From: Dr. John Schooneveldt
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PFAS in Bass Strait Coastal Waters

I have been given to understand that PFAS has been detected in Bass Strait. The aim of this submission is to propose a remedial strategy.

I am a human ecologist and recently retired visiting fellow and honorary lecturer at the Australian National University. For the past three years I have lived in Port Albert, Victoria, where I have had the opportunity to observe firsthand the ecological dynamics engaging both people and wildlife in Corner Inlet and Nooramunga Marine and Coastal Park.

As a human ecologist I am an integrative scientist who works to bring together insights generated by reductionist science. Traditionally reductionist science has dominated, often resulting in the premature implementation of new scientific discoveries causing unintended, sometimes very harmful, consequences. The widespread use of per- and poly- fluoroalkyl substances (PFAS) is a case in point.

Integrative science develops applications that seek to minimise and preferably, avoid unintended consequences. Before outlining my proposal, I need to present some background on the area.

BACKGROUND

Corner Inlet and Nooramunga Marine and Coastal Park comprise an area of over 13,500 hectares of shallow marine waters protected by a complex chain of barrier islands in the south and bounded by Wilson's Promontory in the west. It is located about 200 km south-east of Melbourne and adjacent to the 15 thousand sq.km Bass Strait area proposed for the first offshore winds farms in this country. Some 11 windfarms are currently under consideration, and the area has a capacity for many more.

Corner Inlet and Nooramunga comprise tidal mud flats, salt marshes and shallow, fast flowing, channels. This area is adjacent to the Gippsland Lake system in the east and is fed by 5 streams: the Franklin, Agnes, Albert and Tarra rivers and Bruthen Creek. These waterways are major contributors of sediment and nitrogen to the Corner Inlet/Nooramunga area.

While the area includes an internationally significant Ramsar wetland, a State Fauna Reserve, and is subject to careful monitoring by State authorities, it has been highly degraded after European settlement which began after 1841. Most notable has been the massive outflow of terrestrial sediments associated with the farming practices and timber harvesting in the Nineteenth and early twentieth Centuries and infrastructure developments subsequently.

In addition to sedimentation, the over-harvesting of native oysters (*Ostrea angasi*) and native mussels (*Mytilushas galloprovincis*) in the nineteenth century resulted in their virtual extinction in the region. Bivalves such as oysters and mussels are filter feeders

that purify water by removing small organic matter from the water. A single oyster filters about 5 litres of water per hour. Now that these filter feeders are gone, water quality in the area is poor compared to the 1840s.

Worse, over thousands of years the oysters had created small reefs with their accumulating shells. These reefs regulated the water flows, shaping and stabilising channels resulting from both freshwater inflows and tidal movement. These reefs were harvested in the nineteenth century to supply limestone for the Melbourne building industry.

Now sediment covers everything, eroding and smothering sea grass meadows, hindering efforts at their reestablishment, and disrupting the natural productivity associated with estuaries. It is particularly disruptive of fish reproduction and growth.

PROPOSAL

Filter feeders such as oysters, mussels and other bivalves bio-accumulate PFAS. Systematic restoration of these populations and their sustainable harvesting will progressively remove PFAS from the bottom of the food chain.

For some years Victoria's coastal communities have been experimenting with ways to restore the largely extinct native oyster and mussel populations, especially in Port Phillip Bay, Western Port, Corner Inlet and other locations. Results have been encouraging, but small scale. The discovery of PFAS will be discouraging for some of these proponents who were hoping to restore fish habitat using bivalves reefs and to possibly harvest the oysters and mussels for human consumption.

However, ramping up the restoration efforts will help these communities reach their aspirations sooner, while removing PFAS (and other contaminants) to safe levels. Regular harvesting for disposal of contaminated bivalves will ensure regular testing and monitoring of PFAS levels.

Coastal communities have also been working to restore seagrass meadows which are struggling to deal with the sedimentation and currents caused by the absence of the regulating reefs.

Strategically locating suitable size limestone rock substrate infused with oyster spat will raise the oysters above the sediment and reform the reefs that once regulated water flows naturally.

Work on restoring terrestrial flood plains, not by engineered structures, but by letting the water streams themselves do the work, will serve as a methodology for placing the foundational reefs in select locations. Reefs would be marked by buoys to avoid inadvertent entanglement with fishing activities. The buoys would include suspended lines for mussel filtration.

WHAT NEEDS TO BE DONE

While the science on each component is well established, further work is needed to establish the scale and location of the initial placement of the restoration structures.

At present, a great deal of work is being undertaken in planning for the establishment of the first set of offshore wind farms in Australia, particularly in relation to their impact on the marine environment in Bass Strait.

Work is also being done to reduce terrestrial erosion and sediment run off on land and better manage urban run-off. This work is urgent because of the increased risk of storm surges impacting coastal communities.

IN SUMMARY
Locating a marine monitoring and research facility in the Port Albert area will enable the development, facilitation and co-ordination of the restoration work along with the oversight of the marine impacts of the wind power generation facilities.

It will enable crucial work in the areas of land- and coast-care to be coordinated with estuary rehabilitation and PFAS removal. The facility could also provide a controlled hatchery environment for the initial supply of breeding stock and training opportunies for students of marine biology and aquaculture.

Informal consultations with existing fishing, Coastcare and Landcare groups has indicated widespread support for such an initiative.

John Schooneveldt 18 September 2025