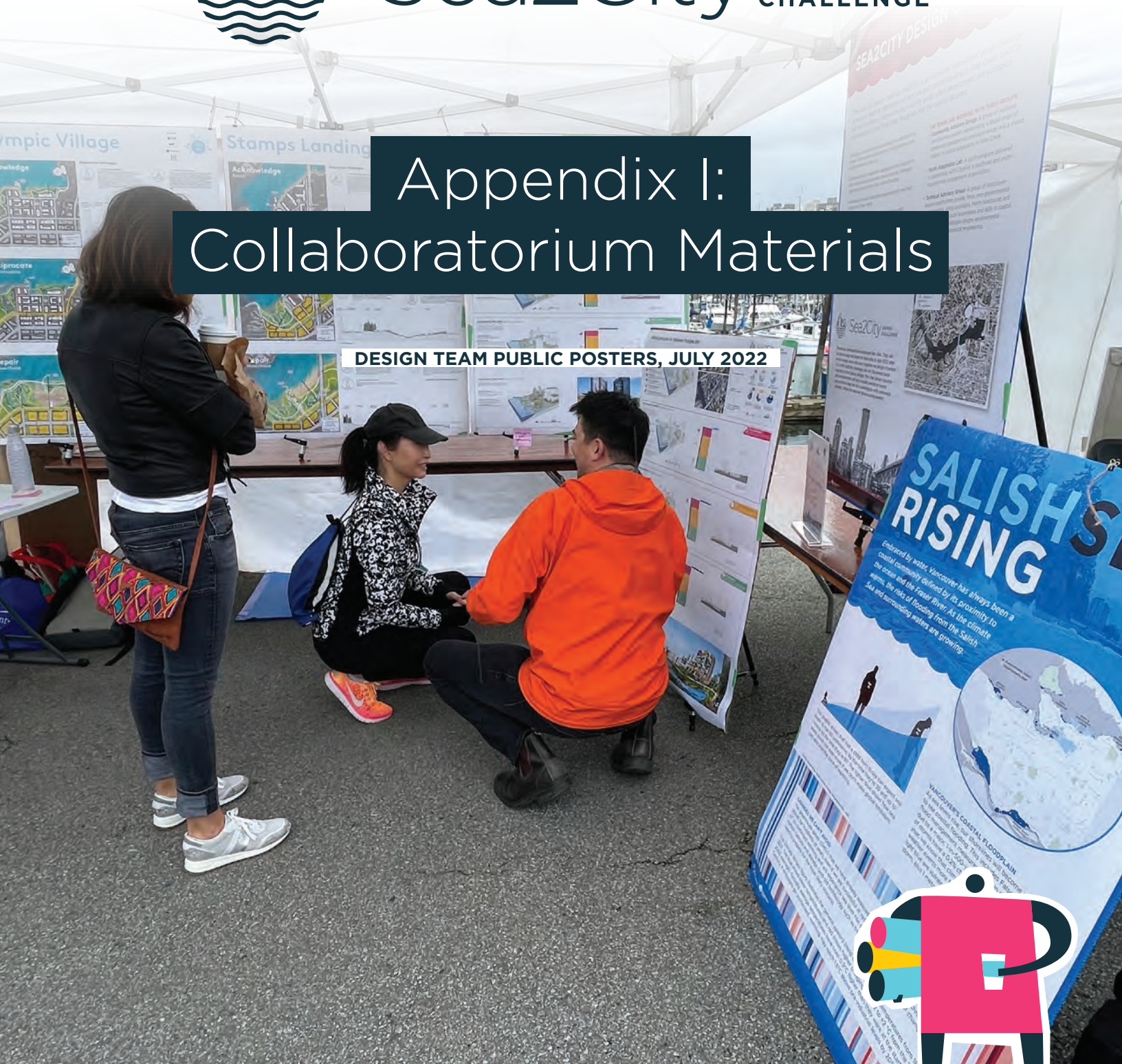




Sea2City DESIGN CHALLENGE

Appendix I: Collaboratorium Materials

DESIGN TEAM PUBLIC POSTERS, JULY 2022



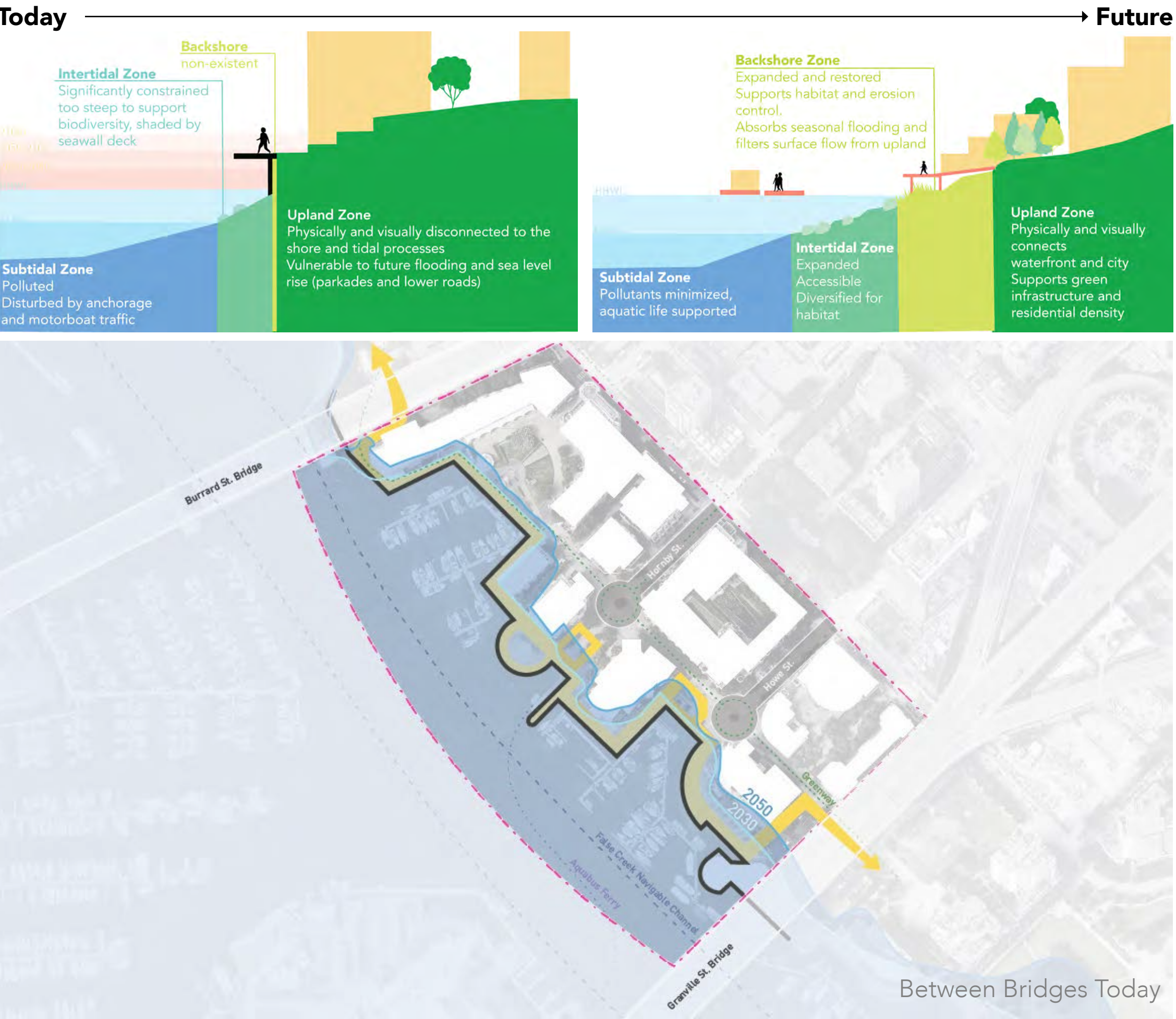


Between Bridges 2100: A Creative Community and Thriving Ecosystem

A place of cultural expression, ecological abundance and social belonging

Vision 2100

Despite its central location, Between Bridges is currently largely disconnected from the city network, natural processes of its waterfront and urban life. Intertidal and backshore zone are minimal, narrowed by buildings and navigation channel. This future vision for Between Bridges proposes transforming it into a place where urban and aquatic life overlap and thrive - a creative, uplifted land-water community with green-blue connections to the rest of the city. It demonstrates that innovative nature-based solutions along with floating- and adaptive building structures have the potential to support ecological and cultural abundance, even on constrained urban sites. In the future, the city and nature will have a renewed relationship based on a reciprocity of care.

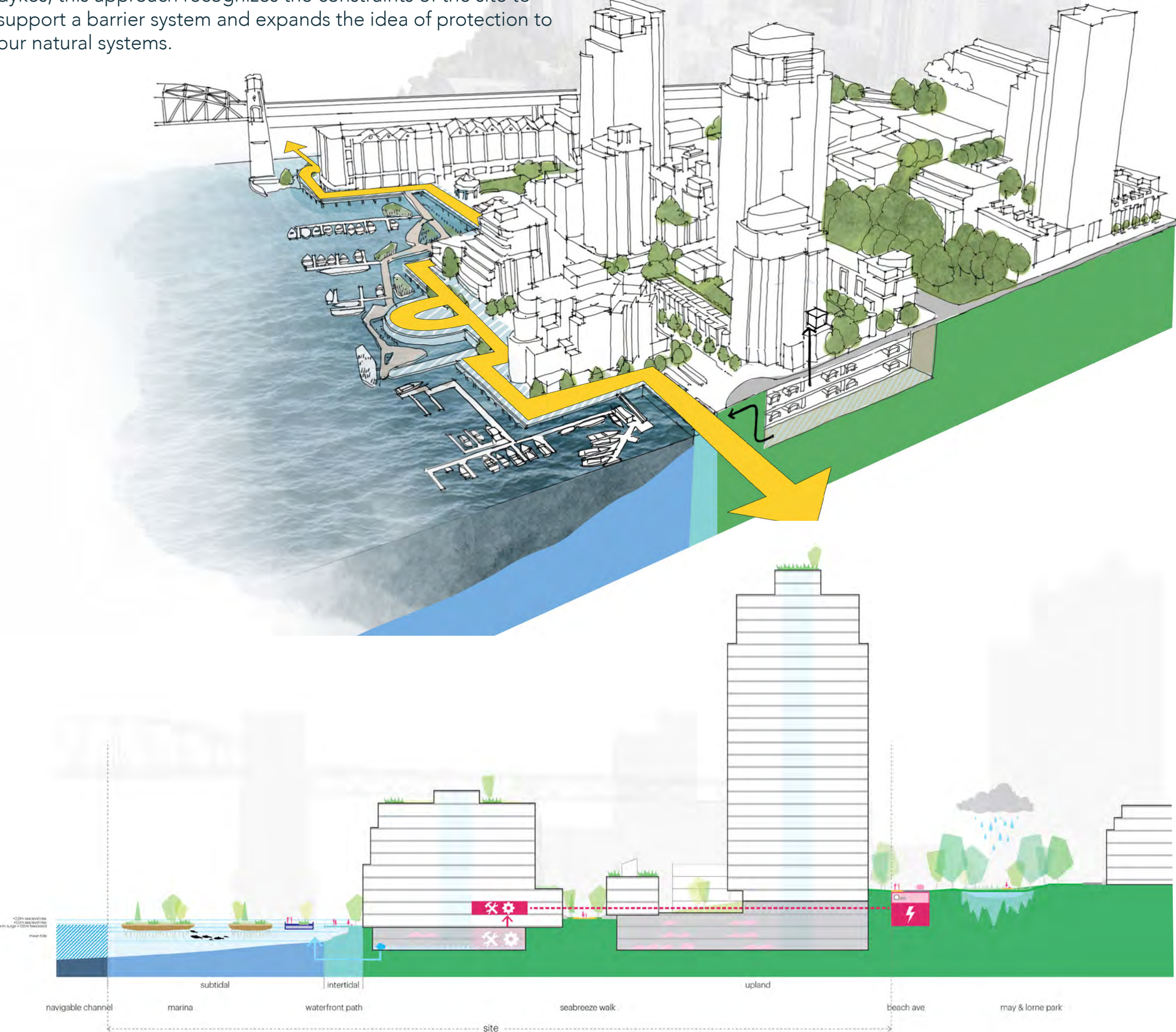


- 1) Floating Walkway
- 2) Elevated Walkway
- 3) Floating Habitat Island
- 4) Tidal Terraces
- 5) The Marina Community
- 6) The circular Start-up Studios
- 7) Paddler's Pavilion
- 8) The adaptive cluster
- 9) The Adaptive Skeleton
- 10) The Community Garden Tower

Adaptation Timeline

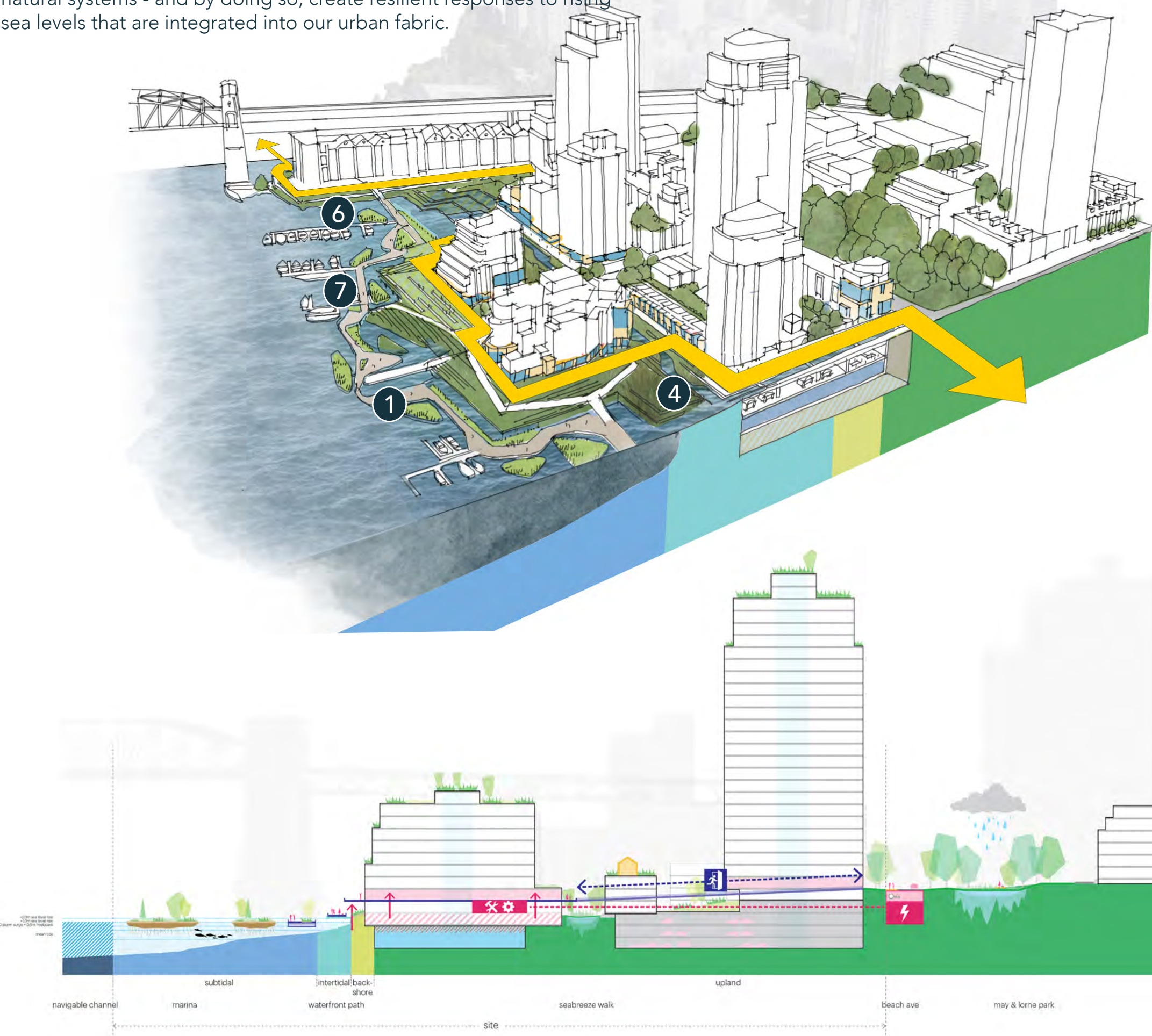
Tomorrow 2030-2050

This approach prioritizes the protection of critical infrastructure while recognizing the necessity of initiating nature-based solutions and systemic mobility upgrades today to ensure resiliency tomorrow. While the traditional response of resistance focuses solely on the protection of property using rigid and ever-raising dykes, this approach recognizes the constraints of the site to support a barrier system and expands the idea of protection to our natural systems.



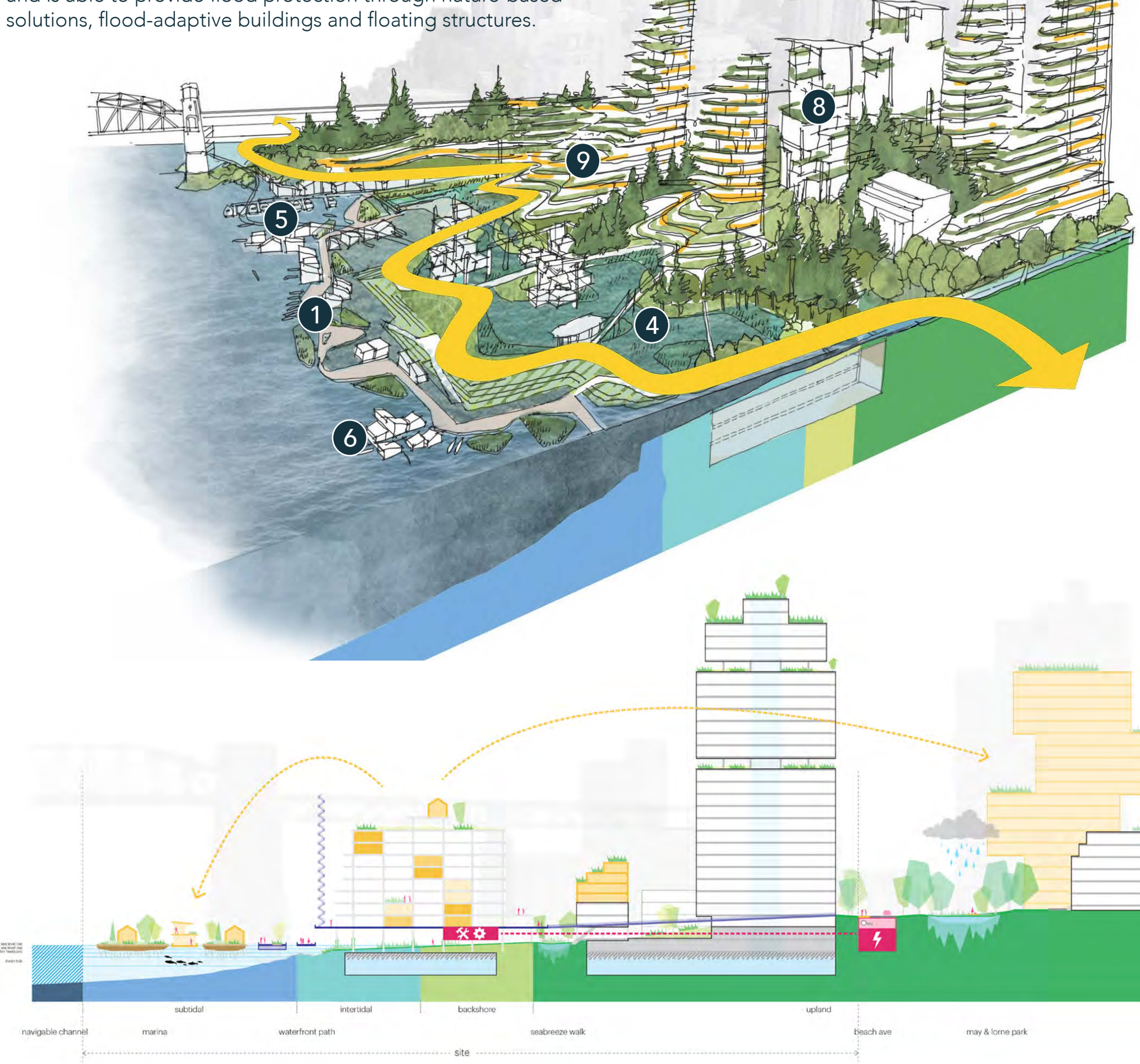
Mid-Term 2050-2100

This approach explores how we can transform the built environment into a resilient and adaptive system that provides the room and support for natural systems to thrive - even in dense and urban sites like Between Bridges. Instead of simply accommodating flooding waters, this approach asks how we can welcome, support, and steward our natural systems - and by doing so, create resilient responses to rising sea levels that are integrated into our urban fabric.



Long-Term 2100+

The approach illustrates a cultural shift and imagines a future where the city has reconnected with nature and reimagines a relationship of reciprocity and respect with the water. It assumes False Creek has been restored to a healthy, biodiverse, inclusive and productive part of the urban environment and is able to provide flood protection through nature-based solutions, flood-adaptive buildings and floating structures.





Between Bridges tomorrow: Bringing Life Back to the Urban Waterfront

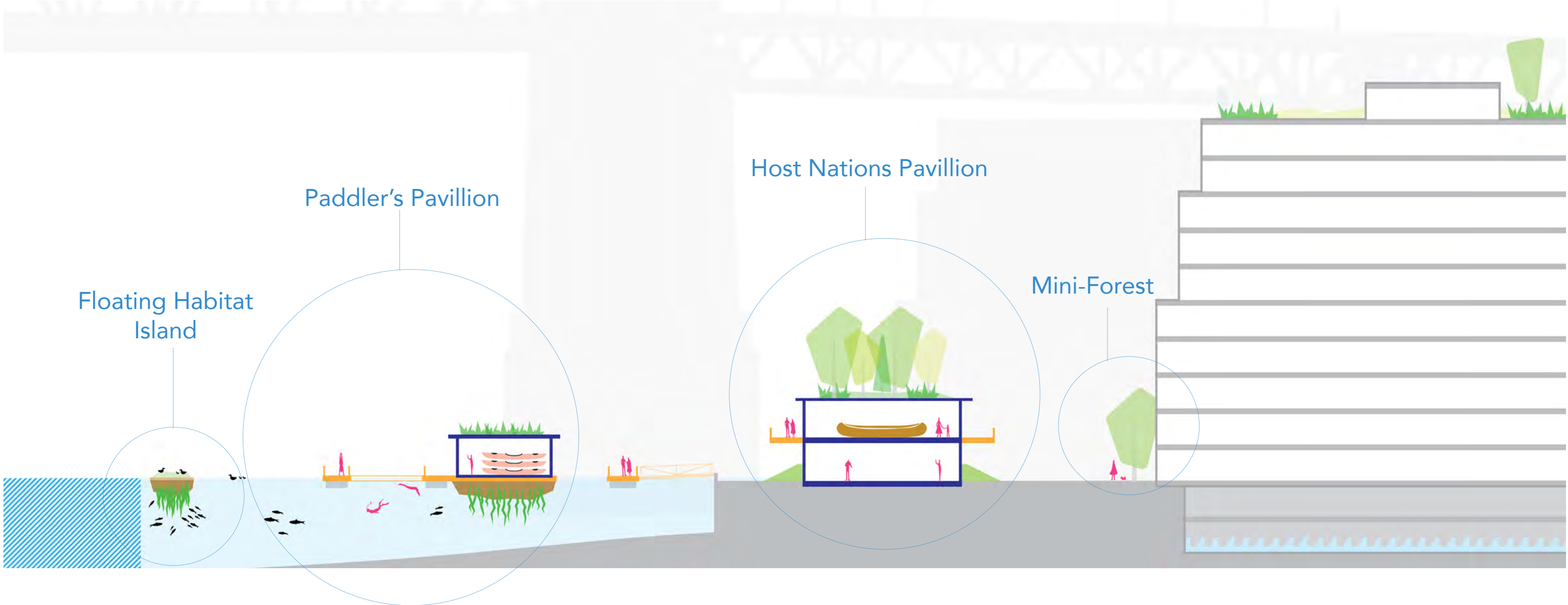
A gray and unlively neighbourhood is softened with blue-green interventions and inclusive community amenity

First steps (2022 - 2040)

First steps are not only pilot projects but general adaptation steps that need to be started early on in the process, e.g.:

- strategy and implementation for flood-resilient, non-fossil mobility networks
- creation of governance frameworks and financing models for upland water retention - green roofs, green-blue corridors,
- start dialogue about flexible waterfront zoning and legislation with the various stakeholders to ease the process of implementation
- conversations with stratas to create an adaptation plan per building
- test and measure/evaluate adaptation ideas such as floating structures, types of species and their climate adaptation potential and monitor their performance/impact over time
- create diverse collaboration models and spaces for action with and for local innovators, sustainability pioneers, governance, first nations, local community initiatives

Focus of pilots: test, monitor, promote floating habitat restoration, awareness about creative community, host nations culture and crafts, knowledge exchange and education by first nations, test implementation (technical/juridical/financial) of floating structures, diversify waterfront program, more inclusion



Potential Pilot Projects

Paddler's Pavilion

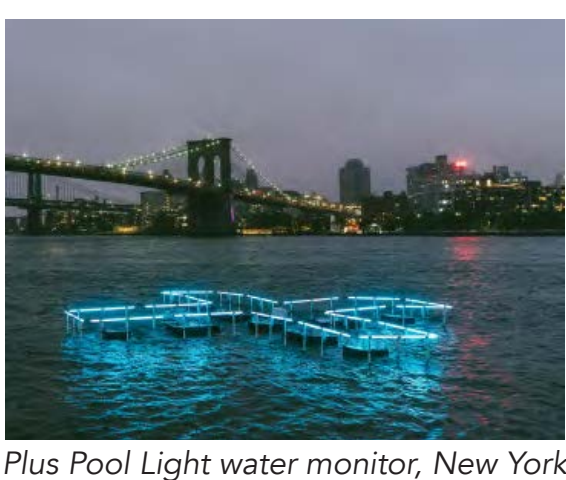
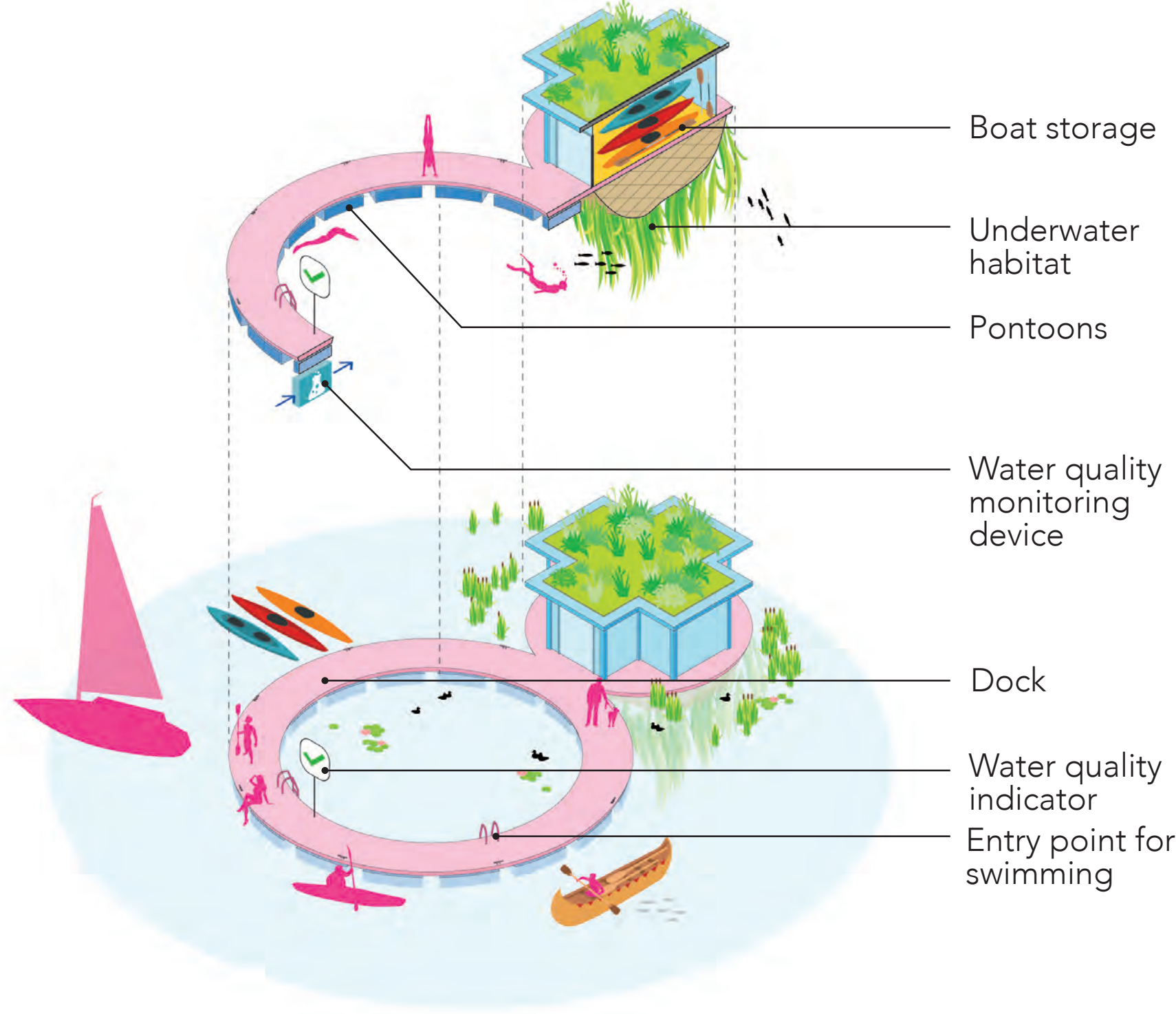
False Creek lacks real interaction with the water. The Paddler's Pavilion provides a safe spot to enter and exit the water with boats or even for swimming. It also measures and monitors the water quality, letting its users know when it is safe to enjoy the water.

Why Now and Why Here?
False Creek lacks places to access and exit the water safely for recreational and cultural use. At the same time, the water quality of False Creek needs to be monitored and gradually improved to allow for safe water recreation and restore our relationship with the water. As this process takes time, it's important to start now.

How?
The Kayak Hotel provides public decks to get in and out of the water by boat, kayak, SUP, or swimming. By displaying real-time water sensor data on the water quality, explaining the possible origin and risk of pollution, citizens understand when and why water conditions allow safe water activities. This enables a gradual increase of interaction with the water.

Who?
First Nations boating associations, in collaboration with local sport clubs and research institutes for water quality monitoring.

Where?
Floating structure in subtidal zone, attached to current waterfront deck or an existing marina slip.



Host Nations Pavilion

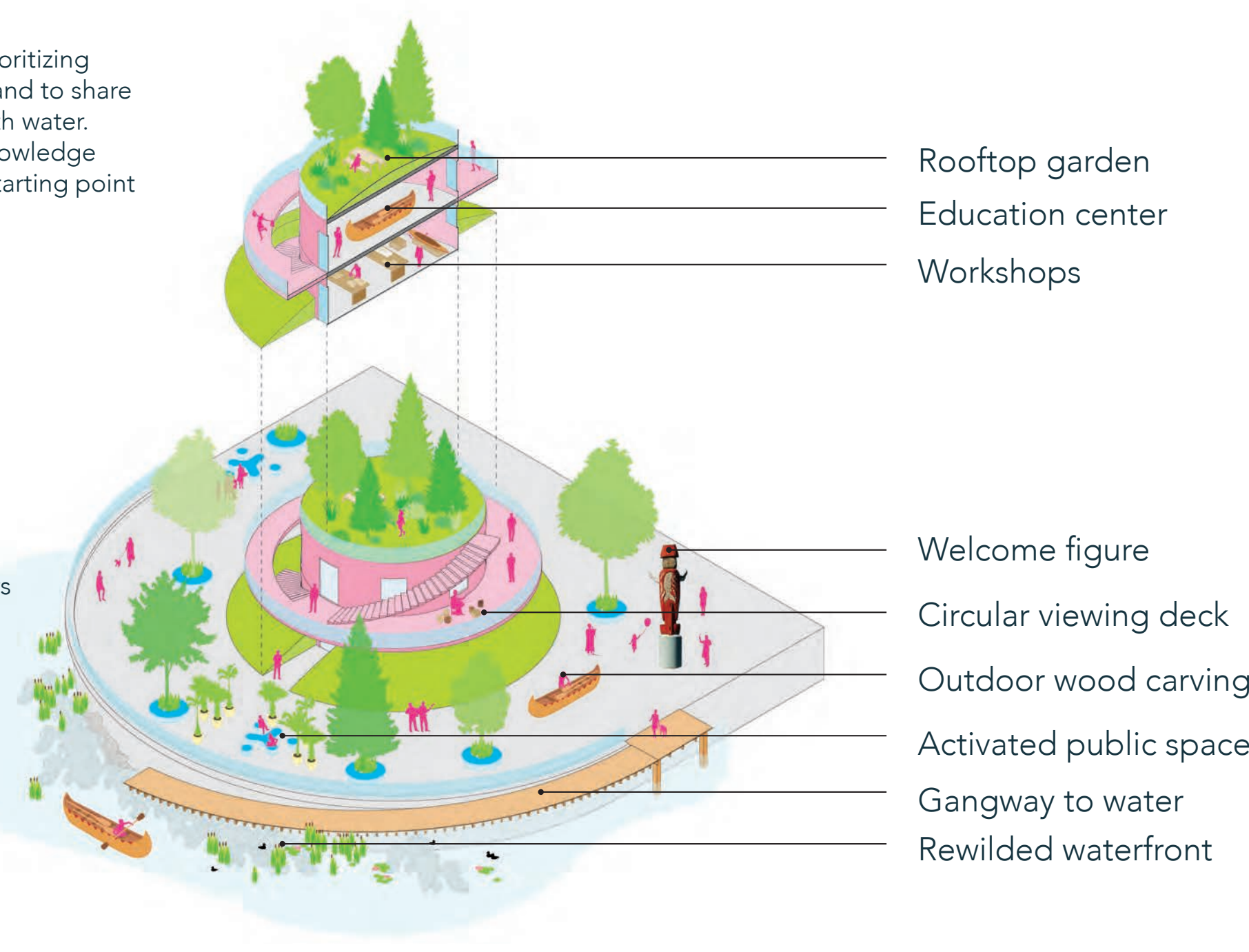
The First Nations have been monitoring and managing the natural resources in their homelands and waters for millennia. Repurposing the viewing deck on the waterfront of In Between Bridges provides space for an education center and cultural exchange pavilion. It provides the opportunity to employ community members and is the home for the land stewards. It is a space to learn about the indigenous relationship to the landscape, and for testing and monitoring the environment.

Why Now and Why Here?
Bringing life back to the waterfront means prioritizing opportunities for traditional stewards of the land to share knowledge about a reciprocal relationship with water. Making space for community building and knowledge sharing, led by Host Nations, is an essential starting point of the adaptation process and dialogue.

How?
A community center offers spaces for workshops, outdoor crafts and events and spaces for display and practice of indigenous culture. A lifted circular viewing deck anticipates future elevated walkways and allows people to experience this future perspective. The rooftop garden provides a space for showcasing re-wilding efforts and upland biodiversity, while the gangway connects users directly with the water.

Who?
Host Nations, City of Vancouver and local organizations.

Where?
The Host Nations Pavilion is proposed to be located on the currently underused viewing deck along the waterfront of the Between Bridges site.



Mini-Forests

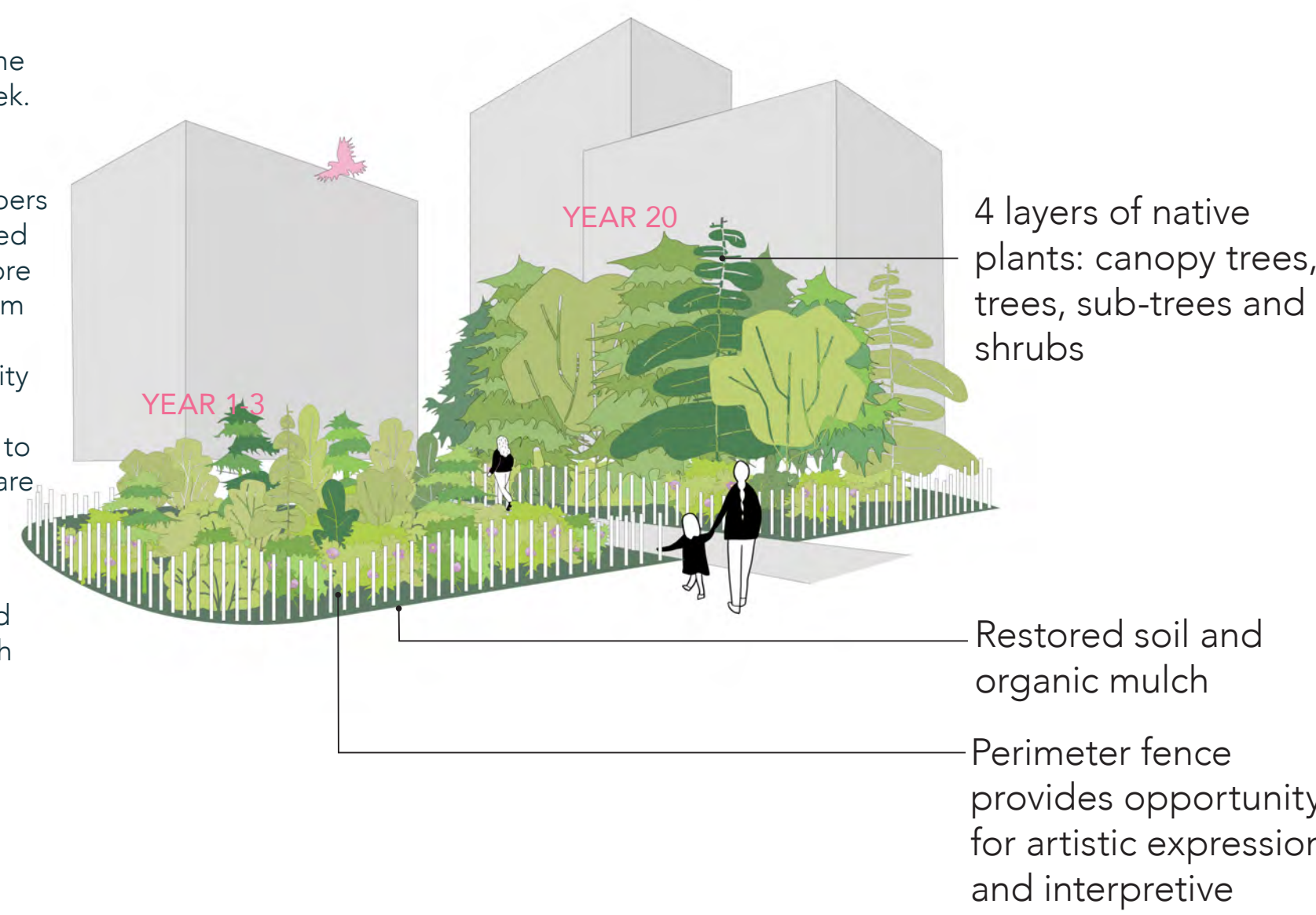
Mini-Forests, or the Miyawaki Method of afforestation, allows for the rapid creation of urban pockets of native forest. Fast to establish and virtually maintenance free, these forests offer quick-start opportunities to create a haven for urban biodiversity, carbon sequestration, cooler temperatures, stormwater management and access to a wilder form of nature not often experienced on urban sites. Mini-forests are not meant as substitutes for forests but can be an incredibly efficient and economic way of introducing productive and wild nature into small pockets in our cities.

Why Now and Why Here?
The Between Bridges site is largely impermeable with less than 10% of tree canopy cover and limited space for vegetation. As summers get hotter and biodiversity continues to fall, mini-forests can be piloted immediately to return the benefits of a forest into the heart of False Creek.

How?
Step 1: Work with indigenous knowledge keepers to determine the best selection of plants, based on the four layers of vegetation. Step 2: Restore and prepare the soil using microorganisms from the local forests. Step 3: Plant saplings with help from community. Step 4: Maintenance for first 3 years involves mostly just light weeding and heavy mulching to protect soil and retain moisture. Mini-Forests are typically self-sufficient after 2-3 years.

Who?
Mini-Forests are being established and piloted around the world, including in Canada through organizations like CANPlant. They can be easily installed and stewarded by community volunteers.

Where?
Small Upland Area (min 12m²)



Floating Habitat Island

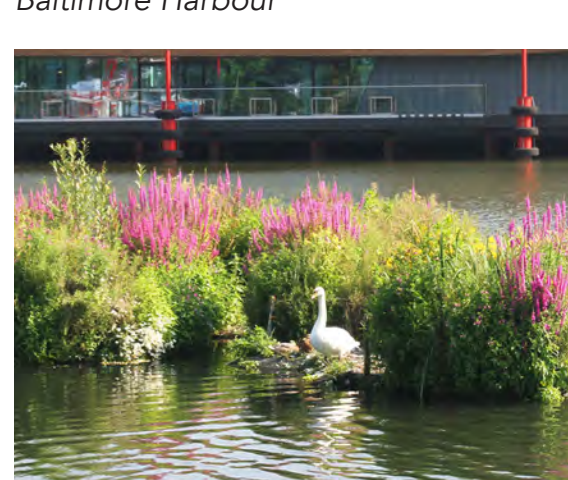
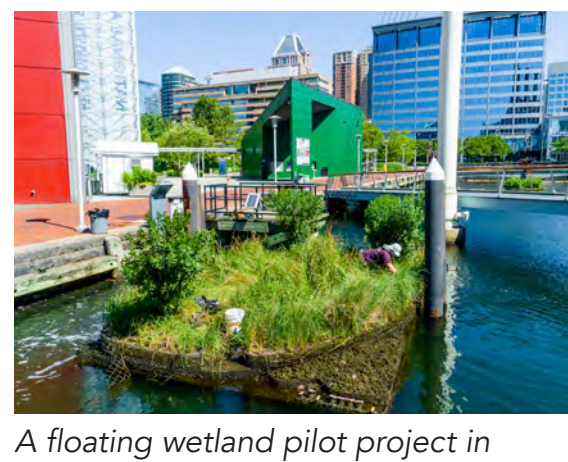
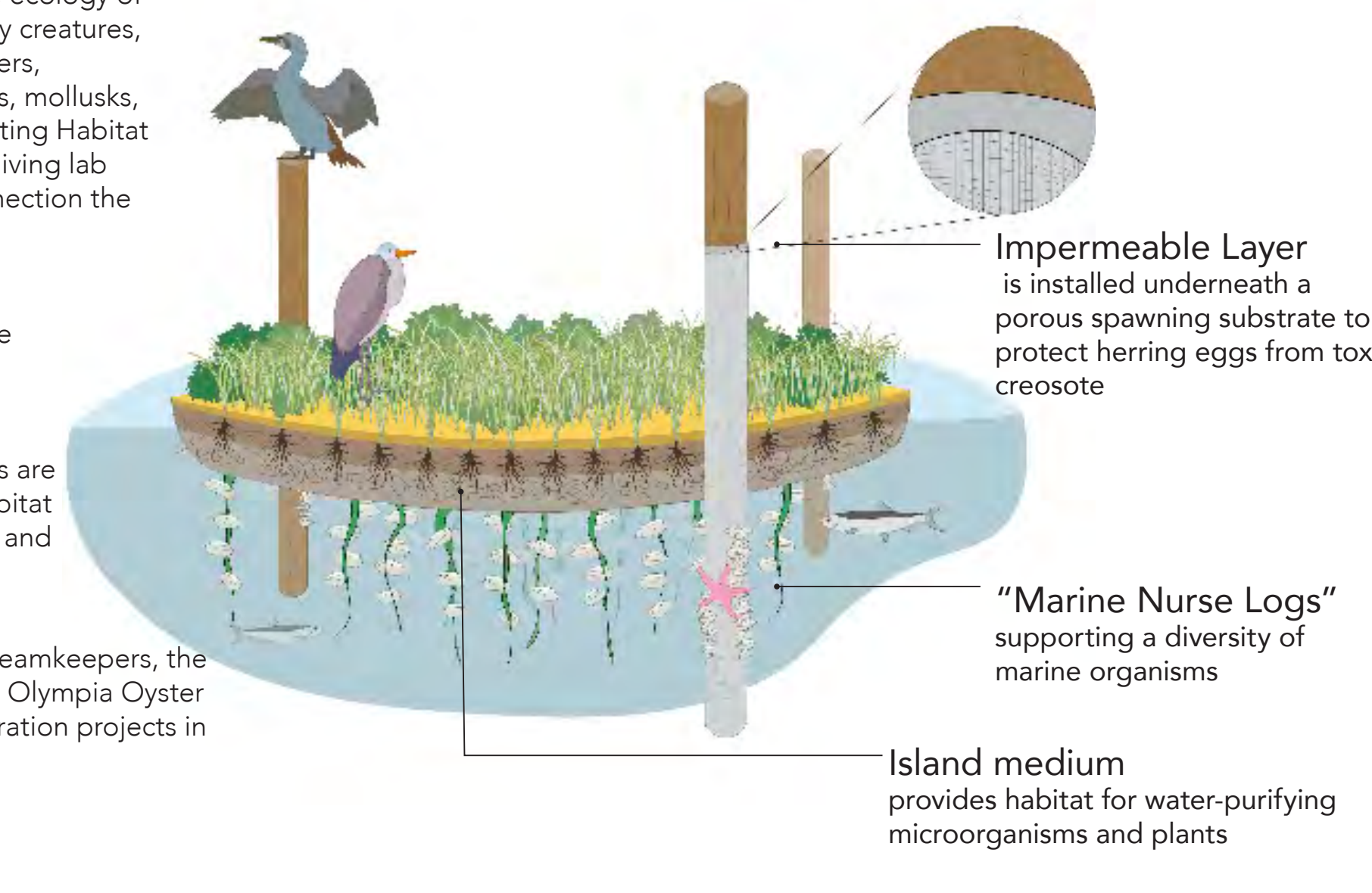
If we're going to welcome nature back into the city, we need to get creative about making space for it. These waters were once a place of abundance and diversity, feeding Host Nation communities for millennia. Habitat Islands are a step towards a positive loop in which increased biodiversity results in cleaner waters and False Creek teeming with life. Floating Habitat Islands offer an opportunity to provide habitat, above and below the water, while improving water quality and providing important adaptation research opportunities.

Why Now and Why Here?
Improving water quality and reintroducing habitat for marine life is an essential step in restoring the ecology of False Creek. Habitat Islands are home to many creatures, including marine plants, habitat for filter feeders, spawning substrate for herring eggs, sea birds, mollusks, and micro-ecosystems of tiny organisms. Floating Habitat Islands provide habitat, water filtration and a living lab of stewardship, and building the public's connection the ecology of False Creek.

How?
Engage and consult with Host Nations, marine biologists, and conservation aquaculture initiatives who can provide insight into conservation aquaculture in these waters. Prefabricated, modular floating habitat islands are available from commercial manufacturers. Habitat Islands will require some ongoing monitoring and maintenance.

Who?
Local groups and governments. Squamish Streamkeepers, the Coastal Stewardship Network, and the Native Olympia Oyster Collaborative are all engaged in marine restoration projects in the Salish Sea.

Where?
Subtidal zone, outside of navigable channel



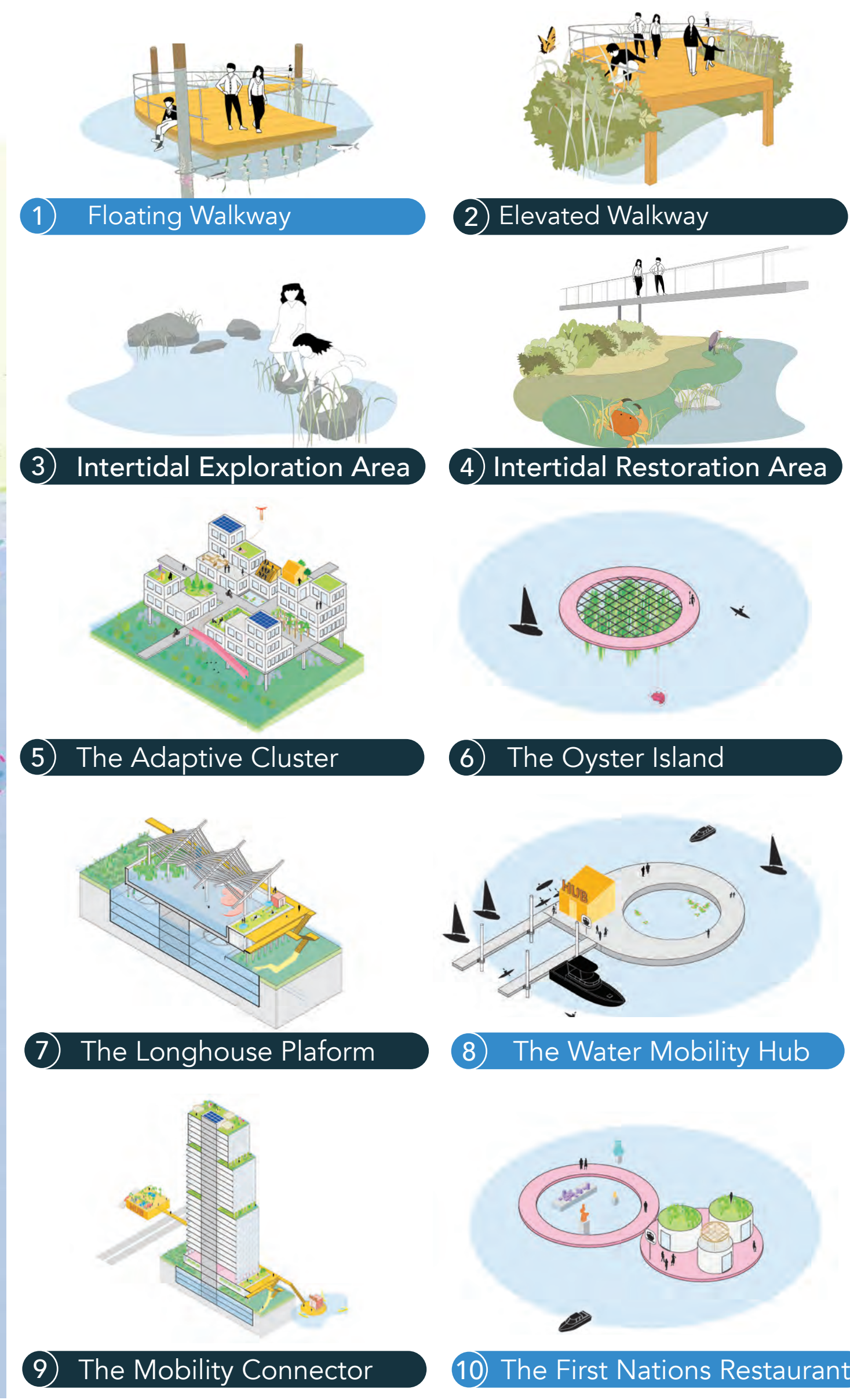
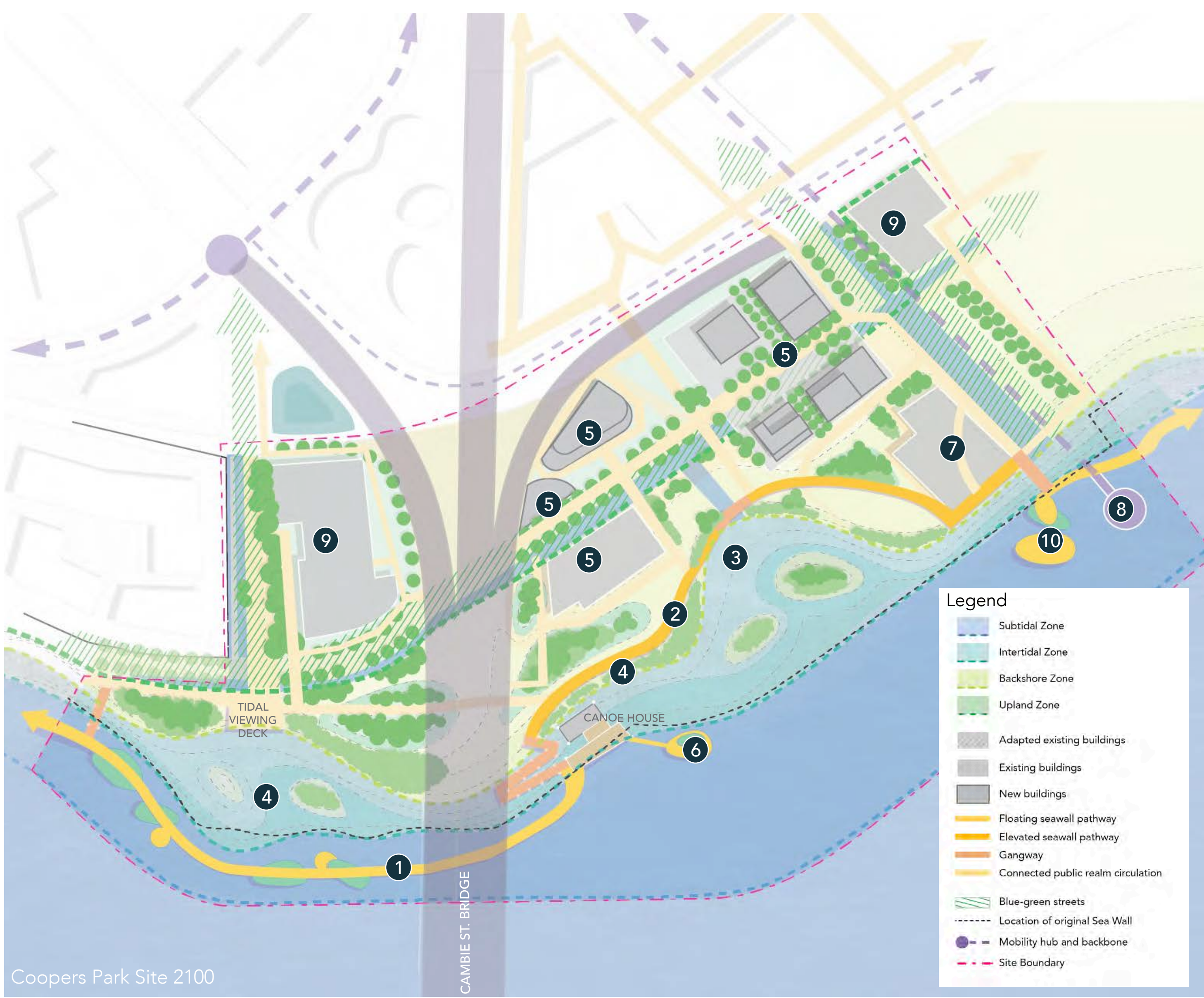
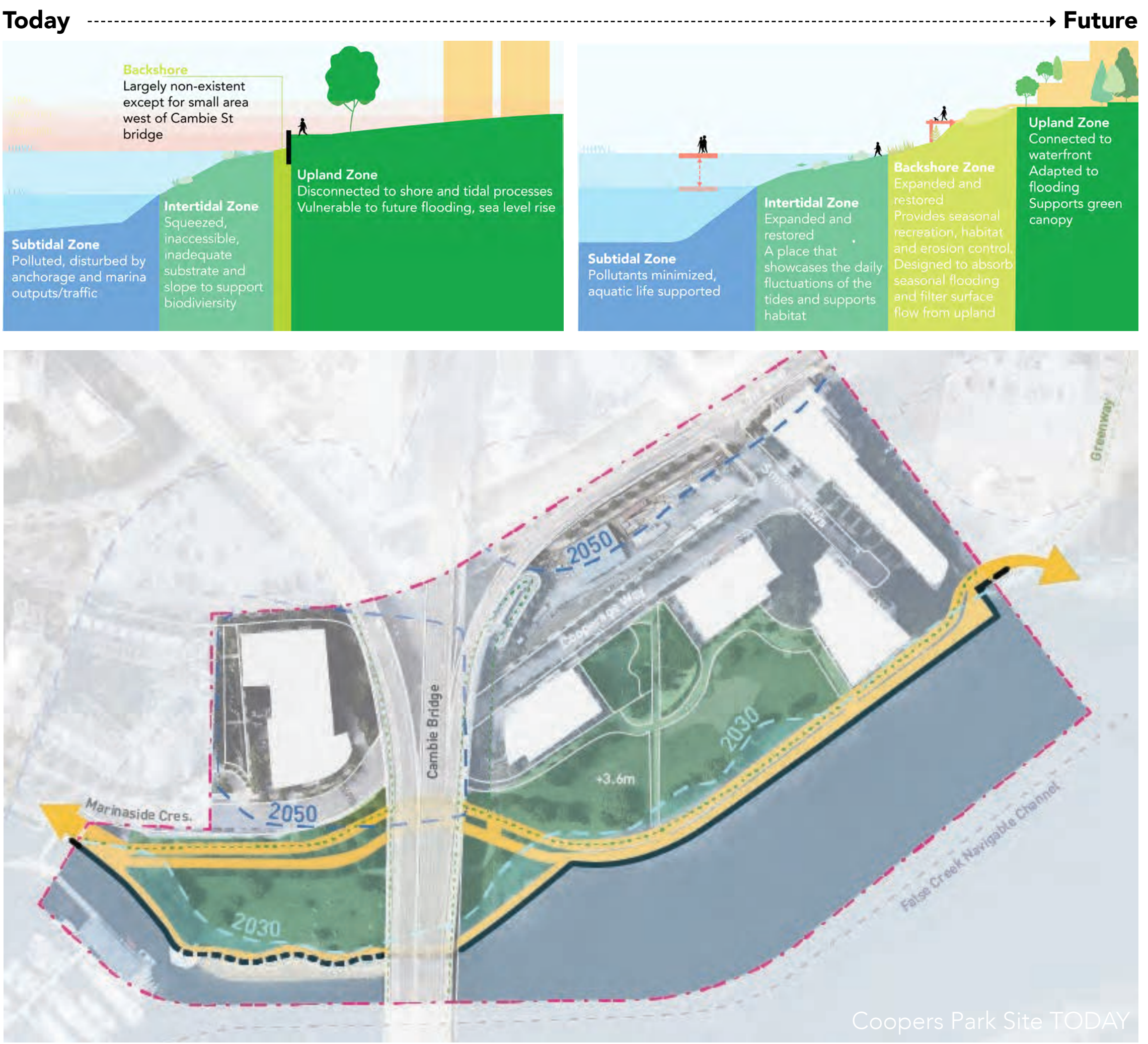


Coopers Park 2100: The Tidal Community of False Creek

A place for restored connections

Vision 2100

Coopers Park today is a vulnerable park with an almost non-existent backshore or intertidal zone. This vision transforms it into tidal gardens with adaptive building clusters and pavilions that can host a broad community of species and circular initiatives while inviting people to reconnect with the water. In the future, Coopers Park will demonstrate that our natural spaces deserve protection and restoration by transforming static parkland into a dynamic community space - for humans and non-humans alike.



Adaptation Timeline

Tomorrow 2030-2050

This approach prioritizes the protection of critical infrastructure while recognizing the necessity of initiating nature-based solutions today to ensure resiliency tomorrow. While the traditional response of resistance focuses on the protection of property using rigid and ever-raising dykes, this approach utilizes the public waterfront to expand the idea of protection to our natural systems.



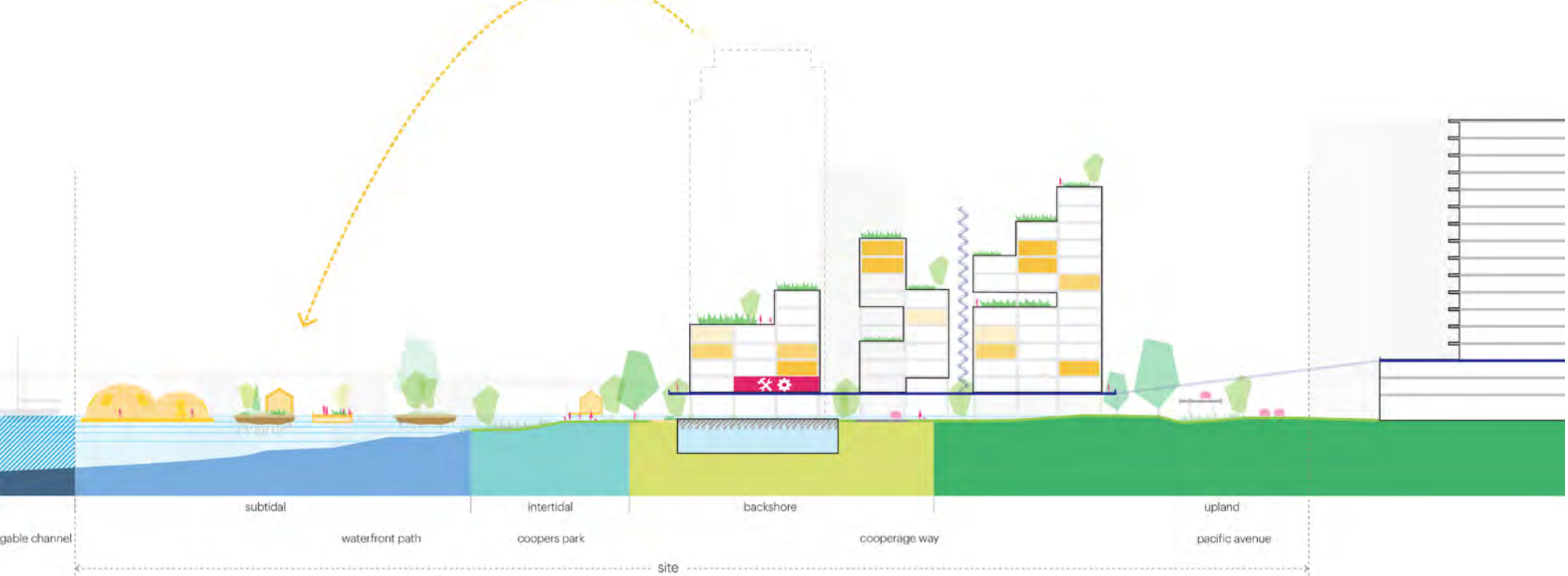
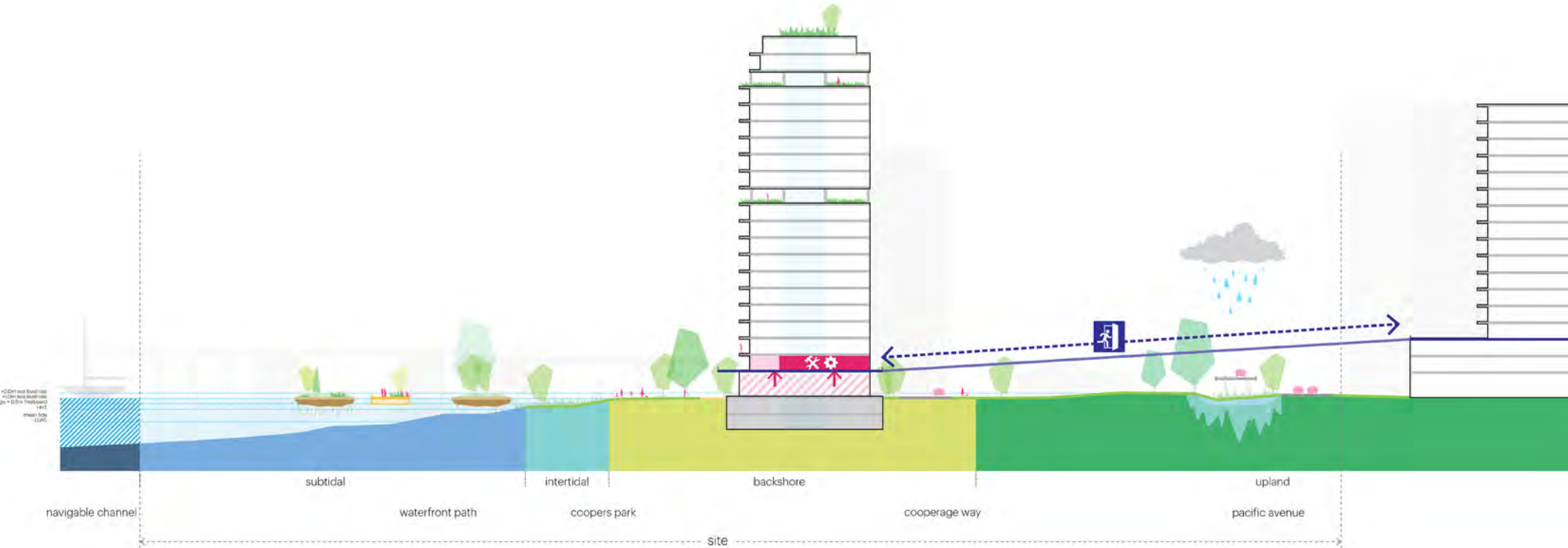
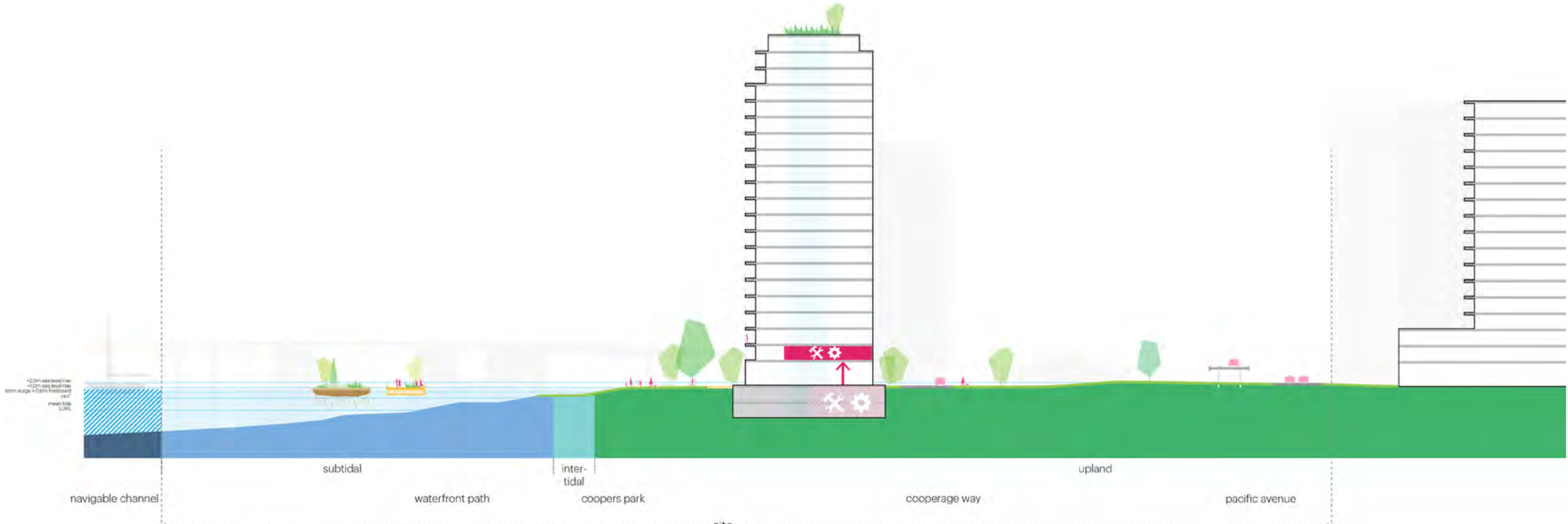
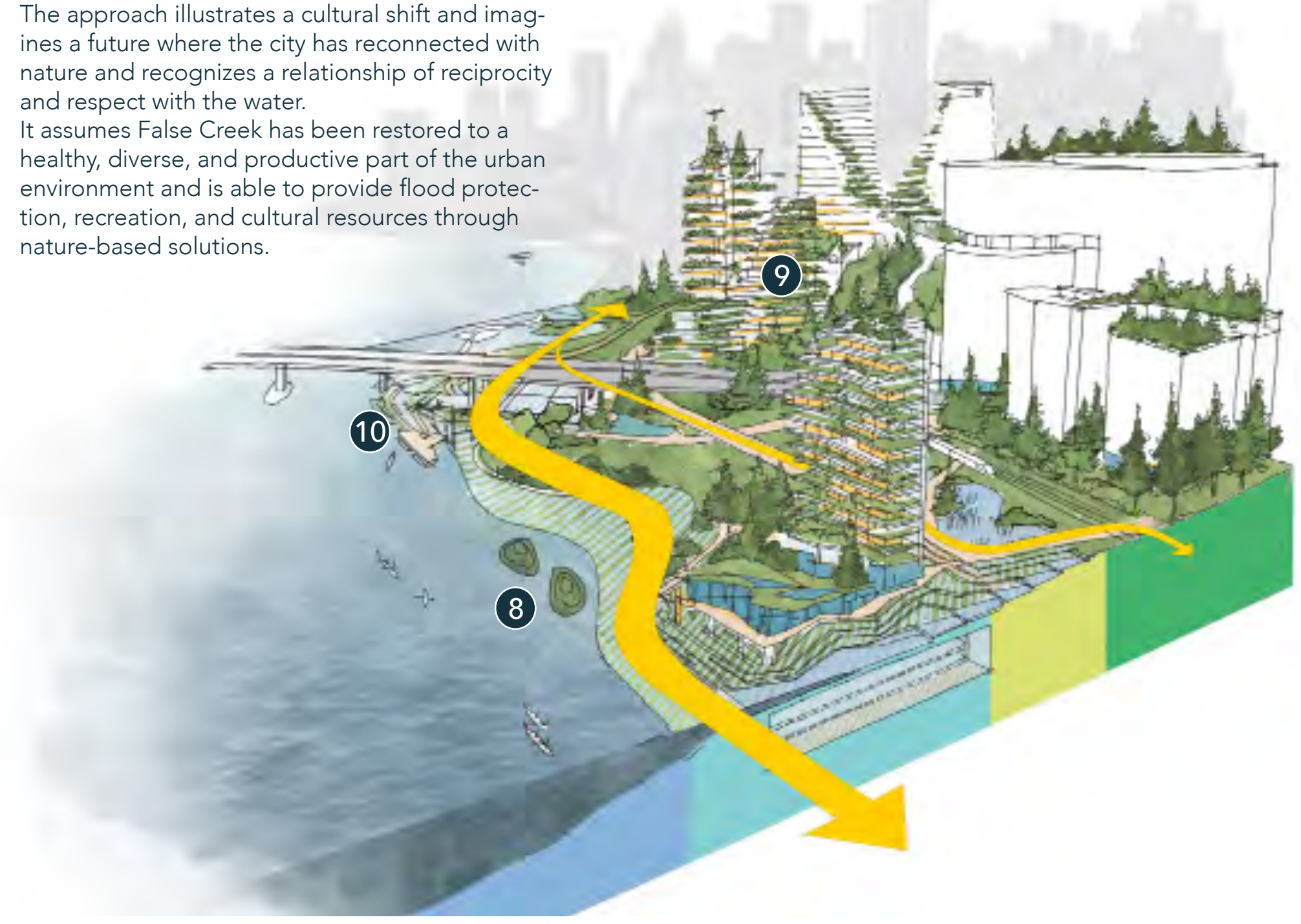
Mid-Term 2050-2100

This approach explores how we can transform the built environment into a resilient and adaptive system that provides the room and support for natural systems to thrive - while providing recreational, cultural and community services. Instead of simply accommodating flooding waters, this approach asks how we can welcome, support, and steward our natural systems - and by doing so, create resilient responses to rising sea levels that are integrated into our urban fabric.



Long-Term 2100+

The approach illustrates a cultural shift and imagines a future where the city has reconnected with nature and recognizes a relationship of reciprocity and respect with the water. It assumes False Creek has been restored to a healthy, diverse, and productive part of the urban environment and is able to provide flood protection, recreation, and cultural resources through nature-based solutions.





Coopers Park Tomorrow: A living lab for habitat and change

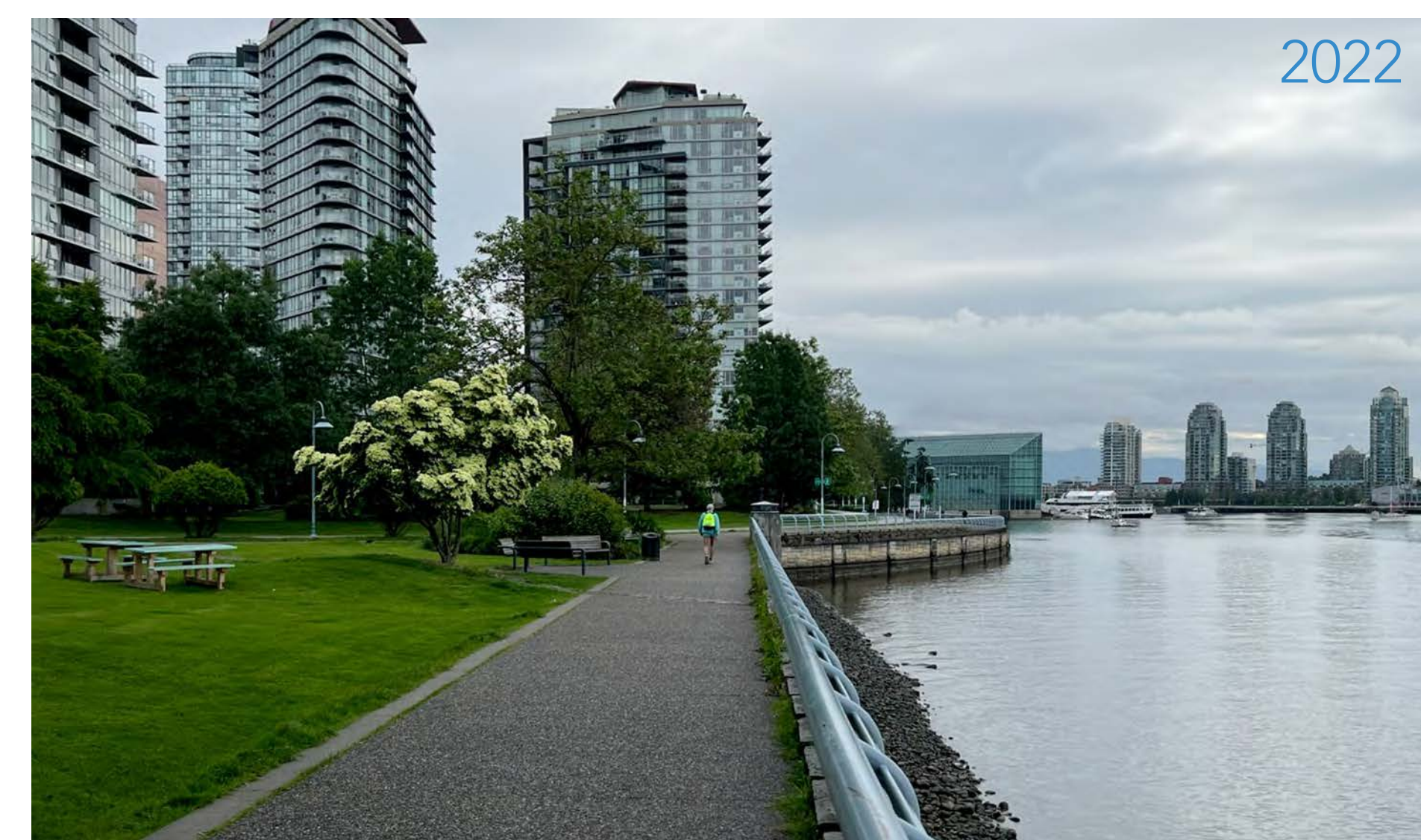
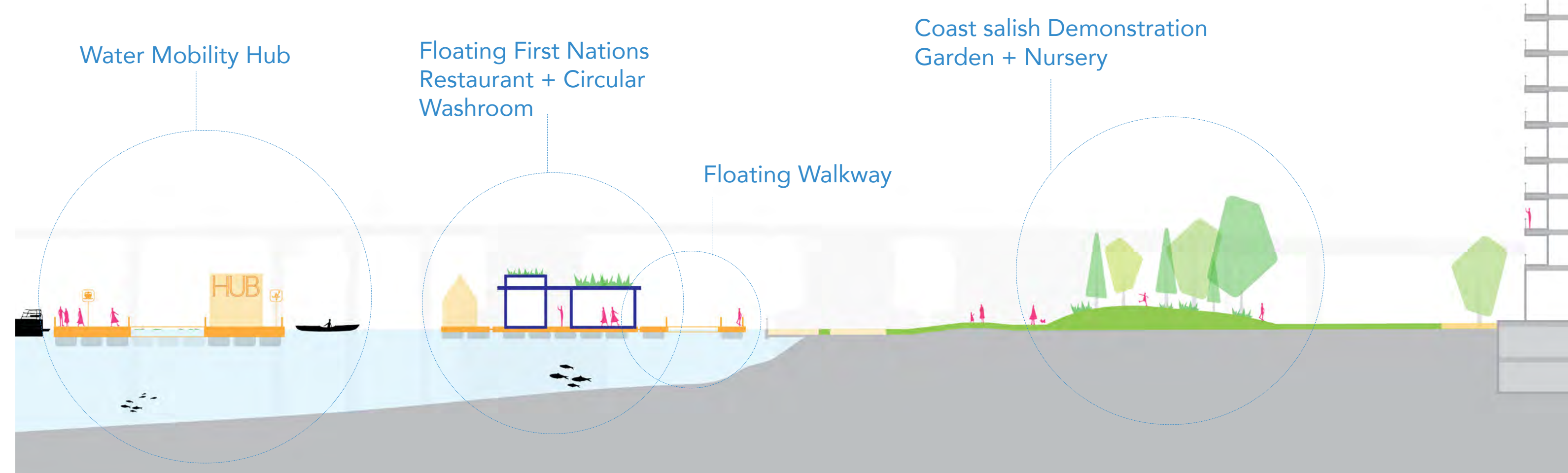
Rewilding and Reconnecting the waterfront with natural systems and social hubs

First steps (2022 - 2040)

First steps are not only pilot projects but general adaptation steps that need to be started early on in the process, e.g.:

- strategy and implementation for flood-resilient, non-fossil mobility networks
- create governance frameworks and financing models for upland water retention - green roofs, green-blue corridors,
- start dialogue about flexible waterfront zoning and legislation with the various stakeholders to ease the process of implementation
- conversations with strata's to create an adaptation plan per building
- test and measure/evaluate adaptation ideas such as floating structures, types of species and their climate adaptation potential and monitor their performance/impact over time
- create diverse collaboration models and spaces for action with and for local innovators, sustainability pioneers, governance, first nations, local community initiatives

Focus of pilots: test, monitor, promote circularity on site, habitat restoration, awareness about healthy food and traditional food culture, knowledge exchange and education by first nations, community garden approach, test and grow plant species for future tidal park.



2022

Potential Pilot Projects

Water Mobility Hub

The Water Mobility Hub encourages the use of public transport and electric water mobility. It's easily accessible from the waterfront and is directly connected to mobility hubs upland, allowing for seamless transition between sustainable modes of transport.

Why Now and Why Here?

Underground parking garages and current waterfront decks will be the first elements to be flooded more frequently. That means that parkings and the current seawall will not always be usable, blocking conventional access to the waterfront and first row buildings. It is crucial to start working on alternative, flood-resilient accessibility to and from the waterfront now, as it takes time to upgrade the urban mobility network in the city.

How?

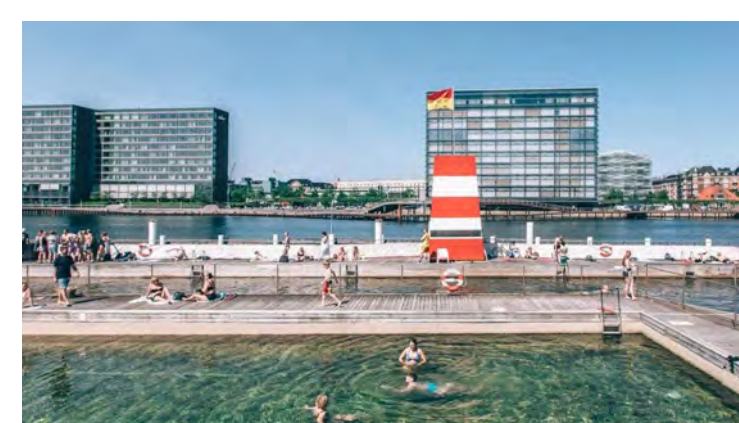
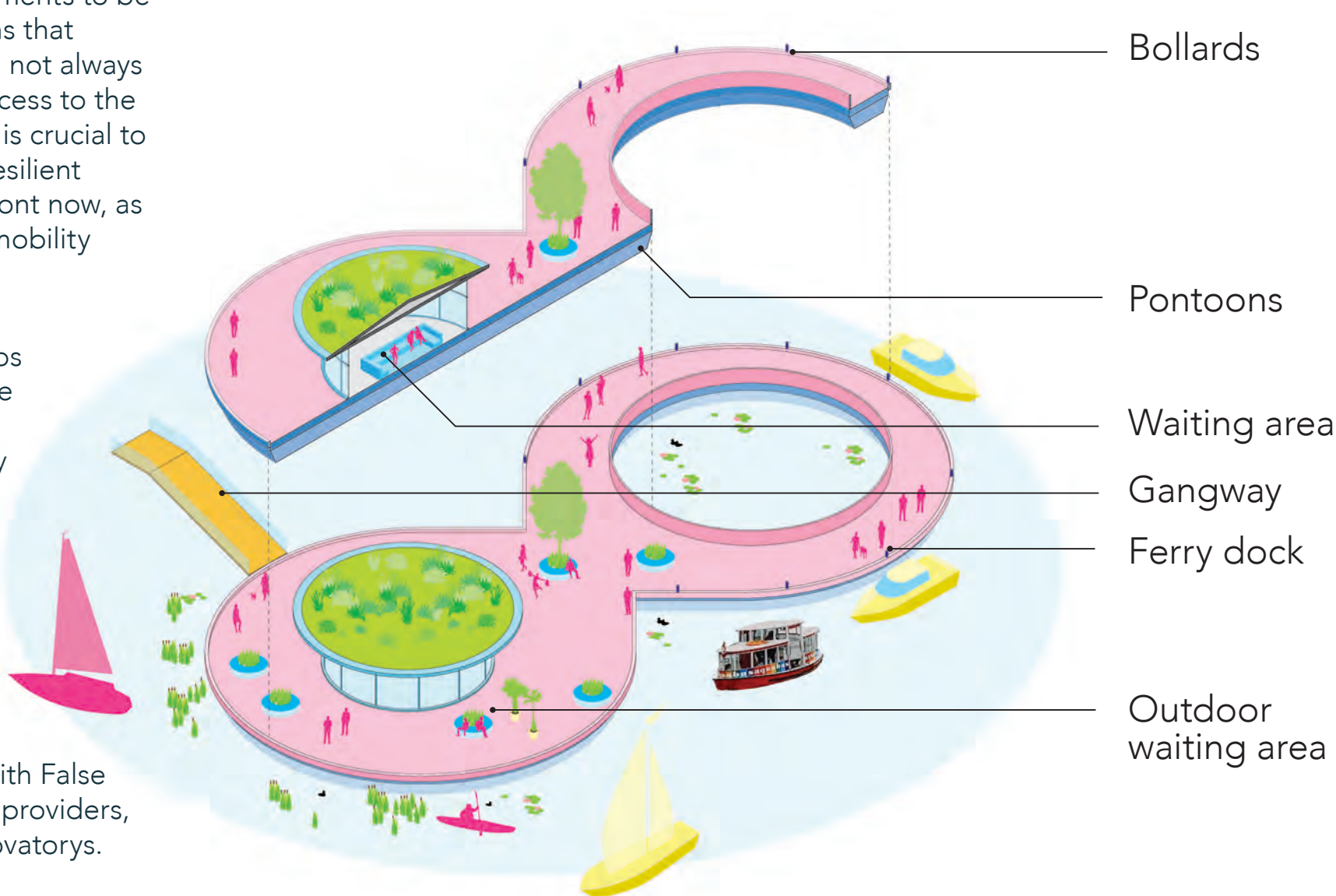
Flexible, floating Water Mobility Hubs increase accessibility from and to the waterfront via the water. They offer rental of micro-mobility and mobility as a service. Their direct connection to waterfront buildings and upland mobility hubs via gangways, lifted walkways/bike paths allows for alternative, flood-safe accessibility of the waterfront.

Who?

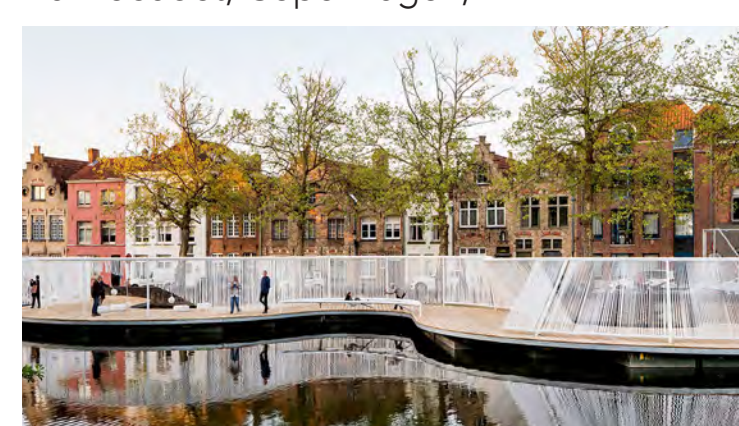
City of Vancouver in collaboration with False Creek Ferries, Mobility-as-a-Service providers, Bike rental companies, mobility innovators.

Where?

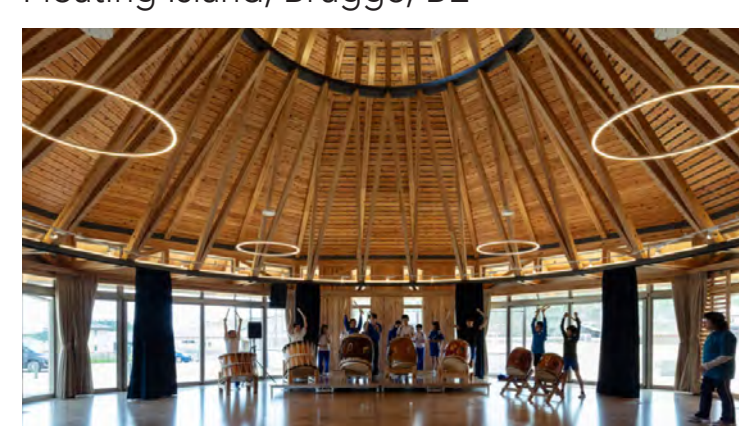
Floating mobility hubs are added in the subtidal zone along the shoreline, in prolongation of pedestrian and bike connections to the upland mobility hubs and -network.



Havnebadet, Copenhagen, DK



Floating Island, Brugge, BE



Musqueam Cultural Centre, Vancouver, BC

Coast Salish Native Plant Nursery

A Coast Salish Native Plant Nursery provides opportunity to reintroduce native plant species to False Creek with purpose to reintroduce native species, connect the community with land stewardship, and test species for adaptation. A key component of this pilot project will be a demonstration garden that educates the public on traditional ethnobotanical practices. An emphasis will be placed on co-creation with Host Nations and reconnecting the community with the native ecology of False Creek.

Why Now and Why Here?

A community-led nursery has a low barrier to entry compared to many other interventions, and allows for immediately visible and interactive plant cultivation. Cooper's Park has extensive green space to support its establishment, and a central location for collaboration with other initiatives.

How?

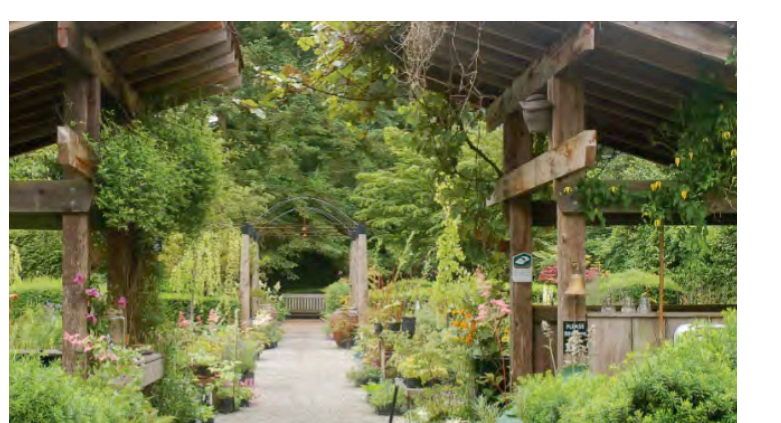
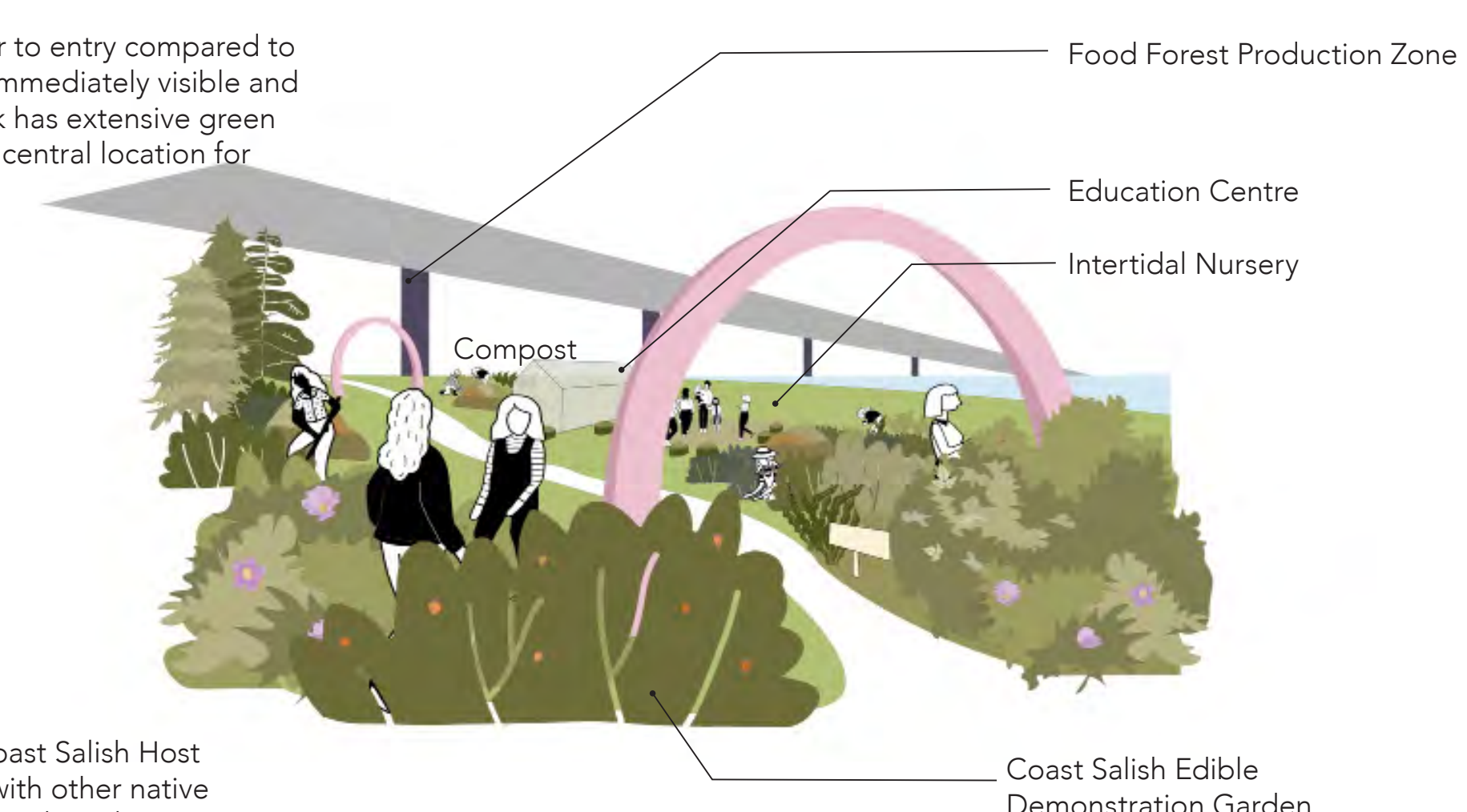
Work with Host Nations to determine objectives and best practices for the garden. Establish an educational garden with culturally significant species that demonstrate cultivation practices, seasonality, and sustainability. Cultivated plants can be transplanted to various adaptation projects throughout the city.

Who?

This project will be co-established with Coast Salish Host Nations, with opportunity to collaborate with other native plant nurseries and programs in the area, such as the Maplewood Flats Coast Salish Nursery.

Where?

Backshore or Upland, with potential to explore intertidal 'gardening' in the future



Free Spirit Nursery in Langely BC



Maplewood Flats Coast Salish Nursery



Indigenous Health Research and Education Garden (IHREG) at UBC Farm

Floating First Nations Restaurant + Circular Washroom

The Floating First Nations Restaurant highlights the importance of maintaining and revitalizing Indigenous knowledge and harvesting practices by providing a place of Indigenous gastronomy. Being completely circular means to respect natural processes and composting the output of the restaurant and floating washroom. Moreover, the outdoor terrace provides a unique experience with stunning views over False Creek

Why Now?

There is an urgent need to reduce the global agricultural and logistic CO2 footprint and natural exploitation. Creating more awareness of the benefits of a local, circular and healthy food chain and -consumption is an essential. False Creek once was a place of ecological and abundance, and a source of nutrition for the First Nations. Learning from them about careful local harvesting next to where "the table is set" can help accelerate the cultural shift needed.

How?

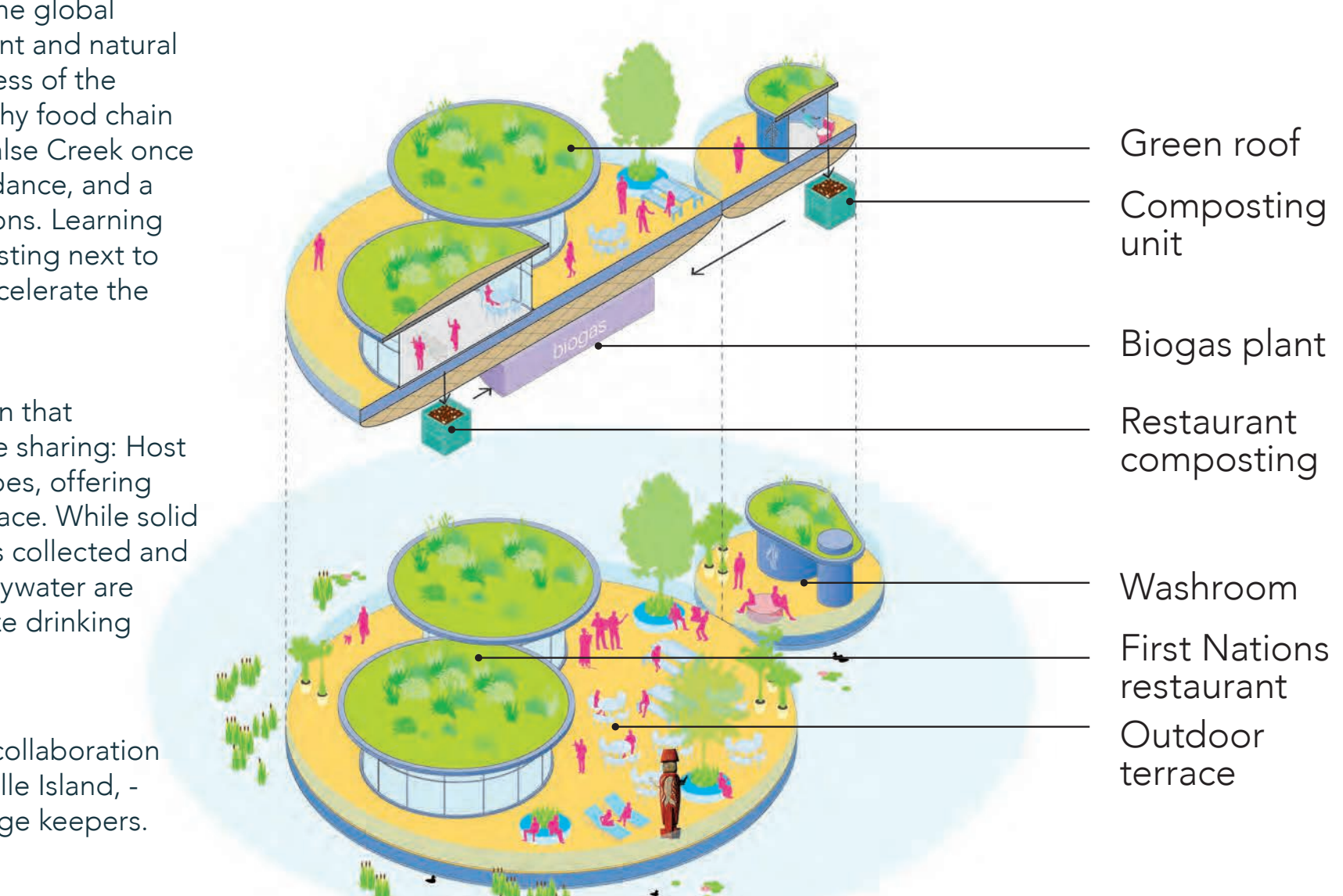
A flexible, floating restaurant pavilion that maximizes circularity and knowledge sharing: Host Nations using ingredients and -recipes, offering courses and food events on the terrace. While solid waste from kitchen and washroom is collected and converted into energy, rain- and greywater are being filtered and reused to minimize drinking water demand.

Who?

First Nations operated, possibly in collaboration with First Nations vendors of Granville Island, -fishermen, -gatherers and knowledge keepers.

Where?

Floating in the subtidal zone, accessible via a gangway from the current promenade along the waterfront of Coopers Park and via the water.



Floating Pavilion, Rotterdam, NL



Floating Pavilion, Almere, NL



Lil'Wat Cultural Centre, Whistler, BC

Floating Walkway

A Floating Walking Pilot Project would test out the technology to prepare for a future where significant stretches of our beloved Sea Wall is transformed to accommodate rising waters.

Why Now and Why Here?

The pathway along the sea wall is one of Vancouver's most beloved public spaces, but sections are already being impacted by higher and stronger storm surges and erosion. Adapting the sea wall pathway to sea level rise by creating floating public walkways along the waterfront helps Vancouver residents reimagine their home and their relationship to the water in a positive way in the context of climate change, and provides an exciting, beautiful expansion of public space along the waterfront.

How?

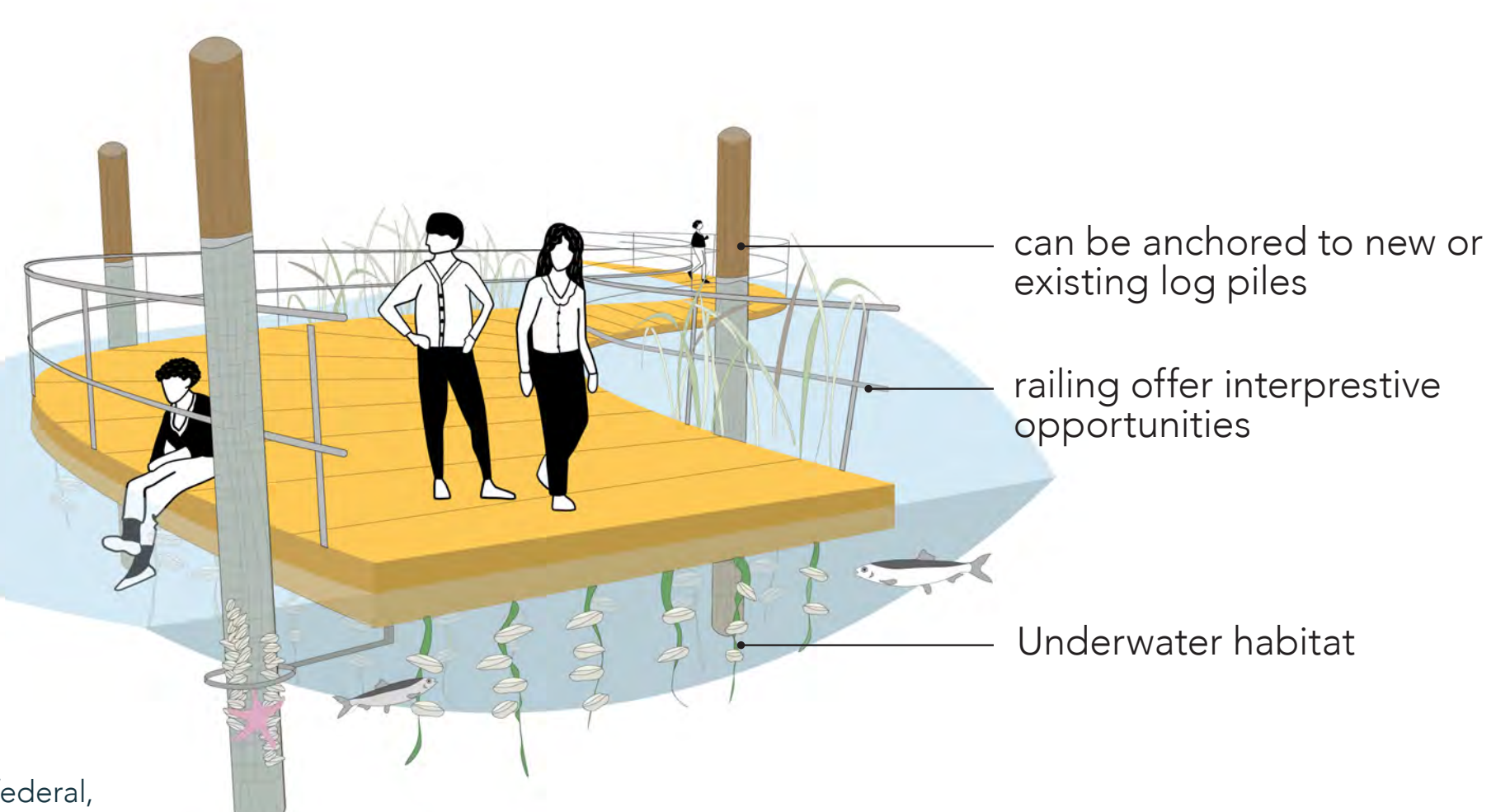
A floating walkway anchored to pilings could be built in sections as public waterfront social spaces that will one day form a continuous path.

Who?

Multiple levels of government, including federal, municipal, and Host Nations, will be involved in any development below the low tide line

Where?

Building the first section adjoining Cooper's Park will extend public green space over and on the water



Summit Bechtel National Scout Reserve



Martin Luther King Park, Paris, France



South Visitor Center Park, Fuxian Lake, China

Adaptation Pathways

as Currents of Possibility for False Creek

Not linear, but fluid, cumulative, relational and always moving forward

Inhabiting a climate changed world requires an ongoing process of adjusting to changes referred to as Climate Adaptation. An Adaptation Pathway is a tool designed to plan for adaptation decision-making by identifying the decisions and actions that need to be taken now and in the future. The typical approach supports strategic decision-making that is both structured and flexible.

In the context of the Sea2City Project, this "pathway" has been re-imagined as flowing currents - using water as a metaphor to describe the fluid, cumulative, relational, and forward-moving process of adaptation. The imagery is intended to deemphasize the presumption that complex techno-scientific solutions are the main driver of progress, and instead reminds us of the immense value of traditional ecological knowledge and nature-based solutions.

This approach to adaptation highlights 5 principles, as illustrated below.

Uphold Host Nations and Community Values

This Adaptation approach seeks to decolonize the wider settler-colonial structure of power that has produced the very conditions to which we now must adapt. It demands that we all recognize and respect the gentle footsteps of Host Nations ancestors, and commit to listening to the teachings offered by the traditional territories of the MST people on how to co-exist in reciprocal relationships with all living spirits. It requires us all to share our collective and diverse knowledge as well as the responsibility of stewarding the land and water.

Upholding the traditional MST values while recognizing the community values identified through the public engagement process will establish a strong foundation from which to travel. Like all adaptation principles, it requires frequent care and check-ins.

Recognize what was, what is, and what could be

We are in a climate emergency. It is essential that we understand how we got here, what the challenges are, and what we need to do to fix it. This requires critical reflection, rigorous studies and bold imagination. We need to be able to imagine a False Creek where all residents can recognize themselves and feel attached to the place and its future if we're going to create it. We also need to recognize our dependence on the more-than-human world by recognizing the damage that has been done by denying our kinship with it. A vibrant, fair, and regenerative future is possible but it demands continuously looking back while leaping forward.

Dive in - Urgent action is needed

Long-term objectives often require near-term decisions and actions. In the face of uncertainty, **pilot projects** can be immediately initiated to explore ideas, investigate what works and nurture a renewed sense of collective action in False Creek. Beyond pilot project, there are also general adaptation steps that need to be started early on in the process such as:

- strategize and implementation for flood-resilient, non-fossil mobility networks
- create governance frameworks and financing models for upland water retention - green roofs, green-blue corridors
- start dialogue about flexible waterfront zoning and legislation with the various stakeholders to ease the process of implementation
- conversations with strata's to create an adaptation plan per building
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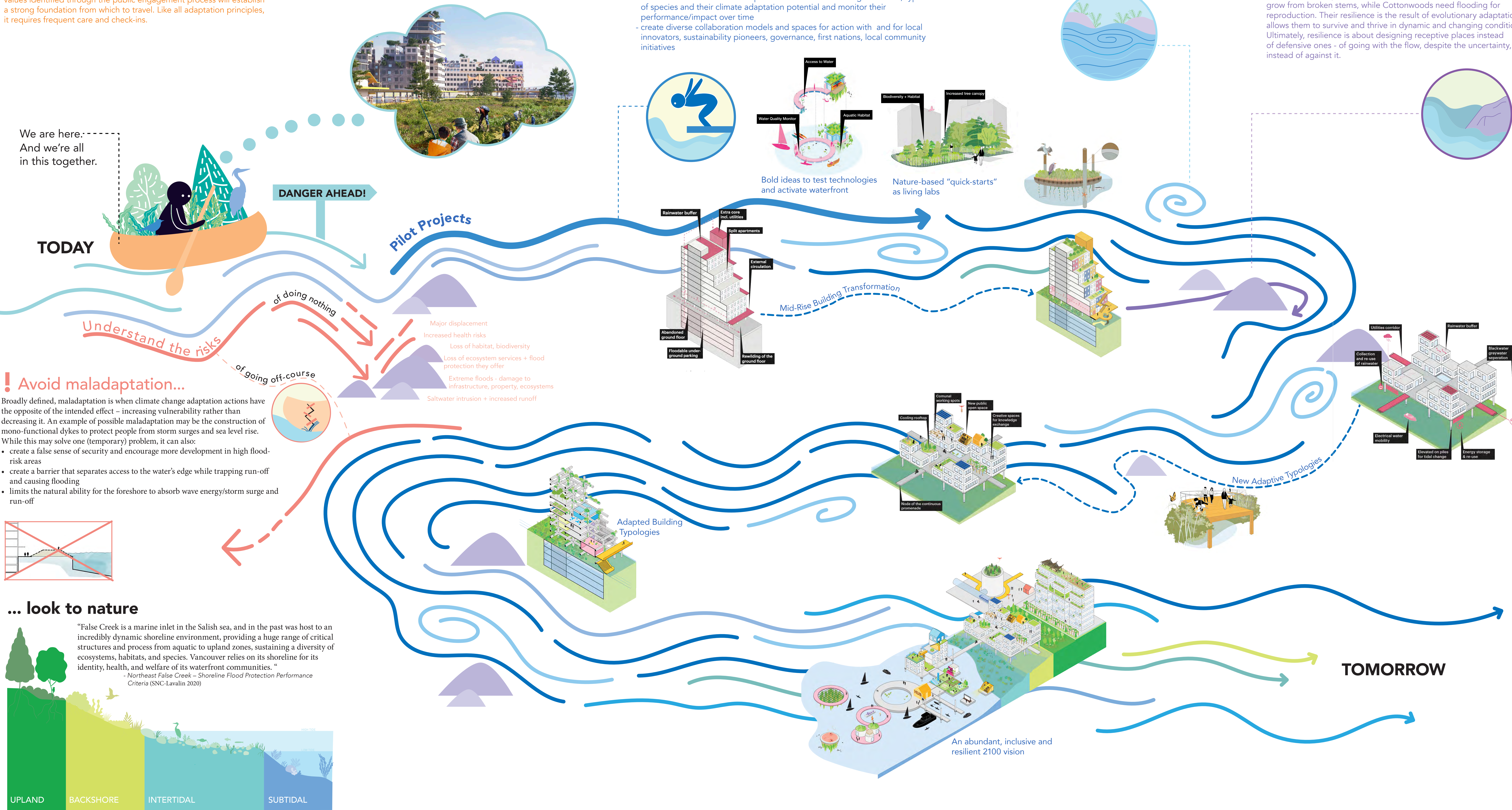
Pause to Reflect and Navigate Where we are and where we're going

We need to pay attention to our surroundings: are the measures that we implemented working the way we designed them? Were our assumptions about the future correct? Being able to map out and identify opportunities to stop, reflect, and make informed decisions is a critical part of this adaptation approach. It also provides essential opportunities to change course, make repairs or pause, if needed. Nature-based solutions allows us to be flexible when facing uncertainty, and by constantly checking our course, we are able to act in time or adjust our trajectory when needed.

Stay Resilient and Adaptive Plan for uncertainty

Planning for uncertainty means preparing for boulders and obstacles we can and can't see ahead. While "sustainability" has successfully encouraged a new lens through which we see ourselves in relation to the natural world and its finite resources, it has also led to a common misunderstanding that a balanced, sustained equilibrium is achievable. But we know in reality that the only thing constant is change and that life is a series of trying, failing, adapting, learning, and growing in endless cycles. With this in mind, change and disturbance - or unexpected boulders in our path - are accepted and expected characteristics of the larger system - and opportunities to increase resiliency.

Willows, for example, have flexible branches and the ability to root and grow from broken stems, while Cottonwoods need flooding for reproduction. Their resilience is the result of evolutionary adaptation that allows them to survive and thrive in dynamic and changing conditions. Ultimately, resilience is about designing receptive places instead of defensive ones - of going with the flow, despite the uncertainty, instead of against it.



... look to nature

"False Creek is a marine inlet in the Salish sea, and in the past was host to an incredibly dynamic shoreline environment, providing a huge range of critical structures and process from aquatic to upland zones, sustaining a diversity of ecosystems, habitats, and species. Vancouver relies on its shoreline for its identity, health, and welfare of its waterfront communities."
- Northeast False Creek - Shoreline Flood Protection Performance Criteria (SNC-Lavalin 2020)

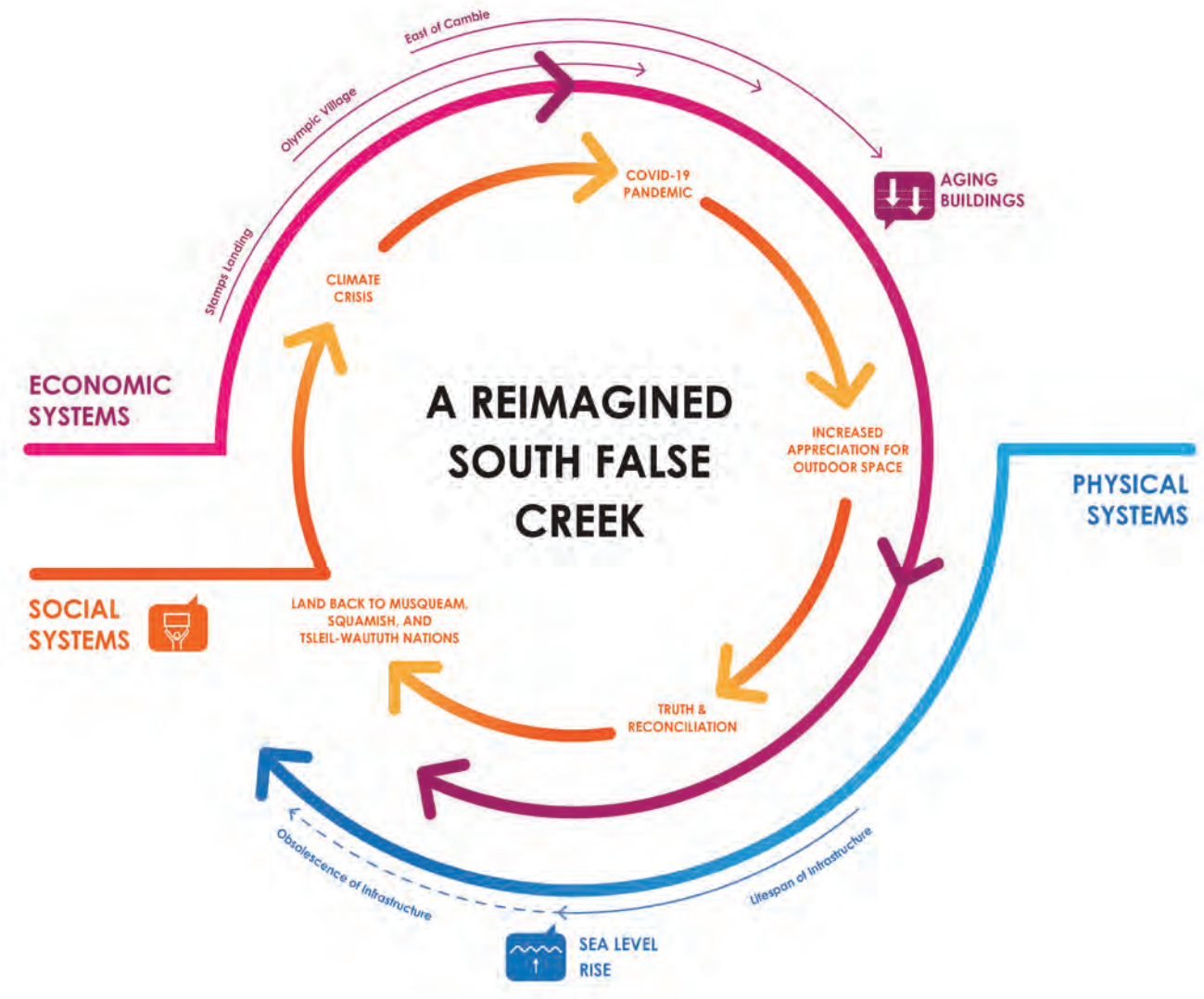




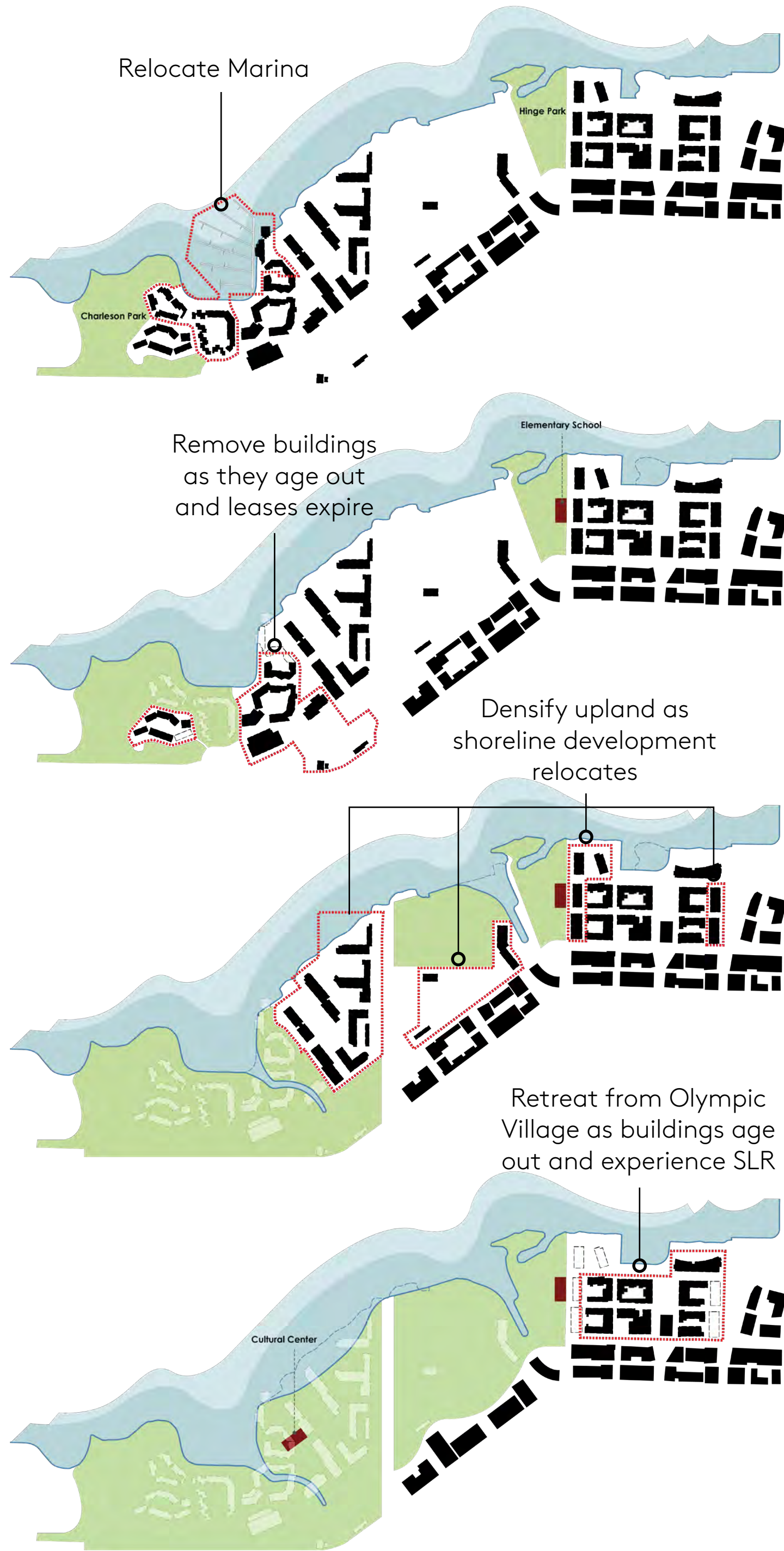
Adaptation Approach

Adapting South False Creek to address sea level rise is an iterative, long-term process that requires us to begin planning and collaborating today. It is a challenge that can become an opportunity for the City of Vancouver; adapting to climate change will be the impetus for shoreline restoration that centers the knowledge and stewardship practices of Musqueam, Squamish and Tsleil-Waututh Nations, renews the relationship between city and nature, and supports vibrant upland neighborhoods. Building an understanding of resilience and creating the capacity to adapt starts today.

While it is uncertain how the process will unfold, there are clear drivers that will play a role in advancing adaptation: the economic realities of aging building stocks and their capital investment cycles; the infrastructure constraints of utility and drainage systems, with a functional lifespan linked to sea level rise, and an evolving social context for decision making, shaped by recent experiences including the Covid-19 pandemic, the Truth and Reconciliation Commission, and the climate crisis.

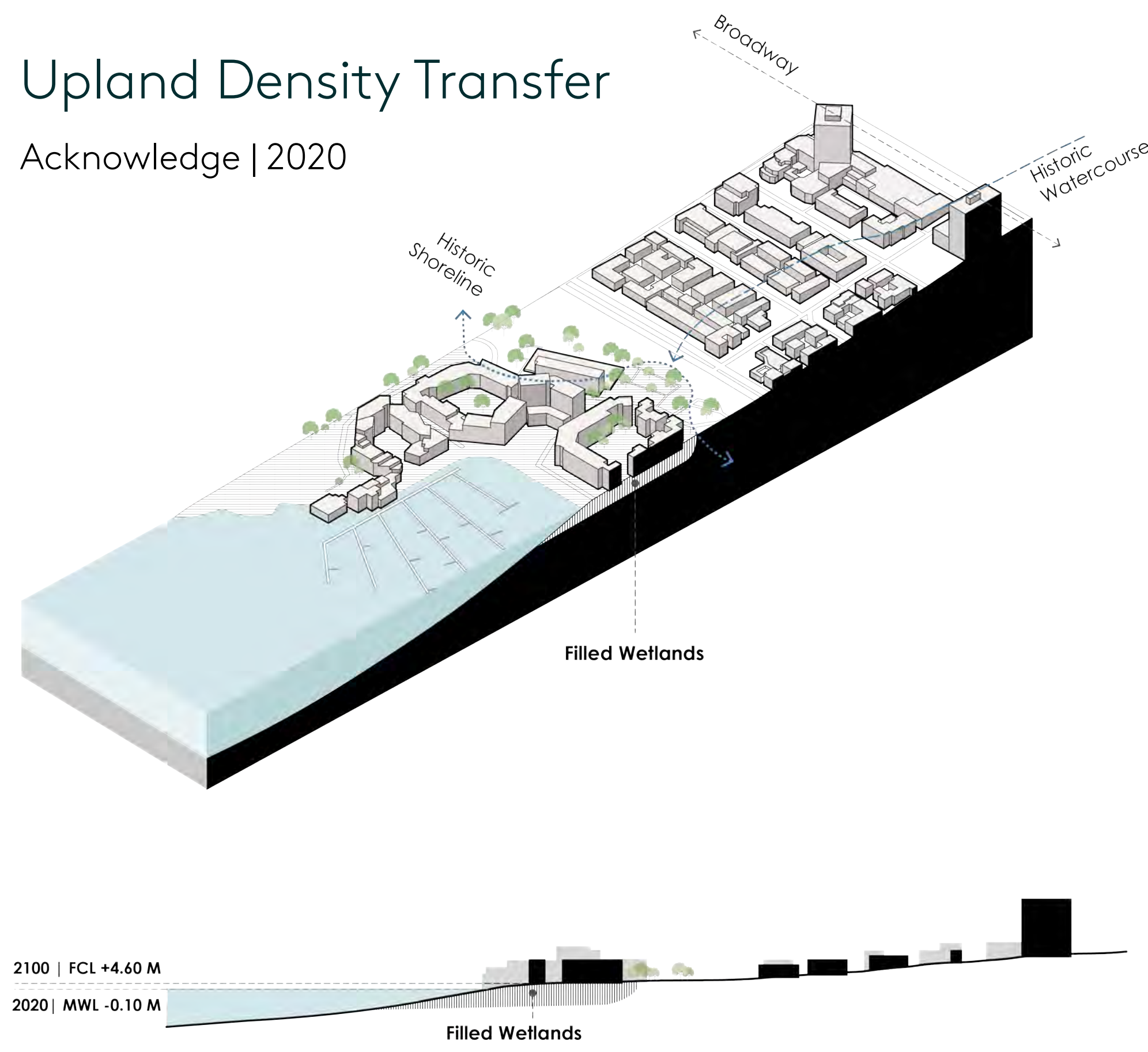


Adaptation Triggers & Process

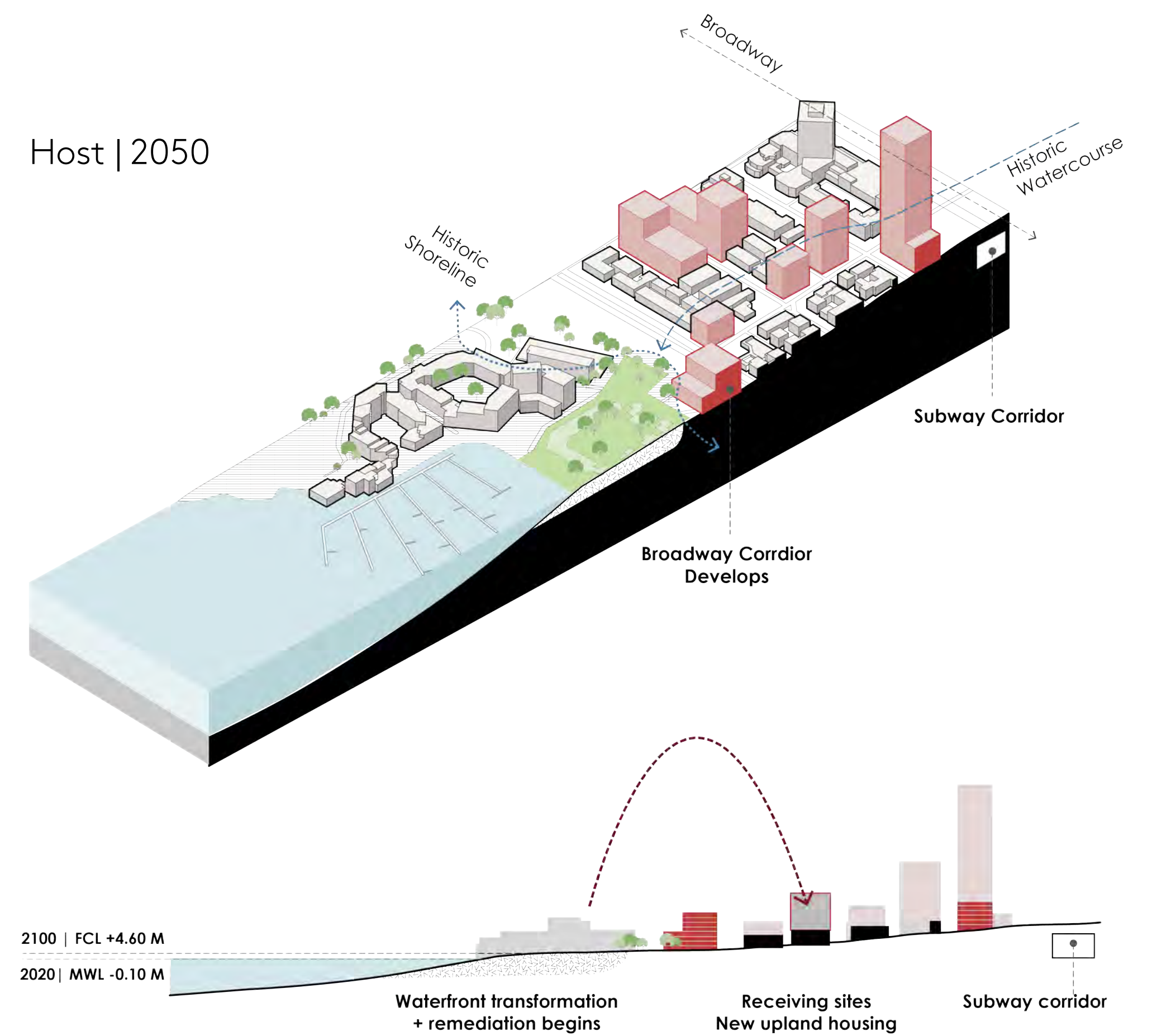


Upland Density Transfer

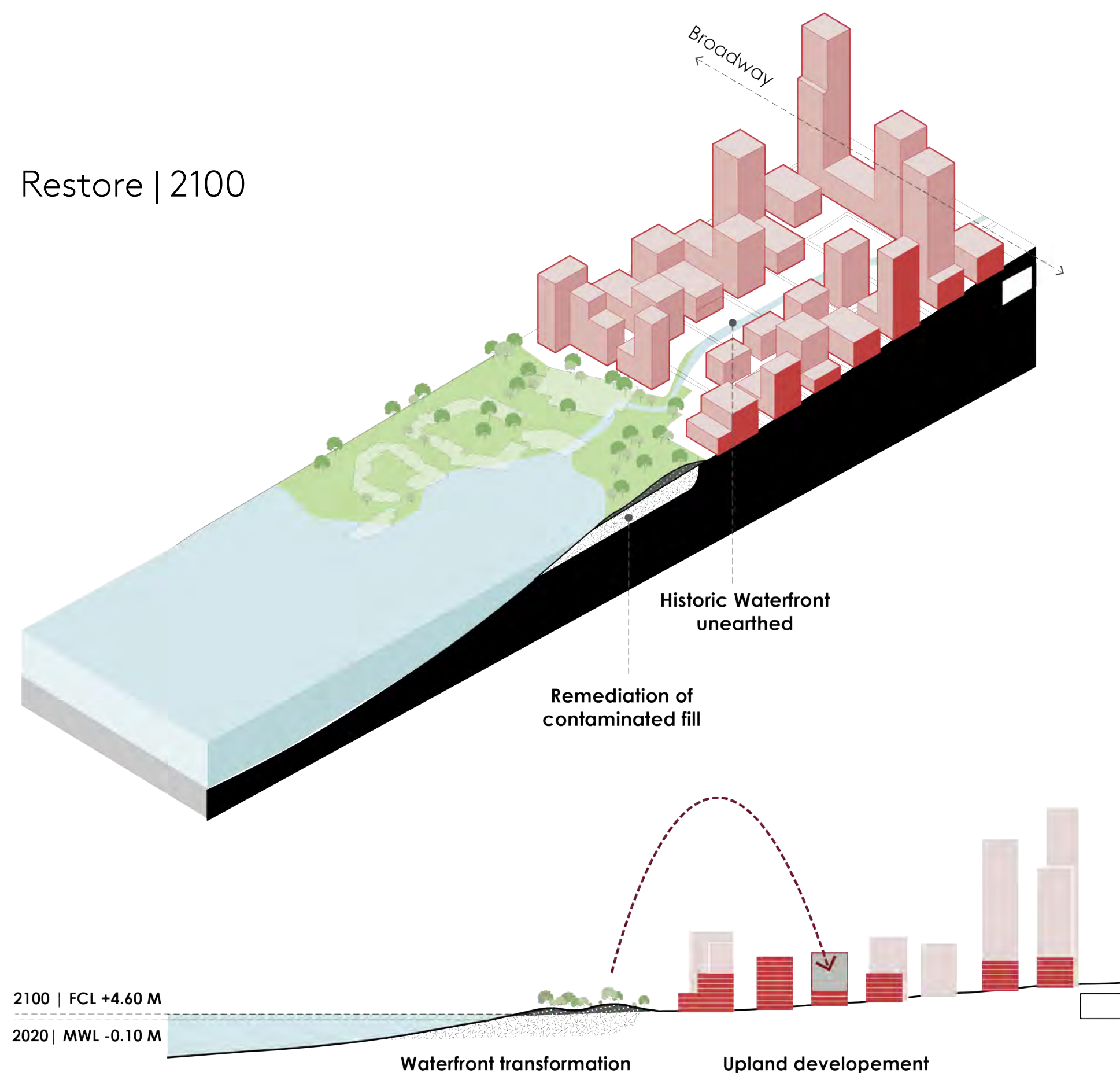
Acknowledge | 2020



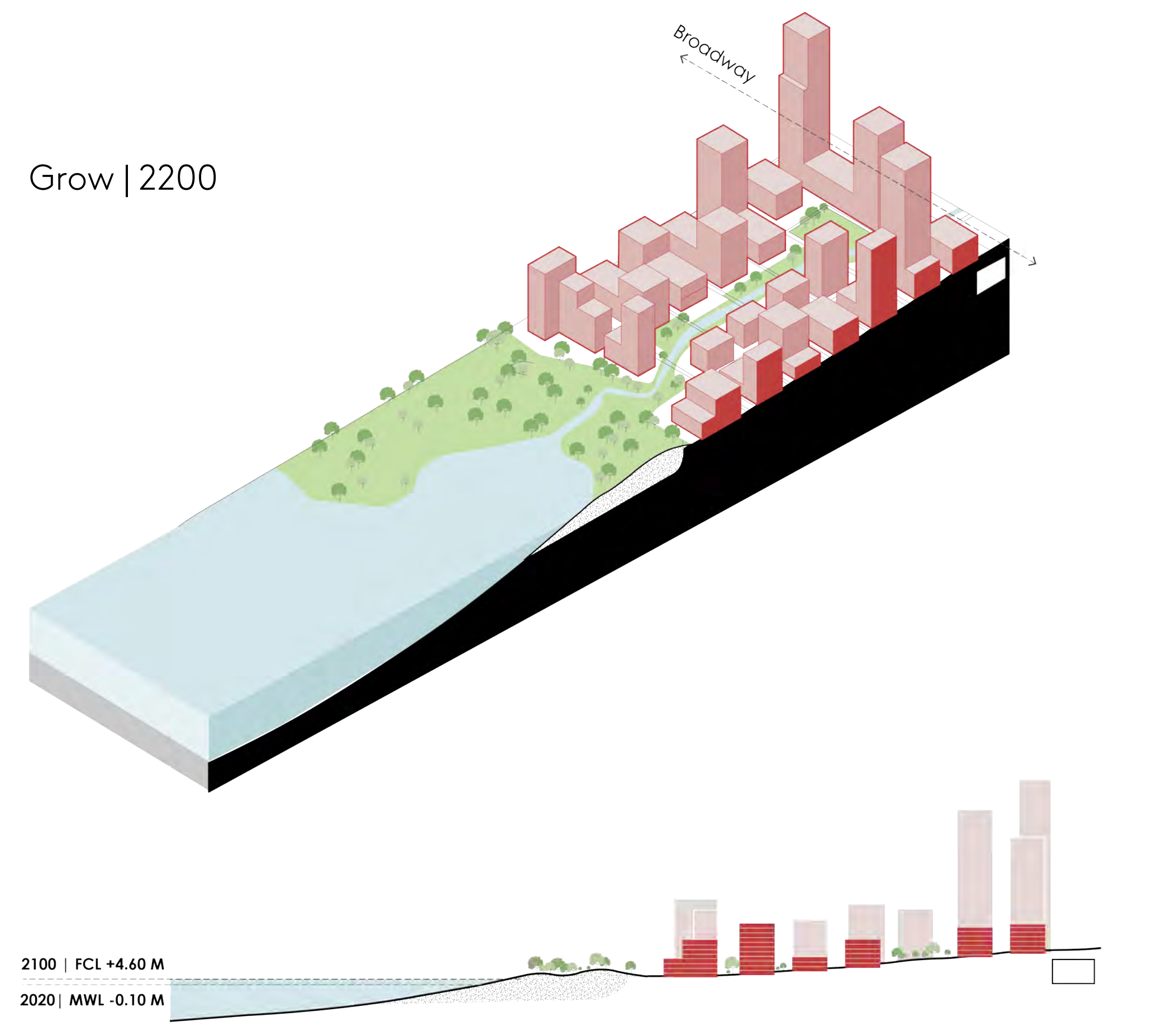
Host | 2050



Restore | 2100



Grow | 2200



2100+ Vision

The vision for a decolonized False Creek is one that reframes the city's relationship with the shoreline, the processes that shape it, and how it is inhabited. A holistic view of False Creek reconnects the watershed to the hydrologic and ecological functions of the shoreline, tidal, and marine environments. As a shared stewardship of this land is curated, the people of Vancouver will continue to learn to live with and reestablish a relationship with the fluctuations of the tides.

An adaptation pathway that takes a decolonized approach shifts investments from those that protect and hold the hardened shoreline to those that allow the repair and restoration of the lands and waters that have been impacted by the pressures of our society over recent generations. Areas of False Creek that were filled in, industrialized, and redeveloped will be restored, while redevelopment shifts in an incremental and intentional way away from these areas.

This space is envisioned as a place where the Musqueam, Squamish and Tsleil-Waututh Nations can practice, celebrate, share their cultures, and co-manage the landscape as a part of an ongoing conversation with the City of Vancouver. In this landscape that they have stewarded since time immemorial, False Creek is once again a place where they can see themselves and their values and knowledge represented. The future of False Creek is a place for all people and all creatures to cohabitate. It represents a place of shared values, natural abundance and optimism about our role in helping heal the land and water for future generations.





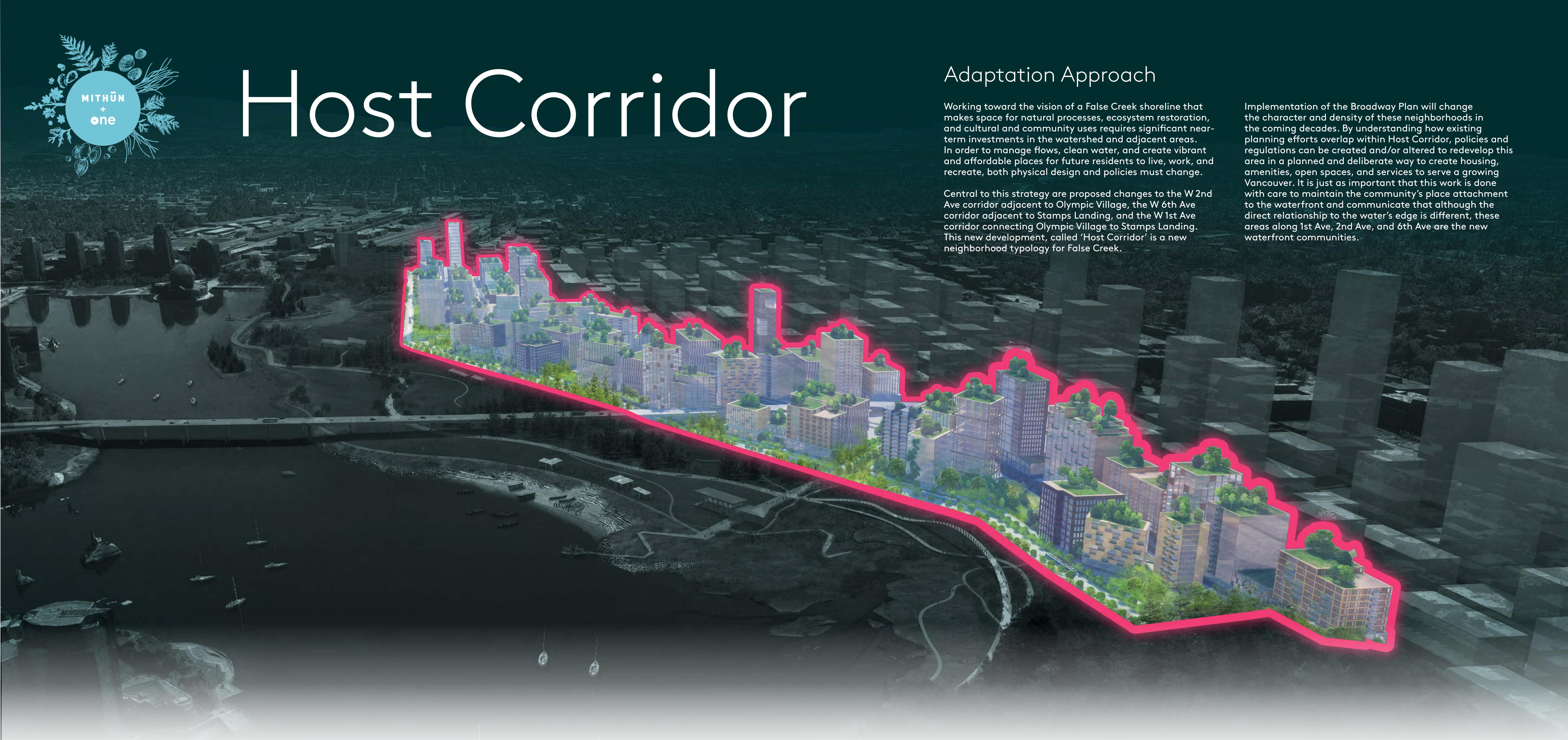
Host Corridor

Adaptation Approach

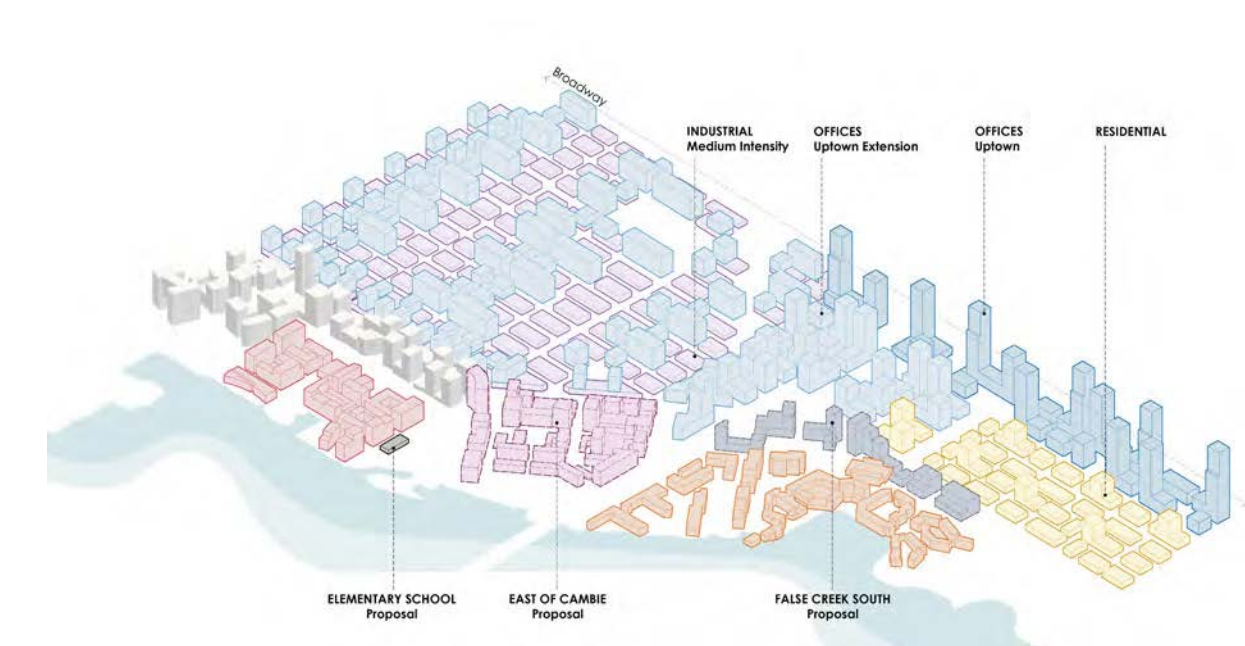
Working toward the vision of a False Creek shoreline that makes space for natural processes, ecosystem restoration, and cultural and community uses requires significant near-term investments in the watershed and adjacent areas. In order to manage flows, clean water, and create vibrant and affordable places for future residents to live, work, and recreate, both physical design and policies must change.

Central to this strategy are proposed changes to the W 2nd Ave corridor adjacent to Olympic Village, the W 6th Ave corridor adjacent to Stamps Landing, and the W 1st Ave corridor connecting Olympic Village to Stamps Landing. This new development, called 'Host Corridor' is a new neighborhood typology for False Creek.

Implementation of the Broadway Plan will change the character and density of these neighborhoods in the coming decades. By understanding how existing planning efforts overlap within Host Corridor, policies and regulations can be created and/or altered to redevelop this area in a planned and deliberate way to create housing, amenities, open spaces, and services to serve a growing Vancouver. It is just as important that this work is done with care to maintain the community's place attachment to the waterfront and communicate that although the direct relationship to the water's edge is different, these areas along 1st Ave, 2nd Ave, and 6th Ave are the new waterfront communities.



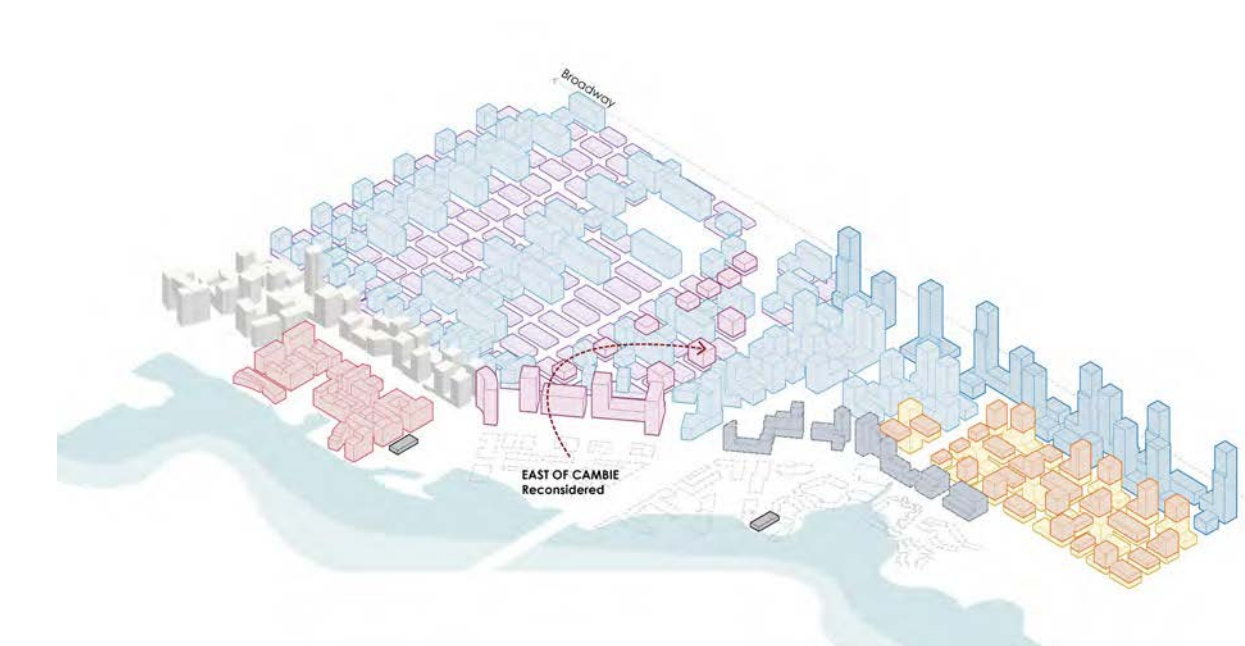
False Creek South Today



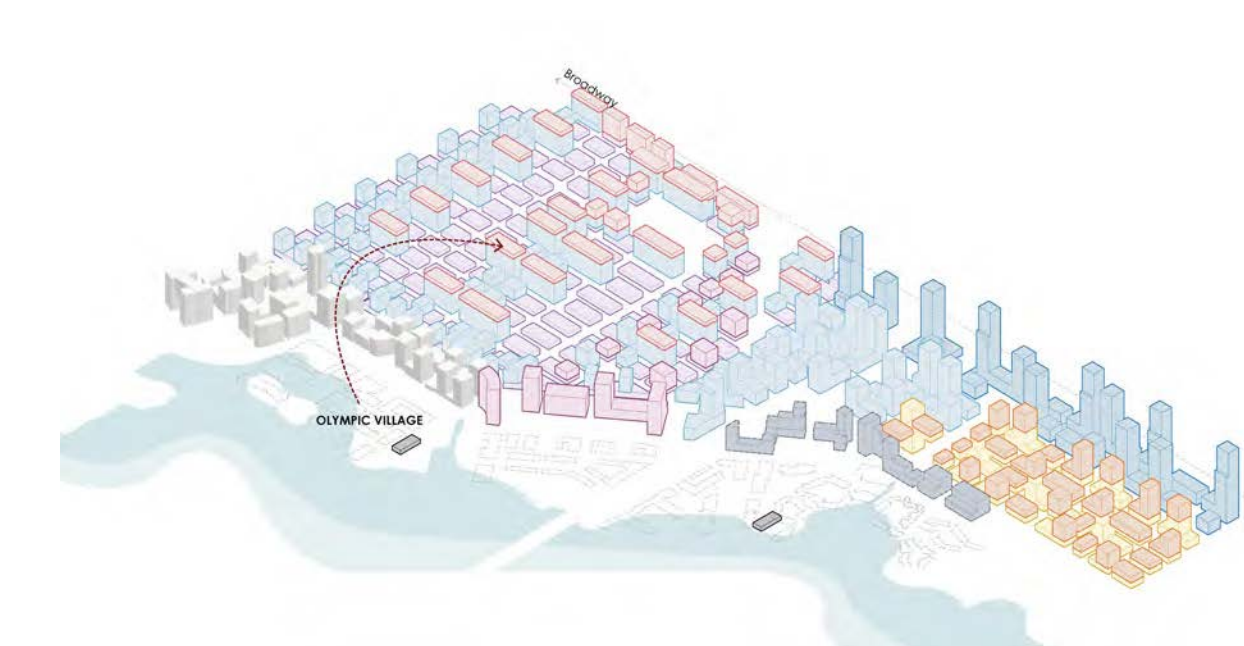
Proposed Development:
False Creek South + East of Cambie + Broadway Plan



Stamps Landing Density Transfer



East of Cambie Redesign + Density Transfer



Olympic Village Density Transfer

2100+ Vision

Host Corridor is connected to both False Creek and the upland neighborhoods. Blue-Green Systems and integrated open spaces tie the watershed to the waters of False Creek through a series of floodable streets that act like sponges, providing diverse habitat for urban wildlife. This new type of urban district feels like a city tucked into a forest. Informed and inspired by the architecture, art, and culture of Musqueam, Squamish and Tsleil-Waututh Nations, Host Corridor is a place where urban expression is humble and reflects the stories, forms, and materials that connect the Musqueam, Squamish & Tsleil-Waututh peoples to this place. Building typologies are impermanent, designed

for deconstruction, are constructed with mass timber technologies and decenter human habitation as the sole function of these spaces.

The 1st Ave Blue-Green Corridor is reimagined as a pedestrian street that vehicles no longer occupy. The Streetcar has returned, connecting Olympic Village and Stamps Landing to other neighborhoods and parks along False Creek. The blue-green system running along the pedestrian street intercepts rainwater and upland flows to slow, filter, and clean water before it enters the sensitive tidal ecosystems of False Creek.



Special thanks to Charlene Aleck, Cultural Advisor



Olympic Village

Change Over Time

This phased approach moves from an initial pilot project and demonstration and research phase to the implementation of the Forest Berms which will grow in place as other investments occur around them over time. Early actions include upland development and a new Blue Green Corridor to support healthy and clean shoreline habitats including low gradient beaches, a tidal mudflat, and wetlands.

Adaptation Approach

The adaptation approach for Olympic Village is driven by the time horizon for implementation, flood risk areas, building age & expected building lifespans, and the land ownership structure.

Regular flooding is not an immediate concern for much of Olympic Village in the near term. A long-term phased approach, focused on densifying upland areas to the south around the 2nd Ave "Host Corridor," allows for the gradual retreat and relocation of housing, services, and amenities. This supports the vision of a new Olympic Village shore that moves development out of areas that are threatened by sea level rise and groundwater

contamination. These areas were historically filled in, and this approach makes space for ecological and cultural reconnections to the land and water.

Near-term investments in the Forest Berms are the anchor for this future landscape, serving as a flood protection measure, a first step in creating a successional forest edge, and providing an opportunity for the City of Vancouver to partner with Musqueam, Squamish & Tsleil-Waututh Nations in design and co-management of this landscape.

ACKNOWLEDGE

HOST

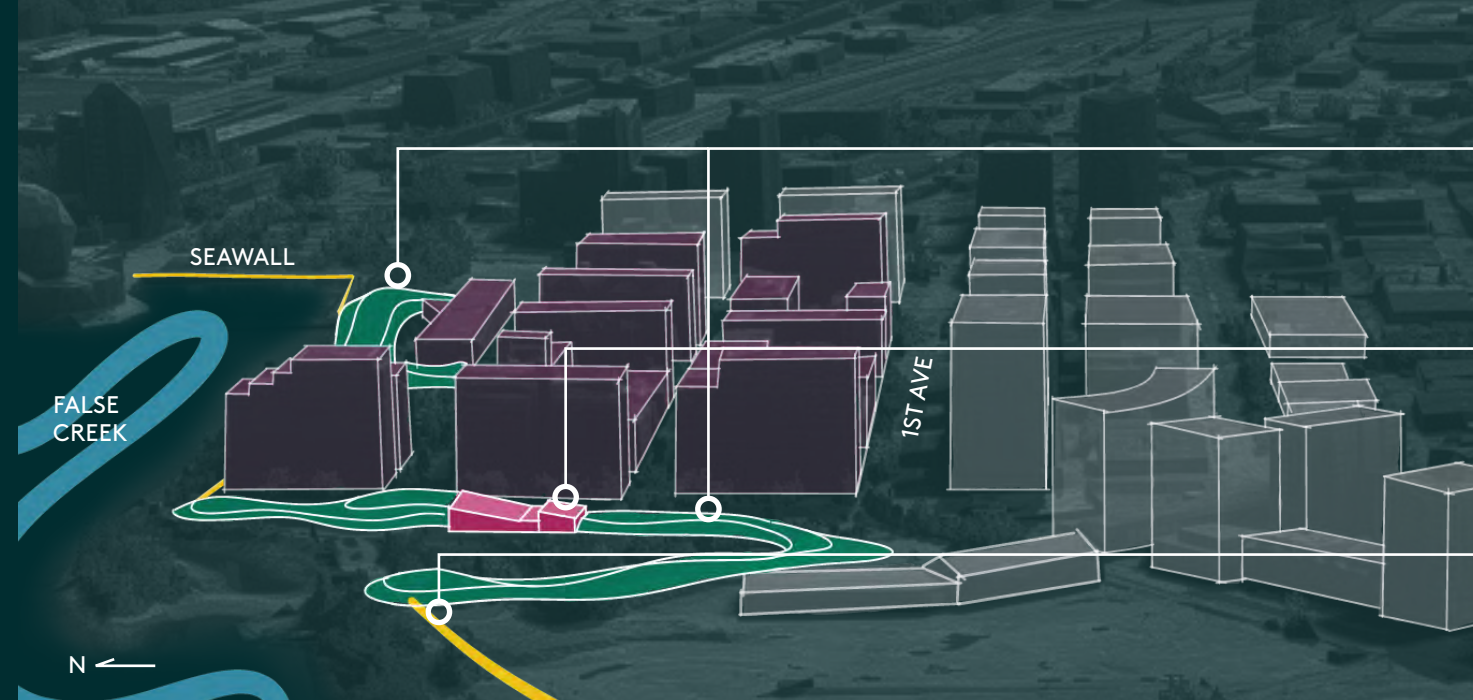
RESTORE

1 - Forest Berm Pilot Project



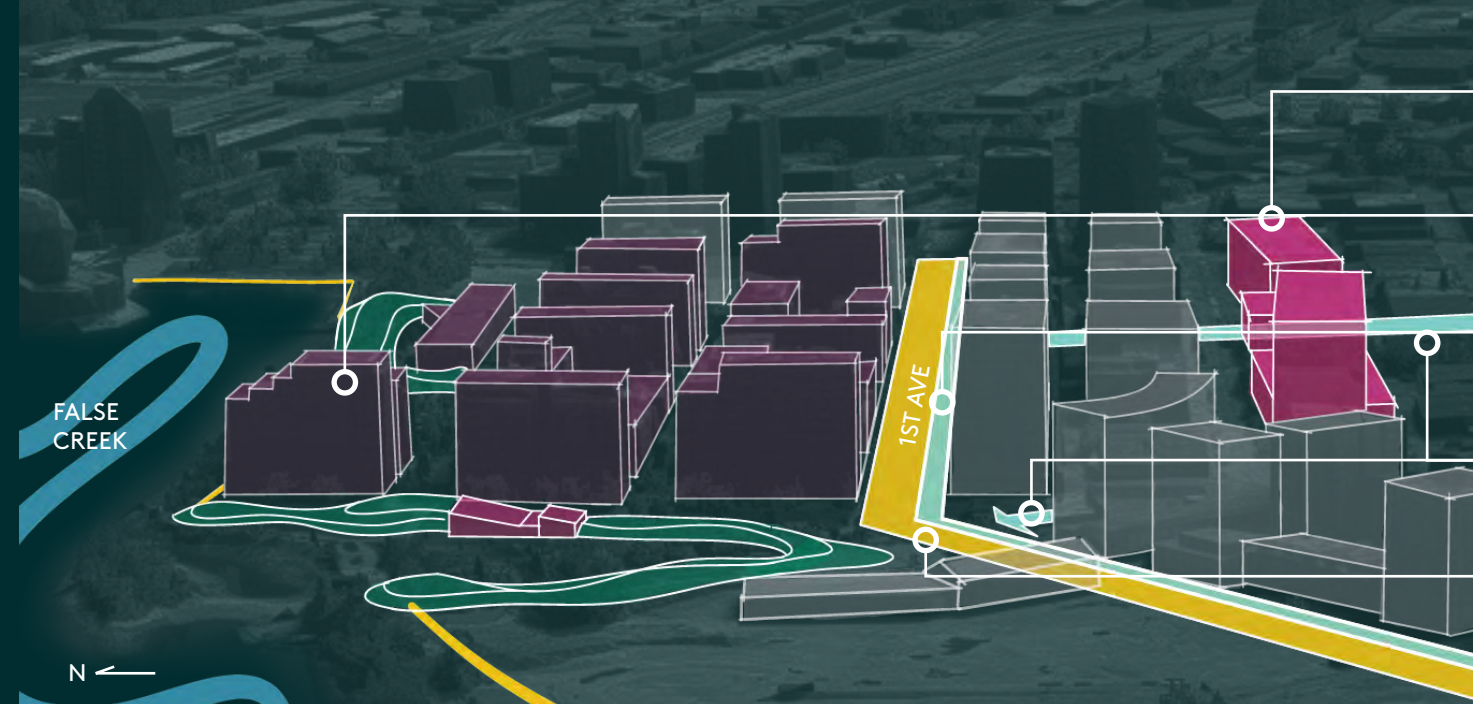
Forest Berm Pilot Project

2 - Forest Berms + Habitat Bench



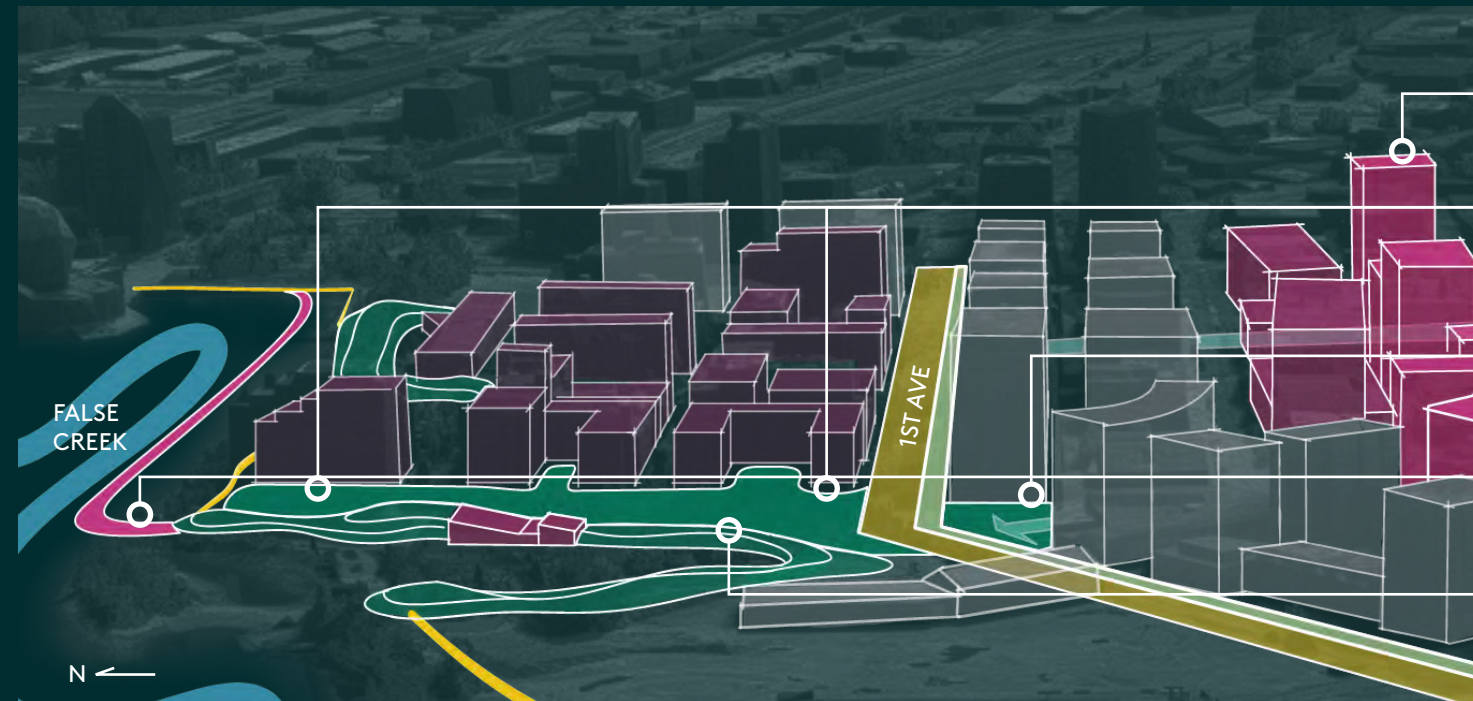
- Forest Berm
- Olympic Village Elementary School
- Habitat Bench

3 - Blue Green Corridor + Upland Development



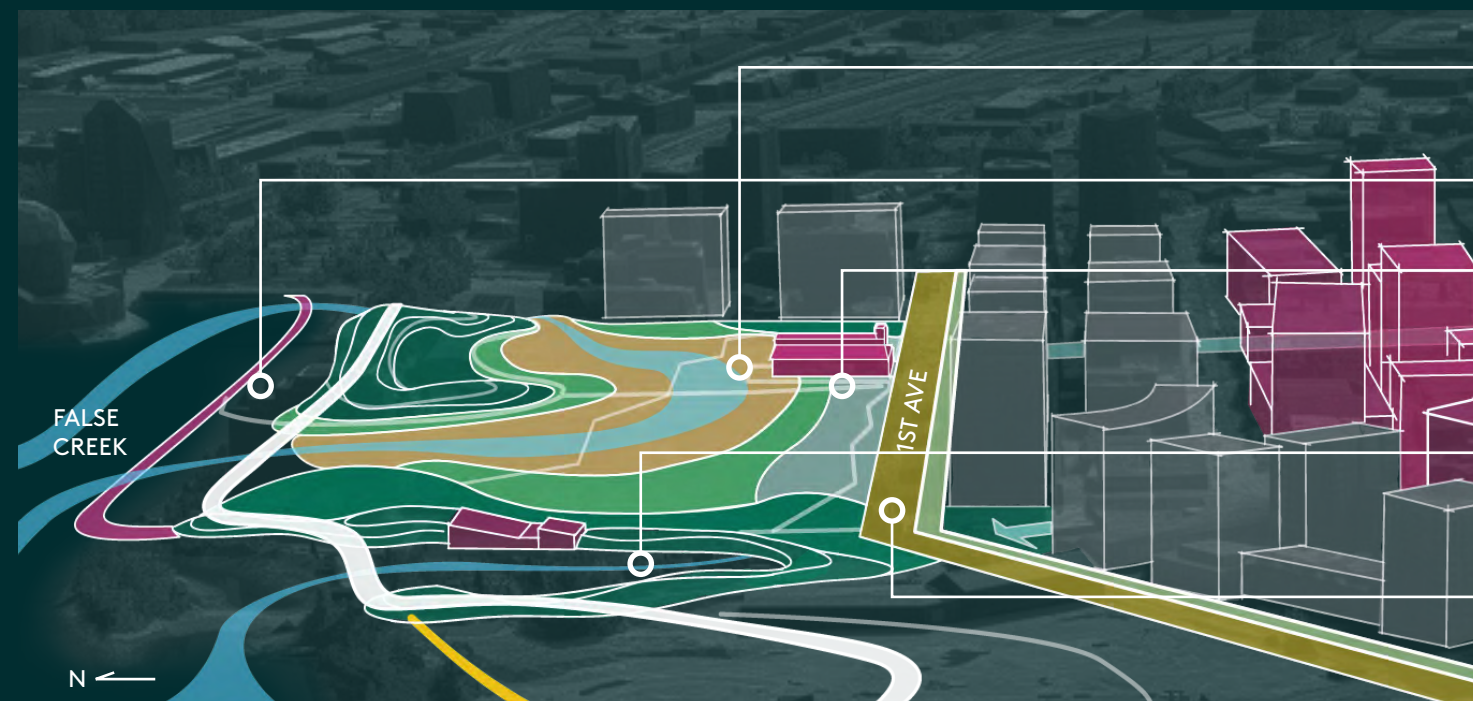
- Host Corridor Development
- Floodproof At-Risk Buildings
- 1st Ave Blue Green Corridor (Elevation of road meets flood construction level)
- Connect Upland Blue Green Systems
- 1st Ave Redevelopment

4 - Incremental Retreat + Upland Development

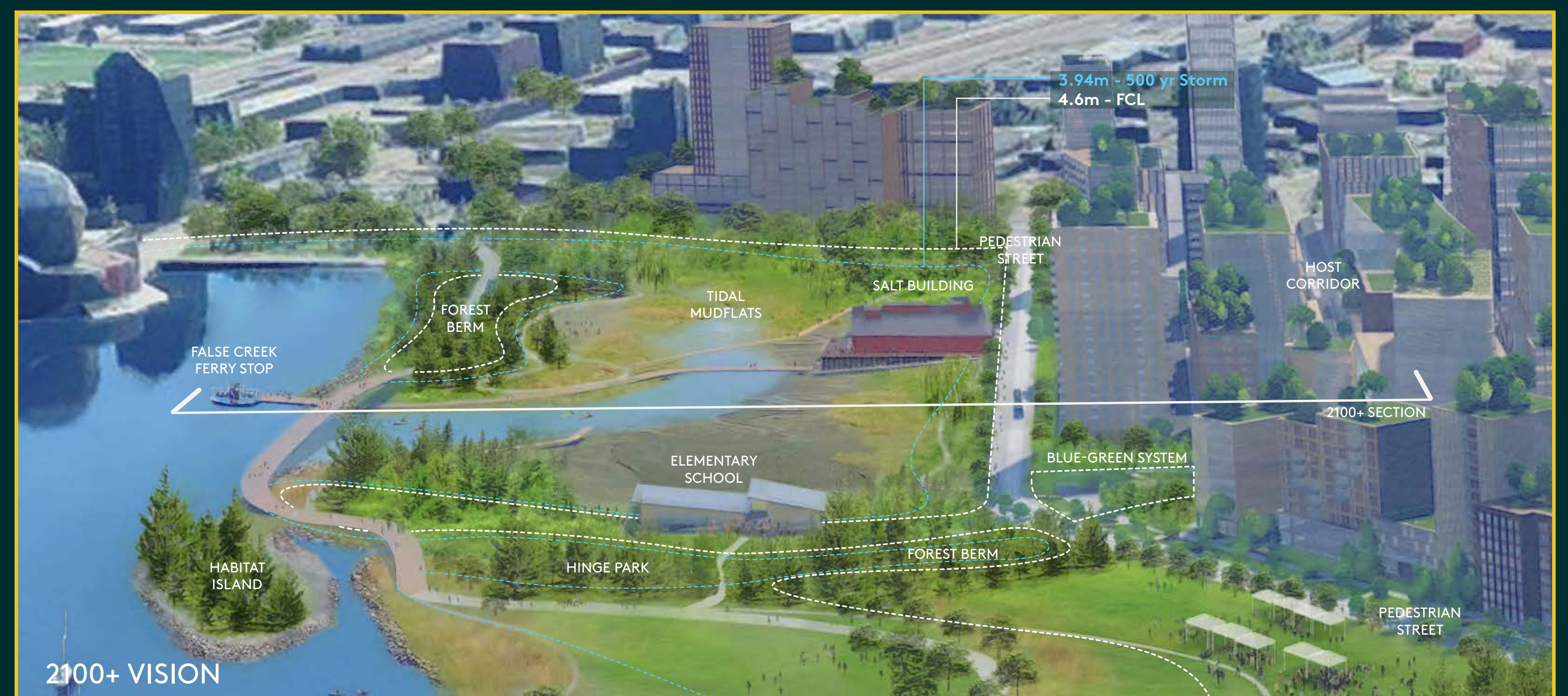
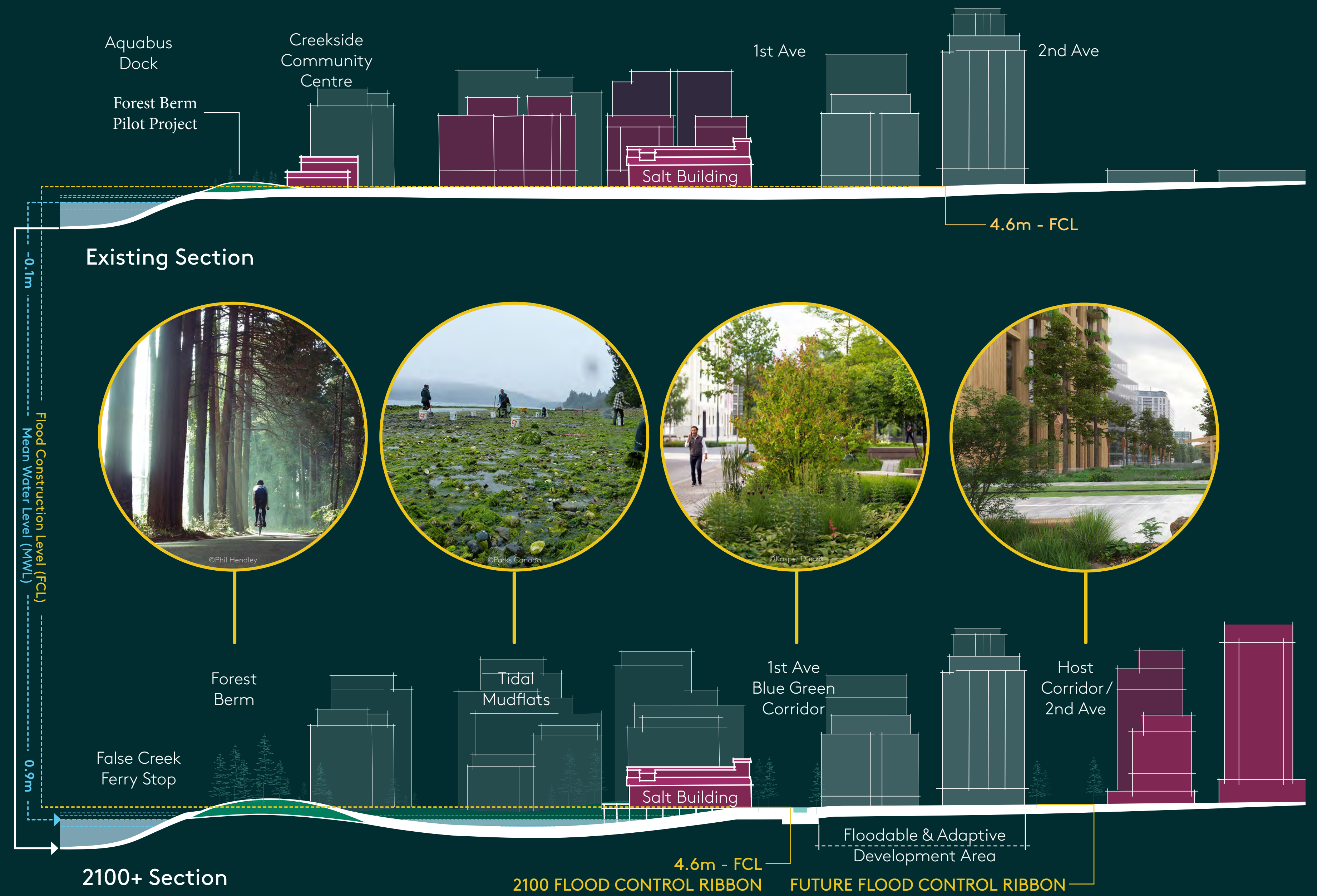


- Host Corridor Development
- Flood-Prone Buildings Removed
- Upland Open Space Connections
- Temporary Floating Walkway
- Wetlands

5 - Retreat + Ecosystem Repair



- Tidal Mudflat
- Sediment Cap
- Low Gradient Beach
- Hinge Park Tidal Connection
- 1st Ave Pedestrian Promenade



2100+ Vision

Responding to both rising sea levels and the changing character and age of the neighborhood, this long-term vision for Olympic Village shifts urban density away from the water's edge. Housing, amenities, and community services have been relocated overtime, now centered around the new retail street: the 2nd Ave "Host Corridor." The 1st Ave pedestrian street is bustling with people, some of them hopping off of the Streetcar to head to the waterfront.

The Forest Berm is now full of 30-meter tall trees and supports a thriving and dynamic ecosystem; the landscape is once again influenced by the daily tidal fluctuations. The tidal mudflat hosts beds of clams that cleaned the water and now, generations later, are managed and selectively harvested by the Host Nations. Restored to a healthy state, this landscape is co-managed by the City of Vancouver and the Musqueam, Squamish & Tsleil-Waututh Nations.





Stamps Landing

Adaptation Approach

The adaptation approach for Stamps Landing targets opportunities around building end-of-life and lease periods, combined sewer overflow separation and planned infrastructure investments, and the presence of historic streams to support a vision of restored tidal marshes and clean upland waters. The co-management of this landscape is realized through partnerships with the Musqueam, Squamish & Tsleil-Waututh Nations. This creates a healthy environment where aquatic species, birds, and mammals cohabitate with people along this restored shore of False Creek.

Because much of Stamps Landing will not be susceptible to regular flooding in the near-term, the Habitat Bench can protect vulnerable areas until their eventual removal as urban development moves inland.

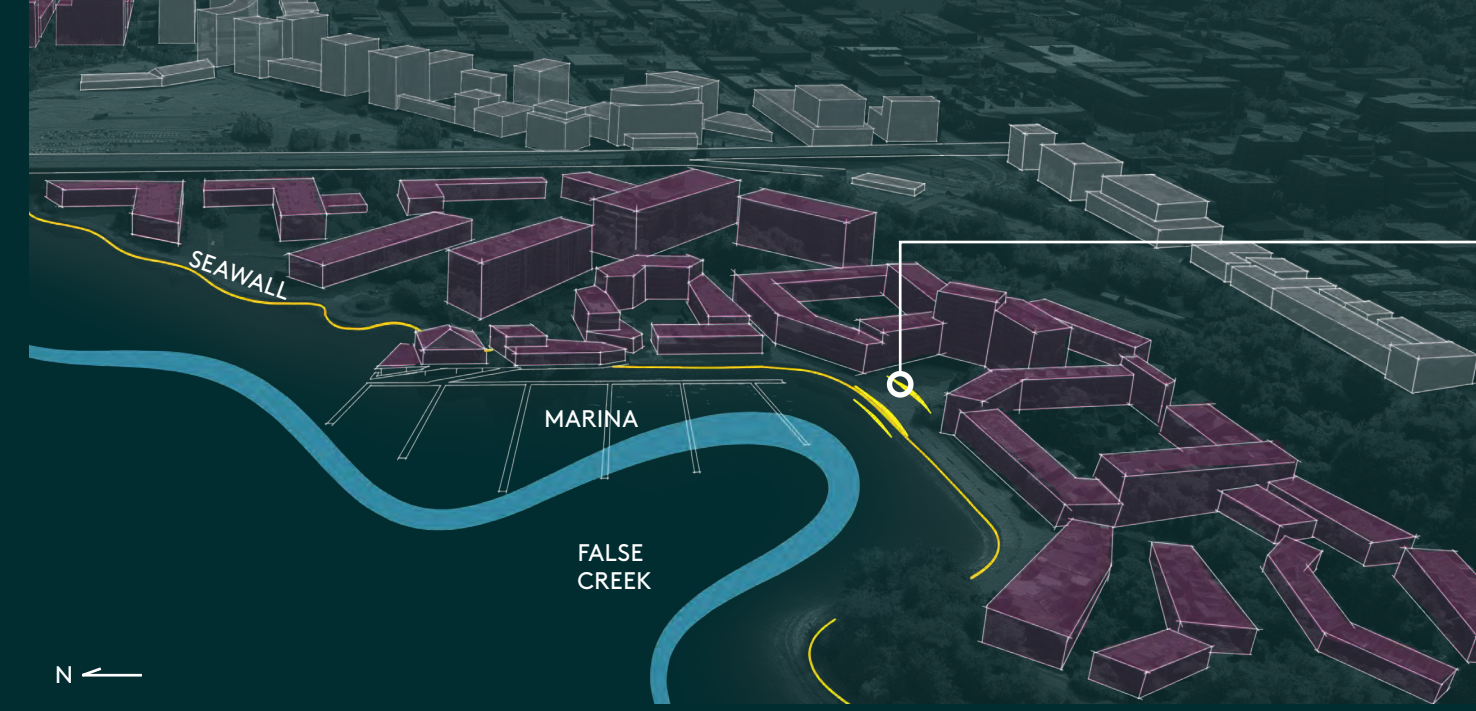
Early investments in the 1st Ave Blue Green Corridor and increasing housing and services along the W 6th Ave "Host Corridor" will allow a phased approach in which buildings move away from the existing shoreline, establishing a new waterfront experience for the False Creek South neighbourhood.

Change Over Time

This phased approach moves from an initial pilot and demonstration phase to the implementation of the temporary Habitat Bench which can be deconstructed and relocated as actions occur around it. Investments in upland infrastructure and blue green systems within the watershed are critical to the health and success of restored tidal ecosystems and streams.

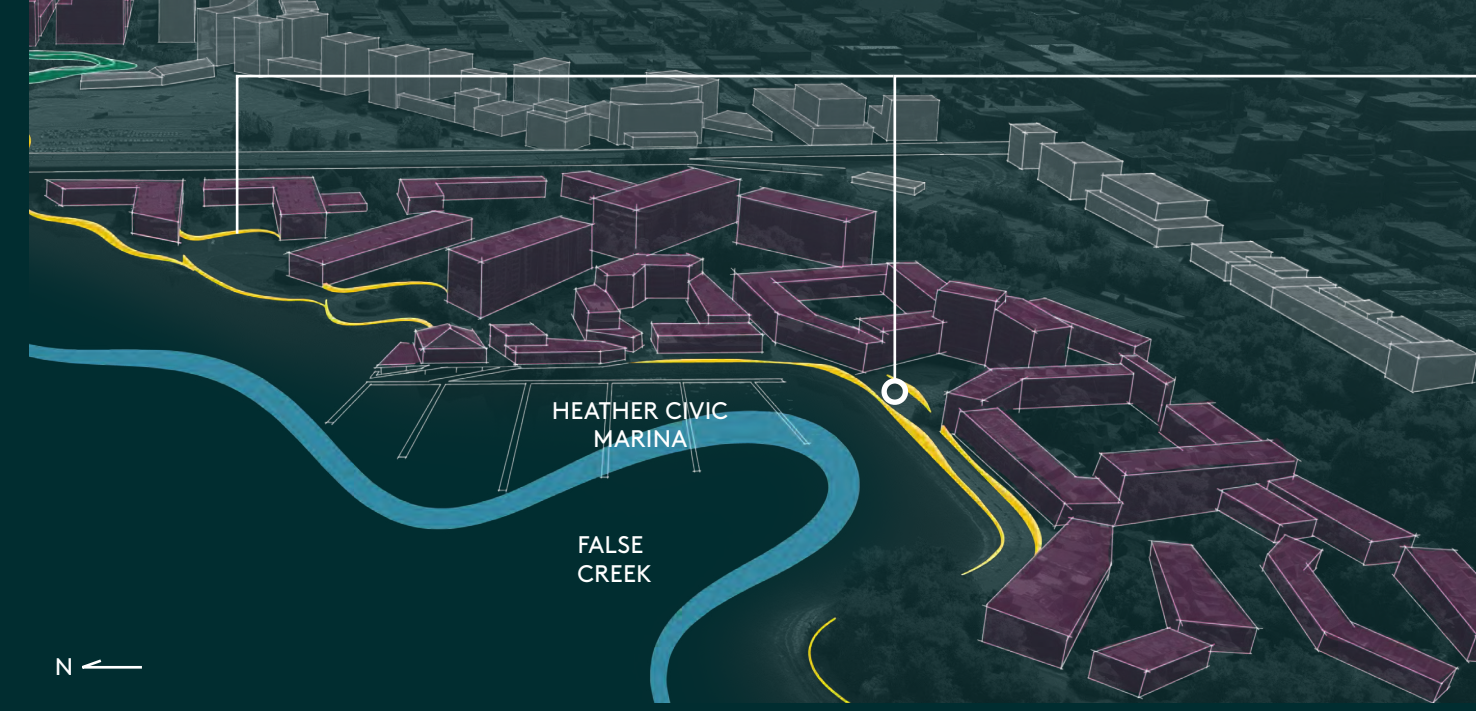
ACKNOWLEDGE
HOST
RESTORE

1 - Habitat Bench Pilot Project



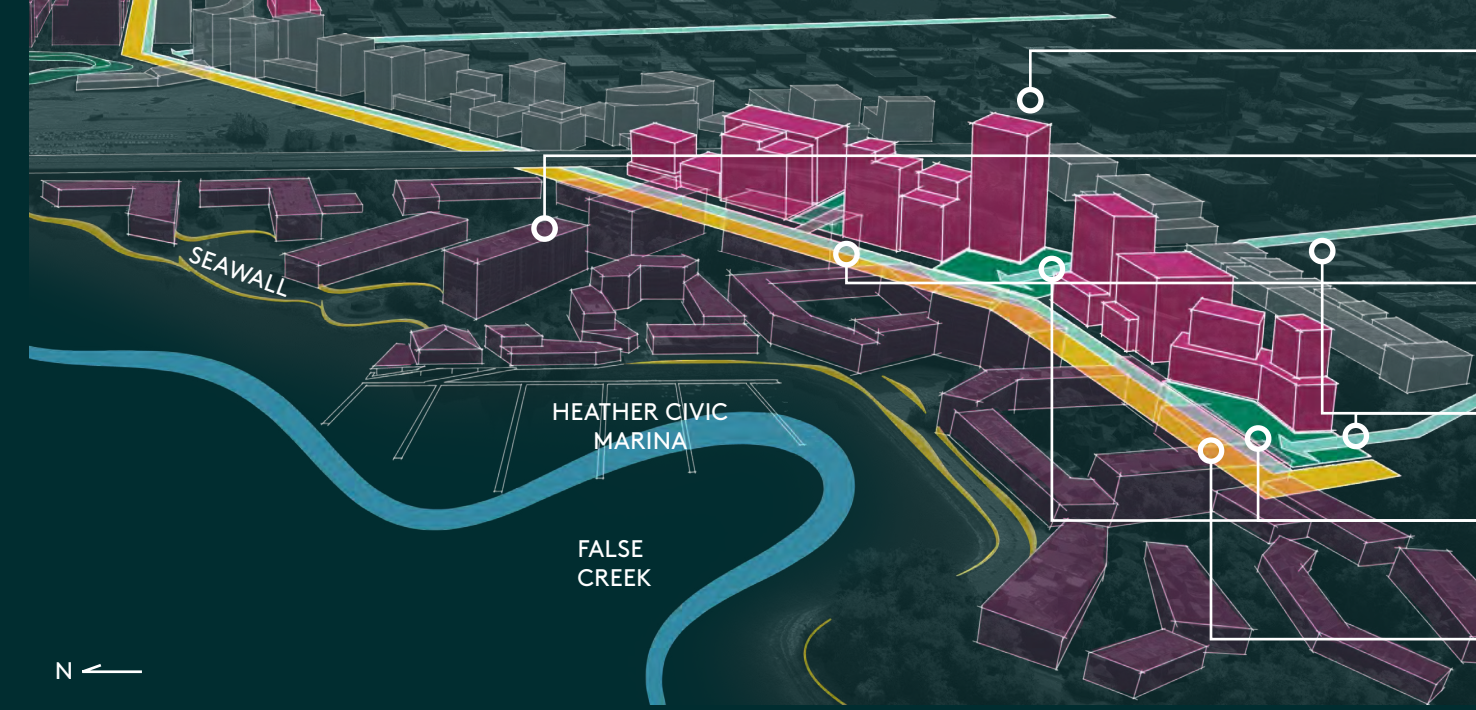
Habitat Bench Pilot Project

2 - Habitat Bench



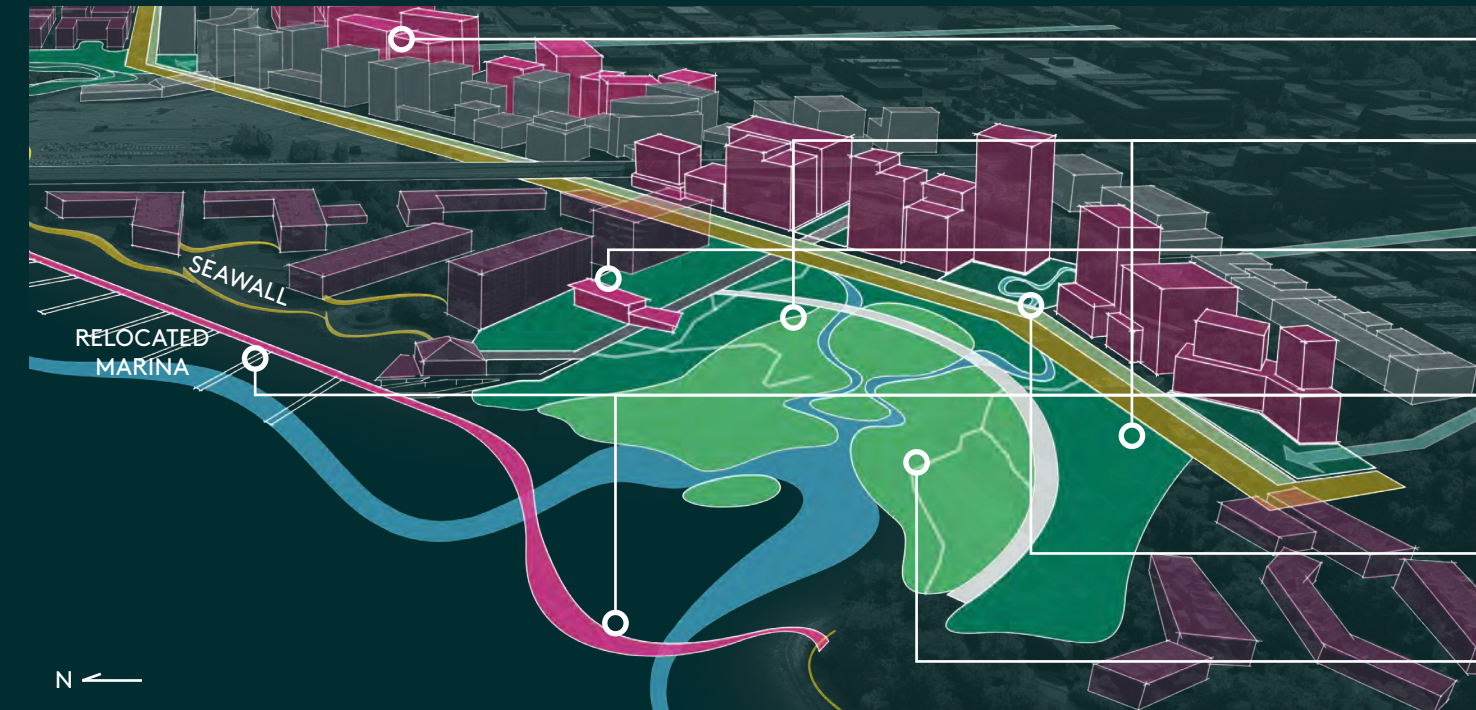
Habitat Bench

3 - Blue Green Corridor + Upland Development



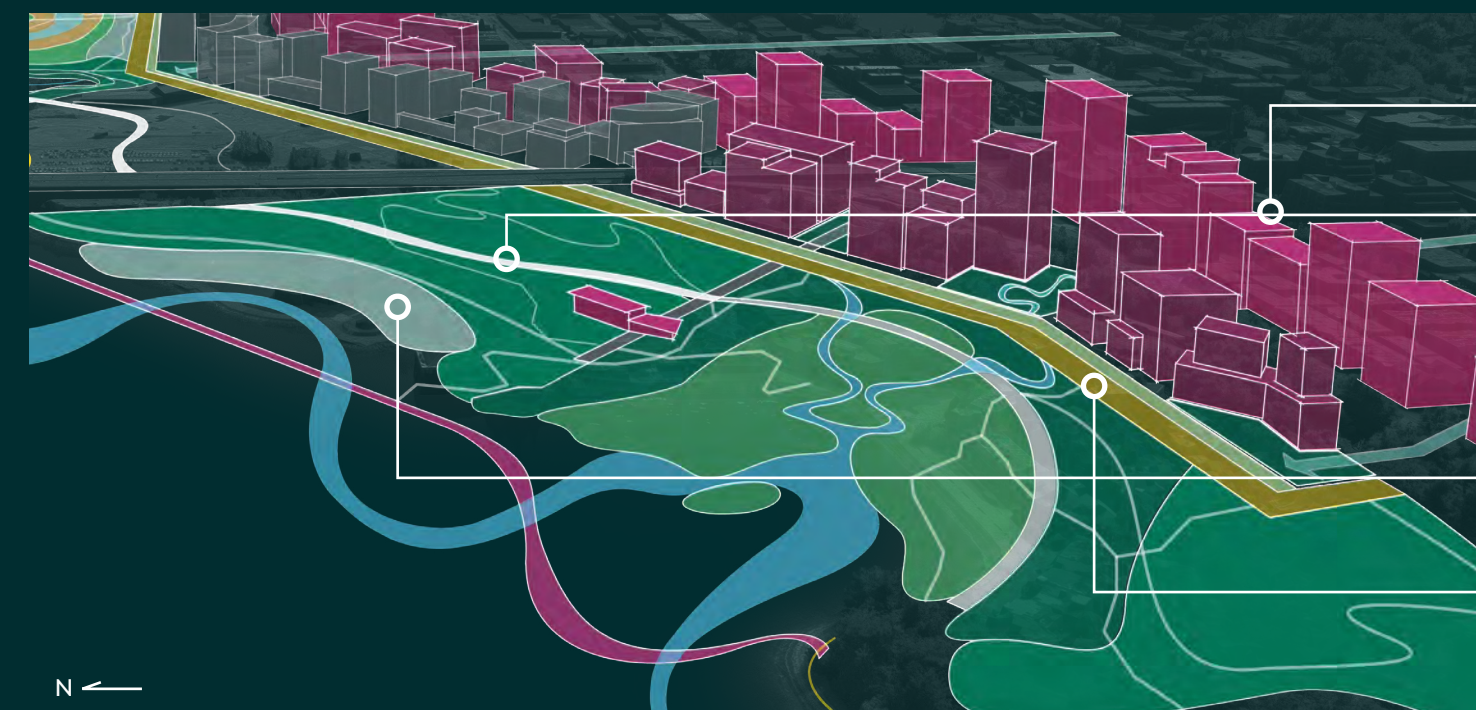
- Host Corridor Development
- Floodproof At-Risk Buildings
- 1st Ave Blue Green Corridor
- Connect Upland Blue Green Systems
- Upland Open Space Connections
- 1st Ave Redevelopment

4 - Incremental Retreat + Upland Development

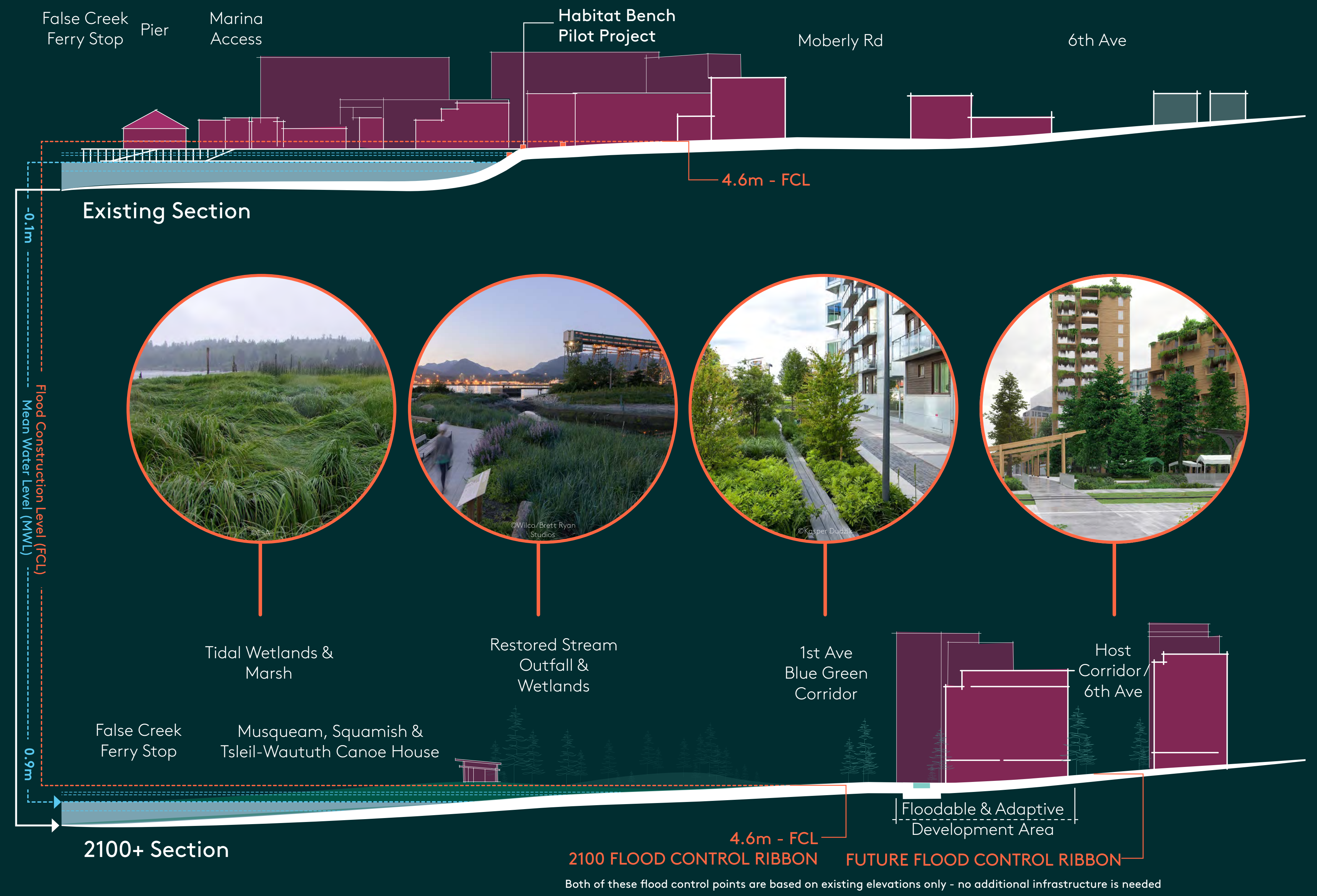


- Host Corridor Development
- Flood-Prone Buildings Removed
- Musqueam, Squamish & Tsleil-Waututh Canoe House
- Temporary Floating Walkway & Marina Relocation
- Restored Stream Outfall
- Tidal Marsh

5 - Retreat + Ecosystem Repair



- Host Corridor Development
- Flood-Prone Buildings Removed
- Low Gradient Beach
- 1st Ave Pedestrian Street



2100+ Vision

Over time, buildings have aged out and strategic infrastructure and building investments have been relocated along the W 6th Ave "Host Corridor". Near-term infrastructure projects that separate combined sewers and improve upland water quality have catalyzed the restoration of streams. The seasons are host to natural phenomena including abundant salmon migrations and migratory bird stopovers.

Connected to the 1st Ave pedestrian street, weaving pathways offer a variety of views and experiences of the marsh, beaches, meadows, and upland forest. One of the few structures that is present in this landscape is the Musqueam, Squamish & Tsleil-Waututh Canoe House. This space is imagined as a place for cultural exchange where people come together to honor and practice their cultures. It is a spiritual space, a place for traditional commerce, a place to share indigenous knowledge and a space to connect with nature and the cultures of the Host Nations.





Habitat Bench

Overview

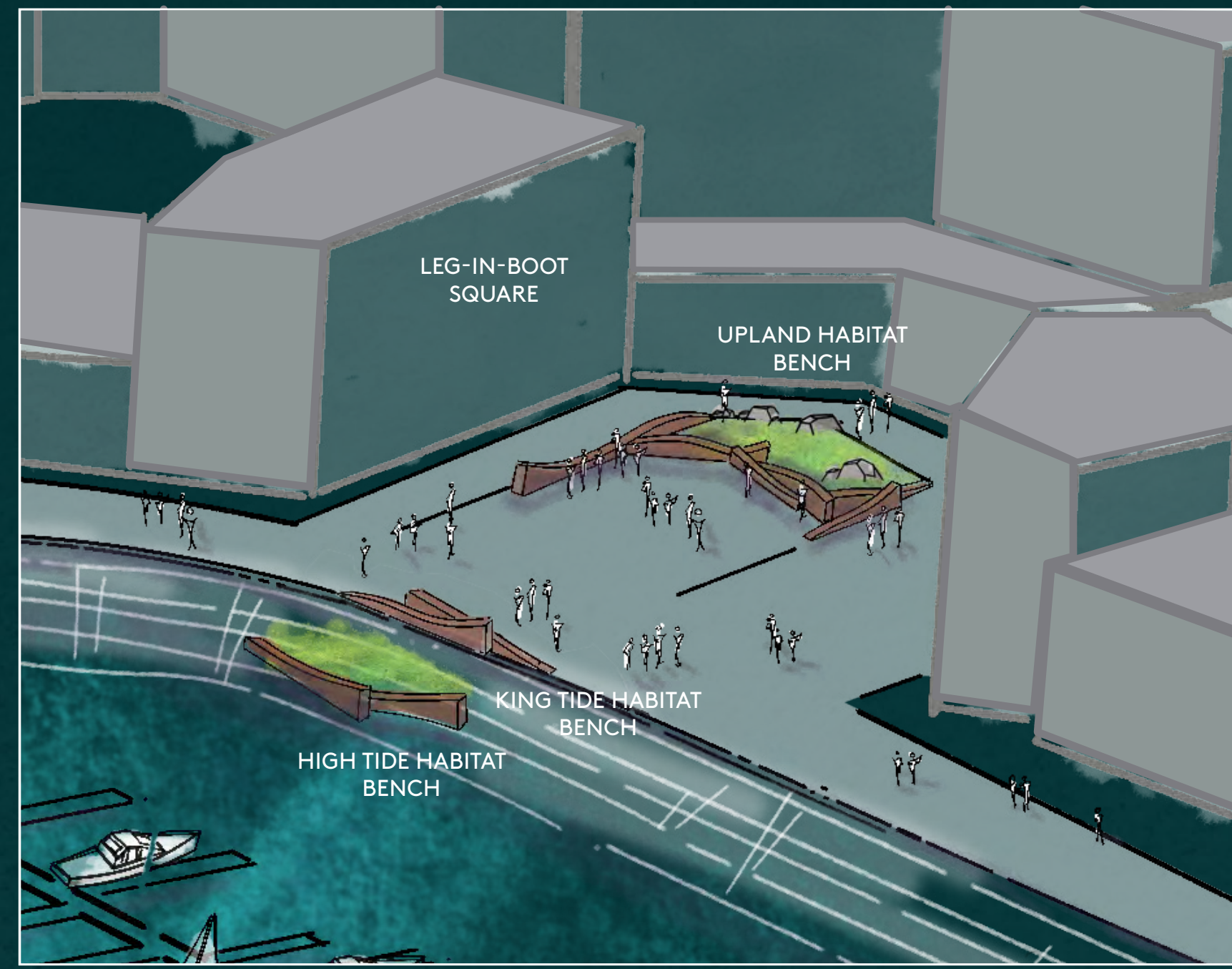
The Habitat Bench Pilot Project demonstrates how a simple, near-term shoreline intervention can provide temporary protection for occasional flood events and support future habitat functions through adaptive reuse.

The Habitat Bench is made of locally sourced timber and is designed as a modular element that is temporary, deconstructable, and designed for decomposition and adaptive relocation. As sections of the Habitat Bench start to deteriorate and need to be replaced, or as upland investments in shoreline restoration occur making protection no longer necessary, these sections can be deconstructed and relocated within restored areas of the landscape. In it's second life, the Habitat Bench acts as a network of nurse logs in a variety of settings.

Inspired by the story of the Double-headed Serpent, shared with the

design team by the team's cultural consultants, the base design of the Habitat Bench takes on an undulating form. The Habitat Bench is imagined as a canvas for storytelling and interaction which could be expressed as a bench, a play element, an art installation, wood carving and murals to tell the story of how the shoreline will change over time.

The pilot project does not address a few conditions that would enable this to be a functioning flood control measure. Future design explorations and studies might include the following considerations: How does this modular element tie into adjacent structures or other segments of the habitat bench to provide a continuous structure? What elements help create a water-tight barrier within these structures? How does the Habitat Bench interact with the top of the seawall where curbs, no curbs, or other structures are present?

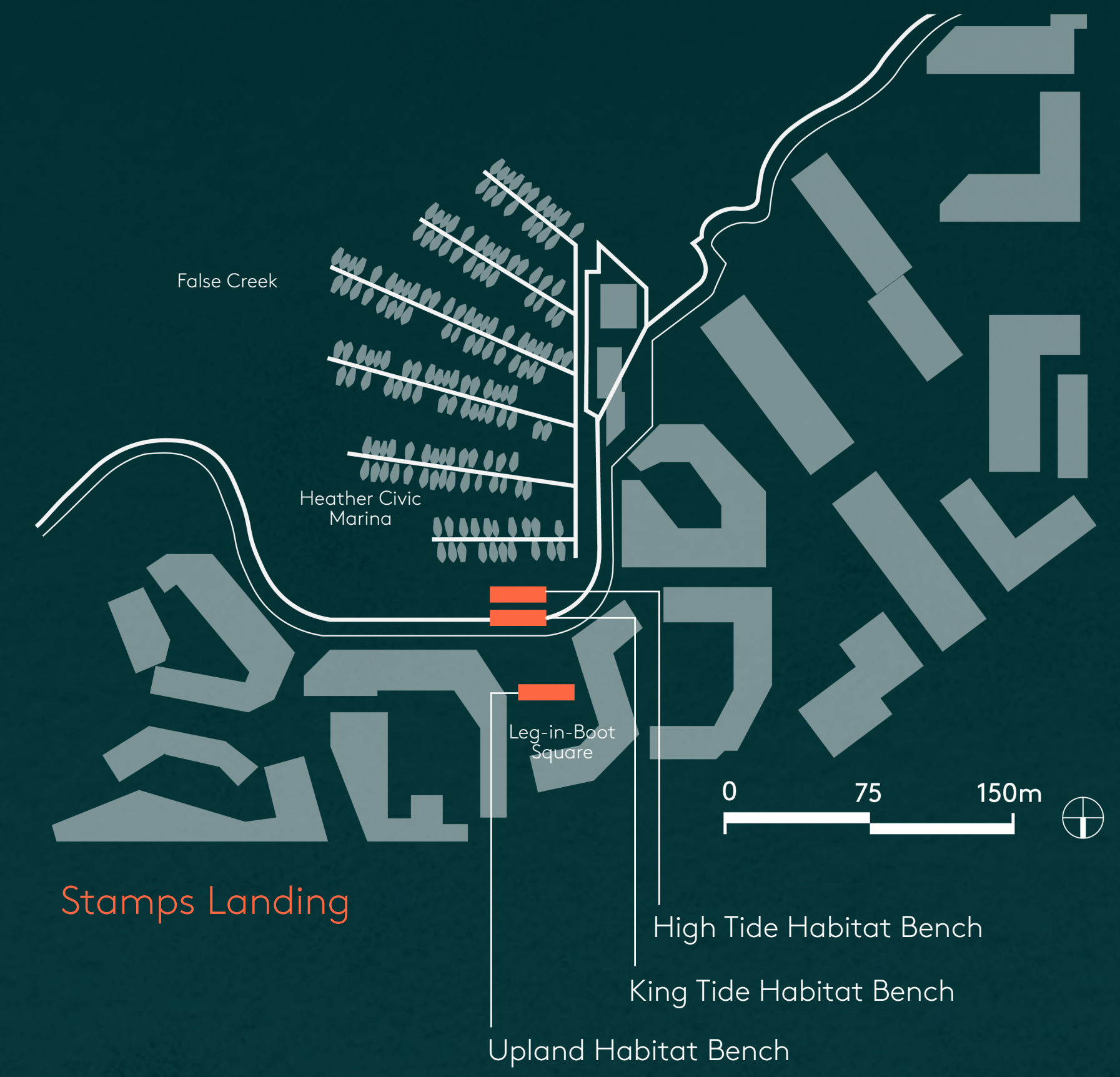


Phasing & Scalability

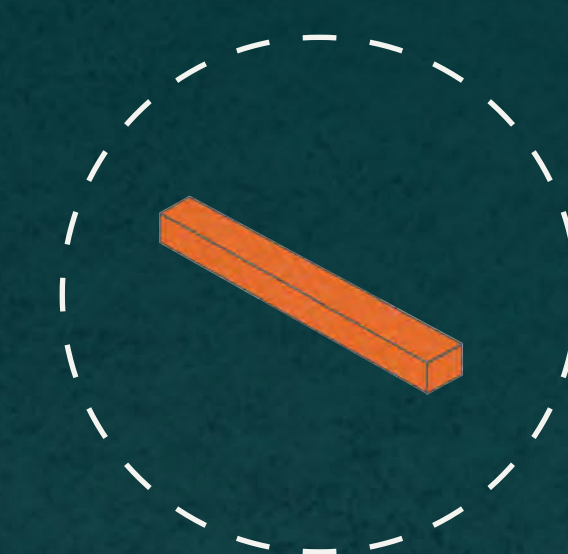
The initial phase of the Habitat Bench can be installed in three different locations at Leg-in-Boot Square in Stamps Landing. The three installations would be located in a tidally influenced portion of the existing seawall, at the top of the seawall, and in an upland location.

These three installations provide an opportunity to monitor how and at what rate these elements age and to understand how community responds to and engages with these elements.

Through the monitoring and maintenance of these elements over the near-term, a determination can be made about whether this strategy is effective and scalable across False Creek. As other opportunities arise, the initial pilot project may be deconstructed and relocated to demonstrate the adaptive capacity as well as it's future function as habitat structure.



Acknowledge



Phase 1

The Habitat Bench creates a small-scale interim shoreline barrier, and provides protection for the near-term while long-term strategies for the adjacent land and buildings are considered. This interim strategy protects these areas from intermittent flood events, before development retreats to upland areas in the future.

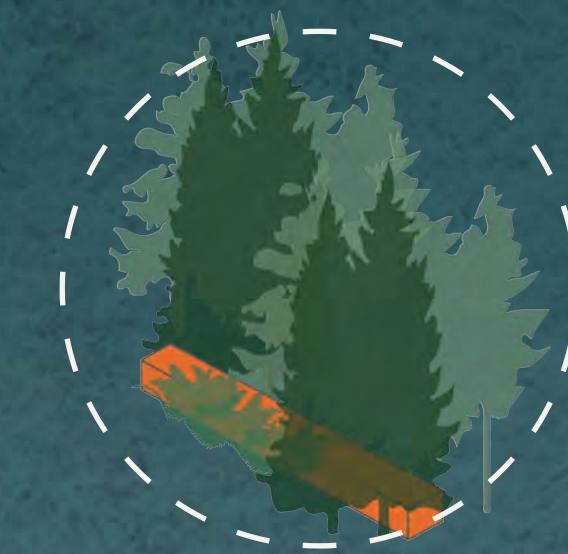
Host



Phase 2

The second design phase investigates ways to engage the public and integrate multiple benefits into the flood barriers along the seawall. There are a range of opportunities for using this element as a canvas for all kinds of activity and expression including sharing Musqueam, Squamish, and Tsleil-Waututh stories and art alongside spaces for rest, play, and habitation by plants, animals, and insects.

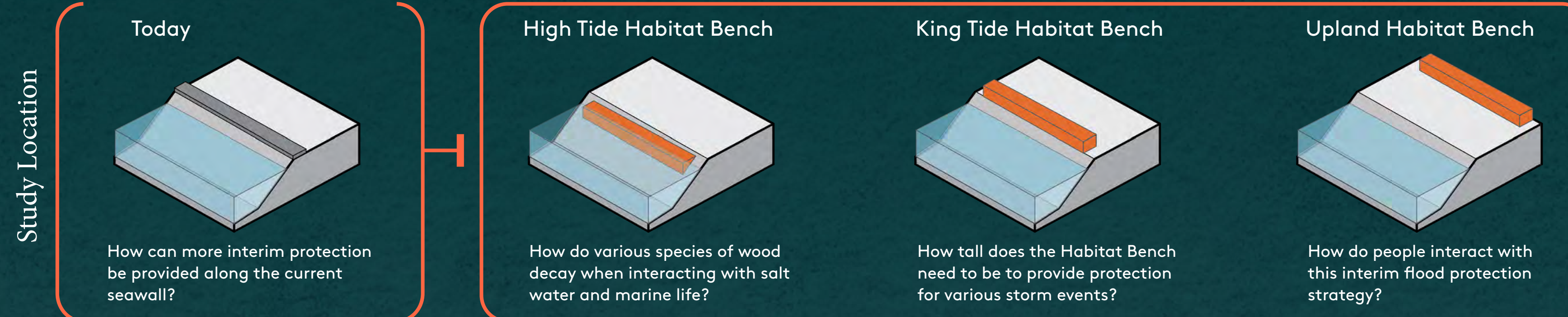
Restore



Phase 3

After the Habitat Bench is no longer needed for flood protection along the seawall or the individual sections need to be replaced, the timber pieces can be relocated and integrated into habitats that have been reintroduced to the shoreline. The wood will provide habitat structure, nutrients, spaces for life to seed, and support native species in the future.

Near-Term Research & Monitoring



Anticipated Research Topics:

- Waterproofing options
- Scalability and connectivity for holistic flood protection
- Along shore water quality monitoring
- Marine life recruitment on shelf
- Decomposition of Habitat Bench materials
- Public outreach, education, and engagement studies

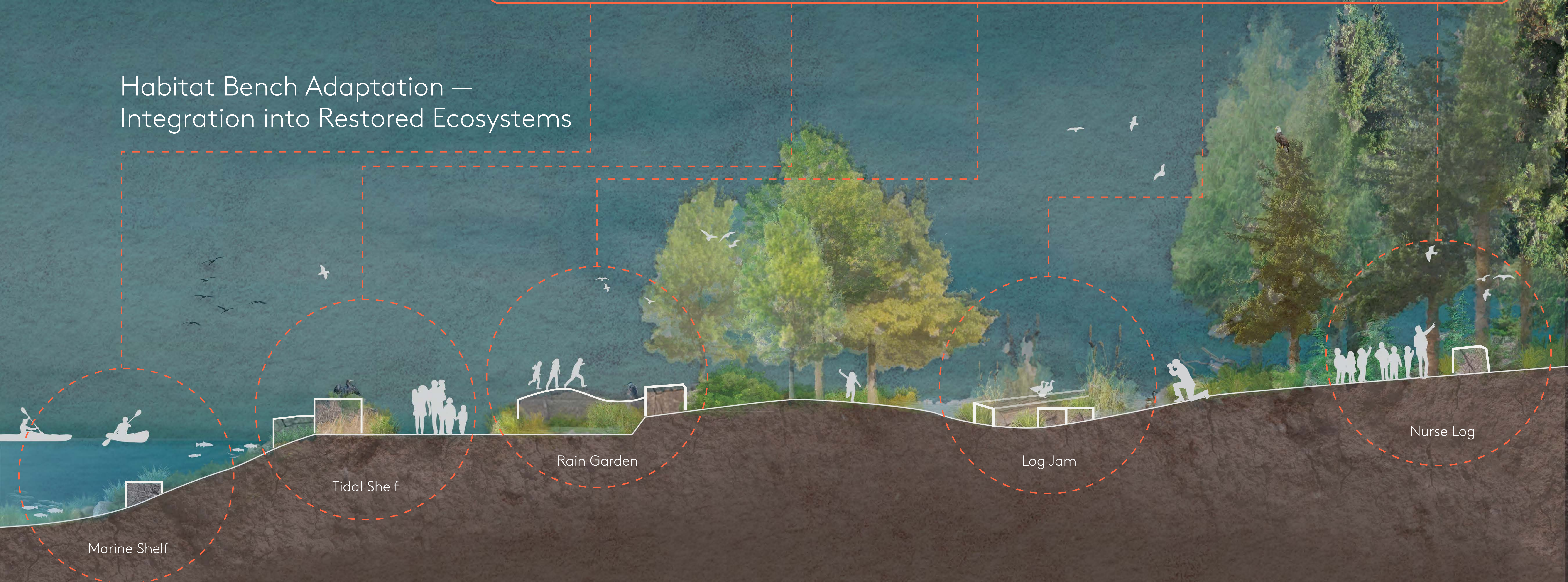
Form Options



Long-Term Adapted Habitat Functions



Habitat Bench Adaptation — Integration into Restored Ecosystems





Forest Berm

Overview

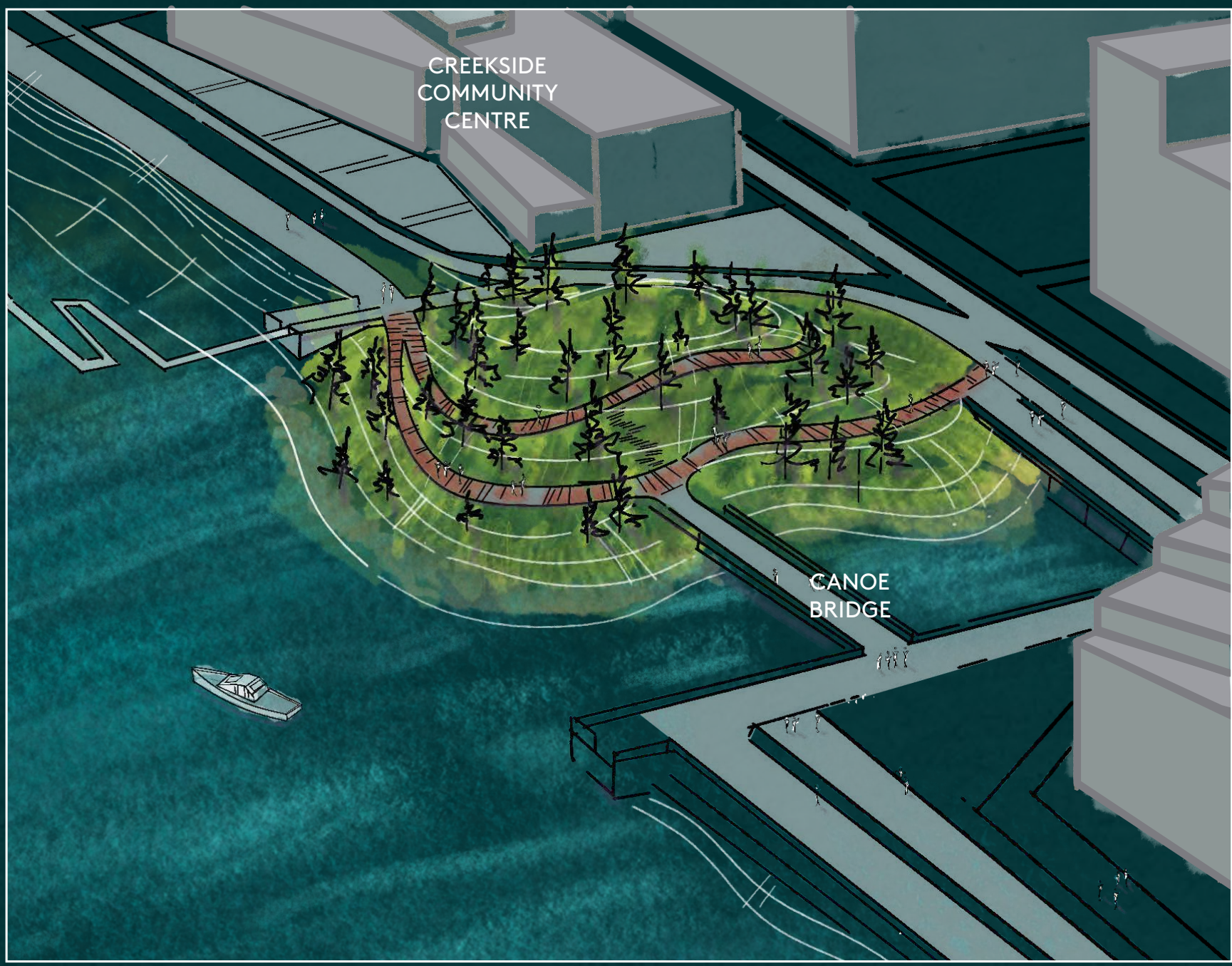
The Forest Berm is both a pilot project as well as a first step investment in working toward the long-term vision for Olympic Village. Flood risk at Olympic Village is primarily caused by a few isolated points of entry along the shoreline. The long-term strategy for mitigating flood risk is to install the Forest Berm landscape type in those areas to cut off those points of sea level rise entry.

By investing early in these Forest Berms, the vegetation and habitats are able to grow and naturally change over time, offering multiple benefits beyond flood protection.

The pilot project is an intervention that demonstrates the short and long-term vision of climate adaption at Olympic Village. The Forest Berm provides the anchor for achieving the elevations needed to recreate a tidal mudflat, while establishing an upland forest typology. It is critical that this work begin in the near-term. This is a long-term generational investment that relies on understanding how this type of ecosystem can thrive in an

urban environment with additional pressures of contaminated soils, salt water intrusion, disconnected groundwater systems, and the extreme precipitation and temperature swings associated with a changing climate.

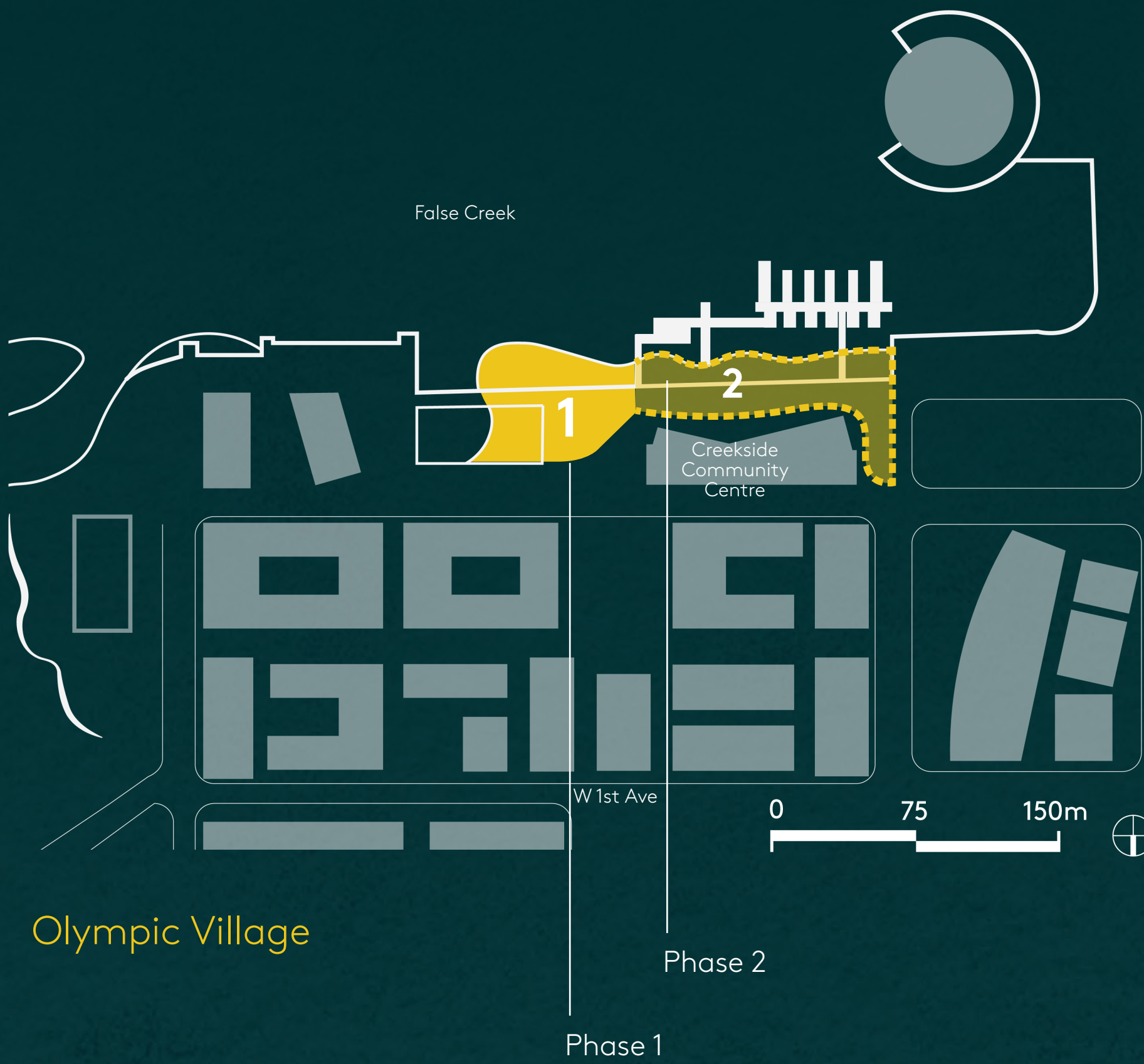
The Forest Berm can serve as a research plot for a variety of studies and will require adaptive management and iterative experimentation to find the right balance between human intervention and natural ecosystem function. Central to this idea is the co-management of this space with Musqueam, Squamish, and Tsleil-Waututh Nations. This landscape can be developed as a successional forest, with a primary objective being to integrate more Western Red Cedar trees along the shoreline of False Creek. This project can further the understanding of how this species, with such significant cultural value to the Host Nations, can be a part of the long term vision for a healthy False Creek.



Phasing & Scalability

The initial phase of the Forest Berm can be installed west of the Creekside Community Recreation Centre. Replacing much of the largely impervious plaza and a portion of the hardened seawall, this natural landscape typology could be a new and unique experience for people in Olympic Village.

This pilot project can be scaled up or down based on the implementation time horizon, level of investment, or certainty around environmental remediation requirements. Based on the initial investigations into the feasibility, this project may be scaled down to a demonstration garden, showing how a successional landscape can be established in an urban environment, or it may be scaled up to remediate contaminated soils, excavate below the existing surface, and establish a landscape that is meant to last many generations.



Acknowledge



Host



Restore



Successional Forest Planting

Phase 1

The first stage of this successional forest planting is to plant a fast growing native deciduous forest of Alder and Willow species to add nutrients to the soil and create a canopy of shade for coniferous seedlings to establish.

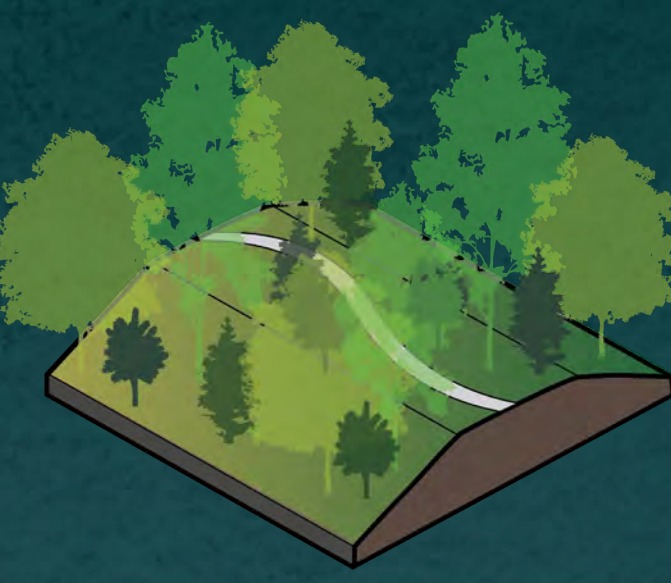


Native Alder Forest Plant Guild

Red Alder, *Alnus rubra*
Sitka Willow, *Salix sitchensis*
Hooker Willow, *Salix hookeriana*
Red Huckleberry, *Vaccinium parvifolium*
Salmonberry, *Rubus spectabilis*
Red Elderberry, *Sambucus racemosa*
Saskatoon Serviceberry, *Amelanchier alnifolia*
Red-tailed Hawk, *Buteo jamaicensis*
Woody Debris

Phase 2

Once the deciduous forest has established, the shady understory is a healthy ecosystem to plant native conifer seedlings within. These trees need shade, water, and nutrient-rich soil to establish a healthy grove. Seeds or saplings for these species may be sourced from southern latitudes in order to introduce a more resilient genetic strain, adapted to warmer and drier climates.

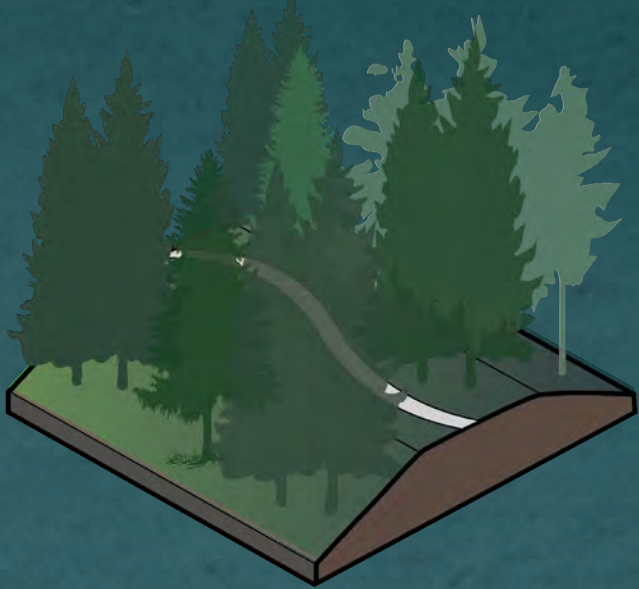


Native Forest Establishment Plant Guild

Western Red Cedar, *Thuja plicata*
Yellow Cedar, *Callitropsis nootkatensis*
Sitka Spruce, *Picea sitchensis*
Western Hemlock, *Tsuga heterophylla*
Grand Fir, *Abies grandis*
Douglas Fir, *Pseudotsuga menziesii*
Yellow Warbler, *Setophaga petechia*
Nutrient-Rich Soil

Phase 3

While the native conifer forest is growing, stewarding an understory is just as important as supporting the tree grove. This will create an important ecosystem where native plants and animals can flourish and people can learn and be immersed. Working with a local ethnobotanist throughout this entire process to observe and monitor the health of the Forest Berm is essential to the whole process and adapting to a changing climate.



Forest Understory Plant Guild

Western Swordfern, *Polystichum munitum*
Low Oregon Grape, *Mahonia nervosa*
Bracken Fern, *Pteridium aquilinum*
Inside-Out Flower, *Vancouveria hexandra*
Evergreen Huckleberry, *Vaccinium ovatum*
Salal, *Gaultheria shallon*
Hairy Woodpecker, *Leucanotopicus villosus*
Mycellium Fungus Network

Research Topics

Musqueam, Squamish, and Tsleil-Waututh Knowledge

- Exploration with the Host Nations to develop ways to share indigenous values and knowledge through a holistic approach
- Work with an ethnobotanist
 - Interpretation signage
 - Plant knowledge, design and harvest
 - Stewardship models & Co-management
 - Gathering and programmatic elements
 - Language and naming

Climate Adaptation

- Research to understand the relationship between site specific conditions, the impact of past urbanization, and future impacts of climate change
- Study of adaptive seed migration and assisted plant migration
 - Groundwater and surface water relationships influencing the plant establishment and longevity
 - Potential for phytoremediation
 - Natural migration potential of species as water levels rise
 - Carbon sequestration potential
 - Plant community resiliency and natural adaptive capacity

Anticipated Research Outcomes

- Maintain and grow connection between cultural practice and access to meaningful plant resources
- Build two-eyed seeing into standard practice
- Planting strategies for effective conifer establishment in urban environments
- Monitoring habitat creation & animal recruitment
- Beneficial Soil and Water Quality outcomes
- Understand soil types and seismic impacts

Forest Berm Succession — Co-Managed Urban Ecosystem

