

## Attachment 2

The barrages at the Murray Mouth are intended to keep the freshwater lake level above sea level. However, the sea currently flows over the barrages several times a year. A significant relative sea-level rise in the area may require the barrages to be raised. Interestingly, one water management option being considered by the South Australian Government is to construct a weir at Wellington, upstream of the terminal lakes Alexandria and Albert (Mazmanian and Sabatier, 1983). Although this option is not currently economically or environmentally favorable, it could become a viable alternative to raising the barrages at the Murray Mouth if some of the higher Greenhouse Effect sea-level predictions occur.

Harvey, 1988

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A last-resort option is to abandon the wetland as a freshwater environment and open the barrages to allow seawater into the lakes. Projected rises in sea level, associated with global warming, suggest that the sea could invade the region in 25-50 years; if this is correct then, there are limited prospects for long-term management of the Lakes as a freshwater system.

Kingsford et al Nov. 2009

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### 4.5 Sea level rise

Current predictions, based on Intergovernmental Panel for Climate Change projections, are for a sea level rise of at least 0.3 metres by 2050 and 1.0 metres by 2100. Sea level rise is not seen as an immediate threat due to the geomorphology of the region, but it is acknowledged that it may lead to a transition of the Lower Lakes to an estuarine environment in the longer-term.

SA Govt (DEH) Securing the Future, Dec 2009

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The first five adaptation actions are arguably a continuation of current practice. This suggests that the region has already built significant capacity to respond to a variable climate, influenced largely by experience with past droughts such as the Millennium Drought. **In contrast, the future operation and location of the barrages is one of the most transformational adaptation actions identified in this plan.**

**We do not need to know everything to start planning and acting now.**

Climate change will affect the area in two ways. It will reduce flows down the river and change ocean conditions. Declining average rainfall in upstream catchments will cause flows to reduce, changing salinity levels in the Lakes and Coorong. The largest potential effect though may come as a result of

## Attachment 2 (cont)

changing conditions in the Great Southern Ocean. Warmer ocean waters and decreased alkalinity will affect mixing in the column and the form and abundance of species living in the Coorong estuary. **Perhaps of greatest concern though is the possible effect of sea level rise, which could result in more regular saltwater incursions into the Lower Lakes, more persistent marine conditions in the Coorong and, ultimately, regular failure of the barrages**

**The immediate priority is to commence social engagement to increase community awareness and promote informed debate about the future adequacy, operation and location of the barrages.**

SA Govt (NRM) Building Resilience to a Changing Climate, 2014