

2.0 Analysis Framework

2.0.1 Introduction

Climate change-induced sea level rise accompanied by more frequent, intense storm events, and storm surges are a significant risk to coastal communities. In anticipation of the need for coastal protection against future severe storms and sea level rise, the North/West Battery Park City Resiliency Project (Proposed Project) has been proposed by the Battery Park City Authority (BPCA) to address the need for coastal protection against future severe storms and sea level rise in Battery Park City and immediately upland areas. The proposed design is part of a broader coastal flood risk management system for Lower Manhattan that includes several separate and distinct projects, specifically the South Battery Park City Coastal Resiliency Project (SBPCR Project), the Battery Coastal Resilience Project, the Financial District and Seaport Master Plan, the Seaport Coastal Resilience Project, and the Brooklyn Bridge-Montgomery Coastal Resilience Project, that collectively will support the overall Lower Manhattan Coastal Resiliency (LMCR) Strategy and reduce vulnerability to coastal flood events.

In order to implement the Proposed Project, a number of federal, state, and local approvals are required. The discretionary actions are outlined in further detail in Section 1.5, “Regulatory Permitting, Approvals, and Coordination.” All discretionary decisions of a state, regional, or local agency to approve, fund, or directly undertake an action that may affect the environment are subject to review under the State Environmental Quality Review Act (SEQRA). By incorporating a systematic interdisciplinary approach to environmental review, impacts can be identified and avoided or minimized to reduce the potential for significant adverse impacts to the environment to the maximum extent practicable. SEQRA directs that protection and enhancement of the environment and community resources be balanced with social and economic factors in the decision-making process. As the Proposed Project is being developed by a State Authority, BPCA will serve as the Lead Agency in this process and will prepare the environmental impact statement (EIS) pursuant to SEQRA, and its implementing regulations at 6 NYCRR Part 617, using analysis guidelines established through the New York City Environmental Quality Review (CEQR) and contained in the *CEQR Technical Manual*.

The EIS examines BCPA’s proposal to install a flood protection system that would be comprised of a combination of floodwalls, gates, and closure structures coupled with infrastructure improvements and park enhancements. The Proposed Project would reduce the adverse effects of a design storm event on the Protected Area (see Figure 1-5 in Chapter 1, “Project Description”). The principal objectives of the Proposed Project are as follows: (1) provide a reliable and adaptable coastal flood barrier system that minimizes risk and the need for operational interventions by relying on passive flood control rather than mechanical “deployable” flood barrier systems to the extent practicable; (2) minimize urban heat island effects and enhance outdoor occupant thermal safety to the extent practicable; (3) construct and operate the Proposed Project in an environmentally responsible manner; and (4) utilize cost-effective low-impact solutions to maximize capital investment over the lifespan of the Proposed Project.

This chapter outlines the specific analysis framework used to complete this EIS. It describes the reasoning behind the chosen analysis year(s) and study area(s), and outlines the methodology used to establish baseline conditions from which the environmental impacts are analyzed.

2.0.2 Organization of the Environmental Impact Statement

This EIS considers both the short-term (construction) and long-term (operational and, where relevant, maintenance) effects of implementation of the Proposed Project. The Proposed Project has been evaluated for potential significant adverse environmental impacts to the Project Area and applicable study areas for all relevant potential environmental effect categories in accordance with the *CEQR Technical Manual* as well as the applicable state and federal guidelines.

2.0.2.1 Categories of Environmental Effects

In accordance with the *CEQR Technical Manual*, the following categories have been determined to warrant analysis for potential adverse impacts: land use, zoning, and public policy; open space historic and cultural resources; urban design and visual resources; natural resources; hazardous materials; water and sewer infrastructure; transportation; greenhouse gas emissions and climate change; neighborhood character, and construction. These analyses are contained in Chapter 3, “Affected Environment.”

Based on screening analyses set forth in the *CEQR Technical Manual*, detailed analyses of socioeconomic conditions, community facilities and services, shadows, solid waste and sanitation services, energy, operational air quality, operational noise, and public health are not required, as set forth below and in **Appendix A** (Final Scope of Work).

Socioeconomic Conditions

The *CEQR Technical Manual* identifies six circumstances in which a socioeconomic assessment is warranted:

- Displacement of residential population
- Displacement of more than 100 employees
- Business displacements
- New development that is markedly different from existing land uses
- New or improved retail development
- Effects on a specific industry

As the Proposed Project results in no residential, employee or business displacements, includes no retail development, does not create land uses markedly different from existing conditions and does not affect a specific industry, no further socioeconomic assessment is required.

Community Facilities and Services

The Proposed Project would not physically impact or displace any community resources, nor result in any increases in resident population. It would not have any impact on public schools, healthcare facilities, publicly funded group early childhood programs, libraries or local police and fire facilities. Accordingly, no detailed assessment of community facilities is required.

Shadows

As the Proposed Project would not result in structures over 50 feet in height, nor any structures adjacent to a sunlight sensitive resource, there would be no potential for significant adverse impacts from shadows and a detailed assessment is not required.

Solid Waste and Sanitation Services

According to the *CEQR Technical Manual*, a detailed analysis should be conducted if the project (1) exceeds 50 tons per week or more of solid waste generation; or (2) involves the construction, operation, or closing of any type of regulated solid waste management facility, New York City Department of Sanitation (DSNY) district garage, or borough repair shop, or involves a change to the public or private waste collection.

As the Proposed Project does not meet any of these criteria, no further assessment is required.

Energy

As the Proposed Project would not result in an increased energy usage nor would it have the potential to affect existing energy systems, there would be no potential for significant adverse impacts related to energy and no detailed assessment of energy is required.

Air Quality (Operational)

Since there would be no mobile sources (e.g., traffic) or stationary sources (e.g., fossil-fuel fired heating, ventilation, and air conditioning systems) generated by the Proposed Project, no further assessment of operational air quality impacts is required.

Noise (Operational)

Since the operation of the Proposed Project would not result in the introduction of any new stationary or mobile sources of noise, and consequently would not have the potential to impact nearby sensitive receptors in the vicinity of the Study Area, no further assessment of operational noise and vibration impacts are required.

Public Health

According to the *CEQR Technical Manual*, assessment of public health impacts would be required if there are significant unmitigated adverse impacts associated with the Proposed Project. The operation of the

Proposed Project would not have any unmitigated air quality, noise, hazardous materials or natural resource impacts; therefore, no further assessment is required.

2.0.2.2 Categories for Analysis

Each category discusses the existing conditions (affected environment) and conditions in the future for each evaluated alternative. The technical analysis identification of potential significant adverse impacts is focused on the incremental changes to the affected environment that would occur under the Proposed Project as compared with the No Action condition. The No Action condition includes a discussion of projects expected to be completed independent of the Proposed Project in addition to the baseline growth within the affected environment for each applicable category.

In addition, this DEIS acknowledges cumulative effects by comprehensively defining the environmental setting expected in the No Action condition, including a discussion of projects expected to be completed independently of the Proposed Project by 2030 and the baseline growth in the No Action condition. The DEIS considers as the future baseline condition the combination of existing conditions together with known development plans, recent approved land use actions, public policies, projected population and employment growth, and other general background growth. The potential effects of the Proposed Project, presented in Chapter 3.0, “Affected Environment,” were assessed in comparison with the future baseline condition, the No Action condition.

2.0.3 Proposed Project Area

The Proposed Project is located in Lower Manhattan and includes the installation of a flood barrier system within Battery Park City along the Hudson River waterfront between 1st Place in the south and the Battery Park City North Esplanade in the north; the flood barrier alignment then continues across Route 9A/West Street and turns East into North Moore Street where it terminates before it reaches Greenwich Street. In addition to the proposed flood barrier system, interior drainage improvements are proposed that include a pump station in Reach 1, as well as new tide gates, conveyance improvements in select areas, near surface isolation systems and drainage improvements along Route 9A/West Street. Each of these project elements is described in greater detail in Section 1.3, “Project Area.”

2.0.4 Analysis Year

The environmental setting for the technical analyses for the Proposed Project is the conditions that would exist at the completion of its construction. Therefore, future conditions in the absence of the Proposed Project are projected to compare potential project effects. This projection is made for a particular year, generally referred to as the “analysis year,” which is the year when a proposed project would be substantially operational. For this analysis, it is expected that construction of the Proposed Project would take approximately 5 years, with construction commencing in 2025 and completed in 2030.

2.0.5 Study Areas

Study areas relevant to each analysis category are defined by the geographic areas with the potential to be affected by the Proposed Project for each impact category and as informed by *CEQR Technical Manual* guidance. Study areas therefore differ depending on the category.

2.0.6 Methodologies for Technical Analyses

The analyses contained in this EIS have been developed in conformance with SEQRA and CEQR regulations and guidelines. The methodologies utilized for each analysis are presented in each technical area's respective chapter.

2.0.6.1 Affected Environment (Existing Conditions)

The Project Area consists of developed reclaimed land areas and over-water platforms constructed within and along the Hudson River to create Battery Park City, as well as areas along Route 9A, North Moore Street, and a small portion of Hudson River Park. Battery Park City was formed through landfill operations conducted as part of a massive land reclamation project that extended into the Hudson River. Land development within Battery Park City began in the 1980s and has since evolved into a densely developed community with high-rise residential buildings, commercial spaces, parks, schools, and cultural institutions. The entire length of the Battery Park City shoreline was formed and stabilized with fill, bulkheads, seawalls, and rip-rap and is devoid of any natural shoreline segments. Over-water platforms extend along the entire length of the shoreline within the Project Area. The pile supported platforms extend between 30 to 70 feet into the Hudson River. The Battery Park City waterfront where the flood barrier system would be constructed includes many parks and plazas that are accessed daily by a variety of users. These include Rockefeller Park, the Lily Pond, Belvedere Plaza, Brookfield Place, North Cove Marina, the Esplanade, including the North Esplanade and south to the South Esplanade, Rector Park, and South Cove. The Project Area is used daily by residents, visitors, and commuters for both passive and active recreation.

For each technical area to be assessed in the EIS, the existing conditions in the Project Area are described. The analysis framework begins with an assessment of existing conditions, which serves as a starting point for the projection of future conditions both with and without the Proposed Project and the analysis of adverse impacts.

2.0.6.2 No Action Conditions

The No Action condition assumes that the Proposed Project would not be constructed and considers any other projects within the Study Area that would be completed by 2030. In the absence of the Proposed Project, the Protected Area would remain at risk from storm surges during major storm events. A project to repair and upgrade drainage systems within Rockefeller Park would be completed by the analysis year, independent of the Proposed Project.

The No Action condition establishes the context to assess and compare the effects among the project alternatives where relevant. In the absence of the Proposed Project, the existing areas, neighborhoods, and open spaces within the Protected Area would remain at risk from storm surges and severe weather events. The No Action condition would not meet the Proposed Project goals of providing comprehensive coastal flood protection for the Protected Area. During a design storm event, the Protected Area would experience significant flood risk and potential impacts to human health and safety, as well as damage to property and assets within Battery Park City and the surrounding areas. The No Action condition is not anticipated to result in significant adverse impacts within the Protected Area by the analysis year of 2030. However, over time, absent the Proposed Project, flooding risk within the Protected Area is expected to worsen and may result in potential significant adverse impacts (see Figure 1-6, in Chapter 1.0, “Project Description”).

2.0.6.3 Proposed Action Conditions

The EIS will evaluate the potential adverse impacts of the Proposed Project for the 2030 analysis year based on the proposed designs for each of the reaches in the Proposed Action condition. In addition, for analysis purposes, a reasonable worst-case conceptual construction phasing and schedule was developed to illustrate how the construction of the Proposed Project could occur over an approximately 5-year period.

The Proposed Project is being designed to provide flood risk reduction for the Protected Area for 2050s 100-year storm events, inclusive of rainfall, coastal surge, and predicted sea level rise. The proposed flood barrier system is also being designed to provide protection against 100-year storm events inclusive of the 90th percentile projection for sea level rise for the 2050s, with adaptability for future conditions.

For analysis purposes the Project Area has been organized into seven reaches, which are, from north to south:

- Reach 1 – Route 9A /Tribeca;
- Reach 2 – North Esplanade;
- Reach 3 – North Neighborhood/Rockefeller Park;
- Reach 4 – North Neighborhood/Ferry Terminal;
- Reach 5 – Brookfield Place;
- Reach 6 – South Neighborhood/Esplanade; and
- Reach 7 – South Neighborhood.

In addition to the flood barrier systems, interior drainage improvements would be involved, including a near surface isolation system along Route 9A/West Street and six tide gates are proposed along the flood barrier alignment on Chambers Street, Albany Street, Rector Street, south of the Irish Hunger Memorial at Vesey Street, near Rector Park, and near Stuyvesant Plaza immediately east of Stuyvesant High School. As described in Chapter 1.0, “Project Description,” a pump station and associated infrastructure would also be installed in the area east of Stuyvesant High School.