

Thank you for the opportunity to provide a submission to the Standing Committee. I am writing as former Chair of the NSW Coastal Council and as a member of the Wentworth Group of Concerned Scientists. I have advised former Ministers in my role as Visiting Professor to the Dept. of Infrastructure, Planning and Natural Resources on coastal policy including issues related to climate change (eg. NSW Coastal Policy 1997 and coastal regional strategies 2005-60). I also chaired an inquiry on behalf of Minister Amery in 1999 on beach protection which led to amendments to the Coastal Protection Act 1979 in 2002 which indirectly took into consideration the impact of sea level rise on beaches and foreshores in NSW.

My submission is based on the premise that climate change including sea level rise will adversely impact of the state's coastal natural resources. I have written scientific papers on this topic from 1987 to the present including a keynote address to the International Coastal Engineering Conference in 2000. More recently I have published with my colleague from the School of Geosciences at Sydney University, Dr Peter Cowell, in the international Journal of Coastal Research (January 2006). Recent talks on the topic given in Australia and New Zealand are to be found on the Wentworth Group web site <www.wentworthgroup.org>. One such talk was at forums organised by the DPI in June as part of presentations on impacts of climate change on the NSW coast sponsored by the former NSW Greenhouse office.

My prime concern relates to two potential adverse impacts of climate change on coastal natural resources. First is the loss of beaches and associated erosion of coastal dunes. The second is the slow but insidious rise of sea level into low lying lands adjacent to estuaries and coastal lakes. Both effects have significant consequences to coastal ecosystems especially wetlands and those biota affected by increased salinities of estuaries. In addition there is the threat to beach condition. NSW economy and the lifestyles of many are to some extent linked to having beaches in areas of population and tourism interest. Sea level rise can remove sand off beaches where they are backed by protective seawalls. Increased high intensity storm activity under climate change will exacerbate this effect. The natural response of affected property owners is to build protective barriers. This is demonstrated in New Jersey and other places in the USA and elsewhere. Commonly this leads to loss of the natural beach. Inundation of low-lying lands with rising sea levels will also create distress for property owners through what I term the Venice-effect: increased frequency of high tide flooding as sea level rises. It is estimated by the insurance industry that over 200000 properties may be at risk in NSW (700000 around Australia) to the combined impacts of erosion and inundation; this may be an underestimate.

In relation to Term of Reference (a) of the Committee, there is enough knowledge in the scientific community to comment on the likely consequences of climate change on coastal natural resources. Some of these consequences were outlined in the IPCC Assessment report No 4 on coasts in general and Australia in particular. Work by CSIRO has identified the physical changes that are likely over the next several decades. More recent research summarized in Greenhouse 07 conference in Sydney in October indicates potentially higher rates of sea level rise than noted by IPCC. These findings further advance concerns over the loss or degradation of coastal natural resources such as beaches and salt marshes. Scientists in our universities such as Peter Cowell, and in the DECC, are now in a good position to advise Government on likely consequences. The Australian Greenhouse Office is currently examining coastal vulnerability around Australia, and the Department of Planning using funds from the NSW Greenhouse Office has recently completed a high resolution study of terrain likely to be inundated by sea level rise on the Central Coast using Airborne Laser Scanning or LIDAR. All this work is pointing in ONE direction, viz that coastal natural resources, properties, infrastructure, some industries such as the oyster and tourism, and even lifestyles are under threat from climate change.

Term of Reference (b) seeks advice on options for sustainable use given the potentially negative impacts noted above. This raises the need to consider a package of adaptive strategies. Assuming that sea level will continue to rise over the next 100 years or more and at an accelerating not linear rate, then some adverse impacts are inevitable. They can be mitigated in a number of ways: one will be through “soft” and “hard” engineering. Beach sand nourishment is an example of the former. NSW is blessed with abundant deepwater sand which can be pumped onto beaches; sand nourishment is a well established practice in Queensland and overseas. We will have to decide when a particular beach will require nourishment: DECC has identified beaches at risk. Hard engineering involves building solid structures such as sea wall, bunds, dykes and even barrages at the mouths of estuaries as in the case of the Thames. What will be the “tipping” points when demand for such structures will occur? When built such structures in turn may have adverse impacts on natural resources (eg. on fishing).

Another way in which Government can intervene to mitigate impacts is through using its planning and regulatory powers. This can involve amending LEPs to ensure no future structures of significance, both private and public, are placed in hazard zones. Such areas at risk can be defined by climate change scenarios and probability analysis for different locations. Regulations on building codes should be used to prevent re-building in ways that impact adversely on future land owners and on natural environmental conditions. At present most coastal regional strategies provide the Minister for Planning with powers to do this, but depend on DECC to provide technical and financial support to local councils to do the mapping, inform property owners and analyse the impacts using the Coastal Zone Management process as defined in the Coastal Protection Act. In theory the system is in place to avoid construction in places that will lead to adverse environmental and property damage if there is a political will and resources to implement legislation, regulations and policies. One step would be to require section 149 certificates to include notification of climate change risk.

In relation to Term of Reference (d), there is an apparent absence of any audit powers on how current management and planning systems are implemented in relation to climate change and natural resources. The NRC for instance is limited to auditing the Catchment Management Authorities. But CMAs are not the major government bodies involved in coastal natural resource and land use management in NSW, especially in relation to managing for the likely impacts of climate change. Local government, DECC, Lands, and Planning have major roles. Since the demise of the Coastal Council in 2003 there is no coordinating entity that can report through a Minister to the NSW Parliament on the performance and outcomes of these different public bodies. NRAC is not set up to perform this role. The NRC is seeking wider powers over LEPs and other agency plans of management and until it does there will be no explicit way for NSW to learn how the state and local councils are meeting both the known and the uncertain challenges of climate change.

Term of Reference (e) addresses national /international policies. To date the federal government has provided little guidance on adapting to climate change in coastal Australia. Work by the AGO on coastal vulnerability does foreshadow an awareness of issues as does the National Framework for Cooperative Integrated Coastal Zone Management agreed by all NRM Ministers in 2006. A pre-election policy paper from the ALP has defined a stronger interest in population and climate change coastal challenges that the Rudd Government may wish to address. Acceptance by Australia of the RIO Declaration on coastal environmental matters in 1992 did not lead to any major action from the previous federal government on managing the natural resources of the coastal zone under climate change.

I would be happy to discuss any matters raised in this submission with the Committee.

Thank you again for the opportunity to bring coastal issues on climate change to the attention of the Committee.