



Snapshot

AdaptWater: A climate change adaptation tool for the urban water industry

Summary

AdaptWater™ is an online tool that quantifies the risks to water and wastewater systems from climate change and extreme weather events. The tool performs cost-benefit analyses on proposed adaptation options to inform planning and investment decisions. It was developed by Sydney Water in collaboration with the Water Services Association of Australia, other Australian water utilities and Climate Risk Pty Ltd.

AdaptWater™ is an online tool for water utility assets that quantifies the risk associated with climate change and extreme weather events (Figure 1). The need for the tool arose when utility company Sydney Water observed that it had too many individual infrastructure assets to be able to assess them manually. The company needed a tool that could quantify climate change impacts but could also address the complexity of the issue and build in flexibility to both assess and manage climate risk. The tool also needed to be easy to use and able to accommodate different levels of users.

Sydney Water worked with other water utilities, including the Water Services Association of Australia, and consultancy Climate Risk Pty Ltd to develop AdaptWater™. The process, including lessons learned, is described [here](#).

Keywords

AdaptWater™, infrastructure, water, risk cost, tool

In operation since 2013, AdaptWater™ uses a range of climate change futures to assess the risk of climate change hazards to existing or planned assets for both water and wastewater systems. Hazards that can be explored include sea-level rise, flooding from extreme precipitation, heat waves and extreme wind. The outputs can be assessed to determine the most cost effective solutions to address climate risks over time. The tool can provide an estimate of the projected average annual risk (financial and non-financial) associated with the statistical probability of asset failures (Figure 2). Outputs can be in the form of graphs or spatial representations of risk (Figure 3).



Figure 1: AdaptWater™ is an online tool for adaptation planning that was developed for the water industry and that has potential for other types of infrastructure. Source: © Climate Risk.

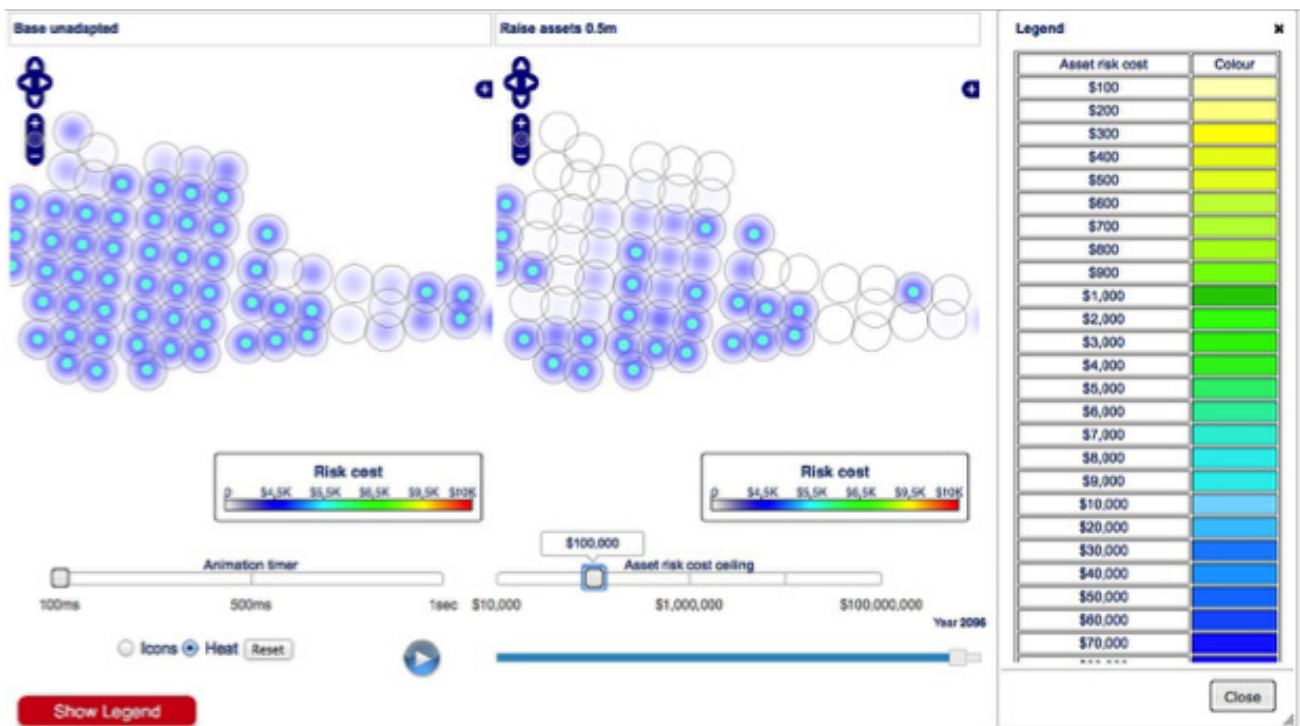


Figure 2: The outputs of AdaptWater™ can help determine the most cost effective solutions to address climate risks over time. Source: © Climate Risk.

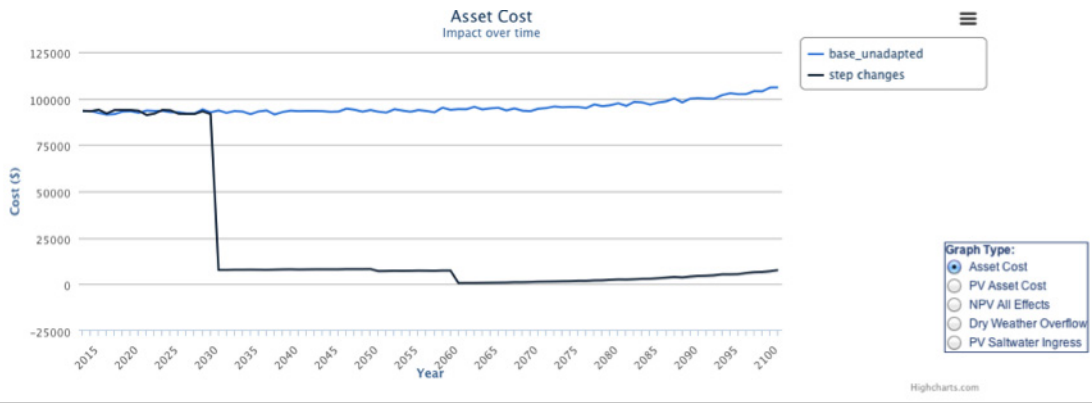


Figure 3: Outputs from the tool can be in the form of graphs or spatial representations of risk. Source: © Climate Risk.

Sydney Water is now mainstreaming AdaptWater™ into its business planning processes. The company anticipates that this will help to build the resilience of the organisation to climate change risks and ensure that planning occurs for future adaptation.

To date, the AdaptWater™ tool has been used to assess most of Sydney Water’s major assets and to produce what is called a ‘State of Asset Resilience’ or SOAR Report. Preliminary results suggest that the annual cost of risk from weather and climate-related hazards is approximately 2.5% of total asset value per year. This risk cost is expected to double in real terms by 2100 due to the projected increased frequency of extreme weather events and sea-level rise.

AdaptWater™ is now being used for strategic planning and 30 year planning of existing infrastructure. In the future it will be used to build adaptation costs into pricing submissions to the state independent price regulator to link adaptation spending to customer prices.

An additional benefit from developing the tool has been increased awareness, among senior executives and the Board, of the need to consider climate change and the costs, benefits and timing of adaptation action. The visual outputs from the tool have proved very effective in communicating the risks and adaptation approaches.

While AdaptWater™ was developed for the water industry, it can be applied to other infrastructure types such as roads, rail and power assets. A number of trials are now underway with local government to roll it out to these different infrastructure types. Incorporating a wider set of infrastructure types will also assist infrastructure owners to better understand their ‘external’ risks and interdependencies, such as failure of power and communications.

Further reading

For more details you can view a short video of AdaptWater™ at <https://www.nccarf.edu.au/localgov/video/adaptwater%E2%84%A2-online-climate-change-analysis-tool> (16 June 2017).

A more detailed case study on AdaptWater™ can be found in https://www.nccarf.edu.au/localgov/sites/nccarf.edu.au.localgov/files/casestudies/pdf/Case%20Study_AdaptWaterTM%20online%20climate%20change%20analysis%20tool.pdf (16 June 2017).

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