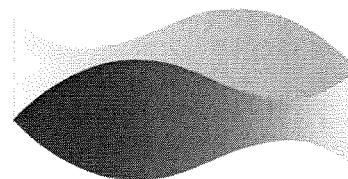


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29 May 2008

Ms Jennie George MP
Committee Chair: Inquiry into climate change and environmental
impacts on coastal communities
House of Representatives
Parliament House
Canberra, ACT 2600



OCEANWATCH
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HEALTHY CATCHMENTS
HEALTHY OCEANS

Dear Ms George,

RE Senate inquiry into climate change and environmental impacts on coastal communities

This letter outlines our submission to the House of Representatives in relation to the inquiry into climate change and the environmental impacts on coastal communities. OceanWatch Australia (OWA) is a national environmental, not-for-profit company that works to achieve sustainability in the Australian seafood industry. All OWA activities are conducted through action based partnerships with the Australian seafood industry, government, natural resource managers, business and the community.

OWA was established in 1989 by commercial fishers in New South Wales. These fishers were concerned about the damage being done to the coastal zone which was in turn negatively impacting on their fisheries resources; habitats, water quality and overall ecosystem productivity. Through OceanWatch Australia, they sought to rectify this. OceanWatch Australia links *healthy catchments and healthy oceans* with the long term sustainable supply of quality Australian seafood and since its inception has been working to deliver its mission of protecting and enhancing fish habitats; improving water quality; and advancing the sustainability of fisheries.

OWA achieves this mission and is steadily moving closer to its long term vision through its three program areas:

1. **Aquatic habitat protection and enhancement – Fish Aid.** Fish Aid informs and provides advice to governments, Natural Resource Management (NRM) managers, the community and other coastal and marine stakeholders in relation to NRM issues impacting on the seafood industry.
2. **Aquatic habitat rehabilitation – Tide to Table.** Tide to Table works with land and marine based primary industries, Landcare and land managers to undertake on-ground works that improve fish habitat, water quality and connectivity, which in turn support and build productive sustainable seafood resources and marine life.
3. **Advancing sustainable fisheries – SeaNet.** The SeaNet program acknowledges that fishers have an impact on the marine environment and ecosystem services that it relies upon. SeaNet extension officers work with commercial fishers to implement environmental mitigation measures that help reduce their own impact on coastal and marine ecosystem.

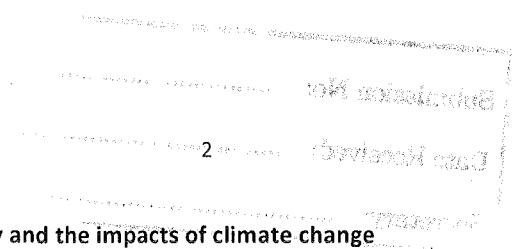
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The Australian seafood industry and the impacts of climate change

The seafood industry is recognised as a critical component to Australia’s economy being the fourth largest primary production sector by value. BRS reports that seafood was valued at \$2.16 billion landed value in 2006/07. The wildcatch component of this was \$1.43 billion, while \$0.76 billion was from aquaculture. Much of the value of seafood is generated from exports: \$1.49 billion generated primarily from rock lobster, abalone, pearls, tuna and prawns¹.

The value of the industry is not only fiscal; the sector also employs an estimated 13,500 people primarily in rural and regional Australia. The social value of the industry to Australia cannot be under estimated. Coastal regions throughout Australia rely heavily upon the seafood industry. The seafood industry resides in these areas which sustains basic community infrastructure and services. For example the South Australian community of Meningie: the community here is largely comprised of fishers from the Lakes and Coorong fishery which has been operating since settlement of SA in the 1800’s. The fishers of this region, the Southern Fishermen’s Association, under took a social audit some years ago and found that without the fishing industry the community would not be viable due to the reduction in size. There would be no essential services (police, ambulance and fire), neither the school nor the hospital would exist and there would be little work for the people of the area.

The importance of the seafood industry to Australia’s social fabric is well documented in recently completed BRS studies included in the Social Assessment Handbook² and is clearly demonstrated from many examples, but in particular the level of structural adjustment required for the communities adjacent to the Great Barrier Reef. The long term survival of the seafood industry is dependent upon healthy coastal and marine environments. There must be recognition of and protection for critical habitats in the coastal zone which can often extend well inland in the form of estuaries, samphire flats, saltmarsh, mangroves and dune complexes.

Addressing impacts on the coastal zone is critical to the long term sustainability of the seafood industry. Climate change poses an additional risk to this sensitive environment which is already struggling through population growth, inappropriate land use planning and development. Outlined below are a number of areas of concern that we believe require priority action. We acknowledge the complexities in managing natural resources within the coastal zone, however with the risks associated with climate change looming, it is imperative that governance frameworks are redefined and improved to ensure the resilience of our coastal and marine ecosystems that sustain us.

1. Governance and institutional arrangements for the coastal zone

To date there has been an ad hoc and disparate approach to coastal zone protection. Although there is talk of “whole of government approaches” this has not actually been delivered on the ground for the betterment of the environment, including the coastal zone. Governance and institutional arrangements need to be addressed to ensure adequate protection of these habitats.

Some key areas that need to be considered include:

- Integrate all tiers of government under one set of rules for coastal development and land use. This would help to create synergy between governments for the protection of the coast and subsequently the marine environment.

¹ ABARE 2008. *Australian Commodities, March 08.1*. Commonwealth of Australia, Canberra.

² Schirmer, J & Casey, A 2005. *Social Assessment Handbook*. BRS & FRDC, Canberra

- Provide for the integration of environmental considerations within all decision making. “Environment” should not be considered the domain of a single department, rather there needs to be an environment section within all government departments. This would ensure a true “whole of government” approach to managing environmental issues. Moreover, it would ensure that all policies and programs of all government activities factor in environmental considerations and take a true ecosystem risk based approach to natural resource management and land use planning decision making.
- Implement *integrated* and *multi-disciplinary* responses to the protection and conservation of the coastal zone. To date, there have been no policies that truly account for the catchment-coastal-oceanic continuum due to the three layers of government operating and the silo mentality that occurs within each tier. This continuum continues to be at the whim of politics. Governments continue to place revenue raising activities and developments above ecosystem services and therefore, also above existing industries that rely upon these ecosystem services e.g. fisheries nursery habitats removed for marina developments. The ecosystem services provided by such coastal habitats such as buffering impacts of storm surge will become more important in the face of climate change. It is important that all levels of government ask *why* there continues to be destruction of coastal habitats and what the *real* costs of this destruction are on the Australian taxpayer.

2. Existing legislation, policies and programs related to coastal zone management taking in the catchment-coastal-ocean continuum

Governments have implemented numerous policies, programs and legislative tools in order to protect the coastal zone from degradation, however these have failed to deliver any substantial and long lasting protection at a regional and national scale (with many weak legislative tools and policies providing only “guidance on” or requirements to “consider” impacts on coastal environments, with no substantial enforcement). Thus, Governance frameworks and related policies continue to allow inappropriate coastal developments in the foredune area which is required by the environment as a buffer area during times of inclement weather to protect areas further inshore and to replenish our beaches. We continue to see destruction of coastal freshwater wetland habitats and critical estuarine and marine habitats such as mangroves, saltmarsh and samphire flats which are critical for sustainable productive fisheries, marine ecological processes, and again for providing a protection buffer for the land directly behind the coast. In adjacent waterways declining water quality from population growth and inappropriate infrastructure and development continues to remove critical habitats in the near-shore environment, such as seagrass meadows.

We believe that the government needs to:

- Establish strong legislative frameworks for future development and use of the coastal zone which incorporates world best practices, for example an Australian Coastal Act. This would ensure that all future developments meet agreed scientifically based standards and risk management principles, thereby reducing the impact of decisions that are driven by political motivation rather than science and sustainability principles (social, economic and ecological).
- Ensure that the policies are *multi-disciplinary*, accounting for the economic, social and the ecological consequences of the action prior to approval. To this end the “real” environmental and social costs of any plans need to be recognised and budgeted for. Private businesses and developers, rather than the Australian taxpayers, should be paying for the ongoing costs of environmental degradation. For example if marina developers change near-shore water circulation and sand movement patterns, sand replenishment programs must be paid for through the licence arrangements and offset type schemes.

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- Policies need to provide clear and definitive direction without being too prescriptive, thus allowing scope for individual business and industry innovation where they are the experts. The fishing industry is already very innovative and keen to reduce costs and do business more efficiently, bycatch reduction initiatives are a good example. It is important for Government to support this innovative thinking through its policies and programs.
- All environmental policies and subsequent programs must be bipartisan with long term commitment to their continuation. This is a must if governments are serious about reducing Australia's environmental degradation across the board. Failure to recognise the environment as a long term investment is a failure to understand the role that ecosystem services play in underpinning our life and economy.
 - The programs that have been implemented in the past, such as Coast and Clean Seas and CoastCare are often only for one political cycle or are substantially changed with each political cycle which creates hiatuses within departments, NGO's and the community. This loss of continuity can be directly related to increasing resignation amongst employees and concerned community members. It is imperative in the coastal zone that natural resource management programs are given long term investment, political commitment and long term delivery frameworks that allow for appropriate time to build the capacity of coastal communities, local councils and private businesses to move forward towards understanding the connectivity and integrated approach required to undertake activities, particularly related to natural resource management in our coastal catchments. There are numerous successful programs being conducted in the catchment-coastal-oceanic continuum in Australia, including our Tide to Table program funded under the National Landcare Program and NHT that provide examples of strategically tackling priorities using an integrated ecosystem approach. This program originated in NSW but owing to its success is being rolled out in Queensland and there are application and interest from South Australia and Tasmania for the program as the outcomes that can be realised from it are being seen.
 - Furthermore, a critical component for any successful program is the people employed within natural resource management. Managing natural resources is really about managing people, modifying attitudes and behaviours. It takes time and trust for individuals and communities to change. People working in this field are passionate and it is vital that government policies support the programs which employ these people and provide long term security of funding rather than year on year contracts. The current political uncertainty is likely to result in a loss of these people into other areas, thereby generating hiatuses for community programs and environmental protection. Monitoring and evaluation of programs is also highly inconsistent and must be made relevant to the broad national environmental objective while being specific to the relevant ecosystem where the work is being conducted.
- Government policy makers must reflect on the effectiveness or failure of existing and past governance frameworks, policies and programs and draw experience from them prior to establishing new policies and/or programs.
- Environmental plans implemented which includes full environmental reporting for all government departments at all levels. Environment must be a part of all government departments so as to ensure that environmental accountability is factored into all activities.
- Environmental planning and reporting needs to also be implemented into public companies. Smaller private companies and industries need to be given incentives to plan and report on environmental performance.

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- Government needs to establish consistent and rigorous monitoring and evaluation of existing programs which are relevant to the ecosystem in which the work is being carried out. Coast and marine programs do not necessarily “fence” anything and yet applications continue to ask for length of fencing or area of native vegetation planted, clearly these are irrelevant to some coastal projects. Government monitoring and evaluation systems for awareness and capacity building programs need to be strengthened and tailored to allow successful programs, such as the SeaNet program to demonstrate the many outcomes it has been a part of in the preceding decade. Often these changes are incremental, but owing to the continuity of people and of the program there have been sensationally innovative and practical sustainability outcomes achieved and implemented throughout the entire fishing industry. The current Government monitoring and reporting frameworks are very terrestrial and on-ground focused and do not capture capacity building aspects and marine based outcomes well, if at all.

3. Environmental impacts of coastal population growth

Anthropogenic impacts on the coastal zone are well documented. Increasing population in coastal areas, including our expanding cities, will further compound the impacts already documented. It is important to recognise that the impacts on these ecosystems are cumulative and that all human activities have impacts. Therefore, it is how we manage these impacts that is important if we are to learn from the mistakes of the past. It is imperative that a consistent and nationally applied method to consider cumulative impacts from land use planning decision making is developed as a matter of urgency. The current method of considering developments in isolation is limiting the resilience of our coastal and marine habitats and potentially degrading these environments over a long time scale such that we cannot see these incremental changes that are occurring until it is too late to reverse the decline.

Critical impacts on the catchment-coastal-oceanic continuum include:

- **Habitat destruction for development.** Habitat in the coastal zone includes riparian vegetation along the catchment tributaries, creeks and rivers, critical to reducing the sediment and nutrient loads entering the marine systems; and estuarine and marine habitats such as mangroves, saltmarsh, samphire areas, wetlands, sand dunes and seagrass meadows which demonstrably reduce the impact of storm events on the coast, play a vital role in a very large proportion of marine species life cycles and ensure sustainable fisheries productivity. The removal of the riparian and coastal vegetation has been shown to be increasing the degradation of nearshore marine systems, for example South Australian inshore reefs which have up to 80% endemism. The loss of saltmarsh and seagrass communities on the east coast has impacted on the recruitment of the 70% of inshore caught commercial and recreational species reliant on estuarine and freshwater coastal habitats during their lifecycle.
- **Declining water quality.** The dissolved matter such as heavy metals, stormwater runoff and agricultural runoff in water entering coastal waters has been of concern for many years. There have been a number of mitigation measures implemented (e.g. tertiary treatment of sewage prior to release and the Great Barrier Reef Water Quality Protection Plan) however in many areas water quality is still affecting these ecosystems. Of particular concern are the levels of nitrogen and phosphorus, which are limiting agents in marine systems. Lesser known but also concerning in some areas are the levels of coloured dissolved organic matter (CDOM) and dissolved organic matter (DOM). Changing the nutrient levels in estuarine and coastal areas can have serious ramifications for primary production and therefore for the ecosystems generally.

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An increasing population means a further decline in water quality due to increased planting of non-native vegetation, increased artificial surfaces (e.g. roads) which reduced the filtration of stormwater, increased population in coastal areas will also mean greater reliance on grey and black water treatment facilities if the infrastructure exists. In rural areas, it is likely that this infrastructure will continue to be septic systems which seep into the surround environment.

- **Access arrangements and management and community capacity.** Increased population is requiring and demanding greater access into coastal areas that were once isolated or protected from the threats that arise with human use. Coastal areas, especially dunes, are sensitive to disturbance and therefore further development to these areas must be carefully planned. Communities are continually placing increased pressure on local councils to undertake activities that are in direct conflict with natural processes such as opening closed estuarine systems. This lack of understanding of natural processes surrounding intermittently closing and opening coastal lakes and lagoons (ICOLLS) is at the expense of healthy ecosystems. Ad hoc development must not be allowed to continue in Australia's coastal areas. Protection of sensitive areas such as beach and wetland areas that are known bird nesting areas must be managed to ensure threatened and endangered birds and animals and related ecosystems have the best chance of recovery.

4. Mechanisms to promote sustainable use of coastal resources

Promotion of environmental best practices and sustainable resource use are notoriously difficult to implement. Given the current high level of main stream media coverage over environmental issues surrounding climate change, it is an opportune time to instigate key messages and actions for individuals, companies and industries to take to ameliorate deleterious environmental effects of their actions.

Specific activities that governments could do include:

- Move to completely protect the rest of the coastal land (fore-dunes, mangroves, saltmarsh, wetlands etc) *now* from any further development thereby negating the possibilities of any further environmental degradation to these areas.
- World's best practices development standards should be mandated for any coastal area. This must include collection and treatment and reuse of grey, black and storm water - critical to improving coastal water quality.
- Ensure sewage and stormwater infrastructure are either relocated or augmented to account for increased capacity or inundation as a consequence of climate change impacts. This is critical to ensure that important coastal habitats and water quality are not degraded, and that the industries which rely on the health of these coastal environments will not be adversely affected.
- Ensure environmental costs are factored into industry activities and developments so as to ensure the long term ramifications to natural ecosystems from these actions are accounted for.
- Develop incentives program for industries, companies and even individuals to make positive changes to the environment. Tax rebates for participation in protective and/or restorative activities may entice greater on-ground action.
- Promote individual ownership of the problems and individual benefit of implementing the solution, e.g. tax rebates.
- Continue with education, awareness and capacity building programs, although the cost-benefit of these programs must also be demonstrable. Thought must be given to how the benefits of such programs can be measured.

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5. Impact of climate change on coastal areas

The impacts of climate change on coastal areas includes the obvious and well discussed sea level rise, but there are many other impacts that have not been well publicised. It is important to consider these impacts within the following context: this is our best guess with the best available scientific information; however there is a great deal of uncertainty: impact intensity might be less or more. Ecosystem resilience (the ability for ecosystems to recover following a disturbance event) is already diminished due to the impacts that have occurred or are occurring from coastal land use planning and population growth. Environmental impacts are cumulative and additive. Climate change impacts in the marine/coastal environment must be considered and addressed at the ecosystem level. The oceanic and coastal systems are in-distinguishable as the life cycles of many (around 70%) key commercial and recreational species are spent in inshore areas (as listed above).

Given this context, climate change is likely to have the following impacts³:

- A decrease to inflows from fresh water sources
- Declines in primary productivity (linked to fresh water flow input and dissolved oxygen)
- Increases in coastal and ocean temperatures
- Increased salinity due to increased evaporation rates (linked to temperature)
- Changes to current patterns at oceanic and coastal scales (e.g. East Australian Current)
- Altered species recruitment and therefore affected marine biodiversity
- Altered species ranges and extinction (with some species already at the limits of their ranges)
- An increased likelihood of invasive species outbreaks
- Changes to habitats including loss of critical fish habitats such as saltmarsh, mangroves and seagrasses (linked to the above factors and also linked to increasing destructive weather events).

More importantly there has been very little attention focussed towards determining the impacts of climate change at the ecosystem level in inshore areas. This needs to be a priority.

6. Strategies to deal with climate change adaptation

There are varying levels of acceptance of climate change within the community. It is apparent that government agencies, scientists and the natural resource management community are leaps and bounds ahead in terms of their acceptance of climate change impacts and measures required to mitigate against or adapt to such impacts. This creates problems for 'change agents' because there is a need to deal with the scepticism, which may take many months or even years, prior to implementing any real changes on the ground and makes the implementation of harsh government policies, that are nevertheless in the best interests of the public, a lot less palatable for the community. Working at the local level is very important as this enables communication to be delivered with individual tailoring e.g. climate change as it relates to fishers is water temperature, productivity and climate cycles rather than discussion of climate change proper which would close communication very quickly for most.

The Government needs to invest in research directed towards determining impacts of climate change on fisheries, resources where there is most likely to be changes in species distribution and productivity. This needs to focus on the likely impacts in terms of loss of or migration of crucial habitats (saltmarsh, seagrass, mangroves, reefs), impacts on water quality (acidity, dissolved oxygen, temperature, nutrient levels etc) and shifts in key oceanic currents. OWA understand that some preliminary data has been

³ Hobday, A; Okey, T; Poloczanska, E; Kunz, T; & Richardson, A (Eds) 2006. *Impacts of Climate Change on Australian Marine Life*. Departments of Environment and Water Resources and Climate Change, Canberra



collected which will help assess the impacts on coastal habitats i.e. NSW Department of Environment and Climate Change elevation data for the coastal zone (Hunter-Central Rivers NSW) using LIDAR (Light Detection and Ranging). This needs to be undertaken nationally in high risk areas, together with other research required to determine impacts on fisheries.

Research needs to be conducted into the likely costs of climate change on coastal communities, businesses and industries such that we can begin to budget for mitigation against and adaptation to likely impacts of climate change and foreseeable associated expenses. For example, costs to the fishing industry will involve loss of fish habitat and productive fisheries, relocation of fisheries related infrastructure etc.

This research should then feed into climate change adaptive management strategies for communities and industries, which allow sufficient time to adapt to the new paradigm following climate change.

Government needs to implement the overarching environmental targets, goals and objectives. These need to be specific and measurable, without being prescriptive about how this must be achieved. Government needs to allow flexibility and adaptability for communities, industries and companies in achieving the "how to" component of the overarching goals and targets.

Environmental risk management needs to be employed throughout the community and industries. Risk assessment helps to breakdown the changes into smaller components and demonstrates success more quickly for the industry itself. Risk assessment also allows for there to be a process of change over time, reducing the burden, and instilling a commitment to continual improvement. The fishing industry leads many other sectors in the development and implementation of Environmental Management Systems which have assisted the industry improve practices in areas such as fuel consumption, habitat and protected species interactions. Tools such as this will provide industry with existing frameworks from which to include additional adaptation and mitigation strategies as required.

Legislation needs to be created e.g. a National Coastal Hazards Act which deals with the impacts of climate change, flooding and other natural hazards in the coastal zone. Current tools for assessing developments, i.e. legislation and policies, do not take into account the recent IPCC (2007) findings on climate change (i.e. between 0.18 and 0.91m rise in sea level by 2100, and it appears that we are tracking towards the upper level of the predictions). Furthermore, they lack the statutory teeth to ensure measures pertaining to development approvals in high risk coastal areas such as setbacks are enforced. Many are only simply guidelines, or state that such matters "are to be considered". This places enormous pressure on councils as they have a "Duty of Care" to ensure that their decisions are in the best interests of the public, and could potentially be liable for loss of property or property damage in the advent of climate change. Thus a National Coastal Hazards Act could provide councils with clear definitive "numbers" to apply to sea level rise in terms of development approvals.

It is important to provide adaptation and mitigation incentive programs. Carrot and stick rules are an effective method of achieving environmental outcomes. However, for some companies and/or businesses it will not be viable for them to implement the new strategies. In this instance it is critical that government support these businesses to exit the industry. Exiting with dignity is essential for people in primary industries who are older than the average workforce, are likely to have been on the land/water all their life and possibly know no other work. Supporting these people into alternate areas of work or retirement is likely to assist to move the rest of the industry toward more sustainable practices as the enterprising individuals will be left to implement change.

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7. Mechanisms to promote sustainable coastal communities

Sustainable coastal communities have understanding and ownership of the environmental issues affecting their local area. Local governments play a key role in the protection of these areas, but the residents have an equally important role. Effective and innovative governance arrangements (as discussed below) are critical for sustainable coastal environments including the communities that reside there.

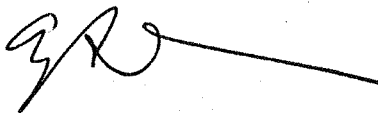
It is essential that government programs support local industries, particularly if they are dependent upon the marine environment, while protecting the natural assets in the area. Programs need to support local groups and activities that help achieve the overarching environmental goal stipulated at the highest level. Education, awareness and capacity building programs are keys to supporting local initiatives, as is having direct access to experts that can assist communities implement best practices. Again this is essential work of the local governments.

Environmental issues need to be owned by the individual, cumulative impacts need to be demonstrated so that actions are taken by all people. This may need to occur through legislation, but however it happens, each person living on or close to the coastal zone needs to understand how their actions impact on the surrounding environment. OceanWatch Australia's Tide to Table program has been very successful in demonstrating to primary producers and policy makers the impact catchment activities on the coastal zone. The 'Connectivity Tours' bring together a range of stakeholders (farmers, fishers, NRM and local/State government personnel) into an area where the fishers talk through the many issues affecting the productivity of the near-shore environment. Through non-confrontational discussion all stakeholders are able to make the catchment connections. These connectivity tours have helped bridge gaps in understanding, allowed new opportunities for discussion and dialogue which has resulted in on-ground actions to mitigate degrading practices (e.g. removal of rubbish from Townsville's wetlands and implementation of fish passage ways in NSW).

We believe that coastal zone protection is critical to the long term viability not only of the coastal zone and the industries that are dependent upon it but also for Australians. We are a beach loving nation and our ability to harvest from the oceans and enjoy the environment means that we must act definitively now to ensure the long term protection of these essential habitats.

If you require any further information and/or clarification, please do not hesitate to contact me directly on 02 9660 2262, 0419 903 800 or email anissa@oceanwatch.org.au.

Yours Sincerely



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