

## **APPENDIX 2**

City of Unley submission on 2011 Draft SMP

Submission to: **Brownhill Keswick Creek Stormwater Project**

Discussion Paper: **Brownhill Keswick Creek Draft Stormwater Management Plan 2011**

From: **City of Unley**

Date: **May 2012**

## **Introduction**

Developing and agreeing to a strategic direction for the management of stormwater through the Brownhill and Keswick Creek catchment is a high priority for the City of Unley (Unley or the Council). Unley supports the planned whole of catchment approach by the participating councils and the intention of reducing the effects caused by flooding to property, people and infrastructure presented in the draft Stormwater Management Plan.

The submission on the Brownhill Keswick Creek Draft Stormwater Management Plan 2011 is outlined in the following topic areas, which provide suggestions, ideas, alternatives and questions to aspects of the draft Plan.

## **General Comments**

1. Unley strongly supports the development of this plan and its objectives to reduce the effects of a 1:100 year ARI flood. The Council has identified in the draft Plan that 5 out of the 11 structural mitigation works are located within the Council area (with a construction value of \$55.4m) these are:
  - a. Develop an inline flood detention system in **Ridge Park Reserve** and rehabilitate stream (\$0.7m)
  - b. Bypass Culvert at **Fisher Street** (\$4.3m)
  - c. Keswick Creek to Brown Hill Creek Diversions at **Le Hunte Street and Anzac Highway** (\$30.0m)
  - d. High-Flow Bypass Culvert between **Malcolm Street and the Glenelg Tramway** (\$11.3m)
  - e. Brown Hill Creek Channel Upgrades between **Leah Street and Anzac Highway** (\$10.1m)

2. The Council will require, if one of the new options proposed by the City of Mitcham becomes a viable alternative, a new round of public consultation for the residents of Unley be conducted to gauge public and stakeholder opinion and support.
3. The council will also want to independently review any new option to determine its direct and indirect economic, social and environmental impacts on the Unley community.

#### **Technical – General**

4. There are questions from council officers that roads identified for some of the diversion works may not have the ability to support the extra infrastructure. This is particularly the case for Fisher Street which already has sewer, water and fibre optic services and has also been identified to host the recycled water pipeline from the Ridge Park MAR. Planning should also consider the possible impacts of the proposed rail grade separation at Unley Park and Millswood.
5. It will be important to ensure that for all the works proposed for road within the Council area that any proposed kerbing, roadworks and footpath works scheduled for streets are timed to avoid conflict with the project and the cost of possible rework. It is therefore important for the Council to know the timings of the following projects within the plan: the bypass culvert for Glen Osmond Creek at Fisher Street Fullarton, Malcolm Street high flow bypass, Keswick Creek Diversion and the Upgrade of creek channel between Leah Street and Anzac Highway.
6. Bridge Upgrades: The City of Unley has an active asset management program in relation to its bridge structures. This program delivers regular inspections that correspond to a frequency dictated by the last reported condition of the bridge. This in turn provides information for the reporting, planning and replacement of bridge structures as required. In recent years, as a part of these replacement works, bridges have been designed with the intention of providing a flow capacity that is consistent with current 100 year ARI flow estimates. However, as described in the draft Plan (page 36), the provision of a greater flow capacity can create “the potential to transfer breakouts to downstream locations”. Where this has been known to be an issue, in recent years some bridges have been designed with either the ability to be duplicated in the future, or throttled with a demountable obstruction in order to not transfer flood risk.

There is an opportunity for the Plan to:

- Identify all of the bridges requiring replacement in order to achieve a capacity that is consistent with that creek reach; and
- Identify any encumbrances (downstream works that must be completed) prior to that being upgraded to full design capacity

This will provide the Catchment Subsidiary with the necessary information to coordinate future delivery of various works packages in an integrated and orderly manner with Council bridge upgrade projects, and vice versa.

7. While the City of Unley would like to ensure base flows are maintained through private properties when the diversion drains are installed to preserve environmental, amenity and social interaction with the creek systems, ongoing maintenance of the privately owned channels remains crucial and an appropriate action plan should be developed.

#### **Technical – Glen Osmond Creek**

8. Flood Plain Mapping: An error in the flood plain mapping, in relation to a breakout of flows from Glen Osmond Creek at Wycliff Street has been noted. The report (page 20) states that:

*“a new 1500 mm diameter culvert was installed in 1996 that effectively bypasses the culvert at Wycliff Street. The culvert has not yet been incorporated into the hydraulic model of the creek system. This oversight dates back to the 2006 Master Plan and was only identified late in the course of the current investigation. It is estimated that the culvert has sufficient capacity to take a majority of the existing 100 year ARI flow along Glen Osmond Creek (and is expected to accommodate the entire flow if upstream detention works are carried out). As a result, in reality the extent of the flow breakout at this location is expected to be significantly reduced (and almost eliminated)”*

9. The Council requests that the five catchment councils be provided with updated current, mid and post-upgrade works flood plain mapping to ensure that each development assessment process is using current information. The modelling also introduces some uncertainty in relation to the post-upgrade performance standard that will be achieved and whether the required scope of works has been appropriately defined.

10. Fisher Street Bypass Culvert (Fisher Street to Windsor Street): This culvert is described in the draft Plan (page 89) to:

*"Reduce potential breakouts further downstream on Glen Osmond Creek between Fullarton Road and Windsor Street and to effectively reduce reliance on the creek within private properties where maintenance of the creek is problematic."*

Investigations need to be undertaken to a sufficient level to confirm the following questions:

- a. That a capacity deficiency exists in this section – Hydraulic modelling contained in WBCM (1984) suggests that a flow of 10 m<sup>3</sup>/s could pass through this section, with upgrades to the Cross Street and Torrens Avenue bridges.
- b. That existing development and lack of easements precludes the opportunity to upgrade this section in its existing alignment, if a capacity upgrade is required.
- c. That the long term cost in maintaining 2 drainage lines (the existing creek line will need to be maintained for drainage of adjoining houses and local street drainage) are favourable in comparison to the alternative scenario of maintaining a single channel.

11. Windsor Street (Fern Avenue to Henry Codd Reserve): The Windsor Street section was designed to a flow rate regime that progressively increased from 7.7m<sup>3</sup>/s at Fern Avenue. This flow corresponds to the 50 year ARI flow reported in WBCM (1984). Further analysis need to be undertaken to confirm that the Windsor Street section has sufficient capacity to accept the proposed flow of 12 m<sup>3</sup>/s (100 ARI) from the Fisher Street bypass culvert. Further, this raises the possibility that the plan might need to account for installation of further capacity on the Windsor Street section (through to the northern end of Henry Codd Reserve at which point the drain capacity increases to correspond with the current 100 year ARI flow estimate), to provide a consistent 100 year ARI standard.

12. Unley Road (Henry Codd Reserve to King William Road): The Council has progressively implemented works that have increased the capacity of Glen Osmond Creek between King William Road and Fern Avenue. While the last significant section was recently completed, a short section at Unley Road remains incomplete. This section has an approximate 5 year ARI capacity and will continue to cause overflow into Culvert Street and Unley Road during heavy storm events.

Specifically, this element is comprised of:

- a. Replacement of an old twin cell culvert structure under Unley Road; and

- b. Construction of a short section of 1200mm diameter drain in Culvert Street to augment the capacity of the existing culvert immediately upstream of Unley Road that is aligned under shop frontages and townhouse driveways.

The completion of these works at Unley Road is considered to be of merit and justifiable for inclusion within the draft Plan.

The integration of these works within the draft Plan will enable the Brown Hill Keswick Creek Stormwater Project to appropriately coordinate the works in a manner that ensures the orderly delivery of various elements (i.e. oversee the provision of appropriate works downstream prior to the removal of the 'bottleneck' at Unley Road).

13. King William Road: The Council believes further assessment of the capacity of the King William Road culverts and the immediate downstream creek (generally privately owned) is also required during the development of the Stormwater Management Plan 'Part B' considerations.

#### **Technical – Keswick Creek**

14. Le Hunte Street: Downstream of the junction through to Le Hunte Street, the draft Plan nominates (indicatively) that a 50 year ARI performance standard will be achieved (page 102). A reference is made to the influence of the tramway crossing (page 103) however options for achieving a 100 year ARI standard have not been presented.
15. Showgrounds Drainage Line: The section of Keswick Creek through the Adelaide Showgrounds is not covered by an easement to Council, and responsibility for this asset rests with the SA Government. This culvert section is old, and passes under a number of large buildings and historic structures. Given that the draft Plan is reliant on this section of creek to continue to provide its current capacity, responsibilities for ongoing monitoring, maintenance and planning/funding and ultimate replacement of this section should be clearly articulated in the Plan.

#### **Technical – Parklands Creek**

16. In addition to the 5 components listed in 1, the South Parklands Detention Basin component may include some bridge upgrade works on Parklands Creek (Young Street) within the City of Unley. It is anticipated that should these works be required, that this upgrade work will be accounted for

within the South Parklands Detention Basin project. The Council will also use its participation on the Steering Committee for this project to present this option.

### **Technical – Brownhill Creek**

17. Cross Road to Malcolm Street: The 100 year ARI peak design flow for this section is understood to be 28m<sup>3</sup>/s. This exceeds the capacity of some road bridges in this section, as reported in HydroTasmania (2003) and WBCM (1984). The draft Plan notes (page 104) that “some residual over bank flooding is expected to occur upstream from Heywood Avenue, which may affect the rear of up to 5 properties.” It is likely that bridge upgrades at Heywood Avenue and Whistler Avenue would largely address this residual flooding.

### **Financial**

18. There is concern that the current timeframe for the allocation of \$14m over 7 years for the development of the infrastructure could be extended. The Council would support an increase to 10 years which allows for a more financially manageable timeframe.
19. The draft Plan offers some brief speculation (page 121) on the role of a Catchment Subsidiary in relation to asset maintenance responsibilities associated with the structural mitigation works components, beyond the implementation phase, with a maintenance budget of \$0.1m/yr (page 116), for an asset with an overall value of \$133m. This would seem to be inadequate to maintain the proposed stormwater system and put a heavy burden on the local council to fund.
20. It is also noted that financial allocation for depreciation has not been identified.
21. The draft Plan notes that the respective Councils would be expected to fund maintenance of creek channels within their area, while the Regional Subsidiary would fund maintenance of the other elements. Would this include private ownership or is it only for public area?

### **Open Space**

22. Currently the alignment of diversions, particularly from Cross Road through to Anzac Highway are predominantly aligned along road and rail corridors. The management objectives of the draft Plan identify with mitigating flooding but also identify opportunities for open space, recreation and

walking and cycling paths. The objective reflecting this states: *'Promote opportunities for multi-purpose benefits in structural stormwater management measures, including passive recreation, pedestrian and cycle paths, water quality improvements, biodiversity improvements and stormwater reuse'*.

- a. The development of this flood mitigation infrastructure presents a unique opportunity to provide community benefits well beyond flood mitigation as already well documented through the stormwater works in Windsor Street and the Glen Osmond Creek redevelopment.
- b. It is well documented that the City of Unley has the lowest ratio of open space per head of population in SA and in the recent review of Unley's Open Space Recreation Strategy it identifies the need for the Council to consider open space requirements now and into the future, particularly with the proposed increase in higher density housing identified for the city by the State Governments 30 Year Plan.
- c. It is suggested that further investigation be undertaken and consideration given to exploring the possibility of the culvert and diversion systems currently proposed being moved to align with the Brownhill Creek. An example of where this would be possible is Wilberforce Walk in Forestville.
- d. While this would have an increased financial cost, the benefits to social infrastructure and environmental enhancement of the City of Unley.
- e. The potential possibility of creating a linear open space system that extends from the Mitcham Hills along Brownhill Creek through Unley and linking up with the Tramline Trail and the Parklands Trail would create a network open space system that provides recreation opportunities, amenity, social and environmental values.
- f. In addition this could create an open space network for greater Adelaide that would provide off road linkages with Tea Tree Gully, Henley Beach, Glenelg, Adelaide and Mitcham as well as all the suburbs in between.
- g. The next time this opportunity will present itself (if ever) the population density of Unley will be higher than we have now and new open space opportunities will be far more limited and expensive to create.

## **Planning and Policy**

23. The City of Unley supports the Planning Policy and Development Assessment initiatives of the Plan as positive.
24. The Council's Assessment Guidelines for developments that are identified to be in areas prone to flooding were developed to streamline processing of Development Applications but the Development Plan currently lacks support in a policy context. This will be addressed when the draft Village Living and Desirable Neighbourhoods Development Plan Amendment - Stage 2 (Residential Character, Growth Areas and General Residential and Sustainability Policy Review) DPA 2, outlined in point 21.
25. The City of Unley draft Village Living and Desirable Neighbourhoods Development Plan Amendment - Stage 2 (Residential Character, Growth Areas and General Residential and Sustainability Policy Review) [DPA 2] has been endorsed by Council in November 2011 as a draft and submitted to the Minister for Planning for approval to release for public consultation, recognises these issues and seeks they be addressed by:
  - a. incorporating flood hazard mapping into the Development Plan (including low, mid and high categories)
  - b. consolidating and refining hazard (flooding) policy principles to tailor the approach for development design and assessment for low, mid and high categories
  - c. consolidating and strengthening sustainability policy to reinforce WSUD (and energy efficiency) in all development (as far as practicable)
26. As flood mitigation works occur, and new modelling reveals changes to affected land, the mapping in the Development Plan will need to be changed. To change the mapping will require a full DPA process, meaning the development assessment criteria will be out of sync for a lag period while updating occurs. Strictly speaking the Development Plan maps and policy must apply, but a level of common sense and use of 'official' new modelling may be considered to temper an assessment.

## **Private Ownership**

27. The private ownership of sections of creek along the Brownhill and Keswick Creeks have always provided a number of challenges when it comes to providing a clean creek system free of weeds, tree growing in the water course and modified banks in private ownership. The City of Unley has

been proactive in recent years in the maintenance of creek areas flowing through community land. This is reliant on all parts working together to achieve the identified objective, and therefore is only as strong as its weakest link. It is vital, for the success of the Brownhill Keswick Creek Draft Stormwater Management Plan, that the responsibility of maintaining a private section of creeks be effectively managed, monitored and enforced.

### **Community Consultation Report**

28. The City of Unley has reviewed the Community Consultation Report produced by Urban and Regional Planning Solutions (URPS) for the five catchment councils.