Planning for what nature, in whose city? Climate resilience and ecological imaginaries in the Port Lands Flood Protection Project

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Abstract

This paper examines the Port Lands Flood Protection Project, a flood mitigation, ecological naturalization, and climate change adaptation project located in Toronto, Canada's Port Lands area. Previously a site of post-industrial economic decline, ecological dysfunction, and flood risk, the area is being remade into a modern mixed-use neighbourhood with a newly constructed river estuary and a significantly increased area of naturalized habitat and recreational green space. Drawing from research on climate change resilience, urban political ecology, restoration ecology, and public participation theory, this paper investigates how the contemporary ecological imaginaries of the Port Lands emerged, how they have defined and influenced the course of the Port Lands Flood Protection Project, and what actors and interests have directed and been served by these developments. This research finds that the planning and implementation of the Port Lands Flood Protection Project has been defined by a series of compromises made by the project's proponents between competing imperatives of ecological restoration and economic development, and between demands for public participation and the directives of government and private sector partners. While the project is a remarkable improvement on the state of the Port Lands, the compromises that have defined the project's direction also threaten to undermine aspects of the project's democratic legitimacy and its ability to produce long-term resilience in the area.

Foreword

As a site-specific case study of a major Toronto climate change resilience project, the Port Lands Flood Protection Project offers a rich opportunity for fulfilling the learning objectives of my area of concentration: Justice and Participation in Climate Adaptation Planning. In the course of this research project, I have applied many of the theories and analytical techniques that I have acquired through the MES program. Through the application of this knowledge to a concrete case study, I have also deepened my understanding and gained new insights into the practice of urban and environmental planning.

The components of my area of concentration are climate justice, public participation, and climate change adaptation planning. This research project has supported all three of these components. By engaging with the planning and policy context of the Port Lands Flood Protection Project, I have gained knowledge about how climate change adaptation projects are planned and implemented. Examining the public consultation processes of the project has been instructive in demonstrating how participatory procedures can operate in planning projects. In this examination, I have seen both positive and negative examples of public participation, and have gained some knowledge as to what makes the difference. In the public participation process and the planning and policy context that surrounds it, some interests have been included and some excluded. Climate justice concerns emerge from these disparities, and my research has provided me with an opportunity to see how injustices in climate change planning can develop and how they may be justified or excused by planners and project proponents.

List of abbreviations

CLC	Community Liaison Committee
CWSP	Central Waterfront Secondary Plan
DMNP	Don Mouth Naturalization and Port Lands Flood Protection Project
DVCA	Don Valley Conservation Authority
EA	Environmental Assessment
LUAC	Landowners and Users Advisory Committee
MCFN	Mississaugas of the Credit First Nation
MTRCA	Metropolitan Toronto and Region Conservation Authority
MVVA	Michael Van Valkenburgh Associates
PLAI	Port Lands Acceleration Initiative
PLFPP	Port Lands Flood Protection Project
SAC	Stakeholder Advisory Committee
TRCA	Toronto and Region Conservation Authority
TWRC	Toronto Waterfront Revitalization Corporation
TWRTF	Toronto Waterfront Revitalization Task Force

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1. Introduction

1.1 Overview of research topic

The large scale and many goals of the Port Lands Flood Protection Project (PLFPP) make it an interesting case study of the interactions between several political-ecological concerns. The PLFPP connects contemporary discourses of climate resilience and ideal natures with matters of urban politics, planning, and governance. The remaking of the Toronto Port Lands through the PLFPP and related developments offers insights into how modern planning and politics in Toronto operate to create and control new socio-ecological orders.

The wide range of objectives involved in the PLFPP carries the possibility of providing many interconnected and integrated benefits to communities in and around the project area, as well as to the city as a whole. The range of economic, social, and environmental objectives at play in the project also produces risk of interference between competing project goals and the potential for significant trade-offs and harms to communities. This case study examines how the resilience-building goals of the PLFPP have been impacted by the interaction of divergent material and political interests and competing ecological imaginaries.

The $1.25 billion project aims to achieve many different objectives: flood protection for 290 hectares of Toronto's waterfront; adaptation of the waterfront and lower Don River lands to the escalating risks posed by climate change; naturalization of the terrestrial and aquatic habitat at the mouth of the Don River; provision of recreational and cultural opportunities in the Port Lands area; maintenance of shipping navigability; creation of opportunities for economically valuable property development; improvement of infrastructure connectivity with the rest of the city; and the positioning of Toronto as a global leader in climate change resilience and sustainability (Toronto and Region Conservation Authority [TRCA], 2014a; City of Toronto & Waterfront Toronto, 2017).

The City of Toronto's (2019a) resilience strategy describes the Port Lands Flood Protection Project as the city's "flagship resilience project" (p. 95). As the flagship framing

suggests, the PLFPP is not only a flood protection project. It is intended to symbolize the city's ambitious, forward-thinking approach to urban resilience. The Port Lands Planning Framework (City of Toronto & Waterfront Toronto, 2017) refers to the importance of the PLFPP in promoting the city's image internationally as a hub for culture, development, and green urbanism. While flood protection projects are typically guided by civil engineers, the PLFPP is guided in many ways by landscape architects (Gauthier, 2022a), indicating a novel focus on nature and aesthetics in this landmark project. In addition to the range of goals, the symbolic, aesthetic, and entrepreneurial character of the project distinguishes it from most previous flood protection efforts and makes the PLFPP an interesting case study of a still-emerging model of green development.

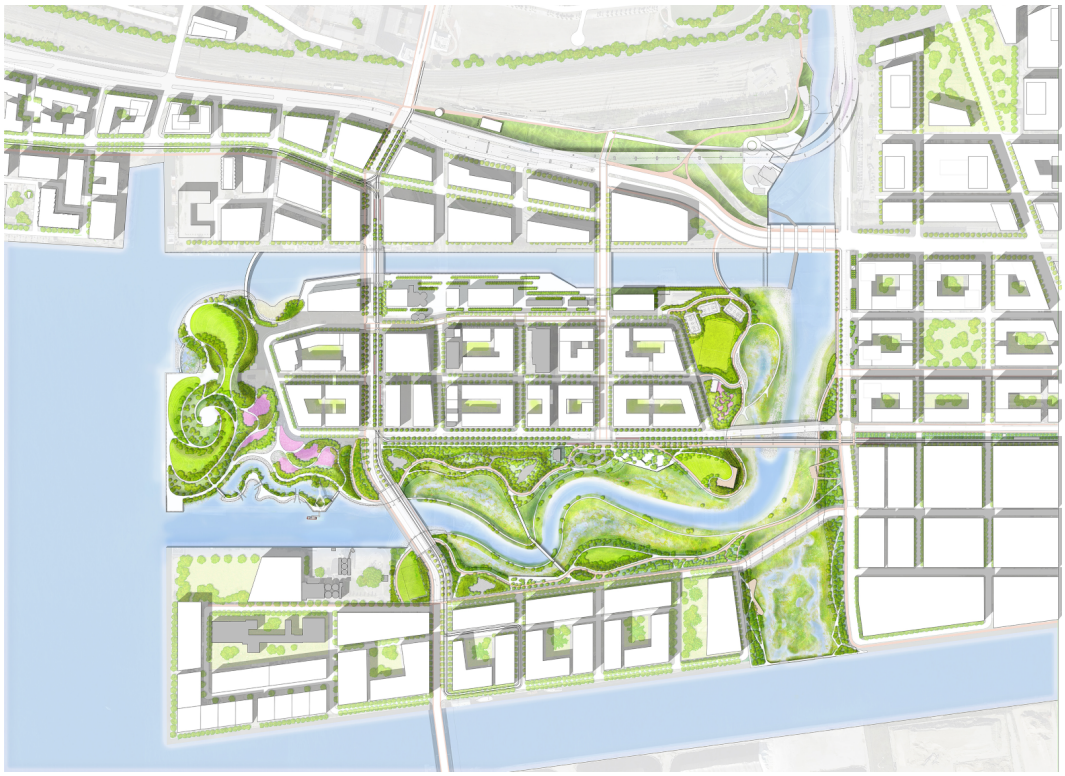
For over a century, the Port Lands have been an industrial centre primarily used by metallurgy, shipbuilding, aggregates, and oil and gas facilities. While the industrial uses of the site have declined significantly from their heyday, their impacts are still apparent in the pollution of the port's soil and groundwater and the disturbance of local ecosystems (Bonnell, 2014). The alterations proposed by the PLFPP to the Port Lands area (see figure 1) include the excavation of a new outlet for the Don River that bypasses the narrow Keating Channel, flow control weirs, new river valley walls and embankments, a new wetland, sediment management systems, and elevated grading of surrounding areas (TRCA, 2014a). The naturalization work will create, in addition to the aforementioned wetlands and the public park land, four hectares of terrestrial habitat and 13 hectares of aquatic habitat. These habitats will range from woodland to marshland to fully submerged aquatic reefs and coves. They will connect to parks and open green spaces within the Port Lands and along the Don River and waterfront (TRCA, 2014a; City of Toronto & Waterfront Toronto, 2017).

The proposed changes amount to a near total remaking of the Port Lands, displacing most of the local industries and greatly altering the local ecology. The new Port Lands will allow for significantly increased biodiversity in its naturalized areas and the restoration of a more

functional river estuary, something which has been a goal of environmentalists in the area for many years (Task Force to Bring Back the Don, 1991). This is being achieved through the creation of significant new naturalized areas of terrestrial, wetland, and aquatic habitat, as well as new connections to nearby areas (TRCA, 2014a). The new Port Lands will also enable significant property development in the area, in line with the Port Lands Planning Framework (City of Toronto & Waterfront Toronto, 2017), the Central Waterfront Secondary Plan (City of Toronto, 2015a), and eventually local precinct plans. This development will include mixed-use residential development, including affordable housing requirements, and industrial development, primarily focused on the film industry.

Figure 1

Design of the PLFPP (Waterfront Toronto, 2018c)



The PLFPP bears many similarities to an increasingly common model for megaprojects, one which is driven by imperatives of urban international competition for investment and the economic transition from industrial to knowledge- and service-based economies. These

“competitive precinct projects” are typified by high-end mixed-use property development, a significant focus on recreation, leisure, and aesthetics, and their intentionally symbolic nature (Harris, 2017). The mixed-use character of these projects allow proponents to build a consensus behind them by positioning them as a panacea to many different urban problems, such as housing shortages, lack of green space, the decline of traditional industries, and a lack of new investment. In Toronto, this model of development has characterized many waterfront redevelopment projects over the last two decades (Lehrer & Laidley, 2008). In contrast to the goal of supporting a broad array of interests and efficiently responding to numerous issues, these projects have, in the past, been criticized for their inability to deliver on promised public goods, their circumvention of local democratic governance, their lack of connection to the urban context within which they are constructed, and the incompatibility of their economic goals with local social and environmental needs (Lehrer & Laidley, 2008; Harris, 2017).

1.2 Overview of research questions

This research project asks three key research questions:

- How have ecological imaginaries and visions of an ideal human-nature relationship in the naturalized Don River estuary emerged, and how have understandings of the controlled or wild nature been deployed?
- How has this vision supported or undermined the complex of resilience-building goals of the PLFPP project?
- What role has public participation played in shaping this process and vision, and whose interests have been served through this process?

These questions help to highlight key themes that are important to the course of the PLFPP as well as to comparable green urbanism, climate resilience, and brownfield restoration megaprojects. The goal of this research is to examine narrative and discursive elements of the PLFPP and how these elements interact with public participation processes in order to produce

certain concrete outcomes that enhance or undermine the project's ability to achieve its objectives, as well as to benefit certain interest groups or damage others.

1.3 Methods

The case study as a research tool

This research is comprised of five parts, together forming a case study of the PLFPP. The case study, as a research tool, presents both opportunities and challenges to the researcher. A wide range of potential uses and limitations to the case study approach have been discussed, sometimes contradictorily, by scholars from a number of social scientific fields. Well-selected cases allow context-independent theoretical knowledge of rules and facts to be translated into concrete, context-dependent insights into the specific operations of social processes. They allow for the testing of hypotheses and analysis of normal or extraordinary events (Flyvbjerg, 2006). The PLFPP exemplifies traits of both the "deviant" and "paradigmatic" type of case study as defined by Flyvbjerg's (2006) typology of cases. Deviant, because there are few similar projects in the world which combine waterfront development, river naturalization, climate resilience, creation of new mixed-use urban neighbourhoods, and a focus on international competition and spectacle. The Dutch "Room for the River" program and the Cheonggyecheon river restoration in Seoul, Korea each share some of these aspects, but the PLFPP may be unique in its combination of all of them. At the same time, the PLFPP may prove to be paradigmatic of an emerging model of green urbanism, as an increasing number of cities around the world consider how to make use of economically declining post-industrial brownfield sites and cope with the risks posed by climate change. While the PLFPP may, for now, only provide information on an unusual type of climate resilience project, the data that emerges from this case study may be useful in understanding future projects that follow a similar path.

Literature review

The first element of this research is a literature review. This review provides the groundwork for the rest of the research and highlights a number of theoretical elements that situate the findings of this case study within the broader context of existing scholarship. The literature review covers four topics: climate resilience, urban political ecology, restoration ecology, and public participation. The scholarship in these fields helps to contextualize the PLFPP within a larger landscape of urban development patterns and ecological restoration work.

Site survey

In the course of this research, I made several trips to the Port Lands in order to familiarize myself with the project site and its broader context in the area. These site visits also served as an opportunity to compare and contrast the descriptions of the site provided in planning documentation with on-the-ground realities as I perceived them. The project's environmental assessment (TRCA, 2014a) and subsequent planning documents contain maps and descriptions of the local environment in differing degrees of detail. Site surveys allowed me to investigate whether these documents succeeded in thoroughly describing local features such as the distribution and make-up of vegetation communities and the presence of human residents, or whether these conditions have changed in the intervening years.

Case study overview

This section contextualizes the PLFPP within the urban fabric of Toronto and the city's environmental history. An examination of the history of the Port Lands and the lower Don River explains the background from which the PLFPP emerged as well as the patterns of development to which the PLFPP offers an alternative. This history includes physical alterations to the area and changing perceptions of the site. A site description provides an overview of the physical conditions in the Port Lands that existed when the PLFPP was initiated, and the specific problems posed by these conditions to adjacent neighbourhoods in Toronto and to

future development within the Port Lands. Prior to the initiation of the PLFPP, a complex suite of policies, regulations, and government agencies were involved in planning in the Port Lands. Significant changes in this network of policy rules and actors occurred in the lead-up to the PLFPP. Since the initiation of the project, its course has been guided by continuing changes in the policy landscape, and these shifts are described in order to elucidate the context within which the PLFPP has operated.

Policy and planning document analysis

One of the primary sources of information on the PLFPP and its history is the trail of planning and policy documentation produced by the City of Toronto, Waterfront Toronto, and other agencies regarding the Don River, the Toronto waterfront, and the Port Lands itself. By beginning with the plans and policies that are immediately relevant to the current activity and investigating the pre-existing plans and policies they overwrote, responded to, or were chosen in preference to, a lineage of Port Lands planning can be excavated. This lineage reveals how planners and politicians have responded over time to changing requirements and contexts and how visions for the Port Lands have developed over time through these documents.

Archival material analysis

The other major source of information on the PLFPP and visions of the Port Lands is archival media material. This includes some social media content, videos, and international and small local news publications, but is primarily composed of newspaper content from the two largest Toronto newspapers: *The Globe and Mail* and the *Toronto Star*. These two newspapers offer useful perspectives on the Port Lands because of the breadth and volume of their reporting and their large audiences. While newspapers and other media do not capture the full gamut of public opinion, they are engines for the production and reproduction of public discourse. As such, they are essential for understanding how visions for the Port Lands have been developed and disseminated, and how different actors have intervened in this process to push their own desired views. This analysis relies on keyword searches to trace discussions of the Port Lands,

the Don River, and the PLFPP throughout Toronto's history. The media uncovered by these searches reveal shifts in the public discourse regarding the Port Lands over time in response to inciting events which change perceptions of the area rapidly, as well as between publications with different target audiences whose interests in the Port Lands diverge.

1.4 Analysis of the core research questions

Due to this research's focus on discourses and imaginaries, this analysis requires a significant degree of interpretation of partial information in order to locate patterns. The questions interrelate in varied ways, such that elements relevant to one question emerge in the analysis of another. Overall, these questions are aimed at developing a better fleshed-out picture of the PLFPP and directing analysis to key thematic elements of the project.

Question 1: Imaginaries

The analysis of the first core research question relies on the media and public discourse, policy, and public participation findings. These sources may converge on one or more sets of shared beliefs, ideologies, imaginaries, and visions regarding how humans ought to relate to nature and what sort of ecology should be produced for the Port Lands through the PLFPP. If such a convergence is in evidence, these sets of shared viewpoints can be related to one another, to the environmental history of the Port Lands, to the design of the PLFPP, and to the project's approach to ecology.

Question 2: Resilience impacts

This section uses the findings regarding the site alterations made through the PLFPP and the analysis of ecological imaginaries of the Port Lands to relate the prevalence of different views of the Port Lands and waterfront development to specific outcomes in the PLFPP. Where the implementation of ideal visions of the Port Lands overlaps with the implementation of the project's resilience objectives, there should be indicators of how the envisioned and imaginary aspects of the project influence the practical effects of the project and the ability of the PLFPP to fulfill its resilience-related objectives.

Question 3: Participation and interests

The findings regarding the participatory and consultative processes involved in the PLFPP inform the analysis of how public participation has shaped the vision of the PLFPP and what interests have been included or excluded from the project's benefits. This analysis examines how public participation processes have shaped both the PLFPP and the ecological imaginaries of the Port Lands, and how different interest groups have leveraged these processes to claim imaginative control over the project or amplify the project's benefits to themselves.

1.5 Findings

This research uncovers how the proponents of the PLFPP have navigated the complex of competing imperatives and interests at play in Toronto's Port Lands. Successfully achieving buy-in from politicians, city staff, business interests, and the public has required that the PLFPP's naturalization plan, resilience-building work, and public consultation approach make compromises between competing demands for ecological renewal and economic development, and between robust public participation and the interests of government and business partners. The naturalization objectives of the project have engaged with and incorporated some of the demands of community and environmental activists in the Don River for significant ecological revitalization, but have also become less ambitious over the course of the project, particularly in response to the city's push for a stronger business case. The PLFPP's work to produce a resilient environment in the Port Lands has navigated the demands of creating nature on a site whose abiotic conditions are decidedly ahistorical and which are constantly threatened by disruption, but where there is significant public desire for historical fidelity and exclusively native flora and fauna. Waterfront Toronto's public consultation processes have been extensive and, in some respects, created genuine opportunities for stakeholders to influence the course of the project, but the framing of the project as a technical endeavour and the project's obligations to the governments which provide it with funding also place limits on the scope of public

participation and often result in decisions being made prior to consultation. The project has been compromised by this push and pull in ways that pose risks to the project's legitimacy and long-term success, but it also represents a remarkable step in the revitalization of Toronto's waterfront.

2. Literature review

2.1 Climate resilience

Climate change, while a global problem, is also a problem that produces local patterns of responsibility and vulnerability (Bulkeley, 2013). Local mitigation and adaptation solutions must be responsive to the unique contexts of local communities. Climate adaptive spatial planning responses include developing new neighbourhoods with a view to reducing climate change-related vulnerabilities, modifying existing plans for changing environmental conditions, and minimizing climate change impacts on existing communities (Canadian Institute of Planners, 2018).

The approaches taken by planners and institutions in response to climate change are informed by how climate risk is conceptualized. Concepts such as vulnerability, adaptation, and resilience are not uncontested, but are rooted in competing conceptual frameworks that have a significant impact on the aims and methods of climate change response (Bankoff, 2018).

Historically, discourses of disaster vulnerability have served to focus attention on how disaster risk is produced and reproduced over time through dynamic global and local processes of marginalization and dispossession (Wisner & Luce, 1993). This approach to understanding disaster risk helps to draw distinctions between natural hazards, such as those that are being created or worsened by climatic changes, and the processes that render communities vulnerable to these hazards, such as displacement, uneven economic development, or conflict. On this account, a natural disaster is not straightforwardly understood as the result of a natural event such as a flood, earthquake, or landslide. These events are only made disastrous by the presence of human populations that are vulnerable to the natural hazards that they face. This

vulnerability is often the result of socio-economic processes that, for example, allow some communities to direct flood protection infrastructure to their own neighbourhoods while poorer or more marginalized populations are relegated to living within floodplains or beyond the protection of risk reduction infrastructure (for an example of this, see: Shokry et al., 2021). As the vulnerability approach's dictum "there's no such thing as a natural disaster" (Smith, 2006a) indicates, a key message is that disasters are not inevitable or natural, but rather the product of a place's particular history and social organization. The model of risk reduction that emerges from a vulnerability-focused approach necessarily requires that institutions engaged in risk reduction efforts place the social, political, and economic causes of vulnerability at the core of risk reduction work (Blaikie et al., 2004).

Since the late 1990s, resilience has increasingly become a key organizing principle in a wide variety of fields, including disaster risk management, urban planning, and crisis response (Walker & Cooper, 2011). The contemporary history of resilience thinking in disaster risk management and climate change has developed from the systems ecology work of C.S. Holling (1973), where resilience indicates the ability of a system to return to a stable base state after experiencing a disruption. This shift in the conceptualization of disaster risk mitigation has meant a shift away from the focus on large-scale root causes that characterized vulnerability thinking, and its attendant focus on large-scale and systemic responses. Resilience bypasses questions regarding the systems that produce risk and instead focuses on how communities can prepare for disaster and, furthermore, how communities can use disasters as opportunities for change (Walker & Cooper, 2011).

This focus on community disaster preparedness and response has meant a shift towards decentralized, localized, and even individualized responses to risk, alongside a reorientation of governing institutions towards hands-off and market-based approaches in line with dominant neo-liberal models of governance (Joseph, 2013; Bankoff, 2018). The bottom-up and community-focused orientation of resilience promises greater agency and empowerment for

communities through participatory techniques and seeks to benefit from community knowledge of their local risk landscape (Pandey & Okazaki, 2005). Community resilience also marks a rhetorical shift away from defining communities as victims in need of aid. While the focus is directed to communities, the transposition of resilience thinking from systems ecology to public policy and the social sciences means that, as a descriptive element, resilience does not lend itself to an analysis of the politics and power dynamics internal to a community (MacKinnon & Derickson, 2012). In the move, resilience has also gained a normative aspect, one that positions it as a universally positive descriptor of an agent's self-reliance, flexibility, and entrepreneurialism in turning disaster risks into opportunities (O'Malley, 2010; Tierney, 2015). In practice, the transition to a community-based resilience approach often means the retreat of the state from direct involvement in community-level affairs and the development of a disaster risk reduction approach led by public-private partnerships and locally-funded civil society organizations, while policy is directed by national institutions or, increasingly, by technocratic networks of international NGOs and institutions (Tierney, 2015).

Even as resilience thinking has proliferated throughout numerous fields of both theory and public policy, scholars continue to put significant work into defining just what, exactly, resilience is. As a bridging concept or boundary object at the intersection of several fields, particularly ecology, disaster risk reduction, and climate change adaptation, the concept of resilience invites numerous approaches and definitions (Brand & Jax, 2007). Davoudi et al. (2013) distinguish variations of resilience on the basis of the role of equilibrium and change within the concept. This approach leads them to define three differing resilience-concepts: engineering, ecological, and evolutionary resilience. Engineering resilience concerns the ability of a system to return to a static equilibrium point after a disturbance. Ecological resilience is concerned with how systems transition from one equilibrium state to another when sufficiently disturbed. Evolutionary resilience (or, socio-ecological resilience) is a non-equilibrium model that is interested in how systems move through perpetual cycles of stress and transformation, rather

than in linear processes of disruption and return. Contradictory approaches to equilibrium and change are important conceptual tensions in the use of resilience within scholarly literature, but not the only ones. Authors also differ in how they weigh the importance of adaptation to existing stressors compared to overall system adaptability, whether resilience is universally a good thing, and whether the speed of transformation or return to equilibrium is an important feature of resilience (Meerow et al. 2016).

By focusing on how systemic transformation and adaptive changes can emerge from disruptions, evolutionary resilience plots a path away from unjust or undesirable normal states in social-ecological systems towards new equilibria through processes of system self-organization (Davoudi, 2018). If Davoudi (2018) is right, resilience thinking may open up opportunities for transformative social change. Inserting resilience into planning discourses might then provide a means for planning towards a social order in which communities are empowered to pursue change that reduces vulnerability and provides social, economic, and environmental benefits.

The deployment of resilience thinking in planning contexts has generally failed to live up to this optimism. Anguelovski et al. (2016) document a range of ways that resilience and adaptation planning can serve as direct or indirect sources of inequity. They find that resilience-building activity in cities tends to prioritize areas with high economic value and neglect areas that are home to low-income communities, and that when resilience-building activity produces displacement or harm, this burden tends to fall on communities that are already marginalized. This is in line with other empirical findings that urban resilience projects and institutions often produce rearrangements of vulnerability and safety, with the vulnerabilities of some groups being displaced onto others (Rizzo, 2020; Sondershaus & Moss, 2014).

The use of resilience as a standard for success poses risks in conservation biology and restoration ecology as well. The normative elevation of resilience to a universal good clashes with situations where ecosystems that have experienced degradation are also highly resilient to changes and difficult to return to a more desirable state (Standish et al., 2014). The focus on

resilience can also conflict with the traditional concern of these fields with biodiversity. As species become threatened by stressors such as climate change, a resilience-first environmental management approach has been to describe these threatened species as insufficiently resilient and seek to replace them with other, often non-native, species that are better equipped to deal with the relevant stress (Newton, 2016). This approach, while often carrying ecosystem service benefits, neglects any other value to be found in diverse ecosystems and endangered species conservation.

While all bridging concepts admit ambiguity and variation in use, the practice of urban resilience planning stands in stark contrast to its promised benefits. Davoudi et al. (2019) advance the metaphor of the resilience machine as a framework for describing the ambiguities, failures, and possibilities of resilience. An analogy to the urban growth machine (Molotch, 1976), the resilience machine is an assemblage of actors, institutions, ideologies, and discourses that drive urban policy and politics. The globalization of urban governance is one shift that has played a particularly important role in differentiating the resilience machine from more traditional models of urban governance. Non-state institutional actors such as policy think tanks and transnational municipal networks such as the Rockefeller Foundation's 100 Resilient Cities network have developed highly mobile policy frameworks and implementation tools while also creating new hierarchies of climate change governance that are removed from the usual terrain of local politics (Nielsen, 2020). In practice, the emergence of these transnational municipal networks has meant an increasingly experimental approach to climate change adaptation, wherein cities serve as laboratories for new strategies and technologies that are implemented by new combinations of public and private actors (Bulkeley & Castán Broto, 2013).

The resilience machine can then be characterized as an experimental mode of urban growth machine politics, one with new discursive underpinnings and metrics for success, but which mirrors an existing framework of entrepreneurial city-building (Lauermann, 2018; Davoudi et al., 2019). This framework helps to explain some of the observed features of resilience-based

urban development, such as the mobilization of international policy networks around the promotion of resilience (Leitner et al., 2018), its important role in inter-urban competition, and its role as a marketing device (Shi, 2020; Lauermann, 2018). The resilience machine concept does this by highlighting how resilience is used as a tool by coalitions of actors in order to ensure continued economic growth in the face of risk and normalize new resilience practices and modes of governance.

2.2 Urban political ecology

The PLFPP is at once a mixed-use urban property development project and an ecological restoration project. This explicitly dual nature highlights the value of an urban political ecology approach to analyzing the project. While political ecology has become a diverse field, with many different scholars relying on various definitions and methodologies, the core feature of political ecology research is the belief that ecology and environmental change are the result of political processes and that, consequently, ecological conditions and environmental changes tend to reproduce existing social inequities (Robbins, 2012). Different scholars have placed differing degrees of emphasis on the ‘political’ or ‘ecological’ sides of the political ecological coin, but the political ecology approach was an important development that allowed for an analysis that focused on the dialectical relationship of nature and society (Blaikie & Brookfield, 1987; Neumann, 2005).

Even as political ecologists established the deep interdependence of nature and society, it took until 1996 for the development of a distinctly urban political ecology which shifted away from a two-sided dialectical nature-society relationship and towards an understanding of cities as socio-natural hybrid entities (Swyngedouw, 1996). For urban political ecologists, the city is constituted by socio-ecological processes, especially the metabolic processes of contemporary capitalism: the production and consumption of commodities composed of natural resources, and all of the attendant power relations, political processes, and economic dynamics (Heynen et al., 2006). As with political ecology before it, urban political ecology offers not only a neutral

description of the processes that constitute cities, but seeks to illuminate how urban metabolism produces socio-natural conditions of inequity or empowerment and to imagine possible alternatives (Heynen, 2014). The concept of urban metabolism is particularly prominent throughout urban political ecology and indicates a creative circulation of physical matter and natural resources, as well as of ideas, values, and representations, which are produced, exchanged, and transformed (Smith, 2006b).

Urban metabolism has important conceptual linkages with the urban growth machine and the resilience machine, as the latter are modes by which the former is structured and regulated. The urban resilience machine mobilizes a rhetoric of resilience and adaptation in support of public policies and institutional arrangements geared towards inter-urban competition, public-private partnership, the promotion of norms of individual and community self-reliance, and an entrepreneurial approach to city-building (Davoudi et al., 2019). This has much in common with other forms of “roll-out neoliberalism” (Brenner & Theodore, 2002) or “roll-out environmentalism” (Keil & Boudreau, 2006), which critical geographers and urban political ecologists have identified as a shift in metabolic politics from the “roll-back” neoliberalism of the 1980s, characterized by a slash-and-burn approach to government programs and regulations, towards an imbrication of the private and public spheres and the mobilization of public policy in order to open new spaces for private profit and create incentive structures for local entrepreneurialism. This new arrangement allows for environmental concerns to be integrated and redeployed in support of capital accumulation (Greenberg, 2015).

When discussing how these mechanisms for the regulation of urban metabolic processes and these machines for urban growth create specific urban spaces, urban political ecologists often employ Harvey’s (2001) concept of the spatial fix, wherein capital is embedded in geographic space for the purpose of improving the circulation of capital or resolving economic crisis. Urban environmental planning has historically served as an important form of spatial fix in many cities. Urban parks are engineered fixtures that consume valuable urban land, the

pre-existing infrastructure on the site, and the investments required to develop and maintain the park. In return, they serve to support local property values and land speculation, and help to promote the city as a desirable site of investment (Birge-Liberman, 2010). Central Park in New York City is an especially famous example of park creation at a massive scale being used as a spatial fix. The creation of Central Park consumed a large swathe of land, including working class communities such as Seneca Village, and replaced them with a world-famous park that some proponents hoped would compete with those of major European cities (Eisenman, 2013) and a site of value production for the owners of nearby properties (Bunce, 2017).

In addition to serving as interventions into economic problems such as property values and inter-urban competition, urban parks and green spaces have also been proposed as "cultural fixes" (Loughran, 2020) which intervene in cultural and social problems. This is accomplished through the normative role that parks play in defining, displaying, and promoting cultural values regarding nature and recreation, as well as by disciplining park users to engage in specified forms of social and economic activity (Gabriel, 2011). Again turning to Central Park, chief architect Frederick Law Olmsted made explicit that in his view the role of the park included the reduction of crime and vice and the inculcation of social norms such as restraint and temperance (Olmsted, 1870/2011). The park was not intended for use as New York residents—especially working class residents—saw fit, but rather to construct a park-using public in line with the dominant social and cultural norms of the day (Sevilla-Buitrago, 2014).

As cities have been pressed to produce solutions for the climate crisis (Angelo & Wachsmuth, 2020), green urbanism in particular has become a strategy for the production of spatial fixes for both the climate crisis and the economic imperatives of property development and inter-urban competition in a context where greenness is a marketable quality (Rosol et al., 2017). Even though large-scale megaprojects typically fail to achieve the goals set out for them, they have surged in popularity in recent years (Flyvbjerg, 2014; Söderlund et al., 2017). Multiple major recent green resilience megaprojects demonstrate similar themes of the pursuit of "global

city" status and recognition by international investors through the demonstration of a commitment to both urban economic growth and a green resilience agenda (Ajibade, 2017; Rizzo, 2020). In these projects, the focus is both on the production of developable properties and useful urban natures as well as preparedness for new climatological conditions. Contemporary green resilience planning must be understood within the context of urban metabolic processes, which are seeking spatial fixes for climate change-related risk in addition to timeless concerns for urban economic growth.

2.3 Restoration ecology and habitat creation

While political ecology forces us to ask political and social questions of ecological subjects, it also requires that we bring an understanding of ecology and biophysical systems into our analysis of the social and political. In particular, understanding the production of nature in the PLFPP requires an understanding of the dimensions of restoration ecology. Higgs (2003) lays out four key principles of the practice of restoration ecology. The two ecological principles that restoration ecology is concerned with are the quality of the ecosystems being developed (ecological integrity) and the degree to which they are faithful to the historical nature of the site (historical fidelity). The two core socio-cultural concerns of the field are the focus on participatory restoration and the cultural benefits of restoration (focal practice) and on the constitution of good ecological design (wild design).

Particularly in heavily built-up urban areas, the goals of restoration must be modified to account for the scale of human impact on local ecosystems. This often means displacing the historical ideal of nature that is prevalent in many restoration projects, as well as a more flexible approach to non-native species and the persistence of evidence of the site's human history (Westphal et al., 2009). Making sense of these differences relies on an appreciation of the distinctions between historical, novel, and designed ecosystems. Historical ecosystems are those ecosystems which were prevalent in a region at some point in the past, as characterized by the local biota, abiotic physical conditions, and the relationships between them. This poses

challenges for restoration ecologists, who need to not only determine what the historical ecosystem looked like, but also which version of the historical ecosystem is most desirable and capable of sustaining itself (Hobbs et al., 2009). Novel ecosystems, by contrast, are those self-assembling ecosystems that result from often dramatic human intervention and are typically composed of a historically unprecedented mix of species and/or new abiotic conditions. Historically, these ecosystems have not usually been the ideal outcome for restoration ecologists; however, as climatic changes, human interventions, and species invasions cause increasingly irreversible shifts in local ecosystems, stable novel ecosystems may be a viable ecological management option (Hobbs et al., 2009). Designed ecosystems differ from the previous two in that they are the result of intensive and ongoing management; they are intentionally developed in order to provide specific services to humans; and they do not necessarily develop from any pre-existing ecosystem, but rather are created from whole cloth (Higgs, 2017).

A related issue that is of significant importance in urban ecological restoration projects is the treatment of invasive and non-native species. The approach of removing non-native species wherever feasible is troubled by both the prevalence of non-natives in many highly modified ecosystems and by the important roles many non-native species have come to play in places where they have often had many decades to cement themselves in the local ecosystem (Westphal et al., 2009). Restoration ecology research has increasingly urged that in cases of dramatic ecosystem change or disruption, we should look to whether new combinations of species, including non-native species, can fulfill existing roles in the ecosystem structure or provide for new ecosystem functions and what the impacts would be on other species in the ecosystem and the overall community (Hobbs et al., 2006). This is supported by empirical findings that the impacts of invasive species are often mixed, often diminishing but sometimes improving the abundance and diversity of other biota, and highly context-dependent (Pyšek et

al., 2012). Urban ecological restoration requires making complex calculations regarding what to conserve, what to restore, what to manage, and what to remake (Standish et al., 2013).

Urban restoration is also distinct from other forms of restoration due to the prevalence of a range of additional practical issues. The characteristic concerns for urban restoration include the importance and involvement of human stakeholders and participants, the immediateness of social equity concerns to the restoration project (Palamar, 2010), and the central importance of ecosystem fragmentation and pollution as a cause of disruption (Klaus & Kiehl, 2021). Klaus & Kiehl (2021) develop an urban ecological restoration framework that uses other, often novel, well-functioning urban ecosystems as reference points for developing target ecosystems, rather than demanding that elusive historical ecosystems remain the ideal.

The emergence of the novel ecosystem as a tolerable, even desirable, objective for ecological restoration has provoked heated debate, issuing from those who see their purpose as the reconstruction and conservation of a historical natural order (see: Murcia et al., 2014, for example). This debate demonstrates that ecological restoration is more than a technical endeavour. While the irreversibility of ecological disruption is often presented as an empirical fact regarding a biophysical system, what counts as irreversible frequently hinges on political and social realities such as the funding available for restoration, the public support behind the project and the presence or absence of political willpower (Miller & Bestelmeyer, 2016).

This debate is also a site of contestation between competing conceptualizations of urban nature and ecological imaginaries. Just as social imaginaries are the deeply normative sets of expectations and understandings that people have of their place in a social order, their relationships to other members of their society, and the images and metaphors on which they rely to make sense of these interrelations (Taylor, 2004), ecological imaginaries are the metaphorical representations of, or cultural projections onto, nature through which deeply normative ideals of how nature ought to be and how humans ought to relate to it are expressed (Angelo, 2019a; Gandy, 2020). Ecological imaginaries are the basis on which ecological futures

can be imagined, providing the normative grounds on which a good or right nature can be prefigured. Bonnell (2014) describes the power to define and limit the imaginable futures of a landscape as an imposition of imaginative control. The difference between describing an irreversibly altered ecosystem as a ruin without potential for useful restoration, or as a novelty with the potential to be guided towards a new self-sustaining form, is a difference in ecological imagination and ecological normativity and a contest over the imaginative control of these landscapes.

Different approaches to restoration and different ecological imaginaries have significant impacts on what new natures are produced and how these new natural orders relate to and reflect the broader social order. Gobster's (2007) work on urban park restoration has shown the linkages between ideal conceptions of nature and the natural spaces and experiences that are produced, including the degree to which urban parks represent historic or self-sustaining ecosystems, the activities available for human users of the parks, and what users are welcome. This work is echoed by Langhorst's (2014) comparative analysis of different visions of nature at work in two post-industrial ecological development sites.

2.4 Public participation and democratic governance

Beyond the technical considerations of ecological restoration, successful spatial planning in the PLFPP requires attention to the requirements of spatial justice in climate change adaptation planning, among which are broad and accessible processes of public participation (Shi et al., 2016). The absence of robust public participation in climate change adaptation planning processes is associated with negative equity outcomes for vulnerable populations, as well as failures to build consensus behind adaptation strategies and a lack of durability for adaptation plans (Anguelovski et al., 2016; Howarth et al., 2020). In addition to being a necessary condition for procedural justice in climate change adaptation, low levels of meaningful public participation and consequent low levels of uptake of local knowledges and lack of attention to local social and economic contextual factors have been found to diminish the

effectiveness of resilience-building programs and policies and result in lower overall levels of climate resilience (Ziervogel et al., 2017; Kim et al., 2018). The importance of democratic and participatory processes has been identified not only by urban planning theorists, but also by restoration ecologists, as with Higgs' (2003) concept of focal practice, and urban political ecologists (Heynen et al., 2006).

In addition to concerns about the outcomes of non-participatory governance processes, procedural and recognitional justice literatures also posit democratic participation as the grounds of social justice. These literatures take the processes involved in public decision making to be the primary subject of concern and are interested in how these processes enable the recognition of communities and individuals in contexts of historical and institutional oppression (Young, 1990; Fraser, 1997).

In practice, there are frequently numerous hurdles to robust public participation in and influence over climate change adaptation planning projects. Even when processes aim to invite stakeholder participation, the effect of this participation can be limited by the delineation between the components of the project that are deemed open for discussion, those that are deemed to be core project values that are not open to debate, and those that are considered technical elements that should be left to experts. Scholars of urban political ecology have warned that urban environmental policy in particular has been characterized by a post-political or post-democratic turn, indicating that, on key subjects, technical expertise, international best practices, and a drive for consensus have displaced local grassroots organizing, endogenous practices, and the understanding that politics involves disagreement and divergent interests (Swyngedouw, 2009; Béal, 2012). This depoliticization of urban environmental governance drains public participation of its influence and meaning (Legacy et al., 2018) and allows for policy approaches driven by imperatives of economic growth, private accumulation, inter-urban competition, financialization, and security to be presented as universal goods or necessities which are immune to public dispute (Davidson & Iveson, 2015; Rosol et al., 2017).

Of particular relevance to the PLFPP, both the concepts of urban greening (Angelo, 2019b) and urban climate change resilience (Cretney, 2019) have been linked to the post-political agenda of urban environmental policy in contemporary cities. Climate change resilience policy has been characterized by a high level of international policy mobility (Goh, 2020) which situates policy-making as a technical endeavour for networks of think tanks and consultancies, rather than the product of a democratic politics (Clarke, 2012). At the local level as well, climate change resilience development projects are prone to being operationalized as technical engineering solutions to climate change-related threats to economic growth, without reference to other local priorities or opportunities for meaningful change in response to local interests (Mikulewicz, 2019).

While the descriptions of the depoliticizing logics of contemporary urban environmental governance and the language of adaptive cycles and machinic resilience may seem to indicate that the results of climate change planning proceed deterministically, we should be attentive to the potential for collective agency, local power relations, and context-specific institutional dynamics to create space for meaningful democracy and climate justice (Lang, 2019). Case studies have found significant benefits where governments have collaborated with and empowered local community-based environmental organizations, particularly with regard to the level of fit between governance models and biophysical systems (Guerrero et al., 2015; Enqvist et al., 2019). Highly collaborative public participation models, coupled with devolved, polycentric, or mosaic-style governance regimes, institutional willingness to experiment, and attention to the bioregional scale, are indicated in practical successes in environmental governance (Huitema, et al., 2009; Buijs et al., 2016).This confirms that public participation can still offer avenues towards meaningful social and environmental progress. As Beveridge & Koch (2017) indicate, actually existing urban governance is not pre-determined by a post-political context, but rather is a highly contingent process in which agency matters and the details of the choices made are paramount.

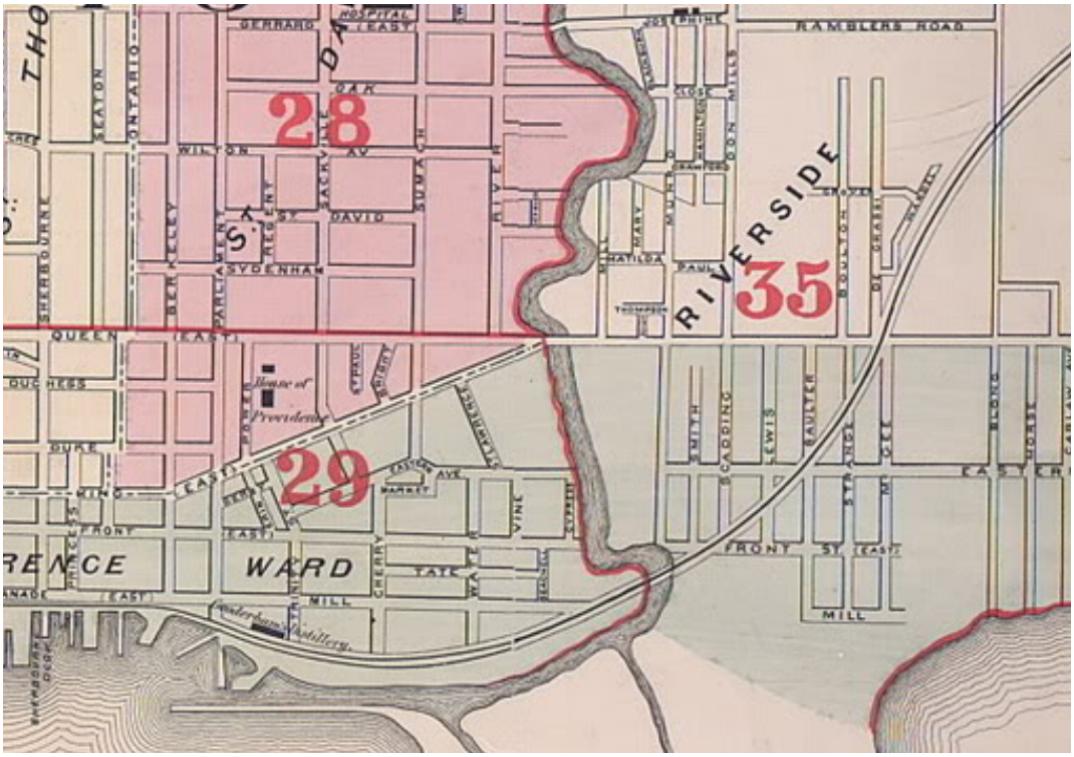
3. Case study overview

3.1 Site history

The PLFPP site is located in Toronto's historic Port Lands area, situated at the mouth of the Don River. The lower Don River was originally the focus of colonial settlement in Toronto, then called York, due to the river valley's forests and clay deposits, its proximity to a branch of the pre-colonial Carrying Place trail that connected the city to Lake Simcoe in the north and to the natural harbour beyond the wetlands at the river mouth, and the suitability of the river for water-powered milling and industrial operations (Bonnell, 2014). For early settlers, the Don River evoked memories of rolling British countryside and was integrated into an ecological imaginary defined by pastoral productivity and agrarian use (Bonnell, 2014).

Figure 2

The Lower Don River in 1884 (Chas. E. Goad Company, 1884)



By the latter half of the 19th century, however, the Don River was seen as a source of significant problems. Flooding, harbour siltation, and pollution had become causes of

consternation (Desfor & Bonnell, 2011). By the late 19th century, these problems began to resolve into a waterfront development agenda supported by local business interests, politicians, and public health officials that was oriented around solving the “waterfront problem” (Desfor et al., 2011). This alignment of interests was coupled with an imaginary that constructed nature generally, and the Don River in particular, as a savage force to be known, controlled, and changed to suit the desires of, or produce value for, its managers (Scadding, 1873; Bonnell, 2014). This set the stage for the first major transformation of the lower Don River into a new industrial waterfront.

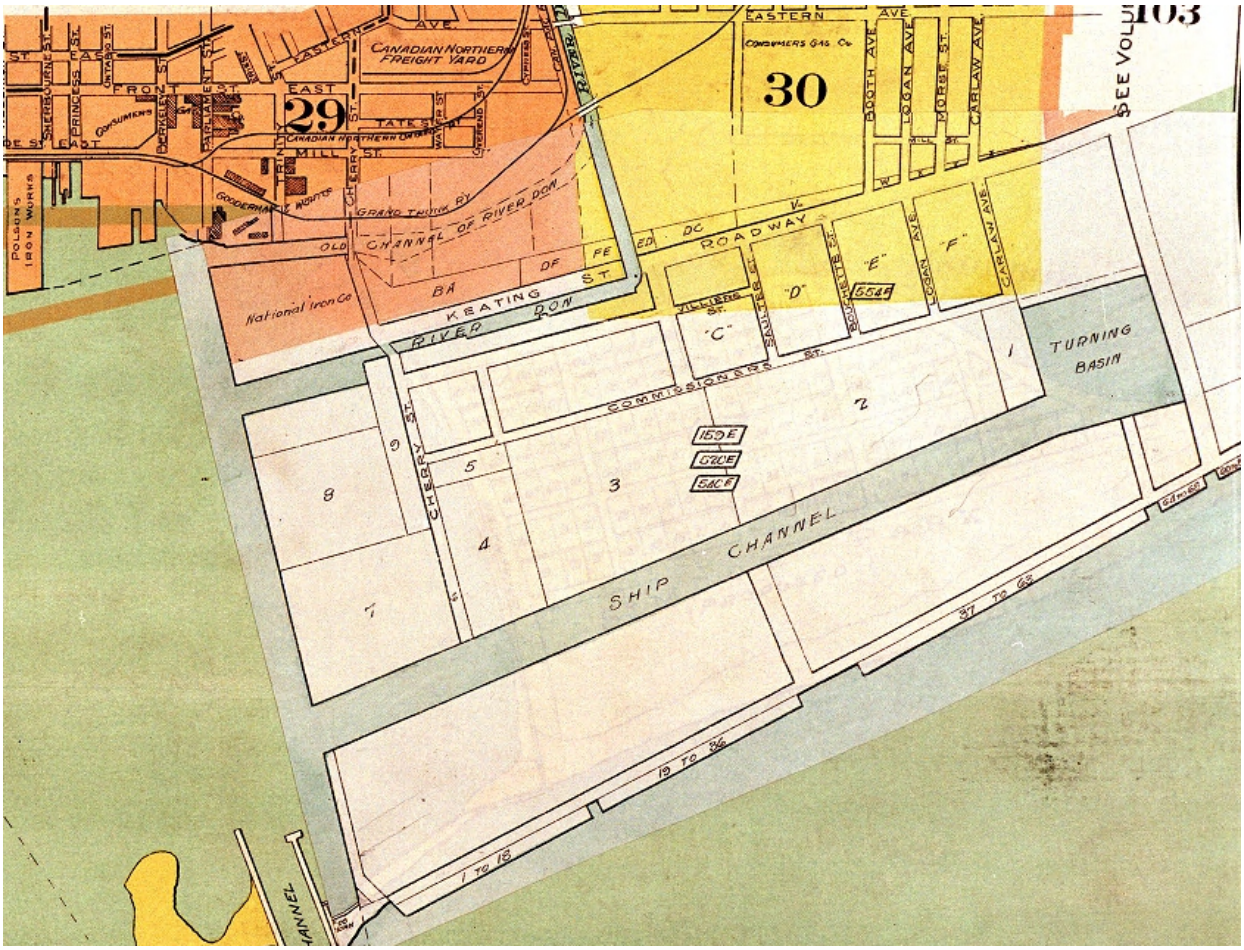
The major components of this new river (see figures 2 and 3) were the Keating Channel, which became the new mouth of the river once the Don was diverted at a sharp angle into this new channelized outlet; a number of new breakwaters and harbour entrances; and, eventually, the filling of the wetlands in order to create a new industrial area known today as the Toronto Port Lands (Bonnell, 2014). These developments, along with major infrastructure works in sewage treatment, made significant inroads in reducing the spread of waterborne diseases and also provided significant financial benefits to the industrial concerns that made use of the now expanded port facilities (Jackson, 2011; Bonnell, 2014).

The main force responsible for this drastic remaking of the mouth of the Don River and its surrounds was the Toronto Harbour Commission, established with the backing of the city’s Board of Trade, the print media, and the city council in 1911 (Desfor et al., 2011). The commission was created as a joint national-municipal appointed body with extraordinary powers over the development of the whole Toronto waterfront, and limited effective accountability to either government. This new arrangement solidified the importance of industrial development as the primary impetus for Toronto’s waterfront development (Desfor et al., 2011). While the Toronto Harbour Commission was formed in order to spur industrial development, the boom was short-lived. Shipbuilding fell off shortly after the end of the first world war (Moir, 2011), and waterfront industrial development fell into decline generally, requiring the commission to begin

selling off land piecemeal in order to cover its expenses, with the waterfront industrial boom largely spent by the 1940s (Sanderson & Filion, 2011; Desfor et al., 2011). This decline would continue until deindustrialization and institutional conflicts between the municipal and federal governments resulted in the disbandment of the Toronto Harbour Commission and the introduction of the federally-dominated Toronto Port Authority (Sanderson & Filion, 2011).

Figure 3

The Lower Don River in 1924 (Chas. E. Goad Company, 1924)



The three drivers of change in the making of the industrial Don River were public health, flooding, and harbour navigation for waterfront industry (Bonnell, 2014). Notably absent from this discourse was concern for or non-instrumental interest in the ecology and biophysical processes of the Don River valley. In addition to the channelization of the lower river and the

predominance of industrial uses, by the mid-20th century the river was increasingly polluted due to suburban development, disconnected from adjacent neighbourhoods, and neglected as a potentially valuable urban ecological corridor (Hough, 2004).

As the economic imperatives of 19th- and early 20th-century industrialization began to fade, a combination of new governmental approaches to environmental management and increasing public awareness of and opposition to the despoliation of the Don Valley began to alter the river's place in the public imagination and effect change in the conditions in the river. The formation of the Don Valley Conservation Authority (DVCA) in 1948 under the leadership of conservationist Charles Sauriol and the 1950 publication of the *Don Valley Conservation Report* marked a beginning for a governmental conservationist approach to the urban nature of the Don Valley (Bonnell, 2014). Charles Sauriol and the early DVCA promoted a sharply different view of nature from those of Dr. Henry Scadding and his contemporaries. They now viewed nature as something to be protected from humans, with citizens' patrols policing activity in the valley and a focus on the stewardship and admiration of nature rather than engagement with it (Bonnell, 2014).

In 1954, Hurricane Hazel caused severe flooding in Toronto and spurred the merger of Toronto conservation authorities into the new Metropolitan Toronto and Region Conservation Authority (MTRCA), which made increasing efforts to acquire land throughout the Don Valley for flood prevention purposes and limit human activities in the valley (Bonnell, 2014). The organization's focus broadened over time, and the 1980 Watershed Plan marked a significant shift away from structural engineering for flood prevention and towards an ecological approach aimed at improving water quality and ecosystem integrity (TRCA, 1980). Over the decades, as the DVCA became the MTRCA and later the TRCA, its conservation approach continued to evolve towards an approach that seeks out ecological improvement as a means for securing services such as flood protection and recreation (TRCA, 2014b).

While the approach of local state organizations to environmental management in the Don Valley was developing in the direction of preserving and promoting natural features for their health, recreational, and flood protection benefits, grassroots activism was also reshaping how Torontonians thought about the Don River and the Port Lands. During the late 1960s, when the environmental and health impacts of pollution were gaining attention throughout North America, Pollution Probe forced the issues into the public eye in Toronto (O'Connor, 2014). In 1969 it brought public attention to the polluted state of the Don River with a guerilla-theatrical funeral for the river, as well as an advertising campaign. This campaign, unlike the earlier work of the DVCA, took industrial activity, corporate greed, and the misuse of chemicals as the primary threats to urban nature (O'Connor, 2014). While its tactics and targets differed significantly from the DVCA, Pollution Probe and the early environmental activist movement in Toronto similarly viewed nature as a distinct entity that needed to be protected from humans. The Don River campaign developed a romantic-historical ecological imaginary of nature as a state that existed before being ravaged by human greed and development activity. This was evidenced in the funeral for the Don Rover by the reading of Elizabeth Simcoe's descriptions of the early colonial river valley as a source of inspiration and by the presence of "Simon Greed," a caricature of an industrial robber baron (O'Connor, 2014).

In the late 1980s, the two pathways of government environmental management and grassroots environmentalism began to merge as civic environmentalism in Toronto was folded into the operation of municipal government (Keil & Boudreau, 2006). The Royal Commission on the Future of the Toronto Waterfront, also known as the Crombie Commission, was notable for the breadth of issues tackled, the recommendation of a watershed approach to environmental protection, and its emphasis on the importance of broad community participation throughout the commission's hearings process and in subsequent environmental programs (Royal Commission on the Future of the Toronto Waterfront, 1992). At a similar time, environmental activists, in partnership with progressive city councillors, were organizing themselves around the issue of

restoring the ecology of the Don River, eventually coalescing, with formal government support, as the Task Force to Bring Back the Don (Bonnell, 2008). The task force engaged in numerous clean-up, tree planting, and public awareness activities, but they also put forward an expansive vision of a revitalized Don Valley that included aquatic habitat improvement, revegetation, improved connectivity with adjacent neighbourhoods, expanded recreational opportunities, and the restoration of lost biophysical processes in the lower reaches of the river through the dechannelization of the river and the recreation of the wetlands at the river mouth (Task Force to Bring Back the Don, 1991). Some of these ideas were taken up by the TRCA in its 1994 report *Forty Steps to a New Don*, which proposed the preservation and restoration of the river's natural habitat as well as the improvement of the river's cultural heritage and its benefits to neighbouring communities.

These decades of civic environmentalism, activism, and shifting state environmental management approaches came with shifting imaginaries of what the Don Valley could, or should, be and what sort of human-nature relationships it should support. It was in the intertwining of activism and government in the 1980s that two competing ideals of the nature-human relationship emerged in competition with one another. Keil & Boudreau (2006) identify the emergence of an ecomodernist approach, exemplified by the work of the Crombie Commission, which combined environmental conservation with economic development, as well as a radical ecology approach, which included the work of the Task Force to Bring Back the Don, defined by civic environmentalism, community organizing, and an opposition to the subsumption of environmental conservation into a regime of economic development.

In the lower Don River, the ecomodernist and radical ecologist views of nature collided in the late 1980s. John Sewell (1989) described "two solitudes" that had formed around the question of how to revitalize the mouth of the Don River. On one side, an ecomodernist agenda promoted property development around the river mouth as a necessary driver of cleanup operations. On the other, an ecology-first approach insisted on the naturalization of the

channelized river and the recreation of wetland habitat. The latter view was that of the Task Force to Bring Back the Don (1991) and the naturalization of the river delta was a key part of its strategy for the lower Don River. The former found its support in the Crombie Commission (Royal Commission on the Future of the Toronto Waterfront, 1992) as well as a coalition of pro-development politicians and private developers (Sanderson & Filion, 2011; Bunce, 2009). These two approaches, both mobilizing rhetorics of sustainability and resilience, have continued to be the wellsprings from which contemporary thinking about the ideal human-nature relationship in the Port Lands have drawn.

3.2 Site description

As of 2018, the Don River watershed is 85% composed of urban land cover (TRCA, 2018a). As a result of the high levels of urban land cover and the river's history of use as a dumping site for effluent, stormwater from storm sewer outlets and run-off from adjacent neighbourhoods, combined sewer overflows, discharge from the North Toronto Wastewater Treatment Plant, and the contamination of river sediment all continue to degrade the water quality in the river (TRCA, 2014a). Significant work has been done and is ongoing in reducing these issues. The Task Force to Bring Back the Don and the TRCA initiated a strategic approach to watershed improvements in the 1990s that focused on the improvement of river flow, water quality, wetland area, and fish stocks (Hough, 2004). The City of Toronto's *Wet Weather Flow Master Plan* proposes significant expenditures on eliminating combined sewer overflows and reducing stormwater inputs (City of Toronto, 2017a). The TRCA's (2018) most recent report on the state of the watershed indicates that the river's water quality has improved from "very poor" to "poor." While this is positive movement, it indicates that the water flowing into the Port Lands is still in need of improvement.

The specific issues with water quality in the Don River are several. The environmental assessment for the PLFPP noted problems with respect to high levels of *e. Coli* bacteria, pesticides, chloride from road salts, and heavy metals (TRCA, 2014a). An assessment of the

aesthetic quality of the Don River found that the river was significantly below average in all metrics, namely clarity, colour, odour, and debris (Dahmer, et al., 2018). These aesthetic problems decrease the desirability of the river for recreational or cultural use by humans, and are also suggestive of the river's deeper problems of contamination and effluent discharge.

The physical characteristics of the lower Don River are defined by the channelization program that was conducted in the early 20th century in order to deal with public health, flooding, and siltation problems in the river delta. While the construction of the narrow, straight channel failed to successfully resolve these problems, it did succeed in enabling the construction of rail and, later, highway transportation corridors through the area (Bonnell, 2014). These corridors, while a boon to early industrial development, have continued to isolate the Port Lands area from the rest of the city. The concrete banks of the channelized river, the loss of aquatic vegetative cover, and poor water quality have resulted in the loss of fish habitat and an aquatic ecosystem that is low in diversity and complexity (TRCA, 2014a). The terrestrial ecosystem of the Port Lands similarly shows a high degree of disturbance and lack of species diversity, though this is primarily related to the degree of urban industrial development on the site. The site's terrestrial habitat is highly fragmented and dominated by early-successional and non-native flora that is well suited to disturbed and stressful environments, while the site's breeding fauna is limited to only a few species of birds, mainly those that are tolerant of the early-successional vegetation, and potentially a den of coyotes (TRCA, 2014a). The environmental assessment's characterization of habitats in the Port Lands is based on a 2004 biological inventory. This inventory found that most of the terrestrial habitat is woodland and meadows. These areas support a range of native and non-native trees, forbs, and grasses. Plants such as milkweed and riverbank grape support communities of insects, birds, and small mammals, though these communities are unlikely to support many larger types of fauna with the possible exception of urban mammals such as coyotes. The TRCA inventory (TRCA, 2014a) does not seem to account for insect populations, though my own observations of the Port Lands

found some insects such as bees and monarch butterflies. The TRCA inventory is also limited by the number of smaller vegetation communities in the Port Lands that are not accounted for. Several vacant lots, roadside verges, and other marginal spaces in the Port Lands contain a surprising array of hardy vegetation, but are not included in the TRCA's list of vegetation communities.

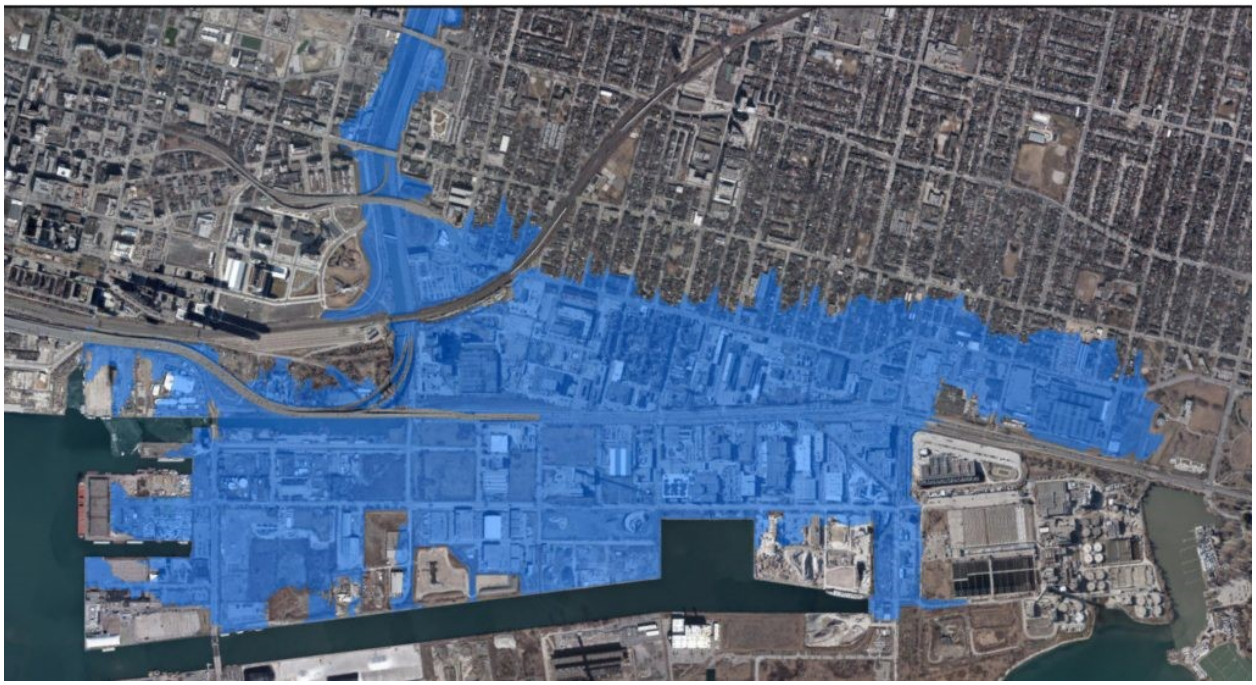
Even prior to the PLFPP's completion, the Port Lands have seen some noteworthy improvements in aquatic and terrestrial ecosystems. Due to the decline in industrial activity in the Port Lands, the vacation of industrial lots has allowed for the growth of small meadows, wetlands, and woodlots, while other sites have actively planted new vegetation (City of Toronto & Waterfront Toronto, 2017). Within the lower Don River itself, the period between 2002 and 2012 saw an increase in the Walleye population as well as the first sightings of a Quillback and an Atlantic Salmon, species which once inhabited the area but which had not been seen since monitoring of the area by the TRCA started (TRCA, 2014a). Since construction work began on new aquatic habitat around Essroc Quay, three new fish species have arrived in the PLFPP area as well, indicating that the new aquatic coves constructed as part of the project have been successful at improving the aquatic habitat within the Keating Channel (Waterfront Toronto, 2021a).

One of the greatest failures of the channelization of the lower Don River in the 19th and early 20th centuries is the exacerbation of flood risk in the area. The hydrology of the lower river is affected by both the high degree of urbanization upriver, which results in the rapid release of stormwater into the river during wet weather events, and by the right-angled turn of the narrow, concrete Keating Channel, which provides an impediment to the flow of the river into Lake Ontario, and additionally creates a sediment trap that, without regular dredging, raises the level of the river bed (TRCA, 2014a). As a result, a large swathe of land, primarily industrial but with some commercial and residential areas, is at risk of flooding when the Don River overflows (see figure 4). The sediment in the lower river poses additional problems for the area due to its

infusion with numerous contaminants. While lead pollution in Don River sediment has decreased, the concentration of other metal contaminants has worsened. The problem is especially acute during floods when contaminated sediment is resuspended in the river and washed out into Lake Ontario or into the floodplain (Mansoor et al., 2018).

Figure 4

Lower Don Flood Plain in a Hurricane Hazel-equivalent Wet Weather Event (TRCA, n.d.)

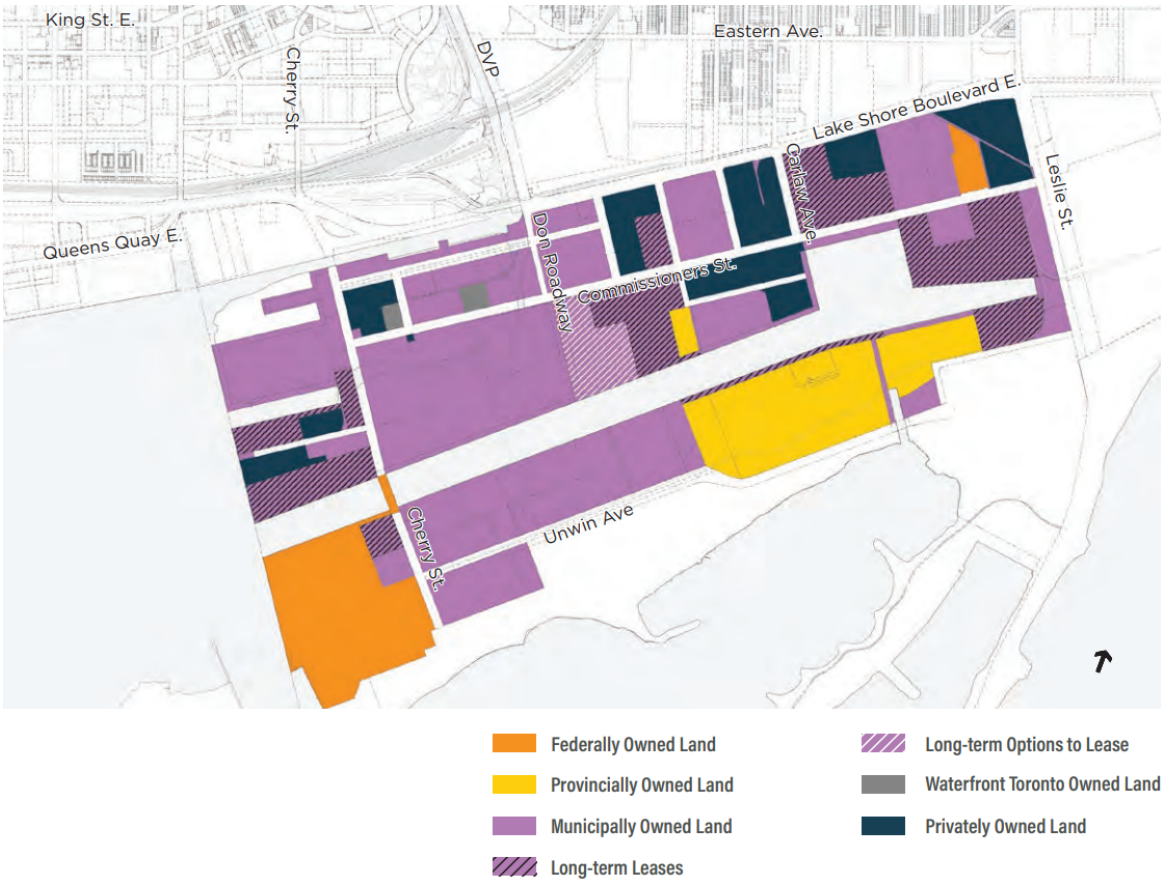


The Port Lands themselves still retain the shape created in the early 20th century through a process of lakefilling. The land is primarily municipally owned, with pockets of private and provincially owned land as well as a number of long-term leases of the municipal land (TRCA, 2014a; see figure 5). The fragmented land ownership situation in the Port Lands has historically been influential in the development of strategic plans for the area, requiring coordination between different government bodies and local private businesses (Hough, 2004). The need for coordination between different government bodies is heightened by the range of other developments occurring in the immediate vicinity of the Port Lands. The PLFPP requires

the cooperation of the City of Toronto, Waterfront Toronto, the Province of Ontario, the TRCA, Metrolinx, the Toronto Port Authority, and private interests (Waterfront Toronto, 2016).

Figure 5

Land Ownership in the Port Lands (City of Toronto & Waterfront Toronto, 2017)



Due to the decades of industrial use, the soil and groundwater on the site is largely contaminated with various pollutants, primarily petroleum products (Waterfront Toronto, 2016; see figure 6). Large-scale soil and groundwater remediation work is required to allow for development within the Port Lands. The specific standards for this remediation are being developed through the PLFPP's community-based risk assessment process (CH2M, 2016), but seem to be based on established parameters for specific contaminants set by the Canadian Council of Ministers for the Environment. Even with significant remediation of the surface soil, the depth of the soil and groundwater contamination requires the use of barriers to prevent the

migration of soil, water, and trapped vapours that cannot feasibly be remediated, which entails ongoing risks to human, plant, and animal health on the site (Waterfront Toronto, 2016).

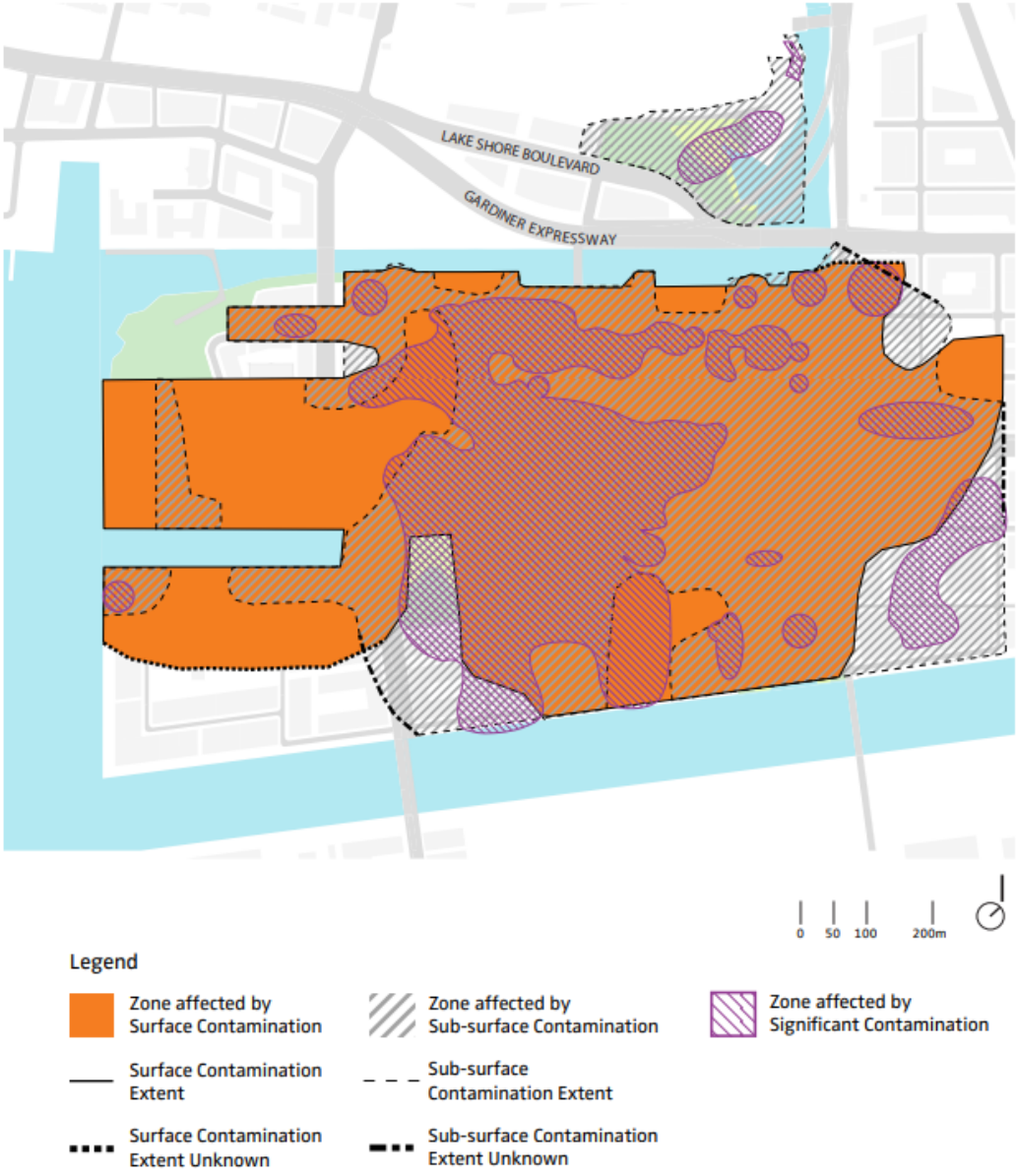
Land use on the site is primarily defined by its continued status as a working port. The most common land use is industrial, with the importation and storage of road salt and aggregates being the main form of industry in the area (City of Toronto, 2014). In addition to ongoing industrial operations, there are several former industrial lots in the Port Lands that currently sit vacant. These lots are the most easily developable land in the area and have already been used for cultural purposes as outdoor music venues and art installations (City of Toronto & Waterfront Toronto, 2017). The port will continue operations during and after the PLFPP is completed, and so will continue to define the economic and land use characteristics of the area for the foreseeable future.

While the environmental assessment process described the project area as devoid of human inhabitation (TRCA, 2014a), there is evidence that this was not the case at that time. An environmental assessment on an adjacent site (City of Toronto, 2017b) similarly indicated no residential uses within the study site, despite the presence of well-documented, visible, long-term informal housing in the area (Ensing, 2021). This indicates that environmental assessments cannot be relied on to accurately report the state of habitation in project areas. The Don Valley has a long history as a refuge for homeless Torontonians and a site for informal housing, particularly attracting those who were reluctant to enter into institutions and those who sought safety from police harassment (Bonnell, 2014). The lower Don River in particular has remained largely out of the public eye and, consequently, the use of the area for encampments has persisted (Evans, 2021). Some of these sites, such as that documented by Ensing (2021), persist for decades, while others expand rapidly before their tenants are evicted by police or private security (Immen & Rusk, 2002). Still others are brief and transient, attracting little notice. Given the persistence and frequency with which the lower Don River and surrounding Port Lands area have been host to informal housing at a wide variety of scales, and the significant

areas of vacant and underutilized space within the PLFPP area (City of Toronto, 2014), it seems possible that the PLFPP environmental assessment, like other assessments in the area, simply failed to account for informal uses of the space. It seems certain that informal use and the repurposing of marginal spaces should be considered a part of the character of the Port Lands site.

Figure 6

Contamination Profile of the Port Lands (Waterfront Toronto, 2016)



3.3 Planning and policy context

Background to the PLFPP: 1991–2005

After over a century of existing primarily as an industrial harbour, momentum for a dramatic overhaul of the Port Lands began to build in the late 1980s. The first major step in the contemporary reimagining of the Port Lands and the beginning of the planning process that would eventually result in the PLFPP was the Task Force to Bring Back the Don's (1991) report *Bringing Back the Don*. In the report, the city-backed task force sets a naturalization agenda for the lower Don River that focuses on restoring the area's ecosystems and biodiversity, reconnecting communities to the river, recreating the wetlands at the river delta, and improving the water quality. Dion (2021a) describes this vision as an important guide and inspiration for subsequent planning efforts in the Port Lands. The task force envisions the recreation of the wetlands and delta at the mouth of the Don River as taking place through natural processes enabled by a cessation of silt dredging activities alongside the cutting of new channels and construction of infrastructure that would enable the build-up of sediments in the designated wetland area (Task Force to Bring Back the Don, 1991). In addition to its usefulness as an early attempt to compass a broad range of technical and strategic requirements for the rehabilitation of the Don River valley and the Port Lands, *Bringing Back the Don* (1991) was groundbreaking for its articulation of the narrative and symbolic elements of the Don River naturalization program and Port Lands redevelopment, drawing on Pollution Probe's funeral for the Don River and stories of the valley's natural and cultural heritage to craft a vision of the river's resuscitation guided by historical characteristics and natural processes.

The next major step in the planning of a new lower Don River was the report of the Crombie Commission (Royal Commission on the Future of the Toronto Waterfront, 1992), which developed a new approach to environmental planning in Toronto and shifted the focus of environmental restoration efforts in the Don River, while still building on the work of the Task Force to Bring Back the Don. The report lays out an ecosystem approach to waterfront

development in the Greater Toronto Area. The ecosystem approach is based on the principle that “everything is connected to everything else” (Royal Commission on the Future of the Toronto Waterfront, 1992, p. 32) and attempts to link economic benefits, environmental health and sustainability, and community livability such that urban waterfront development fulfills all three goals. In practice, this means a more integrated approach to planning and was intended by the commission to resolve three primary problems in Toronto waterfront planning: jurisdictional gridlock, zoning reform, and the management of conflicting public and private interests (Laidley, 2007). The ecosystem approach to jurisdictional gridlock on the waterfront has meant the removal of development and planning responsibilities from jurisdictional siloes and the coordination of waterfront development activities through the broader, multi-governmental Toronto Waterfront Revitalization Corporation (now Waterfront Toronto). The application of the ecosystem approach to zoning by the Crombie Commission included the development of mixed-use neighbourhoods along the industrial waterfront and the integration of neighbourhoods with parks and green spaces in order to reduce urban sprawl and drive private investment towards the area, again linking the economic with the environmental (Royal Commission on the Future of the Toronto Waterfront, 1992). With respect to the management of private interests, the ecosystem approach as developed by the commission meant an expansion of stakeholder consultation as well as a focus on public-private partnerships and a central place for private sector financing in waterfront redevelopment projects.

The report of the commission has had significant and long-lasting effects regarding the Port Lands. The commission’s recommendation that planning should occur at a scale defined by ecological, rather than political, boundaries led to the Toronto Harbour Commissioners (predecessor to the Toronto Port Authority) losing its mandate for land development and planning in the Port Lands, which would eventually make way for the integration of the Port Lands into Waterfront Toronto’s mandate for waterfront planning and redevelopment. The commission also drew explicitly on the work of the Task Force to Bring Back the Don. The

commission's extended discussion of the Don River watershed is similarly oriented around the concept of naturalization (Royal Commission on the Future of the Toronto Waterfront, 1992, pp. 224–258).

Following the Crombie Commission's assessment of the state of Toronto's waterfront and its strategic recommendations for further action, the city began moving towards the drafting of a plan for the redevelopment of the Port Lands. Planning for the waterfront in general and the Port Lands specifically proceeded down multiple avenues. The first significant effort to unlock waterfront development in Toronto in line with the Crombie Commission's recommendations was the formation of the Waterfront Regeneration Trust, which acted as a coordinating body that could negotiate with private and public sector stakeholders in order to spur development. The Trust's primary project was the creation of a Great Lakes Waterfront Trail and efforts to use this project to obtain public funding for environmental remediation which would attract private investors in turn (Laidley, 2007). Perhaps due to the Trust's primarily coordinating role and its lack of direct power over planning and development, the trail failed to result in significant change on Toronto's waterfront (White, 2016). David Crombie, who took leadership of the Trust after his commission finished its work, believed that a much larger project, such as the Olympics, would be needed to overcome the inertia of jurisdictional gridlock (Oliver, 2011).

In 1999, the City of Toronto's planning staff presented city council with *Unlocking the Port Lands: Directions for the Future*, a Port Lands planning study that became the impetus for a full secondary plan for the Port Lands area. This study focuses on the need for mixed uses, green space and naturalization, transit improvements, and placemaking in order to improve the Port Lands (City of Toronto, 1999a). While the city's planning department was at work on a central waterfront secondary plan, the Toronto Waterfront Revitalization Task Force (TWRTF) was also formed in 1999 as a tri-governmental body with the task of preparing a business plan for the Toronto waterfront. This plan was intended to support the city's bid for the 2008 Olympic Games (TWRTF, 2000). The political importance of the Olympic bid imposed certain priorities on

the city, well summarized by a city report that touts the potential of waterfront redevelopment to transform Toronto from a “city that works" into a “city that astonishes,” one that would be able to compete for investment and tourism dollars on a global stage (City of Toronto, 1999b, p. 3). The TWRTF report puts the Port Lands front and centre, turning the Port Lands into a new Olympic district with a stadium and aquatics centre surrounded by new mixed-use neighbourhoods, a district devoted to entertainment and technology industries, and a newly naturalized Don River mouth (TWRTF, 2000).

In addition to making site-specific proposals for the development of an Olympic-supporting waterfront, the TWRTF (2000) report also presents an analysis of the reasons for the lack of waterfront redevelopment in Toronto at that time and recommendations for overcoming these barriers. The numerous barriers and recommendations can be divided into three primary categories. Firstly, the continued jurisdictional gridlock identified by the Crombie Commission (Royal Commission on the Future of the Toronto Waterfront, 1992) and lack of coordinated effort in managing the redevelopment effort could be resolved through the creation of a new tri-governmental body with a corporate structure and the power to spearhead redevelopment projects and primacy over local government. Secondly, the cost of soil remediation and infrastructure improvements prohibited governments from laying the groundwork for redevelopment. The TWRTF (2000) suggests that public-private partnerships and private sector leadership could help to defray the up-front costs. Thirdly, waterfront renewal was held back by the lack of a compelling vision for the waterfront around which stakeholder consensus could be gathered. The TWRTF (2000) presents a waterfront vision oriented around waterfront green space, the development of ‘live, work, play’ communities, and the transition from declining heavy industrial uses to modern economic sectors such as film and biotechnology. The Olympic Games themselves were also an important part of the waterfront vision. As much as the TWRTF’s report was meant to support the city’s Olympic bid, the idea of an Olympic waterfront was instrumentalized as a consensual rallying point for the numerous

governmental agencies and private sector actors whose conflicting interests in the waterfront had created so much gridlock (Oliver, 2011). The grand vision of a Toronto Olympic bid was the necessary motivation for governments to finally agree to a joint plan for revitalization. The core of the TWRTF's strategy was to consolidate waterfront revitalization efforts under a single corporate entity which could be relied on to act as an entrepreneurial agent in unlocking waterfront land for private investment and developing new economic sectors.

Just as the TWRTF built on the work done by city staff in *Unlocking the Port Lands* (City of Toronto, 1999a), city staff subsequently largely supported the TWRTF's recommendations (City of Toronto, 2000). The most significant difference between the TWRTF's (2000) report and the city's follow-up report *Our Toronto Waterfront: Building Momentum* (City of Toronto, 2000) was that, while the TWRTF emphasized that the tri-governmental body with responsibility for waterfront development should have primacy over other governments and bodies with interests in the waterfront and should not be inhibited by existing regulatory frameworks, the City of Toronto report (2000) places an emphasis on accountability to government, the importance of public consultation, and safeguards for the city's interests.

This tri-governmental body was officially created as the Toronto Waterfront Revitalization Corporation (TWRC) in 2002 with a board of an equal number of federal, provincial, and municipal appointees, strictly controlled financing, and with the goals of ensuring the economic, social and cultural revitalization of Toronto's waterfront, engaging with the public, and promoting private sector investment (Toronto Waterfront Revitalization Corporation Act, 2002). The Port Lands were one of the new agency's primary areas of focus, initially drawing on existing concepts regarding the naturalization of the Don River mouth and a transition to new entertainment and high-tech industries (TWRC, 2002).

In order that the TWRC might begin redevelopment activities in the Port Lands and nearby waterfront areas, the City of Toronto approved a new secondary plan for the area as *Making Waves: Principles for Toronto's Waterfront* (City of Toronto, 2003), later the *Central*

Waterfront Secondary Plan (CWSP). This secondary plan was, in many ways, an evolution of the TWRTF (2000) report, maintaining the globalized vision of a tourist-friendly waterfront geared towards new economic activities. However, it marked a significant departure from previous models of planning in Toronto. Whereas secondary plans prior to the CWSP had often involved highly detailed land use planning at the scale of individual parcels of land, the CWSP took a much broader approach to zoning and was intended to provide guidance and performance standards for development, rather than dictate development to the TWRC (White, 2016). The CWSP represented a major jurisdictional hurdle for waterfront redevelopment—the city's planning and land use regulation regime—being flexibilized and brought into line with the new unified tri-governmental approach.

Around the time that the CWSP turned over leadership in the Port Lands revitalization to the TWRC, the TWRC engaged in work to define itself as an organization and set out its approach to waterfront revitalization. The TWRC's (2005) *Sustainability Framework*, in keeping with many previous approaches to sustainable development, lays out a three pillar approach to sustainability that seeks long-term viability through an interlocking focus on the provision of economic, environmental, and social benefits. The implementation of these broad goals is achieved primarily through the setting of specific performance targets for new waterfront development (TWRC, 2005), an approach which lends itself to a policy-led but privately-implemented pattern of sustainable development and which also positions the TWRC as a long-term monitor of these performance standards (Bunce, 2009).

The *Sustainability Framework* was the last major development in the planning and policy framework around the Port Lands before the PLFPP entered the environmental assessment process in 2006. The overall arc of the pre-assessment period of planning for the Port Lands can be divided into three rough phases: a phase of uncertainty and indecision as different organizations tested the limits of the environmental, economic, and jurisdictional hurdles facing waterfront revitalization; a phase of flurried planning and policy activity coinciding with the city's

Olympic bid and the formation of the TWRC; and finally an arrival at a workable plan for the Port Lands that allowed for the environmental assessment process to be undertaken. The period of indecision significantly pre-dated the Crombie Commission, with complaints about the neglect of the waterfront and the lack of political cooperation and willpower going back decades (Eidelman, 2013). The Crombie Commission and the Waterfront Regeneration Trust represented an early effort to find a new organizing principle for waterfront revitalization that could succeed where the government and private sector had struggled for years. The flurry of planning and policy activity that picked up in 1999 and 2000, with several reports and planning documents being produced by city staff and the TWRTF in support of the city's 2008 Olympic bid, resulted from the combination of the Crombie Commission's approach of entrusting responsibilities to well-connected multi-governmental bodies with, as Crombie himself perceptively noted, a catalytic mega-project that could create a unifying vision for the waterfront and around which a stakeholder consensus could be gathered (Oliver, 2011). Finally, the creation of the tri-governmental TWRC with funding commitments and the power to lead revitalization projects produced an organization that could act with fewer jurisdictional impediments and which, after the influential TWRTF and city planning reports, had a reasonably well-developed vision for the waterfront to implement.

Planning the PLFPP: 2006–2022

The planning of what would become the PLFPP properly began with the *Don Mouth Naturalization and Port Lands Flood Protection Project Environmental Assessment* (DMNP EA). The assessment's terms of reference were approved in 2006 and the assessment itself was approved in 2014 (TRCA, 2014a). While the environmental assessment was the first component of the PLFPP to be undertaken, it coincided with the design competition for the new Port Lands and the City of Toronto's launch of the Port Lands Acceleration Initiative. The terms of reference identify three problems in the Port Lands to which the PLFPP is responsive: ecological dysfunction, flood risk, and dereliction (TWRC & TRCA, 2006). The project's seven objectives,

as laid out in the terms of reference, are the naturalization of the mouth of the Don River, the provision of flood protection, protection of existing navigation and flood protection, the integration of transit and utility infrastructure, the development of accessible recreation and cultural heritage opportunities, contribution to sustainable development on Toronto's waterfront, and consistency with the TWRC's *Sustainability Framework* (TWRC & TRCA, 2006).

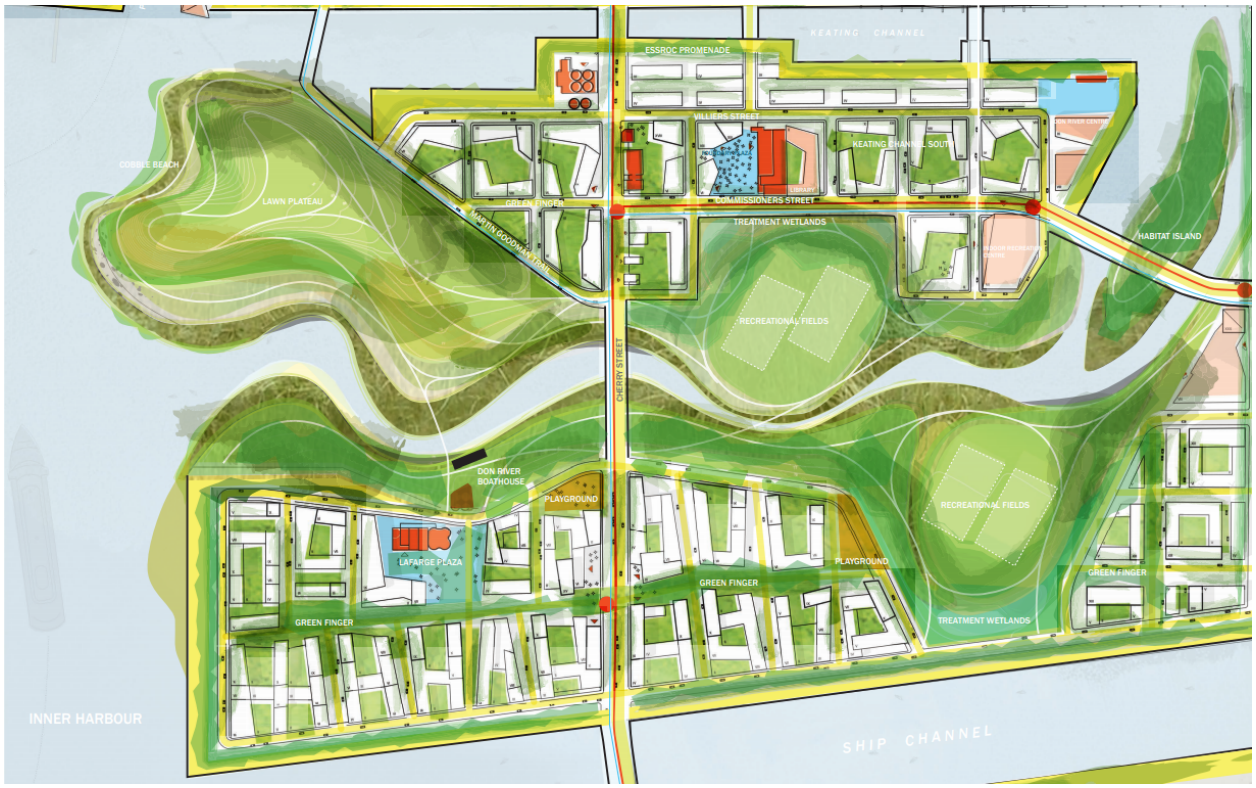
Shortly after the environmental assessment process was begun, the TWRC launched a juried design competition to select a preferred design for the Port Lands area. This competition was completed in 2007, with the design of Michael Van Valkenburgh Associates (MVVA) (see Figure 7) being selected (TWRC, 2007). The selection of the MVVA design was an important milestone in defining the future of the Port Lands and in the setting out of an ecological imaginary and ideal of the human-nature relationship that has remained with the project. The jury's reasoning for the selection of the MVVA design focused on a number of factors, including transit accessibility and cultural heritage, but they made an important note of the design's particular focus on wildness and nature (Kuwabara et al., 2007).

The language used by MVVA in their design proposal is distinctive in that they state that they were guided by questions relating to the agency of the Don River itself: "Where does the mouth of the Don River *want* to be and what form does it *want* to take?" (MVVA, 2007, p. 1, emphasis in original). This proposal centres a view of agential nature to which human designs must defer. In practice, this approach is visible in the design proposal in the openness of the river estuary and the many soft edges to the new river outlet, in contrast to the hard infrastructure that predominates in the other proposals' visions of the land-water interface (cf. Atelier Girot, 2007; StossLandscapeUrbanism, 2007; Weiss/Manfredi, 2007). The MVVA approach hearkens back to the Task Force to Bring Back the Don's faith in natural processes to autonomously restore the lower Don River so long as they could be freed of human interference (Task Force to Bring Back the Don, 1991). This vision, and the story it told about how humans might relate to the waterfront, were clearly compelling to the jury of the design competition, as

well as to those involved in the preparation of the environmental assessment, where it became the basis of the preferred option (TRCA, 2014a).

Figure 7

Original MVVA Port Lands Design (MVVA, 2007)



The MVVA design was more clearly articulated with the *Lower Don Lands Framework Plan* (Waterfront Toronto, 2010). The framework plan offers more details on the project's goals, environmental design approach, technical aspects of regional employment and soil remediation, and next steps. It also makes explicit the importance of some themes that had already emerged in other documents regarding the lower Don River, such as the desire for a waterfront that serves as a spectacle to attract international interest, the importance of the flexibilized planning approach taken by the CWSP, and the historic importance of the naturalization ideal in garnering support for the project (Waterfront Toronto, 2010).

Figure 8

The "Alternative 4WS Amended" Preferred Design (TRCA, 2014a)

The next significant step in the planning process before the completion of the DMNP EA was the City of Toronto's Port Lands Acceleration Initiative (PLAI). The PLAI was based on the progress made in the DMNP EA process and was intended to evaluate the financial feasibility and phasing of the proposed plan (City of Toronto, 2012). The report found that the project stood to be a financial loss for the city, despite the sale of large swathes of publicly-owned land and the influx of development fees, and suggested alternative methods for recouping costs. In the cost-cutting vein, the report also recommended ways to reduce costs and increase the developable and recreational area by consolidating the naturalized area designated for new habitat. The new overall design, termed the "4WS" design, for the Port Lands, while based on the original MVVA (2007) design, diverged significantly in order to achieve these goals,

eliminating much of the soft edges of the naturalized area and river mouth that made the MVVA proposal distinctive. These soft edges were replaced with dock walls to ensure the continued operation of the port facilities (City of Toronto, 2012). These changes emerged from a consultation process that included the formation of a Stakeholder Advisory Committee, composed of a mix of businesses and civil society organizations, and the Landowners and Users Advisory Committee, composed of local landowners and businesses that lease land in the Port Lands (City of Toronto, 2012). These two consulting bodies would outlive the PLAI and continue to play a role in the planning of the Port Lands (City of Toronto & Waterfront Toronto, 2017).

Subsequent to the completion of the PLAI and its development of a business case and phasing plan for the PLFPP, the environmental assessment was completed and approved, ultimately recommending an amended version of the PLAI's 4WS plan (see Figure 8). The environmental assessment report (TRCA, 2014a) describes the goals set out by the terms of reference and its proposed measures for achieving them. The path laid out to achieving the objective of "naturaliz[ing] and rehabilitat[ing] the mouth of the Don River utilizing an ecosystem based approach" (TRCA, 2014a, p. 7-3) involves the removal of existing low-quality habitat and the urban and non-native species that it supports, and the construction of a larger amount of new habitat that will support greater biodiversity and trophic complexity in accordance with pre-formulated lists of desirable native species and barriers to the return of undesirable species. The naturalization proposal anticipates the necessity of an ongoing adaptive environmental management regime to maintain the naturalized environment in the desired state and engage in long-term site maintenance such as regular sediment dredging (TRCA, 2014a). The use of the new Don River estuary and wetlands as a form of nature-based flood protection infrastructure poses other long-term management hurdles as well, as high floods are anticipated to cause significant damage to the riverine and wetland habitat. This also requires a long-term monitoring

and maintenance program in order to ensure that the naturalized area of the Port Lands is maintained in the desired condition (TRCA, 2014a).

The approval of the DMNP EA allowed the project to move forward. The final important documents before the start of construction were the due diligence report (Waterfront Toronto, 2016) and the *Port Lands Planning Framework* (City of Toronto & Waterfront Toronto, 2017). The due diligence report aims to ensure the accuracy of the project's technical details and feasibility of its implementation plan. It additionally mobilizes outside expertise through a peer review process with the Rijkswaterstaat, the Dutch public works and water management agency, and Peter Kiewit Infrastructure, a private firm specializing in marine construction projects (Waterfront Toronto, 2016). The planning framework seeks to provide directions for land use and environmental planning in the Port Lands once the area is open to redevelopment, reiterating the focus of earlier planning documents on the importance of sustainable, green, and resilient urbanism as factors in the global competitiveness of the Port Lands and the City of Toronto as destinations for international investment (City of Toronto & Waterfront Toronto, 2017).

4. Findings

4.1 Jurisdiction and policy

A policy mix is the set of public policy instruments that combine to produce particular outcomes in a given program or project. Different aggregations of policy instruments can have significant, sometimes surprising, impacts on how socio-ecological systems develop and change, especially since policies often have different effects on different spatial and organizational scales that are difficult to disentangle (Ostrom, 2007). The difficulty of developing effective policy mixes and understanding the relationship between policies and outcomes increases with the complexity and heterogeneity of the system. The PLFPP demonstrates a convergence of a number of policy hurdles common to biodiversity conservation or restoration projects (Ring & Schröter-Schlaack, 2011) that are also relevant to the economic development and flood protection aspects of the project: the PLFPP interacts with ecosystems and economic

systems that are multiscalar, complex, and prone to unexpected change; the project involves a wide range of interests and objectives which are not easily balanced in all cases; the changes wrought by the project will be difficult or impossible to undo once undertaken; the benefits and costs of the project fall unevenly and on different stakeholders; and the long-term impacts of the project require consideration of outcomes on an intergenerational temporal scale.

As the Crombie Commission (Royal Commission on the Future of the Toronto Waterfront, 1992) found, the chaotic mix of agencies with various overlapping and conflicting policy instruments at play on Toronto's waterfront were a major hurdle to waterfront development. The formation of a new waterfront development regime under the auspices of the TWRC (now Waterfront Toronto) simplified matters and contributed to the evolution of a distinctive mix of waterfront revitalization policy that has played a significant role in the direction of the PLFPP. Despite this simplification, waterfront policy relevant to the Port Lands remains fragmented between the Province of Ontario, the City of Toronto, the TRCA, and Waterfront Toronto. The PLFPP falls under the City of Toronto's land use planning regulations and frameworks as discussed, the city's Wet Weather Flow Master Plan (City of Toronto, 2017a) and the related management guidelines (City of Toronto, 2006), the TRCA's watershed planning under its strategic plan (TRCA, 2013), and Waterfront Toronto's own sustainability policy (TWRC, 2005), strategic plans (Waterfront Toronto, 2021b), and specific contribution agreements with other governments. The land ownership status in the Port Lands, split as it is between municipal, provincial, and private ownership, creates additional fragmentation of authority for decision making. This arrangement creates a context in which Waterfront Toronto, the agency meant to take a leadership role in waterfront revitalization, is largely subject to land use and policy direction from other agencies and governments. This has had a direct impact on Waterfront Toronto's ability to carry out the PLFPP (Office of the Auditor General of Ontario, 2018).

This mix of jurisdictional authorities and policy approaches creates certain incongruities in the planning process. Waterfront Toronto, the TRCA, and the City of Toronto all have policies that focus on using green infrastructure in new projects, especially with respect to water management, and yet Waterfront Toronto has little to no input into the city's green infrastructure policies that will have direct and immediate impacts on Waterfront Toronto's work (Johns, 2018). The mandate of Waterfront Toronto itself faces conflict between the requirement that its waterfront development work be financially self-sustaining in the short-term and the reality that it is engaged in waterfront revitalization projects with decadal time horizons and a public interest mandate that may conflict with the pursuit of immediate financial returns (Office of the Auditor General of Ontario, 2018). Furthermore, the ownership of waterfront land by municipal and provincial governments as well as other government agencies means that Waterfront Toronto's planning processes are subject to interference by other interested organizations with significant power over how plans are developed and implemented.

The effects of this mix of policies and jurisdictions can be seen in the evolution of the MVVA design over the course of the DMNP EA. The reduction in naturalized area, green space, and soft-edged, natural features in the planned Don River estuary emerged from the PLAI report (City of Toronto, 2012), which focused on mitigating financial risk to the city, reducing project costs, and increasing the involvement and input of private sector partners and stakeholders in the process. The resulting changes to the design of the Don River estuary have been criticized by academic Jennifer Bonnell (Gauthier, 2022b) and by the Toronto advocacy organization CodeBlueTO (2012) for reducing the ecological benefits of the project. They demonstrate how the trajectory of the PLFPP has been subject to competing policy imperatives between the City of Toronto's power over land use in the Port Lands and interest in self-sustaining and privately financed development and Waterfront Toronto's mandates for environmental sustainability and long-term planning.

Weaknesses in the environmental assessment process itself compound the difficulties of a complex and fractious policy and jurisdictional landscape. The back-and-forth interplay between the City of Toronto, Waterfront Toronto, and the environmental assessment team being led by the TRCA occurred in the midst of a lack of critical information. As discussed, the lower Don River and the Port Lands have both been sites of long-term informal housing and homelessness (Ensing, 2021; Evans, 2021). The environmental assessment process does not seem to capture project impacts on these residents. The lack of information on human habitation in the Port Lands forecloses on the possibility of addressing potential displacement and even absolves the relevant public authorities of the need to make a clear decision to not address displacement.

Additionally, important information regarding the current Port Lands ecology is missing from the environmental assessment, a common flaw in environmental assessment processes (Slootweg, 2010). The assessment includes a list of the species found in the Port Lands and an account of the areas of habitat that will be created and destroyed in the construction process, but it lacks an account of what roles those species play in the Port Lands ecosystem and what potential impacts habitat disruption or destruction might have on those species and, consequently, on the ecosystem as a whole. Ecosystem dynamics such as patterns of succession, dispersal, interactions between different species, and the importance of abiotic conditions to different species are essential in understanding both the current state of an ecosystem and the potential impacts of restoration or naturalization decisions (Török, et al., 2018). As such, the decisions to remove existing habitat and reduce habitat creation through the adoption of the PLAI's (City of Toronto, 2012) amended 4WS estuary design occurred in the absence of reliable information regarding the impacts of these decisions on the species that currently inhabit the Port Lands, as well as whether the reduced habitat area and typology will be sufficient to achieve the desired species mix and degree of biodiversity.

Beyond the mix of provincial and municipal governments and multi-government agencies, the policy landscape within which the PLFPP operates is also influenced by the importance of trans-national policy networks and trans-jurisdictional policy mobility. The Rockefeller Foundation's 100 Resilient Cities network, of which Toronto was a member, set requirements of member cities' climate resilience policy and risk assessment—requirements backed by the possibility of losing access to the network's benefits and resources (Nielsen, 2020). At a broad, strategic level, the network's main impact on policy in Toronto was the development of the city's resilience strategy (City of Toronto, 2019a). The 100 Resilient Cities network's approach to resilience has also influenced the approach of Waterfront Toronto, which, like the city's resilience strategy, uses the network's definition of resilience as the ability to sustain growth in the face of stressors or shocks (Waterfront Toronto, 2017). The resilience strategy departs from other environment and climate-focused documents such as the TWRC's (2005) *Sustainability Framework* or the TRCA's (2014b) *Living City Policies* in its neglect of environmental and ecological concerns as part of urban resilience. While the resilience strategy (City of Toronto, 2019a) frames the PLFPP as the city's flagship resilience project, the naturalization component of the project, once one of the primary motivators for the project, is relevant to the strategy's understanding of resilience only in its ability to serve as green flood mitigation infrastructure. Compared to earlier planning and vision documents regarding the revitalization of the Port Lands, this is a significant shift in the role that naturalization and ecological restoration are understood to play in the project. This shift coincided with the move from the project being described primarily as the "Don Mouth Naturalization Project" to the "Port Lands Flood Protection Project".

4.2 Media and public discourse

As the overture to policy formulation and implementation, the ability to define and frame problems has long been recognized as a significant source of power and influence (Weiss, 1989). The way that issues are presented within mass media and other elements of public

discourse has considerable power in selecting what issues garner attention, constructing specific narratives regarding problems (Crow & Lawlor, 2016), and creating space for advocacy organizations, politicians, and other policymakers to make their own contributions to the definition of environmental problems and present their own solutions to the public (Boscarino, 2009).

Policy narratives and the ways that policy problems and solutions are defined and framed within mass media and public discourse are essential to the development of megaprojects, such as the PLFPP. These projects typically have very large budgets and long timelines, require managerial strategies and technical expertise outside of the norms of the institutions that will be responsible for the project, and are so complex as to create difficulties in maintaining accountability for project performance and in measuring potential impacts on other sectors or communities. As a result, megaprojects are typified by budget and timeline overruns, failure to deliver promised benefits, and unforeseen negative consequences (Flyvbjerg et al., 2003). Given these characteristics, Flyvbjerg (2014) finds that megaprojects are motivated and justified not by rational and accurate cost-benefit analyses but, rather, by distinct sets of elements he calls “sublimes” (pp. 8–9) that link the interests of diverse sets of stakeholders to one another and to the project as a whole through narratives of technological achievement, political action, economic progress, and aesthetic improvement.

Depictions of the Port Lands in media and public discourse, especially since the early 1980s, have largely come in the form of presenting the area as a profoundly problematic space: polluted, undesirable, and in severe economic decline; or as a solution to a looming crisis: a space ripe for reimagining. The recognition of Toronto’s industrial waterfront as a ‘terrain of availability’ (Greenberg, 1996)—a space onto which different imagined futures can be projected—made the Port Lands a key site on which competing visions for waterfront development and ecological restoration could be acted out.

While many descriptions of Toronto's waterfront problem in general agree that political indifference and political gridlock are to blame for the dislocation of the city from its waterfront and the impacts of pollution and environmental destruction (Eidelman, 2013), there have been two distinct trends in the role that development is seen to play in producing and solving these problems. This division aligns with the divergence Keil & Boudreau (2006) identify in Toronto's environmental discourse between an eco-modernization agenda, which saw development as a key part of the solution to environmental problems through the creation of economic-environmental win-wins, and an urban ecology agenda that was rooted in local community and environmental activism, which was hostile to the push to subsume environmental concerns into an economic growth and development-oriented regime. These two pathways have competed and interacted in how they represent the Port Lands-as-problem and the Port Lands-as-solution.

The Port Lands problem

The history of the Don River and the Port Lands has been defined by an evolving narrative of these areas as problematic spaces that need to be solved, a narrative that dates back at least to the construction of the Don River as an unruly force in need of taming by figures such as Henry Scadding in the mid and late 19th century (Desfor & Bonnell, 2011). Since at least the early 1960's, a new problematic of the Toronto waterfront and the Don River, including the Port Lands, has developed through the sustained, largely negative, attention the area has received from news publications and advocacy groups regarding the environmental degradation and inaccessibility of Toronto's waters, as well as consternation about the lack of a political response to these problems (Eidelman, 2013). The development of this public discourse around waterfront issues has run parallel to the city's changing political and economic climate.

While views of waterfront industry were marked by optimism during the shipbuilding boom of the World Wars (Moir, 2011) and the opening of the St. Lawrence Seaway project was a cause for celebration of the waterfront's seemingly secure industrial future (Goodman, 1959;

The Globe and Mail, 1959; *Toronto Daily Star*, 1959), the failed realization of the promised long-term economic benefits of the seaway soon resulted in the industrial waterfront being seen as a black mark on the city and a waste of a potentially valuable asset in the form of waterfront real estate (*Toronto Daily Star*, 1962a). The recognition of a new Port Lands problem coincided with a dramatic decline in the economic importance of waterfront industry due to the loss of shipbuilding after the Second World War and changes in shipping and rail technologies (Greenberg, 1996; Moir, 2011), signs of interest in other economic uses for the Toronto waterfront (*Toronto Daily Star*, 1962b), as well as the rise of a wave of environmental activism and public concern about a range of environmental issues (O'Connor, 2014).

When presented as a problem, the language of many media depictions have been vivid: *The Globe and Mail* (1980a, p. 6) described the mouth of the Don River, as a place where "the sludge is thick with lead, zinc, oils, and grease" and as a source of constant threat of flooding and pollution to nearby areas and waters (Makin, 1980), while an article in the *Toronto Star* (Ward, 1980) positioned the lower river as a vestige of the city's dirty, industrial past. The issue of dredging was a flashpoint, and commentators and politicians, while united in their concern that the lower Don River and Port Lands infrastructure were dangerous, were divided on whether the river and its toxic siltation were an economic threat to ship traffic (*The Globe and Mail*, 1980b), or whether the threat was one of pollution to water quality and environmental health (*The Globe and Mail*, 1980a) exacerbated by the incaution and lack of environmental concern by a government pursuing the economic benefits of dredging at the expense of a thorough environmental assessment process (Howard, 1980).

Just what threat the lower Don River and the Port Lands poses to the city at-large has evolved with the times, with air pollution (Sewell, 1989), soil pollution (Till, 1990), and invasive species (Mittelstaedt, 2003) joining the list of threats posed by the Port Lands to the city's environmental health and economic prosperity. The DMNP EA (TRCA, 2014a) explicitly highlights the Task Force to Bring Back the Don and as a key moment in defining the problems

that the PLFPP has set out to solve. The Task Force to Bring Back the Don's combined local environmental activists and successful public outreach with a compelling and extensive vision of a new urban ecology in the Don River (Task Force to Bring Back the Don, 1991) in a way that both attracted media attention and shaped a public discourse at the time (Mays, 1991) and for years after (McAndrew, 1999a; Immen, 2000a). The task force's vision and sustained activism was a consistent push to claim the Don River and the Port Lands as, fundamentally, spaces of ecological dysfunction resulting from traditional patterns of development and a legacy of attempts to control, rather than work with, the river (Keil & Desfor, 2003).

The Port Lands solution

While media has been an important venue for the definition of the Port Lands problem, it has also been an important vector for the presentation of Port Lands solutions. The redevelopment of waterfront property, particularly the sale of public lands around the lower Don River, has a long history of being presented in media and public discussions of the area as a solution to a variety of economic, environmental, and social ills. The redevelopment of the Port Lands has variously been positioned as a cure for economic recession (Horgan, 1982), lack of affordable housing (Moloney, 1989), a polluted environment (McAndrew, 1999b), and Toronto's status and prestige in a competitive international investment market (Barber, 2000), and local media has been the site where public support has been courted for these proposals.

The Crombie Commission (Royal Commission on the Future of the Toronto Waterfront, 1992) and the 2008 Olympic Bid were key points at which many of these threads coalesced into singular visions of the waterfront and the Port Lands as opportunities for economic-environmental-social wins. While the Crombie Commission's idea of an ecosystem approach to environmental protection was not wholly original, it attracted significant praise and commentary in the press (Hossie, 1990; Valpy, 1990; Suzuki, 1992) and quickly entered the language used to discuss a range of environmental issues beyond the Toronto waterfront (Funston, 1991; Fisher, 1991). The Crombie Commission's "everything is connected to

everything else" (Royal Commission on the Future of the Toronto Waterfront, 1992, p. 32) approach to bundling environmental, social, and economic objectives, as well as the consolidation of development and land-use planning responsibilities in centralized institutions that could operate at a distance from local institutions and politics. This package of solutions to slow and piecemeal development not only became the standard for the Toronto waterfront development regime (Laidley, 2007) but also could be repackaged as a model for environmental governance solutions elsewhere in the province.

Toronto's 2008 Olympic Games bid provided the focal point around which a consensus regarding waterfront development could finally be rallied. This process was played out in mass media as well as in the studies and reports of the TWRTF and the City of Toronto. What the TWRTF (2000) presented as a new and exciting waterfront endeavour was, in many ways, a resurrection of many of the themes of Port Lands redevelopment that had been discussed for decades: economic revitalization with clean industry, new housing, and a step forwards in building Toronto's international reputation. What was distinct about the Olympic proposal was the effort to make the Olympic waterfront a salve for many problems and a boost to many interests. From its inception, the Olympic bid was presented to the Toronto public as an exceptionally inclusive process that sought the input of a wide range of citizens (Vincent, 1999). The plan was promoted in the media as a unifier of the private and public sectors, a job creator, a spur for environmental improvement, and a boon to culture and recreation (Christie, 1999; Immen, 2000b). Like many proposals for nature-based solutions to environmental problems elsewhere (Kotsila et al., 2021), the proposal for the Port Lands arising from the Olympic bid process could create consensus by at once positioning itself as the result of democratic and participatory process and a product of technical expertise and business leadership, and as responsive to local contexts and needs and responsive to global economic imperatives. This represented a shift in how Port Lands redevelopment was framed in the media from the

relatively siloed proposals of previous decades and coincided with the new regime of waterfront governance initiated by the formation of the TWRTF and, later, Waterfront Toronto.

Ecological imaginaries

Throughout the history of Toronto's efforts to grapple with waterfront and Port Lands development, the city's citizens and leaders have sought to develop and promote visions of new socio-ecological orders and idealized futures in the region. In many cities, post-industrial spaces are sites of ambiguity, conceived of as disordered wastelands by some; sites of wild nature and urban biodiversity by others; opportunities for future redevelopment and reincorporation into the city as a producer of economic value; or opportunities for new forms of urban commoning and ecology (Rosa, 2016). Different visions for the Port Lands have applied a range of ecological imaginaries to this seemingly waste space, mobilizing different notions of what urban nature ought to be like and how Torontonians ought to engage with it.

In keeping with the traditional concerns of ecological restoration, historical fidelity has been at the heart of many Port Lands imaginaries. The publication of *Bringing Back the Don* (Task Force to Bring Back the Don, 1991) was a landmark moment in defining and disseminating an ecological imaginary for the Port Lands and the Don River valley. In the report, the task force's core goals are described as "re-establish[ing] ecological diversity in ways that integrate history" and "develop[ing] open space and recreational strategies that are in tune with the essential nature and function of a river valley" (p. 19). In their view, the ideal future for the industrialized Don River combines the restoration of a historical ecology with a deference to a transhistorical essence of nature. With respect to the lower Don River and the Port Lands, which they recognize has been altered beyond any hope of historical restoration, the task force's aim is described as the return to a "more 'natural' state" involving "alternative approaches to its restoration that did not previously exist but which are, none the less, based on natural principles" (Task Force to Bring Back the Don, 1991, p. 20).

The combination of the desire to resurrect a pre-industrial nature in the Port Lands and a framing of the naturalization of the area as, in fact, a removal of human influence and a return to the primacy of natural processes is a common feature of commentary on the PLFPP. Appropriately for a river that was once given a public funeral, many narratives regarding the PLFPP and the Don River are laced with language describing the project as a sort of resurrection of an essential nature that once existed but has since been lost (see: MacGregor, 2016; Wilson, 2020; Landau, 2021; Rassy, 2022 for examples). The framing of human intervention as a return to a natural order and a reversal of past human intervention in the Don River has also appeared in the original MVVA (2007) design submission for the PLFPP, the *Port Lands Planning Framework* (City of Toronto & Waterfront Toronto, 2017), comments by Waterfront Toronto's chief planning and design officer (*Great Lakes by Design*, 2022), and commentary by members of the Mississaugas of the Credit First Nation who were consulted on the project (DeLaire, 2022).

This narrative of the PLFPP as a break from the area's industrial past is not the only narrative that has been deployed in discussions of the project, and is a narrative that has perhaps been increasingly decentred as the project has progressed. Though the original design proposal (MVVA, 2007) was framed as a landscape design that followed the agency and essential form of the river valley, the landscape design has also been praised for its inclusion of significant cultural heritage features that reference and create linkages between the river's ecology, its industrial past, and its place in the city (Bassett, 2022). Photography and public art projects by Vid Ingelevics and Ryan Walker, such as *How to Build a River* (2022) focus on the artificiality and engineered nature of the PLFPP. The photographs highlight the human ingenuity, creativity, and effort involved in creating a new Port Lands ecology. The DMNP EA (TRCA, 2014a) does not characterize restoration of a historical ecology as a goal of the project. The TRCA and Waterfront Toronto are usually careful to refer to the project as a "naturalization" rather than a "restoration" of the area's ecology. Particularly in the national and international

press, interest in the PLFPP is primarily centred on it as an exemplar of resilient urbanism and environmentally-friendly flood protection (see: Pelley, 2019; Bozikovic, 2021; Maynard, 2022; Bochove, 2022 for examples).

Instead of measuring the PLFPP's value by its ability to recreate what has been lost or to mimic historical processes, these views find the project's value variously in how the new Port Lands links the area's past to its future, as an expression of human creativity in the design and engineering of a new environment, as an exciting new direction for flood prevention, and as a statement of Toronto's ambitions to be globally recognized for its climate adaptation and resilience.

4.3 Site alterations

The PLFPP proposes sweeping changes to the Port Lands in order to provide the Port Lands with greater ecological integrity and environmental improvements, and to make the broader area more resilient to flood risk. The evidence from the project's planning documents, progress to date and from direct observations of the Port Lands indicate that, once completed, the PLFPP will likely offer significant improvements to the Port Lands' ecology and flood resilience, but also that gaps in information and the imperatives of political and economic expediency pose challenges to some aspects of the project.

Naturalization

As earlier discussed, the DMNP EA (TRCA, 2014a) offers a rough overview of the habitat types found within the project area, but offers relatively little detail as to the species composition and the roles that species play in the local ecology. References to the existing ecology of the Port Lands in the DMNP EA primarily serve the purpose of indicating that they are dominated by non-native and invasive species and are of consequently low quality. This characterization downplays both the importance of these species to novel ecosystems (Higgs, 2017) like the Port Lands and also does not adequately account for the interactions between the presence of invasive species and native species richness. The TRCA's most recent biodiversity

quality survey for Toronto (TRCA, 2018b) indicates that in urban and urbanizing areas, the presence of increasing levels of invasion is associated with higher biodiversity quality. My own on-site observations found numerous non-native and native species within a number of Port Lands sites (see Appendix, Table 1), often existing in heterogeneous mixes even in highly marginal spaces such as vacant lots and roadside verges that are not identified as vegetation communities by the DMNP EA (TRCA, 2014a). These findings are consistent with research on invasion in vegetation communities that has found highly complex and often counter-intuitive relationships between native and non-native species richness across time (Ernst et al., 2022).

The PLFPP's planting strategy (Waterfront Toronto, n.d.) distinguishes between the needs of the river valley and floodplain and the needs of the parks and green spaces outside of the floodplain. The flora that will be planted in the floodplain is limited to native species that are intended to be resilient to inundation during periods of high water levels, while the flora outside of these spaces include non-native species selected for the quality of wildlife habitat and ornamental value that they will provide. The focus on strictly native species in the floodplain and wetland areas raises a number of issues that may undermine the PLFPP's ability to produce and maintain a functional, self-sustaining ecosystem in the long run, which could result in more difficult and costly environmental management going forward. While the restoration of wetlands and grasslands along rivers both offer considerable benefits in flood mitigation as well as additional benefits in carbon sequestration (Drever et al., 2021), the use of wetlands and naturalized riparian buffer zones for flood mitigation necessitates that these areas be exposed to potentially frequent flood-related disturbances. These disturbances can have significant negative impacts on the continued function of these ecosystems as sites of flood mitigation and carbon sequestration, immediately as a result of the disturbance of inundation as well as over time through the concentration of polluted sediment within wetland areas (Ou et al., 2019; Burns et al., 2012). This means that these ecosystems may be frequently required to recover from disturbances in a context of increasing soil toxicity. The PLFPP adaptive environmental

management approach (TRCA, 2014a) also includes measures to prevent the entry of non-native species into the Port Lands. This may pose additional difficulties for the recovery of disturbed wetland and riparian ecosystems, as barriers to invasion are also often barriers to the reestablishment of native species (Kowarik & von der Lippe, 2018). As the TRCA (2018b) found, some non-native species are correlated with increasing biodiversity in disturbed urban and urbanizing ecosystems in Toronto. Given that the native flora of the wetland and riparian ecosystems created through the PLFPP may need to be established and reestablished several times, it may be, or it may become, more practical to accept the novel nature of these ecosystems and expand the species list to include non-native species where they can perform specific ecosystem roles more efficiently.

With respect to the aquatic habitat, alterations to the Keating Channel and around Essroc Quay have already succeeded in creating habitat for fish species that were not common in the area before the PLFPP (Waterfront Toronto, 2021a). Moving forward, the inundation of the new river valley will create a substantial area of new aquatic habitat. A major difficulty for the long-term success of aquatic habitat in the Port Lands is the need to manage sediment. Dredging of sediment has been a constant fixture in the Port Lands since port operations began, and dredging, especially of contaminated sediments, can have severely negative impacts on local marine life through a number of mechanisms including the destruction of habitat and the resuspension of toxic sediments throughout the water column (Wenger et al., 2016). The construction of a sediment and debris management area upriver of the Keating Channel will be essential to relieving the existing channel and newly constructed river estuary of the need for regular dredging and is intended to allow for the establishment of a new aquatic ecosystem without the interference of dredging or sediment build-up.

Historical conditions have been frequently referenced as an inspiration for the naturalization of the Don River, but the DMNP EA's (TRCA, 2014a) environmental performance monitoring plan only describes historical conditions as an explicit monitoring requirement of the

aquatic habitat restoration, with the terrestrial and wetland habitat being compared only against the somewhat more ambiguous “intended outcomes” (p. 8–10). This approach mostly leaves the ideal species composition in the Port Lands open for later definition, although it makes clear that there are limits to this flexibility and distinctions between “desired” and “undesired” species compositions will be made as a part of the environmental management regime (TRCA, 2014a, 8–14). The discovery and potential integration of hardstem bulrush, coyote willow, and cattail growing from seeds buried during the filling of the historical wetland at the delta of the Don River in the early 20th century indicates the potential for flexibility in the historical fidelity of the PLFPP. At the same time, Stuart (2022) remarks on the uncertainty as to whether these historical seeds will be able to thrive in the contemporary Port Lands, where conditions have changed due to changes in the fluctuations of lake and river water levels as well as direct human intervention in the construction of the Port Lands and then in the construction of the PLFPP.

Soil management and flood protection

The process of naturalizing the Port Lands and producing the necessary flood mitigation has involved the excavation and remediation of vast quantities of contaminated soil. The PLFPP’s due diligence report (Waterfront Toronto, 2016) identified knowledge gaps regarding the state of surface and subsurface soil contamination in the Port Lands. Once excavation of the new river valley is complete, the still-contaminated soil below the excavation grade will be contained with a physical barrier that will separate the untreated deeper soil from the remediated soil that will be added at the surface. A community-based risk assessment (CBRA) was initiated in 2016 (CH2M, 2016) to evaluate risks that might arise from the PLFPP, including risks relating to soil and groundwater contamination. Though this process was anticipated to finish in 2017 (Janes, 2017), the results are not available through the PLFPP online document library. Consequently, there is ambiguity regarding the approach taken in the PLFPP to risk to human or environmental health. Janes (2020) describes instances where, in the context of uncertainty regarding subsurface soil conditions, the use of physical barriers as risk

management measures has been reduced in order to reduce costs, indicating a risk optimization approach in effect in the PLFPP, though how optimal risk is determined remains unclear.

With respect to the prospects for successful flood mitigation, the evidence so far has been largely positive, though the record-high water levels in Lake Ontario in 2017 and 2019 show the difficulty of accurately planning for future hydrological conditions. Nevertheless, the recent updates to the flood mitigation plans resulting from the integration of hydrological data from these high-water events and new Don River flood data did not require significant alterations to the existing PLFPP plan (TRCA et al., 2021). While flood risk in Toronto rivers is predicted to increase over the remainder of the century (Rincón et al., 2022), this should be at least partially offset by the improvements to stormwater management in the Don River that will result from the Don River and Central Waterfront component of the city's Wet Weather Flow Master Plan (City of Toronto, 2017a).

4.4 Participation

The importance of public participation and input into the naturalization of the Port Lands has changed considerably over time, but has remained an important factor in the development of the PLFPP. The formation of the Task Force to Bring Back the Don and the resulting report on the future of the Don River (1991) was itself a remarkable instance of public participation in determining the future of the Port Lands, providing much of the overall guiding vision for the naturalization of the Port Lands and inspiring the winning PLFPP design proposal (MVVA, 2007). Waterfront Toronto itself has received praise for its attention to public participation and stakeholder involvement, especially from stakeholders who are close to the organization's projects and have been involved in working alongside the organization for an extended period (Eidelman, 2013).

The efficacy of Waterfront Toronto's public consultation and stakeholder advisory processes at creating consensus around their vision for the Port Lands and a sense of

legitimacy behind the organization was perhaps most visible in the mobilization of academics, activists, and citizens through the grassroots organization CodeBlueTO. This organization sought to defend Waterfront Toronto's plan for the Port Lands against attempts to remove development powers from Waterfront Toronto and change the course of the project away from a naturalization and flood protection-focused endeavour (CodeBlueTO, 2011). While this event led to the PLAI and, eventually, to substantial changes to some elements of the project design, the public mobilization in favour of Waterfront Toronto demonstrated that, for many, the organization had gained some legitimacy through its public engagement activities.

Participatory processes

The PLFPP is the result of a range of public and stakeholder consultation processes (See Appendix, Table 2), most of which were initiated by Waterfront Toronto. The engagement tools employed throughout the planning of the PLFPP have ranged from highly specific tools targeted at key demographic groups whose input was sought, such as focus groups, to unspecific public engagement approaches that cast a wide net in order to connect with participants, such as pop-ups around the city (Comparey & Shenker, 2020). The engagement methods have also ranged in the degree of potential impact on the project, from the dissemination of information with limited ability for significant participant involvement, such as the dissemination of information regarding the project through the social media posts of the project's mascot, Rocky the Rock Ripper (Rocky, n.d.), to long-term working groups that have had consistent input into the course of the PLFPP (Comparey & Shenker, 2020). In the spectrum of public participation provided by the International Association for Public Participation (2018), the participatory processes employed in the PLFPP run the entire gamut from "inform" to "empower."

As the PLFPP transitioned through its stages, from the initiation of the DMNP EA through to construction, so too did public participation evolve through a series of engagement strategies. The DMNP EA (TRCA, 2014a) was crafted through several rounds of public

consultation meetings and workshops that were open to the general public. Public meetings and workshops provided information on the environmental assessment process and gathered early feedback and ideas from the community. Comments from the public led the TRCA (2014a) to consider wildlife corridors and other alterations in the Don Narrows to the north of the Port Lands. The early phases of consultation included the initiation of contact with First Nations and Indigenous Associations. The TRCA reached out to several First Nations, but consultation throughout the PLFPP has been focused on consultation with the Mississaugas of the Credit First Nation (MCFN), with whom the PLFPP proponents identified a legal duty to consult (TRCA, 2014a). These consultations largely revolved around securing opportunities for future input and participation and support for the inclusion of specific types of vegetation, notably wild rice. The proponents of the PLFPP were supportive of this idea and it was subsequently included in MVVA design documents (Waterfront Toronto, 2018a), though has been removed from more recent plantings lists (Waterfront Toronto, n.d.).

The initiation of the PLAI during the environmental assessment process expanded the consultation approach beyond the pre-existing process by forming three advisory committees that would be able to provide consistent fora for communication with project stakeholders and feedback on the project. The Community Liaison Committee (CLC) was composed of representatives of residents and business improvement associations, interested civil society organizations, politicians, and community members. The Landowners and Users Advisory Committee (LUAC) is composed of representatives from companies and agencies that own or lease land in the Port Lands impacted by the PLFPP. The Stakeholder Advisory Committee (SAC), which overlapped with the CLC, consists of neighbourhood and business improvement associations, industry organizations, and environmental organizations (TRCA, 2014a). The LUAC and SAC have persisted beyond the environmental assessment process and, while the membership has undergone some changes over the years, have allowed the project team to build stable relationships with stakeholder organizations over an extended period of time.

Following the completion of the DMNP EA, LUAC and SAC meetings continued and a new construction liaison committee was formed to keep key local stakeholders apprised of construction updates (Waterfront Toronto, 2018b). A round of consultations was also launched to inform the *Port Lands Planning Framework* (City of Toronto & Waterfront Toronto, 2017) and the final design of the PLFPP, including a design charrette involving participants from various government agencies, consulting firms, and environmental organizations (Public Work, 2014). During the post-EA period, Waterfront Toronto held focus groups with seniors and youth, pop-up engagement efforts, and community consultation meetings (Comparey & Shenker, 2020). These consultations engaged a large number of Torontonians, but the demographics of those engaged through this process were certainly not representative of Toronto as a whole or of the neighbourhoods surrounding the Port Lands. Participants engaged through the PLFPP were, on average, considerably wealthier and whiter than Torontonians in general. Participants in PLFPP consultations had a median household income of $100,000–$199,000 and were 73% white or European-identifying, compared to city's median household income of $84,000 and 44.3% white-identifying (Comparey & Shenker, 2020; City of Toronto, 2022a; City of Toronto, 2022b).

The City of Toronto initiated a biodiversity working group in 2015, seeking input from individuals and organizations with expertise and interest in the restoration of biodiversity in support of the planning framework and the PLFPP. The initial meeting of the group provided participants with an overview of the planning process and its goals and engaged in some unstructured preliminary discussion of potential biodiversity initiatives (City of Toronto, 2015b). Whether due to negative feedback from participants or for other reasons, there is no evidence of further meetings of the biodiversity working group, though it remains listed in the *Port Lands Planning Framework* as a contributor (City of Toronto & Waterfront Toronto, 2017).

In 2020, Waterfront Toronto agreed a memorandum of understanding with the MCFN to establish a working group to provide regular input on the project's public realm design and to

contract the Indigenous design and engagement group MinoKamik (Waterfront Toronto, 2020). The MCFN also expects that its role in the project will result in tangible economic benefits for its members (MCFN, 2021). Waterfront Toronto points to a number of historical, cultural, stewardship, and plant restoration features of the public realm design that are the product of the work with the MCFN and MinoKamik, including spaces for events, the planting of culturally significant vegetation, and artwork (Dion, 2021b).

5. Analysis

5.1 How have ecological imaginaries and visions of an ideal human-nature relationship in the naturalized Don River estuary emerged, and how have understandings of the controlled or wild nature been deployed?

The formation of Waterfront Toronto simplified the jurisdictional situation in the Port Lands, but the agency is still subject to many forces: the need to build legitimacy and public support for its efforts; to achieve its naturalization and flood mitigation objectives; to fulfill its mandate to provide financially sustainable development; and to satisfy the three levels of government that provide it with funding, as well as various other agencies with which it must partner to complete the PLFPP. Decades of environmental degradation and economic decline over the latter half of the 20th century were not enough motivation to convince disparate government bodies to invest in the revitalization of the Port Lands.

Waterfront Toronto's key to success has been to craft a compelling narrative of sustainability, resilience, and green urbanism that provides motivation and promises benefits to many actors. Flyvbjerg (2014) describes the importance of "sublimes" in the motivation of megaprojects: the technological desire to do what hasn't been done before, the political desire for the spectacular and the prestigious, the economic desire to be linked with large, expensive endeavours, and the aesthetic desire to create iconic and eye-catching works. The PLFPP offers these sublimes in abundance, serving as a largely unprecedented technical endeavour, proof of the success of political leaders in making progress on the waterfront, a major

public-private partnership that will pay dividends for many stakeholders, and an opportunity to create an iconic waterfront that will attract international attention. These sublimes and the linkages they create between economic, political, and public interests have driven the formation of a compromise vision for the Port Lands that can integrate numerous demands.

The ecological re-imagining of the Port Lands is the product of many inputs. Planning reports, public policy, local community activism, international NGOs, and mass media have all sought to exercise some degree of imaginative control over climate resilience projects generally and the PLFPP specifically. The history of the PLFPP and the documentation surrounding it reveal certain cleavages in how the project has been imagined and justified. Beginning with the contrasting visions for the Port Lands found in *Bringing Back the Don* (Task Force to Bring Back the Don, 1991) and the Crombie Commission (Royal Commission on the Future of the Toronto Waterfront, 1992), different actors and institutions have imagined the Port Lands as a site of overdevelopment where wild nature ought to be restored by breaking with the industrial past, limiting human activities that might compromise the return of nature, and allowing natural forces to reclaim the space, or, alternatively, as a site of underdevelopment where deindustrialization has opened the space to a mix of economically beneficial redevelopment as a modern, mixed-use neighbourhood in line with contemporary economic demands and environmentally sustainable and resilient improvement that could provide amenity to residents and users. These different imaginings of what the new Port Lands ecology ought to be like and how humans ought to engage with it have continued through different treatments of the Port Lands in local and international media, in the contrasting priorities of sustainability-focused documents such as the *Living City Policies* (TRCA, 2014b) and Toronto's (2019a) resilience strategy, and in the early design approach by MVVA (2007) and subsequent changes to the project through the PLAI (City of Toronto, 2012).

These two contrasting threads of ecological imagination might be seen as running parallel to the ecomodernist/radical ecology approaches in Toronto's environmental politics

described by Keil & Boudreau (2006). The PLFPP can then be described as an effort in mediating between these two competing forces in the city's environmental politics, a role that Waterfront Toronto has performed with considerable success.

The ecological imaginary for the Port Lands that has formed over the course of the PLFPP contains elements of both of the broadly defined ecomodernist and radical ecological visions. The landscape architecture-led approach to the project and MVVA's approach to designing-with-nature and creating functional wetland and riparian habitats make the PLFPP an example of a more convivial, ecological approach to urban green space creation than the "horticultural" approach common to many attempts at creating urban nature (Ernwein, 2020). The PLFPP seems to adequately, if not perfectly, respond to many of the problems identified by community environmental activists in *Bringing Back the Don* (Task Force to Bring Back the Don, 1991) and by local media and politicians, such as pollution, flooding, a lack of natural process, and ecological dysfunction. These problems have loomed large in public consciousness regarding the Port Lands and Toronto waterfront for several decades, and the PLFPP has mobilized considerable support for its answer (Eidelman, 2013).

At the same time, the PLFPP has also catered to economic development imperatives through its creation of new space for mixed-use development and the dedication of significant park land in support of this development, as well as the implementation of extensive flood control measures to enable development on a large swathe of potentially valuable real estate near Toronto's downtown core. Economic redevelopment of the Port Lands has been a desire of city politicians and business leaders for decades, and a direct line can be drawn from the Crombie Commission, through Toronto's Olympic bid and the formation of the TWRC, to the PLFPP, of a Port Lands redevelopment initiative being offered to the City of Toronto as a remedy for various economic, reputational, and environmental problems. This solution to the city's Port Lands problem is an example of "problem surfing" (Boscarino, 2009) and has required that

Waterfront Toronto adapt a generic economic development solution to the specific problems that the PLFPP seeks to solve.

Waterfront Toronto's navigation between these two poles has allowed it to garner significant public support for the project, as seen most visibly in the upsurge of protest in the city when the project was threatened, while also generally retaining the confidence of their government, agency, and private partners. As a product of the compromises inherent to the project, the ecological imaginary for the Port Lands around which Waterfront Toronto has sought to build a consensus is marked by ambiguities between design/control and emergence/self-organization. as a product of the compromises inherent to the project.

5.2 How has this vision supported or undermined the complex of resilience-building goals of the PLFPP?

Naturalization

The construction of Toronto's industrial waterfront in public discourse as a fundamentally problematic space that stands, in almost every respect, in opposition to the desired model of green urbanism allows the Port Lands to be understood as a wasteland on which a new climate-positive and resilient community can be built. The framing of the Port Lands as a "terrain of availability" (Greenberg, 1996) smoothes the way for redevelopment in part by presenting an image of the Port Lands as a space without existing environmental value, a place defined only by its deficiencies. However, the focus on designing with natural process in mind and building functional ecosystems demonstrated by groups like the Task Force to Bring Back the Don and MVVA is an important shift in how urban nature is constructed in Toronto.

Particularly within the context of a project that has few precedents to guide it, the lack of detailed information on the species compositions and relationships between native and non-native species in the Port Lands and lower Don River poses risks to the long-term success of the naturalization program and, consequently, the long-term resilience of the novel ecosystem. Non-native invasion is a common and serious concern in many ecosystems, but it is

an especially common occurrence in riparian systems due to the prevalence of non-native species dispersal along river corridors (Richardson et al., 2007). Environmental management in the new Don River estuary will need to grapple with the emergence of non-native species throughout the new riparian system, likely including many of the non-native species currently inhabiting the Port Lands and lower Don River Valley. A greater understanding of the pre-existing species composition and dynamics in the area, including the relationships between specific non-native species and overall native species richness and abundance, may help to better inform management decisions and the prioritization of non-native invasion threats. The absence of clear information on the biodiversity context of the Port Lands may mean a less resilient ecology in the future than might have otherwise been achieved.

The dearth of detailed information on the pre-existing ecology of the Port Lands and the vagueness of the environmental management approach can likely be traced to weaknesses in the environmental assessment process and the failure of the biodiversity working group. The Environmental Commissioner of Ontario (2008) has highlighted many deficiencies in the environmental assessment process, notably the lack of scrutiny and accountability for the technical details of the assessment, limited and discredited public consultation, lack of monitoring of and compliance with the terms of the assessment process, and the lack of integration between the assessment process and other planning processes. This process provides neither the direction nor the scrutiny required to ensure that assessments gather thorough, high-quality data on existing ecologies or likely future trajectories of local ecosystems. For a project such as the PLFPP, where the resulting ecosystems will hopefully be, at least to some degree, self-sustaining, the environmental assessment process may not have set the project up for success. This is compounded by the failure of the biodiversity working group process, which was halted after a single meeting. Consequently, Waterfront Toronto has not benefited from the ongoing expertise of those who were engaged for that group.

As Ernwein (2020) notes, projects that seek to create functional, self-sustaining ecosystems may require less human intervention in the long-term, but they require more, and more rigorous, design initially in order to allow the new ecology to thrive in the long-term. The PLFPP's adaptive environmental management may succeed in dealing reactively with unexpected changes in the Port Lands ecology such as invasion or failures of planted vegetation to thrive, but a greater upfront investment in analyzing how native and non-native species in the area interact and what novel ecosystems might be viable in that context might have improved the resilience of the Port Lands ecology.

Soil remediation

The PLAI (City of Toronto, 2012) and the Auditor General's 2018 report (Office of the Auditor General of Ontario, 2018) provide indications of the pressure that Waterfront Toronto and the PLFPP are under to simultaneously produce a positive return on investment and financial sustainability as well as high-quality naturalization and flood protection works. The need to find efficiencies in the construction of the PLFPP and reduce costs where possible can only lead to the kind of risk-optimization indicated by Janes (2020) with respect to the containment of contaminated soils. That costs must be balanced against benefits is not itself a problem, but the lack of information regarding how risk is calculated and who may be exposed to these risks raises concerns for the resilience of the communities to be constructed in the Port Lands and the aquatic habitat of the Don River estuary and near-shore Lake Ontario. As with megaprojects generally (Flyvbjerg, 2014), the long-term risks of the PLFPP are inherently difficult to calculate and account for. The positioning of the project as an economic and environmental fix for the waterfront and key component of Toronto's efforts to build its reputation as a city on the cutting edge of climate change resilience does not encourage the open and clear communication of potential long-term risks to the public.

This lack of focus is, again, abetted by the weakness of the province's environmental assessment process. Savan & Gore (2015) highlight the importance of a precautionary,

conservative approach to risk in situations of uncertainty and the absence of this approach from Ontario's environmental assessment framework. From the beginning of the assessment process, projects in Ontario with the potential for major environmental impact are not required to utilize the level of caution appropriate for the inherent uncertainty and risk in megaprojects. Waterfront Toronto did take the unusual step of producing a peer-reviewed due diligence report for the PLFPP (Waterfront Toronto, 2016), which provides greater confidence in their approach to risk, especially for the governments funding the project. However, the report itself notes that much of the project's approach to risk will be defined by the community-based risk assessment, which does not seem to be publicly available.

Flood protection

While water and flood management issues do not rank highly in terms of public interest in Canada, they can garner more interest in conjunction with related environmental and economic concerns (Carlson et al., 2021). In the PLFPP, the mix of built and nature-based solutions to flooding are an effective linkage of the mix of environmental issues that have been identified in the ecologically dysfunctional Don River and the economic problems of the declining Port Lands. While media and public discourse around the Port Lands show divisions on questions relating to the importance of naturalization and the benefits of private property development, the desire for flood protection in the area is seemingly undisputed. The city's resilience strategy (City of Toronto, 2019a) presents the PLFPP as the most important climate change resilience project in the city; international media has presented it as a benchmark for urban resilience projects around the world (Bochove, 2022) and even the most critical commentary seems to present the project as a bold, if imperfect, step towards an estuary that can channel the forces of nature that previous development works in the Port Lands failed to control (DeLaire, 2022).

The convergence of the different streams of interests and imaginings in the Port Lands on a largely nature-based approach to flood control puts Waterfront Toronto in a good position to

succeed in the flood protection aspect of the PLFPP. The early indicators that are available are positive in this regard. In addition to analyses of the PLFPP flood protection plan in, for example, the due diligence report (Waterfront Toronto, 2016), one practical indicator that the plan for the Port Lands is sufficient to deal with changing climatic conditions is that record-high lake levels have not required a significant retooling of the project, as the higher lake levels remained within the project's tolerances (TRCA et al., 2021). The strength of the PLFPP's appeal to economic, environmental, and political interests and the narrative that has been woven around the project of, simultaneously, innovation and a return to nature, have created a seemingly effective response to flood risk, despite a mix of general lack of direct public interest in water management issues and a lack of local resident stakeholders to demand flood protection for themselves.

5.3 What role has public participation played in shaping this process and vision, and whose interests have been served through this process?

Participation

The work of the Task Force to Bring Back the Don (1991) that initiated much of the thinking about naturalization in the mouth of the Don River was important as much for its participatory, community-oriented approach as for the environmental agenda that it set. The connection of dedicated community members and activists with the resources of the City of Toronto allowed the task force to engage in an extensive process of participatory planning that set the benchmark for community-based environmental work in the city. The disbandment of the Task Force to Bring Back the Don in 2011 (City of Toronto, 2011) removed the most prominent and best-resourced avenue for public input into the improvement of the Don River. Subsequent work on the Port Lands, including the PLFPP, has given public participation less prominence.

If the Task Force to Bring Back the Don was a high-water mark for public participation in planning, the city's bid for the Olympic Games and the related planning for a spectacular, business-oriented redevelopment of the Port Lands may be a low point. The TWRTF's (2000)

plan for the waterfront was, by its own admission, drafted largely in the absence of public consultation and its alignment with an eco-modernist, pro-development approach to waterfront revitalization is in keeping with the TWRTF's composition of primarily private-sector actors.

The failure of the city's Olympic Bid and the formation of Waterfront Toronto allowed for something of a reset in the participatory approach to planning in the Port Lands. From the initiation of the DMNP EA (TRCA, 2014a), the consultation processes in support of the PLFPP have been extensive. Particularly given the context of an environmental assessment process that often prioritizes efficiency and speed over extensive consultation (Savan & Gore, 2015), in both the number of consultations and the range of consultation mechanisms, including several types of public events as well as ongoing advisory bodies, the DMNP EA seems to have benefited from a fairly robust consultation process. An important exception to this generally good consultation process was the PLAI, which was initiated by the City of Toronto and primarily focused on improving the business case for the PLFPP. The PLAI's plan for the Port Lands involved a significant reduction in the naturalized area, a move which provoked considerable opposition in public meetings, from environmental and community organizations, and through the SAC meetings (City of Toronto, 2012). While the SAC meetings resulted in some concessions in the form of the PLAI's preferred Port Lands design option, the overall result seems to have been largely predetermined. A return to the earlier design, preferred by many participants, or the development of a new design that preserved the naturalized features that had made the earlier design attractive were not considered viable options in the PLAI consultation process.

Following the environmental assessment, Waterfront Toronto has carried out a wide variety of public consultations through meetings and pop-up events, as well as targeted focus groups to gather feedback from seniors and youth. These consultations engaged a considerable number of Torontonians—as many as 150,000 people through online content and 5,325 in-person between 2018 and 2020 alone (Comparey & Shenker, 2020). Many of the public

meetings and events were well-attended, and the public mobilization in favour of the PLFPP by groups like CodeBlueTO and the support the organization has received from its core groups of stakeholders (Eidelman, 2013) demonstrates that Waterfront Toronto has been successful in using public consultations to build legitimacy and consensus behind its plan for the Port Lands.

Waterfront Toronto's consultation record is impressive in its commitment to reaching a large number of Torontonians and in its ability to produce support for its projects. The strong demographic bias of this consultation, however, undermines the organization's overall claim to legitimacy and consensus. The attendance records of Waterfront Toronto's consultation efforts from 2018 to 2020 show that, despite varied forms of consultation, the organization has primarily consulted with a relatively narrow demographic of wealthy, white, downtown residents (Comparey & Shenker, 2020). The use of pop-up events in particular could have provided a basis for more diverse engagement throughout the city, but all of these events were conducted in downtown spaces. The high level of support for Waterfront Toronto among core stakeholders indicated by Eidelman (2013) is a positive indicator of the strength of their consultation work, but it must be understood alongside the narrowness of their constituency.

In addition to this narrowness, it is also important to note that this consultation work has primarily existed to inform members of the public of project details after they have been determined, rather than to seek to improve the PLFPP through the addition of public input. Beginning with the use of a juried design competition to select the direction of landscape design for the PLFPP, decision-making in the project has largely occurred prior to consultation, with subsequent public engagement serving to present the decisions to the public and answer questions. Comparey & Shenker (2020) note a variety of frequent subjects of feedback from participants in this process, including accessibility, ecological balance, public transportation, and housing affordability. What is missing is a clearly articulated strategy for integrating feedback into the design of the PLFPP. A clear pathway for the integration of public feedback and the ability to clearly demonstrate to the public that their input has had an impact on the design of the

Port Lands might provide benefits in the short term by imbuing the PLFPP with legitimacy and in the long term by creating a sense of communal ownership and responsibility for the new Port Lands. A sense of psychological ownership of common space, created through participatory planning and engagement, is useful for motivating volunteer environmental stewardship that could benefit the management of the Port Lands in the future (Bennett et al., 2018; Peck et al., 2021).

The effect of consultation for the PLFPP has been somewhat different for the working groups that have been formed to provide consistent dialogue with Waterfront Toronto for multiple years. The SAC, LUAC, and the MCFN working groups have been in a position to both provide agencies planning and designing the Port Lands with regular feedback and to receive updates on progress, including the implementation of prior feedback. Waterfront Toronto has published explicit information regarding how they have implemented design features in the PLFPP suggested by Indigenous participants from the MCFN or the Indigenous design team MinoKamik (Dion, 2021b). Their partnership with the MCFN is set out in a memorandum of understanding, which includes consultation on design work as well as economic benefits for the MCFN. How successful the PLFPP is at producing these benefits remains to be seen. At a minimum, this represents an attempt at producing a coherent framework for the implementation of community feedback that is missing from much of the consultation work involved in the PLFPP. The capacity for regular dialogue has similarly allowed the SAC and LUAC to give feedback and then receive updates on implementation, as was visible in changes to the Port Lands zoning review across three LUAC meetings (Kittel & Wolfe, 2019).

Interests

While the PLFPP has conducted extensive consultations and sought to integrate a variety of stakeholders and their interests, it has also excluded some communities and missed opportunities to enhance participation and involvement in the creation of a new Port Lands. The PLAI process in particular demonstrated the prevailing importance of securing the best business

case for the PLFPP at the expense of the project's recreational and cultural amenities and its potential for naturalization. Many of the public meetings and consultations conducted by Waterfront Toronto provided the public with information about the PLFPP and sought to promote the project to Torontonians, but did not result in identifiable changes to the project in response to feedback. In these cases, especially that of the PLAI, the PLFPP has operated as an introverted, technocratic endeavour. Economic and political imperatives have prevailed over the interests expressed by participants through the consultation process. The environmental assessments in the Port Lands have also failed to account for informal residents of the studied areas and it is possible that this has also happened with the DMNP EA. The PLFPP is a project that will, ultimately, result in the sale of a large swathe of publicly-owned land to private development capital and, like many such urban megaprojects (Harris, 2017), it has sought to limit meaningful public input into the project at points where public opposition to plans might disturb the appearance of consensus.

The more positive features of the PLFPP's consultation process have been the advisory committees and MCFN working group. These groups have had at least some identifiable impacts on the course of the PLFPP and the design of the new Port Lands. The interests represented within these groups have had the greatest ability to alter the project to suit their needs. As interest groups, private businesses and land users, other government agencies, environmental NGOs, and the MCFN have played outsized roles in the project. While this does not represent a broad-based participatory planning process, these groups have not catered only to a narrow segment of politically and economically powerful interests. The signing of a memorandum of understanding with the MCFN in particular is a promising indication of Waterfront Toronto's willingness to engage with external organizations in order to produce social, cultural, environmental, and economic benefits for interest groups that have not always been beneficiaries of Toronto's waterfront development.

As with much of the project, the participatory politics of the PLFPP have been a compromise. In this case, the compromise has been between, on the one hand, exclusion of interests and the manipulation of public approval in order to protect features of the project that are important to the city's economic interests and its engagement in intercity competition for investment capital and, on the other hand, attempts to imbue the project with public legitimacy and create meaningful opportunities for participation and engagement.

6. Conclusion

6.1 Summary of findings

The trajectory of the PLFPP has been directed primarily by the need to compromise between competing visions for the Port Lands and for urban nature in Toronto more generally. The Port Lands and the Don River have been sites of contestation between, on one side, environmental and community groups with a vision of restored natural processes and vibrant wild nature and, on the other side, growth-oriented political and business interests with a vision of revitalized environmental and ecosystem services supporting the redevelopment of the Port Lands into a spectacular mixed-use area. Under the leadership of Waterfront Toronto and MVVA, the PLFPP has sought to strike a balance between these two forces. The ecological imaginary of the PLFPP involves wild nature and the return of wetland to the area for the first time in a century. It also, however, involves the primacy of the area's economic growth over naturalization and a need for ongoing management and control of this nature to ensure that it will retain the functional and aesthetic properties with which it was designed. The human-nature relationship envisioned for the Port Lands is somewhat convivial, with direct access to both ample green space and a view of the naturalized river and wetlands, but also characterized by a careful separation of the spaces intended for recreation from the naturalized areas.

These compromises carry over to decisions that may impact the future resilience of the future Port Lands ecology and the risks involved in the project. The narratives of the new Port Lands ecology move between framing it as the creation of a new nature that cannot be

compared to the historical state of the area due to the drastic changes the Port Lands have seen in the intervening century, and as an attempt to bring nature back to the area through the recreation of wetlands, the replanting of historical vegetation, and efforts to remove any traces of newer, non-native species from the area. The former view requires a recognition that the best-case restoration scenario for the Port Lands is the creation of self-sustaining novel ecosystems. The mix of aesthetic ideals and ambiguities relating to the degree of control that should be exercised over nature may undermine this goal. The economic imperatives of the project are also cause for concern. The PLFPP must grapple with risks to future residents and users of the Port Lands as well as of nearby areas. The lack of clear risk assessment information means that future users of the Port Lands and current residents of nearby sites like the Toronto Islands are in the dark as to what risks they face from, for instance, the accidental release of polluted soil. A risk optimization approach, such as that evidenced by work on soil barriers in the PLFPP, is not necessarily unreasonable given the project's limited budget, but the lack of clarity as to what risk, and risk to whom, is deemed acceptable is worrying.

Much of the history of the revitalization of the Port Lands has treated public consultation and participation as a secondary concern, primarily useful for sharing information and building consensus around decisions that have already been made by politicians, business leaders, or technical experts. The treatment of the PLFPP as a technical endeavour first may relate to the unwillingness to share technical details of the project, such as how risks are being calculated and optimized. The most effective avenue of consultation in the PLFPP has been through the advisory committees and the MCFN working group, which means that the capacity to impact the PLFPP is limited to the NGOs, agencies, businesses that have been selected for membership in the advisory committees, and the MCFN. This is certainly more impactful consultation than some projects have and represents at least some improvement on past attempts at waterfront development in Toronto. The wave of public support for Waterfront Toronto in the face of threatening political action is also indicative of successes in the project's public consultation

programme and the popularity of the PLFPP's overall vision. Public participation seems to have had at least some effect in reinforcing MVVA's vision of design-with-nature and attention to natural process, as well as the focus on native species and habitat creation. Without the degree of public participation and support that the project has received, these aspects might have been eroded even more significantly than they were during the PLAI.

6.2 Lessons learned

Megaprojects are risky, but play an important role in consolidating policy change and ecological imaginaries

The PLFPP is a remarkable effort to create a new socio-ecology in Toronto's Port Lands. It is also representative of a still-emerging trend of green-urbanist, mixed-use, climate-resilient megaprojects that rely on nature-based solutions. One lesson from the course of the PLFPP is the dual importance of crafting a compelling vision for the project and finding a critical moment at which public attention can be focused on the issue in order to mobilize support from political leaders and the public. While public disgruntlement regarding the state of the Toronto waterfront had existed for decades, it required the coincidence of a publicly-recognized problem in the Port Lands that needed to be solved, the development of policy solutions for the problem through the naturalization-oriented Task Force to Bring Back the Don and the growth-oriented Crombie Commission and the organizations that grew out of it, and the critical juncture of the Olympic Games bid that provided the impetus to remake the regulatory and institutional landscape of the Port Lands in order to allow for development. While Flyvbjerg (2014) correctly notes that megaprojects are highly risky endeavours, the jurisdictional quagmire in the Port Lands before the formation of Waterfront Toronto meant that significant development was effectively impossible in the absence of a large, spectacular project whose vision could alight public interest.

The importance of presenting a compelling ecological imaginary for how Torontonians might engage with Port Lands nature in the future and what form that nature might take has also

been key to building public consensus around the PLFPP. This envisioning process has gone both ways, with the earlier imaginaries of natural process and wild nature developed by the Task Force to Bring Back the Don influencing how later planning efforts have reimagined the Port Lands. The public backlash against the proposed cancellation of the PLFPP and its replacement by a wholly new vision was, in large part, based on a rejection of the municipal government's attempt to seize imaginative control from Waterfront Toronto, which had already gained legitimacy for its naturalization vision of the Port Lands.

Discourses regarding novel ecosystems are ambiguous and in flux

As with many brownfield redevelopment projects, the attempt to plan for ecological integrity is made more difficult by the lack of relevant historical analogues on which to model the environmental planning. Despite the increasing frequency with which ecological restoration or naturalization projects are taking place on highly modified terrains, there remains uncertainty towards novel ecosystems within media and public discourse around the project, as well as within the project's approach to naturalization. Discussions of the new ecology of the Port Lands have lacked a clear vocabulary and have often been described by way of reference to historical conditions that differ drastically from what is being built. The ambiguity of the naturalization vision presented in the PLFPP may result from a discourse of revitalization and historicity which, while not entirely appropriate to the work of the PLFPP, is better understood and has garnered more support than presenting the project as designing and creating something novel. Particularly within mass media, the resort to historical analogies to describe the PLFPP creates confusion as to what the project is seeking to achieve and what sorts of ecosystems are viable or desirable. Efforts to present a clear and well-defined approach to naturalization and explain the importance of novelty for creating resilient ecosystems in highly modified areas may help align the realities of the project with representations of it. While these efforts may better focus attention on aspects of the environmental design that are most relevant to creating functional

ecosystems, it may also simply take time for understandings of novel ecosystems to enter into public understanding.

Megaprojects continue to limit public input, but ongoing stakeholder groups can help

The limited impact of many forms of public participation in the PLFPP and the depoliticized approaches of the Olympic Bid and the PLAI in particular are in line with many other megaprojects internationally. There may be useful lessons, however, in the advisory committees and MCFN working group, as well as the value of the Task Force to Bring Back the Don in crafting a vision for the Port Lands around which a consensus could later be forged. Groups of community members and representatives of stakeholder organizations, when provided with the time and resources to work on an issue and with regular access to decision-makers, can create high-quality opportunities for public participation and can provide projects with ongoing direction and useful feedback in a way that attendees at one-off public meetings cannot.

Resilience as a concept is associated with competition for capital and economic growth

The increasing relevance of resilience as a core organizing concept in discussions of the Port Lands, and the attendant decline in the language of sustainability, is correlated with redevelopment plans for the Port Lands being increasingly embedded in dynamics of international competition for investment and increasingly responsive to highly mobile international best practices and policy approaches. This trajectory has been particularly associated with development approaches that Keil & Boudreau (2006) characterize as eco-modernist and growth-oriented. It has been accompanied by an increasing focus on the potential economic benefits of redevelopment and the liquidation of publicly-owned properties in the Port Lands. The prevalence of discussions of the PLFPP's resilience in international and finance-focused media, compared to the focus on environmentalism and sustainability in local media, demonstrates how different ways of thinking and talking about nature have rooted

themselves in different audiences. The shift from sustainability to resilience in the PLFPP is evidence of the shift in the project's target audience.

6.3 Directions for future research

While this research paper has focused primarily on public imagination and participation processes that have operated in the PLFPP, there are many other aspects of this case study that are ripe for analysis. This research has indicated that the creation of Waterfront Toronto and the initiation of the PLFPP was the result of the conjuncture of public discontent regarding the environmental degradation of the Port Lands and the failures of waterfront development with a desire for waterfront development opportunities that could make the city into a desirable destination for investment capital. A multiple-streams policy analysis may provide greater insight into the precise formation of the PLFPP and provide useful lessons on how similar megaprojects might operate. Similarly, the importance of discourses, imaginaries, and story lines in the history of the PLFPP and in how the project has been designed may indicate that policy discourse analysis is a useful tool for examining the project's trajectory. Winkel & Leipold (2016) outline an approach to joining these two forms of policy analysis, which might enhance an intensive policy analysis of the PLFPP considerably.

As the PLFPP draws to its conclusion, the next phase of Port Lands development will be precinct planning and development. So far, only the Villiers Island precinct plan (Urban Strategies et al., 2017) has been detailed, but this gives some indications of the direction of the project and how it compares to similar projects. Despite being a redevelopment project in which a majority of the land is publicly-owned, the approach to the creation of affordable housing is quite conservative, lagging well behind other North American urban megaprojects (Harris, 2017; Urban Strategies et al., 2017). Whether that remains the case and how other objectives of the development are dealt with on Villiers Island and in other precincts will provide an interesting study of city-building in Toronto.

Lastly, there have been a number of conceptual connections that have been glossed over throughout this research paper that merit attention. The rising importance of an ecological approach to greening connects well with emerging research on conviviality as a model for successful conservation and restoration (e.g. Büscher & Fletcher, 2020; Ernwein, 2020). The aesthetic aspects of the Port Lands have been neglected here, but there is a connection to be made between the imaginaries and discourses of the Port Lands and other contemplations of the environmental and aesthetic place of urban “wastelands” (e.g. Bonthoux et al., 2018; Gandy, 2017) as well as comparisons to other brownfield redevelopment projects that have incorporated a post-industrial aesthetic, such as New York City’s High Line.

References

Ajibade, I. (2017). Can a future city enhance urban resilience and sustainability? A political ecology analysis of Eko Atlantic City, Nigeria. *International Journal of Disaster Risk Reduction, 26*, 85–92. www.doi.org/10.1016/j.ijdrr.2017.09.029

Angelo, H. (2019a). The greening imaginary: Urbanized nature in Germany's Ruhr region. *Theory and Society, 48*, 645–669. www.doi.org/10.1007/s11186-019-09361-5

Angelo, H. (2019b). Added value? Denaturalizing the "good" of urban greening. *Geography Compass, 13*(8). www.doi.org/10.1111/gec3.12459

Angelo, H., & Wachsmuth, D. (2020). Why does everyone think cities can save the planet? *Urban Studies, 57*(11), 2201–2221. www.doi.org/10.1177/0042098020919081

Anguelovski, I., Shi, L., Chu E., Gallagher, D., Goh, K., Lamb, Z., Reeve, K., & Teicher, H. (2016). Equity impacts of urban land use planning for climate adaptation. *Planning Education and Research, 36*(3), 333–348. www.doi.org/10.1177/0739456X16645166

Atelier Girot. (2007). *Don mouth park Toronto*. www.portlandsto.ca/wp-content/uploads/girot_1.pdf

Bankoff, G. (2018). Remaking the world in our own image: vulnerability, resilience and adaptation as historical discourses. *Disasters, 43*(2), 221–239. www.doi.org/10.1111/disa.12312

Barber, J. (2000, February 17). Plan sees 'world's best' waterfront. *The Globe and Mail*, A19.

Bassett, S. (2022, October 1). Recalibrating infrastructure and ecologies: Port Lands, Toronto, Ontario. *Canadian Architect*. www.canadianarchitect.com/port-lands/

Béal, V. (2012). Urban governance, sustainability, and environmental movements: Post-democracy in French and British Cities. *European Urban and Regional Studies, 19*(4), 404–419. www.doi.org/10.1177/0969776411428562

Bennett, N.J., Whitty, T.S., Finkbeiner, E., Pittman, J., Bassett, H., Gelcich, S., & Allison, E.H. (2018). Environmental stewardship: A conceptual review and analytical framework. *Environmental Management, 61*(4), 597–614. www.doi.org/10.1007/s00267-017-0993-2

Beveridge, R., & Koch, P. (2017). The post-political trap? Reflections on politics, agency, and the city. *Urban Studies, 54*(1), 31–43. www.doi.org/10.1177/0042098016671477

Birge-Liberman, P. (2010). (Re)greening the city: Urban park restoration as a spatial fix. *Geography Compass, 4*(9), 1392–1407. www.doi.org/10.1111/j.1749-8198.2010.00374.x

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2004). *At risk: Natural hazards, people's vulnerability, and disasters* (2nd ed.). Routledge.

Blaikie, P., & Brookfield, H. (1987). *Land degradation and society*. Methuen.

Bochove, D. (2022, July 27). Is Toronto's Port Lands Flood Protection Project the future of urban resilience? *Bloomberg*. www.bloomberg.com/news/features/2022-07-27/is-toronto-s-port-lands-flood-protection-project-the-future-of-urban-resilience

Bonnell, J. (2008). Bringing back the Don: Sixty years of community action. In W. Reeves & C. Palassio (Eds.), *HTO: Toronto's water from Lake Iroquois to low-flow toilets* (pp. 266–283). Coach House Books.

Bonnell, J. (2014). *Reclaiming the Don: An environmental history of Toronto's Don River valley*. University of Toronto Press.

Bonthoux, S., Brun, M., Di Pietro, F., Greulich, S., & Bouché-Pillon, S. (2014). How can wastelands promote biodiversity in cities? A review. *Landscape and Urban Planning, 132,* 79–88. www.doi.org/10.1016/j.landurbplan.2014.08.010

Boscarino, J.E. (2009). Surfing for problems: Advocacy group strategy in U.S. forestry policy. *The Policy Studies Journal, 37*(3), 415–434. www.doi.org/10.1111/j.1541-0072.2009.00321.x

Bozikovic, A. (2021, December 27). The Port Lands Flood Protection Project will re-engineer the Don River's mouth. *The Globe and Mail*. www.theglobeandmail.com/canada/article-the-port-lands-flood-protection-project-will-re-engineer-the-don/

Brand, F.S., & Jax, K. (2007). Focusing the meaning(s) of resilience: Resilience as a descriptive concept and a boundary object. *Ecology and Society, 12*(1), 1–23. www.jstor.org/stable/26267855

Brenner, N., & Theodore, T. (2002). Cities and the geographies of "actually existing neoliberalism". *Antipode, 34*(3), 349–379. www.doi.org/10.1111/1467-8330.00246

Buijs, A.E., Mattijssen, T.J.M., Van der Jagt, A.P.N., Ambrose-Oji, B., Andersson, E., Elands, B.H.M., & Steen Møller, M. (2016). Active citizenship for urban green infrastructure: Fostering the diversity and dynamics of citizen contributions through mosaic governance. *Current Opinion in Environmental Sustainability, 22*, 1–6. www.doi.org/10.1016/j.cosust.2017.01.002

Bulkeley, H. (2013). *Cities and climate change*. Routledge.

Bulkeley, H., & Castán Broto, V. (2013). Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers, 38*(3), 361–375. www.doi.org/10.1111/j.1475-5661.2012.00535.x

Bunce, S. (2009). Developing sustainability: Sustainability policy and gentrification on Toronto's waterfront. *Local Environment, 14*(7), 651–667. www.doi.org/10.1080/13549830903097740

Bunce, S. (2017). *Sustainability policy, planning, and gentrification in cities*. Earthscan.

Burns, M.J., Fletcher, T.D., Walsh, C.J., Ladson, A.R., & Hatt, B.E. (2012). Hydrologic shortcomings of conventional urban stormwater management and opportunities for reform. *Landscape and Urban Planning, 105*(3), 230–240. www.doi.org/10.1016/j.landurbplan.2011.12.012

Büscher, B., & Fletcher, R. (2020).*The conservation revolution: Radical ideas for saving nature beyond the anthropocene*. Verso.

Canadian Institute of Planners. (2018). *Policy on climate change*. www.cipicu.ca/getattachment/Topics-in-Planning/Climate-Change/policy-climate-engFINAL.pdf.aspx

Carlson, H., Pietroniro, A., Gober, P., Leger, W., & Merrill, S. (2021). Water resources. In F.J. Warren & N. Lulham (Eds.), *Canada in a changing climate: National issues report*. Government of Canada. www.nrcan.gc.ca/sites/nrcan/files/pdf/National_Issues_Report_Final_EN.pdf

CH2M. (2016). *Community based risk assessment—terms of reference Port Lands, Toronto*. www.portlandsto.ca/wp-content/uploads/cbrator_25may_2016_1.pdf

Chas. E. Goad Company. (1884). *Atlas of the city of Toronto*. www.toronto.ca/city-government/accountability-operations-customer-service/access-city-information-or-records/city-of-toronto-archives/whats-online/maps/fire-insurance-plans/fire-insurance-plans-1884/

Chas. E. Goad Company. (1924). *Atlas of the city of Toronto*. www.toronto.ca/city-government/accountability-operations-customer-service/access-city-information-or-records/city-of-toronto-archives/whats-online/maps/fire-insurance-plans/fire-insurance-plans-1924/

Christie, J. (1999, November 9). Toronto Olympic bid to reveal master plan. *The Globe and Mail*, S6.

City of Toronto. (1999a). *Summary report - Unlocking Toronto's Port Lands: Directions for the future.* www.toronto.ca/legdocs/1999/agendas/committees/to/to990715/it021.htm

City of Toronto. (1999b). *Our Toronto waterfront: The wave of the future.* www.toronto.ca/wp-content/uploads/2017/11/9958-waterfront_pro.pdf

City of Toronto. (2000). *Our Toronto waterfront: Building momentum*. www.toronto.ca/wp-content/uploads/2017/11/92f4-Our-Toronto-Waterfront-staffreport.pdf

City of Toronto. (2003). *Making waves: Principles for Toronto's waterfront*. www.toronto.ca/city-government/planning-development/waterfront/waterfront-strategic-documents-and-reports/

City of Toronto. (2006). *Wet weather flow management guidelines*. www.toronto.ca/wp-content/uploads/2017/11/9191-wwfm-guidelines-2006-AODA.pdf

City of Toronto. (2011). *Council advisory bodies and working committees*. Toronto city council and committees meetings, agendas, and minutes. http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2011.EX5.3

City of Toronto. (2012). *Port Lands Acceleration Initiative final report*. http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.EX22.1

City of Toronto. (2014). *Port Lands planning framework: Land use direction*. www.toronto.ca/legdocs/mmis/2014/pg/bgrd/backgroundfile-70270.pdf

City of Toronto. (2015a). *Central Waterfront secondary plan*. www.toronto.ca/wp-content/uploads/2019/02/8e22-CityPlanning_2006-OP_CWSP_Final.pdf

City of Toronto. (2015b, February 25). *Meeting minutes – Biodiversity working group* [Meeting minutes].

City of Toronto. (2017a). *2017 Wet Weather Flow Master Plan implementation status update*. www.toronto.ca/legdocs/mmis/2017/pw/bgrd/backgroundfile-103216.pdf

City of Toronto. (2017b). *Port Lands and south of Eastern transportation and servicing master plan environmental assessment*. www.portlandsto.ca/wp-content/uploads/TSMP_EA-Report-Sept+29+2017.compressed.pdf

City of Toronto. (2019a). *Toronto's first resilience strategy*. www.toronto.ca/ext/digital_comm/pdfs/resilience-office/toronto-resilience-strategy.pdf

City of Toronto. (2019b). *Wild, connected, and diverse: A biodiversity strategy for Toronto*. hwww.toronto.ca/legdocs/mmis/2019/ie/bgrd/backgroundfile-136906.pdf

City of Toronto. (2022a, July 19). *2021 census: Families, household, marital status, and income*. www.toronto.ca/wp-content/uploads/2022/07/9877-City-Planning-2021-Census-Backgrounder-Families-Hhlds-Marital-Status-Income.pdf

City of Toronto. (2022b, November 4). *2021 census: Citizenship, Immigration, Ethnic Origin, Visible Minority Groups (Race), Mobility, Migration, Religion*. www.toronto.ca/wp-content/uploads/2022/11/8f69-2021-Census-Backgrounder-Immigration-Ethnoracial-Mobility-Migration-Religion-FINAL.pdf

City of Toronto & Waterfront Toronto. (2017). *Port Lands planning framework*. www.portlandsto.ca/wp-content/uploads/Port+Lands+Planning+Framework_AODA+-+reduced.pdf

Clarke, N. (2012). Urban policy mobility, anti-politics, and histories of the transnational municipal movement. *Progress in Human Geography, 36*(1), 25–43. www.doi.org/10.1177/0309132511407952

CodeBlueTO. (2011, September 1). *#CodeBlueTO: Join the movement*. www.codeblueto.com/post/9674834878/codeblueto-join-the-movement

CodeBlueTO. (2012, June 7). *Our response to the Round 3 consultations about the Port Lands Acceleration Initiative*. www.codeblueto.com/post/24617752300/round3

Comparey, M., & Shanker, M. (2020). *Summary of consultation May 2018 – July 2020 Port Lands Flood Protection*. Waterfront Toronto. www.portlandsto.ca/wp-content/uploads/PLFP-Consultation-Summary-FINAL-External.pdf

Cretney, R. (2019). Rejecting and recreating resilience after disaster. In J. Bohland, S. Davoudi, & J. Lawrence (Eds.), *The resilience machine* (pp. 80–93). Routledge.

Crow, D.A., & Lawlor, A. (2016). Media in the policy process: Using framing and narratives to understand policy influences. *Review of Policy Research, 33*(5), 472–491. www.doi.org/10.1111/ropr.12187

Dahmer, S.C., Matos, L., Jarvie, S. (2018). Assessment of the degradation of aesthetics Beneficial Use Impairments in the Toronto and region Area of Concern. *Aquatic Ecosystem Health and Management, 21*(3), 276–284. www.doi.org./10.1080/14634988.2018.1497398

Davidson, M., & Iveson, K. (2015). Recovering the politics of the city: From the 'post-political city' to a 'method of equality' for critical urban geography. *Progress in Human Geography, 39*(5), 543–559. www.doi.org/10.1177/0309132514535284

Davoudi, S., Brooks E., & Mehmood, A. (2013). Evolutionary resilience and strategies for climate adaptation. *Planning Practice & Research 28*(3), 307–322. www.doi.org/10.1080/02697459.2013.787695

Davoudi. S. (2018). Just resilience. *City & Community, 17*(1), 3–7. www.doi.org/10.1111/cico.12281

Davoudi, S., Lawrence, J., & Bohland, J. (2019). The anatomy of the resilience machine. In J. Bohland, S. Davoudi, & J. Lawrence (Eds.), *The resilience machine* (pp. 12–29). Routledge.

DeLaire, M. (2022, October 18). Putting the Don in its place: Toronto's billion-dollar project to heal a river destroyed by development. *The Hoser*. www.thehoser.ca/posts/putting-the-don-in-its-place-torontos-billion-dollar-project-to-heal-a-river-destroyed-by-development

Desfor, G., & Bonnell, J. (2011). Socio-ecological change in the nineteenth and twenty-first centuries: The lower Don River. In G. Desfor & J. Laidley (Eds.), *Reshaping Toronto's waterfront* (pp. 305–325). University of Toronto Press.

Desfor, G., Vesalon, L., & Laidley, J. (2011). Establishing the Toronto Harbour Commission and its 1912 Waterfront Development Plan. In G. Desfor & J. Laidley (Eds.), *Reshaping Toronto's waterfront* (pp. 49–74). University of Toronto Press.

Dion, K. (2021a, November 23). *Bringing Back the Don - 30 years of citizen advocacy*. Waterfront Toronto. www.waterfrontoronto.ca/news/bringing-back-don-30-years-citizen-advocacy

Dion, K. (2021b, November 8). *Indigenous design in new parks and communities for Toronto*. Waterfront Toronto. www.waterfrontoronto.ca/news/indigenous-design-new-parks-and-communities-toronto

Drever, C. R., Cook-Patton, S. C., Akhter, F., Badiou, P. H., Chmura, G. L., Davidson, S. J., Desjardins, R. L., Dyk, A., Fargione, J. E., Fellows, M., Filewod, B., Hessing-Lewis, M., Jayasundara, S., Keeton, W. S., Kroeger, T., Lark, T. J., Le, E., Leavitt, S. M., LeClerc, M.-E., … Kurz, W. A. (2021). Natural climate solutions for Canada. *Science Advances*, *7*(23). www.doi.org/10.1126/sciadv.abd6034

Eidelman, G. (2013). *Three's company: A review of Waterfront Toronto's tri-government approach to revitalization*. Mowat Centre for Policy Innovation.

Eisenman, T.S. (2013). Frederick Law Olmsted, green infrastructure, and the evolving city. *Journal of Planning History, 12*(4), 287–311.

Ensing, C. (2021, October 21). Illegally parked mobile homes draw concern, police response in Port Lands. *Canadian Broadcasting Corporation*. www.cbc.ca/news/canada/toronto/illegally-parked-mobile-homes-draw-concern-police-response-in-port-lands-1.6218866

Enqvist, J.P., Tengö, M., & Bodin, Ö. (2019). Are bottom-up approaches good for promoting social-ecological fit in urban landscapes? *Ambio, 49*(1), 49–61. www.doi.org/10.1007/s13280-019-01163-4

Environmental Commissioner of Ontario. (2008). *Getting to k(no)w: Annual report 2007–2008*. www.auditor.on.ca/en/content/reporttopics/envreports/env08/2007-08-AR.pdf

Ernst, A.R., Barak, R.S., Hipp, A.L., Kramer, A.T., Marx, H.E., & Larkin, D.J. (2022). The invasion paradox dissolves when using phylogenetic and temporal perspectives. *Journal of Ecology, 110*(2), 443–456. www.doi.org/10.1111/1365-2745.13812

Ernwein, M. (2020). From undead commodities to lively labourers: (Re)valuing vegetal life, reclaiming the power to design-with plants. In M. Gandy & S. Jasper (Eds.), *The botanical city* (pp. 237–242). Jovis.

Evans, A.R. (2021). *Toronto's tent encampments: Excavating northwestern informalities and state ambiguities* [Master's thesis]. http://hdl.handle.net/10315/38606\

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry, 12*(2), 219–245.

Flyvbjerg, B. (2014). What you should know about megaprojects and why: An overview. *Project Management Journal, 45*(2), 6–19. www.doi.org/10.1002/pmj.21409

Flyvbjerg, B., Bruzelius, N., & Rothengatter, W. (2003). *Megaprojects and risk: An anatomy of ambition*. Cambridge University Press.

Fisher, J.R. (1991, May 23). Piecemeal planning should be discontinued. *Toronto Star*, W4.

Fraser, N. (1997). *Justice interruptus: Critical reflections on the "postsocialist" condition*. Routledge.

Funston, M. (1991, September 26). Credit in danger pollution study says. *Toronto Star*, BR1.

Gabriel, N. (2011). The work that parks do: Towards an urban environmentality. *Social and Cultural Geography, 12*(2), 123–141. www.doi.org/10.1080/14649365.2011.545139

Gandy, M. (2006). Urban nature and the ecological imaginary. In N. Heynen, M. Kaika, & E. Swyngedouw (Eds.), *In the nature of cities: Urban political ecology and the politics of urban metabolism* (pp. 63–74). Routledge.

Gandy, M. (Director). (2017). *Natura urbana: The brachen of Berlin* [film].

Gandy, M. (2020). At a tangent: Delineating a new ecological imaginary. *Architectural Design, 90*(1), 106–113. www.doi.org/10.1002/ad.2533

Gauthier, D. (2022a, July 15). River cribs and imported bridges, with Netami Stuart, Waterfront Toronto (no. 2) [Audio podcast interview]. In *Don River radio*. www.donriverradio.ca/don-river-radio

Gauthier, D. (2022b, July 8). Remembering the Don, with Jennifer Bonnell (no. 1) [Audio podcast interview]. In *Don River radio*. www.donriverradio.ca/don-river-radio

Gobster, P.H. (2007). Urban park restoration and the "museumification" of nature. *Nature and Culture, 2*(2), 95–114. www.doi.org/10.3167/nc2007.020201

Goh, K. (2020). Flows in formation: The global-urban networks of climate change adaptation. *Urban Studies, 57*(11), 2222–2240. www.doi.org/10.1177/0042098018807306

Goodman, R. (1959, November 7). Toronto—A time of growth and change. *The Globe and Mail*, A17.

Great Lakes by Design. (2022, June 9). *Port Lands*. www.greatlakesbydesign.com/2022/06/09/port-lands/

Greenberg, K. (1996). Toronto: The urban waterfront as a terrain of availability. In P. Malone (Ed.), *City, capital, and water* (pp. 195–218). Routledge.

Greenberg, M. (2015). 'The sustainability edge': Competition, crisis, and the rise of green urban branding. In C. Isenhour, G. McDonogh, & M. Checker (Eds.), *Sustainability as myth and practice in the global city* (pp. 105–130). Cambridge University Press.

Guerrero, A.M., Bodin, Ö, McAllister, R.R.J., & Wilson, K.A. (2015). Achieving social-ecological fit through bottom-up collaborative governance: An empirical investigation. *Ecology and Society, 20*(4), 41. www.doi.org/10.5751/ES-08035-200441

Harris, M. (2017). Competitive precinct projects: The five consistent criticisms of "global" mixed-use megaprojects. *Project Management Journal, 48*(6), 76–92. www.doi.org/10.1177/875697281704800607

Harvey, D. (2001). Globalization and the 'spatial fix'. *Geographische Revue, 3*(2), 23–30.

Heynen, N., Kaika, M., & Swyngedouw, E. (2006). Urban political ecology: Politicizing the production of urban natures. In N. Heynen, M. Kaika, & E. Swyngedouw (Eds.), *In the nature of cities: Urban political ecology and the politics of urban metabolism* (pp. 1–21). Routledge.

Heynen, N. (2014). Urban political ecology I: The urban century. *Progress in Human Geography, 38*(4), 598–604. www.doi.org/10.1177/0309132513500443

Higgs, E. (2003). *Nature by design: People, natural process, and ecological restoration.* MIT Press.

Higgs, E. (2017). Novel and designed ecosystems. *Restoration Ecology, 25*(1), 8–13. www.doi.org/10.1111/rec.12410

Hobbs, R.J., Arico, S., Aronson, J., Baron, J.S., Bridgewater, P., Cramer, V.A., Epstein, P.R., Ewel, J.J., Klink, C.A., Lugo, A.E., Norton, D., Ojima, D., Richardson, D.M., Sanderson, E.W., Valladares, F., Vilà, M., Zamora, R., & Zobel, M. (2006). Novel ecosystems: Theoretical and management aspects of the new ecological world order. *Global Ecology and Biogeography, 15*, 1–7. www.doi.org/10.1111/j.1466-822x.2006.00212.x

Hobbs, R.J., Higgs, E., & Harris, J.A. (2009). Novel ecosystems: Implications for conservation and restoration. *Trends in Ecology and Evolution, 24*(11), 599–605. www.doi.org/10.1016/j.tree.2009.05.012

Holling, C.S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics, 4,* 1–23.

Horgan, D. (1982, December 28). The metro development hustle: Complacency dies in recession. *The Globe and Mail*, 5.

Hossie, L. (1990, November 5). Environment minister hints of big changes. *The Globe and Mail*, A4.

Hough, M. (2004). *Cities and natural process: A basis for sustainability* (2nd ed.). Routledge.

Howard, R. (1980, May 23). Poisoned silt may be dumped without hearing. *Toronto Star,* A14.

Howarth, C., Bryant, P., Corner, A., Fankhauser, S., Gouldson, A., Whitmarsh, L., & Willis, R. (2020). Building a social mandate for climate action: Lessons from COVID-19. *Environmental and Resource Economics, 76*, 1107–1115. www.doi.org/10.1007/s10640-020-00446-9

Huitema, D., Mostert, E., Egas, W., Moellenkamp, S., Pahl-Wostl, C., & Yalcin, R. (2009) Adaptive water governance: Assessing institutional prescriptions of adaptive (co-)management from a governance perspective and defining a research agenda. *Ecology and Society, 14*(1), 26. www.jstor.org/stable/26268026

Immen, W. (2000a, January 17). Task force plugging hard to open Don River's mouth. *The Globe and Mail*, A14.

Immen, W. (2000b, March 1). Olympic bid promises huge waterfront boost. *The Globe and Mail*, A17.

Immen, W., & Rusk, J. (2002, September 25). Toronto's Tent City sealed off, squatters ejected. *The Globe and Mail*. www.theglobeandmail.com/news/national/torontos-tent-city-sealed-off-squatters-ejected/article25306086/

Ingelevics, V., & Walker, R. (2022). *How to build a river* [photography]. www.scotiabankcontactphoto.com/2022/core/vid-ingelevics-ryan-walker-how-to-build-a-river

International Association for Public Participation. (2018). *IAP2 spectrum of public participation*. www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf

Jackson, P.S.B. (2011). From liability to profitability: How disease, fear, and medical science cleaned up the marshes of Ashbridge's Bay. In G. Desfor & J. Laidley (Eds.), *Reshaping Toronto's waterfront* (pp. 75–96). University of Toronto Press.

Janes, M. (2017, June). *Toronto Port Lands community based risk assessment* [presentation]. Canadian Brownfields Network.

www.canadianbrownfieldsnetwork.ca/sites/default/uploads/files/Conf2017/Presentation/5_2-Municipal_Innovations_Meggen_Janes.pdf

Janes, M. (2020, October 15). *Constructing a 1 km river through brownfield sites: Risk based strategy, maximized soil treatment and reuse, environmental protection and land use* [Presentation]. Environmental Services Association of Alberta. www.esaa.org/wp-content/uploads/2021/04/RT2020-Janes.pdf

Johns, C. (2018). *Green infrastructure and stormwater management in Toronto: Policy context and instruments*. Ryerson University Centre for Urban Research and Land Development. www.torontomu.ca/centre-urban-research-land-development/pdfs/JohnsGIandSWMTorontoFinalDec18.pdf

Joseph, J. (2013). Resilience as embedded neoliberalism: A governmentality approach. *Resilience, 1*(1). 38–52. www.doi.org/10.1080/21693293.2013.765741

Keil, R., & Desfor, G. (2003). Ecological modernisation in Los Angeles and Toronto. *Local Environment, 8*(1), 27–44. www.doi.org/10.1080/13549830306679

Keil, R., & Boudreau, J. (2006). Metropolitics and metabolics: Rolling out environmentalism in Toronto. In N. Heynen, M. Kaika, & E. Swyngedouw (Eds.), *In the nature of cities: Urban political ecology and the politics of urban metabolism* (pp. 41–62). Routledge.

Kim, H., Marcouiller, D.W., & Woosnam, K.M. (2018). Rescaling social dynamics in climate change: The implications of cumulative exposure, climate justice, and community resilience. *Geoforum, 96*, 129–140. www.doi.org/10.1016/j.geoforum.2018.08.006

Kittel, A., & Wolfe, C. (2019, February 27). *Port Lands zoning review LUAC meeting #3* [presentation slides]. Waterfront Toronto. www.portlandsto.ca/wp-content/uploads/190710_LUAC-Meeting-3_Final-1.pdf

Klaus, V.H., & Kiehl, K. (2021). A conceptual framework for urban ecological restoration and rehabilitation. *Basic and Applied Ecology, 52*, 82–94. www.doi.org/10.1016/j.baae.2021.02.010

Kotsila, P., Anguelovski, I., Baró, F., Langemeyer, J., Sekulova, F., & Connolly, J.J.T. (2020). Nature-based solutions as discursive tools and contested practices in urban nature's neoliberalisation processes. *Environment and Planning E: Nature and Space, 4*(2), 252–274. www.doi.org/10.1177/2514848620901437

Kowarik, I., & von der Lippe, M. (2018). Plant population success across urban ecosystems: A framework to inform biodiversity conservation in cities. *Journal of Applied Ecology, 55*(5), 2354–2361. www.doi.org/10.1111/1365-2664.13144

Kuwabara, B., Burtynsky, E., Daoust, R., Waldheim, C., & Yolles, M. (2007). *Lower Don Lands Innovative Design Competition Jury Report*. Toronto Waterfront Revitalization Corporation. www.portlandsto.ca/wp-content/uploads/4889f7d07201d.pdf

Laidley, J. (2007). The ecosystem approach and the global imperative on Toronto's Central Waterfront. *Cities, 24*(4), 259–272. www.doi.org/10.1016/j.cities.2006.11.005

Landau, J. (2021, October 18) New life is returning to a reborn stretch of Toronto's waterfront. *BlogTO*. www.blogto.com/city/2021/10/nature-already-starting-thrive-torontos-rebuilt-port-lands/

Lang, T. (2019). Towards a critical political geography of resilience machines in urban planning. In J. Bohland, S. Davoudi, & J. Lawrence (Eds.), *The resilience machine* (pp. 144–158). Routledge.

Langhorst, J. (2014). Re-presenting transgressive ecologies: Post-industrial sites as contested terrains. *Local Environment, 19*(10), 1110–1133. www.doi.org/10.1080/13549839.2014.928813

Lauermann, J. (2018). Municipal statecraft: Revisiting the geographies of the entrepreneurial city. *Progress in Human Geography, 42*(2), 205–224. www.doi.org/10.1177/0309132516673240

Legacy, C., Cook, N., Rogers, D., & Ruming, K. (2018). Planning the post-political city: Exploring public participation in the contemporary Australian city. *Geographical Research, 56*(2), 176–180. www.doi.org/10.1111/1745-5871.12285

Lehrer, U., & Laidley, J. (2008). Old mega-projects newly packaged? Waterfront redevelopment in Toronto. *International Journal of Urban and Regional Research*, 32(4), 786–803. www.doi.org/10.1111/j.1468-2427.2008.00830.x

Leitner, H., Sheppard, E., Webber, S., & Colven, E. (2018). Globalizing urban resilience. *Urban Geography, 39*(8), 1276–1284. www.doi.org/10.1080/02723638.2018.1446870

Loughran, K. (2020). Urban parks and urban problems: An historical perspective on green space development as a cultural fix. *Urban Studies, 57*(11), 2321–2338. www.doi.org/10.1177/0042098018763555

MacGregor, R. (2016, August 12). Bringing Toronto's Don River back from the dead. *The Globe and Mail*. www.theglobeandmail.com/news/toronto/brining-the-torontos-don-river-back-from-the-dead/article31393048/

MacKinnon, D., & Derickson, K.D. (2012). From resilience to resourcefulness: A critique of resilience policy and activism. *Progress in Human Geography, 37*(2), 253–270. www.doi.org/10.1177/0309132512454775

Makin, K. (1980, May 22). Haggling over jurisdiction held up dredging of Don. *The Globe and Mail*, 3.

Mansoor, S.Z., Louie, S., Lima, A.T., Van Cappellen, P., & MacVicar, B. (2018). The spatial and temporal distribution of metals in an urban stream: A case study of the Don River in Toronto, Canada. *Journal of Great Lakes Research, 44*(6), 1314–1326. www.doi.org/10.1016/j.jglr.2018.08.010

Maynard, M. (2022, August 14). How some places are fighting floods. *Santa Fe New Mexican*, B2.

Mays, J.B. (1991, September 11). When a river valley becomes a watershed. *The Globe and Mail*, D1.

McAndrew, B. (1999a, September 10). Moving Don River's mouth gains vocal support: $38 million plan seen as boon to environment. *Toronto Star*, 1.

McAndrew, B. (1999b, March 28). Our waterfront's awash in changes; Crombie, trust ready themselves for privatization. *Toronto Star*, 1.

Meerow, S., Newell, J.P., & Stults, M. (2016). Defining urban resilience: A review. *Landscape and Urban Planning,* 147. www.doi.org/10.1016/j.landurbplan.2015.11.011

Michael Van Valkenburgh Associates. (2007). *Port Lands estuary proposal*. www.portlandsto.ca/wp-content/uploads/port_lands_estuary_1.pdf

Mickulewicz, M. (2019). Thwarting adaptation's potential? A critique of resilience and climate-resilient development. *Geoforum, 104*, 267–282. www.doi.org/10.1016/j.geoforum.2019.05.010

Miller, J.R., & Bestelmeyer, B.T. (2016). What's wrong with novel ecosystems, really? *Restoration Ecology, 24*(5), 577–582. www.doi.org/10.1111/rec.12378

Mississaugas of the Credit First Nation. (2021). *2020–2021 annual report*. www.mncfn.ca/wp-content/uploads/2021/12/2020-2021-MCFN-Annual-Report.pdf

Mittelstaedt, M. (2003, November 24). Finned invader hits Lake Ontario. *The Globe and Mail*, A8.

Moir, M. (2011). From feast to famine: Shipbuilding and the 1912 Waterfront Development Plan. In G. Desfor & J. Laidley (Eds.), *Reshaping Toronto's waterfront* (pp. 97–122). University of Toronto Press.

Moloney, P. (1989, April 6). Build homes for 125,000 on waterfront report urges. *Toronto Star*, A1.

Molotch, H. (1976). The city as a growth machine: Toward a political economy of place. *American Journal of Sociology, 82*(2), 309–332. www.doi.org/10.1086/226311

Murcia, C., Aronson, J., Kattan, G.H., Moreno-Mateos, D., Dixon, K., & Simberloff, D. (2014). A critique of the 'novel ecosystem' concept. *Trends in Ecology and Evolution, 29*(10), 548–553. www.doi.org/10.1016/j.tree.2014.07.006

Neumann, R.P. (2005). *Making political ecology*. Routledge.

Newton, A.C. (2016). Biodiversity risks of adopting resilience as a policy goal. *Conservation Letters, 9*(5), 369–376. www.doi.org/10.1111/conl.12227

Nielsen, A.B. (2020). Governing the transnational: Exploring the governance tools of 100 Resilient Cities. In J. Hoff, Q. Gausset, & S. Lex (Eds.), *The role of non-state actors in the green transition: Building a sustainable future* (pp. 230–246). Routledge.

O'Connor, R. (2014). *The first green wave: Pollution Probe and the origins of environmental activism in Ontario*. UBC Press.

Office of the Auditor General of Ontario. (2018). *2018 annual report: Volume 2*. www.auditor.on.ca/en/content/annualreports/arbyyear/ar2018.html

Oliver, R. (2011). Toronto's Olympic aspirations: A bid for the waterfront. *Urban Geography, 32*(6), 767–787. www.doi.org/10.2747/0272-3638.32.6.767

Olmsted, F.L. (2011). Public parks and the enlargement of towns. In R.T. LeGates & F. Stout (Eds.), *The city reader* (5th ed.) (pp. 321–327). Routledge. (Original work published 1870).

O'Malley, P. (2010). Resilient subjects: Uncertainty, warfare, and liberalism. *Economy and Society, 39*(4), 488–509. www.doi.org/10.1080/03085147.2010.510681

Ostrom, E. (2007). A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences, 104*(39), 15181–15187. www.doi.org/10.1073/pnas.0702288104

Ou, Y., Rousseau, A.N., Wang, L., Yan, B., Gumiere, T., & Zhu, H. (2019). Identification of the alteration of riparian wetland on soil properties, enzyme activities and microbial communities following extreme flooding. *Geoderma, 337*, 825–833. www.doi.org/10.1016/j.geoderma.2018.10.032

Palamar, C. (2010). From the ground up: Why urban ecological restoration needs environmental justice. *Nature and Culture, 5*(3), 277–298. www.doi.org/10.3167/nc.2010.050304

Pandey, B., & Okazaki, K. (2005). Community based disaster management: Empowering communities to cope with disaster risks. *Regional Development Dialogue 26*(2).

Peck, J., Kirk, C.P., Luangrath, A.W., & Shu, S.B. (2021). Caring for the commons: Using psychological ownership to enhance stewardship behavior for public goods. *Journal of Marketing, 85*(2), 33–49. www.doi.org/10.1177/0022242920952084

Pelley, L. (2019, September 25). How climate change gave added urgency to a $1.25B project to prevent flooding in Toronto. *Canadian Broadcasting Corporation*. www.cbc.ca/news/canada/toronto/toronto-flooding-climate-change-1.5290037

Public Work. (2014). *Port Lands charrette*. City of Toronto. www.portlandsto.ca/wp-content/uploads/Port Lands Charrette REPORT.pdf

Pyšek, P., Vojtěch J., Hulme, P.E., Pergl, J., Hejda, M., Schaffner, U., & Vilà, M. (2012). A global assessment of invasive plant impacts on resident species, communities, and ecosystems: The interaction of impact measures, invading species traits, and environment. *Global Change Biology, 18*(5), 1725–1737. www.doi.org/10.1111/j.1365-2486.2011.02636.x

Rassy, S. (2022, June 7). Here's what a $1.25-billion urban regeneration project looks like. *Toronto Life*. www.torontolife.com/city/heres-what-a-1-25-billion-urban-regeneration-project-looks-like/

Richardson, D.M., Holmes, P.M., Esler, K.J., Galatowitsch, S.M., Stromberg, J.C., Kirkman, S.P., Pyšek, P., & Hobbs, R.J. (2007). Riparian vegetation: Degradation, alien plant invasion, and restoration prospects. *Diversity and Distributions, 13*(1), 126–139. www.doi.org/10.1111/j.1472-4642.2006.00314.x

Rincón, D., Velandia, J.F., Tsanis, I., & Khan, U.T. (2022). Stochastic flood risk assessment under climate change scenarios for Toronto, Canada using CAPRA. *Water, 14*(2), 227. www.doi.org/10.3390/w14020227

Ring, I., & Schröter-Schlaack, C. (2011). Justifying and Assessing Policy Mixes for Biodiversity and Ecosystem Governance. In I. Ring & C. Schröter-Schlaack (Eds.), *Instrument mixes for biodiversity policies* (pp. 14–35). POLICYMIX.

Rizzo, A. (2020). Megaprojects and the limits of 'green resilience' in the global South: Two cases from Malaysia and Qatar. *Urban Studies*, *57*(7), 1520–1535. www.doi.org/10.1177/0042098018812009

Robbins, P. (2012). *Political ecology: A critical introduction* (2nd ed.). John Wiley & Sons.

Rocky [@therockripper]. (n.d.). *Tweets* [Twitter profile]. Retrieved November 4, 2022 from www.twitter.com/TheRockRipper

Rosa, B. (2016). Waste and value in urban transformation: Reflections on a post-industrial 'wasteland' in Manchester. In C. Lindner & M. Meissner (Eds.), *Global garbage: Urban imaginaries of waste, excess, and abandonment* (pp. 181–206). Routledge.

Rosol, M., Béal, V., & Mössner, S. (2017). Greenest cities? The (post-)politics of new urban environmental regimes. *Environment and Planning A, 49*(8), 1710–1718. www.doi.org/10.1177/0308518X17714843

Royal Commission on the Future of the Toronto Waterfront (1992). *Regeneration: Toronto's waterfront and the sustainable city: Final report*. www.publications.gc.ca/site/eng/472518/publication.html

Sanderson, C., & Filion, P. (2011). From harbour commission to port authority: Institutionalizing the federal government's role in waterfront development. In G. Desfor & J. Laidley (Eds.), *Reshaping Toronto's waterfront* (pp. 224–245). University of Toronto Press.

Savan, B. & Gore, C. (2015). Translating strong principles into effective practice: Environmental assessment in Ontario, Canada. *Journal of Environmental Planning and Management, 58*(3), 404–422. www.doi.org/10.1080/09640568.2013.859572

Scadding, H. (1873). *Toronto of old: Collections and recollections illustrative of the early settlement and social life of the capital of Ontario.* Adam, Stevenson & Co.

Sevilla-Buitrago, A. (2014). Central Park against the streets: The enclosure of public space cultures in mid-nineteenth century New York. *Social and Cultural Geography, 15*(2), 151–171. www.doi.org/10.1080/14649365.2013.870594

Sewell, J. (1989, May 4). Environmental dilemma also poses opportunity. *NOW Magazine, 8*(34), 13. https://nowtoronto.pressreader.com/now-magazine/19890504

Shi, L., Chu, E., Anguelovski, I., Aylett, A., Debats, J., Goh, K., Schenk, T., Seto, K.C., Dodman, D., Roberts, J.T., & VanDeveer, S.D. (2016). Roadmap towards justice in urban climate adaptation research. *Nature Climate Change, 6*(2), 131–137. www.doi.org/10.1038/NCLIMATE2841

Shi, L. (2020). The new climate urbanism: Old capitalism with climate characteristics. In V. Castán-Broto, E. Robin, & A. While (Eds.), *Climate urbanism: Towards a critical research agenda* (pp. 51–66). Springer.

Shokry, G., Anguelovski, I., Connolly, J.J.T., Maroko, A., & Pearsall, H. (2021). "They didn't see it coming": Green resilience planning and vulnerability to future climate gentrification. *Housing Policy Debate, 32*(1), 211–245. www.doi.org/10.1080/10511482.2021.1944269

Slootweg, R., Rajvanshi, A., Mathur, V.B., & Kolhoff, A. (2010). *Biodiversity in environmental assessment: Enhancing ecosystem services for human well-being*. Cambridge University Press.

Smith, N. (2006a, June 11). *There's no such thing as a natural disaster*. Items: Insights from the social sciences. www.items.ssrc.org/understanding-katrina/theres-no-such-thing-as-a-natural-disaster/

Smith, N. (2006b). Foreword. In N. Heynen, M. Kaika, & E. Swyngedouw (Eds.), *In the nature of cities: Urban political ecology and the politics of urban metabolism* (xi–xv). Routledge.

Sondershaus, F., & Moss, T. (2014). Your resilience is my vulnerability: 'Rules in use' in a local water conflict. *Social Sciences, 3,* 172–192. www.doi.org/10.3390/socsci3010172

Standish, R.J., Hobbs, R.J., & Miller, J.R. (2013). Improving city life: Options for ecological restoration in urban landscapes and how these might influence interactions between people and nature. *Landscape Ecology, 28*(6), 1213–1221. www.doi.org/10.1007/s10980-012-9752-1

Standish, R.J., Hobbs, R.J., Mayfield, M.M., Bestelmeyer, B.T., Suding, K.N., Battaglia, L.L., Eviner, V., Hawkes, C.V., Temperton, V.M., Cramer, V.A., Harris, J.A., Funk, J.L., & Thomas, P.A. (2014). Resilience in ecology: Abstraction, distraction, or where the action is? *Biological Conservation, 177*, 43–51. www.doi.org/10.1016/j.biocon.2014.06.008

StossLandscapeUrbanism. (2007). *River + city + life*. www.portlandsto.ca/wp-content/uploads/stoss_1.pdf

Stuart, N. (2022, April 7). *100-year old seeds*. Waterfront Toronto. www.waterfrontoronto.ca/news/100-year-old-seeds

Söderlund, J., Sankaran, S., & Biesenthal, C. (2017). The past and present of megaprojects. *Project Management Journal, 48*(6), 5–16. www.doi.org/10.1177/875697281704800602

Suzuki, D. (1992, August 29). Toronto's 'ecosystem approach' generates hope. *Toronto Star*, D6.

Swyngedouw, E. (1996). The city as a hybrid: On nature, society, and cyborg urbanization. *Capitalism, Nature, Socialism, 7*(2), 65–80. www.doi.org/10.1080/10455759609358679

Swyngedouw, E. (2009). The antinomies of the postpolitical city: In search of a democratic politics of environmental production. *International Journal of Urban and Regional Research, 33*(3), 601–620. www.doi.org/10.1111/j.1468-2427.2009.00859.x

Task Force to Bring Back the Don. (1991). *Bringing back the Don*.

Taylor, C. (2004). *Modern social imaginaries*. Duke University Press.

The Globe and Mail. (1959, November 12). Overseas tonnage up in Toronto. 1.

The Globe and Mail. (1980a, May 26). Name your poison. 6.

The Globe and Mail. (1980b, June 18). Sewell wants Don dredging halted. 3.

Tierney, K. (2015). Resilience and the neoliberal project: Discourses, critiques, practices—and Katrina. *American Behavioral Scientist, 59*(10), 1327–1342. www.doi.org/10.1177/0002764215591187

Till, L. (1990, September 19). Soil tainted at Ataratiri, report says, *The Globe and Mail*, A10.

Török, P., Helm, A., Kiehl, K., Buisson, E., Valkó, O. (2018). Beyond the species pool: Modification of species dispersal, establishment, and assembly by habitat restoration. *Restoration Ecology, 26*(2), 65–72. www.doi.org/10.1111/rec.12825

Toronto and Region Conservation Authority. (1980). *Watershed Plan*. www.trca.on.ca/trca-user-uploads/WatershedPlan.pdf

Toronto and Region Conservation Authority. (1994). *Forty steps to a new Don*.

Toronto and Region Conservation Authority. (2013). *Building the living city: 10 year strategic plan 2013–2022*. www.trca.on.ca/dotAsset/164987.pdf

Toronto and Region Conservation Authority. (2014a). *Don Mouth Naturalization and Port Lands Flood Protection Project amended environmental assessment report*.

www.trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/don-mouth-environmental-assessment/
Toronto and Region Conservation Authority. (2014b). *The living city policies for planning and development in the watersheds of the Toronto and Region Conservation Authority*. www.trca.ca/planning-permits/living-city-policies/
Toronto and Region Conservation Authority. (2018). *Don River watershed TRCA report card 2018.* www.reportcard.trca.ca/watershed-report-cards/don-river/
Toronto and Region Conservation Authority. (2018b). *Biodiversity in the Toronto region 2003–2016*. www.trca.ca/conservation/environmental-monitoring/environmental-monitoring-resource-library/
Toronto and Region Conservation Authority. (2021). *Flora scores and ranks, 2021*. www.trca.ca/conservation/environmental-monitoring/environmental-monitoring-resource-library/
Toronto and Region Conservation Authority. (n.d.). *Flood plain map*. www.trca.ca/conservation/flood-risk-management/flood-plain-map-viewer
Toronto and Region Conservation Authority, Waterfront Toronto, & City of Toronto (2021). *Don Mouth Naturalization and Port Lands Flood Protection Project amendment to the March 2014 environmental assessment report*. www.portlandsto.ca/wp-content/uploads/DMNP-EA-Amendment-April-15-2021.pdf
Toronto Daily Star. (1959, September 28). First Japanese 'seaway' ship docks at Toronto. 8.
Toronto Daily Star. (1962a, May 31). The shoreline jungle. 6.
Toronto Daily Star. (1962b, September 11). Mayor, Summerville clash on new waterfront plan. 27.
Toronto Waterfront Revitalization Corporation Act, S.O. 2002, c. 28. www.ontario.ca/laws/statute/02t28
Toronto Waterfront Revitalization Corporation. (2002). *Our waterfront: Gateway to a new Canada: The development plan and business strategy for the revitalization of the Toronto waterfront*.
Toronto Waterfront Revitalization Corporation. (2005). *Sustainability framework*. www.waterfrontoronto.ca/sites/default/files/documents/4a1fe4722fcae.pdf
Toronto Waterfront Revitalization Corporation. (2007). *Waterfront corporation announces winner of Lower Don Lands design competition: Jury selects team led by Michael Van Valkenburgh Associates*. www.portlandsto.ca/wp-content/uploads/4889f79c1c498.pdf
Toronto Waterfront Revitalization Corporation, & Toronto and Region Conservation Authority. (2006). *Don Mouth Naturalization and Port Lands Flood Protection Project revised terms of reference*. trca.ca/conservation/green-infrastructure/don-mouth-naturalization-port-lands-flood-protection-project/don-mouth-environmental-assessment/
Toronto Waterfront Revitalization Task Force. (2000). *Our Toronto waterfront: Gateway to the new Canada.* www.toronto.ca/wp-content/uploads/2017/11/91f5-torontow.pdf
Urban Strategies, Waterfront Toronto, and City of Toronto. (2017). *Villiers Island precinct plan*. www.portlandsto.ca/wp-content/uploads/2017.10.04_Villiers+Island+Precinct+Plan+AODA+Attachment+2.pdf
Valpy, M. (1990, September 14). Waterfront report heady stuff. *The Globe and Mail*, A10.
Vincent, D. (1999, January 27). Three-man front for 2008. *Toronto Star*, B1.
von der Lippe, M. (2022). Vegetation as testimony: Botanical traces of the urban past. In M. Gandy & S. Jasper (Eds.), *The botanical city* (pp. 46–53). Jovis.
Walker, J., & Cooper, M. (2011). Genealogies of resilience: From systems ecology to the political economy of crisis adaptation. *Security Dialogue, 42*(2), 143–160. www.doi.org/10.1177/0967010611399616
Ward, B. (1980, April 20). Now it's Toronto the (fairly) clean. *Toronto Star*, A3.
Waterfront Toronto. (2010). *Lower Don Lands framework plan*. www.portlandsto.ca/wp-content/uploads/lower_don_lands_framework_plan___may_2010_15_mb_1.pdf
Waterfront Toronto. (2016). *Port Lands Flood Protection and enabling infrastructure due diligence report*. www.portlandsto.ca/wp-content/uploads/due_diligence_report_october_20_2016_1.pdf
Waterfront Toronto. (2017). *Waterfront Toronto resilience and innovation framework for sustainability*. www.waterfrontoronto.ca/sites/default/files/documents/wtri--framework-20171013-final.pdf
Waterfront Toronto. (2018a). *Port Lands Flood Protection and enabling infrastructure: Parks, river and road detailed design*. www.portlandsto.ca/wp-content/uploads/MVVA07009.plfp_.WT_.WDRP_3A_WATERMARK-compressed.pdf

Waterfront Toronto. (2018b, April 12). *Port Lands Flood Protection Construction Liaison Committee meeting #1*. www.portlandsto.ca/wp-content/uploads/Port-Lands-Flood-Protection-CLC-Meeting1-reduced.pdf

Waterfront Toronto. (2018c). *Port Lands Flood Protection Construction Liaison Committee meeting #2*. www.portlandsto.ca/wp-content/uploads/CSLF-CLC-Meeting-2-reduced.pdf

Waterfront Toronto. (2020, December 4). *Port Lands Flood Protection public meeting*. www.portlandsto.ca/wp-content/uploads/WT-PLFP-PIC-Indigenous-Design-Consultation.pdf

Waterfront Toronto. (2021a, September 24). *Port Lands Flood Protection fish cove restoration success* [Video]. YouTube. www.youtube.com/watch?v=77Pqba4mhNY&ab_channel=WaterfrontToronto

Waterfront Toronto. (2021b). *Leading with landscape: Waterfront Toronto rolling five year strategic plan 2022/23–2026/27*. www.waterfrontoronto.ca/sites/default/files/2022-01/WT Strategic Plan 2022-23_FINAL_PUBLIC (002) AODA Compliant.pdf

Waterfront Toronto. (n.d.). *Plantings in the Port Lands*. PortlandsTO. www.portlandsto.ca/plantings-in-the-port-lands/

Weiss, J. (1989). The powers of problem definition: The case of government paperwork. *Policy Sciences, 22*(2), 97–121. www.doi.org/10.1007/BF00141381

Weiss/Manfredi. (2007). *Wandering ecologies*. www.portlandsto.ca/wp-content/uploads/weiss_1.pdf

Wenger, A.S., Harvey, E., Wilson, S., Rawson, C., Newman, S.J., Clarke, D., Saunders, B.J., Browne, N., Travers, M.J., Mcilwain, J.L., Erftemeijer, P.L.A., Hobbs, J.A., Mclean, D., Depczynski, M., & Evans, R.D. (2016). A critical analysis of the direct effects of dredging on fish. *Fish and Fisheries, 18*(5), 967–985. www.doi.org/10.1111/faf.12218

Westphal, L.M., Gobster, P.H., & Gross, M. (2009). Models for renaturing brownfield areas. In M. Hall (Ed.), *Restoration and history: The search for a useable environmental past* (pp. 208–217). Routledge.

White, J.T. (2016). Pursuing design excellence: Urban design governance on Toronto's waterfront. *Progress in Planning, 110*, 1–41. www.doi.org/10.1016/j.progress.2015.06.001

Wilson, J. (2020, October 18). Port Lands naturalization: Bringing back the Don [video]. *Lost River Walks*. www.lostrivers.ca/content/Walkarchives.html

Winkel, G., & Leipold, S. (2016). Demolishing dikes: Multiple streams and policy discourse analysis. *Policy Studies Journal, 44*(1), 108–129. www.doi.org/10.1111/psj.12136

Wisner, B., & Luce, H.R. (1993). Disaster vulnerability: Scale, power, and daily life. *GeoJournal, 30*(2), 127–140. www.doi.org/10.1007/BF00808129

Young, I.M. (1990). *Justice and the politics of difference*. Princeton University Press.

Ziervogel, G., Pelling, M., Cartwright, A., Chu, E., Deshpande, T., Harris, L., Hyams, K., Kaunda, J., Klaus, B., Michael, K., Pasquini, L., Pharoah, R., Rodina, L., Scott, D., & Zweig, P. (2017). Inserting rights and justice into urban resilience: A focus on everyday risk. *Environment and Urbanization, 29*(1) 123–138. www.doi.org/10.1177/0956247816686905

Appendix

Table 1
Plant species identified on verges and margins within the Port Lands, with 2021 L-ranks (TRCA, 2021)

Common name	**Scientific name**	**Native/non-native**	**TRCA L-rank**
Bird's-foot trefoil	*Lotus corniculatus*	Non-native	L+
Black Swallow-wort	*Vincetoxicum nigrum*	Non-native	L+
Chicory	*Cichorium intybus*	Non-native	L+
Common Buckthorn	*Rhamnus cathartica*	Non-native	L+
Common Jewelweed	*Impatiens capensis*	Native	L5
Common Milkweed	*Asclepias syriaca*	Native	L5
Common Mugwort	*Artemisia vulgaris*	Non-native	L+
Common Nettle	*Urtica dioica*	Non-native	L+
Creeping thistle	*Cirsium arvense*	Non-native	L+
Cup-plant	*Silphium perfoliatum*	Native	L5
Downy Thorn-apple	*Datura innoxia*	Non-native	L+
Mossy Stonecrop	*Sedum acre*	Non-native	L+
Purple Loosestrife	*Lythrum salicaria*	Non-native	L+
Riverbank Grape	*Vitis riparia*	Native	L5
Spear-leaved Orach	*Atriplex prostrata*	Non-native	L+
Thicket Creeper	*Parthenocissus inserta*	Native	L5
Tree-of-heaven	*Ailanthus altissima*	Non-native	L+

Table 2
Public participation and consultation tools employed in support of the PLFPP (TRCA, 2014a; Public Work, 2014; Comparey & Shenker, 2020)

Participatory tool	Engagement targets	Purpose
Advisory committee	Representatives of community associations, businesses, landowners	Consistent line of communication with key stakeholders
Design charrette	Stakeholders from organizations with an interest in the PLFPP	Create a forum for direct public input into design, build consensus around design vision
Focus group	Youth, seniors	Targeted consultation with targeted demographics
Mail-outs and newsletters	Attendees of other events	Inform of new events and project updates
Pop up event	Public (unspecified)	Engage with the public in public spaces, reach people who might not attend meetings
Public consultation meeting	Public (unspecified)	Presentation of information, answering questions
Social media	Public (unspecified)	Provide project updates and media to a broad audience
Survey	Public (unspecified)	Structured way to assess public attitudes and gather feedback
Website	Public (unspecified)	Provide stable access to wide range of project media, documentation
Working group	MCFN, biodiversity experts	Seeking specific expertise or knowledge from target group
Workshop	Indigenous groups, youth, seniors	Interactive and in-depth engagement with members of targeted demographics