

CEO MEMO

To All

CC Mayor
Councillors

From Chief Executive Officer

Subject Ordinary Council Meeting 5 June 2018 – Item 13.2.2 Henshaw Drain Bioretention Basin

Date 30 May 2018

Item 13.2.2 Henshaw Drain Bioretention Basin as included in the Agenda for the 5 June 2018 Ordinary Council Meeting, has since been amended.

The amendments have come from a further review with an external stakeholder of the 'Options for Consideration' within the report. The review has identified the following amendments to the report:

Page	Sentence	Comment
39	Within 'Table 1: Options for Consideration', column entitled 'Benefits/ opportunities', row entitled 'Option 3': Supported by the Friends of Lake Claremont.	Remove from table. Supported by the Friends of Lake Claremont.
41	Within the table on page - column entitled 'Local groups', row entitled '1st': Option 3	To now read: Option 1
41	Within the table on page - column entitled 'Local groups', row entitled '2nd': Option 1	To now read: Option 3

The final report will be included, as amended, within the Minutes for the 4 June 2018 Ordinary Council Meeting.



Liz Ledger
CHIEF EXECUTIVE OFFICER

Encl. Ordinary Council Meeting 5 June 2018 – Amended Report Item 13.2.2 Henshaw Drain Bioretention Basin.

13.2.2 HENSHAW DRAIN BIORETENTION BASIN

File No:	PRK/00123-03
Attachment:	<u>FOLC Henshaw Swale Letter to Council (Attachment 1)</u>
Responsible Officer:	Saba Kirupanather Executive Manager Infrastructure
Author:	Marty Symmons Engineering Technical Officer
Proposed Meeting Date:	05 June 2018

Purpose

For Council to approve additional works to the recently constructed Henshaw Drain Bioretention Basin in Lake Claremont

Background

The Henshaw Drain discharges stormwater collected from a large upstream catchment directly into Lake Claremont. Water quality testing conducted in the past indicates that this water contains high levels of nutrients, which cause environmental issues at the lake such as contributing to algal blooms, which in turn causes the death of frogs, turtles, and waterbirds.

A Bioretention Basin was recently constructed in Lake Claremont to capture sediment and nutrients from the Henshaw Drain stormwater pipe, lessening the amount being discharged into the lake.

Concerns were raised over the design and layout of the basin, which differs significantly from early concepts presented to Council and other stakeholders. A Council motion was subsequently passed that the basin be decommissioned and converted into an enclosed sediment trap and a new bio retention basin constructed, west of the shared path and fence, adjacent to the lake at the end of the Henshaw Drain pipe.

Discussion

As per the resolution the Town has investigated relocating the basin to the lakeside, as well as developing some alternative proposals should that not be practicable, or permitted by the relevant authorities.

Considerations included the function and capacity of the basin and or/ sediment trap, stakeholder requirements, amenity of the park for recreational use, approvals required from relevant authorities, and the estimated cost of works. Options reviewed ranged from minimal works being done to the recently constructed basin, to the complete decommissioning and replacement at a new location.

Option 1 is to retain the recently constructed basin, fencing it to the public and planting some screening vegetation around it.



Image 1: Examples of fenced basins

Option 2 is to decommission the basin and install a covered sediment trap at the location of the recently installed headwall.



Image 2: Examples of covered sediment trap

Option 3 is to reduce the size of the basin and construct a small boardwalk with railing around this smaller basin, with information signs explaining the function of the basin to the public.



Image 3: Examples of boardwalks with railing

Option 4 is to decommission the basin, and construct a new smaller basin adjacent to the lake within the lake fenced buffer zone.



Image 4: Examples of small basin at lake

Table 1: Options for Consideration

	Option Details	Disadvantages	Benefits / opportunities	Cost
Option 1	<p>Plant the nutrient stripping plants within the basin as still required. Fence the existing structure and plant some screening vegetation around.</p> <p>Please refer to Image 1</p>	<p>Not seen favourably due to the proximity to the new nature playground and the recently installed footy goal, as unattractive fencing is required.</p> <p>Usable recreational area of the park is reduced.</p> <p>Perceived safety risk.</p>	<p>The designed for rate of pollution capture is achieved.</p> <p>Work can commence immediately with completion by June 30.</p> <p>No additional approvals required.</p> <p>Supported by the Friends of Lake Claremont.</p> <p>Nutrient stripping plants already ordered can be used.</p> <p>Provides an opportunity for passive environmental education through informative signage.</p> <p>Additional planting will improve the aesthetics of the existing basin</p>	<p>The planting of nutrient stripping plants is within the existing budget.</p> <p>Additional money will require allocating for fencing and the fence screening plants.</p> <p>\$10,000</p>
Option 2	<p>Infill the recently excavated basin and install a covered sediment trap at the same location.</p> <p>Please refer to Image 2</p>	<p>Minimal to no nutrient stripping will occur prior to discharge of stormwater into the lake.</p>	<p>Minimal impact to the park area, with only the access chamber lids visible to the public.</p> <p>Work can commence immediately with completion by June 30.</p> <p>No additional approvals required.</p>	<p>Installation of sediment trap and decommissioning of the recently excavated sump.</p> <p>\$14,000</p>
Option 3	<p>Reduce the extent of the recently excavated basin to approximately half its current size, providing steeper batters around the central water treatment area.</p> <p>Plant the nutrient stripping plants within the basin as still required.</p> <p>Install a boardwalk around the new reduced outer extents of the basin with a railing, and a sign explaining the bioretention basin's function for public education.</p>	<p>A boardwalk is very expensive.</p> <p>Although reduced in size and providing some public amenity, it is still close to the new nature playground, and the recently installed footy goal.</p> <p>It will take some time for a boardwalk to be constructed, so temporary fencing will be required at the sump until its installation can be completed.</p>	<p>Close to the designed for rate of pollution capture is achieved.</p> <p>The basin size will be reduced providing more space for the picnic, BBQ area, and recreational use of the area.</p> <p>The finish will be more aesthetically pleasing.</p> <p>Supported by the Friends of Lake Claremont</p> <p>Nutrient stripping plants already ordered can be used.</p> <p>Provides an opportunity for passive environmental education through informative signage.</p>	<p>The planting of nutrient stripping plants is within the existing budget.</p> <p>Reducing the size of the swale and installing a boardwalk around the perimeter of the bio retention basin.</p> <p>\$140,000</p>

	Option Details	Disadvantages	Benefits / opportunities	Cost
	<p>Please refer to Image 3</p>		<p>Enhances the location in combination with proposed landscaping at the entrance from Lapsley Rd, and the new nature playground area. No additional approvals required.</p>	
<p>Option 4</p>	<p>As per Council resolution 65/18. Infill the recently excavated basin and install a covered sediment trap as outlined in Option 2. Excavate a new smaller nutrient stripping basin within the fenced Lake Claremont buffer zone Please refer to Image 4</p>	<p>Approximately 700 native plants recently planted using grants and volunteer labour will require removal for replanting. It is likely only up to 20-30% would survive the process. Requires new approvals from both the DWER and the DAA which may not be granted, as the proposal is for works within the protected buffer zone around the lake. The approval process will delay construction of the basin by at least 3 months. Planting of the nutrient stripping plants will be delayed until the next winter planting season. Not supported by the Friends of Lake Claremont – Refer to Attachment 1 The designed for rate of pollution capture will not be achieved.</p>	<p>A large amount of pollution will be removed prior to discharge into the lake. Provides an opportunity for passive environmental education through informative signage. The basin is removed from the open area providing more space for recreational use. The sediment trap can be installed prior to gaining the other required approvals.</p>	<p>Installation of sediment trap and decommissioning of the recently excavated sump. \$14,000 Apply for approvals, excavate new basin and associated drainage infrastructure. \$50,000</p>

Evaluating the benefits and the disadvantages of the above four options, the major considerations should be:

- Water treatment outcome for the lake: *Nutrient stripping of primary importance with sediment trapping secondary, although still necessary.*
- Minimal impact to the surrounding parkland: *Recreational area is reduced with the basin in the main park area.*
- Relationships with local groups such as the Friends of Lake Claremont: *Volunteer hours and grant money used for plants which may now require removal, and their priority being the conservation of the lake environment and the surrounding wetlands, flora, and fauna.*
- Public amenity: *Creating an accessible and educational bioretention resource*
- Cost

With the treatment options in order for each consideration:

	Water Treatment	Impact to the surroundings	Local groups	Public amenity	Cost
1 st	Option 1	Option 2	Option 1 3	Option 3	Option 1
2 nd	Option 3	Option 4	Option 3 4	Option 4	Option 2
3 rd	Option 4	Option 3	Option 2	Option 1	Option 4
4 th	Option 2	Option 1	Option4	Option 2	Option 3

The choice between the options therefore comes down to each of these considerations. If all are given equal weighting, Option 1 and Option 3 are the preferred two options. The determination between these two options should then be decided by reviewing the different considerations.

As options 1 and 3 capture very similar volumes of nutrients and sediments prior to discharge into the lake, water treatment can be removed from consideration between the two, with both options meeting this requirement to a similar capacity.

Based on the remaining considerations, Option 3 is the preferred option.

Past Resolutions

Ordinary Council Meeting 5 May 2015, Resolution No. 73/15:

That Council:

1. *Includes for consideration \$50,000 to install a nutrient and sediment stripping detention basin on the Henshaw Drain stormwater outlet as per the 2010 Lake Claremont Management Plan in the draft 2015-16 capital works budget.*
2. *Includes for consideration \$20,000 to install an access pedestrian path from Alfred Road crossing west of Lisle Street.*
3. *Notes site preparation, for FOLC grant funded works for the Alfred Road Woodland and pocket Banksia Tuart woodland plantings in the parkland eastern side of Lake Claremont, be funded from the Lake Claremont Surrounds maintenance budget.*
4. *Notes a funding contribution for site preparation for wetland buffer work may be received for consideration in the 2015-16 midyear review should FOLC win a Community Heritage and Icon Grant.*
5. *Include the Committee's recommended works for consideration in the draft.*

CARRIED

Lake Claremont Advisory Committee Meeting, 26 May 2016.

That the Committee:

1. *Supports the attached concept plan for Henshaw Drain;*
2. *Supports the development of a detailed plan using the specialised services of South East Regional Centre of Urban Landcare;*
3. *Supports the use of existing budget allocation of \$50,000 to cover the project scope above.*

Reason: SERCUL being specialist designers should be allowed to review all options and make the best recommendation.

CARRIED

Ordinary Council Meeting 1 May 2018, Resolution No. 65/18:

That Council:

1. *Modify the sediment retention trap by installing sealed walls and a removable steel cover (to enable access to remove accumulated sediment),*
2. *Create a nutrient stripping basin west of the footpath with a headwall access from the existing drainpipe,*
3. *Install an overflow back into the drain before it enters the lake,*
4. *Fill the existing nutrient stripping basin with soil excavated from the new basin*
5. *Plant the new nutrient stripping basin with plants ordered for the existing basin and relocate the existing plants from the new basin to infill the previously planted area to the north, and*
6. *That the costings of the works be presented to Council for approval.*

Reason:

1. *This will provide something approximating that which Council approved in the 2016 Concept Plan.*
2. *It will conceal the sediment trap so that it does not intrude on the playground/picnic area.*
3. *It will create a nutrient stripping basin that does not have to cope with all the extreme water flows because it discharges excess directly into the lake (as at present).*
4. *Such a swale will effectively do an equivalent job to the 'golf course swale' and not incur major capital costs.*
5. *Location west of the path behind the fence and provision of filtering vegetation will eliminate issues of public access to the swale.*

CARRIED

Financial and Staff Implications

\$10,000 for the reshaping of the existing basin, the planting of the nutrient stripping plants, and the installation of temporary fencing.

\$130,000 for the construction and installation of a boardwalk around the basin, associated landscaping work, and the installation of educational signs.

Policy and Statutory Implications

- *Aboriginal Heritage Act 1972*
- *Department of Water and Environmental Regulation*

- Lake Claremont Management Plan 2016-21
- Lake Claremont Operational Plan 2017-18
- Lake Claremont Concept Plan 2016
- ANZECC Guidelines for Fresh and Marine Waters 2000
- WESROC Storm Water Management Strategy 2002.

Communication / Consultation

During the process of preparing this report, the Friends of Lake Claremont Board members met with the Town's Officers, and provided a written statement of a preferred outcome.

Future communication will depend upon the option chosen by Council.

Strategic Community Plan

Liveability

We are an accessible community with well-maintained and managed assets. Our heritage is preserved for the enjoyment of the community.

- Provide clean, usable, attractive and accessible streetscapes and public spaces.
- Develop the public realm as gathering spaces for participation, prosperity and enjoyment.

People

We live in an accessible and safe community that welcomes diversity, enjoys being active and has a strong sense of belonging.

- Effectively manage and enhance the Town's community facilities in response to a growing community.

Environmental Sustainability

We are a leader in responsibly managing the built and natural environment for the enjoyment of the community and continue to demonstrate diligent environmental practices.

- Take a leadership in the community in environmental sustainability.
- Aim for best practice in water usage and waste minimisation in line with community expectations.
- Protect and conserve the natural flora and fauna of Lake Claremont and the Foreshore.

Urgency

Planting of ordered nutrient stripping plants needs to be completed soon to ensure their survival

Voting Requirements

Simple majority decision of Council required.

OFFICER RECOMMENDATION

That Council:

- 1. Approve the modifications to the bioretention basin, as outlined in Option 3**
- 2. Allocate \$10,000 for the reshaping of the existing basin, the planting of the nutrient stripping plants, and the installation of temporary fencing, to be completed by end of June 2018**
- 3. Allocate \$130,000 for the construction and installation of a boardwalk around the basin, associated landscaping work, and the installation of educational signs to be completed as part of the 2018-19 financial year capital works program.**