Water Research Laboratory

Future Coasts – Port Fairy Coastal Hazard Assessment

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Client: Moyne Shire Council, Victorian State Government
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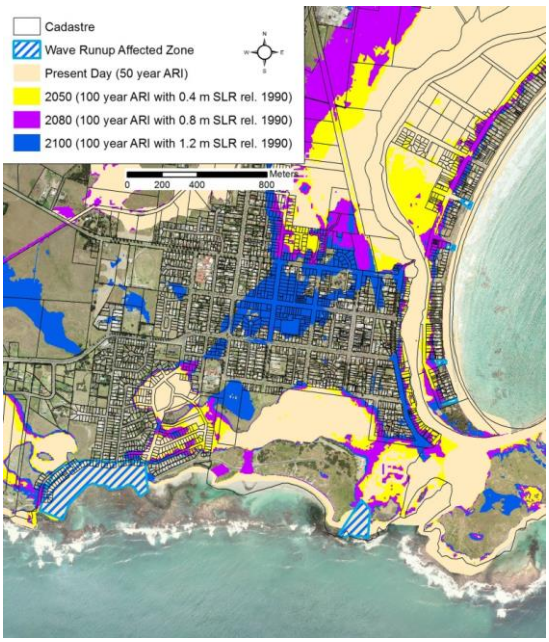

Inundation areas overlain on a digital cadastral map

The Water Research Laboratory has recently undertaken a detailed sea level rise and coastal hazard assessment for Moyne Shire Council, Victoria. This project was jointly funded by Moyne Shire Council and the Victorian Department of Sustainability and Environment (DSE), and is part of the Future Coasts Program. The main purpose of the Future Coasts Program is to assist Victoria in better understanding and planning for the risks associated with sea level rise and storm surge. Port Fairy has been identified as one of the priority locations along the coast for more detailed local coastal hazards assessment.

WRL's study main objective was to provide Moyne Shire Council and other land and asset managers, with information which will assist in planning for and managing the projected impacts of climate change, encompassing over 50 km of coastline from Cape Reamur to Cape Killarney. This coastal vulnerability assessment considered local coastal processes and sea level rise implications, resulting in an integrated assessment of climate change impacts on the foreshore. A large range of coastal processes were considered in the investigation to quantify the impacts of sea level rise and the vulnerability of assets and coastal land, including tides, storm surge, extreme ocean waves and swell wave penetration, long-shore and cross-shore sand transport, and the influence of human activities around the Moyne River estuary.

The effect of sea level rise on hazards such as beach erosion, recession and coastal inundation, was considered in detail as a part of the investigation. These processes and hazards were considered on a detailed level that allowed quantification of sea level rise implications on specific beaches, headlands, and embayments; as well as assets such as roads, buildings, and stormwater infrastructure. Appropriate coastal monitoring strategies were presented as a part of this investigation. Additionally "dynamic coastal inundation" numerical modelling was performed over the coastal area directly around the Port Fairy township. This method allowed the estimation of the possible inundation under combined ocean and catchment flooding. This specific coastal flood analysis considered dynamically both the coastal elevated water levels (i.e. sea level rise projections, storm surge and wave setup) and the wave runup overtopping of the foreshore and coastal structures. The modelling allowed consideration of the variation of the coastal and riverine water levels over the duration of the flood event as well as how the flood waters would propagate inland due to ground elevation or obstacles.

In undertaking this project, WRL demonstrated extensive expertise and understanding of contemporary climate change science, and implications of sea level rise on coastal processes and hazards for the Port Fairy study area. WRL's long history and experience in coastal process analysis were combined with current day sea level rise predictions to assist management agencies in strategic and business planning, infrastructure maintenance and replacement schedules, natural asset management and budgetary processes. Further information can be obtained from James Carley at: James.Carley@unsw.edu.au; or Dr Francois Flocard at: F.Flocard@wrl.unsw.edu.au.

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