Greenway Controversies –
Land Use and Implementation Issues in Urban Greenways Planning

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Executive Summary

KEY QUESTION
The social and economic values of parks and open spaces have been well studied especially to justify their economic value in relation to other competing types of land use. Although the benefits of such green spaces (including greenways) are well understood, less can be found in current literature that address the practical issues in the planning and implementation of greenways. The factors and forces that affect the translation of greenways from plan to reality was the key research question of the thesis. In particular, the research focused mainly on land use factors that affected the planning and implementation of greenways, such as land ownership and regulation. The thesis also examined the inter-related complexities of other factors such as politics, planning tools, regulations and context.

METHODOLOGY
Based in the American context, New York City was used as the main backdrop for the research topic. The thesis traced the historical and explored the contemporary perspectives. The histories of greenways were documented through political and social lenses, while contemporary issues were mainly explored using two case studies - the Staten Island North Shore Greenways and the Williamsburg-Greenpoint Waterfront Greenway in Brooklyn.

A qualitative approach was adopted for the research. Both content analysis and interviews were conducted. In the former, planning reports and documents (e.g., correspondences between organizations during the planning stage of the greenways, published planning agendas, public meeting minutes, research and journal articles and newspaper articles) on the two greenway case studies were analyzed. Data collection entailed archival research from primary and secondary data sources. In the latter, interviews with planning officials, relevant organizations and community groups regarding the planning, design and implementation of the two greenways were conducted and their perspectives were raised as points for critical analysis in the thesis.

MAIN FINDINGS
The research concluded by proposing a framework in identifying the main factors that influence the implementation of greenways:

![Greenway Matrix Diagram]

POLICY IMPLICATIONS
To facilitate the implementation of greenways, the research recommended the following key strategies that could lend significant support to the implementation of greenways in New York City:

1. Policies for an integrated approach upfront in the planning stages for the successful realization of greenways are critical. This should consider the factors identified in the “Greenway Matrix” in the drawing up of a comprehensive master plan.

2. Clearly specified land use regulations such as mandating waterfront public access es are necessary. This can also be used to endorse such greenways officially to lend political support.

3. Greenways are most easily implemented as part of their adjacent land development and not in isolation, hence planning agencies should adopt this approach where possible, especially in a dense urban context.
Introduction

1) Research Rationale

It is projected that by the year 2030, 61% of the world’s population would live in areas considered urban (UN, 1997). This is a drastic increase from the one third urban population in 1960 and 47% in 1999. An increasingly urban environment implies further segregation of human and nature. Green, open spaces have long proven their usefulness in an increasingly urban and dense environment. These are spaces essential for general human well-being, providing means for relieving stress, escaping from the crowds of a hectic city life and in additional, contributing to environmental and ecological services.

Urban Greenways are an integral part of a city’s green infrastructure, along with other parks and naturalized areas. They are especially valuable as connectors to otherwise isolated green spaces and in their role as urban corridors for the preservation of wildlife. They also encourage human movements. Although the retention of large parcels of green spaces offer many benefits, the greenway concept advances a more practical solution with the protection of natural resources, and enhance the quality of urban life due to its unique attributes. Greenways are one particular strategy that is used to return nature into the city and a step forward in breaking down the dichotomy of city and nature. As Kendle and Rohde (1995) suggests, “Nature needs to become recognized as an integral part of the fabric of urban life and just as importantly, human life needs to become reconciled as a part of nature.” As a unique type of landscape form, greenways represent an adaptation of larger plots of urban greens, in response to the “physical and psychological pressures of urbanization” (Searns, 1995).

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2 Example would include parks or any other green open spaces not primarily in the linear form of greenways.
The various benefits and characteristics of urban greenways have been well documented in a multitude of research and study material. These posited benefits include improved public health due to a healthier lifestyle and an increase in recreation opportunities (Scott & Moore, 1995); transportation improvements through promoting inter-modal movements and therefore enhance quality of life; environmental benefits such as preservation of wildlife (Smith, 1993) and natural resources, mitigating urbanization impacts by buffering (Peterjohn and Correll, 1984; Binford and Buchenau, 1993), ameliorating the negative effects of landscape fragmentation\(^3\) (Ahern, J. 1995); social benefits from increased sense of community and strengthened social ties (Lee, 1999); and economic benefits ranging from increased property values in the neighborhood (Hamilton & Quayle, 1999) to acting as tourist attractions.

II) Statement of Purpose

Although the benefits of greenways are well understood, less is found in current literature addressing the practical planning and implementation obstacles, a large part of which involves land use issues. An awareness of the multi faceted benefits of greenways does not automatically place them in an urban landscape. In fact, according to Holly Haff, a former planner at the Department of City Planning (DCP) and currently in the Department of Transportation (DOT) and who has been working on greenways issues in New York City for almost a decade, almost 90% of greenways that have been planned are not actually implemented. Although this might be a rough estimate deriving from her own experiences, the percentage is shockingly high.

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\(^3\) Based on the benefits of connectivity as related to theories of island biogeography and metapopulations. (Schreiber, 1988; Soulé, 1991; Noss, 1993; Opdam et al., 1993)
Given the enormous benefits of greenways, why and what are the forces and factors that work for or against the implementation of urban greenways? The particular research question would be directed to how land use issues such as ownership and regulations facilitate or thwart the implementation of urban greenways. This thesis is concerned with exploring the initial stage of achieving urban greenways successfully by an attempt to dissect land use issues that would affect their planning and implementation. Further, related factors in land use decisions such as political actors, planning tools, regulations and context are examined. The discussion is based in New York City (NYC) and divided into both historical and contemporary elements. By tracing and examining the history of greenways through political and social lenses, it is found that land use issues are substantially important actors in greenways development. Contemporary issues are mainly explored using two case studies—Staten Island North Shore greenways and the Williamsburg-Greenpoint Waterfront greenway in Brooklyn.

**III) Literature Review**

The literature review is divided into two primary sections—background understanding and implementation controversies. Background understanding is imperative to our grasping the special characteristics of greenways, how their design and implementation have evolved through the ages. Particularly interesting is how land use issues thread through history as important factors in greenways-development. Implementation controversies uncovered various issues central to the research question and which have arisen in previous literature or case studies. These issues also form the conceptual framework and direct the focus for the contemporary element in this thesis.
A) Background Understanding

Definition of Greenways

It is important to first discuss the definition of urban greenways; the criteria and typologies that allow us to understand, identify and describe the various components of a greenway. An inclusive definition as proposed by J. Ahern (1995) described greenways as “networks of land containing linear elements that are planned, designed and managed for multiple purposes including ecological, recreational, cultural, aesthetic, or other purposes compatible with the concept of sustainable land use.” Key characteristics of greenways as implied in this definition and distinguishing it from other landscape planning concepts are their:

- primarily linear spatial configuration,
- ability to provide linkages,
- multifunctional nature and,
- support of sustainable development.

Given these fundamental characteristics, urban greenway typologies could be proposed based on spatial scale, landscape context, goals and planning strategies. In the case of NYC, a variety of greenway typologies exist- from the larger scale one such as the Hudson River Greenway, which extends across several counties in New York State (NYS), to the smaller scaled Manhattan riverfront greenways. Within these typologies are a variety of goals.

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4 From various perspectives, greenways promote sustainability of the urban environment as their posited benefits directly affect the sustainability indicators. Sustainability is defined as “the effective use of natural, human, and technological resources to meet today’s community needs without compromising the ability of future generations to meet their needs (The UN World Commission on Environment and Development, 1987). Common indicators, cited in different studies, for a sustainable city would include the following: i) Energy and air quality; ii) Water, materials and waste; iii) Land, green spaces and biodiversity; iv) Transportation; v) Livability, human amenity and health.
from recreational to transportation to biodiversity related and different planning strategies adopted for greenways from protective to defensive and offensive. Only the land context is more homogeneous and predominantly urban in NYC. The two case studies we are focusing on-Staten Island North Shore Greenways and Williamsburg to Greenpoint waterfront greenways in Brooklyn, are examples of smaller scale greenways with a regional influence as they are major linkages for a regional greenway network.

**Historical Origins of Greenways**

Greenways development can be categorized into three generations (Searns, 1995) according to their evolving functions, with each successive generation increasing in complexity and serving a multitude of objectives than the previous. Generation 1 greenways (pre-1700s- circa 1960) describe the axes, boulevards and parkways which simply linked urban spaces. Generation 2 greenways (circa 1960- circa 1985) are essentially recreational in nature. These trail-oriented linear parks provide access to rivers, streams, ridgelines, railbeds and other corridors in the urban fabric. Generation 3 greenways (circa 1985 onwards) are multi-objective greenways functioning as wildlife preservation corridors, flood damage control and reduction, water quality, education, infrastructure needs (eg. providing alternative transportation forms), urban beautification and recreation.

The establishment of the Adirondack Park in New York State has been cited as the primary benchmark in the origins of the greenline, and thereafter greenway, concept (Library of Congress, 1975; Corbett, 1983; Zube 1995). The term greenline was derived from the

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5 Primary goals of greenways tend to vary precisely due to their multi-functionality and ability to provide benefits in many areas.
6 Generation 1 greenways are not actually called “greenways” then, but they did possess greenways characteristics.
blueline that was drawn on the map of New York State to mark the 6 million acres included in Adirondack Park (Library of Congress, 1975). As similar to later ideas of the greenway, the park incorporated both economic and conservation considerations. This resulted in a mixed land uses of public forests and private land developments which are “comprehensively planned, regulated, and managed by an independent state agency set up specifically to preserve its recreational, aesthetic, historic and cultural values.” (Library of Congress, 1975, p.6).

In the late 19th and early 20th centuries, metropolitan open space systems were designed and implemented in a number of cities in the United States7 (Newton, 1971; Heckscher, 1977; Zube, 1995). These greenway predecessors are linear systems, publicly owned and frequently based on topographic and hydrological features and characteristics. The initial concept for such open space system could be credited to Frederick Law Olmstead for his work in metropolitan Boston in 1876, which expanded overtime and is later known as the Emerald Necklace (Zaitaevsky, 1982). Greenways were first built in New York City by Frederick Law Olmstead. He was much inspired by the design of the broad boulevards in Paris and Brussels when he conjured the ideas of parkways (Little, 1990). The first such designed parkway in New York City is in his and in Calvert Vaux’s 1866 proposal for Brooklyn, urging for a “shaded pleasure drive” beginning from the southern end of Prospect Park and terminating at Coney Island. They proposed another parkway linking Prospect Park to the East River and across to Central Park. Interestingly, these early parkways, later to be reincarnated as greenways, were meant for pedestrians, carriages and horseback riders, and excluded the use of bicycles and automobiles.

7 These open space systems could be considered as the 1st generation greenways as according to definitions by Searns (1995).
Mass produced automobiles, however, greatly altered the parkway concepts (Little, 1990). In the early 20th century, motor cars were still recreational vehicles not used for daily transportation needs. This expanded the recreation potential of parkways - the first of which was designed for recreational motor use was the Bronx River Parkway. Automotive parkways proliferated thereafter, especially with the rise of Robert Moses, arguably the greatest builder of New York City. In fact, Robert Moses may be the single person that created the most parks and parkways in the history of the world, on top of the expressways, bridges, housing projects, dams and so many other significant projects (Little, 1990). His numerous parkways in New York City laid the foundation for much of the network of greenways present today. The original intention of Moses was indeed, to create a network of recreational spaces for the New York community rather for commuting routes. However, as demands of the automobiles increased exponentially, they overpowered the landscape value of such parkways and many were turned into highways. His projects include the Hutcheson River Parkway, the Taconic Parkway, the Cross County Parkway in Bronx; Henry Hudson Parkway, and improvements to Riverside Drive and Riverside Park8 in Manhattan; the Belt Parkway in Brooklyn; the Grand Central Parkway, Cross Island Parkway, Long Island Expressway in Queens and Long Island.

The reasons for developing the state park and parkway plan of Robert Moses were complex. The primary motive was, according to Robert A. Caro9, “the further evolution of Robert Moses” (1974) which would be heightened, as construction of parkways was potentially a source of great wealth to politicians. Profits could be reaped from the development of parkways in the form of construction contracts, real estate transactions and future land development around parkways. Politicians have great leverage at influencing the

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8 Originally, this is the design of Olmstead and Vaux’s.
planning decisions related to parkways: the route of such parkways, the chosen construction firm, selling and buying price of land etc.

Robert Moses was met with constant opposition in many later projects such as the Richmond Parkway which he wished to built on Staten Island. Citizen leaders instead, proposed a Staten Island greenbelt and trailway idea. The citizen leaders eventually won, mainly because of changing political climate: the new City administration under Mayor Lindsay, and Moses’ losing of power (Caro, 1974). The victory of the citizen leaders established one of the earliest greenways projects in the country.

Apart from actions by public officials, many civic and non-profit groups are also engaged in the planning and development of greenways. Of significance is the Neighborhood Open Space Coalition. Their 1988 proposal of the Brooklyn/Queens Greenways and a subsequent document “Toward a Metropolitan Greenways System” which proposed 350 miles of trails for New York and acted as a major source document for the 1993 City Planning report, set the organization at the forefront of greenways planning and creation in New York City. Other organizations such as the Transportation Alternatives, NYC Bikeway-Walkway Working Group, Public Space for Public Life made significant contributions as well.

For the City of New York, the official watershed event for greenways development occurred in 1993 with the publishing of “A Greenway Plan for New York City” by the New York City Department of City Planning (NYCDCP). This plan entailed an ambitious vision for a 350 mile of landscaped bicycle-pedestrian paths network throughout the five boroughs of New York City. Eighty percent of these greenways would be separate right of ways and routes free from motor traffic. Currently, 17% (59 miles) of the 350 miles of greenways are in good and usable conditions; 31% (106 miles) are public pathways requiring substantial
improvement while the remaining 52% (183 miles) are still in the proposal stage. Several priority routes have been identified and funding for them secured. Many agencies are involved in the greenways plan to define programs for examining feasibility, guiding the development, and later implementing the greenways. The main responsible agencies include the Department of City Planning, the New York City Department of Transportation and the Department of Parks and Recreation. Most planners interviewed attribute the driving force of the publication of this NYCDCP 1993 Greenways Plan to the availability of the federal funding program- Inter-modal Surface Transportation Efficiency Act (ISTEA). Mr. Scott Wise, director of Pedestrian and Walkway division in NYCDCP commented that it was a timely report as many related constructions and plans were then underway, such as the Route 9a project.

Map 1.1 New York City Greenways (Adapted from: NYC Department of City Planning)
Greenways developments are largely affected by federal policies and the larger political climate. In 1985, President Ronald Reagan appointed the Commission on Americans Outdoors to review outdoor recreational needs of the country. Based on demographics projections and other data, the conclusion was made that by the year 2000\textsuperscript{10}, two-thirds of the US population would be urban and that national parks would be out of the majority’s reach. The Commission therefore recommended for a network of greenways to be created across the nation. This drew attention to such environmental issues and generated much discussion and interests in greenways.

Funding has always been the central question for development especially for such land uses that do not yield apparent economic profits. In 1991, the passing of the Intermodal Surface Transportation Efficiency Act (ISTEA) greatly boosted the greenways agenda. This new federal transportation policy promotes non-motorized modes of transportation such as walking and cycling. Under ISTEA, bicycle and pedestrian projects could be paid for using a 20-80 local-federal matching formula. Several years later, the revised Transportation Equity Act for the 21\textsuperscript{st} Century (TEA-21) re-emphasized this. In a white paper released in February 2003, addressing the reauthorization of TEA-21- TEA3, the importance of transit and mobility were once again stressed. Current and future development of the greenways in NYC was outlined. The importance of greenways as an advocacy for bicycling could be proved by it being the largest recipient of bicycling related funding. More than $50 million of funding was dedicated to the planning, design and construction of greenways throughout NYC.

\textsuperscript{10} In fact, the 2000 Census showed that the Urban population is 222,360,539 - 79\%, more than the projected two third, while the Rural population is 59,061,367 -21\% (Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrix P1).
B) Implementation Controversies- Land Use Issues

Land Ownership

In his seminal book “Greenways for America”, Charles Little discussed various aspects of the American Greenway- from the origins of the idea, to the characteristics of greenways and their implementation. He highlighted numerous greenways across the U.S. using vivid descriptions, extensive interviews and critical analysis. Throughout the book, many land use issues were addressed. He grouped the degree of ease for land acquisition for the purpose of greenways, in relation to land ownership\(^\text{11}\). The easiest would be acquisition of those land under public ownership and already dedicated to open space or recreational uses while the most difficult would be private land ownership especially dedicated for residential uses (Little, 1990).

Also because of the nature of greenway networks to extend across regions and cross political boundaries, this proved to be a major problem in many cases. Co-ordination and disputes among governmental agencies, civil groups and the general public formed complex political layers which surround greenways implementation. One irony identified by Charles Little is this: in order to secure public endorsement and support for greenways, promising public access is fundamental; yet the surest way to acquire a greenways corridor across private land is to promise that public access would be prohibited or at least restricted\(^\text{12}\) (Little, 1990).

The issue of “taking”, or rather the threat of laid claim to the liability of taking, is one major obstacle in the implementation of urban greenways. Rapidly increasing insurance rates and the intimidation of lawsuits render communities and landowners hesitant to grant public

\(^{11}\) As we would see in the later part of the paper, the implementation of greenways on private land can be reconciled through different means and not only through land acquisition.

\(^{12}\) This illustrated NIMBYism at work.
access to their land. Although most states provide some protection against these liabilities, claims made in the publics’ interest, the definitions and evaluation criteria are unclear. These issues are often contested in courts and induce much distrust on the landowners’ part. Although this is identified as one particular land use subject, this issue did not surface in the two case studies that are addressed in this paper. This, however, did not render it an unimportant greenways concern.

Land Regulation

Land along river fronts is generally protected by floodplain zoning. This greatly limits the development potential of such land, and acquisition or easement could usually be achieved relatively cheaply. For lands that have already been developed, the Federal Emergency Management Agency grants, under the flood insurance program, could be utilized to acquire the land, assuming local law prohibits development or redevelopment in the floodplain.13 In other cases, many jurisdictions have requirements for residential developers to donate or enter into agreement with the City14 for dedicating part of their site for open space or recreational use. New York City, under the waterfront zoning amendment, stipulates developers to provide for waterfront access to the public. Furthermore, if privately owned land ready for development falls along a greenways corridor, arrangements could be made to secure part of the land for the greenways trail.

13 To qualify, existing properties within the floodplain, which have been damaged, would have suffered a reduction of more than 50% of their value through a flood disaster.
14 In New York City, such agreements are typically acted through the Department of Parks and Recreation and are detailed in Restrictive Declarations and Management and Operations documents. They act as a form of mitigation for developments that have significant influence on the urban landscape or that cause environmental impacts. Although these are common for sites on the waterfront, they are not restricted only to such developments.
IV) Conceptual Framework

One significant character of greenways is that given its linear, geographical nature, it usually exists on public right of ways such as waterfronts. Historically, land along the river has been subjected to limited rights of public access to the waterway for transportation and other resource needs (Little, 1990). Often the land is publicly or quasi-publicly owned. Or at least the public interest in using this land is generally recognized even if the ownership is private. Examples of public owned land with the least securing issue are dedicated park and recreation areas; quasi-publicly owned lands such as cemeteries or golf courses involve persuading the owner to grant a permanent right of way easement. Private ownership presents the greatest problem as a permanent easement would usually not be voluntary (Little, 1990). Private land for residential use is usually the hardest to acquire because of reasons such as “NIMBYism” sentiments at work. Later, land use tools such as zoning (especially floodplain zoning along rivers, and waterfront zoning) or even aesthetically inspired restraints limit the number and types of possible developments on these lands, thereby limiting the economic value of development. Also, in many places, the land is largely still intact and not subdivided, providing large parcels especially valuable in dense urban areas. These issues facilitated the birth of greenways.

The above theoretical issues along with other factors influence the land use of greenways. These could include such matters as positions of public officials and different interest groups, local and regional plans, politics etc. Therefore in answering how land use issues facilitate/thwart the implementation of urban greenways, the factors to be examined are:

- land ownership (tracing historical influences)
• regulatory issues (e.g. zoning, plans and policies)
• funding and costs
• politics and administration
• perceptions/ mentalities (of public officials and different interest groups)
• present uses of the land
• design and physical attributes of the present land and proposed greenway

V) Methodology

*Perspective- Qualitative*

A fundamentally qualitative approach is adopted. Content analysis and interviews are the major components of this study. Planning reports and documents regarding the two greenways would be analyzed to sort out relevant issues and materials. Documents would include correspondence between organizations during the planning stage of the greenways, published planning agendas, public meeting minutes, research and journal articles and newspaper articles. Data collection therefore entails archival research, primary and secondary data sources. Interviews with planning officials, involved organizations and community groups regarding the planning, design and implementation of the two greenways would be conducted. Organizations to be contacted included:

- NYC Department of City Planning (DCP)
- NYC Department of Transportation (DOT)
- NYC Department of Parks and Recreation (DPR)
- Brooklyn Borough City Planning
- Staten Island Community Board #1
- Brooklyn Community Board #1
- North Shore Waterfront Greenbelt
• Brooklyn Waterfront Greenways
• New York City Economic Development Corporation (EDC)

Data collected could possibly be coded or grouped into major land use issues such as land ownership and land regulation. Each major group could again be sub-divided into more specific issues.

*Research Type- Case Study, Descriptive*

Two case studies in NYC would serve as the primary context for the research. The objective in having two case studies is to compare the difficulties encountered in their implementations given their different characteristics. Relationships (but perhaps not causative relationships) between the contrasting characteristics and implementation situation analyzed allow further understanding of how given and evolved land use issues might affect their implementations. Criteria for choosing the case studies include contrasts in the following:

• physical situation and development context
• land ownership
• agencies involved
• variety of land use issues concerned
• potential function of greenways
• planning tools employed
VI) Validity Threats

There are several validity threats to this proposed research:

As is the situation with any study that analyzes case studies, the choice of cases might not prove to be representative for the issues of concern here. The criteria for choosing the cases are such that they could uncover a variety of land use issues as they relate to greenways that would enable the researcher to generalize\textsuperscript{15} with my findings. Ideally though, the researcher would like to complete more case studies to confirm the conclusions drawn here.

Due to time, labor and resources constraints, the researcher was not able to contact more related personals for interviews and discussions, which could possibly enhance the study. Nor did the study delve deeply into the larger picture of the state, regional or national implications involved. Some examples of important agencies with state and regional influences are NYS Department of State, NYS Department of Environmental Conservation (DEC) and the Regional Planning Association (RPA). By having a better understanding of the relationships between state or regional policies, plans, land use issues and greenways, this would offer alternative perspectives and an added dimension to the study. It would be an important aspect worth further exploration.

In view of the background of the researcher as a non-American and this being a qualitative study, the course of research could have been influenced. For one, the researcher is not familiar with the political entities and structures, geographical locations and general historical background of New York City. Secondly, interviewees may or may not have presented themselves differently to a foreign researcher although the greenways subject is not directly relevant to any particular racial or nationality issues.

\textsuperscript{15} Generalization would be targeted to the American context and not an international one as land use issues are mostly nation and cultural specific. This is especially true in areas such as laws and regulations.
VII) Implications

Literature on greenways mostly addresses the benefits and impacts of greenways and rarely on the historical and policy aspects. This study would place the greenway developments in a larger perspective, more related to planning issues. By uncovering the possible conflicts and complex layers in land use issues, and being more informed about the various factors that contribute to the success or pitfall of a greenway development, future implementation processes and plans could learn from these experiences. This would in turn be useful for policy makers, planners, advocacy groups, politicians, environmentalists, ecologists and the local community.
Case Studies

I) Staten Island North Shore Greenways

Overview

Staten Island North Shore waterfront has long been identified as a priority greenway route in the 1993 Greenway Plan for New York City. The waterfront greenbelt or esplanade stretches from the Verrazano-Narrows Bridge, Fort Wadsworth north to the St. George Ferry.
Terminal and along the Kill Van Kull to Snug Harbor (refer to Fig 1.1). The proposed route cuts through a variety of neighborhoods including New Brighton, St. George, Tompkins Ville, Stapleton, Clifton, Rosebank and Shore Acres. This greenway segment would constitute an important link in the East Coast greenways, connecting New Jersey, New York, Long Island and New England.

Richmond Terrace, the road that runs along the Kill Van Kull on the North Shore is a historic shore road holding vast cultural and historic treasures. It began in the 1700’s as a Lenape Indian footpath. The North Shore Waterfront Greenbelt Coalition strongly advocates for this historic waterfront to be a “thriving restored and protected waterfront where people have a continuous view of the water, and where historic buildings, houses and towns are protected and preserved for an economic and cultural renaissance and for the future generations.” (Linda Eskenas, president of North Shore Waterfront Greenbelt). The many historic sites include- Borough Hall, a magnificent Beaux Arts building; group of four houses on Richmond Terrace between Stuyvesant and Nicholas, circa 1869; Snug Harbor Cultural Center, a splendid Greek Revival building landmarked by the City; site of Anna Leonowen House in which she wrote ““Anna & the King of Siam”¹⁶ in West Brighton, also a literary enclave in the 19th century; House of Alice Austen, an eminent photographer; burial grounds and dwelling place of the Lenape Indians between Tomkins Ct. and Alaska St. Two historic districts of distinctive nature also exist along this stretch of the waterfront. First is the 100-acre Richmond Town established in 1952, the seat of the Richmond County Government and is the city's only living historic village. Another is the St.George/New Brighton Historic District, which occupies one of New York City’s earliest suburban developments conceived in

¹⁶ The story was later made into the Broadway Show “The King and I”.

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the late 1830s, and includes 78 buildings, mostly from the late 19th century (Council on the Arts & Humanities for Staten Island, “Cultural Map and Visitors Guide to Staten Island”).

Staten Island is home to a variety of wild life species especially migrating water fowl such as heron, egret and ibis. The Clean Water Act of 1972 contributed greatly to reclaiming cleaner waters around Staten Island. By 1994 there were approximately 1300 pairs of wading birds on Shooters Island (43 acres), Prall's Island (80 acres), and the Isle of Meadows (101 acres). However in 1990, several oil spills in the New York Harbor caused such natural gains to backtrack. In January, 1990, an Exxon pipeline spilled 567,000 gallons of fuel oil into the Arthur Kill which damaged approximately 197 acres of salt marsh and killed about 700 birds. Fortunately, many local bird species had migrated south at the time of the spill (NYC Public Library, “Timeline of Staten Island - 1900s – Present”).

Light industrial activities appeared along the North Shore early in the mid-1800s. Breweries were set up by the Germans in Stapleton and other trades such as the dairies and bottlers were an important catalyst for settlement developments along the shore. Traditionally, however, Staten Island has been viewed as a “bedroom community” with growth experienced primarily in the residential market.

Early transportation to the Island was mainly through the waterways. Opened in 1825, the Erie Canal dramatically increased trade and port activities of New York, making New York the busiest port in American within the next 15 years (NYS Canals, “The Erie Canal: A Brief History”). Demands for commercial spaces escalated in Manhattan and businessmen turned their attention to Staten Island as an alternative. While the first ferry ran from North Shore of Staten Island to Manhattan as early as 1747, the Sailor’s Snug Harbor was established only in 1831 and began operation in 1833 (Staten Island Advance, “The History of
Several decades later, ferry services were established between St. George Terminal and Whitehall on February 23, 1886. Further with the opening of several bridges—Outerbridge Crossing and Goethals Bridge simultaneously on June 20, 1928, the Bayonne Bridge on Nov. 15, 1931; and much later the Verrazano-Narrows Bridge in November 1964, the linkage of Staten Island to the region was greatly improved. As such, the improved accessibility drew industrial developments to the once isolated island. Modern commercial, industrial and office development were underway on the Island from the 1980s.

Given the vast historical, cultural and natural resources present, planned development and protection of the North Shore of Staten Island, however, only began in the last decades of the 20th century. In early 1984, a three years study of Staten Island’s North Shore was released by the New York City Department of Planning (NYCDCP) which recommends rezoning of certain residential areas, special protection for hillside developments, and also dealt with waterfront and economic developments on the North Shore (NYTimes, 26 Feb 1984). Among the many recommendations, the following three addressed the waterfront and are directly relevant to the conception of the later greenway:

- Protection of the shoreline from the Verrazano-Narrows Bridge north to Hylan Boulevard
- Identification and mapping of scenic corridors
- Planned waterfront development with special emphasis on providing public access through a waterfront esplanade linking Sailor’s Snug Harbor to Fort Wadsworth.
This NYCDCP study did not, however, meet the expectations of many at the time and was much criticized for being too general, “fairly shallow and not illuminating” (Anthony R. Gaeta, Staten Island Borough President, Dec 1983\textsuperscript{17}).

\textit{Rails-to-Trails}

Talk of a trail along the North Shore first saw its opportunity with the North Shore Staten Island Railway that hugs the northern waterfront. The rail corridor runs between St. George and Arlington Yard, and down south along the Travis Spur (Refer to Fig 1.2). The width of this corridor varies from 30 to 120 feet.

\textsuperscript{17} Quoted from NYTimes article “A Call for Staten Island Rezoning- and Slope Protection”, 26 Feb, 1984.
The North Shore Staten Island Railway was originally a part of the Baltimore and Ohio Railroad. The North Shore Rail Line operated rail freight and passenger service between Arlington Yard and the St. George Ferry Terminal from 1890 to 1953. The Staten Island Railway originally had three lines: a main north-south line traversing the island from end-to-end, a North Shore Branch connecting to New Jersey, and a South Shore branch. In 1953, the passenger service line went out of business. In 1971, the New York City Transit Authority purchased and took over the freight line which however still faced closing in 1975.

Ownership of the railway changed from private to public hands without great complications. The rail line property became available when its owner, CSX Corporation, completed the Interstate Commerce Commission (ICC)\textsuperscript{18} abandonment process. In 1994, the city acquired the site from CSX Transportation and Economic Development Corporation (EDC) took jurisdiction and management responsibilities (Staten Island North Shore Rail-with-Trail Feasibility Study, 1997). The $10.3 million transaction was completed using Federal transportation money (NYTimes, 11Nov 1994, “Restoring the Rails on Staten Island”), as an application under the ISTEA of 1991 for the acquisition and preservation of the railroad right-of-way (NYTimes, 22Nov 1993 “Legal Legal”). The city aimed to restore freight services over the following two years which would perhaps be a new but less expensive way for freight to reach Brooklyn and Long Island. Hopes were also pinned on this railroad to revitalize the stagnant economy of the area and to act as an alternate freight route, reducing pollution from trucks. In 2001, a small section of the North Shore branch was reopened to serve the new Richmond County Bank Ballpark, home of the Staten Island

\textsuperscript{18} Predecessor of the Surface Transportation Board (STB). The Surface Transportation Board (STB) was created in 1887 as the Interstate Commerce Commission to protect farmers, shippers, rural Americans and others from the monopolistic power of the railroads. (“Acquiring Rail Corridors” Rails to Trails Conservancy, 1996)
Yankees. Eventually, the entire corridor is expected to be reactivated; however, there were interests in having a trail coexisting alongside the proposed rail freight use.

In February 1997, a North Shore Staten Island Rail-with-Trail Feasibility Study was published exploring the possibilities of converting the 9.5 miles of unused North Shore Rail Line in Staten Island to trail. The study further addressed the issues of pathway users, land use implications and mapped out feasible physical route. Key findings of the report concluded the feasibility of a 10-foot pedestrian/cyclist pathway existing adjacent to a 17-foot rail freight line, enabling a rail-with-trail concept as part of the larger city Greenways network. It was also found that the path would be popular due to the numerous visitor attractions in the area and the north shore’s residential population and major employers. Furthermore, the study expects the pathways and trail systems to promote economic development in the area, by stimulating business, attracting tourists and raising property values. A variety of route opportunities were also identified which results from the physical variety of the linear corridor- elevated and below grade; traversing historic districts, waterfront industrial areas, residential neighborhoods and wildlife areas (Refer to Fig 1.2; Staten Island North Shore Rail-with-Trail Feasibility Study, 1997).

At the time of the 1997 feasibility study, a $645,000 of federal and local funding was available for first phase implementation. This rail-to-trail was however, never realized as a result of several factors, most fundamentally political ones. According to some interviewees, the Borough President reversed his political support for the trail proposal, pushing instead for a passenger rail service to resume, while EDC wanted freight services instead; and neither wanted a trail. Further given the closeness of the Giuliani Administration with Staten Island Borough President, the whole project was indefinitely put on hold. With the abandonment of
this rail-to-trail project, attention was turned instead to the North Shore waterfront piece\textsuperscript{19} on the Eastern side as a more plausible greenway route, which is currently still in the process of development.

\textit{North Shore Waterfront Proposal by DCP}

In October 1999, a final report for Staten Island North Shore Greenways was released by the transportation division of DCP, while the fate of the rail-to-trail proposal remains undecided. This study analyzed and mapped alternative routes complete with criteria used for assessment, estimated costs and future maintenance plan. Cutting through a variety of neighborhoods with differing degrees of development, the design thus calls for a combination of on-street bicycle routes and multiple-use paths to create the continuous greenway.

Of interest are the criteria used for assessing alternative routes which include street geometry, traffic considerations, safety and user comfort, commutation access, and waterfront and open space access (Refer to Table 1). Four route alternatives were proposed and analyzed using a matrix which rates each of the criteria on a numerical rating scale of 1 to 5.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\textbf{Criteria} & \textbf{Sub-Categories} \\
\hline
\textbf{Street Geometry} & Path Width \\
& Horizontal Layout \\
& Intersections \\
\textbf{Traffic Considerations} & Avoids Congestion \\
& Bus Compatibility \\
& Truck Compatibility \\
& Vehicular Compatibility \\
\hline
\end{tabular}
\end{table}

\textsuperscript{19} This refers to the stretch as mapped out in the 1993 DCP Greenways Plan as shown earlier in Fig 1.1.
These criteria were however mostly traffic and access related. Issues such as funding -budget, costs; and land use -land use conflicts, land ownership, were not considered in the very beginning. On one hand, this perhaps explains why land use issues could emerge as obstacles later in the implementation process. On the other hand, planning and implementation of greenways are very much an iterative process. There needs to be a limit to the number of factors to be examined in a preliminary study to achieve any progress. Such an approach therefore could not be completely faulted for any future impediment.

After computing the matrix for each of the four alternatives, one route which received the highest ranking was chosen as the preferred alternative (refer to Fig 1.3). Among the four, it provides the greatest waterfront access and user safety while being ranked second for commutation access. This route would combine multiple-use paths, sidewalks, and on-street bicycle routes. It adequately satisfies the goals set forth for the greenway design and very importantly, provides access to all modes of transportation, existing bike lanes, cultural
institutions, parks and open spaces without compromising on user safety issues. Ideally, the proposed greenways trail would pass through the Home Port and Chessie Sites. The availability of land is however, not certain and proposals are still underway. In the case of unavailability, the alternative Route 1a could be adopted.

Fig 1.3 Preferred Route Alternative (Source: NYC DCP)
The report also designed greenways implementation to be carried out in phases which is a very good strategy. Phase I would detail improvements that will not be affected by redevelopment of land parcels, such as striping bike lanes, repair damaged sidewalks, install Greenways signs, plant roadside trees to give a park-like feel, install pedestrian ramps and other minor works. Phase II consists of improvements which requires larger construction and cannot be completed as quickly as those in Phase I such as bulkhead reconstruction. Some of the Phase II actions would depend on design and development decisions by EDC. The final phase would involve land parcels redevelopment under the direction of EDC.

Present Conditions and Specific Site Issues

From a practical point of view, greenways were developed due to their various benefits but also because of their economic and political values. Other land use developments often spun off greenways formation which would complement such establishments. In the Staten Island North Shore case, several major new projects acted in this capacity for greenways development- the Richmond County Bank Ballpark, National Lighthouse Center and Museum, Staten Island Institute of Arts and Sciences Natural History museum, designed by world-class architect Peter Eisenman, and St. George ferry terminal. The terminal is the center piece for these developments. (Hellmuth, Obata + Kassabuam, P.C.- Kenneth Drucker, 5 November 2002, “Citywide Growth: Staten Island”).

Richmond County Bank Ballpark

The former CSX or Chessie Railyard Site which is directly adjacent to the St. George ferry terminal has 27 acres of land and 26 acres underwater. The site is currently zoned as
manufacturing (M-1). In the early 1980s, CSX attempted to develop the land in partnership with Eric D. Emanuel, an investment banker, into a mixed commercial and residential development. Such a proposal would require a special city permit (NYTimes 14 Jul, 1985, “Staten. Island’s North Shore Primed for Development”). This was, however, not realized. In November of 1998, the city acquired the site for economic development, with EDC holding the jurisdiction. As part of the revitalization effort for North Shore waterfront, this site now houses the 6,500 seating stadium for the Staten Island Yankees baseball team. In June 24, 2001, The Staten Island Yankees marked Opening Day at this Richmond County Bank Ballpark with a 3-1 victory over the Hudson Valley Renegades (Staten Island Advance, “The History of Staten Island”). A waterfront esplanade and bikeway has also been incorporated into the site, forming the only existing part of the North Shore Waterfront greenways.

*National Lighthouse Center and Museum*

The National Lighthouse Center and Museum is currently undergoing restoration and the pier at the Museum is being repaired. The NY State Economic Development Agency confirmed to the NYC EDC, that Governor Pataki has committed $1.9 million to the development of the Museum's facilities and restoration of the site. New York City and the Staten Island Borough would provide additional funding. The museum is scheduled to reopen in Spring of 2004 (Sam Radin, Board President, National Lighthouse Museum, “It’s Happening Now!”).
<table>
<thead>
<tr>
<th>Richmond County Ballpark <em>(Source: Aisling O’Beirn, Site-ations)</em></th>
<th>Benches at Stadium Esplanade <em>(Source: Site-ations)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>National Lighthouse Center and Museum – currently under restoration <em>(Source: Site-ations)</em></td>
<td>Stadium Esplanade Footpaths <em>(Source: Site-ations)</em></td>
</tr>
<tr>
<td>Alice Austen House and Museum <em>(Source: Site-ations)</em></td>
<td>Proposed Ferry Terminal <em>(Source: Goldman Copeland Associates, P.C.)</em></td>
</tr>
</tbody>
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**Stapleton Homeport Navy Site**

The Stapleton Homeport Navy Site has been a topic of multiple development plans. Located on the waterfront about one mile south of the St. George ferry terminal, the land was
first transferred to the Navy on February 21, 1986, by approval from the Board of Estimate in a 6-5 vote. After less than a decade, the Navy pulled out of the Stapleton homeport in June of 1993 (Staten Island Advance, “The History of Staten Island”) as part of a series of base closings nationwide. Development proposals for the site thereafter ranged from a racetrack to a film studio. The Stapleton Studios LLC, planned to build a 14-soundstage complex, which would include a deep-water, 350-slip marina and a 260-room hotel and conference center catering to film crews and tourists (Backstage News, Leonard Jacobs, “Stapleton Studios Sues EDC” 26 November, 2003). According to Linda Eskenas, president of the North Shore Waterfront Greenbelt, the local community and the community board loved the idea of the studio. The city, acting through EDC, however, terminated negotiations and tried to evict the studios in October 2002 after its temporary permit had expired (Forbes, 23 February 2004, “New York State of Mindlessness”). Stapleton Studios thereafter filed a lawsuit against the City for breaching of contract and cause for profit loss, the results of which are still pending. In the meantime, the city has commissioned private consultants for a $300,000 study on future developments for Staten Island and appointed a task force to study the best possible use for the property in question. Previously, plans by the city included parceling up the property and targeting mixed-use development including residential, commercial and office spaces. It was hoped that such an approach would spark off private sector growths in the nearby neighborhoods (Hellmuth, Obata + Kassabuam, P.C.- Kenneth Drucker, 5 November 2002, “Citywide Growth: Staten Island”).

It is with these unresolved land use issues that a greenway could not advance. The EDC, having jurisdiction over the site, has yet to determine how and whether the potential uses of the site will be compatible with public access.
**New Parks Acquisition**

In late February this year, the Port Authority acquired 9.7 acres of waterfront land on the North Shore, located between Richmond Terrace and Tompkins Court in the West Brighton neighborhood. The Trust for Public Land successfully negotiated the land purchase for preservation on behalf of the NYC Department of Parks & Recreation in cooperation with the Port Authority. Department of Parks is yet to determine the best public use for the land, but would develop and maintain the property and provide waterfront access to the community (The Port Authority of NY & NJ News, 24 February 2004, “Port Authority Acquires Staten island Waterfront Site for Preservation by NYC Parks Department.”). This acquisition is another piece of the North Shore Waterfront greenways puzzle falling into place. It would help protect and preserve the waterfront open space and protect the community from overdevelopment.

**NYC2012 Olympic Games**

NYC2012 Olympic team also has a plan for the Staten Island waterfront areas which could act as another catalyst for greenways formation along the North Shore. The Richmond County Bank Ballpark would house the Olympic softball event, given its convenient location just by the Staten Island Ferry Terminal and the proximity to parks and promenades with commanding views of Manhattan. So would the Road Cycling event be held on the streets of St. George. Part of the planned route coincides with the greenways route (refer to Fig. 1.4). If the City indeed wins the bid, this would constitute another thrust for the completion of the North Shore waterfront greenways.
The common impetus underlying these myriad of developments is to capitalize on tourism and in turn, capture economical gains. The comprehensive plan ties in well with the historical and natural resources already present in the area. Furthermore, the sites of the major development projects are all under the ownership of the City of New York, which simplifies the situation somewhat. However, most of the waterfront sites along North Shore are still in derelict condition and inaccessible to the public. Although the city has published a report and proposed the North Shore Greenways route, progress could only hinge on the developments of individual parcels along the route. Further completion of greenways and waterfront access,
providing connections to nearby attractions such as the Sailor’s Snug Harbor Complex to the west and Fort Wadsworth to the south, would greatly enhance the attractiveness of the area.

|-----------------------------------------------|-----------------------------------------------|
| Industrial Uses along Waterfront (Source: C.Y. Huang, 18 Mar 2004) | Old Gypsum Plant (Source: Aisling O’Beirn, Site-|}
| Existing Bikeway along Waterfront (Source: C.Y. Huang, 18 Mar 2004) | Richmond Terrace Bikeway (Source: Transportation Alternative, summer 2001 p.4) |
II) Greenpoint and Williamsburg, Brooklyn

_The Neighborhood - Williamsburg_

For a long period of time, the Williamsburg area was relatively isolated. The strong tides of the East River discouraged navigation while seasonal flooding from surrounding waterways such as the Bushwick Creek in the north, the English Kills to the east, and Wallabout Creek to the south, impeded travel. As governance changed from Dutch to British and finally American control, events, technical innovations and certain business ventures shaped the mixed used character of Williamsburg and influenced what it is today (Williamsburg Waterfront 197-a Plan, 1998).

For over a century since the mid-1800s, the Williamsburg waterfront teemed with industrial activities. As increasing number of immigrants started to settle in the area, they provided a source of cheap labor. At the same time, many large parcels of waterfront properties became available as resorts failed. In 1825, the Erie Canal was completed and the East River advanced as an important transportation route of raw materials to manufacturing industries. The deep water in Williamsburg also allowed commercial ships to dock at the piers. Industrial activities thus flourished. A particularly important industry was sugar refining, and their success supported subsidiary industries, including metal works and transportation. By 1887, seven large refineries were operating along the Williamsburg waterfront, with another in Greenpoint and one in downtown Brooklyn. However, when the Sugar Trust eliminated inefficient plants, only one survived in Williamsburg- the huge Havemeyer & Elder plant in which Domino Sugar operates today (Williamsburg Waterfront 197-a Plan, 1998).

The World War II saw another surge in industrial uses along the Williamsburg waterfront. The Brooklyn Navy yard generated extensive military productions with spillovers
into the neighborhood and kept the waterfront lively. Products included soldier’s uniforms, plated armaments, manufactured penicillin vials and parts of the atom bomb. The end of the war brought an end to active military production. However, industries on the waterfront rebounded to certain extents due to post-war pent-up consumer demands and new waves of immigration into the neighborhood. Recreational uses for the waterfront saw a temporary burgeon when ferryboats became more developed, providing faster and more reliable services linking hotels, gardens, restaurants and a circular railroad at North 7th Street. Such recreational uses of the waterfront was not sustained as further transportation improvements allowed more distant resorts to be accessible to the middle class. For example, Williamsburg was no competition to the wide beaches and ocean views of Coney Island and tourists were drawn away. Moreover, increased sewage and effluent discharges into the East River from industries and uprising residential uses dramatically reduced its appeal as a recreational site (Williamsburg Waterfront 197-a Plan, 1998).

The past few decades saw a rapid decline in industrial activities, both water-dependant and those inland, as a general trend in New York City. In the 1970s, Williamsburg saw a loss of jobs in heavy industry and a substantial population loss. Since the 1980s, however, continued influx of immigrants and residents from other areas, growth of an artists’ colony in North Williamsburg, and high birth rates in South Williamsburg contributed to a substantial increase in population. This population growth called for an increase in housing, community services and facilities. The needs to address environmental burden, and to strike a balance between economic development and community needs are urgent.
The Neighborhood- Greenpoint

The historical development for Greenpoint ran similar to that of Williamsburg. Captain Pieter Janse Wit, of the Dutch West Indian Company first saw great value in this land for both military use and possibly as an attractive place to live. He ardently negotiated its purchase from the Keshaechquereken Indians in 1638 (Dmuchowski, 1996-1998). Greenpoint inherited its name from the high bluff and lush green landscape before early 19th century development.

Before the 1830s, Greenpoint remained isolated and secluded as an agricultural community. It was in 1838 that the first public highway was opened in Greenpoint which connected it by bridges across Newton and Bushwick Creek’s to the cities of Astoria to the North, and Williamsburg to the South (Dmuchowski, 1996-1998). The new found accessibility stimulated the development of the isolated little farming community into a small town.

With the Industrial Revolution, New York City had grown into the largest commercial and manufacturing center of the United States. Thousands of immigrants flooded into the city, especially from Eastern Europe. Increasingly scarce and expensive land in Manhattan led the eyes of merchants and bankers seeking land for new factories and housing for workers, to Long Island. Cities around Greenpoint such as the City of Brooklyn incorporated in 1834 and the City of Williamsburg, incorporated in 1836, were experiencing phenomenal growths. Further with advancements in the shipping and transportation industries, food stuff could be easily imported, and agriculture lost its critical importance. Land use changes were called for. Water-dependant industries as shipping and transportation required suitable locations. The rapid development of the Navy of United States military demanded the construction of more
ships and marine vessels. Ship building industries came into the area and forever changed the face of Greenpoint. The waterfront became dominated by manufacturing and industrial uses with printing, pottery, glass and iron industries in addition to ship building.

Such busy industrial activities however, began to decline in the 1960s as heavy industries moved out of the Northeast Metropolitan regions. From the late 1950s, Greenpoint has become a dumping ground for unpopular city facilities, making it one of the city’s most polluted neighborhoods. Brooklyn is home to 33 of the city’s 55 commercial-waste transfer stations (NYTimes, Nov 16, 1997, “Concern Grows on Where Trash Will Go After Fresh Kills”), which could only be built in areas zoned for manufacturing. Brooklyn has more of these zones than any other Boroughs and many of them in waterfront areas such as Greenpoint. The two neighborhoods of Williamsburg and Greenpoint have the highest concentration of garbage transfer stations in the city but little public access to their waterfronts. In all, Greenpoint and Williamsburg house two small power facilities, 23 waste transfer stations, a sewage treatment plant and Radiac, the city’s only radioactive waste storage facility. Greenpoint also suffers from the city’s highest asthma rates (NYPress, Johnny Dwyer, Vol. 16, Issue 9, “No Smoking Please”). Moreover, Brooklyn Borough has an Open Space Ratio\(^{20}\) of 1.47, lowest among the five Boroughs; while the Brooklyn Community District 1, where Williamsburg and Greenpoint reside in, has an Open Space ratio of 0.63 that is much lower than the City’s (3.62) and the Borough’s average (1.47) (Source Data: NYC Parks and Recreation inventory dated: 10/02; 2000 census data; Refer to Appendix 2).

The waterfront was left to real estate speculators in the 1980s when large parcels of land were purchased at astronomical cost, fell into disuse or became sites for the unwanted

\(^{20}\) Open Space Ratio refers to the ratio of acres of suitable open space to user population. Figures quoted here are based on Year 2000 data.
facilities. Both the Brooklyn Eastern District Terminal and the Greenpoint Terminal Market were slashed for several redevelopment plans. However, the opposition was met for such plans as essential components—affordable housing, adequate public open space and waterfront access, viewed as important to the communities were missing; and the community generally disapproved of tall residential towers.
Fig 2.1 Williamsburg-Greenpoint Waterfront Area (Source: adapted from Oasis maps)
Waterfront Zoning and Rezoning as a tool

New York City started to address the changes and forces shaping its waterfront development in the mid-1980s, much later than many other cities. In 1992, DCP issued “New York City’s Comprehensive Waterfront Plan” outlining strategies to realize the vision for its waterfronts, particularly in maximizing waterfront uses and access. The City’s waterfront was divided into twenty-two study “reaches” and land use studies were conducted for each of these segments which informed the waterfront plan. Characteristics, and uses of each reach were documented and analyzed, and development recommendations made. Based on their characteristics, the waterfronts were divided into four categories—natural, public, working, and redeveloping.

The City Council adopted a set of waterfront zoning amendments in agreement with the waterfront plan. As outlined in Article VI, Chapter 2 of the New York City Zoning Resolution, commonly known as waterfront zoning, requirements were made for public access upon residential or commercial development of a waterfront parcel. In a nutshell, under the amendment, residential or commercial redevelopment of individual parcels would require developers to build and maintain specified public access areas. Under the public access requirements, four components are to be present: a waterfront walkway, a connection between the walkway and existing streets and sidewalks, a public access area, and unobstructed view corridors. In the case of the Greenpoint-Williamsburg waterfront, this tied in well with a waterfront greenway development. Rezoning of the waterfront parcels from industrial to residential and commercial, would stipulate the public access requirement along the waterfront and lay the groundwork for implementing the greenways network in this portion of the city. Moreover, the community would be presented with the opportunity of designing, within certain guidelines, the location and layout of public access prior to development through a Waterfront Access Plan (WAP).
In the recent plan released by DCP in June of 2003- Greenpoint-Williamsburg Land Use and Waterfront Plan, zoning changes are proposed along two miles of Brooklyn’s East River Waterfront and upland neighborhoods after an 18-months study. The main objectives are to revitalize the waterfront areas which had been lying vacant and derelict for years and to allow for housing and open spaces alongside light industries and commercial uses. Being zoned largely for manufacturing uses for 42 years, the area is in need of more appropriate zoning revisions. In recent decades, as waterfront industries were replaced by residents and shops, a patchwork of uses succeeded the area. It seems clear that a standard rezoning would not suffice (NYTimes, 19 June 2003, “City Seeking to Rezone Brooklyn Waterfront”.)

The rezoning scheme would permit light industrial uses to co-exist with residential ones and retain certain manufacturing zones of critical industrial concentrations. Existing zoning reflects the historical land uses. Parcels near the waterfronts are zoned M3 which would accommodate heavy industrial uses. M1 zones that adjoin the waterfront blocks form a buffer between the M3 zones and the upland residential core. R-6 and R-8 residential zones are proposed in replacement for the waterfront lots with commercial overlays along main access roads (refer to Fig. 2.2 and 2.3). Special Mixed Use (MX) districts are also established which combines a light industrial (M1) district with a residential district. This promotes a broader variety of live-work conditions than is allowed under standard zoning.

This proposal released by DCP maps out a continuous publicly accessible waterfront esplanade which links the water edge with upland communities in Williamsburg and Greenpoint (refer to Fig. 2.4). Although this esplanade is not formulated as part of the greenways plan, it would constitute an important segment of the city-wide greenways. The larger climate of changing neighborhoods and evolving demands on land uses, worked in line with facilitating a greenway along the Greenpoint-Williamsburg waterfront. As illustrated,
rezoning to cater to the changes in demand on land uses, and private development efforts are the main tools employed here for implementing the greenways.

Responses to the DCP plan were mixed. The communities of Williamsburg and Greenpoint have been planning for redevelopment since 1989. As part of the effort, Brooklyn Community Board 1 generated 197-A plans for its waterfront, articulating waterfront park opportunities and setting guidelines for social, economic, environmental and quality of life improvements. Both plans were endorsed by City Planning Commission in December 2001, and adopted by City Council in January 2002. Non-profit groups such as the Brooklyn Greenway Initiative have also sprung up in reaction to the development of the Brooklyn waterfronts. While the community supported ideas of the open spaces and accessible waterfront, they felt the affordable housing needs were not adequately addressed. On the other hand, business advocates have reservations about the manufacturing jobs that the new rezoning would cause to eliminate, most of these in crafts and the light industries. In response, city planning expressed that the rezoning adopted a “fine-grained approach” and would preserve the largest factories in the area including the Domino Sugar plant and the Brooklyn Brewery (New York Daily News, 19th June 2003, “On the Brooklyn Waterfront”).

One looming doubt of the proposed plan is the time required to complete the waterfront greenway and whether eventually, it would indeed be completed. Too many unresolved and unknown factors are at play in this case. For one, waterfront properties are significantly more complicated to develop, with complex regulations, added expenses and risks. The Bloomberg administration is offering some of $3 billion in affordable housing subsidies that developers could take advantage of for this waterfront site. However, many community groups strongly oppose the proposals, censuring the rezoning plan to “represent a financial reward for speculative real estate investment more than it does a workable plan for affordable housing.” (City Limits, 31 October 2003, “The City Opens Williamsburg and
Greenpoint to Redevelopment—and Wont Promise Affordable Housing”). They too question the willingness of developers to voluntarily take advantage of the financial incentives when luxury housing market in the neighborhood is on the boom.

While city plans to aid local nonprofit groups build affordable housing in the area, and in the process of establishing a special $15-$20 million revolving acquisition fund to enable purchasing of land, many still regards the competition with the private sector for development sites a tough battle. The slow process of government funds makes it difficult to strike real estate deals before private developers with more ready capital access (City Limits, 31 October 2003, “The City Opens Williamsburg and Greenpoint to Redevelopment—and Wont Promise Affordable Housing”).
Fig. 2.2 Williamsburg-Greenpoint Waterfront Existing Zoning (Source: NYC DCP)
Fig. 2.3  Williamsburg-Greenpoint Waterfront Proposed Zoning (Source: NYC DCP)
Fig. 2.4 Williamsburg-Greenpoint Waterfront Access Plan (Source: NYC DCP)
Present Conditions and Specific Site Issues

The waterfront area has been the battlefield of numerous contentions. Constant struggle between community, government agencies, mega industries and private developers existed over land uses of the waterfront. These waterfront lots remain desirable for uses such as waste transfer, fuel storage, light manufacturing and power generation to the likes of USA Waste and Con Edison. They try to capitalize on the neglected waterfront. The Williamsburg and Greenpoint community had successfully deterred the two from building on the river, yet the land at the waterfront is not secured. However, the realization of greenways hinged critically on these projects and developments almost a by-product in the process.

Garbage Transfer Station

In 1998, the New York State earmarked $10 million for park and other projects along the East River waterfront, while at the same time, contradictorily, state regulators are considering issuing a permit for a garbage transfer station on the same property (NYTimes, 22 April, 1998, “Dump Site Could Clash with Park Plans”). The controversial site formerly known as the Eastern District Terminal was a 20-acre private industrial site stretching for six blocks along the waterfront beginning at North 5th to North 11th Streets in Northern Williamsburg. Recreational waterfront usage is demonstrated by the residents who often slip through a hole in the chain-linked fence to exercise their dogs, sunbathe and fish on a vacant stretch of the property. The entire waterfront of Williamsburg and Greenpoint offer unobstructed and spectacular views of Manhattan which should be enjoyed by the public. A contradiction between State and City land use plans escalated the difficulty in realizing related greenways plans. Fortunately, the community claimed victory against the waste transfer station.
Further negotiations were engaged by the community under the leadership of *Trust for Public Land* (with the State and a partnership with New York University) to purchase the 2.6 acre parcel between North 7th and North 9th streets surrounding the Bushwick Inlet. The Trust proposed to develop a park and U.S.S. Monitor museum on the site in honor of the famous locally constructed Civil War ship, the Monitor. The $850,000 purchase agreement was backed with political support from Assemblyman Joseph Lentol (D-Greenpoint) and City Councilman David Yassky (D-Greenpoint). Motiva Enterprises, a Shell Oil Affiliate that owns the property, however, terminated negotiations with the Trust in the early hours and withdrew from the deal. Eventually though, State Parks department obtained ownership of the two parcels of land.

*TransGas Power Plant*

Another recent dispute was over the siting of a power plant at Newton Creek. The site of controversy is an eight-acre riverfront site at North 12th Street where TransGas Energy has applied to the state to build a power plant, first proposing this in September 2001. In the rezoning plan released by DCP, the site, most of which is currently used as an oil depot by Bayside Fuels, is designated to be a state park. The NYC2012 Olympics would be financing the park and using it for beach volleyball and archery should the Games come to the City. New York University plans to build playing fields which would also be used for the Games at a site a few blocks southward. A spokeswoman for the City Planning Commission said that the DCP plan calls for open space on the site, even without the Olympics (NYTimes, 19 June 2003, “City Seeking to Rezone Brooklyn Waterfront”).
TransGas argued for its case basing on the number of jobs it would create, some 1,000 to 1,500 temporary construction jobs and 40 full-time jobs according to a TransGas spokeswoman (New York Daily News, 19th June 2003, “On the Brooklyn Waterfront”); A the state of art facility that the complex would provide with eighty-percent energy efficiency. Adam Victor, president of TransGas, proposed to build a $1 billion Frank Gehry-inspired complex lined with art galleries, video galleries and a sculpture park, which would also house the 1,100-megawatt power plant. Moreover, Mr. Victor elaborated that the plant would burn relatively clean natural gas and recycle the waste heat to generate steam for heating in Manhattan. He further viewed the plant as a catalyst for the redevelopment of the North Brooklyn Waterfront. He did not see any contradiction in the co-existence of the power plant with proposed park, museum, housing and beach volleyball courts. He also promised to remove the underground residue from the site. (NYtimes, 6 February 2003, “For a Stretch of Brooklyn Waterfront, Many Dreams are Contenders”). The TransGas power plant case also has an added edge with the recent blackout, and plays on the City’s dire needs for more power sources.
Local residents, community groups such as the *Greenpoint-Williamsburg Waterfront Task Force (GWWTF)*, elected representatives of the area, and even residential developers, voiced fierce opposition to the power plant. No one would want to live beside a gigantic power plant, complete with 300-foot smoke stacks, environmental pollution and the risk of health hazards. "It would kill all waterfront housing developments for the next 10 generations," Norman A. Brodsky, a potential developer of residential apartments on the neighboring site, commented. The power plant would extinguish all dreams and plans of the past decade to transform the waterfront. “The power plant will kill it. It’s right smack in the middle, as you can see right here. Right smack in the middle of all of our plans, all of our hopes, and all of our dreams," said 50th District Assemblyman Joseph Lentol (NYPress, Johnny Dwyer, Vol. 16, Issue 9, “No Smoking Please”). The fallen Motiva deal was also speculated to be linked with the TransGas project which needs the added space from the Motiva site and the neighboring Bushwick Inlet to move forward, community activists said (New York Daily News, 6th August 2002, “Parks Plan Grounded”). TransGas denied the allegations however.

Although the Mayor and the City both opposed the power plant, the State of New York’s position on this matter is not clear- David Flanagan, a spokesman for the State Public Service Commission, said that it is very early in the state approvals process but "zoning will be a key issue for the case." (NYTimes, 19 June 2003, “City Seeking to Rezone Brooklyn Waterfront”). New York State’s Public Service Commission (PSC) must determine that the TransGas application is environmentally compatible\(^{21}\) as well as establish that there is a public need for new power facilities. The final decision will be made by a board consisting of the heads of the New York State’s Public Service Commission, Department of

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\(^{21}\) Such that the plant would be in compliance with Article X ("Article Ten").
Environmental Conservation, Department of Health, Economic Development Corporation, and Energy Research and Development Authority—all of who are Pataki appointees, in addition to two members representing the community (NYPress, Johnny Dwyer, Vol. 16, Issue 9, “No Smoking Please”).

On October 3rd, 2003, Mayor Bloomberg offered a compromise, identifying an alternative site for the power plant—9.8 acres abandoned petroleum site along the Newtown Creek in an already industrial part of Greenpoint. The site is currently owned by Exxon Mobile Corporation. Exxon Mobile is responsible for cleaning up the property (NYTimes, 4 October 2003, “Mayor Wants to Move Site of Power Plant”). Large amounts of petroleum—a total of 17 million gallon oil spill, the largest urban oil spill in U.S. history, had seeped into the ground from its former use as a storage, blending and distribution center. If TransGas was to take over the site, they would have to inherit and continue the state-instructed clean-up. This proposal was however rejected by TransGas on 27 October 2003, on the reason that the site is heavily contaminated and would take too long to clean up (New York Daily News, 28 October 2003, “Newton Too Dirty for Us, Says Developer”). The fight over the power plant remains unresolved.

Present Conditions

Panorama of Greenpoint Waterfront, Huron Street to Java Street
(Source: C.Y. Huang, Mar19, 2004)

Despite many plans and voluminous studies, the present condition of the Williamsburg and Greenpoint waterfront still remained in a state of dilapidated neglect. Only “a few
factories and waste-processing plant operates, but much of the land remains a foreboding, fenced-off no-man’s land.” (NYTimes, 21 August, 1991, “Development not even a Contender on Brooklyn Waterfront”). The haphazard waterfront is now littered with vacant rail yards, abandoned warehouses and trucking lots, and only accessible to trespassers. Further aggravating the situation is the divided ownership of properties along the waterfront- city agencies, Port Authority, New York State and private developers all claim a share.

<table>
<thead>
<tr>
<th>Fenced-off River Front</th>
<th>Waterfront Lots along Commercial Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Littered Lot between India Street and Java Street</td>
<td>Existing Access to Waterfront</td>
</tr>
<tr>
<td>Warehouse between North 4th and 5th Streets</td>
<td>Noble Street</td>
</tr>
</tbody>
</table>

(Source: C.Y. Huang, Mar19, 2004)
**Conclusion**

Richard Foglesong stated in his “Planning the Capitalist City” that the “central contradiction of capitalist urbanization [is] the contradiction between the social character of land and its private ownership and control” (Foglesong, 1986). Land is a unique commodity and land-use the central element in urban planning. The primary question explored in this thesis is how land-use decisions are made and executed? The research strove to understand the different factors at play, actors involved, strategies and planning tools employed in realizing greenways as the land-use. The two case studies offered different scenarios of greenways planning and implementation, giving insights into issues such as the value of various planning tools. A greenways matrix is proposed here, entailing these different factors that influence land use decisions towards one for greenways.

![Greenways Matrix](image)

Fig 3.1 The Greenways Matrix- factors that influence land use decisions towards one for greenways. *(Source: C.Y. Huang, 2004)*
The two case studies showcased both differences and similarities in terms of their greenways matrix.

**Planning**

In terms of planning aspects, various planning tools are employed in each case. For Williamsburg-Greenpoint, rezoning is the main planning tool being utilized while in Staten Island, a hodgepodge of measures is engaged but besides the unifying goals of developing tourism and revitalizing the waterfront, there is an absence of a comprehensive plan for the entire North Shore area although many studies have been conducted.

Land use regulations for the two cases are similar as both are along waterfront sites. The most useful tool would have been the requirement for waterfront access adopted in the early 1990s as discussed previously in the paper, and waterfront access plans which sought community inputs. However, ss the current existing waterfront zoning are mostly manufacturing, the waterfront access requirements do not apply. Only with the passing of rezoning, would the requirement be effective.

Land ownership differed in the two case studies. While the North Shore of Staten Island has most of its waterfront properties under public ownership (acting mainly through EDC); in Brooklyn, only two parcels are New York State-owned park land. Other parcels are under private ownership. The implications are interesting for greenways development, in that the former have a more central control while the latter is under the mercy of private development. Although as discussed above for the case of Staten Island, the City usually engages in private partnership or lease out its property for private development, it is still able to dictate and program the sites such that overall development might follow a comprehensive plan. As when the properties are mostly under private ownership, the City has less leverage in controlling the land uses that go on site other than through such measures as zoning and attached waterfront access clauses. In the case that no private developments were initiated
voluntarily, the City could either purchase the land for own development or provide further incentives for private development. There are both merits and demerits in the two situations and these would largely depend on the specific context of development. In any case, an extended time span is probably required before the waterfront revitalization and greenways could finally be completed.

**Politics**

As part of a comprehensive city plan and Mayor Bloomberg’s vision of waterfront access and city-wide greenways linkages, the two sites as studied here both have basic political support for greenways implementation. "The development of the waterfront is one of the Bloomberg administration's most critical economic and neighborhood priorities," said Daniel L. Doctoroff, the Deputy Mayor for Economic Development and Rebuilding. "With maritime industry uses gone or fading, we can reclaim parts of the shoreline. We have a once-in-a-century opportunity to reclaim New York City's waterfront, so we're seeing a lot of things beginning to come together.” (NYtimes, 18 August, 2003, “Renovation Efforts Reclaim the City’s Forbidden Shoreline”) Political support is extremely important in the realization of greenways especially when they traverse diverse neighborhoods and across geographic boundaries and different jurisdictions. Funding is also available through different programs, and from city, state and federal sources, although these are not guaranteed and have to be secured incrementally at different stages of the greenways development. However, the larger climate in NYC is an optimistic one with increasing public awareness of the importance of waterfront access and their continuous linkages in addition to political approval of these issues.
Political mobilization power is an important factor in successful greenway-implementation as the needs and wants of communities are often sought and become part of the public policy making and planning process. However, many flaws still exist. In Brooklyn, the community has greater leverage than the Staten Island community. The lack of cohesion of Staten Island communities has a historical root. Even in 1898 when the “Greater New York” was consolidated and entities like Brooklyn and Staten Island became the boroughs of NYC Metropolis, the sparse population of the Island left it at a disadvantage in the legislative bodies and political activities of New York City (Preserve & Protect, “Stapleton’s History”). Moreover, there is a greater awareness of the problems facing the Brooklyn community: the lack of affordable housing and unfair burden of undesirable city facilities. This is a common phenomenon in greenways planning and implementation. Greenways do not usually exist as an independent identity; but are spun off, if not at least closely linked to, other development concerns. In addition, the Brooklyn community is better organized politically and receives greater media exposure, which in turn helps boost their leverage.

Special catalysts are events or programs that occur only under certain circumstances but would, however, exert great influence on the development of greenways. The pending NYC2012 Olympic bid capitalizes on waterways around New York City as the main transportation means and thus renders waterfront sites a critical role. Identified waterfront venues such as St. George on Staten Island and Williamsburg in Brooklyn would have to be conditioned for the games, making the completion of related developments such as greenways necessary. Greenways could also play a supporting role by connecting the proposed Olympic Village in Queens West to key practice and competition venues in Brooklyn and other Boroughs. As an international event, the number of resources and public support is enormous and in turn, greenways development could benefit from and capitalize on these added assets.
**Greenways**

In our fore-most proposed definition of greenways, greenways are defined as multi-functional and compatible with the concept of sustainable land use. The proposed definition is applicable in both of the case studies however differing in the emphasis of the function of greenways. For Staten Island, greenways would function well as a wildlife sanctuary and historic preservation site for the rich cultural and historical heritage and natural resources along many areas of the waterfront. Equally critical is the marketing of the North Shore as a tourist destination, which the greenways development could complement perfectly. In the case of Williamsburg and Greenpoint, greenways serve more as an added amenity and improvement to living conditions and a possible measure to prevent further dumping of unwanted public facilities such as waste transfer plants and sewage treatment plants etc. The different emphasis in functions affects the other factors in the greenway matrix as they would constitute different reasoning for the establishment of greenways. The strategy to be taken and the type of community groups mobilized would change accordingly too. What is similar in both neighborhoods are that greenways would serve well as a revitalization tool for neglected waterfronts and will greatly improve the quality of living. Notably though, the cause and effects relationship could not be clearly demarcated or rather, it works in both directions - revitalization of the waterfront allows greenways to be incorporated into new developments, while the existence of greenways and more open spaces create more attractive neighborhoods drawing investors and developers who can redevelop the area.

**Context**

Broad historical contexts for the larger region, the neighborhood and each individual parcels would shape existing land uses, neighborhood assets, community make-up, public attitudes and other vital factors that contribute to greenways development; given, of course,
that the present is the extension of the past. Present conditions of the proposed greenways sites also play a significant role in their development. For example in both of the case studies, the sites present derelict industrial neighborhood which are not revitalized or planned after an extended period when circumstances and economic climate has already shifted from dominating water-dependant industries. This provided additional challenges of considering redevelopment of the whole areas instead of simply adding a greenway or bicycle trail to well-established neighborhoods. Linked again to the other factors such as planning tools, political actors and greenways functions, the historical background and present context provide the backstage where these other factors would work on.

<table>
<thead>
<tr>
<th>Factors</th>
<th>Sub-factors</th>
<th>Staten Island North Shore</th>
<th>Williamsburg- Greenpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Planning Tools</td>
<td>Hodge-Podge</td>
<td>Rezoning</td>
</tr>
<tr>
<td></td>
<td>Land Use Regulations</td>
<td>Waterfront Access</td>
<td>Waterfront Access</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requirements</td>
<td>Requirements</td>
</tr>
<tr>
<td></td>
<td>Land Ownership</td>
<td>Mostly Public</td>
<td>Mostly Private</td>
</tr>
<tr>
<td>Politics</td>
<td>Political Support</td>
<td>Yes, but less</td>
<td>Yes, and mainly from City</td>
</tr>
<tr>
<td></td>
<td>Community Leverage</td>
<td>Present, but weaker</td>
<td>Present and stronger</td>
</tr>
<tr>
<td></td>
<td>Special Catalyst</td>
<td>NYC2012 Games</td>
<td>NYC2012 Games</td>
</tr>
<tr>
<td>Greenways</td>
<td>Greenways Function</td>
<td>Wildlife sanction</td>
<td>Amenity and improvement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Historical preservation</td>
<td>to living conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tool</td>
<td>Prevent further dumping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Economic Revitalization</td>
<td>of unwanted city facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tourism promotion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greenways Design</td>
<td>To be explored</td>
<td>To be explored</td>
</tr>
<tr>
<td>Context</td>
<td>Historical Background</td>
<td>Suburban town with light</td>
<td>Primarily Industrial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>industries</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Present Conditions</td>
<td>Derelict industrial</td>
<td>Derelict industrial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>neighborhood, mixed with</td>
<td>neighborhood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>residential houses and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>established historical/cultural developments</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Summary of Case Study Comparisons
From the above comparisons, the following conclusions could be deduced about factors affecting greenways planning and implementation:

1. A comprehensive planning strategy for the area would more forcefully drive greenways implementation.

2. Clearly specified land use regulations such as requirements for waterfront access are very useful and they present an opportunity for officially endorsing greenways development.

3. Ownership of land, be it private or public, both have its merits and demerits in ushering greenways. However, publicly owned land would present a simpler formula to greenways formation.\(^{22}\)

4. Politics, without doubt, is one of the strongest influences. Both support from the government and the public (more importantly, the local community) is crucial to any greenways development or land use developments that would facilitate greenways.

5. Unexpected opportunities such as the City sponsoring a renowned international event could greatly help. These are however, only presented in special circumstances such as NYC bidding for the Olympics game as the hosting city.

6. The functions of greenways as applied to each specific location and context would be an important impetus. They act as the causes for political support and would affect the other factors in the greenways matrix.

7. An understanding of historical background and context of local neighborhoods is useful to greenways implementation. They not only offers understanding of present land uses but also presents the neighborhood assets, community make-up, public attitudes and other vital factors that contribute to greenways development.

\(^{22}\) This is in keeping with the view offered by Charles Little, as previously discussed in the Literature Review.
These inferences could be generalized to greenways planning in the American urban context, though in each case, the various axis of the greenways matrix would differ in weight.

The discussion of greenways through the two specific case studies offered further insights into land use issues otherwise uncovered in the literature review. In addition to land ownership and regulations, many other factors, as can be seen in the proposed greenways matrix, have been found as equally important in affecting land use decisions. It is also apparent that greenway planning is not an autonomous process free from the jurisdiction of other developments. More often, they are a subsidiary of a larger land use or economic development plan for the area. We then turn to the question of whether this should be the case for efficient greenways planning. The researcher concludes that indeed, greenways generated from other land use developments would be the most plausible way especially in a dense urban context. As shown in the greenways matrix, greenways, given its location and characteristics, involve too many other factors and could not therefore be planned in isolation. Assume, hypothetically that an independent greenway is completed in the Williamsburg-Greenpoint waterfront, without complementary residential developments, it would not be safe or well-utilized along the waterfront, as derelict industrial sites still exist. Furthermore, this assumption can only be established if major obstacles such as private land ownership, funding and political issues are overcome. However, having said this, a comprehensive plan, such as the DCP 1993 greenways plan, would still be desired as it sets a framework for planning activities, a direction to be worked towards, and a vision to be realized.

On the other hand, if the context is a rural one, the issues concerned would be different and the model of greenways implementation would too, change. Possibly, the greenways planning process could be more independent and direct. This is however, not the focus of this research and would await future studies to validate the conjecture. Other related areas worth further examination not covered in this paper include the physical design of greenways in facilitating effective usage and how users perceive and make use of them. They would constitute the second stage in the exploration of successfully implementing greenways.
Appendix

Appendix 1: Interview Questions

The interviews conducted with planners, officials and community activists are mostly free-form. A sample of some of the questions asked at interviews is as below:

1. In what capacity are you involved in greenways planning or implementation in New York City? Can you site some specific cases?
2. Can you describe the stages or process or work flow of how greenways develop, for example from conception, choosing of site, planning, acquisition to design and construction?
   What role does your organization play in the process?
   Can you give or describe specific examples of how land use issues such as ownership or land regulations facilitated or obstructed the realization of greenways?
   How were these resolved, if they were indeed resolved?
   Do you think the solution or the way it worked out is ideal? Are there possible alternatives to the situation?
3. In whose interests, primarily, is your organization acting for?
4. Can you trace your organization’s role in the history of the development of greenways in New York City?
5. How is the relationship between your organization and the community boards/local groups/non-profit organizations that worked together on this particular greenway?
6. How would you describe the experience of working with the various public agencies on this greenway?
7. What is your overall view of greenways development in NYC eg. its success rate? Do you think land use issues are an important factor in successfully implementing them?
8. What do you think is the driving force for DCP publishing the 1993 greenways plan for NYC?
9. Are there any conflicts between waterfront development and greenways especially when private developments are involved?
Appendix 2: Open Space Ratio

NYC Open Space Ratio by Boroughs

Source: Generated from Figures of NYC Parks and Recreation inventory dated: 10/02 and 2000 census data
<table>
<thead>
<tr>
<th>Borough</th>
<th>NYC DPR (acres)</th>
<th>State / Federal Open Space (acres)</th>
<th>Total Open Space (acres)</th>
<th>Total Land (acres)</th>
<th>Percent of Land Area (%)</th>
<th>2000 Census Population (persons)</th>
<th>OS ratio 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Bronx</td>
<td>7,019.60</td>
<td>25.92</td>
<td>7,045.52</td>
<td>28,165</td>
<td>25.02</td>
<td>1,332,650</td>
<td>5.29</td>
</tr>
<tr>
<td>Brooklyn</td>
<td>3,621.38</td>
<td>9</td>
<td>3,630.38</td>
<td>52,330</td>
<td>6.94</td>
<td>2,465,326</td>
<td>1.47</td>
</tr>
<tr>
<td>Brooklyn CD1</td>
<td>93.56</td>
<td>7</td>
<td>100.56</td>
<td>3,168</td>
<td>3.17</td>
<td>160,338</td>
<td>0.63</td>
</tr>
<tr>
<td>Manhattan</td>
<td>2,692.27</td>
<td>114.23</td>
<td>2,806.50</td>
<td>15,170</td>
<td>18.5</td>
<td>1,537,195</td>
<td>1.83</td>
</tr>
<tr>
<td>Queens</td>
<td>7,272.44</td>
<td>42.99</td>
<td>7,315.43</td>
<td>71,780</td>
<td>10.19</td>
<td>2,229,379</td>
<td>3.28</td>
</tr>
<tr>
<td>Staten Island</td>
<td>7,370.72</td>
<td>848.11</td>
<td>8,218.83</td>
<td>38,507</td>
<td>21.34</td>
<td>443,728</td>
<td>18.52</td>
</tr>
<tr>
<td>Staten Island CD1</td>
<td>797.22</td>
<td>140.57</td>
<td>937.79</td>
<td>9,052</td>
<td>10.36</td>
<td>137,806</td>
<td>6.81</td>
</tr>
<tr>
<td>New York City</td>
<td>27,976.41</td>
<td>1,040.25</td>
<td>29,016.66</td>
<td>205,952</td>
<td>14.09</td>
<td>8,008,278</td>
<td>3.62</td>
</tr>
<tr>
<td>Total</td>
<td>27,976.41</td>
<td>8,257.63</td>
<td>36234.04*</td>
<td>205,952</td>
<td>17.59</td>
<td>8,008,278</td>
<td>4.53</td>
</tr>
</tbody>
</table>

Source Data: NYC Parks and Recreation inventory dated: 10/02; 2000 census data;

* Additional Federal Property- 7,217.38 (does not include lands under water) including Statue of Liberty / Ellis Island - 58.38 acres (NPS); Governor’s Island National Historic Monument - 22 acres (NPS); GNRA: Jamaica Bay unit - 6192 acres (NPS); Staten Island Unit - 945 acres (NPS)

National Parks Service date:
Note: These estimates of area are approximate, and based in part on unverified data.
The National Park Service takes no responsibility for inappropriate use of this information.
Land, water, and total area estimates were calculated in August of 2000.
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2. **Scott Wise, NYCDCP,** Pedestrian and bicycle division director. 24th February.
3. **Howard Slatkin NYDCP Brooklyn Borough**, Project Director for the Greenpoint-Williamsburg rezoning. 27\textsuperscript{th} February.

4. **Jennifer Hoppa, Department of Parks & Recreation**, Deputy Director, Planning Division. 3\textsuperscript{rd} March.

5. **Linda Eskenas, President of North Shore Waterfront Greenbelt**, 11\textsuperscript{th} March.