

APPENDIX B

SCOPE OF SERVICES

DEFINITIONS

All definitions set forth in the Contract to which this Appendix B (Scope of Services) is attached shall have the same meaning herein unless otherwise defined or the context otherwise requires. Except as otherwise expressly provided herein, the rules of interpretation set forth in Appendix A of the Contract shall apply to this Appendix B.

BACKGROUND

Overview

This study will advance recommendations from comprehensive plans including *A Stronger, More Resilient New York*; *OneNYC: The Plan for a Strong and Just City*; the Rebuild By Design winning proposal, "BIG U"; New York City's National Disaster Resiliency Competition (NDRC) application to the United States Department of Housing and Urban Development (HUD); and the Governor's Office of Storm Recovery (GOSR) New York Rising Community Reconstruction Program, in addition to other community plans formulated by local authorities and community-based organizations. Building on these recommendations, the New York City Economic Development Corporation (EDC), in partnership with the Mayor's Office Recovery and Resiliency (ORR) and in coordination with the New York City Department of Environmental Protection (DEP), New York City Department of City Planning (DCP), New York City Department of Transportation (DOT), and New York City Department of Parks & Recreation (DPR), seeks a Consultant for engineering, planning, landscape architecture, urban design, environmental planning, cost estimating, economic analysis, and public engagement services.

When Hurricane Sandy occurred in New York City on October 29, 2012, Lower Manhattan experienced severe inundation, causing significant damage and economic loss. A combination of storm surge, low edges and topography, among other factors, contributed to flooding that caused substantial damage. Though Lower Manhattan's location within New York Harbor mostly protected it from the destructive wave impacts felt in areas along the open Atlantic coast, Sandy's surge arrived in the area with substantial force and height. The surge overtopped bulkheads all around Lower Manhattan and further north where flooding typically reached one to two blocks from the coastline at depths of two to three feet. In certain areas, the waters extended farther inland and to far greater depths, particularly in areas with below grade infrastructure. In the eastern portion of Lower Manhattan, which is generally separated from the water by an esplanade and local streets—with few inland barriers to slow and contain storm surge—waters

flowed directly off of the East River and into the South Street Seaport and Water Street areas where water as high as eight feet caused significant property damage. On the west side of Lower Manhattan, Battery Park City, built to a higher elevation, fared much differently. While Sandy's surge overtopped Battery Park City's bulkhead—and flooded the development's esplanade, playgrounds, fields, and plantings—the buildings in the development, constructed on the site's highest points, for the most part emerged from Sandy unscathed.

The Battery (formerly known as “Battery Park”) sits at the southernmost tip of Manhattan and bore the brunt of much of the storm surge during Hurricane Sandy. In addition to housing the historic Castle Clinton, recreation facilities and monuments, the Park also sits atop critical transportation infrastructure heavily flooded during the storm. The Hugh L. Carey (formerly Brooklyn-Battery Tunnel) and Battery Park Underpass both run underneath the park and were subjected to significant flooding during the storm. Images of the flooded tunnels were a dramatic illustration of the vulnerability and urgent need for resiliency planning in and around the Battery. In addition, impacts on the park related to reconstruction of the critical transportation infrastructure and resiliency measures have been significant and ongoing reconstruction efforts are expected to continue through 2018 and most likely beyond. Furthermore, around the Battery and further north, several mass transit improvement projects for reconstruction and storm hardening are about to begin or in progress.

Hurricane Sandy demonstrated a clear need for resiliency planning. Lower Manhattan needs to be prepared for future sea level rise and storm events of many varieties and intensities in order to protect critical infrastructure, livelihoods, and other critical assets, some of which are depicted in Figure 1. There is an urgent need for a coordinated response within the flood hazard area, and an opportunity to build off of existing planning efforts to scope potential projects for future final design and implementation. The City of New York has opened the first few phases of its ambitious project for improving the East River Waterfront Esplanade, a two-mile-long, City-owned public open space extending from the Battery Maritime Building to the south to Montgomery Street to the north. Additional phases within this area are currently being implemented under the direction of EDC. The vision, goals and design objectives defined as part of that community design process shall continue to be recognized as part of this resiliency planning. That vision was identified as creating “an innovative, dynamic, highly attractive, and easily accessible waterfront serving residents and visitors for generations to come.” The goals are:

- **Connectivity:** Establish visual and physical connections between the waterfront and adjacent neighborhoods
- **Integration:** Establish a distinct public waterfront, highly integrated with the City and the emerging Harbor District
- **Revitalization:** Contribute to the broader revitalization of Lower Manhattan by providing amenities that attract and retain businesses, invite tourist activity and sustain local residential communities, and create areas of respite and recreation for users of the waterfront

- Innovation: Introduce new spaces and programming to draw people to the waterfront and provide a more diverse waterfront experience provided in part through distinctive and innovative design that address seating, lighting, and landscaping
- Sustainability: Create a waterfront with long-term viability: economically, ecologically and experientially
- Implementation: Identify a set of projects that can be implemented in the next three years with the funds available while laying a foundation for the development of subsequent phases
- Interaction: Engage the public to help shape the design and programming of the waterfront

In addition to this vision and goals, resiliency is now a hallmark concern for the community and must be incorporated into future designs.

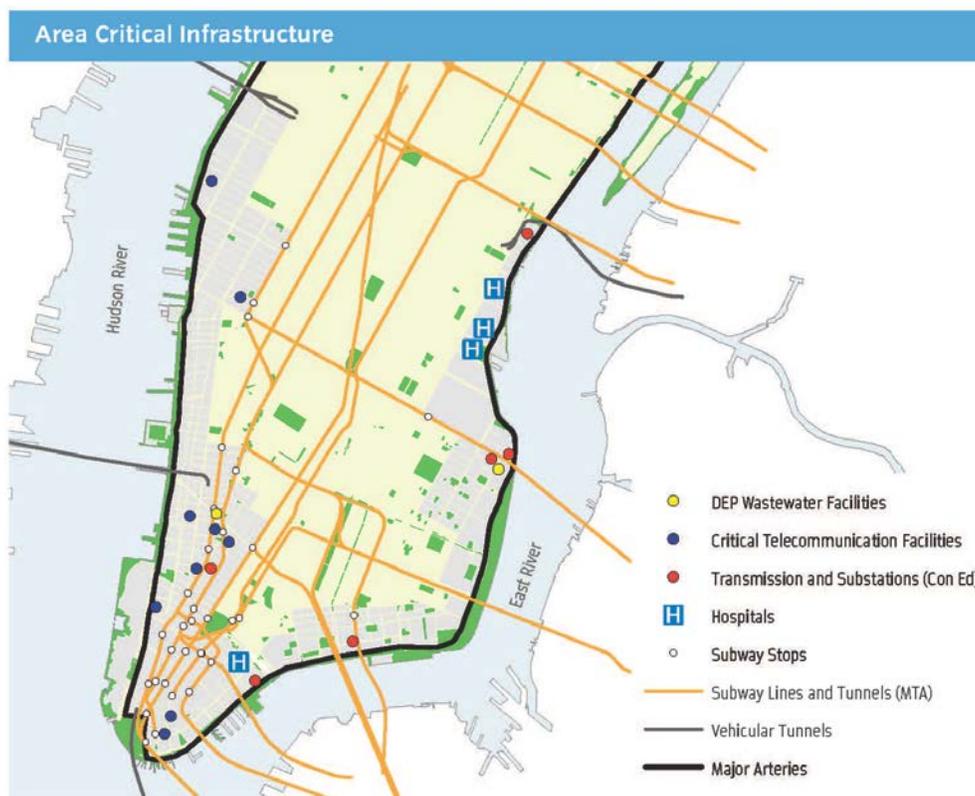


Figure 1: Area Critical Infrastructure

Inundation during Sandy, depicted in Figure 2, begins to illustrate the vulnerability of the area’s population, businesses, and other assets. However, it is important to prepare not just for a Sandy-like event but also for other future extreme weather events resulting in storm surge, the consequences of which could be exacerbated by projected sea level rise. In order to do so, thoughtful consideration and a thorough understanding of below grade structures, transportation infrastructure, topographical grade changes and elevations, port facilities, drainage and sewer outfalls, parks and open spaces, and other factors that create additional entry points for coastal flood waters is required.

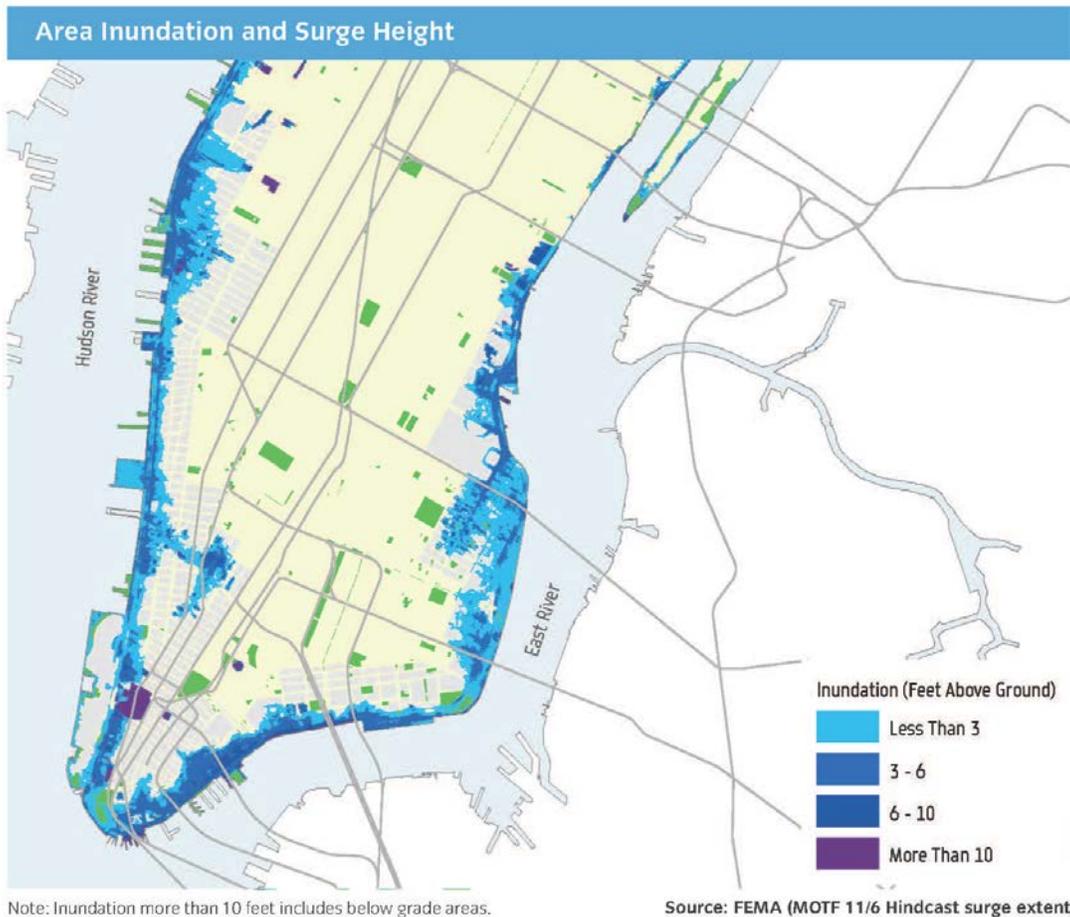


Figure 2: Area Inundation and Surge Height

This study and analysis builds off previous intensive planning efforts and is a continuation of comprehensive planning and design in anticipation of future capital funding becoming available for final design and construction, for example New York City’s current HUD NDRC application, for which award amounts and announcements will be made available in early 2016. Materials and analyses from the NDRC application will be made available to the Consultant team and available data used in the preparation of that application will be revisited and advanced as part of this study to finalize a flood protection alignment and strategy.

This is an opportunity to define and scope implementable coastal protection projects that respond to local existing conditions and are responsive to the local community and other impacted stakeholders. It is expected that recommendations would be based on sound and all-inclusive evidence including topography, waterfront conditions, critical drainage, and transportation infrastructure, other site conditions, while also having thoughtfully engaged with the community to elucidate pathways to enhance community infrastructure and public amenities when possible. Communities within the study area have been actively engaged since Sandy through various

planning processes, making outreach and community engagement critical to understanding of not only local conditions, but also the opportunity to incorporate previous planning ideas and visions that enhanced the public realm. Incorporating elements of project design and programming that activate and enhance the waterfront with recreational, social, cultural, and economic opportunities is integral to any comprehensive integrated flood protection strategy.

Study Objective

The consultant team (“Consultant”) will build upon previous planning efforts for Lower Manhattan and to deliver a detailed, feasible, and comprehensive flood protection concept design and advanced planning for the study area shown in Figure 3 below. The study area is divided into four sub-areas for which the consultant will develop four distinct flood protection scopes of work with supporting technical analyses and implementation strategies of independent utility using a defined capital budget to be determined and under the direction of the City. It is anticipated that the set capital budgets for future implementation of each of the sub areas will be known in the early phases of this study. The Consultant shall prepare all analyses, concept and schematic designs, and project scoping services for future capital projects for integrated flood protection strategies that would prevent and mitigate upland flooding in Lower Manhattan from Montgomery Street on the Lower East Side, south to the Battery and up the west side of Manhattan to Harrison Street, near the northern terminus of Battery Park City (the “study area”). See Figure 3: Lower Manhattan Coastal Resiliency study area map below.

Detailed concept and schematic designs and defined future capital projects shall be comprised of distinct geographic areas, defined in Figure 3, each of which can support resiliency and be implemented as a stand-alone measure of independent utility that can be optimally phased into implementation. Each future capital project concept shall be developed with the capability of future enhancement and with the flexibility to account for future resiliency goals. The detailed concept plans shall also include preparation of site analysis, community engagement strategy and implementation of outreach, development of potential future capital project scopes, a determination of feasibility and project optimization, conceptual design alternatives with a phasing plan, cost estimate analysis, the development of innovative financing mechanisms, and environmental review and permitting preparation.

The study will also require frequent coordination with an extensive City Team comprised of multiple stakeholder agencies and multiple external stakeholders in order to advance components of the project. The City recognizes that this is an opportunity to reconsider the waterfront in a way that will have a range of impacts of residents, businesses, and visitors. As such the Consultant shall consider ways to enhance the waterfront and consider the potential additional benefits of these recommended measures, which could include improved and expanded waterfront public open space, stronger connections between neighborhoods, socially, culturally, recreationally and economically activated spaces, and enhanced environmental conditions.

Study Area

The **study area** (or Project Site), as shown in Figure 3, is the Lower Manhattan shoreline from Montgomery Street (the southern terminus of the City's East Side Coastal Resiliency project) south to The Battery and up the west side to Harrison Street just north of Battery Park City. The approximate inland boundary for the purposes of this study is bounded by the 2050 100-year floodplain.

Within the study area, four sub-areas have been defined based on topographical data, drainage, use, previous planning studies, and additional characteristics. They include:

- **Two-Bridges sub-area:** defined by the southern terminus of the East Side Coastal Resiliency project at Montgomery Street to the Brooklyn Bridge
- **Manhattan Tip sub-area:** defined by the Brooklyn Bridge to the Whitehall Ferry Terminal
- **The Battery:** defined by Peter Minuit Plaza, Bowling Green, and Little West Street
- **Battery Park City sub-area:** defined by Little West Street to Harrison Street

Expansions or changes to the boundaries of each sub-area, additional reaches may be proposed and/or redefined by the Consultant in their proposal for the purposes of identifying opportunities for independent utility, to highlight unique site constraints or design treatments, or in consideration of additional site infrastructure or topographical characteristics. It may also be appropriate to suggest a further break down of each of the four sub-areas. For example, with appropriate rationale, it is acceptable to propose that the Two Bridges sub-area be further broken down into two sections: Montgomery to the Manhattan Bridge, and the Manhattan Bridge to the Brooklyn Bridge. Furthermore, recommendations for one sub-area may include recommendations for adjacent areas that may be impacted by the implementation of flood protection.

In addition, while the study area is defined by the projected extent of the 1% annual chance floodplain in the 2050s (or 100-year storm event) based on FEMA's 2015 PFIRMs (Preliminary Flood Insurance Rate Map), additional considerations will need to be made for upland areas that are a part of the same drainage areas (i.e existing storm and sewer infrastructure draining from upland areas, direct drainage areas to waterways, and wastewater treatment plant drainage areas) or part of other relevant utility or transportation networks. A comprehensive Coastal Flood Risk Assessment task analyzing additional floodplains and drainage analysis is further described within the study tasks.

Note that the City is also currently implementing the first funded phase of Manhattan coastal protection between Montgomery to 23rd Street, also known as the East Side Coastal Resiliency

(ESCR) project, through a separate contract with the NYC Department of Design and Construction (DDC). This scope of work extends the ESCR integrated flood protection system south from Montgomery Street, and is expected to be fully coordinated with the proposals developed for ESCR.

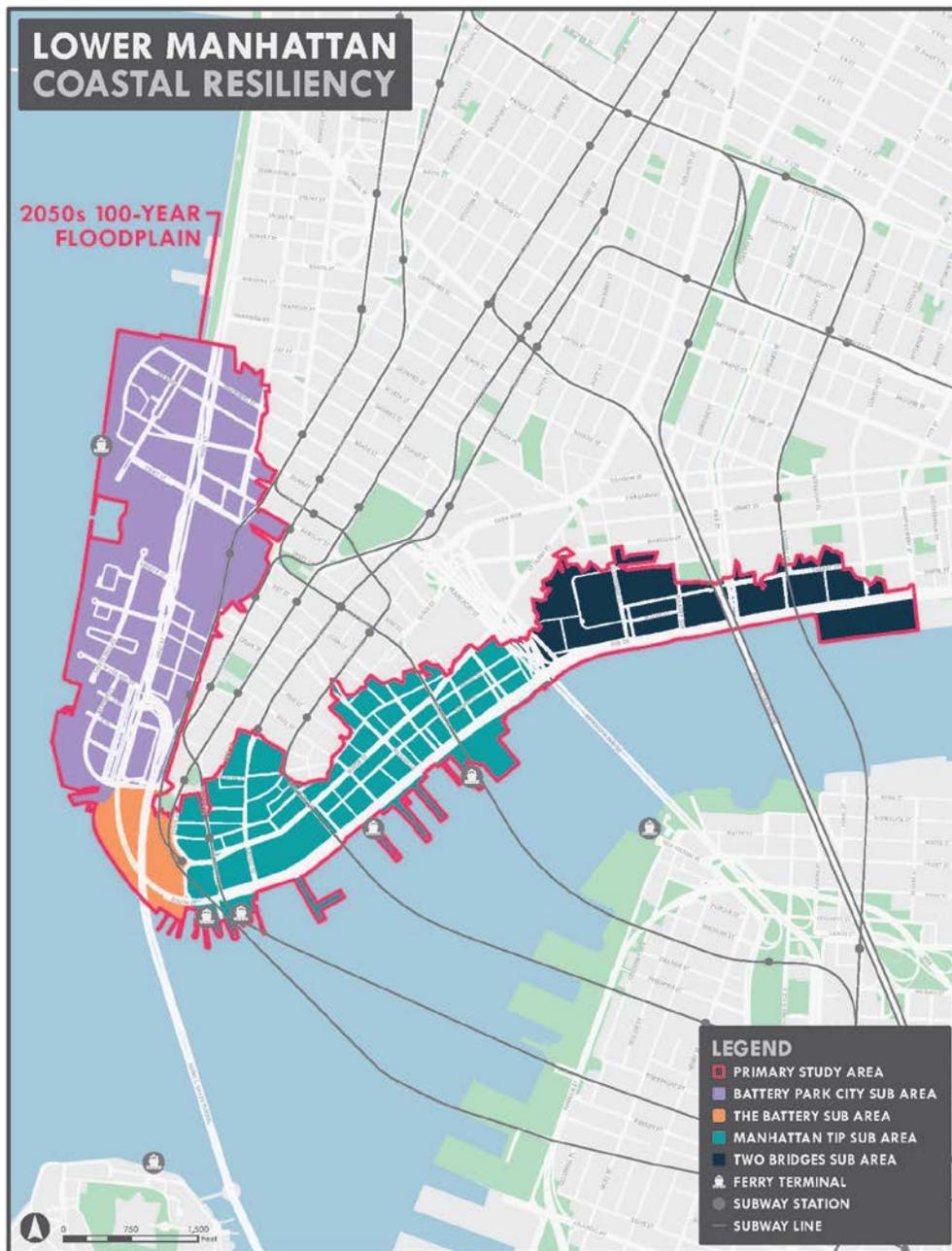


Figure 3: Lower Manhattan Coastal Resiliency Study Area

SERVICES

I. Consultant Team

It is expected that the Consultant Team will comprise the following capabilities and specialists:

- Engineering – Civil, hydrological/stormwater management and analysis, structural, geotechnical, surveying, and transportation
- Design – urban design, physical planning, landscape architecture
- Environmental Planning – environmental review, natural resource inventory, and City, State, Federal approvals/permitting
- Public Engagement – stakeholder engagement, outreach strategists, public relations
- Cost Estimating – capital and ongoing maintenance costs
- Economic Analysis – real estate market analysis, cost-benefit analysis, economic feasibility/funding strategy

The Consultant is not guaranteed full performance of the scope. Should the integrated flood protection concepts prove infeasible, some tasks outlined in this scope will not be necessary and the study may terminate.

II. General Administrative Requirements

The Consultant shall perform the following administrative tasks in connection with and as part of its Services:

1. The Consultant shall provide continuous communication with EDC and, as directed by EDC, all agencies. The Consultant shall furnish to EDC copies of all correspondence related thereto. The Consultant shall cooperate with EDC and all agencies in the Consultant's preparation of reports and minutes of meetings.
2. The Consultant is expected to submit a Progress Schedule to EDC at the onset of work, establishing a schedule of meetings, Work Product review and revision periods, and critical deadlines. Upon approval the Consultant will commence the tasks outlined in the Progress Schedule. The Consultant will be expected to manage this process of communication and to present Project progress and provide a forum for review and feedback. Methods of communication include, but are not limited to:
 - a. Kick-off meetings with EDC and, as applicable, agency staff and other City representatives;
 - b. Regular project team meetings with EDC and ORR. Conference calls may be substituted for in person meetings at the discretion of EDC;
 - c. Regular working group sessions with EDC, ORR, DOT, DEP, DPR, DCP and other relevant agencies and entities; and
 - d. As deemed necessary by EDC, presentation of final results to certain stakeholder groups, EDC, and agencies and/or the preparation of the materials for said presentations.

3. The Consultant shall arrange meetings and presentations as requested by EDC, including regular (e.g., biweekly) project team progress meetings, and shall provide necessary data and Work Product for such meetings including agendas and meeting minutes.
4. The Consultant shall prepare and provide all relevant drawings, materials and other Work Product necessary to meet the Project's objectives.
5. The Consultant shall revise and correct, without any additional compensation therefore, any and all reports, minutes of meetings, letter reports, documents, surveys, designs and all other Work Product until the same shall receive final approval by EDC and by all agencies whose approval is required by EDC or otherwise. The Consultant shall initiate all actions for incremental review of proposed initiatives, including any follow-up meetings as required to expeditiously resolve all questions and concerns and to obtain required approvals. The Consultant shall not make any changes in the Scope of Services as outlined herein without prior written authorization from EDC.

6. Progress Reporting:

The Consultant shall submit a monthly Progress Report and invoices to EDC, starting from the date Consultant shall have received the Director's approval of the Progress Schedule and each month thereafter until the completion of the Services (the "Reporting Period"). The Progress Report shall include an analysis of the Consultant's progress as it relates to the Services and the approved Progress Schedule. The Progress Report and documentation shall be submitted to EDC, for approval, no later than two (2) working days following the close of each Reporting Period. Each Progress Report shall include, but not be limited to, the following:

- a. Narrative description of the Services performed during the Reporting Period;
- b. Actual time used (timesheets) for each Task (as defined below) and sub-Task in relation to the Progress Schedule approved by the Director;
- c. Reasons for any delays in the targeted completion dates;
- d. Changes in completion/target dates for the required Services;
- e. Need and justification for any extensions of time;
- f. Activities requiring a decision or action by EDC and/or any of the agencies or any other entity; and
- g. List of Allowable Additional Costs. The Consultant shall prepare and make all submissions to EDC and/or agencies as directed by EDC. The number of copies of each submission shall be as required by EDC.

III. Specific Services

The Consultant shall provide all consulting services and shall produce and deliver all Work Product as set forth below (collectively, the "Services"). The Consultant shall perform the Services in a series of tasks as set forth below (the "Tasks" and each individually, a "Task").

Tasks 1 through 7, inclusive, may be performed by the Consultant in any sequence, or simultaneously (unless otherwise directed by the Director).

- Task 1 – Existing Conditions
- Task 2 – Comprehensive Coastal Projection Planning and Concept Design
- Task 3 – Project Feasibility Analysis and Project Prioritization
- Task 4 – Near-Term Project Scoping for Implementation
- Task 5 – Environmental Review and Permitting
- Task 6 – Stakeholder Engagement
- Task 7 – Final Study and Recommendations

The specific Services for each of the specific Tasks are as follows:

Task 1: Existing Conditions

Note: Some portion of this analysis and documentary materials may be provided to the consultant – e.g., analysis performed by SIRR, relevant GIS data layers, other publicly available data sources.

1. Data Collection and Review

- a. Collect and review available reports, studies, plans, and other background documents, including *A Stronger, More Resilient New York*, *OneNYC: The Plan for a Strong and Just City*, and associated background research by the NYC Special Initiative for Rebuilding and Resiliency (SIRR); the "BIG U" Rebuild By Design proposal; East Side Coastal Resiliency (ESCR) plans and presentations; New York City's National Disaster Resiliency Competition application to the United States Department of Housing and Urban Development (HUD); Governor's Office of Storm Recovery (GOSR) Community Reconstruction Plan for NY Rising; NYC Waterfront Vision and Enhancement Strategy (WAVES), including *Vision 2020: Comprehensive Waterfront Plan* and NYC Waterfront Action Agenda; public documents related to expansion MTA New York City Transit's South Street Ferry Station reconstruction; NYC Panel on Climate Change (NPCC) reports; A People's Plan for the East River Waterfront; East River Blueway Plan; any relevant CB1 and CB3 planning documents (197-a plans); East River Esplanade Plan (2009), DPR High Performance Landscape Guidelines; DCP Designing for Flood Risk, DCP Urban Waterfront Adaptive Strategies; Active Design Guidelines; DEP NYC Green Infrastructure Plan; New York City Revitalization Program (2013); and *Southern Manhattan Coastal Protection Study: Evaluating the Feasibility of a Multipurpose Levee (MLP)*
- b. Identify current and planned future publicly-sponsored and other relevant capital projects in the study area, including but not limited to, projects being implemented or planned by EDC (particularly the East River Waterfront Esplanade project),

Lower Manhattan Development Corporation, Port Authority of New York and New Jersey, Metropolitan Transit Authority, New York City Housing Authority, National Park Service, Battery Park City Authority, New York State Department of Transportation, the United States Federal Highway Administration. Note that work will need to be coordinated with the DOT Betterment/Mitigation planning project for the Battery Park Underpass and West Street Underpass and the Staten Island Ferry Terminal flood resilience project.

- c. Identify and document lessons learned/best practices from other integrated flood protection and open space projects within and outside NYC. This may relate to technical/engineering issues, design considerations, ecological/habitat considerations, public process, and permitting, among other topics.

2. Site Conditions

- a. Visit and inspect Project Site as required to become familiar with the site and its surroundings. Record significant urban design relationships such as view corridors, built character, and local and historical landmarks to describe overall neighborhood character
- b. Create and catalogue a comprehensive photo survey of the site in its current condition, both from land and water vantage points.
- c. Coordinate with the New York City Department of Transportation and New York City Department of Parks & Recreation to incorporate where possible restoration work that is underway in the Battery Park Underpass and West Street Underpass, as well as planned improvements within The Battery.
- d. Tree Survey conforming to DPR requirements for areas where interventions are proposed. Tree Survey - The Consulting Arborist is subject to DPR/EDC review and approval and must be ISA certified. The format for the Tree Inventory will be a Microsoft Excel file provided by DPR, and shall be completed the Consulting Arborist and submitted to DPR/EDC in digital format for review.

3. Marine Surveys and Shoreline Configurations

- a. Identification of shoreline configuration (e.g., bulkhead, riprap, wetlands, piers, docks), trends (e.g., erosion), and identification of pile supported structures and boundaries with fill, tie-backs, and associated bulkheads and relieving platforms. Respondent is to review existing waterfront inspections reports and identify data gaps where additional analysis is needed. The shoreline configuration analysis should utilize EDC's waterfront inspection manual and comply with rapid-level inspection criteria. Additional further inspection in some areas may be required depending on the outcome of the initial rapid-level inspection.
- b. Perform baseline marine environment surveys:

- Hydrologic and hydraulic surveys, including sources, water depth, currents, wave heights and directions, water quality, tidal cycles, salinity, inundation duration period, and drainage configurations
- Wetland delineation
- Biological resources survey that identifies and maps habitat types and vegetative communities

4. Mapping

- a. Prepare a consolidated basemap, showing streets, blocks and lots, curb lines, building footprints, shoreline, parks, publicly accessible open spaces, and key sites/facilities (e.g., subway stations). This basemap will be used throughout the study to present information in a clear and consistent format.
- b. Prepare individual maps (using the basemap) documenting the various conditions found in Tasks 1.2 as well as including
 - Floodplains, including most recent Preliminary Flood Insurance Rate Maps (FIRMs), 2012 Hurricane Sandy Inundation Map, and the projected 2020s, 2050s, 2080s, and 2100 future flood maps
 - Historic and/or cultural resources with study area
 - Open space, including public parks, privately owned public spaces, and waterfront public access
 - Transportation connections (public transit, highways/arterials, bike routes, pedestrian paths, truck routes, shipping channels, existing and proposed ferry routes); parking
 - Critical infrastructure related to healthcare, emergency services and security, communications, energy, water and wastewater, and key governmental and economic assets for example
 - Local circulation patterns (e.g. vehicular, pedestrian, transit, bicycle), including park/waterfront access routes and important destinations
 - Tax blocks and lots, land uses and density; jurisdiction/ownership (including any portions of tax lots located underwater); underutilized and vacant land; ground floor and cellar uses; recent developments; and building typologies
 - Existing zoning, including special districts, waterfront public access requirements, permitted uses and density, special provisions applicable to the floodplain
 - Natural features (e.g., open water, littoral zone, wetlands)

5. Coastal Flood Risk Assessment

- a. Assess the study area's vulnerability to flooding by analyzing:

- The extent of flooding from a 1% and 0.2% annual chance storm based on FEMA’s 2015 PFIRMs and associated risk from wave action in the V Zone and Coastal A Zone
- The anticipated height of flood waters from a 1% and 0.2% annual chance storm based on FEMA’s 2015 PFIRM Base Flood Elevations (BFE)
- The extent and height of flood waters from frequency storms, including but not limited to the 10% and 2% annual chance storms (10-year and 50-year storms, respectively)
- Tidal flooding extent and depth due to sea level rise using, at a minimum, NPCC2’s 25th, 75th, and 90th percentile projections for the 2050s
- Projected future flooding extent and depth from a 1% and 0.2% annual chance storm in the 2020s, 2050s, 2080s, and 2100s
- Inland flooding/ponding from storm water runoff that exceeds the capacity of existing drainage infrastructure, including but not limited to the 10% and 2% annual chance rainstorms for today and the 2020s, 2050s, 2080s, and 2100s
- Sewer infrastructure, including interceptors, regulators, tide gates, outfalls and pumping stations, and associated flooding pathways.

6. Property Owners Assessment Toolkit

- a. Develop an assessment tool, methodology, or screening analysis to help the City understand the capacity of individual property owners to implement resiliency measures. The objective is to understand data needs, collect the data if available, and determine the likelihood of resiliency measures being implemented to full Appendix G standards Flood Resistant Standards of the New York City Building Code by private and public property owners of buildings and other critical infrastructure and assets.

Task 2: Comprehensive Coastal Protection Planning and Concept Design

Building off previous studies, reports, and planning documents for Lower Manhattan, consultant will develop a comprehensive feasible concept design and benefit cost analysis that advances protection against flood risks and climate change impacts, including sea level rise. [Note: If the consultant believes that a significantly different approach would better achieve the goals represented in *A Stronger, More Resilient New York*, the “Big U”, or other plans, an alternative concept or concepts may be advanced and evaluated alongside the concepts presented]

1. Hydrological Management Strategies

- a. Assess the feasibility of various strategies for reorganizing and controlling water flow and providing flood protection within the Project Area. Potential strategies should be evaluated in terms of their ability to achieve the primary goal of providing flood protection to the Project Area and critical infrastructure while also protecting public health by facilitating internal drainage of combined sewage and

stormwater during an extreme event. Feasibility considerations should include flood risk reduction (a comprehensive account of sea-level rise, wave action, freeboard, etc.), opportunities for ecological enhancement, drainage, stormwater storage capacity, ability to enhance public realm and community infrastructure, and ability to be implemented in consideration of regulatory, permitting, and benefit/cost constraints.

- b. Determine how the type and scale of proposed structures would have to vary in order to perform successfully in different flood scenarios given current and projected future risk (100-year, 300-year, 500-year, etc). Consideration should be given, using the best available science and findings from the NYC Panel on Climate Change, to how various projections for future sea level rise would affect the performance of the integrated flood protection system. At a minimum, project design should incorporate the high-end projection for sea level rise for the 2050s (30 inches above 2000 – 2004 Mean High Water), as well as additional height based on wave effects and overtopping protection.
- c. Strategies shall incorporate an understanding of existing infrastructure extent and capacity, including location and functioning of all utilities, stormwater and CSO outfalls, interceptor and pumping station capacities, as well as wastewater and stormwater capacity relative to development on study area sites.
- d. Although sub-areas are defined, the Consultant shall determine the appropriateness of sub-area definitions and further define additional reaches within sub-areas if appropriate. These defined project areas shall be used to evaluate and prioritize the implementation of coastal protection measures in Task 3.

2. Drainage and Sewer Considerations

- a. Produce a quantitative analysis of the impact of the proposed systems on the drainage of sewage and stormwater runoff from the areas behind and adjacent to the barriers and propose recommended improvements to address drainage in the event of storm surge and sea-level rise. Analysis would include the mapping of a residual floodplain that includes the potential impact of trapped sewage and runoff on the roadways, subway infrastructure, and entrances/ventilation structures of the Battery Park and West Street Underpasses for example, as well as any existing or proposed drainage improvements, including green infrastructure.
- b. Determine what additional infrastructure, such as wastewater pumping stations and retention tanks for example, are necessary to manage sewage and stormwater during wet-weather and storm surge events. Concepts should reflect knowledge of precedents and creative thinking about and solutions to water quality challenges posed by the collection and detention of large volumes of sewage and stormwater

runoff in the study area during major storm events. Project must identify protection of interceptors, regulators, tide gates and pumping stations.

- c. Assess how groundwater level rise or storm surge water might flow along subsurface conduit or infrastructure not anticipated when water levels were lower in elevation (e.g. an electrical conduit placed above a storm drain pipeline)
- d. Evaluation shall additionally consider highway drains, park drainage, and other unpermitted openings, inclusive of subsurface tunnel infrastructure below The Battery and other sub-areas, or other access points that may impinge barrier design utility or adversely impact flood conditions interior of proposed improvements including regulators, outfalls, and tide gates.
- e. Evaluate the resolution and capability of the available InfoWorks CS model detailing the City's existing drainage infrastructure in the vicinity of the project area and update or refine the model as necessary to have confidence in model results. Manhattan is served by the Newtown Creek, North River, and Wards Island Wastewater Treatment Plants (WWTPs).
- f. Conduct model runs, accounting for the compound impacts of rainfall and storm surge with coastal protection, and rainfall and sea level rise with and without coastal protection to measure the impacts of coastal protection on overland drainage. Consider flood waters that may be routed from outside of the protected area via the sewer system. Anticipated model runs include but are not limited to existing conditions and post-project implementation conditions with alternatives, including green infrastructure, the implementation of East Side Coastal Resiliency, alternative conveyance strategies, and supplemental pumping approaches for example.
- g. Where appropriate or required, assess impacts on water quality of receiving waterbodies and determine recommended controls for preventing or removing pollutants from stormwater discharges.

3. Ecological/Environmental Considerations

- a. Evaluate effects on ecological systems and habitats (vegetative, bird, fish, benthic). As appropriate, identify modifications to the flood protection system that would preserve or enhance the ecology while still accomplishing the primary goal of flood protection. If relevant, evaluate the size/extent of structures and volume of fill required, amount of reclaimed land, new water depths, wetland areas, etc.
- b. Evaluate how the proposed structures would affect waterborne traffic and marine access ways, including ferries and ferry terminals and landings.

- c. Identify positive and negative environmental impacts; and co-benefits for communities, including sewage and storm water management and public access. Determine all appropriate environmental review requirements.

4. Operations and Maintenance

- a. Describe how the proposed structures would operate and be activated before and after a major storm event. Consider the likely condition of protection system components after a major storm (e.g., from debris/sediment deposited behind systems), including cost and time required to restore the system to full functioning, staff requirements, lead time and all equipment requirements, and the expected impacts and recovery requirements for the uses outside of the protected areas.
- b. Identify ongoing maintenance needs and costs to maintain the flood protection system, including pumping stations and other associated infrastructure, in a state of good repair, including regular maintenance and exercises as well as periodic capital repairs/improvements.

5. Economic Considerations

- a. Develop order-of-magnitude cost estimates for full implementation of the project, broken down by phases. [Note: If more than one flood management concept has been developed, additional alternatives should be cost estimated.] The cost estimate should include a list of all assumptions such as escalations, hard and soft costs, operations and maintenance for the coastal protection measures and contingencies.
- b. Develop an estimate of public and private benefits associated with implementation of the project, including loss of life prevented, property and infrastructure damage averted, lower insurance costs, increased property values (due to flood protection as well as adjacent open space improvements), and alternative flood protection/mitigation measures avoided. Considerations of cost and benefits will build off the methodology and framework used for the overlapping study area in the City's application for HUD's National Disaster Resiliency Competition. Using this information, develop an updated comprehensive cost-benefit analysis to FEMA and Army Corps standards.
- c. Evaluate the feasibility of creating tools to help finance and implement resiliency improvements. Analysis would include different methods, including variations on public and private financing models, and sensitivity analyses based on potential future conditions with the goal of offsetting some portion of the project construction and maintenance costs.
- d. Provide a comprehensive analysis of ongoing maintenance and operation costs associated with full implementation of the project, and identify potential sources of

ongoing funding and potential governance structures (e.g., public-private partnerships) for operation of the full project.

- e. Identify potential sources of capital funding, including funds already appropriated for Sandy recovery, other Federal funding sources (e.g., surface transportation), and identify opportunities for public-private partnerships. Research qualifications/steps required to qualify the concept for inclusion as a Congressionally mandated project in a future Federal appropriations act.
- f. Conduct a market study and assess the potential demand and space needs for additional commercial facilities/concessions should concessions or other commercial activity be proposed as part of the concept design for the integrated flood protection system.

6. Regulatory Framework

- a. Identify and assess applicable laws, regulations, policies, and plans across all levels of government relevant to the implementation of the concept plan.
- b. Outline all required City/State/Federal permits and approvals, with estimated timelines, required information/materials, and level of review (i.e. discretionary vs. administrative).
- c. In conjunction with (b), describe the anticipated environmental review process and documents.
- d. Identify other public agencies that may have an interest in the project.

7. Concept Designs

- a. Building off Task 1, Tasks 2.1 through 2.6, develop concept designs incorporating high quality architectural, landscape architectural, and engineering design criteria for flood protection including:
 - Integrated flood protection system from Montgomery to The Battery that integrates with and considers existing infrastructure, waterfront open spaces, and buildings, including existing and planned private flood control systems.
 - Protection system within The Battery that enhances existing design conditions and considers visitor experience, historical features and context and the significant underground infrastructure, in consultation with DPR
 - Edge-raising/strengthening structures for vulnerable “breach points,” (could include revetments, bulkheads and sea walls) in specific locations including the southern and northern termini of Battery Park City.
 - Integration of existing and planned sewer outfalls, drainage infrastructure, and other permeable access points within integrated coastal protection system.

- Integration of existing open space and other public resources, including their respective access points and circulation systems.
- b. Concept designs shall include renderings, cross-sections, site plans, elevations and other illustrative materials to appropriately convey the details of the concept to the public and agencies. .
- c. At least three (3) alternative concept designs for the purposes of evaluating options for achieving flood protection shall be required for each sub-area. Alternatives shall be required along with iterative development of concepts through public and agency engagement.

Task 3: Project Feasibility Analysis and Project Prioritization

Given the existing conditions and the development of a comprehensive concept design that considers hydrological management strategies, ecological/environmental considerations, operations and maintenance, economic considerations, and the ability of a concept design to incorporate additional objectives of enhancing the public realm, evaluate project sub areas and consider the optimization of flood protection benefits given a pre-determined capital budget for final design and construction (budget to be determined).

1. Feasibility Analysis

- a. Building on Task 1 and 2 and in consultation with EDC, create a framework to evaluate priorities for project implementation for each of the sub-areas and any further defined reaches.
- b. Identify property acquisition required, if any, as well as considerations related to adjacent properties and owners.
- c. Identify any legislative/policy changes required for full implementation of the plan and timeline/process associated with each, including a potential land use study and rezoning of adjacent areas.
- d. Identify any required ULURP actions necessary to implement this plan
- e. Generate preliminary scope of additional environmental study and analysis that would be required if the project advances.
- f. In partnership with the City, evaluate the feasibility of projects within the respective sub-areas

2. Project Prioritization and Phasing

- a. Based on previous analyses, is the project feasible and what is the ideal implementation strategy to optimize flood protection benefits? Identify priority projects based on available funding that would advance into near-term implementation for Task 4. The proposed interventions should be implementable in the near-term of approximately 2 to 5 years and have the greatest possible impact

on reducing risk to vulnerable housing stock and critical public facilities and infrastructure.

- b. Goals for the defined projects are to include achieving compliance with requirements for FEMA certification and accreditation for consideration of future flood map alteration applications, having independent utility, and supporting resiliency, public realm and community protection.
- c. For each sub area, identify a preferred alternative and summarize rationale
- d. Evaluate the coastal protection measures for consistency with the longer-term strategies associated with concepts in *Southern Manhattan Coastal Protection Study: Evaluating the Feasibility of a Multipurpose Levee (MLP)*, and make a determination if modification of a project would be appropriate so as to not preclude advancement of the concept.
- e. Identify all permitting/regulatory issues involved in implementing the coastal protection measures. Estimate the time required to implement each of the identified coastal protection measures, including any engineering, jurisdictional, or other challenges that may increase the likelihood of delays.
- f. In consideration of priorities identified by the City Team, develop a detailed phasing plan for the entire Project Area, inclusive of an implementation and phasing plan within each sub area. The plan should incorporate a permitting strategy that describes which permits and approvals are necessary and when these need to be obtained. The plan will establish a timeline and detailed work plan for implementation of each phase, including critical path items such as permits/approvals and associated environmental review; property acquisition and disposition; stakeholder outreach; any required rezoning or land-use actions of adjacent upland areas; and site preparation, design, and construction. Note that the Consultant shall consult with relevant agencies and consider respective agency design review requirements when formulating the phasing plan. Phasing shall also consider the capability of accommodating retrofitting to increase protection in the future.

Task 4: Near-Term Project Scoping for Implementation

The objective of Task 4 is to conduct advanced planning activities and schematic design to prepare for final design and construction activities for the near-term concept designs identified in Task 3.2(a). Note that recent as-built drawings are available for much of the Project Areas included in the East River Waterfront Esplanade project and may be available for additional areas as well. The Consultant shall review existing reports if available prior to the performance of these services. Services will be performed in consideration of a pre-determined capital budget

as needed under the direction of EDC and under the review of the City Team. The Consultant will contemplate and describe implementing and regulatory agency roles and responsibilities.

1. Detailed Schematic Design

- a. The Consultant shall prepare schematic design documents. The schematic design shall include, but shall not be limited to: an overall site plan(s) at 1" = 40' (or other scale as approved by EDC) showing existing and proposed streets, buildings, bulkhead and/or structural geometries, defined streets, paths and landscaped areas, defined recreation areas and special event areas, defined vehicular and non-vehicular circulation systems and special design features. Schematic design should be fully coordinated with other Tasks in this study and analysis, and shall explain all significant aspects of the Project.
- b. The schematic design shall include all sketches, diagrams, drawings, renderings and physical models as necessary to fully illustrate all major elements of the Project. The submission should be of a sufficient level of detail and elaboration to describe the design intent of structures, landscape plans and plant materials, pavement materials, railings, lighting, and other public amenities.
- c. The Consultant shall obtain, and become familiar with, all applicable design directives, standard details, administrative procedural bulletins and other guidelines.
- d. The Consultant shall consider:
 - Accommodation of vehicular routes, parking, curb access (e.g., deliveries, taxis, black cars).
 - Locations of benches, bike racks, bus shelters, art panels, and wayfinding, since the relocation of these will require coordination with NYCDOT.
 - Location and arrangements of DPR facilities, bikeways and park user access and maintenance/operation access
 - Location of underground utilities and other infrastructure
 - Side streets infrastructure, stormwater run-off, traffic and pedestrian flows, etc.
 - Light and shadows, sightlines and view corridors, and security
 - Future EDC, DOT, DPR, DDC, MTA, NYSDOT, FHWA, NYCT, and other relevant capital work in the area surrounding the project area and any improvements associated to that work.
- e. Detailed Open Space Planning
 - Develop a large-scale strategy for the study area for waterfront parkland and other public open spaces to be created and integrated into existing parkland and facilities

- Identify system of circulation within the enhanced open space system
 - Evaluate the possibility of enhanced accessibility to the waterfront open spaces
 - Identify ancillary facilities and infrastructure required for maintenance and operation of the open space network
 - Identify opportunities to strengthen waterfront open space continuity and connections, particularly where there are encumbrances.
 - Maximize use of passive and low maintenance design approaches
- f. The Consultant shall develop a schematic design including a cost estimate, with a format approved by EDC. The Schematic Design should consider all feasible options for the Project and result in an ideal design within a reasonable upper cost limit. EDC will review and comment on this design and cost estimate and seek comments from all interested parties. The Consultant shall make presentations of each design to EDC and, as directed by EDC, to interested parties. The Consultant will incorporate any necessary revisions into to the Schematic Design and cost estimate at EDC’s direction.
- g. Once the Schematic Design and cost estimate are approved by EDC and City Team, the Consultant will produce renderings and illustrative materials depicting the design for the Project.
- h. The Consultant shall identify in writing all Agency and utility regulations, ordinances, codes and permits required for approval and construction of the Project.
- i. Once EDC determines a final design direction, the Consultant shall prepare one Schematic Design (based on one previously developed) for PDC Conceptual Review. EDC as well as Community Board 1 and Community Board 3 and subcommittee review and approval shall be required prior to PDC submission. Submission requirements are outlined on the PDC website and will be confirmed by EDC. The Consultant shall review the PDC Schematic Design Documents with EDC as they are being developed.
- j. In preparing all Schematic Designs, preliminary recommendations and cost estimates, the Consultant shall:
- Consider concerns regarding elements such as appropriateness to the particular location, durability, the potential for vandalism, and maintenance responsibility. The Consultant shall coordinate and discuss these concerns with EDC and the appropriate Agencies, including obtaining required Agency approvals.
 - Minimize utility relocations and street reconstruction.

- Present the proposed treatments in a plan view, together with typical cross section views showing the interrelationship between the various elements, as well as the existing and proposed Utilities. The format, size and scale for the plans and cross-sectional views shall be as approved by EDC. Preliminary recommendations shall be coordinated with the Schematic Design and shall explain all significant aspects of the proposed treatment.
- Prepare cost estimates for the Project based on current labor costs, a breakdown for special items, and current unit prices for standard items. Separate cost estimates shall be prepared as directed by EDC.
- Maintain current information relating to the estimated cost of the Project during the Study period and inform EDC promptly in writing of any significant changes in such estimated cost due to market conditions or changes in the scope or design of the Project.
- Ensure the cost estimates shall be consistent with the Project budget as specified by EDC. If the estimates exceed the budget, the Consultant shall, in consultation with and at no additional cost to EDC, modify the Schematic Designs as necessary until the estimates are acceptable to EDC.
- Identify and list any distinctive elements of the Schematic Design requiring a maintenance program and provide both the maintenance program and an estimate of anticipated costs to maintain each element. The Consultant should incorporate Agency standards into the designs and cost estimates.
- Provide details on proposed wastewater projects (e.g. stormwater pumping, changes to regulators, tide gates, interceptors, etc.)

2. Topographic Survey

A topographical site survey will be required to locate all physical features needed to produce a comprehensive design. Survey and analyze current conditions within the framework of commonly accepted industry standards, unless otherwise directed by EDC. Surveys may include tasks listed below; however, respondents are strongly encouraged to propose alternates to the items set forth below that will enable more efficient collection of relevant information. The Consultant shall acquire all necessary approvals to prepare topographic surveys within the framework of the following parameters:

- a. Survey areas will be determined by the proposed concept design and will cover the area reasonably impacted by implementation.
- b. The topographic surveys shall be referenced by station and offset to a centerline baseline which has been established/coordinated/tied into existing borough monument lines, in accordance with current DOT Standard Highway Specifications (November 2010). All elevations shall be references to established borough benchmarks, or to benchmarks set from said established borough benchmarks through the use of independent bench runs. The reference points, including bench

runs and all tie-ins to the centerline baseline, shall be clearly documented so that they may be re-established at any time during the course of the Project, or in the future by any other surveyor.

- c. The topographic surveys shall locate all physical features within the Project Site needed to produce a comprehensive design, including, but not limited to, the following:
- Established building line lengths
 - Established legal grades of all streets.
 - Legal widths of all pavements, sidewalks and sidewalk areas.
 - Actual widths of all pavements, sidewalks and sidewalk areas.
 - Identification of all streets, including "paper" streets, by name.
 - Identification of all plazas, malls and public areas.
 - Location, by station and offset, of all roadways, edges of pavements, headers, curbs, drop curbs, pedestrian ramps, sidewalks, driveways, distinctive/special sidewalk areas, bus stops, traffic islands and traffic channels (permanent and temporary), trees (including caliper and edge distance to existing curb) and survey monuments. Existing curbs, sidewalks and pavements shall be identified by condition and type of materials.
 - Location, by station and offset, and identification of all street hardware including, but not limited to, manhole cover castings, valve box cover castings, catch basins, utility chamber covers, and gratings.
 - Location, by station and offset, and identification of all sidewalk hardware including, but not limited to, coal chutes, oil fills, cellar doors, under-sidewalk drains, sidewalk elevators, building sidewalk ventilation gratings, subway ventilation gratings, hydrants (high pressure, low pressure), street lights, traffic signal poles, parking signs, parking meters, traffic control boxes, traffic controllers, traffic detectors, fire call boxes, police call boxes, subway entrances and emergency exits, traffic stanchions, structural columns, monuments, newsstand kiosks, sidewalk retail areas, areaways, decorative fences and railings, steps, walls, stoops, planting areas, and cellar windows at grade.
 - Location, by station and offset, of all street encroachments including, hedges, fences, grass areas, planting areas, retaining walls, steps and stoops.
 - Location and identification of all abutting tax lots by lot and block numbers as well as existing frontage lengths.
 - Location, by station and offset, of all fronts of abutting buildings, including identification by house number, story height, entranceways, building type and use.
 - Direction of traffic, and the location and type of all lane and crosswalk markings, including school crossing markings.

- d. Horizontal locations shall be taken to the nearest tenth (1/10) of a foot.
- e. Vertical locations (elevations) shall be taken to the nearest hundredth (1/100) of a foot (or as specified by the EDC) longitudinally at fifty (50) foot stations, as measured along the centerline baseline, and at all street intersections, breaks in grade, building lines at intersections, and other locations required to fully define the existing topography; transversely, elevations shall be taken at the building lines, top and bottom of curbs, centerline of street and front and back edges or ribbon sidewalk.
- f. Spot elevations shall be taken at all street surface hardware locations, steps/platforms, building entrances, first floors, garage floors, back of sidewalk at all entranceways, ground elevations at building entrances, traffic islands, parking aprons, intersections (as required), corner (with crosswalk) sidewalk quadrants, storm/combined sewer inverts, at points giving the clearance from the roadway to the underside of overhead structures, and as otherwise required for design purposes.
- g. All street hardware, including manhole covers and frames, inlets, catch basins, gratings, frames, curb pieces, traffic signs, streetlights, meters and benches, shall be located by station and offset. The condition of each shall be noted.
- h. All trees located within the Project Site shall be located by station and offset. The size in caliper inches and condition of each shall be noted and the results presented in a tabular format to be included as a section of the technical supplement.
- i. All cellar doors located within the Project Site shall be located by station and offset. Each shall be visually inspected. The condition of each shall be noted.
- j. The topographic surveys shall include the full right-of-way in Manhattan. The topographic surveys shall extend beyond all intersections a distance of fifty feet (50') measured along the centerline of the respective street from the building line projection.
- k. Datum plane and coordinate system shall be NAVD 88
- l. All measurements shall be in the United States Standard of Measurements except as follows: legal mapped dimensions, base line dimensions and stationing shall be shown in United States Standard of Measurements, with metric equivalents shown in parentheses.
- m. All field notes shall be permanently bound, sharp, clear, crisp, cleaned and "fixed", dated, signed and sealed, and in a format approved by the Corporation.
- n. The Consultant shall submit original survey notes, summary of survey procedures/instruments employed, survey control data, discussion of survey accuracy, summary of survey control data, survey tie-ins, computer digitizer tapes and survey computations.

- o. The Consultant shall identify and provide copies of all survey source material.
 - p. The topographic surveys, working profiles, and cross sections shall be plotted within a framework acceptable to EDC
 - q. All original topographic information shall be dated, signed and certified to by a licensed surveyor. The license seal of the surveyor and/or registered professional engineer shall be shown on all plans, tracing and tabulation sheets.
3. Geotechnical, Environmental Sampling and Testing Plans, Subsurface Soil Investigations

The Consultant shall obtain geotechnical information necessary to advance the concept plan. Certain information may be available and will be provided to the Consultant where possible. Where such information already exists and can be provided, the Consultant shall modify the scope to reflect the existing, usable data and provide supplemental research and analysis as needed. Consultant shall ensure all necessary permits have been acquired to conduct investigations.

- a. The Consultant shall prepare plans for geotechnical and environmental testing along and around the proposed work areas.
- b. Document known environmental contamination issues, both in-water and upland sites (e.g., E designations)
- c. Perform Phase I Environmental Site Analysis of publicly controlled sites.
- d. Additional Phase II investigations including sampling and testing of contaminated soil on publicly owned property may be requested. The Consultant must provide an analysis of the sampling and testing material. Please see “Additional Environmental Investigation Allowance” in the fee schedule to assign a cost for potential Phase II investigations.
- e. The Consultant shall prepare and execute a soil boring plan (including soil strata information) for the preparation of competitive proposals for the soil boring work, indicating the required number of borings to be taken. The work shall likely consist of sinking steel casings, hollow stem augers, or mud drilling through earth or other materials, and drilling two and one-eighth (2-1/8) inch cores in rock with diamond drill bits, taking split spoon samples and/or undisturbed samples, determining ground water elevations, performing permeability and secondary geological testing, excavating for test pits at the locations and depth directed by the Consultant’s engineer, and other related work.
- f. The Consultant shall identify the locations of existing structures that would interfere with proposed project elements contemplated (using geophysical methods, review of available historic maps and data, and test pits as needed).
- g. Deliverables shall include a location plan, logs of all borings and test pits advanced, and a report of the results of the investigation, including soil and rock capacities,

recommendations for foundation types, pile sizes, etc. Deliverables shall be signed and sealed by the Consultant's Professional Engineer licensed in the State of New York.

- h. The Consultant shall compile the findings of the Soils Investigation Program and/or available subsurface data and produce a Geotechnical Foundation Report. The report shall include the subsurface exploration results, geotechnical design parameters for various subsurface materials, soil profile(s), design analysis, evaluation and recommendations.

4. Utility Surveys

The Consultant shall be required to perform and plot utility surveys for the Project Site within the framework of the following parameters:

- a. The utility surveys shall locate all existing surface and subsurface utilities, facilities and systems (both public and private) within the Project Site needed to produce a comprehensive design, including the identification and location of:
 - Storm, sanitary, combined and interceptor sewers and outfalls showing size, elevation and material, including regulators, tide gates and associated access covers
 - Water mains, gas mains and steam mains showing material and size.
 - Electric and telephone conduits
 - Fire and police communications conduits
 - Subway tunnels, station areas, access stairs and ventilator structures
 - Utility chambers and vaults
 - Basin and inlet connections
 - Vehicular, pedestrian and utility tunnels
 - Utility poles and overhead electric facilities
 - Parks and open spaces facilities and infrastructure
 - Other surface and subsurface facilities and appurtenances, as required
- b. The Consultant shall review all data obtained from the agencies, utilities, and other parties, and shall coordinate/reconcile such data with the topographic surveys
- c. The Consultant shall reconcile all discrepancies in the location and identification of all subsurface elements between the topographic surveys and the utility records
- d. All field notes shall be permanently bound, sharp, clear, crisp, clean and "fixed" dated, signed and sealed, and in a format approved EDC
- e. The Consultant shall submit original survey notes, together with all public and private utility drawings, plans and plates
- f. The Consultant shall plot the utility survey within the framework of the following parameters:

- The utility survey will be plotted on base maps, which have been photographically reproduced from the "clean" topographic base maps. All Utilities shall be clearly delineated and identified
 - All plotting and drafting work shall conform to the general standards of drawing in ink on an approved 24" X 36" reproducible drafting film, to a scale of 1" = 10', unless otherwise specified by the EDC
 - All utility drawings shall utilize standard lead agency format(s), notes and symbols.
 - The format for plotting the utility surveys shall be not more than two plan views per sheet, depending upon width or right way, and whether street is straight, skewed or curvilinear. There shall be no overlapping of street plotting for the utility surveys.
 - The utility surveys shall be plotted with utilities indicated by double lines with "to scale" width.
- g. In coordination with DEP, the Consultant shall also prepare a video inspection of sewers within the study area to document the condition of existing sewers and also inventory existing DEP structures (condition, size, and type of catch basins, manholes, etc.) and identify substandard structures which should be replaced.

Task 5: Environmental Review and Permitting

While the plan would be at a conceptual level and no conclusions have been drawn regarding potential impact significance, it is noted that the scale of the project may warrant an Environmental Impact Statement (EIS) or a robust federal Environmental Assessment (EA) that provides analyses comparable to those within an EIS prepared for SEQRA/CEQR purposes. The consultant shall prepare, based off of a schematic design and a worse-case scenario of impacts, draft environmental review and permitting documentation based off of the projects that advance into Task 4.

1. Environmental Review and Permit Application Preparation
 - a. The Consultant shall prepare the necessary environmental review documentation and any supplemental studies as applicable to satisfy NEPA and SEQRA/CEQR requirements for the federal, State and local approvals to implement the Project.
 - b. The Consultant proposal should describe its strategy for coordination of the environmental review processes and documentation. Should an EIS be required, the Consultant shall attend, participate in and help organize the public scoping session and the public hearing on the Draft Environmental Impact Statement (DEIS).
 - c. The Consultant will also be responsible for the drafting of the NEPA and SEQRA/CEQR determinations or findings to conclude the review and all associated notices.

- d. Given the scope of the project, the EA or EIS environmental review documentation would likely necessitate analyses or discussion within technical areas such as:
- Land Use, Zoning and Public Policy
 - Open Space
 - Socioeconomic conditions
 - Shadows
 - Historic and Cultural Resources
 - Urban Design and Visual Resources
 - Natural Resources
 - Hazardous Materials (to be done by others)
 - Water and Sewer Infrastructure
 - Transportation
 - Air Quality
 - Greenhouse Gas Emissions and Climate Change
 - Noise
 - Public Health
 - Neighborhood Character
 - Construction
- e. Each impact issue should be presented in a separate subsection which includes a discussion of existing conditions, the future without the project (No Action condition), potential adverse or beneficial impacts associated with the proposed action (With Action condition), and any mitigation measures designed to minimize identified impacts.
- f. The EA or EIS documentation would also be expected to include supplemental narrative or discussion addressing:
- Project Description - a description of the project, purpose/need, and its environmental context;
 - Environmental Justice Assessment - a consideration of whether the project would result in disproportionately high and adverse human or environmental impacts that would be borne by minority and low-income populations;
 - Mitigation - a description of mitigation measures proposed to eliminate or minimize any significant adverse impacts;
 - Unavoidable Adverse Impacts - a summary of the identified significant adverse environmental impacts that would be expected to occur and cannot be avoided if the project is implemented
 - Alternatives - a discussion and evaluation of reasonable alternatives to the proposed project;
 - Growth Inducing Aspects - a discussion of the potential for the project to spur further development;

- Use and Conservation of Energy - a discussion of the energy resources to be used if the Proposed Action is implemented and measures taken to conserve energy and enhance efficiency; and
 - Irreversible and Irretrievable Commitment of Resources - an identification of natural or human resources that will be consumed, converted or made unavailable for future use if the project is implemented.
- g. Permits documentation is not limited to but would be expected to include the following:
- US Army Corps of Engineers
 - NYS Department of State - Federal Coastal Zone Management Act
 - NYS Department of Environmental Conservation
 - NYS Office of Parks, Recreation and Historic Preservation
 - NYC Department of Small Business Services
 - DCP Waterfront Revitalization Program

Task 6: Stakeholder Engagement

Respondents are encouraged to include within their consultant team local community-based organization(s) involved in resiliency planning within each of the sub areas in order to facilitate successful broader community engagement activities. Respondents are also encouraged to retain the services of public relations firm to assist in outreach and strategy.

Stakeholder engagement is expected to run the course of the project and be an integral part of the study. The Project Site contains two Community Boards with multiple geographically based sub-committees, several organizations and stakeholders already engaged through previous planning processes including HUD's Rebuild By Design competition, and is adjacent to communities actively engaged in planning for East Side Coastal Resiliency. The Consultant will likely have to seek approvals from and coordinate with multiple community-based taskforces representing each sub area and additional stakeholders.

At the start of the Contract, the Consultant is expected to develop an intensive Stakeholder Engagement Plan that strategically identifies key junctures for community input and corresponds to points of needed agency feedback. In consultation with the City, the consultant will meet with Community Boards, local community-based organizations, elected officials, city-wide advocates, key property owners, utility companies, and other interested stakeholders.

2. Stakeholder Engagement Plan

Make a comprehensive list of area stakeholders, including Manhattan Community Boards 1 and 3, the Downtown Alliance, the Battery Conservancy, and other community based organizations and community groups (e.g., tenant associations), NYCHA tenants and tenant associations, City/State/Federal elected officials, major property owners,

institutions and businesses, and Citywide/regional/ national advocacy organizations (environmental, waterfront/maritime/open space, etc.).

- a. Identify strategy and methods for effective outreach. In close consultation with EDC and City Team, develop a detailed outreach strategy and schedule to be implemented in conjunction with other tasks of the feasibility study. Methods and activities may include discussions and informal meetings with individual stakeholders, charrettes/workshops, information sessions/open houses, public meetings, site tours, stakeholder surveys, online platforms, engagement with media outlets, and other types of outreach.
- b. Create easily accessible and understandable graphics and communication materials to be used with different stakeholder groups, at the direction of the City. These may include, but are not limited to: presentations; maps, diagrams, brochures/print literature and other visual materials; stakeholder surveys and other interactive elements; and online resources such as a project website.
- c. In close consultation with EDC and partner agencies, develop a detailed outreach plan and schedule, to be implemented in conjunction with other tasks of the feasibility study. Staff from the Consultant will be expected to assist in all aspects of outreach, including helping to plan, schedule, and run outreach events; gathering and documenting feedback; and participating in discussions with stakeholders.
- d. Synthesize stakeholder outreach activities and outcomes into a cohesive and accessible vision plan document suitable for wide distribution. At the direction of EDC, design, format, and print the vision plan. If a unique project website is created as part of the stakeholder engagement plan, the vision plan should be integrated into the website.
- e. At the direction of the City, conduct stakeholder meetings with the local stakeholders, Community Board leadership, target constituency groups, elected officials and public officials, large property owners, large community developments (including Mitchell Lama, and Co-ops), etc.
- f. The Consultant is expected to give presentations and shall be responsible for preparing appropriate materials, including renderings, for these presentations. In consultation with EDC, the Consultant shall be responsive to comments and shall compile the results of surveys, individuals and group interviews.
- g. The Consultant shall develop materials for and anticipate large-format public meetings and conceptual design workshop sessions. Frequency of public meetings will be finalized with the outreach strategy, but Consultant should anticipate at least one large-format public meeting a month and additional concept design workshop sessions within each sub area.

- h. The Consultant will be expected to assist in all aspects of outreach, including help plan, schedule, and run outreach events; gathering and documenting feedback; and participating in discussions with stakeholders.
- i. Based on the needs of stakeholders, the Consultant may be required to produce materials in English, Spanish, and Chinese, as well as provide for simultaneous English/Spanish and English/Chinese translation. The exact nature and number of the community engagement sessions is to be determined in consultation with EDC.

3. Public Agency Outreach

- a. Prepare for and attend meetings with cooperating, involved, and interested City agencies which may include, but are not limited to:
 - NYC Department of Parks and Recreation
 - NYC Department of City Planning
 - NYC Department of Transportation
 - NYC Department of Environmental Protection
 - NYC Department of Buildings
 - NYC Department of Small Business Services
 - NYC Office of Emergency Management
 - NYC Office of Management and Budget
 - NYC Landmarks Preservation Committee
 - NYC Public Design Commission
 - Police Department, City of New York
 - Fire Department, City of New York
- b. Prepare for and attend meetings with public agencies and other governmental entities that have an interest in the feasibility study. In addition to City agencies, such entities may include, but are not limited to:
 - New York City Housing Authority
 - Battery Park City Authority
 - Lower Manhattan Development Corporation
 - Port Authority of New York and New Jersey
 - Interstate Environmental Commission
 - MTA New York City Transit, Bridges and Tunnels
 - NYS Department of Environmental Conservation
 - NYS Department of State
 - NYS Department of Transportation
 - NYS Office of Parks, Recreation and Historic Preservation
 - NYS Office of General Services
 - NYS Department of State

- US Army Corps of Engineers
- US Environmental Protection Agency
- US Coast Guard
- US Fish and Wildlife Services
- Federal Emergency Management Agency
- Federal Aviation Administration
- NOAA National Marine Fisheries Service
- National Park Service

The Consultant shall in a detailed manner document outreach efforts over the Project duration, provide Project materials for community meetings, provide copies of meeting minutes and give presentations.

Task 7: Final Study and Recommendations

Following the completion of Tasks 1 through 6, inclusive, the Consultant shall prepare a comprehensive Final Study, which shall synthesize the data and information assembled as part of the Services and combine the final versions of each of the Tasks and Subtasks. The Final Study shall also include recommendations regarding the viability of various recommendations proposed, if multiple plans or concepts are presented, and shall be accompanied by supporting documentation and analysis substantiating the findings and analysis contained in the Final Study. It is expected that the Final Study will include, but is not limited to:

- Defined study area boundaries and planning rationale
- Detailed listing of all tasks, subtasks, and milestones
- Lead time for each task, subtask, and milestone
- Proposed interim and final deliverables for each task and subtask
- Project schedule with target dates
- Interrelated and critical path items
- Appealing visual representations including photographs of physical models and community engagement activities
- Chapters that anticipate different audiences and specialize content targeting (1) regulatory and permitting agencies (2) City agencies and (3) the general public.