

**Urban Open Space Planning in Southern Ontario:  
Lessons from the Red Hill Valley Project**

**by**

**Scott Cafarella**

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## ABSTRACT

### **URBAN OPEN SPACE PLANNING IN SOUTHERN ONTARIO: LESSONS FROM THE RED HILL VALLEY PROJECT**

Scott Cafarella  
University of Guelph, 2016

Advisor:  
Professor Karen Landman

Urban open space systems are interconnected networks of green spaces, waterways, and undeveloped lands that link regional ecological corridors to the city. In Ontario, a structure of related land-use policies informs urban open space planning and development. In this study, a policy analysis, a case study, and an evaluation of policy development were undertaken to investigate the outcomes of the Red Hill Valley Parkway Project in Hamilton, Ontario. The methods employed were a document analysis, key informant interviews, and a policy analysis using an established policy evaluation framework. This study identified institutional learning by Project stakeholders and investigated if this learning had informed policy development at the provincial level. Results show that the Open Space Replacement Strategy and the creation of the Joint Stewardship Board are evidence of institutional learning. Lessons from this Project have improved Hamilton's planning practices, but have not directly influenced provincial policy development to date.

Keywords: Socio-Ecological Systems, Greenways, Parkways, Regional Planning, Urban Ecology

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## List of Abbreviations

CHL	Cultural Heritage Landscape
CJB	Consolidated Joint Board
EA	Environmental Assessment
FORHV	Friends of the Red Hill Valley
GGH	Greater Golden Horseshoe
GTA	Greater Toronto Area
HCA	Hamilton Conservation Authority
JSB	Joint Stewardship Board
LINC	Lincoln M. Alexander Parkway
LMP	Landscape Management Plan
MAH	Ontario Ministry of Municipal Affairs and Housing
MOE	Ontario Ministry of the Environment
MTO	Ontario Ministry of Transportation
NEC	Niagara Escarpment Commission
NEP	Niagara Escarpment Plan
NHS	Natural Heritage System
OEAB	Ontario Environmental Assessment Board
OMB	Ontario Municipal Board
OMNR	Ontario Ministry of Natural Resources
OP	Official Plan
PPS	Provincial Policy Statement
QEW	Queen Elizabeth Way
RVHP	Red Hill Valley Project
TRCA	Toronto Region Conservation Authority

## Chapter 1 | Introduction

This thesis is an investigation into how policy influences the development of urban open space systems in cities. Urban open space systems are multi-scalar and multi-functional networks of green space, valleys and undeveloped lands within the boundaries of a city. Specifically, this thesis investigates the factors that contribute to the development of policy, and evaluates how the intent of that policy is implemented in urban and regional planning. This research is conducted within the context of land planning policy and design in the Province of Ontario, Canada. Ontario's policy mechanisms include growth plans for metropolitan regions (Growth Plan for the Greater Golden Horseshoe), development permit granting and park planning commissions (Niagara Escarpment Commission), large-scale land conservation plans (Greenbelt Plan, Oak Ridges Moraine Conservation Plan), watershed-based regulatory agencies (Ontario Conservation Authorities), statutes that outline the process of Environmental Assessment (Ontario Environmental Assessment Act), statutes that inform land-use planning, quasi-judicial land-use boards (Ontario Municipal Board and Environmental Review Tribunal), as well as policy statements that set broad planning objectives to be interpreted and implemented at the municipal level (Provincial Policy Statement).

The policy mechanisms outlined above form a land-use planning strategy for southern Ontario; however, the implementation of this planning strategy is uneven across the Province. Land-use policy is implemented at the municipal level, and implementation varies depending on the sophistication of the municipality's Official Plan, development strategy, land-use zoning and by-laws. The City of Hamilton's open space system was chosen for detailed analysis because it has been influenced by nearly all of the planning policies listed above. The Red Hill Valley Project (RHVP) in Hamilton, Ontario, which forms a significant component of Hamilton's open space system, was chosen as a case study and is examined in detail in this research. The Project involved the construction of an expressway through an urban river corridor that connected the Niagara Escarpment to Hamilton Harbour. Within the RHVP case study, opportunities for further policy development are explored.

## 1.1 | Research Question

As outlined above, there is a complex policy structure governing land-use planning in Ontario. Given this system, this research asks the following question:

- How has the Red Hill Valley Project contributed to the evolution of open space planning policy in southern Ontario?

In the following chapters, the theoretical context for urban open space planning is discussed, a research design is proposed, data are presented and analyzed, and general findings and conclusions of the research are discussed. In Chapter 2, the literature on urban open space planning is reviewed. First, terminology relating to urban green systems is introduced and discussed and a definition of urban open space is proposed. The second part of the literature review introduces socio-ecological system theory and the concept of developing resilience through institutional learning. Chapter 3 outlines the research design and methods: a preliminary document analysis was used to select a suitable case study (the Red Hill Valley Project) and determine a list of key informants. Key informant interviews were conducted, a policy document analysis was performed, and a document analysis of reports and other grey literature relating to the Red Hill Valley Project was undertaken. Three research objectives are outlined. The first objective is to analyze Ontario's policy structure for urban open space planning. The second objective is to develop a case study analysis of the Red Hill Valley Project. The third objective is to find evidence of institutional learning throughout the Red Hill Valley Project planning process, and to describe how municipal learning has contributed to policy development in Ontario. Chapters 4, 5, and 6 describe the respective results of the three research objectives. The results, general findings and implications are discussed in Chapter 7. Finally, limitations of the research, implications for the practice of landscape architecture, and potential future research directions are presented in Chapter 8.

## Chapter 2 | Literature Review

Before developing a research strategy, it is necessary to advance and define a series of terms that contribute to a more complete understanding of urban open space. The term *urban open space* is not commonly, or consistently, used in the literature. Typically, more specific sub-categories of open space become the focus of study (such as greenbelts or greenways), or open spaces are one of a number of different land typologies that contribute to a functional system (such as green infrastructure). Nonetheless, this research justifies the use of urban open space as an appropriate term in this context through an examination and deconstruction of related terms and contributing theories. This sequential analysis forms the first section of the literature review.

First, three common typologies of urban open space are described; these forms are the *greenbelt*, *parkway*, and *greenway*. These are terms for linear systems of green space, and although open space may take many different forms, most significant open space systems can be described using these typologies. That is, open spaces may be a green 'belt' surrounding a city, a transportation corridor right-of-way, or other internal green linkages within the city (Erickson 2004). Within the urban context, the distinct legacy of land-use offers many clues as to why a city's green system evolved into its current form.

Next, a value-systems perspective is applied to the concept of interconnected open spaces. These definitions are responsive to the Ontario context under investigation here; however, similar theory, policy and development in the United States, the United Kingdom, and Australia suggest a concurrent trend. In the case where open spaces have unique landforms, or by extension unique, diverse, or robust biological communities, those open spaces may form a *natural heritage system* that can be designated and protected by planning policy. In Ontario, landscape ecology theory directly informs the designation of natural heritage systems. Additionally, *cultural heritage landscapes* may contribute to urban open space systems, wherein a unique cultural use, land-tenure system, or cultural belief system is tied to the landscape. There is growing recognition that the most valued and robust cultural landscape traditions are also dependent on the natural heritage of a region, and that these systems are codependent and form a larger *bioregional system* (UNESCO 1995, Brunckhorst 2000, Brown *et al.* 2005). In certain circumstances, bioregions are designated and receive a varied level of protection in Ontario (e.g.,

the Niagara Escarpment Biosphere Reserve and the Frontenac Arch). A bioregion may include urban and rural landscapes.

Third, open spaces may be viewed as part of specific functional systems. Notably, many open spaces contribute to *green infrastructure*, by which passive systems mitigate human impacts on the environment. Functional landscape thinking dates back to the Industrial Revolution in England, when urban critics called for parks to become the lungs of the city (Spirn 1985), and to Olmsted's hydrologically-informed design of the Back Bay Fens in Boston, Massachusetts (Spirn 1984). As technology and planning has become more sophisticated, cities are developing stronger green infrastructure strategies as an alternative to upgrading old infrastructure, and to mitigate the impacts of climate change (New York City 2010). Landscapes also function at the ecosystem level; the term *ecological infrastructure* describes landscapes that facilitate biodiversity and create habitat.

Finally, I advance a definition of *urban open space* and *urban open space systems* as a holistic perspective on landscape as a cultural and natural heritage value-system, as well as a component of green infrastructure. In Ontario, there is some contradiction over the use of the term open space: it is used in municipal settings to refer to un-programmed, and often unmanaged, lands. In provincial policy, it may refer to a viewshed in the landscape, as is seen in the term Open Landscape Character in the Niagara Escarpment Plan (Niagara Escarpment Commission 2015). Much of this confusion comes from Canada's dual legacy of planning influence from both the United Kingdom and the United States.

In the second section of the literature review, socio-ecological system theory is introduced. It is argued that the planning and management of urban open space is a socio-ecological system that exhibits the characteristics of non-linearity and self-organization. Finally, the concept of institutional learning is described using socio-ecological system theory.

## 2.1 | Green Systems Terminology

To provide an overview of the main components and functional systems that make up an open space system, key terminologies derived from the Ontario context are discussed. Urban open space systems are interconnected networks of green space, waterways and undeveloped land. Three typologies of urban open space systems - greenways, greenbelts, and parkways - are

defined. Urban open spaces may contribute to natural heritage systems or have cultural heritage significance. Open space systems also provide green infrastructure functions. Although urban open space may include the forms or functions listed above, these concepts are not necessarily inclusive of all urban open space systems. A comprehensive definition of urban open space systems is outlined following this discussion.

### 2.1.1 | Three Typologies: Greenway, Greenbelt, Parkway

Three typologies of interconnected urban green spaces are outlined in this section. Each typology factors into the RHVP case study, although each may be realized at different scales. Greenway is an adaptive term for linear systems of green space at a variety of scales. Greenways particularly factor into the realm of landscape architecture as a designable space with clearly defined social and ecological objectives: the movement of wildlife, the connection of neighbourhoods, and the facilitation of passive recreation along trails. Erickson (2006) defines greenways as linear open spaces along existing natural features or urban infrastructure, such as rivers, railways, canals or roads. They are a key component of open space systems because they have the potential to connect otherwise-isolated green spaces in an urban area. William Whyte (1959) is credited by Little (1990) in *Greenways in America* for first using the term greenway in his description of Philadelphia planner Edmund Bacon's plan for a subdivision in the technical bulletin *Securing Open Space for Urban America*. Bacon and planners are credited with creating "a series of cohesive neighborhood units, with a series of 'greenways' and parks in between" (Whyte 1959, p.23). Since then, advances in knowledge, and particularly the development of landscape ecology theory (Forman & Godron 1986), have considerably broadened the scope of greenway planning and design.

Ahern (1995) has discussed the difficulty in creating consensus for the term *greenway*. In Ahern's critique, such landscape structures are based upon the landscape ecology spatial concept of 'patches and corridors'. Ahern's (1995) survey of the literature suggests that the terms 'ecological infrastructure' or 'ecological networks' are common in European planning, but the terms 'greenway', 'ecological/wildlife corridor' and 'linkage' are more common in North American planning. Terms that deal specifically with the biotic realm, such as 'habitat networks'

or 'riparian buffer' are common to both European and North American planning practice. Table 2.1, adapted from Ahern (1995), deconstructs the terminology applied to greenways.

**Table 2.1: Comparison of Greenway Terminology (Adapted from Ahern 1995)**

<b>Term</b>	<b>Term Usage</b>	<b>Function:</b> Biotic, Cultural, Multi-functional	<b>Scale:</b> Continental, National, Regional, Local	<b>Spatial Basis:</b> Physical, Biological, Cultural
<b>Ecological Networks</b>	Europe	B	C,N,R,L	B
<b>Habitat Networks</b>	Europe North America	B	N,R,L	B
<b>Ecological Infrastructure</b>	Europe	B	C,N,R,L	B
<b>Greenways</b>	North America	B, C, M	R,L	P,C
<b>Wildlife Corridors</b>	North America	B	R,L	B
<b>Riparian Buffers</b>	Europe North America	B, M	R,L	P
<b>Ecological Corridors</b>	North America	B	R,L	P
<b>Environmental Corridors</b>	North America	M	R,L	P
<b>Greenbelts</b>	Europe North America	C	R,L	C
<b>Landscape Linkages</b>	America	B	R,L	B

The greatest difficulty caused by the lack of consistency in greenway terminology is that comparisons, and therefore learning across disciplines and across jurisdictions, are difficult if the function, scale or spatial structure of such systems is not clearly communicated through their terminology. Ahern (1995) proposes an inclusive definition of greenways along the following lines: a primarily linear spatial configuration, linkage at multiple scales, multi-functionality, inclusion of other human uses, and compatibility with other landscape planning systems. The social value of interconnected greenway systems has also been explored in the literature. Researchers have: questioned whether recreational use is compatible with maintaining urban open space corridors for wildlife use (Briffett 2001), investigated how immigrant communities use urban open spaces (Dieterlen 2009), planned for cultural diversity in urban wilderness

(Hester *et al.* 1999), and critically analyzed the accessibility of urban nature through the perspective of environmental justice (Whitehead 2009).

Many of these themes have been echoed by other researchers. Little (1990) wrote that greenways may be formed from waterways, waterfronts, recreational corridors, ecologically significant corridors, historic routes, or other systems and networks. An ecological framework for urban river greenways developed by Baschak and Brown (1995) suggests an integrated approach to greenway planning is needed to relate ecological knowledge to the planning, design and management process. This concern for the disconnect between ecological knowledge and planning practice was repeated by Opdam and Steingröver (2008), who argued that the reason that ecological knowledge has not been more widely applied to landscape planning is because of the complexity of metapopulation ecology. The multi-function component of greenways was reinforced by Searns (1995), who identified three generations of greenway planning: the first being conventional boulevards and parkways; the second, trail-oriented and recreational; and the current generation of projects being multi-objective greenways that tie together green infrastructure, habitat creation, and education. Erickson (2004) reinforced the argument that historic parkways and greenbelts built in the early 20th century have become the physical framework of modern greenway planning. Taylor *et al.* (1995) outlined a concurrent evolution of greenway planning in four major Canadian cities, from a greenbelt approach to a more integrated greenway planning approach. In this model, successful greenway projects operate within an appropriate scale and function framework, maintain biodiversity but incorporate human use, engage local citizens, and have a realistic implementation and management strategy.

The concept of the greenbelt has appeared several times in this discussion of greenways. It is presented as a greenway system in Ahern's analysis (1995). In Taylor *et al.*'s comparative study (1995), a greenbelt is a specific, and sometimes limited, planning approach that can evolve into a more complex landscape-planning strategy. In Canada and the United Kingdom, greenbelts have a specific role as an urban growth boundary, but the sophistication of the planning mechanism varies widely between cases. Greenbelts as a growth planning strategy are rarely used in the United States, where the creation of a greenbelt would require the public or non-profit acquisition of open space, or acquisition of development rights; instead, cities in the United States must employ multiple complementary policy instruments to manage urban growth and protect open space (Bengston *et al.* 2004).

The current greenbelt model originated in the Garden City Movement in Great Britain. Greenbelts may be defined as connected bands of open space that surround cities. They contain public and private land, and rely on development restrictions to preserve their open space character (Erickson 2004). In Ontario, there are two significant greenbelt systems: the Ottawa Greenbelt in the National Capital Region, and the Greenbelt surrounding the Greater Toronto Area. Therefore, the role of the greenbelt as an open space planning mechanism, for the purpose of this research, is understood as it exists within Ontario's planning context.

Ontario's Greenbelt Plan identifies a continuous band surrounding the Greater Toronto Area where development should not occur "in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring on this landscape" (Ontario Ministry of Municipal Affairs and Housing 2005). The main designation for this land is Protected Countryside, a term that connotes a specific biocultural landscape type, wherein a distinctive historical and ecological connection form holistic systems based on land tenure, land use patterns, production, and cultural identity (Pungetti 2013). Although the focus of the Greenbelt Plan is on rural lands adjacent to developed areas, components of the protected areas are also along the Niagara Escarpment and river valleys that protrude into or bisect urban areas. As such, in this context a greenbelt can be understood as both a regional growth strategy mechanism and as an urban green space typology.

As greenbelts age and planning priorities evolve, new strategies may be necessary to ensure that these types of green systems are providing for ecological and social needs; the theoretical framework of green infrastructure, which is discussed later in this literature review, is proposed as a 'soft' governance alternative to the hard development boundary lines of a greenbelt (Thomas & Littlewood 2010). In Sydney, Australia, both a greenbelt and a green 'web' strategy (similar to a greenway system) were employed in the mid-20th century to create an open space system; the green web strategy succeeded because it was more "organic and responsive" to landscape conditions (Evans & Freestone 2010, p.238). The evolution of greenbelts to more complex greenway planning strategies, as described by Taylor *et al.* (1995) and Erickson (2004), is common throughout the world. In Ontario, the Ottawa Greenbelt, originally conceived in the Gréber Plan for the National Capital (1950), originated as a multi-use urban growth boundary; however, leap development in the nearby town of Kanata has meant that this system functions more as a park system and greenway today.

Nonetheless, the greenbelt as a planning strategy continues to this day and, with the creation of the Greater Toronto Area Greenbelt, is applied at increasingly larger scales. Macdonald & Keil (2012) argue that the Greenbelt is an act of 'scaling-up' the existing regional land-use regulation in Ontario, through a process they describe as extended metropolitanization, meaning that the Province has reclaimed the realm of regional planning in the Toronto bioregion. Clearly, in the case of the Greater Toronto Area Greenbelt, this is a component of a larger, provincially-driven urban growth management strategy that is managed in partnership with the Places to Grow Act, and not a traditional green space urban growth boundary as implemented by individual municipalities. While still a greenbelt, Ontario's implementation of this strategy represents a re-definition of the term in planning practice.

As argued by Taylor *et al.* (1995), Erickson (2004) and Evans and Freestone (2010), the traditional planning strategy of greenbelts has often evolved into a more complex greenway planning strategy. Parkways, defined as a roadway for leisure driving that functions as a visual continuation of the countryside, have also evolved to become part of a large green-space planning strategy. Parkways typically were designed with a broad right-of-way to enable recreational uses and the preservation of open space lands (Erickson 2004). In the United States, Robert Moses vigorously promoted the construction of parkways as recreational amenities and as a mechanism of efficient modern city planning (Caro 1974). Over time, as highway speeds increased and roadway widths were widened, many parkways lost their countryside and leisure-driving character; the evolution of the Queen Elizabeth Way (QEW) in Ontario is an example of this phenomenon (van Nostrand 1983, Nash 2011). In many circumstances, the parkways that were planned in the early 20th century form the spatial framework for urban greenway and open space systems today (Erickson 2004). In this way, historic city form is a determining factor in a city's ability to grow its urban open space system.

The United States has a strong tradition in parkways being built and maintained as a component of open space systems. In the United States, parkways were designed based on aesthetic principles – e.g., Myers (2004) discusses the influence of normative art theory on the landscape architects who designed the Blue Ridge Parkway in North Carolina and Virginia in the United States. In Ontario, the parkway movement appears to have been much less established. The Niagara Parkway is one key example; it is a scenic road that functions as a linear corridor, linking many of the assets of the Niagara Parks Commission (Moriyama & Teshima Planners

Ltd. 1999). In Ontario, the term parkway is not an official designation for a roadway; rather, it is a title that is occasionally applied to freeways (controlled-access roads), expressways (limited-access roads) and other roadways. Due to this loose terminology, there may or may not be a significant open space component to nominal 'parkways' in Ontario. Nonetheless, the idea of a roadway offering scenic, recreational and ecological value to a community has been adopted in the Ontario context, and the legacy of leisure roadways such as the Queen Elizabeth Way are still visible in the urban fabric.

Greenways, greenbelts and parkways are three spatial typologies that form the majority of an urban open space system. Other isolated forest remnants and programmed park lands may contribute to a city's open space; however, they may not be interconnected in the same manner as a greenway, greenbelt or parkway. As evident from the discussion above, there is a great deal of overlap regarding what constitutes a greenway, greenbelt or parkway, and in many cases one typology may evolve into another. These three typologies outline a structural argument for urban open spaces; however, landscapes are also part of larger ecological and cultural systems. To understand the value-systems approach to land designation and management of open space, two planning terms are discussed: natural heritage systems and cultural heritage landscapes.

### 2.1.2 | Landscape as Value-System

In Ontario's land planning framework, the concept of landscape as a system is a recent addition to provincial policy language. This integration of a landscape systems theory approach was discussed by Pollock-Ellwand (1997), in which she coined the *landscape idea*. Planning for the landscape idea introduced two key terms into Ontario's planning language: natural heritage systems and cultural heritage landscapes. The idea of landscape as a physical impression of *heritage*, either natural or cultural, and the implications of the use of heritage are discussed. Additionally, the origin, use, and theory surrounding these two terms are considered.

Natural heritage systems have been adopted as a municipal planning strategy endorsed by the Province under the Provincial Policy Statement (PPS). Natural heritage conservation was introduced in the 1995 PPS, and the concept of natural heritage systems was more fully realized in the 2005 PPS. In Ontario policy, a natural heritage system is defined as:

a system of connected or to be connected green and natural areas that provide ecological functions over a longer period of time and enable movement of species. Natural heritage systems encompass or incorporate natural features, functions and linkages (also referred to as "corridors") as component parts within them and across the landscape. They also enable the linking of different landscapes (Ontario Ministry of Natural Resources 2010, p.15).

The Province published a green paper on the natural heritage of the settled landscapes of southern Ontario, which reviewed how ecological concepts can be applied to land-use planning and landscape design to increase ecological function (Riley & Mohr 1994). Leading up to Riley and Mohr's green paper, Forman and Godron's (1986) work on landscape ecology established a groundwork of theory that enables researchers and land planners to more effectively address the challenge of maintaining ecological function while accommodating the needs of humans in the landscape (Ahern 1991). Informed by landscape ecology theory, Riley and Mohr's paper contributed significantly to the development of natural heritage systems in southern Ontario. Riley and Mohr consider area, size, shape, the need to retain core lands and waters, the protection of corridors and linkages in the countryside, and various approaches to monitoring and managing the settled landscape for ecological function. A core component of this study was the need to plan for natural heritage systems, as it is not sufficient to create island reserves in the landscape. Protected areas (or patches) must be linked by nodes and corridors to maintain healthy wildlife populations. The approach outlined in Riley and Mohr's green paper was eventually adopted as a planning mechanism by the Province.

The term natural heritage may have originated in United States President Lyndon Johnson's Special Message to Congress on *Protecting Our Natural Heritage* (1967), in which he advocated for beautifying highways, conserving natural resources, and creating parks, wilderness areas, trails and recreation areas. Within these broad objectives is the acknowledgement that America was bestowed with a *natural* heritage, of which the American people should strive to be better stewards. It is this same term that Riley and Mohr employed to describe the ecologically significant areas of southern Ontario, and it has since been adopted in Ontario policy language. Since the publication of the green paper, the Ontario Ministry of Natural Resources (OMNR) has developed a rigorous methodology for natural heritage system design (Puric-Mladenovic & Strobl 2012). At the municipal level, Ontario cities are expected to employ the Natural Heritage System Design Manual to design a natural heritage system described within the Official Plan

(Ontario Ministry of Natural Resources 2010). The design of this system may utilize existing publicly-owned parks and open space lands, in addition to other ecologically-significant lands. As such, a municipal natural heritage system may form part of a city's open space system. A systems approach to natural heritage conservation has also been employed in British Columbia, the United States, and Australia (Ontario Ministry of Natural Resources 2010).

In addition to natural heritage, Pollock-Ellwand (1997) also identifies cultural heritage landscapes as a product of planning for the landscape idea. Cultural heritage landscape is defined as a "geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Aboriginal community" in Ontario planning policy (Ontario Ministry of Municipal Affairs and Housing 2014, p.40). Cultural heritage conservation in Ontario has traditionally been focused on the preservation of old or distinct structures. Tangible cultural objects are where culture is clearly recognized and more easily conserved: a house or a bridge is a tangible object of culture that can be preserved and repurposed. However, this approach omits the environmental context of cultural heritage, or how culture and landscape interplay and interrelate to create meaning. The introduction of the Heritage Conservation District toolkit in 1975 under the Ontario Heritage Act attempted to address the issue of context and regional character. In the mid-1990's, cultural heritage landscapes were also added to the PPS as resources that merit conservation. In this way, cultural heritage landscapes represent a systems approach to heritage conservation because they acknowledge that cultural value is interdependent on social, cultural, economic, historical, and environmental factors. Although Heritage Conservation Districts may be used at a variety of scales and contexts, it is almost exclusively used in urban areas to preserve built features. The first rural example, to preserve an historic farming community in Buxton, Ontario, of African-Americans who fled slavery in the United States, is still under review (Pollock-Ellwand 2006, Ontario Heritage Trust 2013).

Natural environments, such as the Grand River or the Niagara Escarpment, have also been described as heritage features (Canadian Heritage Rivers System 2011, Preston 2003). In this way, a cultural heritage designation can be an additional mechanism for protecting and valuing green systems and natural features. The dual acknowledgement of landscapes as having cultural and natural heritage significance suggests a growing awareness of the interdependence of nature and culture in creating sustainable landscape systems (Antrop 2006). A further

conceptual leap in the integration of natural and cultural resources as a sustainable landscape management strategy is found in bioregional landscape planning.

Bioregional landscape planning originated in the environmental movement of the 1970s and 1980s, when innovative planning and conservation strategies, such as UNESCO's Man and the Biosphere Programme, were developed in addition to the advancement of landscape planning theory (McHarg 1969, Lyle 1985, Forman & Godron 1986, Steiner 1990). Bioregions are defined as an area of "similar landscape ecosystems with which local human communities identify because of how they see it, use it, and what it produces for them" (Brunckhorst 2000, p.33). Brunckhorst (2000) and Pungetti (2013) clearly recognize a strong socio-cultural and spiritual dimension to bioregions. Brunckhorst (2000) argues that bioregions are in fact biocultural landscapes, in which human governance is integrated within ecological systems. Biocultural landscapes are areas characterized by a distinctive historical and ecological connection, which form holistic systems based on land tenure, land use patterns, production, and cultural identity (Pungetti 2013). While primarily concerning the regional scale, bioregional landscapes intersect the urban fabric, such as the case of the Niagara Escarpment (a UNESCO biosphere reserve) through Hamilton, Ontario.

A systems approach to landscape planning is seen at the local scale through cultural heritage landscapes and municipal natural heritage systems, and carried through to the regional scale through bioregional planning strategies such as the Niagara Escarpment Plan and the Oak Ridges Moraine Conservation Plan. These strategies represent a relatively recent development of the landscape idea, as described by Pollock-Ellwand, within Ontario's regional planning framework (1997). A more recent development in Ontario's planning framework is the recognition of landscapes as functional systems.

### 2.1.3 | Functional Landscape Systems

Urban woodlands, parks, and other green spaces are recognized as functional systems that provide an alternative management strategy for water management, urban cooling, urban ecology, and recreation. Collectively, landscapes that provide these passive services are referred to as *green infrastructure*. Urban open space systems contribute to part of a city's green infrastructure.

Ahern (2007) defines green infrastructure as a hydrological drainage network that links relict green spaces with built infrastructure to provide a range of hydrological, climatological, ecological and cultural functions. This network may be comprised of parks, fields, urban wetlands, rooftops, vacant lots, waterways, canals, and hydro corridors within the urban matrix; therefore, there is significant overlap between urban open space systems and green infrastructure systems. Ahern's use of the term green infrastructure also implies an ecological component, although this is not always an objective of green infrastructure system planning in practice (New York City 2010).

#### 2.1.4 | Urban Open Space Systems

Urban open space systems have the potential to combine the physical typologies of linked urban green spaces (greenways, greenbelts and parkways), with functional landscape systems (cultural heritage, natural heritage, and green infrastructure services). As evident in the review of the literature, there is no universally accepted term for interconnected urban green space systems. These systems have the potential to contribute to cultural heritage, recreational systems, natural heritage, and biological/hydrological functions, but they are not necessarily inclusive or exclusive of these terms. Instead, open space systems can be used as a planning strategy to create multi-functional green networks that provide a variety of socio-ecological services to urban communities.

The concept of urban open space as a unifying term has been explored by Thompson (2002), who suggests that an open space planning framework allows for flexibility in land designation by recognizing the social and ecological value of linking 'loose-fit' landscapes. Ahern (1991) describes open space as land "left unbuilt as fields and forests" (p.131), and suggests planning for open space systems using the principles of landscape structure and function, rather than relying on the accidental creation of these systems based on external land-use controls or existing property boundaries. McHarg (2014[1998]) has written about the need to preserve open spaces, as normal urban growth does not provide for these systems.

The structure of urban open space systems has also been discussed in the literature. Several open space typologies have been advanced, and are organized by the parameters of scale,

social-value, or ecological value (Tankel 1963, Hough 1990, Swanwick *et al.* 2003). These typologies are summarized in Table 2.2.

Therefore, there is currently an unrealized potential to use 'urban open space systems' as a broad conceptual framework for unifying the planning of all types of green systems at the urban scale. This approach borrows from components of the progressive regional planning of Olmsted, Patrick Geddes (1968[1915]) and Lewis Mumford (1938). The common thread between these theorists is that they attempted to reconcile an Arcadian view of nature as fragile and threatened by humans, with the imperialist view of humans having dominion over nature (Spirn 1985). Olmsted in particular took up Marsh's (2003[1864]) call to reconstruct nature's 'damaged fabric' in the city. Olmsted's collaboration with sanitary engineers on projects such as The Fens and The Riverway in Boston established a new functional foundation of urban open space as green infrastructure (Spirn 1985). Geddes and Mumford made significant general advances to planning theory, in that they were effective in drawing attention to the deficit of nature in city design, but were not wholly effective as prescribers of solutions to this problem. Unlike Howard (2014[1898]), who advocated for greenbelt suburbs and new towns which did little to truly integrate natural processes into the city fabric, Geddes recognized that a regional and holistic approach was needed instead of Howard's segregated approach. Mumford made general observations of the city, but did not reconcile the urban-nature gap in practice (Spirn 1985). Lynch (1981) was heavily influenced by these theorists in his analysis of city form, through which he advocated for urban design that makes natural processes visible and legible. McHarg (1969) used a regional system approach to develop his overlay methodology for identifying opportunities and constraints in regional development, outlined in *Design with Nature*.

**Table 2.2: Urban Open Space System Typologies**

<b>Typology System</b>	<b>Parameters</b>	<b>Components</b>	<b>Citation</b>
Scale	<ul style="list-style-type: none"> <li>• Size</li> <li>• Regional Value</li> </ul>	<ul style="list-style-type: none"> <li>• Street (yards and courts)</li> <li>• Community (parks, playfields, ponds, streams)</li> <li>• County (parks, golf courses, conservation areas, flood plains, watersheds, wildlife refuge, lakes and rivers)</li> <li>• Region (large parks, large conservation areas, farms, woodlands, coastlines, great rivers)</li> </ul>	Tankel (1963)
Ecological Value	<ul style="list-style-type: none"> <li>• Level of Maintenance and Intensity of Use</li> <li>• Sensitivity to Disturbance</li> </ul>	<ul style="list-style-type: none"> <li>• Paved Surfaces (plazas, squares, streets)</li> <li>• Hard Surfaced Sports Facilities (courts, pools, playgrounds)</li> <li>• Turf Sports Facilities</li> <li>• High and Low Maintenance Parkland (gardens, parks, golf courses, ravines)</li> <li>• Naturalizing Areas (abandoned sites, vacant lots, reforested areas)</li> <li>• Remnant Natural Areas (rivers, wetlands, mature forests)</li> </ul>	Hough (1990)
Social Value	<ul style="list-style-type: none"> <li>• Recreational Value</li> <li>• Degree of Access</li> <li>• Frequency of Use</li> </ul>	<ul style="list-style-type: none"> <li>• Linear Green Space</li> <li>• Semi-Natural Habitats (wetlands, woodlands)</li> <li>• Functional Green Spaces (productive lands, burial grounds, institutional lands)</li> <li>• Amenity Green Space (recreation area, incidental space, private green space)</li> </ul>	Swanwick <i>et al.</i> (2003)
Integrated System	<ul style="list-style-type: none"> <li>• Degree of Connectivity and Neighbourhood Permeability</li> <li>• Patch Size and Form</li> <li>• Degree of Community Stewardship and Value</li> <li>• Resilience and Ability to Incorporate Landscape Change</li> </ul>	<ul style="list-style-type: none"> <li>• Working and Natural Forests</li> <li>• Rangelands and Grasslands</li> <li>• Farms and Ranches</li> <li>• Parks</li> <li>• Stream and River Corridors</li> <li>• Other Natural Lands within Rural, Suburban, and Urban Areas</li> </ul>	USDA (2015)

Modern iterations of these regional system planning approaches fall under a range of terms: ecosystem planning, ecological planning, watershed planning, and bioregional planning. All of these planning systems call for a collaborative, multi-disciplinary and multi-jurisdictional approach at a bioregional or watershed scale (Tomalty *et al.* 1994). From an urban design perspective, this approach is most succinctly stated by Hough (1995) in *Cities and Natural Process*. Landscape architects have developed theory that contributes to this planning approach by developing frameworks for site-scale work that contributes to larger ecological processes, generally called Urban Ecological Design (Ahern *et al.* 2006, Rottle & Yocom 2010, Palazzo & Steiner 2011, Way 2015). I propose that urban open spaces and urban open space systems are the products of successful integrative ecological planning and urban ecological design approaches in practice; however, the significant challenge of defining and understanding such a loose term as urban open space still remains. This leads to the second component of the literature review, where a critical evaluation framework of urban open space systems using socio-ecological system theory is outlined.

## 2.2 | Urban Open Space as Socio-Ecological System

Socio-ecological system theory is an attempt to bridge the understanding between the social sciences and natural sciences. Adherents of this theory argue that the distinction between social and ecological systems is arbitrary and inhibits environmental problem-solving. Essentially, a socio-ecological system is made up of biophysical components and social and institutional actors. Berkes *et al.* (2003), in *Navigating Social-Ecological Systems: Building Resilience For Complexity and Change*, outline a framework for understanding socio-ecological systems as complex systems. A complex system is a system with many interacting processes and agents whose behaviours are non-linear and exhibit self-organization. Many environmental problems can be understood as complex systems with natural and social components; therefore, the solution to these problems requires an interdisciplinary approach (Berkes *et al.* 2003). Our understanding of complex systems evolved from general systems theory; complex systems are distinguished from simple systems through their non-linearity, uncertainty, emergence, scale, and self-organization (Berkes *et al.* 2003). As a result, predictive descriptions of these systems are

highly difficult to achieve, and qualitative approaches are necessary to create a useable adaptive management strategy.

Socio-ecological systems are the product of ecological systems and the socio-political processes of governance, property law, institutions, and local knowledge. Berkes *et al.* (2003) posit the concept of *resilience* as the degree of change that a complex system can absorb without a dramatic change to that system's equilibrium; such systems operate within thresholds, beyond which change may be irrevocable. In practice, the degree of resilience in a socio-ecological system will determine how a society may adapt to a significant external change. Thus, we can design to ensure resilience in our systems of governance and ecological management in order to withstand significant external environmental crises.

The dynamic components of socio-ecological systems are disturbance, diversity, knowledge, and self-organizations. These concepts are expanded upon in Table 2.3.

**Table 2.3: Dynamics of Socio-Ecological Systems (Adapted from Berkes *et al.* 2003)**

<b>Element</b>	<b>Description</b>	<b>Relevance in Urban Open Space Systems</b>
Disturbance	<ul style="list-style-type: none"> <li>• Social or ecological change, such as a change of political regime or global climate change</li> </ul>	<p><b>Social:</b> broad policy change, politically-driven planning change</p> <p><b>Ecological:</b> climate change, large urban infrastructure projects (transportation systems, stream channelization), invasive species invasion</p>
Diversity	<ul style="list-style-type: none"> <li>• Social and ecological diversity informs adaptive responses to change</li> </ul>	<p><b>Social:</b> diverse community use, environmental activism</p> <p><b>Ecological:</b> conservation, restoration, biodiversity planning</p>
Knowledge	<ul style="list-style-type: none"> <li>• Ecological and local knowledge informs institutional learning and management practice</li> </ul>	<p><b>Social:</b> local knowledge, traditional indigenous knowledge, challenges to existing technocratic processes</p> <p><b>Ecological:</b> citizen-led science, nature conservation organizations</p>
Self-organization	<ul style="list-style-type: none"> <li>• Institutional and societal self-organization is an emergent property of the complex system, the system will reorganize at critical points of instability</li> <li>• The memory of the system enables the renewal process</li> </ul>	<p><b>Social:</b> reclamation of open space as public space</p> <p><b>Ecological:</b> overloading and failure of grey infrastructure, emergence of resilient, spontaneous plant communities, wildlife in urban areas</p>

Urban open space systems can be understood as complex systems. The social and ecological processes that determine how remnant open spaces are conserved, protected and planned for urban areas are complex, non-linear and self-organizing. With respect to the dynamic components of socio-ecological systems, the distinct elements of urban open space systems are described below.

Disturbance in urban open space systems may occur through governance (such as broad-range policy change, or significant changes in the politically-driven component of the urban planning process). This may have the effect of interrupting the continuity of open space systems, or reducing their integrity in the landscape. Ecological and environmental disruption may occur through large infrastructure projects, climate change, or exotic species invasion.

Social diversity in these systems is achieved through a wide community user base and interest through grassroots environmental activism (Lukasik 2002). Ecological diversity may be achieved through landform conservation, urban ecological restoration, and biodiversity planning (Riley 1998, Ontario Ministry of Municipal Affairs and Housing 2002).

Local knowledge in urban open space systems has taken a renewed relevance in challenging the status quo of a highly technocratic and bureaucratic approach to environmental problem solving (Richardson *et al.* 1993, Fischer 2000, Patano & Sandberg 2005). Specifically, this has taken the approach of challenging the traditional process of Environmental Assessment, and the demand of a more inclusive and expansive approach to assessment.

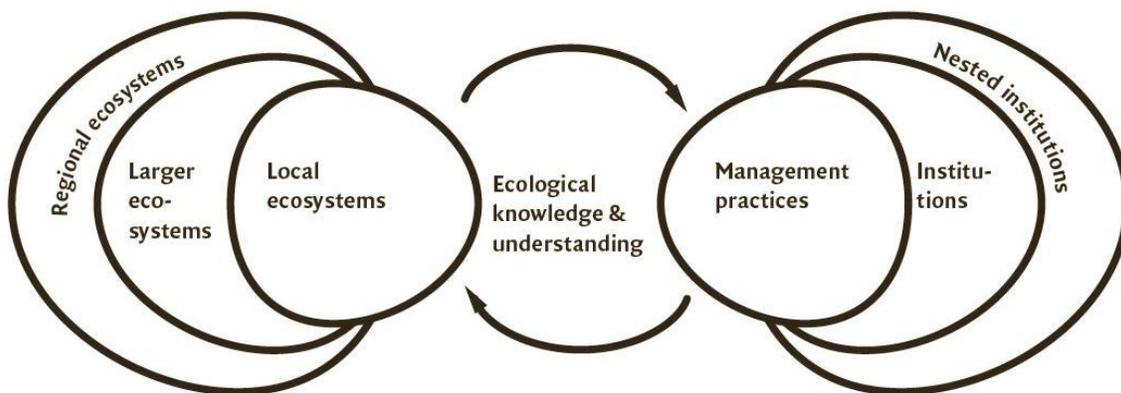
Self-organization in ecological systems is observed through the overloading and failure of grey infrastructure (e.g., flooding), the emergence of spontaneous resilient plant communities on vacant lands, or the use of city park lands by wildlife (Ahern 2007, Del Tredici 2010, Robinson & Lundholm 2012, Kremer *et al.* 2013). Social self-organization can be seen in the social reclamation of open space for recreation or other social organizations. In an ideal case, the tendency for these systems to self-organize in a way that is contradictory to planning intent should be an opportunity for institutional learning and new adaptive management strategies.

Hence, urban open space systems can be understood as a specific type of complex system: a socio-ecological system. In *The Granite Garden*, Spirn (1984) argues that cities are socio-ecological systems that are inherently governed by natural processes. Environmental crises occur when people ignore these inherent and historical processes, resulting in flooding, landslides and air pollution. Spirn states that cities are systems "sustained by massive

importation of energy and materials," and that "the changes [cities] produce in the air, earth, water, and life within and around them trigger environmental problems" that affect quality of life (1984, p.13).

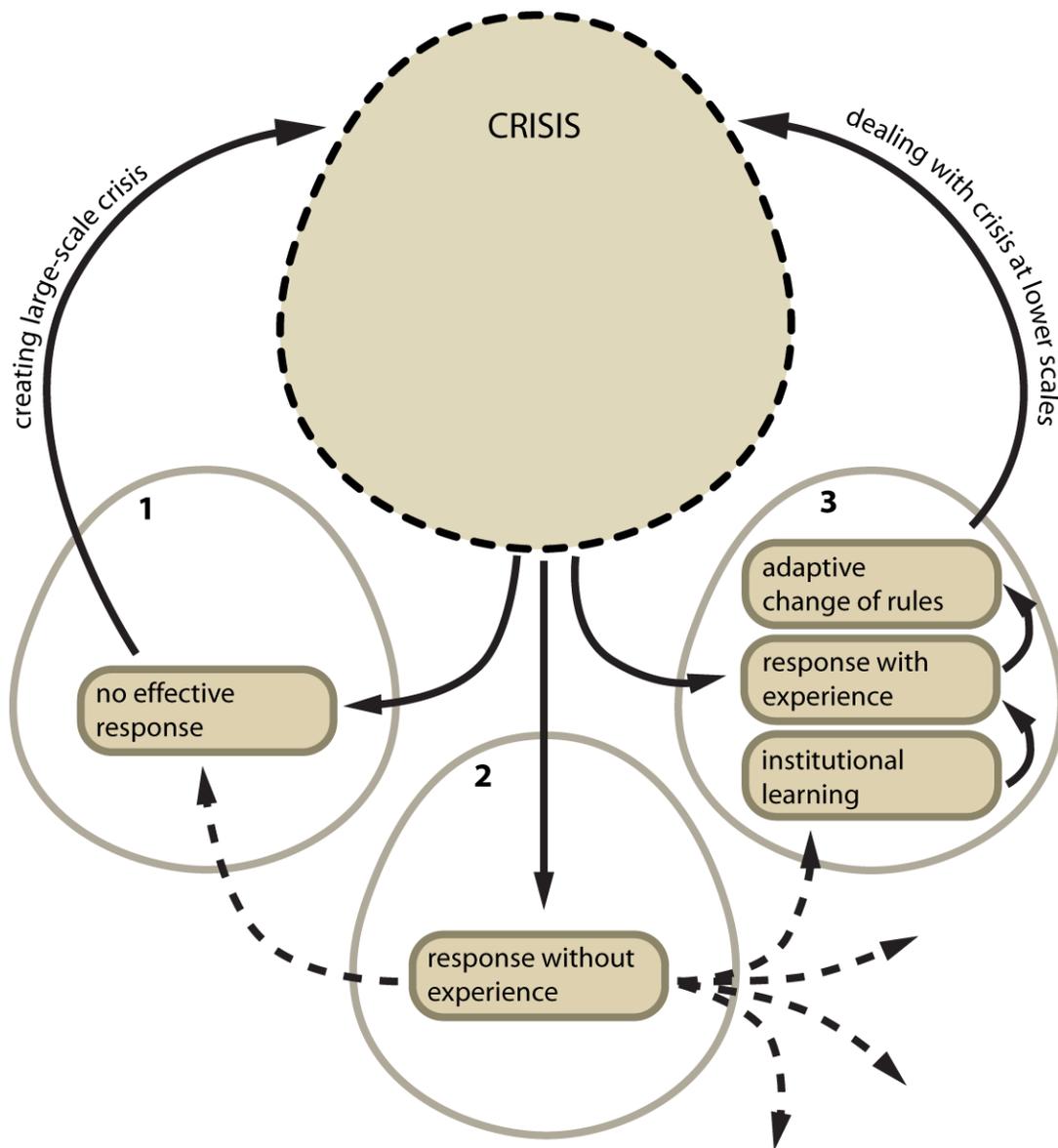
Urban open space systems are used, through natural processes, to manage urban wildlife, withstand floods, and mitigate and avoid other crises. Spirn (1984) suggests an adaptive design and management strategy for parks, open spaces, wetlands and waterways in the city that reads like a precursor to the concept of green infrastructure. She also proposes the design of urban wildlife corridors using theory from island biogeography and early iterations of landscape ecology (Spirn 1984). Design for flood control and wildlife habitat is best realized holistically through urban open space system planning. Hough (1995) presents a similar argument in *Cities and Natural Processes*, in which he advocates ecologically-informed city design to improve the natural management of water systems and wildlife systems using an open space typology.

A key component of socio-ecological system theory is institutional social learning, codified through policy development. Figure 2.1 illustrates how local ecosystems, which are nested within larger regional-scale ecosystems, provide feedback through infrastructure failure or habitat loss to social systems. These social systems, which determine management practices, are nested within larger institutions. Through institutional learning and the acquisition of ecological-based knowledge, social systems respond to environmental feedback through more informed management practices, which ideally build resilience in the ecological system and strengthen the links between social management practices and ecosystem behaviour.



**Figure 2.1: Illustration of the Links Between Ecosystems, Knowledge, and Institutions (Berkes *et al.* 2003, p.22)**

Socio-ecological system theory can be used to understand how institutions respond to environmental crises. In Figure 2.2, three possible responses to an environmental crisis may occur: (1) the institution may have no effective response, thereby creating a potential large-scale crisis; (2) there may be a response, but without experience the result of this action is uncertain; (3) the institution uses past experience to respond to a crisis, which leads to institutional learning and adaptive management changes. Through iterative responses to the crisis and policy adaptation, the crisis can be dealt with at a lower scale.



**Figure 2.2: Three Generic Responses to Environmental Crises (Berkes *et al.* 2003, p.359)**

Socio-ecological system theory provides a framework through which environmental policy development can be better understood. If we accept that an urban open space system, and the institutional policy environment that determines the planning and management of these spaces, is a specific type of socio-ecological system that displays the properties of nonlinearity, emergent behaviour, hierarchical nested organization by scale, and self-organization, it becomes possible to model these systems and predict their behaviour (Berkes *et al.* 2003). This framework allows us to describe urban open space systems, map their evolution over time, map the various elements that determine their behaviour, and critically analyse how social and institutional actors respond to environmental crises at a variety of scales.

The key analytical element is the concept of institutional learning, which can be tested by evaluating how policy evolves and adapts to external inputs. This theoretical framework is carried throughout the remainder of this paper, where it is employed to determine whether institution learning occurred in the management and planning of a specific urban open space system, the Red Hill Valley in Hamilton, Ontario.

This chapter has presented the literature on green systems in Ontario planning, proposed a definition for urban open space systems that is informed by the literature, and outlined socio-ecological system theory. The next chapter outlines the three methods used for this research: a systematic policy analysis, a case study analysis, and an evaluation of the contributions of the case study to the evolution of open space planning.

## Chapter 3 | Methods

The following chapter outlines the methodological approach for the research. To answer the research question, three research objectives are proposed: a policy analysis, a case study, and an evaluation of policy using a socio-ecological system theory approach. A set of policy indicators is developed for assessing the performance of land-use policy that informs urban open space planning. Furthermore, the organization of the case study method and the selection process for key informants is described. Finally, the approach for the policy evolution study is outlined.

### 3.1 | Research Question and Methods Overview

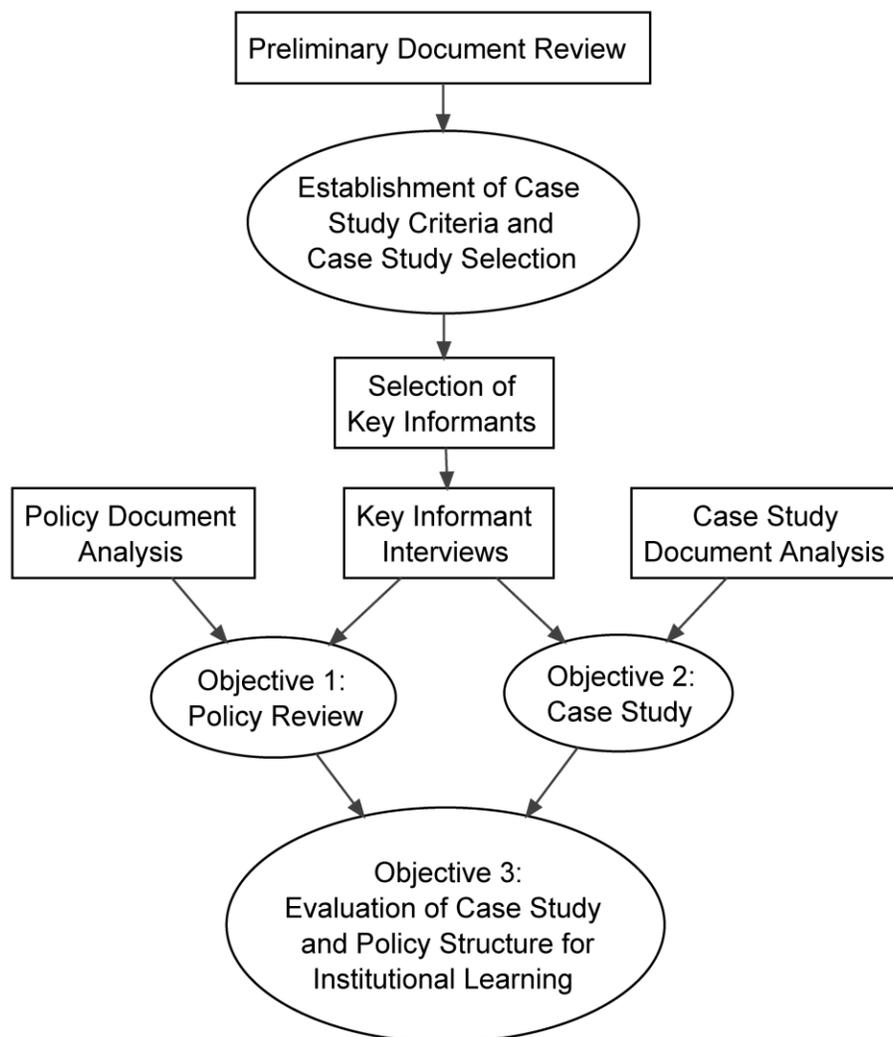
#### **Research Question:**

How has the Red Hill Valley Project contributed to the evolution of open space planning policy in southern Ontario?

**Table 3.1: Research Objectives**

<b>Objective</b>	<b>Method</b>
<b>1) Policy Analysis:</b> To assemble and evaluate policy that guides the development of urban open space systems in Ontario.	Systematic review of Ontario policy documents and publications.
<b>2) Case Study:</b> To assess the implementation of the current open space planning framework through an investigation of a specific planning case study (Red Hill Valley Project in Hamilton, Ontario).	Develop a timeline that illustrates landscape change in the valley system, and describe the relationships between stakeholder groups in the valley through an archival document analysis. Interview key informants to describe the urban open space planning process for the Red Hill Valley Project within the context of Ontario's planning policy.
<b>3) Policy Evolution:</b> To determine if institutional learning has occurred in Ontario's planning practice as a result of the Red Hill Valley Project.	Apply socio-ecological system theory in the analysis of changes in Ontario's policy framework for urban open space system planning throughout the duration of the Red Hill Valley Project and after Project completion.

The overall research design is described in Figure 3.1. A preliminary literature and document review was employed to establish the criteria for case study selection, and a group of potential key informants were identified. Key informant interviews were undertaken, in addition to a policy document review and archival document analysis of reports and literature on the Red Hill Valley Project. The results of these studies informed the urban open space policy review and the Red Hill Valley Project case study. Results from the policy review and case study were compared to find evidence of institutional learning and assess whether current policy development was informed by the learning from the Red Hill Valley Project.



**Figure 3.1: Research Design**

### 3.2 | Objective 1: Policy Analysis

A systematic review of the policy literature is conducted to describe the current planning structure in Ontario as it relates to urban open space systems. There is no stand-alone, overarching urban open space system strategy in Ontario; therefore, a range of policy law, regulations, and programs are consulted. A general policy evaluation framework has been developed for the policy review, based on a general environmental policy evaluation framework developed by Mickwitz (2003). This framework (see Table 3.2) considers three realms of policy impact: general performance, economic efficiency, and democratic performance. These parameters have been adapted to suit the criteria for urban open space planning, and tailored for the purpose of this study.

**Table 3.2: Policy Evaluation Framework (Adapted from Mickwitz 2003)**

<b>Policy Realm</b>	<b>Parameters</b>
General Criteria	Relevance Impact Effectiveness Persistence Flexibility Predictability
Economic Criteria	Efficiency: Cost-Benefit Cost-Effectiveness
Democratic Criteria	Legitimacy Transparency Equity

Using the above framework, a number of policy indicators were developed for the purpose of this research. The policy indicators are scale, applicability to open space planning, ability to promote open space systems, adaptability, permanence, and transparency. These indicators were developed using information from existing environmental policy analysis, literature on open space planning, and literature on policy analysis. The concept of *relevance* has been expanded to create an indicator that describes the degree of impact on open space planning, and to create another indicator to indicate how well the policy describes the functional and management components of urban open space systems. The concept of *impact* has been expanded to describe the scale and range of the policy's reach. The concepts of

*flexibility, persistence, effectiveness, and predictability* have also been adopted from Mickwitz (2003). In particular, effectiveness describes whether a policy is proactive or reactive when responding to environmental planning issues. The economic criteria proposed by Mickwitz (2003) have not been adapted as a policy indicator because economic analysis is beyond the scope of this research. Finally, the democratic criteria proposed have been collapsed into a single indicator to assess the amount of public participation and input in the planning process. A full description of each indicator is listed in Table 3.3.

**Table 3.3: Policy Indicators (Adapted from Mickwitz 2003)**

<b>Indicator</b>	<b>Description</b>
Scale and Range of Impact	Scale: Provincial, Regional, Municipal Range: Location Specific, Ontario-wide
Capacity to Respond to Environmental Problems	Proactive, Regulatory, or Reactive
Applicability and Relevance to Open Space Planning (Direct or Indirect)	Direct Impact: Advocates for Urban Open Space Systems Indirect Impact: Urban Open Space Systems may benefit from this policy
Open Space System Management and Function	Does the Policy Consider: Patch Size, Creation of Linkages, Management Regime, Ecological/Watershed Function
Adaptability/Flexibility, Frequency of Review	Adaptability: Can the policy meet a range of planning needs? Frequency: How often is the policy reviewed?
Permanence and Predictability	Permanence: How effective is the protection afforded by policy? Predictability: Is the policy uniformly implemented across the Province?
Transparency and Degree of Public Input	Public Input: Are there opportunities for public comment? If so, how effective is the public consultation?

These policy indicators are used to evaluate and contextualize relevant Ontario policies in Chapter 4.

### 3.3 | Objective 2: Red Hill Valley Project Case Study Process

A suitable case study was chosen to examine how policies that impact urban open space system development are implemented in practice. To select a relevant and pertinent case study,

a cross-sectional analysis of major Ontario cities was performed (see Appendix A). This analysis divided cities into 4 classes: Historic Major Cities, Historic Amalgamated Cities, Inter-War Cities, and Modern Cities. These classes of cities were chosen based on the dates when the cities were incorporated. The economic and demographic needs of cities that were incorporated before WWI (Historic Major Cities) are different than those of Modern Cities, which were incorporated after WWII. These classes represent general large-scale changes in approaches to city building over time. For the purpose of this research, Historic Major Cities form the focus of this inquiry. These Historic Major Cities were incorporated as cities before WWI, and currently have over 100,000 inhabitants. All of these cities have historic city plans that outline green space systems (see Appendix A), and the evolution of these green space strategies over time allows for an analysis of policy development throughout the 20th and early 21st century. These cities were: Toronto, Hamilton, Ottawa, Kitchener, London, Kingston, Guelph, Windsor, Barrie, and St. Catharines. In these cities, historic and contemporary plans for major green space systems are listed (Appendix A).

Out of this analysis, the case study of the Red Hill Valley Project was chosen because of the accessibility of the City of Hamilton archives, the layers of government and agencies involved in the planning process, and the long timeframe of the Project that allows for many opportunities to assess institutional learning. The case study method has been used successfully in landscape architectural inquiry (Francis 2001, Deming & Swaffield 2011). The approach has also been successfully used in planning inquiry. As this thesis strongly overlaps both planning and landscape architecture, the methodology is based in a case study approach. As outlined in the literature, a case study is a systematic investigation of either a single project, or a comparative study of multiple projects. For this research, a single case study analysis was conducted. The Red Hill Valley Project is used to illustrate the evolving nature of policy for urban open space planning in Ontario.

The key outputs of the first phase of the case study are a timeline of the key events and processes that contributed to the completion of the Red Hill Valley Project and an analysis of the relationship between various agents and stakeholders in the Project. The case study analysis involved a thorough archival and document analysis of grey literature, academic literature, government reports, and media related to the Project.

The second phase of the case study involves key informant interviews with stakeholders in the Project. They were asked to identify their role in the Project, and comment on how policy and policy execution informed the development of the Project. One objective of the key informant interview process is to achieve a consistent and even representation of stakeholders in the Project. Stakeholders were identified through a preliminary review of the literature on the Red Hill Valley Project. Table 3.4 describes the ideal selection of informants, and the actual achieved selection.

**Table 3.4: Key Informant Selection Process**

<b>Ideal Selection</b>	<b>Achieved Selection</b>	<b>Interviewee Code</b>
At least 1 stakeholder in each group (groups identified in preliminary document analysis):		
Provincial Policy Experts	1 Interview	Interviewee 1
City of Hamilton Staff	2 Interviews	Interviewee 2 Interviewee 3
Private Consultants	1 Interview	Interviewee 4
Environmental Organizations	1 Interview	Interviewee 5
Hamilton Conservation Authority	Declined Request	
Joint Stewardship Board	Declined Request	

The output of the key informant interviews is a structured evaluation of policy implementation during the Red Hill Valley Project.

The lack of participation from the Hamilton Conservation Authority and the Joint Stewardship Board is a significant limitation to this study. The Hamilton Conservation Authority is engaged with watershed planning, ecological planning and biodiversity planning at the regional watershed scale. Conservation Authorities’ policy contributions are a significant component of the urban open space planning process in Ontario. The Joint Stewardship Board is the current managing authority of the Red Hill Valley; it is a collaborative board with membership from the City of Hamilton and the Haudenosaunee Confederacy.

No current or former municipal or provincial politicians were interviewed for this research. The rationale is that this research investigates how professional planners, designers, and organizations shape and respond to land-use planning. Policy development is a highly political process, but these processes are not the focus of this research. Political developments regarding the Red Hill Valley Project are discussed in the case study; however, a thorough discussion of the role of politics in policy is beyond the scope of this research.

### 3.4 | Objective 3: Track the Evolution of Urban Open Space System Policy

The outcomes of the policy analysis and case study inform the final objective of this research: to determine if institutional learning and policy development occurred as a result of the Red Hill Valley Project. Recent developments in policy are correlated to decision-making processes and institutional changes in agencies related to the Red Hill Valley Project. This method employs an analytical framework for understanding socio-ecological systems, as described below.

Institutional learning is the process through which organizations learn from previous experiences and adapt their management practices to build consensus between stakeholders within a socio-ecological system. Learning is identified through an adaptive change of the rules, through which adaptive capacity and resilience are developed in an ecosystem-society-management system. The concept of resilience is defined as: the amount of change a system can undergo while retaining the same function or structure; the ability of a system to self-organize; and the capacity for a system to learn and adapt (Berkes *et al.* 2003). Learning from crisis can build resilience in a system. Therefore, if the institutions that plan and manage urban open spaces demonstrate the process of institutional learning, then urban open space systems will develop long-term resilience and adaptive capacity in the face of environmental and social stressors. This research focuses on learning at the municipal and provincial level.

Winfield (2012) employs a modified analytical framework for Ontario environmental policy. A detailed analysis of environmental policy development as a socio-ecological system is outlined in *Blue-Green Province: The Environment and the Political Economy of Ontario* (Winfield 2012). As urban open space planning policy is one facet of Ontario's environmental planning framework, this ecosystem-knowledge-institution approach to understanding policy development can be applied to the case of urban open space planning, and to understanding the influence of the Red Hill Valley Project on the development of policy. The inputs of this system include material, normative, institutional and societal factors, and are described in greater detail in Table 3.5. This framework places Ontario's urban open space policy within a larger realm of socio-ecological management strategies.

**Table 3.5: Analytical Framework for Urban Open Space Planning (Adapted from Winfield 2012)**

<b>Material Factors</b>	<b>Normative Factors</b>	<b>Institutional Factors</b>	<b>Societal Factors</b>
Rural/Urban Economic Division	Role of the State	Provincial - Municipal Relationships	Public Opinion
Structural Economic Change	Policy Paradigms: • Pollution Control vs. Pollution Prevention • Sustainable Development vs. Minimal Growth Environment	Municipal Restructuring	Interest and Advocacy Groups  Media
Demographic Change		Aboriginal Treaty Rights  Responsibilities of Other Government Agencies	

The material and normative factors identified in the analytical framework are used to contextualize the case study and open space planning within a larger system of provincial economic growth, changing infrastructure needs, and evolving political discourse. The institutional and societal factors are the main focus of the socio-ecological analysis. The institutional factors, including the relationship between the Province and municipalities, the role of municipal restructuring and amalgamation on land-use planning, relationships with First Nations, and the role of other public agencies in planning decisions, all shaped the outcomes of the Red Hill Valley Project. Therefore, instances of institutional learning are identified in each of these factors. Societal factors, including public opinion, advocacy and media, were also significant in the outcome of the Project, and influenced the development of policy. In the policy evolution analysis, instances of institutional learning are identified using the factors and agency relationships identified above.

This chapter has stated the central research question, and outlined three objectives used to answer this research question. The three objectives are a systematic policy analysis, a case study, and an analysis of institutional learning and policy evolution. The following chapter presents the policy context for urban open space planning in Ontario, and an analysis of five key policies using a series of policy indicators.

## Chapter 4 | Policy Structure for Urban Open Space Systems in Ontario

The first stage in this three-step research process is an analysis of relevant Ontario policy that contributes to the creation of urban open spaces. As stated earlier, there is no holistic framework of policies that promotes urban open space creation. Instead, there are a series of related land-use planning policies that, when viewed together, form a structure for promoting urban open spaces.

In Ontario, there are several planning policies that may be used to plan and design urban open spaces. These policies are outlined in Table 4.1.

The selection of these policies was informed by a document review and key informant interviews. The following policies are identified as having a significant role in the development of urban open space systems in Ontario:

- Greenbelt Plan (Urban River Valley Amendment)
- Site Plan Control (under the Niagara Escarpment Plan, Conservation Authorities Act, and Planning Act)
- Environmental Assessment
- Natural Heritage Systems and Cultural Heritage Landscapes
- Natural Feature Protection By-Laws

The preceding policies are evaluated using the indicators described in Table 3.2: Policy Indicators. A list of policy documents and grey literature was compiled for the purpose of this analysis. These documents are listed in Table 4.2.

**Table 4.1: Provincial Policy Context for Urban Open Space in Ontario**

<b>Statute</b>	<b>Description of Policy</b>	<b>Examples and Relevance to Urban Open Space Planning</b>
Individual Land-Use Planning Acts:		
Greenbelt Act	Greenbelt Plan	<ul style="list-style-type: none"> <li>• Greenbelt Plan Amendment No.1: Urban River Valley</li> </ul>
Niagara Escarpment Planning and Development Act	Niagara Escarpment Plan and Niagara Escarpment Commission	<ul style="list-style-type: none"> <li>• Niagara Escarpment Parks and Open Space System</li> </ul>
Oak Ridges Moraine Conservation Act	Oak Ridges Moraine Conservation Plan	<ul style="list-style-type: none"> <li>• Land-Use Designation (Natural Core Areas and Natural Linkage Areas) and Continuous Trail System</li> </ul>
Places to Grow Act	Growth Plan for the Greater Golden Horseshoe	<ul style="list-style-type: none"> <li>• Individual Growth Plans (Intensification, Natural Resource Protection, Community Design)</li> </ul>
Ontario Planning and Development Act	Planning and development plans under act: Parkway Belt West Plan	<ul style="list-style-type: none"> <li>• Identification of Land Use Areas for Parks and Open Space</li> </ul>
Planning Act	Provincial Policy Statement and Municipal Official Plans	<ul style="list-style-type: none"> <li>• Natural Heritage Systems (Including ANSIs, ESAs, Significant Wetlands, Ravines, Woodlands)</li> <li>• Height and Density Bonusing or Park Offsets</li> </ul>
	Land Use Controls and Related Administration: Zoning By-Laws	<ul style="list-style-type: none"> <li>• Natural Features</li> <li>• Areas of Natural and Scientific Interest (ANSI)</li> <li>• Significant Archaeological Sites</li> </ul>
Environmental Protection Act	Regulation 153/04: Records of Site Condition	<ul style="list-style-type: none"> <li>• Environmentally Sensitive Area Protection</li> </ul>
Municipal Act	Specific Municipal Powers under "Cultural, Parks, Recreation and Heritage", "Drainage and Flood Control", and "Natural Environment"	<ul style="list-style-type: none"> <li>• Tree By-Law</li> <li>• Ravine and Natural Feature Protection By-Law</li> </ul>
Environmental Assessment Act	Individual and Class Environmental Assessments	
Conservation Authorities Act	Conservation Authority Powers	<ul style="list-style-type: none"> <li>• Watershed Action Plans</li> <li>• Property Acquisition or Conservation Easement</li> <li>• Site Plan Control</li> </ul>
Ontario Heritage Act	Cultural Heritage Designation and Archaeological Resource Protection	<ul style="list-style-type: none"> <li>• Cultural Heritage Landscapes</li> <li>• Heritage Conservation Districts (HCD)</li> </ul>

**Table 4.2: Urban Open Space Policy Documents Consulted**

<b>Policy Realm</b>	<b>Ontario Statutes</b>	<b>Other Documents and Policies</b>
Greenbelt Urban River Valley Amendment	<ul style="list-style-type: none"> <li>• Greenbelt Act</li> </ul>	<ul style="list-style-type: none"> <li>• Greenbelt Plan (2005)</li> <li>• Urban River Valley Amendment (2013)</li> </ul>
Site Plan Review/Control	<ul style="list-style-type: none"> <li>• Planning Act</li> <li>• Conservation Authorities Act</li> <li>• Ontario Regulation 161/06: Hamilton Conservation Authority</li> <li>• Niagara Escarpment Planning and Development Act</li> <li>• Ontario Regulation 828/90: Niagara Escarpment Development Control Regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Hamilton: Submission Requirements and Application Form for Site Plan Control (2015)</li> <li>• Hamilton Conservation Authority: Planning &amp; Regulation Policies and Guidelines (2011)</li> <li>• Niagara Escarpment Plan (2015)</li> <li>• Niagara Escarpment Commission: Visual Assessment Guidelines (2008)</li> </ul>
Environmental Assessment	<ul style="list-style-type: none"> <li>• Environmental Assessment Act</li> <li>• Consolidated Hearings Act</li> </ul>	<ul style="list-style-type: none"> <li>• Federal/Provincial Environmental Assessment Coordination in Ontario: A Guide for Proponents and the Public (2007)</li> <li>• Ontario: Code of Practice: Consultation in Ontario's Environmental Assessment Process (2014)</li> <li>• Ontario: Preparing and Reviewing Environmental Assessments in Ontario (2014)</li> </ul>
Natural Heritage Systems and Cultural Heritage Landscapes	<ul style="list-style-type: none"> <li>• Planning Act</li> <li>• Ontario Heritage Act</li> </ul>	<ul style="list-style-type: none"> <li>• Provincial Policy Statement (2014)</li> <li>• MNRF: Natural Heritage Reference Manual (2010)</li> <li>• Ontario Nature: Best Practices Guide to Natural Heritage Systems Planning (2014)</li> </ul>
Natural Feature Protection By-Laws	<ul style="list-style-type: none"> <li>• Municipal Act</li> </ul>	<ul style="list-style-type: none"> <li>• Toronto Chapter 658 Ravine and Natural Feature Protection By-Law (2013)</li> </ul>

## 4.1 | Greenbelt Plan and Urban River Valley Amendment

The first policy considered is the Greenbelt Plan and Urban River Valley Amendment. The Greenbelt includes 1.8 million acres of protected land that surrounds the Greater Toronto Area. It was created under the Greenbelt Act of 2005, and is governed under the Greenbelt Plan. Effective in 2013, the Greenbelt Plan was amended to include urban river valleys that are adjacent to the Greenbelt. This amendment extends Greenbelt protection to "publicly owned lands within the main corridors of river valleys connecting the rest of the Greenbelt to the Great Lakes and inland lakes" (Ministry of Municipal Affairs and Housing 2013). The objective of this amendment was to protect "natural and open space lands along river valleys in urban areas". The intention is to emphasize the connection between the Greenbelt Area and Lake Ontario. These lands may be the setting of "a network of uses and facilities including recreational, cultural and tourist amenities and infrastructure" that are needed to "support urban uses" (Ministry of Municipal Affairs and Housing 2013). To date, only the Glenorchy Lands in Oakville have been designated, but other municipalities have considered nominating lands.

The role of the Greenbelt in contributing to the extended metropolitanization of the Toronto metro area has been discussed by Macdonald and Keil (2012). They argue that the Greenbelt is a case of scaling-up regional land-use policy by creating a "clear and reliable legal framework for conservation [...] and development" (Macdonald & Keil 2012, p.141). Therefore, through the creation of the Urban River Valley Amendment, the Province has extended this regional legal framework into urban open spaces. In Table 4.3, the Greenbelt Act, with particular attention to the Urban River Valley amendment, is evaluated using the seven environmental policy indicators developed earlier.

**Table 4.3: Greenbelt Plan and Urban River Valley Amendment Evaluation**

<b>Indicator</b>	<b>Description</b>
Scale and Range of Impact	The scale is regional and municipal. The only river systems that apply are those that flow through the Greenbelt into Lake Ontario. The intention is to create a symbolic and tangible link between the Greenbelt and urban ravines and rivers. It is the responsibility of the municipality to nominate public lands to be protected under this policy, so the scale is both regional and municipal. The range is location specific, as it deals with urban river valleys and the Greenbelt planning area.
Capacity to Respond to Environmental Problems	The intention for this policy is to be proactive in protecting urban rivers. It is also regulatory, and the land-use policies for Greenbelt-designated land are very restrictive of development.
Applicability and Relevance to Open Space Planning (Direct or Indirect)	This policy, specifically the Urban River Valley Amendment, directly protects urban open space systems.
Open Space System Management and Function	This policy considers the importance of linkages (between Lake Ontario and the Greenbelt), the management regime (currently restricted to public lands), and the ecological/watershed function of urban rivers.
Adaptability/Flexibility, Frequency of Review	This policy has limited applicability, other than to river systems associated with the Greenbelt that are publicly owned. This policy is reviewed, with the Greenbelt Plan, every 10 years.
Permanence and Predictability	The Greenbelt policy is permanent, with review and adjustments every 10 years. The predictability of how this policy is applied is unknown. Additionally, as municipalities must nominate lands to be designated as urban river valleys, it may not be uniformly implemented.
Transparency and Degree of Public Input	Public comment is solicited by the Province every 10 years. Public comment at the municipal level is variable and may not be solicited by the municipality directly. Amendments to the plan (such as the Urban River Valley Amendment) may occur between review periods.

## 4.2 | Site Plan Control

The second policy system evaluated is site plan control. Site plan control that relates to urban open spaces may fall under several authorities and jurisdictions: the authorities that are considered for this research are the Niagara Escarpment Planning and Development Act, Conservation Authorities Act, and the Planning Act. The effectiveness of municipal site plan approval was the subject of a report commissioned by the Ontario Association of Architects (2013). Water management policies, and the effectiveness of conservation authorities in Ontario in general, have been the subject of some studies (Shrubsole 1996, Mitchel *et al.* 2014); however, there have been no studies on the effectiveness of site plan control by Conservation Authorities or by the Niagara Escarpment Commission. Winfield (2012) argues that the role of public agencies in the land planning process were diminished under the Progressive Conservative government of 1995-2003; public bodies were restricted from planning decisions unless invited by the Ministry of Municipal Affairs and Housing. This was consistent with the one-window service philosophy of the Progressive Conservative government's 'common sense revolution' policies (Winfield 2012, p.97-98). An evaluation of site plan control using the seven environmental indicators is found in Table 4.4.

**Table 4.4: Site Plan Control Evaluation**

<b>Indicator</b>	<b>Description</b>
Scale and Range of Impact	The scale is municipal and regional (watershed basis for Conservation Authorities). Range is Ontario-wide. Review for the Niagara Escarpment Plan is site specific to the Niagara Escarpment
Capacity to Respond to Environmental Problems	This policy is regulatory in general. Conservation Authority site plan control may be seen as proactive watershed management.
Applicability and Relevance to Open Space Planning (Direct or Indirect)	Indirect impact. Purpose of review is to maintain existing corridors. New systems cannot be created using this policy, and existing systems are not given protection without supporting policy.
Open Space System Management and Function	Review considers management needs, and maintaining ecological and watershed function. Viewsheds are also considered by the Niagara Escarpment Plan.
Adaptability/Flexibility, Frequency of Review	This is a highly adaptable policy, but still limited in its scope and planning powers. It is reviewed within the various acts that enable these powers. The function and appropriateness of site plan review is not generally reviewed for its effectiveness and ability to meet targets.
Permanence and Predictability	The protection is effective, although it depends on the sophistication and capability of the regulatory agency or municipality. Therefore, it may not be uniformly implemented.
Transparency and Degree of Public Input	In general, the public does not comment on this process. There may be opportunities for public input during the coordinated land-use planning review, but municipal and Conservation Authority powers are not usually publicly debated.

### 4.3 | Environmental Assessment

The third policy is Environmental Assessment. Environmental Assessments assess the potential effects of a proposal, include consultation with stakeholders and the public, consider alternative designs, and address the management of potential negative effects. The government of Ontario provides strong direction for the documentation of Environmental Assessments and their submission to the Minister of Environment for approval (Ontario Ministry of the Environment 2014a). The Environmental Assessment Act sets out a standard process for Environmental Assessments. The history of Environmental Assessment in Ontario is discussed by Winfield (2012). He states that a green paper on Environmental Assessment, authored by then Environment Minister James Auld, was issued by the Province in 1973, in which Auld argued for a more proactive approach to environmental protection. The Environmental Assessment Act was passed in 1976. Under the 1995-2003 Progressive Conservative government, during which time the Red Hill Valley Project received an exemption order, the Environmental Assessment process was amended in 1996 to remove the requirement to examine the need for a project and the potential of alternatives. Terms-of-reference for projects became narrower and were defined on a case-by-case basis (Winfield 2012). Under the subsequent Liberal government elected in 2003, which was in power during the completion of the Red Hill Valley Project, Environmental Assessments continued to be defined by narrow terms-of-reference, and many significant public projects were exempted from a full Environmental Assessment (Winfield 2012). The last public review of the Environmental Assessment Act was a 2005 report titled *Improving Environmental Assessment in Ontario: A Framework for Reform* by the Environmental Assessment Advisory Panel. The objectives of this report were to address stakeholder concern regarding the cost, timing, complexity, inconsistency, and uncertainty of the Environmental Assessment Process (Lindgren & Dunn 2010). Since the 2005 EA Advisory Panel report, few binding changes to the Environmental Assessment process have been made. The provincial response to the report has been to issue a series of Codes of Practice documents to clarify the EA process and guide stakeholders on consultation and mediation (Savan & Gore 2015).

Proposed reforms to the Environmental Assessment process are evaluated by Savan and Gore (2015); they propose that the Environmental Assessment process should aim to be more

proactive than reactive, by "expediting and facilitating the implementation of projects that produce maximum benefits, across sectors" (Savan & Gore 2015, p.404). It is also questioned whether the EA process can expedite beneficial projects while also meeting the goal of deliberative public participation. The policy's ability to meet the needs of urban open space planning is evaluated using the policy indicators in Table 4.5.

**Table 4.5: Environmental Assessment Evaluation**

<b>Indicator</b>	<b>Description</b>
Scale and Range of Impact	The scale is municipal, regional, and provincial depending upon the scale of the project. The range is Ontario-wide.
Capacity to Respond to Environmental Problems	The intention of the EA process is meant to be proactive: a series of design alternatives are proposed, and through public and stakeholder input a preferred alternative is selected.
Applicability and Relevance to Open Space Planning (Direct or Indirect)	Generally has an indirect impact. The integrity of an open space system may or may not be an important factor in the EA process.
Open Space System Management and Function	May consider a number of factors. The purpose of an EA is to consider all environmental impacts, both social and physical.
Adaptability/Flexibility, Frequency of Review	This is a highly adaptable policy, although the range of projects to which the EA process applies is limited. The process is reviewed through updates to the EA Act by the Ontario legislature. Unclear if there has been a comprehensive review of the effectiveness of EAs.
Permanence and Predictability	Highly permanent process, and legally binding. Not uniformly executed, and there are many exemptions to the policy. The Minister of the Environment can exempt projects from the process with approval from cabinet.
Transparency and Degree of Public Input	Public comment occurs throughout the EA process. There are fewer opportunities to comment on the structure of the EA process in general, or to petition for an EA. Since 1996, only two projects have been referred to the Environment Assessment Tribunal for a public hearing. The last public review of the Environmental Assessment Act was in 2005.

## 4.4 | Natural Heritage Systems and Cultural Heritage Landscapes

The fourth set of policies evaluated are Natural Heritage Systems and Cultural Heritage Landscapes. These policies are outlined in the Provincial Policy Statement (Ontario Ministry of Municipal Affairs and Housing 2014). The Ministry of Natural Resources provides direction to municipalities in designating Natural Heritage Systems (Ontario Ministry of Natural Resources 2010), and the Ontario Ministry of Tourism, Culture and Sport provides direction for Cultural Heritage Landscapes through the Ontario Heritage Trust.

Natural Heritage Systems are "connected green and natural areas that provide ecological functions [...] and enable movement of species" (Ontario Ministry of Natural Resources 2010, p.15). Natural heritage features that may be included in a Natural Heritage System are significant habitat, significant wetlands and coastal wetlands, significant woodlands, significant valley lands, and areas of natural and scientific interest (Ontario Ministry of Natural Resources 2010). The *Natural Heritage Reference Manual* published by the Ontario Ministry of Natural Resources (2010) outlines a methodology for establishing the significance of natural heritage features. In practice, many municipalities incorporate previously designated Environmentally Sensitive Areas when identifying a Natural Heritage System (Froehlich 2012). Environmentally Sensitive Area designation is not mentioned in the current Provincial Policy Statement (Ministry of Municipal Affairs and Housing 2014), nor is it defined in the *Natural Heritage System Reference Manual* (Ontario Ministry of Natural Resources 2010).

Cultural Heritage Landscapes are geographic areas that "may have been modified by human activity" and are "identified as having cultural heritage value or interest by a community, including an Aboriginal community" (Ontario Ministry of Municipal Affairs and Housing 2014, p.40). Cultural Heritage Landscapes may have value because they were intentionally designed, because they evolved over time and represent a specific social, economic or religious practice, or have "powerful religious, artistic or cultural associations with nature" (City of Kitchener 2014, p.6). Under this definition, significant natural areas and open spaces may be viewed as cultural landscapes, and therefore protection to such landscapes may be afforded by cultural heritage policies in addition to natural heritage protection policies.

Once identified, protection of Cultural Heritage Landscapes may be achieved through

viewshed by-laws, Heritage Conservation Districts, Significant Valley Land designation in conjunction with Natural Heritage System policies, and Heritage Conservation Easements (Region of Waterloo 2013).

The implementation of natural heritage policies in Ontario has been evaluated by WWF Canada (The Community Development Group Ltd. 1999), Wilkinson and Eagles (2001), O'Hara (2008), Heintzman (2012), and Ontario Nature (2014). The Region of Waterloo (2013) and the Waterloo Heritage Resource Centre (2004) have developed implementation guidelines for cultural heritage landscapes; however, a thorough Ontario-wide review of cultural heritage landscape policy is lacking in the academic and grey literature, especially regarding landscape systems such as agricultural lands, valley lands, and linear corridors. These policies are evaluated using the environmental policy indicators in Table 4.6.

**Table 4.6: Natural Heritage Systems and Cultural Heritage Landscapes Evaluation**

<b>Indicator</b>	<b>Description</b>
Scale and Range of Impact	Municipal scale, including regional municipalities. All Ontario municipalities are required to identify natural heritage systems and cultural heritage features.
Capacity to Respond to Environmental Problems	Purpose is to be proactive in identifying heritage resources.
Applicability and Relevance to Open Space Planning (Direct or Indirect)	These policies have a direct impact on creating and protecting urban open space systems. Both cultural and natural heritage features have linear, system-like structures.
Open Space System Management and Function	This policy considers patch size, creation of linkages, management regime, ecological/watershed function
Adaptability/Flexibility, Frequency of Review	Can apply to many landscape types. The key feature of these policies is whether a landscape has 'significant' natural or cultural heritage value. This policy is reviewed with the PPS, generally every 10 years, and by relevant Ontario ministries through their policy direction to municipalities.
Permanence and Predictability	Somewhat permanent, and directed by Ontario policy. These policies form a component of a large land-use planning directive from the PPS: this statement must be read and understood in its entirety. In general, uniformly implemented; however, these policies are relatively new, and adoption may be slower in some municipalities.
Transparency and Degree of Public Input	Public input during study phase, and during a municipality's creation and review of an Official Plan. Structured and limited public input for review of the PPS policies.

## 4.5 | Natural Feature Protection By-Laws

The final policies to be discussed are natural feature protection by-laws. Generally, these take the form of woodland protection by-laws, tree by-laws, and ravine by-laws. The Municipal Act gives municipalities the power to enact these types of by-laws. The City of Hamilton has passed a by-law to regulate trees on or affecting public property (City of Hamilton 2015a), and a woodland conservation by-law for private property within the urban area (City of Hamilton 2014). The Toronto Ravine and Natural Feature Protection By-Law is the most notable example of this planning approach to protect a system of related landscape features in an urban environment. Other cities have enacted woodland by-laws, but they lack the systems approach of Toronto's ravine by-law. Therefore, the ravine by-law is used as the central example for this policy critique. Literature on the effectiveness of these types of by-laws is lacking. The evaluation of natural feature protection by-laws is found in Table 4.7.

**Table 4.7: Natural Feature Protection By-Laws Evaluation**

<b>Indicator</b>	<b>Description</b>
Scale and Range of Impact	Municipal scale, including regional municipalities. Range is generally for woodlots and ravines.
Capacity to Respond to Environmental Problems	Regulatory, for existing features. Sometimes reactive in the case of tree canopy loss.
Applicability and Relevance to Open Space Planning (Direct or Indirect)	Has a direct impact in protecting open spaces (woodlots) and open space systems (linear features and ravines).
Open Space System Management and Function	By-law mostly considers management regime, ecological/watershed function. The purpose is not to acquire land or identify new resources.
Adaptability/Flexibility, Frequency of Review	Adaptable, but generally concerned with specific landscape types. By-law review at discretion of the municipality. Municipal Act gives powers, and is reviewed by Ontario legislature.
Permanence and Predictability	Somewhat permanent, but more flexible than Greenbelt designation. It is within a municipality's power to create and implement a by-law, but there is little direction from the Province
Transparency and Degree of Public Input	Public input required for the creation of a by-law.

## 4.6 | Open Space Policy Summary

The five policies discussed above form a structure for promoting urban open spaces in land-use planning in Ontario. The policies operate independently of each other; there is no central 'window' or directive for urban open space planning. Nonetheless, there are significant areas of overlap within the objectives of these policies. Furthermore, policies may complement each other where there are relative weaknesses or strengths. A summary of the results of this analysis is presented in Table 4.8.

The policy structure summary indicates that the five policies cover a range of scales and landscape types. In general, they are adequate tools that allow policy-makers to respond to environmental issues and concerns. The policies are well informed by landscape ecology theory, and both directly and indirectly affect urban open space planning.

One of the most distinguishing features of urban open space planning in Ontario is that implementation of these policies is uniformly a municipal responsibility. Greenbelt-designated Urban River Valleys must be public lands, and it is the municipality's responsibility to identify, nominate, and manage these lands. Site plan control is exercised by municipalities and other public agencies. Site plan control by Conservation Authorities in Ontario is coordinated with municipal site plan control, as the majority of funding and board membership for Conservation Authorities is from the local municipality. Natural Heritage System policy is developed at the provincial level, but the actual design and implementation is at the municipal level. Many public projects must complete a municipal-led Environmental Assessment. Finally, Natural Feature Protection By-Laws are developed by municipalities in conjunction with other public agencies, and are at the discretion of the municipality. The above means that 'local' staff must be well informed about the various aspects of Ontario's open space policy structure in order to effectively plan for urban open space.

**Table 4.8: Open Space Policy Analysis Summary**

<b>Indicator</b>	<b>Parameter</b>	<b>Greenbelt Plan / Urban River</b>	<b>Site Plan Control</b>	<b>Environmental Assessment</b>	<b>NHS and CHL</b>	<b>Natural Feature By-Laws</b>
Scale and Range	Provincial					
	Regional					
	Municipal					
	General					
	Site Specific					
Capacity to Respond to Environmental Problems	Proactive					
	Regulatory					
	Reactive					
Relevance to Open Space System Planning	Direct					
	Indirect					
Open Space System Management and Function	Linkages and Patches					
	Management					
	Ecological Function					
Adaptability and Frequency of Review	Flexible					
	Rigid					
	Frequent (10 years or less)					
	Infrequent					
Permanence and Predictability	Permanent					
	Predictable					
	Uniform					
Public Input	High Level					
	Low Level					

Opportunities for meaningful public input are often limited. Additionally, feedback and recommendations from municipalities to the Province on open space policy implementation is somewhat limited. Municipalities have direct control over site plan control in their jurisdiction. Furthermore, the implementation of a natural heritage and cultural heritage strategy in an Official Plan is the responsibility of the municipality, although the Province will comment on this process to make sure that provincial objectives are being met. Municipalities may be able to comment on Greenbelt planning and suggest revisions, but this process occurs over a 10 year timeframe. Finally, there are few opportunities for municipalities to comment on the practice of Environmental Assessments, or on how Environmental Assessments affect local planning decisions.

This chapter has described Ontario's policy structure for planning urban open spaces. Using a consistent set of policy indicators, five prominent land-use planning policies have been analyzed. The results of the analysis have been summarized, and the policy structure has been identified. In the next chapter, the results of the case study investigation are described. The two methods of the case study are a document analysis and a series of key informant interviews. Significant trends found in the document analysis and interviews are outlined.

## Chapter 5 | Case Study: Hamilton's Open Space System

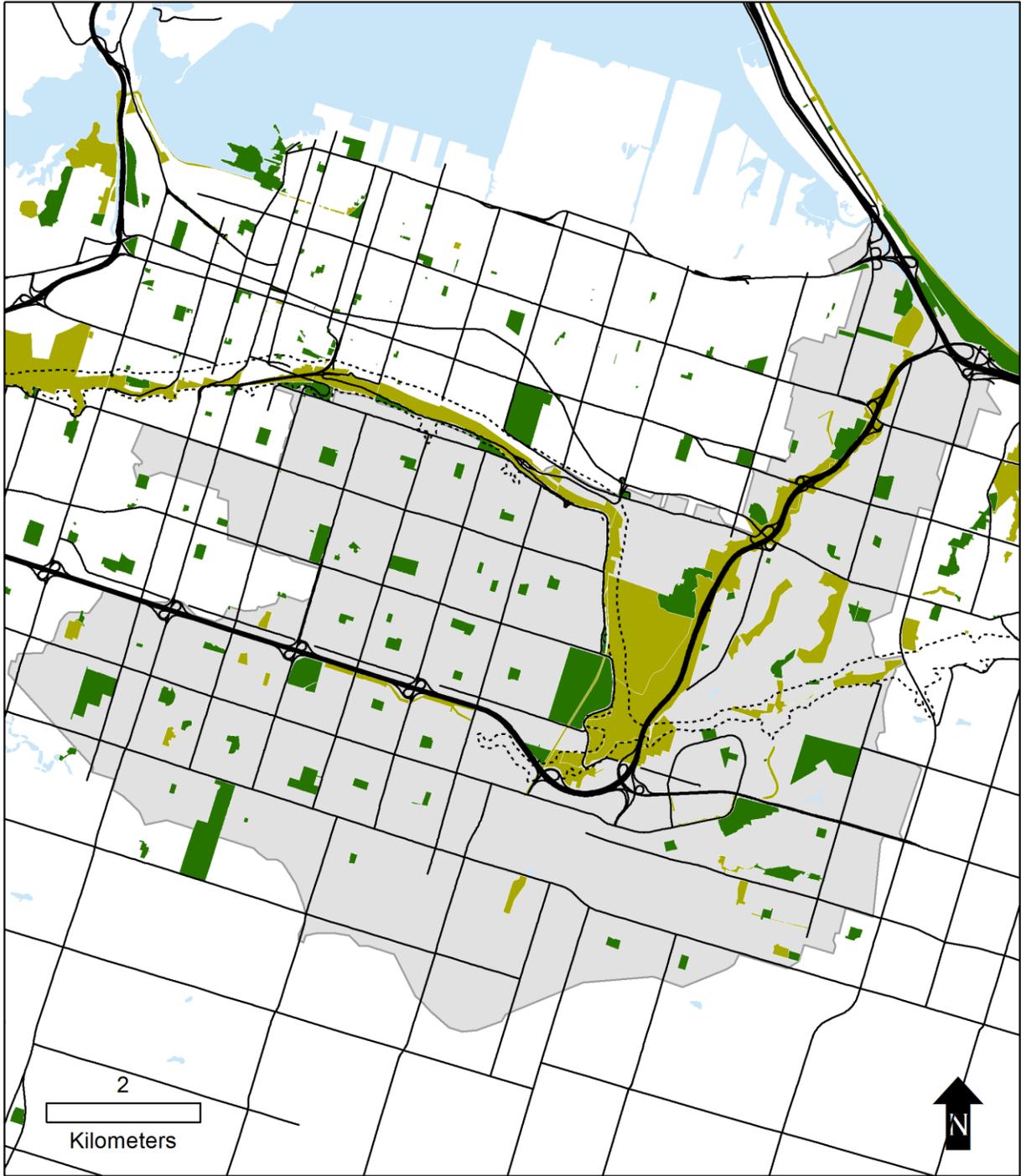
This chapter provides the history and context of the Red Hill Valley Project. The Project involved the creation of an expressway along the Red Hill Valley, a river valley that runs from the Niagara Escarpment to Hamilton Harbour. As a result of the expressway, storm water and sewer infrastructure was also upgraded, and the Red Hill Creek was realigned. The Project was controversial and underwent a series of planning stages before completion. This chapter investigates and analyzes the design and planning process of the expressway, with specific attention to how the expressway's impact on the urban open space corridor of the valley was incorporated into the design of the Project. Key reports and studies that addressed the impacts of the expressway on open space resources are the central focus of this analysis. A timeline of events and description of involved stakeholders and public agencies is included. The results of the document analysis and key informant interviews are outlined, and significant trends in the development of the Project are identified.

As stated above, the Red Hill Valley Project was chosen as an ideal case study to investigate the implementation of open space planning policy because of the accessibility of the City of Hamilton archives, the involvement of multiple tiers of government and various public agencies in the planning process, and for the long timeframe of the Project that allows for many opportunities to assess institutional learning. The Red Hill Valley is also a unique and prominent feature in Hamilton's urban open space system, which includes a segment of the Niagara Escarpment, Dundas Valley and Cootes Paradise. Hamilton's open space system is illustrated in Figure 5.1, and the location of the Red Hill Valley is identified by the red outline.

The Red Hill Creek Watershed is the area of land that drains into the Red Hill Creek, eventually to be discharged into Hamilton Harbour (Figure 5.2). The majority of the watershed has urban-type drainage, meaning that rain is conveyed through storm sewers, catchbasins, roadways or channelized watercourses (Region of Hamilton-Wentworth 1998b). The construction of the Red Hill Valley Parkway impacted a significant portion of the Red Hill Valley, particularly the narrow northern part of the Valley corridor (Figure 5.3).



**Figure 5.1: City of Hamilton Natural Heritage System 2013: The Red Hill Valley is Outlined in Red (City of Hamilton 2013)**



## Red Hill Creek Watershed

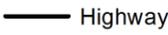
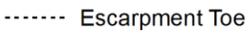
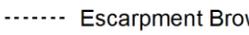
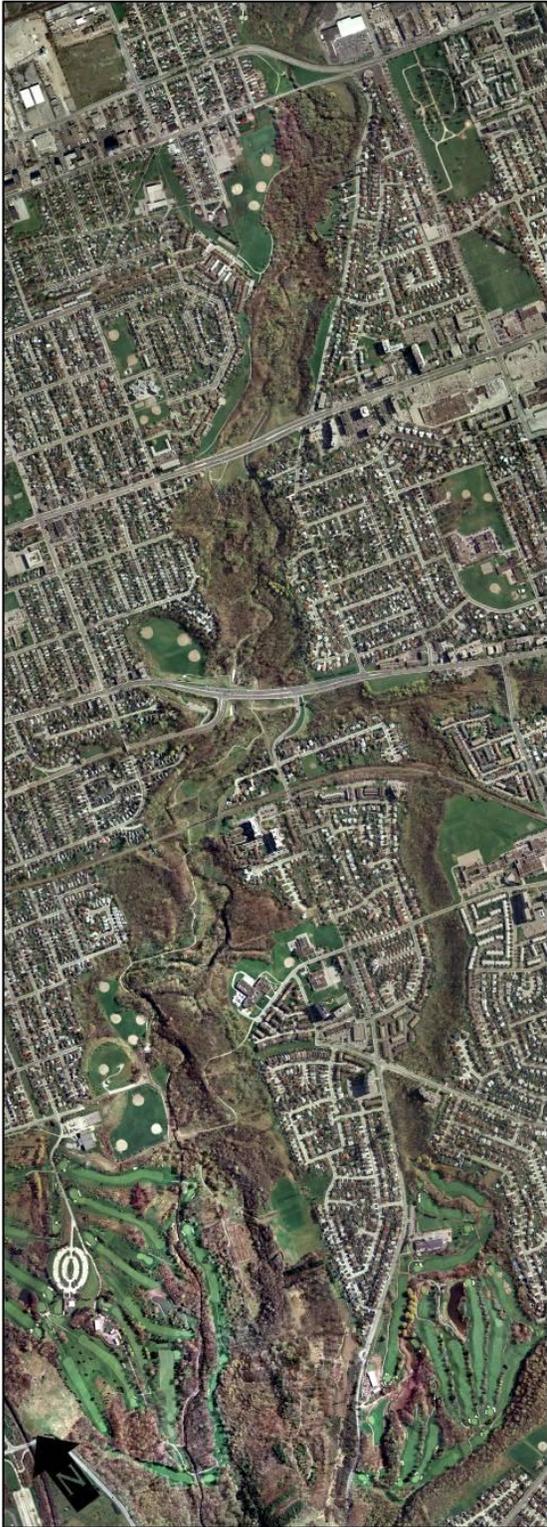
- |  |   |
|--|---|
|  Municipal Parks          |  Highway         |
|  Municipal Open Space     |  Major Road      |
|  Red Hill Creek Watershed |  Escarpment Toe  |
|  Lake Ontario             |  Escarpment Brow |

Figure 5.2: Red Hill Creek Watershed Boundary



**2002**



**2010**

**Figure 5.3: Red Hill Valley Before and After Expressway Construction**

The City of Hamilton is a unique planning environment in Ontario; as such, conclusions from this study may not apply to other Ontario municipalities. Hamilton's development was influenced by the presence of the Niagara Escarpment (limestone and dolostone extracted from the escarpment rock was used as flux for smelters and contributed to the rise of Hamilton as a centre of industry), the history of the Desjardin Canal and Hamilton Harbour, the rise and decline of industry in the City, and the current demands of planning in a low-growth environment (Chapman & Putman 1984).

The outcomes of this chapter consist of a timeline, a series of process diagrams that illustrate the three phases of the Red Hill Valley Project and the stakeholder relationships, and an analysis of the role of policy in the planning process. Information for these research projects is gained through a document analysis and a series of key informant interviews.

Materials for the document analysis were accessed through a variety of sources. The Hamilton Public Library holds an extensive collection of reports and other documents relating to the 'Red Hill Valley Expressway' in their archives. Material in this collection dates from 1917 to 2004. Additionally, many other reports and grey literature relating to the Red Hill Valley Project were accessed online through the City of Hamilton's website, the Province of Ontario's websites, and through the University of Guelph Library System. Relevant media documents were accessed through the Friends of the Red Hill Valley website. Additionally, defunct webpages relating to the Red Hill Valley Project were accessed through the 'Wayback Machine' hosted by the Internet Archive.

The planning of the Red Hill Valley Project required the participation of many stakeholders and public bodies. These included the lower-tier City of Hamilton and the Region of Hamilton-Wentworth (later amalgamated into the single-tier municipality of the City of Hamilton), the Province of Ontario through various provincial ministries, the Federal Government through various federal ministries, Six Nations, the Ontario Municipal Board and the Ontario Environmental Assessment Board, and multiple public agencies including the Niagara Escarpment Commission and the Hamilton Conservation Authority. Public interest and environmental groups also influenced planning decisions in the Valley. These groups include: Clear Hamilton of Pollution (CHOP), Save the Valley, Friends of the Red Hill Valley, and Environment Hamilton. As this is a landscape architecture thesis, how landscape architecture practice informed the planning process is of particular interest. Two key

consultants on the Project were Dougan & Associates and ENvision - The Hough Group. The roles of these consultants are discussed below. This complex system of government, public agencies, public participation and private consultants provides many opportunities to explore institutional learning. The complex stakeholder relationships illustrated in Figures 5.4 – 5.6 correspond to the three planning and learning stages of the Project.

The key stakeholders in this relationship were identified as the City of Hamilton, the Province of Ontario, the Hamilton Conservation Authority, Six Nations, the key landscape consultants, and the environmental organizations. These stakeholders were solicited for interviews to discuss the Project. The City of Hamilton, Province of Ontario, Private Consultants, and Environmental Organizations agreed to be interviewed, and their perspectives inform the Project analysis.

## 5.1 | Red Hill Valley Project History

The Red Hill Valley was acquired by the City of Hamilton in 1929. A north-south expressway through the valley was formally proposed in a transportation study in 1963, and eventually completed in 2007. In the intervening years, the parkway development involved a highly contentious planning process. Table 5.1 highlights key developments and policy decisions in the Red Hill Valley planning process.

First, it is helpful to understand the planning history of the Red Hill Valley before the expressway was proposed to situate Hamilton's current planning practice for open spaces in an evolving historical framework for parks, civic institutions and city building. Prior to the initial proposal for the expressway, planning authorities for the City of Hamilton envisioned that the Red Hill Valley would meet an open space and recreational need for the City. It would be conceptualized as a greenbelt along the City's eastern border.

**Table 5.1: Red Hill Valley Project Timeline**

<b>Date</b>	<b>Event and Important Publications and Policy</b>
<b>1917</b>	Report by Ottawa planner Noulan Cauchon delivered to the City of Hamilton ( <i>Reconnaissance Report on Development of Hamilton, Ontario</i> ).
<b>1929</b>	Acquisition of the Red Hill Valley by City of Hamilton, under direction of Thomas B. McQuesten.
<b>1947</b>	First Official Plan for Hamilton ( <i>A Master Plan for the Development of the City of Hamilton</i> ). The plan recommends that the Red Hill Valley be maintained as a greenbelt.
<b>1963</b>	Hamilton Area Transportation Study proposes 5 new expressways including one through the Red Hill Valley Corridor.
<b>1977</b>	Regional government considers the Red Hill Valley location after pressure from Provincial Government. Hamilton-Wentworth regional government had previously voted against the expressway plan.
<b>1979</b>	Preferred alternative selected by Hamilton Council for Red Hill Expressway. Province combines approvals into Consolidated Joint Board Hearing.
<b>1982</b>	Environmental Assessment submission for North-South Expressway ( <i>Hamilton-Wentworth Mountain East-West and North-South Transportation Corridor Environmental Assessment Submission</i> )
<b>1984</b>	Consolidated Joint Board Hearings
<b>1985</b>	Consolidated Joint Board Decision: Approval from Ontario Municipal Board members, dissent from Ontario Environmental Assessment Board member. Appellants included Hamilton Conservation Authority, Niagara Escarpment Commission, and 'Save the Valley' community group.
<b>1987</b>	Appeal of decision was unsuccessful.
<b>1990</b>	NDP government withdraws funding for the Project.
<b>1991</b>	Environmental group 'Friends of the Red Hill Valley' formed.
<b>1994</b>	David Crombie appointed to mediate conflict between Province and Regional Municipality of Hamilton-Wentworth. The proposed compromise is rejected.
<b>1995</b>	Progressive Conservative government restores funding for the Project.
<b>1996</b>	EA Exemption Order/Declaration Order from Provincial Government. A Project redesign and a series of technical reports is required by the order.
<b>1997</b>	First release of Exemption Order technical reports ( <i>Draft Summary Report Volume 1</i> ).
<b>1998</b>	Draft Summary Report Vol. 2 Assessment ( <i>Hamilton-Wentworth Red Hill Creek Expressway North-South Section: impact assessment and design process: draft summary report: Vol. 2</i> )
<b>2001</b>	Region of Hamilton-Wentworth amalgamation with lower-tier municipalities to create new single-tier municipality of City of Hamilton. Federal Environmental Assessment cancelled.
<b>2003</b>	Final technical reports released for partial Environmental Assessment. See complete list of technical reports in Appendix B.
<b>2004</b>	Joint Stewardship Board formed between City of Hamilton and Six Nations
<b>2006</b>	Transfer of land for Eramosa Karst Conservation Area
<b>2007</b>	Completion of Project
<b>2012</b>	Completion of ecological restoration component

In 1917, Noulan Cauchon, a planning consultant based in Ottawa, was asked by Hamilton's Town Planning Commission to produce a report on the potential for future development in Hamilton. Cauchon produced a far-reaching and ambitious plan in the 'City Beautiful' tradition, including a mountain amphitheatre, wide tree-lined boulevards, garden suburbs and high-speed electric railways for commuters (Terpstra 1985, Best 1991, Nash 2011). Although much of this vision remained unrealized, T.B. McQuesten, a city councillor and then planning commissioner, was strongly influenced by the plan's strategic objectives and grand vision (Best 1991).

Under McQuesten's leadership, Hamilton's Board of Parks Management would carry out an ambitious program of acquiring parks. In 1929, there was considerable controversy over McQuesten's purchase of King's Forest Park, which would later form a significant part of the southern end of the Red Hill Valley. This land comprised 700 acres of forested ravine that was beyond the eastern limits of the City (Best 1991).

In 1947, the first Official Plan was completed by the City of Hamilton. The Official Plan outlined the development of a "green belt park system," calling for the acquisition of

304 acres of the Red Hill Ravine from the Bay to King's Forest Park. [...] The acquisition of these natural park lands joining the already publicly owned land under the jurisdiction of the Parks Board would provide Hamilton with a green belt system that will be outstanding within cities of this Continent. It will also create a natural barrier between densely built up areas and future developments (Faludi 1947, p.54).

The Official Plan proposes to expand on land acquisition already completed by McQuesten to create a continuous greenbelt system along the Red Hill Valley. In the following year, further land was acquired by the City to form a continuous green corridor from the escarpment to the lake: 101 acres were acquired in 1950, although parts of the valley would continue to be cultivated until 1961 (Peace 1998).

The first proposal for the construction of a roadway in the valley appeared in 1951 (Peace 1998). The Hamilton Area Transportation Study, completed in 1963, further emphasized the need for a north-south and east-west transportation route in the City, although it did not state a preferred route. Despite opposition from Hamilton City Council to the Red Hill Creek route for a north-south roadway, a City-Provincial Technical Advisory Committee continued to recommend the Red Hill Valley as the preferred location for the route. In 1975,

the Minister of Transportation indicated that the Province was prepared to accept the City's position and exclude the Red Hill Valley route from further study, but would not subsidize land acquisition for the east-west Mountain Freeway (later the Lincoln M. Alexander Parkway) as it would have "no provincial network function" (Peace 1998, p.228). As a result of the Province's action to withhold subsidies, the Regional Council decided in 1977 to undertake a transportation study that included the Red Hill Valley. A formal agreement between the Region and the Province to study the north-south and east-west transportation corridors was reached, and in 1979 'Alternative 2' was adopted by the City of Hamilton and the Regional Council (Peace 1998).

It is evident through ministry language that the two transportation corridors are part of a provincial transportation network that has been downloaded to the regional municipality. The Province granting or withdrawing of funding to the City of Hamilton for regional and local planning initiatives occurred many times throughout the Red Hill Valley Project planning process. The Province used this strategy to incentivize the City to take on regional or provincial planning projects, such as the construction of a provincial highway network link. As will be demonstrated, the over-reliance on funding mechanisms has occasionally hindered or delayed meaningful study of environmental impact and possible design alternatives.

The formal adoption of the expressway plan by the Region of Hamilton-Wentworth indicates the beginning of the Red Hill Valley Project planning process. The following chapter section analyzes the policy and decision-making processes of the Red Hill Valley Project. It adds a new perspective to a growing body of literature developed over the past 20 years that focuses specifically on this Project. Academic critiques of the Project generally fall into several broad categories: urban ecology, land-use history, environmental justice, planning policy, and First Nations land rights.

A collection of essays on the Red Hill Valley, covering biophysical, cultural and political aspects of the Valley's history, was published in 1998 (Peace 1998). This book was both scholarly and political, creating a physical and cultural history of the Valley and drawing attention to its importance in Hamilton's cultural landscape. Regarding Hamilton's planning policy, Park (2004) investigated the 1982 Environmental Assessment Submission by the Region of Hamilton-Wentworth. The pursuit of environmental justice in the Red Hill Valley through public action is the topic of research by Lukasik (2002) and Lawrence-Nametka

(2016). The political development of the Red Hill Valley Project is discussed by McKay (2000, 2001), Oddie (2007, 2008, Oddie & Mulkeewick 2011), and Fraser and Viswanathan (2013). A close analysis of the relationship between citizen activism against the Red Hill Valley Project and First Nation protest against the Project is examined by Salter (2013). Salter's critique is incomplete, and he ends his critique without any acknowledgement of the 2003 joint agreement between the City of Hamilton and Six Nations that guided future stewardship of the valley. The study was published in 2013, so it is unclear why the Joint Stewardship Board is omitted in its entirety. The documentary film *Grass Through Concrete* chronicled the protests and land occupation of 2003 and 2004 (Iotzova 2004).

Much of the existing writing about the Project, cited above, focuses on the political processes that informed decision making in the valley. Policy-based analysis of the Project is limited, and is often focused on a single portion of the policy process, and not on the evolution of policy over time. Therefore, this research focuses on a comprehensive analysis of policy-based decision-making processes. It is acknowledged that policy is a politically-driven mechanism, and that political objectives are reflected in policy; nonetheless, policy is often developed, tested, and evaluated separately from political process.

## 5.2 | Red Hill Valley Project Planning Analysis

The results of the document analysis have identified a series of reports that are most important to the landscape planning and management of the Red Hill Valley Project. These are:

- **1981** Proposed Recreation Master Plan
- **1982** North-South Transportation Corridor Environmental Assessment Submission
- **1985** Consolidated Joint Board Decision
- **1994** Waterfront Regeneration Trust Report on the North-South Expressway
- **1996** Exemption/Declaration Order
- **1998** Red Hill Creek Watershed Action Plan
- **1997 - 2003** Red Hill Valley Project Technical Reports
- **2003** Sub-Agreement on Joint Stewardship of the Red Hill Valley
- **2004** Open Space Replacement Strategy

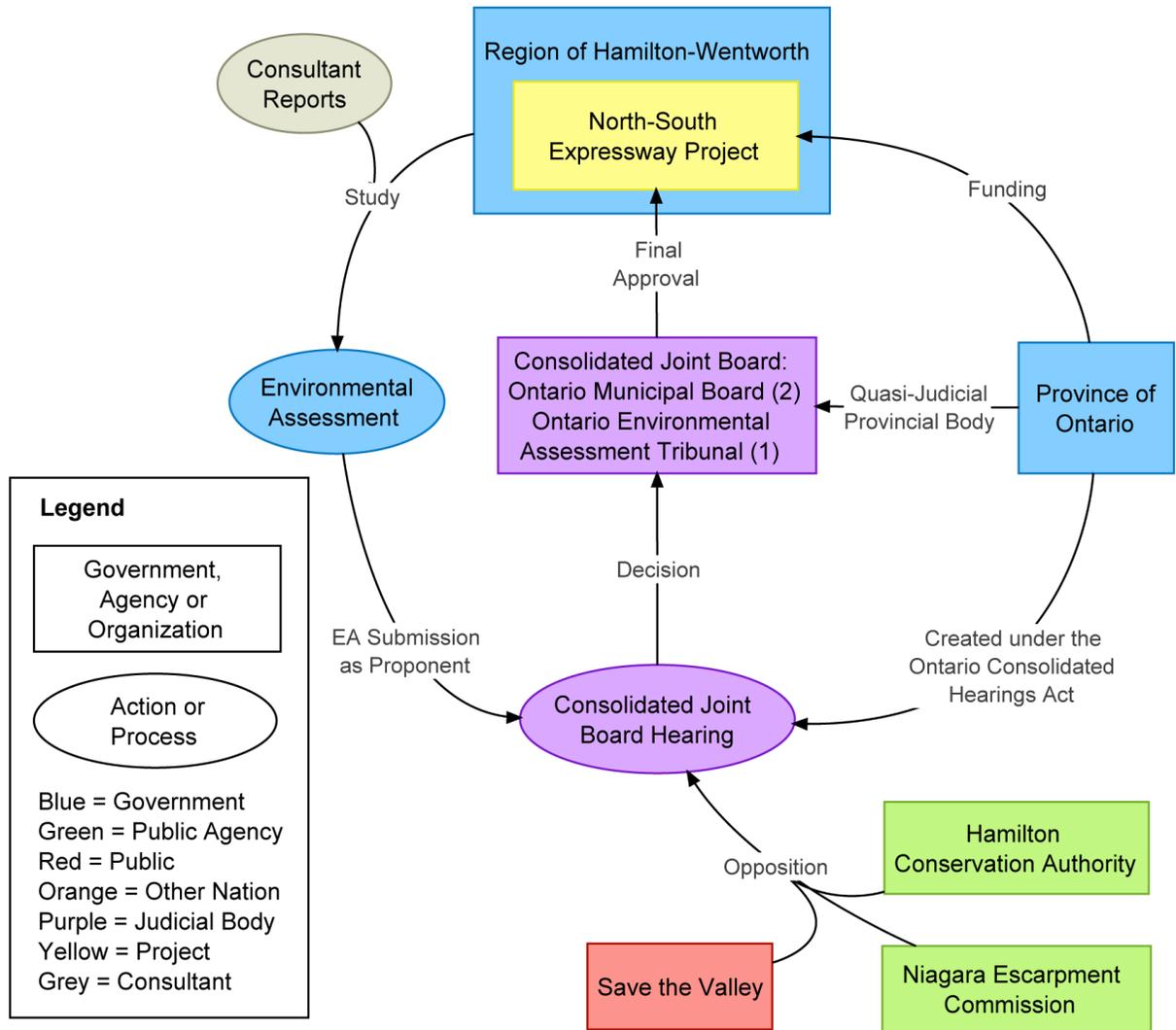
The North-South Expressway Proposal, later the Red Hill Valley Project, is referred to holistically as the Red Hill Valley Project, or the Project. The document analysis is informed by a close reading of the above documents. Additionally, results from the key informant interviews inform this analysis. The planning process for the Red Hill Valley Project can be distinguished by three separate planning stages:

- **1977 - 1989** Phase 1: Initial Expressway Proposal and Approval
- **1990 - 2003** Phase 2: Exemption Order and Re-Design due to Political and Public Pressure
- **2004 - Present** Phase 3: Project Completion and Post-Occupancy Analysis

The decision-making and planning processes of each of the three stages is discussed in detail below. Additionally, key policies for landscape planning are noted and explained. These three stages had distinct stakeholder relationships and decision-making processes. These relationships and processes are illustrated in Figures 5.4 – 5.6.

### 5.2.1 | Phase 1: Initial Expressway Proposal and Approval

Phase 1 describes the process by which the Province and Region advanced a formal proposal for the North-South Expressway, the approval through the Consolidated Joint Board, the first design phase of the Project, and the beginning of construction. In Phase 1, illustrated in Figure 5.4, the Province and the Region of Hamilton-Wentworth undertook a streamlined Environmental Assessment process under the Ontario Consolidated Hearings Act to achieve approval for the Project. A Consolidated Hearing may occur when approvals under the Environmental Assessment Act and the Planning Act are needed for a project. The hearing for the North-South Expressway was the first Joint Board created under the Consolidated Hearings Act.



**Figure 5.4: Phase 1 Diagram: 1977 - 1989**

The Consolidated Hearing process was criticized because there was no consistent or replicable justification of need for the Project (Park 2004). At this time, the requirement to justify need was not a condition of an Environmental Assessment (Park 2004). Compared with the second phase of study of the Project, the first phase was a single evaluation study that was submitted directly to the Province. Many of the components of the submission were evaluated using a process that did not clearly indicate how various impacts to the environment were weighted.

The Environmental Assessment Act defines the environment as the entirety of the bio-physical, cultural, and economic components that exist. It is the

air, land or water; plant and animal life, including human life; the social, economic and cultural conditions that influence the life of humans or a community; any building, structure [...] made by humans; [...] any part or combination of the foregoing (Ontario 1990c, p.2-3).

The act does not state which, if any, of these aspects of the environment take precedence over the other. As will be shown in the reading of the Consolidated Joint Board decision below, the relationship between various aspects of the environment is never clearly stated. Nonetheless, it was under this policy that approval was granted for the Project. Perhaps because the process was streamlined, and the ultimate approval contested, the Project would undergo a re-design in the second phase to gain legitimacy from public agencies and the general public.

Prior to the Consolidated Joint Board hearing, the *Proposed Recreation Master Plan for the Red Hill Creek Valley* (hereafter the Recreation Master Plan), prepared for the Region of Hamilton-Wentworth in 1981 by Ecologistics Limited, was the only study that addressed landscape planning impacts relating to the expressway proposal. An earlier study dating to 1976, and also prepared by Ecologistics Limited, identified the Red Hill Creek Valley as a significant, environmentally sensitive area in the City of Hamilton. The Recreation Master Plan suggested ways to mitigate impacts of the expressway on open space and recreation lands, and proposed new recreational infrastructure to replace assets that would be displaced by the expressway.

The viability of the Project was dependent on the 1985 Consolidated Joint Board decision. The Consolidated Joint Board consisted of A.B. Ball and M.D. Henderson, both representatives from the Ontario Municipal Board (OMB), and M.I. Jeffery, representing the Ontario Environmental Assessment Board (OEAB). In the final decision, both OMB members were in favour, and the OEAB member was dissenting. In the approval, the two OMB members noted that it "cannot find, anywhere in the record, any evidence by any witness, other than very general statements, to show that the construction of the proposed road will 'destroy the valley'" (Ontario 1985, p.188). Furthermore, it is stated that

the evidence clearly shows that the Red Hill Creek Valley is presently in a state of pollution. [...] The construction of the proposed road will clean up the major points of

pollution and will provide improved public access to the Valley (Ontario 1985, p.190-191).

In contrast to the above reasoning, Jeffery's dissent refutes the argument that restoration of the Valley will be better accomplished through the construction of an expressway: "there is nothing to prevent the City from undertaking a comprehensive rehabilitation of the Valley," in the event that the application is denied (Ontario 1985, p.284). Furthermore, Jeffery reaches the conclusion that an expressway bisecting the valley "inhibits the preservation of this area as a continuous natural environment and is in fact incompatible with that natural environment" (Ontario 1985, p.286).

Clearly there is an issue between the radically different interpretations of the same evidence presented to the Consolidated Joint Board. Possibly this different interpretation is less a disagreement about the evidence, but instead a differing interpretation of the terms of reference of the original Environmental Assessment. As previously stated, there is no guidance in the Environmental Assessment Act as to how different components of the environment are weighted against each other. This allows for equally valid interpretations of environmental impact: an economically pragmatic view in which expressway construction funds improvements to stream management and recreational infrastructure, and a preservationist view that emphasizes the socio-ecological and habitat value of a contiguous green corridor system.

In the first phase of the Project, process was curtailed to streamline the approval. Relevant open space planning policies include the Environmental Assessment Act, Planning Act, and plan approval by the Niagara Escarpment Commission (NEC) and Hamilton Conservation Authority (HCA). In this case, these policies were amalgamated into a joint approval process, in which the HCA, City of Hamilton, and NEC became expert witnesses and appellants in a quasi-judicial hearing. Although the Valley was recognized as ecologically significant and environmentally sensitive, this did not altogether affect planning process or decision-making.

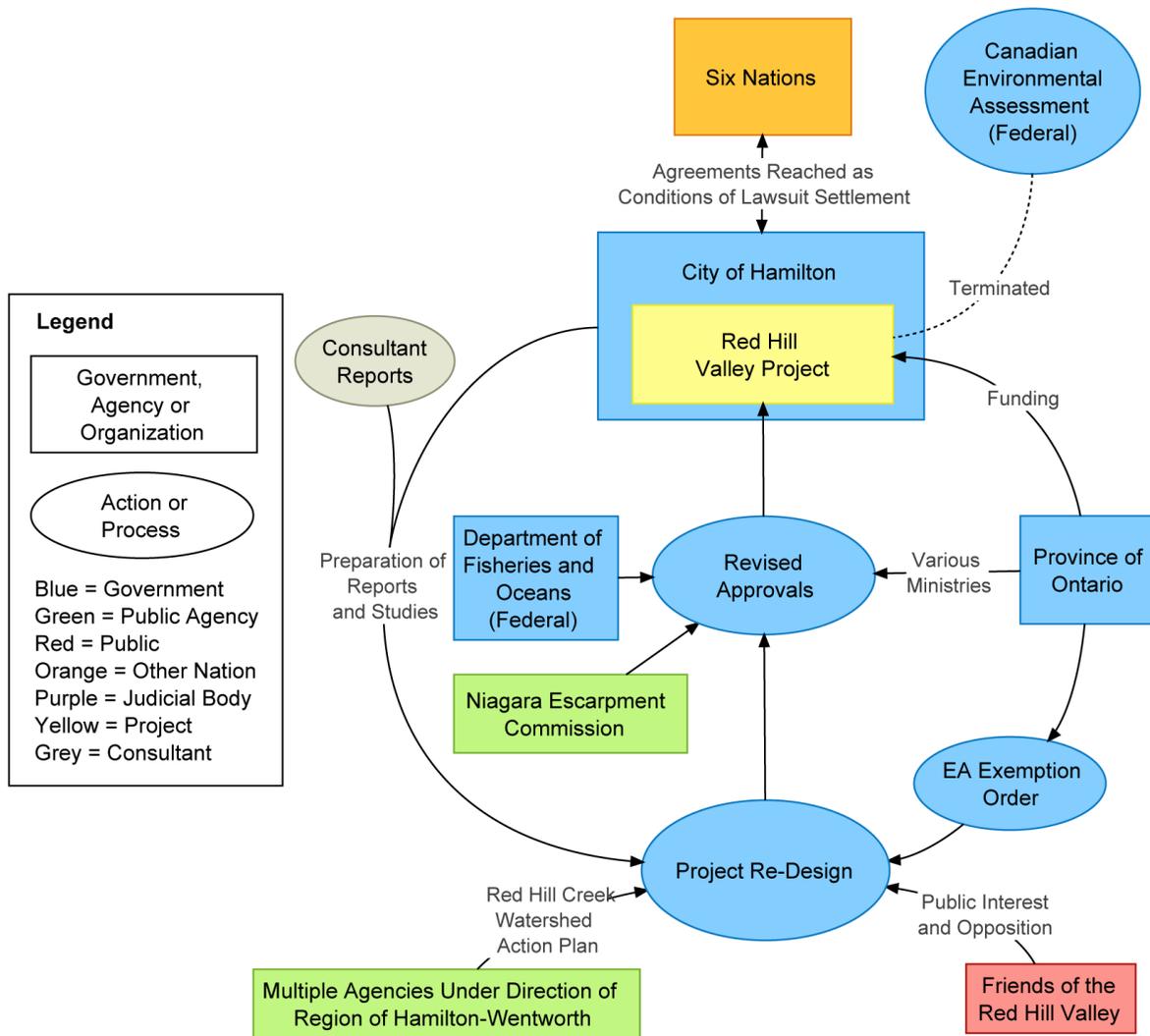
An appeal of the Consolidated Joint Board's decision was rejected in 1987. A one-year planning phase began in 1989, and the construction phase was intended to last from 1990 to 1998. However, the newly elected NDP government withdrew funding for the Project, effectively putting the Project on hiatus. As stated above, this is a further example of the

Province using conditional subsidies to guide regional planning decisions, in this case to protect an "irreplaceable [...] natural asset" (Peace 1998, p.234). This action ushered in the second phase of the Project planning and re-design, discussed below.

### 5.2.2 | Phase 2: Exemption Order and Re-Design

The second phase of the Project planning process was focused on the re-design of the Project, and the completion of a series of technical reports indicated by the Province's exemption order. Following the NDP government's removal of funding, all construction on the Project was halted. The decision making process is illustrated in Figure. 5.5.

In 1994, the Waterfront Regeneration Trust, under the direction of the provincial government, commented on the future of the Red Hill Valley and the issue of the Red Hill Creek Expressway in the *Report to Premier Rae: Vision 2020: The Provincial Response*. This document outlined steps for restoration of the Red Hill Valley, advocated for the creation of a conservation easement and transfer of ownership of the Valley to the Province. Furthermore, it proposed an environmental Interpretive Centre, Windermere Basin Corridor, and improved regional trails. However, the report did concede that a north-south road is needed, and proposed a realignment to avoid the valley floor, and a buried section of the roadway to avoid a sensitive wetland. Nonetheless, the Region rejected the expressway compromise in this proposal.



**Figure 5.5: Phase 2 Diagram: 1990 - 2003**

In 1995, the newly-elected Progressive Conservative government reinstated funding for the Red Hill Valley Project. By this time, a re-design of the Project was needed, especially for the newly proposed interchange at the Queen Elizabeth Way. In 1996, the Province issued an exemption order that effectively made the QEW interchange and all future work on the Red Hill Valley Project exempt from a formal Environmental Assessment, but stipulated that a re-design and further study of impact and mitigation strategies were warranted. The exemption order stated that the Region of Hamilton-Wentworth could continue with the project as approved in 1985, but this would result in "significant impacts to the Niagara Escarpment [...] and Van Wagner's Marsh, and will not result in a needed interchange with the Queen Elizabeth

Way" (Ontario 1997, p.1). Specifically, a second full Environmental Assessment was waived because it may "jeopardize the timing of construction or the guaranteed provincial funding" (Ontario 1997, p.1). Additionally, it is stated that the

implementation of an assessment process to establish a forum for government agencies, community groups and the public to exchange ideas and information, clarify positions and expectations, and work cooperatively to develop an Expressway design that reduces impacts to the Red Hill Creek watershed

will be accomplished in place of public consultation achieved through the Environmental Assessment process (Ontario 1997, p.2).

The Region of Hamilton-Wentworth also completed a Watershed Action Plan for the Red Hill Creek in 1998. This watershed planning process involved the input of provincial, federal and municipal government stakeholders, in addition to a number of public agencies and community and environment groups. The results of the plan were a number of open space, recreation, ecological, and green infrastructure long-term goals and immediate action steps. The action plan became a component of the revised Red Hill Valley Project, and informed later reports and planning decisions.

During the study and re-design phase of the Project, Environment Canada initiated a federal Environmental Assessment of the Project in 1998. The Region of Hamilton-Wentworth challenged the need for an additional federal environmental review of the Project and a federal judicial review board sided with the Region. The federal government lost a series of appeals to this verdict, and did not pursue the federal assessment after 2001.

In 2001, the Region of Hamilton-Wentworth formally amalgamated with the City of Hamilton and other lower-tier municipalities to form a new, single-tier municipality of the City of Hamilton. Municipal restructuring resulted in a more direct and streamlined relationship between the City and other stakeholders.

The consultation and preparation of the technical reports were completed between 1997 and 2003. In this phase of the Project, there were 5 components of the Red Hill Valley Project (Interviewee 2):

- The Expressway
- Stream Realignment
- Storm Water Management Facilities
- Combined Sewer Overflow
- Landscape Management Plan

This analysis focuses specifically on the Stream Realignment and Landscape Management Plan components of the Project. A total of 26 Technical Reports fulfilled the Exemption Order Redesign of the Project. Of these 26 reports, 9 reports related specifically to landscape planning (see Table 5.2). The need for 3 of these reports, including the Draft Landscape Management Plan, Southern Flying Squirrel Study, and the Golf Course Impact Study, were identified through public consultation and were not identified in the exemption order. The landscape planning technical reports, which are reviewed in this research, are listed in Table 5.2. See Appendix B for a list of all technical reports.

**Table 5.2: Landscape Planning Technical Reports**

<b>Author</b>	<b>Report Title</b>	<b>Notes</b>
Region of Hamilton- Wentworth and ENvision - The Hough Group	Niagara Escarpment Expressway Crossing Alternative Design Report	
ENvision - The Hough Group	Escarpment Crossing Visual Assessment	
ENvision - The Hough Group and Dougan & Associates	Draft Landscape and Recreation Master Plan	Not Identified in Exemption Order
Dougan & Associates	Terrestrial Resources Southern Flying Squirrel Study	Not Identified in Exemption Order
Archaeological Services Inc.	Cultural Heritage Resource Assessment	
Graham Cooke and Associates Inc.	Golf Course Impact Assessment Study, Red Hill Creek Expressway and King's Forest Golf Course	Not Identified in Exemption Order
Water Regime Investigations and Simulations Ltd.	A Stream Network Inventory, Fluvial Geomorphologic Assessment, and Preliminary Natural Channel Design of Red Hill Creek	
Dillon Consulting Ltd.	Land Use Assessment	

Policy development on natural heritage systems and cultural heritage landscapes influenced the re-design of the Project. These landscape value policies were introduced in the 1995 Provincial Policy Statement, and it is evident that a greater understanding of landscape ecology and the value of cultural landscapes was incorporated into the landscape planning technical reports completed for the re-design. The cultural heritage resource assessment in particular emphasized the value of cultural landscapes, in contrast to the 1982 submission, which was narrowly focused on historic buildings and a limited number of archaeological sites.

The *Niagara Escarpment Expressway Crossing Alternative Design Report*, co-authored by ENvision - The Hough Group and the City of Hamilton, can be credited with significant improvements to the Project, including the proposal of a viaduct in place of building the expressway on top of fill at the escarpment crossing in order to maintain the east-west escarpment ecological corridor. The Project was originally approved to be built on fill: the parkway would cross the escarpment, and massive amounts of fill would be used to raise the valley bed to reach the appropriate level (Interviewee 2). Due to the negative terrestrial impacts, disruption of the wildlife corridor, and the discovery of southern flying squirrels in the Valley, the City investigated the visual impact of a raised open structure instead of the valley fill approach (Interviewee 2).

The Escarpment Crossing Visual Assessment was a significant document because detailed visual analysis is not usually undertaken for projects of this nature. As the expressway was to cross the Niagara Escarpment, further design-detail considerations were triggered. This study is also noteworthy for applying innovative digital methodologies to assess visual impact. Experts from Ontario Hydro, who had developed visual assessment methodologies, aided in the completion of this study. It is unclear why visual assessment was not a stronger element in the first phase of the Red Hill Valley Project. Possibly, as the first Niagara Escarpment Plan was not approved by cabinet until 1985, there was no standard Visual Assessment Study process in place for evaluating visual impacts to the Niagara Escarpment at the time of the initial Environmental Assessment. Policy development by the Niagara Escarpment Commission, and a growing awareness of the importance of understanding visual impact, coupled with new tools to achieve this objective, resulted in the re-evaluation of visual impact of the expressway in Phase 2 of the Project. This is evidence of institutional learning and adaptive policy development.

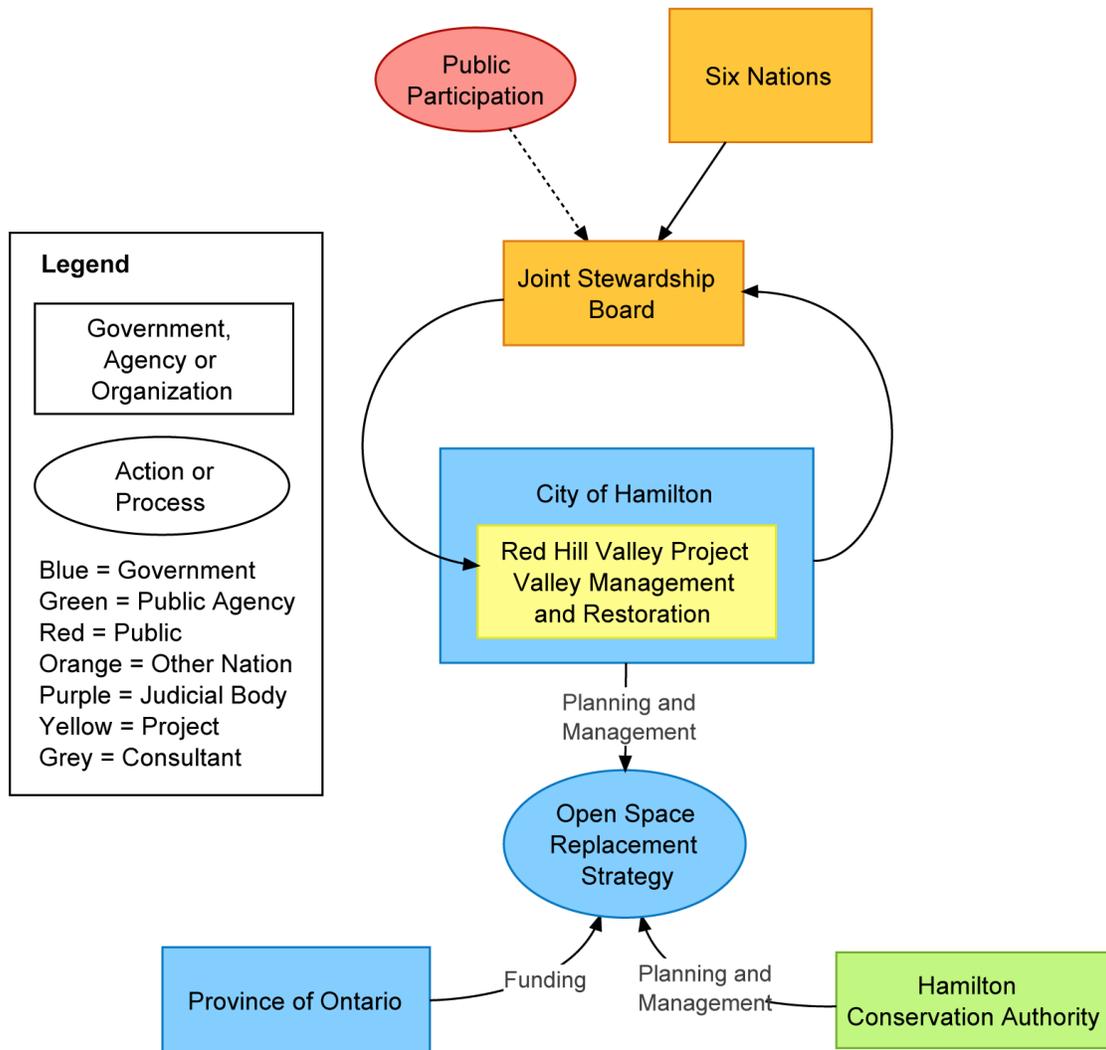
The results of the landscape planning suite of studies identified here were amalgamated into the Landscape Management Plan. This plan remained in draft form due to the need for approvals for further design detail work; nonetheless, it became a key document for ongoing stewardship of the valley. The Plan sets out a series of objectives for ecological restoration of the valley, enhancement of open space, recreational, and cultural heritage resources, and landscape design proposals. Potential re-design alternatives of Rosedale Park, which was impacted by the expressway development, were also proposed in the Landscape Management Plan. The Plan laid the groundwork for future detailed design work in the Valley, and continued ecological stewardship of the Valley. It is important to note that the document remained in draft form and was very adaptable: after its completion, the City of Hamilton would enter into an agreement with Six Nations on further stewardship of the Valley. Goals identified in the Landscape Management Plan were adapted to meet this new strategic objective. The continuation of the Landscape Management Plan and the Six Nations Agreement will form the majority of the discussion of Phase 3 of the Project, found below.

The technical reports were released in their final form in 2003, and subsequent to this process construction was to begin. However, two further developments would continue to impact the expressway plan: a lawsuit and subsequent agreement with Six Nations, and a proposed federal Environmental Assessment. The federal assessment was eventually terminated; however, the agreement with Six Nations would have long-term impacts on the management of the Valley. The result of this agreement is discussed in the summary of the final phase of the expressway planning below.

### 5.2.3 | Phase 3: Project Completion and Post-Occupancy Analysis

The expressway was completed between 2004 and 2007; however, elements of the Project relating to the landscape management of the Valley, and the open space replacement strategy, are still ongoing. The third phase of the Red Hill Valley Project was defined by several key actions. These were: the Sub-Agreements between Six Nations and the City of Hamilton, the adaptation and implementation of the Landscape Management Plan, the construction of the expressway, and the development and continuing implementation of the

Open Space Replacement Strategy. The decision making process for Phase 3 is illustrated in Figure 5.6.



**Figure 5.6: Phase 3 Diagram: 2004 - Present**

In 2003, a lawsuit was initiated against the City of Hamilton to stop construction of the expressway on behalf of Six Nations, citing impacts of the expressway on Nanfan Treaty rights. As part of the resolution of this lawsuit, the Joint Stewardship Board was "established as part of a suite of 10 agreements with the Haudenosaunee" (Interviewee 2). The Sub-Agreement on Joint Stewardship of the Red Hill Valley outlined the creation of a Joint Stewardship Board that would "be responsible for the creation, implementation and administration of the Master

Plan" that would guide future development and stewardship of the Valley (Joint Stewardship Board 2003, p.2). The Master Plan would have two parts: the first proposed activities over the construction of the Project that would "mitigate [the] loss" of "wildlife habitat, wetlands and populations of indigenous species in the Valley". The second part would set out "long-term values and objectives" that would adopt an "ecosystem and watershed approach to planning for the future of the Valley" (Joint Stewardship Board 2003, p.4). Furthermore, it is acknowledged that "the Valley's ecosystem and urban environment will change over time, [so the] Master Plan will provide [...] the flexibility to adapt to accomplish its objectives" (Joint Stewardship Board 2003, p.4).

Under the Economic Opportunities Sub-Agreement, the City negotiated an ecological restoration plan between the Haudenosaunee and the City of Hamilton. The restoration plan was included in the Landscape Management Plan, but further details were negotiated in the sub-agreement and other negotiations (Interviewee 2). Hamilton City Council then approved undertaking single source delivery with a native plant contractor (Kayanase, located in Ohsweken, ON) that Hamilton jointly established with the Haudenosaunee. The restoration program was a five-year deal, implemented jointly by the City of Hamilton, the Haudenosaunee, and the ecological consultant group Dougan & Associates (Interviewee 2).

Complementary to the ecological restoration plan was the development of the East-Mountain Trail Loop under the Open Space Replacement Strategy. The Open Space Replacement Strategy was an outcome of the Project re-design initiated in 1997, in which the City of Hamilton had "explored ways to reduce the impact of the Red Hill Valley Project on the local area" (City of Hamilton 2006, p.2). To address the loss of open space, and to ensure access to "quality recreational areas," and "open space replacement strategy was developed [...] to replace the 70 hectares of open space permanently displaced by the Red Hill Valley Parkway" (City of Hamilton 2006, p.2). Neighbourhood associations and the Friends of the Red Hill Valley were invited to participate in the development of the strategy.

Formally, the strategy is a partnership between the City of Hamilton and the Hamilton Conservation Authority; the system is being built over time as property becomes available and funding for trail construction is in place (Interviewee 2). The 10km trail loop connects through the Red Hill Valley to a waterfront trail developed by the Waterfront Regeneration Trust. As this was a provincial objective, provincial funding was granted for a pedestrian bridge at the

Queen Elizabeth Way and over the Lincoln M. Alexander Parkway. Both bridges would have been well beyond the capital budgets of the City of Hamilton (Interviewees 2 and 3).

Funding for the implementation of the strategy was provided by the Province, the Hamilton Conservation Authority Foundation, and the City of Hamilton's capital budget. During the key planning stages of the strategy the former head of the HCA was a very engaged stakeholder in the Red Hill Valley Project (Interviewee 2). A key element in this strategy was the creation of the Eramosa Karst Conservation Area. The land was held by the Ontario Realty Corporation, with the intention of development, but the HCA was able to secure the lands as part of the East Mountain Trail Loop open space system (Interviewee 3). In 2006, the Province donated 180 acres of land that would become the Eramosa Karst Conservation Area (Hamilton Conservation Authority 2006).

The stewardship of the Valley through the Joint Stewardship Board and the ongoing strategic objectives of the open space replacement strategy are the two defining features of the third phase of the Project. These strategies evolved as a result of institutional learning, inter-agency cooperation, and public consultation. In both cases, policy was created directly at the municipal level through consultation with stakeholders. This suggests that municipalities can immediately and effectively respond to environmental disputes within their jurisdictions.

This chapter has reviewed the planning process for the Red Hill Valley Project, and highlighted key planning decisions and policy development for the Project. Three planning stages were identified. Each stage was driven by an evolution of policy and a revision of the objectives of the Project. In the next chapter, the underlying themes and processes that drove this evolution are examined.

## Chapter 6 | Contributions of the Red Hill Valley Project to Policy

The previous two chapters described Ontario's policy structure for protecting and managing urban open spaces, and described the planning process for the Red Hill Valley Project that involved the construction of an expressway in a significant urban open-space corridor in the City of Hamilton. This chapter investigates the policy structure and the history of the Red Hill Valley Project to determine if institutional learning occurred in the planning practice of the City of Hamilton and the Province of Ontario as a result of the Project. Socio-ecological theory is applied to analyze the changes in Ontario's open space policy structure throughout the duration of the Red Hill Valley Project.

The analysis of the evolution of Ontario's policy structure is informed by the concept of institutional learning. Gunderson describes this type of learning as a "long-term proposition" that would require institutions to focus on "enduring system properties such as resilience, adaptive capacity, and renewal capacity" (in Berkes *et al.* 2003, p.44). Furthermore, for this type of learning to occur, institutions must be willing to "embrace uncertainty and systematically learn from their actions" (in Berkes *et al.* 2003, p.44). Therefore, institutional learning is the process through which organizations learn from previous experiences and adapt their management practices to improve ecosystem health and build consensus between stakeholders within a socio-ecological system.

Institutional learning is a component of resilience theory. Resilience is a way of understanding the dynamics of nonlinear systems, such as ecosystem behaviour. Resilience has three defining characteristics: the amount of change a system can undergo while retaining the same function or structure; the ability of a system to self-organize; and the capacity for a system to learn and adapt (Berkes *et al.* 2003). Learning from crisis can build resilience in a system. Therefore, if the institutions that plan and manage urban open spaces demonstrate the process of institutional learning, then urban open space systems will develop long-term resilience and adaptive capacity in the face of environmental and social stressors. For this research, institutions include municipalities, provinces, public agencies, First Nations, environmental organizations, and the interactions among these groups. This research focuses on analysis of learning at the municipal and provincial level.

Three institutional responses are possible in the face of an environmental crisis. There may be no effective response, which occurs when an institution with "vested political or economic interests" aims to remove a disturbance by blocking change within the institution (Berkes *et al.* 2003, p.359). There may be a response without experience, which results in new and untested policy responses. Such a response may be equivalent to an ineffective response. Third, it could lead to institutional learning, resulting in further responses with experience and leading to effective adaptive management and policy development.

It is evident that many changes in policy and new adaptive management strategies were required in the planning process for the Red Hill Valley Project. This research evaluates the adaptive responses by the City of Hamilton and the Province to various environmental stressors to determine if institutional learning did occur, and whether this learning corresponded to effective policy development at the municipal and provincial level.

Institutional learning is evident in Phase 2 of the Project through the completion of a re-design of the Project through public consultation and stakeholder consultation, and the development of a Landscape Management Plan. In Phase 3, meaningful input from Six Nations was incorporated into planning for the Valley, and the scope of the Project was expanded to include connections to a regional trail system and the development of the Open Space Replacement Strategy.

Contributions of the Project to provincial policy development are less evident, and in many cases the legacy of this Project is still unknown. Nonetheless, there is evidence that an evolution in planning policy influenced planning decisions in the Red Hill Valley, and that lessons learned through Project planning have been reflected in subsequent policy development.

Table 6.1 describes the three planning stages of the Red Hill Valley, and suggests complementary policy evolution in each of these stages.

**Table 6.1: Red Hill Valley Project and Policy Evolution**

<b>Date Range</b>	1977-1989	1990-2003	2004-Present
<b>Red Hill Project Phase</b>	Phase 1: Initial Proposal and Approval	Phase 2: Re-evaluation due to Political and Public Pressure	Phase 3: Project Completion and Post-Occupancy Analysis
<b>Policy Evolution</b>	<ul style="list-style-type: none"> <li>• Environmental Assessment</li> <li>• Site Plan Control</li> <li>• Planning Act Approvals</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Assessment (Revised)</li> <li>• Natural Heritage System Planning</li> <li>• Cultural Heritage Landscape Planning</li> </ul>	<ul style="list-style-type: none"> <li>• Municipally-directed Collaborative Management and Stewardship</li> <li>• Greenbelt Urban River Valley Amendment</li> <li>• Natural Feature Protection By-Law</li> </ul>

In the first phase of Project planning, the Environmental Assessment process was the driving policy program guiding the completion of the expressway proposal. As noted above, the Environmental Assessment Act, passed in 1975, was a recent policy development from the Province at the time of the 1982 study submission by the Region of Hamilton-Wentworth. Furthermore, the Consolidated Joint Board that was created to decide on the approval of the Project was the first of its kind created under the Consolidated Hearings Act. The Consolidated Joint Board was created to combine Environmental Assessment approvals with required approvals under the Planning Act and Site Plan Control from other public agencies. The creation of the Joint Board streamlined approval for the Project, but limited public input and thorough evaluation of the cumulative impacts of the proposed development.

Concurrently, provincial funding incentives influenced the political approval for the Project at the regional scale during the first phase of the Project. This provincial action suggests a strong vested interest in the established management scheme for the development of urban open spaces. As stated above, when a political entity has an established interest in a particular management scheme, there is likely to be no effective response to an environmental crisis. The creation of the Consolidated Joint Board with two Ontario Municipal Board members and one Ontario Environmental Assessment Board member suggests that the Province desired to block institutional learning and change. Through this action, the stability of the socio-ecological system of management for the Red Hill Valley was diminished, and institutional relationships amongst the Province, Region, other public agencies and the public was weakened. Given this response, it was unsurprising that the first phase of Project planning

would be unsuccessful, and strongly opposed by environmental organizations and other vested public agencies. The reasoning that an expressway project would "clean-up major points of pollution" and "improve public access" to the Valley was challenged by environmental organizations, including Save the Valley, and later Friends of the Red Hill Valley (Ontario 1985, p.190-191; Interviewee 5). Politically-driven landscape management decisions can be halted, at least temporarily, as occurred though the NDP government's removal of funding for the Project. Conversely, planning objectives that have developed through consensus and meaningful public engagement are much more likely to be permanent. A consensus-based approach is more evident in phase 2 and 3 of the Red Hill Valley Project.

In the second phase, the Environmental Assessment process was revisited with more meaningful public participation. Responding to new transportation needs that had arisen since the 1985 approval (such as an interchange with the Queen Elizabeth Way), the Region took the opportunity to re-examine the Project on a "defined scope basis" to "see if new design considerations" could "reduce or eliminate some of the negative impacts" of the Project (Interviewee 2). This process resulted in significant institutional learning at the municipal level. Greater participation is evident through the Region of Hamilton-Wentworth's watershed action plan process and the development of a series of landscape management technical reports with public input. Furthermore, an improved understanding of natural heritage systems, urban ecology, watershed analysis and cultural landscapes informed a more comprehensive study of potential impacts of the expressway. This improved knowledge was informed by new policy language concerning natural heritage systems and cultural heritage landscapes in the Provincial Policy Statement.

The legacy of the Project on the Environmental Assessment process at the provincial level is unclear. Unfortunately, the Province's exemption order and the direction of the second study demonstrates partial institutional learning at best. The rationale for the exemption order was that a full assessment would impact construction timing and jeopardize provincial funding. A key private consultant interviewed for this research noted that, regardless of the exemption, the Project needed to go through a lengthy re-design process to gain legitimacy. The Project has been criticized for representing outdated planning thinking related to the construction of highways for urban growth and expansion (Interviewee 4).

Concurrent to these developments in the Red Hill Valley Project, landscape-based planning language was being incorporated into provincial policy, most noticeably Natural Heritage and Cultural Landscape policies in the Provincial Policy Statement. A growing recognition of urban natural corridors as ecologically and culturally significant systems should be put in context with recent planning events in Ontario, such as the work of the Crombie Commission to emphasize naturalization and urban ecology in city planning (Interviewee 4). These policy developments led to a public demand for better outcomes from the Red Hill Valley Project (Interviewee 5). The re-design of the expressway reflected a growing planning knowledge of the importance of urban ecological systems.

Adaptive change is evident in the re-design process of the Project; however, it was mostly limited to changes within an established municipal-control structure. The Region of Hamilton-Wentworth (later the City of Hamilton) still operated under a system in which approval for the Project was guaranteed by the Province through due process, and the meaningful input of other public agencies, citizen groups, and other organizations was limited. These social stressors on the planning process would eventually become too great, requiring yet another adaptive reorganization of the Project planning process in 2003.

The third stage of the Red Hill Valley Project was driven by municipal-level policy development, reflecting new agreements and collaboration with Six Nations and other public agencies and stakeholders. The agreements with Six Nations regarding the future management of the Valley represented a significant adaptive change to the City's management regime for the Valley; however, this change still occurred within an established management framework. The Joint Stewardship Board was an engaged party and stakeholder in the planning process, but they were not a permitting body for the Project (Interviewee 2).

The Open Space Replacement Strategy exhibited institutional learning through the development of inter-agency cooperation on a significant park-planning project. Additionally, it represented an active planning strategy for the creation of open space, which is not typically an objective of municipal-park planning. The City of Hamilton does not proactively manage the open space, non-park lands that it owns. Management may be reactive if there is a public safety issue, but the City does not "plan or design for ecological benefit or improvement to a forest" (Interviewee 2). The current municipal funding model does not prescribe for open space management, withstanding a comprehensive, Ontario-wide program of ecological restoration.

Due to the changing perspective and nature of the Red Hill Valley Project, the City was able to do things differently regarding the open space management and ecological restoration planning of the Valley (Interviewee 2). Short term, case-by-case adaptive management strategies, as were exhibited by the City's open space management strategies under the Red Hill Valley Project, are examples of responding without prior experience to an environmental crisis. If this local management strategy leads to further institutional learning (such as policy change), then resilience through improved urban ecological planning will be developed in urban open space systems.

Provincial policy change in the post-occupancy study stage of the Red Hill Valley Project is evident, although there are fewer examples of institutional learning and change. To date, there is no provincial strategy for urban ecological restoration, although some municipalities (notably Toronto) have adopted this objective in their park planning strategies. At the provincial level, the 2014 Provincial Policy Statement placed an increased focus on natural heritage planning at a system basis (Interviewee 1). Two recent policy programs that specifically address urban open space systems are the Greenbelt Plan Urban River Valley Amendment, and the planning model advanced by Toronto's Ravine and Natural Feature Protection By-Law. These recent policy innovations were discussed in more detail in Chapter 4.

Currently, the Province is reviewing the Greenbelt Plan. This is an opportunity for municipalities to review Greenbelt boundaries, and also to consider the inclusion of new lands as protected urban river valleys. As previously stated, The Urban River Valley Amendment only applies to public valley lands. During policy development, it was decided that protecting public lands as an extension of the Greenbelt was a good first step (Interviewee 1). The Province is currently undergoing a coordinated review of its land-use planning policies, including the Greenbelt Plan. This review provides an opportunity for municipalities to suggest revisions to the Greenbelt boundaries and submit new lands for designation. In Hamilton, environmental organizations have supported urban river valley designations for Hamilton's rivers. Although the use of rural zoning in urban areas has been met with some resistance from city planners, the designation would function as a symbolic function of "green fingers" extending into the city, would become an educational piece about the Greenbelt and watershed health, and would set a firm boundary for urban river valleys (Interviewee 5). In 2015, the

City underwent a Greenbelt review process: urban river valley designation was proposed for the Red Hill Valley, but did not go forward in the final submission (Interviewee 5, Hamilton 2015).

Policy development for urban open spaces has also occurred in other municipalities. The Toronto Ravine and Natural Feature Protection By-Law provides an alternative model to the Greenbelt model of urban greenway protection. Much of Toronto's ravine system is in public ownership by the Toronto Region Conservation Authority (TRCA): the most pressing issues are encroachment and urbanization in forested areas. Toronto's Ravine By-Law and TRCA regulation are complementary in protecting urban river valleys. This policy allows for greater flexibility in green infrastructure and stormwater management infrastructure over Greenbelt designation (Interviewee 4). Nonetheless, there is a shortage of hazard funding to address slope failures during flood events. Restoration work could function as proactive management for a city's green infrastructure system. Hazard funding reserves for municipalities were cut under the previous Progressive Conservative government, and the Province still lacks an integrated ecological restoration programme to complement and strengthen municipal green infrastructure systems. Institutional learning is incomplete, and there remains a disconnect between provincial and municipal planning approaches.

Results of the key informant interviews are summarized in Table 6.2. Results show that definitions for open space and its use in a municipal planning setting are fairly consistent between all engaged stakeholders. Although the term was not preferred by provincial stakeholders or by Environmental Organizations, it was consistently defined by all groups as unstructured and unprogrammed lands that have habitat and recreational value. Increasingly, urban open spaces are being recognized for their importance in ecological planning and their contributions to community well-being.

**Table 6.2: Key Informant Interviews Summary**

<b>Key Informant</b>	<b>Definition of "Open Space"</b>	<b>Involvement with Red Hill Valley Planning</b>	<b>Future Opportunities for Policy Development</b>
Provincial Policy Experts	<ul style="list-style-type: none"> <li>• Not a preferred term</li> <li>• May include natural heritage or cultural heritage features, park lands</li> <li>• Broad interpretation</li> </ul>	N/A	<ul style="list-style-type: none"> <li>• Greenbelt Urban River Valley Amendment has potential for broader protection</li> </ul>
City of Hamilton Staff	<ul style="list-style-type: none"> <li>• Natural green space, unprogrammed, unstructured, often unmanaged</li> <li>• Zoning designation</li> </ul>	<ul style="list-style-type: none"> <li>• Project leader</li> <li>• 5 main components of Project: Parkway, Creek Realignment, SWM, Combined Sewer Overflow, and Landscape Management Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Local adaptive management of open spaces</li> <li>• Provincial urban ecological restoration strategy</li> </ul>
Private Consultants	<ul style="list-style-type: none"> <li>• Non-formalized parks, green spaces, space between built-form</li> <li>• Catch-all term, typically used at municipal level</li> <li>• Renewed importance for ecosystem planning</li> </ul>	<ul style="list-style-type: none"> <li>• Landscape Management Plan</li> <li>• Creek Realignment</li> <li>• Escarpment Crossing Visual Assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Ecological restoration for green infrastructure</li> <li>• Complementary municipal and Conservation Authority policy</li> <li>• Visual assessment for impacts to natural and cultural heritage</li> </ul>
Environmental Organizations	<ul style="list-style-type: none"> <li>• Not a preferred term</li> <li>• Lands in public ownership: a park, meadow</li> <li>• Passive recreation</li> <li>• Habitat value</li> </ul>	<ul style="list-style-type: none"> <li>• Biological inventory</li> <li>• Environmental sampling</li> <li>• Raising public awareness about the Valley</li> </ul>	<ul style="list-style-type: none"> <li>• Proponent for Greenbelt Urban River Valley designation</li> </ul>

The only stakeholder group that had a consistent role in Project planning was the City of Hamilton. Consultants provided support in the development of landscape assessment studies and ecological restoration plans. The Joint Stewardship Board was a key partner in the ecological restoration of the Valley, and Hamilton Conservation Authority helped secure significant lands for the Open Space Replacement Strategy. Opinions on future policy development are divergent. The Province and Environmental Organizations are advocates for Greenbelt designation in urban river valleys. This approach delineates strong boundaries for urban valley protection. The City of Hamilton and key Consultants prefer a local, municipally-based strategy for urban open space planning. The advantages of this strategy are a flexible and adaptive approach to land management that may include green infrastructure uses in addition to ecological services.

This chapter has identified opportunities for institutional learning relating to policy development for urban open space management throughout the Red Hill Valley planning process. The purpose of this analysis was to determine if lessons from the Red Hill Valley contributed to policy development for urban open space management. It was found that there were instances of institutional learning; however, the process is incomplete and still ongoing. The next chapter discusses the findings from the three preceding research strategies: the policy review, case study analysis, and institutional learning analysis. General themes and findings are identified.

## Chapter 7 | Discussion

This chapter reflects on the results of the research design in relation to the central research question. The research question was to determine if institutional learning from the Red Hill Valley Project contributed to the development of urban open space planning policy in Ontario. The chapter first outlines the context for urban open space planning and the socio-ecological systems framework employed in this research. This is followed by a discussion of the research process and results for the policy review, case study investigation, and institutional learning analysis. Finally, the results of the study are contextualized within the larger realm of ecosystem management strategies using the material, normative, institutional and societal framework for environmental policy outlined in Chapter 3.

Urban open space is not an established concept in Ontario planning practice. Although some municipalities use parks and open space as zoning designation terms, and open space language does occasionally appear in provincial planning policy, there is no established overarching urban open space planning strategy. Rather, as demonstrated in this research, there is a structure of complementary policies that directly or indirectly influence open space planning. Arguably, it is difficult to find evidence for institutional learning and policy development in support of a concept that is not uniformly adopted. The results of this research suggest that policy development is moving in the direction of a comprehensive urban open space strategy, although this policy evolution is still in progress.

In place of evidence of policy development, this research discovered that local adaptive management strategies taken on by municipalities and regional public agencies were the most effective response to environmental crisis and public criticism in the Red Hill Valley Project case study. Adaptive management is an iterative decision-making process through which a system incrementally changes. Furthermore, adaptive management leads to improved knowledge about the nature of a system, and increases the resilience of the system (Holling 1978). Adaptive management is most effective at a local level of governance, as decision-makers can immediately respond to feedback and change system behaviour. There is a complex relationship between broad provincial policy directives, intermediate regional public agencies such as the Niagara Escarpment Commission and the Hamilton Conservation Authority, the interests of First Nation stakeholders, and the City of Hamilton. Although

provincial policy set a framework for the approval process, the actual approval for the Project was a political decision that was shown to be highly decisive. Iterative adaptive management practiced by the City of Hamilton, Hamilton Conservation Authority and Niagara Escarpment Commission led to a number of positive outcomes for the management of the Valley. These outcomes included: the Open Space Replacement Strategy, the Niagara Escarpment Crossing Viaduct, and the ecological restoration of the Valley under the Joint Stewardship Board. The remainder of the discussion chapter will compare the relative successes and failures of provincially-driven decision making with locally-based adaptive management strategies for the Red Hill Valley Project.

The nature of open space is still not well understood in an Ontario policy context. When interview participants were asked to define urban open space, there was a range of responses that revolved around a central theme: urban open spaces were un-programmed areas, not proactively managed lands, or left-over spaces. Municipalities do not have the same standards for urban open space as would apply to parklands (Interviewee 3). When asked if urban open space is a term that they used in a professional capacity, responses varied. The use of the term is more common at the municipal level, and less commonly used at the provincial level. Proposed alternatives to the term, such as natural lands, do not necessarily convey the same meaning as open space. Other respondents noted that there may be a challenge in knowing what a broad term like open space means in a policy environment. The implication of these answers is that municipal staff are more directly concerned with open space development, whereas provincial staff may be more removed from open space planning despite writing and directing policy to that aim.

In Ontario, urban open spaces tend to follow a similar pattern of development: historically, they were purchased as parade grounds or multi-use greenbelts, or remained undeveloped during a city's initial growth stage due to the presence of hazards or landscape unsuitability. Overcome by urban growth, the greenbelt becomes an internal greenway system. Over time, the land value of the greenway, and the value of the land as a linear corridor for the city's infrastructure needs, becomes too great and the greenway is developed to meet the needs of a growing city. This pattern was evident, to an extent, in the planning of the Red Hill Valley Project. The ability of policy to address planning issues for loose, un-programmed and unmanaged lands is a challenging prospect: the most likely location for institutional learning

and adaptive change will be found at the municipal or local level. As shown in the open space policy review, the responsibilities for implementation and application of all five policies in Ontario's open space policy structure are at the municipal level. Results from the key informant interviews and document analysis confirm this expectation.

The framework of socio-ecological system theory was used to describe the ecosystem-management relationship of urban open space systems. This framework posits that urban open space systems are complex systems and therefore should be understood through their disturbance regimes, amount of structural diversity, input of knowledge, and ability to self-organize. The two key dynamics of this system for understanding policy are knowledge and self-organization. Knowledge in a complex social system is a reflection of an openness to other knowledge and value systems, and an institution's ability to reflexively learn from experience. Self-organization is a reflection of resilience in a system. A system may radically reorganize when environmental and social stressors become too great. In the Red Hill Valley Project case study, the strong public response to the Project required a reorganization of the planning structure for the Valley through a Project re-design, a series of agreements with Six Nations, and new policy development with other public agencies. In the post-occupancy phase of the Project, the public reaction provided opportunities to reflect on why certain environmental and social responses required the system to reorganize. Through this reorganization, the management of the Valley now has a cooperative, consensus-based planning structure through the Joint Stewardship Board.

In the Ontario policy response, the Urban River Valley Greenbelt amendment policy can be interpreted as an example of adaptive management and social learning. An amendment represents a specific type of institutional learning: it is an amendment to a previous policy directive. Therefore, the issuance of a policy amendment suggests that an institution is learning from previous approaches, and this learned knowledge is encoded in the policy amendment language. The Urban River Valley Amendment may have arisen from a number of management factors: the lack of a Province-wide restoration or open space strategy, a figurative and literal disconnect between Greenbelt designated lands and urban hydrological systems, and a growing knowledge base on the importance of urban ecological systems. The Urban River Valley Amendment could be applied to the Red Hill Valley, and such a decision may be an outcome of the Province's current coordinated land use planning review. Although it

is too early to tell what the long-term implications of this policy are, its development suggests institutional learning.

The analytical framework for understanding urban open space system planning identified in the methods chapter is revisited in this chapter to evaluate the results of urban open space policy evaluation findings. Institutional factors in the development of policy are considered in detail. The institutional factors identified are:

- Provincial - Municipal Relationships
- Municipal Restructuring
- Aboriginal Treaty Rights
- Responsibilities of Other Government Agencies

The role of municipal restructuring did impact the Project planning process: the Region of Hamilton-Wentworth amalgamated with the City of Hamilton and other lower-tier municipalities to form the single-tier City of Hamilton in 2001. The impact of the amalgamation on municipal planning practice is beyond the scope of this research. Additionally, aboriginal treaty rights, and the legal duty to consult and accommodate on projects that impact open space is beyond the scope of this research due to limitations in key informant availability. Readers interested in a detailed analysis of the relationship between the Crown's duty to consult and the Red Hill Valley Project are directed to research by Fraser and Viswanathan (2013).

The ascribed roles and responsibilities of other government agencies and organizations are an indicator of an institution's willingness to accept other knowledge systems to achieve resilience in socio-ecological systems. In the early stages of the Red Hill Valley Project, these knowledge systems were either ignored (as in the case of First Nations history in the Valley), or opposed through legal process to streamline the Project approval. In later stages, input from other agencies was sought on Valley stewardship, open space planning strategies, and policy amendments. Other knowledge systems were actively encouraged, and institutions sought to develop consensus when conflict arose. The evolution of inter-agency collaboration at the municipal level is a strong example of the development of resilience in the Red Hill Valley open space system.

Finally, the provincial-municipal relationship was a key determining factor in the Project's evolution. For example, the Province used funding mechanisms to steer regional planning in a desirable direction. This behaviour suggests a diminishing of policy-based decision-making programs in favour of ad hoc, politically-motivated decision making. Over the course of the Red Hill Valley Project, provincial funding was used to persuade the regional government to adopt the original expressway plan, then was used by a subsequent provincial government to halt or stall the development of the expressway, and then was reinstated by the following provincial government. This behaviour is the antithesis of a clear and transparent planning process, and does not allow for institutional learning or the development of system-based knowledge.

There is also a noticeable break between the municipal-driven city planning practiced in the McQuesten era and the current provincially-driven model; in fact, the evidence shows that in the past municipalities such as Hamilton used the former Ontario Act to impose significant levies to enable park planning objectives, and the City of Hamilton worked directly with planning consultants to realize bold City Beautiful plans for the City (Best 1991). The role of the Province in land-use planning was largely by-passed at this time. The City of Hamilton extended its own metropolitan influence to create a greenbelt that was beyond its own municipal borders. In contrast, today the Province drives open space and regional planning in the Greater Golden Horseshoe by operating through a Toronto-based extended metropolitanization model. The evidence for this is as follows: the Province downgraded the responsibility of creating a super-regional transportation network to the regional municipality, created a Consolidated Joint Board hearing process to fast-track the approval of the original Project, used the Toronto-centric Waterfront Regeneration Trust to comment on and critique the Project outcomes, and either emphasized or suppressed the role of regional planning mechanisms such as the Niagara Escarpment Commission to achieve regional planning goals. These politically-motivated actions represent an institution acting against socio-ecological system dynamics in an attempt to preserve the status-quo.

As discussed above, the legacy of the Red Hill Valley and its impact on open space planning policy is still uncertain. The City and Province have only now begun the post-occupancy evaluation of the Project. At the municipal level, post-occupancy evaluation includes ongoing monitoring of ecological restoration and stewardship of the Valley through

the Joint Stewardship Board. At the provincial level, there are several possible outcomes of the post-occupancy learning period for the Red Hill Valley Project. These may include a public evaluation of the Environmental Assessment Act when applied to urban open space planning, a comparative study of the Urban River Valley Greenbelt policy with municipal Natural Feature Protection By-Laws for achieving urban open space planning objectives, and an evaluation of meaningful public-participation consultations on large-scale open space planning projects.

As stated in the introduction to this research, there is no overarching policy for urban open space planning and development in Ontario. Results from the document analysis and key informant interviews indicate that there is no need for a single overarching policy, and that a structure of complementary open space policies may be more effective by allowing for greater flexibility in their application at the municipal level. Nonetheless, there is need for more consistency in the definitions, terms of reference, and scope of the existing policies.

This chapter has evaluated the context and theoretical framework for this research, discussed the major findings from the three research objectives, and commented on the implications of the findings. The next chapter concludes this research with a discussion of study limitations, implications for landscape architects and land planners, and suggestions for future research directions.

## Chapter 8 | Conclusion

Overall, the research process was successful in identifying instances of institutional learning in the Red Hill Valley Project, and determining if these lessons have contributed to policy development for urban open space planning in Ontario. The three objectives were met: a policy review and analysis was performed, a case study was identified and analyzed, and contributions of the case study to the open space policy structure were identified. The research methods employed to meet these objectives were a document analysis and key informant interviews. Triangulation of the results of these methods was used to verify the results of the research. Conclusions from the document analysis were compared with the key informant interview responses. Socio-ecological system theory provided a robust framework to identify institutional learning in the Red Hill Valley Project and to show how resilience was developed in this open space system. General findings on Ontario open space policy structure were communicated in the discussion chapter.

The research question posed was: How has the Red Hill Valley Project contributed to the evolution of open space planning policy in southern Ontario? This research concluded that there were few instances of provincial institutional learning in urban open space planning as a result of this Project. No single provincial policy was the most effective in driving improvements in Project planning. Rather, successful institutional learning and adaptive management was found at the local municipal level through the Open Space Replacement Strategy (driven by the City of Hamilton and the Hamilton Conservation Authority with assistance from the Province), and the ecological restoration work overseen by the Joint Stewardship Board.

### 8.1 | Limitations of this Research

The three methods used in this research were a policy evaluation, a case study through key informant interviews and document analysis, and a comparative analysis for institutional learning. The policy analysis using the policy evaluation framework adapted from Mickwitz (2003) was effective in identifying patterns in Ontario's policy structure for urban open space.

The document analysis was also effective; the majority of relevant documents were acquired through the City of Hamilton and the Hamilton Public Library Archives.

The application of the key informant method in this research was constrained due to the lack of participation from two key stakeholders. This gap prevented a complete cross-sectional analysis of key informant interview responses. Lack of participation from the Hamilton Conservation Authority and the Joint Stewardship Board is a limitation to this research. A request for interview participation was sent to the Joint Stewardship Board coordinator, and the proposal was circulated and considered by the Joint Stewardship Board. Ultimately, it was decided that they would not participate, and the researcher was directed to contact City of Hamilton staff. Similarly, requests for interviews with the Hamilton Conservation Authority were denied, as the Hamilton Conservation Authority felt they did not have sufficient planning jurisdiction in the Valley or knowledge about the Project. The Hamilton Conservation Authority also directed the researcher to contact City of Hamilton staff for comment on the Project. As a consequence, the discussion of findings of institutional learning in these two cases is limited.

Furthermore, the results of this research may only apply to the case study investigated. A multi-case study analysis of urban open space policy implementation through a repetition of the methods used in this study may allow for further development of theory and the creation of policy recommendations.

## 8.2 | Implications for Landscape Architecture

Landscape architects contributed in many ways to the Red Hill Valley Project: reports on the urban ecology of the valley, improvements to the Project design, and the long-term Landscape Management Plan strategy were all authored by landscape architecture firms. However, these reports contributed to the second and third phases of the Project. Clearly, landscape architects should have a stronger voice in the early stages of projects that impact urban open space. Involvement in the pre-design planning phases of such projects would require landscape architects to be more knowledgeable about planning processes in the provincial and municipal realms, and to take a more active interest in political decision-making

processes. By actively changing the rules of how open spaces are planned and managed, landscape architects can ensure better designed outcomes for urban open spaces.

Landscape architects could become more involved in policy development through writing position papers, commenting on policy through statements and publications issued through landscape architecture professional associations, and evaluating the role of policy in project development during post-occupancy analysis. Landscape architects can learn from the example of the ecologists Riley and Mohr (1994) who authored an influential green paper on ecological planning in southern Ontario. The ideas expressed in this green paper were eventually adopted through natural heritage system policy. Furthermore, knowledge sharing with allied professionals such as the Ontario Professional Planners Institute may also help landscape architects to engage in policy development.

Finally, throughout the Red Hill Valley Project planning process there was a lack of consideration of the social and cultural impact of the loss of open space to the local community. Landscape architects can bring social and cultural impact assessment expertise to such projects. For instance, the Ontario Environmental Assessment process would benefit from a consistent method for identifying the social and cultural impacts of development projects.

### 8.3 | Future Research Directions

This research has served as an introduction to the history and planning of the Red Hill Valley Project, but it is only a starting point. Further study of the Red Hill Valley Project and the implementation of various components of the Project would be useful to policy-makers. For example, the Open Space Replacement Strategy could be a topic of ongoing study. Additionally, the structure and operation of the Joint Stewardship Board and the City's implementation of an ecological restoration programme in the Valley would be an enlightening topic of research.

The Joint Stewardship Board is a collaborative planning partnership between First Nations and a municipal government. There are few examples of direct engagement between First Nations and municipal governments, and there is a gap in the literature about the legal duty of municipalities to consult First Nations in the planning process (Fraser & Viswanathan

2013). Research on the Joint Stewardship Board model of land management would have broad relevance in planning, landscape architecture, and political science.

As previously noted, the Red Hill Valley Project was enabled through a political decision-making process. A complete analysis of this process was beyond the scope of this research. An examination of the relationship between large-scale landscape architecture projects and political processes may be a topic of further study.

General directions for future research include development of theory related to urban open space planning. A more detailed understanding of the characteristics of urban open space would be useful. Although it is a common term, urban open space is not clearly defined in theory or in planning practice. Improved knowledge about urban open space would be useful for the development of management strategies and policy.

A cross-sectional study of how municipalities manage open spaces would set a baseline for further study. Some municipalities actively manage for open space and have ecological restoration strategies. An updated and thorough inventory of municipal practice would be useful for future evaluative research and policy development.

Finally, research on learning within a political system will aid in developing theory on socio-ecological systems. This research has demonstrated that municipalities can be flexible and adaptive in the implementation of planning policies, but policy is developed at the provincial level. Therefore, research on how the Province can learn from municipal planning experience would improve the relationship between policy development and policy implementation. Applied research on how to develop metrics for learning within a political system would allow for greater adoption and use of the institutional learning model proposed in socio-ecological system theory.

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## Appendix A | Ontario City Classification Tables

**Table A.1: Ontario City Classification**

<b>City Typology</b>	<b>Ontario Cities Population &gt;100,000</b>	<b>Date Incorporated as City</b>	<b>Population 2011</b>	<b>Population 2006</b>	<b>Regional Municipality</b>
<b>Historic Major Cities</b>	Toronto	1834	2615060	2503281	Single-tier
	Hamilton	1846	519949	504559	Single-tier
	Kingston	1846	123363	117207	Single-tier
	Barrie	1853	125711	128430	Single-tier
	Ottawa	1855	883391	812129	Single-tier
	London	1855	366151	352395	Single-tier
	St. Catharines	1876	131400	131989	Niagara Region
	Guelph	1879	121688	114943	Single-tier
	Windsor	1883	210891	216473	Single-tier
	Kitchener	1912	219153	204688	Region of Waterloo
<b>Historic Amalgamated Cities</b>	Thunder Bay	1907 (Fort William), 1907 (Port Arthur), 1970 (Amal.)	108359	109160	Single-tier
	Cambridge	1915 (Galt), 1973 (Amal.)	126748	120371	Region of Waterloo
<b>Inter-War Cities</b>	Oshawa	1924	149607	141590	Durham Region
	Greater Sudbury	1930	160274	157857	Single-tier
<b>Modern Cities</b>	Mississauga	1974	713443	668599	Peel Region
	Brampton	1974	523911	433806	Peel Region
	Burlington	1974	175779	164415	Halton Region
	Vaughan	1991	288301	238866	York Region
	Markham	2012	301709	261573	York Region

**Table A.2: Historic and Current Green Space Plans for Historic Major Cities in Ontario**

<b>Historic Major Cities</b>	<b>Historic Plans</b>	<b>Current Plans</b>
Toronto	<ul style="list-style-type: none"> <li>• Toronto Guild of Civic Art Improvement Plan (1908)</li> <li>• Toronto Harbour Commissioner's Plan (1912)</li> </ul>	<ul style="list-style-type: none"> <li>• Waterfront Regeneration Trust (1988)</li> <li>• Waterfront Toronto (2002)</li> </ul>
Hamilton	<ul style="list-style-type: none"> <li>• Cauchon Reconnaissance Report on Development of Hamilton (1917)</li> <li>• Faludi Master Plan of the City of Hamilton (1947)</li> </ul>	<ul style="list-style-type: none"> <li>• City of Hamilton Urban Official Plan Natural Heritage System and Open Space Designation (2013)</li> </ul>
Kingston	N/A	<ul style="list-style-type: none"> <li>• Waterfront Master Plan (2016)</li> </ul>
Barrie	N/A	<ul style="list-style-type: none"> <li>• Barrie Official Plan (2010)</li> </ul>
Ottawa	<ul style="list-style-type: none"> <li>• Holt/Bennett General Plan (1915)</li> <li>• Cauchon Federal District Plan (1922)</li> <li>• Gréber Report (1950)</li> </ul>	<ul style="list-style-type: none"> <li>• Greenspace Master Plan - City of Ottawa (2006)</li> <li>• Greenbelt Master Plan - National Capital Commission (2013)</li> </ul>
London	<ul style="list-style-type: none"> <li>• Adams/Seymour Plan For the City of London (1925)</li> </ul>	<ul style="list-style-type: none"> <li>• Thames Valley Corridor Plan (2011)</li> </ul>
St. Catharines	N/A	<ul style="list-style-type: none"> <li>• The Green Plan (1995)</li> <li>• Parks Policy Plan (2005)</li> </ul>
Guelph	<ul style="list-style-type: none"> <li>• City of Guelph Open Space Master Plan (1973)</li> </ul>	<ul style="list-style-type: none"> <li>• Natural Heritage System OPA 42 (2014)</li> <li>• Naturalization in the City of Guelph Parks Policy (1991)</li> </ul>
Windsor	<ul style="list-style-type: none"> <li>• Adams/Seymour Plan for Windsor (1930 - Not Completed)</li> </ul>	<ul style="list-style-type: none"> <li>• Greenway System Plan in Windsor Official Plan (2013)</li> </ul>
Kitchener	<ul style="list-style-type: none"> <li>• Leavitt City Plan for Greater Berlin, Canada, Showing Waterloo (1914)</li> </ul>	<ul style="list-style-type: none"> <li>• Naturalization/Reforestation of Parks and Open Space (1990)</li> </ul>

## Appendix B | Technical Reports

**Table B.1: All Technical Reports for the Red Hill Valley Project**

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The following reports have been prepared to support the IADP (note: \* indicates reports that were not identified in the Exemption Order but have been developed as a result of public or government agency consultation)

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- Surface Water, Stormwater Quality and the Red Hill Creek Realignment Study (Philips Engineering Ltd.)
  - Air Quality Assessment (RWDI)
  - Vehicle Air Emissions Inventory (RWDI)
  - Thermal Dynamics Impact Assessment (RWDI)
  - Noise Assessment (QEW section) (MTO)
  - Traffic Noise Impact Assessment (Red Hill Valley section) (RWDI)
  - \*The Health Assessment of Particulate Matter with Special Emphasis on Mobile Sources of Emission (Cantox)
  - Contaminated Sites Impact Assessment Report (Dillon)
  - Escarpment Crossing Visual Assessment (ENvision - The Hough Group)
  - Hydrogeologic Inventory and Impact Assessment (Blackport and Associates)
  - Terrestrial Resources (Dougan and Associates)
  - Cultural Heritage Resource Assessment (Archaeological Services Inc.)
  - Pre-construction Ambient Air Quality Monitoring Survey (RWDI)
  - Post-Construction Air Quality Monitoring For Lincoln Alexander Parkway (RWDI)
  - \*Golf Course Impact Assessment Study, Red Hill Creek Expressway and King's Forest Golf Course (Graham Cooke and Associates, Inc.)
  - A Stream Network Inventory, Fluvial Geomorphologic Assessment, and Preliminary Natural Channel Design of Red Hill Creek (Water Regime Investigations and Simulations Ltd.)
  - \*Southern Flying Squirrel Study (Dougan and Associates)
  - Land Use Assessment (Dillon)
  - Economic Impact to Businesses at QEW Interchange (C.N.Watson)
  - Snow Drifting Assessment (RWDI)
  - Niagara Escarpment Expressway Crossing Alternative Design Report (City of Hamilton and ENvision - The Hough Group)
  - Fisheries and the Red Hill Creek Realignment Study (C. Portt and Associates)
  - Consultation Report (Lura Consulting)
  - \*Draft Landscape and Recreation Master Plan (ENvision - The Hough Group, Dougan and Associates)
  - Assessment of Updated Auto and Truck Forecasts (iTrans)
  - Traffic Forecast for Noise and Air Quality (iTrans)
-

## Appendix C | Key Informant Interview Questions

### C.1

#### **Interview Question for Provincial Policy Expert (Interviewee 1) Interview Conducted February 5th, 2016**

1. Define open space. Is this a term you used in your professional work?
2. Can natural heritage areas, parklands, trails, and large private green spaces all be considered open space, or are these separate entities?
3. What policy tools can municipalities use to protect or expand open space?
4. Have new policies such as the Greenbelt Plan Urban River Valley Amendment been successful in protecting open space?
5. Which provincial ministries have a role in open space systems? Did you work with the Ministry of Municipal Affairs and Housing on policy development and implementation?
6. In general, what is the relationship between the province and municipalities when planning for natural heritage, parks and open spaces?

### C.2

#### **Interview Questions for City of Hamilton Staff (Interviewee 2 and Interviewee 3) Interview Conducted February 9th, 2016**

1. Define open space. Is this a term you used in your professional work?
2. Describe the different components of the Red Hill Valley Project.
3. Which other organizations or agencies contributed to the project planning? What were their roles?
4. Describe your role in the project.
5. Describe the goal, objectives and responsibilities of the Joint Stewardship Board.
6. What policy mechanisms are currently in place to protect natural heritage systems, and other non-designated open space systems around the Red Hill Valley?
7. How does the City of Hamilton currently plan for Open Space?

8. How has the planning policy framework evolved over the history of the Red Hill Valley Project?

### C.3

#### **Interview Questions for Private Consultant (Interviewee 4) Interview Conducted February 11th, 2016**

1. Define open space. Is this a term that you use in your professional work?
2. Describe the different components of the Red Hill Valley Project with which you were involved. What was your role in the project?
3. Describe the development process of the Red Hill Valley Project's Landscape Management Plan. What other organizations or agencies contributed to the development of this document. How did the document evolve over time?
4. Describe the development process of the Escarpment Crossing Visual Assessment.
5. How did the provincial policy framework (regarding Natural Heritage Systems, Cultural Heritage Landscapes etc.) change over the timeframe of the Red Hill Valley Project? How did provincial policy influence the project?
6. Describe the current policy framework for urban open space planning. This may include natural hazard and natural heritage policy in the PPS, Cultural Heritage Policy, and the Greenbelt Urban River Valley Amendment. Does existing policy provide an adequate framework for open space planning?

### C.4

#### **Interview Questions for Environmental Organization Representative (Interviewee 5) Interview Conducted February 18th, 2016**

1. Define open space. Is this a term you use in your professional work?
2. Describe the timeline of the Red Hill Valley.
3. What organizations and community groups were active or interested in the Red Hill Valley Project? What were the objectives of these organizations? (For example, Hamilton Naturalists' Club, Save the Valley, Friends of Red Hill Valley, Clear Hamilton of Pollution, Environment Hamilton)
4. Describe your interest and involvement with the Red Hill Valley.

5. How was the public consulted during the history of the Red Hill Valley Project?
6. Discuss policy reforms that may improve protection and management of urban open space. (For example, Natural Heritage, Cultural Heritage, Greenbelt Expansion, Open Space By-Laws and Zoning Overlays)

## C.5

### **Interview Questions for Joint Stewardship Board Representative** **Interview Questions were Circulated. Interview Request was Denied.**

1. Define 'urban open space'. Is 'open space' a term you use in your professional activities?
2. How would you describe Hamilton's open space system? What areas contribute to this system?
3. Describe the objectives of the Joint Stewardship Board and its role in open space planning.
4. What factors contributed to the formation of the Joint Stewardship Board?
5. Was the creation of the Joint Stewardship Board modelled on any other collaborative (or multi-stakeholder) planning boards?
6. How has policy influenced the stewardship of the valley?
7. Does provincial policy, such as the Greenbelt Act and Urban River Valleys Amendment, influence the management of the valley?

## C.6

### **Interview Questions for Hamilton Conservation Authority Staff** **Interview Questions were Circulated. No Response to Interview Request.**

1. Does the Hamilton Conservation Authority use the term 'open space'? If yes, what is the Hamilton Conservation Authority's operational definition of the term open space?
2. Does the Hamilton Conservation Authority collaborate with the City of Hamilton for the planning and management of open space and urban woodlands? If yes, what types of support or service does the Hamilton Conservation Authority offer to the City of Hamilton in the planning process?

3. Does the Hamilton Conservation Authority contribute to the development of Hamilton's Natural Heritage System? If so, how? (e.g. watershed plans, land acquisition, natural area inventories etc.)
4. Does the Hamilton Conservation Authority have an official position on the potential use of the Urban River Valley Greenbelt Amendment for the City of Hamilton?
5. Has the Hamilton Conservation Authority contributed to the development of any other recent initiatives that protect open spaces? (e.g. Hamilton's Woodland Protection By-Law)

Appendix D | Research Ethics Board Certificate, Letter and Consent  
Form

**APPROVAL PERIOD:** January 8, 2016  
**EXPIRY DATE:** January 8, 2017  
**REB:** G  
**REB NUMBER:** 15DC013  
**TYPE OF REVIEW:** Delegated Type 1  
**PRINCIPAL INVESTIGATOR:** Landman, Karen (klandman@uoguelph.ca)  
**DEPARTMENT:** School of Environmental Design & Rural Development  
**SPONSOR(S):** None  
**TITLE OF PROJECT:** Exploring the Challenges of Urban Open Space System Planning in Ontario through the Case Study of the Red Hill Valley, Hamilton, Ontario

The members of the University of Guelph Research Ethics Board have examined the protocol which describes the participation of the human participants in the above-named research project and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement, 2<sup>nd</sup> Edition.

The REB requires that researchers:

- Adhere to the protocol as last reviewed and **approved** by the REB.
- Receive approval from the REB for any **modifications** before they can be implemented.
- Report any **change in the source of funding**.
- Report **unexpected events or incidental findings** to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants, and the continuation of the protocol.
- Are responsible for **ascertaining and complying with all applicable legal and regulatory requirements** with respect to consent and the protection of privacy of participants in the jurisdiction of the research project.

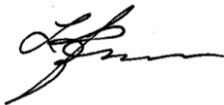
The Principal Investigator must:

- Ensure that the ethical guidelines and approvals of facilities or institutions involved in the research are obtained and filed with the REB prior to the initiation of any research protocols.
- Submit a **Status Report** to the REB upon completion of the project. If the research is a multi-year project, a status report must be submitted annually prior to the expiry date. Failure to submit an annual status report will lead to your study being suspended and potentially terminated.

The approval for this protocol terminates on the **EXPIRY DATE**, or the term of your appointment or employment at the University of Guelph whichever comes first.

Signature:

Date: January 8, 2016



L. Kuczynski  
Chair, Research Ethics Board-General



## LETTER OF INVITATION TO PARTICIPATE - INTERVIEW

*Exploring the Challenges of Urban Open Space System Planning in Ontario through the Case Study of the Red Hill Valley, Hamilton, Ontario.*

REB# 15DC013

Dear [*potential participants name*]:

My name is Scott Cafarella and I am a graduate student in the Master of Landscape Architecture program at the University of Guelph, working under the supervision of Dr. Karen Landman to complete my master's thesis.

I am currently conducting a research project on open space planning in urban areas in Ontario. The purpose of this project is to identify and address policy gaps and determine opportunities for creating and sustaining urban open space systems. Urban open space systems are connected networks of public and private lands that provide recreational, cultural, ecological, and environmental services in urban areas. The case study of the Red Hill Valley in Hamilton, Ontario, will be used to examine how policy was applied to the management of that system, and how stakeholder engagement influenced management decisions. Lessons from this case study will be generalized to make wider policy recommendations that will further enable the creation of urban open space systems in Ontario.

The core purpose of the project is to determine the policy-based challenges and opportunities for Ontario municipalities in creating urban open space systems. We will conduct a series of interviews with representatives from key stakeholders in the Red Hill Valley Project. The key stakeholder groups are 1) the City of Hamilton, 2) the Haudenosaunee Confederacy, 3) Citizen Interest Groups, 4) the Province of Ontario, 5) Conservation Authorities, and 6) Professional Consultants involved with the project. Two representatives from each stakeholder group will be interviewed.

You have been contacted to contribute a perspective of the [*relevant stakeholder group*]. If you are willing to participate in this research project, or have further questions about the project, please contact Scott Cafarella at [cafarels@uoguelph.ca](mailto:cafarels@uoguelph.ca). The estimated time required for the interview is 1 hour. Interviews will take place at your place of work, or at a public location that is convenient for you.

We look forward to hearing from you.

Sincerely,

Scott Cafarella  
Master of Landscape Architecture  
Student  
University of Guelph  
cafarels@uoguelph.ca

Dr. Karen Landman  
Faculty Supervisor/  
Principal Investigator  
SEDRD  
University of Guelph  
klandman@uoguelph.ca  
519-824-4120 x53748



## **CONSENT TO PARTICIPATE IN RESEARCH**

*Exploring the Challenges of Urban Open Space System Planning in Ontario through the Case Study of the Red Hill Valley, Hamilton, Ontario.*

You are asked to participate in a research study conducted by Dr. Karen Landman (Principal Investigator) and Scott Cafarella (Student Investigator), from the School of Environmental Design and Rural Development at the University of Guelph. The results of this research will contribute to a Master of Landscape Architecture thesis.

If you have any questions or concerns about the research, please feel free to contact Dr. Karen Landman at 519-824-4120 ext. 53748.

## **PURPOSE OF THE STUDY**

This research project will investigate the policy-based challenges and opportunities in creating urban open space systems. Urban open space systems are connected networks of public and private lands that provide recreational, cultural, ecological, and environmental services in urban areas. The study will respond to new legislation, such as the 2013 Urban River Valley amendment to the Greenbelt Plan and Ontario's Natural Heritage System planning tools, to identify and address the gaps and opportunities for creating and sustaining urban open space systems.

The case study of the Red Hill Valley will be used to evaluate how municipal, provincial and federal policy was used to influence the development of open space systems in the City of Hamilton. This case study involves the construction of an expressway along the urban valley, a project that involved input from a variety of stakeholders. The results of this case study will contribute to policy recommendations that may better align urban open space planning policies with practice in Ontario, and will also help to position landscape architects to advocate, plan and design for interconnected open space systems.

## **PROCEDURES**

If you volunteer to participate in this study, we will ask you to do the following things:

1. Participate in an interview conducted by Scott Cafarella. You will be asked a series of questions. The interview should be approximately 1 hour in duration. You will be asked for permission to have the interview recorded. If recording is not desired, notes will be transcribed during the interview. You have the right to withdraw from the interview at any time.

2. Following the completion of a draft of the research, the results and analysis will be sent to you with your contributions highlighted. You will be given one week to review your contributions to the final research paper, and you may withdraw your input at this time.

### **POTENTIAL BENEFITS TO PARTICIPANTS AND TO SOCIETY**

The participant will be able to offer their expertise to the greater benefit of the landscape design and planning discipline. The results of this study will improve the knowledge of open space planning and will expand the knowledge base of open space planning theory and practice.

### **CONFIDENTIALITY**

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. The audio recording of the interview will be transferred to an encrypted hard-drive within 24 hours of the completion of this interview. Interviews will be transcribed and securely stored on the encrypted hard-drive. You may be identified based on your stakeholder affiliation (for example, "City of Hamilton 1"), and direct quotations may be attributed to this code. All participants will have the opportunity to review, and withdraw, their contributions to the final research paper before completion of the research project.

### **RISKS**

There may be social risks regarding the participant's employment or status associated with participating in this project due to the controversial nature of the Red Hill Valley Project. It is possible that participants will be indirectly identified due to the small pool of people in the stakeholder groups, and through reference to involvement with certain projects related to the Red Hill Valley Project.

### **PARTICIPATION AND WITHDRAWAL**

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You will be able to withdraw your data at any time until you have reviewed and approved your contributions to the dissertation. You may also refuse to answer any questions you do not want to answer and still remain in the study. Following the completion of the project, you may receive a PDF of the final dissertation via email if desired.

**RIGHTS OF RESEARCH PARTICIPANTS**

- I. This project has been reviewed by the Research Ethics Board for compliance with federal guidelines for research involving human participants.
- II. If you have any questions regarding your rights and welfare as a research participant in this study (REB # 15DC013), please contact: Director, Research Ethics; University of Guelph; reb@uoguelph.ca; 519-824-4120 ext. 56606.
- III. You do not waive any legal rights by agreeing to take part in this study.

**SIGNATURE OF RESEARCH PARTICIPANT**

I have read the information provided for the study " *Exploring the Challenges of Urban Open Space System Planning in Ontario through the Case Study of the Red Hill Valley in Hamilton, Ontario*" described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

\_\_\_\_\_  
Name of Participant (please print)

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Date

**SIGNATURE OF WITNESS**

\_\_\_\_\_  
Name of Witness (please print)

\_\_\_\_\_  
Signature of Witness

\_\_\_\_\_  
Date