

Appendix E

Melbourne Water's experience with the application of debris racks and sediment dams

Appendix E is available on the WSAA website

wsaa.asn.au/publication/

[bushfire-recovery-case-study-6-managing-debris-flow-risk-catchments-after-bushfires](https://wsaa.asn.au/publication/bushfire-recovery-case-study-6-managing-debris-flow-risk-catchments-after-bushfires)

MANAGING DEBRIS FLOW RISK IN CATCHMENTS AFTER BUSHFIRES

Following a fire in the Thomson Reservoir catchment in January 2019, Melbourne Water needed to manage the incident to reduce the likelihood of ash and fire debris contaminating the water supply which could cause a reduction in chlorine efficiency, aesthetic degradation and an inability to supply water.

This is one of two case studies from Melbourne Water about recovery from the Thomson Reservoir catchment bushfires and provides an understanding of mitigation works installed by Melbourne Water in the catchment and reservoir to address debris flow risk.

The other case study provides an overview of how hydrodynamic modelling was used to assist in planning, management and recovery.



In January 2019 a major fire in the Thomson Reservoir catchment burnt over 6,300 hectares – approximately 13% of Thomson catchment area. The Thomson Reservoir is the largest of Melbourne Water's reservoirs. It has a capacity of 1,068 billion litres, and makes up about 60% of Melbourne's total storage capacity.

Debris flows

The risk of a debris flow, a fast moving mass of water, rock, soil, vegetation, boulders and trees, increases post fire. Sediment loads can be two orders of magnitude higher than

erosion by other sources and result in the rapid and prolonged deterioration in water quality in a reservoir or river.

To mitigate the impact of a debris flow, Melbourne Water has installed mitigation works in the Thomson Reservoir and its catchment. The placement of these mitigation works were based on the debris flow risk mapping undertaken by the University of Melbourne. This mapping identified sites for :

Silt curtains

- Placed at strategic locations in the reservoir
- Quick to manufacture and install
- Relatively cheap
- Will not stop fine sediment or be useful in a large storm event.



Sediment fences installed in high-risk bushfire affected headwaters (Gary Sheridan, The University of Melbourne).

Sediment barriers

- Reduce the amount of debris reaching the reservoir
- Reduce force of flow and therefore reduce downslope scouring.

Debris racks and sediment dams

- Coarse sediment and debris caught upstream of culvert
- Fine sediment will settle around the riser.

Ongoing monitoring of debris flow mitigation works

Melbourne Water are continuing to monitor the effectiveness of the mitigation works over time and especially following significant rainfall events. In response to this monitoring, mitigation measures will be improved.



Debris racks and sediment dams (Melbourne Water).

More information

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