

CASE STUDY 9: SOUTH EAST WATER – ELSTER CREEK SEWER CAPACITY UPGRADE STAGE 1



Figure 1 – Tucker Rd Sewage Pump Station (SPS804)

South East Water have utilised a containment approach to an upgrade of a problematic sewer pump station that meets Victoria's new General Environmental Duty, and considered ecosystem, community and property receiving environment principles.

Management approach

Containment

Receiving environment principles considered/met/achieved

Ecosystem, Community and Property

Background

The Elster Creek sewerage catchment serves over 26,000 customer connections across the south-eastern Melbourne suburbs of Bentleigh, Bentleigh East, Brighton East, McKinnon, as well as parts of Hampton East, Highett, Moorabbin, and Ormond.

Hydraulic modelling completed prior to the 2018-2023 Regulatory Period identified that sewers within four sub-catchments (Murray Road, Tucker Road, Higgins Road, and Mortimore Street) experience significant surcharging and predict spills in the current network during wet weather events. Without upgrade, the network is at risk of uncontrolled spills during wet weather events from various manholes. The level of risk will increase over time, as customer connections are expected to grow to approximately 49,000 by 2056.

Field observations supported the conclusions of the hydraulic modelling that the system was nearing capacity. Consequently, a capacity upgrade of the Elster Creek sewer network was deemed to be required.

Investigations and Program Objectives Hydraulic Modelling & Flow Monitoring

Due to the extent of deficiencies and to reconfirm

loading rates and usage profiles across the catchment, a decision was made to collect flow data to enable the recalibration of the Elster Creek hydraulic model.

Field monitoring completed over the FY2017/18 captured a wide range of wet weather events providing improved confidence in the model's wet weather calibration. The subsequent system performance incorporated the revised Australian Rainfall & Runoff (ARR) 2016-19 data, including climate change scenarios.

Analysis of the updated model showed a significant reduction of deficiencies across the sewer network, when compared to analysis of the earlier model which incorporated ARR1987.

Program Objective

Consequently, a staged augmentation of the Elster Creek Sewer Network was proposed. This scope of work would meet SEW's objective by ensuring the containment of sewage within the Elster Creek sewer network for an 18.13 per cent AEP rainfall event, as required in the State Environment Protection Policy (Waters) (SEPP). Whilst the SEPP has recently been revoked, clauses relating to sewerage management such as the containment standard can be used as guidance on meeting the General Environmental Duty in Victoria's new environment protection framework.

A 'do nothing' option was explored, however due to many of the predicted spills being uncontrolled, this option was discounted because of the direct impact to the community.

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Project Timing

The capacity upgrades are to be delivered in stages.

Stage 1 Works (2022-2024):

Tucker Rd PS Sub-Catchment & Higgins Rd PS Sub-Catchment Upgrade

- 1.4km DN300 gravity sewer
- 320 kL detention storage

Stage 2 Works (2028 - beyond):

Murray Road Pump Station Sub-Catchment Upgrade

- 0.5km DN450 gravity sewer

Stage 3 (2035 – beyond):

The Mortimore Street Pump Station Sub-Catchment

- 0.2km of DN300 gravity.

The scope of work detailed in stage 2 and stage 3 is indicative only and further work refinement will be completed in due course. The performance of the network will continue to be monitored using SEW's BlokAids and funding will be sought at the appropriate time in the future.

Stakeholder Involvement

South East Water considers the input of both internal and external stakeholders as integral to achieving optimal project results.

- External stakeholders included:
 - Glen Eira City Council
 - Melbourne Water
 - Department of Transport
- Internal stakeholders included members from the following teams:
 - Operations
 - Pipes & Structures (Delivery)
 - Design
 - Environment & Approvals
 - Engagement
 - Reliability

Both groups of stakeholders were engaged early in the planning phase, with all parties attending a Multi-Criteria Assessment (MCA) workshop in which the preferred option was determined. This engagement continued through to the finalization of the detail design.

Outcomes

In recent years, the Elster Creek sewerage catchment has experienced controlled and uncontrolled spills during wet weather. Uncontrolled spills are overflows that occur through low lying manholes and other points within the network which in some instances can result in spills within dwellings with unacceptable direct impacts to the community. The proposed works at the Tucker Road Pump Station and upstream gravity network will eliminate these spills and any resulting impacts on the environment and customers in the area.

Costs/benefits

The indicative cost to deliver Stage 1 of the Elster Creek Sewer Capacity Upgrade project is \$14.1 million.

This upgrade to the Elster Creek sewerage catchment will ensure a more reliable sewerage network free from spills. The works align with outcomes of the Price Submission 5 customer engagement and what our customers value and expect, protecting the environment, maintaining customers service levels, and ensuring we have reliable services across the whole network which minimise disruptions to our customer.