nacc
managing natural resources in WA's Mid West

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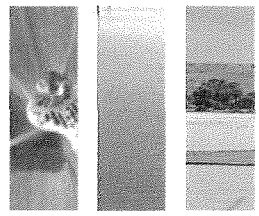


28th May 2008

Committee Secretary
Standing Committee on Climate Change, Water, Environment and the Arts
PO Box 6021
House of Representatives
Parliament House
Canberra ACT 2600
AUSTRALIA

To Whom It May Concern,

RE: Inquiry to climate change and environmental impacts on coastal communities

Overview:

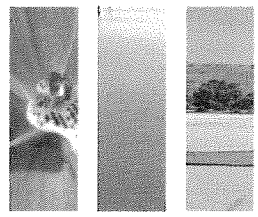
The following document is written by the Coastal and Marine program leader of the Northern Agricultural Region on behalf of the ***Northern Agricultural Catchments Council****, local peak body for the environment and natural resource management in Western Australia. Climate change is likely to impact human settlements of the NAR by rising sea levels, more intense storms and cyclones, reduced water availability and more heat waves. NACC recognises the importance of reducing the vulnerability to coastal erosion by managing the non-climate related stress factors such as fisheries, remnant vegetation, coastal run-off and pollution, which are likely to reduce the ecosystem resilience to climate change. This paper proposes a few adaptation strategies and recommendations of possible mechanisms for implementation based on our experience and knowledge of the natural resources of the Northern Agricultural Region. The NAR has a coastline of about 400km, and includes the "****Central Coast****" from Guilderton to Dongara and the "****Batavia Coast****" from Dongara north to Kalbarri. Two distinctive coastal geologies can be delineated at the regional scale. The first is the dune/limestone coast, abutting sand and alluvial plains of the Perth basin and the second one is the dissected sandstone/limestone plateau characteristic of the Carnarvon basin. Coastal dunes are a relatively young formation and therefore highly susceptible to erosion if the vegetation is removed. The coastline is predominantly exposed to prevailing strong southerly winds and long fetch swell, with some protection afforded by reef system and rocky outcrops. Some of the areas are heavily accessed and many localities are highly degraded as a result of natural and human induced erosional processes. Both the coastal regions are under increasing pressure for change due to the economic and lifestyle benefits offered by coastal locations. Four major rivers contributing to the loads of suspended sediment and nutrients reaching coastal areas in the region are highly susceptible to flooding especially in prolonged drought conditions. Within the NAR lies the southernmost living reef in the Indian Ocean: the* ***Houtman Abrolhos Islands****. The A-Class Reserve archipelago comprises a total of 122 low-lying islands and reefs located at only 60 kilometres from the mainland and only a few metres above sea level.*



1. **Existing policies and programs related to coastal zone management, taking in the catchment-coast-ocean continuum. Governance and institutional arrangements for the coastal zone.**
   Under a management point of view the coast suffers from fragmented control and responsibility, resulting in poor integration and lack of coordination of planning and management. The high number of shires with limited resources can become a problem in managing the coastline in a sustainable way. Shires have been under constant pressure to provide further improvements to existing access, and to have more direct road connections between coastal towns. Budgets are limited and often recourses are directed towards supply of non-coastal related services (especially if the main town is not located on the coast). Reduced risk of costs associated with possible liability could be considered an additional economic benefit of the implementation of adaptation measures. Coastal, estuarine and marine programs are shaped by a number of State and Regional strategies and policies. Local authorities sometimes don't have enough resources to implement them or review them. Here are some gaps/issues emerging from current coastal policies:

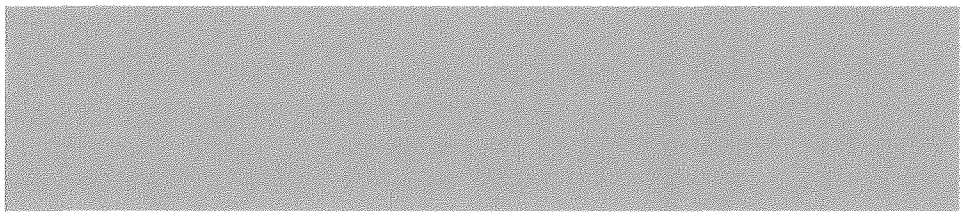
   - Reviewing the component for sea level rise (currently 38m) in the calculation of minimum setback (State Coastal Policy 2.6) to be far more conservative, for example 200m setback.
   - Incorporation of climate relevant policies into coastal development plans;
   - Increased uncertainty in long-term land-use planning and infrastructure design, i.e. location of future developments, suitability of infrastructure designs to cope with changing climate, etc.
   - Undertake a risk assessment for the local government areas to identify the most significant areas of risk and to establish priorities;
   - Management and implementation issues associated with Land tenure.
   - Coordination of departments and levels of government, and sound working arrangements between national, provincial and local level administrations is fundamental to the success of coastal policies.
   - A monitoring and evaluation system that can track the progress of coastal policy measures, and that can provide feedback to managers and the public, is a key element in ensuring that policy measures are able to achieve their intended goals.
   - Decentralisation of functions and authority as a necessity for the efficient and effective delivery of coastal policies.

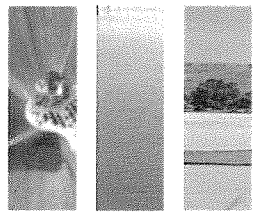
2. **The environmental impacts of costal population growth and mechanisms to promote sustainable use of coastal resources.**
   In coastal areas, the degradation of ecosystems (due to population growth and intensive development) has increased the vulnerability of coastal towns. This degradation is reducing the long-term resilience of coastal systems and is thereby limiting their sustainability. Beaches, estuaries, coastal wetlands, and reefs have adapted naturally to past changes in climate and sea level over long time scales. However, now and in the future they are likely to face faster rates of change. The coastal environment is not prepared to adapt to this changes if the natural assets are removed or irreversibly



altered. Erosion is particularly prevalent in areas where vegetation has been diminished. Throughout Western Australia a rapidly growing population is causing an over-exploitation of coastal, marine and estuarine resources with irreversible consequences: Loss of natural areas; Loss of coastal, marine and estuarine habitats; Removal of important geomorphological features (sand dunes); Extensive clearing of coastal vegetation, Loss of flora and fauna; Beach width loss; Removal of buffer zones; Increased pressure on dunal systems; Changes in distribution of invasive species; Reduced ecosystem resilience to sea level rise and climate change related stresses; Saltwater intrusions. Strategies to promote a sustainable use of coastal resources could include:

- Strengthen the capabilities and the partnership of national and regional agencies responsible to facilitate more efficient decision-making in managing marine and coastal resources;
- Building designs to consider future climate change impacts – encouraging sustainable development in coastal areas and eco-tourism type of accommodation.
- Increase access to marine and coastal resource management data resulting from fragmentised projects.
- Increase education, training and awareness related to climate change for agencies, community and local governments.
- Zoning processes with better consideration for nature reserves and corridors. NRM should be heavily involved in this process in collaboration with the other agencies.
- Ensure that regional coastal zone strategies include: responsible public beach access; building height restrictions; adequate setbacks consideration of extreme events; and a prohibition on canal developments.
- Identify activities that could damage the coastal assets in the long term (off road vehicles, sand boarding, littering, illegal camping etc.). Coastal shires to offer valid alternatives to such activities (e.g. designated off road vehicle parks, recycling, affordable camping areas).
- To collect high quality data (especially for high risk areas) by combining wave/sediment data with spatial applications such as remote sensing and satellite imagery (sediment budgets studies using LIDAR mapping, etc).
- Increasing the use of spatial data for planning.
- To conserve and enhance green corridors to promote environmentally sustainable forms of transport such as walking and cycling within urban areas.
- Involve communities in the protection and management of their own coastal resources (coastal monitoring, Coastcare projects, etc). Advertise the fact that current practices are not creating a sustainable coastal environment and pointing out the possible repercussions that massive losses to natural resources and natural habitats could mean to user groups.
- Management in our region is currently very sectoral with numerous different organisations, towns and lower levels of government all trying to manage areas either next to or overlapping each other. A holistic approach is needed. The problem of fragmented responsibility among various government agencies has resulted in a lack of management integration, which has lead to needlessly reactive management. This has also caused cumulative impacts with many minor decisions made at different levels of government add up to major problems. Each





major centre in the Region should have a coastal manager working as linkage and coordinator between state agencies, local government bodies, NRM body and other stakeholders. Suggestion: Adjust local government boundaries to allow for land use compatibility or consistency, e.g. merge all coastal land into a number of coastal LGA's.

- Effective cooperation between all stakeholders, as well as good inter-disciplinary coordination and diversification of economic activities (including better public consultation). Improve and promote partnership with the private sector (coastal developers).
- Undertake studies on human carrying capacity for the coastal areas under pressure and make long-term policies that take this into account.

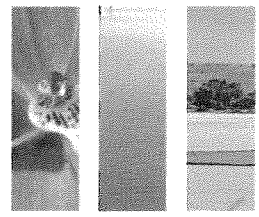
3. **The impact of climate change on coastal areas and strategies to deal with climate change adaptation, particularly in response to projected sea level rise;**

Natural coastal habitats are starting to disappear around population centres. The Region has some important coastal National Reserves and National Parks, but outside these the pressures on both public and private coastal land from tourism, recreation and residential development are considerable and growing. The possible impacts from sea level rise and climate change are also relevant in future planning and management of the coast. Below are listed a number of threats to coastal habitat in the NAR:

- Impacts from Off Road Vehicles on beaches, dune systems and other coastal landforms;
- Pollution from industrial activities, residential developments and land reclamation;
- Coastal weeds;
- Disturbance or mortality of nesting shorebirds and penguins from dogs, horses, feral cats and humans;
- Camping in undesignated areas;
- Multi access points and erosion areas on coastal dunes;
- Unauthorised private paths and ongoing degradation of coastal foreshore ecosystems adjacent to private property;

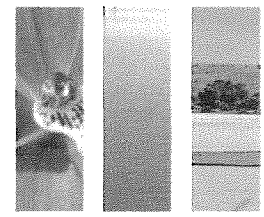
There is still insufficient information to avoid development on the most vulnerable coastal areas in our Region. In regional areas the development on foreshore dunes on sandy coastlines is not supported by a detailed modelling and collection of high-resolution spatial data that would allow to measure shoreline changes over time. Without adequate information, new developments in vulnerable areas may be placed in the line of harm. Setbacks need to be reviewed where the buffer zone is not sufficient to protect the new housing from sea level rise. Adaptation options include:

- Integrated coastal zone assessments and management (ICZM);
- Redesign, rebuilding, or relocation of capital assets;
- Protection of beaches, dunes and maritime infrastructure;



- Urban development at safe distance from shoreline (re-calculate setbacks for high-risk areas if minimum distance is not sufficient; setbacks calculated in the past are not necessarily best option at the moment of development. Update setbacks in foreshore plans. Determine specific setbacks for future developments and that foredunes are protected). Different coastal areas in the region have very different vulnerability profiles and adaptation needs. If the costs or environmental impacts of shore protection were high compared with the property being protected, an alternative adaptation strategy would be to locate housing further inland instead at a minimum set back required by the coastal policy.
- Education and awareness for coastal users;
- Gathering quantitative assessment tools and data (establish baselines for coastal monitoring);
- Access to national and international technical expertise;
- Developing detailed maps detecting which areas will require shore protection (e.g. dikes, beach nourishment) and which areas will be allowed to adapt naturally;
- Determine best location for marine and other type development to minimise impacts of sea level rise or storm events (develop guidance for local governments to avoid approval of development in high risk areas);
- Analysing the environmental consequences of increasing infrastructures on the coast;
- Promoting shore protection techniques that do not destroy all habitat;
- Engaging state and local governments in defining responses to sea level rise;
- Improving early warning systems and flood hazard mapping for storms;
- Establish natural variability of shoreline regression and accretion on short, medium and longer-term time scales.
- Assess vulnerability of coastal areas to climate change.
- Protecting and enhancing migration corridors to allow species to migrate as the climate changes;
- More access to appropriate technologies, information, and adequate financing to local shires;
- Cost-effective investment in coastal areas to reduce climate change impacts requires an understanding of the sources and movement of sediments along the coast.
- Programs to measure change and modelling of climate change impacts will be crucial components of a strategic national assessment of climate change impacts so that management strategies can be developed.
- The Abrolhos Islands are managed by the Department of Fisheries for the conservation of flora and fauna, for tourism, and for purposes associated with fishing industries in particular with the Rock Lobster Industry. Impacts of sea level rise would be devastating for the fishing industry and the economy of WA.

Some existing management plans for coastal areas need to be implemented, and additional plans are required for priority areas not covered. There is a lack of spatial information on coastal habitat and geomorphology (from High Water Mark to 100 m inland) that is available to decision makers across the whole region. A region-wide 'vulnerability to climate change' assessment is required and a range



of adaptive measures will need to be investigated, to reduce the risk for buildings and infrastructure from climate change. These could include preventing development in certain areas or only allowing demountable dwellings in others.

4. **Mechanisms to promote sustainable coastal communities;**
   - Establish a coastal management structure for the region which provides advice to decision makers, oversees training, supports voluntary "Coastcare" type groups, seeks funding for projects and works, and facilitates integration of coastal management.
   - Encourage participation in the management process. Liaison with Aboriginal Heritage Associations and relevant local Aboriginal community organisations must be emphasised prior to undertaking any development or management work. Decision makers need clear advice on areas of significance.
   - Public education and information on coastal management is needed, including a guide to the State planning framework, newsletters for the community, coastal management training courses, signage and interpretation about coastal values, educating recreational users about the consequence of their activities, interpretation materials, informational panels and pamphlets. The community needs access to advice and support if it is to contribute effectively to coastal management. The nature of the relationship between each local government and their community means that local government has the ability to play a role of educator and encourage awareness within their communities, and to promote sustainable development. Motivate a change in behaviour towards coastal activities that could increase erosion and loss of habitats. Identify stakeholders whose support is essential to solving the problem and evaluate these groups to determine the most effective means of delivering information to them. Promote coastal eco-tourism.
   - NRM bodies to be involved in strategic decision making on zoning of coastal areas and planning.
   - Encourage diversity in ecological systems;
   - Avoid degradation of iconic ecosystems.

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