

## Reimagining Streets for a Sustainable Future: The St. George Rainway Project

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To address the challenges of heavy rainfall, water quality and climate adaptation, the City of Vancouver has developed the St. George Rainway, a green rainwater infrastructure project that reimagines the street to enhance community, nature and mobility. In this webinar, representatives from the City of Vancouver shared insights into the development and implementation of the St. George Rainway, and the ongoing efforts to monitor and maintain its effectiveness for long-term success.

### Presenters

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### Key Findings

- 🕒 Once finished, phase one of the St. George Rainway will be able to filter 42 mm of polluted rainwater every year.
- 🕒 Also being added are 35 new trees to build urban tree canopy, and 1100 m<sup>2</sup> of natural habitat planting for urban nature. Altogether the rainway phase one will be able to sequester over 300 kg of carbon every year.
- 🕒 The engagement process indicated a desire for daylighting, but the creek was buried too deep and it was infeasible to daylight. Instead, the focus is to bring back the ecological function of the creek.
- 🕒 Characteristics of the rainway include: A meandering sidewalk, large scale bioretention assets, seating, weirs to encourage infiltration, public art, and bike lanes.
- 🕒 While phase one can manage 42 mm of water every year, Vancouver experienced an Atmospheric River last year which brought in 120 mm of rainfall in one day, which is far beyond the design target for the rainway. Suggesting the rainway is capable of more than anticipated.

### Presentation Overview

#### Background

- 🕒 St. George Rainway is one of 400 green rainwater infrastructure assets that have been built in streets and public spaces in the City of Vancouver.

- ☺ The Rain City Strategy (2019) helped formalize a green infrastructure program for the City, turning it into “business as usual”. The Rain City Strategy is a 30 year plan to change how the City manages rainwater using GI and established a goal of capturing and cleaning 90% of rainwater in the City.
- ☺ The St. George Rainway is one of the largest, and potentially biggest, green infrastructure project taken by the City.
- ☺ The City has embarked on many blue green systems (blue green systems create space for water, active transportation, and green spaces).
- ☺ In the early 1900’s, City of Vancouver buried many creeks and streams during development. There are only three surface streams in Vancouver.
- ☺ In 2005, a local landscape architect heard water running under St. George St. and found that there was a stream buried underground in a pipe. He completed his Masters thesis on the idea of daylighting the St. George Creek. The community backed this idea and advocated for this idea to become reality. They created designs, hosted educational events, and held street parades.
- ☺ This webinar focuses on Phase 1 of the project (4 blocks). The total project will span approximately 9 blocks.
- ☺ This project supports the Rain City Strategy, Mount Pleasant Community Plan, Urban Forestry Strategy, Van Play (Parks and Recreation Master Plan, Healthy City Strategy, Greenest City, and Transportation 2040.

## Public Engagement

- ☺ Public engagement took approximately 2-3 years.
- ☺ The community’s designs envisioned a daylighting project where surface water would be visible at all times. While this was not realized, the ambition and level of support from the community allowed for the final design to be bold and reclaim a lot of street space.
- ☺ The engagement process began with a survey to gauge support for relocating road space and loss of parking.
- ☺ A public advisory committee was established through an application process, where participants were selected to reflect diversity in age, gender, income, and race.
- ☺ The design took into consideration what elements were most important to the community through a co-designing for co-benefits activity.
- ☺ Additional engagement activities included the community voting on three design concepts, taking part in Bioblitz’, and hosting a festival that provided a demonstration of what the rainway would look like.

- ④ The City worked with a local Squamish ethnobotanist to inform planting and incorporate indigenous knowledge into the project. One key learning was to consider plant communities (how they work together and build root structures) versus individual plants.
- ④ An engagement package for youth was distributed to local elementary schools where the students shared what they wanted to see along the railway. Youth also voted on the concept.
- ④ A Community Science Campaign was conducted to inform the design and provide a way to look at biodiversity changes before and project completion.
  - This campaign also sparked organic engagement where participants would be approached by members of the community.
  - Total species count was the metric used. The City will continue with these counts over the next few years.
  - Plant selection and placement was influenced by species counts.
- ④ Four community plants were selected for the railway to indicate that the railway doesn't need to be restricted to the railway but can extend into local gardens.

### **Design and Feasibility Design Process**

- ④ The first step of the feasibility design was to look at the watershed. This watershed drains into a recreational water body and overflow is not an issue, so a project priority was water quality improvements.
- ④ Other characteristics taken into account include: The area's high urban heat temperature; risk of localized flooding; and sea level rise.
- ④ St. George Railway is located in an area expecting increased densification and an aging pipe system. Once completed, the project is expected to alleviate green space deficiencies and pressure on the pipe system.
- ④ Tree canopy and urban heat on a neighborhood scale informed landscape design and the green infrastructure design.
- ④ The City also looked at hard surfaces and how much rainwater could be captured for this area. To maximize the volume of water being captured through the rainway, water is being captured from nearby crossings and roads, not only water falling onto the central street.
- ④ In total, for phase one, 1.6 hectare of hard surfaces is being captured.
- ④ Subsurface utilities were considered. The water main was one of the primary constraints for implementing green rainwater infrastructure into the right of way. The water main requires a 3 meter offset from green rainwater infrastructure to provide access for their repair and due to concerns of stormwater intrusion into the drinking water pipe.

- ☉ St. George Street also has live gas, sewer and sanitary, a drinking water pipe, and electrical conduits. Because of these utilities, the rainway was constructed on the east side of the street.
- ☉ The meandering sidewalk allows space on either side of the sidewalk for rain gardens and for people to walk through the rainway, providing a more immersive feeling of urban nature.
- ☉ The rainway includes two car free areas to dedicate more room to GI.
- ☉ Vancouver City Council has a direction to reallocate 11% of the road space for active transportation, for urban nature, for water. For this project, over 40% of the road space was reallocated to active transportation and green rainwater infrastructure.
- ☉ Some street parking was maintained for senior population/accessibility.
- ☉ Weirs were incorporated to allow water to animate during rainfall to generate curiosity among pedestrians.

## Additional Resources

- ☉ [City of Vancouver Rain City Strategy \(2019\)](#)
- ☉ [St. George Rainway Phase 1 Survey Summary](#)
- ☉ [2022 St. George Rainway Bioblitz Report](#)

## Contact Information

Please reach out to us at any time with questions, input, or for additional information.

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You can view our upcoming events [here](#).