RIDGE PARK STORMWATER DETENTION AND HARVESTING

BROWN HILL KESWICK CREEK STORMWATER MANAGEMENT PROJECT

A Stormwater Management Plan to reduce the impact of major flooding across the catchment of Brown Hill, Keswick, Glen Osmond and Parklands Creeks has been developed by the catchment councils of Adelaide, Burnside, Mitcham, Unley and West Torrens. Community consultation on this Plan occurred between 31 October and 12 December 2011, and the final Stormwater Management Plan was approved by the Stormwater Management Authority in February 2013.

THE CITY of Unley

Brown Hill Keswick Creek STORMWATER PROJECT

Ridge Park Stormwater Detention Dam

One of the elements of the Stormwater Management Plan is a stormwater detention dam on Glen Osmond Creek in Ridge Park Reserve, Myrtle Bank. Like other infrastructure proposed in the Plan, the dam is part of an overall stormwater management strategy designed to substantially reduce the number of properties within the catchment that would be affected by very large flood events (up to a 100 year ARI flood).

As part of the catchment-wide stormwater management strategy, the Ridge Park detention dam, during large storms, will reduce peak stormwater flow rates in Glen Osmond Creek by holding back a volume of stormwater collected from the upstream catchment and releasing it downstream in a controlled manner.

The dam has been designed to comply with standards used universally in Australia for structures of this type. Construction is expected to take about 6 months and be completed in 2013. The dam is jointly funded by the catchment councils (including Unley) and the Stormwater Management Authority.

Stormwater Harvesting – Managed Aquifer Recovery

The detention dam will also collect stormwater for the City of Unley's Managed Aquifer Recovery (MAR) scheme in Ridge Park. In conjunction with the dam, the MAR system will harvest 60 megalitres (60 million litres) of stormwater which will be stored in the underground aquifer and used for irrigation of Unley's parks and reserves during periods of dry weather. The MAR project is jointly funded by the Australian Government's Water for the Future initiative and the City of Unley.

100 Year Flood

A 100 Year Average Recurrence Interval (ARI) flood is a flood that will occur on average once every 100 years, and has a 1 in 100 (1%) chance of occurring in any given year. It is the most commonly applied standard in Australia for providing an acceptable level of flood protection for the community.

Currently, a 100 Year ARI flood in the Brown Hill Keswick Creek catchment would affect over 6,000 properties and cause potential damages of about $180 million. This figure does not account for the trauma suffered by people and other intangible costs incurred as a result of flooding.

How will the dam impact the environment and amenity of the park?

The dam site is on the creek line at the western end of Ridge Park, near the tennis courts. The dam has been positioned and designed to preserve as many nearby large and prominent trees as possible. However, a significant river red gum tree is situated where the key structural component of the dam on its southern bank is to be built, and will have to be removed.

Landscaping of the dam site with native species and trees to enhance the park and in sympathy with existing vegetation will be undertaken following construction of the dam. The landscaping will be irrigated by stormwater captured by the MAR scheme.

Existing walking paths in Ridge Park will be retained, with some minor re-alignments. The playground equipment will be relocated, but otherwise existing recreation facilities in the park will not be affected by the dam.

In terms of risks presented by having a potentially deep water body and access to the dam structure, the infrastructure will comply with applicable safety standards.

What will the dam look like?

The dam will be made up of a concrete core wall supported on either side by gabions which are wire cage baskets filled with stone of durable quality. The top row of gabion baskets will be planted with vegetation to enhance the park environment and soften the visual aspect of the dam.

Earth mounds (or levee banks) to a maximum height of 1 metre tapering back to natural surface will be constructed to the north and south of the dam wall to direct floodwater flows over the dam wall in an extreme event when water level reaches maximum height. The dam is designed to safely discharge overtopping flows back into the creek without impairing its structural integrity and safety.

The dam wall has a stepped down profile, with the central spillway lower than the walls on either side. The maximum height of the dam is 6.5 metres above the existing creek bed level, but viewed from upstream (looking at the eastern face) the wall height will be 5.5 metres above the finished base level. The total length of the dam wall along its generally north/south axis is 60 metres.

The maximum water depth would be 6.5 metres, but this would be reached only very rarely and then recede to about 3 metres depth within 24 hours. In the creek immediately upstream of the dam wall, three ornamental ponds forming part of the City of Unley's MAR scheme will contain water year-round to a depth of approximately 1.2 metres.

How does the dam work?

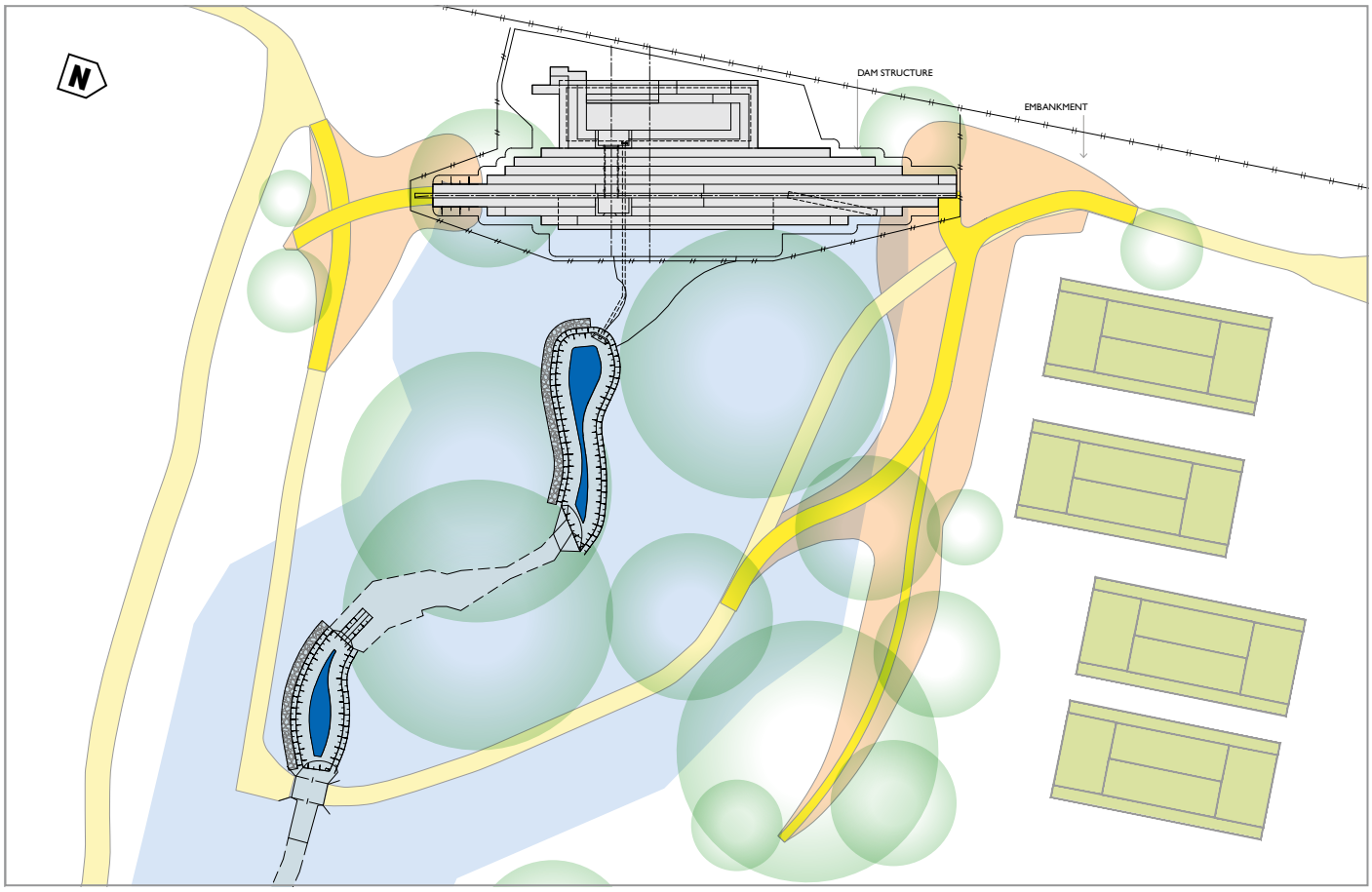
During normal winter rains, the water level in the dam will rise to approximately 3 metres depth. Above this, water will start to flow through the outlet pipe built into the dam wall and discharge into the downstream creek. At the same time, the MAR system will activate and pumps will extract water for storing in the aquifer. Without further rainfall the water level will slowly fall down to pond level. This rise and fall would occur on average about 20 times a year.

In a 100 Year ARI flood, the same process will occur, but the water level will continue to rise to the level of the dam spillway. The dam has been designed to hold back approximately 11 megalitres (11 million litres) of water which will reduce the 100 Year ARI flood flow to an outlet flow that can be safely conveyed downstream of the dam. Steel racks are fitted to the outlet to prevent large debris from being washed down the creek and creating blockages

During summer the ponds will be topped up to their usual level using water recovered from the aquifer below.

What are the alternatives?

There are no other comparable methods of temporarily detaining the volume of creek water generated in a large storm event. A constructed underground storage of 11 megaltires capacity equivalent to the volume of about four Olympic size swimming pools, would not reduce the downstream peak flow compared with the dam. Constructing a pipe system to convey peak stormwater flows downstream (in excess of the creek capacity) would also be much more costly to construct than the dam and would not reduce peak stormwater flows in the downstream part of the catchment, including Keswick Creek. Slowing down of stormwater runoff is universally recognized as best practice in stormwater management.



Location of the project

How can I find out more?

For more information about the Ridge Park stormwater detention dam, please contact PERSON, PHONE, EMAIL.