

Option*	Creek capacity upgrade works on private properties	Other infrastructure required
A1	Anzac Highway to Leah Street Cross Road to Hampton Street	Detention Dam at Brown Hill Creek Recreation Park High flow bypass culvert from Malcolm Street to Victoria Street
A2	Anzac Highway to Leah Street Cross Road to Hampton Street	Detention Dam at Ellisons Gully High flow bypass culvert from Malcolm Street to Victoria Street
B1	Anzac Highway to Leah Street Sections between Mitchell and Malcolm Streets Cross Road to Hampton Street Fife Avenue	Detention Dam at Brown Hill Creek Recreation Park
B2	Anzac Highway to Leah Street Sections between Mitchell and Malcolm Streets Cross Road to Hampton Street Fife Avenue	Detention Dam at Ellisons Gully
C1	Anzac Highway to Forestville Reserve Sections upstream of Hampton Street	High flow bypass culvert from Hampton Street to Victoria Street via the railway corridor / with Malcolm Street leg
C2	Anzac Highway to Forestville Reserve Sections upstream of Hampton Street	High flow bypass culvert from Hampton Street to Victoria Street via suburban streets
C3	Anzac Highway to Forestville Reserve Sections between Douglas and Malcolm Streets Sections upstream of Hampton Street	High flow bypass culvert from Hampton Street to Victoria Street via the railway corridor / without Malcolm Street leg
D	Anzac Highway to Forestville Reserve Sections between Victoria and Mitchell Streets Douglas to Malcolm Streets Cross Road to Hampton Street Sections between Hampton Street and Muggs Hill Road	No other infrastructure required

\*Note that all eight options also involve creek rehabilitation works along the full length of upper Brown Hill Creek.

A **culvert** is an underground conduit, typically rectangular in shape and of concrete construction.

### For more information

This information sheet provides an explanation of creek capacity upgrade works, as proposed in the BHKC Part B Report. Additional information sheets explain 'Creek Rehabilitation Works' and 'Legal Arrangements with Property Owners' (only applicable where creek capacity upgrade works are required).

The full report is available at the Project website: [www.bhkcstormwater.com.au](http://www.bhkcstormwater.com.au)

## CREEK CAPACITY UPGRADE WORKS

The Part B Report, prepared by the Brown Hill Keswick Creek (BHKC) Stormwater Project, identifies eight flood mitigation options aimed at improving flood protection for homes and properties across the catchment.

All options involve two types of work along upper Brown Hill Creek to reduce the risk of flooding during high stormwater flows:

- 1 Creek capacity upgrade works in critical sections (which vary for the eight options) – to increase the capacity of the creek so it can carry more water; and
- 2 Creek rehabilitation works along its full length – to assist the flow of water along the creek and improve its biodiversity.

This information sheet provides details about creek capacity upgrade works.

### What are creek capacity upgrade works and why are they needed?

Creek capacity upgrades are needed where the capacity of the creek channel is not sufficient to contain high stormwater flows, resulting in water overflowing the creek banks and causing flood damage.

Insufficient capacity generally occurs because of the creek channel's irregular alignment, or inadequate depth or width. In some areas this is made worse by trees and vegetation growing within the channel as well as undersized bridges that restrict the flow of water.

Creek capacity upgrade works involve widening the creek bed and/or modifying the creek banks at critical sections, including bridges, to ensure there is sufficient capacity for high stormwater flows. Minor deepening of the creek may also be required at certain sections by removing sediment build-up.

### What are creek capacity upgrade works proposed?

All of the eight options investigated by the BHKC Stormwater Project involve creek capacity upgrade works.

As summarised in the table on the back page, the extent of creek capacity upgrade works varies between the options depending on the full scope of works for that option. In those options involving the construction of a detention dam and / or high flow bypass culverts,

creek capacity upgrade works are still required albeit to a lesser extent. The maximum extent of creek capacity upgrade works (under Option D) at critical sections of the creek totals approximately 1.9 kilometres over the full 7 kilometre length of upper Brown Hill Creek.

For all options, investigations have been carried out at a concept level based on 'whole of catchment' flood

modelling. Further investigations relating to creek capacity upgrade works were undertaken on Options B1, B2 and D as these are seen as the most viable and cost effective options. However, the exact scope of creek capacity upgrade works would be an outcome of detailed design at a later stage of the BHKC Stormwater Project.

## How many private properties require creek capacity upgrade works?

Based on a concept level of investigation, the number of private properties requiring creek capacity upgrade works is estimated to be 66 for Option D, 29 for Option B1 and 22 for Option B2. In some cases the extent of works on each property under Options B1 and B2 is less than for Option D due to reduced peak

stormwater flows under Options B1 and B2.

It is important to note that under all eight options, in general, properties that do not require creek capacity upgrade works are likely to require creek rehabilitation works as described in the 'Creek Rehabilitation Works' information sheet.

## How many public road bridges need to be upgraded?

Under Options B1, B2 and D, capacity upgrades are required at public bridges in:

- First and Second Avenue, Forestville
- Orphanage Park (internal road)
- Regent Street, Millswood

Under Option D, public bridges would also be upgraded in:

- Charles Street, Forestville
- Ethel Street, Forestville
- Goodwood Road, Millswood (approach culvert next to the road)
- Northgate Street, Unley Park
- Hampton Street, Hawthorn
- Fife Avenue, Torrens Park

## How would public parks be impacted by creek capacity upgrade works?

Increasing the capacity of the creek through Orphanage Park is identified under all eight options to varying degrees; to a lesser extent for Options B1 and B2 than for Option D. Preliminary options which were canvassed with the local community in mid-2014 include widening the creek and/or installing a culvert underneath the park.

Forestville Reserve would require modifications under Option D,

including removing the concrete-lined creek base and associated small widening of the creek bed in the northern half of the reserve.

The capacity of the creek running through the three adjoining reserves of Soldiers Memorial Gardens, JWS Morris Park and Delwood Reserve will be increased when the master plan, approved by the City of Mitcham in consultation with the community, is implemented.

## Design of creek capacity upgrades

It is expected that final designs would be the result of professional landscaping and engineering advice based on consultation and collaboration with individual property owners. The objective is to retain as far as possible a natural creek environment. Importantly, it is not proposed to create any concrete lined channel.

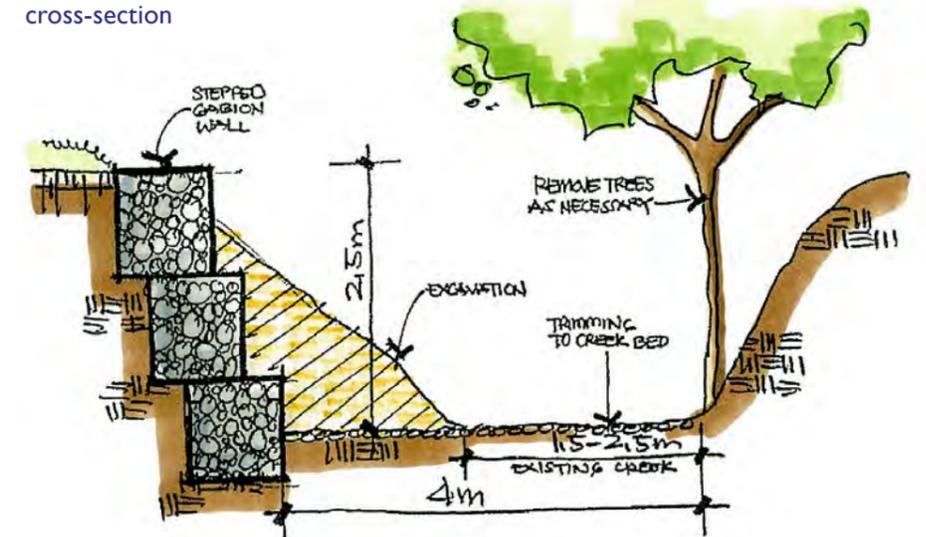
Where the creek banks need to be stabilised as a result of creek

widening, the types of materials that could be used include dry-stack stone walling and gabions (rock filled wire baskets).

The indicative sketch diagram shows how the treatment might apply using a stepped gabion wall.

The artistic impressions below show typical treatments.

## Treatment Concept cross-section



## Treatment concept 1

Dry-stack stone walling and vertical gabion wall



## Treatment Concept 2

Dry-stack stone wall and stepped gabion wall



## How many trees would be impacted by creek capacity upgrade works?

All of the eight flood mitigation options considered for Part B Works involve the selective removal of unsuitable trees in the creek bed or banks. The number of trees likely to be impacted in the watercourse channel is about the same for all options, as trees would need to be removed either for creek capacity upgrade works or creek rehabilitation works.

In undertaking creek capacity upgrade works, the same principles would apply as for rehabilitating the creek (Refer to 'Creek rehabilitation Works' information sheet):

- As many trees as possible would be preserved. In particular, every effort would be made to retain prominent trees, including those classified as significant, regulated or heritage listed.

- Where trees and vegetation are removed from the creek channel, the nearby area would be revegetated with local native plant species to improve creek conditions and biodiversity, whilst considering property owners' requirements. Trees would be replanted on the top of banks.

More information about suitable native trees and vegetation for planting can be obtained by entering a suburb name at the 'plant selector' on the Natural Resources and Management website:

<http://plantselector.naturalresources.sa.gov.au>