

## Green Rainwater Infrastructure You Can't See From the Streets

The buildings in Olympic Village collect rainwater from their roofs and paved surfaces in a cistern in the basement. This water is used in decorative water features, toilets and for summer garden irrigation, providing a 40% reduction in demand for drinking water from municipal reservoirs.

Many of the buildings also have green roofs, which have replaced traditional roofing materials with a layer of soil blanketed by plants. These structures can be extensive green roofs, which have a thin layer of soil and low vegetation, or intensive green roofs, which have a thicker layer of soil to support larger plant growth and are usually more suited for recreational use. Both varieties absorb rainwater, provide habitat and insulate the building, reducing energy use for heating and cooling.



 The plants on the extensive green roofs in Olympic Village resemble athletes playing sports like hockey, curling and skiing. The figures are created with different plant types, colours and textures.

## Why Should We Manage Rainwater?

In the natural environment, rain is absorbed and filtered by trees, plants and soils. This water cycle is disrupted in cities, however, where rainwater instead flows across rooftops and pavement — sometimes triggering urban flooding in the process. This water picks up pollutants that ultimately end up in our waterways, causing negative effects to water quality and wildlife.

## What is Green Rainwater Infrastructure?

Green rainwater infrastructure is an approach to rainwater management that protects, restores, and mimics the natural water cycle in the city. It uses soils, plants and trees in swales, rain gardens, green roofs and other built structures to capture, store and clean rainwater before returning it to our waterways and atmosphere. Green rainwater infrastructure systems can also harvest and reuse rainwater for toilet flushing and irrigation.

Sustainably managing our rainwater with green rainwater infrastructure reduces the volume of rainwater entering our sewer system, as it is instead absorbed by soils and plants. This process can prevent pipes from getting overwhelmed and overflowing.

Green rainwater infrastructure practices enhance our city's resilience to climate change by reducing flooding, cooling the air and improving the adaptability of our natural and urban environments.



## Rain City Strategy

The Rain City Strategy is a long-term, city-wide plan to identify opportunities for green rainwater infrastructure practices across Vancouver.

The City's goal is to capture and clean 90% of our annual rainfall to help improve water quality, resiliency and livability.

## For More Information

[vancouver.ca/raincitystrategy](http://vancouver.ca/raincitystrategy)  
[rainwater@vancouver.ca](mailto:rainwater@vancouver.ca)  
[#raincitystrategy](https://twitter.com/raincitystrategy)

# RAINWATER MANAGEMENT IN OLYMPIC VILLAGE



A Self-Guided Green  
Rainwater Infrastructure Tour



## A Tour Through Olympic Village

In keeping with Vancouver's Greenest City targets, Olympic Village was designed with innovative rainwater management tools such as green roofs, permeable pavement and swales, and energy efficiency systems such as heat recovery from sewage. Using this guide, you can explore the neighbourhood and learn all about how it sustainably manages rainwater using green rainwater infrastructure and natural landscaping.

### 1 Creekside Community Centre



#### 1 Athletes Way

This LEED Platinum community centre harvests and reuses rainwater for toilet flushing and irrigation, reducing potable water consumption by 30%. The

building also has a green roof, which manages rainwater, insulates the building, helps to mitigate urban heat island effects and includes outdoor play space for the day care located on the top floor.

### 2 Seawall Soil Cells

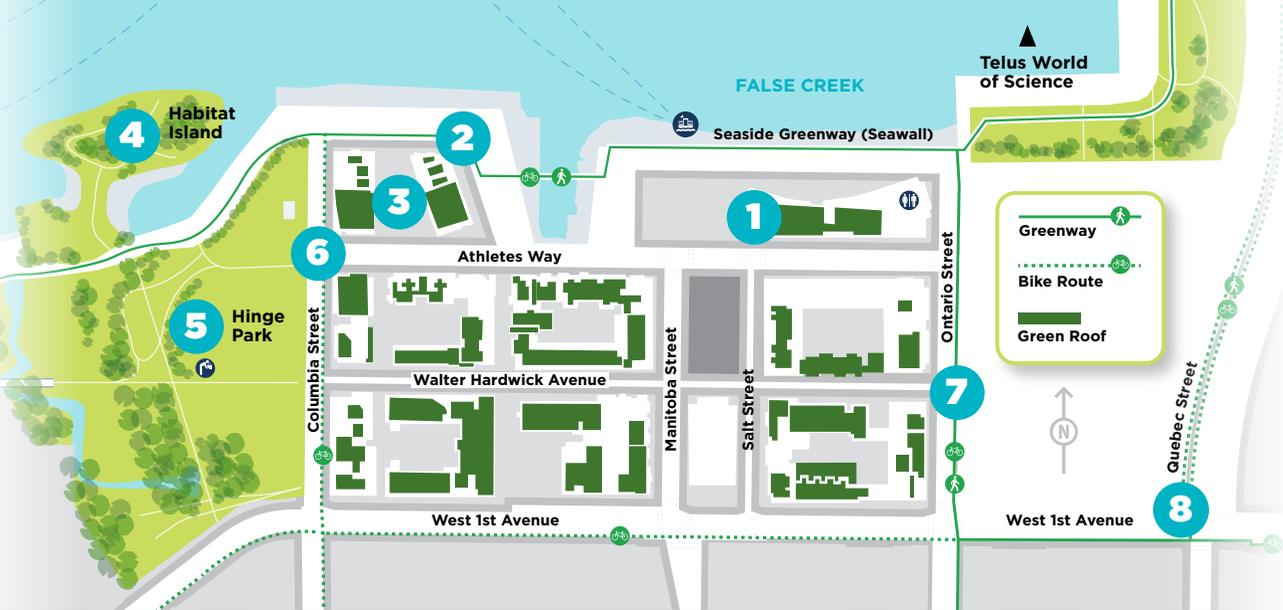


#### Along the Seaside Greenway

The trees along the Seawall have been planted using underground, load-bearing structures called soil cells. These materials keep the soil

too dense for growth, allowing for trees to develop larger root networks and mature into the full size they would reach in their natural setting.

By placing soil cells below sidewalks, bike lanes and roads, we provide this extra space and allow rainwater to collect for later use by the tree or to infiltrate deeper into the ground. Soil cells were also used to support the trees planted along the sidewalks throughout Olympic Village — maximizing the use of space without compacting the soil.



### 3 Water Feature and Blue Roof



#### 151 - 181 Athletes Way

Rather than using up precious drinking water, the decorative water feature in this courtyard uses captured rainwater for its fountains and pools. The water

is collected in cisterns and circulated through the water feature, killing bacteria and preventing stagnation through aeration and exposure to sunlight. This process keeps the water at a cleanliness level that's safe for recreational uses and saves drinking water for other important uses, like drinking and cooking.

This water feature is also built on top of the parking structure, making it one of very few local examples of a blue roof — structures which collect and store rainwater on rooftops without necessarily adding vegetation as a green roof would. All water features also help to provide passive air cooling for the surrounding area as they operate.

 Explore a small section of the world's longest uninterrupted waterfront path to get to **Location 4**. The 28 km Seaside Greenway, which includes the Stanley Park Seawall, extends from the Vancouver Convention Centre to Spanish Banks Park.

### 4 Habitat Island



#### Off the Seaside Greenway

This artificial island was designed to replace natural shoreline habitat lost with the construction of Olympic Village, providing space for plants, birds and coastal and beach-dwelling animals such as crabs, sea stars and fish. The naturalized landscape of the island will absorb any rainwater that falls on its surface, and create a sense of nature in the city.

### 5 Hinge Park Wetland



#### Hinge Park

This park includes a constructed wetland, which collects and manages two thirds of the rainwater that runs off of roadways, plazas and other public lands in Olympic Village. The wetland uses native plants and healthy bacteria to filter water, cleaning out pollutants such as heavy metals, oils and fertilizers before it's returned to False Creek. The wetland also provides important habitat for wildlife, including a family of beavers!

### 6 Permeable Pavers



#### Athletes Way at Columbia

The paving stones used in parking spots along Athletes Way are permeable, which allows rainwater runoff to pass through tiny gaps in

the surface and soak into the soil below. This process reduces street flooding and keeps rainwater runoff from entering drainage and sewer systems. Too much rainwater entering the pipes can lead to combined sewer overflows into our waterways.

 Walk east along Walter Hardwick Avenue to location 7. On your right you'll pass **Craft Beer Market**, an historic building which still retains a small, dock-like loading area from its original use as a salt refinery.

### 7 Bioswale



#### Ontario Street at Walter Hardwick Avenue

A bioswale is a soil channel planted with vegetation which manages rainwater. This bioswale collects

one-third of the rainwater runoff from the public lands in Olympic Village, and the plants filter out pollutants as it travels down the channel and into False Creek.

### 8 Tree Trench & Bioswales



#### Quebec Street at West 1st Avenue

Built along West 1st Avenue and Quebec Street, these features collect rainwater runoff from surrounding

roads. Weirs in the bioswales slow water flow for use and filtration by plants in the garden, while stormwater tree trenches collect water underground in structures similar to soil cells. What little water the soils can't absorb exits through the overflow, moving from the catch basin into the pipes cleaner than when it entered.