

**Calgary**



# **Sunnyside Flood Barrier:**

**Ensuring flood protection while enhancing our riverfront**



## **October 2023 Information Session**

**Package of information**

## The 2013 Flood

The June 2013 flood was catastrophic. One Calgarian's life was lost and 80,000 residents were forced to evacuate their homes.

In Sunnyside:

- Buildings, roadways and park spaces were flooded
- Emergency critical services were affected
- C-Train and bus service were disrupted
- Homes and personal property were damaged

It remains one of Canada's costliest disasters with an estimated \$5 billion in damages across Alberta. As a river city, there will always be a need to prepare for, respond to and adapt to floods. That's why building resilience to flooding is one of our top priorities. While we can't prevent future floods, we have a plan to reduce their impact.



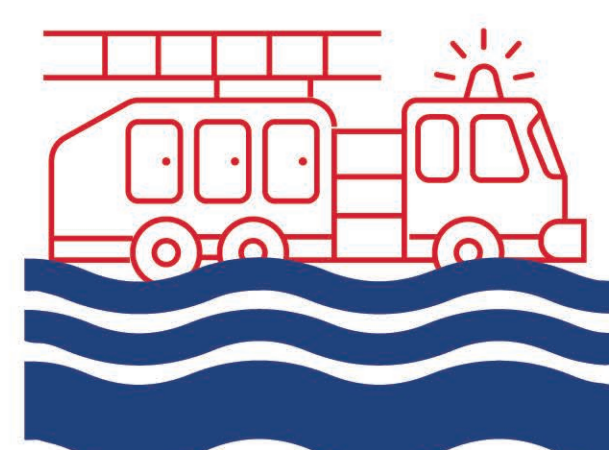
Evacuations in **26** communities affected **110,000** Calgarians.



More than **1,600** people registered at community support centres on the first day.



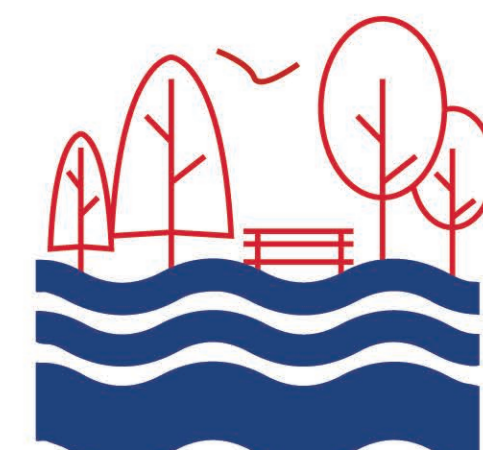
**~4,000** businesses were impacted.



**\$55 million** in emergency response costs to the City of Calgary.

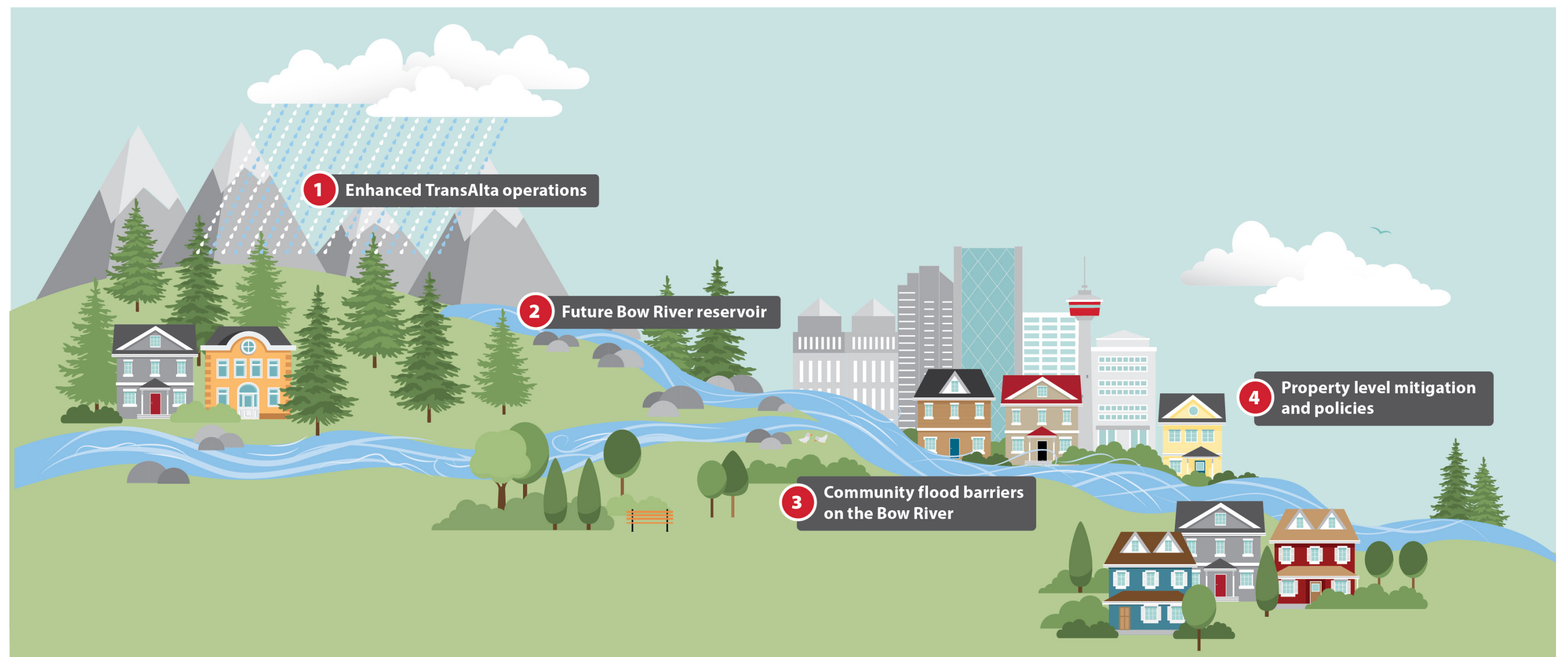


Over **\$400 million** in damages to the City of Calgary infrastructure.



**30** parks across Calgary were flooded.

# Protecting Sunnyside from flooding



There will always be a risk of flooding in Calgary, but we have a four-part plan to reduce its impact.

1

## Enhanced TransAlta operations of the Ghost Reservoir

Supporting the continuation of the existing Government of Alberta and TransAlta agreement to use the upstream Ghost Reservoir to capture more flood water.

2

## A new upstream reservoir on the Bow River

Working with the Government of Alberta, a new reservoir on the Bow River will capture more water from large floods, as well as provide an additional source of water supply for drought management.

3

## Community flood barriers

As the reservoir reaches capacity and is forced to release water, permanent barriers help reduce overland river flooding during these large events.

4

## Property level mitigation and policies

Policies, bylaws, land use regulations, building codes, possible incentive programs for flood proofing and public education.

**Sunnyside Flood Barrier**  
is a community flood barrier



# Drainage improvement investment

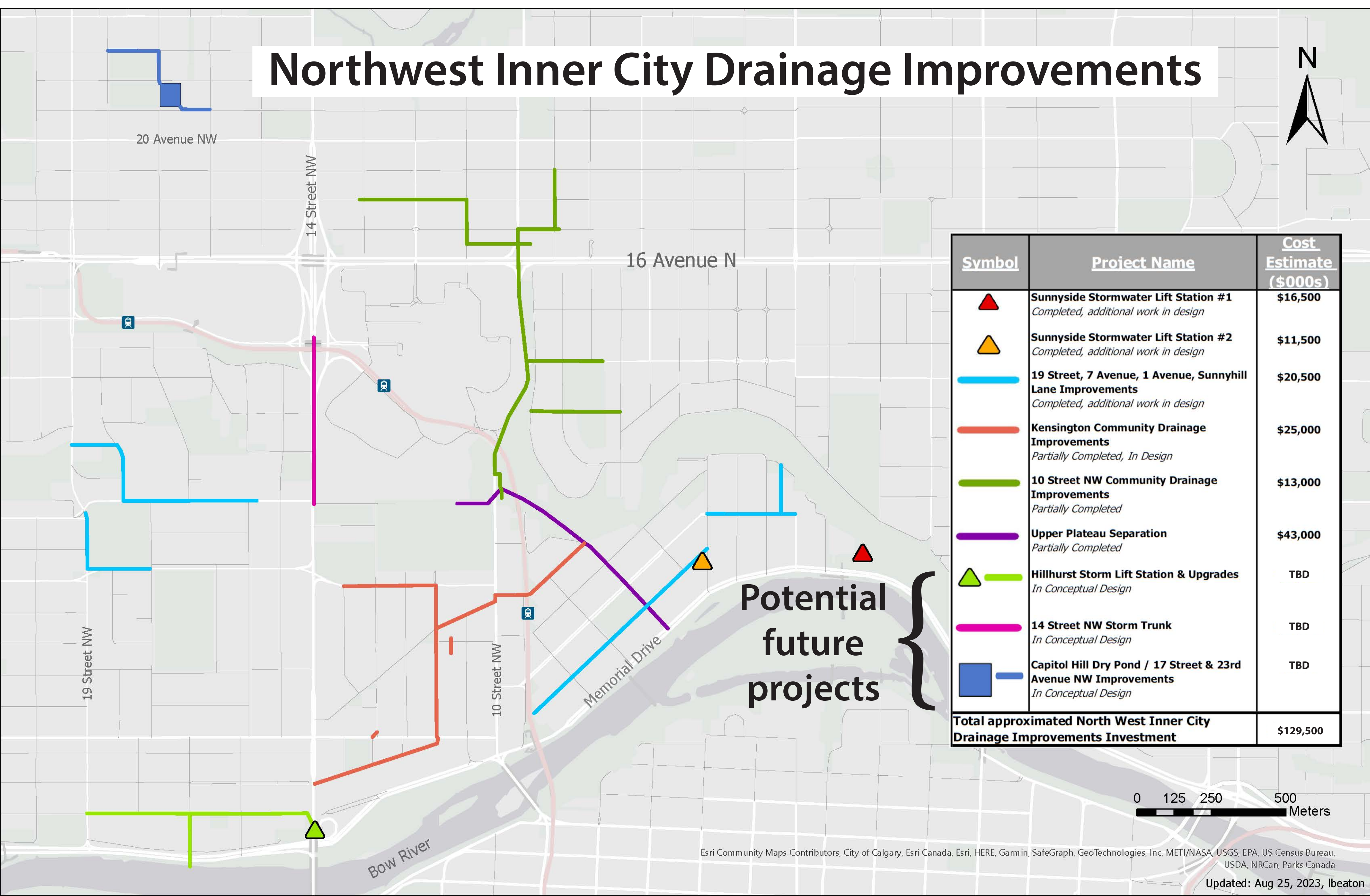
## What else is the City doing?

In addition to managing the Sunnyside Flood Barrier project, the City has undertaken numerous drainage improvement projects in Calgary's north west inner city. The purpose of these projects is to enhance the safety of residents and protect vulnerable areas from the damages caused by stormwater flooding.

With support from the Government of Alberta, the construction of these upgrades started in 2021.

## What does drainage improvement actually mean?

Drainage improvement includes replacing and upgrading storm drains (or catchbasins) and replacing or upsizing existing pipes to increase stormwater capacity. These improvements all help to reduce flooding and pooling.



# Sunnyside Flood Barrier

## Project description

In spring 2017, City of Calgary Council endorsed a suite of comprehensive flood mitigation recommendations, including the implementation of six permanent community flood barriers. These local measures will work together with planned watershed-scale mitigations to reduce flood risk to communities along the Bow River. The Sunnyside Flood Barrier project is one of these permanent flood barriers.

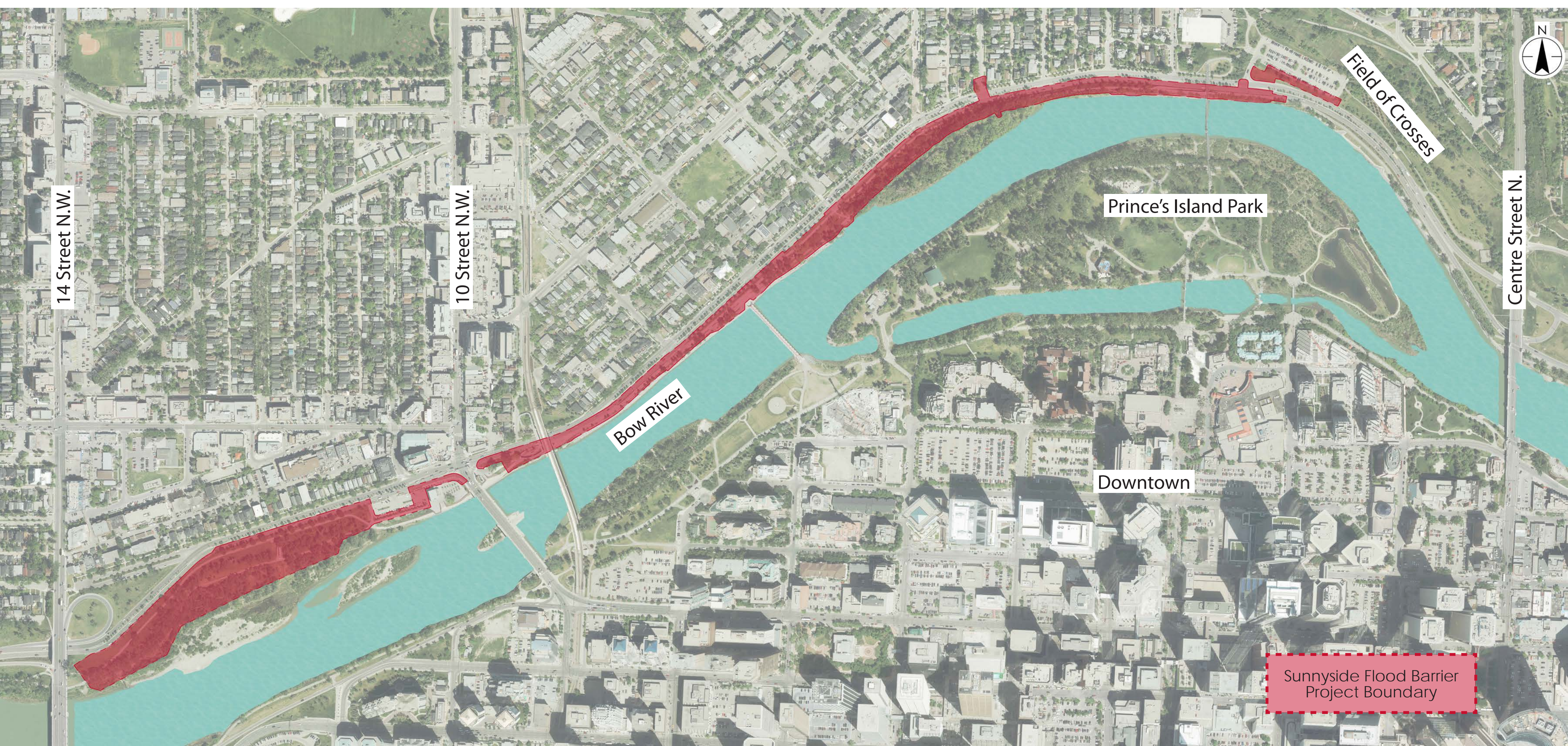
As part of the initial steps for the Project, a Triple Bottom Line (TBL) evaluation, including public engagement, was completed to determine the level of flood protection to be provided by the barrier. The TBL compared four levels of flood protection and recommended the 1:100 level of protection be selected. City of Calgary Council approved moving forward with the 1:100 year flood barrier height on April 15, 2020.

The flood barrier will include a combination of permanent flood walls and sheet walls as well as temporary deployable systems (i.e. sandbags, water filled tubes) and demountable flood walls. The barrier will run along the north side of the Bow River from 14 Street N.W. to the west side of the Field of Crosses.

## Funding

The project is an estimated **\$50 million** investment in the communities of Sunnyside and Hillhurst, building vital flood protection along the Bow River.

The barrier will protect Sunnyside  
from a 1:100 year flood 



# What is a 1:100 year flood?

A 1:100 (100-year or 1 per cent flood) flood has a one per cent chance of happening in any given year. This doesn't mean that after a 1:100 flood occurs it won't happen again for another 100 years. It's possible for major floods to happen in back-to-back years and in the face of climate change, it's possible this will lead to changes in how flooding frequency is calculated in the future.

***Smaller floods tend to occur more often than larger floods over time.***

For example:

- 1:20 year flood has a 5 per cent chance of happening in any given year and would be smaller than a 1:50 year flood.
- 1:50 year flood has a 2 per cent chance of happening in any given year and would be bigger than a 1:20 year flood.

## Did you know?

The Government of Alberta is taking a new approach to revising its Flood Hazard Area maps, which are expected to be released by the end of 2023. New maps will reflect the latest understanding of how a 1:100 flood would impact Calgary. For more information about the:



Flood Hazard Identification Program, visit:  
<https://www.alberta.ca/flood-hazard-identification-program>



Calgary River Valleys Project, visit:  
<https://www.calgary.ca/content/www/en/home/water/flooding/calgary-river-valleys-project.html>

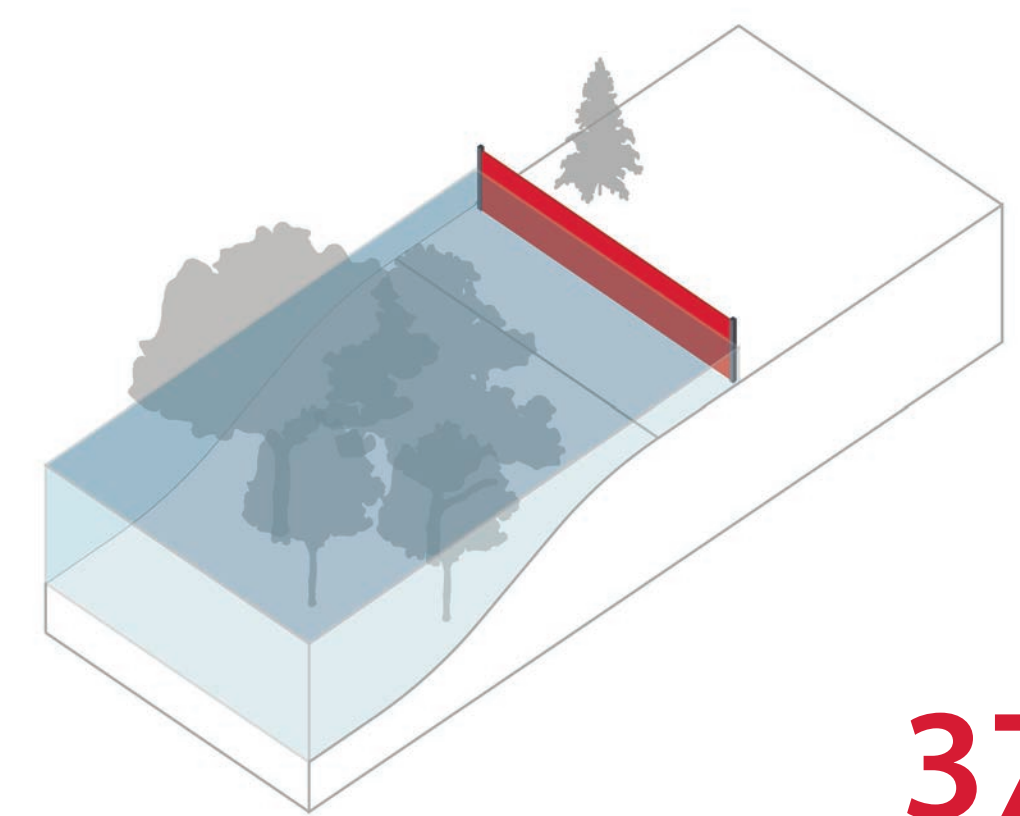


\* This figure is for illustrative purposes only. It is not meant to convey actual flood levels in Sunnyside.

# What will the Sunnyside Flood Barrier look like?

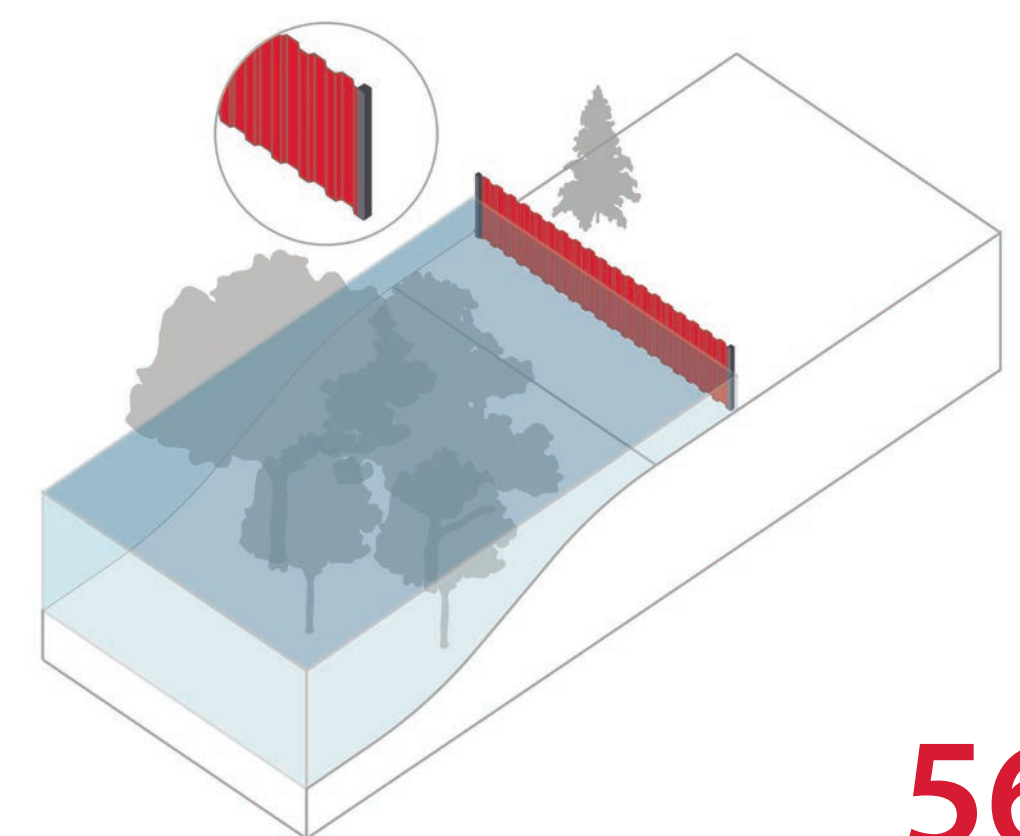
The flood barrier will include a combination of permanent flood walls and sheet walls as well as temporary deployable systems (i.e. sandbags, water filled tubes) and demountable flood walls. The barrier will be approximately 2.4 kilometres long.

## Flood wall



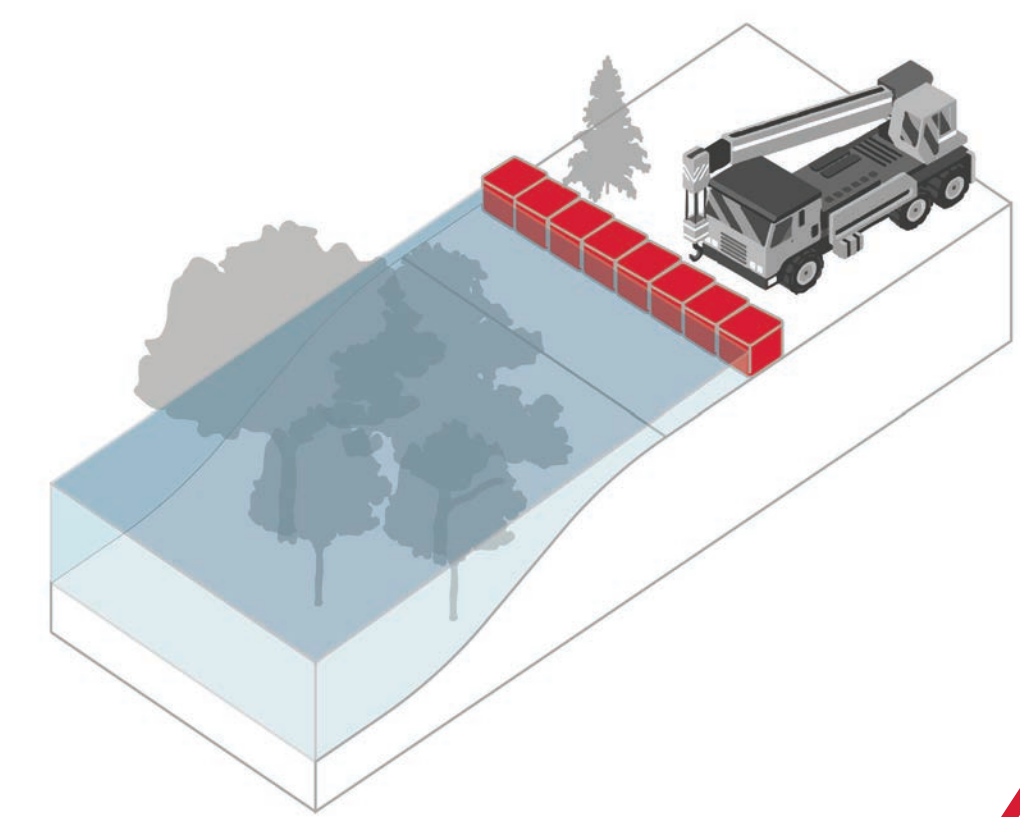
37 %

## Sheet wall



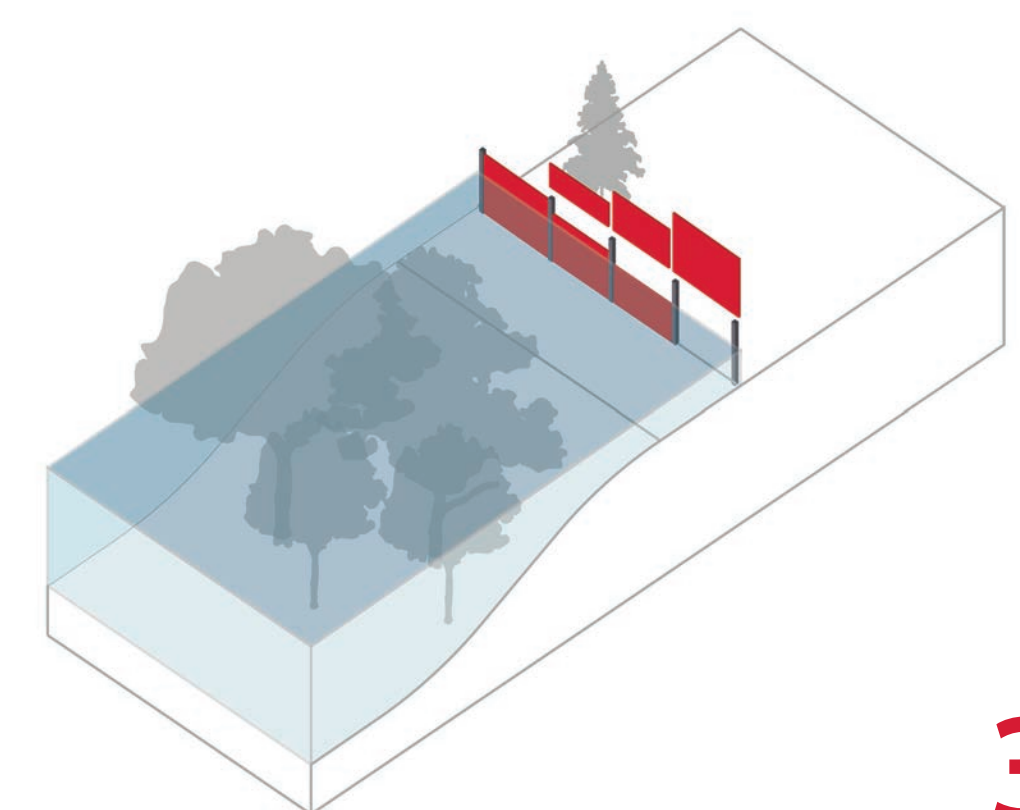
56 %

## Deployable systems



4 %

## Demountable flood wall



3 %

# Circulation & open space benefits

## Separation of bikes and people

During busy times, especially on weekends and during rush hour, the pathway system can feel overwhelming. This is particularly true in areas where the pathway is shared by different users. To address this issue, a multi-use pathway is proposed along the majority of the project length. This pathway will have clearly defined lanes for cyclists and pedestrians.

## Pathway widening

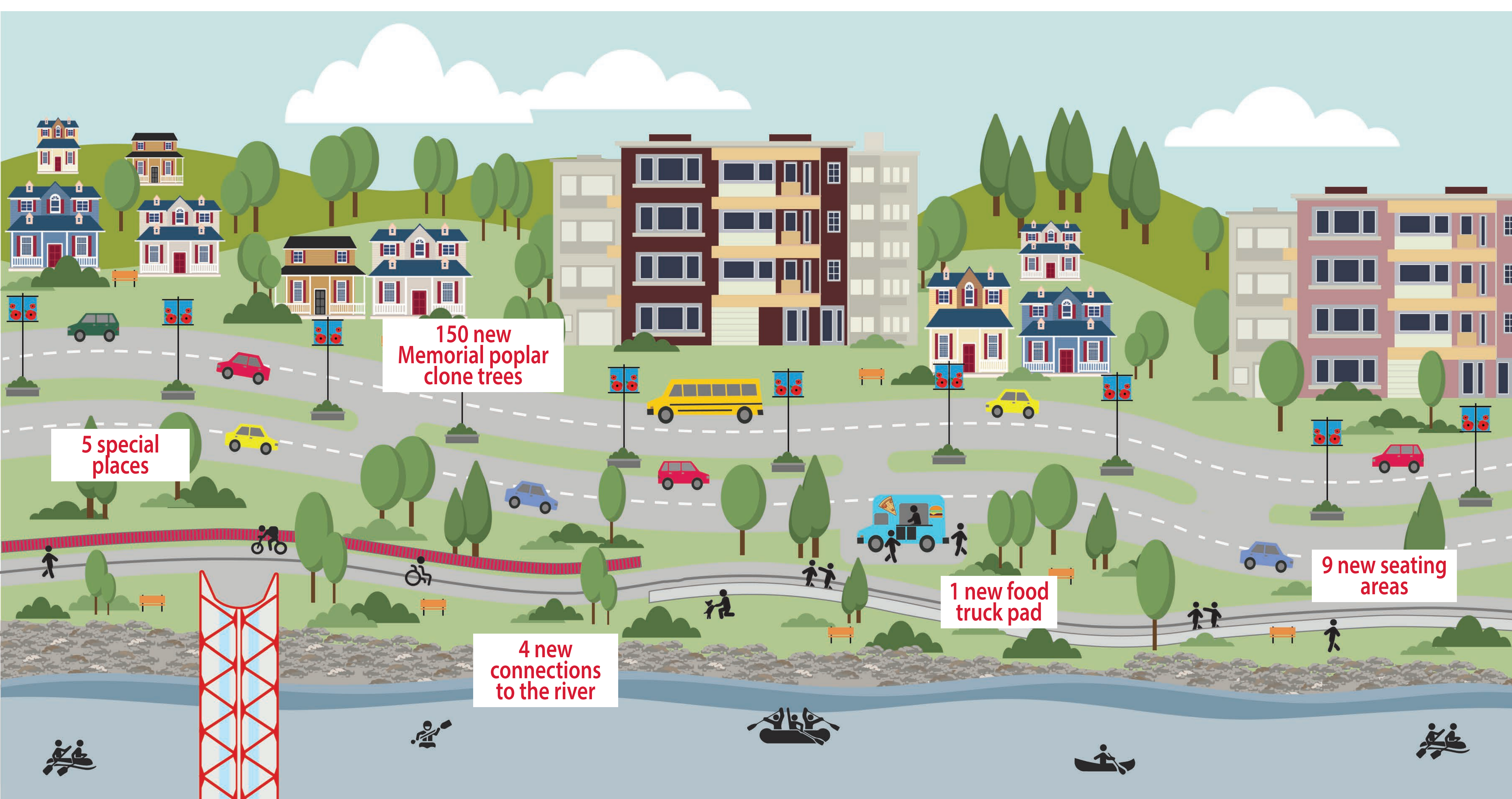
The existing pathway along the north shore of the Bow River narrows in a number of spots. To improve circulation, the pathway will be widened where possible.

## New connections to the river

There are numerous informal pathways that run adjacent to the river. Reaching these trails can be a bit of a scramble and has led to areas of localized erosion. These connections will be formalized, with staircases and accessible routes leading down to the river.

## Additional seating areas

In addition to new and enhanced plaza spaces, additional seating areas off the primary network are planned. These will be spaces to take a break, take a selfie, or just sit back and watch the river flow by.





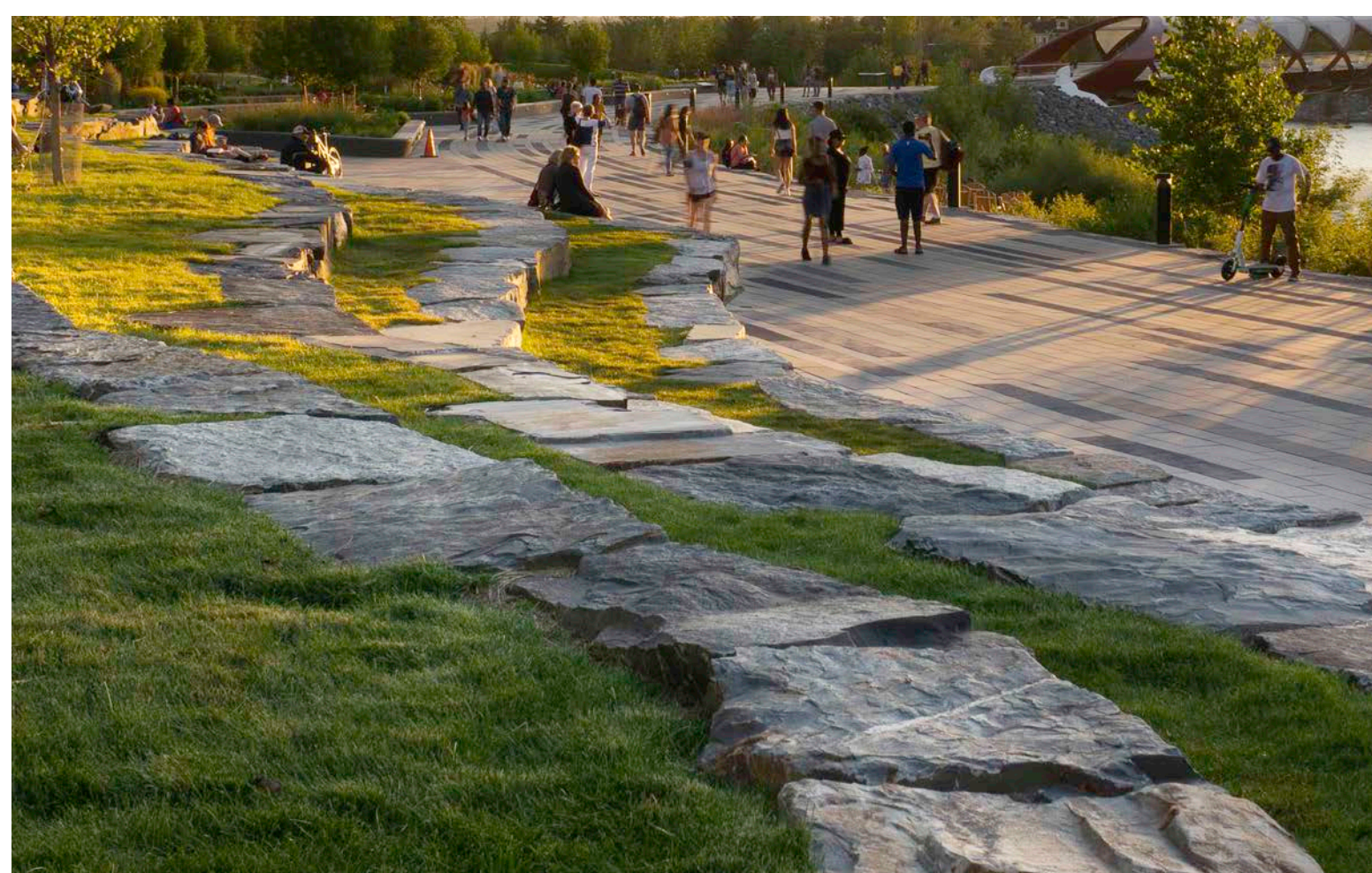
# Materials palette

Timber boardwalks, cut stone seats, riverbank sitting stones and seat walls have been selected from the existing open spaces along the Bow River pathway system for use on the Sunnyside Flood Barrier project. While not entirely finalized, the intent is that these materials will visually tie together the different spaces along the river to help create a feeling of continuity.

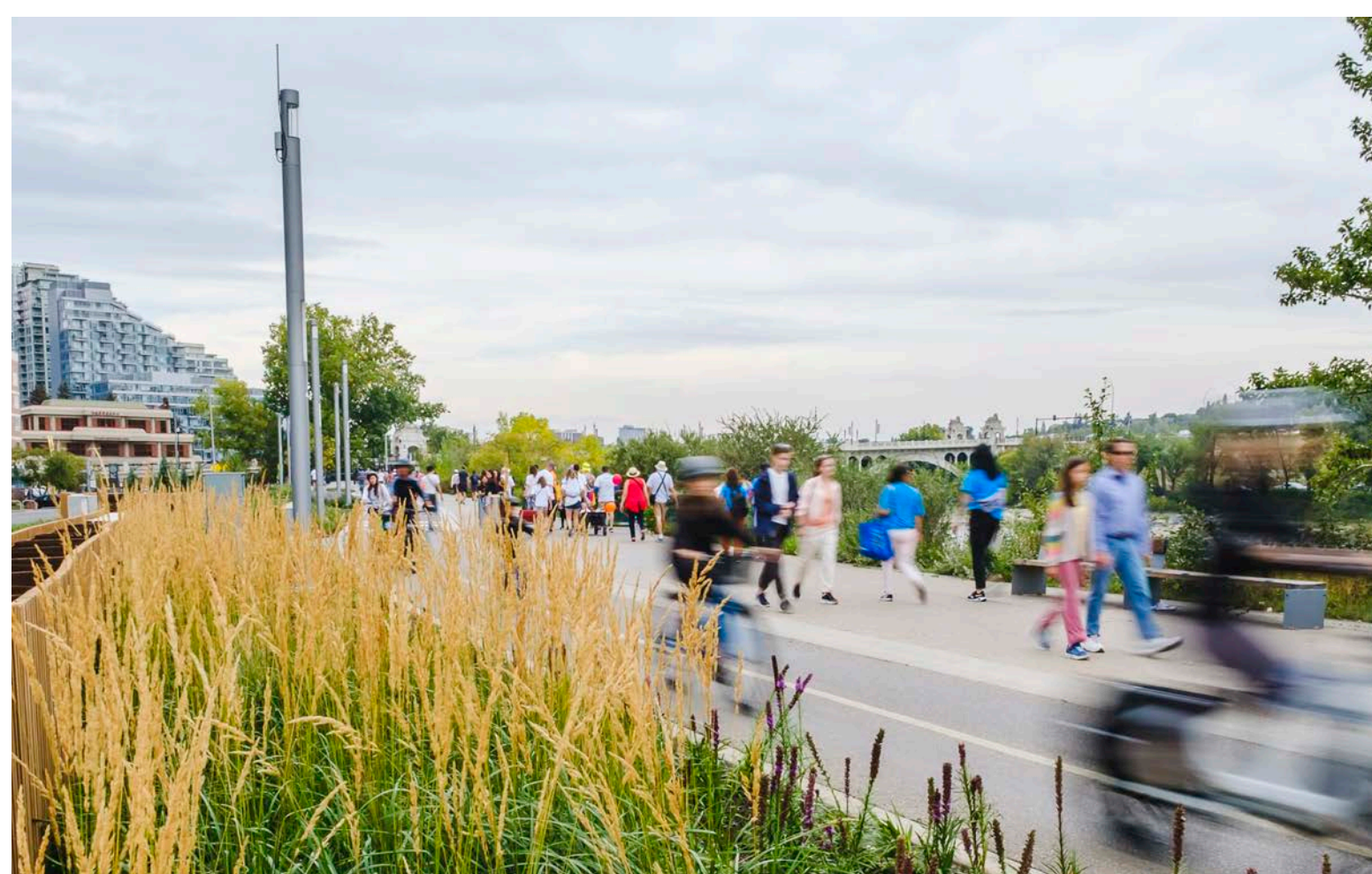
## Modular Seating



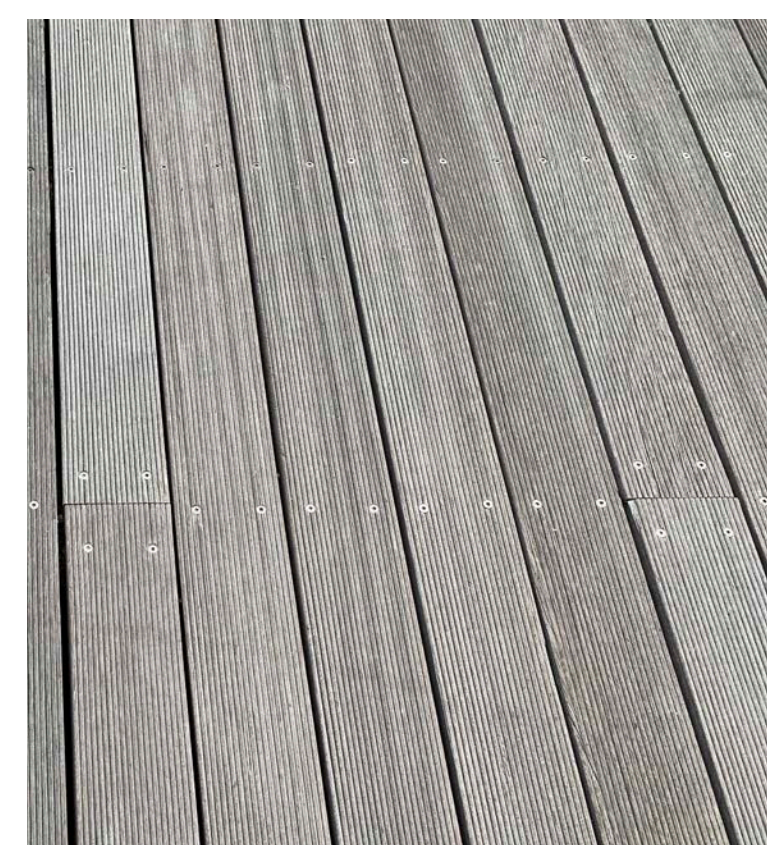
## Riverbank seating



## Lighting



## Paving



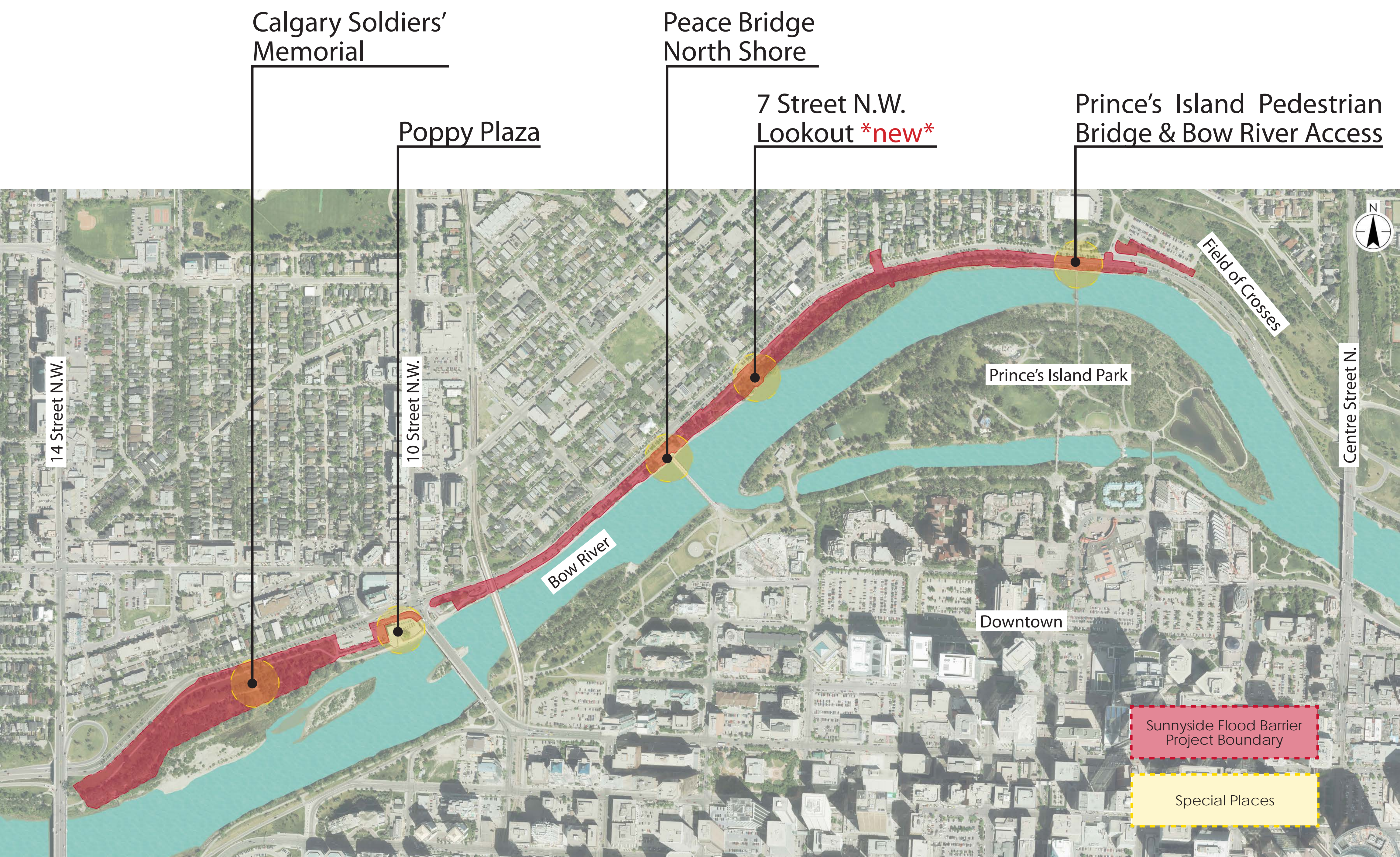
# Special places

## New and enhanced special places

The Sunnyside Flood Barrier is located along the north shore of the Bow River from 14 Street N.W. to the west side of the Field of Crosses. This corridor is one of the most popular in the city and includes a number of special places. These are places where people may stop to watch rafters on the river, enjoy a beautiful view of downtown or snap a graduation photo. These are important spaces for Calgarians.

Five special places, where public realm improvements are planned, have been identified along the corridor:

- Calgary Soldiers' Memorial
- Poppy Plaza
- Peace Bridge North Shore
- 7 Street N.W. Lookout *\*new\**
- Prince's Island Pedestrian Bridge & Bow River Access



# Calgary Soldiers' Memorial

Unveiled on April 9, 2011, on the 94th anniversary of the Battle of Vimy Ridge, the Calgary Soldiers' Memorial is dedicated to Calgary area soldiers who have given their lives in war and military service overseas.

## What will change?

**New pathway connection:** Currently, the Calgary Soldiers' Memorial is only connected to the pedestrian pathway to the south. It is not connected to the more accessible regional pathway to the north. To improve access, a new pathway connection to the regional pathway is planned.

**Additional gathering space:** The existing plaza space west of the Memorial is fairly narrow. An expansion of this plaza is planned to provide additional gathering space for Remembrance Day ceremonies and other events.

All updates in this area will seek to respectfully complement the existing aesthetic and feel of the Calgary Soldiers' Memorial.



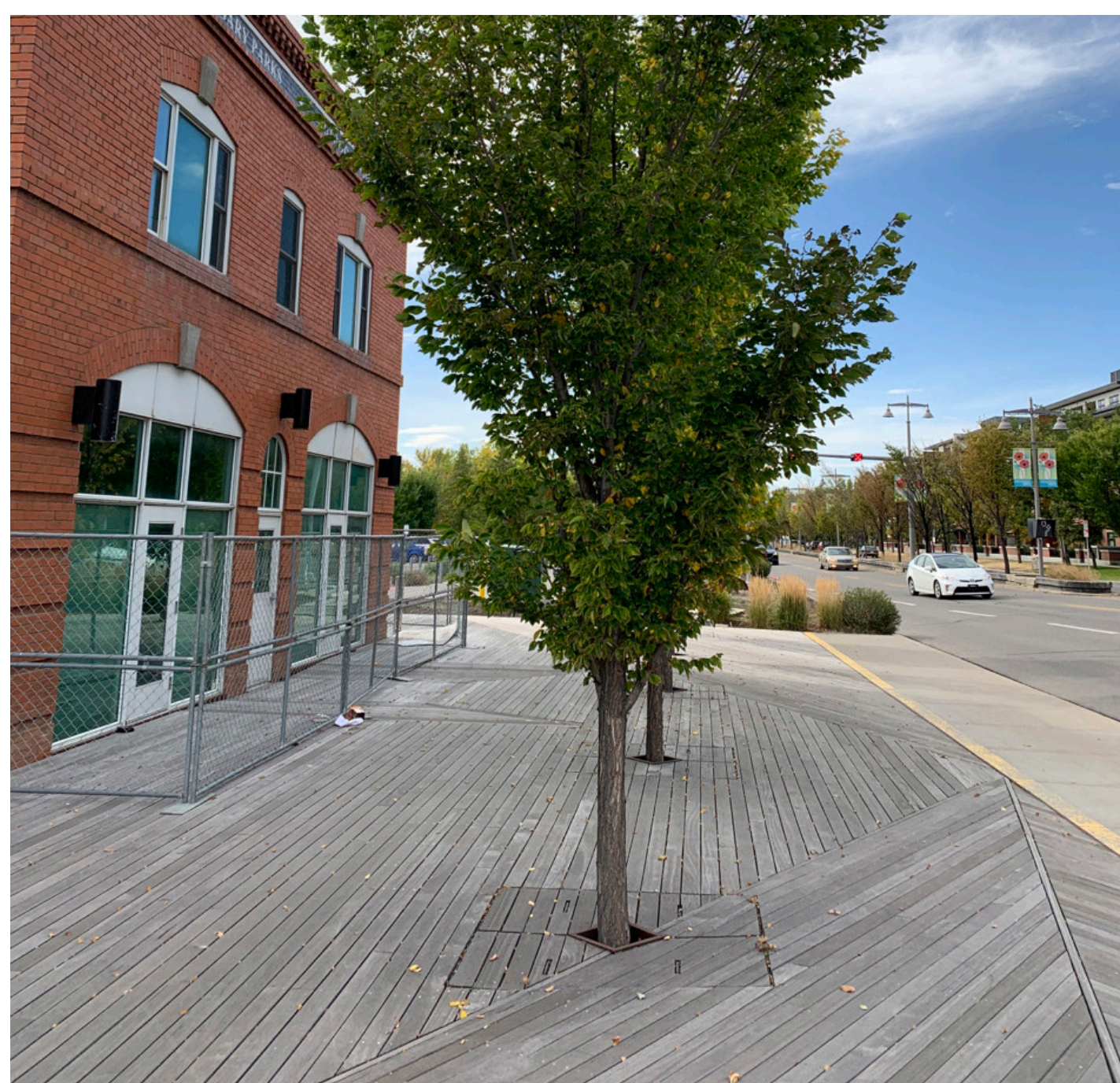
# Poppy Plaza

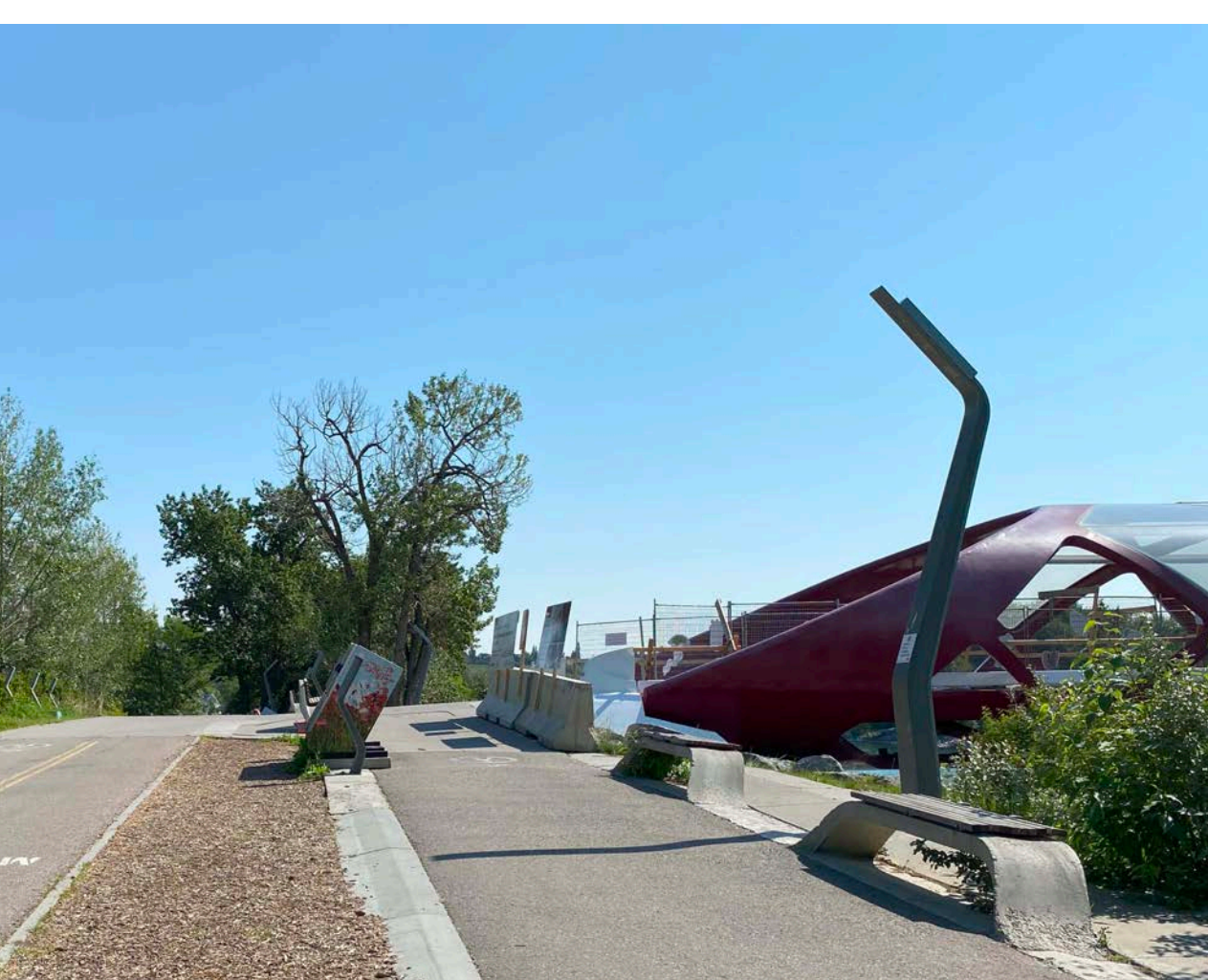
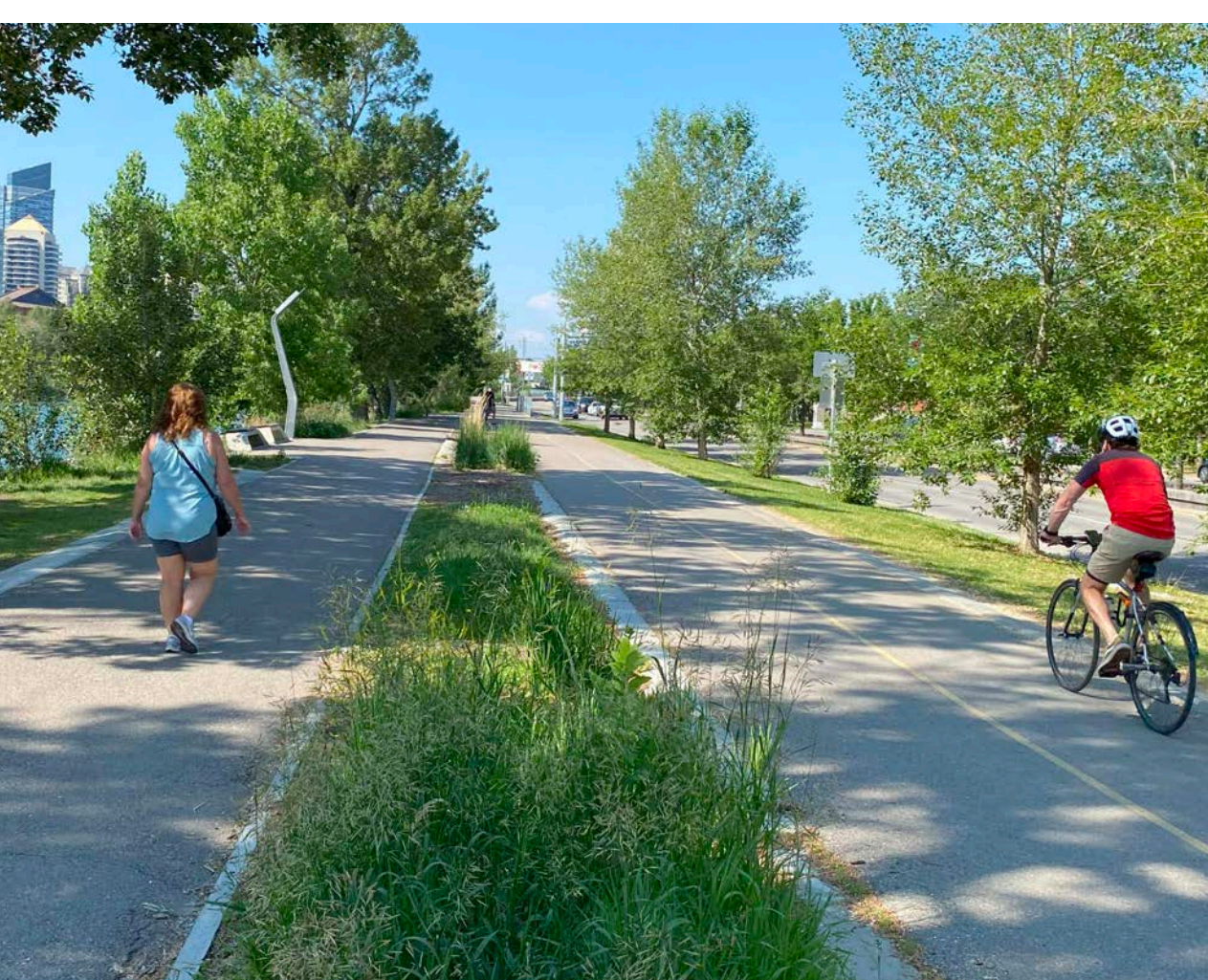
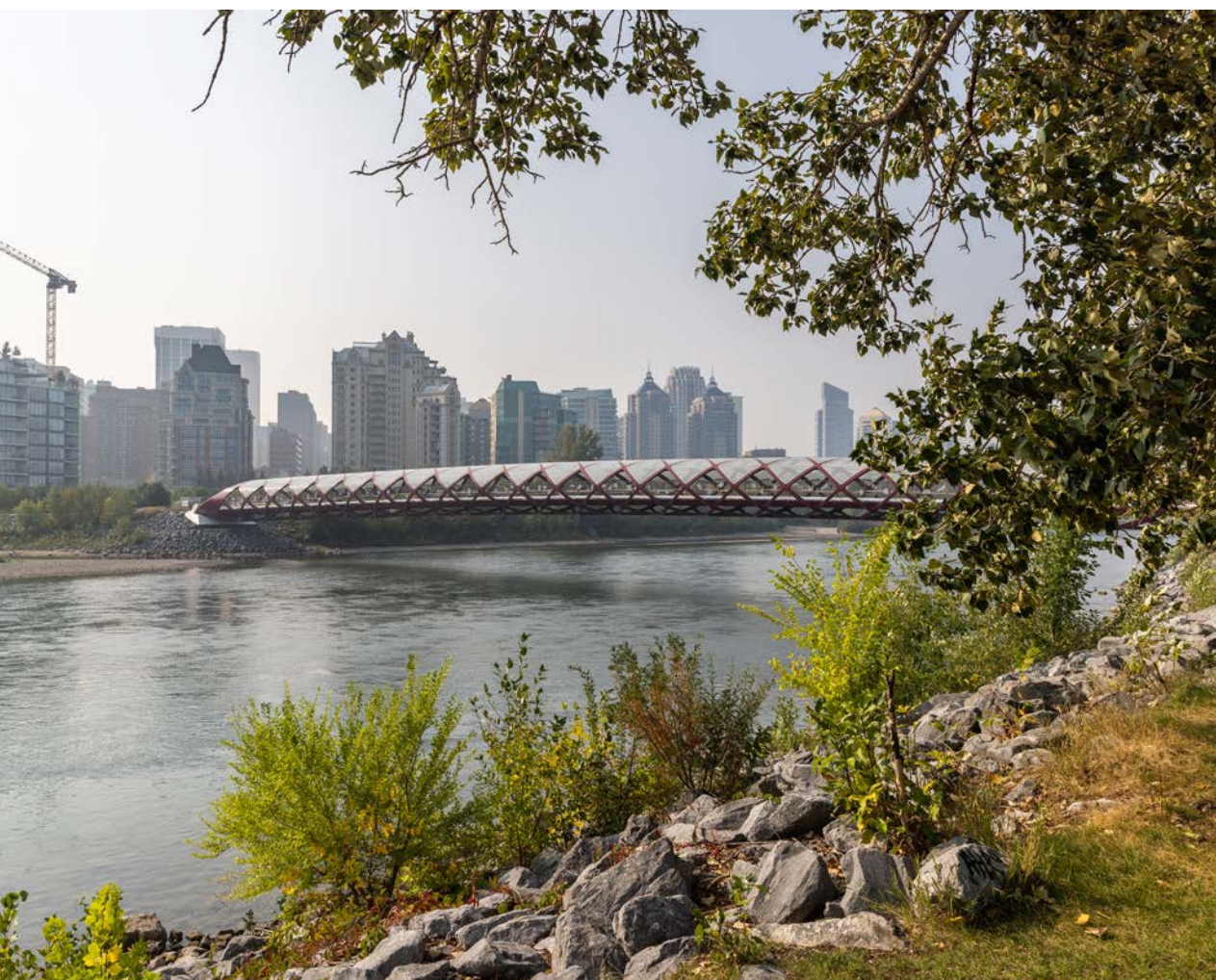
Poppy Plaza is a site of remembrance as well as a gateway to the Sunnyside neighbourhood. Part of the City of Calgary's "Landscape of Memory" initiative, the plaza serves as a living memorial honouring Canadian veterans, past and present.

## What will change?

In short - very little. Winner of the 2009 Canadian Architects Award of Excellence, Poppy Plaza is a beautifully designed memorial space. Flood protection requirements in this area are minimal; therefore, in a major flood event, deployable systems will be installed by City crews.

Beyond the scope of the barrier project, the City of Calgary is investigating initiatives to enliven and better activate Poppy Plaza (e.g. permitting summer markets and other types of programming).





# Peace Bridge North Shore

Since opening in 2012, Calgary's Peace Bridge is a transformative project that has become an iconic destination along the Bow River. Used by an estimated 6,000 people a day, the bridge galvanizes the connection between Sunnyside and downtown.

## What will change?

**Better separation of bikes and people:** The north shore plaza is currently a mixing space with a lot of confusion about who goes where. The proposed design will better guide cyclists and pedestrians and allow cyclists to move through the space without being disrupted by pedestrian traffic.

**Additional gathering spaces:** While many people use the Peace Bridge to cross the river, others use the space to relax, take selfies and catch up with friends. To accommodate passive gathering, the north shore plaza will be enlarged, providing additional plaza spaces flanking the bridge. Steps down to the river are also planned.

**More robust design:** Many of the original benches and planting beds along the north shore plaza are beginning to show their age. The proposed design employs more robust site furnishings and planting design to better weather the high-use seen in this area.

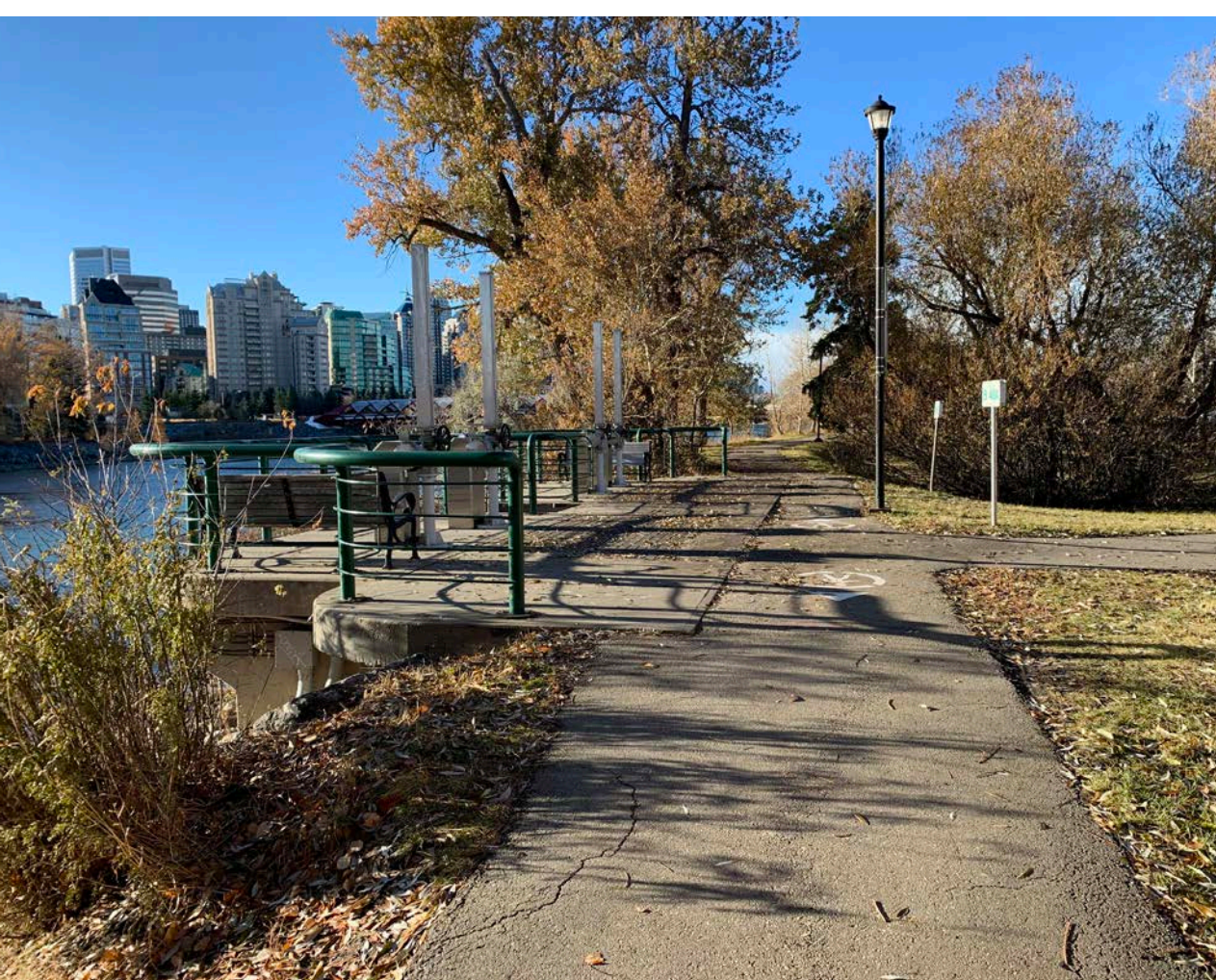


# 7 Street N.W. Lookout



After reviewing the congested network of trails in this location, the project's designers recognized an opportunity to develop a new special place.

The 7 Street N.W. Lookout is envisioned as a new hub where visitors can grab a bite from a nearby food truck or sit down to take in the amazing views of the river.



## What is planned here?

**Improved pathway circulation:** The existing pathway network, including the 7 Street N.W. crosswalk, has been simplified to allow for more intuitive circulation in this area.

**A place for food trucks:** There is nothing quite like stopping for an ice cream on a warm summer's day or a mug of hot cider in early October. To activate this spot, a dedicated space for food trucks and ample seating away from the buzz of the primary pathway system is planned.



# Prince's Island Pedestrian Bridge & Bow River Access

Prince's Island Pedestrian Bridge and the Bow River access are abuzz with activity - particularly during the summer months. This node links Sunnyside to Prince's Island and serves as a key egress point for watercrafts.

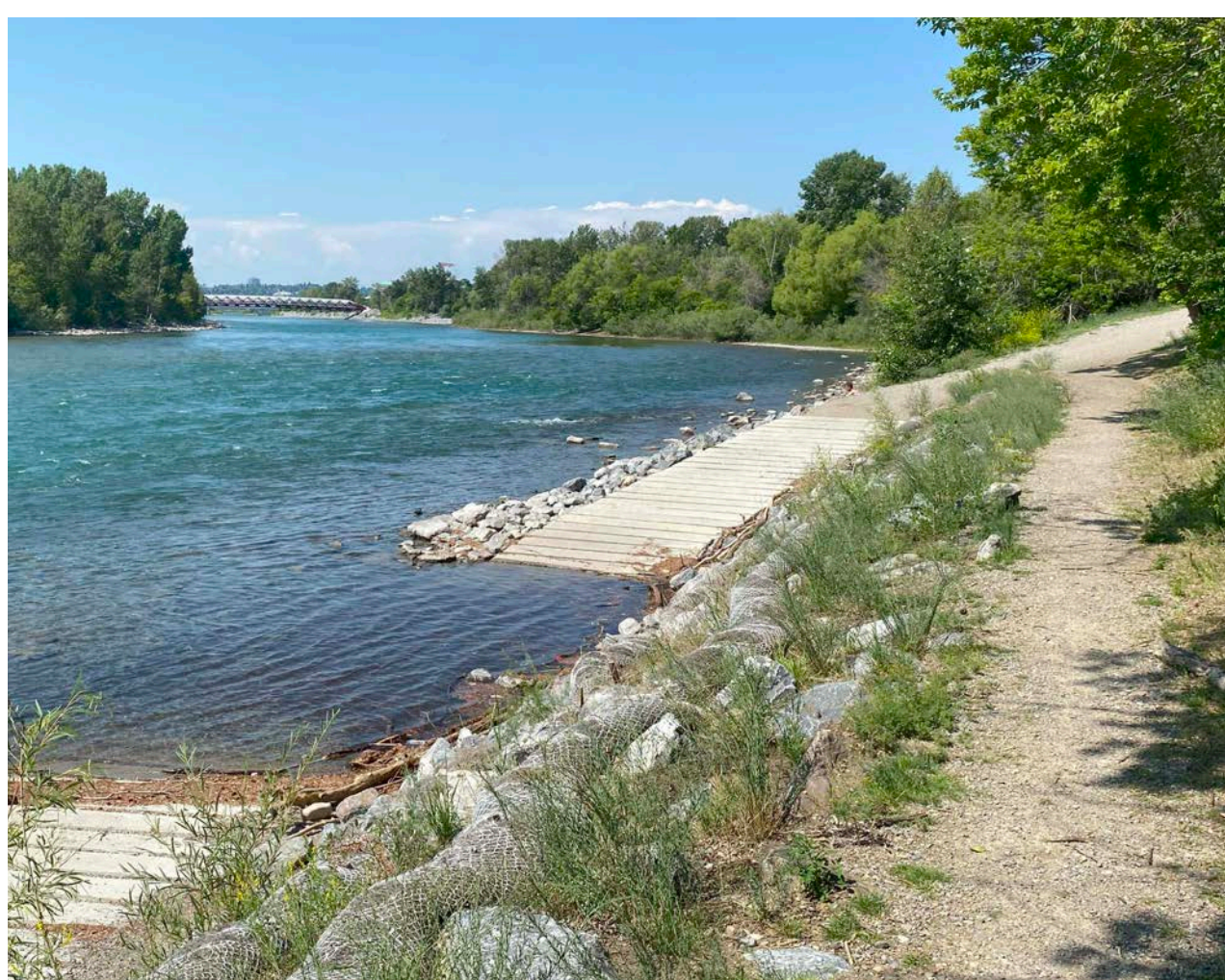
## What will change?

Over the last two years, use of the Bow River access has exploded in popularity and the existing design is at capacity.

**Additional gathering spaces:** Additional gathering space, including tiered riverbank seating and an upper plaza area are proposed. Gathering spaces will be designed to function for both watercraft and those looking for a contemplative spot to look out on the water.

**Improved pathway transitions:** The transition between the regional pathway and the Prince's Island pedestrian bridge ramp is very tight and presents a growing safety concern. Modifications to establish intuitive flow patterns for both pedestrians and cyclists are planned.

**Riverbank restoration:** Having experienced recent degradation and erosion, this area presents an opportunity to reestablish native riparian vegetation.



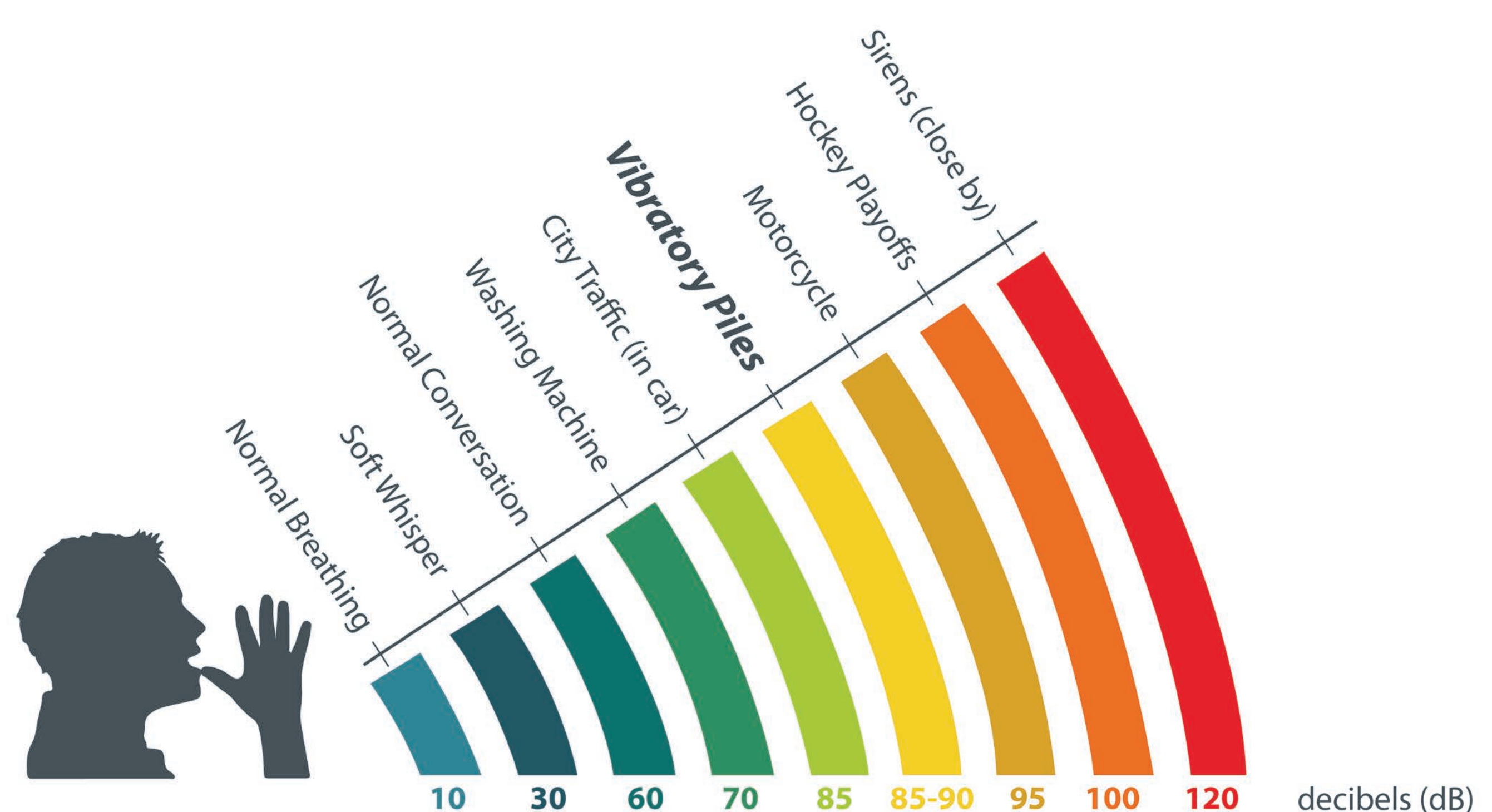
# Construction impacts

At The City of Calgary, we pride ourselves on building a great place to live and a great place to make a life. We know that construction can be disruptive as we build this vision. Our project managers and contractors have extensive experience in this area and use lessons learned from previous projects to find new, alternative and better ways to mitigate the direct impact on Calgarians. Construction is anticipated to start in 2024, so it is important you know what to expect.

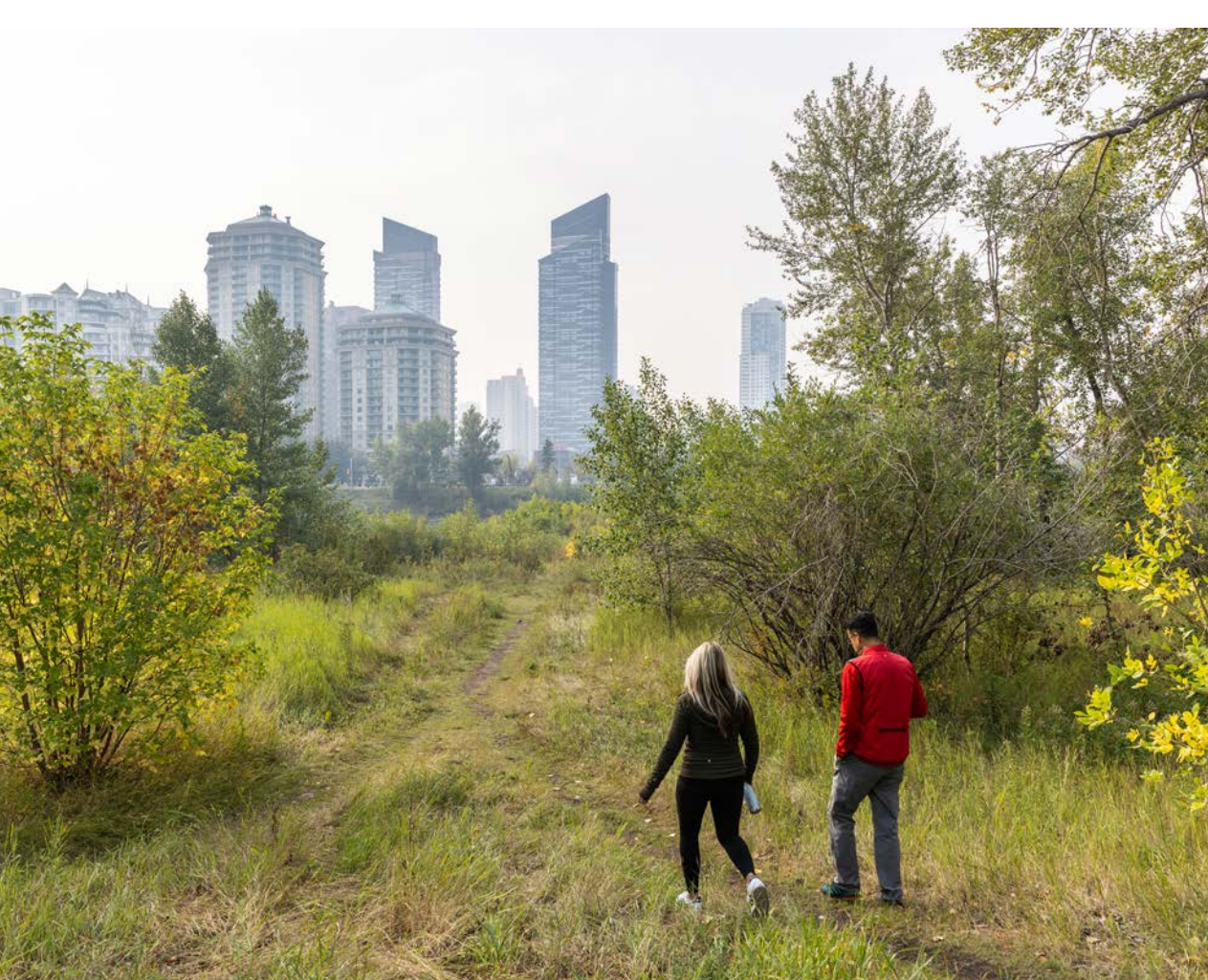
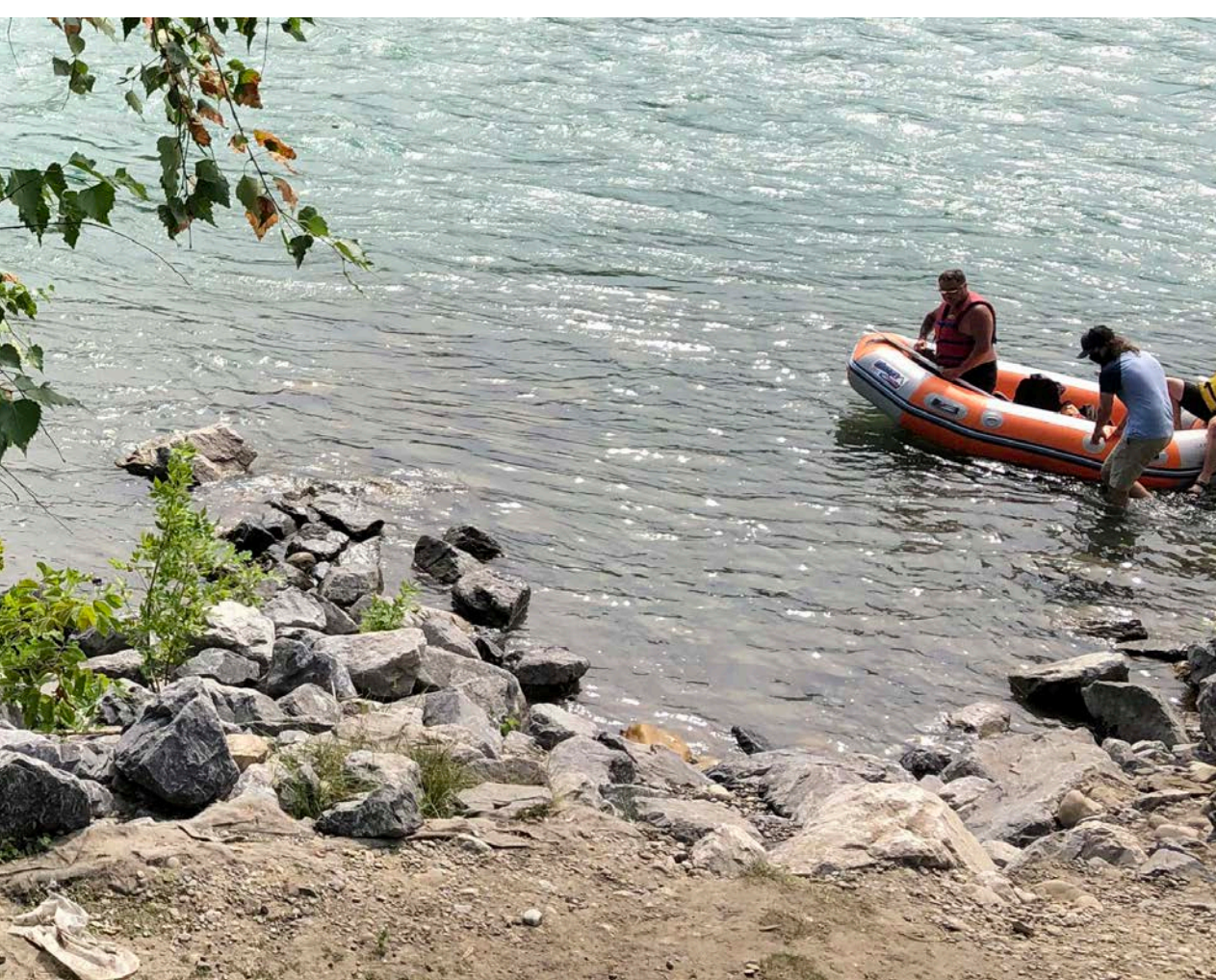
## What to expect:

When construction is underway, here's what you can expect:

- An increase in on-site construction activity, including construction crews, vehicles and heavy equipment
- Pathway and sidewalk closures and detours along the Bow River Pathway
- An increase in traffic on the roads and pathway networks; we want everyone to get home safely, so please slow down
- Temporary removal of parking
- Road closures and lane detours
- Fencing around construction areas and on-site signage
- An increase in noise and vibrations throughout construction, including, for example, demolition, pile driving, motorized equipment, ground compaction and vehicle back-up alarms
- Installation of steel sheet piles that will generate ground vibrations in localized areas
- Soil disturbance and increased dust
- Use of select opens spaces for construction staging areas
- An increase in truck and equipment traffic accessing the construction site(s) and surrounding areas
- Material removal and delivery, as well as on-site flaggers to help direct traffic and pathway users
- Temporary utility shut-downs may be required
- Construction activity on weekends, weekdays and overnight as required







# Getting around Sunnyside

The City of Calgary is looking at the transportation network in and around Sunnyside to understand where people need to go and how we can make it easier, safer and more accessible for everyone, whether you travel by foot, bike, bus or car.

No one mode of transportation serves all needs for all people, and that's especially true in the community of Sunnyside.

## It's policy

The demand for our city's transportation network grows with Calgary's population. With another million Calgarians expected in the next coming decades, The City plans to keep Calgarians moving for generations to come. Our objective? To provide more convenient, affordable and attractive transportation choices for all Calgarians. This means emphasizing comfortable, safe, walkable streets, as well as reliable transit service.

## So what does this mean for Sunnyside?

Sunnyside is already a very walkable neighbourhood, with good connections to top destinations like the shops and restaurants in Kensington, the Peace Bridge, Prince's Island Park and the Downtown Core. The pathway network along the north side of the river makes it easy to connect to neighbouring communities like Parkdale, Hillhurst, Crescent Heights, Bridgeland/ Riverside, Eau Claire and the Downtown.

## Detours

To construct the Sunnyside Flood Barrier, traffic and pathway detours will be necessary. The City of Calgary is committed to providing ample notice and clear signage so that people know when and where detours will be occurring.

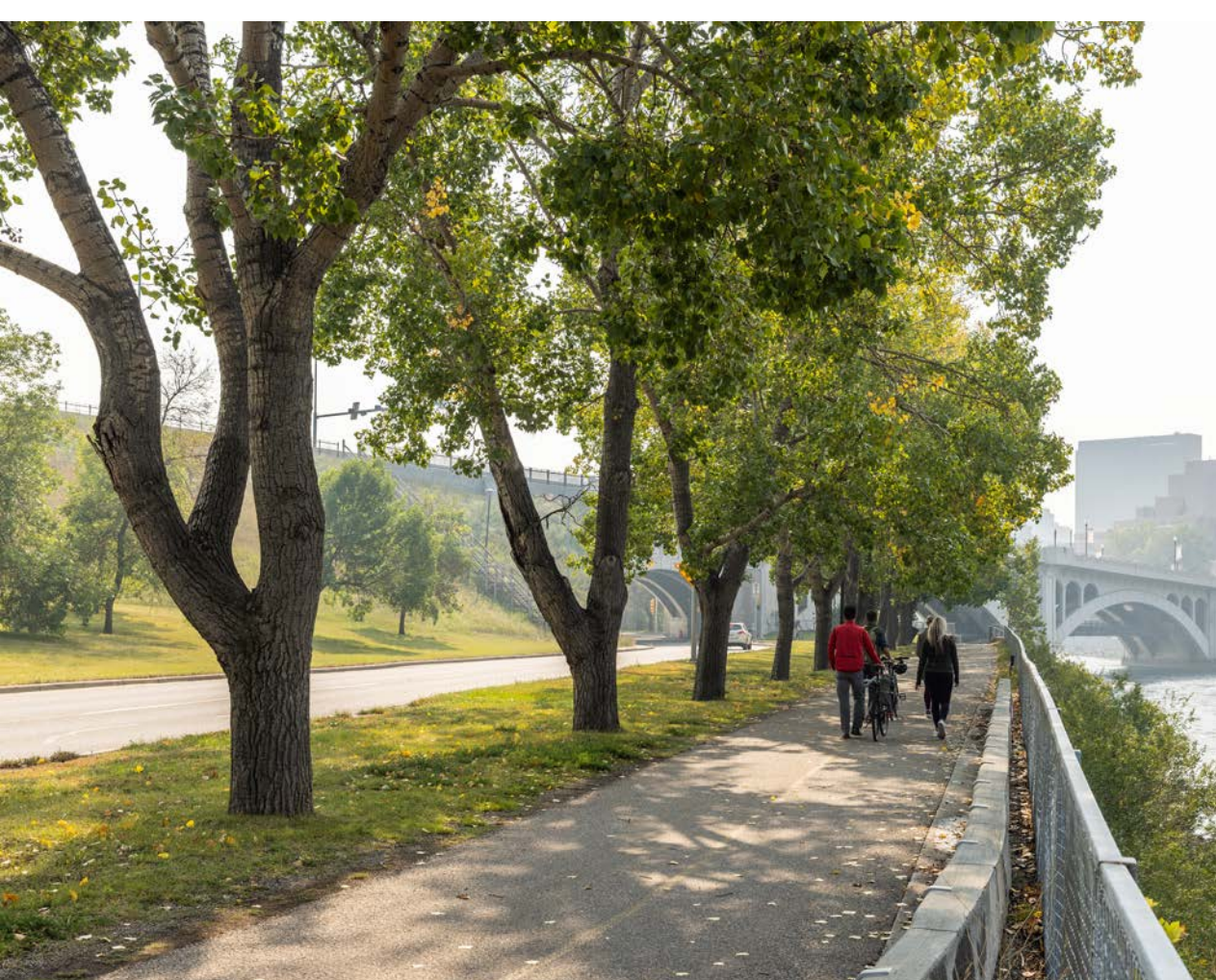
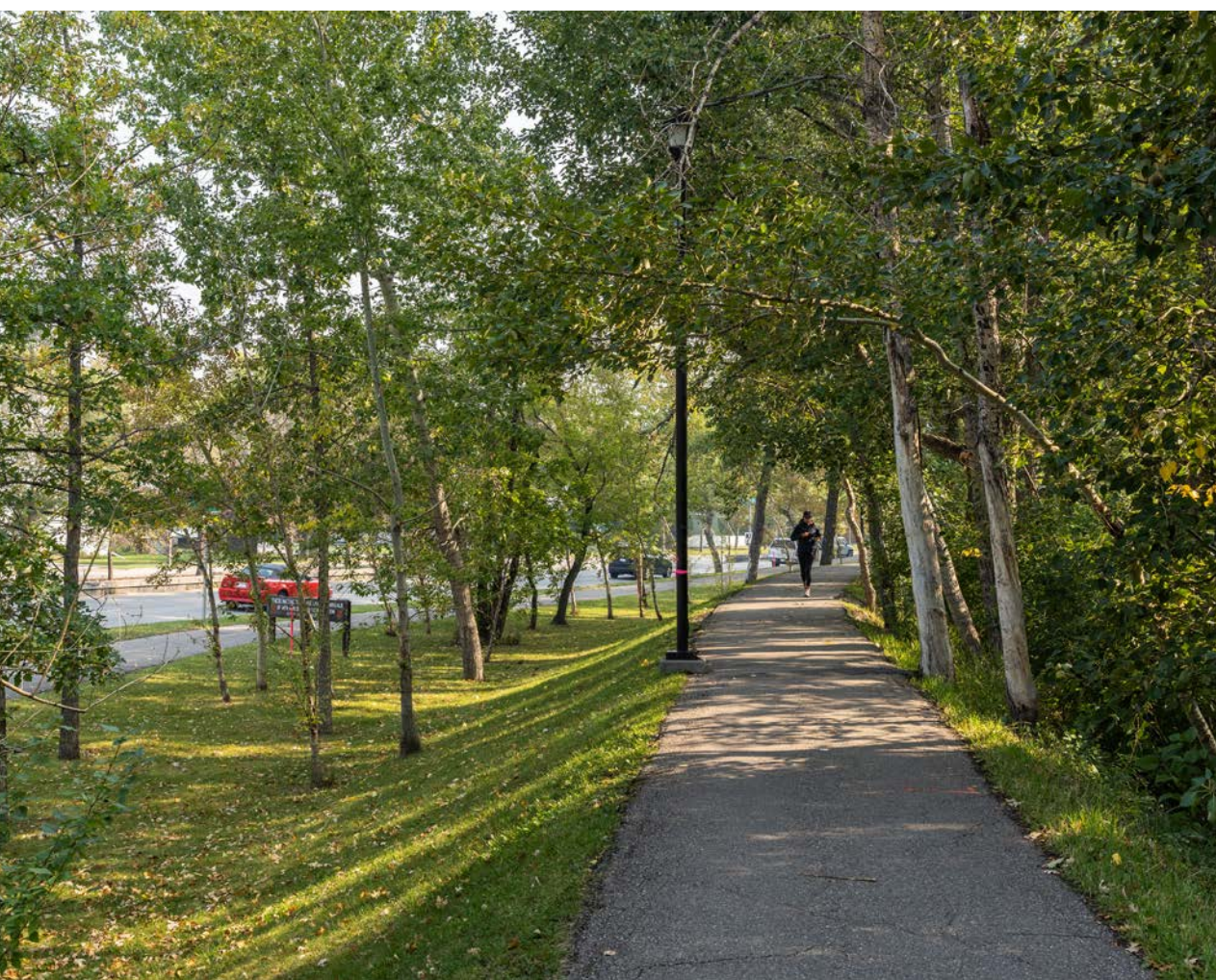
Once the project is underway for current information about:



Traffic detours, visit the Sunnyside Flood Barrier project website:  
<https://www.calgary.ca/planning/water/sunnyside-flood-barrier.html>



Pathway detours, visit Calgary's Pathways & Bikeways map:  
<https://maps.calgary.ca/PathwaysandBikeways/>



# Tree impacts

While we make every effort to avoid impacts to trees, sometimes the nature of a capital project requires that some trees are removed. In those unavoidable cases, The City has two ways to replace the loss of existing trees:

## Manicured areas

When trees are impacted in manicured areas, a tree protection plan is created that first attempts to protect the trees during construction and, if this is not possible, tree compensation is applied to replace the lost trees. Tree compensation is based on the value of the impacted trees, determined by the health, size, species and location.

It's important to note that replacement trees are planted in the closest suitable location to replace the impacted trees.

## Natural areas

When trees are impacted in natural areas, a restoration plan is developed to restore the ecological health of the area. A restoration plan aims to restore the ecological health of an area by identifying the ecological needs of that area and measuring the success of the actions taken to meet those needs. Depending on the location, it may mean planting more trees to restore the area, but sometimes it may mean planting other types of vegetation to help restore the health of the local ecosystem.

## Keeping the public informed

We know that the trees in Sunnyside are important to our city and the community. When we have more information on where and how the trees will be removed, replaced and restored, we will provide an update to the community.

The City of Calgary will make every effort to give citizens at least 14 days notice before trees are removed by marking the impacted trees or area; however, trees may be removed with shorter notice if they pose a danger to City assets or people.

# Planting strategy

There are numerous complexities associated with vegetation planting and management on the Sunnyside Flood Barrier project. Key considerations include planting adjacent to the proposed flood barrier, management of historically significant trees, appropriate species selection, and finding opportunities to reuse trees that need to be removed. The replanting approach and tree reuse are central to the planting strategy and are described below.

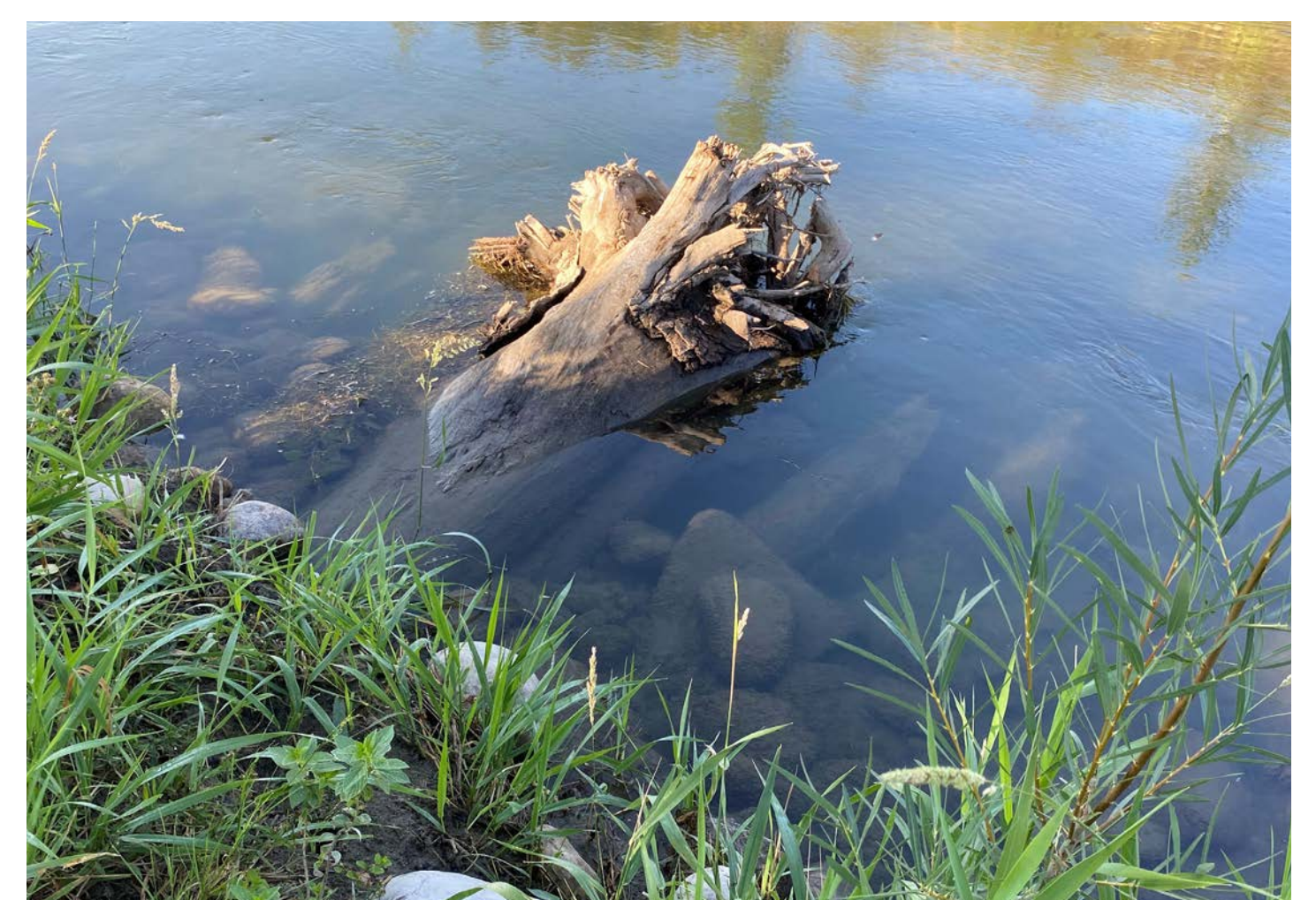
## Replanting approach

As part of the project's compensation and restoration plan, trees, shrubs and flowers, including native species, will be replanted within the project area. Our team knows that many trees in the project area, for example in Poppy Plaza and alongside Memorial Drive, are in poor health and showing signs of decline. Learning from these examples, the project team is committed to selecting trees that are proven to grow well in Calgary. We are also committed to ensuring that the right tree is planted in the right spot.

The project's replanting efforts aim to provide canopy coverage, species diversity and resiliency against Calgary's unpredictable weather.

## Tree reuse opportunities

There is no denying that existing trees will need to be removed to accommodate the Sunnyside Flood Barrier. Many of the trees that need to be felled will be re-purposed. Some may be used to provide wildlife or in-stream fish habitat, while others can be used as timber planters, like those at Prince's Island Park. Chipped woody organic matter may also be used in planting beds within the project area.



# What about Sunnyside's Memorial Trees?

This area is an identified historic resource and as part of conserving the historic significance of the site, the living memorial will continue with clones of the original trees, retaining the symbolism of life over death.

Over the course of the last century there have been three periods of purposeful Memorial tree plantings along what is now Memorial Drive.

2

Original Memorial poplars will need to be removed



## ○ Planting #1: poplar, 1922-1928

Following the First World War, poplars were planted on either side of Sunnyside Boulevard (later renamed Memorial Drive) to commemorate soldiers killed during the war. This was part of a larger effort across the commonwealth to memorialize the dead.



Mayor Adams planting the first poplars on Arbour Day 1922.

1

Ash planted in memoriam will need to be removed



## ○ Planting #2: elm and ash, 1990

In 1990, The Royal Canadian Legion and Calgary Parks Foundation planted 250 elm and ash trees between 10 Street N.W. and Crowchild Trail. The trees honour veterans from the First and Second World Wars and the Korean conflict.



Memorial cairn erected in 1990 located east of 10 Street N.W.

40

Memorial poplar clones will need to be removed



## ○ Planting #3: poplar clones, 2007/2008

To preserve the living memorial of the original Memorial poplar trees, in the early 2000's, The City harvested live cuttings. Propagated clones from the cuttings were planted along Memorial Drive.



Urban Forestry staff planting Memorial poplar clones in 2007.

150

New cloned Memorial trees will be planted along Memorial Drive

## Project Memorial tree planting

As part of the Sunnyside Flood Barrier project, Memorial tree planting within the project area is required. An intentional approach to Memorial tree planting is proposed. Poplar clones (like those used during Planting #3) as well as other species like elm and ash will be used.

## Project timeline

### Background

- 2017 • The Sunnyside Flood Barrier is identified as a community-level flood barrier in Calgary’s Flood Resilience Plan.
- 2018 • Preliminary design work on the barrier begins.
- 2019 • Work on the barrier presents an opportunity to preserve and replant trees and develop special places along Memorial Drive, reducing the Sunnyside Flood Barrier project impacts to the area.
- 2020 • Council approves the Sunnyside Flood Barrier at a 1:100 flood level.
- 2021 • Recognizing the importance of this space, the Memorial Parkway program was established to deliver the Sunnyside Flood Barrier through an integrated program that will define a vision for the space, celebrating its commemorative legacy.

### Project planning

Memorial Parkway Program vision and design guidance

- 2022 • The Sunnyside flood barrier project transitions to the Memorial Parkway program, focused on developing flood protection and future public realm improvements.
  - **Summer project engagement phase one:** The project team updates the Landscape of Memory mission and principles.
  - **Project engagement phase two:** The team collected feedback to help develop concepts for public realm improvements along the Sunnyside Flood Barrier.
- 2023 • Design validation, risk assessment and peer review
- Design evolution and refinement

### Pre-construction

- PCL Construction Management onboarded
- Project planning
- Design development
- Budgeting and cost estimation
- Permitting and regulatory approvals
- Procurement

### Execution

- 2024 • Site mobilization (spring)
- Flood barrier construction will begin (summer)
- 2025 & onwards • Functional flood barrier substantially completed
- Public realm improvement works will continue to be delivered

*\*These dates are an estimation and are subject to change*