

Sea2City

DESIGN CHALLENGE



Project Report
November 2022

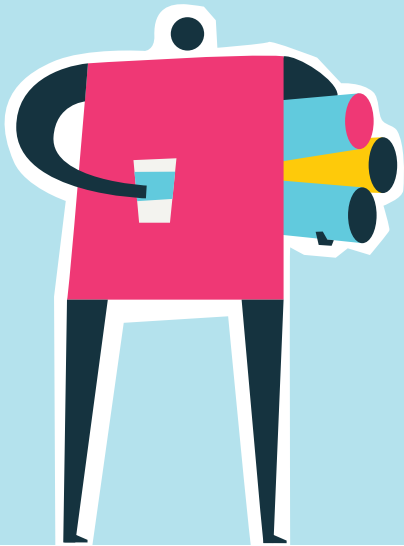
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Flanked to the north by Burrard Inlet, to the west by the Salish Sea, and to the south by the north arm of the Fraser River, Vancouver has always been a coastal community defined by its proximity to the ocean, river, and mountains. Vancouver is situated on the unceded traditional homelands of x̱məθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and səliłwətał (Tsleil-Waututh). The area currently known as False Creek is of significant meaning to the local First Nations who stewarded the land since time immemorial.



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Welcome to the story of the Sea2City Design Challenge.

It is a story of how an innovative design project came to life along the shores of False Creek.

It is a story of how the project grew and changed with the gifts of the people who helped it become something special.

It is a story of a new Vision for False Creek. A vision that acknowledges our rising seas, hosts water in a good way, restores the health of False Creek, and rebuilds our connections to the Salish Sea.

It is a story of a process built on restoring relationships with the Host Nations who have stewarded the lands and waters of False Creek from time immemorial.

It is a story of a two-eyed seeing approach to coastal adaptation that integrates Host Nations' ways of knowing alongside western science, and the teams professional experience.

It is a story full of spirit that shows the value and importance of involving Host Nations whenever we plan on these lands and waters.

It is a story that belongs to everyone, but where we can see and recognize our Musqueam, Squamish, and Tsleil-Waututh relatives in it.

Let's keep telling this story as we journey together with the transformation of False Creek.

Charlene Aleck
Knowledge Keeper
Tsleil-Waututh Nation

Cory Douglas
Cultural Advisor and Designer



Executive Summary

The Sea2City Design Challenge (Sea2City) was a collaborative design challenge to rethink the future of the False Creek shoreline. The project brought together two multi-disciplinary design teams, City staff, local coastal adaptation experts, and Host Nation representatives, knowledge holders, and designers from Musqueam, Squamish, and Tsleil-Waututh over a 12-month period to reimagine key sites along Vancouver's False Creek shoreline. The teams showed how these sites can adapt to rising sea levels while accommodating urban development and fostering ecological revitalization. The work will also inform the next phase of the City's Climate Adaptation Plan and Coastal Adaptation Plan.

Sea2City was designed as a deeply collaborative initiative to demonstrate a more decolonized planning approach and to create a long-term Vision for a beloved urban waterfront that is vulnerable to sea level rise and coastal flooding. Guided community values, Indigenous knowledge values, and design principles identified through earlier engagement, Sea2City provided a collective learning and capacity building opportunity for the City, project partners, and design teams to:

- Increase public awareness of sea level rise and coastal flooding and opportunities to address it.
- Explore and develop a coastal adaptation approach that centres reconciliation with Host Nations who have stewarded Vancouver's coastline since time immemorial.
- Investigate coastal adaptation approaches that respond to the social equity, economic, and

ecological challenges posed by sea level rise and coastal flooding.

- Examine options for sea level rise of at least two metres.

Sea2City was organized around three rounds of advisory sessions and workshops called Collaboratoriums (collaborative laboratories). The Collaboratoriums brought together the design teams, city staff, technical experts, Host Nation representatives, and youth. Alongside the Collaboratoriums, Sea2City included decolonization workshops and Host Nations' perspectives learning sessions for project participants, and a series of public outreach events. The final round of engagement included a one-day, inter-team design charrette for a large, undeveloped City-owned site on False Creek.

▼ **FIGURE:** *Sea2City project timeline*





Sea2City was intentionally organized as a challenge, rather than a competition. Coastal adaptation is a generational project that involves a range of knowledge, multi-disciplinary expertise, and collective experience. The project facilitated inter-team collaboration and embraced a reflective learning approach.

Sea2City was grounded in a commitment to decolonization. The design process involved Host Nation representatives, knowledge keepers, cultural advisors, and artists that played key roles in the design teams and larger project. Their stories, advice, and input guided the development of powerful and positive vision for False Creek and helped shift the language and approach to coastal adaptation. This reframing of our approach to coastal adaptation was one of the most significant outcomes of Sea2City.

The Vision and new approach to coastal adaptation for Vancouver guided the teams in the development of their designs and near-term pilot projects. The focus of this work was to produce concepts in which Musqueam, Squamish, and Tsleil-Waututh people can see themselves, their values, their knowledge, and their culture represented.

Sea2City Vision

The project team, advisory groups, Host Nation knowledge holders, and cultural advisors co-created a project Vision. The Vision tells the story of what False Creek can look like in a future where sea levels have risen two metres, but we have kept true to the process and vision of Sea2City.

A FALSE CREEK VISION

The Salish Sea has risen, and False Creek has transformed. The area remains a vibrant and much-loved place. The naturalized shoreline is a healthy and safe place for people to connect with the water. Restored habitat areas provide homes for many species.

Host Nations are active partners in the transformation and are visible and celebrated as the stewards of the lands and waters. Their knowledge and guidance continue to breathe life into the place.

The False Creek shoreline can accommodate higher waters. Buildings have changed and are safe during the occasional flooding that is a part of life along Vancouver's coastline.

We have now practiced coastal adaptation for generations. As Vancouver continues to learn and prepare for the future, the city celebrates the ever-changing nature of its shorelines and the communities that call them home.



Sea2City Coastal Adaptation Approach

Beyond the design concepts, Sea2City helped participants rethink their relationships with the shoreline. Host Nations' guidance helped Sea2City shift the language of coastal adaptation from a colonial perspective that separates water from the land to language that integrates water within the larger system:

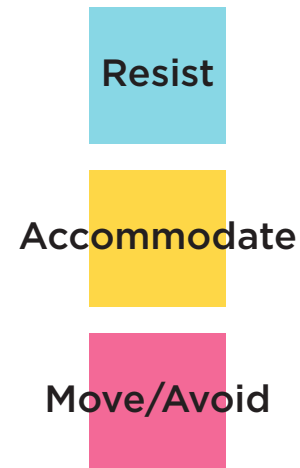
- From “Resist” to **Acknowledge** – gradually retrofit or relocate spaces to improve their resilience and better care for natural systems.
- From “Accommodate” to **Host** – welcome and steward water, nature, and culture, including human uses that are flexible, adaptable, and leave a light-touch, and infrastructure that works with nature.
- From “Move/Avoid” to **Restore** – revitalize the shoreline to restore natural ecosystems, functions, and features, including improved flood protection for upland communities.

The illustration reflects the embedded Host Nation values in the new approach, but also their holistic and interlinked structure. The more resilient, layered approach incorporates components of acknowledge, host, and restore with each application, with certain elements being emphasized depending on the site or phase of work.

As our understanding about adaptation evolves over time, we will collaborate with Musqueam, Squamish and Tsleil-Waututh as appropriate to explore opportunities to reflect the hən̓q̓əmi̓n̓əm̓ and Skwxwú7mesh Sníchim languages in adaptation language and concepts.

▼ **FIGURE:** Sea2City's shift in the language of adaptation

CONVENTIONAL APPROACH



NEW APPROACH



Sea2City Coastal Adaptation Commitments

The larger Sea2City team developed a set of coastal adaptation commitments that they recommend the City of Vancouver formally endorse and adopt to reinforce the new approach and help guide future work in False Creek and other coastal areas.

Coastal adaptation in the City of Vancouver:

- *Is grounded in respect for the waters, land, and each other.*
- *Meaningfully involves Host Nations in planning and implementation and ensures that Host Nation knowledge holders continue to provide guidance and leadership.*
- *Embraces living with water and builds kinship with the dynamic conditions of water, land, and the species that call them home.*
- *Is coordinated across and within departments and agencies at the City of Vancouver (Planning, Sustainability, Engineering, Transportation, Real Estate and Facilities Management, Parks) in recognition of the cross-cutting challenges posed by sea level rise.*
- *Is informed by and enriched through partnerships with academic institutions, utility and asset operators, and the private sector.*
- *Recognizes that human systems can fail, and that working with nature is often the best long-term approach.*



Sea2City – Lessons Learned and Recommendations

The following is a summary of lessons learned and recommendations developed by the project team, including design teams, project consultants, advisory groups, and City staff based on Sea2City outcomes. They are intended to ensure the valuable learning from the Sea2City Design Challenge is carried forward into future coastal adaptation planning and implementation and to help maintain the positive momentum Sea2City helped generate.

LESSON LEARNED

✓ **Host Nations involvement is foundational**

The involvement and guidance of Host Nations representatives, leadership, participants, and cultural advisors in Sea2City shaped and guided outcomes and supported an open, reflective, and collaborative work environment that is reflected in project outcomes.

✓ **Be bold and embrace uncertainty**

As climate change accelerates, so are the impacts of the hazards it is generating. For coastal adaptation, the directive is clear – plan for two metres of sea level rise and be prepared to adjust upwards and act more quickly, if necessary. Planning decisions made today must consider how climate change and sea level rise will impact coastal development in both the near- and longer-term.

✓ **Collaborate and mainstream**

Effective coastal adaptation demands a deeply collaborative response. Sea2City engaged a broad range of voices, skills, and experience in an open and reflective design competition; their collective input helped shape the outcomes. Moving forward, coastal adaptation must involve the same broad section of collaborators, while implementation must be mainstreamed across City departments, programs, policies, and plans.

✓ **Adaptation demands flexibility**

There is no “playbook” for urban coastal adaptation or decolonizing the conventional planning processes used with Vancouver’s shoreline. As Sea2City advanced, learning and self-reflection resulted in changes to both the project process and final deliverables. Such open, safe, and adaptive process should be encouraged in future coastal adaptation projects.

RECOMMENDATIONS

The following recommendations are organized in rough order of priority based on feedback from project partners and collaborators.



Apply new approach and commitments to future coastal adaptation planning

Future coastal planning work should adopt new adaptation language and the shift in thinking and approach it entails.

- **Acknowledge:** gradually retrofit or relocate spaces to improve their resilience and better care for natural systems.
- **Host:** welcome and steward water, nature, and culture, including human uses that are flexible, adaptable, and leave a light-touch, and infrastructure that works with nature.
- **Restore:** revitalize the shoreline to restore natural ecosystems, functions, and features, including improved flood protection for upland communities.

The Sea2City team developed a set of supporting coastal adaptation commitments the City of Vancouver should adopt to reinforce the new coastal adaptation approach and to help guide future work.

Coastal adaptation in the City of Vancouver:

- *Is grounded in respect for the waters, land, and each other.*
- *Meaningfully involves Host Nations in planning and implementation and ensures that Host Nation knowledge holders continue to provide guidance and leadership.*
- *Embraces living with water and builds kinship with the dynamic conditions of water and land and the species and ecosystems that call them home.*
- *Is coordinated across and within departments and agencies at the City of Vancouver (Planning, Sustainability, Engineering, Transportation, Real Estate and Facilities Management, Parks) in recognition of the cross-cutting challenges posed by sea level rise.*

- *Is informed by and enriched through partnerships with academic institutions, utility and asset operators, and the private sector.*
- *Recognizes that human systems can fail, and that working with nature is often the best long-term approach.*



Engage Host Nations and share Sea2City learning and outcomes

Coordinate sharing of information and materials like the new adaptation approach, coastal planning commitments, and core recommendations with Host Nations staff, Councils, and communities as appropriate. Presentations could also be organized with Host Nations' development corporations (Nch'ka' Development Corporation, Musqueam Capital Corporation, Tsleil-Waututh Economic Development Department, and joint economic development organizations (MST Development Corporation) with ongoing or proposed development in or near the coastal floodplain. The presentations can be for information only, but the opportunity for a more formal endorsement from Musqueam – Squamish – Tsleil-Waututh and/or individual Host Nations could also be explored.



Establish a Coastal Collaborative Working Group to support future work, including implementation of pilot projects in False Creek

An interdepartmental working group with City staff who participated in Sea2City (City Advisory Team) should be established to maintain the learning and collaboration from Sea2City and support pilot projects. The Working Group would meet to support future planning and implementation projects (see Recommendations 3, 5, 7) with participation from Sea2City Technical Advisory Group participants, including asset owners/operators (Metro Vancouver, BC

Hydro), non-governmental participants (BC Stewardship Centre, UBC Coastal Adaptation Lab), and private sector participants where practical and feasible. Host Nation participation in these Working Group sessions should be actively pursued.

As a part of this recommendation the City of Vancouver could host or work with a partner(s) to host an annual symposium or forum to bring together external partners, potential collaborators, and practitioners working in the coastal adaptation field. A regular forum would create a space and provide a venue for sharing updates on coastal adaptation initiatives (research, policies, programs, pilots, funding) both in the City and the larger region. Building on the valuable learning that was generated through Sea2City Collaboratoriums, an annual forum would provide an opportunity would bring together Working Group members along with allied professional organizations (Planning Institute of BC, BC Society of Landscape Architects, Engineers and Geoscientists BC, etc.), provincial and federal government staff, non-governmental and academic institutes and organizations (Pacific Institute of Climate Solutions, West Coast Environmental Law, SFU Act, ICLEI, etc.), relevant business groups (Urban Development Institute, Vancouver Economic), and Host Nations to discuss current coastal adaptation initiatives and share learning and lessons from them. The forum could also bring together other coastal municipalities and First Nations in BC along with similar governments and organizations from the US Pacific Northwest. Such a learning forum or symposium would help establish Vancouver as a centre of learning for urban coastal adaptation.

Apply relevant UNDRIP Strategy actions to coastal adaptation planning

Vancouver adopted the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) strategy in 2022. There are several strategy actions in the UNDRIP Strategy

Report that Sea2City implementation would support and that should be applied to future coastal adaptation planning at the City. These include Actions 3, 1.6a, 1.6e, 1.6f, 1.8a, 1.8b, 1.8d, 1.11, 1.12, 2.7, 3.10, 4.3, 4.9, 4.10, and 4.11.

Conduct additional feasibility assessments on Sea2City pilot projects

Sea2City design teams identified six pilot projects. Recognizing that the City has limited capacity to undertake all six, additional screening and feasibility analysis should be carried out to prioritize the top one or two projects. Screening criteria would need to be developed for the initial review (e.g., Sea2City and Coastal Adaptation Plan objectives met; project value in addressing and mitigating current coastal flood risk; learning value i.e., applicability of pilot for other potential projects in False Creek and coastal areas in Vancouver]; cost; public amenity value; educational; and awareness building opportunities). Following this screening and prioritization, additional feasibility analyses; costing, and technical analysis work would be required prior to pilot project implementation. As noted in Recommendation 2, the Coastal Collaborative Working Group could be harnessed to support this work.

SEFC 1A (East of Cambie) Business Case

The SEFC 1A (East of Cambie) site presents an opportunity to put the Sea2City Vision and learnings into practice. As an undeveloped shoreline site owned by the city, East of Cambie can serve as a testbed and example of how to build coastal resilience by following a values-based, decolonized, and whole-systems approach. As a first step, a business case for site development should be developed to assess basic development options for the site. Using a value-based, structured decision support process developed and used for Sea2City Collaboratorium II, the business case would explore how different development scenario and adaptation options perform on financial, technical, community, and Indigenous values criteria. Options to be explored could include current

SEFC 1A Official Development Plan concept and the two concepts produced during the Sea2City East of Cambie Design Charrette, both of which imagined different development intensities for the site.

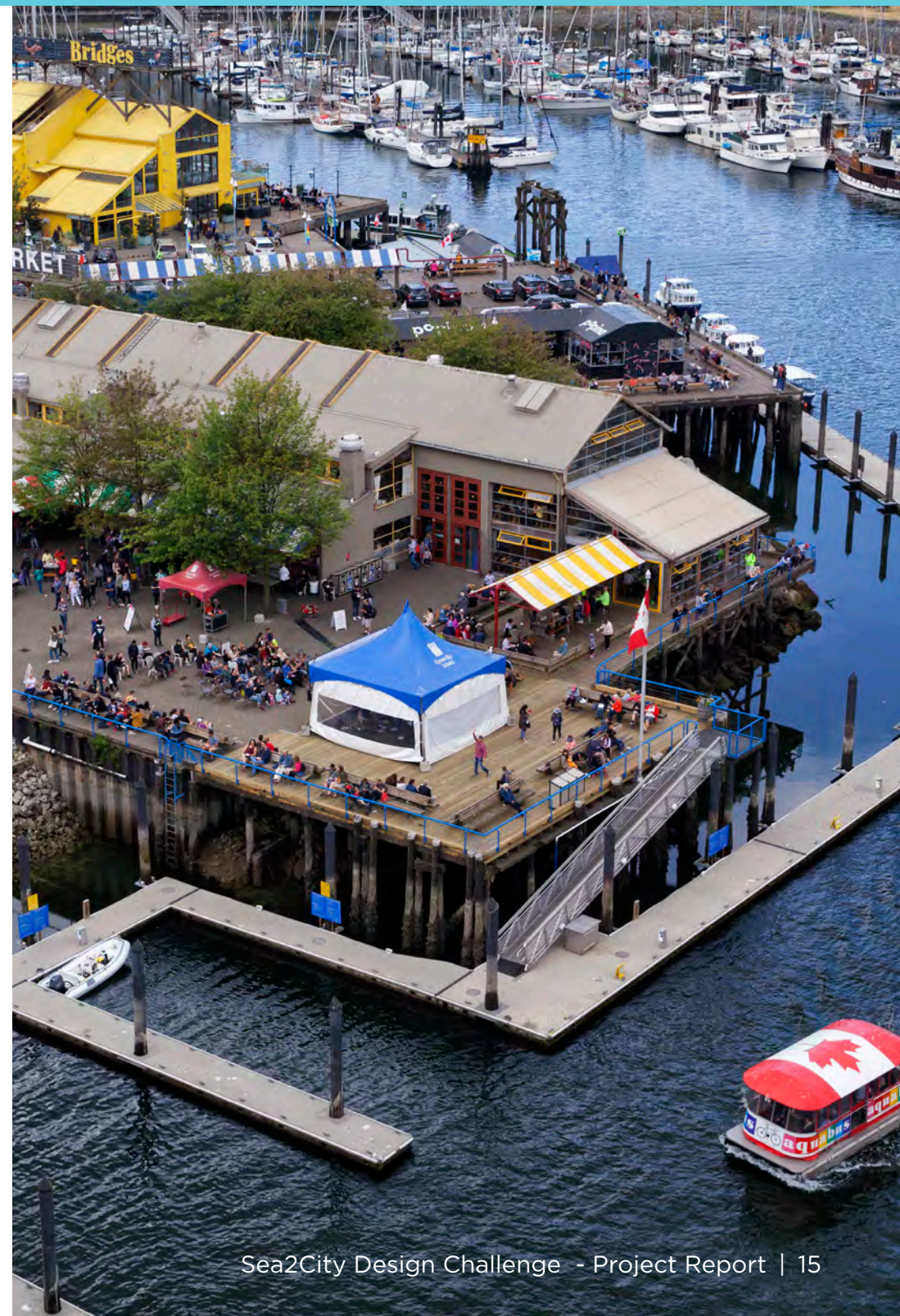
★ **Continue Granville Island collaboration**

As one of the City's most valued places and one of the most at-risk sites in False Creek, Granville Island is a critical partner in ongoing adaptation and resilience work in False Creek. With its unique operating structure and ownership, there are opportunities to continue building on the work carried out through Sea2City and to engage the federal government more directly in adaptation work in False Creek.

The City of Vancouver engaged Granville Island through Sea2City, organizing a preliminary vulnerability assessment for major tenants and the production of a Flood Resilience Guidebook for tenants that outlines a range of actions businesses can take to improve their flood resilience. A Resilience Roadmap was also produced for Granville Island that identified actions (policies, programs, projects) CMHC could undertake over the shorter-term to continue building their adaptive capacity and flood resilience. Actions that Granville Island may pursue would both benefit the City of Vancouver and benefit from their involvement.

★ **Update technical guidelines**

Design Teams, Technical Advisory Group participants, and City Advisory Team members all noted the need for Vancouver to update technical guidelines for sea level rise. The City's guiding Coastal Flood Risk Assessment could be updated to reflect new data and guidance that has been produced in the 10-years since the mapping work and modelling work was completed. The Coastal Flood Risk Assessment





planning framework and risk tolerances could also be updated. Other potential technical gaps and needs include a groundwater contamination study for False Creek and Host Nation archeological investigations.

★ **Establish a Youth Climate Resilience Committee**

Climate change disproportionately impact youth. Their place at the table could be supported with the creation of a Youth Climate Resilience Committee as one of Vancouver's standing council committees. As part of this committee, incentives and other opportunities should be leveraged to support the participation of Indigenous youth. The City of Vancouver partnered with CityHive to establish the Youth Adaptation Lab for Sea2City. The cohort of youth participants were active participants in Sea2City and developed, amongst other projects, a Youth Manifesto on climate change and sea level rise. The call to action was resolute in youth wanting to be at the table in supporting Vancouver climate emergency actions and related planning initiatives. A Youth Climate Resilience Committee could contribute to adaptation and mitigation actions in a myriad of ways but could also support many of the recommendations outlined this report.

★ **Engage False Creek / Sea2City collaborators**

Potential pilot project supporters, collaborators, and partners in the False Creek floodplain should be followed up with to present Sea2City outcomes and explore future collaboration opportunities. These groups include Vancity, who were engaged early in the Sea2City process to introduce the project. Vancity's head office is in the False Creek Floodplain close to the East Basin shoreline. As a credit union committed to climate action, and supporting their local community, Vancity is an apt potential pilot partner. Other potential collaborators include Science World at Telus World of Science, which is also located in the False Creek Floodplain.



Present learning to professional associations and organizations

Working with City of Vancouver Sea2City project staff and Technical Advisory Group members, project presentations could be organized with relevant professional associations, including, BC Society of Landscape Architects, Planning Institute of BC, Engineers and Geoscientists BC, Architectural Institute of BC, and the Association of Professional Biologists BC. Many of these groups maintain a climate action sub-committee or equivalent who could support organization of seminar or learning event. Other associations, including the Urban Development Institute (UDI) and Urban Land Institute (ULI) should be reached out to organize a learning event. Opportunities for more formal endorsement of Sea2City's new adaptation approach and supporting principles at board level of these organizations should also be explored.

In addition to these recommendations, the design teams made general recommendations on advancing the gradual and long-term realization of the False Creek Vision, and more specific and granular recommendations to support implementation of pilot projects. These recommendations are captured in the final reports provided in the Technical Appendices (Appendix B: North Shore Collective Materials; Appendix C: Mithun + One Materials).

Some recommendations of note include:

- Review and update 2018 False Creek Coastal Adaptation Plan to include the new adaptation approach, Vision, principles, and to centre Host Nation knowledge from Sea2City (North Shore Collective).
- Create specific False Creek design strategies for flood-adaptive waterfronts and buildings (North Shore Collective).
- Consider a Shoreline Resilience Land Use Zone or special planning area (North Shore Collective).
- Coordinate planning with Broadway Plan around potential movement of density from False Creek as sea levels rise (Mithun + ONE).
- Continue targeted studies to improve system understanding around False Creek (and larger watershed) on hydrology, water quality and infrastructure (Mithun + ONE).
- Develop a co-design and co-management process with the Host Nations to address management, maintenance, and monitoring considerations of pilot projects (forest berm, habitat bench) including when, who and how harvest may occur in these landscapes; balancing human impacts and presence with ecosystem function (Mithun + ONE).

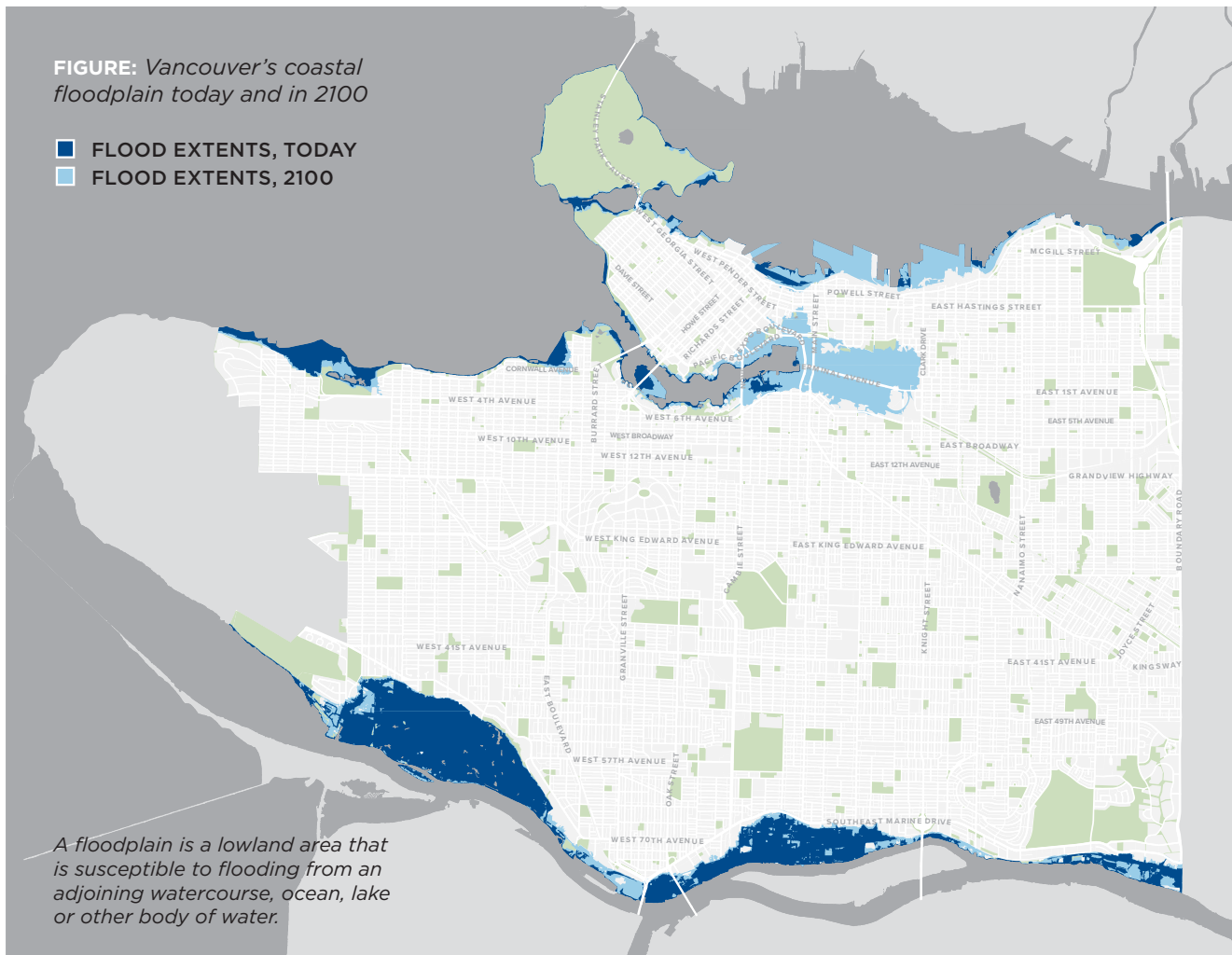
Background

Coastal Flooding and Vancouver

The City of Vancouver has always been a coastal community defined by its proximity to the ocean, river, and mountains. Vancouver recognizes the need to plan for future sea level rise and to help vulnerable shoreline neighbourhoods, communities, and businesses to become more resilient to present day and future coastal flooding.

The map shows Vancouver's coastal floodplain today and in 2100. Without flood management measures in place, areas in dark blue are vulnerable to flooding due to a major storm (1:500; 0.2 % AEP event) today, and the areas in light blue are vulnerable to flooding due to a major storm and 1 metre of sea level rise by 2100, or potentially decades earlier if global heating is not mitigated.

Over the longer term, Vancouver and other coastal areas must prepare for at least 2 metres of sea level rise, which is considered unavoidable by the United Nations International Panel on Climate Change. While current provincial guidance looks to 2200 for this to occur, there is considerable uncertainty around timing with some forecasts pushing this scenario forward by multiple decades.



False Creek

False Creek is a bustling, urban, mixed-use waterfront area that is one of Vancouver's major destinations for residents and visitors alike. The area surrounds the False Creek inlet, which flows from English Bay beneath the Burrard, Granville, and Cambie Street bridges along the southern edge of the Downtown peninsula to Science World in the east. Historically one of Vancouver's major industrial centres, the last few decades have seen False Creek transition into a social and recreational heart of Vancouver. Today, the area features a variety of higher density multi-family residences, commercial areas, and parks that are used by many.

Before colonization, False Creek extended much further east to present day Clark Drive and was a large tidal mudflat. The area featured several streams flowing down the southern slopes, and provided abundant resources for Host Nations, including some of the most productive salmon and trout runs in Vancouver.

The eastern half of False Creek filled in for industrial use in the early 1900's. For the first half of the 20th century, False Creek was one of Vancouver's principal industrial areas, with extensive rail yards, lumber mills, shipbuilding, and other industrial activity. As industrial production shifted and moved out, False Creek became the focus of major urban renewal initiatives beginning in the 1970's which have continued to this day. False Creek's industrial legacy remains with issues related to contaminated soils and other issues.

WHAT'S AT RISK

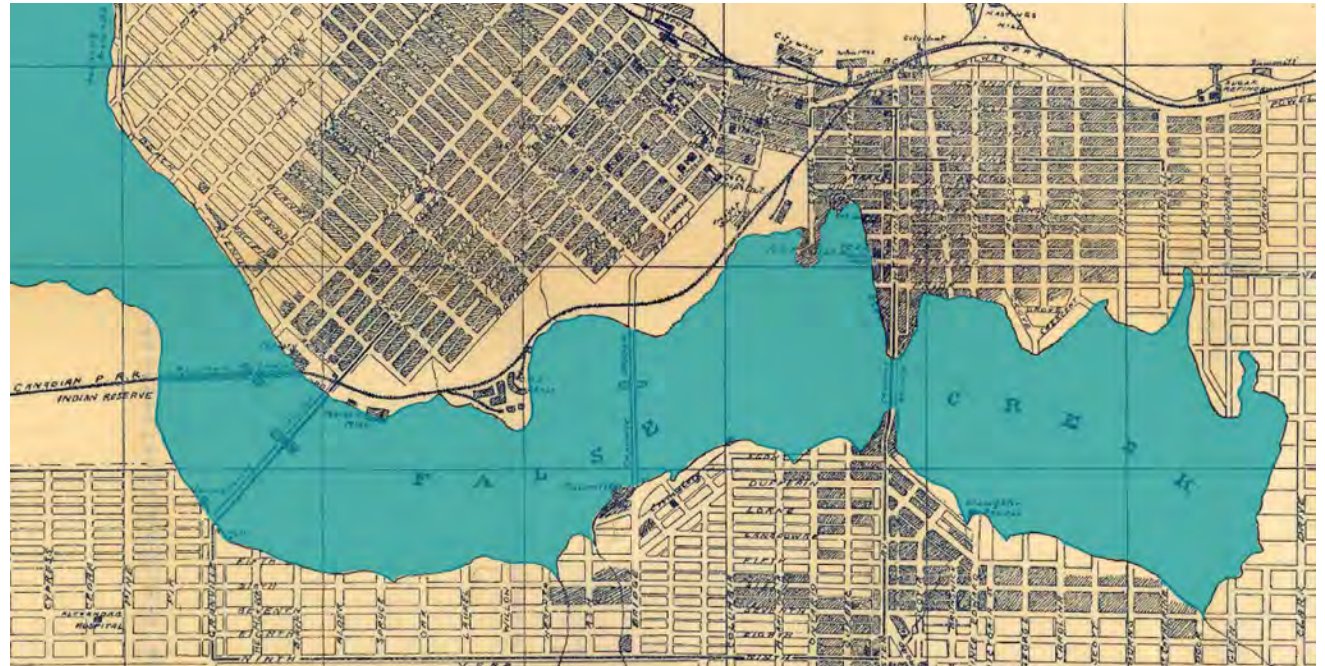
A diverse and dynamic area, the False Creek flood plain is home to several neighbourhoods, including portions of Yaletown, Chinatown, Strathcona on the north shore, and Fairview, Southeast False Creek, Olympic Village, and False Creek Flats along the south. False Creek North and South both include sizeable parcels of yet-to-be developed land. The False Creek floodplain area itself includes:

- 38,000+ residents and a range of housing
- \$19 billion in assessed property value (2019 BC Assessment data)
- 200 industrial properties
- Emergency and medical facilities
- Schools and childcare facilities
- Granville Island
- Parks, recreation, and activity centres
- Major utilities and other assets

False Creek is also home to Granville Island, which is very exposed to coastal flooding in event of a large storm today. Managed by the Canada Mortgage and Housing Corporation, the island features a mix of uses. Its Public Market, lively arts and culture, culinary scene, and many restaurants make it one of Vancouver's most popular tourist destinations. It is also the site of a community centre, commercial and office spaces, float homes, and a marina.

► **FIGURE:** Historic False Creek (top) with current creek area overlain with flood extent for False Creek with 1 metre of sea level rise and a major storm event (1:500; 0.2 % AEP event).

The figures show a historic map of False Creek in 1893. The second figure overlays the historic boundaries of False Creek on top of a current aerial photo of Vancouver. The second image overlays the projected flood extent of what is at risk of flooding without flood management measures in place in False Creek with 1 metre of sea level rise and a major storm event (1:500; 0.2 % AEP event). The figure also illustrates how closely the future flood extents align with False Creek's historic boundaries.



FALSE CREEK COASTAL ADAPTATION PLAN

Since the release of Vancouver's Climate Change Adaptation Strategy in 2012, the City has been working to understand and manage coastal flood risk. Starting in 2013, the City began modelling flood hazards and coastal flood risk in Vancouver (to the years 2100 and 2200). Early work identified community assets, infrastructure, and buildings at risk to flooding over time.

Next, a high-level assessment of flood management options for flood hazard areas within the City was conducted. This fed into the development of a sea level rise planning framework and will continue to inform public engagement and planning.

All this work informed the Coastal Adaptation Plan, a long-term planning effort to address coastal adaptation needs for the City of Vancouver. The Coastal Adaptation Plan's first output was the Coastal Adaptation Plan – Fraser River Foreshore, which was completed in 2018. This project engaged stakeholders along the Fraser River to identify community values, sought input on potential flood management options, and crafted design and planning principles to use when developing flood management options for the area.

As part of the Coastal Adaptation Plan, a similar engagement program was conducted in False Creek in 2020. The False Creek Coastal Adaptation Plan was carried out between January and December 2020. It was informed by the Fraser River project and incorporated lessons learned from that phase of work. The objectives of the False Creek project were to:

- Build awareness of sea level rise and coastal flooding risks for False Creek.
- Identify and confirm community values to help guide future work.
- Explore potential adaptation approaches to look at in more detail during the next phase of work.
- Introduce the Sea2City Design Challenge.

The project involved over 2,000 residents, business owners, and other stakeholders in a two-round engagement program. In the first round of engagement, participants reviewed and refined the set of community values that were first identified during the Fraser River Coastal Adaptation Plan in 2018. Seven high-level values were presented to community members through a series of online engagement sessions and a citywide survey. Due to the COVID-19 global pandemic, all engagement was shifted online and supported by a creative communications program that included signage in and around False Creek, a social media program, and an educational video series called Conversations in Canoes.

A second round of engagement activities focused on continuing to build awareness of sea level rise and coastal flooding risks for False Creek. The community values that were identified in the first round of engagement were reviewed and confirmed. The general coastal flooding adaptation approaches that will be the focus of future phases of the Coastal Adaptation Plan were introduced and their relevance and fit for the False Creek context were discussed. Both rounds of engagement introduced participants to the next phase of the Coastal Adaptation Plan to be undertaken by the City, the Sea2City Design Challenge.



Sea2City Design Challenge

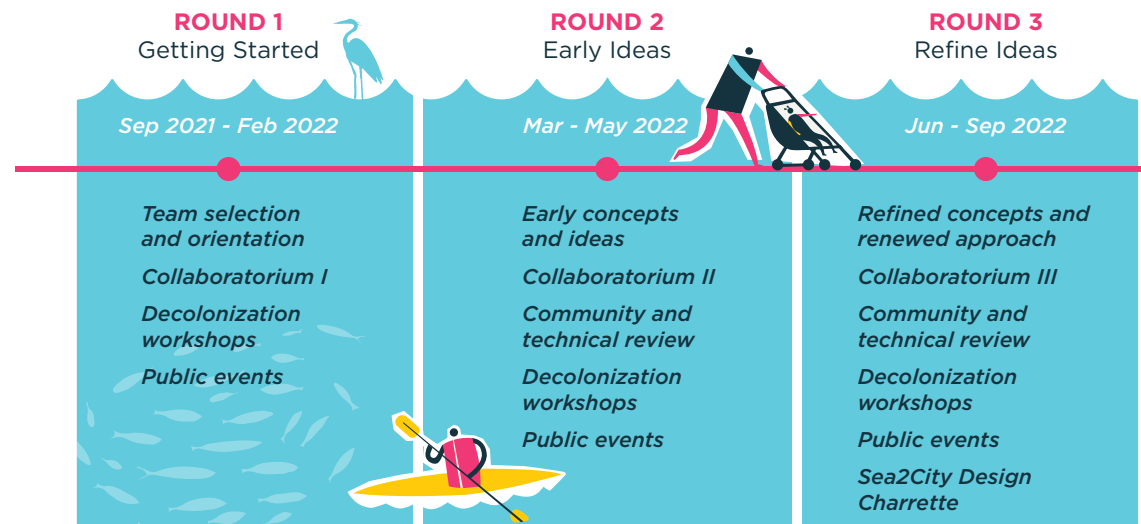
The Sea2City Design Challenge (Sea2City) was a collaborative design challenge to rethink the future of the False Creek shoreline. The project brought together two multi-disciplinary design teams, City staff, Host Nation representatives, local coastal adaptation experts, and Host Nation knowledge keepers and designers from Musqueam, Squamish, and Tsleil-Waututh over a 12-month period to reimagine key sites along Vancouver's False Creek shoreline. The teams showed how these sites can adapt to rising sea levels while accommodating urban development and fostering ecological revitalization. The work will also inform the next phase of the City's Climate Adaptation Plan and Coastal Adaptation Plan.

Sea2City was designed as a collaborative initiative to demonstrate a more decolonized planning approach and to create a long-term Vision for a beloved urban waterfront that is vulnerable to sea level rise and coastal flooding. Guided by Host Nation community values and design principles identified through earlier engagement, Sea2City provided a collective learning and capacity building opportunity for the City, project partners, and design teams to:

- Increase public awareness of sea level rise and coastal flooding and opportunities to address it
- Explore and develop a coastal adaptation approach that centres reconciliation with Host Nations who have stewarded Vancouver's coastline since time immemorial
- Investigate coastal adaptation approaches that respond to the social equity, economic, and ecological challenges posed by sea level rise and coastal flooding
- Examine options for sea level rise of at least two metres

Sea2City was organized around three rounds of advisory sessions and workshops called Collaboratoriums (collaborative laboratories). The Collaboratoriums brought together the design teams, city staff, technical experts, Host Nation representatives, Host Nation cultural advisors, and youth. Alongside the Collaboratoriums were a decolonization workshops and Host Nations perspectives learning sessions for project participants, and a series of public outreach events. The final round of engagement included a one-day, inter-team design charrette for a large, undeveloped City-owned site on False Creek.

▼ **FIGURE:** Sea2City project timeline





Sea2City was intentionally organized as a challenge, rather than a competition. Coastal adaptation is a generational project that involves a range of knowledge, multi-disciplinary expertise, and collective experience. The project facilitated inter-team collaboration and embraced a reflective and open learning-by-doing approach.

Sea2City was grounded in a commitment to decolonization. The design process involved Host Nation representatives, Host Nation knowledge keepers, cultural advisors, and artists who were an integral part of the design teams and larger project. Their stories, advice, and input guided the development of powerful and positive vision for False Creek and helped shift the language and approach to coastal adaptation. This reframing of our approach to coastal adaptation was one of most significant outcomes of Sea2City.

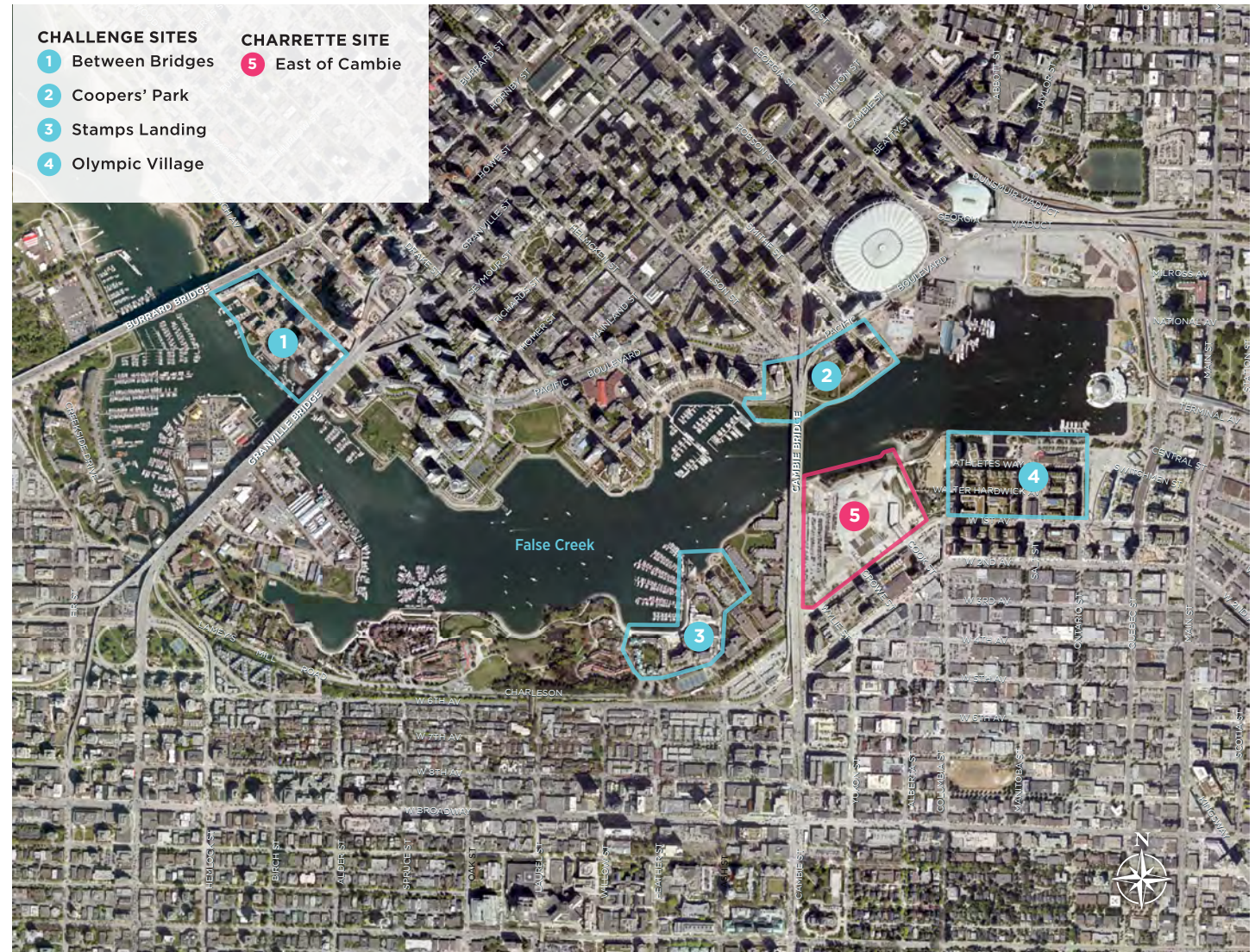
The Vision and new approach to coastal adaptation for Vancouver guided the teams in the development of their designs and near-term pilot projects. The focus of this work was to produce concepts in which Musqueam, Squamish, and Tsleil-Waututh people can see themselves, their values, their knowledge, and their culture represented.

The Vision, new approach to coastal adaptation, and the teams' designs will support the transformation of the False Creek waterfront into a place of natural abundance and restored relationships with the dynamics of land and water.

Sea2City Design Challenge Teams and Challenge Sites

There were four Sea2City challenge sites divided between sites on the north shore of False Creek and the south shore. The selected challenge sites represented the varied land use typologies found in False Creek along with a range of coastal flood management constraints and opportunities. They included high density mixed-use neighbourhoods, mixed-use local commercial areas, and valued parks and public spaces.

Two Sea2City design teams were selected after a widely circulated request for proposals attracted nine submissions from local, Canadian, and international firms. Both teams had experience working on leading edge coastal adaptation projects and studies in North America, Europe, and Asia.



▲ **FIGURE:** Sea2City Design Challenge sites

FALSE CREEK NORTH

The North Shore design team was led by:

- PWL Partnership Landscape Architects (Vancouver-based architecture firm)
- MVRDV (Rotterdam-based architecture, and urban design practice)
- Deltares (an independent knowledge institute for applied research in the field of water, coastal flooding, and climate adaptation with offices in the Netherlands and around the world).
- Modern Formline (Vancouver-based design and Indigenous cultural advising).

The team also included WestMar Advisors (local foreshore engineering), G.L. Williams & Associates Ltd. (local biologist), Happy City (socially focused planning), Modus (urban planning), and Goudappel (mobility).



1. BETWEEN BRIDGES: Between Bridges is located east of Burrard Bridge and west of Granville Bridge. The site includes the seawall, the Hornby False Creek Ferry dock for the Aqua Bus service, a private marina, high-density residential towers, and mixed-use ground floors that include commercial and office uses. The site was developed between the mid-1980s and the early 2000s. To the northwest is Sunset Beach and the Vancouver Aquatic Centre, to the northeast is Beach Avenue and recent developments including Vancouver House, and to the southeast is high-density residential development and George Wainborn Park.



2. COOPERS' PARK: Coopers' Park is located under the north end of Cambie Street Bridge. The park includes open fields, the seawall path, and a playground and basketball court beneath the bridge. The shoreline is a combination of rip rap revetments and sea walls. In the late 1990s and early 2000s, small saltwater marsh sections were developed with varying degrees of success. To the east of the site is Plaza of Nations, where a planned section of the Ribbon will present options for connection. To the north of the site is a variety of mixed-use development within the future flood extent areas, including BC Place stadium.

FALSE CREEK SOUTH

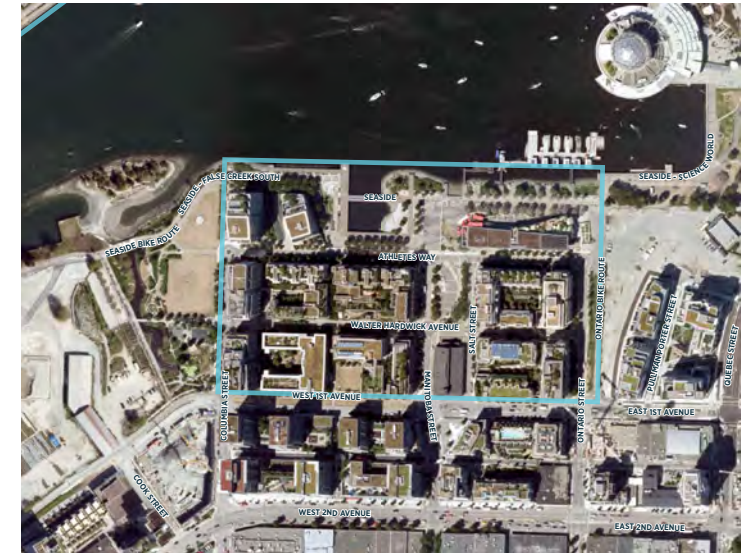
The South Shore design team was led by:

- Mithun (Seattle-based landscape architecture firm)
- One Architecture & Urbanism (ONE) (design and planning firm with offices in Amsterdam and New York)
- Modern Formline (Vancouver-based design and Indigenous cultural advising)

The team also included Moffatt & Nichol, an infrastructure advisory firm with offices in Vancouver, and Herrera Environmental Consultants, an engineering and scientific consulting firm focused on restoration, water, and sustainable development headquartered in Bellingham, WA.



3. STAMPS LANDING: Stamps Landing is a complex site located east of Charleson Park, bordered by the Cambie bridge to the east, and the Heather Civic Marina on the eastern shoreline. The site features rip rap revetment shoreline, park-space, and mixed used commercial residential development, including some City-leased lands, and several waterfront restaurants. There is a combined sewer outfall located along the western portion of site with a discharge point offshore to the north of the site. The site includes a large public marina.



4. OLYMPIC VILLAGE: Olympic Village is a large mixed-use development first developed for the 2010 Winter Olympics as the athletes' village. The area includes many high-density residential units with some rental developments and co-operative housing development, along with ground floor commercial shops and services. The area is home to Creekside Community Centre, a bustling section of the False Creek Seawall, and a marina and dock complex that supports False Creek's dragon boat community and an Aquabus/False Creek Ferries water taxi dock. To the east of the site is the East Park development project, where a planned section of the Ribbon will present options for connection, while Hinge Park demarcates the western boundary.

SEA2CITY CHARRETTE SITE

The south shore of False Creek also included the site for a joint-team, one-day design charrette that took place in the final phase of Sea2City.



5. EAST OF CAMBIE: East of Cambie is a large City-owned site located between the Cambie Street Bridge and Hinge Park. It is the last undeveloped site in Vancouver South East False Creek Official Development Plan. Officially referred to as site SEFC 1A, the site is one of the lowest elevation areas around False Creek and is exposed to significant coastal flooding hazards.

Current uses at the site include a large social enterprise urban farm operated by Sole Foods Street Farms, a City works yard, a city owned office building, and a parking facility for the Vancouver Police Department. The site hosts Hummingbird Place, a City-operated temporary modular housing facility. Undeveloped portions of the site have been used to host community events and stage parking and construction activities. The site neighbors Hinge Park, which is the only biodiversity hotspot in False Creek. The site also neighbors Olympic Village, which is a large mixed-use development first developed for the 2010 Winter Olympics.

Sea2City Vision, Approach, and Commitments

The project team, advisory groups, Host Nation knowledge holders, and cultural advisors co-created a project Vision. The Vision tells the story of what False Creek can look like in a future where sea levels have risen two metres. It sits at a moment in the future when, as expected, sea levels have risen two metres, severe weather and storms have become more intense and frequent, and extreme heat has become a regular occurrence.

The Salish Sea has risen, and False Creek has transformed. *The area remains a vibrant and much-loved place. The naturalized shoreline is a healthy and safe place for people to connect with the water. Restored habitat areas provide homes for many species.*

Host Nations are active partners in the transformation and are visible and celebrated as the stewards of the lands and waters. Indigenous knowledge and guidance continue to breathe life into the place.

The False Creek shoreline can accommodate higher waters. Buildings have changed and are safe during the occasional flooding that is a part of life along Vancouver's coastline.

We have now practiced coastal adaptation for generations. As Vancouver continues to learn and prepare for the future, the city celebrates the ever-changing nature of its shorelines and the communities that call them home.

In creating the Vision, the Sea2City project team developed a new language of coastal adaptation and supporting principles or commitments. Together, the new approach and commitments are one of Sea2City's most important outcomes and a significant project legacy.

Through learning from Host Nation perspectives, Sea2City teams came to understand that conventional adaptation language reinforces a colonial approach to flood management that sees water as separate and distinct from the land and not part of larger, interconnected, and holistic system. With this learning, new language was adopted by the Sea2City team, including Host Nation knowledge holders and cultural advisors. The approaches are not mutually exclusive and can be interwoven throughout False Creek with a foundation of Host Nation values embedded in them.

- **ACKNOWLEDGE:** spaces are retrofitted or relocated over time to improve their resilience and better care for and steward natural systems.
- **HOST:** a dynamic place where water, nature, and culture are welcomed and stewarded. Human uses are flexible, adaptable, and leave a light-touch. Infrastructure works with nature to enhance resilience.
- **RESTORE:** a revitalized and rehabilitated shoreline that restores natural functions, features, and ecosystems and includes improved flood protection for upland communities.

The illustration on the following page reflects the embedded Host Nation values in the new approach, but also their holistic and interlinked structure. The more resilient, layered approach incorporates components of acknowledge, host, and restore with each application, with certain elements being emphasized depending on the site or phase of work.

▼ **FIGURE:** *The transformation of approach, Sea2City*

CONVENTIONAL APPROACH



NEW APPROACH



With the new coastal adaptation approach, the larger Sea2City team also developed a set of coastal adaptation principles or commitments that they recommend the City of Vancouver formally endorses and adopts to reinforce the new approach and help guide future work in False Creek and other coastal areas.

Coastal adaptation in the City of Vancouver:

- *Is grounded in respect for the waters, land, and each other.*
- *Meaningfully involves Host Nations in planning and implementation and ensures that Host Nation knowledge holders continue to provide guidance and leadership.*
- *Embraces living with water and builds kinship with the dynamic conditions of water and land and the species and ecosystems that call them home.*
- *Is coordinated across and within departments and agencies at the City of Vancouver (Planning, Sustainability, Engineering, Transportation, Real Estate and Facilities Management, Parks) in recognition of the cross-cutting challenges posed by sea level rise.*
- *Is informed by and enriched through partnerships with academic institutions, utility and asset operators, and the private sector.*
- *Recognizes that human systems can fail, and that working with nature is often the best long-term approach.*

Sea2City Design Concepts and Pilot Projects

NORTH SHORE SEA2CITY CHALLENGE SITES

Re-wilding False Creek

The “North Shore Collective” team envisions the gradual transformation of the two sites to a ‘re-wilded’ urban waterfront that will help redefine Vancouver’s relationship with water and become a zone of cultural adaptation in the city that enables the evolution of an inclusive, prosperous society. The designs incorporate the natural topography of the sites and imagines a future where flood new development sits higher and closer to the boundary of the floodplain. This approach helps restore the natural shoreline to buffer new development while helping improve False Creek water quality and rainwater management. The team imagines a shoreline that creates room for False Creek to safely host more common coastal flood events in the future and expand public access to the shoreline.



Between Bridges

The design team's long-term vision for this site is a creative community and thriving ecosystem. 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.



Coopers' Park

The design team's long-term vision for this site is the "Tidal Community of False Creek" that features creative, cultural, and recreational facilities with intertidal park areas that provide a mix of ecological zones for accessible exploration. The space features 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. Flood management is achieved through setback elevations, behind the natural areas. Like Between Bridges, some intertidal habitat areas are protected to limit access with an elevated walkway. Unique features include a floating restaurant managed by Host Nations featuring Indigenous foods that have returned to False Creek and a Community Garden Tower



North Shore - Pilot Projects

The North Shore Collective proposed four pilot projects aimed at testing ideas and demonstrating practical steps that can be taken towards further development of site concepts and achieving the Sea2City Vision.

The first pilot project is a floating habitat island and walkway that could be installed along Coopers' Park. The walkway and island would test habitat modules and rewilding techniques, while providing a new way for people to experience the seawall and access False Creek. The pilot would also provide an opportunity to investigate and check the permitting, governance, and construction techniques that will be needed for longer-term adaptation projects.

The second pilot project is a Coast Salish cultural learning garden and test plot nursery. The nursery would provide a chance to put reconciliation into action by reintroducing native shoreline, upland, and aquatic plants to False Creek. The facility could also host stewardship and community learning events and programs. In collaboration with Host Nations and academic partners, studies could be run on the adaptability of species to climate change and the co-benefits they can provide.

Alongside these two pilots, the North Shore Collective also proposed a Host Nations Pavilion to be located at their Between Bridges site and a floating Paddler's Pavilion that could be developed at either of their two sites.

"Things like habitat islands are like visible, public conversations on climate change and sea level rise that also help address pollution and contaminants in False Creek"

- Collaboratorium III participant



▲ FIGURE: Floating walkway and habitat island



▲ FIGURE: Coast Salish cultural learning garden

Pilot Projects Costing

The design teams provided high level cost considerations for the development of pilot projects. These cost considerations are considered “order of magnitude” simplified assumptions and apply contingency factors of 50%. Further detailed design and costing would need to be completed for more accurate estimates.

FLOATING WALKWAY AND HABITAT ISLAND

Floating Walkway, 75m length	\$1.25m
Habitat Island, 200 sqm	\$0.35m
Soft Costs (<i>Planning, engagement, and design</i>)	\$0.5m
Total Cost, including 50% contingency	\$2.71m

COAST SALISH CULTURAL LEARNING GARDEN AND TEST PLOT NURSERY

Construction and materials, 2100 sqm	\$0.84m
Soft Costs, (<i>Planning, engagement, Host Nations consultation</i>)	\$0.28m
Total Cost, including 50% contingency	\$1.54m

Design, Planning, and Adaptive Design Considerations

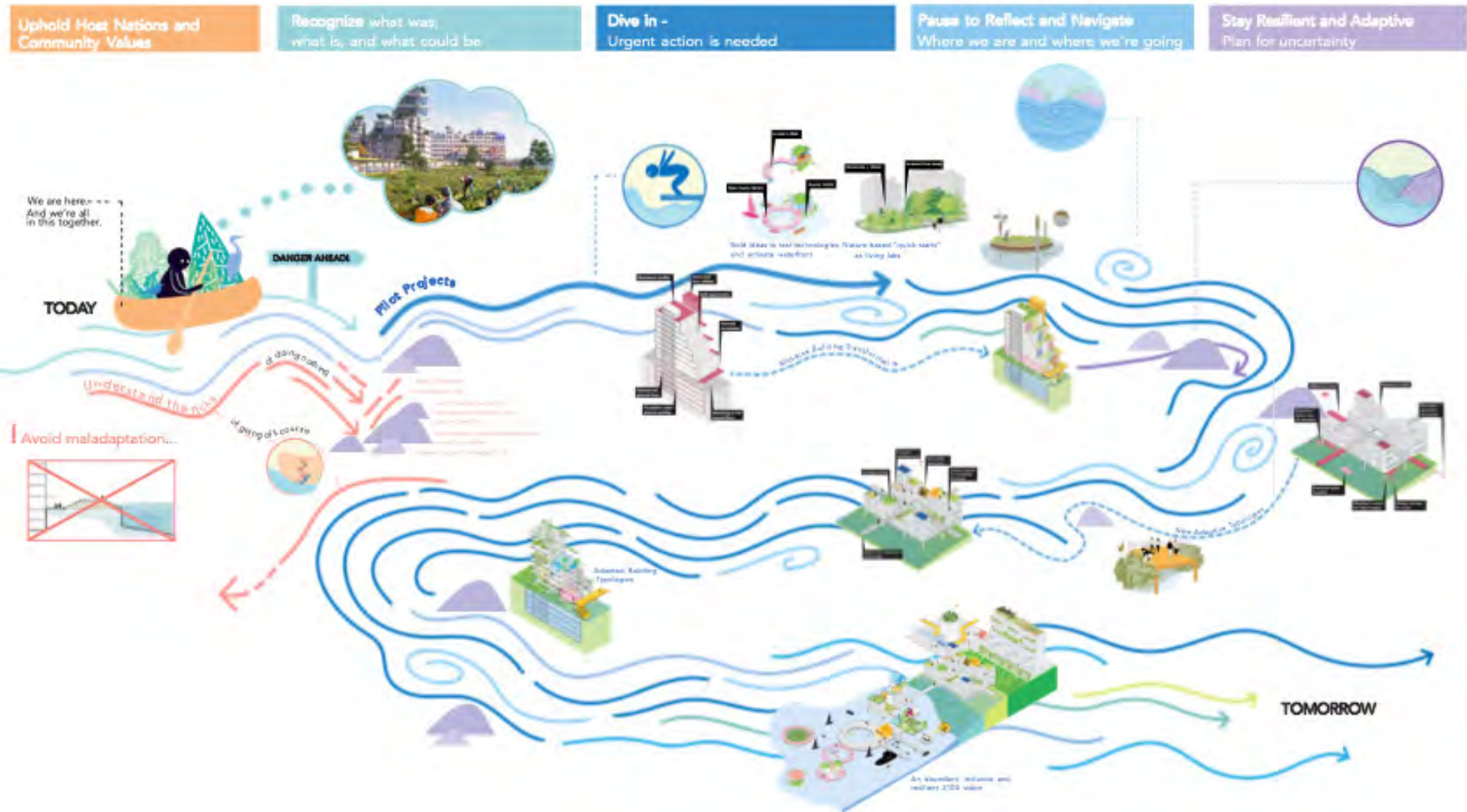
Key considerations integrated in the designs of the North Shore team included flood management (both internal drainage and sea level rise flood level), water quality and habitat issues, floating elements and opportunities, and accessibility and multi-modal mobility. The design concepts integrate and address these considerations in different ways, while highlighting them as important for work all around False Creek.

In terms of adaptive design, the North Shore team recognizes that there is uncertainty around the impacts and timing of climate change, and that part of planning for adaptation is to remain open and flexible to timelines that can change significantly as new information is included. Adapting according to shoreline zones that follow the gradient of the shoreline and focusing development above a flood construction level (FCL) of 5.6m is a major consideration for the north shoreline.

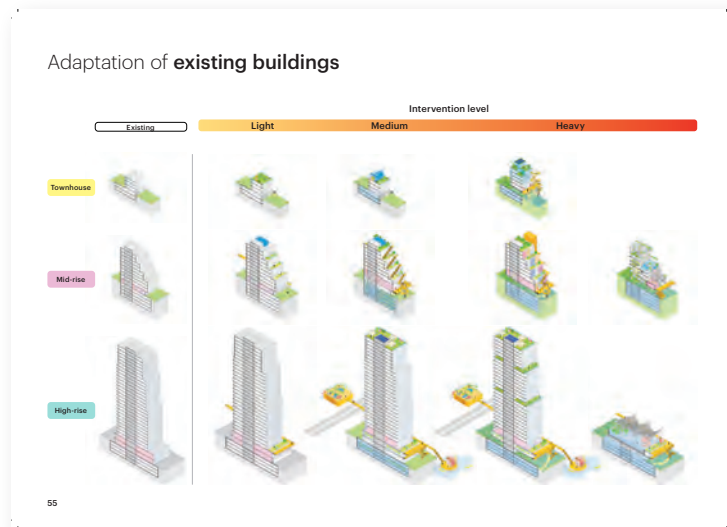


The team also presented an adaptation pathway, or phasing, that sets a series of adaptation actions along a timeline that integrates planning, engagement, collaboration, pilot projects, and construction and deconstruction projects.

▼ **FIGURE:** Adaptation Pathway presented by North Shore Collaborative at Collaboratorium II



▼ **FIGURE:** *Sea Level Rise Catalogue*



SOUTH SHORE SEA2CITY CHALLENGE SITES

Restoring the Shoreline

The south shore design team's long-term concepts for the two challenge sites were closely linked and integrated given the sites' proximity to one another. The two concepts would be developed incrementally as existing density is gradually shifted south beyond a blue-green corridor (pictured) along 1st Avenue that would provide improved flood protection for areas behind it.

The design imagines two other corridors linking and connecting the two sites. A 'Host Corridor' integrates and connects First Nations facilities (including a canoe house and cultural hub and canoe journey landing beach), interpretive elements, and cultural use landscapes and habitats. A recreational corridor continues the seawall pathway legacy and provides pedestrian and cyclist connections between the two sites along a restored

shoreline featuring salt marshes, forested berms, and intertidal habitat areas. The long-term 2100+ (or 2m sea level rise) concept is illustrated here.

Together, both concepts are envisioned as a place where Host 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 Host Nations have stewarded since time immemorial, False Creek is once again a place where they can see themselves and their values and knowledge represented. As noted in their report, "The future of False Creek is a place for all people and all creatures and diverse plant species 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."





▲ **FIGURE:** *1st Avenue green-blue corridor*

Stamps Landing

The design team's long-term vision for Stamps Landing features a restored shoreline with a large tidal wetland and marsh area occupying the central portion of the site, fed by a historic, daylit creek. Existing density is moved behind a blue-green corridor on 1st Avenue while a Host Corridor provides connections to a canoe house and cultural facility operated by Host Nations and linked to a canoe landing beach and launch.

A multi-modal bridge spans a portion of restored salt marsh and historic stream restoration, while a native tree canopy provides shade for pedestrians. A restored salmon stream and Indigenous food plants line a marshland walkway.



Olympic Village

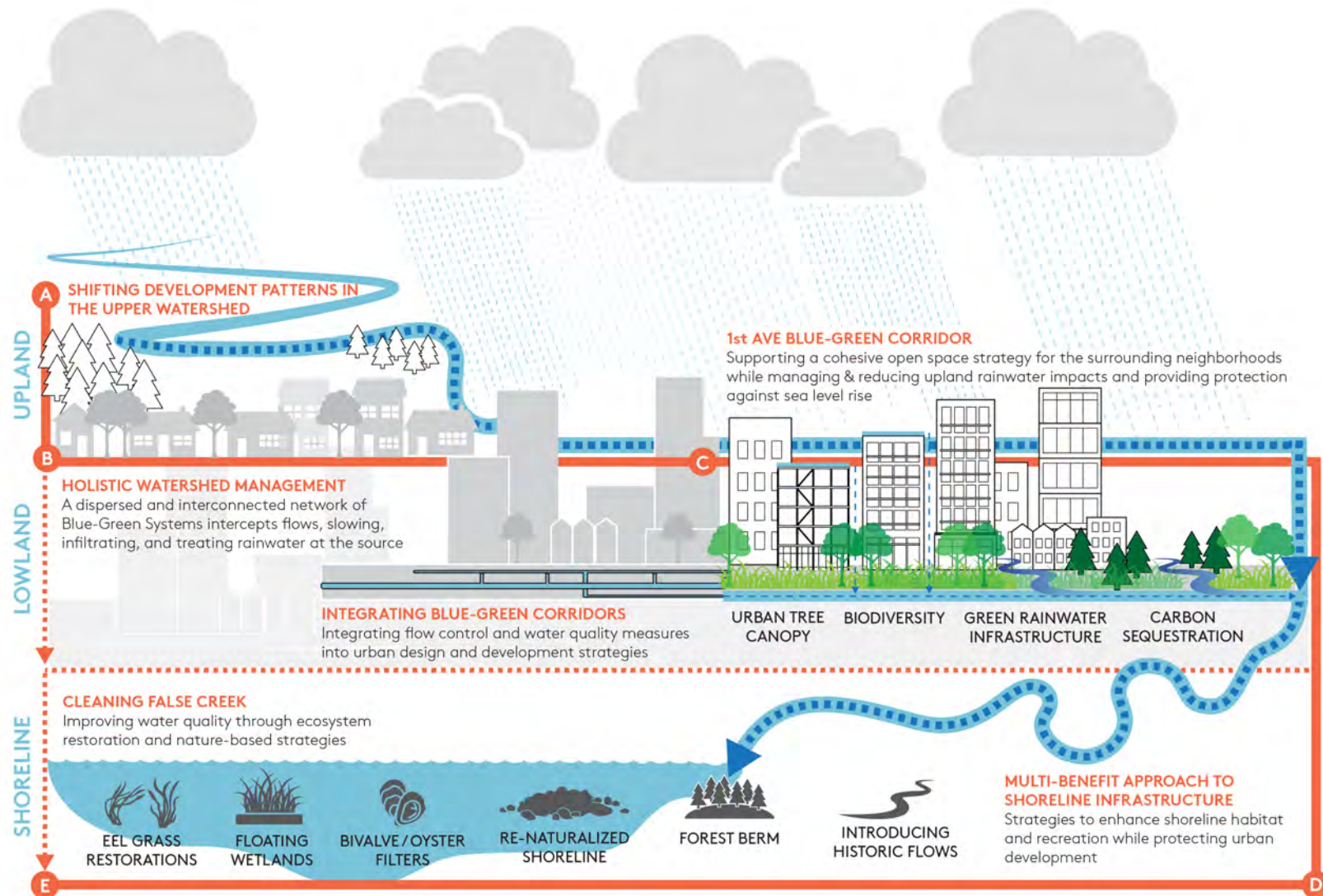
The design team's long-term vision for Olympic Village features restored tidal mudflats that were once the dominant feature of False Creek, edged by a forest berm of mature cedars and other indigenous species. The berm provides flood protection to buildings behind it and serves as a park space. The historic Salt Building remains at the edge of the False Creek shoreline and provides a community amenity.

A pathway connects the forest berm to the shoreline and provides a central link through the site. The berm provides a location for a new ferry dock and marine transit hub. The 1st Avenue blue-green corridor runs down the rear of the site and provides transportation and coastal flood management for new development behind it.



Both concepts take a broad, holistic view towards hydrology, water quality, and associated infrastructure in the larger urban ecosystem. The figure illustrates the Mithun + ONE team's understanding of the opportunities for coastal adaption in False Creek to transform how rainwater is managed to improve water quality, resilience, and livability through creating healthy urban ecosystems.

FIGURE: South Shore rainwater systems diagram



South Shore - Pilot Projects

There are two pilot projects imagined that integrate flood protection measures, habitat creation, and traditional knowledge on the south shore.

In Olympic Village, a forested berm tests how tree and plant species will adapt to changing temperatures, including red cedars, yellow cedars, and sequoias. The berm also serves to raise the elevation at the site and acts as an anchor for the gradual transition of the area.

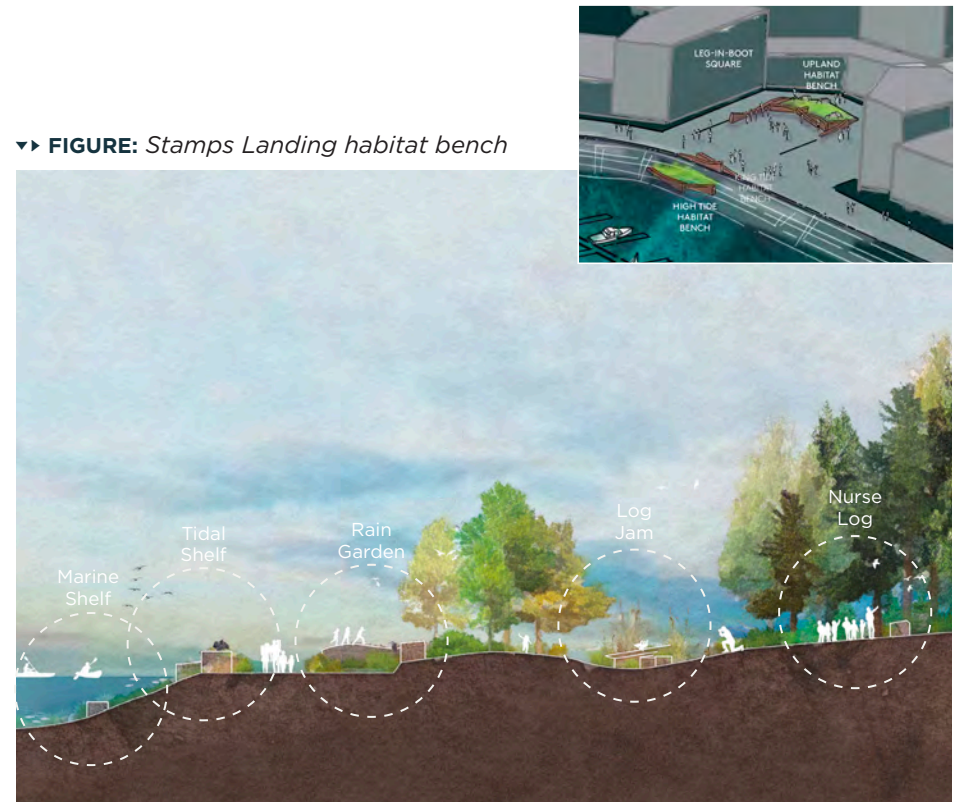
▼► FIGURE: Olympic Village forested berm



In Stamps Landing, a habitat bench will provide an oasis for people and nature in Leg-in-Boot Square. The habitat bench will demonstrate a soft shores approach to temporary flood protection in an urban setting in the near-term. As sea levels rise, the habitat bench will decay and evolve from an upland, to intertidal, to subtidal feature.

Both pilot projects will test how these spaces can be maintained to support functioning ecosystems.

▼► FIGURE: Stamps Landing habitat bench



Pilot Projects Costing

The design teams provided high level cost considerations for the development of pilot projects. These cost considerations are considered “order of magnitude” simplified assumptions and apply contingency factors of 50%. Further detailed design and costing would need to be completed for more accurate estimates.

FOREST BERM

Forest Berm, 4,100 sqm, preparation, fill, revetment, and planting	\$3.0m
Landscaping Features	\$1.0m
General Costs and Monitoring (<i>environmental protection, monitoring</i>)	\$0.62m
Total Cost, including 50% contingency	\$4.6m

HABITAT BENCH

High Tide Bench (<i>Marine Shelf</i>)	\$0.25m
Kind Tide Habitat Bench (<i>Tidal Shelf/Rain Garden</i>)	\$0.13m
Upland Habitat Bench (<i>Log Jam/Nurse Log</i>)	\$0.36m
General Costs and Monitoring	\$0.39m
Total Cost, including 50% contingency	\$1.13m

Design, Planning, and Adaptive Design Considerations

Along the South Shore, Mithun + ONE emphasized a flexible and phased approach to planning and design. They recognize that designing to higher flood standards such as 2.0m may reduce long-term risk but can produce a trade-off for the feasibility of some projects over shorter timelines. Assessing each potential project based on its own unique risk profile and lifespan may enable ways of building momentum towards the vision in the shorter term and phasing out as needed.

The strategies of Mithun + ONE make room for restoration of the shoreline over time but may not be applicable to sites on the north shore of False Creek due to wave exposure and constrained geography.

Because adaptation will occur over many decades, we need to remain open and flexible to shifts in technologies and approaches. There are many pathways towards adaptation, and investments along the shoreline will need to be planned and implemented with the intention of working toward the vision. This means that some shorter-term investments may need to be made with redefined risk tolerances, to move towards the vision with short-term, adaptable elements.

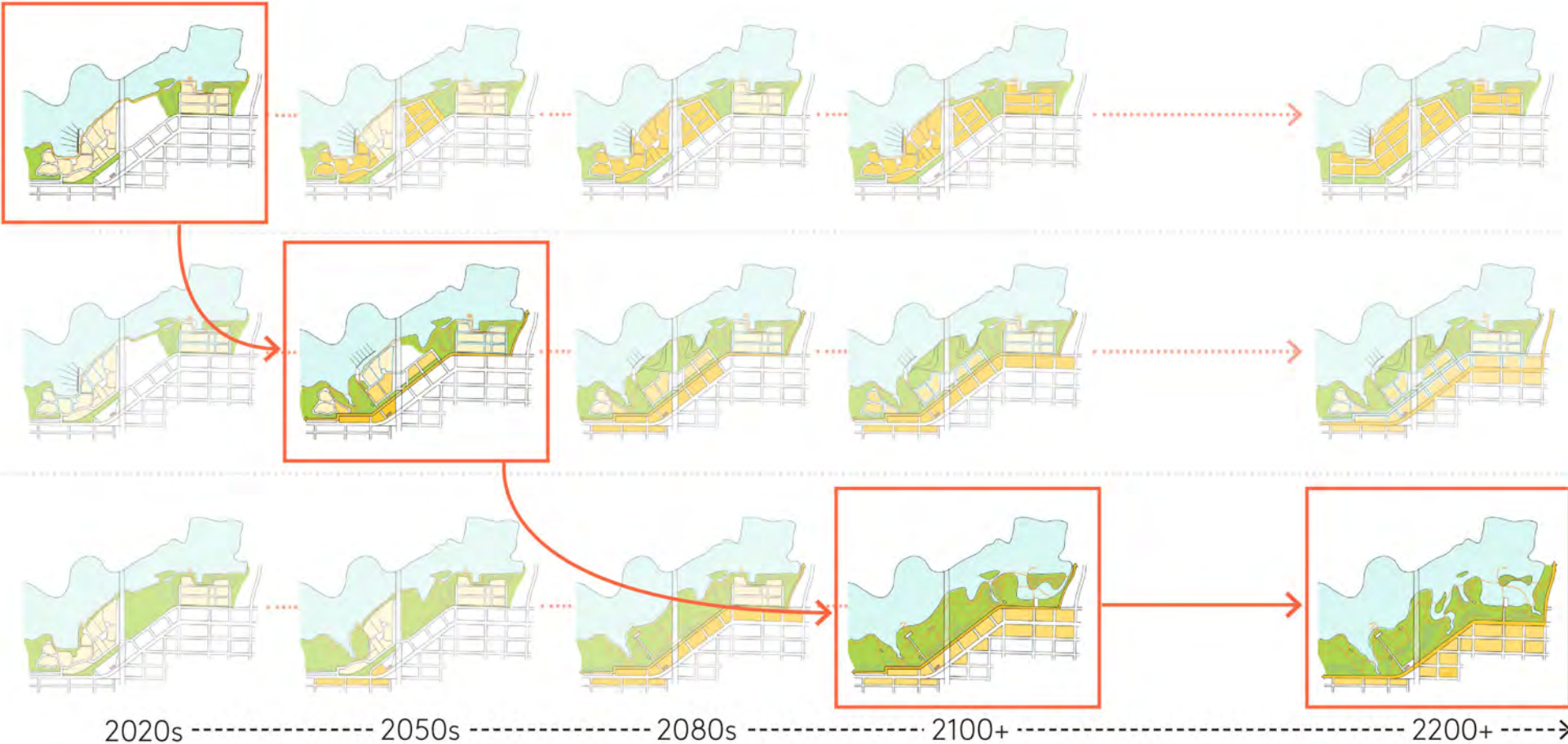
The South Shore Design Team’s concepts include a phased approach which is comprised of the following steps:

- Establish Forest Berm and Habitat Bench pilot projects to test strategies and demonstrate commitment to the vision
- Investigate how density could be transferred from the flood plain to nearby areas south of 2nd Avenue
- Invest in the raised-road blue-green corridor as a flood control ribbon along 1st Avenue and Lameys Mill Road
- Gradually shift development behind the raised-road blue-green corridor
- Restore ecosystems as buildings reach end of life and are deconstructed
- As sea level rise observations and forecasts are updated, consider shifting flood control to 2nd or even 6th Avenue as necessary

FIGURE: *Habitat Bench concepts*



FIGURE: South Shore design team adaptation pathways — making gradual changes and updating plans as more is learned can help avoid maladaptation





Sea2City Advisory Groups

At each step of Sea2City, design teams worked closely with advisory groups that were established to help build coastal adaptation capacity at the City, engage residents in the area, and build agency with local partners, including youth and Host Nations.

Advisory group members participated in Sea2City Collaboratoriums, decolonization and Host Nation perspectives workshops, Sea2City arts and engagement events, and contributed to the project's final deliverables.

TECHNICAL ADVISORY GROUP

The 21-person group was composed of Vancouver-based experts from private firms with coastal adaptation expertise, non-governmental organizations, academic institutions, and asset operators (e.g., BC Hydro, Metro Vancouver). Individuals on the advisory group included private representatives with specific local experience and skills in coastal engineering, coastal adaptation and landscape design, environmental planning, and geotechnical engineering. The group also included academic experts with specific coastal adaptation experience from UBC School of Architecture and Landscape Architecture and non-governmental experience in greenshores adaptation approaches and the regulatory environment. Representatives from major asset operators are also participating, including Metro Vancouver, BC Hydro, and Fortis. Outside of the advisory group, the project team consulted with the BC Inspector of Dikes on project approaches and outcomes.

The Technical Advisory Group provided feedback and input through dedicated meetings and participated in project Collaboratoriums (including presentations in Collaboratorium II), the design charrette, and other meetings with Sea2City project staff.

Collectively, the group provided technical advice and local knowledge and provided a forum to discuss and clarify engineering and technical design issues, criteria, and concepts. The group was intended to augment engineering experience of the design teams and advise the Sea2City project team on technical considerations. The group did not provide any new engineering analysis or modelling.

CITY ADVISORY TEAM

A 28-member group made up of staff from key departments (e.g., planning, engineering, transportation, real estate and facilities, sustainability) at the City of Vancouver and the Park Board, Host Nations, and CMHC – Granville Island were active participants in the three Collaboratoriums and the final design charrette. The team also included government representatives from Squamish and Tsleil-Waututh Nations.

The City Advisory Team provided feedback and input during the entire process with most members attending all three Collaboratoriums and the Charrette. Some members of the City Advisory Team were called upon to provide additional support by way of providing additional studies, presentations and dialogues with the Design Teams.

COMMUNITY ADVISORY GROUP

A 17-member Community Advisory Group was made up of representatives from local community and social organizations, neighbourhood associations, business groups and local Business Improvement Associations, arts and culture organizations, recreation groups, and environmental organizations, some of whom participated in the Sea2City lead-up project, the 2020 False Creek Coastal Adaptation Plan.

The group provided a forum for feedback, guidance, and advice to design teams at key milestones during Sea2City. Through their participation in workshops throughout each phase of Sea2City, the Community Advisory Group supported design teams by:

- Acting as a sounding board for the Sea2City design teams to share and discuss ideas and design concepts.
- Advising teams of their individual and/or organization's / community's / constituency's perspectives relating to coastal flood adaptation in False Creek.
- Providing feedback and suggestions on proposed coastal adaptation approaches and concepts.
- Providing a sense of the broader community's potential interests and concerns relating to proposed coastal adaptation approaches and concepts and how these might be addressed.
- Helping ensure that the community values identified in the 2020/2021 False Creek Coastal Adaptation Plan were reflected in the proposed coastal adaptation approaches and concepts.

▼ **FIGURE:** *Community Advisory Group design review meeting*



Sea2City Collaboratoriums

With a commitment to collaboration and joint-learning underpinning Sea2City, the challenge included three rounds of advisory sessions with Host Nation cultural advisors, City Advisory Team, and the Technical Advisory Group. These collaborative, inter-team sessions were referred to as Collaboratoriums (collaborative laboratories) and represented the fundamentally collaborative nature of the challenge. Three full-day Collaboratoriums were held in each of the three rounds of engagement.

COLLABORATORIUM I

Collaboratorium I was hosted online over two half-days on October 13 and 14, 2021. The objectives of the were to introduce the design teams and the larger project team, provide background information on coastal adaptation in Vancouver, and set a tone of collaboration, cooperation, creativity for Sea2City. The number of participants for Day 1 peaked at 63, with an average of 60 attending the whole morning. Day 2 participants peaked at 57, which an average of 56 attending the whole morning.

The City Advisory Team and Technical Advisory Group members made several presentations on relevant planning and engineering projects in the area, including an overview of the Coastal Flood Risk Assessment, Coastal Flood Adaptation Plan – False Creek, an assessment of shoreline structures in False Creek, relevant planning projects (East Park, North East False Creek, Coopers’ Park Renewal), and two recently completed coastal engineering studies – the Vancouver Shoreline Flood Protection Design Reference and Northeast False Creek Shoreline Flood Protection Performance Criteria. The Collaboratorium also provided an overview of the values-based planning approach to be used, Sea2City deliverables, and a discussion of the communications and engagement approach.

During the event, participants were asked what would make Sea2City a success and what they were excited about. There was some consistency of feedback, particularly around involvement of Host Nations. Sample feedback is included here.

FIGURE: Feedback from Collaboratorium I participants on the Sea2City process and project expectations



COLLABORATORIUM II

On March 29, the City of Vancouver hosted the second Sea2City Design Challenge Collaboratorium at Creekside Community Centre. Approximately 52 people attended the all-day event in person, while 18 participated online during the morning session. During the event, participants heard from a panel on Indigenous perspectives, the Technical Advisory Group on emerging sea level rise research data and provincial guidance, and from the Design Teams their design approaches.

The objective of Collaboratorium II was to provide the Design Teams with feedback on their preliminary design concepts for each challenge site (Olympic Village, Coopers' Park, Stamps Landing, Between Bridges).

The presentations began with a Host Nations panel which helped to ground the group as learners and set the tone for the discussions of the day. The dialogue focused panel was largely unstructured and allowed panelists to freely reflect and share ideas with the group. A discussion by panelists about the need to change the largely colonial language surrounding adaptation sparked discussion and led to a pivot in project deliverables and the creation of a renewed Vision and Approach document.

Following the presentations, participants had small table discussions and larger plenary discussions reviewing the design concepts for each of the challenge sites.

During Collaboratorium II, both teams moved away from earlier adaptation language (resist, accommodate, move/avoid) to language reflecting their learning with Host Nation cultural

advisors. Following Collaboratorium II, design teams met with the City, Host Nation cultural advisors, and project consultants to develop consistent, shared language for refined designs and to develop a shared Vision for False Creek. These changes and further learning from Collaboratorium II led to the development of new deliverables for Sea2City.

▼ **FIGURE:** *Collaboratorium II table work*



COLLABORATORIUM III

The third Collaboratorium was held on July 14th from 9:00 am until 4:00 pm, with approximately 55 attendees from organizations including the Youth Adaptation Lab, the Technical Advisory Group, the City Advisory Team, and the North & South Shore Collective design teams.

The objectives were to build upon the refined concepts from the previous Collaboratoriums, provide feedback on the 'First Step' concepts, and present the Vision and new approach for review.

The event also included a “pre-mortem” activity where participants envisioned a False Creek in 2050 where all shoreline developments since the late-2020’s reflected the Sea2City Vision and new approach. Participants were asked what had happened (and not happened) to get the City to this point.

Participants were also invited to speak about their experiences through the Sea2City Design Challenge process. Feedback was extremely positive and echoed in a workshop evaluation form circulated at the end of the day.

“I love the format and the agenda of this workshop! It has been easy to comment on the design proposals. Super well planned and interesting events - good job team!”

“Great session. The pilots are exciting and there has been a lot of effort made to make them feasible.”

“Great job! Really appreciate seeing feedback incorporated.”

“Well done, it was very well organized. Meaningful discussions. Looking forward to next steps (and working on flood risk related projects).”

“Very well facilitated! Fun and engaging.”

▼ **FIGURE:** Tsleil-Waututh Knowledge Keeper Charlene Aleck speaking at Collaboratorium III



Decolonization and Host Nations Perspectives

Sea2City was grounded in the question, “What does a decolonized shoreline look like?” To help answer this question and support the City in moving forward in a good way on coastal adaptation, Host Nation representatives, knowledge keepers, cultural advisors, and designers were an integral part of the design teams and the Sea2City process. Their stories guided development of the Vision, site concepts, and pilot projects and collectively helped change the language of coastal adaptation.

Representatives from Squamish and Tsleil-Waututh nations co-hosted Decolonization workshops with the larger Sea2City project team during each project phase further supported team learning and un-learning around decolonization and reconciliation.

With their guidance and active involvement, the concepts developed by Sea2City are rooted in Host Nations’ use, history, and stewardship of False Creek.

PHASE 1

On October 6 and 7, 2021 the Sea2City project team was honoured to have representatives from Tsleil-Waututh and Squamish Nations lead online workshops on decolonizing planning and design, and on Indigenous perspectives and knowledge of the shoreline.

On October 6, 2021, Leslhá7lhamaat, Elizabeth Ross, a Technical Advisor from Squamish Nation presented. On October 7, 2021, Michelle George, a Cultural and Technical Specialist from Tsleil-Waututh Nation presented.

Both workshops were well attended and very well received by those who participated. The events were not recorded. A total of 135 design team members, city staff, and members of the advisory groups were present for the two workshops, with 70 attending the first session and 65 attending the second.

PHASE 2

On March 28, 2022, the Sea2City participants were invited to attend a Decolonization and Indigenous Perspectives workshop. The Sea2City project team was honoured to have Hillary Hyland, Senior Environmental Specialist and a Tsleil-Waututh Nation community member share a presentation and dialogue. The online workshop was attended by 76 participants. The theme of the presentation was “Sense of Place – current work and leadership” where Hillary shared her experiences of being on the land, connections to the land, and current research and related ideas.

“It’s extremely moving and humbling seeing this work. There are sparks of joy seeing what we’ve talked about in the drawings”

Charlene Aleck, Tsleil-Waututh Nation



PHASE 3

Dialogue with Chief Ian Campbell

As part of an Indigenous speaker series, Sea2City project staff hosted a dialogue with Chief Ian Campbell on May 10. Approximately 15 people from the project team and design teams attended the talk, which was recorded with permission for the purpose of sharing with other team members. The purpose of the talk was to learn about the physical space that is False Creek, perspectives on Indigenous governance and culture tied to this place and opportunities to support Indigenous culture on the land. Chief Ian Campbell also reviewed the early draft concepts and provided feedback on those concepts.

Decolonization and Host Nations Perspective Workshop

On May 17, the Sea2City project team, City staff, CityHive, design teams and advisory group members were invited to attend a Decolonization and Indigenous Perspectives workshop. 15 people attended the workshop where Aaron Marchant, Referrals Analyst from Rights and Title, and his colleagues led

a discussion about Squamish Nation's referral process and archeological assessment process.

Decolonizing the Shoreline

On June 22, Sea2City, in partnership with SFU Morris J Wosk Centre for Dialogue held a public, online event, Decolonizing the Shoreline. Moderated by Ginger Gosnell-Myers, the event brought Chief Dr. Frank Brown, Christine Smith-Martin, Joanne Nelson, and Sea2City Cultural Advisor Cory Douglas together in dialogue regarding the significant and recent initiatives Coastal First Nations have championed for shoreline health and to provide insights for the City of Vancouver to learn through Sea2City.

The dialogue was centred around a decolonized approach, with an understanding that Indigenous knowledge has defined and protected the health of coastal waters since time immemorial, and that re-establishment is needed to navigate the conversations and ideas around adaptation to sea level rise. Following introductions by each of the panel speakers, audience

▼ FIGURE: Decolonizing the Shoreline speakers



Chief Dr. Frank Brown



Christine Smith-Martin



Cory Douglas



Joanne Nelson



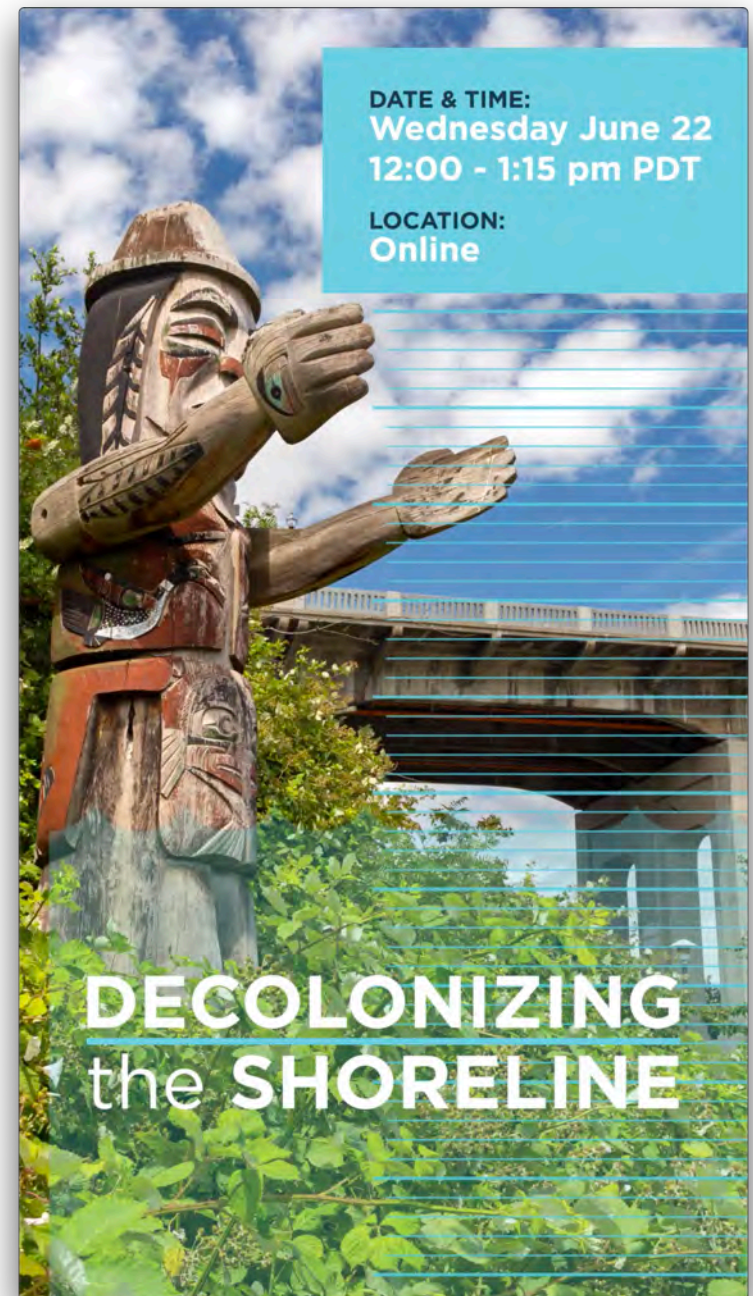
Ginger Gosnell-Myers

members were able to ask questions through chat. The event was very well attended, with 550 people registering to attend and 338 attending.

Dialogue with Senaqwila Wyss

On June 23, Sea2City design teams and project team were invited to attend a conversation with Squamish Ethnobotanist, Senaqwila Wyss, about plants, people, and relationships. Following an introduction and discussion, design teams had the chance to ask questions of Senaqwila. These included questions about specific species to incorporate in design concepts, on how landscape architecture language can change to reflect reciprocity and understanding rather than the current language of dominance and control, and about the impacts of climate change on Squamish relationships with the land. Approximately 15 people from the Sea2City project team and design teams attended.

▼ **FIGURE:** *Decolonizing the Shoreline event image*



Youth Engagement

YOUTH ADAPTATION LAB

The Youth Adaptation Lab was a capacity-building and experiential learning program for youth ages 18-30 who hold deep connections to False Creek to work alongside the City of Vancouver to plan for the future of coastal adaptation planning. In partnership with City Hive, a local youth engagement and civic participation organization, the Youth Adaptation Lab program aimed to enable youth to learn about key coastal adaptation challenges and better understand the impacts of sea level rise to the False Creek neighborhood.

The intent was for youth participants to leave the program feeling more confident in their knowledge, skills, and capacity to engage with their communities and neighborhoods on climate and adaptation issues they care about.

A cohort of 15 youth participated in Sea2City over a 10-month period. In addition to participating in Sea2City events and connecting with design teams, the Youth Adaptation Lab were challenged to develop three unique project ideas to inform the future of coastal adaptation planning in the City of Vancouver. Their three completed projects included a Youth Design Manifesto of values, a set of communication tools that can be used as an interactive walking tour of False Creek, and a youth-led community event, Sea Change. These three projects will be used to inform the next phase of the City's coastal adaptation plan, the Climate Change Adaptation Strategy and pilot projects.

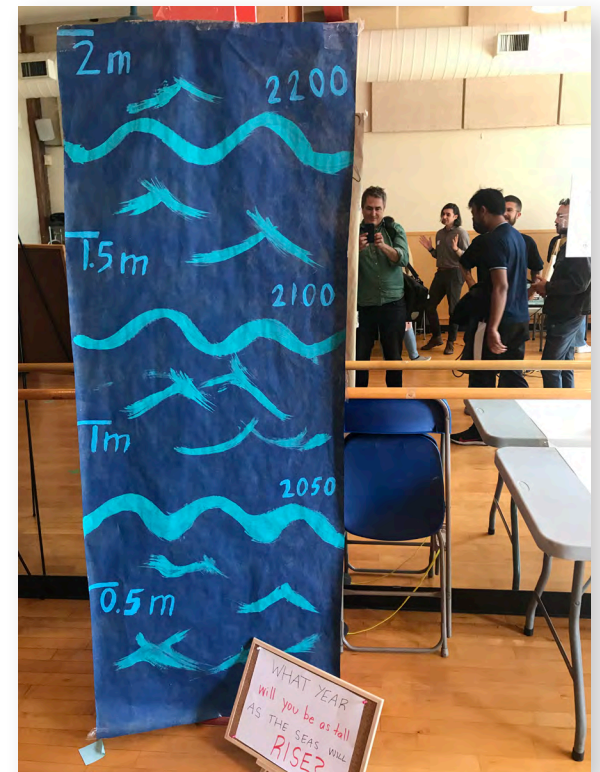
► **FIGURE:** *Sea Change poster and sea level rise poster from event*



CITYSTUDIO COLLABORATIONS

CityStudio Vancouver is an innovation hub that brings together city staff, students, faculty, and community to co-create experimental projects that make Vancouver more sustainable, liveable, joyful, and inclusive.

Sea2City collaborated with CityStudio during Phase 1 and 2 to host three student lectures at UBC with 200 students in Arts One and Geography Departments. The CityStudio collaboration created 100 unique pieces of feedback on the draft design concepts for the design teams' reflection.



East of Cambie Design Charrette

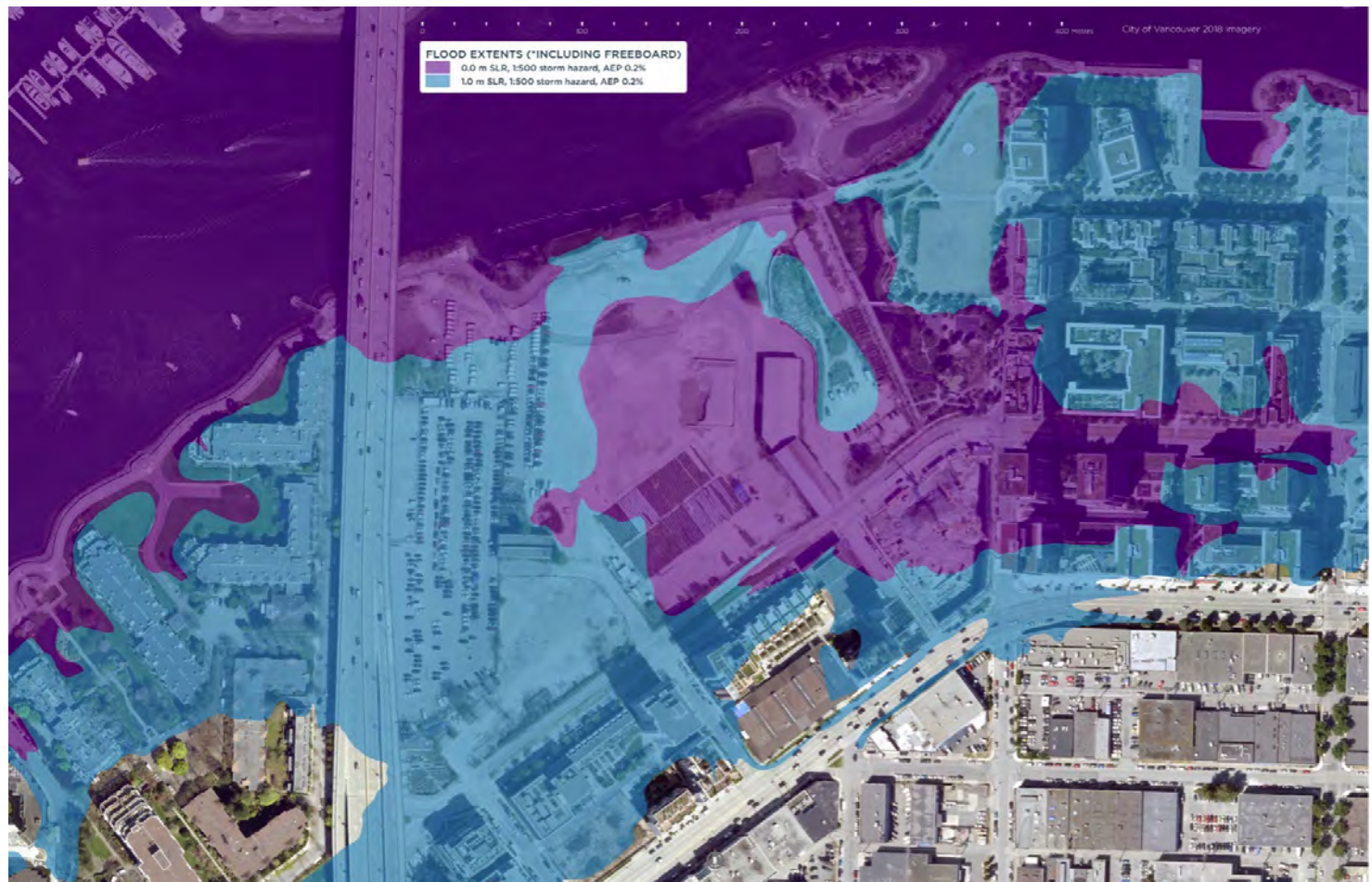
On July 15, 2022, a one-day mini-charrette was held for Southeast False Creek 1A (SEFC 1A), or East of Cambie as the site was referred to in the Sea2City Design Challenge (Sea2City). The charrette was designed by and hosted through the Sea2City, providing an opportunity to draw upon the knowledge and expertise of the multi-disciplinary design teams, cultural advisors, technical advisory group, and City staff in an intensive and focused design process.

East of Cambie is a large City-owned site located between the Cambie Bridge and Hinge Park. The site is one of the lowest elevation areas around False Creek and is exposed to significant coastal flooding hazards (see Figure).

As one of the lowest and most flood-prone sites in False Creek, SEFC 1A has yet to see major development. Current uses at the include a large social enterprise urban farm operated by Sole Foods Street Farms, a City works yard, A city owned office building, and a parking facility for the Vancouver Police Department. The site hosts Hummingbird Place, a City-operated

temporary modular housing facility. Undeveloped portions of the site have been used to host community events, parking, and to stage construction activities. The site neighbours Hinge Park, the only biodiversity hotspot in False Creek.

▼ **FIGURE:** SEFC 1A Flood Extents. The purple shading shows flood extents in a 1:500 event today. Blue shows areas show flood extents in a 1:500 event with 1m of sea level rise.



Development plans for the site are detailed in the Southeast False Creek Official Development Plan (ODP) from 2007. The ODP lays out a conventional development with 85,000 m² of development, a large park space, and a repaired bulkhead seawall. No mention or planning for sea level rise or flood mitigation is included in the ODP.

Since the ODP was adopted in 2007, the City has reshaped its understanding of coastal flood hazards in False Creek. Multiple rounds of flood mapping and hazard assessment were carried out through the three phase Coastal Flood Risk Assessment (CFRA), the Coastal Adaptation Plan – False Creek, and the Sea2City Design Challenge. Vancouver understands that a conventional build-out of the 2007 ODP would put the park space and development within the False Creek floodplain. Though traditional flood mitigation measures and development for the ODP vision may be technically possible, they have not been recently investigated and may be cost-prohibitive from both a capital and operations and maintenance perspective.

Alongside the technical flood management and cost challenges of implementing the ODP plan, is a recognition that City is moving towards reconciliation with the Host Nations, and a decolonized approach to planning. Revisiting the 2007 ODP in collaboration with Host Nations and Indigenous knowledge holders represents an opportunity to make progress on the City's commitment to reconciliation.

▼ **FIGURE:** SEFC 1A / East of Cambie looking southeast



The charrette had four major goals:

- Develop high-level design concepts that illustrate how the Sea2City Vision and Renewed Approach could be achieved while supporting Southeast False Creek Official Development Plan goals for site.
- Explore how site adapt to sea level rise over time, including 2m+.
- Identify Sea2City connection points and planning considerations.
- Involve City staff in a collaborative process to explore alternative visions for the site.

The final outputs of the charette were two high-level site strategies that included site organization and site feature illustrations and concept diagrams. These were shared during the final walk-through presentation for charrette participants. Ideas explored included:

- Potential organization of housing on site, including building heights/storeys.
- Integration of cultural and Host Nations presence throughout the site.
- Potential organization of open and parks on site.
- Potential cultural features and connections.
- Site access and connection concepts (vehicle, water, active transportation).
- Land raising considerations - how to connect to context.
- Transect from shoreline to development areas (i.e., restored areas, hosted areas, protected areas).
- Connection points (and considerations) to Olympic Village and west of Cambie.
- Site drainage considerations.



FIGURE: Sea2City design charrette

When conducting the charrette sketched, participants framed the exercise by asking themselves a series of questions. The questions were designed to help focus the sketches/designs to target the underlying values that the participants held for the East of Cambie project area. As the questions were asked, some potential strategies were envisioned that could be used to address the concerns.

A series of key questions were raised, including “How might we...”

- Maintain this as public land, while balancing the need for housing, and revenue?
 - Ideas: long-term leases, property endowment fund, environmental capacity.
- Avoid maladaptive design and tenure?
- Further the work of decolonization and uphold the presence of the Host Nations?
- Reflect land and water as sacred?
 - Ideas: identify where water is blocked/stagnant, and allow for flow.
- Store and cleanse water?
 - Ideas: utilize upland areas, viewing bridge as a pinch point, widen blue/green systems for greater water flow and flushing? Maximize permeability, layer stormwater retention where possible.

- Improve connectivity?
- Protect infrastructure?
- Expand the site, to draw on upland areas to support the multiple pressures/needs that are here?
 - Ideas: review ‘boundaries’ and expand for beyond the site, grid shift here, including natural systems, housing needs, etc.

▼ **FIGURE:** Presenting one of the team’s site concepts – The Weave



Some overarching themes that emerged included:

- Avoid “locking-in” and maladaptive pathways
- Providing multi-functional buildings and spaces
- Maintaining recreation and access in line with the present-day seawall experience
- Improving water quality as step towards reconciliation
- Decolonization over time:
 - short term: enhancing wellness, supporting a living shoreline
 - long term: exploring conditions for Land Back, relationship building, “public ownership”
- “How” change is made is as important as “what” change happens
- Using gradients to create/support a rich ecosystem
- Give Host Nations prominence - design around the natural systems and sacred cultural spaces
- Expanding boundaries beyond this site and applying thinking system-wide



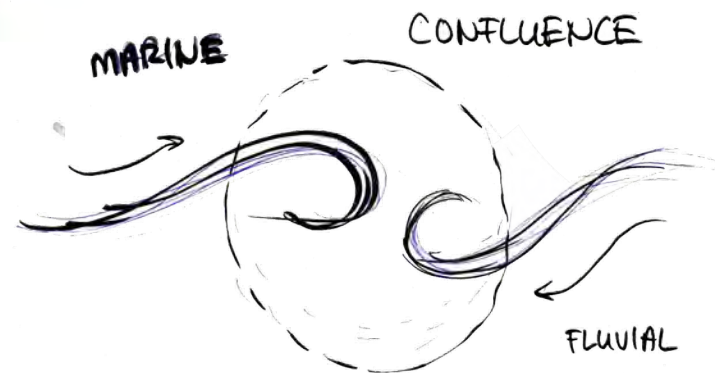
FIGURE: Presenting one of the team's site concepts - First Avenue

CHARRETTE DESIGN CONCEPTS

The Weave

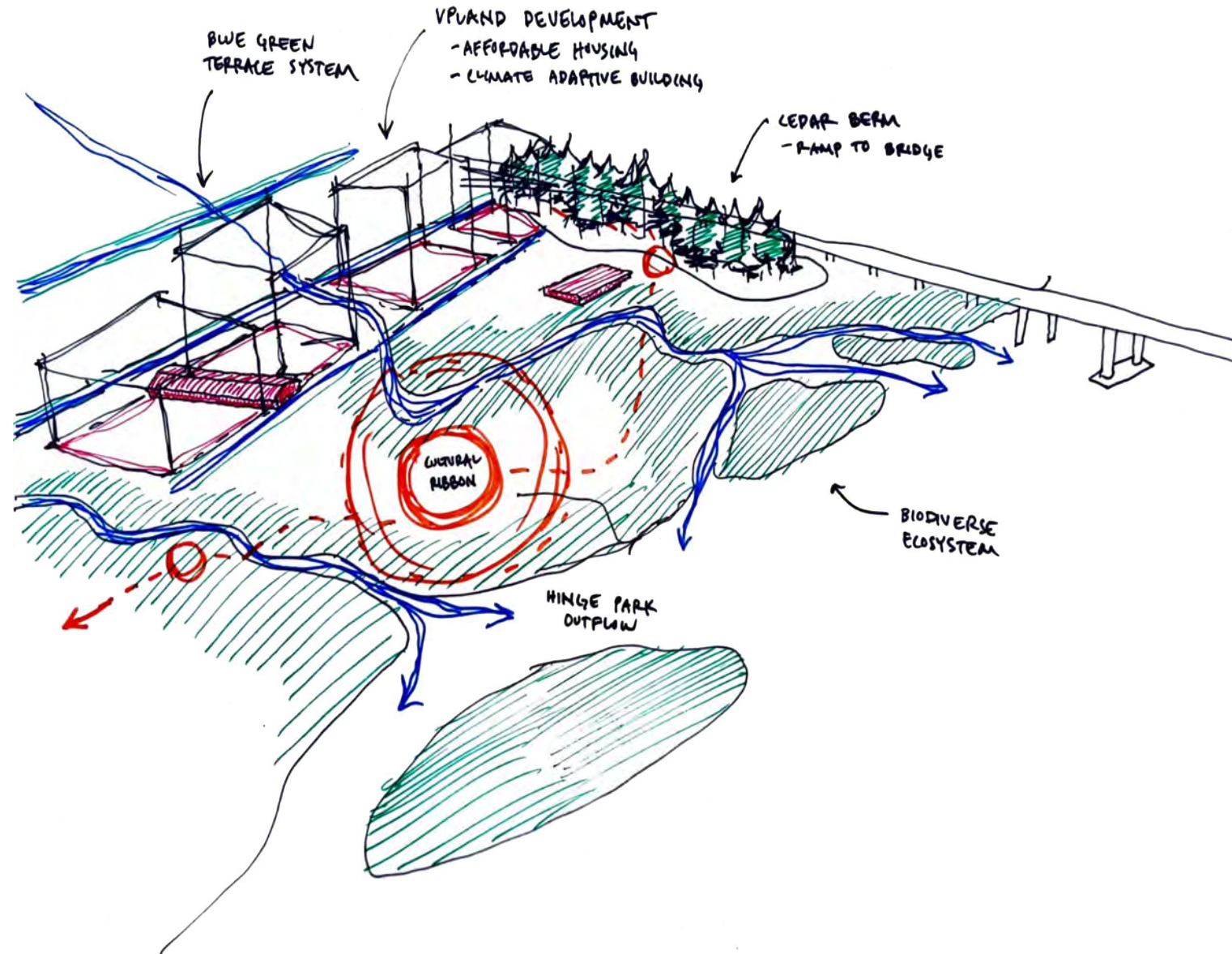
The Weave envisions the site as a place where coastal and upland waters meet and interact. Daylit streams flow from the uplands and enter the site, where naturalized areas allow for ponding and retention during extreme rainfall events. Coastal waters have room to move inland during flood events, but recreational and public space is prioritized and located at higher elevations. A few fingers of development raised up and designed for long term 2m+ sea level rise scenarios stretch north from 1st Avenue. A cultural ribbon of Host Nations art and presence extends through the site as a future version of the seawall.

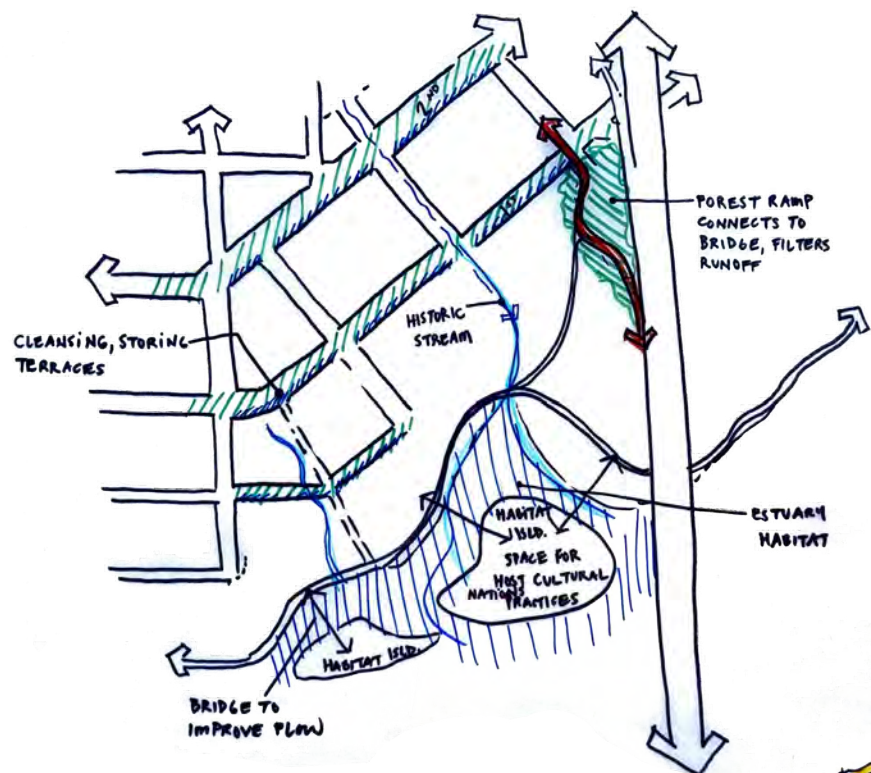
THE WEAVE



1st Avenue

The second team did not name their concept, but their approach keeps development clustered tightly to the site's southern edge and 1st Avenue. The concept envisions a deeply restored and naturalized site that terraces downwards to False Creek. Pathways, some raised, are organized around a central Host Nations cultural hub that centres the site. A blue green terrace system moves stormwater to the creek in a connected system using both Hinge Park creek and a second stream in the centre of the site. The concept includes the notion of a "power swale" along 1st Avenue as part of this system. A cedar forest berm is built up adjacent to the southwest corner of the site to provide a buffer to Cambie Bridge, treat stormwater from the bridge deck, and to provide access between the site and Cambie Bridge. In addition to affordable upland housing and climate adaptive housing, the site could be used as a testbed for moveable, adaptive structures, including housing.





GREEN BRIDGES

FOREST BERM TO BUFFER CAMBIE BRIDGE + COLLECT CAMBIE BRIDGE RAINWATER, CONNECT PEOPLE UP TO THE BRIDGE + ANCHOR THE SOUTHWEST CORNER OF THE SITE

LANDFORM CONNECTS UNDER BRIDGE TO PROTECT NEW PED + BIKE CONNECTIONS

AIR QUALITY BUFFER

FOREST LANDFORM

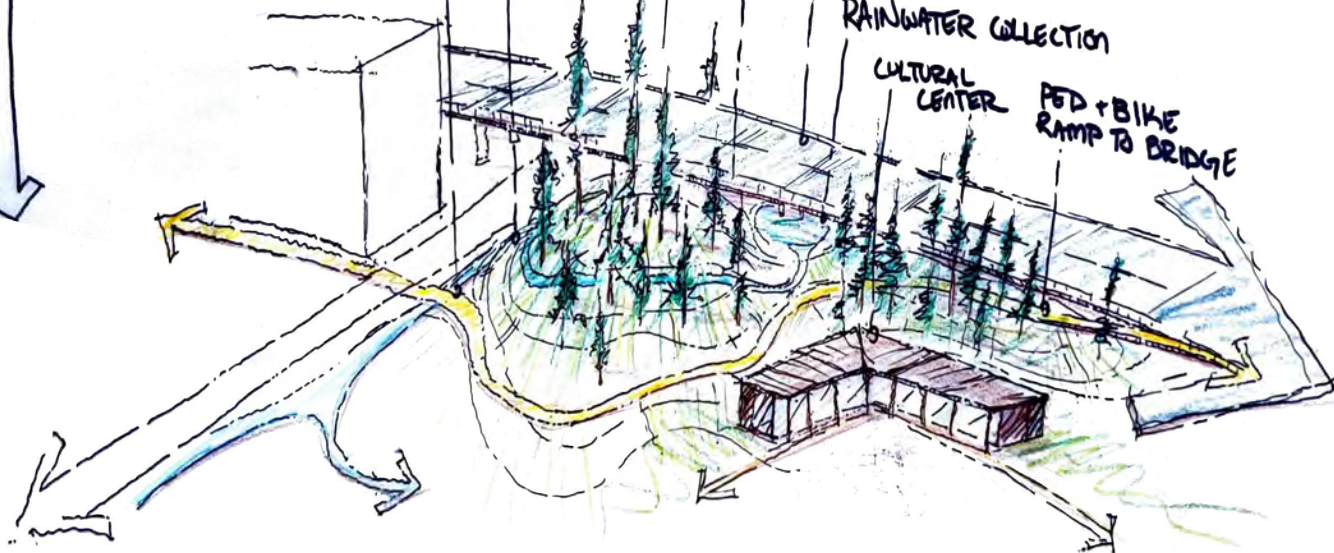
CAMBIE BRIDGE

RAINWATER CHANNEL

RAINWATER COLLECTION

CULTURAL CENTER

PED + BIKE RAMP TO BRIDGE



Academic Research Collaborations

In addition to these advisory groups, Sea2City informed two post-graduate research projects at UBC and SFU. The academic collaborations engaged student researchers directly in the project and provided the project team additional feedback on important project elements (equity, justice, and incorporating Indigenous ways of knowing). The researchers participated in Sea2City activities and interviewed project team members on their work.

Both research projects enriched the Sea2City learning journey and have resulted in frameworks that will support future coastal adaptation work in Vancouver and beyond.

ENGINEERING COLLABORATION (UBC)

At UBC, the City engaged with an Indigenous engineering scholar as part of their Master's thesis in Civil Engineering. Their thesis examined how infrastructure projects, like Sea2City, incorporated Indigenous ways of knowing in the project process. Their work resulted in the development of a framework for decolonizing planning and incorporating Indigenous ways of knowing in engineering project planning and delivery processes.

LIVING WITH WATER COLLABORATION (SFU)

As part of the Pacific Institute for Climate Solutions (PICS) Living with Water research collaborative a Master's student at SFU's Resource and Environmental Management Program explored how equity and justice were being evaluated in Sea2City. Their work will result in development of an evaluative framework that can be applied to other coastal adaptation projects in the future.

The Living with Water project brings together a diverse, multidisciplinary team to help communities living on British Columbia's South Coast prepare and adapt for sea level rise and flooding.



Sea2City Arts Programs

To broaden the reach of Sea2City communications and engagement, the project included an arts component that created sea level rise and coastal adaptation themed exhibitions and productions around False Creek and Vancouver.

HOW WATER REMEMBERS

How Water Remembers, by interdisciplinary artist LAIWAN was launched in early 2021 in time with the Chinese New Year. How Water Remembers explored sea level rise in Vancouver using culturally appropriate traditions rooted in ancient teachings of the Tao. With an exhibition at Dr. Sun Yat-Sen Garden courtyard and a display of different False Creek intertidal inhabitants on transit shelters throughout the city, the project explored the intersections between culture and a more resilient creek.



TOWN CHOIR

In four different coastal cities facing the challenge of climate change and rising sea levels — Vancouver, New York, Mumbai, and Tokyo — four writers who call these places home type out observations of the changing world unfolding around them. In that same moment, the Vancouver Youth Choir, situated in on stage in Milton Wong Plaza in Olympic Village, receives their observations via a large screen and sings them out to the public.

Town Choir was performed by the Vancouver Youth Choir, under the Artistic Direction of Carrie Tennant, and composed and conducted by Robbie Blake. Featuring an international team of writers: Rosemary Georgeson (Vancouver), Ranjit Hoskote (Mumbai), Yuki Kedoin (Tokyo) and Tanya Marquardt (New York). The production was directed by Theatre Replacement's Artistic Director, Maiko Yamamoto.

Approximately 300 people attended the performance, which also included a showcase of Sea2City design concepts and photos from an Intergenerational Photo Project.

Theatre Replacement is a local company that exists to create new, experimental, and intercultural works of performance and public art works. Their projects are built through a highly collaborative process and engage a diverse group of both ongoing and new collaborators.



▲ **FIGURE:** *Town Choir in performance at Milton Wong Plaza, Olympic Village*

As part of Theatre Replacement's activities for Sea2City, the company also worked with project partners to deliver a citizen-led photo project. Eight pairs of intergenerational participants imagined themselves engaged in, and adapting to, activities that will be impacted by rising sea levels in and around False Creek. The photos premiered prior to the *Town Choir* event.

Photography by
Liam Wake, design
by Stephanie Wong,
facilitated by James Long.

The photographs will be used to support and animate future outreach and engagement projects and may tour False Creek community centres in an upcoming exhibition.

LOA MARTIN / *Child*

"This park has been cherished by three generations of my family, and is a continuous reminder of one of the great privileges we share in Vancouver - to be able to play by the water, and remain connected to nature. Will our current actions take this away from future generations?"

- Lisa Mariko Gelley



Sea2City's Intergenerational Photo Project asked participants to imagine scenarios of themselves engaged in and adapting to activities that will be impacted by rising sea levels in and around False Creek.

Original Concept Lisa Mariko Geley and Loa Martin
Photography Liam Wake
Design Stephanie Wong
Direction James Long

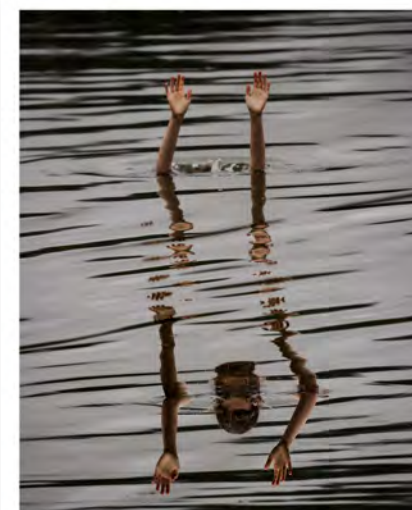
THEATRE/REPLACEMENT



CHRISTINE PILGRIM / Grandparent



"With this photo, we attempted to combine our favourite game and hobby: it was my third and I was so excited that I [hardly] noticed the hole rising higher and closer than it could be. My granddad will put me in check-mate in three moves if I start to say anything about me!"

PETER SHARPE / *Father*

• *Not Waving, But Drowning?*
 "Not Waving, But Drowning," a 1981 poem based on British poet Stevie Smith, is all about our affinity with water. This simple, intimate poem is for everyone (drowning), but cannot change it. I entered our perspective from Sub to Near Drownings."



▲ **FIGURE:** From the 2022 Vancouver Mural Festival, Hipol and Kim's *Water: Connecting Roots* provides an Asian-Canadian perspective to addressing Climate change within the traditional unceded territories of the First Nations, Inuit, and Métis.

VANCOUVER MURAL FESTIVAL

Still in development at project wrap-up, a mural will be created in the spring/summer of 2023 with Indigenous artist Manuel Axel Strain. Located between the Olympic Village and Stamps Landing Challenge Sites, the mural will be part of the festival's climate justice focus and explore sea level rise and coastal adaptation from the perspective of Host Nations in False Creek.

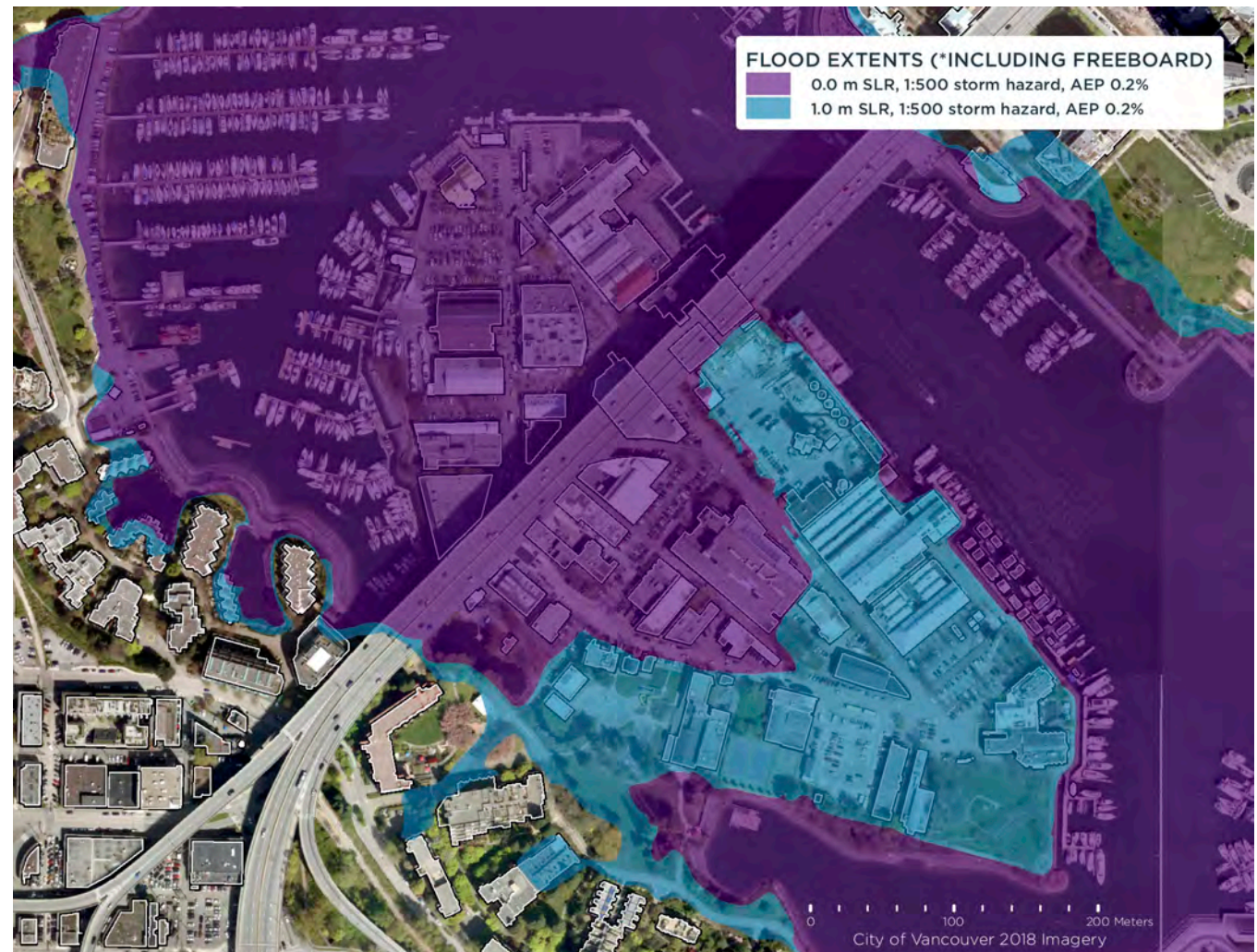
Granville Island

Within False Creek, Granville Island is one of the most flood vulnerable areas. Managed by the Canada Mortgage and Housing Corporation, Granville Island features a mix of uses. Its 300 plus businesses, including a Public Market, and lively arts, culture, and culinary scene make it one of Vancouver's most popular tourist destinations. It is also the site of a community centre, commercial, industrial, and office spaces, float homes, and a marina.

Granville Island is within Vancouver's coastal flood plain and will experience significant flooding in a major storm event. This flood risk exists today. Flood extents in a major storm (1:500 storm event that has a 0.2% likelihood of occurring in any given year) would inundate the western portion of the Island. Climate change and sea level rise will make these flood risks much worse in the future. With 1 metre of sea level rise, the entire Island would be inundated in a major storm. Based on assessments conducted in 2011, the province recommends planning for 1 metre of sea level rise by 2100. In the decade since that assessment, further information and climate feedbacks have led experts to expect even higher levels of sea level rise. The province is

expected to update their sea level rise planning guidance within the next few years.

▼ **FIGURE:** Flood extents - Areas in purple would experience flooding in a major storm today, while areas in purple or blue would experience flooding in a major storm with an additional metre of sea level rise.



Granville Island is a critically important site in False Creek, however, as a federally managed site, it fell outside the scope of the City of Vancouver's Sea2City Challenge sites. Granville Island remained involved and, as part of the Sea2City, collaborated with the City of Vancouver on a preliminary vulnerability scan to explore flood risks and coastal adaptation. Held at the False Creek Community Centre on Friday, May 6th, 2022, the workshop brought together Granville Island/CMHC staff, Granville Island Council members, major tenants, and subject matter experts to:

- Build awareness of sea level rise and coastal flooding risks for Granville Island.
- Learn about Vancouver's current work on coastal flood planning – Coastal Adaptation Plan and Sea2City Design Challenge.
- Identify major assets (facilities, infrastructure) on Granville Island and their sensitivity to flooding.
- Start the conversation around Granville Island flood resilience.

A total of 28 people attended the five-hour workshop. The workshop was one of the first steps taken in Granville Island's coastal flood adaptation work.

Several findings were confirmed at the workshop, including:

- Granville Island is currently at risk of flooding in a major storm event. Over half of the island could be inundated in a major storm today, including the Public Market, Theatres, Arts Umbrella, False Creek Community Centre, Bridges Restaurant Building, and Kids Market.

▼ **FIGURE:** Workshop participants conducting a preliminary vulnerability scan.



- Granville Island has **already experienced and will continue to experience damage to shoreline infrastructure and buildings** in storm events.
- Sea level rise will occur in False Creek** and will impact Granville Island. Basin-wide strategies such as a coastal barrier will not be implemented. Local strategies will be necessary to adapt to sea level rise.
- The **vulnerability of Granville Island to flooding is high**. Of the assets surveyed, 100% have high vulnerability to severe flooding, 82% have high vulnerability to major flooding, and 44% have high vulnerability to minor flooding.
- Surface flooding and sewer backup are known risks** for Granville Island and will need to be considered in addition to coastal flood risks.

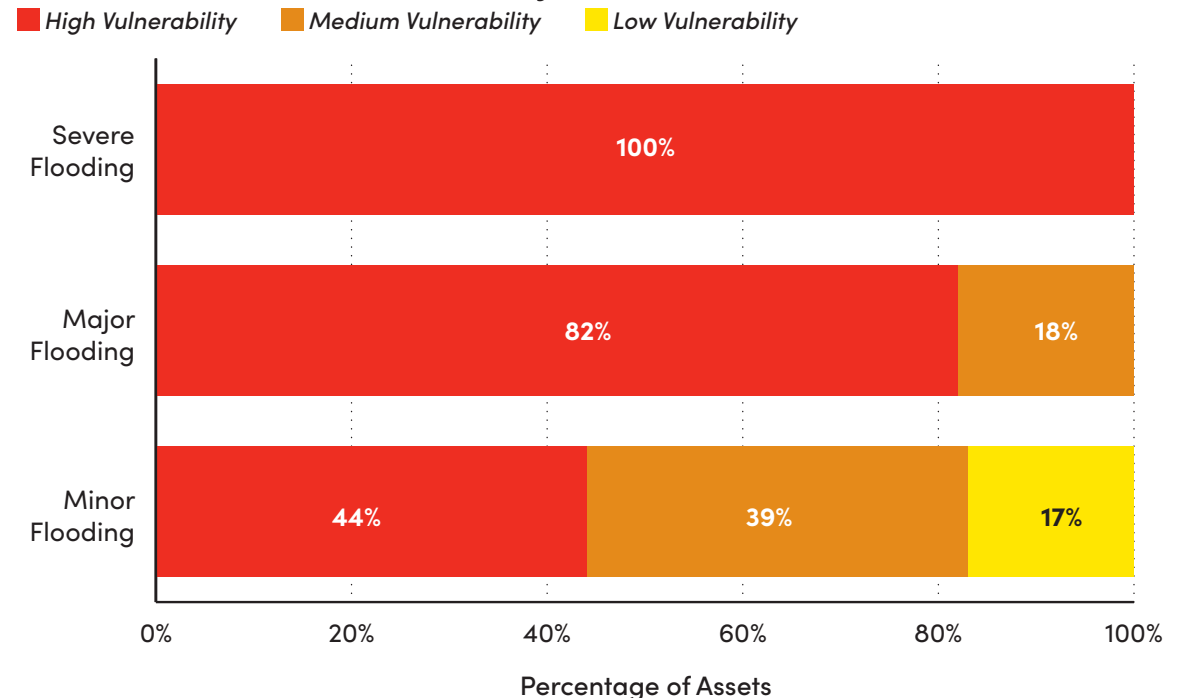
The workshop followed a simplified version of a standard vulnerability scan. Three main activities were completed with participants.

- Cascading Impacts**
A holistic look at the impacts of a minor flood event across the whole island.
- Preliminary Vulnerability**
An asset-by-asset scan of the impacts of flood scenarios on assets.
- Adaptive Capacity**
A look ahead to see what actions can be taken to reduce flood risks for each asset.

The preliminary vulnerability scan found high levels of vulnerability to flooding. In a severe flooding scenario (1.1 to 1.6m of water), all assets identified high vulnerability, meaning that the asset would cease to function. With major flooding (0.6 to 1.1m), more than 80 percent of assets would cease to function, with the other 20 percent being affected but maintaining functionality. Only with minor flooding occurring (up to 0.6m) are there assets that would not be directly affected by flooding. That said, even in a minor flooding scenario, nearly half of the assets would cease to function. Given the cascading effects of a flood on Granville Island, even assets that would not be directly physically impacted may still face issues in a flood event.

▼ FIGURE: Asset Vulnerability

VULNERABILITY OF ASSETS IN SEVERE, MAJOR, AND MINOR FLOODING



▼ **FIGURE:** Granville Island-wide visualization of water levels at 1.0m sea level rise and a 1:500 storm event.

Granville Island

RENDERED 2022.02.25

View from North-West - 1.0m SLR, 1:500 storm event, AEP 0.2% (Water level along the shore is approx 3.94m GD)



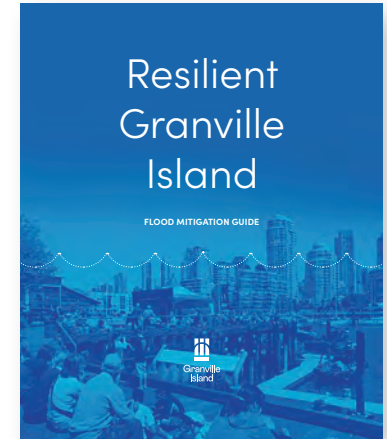
▼ **FIGURE:** Flood visualization at Granville Island Public Market.



GRANVILLE ISLAND OUTPUTS

Flood Mitigation Guide

The *Resilient Granville Island Flood Mitigation Guide* was developed to provide a resource to support staff and tenants in taking action to reduce their flood risks. The guide contains an introduction to the flood risks for Granville Island, and a series of actions, ranging from *quick starts* to *long-term* that can reduce the impacts from flood events. The guide is intended as a starting point and educational resource.



Resilience Roadmap

The *Granville Island Resilience Roadmap* was developed to provide recommendations and guidance to Granville Island staff and Council to support longer-term coastal adaptation and climate resilience work. The roadmap presents a series of planning, capacity building, and research activities that will form a strong foundation to support decision making on the future of the Island.

Future Work

Alongside the Flood Mitigation guide and Resilience Roadmap, additional planning and decision support work will continue with Granville Island as part of the Sea2City legacy. The Granville Island Council unanimously passed a motion in June 2022 that recognizes coastal flood risks and moves to request funding to complete risk assessment and coastal adaptation planning work.

Granville Island is an observable microcosm of the global sea level rise issue, with the power to raise public awareness, pilot mitigation solutions, and influence action.

- Granville Island Council, Sea Level Rise Motion

Community Engagement and Outreach

As a project, Sea2City continued an engagement program started during the 2020 False Creek Coastal Adaptation Plan process. Engagement was a major success and exceeded the targets in the Engagement Plan. Public engagement included three rounds of online community conversations and dialogue sessions, a social media communications program through all project phases, and three well attended community information sessions attended by 1,200 people.

Sea2City also generated considerable media coverage (online, radio, TV, print) with stories in local and national outlets including CBC News, CBC Radio, Tyee, Globe and Mail, and the Georgia Straight. The figure provides engagement and outreach highlights.

▼ **FIGURE:** *Engagement and Outreach Highlights*

MEDIA

25+ 
local, provincial,
national media pieces
(print, radio, web, TV)

150,000+
estimated views of
Sea2City media coverage
(web, TV)

6,500+ 
visits to the
Sea2City web page
with 3,000+ unique users

  
160,000+
impressions across
City of Vancouver
social media platforms

EVENTS

 **19** Sea2City
events
(public events, student events,
Community Conversations,
Collaboratoriums, workshops)

2,000+


participants at Sea2City events
including community members, advisory
group members, collaborators, students,
and members of the public


8

Community
Conversations

 **5**
student lectures
(UBC)

7 
Decolonization and Host Nations
perspectives workshops and events

OUTREACH & COLLABORATION

 **12** project collaborators
(events & activities,
productions, workshops)

 **4** 
collaborations with
arts groups and artists

3 
public
events

COMMUNITY CONVERSATIONS

Round 1 Community Conversations

Community Conversations provided an opportunity for the public to learn about the project and ask questions directly to both project teams. Participants were introduced to Sea2City, learned about coastal flood adaptation in Vancouver, and learned about the design teams and deliverables.

- September 23, 2021 (9 participants)
- September 27, 2021 (13 participants)
- October 28, 2021 (150 participants)

The October 28th Community Conversation was delivered at UBC to Dr. Fernanda Tomaselli's CONS 210 class.

Round 2 Community Conversations

Three Community Conversations were held during Phase 2 of Sea2City. The one-hour Community Conversations included a presentation of draft design team concepts.

- April 11, 2022, 12-1pm (12 participants)
- April 12, 2022, 6-7pm (10 participants)
- April 20, 2022, 12:30-1:30 (9 participants)

Round 3 Community Conversations

Two final 1-hour webinars were delivered during Phase 3 of Sea2City. The one-hour Community Conversations focused on the final design team concepts and pilot project ideas.

- July 20, 2022, 12:00-1:00pm (10 participants)
- July 26, 2022, 12:30-1:30pm (9 participants)

UBC SCHOOL OF LANDSCAPE ARCHITECTURE / INFORM INTERIORS

SALA Lectures

Sea2City hosted two well-attended lunch and learn style online events for UBC students with the School of Architecture and Landscape. Each one-hour event included an introduction to Sea2City by the project team, followed by a presentation from both design teams, (PWL on March 9th, and Mithun + ONE on March 16). The lectures concluded with an opportunity for students to ask questions of the design teams and Sea2City project team. Both online events were well attended, with 72 students attending between both events.

Inform Event

On March 30, 2022, from 5-8pm Sea2City hosted an in-person community event in partnership with UBC's School of Architecture and Landscape Architecture. The public event was designed to connect with the Vancouver architecture and design community and to showcase Sea2City, Indigenous perspectives, and the design teams' work. The event was hosted at Inform Interiors, in Gastown where 150 people attended in-person (maximum amount allowed due to COVID-19 restrictions). The event began with a brief introduction to Sea2City, followed by a panel presentation from design teams, and concluded with a question-and-answer period.

UBC design students also attended the event and had models of their design work on display.

HERRING DAY

As part of Round 2 of education and communication events, Sea2City hosted *Herring Day*, a public, outdoor event on April 2, 2022, from 10-2 pm at Fishermen's Wharf in False Creek. The purpose of the event was to highlight herring spawn events, False Creek ecology, seven local NGOs and seek input on early design team concepts and adaptation approaches. The Sea2City project team and a representative from a design team were present to discuss Sea2City, preliminary concept design concepts, and sea level rise in Vancouver.

The goals of the event were to:

- Educate and inspire the public about Salish Sea and its ecology.
- Educate the public about sea level rise and adaptation and the Sea2City Design Challenge.
- Raise awareness about herring ecology in False Creek and the work of the Squamish Streamkeepers.
- Support other environmental NGOs and other organizations in the form of providing space for them to showcase their own programming and recruitment needs.
- Seek feedback from the public on Sea2City adaptation approaches.

Herring Day was successful with 350 attendees throughout the four-hour event. Media promotion of Herring Day in the Georgia Strait, Vancouver is Awesome, and on social media also provided an opportunity to and raise awareness of sea level rise and Sea2City with new audiences.

Local NGOs with a presence at Herring Day included Sea Smart, Squamish Stream Keepers, Year of the Salish Sea, Georgia Strait Alliance, True or False Creek, Swim Drink Fish and Oceanwise's Youth to Sea.



SEA2CITY & TOWN CHOIR POP-UP

On July 17, Sea2City hosted the Sea2City and Town Choir pop-up event in Olympic Village. The event featured Town Choir, a multi-media, choral experience focused on a changing climate and sea level rise from Theatre Replacement and the Vancouver Youth Choir. The event took place from 12:00-3:00pm, with a one-hour choral from 12:00-1:00pm.

The performance featured writers in four different coastal cities—Vancouver, New York, Mumbai, and Tokyo, facing the challenge of rising sea levels write out their observations of the changing world. The writers' words were displayed on screens in the Olympic Village Plaza, as the Vancouver Youth Choir sang out their observations.

As part of Theatre Replacement's activities, the event featured photographs developed through a citizen-led photo project with eight pairs of inter-generational participants who imagined themselves engaged in, and adapting to, activities that will be impacted by rising sea levels in and around False Creek. Seven Intergenerational Photo posters (20x30 inch) were displayed at the event.

Despite some rain towards the end of the one-hour performance, the event was successful. There were approximately 170-200 audience members at peak viewing with an estimated 300 people visiting the plaza during the event. The event was covered by CBC News with the resulting video story highlighting Sea2City and the City's response to sea level rise.



Communications and Media

SOCIAL MEDIA

The Sustainability Group and City of Vancouver's social media team supported a broad-based social media program that contributed to achieving Sea2City's engagement and communications goals of increasing public awareness of sea level rise and inspiring the public about coastal adaptation design concepts that could be explored for our shoreline. Sea2City project posts, promotions, and communications were sent through the Greenest City (@greenestcity) Twitter, Facebook, and Instagram channels.

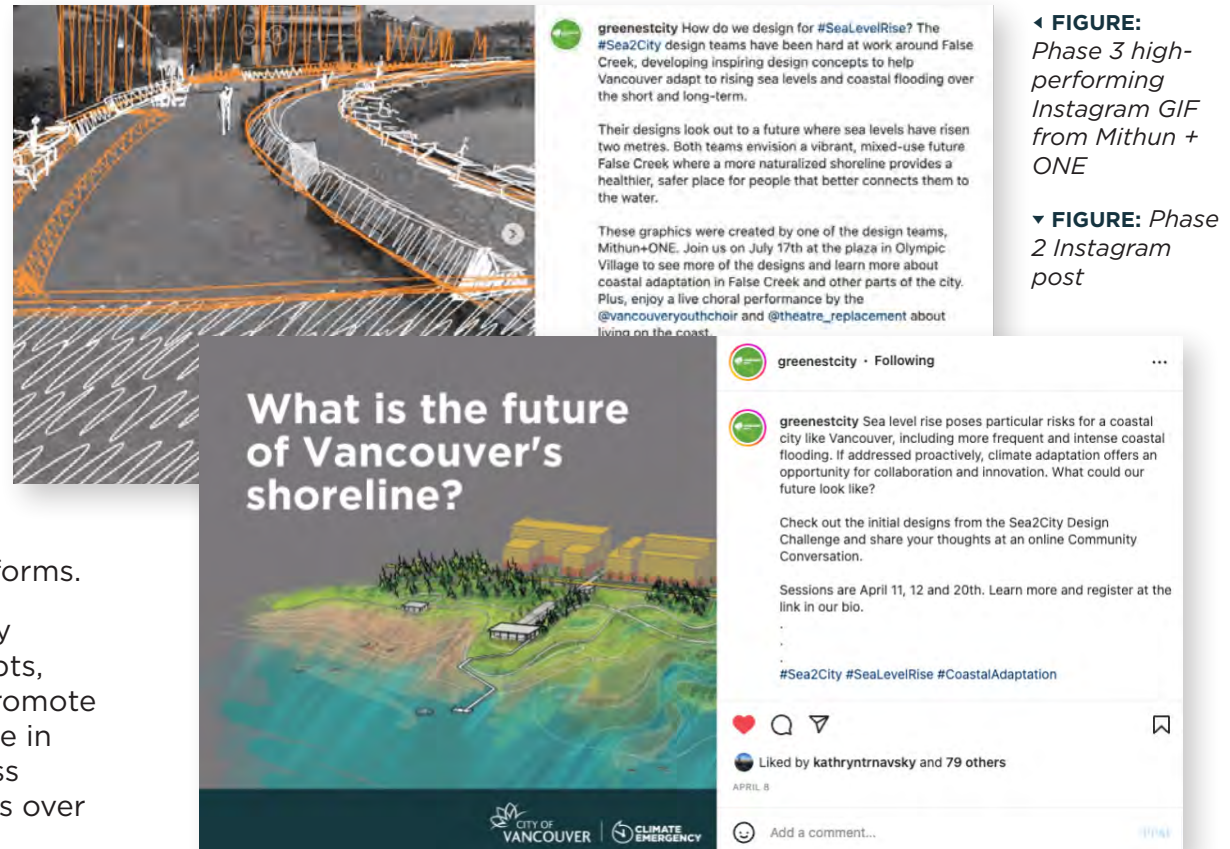
Sea2City social media performed well, with consistently high reach numbers throughout each phase. A combination of short video posts and engaging event graphics (*Decolonizing the Shoreline*, Herring Day, *Town Choir*) resulted in Sea2City posts contributing to a considerable amount of Greenest City's overall performance, especially during the month of July.

During Phase 1, the social media drove traffic to the community advisory group application portal and raised awareness about the project and sea level rise in Vancouver. Total impressions (the number of times posts were displayed to users) reached 55,000 across Instagram, Twitter, and Facebook. Engagement (the number of times users interacted with posts) was over 1,500 across the social media platforms.

In Phase 2, social media drove traffic to Community Conversations, showcases of the early draft concepts, and other public events, as well as continuing to promote Sea2City and raise awareness of about sea level rise in Vancouver. Total impressions reached 57,000 across Instagram, Twitter, and Facebook. Engagement was over 1,200 across the social media platforms.

Phase 3 social media Sea2City posts drove traffic to attend *Decolonizing the Shoreline*, the Sea2City *Town Choir* pop-up event, and two final Community Conversations. There were over 40,000 total impressions through Instagram, Facebook, and Twitter.

During the month of July, Greenest City social media engagement increased by 86.8%, with a huge bump in engagement across all channels. The Sea2City campaign was credited as one of the two campaigns driving engagement during this period.



◀ **FIGURE:** Phase 3 high-performing Instagram GIF from Mithun + ONE

▼ **FIGURE:** Phase 2 Instagram post

MEDIA

Sea2City used a combination of paid and earned media to support the engagement and communications goals of increasing public awareness of sea level rise, promoting Sea2City public events, and inspiring the public about coastal adaptation design concepts that could be explored for our shoreline.

Throughout the three phases of Sea2City, there were over 25 media pieces including print, radio, and video coverage. Media coverage raising awareness of Sea2City and promoting public events was featured in local and national media including, CBC News, CBC Radio, The Georgia Straight, and The Globe and Mail.

WEBSITE

A Sea2City online project hub was established at vancouver.ca/sea2city. The website featured information about the project, a schedule of public events, information about the participating design teams and background information about sea level rise and coastal adaptation in Vancouver.

During Phase 1, from June 2021 through to December 2021 a total of 2,400 users viewed the webpage 3,500 times.

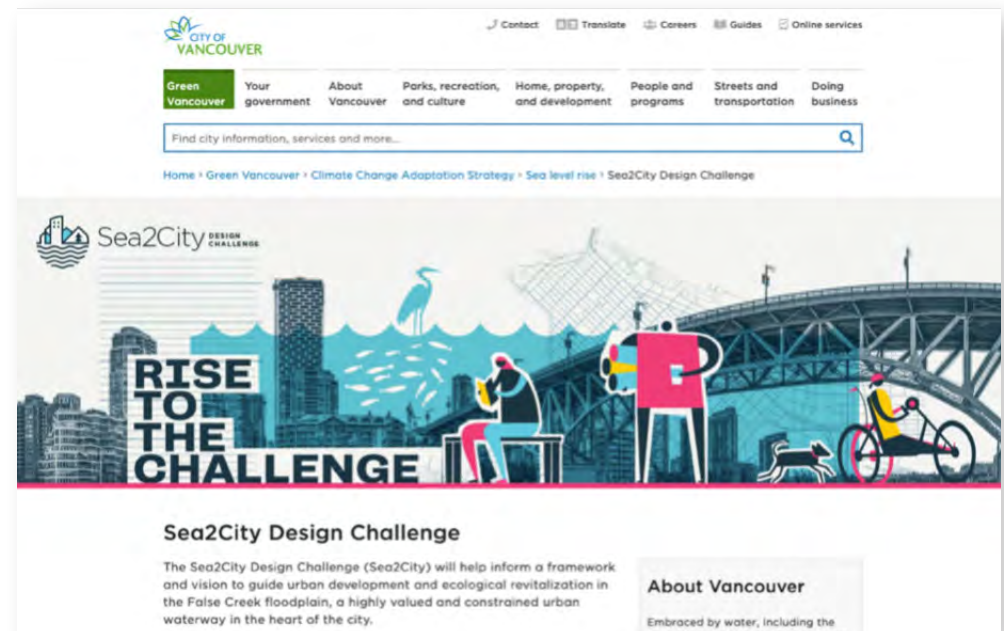
During Phase 2, the website was updated during with public events. Between January 2022 to May 2022 there were a total of 1,544 page views¹ over 721 sessions², with 392 users³.

During Phase 3, from May 1 and August 24, 2022, the Sea2City website had a total of 1,700 page views, over 736 sessions, and 404 total users. This traffic was primarily concentrated in the week of July 25 to July 31.

- 1 Page views- an approximate number of times a page or pages were accessed in a browser. Refreshing a page 10 times will generate 10 pageviews.
- 2 Sessions- an approximate number of visits to the site in which at least one page was viewed. Can be used to estimate reach.
- 3 Users- an approximate number of unique browsers from which at least one page of our web properties was viewed. The least reliable measurement of reach.



▲ FIGURE: CBC Vancouver coverage of Sea2City Town Choir event



▲ FIGURE: Sea2City project webpage





For More Information:

Visit: vancouver.ca/sea2city

Phone: 3-1-1 TTY: 7-1-1

Outside Vancouver: 604-873-7000

Hỏi chi tiết **Obtenga Información**

資料查詢 **ਜਾਣਕਾਰੀ ਲਵੋ** 3-1-1



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