Hidden Landscapes: Revealing Toronto's Garrison Creek Ravine

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I would like to thank my supervisor Cynthia Girling, for guiding me through this process and encouraging me to explore this project in a variety of ways. Also, I would like to thank my instructor Kees Lokman, for always keeping my classmates and I on track. Both of your advice and guidance was greatly appreciated.

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ABSTRACT

In urban centres we rely on our built environment to support infrastructure like storm water management, transportation, energy distribution and waste removal to facilitate day-to-day life. Although the development of this infrastructure is necessary to allow urban centres to function, these built interventions create fragmented gaps in our urban landscape and it results in a ruptured relationship between urbanism and nature. However, there is the potential for the relationship between urbanism and nature to be repaired by having the infrastructural systems we build to function in tandem with our natural environment

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1.1 The Problem

In urban centres we rely on our built environment to support infrastructure like storm water management, transportation, energy distribution and waste removal to facilitate day-to-day life. Although the development of this infrastructure is necessary to allow urban centres to function, these built interventions create fragmented gaps in our urban landscape and it results in a ruptured relationship between urbanism and nature. In Toronto, we can specifically uncover this disconnection in exploring the Garrison Creek and its current hidden ravine landscape.

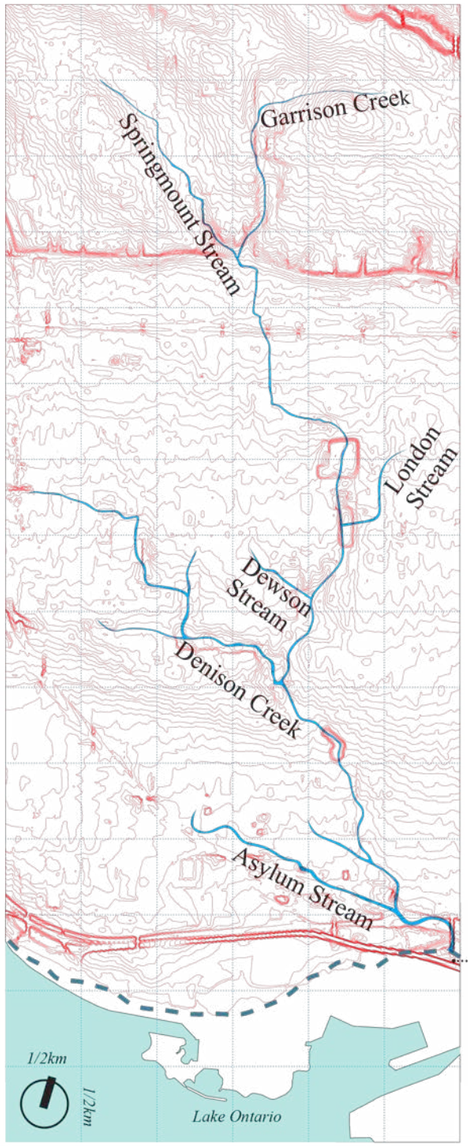


Figure 1.
Recreation map of Garrison Creek Ravine

1.2 The Focus

By uncovering and honouring one of Toronto's historic hidden natural landscapes, the Garrison Creek Ravine, this project will create an infrastructural system in our urban environment that can function in tandem to deepen the relationship between urbanism and nature, as well as respond to the infrastructural needs of Toronto.

Through introducing an alternative infrastructural solution to urban storm water management within the ravine's remaining profile, the proposed landscape design intervention would challenge the century-old trend of disconnecting Toronto's urban infrastructure from its natural environment and help the city in its efforts of minimizing the effects of extreme summer rainfall and memorialize the forgotten open city landscape.

Figure 2.
Project concept collage

TORONTO, ONT CANADA

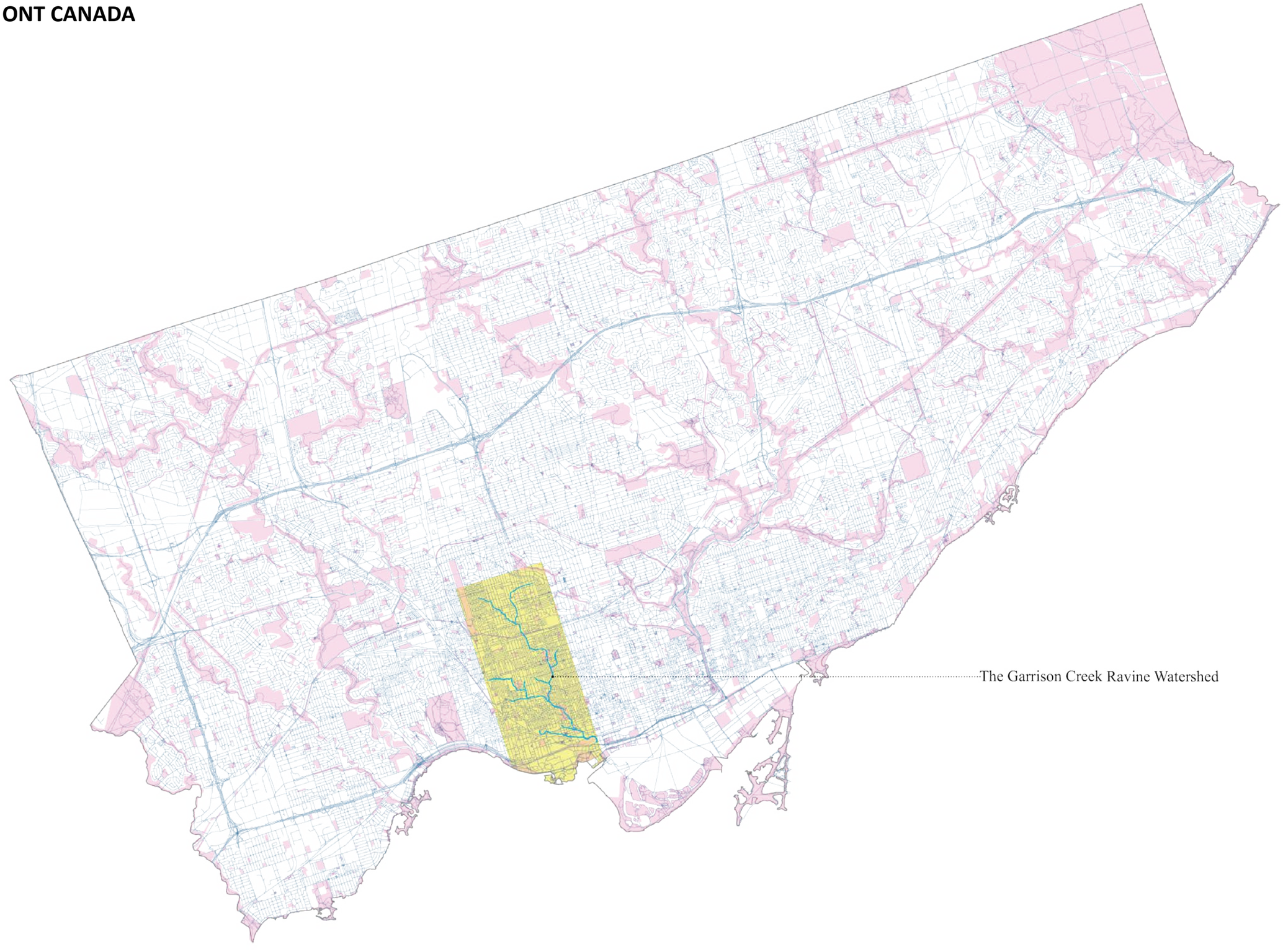


Figure 3.
Context map

2.0 HISTORY OF THE GARRISON CREEK RAVINE

2.1 A City Formed by its Landscape

Garrison Creek, which was a secure source of fresh water for Toronto's Fort York during the years of early European colonization, is one of the many waterways that was lost to the developing city, much of it being buried in the late 19th-centry to better accommodate Toronto's intensifying growth. Most of the ravine was filled, surrounding land was consumed by housing and many bridges that crossed the ravine throughout its area were buried fully intact. Today what remains of the Garrison is a ghosted outline, formed by the urban tree canopy that is sprinkled throughout a discontinuous series of parks, which include Christie Pits, Bickford Park, Trinity Bellwoods and Fort York along with smaller parkettes. These are the traces left of the ravines once dynamic presence.[1]

As our urban environments continue to grow to better suit the needs of a changing climate and civic life, it is necessary for there once again to be an integration between the city and its landscapes, allowing them to function in their earlier symbiotic roles, as places of recreation, of community connection and as natural watersheds.

"If one of the legacies of modern town planning is the invisible efficiency of the hygienic infrastructure, perhaps, as ecological concerns permeate the consciousness of urban dwellers, it is both psychologically and physically necessary to make urban support structures more tangible and visible."[2] - Brown and Storey Architects. Infrastructure and Parks: The Garrison Creek Community Project

While these current invisible pipe solutions are more economically feasible they lose the potential of infrastructure adding attraction to necessity. An example of bringing infrastructure projects into the public realm can be found in the historic work of R.C. Harris and his lasting contribution of bringing together urban design, engineering and architectural significance in the City of Toronto. Of course this broadened definition of infrastructure as an ecological approach would be at a much higher cost, but it would offer an unquantifiable amenity, at the same time being an example of a co-evolving system and how the city can locally manage the complex relationship between natural and urban environments, while enhancing public interaction and the quality of life in the city. [3]

2.2 Co-evolving Systems

An ecological approach would suggest that multiple aspects of the Garrison and broader developments should be examined both separately and together. The idea of co-evolving systems would further suggest that these different aspects evolved through a sequence of dynamic balances and imbalances that took place between nature and the city's growth. How the city's infrastructure has been put in place to both collect and treat water is an example of how those imbalances are continuously changing as the city expands. In order to have a co-evolving system between the environment and urban growth, it needs to be understood that both are interconnected and alterations to one system affects the other. [4]

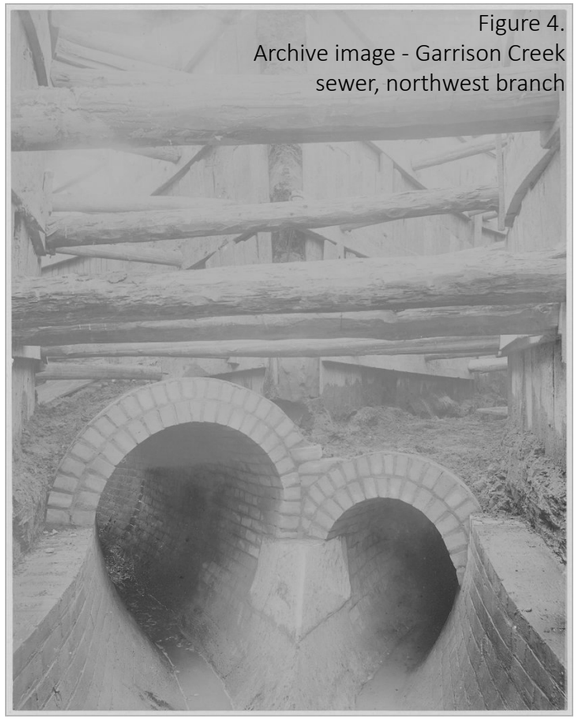


Figure 4.
Archive image - Garrison Creek sewer, northwest branch

2.3 Built on the Banks of the Ravine

The history of Garrison Creek shows the balances and imbalances that have happened as a result of Toronto's environmental changes to better accommodate its urban growth. In 1792, the first British Governor, Lord Simcoe, arrived on the shores of Lake Ontario to establish the military outpost that is known as Fort York. Prior to his arrival, Garrison Creek had flowed and meandered for thousands of years through a ravine that cut into the sloping plain that was formed by the receding waters of an ancient glacial lake. As the army engineers saw it, the creek would provide Fort York with a secure natural water resource, having a balance between necessity and nature. The balance between town and ravine would first shift when army engineers sectioned off the surrounding land into large orthogonal lots to allow for future estates, ignoring the influence of the ravine.[5]

Much of Toronto's early industries located themselves along Garrison Creek, typically closer to Lake Ontario. As industries grow so did the settlements and soon the Garrison became a deposit for discarded waste, quickly going from being a water resource to becoming a polluted health hazard. Sometime during the late 1880's, the creek would be contained underground in a ten-foot diameter Victorian brick sewer as a way to provide predictable, safe and serviceable stormwater and wastewater management. The burial of the creek reflected the attitude that nature was to be experienced not through infrastructure, but in the open wilderness and within the city's easily managed land parcels. [6]

Just as Garrison Creek sustained the first settlement in Toronto, it also sustained Toronto's rapid growth in the late nineteenth century during its second wave. Although the creek was partially contained in a brick sewer, the ravine still provided a continuous network of open space, with neighbourhoods being built around it. The ravine became a vital part of the city's economy, facilitating industries such as gravel quarries in locations like Christie Pits and Shaw Pits and brickyard in the Bickford Vale.[7] It was also were major institutions like the original Trinity College, which was located on the southern portion of Trinity Bellwoods park, situated themselves, bring vitality, prestige and acting as central monuments. The bridges that crossed the ravine also became landmarks, directly connecting the city's grid to the ravine.[8] At this point in Toronto's development, it was possible for there to be a balance between the city co-existing with the ravine, its original host. Had this balanced been maintained and pursued, today there would have been a continuous open landscape that connected the city's west end neighbourhoods directly to Lake Ontario.[9]

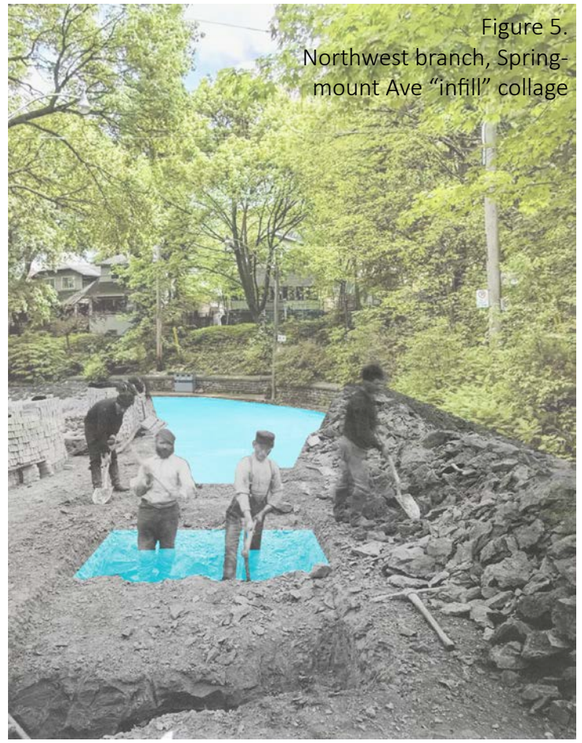


Figure 5.
Northwest branch, Spring-mount Ave "infill" collage

Unfortunately during the 1930's and 40's, the city had lost their interest in the Garrison lands, allowing public parks and private property designated for housing development to become inexpensive landfill sites that were used for garbage and construction debris disposal. It was during this third wave of settlement that the relationship between urbanity and nature would be disconnected; no longer would they be viewed as interconnected elements that could harmoniously co-exist, but rather as very separate and non-compatible entities. As a result, the ravine lands would be intersected by city streets and parcelled off into separate parks, creating the disjointed fragmentation throughout the Garrison system. As pieces of the ravine were filled or sold for new development and many of the bridges that gave continuity to the ravine were buried intact, the Garrison community lost its central core that unified its neighbourhoods. What is left today is only functionless traces of the ravine profile.[10]

In order to achieve a co-evolving system there needs to be equal health in both the city and the natural landscape. With the loss of Garrison Creek also came the loss of not only the natural environment, but of a unique urban condition that offered a tangible connection to natural landscape processes.[11] Throughout Garrison Creek's history there could have been attempts to revive the waterway, if it had been seen as an opportunity for local rainwater to be collected in natural urban waterways and treatment ponds, or sent through its natural course to the lake. Instead, what materialized was an imbalance between the city's man-made form and its natural landscape, favouring further development of the city that removed itself from nature.[12]

Today, there is little reminder of the Garrison's history or its contribution to Toronto's evolution. What little of the land remains is accompanied by small tokens of historic acknowledgement, through the use of curbside commemorative plaques and plant filled canoes acting as place markers.[13] Other than a small portion of the Harbor Street Bridge, all others have been hidden in plain sight, leaving little trace of the once vast dynamic ravine system. However, in recent years the Garrison Creek has, in some way, resurfaced, making its presence known to Torontonians.

In 2013, Toronto experienced a severe rainstorm that overwhelmed the Garrison stormwater sewer, causing water to resurface in areas of Christie Pits, Bickford Park, Trinity Bellwoods and the train bridge underpass at King and Atlantic.[14] This storm event, along with others, reinforces the need for added alternative solutions to Toronto's stormwater management plan, that go beyond the current brick and mortar.

Figure 6.
Archive image - Construction of the Crawford Street Bridge over Trinity Bellwoods ravine

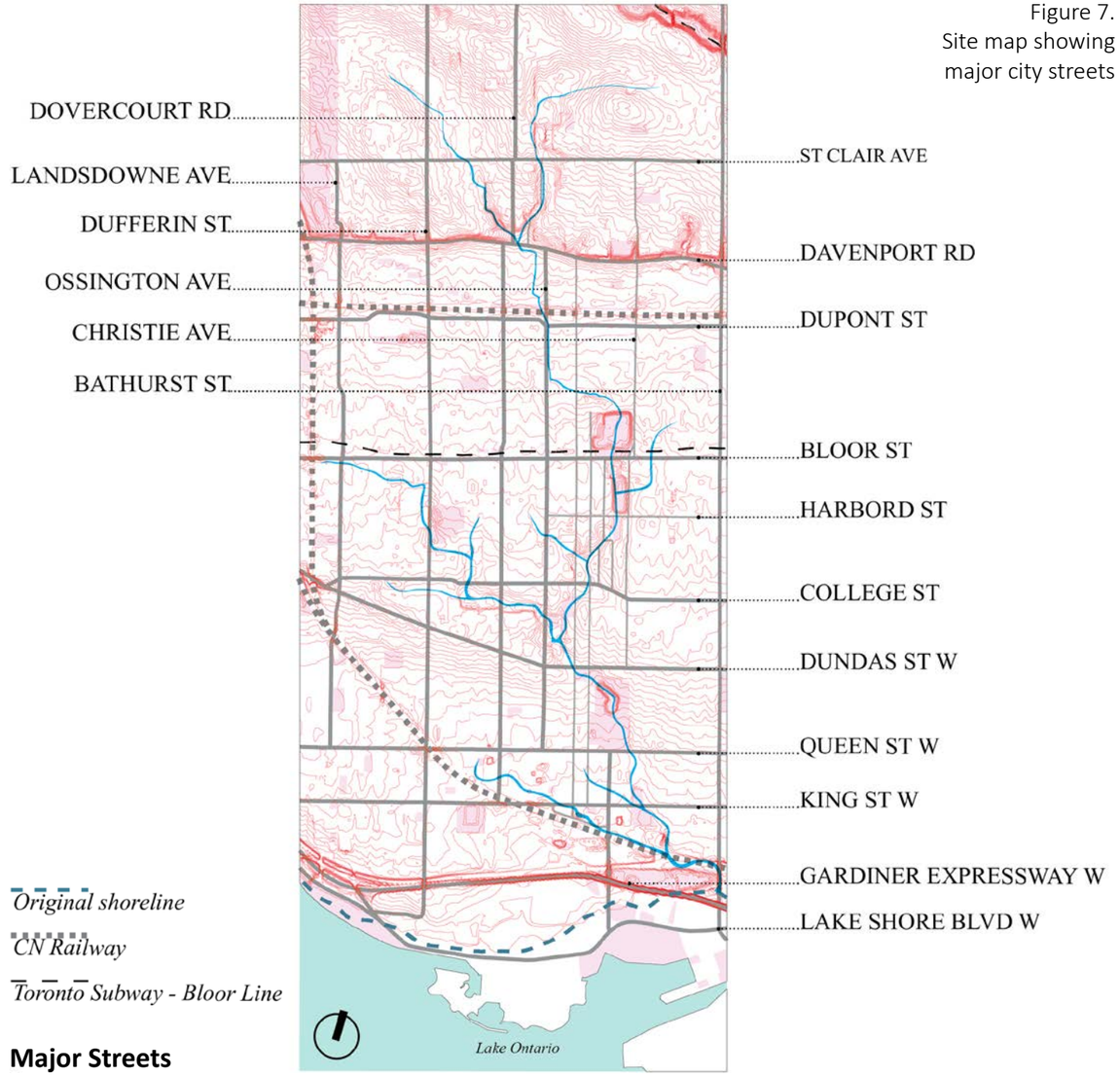


Figure 7.
Site map showing major city streets

3.0 WHEN IT RAINS

3.1 Combined Sewer Overflow

In urbanized areas, when rainfall washes over street pavements, roofs, gardens, yards and trees, both bacterial and metal contaminants are captured in the process. The sewer system built beneath the Garrison watershed is a typical 'combined sewer system,' a single pipe channelling both stormwater and sanitary sewage. As it is, in the combined system, rainwater runoff and sanitary sewage are carried to a treatment plant, cleaned and then discharged to the receiving waters of Lake Ontario. In the event of heavy rainfalls, the system will receive a sudden increase of stormwater and exceed the sewers designed capacity, resulting in an excess mix of stormwater and raw sewage to be discharged directly into Lake Ontario through the city's combined sewer overflow (CSOs) system. In the event that the CSOs are used, large amounts of bacterial pollution enter the lake and wash up on Toronto's beaches, causing restricted public access. Eliminating the use of CSOs has now become a common environmental, political and community goal.[15]

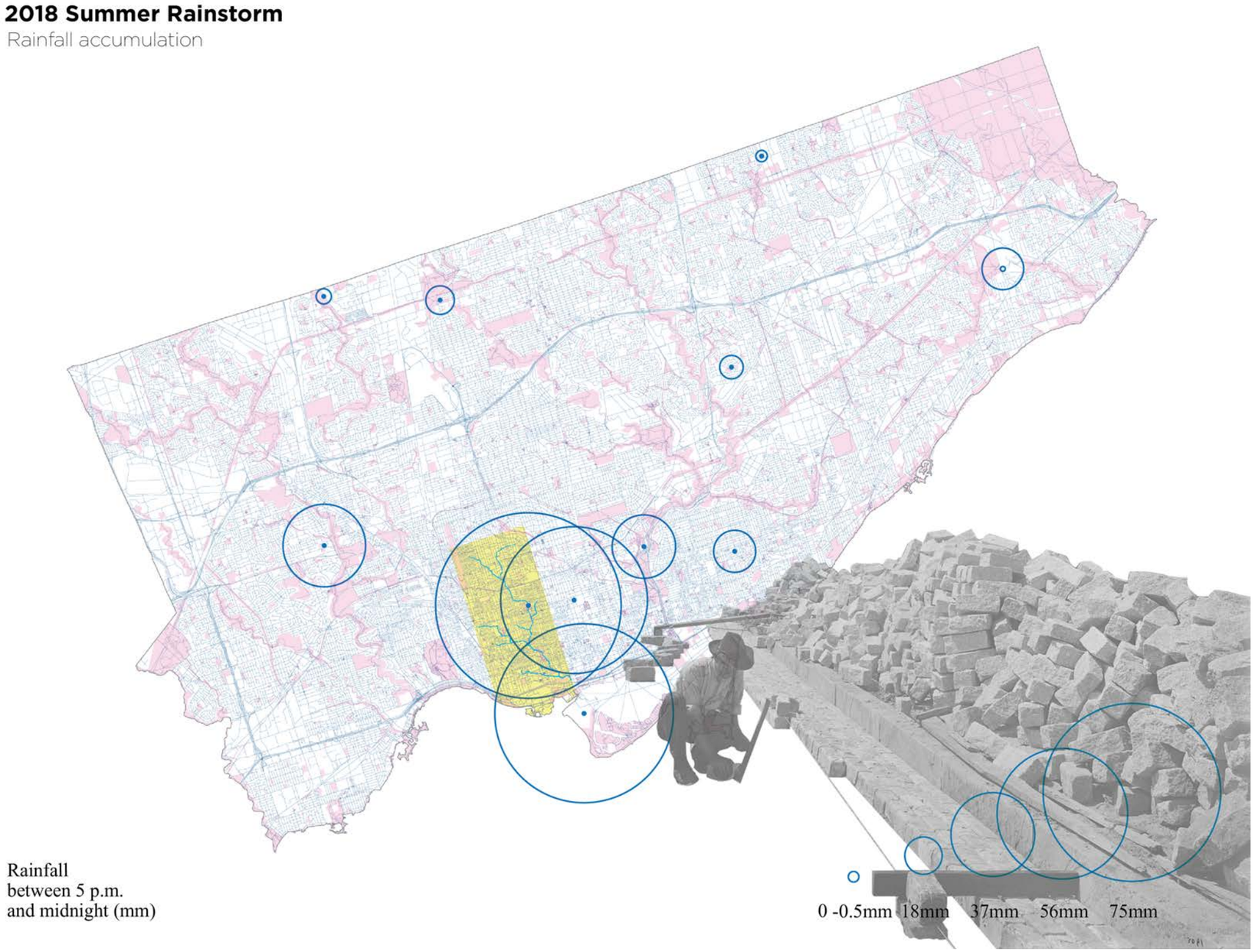
3.2 The Cost of Storm Events in Toronto

Heavy seasonal rainfall and dramatic storm events are a common occurrence in Toronto, typically overwhelming the city's aging single pipe sewer system and sending the combination of stormwater and sewage into the systems CSOs. On August 7th of 2018, the city experienced one of its most recent extreme weather events, a summer storm that dropped 64mm of rain in only 2 hours. This storm like others severely overwhelmed the sewer system, resulting in flooding throughout much of the downtown and causing large amounts of urban runoff to enter the city's waterways. Just this one storm event cost $80 million in damage. [16]

These sudden and extreme weather events known as "ghost" or "ninja storms", are expected to happen more frequently as Toronto faces the oncoming effects of a changing climate.[17] According to University of Waterloo Environmental Sciences professor Blair Feltmate, as a result of climate change caused extreme weather events, Toronto's weather is going to become hotter, wetter and more unpredictable.[18]

The City of Toronto has had a costly history of extreme weather events, each time bringing the city to a standstill. In 1954, Hurricane Hazel brought down 121mm of rainfall and destroyed 500 homes, most of which being located west along the Humber River; if occurred today the cost of damage is estimated to be $1 billion. In 2005, a severe summer thunderstorm brought down in some locations, 103mm of rainfall an hour, resulting in flash flooding across Toronto and a portion of road being lost to a sink hole, costing $642,400,000 in damage. On July 8th of 2013 a sudden storm dropped 96.8mm of rainfall in less than 2 hours, adding to the 38mm that had fallen the previous day. The heavy rainfall, again, overwhelmed the city's stormwater sewer system, causing flooding at the foot of the Don Valley Parkway, submerging vehicles and public transit, leaving 500,000 households without power, flooding 3,000 homes and causing the Garrison sewer system to overflow. The cost of damage was $1 billion.[19]

Figure 8.



4.0 TORONTO'S STORMWATER MANAGEMENT PLAN

4.1 Stormwater Strategy

Knowing that the City of Toronto will continue to face unpredictable storm events and that the city's aging stormwater infrastructure is in need of improvement, the current government has taken steps toward addressing these issues; in 2018, it was announced that the city will receive a $3 billion stormwater management plan improvement project and released in 2019 was *Toronto's First Resilience Strategy* plan, both steps toward becoming a city that will be more resilient to future climate caused events. The improvement project will update the existing sewer system by expanding current lines, constructing retention tunnels and update treatment facilities. [20] The city will also be implementing alternative solutions to stormwater management by developing urban ecological infrastructure (UEI), which will be used in the re-naturalization project of the Don River Mouth. Between the upgrade to the city's built infrastructure and introducing UEIs, will be Toronto's most ambitious and costly infrastructure projects in the city's history. [21]

It should be noted that the topic of Toronto's dated infrastructure and the improvements that are needed have been ongoing for over 20 years. The purposed new storage tunnel that would collect and store the city's CSOs has been in discussion just as long.[22] As is common in government, projects promised by one party are not always a carried out by another.

The announcement of Toronto's stormwater management improvement project, works to incorporate both man-made and natural forms of stormwater infrastructure as part of the city's resiliency plan. Taking a step towards re-incorporating natural landscape back into the management process. Of that management process, the Don River's re-naturalization plan is part of Toronto's Port Lands Flood Protection Project that looks to transform the existing Don River mouth back to its pre-industrial state as a way to provide critical flood protection to 240 hectors of Toronto's eastern waterfront. [23] As part of the Don Valley, re-naturalizing the river will also offer opportunities for creating trail networks and other public amenities along the river's edge.[24] With the completion of this project, it will set the example of how the city is able to incorporate more holistic approaches to urban infrastructure, re-balancing the relationship between the city's urbanity and its natural landscape. Being that the Don River has become a polluted waterway due to decades of urbanization,[25] this project also illustrates the need for the restoration and the preservation of natural landscapes in urban areas.

Ultimately, what this re-naturalization plan aims to achieve is to reduce the influx of runoff from entering the city's stormwater system during the event of a storm, as a way to help mitigate flooding at the Don River's outlet and southeast of downtown. However, the mitigation plan for this project only reaches so far, continuing traditional forms of stormwater infrastructure to be overused in other areas of the city. Even after the completion of the Don River flood protection plan, with increased urbanization and more extreme weather events, parts of the city will still be subject to flooding. The hard materials, like pavement and concrete that are being added to the city each year will ultimately prevent more rainwater from seeping back into soil, contributing to runoff and overflowing stormwater sewers.[26] Knowing this, the city has taking steps to help address this reality, like with the $3 billion water management expansion plan and the re-naturalization of the Don River, however that plan is largely dependent on expanding sewer systems, catch basin and diversion tunnels,[27] having the Don River project just be a small portion of the overall plan. By prioritizing these single-purpose stormwater infrastructure systems, continues the mentality that the city and it's natural processes should be thought of and developed separately.

As a way to directly and visibly benefit the public, the money spent on these improvement projects could also double as funding for regenerating the city's parks to also facilitate natural infrastructure.[28] In doing so, Toronto can continue the process of interconnecting open public space with necessary urban ecological infrastructure, linking the city back to nature. Like in the case of the Don River project, the city's landscapes and the natural processes they provide can help relieve stress on the city's aging infrastructure and offer multiple types of ecosystem services through the use of urban ecological infrastructure.

4.2 Reducing the Amount of Water From Entering Toronto's Sewers

In a separate sewer system, having a dedicated pipe for wastewater, would allow municipal sewage to be contained and then taken to the sewage treatment plant before being discharged into the lake. Having a separate stormwater pipe, could then allow for alternative treatment techniques to intersect the system helping reduce the amount of runoff being carried to the receiving waters. These types of separate storm lines have been constructed in Toronto, mainly to collect road surface runoff, but most other forms of runoff from private yards, gardens and laneways continue to be collected in the city's older, main combined sewer system.[29]

Toronto has generally been considered too densely developed to allow for the amount of land necessary to manage stormwater through urban ecological infrastructure and alternative treatment techniques. However, the city's public ownership of open parkland provides a considerable inventory of space that could be used for implementing these systems. [30] The remaining land within the Garrison Creek Ravine offers opportunities to establish UEIs and alternative treatment techniques; within the Garrison's remaining footprint, stormwater could be directed, retained and filtrated, helping to purify and remove heavy metals and pollutants. The cleaned stormwater could then be reused as park irrigation, stored naturally in an canopy of trees, filter into the groundwater supply or be directed back into the sewer system as a cleaner and smaller volume then it would have been if it had not been diverted. The systems put in place could carry all through the parks that fall within the Garrison ravine, creating an interconnected network of wetlands and filtration beds that follow all the way to Lake Ontario, offering different public amenities and ecosystem services alongside a unique form of landscape focused urban infrastructure.

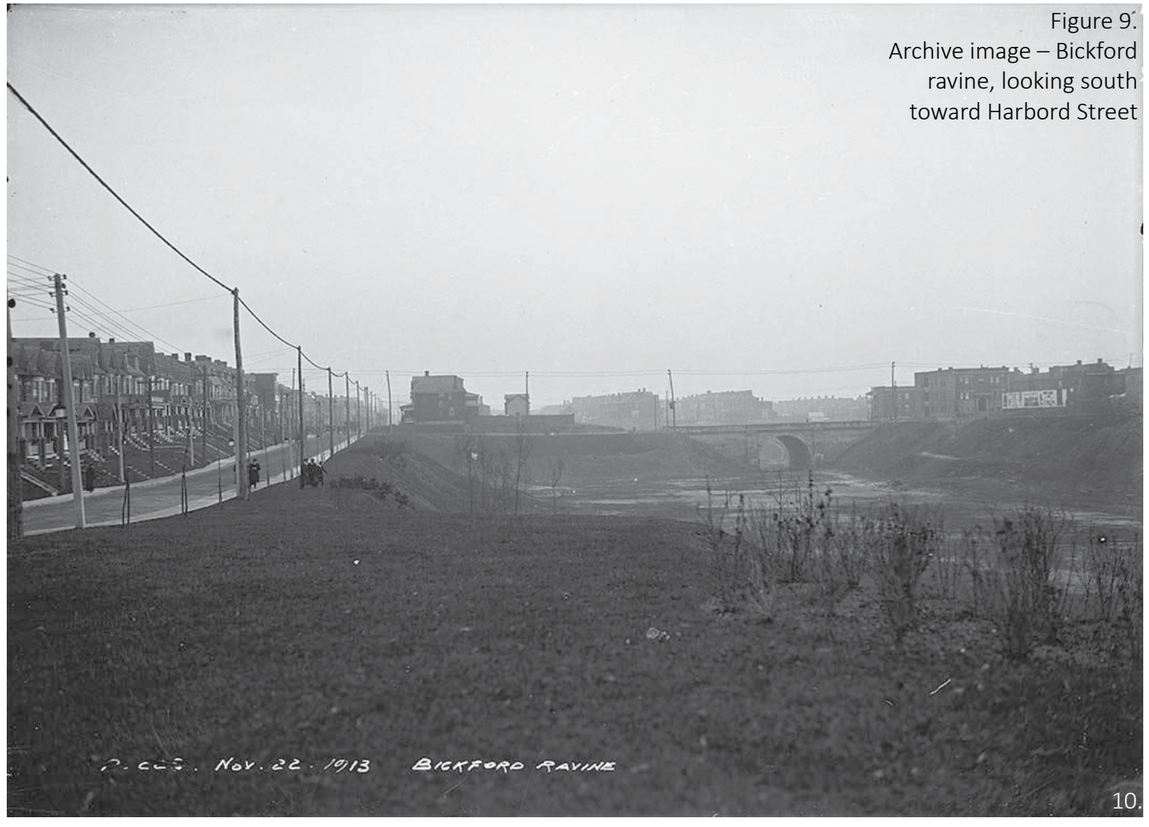


Figure 9.
Archive image – Bickford ravine, looking south toward Harbord Street

5.0 PRECEDENT STUDIES

5.1 Gowanus Canal - Sponge Park™ Pilot

Location: Gowanus, Brooklyn | **Landscape Architect:** DLAND Studio

The Gowanus Canal, originally a wetland creek, is now an urban waterway bordered by industrial buildings and surrounded by growing residential neighbourhoods. Decades of industrial exposure and regular discharge from New York's combined sewer system has left the canal with an dangerous amount of industrial toxins in its soil, water and canal bed, becoming one of the most polluted bodies of water in America according to the Environmental Protection Agency. [31]

As a way to "minimize the volume of overflows that occur within the canal, reducing raw sewage contamination and thus helping to clean the watershed" [32], DLAND Studio designed the Sponge Park™, which will re-direct, hold and treat nearly 2,000,000 gallons of stormwater per year through its natural filtration system, minimizing the amount of overflows into the canal. Designed as modular concrete forms for ease of implementation to similarly affected sites, the Sponge Park™ uses gravel, sand and a selection of plants that have the ability to extract heavy metals and biological toxins from the contaminated runoff.[33]

Sponge Park™ is a pilot project that is part of a larger master-plan to create an esplanade running the length of the canal for the surrounding neighbourhood that has seen a growth in its residential development. Interconnecting public amenities with urban ecological infrastructure, the design aims to create a working landscape that improves water quality and increase public activity along the canals edge, while communicating a larger vision for stewardship of the environment to a community with many competing voices, agendas and concerns.[34]

The Sponge Park™ pilot project on the surface seems to be a successful example of urban stormwater runoff remediation and filtration, it interconnects public open space and green infrastructure systems by having a stacked program and offers a public space were active green infrastructure is visible. However, when researching this project there were a couple of things that I found odd, not related to its design, but to its mentality of ownership over an urban runoff mitigation concept. The issues I have or what I find off putting about the Sponge Park™ pilot, is that the name, Sponge Park™ has been trademarked and that the design for the modular gravel and plant bed system is patent pending. In a New York Times article, Susannah C. Drake, a landscape architect and founding principal of DLAND studio, explains that by trademarking the name she hopes it will help have the design be replicated elsewhere, but does not go on to further explain the reason for trying to patent the design.[35] For a project that is meant to act as a solution for helping clean a city's waterway and reduce the amount of pollution from entering the watershed, these two acts of trying to privatize the idea cheapens the concept and almost makes the whole project seem disingenuous.

As defined by the Canadian Society of Landscape Architects (CSLA): "Landscape Architecture is the design profession concerned with the design, planning, management and stewardship of the land...The goal is to achieve environmental, social or aesthetically pleasing spaces by investigating existing social, ecological and geological conditions in the landscape…"[36] If landscape architects are meant to act as stewards of the land, then trying to monetize off something beneficial you provided for it, seems to give a conflicting message of priorities. Regardless, this is a successful project and an example of natural ways cities can help reduce runoff and minimize pollution from entering its water systems.

As this project relates to the focus of my GP topic of reviving Toronto's Garrison Creek as a way to help minimize urban runoff, DLAND Studio's Sponge Park™ provides a concept example of stacking public amenities over top of a working landscape. This technique then allows for them to operate separately, so to not negatively affect one another, while still having integration between programs. When studying this project as part of its master-plan strategy, it also provides an precedent of how to link urbanism, environmentalism and infrastructure through a systems approach, having the primary function of being an stormwater runoff filtration system, which then creates a public landscape for the surrounding residents which will also act as visible green infrastructure that reduces pollutants from entering the canal. Bringing awareness of modern urban issues while providing a public amenity.

5.2 Town Branch Commons and Park

Location: Lexington Kentucky | **Landscape Architect:** Scape Studio

The headwaters of Town Branch that were formed by Lexington's surrounding urban area, historically has been used as a waste canal, sewer and water conduit for the city. Today, it is a hidden remnant of public infrastructure buried beneath the city of Lexington, Kentucky. The disconnection Lexington has from its historical landscape is also present in the city's downtown core. At the time of this projects proposal, Lexington's downtown offered a series of fragmented public spaces that had little connection to the regions buried waterways or the geology that helped form the city. By rethinking the public realm of Lexington's downtown, Scape Studio designed the Town Branch Commons and Town Branch Park, that looked to reconnect the city with its historic geology through introducing new public amenities influenced by the surrounding karst limestone landscape and the natural movement of the areas hydrology.[37]

Having visibly and invisibly shaped downtown Lexington, karst limestone is unlike most other stones since it is highly porous which can create unexpected water flow patterns. Lexington's karst has allowed for underground waterways to form, having water travel through layers of permeable limestone, surfacing into pools, disappearing into sinks and dramatically resurfacing where least expected.[38]

Scape's design for the Town Branch Commons, utilized the 2.5-mile path along the historic Town Branch Creek as a way to weaves and connect a linear network of public spaces to Lexington's downtown. Much like the unexpected flows of water that pass through the karst limestone, the proposed public spaces along this path, introduces spontaneous placement of pools, pockets, water windows, and stream channels as a way to break the networks current linear form and resurface water into the public realm. In doing so, the Town Branch Commons project aims to rejuvenating the downtown by creating a hybrid park network that has a multi-modal trail system and connect Lexington's rural and urban communities by establishing a landscape of natural water filtration systems.[39]

The design for Town Branch Park was seen as an opportunity to reveal and restore Lexington's downtown portion of the Town Branch Creek, while offering a new large-scale open green space. The concept was to daylight the water of Town Branch Creek and use its restored stream bed to help arrange a series of highly programmed recreational and ecological destination spaces; building on the city's identity as a way to create a landscape that celebrates civic values and active community networks. The site of the park acts as a link between the 3 trail networks that go through and around the downtown. Within the network of trails, Town Branch Park will act as a public hub, connecting regional open space with the urban core while re-introducing a piece of Lexington's landscape history.[40]

"To revive is to restore to life, to bring back from disuse."[41] Scape Studio's approach to both the Town Branch Commons and Town Branch Park was one that looked to revive rather than to restore, seeing revival as a way to creatively move forward, appose to restoration, which is driven by nostalgia for the past. By reviving Lexington's relationship to its natural hydrology, Scape was able to seamlessly integrating geological and civic history into modern public space; using water as a primary place making and identity driver, which will reintegrate the regions history back into city streets and civic life. The project is an example of how public space and amenities can be shaped by the surrounding landscapes natural processes and how reviving a site can showcase history while still being routed in a modern urban context. The combining public spaces work together as an interconnected system, driven by the disappearing and reappearing Town Branch Creek, where and how this creek surfaces dictates how a space will be shaped and what public amenity it will offered. It also reinforces the notion that historic preservation does not have to come in the form of recreating what once was, but instead using the past to create something that will be.

As this project relates to the focus of my GP topic of reviving Toronto's Garrison Creek, it deals with the similar task of stitching together fragmented historical urban landscapes, exposing there hidden history and natural processes in the form of public space and infrastructure. Re-establishing the connection between the urban environment and its surrounding natural landscape as a way to restore equal balance between the systems that support and enrich where we live.

6.0 DESIGN PROPOSAL

6.1 Site Introduction

With the city's aging infrastructure and there being little room for further development, there's an opportunity to utilize the public parkland's that are available within the Garrison watershed along with adapting select residential streets to act as engineered blue & green streetscapes. What remains of the ravine provides an adequate amount of space to support new forms of landscape focused infrastructure that would help Toronto in its efforts to reduce the amount of surface runoff from entering its waterways and mitigate the effects of storm related flooding.

Using alternative concepts of stormwater management to help repair Toronto's relationship with the Garrison, the ravine will be broken down into 3 branches and be provided with a kit of parts that helps to direct, retain and filtrate stormwater; these interventions will then facilitate new forms of urban public landscapes that help to memorialize the Garrison's forgotten landscape.

Figure 10.
Project concept collage

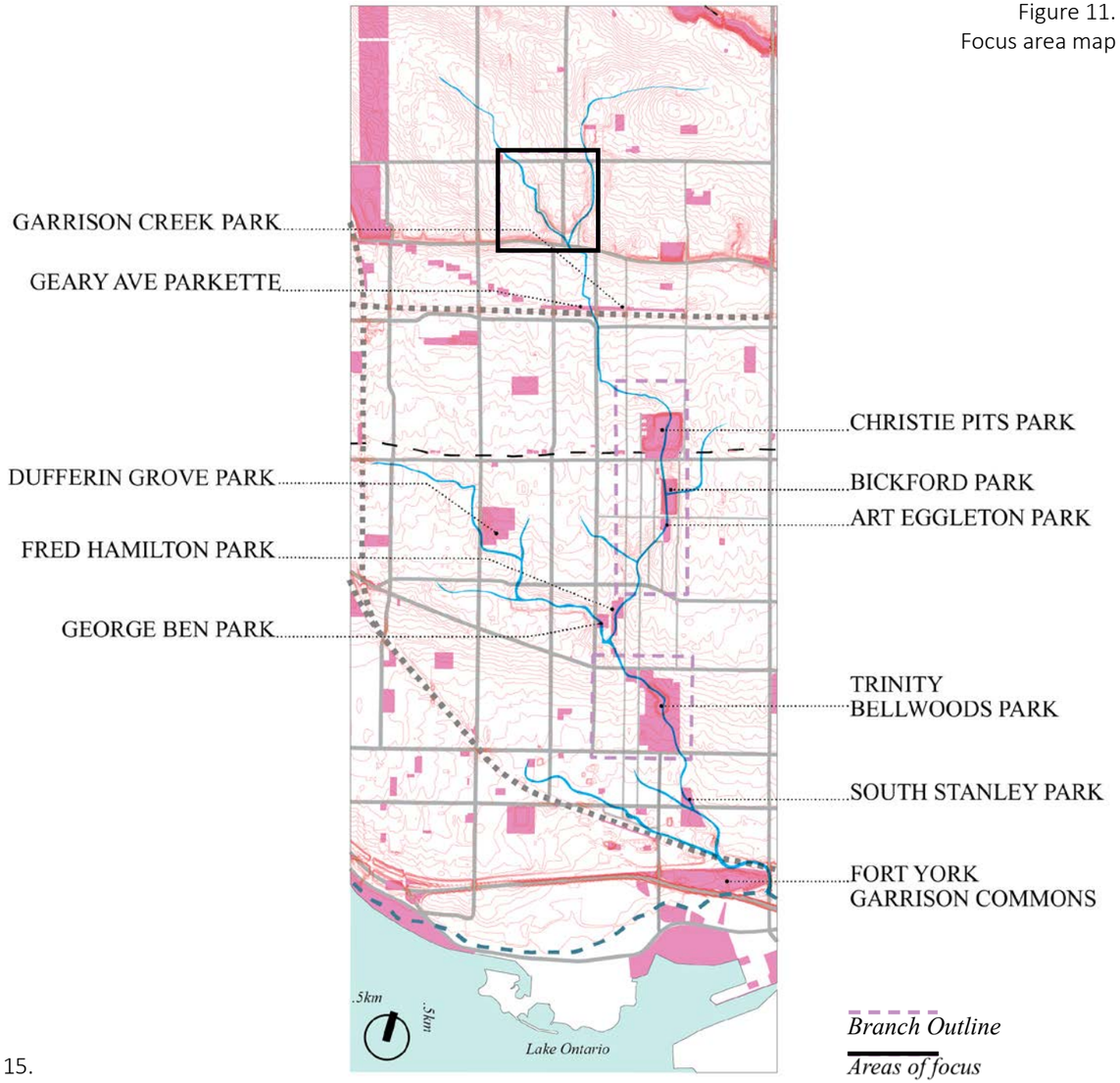
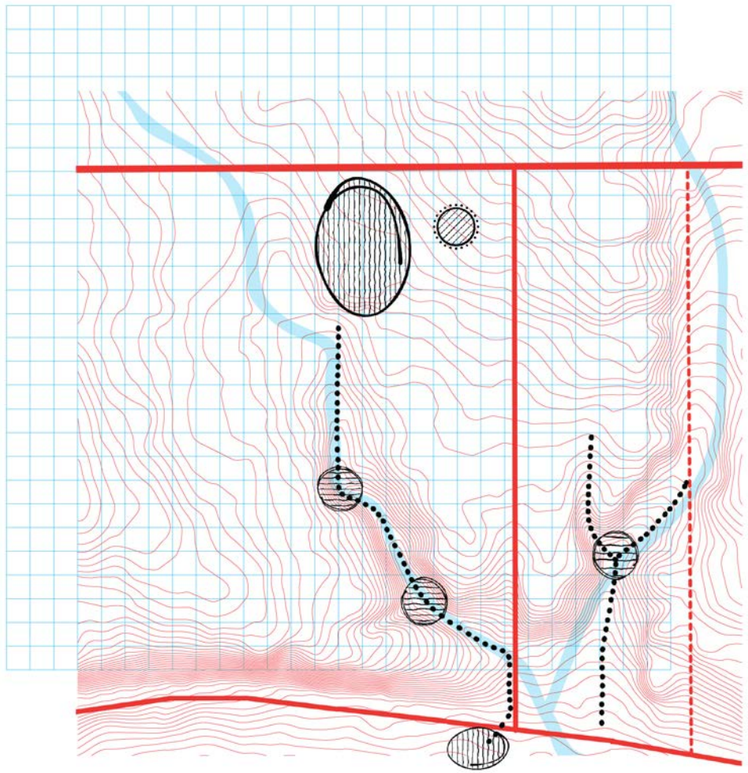


Figure 11.
Focus area map

6.2 Upper Branch

The Upper Branch of the Garrison provides the most dramatic change in topography, which allows for both soft and hard infrastructural approaches to the design. Within this branch, the proposal is to try to direct, retain and natural filtrate as much stormwater runoff as possible through underground retention basins at the north and south points of the branch. As well, the residential streets that are formed by the ravines topography offers the opportunity to introduce blue and green streetscapes, the proposed design of these would occupy 1 lane of traffic and act as an extension of the pedestrian sidewalk.

Figure 12.



Diagrammatic Concept Plan

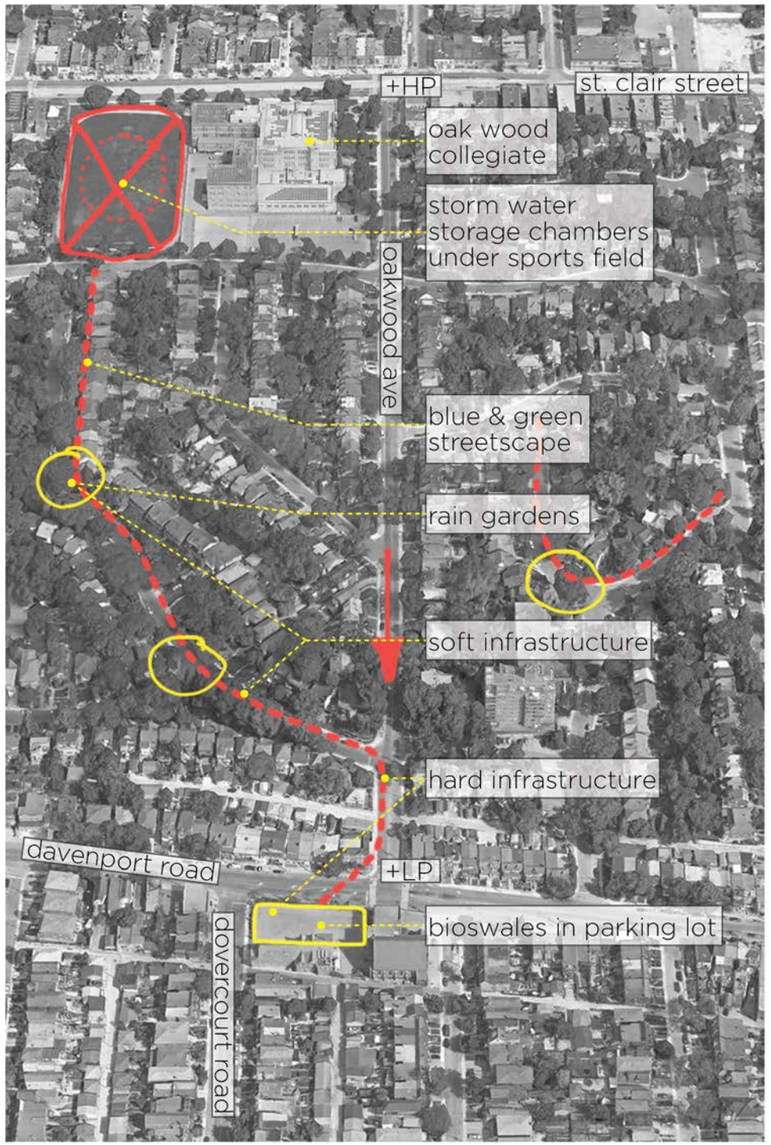


Figure 13.
Upper branch diagrammatic plan

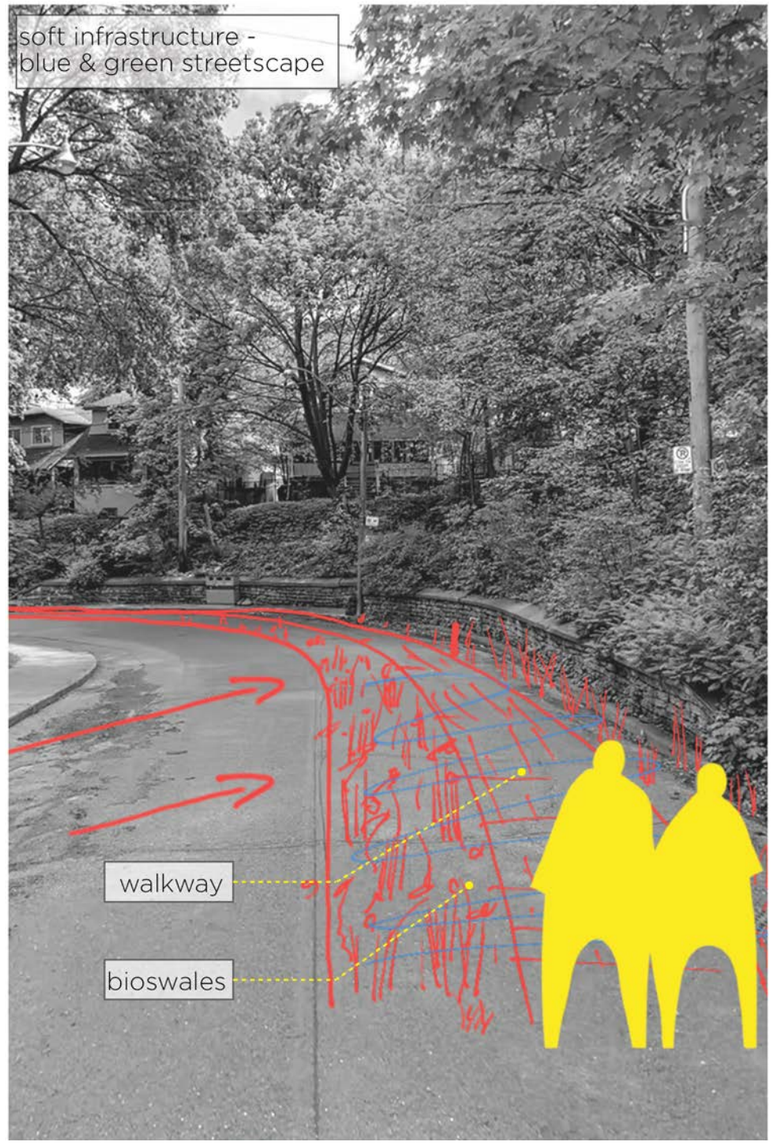


Figure 14.
Springmount Ave concept sketch

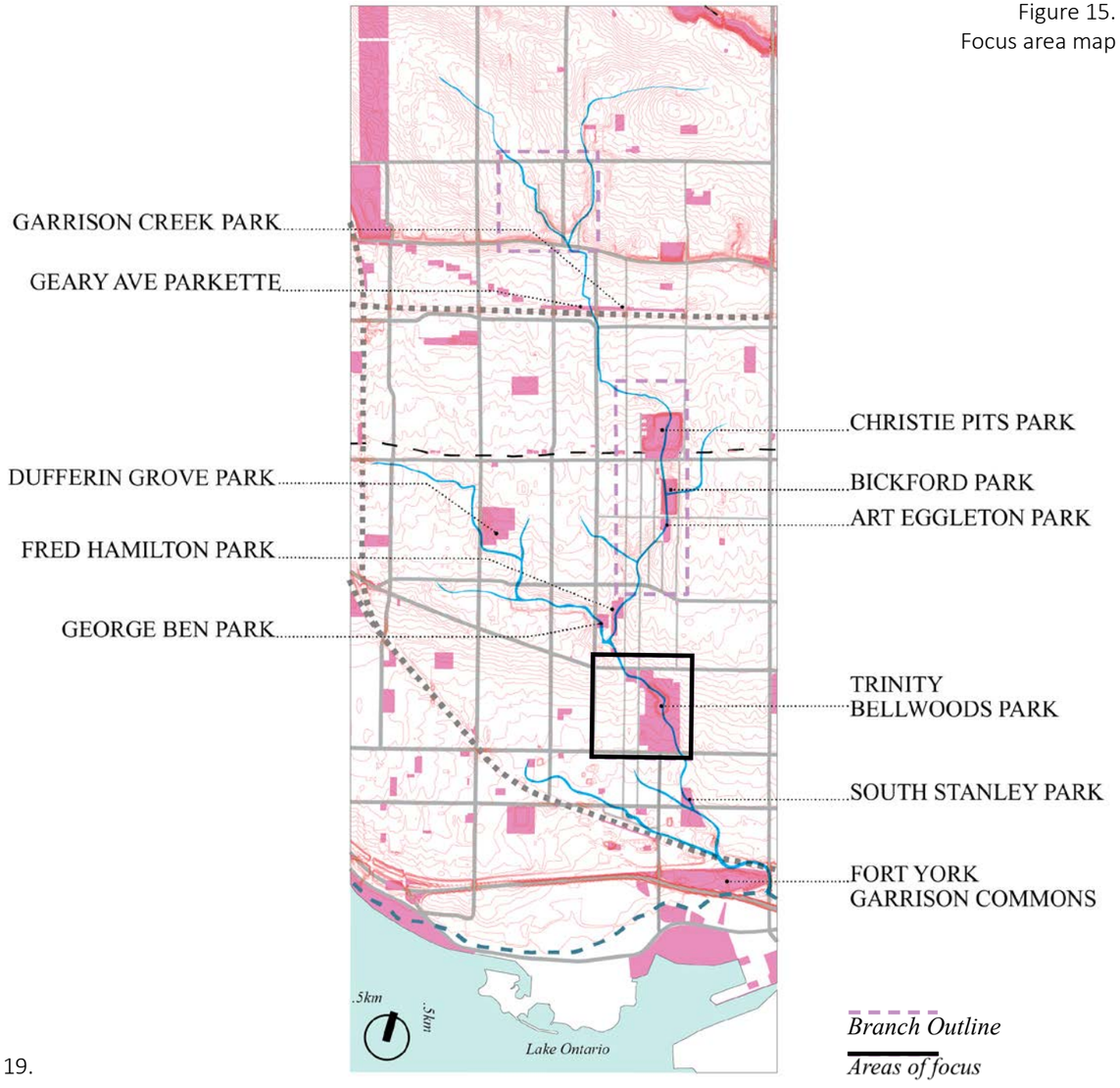


Figure 15.
Focus area map

6.3 Lower Branch

Lower branch, focuses on design interventions within Trinity Bellwoods Park and along Crawford Street. Trinity Bellwoods Park within the lower branch was built around the banks of the Garrison and although some of the ravine was filled in almost a 100 years ago, there still remains a large portion of it visible and available for landscape interventions. The parks low point suffers from poor ground filtration, during heavy rainfall and winter snow melt the ground becomes a landscape of mud and puddles. Part of the branch's design intervention would be to introduce a wetland at the low point, helping to collect surrounding runoff and reduce pooling water on site. Crawford Street, which runs north to south and connects the lower branch to the mid branch, would be retrofitted with a similar blue and green streetscapes as the upper branch, where the pedestrian sidewalk would extend into 1 lane of traffic and act as a bioswale.

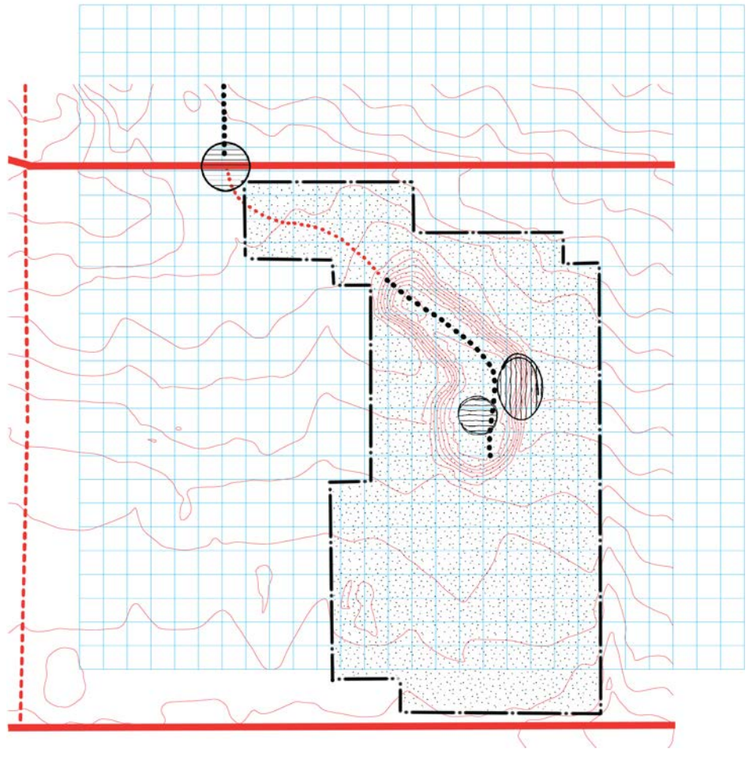


Figure 16.
Diagrammatic Concept Plan

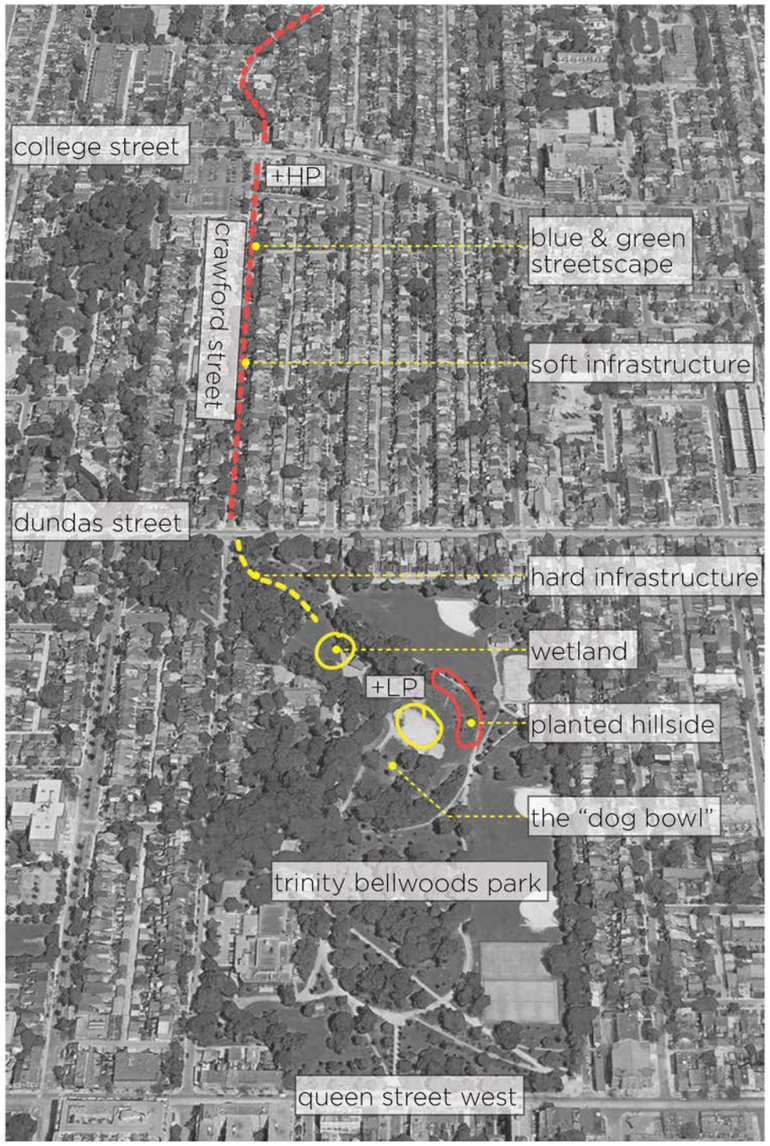


Figure 17.
Lower branch
diagrammatic
plan

Figure 18.
Trinity Bellwoods
Park concept
sketch

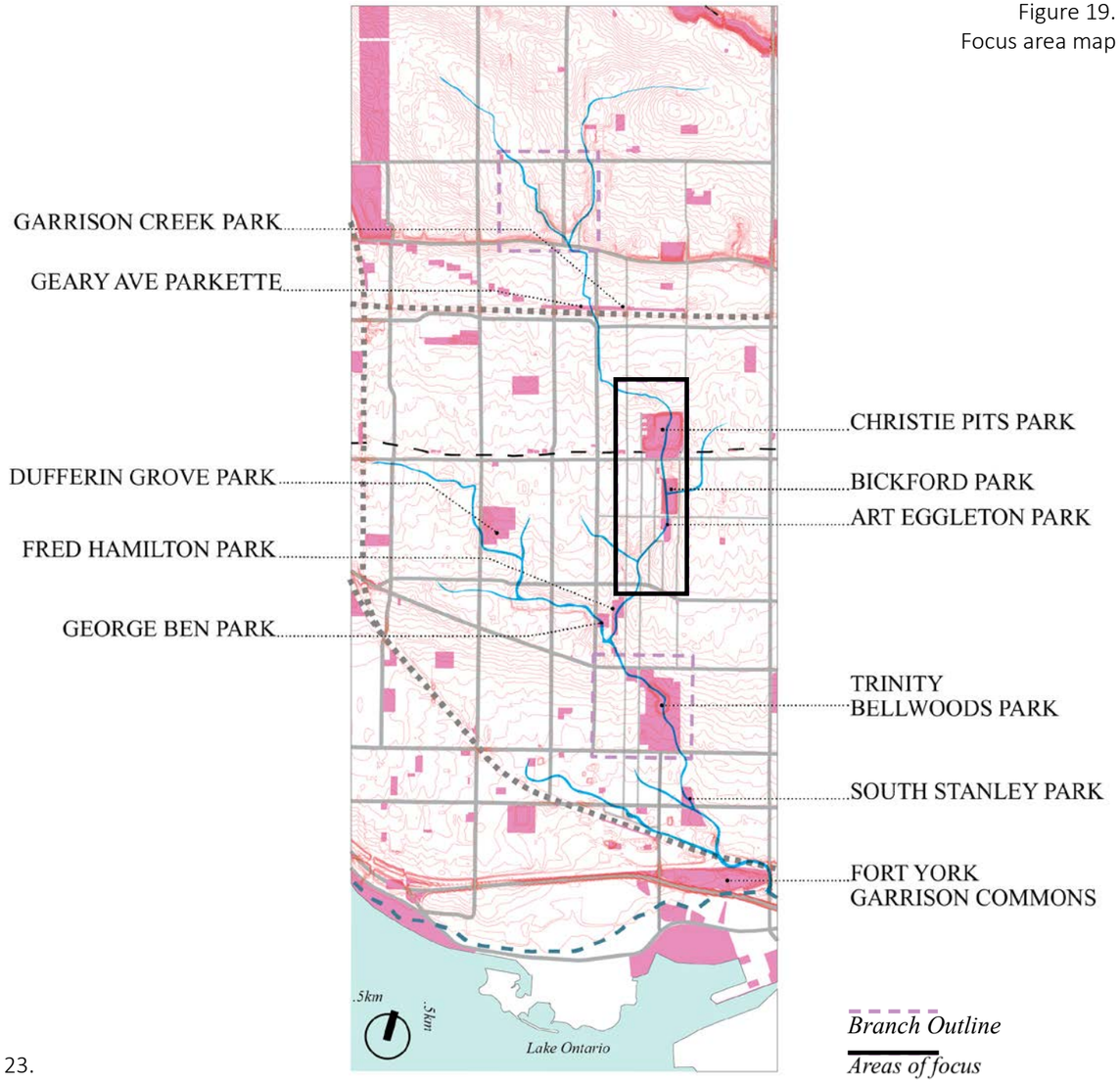


Figure 19.
Focus area map

6.4 Mid Branch

Mid branch, which is the main focus of this project. Within this branch the Garrison is most visible or known to have once been, this is due to both Christie Pits and Bickford Park having deep depressions in the landscape and there being little historic mementos scattered throughout the area. That being said, both park designs do not in any meaningful way showcase or reference the Garrison currently. To help reveal the relationship between space and place, this project proposal uses Bickford Park as its case study to explore how the Garrison can be revealed both physically and metaphorically.

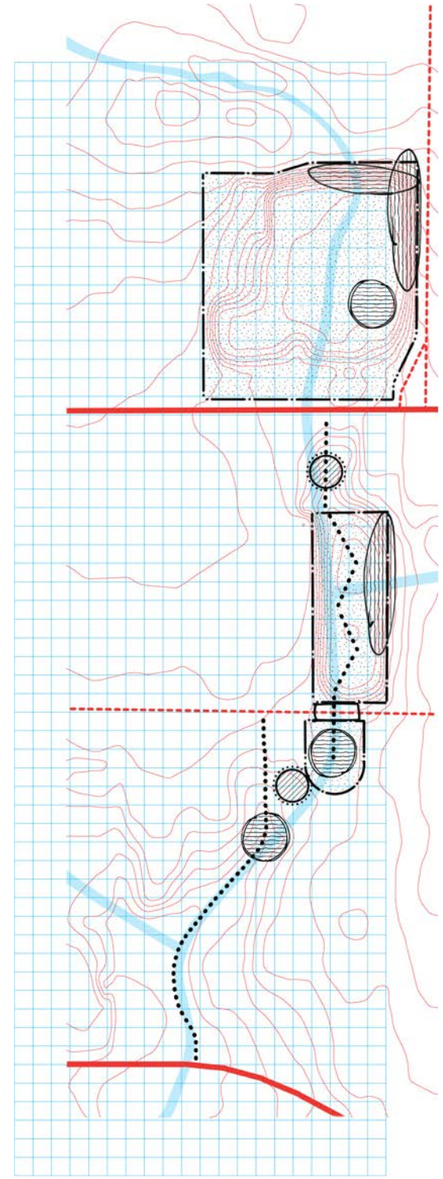


Figure 20.

Diagrammatic Concept Plan

In its current state Bickford functions as a typical urban park, providing space for informal recreation and respite. However, within the park there are hidden elements of the Garrison that could be exposed making its presence much more visible.

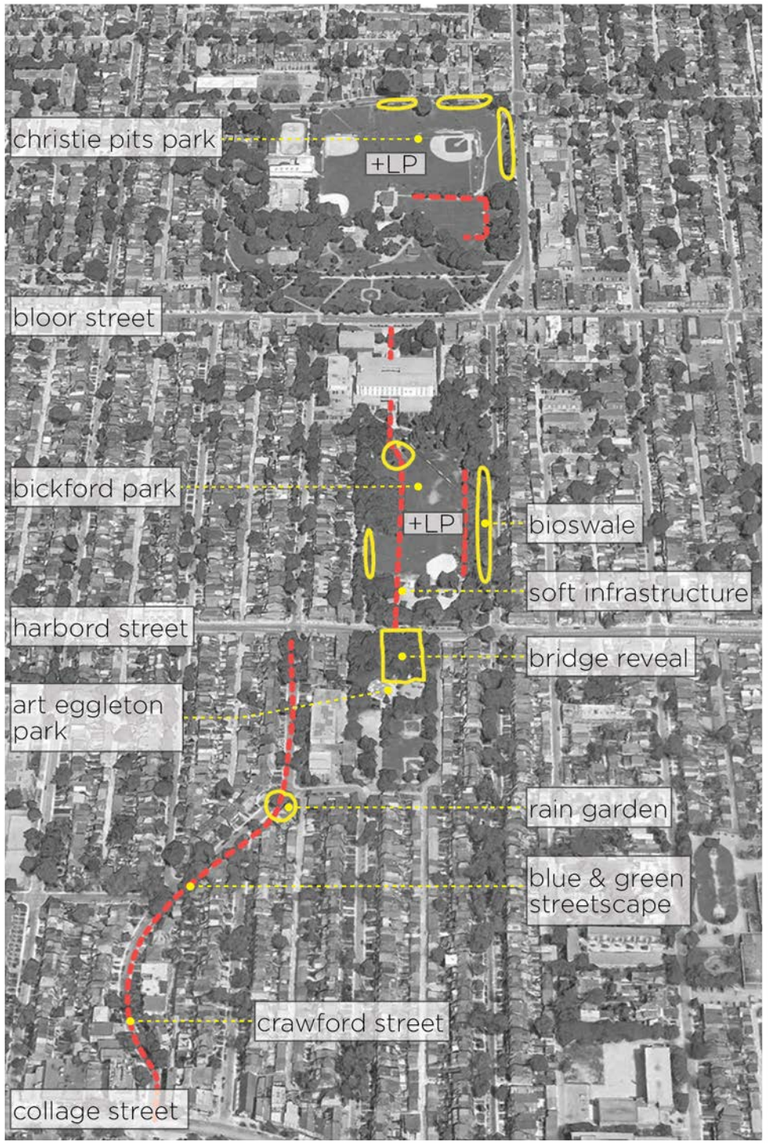


Figure 21. Mid branch diagrammatic plan

Currently Harbord Street disconnects Bickford from Art Eggleton Park. Uncovering the span of the bridge would allow for the two parks to function as one and work to create a public landscape that allows for direct interaction with a historic landmark.

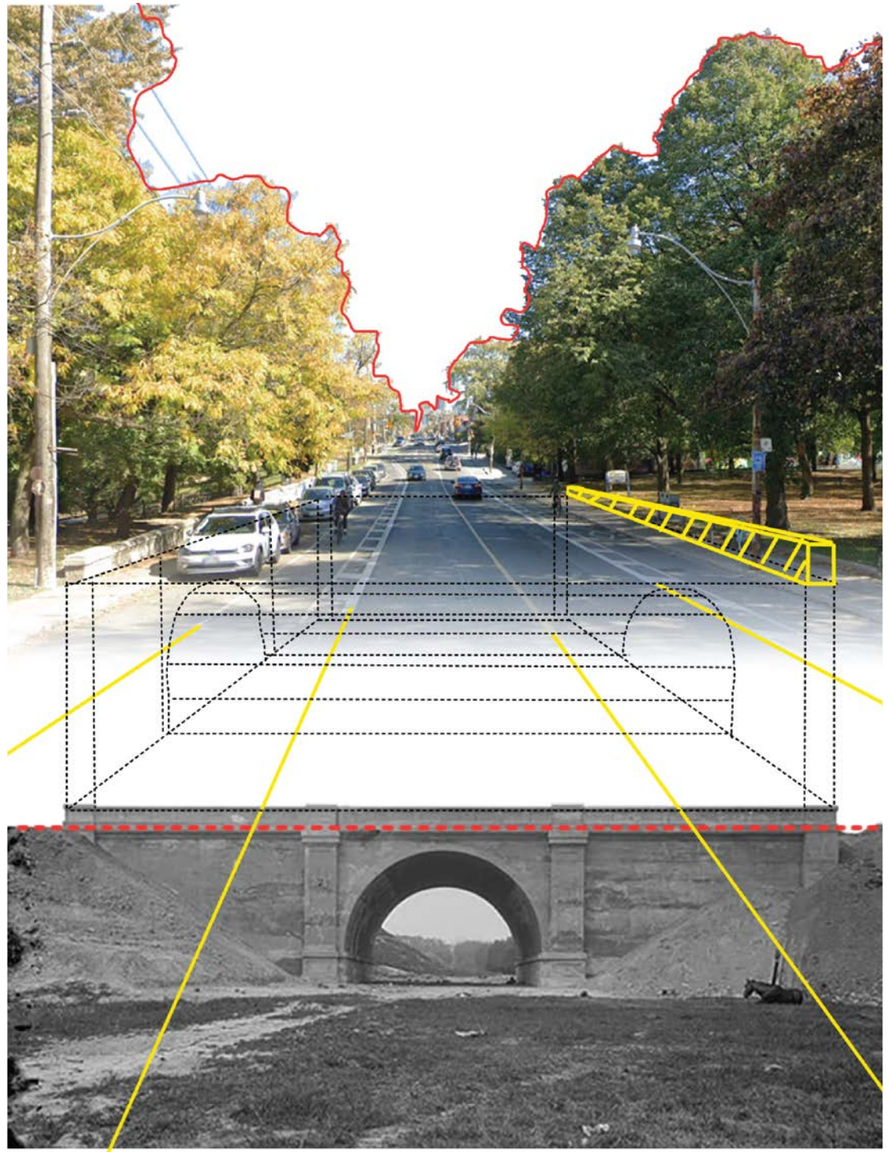


Figure 22. Harbord Street Bridge concept sketch

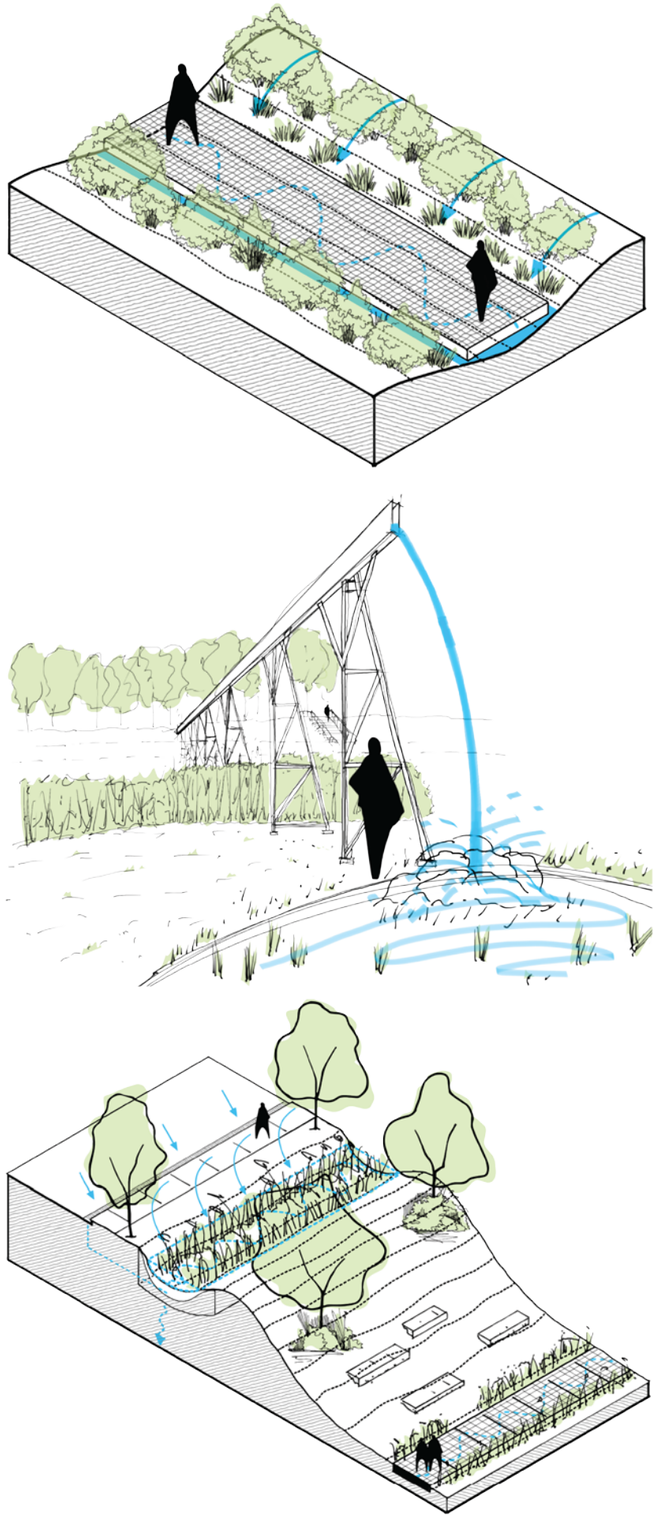


Figure 23.
Design concept
sketches

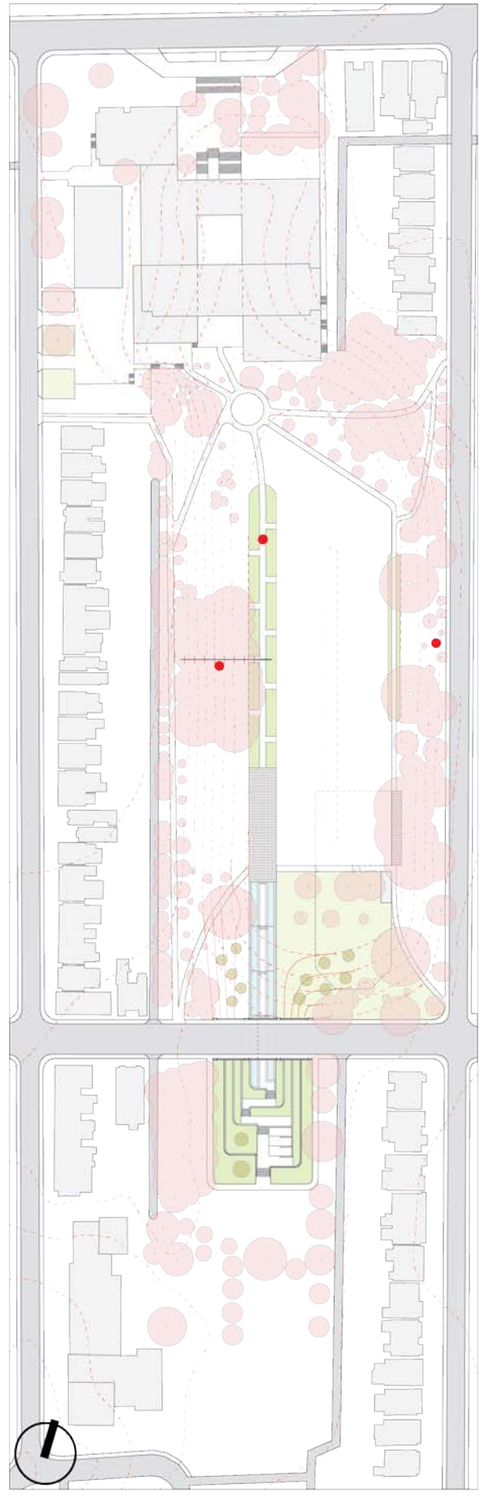
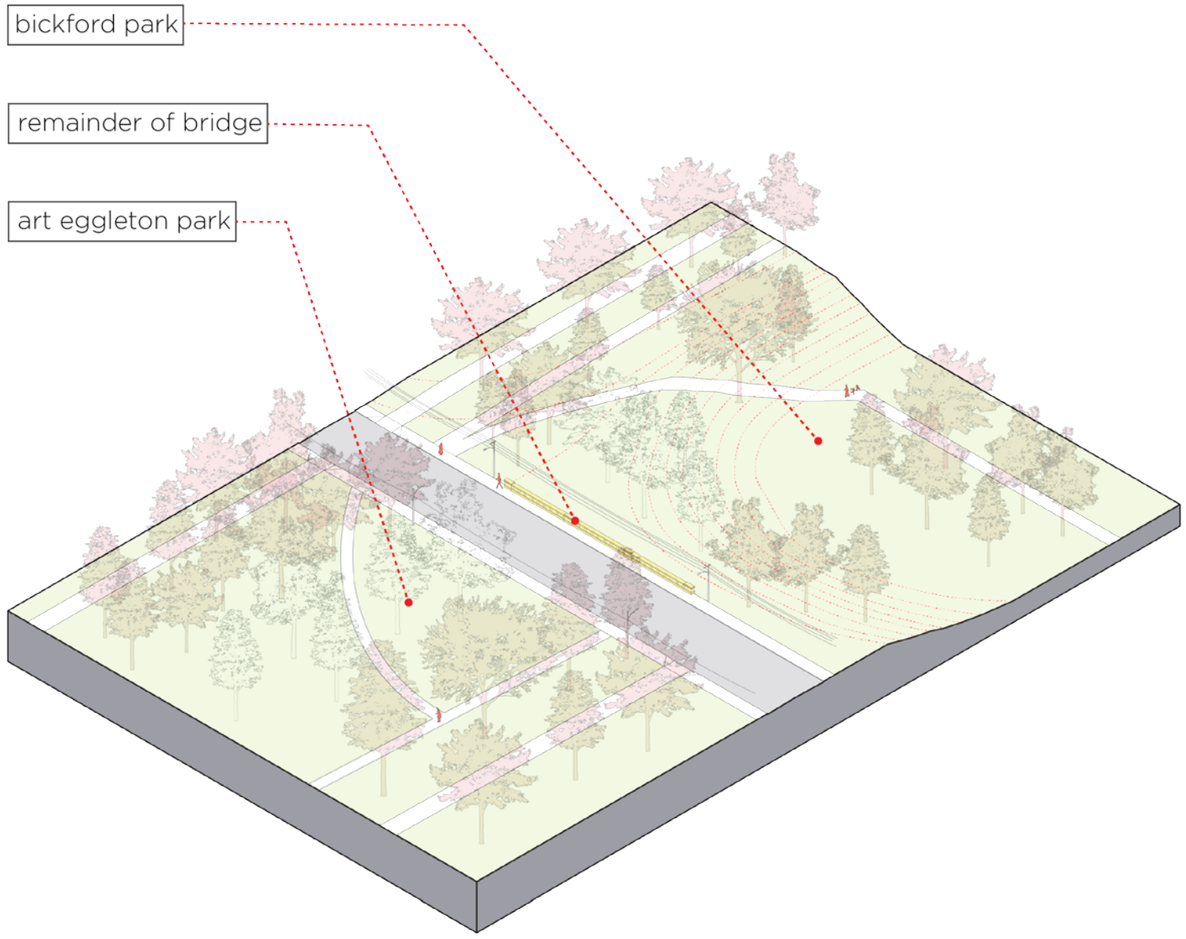


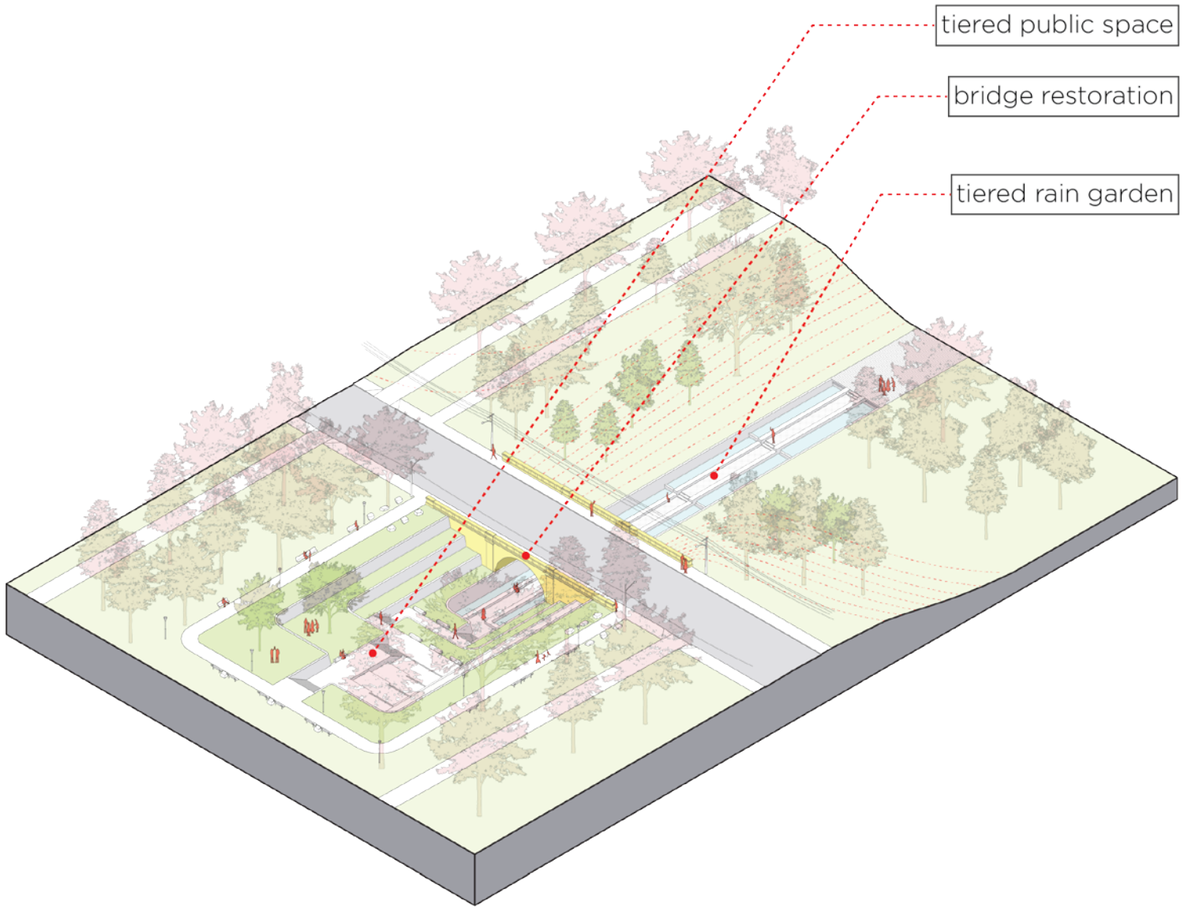
Figure 24.
Bickford Park
site plan

Figure 25
Harbord Street
existing condition

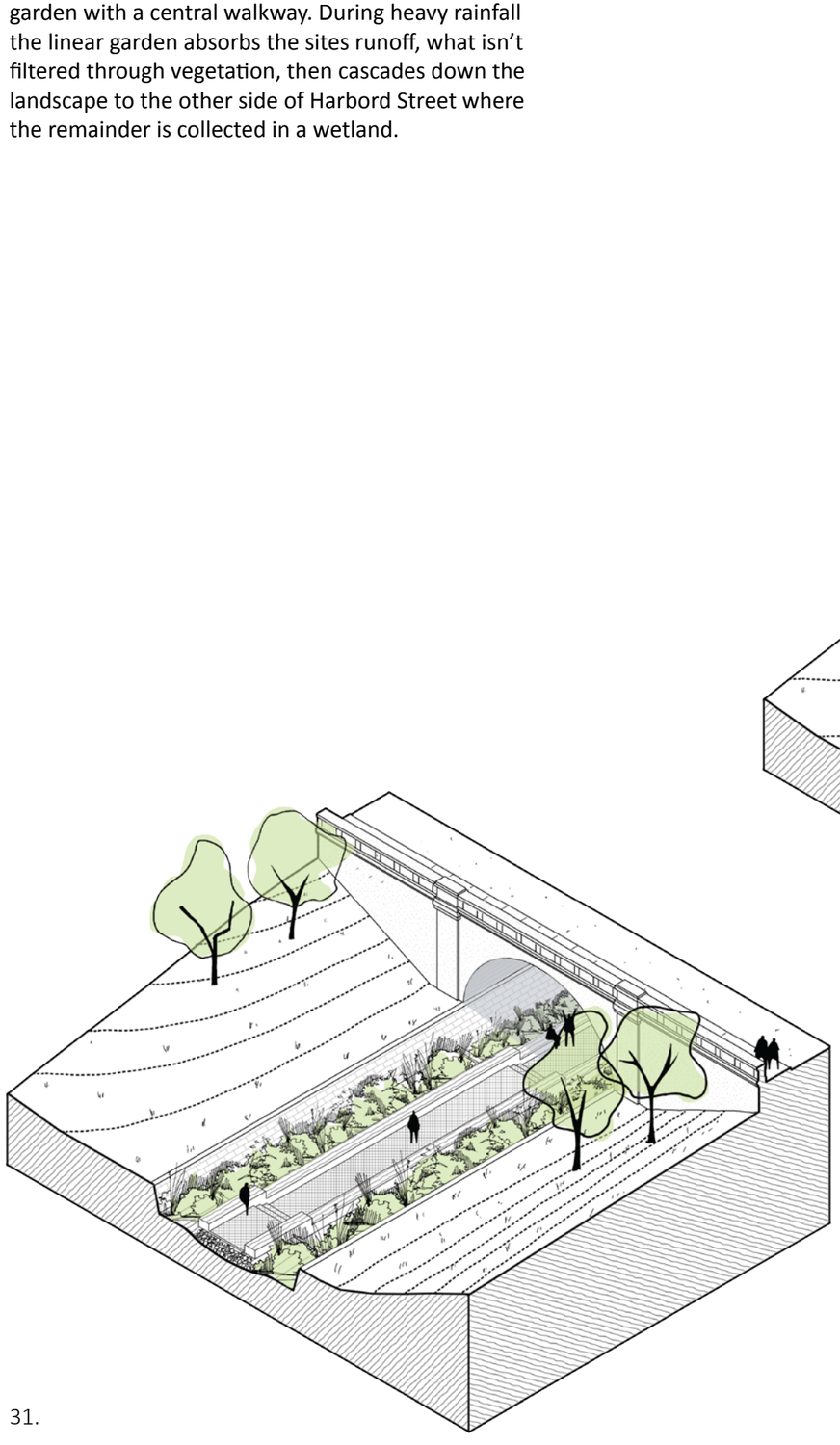
The design intervention would be to uncover the Harbord Street bridge and re-shaped the landscape to help direct and filtrate stormwater in a more visible way, symbolically referencing the flow of the Garrison Creek underneath the park.

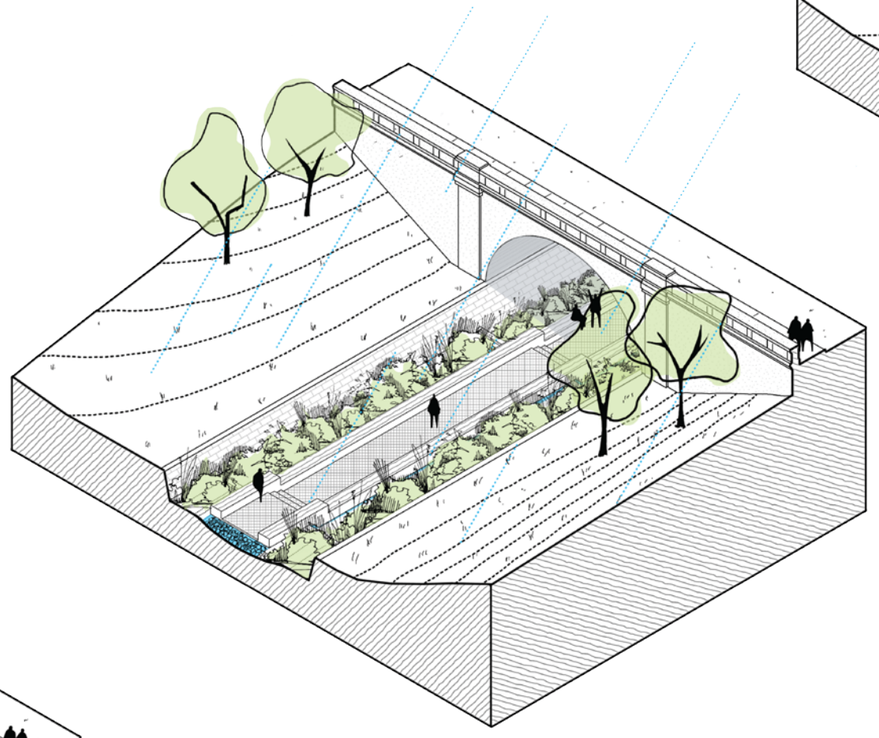
Figure 26.
Harbord Street
design proposal





At the base of Bickford Parks hillside, is a linear rain garden with a central walkway. During heavy rainfall the linear garden absorbs the sites runoff, what isn't filtered through vegetation, then cascades down the landscape to the other side of Harbord Street where the remainder is collected in a wetland.





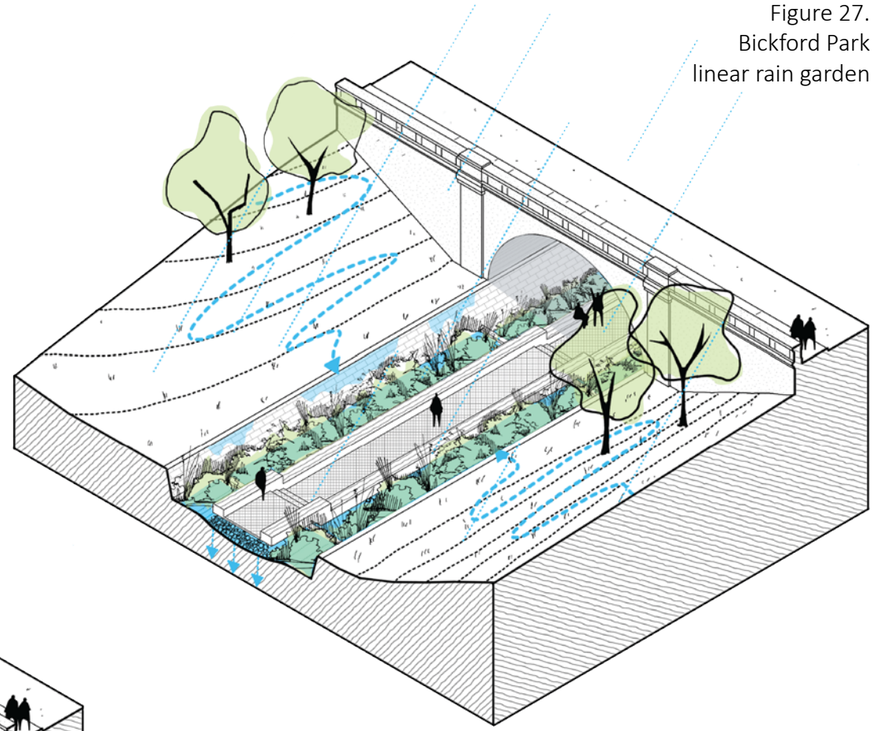


Figure 27.
Bickford Park
linear rain garden

South of the Harbord Street is a public landscape formed by planted terraces, which help to soften the difference in grade between the base of the bridge and street level. The terraced landscape acts as an informal public space where people are provided with a clear view of the uncovered bridge and waterway traveling under it.

Figure 28.
Art Eggelton Park
north to south section

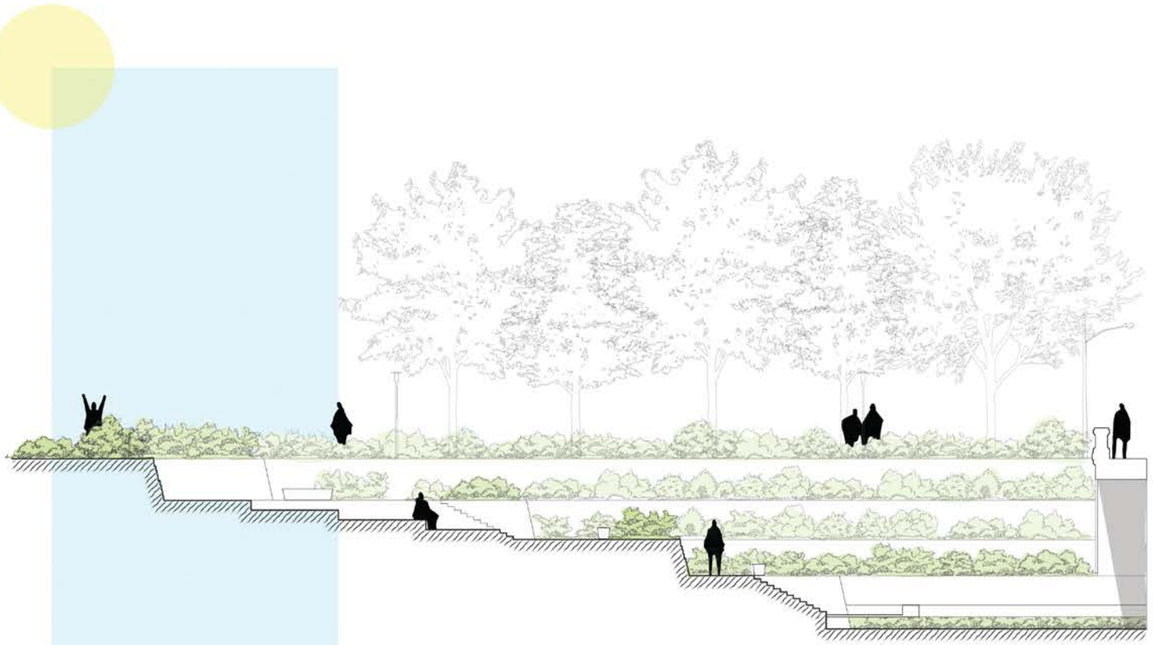
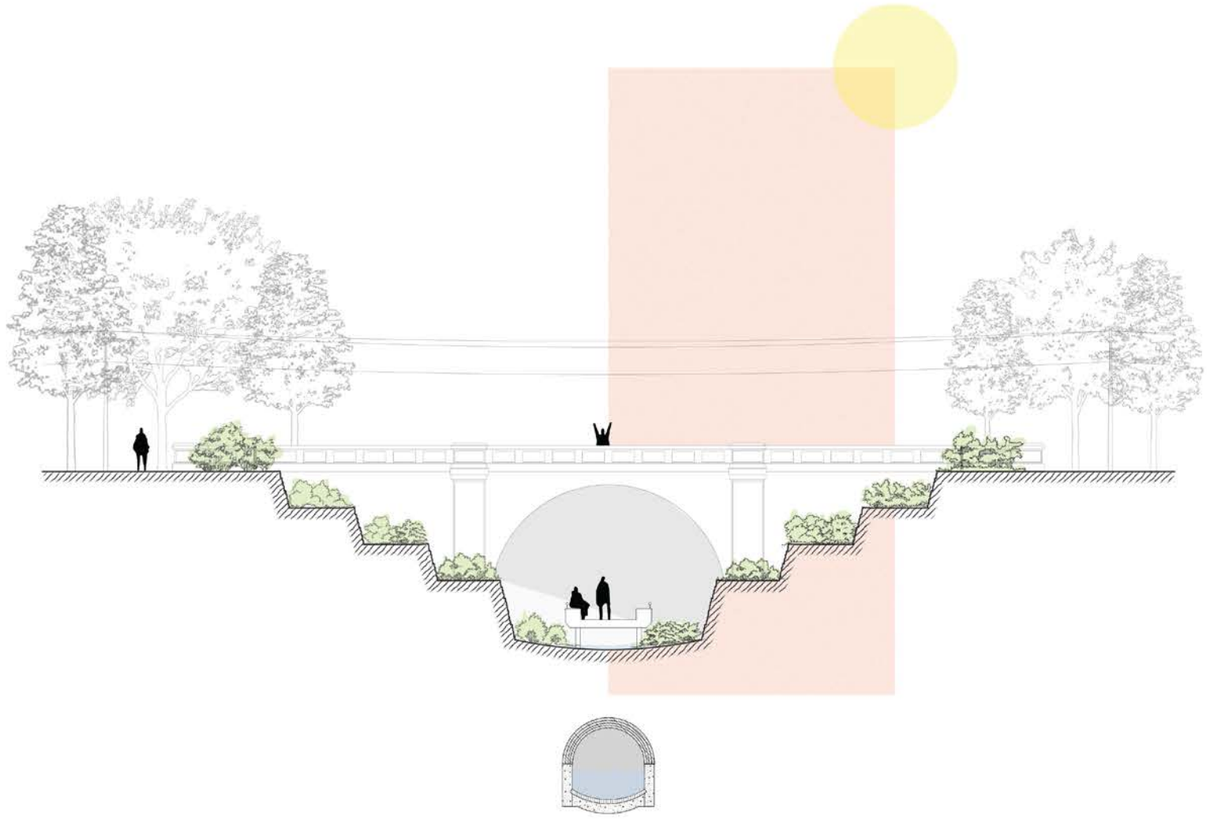


Figure 29.
Art Eggelton Park east
to west section



7.0 CONCLUSION

In urban centres we rely on the built environment to support our infrastructural needs, but in order to retain a connection between urbanism and nature our approach to infrastructure needs to work in tandem with the natural process that are already set in place.

The Garrison Creek Ravine is just 1 of the 21 urban river valleys and creek systems, intact or buried, that travel down Toronto's gently sloping topography into Lake Ontario. In many ways, Toronto's own history is reflected in the layered history of the Garrison, decades of its development shows Toronto's progression as a city, while also showing its disconnection from place. However, by introducing alternative infrastructural solutions to urban storm water management, within the Garrison Creek Ravine, it would counter the century-old trend of disconnecting Toronto's urban infrastructure from its natural infrastructure, help to minimize urban runoff and memorialize one of Toronto's hidden landscapes. Connecting urban space back to its authentic place.

Figure 30.
Concept collage

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