

CASE STUDY 1: MELBOURNE WATER – ENHANCING OUR DANDENONG CREEK



Melbourne Water’s alternative approach to meeting the Victorian 1 in 5 sewage containment policy by deferring traditional sewer augmentation.

The Dandenong Creek project addresses uncontrolled spills, preventing catchment pollution, natural amenity and threatened species habitat.

Management approach

Outcomes, Risk-based

Receiving environment principles considered/met/achieved

Ecosystem, Community, Property, Economic

Background

Melbourne Water has used a standard of “five year frequency wet weather additive flow” when designing sewers since the 1980s. This standard for sewage containment connected to 1 in 5 storm events was embedded through an initial Memorandum of Understanding (MOU) with EPA Victoria in 1994 and has been an objective in State environment protection policy since the Yarra schedule was gazetted in 1999.

Melbourne Water implemented its Wet Weather Sewage Spill Reduction Program to achieve the 1 in 5 policy objective through a risk based approach using data collected to understand sewage flows, rainfall impacts and receiving environments. Spills from emergency relief structures (ERS) were ranked and a program of works was developed to achieve compliance over time. Augmentation to reduce spills progressed until lower priority sites remained, including a Yarra Valley Water ERS that spilled more frequently (than 1 in 5) into Dandenong Creek (the spills being caused by hydraulic limitations in a Melbourne Water sewer).

Project assessment showed that augmenting the Melbourne Water sewer was not the best solution

and an alternative approach was developed based on adopting environmental improvement works, with the sewer augmentation still planned but deferred. A Memorandum of Understanding (MOU), agreed with EPA Victoria, was implemented in July 2012 through to 2018 which enabled this alternative approach to be piloted.

Investigations and Program Objectives

Whilst this project was required arising from policy objective to contain sewage, sewage spills to Dandenong Creek were found to not a priority issue for the waterway: a study of primary factors influencing the Creek’s aquatic ecosystem health found pollution caused by heavy metals, petroleum hydrocarbons, organic and synthetic chemicals were significant stressors to aquatic ecosystem health. Wet weather sewage spillage was not a significant cause of poor waterway health outcomes, and furthermore, an augmentation to the sewerage system was unlikely to have a measurable benefit to ecosystem health.

The middle section of the Creek, the focus of this project, has been heavily modified over the last century due to significant changes in land use and subsequent flood mitigation works. These changes, coupled with the legacy issues of industrial pollution in the catchment has resulted in degraded ecological value of the creek, however the primary value is local amenity, which is still supported by Melbourne Water’s waterway management.

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The options developed needed to achieve the policy intent and be able to demonstrate a measurable impact on the endpoints identified through the scientific investigations. All alternative measures were compared to the sewer augmentation, and should achieve the best for community cost. The options included do nothing, augmentation of sewer hydraulics, defer augmentation for five years and/or prepare a program of works that focus on waterway improvement. Over sixty potential improvement projects were developed, assessed and shortlisted to three project areas using a triple-bottom-line approach considering the impact or benefit in addressing issues of water quality, aquatic and riparian ecosystems, access and recreation as well as financial impacts.

Stakeholder Involvement

In 2011 the EPA/Victorian Water Industry Strategic Project No.1 – “Risk-Based Management of Wet Weather Sewage overflows”, included the project as a case study to prepare a method for a risk based approach to determine investment priorities for the sewerage system.

Establishing authentic partnership between the regulator, sewerage and waterway managers was a fundamental step in the initiation of the Enhancing Our Dandenong Creek program. In 2012 a project MOU was established with key deliverables and actions that were considered by EPA Victoria to assess compliance.

Stakeholders, including Councils, EPA and community groups, were engaged in concept development and in detailed project planning to ensure community and regulator satisfaction. This included developing generic educational media about ERSs and the role they play. Project evaluation also included community satisfaction with outcomes.

Outcomes

This project achieves waterway health and amenity improvements to the community and

waterways, as well and provides a financial saving to Melbourne Water and its sewerage customers. Augmenting the sewer has not been abandoned, simply deferred, and the need for this will be reviewed at regular intervals. The project shows that a risk based, flexible approach to achieving sewage containment for marginal overflows can be developed with community and regulator support. It is important to understand that project support was enhanced by the long term investment by Melbourne Water through its Wet Weather Sewage Spill Reduction Program addressing significant overflow locations.

Cost / Benefits

The NPV of traditional augmentation (as revised for a preliminary business case) was \$99 million compared to the NPV of \$84 million for a five year augmentation deferral including the improvement works program (at the time of the project inception in 2013). The cost of the improvement program was \$15.5 million for both opex and capex. Concurrently, Melbourne Water was able to save its customers \$15M through the deferral of the augmentation.

A review conducted at the end of five years determined that the program was effective in achieving the desired outcomes, and a second round of the program should be considered.

Project timing

The pilot project has been completed, with the Enhancing Our Dandenong Creek program running from 2013–2018. Since this time, a second phase of the project has been established, with new projects and measures. This has been established in the context of Melbourne Water pricing submissions and will be assessed in five yearly blocks. Importantly, the capital upgrade of the sewer is still scheduled within Melbourne Water’s capital program, with the timing of these works dependent on the outcomes of this project and further monitoring.