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Government
of South Australia

Report

of the

Auditor-General

Tabled in the House of Assembly and ordered to be published, 29 November 2016

Second Session, Fifty-Third Parliament

Examination of the Brown Hill and Keswick Creeks Stormwater Management project: November 2016

By authority: P. McMahon, Government Printer, South Australia

2016

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ISSN 0815-9157

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28 November 2016

The Hon R P Wortley MLC
President
Legislative Council
Parliament House
ADELAIDE SA 5000

The Hon M J Atkinson MP
Speaker
House of Assembly
Parliament House
ADELAIDE SA 5000

Dear President and Speaker

Report of the Auditor-General: Examination of the Brown Hill and Keswick Creeks Stormwater Management project: November 2016

Under section 32(3) of the *Public Finance and Audit Act 1987*, I present to each of you a copy of my Report on the 'Examination of the Brown Hill and Keswick Creeks Stormwater Management project: November 2016'.

Content of the Report

In accordance with section 32(1)(b) of the *Public Finance and Audit Act 1987* the Auditor-General may examine the accounts of a public funded project and the efficiency and cost effectiveness of the project. I have completed an examination of the Brown Hill and Keswick Creeks Stormwater Management project and this Report communicates the findings from that examination.

Acknowledgements

The audit team for this Report was Andrew Corrigan, Satish Chandra Akula and the Local Government audit team.

I would like to record my appreciation for the cooperation and assistance provided by the staff of the catchment councils, Stormwater Management Authority and the Adelaide and Mount Lofty Ranges Natural Resources Management Board during the course of the examination. I would also like to thank John Frith from flatEARTHmapping for the production of the maps contained in this Report.

Yours sincerely

Andrew Richardson
Auditor-General

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1 Executive summary

1.1 Introduction

The high flood risk and flood protection issues associated with the BHKC Stormwater Management date back to 1930 with the occurrence of the last major flood. Since then attempts have been made to initiate a catchment-wide approach to deal with the flooding issues.

The 2006 Master Plan was released in December 2006 as the proposed flood management plan for the BHKC catchment (the BHKC project). The BHKC project is a significant and complex cross-boundary project involving works across five council areas: Adelaide, Burnside, Mitcham, Unley and West Torrens (the catchment councils). The catchment encompasses long established semi-rural to highly urbanised environments, owned both privately and publicly. Modifying this environment for flood mitigation purposes can be highly complex.

Since its release, the 2006 Master Plan has been revised, resulting in the current approved 2012 BHKC SMP and a revised plan submitted to the Authority in March 2016 (draft 2016 BHKC SMP). The following table provides the estimated flood damages from a 100 year ARI, cost of flood mitigation works and flood protection outcomes as detailed in these plans.

	2006 Master Plan	2012 BHKC SMP	Draft 2016 BHKC SMP
Estimated cost of flood damages ($'million)	200	187	122
Affected properties	5 000	7 000	2 089
Estimated cost of flood mitigation works ($'million)	105	150	140
Estimated cost of flood damages after works ($'million)	74	17.8	0.8
Affected properties after works	Not identified	1 321	31

Stormwater management governance arrangements relevant to the BHKC project included the creation of the Authority from July 2007 and the catchment councils' PSG, established in August 2007.

Where a stormwater catchment crosses council boundaries, in addition to meeting technical requirements the State's stormwater management governance arrangements require councils to agree on proposed management plans to submit to the Authority for approval. This governance model for a complex and significant cross-boundary project inherently risks not achieving prompt or timely outcomes where an aspect of the project is controversial or has significant community opposition that is difficult to resolve. The Authority can exercise coercive powers and, ultimately, take action to ensure the proper functioning of the State's stormwater management system.

Over the period May 2010 to December 2015 the Authority exercised its coercive powers by issuing notices and orders for the preparation of a BHKC SMP. The latest notice issued required the catchment councils to submit a revised BHKC SMP to the Authority by 29 February 2016.

The catchment councils agreed on an option in late 2015 and a revised, whole-of-catchment draft 2016 BHKC SMP was submitted to the Authority on 17 March 2016. At the time of this Report, the Authority was assessing the draft 2016 BHKC SMP.

Given the complexities of the BHKC project and significant delay in preparing an SMP, we decided to undertake an examination under section 32(1)(b) of the PFAA.

The objective of our examination was to determine whether the BHKC project is being managed efficiently and cost-effectively with regard to sound governance, including project management and risk management practices, and administrative and financial arrangements.

1.2 Audit conclusion

The catchment councils, through their collaborative efforts, have prepared a majority community accepted and council agreed, whole-of-catchment draft 2016 BHKC SMP. It was submitted to the Authority for approval in March 2016. This is the first time this has been achieved for the whole BHKC catchment.

Arriving at this point has, however, taken some nine years since the 2006 Master Plan was released. The draft 2016 BHKC SMP flood mitigation works are proposed to be constructed over a 10-year period subject to funding being available.

The flood damage risk of a 100 year flood event within the BHKC catchment, while estimated to be of lower value now than in 2006, remains and has an estimated 1% chance occurring in any given year. The Authority considers the BHKC catchment to have the highest flooding damage risk of all urban catchments in South Australia. Storms in January and September of 2016 have emphasised the unpredictability of the timing, extent and damaging effect of such events. It is not evident those storms were of the severity proposed to be addressed by the BHKC project.

The principal matter contributing to this nine-year time frame was the time needed to resolve whether the controversial flood control dam(s) in the Upper Brown Hill Creek should be a component of proposed flood mitigation plans. Under the LG Act, councils are required to consult and the interests of their respective council communities are to take priority over the interests of the catchment area. The risk of strong objections to a dam(s) in the Brownhill Creek Recreation Park was first reported in the 2006 Master Plan and continued in the Mitcham council area. Consistent with those objections and with other council responsibilities, numerous reviews of plan information, including modelling, were performed to either confirm plan outcomes or specifically seek alternatives to a dam(s). These failed to displace a dam(s) as a feasible and recommended component over a number of years. It was not until revised rainfall data was released in mid-2013 that a feasible, alternative creek capacity upgrade option plan, without a dam, was identified and accepted which allowed a final plan to be prepared.

Notably, in individually accepting the creek capacity upgrade option in late 2015, four of the five councils resolved that in the absence of unanimous agreement, they were prepared to request the Authority to use its powers to finalise and approve the BHKC SMP.

The Authority first used its coercive powers, considered last resort powers at the time they were established, relatively early in the project in May 2010. The Authority issued a notice to the catchment councils to prepare a revised SMP for the BHKC catchment within 90 days. The catchment councils failed to comply with the notice and the Authority issued subsequent notices and orders at various times through to 2015.

The Authority, however, did not exercise its full coercive powers to finalise the SMP. We found that the Authority was reluctant to prepare the SMP as it perceived there were legislative deficiencies and limited resource capability. In our view, the Authority did not give adequate attention to its strategic approach and risks associated with the BHKC project prior to exercising its coercive powers. Having not fully exercised its powers, a single authority approach to this project was not tested to see if the project could have reached this point successfully, but more promptly. A single authority approach would have faced the same technical and community acceptance or opposition issues, but within a different governance framework responsible to the whole catchment community.

When a BHKC SMP is approved, funding becomes the key issue. The draft 2016 BHKC SMP is estimated to cost about $140 million. Councils have committed up to 50% but their preferred funding is one third sharing between the councils and the State and Commonwealth Governments. Councils have unanimously reserved their rights in the event that the cost sharing proposal involving the other levels of government does not materialise. In that case they may review the scope of work, delivery timelines and funding model under the agreed SMP to enable some affordable flood mitigation works to be undertaken which mitigate and reduce impacts of flooding on properties within the BHKC catchment.

The catchment councils continue to face key challenges in the next stages of the project including the plan approval, finalising funding commitments and future governance arrangements, implementation of the BHKC SMP and operations of future infrastructure. This requires continued collaboration, timely agreement of the catchment councils on key matters and improving project management practices to address immediate and ongoing challenges to ensure more timely achievement of project outcomes and addressing the significant flood risk.

In the event, it has proved difficult to conclude on the efficiency and cost-effectiveness of the overall project. We have made findings and recommendations on a number of aspects. With the elapsed time, the project has had the benefit of improved information and advanced investigations. The emergence of the revised rainfall data has allowed the most controversial aspect, the dam(s), to be avoided. However, the underlying flood damage risk is not yet mitigated. In that light, the overall experience of this project, its inherent risks, how and when they are resolved and the reliance on collaboration rather than exercising the single authority option, is important for the future of this and other projects with controversial aspects, if urgency to mitigate a risk is a priority.

1.3 Key findings of the examination

Our examination identified areas in project governance and administrative arrangements that required improvement. Some of these, in our opinion, would have contributed to more timely outcomes and efficient project management. We also made some observations on administrative processes. A summary of our key findings is provided below.

1.3.1 Project governance

Inadequacy of governance arrangements for complex and controversial projects – despite collaboration between the catchment councils and various actions by the Authority, until the controversial flood control dam matter was resolved, the governance arrangements for the significant and complex cross-boundary BHKC project have not facilitated timely outcomes to reduce the identified flood risk.

Project authority needed to be clearly defined – for the BHKC project, we found instances where a council made a different decision on a matter after a decision made by the CEO. While a council has this power, such practice risks inefficiencies in project management and achieving timely outcomes. While not found in this examination, in some circumstances this could give rise to legal consequences, depending on the nature and extent of action taken in implementing the CEO's decision.

Investigations undertaken during public consultation process – on 17 November 2011 Mitcham's report titled 'Brown Hill Keswick Creek Draft Stormwater Management Plan – Preliminary Assessment Enhancement of Flood Mitigation Options' (the Enhancement report) was made publicly available. Although we acknowledge the local community opposition to a dam faced by Mitcham and the obligation and right to take necessary action in the best interest of its community, in our view the timing of the investigation was inappropriate. This is because it undermined the agreed and council endorsed public consultation process, the intent of the catchment councils to work collaboratively and the commitment to the agreed timing and process to finalise the BHKC SMP by early March 2012 to comply with the Authority's second order.

Breach of agreed public consultation principles – inconsistent and inappropriate messages – the Enhancement report had a significant impact on the outcome of the public consultation process. The release of inconsistent and inappropriate messages potentially undermined the public consultation process and the decision of the catchment councils to release an endorsed draft plan for consultation. It also potentially misinformed the community that feasible alternative solutions were available at that time.

Inadequate documentation of supporting roles and responsibilities – for the BHKC project, where there are five individual entities working collaboratively, it is essential that the roles and responsibilities of each entity and various groups/committees are clearly defined, documented and agreed throughout the project life. We noted that at times the 2008 MoA did not reflect the current conditions and requirements. We also noted there were no terms of reference to support the various technical reference groups to assist in preparing the SMP.

1.3.2 Project planning

Lack of documented assessment and management of risks – although we noted instances where catchment councils were updated on the project risks, we noted that a risk management plan had not been prepared for the BHKC project since project inception in 2008.

A comprehensive project plan needed for the BHKC project – while most project requirements were provided in various documents, for a significant and complex project there should be one overarching document. A comprehensive project plan would provide any key stakeholder with a clear understanding and confidence in the way the project is being governed and managed. Further, it would contribute to efficient project management.

1.3.3 Project monitoring and reporting

Improvements needed to monitor project performance – improvements could be made in the information provided to the PSG to monitor the project progress and performance. For example, implementing regular project risk reporting against a risk assessment and management plan and regular progress reporting against a project plan.

Lack of documented analysis of consultancy reviews – a number of consultants were engaged to help prepare the 2012 BHKC SMP. Their advice covered technical and financial aspects and the public consultation process and was fundamental to the recommendations the PSG made to the catchment councils for decisions. We found the PSG meeting minutes inadequately documented the analysis of these consultancy reviews.

1.3.4 Compliance with legislative requirements

The 2012 BHKC SMP did not comply with the Guidelines – the Authority's assessment of an SMP must determine whether it complies with the Guidelines and consider the relevant regional NRMB(s) advice. The Authority received various advice and information which provided sufficient evidence that the 2012 BHKC SMP did not comply with the Guidelines, particularly as a solution for the Upper Brown Hill Creek was not resolved at that time.

Inadequate documentation of the Authority's assessment of the 2012 BHKC SMP – the Authority's meeting minutes did not adequately document the members' consideration and assessment of various advice, previous concerns and unresolved issues to assess the 2012 BHKC SMP. For example, evidence to support the Authority's consideration of the AMLRNRMB's advice and recommendations, and the rationale for its overall conclusion that the 2012 BHKC SMP complied with the Guidelines, was not recorded.

1.3.5 Strategic and financial planning

Inadequate strategic action to achieve timely outcomes – on 20 May 2010 the Authority resolved to exercise its coercive powers with the objective of an SMP being prepared for the BHKC catchment area within 90 days. The Authority did not give adequate attention to its strategic approach to achieve a timely outcome for the BHKC SMP prior to exercising its coercive powers. The course of action taken led to the possibility of the Authority taking over the preparation of the SMP if the councils failed to comply with the Authority's orders. We found that the Authority was reluctant to prepare the SMP as it perceived there were legislative deficiencies at the time and limited resource capability.

Lack of long-term financial planning – a key Authority responsibility is administering the SMF. The SMF was established to provide funding to overcome the backlog of priority stormwater management works. It is prudent that the Authority undertakes a financial assessment as to whether the necessary funds from the SMF are available to fund high priority projects, and to what extent, at the time of assessing an SMP. We found that, after eight years in operation, the Authority did not have a long-term financial plan for the SMF.

Further details of these key findings are provided in sections 8 to 12.

1.4 Recommendations

This Report contains the following recommendations:

For the catchment councils

- The councils should clearly articulate any specific limitations of the delegated authority provided to the CEO. Delegated authorities should be reviewed regularly to confirm that they remain appropriate throughout the project life (section 8.3).

- Where the council determines to retain authority to make specific decisions about the project, these key decision points should be identified as early as possible and reflected in a project plan (section 8.3).

- In project planning, the catchment councils should determine how their individual priorities will be addressed against the priorities of the BHKC project objectives and outcomes (section 8.4).

- Catchment councils should agree and fully commit to a proposed solution(s) in the SMP before a formal public consultation process (sections 8.4 and 8.5).

- All catchment councils should provide clear and consistent messages to the catchment community during any future public consultation process (section 8.5).

- Project committee/groups should be supported by current and relevant MoA/terms of reference (section 8.6).

- The catchment councils should formalise the risk assessment process and complete a risk management plan for the BHKC project. Risk assessment should be undertaken at the start of a project and progressively updated as new risks are identified throughout the project's life cycle. The effectiveness of risk treatments should be regularly reviewed to ensure they continue to mitigate the risk. The nature and extent of regular reporting on project risks to the PSG and catchment councils should be determined (section 9.2).

- A comprehensive project plan should be prepared and endorsed at the commencement of the project and updated regularly. In line with the project plan, processes should be implemented and monitored to deliver agreed project objectives and timely outcomes (section 9.3).

- A standard report format that provides adequate and regular information to effectively monitor all aspects of the BHKC project should be established (section 10.2).

- Discussions on key consultancy reviews and outcomes should be documented in meeting minutes. All consultancy engagements should be supported by signed contractual arrangements that evidence all the agreed terms and conditions. The PSG should receive regular reports from the various technical reference groups on their activities, including any recommendations made regarding consultancy review outcomes (section 10.3).

For the Authority

- Only SMPs that comply with the Guidelines should be approved. Prior to approval, the Authority should ensure that appropriate and timely action has been taken to address known issues and assess the significance of all unresolved issues and the impact on achieving the overall SMP objectives and fulfilling its legislative role and responsibilities (section 11.2).

- A summary assessment of and basis for approving or not approving an SMP should be documented in the meeting minutes. The documentary evidence maintained should provide a clear and sufficient account of the decision-making process (section 11.3).

- The Authority should develop and endorse policies and procedures to support its decision-making process for key activities, such as issuing notices and orders (section 12.1).
- The Authority should develop and endorse a long-term financial plan that reflects the use of money from the SMF to fund existing approved SMPs, assess the priority of approved SMP projects and determine whether additional funds are required to accelerate priority project works (section 12.2).

1.5 The Stormwater Management Authority and catchment councils' responses

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This examination included a detailed natural justice process occurring between April and October 2016 to discuss the findings and confirm the factual evidence contained in our draft Report. Our findings were formally reported to the Authority and the catchment councils in late June 2016. Responses to the matters raised were received in July 2016 and were taken into consideration and the necessary changes were reflected in the final Report. The more significant changes came from some concerns and views in the catchment councils' response. The PSG, the Authority and officers of the AMLRNRMB received the final draft Report in November 2016. The PSG provided comments on the final draft Report, particularly noting our updated comments on governance arrangements and that the responses included in this Report reflected the draft report the Councils received in July 2016. Having related with the PSG, we acknowledge we did not separately provide the draft final Report to the catchment councils.

Some findings and recommendations raised in this Report may have been, or are due to be, resolved as a consequence of the draft 2016 BHKC SMP. Our examination did not include the finalisation of the draft 2016 BHKC SMP, which is yet to be approved by the Authority.

The following is a summary of the responses to the recommendations made in this Report.

Catchment councils' response

The BHKC project has been conducted collaboratively between the councils, which have worked together to successfully develop an agreed SMP (the draft 2016 BHKC SMP). Further, through effective management and robust debate amongst the councils, as well as cooperation and support from State Government agencies, key project decisions and outcomes have been agreed unanimously. There are always challenges with projects of this size, scale and complexity. However, the BHKC project has been resolute in terms of the efforts to develop an effective SMP which was submitted to the Authority in March 2016.

The Auditor-General's Report recognises the BHKC project as a significant and complex cross-boundary project. That is, the distinct responsibilities of the councils both individually and collectively for flood mitigation of the BHKC catchment. It is in recognition of the collective responsibility that the councils determined to implement a governance structure and arrangement to oversee the project. The importance of project governance is correctly recognised in the Report as being heightened for cross-boundary projects. A council is principally responsible for its proclaimed area. It is unsurprising that the examination found that, at times, there have been conflicting priorities for the councils between respective obligations to their communities and to the catchment community. The councils have collaboratively addressed and overcome conflicting priorities in their objective to achieve beneficial public policy outcomes. Significant achievements have come to fruition over the past year.

The catchment councils responded to the specific recommendations as follows:

- The recommendation that the councils clearly document the nature and extent of delegated authority for particular projects is unnecessary given the extensive suite of statutory and administrative delegations of the CEO (section 8.3).

- It is impractical in nature for councils to retain authority to make specific decisions about projects at key decision points. This is due to the wide ranging nature of decisions that will be and are made in such matters, many of which can be reasonably be classified as operational, and is a position that the councils already retain unto themselves by virtue of the LG Act (section 8.3).

- The BHKC project has been conducted in a manner consistent with the recommendations. The 2011 consultation process was carried out in accordance with relevant policies of the councils and the project's consultation strategy approved by the councils (sections 8.4 and 8.5).

- The councils have already invested time and effort to establish an agreed MoA to guide mutual projects (section 8.6).

- Assessing for risks and planning mitigation measures were always at the forefront of project management business. The recommendation outlines a standard formal risk management structure suitable for application in the next stage of the project, involving major design and construction. However, for the SMP phase of the project such a structure was considered unnecessary and would have consumed a greater level of resourcing than warranted (section 9.2).

- It is accepted that a comprehensive project plan be prepared and endorsed at the commencement of the project and updated regularly (section 9.3).

- To the extent that may be necessary in the future, the PSG will establish a standard report format that provides adequate and regular information to improve the monitoring of financial aspects of the project (section 10.2).

- It is accepted that the PSG should document in meeting minutes discussions on consultancy reviews and outcomes and that all consultancy engagements should be supported by signed contractual agreements within the context of council procurement policies and delegations (section 10.3).

The Authority's response

The Authority noted that many of the examination findings have either already been actioned or have now been included in the organisation's forward work program.

In the Authority's view, the examination does not adequately recognise the broader context and the associated risks of not facilitating a process to deliver a final plan. The Authority has strategically aimed to maintain progress and ensure collaboration across all relevant organisations on what continues to be a significantly sensitive and contentious matter. In the Authority's view, the risk of not having an SMP prepared for the highest risk urban catchment in South Australia warranted the unusual decision to approve an SMP in two parts. It could be reasonably argued that Parts A and B within the SMP are in fact separate catchments, given

their limited connectivity. The risk associated with not approving the 2012 BHKC SMP included that the catchment councils would not progress to the next stage of the plan's development. Further, had the Authority not approved the 2012 BHKC SMP, its ability to leverage Commonwealth and State Government funding for the two subprojects of the 2008 and 2012 BHKC SMPs would also have been compromised[1] (section 11.2).

The Authority agreed that there is a need for improved processes and policy to guide the approval of SMPs and will ensure this is addressed as a matter of urgency (section 11.3).

The Authority agreed that the use of notices and orders under Schedule 1A without due consideration of the implications of taking over the preparation of the SMP was not appropriate, given the inability of the Authority to resource such an option. At that time, it was the Authority's intention to facilitate a resolution to an impasse between councils within the powers available and to drive the completion of a full SMP in the timeliest manner possible. The Authority agreed that policies and procedures need to be developed to provide a clear decision-making pathway for the use of notices and orders in the future (section 12.1).

The Authority responded that it does not have a long-term financial plan. The Authority is in the process of addressing this matter by pursuing the development of SMPs in specific priority catchments. Until these SMPs are completed, it is extremely difficult to quantify the likely investment required from the SMF. The Authority's preliminary assessment suggests that around $800 million is needed to address current and emerging stormwater issues. This quantum is clearly in excess of the current $4 million annual allocation provided to the SMF by the State Government (section 12.2).

1.6 Key challenges

Some of the key challenges requiring immediate and ongoing focus to ensure the desired project outcomes are achieved and address the significant flood risk are:

- establishing an efficient and effective governance structure to govern the future BHKC project activity, such as a regional subsidiary
- developing detailed design works for all structural works and revised estimated costs for the BHKC project. At this time the catchment councils will need to update a benefit cost ratio assessment of the BHKC project
- addressing the outstanding matters identified in the 2012 BHKC SMP, such as determining future maintenance costs and responsibilities
- identifying, assessing and managing project risks associated with implementing the draft 2016 BHKC SMP and future maintenance
- finalising the funding arrangements with the State Government. If sufficient funding is not secured, however, the catchment councils unanimously decided to reserve their right to review the scope of work, delivery timelines and funding model under the agreed SMP. This may potentially result in abandoning the current SMP and recommencing the planning process to develop a more affordable solution(s)

[1] Refer to section 5.3.3.1 for details of the subprojects.

- any flood mitigation strategy will have risks and challenges that need to be assessed and managed accordingly. Option D[2] is heavily reliant on maintaining the creek in an acceptable condition by the various land owners over a long-term period (ie life of the infrastructure of 100 years). Creek maintenance is a complex matter and associated costs remain unknown

- Option D is based on the most recent rainfall data study, which resulted in a decrease in rainfall estimates (a reduction of up to 28%) from the previous study. Option D provides for at capacity flood protection at the revised levels. Further information regarding the use of rainfall data will be released in future years, which may result in further adjustments to the BHKC catchment hydrology. However, the catchment councils consider any adjustments are unlikely to require change to the general form and scope of proposed works

- the proposals in the 2012 BHKC SMP and Part B's Option D may require acquisition of easements on private land. Concerns are being raised by various community groups that have the potential to result in legal class actions against the councils and the Authority, posing a risk to the BHKC project.

[2] Refer to Appendix 2 for details of Option D.

2 Timeline of events

This table is intended to assist in reading this Report. It is not intended to be a complete list of all significant events. Rather, it gives context to events discussed in the following sections. A more detailed timeline is provided in Appendix 3.

2006	
15 December	2006 Master Plan is released.
2007	
12 October	The catchment councils submit the 2008 BHKC SMP ($105 million) to the Authority for approval. The plan components include a flood control dam in Upper Brown Hill Creek.
24 October	The AMLRNRMB provides advice, with recommendations, to the Authority on the 2008 BHKC SMP.
2008	
19 February	The Authority approves the 2008 BHKC SMP with a condition attached.
22 July	Mitcham resolves to withdraw support to the 2008 BHKC SMP and the 2007 MoA.
2009	
28 July	Mitcham instigates a peer review of the hydrology study for Brown Hill Creek (undertaken by VDM Consulting) with a report available in April 2010.
2010	
27 April	The PSG engages Sinclair Knight Merz to comparing the findings of VDM consulting and the 2008 BHKC SMP. The hydrology model of the 2008 BHKC SMP was considered appropriate and remained the basis for the Draft 2011 BHKC SMP.
20 May	The Authority issues a notice to councils to prepare a BHKC SMP, due by 20 August 2010.
26 August	The Authority issues first order to councils to prepare a BHKC SMP by 30 April 2011.
2011	
13 May	The Authority issues a second order to councils to prepare a BHKC SMP by 2 March 2012 (or a later date as agreed by the Authority but no later than 30 April 2012).
August	The Draft 2011 BHKC SMP ($133 million) is released. As supported by the peer reviews, the Draft 2011 BHKC SMP still recommended a flood control dam as a flood mitigation component.
31 October	Public consultation on the Draft 2011 BHKC SMP starts.

17 November	In the midst of public consultation, Mitcham releases the Enhancement report, a preliminary investigative report identifying alternate options to the proposed flood control dam.
12 December	Public consultation ends.
2012	
March	The public consultation report is released. Most respondents indicated overall support for the Draft 2011 BHKC SMP across the five councils. There were high levels of support for all proposed infrastructure components, with the exception of the proposed flood control dam. This option had lower and more variable levels of support across the five councils.
26 April	Following the Enhancement report, the PSG undertakes further investigations and releases the Bypass Culvert Feasibility Assessment report. The report highlighted that alternative options would cost more than the solutions provided in the Draft 2011 BHKC SMP.
30 April	The AMLRNRMB releases the AWE's BHKC Survey and Hydraulic Assessment report which found significant reductions in the hydraulic capacity of the BHKC catchment watercourses.
2 May	The Authority endorses the PSG's Part A and Part B strategy. The catchment councils endorse the Part A and B strategy for the commencement of designated Part A works. They also endorse a commitment to undertake further investigations over a 12 month period from the date of gazettal of the 2012 BHKC SMP to resolve the works for Upper Brown Hill Creek under a Part B works process. Central to the strategy is a preference to pursue a feasible and community acceptable 'no dam' solution of acceptable cost.
31 August	The catchment councils submit the 2012 BHKC SMP for approval. Depending on the options selected for Part B (which included a flood control dam), total estimated cost ranged from $147.8 million to $154 million.[3]
27 September	The AMLRNRMB provides advice, with recommendations, to the Authority on the 2012 BHKC SMP.
2013	
26 February	The Authority approves the 2012 BHKC SMP.
26 July	BOM releases new rainfall data. DPTI recommends that the PSG apply the new hydrological data in preparing the final BHKC SMP.
23 August	The PSG recommends Option 3A (the extended high flow bypass culvert) as the preferred option for Part B, alternative to a flood control dam.

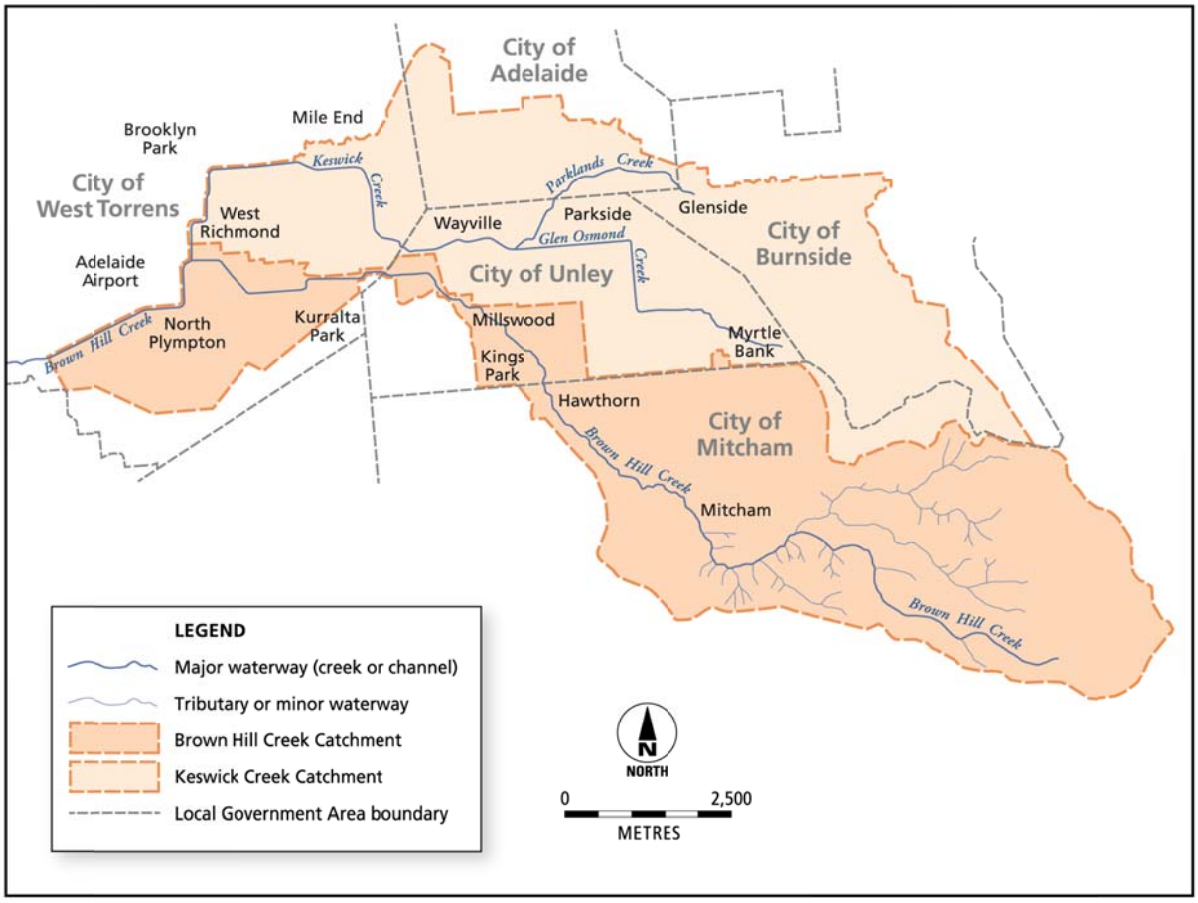
[3] Refer to Appendix 2 for further details of the options proposed for Upper Brown Hill Creek.

28 October	Unley resolves to reject Option 3A and investigate other alternatives.
1 November	The PSG identifies creeks upgrade option (Option D) as an alternative option for Upper Brown Hill Creek.
2014	
8 September	Part B report is released to the public with the creeks upgrade option (Option D) as the preferred option.
2015	
13 May	Public consultation on Part B starts.
19 May	The Authority issues a notice to councils to prepare a revised BHKC SMP by 30 September 2015.
7 September	Public consultation report on Part B released.
September to October	All councils resolve to approve Option D. Unley also resolves to seek support of the PSG to consider a number of matters before commencing Part B works.
17 December	The Authority issues a notice to vary the 19 May 2015 notice requiring the catchment councils to prepare the revised SMP by 29 February 2016.
2016	
18 March	The catchment councils submit the draft 2016 BHKC SMP ($140 million) to the Authority. At the time of this Report the Authority is yet to approve this SMP.

3 Introduction

3.1 Background

The BHKC catchment area covers five council areas, as shown in the following diagram, and is considered the highest flood risk urban catchment in South Australia.



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The high flood risk and flood protection issues associated with the BHKC Stormwater Management date back to the last major flood in 1930. Since the 1930s works were conducted to reduce flood risk, however it was recognised in the 1950s that flooding remained a major issue. Recent flood events (not classified as major floods) occurred in November 2005 and most recently in January and September 2016.

Since the 1930s attempts have been made to initiate a catchment-wide approach to deal with the catchment flooding issues. Various studies have provided a range of solutions that have been debated, but most of the recommendations were not implemented. These attempts failed because the councils did not reach agreement on the scope of works or cost-sharing arrangements.

In 2001, the State Government and relevant councils entered into a heads of agreement to work collaboratively to address floodplain management issues in the BHKC catchments. The parties agreed to take a whole-of-catchment approach to resolving flood management and

drainage issues. In its agreed lead role, the former PCWM Board engaged consultants to provide detailed inundation mapping[4] and refine damage estimates for the first time since 1984. This highlighted that 5000 properties would be affected by a 100 year ARI[5] flood, with a likely damage cost of around $200 million. This study resulted in the 2006 Master Plan, released on 15 December 2006.

The responsibilities of the former PCWM Board were assumed by the AMLRNRMB in December 2004.

The primary focus of the 2006 Master Plan was flood risk management. The 2006 Master Plan involved a three stage process comprising technical assessment, consultation and a detailed assessment of preferred options.

If the 2006 Master Plan was implemented, it was estimated that the flood damage could be reduced to $17.8 million and 1321 properties. The flood mitigation options, including flood control dams in the upper reaches of Brown Hill Creek, were estimated to cost $105.5 million to implement over 10 years. The flood mitigation options were developed from a catchment-wide perspective irrespective of administrative boundaries and were considered to provide the greatest benefit across the catchment.

Since 2006 a series of events has led to revision of the SMP, resulting in the current approved 2012 BHKC SMP. At the time of this Report a revised draft 2016 BHKC SMP is with the Authority for approval. If approved, the 2016 BHKC SMP will replace the 2012 BHKC SMP.

The BHKC project's capital works are estimated to cost about $150 million, which was reduced to about $140 million in the draft 2016 BHKC SMP. The BHKC project is a significant and complex cross-boundary project involving works across five council areas. The catchment encompasses long established semi-rural to highly urbanised environments, owned both privately and publicly. Modifying this environment for flood mitigation purposes can be highly complex.

Further details of key events are documented in Appendix 3.

Given the complexities of the project and significant delay in preparing an SMP, we decided to undertake an examination under section 32(1)(b) of the PFAA.

3.2 Audit objective and approach

3.2.1 Audit objective

The objective of the examination was to determine whether the BHKC project is being managed efficiently and cost-effectively with regard to sound governance and project management practices.

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4 A map delineating the area that would be flooded by a particular flood event.

5 The term refers to the amount of rainfall and intensity of the flood event. A 100 year ARI means that there is a 1% chance of a 100 year flood event occurring in any one year. The 100 year flood measure does not mean that there is certainty of an occurrence or that if it floods one year, it will not flood for the next 99 years. Areas in Australia have experienced two 100 year flood events within one year.

3.2.2 Audit criteria and scope

Success in project management is delivering projects on budget, on time and with the intended outcomes. This requires projects to be well managed throughout the project life cycle (ie inception to full implementation). The examination covered the planning stage of the BHKC project, specifically the preparation of the SMP.

Whether the BHKC project is being managed efficiently and cost-effectively involves assessing whether the project activities are functioning effectively with minimum waste/cost and producing good results for the cost. The lack of or deficiencies in project activities can contribute to project failure, leading to inefficiency and cost-ineffectiveness in project delivery.

The criteria developed for this examination aimed to address the following aspects of project management.

Project governance	Planning	Monitoring and reporting	Compliance
• sound governance structure • clear roles and responsibilities • clear accountability and authority	• agreed project objectives, plan and budget • agreed funding arrangements • management of risks	• regular reporting on project and financial performance • adequate record and financial management	• legislative and policy requirements

The criteria were based on relevant legislation (including the Guidelines), requirements of the approved 2012 BHKC SMP, the 2006 SM Agreement and best practice guidelines for project management, governance and risk management.

The examination covers the period from February 2008 to October 2015. This examination did not cover the period:

- before the 2008 BHKC SMP was approved
- after the catchment councils' approval of Option D.

Also, the examination did not cover the project implementation stage (ie the activities of the construction works undertaken so far). While this Report has been updated to reflect recent events, references to the BHKC SMP relate to the approved 2012 BHKC SMP.

3.2.3 Audit approach

The examination involved a detailed review of documentation and discussions with the CEOs of the catchment councils, the Project Director and officers of the Authority and the AMLRNRMB. This examination also included a detailed natural justice process occurring between April and October 2016.

The respective preliminary examination findings and recommendations were forwarded to the catchment councils' CEOs and the Authority's Acting General Manager in April 2016 for review and comment.

In late April 2016 we met with the Authority Board members and the PSG members, separately, to discuss and provide comments on the respective preliminary examination findings and recommendations. This included confirming that the factual evidence was accurate.

Following these meetings, the PSG provided written comments and clarification on certain matters in early May 2016. In late May 2016 we met with officers nominated by the PSG to further discuss and clarify outstanding matters. Subsequently, the Project Director on behalf of the PSG provided final comments in early June 2016.

The Authority's and PSG's comments and documentation provided during the extensive natural justice process were considered at length in finalising our examination of the BHKC project.

Our findings were formally reported to the Authority and the catchment councils in late June 2016, with responses to the matters raised received in late July 2016. In their response, the catchment councils raised concerns, including that the examination did not clearly reflect the significant progress that has been achieved by the catchment councils over the past two years.

Where relevant we have taken into consideration these concerns. As already outlined, however, this examination did not extend beyond October 2015. At the time of conducting the examination, the catchment councils were in the process of agreeing on a preferred option for Part B and finalising the draft 2016 BHKC SMP, which was and still is subject to assessment and approval by the Authority.

We acknowledge, however, that some issues and recommendations raised in this Report may have been, or are due to be, resolved as a consequence of the draft 2016 BHKC SMP.

4 Stormwater management overview

4.1 Stormwater management objectives

Since the early 2000s the approach to water management (including stormwater) has moved from flood mitigation to a water sensitive state focus. A water sensitive state achieves a multi-objective approach by considering water catchment, quality and conservation and for the three tiers of government to work together to meet policy objectives.

The Commonwealth Government has taken a major policy role in water management and been a major funding partner in large water projects. The State Government funds its own stormwater projects and contributes to councils' stormwater projects (eg waterproofing projects). The benefits of this approach include creating more liveable and healthy cities, flood control, protecting local environments, securing water supplies, economic sustainability and resilience to climate change. The multi-objective approach is reflected in various State Government policies, strategic plans, agreements and funding programs.[6] This includes the 2006 SM Agreement approved in line with Schedule 1A of the LG Act (Schedule 1A).

The objective of Schedule 1A was to ensure the proper operation of the 2006 SM Agreement by implementing administrative and funding arrangements and conferring the powers necessary for the proper discharge of State and Local Government responsibilities.

A new stormwater management agreement was signed on 30 August 2013 and was intended to supersede the 2006 SM Agreement. This required an amendment to Schedule 1A. The Local Government (Stormwater Management Agreement) Amendment Bill 2015 was laid before Parliament on 28 October 2015 and was assented to on 21 April 2016.

4.2 Stormwater Management Authority

The Authority was established under Schedule 1A and has been operating since 1 July 2007. The Authority was established to provide certainty and legal efficacy to the 2006 SM Agreement's provisions.

The Authority is governed by a Board consisting of seven members who are representatives of State and Local Governments. These members have qualifications or experience in public administration, water resources, stormwater management, environmental management or infrastructure development. Appointment terms have been mainly for 12 months with some members being reappointed. Since July 2007, there was no Authority Board for the periods:

- 31 August to 14 December 2012
- 1 July 2015 to 6 October 2015.

In line with clause 12 of Schedule 1A, the Authority has an arrangement with DEWNR for administrative support, which consists of one full-time employee, the General Manager. The Authority also engages expert advice when required, including legal advice, project advisors and technical advisors.

[6] Such as the Urban Stormwater Management Policy for South Australia (May 2005), the 30 year plan for Greater Adelaide (February 2010), the Water for Good Policy (June 2010) and Stormwater Strategy: the future of stormwater management (2011).

The Authority's key role is to operate as a stormwater planning, prioritising and funding body and administer the SMF. The Authority provides funding for stormwater planning and infrastructure projects from the SMF. Under Schedule 1A, the Authority's functions include to:

- facilitate and coordinate stormwater management planning by councils
- formulate policies and provide information to councils on stormwater management planning
- ensure that relevant public authorities cooperate in an appropriate fashion in stormwater management planning and the construction and maintenance of stormwater management works
- approve an SMP prepared by a council after receiving advice from the relevant regional NRMB as to whether the SMP contains appropriate provisions.

A key strategy to achieve policy goals is to develop SMPs for catchments.[7] The purpose of these SMPs is to ensure that stormwater management is addressed on a total catchment basis with the relevant NRMB, various local government authorities (ie catchment councils) and State Government agencies responsible for the catchment working together to develop, implement and fund a coordinated and multi-objective approach. The SMP is used as the basis for developing budgets, specifying cost apportionment arrangements and allocating State support funds.

The Authority has issued the Guidelines. A council must prepare SMPs that comply with the Guidelines, in consultation with the relevant regional NRMB. A council may apply for funding from the SMF for works relating to an approved SMP.

The Authority has coercive powers to support its functions. The 2006 SM Agreement envisaged these powers as being exercised only as a last resort, when councils and/or the State Government are unable to resolve stormwater management matters at a hydrological catchment level.[8] Schedule 1A empowers the Authority to:

- issue a notice to require a council to prepare an SMP within a specified time. Notices may be varied or revoked by the Authority by a subsequent notice
- serve an order on a council where a council fails to comply with a notice
- take any action required by an order where a council fails to comply with the order. The Authority may recover costs incurred in taking action from the council
- apply money from the SMF for the preparation of SMPs, carrying out works for the purposes of stormwater management and other purposes.

4.3 Local government councils

Councils play a key role in managing stormwater, with a primary focus on flood risk mitigation and, in line with developments in water management, investigating multi-objective

[7] The 2006 SM Agreement applies to stormwater systems with a catchment area greater than 40 hectares.

[8] A hydrological catchment area means a catchment area in which the stormwater drainage systems serves a defined area which stands alone from and is unaffected by stormwater draining from any such adjoining catchment.

strategies.[9] This role emanates from a council's function under section 7 of the LG Act to:

- take measures to protect its area from natural and other hazards and to mitigate the effects of such hazards
- manage, develop, protect, restore, enhance and conserve the environment in an ecologically sustainable manner, and to improve amenity
- provide infrastructure for its community and for development within its area. This includes infrastructure that helps to protect any part of the local or broader community from any hazard or other event, or that assists in the management of any area.

The LG Act imposes a high standard of prudential behaviour on councils and councillors in performing their functions. This is to ensure that a council:

- acts with due care, diligence and foresight
- identifies and manages risks associated with a project
- makes informed decisions
- is accountable for the use of council and other public resources.

One of the prudential issues councils must consider before engaging in any project is the level of consultation with the local community. This includes contact with stakeholders who may be affected by the project and the representations that have been made by them, and the means by which the community can influence or contribute to the project or its outcomes.

In addition to the requirements on councils, members of a council are required at all times to act honestly and with reasonable care and diligence in the performance and discharge of official functions and duties.

4.4 Natural Resources Management Boards

NRMBs are established under the *Natural Resources Management Act 2004*. Councils are required to consult with the relevant NRMB in preparing an SMP. NRMBs are required to consider any SMP prepared by a council or group of councils for an area within an NRMB's region. NRMBs must advise the Authority in writing and as expeditiously as practicable whether, in the opinion of the NRMB, the SMP contains appropriate provisions.

[9] For example: Waterproofing Adelaide projects involving, for example, the Playford and Salisbury councils; Eastern Region Alliance Water, a newly formed regional subsidiary constituted by the Burnside, Walkerville and Norwood, Payneham and St Peters councils for water supply for irrigation purposes.

5 Brown Hill and Keswick Creeks Stormwater Management project overview

5.1 2012 Brown Hill and Keswick Creeks Stormwater Management Plan

The objectives of the 2012 BHKC SMP were to:

- provide a standard of flood protection equivalent to the one in 100 year ARI flood event or better (subject to economic justification)
- enhance flood mitigation infrastructure with multi-purpose outcomes, including visual, aesthetic and amenity improvements for the benefit of the wider community, where it was economically and socially feasible
- provide flood forecasting and warnings and flood preparedness measures to help the community reduce any residual damages to property and risk to life during major flood events, particularly in high hazard areas
- ensure that new stormwater infrastructure did not increase the risk of flooding in downstream areas.

The following table provides the estimated flood damages from a 100 year ARI, cost of flood mitigation works and flood protection outcomes.

	2012 BHKC SMP	Draft 2016 BHKC SMP
Estimated cost of flood damages ($'million)	187	122
Affected properties	7 000	2 089
Estimated cost of flood mitigation works ($'million)	150	140
Estimated cost of flood damages after works ($'million)	17.8	0.8
Affected properties after works	1 321	31

The 2012 BHKC SMP was divided into Part A and B works.

Part A reflects about 80% of the value of the proposed flood mitigation works ($120 million) where the planning concepts are established. Part A has been agreed to as no significant adverse issues have been raised by the member councils or community consultation.

Part B reflects the remaining part of the catchment area ($30 million), namely Upper Brown Hill Creek. Part B has a number of unresolved issues, including significant community concerns about the proposed dams emerging from the community consultation process. Central to the Part B strategy was a preference to pursue an economically and socially feasible 'no dams' solution.

In September 2015 the catchment councils endorsed Option D for Upper Brown Hill Creek. This option is to upgrade the existing creek at six critical sections and rehabilitate (remove invasive vegetation) at the non-critical sections. Option D is reflected in the draft 2016 BHKC SMP.

Appendix 2 provides details of the alternative proposed flood mitigation options for Upper Brown Hill Creek.

5.2 Governance and administrative arrangements

5.2.1 Overview of council governance arrangements

The catchment councils are responsible for the BHKC catchment area and its associated flood risk. On 1 August 2007 the catchment councils entered into a 2007 MoA which established the PSG. The PSG was intended to be a mechanism for the catchment councils to work collaboratively to manage the BHKC project, including the possible establishment of a regional subsidiary. The PSG comprises the CEOs, or their delegate, of the five catchment councils.

In July 2008 Mitcham Council resolved to withdraw from the establishment of a regional subsidiary but to continue working cooperatively with the other councils in stormwater management within the catchment. Mitcham also recorded that it had never endorsed or adopted the 2006 Master Plan.

On 22 December 2008 the catchment councils, except Mitcham, entered into a revised MoA (2008 MoA). Mitcham has not signed the 2008 MoA on the basis that the MoA supports the 2008 BHKC SMP, which Mitcham considers to be invalid as it was based on the 2006 Master Plan.

The PSG operates within the principles outlined in the 2008 MoA. While Mitcham has not signed the 2008 MoA, the CEO, Mitcham actively participates in the PSG's activities.

Through the 2008 MoA, the four catchment councils (excluding Mitcham) agreed to work collaboratively through the PSG to develop and maintain an effective stormwater management system within their own areas and collectively. The four catchment councils also agreed to consider establishing a regional subsidiary under section 43 of the LG Act. It was envisaged that the PSG would operate in the interim until a regional subsidiary was established. While the PSG has been working on a charter for the regional subsidiary since 2007, we have been advised that it will not be established until the draft 2016 BHKC SMP is approved and funding arrangements are resolved.

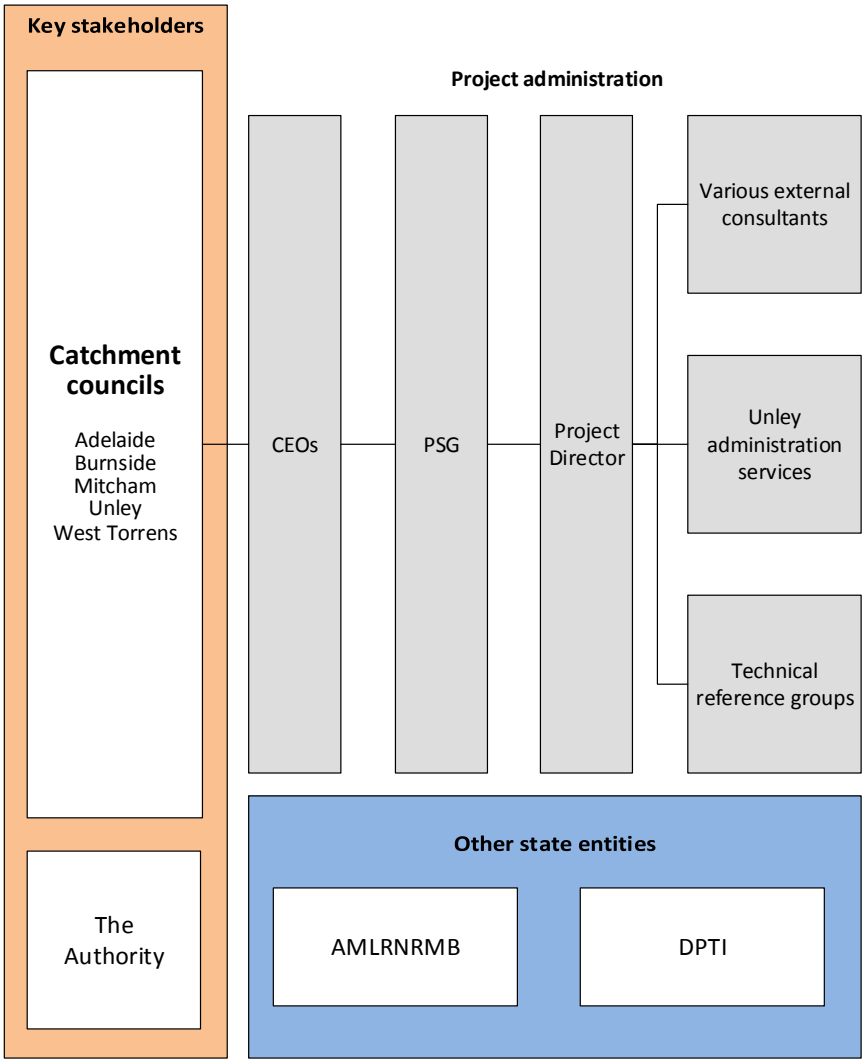
The 2008 MoA states that the four CEOs have delegated authority to make decisions on behalf of their respective councils and ensure the councils are kept informed of the PSG activities. The CEOs' delegated authority is within the scope of their individual council delegations. For example, all five CEOs have been delegated general powers, under section 36 of the LG Act, to do anything necessary, expedient or incidental to performing its functions or to achieving the objectives of the council.

The PSG's functions include providing support and promoting the 2008 BHKC SMP (and any subsequently approved amendment to the SMP) and the intent of the 2008 MoA. The key responsibilities of the PSG are outlined in section 5.2.3.

In line with the 2008 MoA, Unley provides the administration and coordination of the 2008 MoA's performance (eg preparation of documents, contracting third parties, keeping records, management of funds).

5.2.2 Project governance structure

The following diagram provides the governance structure for the BHKC project.



5.2.3 Roles, responsibilities and reporting arrangements

The following table summarises the roles, responsibilities and reporting arrangements of the parties providing a governance role over the BHKC project.

Party	Roles, responsibilities and reporting arrangements
The Authority	Approve the SMP for the BHKC catchment area Approve funding from the SMF Apply coercive powers if considered necessary to facilitate the preparation of an SMP Supported by DPTI for technical advice on SMPs

Party	Roles, responsibilities and reporting arrangements
Catchment councils	Endorse an SMP for the BHKC catchment area to submit to the Authority for approval Implement the approved BHKC SMP Manage ongoing infrastructure, once determined, of the BHKC catchment area
PSG	Prepare the SMP for the BHKC catchment area for council endorsement, including assessing stormwater flooding risks and potential capture and use of stormwater, engaging expert advice, managing the public consultation process, liaising with relevant authorities on stormwater management policies, priorities and funding support, applying for funding Ensure project documentation sets out in reasonable detail consultation procedures, community engagement arrangements, task responsibilities, timetables and budgets Facilitate the establishment of a regional subsidiary for the long-term delivery of the approved SMP Coordinate the planning, construction, operation and maintenance of stormwater infrastructure Inform the catchment councils on the PSG activities
Project Director	Manage the project and report to the PSG. The Project Director is engaged under a contract with Unley
Technical reference groups	Council staff with engineering expertise advise the PSG on technical matters in preparing the SMP
AMLRNRMB	Board staff attend PSG meetings to consult on the preparation of the SMP Provide an opinion to the Authority as to whether the SMP contains appropriate provisions

The BHKC project has also used various external consultants. Further details are provided in Appendix 4.

5.3 Project funding and expenditure to date

5.3.1 Funding arrangements

The estimated cost of implementing the 2012 BHKC SMP was $150 million (capital cost). A revised estimate has, however, since been provided in the draft 2016 BHKC SMP. This revision was to further take into consideration, for example, Part B works and the associated impact on Part A works, any additional cost to address the reduced channel capacity of the BHKC watercourse and future maintenance costs (once ongoing management and funding responsibilities were resolved). The draft 2016 BHKC SMP now provides an estimate of $140 million.

Before the recent State Government funding proposal,[10] the catchment councils' preferred funding model was based on each tier of government (Commonwealth, State and Local) contributing a one-third share of the total capital cost. The catchment councils agreed on the cost apportionments for the local government share of the total capital costs shown in the table below. The cost apportionment was primarily based on the benefits that each catchment council would receive from the proposed mitigations works. These were considered to be the benefits from the reduction in flood damages and potential flooding problems downstream caused by existing and future urban development.

Council	Percentage share of costs	2012 BHKC SMP (1/3 share model) $'000	Draft 2016 BHKC SMP (1/3 share model) $'000
Adelaide	3%	4 500	4 200
Burnside	4%	6 000	5 600
Mitcham	3%	4 500	4 200
Unley	7%	11 000	9 800
West Torrens	16%	24 000	22 400
Unfunded	67%	100 000	93 800

Until recently, given the lack of secured funding from the other government tiers, the catchment councils collectively provisioned up to 50% of the estimated project cost in their budgets and long-term financial plans. This left 50% of the estimated project cost awaiting a Commonwealth and/or State Government funding commitment.

The BHKC project has also incurred administration costs for the preparation of the SMP and project management, totalling about $6.4 million as at 31 May 2016. Administration costs are funded equally by the five catchment councils with up to 50% subsidised by Authority grants.

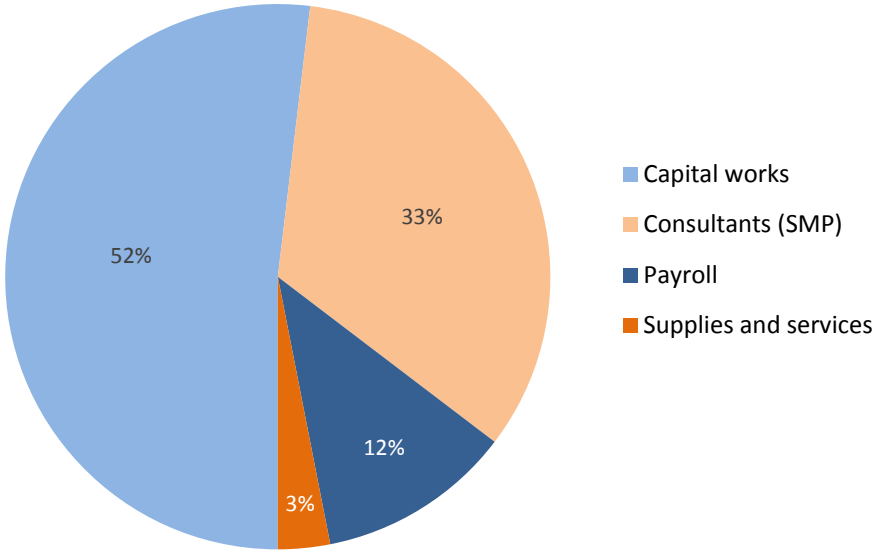
5.3.2 Project expenditure

Since 2008 the total project expenditure as at 31 May 2016 was $13.4 million. Of this, the Authority contributed $4.4 million ($3.4 million for capital works and $1 million towards preparing an SMP and other project related activities).

The total project expenditure excludes the costs that are fully funded by an individual council (eg Mitcham has commissioned various consultancy reviews) or incurred in preparing the 2008 BHKC SMP.

[10] Reference: http://www.premier.sa.gov.au/index.php/ian-hunters-news-releases/1152-don-t-bother viewed 22 November 2016.

The following chart shows the breakdown of the total project expenditure for the period July 2008 to May 2016.



Source: Data supplied by the Project Director, PSG. We have not audited this data.

The following table provides the total project expenditure since 2007-08.

	2015-16 $'000	2014-15 $'000	2013-14 $'000	2012-13 $'000	2011-12 $'000	2010-11 $'000	2009-10 $'000	2008-09 $'000	2007-08 $'000	Total $'000
Capital works	2	6 925	8	-	-	2	-	-	16	6 953
Consultants	495	983	870	639	593	409	297	187	9	4 482
Payroll	205	212	239	242	195	162	102	121	70	1 548
Supplies and services	25	87	61	36	35	29	30	47	62	412
Total	727	8 207	1 178	917	823	602	429	355	157	13 395

Source: Prepared from data supplied by the Project Director, PSG. We have not audited this data.

Significant project funds were spent in 2014-15 mainly due to capital works totalling $6.9 million (52% of total project expenditure). Another significant project cost related to engaging consultants, totalling $4.5 million (33% of total project expenditure) since 2007.

Capital works

Capital works of $6.9 million represents two subprojects of the 2008 and 2012 BHKC SMPs as follows.

Brown Hill Creek diversion culvert

The Brown Hill Creek channel at the Goodwood Junction was to be upgraded for stormwater flow capacity under the approved 2008 BHKC SMP.

In 2011-12 DPTI initiated the Goodwood Junction Rail Grade Separation Project[11] which involved structural works at the same location where Brown Hill Creek crosses the railway.

In November 2012 DPTI and the PSG agreed that DPTI would undertake the associated structural works for $5 million, which were completed in 2013. The PSG paid the total $5 million to DPTI in April 2015. Of this amount, the Authority contributed $2.5 million.

[11] The DPTI Goodwood Junction Rail Grade Separation Project is the $110 million surface alignment of the interstate Australian Rail Track Corporation railway line and the suburban Noarlunga Centre railway line at Goodwood Junction. This is a separate project funded by the State and Commonwealth Governments.

DPTI and the PSG have also agreed that DPTI retains ownership and control over the associated structural maintenance. On behalf of the PSG, Unley has operational maintenance responsibility of the culvert.

Ridge Park Reserve Detention System

In 2010 Unley received Commonwealth grant funding of $2.6 million under the Water for the Future initiative for a suite of projects, including establishing a managed aquifer recharge. The 2008 BHKC SMP proposed a detention dam in Ridge Park as a flood mitigation initiative with a plan to divert the captured water into the managed aquifer recharge for reuse.

On 26 February 2013 the Authority approved $1.4 million in grant funding for these works on a dollar for dollar matching basis from the five catchment councils. As at 31 May 2016, the Authority has paid approximately $900 000 to Unley in progressive claims.

In February 2013, Unley took over the responsibility to deliver, construct, maintain and control the structural works. The project was completed in July 2015.

Consultants

Since 2008 about $4.5 million has been spent on consultants to prepare the BHKC SMP. This was mainly spent on:

- $1.5 million on technical and design works for the Ridge Park and South Parklands detention system subprojects
- $670 000 on community consultation processes (approximately $310 000 for the Draft 2011 BHKC SMP and $360 000 for Part B)
- $460 000 on a peer review[12] of the 2008 BHKC SMP, identifying alternative solutions to the flood dam option and preparing the draft SMPs
- $200 000 for a study on the catchment watercourse and estimated cost of reinstating the flow capacities in response to the AMLRNRMB's concerns about the poor state of the creeks and stormwater channels. The study report was not finalised mainly due to the release of the revised rainfall data by the BOM
- $350 000 on updating the flood plain modelling for the revised rainfall data
- $284 000 on a peer review of the cost estimates and finalising the proposed options provided in Part B.

Most of the consultation expenditure was incurred to identify alternative flood mitigation solutions and update ageing technical data. Appendix 4 provides a list of key consultants and services provided for the BHKC project.

Payroll

Payroll expenditure of $1.6 million predominantly relates to a full-time Project Director engaged by the PSG since 1 July 2007.

[12] The PSG commissioned a peer review in responding to findings of a peer review of the 2008 BHKC SMP commissioned by Mitcham at a cost of about $50 000.

6 Project delivery status

The 2012 BHKC SMP sets out the proposed structural works (by subprojects). These were developed as a package of works that collectively achieve the flood management outcomes of the SMP. These outcomes will not be realised until the entire package of works is complete and in operation.

Similar to the 2006 Master Plan, the 2012 BHKC SMP stated that the proposed structural works (comprising Part A and B) would be completed over 10 years. The first year of build was 2012-13, with the construction works estimated to be completed by 2021-22. The draft 2016 BHKC SMP provides a revised completion time frame of 2024-25.

A detailed cost-benefit analysis showed that implementing the structural works in seven years provides a more favourable benefit-cost outcome. Given the constraints on council and government budgets, a 10-year build time frame was determined. This time frame limited expenditure to a maximum of about $20 million in any year.

The construction works for two subprojects of the approved 2012 BHKC SMP were completed by June 2015. The design works for other subprojects continue to be progressed. However, all further construction works were put on hold until the funding arrangements were resolved, along with other outstanding matters.

The 2012 BHKC SMP also highlighted an additional constraint in the timing of the project build program due to the outstanding issues with Upper Brown Hill Creek section of the catchment (ie Part B). The project build program is based on a specific order in which structural works need to be undertaken to ensure each stage of structural works does not result in the temporary transfer of the flood risk to another area. With delays in resolving Part B and other outstanding issues, the project is at risk of not meeting the 10-year time frame and therefore not realising the benefits of the flood mitigation outcomes.

The Authority issued a notice on 21 May 2015 to the catchment councils to prepare a revised SMP for the BHKC catchment by 30 September 2015. The revised SMP was required to address the entire BHKC catchment and focus on the issues left unresolved in the 2012 BHKC SMP.

Since February 2008, the catchment councils have continued to address the outstanding issues provided in the 2008 and 2012 BHKC SMPs, particularly resolving Part B works. The catchment councils, however, failed to meet the 30 September 2015 deadline. On 14 December 2015 the Authority issued a notice to vary the 21 May 2015 notice so that the catchment councils were to prepare the revised SMP for the BHKC catchment by 29 February 2016.

In preparing the revised BHKC SMP, the catchment councils were required to revise the estimated project costs and undertake a detailed cost-benefit analysis to support the economic viability of the project.

At the time of this Report, the catchment councils had submitted a revised BHKC SMP to the Authority in March 2016. The Authority had yet to approve this draft 2016 BHKC SMP.

7 Key project events

Appendix 3 provides a timeline of the key project events.

7.1 Stormwater management plan approved

The 2006 Master Plan was released on 15 December 2006, an initiative of the former PCWM Board (taken over by the AMLRNRMB), before the Authority issued the Guidelines. The catchment councils submitted the 2006 Master Plan to the Authority for approval as an SMP complying with the Guidelines, referred to as the 2008 BHKC SMP.

On 24 October 2007, the AMLRNRMB endorsed the 2008 BHKC SMP. The SMP was prepared with the objective of flood mitigation in the BHKC catchment area as was consistent with the prevailing purpose over the period of its preparation. In the course of developing the 2006 Master Plan, water policy began to change significantly with a strong focus on water security due to a prolonged period of drought. In endorsing the SMP, the AMLRNRMB resolved to strongly advise the Authority that further strategies needed to be considered and where possible incorporated into the SMP for the management of quality of runoff, effect on the coastal water (both terrestrial and marine) and opportunities for stormwater harvesting and reuse. This change in focus and purpose contributed to slowing the progress of the initial project activities.

The Authority approved the 2008 BHKC SMP on 19 February 2008, with a condition that the catchment councils incorporate, wherever practicable, stormwater reuse schemes together with improvement in water quality and biodiversity outcomes to the satisfaction of the Authority.

7.2 Stormwater Management Authority's powers are challenged

At its council meeting on 22 July 2008, Mitcham received a number of community deputations opposing the dams in Upper Brown Hill Creek proposed in the 2008 BHKC SMP. Mitcham resolved to withdraw from the establishment of a regional subsidiary. Despite this withdrawal Mitcham advised that it still wished to continue working cooperatively with the other catchment councils in stormwater management within the Brown Hill Creek catchment. Mitcham also recorded that it had never endorsed nor adopted the 2006 Master Plan. This meant that Mitcham did not accept the 2008 BHKC SMP given it was adopted from the 2006 Master Plan.

Mitcham then challenged the validity of the Authority's approval claiming that:

- the Authority acted beyond its powers by imposing a condition to its approval
- the SMP was not prepared by the council as Mitcham's CEO did not have the authority to approve an SMP.

We note that the Mitcham CEO signed off on the 2008 BHKC SMP along with other catchment councils' CEOs prior to its submission to the Authority for approval.

7.3 Stormwater Management Authority appoints a mediator

From June 2009 to April 2010, the Authority made several attempts to re-engage the catchment councils to work collaboratively to prepare a revised SMP.

On 20 October 2009, the Authority resolved to appoint an independent mediator to assist the catchment councils to initiate a negotiation process to resolve their differences and progress the BHKC project. The mediation failed to achieve the desired outcome.

7.4 Notice issued

On 20 April 2010, the Authority resolved to meet with the CEOs and Mayors of the catchment councils to seek an indication of the time frame that was deemed reasonable to prepare a BHKC SMP and carry out the currently approved projects. Of the five catchment councils, all except Mitcham agreed that 90 days was a reasonable time to submit a revised BHKC SMP for approval.

On 20 May 2010 the Authority issued a notice to the catchment councils to prepare a revised SMP for the BHKC catchment within 90 days (due by 20 August 2010). The catchment councils failed to comply with the notice.

7.5 Order issued

On 9 August 2010 the CEOs of four of the five catchment councils and the Project Director attended an Authority meeting to discuss the funding application and the progress of the BHKC SMP. The catchment councils had underestimated the complexities of the project but had achieved agreement on the new scope of works, including community consultation, and had agreed to the timing of the project.

On 26 August 2010 the Authority issued an order to the catchment councils to complete the BHKC SMP by 30 April 2011. The catchment councils failed to comply with the order.

7.6 Second order issued

On 14 December 2010 the Project Director advised the Authority that the deadline for the order issued on 20 August 2010 would not be met. This was mainly due to delays in resolving anomalies in floodplain mapping, which involved a higher degree of rigour than originally planned.

On 13 May 2011 the Authority issued a second order to the catchment councils to complete the BHKC SMP by 2 March 2012 (or a later date as may be agreed by the Authority, but in any event no later than 30 April 2012). The order contained a number of actions to be taken by the catchment councils by specific dates. The catchment councils also failed to comply with the second order.

7.7 Draft 2011 Brown Hill and Keswick Creeks Stormwater Management Plan

In late 2011, the Draft 2011 BHKC SMP, which still included a flood control dam in the Brownhill Creek Recreation Park, was subject to community consultation in line with a timetable agreed at the time of the second order. Significant community concerns about the proposed dam were raised in the consultation process.

During the formal public consultation process, Mitcham released the Enhancement report. This report provided potential alternative options to the flood control dam. The PSG was obliged to perform further investigations of these options.

7.8 Stormwater Management Authority grants an extension to the second order

On 9 March 2012 the Project Director (on behalf of the catchment councils) notified the Authority that the catchment councils had not approved the final version of the SMP by 24 February 2012, a milestone required by the second order. While significant progress had been made in investigating alternative options to a flood control dam, the PSG anticipated that investigations and community concerns on an acceptable SMP outcome would not be resolved quickly.

On 4 April 2012 the Authority resolved to grant an extension of the second order to 30 April 2012 and that the catchment councils should:

- prepare a timeline and strategy to complete a valid SMP
- advise whether in their opinion they are able to commence construction of works on any of the agreed project prior to the completion of the plan, subject to council approval.

The PSG and the Mayors were to attend the Authority meeting on 8 May 2012 to address the Authority.

On 30 April 2012, the PSG presented the Part A and B strategy to the Authority. The PSG proposed that the catchment councils recommend to the Authority a 2012 BHKC SMP comprising the following:

- flood mitigation works for Part A of the catchment subject to effective flood mitigation performance and cost controls
- a process for determining flood mitigation works for Part B of the catchment
- other flood mitigation measures
- other information required to satisfy the Guidelines.

The catchment councils, on approval of the 2012 BHKC SMP, were then required to agree to the full scope of flood mitigation works for the catchment and incorporate them in the revised BHKC SMP.

On 2 May 2012 the Authority agreed to endorse the PSG's proposed strategy.

7.9 2012 Brown Hill and Keswick Creeks Stormwater Management Plan approved

In May 2012 the catchment councils endorsed a commitment to undertake further investigations over a 12 month period from the date of gazettal of the 2012 BHKC SMP to resolve the works for Upper Brown Hill Creek under a Part B works process. Central to the Part A and B strategy was a preference to pursue a feasible and community acceptable 'no dam' solution of acceptable cost.

The catchment councils submitted the revised SMP (2012 BHKC SMP) to the Authority for approval on 31 August 2012. The Authority approved the 2012 BHKC SMP on 26 February 2013.

7.10 New rainfall data released

On 26 July 2013 the BOM released revised rainfall data for Australia,[13] including for the Upper Brown Hill Creek region, which reported a decrease in rainfall from the previous study. This changed the hydrology dynamics in the region impacting the flood plain modelling data applied for the 2012 BHKC SMP (a reduction of up to 28% in the peak flows of the watercourse).

The revised rainfall data provided an opportunity to re-evaluate previously identified options deemed to be unfeasible in preparing the 2006 Master Plan. As a result, Option D now became an alternative option to the flood control dam and culverts. By October 2015, the catchment councils approved Option D.

7.11 New notice issued

The Authority issued a notice on 19 May 2015 requiring the catchment councils to prepare a revised SMP for the BHKC catchment by 30 September 2015. Further, the revised SMP was to address the entire BHKC catchment and focus on the issues left unresolved in the 2012 BHKC SMP. The catchment councils failed to meet the 30 September 2015 deadline.

On 14 December 2015 the Authority issued a notice to vary the 21 May 2015 notice extending the deadline for the revised BHKC SMP to 29 February 2016. The catchment councils failed to comply with the revised deadline.

7.12 Councils approve draft 2016 Brown Hill and Keswick Creeks Stormwater Management Plan

A revised BHKC SMP, the draft 2016 BHKC SMP, was submitted to the Authority on 18 March 2016. At the time of submitting this draft for approval, the State and Commonwealth Governments had not provided any financial commitment to fund the BHKC project.

[13] Reference: Australian Rainfall and Runoff project (see http://www.bom.gov.au/water/designRainfalls/ifd/), viewed 9 November 2016.

8 Project governance

8.1 Background

Project governance is key to effective project implementation and achieving timely outcomes. The importance of project governance is heightened for cross-boundary projects like the BHKC project.

To form an opinion on whether the project governance arrangements supported the project being managed efficiently and cost-effectively we looked at whether the:

- governance arrangements were clearly established and adequate to manage the BHKC project
- roles and responsibilities were clearly defined
- accountability and authority were clear and adequate for the delegate to fulfil their responsibilities
- project's objectives and priorities had been clearly defined and agreed.

Our examination of project governance noted the following issues and challenges.

8.2 Inadequacy of governance arrangements for complex and controversial projects

Audit comment

Despite collaboration between the catchment councils, the governance model adopted for the significant and complex cross-boundary BHKC project did not facilitate timely outcomes to reduce the flood risk. The outcomes of the public consultation in 2011, which included the strongly opposed dams and presented councils with conflicting priorities, was a significant project risk. In our view, it is a significant project risk at the whole-of-catchment level that cannot be easily managed by five councils, either individually or collectively, to achieve timely outcomes.

Under these circumstances, the legislative framework for stormwater management enables the Authority to exercise its coercive powers where catchment councils are unable to resolve planning or implementation matters to ensure timely outcomes. While the Authority did initiate using its coercive powers, considered last resort powers at the time they were established, it did not exercise its full coercive powers. That is, the Authority did not take the action required by an order after the catchment councils failed to comply. The Authority was reluctant to take the necessary action for the following reasons:

- to maintain progress through collaboration across the relevant entities
- perceived deficiencies in legislation which at the time highlighted ambiguity in the Authority's powers
- limited resource capability.

Refer to section 12.2 for further commentary.

After nine years, while the catchment councils have achieved a significant milestone by agreeing and submitting a revised BHKC SMP, it has yet to be approved by the Authority, funding arrangements are still being finalised and infrastructure to reduce the flood risk will not be implemented for potentially another 10 to 15 years. In the interim, the catchment community continues to be exposed to high flood risk in the BHKC catchment, cited by the Authority as the highest risk urban catchment in South Australia.

Finding

The governance arrangements applying to the BHKC project seek councils to collaborate and agree on an SMP to submit to the Authority for approval. It has taken some nine years since the 2006 Master Plan was released for the catchment councils to agree on an SMP for the whole of the BHKC catchment that is accepted by a majority of the respective communities (the draft 2016 BHKC SMP). It has yet to be approved by the Authority. Funding arrangements are yet to be finalised.

Flood mitigation works to reduce the flood risk are proposed to be constructed over a 10-year period subject to funding being available. In the interim, the catchment community continues to be exposed to high flood risk until the works are substantially or completely implemented.

In our view, the governance model for such a complex and significant cross-boundary project, inherently risks not achieving prompt or timely outcomes where an aspect of the project is controversial and has significant community opposition. For this project, a single authority approach was not tested to see if the project could have reached the draft 2016 BHKC SMP point successfully, but more promptly. Notably, a single authority approach would have faced the same technical and community acceptance or opposition issues but with a different governance framework responsible to the whole catchment community.

We found that the catchment councils, through the PSG, worked collaboratively to progress the project. Significant project milestones were achieved and eventually the draft 2016 BHKC SMP was submitted to the Authority.

We also found that a primary challenge was obtaining agreement by the five councils on key project matters as councils' responsibility to their individual communities take priority over the interests of the catchment area.

A significant challenge for the PSG was to identify flood mitigation solutions that met the project objectives and addressed the individual requirements and priorities of the five catchment councils. A key matter was community opposition to preferred options including a dam in the upper reaches of Brown Hill Creek.

The 2006 Master plan, 2008 BHKC SMP, Draft 2011 BHKC SMP and 2012 BHKC SMP included flood control dams in Upper Brown Hill Creek as a component of the recommended flood mitigation strategies. The Mitcham community strongly opposed the flood control dams in the 2008 BHKC SMP. Strong opposition was maintained during the 2011 and 2015 public consultation processes.

In July 2008, Mitcham responded to its community's concerns by withdrawing from the 2007 MoA and support of the 2008 BHKC SMP. This temporarily stopped the BHKC project. On 22 September 2009 Mitcham resolved to engage an external consultant to review the hydrology model supporting the 2008 BHKC SMP, including a focus on whether there was capacity to significantly reduce or delete the requirement for detention dams. The outcome of

this review did not result in a change to the 2008 BHKC SMP or the catchment councils reaching agreement on the flood mitigation solutions for Upper Brown Hill Creek. Appendix 3 gives further details of the events in the period July 2008 to May 2010.

After attempts to re-engage the catchment councils, on 20 May 2010 the Authority initiated coercive actions and issued a notice to the catchment councils to prepare an SMP for the BHKC catchment within 90 days. Since 2010, the catchment councils have worked collaboratively towards an agreed flood mitigation solution(s).

Due to the ongoing community opposition, Mitcham continued to investigate alternative solutions to the flood control dam. Where agreement could not be reached, more time and costs were incurred to further explore alternative options and then put to public consultation.

The catchment councils did not reach agreement on the flood mitigation strategies for Upper Brown Hill Creek until late 2015. Most importantly, agreement was reached after revised rainfall data, available in July 2013, resulted in alternative options to the flood control dam becoming feasible and preferred. As a result, the creek capacity upgrade option (Option D) became the preferred option providing cost effective flood mitigation and achieving a feasible and majority community accepted no dam solution. All five catchment councils agreed on the option.

In individually carrying the decision to accept the creek capacity upgrade option, four of the five councils also carried that, in the event that all five catchment councils were not able to agree on the option, they were prepared to request the Authority to use its powers to finalise and approve the SMP for the BHKC Catchment.

8.3 Project authority needed to be clearly defined

Recommendations

For a significant and complex project like the BHKC project, the councils should clearly articulate any specific limitations of the delegated authority provided to the CEO. In delegating authority, the extent of authority should be appropriate for the delegate to carry out the project functions/activities efficiently. Councils should establish clear reporting protocols.

Where a council determines to retain authority to make specific decisions about the project, these key decision points should be identified as early as possible and reflected in a project plan.

Delegated authorities should be reviewed regularly to confirm that they remain appropriate and to take into account changing circumstances throughout the project life.

Finding

The CEOs were delegated general powers of the council within the limitations provided by the LG Act. In practice, the CEO will take decisions they deem significant to their respective councils for resolution.

For the BHKC project, we found instances where the council made an alternative decision on a matter subsequent to a decision made by the CEO. Such practice risks inefficiencies in project management and achieving timely outcomes. In some circumstances this could give

rise to contractual consequences depending on the nature and extent of action taken in implementing the CEO's decision. The following are examples of where this practice led to delays in progressing the project.

Example 1

- All five CEOs approved the draft 2008 BHKC SMP on behalf of their respective councils before it was submitted to the Authority for approval. Due to community concerns, Mitcham challenged the legal validity of the approved 2008 BHKC SMP on the basis that the CEO did not have the authority to approve the SMP. Mitcham claimed that the 2008 BHKC SMP was not binding on its council. At the time, the CEO was acting on an understanding that the approved authority to accept and submit the SMP was provided in the 2007 MoA.

- Mitcham withdrew its support for the 2008 BHKC SMP and 2008 MoA in July 2008. Mitcham re-engaged in PSG activities in May 2010. Refer to Appendix 3 for the events occurring between July 2008 and May 2010.

Example 2

- All five CEOs approved engaging consultants to perform a feasibility and engineering study for Option 3A (as provided in the approved 2012 BHKC SMP). The five CEOs also approved engaging a consultant to undertake public consultation on Option 3A. Due to community concerns,[14] Unley passed a resolution to abandon Option 3A while preparing for the formal public consultation process (prior to seeking formal community feedback). As a consequence, costs were incurred by the catchment councils for no outcome.

8.4 Investigations undertaken during public consultation process

Recommendations

As part of project planning, the catchment councils should determine how their individual priorities will be addressed against the priorities of the BHKC project objectives and outcomes.

The catchment councils should agree and fully commit to the proposed solutions in the SMP before a formal public consultation process.

Finding

In early 2011 the five catchment councils agreed to the timing and process to submit the revised BHKC SMP to the Authority by early March 2012. This agreed process included the PSG:

- finalising investigations of the validity of the 2006 Master Plan proposal
- identifying and reviewing other options to determine a preferred proposal
- undertaking an economic peer review.

[14] Prior to the formal consultation process, Unley mailed out information to the relevant part of its community in mid-2013 about the three options (including Option 3A) of the 2012 BHKC SMP for Upper Brown Hill Creek to raise awareness within its community prior to the formal public consultation period.

As part of this process, on 31 August 2011 the Draft 2011 BHKC SMP was provided to the catchment councils for review. This plan included a flood control dam component, as investigations at that time had determined no alternative solution agreed to by all five catchment councils.

Although Mitcham had agreed to the timing and process, on 27 September 2011 Mitcham endorsed the engagement of engineering consultants to provide additional technical advice. The aim was to inform Mitcham's response to the Draft 2011 BHKC SMP and to determine whether there was merit in pursuing the proposal, provide advice of alternative options to the flood control dam and respond to local community concerns.

The other catchment councils respected Mitcham's statutory rights and agreed for Mitcham to undertake the additional study to identify alternative options to the flood control dam. The PSG agreed that Mitcham would fund the study with an outcome by mid-October 2011. The PSG did not intend to incorporate the outcome in the draft SMP or other material for formal public consultation but it was to be included in the public consultation report.

All five councils resolved to go ahead with the agreed public consultation on the endorsed Draft 2011 BHKC SMP.

On 17 November 2011, Mitcham's Enhancement report was made publicly available. This report provided potential alternative options to the flood control dam, although further investigation was required to confirm the economic feasibility of these alternative options.

We acknowledge Mitcham had local community opposition to a flood control dam and the obligation to take necessary action in the best interest of its community. In our view, the timing of the investigation was inappropriate when compared to the agreed PSG position recorded above. This was given the state of events and that Mitcham and the PSG had previously undertaken detailed investigations, including two peer reviews, to support the Draft 2011 BHKC SMP.

In summary, it was clear that in engaging the consultant to identify alternate options to the flood control dam, Mitcham was not going to accept a flood control dam solution until it believed that alternative 'no dams' options were not feasible or acceptable to all five councils. Despite its proposed additional work, Mitcham several weeks later resolved to release the Draft 2011 BHKC SMP for public consultation.

The release of the investigation results had a significant impact on the public consultation outcome. The investigation results were based on a preliminary assessment that required further detailed analysis to determine the economic feasibility of the alternative options. These options were not subject to the same rigorous analysis as was applied for the proposed solutions in the Draft 2011 BHKC SMP. The PSG was obliged to perform further investigations which later (about 15 months after) determined that Mitcham's alternative options were not economically feasible or acceptable to all five councils. This contributed to further delays in preparing a revised BHKC SMP.

We have acknowledged that the interests of council communities take priority over the interests of the catchment community. However, in our view, the timing of these actions were inappropriate as they undermined the:

- agreed and council endorsed public consultation process

- intent of the catchment councils to work collaboratively
- commitment to the agreed timing and process to finalise the BHKC SMP by early March 2012 by increasing the risk this date would not be met.

The actions also indicate that despite the time elapsed since the approval of the 2008 BHKC SMP, the project and SMP governance arrangements instituted had failed to result in the catchment councils agreeing to a draft SMP before this formal public consultation process.

8.5 Breach of agreed public consultation principles – inconsistent and inappropriate messages

Recommendations

Before public consultation, the catchment councils should agree and commit to a proposed solution.

All the catchment councils should provide clear and consistent messages to the catchment community during any future public consultation process.

Finding

Two public consultation principles endorsed by the catchment councils were that:

- the consultation process is undertaken at the catchment scale with common messages
- material and processes to support consultation were definitive, controlled and approved.

To implement these principles, the five catchment councils agreed on the form and content of materials that were to be distributed to the public (eg SMP summary, brochures, fact sheets and feedback forms). The objective was to obtain feedback from the public on the proposed stormwater management works in the Draft 2011 BHKC SMP on a catchment basis.

As noted, during the public consultation process Mitcham publicly released the Enhancement report. Mitcham released this report in the knowledge that:

- the CEO, Unley expressed that the options presented in the report may not gain the support of its council and would be subject to a separate public consultation process
- the options required further detailed investigation to support their feasibility (it was later determined that the options were not as economically feasible as the flood control dam solution)
- the options were not consistent with the proposed solutions in the Draft 2011 BHKC SMP which all five catchment councils, including Mitcham, had endorsed for public consultation.

The Enhancement report had a significant impact on the outcome of the public consultation process. A key outcome reflected in the public consultation report was a strong opposition to any dam on Brown Hill Creek with a view that alternative infrastructure solutions are available.

The authorised Draft 2011 BHKC SMP material for public consultation did not refer to alternative solutions. Only the Enhancement report presented alternative options.

The release of inconsistent and inappropriate messages potentially:

- undermined the public consultation process
- undermined the decision of the catchment councils to release a draft plan for consultation
- misinformed the community that alternative solutions were available at that time.

8.6 Inadequate documentation of supporting roles and responsibilities

Recommendations

All project committee/groups should be supported by current and relevant MoA/terms of reference that provide a clear understanding of its role, responsibility and authority. This includes the committee/steering group meeting procedures, recordkeeping and project reporting requirements.

Further, the MoA should provide for a formal dispute resolution mechanism to seek to deal with differences efficiently and cost-effectively.

Finding

For the BHKC project, where there are five individual entities working collaboratively, it is essential that the roles and responsibilities of each entity and various groups/committees are clearly defined, documented and agreed throughout the project life.

A formalised arrangement (irrespective of its legal status) contributes to effective project governance and efficient project management where it:

- demonstrates commitment to the project. Signing an agreement provides clear evidence of an entity's intention to carry out the agreed functions specified in the agreement
- promotes effective collaboration by the councils. It is important the agreement provides a formal dispute resolution mechanism to seek to deal with differences efficiently and cost-effectively
- provides a formal record of the agreed project objectives, priorities, governance arrangements, roles and responsibilities
- establishes a level of control over the project activities
- enhances transparency and accountability
- provides better and timely outcomes.

The arrangements should be regularly reviewed to ensure they remain relevant and efficient through the various stages of the project. Our examination identified inadequate documentation supporting the roles and responsibilities of the PSG and supporting groups.

Project Steering Group

The 2008 MoA establishes the PSG and outlines its roles and responsibilities in progressing the BHKC project objectives. This includes to support and promote the 2008 BHKC SMP. While the 2008 MoA may not be legally binding on the catchment councils, it provides the intent of the catchment councils' commitment and how they will work collaboratively to achieve the project objectives. The MoA provides that the catchment councils are bound by its terms, which provides a reasonable expectation by the community that it will be complied with.

The 2008 MoA does not adequately reflect the current conditions and requirements of the PSG.

From December 2008 to April 2010 the catchment councils could not reach unanimous agreement on the amendments to the MoA to reflect Mitcham's withdrawal from the 2008 BHKC SMP. As a consequence Mitcham did not sign the 2008 MoA. Despite this, in May 2010 Mitcham re-engaged with in the PSG's activities to address the notice and orders issued by the Authority.

In January 2014 the PSG questioned the status and validity of the 2008 MoA as the catchment councils' performance had lapsed for some conditions and requirements. At this time, the PSG did not review the 2008 MoA to reflect the current conditions and requirements.

Technical reference groups

In line with the 2008 MoA, the PSG formed various technical reference groups to assist in the preparation of the SMP. We found that there were no terms of reference for these groups.

9 Project planning

9.1 Background

Over the period we examined, 2008 to 2015, the key project outcome was to prepare a majority community accepted BHKC SMP. This involved a wide range of project activities, engaging with all stakeholders and managing significant project risks. Project planning is key to effective project implementation and management and achieving timely delivery of project outcomes.

To form an opinion on whether the project planning supported the project being managed efficiently and cost-effectively, we looked at whether the following were evident from project commencement:

- the funding arrangements had been clearly defined and agreed
- a project plan was maintained. The project plan was consistent with the agreed project objectives and roles and responsibilities. Project performance was then monitored and reported against the project plan
- a project budget was maintained. The project budget was consistent with the agreed funding arrangements and project costs. Financial performance was then monitored and reported against the project budget
- a project risk management plan was maintained. Risk management process identified weaknesses in and opportunities for achieving project objectives and they were effectively managed throughout the project life cycle.

Our examination on project planning noted the following issues and challenges.

9.2 Lack of documented assessment and management of risks

Recommendations

While the PSG considers issues and associated risks in undertaking project activities, it should formalise the risk assessment process and complete a risk management plan for the BHKC project. The risk management plan should outline the risk and action taken to mitigate the risk, and assign responsibility to a relevant officer for its management.

The risk assessment should be undertaken at the start of a project and progressively updated as new risks are identified throughout the project's life cycle.

The effectiveness of the risk treatments should be regularly reviewed to ensure they continue to mitigate the risk. Such a process will enable monitoring and reporting of project risks to the PSG and catchment councils.

In establishing project reporting requirements, the PSG should determine the nature and extent of regular reporting on project risks to the PSG and the catchment councils.

Finding

The importance of risk management is reflected in section 48 of the LG Act. This section requires a council to maintain prudential management policies, practices and procedures for

the assessment of projects. The purpose is to ensure that the council identifies and manages risks associated with a project and makes informed decisions. This includes providing regular reports to the council on project risks and action taken to manage, reduce or eliminate those risks.

Our examination noted that a risk management plan has not been prepared for the BHKC project since project inception in 2008.

In June 2013, a consultant engaged by the PSG prepared a risk assessment report. Adelaide staff then assisted the PSG to develop a risk register based on the consultant's report. We noted, however, that the risk register remains incomplete, with no progress since November 2013. In our view, this presents inefficiency and cost-ineffectiveness where costs were incurred and staff resources employed with no outcome. The use of resources did not result in a sufficient documented risk assessment and management plan for the BHKC project. It is also our view that this work was not undertaken at the right time. To obtain optimum value, the risk assessment should have been undertaken and documented at the commencement of the project. This would enable better management and monitoring of project risks leading to efficiencies in project management.

Since 2008, the PSG has faced a range and significant number of issues, including:

- continuous opposition to dams as a plan component
- legal challenges from community groups
- significant influence of lobby groups
- conflicting priorities of the catchment councils
- outdated financial and technical data
- reaching a consensus across the catchment councils.

We note instances where catchment councils were updated on the project risks. For example, West Torrens was provided with a project overview at its planning day on 28 February 2015, which included a list of project risks. However, the information did not provide details of how the risks would be addressed and managed.

Without a complete and updated risk management plan, risks may not be identified, effectively managed and monitored on a timely basis and insufficient risk treatments may be applied. This could lead to risks being realised and not achieving timely project outcomes.

9.3 A comprehensive project plan needed for the Brown Hill and Keswick Creeks Stormwater Management project

Recommendation

For significant and complex projects, a comprehensive project plan should be prepared and endorsed at the commencement of the project and updated regularly. In line with the project plan, processes should be implemented and monitored to deliver agreed project objectives and timely outcomes.

Finding

Effective project management includes developing a project plan detailing how the project is going to be delivered to achieve the agreed project objectives and timely outcomes. The level of detail provided in a project plan should be commensurate with the project's significance and complexity.

We found that various plans were prepared and monitored for specific project activities and time frames, including:

- preparing a revised SMP to meet the time frames of the Authority's order
- a timing and process plan sought by the Authority to support the action to prepare the Draft 2011 BHKC SMP within the extended time frames
- work plans (which focused on tasks to be completed over the following two to four weeks) for November 2012 to June 2014 to support the Part B process
- public consultation plans.

There was not, however, an overarching comprehensive project plan. In our view, a significant and complex project like the BHKC project warrants a comprehensive project plan that addresses, for example:

- the life of the project. A project plan should be developed at the commencement of the project and detail how and when each project stage is going to be delivered. The project plan would be revised, when required, throughout the project life
- the governance arrangements, detailing the role, responsibilities (including authority), assigning accountability and reporting requirements of the governing bodies and administrative support. That is, council, PSG, various technical groups formed, Project Director, Unley administration. These would be supported by relevant documentation such as terms of reference and contract arrangements
- project objectives, outcomes and key deliverables
- communication and reporting protocols with various stakeholders. This includes determining the frequency, nature and format of information to be provided and assigning reporting responsibilities. This should consider the protocols in responding to community feedback received outside an approved public consultation process
- public consultation policy and procedures supported by a public consultation plan
- key milestones and time frames and responsibility supported by various detailed action plans for the PSG and technical groups formed. This should include identifying the decision/approval points of specific delegates. That is, identifying decisions to be made by the CEO and those that need to be taken to council
- project budget and funding arrangements supported by detailed project budgets
- project risk assessment supported by a risk management plan.

While most of the above areas were provided in various documents, for a significant and complex project these areas should, in our opinion, be consolidated into one overarching document and referenced to various supporting documents. A comprehensive project plan would provide any key stakeholder a clear understanding and confidence in the way the project is being governed and managed and contribute to efficient project management.

10 Project monitoring and reporting

10.1 Background

Effective project governance and management includes having clearly documented arrangements for monitoring and reporting projects. Proper monitoring and reporting of a project contributes to effective control, keeps decision-makers informed and improves project success and meeting its objectives. These arrangements would be documented, for example, in a project plan.

To form an opinion on whether the project monitoring and reporting arrangements supported the project being managed efficiently and cost-effectively we looked at whether there was:

- regular and adequate reporting to the PSG and catchment councils on project and financial performance
- adequate record and financial management.

Our examination on project monitoring and reporting noted the following issues and challenges.

10.2 Improvements needed to monitor project performance

Recommendation

In developing the reporting requirements, the PSG should establish a standard report format that provides adequate and regular information to effectively monitor all aspects of the BHKC project.

Finding

We found that improvements could be made in the information provided to the PSG to monitor the project progress and performance. For example:

- a consolidated financial report on actual expenditure for the current year and total project to date
- budget and actual project expenditure variance analysis
- regular project risk reporting against a risk assessment and management plan
- regular progress reporting against a project plan.

In our view, such information contributes to efficient project management in addressing agreed priorities, meeting time frames, achieving intended outcomes, managing project risks and escalating project costs.

10.3 Lack of documented analysis of consultancy reviews

Recommendations

The PSG should document discussions on key consultancy reviews and outcomes in meeting minutes. Such documentation should provide a clear understanding of the rationale for engaging the consultant, tabling of consultancy reports, record of discussions on the outcome of the consultancy and implications for the BHKC project.

All consultancy engagements should be supported by signed contractual agreements that evidence all the agreed terms and conditions.

The PSG should receive regular reports from the various technical reference groups on their activities, including any recommendations made regarding consultancy review outcomes.

Finding

A number of consultants were engaged to help prepare the 2012 BHKC SMP. The consultants' reports were fundamental to preparing the SMP and the recommendations made to the catchment councils.

We found the PSG meeting minutes inadequately documented these consultancy reviews and not all engagements were supported by signed contractual agreements. Minutes did not record:

- the purpose of engaging a consultant
- the tabling of draft and final consultancy reports
- the outcomes of the consultancy reports, including concerns, requests for further changes and the rationale for adopting or not adopting the consultant's advice, and implications on the BHKC project
- the tabling of reports of the relevant technical reference groups involved in managing a consultant's review and outcome
- an understanding of the significant variations between revisions in a consultant's report or consultancy reviews.

An inadequately documented management trail of consultancy reviews increases the risk that:

- there is no clear and common understanding of the scope and purpose of the consultancy prior to the consultant's engagement. This leads to increased risk that the terms and conditions of the consultant's engagement do not reflect the agreed understanding
- variances between revisions of consultancy reports are not clearly understood or justified
- incorrect decisions may be made and/or project success may not be fully achieved. In particular, where expert consultants' advice is not adopted and the rationale to support the subsequent decision made is not clearly documented
- without formal contractual agreements, there is an increased risk the terms and conditions of the arrangement are not clear in the event of dispute.

11 Compliance with legislative requirements

11.1 Background

Successful project management delivers the intended outcomes while ensuring compliance with relevant legislative requirements. For the BHKC project, a key legislative requirement was that an SMP must comply with the Guidelines.

To form an opinion on whether the 2012 BHKC SMP complied with the legislative requirements we looked at whether the:

- SMP addressed the key elements and components of the Guidelines
- Authority had received advice from the AMLRNRMB
- Authority had adequately documented the assessment of the SMP.

Our examination on the compliance with legislative requirements noted the following issues and challenges.

11.2 2012 Brown Hill and Keswick Creeks Stormwater Management Plan did not comply with guidelines

Recommendations

In accordance with its legislative responsibilities, the Authority should only approve SMPs that comply with the Guidelines.

Prior to approval, the Authority should ensure that appropriate and timely action has been taken to address known issues. Ideally, all known issues should be addressed prior to approving an SMP. The Authority should assess the significance of all unresolved issues and the impact on achieving the overall SMP objectives and fulfilling its legislative role and responsibilities.

Finding

The Authority's assessment of an SMP must determine whether the SMP complies with the Guidelines and consider the relevant regional NRMB(s) advice.

The Authority received various advice and information which provided sufficient evidence that the 2012 BHKC SMP did not comply with all aspects of the Guidelines.

We consider that the newly appointed Board (appointed December 2012) did not give adequate time and due diligence to assess a project of such significance in terms of total estimated cost, risks, works program and unresolved issues.

We acknowledge that this Board was placed in a difficult position because the previous Board had agreed to the Part A and B strategy. Further, the Authority's objective was to work with the catchment councils to progress the BHKC project in a timely manner. Notwithstanding this, an SMP submitted for approval must comply with the Guidelines.

The fact that the Authority considered exercising its coercive powers to issue a notice to the catchment councils to deliver a revised BHKC SMP at the same time as approving the 2012 BHKC SMP raises the question of whether it was a complying SMP.

The Guidelines define that the purpose of SMPs is to ensure that stormwater management is addressed on a total catchment basis. The SMP should provide complete and adequate information in order to develop budgets and allocate support funding.

The 2012 BHKC SMP provided various statements that clearly indicated that it was incomplete and did not comply with the Guidelines. In our view the SMP was non-complying and incomplete for the following key reasons:

- ***Flood risk not addressed for total BHKC catchment area*** – Part B works had not been determined and were to be incorporated into a revised BHKC SMP. Once determined, the impact on Part A works would need to be finalised.

- ***Estimated project costs were incomplete*** – Part B's estimated costs of design and construction were not at a level of detail consistent with Part A works. They had to be determined along with other information to satisfy the Guidelines, including the additional cost to remediate the watercourse, due to deterioration and poor maintenance over the last 40 years, had not been included; future maintenance costs; interest on current and future borrowings.

- ***Unresolved significant issues*** – these included determining water course maintenance responsibilities; governance and funding arrangements for construction works; asset ownership; ongoing management of infrastructure; maintenance; environmental impact on terrain and receiving waters in the Gulf St Vincent; and finance responsibilities.

The AMLRNRMB advised the Authority that the Part B outcomes were essential to having an agreed package of works that are critical to the integrity of the overall SMP. Further it advised that just implementing Part A would mean the SMP is not compliant with the Guidelines and leaves the catchment community at significant risk. The AMLRNRMB's advice indicated key deficiencies in the information supporting Part B works. Specifically:

- the Part A and B strategy is risky in that Part B may be too costly to deliver or too difficult for the councils to resolve given past community and council views, potentially leaving significant areas highly vulnerable to floods

- the 2012 BHKC SMP lacked a clear commitment from the catchment councils to implement the Part B options outlined. The AMLRNRMB recommended the Authority obtain commitment from the catchment councils to implement Part B. To achieve a timely outcome it was critical that all catchment councils committed to an option[15]

- there were significant risks in the final feasibility and costs of the Part B options, which would not be known for some time and could jeopardise the overall budget and integrity of the SMP.

[15] The catchment councils had not committed to any option but had given a commitment to undertake further investigation to resolve the works for Upper Brown Hill Creek under the Part B works process. The outcome would be incorporated into a revised SMP.

In discussions with the catchment councils about this issue, we were advised that the costs used to formulate the 2012 BHKC SMP were considered to be accurate at the time. This was because the intended approach was to only use preliminary costs (including a contingency allowance) based on the concept design, with detailed designs and associated costings conducted if/when the concept was approved by the Authority. Our view, however, is that relying on these preliminary costs, some of which have since changed, created an increased risk profile in the approval of the 2012 BHKC SMP.

The Authority approved the 2012 BHKC SMP with an expectation that a revised SMP would be delivered with all outstanding issues resolved and agreed on by all catchment councils. The Authority was concerned that if it did not approve the plan, there was a risk that the catchment councils would not progress to the next stage of the plan's development.

It is not evident that approving the 2012 BHKC SMP has contributed to achieving a more timely outcome. A revised BHKC SMP was submitted for approval in March 2016, two years after the initial deadline. Some outstanding issues are still unresolved and no significant progress has been made in the implementation of Part A works. Refer to section 5.3.2.1 for the status of the capital works.

A non-complying SMP increases the risk of achieving project objectives and timely outcomes. It creates inefficiencies and cost-ineffectiveness where it causes:

- duplication of processes, such as public consultation and preparation of revised SMPs
- delays in progressing the build work program
- delays in resolving and securing funding commitments.

11.3 Inadequate documentation of the Stormwater Management Authority's assessment of the 2012 Brown Hill and Keswick Creeks Stormwater Management Plan

Recommendation

A summary of the Authority's assessment of and basis for approving or not approving an SMP should be documented in the meeting minutes. The documentary evidence maintained should provide a clear and sufficient account of the decision-making process.

Finding

We found that the Authority's meeting minutes did not adequately document the members' consideration and assessment of various advice, previous concerns and unresolved issues to assess the 2012 BHKC SMP. For example, evidence to support the Authority's consideration of the AMLRNRMB's advice and recommendations, and the rationale for its overall conclusion that the 2012 BHKC SMP complies with the Guidelines, was not recorded.

The AMLRNRMB advised the Authority that the 2012 BHKC SMP broadly contained the appropriate provisions. Attached to this advice was the AMLRNRMB's assessment of the 2012 BHKC SMP against the key elements and components of the Guidelines. This assessment indicated that:

- only two of the six key policy goals and two of the five key elements were fully met
- a conclusion on the assessment of the key element on costing, priorities and time frames was not provided

- the project costs were an estimate only and were incomplete.

Further commentary on the AMLRNRMB's advice is provided in section 11.2.

While the Authority resolved to note the AMLRNRMB's advice, the Authority's documented assessment does not provide any further information as to whether and how the advice and recommendations were considered and addressed. That is, there was no documentation of whether the Authority agreed with the recommendations and whether further action was required and undertaken.

Considering the nature and significance of the unresolved matters and the history of the catchment councils not reaching timely agreement on matters, the Authority's rationale to approve the 2012 BHKC SMP with an expectation that the final SMP will be delivered within a year is unclear.

There is inadequate documentary evidence to support the Authority's due diligence in its assessment of the 2012 BHKC SMP. Without this documentary evidence, there is an increased risk that the integrity of the Authority's assessment and approval processes is open to question.

12 Strategic and financial planning

12.1 Background

As previously outlined, the Authority's key role is to operate as a stormwater planning, prioritising and funding body and administer the SMF. In undertaking this role, the Authority assesses and approves SMPs and has coercive powers to support its functions. The Authority is a key stakeholder of the BHKC project, as the approving authority.

In addition to the matters raised in sections 11.2 and 11.3, our examination of the Authority's assessment and approval of the 2012 BHKC SMP noted the following issues.

12.2 Inadequate strategic action to achieve timely outcome

Recommendation

The Authority should develop and endorse policies and procedures to support its decision-making process for key activities, such as issuing notices and orders. Where relevant, the Authority should consider the principles provided in legal advice received and reflect these in the relevant policies and procedures.

Finding

It is prudent that the Authority has a clear understanding of the nature and extent of its legislative powers before embarking on a course of action. Any action should reflect a well-considered and strategic approach to resolving known and anticipated issues to achieve its objectives. This is critical when action may include exercising coercive powers.

The Authority may exercise its coercive powers where catchment councils are unable to resolve planning or implementation matters at a hydrological catchment level. The Authority exercising coercive powers should only arise as a matter of last resort and would be directed to securing compliance with the preparation of an SMP and implementing those plans when approved by the Authority.

From June 2009 to April 2010, the Authority made several attempts to re-engage the catchment councils to work collaboratively to prepare a revised SMP, including engaging a mediator. As a last resort, on 20 May 2010 the Authority resolved to exercise its coercive powers with the objective of an SMP being prepared for the BHKC catchment area.

The Authority's decisions were challenged by the catchment councils which emphasised the importance of the Authority having a clear strategic direction and following due diligence in making decisions and exercising its legislative powers. In response, the Authority sought legal advice prior to making decisions. At times the legal advice was repetitive in nature and directed to correcting previous actions or to supporting the Authority's proposed actions. The legal advice highlighted that certain powers may be restricted due to perceived deficiencies in Schedule 1A.[16]

[16] The Local Government (Stormwater Management Agreement) Amendment Bill 2015 was assented to on 21 April 2016 and amended Schedule 1A to address the perceived deficiencies.

In our view the Authority did not give adequate attention to its strategic approach to achieve a timely outcome for the BHKC SMP prior to embarking on its course of action. The course of action taken led to the possibility of the Authority taking over the preparation of the SMP if councils failed to comply with the Authority's orders. When this occurred, rather than taking over the preparation of the SMP, the Authority issued further orders and agreed to strategies that in effect extended the time frames for the catchment councils to prepare the SMP. The first notice was issued on 20 May 2010 to prepare an SMP by 20 August 2010. This did not occur and after subsequent orders and new notices a revised BHKC SMP was due by 29 February 2016, about six years after the initial notice was issued.

We found that the Authority was reluctant to prepare the SMP as it perceived there were legislative deficiencies and limited resource capability.

At the outset, there was a lack of documentary evidence to support the Authority's assessment of the course of action and consequences, the risks to the Authority, the preparedness of the Authority to take action and anticipation of councils' reaction given the underlying issues.

The lack of a clear and predetermined strategic direction increased the risk that the Authority has:

- not taken appropriate and timely action to meet its objectives and legislative responsibilities. This has potentially contributed to the delay in progressing the BHKC project and the catchment community remains at significant flood risk
- acted outside its legislative powers which may lead to its decision-making process being legally challenged and undermined.

Further commentary on the Authority's course of action and decision-making process is provided in Appendix 5.

12.3 Lack of long-term financial planning

Recommendations

The Authority should develop and endorse a long-term financial plan that reflects the use of money from the SMF to fund existing approved SMPs. The Authority's planning documents should be regularly updated for new information to assess the priority of approved SMP projects and whether additional funds are required to accelerate priority project works.

Finding

A key Authority responsibility is administering the SMF established under section 17(1) of Schedule 1A. The SMF was established to provide funding to overcome the backlog of priority stormwater management works. The stormwater management works must be supported by an approved SMP and be confirmed as requiring investment by the Authority. Where necessary, the Authority can use borrowings to accelerate important priority works.

A council(s) may apply for a payment from the SMF provided the proposed stormwater infrastructure works relate to an approved SMP. Further, a council(s) must satisfy the Authority that it will at least match, on a dollar for dollar basis, the amount of any payment from the SMF for the proposed stormwater infrastructure or works. The Authority has the discretion to contribute more or less than 50% of the cost of certain works.

The Authority's policy treats the funding for preparing SMPs and the funding of works projects separately, even though the works projects are part of the SMPs. The Authority will not commit funds unless separate applications are received for the approved works projects and the Authority determines the work project to be a priority.

On approving the 2012 BHKC SMP, the Authority resolved to inform the catchment councils that the SMP approval did not represent a commitment or approval of any funding contribution towards the implementation of the SMP. This is the Authority's consistent practice as evidenced by its minutes.

At that time the catchment councils raised concerns about the Authority's ability and willingness to fund the BHKC project. This left the BHKC project at significant funding risk given the proposed funding arrangements outlined in the 2012 BHKC SMP.

In our view, it is prudent that the Authority undertakes a financial assessment as to whether the necessary funds from the SMF are available to fund high priority projects, and to what extent, at the time of assessing an SMP. The Authority responded that it is not practical to approve or invest in SMPs until a specific funding model is agreed, in alignment with the long-term financial plan.

As provided in the Guidelines, such information should be used in developing the Authority's budget and long-term financial plan. These planning documents should reflect the funding commitments of all current approved SMPs. Our examination revealed that, after eight years in operation, the Authority did not have a long-term financial plan for the SMF.

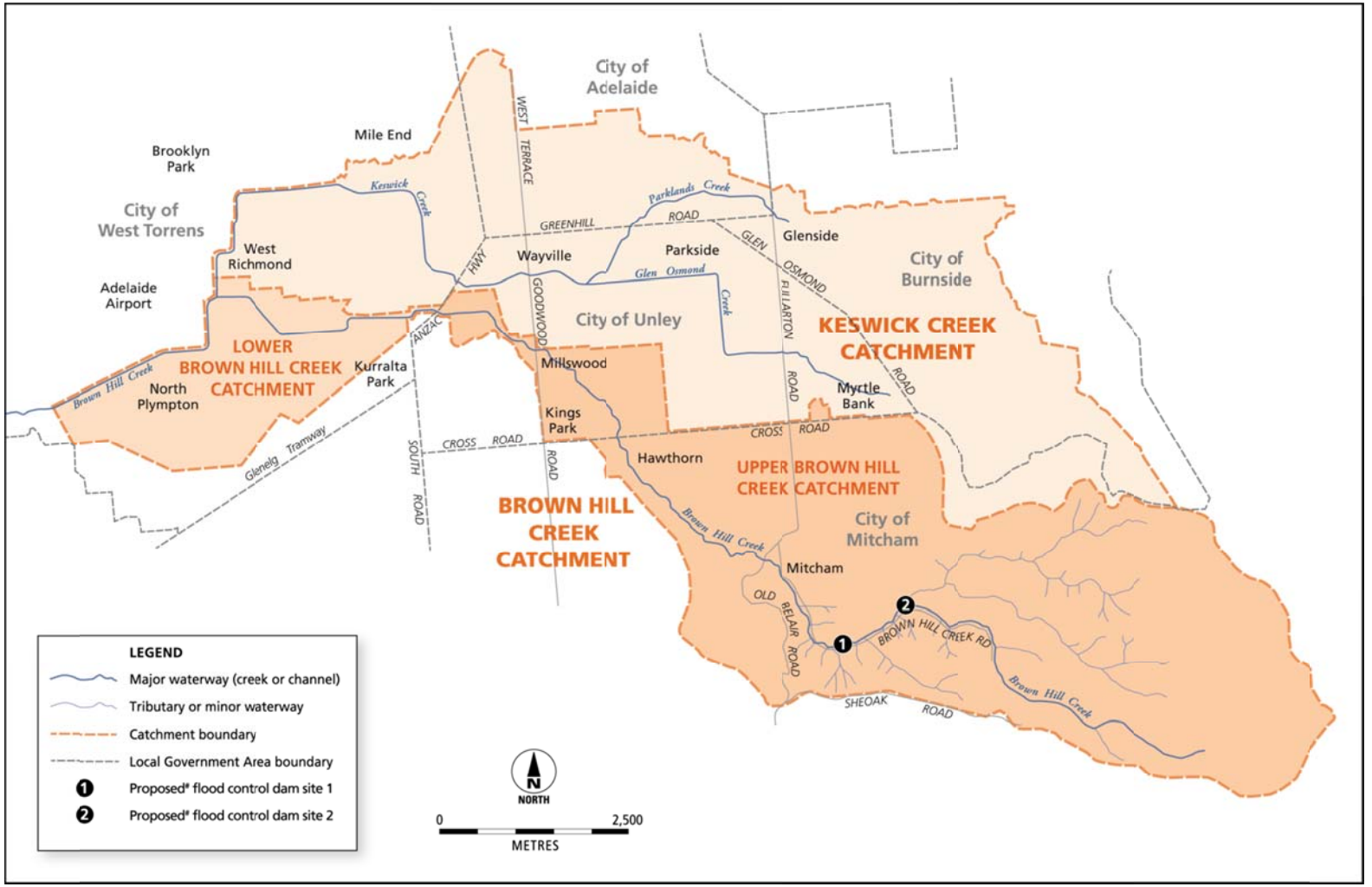
Current policy and practice means that the Authority may not be able to fulfil its responsibilities under Schedule 1A to provide direct funding to high priority projects in accordance with the funding arrangements outlined in approved SMPs.

The lack of financial assessment at the time of approving SMPs and the absence of long-term financial planning for the SMF means the Authority may not be in a position to fund the SMPs that it has approved. This would undermine a key function of the Authority and the SMF.

The Authority has indicated that a preliminary assessment suggests around $800 million is needed to address current and emerging stormwater issues across the whole of the State. This quantum is clearly in excess of the current $4 million annual allocation provided to the SMF by the State Government.

The Authority has advised that it will continue to maintain that its first priority is to ensure that SMPs are prepared for priority areas of the State, and that until those plans have been undertaken it is not possible to accurately estimate the cost and funding requirements. Nonetheless, the Authority is conscious of the judicious application of its limited funding over the long term and therefore places considerable emphasis on identifying stormwater management priorities.

Appendix 1 – Brown Hill Creek and Keswick Creek catchment area



 # Flood control dams proposed in the 2006 Master Plan, 2008 BHKC SMP and 2012 BHKC SMP

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Appendix 2 – Alternative proposed flood mitigation solutions for Upper Brown Hill Creek

Brown Hill Creek has a catchment area of 32 km^2 (of which about 18 km^2 is rural land) and flows through Crafers West to the Adelaide Airport before flowing into the Patawalonga. Appendix 1 provides a map of the Brown Hill Creek watercourse. The 2012 BHKC SMP was divided into Part A and Part B works. Part B reflects mainly the Upper Brown Hill Creek (upstream of Anzac Highway) part of the BHKC catchment area.

Eight flood mitigation options were assessed for Part B. These options differed in how they combined three components: a detention dam, high flow bypass culverts and creek capacity upgrade works. After further investigations and the release of revised rainfall data, the catchment councils endorsed Option D on the basis of technical viability, estimated cost and a whole-of-catchment community supported 'no dam' solution.

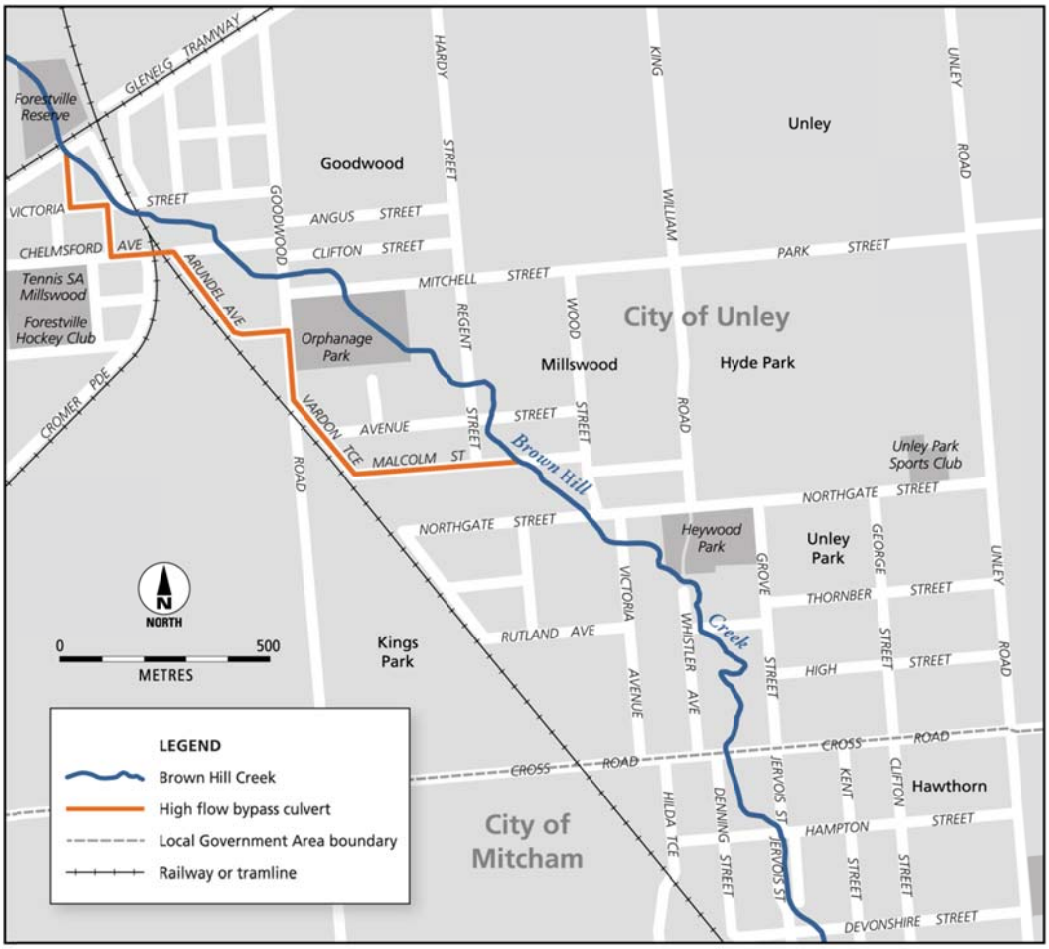
The following provides a summary of the alternative proposed flood mitigations solutions for the Upper Brown Hill Creek.

Flood control dam

The Draft 2011 BHKC SMP considered various flood mitigation works and recommended a preferred option for the Upper Brown Hill Creek which was the construction of a small dam (12 metres at site 1) and other works to prevent channel overtopping. These works included:

- a high flow bypass culvert from Malcolm Street in Millswood to Forestville Reserve
- upgrading of the Brown Hill Creek channel between Leah Street and Anzac Highway, Forestville.

Appendix 1 provides the dam site 1 and 2 locations within the BHKC catchment area. The following diagram shows the location of the bypass culvert.



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This was the recommended scenario because:

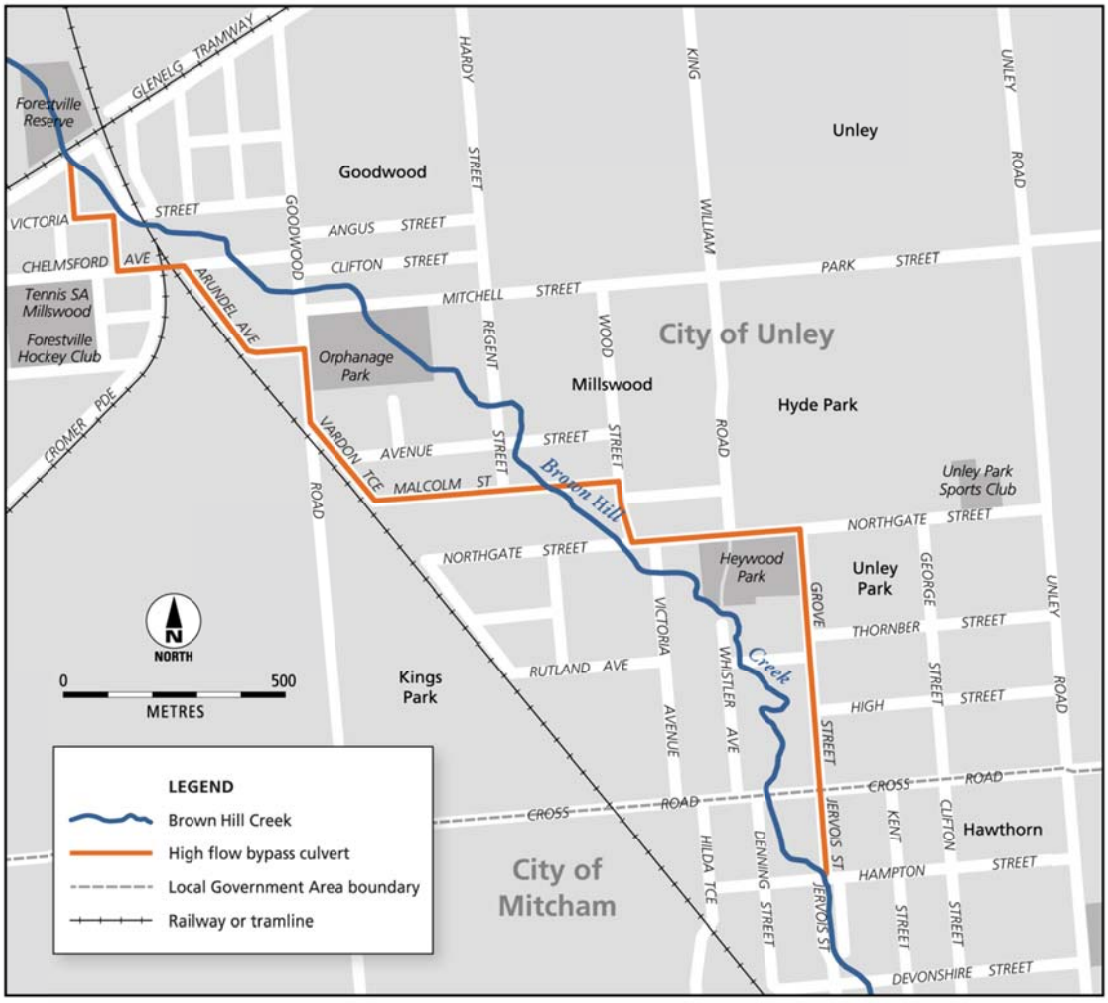
- it had the most favourable flood mitigation potential of all the viable scenarios considering the two critical duration storms – the 90 minute storm that produces peak runoff from urban areas and the 36 hour storm that produces peak runoff from the rural portion of the catchment
- the proposed supplementary works would provide more effective flood mitigation in Unley and would be more practicable to implement, compared with other supplementary works options
- it had comparatively less private property impact
- other viable scenarios with comparable flood mitigation potential and cost involve a flood control dam at site 2, which would be a significantly higher dam (20 metres compared with 12 metres) with a larger footprint and would involve increased impact on private property.

During the public consultation process, Mitcham commissioned an independent study to identify alternate options for the proposed flood control dams. The report from the study resulted in two alternate options, Options 3 and 3A. These options were presented as Part B works in the 2012 BHKC SMP.

Option 3

Option 3 involved an extension of the high flow bypass culvert proposed in the flood control dam option. The additional high flow bypass culvert draws stormwater from the Hampton Street (Unley) section of Brown Hill Creek and diverts it to the Malcolm Street culvert.

The following diagram shows the location of the two high flow bypass culverts.



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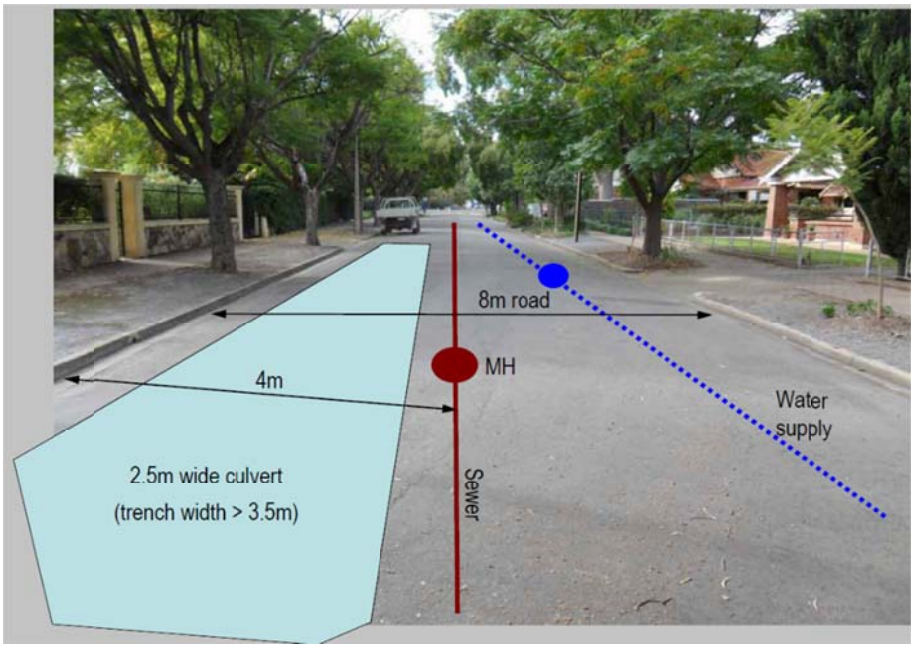
This option involves laying an up to 3.6 metre wide culvert box of 3.2 km in length beneath the existing 8 metre wide road that also contains other infrastructure such as telecommunication, natural gas, electricity, sewerage and water supply lines. Option 3 required 11 adjustments to existing stormwater infrastructure and relocating:

- 16 gas crossings
- 26 telecommunication crossings
- three electricity line crossings
- 3.1 km of sewerage infrastructure
- 1 km of water supply infrastructure.

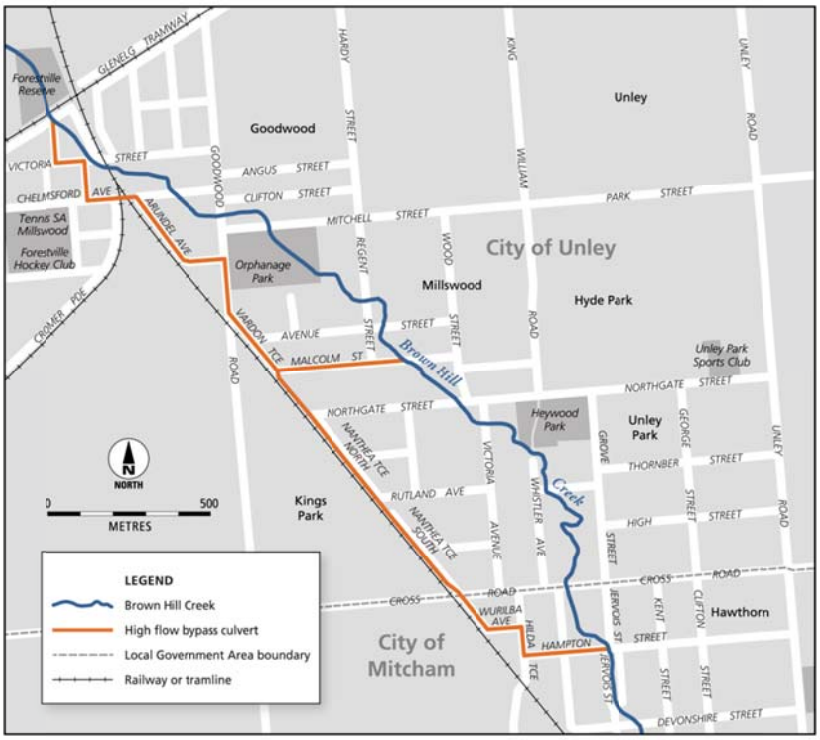
The following shows the culvert layout under a road.



Source: Brown Hill Keswick Creek Stormwater Project Preliminary Assessment: Enhancement of Flood Mitigation Options (Worley Parson's presentation to Mitcham Council, 25 November 2011)

Option 3A

Option 3A is a slight variation to Option 3, with the extended high flow bypass culvert taking a different route that connects Hampton Street to the Malcolm Street culvert. The following diagram shows the location of Option 3A.



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Option 3A requires laying the same amount of infrastructure as Option 3, 11 adjustments to existing stormwater infrastructure and relocating:

- 16 gas crossings
- 28 telecommunication crossings
- three electricity line crossings
- four railway signal boxes
- 2.3 km of sewerage infrastructure
- 1.1 km of water supply infrastructure.

Comparison of alternative options

Malcolm St to Forestville high flow bypass culvert	Dam option (2011 Draft BHKC SMP)	Option 3	Option 3A
Design capacity of the culvert	12 m^3/s	20 m^3/s	20 m^3/s
Measurement of largest culvert box (W x H)	2.4m x 1.8m	3.6m x 1.8m	3.6m x 1.8m
Maximum width of trench	3.4m	4.6m	4.6m
Measurement of smallest culvert box (W x H)	1.8m x 1.8m	2.4m x 1.8m	2.4m x 1.8m
Total length of the culverts	1.7 km	1.7 km	1.7 km
Cost ($'million)	11.3*	19	18.1

* The 2012 BHKC SMP shows $14.1 million as a revised cost estimate.

Hampton St to Malcolm St high flow bypass culvert	Dam option (2011 Draft BHKC SMP)	Option 3	Option 3A
Design capacity of the culvert		11 (m^3/s)	11 (m^3/s)
Measurement of largest culvert box (W x H)	No bypass culverts	2.1m x 1.5m	1.8m x 1.8m
Maximum width of trench	proposed for this	-	-
Measurement of smallest culvert box (W x H)	section.	1.5m x 1.5m	1.5m x 1.5m
Total length of the culverts		1.5 km	1.5 km
Cost ($'million)	-	11	8.5

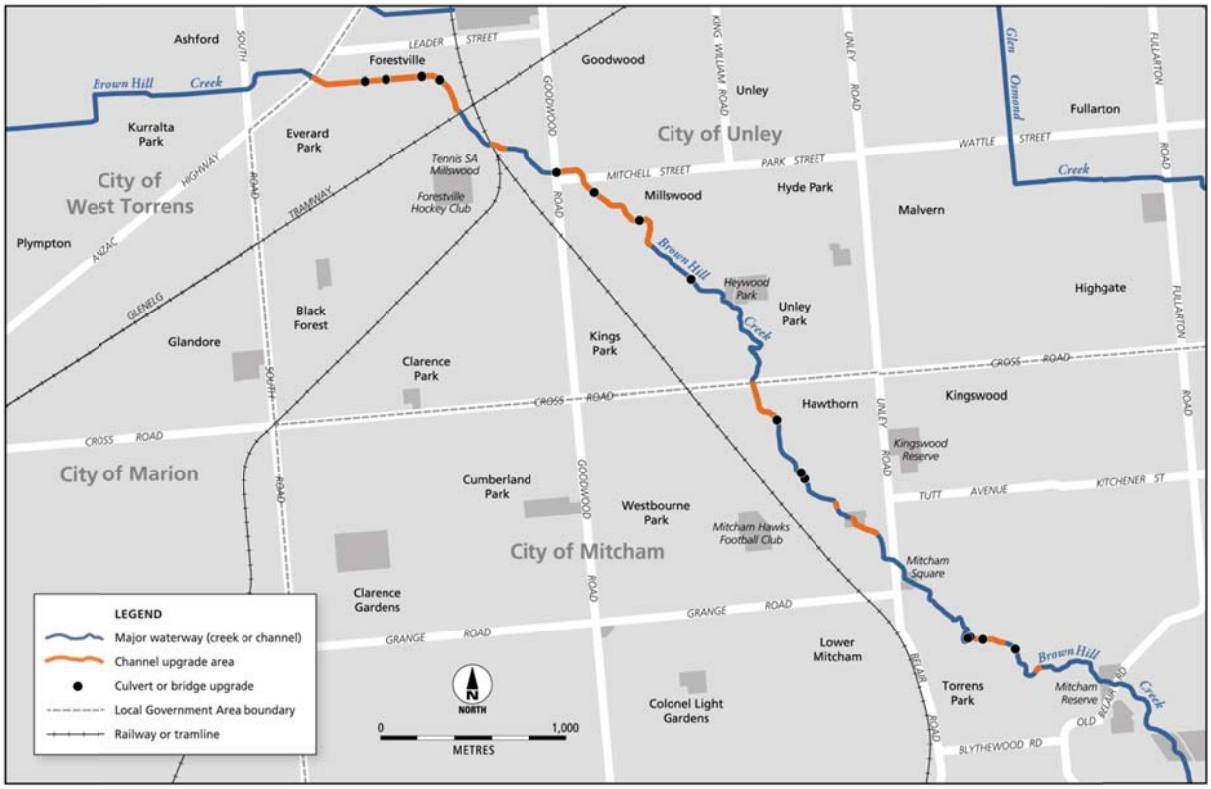
Option D

In June 2013, the BOM released updated rainfall data. In response, the hydrology of the BHKC catchment was revised, which effectively reduced the need for the scale of the infrastructure provided in the 2012 BHKC SMP.

The PSG proposed a new option, Option D, which involves creek upgrade at critical sections (over 1.9 km of its total length of about 7 km) and upgrading specific creek choke points such as bridges. Creek rehabilitation works (removal of invasive vegetation) are proposed for the non-critical sections. This option does not involve a flood control dam or high flow bypass culverts.

Option D is designed to mitigate flooding at a catchment scale. The exact scope of creek capacity upgrade works and the flood protection given individual properties is to be determined during the detailed design phase.

The following diagram shows the six critical sections of Upper Brown Hill Creek and 14 bridges identified for upgrade under Option D.



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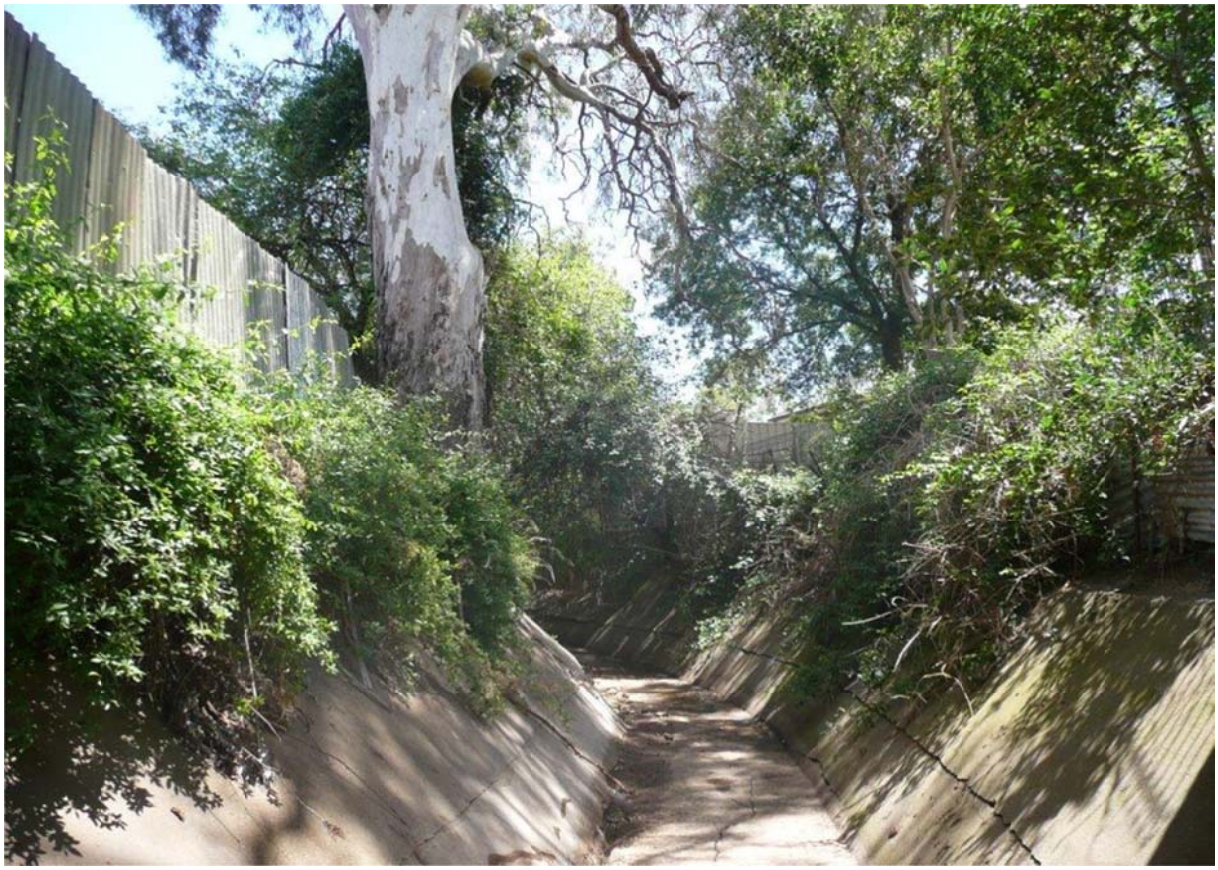
Option D accepts a limited tolerable flooding risk in the non-critical sections and is built on the maximum hydrological capacity of the creeks. This means rainfall above the assumed levels will cause flooding in Upper Brown Hill Creek.

The sections of Upper Brown Hill Creek identified for the creek upgrade works are located in 66 privately owned properties (36 in Unley and 30 in Mitcham). The proposed works under Option D will require access to these properties and may require securing easements. Further, access to the creek to perform the rehabilitation and upgrade works may be difficult in some areas. The varying extent of difficulty in accessing the creeks for the proposed works can be seen in the following pictures that have been sourced from the PSG.



Appendix 3 – Timeline of key project events

Date	Event
2006	
15 December	The BHKC 2006 Master Plan was released by the AMLRNRMB.
2007	
1 July	The Authority and the SMF were established under Schedule 1A.
	The Authority issued the Guidelines.
1 August	The five catchment councils signed the 2007 MoA to establish a regional subsidiary, prepare and implement an SMP for the BHKC catchment.
6 August	The PSG adopted a draft Charter for the proposed regional subsidiary. The draft Charter has not been finalised due to a number of unresolved matters.
12 October	The catchment councils submitted the 2008 BHKC SMP to the Authority for approval.
24 October	The AMLRNRMB endorsed the 2008 BHKC SMP, with recommendations for the catchment councils to consider water harvesting and reuse, as required by the Guidelines.
2008	
19 February	The Authority approved the 2008 BHKC SMP with a condition that the catchment councils incorporate, wherever practicable, stormwater reuse schemes together with improvement in water quality and biodiversity outcomes to the satisfaction of the Authority.
27 May	Mitcham resolved to approve the CEO entering into negotiations with the other catchment councils to finalise the Charter and set up a regional subsidiary subject to some conditions acceptable to other catchment councils.
22 July	In response to deputations from the community opposing the flood control dam proposed in the 2008 BHKC SMP, Mitcham resolved to • withdraw from the 2007 MoA • notify stakeholders that the council had not endorsed or adopted the 2006 Master Plan.
23 September	Mitcham rescinded its resolution of 22 July 2008 to withdraw from the 2007 MoA, subject to a number of conditions and amendments to the new MoA.
28 October	Mitcham resolved to notify the Authority that the approval of the 2008 BHKC SMP was based on miscommunication that the catchment councils had endorsed the SMP when, in fact, all catchment councils had not.
25 November	Mitcham's meeting minutes reflect the Authority responded that: • the 2008 BHKC SMP plan was approved in accordance with the requirements of the LG Act • there is no requirement for endorsement by one or more councils as approval of the plan was sought by the CEO group acting for the councils.

Date	Event
2 December	Mitcham considered the revised MoA and requested further amendments.
	The other catchment councils resolved to execute a new MoA (2008 MoA) without the amendments sought by Mitcham.
2009	
27 January	Mitcham resolved to: • not sign the 2008 MoA • cease funding to the BHKC project with immediate effect • inform stakeholders that the council had never endorsed or adopted the 2006 Master Plan.
26 May	Mitcham resolved to undertake a detailed review of the hydrology model supporting the 2008 BHKC SMP. Mitcham sought the Authority's assistance to: • mediate an agreement between Mitcham and the four other catchment councils • fund an independent review of the hydrological modelling for Brown Hill Creek.
28 July	Mitcham adopted a report written by two residents titled 'A review of the justification for the construction of two large detention dams in the upper reaches of the Brown Hill Creek'. Mitcham resolved to use the report to discuss the components and staging of the 2008 BHKC SMP. The report questioned the cost-benefits of the proposed flood control dams. The AMLRNRMB and DPTI later discredited this report and found it to have no bearing on the validity of the 2008 BHKC SMP.
	Mitcham resolved to engage an external consultant to undertake a peer review of the hydrology study for Brown Hill Creek at a cost of $50 000.
22 September	Mitcham resolved: *(2) That VDM Consulting be advised that approval is given to proceed with the consultancy in accordance with the original Terms of Reference and the Inception Report but noting the following:* *(a) That the hydraulic models need to be capable of possible future use for the City of Mitcham in assessing the effects of a variety of rainfall events, catchment characteristics and other, yet to be defined, structural works in and around Brown Hill Creek;* *(b) That in addition to the hydrological assessment of the current proposal for dams in the upper reaches of Brown Hill Creek, it is a high priority to address and comment on the hydrological data and inputs that may have the capacity to significantly reduce or delete the requirement for detention dams;* *(c) That expanded commentary on the differences between the RRR Model (Kemp et al) [model used in BHKC 2008 SMP] and other industry standard models would be useful to the City of Mitcham.*

Date	Event
20 October	The Authority resolved to proceed with the necessary arrangements to progress the mediation process, including appointment of a mediator. A mediator was appointed in December 2009.
2010	
20 April	The Authority received the mediator's report and resolved to conclude the mediation process as it had failed to achieve the desired outcome.
27 April	Mitcham tabled the external consultant's report on the peer review of the hydrology study for the BHKC project. The report questioned the hydrological model (RRR Model) used in the 2008 BHKC SMP. The report justified the flood control dam. The catchment councils, with the assistance of the Authority and DPTI, engaged an independent consultant to peer review the RRR model and that model provided in Mitcham's external consultant's report. The RRR model was considered appropriate and remained the basis for the 2012 BHKC SMP.
20 May	The Authority issued a notice to the catchment councils to prepare an SMP for the BHKC catchment within 90 days.
26 August	The catchment councils failed to comply with the notice. The Authority issued an order to the catchment councils to prepare the BHKC SMP by no later than 30 April 2011.
14 December	The Project Director, PSG advised the Authority that the deadline set in the order would not be met.
2011	
17 February	The Authority wrote to the catchment councils asking them to act on its plan and agree on the timing and process for the: • completion of the BHKC SMP • completion of public consultation on the BHKC SMP • approval of the BHKC SMP by the catchment councils.
March/April	The catchment councils passed resolutions agreeing to the timing and process for preparation, consultation, approval and submission of the BHKC SMP by early March 2012.
13 May	The Authority issued a second order to the catchment councils to prepare the BHKC SMP by no later than 30 April 2012. The order contained a number of actions to be taken by the catchment councils by specific dates.
August	The catchment councils endorsed the Draft 2011 BHKC SMP for public consultation with the flood control dam proposed for Upper Brown Hill Creek.

Date	Event
19 September	The PSG: *… agreed that Mitcham Council will engage Worley Parsons at its own cost to assess by mid-October whether or not there is merit in pursuing the proposal [to identify alternative options to the flood control dam]. The resulting information will be made available to the project when it is received by Council. It is not intended to incorporate the proposal or the WP assessment into the draft SMP report or other consultation material for the purposes of the formal consultation. However it may be appropriate to include the proposal and the WP assessment in the consultation report (post 12 December), in which case further action may be recommended.*
27 September	Mitcham engaged an engineering consultant to provide additional technical advice, including to identify alternative options to the flood control dam.
31 October to 12 December	Public consultation was undertaken on the Draft 2011 BHKC SMP.
17 November	Mitcham released the BHKC Draft SMP – Preliminary Assessment Enhancement of Flood Mitigation Options report to the public. This report highlighted that a flood control dam could be replaced by bypass culverts at an additional cost of $3-$6 million. The report was preliminary and required further investigation to conclude on the feasibility. Subsequent investigations by the PSG revealed that the bypass culvert options (Options 3 and 3A) were not economically feasible, because the project cost was estimated at over $200 million. Also, in October 2013 Unley resolved to explore other options resulting in the PSG abandoning the culvert options.
2012	
17 February	AMLRNRMB and AWE representatives gave a presentation to the PSG highlighting that the condition of channels and watercourses was worse than the presumed state in the Draft 2011 BHKC SMP.
March	A public consultation report on the Draft 2011 BHKC SMP was released.
9 March	The PSG determined that the BHKC SMP would not be prepared within the time specified in the second order. The Project Director, PSG wrote to the Authority outlining the Part A and B strategy. The Authority approved the strategy on 2 May 2012.
30 April	The AMLRNRMB released the AWE's Brown Hill and Keswick Creek Survey and Hydraulic Assessment report to the public. This report found significant reductions in the hydraulic capacity of the BHKC catchment watercourses with 20% lower capacity than the levels assumed in the draft 2012 BHKC SMP.
22 June	The AMLRNRMB responded to the Project Director confirming the impact of the AWE findings on the draft 2012 BHKC SMP. The AMLRNRMB expressed strong views on the Part A and B strategy, and highlighted the flawed assumptions inherent in the draft 2012 BHKC SMP, including unknown cost to remediate the watercourses in the BHKC catchment.

Date	Event
31 August	The 2012 BHKC SMP was submitted to the Authority for approval. The Part A works were those contained in the Draft 2011 BHKC SMP, estimated at $119 million. Part B had three flood mitigation work options – with flood control dam ($28.5 million), Option 3 ($34.9 million) and Option 3A ($31.5 million). Depending on the options selected, total estimated cost ranged from $147.8 million to $156 million.
	The Authority's Board membership expired. The term of the new Authority Board members commenced on 14 December 2012.
27 September	The AMLRNRMB advised the Authority that the 2012 BHKC SMP broadly contained appropriate provisions while highlighting significant shortcomings and recommendations. These recommendations were not addressed by the catchment councils. They proposed to consider them in the Part B investigations.
December	The PSG and DPTI negotiated an informal arrangement for DPTI to undertake the construction works for the Brown Hill Creek Culvert Diversion works (part of the 2012 BHKC SMP) for a capped price of $5 million. Asset ownership and maintenance responsibilities were not agreed on until mid-2015. Formal resolutions were passed by the councils in February 2013. Construction was completed by 30 June 2014.
2013	
26 February	The Authority approved the 2012 BHKC SMP.
3 May	The PSG agreed to conclude Part B investigations and undertake public consultation in October 2013.
17 May	The PSG engaged an external consultant to peer review the cost estimates of all the options developed by various consultants to ensure a consistent methodology and enable comparisons. This included the estimated remediation cost of $70-$90 million to remediate the watercourses along Upper Brown Hill Creek reported by the AWE. As a result of the peer review, the estimated remediation cost was revised to $40 million. This report became redundant due to the new hydrological data.
26 July	The BOM released new rainfall data. This resulted in a revision of the proposed stormwater infrastructure and opportunities to investigate alternate options, other than bypass culverts and flood control dams. DPTI recommended that the PSG apply the new hydrological data in preparing the final BHKC SMP.
23 August	The PSG recommended Option 3A as the preferred option for the purpose of public consultation. Option 3A is an alternate solution proposed for Upper Brown Hill Creek in the 2012 BHKC SMP, the other alternatives being Option 3 and a flood control dam.
28 October	Unley (impacted by culvert options) passed a resolution to explore alternatives to constructing culverts. This effectively put an end to the culverts option.
1 November	The creeks upgrade option (Option D) was identified as an alternative to the culverts and flood control dam options.

Date	Event
2014	
2 May	The PSG agreed to undertake the public consultation over a three week period and conclude before the commencement of the caretaker period (16 September 2014).
8 July	Mitcham resolved to amend its public consultation policy (28 days minimum) to facilitate a three week public consultation on Part B.
16 July	Unley resolved to undertake public consultation over six weeks.
1 August	The PSG agreed to undertake the public consultation over six weeks, but a decision was left to the incoming council, after the local government elections (November 2014).
11 August	The PSG agreed to defer the public consultation to the first quarter of 2015. This was subsequently moved to May/June 2015.
8 September	Part B report was released with Option D as the preferred option.
2015	
2 April	The Authority issued a notice to the five councils to prepare the revised SMP for the BHKC catchment by 30 September 2015.
13 May to 23 June	Public consultation was undertaken on Part B with the results released on 7 September 2015.
30 September	The catchment councils failed to comply with the notice.
September to October	All councils resolved to approve creeks upgrade (Option D). Unley also resolved to seek support of the PSG that before any Part B works are commenced: • works to rehabilitate the creek be undertaken as a priority • active consultation regarding structural treatment options and vegetation treatment for each property be undertaken with each owner • easement or maintenance agreement be offered to affected property owners. If an easement is agreed to with an owner, the PSG is to ensure that fair compensation is negotiated with the owner • initiatives for further water harvesting and improving water quality continue to be investigated in any future works so as to maximise the value of water as initially requested in line with motions passed by Unley and put to the Authority in August 2012 • any trees of importance are not removed or impacted if possible • a detailed design is prepared for options in Orphanage Park and Forestville Reserve that consider the heritage and biodiversity corridor in these reserves.
17 December	The Authority issued a notice to vary the 19 May 2015 notice requiring the catchment councils to prepare the revised SMP by 29 February 2016.
2016	
29 February	The catchment councils failed to comply with the notice.
18 March	The PSG submitted the draft 2016 BHKC SMP to the Authority and AMLRNRMB. The Authority is yet to approve the SMP.

Appendix 4 – Use of key external consultants

The following is a list of key expert advice provided for the BHKC project.

Date	Consultant name	Description of services
December 2006	Hydro Tasmania	*Brown Hill and Keswick Creeks Flood Mitigation Study – Flood Management Master Plan*
August 2008	AWE	*Brown Hill Creek Flooding: Preliminary Assessment of Alternative Options*
2009 to 2015	Tonkin Consulting	Several reviews and engineering designs for the structural flood mitigation measures
May 2010	VDM Consulting	*Audit/Review of Hydrology Study for Brown Hill Creek* (to critique technicalities in the 2008 BHKC SMP). Commissioned by Mitcham to assess the technical inputs in the 2008 BHKC SMP and compare the hydrological model in the SMP with other models to reduce or avoid detention dams in Upper Brown Hill Creek. The review identified that the hydrology model in 2008 BHKC SMP is based on lower bound estimates and the proposed flood mitigation infrastructure may need up scaling, including the size of the dams.
June 2010	SKM	*Brown Hill Creek Catchment Stormwater Project – Peer Review of Hydrology* This peer review compared DPTI's technical data applied in the 2008 BHKC SMP with the peer review undertaken by VDM Consulting. The review validated DPTI's technical data in the 2008 BHKC SMP and no material changes were recommended.
August 2011	Worley Parsons	Prepared Draft 2011 BHKC SMP based on DPTI's hydrologic modelling methodology (consolidated all peer reviews and critique reports).
November 2011	Worley Parsons	Prepared a preliminary assessment identifying Culverts options (Option 3 and 3A) for Mitcham – *Brown Hill Keswick Creek Draft Stormwater Management Plan – Preliminary Assessment Enhancement of Flood Mitigation Options*. Mitcham initiated the study believing all options had not been adequately investigated.
December 2011	URPS	Consulted on and undertook the public consultation processes, including preparing the public consultation report, for the Draft 2011 BHKC SMP
April 2012	AWE	*Brown Hill and Keswick Creek Survey and Hydraulic Assessment* commissioned by the AMLRNRMB that uncovered poorer state of Brown Hill Creek than the project assumed.

Date	Consultant name	Description of services
April 2012	Worley Parsons	Prepared *Brown Hill Keswick Creek Stormwater Project – Bypass Culvert Feasibility Assessment (Hampton Street to Forestville Reserve)*. This report is the refined version of its 2011 report prepared for Mitcham. Later cost estimates by Cost Plan in July 2013 proved these options to be unaffordable.
August 2012	Worley Parsons	Prepared the 2012 BHKC SMP.
February 2013		2012 BHKC SMP approved.
April 2013	AWE	Upper Brown Hill Creek capacity reinstatement study and cost estimates.
May 2013	SMEC	Cost estimate flood control dams for Part B.
June 2013	Natalie Fuller & Associates	Public consultation strategy on culverts option (Option 3 and 3A).
July 2013	Cost Plan	Peer review and update cost estimates of flood control dams (July 2013) earlier costed by SMEC.
		Update cost estimates of Option 3 and 3A culverts options from Worley Parsons' April 2012 report.
August 2013	Maloney Field Services	Preliminary desktop assessment of easement costs in private properties.
August 2013	Worley Parsons	Reviewed the AWE's Upper Brown Hill Creek capacity reinstatement study and cost estimates.
2014	Worley Parsons	Update BHKC flood plain modelling.
June 2014	Maloney Field Services	Update of the preliminary desktop assessment of easement costs in private properties.
July 2014	Cost Plan	Peer review and cost estimates of all eight options in Part B, including those costed in July 2013.
September 2014		BHKC SMP – Part B released to public.
June 2015	Natalie Fuller & Associates	Public consultation strategy and implementation on Part B (creeks upgrade option, Option D).
September 2015	URPS	Consulted on and undertook the public consultation processes, including preparing the public consultation report, for the 2015 Part B report.
March 2016		Draft 2016 BHKC SMP submitted to the Authority.

Appendix 5 – Legislative powers exercised by the Stormwater Management Authority

1 Issuing an order

On 20 May 2010 the Authority issued a notice to the catchment councils to prepare an SMP for the BHKC catchment within 90 days (due by 20 August 2010). The aim of the notice was to re-engage the catchment councils to work collaboratively to prepare an SMP within the agreed time frame. The 90 days was considered a reasonable time frame by the five catchment councils. The catchment councils failed, however, to comply with the notice.

Based on legal advice, at this point the Authority could either:

- do nothing
- vary or revoke the notice
- issue an order. If the catchment councils did not comply with an order, the Authority could take any action required by the order. That is, the Authority could prepare the SMP.

The second and third options are clearly outlined in Schedule 1A. A variation of a notice may extend the period in which the plan must be prepared. This option may be adopted if the catchment councils have demonstrated to the Authority's satisfaction that they have made a genuine effort to prepare the plan and that it is reasonable to expect that the process could be completed if an extension was granted.

However, a potential deficiency in Schedule 1A was whether the Authority could approve an SMP that it had prepared. Further the Authority had no legislative power to enforce a council(s) to accept a plan prepared by the Authority.

The minutes of a meeting held on 9 August 2010 document that the Authority understood that there was a change in the project scope to satisfy the needs of Mitcham. The Authority needed to confirm the confidence of the five catchment councils that they could work together.

Prior to defaulting on the notice, the CEOs of four[1] of the catchment councils and the Project Director attended the 9 August 2010 Authority meeting to discuss the progress of the BHKC SMP. The catchment councils advised the Authority the time frame specified in the notice would not be met as they had underestimated the complexities of the project. However, the catchment councils had reached agreement on the new scope of works and the timing of the project, and agreed that they would not ignore any opportunity for recycling the stormwater/reuse.

At this meeting and prior to the catchment councils defaulting on the notice, the Authority resolved to issue an order. The minutes of this meeting did not provide adequate documentary evidence to support the rationale for this resolution. The minutes did not document the Authority's consideration of the courses of action available based on legal advice and the rationale for issuing an order rather than varying the notice. Specifically, there was no record that issuing an order could lead to the Authority taking over the preparation of the SMP. It was evident that the Authority was reluctant to prepare the SMP given the perceived deficiencies in legislation. The Authority did not take action to address the perceived deficiencies until October 2011.

[1] CEO of Burnside did not attend.

On 26 August 2010 the Authority issued an order to the catchment councils to complete the preparation of the SMP for the BHKC catchment by 30 April 2011 (eight months).

2 Issuing a second order

On 14 December 2010, the PSG communicated to the Authority that the deadline set on the order, issued on 26 August 2010, would not be met. Based on legal advice, unless the Authority believed there were reasonable grounds for non-compliance, a second order or extension could not be issued. Schedule 1A does not provide for another order to be issued.

On 16 February 2011 the Authority resolved to seek the agreement of all the catchment councils on the timing and process for the:

- completion of the SMP
- completion of public consultation on the SMP
- approval of the SMP by the councils.

The catchment councils passed resolutions agreeing to the Authority's plan. The Authority considered this a significant step and reasonable grounds for non-compliance with the order issued on 26 August 2010, and resolved to issue a second order. The rationale for issuing a second order is referred to in the Second Order notice letter, which stated:

> *At our meeting on the 19 April 2011 we were pleased to be informed by the Council representatives that all five Councils had agreed on a timing and process for the completion of the Stormwater Management Plan.*
>
> *The agreement was seen as a significant step in preparing the Plan and demonstrates the commitment of the five councils to deliver a plan that provides the appropriate flood mitigation measures to protect the community.*

As anticipated, on 30 April 2011 the catchment councils failed to comply with the first order.

On 4 May 2011 the Authority sought further advice as to whether another order could be issued setting milestones that aligned with those agreed on by the catchment councils. The Authority considered that including milestones would enable it to monitor progress and preserve its power to act in the event that the catchment councils breached the milestones.

At this stage, the only actions that Schedule 1A expressly authorises the Authority to take are to:

- take any action required by the order (ie prepare the SMP itself) and apply money from the SMF to cover the costs incurred by the Authority in taking action, or recover that cost from the council as a debt

- refuse to make, cancel or suspend a payment that would otherwise have been made to a council from the SMF.

The action that the Authority was considering was not expressly authorised by Schedule 1A and was open to legal challenge. Further, advice obtained stated that issuing a second order with milestones served no purpose if the Authority was not prepared to take action to prepare the SMP itself, and that it could not do so within the time frame expressed by the catchment councils.

The minutes of an out-of-session meeting held on 11 May 2011 indicated that the Authority was concerned about the delay in finalising the SMP but the members agreed to support the catchment councils' way forward. The Authority agreed to appoint a project adviser to assist the five catchment councils through the strategic process and provide feedback on progress to the Authority.

On 13 May 2011 the Authority issued a second order to the catchment councils to complete the SMP for the BHKC catchment by 2 March 2012 (or such later date as may be agreed by the Authority, but in any event no later than 30 April 2012). The order contained a number of actions to be taken by the catchment councils by specific dates. The catchment councils failed to comply with the second order.

3 Varying the second order

On 9 March 2012 the Project Director, PSG (on behalf of the catchment councils) wrote to the Authority and notified that the catchment councils had not approved the final version of the SMP by 24 February 2012, a milestone required by the second order. While the PSG considered significant progress had been made in investigating alternative options to a flood control dam, the PSG anticipated that investigations and community concerns on an acceptable SMP outcome would not be resolved quickly. The PSG considered a strategy resulting in Part A and B.

On 20 March 2012 the Authority received advice on whether it could approve an SMP that deals with 80% of the catchment stormwater management issues. The Authority's approval is primarily based on whether the SMP complies with the Guidelines, particularly that the strategies and objectives in the SMP achieve an acceptable level of protection of the community.

On 4 April 2012 the Authority resolved to grant an extension of the second order to 30 April 2012 and that the catchment councils should:

- prepare a timeline and strategy to complete a valid SMP
- advise whether in their opinion they are able to commence construction of works on any of the agreed project prior to the completion of the plan, subject to council approval
- along with the Mayors, attend the Authority meeting on 8 May 2012.

On 30 April 2012 the Project Director, PSG (on behalf of the catchment councils) advised the Authority on the proposed strategy to deliver the BHKC SMP:

> *(a) the catchment councils recommend to the Authority a 2012 BHKC SMP comprising the following points:*
>
> — *flood mitigation works for Part A of the catchment subject to effective flood mitigation performance and cost controls*
>
> — *a process for determining flood mitigation works for Part B of the catchment*
>
> — *other flood mitigation measures*
>
> — *other information required to satisfy the Guidelines.*

(b) the catchment councils, on approval of the 2012 BHKC SMP, undertake to agree the full scope of flood mitigation works for the catchment and incorporate them in the revised SMP.

At an out-of-session meeting held on 2 May 2012, the Authority agreed to endorse the PSG's proposed strategy subject to the catchment councils agreeing to the strategy. This resulted in the Authority revising the requirements of the second order. The legislation, however, does not provide for the varying of orders. The Authority did not act within the powers expressed in the legislation by varying the order.

4 New notice issued

The Authority issued a notice on 21 May 2015 which stated that the catchment councils were required to prepare a revised SMP for the BHKC catchment by 30 September 2015. Further, the revised SMP needed to address the entirety of the BHKC catchment and focus on the issues left unresolved in the 2012 BHKC SMP. The catchment councils failed to prepare a revised SMP by 30 September 2015.

Schedule 1A does not provide for the amendment or revision of approved SMPs or the ability to supersede an existing plan with a later plan. Legal advice to the Authority suggests that it is not possible to amend an existing plan. The existing plan must be replaced with a wholly new plan if changes are needed. The Authority was advised that the new plan could be identical to the old plan but include new information to address unresolved issues.

The Guidelines provide for a periodic review of SMPs (at least every five years) to take into account current knowledge, changing conditions within the catchment and changing community attitudes to stormwater management. Amendments of the SMP may be undertaken to take into account unforeseen circumstances provided the proposed changes are consistent with the overall strategy and integrate with existing or proposed infrastructure.[2]

In our view it remains unclear whether the purpose of revisions, as outlined in the Guidelines, is intended to address known and unresolved issues. Further, it is unclear whether the Authority can issue a notice to prepare a revised SMP when an already approved SMP exists.

In addition, we question whether the Authority took appropriate action by issuing a notice. The approved 2012 BHKC SMP stated that the catchment councils would undertake further investigations to resolve Part B works within 12 months of approving the 2012 BHKC SMP. This time frame was not met. Schedule 1A enables the Authority to issue an order where an approved SMP has not been complied with.

[2] The Guidelines, section 2.11, page 9.

Appendix 6 – List of acronyms/Glossary of terms

Acronym/Term	Description
2006 Master Plan	BHKC Flood Mitigation Study: Flood Management Master Plan
2006 SM Agreement	Agreement between the State of South Australia and the Local Government Association on Stormwater Management, February 2006
2012 BHKC SMP	Brown Hill and Keswick Creeks Stormwater Project: Stormwater Management Plan 2012
Adelaide	The Corporation of the City of Adelaide
AMLRNRMB	Adelaide and Mount Lofty Ranges Natural Resources Management Board
ARI	Average Recurrence Interval
AWE	Australian Water Environments
BHKC	Brown Hill and Keswick Creeks
BOM	Bureau of Meteorology
Burnside	City of Burnside
CEO	Chief Executive Officer
DEWNR	Department of Environment, Water and Natural Resources
DPTI	Department of Planning, Transport and Infrastructure
Draft 2016 BHKC SMP	The revised Brown Hill and Keswick Creeks Stormwater Management Plan submitted to the Authority on 18 March 2016
The Guidelines	Stormwater Management Planning Guidelines (July 2007)
Hydrology	Hydrology[3] is the science dealing with the occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere.
Hydraulic capacity	Measure of the volume and flow of water within a watercourse
LG Act	*Local Government Act 1999*
Mitcham	City of Mitcham
MoA	Memorandum of Agreement
NRMB	Natural Resources Management Board
PCWM Board	Patawalonga Catchment Water Management Board
PFAA	*Public Finance and Audit Act 1987*
PSG	Project Steering Group
SMF	Stormwater Management Fund
SMP	Stormwater Management Plan
The Authority	Stormwater Management Authority
Unley	City of Unley
West Torrens	City of West Torrens

[3] Definition taken from http://www.dictionary.com, viewed 9 November 2016.