Toronto Tomorrow

A new approach for inclusive growth

SIDEWALK LABS

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The Plans

Land Acknowledgement

Sidewalk Labs recognizes that this land we now call Toronto has been the site of human activity for over 15,000 years; we are within the Treaty Lands and claimed Territory of the Mississaugas of the Credit. Toronto is now home to many diverse First Nations, Inuit, and Métis peoples. It is the responsibility of all people to share in wise stewardship and peaceful care of the land and its resources. We are mindful of a history of broken treaties, and of the urgent need to work continuously towards reconciliation, and we are grateful for the opportunity to live and work on this land.

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Volume 1

Intro -duction

A Vision for Unlocking the Eastern Waterfront

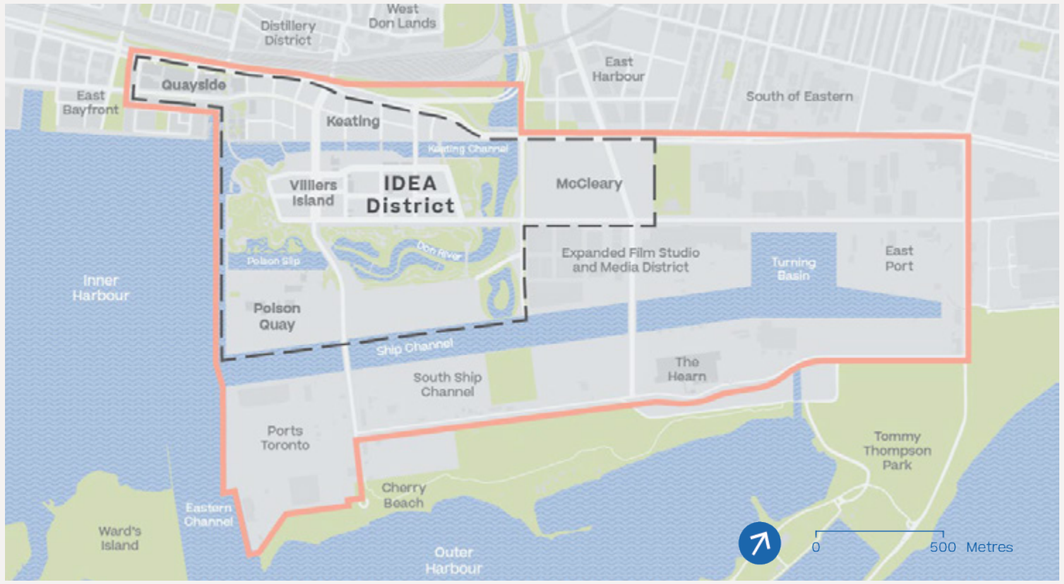
Sidewalk Labs proposes a vision — beginning with Quayside — designed to realize and maximize ambitious quality-of-life goals by integrating innovations into the physical development.

For more details on the project background, see the Overview volume.

The Master Innovation and Development Plan (MIDP) is a comprehensive proposal for inclusive growth along Toronto's eastern waterfront, informed by more than 18 months of public consultation, following the selection of Sidewalk Labs as Innovation and Funding Partner in October 2017 by Waterfront Toronto, the public corporation formed to unlock the social and economic potential of the waterfront.

In creating the MIDP, Sidewalk Labs has tried to respond directly to Waterfront Toronto's priority outcomes: job creation and economic development, sustainability and climate-positive development, housing affordability, new mobility, and urban innovation (including robust data privacy and digital governance).

Throughout its planning process, Sidewalk Labs has also tried to respond to Toronto's Official Plan, which embraces the use of "innovative implementation solutions" to help address tough urban challenges and describes the future city as one where "the private sector marshals its resources to help implement public objectives." Specifically, the Official Plan calls for leaders in the private sector "with the courage to take risks, develop proactive solutions and then follow through."



Map

The proposed IDEA District geography

The proposed 77-hectare IDEA District provides sufficient scale to achieve ambitious quality-of-life outcomes.

Eastern waterfront
IDEA District

Consistent with these priorities and values, the plans and ideas described in Volume 1 put forward innovative implementation solutions, aim to leverage private resources to realize public objectives, and advocate for sustainable communities along the eastern waterfront.

Creating an IDEA District within the eastern waterfront.

The eastern waterfront is located just east of downtown Toronto, extending around the inner harbour and encompassing the industrial areas surrounding Parliament Slip, the mouth of the Don River, the Ship Channel, and the Turning Basin. As defined by Waterfront Toronto's 2017 Request for Proposals (RFP), the eastern waterfront is made up of the areas of Quayside, the Keating Channel precinct plan, and the Port Lands Planning Framework. Some of the area has recently been developed, some is under construction, some supports active industry today, and other lands are underutilized. The total area is over 300 hectares.

To achieve its goals, the MIDP proposes to transform a small portion of the eastern waterfront — less than one-third, to be developed over 20 years — into an Innovative Design and Economic Acceleration (IDEA) District that represents an innovative new development model for how the private sector can support the public sector in tackling the toughest growth challenges.

Exploring phases and roles to maximize impact

From the 2017 RFP to the Sidewalk Toronto Plan Development Agreement, Waterfront Toronto has sought to maximize the impact of its objectives.

The RFP recognized the potential constraint of Quayside, at just five hectares, including a requirement to "describe your team's ability and readiness to take the concepts and solutions deployed on Quayside to scale in future phases of waterfront revitalization." The Plan Development Agreement describes the MIDP as including both plans for the Quayside parcel and "plans at scale."

Consistent with these calls, Sidewalk Labs believes in a phased approach for testing, refining, and demonstrating the impact of core innovations, beginning with a smaller setting and working up to larger areas along the eastern waterfront as project objectives are achieved. Certain solutions cannot reach their full impact at the size of a small neighbourhood like Quayside while others do not become financially feasible at this smaller scale.

For these reasons, Sidewalk Labs has proposed a geography for the IDEA District that can meet or exceed the ambitious priority outcomes outlined by Waterfront Toronto, and do so in a way that is both financially achievable and replicable in other parts of Canada and around the world.

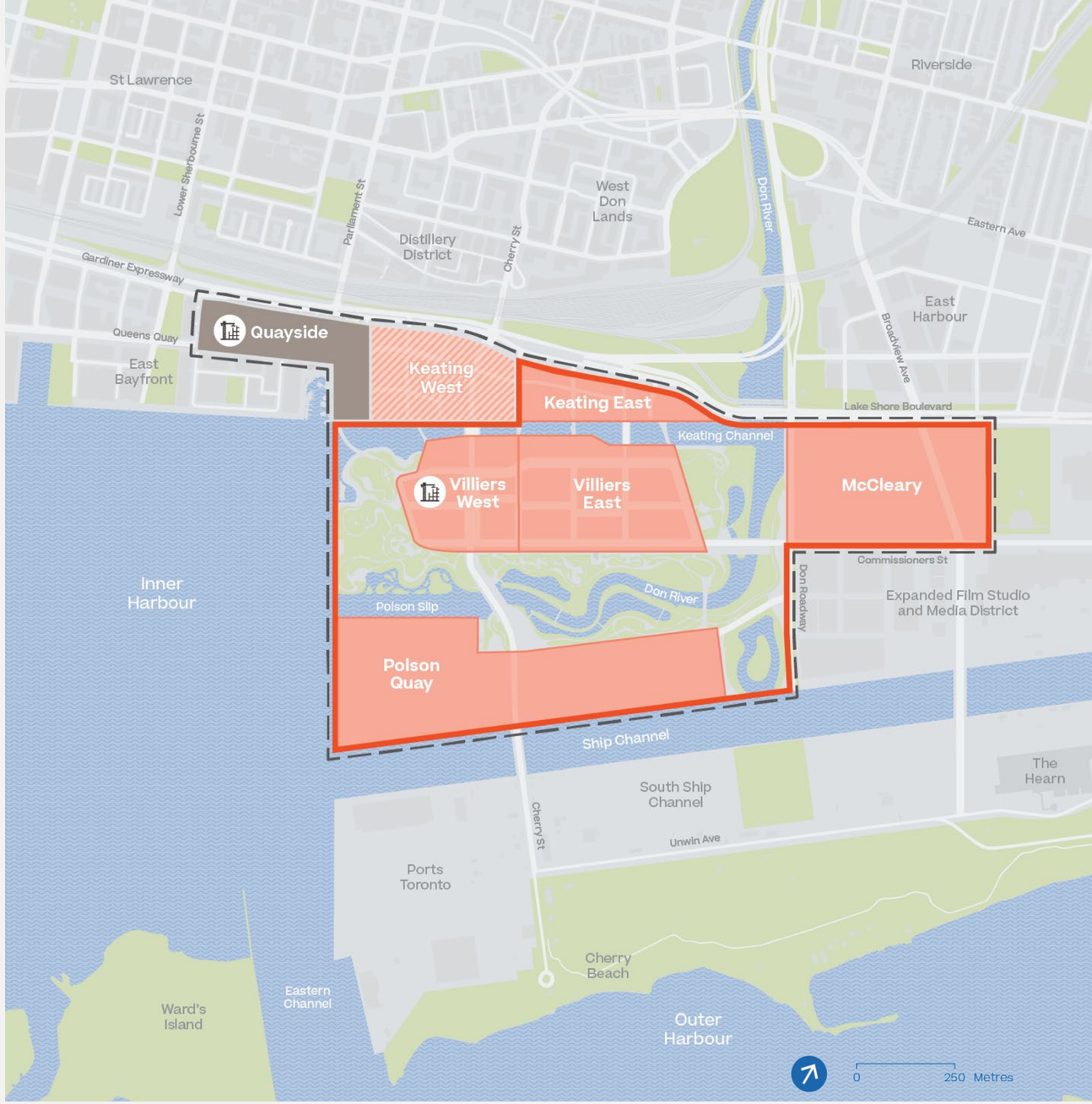
The IDEA District proposal is broken into two phases.

Phase 1:
Quayside.
The first phase of the IDEA District would be Quayside, a five-hectare neighbourhood that sits at the crucial transition point to the broader eastern waterfront. The Quayside development plan provides the opportunity to lay out the foundations for achieving the priority outcomes, forming the basis for identifying the required innovations and the critical and advanced infrastructure to make it all happen.

Sidewalk Labs proposes to lead this development, working with local partners, and take the risk of proving the market viability of a proposed development model that incorporates urban innovations to achieve ambitious quality-of-life objectives.

The Quayside phase is explored in the greatest amount of planning detail throughout the MIDP. The "Quayside Plan" chapter begins on Page 24.

Phase 2:
River District.
The second phase would be the River District, a 62-hectare area made up of five neighbourhoods surrounding the renaturalized Don River: Keating East, Villiers West, Villiers East, Polson Quay, and McCleary. Extending Quayside's innovations into the River District would unlock opportunities for Waterfront Toronto and the city to fully realize priority outcomes.



Map

Proposed IDEA District neighbourhoods and roles

IDEA District
River District

Phase 1: Quayside
Phase 2: River District
Optional participation in Phase 2

Sidewalk Labs develops real estate and advanced systems

(A Keating West parcel of roughly eight hectares that sits between Quayside and Keating East already has approved plans; the private landowners there can choose to participate in the IDEA District if they want.)

The "River District" chapter includes considerable planning details for Villiers West, a parcel of nearly eight hectares, where Sidewalk Labs proposes to be lead developer, working with local partners. Villiers West would serve as a catalyst for a new economic cluster focused on urban innovation, anchored by a new Google Canadian headquarters and a new Urban Innovation Institute, and it could further prove out the innovations necessary to achieve Waterfront Toronto's priority outcomes.

In total, Sidewalk Labs proposes leading development (with local partners) on less than 7 percent of the eastern waterfront.

The "River District" chapter includes only concepts for the other proposed neighbourhoods. It also describes how each core innovation creates greater benefits or becomes economically viable at scale.
This chapter begins on Page 254.

The IDEA District can exceed Waterfront Toronto's ambitious priority outcomes — and do so in a way that is both financially achievable and replicable in other parts of Canada.

Proposed project roles beyond Quayside and Villiers West

Planning and development for the River District would be led by Waterfront Toronto and the City of Toronto, working with various development partners. It is Waterfront Toronto's mandate to lead the urban planning, design, infrastructure delivery, and real estate development associated with broader geographies along the eastern waterfront.

Sidewalk Labs proposes that government designate a public entity to serve — or in the case of Waterfront Toronto, continue to serve — as revitalization lead for the IDEA District.

Beyond Quayside and Villiers West, Sidewalk Labs proposes to play a different role across the IDEA District, focusing on three supportive areas:

- Planning, design, and implementation. In this role, Sidewalk Labs proposes to support Waterfront Toronto's ability to provide cutting-edge infrastructure and development that meets agreed-upon guidelines and standards for innovation, with the goal of realizing key quality-of-life objectives around economic opportunity, affordability, mobility, and sustainability.

  Building on the Quayside innovations, Sidewalk Labs proposes to work with Waterfront Toronto to prepare a set of "Innovative Design Guidelines and Standards" that can be used to ensure that all developments in the IDEA District achieve the desired outcomes. Waterfront Toronto would be responsible for working with government to approve them and then ensure their implementation as development proceeds.

- Technology support. In this role, Sidewalk Labs proposes to deploy a limited set of technologies required to achieve key project objectives — defined in Waterfront Toronto's original RFP as "purposeful solutions" — including a dynamic curb that can adjust throughout the day to accommodate vehicle traffic or pedestrian uses, and a standardized mount system that can help catalyze digital innovation by third parties.

- Optional infrastructure financing. In this role, Sidewalk Labs proposes to provide optional support financing critical infrastructure, such as upfront debt service, to help ensure that the city and waterfront can invest holistically in systems that unlock the potential for future development.

These supportive roles reflect Sidewalk Labs' belief that the greatest cities are built from the community up, and that the proposed innovation strategies for achieving public policy goals can only be successful if widely adopted by Toronto's broader development and innovation communities.

Applying this innovative planning approach across the full proposed IDEA District could spark a global hub for urban innovation along the eastern waterfront. Details on these economic benefits can be found in the "Economic Development" chapter on Page 420.

See Volume 3 for more details on Sidewalk Labs' proposed roles for the IDEA District.

A planning approach that integrates innovations into the physical environment

The development of the IDEA District provides a rare opportunity to achieve — and exceed — the priority outcomes established by Waterfront Toronto for the MIDP.

These objectives have proven largely elusive for a variety of reasons. They speak to problems that cannot be solved in a single development and require a scale of coordination that is difficult, if not unprecedented. In some cases, the solutions are contrary to market forces. For many of these challenges, the technology simply did not exist to successfully address the issues.

That has the potential to change today. The scale of the IDEA District offers the opportunity to create a truly transformative experience — at the moment when technology has finally advanced enough to make genuine breakthroughs, if applied with the right level of thought and care. But realizing this opportunity for the betterment of people's lives and urban economies requires a new approach to urban planning and a strong focus on quality-of-life objectives.

An innovation vision across key areas. Sidewalk Labs' approach to planning centres around providing the physical, digital, and policy conditions for innovation on which an array of third parties can build and explore new solutions to urban challenges, with the goal of achieving long-term quality-of-life goals.

To catalyze this approach, Sidewalk Labs identified the building blocks of a neighbourhood — mobility, public realm, buildings and housing, and sustainability — and explored how urban innovations within these areas could support a new kind of community and infuse flexibility into the built environment.

Many of these advances, from mobility management systems guiding the streets to building systems optimizing energy use, are made possible by connectivity and digital innovation. Sidewalk Labs aims to establish the open foundation for a wide array of third parties to address urban challenges using urban data. To ensure that digital innovation aligns with the public interest, all digital proposals — including those by Sidewalk Labs — would be subject to approval from an independent entity tasked with overseeing a transparent process for responsible data use, which would apply in addition to existing Canadian privacy laws.

No community is complete without a cross-cutting layer of social infrastructure that could provide residents with programs to support health and well-being, education and work opportunities, civic life, and arts and culture. Sidewalk Labs' approach would integrate physical spaces, trusted delivery partners, and digital complements to enable a healthy and engaged community where everyone can grow, thrive, and belong.

Within each of these areas, the planning team incorporated innovations into the development designs with an eye towards achieving Waterfront Toronto's priority outcomes and improving quality of life for all. This goal is reflected in the vision statements for each of the urban innovation areas:

Mobility.
A transportation system that reduces the need to own a car by providing safe, convenient, connected, and affordable options for every trip.

Public Realm.
A system of streets, parks, plazas, and open spaces that encourages people to spend more time outdoors, together.

Buildings.
Sustainable buildings that can be constructed and adapted far more quickly and support a lively mix of uses.

Housing.
A program with 40 percent below-market units to improve affordability and expand options for all households.

Sustainability.
A new standard of sustainability that creates a blueprint for truly climate-positive communities.

Social Infrastructure.
Health, civic life, learning, and workforce initiatives and facilities that enable people to thrive.

Digital Innovation.
Catalyze digital innovations that help tackle urban challenges and establish a new standard for the responsible collection and use of data in cities.

For more details on the urban innovations proposed by Sidewalk Labs, see Volume 2.

Chapter 1

The Quay-side Plan

Quayside History: A Working Waterfront

While Quayside was once a bustling manufacturing area, and before that a waterway entry point to a vibrant node of commerce and trade for the Northeastern Indigenous Peoples, the rise of the Gardiner and the fall of industry have left the site underutilized — creating a new opportunity to reimagine it for inclusive growth.[1]

Sitting on the Treaty Lands and Territory of the Mississaugas of the Credit and the traditional territory of the Haudenosaunee and Wendat,[2] along Toronto's waterfront, the site known today as Quayside consists of two portions of land, roughly equal in size, that form an L-shape around the waters of Parliament Slip when viewed from above.[3]

Quayside emerged during a century of lakefill that began in the 1850s.[4] Prior to that point, the original lakefront ended at Front Street.[5] The expansion of the dockwall shifted the water's edge farther and farther from the city centre — and fundamentally changed the conditions of the waterfront.

For most of the 20th century, Quayside had all the hallmarks of a working waterfront. It was the site of a fish processing plant, as well as an enormous soybean storage and processing plant thrumming with production. Vessels pulled up to Parliament Slip to be filled with products bound for the St. Lawrence Seaway across Lake Ontario — and to distant seas and harbours beyond.[6]

As times changed, so did Quayside. The rising hulk of the Gardiner Expressway, begun in 1955, stranded the land from the rest of the city.[7] The fish processing plant closed. By the 1990s, most of the soybean processing facility had been torn down, leaving only one set of grain elevators, which still stand in silent testimony to the area's past: the Victory Soya Mills Silos adjacent to Quayside.[8]

In recent years, cities around the world have realized that this type of industrial waterfront site is valuable public space. Toronto has been a leader of this trend, including the very creation of Waterfront Toronto in 2001, which has since applied strong people-first planning to much of the central waterfront.[9] But Quayside and areas to the east have not yet undergone this transformation, and despite Quayside's spectacular views and close proximity to downtown, the site's potential remains untapped.

Despite Quayside's spectacular views and close proximity to downtown, the site's potential remains untapped.

This historic view of Quayside shows construction beginning on the Victory Soya Mills Silos, in August 1944. Credit: Arthur Beales

Quayside Today: Untapped Potential

Waterfront Toronto recognized that revitalizing Quayside requires a bold development plan that is both evolutionary, in terms of building on existing waterfront initiatives, and revolutionary, in terms of applying new innovations.

Today, Quayside remains a post-industrial piece of land used mostly for parking. It has a few scattered buildings, with no parks, plazas, or public gathering places — and no restaurants, stores, or homes. The only occupied structure is a low, cinderblock former fish-processing plant that Sidewalk Labs has renovated into "307," its main Toronto office and innovation workshop.[10]

For all Quayside's promise, its revitalization faces some imposing physical barriers.

The site is bisected by Queens Quay East, which turns into Parliament Street as it heads beneath the Gardiner — with four lanes of car traffic and few pedestrian crossings. The eastern end of Quayside sits at the edge of Parliament Slip but is difficult to access and set outside the city's current existing block structure. Much of the lakefill terrain has been contaminated as a result of the area's industrial history, and making the site safe for development and public space would require expensive measures to cap or remove this soil. Any development requires deep building foundations that drill down into rock, because the soft fill cannot support structures of any significant scale. Basic infrastructure like water pipes, sewers, and power grids would need to be relocated or upgraded to support any new development.

There are psychological obstacles, too. Although Quayside is tantalizingly close to Downtown Toronto, the Gardiner Expressway and the railroad tracks beside it serve to cut off the waterfront from the rest of the city.[11] And while Lake Shore Boulevard, Queens Quay, and Parliament Street all meet on the site, the streetcar veers off half a mile away, creating a sense that the site is out past the end of the line.

To be sure, city and waterfront developments are advancing eastward. The East Bayfront Precinct Plan — one of the first precinct plans to be prepared by Waterfront Toronto at its inception[12] — is being realized, and a series of residential and commercial buildings is taking form and being connected by new public spaces, streetscapes, and a water's edge promenade. The vision is that vibrant ground-floor uses would begin to extend along Queens Quay and the Martin Goodman Trail, and that a new Queens Quay light rail would connect the Central Waterfront through East Bayfront and into the Port Lands.

Quayside completes the vision of the East Bayfront plan while forming a new entry point and beginning for areas further east. The eastern half of Quayside is governed by the Keating Channel Precinct Plan, which sets out Waterfront Toronto's visions for great public spaces, a vibrant water's edge, mixed-use buildings, and extension of the light rail.

As waterfront revitalization approached Quayside, Waterfront Toronto's 2017 Request for Proposals (RFP) envisioned Quayside as something more than the next step in waterfront progress, calling it a "globally significant transformation opportunity that showcases innovative and sustainable approaches to development." Instead of Quayside serving as the final step to the success of the Central Waterfront, it can become a beginning — the entrance to a reimagined eastern waterfront with innovation at its core that achieves new levels of affordability, sustainability, economic opportunity, and inclusion.

Located just southeast of downtown Toronto, Quayside is a post-industrial area awaiting revitalization.
Credit: DroneBoy

Quayside Tomorrow: Connecting the City to the Eastern Waterfront

Located at the nexus of many key corridors, Quayside can become an essential new link that draws on the energy of surrounding neighbourhoods and makes the eastern waterfront more accessible to Torontonians.

Quayside sits at the intersection of key corridors that span some of the country's densest, most diverse neighbourhoods to the north and east, new communities rising along Toronto's revitalized Central Waterfront to the west, and the future promise of the Port Lands to the south.

Parliament Street and the East End: Diverse, historic neighbourhoods.
Parliament Street is home to the revitalized Distillery District and a diverse network of historic neighbourhoods. The corridor continues north through Regent Park and Cabbagetown and ultimately arrives at St. James Town up at Bloor — the most densely populated neighbourhood in the country, where over 60 percent of the residents were born outside Canada.[13]

The St. Lawrence neighbourhood and ongoing revitalization initiatives in Regent Park and West Don Lands are strong Toronto models for mixed-income neighbourhoods and the integration of social infrastructure that Quayside seeks to build upon.

A number of Indigenous organizations, including Miziwe Biik Aboriginal Employment and Training and Anishnawbe Health Toronto, are leading the development of a new Indigenous Community Hub in the neighbouring West Don Lands. Further to the north, a new Indigenous business district on Dundas Street East is being planned.[14]

Across the Don River, a number of East End mixed residential neighbourhoods — including Riverdale, Riverside, and Leslieville — connect to Quayside through existing light rail lines and will soon gain an additional link from the future SmartTrack line.

Quayside can extend the mixed-income character of the communities found in neighbourhoods to the north and east, provide the additional social infrastructure the area needs, and establish new public spaces along the waterfront that connect people with the lake.

Queens Quay: New waterfront communities.
The improved Queens Quay runs through neighbourhoods along the city's revitalized Central Waterfront and many important projects Waterfront Toronto has undertaken, including significant residential development, extension of the light rail along the renovated Queens Quay corridor, and major new public parks such as Sugar Beach and Sherbourne Common.

Sidewalk Labs plans to build on Waterfront Toronto's work to extend the pedestrian, cycling, light rail, and public realm enhancements through Quayside, creating a vibrant connection to future waterfront development to the east.

Cherry Street: Future waterfront parks and development.
Cherry Street and a series of pedestrian bridges would provide a connection across Keating Channel to the extraordinary new parks that will encircle Villiers Island as part of Waterfront Toronto's renaturalization of the Don River and link to future neighbourhoods like Polson Quay.

In short, Quayside can serve as a connection point for city and waterfront, lake and land, past and present. It can emerge as a starting point to address the broader challenges of city life and become a model for how urban communities can meet the needs of new generations.

Quayside and surrounding neighbourhoods

What Makes Quayside Different: Applying Innovations to the Plan

Applying Sidewalk Labs' planning approach and proposed innovations to Quayside would result in a new type of neighbourhood that enables more affordability, more sustainability, and more opportunity for more people than conventional developments — with exploration built into its bones.

The following pages provide a high-level overview of the various physical, digital, design, and policy innovations proposed as part of the Quayside plan. These innovations have been organized around mobility, public realm, buildings and housing, sustainability, social infrastructure, and digital innovation.

Readers wishing for additional details on how these innovations would be applied in Quayside should turn to the technical plan sections of this chapter, on Page 96. Readers wishing for even greater detail on the innovation concepts, including their potential impact on quality of life at various scales of development, should turn to Volume 2 of the MIDP.

Mobility

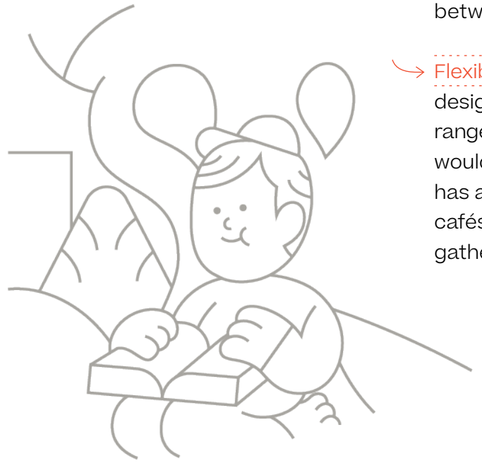
A transportation system that **reduces the need to own a car** by **providing safe, convenient, connected, and affordable options** for every trip.

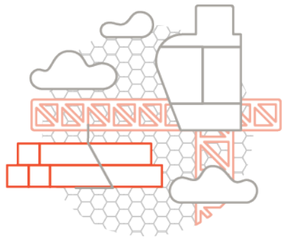
- A self-financing light rail extension would connect residents to employment hubs and draw workers and visitors to the waterfront from all over the city.
- A vast network of pedestrian and cycling infrastructure featuring wider sidewalks, wider and heated bike lanes, and accessibility elements would encourage walking and cycling and support people using wheelchairs or other assistive devices.
- New mobility services such as ride-hail, bike-share, electric vehicle car-share, and e-scooters would provide affordable alternatives to private car trips.
- An integrated mobility subscription would enable residents and workers to see all their trip choices in real time and pay in one place — a concept often called “mobility as a service.”
- A neighbourhood freight “logistics hub” connected to an underground package delivery system would dramatically reduce truck traffic on streets and improve convenience.
- To reduce congestion and encourage shared trips, a proposed mobility management system would coordinate all travel modes, traffic signals, and street infrastructure, and apply demand-based pricing to curb and parking spaces.
- Flexible street spaces called “dynamic” curbs would provide passenger loading zones during rush hour that could be used as public spaces in off-peak times.
- Adaptive traffic signals would prioritize pedestrians who need more time to cross a street or transit vehicles running behind schedule.
- A set of “people-first” street types would be designed for different speeds and primary uses: Boulevards and Transitways for public transit and vehicle traffic, Accessways designed for cycling speeds, and Laneways designed for pedestrian speeds.

Public Realm

A system of **streets, parks, plazas, and open spaces** that **encourages people to spend more time outdoors, together.**

- People-first street designs would eliminate curbside parking, widen sidewalks, and increase tree plantings to improve safety and activate street life.
- Modular pavement — hexagonal pavers that can be replaced or repaired in mere hours by a single person with a handheld machine — would dramatically reduce the amount of time streets spend closed down for road or utility work and increase flexibility of street uses.
- A proposed outdoor-comfort system could dramatically increase the amount of time it is comfortable outside, including Raincoats to block rain, wind, and sun along sidewalks; Fanshells to provide cover in open spaces; and Lanterns to block wind between buildings.
- Flexible ground-floor “stoa” spaces designed to accommodate a wide range of uses beyond traditional retail would ensure that the community has a lively mix of shops, restaurants, cafés, art installations, community gatherings, and maker studios.
- A leasing platform called Seed Space would help small businesses and other retailers book a wide range of stoa sizes, from anchor-tenant spaces to micro-stalls, for short- or long-term uses.
- Quayside’s three primary open spaces would be infused with flexibility to encourage year-round use, including a dynamic water feature and performance space at Parliament Plaza, barges on Parliament Slip, and multi-sport fields in Silo Park.
- A proposed entity called the Open Space Alliance would coordinate programming, operations, and maintenance across Quayside’s parks, plazas, streets, and water spaces for a more responsive public realm.
- Shared programming infrastructure, such as projectors and lighting options, would enable the community to program open spaces themselves.
- A real-time map of public realm assets — from park benches to drinking fountains to landscaped gardens — would enable proactive maintenance and keep spaces in good condition.





Buildings

Sustainable buildings that can be **constructed and adapted far more quickly** and **support a lively mix of uses.**

- Quayside would be the first neighbourhood built entirely of "mass timber" — an emerging material every bit as strong and fire-resistant as concrete or steel but far more sustainable — including record-setting buildings of around 30 storeys.
- An Ontario-based factory would produce mass timber building parts for fast assembly in Quayside, catalyzing a new industry that taps into Canada's vast sustainable forests.
- A digital coordination system called Sidewalk Digital Fabrication would help to coordinate every part of the proposed mass timber supply chain, from the off-site factory to on-site assembly.
- Buildings in Quayside would feature adaptable "Loft" spaces designed with flexible floor plates to accommodate residential, commercial, and light manufacturing uses, enabling a true live-work community.
- A system of flexible wall panels would enable renovations to Loft and residential spaces to occur much faster than normal, reducing vacancies and helping the neighbourhood adapt to market conditions.
- Low-voltage digital power connections — designed to travel over ethernet cables rather than via electrical wires embedded in walls — would dramatically reduce fire risks and facilitate quicker renovations.
- Mist-based sprinklers would provide the same protection as traditional sprinkler systems but use a fraction of the water and facilitate quicker renovations by travelling through narrow tubes instead of being embedded in walls.
- A sustainable material called Shikkui plaster would provide fire protection equivalent to drywall with a fraction of the waste.
- A proposed "outcome-based" building code system would monitor noise, nuisances, and structural integrity in real time to help a mix of residential and non-residential uses thrive without sacrificing public safety or comfort.

Housing

A program with **40% below-market units** to **improve affordability** and **expand options for all households.**

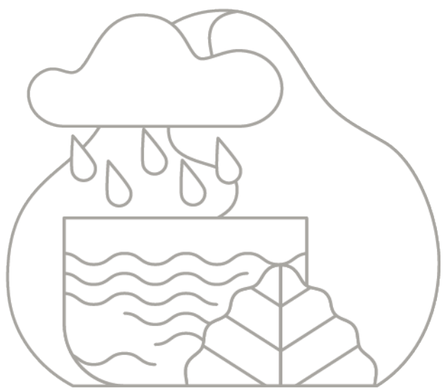
- Quayside's proposed mixed-income housing program would feature 20 percent of units as affordable housing (a quarter of which would go towards "deep" affordability needs) and 20 percent of units as middle-income housing.
- Middle-income housing options would include "shared equity" units designed to help households build value in their home without the high up-front cost of a traditional mortgage down payment.
- Half of the total proposed housing program would consist of "purpose-built" rentals that are critical to improving long-term affordability.

- Quayside would feature a set of efficient and ultra-efficient units that reduce size to enable affordability while remaining livable through thoughtful design features, such as space-saving furniture, shared building amenities, and access to off-site storage space with on-demand delivery.
- This approach of "affordability by design" would enable the creation of 87 more units in Quayside than would otherwise exist in a conventional development, creating $37 million of value that could be applied towards below-market housing.
- A set of co-living units would feature shared building amenities, such as communal kitchens, to enhance community for a range of residents, including single-person households, multi-generational families, and seniors.
- In Quayside, 40 percent of housing would consist of family-sized units at two bedrooms or more.

Sustainability

A new standard of sustainability that creates a blueprint for truly climate-positive communities.

- Low-energy building designs — inspired by the Passive House movement — would achieve Toronto Green Standard Tier 3 rating for energy efficiency and Tier 4 for greenhouse gas intensity.
- A proposed suite of energy "Schedulers" would optimize energy systems for residents, businesses, and building operators, ensuring that buildings operate in the most efficient way possible.
- A district energy system called a "thermal grid" would provide heating, cooling, and domestic hot water without relying on fossil fuels.
- An advanced power grid would use solar energy, battery storage, and time-based energy pricing to reduce reliance on the main Toronto Hydro grid during periods of peak demand and make an all-electric community affordable.
- An innovative bill structure would enable residents and businesses to set monthly budgets for energy costs, similar to the way people pay for mobile phone plans today.
- A smart disposal chain would feature real-time feedback to improve waste sorting and "pay-as-you-throw" chutes to reduce household and business waste.
- An underground pneumatic tube system would keep these waste streams separated until they reach a collection facility, reducing contamination and centralizing trash hauling.
- An active stormwater system would rely on green infrastructure to capture and retain stormwater and on digital sensors to empty storage containers in advance of a storm.



Social Infrastructure

Health, civic life, learning, and workforce initiatives and facilities that enable people to thrive.

- A Care Collective would provide community space dedicated to enhancing health and well-being by co-locating the delivery of health care and community services alongside proactive health programming.
- A Civic Assembly, adjacent to the Care Collective, would provide neighbourhood access to spaces for community programs, civic engagement, and cultural events.
- An elementary school, co-located with a childcare centre, would ensure that downtown families have access to basic education needs.
- A proposed collaboration with the Toronto Public Library (TPL) would explore ways to integrate the library's presence throughout the neighbourhood, resulting in potential pop-up lending services or TPL-developed classes on digital literacy.
- An online resource called Collab could allow community members to decide on public space programming, giving them a nuanced understanding of trade-offs and community impact.
- The Sidewalk Works jobs program would bring employers and educators into conversation, prepare workers to acquire in-demand skills, and connect employers with a diverse and talented workforce.

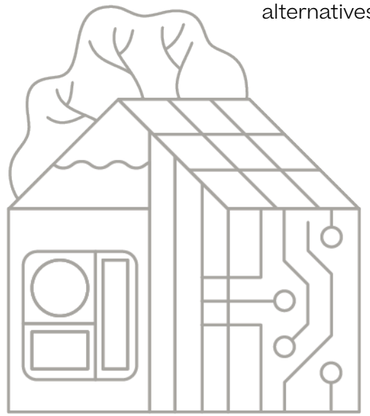
Digital Innovation

Catalyze **digital innovations** that help **tackle urban challenges** and establish a **new standard for the responsible collection and use of data** in cities.

A ubiquitous connectivity network — powered by a new Super-PON technology that reaches faster speeds with less equipment — can provide households and businesses with a secure personal network across the entire neighbourhood, indoors and outdoors.

Standardized physical mounts connected to power would dramatically reduce the cost of deploying digital innovations, serving as a sort of "urban USB port."

Open, published standards would make properly protected urban data accessible to the community in real time, and make it easy for third parties to build new services or competitive alternatives to existing ones.



A best-in-class approach to security and resiliency would be designed to prevent disruptions, rapidly detect them, and rapidly restore functionality.

Building on existing privacy laws, a proposed independent Urban Data Trust would oversee the review and approval of all digital innovations that propose to use or collect urban data in Quayside — whether developed by Sidewalk Labs or third parties.

The proposed Urban Data Trust would be tasked with establishing clear Responsible Data Use Guidelines that safeguard the public good while enabling innovation, including by making de-identified or non-personal data publicly accessible by default.

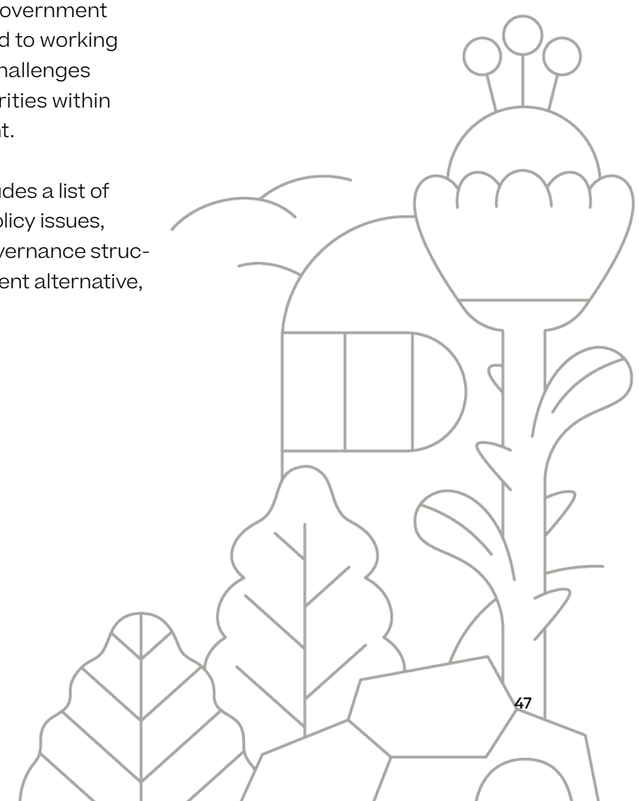
A publicly transparent Responsible Data Use Assessment would ensure that companies or community members wishing to use urban data do so in a way that has a beneficial purpose and protects privacy.

The path to implementing these innovations

Sidewalk Labs recognizes that some of these proposed innovations would require regulatory or policy changes in order to be implemented. Sidewalk Labs also recognizes that these types of changes require significant review and analysis by public agencies at multiple levels and understands how challenging this process can be.

In preparing this proposal, Sidewalk Labs has begun discussions with Waterfront Toronto and government officials and looks forward to working through these complex challenges with the applicable authorities within each order of government.

Volume 3 of the MIDP includes a list of specific regulatory and policy issues, along with a proposed governance structure with which to implement alternative, innovative approaches.



Development Plan

The Quayside development plan strives to achieve transformative quality of life improvements by combining forward-thinking planning approaches with new physical and digital innovations.

The following pages show the site plan and some illustrative renderings of the neighbourhood, as well as a breakdown of the development program into its core components.

These components include residential uses and a wide range of non-residential uses — including retail, office, production, and community spaces — to create a diverse live-work community.

The Quayside Site Plan

This plan view of the site illustrates the extensive pedestrian pathways in Quayside, as well as a new grand public space at Parliament Plaza.

By creating a new “cove” at Parliament Slip, an exciting new public space oriented around the water, this plan would help connect all Torontonians to the waterfront.

This connection to the water is a major theme of the Quayside plan: residents, workers, and visitors can interact directly with the water through barges, kayaks, and new floating boardwalks.

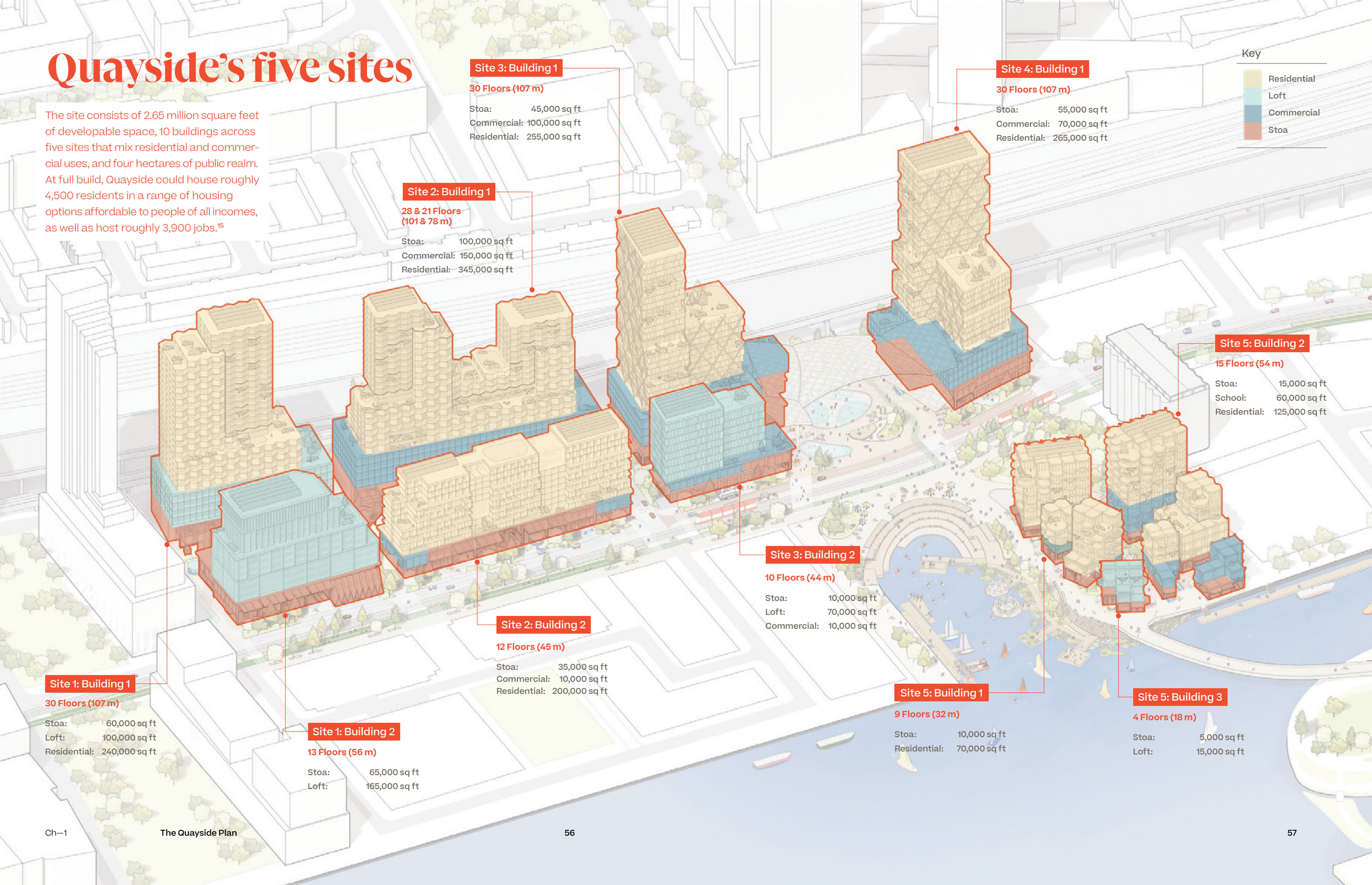

Parliament Street
Lower Sherbourne Street
Bonnycastle Street
Gardiner Expressway / Lake Shore Boulevard
Silo Street
Parliament Plaza
Martin Goodman Trail
Queens Quay
Sherbourne Common
Small Street
Parliament Cove
Silo Park
Merchants' Wharf
Parliament Slip
Inner Harbour
To Villiers Island
Keating Channel

The Quayside neighbourhood

This view of the Quayside site plan looks northeast towards the Gardiner Expressway. The plan incorporates a series of innovations around transportation, social infrastructure, housing affordability, digital tools, sustainable infrastructure, building construction, and public space — with the goal of improving quality of life for Torontonians. It reflects 18 months of public engagement needed to refine these planning ideas and start to achieve Waterfront Toronto's ambitious priority outcomes.

Quayside's five sites

The site consists of 2.65 million square feet of developable space, 10 buildings across five sites that mix residential and commercial uses, and four hectares of public realm. At full build, Quayside could house roughly 4,500 residents in a range of housing options affordable to people of all incomes, as well as host roughly 3,900 jobs.[15]



Pedestrian walkway:
Intimate public spaces

A network of pedestrian-only pathways would be lined with a variety of retail, community, and cultural ground-floor stoa spaces, with housing and offices on upper floors to create a true live-work neighbourhood.

As the world's first all-mass timber neighbourhood, Quayside would become a global model for showcasing this sustainable, beautiful building material.

Queens Quay:
People-first streets

A redesigned Queens Quay would create expanded pedestrian spaces that benefit from animated ground floors, curbless streets, lush plantings, and outdoor-comfort strategies that make it possible for people to spend more time outside together.

A new modular pavement system with embedded lights and heating would facilitate safe, welcoming spaces that can adapt to changing conditions.

Parliament Plaza:
Connecting land and water

A series of water-based play spaces would anchor a grand central plaza designed to draw people down to the water's edge and host a wide range of activities, from concerts to markets to art installations.

The plaza would be surrounded by two-story ground-floor stoa spaces that host diverse programming and blur the line between indoors and outdoors.

Parliament Slip:
Active in all seasons

Framed by lower-scale, intimate buildings, Parliament Slip would offer direct access to the water for activities like kayaking, educational programs, art installations, and relaxation. A new pedestrian bridge would connect the slip with the stunning new parks of Villiers Island.

Outdoor-comfort strategies, such as building Raincoats that extend over the side-walk and temporary enclosed structures, would support ongoing programming to ensure that the waterfront remains lively and safe year-round.

The Quayside Development Program

Applying these principles and innovations to Quayside would result in a physical development program that is fundamentally more affordable, vibrant, connected, and inclusive than conventional urban developments.

Development in Quayside is governed by zoning bylaws that, if followed exactly, would have a limited impact on some of Toronto's biggest challenges around affordability and economic opportunity.

In its aspirations to push beyond these bylaws, Waterfront Toronto developed precinct plans and zoning bylaws for Quayside (endorsed by the city) that represent an important departure from typical developments in Toronto, with increased requirements for mixed-use and affordable housing, a focus on creating a top-quality public realm, and an emphasis on sustainability.

Sidewalk Labs embraces this vision and proposes to push these priorities even further, exceeding the targets established in the precinct plans and the zoning bylaws, and creating a new type of development model to achieve the goals established by Waterfront Toronto.

Evolutionary:
→ Greater mixed-use
→ Expanded social infrastructure
→ Ambitious sustainability plan

Several aspects of Sidewalk Labs' vision for Quayside are evolutionary in nature, building on progress by Waterfront Toronto and the city.

Quayside's plans support a significant mix of residential and non-residential space, exceeding the minimum requirements for retail and commercial activity in order to generate street life and drive economic expansion — an approach enabled by flexible building types designed to accommodate a variety of uses and accelerate renovations. Quayside's plans build in space for community purposes up front, ensuring that residents have access to schools, health facilities, civic spaces, and arts and cultural programs. And Quayside will advance Waterfront Toronto's sustainability ambitions through a series of design and technology initiatives that, altogether, would reduce greenhouse gas emissions by 85 percent from the city's average.

In addition to these efforts, Sidewalk Labs proposes some initiatives that are more revolutionary in terms of their ability to push city and waterfront objectives forward in new ways.

Revolutionary:
→ All-wood construction
→ 40% below-market housing
→ Accelerated light rail expansion

Sidewalk Labs proposes to cap heights at around 30 storeys to create a livable neighbourhood, with all-wood construction to create healthy and sustainable buildings. Instead of providing the minimum amount of affordable housing, Sidewalk Labs proposes to increase the range of housing opportunities, including 40 percent of units at below-market rates. Instead of building a neighbourhood and waiting for public transit to arrive, Sidewalk Labs is prepared to assist with the financing for the extension of the light rail in tandem with building Quayside, which would accelerate development opportunities and make the site dramatically more attractive for commercial activity.

These approaches to the development program run counter to current market trends and forces but are fully consistent with the goals for Quayside, as established by Waterfront Toronto, for an affordable, mixed-use community.

A development program defined by a vibrant mix of uses

A cornerstone of Sidewalk Labs' proposed development program for Quayside is that it calls for roughly 33 percent of the site's allowable floor area to be devoted to non-residential uses,[16] encouraging a mix of office space for companies and startups, ground-floor commercial space for retailers and makers, and social space for schools and community groups, in addition to homes.

For Quayside's residential spaces, Sidewalk Labs proposes an unprecedented commitment to mixed-income housing. Sidewalk Labs plans to meet and even exceed Waterfront Toronto's 20 percent requirement for traditional affordable housing[17] (a quarter of which Sidewalk Labs would dedicate to "deep" affordability needs) and add 20 percent more below-market housing for middle-income households.

The benefits of this type of complete live-work community include decreased commute times, greater "all-in" affordability because of lower housing costs and travel options that do not require owning a car, and a heightened sense of social cohesion. Sidewalk Labs estimates that this approach would also result in major economic development, with more than 3,900 jobs eventually located in Quayside (and more than 9,000 new jobs in Ontario overall).

Quayside could be home to more than

3,900

jobs.

Each aspect of the proposed Quayside development program responds to a challenge facing Toronto today. To help show how this plan would address these challenges while building on existing city and waterfront development trends, the tables on the following pages compare Quayside's proposed development program to the zoning bylaws for residential, commercial, ground-floor, community, and public spaces, as well as for parking.

(Additional information on how Sidewalk Labs' proposed plan meets or exceeds existing precinct plans and zoning bylaws is available in the "Planning Policy Justification Report" section of the MIDP Technical Appendix.)

In total, the proposed Quayside development plan consists of five sites, 10 buildings, and 2.65 million square feet of developable space.[18] For several reasons, Sidewalk Labs has decided not to build up to the maximum square footage allotted by the zoning bylaws.

First, Sidewalk Labs believes Quayside can become the world's first neighbourhood designed entirely out of sustainable mass timber, demonstrating the vast potential of this important technology. Achieving this goal would catalyze a new Canadian industry around mass timber building components, anchored by the launch of a new Ontario-based factory. An all-wood Quayside would also have significant benefits to the environment, removing the equivalent of 20,000 cars from the road annually.[19]

Currently, the practical limit of mass timber is around 30 storeys; beyond that height, structural beams become so large that they interfere with usable interior space.[20] As a result, the Quayside development proposes buildings around 30 storeys.

Total development program

	Quayside Approximate square feet	Quayside Program percentages	Zoning bylaws[21]
Total developable space	**2.65 million sq ft**	**100%**	**3.17 million sq ft**
Residential space	**1.78 million sq ft**	**67%** of total program	**95%** of total program
Condo	800,000	45% of residential	
Market rental	270,000	15% of residential	
Below market	710,000	40% of residential	
Non-residential space	**870,000 sq ft**	**33%** of total program	**5%** of total program
Traditional commercial space	340,000	39% of non-residential	
Loft commercial space 3rd to 12th floors	70,000	8% of non-residential	
Stoa commercial space 1st or 2nd floor	140,000	16% of non-residential	
Stoa retail, food, and beverage 1st or 2nd floor	210,000	24% of non-residential	
Stoa production 1st or 2nd floor	20,000	2% of non-residential	
Stoa social infrastructure 1st or 2nd floor	30,000	3% of non-residential	
Elementary school	60,000	7% of non-residential	

Note: Numbers may not add up due to rounding. All numbers are subject to change based on further consultations and refinement of the plan.

Second, the Quayside plan aims to prototype more flexible interior spaces, both with stoa on the lower two floors, which can accommodate a range of retail, production, and community spaces, and with Loft spaces at the mid-rise sections of buildings, which can accommodate commercial and live-work spaces in what would normally be residential-only buildings. To provide these flexible spaces, floor-to-ceiling heights would be taller than in a typical development, resulting in fewer overall floors within the same general heights.

Third, Sidewalk Labs aims to create a neighbourhood filled with more open and publicly accessible space than it might otherwise have, often with an intimate feel. The Quayside plan would convert Parliament Street into a new concept for a public plaza, Parliament Plaza, and devote more open space to this area than previous plans to create a significant public destination at this location. Additionally, while the East Bayside precinct plan identified a passageway through Sites 1 and 2, the proposed Quayside plan creates a more generous space that extends through Site 3 to connect directly to Parliament Plaza.

Together, these spaces advance the goals of creating more active street life for residents, visitors, and workers, as well as creating new opportunities for small retailers and other ground-floor uses that benefit from foot traffic. Sidewalk Labs believes these benefits are worth the tradeoff in land area for development.

Another example of building less than bylaws allow occurs on Site 5. Instead of pursuing a single larger structure of approximately 12 storeys, Sidewalk Labs proposes a group of smaller buildings for the site. This approach enables pedestrian passageways and courtyards to bisect the site, extending the public realm from Silo Park to the waterfront. It also allows buildings to descend in height as development moves towards the water, ranging from 15 storeys down to 9 and then only 4 storeys at the water's edge, consistent with priorities of the city and Waterfront Toronto and creating a more human-scaled experience.

Residential uses: More options for all incomes

While the zoning bylaws for Quayside would allow for a development that is 95 percent residential, Waterfront Toronto's precinct plans for Quayside recognize that an inclusive community should provide options for households of all incomes while also leaving room for non-residential uses. For that reason, the precinct plans call for 75 percent of developable area to be designated as residential space — with 20 percent of units as affordable housing and 5 percent of units as low-end-of-market housing.[22]

Sidewalk Labs agrees that the city's greatest strength is its diversity and that the most successful neighbourhoods welcome a wide range of people and activities. To push the concepts of the precinct plans further, Sidewalk Labs plans to allocate 67 percent of space in Quayside to housing and ensure that it is accessible to a greater diversity of residents, creating a neighbourhood that reflects a mix of non-residential uses alongside residential ones.

Residential program

	Quayside Approximate square feet	Quayside Program percentages	Zoning bylaws
Residential space	**1.78 million sq ft**	**67% of total program**	**95% of total program**
Condo	800,000	45% of residential	
Market rental	270,000	15% of residential	
Below market	710,000	40% of residential	

To realize the goal of a mixed-income community, Sidewalk Labs plans for 40 percent of housing units in Quayside to be below-market. Half of these units would be dedicated to traditional affordable housing for households at or below 100 percent Average Market Rent (AMR), as defined by the city.[23] The other half would provide housing options — both rental and shared equity — for middle-income households (defined as 100–150 percent AMR), who currently cannot qualify for affordable housing but also cannot afford to pay market prices.

Housing plan:

50%

"purpose-built" rentals to improve affordability.

A key part of this program is that it consists of 50 percent purpose-built rentals, or units created specifically to be rented, which are almost non-existent in new Toronto developments. These rentals — which include units at both market and below-market rates — can provide more flexibility and easier entry into the market for residents, as well as long-term affordability for the city.[24]

Quayside's proposed housing program also includes new types of flexible, efficient residential units of all sizes that can appeal to single-person households, seniors, and growing families, as well as co-living options, where residents trade some individual unit space for more generous and social community areas within a building.

But affordable homes are just one aspect of an affordable community. To reduce the cost of living, neighbourhoods should also put jobs and essential daily services in close proximity to homes. For that reason, the plans for Quayside devote 33 percent of developable space to a mix of non-residential uses, including offices, ground-floor retail, production spaces, and social infrastructure.

In total, the Quayside plan calls for roughly 2,600 residential units, including roughly 1,000 below-market units.

Non-residential uses: A lively mix of flexible spaces

To advance the shared goal of creating a truly complete community where people can walk to work and enjoy a lively mix of people and activities, Sidewalk Labs' development plan proposes over six times the amount of non-residential space required in Quayside through the zoning bylaws.

Bolstering the neighbourhood's commercial presence would position Toronto to capitalize on the rapid growth of a wide range of new economy businesses seeking to locate in dynamic urban centres that provide inspiration and convenience in equal measure. As just one major driver of this new economy, Toronto's tech sector alone is poised to provide thousands of new, high-paying jobs — if the city can supply the right spaces.

An office park will not attract this new generation of companies, nor will traditional downtown office towers. Quayside's proposed commercial program includes 550,000 square feet of office space, integrated within mixed-use buildings rather than isolated in office towers that are only occupied during weekday work hours. Employees would have daily access to the creative activity that is the hallmark of thriving, diverse cities.

Non-residential program

	Quayside Approximate square feet	Quayside Program percentages	Zoning bylaws
Non-residential space	**870,000 sq ft**	**33%** **of total program**	**5%** **of total program**
Traditional commercial space	340,000	39% of non-residential	
Loft commercial space 3rd to 12th floors	70,000	8% of non-residential	
Stoa commercial space 1st or 2nd floor	140,000	16% of non-residential	
Stoa retail, food, and beverage 1st or 2nd floor	210,000	24% of non-residential	
Stoa production 1st or 2nd floor	20,000	2% of non-residential	
Stoa social infrastructure 1st or 2nd floor	30,000	3% of non-residentialt	
Elementary school	60,000	7%	

Key Term

Loft spaces

(found on upper floors) are designed with flexible floor plates to accommodate a range of residential and non-residential uses.

Key Term

Stoa spaces

(found on the lower two floors) are designed to accommodate a wide range of uses beyond traditional retail, helping to activate the street.

New types of commercial space.
Nearly 40 percent of Quayside's commercial office space would consist of adaptable Loft or stoa spaces. These spaces are designed with flexible floor plates and interior wall systems to enable rapid and low-cost renovations in response to changing economic conditions, as well as to accommodate a range of uses.

Loft spaces would be located on floors 3 through 12 in buildings and could potentially be used for residential purposes, in addition to non-residential uses. (Sidewalk Labs plans to implement minimum targets on its Loft spaces for commercial usage, so they always include a mix of residential and non-residential space.)

Stoa spaces would be located on the ground and second floors of buildings to support retail, commercial, production, and community uses that activate the adjacent public spaces and streets.

The other 60 percent of commercial office space with traditional floor plans would also differ from the norm. In keeping with the preferences of new economy companies, these spaces would provide large horizontal footprints similar to the kind often found in old industrial buildings, which promote interaction and collaboration among employees, rather than the small footprints often found in towers, which separate workers across multiple floors and divorce them from neighbourhood street life.

Stoa: More vibrant lower floors.
Street life is what gives cities their energy and vibrancy, offering pedestrians lively storefronts and cafes, neighbourhood essentials like schools and healthcare centres, and access to everything from art galleries to maker spaces to community rooms. This eclectic mix fuels the character of a neighbourhood.

Unfortunately, today these spaces are at risk. Rising rents and high overhead costs are squeezing out all but the most established businesses, which can afford the capital expense, time, and risks associated with opening a ground-floor space.

In recognition of these challenges, the precinct plans developed by Waterfront Toronto devote 5 percent of total building area to retail and community uses intended to activate key street and park spaces. Sidewalk Labs proposes to push this concept further, devoting 15 percent of the development to retail and other active uses — both on the ground floor and extending into the second floor of buildings—to encourage activation of public spaces and support community needs.

Sidewalk Labs calls its proposed ground-floor space stoa in a nod to the Ancient Greek structures that hosted a broad range of civic functions such as markets and teaching spaces.[25] These modern stoa spaces are designed to foster a diverse urban ecosystem of stores, galleries, public markets, restaurants and cafes, light manufacturing or production, and community gathering spaces and services.

Stoa's flexible nature enables it to accommodate a diverse range of uses, including retail, production, commercial, and social infrastructure.

Stoa program

	Quayside Approximate square feet
Stoa space Lower two floors	**400,000 sq ft**
Commercial space	140,000
Retail, food, and beverage	210,000
Production	20,000
Social infrastructure	30,000

The inherent flexibility of stoa space enables it to be quickly and inexpensively converted into different uses. Stoa spaces would come in varying sizes and involve leases of varying length, supported by a digital leasing platform that enables straightforward applications and fast approvals. The combined impact of these strategies would create new opportunities for small businesses and reassert the streetscape as the centre of civic life.

This flexible design also encourages the programmatic makeup of stoa in Quayside to shift over time in response to market trends. At any given time, retail might make up 40 to 80 percent of stoa, commercial spaces 15 to 45 percent, social infrastructure 5 to 10 percent, and production 1 to 5 percent.

Stoa: retail, food, and beverage.

The variety of retail offered in a typical community can be limited by economic factors such as high rents, competition from online merchants, and a desire for long-term leases — often leading to retail spaces being dominated by multi-national chains rather than local businesses. The loss to neighbourhood life is significant. Sidewalk Labs plans to dedicate half of Quayside's ground-floor space to retail and take steps to ensure a diverse mix of stores of all sizes and ambitions by reducing fit-out costs and designing flexible floor plates into its stoa spaces.

Retail uses in stoa could include traditional retail shops, food and beverage service, marketplaces or bazaars, and essential neighbourhood services. The flexible nature of stoa enables production spaces to coexist alongside sales. For example, a major clothing brand could open a retail space next to an incubator workshop, where local clothing makers could create and sell their own independent labels.

Flexible walls help reduce renovation costs by

50%

in stoa spaces.

Stoa's flexible walls also enable the rapid creation of retail spaces of different sizes, making rental and fit-outs easy and affordable for small merchants. Sidewalk Labs estimates that the costs associated with structural elements of renovation, such as moving walls and electrical wiring, would decline by 50 percent in stoa spaces, compared with traditional spaces. So if it would typically cost a landlord $40 per square foot to make these structural changes, it would instead only cost $20 per square foot in stoa.[26] Tenants who choose to take full advantage of Sidewalk Labs' prefabricated components and finishings could reap additional cost savings.

Thanks to these low costs, pop-ups should also become a hallmark of stoa retail, with some 20,000 square feet of space devoted to them across both retail and food and beverage.

Stoa: production.

A typical development is not designed in such a way to include light manufacturing, and zoning and building codes often prohibit production spaces within mixed-use projects. But production-oriented businesses are once again becoming a key part of urban economic growth.

Whether it is a small business that needs fabrication space, or an e-commerce craft-maker that needs studio space in a lively neighbourhood, this type of production work need not be located in a remote warehouse in a far-flung industrial district. Artisans and small businesses embedded within Quayside can create unique products and services that reflect and inform the surrounding community, reinforcing the neighbourhood's culture of exploration.

All proposed digital innovations would require approval from the independent Urban Data Trust, described more in the "Digital Innovation" chapter of Volume 2.

Stoa space allows for production to occur throughout, with no specific designations. All stoa space is designed to support light manufacturing, such as fabrication or 3D printing spaces, general maker spaces, and other creative endeavours by providing the wide-open floor plates that production facilities tend to need, as well as proximity to the street so large materials can be easily transported.

For retailers, these spaces might be used for on-site assembly, personalized goods, or commissary kitchens. Production is also very much necessary in today's commercial offices, as can be seen with any prototyping lab or design studio.

Sidewalk Labs anticipates that approximately 4 percent of Quayside's ground-floor space would be used by production-related organizations or businesses. While certain production uses are not currently permitted under zoning for a development like Quayside, Sidewalk Labs proposes to use a digital innovation capable of monitoring noise, air quality, and other use-related nuisances in real time, with the goal of enabling a vibrant mix of residential and non-residential spaces to coexist safely. As a result, a wide range of new creative and production activities normally relegated to industrial zones could thrive within an urban centre.

Sidewalk Labs plans to work closely with the city to develop this proposed system, which would be operated, managed, and enforced by the City of Toronto, in full accordance with the standards established by the city.

Social infrastructure program

	Quayside Approximate square feet
Social infrastructure	**90,000 sq ft**
Elementary school	60,000
Stoa social infrastructure	30,000

Social infrastructure: Integrated into neighbourhood planning

Social infrastructure encompasses a wide range of vital services and support for all members of a community. In Quayside, the proposed development program would include approximately 60,000 square feet of building space for an elementary school co-located with a childcare facility.

The program would allocate another approximately 30,000 square feet of its ground-floor space to evolving community use. The plan allocates community space for health care and community service delivery alongside proactive health programming, as well as for participation in civic life and cultural activities and the development of digital skills. The Quayside plan would also provide space for ongoing educational programs, such as pop-up libraries and community mentorships.

Such support systems and neighbourhood resources are necessary to ensure the level of access and opportunity that Sidewalk Labs sees as fundamental to any thriving, inclusive community.

Public realm: A wide variety of spaces for all

Public space is an essential component of any urban environment, and one that helps to define the community. Well-designed and active public parks and other gathering places provide opportunities for social interaction, recreation, and many other forms of civic engagement vital to a neighbourhood's success.

To ensure that the public realm plays a central role in Quayside, Sidewalk Labs plans to provide more than 40,000 square metres of open space and include an extraordinary range of spaces (see Page 79) that can appeal to different groups — from traditional parks, to reclaimed street space made possible by expanded trip options, to new opportunities for engaging with Toronto's lakefront.[27]

The Quayside plan would increase comfortable outdoor hours by

35%

Public realm program

	Quayside Approximate square metres
Public space	**40,700 sq m**
Parliament Plaza	6,000
Parliament Slip	6,000
Queens Quay	7,500
Silo Park	5,000
Other Sidewalks, buffers, courtyards, and promenades	16,200

The centrepiece of the public realm plan is the creation of a grand new public space called Parliament Plaza that unlocks new ways to access Lake Ontario at Parliament Slip. To create this space, the Quayside plan proposes to close off a block of Parliament Street to cars, with limited expected impact on network connectivity for drivers. (See Page 143 for more details on street network connectivity and the proposed design for Parliament Plaza.) This design is aligned with Sidewalk Labs' approach to planning, which prioritizes transit, biking, walking, and cycling and assumes an increasing shift away from private car trips.

Creating a wide variety of spaces is a key strategy towards achieving Sidewalk Labs' goal of encouraging people to spend more time outdoors, together.

It is also critical in a cold-weather city like Toronto that these spaces remain available and activated as much as possible. A proposed set of outdoor comfort strategies and weather-mitigation structures would increase the number of hours it is comfortable to be outdoors by an estimated 35 percent, as compared to traditional public spaces.

Four major locations would become the anchors of this public realm program:

- Parliament Plaza. This 6,000-square-metre gathering place at the heart of Quayside would be surrounded by stoa space and include dynamic water features and an overhead canopy for weather protection in all seasons.
- Parliament Slip. At this 6,000-square-metre space, residents, workers, and visitors could connect directly with the water via a new "cove" feature (Parliament Cove), as well as a stretch of dedicated parkland running along the slip's eastern edge.
- Queens Quay. This 7,500-square-metre stretch of public space along the street would represent a major expansion of typical sidewalk space, made possible by narrowing the width of vehicle lanes and creating dynamic curbs that can become public spaces during off-peak times.
- Silo Park. This 5,000-square-metre park across from the Victory Soya Mills silos would serve as the green and recreational heart of the community.

Parking: Dramatically reduced

One component of Quayside's plan is notable for its near absence on-site: parking. Adhering to zoning bylaws, a traditional development would create on-site parking lots and likely build expensive underground garages to serve approximately 2,400 spaces.[28]

In Quayside, no parking would be provided above ground and only 500 spaces would exist in a below-ground lot for visitors. Residents and workers who choose to arrive in the neighbourhood by car could pick up or drop off their vehicle at an underground interchange facility in Quayside, with storage at a 750-space off-site parking facility in the Port Lands or a nearby location.

This reduction in on-site parking is possible because Sidewalk Labs' mobility plan is designed to provide convenient and affordable alternatives for virtually every trip by expanding public transit, bike networks, pedestrian infrastructure, and ride-hail options. Sidewalk Labs also predicts that, within the next 15 years, shared access to self-driving vehicles would fill any remaining needs that private cars serve today.

By unbundling the parking requirement from the site itself, Quayside's plan can use neighbourhood space that would normally go towards parking for buildings or the public realm — without reducing mobility.

Eliminating parking lots would improve the quality of the pedestrian experience on the sites by freeing up potential space for plazas, sidewalks, and other public uses. And eliminating the cost of parking garages enables developers to create more shared spaces in buildings. They can also pursue higher-quality architectural designs, with curves or other interesting shapes, since the layout of a parking garage often determines the structural columns of the building above it. In other words, removing the need for on-site parking enables structures that can respond to the needs of people rather than the requirements of car storage.

Parking program

	Quayside Number of spaces	Zoning bylaws
Total parking	**1,250 spaces**	**2,400 spaces**
On-site above grade	0	2,400
On-site below grade	500	
Off-site	750	0

Expanded public transit, bike networks, pedestrian walkways, and ride-hail options would dramatically reduce the need for on-site parking — freeing up space for a bigger, more vibrant public realm.

Program spotlight

Parking: Available, but not too convenient

Quayside's expanded set of mobility options means residents and workers are expected to travel mostly by public transit, walking, biking, or shared rides — driving only infrequently.

For example, modelling suggests that only 8 percent of people who work in Quayside would drive into work; it also suggests that just 30 percent of Quayside households would own cars,[29] compared with the 48 percent of downtown households today.[30]

Infrequently used vehicles are best accommodated by off-site attended parking. Residents or workers could store vehicles off-site at reasonable monthly rates and hail them through apps. Because few Quayside residents are expected to drive to work, most use of the lot would occur during off-peak hours, minimizing the impact on peak traffic.

Underdeveloped sites near Quayside could host these secure parking facilities, which would be equipped with electric vehicle charging facilities and managed by the proposed Waterfront Transportation Management Association. Residents or workers could of course choose to pay higher rates for the on-site parking garage.

(See the "Mobility" chapter of Volume 2 for more details on the Waterfront Transportation Management Association.)

Together, these parking facilities are meant to provide an option for those wishing to drive while encouraging residents and workers to consider alternatives to driving — consistent with the climate-positive and affordability objectives for Quayside.

Committing to Diversity, Equity, and Inclusion

Designing neighbourhoods that everyone can access means planning for the full spectrum of people's abilities, whether physical, digital, economic, social, or cultural. Sidewalk Labs aims to create the conditions that bring people together, not pull them apart, and that provide new opportunities for all.

Sidewalk Labs has approached its planning for the Sidewalk Toronto project with the following principles in mind:

Diversity.
Sidewalk Labs recognizes and honours the vibrant diversity of Toronto, and strives for a place that reflects Toronto's values around diversity — one where people of all ages, abilities, incomes, and backgrounds can thrive and belong.

Accessibility.
Sidewalk Labs prioritizes accessibility of place, transportation, services, and opportunities to ensure Quayside is physically, socially, economically, and culturally accessible for all, including residents, workers, and visitors. Sidewalk Labs designs spaces, systems, and services for 100 percent of the population, including people who face multiple barriers.

Affordability.
Sidewalk Labs includes options for housing, retail, programming, and amenities that are affordable for people of all income levels, including those who are low income.

Equity of opportunity.
Sidewalk Labs works to identify and remove systemic barriers to participation so everyone can exercise the right to fair and respectful access to economic, social, and cultural opportunities, paving the way for equitable outcomes.

Inclusion.
Designing neighbourhoods that everyone can access means planning for the full spectrum of people's circumstances: physical, digital, economic, social, or cultural. Quayside would create the conditions that bring people together, not pull them apart. These conditions can help create an inclusive community — a group of people who share a sense of belonging, trust, safety, and collective stewardship in a place where everyone feels welcome and has an opportunity to flourish and thrive.

Sidewalk Labs aims to create the conditions that bring people together.

See the “Buildings and Housing” chapter of Volume 2, for more details on the proposed housing vision.

Affordability by the numbers:

- **40 percent below-market housing program**
- **$4,000 annual savings through mobility subscription package**
- **Affordable electrification that maintains or reduces utility costs**

Honour strength in diversity

Sidewalk Labs recognizes and honours the range of visible and invisible qualities, experiences, and identities that shape who people are, how they think, and how they engage with and are perceived by the world. These include but are not limited to race, ethnicity, gender, marital and family status, sexual orientation, socio-economic status, age, physical or mental abilities, religious or spiritual beliefs, Indigeneity, immigrant and newcomer status, and political ideologies.

Sidewalk Labs deliberately and thoughtfully strives to develop designs, spaces, services, and programming — in partnership with local institutions — that are welcoming, iterative, responsive, and accessible to a diverse population, including people who face multiple barriers.

Design accessibility for people of all ages and abilities

Sidewalk Labs’ commitment to intergenerational communities involves developing a variety of housing types and sizes, pedestrian-friendly streets, and complete communities where people can easily access shops, social services, and community spaces. This commitment is particularly relevant for populations that tend to stay closer to home, including children and seniors.

Sidewalk Labs also plans to establish a host of physical and digital accessibility initiatives co-designed with members of the disability community, including accessible streets, building entrances, and public washrooms, as well as way-finding tools for people who are visually impaired. These initiatives would aim to meet or exceed existing Accessibility for Ontarians with Disabilities Act (AODA) requirements. They are based on 22 general, physical, and digital accessibility principles developed in collaboration with more than 200 members of the accessibility community in Toronto during 70 hours of co-design sessions.

See the “Economic Development” chapter of Volume 1, on Page 420, for more details on planning for prosperity with equity.

Create affordability for people of all incomes

A mix of incomes, lifestyles, and life-stages is essential to generating a neighbourhood’s sense of community and energy. Sidewalk Labs’ proposed housing program has been designed to set a new standard for inclusive communities.

An ambitious affordability vision would target residents across the income spectrum: overall, 40 percent of units would be below-market. This breakdown includes 20 percent of units devoted to traditional affordable housing (at least a quarter of which would go towards households with “deep” affordability needs) and 20 percent of units for middle-income housing.

In contrast to conventional waterfront revitalization in Toronto, often dominated by market-rate condos, a full 50 percent of housing units would be “purpose-built” rentals, improving long-term affordability for the city. A new set of efficient unit designs would reflect a broader effort to make downtown living affordable and meet the evolving needs of Toronto’s diverse households.

In addition to expanding housing affordability, Quayside would strive to improve the “all-in” affordability of living in the neighbourhood. For example, a mobility subscription package would enable households to forgo car ownership, saving more than $4,000 a year without sacrificing the ability to get around. A new approach to affordable electrification would maintain or reduce overall utility costs for households and businesses while achieving more sustainable outcomes.

Ensure opportunities for all

Sidewalk Labs believes that a strong plan for economic growth requires an equally strong commitment to inclusion.

Sidewalk Labs plans to take a proactive “community benefits approach,” based on community input, to ensure that equitable economic opportunities are open to a wide range of Torontonians. This effort includes creating training and employment opportunities for members of historically disadvantaged and equity-seeking groups, together with employers, community organizations, training providers, and labour.

Building on the Waterfront Toronto Employment Initiative, Sidewalk Labs plans to work with a range of partners — including Toronto Employment and Social Services, Dixon Hall, Miziwe Biik Aboriginal Employment and Training, and Acces Employment, among others — to provide opportunities in both the construction and tech sectors. The project will set minimum targets, including requiring 10 percent of all construction hours to be worked by members of equity-seeking groups.

While creating meaningful employment in the industries of today is important, so too is helping to cultivate the next wave of local entrepreneurs. Sidewalk Labs envisions a business incubator program developed with a local partner to provide space and support for underrepresented and for low-income entrepreneurs, and small business owners from diverse communities.

Planning spotlight

Planning for resiliency to ensure a safe future

Resilience is critical for successful neighbourhoods and has been a core priority for Waterfront Toronto, as demonstrated in part by its Resilience and Innovation Framework. Sidewalk Labs’ resiliency planning addresses climate-related shocks and other stressors designated as critical to Toronto by ResilientTO, such as housing, congestion, and robust social networks. The below list includes examples of how Sidewalk Labs plans to approach resiliency by being proactive, responsive, and informative.

Proactive. Stormwater management systems would be designed to mitigate flooding risk, including robust green infrastructure to capture water, and environmental sensors that free up water storage space in advance of storms. Connected utility infrastructure would enable predictive maintenance to stop major failures before they occur. Redundant physical infrastructure would ensure reliable accessibility before, during, and after a weather event.

Additionally, open-source software would allow Sidewalk Labs to learn about potential problems from the data security community before they happen, and proactive threat-modelling will improve response readiness. Finally, designing to encourage strong social infrastructure and community cohesion would ensure that social networks could be quickly activated in the event of emergencies.

Responsive. Buildings would have backup generators and draw power from Toronto’s main electricity grid, which has 99.99 percent reliability, reducing the likelihood of a power outage. In the event such an outage does occur, high-performance building envelopes would enable thermal resiliency without the use of any backup mechanical heating system.

Informative. Sidewalk Labs would help amplify the city’s emergency preparedness plans and emergency messaging prior to, during, and after any event through additional physical and digital communication methods such as apps and signage.

Supporting robust social infrastructure

Social infrastructure fosters health and well-being, ties together communities, and helps people reach their highest potential.

Proactive planning for social infrastructure — including health, civic engagement, lifelong learning, and arts and culture — is critical to achieving an inclusive community. Quayside should be a place that creates and sustains good health for all by enabling proactive, coordinated, continuous, and holistic approaches to health, care, and well-being. It should foster a civically engaged community underpinned by deep social ties and a strong sense of pride and belonging. And it should provide the conditions to explore, produce, and experience creative expression of all kinds.

Sidewalk Labs plans to take a proactive approach to health and well-being that recognizes the social determinants of health. This approach would be reflected through a built environment designed to promote active transportation and infuse nature into the streetscape. A Care Collective, operated through service-delivery partnerships, would seek to meet the diverse health needs of people in their local neighbourhood.

Quayside would also have a central location for community connection and participation that would be the heart of civic life: the Civic Assembly, a place to connect with neighbours, learn about what is going on in and around the neighbourhood, share ideas, express creativity, engage in cultural activities, and get technical assistance on digital tools.

Committing to Indigenous Communities

Sidewalk Labs will work to reflect and acknowledge traditional and contemporary Indigenous presence in Quayside, and commits to contributing to prosperity and opportunity for local Indigenous communities.

There is a collective responsibility to share in wise stewardship and peaceful care of the land and its resources.

Quayside sits on the treaty lands of the Mississaugas of the Credit First Nation. Today, there is a significant diverse urban Indigenous community in Toronto. Sidewalk Labs acknowledges the urgent need for, and is committed to furthering the goals of, reconciliation with Canada's Indigenous Peoples.

Quayside is close to a number of Indigenous organizations and districts, including a new Indigenous business district on Dundas Street East, which will include an Indigenous Centre for Innovation and Entrepreneurship, Miziwe Biik Aboriginal Employment and Training, and Anishnawbe Health Toronto, which is developing a new Indigenous Community Hub in the neighbouring West Don Lands.

Over half of the Indigenous people in Canada now reside in urban centres. This project is an opportunity to model how contemporary city building can contribute to, and support, urban Indigenous prosperity and opportunity. Sidewalk Labs will strive to create opportunity for local Indigenous communities through a number of initiatives.

These commitments include:

- Engagement. Sidewalk Labs will engage Indigenous communities, including the Mississaugas of the Credit First Nation, in ongoing dialogue to build a mutually respectful relationship and explore potential collaborations.
- Workforce initiatives. Sidewalk Labs will work with Indigenous workforce agencies (such as the Miziwe Biik Aboriginal Employment and Training and the Centre for Indigenous Innovation and Technology) on both skills training and job opportunities in construction and tech, and include Indigenous suppliers in diverse procurement strategies.
- Design and education. Sidewalk Labs will reflect and acknowledge Indigenous presence on the waterfront. In November, Sidewalk Labs held a design consultation with Indigenous participants, designers, and artists led by Brook McIlroy's Indigenous Design Studio to imagine (among other things) educational opportunities and Quayside's future through the lens of Indigenous design.

For the Sidewalk Toronto project to truly contribute to Indigenous prosperity and opportunity, Indigenous voices must be at the table. Sidewalk Labs is committed to ongoing conversations and collaboration with Indigenous communities in Toronto throughout the development process.

Mississaugas of the Credit First Nation. The Mississaugas of the Credit First Nation (MCFN), part of the Ojibwe (Anishinabe) Nation, is one of the largest Aboriginal Nations in North America.

MCFN asserts unextinguished title to all water in its claimed traditional territory including Lake Ontario, and any adjacent lands under water or formerly under water. The land on which Quayside will be built are lands covered by Treaty 13/13A Toronto Purchase (1805) between the Mississaugas and the Crown.

As a company proposing a new vision for these lands, Sidewalk Labs intends to engage with, and include, MCFN in the project.

Sidewalk Labs recognizes the aspirations of the MCFN as articulated in their vision statement: "[MCFN] looks to our Anishinabe roots to guide our vision for the future as a strong, caring, connected community who respects the earth's gifts and protects the environment for future generations. Our identity includes our history, language, culture, beliefs and traditions which we strive to incorporate into the programs and services offered to our community."

In partnership with Waterfront Toronto, Sidewalk Labs has started an important ongoing dialogue between project staff, MCFN Chief R. Stacey Laforme, and the MCFN Department of Consultation and Accommodation (DOCA). Sidewalk Labs thanks Chief R. Stacey Laforme, MCFN band councillors, and DOCA staff for their generous time during the development of this MIDP, and looks forward to continued meaningful and respectful conversation. It is Sidewalk Labs' hope that this important engagement improves the environmental, social, cultural, and economic well-being of the city and all the project's stakeholders, including MCFN.

Quayside Impact: The New Bottom Line

The Quayside development plan lays the foundation for achieving Waterfront Toronto's priority outcomes: job creation and economic development, sustainability and climate-positive development, housing affordability, new mobility, and urban innovation (including robust data privacy and digital governance).

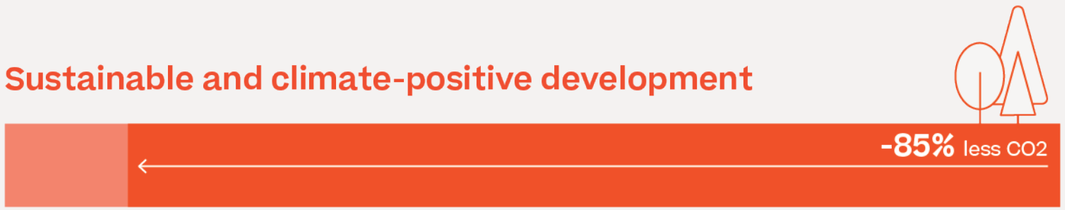
Economic impact: Creating 11,000 construction jobs and catalyzing a new mass timber industry

Development on the waterfront should support Toronto's need for continued economic success and growth in employment. The Quayside development plan would catalyze economic growth in the short term and the long term — creating an estimated 11,000 construction jobs in Ontario and hosting nearly 3,900 new permanent jobs in a true live-work community.[31]

The advanced designs and technologies proposed as part of the plan would help grow new Canadian industries, including tall-timber design and construction, modular supply, and new mobility technology.

The plan also incorporates flexible ground-floor spaces called stoa that support small-scale businesses throughout the neighbourhood and mix more non-residential space into buildings. The adaptable ground floor is designed to merge with sidewalks and the public realm, forming civic arcades filled with community space, local pop-ups, light manufacturing, small businesses, or micro-enterprises. Rather than requiring long-term leases that are only possible for select global retailers, this flexible stoa space, combined with new digital tools, would lower the barriers for new businesses to get started.

Climate impact:
A nearly carbon-neutral neighbourhood that cuts GHGs by 85%

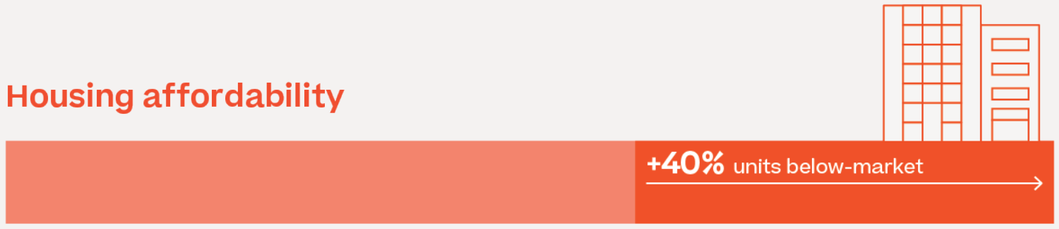


Following Waterfront Toronto's lead in sustainable development, Quayside would produce seven times less CO2 than other Toronto neighbourhoods.[32] Sidewalk Labs proposes a series of innovations and planning initiatives that would drastically reduce greenhouse gas emissions below the levels in comparable projects:

- Prioritizing biking, walking, public transit, and electric vehicles
- Reducing truck deliveries on local streets by coordinating freight through a logistics hub
- Relying on clean energy, including from building heat recovery systems, geothermal wells, solar capacity, and battery storage
- Managing energy consumption more actively and efficiently using digital technology
- Designing buildings to reduce energy use by meeting the Toronto Green Standard Tier 3
- Managing waste and stormwater more effectively and holistically through a smart waste management system and active stormwater management

Through these initiatives, Quayside would set a new standard of sustainability that builds upon the vision of Waterfront Toronto and all three levels of government, taking the first steps towards a climate-positive community on the waterfront.

Affordability impact:
40% below-market program



The housing program in Quayside is specifically designed to address the housing gridlock facing the city today, providing options and opportunities for more Torontonians on the waterfront.

Meeting the intent of the Central Waterfront Secondary Plan requirement, Sidewalk Labs plans to deliver 20 percent of housing units as affordable housing in Quayside (as defined by the city as being at or below 100 percent Average Market Rent), with at least a quarter of these units going towards households with "deep" affordability needs (as defined as households at 60 percent of AMR).

Recognizing the challenges in the market for middle-income households, the Quayside housing program goes beyond this requirement to include another 20 percent of units for middle-income households (for example, mid-range rental at 100-150 percent AMR). Together, these units create a 40 percent below-market program to help achieve unprecedented new levels of affordability.

In addition to housing, the Quayside plans would improve all-in affordability by providing an extensive range of transportation options that make it possible for households to get around conveniently without the need to own a car — saving two-person households an estimated 40 percent on annual transportation spending, or roughly $4,000 per year.[33]

Quayside would also provide the proximity to everyday essentials that defines a complete community for people of all ages and abilities, featuring an expanded public realm and access to essential social infrastructure, including spaces dedicated to health, education, civic life, the arts, and culture.

Mobility impact: 73% of trips using transit or active modes, with 91% more pedestrian space

New mobility

73% of trips using public transit, walking, or cycling

Rapid urban growth is making it harder to get around, but support for transit and innovations in mobility management offer opportunities to help people and goods move more easily.

The plans for Quayside would support light rail expansion, provide exceptional bike and pedestrian infrastructure, and encourage on-demand mobility services priced for sharing. Streets would be made safer with digital technologies, including responsive traffic signals that can prioritize pedestrians. Quayside would also pilot a new neighbourhood delivery system that collects all packages in one logistics hub and then distributes them via a below-grade tunnel system, reducing truck traffic on local streets, along with noise and air pollution.

Sidewalk Labs estimates that, taken together, these mobility initiatives would reduce the percentage of trips made by private automobiles in Quayside from the 27 percent made in comparable neighbourhoods to just 13 percent by 2025.[34]

Quayside's expanded mobility options enable the neighbourhood's streets to reclaim significant amounts of street space for pedestrians. While designed for safe operation today, the streets in Quayside would also be the first in the world designed specifically to anticipate the potential benefits of self-driving technology. Sidewalk Labs estimates that its street designs could provide 91 percent more pedestrian space than a business-as-usual development scenario, thanks to features such as narrower lanes and the potential for self-driving vehicles to share a right-of-way with public transit without hindering transit efficiency.

And when all dynamic curb spaces are open to pedestrians, during very low pick-up and drop-off periods, there would be a 118 percent increase in pedestrian space.

Urban innovation impact: Catalyzing digital innovation while protecting privacy

At the heart of the vision for urban innovation in Quayside is the ability to create the digital conditions for others to build on. These conditions begin with flexible, affordable digital infrastructure that includes a powerful and affordable ubiquitous connectivity network that leverages new advances to improve speed and security, as well as a standardized mount system that reduces the cost of deploying innovations and eliminates vendor lock-in.

Key Term

Urban data

Information gathered in the city's physical environment, including the public realm, publicly accessible spaces, and even some private buildings.

As with ecosystems such as the World Wide Web, third parties depend on open hardware and software as well as on an agreed-upon set of standards and protocols to successfully deploy their ideas. A set of published standards around open-data architecture, access, and sources would enable third parties to build upon a shared foundation, supported by a common set of security, formatting, and communication standards.

To implement the systems needed to achieve quality-of-life objectives, Sidewalk Labs plans to purchase third-party technology or partner with third parties to create (or enhance) it whenever possible, giving priority to technology that is local to Toronto, Ontario, or Canada. For systems that Sidewalk Labs needs to develop itself, because they do not exist in the market, data would be made publicly accessible (with the proper protections, including de-identification), further catalyzing third-party creation.

Above all, Sidewalk Labs understands realizing the promise of digital innovation in a responsible manner requires an approach to governance that protects privacy and makes the benefits of urban data widely accessible.

To meaningfully enable responsible data use in Quayside, Sidewalk Labs proposes that urban data be controlled by an independent entity called the Urban Data Trust, charged with balancing the interests of personal privacy, public interest, and innovation. This public steward would establish a clear process for approving any initiative that involved the use or collection or urban data for all parties, including those proposed by Sidewalk Labs.

Sidewalk Labs proposes that the Urban Data Trust anchor this process around a publicly auditable Responsible Data Use (RDU) Assessment — an in-depth review that is triggered by any proposal to collect or use urban data — and guided by a set of RDU Guidelines that incorporates globally recognized Privacy by Design principles.

For more details on the proposed Urban Data Trust and responsible data use process, see the "Digital Innovation" chapter of Volume 2.

Exploring larger scales to realize and maximize the impact achieved in Quayside

Quayside can take meaningful steps towards realizing Waterfront Toronto's priority outcomes and a new model for urban development. But some of the elements of the Quayside plan are only economically viable or programmatically effective when deployed across a sufficient geographic scale. More importantly, the opportunity to achieve Waterfront Toronto's priority outcomes need comprehensive planning and scale.

The RFP recognized the potential constraint of Quayside, at just five hectares, including a requirement to "describe your team's ability and readiness to take the concepts and solutions deployed on Quayside to scale in future phases of waterfront revitalization." The PDA describes the MIDP as including both plans for the Quayside parcel and "plans at scale."

See the "River District" chapter on Page 254 for more details on why scale is necessary to achieve Waterfront Toronto's priority outcomes.

Consistent with these calls, Sidewalk Labs believes in a phased approach for testing, refining, and demonstrating the impact of core innovations, beginning with a smaller setting and working up to larger areas along the eastern waterfront as project objectives are achieved. Certain solutions cannot reach their full impact at the size of a small neighbourhood like Quayside, while others do not become financially feasible at this smaller scale.

For such reasons, Sidewalk Labs has proposed a concept plan for a wider River District geography, enabling the IDEA District to meet or exceed the ambitious quality-of-life objectives in a way that is both financially achievable and replicable in other parts of Canada and around the world.

Waterfront Toronto's RFP recognized the potential need to "take the concepts and solutions deployed on Quayside to scale in future phases of waterfront revitalization."

Three specific examples of the need for scale include:

1

Climate-positive infrastructure.
This robust infrastructure reduces greenhouse gas emissions by 85 percent in Quayside compared to the status quo. But designing, implementing, and operating the advanced infrastructure systems necessary to achieve climate positivity — which requires exporting clean energy outside a project area — requires a large enough customer base to be effective and financially feasible.

Specifically, to keep Quayside resident energy bills in line with Toronto averages, the advanced power and thermal grids would require a $19 million supplemental innovation investment based on the current plan, due to factors including the high cost of geothermal exchange and initial electric grid connections, in addition to the poor economies of scale for operating costs.

2

The light rail expansion.
If public funding is not available, an innovative self-financing mechanism could finance this expansion, based on existing city plans, estimated to cost $1.2 billion.

The idea behind self-financing is to impose a future charge on real-estate value, and borrow in the present against that stream of future funds to pay for part of the cost of construction of the transit system. But Quayside's proposed development of 10 buildings (roughly 2.65 million square feet) is not large enough to sustainably support the financing of the waterfront light rail.

3

Mass timber production.
As the world's first entirely mass-timber neighbourhood, Quayside can help demonstrate the feasibility and benefits of this new sustainable building material. But Sidewalk Labs estimates that a larger development area — roughly 6 million square feet — is needed to justify an investment in the factory-based production of mass timber.

This larger area is also necessary for such a factory to hit peak efficiency in producing sustainable building components on a predictable timeline that developers can trust, leading to new value that can be captured for below-market housing.

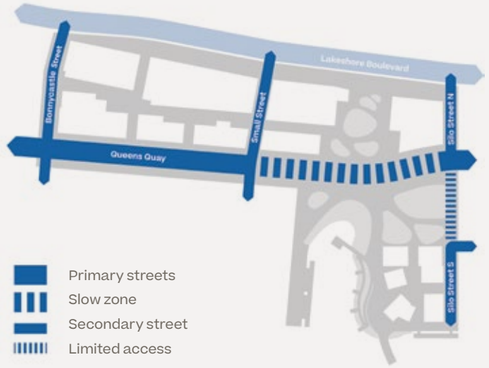
How It Works

The Quayside plan incorporates innovations into its development approach to achieve project goals.

The following section delves into the technical workings of the plan's proposed innovations around six key areas: mobility, public realm, buildings and housing, sustainability, social infrastructure, and digital innovation.

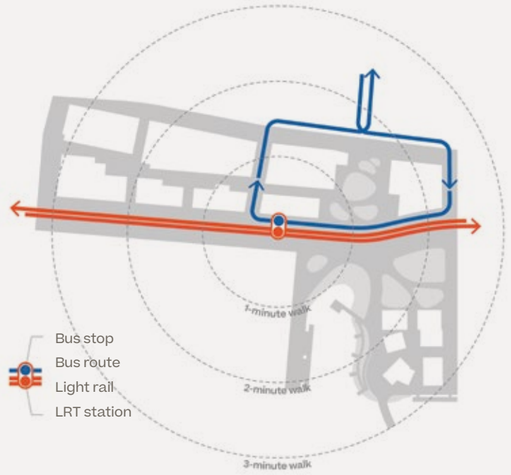
These initiatives are designed to work together to support a comprehensive vision of a neighbourhood that can adapt to the ever-changing needs of its residents and create a more affordable, sustainable, and prosperous community.

The Quayside technical systems



Streets

4 curbless streets



Transit

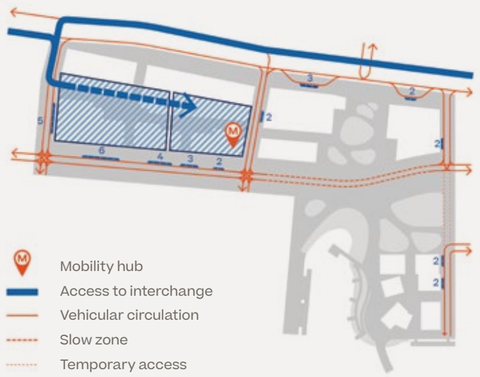
2 new transit stops (light rail and bus) on Queens Quay

Walking

31,000+ square metres of pedestrian-accessible space

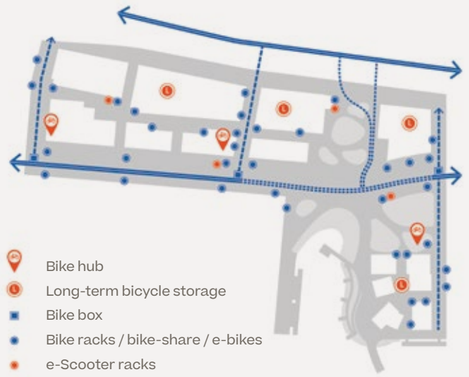
Lighting

100% responsive lighting



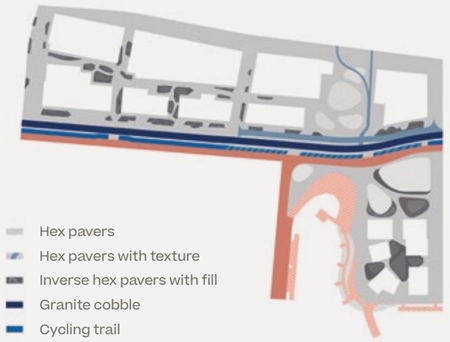
Vehicles

33 dynamic curb spaces and a vehicular interchange



Cycling

4,000+ bicycle parking spaces

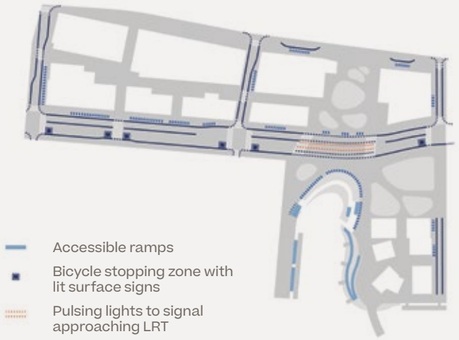


Paving

50% modular streetscape

Planting

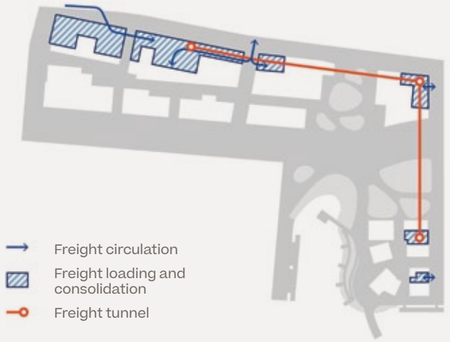
430+ new trees



- Accessible ramps
- Bicycle stopping zone with lit surface signs
- Pulsing lights to signal approaching LRT
- Detectable edge
- Seating, planters, and buffers
- Crossings

Accessibility

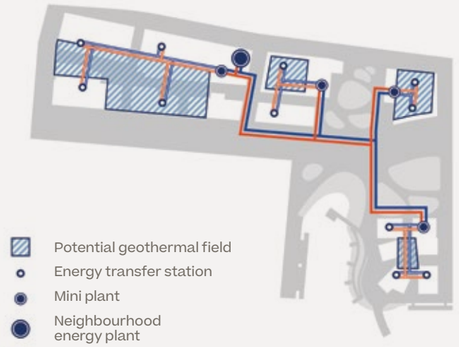
Wayfinding beacons throughout the site



- Freight circulation
- Freight loading and consolidation
- Freight tunnel

Freight

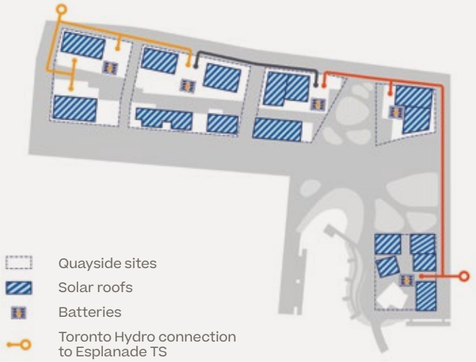
78% on-site truck trip reduction



- Potential geothermal field
- Energy transfer station
- Mini plant
- Neighbourhood energy plant
- Hot / chilled piping
- Ambient piping

Thermal grid

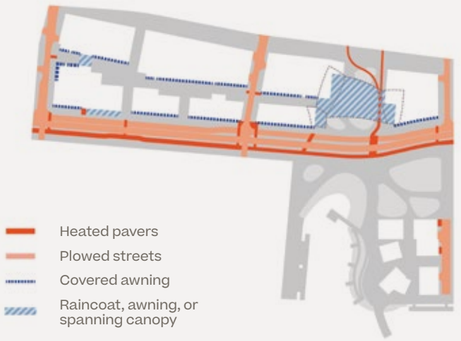
100% clean energy heating and cooling



- Quayside sites
- Solar roofs
- Batteries
- Toronto Hydro connection to Esplanade TS
- Toronto Hydro connection to Basin TS
- Backup connection

Advanced power grid

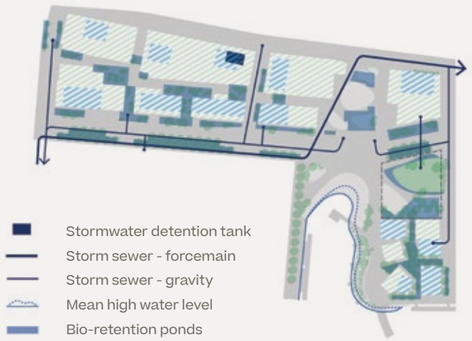
Battery capacity equal to 66% of peak demand



- Heated pavers
- Plowed streets
- Covered awning
- Raincoat, awning, or spanning canopy

Outdoor comfort

35% increase in comfortable outdoor hours



- Stormwater detention tank
- Storm sewer - forcemain
- Storm sewer - gravity
- Mean high water level
- Bio-retention ponds
- Green roof
- Blue roof
- Opportunity for below-grade infiltration

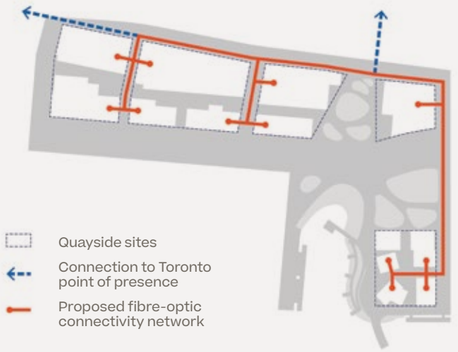
Stormwater

90% on-site stormwater absorption

- Quayside sites
- Waste collection Terminal Station
- Pneumatic waste tubes
- Pneumatic waste public realm inlet
- Freight tunnel for transporting special waste

Waste

80% landfill diversion



- Quayside sites
- Connection to Toronto point of presence
- Proposed fibre-optic connectivity network

Fibre-optic network

Super-fast connectivity network

Mobility

A transportation system that **reduces the need to own a car** by providing **safe, convenient, connected, and affordable options** for every trip.

See the “Mobility” chapter of Volume 2 for more details on the urban innovations described in this section.

Creating a balanced transportation network that provides convenient, affordable options

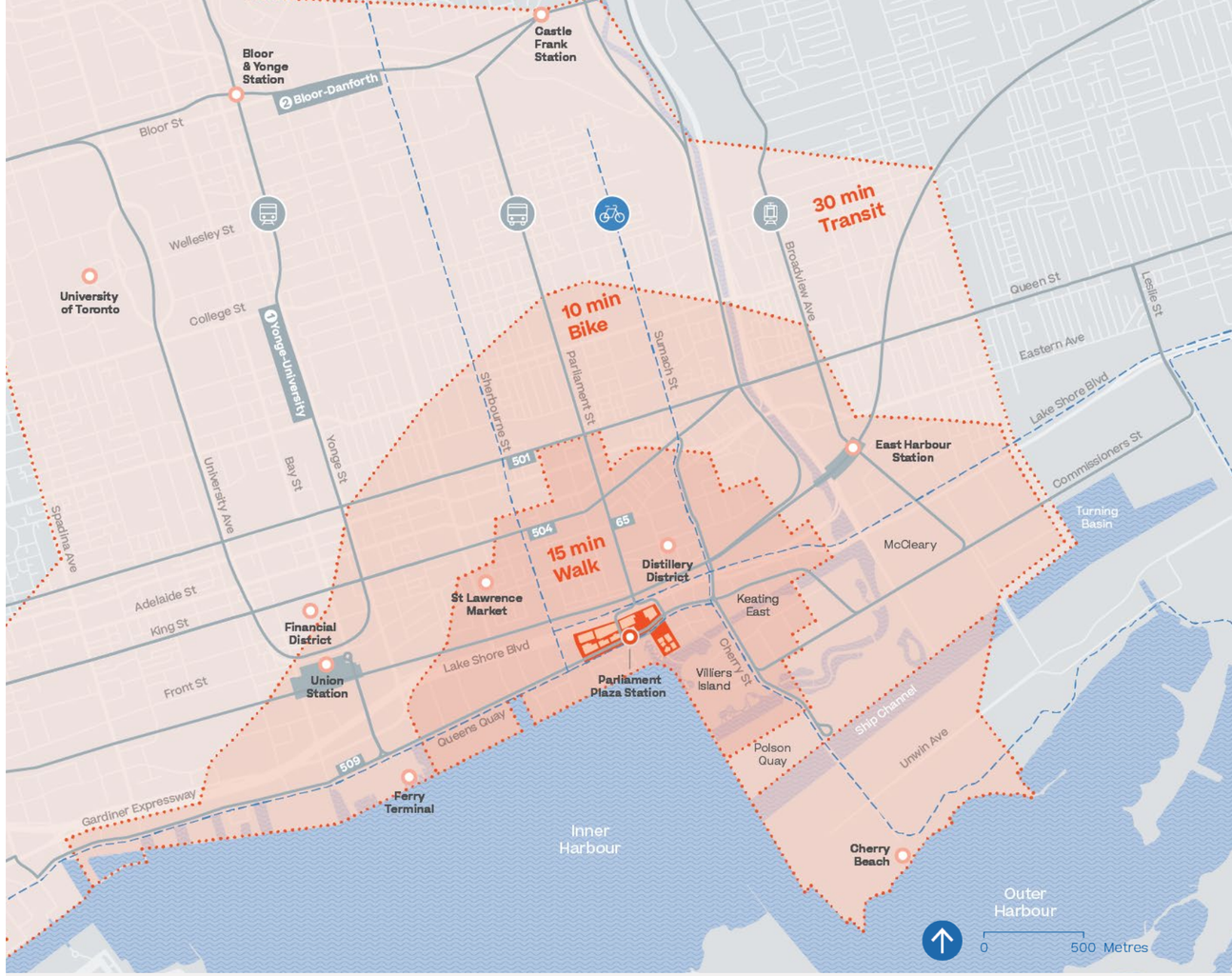
The Quayside plan takes an integrated mobility approach designed to offer more choices, lower costs, and better service; to incorporate changing technologies over time; and to provide extensive, easy connections to the surrounding city.

The more growth that Toronto experiences, the harder it can be for the transportation network to fulfill its core mission of helping people get around safely, efficiently, and at a price that everyone can afford.

Traffic congestion costs the greater Toronto area more than $11 billion a year in lost productivity. Toronto area residents who commute by public transit spend nearly 100 minutes travelling each day.[35] Torontonians who live downtown with a car spend, on average, over $10,000 a year in car-ownership.[36] Bike lanes are frequently unprotected and pedestrian walkways are sometimes dangerous.

Toronto's waterfront has already started to address these challenges, with a redesigned Queens Quay West that includes a protected cycle path, walkways, and public transit access.[37] The Quayside plan would accelerate these improvements by integrating safe street design, innovative policy and financing tools, and cutting-edge technology to create a balanced transportation system that meets the needs of all travellers and can adapt over time.

By providing affordable and safe choices for every trip, Quayside's transportation network would reduce the need to own a car and set a more sustainable course for urban mobility along the eastern waterfront.



Map

Connecting Quayside to the city: Future pedestrian, bike, and transit travel times

City transit
Primary bike routes
Quayside
Travel times from Parliament Plaza Station
(a new light rail station located near the centre of the neighbourhood)

Source data:
Transit area data from Sidewalk Labs G4ST model
Walk and bike area data from Sidewalk Labs

The Quayside plan expands choices through five main strategies that include physical, digital, and operational innovations.

Physical and digital innovations

Providing robust, multi-modal connections to the surrounding city.
The plan would create new or improved links between Quayside, downtown, and the wider city by extending light rail lines, adding a new bus stop, and enhancing cycling and pedestrian connections. Designated pick-up and drop-off zones within Quayside would help manage curbside traffic congestion and facilitate the use of shared new mobility services. In addition to these options, the Quayside plan features a vehicle interchange with a limited amount of parking for visitors, residents, and workers to ensure vehicle access to the neighbourhood.

Enabling residents to fulfill daily needs within a short walk.
The Quayside plan is designed to enhance walkability by providing a mix of homes, shops, offices, parks, and community spaces — a true live-work neighbourhood. Some of the planning components that enable this walkable urban form include adaptable spaces within buildings and on the lower floors that are designed to accommodate a variety of residential and non-residential uses, high-quality connections to light rail and bus stops, access to schools and health facilities, and an extensive pedestrian network that features wider sidewalks, heated pavement, and lush landscaping.

Designing flexible streets that can adapt to new mobility options.
As transportation technologies evolve to include the increased use of self-driving vehicles or new forms of electric micro-transit, Quayside's flexible streetscape should be able to adapt and rebalance accordingly. To enable future changes to be made with ease, Quayside's streets are designed with removable pavers and extensive digital infrastructure, such as adaptive traffic signals capable of coordinating all travel modes, and dynamic lanes capable of being converted into pedestrian areas.

More detail on these innovations can be found in the How It Works: Mobility pages that follow.

Operational innovations

Helping people make smarter, more cost-effective travel choices.
Quayside residents and employees would have access to a unified mobility package that includes a Toronto Transit Commission (TTC) pass, an unlimited Bike Share Toronto membership, access to e-scooters and other low-speed vehicles, credits for rides with ride-hail or car-share providers, and parking options. This package could be provided through a new mobility app created specifically for the waterfront that features all mobility choices in one place. In addition, open data integrations would allow existing third-party mobility apps to understand real-time prices for each service and provide personalized transportation options to users.

Managing the system holistically.
Sidewalk Labs proposes that a non-profit management entity called the Waterfront Transportation Management Association be responsible for operating all aspects of mobility in Quayside, from establishing safety and traffic congestion goals to offering the mobility subscription package. This entity would operate collaboratively with Quayside residents.

For more details on these operational innovations, see the "Mobility" chapter of Volume 2.

Sidewalk Labs analysis

Using modelling to develop Quayside's mobility plan

To help design its transportation network, Sidewalk Labs used a model called the Greater Toronto Area Model 4.0 for Sidewalk Toronto, or G4ST, in addition to more traditional analysis tools. This model builds on the official GTA Model 4.0 developed by the University of Toronto, which is used as the official model of the city to understand how new developments can impact the transportation system.[38]

How it works. G4ST uses a representative sample of travel behaviour to simulate the travel patterns of residents, workers, and visitors coming and going from Quayside, including trip modes (such as car, transit, cycling, and walking), routes, and origins and destinations.

What is new. On top of these basics, G4ST incorporates some new elements specific to the Sidewalk Toronto project, such as the potential performance of transit service patterns, costs of self-driving fleets, and the effectiveness of parking and curbside pricing.

Its limitations. All models are simplifications; for example, no one can predict the impact of new regulations on travel behaviour or the emergence of new technology with full accuracy. The G4ST model is an attempt to represent travel demand and decisions, but Sidewalk Labs recognizes that modelled mode shares and results are best seen as indicators of outcomes rather than perfect projections.

How it helps. G4ST has helped inform planning decisions for some essential features of Quayside's mobility network, such as the number of curbside spaces, vehicle lanes, bike lanes, bike-share stations, and bike-parking spaces, as well as the layout of roads.

What it shows. Based on all these inputs, G4ST shows that private car usage would be 13 percent in Quayside, down 16 percentage points from what would be expected from standard development, enabling the neighbourhood to devote more space to housing, public uses, cycling, and walking.

Expanding transit connections between Quayside and the city

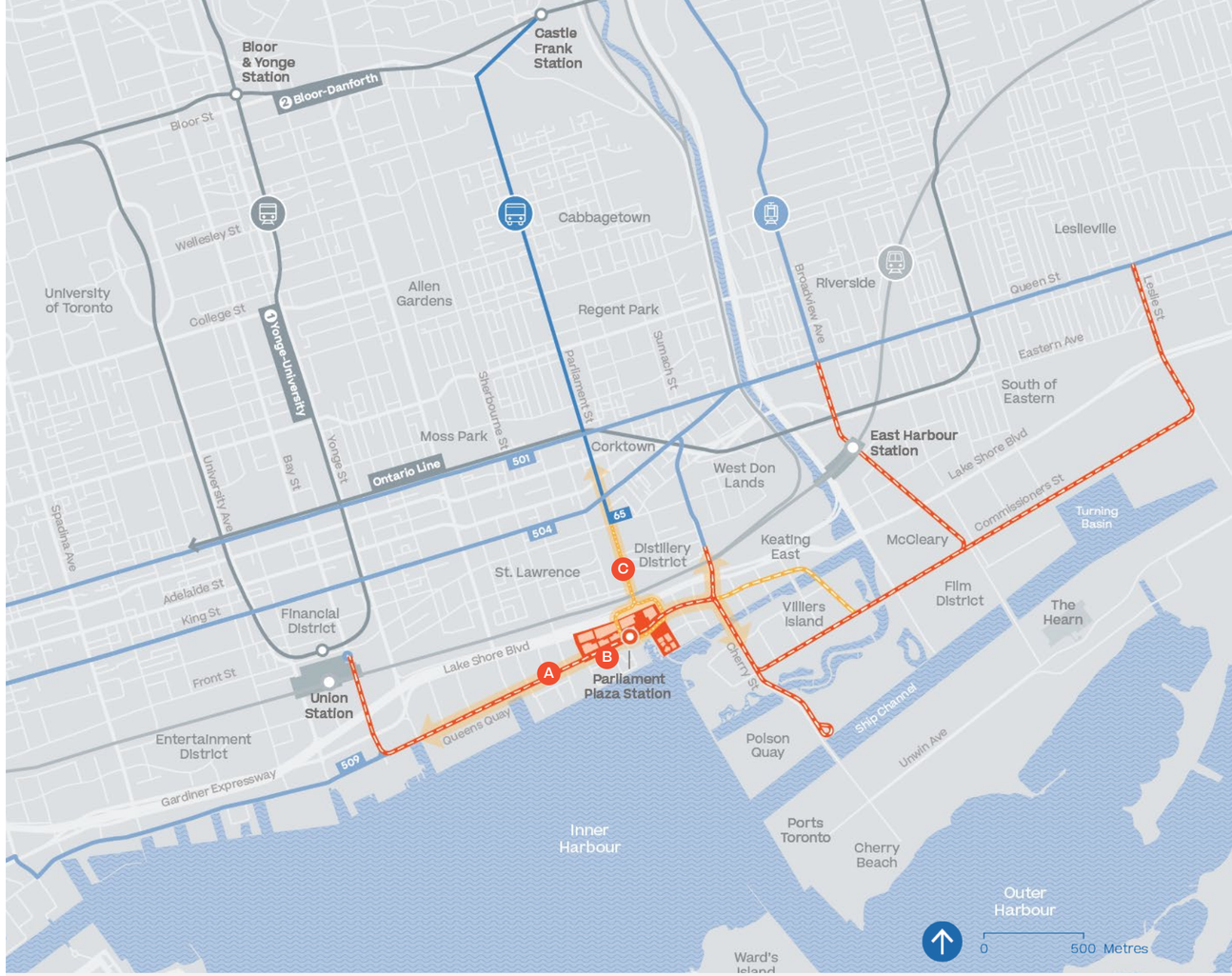
Extending Toronto's existing public transportation system would establish Quayside as an integral downtown neighbourhood whose jobs and waterfront spaces are accessible to all.

Public transit is the most efficient way of travelling through dense urban neighbourhoods: it serves the most people, at the most affordable cost, with the least environmental damage. For more than a decade, Toronto has planned for a light rail extension to support development along Queens Quay East, but the project remains unfunded.[39]

Sidewalk Labs' plan to address this challenge begins by advocating the construction of 6.5 kilometres of light rail transit proposed in the Waterfront Transit Network Plan, including a new Quayside-Parliament Plaza stop. Beyond the approved plan, Sidewalk Labs further proposes an optional second phase of construction to add light rail infrastructure to the area north of the Keating Channel to serve future development. These expanded plans can be pursued at a total estimated cost of approximately $1.2 billion (roughly $1.3 billion if the optional Sidewalk Labs link were included).

This proposal advocates that Toronto use the innovative funding mechanism of self-financing, sometimes referred to as "value capture," to finance this plan. The idea behind self-financing is to impose a future charge on real estate development and borrow in the present against that stream of funds to pay for part of the cost of construction of the transit system. Sidewalk Labs is prepared to assist with the financing of this project. The light rail would remain owned and operated by the TTC.

To provide a high-quality rider experience, Sidewalk Labs also seeks to work with the TTC to test and implement a broad range of light rail enhancements, such as wider platforms with seating bars, weather protection, and electronic information displays.



Map

Quayside light rail and bus connections

- GO Transit / SmartTrack
- Subway (existing and planned)
- Light rail
  - Existing
  - Approved extension
  - Optional
- Bus
  - Existing
  - Proposed by Sidewalk Labs
- Quayside
- Parliament Plaza Station

A Expanding light rail transit.
The city's high-capacity light rail system would be extended into Quayside via the 509 (Harbourfront) line and the 504 (King Street) line, operated by the TTC. These extensions into Quayside are part of existing city plans but would be accelerated through Sidewalk Labs' proposed self-financing approach. The Quayside extension would be the first leg of new transit lines to be extended further south and east into the Port Lands, following approved plans by the city and new plans proposed by Sidewalk Labs.

B New light rail stop.
A new Quayside-Parliament Plaza stop would connect the neighbourhood to major areas like downtown, the exhibition area, the King Street business area, and Union Station, as well as to the Bloor-Danforth (Line 2) subway line, the future East Harbour SmartTrack station, and the Sumach Street station on the proposed Ontario Line.[40]

C Local bus.
A new bus stop for the 65 bus route would be located on Queens Quay at Parliament Plaza, adjacent to the light rail stop, and could be used by the 72 bus until the Light Rail Transit extension is complete.

Prioritizing pedestrians to create a walkable community

Quayside's extensive pedestrian network is designed to put daily essentials and many jobs within a six-minute walk of every building and provide safe, comfortable connections to surrounding neighbourhoods.

Quayside is within walking distance of many important destinations, but people's willingness to walk is driven more by experience than by distance: if walking is pleasant and safe, people will walk. Especially in the winter, harsh weather can add an additional barrier to walking outside. The Quayside plan integrates design, policy, and technology advances to make walking easier, safer, and more enjoyable year-round.

In the plan, weather-protected walkways — enlivened by shops, plazas, parks, cafés, and community spaces — would make every part of the site accessible and link to adjacent neighbourhoods. A new grand public space, Parliament Plaza, would prioritize pedestrians and feature a "slow zone" through which the light rail, cars, and bikes move closer to pedestrian speeds. Pedestrians and cyclists would be given priority at traffic crossings by responsive traffic signals. Adaptable buildings designed to accommodate offices, homes, shops, community spaces, schools, and health facilities would ensure that everyone in Quayside could fulfill daily needs within a short walk.

Drawing people outside in these ways would not only improve the pedestrian experience but enliven the streets, fill shops, and create the unexpected encounters that fuel great cities.

Map

Quayside pedestrian network

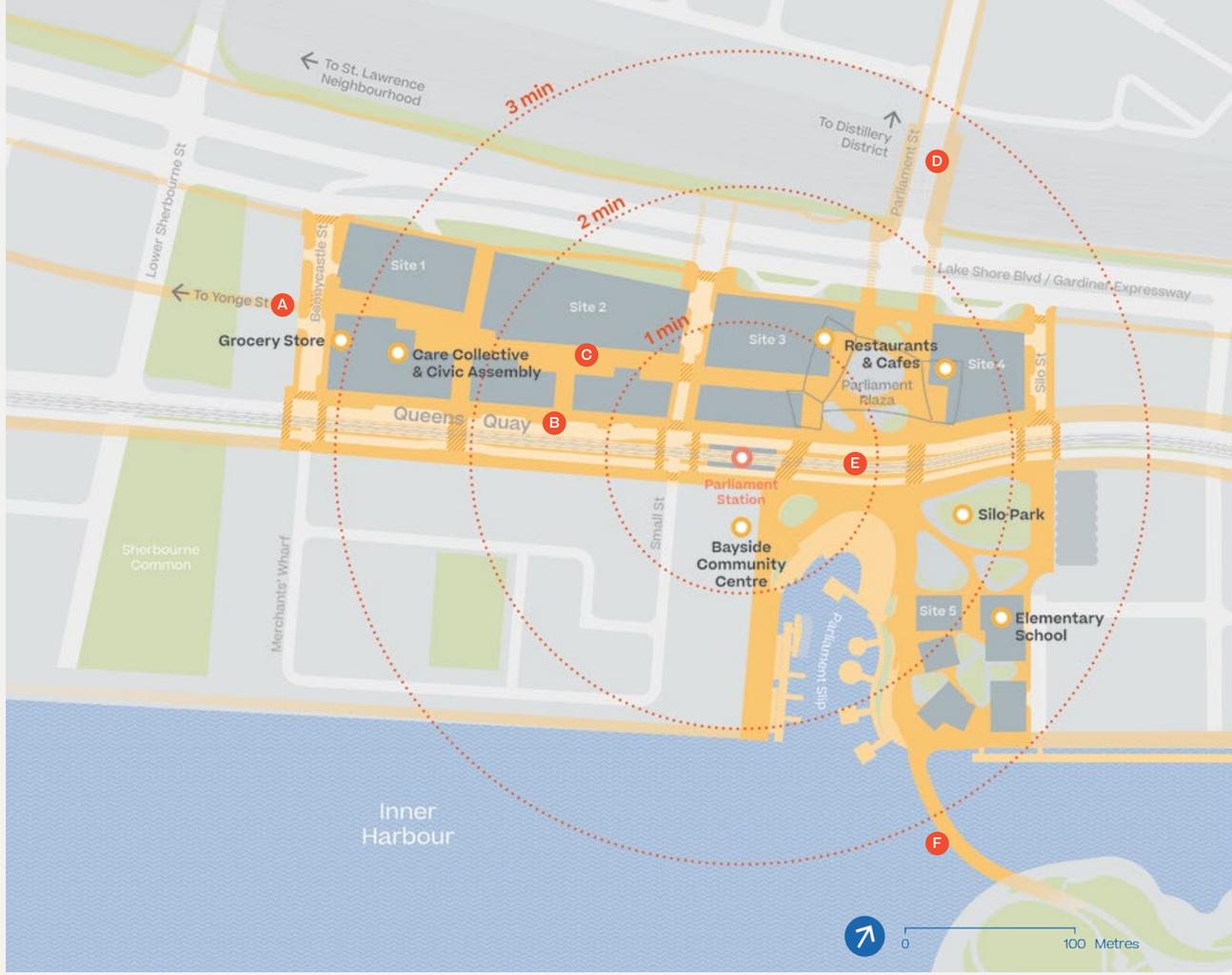
- Pedestrian access
- Quayside pedestrian crossings
- Quayside points of interest
- 1-minute walk radii from Parliament Station

A Walking from Yonge Street.
The network of pedestrian paths running parallel to Queens Quay from Yonge Street would be extended through Sites 1 to 3 in Quayside, becoming a pedestrian-only courtyard filled with shops and community spaces that culminates in Parliament Plaza.

B Creating a linear plaza.
When Quayside opens, Queens Quay's north sidewalk would be more than 7 metres wide — almost twice the size of present precinct plans. In the future, when self-driving vehicles share the road with light rail transit and car lanes can be reclaimed as sidewalk space (see Page 356), this area would grow to become a linear promenade more than 14 metres wide.[41]

C Pedways and courtyards.
Bustling, car-free pedestrian walkways and courtyards connect all areas of Quayside, breaking down large block footprints and creating a greater sense of intimacy.

D Improving underpass connections.
Currently, to reach Quayside from the north, visitors must travel through dark, narrow, noisy railway underpasses and cross the wide intersection of Lake Shore Boulevard. Sidewalk Labs plans to renovate the underpasses into bright, active corridors to create a more inviting connection.



E Queens Quay slow zone.
Queens Quay between Small and Silo streets, crossing through Parliament Plaza, would be designated as a slow zone. The light rail, vehicles, and bicycles would cross through the wide, open plaza travelling no faster than 10 km/h — closer to the walking speed of pedestrians. In this zone, vehicle and bike lanes would narrow and varied paving colours, patterns, and textures, as well as dynamic lighting, would alert drivers and cyclists to slow down. Two clearly defined crossing areas at the west and east edges of the plaza would provide primary areas for pedestrian passage and be marked for accessibility.

F Connecting to Villiers Island.
Pathways would lead to a new pedestrian bridge that connects Quayside to the stunning new parks of Villiers Island.

3 Minutes.
A household in Quayside should be able to reach many daily needs within a three-minute walk from the neighbourhood centre, such as the elementary school, a grocery store, and almost 3,900 jobs.

Creating a safer, connected cycling network

Quayside's proposed cycling network connects seamlessly to surrounding neighbourhoods while piloting new designs and technologies to make cycling smoother, safer, and more convenient across all seasons.

Pedestrians and cyclists along the waterfront face steep challenges in the form of connectivity, safety, and comfort — from unprotected lanes to freezing, snowy days. Waterfront Toronto has started to tackle this challenge along Queens Quay West, with new protected bike lanes that attract more than 6,000 riders a day.[42] The Quayside plan builds on this progress by piloting a series of innovations to protect cyclists and create safe and convenient connections with the rest of Toronto.

The plan's heated bike lanes would make cycling comfortable and safer for more of the year. Wide, physically separated lanes would protect cyclists from traffic. "Green wave" lighting would help cyclists avoid hitting red lights and guide them safely through crossings. Responsive traffic signals would give cyclists and pedestrians priority over cars at intersections. And extensive bike infrastructure — including bike-share stations, bike parking, and e-bike options — would support riders and ensure seamless transfers to other travel modes.

Map

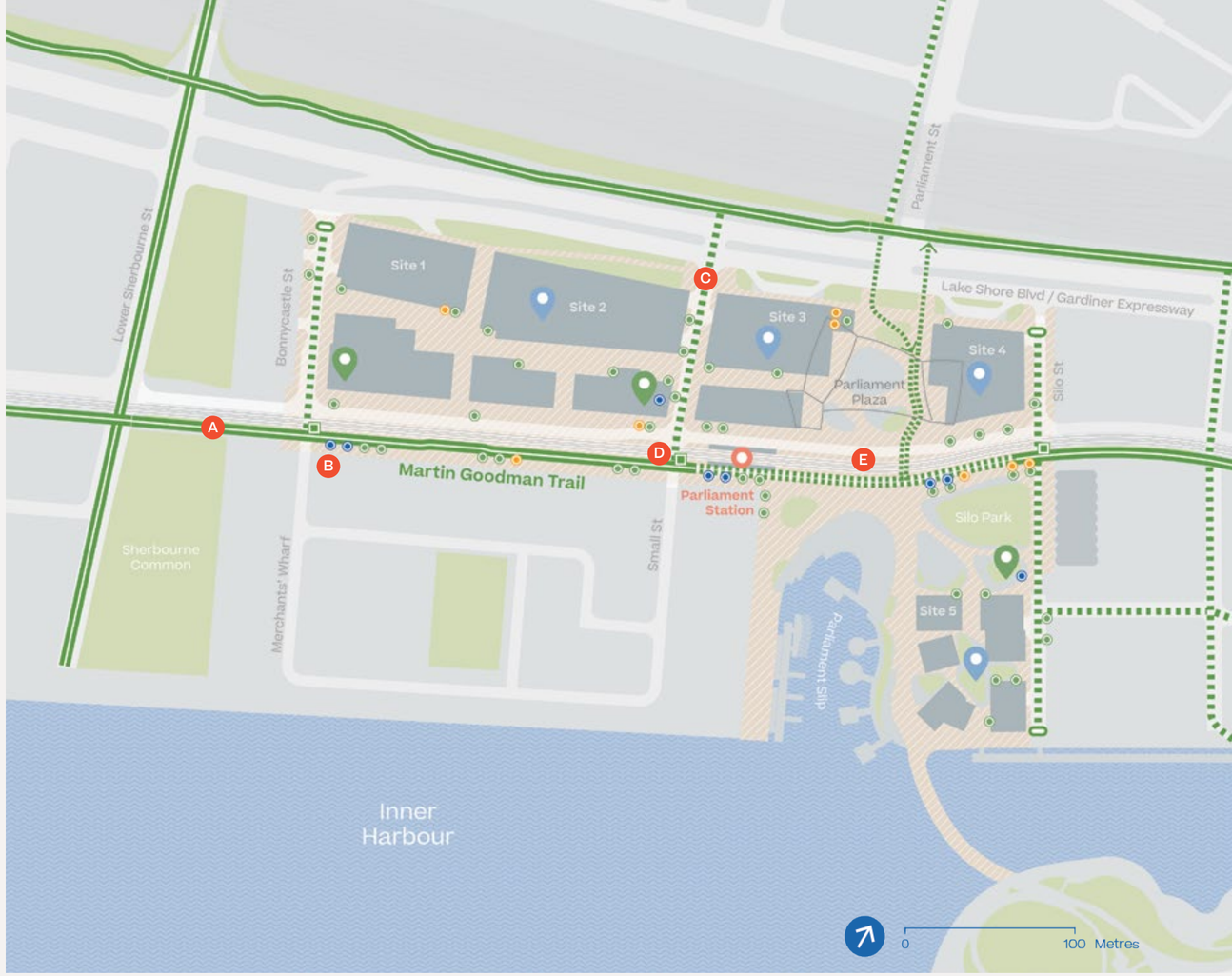
Quayside bicycle network and facilities

Bike routes
- Primary / Separated
- Slow zone
- Secondary / Shared

- Pedestrian / Dismount zone
- Bike box

Bike parking (spaces)
- Bike hub (500)
- Basement storage (2700)
- Bike racks (600)

Other parking
- Bike-share (190)
- Electric vehicles
  Bikes (60) / Scooter (190)



A Martin Goodman Trail.
For the trail's four blocks through Quayside, cyclists would notice that their trips become more comfortable thanks to a series of pilots, such as doubling capacity on the trail to allow riders to pass each other safely, green waves that enable continuous biking, and heated pavers to melt snow and ice.

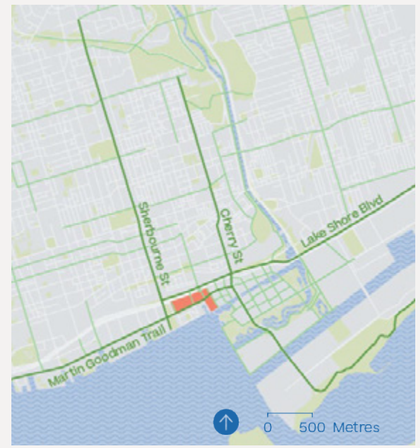
B Bike parking.
To encourage cycling as a primary form of transit, the Quayside plan provides more than 800 short-term and almost 3,000 long-term bike parking spaces on site (more than one per residential unit).[43] This amount meets Toronto Green Standard Tier 1 for long-term residential bike storage and represents almost 70 percent more short-term bike parking spaces than required by city standards and almost 20 percent more spaces overall.[44]

C Low-speed streets.
Cyclists can travel through Quayside's north-south side streets alongside pedestrians and cars travelling at reduced speeds.

D Protected turns for cyclists.
Cyclists travelling north along Bonnycastle or Small Streets would be protected by bike boxes at the Queens Quay-Martin Goodman Trail intersections, separating cyclists from vehicle turning paths.

E Queens Quay slow zone.
As described on Page 111, all modes would share space in the slow zone along Queens Quay, through Parliament Plaza, at a reduced speed of 10 km/h. For cyclists, a new north-south trail through the plaza would connect to the Martin Goodman Trail and be marked with coloured pavers and dynamic lighting. Bike parking and bike-share stations around the edge of the plaza would enable cyclists to easily pick up and drop off bicycles.

Bike network.
Sherbourne and Cherry streets, as well as a path through the new Parliament Plaza, connect cyclists to the Martin Goodman Trail, which runs through the heart of Quayside parallel to Queens Quay.



- Bike network
- Primary routes
- Quayside

Ensuring vehicle access to Quayside

Quayside's proposed vehicular facilities and street network would create connections along the waterfront for drivers while protecting pedestrian and cycling spaces and minimizing the need for privately owned cars.

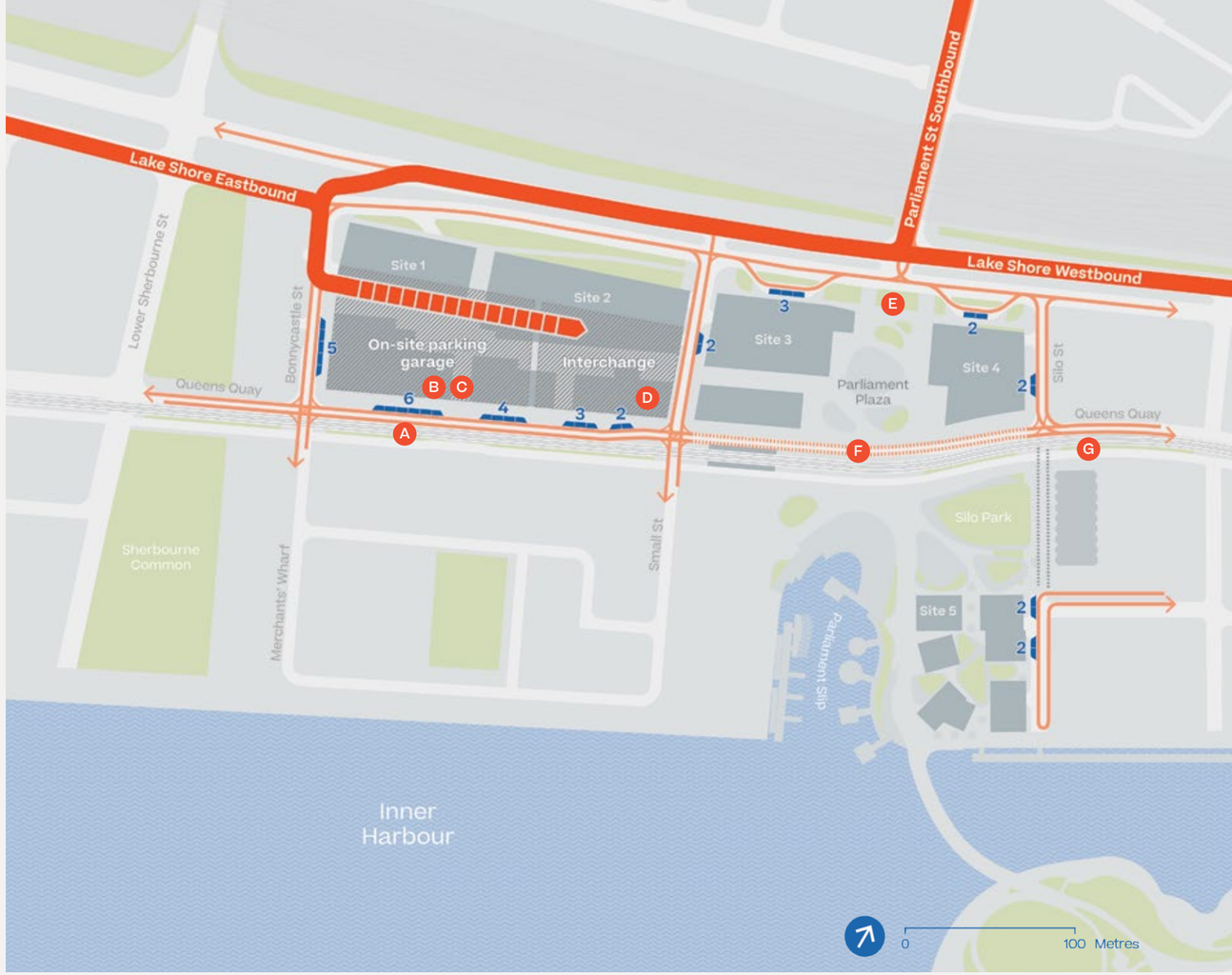
Quayside's transportation network is designed to prioritize public transit, cycling, and walking. But Sidewalk Labs recognizes that traditional cars — and, in the future, self-driving vehicles — play a part in any comprehensive mobility system.

That means providing network connections to downtown and across the eastern waterfront; offering facilities that prioritize new mobility options, such as ride-hail and car-share services; and facilitating connections to bikes, scooters, and walking paths for travellers leaving from or arriving into the neighbourhood.

The resulting system would provide easy circulation throughout the city and access to vehicles for trips that require them — like transporting an elderly parent to the hospital or travelling to the airport with lots of luggage — while minimizing the need for private car-ownership.

Map

Quayside vehicular network and facilities



A On-street pick-up and drop-off.
Pick-up and drop-off spaces would be available on Queens Quay, with additional sites at Lake Shore Boulevard, Bonnycastle Street, and Small Street. Availability would be monitored, priced, and communicated in real-time to travellers via apps, as well as to new mobility services.

B Electric vehicle facilities.
To support climate-positive goals, all parking sites would offer extensive electric vehicle charging facilities — enough to meet Toronto Green Standard Tier 2 (25 percent of spaces enabled and all spaces capable of connection). At the on-site garage, Level 3 chargers (which require 1 hour to charge) and Level 2 chargers (which require 3.5 hours to charge) would be available for car-share vehicles, taxis, shuttles, electric buses, and electric mini-buses. To encourage car-sharing and meet environmental goals, almost 100 car-share vehicles would be available at the on-site parking facility and would be all electric. At the off-site facility, Level 1 chargers (which take 10 to 12 hours to charge) would be available. Discounts for these parking facilities would be provided to Quayside residents and employees who own electric vehicles.

C Hourly (on-site) parking.
An underground parking garage with some 400 spaces would be accessible via Bonnycastle Street; intended mainly for visitors, this garage would charge hourly rates and offer monthly spaces for accessible parking or other exceptions.[45]

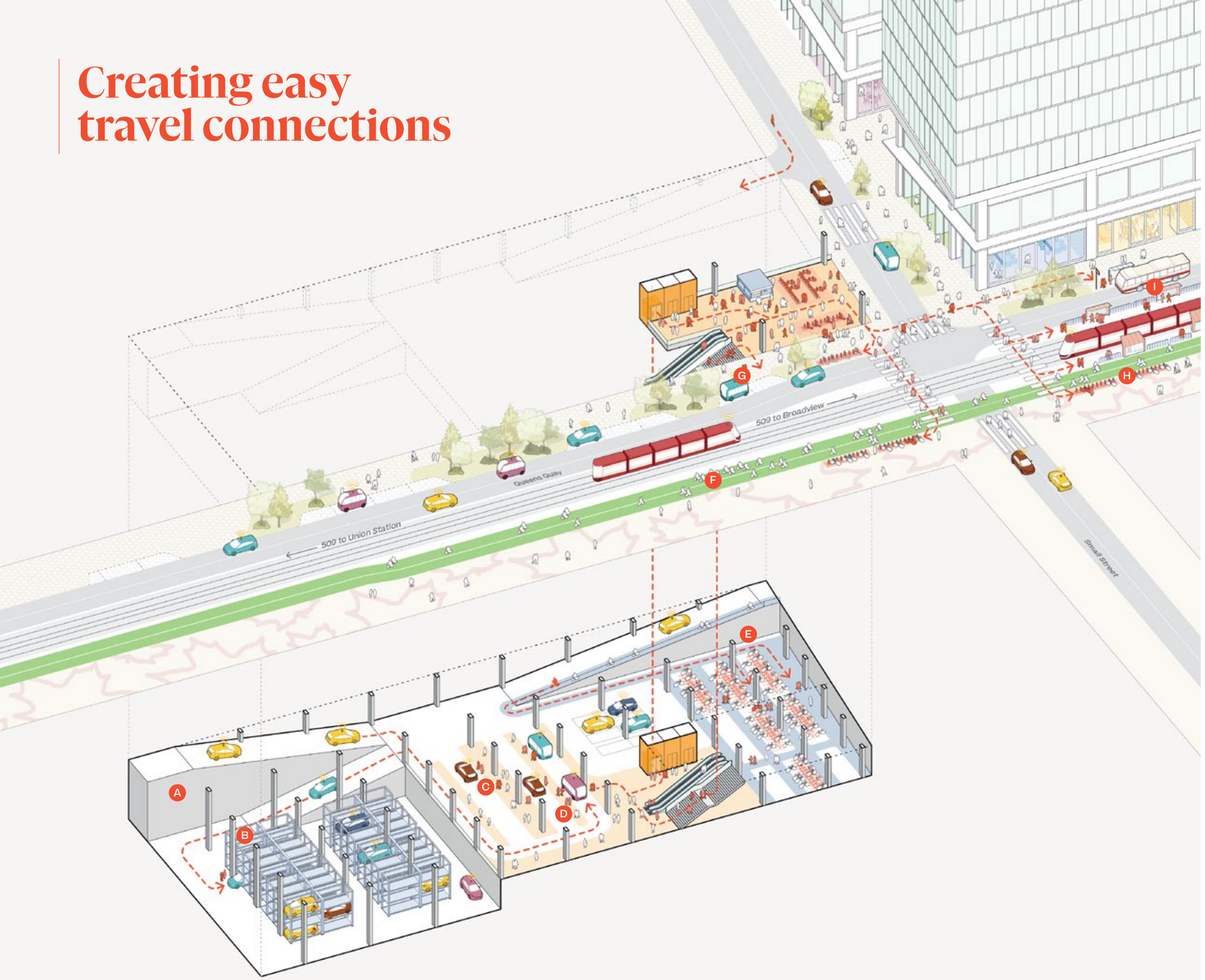
D Off-site parking access.
Residents and employees requiring monthly parking for personal vehicles could access their cars at the proposed "interchange" (see Page 117), where an attendant (scheduled in advance via app) would convey the vehicles to and from off-site parking spaces (750 total) located in the Port Lands or nearby.

E Parliament Street closure.
To support a safer, livelier transit, bike, and pedestrian experience and create a grand neighbourhood public space at Parliament Plaza, the Quayside plan proposes a closure of Parliament Street with traffic diverted to Small and Silo streets in a loop, via traffic signal management able to respond in real-time to changing conditions. (See Page 143 for details.)

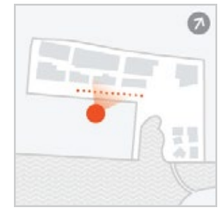
F Queens Quay slow zone.
Traffic lights at the intersections of Queens Quay and Small and Silo streets would operate to allow limited numbers of cars into the proposed slow zone running through Parliament Plaza (see Page 143).
To ensure safety, pedestrians would be given priority in this zone and vehicles would move along the street at reduced speeds of 10 km/h.

G Queens Quay adaptation.
Queens Quay would be designed to adapt in the future. When self-driving cars become the norm — based on successful pilots and approved operation design — Sidewalk Labs anticipates that these vehicles could share the roadway with light rail. At that time, Queens Quay's vehicular lanes would be repurposed as a linear pedestrian plaza. (See Page 123 for details.)

Creating easy travel connections



Quayside's multi-modal mobility hub



In the heart of Quayside, a nexus of bike-share stations, pedestrian paths, light rail and bus stops, a parking garage, and ride-hail pick-up and drop-off points would enable easy transfers across every travel mode.

The Quayside plan anchors the transportation system around a mobility hub for drop-offs, pick-ups, and transfers located in the bustling centre of the neighbourhood.

Travellers who arrive to Quayside by car or public transit can rent bikes or scooters to complete the last leg of their trip, or choose to walk through the expanded and improved pedestrian network.

Alternatively, residents can use bikes and scooters to arrive at the mobility hub, where they could board a light rail vehicle or bus — or access personal, shared, or hailed vehicles — to reach destinations across the Greater Toronto Area.

A Parking garage.
An hourly-rate parking garage, complete with electric vehicle charging, could accommodate some 400 cars. This on-site garage would be designed with stacked parking, requiring vehicles to be dropped off with and picked up from parking attendants.

B Car-sharing.
To facilitate access to car-sharing services, nearly 100 car-share spaces would be included in the garage.

C Vehicle interchange.
The interchange, a below-grade drop-off and pick-up area, would be co-located with the visitor parking garage and have a peak capacity of 500 vehicles per hour.[46] The underground location keeps cars off the road and frees up space for the public realm and building ground floors.

D Ride-hailing.
To facilitate access to ride-hailing services, taxis and shuttles would have designated interchange spaces located conveniently near the entrance / exit.

E Bike hub.
The bicycle hub includes bike parking, bike-shares, e-bikes, and e-scooter racks.

F Martin Goodman Trail.
Protected five-metre bicycle lanes would double the capacity of traditional bike paths.

G Pick-up and drop-off zones.
More than 30 pick-up or drop-off spaces would be located around Quayside.

H Electric bikes and e-scooters.
Some 250 spaces for these new mobility devices would be provided across Quayside.

I Transit connections.
A new Queens Quay light rail station and city bus stop would be located at the mobility hub.

→ Multi-modal connections.
Connections to every type of mobility option are available in the hub area.

Establishing a people-first street network

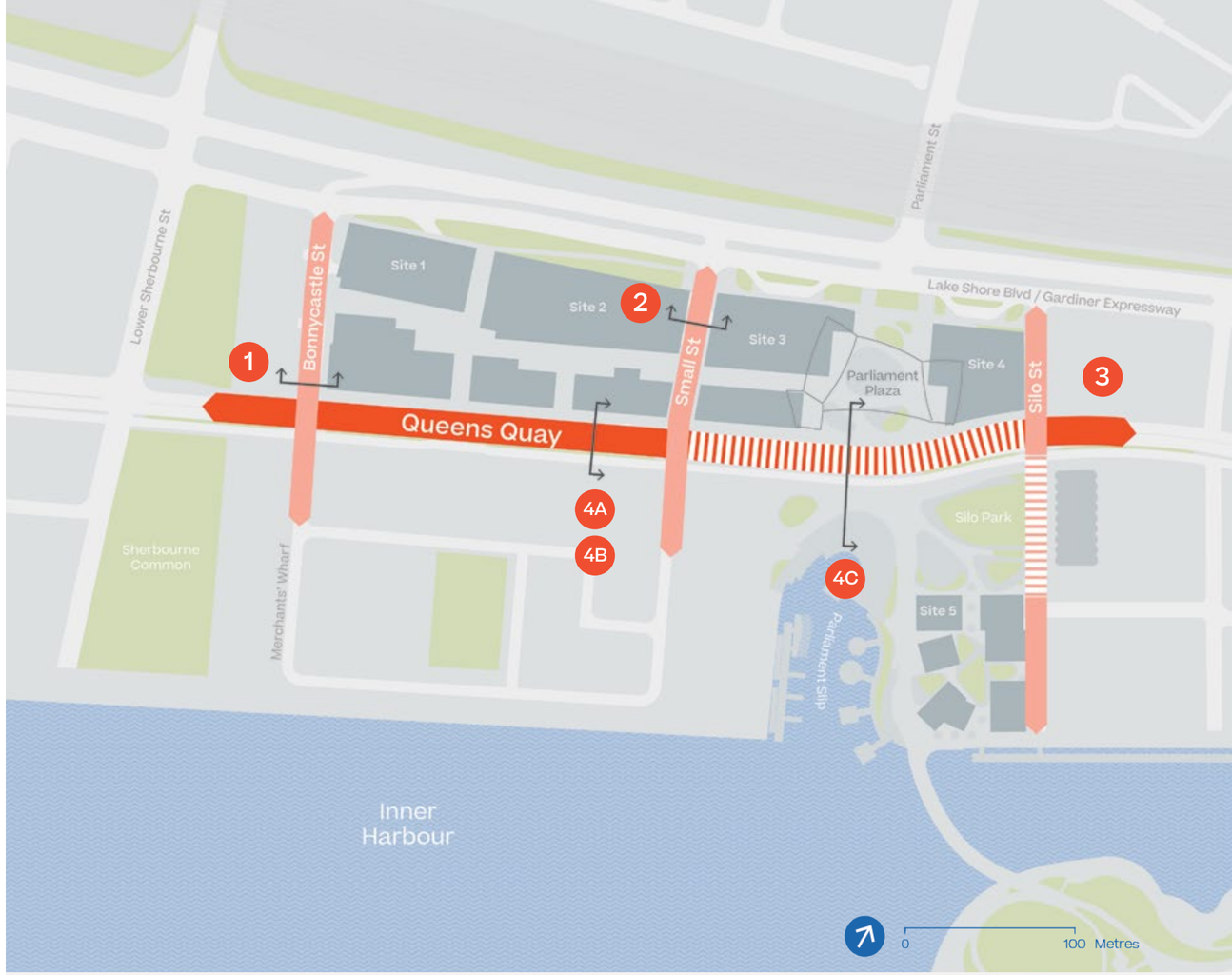
Quayside's balanced street network integrates digital and design innovations to create a welcoming, safe public realm while facilitating movement for all modes of travel.

Most streets have a single, static design, yet they are expected to serve an ever-shifting group of users, whose needs change and conflict over the course of a day. In the morning rush hour, the number of transit and private vehicles on the streets is much higher. During the afternoon, there are likely to be more pedestrians using the sidewalk for errands and strolls. Whether exploring or commuting, cyclists should be protected at all times.

Typical street designs cannot respond to these varied demands. Instead, they tend to feature wide, permanent car lanes to accommodate peak traffic needs at the expense of public space.

Quayside's people-first approach creates a balanced street network designed to incorporate the needs of all users and adapt as conditions evolve. Dynamic curbs can provide flexibility to make the most of limited street space, enabling quick conversions between transportation and public realm purposes like plazas or special events like pop-up markets. By planning streets around public transit use and shared mobility fleets, not private car-ownership, Quayside can reclaim street space for wide sidewalks and safe cycling routes.

This approach is designed to operate safely and effectively in existing cities with traditional vehicles, however, it reaches its peak potential in a world of self-driving vehicles that can be programmed to follow traffic rules, be routed by a mobility management system, and defer to pedestrians.



Map

Quayside's street plan

Quayside's proposed street network consists of one grand boulevard that runs east-west (Queens Quay) and three north-south streets that provide convenient building access.

- Queens Quay
  30m wide, 40km/hr
- Slow zone
- North / South streets
  16-20m wide, 20km/hr
- Temporary roadway
  during construction of sites to east

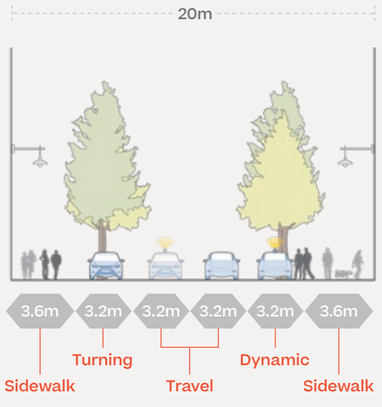
1 Bonnycastle Street
2 Small Street
3 Silo Street
4A Queens Quay 2025
4B Queens Quay 2035
4C Queens Quay slow zone 2025

See street sections on the following page

Designing Quayside's four streets

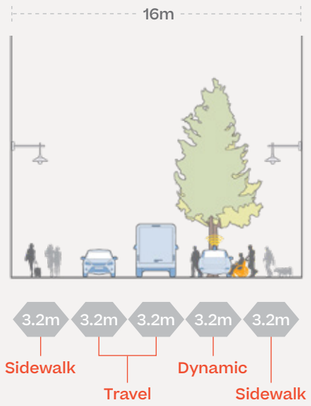
1

Bonnycastle Street.
Bonnycastle would have north- and south-bound vehicle lanes and multiple dynamic curb spaces.



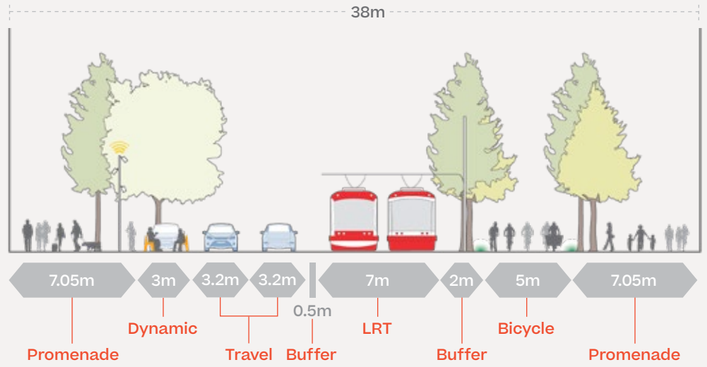
2 **3**

Small and Silo streets.
Quayside's two smallest streets would share space among pedestrians, cyclists, and cars, with slower vehicle speeds. Trucks exiting from the neighbourhood logistics hub (see Page 134) would pass along Small Street.



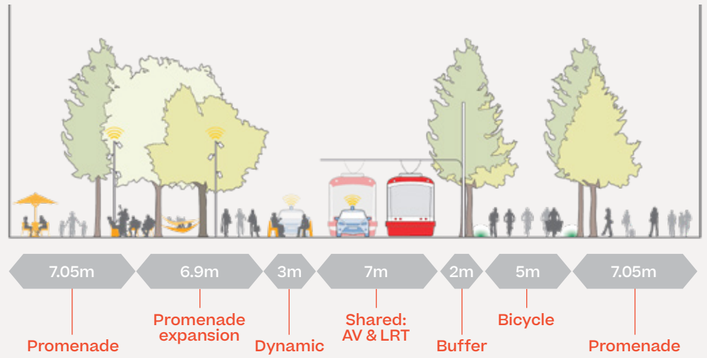
4A

Queens Quay 2025.
The initial plans for Queens Quay feature wide sidewalks and bike lanes, as well as plentiful dynamic curb spaces along the north side of the street.



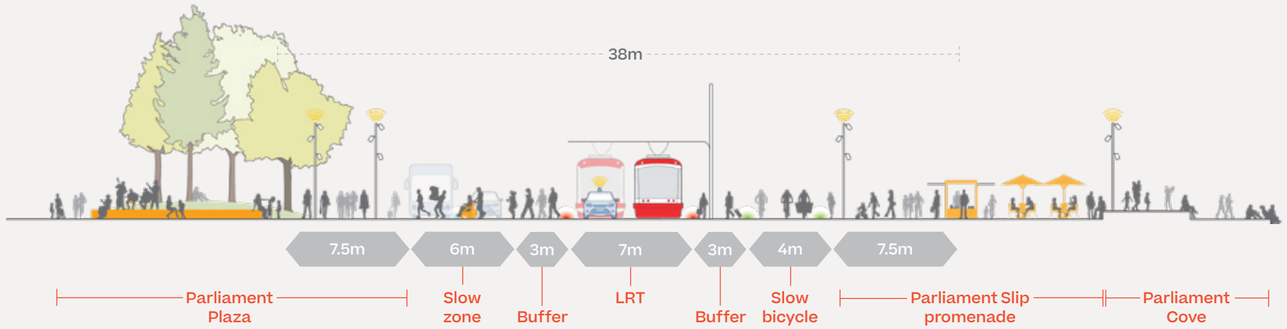
4B

Queens Quay 2035.
In the future, when self-driving vehicles are able to replace traditional cars and share space with the light rail transit lanes without impeding operations, the two traffic lanes would be converted to pedestrian space.



4C

Queens Quay slow zone 2025.
As described on Page 123, light rail, vehicles, and bicycles would cross through Parliament Plaza along the Queens Quay slow zone, sharing the space with pedestrians at a reduced speed of 10 km/h. Buffer zones between travel lanes would act as additional safety features for pedestrian crossing areas, and "red waves" would alert pedestrians to the light rail's arrival.



Reimagining Queens Quay for 2025 and 2035

Quayside's plans accelerate improvements already underway to transform Queens Quay into a vibrant boulevard that welcomes pedestrians, bikes, and public transportation and provides a grand entrance to the eastern waterfront.

Queens Quay is the major boulevard connecting public spaces and neighbourhoods along the waterfront.
Farther west, the street has seen major improvements over the last 10 years, resulting in safer conditions, enhanced public transit service, and better cycling conditions.

The Quayside plan builds on these improvements to create an inspiring entrance to the eastern waterfront, a street purposely designed to evolve over time and capture the opportunities provided by a future with self-driving vehicles. On opening day, travellers could enjoy the newly extended streetcar line, superior cycling and pedestrian experiences, and access to new ride-hail services. An expanded public realm would blur the line between sidewalks and building ground floors, which can host a range of micro-shops, major retailers, cafés, community spaces, and art and cultural installations.

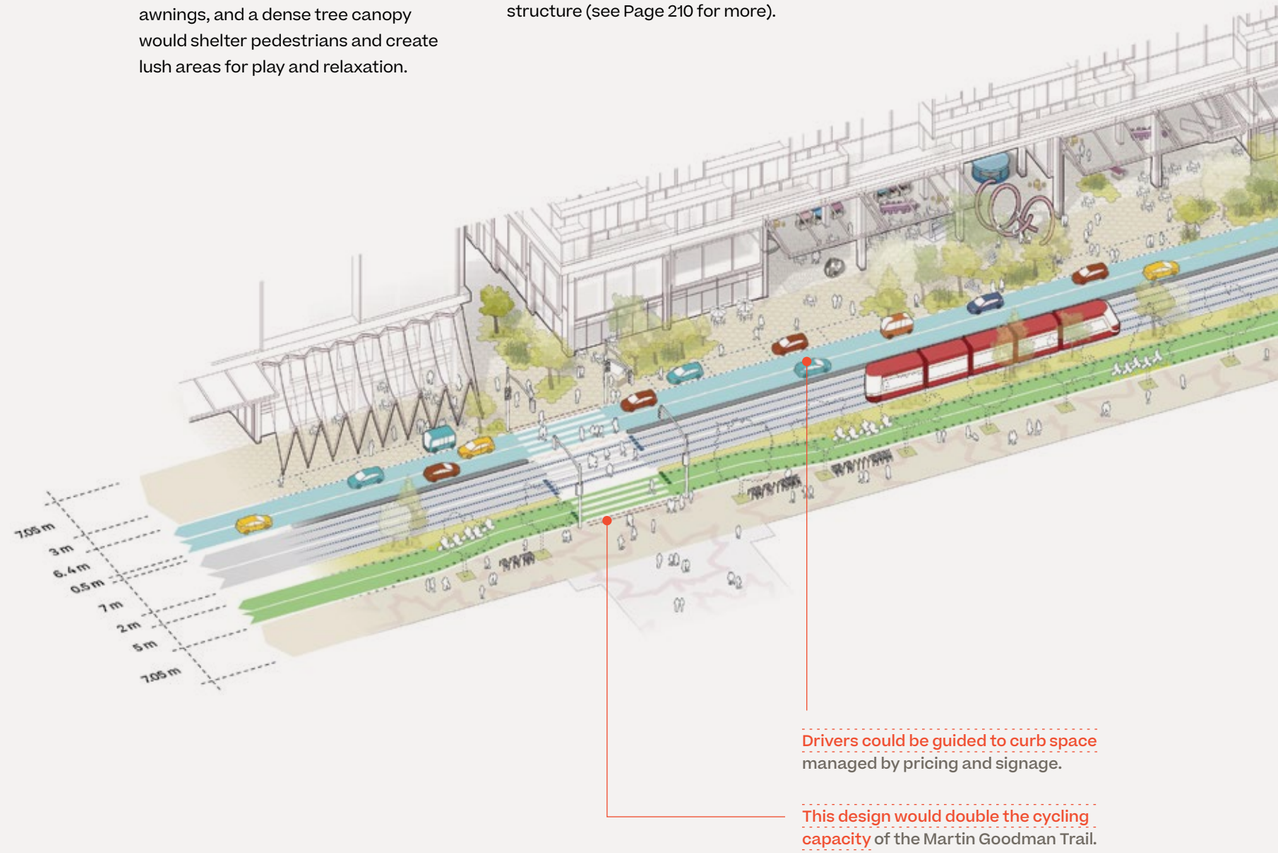
Over time, as new transportation options and self-driving vehicles emerge, the street could recapture car lanes to create a bigger, more varied public realm.

2025

Queens Quay on Day One

Upon opening, Queens Quay would retain two east-west vehicle lanes to ensure connectivity across the waterfront. Building Raincoats, movable awnings, and a dense tree canopy would shelter pedestrians and create lush areas for play and relaxation.

During slower midday and weekend times, the numerous dynamic pick-up and drop-off zones could be repurposed for programming like outdoor cafés or pop-up shops. Expansive landscaping would also form the foundation of Quayside's green stormwater infrastructure (see Page 210 for more).



The reclaimed road space would be repurposed for the public realm, creating a lively, linear park, with the potential to carve out spaces for playgrounds, markets, and public events.

Self-driving vehicles would improve street safety and require fewer traffic lights.

Self-driving vehicles and the light rail could share a lane without impeding transit operations.

Self-driving vehicles could be assigned to spaces and navigate directly there.

2035

Queens Quay 2035

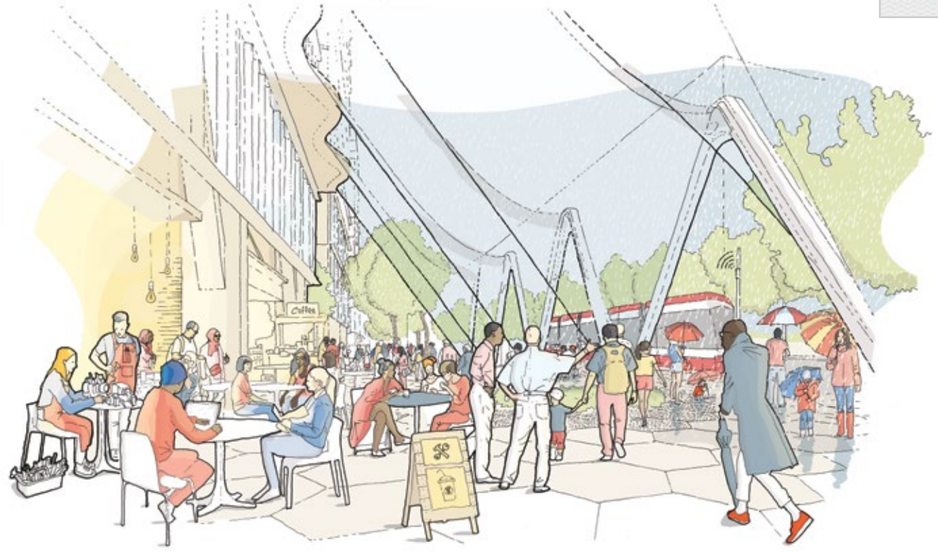
The wide adoption of self-driving vehicles could enable a dramatic transformation to the street. Because self-driving vehicles can be programmed to travel in predictable lanes at predictable speeds, it is expected they would be able to share the light rail without slowing down transit service, eliminating the need for separate vehicle lanes. (Sidewalk Labs plans to thoroughly test and pilot the compatibility of self-driving vehicle operations in light rail lanes prior to implementation.)

Designing a welcoming, lively boulevard in 2035

As travellers move along Queens Quay, they would experience a grand boulevard full of intimate moments and a series of digital and design innovations that make the street inviting to pedestrians and cyclists no matter the season.

Tree clusters and cover.
The rich tree canopy clustered at each end of Queens Quay would provide protection from winds sweeping in from the west and southwest, creating opportunities for pockets of playful, green space. All of these trees would have the 30-cubic-metre soil volume set out in the Toronto Green Standard.[47] In addition to these ecological benefits, on Queens Quay East in 2025, it would be possible to plant trees at a concentration of 59 trees per hectare, a 20 percent increase over the concentration of 49 trees per hectare achieved on Queens Quay West today.[48]

Building Raincoats.
These covered, versatile spaces can protect pedestrians and shelter outdoor pop-ups or patio areas from rain and wind.



Wider public realm.
Flexible ground-floor spaces can be opened in summer, creating a seamless, indoor-outdoor experience for wide-ranging uses, such as markets, cafés, and arts spaces.

A Green wave.
LED lights embedded in the Martin Goodman Trail can turn green, signalling a green wave that allows cyclists to travel as fast as 22 km/h without stopping at intersections. Green waves encourage cyclists to ride in packs, increasing safety as they receive protected green lights at intersections.[49]

B Real-time crosswalks.
In a traditional design, wide boulevards require traffic lights to allocate a long time for pedestrians to cross the entire street, potentially delaying the light rail. On Queens Quay, lighting embedded in crosswalk pavers at key intersections would create a two-stage crossing, guiding pedestrians safely to a central median and holding them if the streetcar is approaching.

Creating a more balanced, responsive streetscape

All streets in Quayside — even the smaller ones, such as Bonnycastle Street, shown here — would feature a range of innovations that balance the needs of all users and make adjustments in real time, facilitating easier, safer, more enjoyable trips.

Streets are used in dramatically different ways across the course of a day, a week, and even the seasons. But their designs are generally unable to adjust to changing needs. For instance, pick-up and drop-up spaces might be packed during commuting rush hours but empty in the afternoon. Individual needs also vary: a healthy young adult typically needs less time to cross the street than a family with a toddler.

Quayside's street designs can support a range of needs at different times. A coordinated mobility management system would provide vehicles with real-time information on available passenger loading zones. Adaptive traffic signals can balance safety and convenience for all users. Adjustable lighting, protection from bad weather, and more public space would make for a more inviting streetscape.

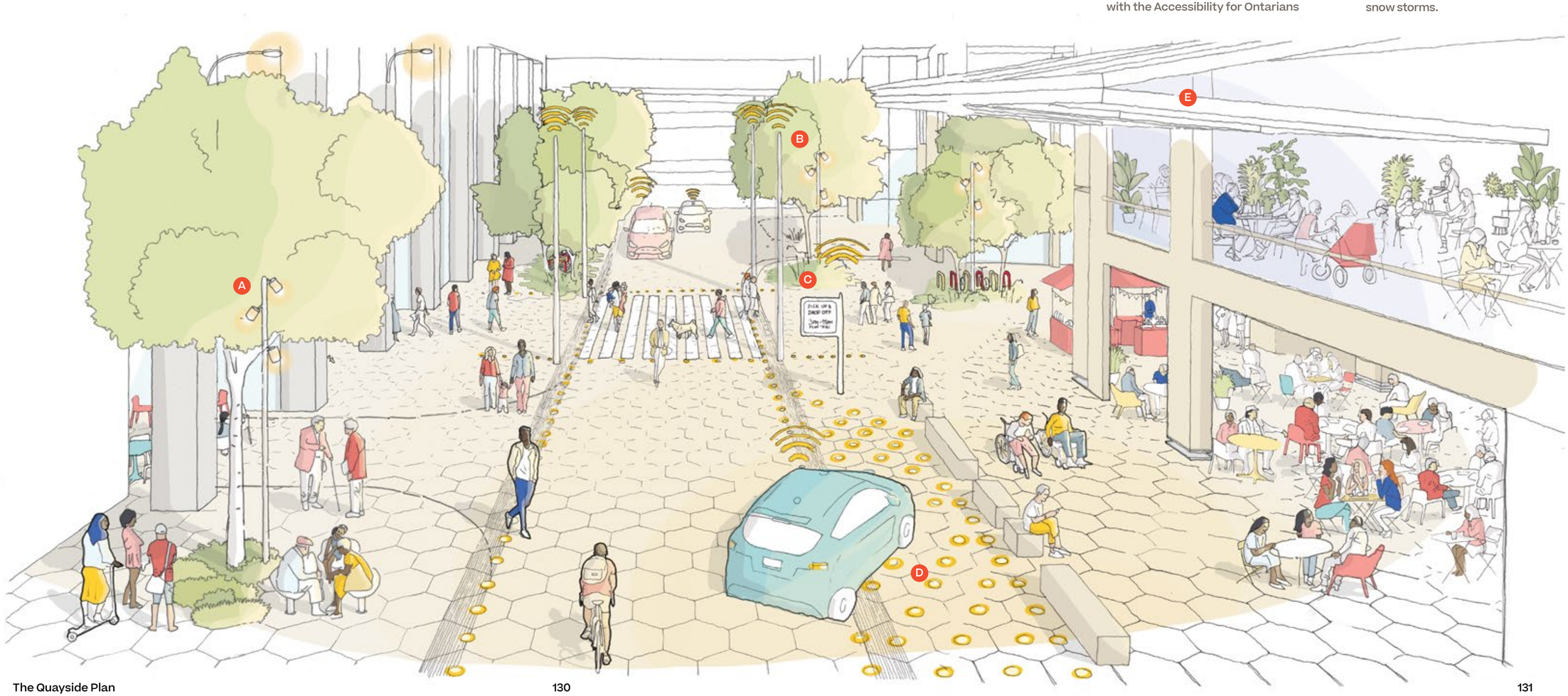
A Street lighting.
In contrast to conventional street lights, which have only one brightness level, Quayside's street lights would adjust to real-time conditions, helping to maintain a consistently safe, beautiful, and sustainable streetscape across all times of day and seasons.

B Adaptive traffic signals.
Adaptive signals can make real-time adjustments to balance the needs of different groups, whether that means helping a slower pedestrian safely finish crossing or giving priority to a streetcar that is running late.

C Traffic coordination.
A proposed mobility management system would monitor space availability in underground parking areas and pick-up and drop-off zones throughout the neighbourhood, direct drivers (and, in the future, self-driving vehicles) to open spaces, and adjust the pricing in real time to encourage shared rides or alternative trip options.

D Dynamic curb.
Pick-up and drop-off spaces would expand or shrink based on demand. During weekday rush hours, the maximum dynamic curb space would be reserved for cars. At off-peak hours, excess spaces could be repurposed for programming like outdoor cafés or pop-up markets. These changes would be fully compliant with the Accessibility for Ontarians with Disabilities Act (AODA), using a combination of tactile markings in pavers, movable street furniture, lighting, and digital signage.

E Retractable facades.
Facades that fold up similar to a simple garage door — one of several outdoor comfort tools in Quayside — would open during the summer months but close during rain and snow storms.



Bonnycastle Street

Using modular pavers to build a more durable and flexible street

Quayside's proposed modular pavement system would incorporate technology to make the streetscape more responsive and green, reducing the time and disruption required for utility work.

Traditional paving systems lead to rigid streets that cannot adapt when problems arise, technology evolves, or community needs change. Cracks are common — Toronto fixed 214,253 potholes in 2017 alone[50] — as are street cuts for utility work, leading to full crews working with noisy equipment for days. The result is a network of pockmarked pavement that is difficult and costly to replace. Opening up the street is a cost-intensive endeavour that discourages rapid innovation and investment in new infrastructure, such as fibre-optic cables that have become a basic need for homes and businesses.

To address these challenges, Sidewalk Labs plans to deploy a modular pavement solution in Quayside. Sidewalk Labs has prototyped a pre-cast concrete, one-metre hexagonal road-grade paver that can be used from building-front to building-front and plans to work with local universities and regulators to refine the prototype and develop a pavement that would work in a Toronto context.

While modular pavement can cost the same to deploy as Toronto's current waterfront streetscape, it can be more cost-efficient over the long term due to a greater ability to resist wear and tear and to savings associated with the ease of utility access. The pavers can also host other technologies, and Sidewalk Labs plans to include features like heating to melt snow, lighting to animate street use, and permeability to allow for rainwater infiltration — making streets more safe, inviting, and sustainable.

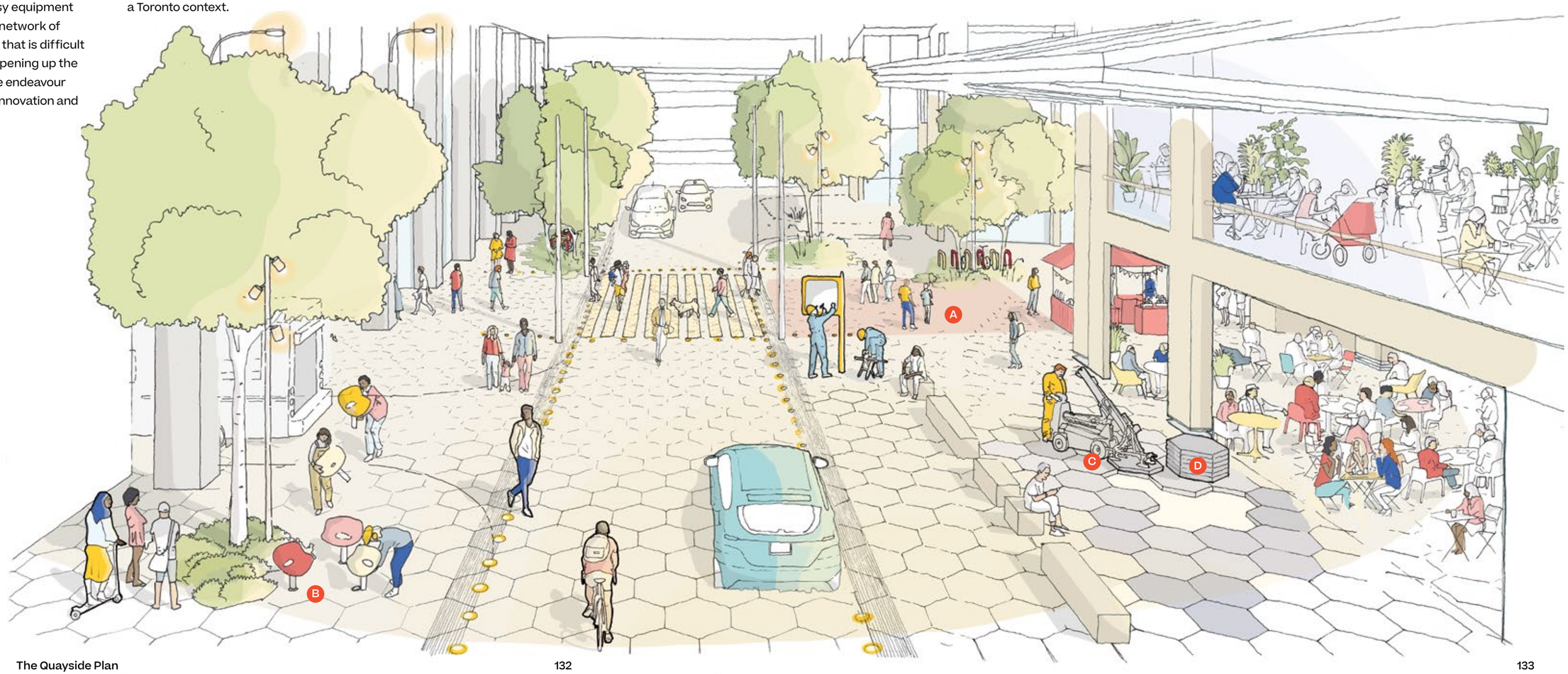
A Heating.
A number of modular pavers in Quayside will pilot heating capabilities to clear snow and ice, improving safety and eliminating the need for salting.

B Streetscape installations.
Pavers would be designed to enable easy installation and removal of street infrastructure, such as signs, traffic lights, and equipment for special events.

C Paver maintenance.
Minor repairs can be completed in a single afternoon — down from Toronto's current average of several days — with a hand-held tool, reducing cost and neighbourhood disruption from jackhammers and large trucks.

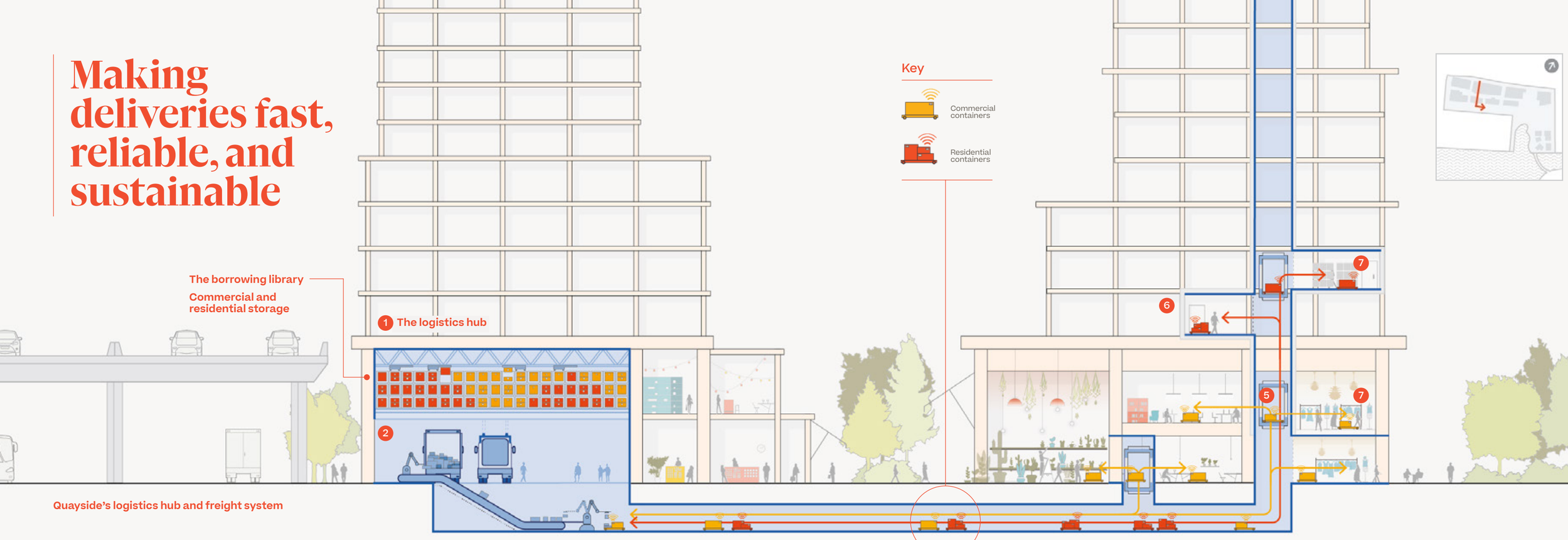
D Hexagonal design.
Each paver's 120-degree angles distribute vehicle weight more evenly than traditional rectangles, helping to minimize cracks and potholes.

Open access channel.
Site utilities (such as fibre-optic cables, pneumatic waste tubes, and electric utilities) would be located in an open access channel running under removable pavers, speeding up maintenance and lowering the installation cost for new utilities by almost 90 percent,[51] helping the neighbourhood keep up with future infrastructure innovations.



Bonnycastle Street

Making deliveries fast, reliable, and sustainable



Quayside's logistics hub and freight system

Lake Shore Boulevard | Site 2 North | Site 2 South | Queens Quay

Quayside's innovative last-mile delivery system would use underground freight tunnels to deliver packages directly to buildings, significantly reducing truck traffic from local streets.

Quick and reliable deliveries are essential to urban living, especially for residents who do not own cars. But the economic and environmental costs of such service is high: trucks clog the streets and contribute disproportionately to air and noise pollution in part of what is known as the "last-mile" delivery problem.

In Quayside, Sidewalk Labs proposes an innovative approach that would consolidate deliveries at a logistics hub, transferring them into "smart containers" that can be packed onto self-driving delivery dollies, which would reach residents and businesses through a system of underground tunnels. This system would reduce the number of on-site truck trips at Quayside by as much as 72 percent compared to business as usual.[52]

The logistics hub would be a centralized mailroom and storage facility accepting deliveries from existing carriers, such as Canada Post or private couriers.

1 Logistics hub.
Sites 1 and 2 in Quayside are being planned with the potential to house a logistics hub that would include a centre for mail and parcel delivery, resident and commercial storage space, a borrowing library for items too bulky to keep in apartments (such as ladders), and a waste transfer facility.

The proposed logistics hub could handle 95 percent of Quayside's freight (projected at more than 18,000 daily parcels), significantly reducing truck traffic on internal streets.

2 Freight transfer.
Freight would be transferred into secure, stackable smart containers loaded onto self-driving delivery dollies.

3 Smart containers.
New smart containers are designed to know their destination, be tracked by app, and be accessed only by a unique passcode.

4 Robot tunnel delivery.
Self-driving delivery dollies carrying smart containers would travel through two bi-directional tunnels — each about two metres wide — connecting into the basements of Quayside's buildings.

5 Drop-off and pick-up.
Self-driving delivery dollies could take a building's freight elevator to a mailroom to drop off packages. They could return with new cargo, such as outbound cardboard, reducing empty runs.

6 Door delivery service.
Door delivery service would be available for bulkier packages, storage, or borrowed items, or for residents with special needs.

7 Resident and commercial storage.
Smart containers can be used for short-term storage in a resident's building and long-term storage (such as for seasonal items) at the logistics hub. Commercial storage would also be available at the logistics hub, enabling retail stores to act more like showrooms and helping small local businesses compete with more established enterprises. Users can track their deliveries, unlock containers, and save an inventory of stored goods through an app.

Planning for accessibility from the start

A series of workshops — conducted in collaboration with the accessible community in Toronto — led to 22 accessibility principles to guide planning in Quayside. These pages help bring some of these principles to life and outline some core accessibility commitments.

In 1945, some of the first curb cuts were introduced in Kalamazoo, Michigan. The idea was to make it easier for people using wheelchairs and other mobility devices to cross the street.[53]

It took 50 more years and the tireless efforts of disability rights groups before the first legislation was passed requiring curb cuts on all street corners in the U.S.[54] But as cities began installing curb cuts, they noticed that the majority of people using them were not people using wheelchairs. They were parents pushing strollers, travellers wheeling roller bags, bicyclists crossing streets, even pedestrians who simply preferred a gradual slope. A simple technology designed and advocated for by people with lived experience of disability ended up benefitting a much wider group.

As the curb cut example shows, everyone benefits when neighbourhoods are designed with homes, transportation systems, and city services that can adapt to all types of different abilities. In Quayside, Sidewalk Labs has a unique opportunity to design more inclusive environments from the start, with a chance to put into place accessible systems that can improve the lives of everyone and become a model for the world to follow.

To guide this planning process, Sidewalk Labs engaged extensively with the accessible community in Toronto, including professional designers, advocates, and especially people who self-identified as having lived experience of disability. Together, this group co-created 22 accessibility principles that Sidewalk Labs commits to following for the Sidewalk Toronto project.

Building on top of the legal standards set forth in the Accessibility for Ontarians with Disabilities Act, these principles served as a planning guide for both the accessibility of the physical elements of the neighbourhood and the digital services proposed for Quayside.

In Focus

The 22 accessibility principles guiding planning in Quayside

General accessibility principles

1 Enable experiences that were not possible before

2 Do “nothing about us without us”

3 Make infrastructure simple, durable, and reliable

4 Design predictable, intuitive experiences

5 Futureproof by default

6 Make the accessible path the most convenient, delightful path

7 Prioritize end-to-end accessibility

8 Prioritize autonomy first

Physical accessibility principles

9 Build for wheels

10 Enable wayfinding in multiple formats

11 Eliminate barriers and friction

12 Promote relaxation and recovery

13 Enable personal assistive technology, with a focus on easy to access, low-cost technologies

14 Go beyond legal requirements

15 Enable flexibility and customization

Digital accessibility principles

16 Provide information in multiple, easily accessible formats and languages

17 Support multiple input modalities to all digital experiences

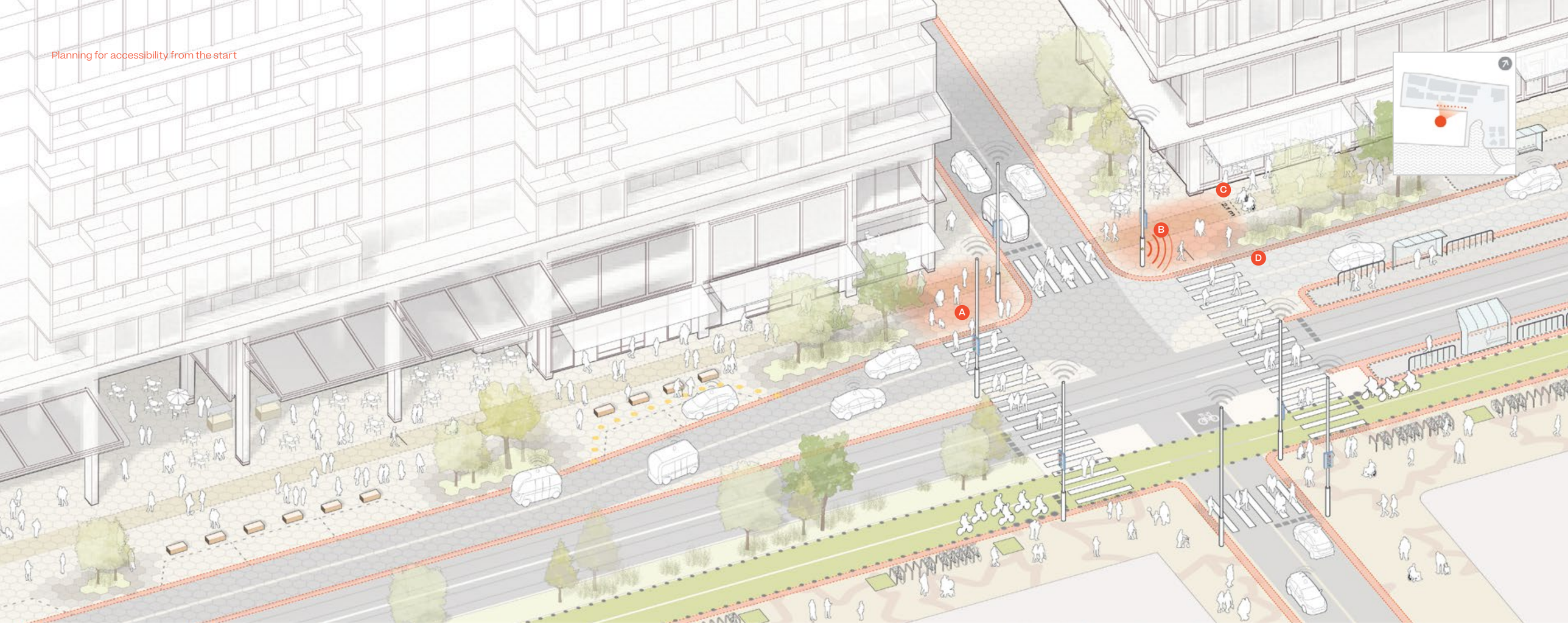
18 Preserve privacy and support fairness in machine learning

19 Allow an easy way to give feedback on digital tools

20 Use common standards for messages in audio wayfinding features

21 Provide a recommended, free option that is also open to third-party alternatives wherever technology is necessary to interact with a key service

22 Use the best digital accessibility standards available and set new, higher standards wherever possible



Dynamic, accessible streets

One of the cornerstones of an accessible city is the ability to travel independently and safely at street level. Sidewalk Labs proposes streets that are for pedestrians first — including pedestrians using mobility devices, travelling with service animals, and with varying levels of sensory perception and attention.

This proposal illustrates the following principles:

- Build for wheels
- Enable visual, auditory, and tactile wayfinding
- Eliminate barriers and friction

A Modular heated pavement.
Sidewalk and road maintenance can be a common impediment to accessibility. The Quayside plan features modular pavers that can be individually and quickly replaced if one cracks or breaks. Pavers at key street crossings and intersections would also include heating elements that can prevent buildup of snow and ice on pedestrian throughways. Heated pavers, coupled with building awnings that protect from rain and snow, would create pathways along Queens Quay and the pedestrian passage between Sites 1, 2, and 3, making streets more passable to people using wheeled mobility devices and more comfortable for service animals year-round.

B Wayfinding beacons.
Beacons are small objects, about the size of Post-it Notes, that emit signals that can be picked up by smartphones or other Bluetooth-enabled devices. Beacons can broadcast navigational information about the environment that is especially useful to people who are blind or partially sighted — for example, that an accessible ramp is located to the right of the steps. In Quayside, beacons would enable the use of BlindSquare and other wayfinding apps as part of the default street-level experience.

C Sidewalk width.
All thoroughfares in Quayside are planned to have at least enough room for two people using mobility devices (wheelchairs, scooters, white canes) to ride or travel side by side in each direction or for two people to sign while walking. Even more room would be provided wherever possible.

D Curbless streets.
In Quayside, instead of a vertical step separating the vehicle right-of-way from pedestrian paths, tactile indicators would indicate the line between pedestrian-only areas and spaces shared between pedestrians, bikes, and low-speed vehicles.

Accessible self-driving rides

One of the key experiences that participants in co-design sessions were most excited about was an accessible fleet of self-driving vehicles to help people get around the neighbourhood safely and independently.

Ideas included the ability to hail a self-driving vehicle using a voice assistant or soft-touch button according to personal preference, as well as visual or audio cues that could guide people to their vehicles (imagine an augmented-reality thick green line on the ground to follow, paired with a unique audio identifier for a vehicle).

The potential for self-driving vehicles to expand mobility and become part of a personal support network speaks to the essence of what accessibility is all about: making people feel at home in their city.

Sidewalk Labs commits to working with self-driving vehicle fleets to make calling, riding, and getting picked up and dropped off easy and accessible. All streets — even pedestrian laneways — would be designed to allow accessible self-driving vehicles.

This proposal illustrates the following principles:

- Enable experiences that were not possible before
- Prioritize autonomy first

Visual, audio, and digital cues can help guide passengers to their self-driving vehicles.

Seamless building thresholds

Getting through a door with an armful of packages can be difficult for anyone — and harder still for people who are using a wheelchair, partially sighted, or experiencing reduced dexterity. A session co-hosted with the Inclusive Design Research Centre focused on improving these "threshold" moments: transitioning through a door into a home, between floors in an office building, or past a badged access point.

The difficulty of these threshold moments can be eased or eliminated by applying simple technologies, like automatic doors. Where access control is necessary, doors can have a contactless scanner for a card, fob, or phone. Participants in the co-design session highlighted these as useful innovations, particularly when they are all knit together, such that a single access device can open doors, call elevators, negotiate access controls, and request street crossings.

Sidewalk Labs commits to a design principle that "fewer doors are better." When doors are necessary, designs should preference sliding automatic doors over button-controlled doors.

This proposal illustrates the following principles:

- Eliminate barriers and friction
- Design predictable, intuitive experiences

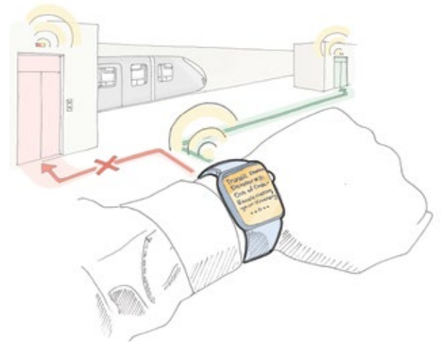
Digital technology can provide safe and secure building entry without push buttons or fob keys.

Infrastructure that reports back

What causes a frustrating delay for some commuters can create an arduous ordeal for others — the wheelchair user faced with a broken elevator at her transit station; the youth with cognitive disabilities whose bus route unexpectedly changes; the visually impaired senior whose daily walk is interrupted by road work.

But imagine if people could be alerted immediately when station infrastructure breaks down, when transit service gets delayed or detoured, or when street maintenance occurs — and be instantly re-routed via a smartphone or wearable device. Participants at a Sidewalk Labs accessibility hackathon prototyped just such a technology, which would allow visually impaired pedestrians using the BlindSquare app to be safely guided around construction sites.

Sidewalk Labs commits to developing infrastructure capable of reporting itself as broken and to working with existing navigation tools to ensure every journey in Quayside is accessible, safe, and convenient for all.



Wearable tech can provide wayfinding instructions and alert people to obstacles or delays.

This proposal illustrates the following principles:

- Make infrastructure simple, durable, and reliable
- Enable personal assistive tech

Engaging the accessibility community in Toronto

Sidewalk Labs co-developed 22 initial principles with more than 200 members of the accessibility community in Toronto and around the world. Throughout 2018, Sidewalk Labs hosted 14 events focused on accessibility, including more than 70 hours of co-design sessions.[55] After each event, Sidewalk Labs compiled attendee thoughts, ideas, and feedback; added it to the principles list; and presented the latest version at the next event for further feedback.

Sidewalk Labs sees these principles as a living document to be updated as new insights emerge through prototyping or user testing. Sidewalk Labs hopes to work with government agencies to harmonize these principles with existing legislation and codes and incorporate them into development plans at a more granular level. Sidewalk Labs will continue to listen, engage, and connect with organizations, advocacy groups, and individuals focused on accessibility and inclusive design in Toronto. And Sidewalk Labs will continue to be open to great new ideas for creating an accessible, flexible, and empowering neighbourhood.

Sidewalk Labs will continue its work with the local accessibility community to integrate accessible systems that can improve the lives of everyone and become a global model.

Exploring alternative designs for Quayside's street network

Sidewalk Labs has explored multiple alternative designs to ensure sufficient road network connectivity while at the same time creating a significant new public space at Parliament Plaza.

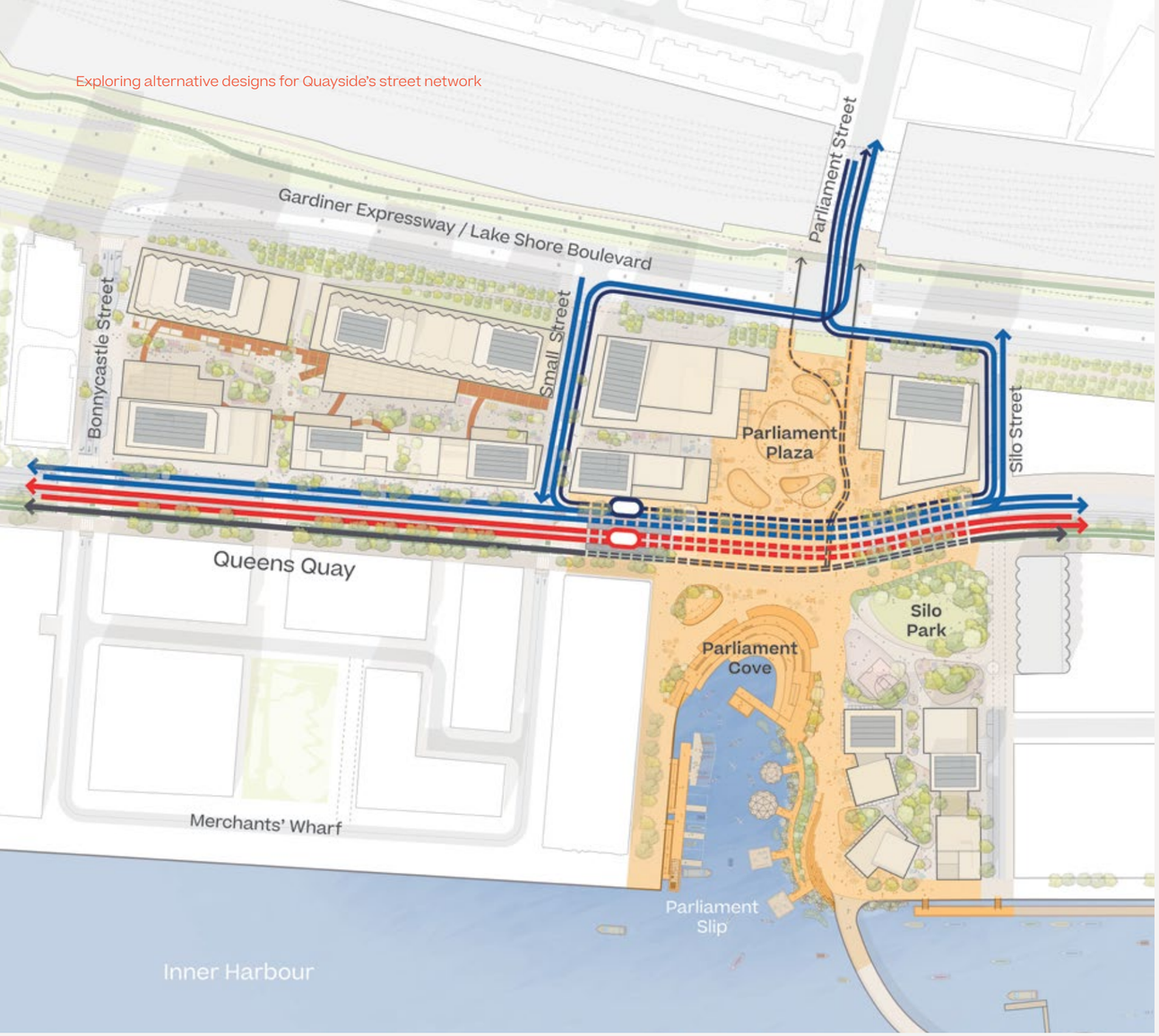
Working with Waterfront Toronto and the City of Toronto, Sidewalk Labs explored more than a dozen designs for a proposed new plaza in Quayside, at the base of Parliament Street, aiming to balance road network connectivity with the creation of a safe and vibrant public space. These alternative road network designs for Queens Quay considered many options: full vehicular access across both Queens Quay and Parliament, one-way streets, shared streets (building on Toronto precedents such as Willcocks Common), and a light-rail animated, fully car-free plaza. Alternative public realm designs were also explored, including options to retain and extend the head of the slip or partially fill the slip in varied patterns.

The proposed design retains Queens Quay as a two-way, east-west bound connection across a flat pedestrian Parliament Plaza, with Parliament Slip filled and a new head of the slip developed into a cove feature that brings visitors down to the water's edge. Upon opening, Queens Quay between Small and Silo streets is proposed as a slow zone in which pedestrians have priority and all transportation modes move at reduced speeds.

This configuration allows for city buses (and other vehicles) to travel south on Parliament Street, make an easy loop through the Quayside site, and return northbound on Parliament Street. As mobility technologies evolve, the flexibility built into this section of Queens Quay would allow for the evolution of this stretch of Parliament Plaza.

The proposed option was selected because it represents the best balance between providing for east-west vehicular access to link waterfront neighbourhoods and maintain passage to the Port Lands, and the creation of an expansive and flexible public plaza. Filling in a portion of the slip and creating public space south of Queens Quay ensures connectivity between existing public spaces and facilities on the west side of the slip and the new outdoor public green space of Silo Park to the east of the slip.

The proposed design will be assessed by the city as part of the MIDP review and final approval will be subject to the regular public environmental assessment process.



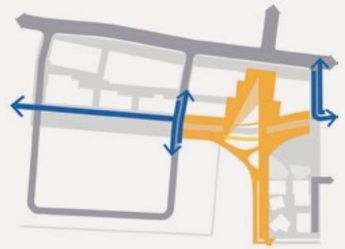
Quayside proposed design Two-way Queens Quay slow zone

- Bus stop
- Bus route
- Vehicular circulation
- Light rail stop
- Light rail route
- Bicycle network
- Slow zone

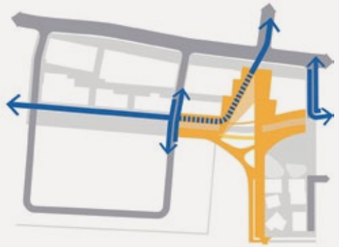
Eight possible street designs

Precinct plan:
Two-way Parliament Street and two-way Queens Quay

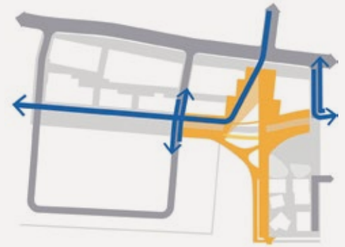
Car-free plaza



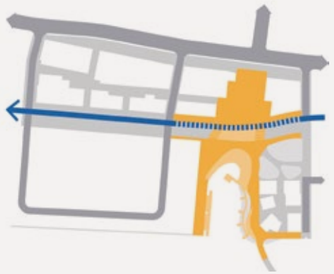
One-way northbound Parliament slow zone



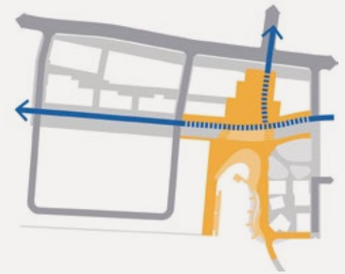
One-way southbound Parliament Street



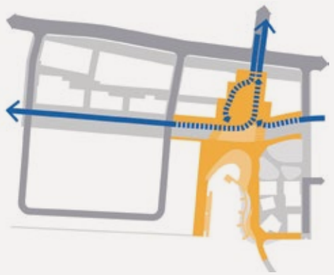
One-way westbound Queens Quay slow zone



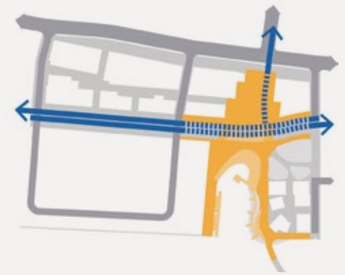
One-way westbound Queens Quay slow zone and one-way northbound Parliament slow zone



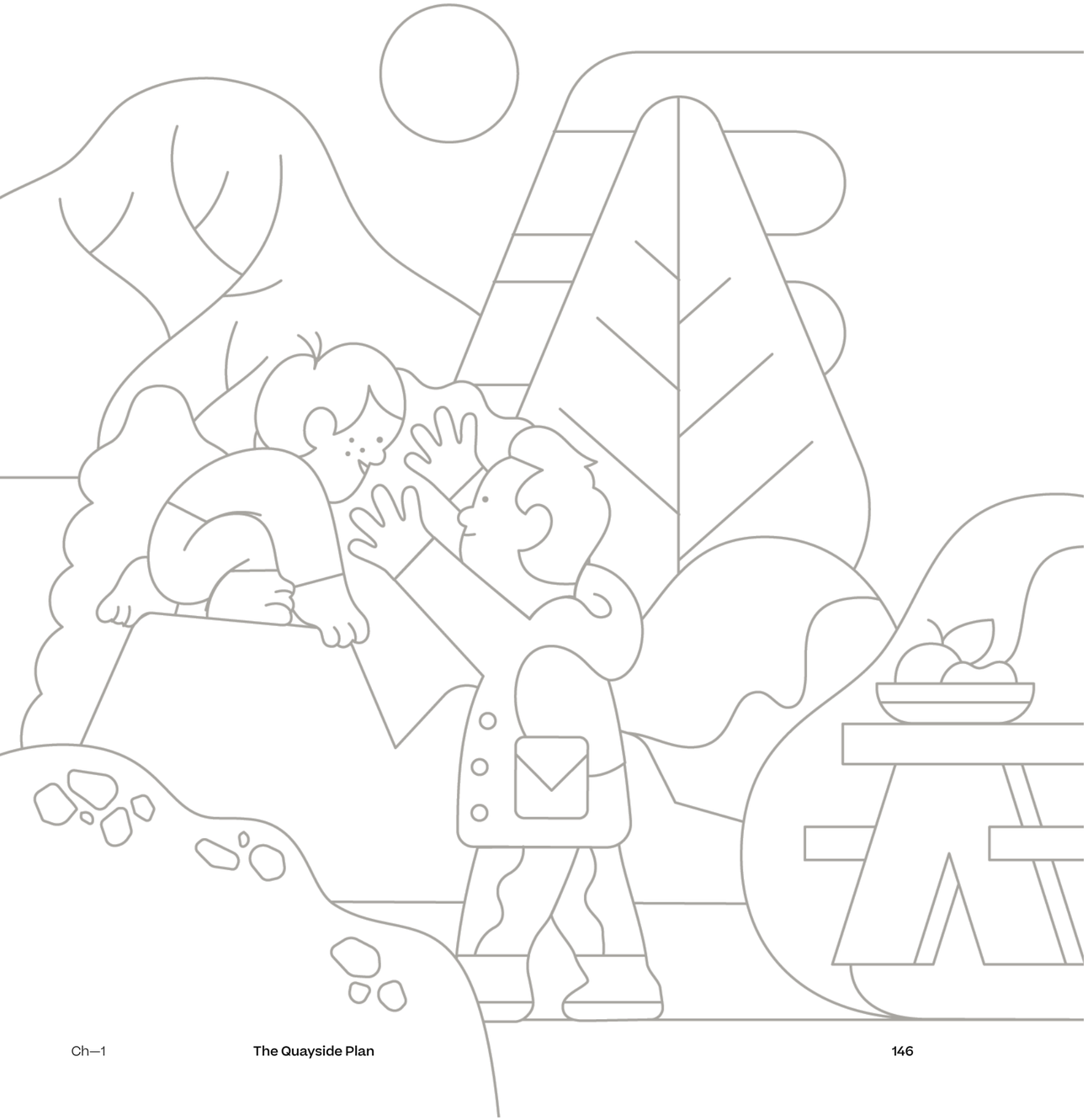
One-way inbound Queens Quay slow zone and Parliament slow zone loop



Two-way Queens Quay slow zone and one-way northbound Parliament slow zone



Public Realm



A system of streets, parks, plazas, and open spaces that encourages people to spend more time outdoors, together.

See the “Public Realm” chapter of Volume 2 for more details on the urban innovations described in this section.

Creating an expansive public realm network

The Quayside plan features an expansive public realm designed to bring together residents, workers, and visitors of all ages and abilities and to remove traditional barriers between indoors and outdoors, public space and private space, and land and water.

During the broader public engagement process, Torontonians shared many design priorities for the public realm in Quayside, including the need for accessible amenities, diverse programming, and connections to nature and water. To get further perspectives, Sidewalk Labs commissioned an ethnographic study of the experiences diverse Torontonians seek out in open spaces.

Across demographics, study participants shared six fundamental needs for open space, which Sidewalk Labs has incorporated into Quayside's public realm designs: convenience, discovery, gathering space, serenity, spectacle, and all-ages play. The following pages go into greater detail on how these spaces reflect the current needs voiced by Torontonians — while remaining adaptable to future ones.

This approach aims to create a truly connected public realm network that provides more space and is more usable more of the time.

A truly connected public realm network

Quayside's public realm does not treat the neighbourhood in isolation, instead aiming to create a network carefully stitched together with surrounding areas. This approach means designing in concert with the neighbourhood to the west of Quayside, Bayside;[56] with future improvements to the public realm under the Gardiner Expressway; and with public spaces to the north of Quayside, in particular in the Distillery District and St. Lawrence neighbourhood. In addition, this approach builds on the innovations established along the Central Waterfront to date. Together these efforts strive to create an experience around a slip unlike any other in Toronto, with a remarkable sense of arrival from the north, direct access to the lake, and a diverse blend of indoor and outdoor uses for all seasons.

Quayside's public realm

1. **Parliament Plaza**
2. **Silo Park**
3. **Parliament Cove and Slip**

New community spaces connected to Lake Ontario

The heart of the public realm in Quayside is the Parliament Plaza, Cove, and Slip area, which brings together a series of public spaces between Lake Shore Boulevard and Lake Ontario, from Small Street to Silo Street.

Each space has a unique character and programming potential. Parliament Plaza itself is a flexible space well-suited for markets, public art installations, all-ages play, and events that integrate with surrounding buildings — all made possible by the closure of Parliament Street to vehicles. This emphasis on arts and culture builds on the precinct plans that envisioned a sculpture garden adjacent to Parliament Street.

The plaza design is complemented by recreational and social infrastructure uses to the south, including the Bayside Community Centre, the greenery of Silo Park, and a school amid the collection of Site 5 buildings near the lake's edge. These areas are directly connected with Parliament Cove, allowing for seamless pedestrian movements between the community centre and Silo Park as well as direct access to the water for marine or cultural uses (such as an amphitheatre that encircles a floating stage).

The western side of Parliament Slip remains a reinforced dock wall and provides easy access to marine transit; the eastern side has floating structures for additional water-based programming. A floating walkway also begins on the eastern side of the new bridge, establishing expanded space for ecologies and water uses up through the Keating Channel.

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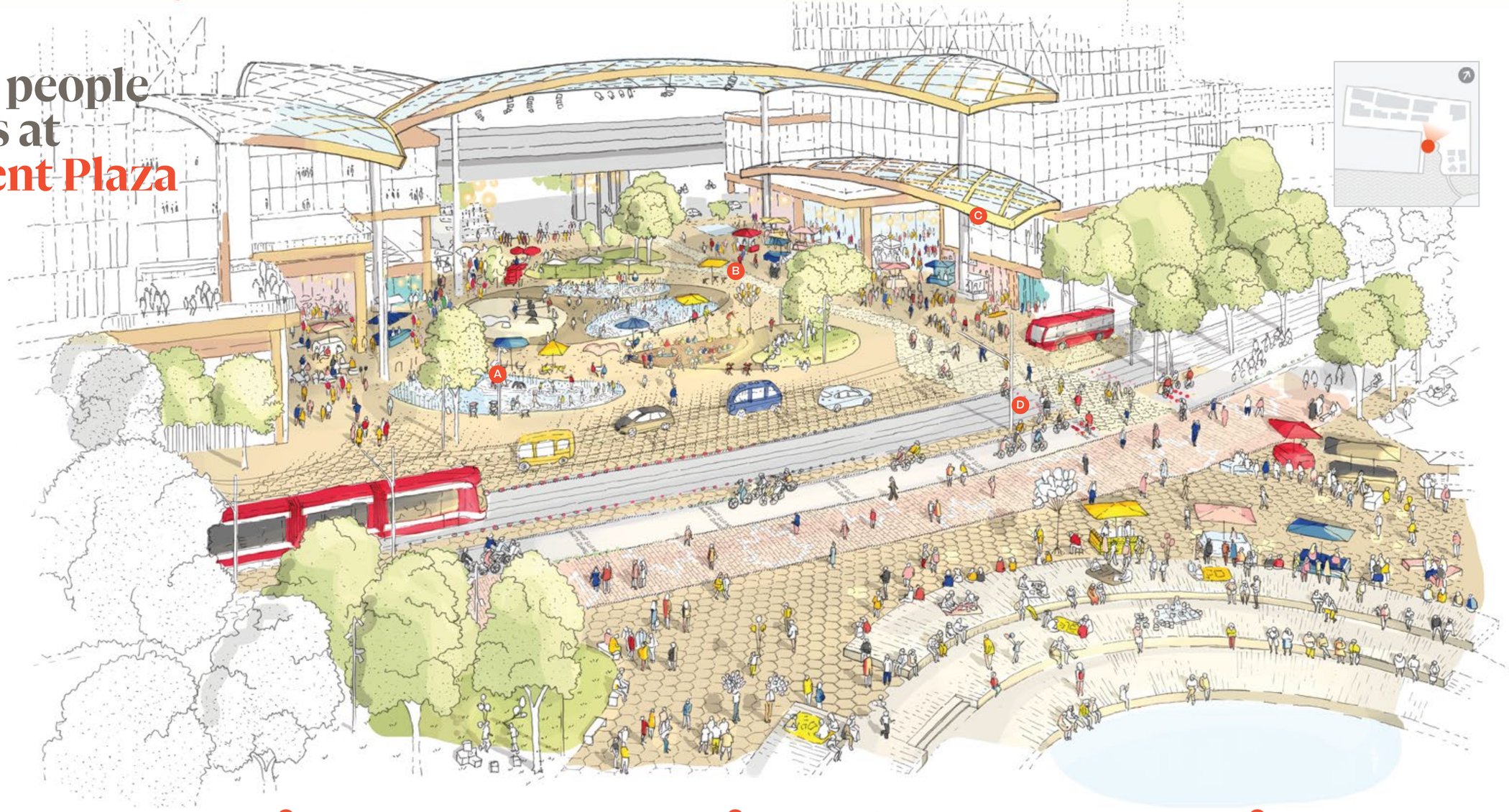
Drawing people outdoors at Parliament Plaza



The proposed 6,000-square-metre Parliament Plaza would provide a stirring entrance to a reimagined waterfront, drawing people through a vibrant open plaza towards Parliament Slip to experience the water in exhilarating new ways. Parliament Plaza would fulfill the need for spectacle, through its innovative art installations, as well as the need for convenience, through the provision of food and goods from a bustling group of small vendors and shops lining the plaza's edge.

A Interactive water features.
Visitors entering Parliament Plaza from the north would be greeted by interactive water features the moment they cross Lake Shore Boulevard. The flexible plaza space is designed to transform from an active water play space into a site for art installations through a dramatic lighting system and technology that can manipulate the water into mirror-like stillness, fine mist, splash pad, or dry zone.

B Ground-floor activation.
The stoa surrounding Parliament Plaza would be filled with shops, pop-up booths, maker spaces, cultural installations, and other uses that can spill out onto the plaza, creating a lively market destination. These stoa spaces would be connected to a series of pedestrian pathways that begins at Yonge Street and runs parallel to Queens Quay, culminating at Parliament Plaza.

C Outdoor comfort systems.
Sidewalk Labs plans to deploy innovative weather-mitigation systems that would make outdoor spaces such as Parliament Plaza comfortable for 35 percent more hours throughout the year, compared with conventional development.[57] The additional days for programming — which could support outdoor markets, movie festivals, art installations, and more — would create a more vibrant street life that also yields direct economic benefits. An overhead canopy would span the plaza, offering protection from wind, rain, and snow, as well as providing shade on sunny days. The canopy would be equipped with rigging and power mounts, enabling varied installations.

D Slow zone.
Parliament Plaza would feature a designated slow zone in which the light rail, vehicles, cyclists, and pedestrians all share space while travelling at low speeds (10 km/h). Modelled on shared plazas from Amsterdam (Dam Square) and Nice, France (Place Masséna), this zone would ensure connectivity across the site while still allowing for a safe, vibrant plaza.

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Facilitating recreation for all ages at Silo Park

The proposed 5,000-square-metre Silo Park — framed by the Victory Soya Mills silos and sheltered by abundant trees — would be the green heart of Quayside. The park would be seamlessly connected by bridges to a community centre at Bayside, creating a lively mix of indoor and outdoor recreational facilities. The Silo Park plans fulfill the need for gathering via bookable community spaces, as well as for all-ages play, through multi-generational recreational opportunities.

A All ages play-scape.
A play-scape would consist of such activities as children's nature play, adult-scale swings connected to sound and light, exercise equipment for all ages, skateboarding surfaces, and space for other active sports. This intergenerational design is intended to create public space that is inclusive for everyone.

B Multi-sport area.
A multi-sport recreation area would use lights embedded in the ground to reconfigure the field to accommodate a variety of interactive games, including basketball, ball hockey, tennis, pickleball, and futsal.

C Abundant tree canopy.
More than 430 trees would be planted throughout Quayside.[58] Silo Park would be densely planted with trees designed with a "forest patch" strategy that combines diverse species of tall trees with smaller bushes and plants to promote natural regeneration, adaptive resilience, and support for pollinators. Plant health would be monitored by a digital maintenance system capable of providing park officials with real-time alerts about landscaping and watering needs.

D Experimental Zone.
Sidewalk Labs is working with Toronto's Indigenous community to design and program an Experimental Zone, guided by principles around environmental history, cultural history, place and tradition, and respect for nature. Programming would change across the seasons: in colder weather, the area could host a design competition for local Indigenous artists to develop innovative structures for winter gatherings; in warmer weather, it could host student projects that use digital media to add a layer of cultural interpretation, storytelling, and learning into the landscape.

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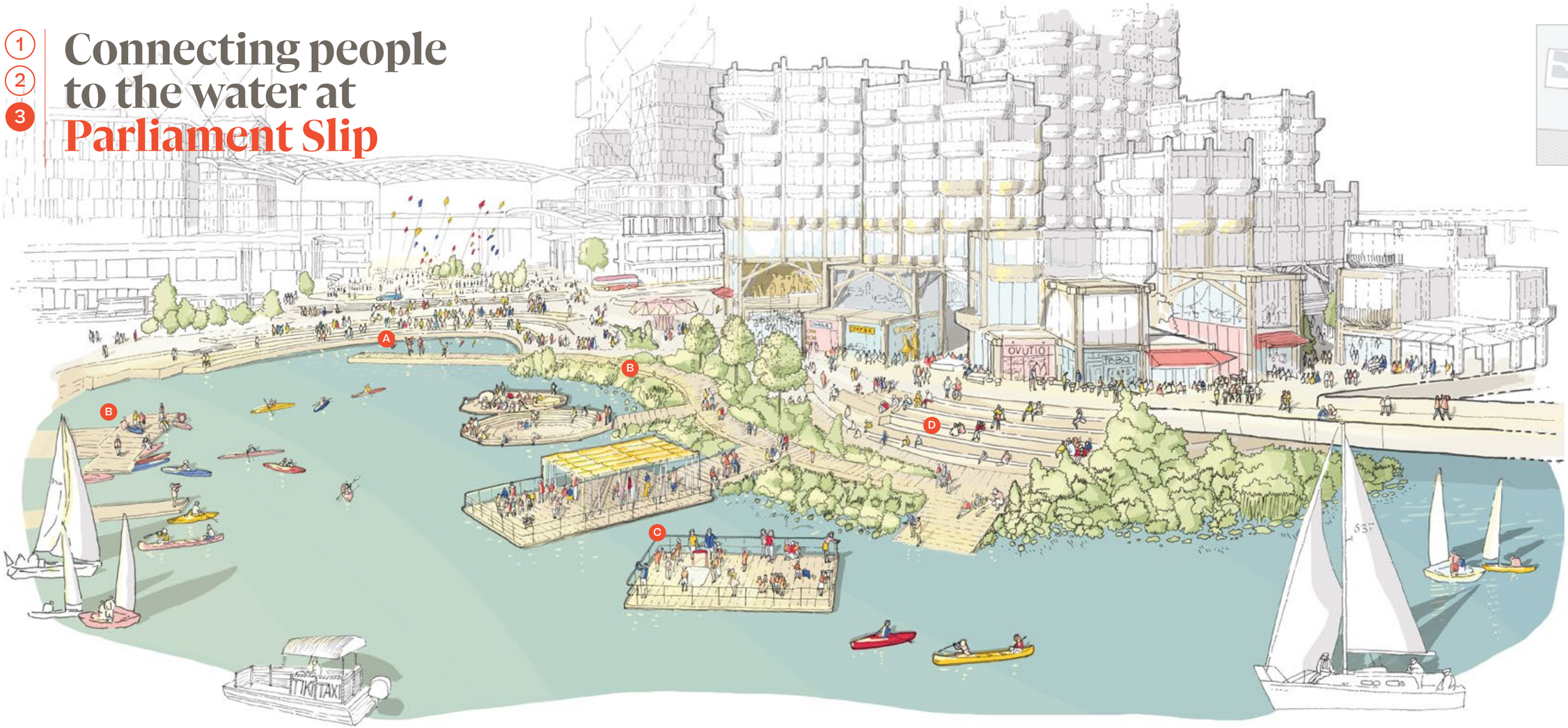
Connecting people to the water at Parliament Slip



Parliament Slip and a new Parliament Cove would provide direct access to the water for a range of activities. The promenade is designed as a place to walk and linger, encouraging people to picnic as the water laps onto the shores, gather around fire pits, or travel across a new pedestrian bridge to visit the stunning new parklands of Villiers Island. Parliament Slip fulfills the need for serenity through its expansive view of Lake Ontario, as well as the need for discovery through water-based programming.

A Parliament Cove.
A set of floating wooden terraces would bring people directly down to the water and an intimate cove. A floating stage could enter this area, enabling water-borne performances. The shoreline to the east side of the slip would be naturalized, restoring aquatic habitat and supporting biodiversity.

B Floating walkway.
Along the promenade, on both the west and east sides of the slip, a floating walkway would bring people down to the water and curve around the edges of the slip to provide direct access to the Inner Harbour. Comfortable seating, aquatic plantings, and stations for kayak rentals and water taxis would create opportunities for contemplation and active transportation on the water.

C Floating spaces.
Along the restored ecology of the Parliament Slip shoreline, a planned series of floating structures could provide space for artist workshops focused on the creative exploration of nature, technology, and urbanism, as well as opportunities for visitors to picnic, sunbathe, or just gather and linger on the water. One structure would house an ecological research station, providing opportunities to conduct water-based research studies.

D Boardwalk bleacher.
At the southern edge of the slip, a six-tiered bleacher with seating for approximately 200 people would surround the dock wall, providing further opportunities for people to gather and connect with the lake.

Planning a dynamic arts and cultural landscape

Quayside's signature neighbourhood spaces are designed with public art and creative culture at their core, providing expansive digital, physical, and programmatic infrastructure for ongoing creation, expression, and dialogue from diverse voices.

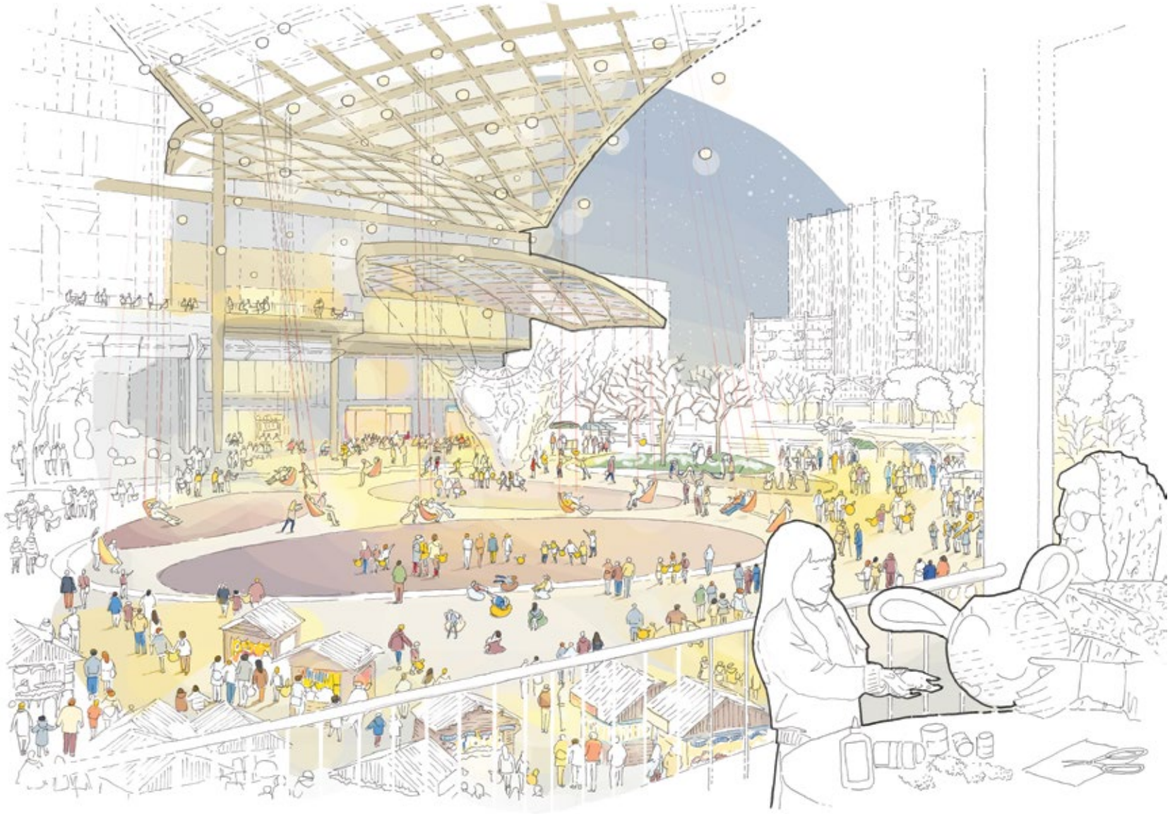
Art and creative culture are central to creating an inclusive and participatory public realm. Today, the thoughtful integration of emerging technologies into the urban environment offers new and engaging ways to further support community identity and social connections.[59] Despite public art's immense potential, in many neighbourhoods it remains limited to static modern sculptures. The Quayside plan aims to shift this paradigm.

All public spaces in Quayside would have access to high-speed connectivity, power, mounts, projectors, speakers, lighting, water, and storage — the vital ingredients to making emerging forms of participatory public art easy. This shared infrastructure would enable public art to flourish: from an Experimental Zone for Indigenous placemaking in Silo Park, to water-based performances in Parliament Cove, to workshops on floating structures in Parliament Slip, to projection mapping on building Raincoats along Queens Quay, to an arts hub with access to fabrication and prototyping tools, to the installations and performances in the underpasses, Parliament Plaza, and Parliament Cove illustrated on these pages.

In Quayside, a proposed new non-profit entity called the Open Space Alliance would have a robust programming budget to support ongoing community arts programs, design competitions, and residencies for local and international artists and technologists.

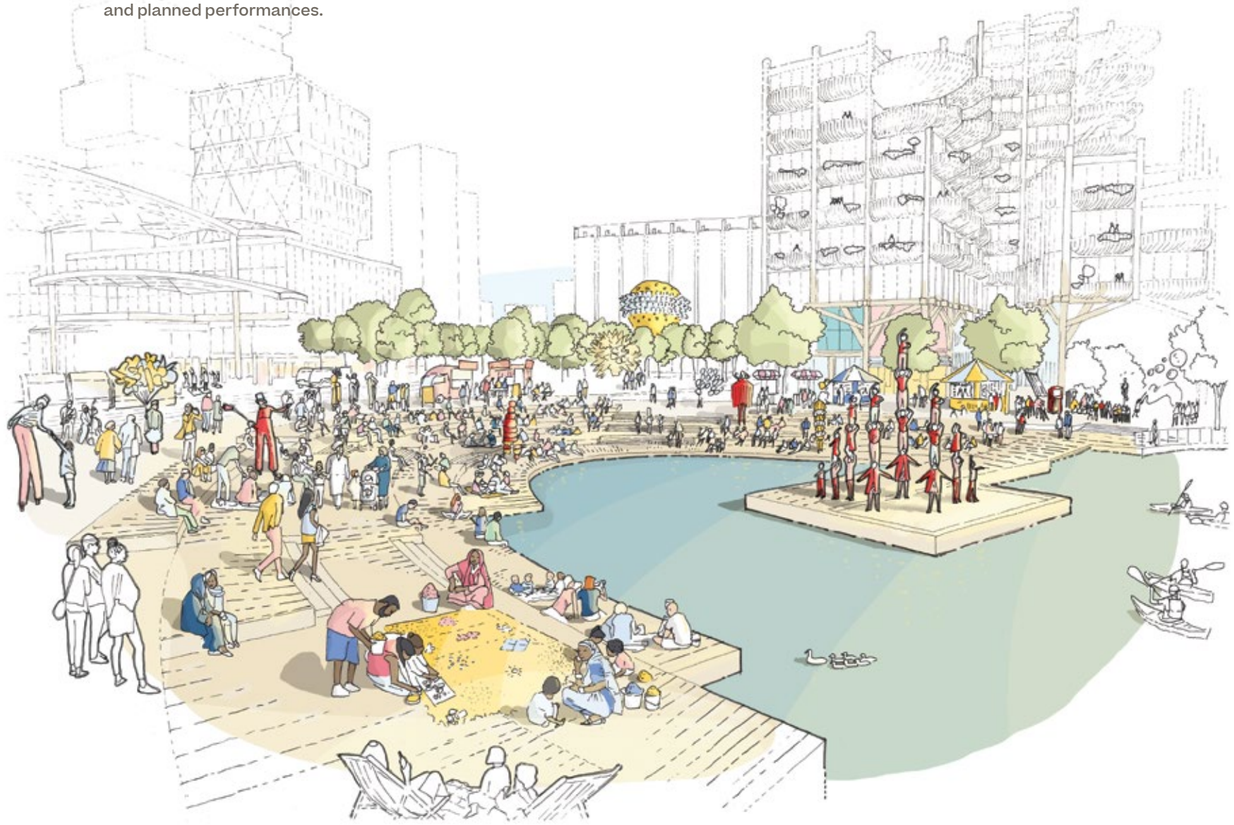
See the "IDEA District" chapter of Volume 3 for more details on the proposed Open Space Alliance.

Underpass installation.
The public art experience would begin in the underpasses on Parliament Street north of Lake Shore, where what currently is a damp, dark tunnel can become a multi-media installation of projection and sound that evokes the arrival on the waterfront.



Parliament Plaza.
The planned centre for neighbourhood culture is Parliament Plaza, designed as a year-round open-air theatre where artists can create immersive, multi-sensory installations using flexible infrastructure. The ground can provide mist, the building facades can be opened or closed, and a canopy can provide rigging to support the suspension of materials. Imagine a forest of large-scale swings hanging for all to enjoy, each swing triggering sounds recorded on Lake Ontario, harmonizing when people move together.

Parliament Cove.
An intimate amphitheatre would encircle Parliament Cove, with a barge providing opportunities for spontaneous and planned performances.



Reimagining ground floors as diverse, vibrant, adaptable spaces

The Quayside plan supports a variety of retail, office, production, and community spaces within its ground floors through flexible floor plates that connect directly to the street to create a larger, livelier public realm.

Retractable facades.
Some facades would include retractable glass door systems that can open easily to create a more seamless public realm.

Building Raincoats.
Buildings in Quayside would have Raincoats that can protect against rain, snow, wind, and sun.

Summer

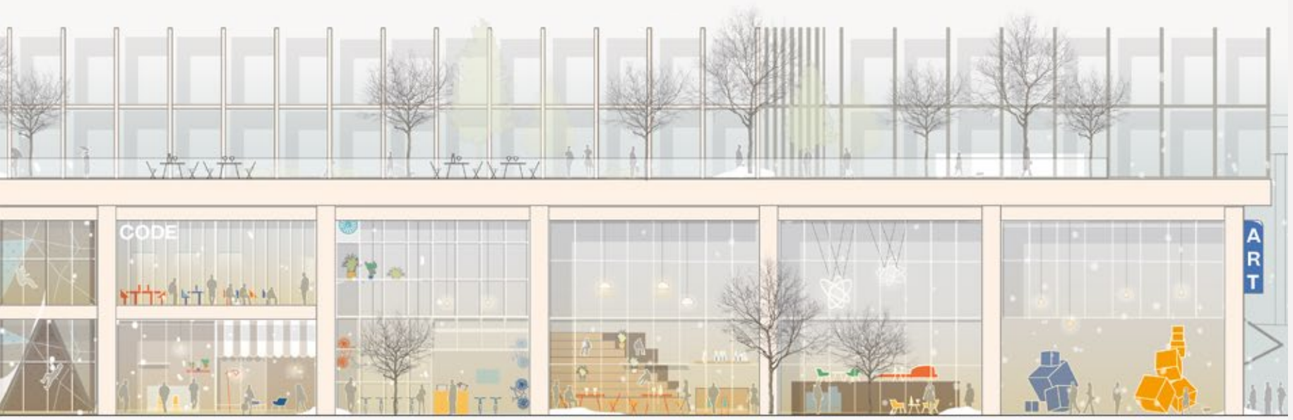
22˚C – Fully conditioned stoa | 24˚C – Semi-conditioned stoa | 28˚C – Outdoor unconditioned

0˚C – Outdoor unconditioned | 12˚C – Semi-conditioned stoa

Vibrant ground-floor spaces are key to a neighbourhood's energy and convenience. But changing market forces — from online shopping to rising construction costs — and rigidly sized storefronts are limiting the variety of tenants who can survive. Toronto's waterfront has started to address this challenge through its ground-floor animation agreements, and the Quayside plan aims to build on this progress by devoting the lower two floors to flexible stoa structures that promise a return to the bustling public markets of an earlier time.

Stoa's adaptable spaces and a digital leasing platform can support a broad mix of pop-ups, arts and cultural installations, community uses, small businesses, maker spaces, and markets, alongside established retail tenants.[60] Stoa is designed with the ability to open directly onto the street and be protected by innovative weather-mitigation strategies, creating seamless indoor-outdoor spaces that strengthen the neighbourhood's sense of activity and community.

Winter



22˚C – Fully conditioned stoa

Quayside stoa: Floors 1 and 2 and rooftop

- A Rooftop terraces
- B Spacious column bays 40-by-40 feet
- C Building Raincoats
- D Modular ceiling grid with lighting and AV plug-ins
- E Exposed timber beams and walls
- F Double-storey ceiling height six metres per floor
- G Deconstructable partitions 50% of walls
- H Utilities wired through flexible baseboards
- I Polished concrete floors
- J Movable kiosks

Providing a flexible shell for exploration.

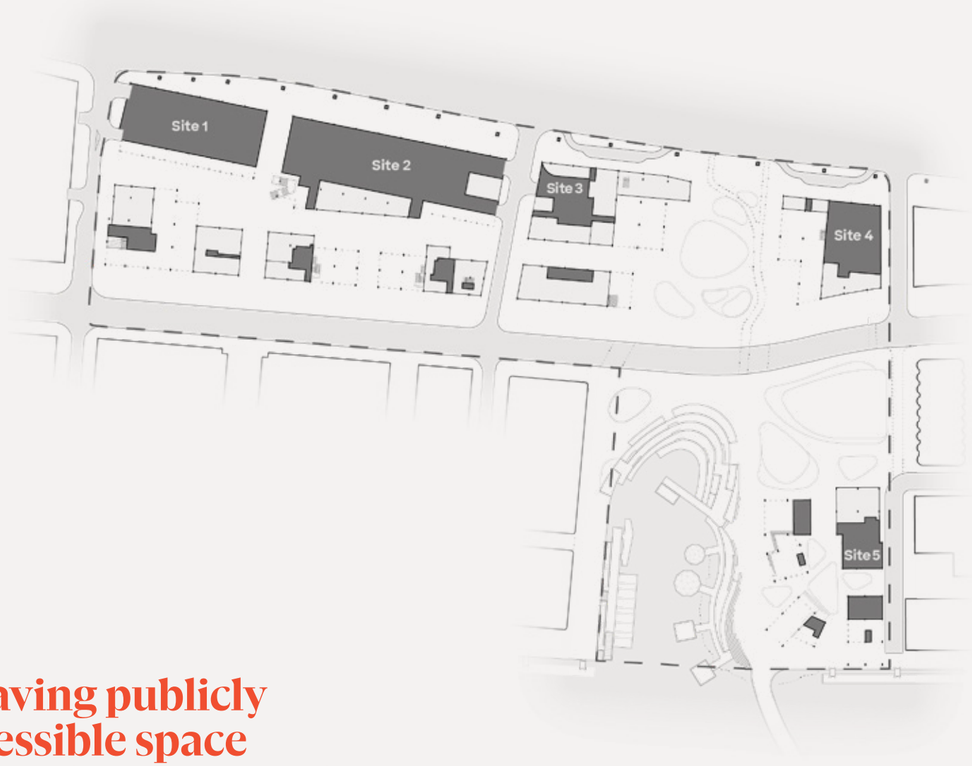
For many businesses, a lack of customizable ground-floor spaces and high fit-out costs prevent them from adapting to a changing market — or opening at all. Stoa's physical structure is designed to remove those barriers by creating adaptable spaces that can be reconfigured quickly and affordably.

A flexible floor configuration of deep column bays enables a marketplace thrumming with 100-square-foot stalls to coexist beside 6,500-square-foot anchor tenants that provide long-term neighbourhood stability. Interior walls are designed and wired for quick, low-cost transformations. With this design, Sidewalk Labs estimates that the costs associated with structural elements of renovation, like moving walls and electrical wiring, would decline by 50 percent.[61] Open areas for public events, casual gathering spots, and community hubs could be threaded throughout stoa spaces.

The Quayside plan calls for stoa spaces in Sites 1 to 4 to exist on two floors and stoa in Site 5 to occupy one floor.[62]

Supporting a wide array of tenants

In Quayside, stoa can transcend the traditional retail strip to become its own diverse micro-neighbourhood. That means integrating pop-up markets, civic gatherings, arts and cultural events, health services, work stations, community classes, and even light production facilities alongside traditional stores and everyday essentials.



Weaving publicly accessible space throughout Quayside

The public realm typically ends at the walls of the buildings lining the streets. In Quayside, stoa would become an extension of the sidewalk, inviting pedestrians to wander through public markets, galleries, and community hubs, past plazas, production spaces, and shops, and connect through these interior walkways to the street on the other side.

Expanding the public realm network into the lower floors of buildings also creates new opportunities for exploration and connection. As people are drawn through the site along new pathways that weave through, between, and around buildings, they can encounter the range of diverse experiences and new chances for discovery that are the strength of thriving cities.

Key

- Loading and operations space
- Publicly accessible space

Four types of programming on Quayside's lower floors

First floor

Second floor

Retail, food, and beverage.
Local retail and restaurants play an essential role in the street life of a community, satisfying basic needs (as in the case of grocery stores), offering outlets for creativity (artisan crafts), and facilitating connections (cafés). On Day One in Quayside, more than half of stoa space would be devoted to retail, food, and beverage, which can range from seasonal stalls to restaurants and clothing stores to commissary spaces.

Production.
Production space has a vital role in the modern economy. In Quayside, artisan workshops, commercial kitchens, 3D printing, and other forms of light production would animate studios throughout stoa, with opportunities to sell wares to the public. Real-time building-code tools would help ensure that these facilities can coexist without excessive noise or nuisance impacts on surrounding tenants (see Page 77).

Office space.
Stoa is designed to offer a variety of professional spaces, primarily on the second storey, including co-working stations for individuals and offices for businesses. Co-working stations could be permanent or operate during certain hours, similar to the Toronto startup FlexDay, which converts restaurants and bars into work spaces before the evening rush.

Social infrastructure space.
Quayside's community spaces include the proposed Care Collective, which would provide health and well-being services and programming, as well as the Civic Assembly, which would become the hub for the community, arts, and cultural gatherings. These spaces would exist near cultural, educational, and recreational areas to nurture the interactions that build relationships and forge a healthy, vibrant, and engaged community. (See Page 216 for more information about the Care Collective and Civic Assembly.)

Preparing for the future of retail

Market forces, such as online shopping, are changing the future of brick-and-mortar businesses. In Quayside, stoa space will offer retailers the chance to experiment with different physical, operational, financing, and leasing models.

As part of its planning process, Sidewalk Labs interviewed 30 business owners about the challenges facing the retail sector, from lengthy launch timelines that drive up costs, to inflexible spaces that cannot adapt to changing market needs, to storage constraints that put small businesses at a disadvantage.

Stoa's adaptable design can help address these challenges by supporting entrenched, beloved businesses as well as up-and-coming entrepreneurs. Its flexible floor plate enables stores to evolve in response to market forces while reducing economic and logistical barriers for aspiring retailers to test concepts. A proposed digital leasing service, Seed Space, would show all available spaces, possible configurations and fit-out options, leasing durations and terms, and potential matches for co-tenancy.

Low-risk physical space.
Opportunities for shorter lease terms (one-month versus traditional 10-year leases) and alternative leasing models (charging tenants a percentage of their sales versus a fixed rent) — all easily accessible through Quayside's leasing service — would help businesses open and evolve.

"Everyone ... is experimenting with different formats right now, as are we, but it is very expensive to flex our existing space."

— Toronto Grocer

Business collaboration.
Adaptable spaces and a digital leasing platform enable businesses to connect with other businesses to exchange tips and discuss best practices, plan joint programs and marketing efforts, or even find co-tenants — for example, a flower shop could connect with a pop-up jazz club for evening events.

"We are actively looking for ways to partner with complementary businesses. The more integrated the experience we offer, the better."

— Canadian General Merchandise Retailer

Integrating on- and offline.
Online retailers are turning increasingly to temporary spaces as a way of spreading the word about their brand or meet customers where they live. In Quayside, online businesses would be able to rent small spaces to meet customers in a store and to match those rent times to promotional campaigns.

"We get reasonable traffic online, but they only really become our customer when they get to know us in store. We aren't sophisticated enough to start that conversation online."

— Toronto Apparel Retailer

New inventory strategies.
Quayside's on-site storage service at the logistics hub could free up retail stores to act more like showrooms, with the ability to send products directly to customers who live in the neighbourhood (via the neighbourhood's automated freight system) or to those who live elsewhere (via trucks from the logistics hub).

"Managing backroom inventory can be a challenge. It requires constant monitoring and can take associates away from the sales floor where they could be helping customers."

— Multinational Merchandise Retailer

Startup support

Incubating small businesses

Aspiring entrepreneurs all have different dreams, but they face common challenges: limited capital to cover startup costs, operating expenses, and long-term leases, and a lack of experience navigating logistical and bureaucratic hurdles. Certain groups face additional barriers as they attempt to enter fields where they are underrepresented and potentially overlooked.

To help these groups thrive, Sidewalk Labs plans to issue a Request for Proposals for partners to launch and operate a small business incubator designed to provide training and support to small business entrepreneurs across the Greater Toronto Area.

A portion of stoa space in Quayside would be reserved for these businesses at below-market rent, enabling entrepreneurs to test their ideas and sharpen their business skills in a low-risk environment. Participants would also have access to shared fabrication equipment such as 3D printers, laser cutters, and robotic routers in the central community hub called the Civic Assembly (see Page 224 for more details), as well as use of the shared commissary kitchen spaces.

Buildings and Housing

Sustainable buildings that can be constructed and adapted far more quickly, and a new set of financial and design tools that help improve affordability and expand options for all households.

See the “Buildings and Housing” chapter of Volume 2 for more details on the urban innovations described in this section.

Building a more affordable and inclusive neighbourhood

Quayside's innovative approach to buildings and housing — including factory-produced mass timber, flexible floor plates, and an ambitious affordability program — would create a neighbourhood that is more inclusive and responsive to evolving community needs.

For two years running, Toronto has hoisted more construction cranes than any other city in North America.[63] But to remain a leader in openness and inclusion, Toronto must continue to push for greater levels of affordability and economic opportunity during the building boom. That goal involves helping developers meet new demands for housing by completing projects more quickly; creating true live-work communities that host a lively mix of homes, offices, shops, and services; and finding new ways to expand support for affordable housing.

The 2.65 million square feet of built space in Quayside can forge a new paradigm. Quayside would be the first neighbourhood built entirely of mass timber, an emerging material as strong and fire-resistant as steel, but easier to manufacture and far more environmentally sustainable. Flexible floor plates can accommodate multiple uses at once, enabling a complete community that provides every need — housing, jobs, shopping, childcare — within a short walk. When coupled with an ambitious, wide-ranging affordable housing program, this plan can recreate the kind of welcoming, integrated Toronto community that has defined the city for decades.

A more welcoming neighbourhood

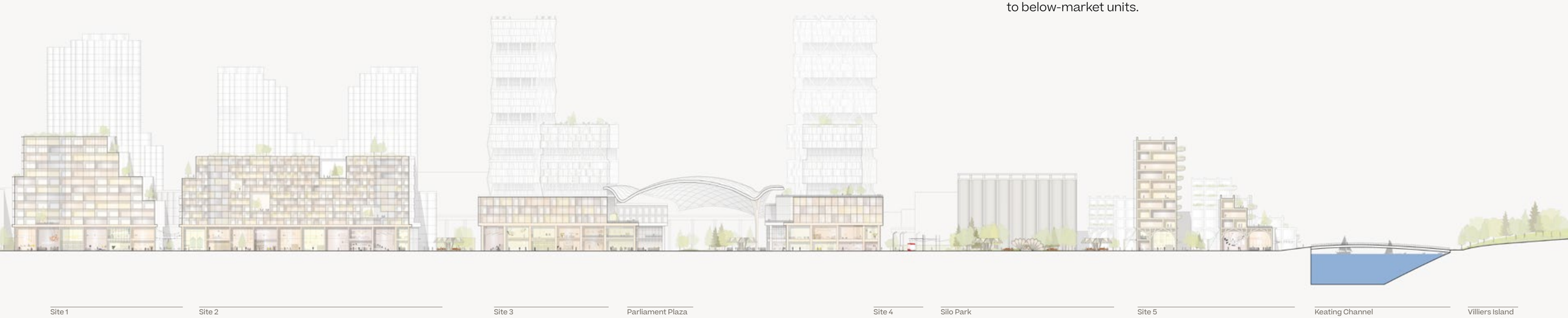
Quayside's buildings are designed to foster a welcoming spirit where everyone can find their place: from the warm, wooden construction of varying heights that top out at around 30 storeys; to the open, flexible ground-floor spaces and commercial offices designed to nurture aspiring entrepreneurs alongside established businesses; to the array of housing options that support a wide range of lifestyles and incomes.

A more affordable neighbourhood

The Quayside plan creates a more affordable community for more people. A new factory-based building approach can accelerate project timelines while reducing costs and uncertainties for developers, helping them create mixed-income housing. Quayside's proposed housing units leverage more efficient designs and off-site storage to further reduce costs. But to create a truly inclusive community, additional action is needed, so Sidewalk Labs proposes to devote 40 percent of Quayside's housing stock to below-market units.

A more responsive neighbourhood

Quayside's buildings are designed to support the community's evolving needs. Flexible floor plates and movable walls enable residents and businesses to adapt their spaces quickly and inexpensively as their situations change — or to shift uses entirely. By accommodating this mix of housing, retail, offices, light production, and community spaces, every resident can meet their needs within a short walk. As described on Page 77, a proposed digital building code system could help ensure that this vibrant mix of uses can thrive without creating nuisances, such as noise.



Achieving sustainable construction with mass timber

The Quayside plan calls for all buildings to be made from an emerging material known as mass timber, which is as strong and fire-resistant as steel, easier to manufacture, and dramatically more sustainable.

While most mid- and high-rise buildings in cities are currently constructed out of steel or concrete, these materials come with downsides. They are increasingly expensive — in Toronto, steel prices rose 16 percent in 2017 alone[64] — and they are difficult to produce, assemble, and transport, leading to lengthier, costlier, more disruptive construction projects. They also bear a steep environmental cost: concrete and steel emit CO2, whereas timber sequesters CO2.[65]

Cities like Toronto have started to explore a promising alternative: an emerging type of engineered wood called mass timber. Mass timber has been successfully tested in Toronto and is particularly well suited for factory-based construction, an approach in which building parts are created in an off-site facility and shipped to a site for faster assembly. For Quayside, Sidewalk Labs proposes to advance these efforts by supporting the launch of a factory in Ontario that would process mass timber building parts, reducing construction timelines by as much as 35 percent[66] and catalyzing a new industry around this sustainable material.

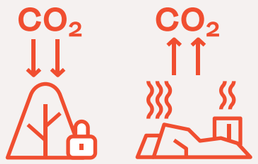
Accelerating construction through modular buildings

The Quayside plan uses factory-produced mass timber to construct buildings faster and more sustainably, without sacrificing safety or architectural excellence.

Virtually every construction project suffers from a complicated construction process that faces logistical challenges from heavy materials like concrete and steel, relies on significant on-site fabrication work that generates considerable waste, and requires going back to the design phase for aspects of a plan that fail to meet code. As a result, delays drive up costs and tie up streets with disruptive noise and blockages. Factory-produced buildings can streamline the process but have traditionally resulted in limited designs.

Quayside plans to achieve a new standard for modular construction that creates unique, efficient, and sustainable buildings. An off-site fabrication process — with each building component pre-reviewed by the city — would reduce uncertainty in the construction process, accelerate assembly, reduce waste, limit neighbourhood disruption, and improve site safety. A customizable library of building parts would enable architects to benefit from these efficiencies while still creating radically different designs.

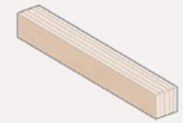
Quayside can be the catalyst for a new, sustainable mass timber industry in Canada.



Sustainable material.
Forest-harvested timber sequesters carbon, trapping 1 tonne of CO2 in every cubic metre of wood.

Timber production and products

The factory would process two mass timber products: cross-laminated timber structural panels (CLT) and glulam beams, each created by combining three to seven layers of wood, milled about 25 millimetres thick.



A Glulam structures.
The wood pieces in glulam beams are glued together with grains in the same long direction, creating superior load-bearing strength. In Quayside, glulam structures (along with CLT floor panels) would be used to develop buildings around 30 storeys tall.

B CLT panels.
The wood pieces in CLT panels are glued together with grains at perpendicular angles, then compressed into panels that can self-support a 12-storey building.

Library of building parts and digital design

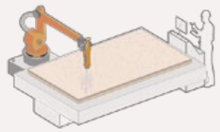
To accelerate project timelines, improve predictability, and reduce costs in a holistic way, Quayside's buildings would draw from a complete library of factory-made building parts that can be customized for each project to allow for a diverse and interesting variety of buildings that achieve design excellence. A digital coordination system would ensure that these parts can be efficiently sourced and fabricated.

Local sourcing

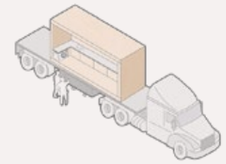
Spruce trees from the boreal forests of Quebec and Ontario and Douglas fir trees from British Columbia would supply the wood for mass timber construction.

Ontario-based factory construction

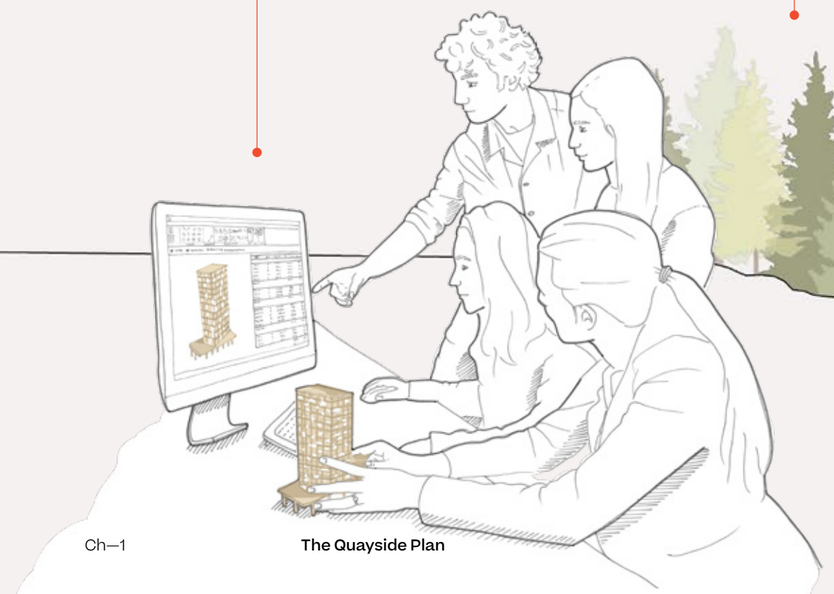
Operating in collaboration with Canadian foresters, sawmills, and other industry partners, a new Ontario-based factory would process building parts out of mass timber, catalyzing a new Canadian industry.



C Shikkui plaster.
Shikkui plaster is a Cradle to Cradle certified sustainable material that has a fire-resistance rating comparable to that of drywall and many additional advantages, including health benefits (it is a natural killer of bacteria and mold), faster application times (cutting the time typically devoted to paint and drywall in half when mechanically applied in a factory), and a green waste stream (recyclable as plant-beneficial fertilizer).



D Efficient shipping.
Factory-produced modular parts are designed to maximize shipping in a standard truck. The lightness of timber allows trucks to be more fully packed, as compared to shipping concrete or steel, reducing the number of site deliveries by 85 percent.[67]



Well-managed forests thrive

Collaboration with local sawmills

Day 0 to Day 10 – Fabrication starts

Faster assembly

Quayside's factory-based mass timber buildings can be completed 35 percent faster than traditional concrete construction — including basic structural assembly as well as the installation of all finishes, the connection of all electromechanical equipment, and the execution of all tests.

The reasons for faster completion include the off-site fabrication of tricky building components such as kitchens and bathrooms, as well as modular cores that integrate elevator supports. Building components would be cut into assembly-ready posts, beams, and panels at the factory and fitted with interlocking metal cleat technology that makes it easy to snap parts into place quickly. Additionally, the lightness of mass timber structures would require less extensive foundations.

Concrete cores

Modular cores that are fabricated off-site and integrate elevator supports can better match the timber assembly timeline, speeding the overall pace of construction.

Traditional approach: Cast-in-place concrete cores need to be poured before other components can be assembled, a much lengthier process than modular assembly. Temporary, expensive construction elevators are required to deliver materials.

Kitchens, bathrooms, and HVAC systems

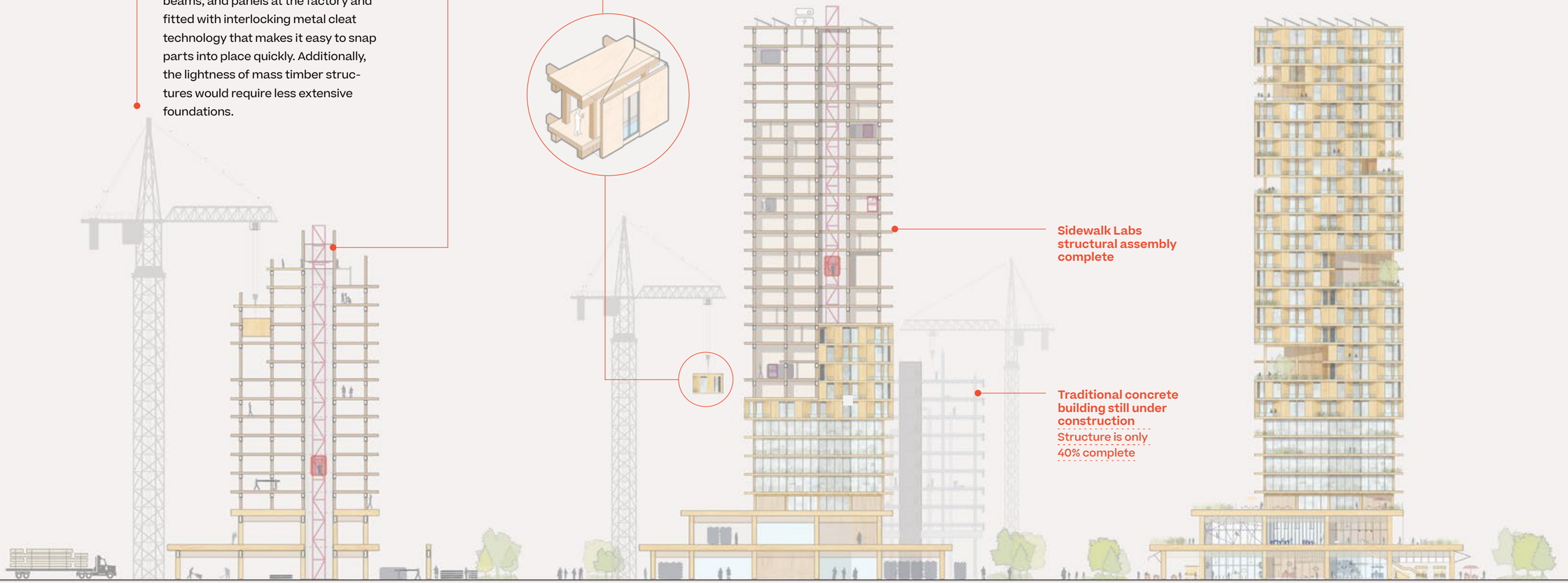
Off-site fabrication of kitchens, bathrooms, and HVAC systems allows for greater quality control, more efficient inspection and commissioning, and faster installation.

Traditional approach: On-site installation of kitchens, bathrooms, and customized HVAC systems is a lengthy, complicated process due to multiple trade workers needing to layer in their installations in confined spaces.

Tall timber building completed

35%

faster than traditional buildings



Sidewalk Labs structural assembly complete

Traditional concrete building still under construction
Structure is only 40% complete

Days 11 to 23 – Structural assembly working

Days 24 to 43 – Assembly of modular components

Fully operational at 18 months – Completed tall timber building

Creating flexible building interiors

Quayside buildings would feature adaptable floor plates and interior walls to improve flexibility, renovation speed, and affordability — helping the neighbourhood evolve.

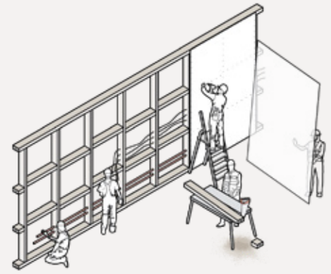
Adaptable building spaces enable a community to respond more effectively to larger trends and changing markets. But today, renovating a building space to accommodate a new use requires a lot of time and money. Walls are lined with electrical wiring, pipes, sprinkler systems, and other infrastructure, making them difficult and expensive to move. That can make it hard for businesses and residents to find locations that can adapt to their changing needs, whether that is a shop seeking to expand or empty-nesters looking to downsize.

Quayside's buildings would leverage adaptable Loft space to keep pace with the evolution of the neighbourhood and the needs of individual tenants. Loft is designed for flexibility, incorporating reconfigurable floor plates, high ceilings, and movable interior wall systems freed from the traditional tangle of wiring and pipes. These designs enable businesses and apartments to expand or shrink quickly and inexpensively and help spaces shift between commercial and residential uses.

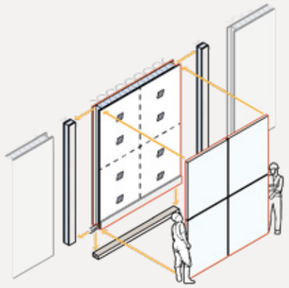
Innovative building components that enable flexible wall systems

Commercial.
Renovating a traditional commercial space (left) for a new use can be a lengthy process that requires knocking down walls to move utilities and power systems embedded within them.

In contrast, Loft's flexible interior walls (right) are designed with modular fittings and mounted (rather than embedded) utility and power systems for fast renovation.



Traditional approach

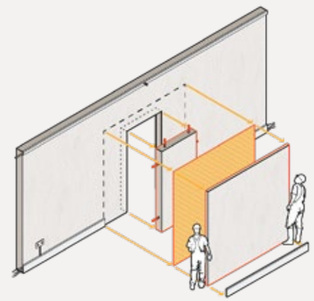


Sidewalk Labs approach

Residential.
As with commercial spaces, changing traditional residential units often requires substantial renovations that involve knocking down walls and relocating utilities (left).

Residential flexible walls (right) would be fabricated in the factory and arrive at the construction site nearly complete. When a residence needs to expand, the removal of a prefabricated wall section would connect the residence to an adjacent room in hours and would generate no renovation waste.

Traditional approach

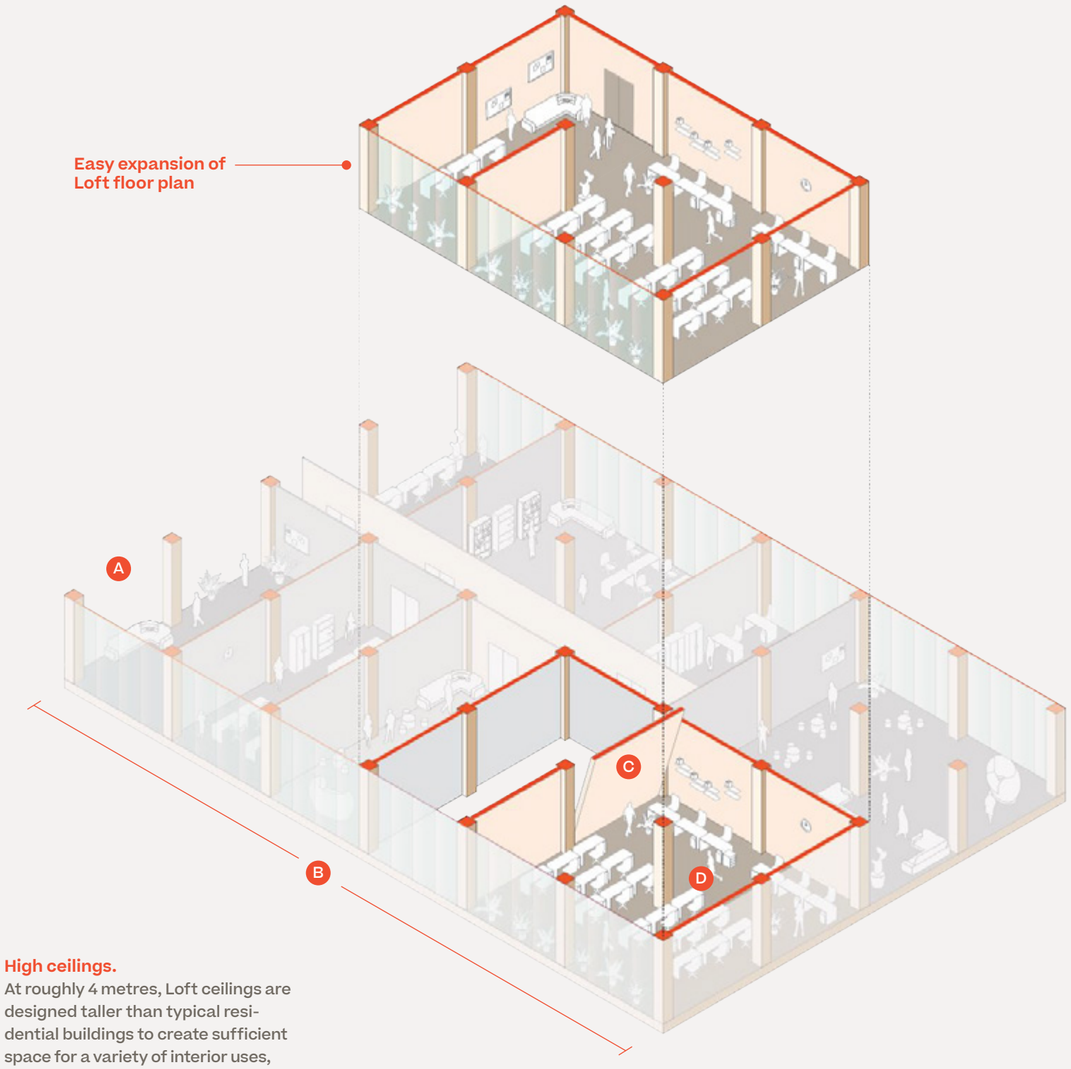


Sidewalk Labs approach

Mist-based fire protection systems.
These systems are equally effective as traditional sprinkler systems yet use 10 percent of the water volume, reducing potential flood damage. Smaller, surface-mounted tubing can be hidden in moldings and easily moved during renovations.[68]

Low-voltage DC power systems.
These systems reduce fire risk over traditional AC power systems and can run through the baseboard, allowing for faster reconfigurability of walls. They also require 50 percent less wiring.[69]

Utilities.
Utilities typically embedded in traditional walls can be moved to floor boards or crown molding, making the interior wall system far easier and less expensive to reconfigure.



A High ceilings.
At roughly 4 metres, Loft ceilings are designed taller than typical residential buildings to create sufficient space for a variety of interior uses, such as art studios, small businesses with lots of inventory storage, or smaller apartments that feel more comfortable with higher ceilings.

B Long floor spans.
At 27-by-33 feet, with few columns interrupting the space, Loft floor spans provide for the flexible arrangement of spaces and make it easier to subdivide the same space for new uses.

C Loft flexible walls.
Equally strong as typical walls, Loft's flexible interior walls are designed to accelerate renovation by hiding power and sprinkler systems instead of embedding them within walls.

D Modular fittings.
Loft's doors, interior walls, finishes, and other modular fittings are designed to be interchangeable across all uses, as well as to be reusable.

Creating three unique designs from one library of parts

Using the same set of modular components, three global architecture firms developed creative design concepts for Quayside's mass timber buildings.

The library of building parts created and assembled in an off-site factory would include structural pieces (such as glulam beams and CLT panels), exterior facades and windows, interior wall systems, kitchen and bathroom systems, and roofs.

These parts would be produced in sufficient volumes to reduce both costs and sourcing time for developers and contractors. Sidewalk Labs has started to work closely with local regulators to enable these pieces to be pre-approved, creating more certainty around construction timelines and the permitting process. And these parts would still be customizable by architects seeking to deliver distinctive designs.

To help bring the vision for a more affordable and sustainable Quayside to life, three leading architecture firms — Heatherwick Studio, Snøhetta, and Michael Green Architecture — used this library of parts to conduct design explorations that prioritized a mix of uses throughout buildings, energy-efficient building design, and the needs of a diverse population.

As the following pages demonstrate, new developments can achieve design excellence by providing the tools for different architects to reconfigure and assemble these same basic building blocks in thousands of original ways, allowing for truly unique, customizable, and welcoming spaces.

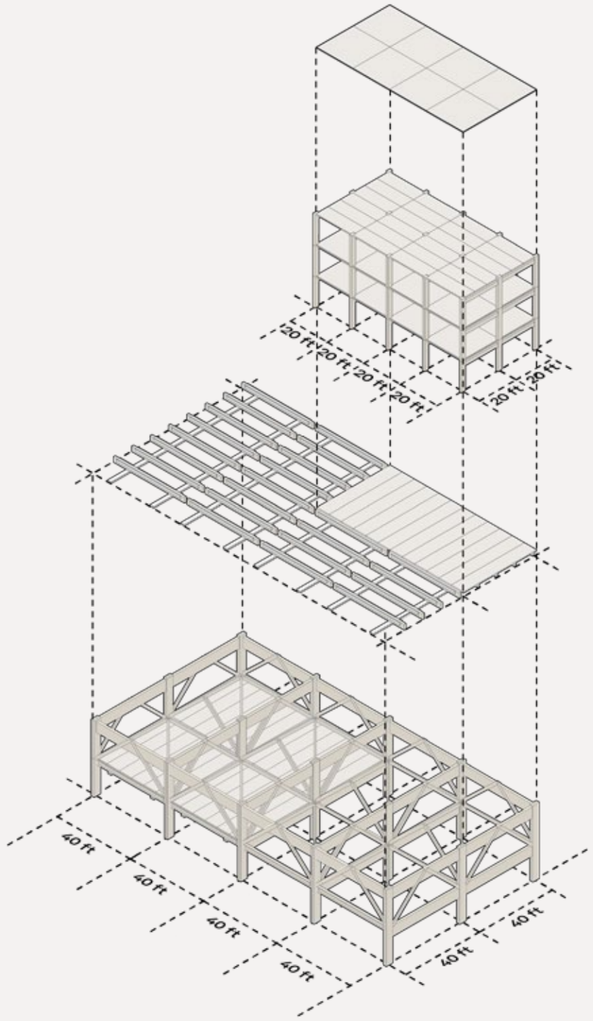
Michael Green Architecture is a leading Canadian architecture firm and an innovator in mass timber building design.
Credit: Michael Green Architecture

Snøhetta is an international architecture firm that recently completed the Ryerson University Student Centre in Toronto and the new Central Library in Calgary.
Credit: Snøhetta

Heatherwick Studio is an international firm focused on large-scale architectural, space, object, and infrastructure projects in cities all over the world.
Credit: Picture Plane for Heatherwick Studio

Using the mass timber library of parts

Structural components



Floor finish

Column 2–10 storey
Material: Glulam
Dimensions: 365 × 684 mm

Column 10–20 storey
Material: Glulam
Dimensions: 2,215 × 874 mm

Column 20–30 storey
Material: Glulam
Dimensions: 2,265 × 1,140 mm

Floor deck
Material: CLT
Dimension: 175 mm minimum

Floor girder
Material: Glulam
Dimension: 315 × 570 mm

Stoa column
Material: Glulam
Dimensions: 2,265 × 1,102 mm

Stoa girder
Material: Glulam
Dimensions: 365 × 1,596 mm

Modular building components

A **Building roof** options would include photovoltaic roofs that harvest solar energy, green roofs to integrate nature, and “blue roofs” to help manage stormwater.

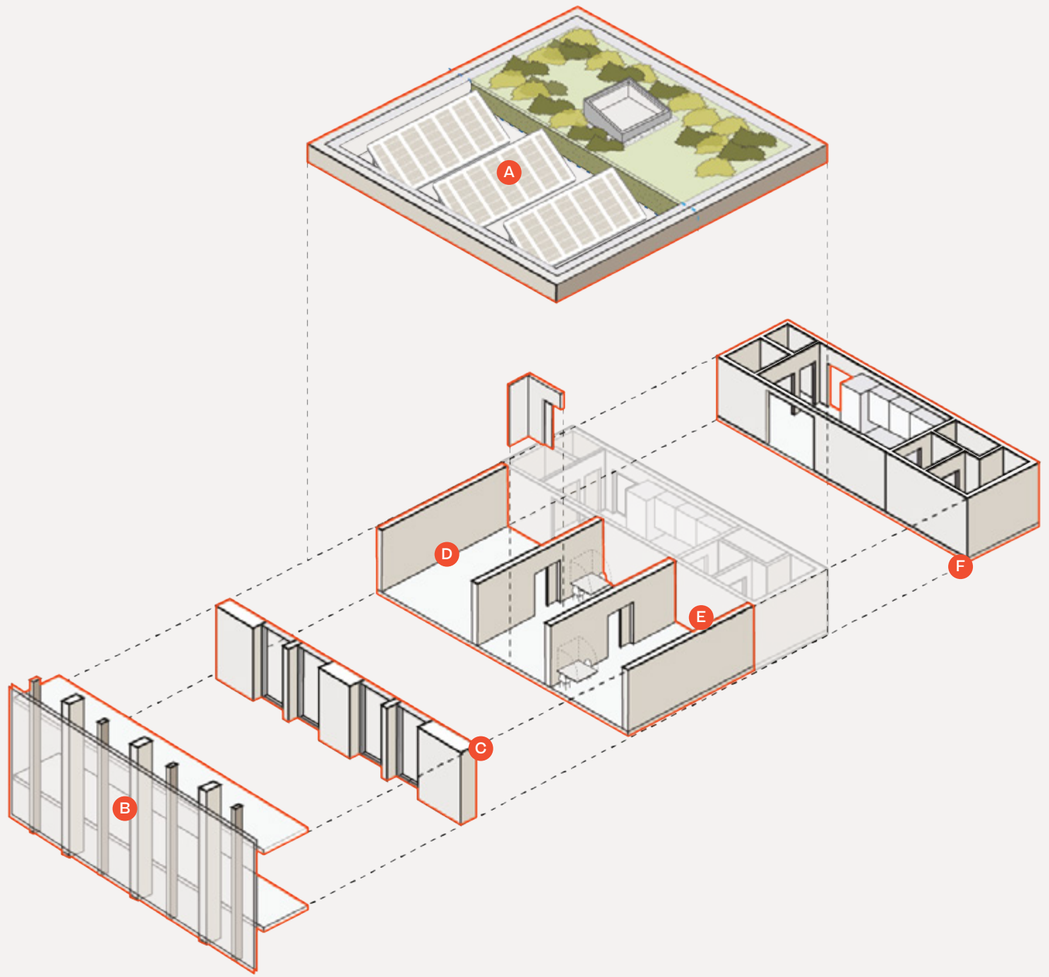
B **Exterior facades and windows** would be part of a customizable facade system that could reflect unique architectural visions.

C **Exterior wall systems** could feature many different materials and create an airtight building seal that reduces the need for heating and cooling.

D **Interior structural wall systems** could be made out of CLT panels.

E **Interior non-structural wall systems** could be clipped into place for faster, easier renovations while remaining as strong as traditional interior walls.

F **Kitchens and bathrooms** would be preassembled off-site for faster, higher-quality installations.



Library of parts interpretation:
Michael Green Architecture

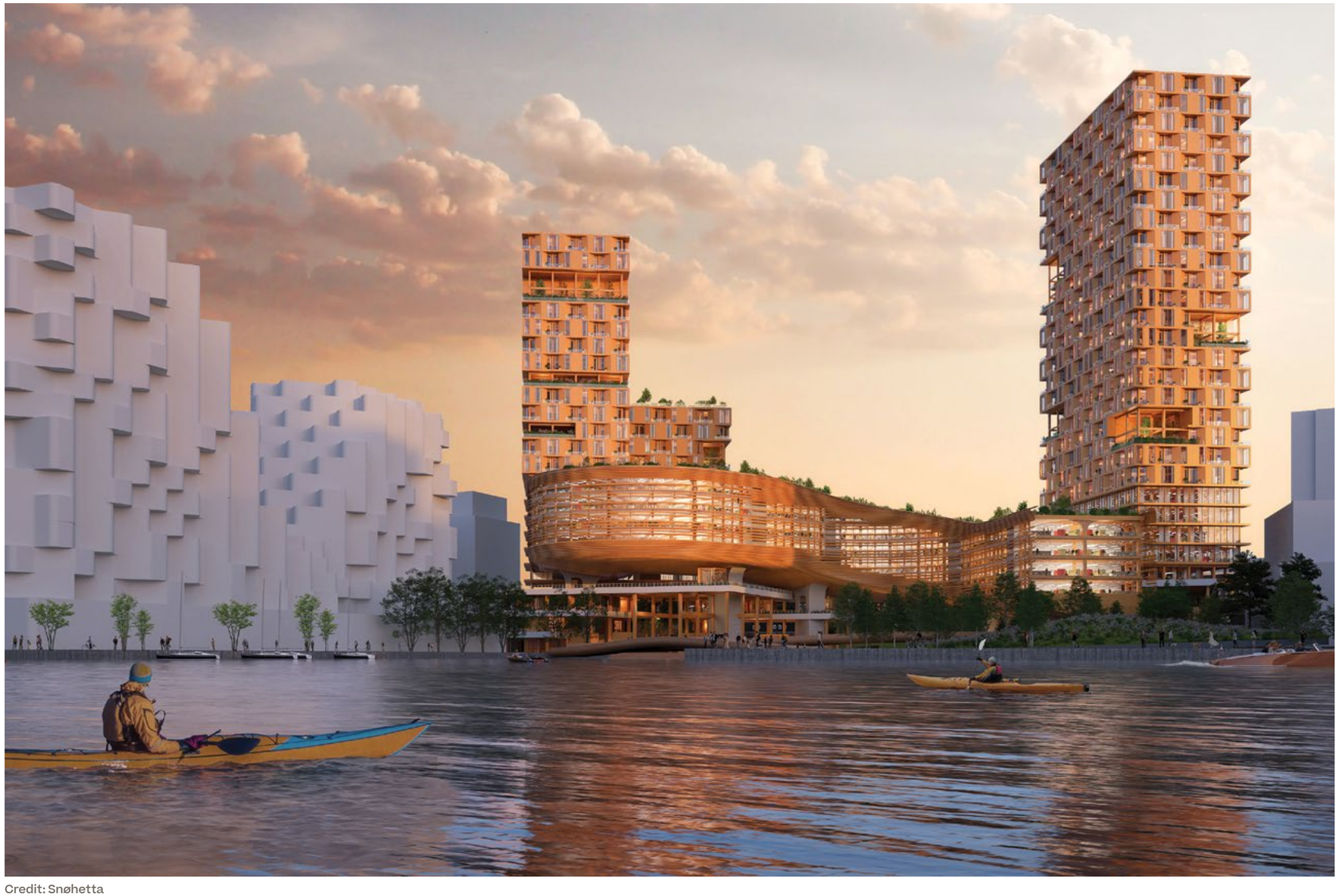
Sites 1 and 2

Credit: Michael Green Architecture

"Designing with the toolkit allows us to create a diverse range of public and private spaces that enhance the quality and value of our built environment. These new neighbourhoods, composed of wood, natural materials, and garden spaces, strengthen our connection to our homes, communities, and environment."

— Michael Green, Principal Architect

Library of parts interpretation:
Snøhetta
Sites 3 and 4



Credit: Snøhetta

"Working with Sidewalk Labs' toolkit for mass timber structural systems provided a unique challenge. Our design team took advantage of the flexibility and modularity of these systems, such as in the stoa and plazas. Yet we also found ways to unlock new formal possibilities, such as the double-curved form of the commercially programmed 'hull.' Finding ways to playfully stretch the model allowed us to create compelling, site-specific architecture from the standardized kit."

— Matt McMahon, Project Leader

Library of parts interpretation:
Heatherwick Studio

Site 5

Credit: Picture Plane for Heatherwick Studio

"At the beginning of our study, we asked ourselves: can buildings created using a repetitive modular construction system still be expressive and unique? In fact, using the system freed us from the distractions of 'how' and allowed us to focus on a design driven by the specifics of the site: the need for an intimate human scale intertwined with the public realm and a vibrant waterfront."

— Charlotte Bovis, Project Leader

Making housing more affordable for more people

The Quayside plan proposes an ambitious affordability program that sets aside 40 percent of units for below-market housing, creating new living opportunities for households across the income spectrum.

For decades, Toronto forged an identity as a city of diverse neighbourhoods, with a flourishing middle class thriving at its spiritual — and geographic — heart. But Toronto's recent success and rising construction costs have forced it to reckon with a challenge faced by many other growing cities: an increasingly urgent affordability crisis. Since 1970, Toronto has tended to sort itself into "Three Cities": wealthy areas downtown, low-income areas forced to the edges, and middle-income pockets that continue to shrink.[70] Limited housing size options and an aging rental stock have further led to inadequate choices for multi-generational, single-person, and middle-income households.

A mix of incomes, lifestyles, and life stages is a foundational element of urban life, generating a neighbourhood's sense of community and its energy. That is why Quayside's housing program has been designed to set a new standard for inclusive communities. An ambitious affordability program creates opportunities for residents across the income spectrum, including lower-income tenants and middle-income households unable to afford market-rate units or hefty down payments. Every unit is designed to reflect a broader effort to offer a wider range of housing options that enable more affordability across the board and meet the evolving needs of Toronto's diverse households.

See the "Buildings and Housing" chapter of Volume 2 for more details on Sidewalk Labs' housing vision.

40% below-market housing

The Quayside housing plan includes 40 percent of units at below-market rates, outpacing recent development on the waterfront and downtown. This affordability program features unusual depth and breadth, including 20 percent affordable housing, at least a quarter of which would be available to lower-income tenants with "deep" affordability needs and be operated by experienced non-profits. Quayside would also devote 20 percent of units to middle-income Torontonians who are currently struggling to afford market prices.

40% family-sized units

Toronto households are evolving — they are increasingly single, senior, and multi-generational — and so are their housing preferences. The Quayside plan offers an array of new housing options, including family-sized units from two to four bedrooms, co-living options that offer more communal supports, and efficient units with flexibility to grow or shrink as needs and households change.

Efficient unit designs.
Quayside's proposed efficient apartments would be 7 percent smaller on average than equivalent traditional apartments. Reducing unit footprints enables the creation of more units and increases revenue potential, allowing developers to meet greater affordable housing commitments. Clever design maximizes the space in these units, including features like convertible furniture, built-in shelving, and fold-out tables and beds to improve livability.

Healthy, warm interiors.
Quayside's mass timber buildings would offer warm, inviting spaces with exposed wood and elegant finishes. Exposed wood also unlocks "biophilic" health benefits, such as reduced stress, that have been shown to occur with exposure to nature in cities.

Off-site storage.
Residents would have access to off-site storage space at the neighbourhood logistics hub, with packages sent and delivered on demand by self-driving dollies and tracked via app.

Borrowing library.
Residents could summon useful items that are too bulky to store inside an apartment (like ladders) from a borrowing library at the logistics hub, via on-demand delivery.

Communal spaces.
Residents in co-living units could access communal spaces, such as extra bedrooms for visiting family and friends or large dining spaces for hosting dinner parties.

50% rental and 50% ownership

Creating a rental pipeline is an essential element for all cities seeking to build mixed-income communities, offering an entry point that does not require a large down payment and providing more flexibility than home ownership. Estimates suggest that Toronto must build 8,000 rental apartments a year through 2041 to improve affordability.[71]

The Quayside plan includes 50 percent purpose-built rentals to address the pent-up demand in Toronto. In addition to these rentals and traditional ownership options, the Quayside plan explores alternative ownership models, such as shared equity, which allows families to put a down payment on a portion of an apartment, enabling them to build equity with a lower up-front cost.

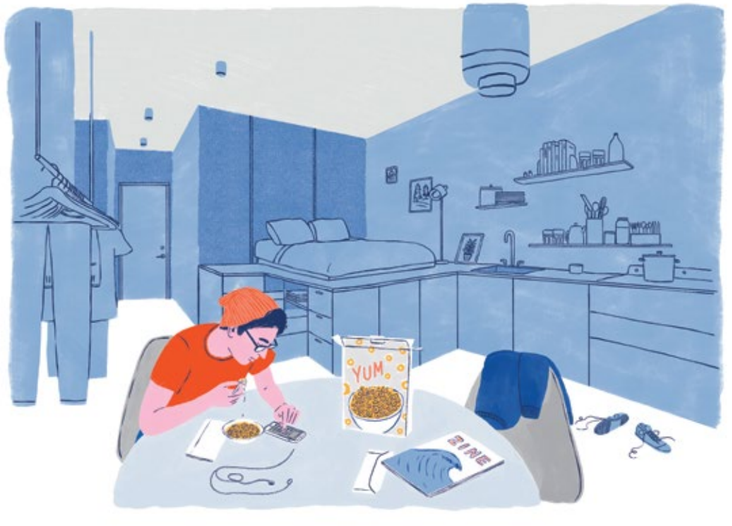
Creating housing options across a lifetime

Housing options should be as dynamic and adaptable as the families that live in them. Quayside's wide range of options are designed to meet the needs of residents as they evolve across a lifetime.

Quayside's housing program promises to do more than attract and support a range of people from across the socio-economic spectrum — it also recognizes that, across a lifetime, housing needs, budgets, and aspirations change.

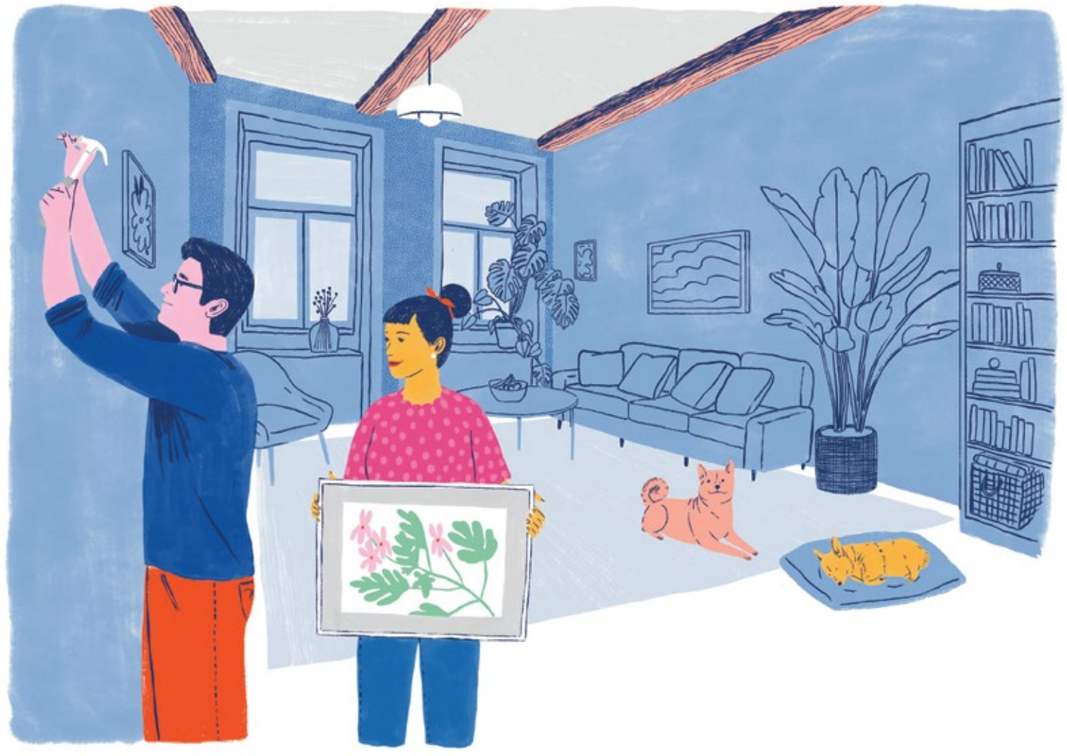
Part of creating a complete community is ensuring that residents can find a comfortable home no matter their stage of life. Whether residents are recent college graduates, newlywed couples, young parents, empty nesters, or on another life path entirely, Quayside can support their journey with housing that is appropriate and affordable.

These pages tell one hypothetical story for how a resident might grow within Quayside, across the neighbourhood's full spectrum of types and tenures.



Jaime moves to Quayside after college.
After taking a new job, Jaime searches for an apartment close to the office, a network of friends, and the amenities and convenience of downtown. The catch? Budget. A sleek ultra-efficient studio in Quayside — renting for less than other downtown studios — is a perfect fit. In addition to the affordable cost, the apartment features space-saving furniture and energy-efficient ventilation systems designed to improve interior comfort.

Jaime gets married.
Jaime falls in love at a dog park in Quayside. The couple decides to move in together, but even with two incomes they cannot afford to buy a condo. Instead, they put their savings towards a small down payment for a shared equity unit. The total monthly cost — 25 percent in mortgage, 75 percent in rent— is in line with similar one-bedroom rental units but allows them to build equity on the portion they own. The well-designed space offers exposed wood and off-site storage for their combined possessions.



The family has kids.
By the time Jaime's family welcomes its second child, they have enough savings to explore condo options. With the appreciation from reselling their shared equity unit, they put a down payment on a two-bedroom condo. The family enjoys Quayside's expanded set of parks, plazas, and public spaces — comfortable year-round thanks to weather-mitigation systems. A few years later, after a next-door neighbour moves out, they are able to expand their unit by removing one of the building's flexible interior walls.

The couple ages in place.
In their later years, as empty nesters, the couple downsizes to a two-bedroom unit within a co-living community with shared building spaces that include guest bedrooms for visiting family, as well as other supports for seniors, such as good access to health programs on the ground floor.

Supporting aging in Quayside

With accessible design, affordable housing options, a network of amenities and programs, and strong social connections, Quayside could be a vibrant community where seniors can age with greater ease and dignity.

Seniors are the most rapidly increasing segment of the population in Canada[72] and Toronto.[73] As reinforced throughout the Sidewalk Toronto public engagement process, the vast majority of seniors want to be able to live well in their own home or community for as long as possible. However, for some, living independently becomes increasingly difficult with age.

To support the ability of residents to age in their communities, Sidewalk Labs partnered with the Futures Team at SE Health, a non-profit social enterprise, to better understand how neighbourhood and home design, alongside social and health programming and services, could maximize well-being later in life.[74]

Building on this research and community feedback, Sidewalk Labs proposes meeting (and whenever possible surpassing) AODA requirements[75] as well as other guidelines, such as the World Health Organization's recommendations for Age Friendly Cities.[76] Sidewalk Labs plans to ensure that 20 percent of residential units are built with flexible fixtures, such as height-adjustable sinks or light switches, that can be easily modified to seniors' physical needs.

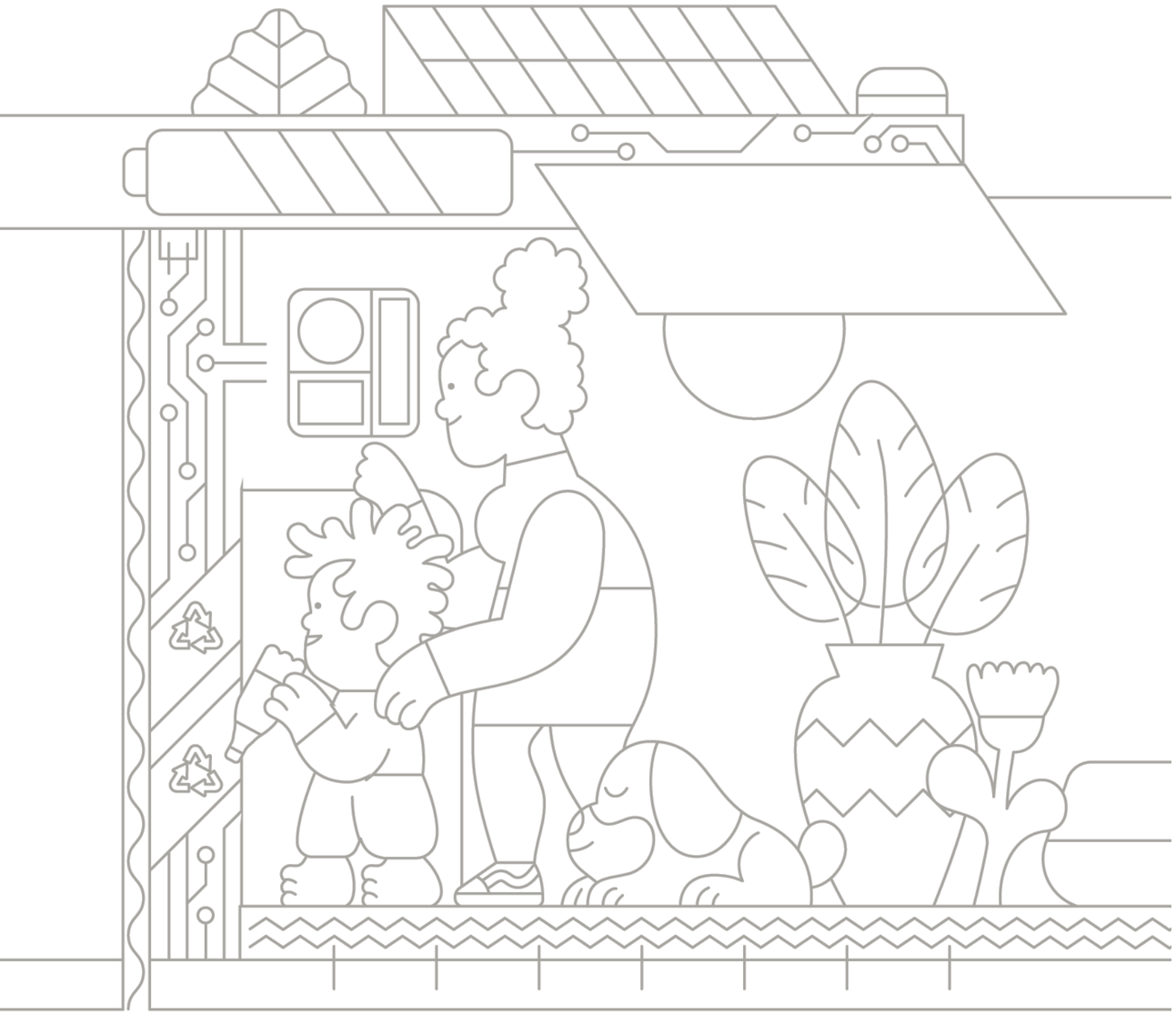
Sidewalk Labs also plans to provide emerging housing types, such as co-living, that create communal supports; affordable housing options that can help seniors living on fixed budgets; and affordable space for health and community service providers, so they can be centrally located in the community.

The Quayside plan would support aging through residential unit design, communal supports, affordable housing options, and access to community services, among other approaches.

In addition to nearby access to formal health care and community services, older adults benefit from living in communities with strong social capital, where informal supports can be relied upon. Neighbours Helping Neighbours is an example of a programmatic approach to activating communities to support socially isolated seniors, who are at higher risk of poor health.[77] Currently being developed by the Health Commons Solutions Lab in Toronto, a cross-disciplinary group that co-creates local solutions to health challenges, the initiative will assess seniors' well-being and respond to identified needs by matching individuals with programs, activities, or services that address their unique needs. Sidewalk Labs is working with the Health Commons Solutions Lab to identify where technology can add the greatest value to this solution by developing and piloting a rapid prototype in 2019.

In these ways, the Sidewalk Toronto project would create a vibrant, dense, multi-generational community where seniors can age with greater ease and dignity.

Sustainability



A new standard of sustainability that creates a blueprint for truly climate-positive communities.

See the “Sustainability” chapter of Volume 2 for more details on the urban innovations described in this section.

Designing ultra-efficient, low-energy buildings

The Quayside plan includes buildings that feature ambitious energy-efficient construction inspired by the Passive House movement — meeting Toronto Green Standard Tier 4 for greenhouse gas intensity.

Toronto's buildings account for roughly 60 percent of the city's greenhouse gas emissions, predominantly by burning natural gas for heat and hot water.[78] Inefficient building designs — for example, with doors, windows, and exterior facades that leak heat — miss opportunities to conserve energy and improve comfort forcing tenants to compensate by using more energy.

In Quayside, Sidewalk Labs proposes to require that buildings meet rigorous energy-efficient building design standards inspired by the Passive House movement, including high-performing wall insulation, airtight exteriors, and high-quality windows. Balanced ventilation systems would circulate fresh, filtered outside air year-round. On cold days, this system would transfer warmth from the older interior air to help the cool outdoor air reach the desired temperature with minimal energy use; on hot days, the system would transfer warmth and moisture from the incoming hot and humid outdoor air to the exhaust air, cooling and drying the new air supply and reducing the need for supplemental air conditioning.

Together, these efforts reduce the "loads" of buildings: heating, cooling, ventilation, and other systems needed for people to be comfortable. As a result, Quayside buildings would meet Toronto Green Standard Tier 4 for greenhouse gas intensity — the highest standard available.

Improving modelling through real-time metering.

Today, a building's energy usage is modelled during the design phase, prior to construction, but rarely revisited once the building is operational. In Quayside, operational building energy would be measured against the original design-level targets, providing invaluable data on the gap between industry-accepted modelling techniques and actual building performance — and helping to improve energy standards.

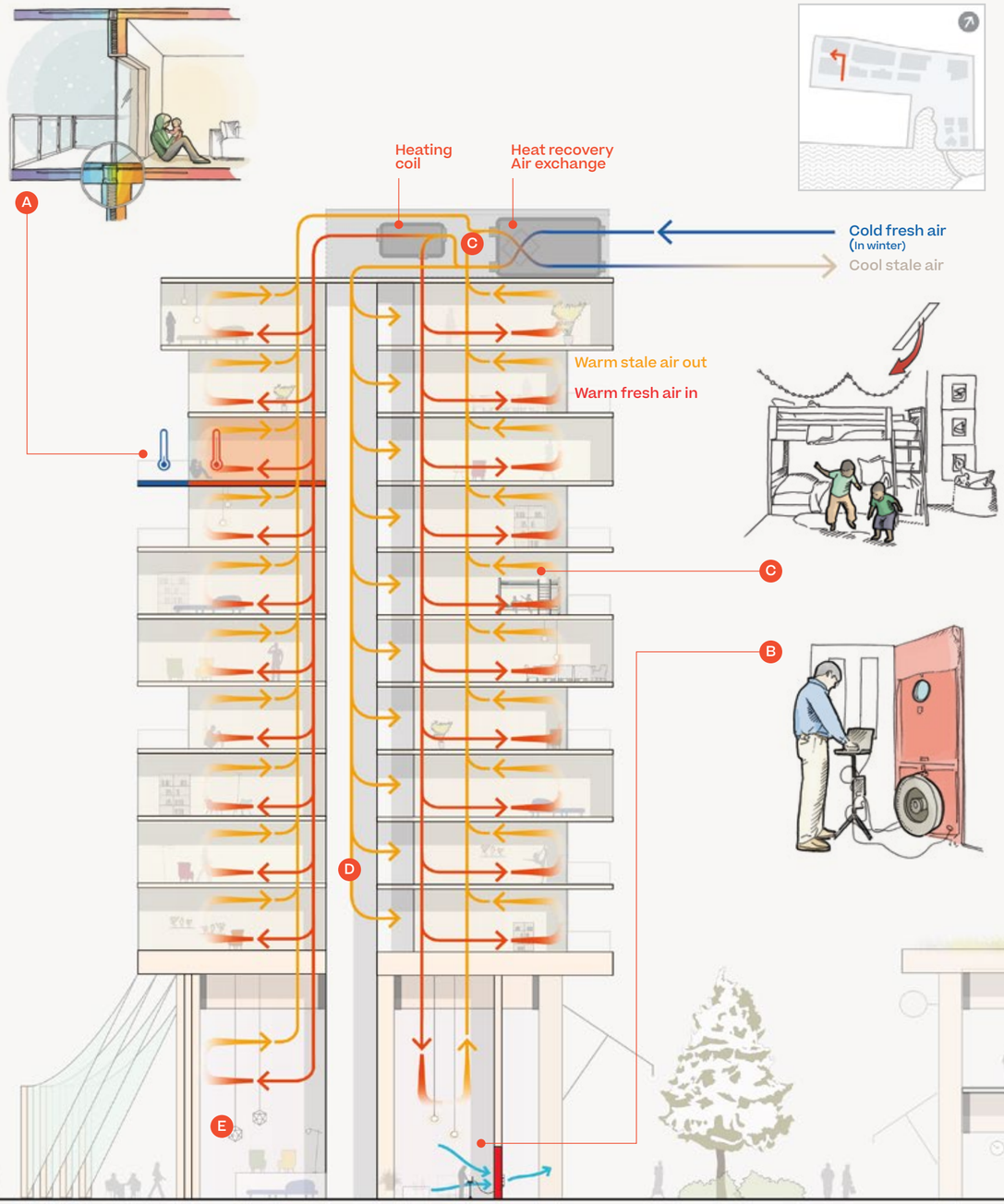
A Ultra-insulated.
Smarter installation strategies — such as high-performance windows, doors, fasteners, and facade design — would help the building resist heat loss and preserve interior temperature, like a thermos. They would also help prevent heat or cooling from escaping the building via conductive metal framing (known as "thermal bridging").

B Airtight.
Airtight construction reduces the need to heat and cool buildings. Before opening, Quayside buildings would undergo "blower-door" testing to help expose and address air leaks. In blower-door testing, fans are placed in doorways to blow air inside and pressurize the building, which is then measured for how well it holds this new pressure.

C Air quality and heat recovery.
In Quayside buildings, fresh outdoor air would be filtered and ducted directly into living rooms, bedrooms, and office spaces, while old stale air would be vented out, ensuring high levels of air quality. Ventilation systems would be equipped with "heat recovery" devices that transfer heat and moisture between the warm and cool airstreams, reducing energy use. On particularly cold days, the air could be further heated before it is distributed throughout the building.

D Corridor conditioning.
Sidewalk Labs estimates that using heat recovery alone to temper the air in corridors can reduce building energy usage by as much as 20 percent.[79] This design means a hallway passage could be hotter or cooler than people's homes, depending on outdoor conditions, but as people generally dress for the outdoors when going out, it is not anticipated to significantly decrease comfort.

E Cold air curtain.
In summer, it is nice to get a cold wash of air conditioning when walking into a building lobby. But often the lobby as a whole is too cold, wasting energy. In Quayside, there would be no lobby air conditioning, but the lobbies — tempered using heat recovery only — would still provide a cool air curtain to offer initial relief for people as they enter the building.

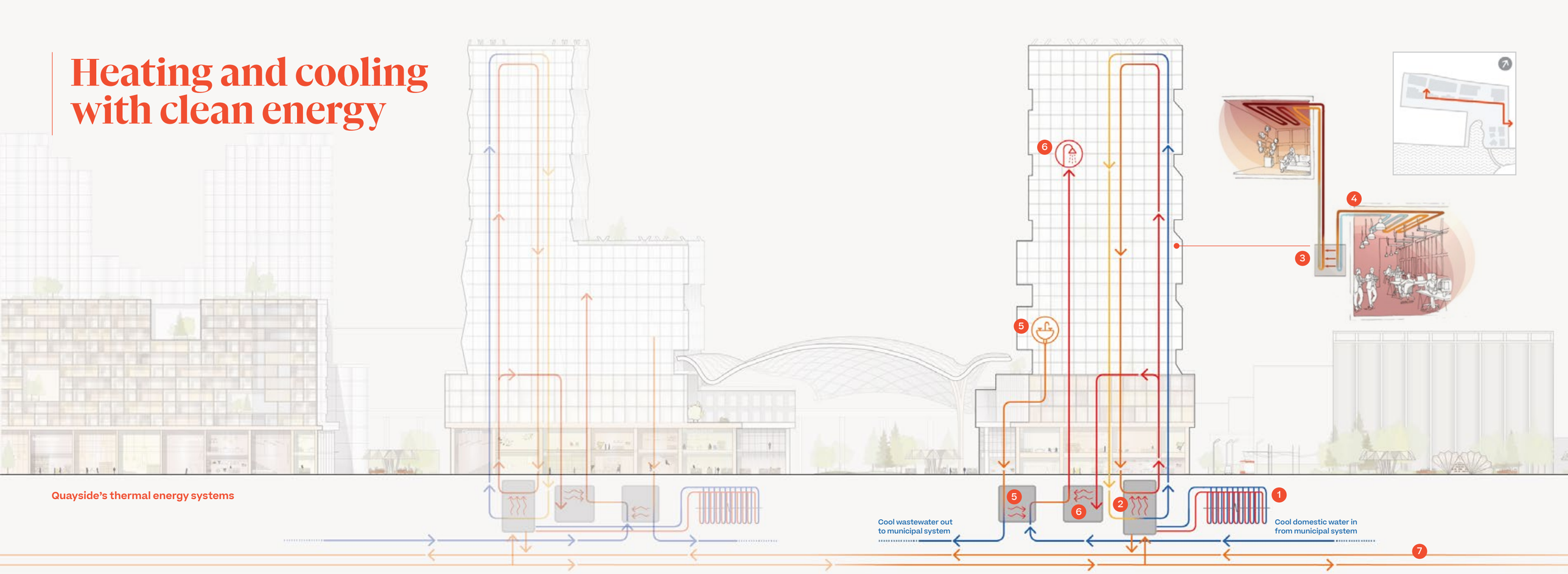


Quayside low-energy building systems in winter

Site 1 South

Pedestrian Walkway

Heating and cooling with clean energy



Quayside's thermal energy systems

The Quayside plan recycles every source of "waste" heating or cooling created in its own buildings to keep residents comfortable. When that is not enough, it would draw from a "thermal grid" that runs on clean energy.

Low-energy buildings can dramatically reduce the need for additional heating and cooling. But even Passive House-inspired designs cannot eliminate that need, especially in a cold-weather climate like Toronto's waterfront. To deliver heating and cooling to residents and businesses without using fossil fuels, the Quayside plan would deploy a type of district energy system called a thermal grid.

Quayside's thermal grid would rely on clean energy sources to heat and cool buildings. At the building level, waste heat generated by wastewater would be repurposed to provide energy for heating and domestic hot water systems. For additional needs, buildings could draw from a hot and chilled water loop at the site level, generated by a mini heat pump plant that can exchange geothermal energy via underground wells.

A neighbourhood loop of the thermal grid would connect all of the site plants and allow for the transfer of energy among sites. It would also be designed to incorporate other large-scale clean energy sources in the future, such as heat recovered from sewage stations.

Why a thermal grid, not gas boilers?

Natural gas boilers are an inexpensive way to provide heat — much less expensive than geothermal wells. However, 87 percent of the greenhouse gas emissions from buildings in Toronto are associated with the use of natural gas for heating and hot water.[80] In addition, a building study commissioned by Sidewalk Labs discovered that Toronto multi-unit residential buildings were using 39 percent more gas for heating and 21 percent more gas for generating domestic hot water than shown in energy models.[81] The Quayside plan aims to forgo gas altogether and move towards a system of low-energy buildings, geothermal heating, and affordable electrification.

1 **Geothermal energy.**
Quayside's thermal grid would use the bedrock of the Canadian Shield like a huge battery — storing heat that is pulled out of buildings in the summer for use in the winter through "geothermal wells." Each site would host a small well field under its buildings, connected to a mini heat pump plant that distributes the heat. Wells would be drilled 244 metres into the rock.

2 **Mini heat pump plant.**
The mini heat pump plant would generate hot and chilled water, which would circulate to buildings through the site.

3 **Waste heat.**
One of the mini plant's sources of heating for hot water is the "waste" heat extracted from spaces in a building (such as busy offices), which can be given to other areas that need heat (such as residential apartments in winter). Up to 31 percent of Quayside's heating and 27 percent of its cooling requirements could be met using such waste heat.[82]

4 **Radiant ceiling panels.**
Heating and cooling would be provided by radiant ceiling panels served by a building's heating and cooling loops.

5 **Wastewater heat.**
Domestic hot water would be pre-heated using heat recovered from bathrooms, kitchens, and other sources of building wastewater.

6 **Domestic hot water.**
After being pre-heated, water for domestic use would be further heated with an electric heat pump that draws heat from the loop serving the building's heating system.

7 **Additional waste heat sources.**
The thermal grid extends throughout Quayside and in the future could connect to additional sources of waste heat, such as data centres or municipal wastewater systems.

Using clean electricity and actively managing energy use

To help reduce greenhouse gas emissions and strive towards a climate-positive neighbourhood, the Quayside plan shifts from gas infrastructure to clean electricity and proposes to use new digital tools to help manage energy consumption.

In Toronto, residents and businesses draw power from a centralized electricity grid that can run primarily on clean energy sources (including nuclear, hydro, or renewables) during off-peak periods, such as overnight. But at peak times, when electricity demand is high, this grid must use a greater portion of natural gas–generated power to meet the task, increasing the greenhouse gas intensity of the grid power supply as a whole. In addition to being expensive, natural gas–generated power has 15 times the GHG intensity of the Ontario grid's current average,[83] so increasing its supply would increase both utility costs for households and businesses and GHG emissions for the community.

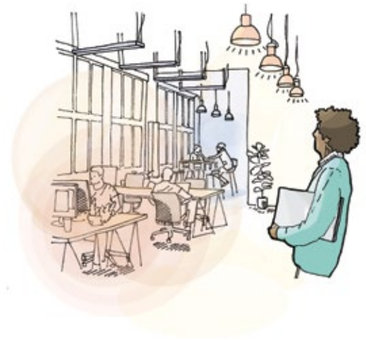
Quayside's building systems are designed to help residents and businesses minimize their use of the grid's most expensive and GHG-intensive power while providing new sources of clean energy, such as community batteries (that store clean energy) and solar panels. These strategies enable Quayside to accommodate significant new electricity-intensive technologies — such as electric vehicles — without expensive power grid expansions that can often lead to higher utility bills.

A Low-voltage DC power.
Quayside's buildings propose to incorporate a digital electricity power system that can travel over lightweight cables, such as ethernet cable, into residential units and offices, providing plug power for computers, lighting, and many appliances. (AC power would continue to operate for larger kitchen appliances, such as ovens.) As a controlled system that only sends power when a device is present, digital energy can dramatically reduce shock hazards and electrical fire risks.

B Solar and battery power.
Photovoltaic cells would be installed on every tower roof to capture almost 1 megawatt of solar energy, and batteries housed indoors would store 4 megawatts of clean energy taken from the grid during off-peak hours. The batteries would support almost 75 percent of Quayside peak load[84] — reducing the use of grid power at costlier and more GHG-intensive peak times.

C Backup power.
Quayside buildings would have on-site backup generators, fueled by bio-diesel, to provide emergency services, such as elevators and hot water, for multiple days.

D Advanced power grid.
Sidewalk Labs has been working in collaboration with Toronto Hydro to design an advanced power grid that would have two connections to the main Toronto electricity grid as its primary source of power, supplemented by local solar generation and battery storage. The advanced power grid is designed with the ability to disconnect from the larger grid ("islanding") through switching and connections, so that on-site energy resources could be fully used during a larger grid outage. It is also designed with enhanced distributed energy management visibility, control, and coordination into the neighbourhood resources (often called "behind the meter" insight) through a distributed energy resource management system to enhance demand management functionality and grid reliability. Even when disconnected, the Quayside grid would remain under Toronto Hydro control and management.

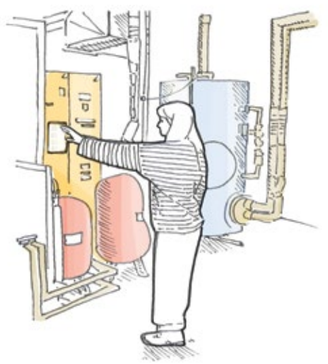


Office Scheduler

A proposed digital Office Scheduler tool is designed to help commercial tenants manage their energy use and costs by optimizing all the systems under their control. For instance, these Schedulers could automatically adjust the interior temperature based on occupancy, and could also point workers to warmer and cooler areas in their office, depending on their preferences.

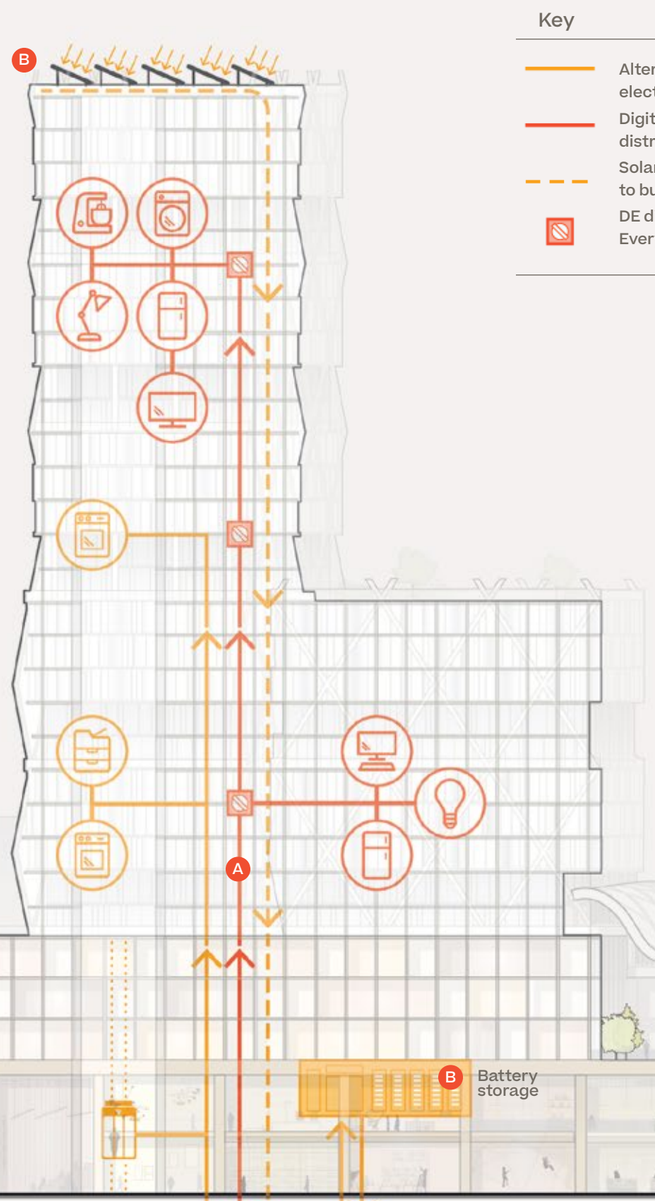
Home Scheduler

A digital Home Scheduler tool would help residents manage energy use and utility bills in Quayside. This Scheduler can automate devices such as dishwashers to run during off-peak hours, when energy is cleaner and cheaper. (Residents can always override these settings if they wish and pay peak-hour utility prices.)



Building Operator Scheduler

Building operators make dozens of daily decisions about how to manage the centralized heating, cooling, lighting, and electric systems in buildings.
The Building Operator Scheduler can help optimize core building energy systems, freeing up managers to focus on things that require more personal attention, like preventive maintenance.



Key

- Alternating Current (AC) electricity distribution
- Digital Electricity (DE) distribution
- Solar energy connection to building system
- DE distribution point Every 10 floors

Quayside's advanced electricity systems

Creating a smart waste system

Quayside's smart chute and pneumatic waste collection system

Lake Shore Boulevard | Site 2 North | Site 2 South | Queens Quay

The Quayside plan features a series of technological, policy, and infrastructure advances to exceed Toronto's goals for landfill diversion and demonstrate an innovative path forward for neighbourhood waste.

Despite a citywide waste reduction target of diverting 70 percent of recyclables and organics from landfill waste by 2026,[85] multifamily buildings in Toronto currently divert only 27 percent;[86] commercial buildings are worse, diverting only 13 to 18 percent.[87] This outcome has major climate impacts: food waste that ends up in a landfill produces methane, a greenhouse gas 25 times more potent than carbon dioxide.[88]

Quayside can achieve a landfill diversion rate of 80 percent[89] by providing real-time feedback on common recycling mistakes, using smart chutes to separate waste and institute a "pay-as-you-throw" system to reduce waste, which has proven effective in single-family homes, and conveying waste to a centralized location through underground tubes to reduce contamination.

1 **Smart collection.**
Refuse rooms on every floor would be equipped with three separate disposal chutes: organics, recyclables, and landfill.

2 **Pay-as-you-throw.**
Smart chutes for each waste type could be unlocked from an app or a touch screen to charge tenants for what they deposit, creating an incentive to throw away less trash. Sensors would measure volume and weight.

3 **Waste transfer.**
In the basement, waste would connect to an underground pneumatic tube system designed to handle almost 1.5 tonnes a day, and move waste at speeds of up to 70 km/h[90] to the neighbourhood's collection point: Terminal Station. Sensors would release only one type of waste stream at a time, eliminating cross-contamination.

4 **Outdoor waste disposal.**
Disposal chutes in strategic public locations would be tied directly into the pneumatic system, and in other locations, deployable smart bins would send alerts to maintenance staff when they are ready to be emptied.

5 **Special waste.**
Oversized and speciality items that cannot go through the waste tubes (like paint and recyclable cardboard) would be transported through the underground freight tunnel system to Terminal Station.

6 **Terminal Station.**
Terminal Station is planned to be co-located at Site 1 with the Quayside logistics hub, integrating freight and waste management. A crane system would hoist full airtight dumpster-sized containers onto garbage trucks for removal and replace empty containers.

7 **Off-site disposal.**
Trucks would transport the waste to three locations for disposal. Organic materials would be taken to one of Toronto's world-class anaerobic digestion facilities, such as Disco Road.[91] Recyclables would be brought to one of Toronto's material recovery facilities, in which glass, metal, paper, and other materials are sorted and processed for sale on a secondary market. Other materials would be taken to Green Lane landfill.

8 **Feedback loop.**
Sidewalk Labs proposes to collaborate with material recovery facilities to track contamination in the recycled waste stream via computer vision software. The results would be displayed on smart screens in building refuse rooms to provide feedback on the most common recycling errors and contamination rates, helping tenants recycle more effectively. Over time, cleaner waste streams would reduce waste disposal costs for residents and businesses.

Managing stormwater at a neighbourhood scale

Quayside's stormwater management system

Quayside's holistic and active approach to stormwater management would integrate technology and green infrastructure to create a neighbourhood-wide system that is more effective, sustainable, and beautiful than typical developments.

In the face of climate change, cities must prepare for the impact of increased storm intensities. For example, Waterfront Toronto's vital $1.25 billion flood-mitigation project will help protect the eastern waterfront from flooding during heavy rains.[92] The Quayside plan builds on such efforts with a neighbourhood-wide stormwater management system that features two core components: "green" infrastructure and active management capabilities.

Developments typically manage stormwater by using large-scale "grey" stormwater infrastructure, such as concrete or plastic tanks, to capture stormwater for detention. Mechanical treatment centres then filter it for pollutants. These costly facilities are single-purpose and take up valuable space that could be used for the public realm or other development uses.

In Quayside, a coordinated network of green infrastructure, such as street plantings and green roofs, would help retain stormwater and filter it in natural ways. To complement this infrastructure, digital tools would empty stormwater tanks or cisterns in advance of storms, minimizing grey infrastructure needs and improving resilience. The same tools could also monitor the operational health of the system — from plants to pipes.

At opening, this integrated system would meet or exceed Toronto Green Standard Tier 3 retention requirements (25 millimetres) for every rain event, resulting in on-site management of at least 90 percent of the water that would typically end up entering the municipal system.[93] This approach also contributes to a greener, healthier public realm.

A Active management.
Quayside's active stormwater management system consists of environmental sensors (described on the following page) that would manage blue roof cisterns on all buildings and one large underground tank at Site 1. The system would empty tanks in advance of storms to maximize storage capacity and use water for site irrigation.

B Green infrastructure.
The Quayside plans uses landscaping and green infrastructure as a first layer of stormwater management, to naturally retain and filter rainwater. This network includes tree plantings and bio-retention zones (described in more detail on the next page) that help retain stormwater in spaces beneath the sidewalk, where it can irrigate the plantings or evaporate without needing treatment.

C Green roofs.
The Quayside plan uses a combination of photovoltaic cells (installed over the blue roof areas) and green roofs to adhere to the Toronto Green Roof Bylaw.[94]

- Blue roof 80%
- Green roof 30-50%
- Bio-retention High infiltration
- Bio-retention Low or no infiltration
- Active control and monitoring sensors

Designing a green, active stormwater system

Site 1 South

Queens Quay

Compared to business-as-usual stormwater design, which uses large underground tanks and pipes, Quayside's lush public landscape is designed to act as a robust stormwater management system. Digital tools would help handle excess stormwater by proactively emptying storage tanks before a storm.

A Stormwater drains.
Rain flows directly from the street into underground pipes and must be treated by large-scale municipal facilities. In heavy rains, the system can be overloaded, leading to flooding.

B Standard street trees.
Most street tree-planting areas are not specifically designed for water infiltration, treatment, and conveyance.

C Grey infrastructure tanks.
Tanks and pipes in traditional developments are expensive and must be sized for maximum detention, leaving them underutilized in good weather. These systems are also passive, in that they are unable to respond to anticipated storm events.

D Blue roof.
The water captured by blue roof systems would be used to irrigate rooftop gardens and other plantings within the building, or conveyed to green infrastructure areas for controlled site irrigation.

E Rainfall gauge and weather station.
A proposed active stormwater management system would use real-time weather data to identify potential rain events. Control valves for rooftop and underground cisterns would automatically empty tanks to maximize storage capacity in advance of storms, helping to reduce flooding.

F Agriculture sensors.
Agriculture sensors typically used in farming, including moisture sensors and infrared technology used to measure nitrogen and salinity levels, would be piloted to track and maintain ecological health.

G Bio-retention zone.
Extensive planted areas throughout the site would reduce the flow of stormwater into the municipal system while irrigating plants and prefiltering the water. Permeable pavers used extensively around these planted areas would filter surface runoff and prevent inundation, and soil cell infrastructure underground would allow for extensive root growth.

H Plant diversity.
A diverse selection of plantings would be designed to collectively maximize root growth and water absorption, resist street salt, and demonstrate phytoremediation (or contaminant abatement) abilities.

I Pavers and soil cells.
Permeable pavers used extensively around planted areas would filter surface runoff and prevent inundation, and soil cell infrastructure underground would allow for extensive root growth.

J Flow-monitor and water-quality sensors.
Stormwater sensors would measure water quality and reduce operational issues by tracking water flows and identifying blockages in the system.

K Contamination control.
In areas with more contaminated soil, such as the south side of Queens Quay, green infrastructure like soil cells would use impermeable bottom liners to keep polluted water from entering the system.

L Heat island effect.
Trees and plantings would reduce the heat island effect by shading streets, releasing moisture to cool the environment, and providing natural wind mitigation.[95]

Social Infrastructure

Provide the **health, civic life, learning, and workforce initiatives and facilities** that **enable everyone to thrive.**

Building towards a complete community

The Quayside plan would integrate space for social infrastructure from the start, creating opportunities for community organizations and local service providers to activate these spaces, strengthen the community, and help community members thrive.

Whatever its form — library, online forum, health centre, weekly meetup — social infrastructure fosters health and well-being, ties together communities, and helps people reach their highest potential.

While Sidewalk Labs would not provide any community services, to build towards a complete community in Quayside it proposes allocating 90,000 square feet towards social infrastructure as well as supporting local community organizations and service providers with expertise, digital prototypes, resources, and planning to bring innovative service delivery models to the community. Sidewalk Labs would also work with partners to ensure that critical services are accessible to all populations, including the most vulnerable, and that Sidewalk Labs' commitments to diversity, equity, and inclusion are sustained.

While social infrastructure cuts across a wide range of disciplines, Sidewalk Labs has chosen to focus on social infrastructure spaces and programs that relate to health and community services, civic life, and learning, as a starting point to show what could be possible in this unique site.

Sidewalk Labs' contribution to health and well-being has two core components. One is a development plan that encourages healthy living and community well-being. Another is a physical hub called the Care Collective dedicated to enhancing health and well-being by co-locating health care and community services alongside proactive health programming. Upon approval of the MIDP, Sidewalk Labs plans to seek a local partner to convene health care and community service providers; working together with the community, this group could explore opportunities to provide proactive, integrated, digitally enabled, and holistic service delivery offerings.

Sidewalk Labs' contribution to civic engagement is anchored by a physical hub called the Civic Assembly, a place for gathering, learning, and engaging amongst the community. To complement the physical space, fully accessible digital tools — both those already existing in the market and others created in partnership with the community — could help people to participate in civic life, collaborate, and shape their neighbourhood and help governing bodies to undertake more transparent, inclusive, and responsive decision-making.

Sidewalk Labs' contribution to learning provides opportunities to push the boundaries outside the four walls of the classroom. It begins with an elementary school (proposed to be operated by the Toronto District School Board) and a collaboration with the Toronto Public Library to further expand the reach of its programming throughout the community.

In addition to the planning of physical spaces and partner-led programs, the conditions for innovation established throughout Quayside create unique opportunities for social infrastructure. For example, educational programming could pop up in Quayside's flexible spaces; organizations could explore new digital tools, with the confidence that all community members will have access to digital supports; and a community service provider could explore the implementation of a new operating model.

These contributions should evolve through the leadership and ownership of local partners and institutions — hopefully, resulting in a network of diverse and inclusive social infrastructure spaces, digital complements, and services that will continue to respond to a wide, inclusive range of community needs.

Prototype spotlight

Engaging the community in local decisions

Together with local communities and Digital Public Square, a non-profit spun-out of the University of Toronto, Sidewalk Labs prototyped a new digital tool in early 2019 called Collab.

This online resource engages community members in local decisions that can shape their neighbourhood, such as programming in a central public space, through a transparent process that reveals the decision-making framework and all community inputs. Users propose their choices for events in their community, and then the tool walks them through the trade-offs associated with each proposal — a farmers market provides fresh produce and draws a lot of foot traffic, but the space may feel too congested for a community picnic — and how their individual choices impact the community.

The Collab prototype has a publicly available Responsible Data Use Assessment. For use in Quayside, Collab would need to be approved by the proposed Urban Data Trust and would abide by all Canadian laws and the Responsible Data Use Guidelines for the Sidewalk Toronto project. The prototype is available to try at collab.sidewalklabs.com.

With new and existing technologies like these serving as easy entryways to engagement, everyone in the community could be activated to shape the Quayside neighbourhood.

Designing a healthy place

The Quayside plan will be developed through a health and well-being lens; in this way, the neighbourhood would encourage and enable healthy living.

Research has found that 60 to 80 percent of a person's long-term health outcomes are determined not by access to quality care, or even genetics, but by environmental conditions, social circumstances, and individual lifestyles and behaviors.[96] To enable all people to live well, these "social determinants of health," defined by the World Health Organization as "the conditions in which people are born, grow, live, work and age," must be addressed. One way to do this is through planning and design.

Since the mid-20th century, many cities have been developed in ways that undermine people's abilities to lead healthy lives. Too many people spend too much time commuting in cars and sitting all day in offices and spend too little time being active, outdoors, or interacting with people face-to-face — all risk factors for poor health and, in particular, preventable chronic diseases.

Designing for good health should be a key planning principle. To help guide the development of Quayside, Sidewalk Labs plans to use The Community Wellbeing Framework, developed by the Conference Board of Canada and the design firm DIALOG in 2018, which provides useful, evidence-based guidance for developers, urban planners, and architects to apply a health and well-being lens to their work.[97]

The Quayside plan incorporates a range of strategies to create a healthier neighbourhood for all, including mass timber buildings, abundant open and green spaces, and a lively mix of community spaces.

Supporting a mix of uses

Quayside's development program calls for 67 percent of space to be devoted to housing, with roughly 33 percent devoted to office, retail, community, and maker spaces, as well as other non-residential uses. This approach to creating a dense, walkable, mixed-use neighbourhood can enable increased physical activity and enhanced social well-being.

Promoting active transportation

Safe and accessible cycling and pedestrian infrastructure can lead to increased physical activity. Sidewalk Labs plans to deploy heated pavement in bike lanes to make cycling more attractive all year and in some sidewalks to reduce falls and injuries.

Providing abundant green space

The Quayside plan provides accessible green spaces throughout the neighbourhood, helping to bring people together as well as to reduce levels of stress, depression, and anxiety. Sidewalk Labs' proposed outdoor comfort systems would also make outdoor spaces comfortable for 35 percent more hours throughout the year, compared with conventional development.

Encouraging social interaction

Formal and informal community spaces, activated with community-led programming, are designed to draw in diverse groups of people, enhance cohesion, and reduce isolation. Locating community spaces alongside spaces for the delivery of health care and community services can make interactions with service providers part of day-to-day life.

Designing healthy buildings

Buildings that embody biophilic design principles, optimize for natural light, use healthy materials (such as mass timber), and ensure indoor air quality can ensure that residents, visitors, and workers have healthy indoor environments.

Providing ubiquitous connectivity

Affordable, high-speed Wi-Fi, as well as access to digital support, would enable providers to extend support beyond the clinic via virtual care and digital health management tools.

Care Collective: Enabling health, well-being, and access to holistic care

The Quayside plan sets aside a central space, called the Care Collective, which would be dedicated to enhancing health and well-being by co-locating health care and community services alongside proactive health programming, and would be activated by local partners. If these partners choose, the Care Collective could demonstrate a forward-looking model of integrated local health programming and health care and community service delivery.

The city's Downtown Plan recognizes a need to plan for more affordable, accessible, and appropriate spaces for delivering community services in downtown Toronto; what's more, enhanced coordination in planning and delivering health care and community services, especially in parts of the city that are growing rapidly, has also been recognized as an urgent need.[98] The Care Collective is envisioned as a convenient place for community members to not only access both health care and community services but to receive proactive support so they can lead healthier lives and better care for themselves.

Helping people to remain healthy requires an increased focus on prevention and early intervention, alongside the delivery of more integrated health care and community services.

In Quayside, Sidewalk Labs plans to be a catalyst when it comes to promoting health, not a direct service delivery provider. In this role, Sidewalk Labs proposes providing a space, called the Care Collective, for the co-location of preventive support, health care, and community services as well as offering leases at below-market rates to ensure a diverse set of service providers, including non-profit organizations.

Local service providers would be invited to work together to activate the space and coordinate services to provide residents, workers, and visitors with responsive, community-based care.

The Care Collective would be located adjacent to a number of community spaces, including the Civic Assembly (see Page 224) as well as amenities (such as cafés, gyms, or health-related shops) that make it an essential community resource — a place for people to go not just when unwell, but to spend time and seek proactive support.

To envision what kinds of spaces could respond to the emerging health and well-being needs of future populations, Sidewalk Labs commissioned Toronto-based design studio Idea Couture to undertake preliminary concept work for a people-centred design of the space.[99]

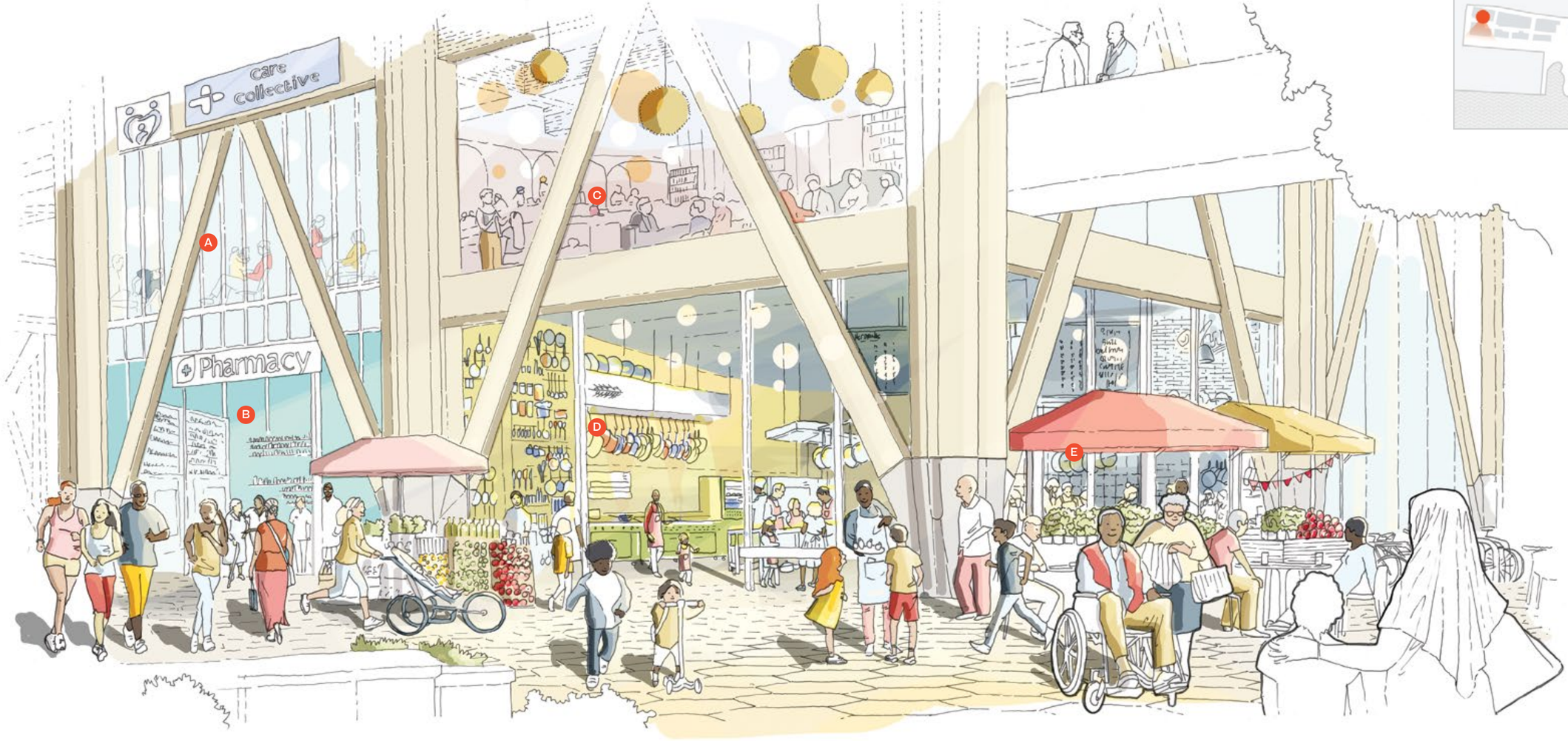
A plan for the Care Collective, and a vision for how health care and community services could be delivered in Quayside, must be led by local stakeholders and should build on the lessons learned from existing models.

For example, recognizing growing health and equity gaps across the city, United Way Greater Toronto has supported the development of community hubs in underserved neighbourhoods, each a "one-stop-shop" that makes a range of services and programs available under one roof.[100] This model and others, such as family health teams and community health centres, are compelling examples of operating models that seek to better coordinate services through co-location, respond to community needs, and treat people holistically through team-based care.

As governments and health care providers work to address the social determinants of health, and as care increasingly shifts from acute to community-based (and virtual) settings, new models of community care in new types of community spaces will be required in every neighbourhood.

If the MIDP is approved, a leading entity or entities (not Sidewalk Labs) could convene health care and community service providers and the community to co-create a proposal for the operations of the Care Collective. If desired by this group, the Care Collective could demonstrate a forward-looking model of integrated local health promotion and care delivery. This model could provide continuous disease prevention and management support as well as integrated community-based care, leverage emerging digital solutions and virtual care to enhance access, and reduce health inequities to improve health outcomes for all.

Sidewalk Labs proposes contributing resources to support the development of a proposal for the Care Collective. If desired, Sidewalk Labs would offer its expertise, including support on technical roadmaps for new or existing digital tools that could meaningfully improve outcomes, efficiency, and experience.



A Spaces for service delivery.
Spaces for the delivery of health care and community services, including consult rooms, meeting rooms, and flexible multi-purpose spaces. Virtual consult rooms, which would be stocked with diagnostic tools and staffed with in-person technical support, could enable virtual care with specialized providers that aren't located in the Care Collective.

B Spaces for health-related retail.
Retail spaces with a health and well-being focus, such as a pharmacy or fitness club, could be located near the Care Collective.

C Space to enhance health literacy.
A health resource centre where visitors could test, learn about, and borrow a range of curated digital health tools and apps recommended by care providers. Staff in this centre could guide visitors to helpful resources in their community and lead educational programming focused on health literacy, digital health, and self-care.

D Space to support healthy, communal eating.
A community kitchen and dining space for use by residents, community organizations, and pop-ups could teach healthy cooking and eating skills while also providing space for communal dining to bring people together.

E Spaces to support well-being.
Dedicated sanctuary space could help people to maintain their mental well-being by providing a place to relax, relieve stress, and unplug in a quiet, nature-infused environment. These spaces could support social prescribing (for example, a doctor could prescribe time in the sanctuary space).

Civic Assembly: Creating a connected community that is civically engaged

The Quayside plan sets aside a central space to connect with neighbours, learn about what is going on in and around the neighbourhood, share ideas, debate, engage in cultural activities, stay abreast of the newest digital tools, access local services, and participate in community decisions. This Civic Assembly would be the physical heart of civic life in Quayside.

It can be hard in the rush of urban life for community members to meet each other and connect, let alone to join in the shared project of shaping their neighbourhood. In the words of a Sidewalk Toronto Reference Panel resident: "A big part of social capital is the accident of bumping into people you know, and having unplanned conversations. It's that magical pixie dust that happens between people when we are out together."

The Quayside plan allocates space for both the Civic Assembly and the Care Collective in a prime location that spans Sites 1 and 2 (the first phase of development). This space has direct access to Queens Quay and an animated pedestrian corridor, and is adjacent to housing and office space. This location would enable the Civic Assembly to draw off the energy of local street life, enhancing the likelihood of serendipitous connections and becoming a vibrant daily gathering place that brings people together and activates the community.

Community members and organizations could book space in the Civic Assembly for meetings or gatherings. Located in an adaptable stoa space, the assembly could evolve according to the community's needs and interests: one day, a stay-at-home dad could host a book club there; the next, a senior could teach a giant knitting class; or, throughout one summer, an emerging artist could lead a projection-mapping workshop.

Sidewalk Labs has started to prototype many of the ideas that could be present in the assembly — including innovative arts programming and tech demonstrations — in its collaborative workspace, 307, and will continue to pilot ideas leading up to the development of the Sidewalk Toronto project. However, Sidewalk Labs would not operate this space alone; Sidewalk Labs plans to convene and contribute resources to support local stakeholders to develop a proposed plan for the program and operations of the Civic Assembly, offering an opportunity for many organizations from across the city to shape this central gathering space with the community as it grows.

The Civic Assembly would become a central hub for community, arts, and cultural gatherings and could evolve to meet neighbourhood needs.

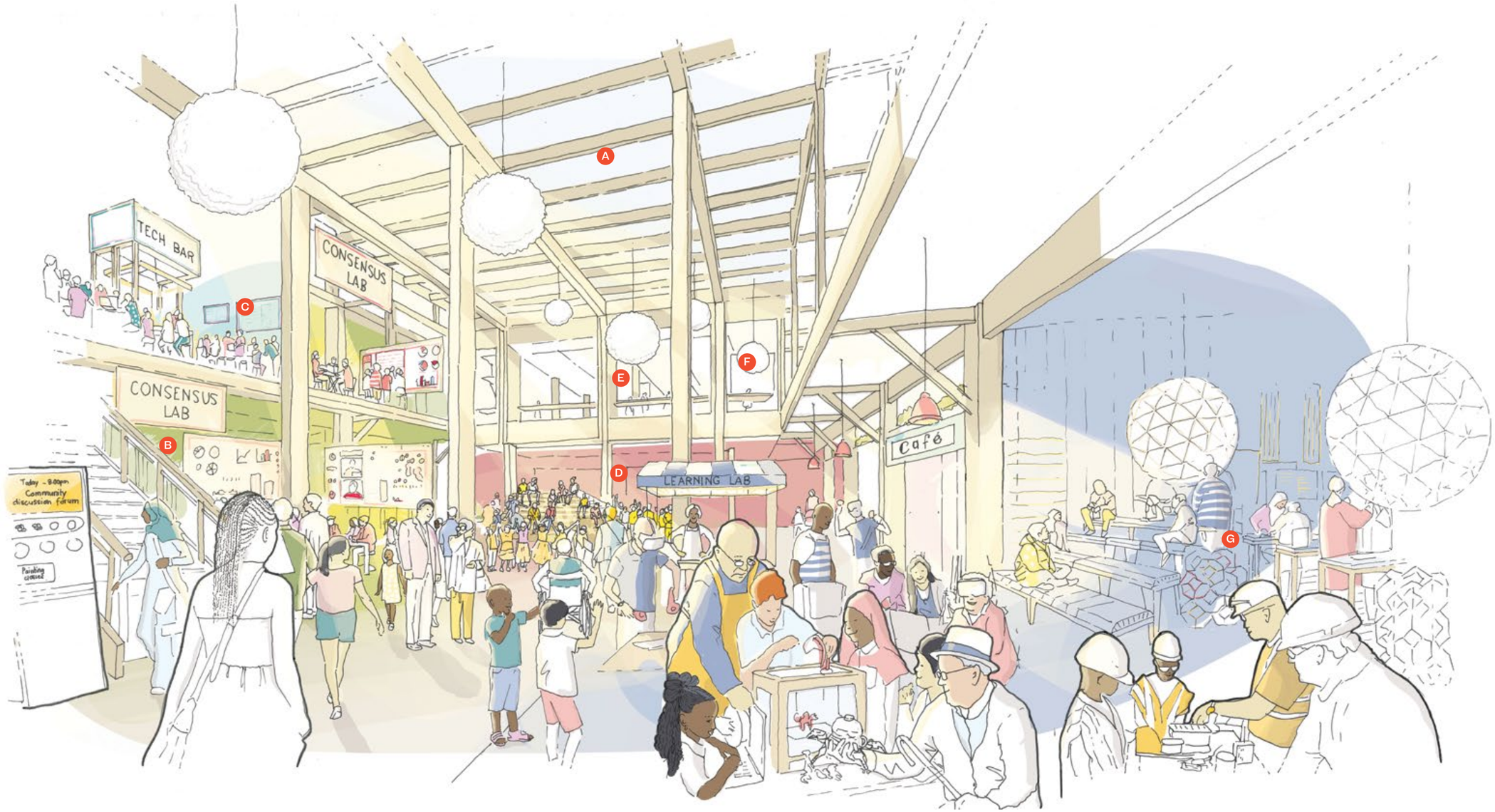
Digital spotlight

Activating civic life in Quayside

In Quayside, community members could attend neighbourhood meetings or provide input by visiting the Civic Assembly. With inclusive access to Wi-Fi and digital support, all community members could also use digital tools designed for participation, collaboration, and influence, helping residents as well as those who visit or work in Quayside to have a greater sense of ownership and belonging in the community.

Community organizations and governing bodies could also choose to leverage these technologies to help them engage with a diverse range of community members and use that community feedback to inform their decision-making processes. While Sidewalk Labs would not operate any of these bodies, it has secured the support of Toronto-based non-profit Digital Public Square to convene a panel of community members and experts that would advise on the creation of a Quayside Neighbourhood Association and offer insight into opportunities for new tools and spaces as well as processes for transparent decision-making.

When combined with Quayside's flexible spaces that community members can adapt to meet their needs, and plentiful civic and gathering spaces that bring people together, these responsive governing bodies and convenient digital tools could activate the Quayside community to participate, enabling a strong, inclusive, and vibrant community.



A Community Central.
This flexible central atrium could draw and accommodate hundreds of people day and night and could feature digital displays that announce upcoming events and activities, new community ideas and participation opportunities, and environmental conditions.

B Consensus Labs.
This space could allow community members to explore the latest community initiatives, weigh in on a pending issue, contribute their ideas, or vote for community projects using large screens and touch tables that visualize initiatives and facilitate conversation.

C Tech Bar.
This space — staffed by digital experts who know the ins and outs of all of the technology in the neighbourhood — would allow community members to access support for any of their digital needs. Leaders in the field, such as the Toronto Public Library, could offer free digital and data literacy classes, as well as host open hours to facilitate input on digital tools and new use cases.

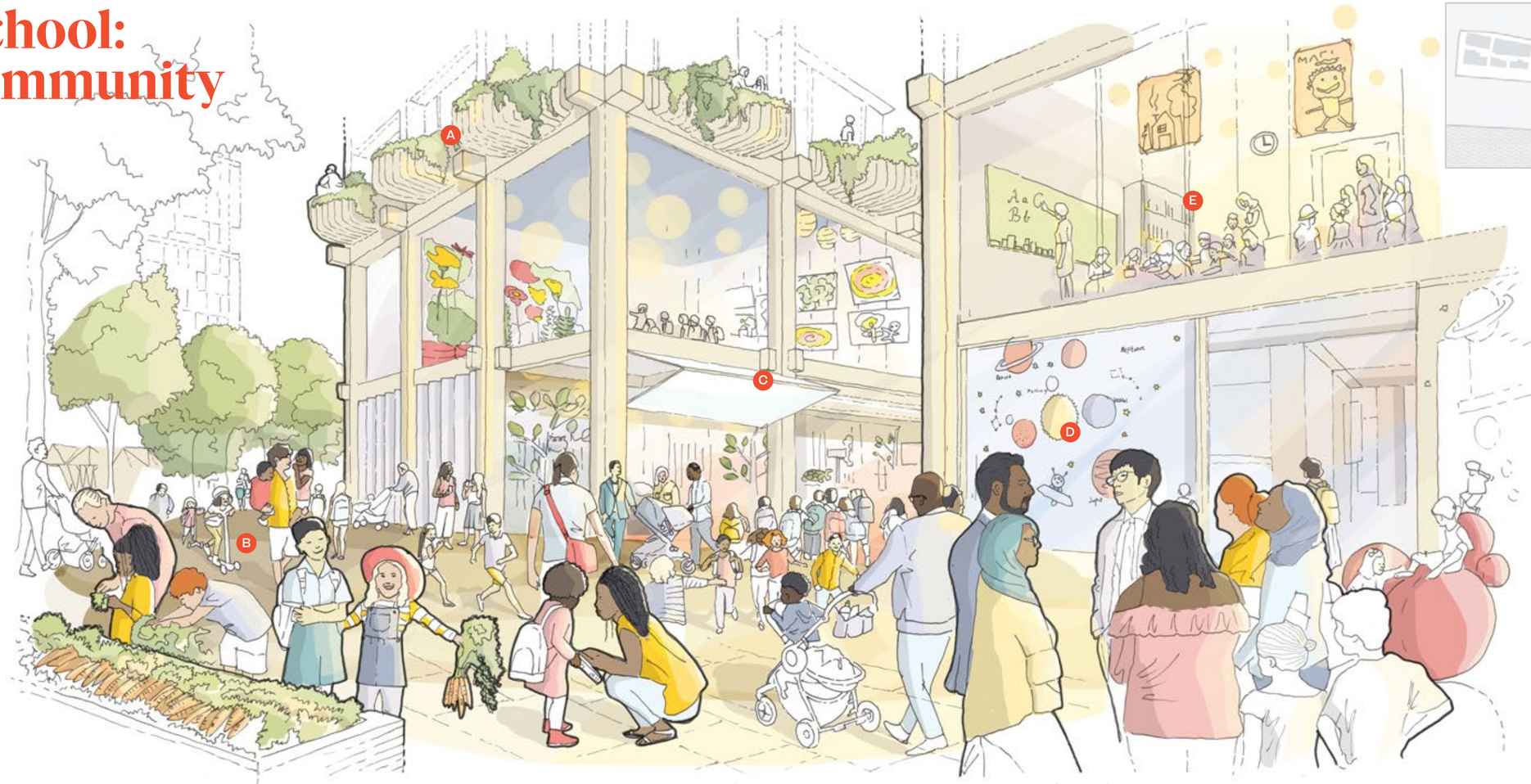
D Pop-up Learning Lab.
In this space, community members could use new technologies, such as robotics and 3D printers, computer workstations, or audio and video equipment to participate, learn, connect, and create online.

E Flexible bookable spaces.
These spaces would enable the community to connect, discuss ideas, build consensus, and participate in civic discourse, with breakout rooms for committees and smaller events as well as flexible spaces for government and non-profit programming.

F Office spaces.
Organizations, such as the Quayside Neighbourhood Association or the Open Space Alliance could reside in the Civic Assembly to easily reach the community.

G Arts and culture areas.
These spaces would include shared fabrication equipment and tools (such as laser cutters and woodworking machines) and have the flexibility to be carved into smaller studio spaces.

Elementary school: Making the community a classroom



Sidewalk Labs plans to work with the Toronto District School Board (TDSB) and the Ontario Ministry of Education to ensure that neighbourhood families in and around Quayside have access to a best-in-class school located near complementary services from the start.

To accommodate projected population growth in the eastern waterfront, the TDSB has proposed to locate a new school in East Bayfront / North Keating.[101]

To help accelerate this development, Sidewalk Labs proposes to work with the TDSB to plan up to 60,000 square feet on the lower floors of a mixed-use building for an elementary school for up to 600 students spanning grades pre-K through 8. A portion of the ground floor space of the school site could also be allocated for a child-care facility.

The TDSB would operate the school, which could support the short- to mid-term needs of this growing population.

Collaborating with TPL to expand community programming.

Planning Quayside around flexible spaces and high-speed connectivity enables lessons, after-school programs, and other learning opportunities to expand outside the classroom — in community spaces or even in the public realm.

To begin activitivating opportunities for learning throughout the community, Sidewalk Labs is pursuing collaborations with educational leaders in Toronto. Sidewalk Labs and the Toronto Public Library (TPL) are currently exploring opportunities to seamlessly integrate the library's presence throughout Quayside, building on the theme of learning happening everywhere.

These opportunities could include pop-up learning labs or lending services; TPL-developed classes, particularly those that support data, AI, and algorithmic literacy; or digital consult rooms in library branches or pop-up library stations that could allow residents to easily book a private session or meeting with service providers.

Sidewalk Labs also proposes supporting TPL's Innovator in Residence program and working with TPL, employers, and other institutions, such as George Brown College, to explore the development of new training pathways.

A Mixed-use location.
Locating the school in a mixed-use, flexible building would lower up-front capital and operating costs and provide the ability to adapt to dynamic community needs.

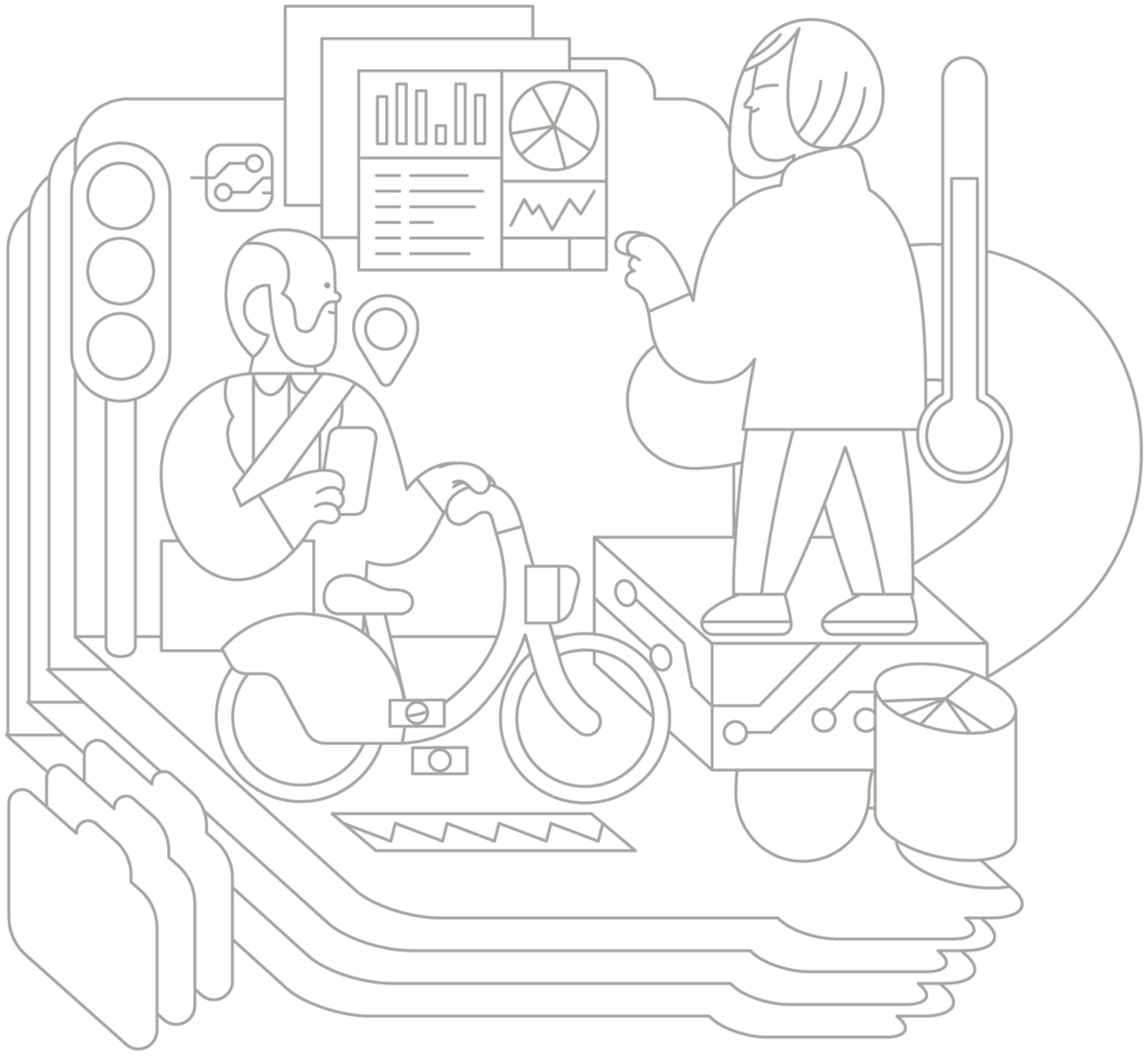
B Proximity to open space.
Locating the school in proximity to vibrant open space, Silo Park and Parliament Slip, would allow students to learn from real-world situations.The waterfront could offer a living laboratory for a biology lesson, for example. Or teachers could create opportunities for students to learn from community members, say by visiting an artist's studio in the Civic Assembly to gain exposure to new materials and techniques.

C Adaptable classroom spaces.
Classrooms with modular furniture and movable walls would allow educators to test new models of learning, such as a "flipped classroom," where students consume lectures outside the classroom and participate in one-on-one and group work in the classroom.

D Common social spaces.
Common spaces outside the school would allow for gathering, lingering, and socializing for members of the school and the larger community, helping to build relationships and connections.

E Proximity to community services.
A school location near housing and complementary community services — such as primary healthcare and childcare — would provide convenient access, save households time, and ensure students' and parents' holistic needs are met.

Digital Innovation



Catalyze **digital innovations** that help **tackle urban challenges** and **establish a new standard** for the **responsible collection and use of data** in cities.

See the “Digital Innovation” chapter of Volume 2 for more details on the urban innovations described in this section.

Creating the conditions for digital innovation

Quayside represents an important first step towards showing an innovative path forward on digital governance — demonstrating that cities do not need to sacrifice their values of inclusion and privacy for economic opportunity in the digital age.

Key Term

Urban data

refers to information gathered in the city's public realm, its publicly accessible spaces, and even some private buildings.

The ability to create the conditions for digital innovation is at the heart of Sidewalk Labs' vision for the city of the future.

Digital innovation is the basis for many of the core planning initiatives that Sidewalk Labs has proposed throughout this Quayside development plan to achieve Waterfront Toronto's priority outcomes. It is also essential for catalyzing an ecosystem of new services and solutions by individuals, Canadian companies, local Toronto entrepreneurs, and other third parties from around the world.

But digital innovation raises a number of challenges that cities like Toronto are just starting to address. These challenges are especially complicated for "urban data," which Sidewalk Labs defines as information gathered in the city's physical environment, including the public realm, publicly accessible spaces, and even some private buildings.

Toronto and Ontario have taken some important initial strides to advance the conversation around data governance principles. Sidewalk Labs proposes to build on that progress in Quayside by taking a holistic approach that creates four core conditions for digital innovation to flourish responsibly.

Providing more affordable and flexible digital infrastructure.
First, Sidewalk Labs proposes to establish open digital infrastructure that provides a shared foundation for using urban data to improve quality of life. That includes a powerful ubiquitous connectivity network that leverages new advances to improve speed and security. A standardized mount system would dramatically reduce the cost of deploying innovations and eliminate vendor lock-in.

Setting data standards that are open and secure.
Second, Sidewalk Labs proposes to outline clear standards that make data publicly accessible, secure, and resilient. Third parties depend on open hardware and software as well as on an agreed-upon set of standards and protocols to successfully deploy their ideas. A set of published standards around open-data architecture, access, and sources would enable third parties to build upon a shared foundation, supported by a common set of security, formatting, and communication standards.

Creating a trusted process for responsible data use.
Third, Sidewalk Labs proposes a trusted process for responsible data use that would apply to all parties (including Sidewalk Labs).

To meaningfully enable responsible data use across the IDEA District, Sidewalk Labs proposes that urban data be controlled by an independent entity called the Urban Data Trust, charged with balancing the interests of personal privacy, public interest, and innovation. This public steward would establish a clear process for approving any initiative that involved the use or collection or urban data for all parties, including those proposed by Sidewalk Labs.

This process would be anchored by a Responsible Data Use (RDU) Assessment — an in-depth review that is triggered by any proposal to collect or use urban data — and guided by a set of RDU Guidelines that incorporates globally recognized Privacy by Design principles.

Launching core digital services that others can build on.
Finally, Sidewalk Labs proposes to launch a minimal set of digital services that would catalyze this ecosystem of urban innovation. These services and applications remain essential to achieving Waterfront Toronto's priority outcomes. Furthermore, the properly protected urban data generated by these launch services would be made publicly accessible, enabling companies, community members, and other third parties to use it as a foundation to build new tools.

The following pages describe how Sidewalk Labs plans to approach each of these conditions in Quayside.

Expanding opportunity with ubiquitous Wi-Fi

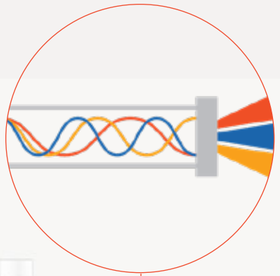
The waterfront currently incorporates world-leading internet speeds, thanks to the work of Waterfront Toronto and its telecommunications partners. Sidewalk Labs proposes to go even further by taking advantage of recent advances in fibre-optic technology.

Digital connectivity is what unlocks many of the innovations found in the Quayside plan. It is also the catalyst for new services or businesses and the cornerstone of a digital economy.

The Quayside plan would offer super-fast, super-secure Wi-Fi service that is accessible to residents and workers everywhere they go. Designed to span the entire neighbourhood, be upgraded easily, and minimize interference between devices, this network would always give users the highest speed possible.

This network would build on the work done to date along the waterfront to bring even more secure and reliable connectivity to all corners of the community, at all times.

Super-PON, super speed.
As part of its network planning, Sidewalk Labs is exploring a new technology called Super-PON (Passive Optical Network). By splitting lights into distinct wavelengths, Super-PON can support 768 users per fibre-optic strand, at least 12 times more than conventional systems, and extend fibre reach to 50 kilometres, at least 150 percent more than conventional systems.[102] The result would be a network that provides increased speed over greater distances while requiring significantly less cable, equipment, and electricity.

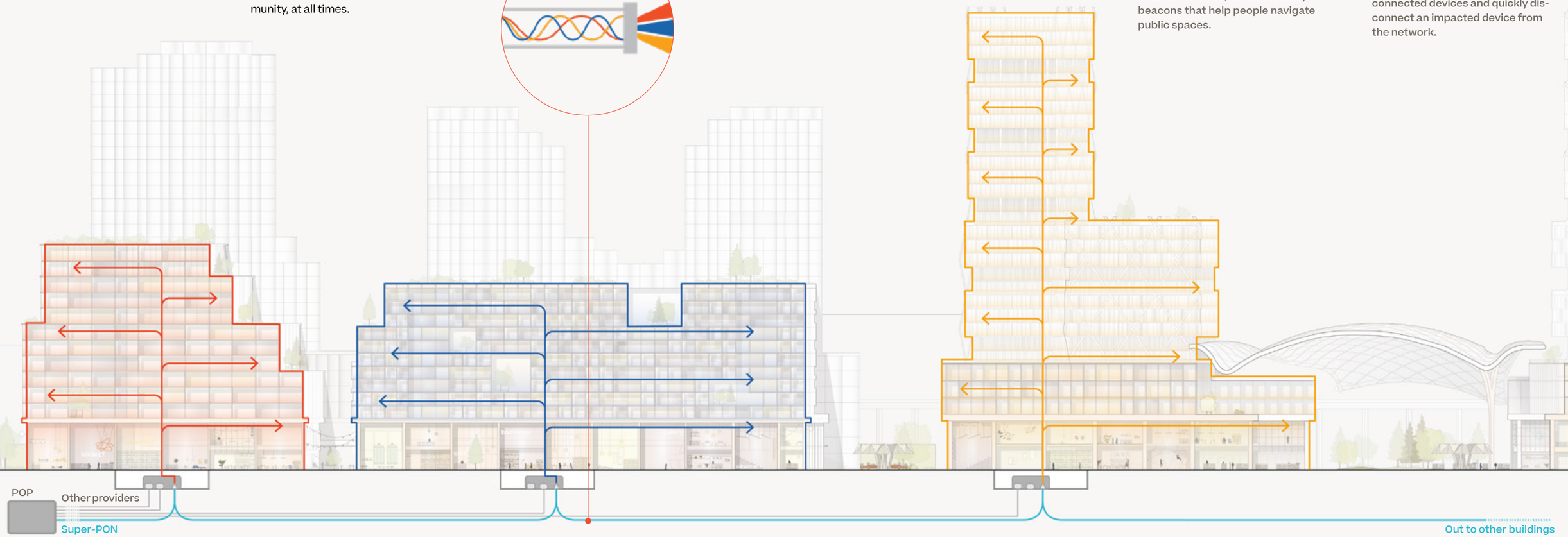


Buildings as networks.
Sidewalk Labs proposes that all buildings conform to a set of specifications that balance the goals of the Super-PON network with the ability for other providers to offer their own network services, including having three distinct points of entry; a "Meet Me Room" where all communications-related equipment would be installed; vertical risers dedicated to communications wiring accessible on each floor; horizontal risers connecting vertical risers to each unit; and Cat 6A wiring in each room for power-over-ethernet wireless access points.

Points of Presence.
The proposed design for a fibre-optic backbone would be connected to two major internet Points of Presence in downtown Toronto. Conduits holding the fibre would have express and local routes, as well as regular handholes (access points).

Wireless infrastructure.
Sidewalk Labs is working to determine the optimal location for Wi-Fi access points and antennas inside buildings and throughout the public realm in Quayside. This connectivity would ensure that many of the systems designed to improve life can operate seamlessly, from bike lanes that heat up using real-time weather information, to energy management systems that constantly optimize themselves, to accessibility beacons that help people navigate public spaces.

Personal, secure connectivity.
An emerging security approach known as a "software-defined network" can help people stay connected to their own personal home or office Wi-Fi network no matter where they are in Quayside, including parks and public spaces. These networks have advanced security capabilities; they are able to detect potential security risks aimed at connected devices and quickly disconnect an impacted device from the network.



Quayside's advanced fibre-optic network

Site 1 | Site 2 | Site 3 | Parliament Plaza | Site 4

Reduce installation and maintenance costs with an "urban USB port"

A standard connection point for digital devices would drive down the cost of installing and maintaining digital hardware by 92 percent, making it easier for an array of third parties to develop new solutions to urban challenges.

Today, when cities (or their private-sector vendors) deploy devices that can collect data, the installation process creates significant disruption to street life and costs thousands of dollars, because light poles and other street fixtures were never designed to host digital hardware.

Adding a single car-counting device to an intersection requires the city to take the following steps:

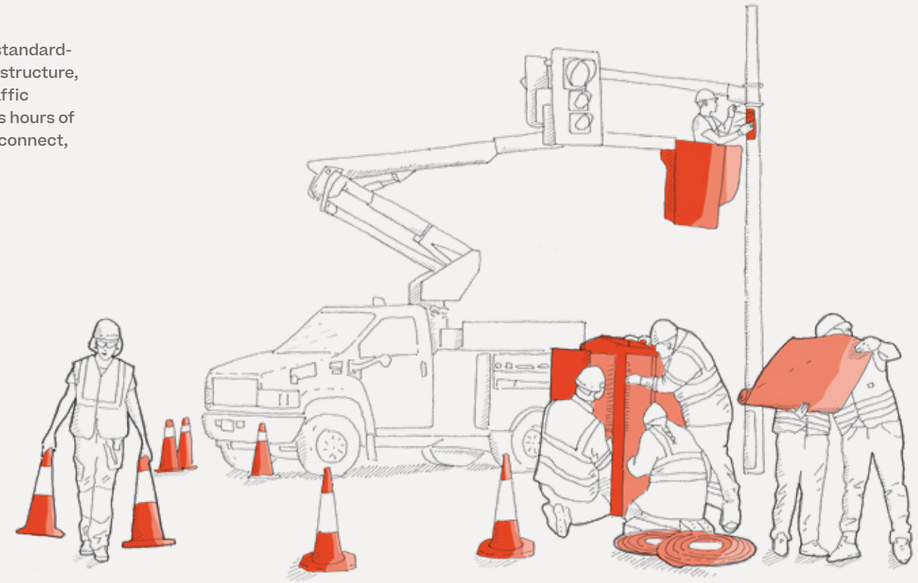
- Shut down a lane of traffic for hours or even days.
- Send a bucket truck with several staff to the intersection.
- Devise a creative mounting solution involving special clamps to adapt to the particular conditions of a traffic pole while maintaining safety standards.
- Employ an electrician to shut down the supply to the pole and possibly run a network wire up the pole, a process that might involve digging a trench to the nearest connection point.
- Repeat much of this labour-intensive process for repairs or upgrades.

To tackle this challenge, Sidewalk Labs has designed a standardized mount called "Koala" that would make it fast, inexpensive, and safe to install a device on a light pole or other street fixture by providing a sturdy physical mount, power, and network connectivity. Sidewalk Labs estimates its mounts would reduce the time of installation by roughly 92 percent — down from 30 hours today to two hours.[103]

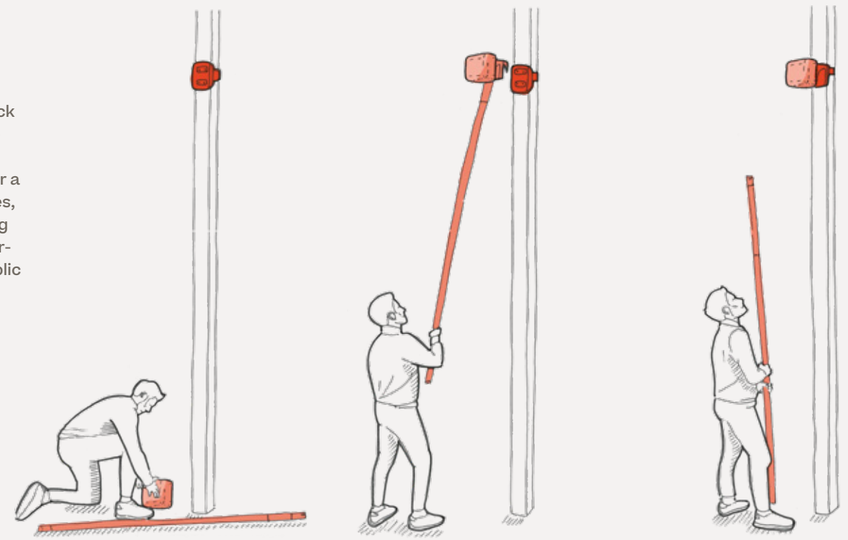
In addition to saving costs, Koala mounts would help cities avoid proprietary lock-in, as this open infrastructure would be capable of working with any device that meets its published standards — just like a USB port. Any proposal to collect or use urban data would be subject to the responsible data use process described on Page 240.

A standardized mount to reduce disruption

Today, without standardized digital infrastructure, even a basic traffic counter requires hours of work to mount, connect, and test.



Koala mounts would make it easy and quick to connect to a ubiquitous network and collect urban data for a multitude of purposes, from bicycle counting to air-quality monitoring to interactive public art installations.



Setting data standards that are open and secure

In Quayside, Sidewalk Labs plans to apply published standards and to use best-in-class security and resiliency techniques.

Key Term

APIs

are standardized programming tools that enable computer systems to communicate. For example, when a Transit App shows bike-share availability at a nearby dock, it is using an API to connect with the bike-share system's real-time database, process that data, and display it on a phone.

Enable third-party innovation with published standards

Openness is essential to provide new services that help improve quality of life and to inspire urban innovation by third parties. Just as no single company owns the web, no single company, organization, or agency should own the data or databases used by cities. They must be publicly accessible to improve upon, build on top of, or even replace.

Sidewalk Labs proposes a three-part plan to achieve its goal of a digitally open city:

Open architecture and APIs.
In Quayside, any digital hardware and software that Sidewalk Labs creates would use public standards that make it possible not just to access data easily but also to replace aspects of the hardware or software itself, avoiding lock-in from a single technology provider and encouraging innovation.

Sidewalk Labs commits to publishing an ongoing list of standards it uses. Where relevant standards do not exist, Sidewalk Labs would work with other companies, researchers, and standards bodies to create those standards.

To make that urban data available in ways that software developers can readily build, Sidewalk Labs proposes to provide data via well-defined, public application programming interfaces (APIs) — standardized programming tools that enable computer systems to communicate.

Open access.
In Quayside, Sidewalk Labs proposes to make properly protected urban data publicly accessible by default, enabling others to use it to create new services, tools, or products. As an extension of this policy, Sidewalk Labs proposes that this information be integrated into existing open-data portals containing relevant urban data — including the Toronto Open Data Portal and the Ontario Open Data Catalogue — expanding access even further.

Open source.
In Quayside, Sidewalk Labs proposes to make the software source code required for others to integrate with each of these systems publicly available under a free software licence. Sidewalk Labs has released several of its tools as open source, including the CommonSpace app for supporting public life studies. Sidewalk Labs plans to continue doing so in the future and to encourage others to do the same.

Use best-in-class resiliency and security

Sidewalk Labs plans to ensure that the digital technology used in Quayside is resilient as well as secure. Digital systems should not only be secure from hackers — they should also be reliable in the face of inadvertent actions or environmental effects and maintained in a way that keeps them functioning at a consistent level over time.

Sidewalk Labs' approach to digital reliability emphasizes three design goals:

- First, as much as possible, prevent disruptions and the loss of functionality.
- Second, rapidly detect any loss in functionality or increased risk of loss of functionality through audits and other approaches.
- Third, prepare to rapidly restore functionality to any service that experiences a disruption.

These priorities are modelled after the standard approach taken by government and municipal services to ensure the resilience of critical systems, and are parallel to the software architecture concept "security by design." Security by design refers to the principle that rather than being an afterthought, security should be considered at the beginning of the systems design process.

In Quayside, digital security and resiliency would be designed in from the start.

Technical spotlight

Current Sidewalk Labs cybersecurity practices

Though best practices in cybersecurity are always evolving, there are a number that Sidewalk Labs follows today and plans to follow in Quayside, including:

- **Encrypting** as much data as possible in storage and in transit using AES keys of 256 or 512 bits
- **Storing** keys in a key management system backed by FIPS 140-2 Level 3-certified hardware security modules
- **Enabling** client-managed encryption keys running on top of the same modules for any storage or computing resources to third parties
- **Using** HMAC to ensure message integrity with symmetric encryption
- **Preferring** elliptic-curve-based approaches over RSA for asymmetric encryption and digital signatures
- **Using** SHA-256 for general hashing and bcrypt for passwords
- **Preferring** multi-factor authentication methods over passwords alone
- **Routing** all traffic through TLS and, when that is not an option, physically partitioning devices from other networks

Creating a trusted process for responsible data use

Through the creation of an independent Urban Data Trust to oversee matters of digital governance, Quayside could establish a new standard for the responsible collection and use of data in cities.

A core condition for digital innovation is earning community trust that information collected in cities will preserve the privacy of individuals and be used for the greater good — all while supporting the growth of new businesses and the rise of new tools to improve urban life.

To help achieve this goal in Quayside, Sidewalk Labs proposes the establishment of an Urban Data Trust: an independent entity that would serve as the steward of urban data and the public interest.

Provincial and federal privacy commissioners would continue to oversee compliance with all privacy laws. Additionally, the Urban Data Trust would oversee matters of the digital governance of urban data for Quayside, including the approval and management of data collection devices placed in the public realm, as well as of any activities that involve the collection or use of urban data.

As described more in Volume 2, Sidewalk Labs believes the Urban Data Trust should be managed through a democratic process, and also supports the consideration of other recent proposals, including from MaRS and the Toronto Region Board of Trade, calling for independent entities whose mandate could be to govern data collection and use.

Beginning in Quayside, Sidewalk Labs proposes that the Urban Data Trust have two initial tasks.

First, it should establish a set of Responsible Data Use (RDU) Guidelines that would apply to all entities seeking to collect or use urban data in the IDEA District, incorporating globally recognized Privacy by Design principles. Second, it should implement and manage a process for approving the responsible collection and use of urban data anchored by a publicly auditable Responsible Data Use (RDU) Assessment — an in-depth review that is triggered by any proposal to collect or use urban data.

Key proposed aspects of the Urban Data Trust:

- **Independent entity (not controlled by either Sidewalk Labs or Waterfront Toronto)**
- **Five-person board with diverse representation**
- **Chief Data Officer to run daily operations**
- **Approve all collection or use of urban data in Quayside**

RDU Guidelines

Sidewalk Labs believes the Urban Data Trust would be in a position to determine the most appropriate RDU Guidelines. For consideration as an initial set, however, Sidewalk Labs submits the following guidelines, which it has implemented internally for pilots that undergo privacy assessments:

Beneficial purpose.
There must be a clear purpose and value to any proposed use of urban data.

Transparency and clarity.
Organizations should inform individuals of how and why data would be collected and used in a way that is proactive, clear, and easy to understand.

Data minimization, security, and de-identification by default.
Organizations should collect the minimum amount of data needed to achieve the beneficial purpose and use the least invasive technology available to achieve the beneficial purpose.

Publicly accessible by default.
Organizations should make properly de-identified or non-personal data that they have collected publicly accessible to third parties by default, formatted according to open standards.

No selling or advertising without explicit consent.
Such precautions are necessary because individuals often do not know when their personal information is being sold or used for such purposes.

Responsible AI principles required.
Organizations should be required to show how they have incorporated Responsible AI principles to reduce the likelihood of biased and unethical outcomes.

Sidewalk Labs has already committed publicly that it would not sell personal information to third parties or use it for advertising purposes. It also commits to not share personal information with third parties, including other Alphabet companies, without explicit consent.

A clear process for approval

Sidewalk Labs proposes that once the Urban Data Trust and RDU Guidelines have been established, a transparent process should be created for any proposals seeking to collect or use urban data.

Step 1:
Classify the data.
If urban data is involved, then the proposal would fall under the jurisdiction of the Urban Data Trust and the data collector should move on to Step 2 of the process.

Step 2:
Submit an RDU Assessment.
Entities seeking to collect or use urban data complete an RDU Assessment: an in-depth review outlining the purpose of the digital proposal, the type of urban data it aims to collect, its potential impact on the community, and its risks and benefits.

Step 3:
Receive a decision.
Sidewalk Labs proposes that the Urban Data Trust determine whether the data activity should proceed based on the organization's attestation to applicable laws, as well as a subjective and objective evaluation of the RDU Assessment.

Step 4:
Meet post-approval conditions.
A set of post-approval conditions include transparency (making RDU Assessment summaries available), device registration (including a real-time public map of digital devices), data access, data sharing and licencing agreements, and auditing.

Catalyzing innovation by launching core digital services that others can build on

Sidewalk Labs proposes to launch a limited set of digital services in Quayside designed to tackle tough urban challenges and inspire countless subsequent innovations by third parties.

A true ecosystem of urban innovation requires a catalyst that makes it possible for third parties to build new digital applications, services, products, or tools that improve people's lives. To serve as that catalyst, Sidewalk Labs proposes to launch a limited set of core digital services that are essential to achieving quality-of-life objectives from Day One in Quayside.

These core services would not only deliver improvements in affordability, mobility, sustainability, and economic opportunity, but also would make the urban data they generate publicly accessible to others (with proper protections), enabling countless subsequent innovations to emerge from local companies, entrepreneurs, startups, researchers, agencies, civic groups, and others.

Many of these proposed innovations have been described throughout this "Quayside Plan" chapter. A full list of proposed digital innovations can be found in Volume 2. All proposals to collect or use urban data in Quayside — whether by Sidewalk Labs or any other entity — would be subject to approval by the independent Urban Data Trust.

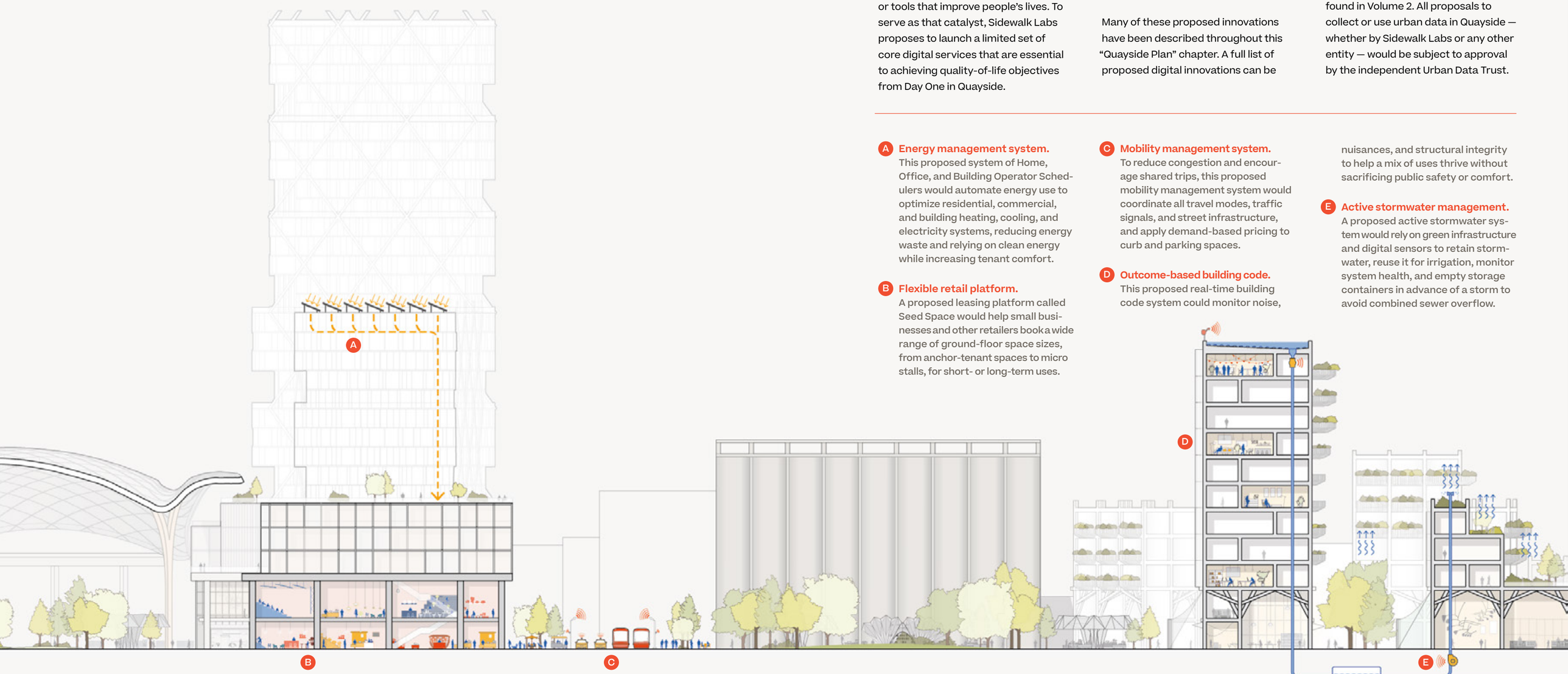
A Energy management system.
This proposed system of Home, Office, and Building Operator Schedulers would automate energy use to optimize residential, commercial, and building heating, cooling, and electricity systems, reducing energy waste and relying on clean energy while increasing tenant comfort.

B Flexible retail platform.
A proposed leasing platform called Seed Space would help small businesses and other retailers book a wide range of ground-floor space sizes, from anchor-tenant spaces to micro stalls, for short- or long-term uses.

C Mobility management system.
To reduce congestion and encourage shared trips, this proposed mobility management system would coordinate all travel modes, traffic signals, and street infrastructure, and apply demand-based pricing to curb and parking spaces.

D Outcome-based building code.
This proposed real-time building code system could monitor noise, nuisances, and structural integrity to help a mix of uses thrive without sacrificing public safety or comfort.

E Active stormwater management.
A proposed active stormwater system would rely on green infrastructure and digital sensors to retain stormwater, reuse it for irrigation, monitor system health, and empty storage containers in advance of a storm to avoid combined sewer overflow.



Parliament Plaza | Site 4 | Queens Quay | Silo Park | Site 5

A Robust Public Engagement Process, Reaching Thousands of People

The Sidewalk Toronto project teams solicited a wide range of feedback and inputs from thousands of people across the city, including residents, researchers, community leaders, and government agencies. This unprecedented level of preliminary public input helped shape the Quayside development plan.

Consultation by the numbers

- **~21,000 people engaged in person during Sidewalk Toronto and 307 events**
- **~280,000 online views of live-streamed events or videos**
- **More than 11,000 visitors to 307 since June 16, 2018**

After Sidewalk Labs was selected by Waterfront Toronto as Innovation and Funding Partner, the Sidewalk Toronto project launched in October 2017. Public engagement began shortly after the project launch and occurred alongside this period of intensive planning work. This type of extensive engagement from the outset is critical to designing a plan that truly reflects the aspirations and ideas of Torontonians.

In November 2017, some 530 Torontonians showed up on a chilly evening, packing the St. Lawrence Centre for the Arts to hear about the Sidewalk Toronto project. The live-streamed discussion from this initial Town Hall has since been viewed by over 5,000 people online. It was the start of a sprawling conversation that, over the course of the next 18 months, would become one of the city's largest-ever public discussions on an urban development — and is still ongoing.

To date, the Sidewalk Toronto public engagement program has reached more than 21,000 Torontonians of all ages. Credit: Jenna Wakani

At that first Town Hall, Torontonians said they wanted a community engagement process that would be inclusive, transparent, frequent, wide-reaching, and meaningful. Soon after, Sidewalk Labs released its participation plan:

13 different programs that would ultimately connect the project with tens of thousands of Torontonians.

Sidewalk Labs' subsequent outreach has included dozens of community meetings and programs. A series of large-scale roundtable meetings helped to keep people informed of the latest project updates and asked them to weigh in on key topics, from the principles guiding the planning process to the initial drafts of the plan for Quayside. A series of public talks brought local and global experts to broaden the conversation on safe street design, housing affordability, accessibility, and sustainable buildings.

The engagement plan included two intensive programs for representative groups of Torontonians. One was the Sidewalk Toronto Residents Reference Panel: a group of 36 residents from every corner of the city and diverse backgrounds. Across six Saturday sessions, spread over nine months and dozens of hours, the panelists received an in-depth look at many aspects of the Sidewalk Toronto project and provided a detailed set of recommendations, helping to shape the plan in the best interests of all Torontonians.

The other intensive program was the Sidewalk Toronto Fellows program, designed as an opportunity for 12 early-career Torontonians aged 19-24 to travel to cities across North America and Europe and learn about waterfront revitalization and the use of technology. The fellows represented a range of perspectives, skills, and educational backgrounds from all over Toronto. They synthesized their learnings and published a report of recommendations that has directly influenced Sidewalk Labs' planning teams.

The outreach effort stretched across all ages, including a partnership with the YMCA that led to a kids camp.

Bringing informed scrutiny into the heart of the project was essential. Sidewalk Labs convened six topic-specific advisory boards filled with local experts to challenge and improve the project's assumptions. Project members also held hundreds of one-on-one or small group meetings — including concerted outreach to the business, academic, non-profit, and institutional sectors — and engaged extensively with Waterfront Toronto and public officials at all three levels of government.

This programming was complemented by consultations held by Waterfront Toronto, including Civic Labs focused on digital elements of the project and "design jams" that provided stakeholders and residents with an opportunity to engage deeply with aspects of the project focused on vertical living, cycling, and the water.

Consultation by the numbers

- **100+ hours spent co-designing with communities**
- **~1,700 total hours volunteered by Resident Reference Panel members**
- **~2,300 total hours committed by Sidewalk Toronto fellows**
- **Worked with 75 experts, across six expert advisory groups**

Sidewalk Labs' Amina Mohamed discusses a student-created model imagining the future of Quayside with visitors to 307. More than 11,000 Torontonians have visited 307 since it opened in June 2018. Credit: Jenna Wakani

Learning from many voices

In June 2018, Sidewalk Labs opened a Toronto office and innovation workspace in Quayside called 307, housed in a former fish-processing plant in Quayside. All summer long, 307 hosted special events that attracted residents, artists, and innovators to learn more about the Sidewalk Toronto project, engage with early explorations into a variety of urban innovations, and provide valuable feedback.

Since its opening, 307 has welcomed more than 11,000 people, creating a dynamic and original venue for consultation and exploration.

In the latter half of 2018, Sidewalk Labs reached out to groups whose voices had been missing and brought them to the design and planning table, and also strived to meet people in their own communities.

Teams worked with members of the Indigenous community for a design workshop; engaged seniors in a charrette around housing; travelled to middle schools to ask children and youth for their ideas; and held a series of co-design sessions with members of the accessibility community and with people with lived experience of addiction and mental health challenges, in collaboration with the Inclusive Design Research Centre at the Ontario College of Art and Design University.

Consultations were also held with residents and students from the inner suburbs of Rexdale and Scarborough, with the Lived Experience Advisory Group to the City of Toronto's Poverty Reduction Strategy, and with the Toronto Community Benefits Network to explore ways in which the project could drive equity, opportunity, and social inclusion.

Planning teams also commissioned ethnographic research that emphasized the inclusion of diverse voices or voices often missed in the traditional public engagement process for reasons such as geography, awareness, or access.

These studies focused on public space, family housing, and community care.

"North of the Water": Generating open space principles

Sidewalk Labs collaborated with Doblin, Deloitte's consulting practice on human-centred design, and Park People, Canada's leading charity devoted to improving public space, to understand which factors contribute to a sense of belonging in public space. The "North of the Water" research involved 40 Torontonians who had previously not participated in a formal public engagement process, representing 23 different neighbourhoods and a mix of ages and backgrounds. The work drew from in-depth interviews, "research walks" through public space, and daily diaries. A final report — available on the Sidewalk Toronto website — resulted in six design principles for great, inclusive public space.

"Living Well on the Waterfront": Understanding health needs

Sidewalk Labs commissioned the design firm Idea Couture to provide an understanding of the health needs of Torontonians. Twenty residents and service providers — from a mix of age groups and cultural, professional, and political backgrounds — were interviewed in their homes and communities. Idea Couture and Sidewalk Labs then hosted a co-design charrette at the Centre for Social Innovation in Toronto, with participants from both the public and private sectors, to co-create more than 90 ideas on the future of community care. The resulting report sketched out a concept for a new type of community-based care hub in Quayside.

Accessibility has been a core focus of the Sidewalk Toronto public engagement program, with Sidewalk Labs' planning teams holding more than 14 co-design events and 70 hours of workshops with the accessibility community. Credit: Jenna Wakani

"Family Lifestyles": Informing a new housing toolkit

With SHS Consulting, a Toronto-based housing research firm, Sidewalk Labs conducted research with 25 low- or middle-income couples and families to uncover the housing needs of Torontonians — beyond the typical downtown resident. This work interviewed couples and families from the Toronto core, Etobicoke, and Scarborough in their homes and conducted a three-hour co-design workshop at 307, where families responded to a unit mock-up, tried out digital prototypes, and filled out workbooks. This direct feedback helped the Sidewalk Labs planning teams develop and validate certain concepts in a new housing toolkit.

To date, Sidewalk Labs has heard first hand from more than 21,000 Torontonians.

But the listening does not stop here. Sidewalk Labs will continue learning from Torontonians and incorporating their feedback as the plans for Quayside and the eastern waterfront come to life.

See the "Public Realm" chapter of Volume 2 for more details on this research.

Spotlight

Consultation milestones

November 2017

First Town Hall

More than 530 people attended the Sidewalk Toronto project's first town hall meeting, at the St. Lawrence Centre for the Arts, with another 5,700 more participating via livestream.

February 2018

Public engagement plan release

The Sidewalk Toronto team released its full public engagement plan, outlining dozens of ways to get involved across a variety of programs.

March 2018

First public roundtable

Waterfront Toronto and Sidewalk Labs host the first public roundtable. Roughly 800 people attend in person, with another 1,700 joining via livestream.

May 2018

Initial data framework and second public roundtable

Sidewalk Labs presents its initial Responsible Data Use Policy Framework for feedback at the second public roundtable, which is attended by roughly 400 people, with another 1,300 joining via livestream.

June 2018

Opening of 307

Sidewalk Labs opens a Toronto office and experimental workspace at 307 Lake Shore Boulevard East, welcoming the public to learn about the Sidewalk Toronto project and participate in regular programs held in partnership with local vendors. About 2,000 Torontonians attend.

August 2018

Third public roundtable

Waterfront Toronto and Sidewalk Labs host the third public roundtable, focused on initial thinking for public realm, streets, and buildings. Roughly 460 people attend in person, with another 8,700 joining via livestream.

September 2018

Design jams

Waterfront Toronto hosts three "design jams": full-day sessions for local residents to help shape the project. Themes include vertical living, water connections, and cycling.

November 2018

First look at the plan

Sidewalk Labs releases its Draft Site Plan for Quayside, laying out specific goals for the neighbourhood: 40 percent below-market housing, mass timber construction up to around 30 storeys, a 75 percent reduction in greenhouse gas emissions, and more.

December 2018

Fourth public roundtable

Waterfront Toronto and Sidewalk Labs host the fourth public roundtable. Roughly 400 people attend in person, with another 3,400 joining via livestream.

January 2019

Advisory Working Groups' final meetings

After six months to a year of meetings, the Advisory Working Groups — which include 75 experts from across six critical areas: community services, sustainability, mobility, digital governance, housing, and public realm — meet for the final time.

February 2019

Draft accessibility principles

After participating in 70 hours of co-design sessions with the accessibility community and hosting 14 accessibility-related events, Sidewalk Labs releases a set of draft accessibility principles to guide the planning process for the Sidewalk Toronto project.

March 2019

Fourth Open Sidewalk

At the fourth Open Sidewalk at 307, Sidewalk Labs unveils two new prototypes: the modular pavement and building Raincoat systems. About 785 people attend.

May 2019

Reference panel recommendations

The 36-member Residents Reference Panel releases its 60-page final report. Across six sessions spread over nine months, and a collective 1,728 hours, the residents received an in-depth look at the Sidewalk Toronto project, provided feedback, and helped to shape the plan in the best interests of Torontonians.

June 2019

Draft MIDP release

Sidewalk Labs submits its Master Innovation and Development Plan to Waterfront Toronto and the City of Toronto for consideration.

Endnotes

General note: Unless otherwise noted, all currency figures are in Canadian dollars.

Charts note: Sources for the charts and figures in this chapter can be found in the accompanying copy for a given section; otherwise, the numbers reflect a Sidewalk Labs internal analysis. Additional information can be found in the MIDP Technical Appendix documents, available at www.sidewalktoronto.ca/midp-appendix.

1. The technical figures, projections, and other calculations that inform this site plan are supported by a number of accompanying documents, all of which are included in the MIDP Technical Appendix, available at the Sidewalk Toronto website. For Volume 1, the key supporting documents in the Technical Appendix are the "Quayside Planning Supplement," the "Planning Policy Justification Report," and the "MIDP Engineering Basis of Design" reports. In addition, many aspects of this site plan are explored in greater detail in other sections of the MIDP Technical Appendix, as referenced in these endnotes.

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Quayside can emerge as a starting point to address the broader challenges of city life and become a model for how urban communities can meet the needs of new generations.