

COMMISSION REPORT

TO: CHAIR AND MEMBERS
PARKS, RECREATION & CULTURE
COMMISSION

DATE: 2019 Nov 19

FROM: DIRECTOR - PARKS, RECREATION &
CULTURAL SERVICES

FILE: 62500-20

SUBJECT: CONFEDERATION PARK STORM WATER MANAGEMENT PLAN

PURPOSE: To obtain approval for the Storm Water Management Plan for Confederation Park as a green infrastructure project, and begin design and implementation of the sub projects within the plan.

RECOMMENDATIONS:

1. **THAT** approval be granted in principle for the Storm Water Management Plan for Confederation Park.
2. **THAT** staff be authorized to pursue the preparation of a public consultation for the Storm Water Management Plan and the proposed park improvements associated with the plan.

REPORT**1.0 INTRODUCTION**

The existing storm sewer infrastructure in Confederation Park is comprised of ad hoc components which have been linked together over time as the park has developed over a 100 year period. Many of the existing storm sewers are near the end of their useful service life, while others have collapsed or are clogged with sediment. An extensive study of the storm sewer infrastructure capacity and condition was commissioned in 2016 to assess the condition of the assets and set out new operational targets of replacing old infrastructure with new "Green Infrastructure". This document provides a framework for replacing and upgrading the existing ad hoc systems with an integrated, whole park drainage system that is consistent with, and given direction by, the Environmental Sustainable Strategy (ESS) adopted by Council in 2016.

Burnaby Council adopted the ESS on 2016 November 07 as a city-wide policy that sets a long term vision for the City to become a leader in protecting and regenerating healthy ecosystems, and supporting a healthy and prosperous community. The Confederation Park Storm Water Management Plan (SWMP) proposes to bring to life these goals quoted from the ESS Strategy:

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(Section 2) Healthy and Resilient Watersheds.

2.1 Manage rainwater to restore and mimic natural flows and quality.

Look for opportunities to reduce the volume and clean the water flowing off roofs, roads and paved areas directly into storm sewers by using systems like rain gardens and permeable pavement.

2.2 Protect, restore and improve aquatic ecosystems like ponds, lakes, streams, wetlands and marine areas.

Consider opportunities to restore, enhance and daylight streams when public and private lands are being developed.

2.3 Protect and improve water quality in aquatic ecosystems like ponds, lakes, streams, wetlands and marine areas.

Consider opportunities to further avoid or reduce the use of chemicals such as pesticides and fertilizers on public and private lands.

2.4 Conserve water in the home, garden, workplace and community.

Look for opportunities to plant drought resistant landscaping in appropriate urban locations on private and public lands.

“Quick starts” identified in the ESS plan:

Create a high-profile demonstration project to showcase riparian/aquatic ecosystem restoration, including community involvement and education.

Flow (2.1) Manage rainwater to restore and mimic natural flows and quality.

Flow (2.2) Protect, restore and improve aquatic ecosystems like ponds, lakes, streams, wetlands and marine areas.

2.0 POLICY SECTION

The proposed Confederation Park Storm Water Management Plan is aligned with the City of Burnaby’s Corporate Strategic Plan by supporting the following goals and sub goals of the plan.

- A Connected Community
 - Geographic connection
 - Enhances our connection between aquatic and terrestrial landscapes

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- A Healthy Community
 - A healthy environment
Enhances our environmental health, resilience and sustainability
- A dynamic community
 - Civic facilities and infrastructure
Green initiatives using nature to inspire site drainage solutions

3.0 THE STORM WATER MANAGEMENT PLAN SYNOPSIS



Image: Rainbow Creek drainage proposed south of Penzance Drive

The drainage area for Confederation Park (south of Penzance Drive) historically was a single catchment area drained by Rainbow Creek. Over time (100 years), however, various ditches, swales, underdrains and area drains have been added, capturing storm water in more localized areas and channeling it either downstream and ultimately back to Rainbow Creek north of Penzance Drive or outside the park to the municipal storm sewers. Approximately one half of the study area still ultimately drains to Rainbow Creek while the civic complexes at the south-west corner, the all-weather field in the north-west corner, and a portion of the central area around the running track are drained into the municipal storm sewer.

The Goals of the SWMP in Confederation Park are to:

- Re-establish portions of Rainbow Creek, south of Penzance Drive and restore sustainable base flows.

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- Replace aging storm sewer infrastructure with green infrastructure which mimics natural drainage pathways.
- Enhance the Park's ecological value by integrating plantings, rain gardens and constructed wetlands into new green infrastructure.
- Create a strong Park identity through landscape design which reflects its historic natural characteristics (provide a sense of place).
- Ensure that the Park's storm water infrastructure is resilient to climate change.

Park Sub Areas

The SWMP divides the Park into several planning zones with distinct characteristics which inform the types of storm water that need to be managed. Implementation strategies are provided for each zone. Individual projects throughout the Park are identified in each of these zones which are described briefly below:

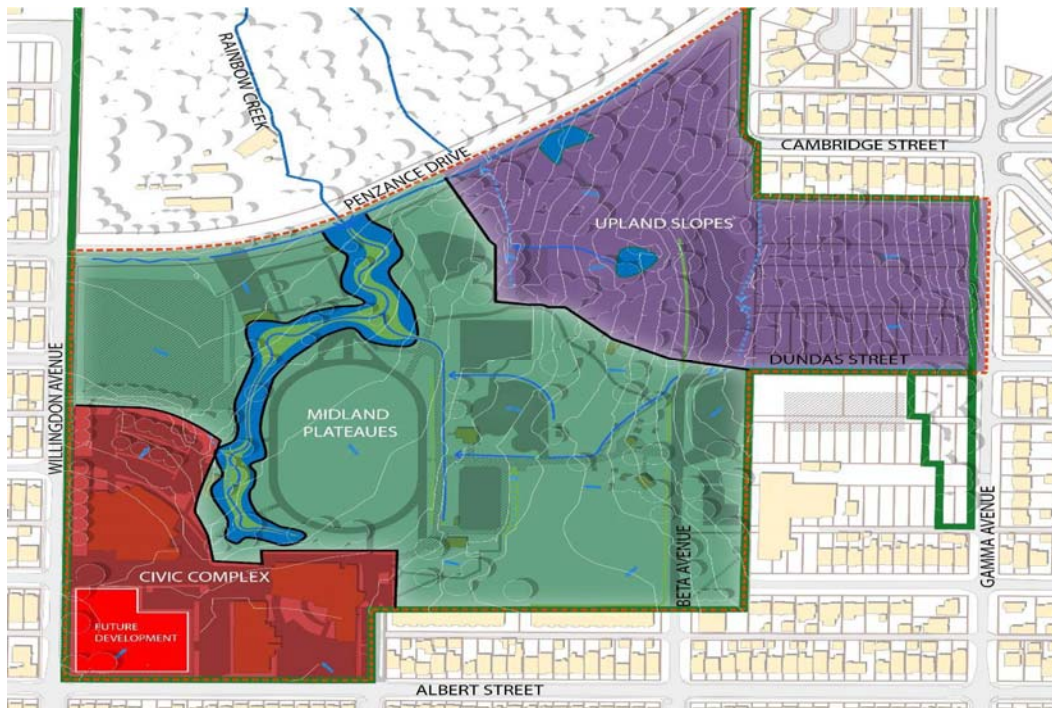


Image: Park Sub Areas

The Civic Complex Zone 1: Directions

1. Future facility expansion should feature green storm water infrastructure.
2. Parking run-off should be re-directed to a reconstructed Rainbow Creek.
3. Future facility improvements should be designed to collect and redirect roof run-off to the reconstructed Rainbow Creek.

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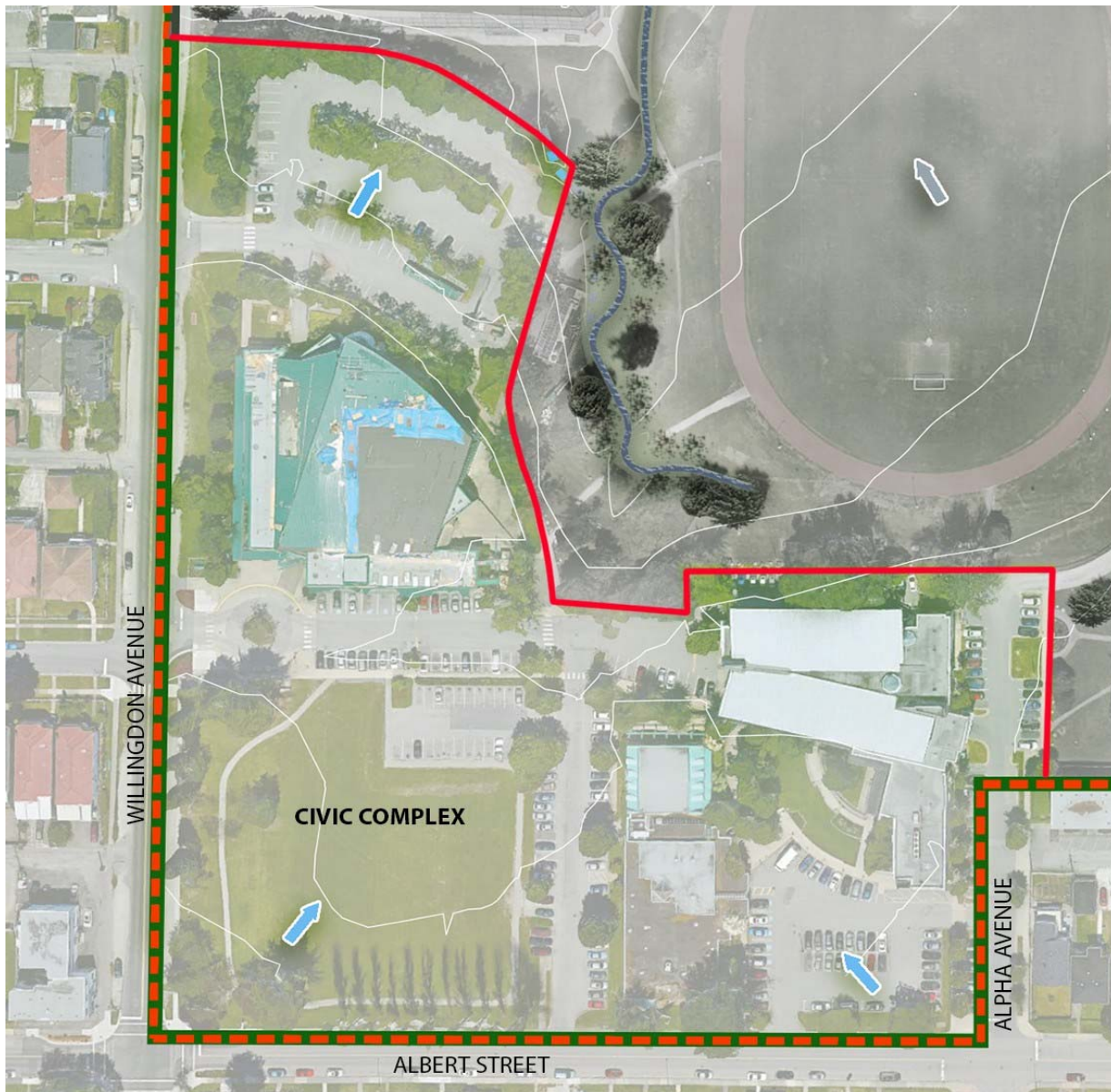


Image: Zone 1 Civic Complex

The Midland Plateau Zone 2: Directions

1. The existing gravel field should be converted to an artificial sports field to provide an absorbent landscape.
2. Reconstruction of the Cenotaph area in conjunction with the drainage improvement plan.
3. Playfield underdrainage should be re-directed to reconstructed Rainbow Creek.
4. Improve park path corridors with parallel bio-swales.
5. Proposed new bio-swales in low lying areas or water collection areas.

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Image: Zone 2 Midland Plateau

The Upland Slope Zone 3: Directions

1. The existing swale should be upgraded and naturalized.
2. Addition of a new bio-swale.
3. Addition of bio-retention ponds.
4. Addition of a proposed bio-swale.
5. Existing gravel parking lot should be upgraded with green infrastructure.
6. Existing ditch should be naturalized.
7. Existing woodland should be preserved and enhanced.

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Image: Zone 3 Upland Slope

The Penzance Drive Streetscape Zone 4: Directions



Image: Zone 4 Penzance Drive Streetscape

One of the opportunities for this zone is the creation of a new pedestrian gateway to the park as well as a better connection to the park north of Penzance Drive. One of the ways attention could be drawn to this new node would be to replace the creek culvert with a bridge or bridge-like crossing such as a box culvert which could be embellished to look like a bridge. This would draw attention to the presence of the creek and create a focal point to help anchor the new pedestrian node. The streetscape should imply that the street is passing through one contiguous park by incorporating landscape features which bridge the street. Additional improvements would include:

- Improvements to connect the Trans Canada Trail to the internal park pathways.
- New on-street parking within the park to provide peak-use over flow parking.
- Travel lanes and new on-street parking should be treated by infiltration bulges or roadside swales which convey run-off to Rainbow Creek.
- Infiltration bulges should mark the extent of the park, creating a traffic calming zone to ensure a safe pedestrian crossing.

4.0 CURRENT INITIATIVES

Within Zone 1 - the Civic Complex, plans are being formulated for a new recreation centre. The architects have been working with the City to provide green infrastructure options to ensure roof runoff and parking lot run off in new developments would be captured and redirected into a surface drain system eventually feeding Rainbow Creek. The plans for the new recreation centre and associated outdoor program space will be brought forward to Commission in a future report.

Within Zone 2 - the Midland Plateau, general siting of a reconstructed Rainbow Creek is being reviewed for fit within and around existing recreational program spaces (both formal and informal). Initial areas of drainage reconstruction will be done in conjunction with park redevelopment projects including but not limited to:

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- The reconstruction of the Cenotaph area.
- The conversion of the rock dust sports field to artificial turf with the inclusion of storm water storage capacity below the field.
- The establishment of a central circulation spine with associated bio-swales to collect run-off.

Within Zone 3 - the Upland Slope, a general approach will be taken to naturalize and improve bio-swales and water retention areas to mimic natural absorbent landscapes. This will include monitoring below and above grade drainage patterns to make use of natural water flows existing on site, complexing of plant communities to create habitat zones, and enhancing the existing forest areas.

Within Zone 4 - the Penzance Drive Streetscape, initial projects will include complexing the drainage swale along the road and providing a new gateway and pedestrian entry into the park to link the north and south sides of the park.

5.0 RECOMMENDATION

With approval from Commission on the recommendation to adopt the Storm Water Management Plan staff would undertake the initial projects outlined above. The development of the storm water drainage system including the reconstruction of Rainbow Creek will be incrementally phased in. The balance of open space for recreational programs and water drainage routes will be re-assessed within each zone as projects proceed. Public consultation on the overall plan would be scheduled in 2020, and notification of proposed dates and times would be brought forward to Commission for approval. A re-visitation of the plan and proposed work projects would be brought forward in the capital work plan on a yearly basis. Sufficient funds have been identified in the five-year capital project to begin the works outlined in this report.



Dave Ellenwood
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HE:tc

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