Restorative Infrastructure

by

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for the degree of Master of Architecture

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DALHOUSIE UNIVERSITY

SCHOOL OF ARCHITECTURE

The undersigned hereby certify that they have read and recommend to the Faculty of Graduate Studies for acceptance a thesis entitled “Restorative Infrastructure” by Ian Higenell in partial fulfilment of the requirements for the degree of Master of Architecture.

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ABSTRACT

The ferry terminal in Halifax, Nova Scotia, Canada is located in an important public place for the city of Halifax. This area has been subject to planning decisions that have led to its current state of reduced functionality. This project is intended to activate and restore this central, damaged urban public site through integration with the existing buildings, reconnection of the city to the waterfront, and increased amenity offered by new design and architecture. Rethinking the design of the ferry terminal and its adjacent public spaces aims to create a model for future development along the currently undeveloped Halifax waterfront.

ACKNOWLEDGEMENTS

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CHAPTER 1: INTRODUCTION

This thesis explores the potential of public infrastructure to improve a non-functioning public space and re-engage public activity. The project aims to produce a better functioning, and more integrated ferry terminal, acting as a catalyst to provide new program and new facility for public life in the urban core of Halifax. A complete redesign of the current ferry terminal is proposed, which is currently not functioning to desired performance requirements. The proposal at the ferry terminal site will create a focal point on the Halifax waterfront which will support and encourage activity in this public space. This project will be an example of publicly funded infrastructure providing a model for future development at the waterfront, a model which restores this problematic urban area.

In order to properly investigate problems the ferry terminal site is facing, it is important to consider what influences initially created this situation. Urban renewal, public space design and urban morphology will be addressed as key areas which are important in understanding the historical implications of the current situation, and how delicate, incremental progress can be made. By researching the potential of Restorative Infrastructure, the project intends to: restore urban landscapes damaged by aggressive urban renewal, integrate with existing urban fabric to encourage reconnection of the city to the waterfront, and increase amenity offered by new design and architecture.

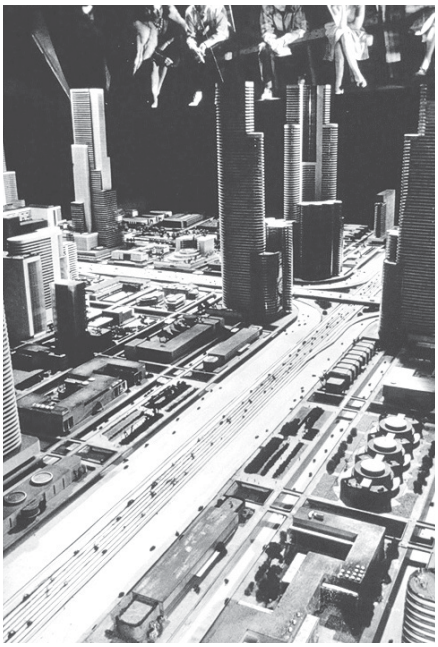
The ferry terminal currently occupies an important site in the structure of the Halifax Regional Municipality. Sitting at the crossroads of two main axes of the city, it provides a strategic opportunity to improve public space. Currently the site is dominated by vehicles and is used mainly as a turnaround. Pedestrian access is poor, allowing no sidewalk access to main city streets.

Because of the complexity and chaotic nature of the overlapping layers of the city, not all results can be anticipated. Aligned with this reasoning is the careful consideration of urban form. The proposed ferry terminal would act as a small step in the regeneration of Halifax's waterfront, setting the precedent for appropriate development to follow. By utilizing incremental development over time, urban fabric can evolve into a setting diverse in program and architecture, allowing a wide range of activities and uses.

Thesis Question

How can architecture restore a non-functioning urban public place?

Current Halifax Ferry Terminal



“Futurama” model at the 1939 world fair in New York. Photograph by Margaret Bourke-White. Source: Klemek 2011

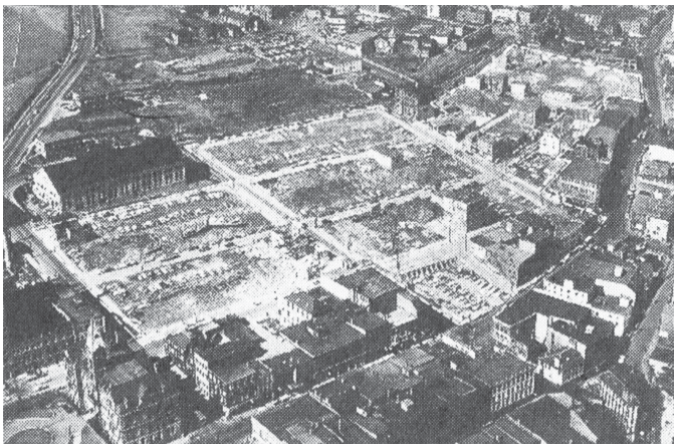
Urban Renewal

In an attempt to adopt a new desired aesthetic of modern architecture, European and North American political federal policy and academia rallied behind a new progressive concept called urban renewal (Klemek 2011, 48). Starting in the 1930s with a massive effort to popularize modern architecture and bring the International Style into mainstream acceptance, the North American public was enticed to believe cities needed to be modernized and reworked to allow for the convenience of a car-ready system. This concept was strengthened by the increase in wealth and nation-wide adoption and availability of the automobile. A stream of academia developed in North America loosely defined as “urbanism” began to define the city as a broken system that required grooming, redevelopment, streamlining, and organization (Klemek 2011, 52). This new stream of academics, backed by government policy and federal funding, began massive redevelopment in many North American and European cities, including Halifax, Nova Scotia, Canada. The newly christened “urban renewal” took on three main areas of development: “housing provision, slum clearance, and road building often in the form of massive multi-lane highways” (Klemek 2011, 60).

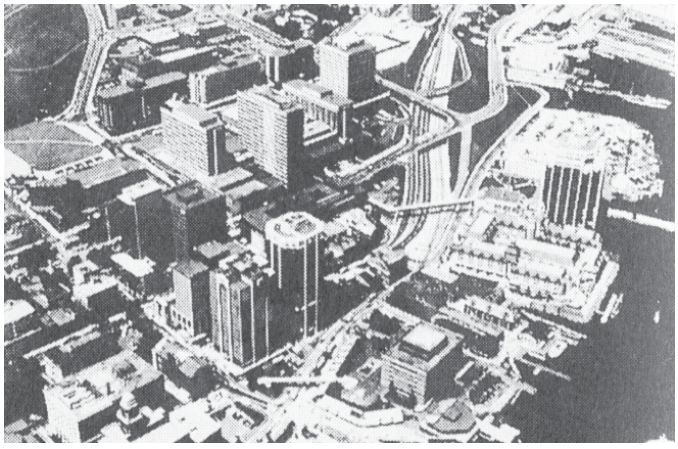
The Cogswell interchange built in 1971 was part of a larger scheme for a four lane freeway running parallel to the harbour.

Expansion in Halifax during and following World War Two lead to an investigation of transportation improvements and slum clearance to allow for continued economic prosperity and connection to newly formed suburban communities beyond the penin-

sula (Sandalak 1998, 19). In 1957 the city consulted University of Toronto professor Gordon Stephenson who produced *The Stephenson Report*: *A Redevelopment Study of Halifax*. Using Gordon Stephenson's recommendations, the Halifax officials began planning a city wide urban renewal development. With the goals of slum clearance and road construction, sixteen acres of downtown Halifax was cleared, an area where over 1600 inhabitants lived (Sandalack and Nicolai 1998, 19). The most devastating of these projects was the complete destruction



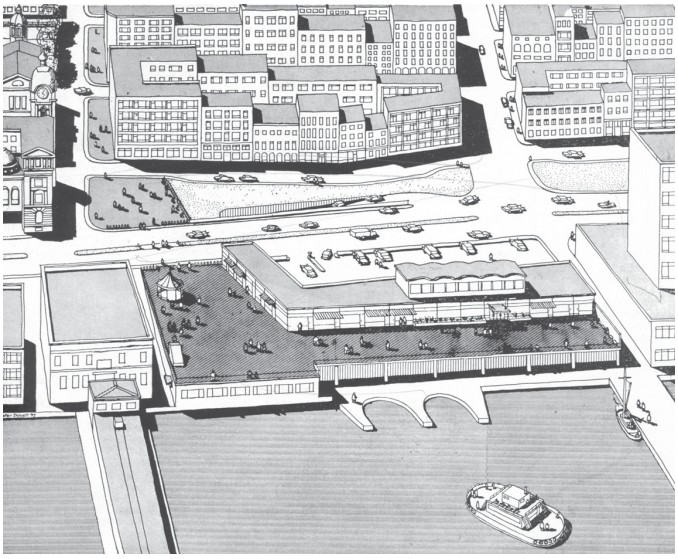
Downtown Halifax cleared for development according to urban renewal guidelines outlined in the Stevenson Report. Source: Sandalack and Nicolai 1998



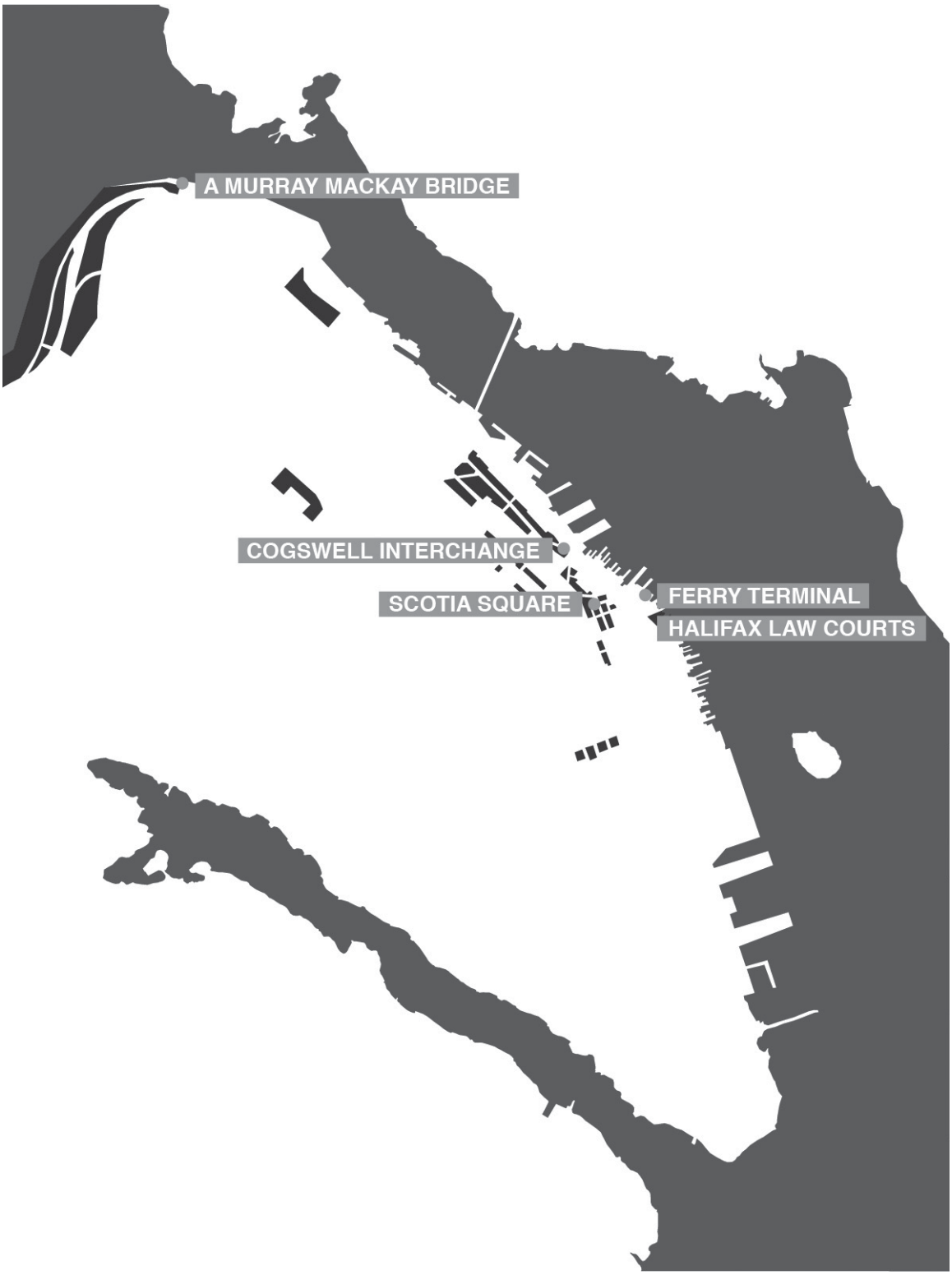
Downtown Halifax post urban renewal. Source: Sandalack and Nicolai 1998

and forced relocation of Africville. This largely black community, located at the northern tip of the peninsula, was destroyed in the mid 60s to make way for the A. Murray MacKay bridge (Boileau 2007, 34). Today, Seaview Memorial Park occupies the land on which Africville once stood, named after a church that once served this community (Nova Scotia Archives, 2012).

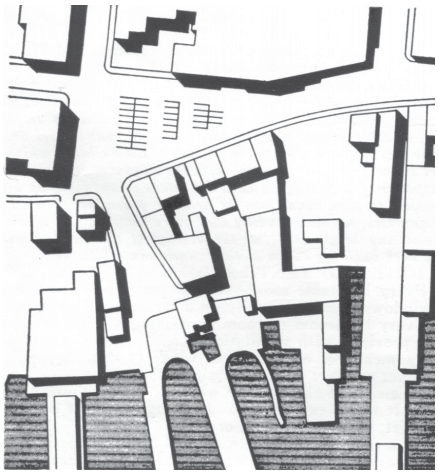
Large, multi-block buildings and vast parking lots at the waterfront replaced the intricate urban fabric that had developed in Halifax since its founding. The urban fabric had developed according to historical programs such as: fish companies, ship chandlers, coal companies, a cable company and West Indies merchants (Boileau 2007, 33). Some of the new urban renewal projects created during this period of development included Scotia Square, the Halifax Law Courts, the Cogswell interchange and a new ferry terminal. In an effort to modernize downtown



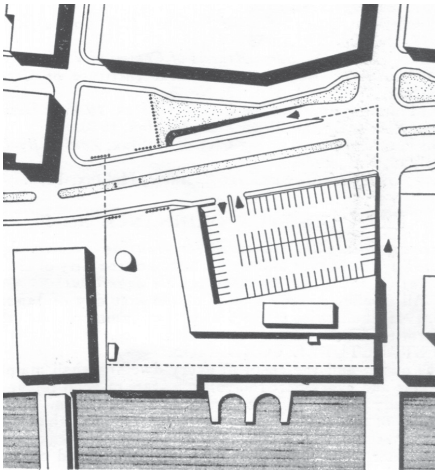
Rendering of proposed ferry terminal development. Extremely similar to the current Halifax Law Courts existing at this site. Source: Stephenson 1957



In 1957 University of Toronto professor Gordon Stephenson and the city of Halifax released a document titled: *A Redevelopment Study of Halifax Nova Scotia*. These urban renewal developments are results following its recommendations. Source: Stephenson 1957



Original Condition of the ferry terminal site at Lower George Street. Source: Stephenson 1957



Proposed development including parking for 300 cars on two levels. A single building is proposed providing very little integration with the surrounding streets, lack of mixed uses and no possible pedestrian access routes. Source: Stephenson 1957

Halifax, large buildings were created that spanned several city blocks, eliminating cross streets and reducing the diversity and mixed use environment of the urban environment they were replacing.

Urban Morphology

The urban organization that traditionally developed along Halifax's waterfront was a response to a variety of commercial and light industrial programs that populated the city's most important resource, the harbour. Valued for its sheltered, deep clearance and natural defence points, the harbour provided a method of transportation and a close tie to England within Canada. As with many industrial and commercial centres in international networks, the sheds, shops and finger piers of Halifax eventually became obsolete with the development of larger scale port operations and technological improvements in transportation methods (Meyer 1999, 13). Large parts of the Halifax waterfront were abandoned and became dormant for a thirty year period following World War Two (Boileau 2007, 35). Common to many port cities of this time, Halifax decided to redevelop its industrial waterfront into a recreational area, and In 1976 Halifax created the waterfront Development Corporation. By this time, the waterfront had fallen victim to urban renewal developments that had been taking place throughout the Halifax peninsula, with almost all the historical urban fabric converted into vacant parking lots or large scale urban renewal projects.

Halifax Waterfront - Parking lots are shown in green. Source: Google Earth

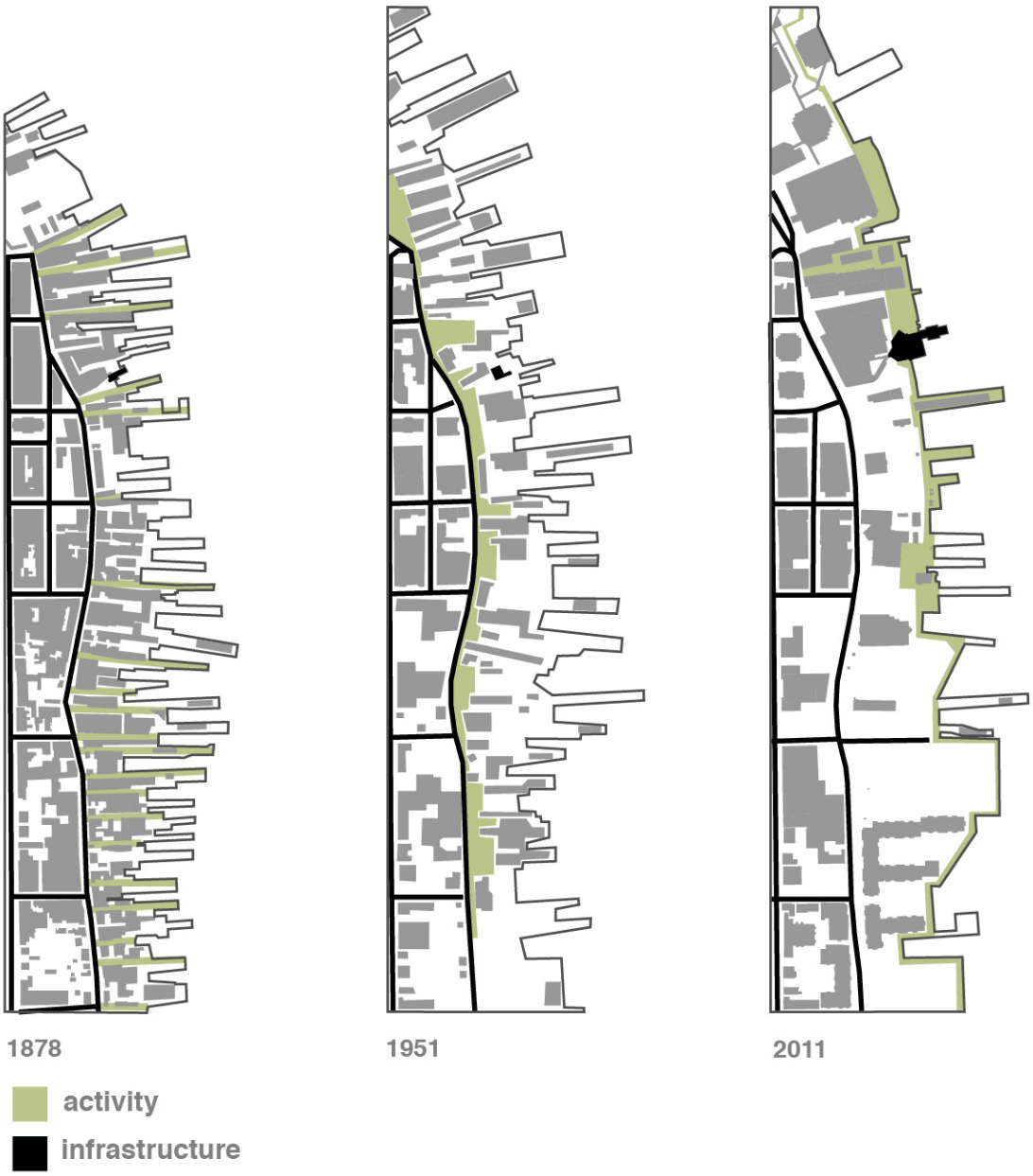
The Halifax Waterfront

As stated previously, the transformation from a tightly woven fabric of linear fishing sheds, light industrial and small warehouse buildings to was quickly transformed to large scale buildings and parking developments at the Halifax waterfront. The implication of this transformation was the interruption of a trial and error process of city block evolution that had been taking place at the Halifax waterfront for almost one hundred years. The small plots of land initially established at the waterfront allowed for one building to change at a time, encouraging a slow overall evolution of this city zone. Phillippe Panerai calls urban land division the “framework” of the city’s evolution (Panerai 2004, 158). The framework of the Halifax waterfront which developed over many years has been lost. The demolition of these small plots of land and redevelopment into large multi-block structures and parking lots changed the traditional and historical framework that allowed for an active and dynamic mixed-use environment. Beyond the lot sizes, lot layouts and configurations, the buildings themselves also contain embedded information upon which new projects can build from. The traditional buildings in this area evolved to respond to climate, social and economic conditions. When these buildings were destroyed and forgotten, the architectural evolution process began again.

The findings of Candilis, Josic and Woods describe the urban realm as a “structural mesh with the capacity to evolve and change” (Avermaete 2003, 263-

264). Through his studies, Chombart de Lauwe sees the urban fabric as an “organization, characterized by a strong commonality between its composing parts and by its capacity to transform, adapt and modify” (Avermaete 2003, 263-264). The city is a fluid condition constantly changing, adapting, and modifying itself to respond to social, economic or legislative conditions. This idea becomes relevant when considering the large scale urban renewal projects in Halifax of the 1960s and 1970s. Although created with good intentions, and responding to city scale conditions at a single moment in time, these projects did not respect the flexibility of the street. These projects committed whole city blocks to an inflexible, long term architecture. New frameworks created with buildings at the scale of entire city blocks are far less capable of responding to changing conditions at different scales, and are far more difficult to modify or rebuild, requiring substantially more capital investment. Due to the complexity and constantly changing nature of the city investing heavily in massive scale projects can be a risky strategy in developing a successful model for urban form.

In comparison with the slow evolution of the urban tissue of the Halifax waterfront, the quick demolition and multi- block developments of the 1960s and 70s have had a rapid and largely unsuccessful impact. The loss of an urban framework is obvious in the confusion and undeveloped nature of the waterfront. With nothing left to reference or build from and developments such as the Halifax Law Courts and current Halifax Ferry Terminal as precedents, the situa-



As the focus of urban activity shifts from the water to the street to a largely abandoned waterfront the urban form changes to accommodate. The current model of large plots of land and undeveloped parking lots only supports activity along a recreational boardwalk except at historic properties where some old buildings still remain.

tion has lead to “conflict between developers and community-interest groups over waterfront access, historic buildings, Citadel view planes, and the urban scale and environment, which has frustrated several developments and developers” (Boileau 2007, 36). Currently the Halifax waterfront is risking “no development at all or completely random development” (Boileau 2007, 36).

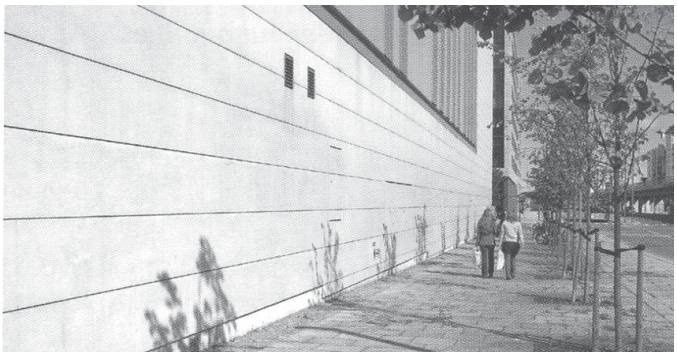
Mixed Use Environments

> Mile after mile, Tokyo’s streets are consistently more interesting than ours [in North America]. The Japanese do not use zoning to enforce a rigid separation of uses, but instead encourage different uses, side by side and upward-shops, showrooms, pachinko parlours, restaurants piled on top of restaurants, four or five stories or more. (Whyte 1988, 88)

Small city lots and small scale developments create city blocks which are broken into multiple buildings, each with separate programs and uses. Because there are more buildings per block, there are more uses, more entrances and hypothetically more people. Jan Gehl thinks of entrances and doors on ground level as “exchange points between inside and outside”, and that many of these exchange points create opportunities for the program within the buildings to spill out into the city and vice-versa (Gehl 2010, 75).

The mixture of small scale programming creates diversity in the life of a city and is resilient to redevelopment and programmatic change. Each city block developed in this way is governed by its relationship to the street, and local economies. Over a long per-

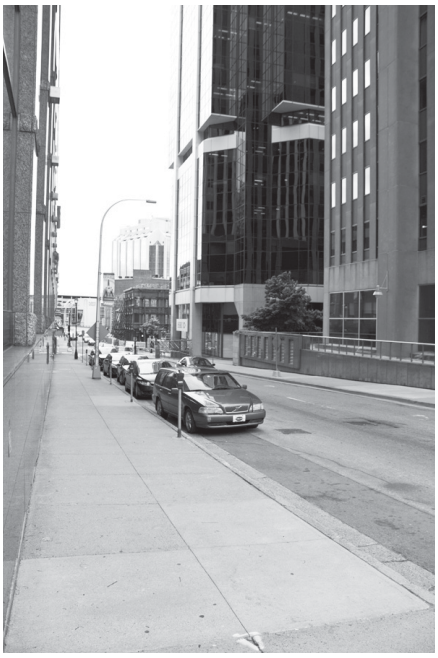
Small units with many entrances provide opportunities for program to spill out into the street. This type of mixed-use environment is also much more capable of accepting change Source: Gehl 2010



Single use buildings with few entrances create boring, inactive streets. Source: Gehl 2010

iod of time, this type of urban morphology can lead to an urban fabric that finds balance within itself in relation to the neighbourhood in which it is located. Contrasting with this is large scale buildings containing only one program.

A variety of programs in one district also gives reason for many people to go there, at different times of the day, helping to populate a public place. Jane Jacobs suggests that a district needs as many different “internal parts” as possible, creating reason for different people on different schedules to visit at different and overlapping points in the day (Jacobs 1961, 152).



Halifax's central business district 6:00pm, Thursday, June 14, 2012.

The absence of mixed use programming, mono programming, is common among large, city block sized buildings commonly seen in financial districts of cities. These districts consist of office towers, banks and the occasional lunch shop and offer very little reason for anyone to visit outside of work. These districts are void of human life after five thirty on weekdays and all day Saturday and Sunday. A visit to Halifax's financial district at night will confirm what Jane Jacobs calls a "deathlike stillness" (Jacobs 1961, 155).

Once these mono programmed areas are established it becomes very difficult to revert back to a mixed use environment. Huge amounts of capital and infrastructure are invested in these block-sized buildings which are controlled by a single owner, creating a place that is difficult to improve.

Restorative Infrastructure

Norman Foster's Bilbao metro. The curved metro entrances provide a sculptural feature in Bilbao's streets. Source: fosterandpartners

Offering a possible solution to mono programmed, or poorly programmed public spaces is the idea of

restorative infrastructure. Restorative infrastructure is a new term developed to describe the utilization of urban infrastructure upgrades to fix problems caused by urban renewal, correct poor development, and to upgrade and revitalize non-functioning areas of the city. Non-functioning, damaged and unpopular areas of the city provide unattractive opportunities for redevelopment. These damaged areas often have low pedestrian flows because of inappropriate road planning and large multi-block projects which create a hostile pedestrian environment. These districts need drastic change to aid in rejuvenation. This can be difficult for these areas to improve conditions from within due to unattractive conditions for developers and investors.

Public infrastructure has the potential to restore and revitalize the unattractive and hostile pedestrian environments. Michael Singer describes public infrastructure as a potential “catalyst for interactive systems that help build and revitalize communities. By [broadening the scope of city] infrastructure, public facilities can develop beneficial ... relationships with their surrounding economic, social and environmental networks and neighbourhoods” (Singer 2007, 12). Using this logic, infrastructure, which requires periodic government upgrades, can create an ideal scenario for new thought that is sensitive to the surrounding urban fabric and programmatic uses.

The Halifax Ferry Terminal project attempts to accomplish this by using appropriate urban morphology, reintegration with existing fabric, and utilization

of the public space guidelines developed by relevant public space design researchers. The construction of public infrastructure should be accomplished with an awareness of the importance of restoring and renewing the urban fabric. Public projects funded by public money represent a chance to improve and clarify the experience of a city, improving infrastructure and allowing for a re-connection to surrounding facilities and the rethinking of strategic urban areas. The development of the city fabric is a long and error-prone process. Infrastructure upgrades provide a chance to consider the current and future states of this process, allowing an opportunity to upgrade the greater context of the city along with the buildings involved.

Case Studies

New York City - East River

New York City - East River. Source: Google Earth

New York City's East River suffers from many of the

same problems occurring at the Halifax waterfront, and the city has been ambitiously investigating the river's redevelopment. The East River is dominated by the FDR, a six lane highway built in 1955 that severs the harbour from downtown Manhattan. The city aims to restore public access and provide improvements to public space along the water, to revive an obvious natural and recreational resource. Since it has fallen into disrepair, New York City has held multiple design competitions to create ideas to reconsider this damaged landscape (Gastil 2002, 139). The Economic Development Corporation (EDC) of New York has been actively pursuing different methods to redevelop the East River's waterfront. In the early 90's the EDC used federal money allocated for the transportation enhancement program to complete the Wall Street Pier Ferry Terminal and make improvements to the East River walkway (Gastil 2002, 143). The terminal designed by SMH architects is conceived "as part of a long term plan to improve the City's alternative transportation infra-

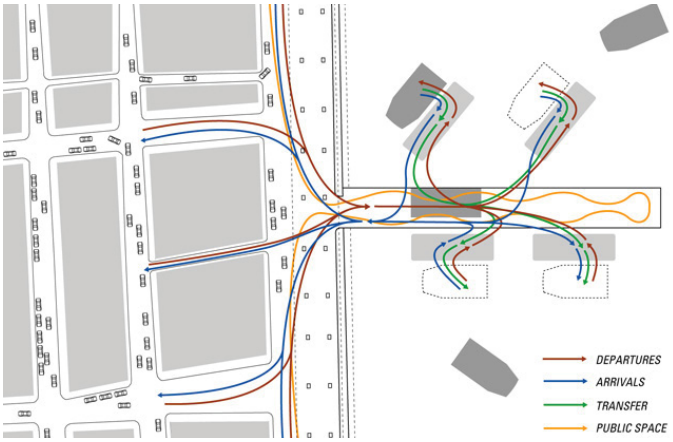


Diagram showing pedestrian traffic at the Wall Street Ferry Terminal, East River, New York City. Source: SMH Architecture

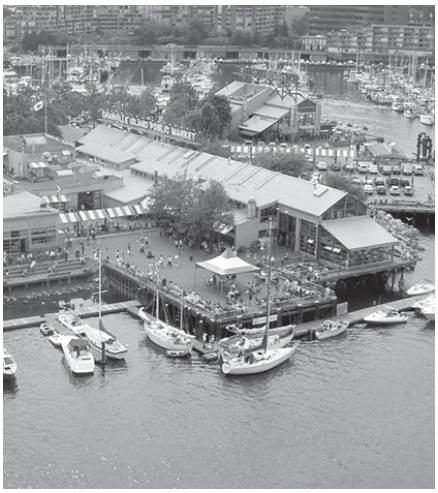
structure, together with improving waterfront public access and open space in Lower Manhattan" (SMH Architecture, 2012). The master planning by Kennedy & Violich architects for the East River Ferry network includes multiple terminals along the East River, acting as an element of public infrastructure used to restore the waterfront area of the East River.

> The Ferry Landings expand a regional waterway commuter network by accommodating high speed ferry service to La Guardia Airport, Staten Island, Brooklyn, Queens and New Jersey. The project strengthens pedestrian, train and vehicular connections from the City to the riverfront and encourages public use of the waterfront. (Kennedy and Violich, 2012)

These projects and the development of the New York East River Ferry network illustrate the power of public infrastructure. The projects are changing the way the public interacts with the waterfront and are allowing the rejuvenation of the old industrial and currently severed East River lands.

Vancouver, BC - Granville Island

Vancouver - Granville Island. Source: Google Earth



Vancouver - Granville Island. Source: Wikipedia

Sensitivity to urban form can be seen in the case of Granville Island, in Vancouver B.C. Granville Island was an early 20th century industrial centre for the city of Vancouver, whose prosperity ended in the Great Depression. The city of Vancouver eventually decided to redevelop the dormant industrial park into a public amenity for the city and engaged Hotson Bakker Boniface Haden in 1977. The firm took a sensitive approach to redeveloping the island, focusing on working with existing footprints, maintaining the industrial character of the place and incrementally developing the island over time (City of Vancouver 1978, 1). The following were Hotson Bakker Boniface Haden's design principles:

> •Maintain a variety of land uses and activities
> •Attract people of all ages and incomes
> •Emphasize the maritime experience
> •Retain the industrial character of the place
> •Re-define public space to acknowledge the "urban park" character, with street-related uses and activities
> •Reinforce a rich diversity in the pedestrian environment
> •Provide public access to the water's edge
> •Integrate the car as part of the ambience
> •Explore alternative means of access to the island
> •Limit the extent of retail to markets, arts and crafts and cottage industries, with goods produced on premise
> (Hotson 2008, 13)

Granville Island has been an overwhelming suc-

cess. Project for Public Spaces called it “one of the world’s great places” (Project For Public Spaces, 2009). The success of Granville Island lies in recognizing the value of the urban condition that had been developing for nearly one hundred years. The trial and error process and slow development that had been taking place in this location eventually created a wonderful place for people to enjoy. Slowly building from history and using old urban frameworks is key in the planning and execution of this study.

Oslo, Norway - Aker Brygge

Oslo, Norway - Aker Brygge. Source: Google Earth

With the addition of a water side opera house and the new mixed used development of Aker Brygge, Oslo is a city which is taking steps to actively redevelop its waterfront. Aker Brygge was historically a shipyard and industrial zone, allowing access to the city’s harbour. In 1982 the city, residents and developers began planning for a new waterfront mixed-used development including housing, retail, commercial and recreational programs (Bryggedrift

Aker Brygge - Oslo Norway. A stepped water's edge acts as integrated street furniture as well as an access point to the water. Source: visitnorway

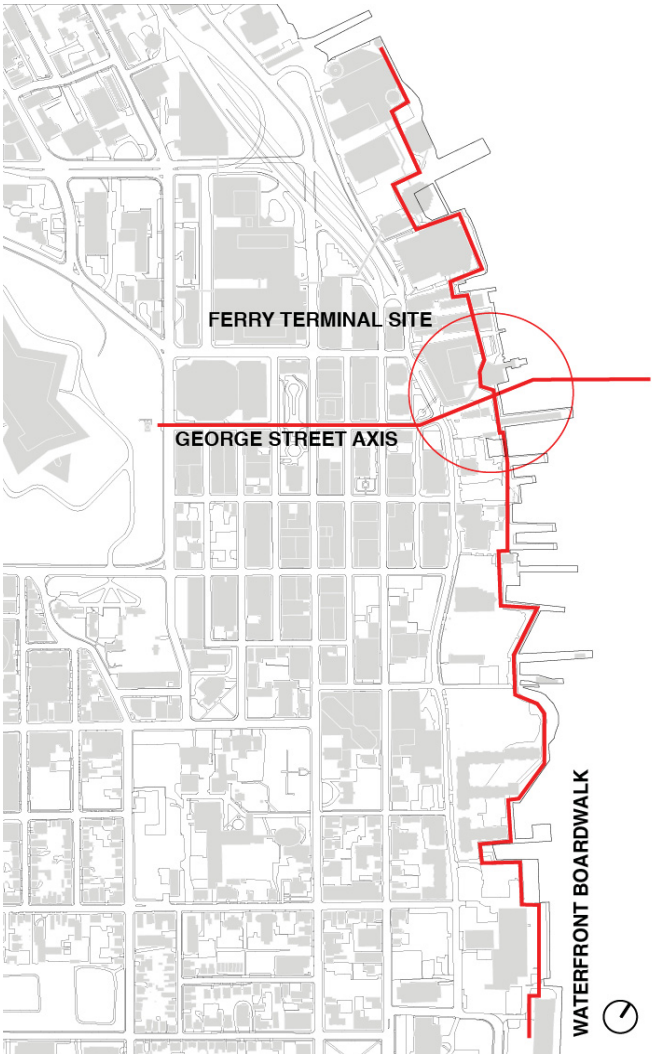
AS, 2012). Aker Brygge has been a massive success with six million visitors per year (Bryggedrift AS, 2012). Jan Gehl calls it "[An] outstanding new urban area" in which density is kept high by maintaining fewer floors along the streets with taller buildings set further back (Gehl 2010, 69). Some effort has been made to work with existing fabric as two of the central shopping buildings are renovated and restored originals (Bryggedrift AS, 2012).

Interaction with the water has been encouraged by a stepped wooden dock that follows the water's edge. These steps create places for people to socialize and an opportunity for small recreational boats to access the area through a series of small piers and docks. Having a similar climate and history to the Halifax waterfront, Aker Brygge is an important precedent in terms of its high density, mixed-use and small blocks that foster its active public nature.

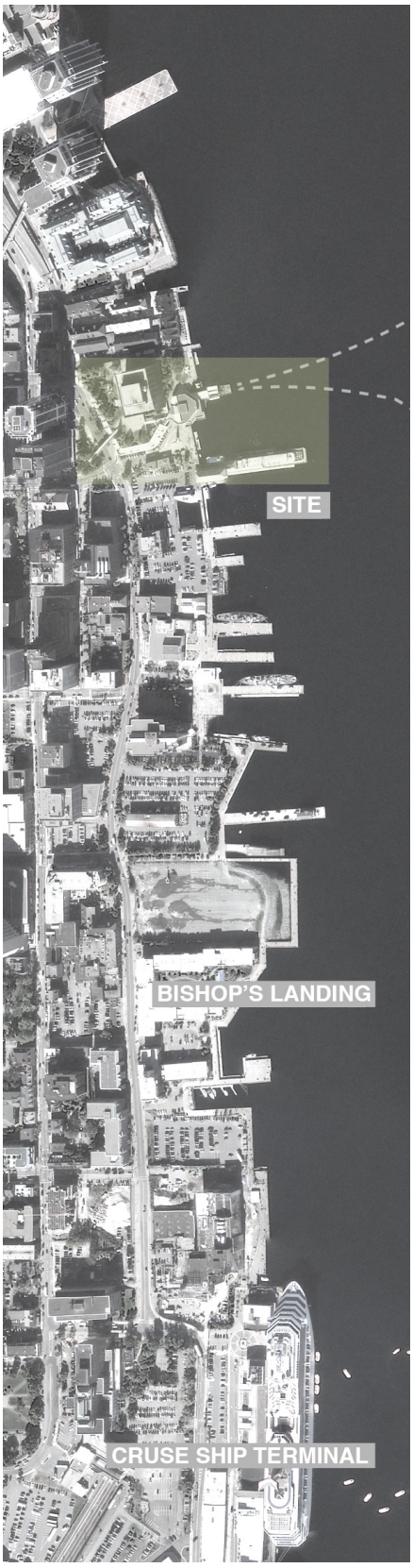
CHAPTER 2: DESIGN

Site

The existing Halifax Ferry Terminal is sited on two main axes of the city, the north/south axis of the recreational waterfront boardwalk and the east/west axis of George Street, a central and important street in Halifax. George Street begins at the ferry terminal site and changes names to Carmichael Street after



Downtown Halifax: The George Street axis and the Waterfront Recreational Boardwalk. Chebucto Landing (ferry terminal Site) sits at the crossing point of these two major axes.



The Halifax boardwalk - existing condition. source: Google Earth

it passes through the Grand Parade, an important public space. The street axis then terminates at the historic clock tower where it intersects with the Halifax Citadel, an important historic monument and soft surfaced public space. The ferry terminal is situated on the edge of a large open space called Chebucto Landing which currently functions as a cul-de-sac for vehicular traffic. There are several restaurants, the Nova Scotian Crystal Company, and the Halifax Law Courts, the most massive building on the site.

The Halifax Boardwalk

The Halifax boardwalk is a prominent feature in the organization of the city. Spanning from the cruise ship terminal in the south to the Halifax casino in the north, the boardwalk functions as a facility for pedestrian waterfront experience. Added to the city in 1977 (Boileau 2007, 39), the boardwalk was part of an initiative to regenerate Halifax's largely abandoned waterfront. As with many port cities at this time, Halifax was attempting to transform its waterfront from an outdated economic resource to a recreational destination. Currently the boardwalk is successful in providing a venue for activity, but is suffering from several problems as well. The boardwalk is extremely seasonal in nature, with most amenity geared toward tourist business. Very few of the amenities are attractive for local Haligonians causing the boardwalk to be underused for much of the year. The undeveloped nature of the waterfront is also a deterrent to the use of the boardwalk, which runs beside parking lots or unattractive land-

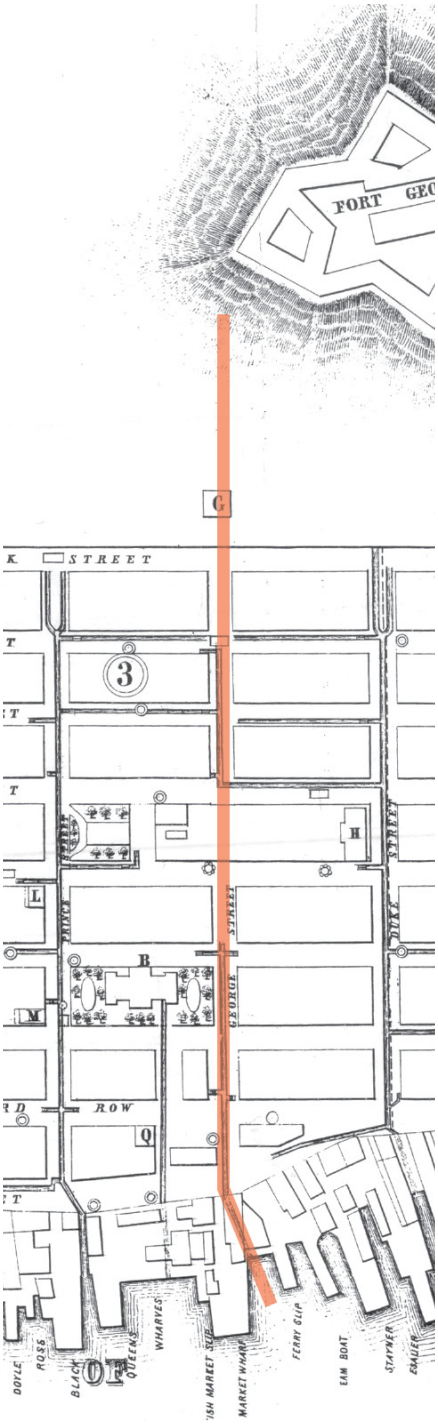
Food and souvenir sheds on the Halifax boardwalk.

scapes for much of its length. Bishop's Landing is a notable development that attempts to correct some of these problems the boardwalk is facing. Bishop's Landing, which was recently added along the Halifax boardwalk, is a mixed-use building adding valuable residential units and retail shops to the Halifax waterfront. The project nearly follows the linear configuration established on the waterfront at its founding.

The George Street Axis

The George Street axis connects three important public spaces on a spine through the centre of the city: The Citadel, The Grand Parade, and Chebucto Landing. The Citadel is known for its excellent views and have been closely monitored by the city. Be-

George Street from the Grand Parade looking down to the harbour. Murphy's on the water restaurant visible



George Street axis. Source: Fuller 1851.

cause of this the original cannon fire view planes remain undeveloped and intact. This provides a unique vantage point to experience the city and is used both by tourists and locals who enjoy the soft surface of the public space. The historic town clock overlooks the upper portion of the George Street axis and the Grand Parade, which contains Halifax city hall and a historic church. The Grand Parade houses the city's formal events including ceremonies, parades and protests. As George Street runs into the waterfront it arrives at the ferry terminal site. This site maintains an important connection with the Halifax waterfront, and at this point intersects with the pedestrian only waterfront boardwalk.

This central axis corresponds with the original city grid which terminated before reaching the waterfront. Because the grid was set back from the water, the urban fabric consisting of finger piers and narrow lanes developed more organically and did not correspond with the city's alignment. As a result, the George Street axis is not straight, but shifts north as it passes through the ferry terminal site.

Site Selection

The realignment of the George Street axis and repositioning of the Halifax Ferry Terminal was considered carefully. Throughout Halifax's recent history, urban renewal schemes have had similar aims; A reorganization of the city's fabric to streamline, simplify and bring logic to the city's form. In Halifax, this strategy has been unsuccessful in almost every case, replacing existing neighbourhoods with large

scale plans that ultimately stifle street life and create dead areas void of human activity. Instead of a massive redevelopment scheme, this project aims to redevelop the site piece by piece, replacing single poorly functioning buildings with upgraded projects which are more sensitive to the urban conditions at the site. Aside from its historical importance, the Halifax Ferry Terminal site has a consistently large pedestrian population. The pedestrian traffic created by the ferry service as well as the crossing of the two main axes of the city provide many opportunities for people to visit the site at many overlapping points in the day. There are several buildings at the site that are currently functioning well. The Nova Scotia Crystal Company actively engages the public with live crystal blowing, and the Stayner's wharf patio promotes public engagement and active street life.

Ferry at the Halifax Ferry Terminal

Program

The Halifax Ferry Service

The Halifax Ferry Service was established in 1752, making it the oldest ferry service in Canada. It now transports 1.4 million people yearly and is expected to increase to 1.75 million by 2014 (Halifax Regional Municipality 2010, 1). The Ferry Network employs three vessels connecting terminals in Halifax to Dartmouth and Halifax to Woodside. The Halifax Terminal is ideally located in the heart of the city's central business district and serves mainly commuter traffic. The terminals are interconnected by city transit allowing a large area on both sides of the

Map depicting existing ferry routes to Darmouth and Woodside from Halifax and a proposed recreational ferry route from Seaview Park to Purcells Cove.

Harbour to be reached.

The ferry service operates Monday to Saturday 7am to 12pm and Sunday 11am to 6pm with a less frequent service to Halifax - Woodside (Halifax Regional Municipality 2012).

Each of the terminals requires the following: a dock and ramp for ferry landings, a ferry terminal lobby or waiting area and a kiosk for fare payment (Halifax Regional Municipality 2010, 9).

The ferry service is an important part of the HRM (Halifax Regional Municipality) transit system and plans on increasing ridership to become an even more vital link across the harbour. As land prices and density increase on the peninsula, these links to Dartmouth and Woodside could become nodes linking urban areas to the downtown core of Halifax.

The Existing Terminal

The existing ferry terminal is suffering from several fundamental problems that cause a reduction in functionality, and make it a burden rather than an asset to Chebucto Landing, and the city's transportation network. In 2010 the Halifax Ferry Terminal became affected by the International Ships and Port Facility Security Code (Halifax Regional Municipality 2010, 7). This has lead to increased security measures in the terminal and the inappropriate adaption of the current building. Because the building was not designed to comply with these codes, the viewing platform has been shut down reducing the

View of the current Halifax Ferry Terminal, taken from the ferry departing to Dartmouth.

function of the current terminal. The food services have also been removed from the Halifax terminal, further reducing amenity. In the 2010 Metro Transit Strategic Operations Plan the Halifax Ferry Terminal was described as “dated and unappealing” (Halifax Regional Municipality 2010, 15). This aging infrastructure causes the ferry service to be thought of as a second rate method of transportation, reducing the number of users. An upgrade to the Halifax terminal would reinstate confidence in ferry users and possibly entice new users to commute using a modern, upgraded system.

Increased security measures restricted access to current ferry terminal.

A New Halifax Ferry Terminal

The new terminal aims to provide a public venue for people to congregate and socialize, as well as a

public plaza suitable for organized events. Programmatically the terminal has two foci: a ferry service functioning as an active piece of the Halifax transportation network, and a public building that blends into a public space and helps to enliven, activate and extend the use of the Halifax boardwalk and George Street axis, reconnecting the waterfront to the city. The Halifax Ferry Terminal provides an obvious service to the public in the form of urban transit. In addition, this publicly-funded building should provide free, accessible amenities to the Halifax region. These amenities will come in the form of services and infrastructure, adding more public amenity to George Street and the ferry terminal site.

George Street and the Halifax Boardwalk

The main public space immediately adjacent to the terminal is at the end of a three space chain starting at the Citadel, including the Grand Parade and terminating at the ferry terminal site (Chebucto Landing). Due to the scale of Chebucto Landing and its prominent site in the city, it is considered as important as the other two spaces on the George Street axis. Programmatically the Citadel is used for recreation and tourism, the Grand Parade for formal events, and Chebucto Landing for supporting organized recreational activities such as large concerts, festivals, winter and summer markets, and outdoor exhibitions. The scale and location of this space as well as affiliation with other prominent public spaces suggest this type of multi-purpose recreational area is missing in the urban network and provides an

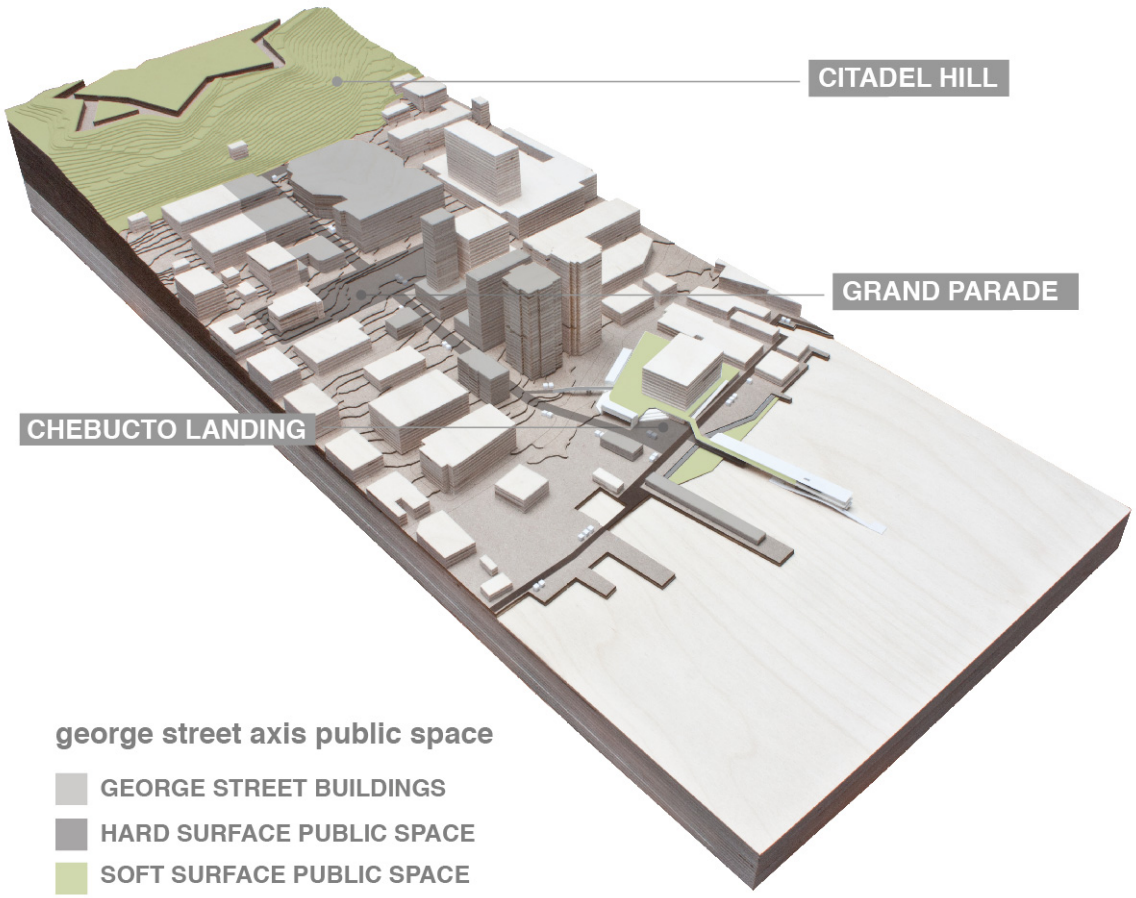
ideal opportunity to fill this void.

Due to the linear nature of the two axes crossing the ferry terminal site, there is a need for a variety of programs distributed along it. To allow for this, the terminal will primarily house only the ferry service allowing for other surrounding buildings to provide additional amenity. This leads to programmatic interventions at a small scale, distributed along the two city axes in order to provide unique and varied experiences, and to encourage pedestrian use. Some of the activities that happen at the waterfront are seasonal in nature, such as volleyball games, summer festivals and concerts, requiring temporary or flexible facility. The current seasonal nature of the waterfront could be adjusted by the addition of temporary architecture that can be deployed to encourage winter use when pedestrian populations are typically low.

Design Method

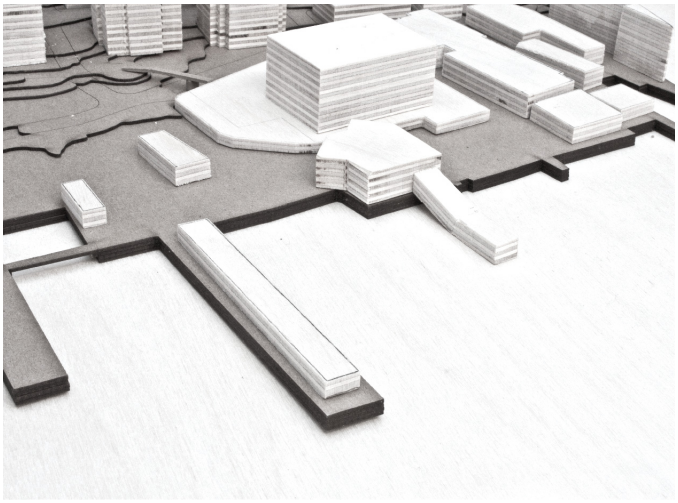
The redesign of the Halifax Ferry Terminal involves the correction of existing problems in both the ferry terminal area and within the ferry terminal itself. The project aims to restore a potentially successful public space by creating an architectural language that works with existing buildings and conditions to restore, evolve, reconnect and revitalize the ferry terminal area. The architectural solution to these problems aims to become a model to encourage redevelopment of the Halifax waterfront and other areas damaged by poor planning or aggressive urban renewal. The problems with the ferry termin-

al site will be analysed, and architectural solutions to these problems will be presented, focusing on George Street, The laza (Chebucto Landing), and the pier (ferry terminal building).



A pedestrian priority street down the George Street axis would help integrate the waterfront into the rest of the city. This recreational passage through the centre of Halifax would also connect Chebucto Landing to two other major public spaces: the Citadel and the Grand Parade. Each of these three public spaces would then be able to house different events individually or simultaneously. The Citadel is used as a historic monument and large green space, the Grand Parade for formal events and ceremonies and Chebucto Landing could be used for organized waterfront activities and festivals.

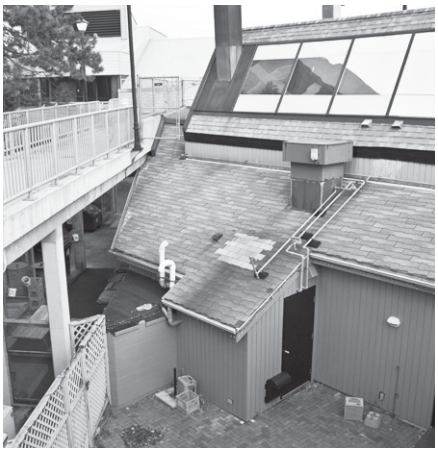
Existing Condition



1:1000 model showing the existing ferry terminal site.

Vehicular Dominance

Currently the Chebucto Landing site is cut off from the city by Lower Water Street, a high traffic route, which separates Chebucto Landing from downtown Halifax. Lower Water street is fed traffic by the Cogswell interchange, a large highway project that aimed to create a multi-lane route running parallel to the waterfront. As this project did not materialize, the resulting condition is a busy road with poor pedestrian access and few pedestrian friendly areas to cross to road. The lack of access creates a pedestrian disconnect from the rest of the city, discouraging an easy transition to the waterfront and therefore reducing waterfront use. A crucial intersection across Lower Water Street is where George Street intersects the Chebucto Landing which is the current site of the Halifax Ferry Terminal. This intersection should serve as the main entrance to the waterfront and is currently discouraging to pedestrians.



Leftover space behind Murphy's on the water. Picture taken from the roof of the Halifax Law Courts.

Problems Caused by Urban Renewal

The Halifax Metro centre and the Halifax Law Courts are two large buildings that have an effect on the pedestrian experience of George Street, and the ferry terminal site. These multi-block buildings prevent a mixed-use environment by eliminating the opportunity for multiple programs to exist side by side. The building's programs are inward looking, designed for specific purposes that do not engage pedestrians on a regular basis and are largely accessed by car. The original construction of multi-block projects requires the clearing and destruction of existing city fabric that would have likely been functioning well in the current context.

Disconnection from the Water

The transformation in waterfront usage from a working industrial harbour to a recreational city zone has created significant changes in the organization of the city. The traditional wooden pier style on which the waterfront is based causes a physical separation from the water with the pedestrian unable to gain access. The pollution of the Halifax harbour, although improving, is also a concern in transforming the waterfront into a recreational destination.

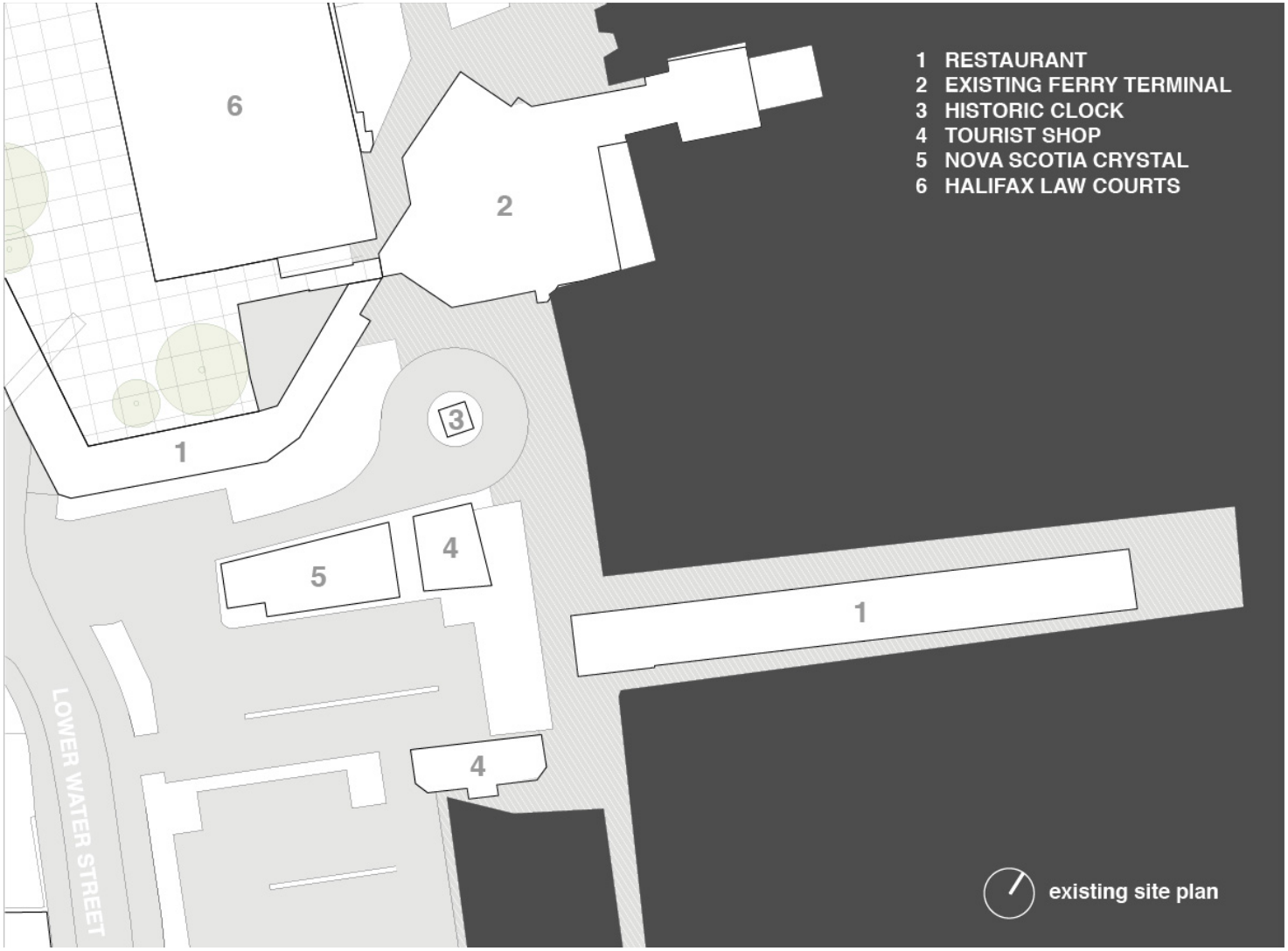
Pedestrians at the end of an uninhabited dock illustrating a desire to experience the water but a disconnection from it.

Lack of Greenspace

At Chebucto Landing, the Halifax Law Courts has one of Halifax's largest green roofs. The roof of this parking structure has potential to function as a greenspace on the waterfront, but is currently suffering from lack of access. Completely isolated

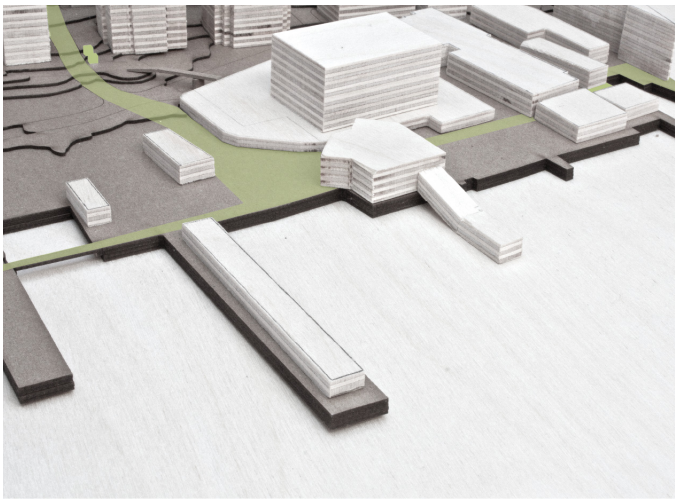
with no views to the water or street below, the green roof is largely underused. The concrete and asphalt materials of the waterfront also discourages planting and the waterfront is currently populated by many parking lots, further discouraging green features.

Current condition of Chebucto Landing. The Halifax Ferry Terminal can be seen on left.



Chebucto Landing and the ferry terminal site.

Street



1:1000 model showing George Street as it intersects the plaza

Limited Vehicular Access

Currently, the bottom portion of George Street functions as a one-way street for vehicular traffic. The conversion of George Street to a pedestrian priority street would remove one lane of parking and change George Street to pedestrian priority in its entirety. This is accomplished through application of pedestrian friendly surface treatments that extend out into cross streets, and the addition of lighting features at these intersections.

Small Architectural Interventions Integrated into Existing Fabric

The long steep slope of the George Street axis provides an opportunity to create a terraced pedestrian landscape. Block long decks are proposed, creating flat areas for pedestrians to eat, socialize and rest. Terraces of this nature already exist on George Street and elsewhere in Halifax at a smaller scale. The decks would be building from an existing trad-

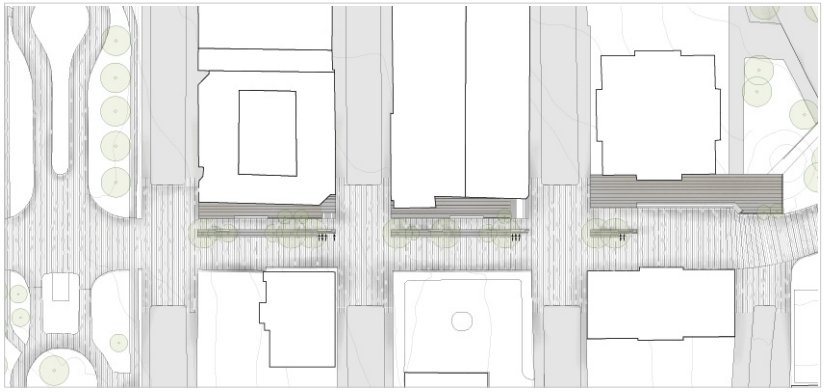
ition of wooden boardwalks in Halifax and allow integration into existing terraces and George Street building facades. Small cafes would be integrated into these decks where there is sufficient head room.

Pedestrian Route to Waterfront

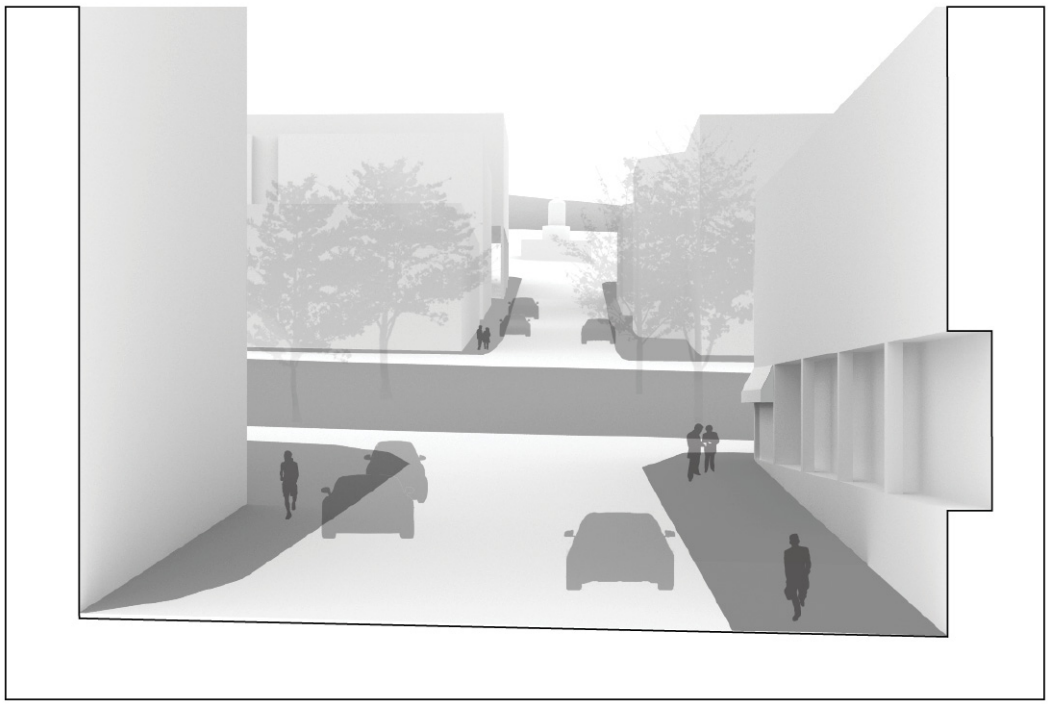
George Street is situated in the centre of the Halifax downtown, and should act as an important pedestrian route to the waterfront. Street furniture, pedestrian seating and lighting could create an even stronger visual link from the historic clock tower to the harbour. An architectural language using a similar material palette helps strengthen this pedestrian connection.

Trees Added to Streetscape

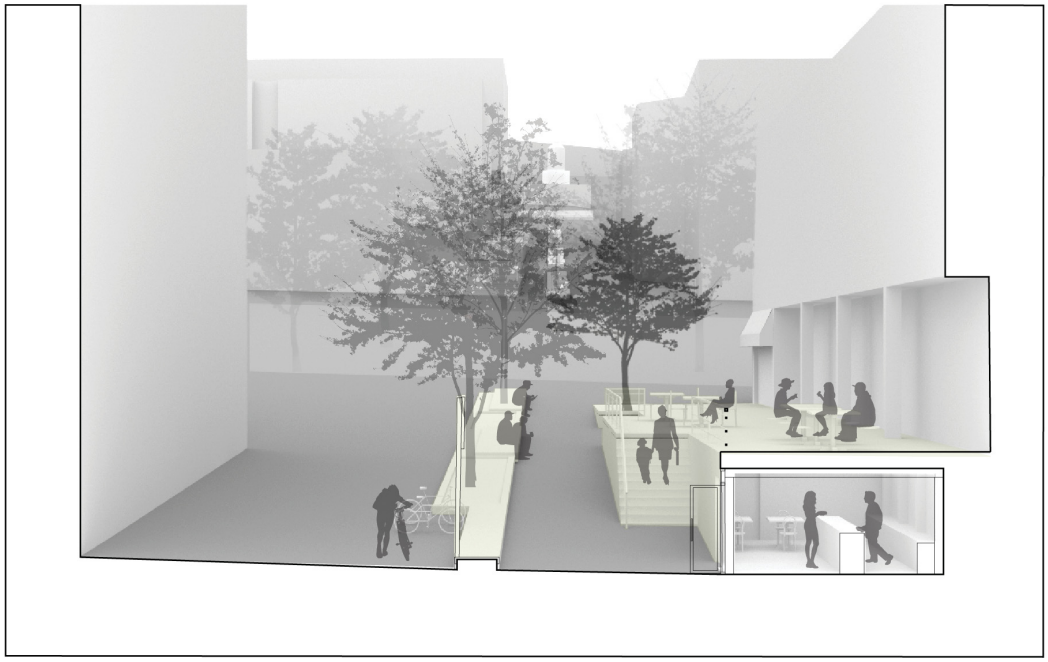
Additional trees are provided by making use of planters at street level and on pedestrian decks. The decks allow for above ground soil containers by making use of the hollow space created by the George Street slope.



George Street plan and section from the Halifax Citadel through the Grand Parade to Chebucto Landing and the proposed Halifax Ferry Terminal.



Cross section of the existing condition of George Street.

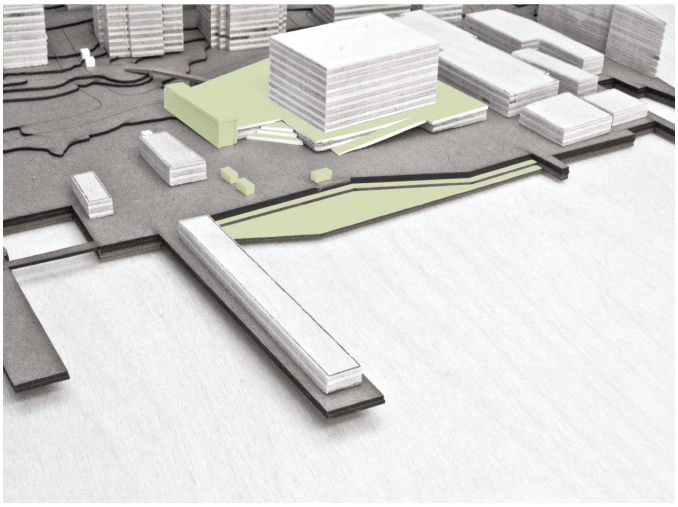


Cross section of George Street with proposed, decks, planters and cafes added

Perspective showing the proposed condition at the top of George Street. Cafe shown on right. Pedestrian paving surfaces depicted.

Perspective showing George Street near Barrington Street, further down the route to the waterfront. Terraced deck shown on left.

Plaza



1:1000 model showing the plaza design

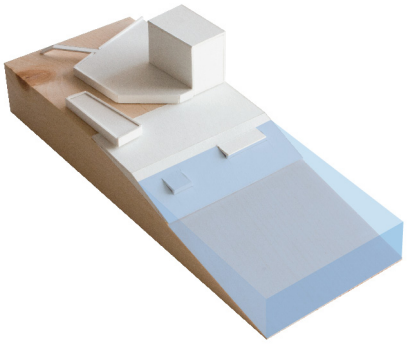
Creation of a Major Public Space

The plaza is linked to two other major public spaces by the George Street axis; The Halifax Citadel, a large greenspace and historic monument, and the Grand Parade, a formal hard surfaced public space. By alignment with these other major public spaces, the ferry terminal site takes on a more important role as a venue for activity not appropriate for these two other spaces. Concerts, markets, festivals and other pedestrian events could make use of the plaza space encouraging city wide pedestrian activity.

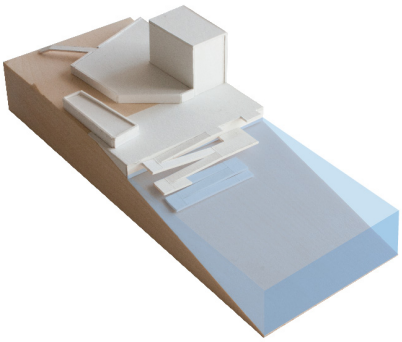
Nova Scotia Crystal. Source: Bourdeau, 2012

Flexible, Small Scale Interventions

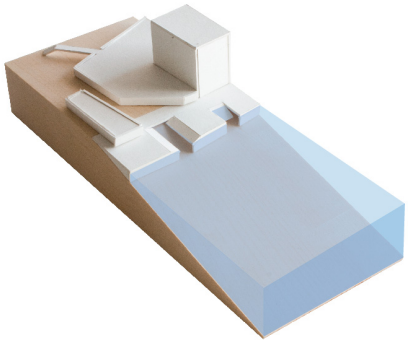
To host these events, a series of temporary sheds could be set up by private organizations to provide the facilities for scheduled events. The addition of a restaurant building is also considered at a scale which resembles historical buildings on site, specifically Historic Properties and the Nova Scotia Crystal Company.



A beach design makes use of a slow sloping plane allowing access to the water.



A ramp solution shows the rising and falling of the tides by allowing a ramp to submerge at different points of the day. This scheme however has the least access to water.



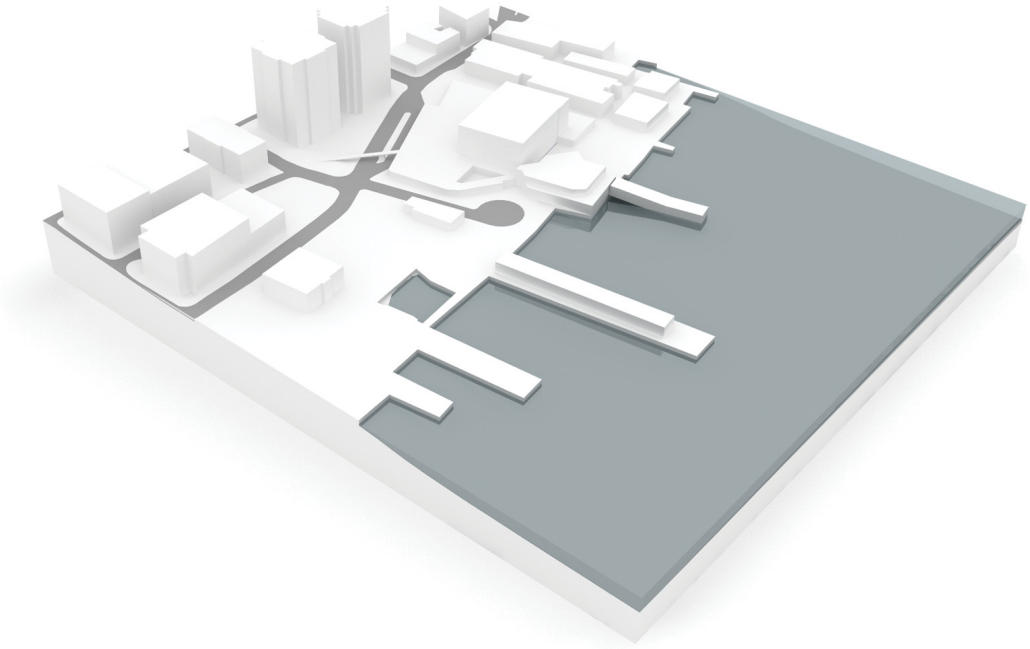
The channelled edge is a solution that is implemented already at some points along the waterfront. Practically the site is too small to maintain this type of construction. The water level is two to three meters below street level which would require massive stepping down for access.

Terraced Water Edge

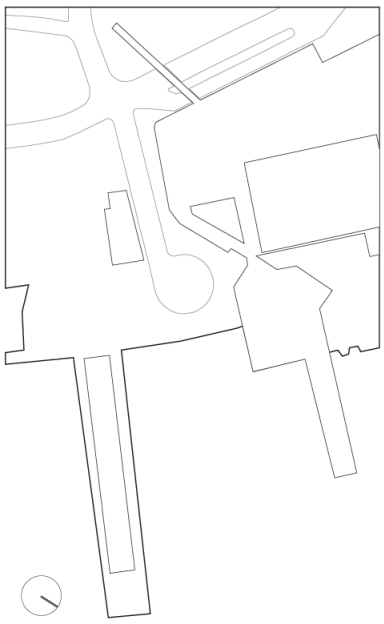
After a series of investigations, a terraced waterfront edge was chosen as means to access the waters of the Halifax harbour. This edge condition would allow a large area of water to be accessed, show tidal forces, remain relatively safe and keep the existing buildings intact. This terraced language is also present in the decks created for the George Street axis.

Access to Law Court's Green Roof

The greenspace for the plaza is provided largely by increasing access to the Law Court's green roof. Pedestrian stairs, ramps and bridges have all been added to help make use of this amenity. The view planes from the roof have also been opened up to allow users to experience the plaza, water and the city visually. A buffer of trees has also been added at the water's edge to help protect against strong winds from the harbour.



Digital model showing existing Chebucto Landing (plaza) and surrounding area.

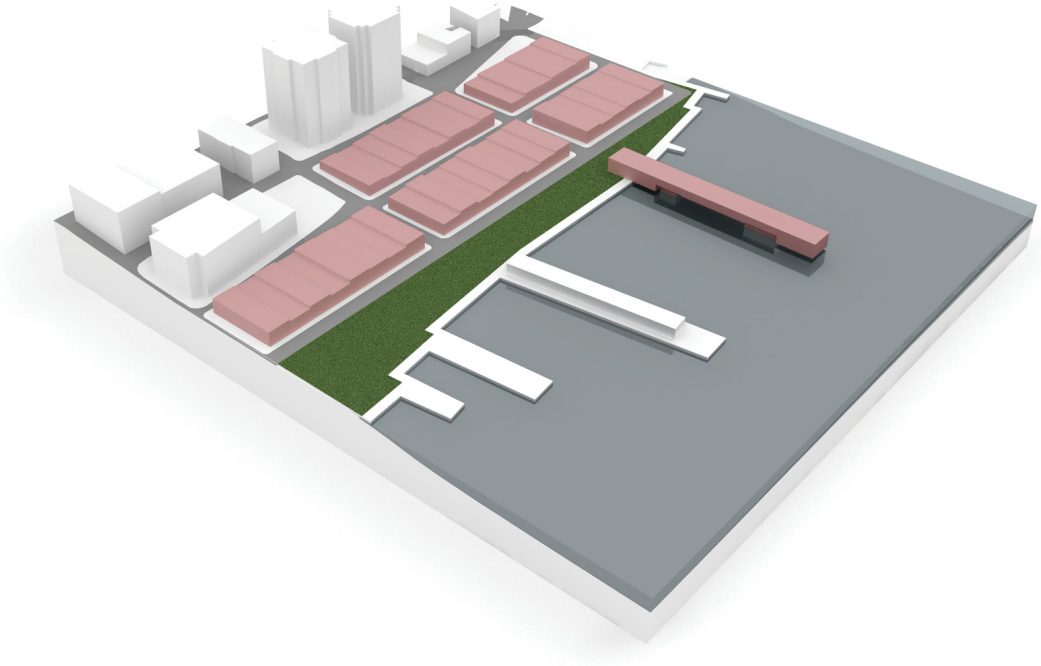


Plan detail of the plaza in its existing condition.

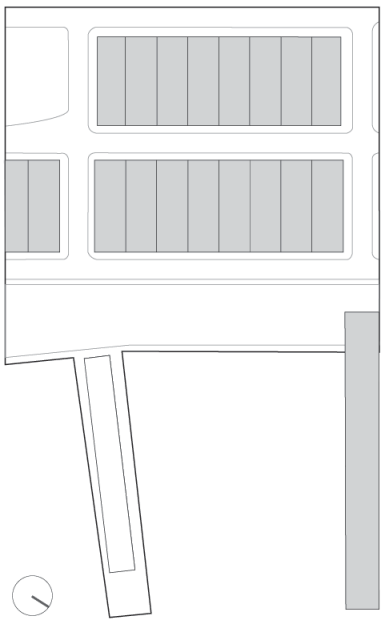
Existing Plaza Condition

The existing plaza is suffering from a disorganization of surrounding buildings and lack of development at the waterfront. The current ferry terminal building and Law Courts buildings limit pedestrian access along the boardwalk, discouraging pedestrian travel. Lack of development in surrounding lands also reduce the success of the plaza causing a low diversity of programs and no buildings to define the plaza walls.

The following analysis explores options for developing these vacant lands and how these strategies would affect the proposed plaza.



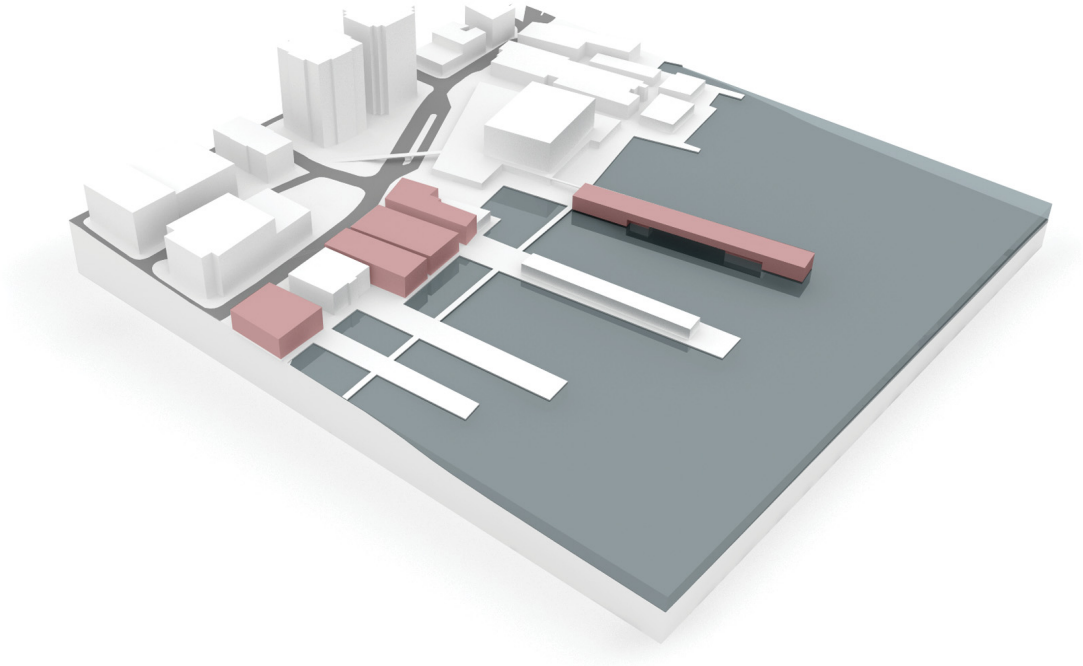
The city grid is extended and new low rise density and terminal added (red). The plaza is no longer visible.



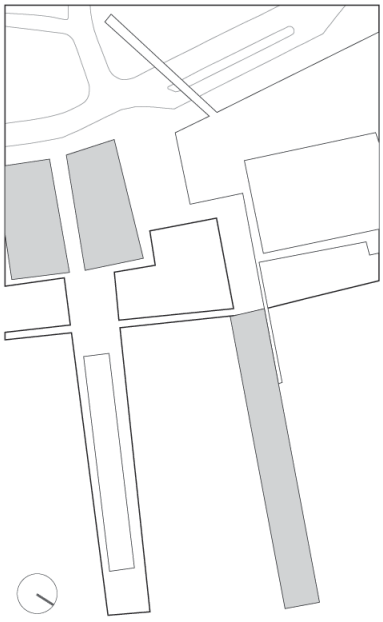
Plan detail of the plaza area, now used as greenspace.

Extension of the City Grid - Option 1

This strategy proposes extending the original Halifax city grid out over waterfront property. The additional city blocks created could house low rise, mixed use development, enriching city life at the waterfront. In this scenario, the plaza is no longer relevant as the leftover waterfront property would become a linear waterfront park running parallel to the water edge. Although efficient, this strategy does not incorporate existing fabric and would require the demolition of existing buildings including historic properties which houses several heritage buildings. More akin to the urban renewal campaigns of the 60s and 70s this strategy is rejected based on the unsuccessful nature of related projects.



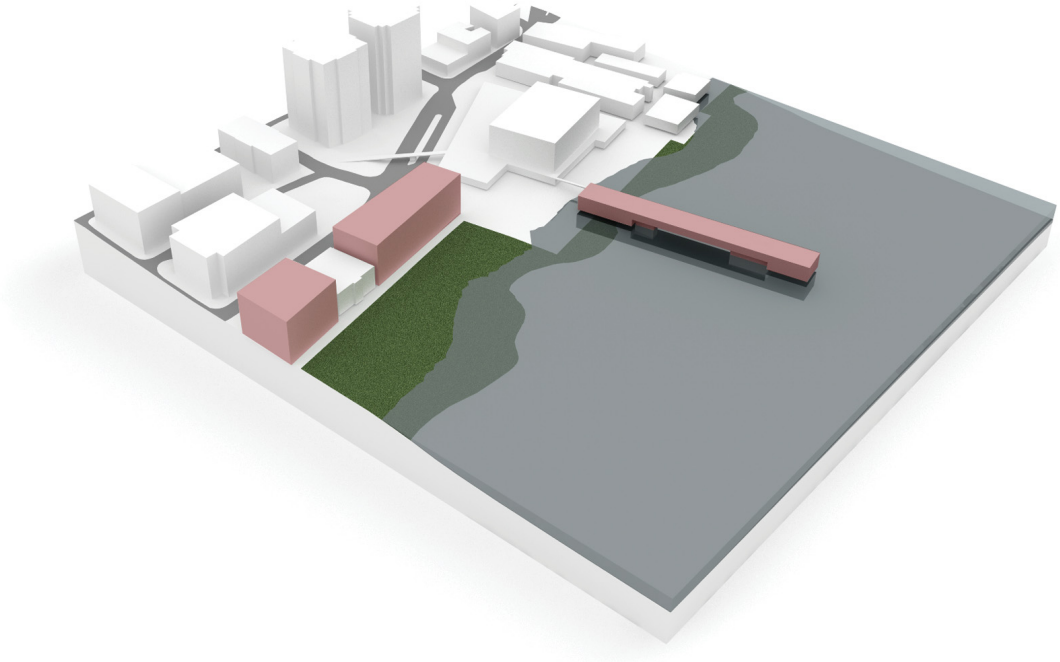
Channels and bridges are incorporated into the waterfront lands. Density along Lower Water Street and proposed ferry terminal is shown in red.



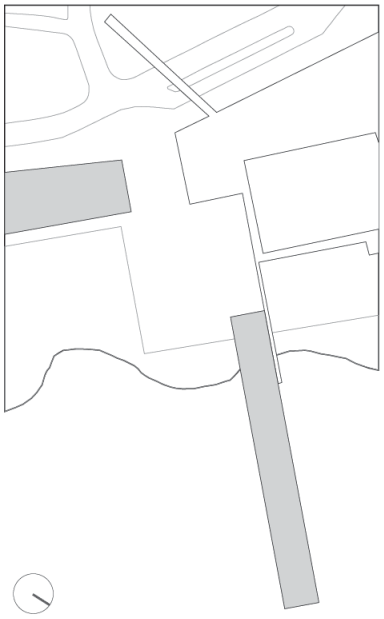
Plan detail of the plaza area now largely a water inlet.

Bridges and Inlets - Option 2

Construction of channels into the waterfront lands allowing pedestrians to experience water on both sides of the boardwalk. Density is added along Lower Water Street and the boardwalk becomes a series of piers and bridges. The plaza now features an inlet with the ferry terminal in its new location. The disadvantage to this strategy is the destruction of existing fabric and the distance down to sea level. Waterfront land sits two to three meters above sea level restraining access to the water at these proposed inlets. Massive stepping would be required to access water level requiring larger amounts of space than is typically available. Once at water level the bridges would block sightlines out to the harbour adding further difficulty to this strategy.



Waterfront lands converted into wetlands and high density buildings proposed along Lower Water Street (red)

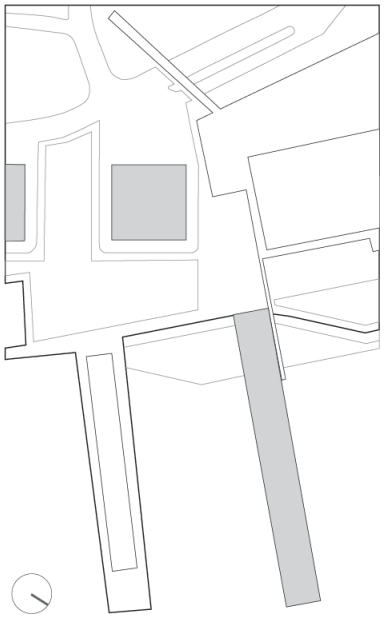


Plan detail of the plaza area. The plaza remains hard surfaced while surrounding areas are converted to wetlands.

Wetlands - Option 3

Completely abandoning the waterfront boardwalk, the wetlands strategy assumes a natural edge for the waterfront. A greenspace is developed that slopes down into the harbour providing water access. Urban density is built up along Lower Water Street and the waterfont lands becomes a large urban park. The plaza is a sloping, hard surface public space with immediate access to the water. Although interesting, this strategy is problematic. It requires the destruction of millions of dollars of city infrastructure and the destruction of all historical piers and other water access related structures.

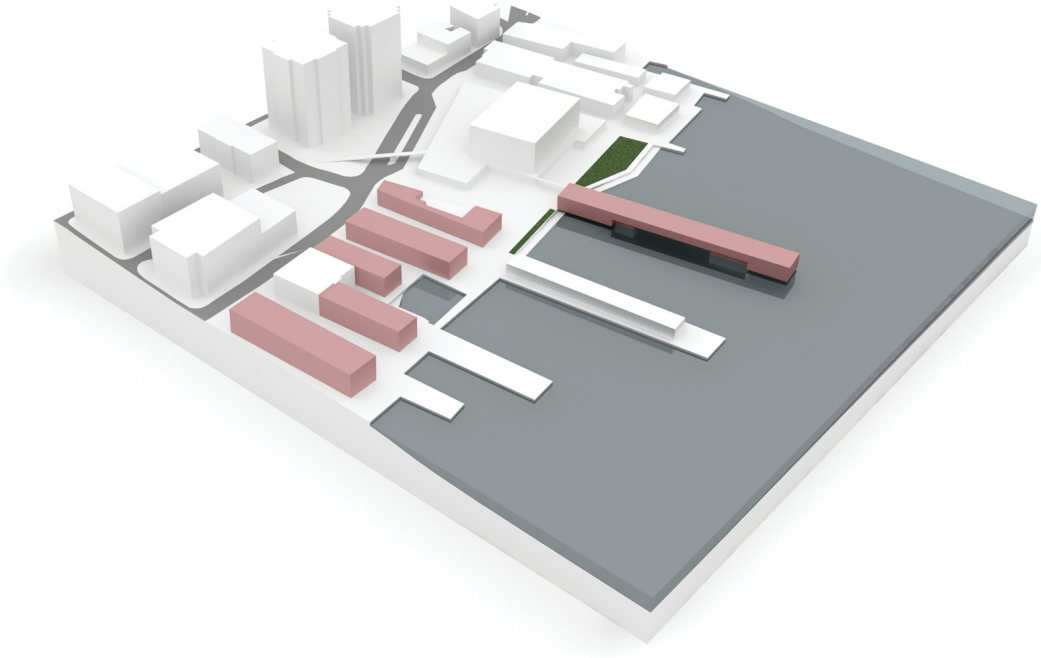
Digital model of the tower proposal.



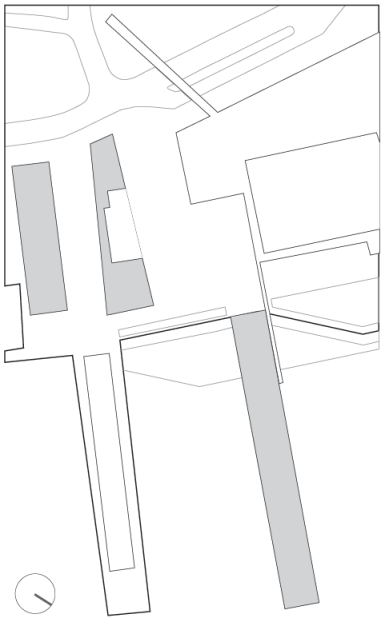
Plan detail of the plaza area. The plaza now exists between the Law Courts and a tower building.

Towers - Option 4

As a reference to the two towers near the Chebucto Landing site, this scheme incorporates high density towers into the waterfront. The surrounding land is transformed into parkland continuing to maintain the waterfront as a pedestrian recreational zone. The plaza (shown at the bottom left) is accessed through a small opening from Lower Water Street and opens out to the water. This scheme, although profitiable would cut off views to the water and further disconnect the waterfront from the rest of the city. There is also a danger of privatizing much of the waterfront lands by adding these towers.



Linear buildings and proposed ferry terminal (red) are similar in form to historic properties shown at the top of the model.

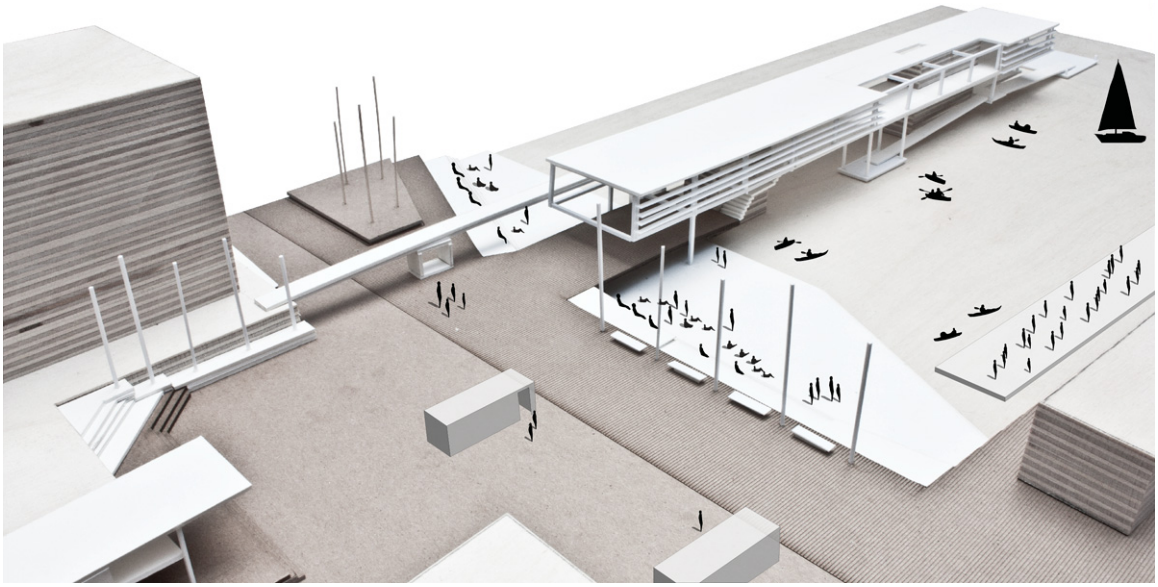


Plan detail of the plaza area.

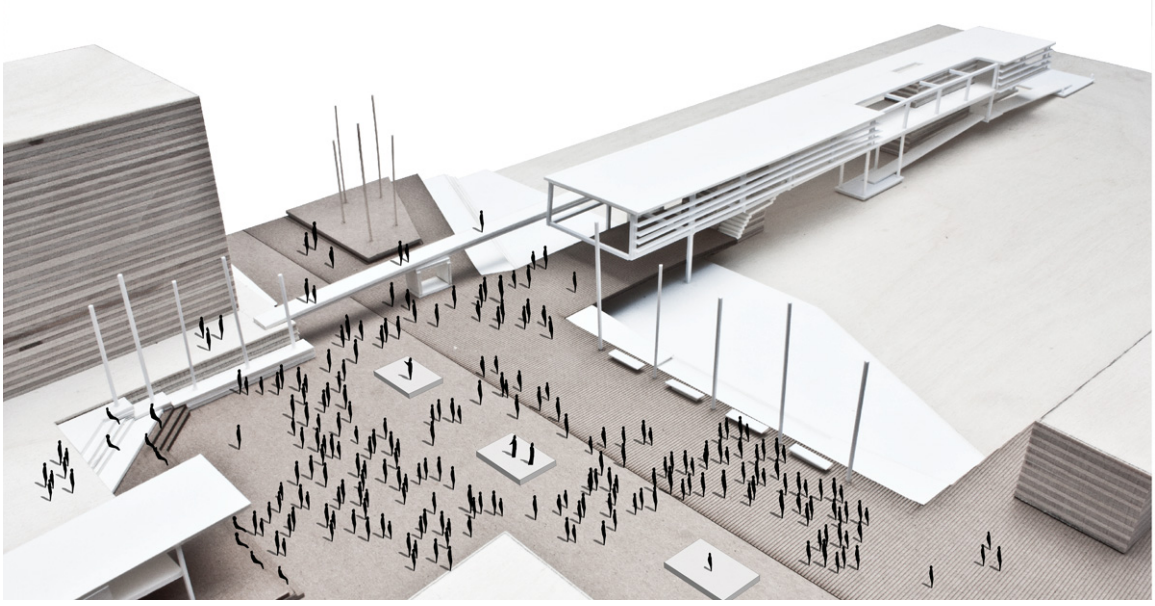
Linear Buildings - Option 5

Referencing the historical language of the fishing sheds, warehouses and shops that once populated the waterfront, linear buildings is the preferred urban design strategy for the development of the plaza. The linear density allows a permeable urban fabric reconnecting the city back to the waterfront in multiple places through a series or courtyards and urban parks. This type of development is built into existing fabric allowing for existing buildings to be integrated into the urban scheme. The plaza now becomes a larger open square among a series of linear public spaces terminating at the waterfront. The water is accessed by a terraced landscape stepping down to the water expressing the condition of the tides.

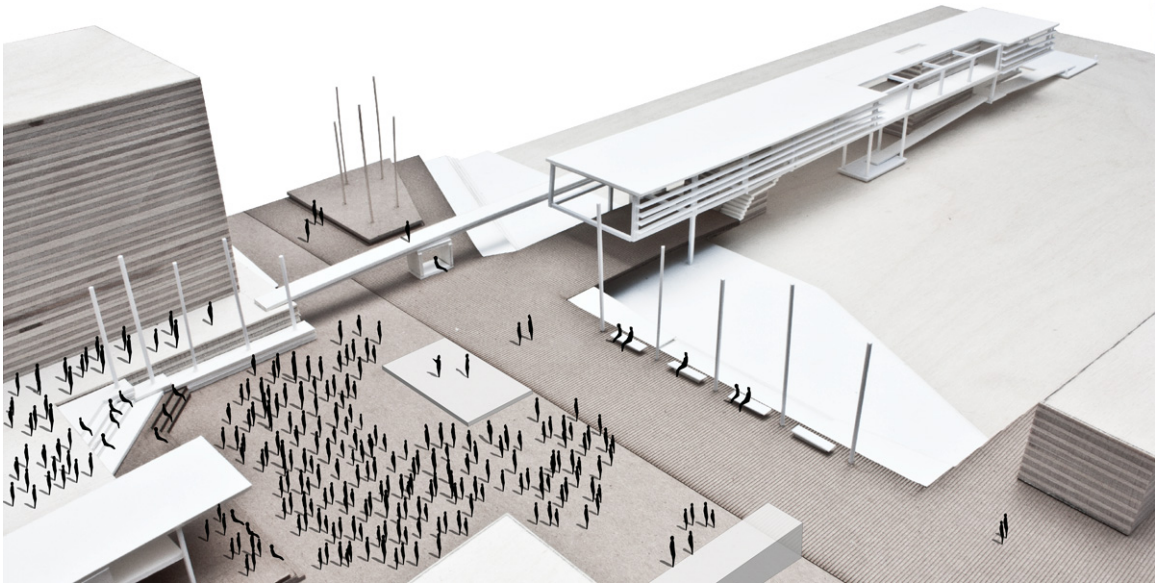
Plan and section of the proposed plaza and surrounding area



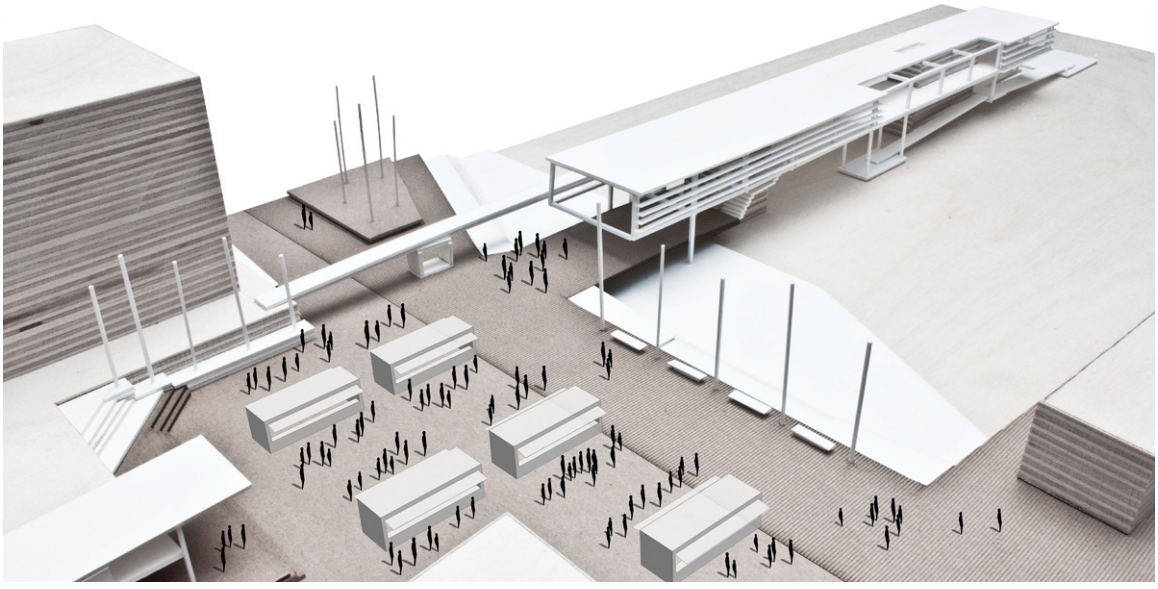
1:300 model showing proposed plaza, new terminal and water activity.



Model showing Halifax Buskerfest scenario. Buskerfest is held in Halifax, at the waterfront every summer. The festival consists of many performances simultaneously.



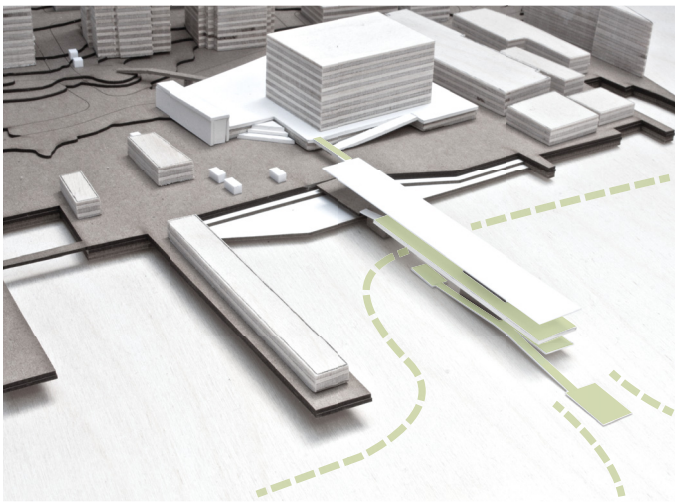
Model depicting a large scale concert event.



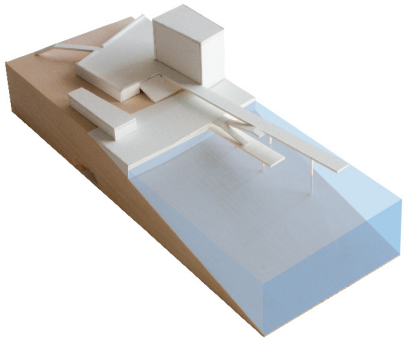
Model depicting an outdoor market event. Temporary structures could be brought to the site to support different organized events.

Perspective showing the proposed Chebucto Landing plaza. The proposed ferry terminal is shown on left.

Pier



1:1000 Model showing the proposed ferry terminal design.



A finger pier forms the typological model for the new terminal. This type of construction allows users to experience the water and is especially useful for boat traffic (below).

The Halifax waterfont as seen from Murphy's on the water pier.

Upgraded Ferry Building Encourages the Use of Public Transit

The current ferry terminal is in need of upgrades and repair. Its dilapidated condition discourages its use as well as interest in the Ferry system. A new building would spur interest, increase ridership and secure the future of an important piece of city infrastructure.

One for One Upgrade of Existing Terminal

By rebuilding the ferry terminal with a similar scale and footprint of the existing one, the new terminal will allow for: other small scale buildings to develop providing additional program to the plaza, existing buildings to remain intact by maintaining a small footprint, referencing a historical model that could suggest similar development along the waterfront.

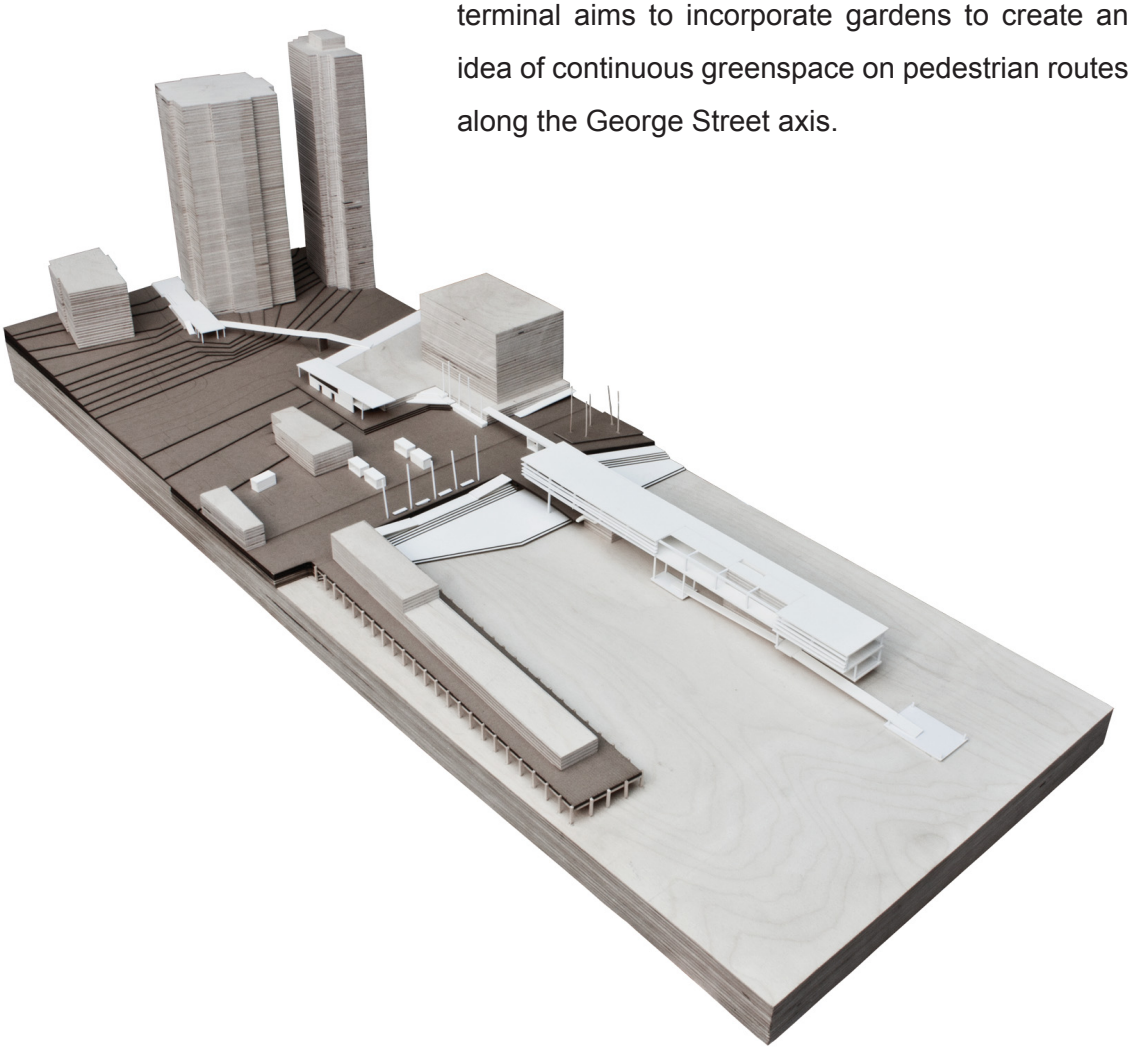
Bridge Pier Typology Allows Access to the Water

A pier typology allows ferry users to experience be-

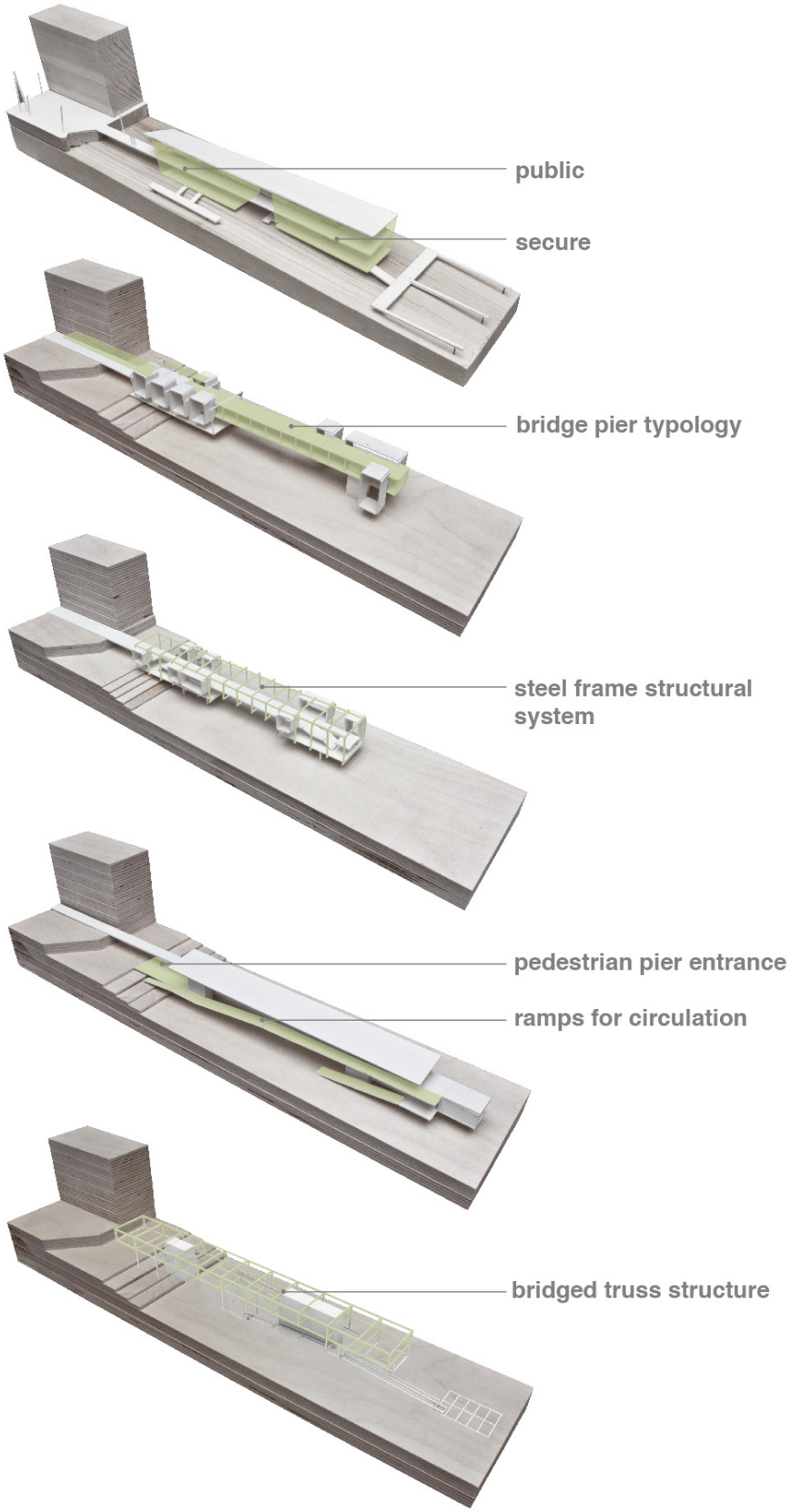
ing on the water without the use of a boat. Additionally, the bridge construction of the terminal allows recreational traffic as well as a new ferry line to pass undisturbed under the building. This feature increases the public's access to the water as well as increasing the safety of recreational water usage.

Connection to the Law Court's Green Roof

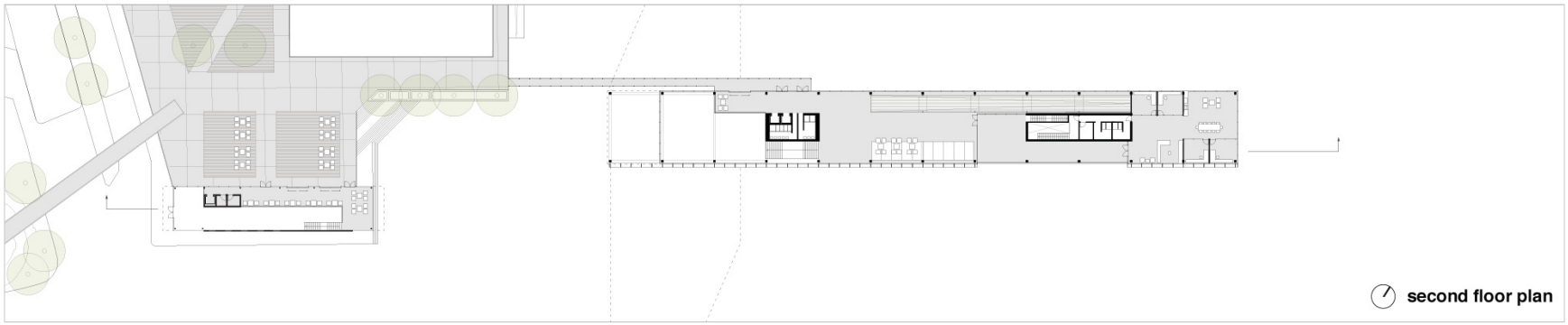
A bridge from the terminal to the roof of the Halifax Law Courts aims to physically connect the terminal with an existing greenspace. Additionally, the terminal aims to incorporate gardens to create an idea of continuous greenspace on pedestrian routes along the George Street axis.

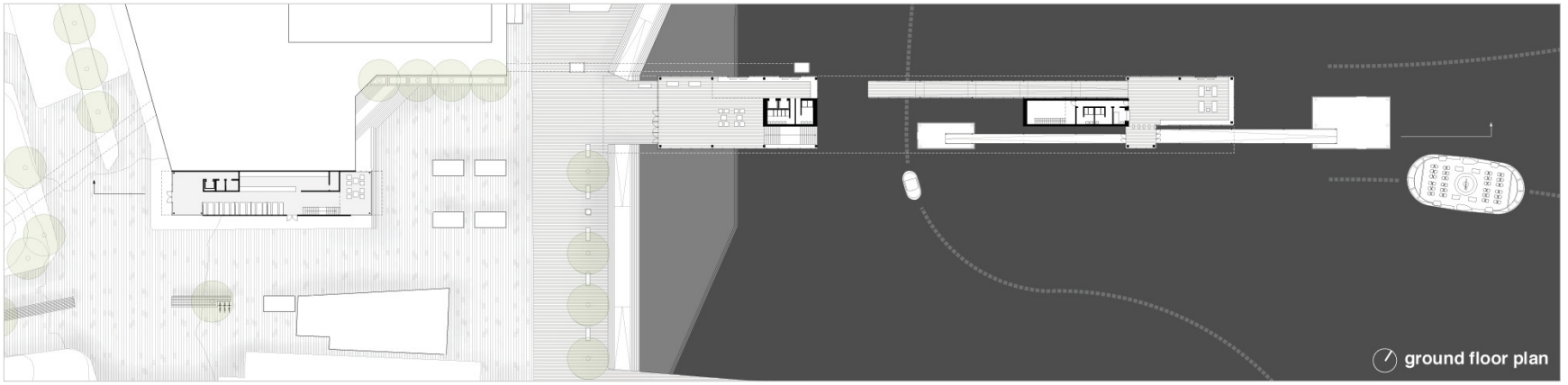


1:300 model showing the new terminal proposal, the public plaza and one George Street cafe.

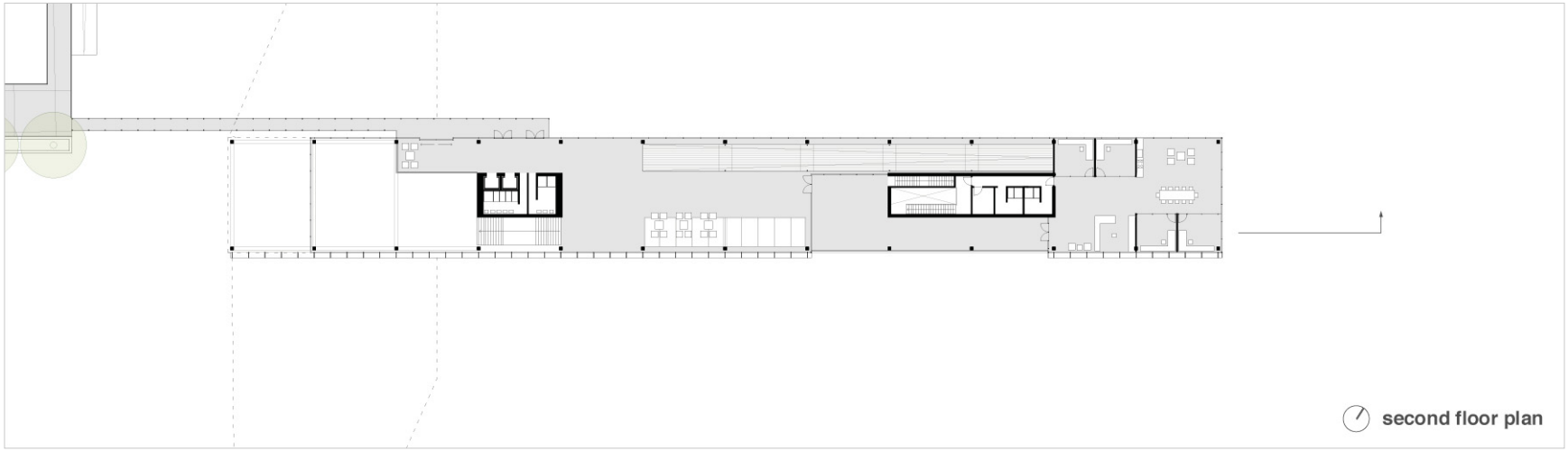


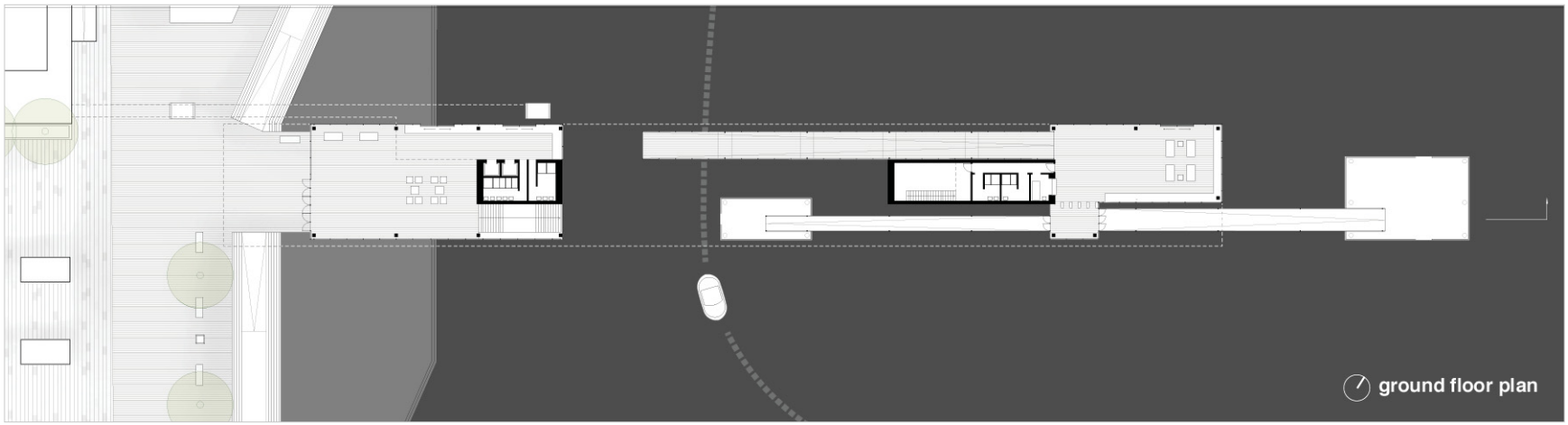
A series of study models showing the design evolution of the proposed ferry terminal.



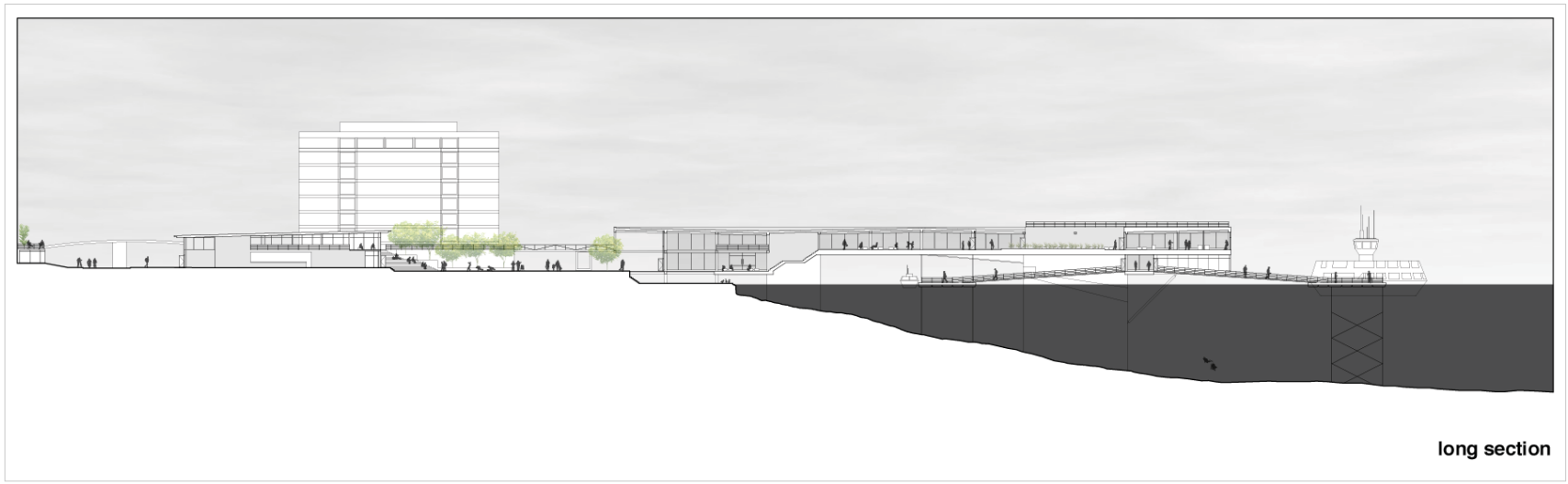


Ground plan and second floor plan of the proposed Halifax Ferry Terminal and Chebucto Landing Plaza.





Ground plan and second floor plan of the proposed Halifax Ferry Terminal.



Long section and long section detail of the proposed Halifax Ferry Terminal

Ferry terminal public lobby.

Ferry terminal jetty for the recreational ferry line

CHAPTER 3: CONCLUSION

City infrastructure has massive potential to change cities in a positive way. By conducting a deep analysis of damaged sites including history, urban form and location in the city, it is possible to develop a series of guidelines required to fix problems damaged landscapes are facing. Infrastructure can then be tailored to address problems in the site and be deployed as a way to jumpstart new development, stimulate activity and develop models for further development.

Specific to this project and the Chebucto Landing site, several guidelines were developed.

1. Integration with existing buildings

2. Small scale development promoting a mixed use environment

3. Access to greenspace and natural amenities ie. the Halifax Harbour

4. Reduction of vehicular use and support

Specific to the site of this thesis, these guidelines if followed would promote healthy development along the two axes of the city analyzed in this report. In further applications similar guidelines could be developed to focus infrastructure development elsewhere with positive results.

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