Designing for the future

Infrastructure and water management solutions to protect wetlands, rivers and lakes in the West Gippsland Catchment Management Authority region are being investigated as part of a strategy to combat the impacts of climate change.

The strategy

The West Gippsland Regional Natural Resource Management (NRM) Climate Change Strategy was developed by West Gippsland Catchment Management Authority (WGCMA) with its partner organisations to help better understand and prepare for the impacts of climate change on the natural environment.

The strategy was funded by the Australian Government and identifies climate change adaption and mitigation management options for the region, including options for better environmental protection, planning and decisions about future environmental water flows.

Options identified in the strategy have been implemented in a project focused on protecting two iconic local wetlands, Heart Morass and Dowd Morass.

The challenge

The latest climate projections from the Bureau of Meteorology and CSIRO indicate the WGCMA region will be subject to a warmer, drier and more variable climate in the future.

Less average annual rainfall, higher rates of evaporation, and reduced surface run-off will result in rivers, estuaries and wetlands receiving less water. Coastal environments may flood or become more saline as the result of sea level rise.

This will mean lower fresh water inflows and increased salinity in the internationally significant Heart Morass and Dowd Morass wetlands, as well as in the Latrobe River, and Lake Wellington.

Wetlands under threat

Heart Morass and Dowd Morass are listed as ‘Wetlands of International Importance’ under the Ramsar convention.

These seasonally brackish wetlands border the north and south side of the lower Latrobe River and adjoin Lake Wellington.

At nearly 3,000 hectares in size, they provide significant habitat for a great number of nationally and internationally important birds, amphibians, marsupials and plants.

Even without the threat of climate change, these wetlands face environmental challenges.

Reduced river flows from the construction of dams and diversion of water, together with construction of levees along the river banks, have resulted in decreased freshwater inflows into these wetlands over a number of years.

The reduced river flows, together with the permanent opening to the sea at Lakes Entrance, also led to an increase in salinity levels within Lake Wellington.

The culmination of these interventions mean the neighbouring wetlands are at risk of becoming saline, impacting negatively on the natural habitat they provide.

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Strategy in action

Climate change modelling and water quality monitoring in the lower Latrobe River were used to identify the best location and size of the proposed new water control gates to combat the effects of climate change.

This information clearly demonstrated the importance of climate change mapping and good monitoring data in the decision making process, to ensure the water control gates were fit-for-purpose for at least their lifespan.

One of the most significant outcomes of the climate change modelling was the identified risk of sea level rise. Because the wetlands adjoin Lake Wellington, which is part of the Gippsland Lakes system, sea level rise will result in more frequent inundation events into the wetlands.

While new water control gates can address this to some degree by providing freshwater to the wetlands, saline inundation remains a significant threat.

WGCMA is now undertaking more investigations to determine how saline water inundation into the wetlands can be further reduced through either infrastructure and/or adequate management options.

Developing solutions

To mitigate already declining fresh water flows into the Heart and Dowd morass', water specifically for the environment has been allocated for diversion to the wetlands from the Latrobe River to help lessen the impacts to their health.

However, the current infrastructure used to divert the water from the river into the wetlands is inadequate.

To address this issue, WGCMA with funding from the Department of Environment, Land, Water and Planning (DELWP), undertook a project to investigate how freshwater inflows could be better provided to these wetlands.

However, it was important the project not only considered solutions to the current inflow problem, but also factored in the impact of future climate change, to ensure any solutions met long-term challenges.

Thanks to the NRM Climate Change Strategy, information about the impact of climate change on the wetlands, and how these could be lessened using a combination of infrastructure and management options, was at hand.

Construction of new water control gates on the Latrobe River is a workable solution.

These water control gates, with a typical lifespan of between 30-50 years, were designed to provide adequate inflows under all climate scenarios to ensure the wetlands maintained a natural watering regime.

The gates will be in a suitable location to ensure only freshwater is diverted from the river to the wetlands.

WGCMA has secured funding for one of five water control gates through the Victorian State Government. The gates are due to be constructed during 2017.

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