

## Elster Creek Flood Mitigation Study

Physical flood management options in the Elster Creek catchments were investigated through a detailed process from 2011 – 2014. During this period, Melbourne Water’s published strategy was to seek opportunities to mitigate the larger flood events (1%AEP) as, while infrequent, these events constitute a significant safety and economic risk to the community. Using this approach, Melbourne Water undertook a broad ranging investigation of potential options for flood management across Elster Creek

Options assessed included:

- A range of physical mitigation works, including construction of retarding basins in existing open space, augmentation and optimisation of existing drainage infrastructure, and construction of new drainage infrastructure creating additional outlets direct to the bay.
- A theoretical assessment of works required to remove all flooding. The preliminary cost estimate put this option in the order of \$330 – 440 million, requiring over 50 kms of new pipe, and upgrades along approx 2.6 km of open channels.
- A preliminary assessment of the cost of property acquisition to re-instate natural floodplains. This found the purchase of approximately 1500 properties would be required, costing in the order of \$1 billion.

### Physical mitigation investigations

Mitigation opportunities were explored through three stages.

The first stage sought to identify and make a preliminary assessment of flood mitigation opportunities in a wide range of locations across the wider Elster Creek catchment. This stage considered:

- Ten existing areas of open space and clusters of sports ovals
- Augmentation of seven sections of the main trunk drainage system
- Diversion pipelines to re-direct flows direct to the bay.

Each option considered in the first stage was assessed for broad scale constructibility and impact on open space resources. Where the option was considered potentially feasible, it was passed through to a more detailed assessment in the second phase.

Second stage investigations included analysis of the potential changes in flood extent and properties affected, and an assessment of works and costs for several packages of mitigation works. A range of mitigation options (packages of drainage augmentation, diversion pipes and new retarding basins) were identified as having potential to provide a beneficial reduction in flooding however the cost to construct was, proportionate to other flood mitigation opportunities in Regional Melbourne, extremely high.

A summary of this study is shown in the table and figure. *Please note: This summary provides a high level outline of investigations and reports spanning several years. It does not include a full outline of all issues and options canvassed. All costs are estimates only and would need to be recalculated should any of the projects proceed*

Map ref	Mitigation work package	Estimated costs
1	Byron Street Main Drain & Yanakie Crescent Main Drain pipe augmentation	\$67 M
2	Elsternwick Main Drain - Foam Street Diversion	\$28 M
3	Caulfield South Main Drain - Jasmine Street diversion, Gardenvale augmentation & diversion, and North Road diversion.	\$102 M

Map ref	Mitigation work package	Estimated costs
4	Koornang Road Main Drain - Diversion along Murray Road and construction of retarding basins at Packer Oval, Velodrome & Duncan McKinnon Reserve	\$58 M
4a	Koornang Road Main Drain - Diversion along Murray Road and construction of retarding basins at Packer Oval, Velodrome & Duncan McKinnon Reserve, Diversion to bay along North Road	~\$120 M
5	Bentleigh Main Drain - Bentleigh MD pipe augmentation	\$29 M
6	Moorabbin East Drain - Moorabbin East augmentation and a retarding basin at G.R. Bricker Reserve	\$21 M

In 2015, the Flood Strategy – Port Phillip and Westernport was published. This strategy has shifted focus to mitigating frequent flooding regardless of event size where that flooding can be demonstrated to be a safety hazard or be causing significant economic loss or community disruption. Importantly, mitigation works must be feasible from a constructibility perspective and in the context of fair and equitable investment of community resources across the Region.

Melbourne Water is currently (2016-2018) working with the four councils of Elster Creek on several mitigation projects. These include smaller scale mitigation works, opportunities arising from the redevelopment of Elsternwick Park and understanding the potential of alternative flood management tools such as distributed water harvesting. These studies are yet to be concluded however results will be made available when finalised.

