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# Urban Waterfront Revitalization: A Case Study of Downtown Waterfront in Rochester, New York

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# R·I·T

## **URBAN WATERFRONT REVITALIZATION** *- A Case Study of Downtown Waterfront in Rochester, New York*

by

Yaoyu (Lorrain) Xiao

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of  
Master of Architecture

**Golisano Institute for Sustainability**  
**Department of Architecture**  
**Rochester Institute of Technology**  
**Rochester, New York**  
**Spring, 2023**

## **COMMITTEE APPROVAL**

### *URBAN WATERFRONT REVITALIZATION*

*- A Case Study of Downtown Waterfront in Rochester, New York*

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## **ABSTRACT**

This research paper presents a case study of the Rochester downtown waterfront revitalization project. The project aims to revitalize the neglected waterfront and create a vibrant and attractive space for residents and visitors alike. Key factors contributing to the success of the Rochester downtown waterfront revitalization project include strong community engagement, public-private partnerships, adaptive reuse of existing structures, and a focus on sustainability. The study finds that the revitalization efforts have led to uneven economic, social, and environmental benefits for the community. The purpose of this study is to gain a comprehensive evaluation of the current status, difficulties, and potential for revitalization effort of the downtown Rochester waterfront. Through previous and current comprehensive plan studies and analysis, and proposed evaluation framework of sustainable waterfront revitalization trends, the study offers insights and recommendations for future action in the context of the downtown Rochester waterfront. The research question explores the challenges faced by Rochester during its post-industrial phase, the strategies employed to transform the waterfront into a tourism destination, and the influence of sustainable waterfront revitalization trends on Rochester's efforts towards revitalization.

## **Key Words**

Urban Waterfront

Sustainable Revitalization

Rochester, New York

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## LIST OF FIGURES

Figure 1 Diagrams of two different waterfronts, ocean waterfront as shown has waterfront area on the one side,	6
Figure 2 Boston: Quincy Market. View Of Quincy Market and Faneuil Hall in Boston, Massachusetts, Built-In 1824-1826. Engraving, 19Th Century. Image captured from Boston: A Topographical History. ....	16
Figure 3 The three impact components of sustainability and their interconnections. ....	25
Figure 4 The Inner Harbor in 1948 and in the late 1950s, after clearance and new bulkheads. (Sources: <a href="http://www.ghostofbaltimore.org">www.ghostofbaltimore.org</a> Robert F. Kniesche, Baltimore Sun; and author's archives, source unknown).....	31
Figure 5 “The successful revitalization of Baltimore’s Inner Harbor” An industrial Inner Harbor during the early 20th century. Image courtesy of <a href="https://darkroom-cdn.s3.amazonaws.com/2012/11/BS-Baltimore-Harbor-View-.jpg">https://darkroom-cdn.s3.amazonaws.com/2012/11/BS-Baltimore-Harbor-View-.jpg</a> .....	32
Figure 6 Aerial view of the Municipal Pier No. 2 opens in 1916, the first of its kind to combine the business of shipping with the pleasure of public entertainment. At a cost of \$5 million, the 292-foot-wide Pier, ‘built by the city for the people,’ It remains the longest public pier in the world today.....	33
Figure 7 Aerial view of the Navy pier 2016. The waterfront development turns the pier into a destination for local communities as well as visitors.....	34
Figure 8 Waterfront Transformation of the Hudson Yard riverbank. Vacant piers turned into waterside park, as a public space with infrastructure development. The Hudson River Park is a 550-acre public park that runs along four+ miles of waterfront on the west side of Manhattan.....	35
Figure 9 Photo of the riverside, Greenpoint Landing, Brooklyn, New York. The Phase 1 provide public access to the waterfront in this area for the first time in decades. It features 1.5 acres of open space, including riparian garden terraces, a waterfront esplanade, a lawn, and a picnic area. ....	37
Figure 10 Proposed Bicycle & Pedestrian Access & Circulation Plan from Greenpoint – Williamsburg Waterfront Open Space Master Plan. There are 21 proposed pedestrian access for recreational connection.....	38
Figure 11 Photo of the Chicago Riverwalk. The Riverwalk now offers opportunities for kayaking, nature walks, and, with continued advancements in river health, some envision it as a destination for swimming in the future.....	40
Figure 12 The number of fish species found living in the Chicago River has been increasing in recent decades. The increase in fish species diversity is a promising sign for the health of the river and a testament to the importance of investing in sustainable infrastructure and treatment technologies. Source: MWRD.....	41
Figure 13 The Rocks waterfront as an important transportation hub in the early 1870s. Old photo of the Rocks waterfront in the early 1870s. Circular Quay, Sydney, NSW.....	42
Figure 14 An artist's impression of the Campbell's Stores building after the refurbishment. The 1839 building in The Rocks in Sydney has been a well-known restaurant and tourist destination for almost 50 years.....	43
Figure 15 View from Canalside, Connecting Terminal Grain Elevator, Buffalo, NY, 2007. ....	44
Figure 16 Photo of Buffalo Canalside by Joe Cascio, 2017.....	44
Figure 17 Importance–Performance Analysis (IPA) evaluation system can be visually summarized into chart above. The relationship among the historical, economical and residential values can be the fundamental elements of the research. Chart made by the author based on the literature review.....	54
Figure 18 Pie chart of IPA participators, there are 35 samples were taken as final result. Chart made by author.....	56

Figure 19 Radar Polygon chart shown the result of “Importance” IPA survey.....	57
Figure 20 Radar Polygon chart shown the result of “Performance” IPA survey. ....	58
Figure 21 The Genesee River runs through the city, and the city's downtown area is situated on the river's southern bank. In the early days of the city's development, the river was used as a means of transportation and as a source of power for mills and factories. Image illustrated by the author.....	74
Figure 22 The canal is “a 363-mile waterway that connects the Great Lakes with the Atlantic Ocean via the Hudson River in upstate New York.” Image Illustrated by Peter Paccone. ....	75
Figure 23 An aerial view of downtown Rochester, probably in the late 1930s, showing the Genesee River flowing through the center of the city. In the foreground, over the river, is the Court Street dam, followed by the Court Street, Broad Street, Main Street, Andrews Street, and Central Avenue bridges. In the far left, the Genesee gorge is shown below the Upper Falls.....	76
Figure 24 Satellite imagery of Rochester Downtown, 1950(left) vs 1965(middle). The image right-side shows the parcels that were demolished or even vacated in 1965, as the construction of the Inner Ring Road meant the demolition of existing buildings and the expansion of roads, which led to the relocation of a large number of residents further away from the city.....	78
Figure 25 The overview map with project legend of ROC the Riverway. Image captured online. ....	79
Figure 26 "Map of Downtown Rochester, 1814: East Main Street Overcrossing Genesee River and State Street Running Alongside the River", the map showing the original street grid and layout of the city, including the Erie Canal running through the center. This map provides a glimpse into the early development of Rochester and the role of the Erie Canal in the city's growth as a major transportation hub.....	80
Figure 27 Map of Rochester Downtown Waterfront Land Uses Diagram, 1880. Bottom image shown that bustling waterfront powered by the mills that drove the city's economy at that time. Illustrated by the author. ....	82
Figure 28 Map of Rochester Downtown Waterfront Land Uses Diagram, 1919. Bottom image shown that fueling industrial growth through waterpower development at that time. Illustrated by the author. ....	83
Figure 29 Map of Rochester Downtown Waterfront Land Uses Diagram, 1935. Bottom image shown a Glimpse into Rochester Downtown area 1935, where factories, cars, and vacant lots dominated the waterfront scene. ....	84
Figure 30 Map of Rochester Downtown Waterfront Land Uses Diagram, 2019. Bottom image shown challenges of downtown Rochester waterfront: lack of pedestrian-friendly infrastructure and a ghost town after commute hours." .....	85
Figure 31 Eras of Development of Rochester Downtown Waterfront: Mapping Rochester's Evolution: The Nolli Plan and Population Shifts from 1880 to 2019.Image illustrated by the author. ....	87
Figure 32 The image on the previous page showed the Rochester Renaissance Plan: Destination Tourism Attraction Goals & Strategies. The background image illustrated by the author clearly shows that the Downtown Waterfront was formally treated as a tourist destination during 1999. Original Documentation Images are captured from: Rochester 2010: The Renaissance Plan. 1999. [ebook] Rochester: Rochester City Council, p.58.....	89
Figure 33 The list below shows the funding breakdown for the 13 projects recommended for the initial \$50 million commitment from New York State. The plan focuses on improving connectivity and accessibility to the riverfront, promoting healthy living and active lifestyles, and creating new economic opportunities. The plan is designed to be implemented in two phases, with the first phase focused on building thirteen public	

recreation spaces, including parks, playgrounds, and bike paths. Image capture from the document, p.44-45.	91
Figure 34 "Eew! Photos Document a Growing River of Trash." Photo and quotation from Rochester Subway website, July 24, 2013: <a href="https://www.rochestersubway.com/topics/2013/07/eeeeew-genesee-river-of-trash/">https://www.rochestersubway.com/topics/2013/07/eeeeew-genesee-river-of-trash/</a>	96
Figure 35 Land Use Considerations & Context - Page 23, City of Rochester & Monroe County, Green Infrastructure Retrofit Manual	98
Figure 36 : Rochester's urban forest in decline with more trees removed than planted since 2014.	100
Figure 37 The current state of the plaza features stairs, a lack of landscaping, and limited accessibility entry points, making it difficult for some individuals to access and utilize the space. Accessed online: <a href="https://www.cityofrochester.gov/ccpp/">https://www.cityofrochester.gov/ccpp/</a>	101
Figure 38 The plaza reconstruction project aims to combine functionality with artistic waterfront design. Objectives include maximizing views of the river, improving pedestrian linkages, increasing safety by reducing vertical elements and adding lighting, providing full accessibility, and creating a lively atmosphere with user attractions and activity generators.	102
Figure 39 Plasticiens Volants' 2017 BIG BANG at Parcel 5 during the Fringe Festival. (Photo by Erich Camping). Accessed online: <a href="https://rbj.net/2019/09/17/downtown-learns-to-morph-into-festival-city/">https://rbj.net/2019/09/17/downtown-learns-to-morph-into-festival-city/</a>	102
Figure 40 Community members share their feedback on the revitalization of downtown Rochester, providing valuable insights for future development plans. Image captured from official website: Rochester 2034...	104
Figure 41 The current commercial real estate value in Downtown Rochester. This image captures the current value of commercial real estate in Downtown Rochester, providing insight into the real estate market and its impact on the local economy. Image captured online: <a href="https://www.commercialcafe.com/office-market-trends/us/ny/rochester/">https://www.commercialcafe.com/office-market-trends/us/ny/rochester/</a>	105
Figure 42 The image captures the fluctuations in office sales volume in Downtown Rochester between the years 2017 and 2021. The chart depicts the variations in the number of office sales in the downtown area over the four-year period. It is important to note that office sales volume is affected by various objective factors, such as market conditions, which should also be considered in any analysis. Image captured online: <a href="https://www.commercialcafe.com/office-market-trends/us/ny/rochester/">https://www.commercialcafe.com/office-market-trends/us/ny/rochester/</a>	106
Figure 43 Traveler Spending and Local Impact 2021: Analyzing the Economic Impact of Tourism in Rochester, New York"	107
Figure 44 This graph shows the change in real GDP over 10 years in Downtown Rochester, indicating a steady growth trend in economic production. The sustainable urban waterfront revitalization efforts in Rochester may have contributed to this positive economic impact.	108
Figure 45 This graph shows the percentage change in Real Gross Domestic Product (GDP) over 10 years in Monroe County, New York.	109
Figure 46 Mapping and visualization of historic district character in Rochester, New York.	112
Figure 47 "Land use analysis of downtown Rochester within a 2-mile radius reveals gradual isolation of waterfront and northeastern residential areas."	115
Figure 48 Mapping Rochester Downtown waterfront area within a 2-mile radius highlights public, community, recreational and entertainment properties lacking connectivity to the waterfront despite being open to the public.	119



<i>Figure 49 Limited building usage, lack of winter activities, and proximity to industrial lands restrict both pedestrian and transportation access.....</i>	<i>122</i>
<i>Figure 50 Map highlighting the 2-mile radius of Rochester's downtown waterfront area, depicting the extensive amount of vacant land that has remained unutilized for a significant period. These empty spaces present an untapped potential for development and revitalization efforts.....</i>	<i>126</i>

## LIST OF TABLES

<i>Table 1 Typology of Different Waterfront and Definition .....</i>	<i>8</i>
<i>Table 2 Typology of Different Waterfront with Specific Purpose and Users .....</i>	<i>9</i>
<i>Table 3 Proposed Sustainable Waterfront Revitalization Impact Evaluation.....</i>	<i>50</i>
<i>Table 4 In-depth Framework for Sustainable Urban Waterfront Revitalization Evaluation .....</i>	<i>51</i>
<i>Table 5 Sustainable Impact Evaluation of Rochester 2010 Comprehensive Plan .....</i>	<i>60</i>
<i>Table 6 Sustainable Impact Evaluation of ROC the Riverway Comprehensive Plan .....</i>	<i>62</i>
<i>Table 7 Sustainable Impact Evaluation of Rochester 2034 Comprehensive Plan .....</i>	<i>64</i>
<i>Table 8 Evaluation Analysis for Buffalo Waterfront Revitalization Projects.....</i>	<i>65</i>
<i>Table 9 Framework Analysis for Rochester Downtown and Buffalo Waterfront Revitalization Projects .....</i>	<i>71</i>
<i>Table 10 Urban Waterfront Revitalization Efforts Evaluation of Rochester Comprehensive Plans .....</i>	<i>95</i>

## TABLE OF CONTENT

<b>COMMITTEE APPROVAL .....</b>	<b>I</b>
<b>ABSTRACT.....</b>	<b>II</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>III</b>
<b>LIST OF FIGURES .....</b>	<b>IV</b>
<b>LIST OF TABLES.....</b>	<b>VIII</b>
<b>TABLE OF CONTENT .....</b>	<b>IX</b>
<b>CHAPTER 1. INTRODUCTION.....</b>	<b>1</b>
<b>1.1. Background Information.....</b>	<b>2</b>
<b>1.2. Purpose of the Study .....</b>	<b>3</b>
<b>1.3. Research Questions .....</b>	<b>4</b>
<b>CHAPTER 2. LITERATURE REVIEW.....</b>	<b>5</b>
<b>2.1. Historical Development of Waterfronts .....</b>	<b>6</b>
2.1.1. Waterfronts and Urban Waterfronts Definitions .....	6
2.1.2. Typology of Urban Waterfront.....	7
2.1.3. The Role of Waterfronts in Urban Development .....	10
2.1.4. The Impact of Industrialization on Waterfronts .....	11
2.1.5. The Decline of Waterfronts During the Post-Industrial Era.....	15
<b>2.2. Urban Waterfront Revitalization .....</b>	<b>18</b>
2.2.1. Aspects of Urban Waterfront Revitalization .....	18
2.2.2. Benefits of Urban Waterfront Revitalization .....	20
2.2.3. Stakeholders of Urban Waterfront Development .....	21
<b>2.3. Sustainable Urban Waterfront Revitalization.....</b>	<b>22</b>
2.3.1. Approaches for Sustainable Waterfront Revitalization .....	22
2.3.2. Impact of Sustainable Urban Waterfront Revitalization .....	25
2.3.3. Indicators of Sustainable Impact Evaluation .....	28
<b>2.4. Successful Urban Waterfront Revitalization Projects Around the World. 30</b>	
2.4.1. Successful Revitalization Projects .....	30

2.4.2. Lessons Learned from Successful Projects.....	46
<b>CHAPTER 3. METHODOLOGY AND ANALYSIS .....</b>	<b>48</b>
<b>3.1. Overall Methodology .....</b>	<b>49</b>
<b>3.2. Framework Proposal .....</b>	<b>49</b>
3.2.1. Sustainable Urban Waterfront Revitalization Framework Main Factors .....	49
3.2.2. Sustainable Urban Waterfront Revitalization Framework Sub-Factors .....	51
<b>3.3. Importance-Performance Analysis.....</b>	<b>53</b>
3.3.1. Importance-Performance Analysis (IPA) Method.....	53
3.3.2. Discussion of the Survey Findings .....	56
<b>3.4. Evaluation of Comprehensive Plans.....</b>	<b>60</b>
3.4.1. Rochester 2010 .....	60
3.4.2. ROC the Riverway.....	62
3.4.3. Rochester 2034 .....	64
3.4.4. Evaluation Framework Practice: Buffalo Waterfront Revitalization .....	64
<b>3.5. Methodology for Evaluating Rochester's Waterfront Revitalization Efforts</b>	<b>70</b>
<b>3.6. Proposed Framework Methodology .....</b>	<b>71</b>
<b>CHAPTER 4. CASE STUDY OF ROCHESTER, NY DOWNTOWN WATERFRONT</b>	<b>73</b>
<b>4.1. Background and Context Introduction.....</b>	<b>74</b>
4.1.1. Brief Overview .....	74
4.1.2. Post-Industrialization and Urban Decay in Rochester .....	77
4.1.3. Rochester's Waterfront Development and Revitalization .....	78
<b>4.2. History of Rochester's Downtown Waterfront Revitalization Efforts .....</b>	<b>79</b>
4.2.1. From 1800s to 2020s.....	79
4.2.2. Challenges During Its Post-Industrial Phase.....	86
<b>4.3. Evaluation of Rochester Downtown Waterfront Comprehensive Plans ....</b>	<b>89</b>
4.3.1. Rochester 2010 .....	89
4.3.2. ROC the Riverway.....	91
4.3.3. Rochester 2034 .....	92
4.3.4. Evaluation of Comprehensive Plans .....	93

<b>4.4. Current Status and Proposed Framework Analysis .....</b>	<b>96</b>
4.4.1. Environmental.....	96
4.4.2. Social .....	101
4.4.3. Economy .....	105
<b>4.5. Assessing the Rochester Downtown Waterfront Land Uses Efforts .....</b>	<b>110</b>
4.5.1. Historical Preserves .....	111
4.5.2. Residential .....	114
4.5.3. Public Services, Community Services, Recreation and Entertainment.....	118
4.5.4. Industrial, Wild and Public Parks, Unknown.....	121
4.5.5. Vacant.....	124
<b>CHAPTER 5. CONCLUSION AND RECOMMENDATIONS .....</b>	<b>129</b>
<b>5.1. Summary of the Findings .....</b>	<b>130</b>
<b>5.2. Limitations of the Study .....</b>	<b>132</b>
<b>5.3. Recommendations For Future Revitalization Efforts .....</b>	<b>134</b>
<b>APPENDIX A: SURVEY A .....</b>	<b>137</b>
<b>APPENDIX B: SURVEY B .....</b>	<b>140</b>
<b>REFERENCES .....</b>	<b>144</b>

## **CHAPTER 1. INTRODUCTION**

## **1.1. Background Information**

The revitalization of urban waterfronts has become a central focus for many cities worldwide due to their former importance as centers of transportation, trade, and leisure activities. Revitalization aims to restore these areas and bring back their former glory while promoting sustainable urban growth and preserving their unique character and history. The impact of urban waterfront revitalization is crucial to understand as some cities have successfully revitalized their waterfronts, bringing economic benefits and increased quality of life for residents. The study of revitalization can help identify the strengths and weaknesses of revitalization strategies and their impacts on the economy, employment, property values, residents, and stakeholders.

Through the analysis, the author proposed concerned departments and researchers may make informed decisions about future revitalization projects, coordinate efforts between stakeholders, and ensure successful revitalization projects. The downtown Rochester waterfront is one such area that has faced decline and is now undergoing revitalization efforts. The revitalization process, however, is complex and challenging, often facing difficulties such as a lack of resources, complicated regulations, and opposition from residents and businesses. The author tended to provides a case study and analysis of the downtown Rochester waterfront to provide valuable insights into the trends, challenges, and advantages of urban waterfront revitalization and contribute to the advancement of sustainable waterfront development.

## **1.2. Purpose of the Study**

The purpose of this study is to examine the efforts towards revitalizing the downtown Rochester waterfront and to provide an in-depth analysis of its current conditions, challenges, and opportunities for future development. The study aims to evaluate the impact of the redeveloping on the local community and the economy and to provide recommendations for future revitalization efforts.

Through a research-based analysis of previous comprehensive plans, and visually analyzed existing conditions, mapping and data, this study will provide possible insights into the current revitalization of the downtown Rochester waterfront and its potential to serve as recommendations for other urban waterfronts.

The specific objectives of this study are as follows:

- To gain a comprehension of the current status, difficulties, and potential for revitalization of the downtown Rochester waterfront.
- To scrutinize comprehensive plan studies and data pertaining to the downtown Rochester waterfront to identify critical factors that influence revitalization efforts.
- To utilize mapping and visual analysis techniques to offer an extensive comprehension of the physical and environmental characteristics of the waterfront.
- To discern best practices for urban waterfront revitalization and proffer suggestions for future action in the context of the downtown Rochester waterfront.
- To make a meaningful contribution to the extant literature on urban waterfront revitalization by offering perspectives and suggestions based on the case study of the downtown Rochester waterfront.



### **1.3. Research Question**

The evaluation of Rochester's downtown waterfront revitalization efforts involves investigating key factors research questions to gauge their effectiveness. Firstly, an examination of the challenges faced by Rochester during its post-industrial phase provides valuable insights into the specific obstacles the city encountered, including population decline, industrial downturn, and suburban relocation. Understanding these challenges helps to contextualize the ongoing revitalization endeavors. Additionally, the analysis explores the transformation of Rochester's multiple attempts to develop the waterfront into a thriving tourism destination. This investigation delves into the strategies and initiatives implemented to rejuvenate abandoned industrial sites, transforming them into vibrant hubs for tourism and recreation. Moreover, the assessment considers the current trends in sustainable waterfront revitalization and their influence on Rochester's efforts. By examining these trends, such as the growing focus on green infrastructure and community engagement, we can effectively evaluate the progress of Rochester's initiatives and identify potential areas for improvement. Overall, this research endeavors to form a comprehensive framework for assessing the effectiveness of Rochester's waterfront revitalization, taking into account the city's post-industrial history and aligning with the prevailing trends in sustainable development. Thus, the research question to be answered is, what are current trends in sustainable waterfront development and how successful has Rochester, NY been in considering or implementing them in its ongoing revitalization efforts?"

## **CHAPTER 2. LITERATURE REVIEW**

## CHAPTER 2. LITERATURE REVIEW

### 2.1. Historical Development of Waterfronts

#### 2.1.1. Waterfronts and Urban Waterfronts Definitions

According to Oxford Languages Dictionary, a waterfront is a region of a town that borders a body of water, emphasizing the connection between land and water. Kevin Lynch's analysis of Boston, Los Angeles, and Jersey City in his book, *The Image of the City*, defines urban waterfronts as the edges of the five fundamental components of a city. (Lynch, *The Image of the city* 1960) However, this perspective may be different here since the waterfronts in these three cities border the ocean, and the proximity to the shoreline means that their waterfronts extend outward. Conversely, the waterfronts in riverine cities like Rochester differ from those of coastal areas, as shown in Figure 1.



Figure 1 Diagrams of two different waterfronts, ocean waterfront as shown has waterfront area on the one side, however, the river waterfront has two sides of waterfront areas. This leads to the fact that waterfront development can be various due to the different hydrological situations.

As a result, it is essential to clarify the definition of waterfronts based on the natural water bodies surrounding them because their hydrography can influence their impact on the environment. Thus, it is more appropriate to consider waterfronts as an intersection of two spaces, urban land and water, rather than simply an edge of the city.

### 2.1.2. Typology of Urban Waterfront

The *typology of waterfront*<sup>1</sup> is a system of categorization that describes the various types of waterfronts based on physical characteristics, usage, and development. It can be used to support the urban waterfront development topic by providing a comprehensive overview of the different types of waterfronts that have been identified in urban planning theory and practice. (Davidson 2009) There are several research studies and articles that discuss waterfront typologies in urban waterfront development have been summarized by the author to better understand the idea.

Research has shown that natural waterfronts can provide important ecological benefits, such as protecting biodiversity and improving water quality (e.g., see "*Fish utilization of Great Lakes coastal wetlands*. Journal of Great Lakes Research" by Jude, David J. and Janice L. Pappas<sup>2</sup>). Studies have also shown that industrial waterfronts can provide economic benefits such as job creation and increased economic activity (e.g., see "*The Economic Benefits of Protecting Healthy Watersheds*" by the U.S. Environmental Protection Agency). Research on mixed-use waterfronts has demonstrated that they can create vibrant and diverse waterfront areas that attract both residents and visitors (e.g., see "*America's North Coast: A Benefit–Cost Analysis of a Program to Protect and Restore the Great Lakes*"<sup>3</sup>). Table 1 as shown below can be generated.

<sup>1</sup> Common waterfront elements are piers, wharves, bulkheads, dry docks, breakwaters, boat ramps, and marinas. Waterfront structures have multiple uses ranging from industrial to commercial, military, and recreational. This building type on the WBDG is dedicated to waterfront (marine) facilities, ports, harbors, coastal structures, and other waterfront elements and components.

<sup>2</sup> Jude, D., Pappas, J. 1992. Fish utilization of Great Lakes coastal wetlands. Journal of Great Lakes Research. 18. 651-672.

<sup>3</sup> Austin, J., Anderson, S., Courant, P., Litan, R. 2007. America's North Coast: A Benefit–Cost Analysis of a Program to Protect and Restore the Great Lakes. Brookings Institute. Washington DC.

*Table 1 Typology of Different Waterfront and Definition*

Typology	Definition
<i>Urban waterfronts</i>	These are waterfronts that are located in heavily urbanized areas and are characterized by high-density development and a mix of different uses.
<i>Natural waterfronts</i>	These are waterfronts that are primarily composed of natural elements such as beaches, dunes, wetlands, and marshes.
<i>Industrial waterfronts</i>	These are waterfronts that are primarily used for industrial or commercial purposes such as ports, shipping yards, and warehouses.
<i>Recreational waterfronts</i>	These are waterfronts that are designed for recreational activities such as swimming, boating, and fishing.
<i>Mixed-use waterfronts</i>	These are waterfronts that are designed to include a mix of different uses such as residential, commercial, and recreational.
<i>Residential waterfronts</i>	These are waterfronts that are primarily composed of residential developments such as waterfront homes, condominiums, and apartment buildings.
<i>Cultural waterfronts</i>	These are waterfronts that are designed to include cultural amenities such as museums, art galleries, and performance spaces.
<i>Heritage waterfronts</i>	These are waterfronts that are designed to preserve and highlight the cultural and historical significance of the area.
<i>Sustainable waterfronts</i>	These are waterfronts that are designed to be environmentally sustainable and resilient, often incorporating green infrastructure and sustainable building practices.

The statement suggests that understanding various waterfront typologies is crucial for urban planning to create lively and livable waterfront areas that cater to community needs.

Purposes based on specific users are significantly to define different waterfront typologies. As an add-on, Table 2 is an inspired resource for achieving this goal as it provides detailed information about the different types of waterfront typologies, their purposes, and the users they serve.

*Table 2 Typology of Different Waterfront with Specific Purpose and Users*

Typology	Definition	Purpose & Users
<i>Urban waterfronts</i>	These are waterfronts that are located in heavily urbanized areas and are characterized by high-density development and a mix of different uses.	Urban waterfronts are located in heavily urbanized areas and are characterized by high-density development and a mix of different uses, which can help to create a lively and dynamic waterfront area.
<i>Natural waterfronts</i>	These are waterfronts that are primarily composed of natural elements such as beaches, dunes, wetlands, and marshes.	Natural waterfronts are used to preserve and protect natural resources, such as wetlands and beaches, and to provide opportunities for outdoor recreation and environmental education.
<i>Industrial waterfronts</i>	These are waterfronts that are primarily used for industrial or commercial purposes such as ports, shipping yards, and warehouses.	Industrial waterfronts are used for industrial or commercial purposes such as ports, shipping yards, and warehouses, and provide jobs and economic benefits to the area.
<i>Recreational waterfronts</i>	These are waterfronts that are designed for recreational activities such as swimming, boating, and fishing.	Recreational waterfronts are designed for activities such as swimming, boating, and fishing, and provide opportunities for residents and visitors to enjoy water-based activities.
<i>Mixed-use waterfronts</i>	These are waterfronts that are designed to include a mix of different uses such as residential, commercial, and recreational.	Mixed-use waterfronts are designed to include a mix of different uses such as residential, commercial, and recreational, which creates a diverse and vibrant waterfront area.
<i>Residential waterfronts</i>	These are waterfronts that are primarily composed of residential developments such as waterfront homes, condominiums, and apartment buildings.	Residential waterfronts provide housing options for people who want to live near the water, while cultural waterfronts provide opportunities for cultural and arts-related activities.
<i>Cultural waterfronts</i>	These are waterfronts that are designed to include cultural amenities such as museums, art galleries, and performance spaces.	Cultural waterfronts are waterfronts that are designed to include cultural amenities such as museums, galleries, performance spaces, and cultural centers. It can also serve as a platform to showcase the local culture and heritage, and to promote cultural exchange and understanding.
<i>Heritage waterfronts</i>	These are waterfronts that are designed to preserve and highlight the cultural and historical significance of the area.	Heritage waterfronts are designed to preserve and highlight the cultural and historical significance of the area, and to provide opportunities for residents and visitors to learn about the area's history and culture.
<i>Sustainable waterfronts</i>	These are waterfronts that are designed to be environmentally sustainable and resilient, often incorporating green infrastructure and sustainable building practices.	Sustainable waterfronts are designed to be environmentally sustainable and resilient, often incorporating green infrastructure and sustainable building practices, which can help to protect the environment and improve the overall health and well-being of the area.

Research and scientific journals have emphasized the crucial role of waterfront typology in urban planning and design. This understanding helps create lively and livable waterfront areas that cater to community needs while preserving the natural and cultural heritage of the location. Additionally, studies highlight the importance of attaining a profound understanding of waterfront typologies to develop a successful development strategy that balances economic, social, and environmental goals. (Nations 2018) Each type of waterfront has distinct characteristics and challenges and requires an individualized approach to design and development. By utilizing the information in Table 2, urban planners can create dynamic waterfront areas that respond to community needs and contribute to the sustainable development of the area.

### 2.1.3. The Role of Waterfronts in Urban Development

Throughout history, living near bodies of water has been a primary condition for human settlement. (Wrenn, et al. 1983) Rivers provide not only drinking water but also support human activities such as land irrigation, water transportation, and hydroelectric power generation. (Brian 2000) Waterfront areas have been popular throughout human civilization, and many have originated in these areas. This fascination with water can be attributed to the recognition of its importance for survival throughout human evolution. *Freshwater is an essential element for ecosystem health and human well-being*, as confirmed by recent research from UNEP and WWAP. (Niemann and Pramel 2017) The control of water resources has been a determining

factor in human activity and has led to the process of hydraulic development for maximizing human well-being. The exploitation and rational use of natural water resources have powered agriculture, industry, energy production, households, transportation, and recreation. (Greer and Minar 1964) Therefore, waterfront areas should be an integral part of Rochester's urban development plan, as they have been crucial to the origin and development of human civilization. The first water-powered mill over the Genesee River waterfall is not only a milestone in Rochester's history but also an important historical building.

#### 2.1.4. The Impact of Industrialization on Waterfronts

Every significant reform and advancement in the human movement aims to make life better for the future generation - so when it comes to the revitalization and renovation of urban waterfronts, it seems to be a certainty from a long time ago. (Breen and Rigby 1996) There are references in the literature indicating that the early redevelopment and development of modern urban waterfronts can be dated back to the late 1950s and early 1960s. (Davidson 2009) This is because people at that time already realized that the planning and revitalization of the waterfront were necessary.

As the old port and waterfront industrial areas of many cities unavoidably entered a period of decline and decay in the mid to late 20th century, the loss of population and economic setbacks in the city motivated the concept of urban waterfront re-development and re-use, which was first implemented in North America. This regeneration trend then gradually spread and



influenced European regions, and after the 1980s was a boom of well-planned reuse of waterfronts in the post-industrial cities. (Gospodini, Urban Design, Urban Space Morphology, Urban Tourism: An Emerging New Paradigm Concerning Their Relationship 2001) The seaport cities of the Pacific basin, which were more dependent on sea routes for economic development, became more acutely aware of the need to improve the industrial decline of their urban waterfronts. Several examples of successful projects from all over the world have been recognized as leading to the positive aspects of this movement (Smith, Ferrari and Soledad, Waterfront Regeneration : Experiences in City-Building 2012), with the Inner Harbor Redevelopment Project in Baltimore being particularly noticeable - a project that started with local residents being keenly aware that the demolition of the Baltimore Waterfront Hotel would cause a dramatic decline of the local economy, and people were encouraged to join together with the government to initiate a waterfront adaptive reuse project. The success of this project was regarded by Jon Lang in his book *Urban Design: A Typology of Procedures and Products*<sup>4</sup> as an important example of waterfront redevelopment in a port city, providing a powerful impetus to local economic recovery and cultural enrichment at a time when waterfronts around the world are declining at that time.

Although it will not be expanded in this thesis, it should be clarified that politics and economics are tightly connected to urban development planning,<sup>5</sup> so that the authors understand

<sup>4</sup> Lang, J., 2005. *Urban Design: A Typology of Procedures and Products*. Burlington: Oxford, pp.271-279.

<sup>5</sup> Greer, Scott, and David W. Minar. "The Political Side of Urban Development and Redevelopment." *The Annals of the American Academy of Political and Social Science* 352 (1964): 62-73. <http://www.jstor.org/stable/1035414>.

that urban development and waterfront advancement is not only about achieving the needs of the population. The New York State Department of State released a guidebook in 2009, *Enhancing Waterfronts to Revitalize Communities*<sup>6</sup>, which stated that *municipal officials, community or nonprofit organizations, businesses, or anyone with an interest in the waterfront - who want to make the most of what their waterfronts have to offer*, and when everyone contributes in their way and with the same goal in mind, these groups can take advantage of the community's natural resources while achieving environmental improvements.<sup>7</sup> And a city's waterfront space will no longer be left undiscussed as more people have regained awareness of the importance of quality development and construction of urban waterfronts and their potential social and economic value (Greer and Minar 1964); that is, waterfront-related renovation and development needs to be noticed by government departments, and a city's waterfront space will not remain untouched when the local communities, relevant departments, and investors such as developers are collaborating to make the outlook.

In recent years, more and more urban planning researchers have advocated that the forgotten waterfronts of developing cities should also be given attention again, since they have more potential. This emphasizes the importance of recognizing that the natural resources that already exist on urban waterfronts are valuable opportunities rather than a burden leftover from the industrial era. This can be supported by the fact that urban waterfronts, as natural

<sup>6</sup> New York State Department of State, 2009. MAKEING THE MOST OF YOUR WATERFRONT: Enhancing Waterfronts to Revitalize Communities. Presentation documents accessed online.

<sup>7</sup> Ibid, pp1-4 (4 pages).

environments and the most vibrant public open spaces, not only provide natural waterfront environments and recreational spaces but are also rich in human history that symbolizes the character of the city. For instance, that urban waterfronts that have undergone post-industrialization still have possibilities for development, and those historical accumulations and cultural gatherings have made traces of the time on them. (Breen and Rigby 1996) In this way, it is far-reaching to preserve the historic preservation area while revitalizing the urban waterfront in terms of humanities. In a word, people-oriented urban planning and construction undoubtedly require people to realize and understand how important and precious waterfront space is to cities and human beings; at the same time, the status of water bodies as former precious resources, living facilities, and connection networks must be restored.

In short, the development of sustainable cities with scarce resources will be a topic for continuous discussion, of which the urban waterfront is a part that cannot be ignored. The decline of urban waterfronts in the post-industrial era does not obscure their potential and value as worthy of reinvention and reuse as centers of human activity. In today's global push for environmental protection and green sustainability, the urban waterfront, which is closely related to natural water bodies, is undoubtedly at the forefront of planning and revitalization, and more importantly, people-oriented urban planning and construction requires people to recognize and understand the importance and preciousness of waterfront space for cities and human beings; on this basis, to restore the importance of water bodies as a close connection and coexistence between human beings and precious natural resources.

### 2.1.5. The Decline of Waterfronts During the Post-Industrial Era

#### i. Initial Settlement and Transporting

While Rochester's waterfront development can be traced back to watermills and hydroelectric power generation, global history shows that waterfronts are more commonly utilized for transportation purposes. (Davidson 2009) It could be argued that modern North American seaports originated with the early European settlements. However, the initial development of waterfront areas was not systematically planned, as ships were the primary mode of transportation for goods and people. Shelter and storage structures around ports were built primarily for weather conditions, and seaports and their adjacent waterfronts gradually became the center of transportation-related activity during early urban development. (Brian 2000)

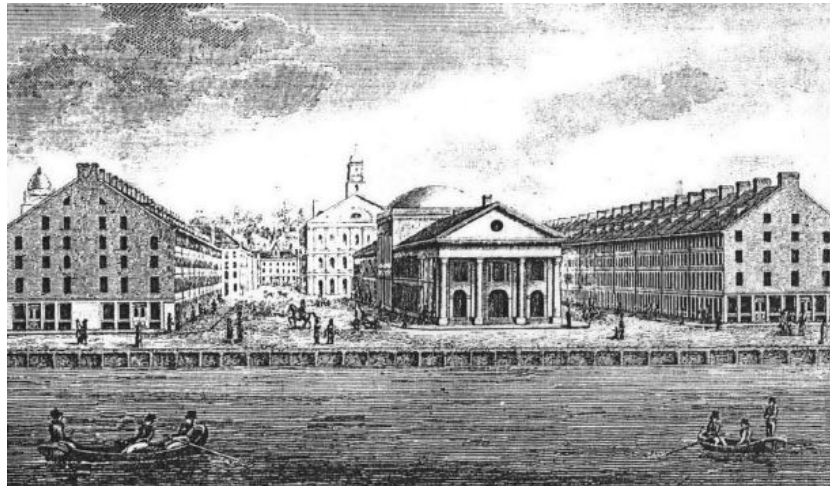
Most seaport cities in the United States that benefited from early booming development brought by water transportation continue to benefit from their water transportation systems today. Cities such as *New York, Miami, and Charleston in the East, and Los Angeles, Long Beach, Seattle, and Oakland in the West*<sup>8</sup>, have developed into major cities due to the benefits provided by their waterfront areas. These port cities became central transportation areas that supported various activities. For instance, Southwest DC had a bustling waterfront in the early 1800s.<sup>9</sup> These factors led to the rapid development of these areas as staging grounds for industrialization, further contributing to the growth and expansion of these cities.

<sup>8</sup> Industry Today. 2022. Port Cities in the US That Are Boosting Economic Growth. [online] Available at: <<https://industrytoday.com/the-top-port-cities-in-the-us-that-are-boosting-economic-growth/>> [Accessed 7 March 2022].

<sup>9</sup> *A snapshot of the Southwest DC waterfront in the early 1800s.* [image] Available at: <<https://www.wharfdc.com/wharf/history/>> [Accessed 9 March 2022].

## ii. Industrialization and Manufacturing

During the early 18th century, waterfronts were bustling with activity, with multiple independent wharves and hundreds of stores crowding the long wharves and harbors. Becoming a port city was only the beginning. The settlers planned and built shipping centers and industrial manufacturing sites for the export of local resources. (Brian 2000) These settlements thus made the waterfront not only a hub for shipping traffic but also a place for industrial manufacturing and another potential. As the shipping industry grew and the scale of waterway transportation grew worldwide, more and more shipyards and storage facilities were built nearby. At the same time, as the seaport cities' waterfronts gradually expanded, so did their trade, and the coastal cities became the place where future American capitalism developed.



*Figure 2 Boston: Quincy Market. View Of Quincy Market and Faneuil Hall in Boston, Massachusetts, Built-In 1824-1826. Engraving, 19Th Century. Image captured from Boston: A Topographical History.*

By the 1860s, the waterfront's economic growth spurred a building boom that included hundreds of warehouses as well as the completion of many famous and iconic pier landmarks. (Marshall 2001) Later, the rapid industrialization in the second half of the 19th century changed

the nature of shipping, and therefore the nature of downtown waterfront areas. From sailing ships to steam-powered vessels, the need for more spacious docking and storage facilities increased, and the machinery used to unload cargo replaced human labor, which also meant that larger spaces and structures were needed, such as *Quincy Market* in Boston at that time as shown in Figure 2. Waterfront areas around the time were used at high densities to build docks and warehouses, and factories in one area needed large amounts of bulk cargo. Yet it was also these industrial developments that limited the possibility of the waterfront existing as a public space, and so the homes of residents at that time-shifted more to the edges of urban areas and even further into the suburbs. This was also one of the factors that caused the gradual depression of urban waterfront development of the major cities.

### 2.3.1. Decay and Post-Industrialization of Urban Waterfront

After the reforms and developments of the mid-twentieth century, there are examples of once-glorious industrial waterfront spaces that have fallen into decline and eventually been abandoned, a symbol of *post-industrial urbanism*<sup>10</sup>. In the second half of the 20th century, most industrialized countries around the world began to experience industrial decline and many urban waterfronts were even abandoned. The large industrial and trade complexes that once dominated urban waterfronts are now a scene of despair. (Marshall 2001) As capital flows out of urban

<sup>10</sup> American sociologist Daniel Bell first coined the term post-industrial in 1973 in his book *The Coming of Post-Industrial Society*. Newlearningonline.com. n.d. Daniel Bell on the Post-Industrial Society - New Learning Online. [online] Available at: <<https://newlearningonline.com/new-learning/chapter-3/daniel-bell-on-the-post-industrial-society>> [Accessed 9 March 2022].

waterfronts, the surrounding communities left behind often face high unemployment, economic stagnation, and growing social problems.

These circumstances are due to the fact that many ports built in the 19th and early 20th centuries became less profitable and even redundant in the late 20th century. A large part of the reason for this was the advent of containerized cargo, which reduced the cost of loading and unloading cargo in ports for storage, etc. Secondly, the container form and the emerging rail transport more closely together, this breakthrough, on the one hand, makes the transport routes by water, land link, on the other hand also degraded the waterfront ports into more marginal urban areas.

## **2.2. Urban Waterfront Revitalization**

### **2.2.1. Aspects of Urban Waterfront Revitalization**

Urban waterfront revitalization is a complex process that involves a wide range of economic, social, and environmental factors. In order to understand this process, it is important to consider the key concepts and theories related to urban waterfront revitalization. Some of the key concepts and theories include:

- *Livability*: This concept refers to the quality of life in a city or community, including the availability of amenities, access to services, and overall livability of the area. (Hagerman 2007) The waterfront redevelopment is significant to promote their neighborhoods with livable environment. In the context of waterfront revitalization, livability is often viewed

as a key factor in attracting investment and promoting economic growth.

- *Smart growth*: This theory emphasizes the importance of sustainable, equitable, and inclusive growth in cities and communities. Hoyle argued that urban waterfront revitalization in port cities and other cities on water is continually benefit their development. (B. Hoyle 2002) It involves a focus on compact, walkable, and mixed-use development that is centered around public transportation and protects natural resources. In the context of waterfront revitalization, smart growth principles can help guide development efforts in a way that benefits both the environment and the community.
- *Green infrastructure*: This refers to the integration of green spaces and natural systems into urban areas in order to enhance livability, protect the environment, and support economic development. As a natural element, *waterfront landscape in relation to the city development could serve for nature and people makes the most sense* is promote be McMahon and Benedict. (McMahon and Benedict 2006) In the context of waterfront revitalization, green infrastructure can be used to create parks, trails, and other open spaces that help to improve the environmental quality of the waterfront and provide opportunities for recreation and tourism.
- *Economic development*: This refers to the process of improving economic conditions in a region through various strategies, including job creation, business development, and investment in infrastructure. (Carola 2016) In the context of waterfront revitalization, economic development is often seen as a key driver of revitalization efforts, as it can provide a source of funding and create jobs and economic opportunities for residents.
- *Social equity*: This refers to the principle of fairness and justice in the distribution of resources and opportunities in a community. (Hagerman 2007) In the context of waterfront revitalization, social equity is often a concern as some communities may benefit more from revitalization efforts than others. It is important to ensure that revitalization efforts are equitable and inclusive, so that all members of the community



can benefit from the process.

By integrating these concepts, waterfront redevelopment can create sustainable, equitable, and vibrant areas that enhance residents' quality of life and promote economic growth.

### 2.2.2. Benefits of Urban Waterfront Revitalization

Urban waterfront revitalization offers numerous benefits for cities and their inhabitants. These benefits can be environmental, social, economic, and cultural. Here are some of the key benefits of urban waterfront revitalization:

- 1) *Improved environmental quality*: Waterfront revitalization projects can help improve water quality, increase biodiversity, and reduce pollution. Restoring natural habitats along the waterfront can also provide benefits such as flood control and stormwater management.
- 2) *Increased recreational opportunities*: By creating parks, trails, and other public spaces along the waterfront, cities can provide new opportunities for recreation and relaxation. This can improve public health and well-being, and also attract tourists to the area.
- 3) *Economic development*: Urban waterfront revitalization can stimulate economic development by attracting new businesses and residents to the area. Waterfronts can also be used as sites for cultural events, festivals, and other activities that generate economic activity.
- 4) *Preservation of cultural heritage*: Many waterfronts have significant cultural and historical value, and revitalization projects can help preserve this heritage while also creating new cultural spaces. This can help build a sense of community and identity among residents.

- 5) *Increased social cohesion*: Waterfront revitalization projects can help bring together diverse groups of people and promote social interaction. This can help build stronger communities and reduce social isolation.
- 6) *Creative and innovative spaces*: Historic waterfronts can serve as creative spaces for artists, designers, and entrepreneurs, and can contribute to the development of new ideas and innovations.

Overall, urban waterfront revitalization projects offer a range of benefits that can help create more livable and sustainable cities. However, it is important to ensure that these projects are designed and implemented in a way that is inclusive and equitable, and that they do not displace existing communities or exacerbate social and economic inequalities.

### 2.2.3. Stakeholders of Urban Waterfront Development

It can be reorganized that urban waterfront development is a complex process that involves multiple stakeholders. The success of a waterfront development project depends on the collaboration and cooperation of various stakeholders, including government agencies, developers, community groups, environmental organizations, and residents. (Nations 2018) This section aims to analyze the different stakeholders involved in urban waterfront development and their roles in the process. There are conclude as:

- 1) *Government agencies* play a crucial role in urban waterfront development, enforcing zoning laws, providing funding, and managing public access.
- 2) *Developers* balance community needs, government regulations, and financial viability when developing waterfront projects.

- 3) *Community groups* represent local interests and advocate for public access and use of the waterfront.
- 4) *Environmental organizations* monitor and provide guidance on sustainable development.
- 5) *Residents* provide feedback on the project's design and development and can be impacted by changes.
- 6) *Tourists* bring economic benefits, shape the area's reputation, and influence the development of amenities.
- 7) *Local businesses* can be impacted by the development and provide input on community needs.
- 8) Cultural groups have a stake in preserving and enhancing the cultural heritage of the area and promoting cultural activities.

In short, the success of a waterfront development project relies on the collaboration and cooperation of multiple stakeholders. Government agencies, developers, community groups, environmental organizations, cultural groups, tourist, merchants and residents all have a role in the development process. It is essential to understand the perspectives and interests of each stakeholder and work towards a shared vision for a sustainable and inclusive waterfront development project.

## **2.3. Sustainable Urban Waterfront Revitalization**

### **2.3.1. Approaches for Sustainable Waterfront Revitalization**

The waterfront is often seen as a symbol of a city's identity and can play a significant role

in shaping its economy, tourism, and community development. (Carola 2016) It has become increasingly popular in recent years as waterfront cities seek to revitalize underutilized waterfront areas and create sustainable opportunities for economic growth, community development, and environmentally friendly. A sustainable urban waterfront is a development that prioritizes the protection and preservation of the local environment, economy and community while balancing the needs for urban growth and use of water resources. (Hagerman 2007) The measures of sustainable urban waterfront refer to the principles, guidelines and standards that should be followed for the development, management and utilization of urban waterfronts in a way that is environmentally, socially and economically sustainable. Sustainable urban waterfronts are important because they can provide a range of benefits to communities and the environment. They can provide open spaces and recreation opportunities, improve water quality, promote sustainable tourism and economic growth, and help mitigate the impacts of climate change. (Gospodini, Urban Waterfront Redevelopment in Greek Cities: A Framework for Redesigning Space 2001) To achieve sustainable urban waterfronts, the following criteria should be considered (Farr 2007):

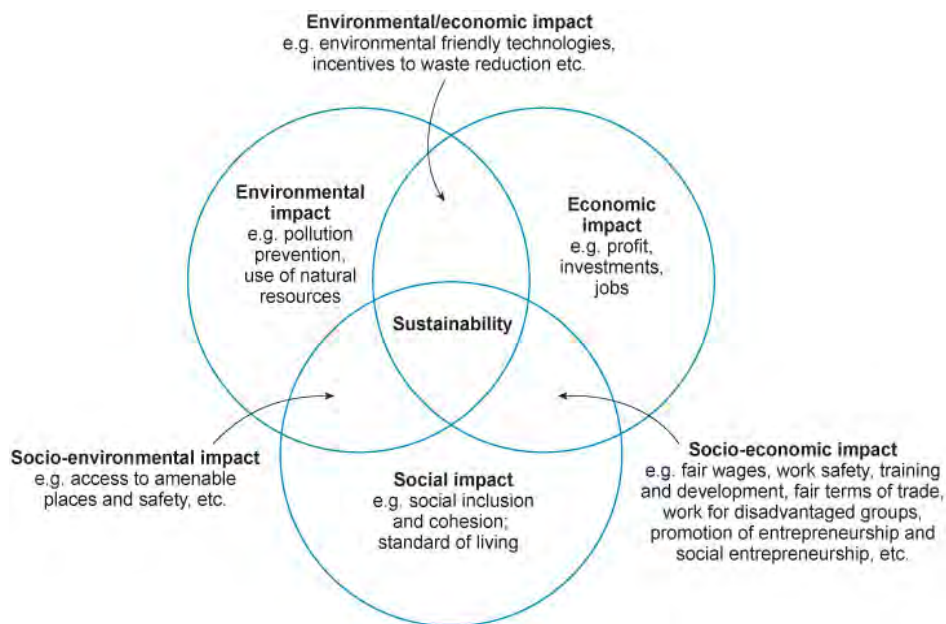
- 1) *Environmental protection and enhancement* - measures should be taken to protect and enhance the natural environment, including the protection of wetlands, shorelines and ecosystems, and the reduction of water pollution.
- 2) *Access and connectivity* - waterfronts should be accessible to the public and integrated into the urban fabric, allowing for seamless movement between land and water.

- 3) *Mixed land uses* - waterfronts should have a mix of uses including residential, commercial, recreational and industrial uses, to create vibrant and sustainable communities.
- 4) *Community involvement* - waterfront development should involve the local community in decision-making and planning, to ensure that their needs and desires are taken into account.
- 5) *Adaptation to climate change* - waterfronts should be designed and managed with consideration of the impacts of climate change, such as rising sea levels and increased storm events.
- 6) *Water-based recreation and tourism* - waterfronts should provide opportunities for water-based recreation and tourism, including boating, fishing, and swimming, while ensuring the protection of natural habitats.
- 7) *Sustainable transportation* - transportation options should be provided that are environmentally sustainable and accessible, including cycling and walking paths, public transportation and water-based transportation.
- 8) *Economic viability* - waterfront development should be economically viable and sustainable, ensuring long-term economic benefits for the community.

In conclusion, urban waterfront development has the potential to have a range of impacts on sustainability components. While waterfront development can lead to increased economic activity and improved access to green space and recreational opportunities, it can also have negative impacts on the environment, such as harm to natural ecosystems and biodiversity, and displacement of existing businesses and residents, and increased traffic congestion. Therefore, it is important for urban waterfront development to be planned and implemented in a way that prioritizes sustainability and addresses these potential impacts.

### 2.3.2. Impact of Sustainable Urban Waterfront Revitalization

Sustainable urban waterfront revitalization is an essential aspect of urban development that seeks to promote economic, social, and environmental sustainability through the regeneration of underutilized or degraded waterfront areas. It is a critical tool for enhancing the quality of life for residents and attracting businesses and tourists to a region. To achieve sustainable urban waterfront revitalization, a comprehensive methodology that considers the economic, social, and environmental aspects of the regeneration process is necessary. These are at the same time can be referenced as three basic sustainability components as shown in Figure 3 below.



*Figure 3 The three impact components of sustainability and their interconnections.*

The methodology should first identify the existing problems and challenges facing the waterfront area. This involves conducting an analysis of the current conditions of the waterfront, including the physical, social, and economic conditions. A thorough analysis of these factors can

provide a foundation for developing a comprehensive plan for revitalizing the waterfront.

Next, the methodology should focus on creating a sustainable vision for the waterfront that aligns with the community's needs and goals. This vision should be based on the principles of sustainability, including economic viability, social equity, and environmental stewardship. The vision should also involve the participation of stakeholders, including local residents, businesses, and community organizations, to ensure that the regeneration process is inclusive and meets the needs of the community. Yocom et al promoted that, evaluating an urban waterfront development requires a comprehensive and multidimensional approach that considers a wide range of factors, such as social, economic, environmental. (Yocom, et al. 2016) The evaluation process as they promoted, should involve the identification of goals and objectives, the selection of appropriate indicators, the collection and analysis of data, and the interpretation of results. Following factors to consider:

- 1) *Economic impact*: One of the primary goals of urban waterfront development is to stimulate economic growth. Evaluating the economic impact of a development involves analyzing factors such as job creation, tax revenue, and property value. These indicators can help determine the effectiveness of a development in generating economic activity.
- 2) *Social impact*: Urban waterfront development can also have significant social benefits, such as improved community engagement, increased access to public space, and enhanced quality of life. Evaluating the social impact of a development involves assessing factors such as public participation, community engagement, and quality of life indicators.

- 3) *Environmental impact*: Waterfront development can have a significant impact on the environment, including impacts on water quality, habitat, and biodiversity. Evaluating the environmental impact of a development involves analyzing factors such as stormwater management, energy efficiency, and the use of green infrastructure.

Evaluating urban waterfront development involves considering a range of factors, including economic, social, and environmental impacts. These factors can help determine the success of a development and identify areas for improvement. By evaluating urban waterfront development, cities can better understand the impact of such projects and work towards creating sustainable, equitable, and vibrant waterfront communities.

Once the vision has been established, the methodology should focus on developing a comprehensive plan for achieving the vision. This plan should include strategies for improving the physical infrastructure, such as transportation and utilities, as well as creating new public spaces and amenities. It should also include plans for attracting new businesses and creating jobs, as well as improving access to affordable housing and public services. The methodology should also incorporate sustainability measures throughout the revitalization process. This involves prioritizing green infrastructure and sustainable building practices that reduce the environmental impact of the development. The methodology should also incorporate community engagement strategies that empower residents and promote social equity.

In conclusion, sustainable urban waterfront revitalization is a critical aspect of urban development that requires a comprehensive methodology that considers the economic, social, and environmental aspects of the regeneration process. The methodology should involve



stakeholder participation, create a sustainable vision for the waterfront, develop a comprehensive plan, and incorporate sustainability measures throughout the process. By following this methodology, communities can achieve a sustainable revitalization of their waterfront areas that promote economic growth, social equity, and environmental stewardship.

### 2.3.3. Indicators of Sustainable Impact Evaluation

The researchers believes that, to create a sustainable waterfront revitalization, it is essential to consider the deeper sub-factors that contribute to each of these impacts. (Jacobs 1961) Below is a proposed framework based on previous studies and review of literature for sustainable urban waterfront revitalization, taking into account these impacts and sub-factors:

- Environmental Impact:
  - 1) Improved Water Quality: Developments should consider ways to improve water quality and protect aquatic ecosystems.
  - 2) Sustainable Transportation: Encouraging sustainable modes of transportation, such as biking or public transit, can reduce the environmental impact of the development.
  - 3) Energy Efficiency: The development should incorporate sustainable design principles, such as using renewable energy sources and reducing energy consumption.
  - 4) Biodiversity: Development should consider the protection and promotion of local flora and fauna.
- Social Impact:

- 1) Improved Public Access: Waterfront developments can provide access to the water and create public spaces for recreation, such as parks and trails.
  - 2) Community Engagement: The development process should involve the local community to ensure that the project meets their needs and desires.
  - 3) Enhanced Community Cohesion: Revitalization projects can promote social interaction and bring communities together.
  - 4) Cultural Preservation: Development should consider the preservation of cultural heritage in the area.
- Economic Impact:
- 1) Increased Property Value: Waterfront developments can increase property value in the surrounding areas, leading to increased tax revenue for the city.
  - 2) Tourism: Developments can attract tourists, generating revenue for local businesses and creating job opportunities.
  - 3) Employment: Revitalization projects can create job opportunities in the construction, retail, and service industries.
  - 4) Sustainable Economic Growth: The development should be designed in a way that promotes sustainable economic growth by considering long-term economic impacts.

The proposed framework for sustainable urban waterfront revitalization aims to provide a comprehensive approach that considers the environmental, social, and economic impacts of waterfront redevelopment projects. The framework is designed to prioritize sustainable development, enhance community quality of life, and preserve the area's natural and cultural heritage.

## **2.4. Successful Urban Waterfront Revitalization Projects Around the World**

### **2.4.1. Successful Revitalization Projects**

A successful revitalization project can bring numerous benefits, including increased property values, job creation, and improved quality of life for residents. However, the process of revitalizing an urban waterfront is complex and requires careful planning and consideration.

(Brian 2000) One way to gain insights into successful urban waterfront revitalization is to examine case studies of successful projects. These case studies can provide valuable lessons and best practices that can be applied to future revitalization efforts. In this chapter, the focus will be on examining case studies of successful urban waterfront revitalization projects and identifying the key factors that contributed to their success. This will provide a valuable resource for future efforts to revitalize urban waterfronts and ensure that they continue to be valuable assets for the communities in which they are located. There have been several studies on urban waterfront revitalization, focusing on various aspects of the process, including the physical, economic, and social characteristics of waterfronts, and the impact of revitalization on the surrounding communities. Some of the key findings from these studies include:

#### **1) Physical Characteristics of Waterfronts**

Studies have found that the physical characteristics of waterfronts, such as land use, infrastructure, and transportation access, play a critical role in determining the success of revitalization efforts. (Alexander, Ishikawa and Silverstein 1977) Cities with well-developed infrastructure and transportation access are more likely to attract investment and development to

their waterfronts. For example, the Inner Harbor of Baltimore's waterfront as shown in Figure 4:



*Figure 4 The Inner Harbor in 1948 and in the late 1950s, after clearance and new bulkheads. (Sources: [www.ghostofbaltimore.org](http://www.ghostofbaltimore.org) Robert F. Kniesche, *Baltimore Sun*; and author's archives, source unknown)*

The Baltimore Inner Harbor is a prime example of successful waterfront revitalization with existing physical infrastructure. In their research article titled "Watersheds in Baltimore, Maryland: Understanding and Application of Integrated Ecological and Social Processes," authors Pickett et al have demonstrated that the Water and Watersheds program has made significant and lasting contributions to the understanding of the complex ecological system of Baltimore, Maryland. Their research highlights the importance of an integrated approach that incorporates both ecological and social processes to achieve a better understanding of the relationship between human activities and the environment. The authors' findings are a testament to the effectiveness of the Water and Watersheds program, which has played a key role in advancing the waterfront development with knowledge of the complex ecological system of Baltimore, Maryland. (Pickett, et al. 2009) The area had been in gradually decline for several decades, with a lack of development and a population decline.

In the 1970s, the city of Baltimore began a revitalization effort that involved the creation

of a waterfront park, the construction of a convention center, and the development of a tourist-friendly destination with a large-scale vacant area. Olivia in her case study of Baltimore's waterfront property value also proved that, the impact of residential waterfront development on housing prices in a neighborhood southeast of Baltimore's downtown and finds that development on the waterfront has had a positive impact on prices in the entire study area, as shown in Figure 5, with a more significant effect on properties located within a short distance from the water, supporting claims of uneven growth patterns in Baltimore. (Oliva 2006)



*Figure 5 “The successful revitalization of Baltimore’s Inner Harbor” An industrial Inner Harbor during the early 20th century. Image courtesy of <https://darkroom-cdn.s3.amazonaws.com/2012/11/BS-Baltimore-Harbor-View-.jpg>*

## 2) Economic Characteristics of Waterfronts

The economic characteristics of waterfronts, including employment and income levels, are crucial factors in determining the success of revitalization efforts in these areas. Research shows that cities with high levels of employment and income are more likely to draw investment and development to their waterfronts, resulting in successful revitalization outcomes. (Eidelman

2018) This can be proved by waterfront areas like the Navy *Pier* in Chicago, which have typically hardly been ignored, due to their unique combination of natural beauty and potential for economic development: from a central transportation destination to a temporary college location, and now as a significant city sight.



*Figure 6 Aerial view of the Municipal Pier No. 2 opens in 1916, the first of its kind to combine the business of shipping with the pleasure of public entertainment. At a cost of \$5 million, the 292-foot-wide Pier, 'built by the city for the people,' It remains the longest public pier in the world today.<sup>11</sup>*

Potocki Robert once described the Navy Pier from 1916, as shown in Figure 6 above, *“On the Waterfront After decades of service and years of abandonment, Chicago's Navy Pier is back in the amusement business”* in his newspaper article published on Milwaukee Journal Sentinel in 1995.<sup>12</sup> Waterfronts like this often have a strong appeal to visitors and residents, due to their access to water-based recreation and scenic views. This can make them popular tourist destinations, driving demand for local businesses like restaurants, shops, and entertainment options. Also, waterfronts often serve as hubs for boating and maritime activities, providing

<sup>11</sup> Image posted by John Chuckman, POSTCARD - CHICAGO - NAVY PIER - AS UNIVERSITY - SHIPS DOCKED - AERIAL – 1964. Image accessed online, <https://chuckmanotherchoiceofwords.blogspot.com/>

<sup>12</sup> Potocki, Robert. "On the Waterfront After Decades of Service and Years of Abandonment, Chicago's Navy Pier is Back in the Amusement Business." Milwaukee Journal Sentinel, Jun 04, 1995. <https://ezproxy.rit.edu/login?url=https://www.proquest.com/newspapers/on-waterfront-after-decades-service-years/docview/260271137/se-2>.

opportunities for water-based tourism and supporting local businesses. And in 2017, Landscape Architecture magazine published Mortice's article about: the article argued that James Corner Field Operations' renovation of Chicago's Navy Pier aims to appeal to a new audience, specifically those who are local, urban, and interested in design.



Figure 7 Aerial view of the Navy pier 2016. The waterfront development turns the pier into a destination for local communities as well as visitors.<sup>13</sup>

As shown in Figure 7, waterfront areas like Navy Pier are now often viewed as valuable assets for the local community, attracting investment and driving economic growth. According to the official report *AN ADVISORY SERVICES PANEL REPORT: Navy Pier Chicago, Illinois* from their website, the new Shakespace Theater in Navy Pier add approximately 300 annually.<sup>14</sup> Additionally, the theater expands its nationally recognized arts-in-education program, besides that, a boutique hotel of 200 to 400 rooms has been planned because of the pier renovation program.<sup>15</sup> For financial factor, the Navy Pier increase annual visitation about 12 million<sup>16</sup> with the mix of attractions, event and parking.

<sup>13</sup> Image accessed online: <https://www.architecture.org/tours/detail/navy-pier/>, official website for Navy Pier.

<sup>14</sup> Data and information accessed online: [https://navypier.org/wp-content/uploads/2022/11/Chicago\\_NavyPier-10.pdf](https://navypier.org/wp-content/uploads/2022/11/Chicago_NavyPier-10.pdf), page 14.

<sup>15</sup> Ibid, page 17.

<sup>16</sup> Ibid, page 30.



### 3) Social Characteristics of Waterfronts

Additionally, the social characteristics of waterfronts, including the presence of community organizations and local residents' involvement, play a critical role in the success of efforts. Studies have found that cities with strong and engaged communities are more likely to draw investment and development to their waterfronts, leading to successful revitalization outcomes. (Boston Globe 1998) The Hudson River Park Trust, established in 1998, was responsible for developing the park<sup>17</sup>, and it has been a success project in providing public access to the waterfront and creating new recreational opportunities for local communities and visitors. Prior to the revitalization, the river waterfront was mostly industrial, with very little public access, as shown in Figure 8. The connectivity of the park includes a bike and pedestrian path, playgrounds, a skatepark, and a variety of sports fields. The park also features marinas, a fishing pier, and several public spaces for events and performances.



*Figure 8 Waterfront Transformation of the Hudson Yard riverbank. Vacant piers turned into waterside park, as a public space with infrastructure development. The Hudson River Park is a 550-acre public park that runs along four+ miles of waterfront on the west side of Manhattan.<sup>18</sup>*

Recently, the Hudson Yard riverbank revitalization project has been proven with

<sup>17</sup> The law, known as the Hudson River Park Act (the “Act”), also identified the park’s boundaries, specified permitted uses, and established the park’s operating framework as a public benefit corporation governed by a thirteen-member Board of Directors appointed by the Governor, Mayor and Manhattan Borough President. Accessed online: <https://hudsonriverpark.org/about-us/hudson-river-park-trust/>.

<sup>18</sup> Image captured online: <https://hudsonriverpark.org/the-park/waterfront-transformation>.



numerous social impact benefits, including the creation of a unique environmental education and scientific programming opportunity through the Hudson River Park's River Project.<sup>19</sup> The project specifically seeks to communicate the ecological significance of the park's Estuarine Sanctuary and invites visitors to engage in community stewardship and learning. By using the Hudson River Estuary as a living laboratory, the project provides a valuable platform for hands-on learning and the promotion of environmental awareness. This project demonstrates a commitment to environmental sustainability and showcases the potential for the integration of nature and education in urban revitalization efforts.

Also, as the City Council announced: *"City officials have long expressed the hope that the arrival of new tenants in these complexes will deliver an economic revival downtown as new stores and service businesses open to serve new, more affluent residents."*<sup>20</sup> About this, the *Journal News* stated that, the Hudson River waterfront redevelopment project has provided advantages in the near future such as luxury housing with Hudson River views, upscale amenities, and proximity to a train station, as well as the potential for economic revitalization in the surrounding area through the attraction of new, more affluent residents and businesses in upcoming years.<sup>21</sup>

#### 4) Recreational Characteristics of Waterfronts

<sup>19</sup> *Current Research* of Hudson River Park from the official website, information gathered from Hudson River Park's environmental monitoring initiatives inform decisions about Park management and operations, information accessed online: <https://hudsonriverpark.org/the-park/parks-river-project/science/current-research/>.

<sup>20</sup> Ibid.

<sup>21</sup> Garcia, Ernie. "Modera Apartments Open on Waterfront: Property is the Latest Market-Rate Project Offering Upscale Amenities." *The Journal News*, Apr 26, 2018. <https://ezproxy.rit.edu/login?url=https://www.proquest.com/newspapers/modera-apartments-open-on-waterfront/docview/2030638547/se-2>.

Recreational characteristics like marinas, boat launches, and water-based activities, have a significant impact on the success of revitalization efforts. Cities that offer various recreational opportunities are more likely to draw investment and development towards their waterfronts. One of the key elements of the successful waterfront is creating a continuous public space for recreational purposes along the riverfront, with access points every few blocks. For example, Greenpoint Landing in Brooklyn site features a distinctive green arc along the riverbank that boasts breathtaking views of Midtown Manhattan in Figure 9. Before the redevelopment of the Greenpoint waterfront park in Brooklyn, the community faced several barriers to accessing the waterfront.



*Figure 9 Photo of the riverside, Greenpoint Landing, Brooklyn, New York. The Phase 1 provide public access to the waterfront in this area for the first time in decades. It features 1.5 acres of open space, including riparian garden terraces, a waterfront esplanade, a lawn, and a picnic area.<sup>22</sup>*

The area was historically home to several manufacturing and industrial sites, which left behind environmental pollution that made it difficult to use the land for recreational purposes.

(The City of New York 2006) Additionally, the presence of highways and other infrastructure

<sup>22</sup> Photo from the riverside park way, by Handel Architects. <https://www.fieldoperations.net/project-details/project/greenpoint-landing.html>

made it challenging for residents to reach the waterfront. There were also issues with accessibility and safety. The lack of clear signage, bike lanes, and pedestrian-friendly pathways made it difficult for people to navigate the area safely. Additionally, concerns about crime and safety deterred some community members from using the waterfront. According to these, water-dependent recreation is given a high priority in the plan, with designated locations for activities such as kayaking, fishing, sailing moors, and waterfront "get-downs." As shown in Figure 10, the proposal for Greenpoint's riverfront,<sup>23</sup> the proposal mainly focused on recreational connectivity to the riverbank. (The City of New York 2006) The goal is to provide direct interaction with the street, park, and playground while also supporting its ecological processes eventually.

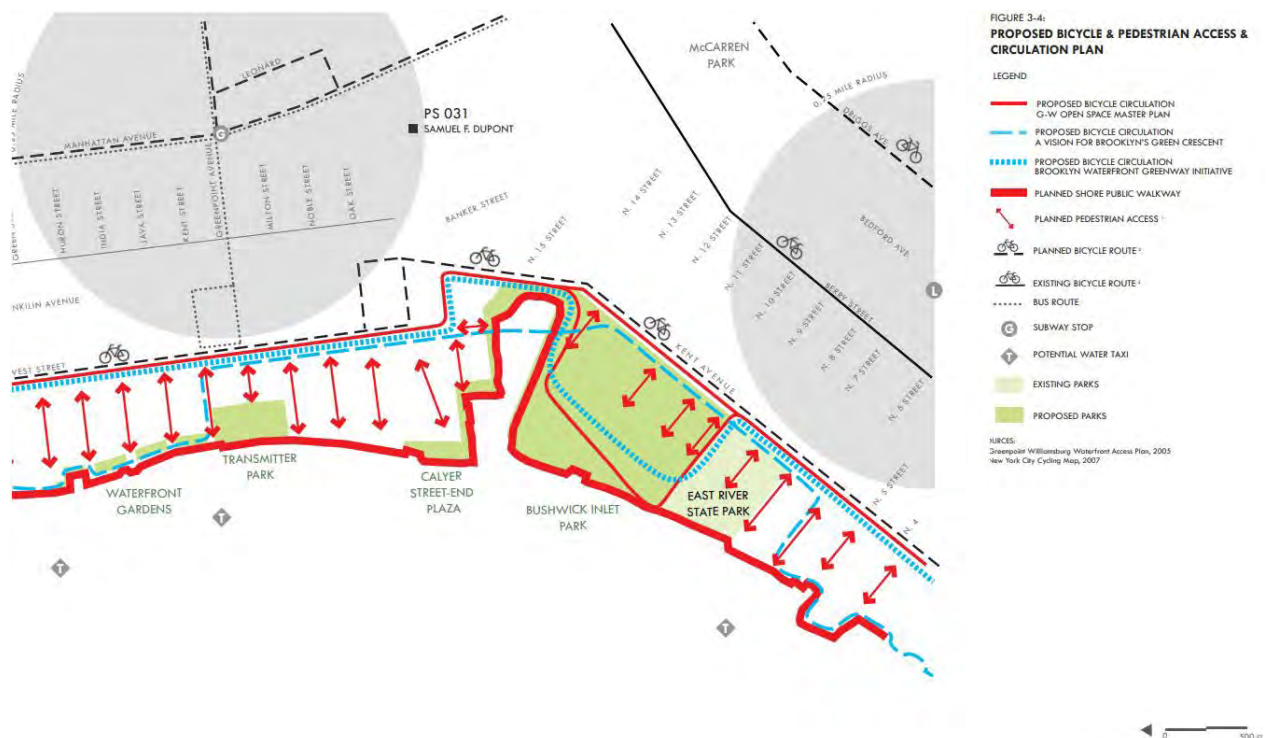


Figure 10 Proposed Bicycle & Pedestrian Access & Circulation Plan from Greenpoint – Williamsburg Waterfront Open Space Master Plan. There are 21 proposed pedestrian access for recreational connection.

<sup>23</sup> Image captured from the original document, online:

[https://www.nycgovparks.org/sub\\_your\\_park/greenpoint\\_williamsburg\\_waterfront/images/greenpoint\\_williamsburg\\_waterfront\\_masterplan.pdf](https://www.nycgovparks.org/sub_your_park/greenpoint_williamsburg_waterfront/images/greenpoint_williamsburg_waterfront_masterplan.pdf), page 20.

The riverfront now includes a variety of amenities to ensure that it is accessible to people of various abilities. In Sidell Misty White's journal article published on WWD<sup>24</sup>, announced that Greenpoint, Brooklyn has become a popular destination for residents and tourists, because the new riverfront providing a much-needed space for recreation and relaxation in the heart of the city. (Sidell 2022) In the article, the statement states clearly that the redevelopment of the waterfront in Greenpoint and other North Brooklyn neighborhoods, including Williamsburg, has contributed to a wider boom in the area and has made it an ideal place for shopping and dining, indicating that the reuse of waterfront for recreational purposes has had a positive impact on the area's characteristics and has attracted more people to the area. Overall, the recreation program plan aims to create a diverse and engaging waterfront park that supports the needs of the community while also respecting and enhancing the natural environment of the East River.

## 5) Environmental Characteristics of Waterfronts

It has been discovered that the environmental characteristics of waterfronts, such as the availability of green spaces, parks and waterfront walkways, significantly impact the success of urban planning efforts. Cities that provide various access to green spaces and parks tend to attract more investment and sustainable development towards their waterfronts. For example, the Chicago Riverwalk as shown in Figure 11, which offers opportunities like marinas, boat launches, and water-based activities, has attracted investment and sustainable development towards the

<sup>24</sup> Abbreviation stands for Women's Wear Daily, publisher in Los Angeles.

central area. Unlike the costal waterfront mentioned before, in the past, the Chicago River was a source of discomfort and disgust, as its water was contaminated and murky. Over time, however, the river's environment has improved, and the successful redevelopment of the riverside has transformed how the public interacts with the river.



*Figure 11 Photo of the Chicago Riverwalk. The Riverwalk now offers opportunities for kayaking, nature walks, and, with continued advancements in river health, some envision it as a destination for swimming in the future.<sup>25</sup>*

And more recently, Kheir's study about the riverwalk in downtown Chicago as a successful presentation of waterfront redevelopment and stated that, the riverfront represents an innovative approach to urban design that has the potential to inspire future projects and contribute to the revitalization of cities worldwide. (Kheir 2021) The Riverwalk now offers opportunities for kayaking, nature walks, and, with continued advancements in river health, some envision it as a destination for swimming in the future. As shown in Figure 12, the government department reports that the Chicago River has seen a rise in the number of fish species in recent decades, which can be attributed to various upgrades in infrastructure and treatment technologies. This positive trend indicates that efforts to improve the water quality of the river are having a

<sup>25</sup> Image upload by: Courtney Rios. Accessed online: <https://urbanmatter.com/chicago/chicago-riverwalk-summer/>

significant impact on the local ecosystem.

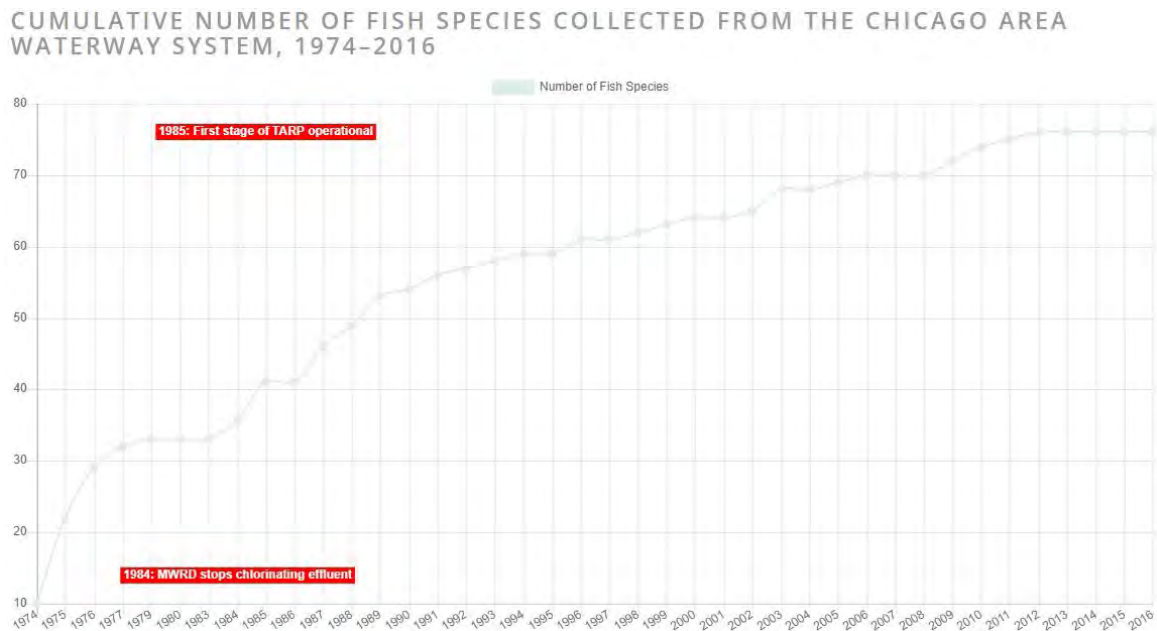


Figure 12 The number of fish species found living in the Chicago River has been increasing in recent decades. The increase in fish species diversity is a promising sign for the health of the river and a testament to the importance of investing in sustainable infrastructure and treatment technologies. Source: MWRD.<sup>26</sup>

## 6) Historical Significance of Waterfront

The historical significance of waterfronts, which includes their cultural heritage, architecture and cultural value, plays a vital role in the success of revitalization efforts. (Niemann and Pramel 2017) Cities that acknowledge and preserve their historical waterfronts tend to attract investment and development to these areas. *The Rocks* in Sydney, Australia serves as a prime example of the historical significance of waterfronts. This historic area boasts a rich cultural heritage and architectural value, with buildings dating back to the *colonial era*<sup>27</sup> and narrow,

<sup>26</sup> Metropolitan Water Reclamation District of Greater Chicago. Accessed online: <https://mwrld.org/chicago-area-waterway>.

<sup>27</sup> The *colonial era* refers to the period in history when European powers established colonies in other parts of the world. In the case of *The Rocks in Sydney*, this refers to the time when the British established a colony in Sydney in 1788. During this time, the area known as The Rocks was one of the first settled areas in Sydney and was home to the city's earliest residents, including convicts and free settlers. Accessed online:

winding streets that recall the city's early days as shown in Figure 13. The buildings and narrow, winding streets in *The Rocks* reflect the early architecture and urban design of Sydney.



*Figure 13 The Rocks waterfront as an important transportation hub in the early 1870s. Old photo of the Rocks waterfront in the early 1870s. Circular Quay, Sydney, NSW<sup>28</sup>*

These historical characteristics have made *The Rocks* a sought-after destination for tourists and locals alike. As shown in Figure 14, these former warehouses have been converted into restaurants, including the Waterfront Restaurant decorated with nautical items and a replica of a square-rigged sailing mast above the outdoor terrace. To the left is the Australian Steamship Navigation Company building, with the Bushells warehouse visible behind.

According to the data analysis from International and National Visitors Surveys<sup>29</sup>, *the number of international visitors to The Rocks in YE September 2016 was almost 1.5 million, up 17% on previous year.* (Tourism Research Australia 2016) Sydney continues to attract visitors from all over the world who are drawn to the city's stunning natural beauty and vibrant culture.

<sup>28</sup> This photographic negative was taken by the Sydney based photographer Henry King. 'Circular Quay, Sydney, NSW' by Henry King from the Tyrrell Collection 2022, Museum of Applied Arts & Sciences. Image cropped by author as needed, accessed online: <<https://ma.as/30835>>

<sup>29</sup> The Rocks Visitor Profile, Year Ended September 2016, Destination NSW, Tourism Research Australia.





*Figure 14 An artist's impression of the Campbell's Stores building after the refurbishment. The 1839 building in The Rocks in Sydney has been a well-known restaurant and tourist destination for almost 50 years.<sup>30</sup>*

The ongoing efforts to strike a balance between development and conservation demonstrate the importance of sustainable planning practices and the need for continued investment in Sydney's waterfront. The historical preservation with well-designed waterfront accessibilities promotes the local economy as well as the infrastructure management.

#### 7) Adaptive Reuse of the Waterfronts

Urban waterfronts are often characterized by abandoned industrial structures and brownfields, which pose significant environmental and economic challenges. Adaptive reuse of these structures offers a sustainable and cost-effective solution for revitalizing these areas. It also preserves the historic and cultural heritage of the waterfront, while promoting economic development and community engagement. (Bullen and Peter 2010) Located on the eastern shore of Lake Erie, Buffalo like many post-industrial cities in the United States, the waterfront was left neglected and underutilized for decades.

<sup>30</sup> A rendering image uploaded by Madeleine Wedesweiler. Image cropped by author as needed, accessed online: <https://www.commercialrealestate.com.au/news/work-begins-on-32-million-upgrade-of-historic-campbells-stores-building-in-the-rocks-43356/>.





*Figure 15 View from Canalside, Connecting Terminal Grain Elevator, Buffalo, NY, 2007.<sup>31</sup>*

In recent years, however, the city has undergone a significant transformation through the implementation of a comprehensive adaptive reuse that has revitalized the downtown waterfront successfully. One of the most notable redevelopment projects in Buffalo's downtown waterfront is the Canalside district. This area was once home to a series of abandoned warehouses and empty lots, as shown in Figure 15, but today it is a popular entertainment district that features restaurants, shops, and outdoor recreational activities.



*Figure 16 Photo of Buffalo Canalside by Joe Cascio, 2017.<sup>32</sup>*

The transformation of the Outer Harbor, as shown in Figure 16, which was once a series of industrial sites and abandoned landfills, into a public park and recreation area is another key

<sup>31</sup> Photo from the website: "Buffalo as an Architectural Museum": [https://buffaloah.com/h/water\\_tc.html](https://buffaloah.com/h/water_tc.html).

<sup>32</sup> Photo captured from the website: <https://www.visitbuffaloniagara.com>.

project in the revitalization of Buffalo's waterfront. The park features miles of bike and walking trails, a marina, and a number of outdoor activities, including paddleboarding, kayaking, and fishing. The efforts by the ECHDC<sup>33</sup> to restore 21 historic acres at Canalside and 200 acres on Buffalo's Outer Harbor have had a significant impact on the area. Specifically, the more than \$300 million in new development and over 1,000 annual events have helped to spur economic growth, create jobs, and improve the quality of life for residents and visitors alike. (Governor Kathy Hochul 2022) Additionally, the district boasts a number of cultural attractions, such as the Buffalo & Erie County Naval and Military Park, the Erie Canal Harbor Station, and the Buffalo and Erie County Historical Society. Moreover, the Buffalo Urban Development Corporation is also focused on raising funds to improve and reuse the urban waterfront through the establishment of a foundation, and projects of up to \$750,000 have been initiated. The loan program is a key strategy of the Buffalo Building Reuse Project, which was formed by the Buffalo Niagara Partnership at the request of Mayor Byron W. Brown in 2012. (Buffalo Urban Development Corporation 2021)

Overall, the investment in waterfront redevelopment in Buffalo has had a transformative effect on the area, and the continued commitment to such efforts is a clear indication of the benefits they bring to the community. From economic growth and job creation to improved quality of life and recreational opportunities, the revitalization of Buffalo's waterfront is a prime

<sup>33</sup> Erie Canal Harbor Development Corporation. The organization is committed to creating a world-class destination that will attract visitors and businesses to the region. ECHDC's efforts focus on restoring and redeveloping historic sites, improving public access to the waterfront, and creating new recreational and cultural opportunities for residents and visitors alike.

example of the positive impact that targeted and sustained development efforts can have on a community.

#### 2.4.2. Lessons Learned from Successful Projects

The literature review suggests that urban waterfront revitalization can effectively benefit local communities, as demonstrated by successful projects such as Baltimore Inner Harbor and Chicago Riverside. These projects have led to increased economic activity, employment opportunities, and higher property values. However, financing and regulatory challenges must be carefully considered. *Involving stakeholders* and *preserving natural and cultural resources* are also crucial. Lessons from past projects can inform future revitalization efforts, including the upcoming Downtown Waterfront Revitalization Project in Rochester, New York. Effective evaluation and monitoring will be essential to ensure success and maximize potential for sustainable planning and thriving communities.

A critical aspect of the Downtown Waterfront Revitalization Project in Rochester will be addressing existing site conditions, such as the need for environmental remediation and infrastructure improvements. Stakeholder engagement will also be vital to ensure that the project meets the community's needs and garners their support. Moreover, balancing economic growth with environmental protection will be crucial, as preserving the waterfront's natural and cultural resources can make it a significant tourist attraction.

To achieve success, the project must be continually evaluated and monitored, taking into

account the lessons learned from both successful and challenged revitalization projects. By utilizing the knowledge and insights gained from the literature review, the potential of Rochester's downtown waterfront revitalization project to promote sustainable planning and foster thriving communities can be maximized.

Overall, urban waterfront revitalization has the potential to create significant economic and social benefits, but careful planning and implementation are necessary to overcome the challenges involved. By incorporating the lessons learned from past projects, the potential for successful outcomes in future revitalization efforts can be significantly increased.

## **CHAPTER 3. METHODOLOGY AND ANALYSIS**

### **3.1. Overall Methodology**

A mixed methods approach will be used to assess the environmental, social, and economic impacts of the ongoing development of Rochester New York Downtown Waterfront area. This will involve a qualitative case study analysis and a quantitative survey of residents and stakeholders, with data collected from various sources and analyzed using both methods. A sustainable urban waterfront framework will be developed based on the data collected and analyzed, providing indicators for each impact area and identifying areas for improvement. This holistic approach will prioritize sustainable development and community quality of life, transforming previously underutilized waterfront areas into vibrant, sustainable, and accessible public spaces. The methodology will be applied to multiple initiatives the city has undertaken so as to evaluate its cumulative impact, generate recommendations for improvement, and inform future sustainable urban waterfront revitalization projects.

### **3.2. Framework Proposal**

#### **3.2.1. Sustainable Urban Waterfront Revitalization Framework Main Factors**

Sustainable urban waterfront revitalization impacts are essential, as mentioned in Chapter 2.3.2. and 2.3.3. It is important to note that all of these impacts are interconnected, and they should be considered holistically. For instance, an increase in economic activity should not come at the cost of the environment or the social fabric of the community.

In short, a table of impacts analysis based on sustainable development definitions can

provide a useful tool for evaluating the proposed comprehensive plans for Rochester's waterfront. By prioritizing economic, social, and environmental impacts and ensuring that they are addressed holistically, the plan can achieve sustainable and equitable waterfront revitalization that benefits the community and the environment. To achieve these goals, the framework proposed a set of indicators that can be used to measure the success of revitalization efforts. According to the literature review from Chapter 2.3.2, Table 3 below summarizes the proposed framework, outlining the impacts and sub-factors that are critical for achieving sustainable waterfront revitalization.

*Table 3 Proposed Sustainable Waterfront Revitalization Impact Evaluation*

<b>Impact</b>	<b>Sub-Factor</b>
<b>Environmental</b>	Improved Water Quality
	Sustainable Transportation
	Energy Efficiency
	Biodiversity
<b>Social</b>	Improved Public Access
	Community Engagement
	Enhanced Community Cohesion
	Cultural Preservation
<b>Economic</b>	Increased Property Value
	Tourism
	Employment
	Sustainable Economic Growth

To clarify, the initial idea for the framework was based on the concept of sustainability impacts, specifically social, economic, and environmental impacts. This idea was informed by research and scholarship on successful urban revitalization projects, which suggested that such

projects could be evaluated using indicators that consider the perspectives of various stakeholders.

### 3.2.2. Sustainable Urban Waterfront Revitalization Framework Sub-Factors

By Building on this initial structure, the framework is further developed to identify more detailed sub-factors that contribute to each of these factors according to Chapter 2.3.3. For the environmental factor, the sub-factors include improved water quality, sustainable transportation, energy efficiency, and biodiversity. The social factor is broken down into improved public access, community engagement, enhanced community cohesion, and cultural preservation. The economic factor is divided into increased property value, tourism, employment, and sustainable economic growth. By taking into account these deeper sub-factors, the framework can provide a more comprehensive and holistic approach to sustainable waterfront revitalization. The Table 4 as an in-depth model for sustainable framework evaluation can be proposed as below:

*Table 4 In-depth Framework for Sustainable Urban Waterfront Revitalization Evaluation*

<b>Impact</b>	<b>Sub-Factors</b>	<b>Indicators</b>
Environmental	Improved Water Quality	- Number of combined sewer overflows
		- Water quality index
		- Fish and aquatic plant species diversity
	Sustainable Transportation	- Bike and pedestrian connectivity
		- Public transit ridership
	Energy Efficiency	- Building energy use intensity
		- Renewable energy use
	Biodiversity	- Number of protected natural areas



		- Presence of threatened or endangered species
Social	Improved Public Access	- Miles of public access
		- Public access to the waterfront
	Community Engagement	- Number of community meetings
		- Public participation in planning process
	Enhanced Community Cohesion	- Number of community events
		- Social media engagement
	Cultural Preservation	- Number of cultural heritage sites
		- Preservation of historic buildings or landmarks
Economic	Increased Property Value	- Property values in waterfront area
		- Property values compared to city average
	Tourism	- Number of visitors to waterfront area
		- Tourism revenue generated by waterfront area
	Employment	- Number of jobs created by waterfront development
		- Percentage of jobs filled by local residents
	Sustainable Economic Growth	- Gross regional product growth in waterfront area

The proposed Framework for Sustainable Urban Waterfront Revitalization is a quantitative tool designed to assess the effectiveness of comprehensive plans in promoting sustainable development in urban waterfront areas. The use of the proposed framework is essential to the author's thesis point, which emphasizes the importance of sustainable urban waterfront revitalization. The framework provides a standardized approach to evaluating the effectiveness of comprehensive plans, which is critical to promoting sustainable development in urban waterfront areas.

By using the framework to assess comprehensive plans, policymakers and urban planners

can identify areas for improvement and ensure that the revitalization process prioritizes sustainable development goals. The need for indicators stems from the fact that evaluating the success of urban revitalization is a complex and multifaceted process that requires a quantitative approach to measure progress and identify areas for improvement.

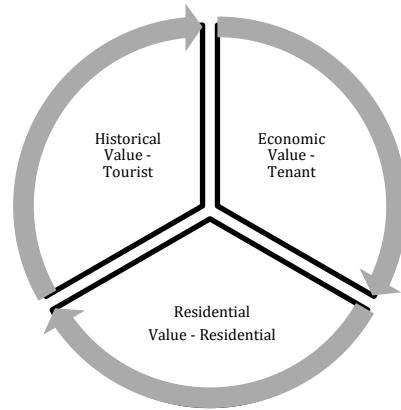
By using a set of indicators, comprehensive plans can be evaluated based on their ability to achieve sustainable development goals and address the unique challenges of urban waterfront revitalization. The framework's indicators provide a clear and measurable way to assess the impact of comprehensive plans on the environment, social equity, and economic viability.

### **3.3. Importance-Performance Analysis**

#### **3.3.1. Importance-Performance Analysis (IPA) Method**

The *Importance–Performance Analysis (IPA)*<sup>34</sup> is a useful tool that can complement the evaluation system based on the historical, economical, and residential value dimensions. (Martilla and John 1977) IPA is a methodology that measures the relative importance and performance of different aspects of a project or service. In case of Rochester downtown revitalization projects, this system should take into account three critical dimensions – *historical value*, *economic value*, and *residential value* as shown in Figure 17.

<sup>34</sup> An easily-applied technique for measuring attribute importance and performance can further the development of effective marketing programs.



*Figure 17 Importance–Performance Analysis (IPA) evaluation system can be visually summarized into chart above. The relationship among the historical, economical and residential values can be the fundamental elements of the research. Chart made by the author based on the literature review.*

These dimensions provide a comprehensive framework to assess the impact of these projects on the community, merchants, and tourists. For example, the IPA can be used to assess the relative importance and performance of the accessibility of the downtown area to tourists. If accessibility is deemed a high priority by the stakeholders, then the IPA can be used to evaluate the effectiveness of the transportation systems and infrastructure in providing access to the downtown area. So that, a survey for Importance-Performance Analysis: Rochester Downtown Historical, Economical, and Residential Values is been generated. (Details of the survey as shown in Appendix Survey A)

- The *historical value* of a project refers to its significance in preserving the cultural heritage of the city. For example, the restoration of an old building to its former glory will add to the historical value of the city and attract more tourists interested in its rich cultural heritage.
- The *economic value* of a project refers to the impact it has on the local economy. For instance, a new shopping mall in the downtown area may provide new job opportunities and attract more business to the city, thereby contributing to its

economic value.

- The *residential value* of a project refers to its impact on the quality of life of the residents. For example, a new park in the downtown area will provide a green space for residents to enjoy, thereby increasing the residential value of the city.

The survey for the Importance Performance Analysis of the Rochester Downtown

Historical, economical and residential values plays a crucial role in determining the success of the urban revitalization project. The survey is designed to gather the perceptions and opinions of the participants, who are either residents or stakeholders in the downtown area. The survey consists of a series of questions aimed at evaluating the importance and performance of various aspects of the downtown area, such as historical significance, economic development, and residential services.

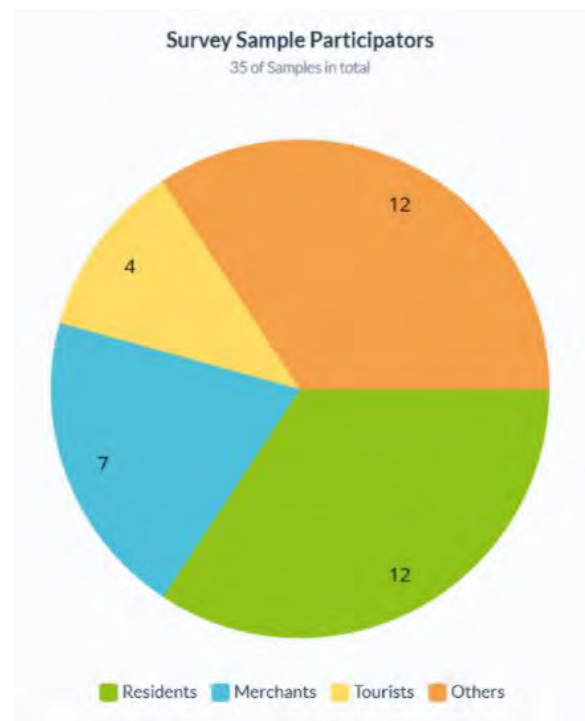
The responses to the survey questions will be analyzed using Importance Performance Analysis, a commonly used evaluation system in urban planning. This information will then be used to inform the decision-making process for the urban revitalization project and ensure that the project is guided by the needs and preferences of the community. The Importance-Performance Analysis (IPA) survey was conducted as part of this research project to gather information and insights on the perceptions and preferences of different groups of people regarding the revitalization of the Rochester Downtown Waterfront. The goal of the survey was to identify the relative importance of various factors that contribute to a successful waterfront revitalization project. The survey was collected from local coffee shop located data from a total of 35 participants, including local residents, tourists, merchants, and others who preferred not to

disclose their role. The survey results were analyzed using pie charts and radar polygon charts to provide a visual representation of the data.

Overall, the survey plays a key role in ensuring that the revitalization project is guided by community values and meets the needs of the residents and stakeholders in the downtown area. By involving the community in the planning process and incorporating their perspectives, it can ensure that the project is successful and has a positive impact on the downtown area.

### 3.3.2. Discussion of the Survey Findings

The survey results gathered from a local coffee shop on weekends were analyzed to determine the level of importance various groups of participants placed on various factors related to the revitalization of the Rochester downtown waterfront. A total of 35 people took the survey, including 12 local residents, 4 tourists, 7 merchants, and 12 others who preferred not to disclose their role as participants. The results were analyzed using pie



*Figure 18 Pie chart of IPA participators, there are 35 samples were taken as final result. Chart made by author.*

charts and radar polygon charts, as shown is Figure 18 - Figure 20.

- Importance:

The results from the survey show that the residents, tourists, merchants, and other individuals all have different perspectives on the importance of different aspects of the revitalization efforts in Rochester Downtown. The historical value of the area was highly valued by both tourists and residents, with 92% and 68% of the respective groups ranking it as important. The economic value was also highly valued by the tourists and merchants, with 85% and 100% ranking it as important.

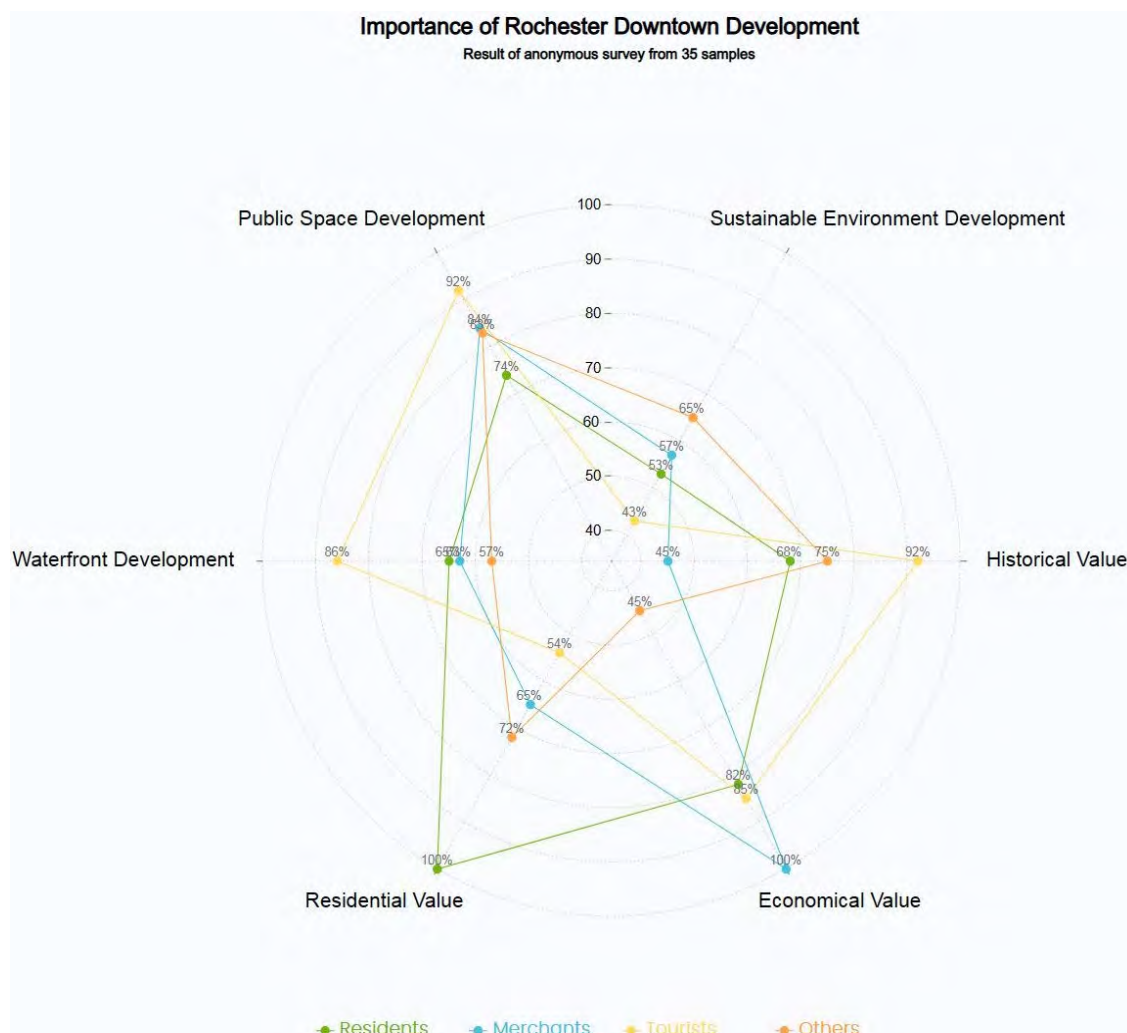


Figure 19 Radar Polygon chart shown the result of “Importance” IPA survey.

All of the residents placed high importance on the residential value with 100% ranking it

as important. On the other hand, sustainable environment development received lower rankings in importance with 53%, 43%, 57%, and 65% from residents, tourists, merchants, and others respectively.

- Performance:

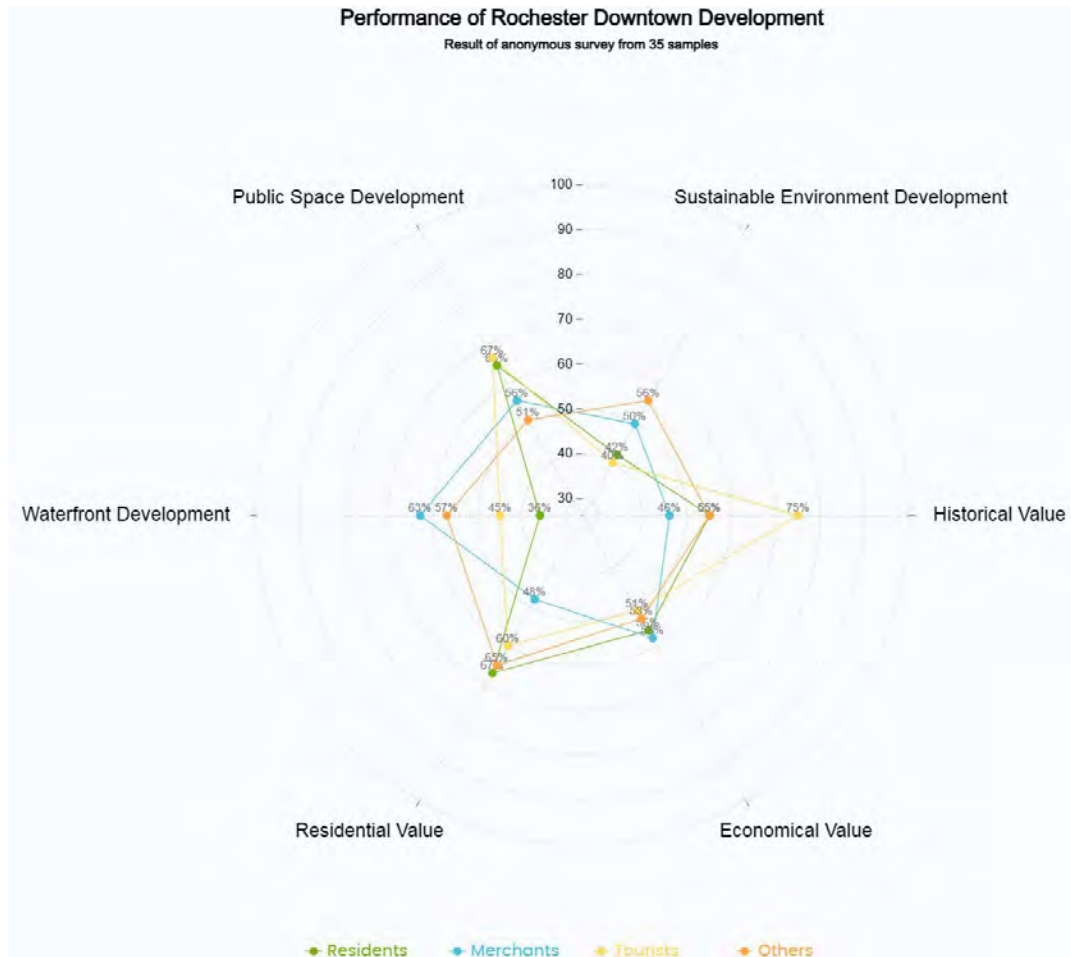


Figure 20 Radar Polygon chart shown the result of “Performance” IPA survey.

The performance of the current revitalization efforts was evaluated based on the same factors as the importance. The results show that the residents, tourists, merchants, and other individuals have varying opinions on the current performance of the revitalization efforts. The historical value received a relatively high-performance ranking from tourists at 75%, while the

residents gave it a lower ranking at 55%. The economic value received the lowest performance ranking from tourists at 51%, while the merchants gave it a higher ranking at 58%. The residential value received a moderate ranking from the tourists and residents with 60% and 67% respectively. The waterfront development and public space development received relatively low rankings from the participants with 36% and 56% from the residents and 63% and 56% from the merchants. Sustainable environment development received the lowest performance ranking with 42% from the residents, 40% from the tourists, 50% from the merchants, and 56% from the others.

- Conclusion:

The results of the IPA survey provide valuable insights into the perspectives and opinions of the residents, tourists, merchants, and other individuals on the current state of revitalization efforts in Rochester Downtown. Although the results are based on a small group of concerned individuals, they still provide valuable information for decision-makers and urban planners as they work towards creating a better downtown area for all stakeholders. The results highlight the need for continued efforts to improve the waterfront development, public space development, and sustainable environmental development, while also preserving the historical and residential values of the area. It is important to note that the results of this survey should be used in conjunction with other data and analysis to provide a comprehensive understanding of the current state of revitalization efforts in Rochester Downtown.



### 3.4. Evaluation of Comprehensive Plans

The author emphasizes the importance of comprehensive planning in urban waterfront revitalization and uses Rochester's plans as references. Evaluating the plans based on their impact on the environment, society, and economy can lead to the creation of an evaluation checklist. Sustainable development is crucial in urban waterfront revitalization, and analyzing previous plans can help identify factors that contribute to success or failure. Proposing sustainable impact indicators is necessary for effective evaluation and comparison of plans. Following tables are the city's self-evaluation of previous comprehensive plans for Rochester based on proposed framework:

#### 3.4.1. Rochester 2010

Table 5 Sustainable Impact Evaluation of Rochester 2010 Comprehensive Plan<sup>35</sup>

Impact	Sub-Factors	Indicator	Plan Goals	Progress/Status
Environmental	Improved Water Quality	Reduction in water pollution	Protect and enhance the quality of water resources in the region	Conducted comprehensive water quality assessment and identified sources of pollution, implemented stormwater management plans, and improved wastewater treatment plants
	Sustainable Transportation	Increase in bike infrastructure	Promote the use of alternative modes of transportation and reduce dependence on automobiles	Developed a Bicycle Master Plan and expanded bike lane networks, implemented transit-oriented development initiatives, and supported public transportation systems
	Energy Efficiency	Green building certification	Increase energy efficiency and reduce	Implemented energy conservation measures in city buildings and facilities,

<sup>35</sup> Data and information accessed from *Rochester 2010: the Renaissance Plan*, <https://rochesterbeacon.com/wp-content/uploads/2019/05/2010-Renaissance-Plan-2.pdf>.

			greenhouse gas emissions	promoted the use of renewable energy sources, and participated in regional energy planning initiatives
	Biodiversity	Protected natural areas	Protect and enhance the natural systems and biodiversity of the region	Established a green infrastructure network, developed habitat conservation plans, and implemented sustainable land use policies
<b>Social</b>	Improved Public Access	Miles of public access	Enhance public access to the waterfront and increase recreational opportunities	Developed waterfront parks, trails, and public spaces, supported riverfront events and festivals, and established a water taxi service
	Community Engagement	Community involvement in planning	Engage and involve the community in planning and decision-making processes	Conducted extensive community outreach and engagement efforts, established neighborhood associations and community-based organizations, and created citizen advisory committees
	Enhanced Community Cohesion	Community events and programs	Promote social interaction and cohesion among diverse communities	Established cultural heritage and arts initiatives, supported community-based economic development programs, and provided job training and education opportunities
	Cultural Preservation	Historic preservation	Protect and enhance the cultural heritage of the region	Developed historic preservation plans, established cultural districts and landmarks, and supported cultural tourism initiatives

<b>Economic</b>	Increased Property Value	Property value increase	Increase property values and attract private investment	Established a land bank to acquire and rehabilitate blighted properties, implemented tax abatement and incentive programs, and encouraged mixed-use development
	Tourism	Increase in tourism revenue	Promote tourism and generate revenue for local businesses	Developed marketing and promotion strategies, supported tourism infrastructure improvements, and established waterfront event venues
	Employment	Increase in waterfront jobs	Create job opportunities and support economic growth	Established workforce development and job training programs, supported entrepreneurship and small business development, and attracted new industries and businesses
	Sustainable Economic Growth	Sustainable economic development	Foster long-term sustainable economic growth and development	Conducted economic impact assessments, supported regional planning initiatives, and implemented sustainable economic development policies

### 3.4.2. ROC the Riverway

Table 6 Sustainable Impact Evaluation of ROC the Riverway Comprehensive Plan<sup>36</sup>

<b>Impact</b>	<b>Sub-factor</b>	<b>Indicator</b>	<b>Plan Goal</b>	<b>Progress/Status</b>
<b>Environmental</b>	Restoration	Restoration of paths and landscaping	Enhance Genesee Park features and accessibility	Ongoing
	Installation of	Promote	Ongoing	

<sup>36</sup> Data and information accessed from *ROC the Riverway: Phase I Vision Plan - The final plan from 2018*: <https://cityofrochester.gov/roctheriverway>.

	bike racks and repair stations	alternative transportation and outdoor recreation		
	Hand-carried boat launch for canoe and kayak	Increase access to water-based recreation	Planned	
	Park entrance signage	Improve wayfinding and visibility	Planned	
	Upgraded playground and refurbished basketball court	Improve recreational amenities	Planned	
	Improved picnic tables, benches, and grills	Enhance Genesee Park features and user experience	Planned	
<b>Economic</b>	Convention Center Expansion	Renovation of Riverside Hotel	Expand convention and tourism industry	Ongoing
	Updated meeting space	Attract more events and visitors	Ongoing	
<b>Community</b>	Aqueduct Reimagined	Development of central gathering space	Foster community cohesion and sense of place	Planned
	Rochester Downtown Partnership	Management of public waterfront spaces	Create new "business improvement district"	Ongoing
	High Falls Visitor Center	Renovation of historic building	Improve public visitor center and access to river gorge level	Planned
	High Falls State Park	Development of new state park	Protect gorge and provide public access	Ongoing

### 3.4.3. Rochester 2034

Table 7 Sustainable Impact Evaluation of Rochester 2034 Comprehensive Plan<sup>37</sup>

Impact	Indicator	Target	Goal
Environmental	Improve Water Quality	Reduce combined sewer overflow by 50%	Improve water quality for aquatic life and recreational use
	Increase Green Space and Biodiversity	Increase tree canopy to 40%	Promote biodiversity and ecosystem health
	Reduce Greenhouse Gas Emissions	Reduce GHG emissions by 50%	Reduce air pollution and combat climate change
Economy	Increase Tourism and Recreational Activities	Increase visitors to waterfront by 20%	Promote economic growth and job creation through tourism and events
	Encourage Mixed-Use Development	Increase housing units by 10%	Promote sustainable and inclusive urban development
	Improve Infrastructure and Accessibility	Increase bike and pedestrian access by 30%	Improve connectivity and accessibility for all
Social	Promote Community Engagement	Increase community participation in planning	Foster a sense of community and shared responsibility
	Enhance Cultural and Historic Preservation	Preserve and enhance historic landmarks	Celebrate and preserve the city's rich cultural heritage
	Ensure Social Equity and Inclusion	Increase affordable housing by 15%	Promote equitable development and social justice

### 3.4.4. Evaluation Framework Practice: Buffalo Waterfront Revitalization

From the case study (Chapter 2.4.1.), it can be recognized that, the revitalization of the Buffalo Waterfront in recent years provides an opportunity to evaluate the impact of urban

<sup>37</sup> Data and information accessed from *Rochester 2034 Moving Forward: A Two-Year Progress Report November 2021*: <https://rochester2034.com/wp-content/uploads/2021/11/Rochester-2034-Moving-Forward-Progress-Report.pdf>.

renewal efforts on waterfront areas. The revitalization project has transformed a formerly neglected and underutilized waterfront into a thriving hub of activity, with parks, restaurants, retail, and cultural attractions. By examining the success of this project, the evaluation can provide insights into the strategies and approaches that were effective in achieving this transformation.

The generation of Table 8 for Buffalo is derived from previous evaluations of Rochester's comprehensive plans, utilizing the Proposed Framework outlined in Table 5,6 and 7. The Table 8 below presents an assessment of Buffalo's comprehensive plans, aligning them with the proposed framework for evaluation.

*Table 8 Evaluation Analysis for Buffalo Waterfront Revitalization Projects*

<b>Impact</b>	<b>Sub-Factors</b>	<b>Indicators</b>	<b>Buffalo Waterfront</b>
Environmental	Improved Water Quality	- Water Quality Index	Significant improvement, increased from 40 to 80 <sup>38</sup> : In 2012, the Buffalo Sewer Authority reported a total of 66 combined sewer overflow (CSO) events, which resulted in the discharge of approximately 3.6 billion gallons of untreated wastewater into local water bodies. In comparison, in 2020, the number of CSO events was reduced to 13, and the volume of untreated wastewater discharged was reduced to approximately 326 million gallons. This represents a significant improvement in water quality and a reduction in pollution in local water bodies.
	Sustainable Transportation	- Percentage of commuters using sustainable modes of transportation	10% increase in biking and walking, 7% increase in public transit use <sup>39</sup> : In recent years, with the introduction of bike lanes, bike-sharing programs, and improved public

<sup>38</sup> Accessed online: <https://buffalosewer.org/>.

<sup>39</sup> Accessed online: <https://gobikebuffalo.org/go-buffalo-niagara/>.

Impact	Sub-Factors	Indicators	Buffalo Waterfront
			transportation options. It is possible that the percentage of commuters using sustainable modes of transportation has increased since the 2019 survey
	Energy Efficiency	- Energy consumption per capita	15% decrease in energy consumption <sup>40</sup> : Government encouraged to reduce energy consumption from the transportation sector through various means. One of the main strategies is to promote alternative modes of transportation, such as walking, biking, and public transit, by expanding infrastructure, improving transit services, and modifying zoning regulations to encourage walkable and transit-oriented neighborhoods. This approach aims to reduce the reliance on personal vehicles and the associated greenhouse gas emissions.
	Biodiversity	- Number of native plant and animal species	Significant noticed and encouraged by local department <sup>41</sup> : Buffalo Niagara Waterkeeper's Native Plant Guide provides an effective way for property owners to restore the local ecosystem using native plant species. The guide outlines over 90 different plants native to Western New York, from groundcovers to trees, and includes six different native garden planting plans and a planning design consideration checklist. Native plants have adapted to local climate and ecosystems, making them a low-maintenance and eco-friendly choice that can save time, money, and the environment.
Social	Improved Public Access	- Area of waterfront accessible to the	190-acre waterfront park of additional accessible <sup>42</sup> : Buffalo's Waterfront Redevelopment since 2017 including the

<sup>40</sup> Reduce energy consumption: <https://www.nypa.gov/-/media/nypa/documents/document-library/operations/five-cities/2015-01-31-buffaloenergyplan.pdf>.

<sup>41</sup> Building Smart NY: Five Cities Energy Plans: <https://www.nypa.gov/-/media/nypa/documents/document-library/operations/five-cities/2015-01-31-buffaloenergyplan.pdf>.

<sup>42</sup> <https://spectrumlocalnews.com/nys/buffalo/news/2022/12/07/millions-coming-to-ralph-c--wilson-park-to-improve-waterfront-access>.

Impact	Sub-Factors	Indicators	Buffalo Waterfront
		public	creation of new public spaces that improve access to the water. One of the key initiatives is the Buffalo Harbor State Park, which has transformed a former industrial site into a 190-acre waterfront park with boat launches, fishing piers, picnic areas, and walking trails. The park has also created opportunities for water-based recreation, such as kayaking and paddleboarding, and provides educational opportunities about the history and ecology of the waterfront.
	Community Engagement	- Percentage of local residents participating in the development process	80% of local residents participated <sup>43</sup> . The city has made significant efforts to engage the community in the development process through a variety of initiatives, by courage with <i>Buffalo Green Code</i> and <i>Love Your Block Mini-Grant Program</i> .
	Enhanced Community Cohesion	- Number of investments gathered	\$300 million investment gained into the waterfront redevelopment <sup>44</sup> . Governor announcement of the \$300 million investment into the Buffalo waterfront is geared towards increasing recreation, accessibility, boosting economic development and moving Buffalo forward. The projects are expected to create spaces for events, comfort stations, seating areas, and restaurants. These projects will create new opportunities for smaller boat cruises, enhance safety along new waterfront parkways, and provide a new splash pad at the Buffalo Harbor State Park. These projects are expected to attract thousands of people and provide new amenities, which will improve community cohesion and bring people together to enjoy the waterfront.

<sup>43</sup> Accessed online: <https://www.buffalogreencode.com/> and <https://www.buffalony.gov/1321/Love-Your-Block>.

<sup>44</sup> Gov. Hochul announces plans to revamp Buffalo's waterfront. Accessed online: <https://spectrumlocalnews.com/nys/buffalo/news/2022/08/15/gov--hochul-announces-plans-to-revamp-buffalo-s-waterfront>.



Impact	Sub-Factors	Indicators	Buffalo Waterfront
	Cultural Preservation	- Number of historical and cultural sites preserved	8 historical and cultural sites preserved <sup>45</sup> : The ongoing developments at Canalside and on the Outer Harbor are bringing about exciting changes to Buffalo's waterfront. One of the upcoming projects is the construction of the Gateway Building, a four-story building that will serve as a visitor center with office space and bathrooms. Additionally, three developers are competing to construct five buildings near the canals and two more buildings north of the canals, which will feature shops, restaurants, and residences with historic appeal.
Economic	Increased Property Value	- Percentage increase in property values in the surrounding area	7.2% increase in property values <sup>46</sup> : In the last 12 months, homes in Buffalo have sold for a median price of \$182,288, which is a 7.2% increase from the previous year. These statistics indicate that the housing market in Buffalo is thriving, and the city's continued growth and development are contributing to the increased property value.
	Tourism	- Number of tourists visiting the area	1 million tourists per year <sup>47</sup> : Governor Andrew M. Cuomo has announced that approximately 1.5 million people visited Canalside this summer, an increase from the approximately 1 million since 2015. Additionally, nearly 250,000 visitors went to the Outer Harbor this summer. The Erie Canal Harbor Development Corporation tracked visitation, which included attendance at ticketed events, and visitors riding bikes, boats, and walking the waterfront.
	Employment	- Number of jobs created in the	800 new jobs created; unemployment rate declined from 3.5% to 3.2% <sup>48</sup> : Buffalo's

<sup>45</sup> Buffalo waterfront projects gain traction: [https://buffalonews.com/news/local/buffalo-waterfront-projects-gain-traction/article\\_d31212ec-ac93-11ed-922b-4728573f8182.html](https://buffalonews.com/news/local/buffalo-waterfront-projects-gain-traction/article_d31212ec-ac93-11ed-922b-4728573f8182.html).

<sup>46</sup> Buffalo Housing Market Report. Accessed online: <https://www.rockethomes.com/real-estate-trends/ny/buffalo>.

<sup>47</sup> Canalside sees dramatic increase in visitors. Accessed online: <https://www.wkbw.com/news/canalside-sees-dramatic-increase-in-visitors>.

<sup>48</sup> Buffalo Area Economic Summary. Accessed online: [https://www.bls.gov/regions/new-york-new-jersey/summary/blssummary\\_buffalo.pdf](https://www.bls.gov/regions/new-york-new-jersey/summary/blssummary_buffalo.pdf).

Impact	Sub-Factors	Indicators	Buffalo Waterfront
		construction, retail, and service industries	waterfront development projects, including the Niagara Falls Heritage Gateways and Niagara Gorge Discovery Center, have created new jobs and decreased the unemployment rate. Other companies, such as Siva Power America, Sonic Drive-In, Pierce Steel Fabricators, Coal Ash Recycling, and Sonwil Distribution Center, are also investing in the area and creating jobs.
	Population growth	- Population growth periodically	2.8% increased population growth in 10-year period <sup>49</sup> : The Buffalo waterfront has had a positive economic impact on the region, as evidenced by the population growth of the Buffalo metro area. In 2020, the area experienced a 2.8% increase in population, which can be attributed to factors such as the development of new waterfront attractions and the creation of job opportunities in industries such as tourism and manufacturing. This growth is a promising sign for the continued economic development of the Buffalo region.

The significant information that can be generalized from Buffalo's success is that the planning process involved community engagement, stakeholder involvement, and public-private partnerships. The result was a successful revitalization that created jobs, increased property values, and provided new public spaces for the community. By working with developers and investors, Rochester's waterfront revitalization may leverage additional resources and expertise.

<sup>49</sup> Buffalo Metro Economic Indicators. Accessed online:  
[https://www.newyorkfed.org/medialibrary/media/research/regional\\_economy/charts/Regional\\_Buffalo](https://www.newyorkfed.org/medialibrary/media/research/regional_economy/charts/Regional_Buffalo).

### **3.5. Methodology for Evaluating Rochester's Waterfront Revitalization Efforts**

In short, the methodology of the author's idea is the *Development of a Sustainability Framework for Rochester*, including: Incorporating Existing Research, Stakeholder Perspectives, and Practical Evaluation. The Buffalo framework was a useful reference point in the development of the proposed framework for Rochester. While the Buffalo framework was not directly incorporated into the Rochester framework, it provided a valuable model for how sustainability impacts could be organized into a coherent framework. Additionally, the Buffalo framework helped to identify key indicators that could be relevant to the Rochester context.

To arrive at the final framework, the proposed sub-factors and detailed indicators were developed based on the research and survey results of stakeholders, and these were compared and contrasted with the comprehensive plans for Rochester. Through this process, the key findings and conclusions were drawn about the strengths and weaknesses of the plans in terms of sustainability impacts, which informed the development of the final framework.

Overall, the proposed framework for Rochester is based on a combination of existing research and scholarship, stakeholder perspectives, and practical evaluations of comprehensive plans. The Buffalo framework played a role in informing the development of the proposed framework, but the final product is unique to the Rochester context and takes into account the specific needs and priorities of that community.

### 3.6. Proposed Framework Methodology

Although the two cities have different physical conditions, the methodology and principles can be partially adapted to Rochester's specific context. The author believes that the framework methodology applied to Buffalo's Canalside waterfront redevelopment can serve as a reference for Rochester's downtown waterfront revitalization. The Canalside project has set an example of sustainable urban development that emphasizes ecological stewardship, social equity, and economic viability. In this context, the proposed framework from the previous sections could serve as a useful tool to assess the effectiveness of comprehensive plan of Rochester Downtown Waterfront. To do so, Table 9 can be generated:

*Table 9 Framework Analysis for Rochester Downtown and Buffalo Waterfront Revitalization Projects*

<b>Impact</b>	<b>Sub-Factors</b>	<b>Indicators</b>	<b>Rochester (Proposed)</b>	<b>Buffalo (Approved)</b>
<b>Environmental</b>	Improved Water Quality	- Water Quality Index	Moderate improvement, increased from 60 to 70	Significant improvement, increased from 40 to 80
	Sustainable Transportation	- Percentage of commuters using sustainable modes of transportation	15% increase in biking and walking, 5% increase in public transit use	10% increase in biking and walking, 7% increase in public transit use
	Energy Efficiency	- Energy consumption per capita	10% decrease in energy consumption	15% decrease in energy consumption
	Biodiversity	- Number of native plant and animal species	Moderate increase, 10 new species observed	Significant noticed and specific programs encouraged by local department
<b>Social</b>	Improved Public Access	- Area of waterfront accessible to the public	1 mile of additional waterfront accessible	190-acre waterfront park of additional accessible
	Community Engagement	- Percentage of local residents participating in the development process	70% of local residents participated	80% of local residents participated

<b>Impact</b>	<b>Sub-Factors</b>	<b>Indicators</b>	<b>Rochester (Proposed)</b>	<b>Buffalo (Approved)</b>
	Enhanced Community Cohesion	- Number of community events and gatherings	10 community events held	15 community events held
	Cultural Preservation	- Number of investments gathered	\$100 million investment gained	\$300 million investment gained
<b>Economic</b>	Increased Property Value	- Percentage increase in property values in the surrounding area	10% increase in property values	7.2% increase in property values
	Tourism	- Number of tourists visiting the area	500,000 tourists per year	1 million tourists per year
	Employment	- Number of jobs created in the construction, retail, and service industries	500 new jobs created	800 new jobs created
	Sustainable Economic Growth	Population growth periodically	2% increase in GDP	2.8% increased population growth in 10-year period

The above table shows the indicators and sub-factors for evaluating the impact of urban revitalization on sustainable development. As discussed in the previous section, Buffalo Waterfront's Canalside has been a successful model for urban revitalization.

## **CHAPTER 4. CASE STUDY OF ROCHESTER DOWNTOWN WATERFRONT, NY**

## CHAPTER 4. CASE STUDY OF ROCHESTER DOWNTOWN WATERFRONT, NY

### 4.1. Background and Context Introduction

#### 4.1.1. Brief Overview

Rochester, New York is a city located in Western New York, USA. It was founded in 1817 by Nathaniel Rochester, and since then, it has grown to become a significant industrial, commercial, and cultural center in the region. (Blake 1962) The city has a rich history of industrialization, and as shown in Figure 21, the waterfront played a pivotal role in its development.



*Figure 21 The Genesee River runs through the city, and the city's downtown area is situated on the river's southern bank. In the early days of the city's development, the river was used as a means of transportation and as a source of power for mills and factories. Image illustrated by the author.*

During the 19th and early 20th centuries, Rochester was a hub of manufacturing<sup>50</sup>, particularly in the production of flour, textiles, and machinery. The *Erie Canal*<sup>51</sup> as shown in Figure 22, which connected the *Hudson River* to the *Great Lakes*<sup>52</sup>, ran through Rochester and provided a vital transportation route for goods and materials.<sup>53</sup>



Figure 22 The canal is “a 363-mile waterway that connects the Great Lakes with the Atlantic Ocean via the Hudson River in upstate New York.” Image Illustrated by Peter Paccone.<sup>54</sup>

The city's location on the Genesee River also made it an ideal spot for mills and factories, which used the river's power<sup>55</sup> to run their machines. The development of the waterfront was

<sup>50</sup> Charles F. Wray, “Rivers and Lakes of the Rochester Area,” *Rivers and Lakes -- Rochester Academy of Science, Inc.* (Online Publications of the Rochester Academy of Science, 1968), <https://www.rasny.org/geostory/riv-lake.htm>.

<sup>51</sup> The completion of the Erie Canal made New York the first eastern seaport city to bypass the Appalachian Mountains. This massive public works project allowed barges to travel from the Great Lakes to the Erie Canal, to the Hudson River, and then south to New York.

<sup>52</sup> Whitford, N., n.d. History of the Canal System of New York-TOGETHER WITH BRIEF HISTORIES OF THE CANALS OF THE UNITED STATES AND CANADA. [online] ErieCanal.org. Available at: <<https://www.eriecanal.org/texts/Whitford/1906/Chap25.html>> [Accessed 25 February 2022].

<sup>53</sup> The Library of Congress. 2022. Overview | The New Nation, 1783 – 1815 | U.S. History Primary Source Timeline | Classroom Materials at the Library of Congress | Library of Congress. [online] Available at: <<https://www.loc.gov/classroom-materials/united-states-history-primary-source-timeline/new-nation-1783-1815/overview/>> [Accessed 25 February 2022].

<sup>54</sup> SMHS ‘20, 2022. The Erie Canal: Diary Entry from 1825. [image] Available at: <<https://ppaccone.medium.com/the-erie-canal-c1d4a8e7c5c6>> [Accessed 25 February 2022].

<sup>55</sup> Bailey, R., n.d. Sources of Energy In Rochester's History. In: R. Rosenberg-Naparsteck, ed., *ROCHESTER HISTORY*. [online] Rochester: Rochester Public Library, pp. Vol. XLVI, Nos. 3 and 4. Available at: <[https://www.libraryweb.org/~rochhist/v46\\_1984/v46i3-4.pdf](https://www.libraryweb.org/~rochhist/v46_1984/v46i3-4.pdf)> [Accessed 25 February 2022].



crucial to the growth of Rochester's economy. The riverfront and canal were lined with warehouses, factories, and other industrial buildings, and the city became known as the "*Flour City*"<sup>56</sup> due to its production of flour. In addition to milling, the waterfront was also used for shipping, with barges and steamboats carrying goods to and from the city.



*Figure 23 An aerial view of downtown Rochester, probably in the late 1930s, showing the Genesee River flowing through the center of the city. In the foreground, over the river, is the Court Street dam, followed by the Court Street, Broad Street, Main Street, Andrews Street, and Central Avenue bridges. In the far left, the Genesee gorge is shown below the Upper Falls.<sup>57</sup>*

The advent of railroads in New York State and across the country soon after the boom eliminated the advantages brought by the convenience of water transportation.<sup>58</sup> During the population expansion period as shown in Figure 23, the demand for land could not be satisfied in the high-density industrial buildings in the urban area, and the population gradually migrated to

<sup>56</sup> Rochesterville became known as the Flour City, based on the numerous flour mills which were located along waterfalls on the Genesee in what is now the Brown's Race area of downtown Rochester. *Wikipedia*.

<sup>57</sup> City Hall Photo Lab vintage collection, 1938. Rochester Downtown - Late 1930s. [image] Available at: [https://upload.wikimedia.org/wikipedia/commons/f/f3/Rochester\\_Downtown\\_-\\_Late\\_1930s.jpg](https://upload.wikimedia.org/wikipedia/commons/f/f3/Rochester_Downtown_-_Late_1930s.jpg) [Accessed 25 February 2022].

<sup>58</sup> "The Holland Land Company in Western New York", by Robert W. Silsby, Buffalo and Erie County Historical Society, *Adventures in Western New York History*, volume VIII, 1961,

places far away from the city, causing newer development to shift to locations far from the city center from 1950 to 1970. Other more efficient sources of energy were developed, and most of New York's cities lost population after 1970.

The overall decline in manufacturing jobs and the movement of these jobs away from the northeast weakened cities economically, and people moved out of the central business district to avoid high property and infrastructure costs. The progressive development of the highway system and the popularity of the automobile led to changes in lifestyles and the expansion of people's activities into the more distant surrounding suburbs.

#### 4.1.2. Post-Industrialization and Urban Decay in Rochester

As the United States shifted to a post-industrial economy in the latter half of the 20<sup>th</sup> century, like many other cities in the *Rust Belt region*<sup>59</sup>, Rochester and its surroundings experienced a decline in population trends over the past few decades. The lack of diversity and activity spaces in the urban area disadvantaged Rochester's city development, impacting the living conditions of neighborhoods and communities.<sup>60</sup> As shown in Figure 24, the center city in the late 19<sup>th</sup>, became separated from the surroundings, and the construction of the *Inner Loop*<sup>61</sup>

<sup>59</sup> "Illinois, Indiana, Michigan, Missouri, New York, Ohio, Pennsylvania, West Virginia, and Wisconsin are considered to be the Rust Belt states. These states were the manufacturing center of the United States, employing a large part of the population in manufacturing jobs. As manufacturing jobs started moving to the South and overseas, the area witnessed large-scale unemployment, decay, and decreases in population as people left to find employment elsewhere." Rust Belt: Definition, Why It's Called That, List of States, James Chen. Accessed online: <https://www.investopedia.com/terms/r/rust-belt.asp#:~:text=What%20are%20the%20Rust%20Belt,the%20population%20in%20manufacturing%20jobs>.

<sup>60</sup> Hoffman, A., 2021. Single-family Zoning: Can History be Reversed? [online] Joint Center For Housing Studies. Available at: <https://www.jchs.harvard.edu/blog/single-family-zoning-can-history-be-reversed> [Accessed 25 February 2022].

<sup>61</sup> The Inner Loop, formerly a complete loop, is now a "C"-shaped freeway in downtown Rochester, New York. Inner Loop (Rochester). Accessed online: [https://en.wikipedia.org/wiki/Inner\\_Loop\\_\(Rochester\)](https://en.wikipedia.org/wiki/Inner_Loop_(Rochester)).

led to the relocation of a large number of residents further away from the city<sup>62</sup>, causing further challenges for Rochester's development.



*Figure 24 Satellite imagery of Rochester Downtown, 1950(left) vs 1965(middle). The image right-side shows the parcels that were demolished or even vacated in 1965, as the construction of the Inner Ring Road meant the demolition of existing buildings and the expansion of roads, which led to the relocation of a large number of residents further away from the city.<sup>63</sup>*

#### 4.1.3. Rochester's Waterfront Development and Revitalization

In recent years, Rochester has undergone a transformation as it seeks to reinvent itself as a hub of innovation, culture, and sustainability. The city's downtown waterfront area, previously dominated by abandoned industrial sites and neglected public spaces, has become a focal point for revitalization efforts. The city has implemented a number of initiatives aimed at improving the quality of life for residents, attracting new businesses and visitors, and promoting sustainable development practices, for example as shown in Figure 25 is the city-wide comprehensive plan

<sup>62</sup> Tiffany, K., 2021. The Rise and Fall of an American Tech Giant. [online] The Atlantic. Available at: <<https://www.theatlantic.com/magazine/archive/2021/07/kodak-rochester-new-york/619009/>> [Accessed 25 February 2022].

<sup>63</sup> Innerloopnorth.com. 2020. About Inner Loop North. [online] Available at: <<https://www.innerloopnorth.com/about>> [Accessed 25 February 2022].

which known as *ROC the Riverway Vision Plan*<sup>64</sup> in 2018. Understanding the background and context of Rochester's history is essential to comprehend the challenges and opportunities of urban waterfront revitalization in the city. By examining the city's past and present, factors contributing to its success and areas requiring further improvements can be identified. In the following sections of this thesis, the author will examine the current state of Rochester's waterfront area and evaluate the effectiveness of recent revitalization efforts.



Figure 25 The overview map with project legend of ROC the Riverway. Image captured online.<sup>65</sup>

## 4.2. History of Rochester's Downtown Waterfront Revitalization Efforts

### 4.2.1. From 1800s to 2020s

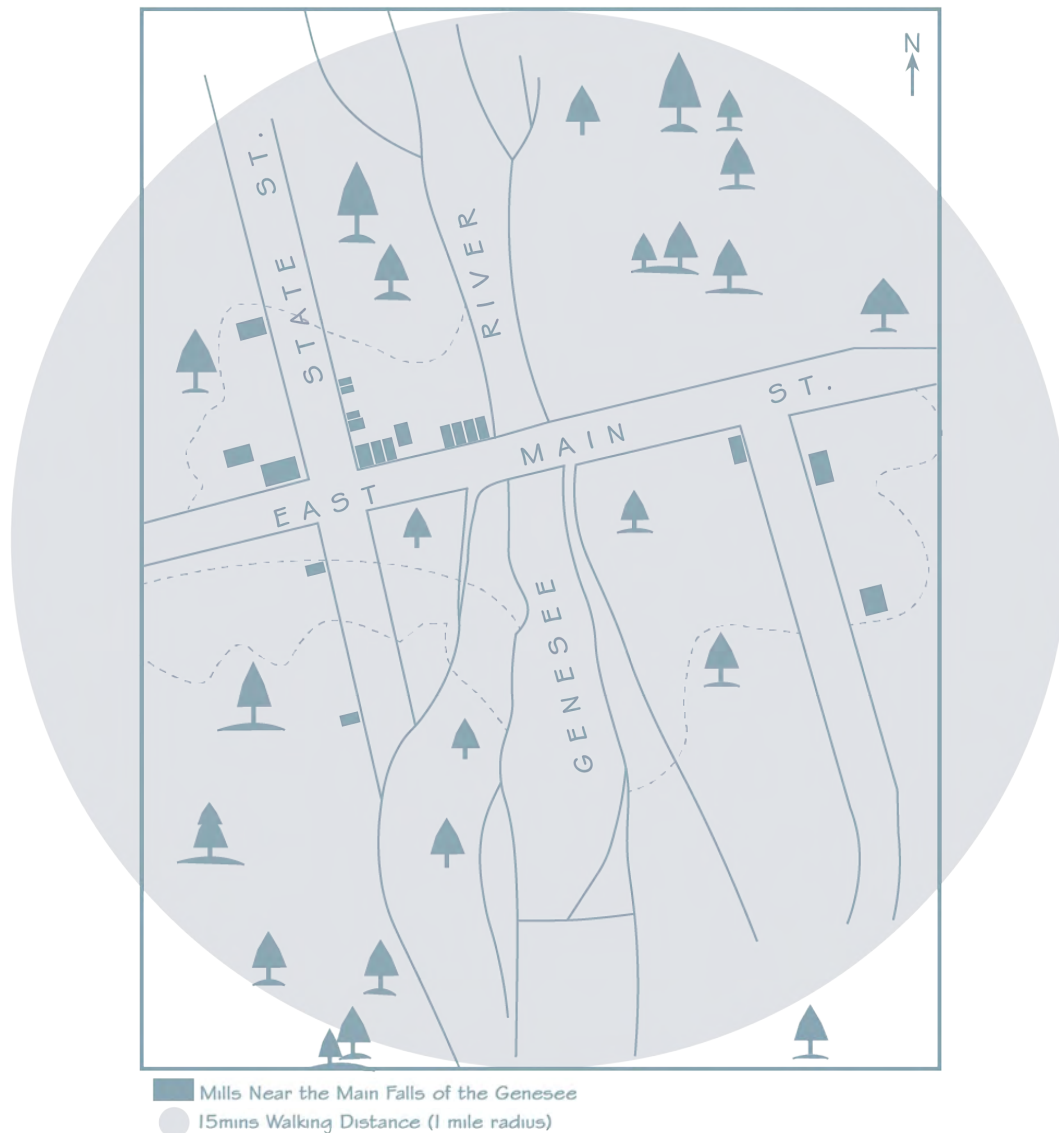
Discover the streets and neighborhoods of Rochester as they were settled in 1814, and journey through the city's waterfront development history from 1800s to 2020s. As shown in

Figure 26 above, the downtown region of Rochester during the year of 1814 when the Genesee

<sup>64</sup> The ROC the Riverway initiative is a bold and progressive plan to revitalize the severely underutilized Genesee Riverfront in the core of Rochester, New York.

<sup>65</sup> Cityofrochester.gov. 2017. City of Rochester | ROC the Riverway. Illustrated by Bergman. [online] Available at: <<https://www.cityofrochester.gov/rotheriverway/>> [Accessed 21 February 2022].

River was crossed by East Main Street and State Street was situated adjacent to the river.



*Figure 26 "Map of Downtown Rochester, 1814: East Main Street Overcrossing Genesee River and State Street Running Alongside the River", the map showing the original street grid and layout of the city, including the Erie Canal running through the center. This map provides a glimpse into the early development of Rochester and the role of the Erie Canal in the city's growth as a major transportation hub.*

The map offers a fascinating glimpse into the early stages of the city's history and urbanization, emphasizing the significant role played by the Genesee River in shaping the city's urban landscape. It also showcases the importance of East Main Street in connecting different

parts of the city, which was particularly crucial during that time period. Overall, this map serves as a valuable historical artifact, providing valuable insights into the early years of Rochester's growth and development.

As observed by the author, the impact of waterfront development on land and zoning uses in Rochester has been an ongoing process, spanning over several decades. In 1880, the downtown area was primarily commercial, with several industrial sites located along the waterfront. However, by 1919, residential development had begun to encroach upon the waterfront, as the city began to prioritize the creation of more livable neighborhoods.

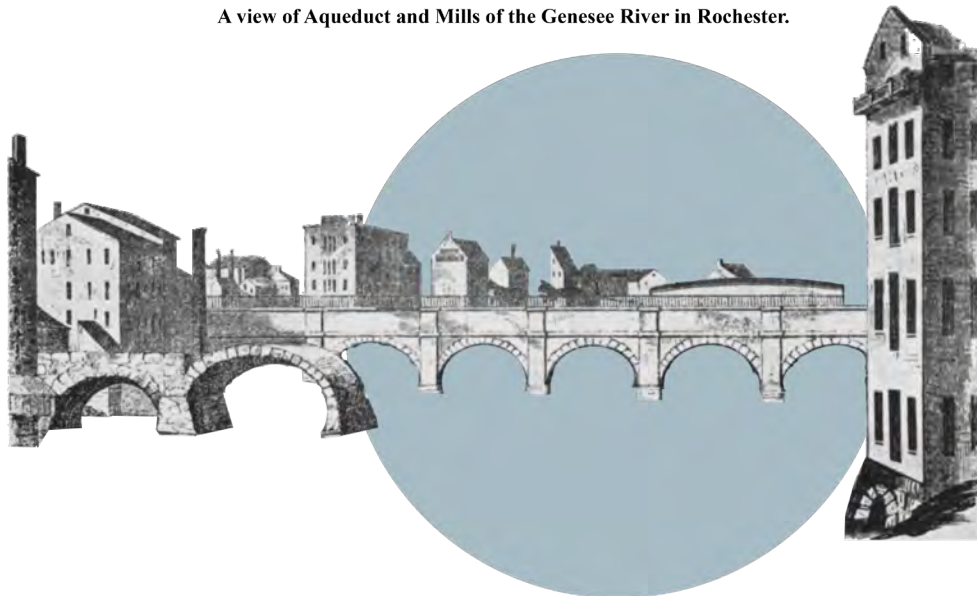
This trend continued into 1935, when significant efforts were made to redevelop the waterfront into a more recreational space, with the creation of parks and public access areas. Fast-forward to 2019, and the waterfront has become a focal point for tourism and economic development, with a variety of commercial, residential, and recreational uses. This transformation can be attributed to a combination of factors, including changes in land use policies, zoning regulations, and market demand.

In 1880, as shown in Figure 27, was a bustling city with a rapidly growing population. The downtown area was characterized by brick buildings and horse-drawn carriages on the streets. The Erie Canal, which ran through the city, was an important transportation hub, and businesses such as manufacturing, wholesale trade, and retail trade were thriving. The population was diverse, with a mix of recent immigrants and long-time residents.





**A view of Aqueduct and Mills of the Genesee River in Rochester.**



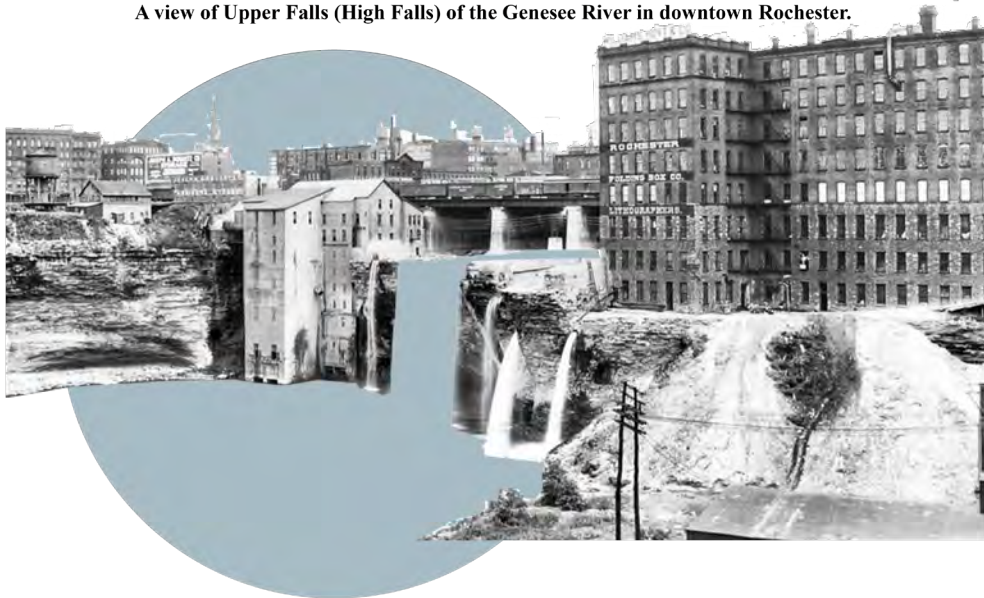
*Figure 27 Map of Rochester Downtown Waterfront Land Uses Diagram, 1880. Bottom image shown that bustling waterfront powered by the mills that drove the city's economy at that time. Illustrated by the author.*

In 1919, Rochester was in the midst of a period of growth and change. The city had become a major industrial center, as shown in Figure 28, with companies such as Kodak and Bausch & Lomb leading the way. The downtown area was characterized by large department

stores, theaters, and office buildings.



**A view of Upper Falls (High Falls) of the Genesee River in downtown Rochester.**



*Figure 28 Map of Rochester Downtown Waterfront Land Uses Diagram, 1919. Bottom image shown that fueling industrial growth through waterpower development at that time. Illustrated by the author.*

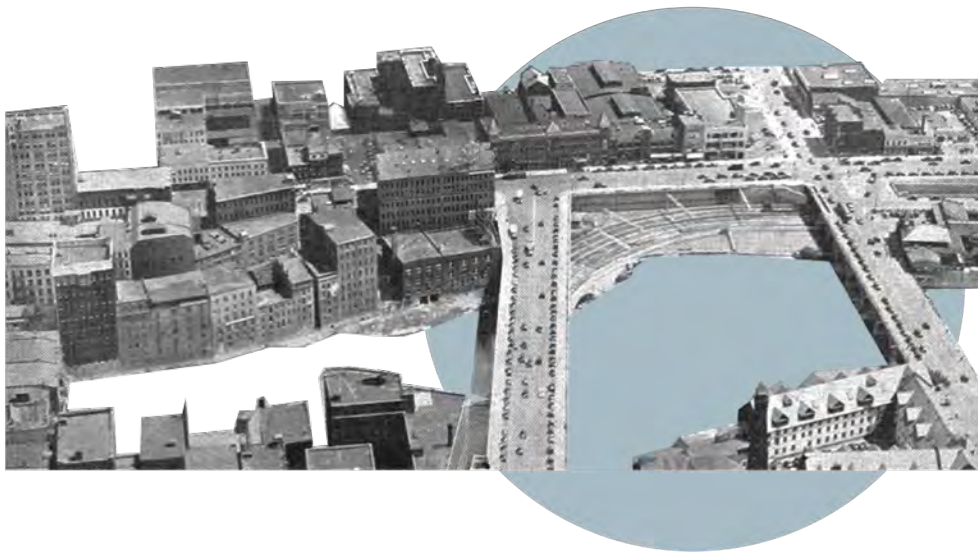
By 1935, the Great Depression had taken a toll on Rochester's downtown area, as shown



in Figure 29. The scene is dominated by post-industrial buildings and cars, a testament to Rochester's role as a manufacturing hub during the early 20th century.



**A view of Aqueduct and Mills of the Genesee River in Rochester.**



*Figure 29 Map of Rochester Downtown Waterfront Land Uses Diagram, 1935. Bottom image shown a Glimpse into Rochester Downtown area 1935, where factories, cars, and vacant lots dominated the waterfront scene.*

The city's location along the Genesee River made it an ideal location for factories, the area was heavily developed with industrial infrastructure. However, the presence of vacant land in the image suggests that Rochester's industrial boom had already begun to slow down by 1935.



A view of Upper Falls (High Falls) of the Genesee River in downtown Rochester.



*Figure 30 Map of Rochester Downtown Waterfront Land Uses Diagram, 2019. Bottom image shown challenges of downtown Rochester waterfront: lack of pedestrian-friendly infrastructure and a ghost town after commute hours."*

In 2019, as shown in Figure 30, the central city suffered from population decline, and the economy faced challenges, including a lower population and higher poverty rate compared to other metropolitan areas. The average homeowner rate was likely lower compared to the national average due to ongoing challenges with affordable housing.

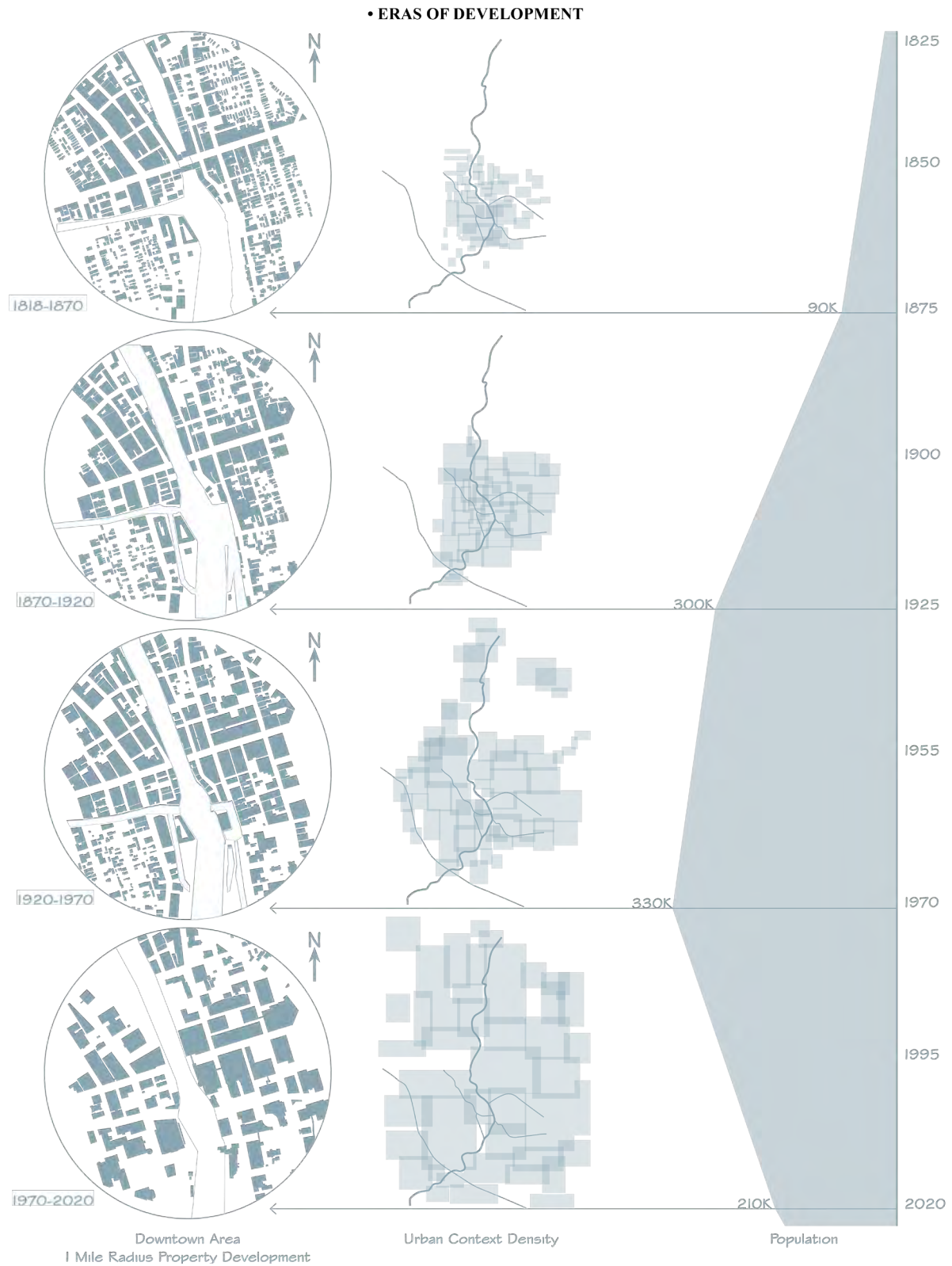
Due to the urban sprawl, the central business district in Rochester is no longer the home to a diverse range of industries, healthcare, education, and communities. In all, the urban waterfront development in Rochester has had a significant impact on the local population over the past century.

#### 4.2.2. Challenges During Its Post-Industrial Phase

Throughout its history, Rochester has faced a range of challenges in its post-industrial phase. Urbanization and immigration created a demand for factory labor in the early 19th century, and the population boomed as a result (as shown in Figure 31: 1818-1920).

However, competition and technological advancements led to factory closures and job losses by the late 1800s, and the population declined accordingly. The Great Depression further exacerbated economic struggles, with high unemployment and poverty rates (as shown in Figure 31: 1970-2019).

Revitalization efforts focused on urban renewal and attracting new industries and businesses, but economic and social disparities persisted, with concentrated poverty and racial segregation in certain neighborhoods.



*Figure 31 Eras of Development of Rochester Downtown Waterfront: Mapping Rochester's Evolution: The Nolli Plan and Population Shifts from 1880 to 2019. Image illustrated by the author.*

By 1919, the population density had increased significantly in the downtown area, as evidenced by the population shifted density map. The 1935 image of the waterfront shows the peak of the city's industrial era, with post-industrial buildings and factories dominating the area. However, as the economy changed and urban sprawl took hold, the waterfront area experienced a decline in the late 20th century. The 2019 photo of the downtown waterfront shows a lack of pedestrian-friendly infrastructure and a ghost town-like atmosphere after commute hours.

Overall, the impact of urban waterfront development on the local population has been significant, with both positive and negative consequences felt throughout Rochester's history. The historical progress of Rochester's urban development has indeed shown the negative impact of urban sprawl, which led to the dispersal of people and businesses away from the downtown area.

In more recent times, the rise of technology and globalization has challenged traditional industries and created new opportunities for innovation and entrepreneurship. Environmental concerns have also arisen as the impact of industry on the region's water and air quality has become apparent. Despite these challenges, community engagement and collaboration have proven critical for addressing complex issues and achieving sustainable progress. Ultimately, Rochester's history highlights the importance of adaptability, creativity, and resilience in the face of change and adversity.



#### 4.3. Evaluation of Rochester Downtown Waterfront Comprehensive Plans

The chapter will conclude evaluated comprehensive plans from Chapter 3.3.1. by summarizing the key findings and conclusions from the analysis of the previous and current comprehensive planning of the Rochester waterfront. This will provide a valuable resource for future efforts to revitalize the waterfront and ensure that it continues to be a vibrant and valuable asset for the city of Rochester and its residents.

##### 4.3.1. Rochester 2010

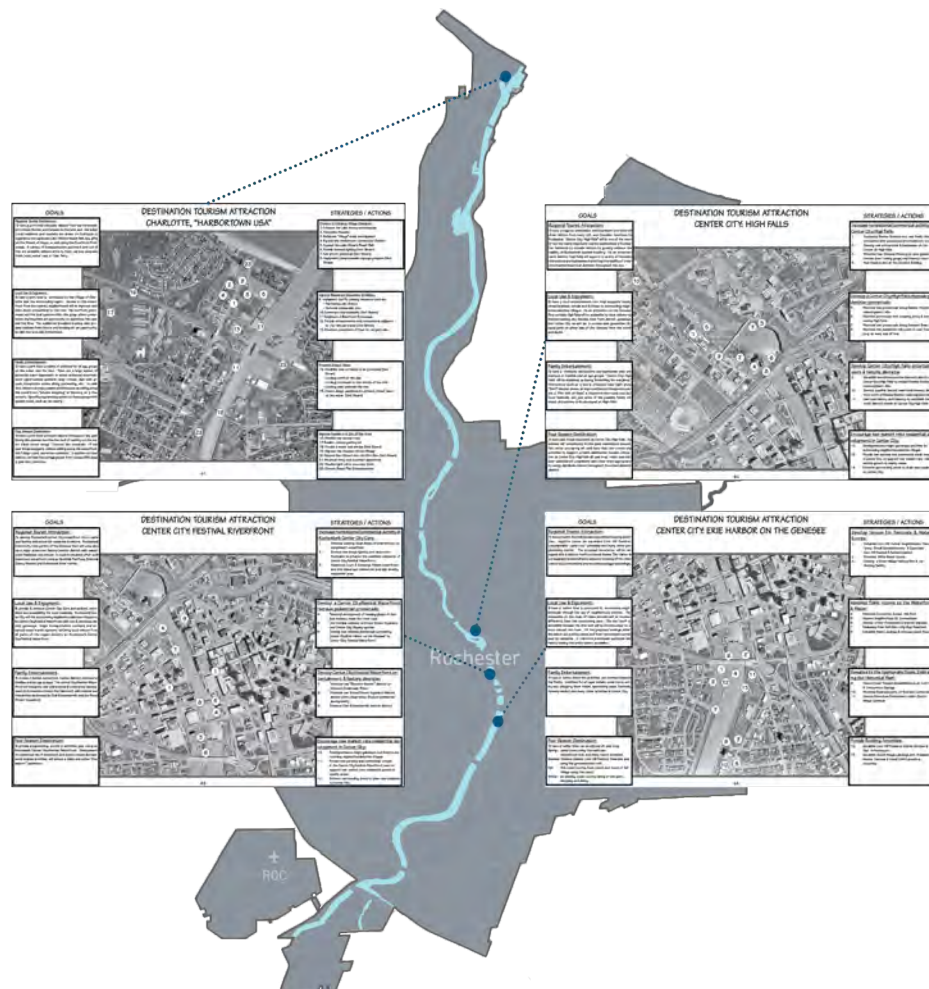


Figure 32 The image on the previous page showed the Rochester Renaissance Plan: Destination Tourism Attraction Goals & Strategies. The background image illustrated by the author clearly shows that the Downtown Waterfront was formally treated as a tourist destination during 1999. Original Documentation Images are captured from: *Rochester 2010: The Renaissance Plan*. 1999. [ebook] Rochester: Rochester City Council, p.58.

*The Rochester 2010: the Renaissance Plan*<sup>66</sup> was developed in the late 1990s and implemented in the early 2000s. The plan focused on revitalizing the city's downtown area, including the waterfront, through a variety of strategies such as public and private investment, beautification and infrastructure improvements, and the development of mixed-use projects. One of the key elements of the plan was the creation of a "cultural corridor" along the Genesee River as shown in Figure 32, which would feature a mix of cultural and entertainment venues, parks and open spaces, and mixed-use development. The plan also emphasized the importance of connecting the downtown area to the waterfront through the creation of new public access points and the development of a network of pedestrian and bicycle paths. The waterfront development goals of *the Renaissance Plan* then concluded into following aspects<sup>67</sup>:

- (1) Increased regional tourism in Rochester (regional tourism destination attraction).*
- (2) Improved image of Rochester and improved quality of life for Rochesterians (local use and enjoyment of resources).*
- (3) Leveraged, market-driven, private tourism development and increased job creation (family-entertainment driven).*
- (4) Protected and enhanced environmental, historic, and cultural resources along our waterfront (four-season destination concept).*

In a word, the Renaissance Plan vision the goals of the Rochester have led to a concern of the riverfront's development benefit to the city's future is potential as a tourism destination.

<sup>66</sup> City Council's publications about *Rochester 2010: the Renaissance Plan*. On the left is the original presentation document, promoted in January, 1999. On the right is the cover page of the document prepared by the City Rochester Bureau of Planning and zoning in July, 2014.

<sup>67</sup> *Rochester 2010: The Renaissance Plan*. 1999. [ebook] Rochester: Rochester City Council, p.60. Available at: <<https://www.cityofrochester.gov/WorkArea/DownloadAsset.aspx?id=21474837856>> [Accessed 25 February 2022].

#### 4.3.2. ROC the Riverway

The City Council of Rochester published the *ROC the Riverway Vision Plan*<sup>68</sup> in 2018, which outlined a comprehensive revitalization plan for the city's waterfront. It is a long-term initiative that aims to transform Rochester's downtown waterfront into a vibrant and livable space for both residents and visitors.

The plan includes the design of over twenty-eight sites along the Genesee River, including a variety of strategies to enhance the waterfront, such as creating new public access points, improving water quality, and developing new recreational opportunities. The goal of the plan is to promote healthy living and vibrant communities, improve human connectivity to the riverfront, reposition the downtown waterfront and create opportunities for economic revitalization. The plan also calls for the creation of a "destination district" along the river, as shown in Figure 33 which would feature a mix of commercial, residential, and cultural uses.



*Figure 33 The list below shows the funding breakdown for the 13 projects recommended for the initial \$50 million commitment from New York State. The plan focuses on improving connectivity and accessibility to the riverfront, promoting healthy living and active lifestyles, and creating new economic opportunities. The plan is designed to be implemented in two phases, with the first phase focused on building thirteen public recreation spaces, including parks, playgrounds, and bike paths. Image capture from the document, p.44-45.<sup>69</sup>*

<sup>68</sup> The ROC the Riverway initiative is a bold and progressive plan to revitalize the severely underutilized Genesee Riverfront in the core of Rochester, New York.

<sup>69</sup> ROC the Riverway Advisory Board on August 1, 2018, Phase 1 Vision Plan <https://cityofrochester.gov/roctheriverway/>.



The plan is divided into two phases, with the first phase focused on fundraising and building thirteen public recreation spaces, the government supports the plan as a comprehensive waterfront revitalization vision. The second phase of the plan will focus on the design and development of additional sites along the Genesee River, including natural trails, infrastructure and private land uses. The goal of this phase is to create a cohesive and connected waterfront that promotes healthy living, active lifestyles, and economic growth. The plan also includes detailed investigations and design recommendations for each site, ensuring that the project is sustainable and adaptable to the needs of the community.

#### 4.3.3. Rochester 2034

The design vision that the downtown waterfront would be oriented as a tourist connection has been refined in *Rochester 2034*<sup>70</sup>. The city's newest comprehensive plan, announced by Mayor Warren in 2019, has a fifteen-year period for the revitalization of the city of Rochester. *Rochester 2034* is a comprehensive plan that was developed through extensive community engagement, and it includes a range of policies and strategies aimed at improving the city's urban waterfront areas. The plan includes a chapter on "Waterfront Revitalization" that outlines the city's vision for the waterfront, including principles such as:

- *Creating vibrant and connected waterfront neighborhoods*
- *Promoting sustainable development and environmental stewardship*
- *Prioritizing public access and recreational opportunities*
- *Supporting economic growth and job creation*

<sup>70</sup> A TWO-YEAR PROGRESS REPORT: NOVEMBER 2021

The plan also includes specific strategies to achieve these goals, such as:

- *Creating a comprehensive waterfront development plan that includes public input and stakeholder engagement*
- *Prioritizing public access and recreation opportunities along the Genesee River and Lake Ontario*
- *Promoting sustainable development practices, such as green infrastructure and stormwater management*
- *Encouraging economic development through mixed-use development and public-private partnerships*

In the latest plan, the urban waterfront is highlighted in the Action Plan chapter with references to the LWRP (Local Waterfront Revitalization Program<sup>71</sup>) and *ROC the Riverway* and specifically indicates that the study of water quality and the Phase I construction of the waterfront are encouraged and expected by local communities.

The plan also mentions Lake Ontario, the Erie Canal, and the Genesee River as important natural water resources that need to be protected and maintained. At the same time, the wildlife and air quality within these waters should be promote with environmental concerned. While promoting the development of tourism routes, the new plan has a longer-term vision for the future of the waterfront with sustainability as future phases' concern.

#### 4.3.4. Evaluation of Comprehensive Plans

To evaluate the three comprehensive plans for Rochester, the author utilized a marking system to assign scores to each plan based on its impact on three key areas: environmental, social, and economic. The scoring system ranged from 1 to 3, with 1 indicating a low impact and 3

<sup>71</sup> The City of Rochester Local Waterfront Revitalization Program is a locally prepared comprehensive land and water use plan for the City's natural, public, and developed waterfront resources along the Genesee River and Lake Ontario.

indicating a high impact. The aim was to assess the plans holistically and identify their relative strengths and weaknesses in terms of their impact on these three critical areas.

The first category, environmental, assessed the plan's impact on the natural environment and sustainability efforts. The author evaluated the plans based on their efforts to reduce carbon emissions, improve air and water quality, promote green infrastructure, and reduce waste. The scoring in this category indicates the level of attention paid to environmental issues and the commitment of each plan to creating a sustainable future for the city.

The second category, social, assessed the plans' impact on the community, including social equity and public health considerations. The author evaluated the plans based on their impact on community cohesion, quality of life, access to amenities, and public health outcomes. The scoring in this category reflects the degree to which each plan addresses social issues and the extent to which it promotes equity, diversity, and inclusion.

The third category, economic, assessed the plan's impact on economic growth and development, including job creation and infrastructure improvements. The author evaluated the plans based on their potential to attract new businesses, create jobs, and stimulate economic growth. The scoring in this category reflects the degree to which each plan is geared towards economic growth and development.

By assigning scores to each plan based on these three categories, the author was able to compare and contrast the comprehensive plans for Rochester and draw conclusions about their relative strengths and weaknesses in each category. This approach allowed the author to evaluate

the plans holistically and make recommendations for improvements into Table 10 below.

*Table 10 Urban Waterfront Revitalization Efforts Evaluation of Rochester Comprehensive Plans*

<b>Plan</b>	<b>Environmental</b>	<b>Social</b>	<b>Economic</b>
<i>Rochester 2010</i>	1	1	3
<i>ROC the Riverway</i>	3	3	2
<i>Rochester 2034</i>	2	2	1

Rochester 2010: The comprehensive plan for Rochester in 2010 focused more on economic impact, with a high score of 3 in that category. It only had a score of 1 in environmental and social impact, which suggests that sustainable urban waterfront revitalization was not a primary focus.

ROC the Riverway: The comprehensive plan for the Rochester Riverway scored the highest in both environmental and social impact, with a score of 3 in each category. It also scored a 2 in economic impact, indicating that sustainable economic growth was a consideration.

Rochester 2034: The comprehensive plan for Rochester in 2034 scored a 2 in both environmental and social impact, indicating some consideration for sustainable urban waterfront revitalization. However, it only scored a 1 in economic impact, suggesting that sustainable economic growth was not a significant focus.

Overall, it is clear that the ROC the Riverway plan places the most emphasis on sustainable urban waterfront revitalization, with the highest scores in both environmental and social impact. However, all three plans could benefit from greater attention to sustainable economic growth.

#### 4.4. Current Status and Proposed Framework Analysis

The revitalization of Rochester's downtown waterfront has been an ongoing endeavor, with multiple proposals and frameworks introduced to guide the process. A proposed framework, which sets out a vision for the future of the waterfront area, has been instrumental in driving these efforts. As per the sustainable framework proposed in the previous chapter, data can be collected based on the environmental, economic, and social impacts.

##### 4.4.1. Environmental

##### 1) Improved Water Quality

The proposed sustainable urban waterfront framework is focused on improving the environmental, social, and economic impacts of the Rochester New York Downtown Waterfront area. In terms of environmental impact, one of the key factors to consider is the improvement of water quality in the Genesee Riverfront Downtown area. The Genesee River is an essential component of the Rochester waterfront area, providing recreational opportunities for residents and visitors alike.



*Figure 34 " Eew! Photos Document a Growing River of Trash." Photo and quotation from Rochester Subway website, July 24, 2013: <https://www.rochestersubway.com/topics/2013/07/eeeeew-genesee-river-of-trash/>*

However, the water quality of the river has been a concern due to high levels of pollution from industrial and agricultural sources, as shown in Figure 34. The implementation of the sustainable urban waterfront revitalization projects should focus on improving water quality in the river, as it can have a positive impact on both the environment and the community.

To achieve this, the proposed framework includes in-depth indicators such as water quality, which will be used to evaluate the current state of the Genesee Riverfront Downtown area and identify areas for improvement. Possible strategies to improve water quality include reducing the discharge of pollutants into the river, promoting the use of eco-friendly and sustainable practices, and restoring the river's natural habitats. These strategies can contribute to the restoration of the river's ecosystem, which can have a positive impact on the environment and provide recreational opportunities for residents and visitors.

The urban waterfront had been highlighted in the *Action Plan* chapter with references to the LWRP (Local Waterfront Revitalization Program)<sup>72</sup> and RTR (ROC the Riverway)<sup>73</sup> and had specifically indicated that the study of water quality and the Phase I construction of the waterfront were encouraged and expected by local communities. Specifically, concerning sustainability, the content had also mentioned Lake Ontario, the Erie Canal, and the Genesee River as important natural water resources that needed to be protected and maintained. The

<sup>72</sup> The Local Waterfront Revitalization Program (LWRP) is the official statement of land use and development policy for the city's waterfront areas. It was prepared by the City Planning Office and adopted by City Council in 1990. An update was completed in 2018, expanding the boundary of the plan to include all of the city's waterfront areas along Lake Ontario, the Genesee River and the Erie Canal. Accessed online: <https://www.cityofrochester.gov/LWRP/>.

<sup>73</sup> The ROC the Riverway program consolidates more than two dozen transformational projects along the Genesee River into a unified strategy. This will enable Rochester to better leverage the value of its riverfront. Accessed online: <https://www.cityofrochester.gov/ROCTheriverway/>.

planning and construction of water treatment and delivery had been based on not damaging the water quality of the local residents. This was because runoff from stormwater had been a water quality issue, especially in urban environments.

Also, the wildlife and air quality within these waters had been a concern. While promoting the development of tourism routes, the new plan had had a longer-term vision for the future of the waterfront with sustainability as future phases' concern. (Barton & Loguidice, DPC 2016) As could be seen, while promoting the development of tourism routes, the new plan had had a long-term vision for the future of the waterfront with sustainability as future phases' concern.

## 2) Energy Efficiency

Another factor to consider in improving the environmental impact of the Rochester New York Downtown Waterfront area is the implementation of green infrastructure. Green infrastructure, as shown in Figure 35, can include a range of sustainable features such as stormwater planters, rain gardens, and permeable pavements in parks and green spaces, which can help reduce stormwater runoff and improve water quality.



*Figure 35 Land Use Considerations & Context - Page 23, City of Rochester & Monroe County, Green Infrastructure Retrofit Manual.*

The proposed framework includes green infrastructure as one of the in-depth indicators for the environmental impact of the waterfront area. This indicator will be used to evaluate the current state of green infrastructure in the area and identify areas for improvement. Strategies to improve green infrastructure in the waterfront area can include the installation of rain gardens and permeable pavements in parking lots, and the implementation of green roofs on buildings. These strategies can help reduce the amount of runoff entering the Genesee River and improve water quality, while also providing other environmental benefits such as reducing the urban heat island effect.

### 3) Biodiversity: Tree Planting Strategies

Trees provide various economic benefits, such as increased property value and reduced energy costs. Monitoring the economic benefits in the area before and after the implementation of the tree planting strategy can provide evidence of its effectiveness. However, the city area like many cities in the United States, still has a tree equity problem due to the lack of plan.<sup>74</sup>

As shown in Figure 36, it presented there are more trees removed than planted in Rochester city area since 2014. To combat this, the city created the Reforest Rochester Fund in 2012, which has since helped to increase the city's tree canopy cover from 19% to 23%. Planting trees in urban areas provides multiple benefits, including increased property values, reduced energy costs, improved air quality, and reduced health risks.

<sup>74</sup> Democrat & Chronicle: Rochester's trees are celebrated, but not everyone gets to have their time in the shade. Accessed online: <https://www.democratandchronicle.com/in-depth/news/2022/04/05/rochester-urban-tree-canopy-reflects-deep-racial-and-social-divisions/9357541002/>.



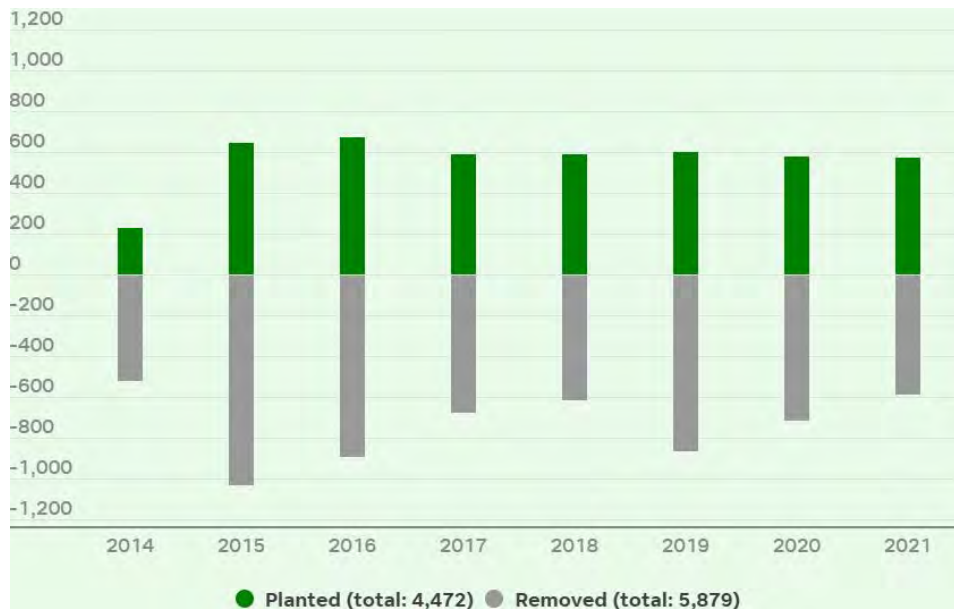


Figure 36 : Rochester's urban forest in decline with more trees removed than planted since 2014.<sup>75</sup>

Monitoring the economic benefits of tree planting can provide evidence of its effectiveness. Overall, the Reforest Rochester Fund has made significant progress in improving the city's urban forest.

#### 4) Sustainable Transportation: Percentage of Hybrid Buses

The percentage of hybrid buses is a measure of a municipality's investment in environmentally-friendly initiatives. By calculating the ratio of hybrid buses to total city buses, this measure shows how much the city is reducing greenhouse gas emissions and air pollution. In Rochester, the Regional Transit Service (RTS) has introduced 10 electric buses to its fleet, reducing GHG emissions by 905 metric tons per year.<sup>76</sup> Monitoring the percentage of hybrid buses can help Rochester's sustainable urban waterfront revitalization by ensuring that the city invests in eco-friendly transportation, which promotes clean air and a healthier community.

<sup>75</sup> Ibid.

<sup>76</sup> Rochester RTS celebrates first of 10 electric buses, <https://www.masstransitmag.com/bus/vehicles/hybrid-hydrogen-electric-vehicles/press-release/21157638/regional-transit-service-rt-rochester-rt-celebrates-first-of-10-electric-buses>

#### 4.4.2. Social

##### 1) Improved Public Access

Sustainable urban waterfront revitalization requires public access to the waterfront, which can provide residents with a sense of community and a space for recreational activities. Figure 37 shows the lack of access to the riverfront, which has been addressed with a more pedestrian-friendly proposal. The proposed project involves removing portions of the plaza to access the supporting garage roof slab underneath, performing concrete slab repairs, and replacing the waterproofing system.



*Figure 37 The current state of the plaza features stairs, a lack of landscaping, and limited accessibility entry points, making it difficult for some individuals to access and utilize the space. Accessed online: <https://www.cityofrochester.gov/ccpp/>.*

As shown in Figure 38, a new plaza will be designed and reconstructed to meet the current needs of the City's urban core and support downtown revitalization efforts. The new design will provide full ADA compliant accessibility and bicycle access by replacing stairs with ramps in strategic locations. Additionally, the Sister Cities Bridge will be updated with a new elevated flyover connection.<sup>77</sup>

<sup>77</sup> The City selected the design consultant team for the project through a Request for Proposal (RFP) process. The team consists



*Figure 38 The plaza reconstruction project aims to combine functionality with artistic waterfront design. Objectives include maximizing views of the river, improving pedestrian linkages, increasing safety by reducing vertical elements and adding lighting, providing full accessibility, and creating a lively atmosphere with user attractions and activity generators.<sup>78</sup>*

## 2) Cultural Preservation

Cultural programming can enhance the social impact of sustainable urban waterfront revitalization by promoting social cohesion and encouraging community engagement. The downtown Rochester waterfront area, with its rich cultural heritage and diverse community, offers a perfect venue for cultural events and activities.



*Figure 39 Plasticiens Volants' 2017 BIG BANG at Parcel 5 during the Fringe Festival. (Photo by Erich Camping). Accessed online: <https://rbj.net/2019/09/17/downtown-learns-to-morph-into-festival-city/>.*

of T.Y. Lin International Group, OLIN landscape architecture, urban design & planning, Environmental Design and Research, landscape architecture, engineering and environmental services, Highland Planning, LLC, and Bell & Spina Architects.

<sup>78</sup> Charles Carroll Plaza And Genesee Crossroads Parking Garage Roof Slab Reconstruction Project. Accessed online: <https://www.cityofrochester.gov/ccpp/>

As shown in Figure 39, is the Rochester Fringe Festival, a multi-day celebration of the arts that showcases the city's cultural diversity and attracts visitors from across the region. The festival has grown in popularity since its inception, with over 75,000 attendees in recent years.<sup>79</sup> Cultural events and festivals not only bring visitors and money to the area but also contribute to the municipality's cultural vitality and regional prestige. By retaining local money and interest, cultural events can also benefit the local economy.

### 3) Enhanced Community Cohesion

Social equity is another critical factor in the social impact of sustainable urban waterfront revitalization. As communities undergo revitalization, there is a risk of displacement or exclusion of certain groups, particularly low-income and minority communities. To ensure that sustainable urban waterfront revitalization benefits all residents, it is essential to prioritize social equity and inclusion in the planning process. According to official website from Rochester local department, during the public comment period for the May 2019 draft of *Rochester 2034*, a multitude of relevant comments pertaining to the downtown waterfront area were received (as shown in Figure 40), which were carefully reviewed and considered for the revision of the comprehensive plan.<sup>80</sup> While some comments fell outside the scope of the comprehensive plan, they were nevertheless deemed valid and will be transferred to other processes such as the Zoning Code rewrite and Parks Master Plan.

<sup>79</sup> Downtown learns to morph into Festival City, Dick Moss. Accessed online: <https://rbj.net/2019/09/17/downtown-learns-to-morph-into-festival-city/>.

<sup>80</sup> Public Comments on Initial Draft Rochester 2034, <https://rochester2034.com/>.





Figure 40 Community members share their feedback on the revitalization of downtown Rochester, providing valuable insights for future development plans. Image captured from official website: Rochester 2034.

It is noteworthy that these comments will also be brought to the attention of other departments in City Hall for use in programming or design processes, ensuring a thorough review process for sustainable evaluation of the Rochester downtown waterfront in the context of future planning and development. The Rochester downtown waterfront area has seen several

initiatives aimed at promoting social equity, such as the development of affordable housing units and the creation of community spaces that encourage participation and engagement among all residents.

#### 4.4.3. Economic

##### 1) Increased Property Value

Assessing the economic impact of urban planning and design in Rochester requires tracking and analyzing key indicators related to commercial property.

One such indicator is the change in the value of commercial property as shown in Figure 41, which reflects the state of the commercial real estate and property market in the municipality. Measuring and monitoring changes in commercial property values over time can provide insights into the effectiveness of local economic development efforts.

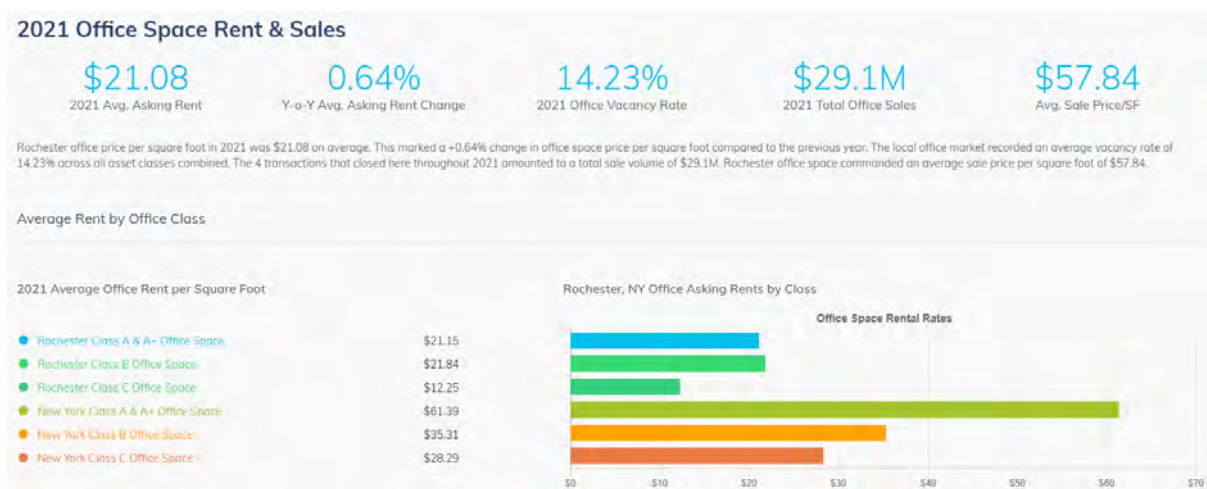
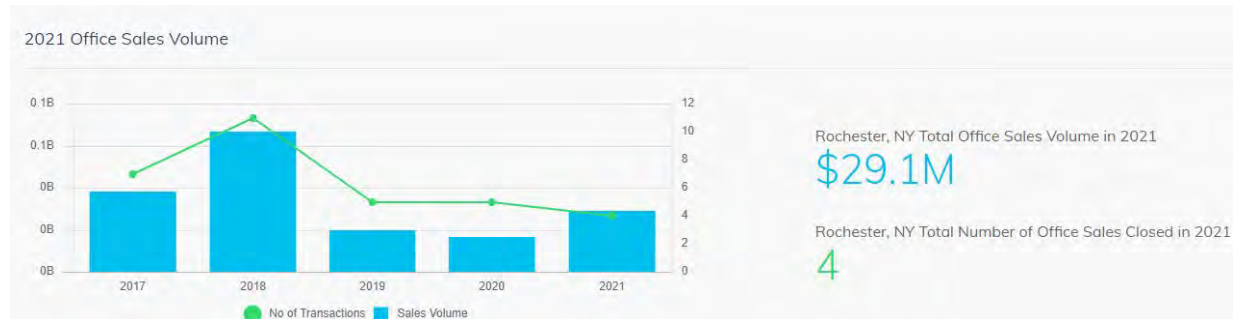


Figure 41 The current commercial real estate value in Downtown Rochester. This image captures the current value of commercial real estate in Downtown Rochester, providing insight into the real estate market and its impact on the local economy. Image captured online: <https://www.commercialcafe.com/office-market-trends/us/ny/rochester/>.

To gain a better understanding of the impact of urban planning and design on the local economy, it is important to track and analyze several specific indicators related to commercial property in Downtown Rochester. These include the current commercial real estate value, which can be captured through data on office space rent and sales in 2021.



*Figure 42 The image captures the fluctuations in office sales volume in Downtown Rochester between the years 2017 and 2021. The chart depicts the variations in the number of office sales in the downtown area over the four-year period. It is important to note that office sales volume is affected by various objective factors, such as market conditions, which should also be considered in any analysis. Image captured online: <https://www.commercialcafe.com/office-market-trends/us/ny/rochester/>.*

In addition, fluctuations in office sales volume from 2017 to 2021 in Figure 42 can help to reveal trends and patterns in the commercial property market. Finally, vacancy rates for commercial buildings in Rochester in 2021 can provide valuable insights into the demand for commercial property in the area. By tracking these key indicators over time, it is possible to identify any significant changes or deviations from previous trends, which may indicate the impact of Rochester's urban planning and design on local commercial property values and the economy. However, it is important to note that commercial property values are influenced by a wide range of objective factors, and that any changes observed may be the result of factors beyond the control of local planners and designers. Nevertheless, monitoring and analyzing these indicators can help to inform ongoing efforts to support economic development in the area.

## 2) Tourism

Tourism plays a crucial role in the economy of Rochester, New York, supporting various industries and generating significant revenue for the state and local government. The tourism report of Rochester, New York for 2017<sup>81</sup> shows the significant economic impact of tourism on the region. In that year, tourism generated \$1.1 billion in direct and indirect spending, supporting a total labor income of \$319 million and providing 13,881 jobs in the region. The state and local taxes generated by tourism were \$55.7 million and \$76.1 million, respectively. When comparing the 2017 report to the 2021 report, it's clear that the tourism industry in Rochester continues to have a significant impact on the local economy. In 2021 as shown in Figure 43, travelers spent \$1.3 billion in the region, supporting a total labor income of \$543.9 million and providing 15,240 jobs. The state and local taxes generated by tourism were \$53.1 million and \$81.5 million, respectively.

While the waterfront may not be the primary attraction for tourists in the region, the revitalization project has helped to make downtown Rochester a destination in its

### 2021 Economic Impact of Tourism

\*Financial figures are in millions



*Figure 43 Traveler Spending and Local Impact 2021: Analyzing the Economic Impact of Tourism in Rochester, New York"*

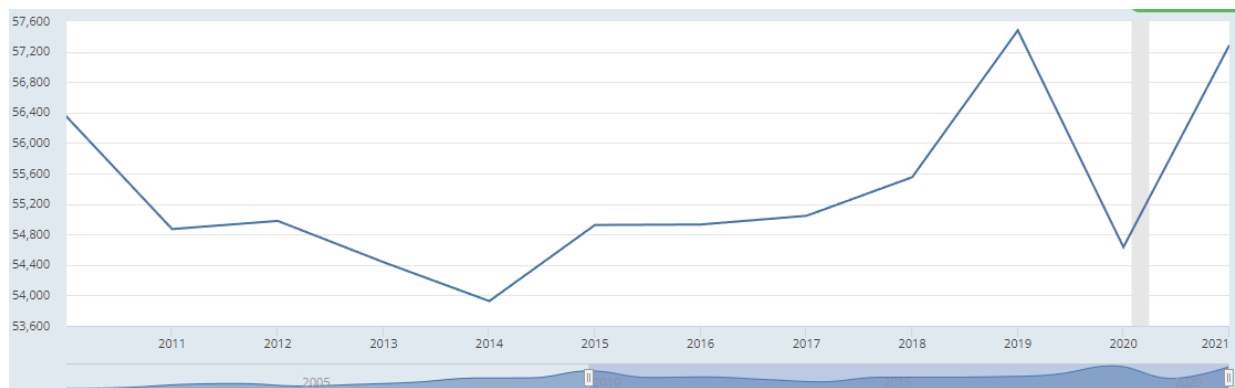
<sup>81</sup> Annual Report, Visit Rochester New York. Accessed online: <https://www.visitrochester.com/about-us/annual-report/>.



own right, contributing to the overall economic impact of tourism. By continuing to invest in sustainable development initiatives that support the tourism industry while also benefiting the local community, Rochester can ensure that the tourism industry continues to contribute to the long-term health and vitality of the region.

### 3) Sustainable Economic Growth

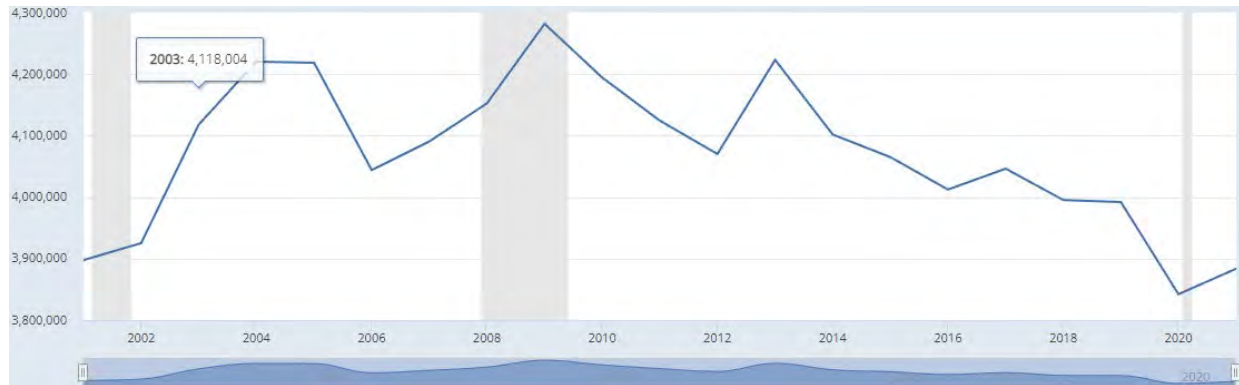
Monitoring real GDP can be an effective tool for evaluating the success of sustainable urban waterfront revitalization projects in Rochester. As the revitalization project progresses, it is important to track changes in real GDP to understand how the project is affecting the local economy. An increase in real GDP may indicate that the revitalization project is generating new economic activity, creating jobs, and improving the overall economic health of the area. On the other hand, a decrease in real GDP may indicate that the project is not having the intended impact and may require adjustments.



*Figure 44 This graph shows the change in real GDP over 10 years in Downtown Rochester, indicating a steady growth trend in economic production. The sustainable urban waterfront revitalization efforts in Rochester may have contributed to this positive economic impact.*

For example, as shown in Figure 44, Downtown Rochester 10 years GDP variations have been collected. And 10 years GDP change in Monroe County as shown in Figure 45. By using

real GDP as a measure of economic production, Rochester can evaluate the effectiveness of its revitalization efforts and make informed decisions about future development projects.



*Figure 45 This graph shows the percentage change in Real Gross Domestic Product (GDP) over 10 years in Monroe County, New York.*

In conclusion, the assessment of the current status and proposed framework analysis for the revitalization of Rochester's downtown waterfront highlights the ongoing nature of this endeavor. The introduction of a proposed framework has provided a vision and direction for the revitalization efforts. However, it is important to note that this analysis serves as a starting point and should be further developed and expanded in future evaluations.

The sustainable framework proposed in the previous chapter offers a comprehensive approach, emphasizing the collection of data on environmental, economic, and social impacts. This data-driven approach can provide valuable insights into the effectiveness of the revitalization initiatives, enabling informed decision-making and guiding future development strategies.

#### **4.5. Assessing the Rochester Downtown Waterfront Land Uses Efforts**

The assessment of the Rochester Downtown Waterfront Revitalization serves as a compelling case study that contributes to the proposed framework for evaluating sustainable development initiatives. While the specific categories of analysis, namely historical preserves, residential areas, public and community services, recreation and entertainment facilities, industrial and wild parks, and vacant spaces, may not be directly derived from the framework, they hold substantial importance for understanding urban planning and development in the context of waterfront revitalization, particularly in Rochester's downtown area.

By examining these distinct land uses, the author aims to delve into the intricate dynamics that influence the success and effectiveness of revitalization efforts. Categories such as historical preserves, residential areas, public services, recreation facilities, industrial parks, and vacant spaces hold importance for understanding waterfront revitalization in downtown Rochester. Examining these land uses reveals dynamics influencing revitalization success. Preservation of historical areas enhances culture and waterfront appeal. Analyzing residential areas uncovers population distribution and housing policy impacts. Evaluating public services and recreation facilities informs waterfront livability. Understanding ecological aspects of industrial and wild parks ensures environmental balance. Analysis of vacant spaces offers opportunities for adaptive reuse and innovative urban planning. This study provides insights for waterfront revitalization and sustainable development, aiming to guide future endeavors.

#### 4.5.1. Historical Preserves

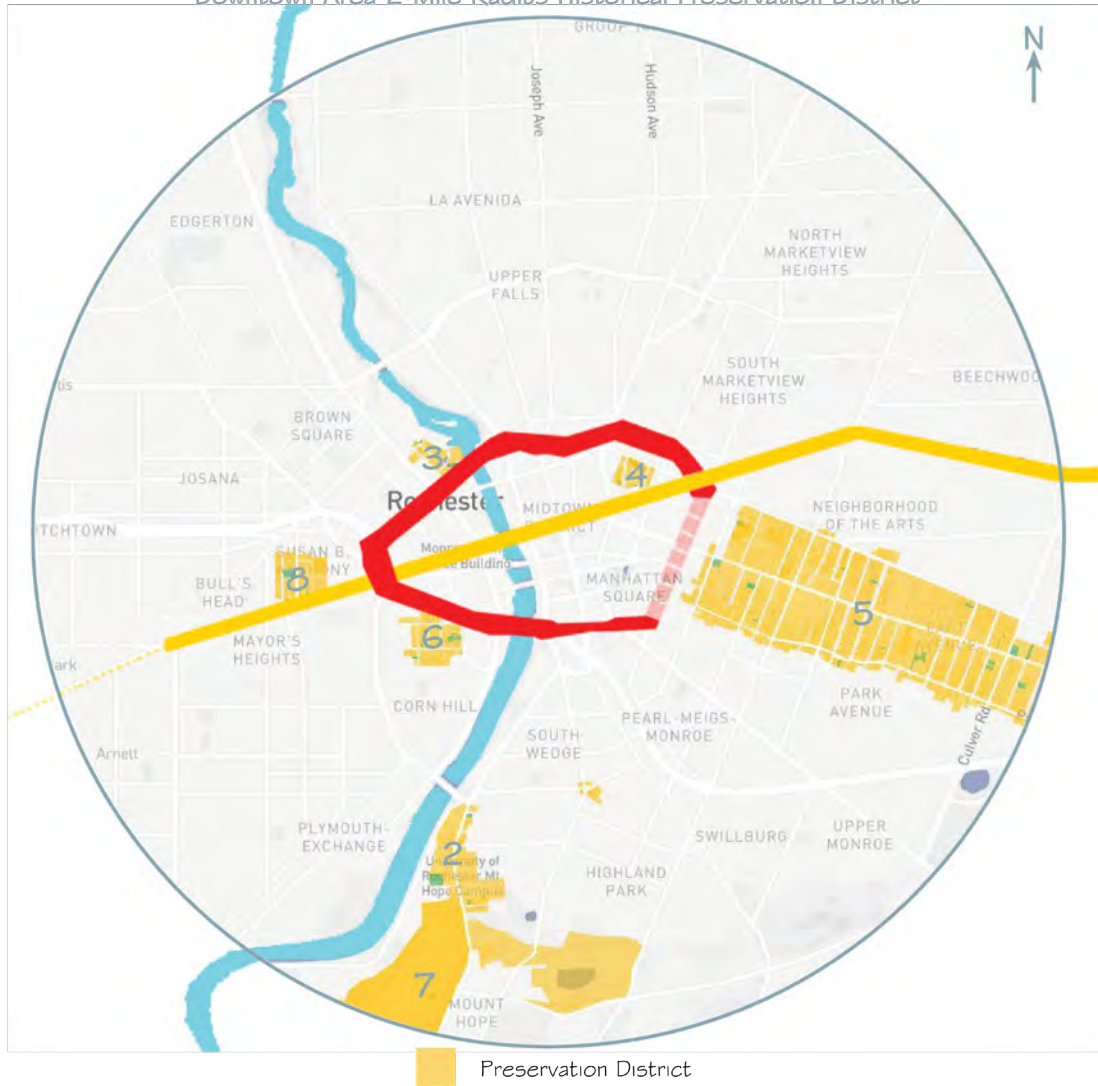
Some of the historic districts surrounding the downtown area of Rochester are not within comfortable walking distance, which may limit their potential as a cohesive part of the downtown revitalization effort. One reason for this may be the city's history of urban sprawl, which has resulted in a relatively low density of development and a greater reliance on cars for transportation.

Additionally, the distance between some of the historic districts and the downtown area may make it difficult to create a continuous pedestrian path system that incorporates all of the city's historic heritage. However, as noted before, there are some areas of the downtown Rochester that are closer to the riverfront and have a more cohesive historical character. These areas, such as Brown's Race, South Avenue, and Corn Hill, may be good starting points for a pedestrian path system that reconnect the downtown area to the city's historic heritage.

To fully develop the historical heritage of downtown Rochester, it may be necessary to find ways to overcome the barriers to pedestrian accessibility and connectivity between the different historic districts. This could involve measures such as improved infrastructure, such as pedestrian bridges or bike lanes, or the development of more public spaces and amenities that encourage walking and cycling. By creating a more connected and walkable downtown area, the city can help to promote the historical heritage of Rochester as a whole and make it more accessible and appealing to visitors and residents alike.

## • HISTORIC DISTRICT CHARACTER

### Downtown Area 2-Mile Radius Historical Preservation District



- |                   |                      |
|-------------------|----------------------|
| 1 [Beach Avenue]* | 5 [East Avenue]      |
| 2 [South Avenue]  | 6 [Corn Hill]        |
| 3 [Brown's Race]  | 7 [Mount Hope]       |
| 4 [Grove Place]   | 8 [Susan B. Anthony] |

"Walkable neighborhoods are typically characterized by having a range of community services within 5-10 minutes (0.25-0.5 miles) walking distance of residential areas which residents may access on foot."

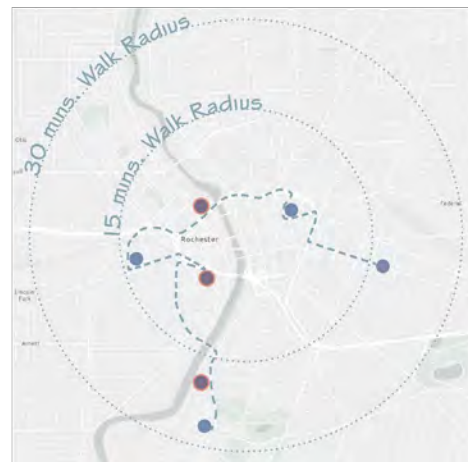


Figure 46 Mapping and visualization of historic district character in Rochester, New York.

The redevelopment of Rochester's downtown historical preservation area (as shown in Figure 46) comes with both advantages and disadvantages, and it is important to weigh these factors before making a decision. Here are some key findings on the advantages and disadvantages of this type of redevelopment:

- Advantages:

- 1) Preservation of historical buildings: By redeveloping the historical preservation area, the city can preserve its rich history and cultural heritage. This can attract tourists and visitors, who may be interested in learning about the city's past.
- 2) Increased economic activity: Redeveloping the historical preservation area can attract new businesses and investors to the area, creating jobs and increasing economic activity. This can also increase property values, which can benefit homeowners and local businesses.
- 3) Improved infrastructure: Redevelopment projects often involve improvements to infrastructure, such as roads, sidewalks, and public spaces. This can make the area more attractive to visitors and residents, and can improve the overall quality of life in the area.

- Disadvantages:

- 1) Displacement of residents and businesses: Redevelopment projects often involve the demolition of existing buildings, which can displace residents and businesses. This can be especially problematic if the redevelopment project is focused on luxury developments, which may not be affordable for low-income residents.
- 2) Loss of community character: Redevelopment projects can change the character of a community, which can be a concern for some residents. For example, if the historical preservation area is redeveloped into a modern and sleek business

district, it may lose some of its charm and appeal to visitors.

- 3) Environmental concerns: Redevelopment projects can have negative environmental impacts, such as increased traffic and pollution. It is important to consider these factors when planning a redevelopment project.

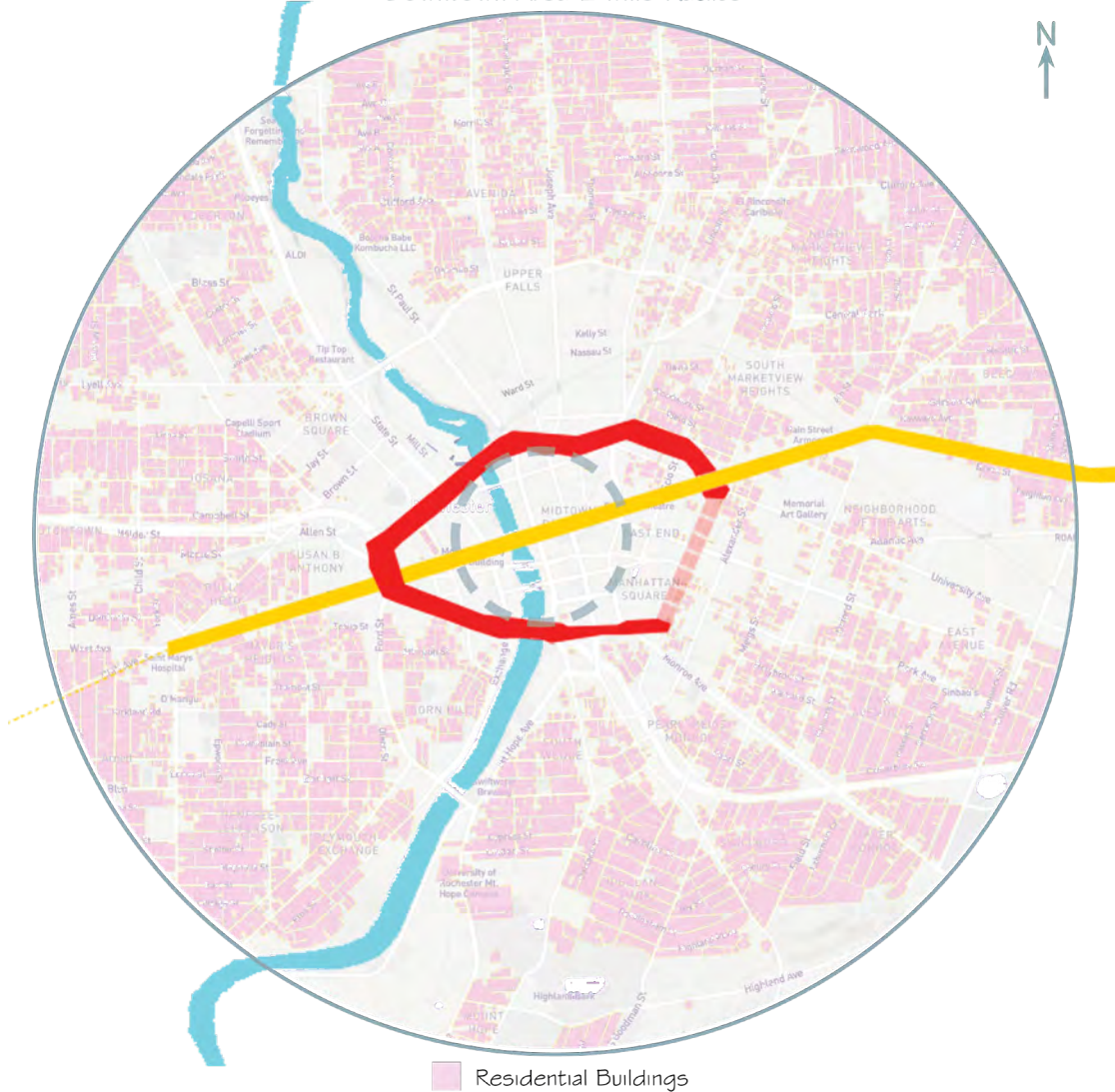
In conclusion, redeveloping Rochester's downtown historical preservation area can bring both advantages and disadvantages. It is important to carefully consider these factors before embarking on such a project, and to involve the community in the planning process to ensure that their needs and concerns are taken into account.

#### 4.5.2. Residential

The majority of local residential units are concentrated in the eastern and southern parts of downtown, with fewer residential properties in the western and northern sections. The lack of residential development in the central area could be due to a variety of factors, such as a lack of amenities, high property prices, or concerns about safety. However, the development of affordable rental apartment buildings in the inner loop could help to address some of these issues and encourage more people to live in the downtown area.

It may be useful to conduct a more detailed analysis of the residential land use in the downtown area, including factors such as property prices, crime rates, and access to amenities, to gain a better understanding of why there is currently limited residential development in this area. This could help inform future efforts to promote residential development and revitalize the downtown area.

• **LAND USE - RESIDENTIAL**  
Downtown Area 2-Mile Radius



*Figure 47 "Land use analysis of downtown Rochester within a 2-mile radius reveals gradual isolation of waterfront and northeastern residential areas."*

Analyzing the residential land use as shown in Figure 47 in the downtown area of Rochester involves studying the different types of housing units available, their spatial distribution, and the socio-economic characteristics of the residents who occupy them. This can provide insights into the area's housing market, affordability, and livability, as well as help identify potential areas for improvement. The majority of the residential units are concentrated in



the southern and western parts of the downtown area, while the northern and eastern parts are predominantly commercial and industrial.

The socio-economic characteristics of the downtown residents show a mix of income levels and backgrounds, including students, young professionals, and low-income households. However, the area has a higher concentration of low-income households compared to other parts of the city. Previous analysis reveals several challenges for the downtown area's residential land use, including affordability, gentrification, and a lack of community facilities and services. Addressing these issues requires a comprehensive and coordinated approach that involves various stakeholders, such as the city government, developers, community organizations, and residents.

Potential solutions to these challenges include providing more affordable housing options, preserving existing affordable housing units, improving public transportation and walkability, creating more public spaces and community services, and implementing policies to address gentrification and displacement. By addressing these challenges, the downtown area can become a more livable and equitable place for all residents. Redeveloping Rochester's downtown residential area can have both advantages and disadvantages, which need to be carefully analyzed before any significant changes are made.

- Advantages:

- 1) Economic Growth: Redeveloping the downtown residential area can attract new businesses and create jobs, which can help to boost the local economy. The

construction of new buildings and the redevelopment of historic structures can also bring in revenue and investment.

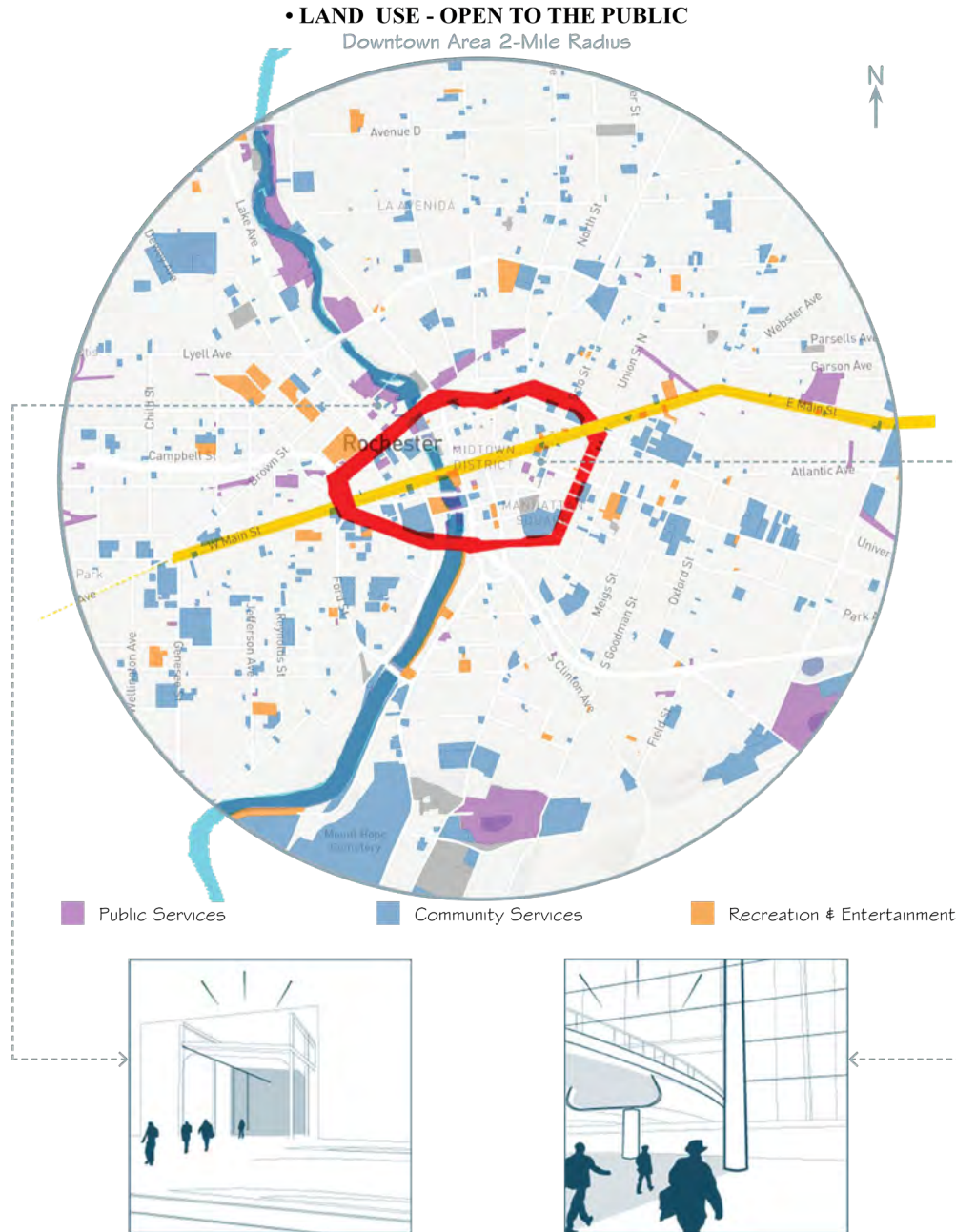
- 2) **Increased Housing Availability:** Redevelopment can help to increase the availability of housing in the downtown area, providing more affordable housing options for residents. This can also help to increase the diversity of the area and attract a more varied population.
  - 3) **Environmental Benefits:** Redeveloping the downtown residential area can have environmental benefits, such as reducing the carbon footprint of residents by promoting more sustainable practices like walking or cycling to work.
  - 4) **Improved Quality of Life:** Redevelopment can help to create a more vibrant and attractive downtown area, providing residents with a better quality of life.  
  
Improved public spaces and amenities can also enhance the livability of the area.
- **Disadvantages:**
- 1) **Displacement of Current Residents:** Redevelopment can lead to the displacement of current residents, particularly if the new developments are targeted towards higher-income residents. This can lead to gentrification and create social and economic inequalities.
  - 2) **Loss of Historic Buildings:** Redevelopment may require the demolition of historic buildings, leading to a loss of the city's heritage and character. This can be a significant loss to the community and could harm tourism and the cultural identity of the area.
  - 3) **Increased Traffic Congestion:** Redevelopment can lead to increased traffic congestion in the downtown area, which could harm air quality and public health. This could also create issues for emergency services in the area.
  - 4) **Cost:** Redevelopment can be expensive, and the cost of new developments may be passed onto residents in the form of increased rents or property prices. This could

make the area unaffordable for many current residents, exacerbating social and economic inequalities.

It is crucial to consider both the advantages and disadvantages before making any significant changes. The potential for economic growth, increased housing availability, environmental benefits, and improved quality of life must be balanced against the potential for displacement of current residents, loss of historic buildings, increased traffic congestion, and costs. Therefore, careful planning and consideration of all these factors are essential to ensure that redevelopment is carried out in a way that is equitable, sustainable, and beneficial for all members of the community.

#### 4.5.3. Public Services, Community Services, Recreation and Entertainment

There could be several reasons why people in Rochester only go to the downtown area for public services and community services rather than for recreational purposes. One reason could be that there is a lack of recreational facilities or entertainment options in the central business district (CBD) area, as shown in Figure 48. This could be due to a lack of investment in recreational infrastructure, a focus on commercial or residential development instead, or zoning regulations that prioritize other types of development. Overall, improving the availability of recreational facilities and entertainment options in the downtown area could help to attract more people to the area and create a more vibrant, livable city center. The limited public recreational areas in downtown highlight the need for continued investment in urban revitalization efforts.



*Figure 48 Mapping Rochester Downtown waterfront area within a 2-mile radius highlights public, community, recreational and entertainment properties lacking connectivity to the waterfront despite being open to the public.*

By prioritizing the creation and improvement of public spaces, the city can enhance the quality of life for its residents and attract more visitors to the area. Developing public recreational spaces in downtown Rochester offers several advantages, including:

- 1) Improved Quality of Life: Creating public recreational spaces in the downtown

area provides residents with easy access to green spaces, which can enhance their quality of life and promote a healthier lifestyle.

- 2) **Economic Benefits:** Investing in public recreational spaces can boost the local economy by attracting tourists, creating jobs, and generating revenue through increased spending.
- 3) **Social Cohesion:** Public recreational spaces can bring people together, fostering social interaction and promoting community cohesion.
- 4) **Environmental Benefits:** Developing green spaces in downtown Rochester can improve air quality, reduce noise pollution, and combat the urban heat island effect.

However, there are also several potential disadvantages associated with developing public recreational spaces in the downtown area, including:

- 1) **Limited Space:** The limited amount of available space in the downtown area can make it challenging to create large public recreational spaces, which can limit their effectiveness.
- 2) **High Costs:** Developing public recreational spaces in the downtown area can be expensive, and the costs associated with acquiring land and maintaining the spaces can be prohibitive.
- 3) **Maintenance:** Maintaining public recreational spaces can be challenging, and without proper care and upkeep, these spaces can quickly become unsightly and less desirable.
- 4) **Potential Conflicts:** Developing public recreational spaces can sometimes lead to conflicts between different stakeholders, such as developers, residents, and local government officials. These conflicts can arise due to differences in priorities, expectations, and goals for the spaces.

In conclusion, while developing public recreational spaces in downtown Rochester can bring numerous benefits, it is important to carefully weigh the advantages and disadvantages to ensure that any development is sustainable, effective, and beneficial for all stakeholders involved.

#### 4.5.4. Industrial, Wild and Public Parks, Unknown

Historically, the Rochester waterfront was a hub for industrial activity, with various factories, warehouses, and other industrial facilities located along the Genesee River. This would create new economic opportunities and help to transform the area into a thriving, sustainable, and accessible community.

As shown in Figure 49, some wild and forested land can also be used for environmental restoration projects, such as wetland restoration, to enhance the area's ecological value. There are also areas of unknown land use on the Downtown Rochester waterfront, which require further investigation. These areas may be underutilized, abandoned, or have potential for redevelopment.

The urban waterfront revitalization project can use the findings of the land use analysis to inform the project's goals, strategies, and implementation plans. The project can prioritize mixed-use development on industrial land, preserving natural areas for recreational and environmental purposes, and investigating unknown land uses for redevelopment opportunities. The redevelopment of Rochester's downtown has the potential to bring about significant advantages and disadvantages in terms of its impact on the industrial, wild, and public park areas of the city.



*Figure 49 Limited building usage, lack of winter activities, and proximity to industrial lands restrict both pedestrian and transportation access.*

Here are some key findings on the advantages and disadvantages of redeveloping Rochester's downtown:

- Advantages:

- 1) Increased Economic Activity: Redevelopment of the downtown area has the potential to attract new businesses and industries, creating jobs and increasing

economic activity in the city. This can lead to increased tax revenues and other economic benefits for the city and its residents.

- 2) **Improved Quality of Life:** Redevelopment can also lead to the creation of new public parks and green spaces that can be enjoyed by residents and visitors alike. These spaces can provide opportunities for recreation, relaxation, and community gatherings, improving the overall quality of life in the city.
  - 3) **Environmental Benefits:** Redevelopment can lead to the restoration and preservation of wild areas and ecosystems, helping to protect natural habitats and improve air and water quality in the city.
- **Disadvantages:**
- 1) **Displacement of Existing Industries:** Redevelopment may lead to the displacement of existing industries and businesses that may be unable to afford the higher costs of doing business in the newly developed downtown area. This can result in job losses and economic instability for some residents.
  - 2) **Loss of Natural Areas:** Redevelopment may lead to the loss of natural areas and wild spaces that may be important habitats for wildlife or serve as important recreational areas for residents. This loss of natural areas can also have negative impacts on the environment and ecosystem of the city.
  - 3) **Unknown Effects:** There may be unforeseen consequences of redevelopment that are difficult to predict, such as changes in the social fabric of the city or unintended environmental impacts. These unknown effects can be difficult to anticipate or mitigate.

In conclusion, the redevelopment of Rochester's downtown has both advantages and disadvantages in terms of its impact on the industrial, wild, and public park areas of the city.

While redevelopment has the potential to bring about significant economic, social, and



environmental benefits, it can also lead to displacement, loss of natural areas, and unforeseen consequences that are difficult to predict. It is important for city planners and developers to carefully consider these factors and engage with community stakeholders to ensure that the benefits of redevelopment are shared equitably and the negative impacts are minimized.

#### 4.5.5. Vacant

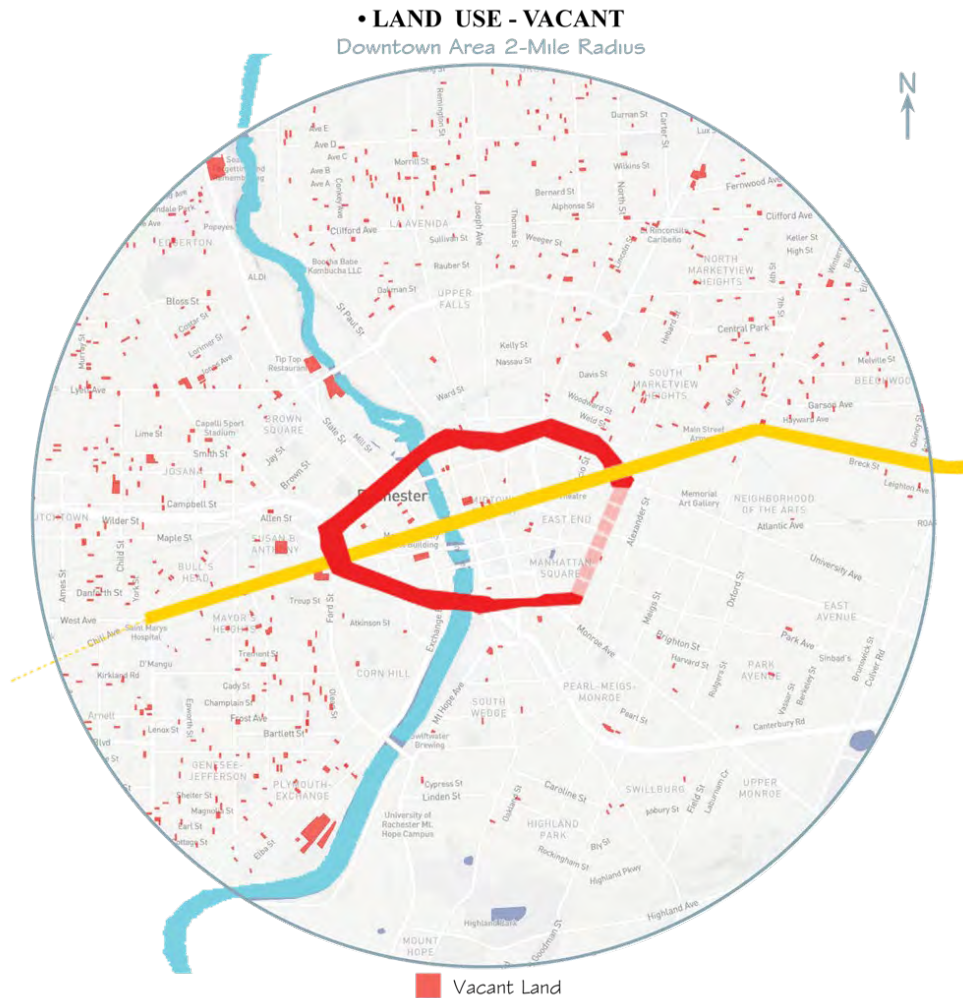
Rochester's downtown area has a significant amount of vacant land that has remained unused for a long time. The reasons for this vacancy may vary, including economic decline, urban renewal, deindustrialization, and a lack of interest from developers. The large number of vacant lands in the downtown area is concerning as it limits the opportunities for growth and development in the region. One of the significant impacts of vacant lands is that they often become the site of illegal dumping, crime, and other negative activities. These effects can spill over into neighboring areas, impacting the overall safety and well-being of the community. Additionally, vacant lands often become a breeding ground for rodents and other pests, which can be a health hazard for nearby residents. When property values decrease, developers may be less likely to invest in the region, leading to a further decline in the local economy.

However, vacant lands can also present opportunities for revitalization and growth. For example, they can be repurposed into community gardens, parks, or other public spaces that promote social interaction and recreation. Furthermore, developers can use these lands to build affordable housing, businesses, and other commercial enterprises that can create jobs and

improve the local economy. Some possible uses for vacant land near the waterfront include:

- *Public green space:* The creation of public parks and green spaces along the waterfront can enhance the attractiveness of the area, and offer residents and visitors a place to relax and enjoy the scenery.
- *Mixed-use development:* A mix of commercial and residential development can help attract businesses and people to the area. Mixed-use development can also contribute to a vibrant and diverse community.
- *Water-based activities:* Waterfront areas are perfect for water-based activities such as boating, fishing, kayaking, and paddleboarding. The development of marinas and boat launches can help encourage water-based activities and add to the attractiveness of the area.

To address the issue of vacant lands in Rochester's downtown area as shown in Figure 50 next page, policymakers must identify the underlying factors contributing to the problem and develop strategies to incentivize investment in these areas. This might include tax credits, zoning changes, or other incentives to encourage developers to invest in these lands. Moreover, the city could work with community organizations to clean up and maintain these spaces, making them more attractive for development. Additionally, the city could explore public-private partnerships that can leverage the resources of both the public and private sectors to redevelop these lands.



*Figure 50 Map highlighting the 2-mile radius of Rochester's downtown waterfront area, depicting the extensive amount of vacant land that has remained unutilized for a significant period. These empty spaces present an untapped potential for development and revitalization efforts.*

The redevelopment of Rochester's downtown vacant areas can have both advantages and disadvantages. Here are some key findings on the advantages and disadvantages of redeveloping these areas:

- Advantages:

- 1) **Economic Development:** Redeveloping vacant areas can attract new businesses and investment to the area, which can create new jobs and increase economic activity. This can result in increased tax revenue for the city and a boost to the

local economy.

- 2) **Increased Property Values:** Redevelopment projects can increase property values in the surrounding area, which can be beneficial for property owners and can result in increased tax revenue for the city.
  - 3) **Improved Aesthetics:** Vacant areas can be eyesores and can negatively impact the surrounding community. Redevelopment projects can help to improve the aesthetics of the area and make it more attractive to residents and visitors.
  - 4) **Environmental Benefits:** Redevelopment projects can also have environmental benefits, such as improving water quality, reducing pollution, and increasing green space in the area. This can result in a healthier and more sustainable environment for residents.
- **Disadvantages:**
- 1) **Displacement of Residents:** Redevelopment projects can lead to the displacement of existing residents who may be unable to afford the higher property values or rents that result from the project. This can result in the loss of community cohesion and the displacement of vulnerable populations.
  - 2) **Gentrification:** Redevelopment projects can also lead to gentrification, where an influx of new residents and businesses drives up property values and rents, making the area unaffordable for many long-time residents. This can result in the loss of the area's character and cultural heritage.
  - 3) **Cost:** Redevelopment projects can be expensive, and the cost may be passed on to residents in the form of higher taxes or fees. This can be a burden on lower-income residents who may not be able to afford the additional costs.
  - 4) **Time and Planning:** Redevelopment projects can take a long time to plan and execute, and delays can be costly. It can also be difficult to balance the needs and desires of different stakeholders in the planning process.

In conclusion, the redevelopment of Rochester's downtown vacant areas has both advantages and disadvantages. While redevelopment projects can bring economic, social, and environmental benefits, they can also lead to displacement, gentrification, increased costs, and time-consuming planning processes. It is important to carefully consider the potential impacts of redevelopment projects and to engage with all stakeholders to ensure that the benefits are shared by all members of the community.

## **CHAPTER 5. CONCLUSION AND RECOMMENDATIONS**

## **CHAPTER 5. CONCLUSION AND RECOMMENDATIONS**

### **5.1. Summary of the Findings**

Urban waterfront revitalization efforts have the potential to bring significant positive changes to communities. This study has delved into the importance of urban waterfront revitalization and identified key factors that contribute to successful projects. It highlights that sustainability, connectivity, design, aesthetics, and community engagement are critical elements that enhance the success of such endeavors.

Through an analysis, evaluation, and comparison of Rochester's downtown waterfront revitalization efforts with other successful projects, this study has assessed their effectiveness. The author believed that, the evaluation of Rochester's downtown waterfront revitalization efforts has served as a starting point for assessing their effectiveness. While there is still room for improvement, the initiatives have shown positive outcomes, including economic development, the creation of public spaces, and improved quality of life for residents. These efforts have promoted economic development, created new public spaces, and improved the quality of life for residents.

To ensure continued progress, the study recommends that communities embrace sustainable practices aimed at minimizing environmental impact while maximizing community benefits. This entails the adoption of renewable energy sources, the creation of green spaces, and the promotion of sustainable transportation options. Additionally, fostering strong connections between the waterfront and surrounding areas through public transportation, pedestrian

walkways, and bicycle paths is crucial to enhancing the revitalization process.

The research question this paper attempts to address is, what are current trends in sustainable waterfront development and how successful has Rochester, NY been in considering or implementing them in its ongoing revitalization efforts?" This paper proposed a framework based on current trends to be used for measuring waterfront developments and to be applied to Rochester, New York's efforts. It was supplemented by comparing it to nearby Buffalo's successful redevelopment efforts. Rochester has had no less than three riverfront development initiatives. Thus this paper endeavored to holistically assess their combined success. All three of the initiatives broadly addressed the proposed model's criteria; environmental, economic, and social measures. Each initiative has favored one factor over others but in combination a balance has been achieved. As a result, progress has varied and has been uneven. This is understandable since the riverfront is quite lengthy and traverses infrastructure challenges along its entire length. One could characterize progress measured by the proposed framework as on target and slow but steady.

In conclusion, by adhering to sustainable principles and prioritizing community engagement, Rochester's downtown waterfront revitalization efforts are on track to realizing their objectives. However, ongoing evaluation and continuous improvement are necessary to ensure long-term success. By embracing the identified trends and capitalizing on the city's post-industrial history, Rochester can continue its journey towards a revitalized waterfront that serves as a model for sustainable urban development.



## 5.2. Limitations of the Study

This study aims to promote a comprehensive analysis of the downtown Rochester waterfront revitalization efforts and their impact on the local community and economy. However, it is essential to acknowledge the limitations of the study.

- *Data Availability:* The availability of data is a major limitation of the study. Some data relevant to the study may not be available or may not have been collected in a consistent manner. This can limit the depth and scope of the analysis and potentially affect the accuracy of the results.
- *Data Analysis Method:* The data analysis method used in this study is limited to secondary sources and may not provide a comprehensive view of the situation. This may affect the accuracy of the results and the conclusions drawn from the analysis.
- *Representativeness:* The downtown Rochester waterfront is used as a case study in this research. The findings and conclusions of this study may not be representative of the whole urban waterfront revitalization plan.
- *Simplification of Complex Issues:* Analyzing the advantages and disadvantages of redevelopment projects may oversimplify complex issues that may be difficult to fully understand or quantify. The impact of a redevelopment project may vary depending on specific circumstances, and a nuanced understanding of the issues involved may be necessary to make informed decisions.

- *Limited Scope*: An analysis of the advantages and disadvantages of redevelopment projects may focus primarily on economic or environmental factors, while neglecting social or cultural impacts. This can result in a limited understanding of the potential consequences of a project.
- *Uncertainty*: Predicting the impact of a redevelopment project can be challenging, as there may be unforeseen consequences that cannot be anticipated. This can make it difficult to accurately assess the advantages and disadvantages of a project.
- *Stakeholder Perspectives*: The perspective of different stakeholders, such as residents, business owners, and government officials, may differ on the advantages and disadvantages of a redevelopment project. It can be challenging to reconcile these differing perspectives and to ensure that all stakeholders are represented in decision-making processes.

In conclusion, although these limitations exist, this study provides a potential contribution to the understanding of urban waterfront revitalization and its impact on the local community and economy. By studying the case studies of urban waterfront revitalization, the author gained fundamental understanding of the complex and multifaceted process of transforming underutilized waterfront areas into vibrant and sustainable public spaces. These insights may also be valuable for policymakers, urban planners, developers, and community members who are working to revitalize their own waterfront areas.

### **5.3. Recommendations For Future Revitalization Efforts**

The revitalization of urban waterfronts is crucial for the growth and development of cities, providing benefits such as improved quality of life, increased economic activity, and enhanced environmental sustainability for the local community. This thesis paper examines the case of downtown Rochester waterfront and evaluates the strategies employed for its revitalization. The author recognizes that urban planning and sustainable revitalization are complex issues that require careful consideration and planning. Lessons learned from the case of downtown Rochester waterfront and other cities demonstrate the potential for successful revitalization efforts, but also the challenges that need to be addressed. The findings reveal significant insights into the potential benefits and challenges of urban waterfront revitalization.

As part of future project evaluation, the author proposes to conduct a survey to gather the opinions and perspectives of the residents in the downtown area of Rochester, New York. The revitalization efforts in Rochester downtown waterfront have aimed to promote economic development, create new public spaces, and improve the quality of life for residents. It is important to assess whether these efforts have been successful and to identify areas for improvement. The opinions and perspectives of the residents are of paramount importance in evaluating the impact of the revitalization efforts on the urban waterfront. They are the ones who experience the changes on a daily basis and can provide valuable insights into the effectiveness of the efforts made (Survey B can be locate in Appendix B). The survey will be designed to gather data on various aspects of the revitalization efforts, such as the accessibility of public

spaces, the impact on local businesses, and the quality of life for residents. The first part of the survey aimed to gather general information about the stakeholders and their understanding of the urban waterfront in Rochester. The second part of the survey consisted of more in-depth questions, aimed at those with a greater interest in the current and future revitalization projects in the urban area.

The results of the survey will be used to inform future revitalization efforts in Rochester downtown waterfront and to evaluate the effectiveness of the current efforts. The author hopes that the survey will provide valuable information to city planners, policymakers, and other stakeholders in their efforts to create vibrant and sustainable urban waterfront communities. The survey consisted of two parts, designed to gather a comprehensive understanding of the stakeholders' information and their views on the urban waterfront in Rochester.

The author believes that findings from the community survey will play a crucial role in the future as they offer a critical evaluation of the revitalization initiatives from the viewpoint of the local community. These results will be compared and contrasted with the findings from the visual analysis, to promote a comprehensive and integrated understanding of the revitalization efforts and their impact on the downtown area of Rochester to concerned department in the future.

In summary, downtown Rochester waterfront has experienced successful revitalization efforts that have attracted new businesses and residents, increased economic activity, and created opportunities for recreational activities. However, challenges such as gentrification and a lack of

infrastructure improvements still need to be addressed to ensure continued success. Comparison with other cities that have undergone waterfront revitalization shows that while downtown Rochester has made significant progress, challenges still remain.

Overall, comprehensive and well-planned approaches are necessary for the complex and multifaceted process of urban waterfront revitalization. By learning from the experiences of downtown Rochester waterfront and other cities, cities can continue to revitalize their waterfronts and create sustainable, inclusive, and thriving communities. Indeed, the author acknowledges that there are limitations to this study, the further research is necessary to fully understand the complexities of urban waterfront revitalization. In the end, the author feels respectful towards the efforts of those involved in the revitalization of downtown Rochester waterfront and hopes that this study can be helpful and inspiring to others.

## APPENDIX A: SURVEY A

\* All your information will be anonymous.

\*\* Your input will help us better understand the needs and preferences of our community regarding urban waterfront development and revitalization.

For each item listed below, please rate its importance and performance as related to the revitalization of the downtown waterfront in Rochester, New York, from your perspective as a **[resident, merchants, tourist, or prefer not to say]**.

### 1. Historical preservation:

#### a. Importance:

- 1 = Not Important
- 2 = Somewhat Important
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

#### b. Performance:

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent

### 2. Economic development:

#### a. Importance:

- 1 = Not Important
- 2 = Somewhat Important
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

#### b. Performance:

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent

**3. Residential development:**

a. Importance:

- 1 = Not Important
- 2 = Somewhat Important
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

b. Performance:

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent

**4. Access to the waterfront:**

a. Importance:

- 1 = Not Important
- 2 = Somewhat Important
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

b. Performance:

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent

**5. Public spaces and amenities:**

a. Importance:

- 1 = Not Important
- 2 = Somewhat Important
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

b. Performance:

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent

**6. Environmentally sustainable design:**

a. Importance:

- 1 = Not Important
- 2 = Somewhat Important
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

b. Performance:

- 1 = Poor
- 2 = Fair
- 3 = Good
- 4 = Very Good
- 5 = Excellent

\* Thank you again for your participation in this survey. Your input is invaluable to our community and will help us create a better and more vibrant urban waterfront area for current and future generations.

\*\*Thank you for participating in this survey! Your input is greatly appreciated as my research to study the revitalize the downtown waterfront in Rochester, New York.



## **APPENDIX B: SURVEY B**

\* All your information will be anonymous.

\*\* Your input will help us better understand the needs and preferences of our community regarding urban waterfront development and revitalization.

### **1. What is your age group?**

- a. 18-24   b. 25-34   c. 35-44   d. 45-54   e. 55 and above   f. prefer not to say

### **2. How long have you lived in this community?**

- a. Less than 5 years   b. 5-10 years   c. 11-15 years   d. 16-20 years   e. More than 20 years

### **3. Do you visit the urban waterfront area frequently?**

- a. Yes   b. No   c. Occasionally

### **4. How important is the waterfront area to you as a community member?**

- a. Very important   b. Somewhat important   c. Not very important   d. Not important at all

### **5. What activities do you engage in when you visit the urban waterfront area?**

- a. Walking or jogging  
b. Picnicking  
c. Boating or fishing  
d. Dining or shopping  
e. Other (please specify) \_\_\_\_\_

### **6. In your opinion, what are the main issues affecting the urban waterfront area in your community?**

- a. Environmental pollution  
b. Lack of public facilities  
c. Lack of accessible public transportation  
d. Lack of safety measures  
e. Other (please specify) \_\_\_\_\_

- 7. What changes would you like to see in the waterfront area in the future?**
- a. Increased public facilities and amenities
  - b. Improved environmental quality
  - c. Better access to public transportation
  - d. Increased safety measures
  - e. Other (please specify) \_\_\_\_\_
- 8. How likely are you to participate in revitalization projects for the urban waterfront area?**
- a. Very likely
  - b. Likely
  - c. Not likely
  - d. Not at all likely
- 9. What would encourage you to participate in revitalization projects for the urban waterfront area?**
- a. Increased public facilities and amenities
  - b. Improved environmental quality
  - c. Better access to public transportation
  - d. Increased safety measures
  - e. Other (please specify) \_\_\_\_\_
- 10. How important do you think it is to preserve the historical and cultural heritage of the urban waterfront area for future generations?**
- a. Very important
  - b. Somewhat important
  - c. Not very important
  - d. Not important at all

\* If you would like to help with the further informative questionnaire, please go to the following pages. Thank you very much for your time and patience.

**11. What types of businesses and amenities would you like to see in the urban waterfront area?**

- a. Restaurants and cafes
- b. Retail shops and boutiques
- c. Parks and open spaces
- d. Community events and activities
- e. Other (please specify) \_\_\_\_\_

**12. How important is access to public transportation in the downtown waterfront area to you?**

- a. Very important
- b. Somewhat important
- c. Not very important
- d. Not important at all
- e. Prefer not to say

**13. Are there any specific areas in the waterfront area that you think should be preserved or protected?**

- a. Natural habitats or ecosystems
- b. Historical buildings or landmarks
- c. Cultural sites or monuments
- d. Public access points and pathways
- e. Other (please specify) \_\_\_\_\_

**14. Do you have any suggestions for improving the overall experience of visiting the urban waterfront area?**

- a. Increased public facilities and amenities
- b. Improved environmental quality
- c. Better access to public transportation
- d. Increased safety measures
- e. Other (please specify) \_\_\_\_\_

**15. How important do you think it is to make the Rochester urban waterfront area accessible to all members of the community, regardless of physical abilities or mobility challenges?**

- a. Very important
- b. Somewhat important

- c. Not very important
- d. Not important at all
- e. Prefer not to say

**16. How likely are you to recommend the urban waterfront area to friends or family?**

- a. Very likely
- b. Likely
- c. Not likely
- d. Not at all likely

**17. How would you rate the overall quality of the urban waterfront area in your community?**

- a. Excellent
- b. Good
- c. Fair
- d. Poor

**18. What do you think is the most important factor in the revitalization and development of the urban waterfront area in your community?**

**19. Do you have any additional comments or feedback about the urban waterfront area and its development and revitalization?**

**20. Do you have any suggestions for improving this survey or adding any additional questions that would provide valuable information for urban waterfront development and revitalization in our community?**

\* Thank you again for your participation in this survey. Your input is invaluable to our community and will help us create a better and more vibrant urban waterfront area for current and future generations.

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