

# 2022/23 Annual Report

**Brown Hill and Keswick Creeks Stormwater Board**

*For the cities of Adelaide, Burnside, Mitcham, Unley and West Torrens*



# Acknowledgment of Country

---

The Brown Hill and Keswick Creeks Stormwater Board acknowledges that the project and our Constituent Councils are located on the traditional Country of the Kurna People of the Adelaide Plains and pays respect to Elders past and present.

We recognise and respect their cultural heritage, beliefs and relationship with the land. We acknowledge that they are of continuing importance to the Kurna people living today.

We also extend that respect to other Aboriginal Language groups and other First Nations.

---

Kurna people play a key role in the design and delivery of the Brown Hill Keswick Creeks Stormwater Project and we value the input and guidance of representatives of the Kurna Nation Cultural Heritage Association (KNCHA) and RAW SA.

## **Willawilla - Brown Hill Creek**

*The Brown Hill and Keswick Creeks Stormwater Board  
tampendi, ngadlu Kurna yertangga  
banbabanbalyarnendi (inbarendi). Kurna meyunna  
yaitya mattanya Womma Tarndanyako.*

*Parnako yailtya, parnuko tappa purruna, parnuko yerta  
ngadlu tampendi. Yellaka Kurna meyunna itto yailtya,  
tappa purruna, yerta kuma burro martendi, burro  
warriappendi, burro tangka martulyaiendi.*

*Kumarta yaitya miyurna iyangka yalaka ngadlu  
tampinthe.*



# Contents

Chairperson's Report	1
Project Director's Report	2
Strategy	3
Establishment	5
The Project	7
Governance	9
Key Stakeholders	14
Project Partners	15
Capital Funding	17
Delivering with Local Industry	19
Project Schedule	20
Project Map	21
Completed Sub-projects	23
Current Works	33
Financial Snapshot	34
Audited Financial Statements	35

# 1

## Chairperson's Report

*This is the sixth annual report of the Brown Hill and Keswick Creeks Stormwater Management Board, a regional subsidiary established in February 2018 under the Local Government Act 1999 (SA).*



The report canvasses the achievements of the Board over the preceding 12 months in implementing the Stormwater Management Plan and provides updates on the progress of continuing projects. Of particular note are:

- The creek works in Blue Gum Park / Kurangga (Park 20) were completed in September 2022. These works integrate with existing users of this Park Land area, including TreeClimb, and are part of the broader works to reduce stormwater flows from Park Lands Creek into downstream areas.
- As part of the Board's work upgrading the flow capacity of Upper Brown Hill Creek, the Millswood upgrade project has commenced to increase the capacity of the existing channel.
- The Board has also commenced work on 3 of the 5 Lower Brown Hill Creek upgrade projects, following a funding contribution of \$10m from the Commonwealth Government under the Preparing Australian Communities program.

On behalf of the Board, I extend our thanks to our many stakeholders for their ongoing support and contribution, including the CEOs, members and staff of our 5 Constituent Councils, the Federal and State governments, Stormwater Management Authority and Green Adelaide.

**Judith Choate**



## 2

## Project Director's Report



The 2022/23 financial year has been a hive of activity on many fronts for the Board. Completion of the Blue Gum Park/ Kurangga (Park 20) creek works marked the finalisation of works within the South Park Lands. Together with the Victoria Park/Pakapakanthi (Park 16) wetland and the Glenside detention basin, this project will offer considerable immediate benefit to downstream properties that would otherwise be susceptible to flooding. The Board is compiling quite a register of completed projects and ensuring operational and maintenance requirements are managed appropriately has become an increased focus.

The Commonwealth Government's \$10m funding contribution under the Preparing Australian Communities Program has allowed for acceleration of packages 1-3 of the 5 Lower Brown Hill Creek upgrade. The existing concrete channel was constructed in the 1930s, which is the last time a 1 in 100 year flood was recorded in the area. Works have commenced adjacent the airport at the downstream end and will extend

upstream across Marion Road toward Birdwood Terrace. Following a lengthy engagement process with local residents, construction has also commenced to upgrade a 235 metre section of Upper Brown Hill Creek in Millswood. These works have been an excellent example of what can be achieved in locations where the creek traverses through privately owned properties, with several different treatments being delivered to cater to the existing natural and built landscape.

Further grant funding commitments have been made by the Commonwealth Government and pre-planning has commenced in preparation for commencement of those works in the coming months. Establishment of a panel of project and contract managers ensures the project is equipped and ready to respond as additional funding becomes available. The Board now has the benefit of having worked with a number of local professionals in recent years and it is the efforts of these consultants that contribute toward the successful delivery of the project. I aim for the Board to be a client of choice for industry participants and am proud of the collaborative relationships that have been formed.

I extend my thanks to the Board and staff of the Stormwater Management Authority for their continued commitment to our project. To our Constituent Councils, their elected members and staff, including representatives of the Owners' Executive Committee, technical, finance and support staff, thank you for your continued support. And lastly, thank you to the Board and Audit and Risk Committee for your ongoing dedication and direction.

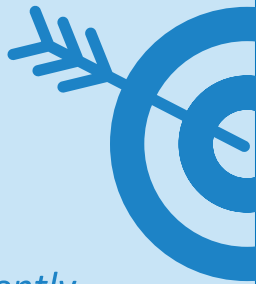
*Peta Mantzarapis*

# 3

## Strategy

### Our Purpose

*To effectively and efficiently deliver infrastructure works to mitigate serious flood risks and help safeguard properties across the Brown Hill Keswick Creek catchment.*



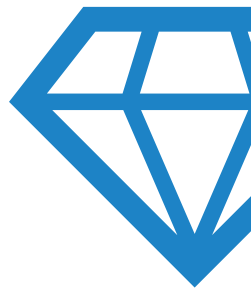
### Our Vision

To create a flood safe Brown Hill Keswick Creek catchment for residents and the public.

The cities of Adelaide, Burnside, Mitcham, Unley and West Torrens aim to become water sensitive cities. This vision is underpinned by six key objectives, the first of which is protection from flooding.



### Our Values



The values that underpin the operations of the Board include:

- **Integrity** – acting ethically, doing what is right and doing what we say we will do
- **Collaboration** – respectful and insightful engagement with all stakeholders
- **Excellence** – striving for the best in all that we do and stretching our capabilities
- **Progressive** – thinking outside the box to innovate and improve
- **Simplicity** – focussing our efforts on the things that are important

### Strategic Focus Areas



- Effective and efficient delivery of the Stormwater Management Plan
- Pursue opportunities for accelerated delivery
- Maximise the utility of our assets
- Enhance our partnerships and engagement
- Strengthen organisational performance

# 4

## Establishment

The Brown Hill Keswick Creek Stormwater Project is the culmination of many years of investigation and planning. The Cities of Adelaide, Burnside, Mitcham, Unley and West Torrens have worked collaboratively to develop a comprehensive Stormwater Management Plan to mitigate serious flood risk and help safeguard properties across the catchment.

From its inception in 2007 until February 2018, the project was conducted as a joint arrangement between the Constituent Councils. The Plan was developed during this phase, leading to its subsequent approval by the Stormwater Management Authority and gazettal of its adoption in February 2017. A condition of the Stormwater Management Authority approving the Plan was that a regional subsidiary be established within 12 months to implement the plan and manage its works. The Brown Hill and Keswick Creeks Stormwater Board was established in February 2018 as a regional subsidiary pursuant to section 43 of and schedule 2 to the Local Government Act 1999.

The Board is governed by a Charter prepared by the five Constituent Councils and subsequently approved by the Minister for Local Government. The inaugural Board was appointed in August 2018 and is responsible for the administration of the affairs of the regional subsidiary.







# 5

## The Project

The Brown Hill Keswick Creek Stormwater Project is a collaborative effort between the Cities of Adelaide, Burnside, Mitcham, Unley and West Torrens to mitigate significant flood risks arising from four major watercourses in metropolitan Adelaide; Brown Hill, Keswick, Glen Osmond and Park Lands Creeks. The catchment is largely contained within the Constituent Council local government areas, which are home to more than 200,000 residents. The Brown Hill Keswick Creek Catchment Stormwater Management Plan outlines a whole-of-catchment flood mitigation strategy that comprises 4 key components:

### Stage 1

Detention storages in the upper catchment that will reduce the downstream flow rates.

### Stage 2

Upgrading the flow capacity of Lower Brown Hill Creek so that it can receive the diverted flows from Keswick Creek.

### Stage 3

Diversion of flows from Keswick Creek to Brown Hill Creek, before they can 'break-out' of the channel (upstream of the Showgrounds) and continue overland through the south-western suburbs.

### Stage 4

Upgrading the flow capacity of Upper Brown Hill Creek and Glen Osmond Creek to prevent 'break-outs' and flooding of private property.

The plan is designed to provide flood protection to the community in the event of a 100-year average recurrence interval (ARI) flood event which would impact almost 4,000 properties and result in significant impact to the Adelaide Airport, Ashford Hospital, major arterial roads and freight corridors. Economic modelling undertaken in 2021 indicated that total damage estimates associated with a significant flood event was \$418.5 million and the completed project would reduce that damage estimate to \$7.5 million, a net benefit of \$411 million.



**3,935**

properties would be flood-affected if a significant flood event occurred today

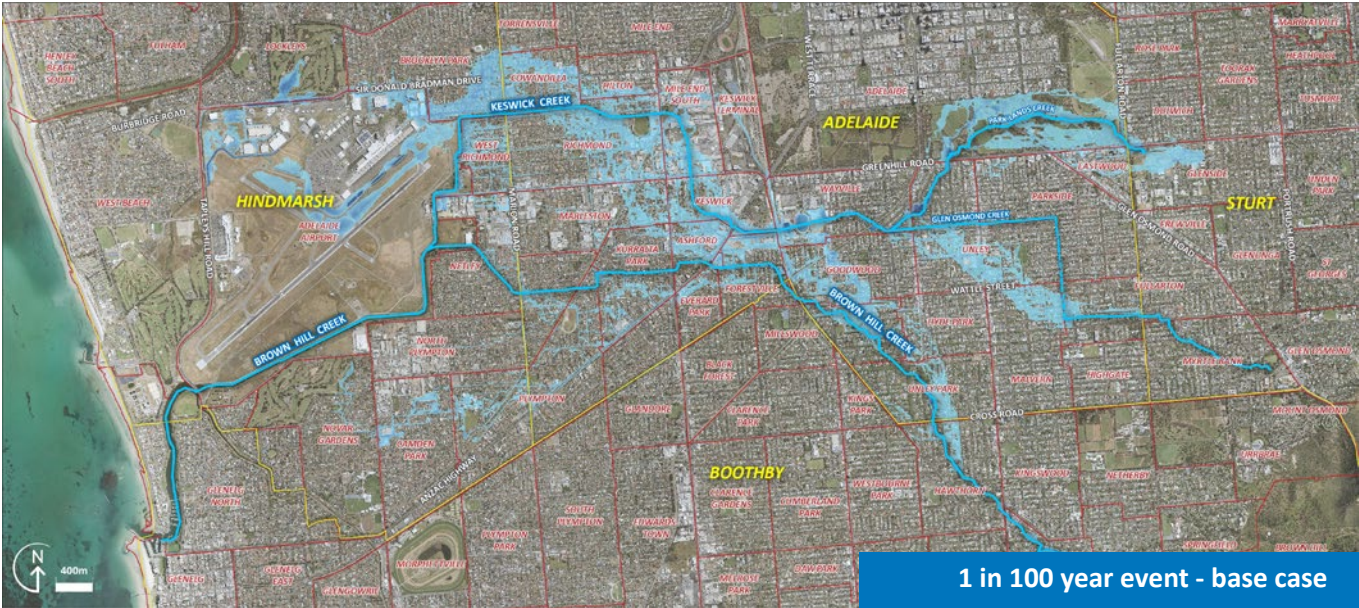


**63**

properties would be flood-affected if a significant flood event occurred after proposed mitigation

Whilst a flood event of this magnitude has not occurred in the catchment since the 1930's, the high flow events of 2005 and 2016 have provided recent reminders of the impact a significant event would have.





# 6

## Governance

The Brown Hill Keswick Creek Stormwater Project is administered by a Board in accordance with the requirements of the Local Government Act 1999 and the Board's Charter. A robust governance structure has been established, including well considered reporting framework, policies and procedures.

The Board is comprised of 5 independent members, appointed following recommendations made by a Nominations Committee of representatives from each of the Constituent Councils. Each Board member contributes a unique set of skills and experience, particularly covering:

- Corporate financial management
- Corporate governance
- Project management
- General management
- Engineering
- Economics
- Environmental management

---

### Current Board Members



**Judith Choate**

Chair since August 2018,  
appointed August 2018



**Geoff Vogt**

Appointed August 2018



**Rachel Barratt**

Appointed August 2018



**Rob Gregory**

Appointed August 2020



**Howard Lacy**

Appointed August 2021



**Independent Member of Audit and Risk Committee**



**David Linder-Patton**  
appointed  
February 2023

The Board’s Audit and Risk Committee comprises nominated Board members along with an independent member and meets quarterly.

We thank outgoing independent member of the Audit and Risk Committee, Justin Humphrey for his contribution to the project and welcome incoming member David Linder-Patton.

The Board appoints a Project Director who is responsible for implementing the decisions of the Board and managing the operational requirements of the project.

**Project Director**



**Peta Mantzarapis**  
appointed  
January 2019

**Owners Executive Committee**

The Owners Executive Committee is comprised of a representative from each of the Constituent Councils. Meetings between the Board and the Owners Executive Committee are scheduled quarterly and four meetings were held in the 2022/23 financial year.

Membership of the committee in 2022/23 was as follows:

<b>Tom McCready</b>	Director, City Services	City of Adelaide
<b>Chris Cowley</b>	Chief Executive	City of Burnside
<b>Daniel Baker</b>	General Manager Engineering & Horticulture	City of Mitcham
<b>Aaron Wood</b>	Manager Assets & Operations	City of Unley
<b>Terry Buss</b>	Chief Executive	City of West Torrens

### Board Member Meeting Attendance 2022/23

Date	Judith Choate	Geoff Vogt	Rachel Barratt	Rob Gregory	Howard Lacy
13 Sep 2022	✓	✓	✓	✓	✓
25 Oct 2022	✓	✓	✓	✓	✓
16 Nov 2022	✓	✓	✓	✓	✓
17 Jan 2023	✓	✓	✓	✓	✓
14 Mar 2023	—	✓	✓	✓	✓
31 Mar 2023	—	✓	✓	✓	✓
18 Apr 2023	✓	✓	✓	✓	✓
13 Jun 2023	✓	✓	✓	✓	✓

### Audit and Risk Committee Meeting Attendance 2022/23

Date	Judith Choate	Geoff Vogt	Rachel Barratt	David Linder-Patton*	Howard Lacy
30 Aug 2022	✓	✓	✓	✓	✓
25 Oct 2022	✓	✓	✓	—	✓
21 Feb 2023	—	✓	✓	✓	✓
22 May 2023	✓	✓	✓	✓	✓

\* David Linder-Patton joined the Audit and Risk Committee in February 2023











# 7

## Key Stakeholders

The Brown Hill and Keswick Creeks Stormwater Board works to deliver successful project outcomes in an efficient and professional manner. We interact with a diverse range of internal and external stakeholders and value the contribution they make.



Constituent Councils



Stormwater Management Authority



Green Adelaide



Federal and State Members



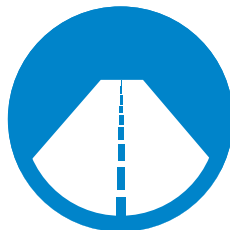
Adelaide Park Lands Authority



Kurna Community



Residents



Commonwealth and State Government Departments



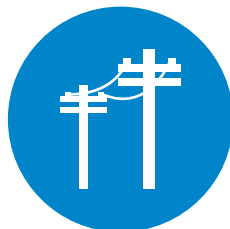
Community Groups



Suppliers



Consultants



Service Utility Providers

# 8

## Project Partners

### Constituent Councils

The Brown Hill Keswick Creek Stormwater Project is the result of a collaborative effort over many years from our 5 Constituent Councils – the Cities of Adelaide, Burnside, Mitcham, Unley and West Torrens. Support is offered to the project from every level of Council, whether it be CEO or delegate involvement in the Owners Executive Committee, technical staff providing design input, finance staff liaison regarding project contributions and budgets, planning and environmental input to construction delivery, or engagement with asset managers regarding operational requirements. The project works in close liaison with our Constituent Councils to ensure we are working together to achieve successful project outcomes and identify opportunities to maximise the utility of our assets.

### Stormwater Management Authority

Continuing the collaborative approach adopted by the five Constituent Councils, the Stormwater Management Authority provides a key role in the delivery of the Project. Beyond the initial role the Authority played in the review and approval of the Plan, the Board's Project Director is in regular contact with the Authority's General Manager to ensure a well-informed and consistent approach to delivery. Through the Authority, the State Government has committed to providing Constituent Council matched capital funding of up to \$70m over a 20 year timeframe and this funding is vital to ensuring the Project is delivered. Board representatives have established a strong working relationship with the Authority and work in partnership to deliver the works set out in the approved Stormwater Management Plan.



**Government of South Australia**  
Stormwater Management Authority

### ***Not just flood mitigation***

The Board works with our project partners to provide enhanced environmental and community outcomes, particularly in areas of public open space. The delivery approach seeks to achieve naturalisation and biodiversity improvements with a focus on protection of significant trees, urban greening, improved water quality and habitat for native species, and opportunity for increased amenity and community interaction. Practical examples of these outcomes are seen at the Victoria Park wetland where over 100,000 new plants have been established and visitors flock to enjoy the site, at the Everard Park upgrade where a dilapidated open channel has been replaced by a larger underground culvert with significant ground level improvements offering increased connectivity to cyclists and pedestrians, and at Hawthorn Reserve where the banks of Brown Hill Creek have been laid back to achieve a more naturalised solution that encourages community interaction.



# 9

## Capital Funding

The Stormwater Management Plan proposed a funding model whereby the three spheres of Government – Commonwealth, State and Local, each contribute one third of the cost of capital works delivery over a 10-year construction program. The Plan further noted that:

*'If at the outset there is no positive response from the Commonwealth Government, the BHKC project would recommend that the catchment councils endorse a strategy along the following lines:*

- *The five councils allocate funding in their budgets for one third of the cost;*
- *a funding commitment is sought from the State Government to at least match that commitment; and*
- *once the State Government has agreed to that commitment, the five councils through the regional subsidiary work jointly work with the State Government to obtain a commitment from the Commonwealth Government for a minimum of one third of the cost to offset against the state and local government contributions.'*

The South Australian Government's Stormwater Management Authority (SMA) has committed \$70m in funding toward the delivery of the project, with these funds being provided over a 20-year timeframe. The SMA funding is contingent upon matching funds being provided by the 5 Constituent Councils. While operating costs are shared equally between the 5 Councils, capital costs are based on the following principles:

- *'The proposed works are the type of works covered by the 2006 agreement between the State of South Australia and the LGA on stormwater management and in particular, both spheres of government each have an interest in reducing flood risk.*
- *Cost sharing between councils should reflect both the extent of their contribution to the problem and the benefits that they each receive from any flood management actions and not be related to the specific location where those actions are implemented.*
- *The approach should be as simple and transparent as is reasonably possible.*

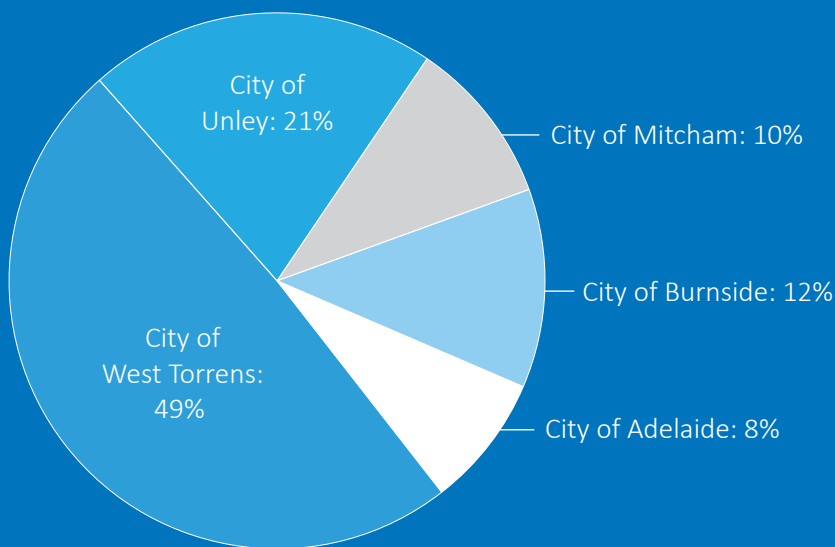
*The starting point for proposed local government cost apportionment is based on the benefits that each council will receive from the proposed mitigation works. These benefits are considered in two forms:*

1. *Benefit from the reduction in flood damages; and*
2. *Benefits from urban development that has already or may take place in the future that will contribute to the flooding problem downstream.'*

The cost sharing arrangement between Constituent Councils is defined within the Stormwater Management Plan and the Board's charter with capital contributions being provided at pre-determined percentage shares.

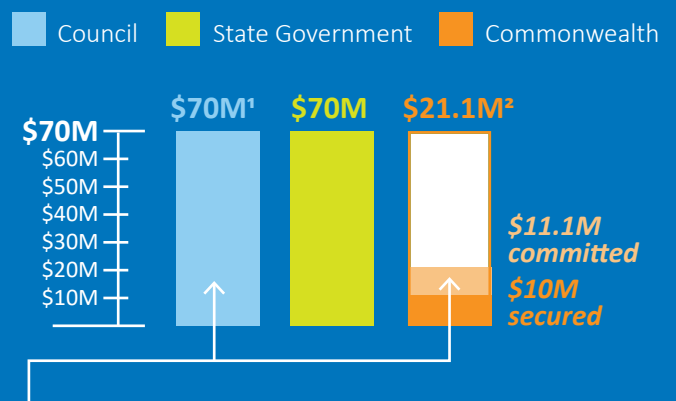


### Council Capital Contributions



A funding shortfall exists as a result of the lack of Commonwealth Government contribution to the project. The Board is seeking to fill this shortfall through pursuit of opportunities to secure smaller grant funding injections and ‘whole-of-project’ funding from the Commonwealth Government. Subsequent to preparation of the Project’s Business Case in 2021/22, \$21.1m in funding has been committed by the Commonwealth Government across 3 grant programs- \$10m committed under the Preparing Australian Communities Program, \$6.1m committed under the Disaster Ready Fund and \$5m committed under the Urban Rivers and Catchments Program.

### Current Funding Commitments



<sup>1</sup> City of West Torrens ongoing contribution to be reviewed in 2027/28.

<sup>2</sup> Commonwealth funding commitment includes \$6.1m under the Disaster Ready Fund and \$5m under the Urban Rivers and Catchments Program. Funding agreements have not yet been executed for these programs.

# 10

## Delivering with Local Industry

Integral to the success of the Brown Hill Keswick Creek Stormwater Project are the relationships established with local suppliers, consultants and organisations. The Board places particular emphasis on ensuring a collaborative approach, bringing together a team of professionals who are leaders in their field and are equipped to deliver results.

Our focus is on providing a pipeline of work to build capacity and capability in the local market, with flow-on benefits for the local economy. The construction scheduling and packaging of works has been specifically developed to maximise participation from local tier 2 and tier 3 contractors. These are businesses that do not compete with the larger contractors for major road transport projects.

The project is supported by the knowledge and expertise of a wide range of professionals, providing services including project management, surveying, engineering, legal, environmental, cultural heritage, civil construction, geotechnical advice, property and arborial assessments.

### Focus on Safety

The Brown Hill and Keswick Creeks Stormwater Board places great importance on the health and safety of our employees, our consultants and the communities within which we operate. Our extensive health and safety management systems ensure we partner with likeminded organisations and are subject to regular review and improvement.

In excess of 60,000 total site hours have been spent delivering our works, with zero notifiable incidents and zero lost time injuries reported.



*“ Having been successfully awarded contracts at both ends of the project extents – one at Upper Brown Hill Creek, Millswood and the other at Lower Brown Hill Creek, Netley – each with their own distinct challenges, the board’s approach to collaborating with the entire project team has ensured works have continued seamlessly. Peta, Brett and the board have worked tirelessly to overcome a diverse range of stakeholder issues including license agreements on private property, soil contamination and unique engineering solutions.*

*The transparency of communication and flexible approach to scheduling has ensured that we have been able to continue confidently with works. The responsiveness of the entire project team and willingness to embrace innovative ideas in order to manage the key project risks has been the main driver in the success of the projects thus far.*

*Another significant project success was in the procurement strategy. The prioritising of local participation of subcontractors and materials supply significantly reduced lead time risk through better supply chain management. This local focus, unlike many of the other less successful IPP models, recognised local not just at an Australian level, not just a South Australian level but at a local postcode level.*

*So to Peta, Brett, the board, and the entire team of subconsultants, this project (from a contractors perspective at least) has set a new bench mark in how government organisations should approach the delivery of projects moving forward, regardless of size. ”*

**Chris Gould, Director Camco**

# 11

## Project Schedule

The Stormwater Management Plan outlines a whole-of-catchment flood mitigation strategy that comprises 4 stages:

### Stage 1 **COMPLETE**

Detention storages in the upper catchment that will reduce the downstream flow rates.

### Stage 2 **IN PROGRESS**

Upgrading the flow capacity of Lower Brown Hill Creek so that it can receive the diverted flows from Keswick Creek.

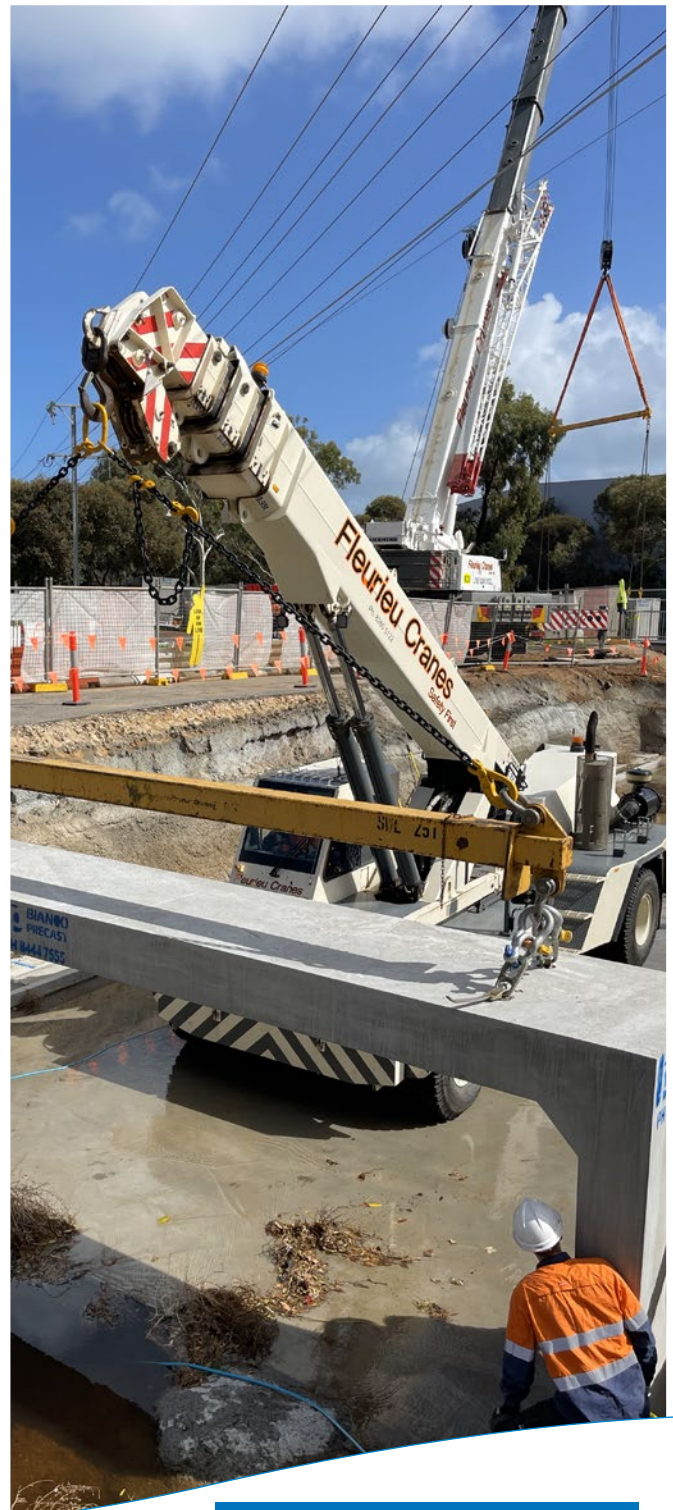
### Stage 3 **ON HOLD**

Diversion of flows from Keswick Creek to Brown Hill Creek, before they can 'break-out' of the channel (upstream of the Showgrounds) and continue overland through the south-western suburbs.

### Stage 4 **IN PROGRESS**

Upgrading the flow capacity of Upper Brown Hill Creek and Glen Osmond Creek to prevent 'break-outs' and flooding of private property.

The Project has a significant funding shortfall which impacts on the ability for all remaining works to be delivered under the current funding model. Additional funding contributions are therefore required to ensure project completion. While priority remains on securing additional project funding to 'fill the gap', the Board's current delivery schedule prioritises completion of Lower Brown Hill Creek upgrades and targeted priority areas within Upper Brown Hill Creek. The Keswick Creek Flow Diversions remain unfunded under the current funding model and delivery will be reliant upon an injection of project funding.



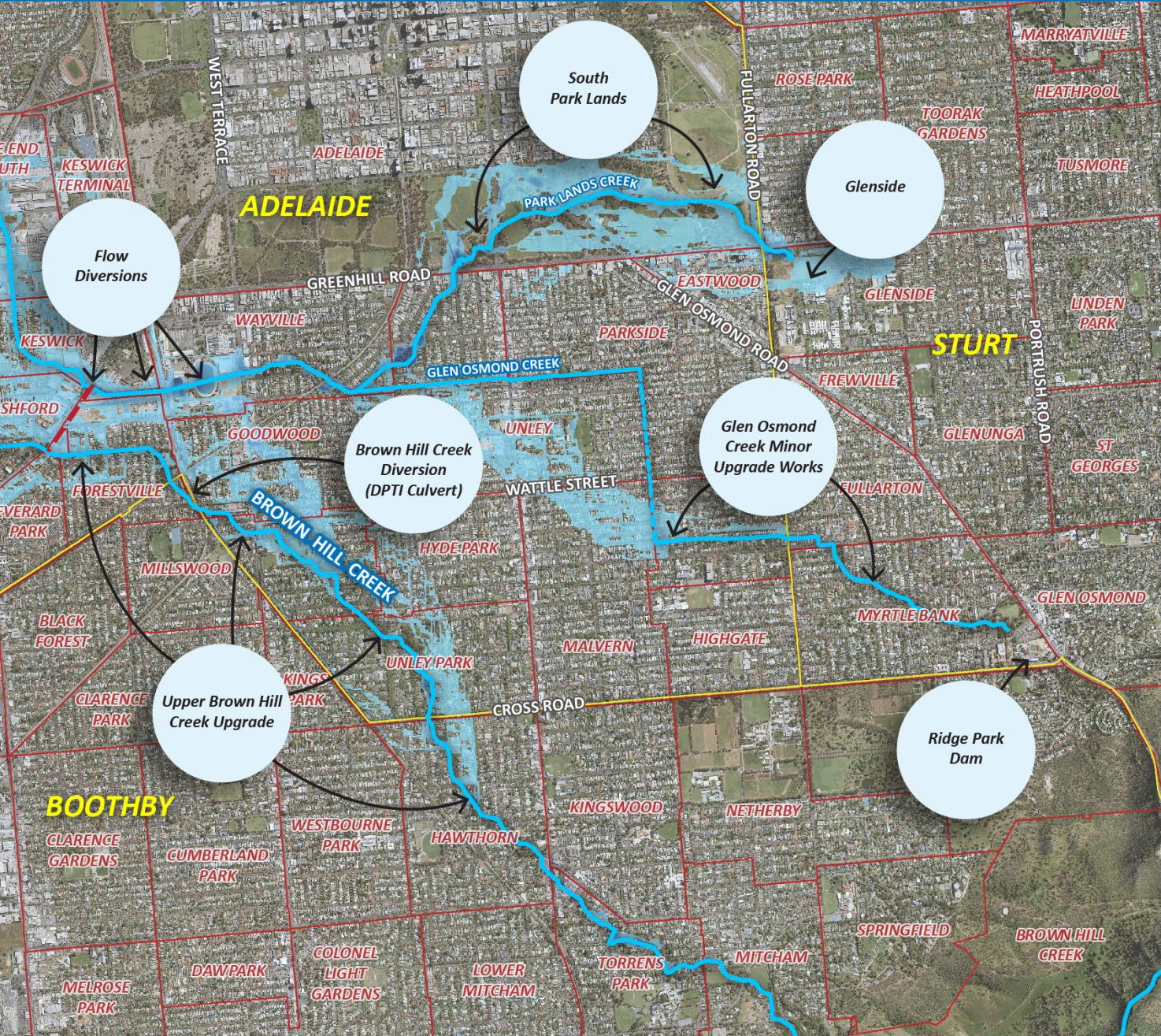


# 12

## Project Map









# 13

## Completed Sub-projects

### ***Brown Hill Creek Diversion (DPTI Culvert)***

A section of Brown Hill Creek in Forestville was diverted by the Department of Planning, Transport and Infrastructure in 2013 as part of the Goodwood Junction Rail Upgrade project. The works, delivered in collaboration with and funded by the Brown Hill Keswick Creek Stormwater Project, involved diverting the creek into a new underground culvert constructed generally along the eastern side of the railway corridor from the southern side of Victoria Street, Goodwood to the northern side of the Glenelg tramway. The culvert discharges into the existing Brown Hill Creek within Forestville Reserve.

### ***Ridge Park Flood Control Dam***

A flood control dam was constructed on Glen Osmond Creek in Ridge Park Reserve, Myrtle Bank to reduce peak stormwater flow in Glen Osmond Creek and reduce the risk of flooding in downstream areas along Glen Osmond and Keswick Creeks.

Commissioned in July 2015, the Ridge Park flood control dam also collects stormwater for the City of Unley's managed aquifer recovery (MAR) scheme. Under the MAR, harvested stormwater is stored in an underground aquifer for irrigation of Unley's parks during periods of dry weather.



*Constructed Culvert*



*Flood Control Dam*

### ***Upper Brown Hill Creek, Hawthorn Reserve***

The Hawthorn Reserve works comprise a component of the Upper Brown Hill Creek Upgrade sub-project, initially earmarked for completion in the second half of the project's delivery program. Grant funding was sought and obtained by the City of Mitcham to upgrade the Hawthorn reserve precinct and the creek works associated with this community space were therefore expedited. The works involved creek widening and upgrade and were delivered by the City of Mitcham. The site was officially opened on May 9th 2019.

The creek has been widened to ensure sufficient capacity to endure a significant flood event. The banks have been laid back in the area of the creek adjacent the Mitcham library to retain a natural setting with native plantings within the creek channel and on the banks. These plantings have been established using a surface material that provides bank stability and allows plant growth. Stepping boulders and logs have also been installed to create an active nature play space for use when the creek is dry or not flowing. Further downstream, rock filled gabions have been installed. In addition, a floodwall has been constructed at George Street to protect properties from flooding and contain creek flows.



*Rock filled gabions*



*Natural creek setting*



### **Upper Brown Hill Creek, Area 1 (Everard Park)**

Comprising portion of the Upper Brown Hill Creek Upgrade sub-project, these works are located between Anzac Highway, Everard Park and Third Avenue, Forestville. The works were expedited to take advantage of access to the site that would be significantly restricted following completion of an adjoining high density residential development. The project involved replacement of an existing open concrete channel with an increased capacity underground covered culvert. Subsequent to installation of the culvert, the City of Unley extended Wilberforce Walk to Anzac Highway, with a shared use path for pedestrians and cyclists traversing the culvert.

Culvert construction works commenced in April 2020 and were completed in August 2020, at which point the site was handed over to City of Unley for the shared use path works to be delivered.



*After*



*Excavation progress*



*Before*



**Glenside**

This project involved enlargement of an existing detention basin from a capacity of 18ML to 37ML, to limit flow to the existing capacity of the culvert under the Fullarton and Greenhill Roads intersection. The detention basin, together with other works in the South Park Lands, is intended to reduce the peak stormwater flows along Park Lands Creek and further downstream. Excavation of approximately 25,000m<sup>3</sup> of material was required to form the detention basin and primary water quality treatment is provided via 3 new large gross pollutant traps.

The site accommodating the detention basin and associated stormwater infrastructure has been vested to City of Burnside as part of Council’s open space and has been developed as a community reserve with playground and associated facilities.

The Glenside project works were delivered by Cedar Woods as part of their residential development and the site was opened to the public on July 2nd 2021.



*Concrete swale and fencing*



*Concrete swale*



*Open Space*

### **Lower Brown Hill Creek - Daly Street Bridge**

The Daly Street bridge is located just downstream of Grassmere Reserve, Kurralta Park. The upgrade of this bridge was delivered by City of West Torrens in conjunction with an adjoining road realignment, with funding contribution from the Federal Government's Local Roads and Community Infrastructure Program.

Previously, the bridge comprised a corrugated domed tunnel of 2.3m in height and 3.7m in width with concrete headwalls on the upstream and downstream faces. This bridge, constructed circa 1950, had one of the lowest capacities of all existing bridges along Brown Hill Creek and especially through the lower reaches. It is known from the 2003 SMP flood modelling that a substantial flood plume was anticipated to escape from the creek in this location in the event of higher flows due to the restrictive capacity. Modelling also showed that this was the first location along lower Brown Hill Creek where creek surcharge would occur in a flood event.

The new bridge comprises twin concrete culverts of 1.8m in height and 4.2m in width, providing a total traversable width of 8.4m. Upstream and downstream transitions comprise gabion basket wall elements, in keeping with the requirements for future channel upgrade through this section of lower Brown Hill Creek.

Upgrade of the Daly Street Bridge was completed in September 2021.



*Before*



*After*



### South Park Lands – Victoria Park/ Pakapakanthi (Park 16) Wetland

This project involved construction of a wetland at the southern end of Victoria Park/Pakapakanthi (Park 16), adjacent Park Lands Creek. Flows from approximately 600 hectares of urban land and 100 hectares of hills face land travel down Park Lands Creek, through the Glenside site and beneath the Fullarton and Greenhill Roads intersection into the Park Lands. The wetland is of approximately 3.2 hectares in area and provides 100 million litres of flood storage. It comprises areas of permanent water, areas that become inundated with stormwater during regular flow events and a broader area that will only become inundated during more significant flow events. The system provides regional benefits of flood detention, stormwater pollutant removal, amenity and recreational enhancement, and biodiversity creation with over 120 new trees and over 100,000 new plantings, including aquatic species.

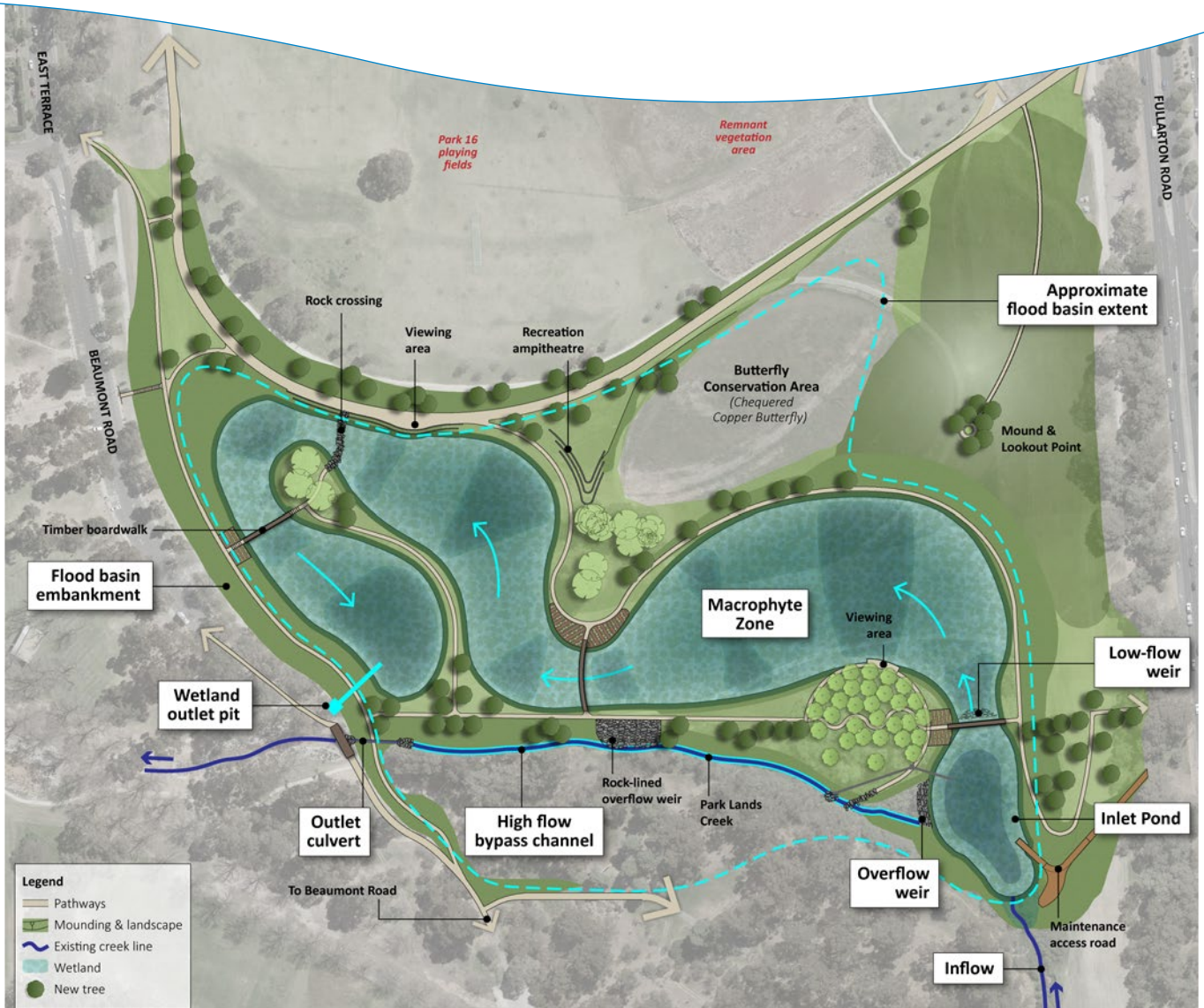
The wetland design incorporates 4 main components-

1. Inlet pond- stormwater enters the site via a deeper pool known as the inlet pond which removes any coarse sediment and slows flow velocities into the vegetated area of the wetland. The pond has a cement treated base that makes it suitable for access by earthmoving equipment and it will need to be cleaned every 5-10 years.
2. Macrophyte zone – the main area of the wetland supports a diverse range of water plants that provide the majority of the stormwater treatment by filtering, collecting and processing stormwater pollutants. This area is designed as a series of deeper pools and marsh zones that will hold permanent water. Marsh zones are typically 100-350mm deep and become more inundated during regular flow events. The macrophyte zone is
3. Flood basin embankment – a vegetated embankment to the west of the wetland is designed to retain water during a significant storm event. During significant flow events, water levels in the wetland will rise and, once full, flow will overtop the inlet pond and continue along Park Lands Creek. A 1500mm x 1200mm box culvert is located at the downstream end of the wetland and controls outflows from Park 16. Once the capacity of the culvert is exceeded, water will pool behind the flood embankment and spread out over the area, including the wetland. Water will continue to flow through the culvert and, once the flood event has ceased, water levels will recede over a number of hours.
4. Landscape integration – the wetland design ensures integration of the system with the existing natural environment with a focus on protection of the butterfly conservation area and existing significant trees. The wetland creates a natural habitat with significantly increased native plant species and passive recreation opportunities including walking paths, wetland crossing points, viewing areas and extension of the Victoria Park running track.



The South Park Lands wetland project was supported by funding from Green Adelaide.





## Operation of the wetland

### Normal rain events

- Flows enter the inlet pond from Park Lands Creek
- A low-flow weir transfers flows under a boardwalk into the shallow vegetated area of the wetland
- Flows take one to two days to reach the wetland outlet pit
- The outlet pit regulates the outflow rate and transfers water back into Park Lands Creek on the western side of the flood basin embankment

### High flow or longer duration events

- During high flow or long duration events, water will begin to flow over the overflow weirs from the inlet pond and wetland directly into Park Lands Creek

- These higher flows will travel along the vegetated high flow bypass channel to the outlet culvert
- The outlet culvert controls flows downstream through the flood basin embankment

### Significant flood events

- During significant flood events, the outlet culvert will choke flows and water levels will rise within the flood basin, inundating the wetland area
- The culvert regulates flows from the wetland area, therefore protecting against flooding of downstream areas
- Following the flood event, water levels will recede to permanent levels over a number of hours



### A valuable community asset

The South Park Lands – Victoria Park/ Pakapakanthi (Park 16) Wetland Project has won accolades across a variety of industry bodies:

- President’s Award at the Planning Institute of Australia SA Awards Dinner – awarded to the Brown Hill and Keswick Creeks Stormwater Board
- Infrastructure Project Innovation award at the Australian Water Association SA Gala Dinner and Water Awards – awarded to Tonkin
- Land Management Award of Excellence at the Australian Institute of Landscape Architects 2023 Landscape Architects Awards SA – awarded to T.C.L
- Healthy Parks Healthy People SA award at the Australian Institute of Landscape Architects 2023 Landscape Architects Awards SA – awarded to T.C.L

“ I have met and spoken to dozens of people during my many visits to the Pakapakanthi (Victoria Park) wetland over the last 6-12 months. Responses to my question “what do you think of this new wetland?” are universally positive – “exquisite”, “stunning”, “inspirational” being just a few of the adjectives that pour off people’s tongues. Most people have been curious to know more about the purpose, design and ecology of the wetland. It is therefore very pleasing to hear that the Brown Hill and Keswick Creeks Stormwater Board will soon erect interpretive signage. A deeper appreciation of the cultural heritage of the site, emerging fragile aquatic and riparian habitats and the creatures that are choosing to make the wetland their home will help ensure people protect the area by staying on paths and keeping dogs on leash. ”

#### **Doug McEvoy AM**

Adelaide Parklands Association’s Co-Ambassador for Pakapakanthi (Victoria Park)  
Chair, South East City Residents Association and co-founder of its volunteer group, Green Pakapakanthi

“ It was an honour to achieve this recognition at the 2022 AWA Gala Dinner and Awards. The award demonstrates the dedication and innovation employed by the Tonkin team, along with our project partners DesignFlow and T.C.L. We’re proud to have worked with the Brown Hill and Keswick Creeks Stormwater Board to deliver this important water infrastructure project that will be enjoyed by the community for many years to come. ”

#### **Ben Taylor**

Tonkin Project Leader

“ The wetlands are a wonderful achievement with benefits for people, wildlife, the environment and future generations plus of course stormwater mitigation. The rock carvings near the crossing are great and ideally placed. All of the artwork is fantastic; a thoughtful addition to the remarkable wetlands. We look forward to seeing them flourish with new growth and bird life. Congratulations to those who made the wetlands possible. ”

#### **Kathy Monks**

Local Resident











### ***South Park Lands – Blue Gum Park / Kurangga (Park 20) Creek Works***

Together with the Victoria Park/ Pakapakanthi (Park 16) wetland, the creek works in Blue Gum Park/ Kurangga (Park 20) reduce the peak stormwater flows from Park Lands Creek into downstream areas.

Works include construction of a low-level mound (typically up to 1 metre in height) and the realignment of existing creek lines in the southern section of the park. The mound is constructed to the south and west of the existing playing fields and stretches for a total distance of approximately 600 metres. Two new open drainage channels converge at a common point at the northern side of the new mound which enables controlled flows to be discharged through a culvert and under Greenhill Road. When large flows exceed the capacity of the culvert, water will build up and be contained behind the mound and temporarily inundate parts of Blue Gum Park/ Kurangga (Park 20) until it subsides.

The new works enable the existing creeks to be backfilled to support tree health and protect the Red Gums against erosion. The works integrate with existing users of this space, including TreeClimb.

The Park 20 project works were completed in September 2022.







# 14

## Current Works

### *Upper Brown Hill Creek – Millswood*

Commencing early in 2023, this project involves:

- Reconstruction and widening of the Brown Hill Creek culverts across Regent Street.
- Reconstruction and widening of a 235 metre long section of the existing creek channel from just downstream of Regent Street, to just upstream of Avenue Street.

The upgrades will result in an approximate doubling of the capacity of the existing channel. The creek passes through several privately owned properties and the project team have been engaging closely with owners over the course of the design development. The design of the widened channel has endeavoured to minimise encroachment into private property and impacts to existing trees, however the works do require the removal of mostly exotic trees and vegetation from the bed and banks of the watercourse. Existing channel walls that are in good condition and the natural cobble stone base of Brown Hill Creek are being retained.

Construction is due for completion in 2024.



### *Lower Brown Hill Creek – Packages 1-3*

Lower Brown Hill Creek is divided into 5 work packages and the Board secured \$10m in Commonwealth Government funding under the Preparing Australian Communities Program to deliver Packages 1-3 over 3 years. The Commonwealth funding is being matched by funding from Constituent Councils and the Stormwater Management Authority.

Packages 1 to 3 of the Lower Brown Hill Creek Upgrade will involve doubling the flow capacity of a 1.7-kilometre-long section of channel beginning at the south-eastern corner of Adelaide Airport and ending at Birdwood Terrace. The channel is primarily situated within a 12-metre-wide reserve owned by City of West Torrens. The upgrades will comprise a 6-metre wide by 1.8 metre high rectangular concrete channel (or an equivalent sized covered culvert) and the upgrade of four crossings using either box culverts or single span bridge structures.

Construction of Package 1 commenced late in 2022 and Package 3 is due for completion in 2025.



## 15

## Financial Snapshot

The activities of the Board are funded by the five Constituent Councils and the Stormwater Management Authority.

Operational expenditure is funded equally by the Constituent Councils.

2022/23 Operational Funding		
City of Adelaide	20%	\$133,594
City of Burnside	20%	\$133,594
City of Mitcham	20%	\$133,594
City of Unley	20%	\$133,594
City of West Torrens	20%	\$133,594
<b>Total</b>		<b>\$667,970</b>

Capital expenditure is funded by regular contributions from Constituent Councils and the Stormwater Management Authority with additional grant funding being secured for individual work packages on an ad hoc basis.

2022/23 Capital Funding		
City of Adelaide	8%	\$196,000
City of Burnside	12%	\$294,000
City of Mitcham	10%	\$245,000
City of Unley	21%	\$514,500
City of West Torrens	49%	\$1,200,500
Stormwater Management Authority		\$0 <sup>1</sup>
Commonwealth Grant Funding		\$4,120,105 <sup>2</sup>
<b>Total</b>		<b>\$6,570,105</b>

<sup>1</sup> The Stormwater Management Authority has committed funding of \$4.5m for 2022/23 but transfer of these funds is awaiting approval from the Public Works Committee of Parliament. It is expected that these funds will be paid with the 2023/24 SMA contribution.

<sup>2</sup> This grant funding comprises the first payments made under the \$10m Preparing Australian Communities Program funding.







# 16

## Audited Financial Statements

**P 1800 934 325**

**E [info@bhkcstormwater.com.au](mailto:info@bhkcstormwater.com.au)**

**PO Box 124 Unley SA 5061**

**[www.bhkcstormwater.com.au](http://www.bhkcstormwater.com.au)**

**ABN 95 889 305 856**