

Nature in the City Program 2020-21

Project Number ENV202100006

Naturescaping Bragg St Park, Hackett with swales

Final report

Prepared by the Bragg St Park Volunteers Group

Under the auspices of the Hackett Community Association

1 December 2021

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Community driven change in a suburban park

The *Bragg St Park Volunteers Group* (the Group) was formed in May 2017 with the aim of getting greater community input into management of the Bragg St park, Hackett. Since then, this group (now has 40 households as members) has undertaken a number of activities including:

- Development of the document “*Managing the Bragg St / Brennan St Park in Hackett: A plan for action today...to enhance the options for tomorrow.*” This document formed the basis for discussions with the Urban Parks area of TCCS for undertaking works to improve the vegetation cover and recreational facilities in the park;
- Applying for a grant through the *2018 Nature Play Program* to provide a range of nature play elements in the park. This was unsuccessful but the *Better Suburbs Play Spaces Forum*, held on 22 September 2018, made a recommendation to allocate \$5,000 to provide seating (logs), boulders and other works. In mid 2019, six logs and around 12 large rocks were installed by the ACT Government near the swings. These have proved very popular with people of all ages, be they just sitting on them, or practicing their balancing skills.

AMENITY CATEGORY 2 - \$125,000 to new amenity (based on community requests) in 20 shortlisted suburbs

The panel reviewed a list of community requests that fell within the 20 shortlisted suburbs, with TCCS price estimates. The selections were as follows:

Play space	Item/s	Cost
Griffith – Captain Cook Park	Seating and tables	\$6,000
Belconnen – McDermott Place	Shade sail	\$26,000
Deakin – Hannah Place	Shade sail	\$26,000
Campbell – Glossap Street	Shade sail	\$26,000
Hackett – Bragg Street	Seating, boulders, soft fall, edging, repair of basketball	\$5,000
TOTAL		\$89,000

- Applying for another grant under the *2020 Nature Play Program* to provide more play features but were unsuccessful.
- In September 2019, TCCS provided the Group with 60 native species of shrubs and ground covers which they planted in the park near the corner of Brennan and Mackenzie St. Urban Parks also agreed to make this a no-mow area to prevent damage to these plantings. Many of the plants have survived dry periods and being eaten by rabbits and kangaroos.
- Receiving a grant through the *2021 Nature in the City Program* (the subject of this report) to build swales with the aim of reducing water run-off and soil erosion in the park. The need to undertake this work is highlighted in the photo showing the impact that heavy rain in February 2020 had on the park - see **Attachment F**, page 15.

Dial Before You Dig documents

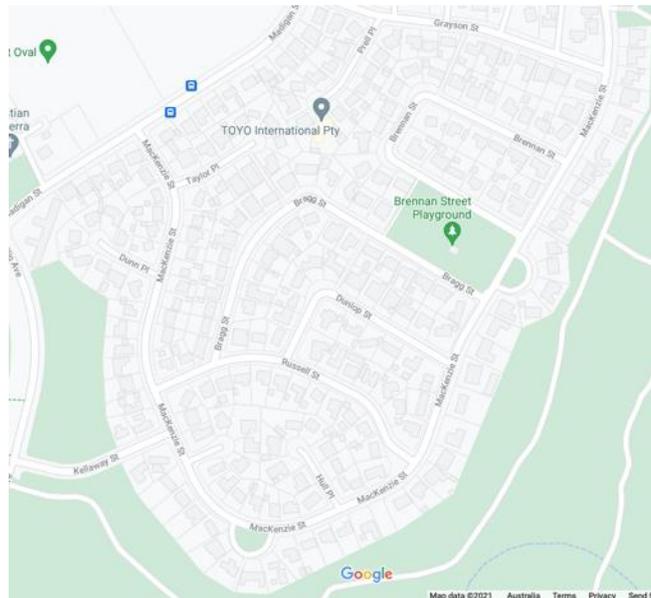
A request for DBYD documentation was submitted by the Group Convenor on 17 May 2021 (**Attachment A**). Of the documents received, the only asset is the Telstra underground line running across the lower end of the park from Bragg to Brennan St. This was well away from any swale construction and the concrete covers at several points across the route show the alignment.

The other asset was the underground stormwater drain which runs from Mackenzie St through the middle of the park to behind 31 Bragg St. None of the DBYD documents showed this infrastructure, but the alignment was obvious with a drain hole and a separate concrete cover, near the middle of the park. The contractor was aware of this infrastructure.

Communication with residents

In May 2021, a letter (**Attachment B**) about the proposed swales work was delivered to all households who may use the park, including those in Bragg, Brennan, Dunlop, Russell, Grayson and Mackenzie Streets (from Grayson to Madigan St), and Prell, Kenny, Taylor, Dunn and Hull Places.

Note – Google maps refers to the park as the “Brennan St playground” – this highlights the need to have agreed names for all parks in the suburb as approved by the ACT Place Names Committee.



The volunteer group has been sent regular “Update” emails every 1-2 months – an example is included in **Attachment C**. Around 32 updates have been sent since the group was established.

Engagement of contractors

In developing the grant application, in early 2020 the group received a quote from Paul Barnett, Director, *Paul Barnett Design Group*. In November 2020, Mr Barnett advised that he would subcontract the design and construction work to Mr Paul Totterdell, a water harvesting and water recycling consultant of *Sustainable Organic Solutions*. Both men have worked together on similar projects in the ACT and NSW. It was agreed that it would be more efficient if Mr Totterdell was contracted directly by the Group (via the Hackett Community Association), rather than paying Mr Barnett who would then pay Mr Totterdell. The work was undertaken by Mr Totterdell and his son, (Jonathon Totterdell) who runs a business, *JT4 Garden Services*.

The fees included the initial consultation and design, tractor hire, hire of fencing to protect the tractor, 20 cubic metres of sand, and labour. Copies of the invoices and payment record are at **Attachment E**.

Rocks were obtained free of charge courtesy of ACT Government - one of the volunteers has done previous work for the ACT Government and had discussed the provision of rocks with the depot in Mitchell. Two truckloads were provided in the week the construction started.

Timeframes

Mr Totterdell provided a plan and swale design in March 2021 (**Attachment D**) which was sent to Urban Parks for approval which was subsequently given. However, due to other jobs and delays on these due to wet weather, the work on the Bragg St Park swales did not commence until Thursday 5 August 2021. The month of July had continual falls of rain which made the soil in the park wet. On Wednesday 4 August, Mr Totterdell commenced digging the first swale in the top end of the park (near corner Brennan and Mackenzie St) but water soon started appearing in the hole. It was decided to delay and start the next day on another swale, which proved to be far drier. A team of up to 5 people worked from Thursday 5 August, through the weekend and finished on Wednesday 11

August – a total of six days. It rained gently (5mm) on the night of 11 August which caused no problems. The timing was very fortunate given that there was a sudden Covid lockdown declared at midday Thursday 12 August. This lockdown was initially for 7 days but was later extended by a further two weeks to early September, preventing the Group from undertaking additional work in the park.

Construction process

Mr Totterdell used a digger tractor on tracks to build all the swales. The process involved:

- Removing and stockpiling top soil;
- Then digging a channel about 70cm deep by 50 cm wide across the front part of the swale;
- Placement of sand in this channel and then backfilling with the topsoil. In each swale they made 2 or 3 sand 'plugs' about 70cm diameter – one at either end and one in the middle. The tops of these appear above the topsoil and are designed to direct water into the lower channel;
- Creating a low bank at the front of the swales;
- Placement of rocks near the sand plugs;
- Raking to smooth the swales;
- Using a theodolite to get the levels correct.

At **Attachment F** is a selection of photos showing the park before and after construction of the swales, while **Attachment G** shows the stages of construction. The total area of the swales is approximately 540 square metres.

Mulching

Mr Totterdell recommended that the swales be covered with mulch, as this will allow grasses and herbaceous plants to regrow and assist retain water that will improve the growth of plants put in the swales.

Urban Parks provide 20 cubic metres of wood chip mulch in September and another load in October. The group spread the mulch using wheel-barrows and rakes on swales 1-4 in early November and then on swale 5 on 28 November 2021, along with plantings. Weeding was carried out before mulch was spread, though on swale 5, large sheets of cardboard were laid over weeds and then covered with mulch.

Warning – the mulch was freshly chipped tree prunings placed in a large pile about 2 metres high. Soon after delivery, several small children were seen playing on the pile. This seemed okay but when the volunteers began shovelling it into barrows about 5 days later, there was a lot of gas/steam omitted from the chip – the recent rain had made it wet. This may have had pathogens harmful to children, so the convenor sent an email to the parents warning them and asking that they did not let their children play on the chip piles – this advice was heeded.

Plantings

The Group prepared a draft planting scheme for the swales and other parts of the park which was submitted to TCCS for approval on 19 August 2021. Following discussions with staff, a revised plan was agreed in late October (see **Attachment H**). This plan would see the planting of 161 trees and shrubs and 72 tufts of *Themeda triandra* in and along the walls of swales 1-5. Four trees were planted on the Brennan St side of the park outside of the swales. Subject to how these plants survive, planting of swales 6 and 7 will be done in autumn 2021. The total area of the swales is approximately 550m² – around 6% of the total area of the park of 8900m². It is noted that the microforest in Downer has around 1,800 plants in an area of 420sq². We have not put plants in such

densities, as the park is in a bushfire zone. In this context, the plants are spread out and designed so that climbing species (*Hardenbergia*) will not climb trees or shrubs and create a fire hazard.

Species have been selected from the ACT Government guide MUNICIPAL INFRASTRUCTURE STANDARDS, [Part 25 Plant Species for Urban Landscape Projects](#), February 2021 and the Canberra Plant Selector <http://actsmart-plantselector.com.au>. Where possible species native to Mt Majura/Ainslie have been selected. As shown in the table in Attachment H, the plants were provided by Urban Parks, the Urban Trees Program and the volunteer group.

Due to the wet ground, the tractor caused minor scarification of soil around the swales. This is not damaging as it has assisted breakup the hard ground surface in which existing seed should germinate and cover these patches up. Scattering of lawn seed will assist revegetate these areas. Urban parks provided a dry land grass seed mix to cover approximately 200 square metres and has been applied to the area below swale 3 and 6. The seed will also be used near other swales as required.

The planting of the swale walls has done with one species. For example, on the front wall of swale 2, a row of *Veronica perfoliata* has been planted. This plant has pale blue flowers with blue-green leaves. The orange flowered *Grevillea juniperina* has been planted on the wall of swales 3 and 5, while *Lomandra longifolia* on swale 4. This approach was adopted to:

- a) see how each species grew - it would be pointless planting every swale wall with the same species only to have them die.
- b) it is envisaged that once they are well established and flowering they will provide colour “stripes” that will provide an additional visual attraction for visitors to the park.

Native daisies growing in the open areas of the park are subject to mowing and trampling by people. As an experiment, in late August, a number of these were transplanted and planted at either end of swale 1, and in the middle of the front wall of swale 7 to see how they would grow. As at 1 December 2021 they were thriving and displaying flowers – in contrast to those which were recently mowed.

Volunteer hours

Between April- August 2021, the Group has spent around 50 hours of work related to this project. This has been mostly with a small number of the group (3-4) involved with:

- Reviewing draft plans for the swale layout in April;
- Liaison with the swales contractors during the construction of the swales;
- Photographing the park before, during and after construction of the swales;
- Preparation of the planting scheme (Attachment H)

With the lifting of Covid restrictions in November, the group undertook weeding, planting and mulching on seven occasions – six of these were 4-5.30pm on weekdays and then a 3 hour session on Sunday 28 November. Between 3-10 people participated in these working bees with a total of 70 hours. The numbers were low because people were keen to go away post Covid lock-down, and also balancing going back to work and then children starting school again.

Education

The group has prep

Attachment A – response from DBYD



Job No 21632188

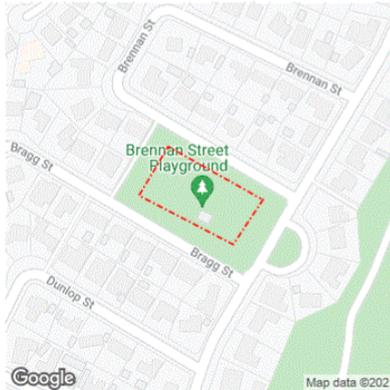
Phone: 1100
www.1100.com.au

Caller Details

Contact: [Redacted] **Caller Id:** 1477675 **Phone:** [Redacted]
Company: Not Supplied **Mobile:** Not Supplied **Fax:** Not Supplied
Address: [Redacted] **Email:** [Redacted]

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: Bragg St Park, Hackett, swales project
Working on Behalf of: Other
Enquiry Date: 17/05/2021 **Start Date:** 24/05/2021 **End Date:** 28/06/2021
Address: Brennan Street, Hackett ACT 2602
Job Purpose: Excavation **Onsite Activity:** Mechanical Excavation
Location of Workplace: Road Reserve **Location in Road:** Nature Strip

- Check the location of the dig site is correct. If not submit a new enquiry.
- If the scope of works change, or plan validity dates expire, resubmit your enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
 Bragg St Park Volunteers Group has a ACT Government grant to build swales in this Park. The ACT Government requires current DBYD documentation as part of their approval process for this work to be done.

Your Responsibilities and Duty of Care

- The lodgement of an enquiry does not authorise the project to commence. You must obtain all necessary information from any and all likely impacted asset owners prior to excavation.
- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at www.1100.com.au
- For more information on safe excavation practices, visit www.1100.com.au

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
 ** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
 # Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
109777664	Evoenergy/Icon Water	0262935770	NOTIFIED
109777665	NBN Co, NswAct	1800626329	NOTIFIED
109777663	Telstra NSW, South	1800653935	NOTIFIED
109777662	TPG Telecom (NSW)	1800786306	NOTIFIED
109777666	Transport Canberra and City Services	0278013960	NOTIFIED

END OF UTILITIES LIST

Lodge Your Free Enquiry Online – 24 Hours a Day, Seven Days a Week [ACT]

Attachment B – letter to residents May 2021

Dear Residents near Bragg St park and Bragg St Park Volunteers
(Taylor Place, Bragg, Brennan, Dunlop, Russell and Mackenzie Streets)

BRAGG STREET PARK – SWALES LANDSCAPING... STARTING SOON

In 2020-21, the *Bragg St Park Volunteer Group* received a grant of \$9,100 under the *Nature in the City* program to construct swales in the park. Swales are mounds of soil (approx. 1m high) built across the contour with the aim of capturing water and directing it into the sub-soil rather than letting it run across the surface.

Why does the park need swales?

Much of the park has very poor grass cover, with some areas just hard, bare earth. During heavy rain events, water rushes down through the park taking with it soil and vegetation. There is a stormwater drain that runs through the middle of the park from Mackenzie St, to the back of 31 Bragg St. From there the drain goes below the backyards of houses in Bragg and Brennan Streets. Several times over the past decade this stormwater drain has blocked and overflowed. This resulted in several gardens and garages in these streets getting flooded. While the ACT Government has flushed out this drain several times in recent years, it would appear that the pipe may not be large enough to handle large amounts of water (it is only 30cm diameter). Capturing water in the swales will reduce the amount of water entering the drain, but increase the ground water in the park which will benefit the plants.

This work been approved by the ACT Government.

How will they be built?

Seven swales each about 20 metres long by 1.5m wide by 1 metre high, will be built using a tractor – see areas marked on attached map. Sand will be placed in the bottom of each swale to improve the infiltration of water entering the ground soil. Rocks about three times the size of a football will be placed in parts of the swales. Large existing trees will not be removed, but some of the small self-sown trees may be damaged. The volunteer group will plant additional plants when the work has been completed.

When will they be built

The work will be done sometime in April/May 2021. A load of sand (20 cubic metres) and rocks will be delivered and placed on the Brennan St side of the park. Subject to weather the works should be completed within one week.

Who will create the swales

Sustainable Organic Solutions, who are a water harvesting and water recycling consultant. They have built swales at Majura Primary School, Downer Micro forest, Orana Primary School and Aranda Primary School.

If you have any questions please do not hesitate to contact me.

Chris Mobbs
Convenor
Bragg St Park Volunteer Group

Attachment C – example of communication with the Volunteer group

Update 24 –30 July 2020

Dear Bragg St Park Volunteers

Great news in this update

Firstly! The table was installed on the 15 July. I am sure that if you have visited the park over the past two weeks you will have seen it. It is made from recycled plastic and designed to allow wheelchair access and the grey tones blend in beautifully in the park. I am sure it will be popular, especially as the weather warms up.

But wait there is more!!

Nature in the City Grants Program

I am also very pleased to inform you that **we have been successful** in our application for a grant under the *ACT Nature in the City Grants* Program.

The decision was released by Minister Mick Gentleman on 24 July 2020 but I have yet to receive the official offer of the grant. Attached is our original grant application in which we asked for \$9,100 to prepare a plan and then have the swales constructed. I am sure this project will greatly enhance our park by reducing the water run-off and soil loss and also help the growth of the trees, shrubs and ground cover through better penetration of water into the sub-soil. We were one of six grants awarded under the program:

The recipients of this year's ACT Nature in the City Grants are:

- **Hackett Community Association for the Bragg St Park Volunteers Group:** Naturoscaping Bragg St Park, Hackett with swales - \$9,100
- **The Campbell Community Association (CCA): Campbell Community Association:** The Park Regeneration Project - \$14,800
- **Friends of Dryandra Woodlands:** Dryandra Woodlands Rehabilitation - \$18,869
- **ACT Wildlife:** Increasing Habitat for Native Wildlife in Canberra's Urban Areas - \$19,999
- **North Ainslie Primary School Parents' and Citizens' Association:** North Ainslie Primary Senior Oval - Environmental Remediation - \$20,000
- **Curtin Garden Group:** Curtin Environmental Education Park - \$17,934

The full list of grants can be seen at:

<https://www.environment.act.gov.au/act-nrm/grants-and-support-packages/act-environment-grants>

I will let you know once I receive the grant contract and how we will progress development of the plan and then construction of the swales.

More plantings

ACT Parks have indicated that they can provide us with more plants to replace those that we planted last year, but died or were eaten. The Dianellas and Bulbines were eaten so I am proposing we not replant them (however, I notice there is one cluster of Bulbines which is doing very well!!). I propose we go for shrubs. Ideally we should aim to plant in August so they get going with the on-set of spring. However, now we have the swales grant I suggest we wait until that work has been completed before we do more plantings.

Cheers

Chris Mobbs
Convenor
Bragg St Park Volunteers Group
30 July 2020

Attachment D – draft plan prepared by Sustainable Organic Solutions

2020-2021 ACT Nature in the City Grant Program

Naturescaping Bragg St Park, Hackett with swales

Reference: ENV202100006

Bragg st Park Hackett swales plan

Bragg St Park Waterharvesting

Paul Totterdell SOS

Paul Totterdell
Sustainable Organic Solutions.
Water Harvesting and Water Recycling consultant.
Part of the 'Green World Group'.



----- no mow zone where volunteers have planted shrubs and ground covers provided by Urban Parks in September 2019



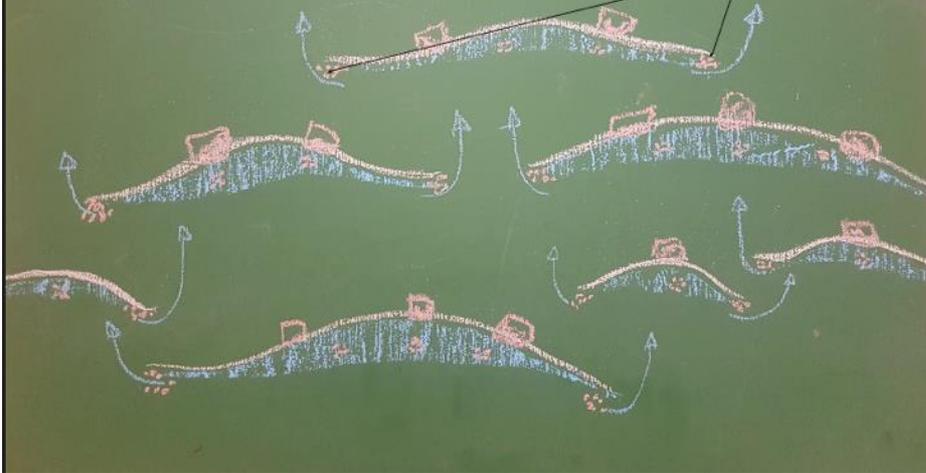
swales

Note – the swale at the lower end of the park (red arrow) was not built, as Mr Totterdell recommended the creation of a swale in the open space opposite 19 Brennan St. The swale in the no mow zone was also not built (green arrow) - see revised layout of swales below.

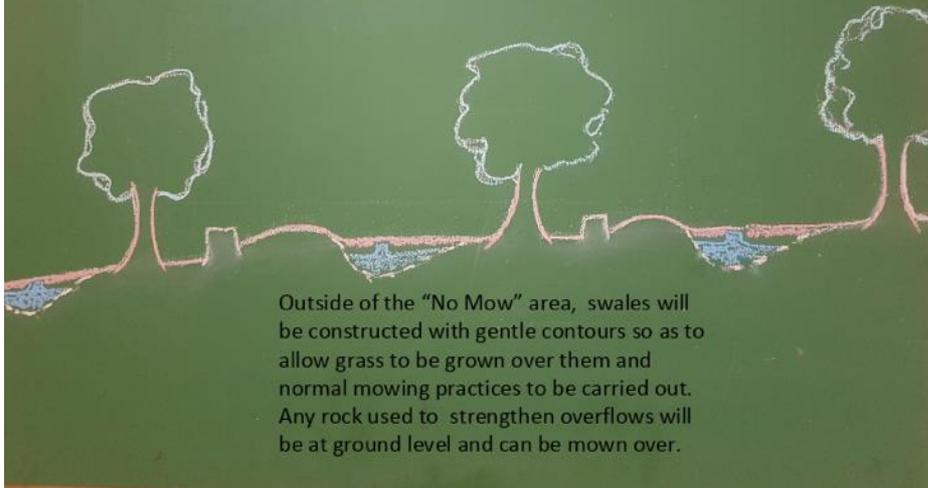


The swales collect water, and when full, release excess water down hill.

The two ends of each swale are level in the landscape. Site rock is used to create spillways from one swale to the next, downhill.

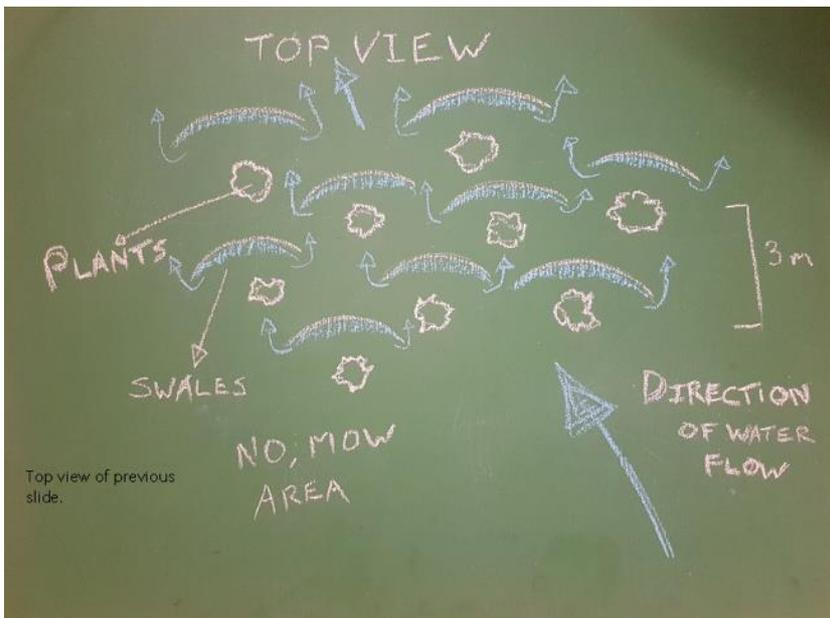


The landscape is excavated between the existing trees. This excavation is refilled using imported river sand and site rock gained from the excavation. Extra rock may be required.



Outside of the "No Mow" area, swales will be constructed with gentle contours so as to allow grass to be grown over them and normal mowing practices to be carried out. Any rock used to strengthen overflows will be at ground level and can be mown over.

The existing plantings can be treated similarly, with a smaller version of the same technique.



Top view of previous slide.

All of the above diagrams are indicative of the waterharvesting design. As excavation and installation occurs, variations on the theme may be required.

The basic design and water management will not change.

Design by Paul Totterdell, Sustainable Organic Solutions

All Rights Reserved.

Attachment E - payment records
Summary of payments

Details removed

Attachment F - Before and after photographs

'Pre-construction' photos taken on 22 June 2021 and the post construction photos on 14 August 2021. Photos will be taken in same location every 6 months as part of the monitoring program.



Aerial photo showing revised indicative location of the seven swales - not to scale



Middle of park looking toward swings. Photo taken after an intense rain event on 10 February 2020 which dropped around 60mm as recorded at BOM weather site at Tyson St, Ainslie. [BOM Climate data](#). This was after the prolonged drought and highlighted the need to reduce run-off and improve retention of water in the park through the creation of swales.



Pre-swales - Lower end of park looking from path connecting Bragg and Brennan



Post-swales construction with swale no 7 in foreground and then 6 and 5 in distance.



Pre-swales – looking from dead tree at centre looking towards 15 Brennan St



Post-construction. swale No.5 from dead tree at centre looking towards 15 Brennan St



Pre-swales from dead tree at centre towards 19 Brennan St



Post-construction swales - from dead tree at centre towards 19 Brennan St. The end of swale no 5 on left hand side.



Pre- swales – looking from dead tree at centre looking towards 31 Bragg St



Post-construction – looking from dead tree at centre looking towards 31 Bragg St.
Swale no.6



Pre- swales – looking from dead tree at centre looking towards 24 Bragg St



Post-construction – south end of swale no 6.



Pre-swales from dead trees at centre looking towards Mackenzie St



Post-construction. Swale no 4 in foreground.



Pre-swales from dead trees at centre looking towards 23 Brennan St



Post-construction Swale no 4 in foreground and swale no 3 in distance



Pre-swales from top of park towards centre



Post-construction with swales no 2 from right of picture and then swale no. 3



Pre-swales from top of park near Mackenzie looking towards swings



Post-construction with swale no 1 in foreground and south end of swale no 3 on right



Pre-swales looking towards 21 and 23 Brennan St



Post-construction. Swale no 1 looking towards 21 and 23 Brennan St



Pre-swales at top of park with Mackenzie St on left hand side



Post-construction swale no.2.

Attachment G – photos showing swales before, during and after construction



First swale - corner Brennan and Mackenzie St



Second swale – before and during construction – sand channel being created



3rd swale showing the sand plugs.



3rd swale completed with rocks near sand plugs

Swales after planting and mulching



Swale no 3



Swale no 5

Attachment H – Final planting scheme approved by TCCS October 2021

Species and supplier	Swale 1	Swale 2	Swale 3	Swale 4	Swale 5	TOTAL
Urban Parks						
<i>Indigofera australis</i> Australian indigo			5		5	10
<i>Cassinia longifolia</i> Cauliflower Bush			2		8	10
<i>Correa. reflexa</i> var. <i>numularifolia</i>			5			5
<i>Daviesia ulicifolia</i> Narrow leaved bitterpea			3		3	6
<i>Lomandra longifolia</i> Long-leaved Matrush	12			10		22
<i>Grevillea juniperina</i> 'Molonglo'			15		15	30
<i>Themeda triandra</i> Kangaroo Grass	14		30		28	72
Urban Trees program						
<i>Callistemon 'harkness'</i>	2	2	2		4	10
<i>Callistemon sieberi</i> River bottlebrush	2		4	4		10
<i>Acacia dealbata</i> Silver wattle	2		2			4
Bragg St Volunteers						
<i>Cassinia longifolia</i> Cauliflower Bush	3		5			8
<i>Hibbertia obtusifolia</i> hairy guineaflower	3		3			6
<i>Hardenbergia violacea</i>	2		8	4	6	20
<i>Veronica perfoliata</i> – diggers speedwell		20				20
<i>Carex appressa</i>		4				4

Trees elsewhere in park

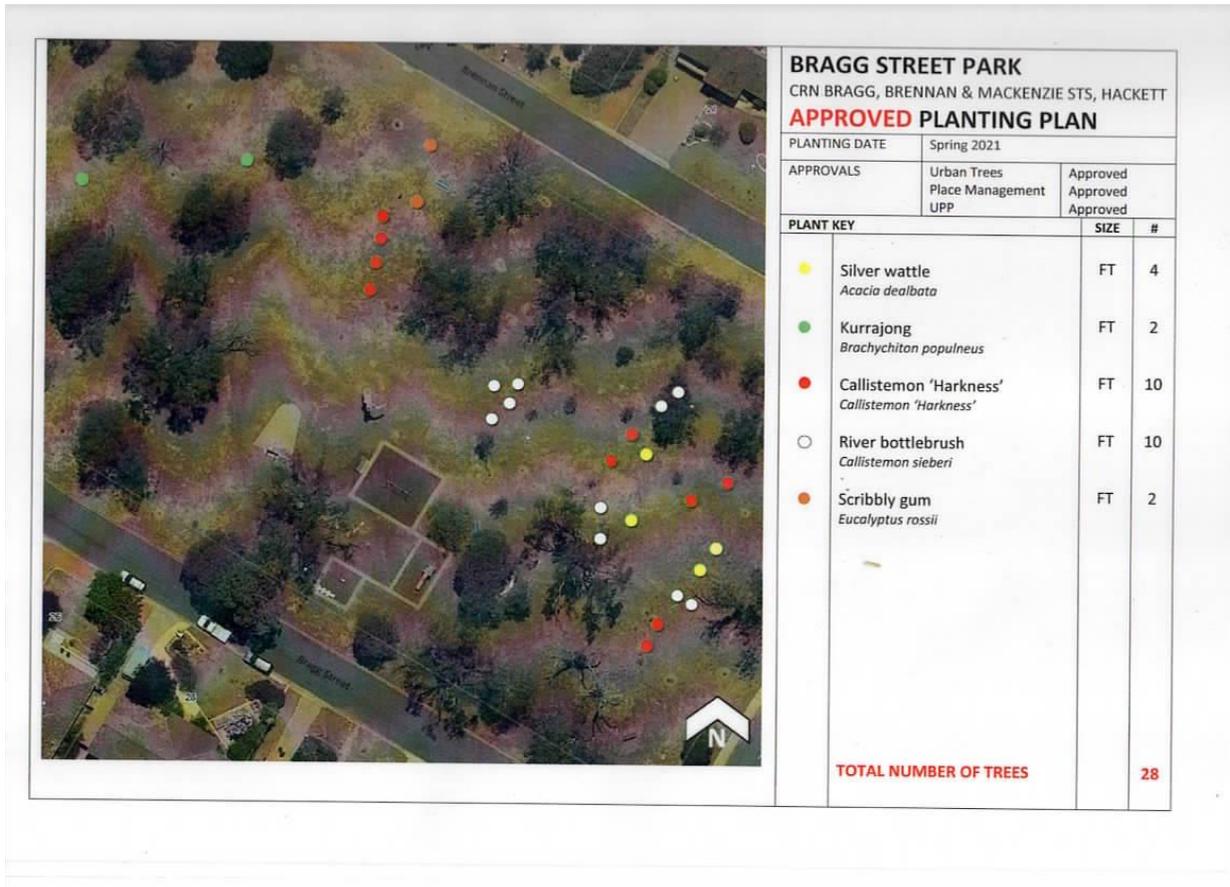
Urban Trees program

Species	Quantity	TOTAL
<i>Brachychiton populneus</i>	2	2
<i>Eucalyptus rossii</i>	2	2

Bragg St Volunteers (to be obtained in autumn 2022)

<i>Fraxinus oxycarpa</i> subsp 'Raywoodii'	2	2
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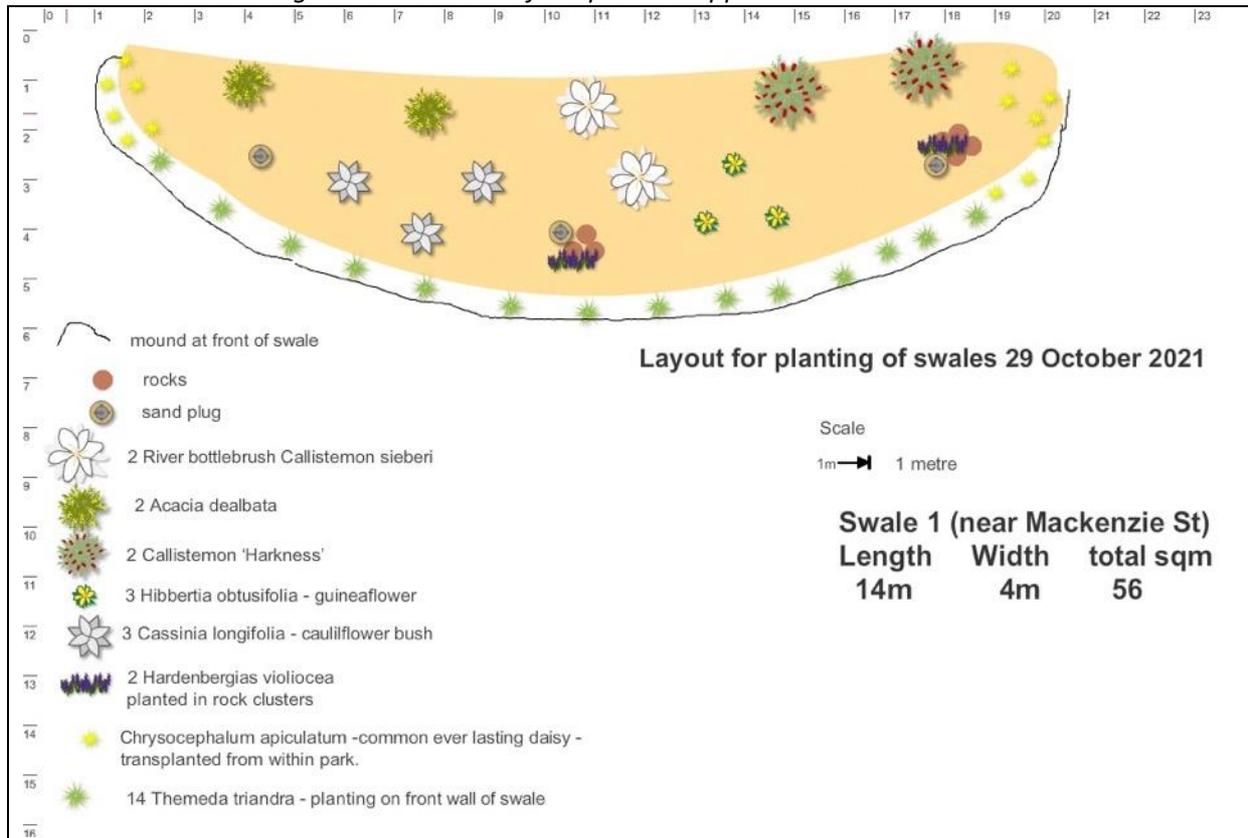
Urban Trees program trees and shrubs layout



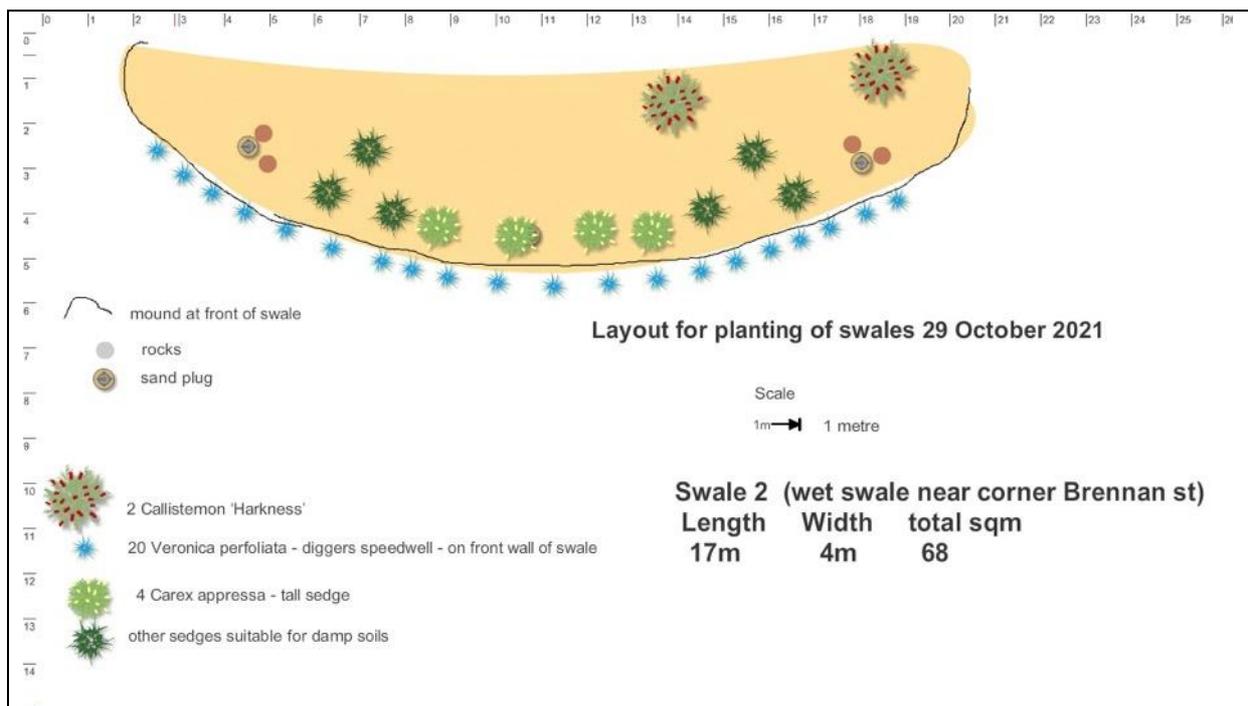
BRAGG STREET PARK			
CRN BRAGG, BRENNAN & MACKENZIE STS, HACKETT			
APPROVED PLANTING PLAN			
PLANTING DATE	Spring 2021		
APPROVALS	Urban Trees Place Management UPP	Approved Approved Approved	
PLANT KEY		SIZE	#
●	Silver wattle <i>Acacia dealbata</i>	FT	4
●	Kurrajong <i>Brachychiton populneus</i>	FT	2
●	Callistemon 'Harkness' <i>Callistemon 'Harkness'</i>	FT	10
○	River bottlebrush <i>Callistemon sieberi</i>	FT	10
●	Scribbly gum <i>Eucalyptus rossii</i>	FT	2
TOTAL NUMBER OF TREES			28

Swale 1

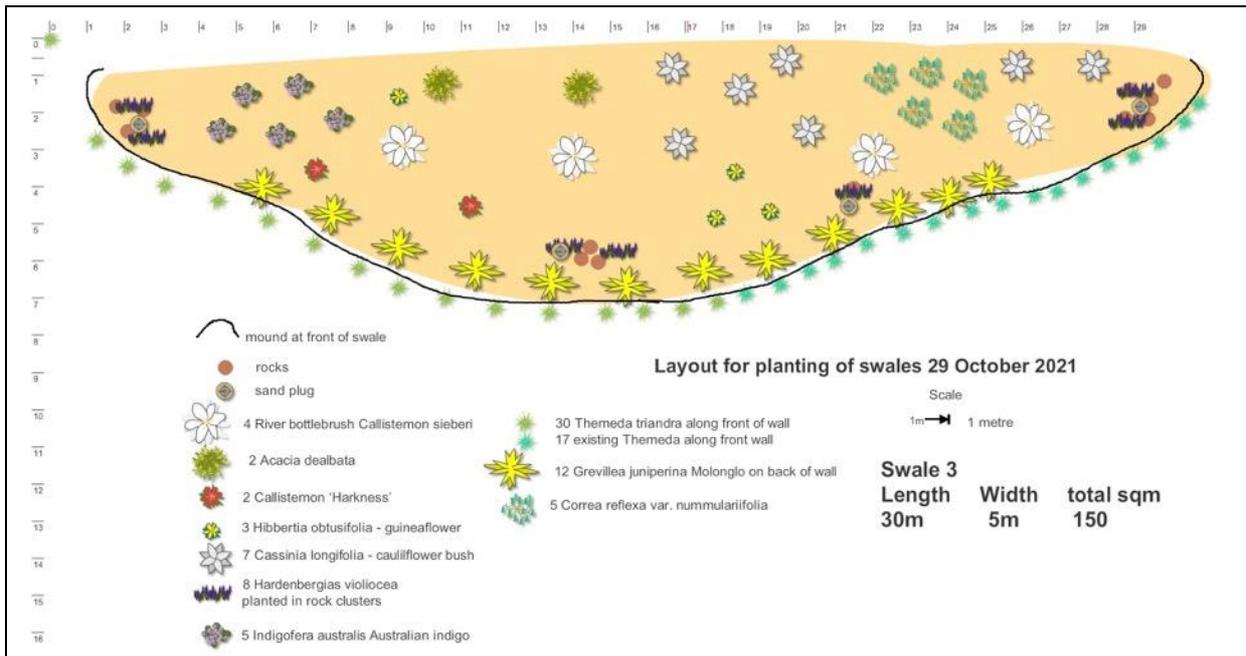
Note – while a scale is given the location of the plants is approx.



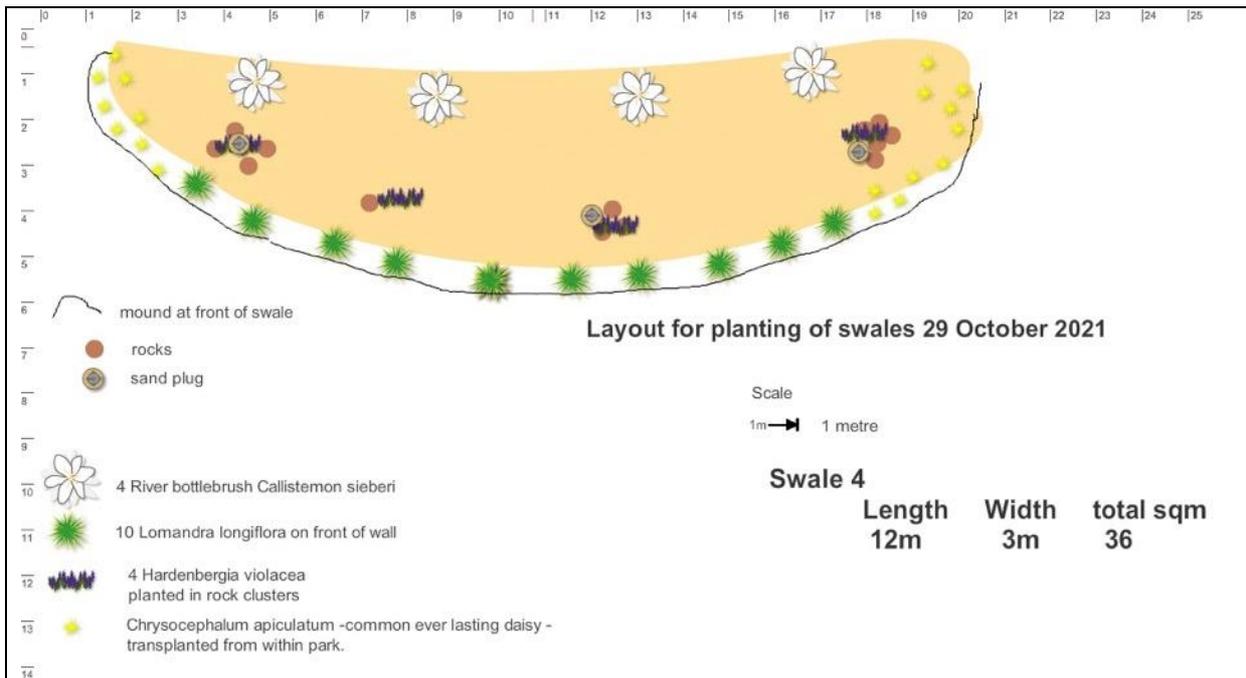
Swale 2



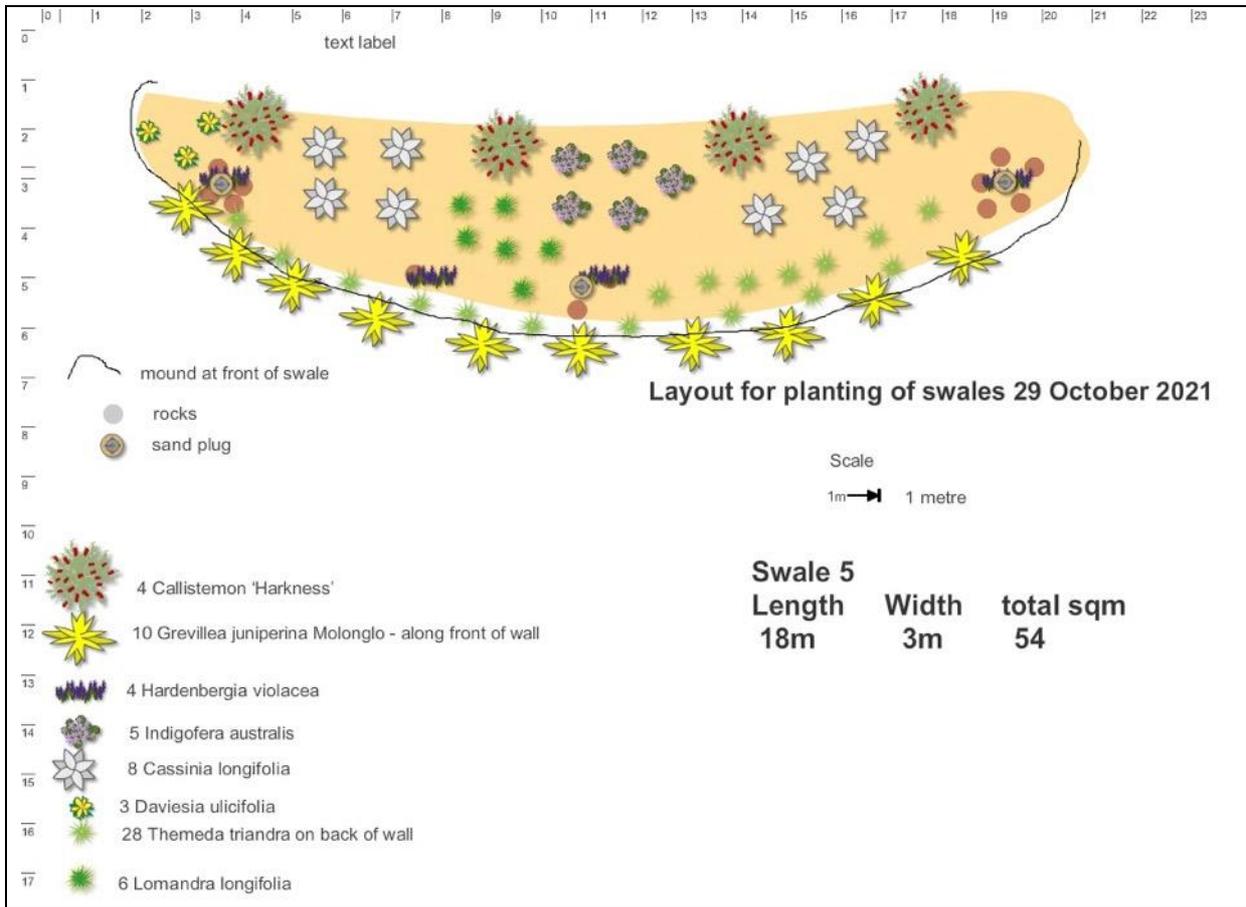
Swale 3



Swale 4



Swale 5



Attachment I - run-off during rain event 16 January 2020

This occurred after the long drought.. Very poor grass cover in park, led to fast run-off of water.



Middle of park with swings on right hand side, looking toward top of Bragg St. Two swales built in this area.



Looking towards 21 Brennan St



Lower end of park – swale no 7 built in right hand side