



## Department of Primary Industries Parks Water and Environment

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Committee Secretary  
House of Representatives Standing Committee on  
Climate Change, Environment and the Arts  
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### **Submission to Standing Committee on Climate Change, Environment and the Arts - Inquiry into Australia's biodiversity in a changing climate**

The Tasmanian Department of Primary Industries Parks Water and Environment (DPIPWE) welcomes the opportunity to make a submission to the House of Representatives Standing Committee on Climate Change, Environment and Arts – Inquiry into Australia's biodiversity in a changing climate.

Tasmania, like other parts of Australia, is already showing evidence of climate change. This presents a major challenge for biodiversity conservation planning and natural resources management. DPIPWE has undertaken an initial assessment of the potential impacts of climate change on Tasmania's natural values and is documented in the report: *Vulnerability of Tasmania's Natural Environment to Climate Change: An Overview* (DPIPWE 2010). The report is attached and available via the Departmental website at:  
<http://www.dpiw.tas.gov.au/inter.nsf/WebPages/DRAR-88P8CY?open>

Climate change is likely to lead to ecosystem changes, including transformed and novel ecosystems, and local species extinctions. Changes such as changing rainfall patterns and increased temperature, and increased frequency of extreme events such as drought, storm surges, and fire, will variably impact on biodiversity in different regions in Tasmania. Tasmania's natural values are already impacted by a range of threats and disturbance regimes such as fire, weeds and diseases - climate change may exacerbate these or lead to complex and cumulative interactions. Climate change will also impact on geomorphic process, landforms and soil systems both directly and indirectly, with fluvial (rivers, lakes and wetlands) and coastal/estuarine (particularly soft, sandy coasts) systems likely to be impacted most. Soils form a critical link between landforms and vegetation providing valuable ecosystem services, controlling vegetation health and moderating infiltration and runoff.

Terrestrial ecosystems in Tasmania considered potentially highly vulnerable include alpine ecosystems, moorlands and peatlands, particularly to altered fire regimes. Increased shrub and tree invasion in these ecosystems could lead to significantly transformed ecosystems, including increased fuel loads. In addition moorlands and peatlands may shift from accumulating carbon to releasing carbon into the atmosphere. Moorland fauna such as the broad-toothed rat and burrowing crayfish are sensitive to changes in moorland habitats. Species with restricted ranges such as mountain tops or low-lying islands and coasts, or those with

life strategies or specialised habitats and ecological requirements are also at risk to the impacts of climate change. Freshwater ecosystems are also considered to be vulnerable to the potential impacts of climate change. Warmer temperatures, increased wind and changing rainfall patterns are projected to impact on water availability. Coastal wetlands will be particularly vulnerable to changes in hydrology and the impacts of sea level rise. Marine and coastal ecosystems are predicted to be highly vulnerable to the impacts of climate change.

Global climate models predict that the greatest warming in the Southern Hemisphere oceans will be in the Tasman Sea. Current evidence is showing an increase in southward extent of the East Australian Current off eastern Tasmania, with a resultant southern extension of warmer, nutrient poor waters, allowing the southern range extension of marine species, including pests. Substantial areas of Tasmania's coast are at risk of erosion from exposure to sea level rise and storm surge inundation.

DPIPWE is actively working in a number of areas that address climate change impacts on Tasmania's natural systems and biodiversity. The *Natural Systems Resilient to Climate Change Project* aims to identify the key vulnerabilities of Tasmania's natural systems to climate change and to identify the adaptations that may maintain, enhance and recover the natural resilience of Tasmania's natural systems to the potential impacts of climate change. This includes: vulnerability assessments; development of spatial layers to inform the planning process; development of risk assessment tools for assessing the potential vulnerability to climate change and sea level rise; undertaking climate change monitoring on key ecosystems for example alpine treeline, conifer health and fjaldmark; conducting workshops and information sessions and maintaining a climate change web page on the Departmental website.

Managing Tasmania's natural heritage and dealing with uncertainty associated with climate change will be challenging and require commitment and action from all levels of government and the Tasmanian community.

#### Reference

DPIPWE (2010). *Vulnerability of Tasmania's Natural Environment to Climate Change: An Overview*. Unpublished report Department of Primary Industries, Parks, Water and Environment, Hobart.

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19 December 2011