CoastAdapt

Snapshot

Tassal: focussing on the future

Summary

Tassal is a publicly listed company that undertakes a range of aquaculture activities including freshwater hatcheries, saltwater aquaculture and salmon processing, as well as adding value from distribution and wholesaling to export. Tassal recognises that climate change is likely to present a range of challenges to its industry. Without proactive adaptation, it may become more vulnerable to gill disease, algal blooms, phytoplankton and viruses brought in by new currents. Tassal participated in a test case, using information and tools available on the CoastAdapt website, to achieve an improved understanding of coastal hazards, as well as improved awareness of climate change-related issues in its Environmental Risk Statement. The area of study in South East Tasmania is shown in Figure 1. In making small changes now, Tassal will be better placed to withstand future climate change.

Keywords

Aquaculture, Tasmania, risk, private sector, Tassal, salmon, test case

Tassal Group Ltd is based in Tasmania. It is Australia's largest producer of fresh salmon products – from egg to plate. As a primary producer, the climate plays an important role in Tassal's operations. In response to the changing climate and to pre-empt future problems, Tassal has developed considerable options for adaptation including selective breeding, modification of farming technologies and practices, and geographic diversification. Tassal has also engaged scientists to identify emerging climate trends and system responses, and to undertake comprehensive broad-scale environmental monitoring, allowing the company to identify any early indicators of concern.

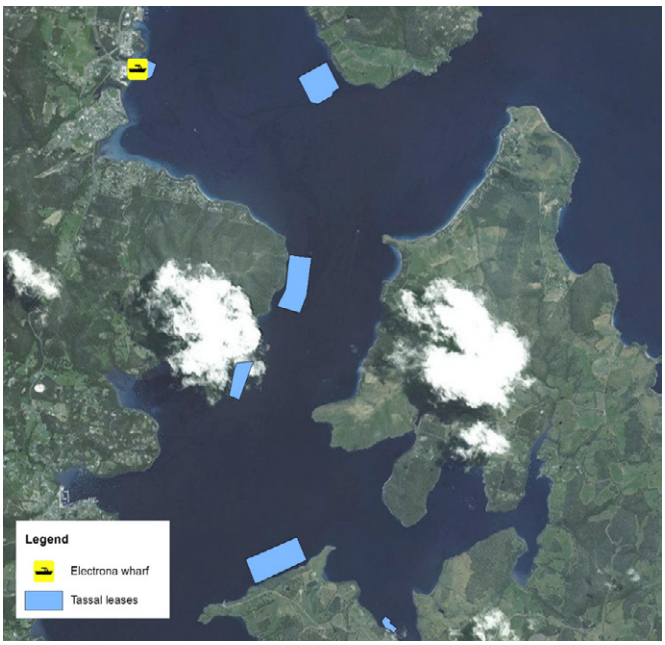

Figure 1: Satellite map of the test case site, including the location of Electrona wharf and Tassal leases. Source: © Climate Planning 2017.

Tassal used the CoastAdapt website to identify a range of climate-related risks. These include changes in temperature and rainfall, sea-level rise, coastal erosion, sea surface temperature, ocean acidification, freshwater availability and bushfire. The outcome of the test case was a first-pass assessment of the identified issues, potential ramifications for Tassal out to 2020 and 2050, and suggested adaptation actions and next steps.

Tassal considered a range of expected changes in climate and the implications for its business:

Rising sea surface temperatures: Information found on CoastAdapt shows that sea surface temperatures in the Southern Australian region (including the eastern coast of Tasmania) are projected to increase faster than in the rest of the country (see Figure 2). Depending on the degree of change, increased water temperature may affect fish stocks by placing increased stress on fish, reducing feeding times, increasing algal bloom risk, or by increasing risk of amoebic gill disease and other pathogens not yet found at the study site. Tassal maintains an ongoing research program to monitor and respond to these risks. Some of the actions Tassal can take in response include cycling cold water, venturation (a process of raising dissolved oxygen levels in water) and breeding fish for temperature tolerance.

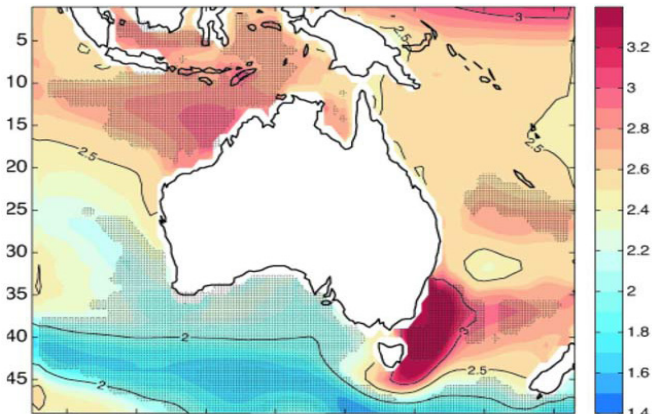

Figure 2: Projected change in sea-surface temperature (°C) for the end of the century based on the RCP8.5 concentration scenario. Source: CoastAdapt 2016a, © Lough et al. 2012.

Sea-level rise: Under a high-end scenario a sea-level rise of 0.74 m above the 1985-2006 average could happen by the end of the century in the Kingborough Municipality. CoastAdapt's Sea-Level Rise and You and Coastal Risk Australia's modelling showed there may be some inundation of the Electrona Wharf area during high tide by 2100 (see Figures 3 and 4). Given the fact that the Tasmanian planning allowances for the Kingborough municipality are 0.87 m it is likely that this will be managed over time, through development of assessment controls during infrastructure upgrades.

Bushfire: Bushfire risk is likely to increase in the Kingborough municipality. Runoff following bushfires can impact local water quality. Although site-specific information on future bushfire risk is not available on CoastAdapt, the test case team identified some adaptation options including undertaking ongoing review of bushfire management planning, conducting site-based risk assessments on a regular basis and ongoing engagement with the state and local governments.

Figure 3: Sea-level rise projections for the Kingborough Municipality. Source: © CoastAdapt 2017.

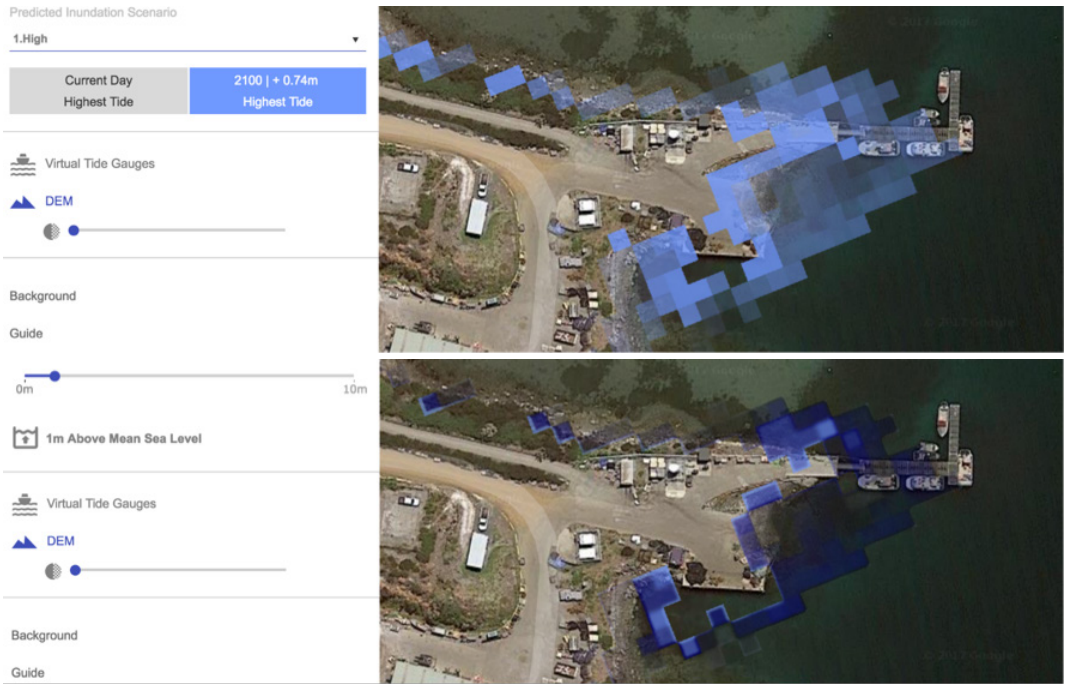

Figure 4: Sea-level rise projections for the Electrona site using the Coastal Risk Australia tool. Upper image shows the High level prediction (0.74 m) and the lower image shows results of the manual 1.0 m selection. Source: © NGIS & CRCSI n.d.

Coastal erosion: The project team used the Smartline map (in CoastAdapt's Shoreline Explorer) to identify any potential coastal erosion risks at Tassal's Electrona Wharf site. The Smartline mapping (see Figure 5) showed that this site has predominantly artificial shores (erodibility unclassified but commonly low) and predominantly hard rock shores with low erodibility, so no risk was identified for either 2020 or 2050.

Figure 5: Smartline map results for the Electrona Wharf show it is located in an area of low erodibility. Source: © CoastAdapt 2016b .

Heavy rainfall: Localised heavy rainfall may impact the test case site through eutrophication and sea surface salinity, affecting the health of the fish and potentially increasing the risk of disease. Links provided on CoastAdapt led to Climate Change in Australia's Climate Projections Builder which predicts little change in rainfall for the Southern Slopes of Australia by 2090. Since rainfall-related risks are largely dependent on urban development and changes to agricultural practices, the test case found that catchment modelling for the site would help identify potential risks.

Land temperature change: The links provided on CoastAdapt to Bureau of Meteorology and CSIRO resources show that high-end climate change projections for the southern Australia region would see increased temperatures by up to 4.2 °C above 1986-2005 levels by the end of the century. The number of extreme heat days (over 35°C) is projected to increase in Kingston, from one day per year to four days per year by 2090 (see Figure 6). Extreme temperatures may affect the thermal comfort of employees and lead to warmer water. To combat these effects, Tassal will maintain an ongoing awareness of the risks as they evolve over time.

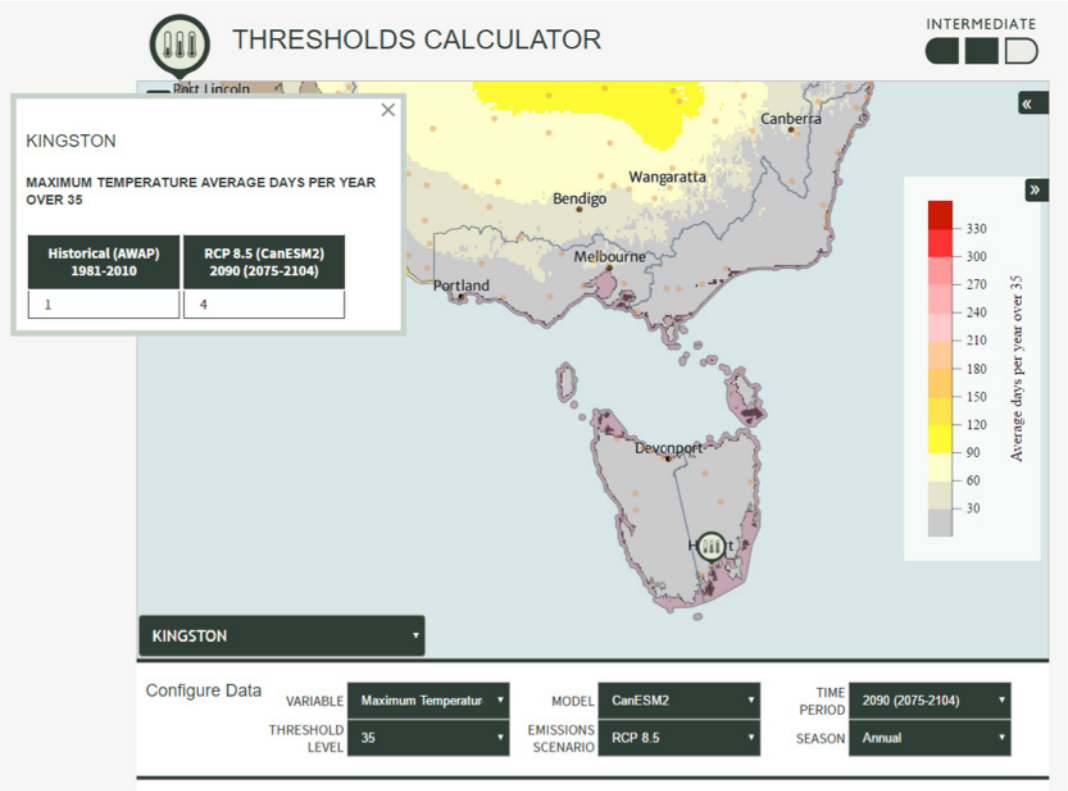

Figure 6: Climate Futures Thresholds Calculator with results for maximum temperature scenario (RCP8.5 in 2090) in Kingston. Reproduced by permission of CSIRO Australia, © CSIRO 2016b.

Adaptation actions and options

Tassal is currently undertaking a range of climate change adaptation actions. These include:

- Maintaining a comprehensive selective breeding program to adjust fish resilience and increase temperature tolerance in line with the changing conditions
- Building a geographically diversified farm portfolio that can reduce site-specific risk impact on the total operation
- Undertaking ongoing environmental research and responding accordingly
- Conducting ongoing reviews to ascertain the viability of the study site (currently leased until 2036)
- Other measures including cycling cold water, venturation, fresh water baths, altering feeding regimes, monthly sampling and diversifying to new fish.

It is interesting to note that if farmed salmon is managed effectively for the impacts of climate change, there may be a positive financial benefit for Tassal. This positive effect may arise from increased demand of farmed fish due to the reduction of global wild stocks as a result of climate change impacts and over-fishing.

Conclusion

The scoping review of the climate change issues in the D'Entrecasteaux Channel shows that risks do exist. However, given the ongoing and proactive research, animal husbandry and environmental monitoring, the climate-related risks that do emerge are unlikely to manifest without warning. This test case has helped Tassal become further aware of the potential issues facing the D'Entrecasteaux Channel. The scoping review recommended that Tassal review its climate change governance and develop a corporate standard/ policy that ensures climate change is considered in a measured and consistent manner.

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