WILLETS POINT DESIGN GUIDELINES

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New York City Economic Development Corporation

APRIL 2011

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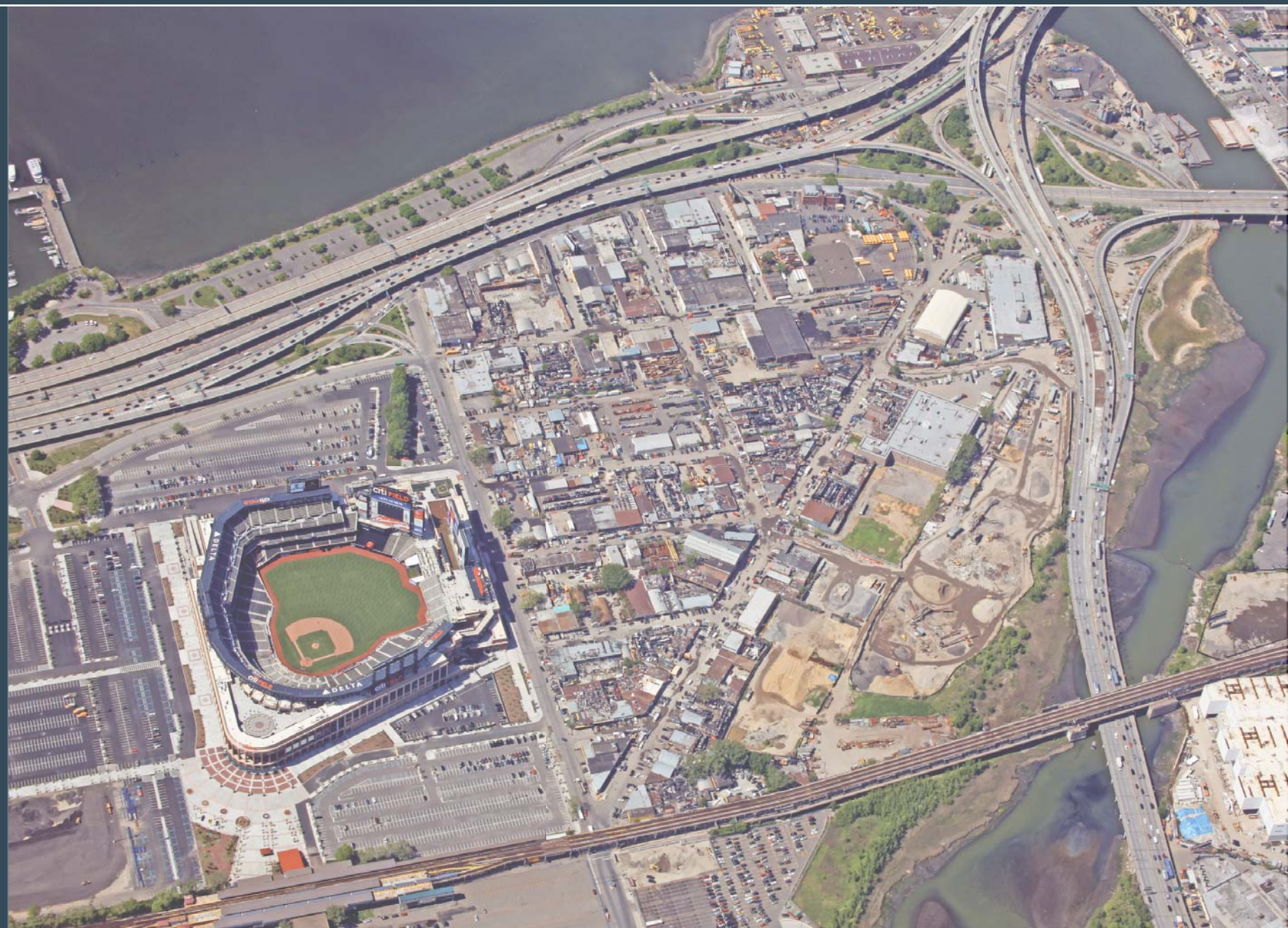
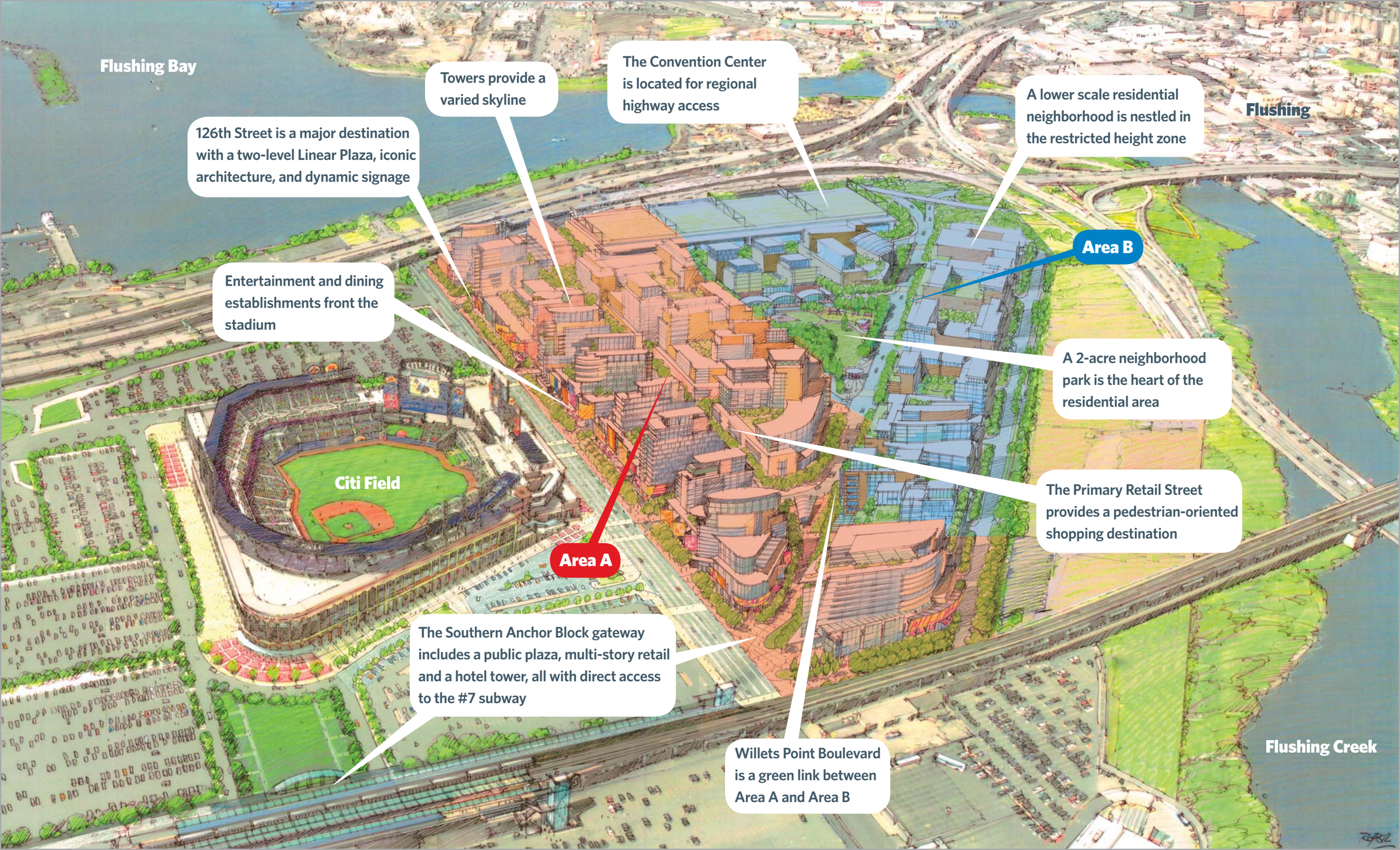


Figure 1. (left) Aerial view of the existing Willets Point
Figure 2. (right) Illustrative rendering of the Willets Point Development
These images depicts the intent of the design guidelines and is for illustrative purposes only

New York City's Next Great Neighborhood

The redevelopment of Willets Point will transform a site with a history of environmental contamination into a model green neighborhood for the future, as a bold new skyline rises on F. Scott Fitzgerald's "valley of ashes."

A vibrant pedestrian-oriented retail and entertainment destination and a thriving residential neighborhood will repair an historic gap in the fabric of the City, forging connections between existing neighborhoods, iconic parks, unique cultural destinations, and the Flushing Bay waterfront.


Flushing Bay
Towers provide a varied skyline
The Convention Center is located for regional highway access
A lower scale residential neighborhood is nestled in the restricted height zone
Flushing
126th Street is a major destination with a two-level Linear Plaza, iconic architecture, and dynamic signage
Area B
Entertainment and dining establishments front the stadium
A 2-acre neighborhood park is the heart of the residential area
Citi Field
The Primary Retail Street provides a pedestrian-oriented shopping destination
Area A
The Southern Anchor Block gateway includes a public plaza, multi-story retail and a hotel tower, all with direct access to the #7 subway
Willets Point Boulevard is a green link between Area A and Area B
Flushing Creek

HOW TO USE THIS BOOK

The purpose of the Design Guidelines is to ensure that the redevelopment of Willets Point will be consistent with the City of New York's vision for the site as a sustainable, pedestrian-friendly, mixed-use, urban neighborhood.

These Design Guidelines illustrate the planning principles and design intent for the District while being flexible and goal-oriented to allow for creative solutions. The vision, principles, and design guidelines within this document are applicable regardless of changes in the redevelopment program.

These Design Guidelines supplement, but do not replace, the Willets Point Special Zoning District (hereafter SZD). Any redevelopment must comply with all requirements of the adopted SZD, which supersede these guidelines in the event of a conflict.

This document is organized into three chapters:

1 "A Model Green Neighborhood" presents the sustainable planning principles that are the basis for the redevelopment of Willets Point.

2 "Design Quality Standards" describes the desired qualities, materials, and details for the public realm and architecture that are recommended district-wide.

3 "Subarea Guidelines" provides design guidelines specific to each subarea based on an integrated concept of streets, public open spaces, and buildings intended to create a complete urban environment.

Willets Point Design Guidelines

Table of Contents

After a century of blight and neglect, this neighborhood's future is very bright indeed. This will be the first truly green community, with buildings that use the latest energy efficient technology and parks and open spaces that give New Yorkers new places to play.

— Mayor Bloomberg

A Model Green Neighborhood

It is a rare opportunity in the densely developed environment of New York City to create an entirely new neighborhood of the scale and scope envisioned for Willets Point, in the Borough of Queens. With the potential for over 5,000 new mixed-income housing units, millions of square feet of retail and commercial space, new parks and plazas, and a wide variety of activities to complement Citi Field, Downtown Flushing, and other nearby destinations, Willets Point provides the chance to realize a new model green neighborhood for New York City.

SITE CONTEXT

REGIONAL AND LOCAL CONTEXT

Willets Point is an approximately 62-acre area located in Queens. The site has exceptional subway and highway access and is surrounded by major regional destinations, including Citi Field, Flushing Meadows Corona Park, and the Flushing Bay waterfront. Although located between the existing neighborhoods of Flushing and Corona, Willets Point is currently an isolated and underdeveloped area within the City's urban fabric. Known as the "Iron Triangle" due to its industrial and auto-related uses, the site has a history of heavy contamination.

BRIEF HISTORY OF WILLETS POINT

During the mid-19th century, the salt marshes around Flushing Creek were turned into landfill by the Brooklyn Ash Removal Company. This area thus became an ash dump, receiving up to 100 railroad cars of ash per day.

In 1936, Robert Moses closed the landfill and created what would later become Flushing Meadows Corona Park for use as a World's Fair site. Although the surrounding areas experienced remarkable transformation, Willets Point remained an industrial hub and became further environmentally compromised.

Figure 3.
Context Map

View of the Flushing Meadows Corona Park

View of the Flushing Bay Promenade

TIES TO CULTURAL AND RECREATIONAL DESTINATIONS

A green Willets Point will complete a network of public open spaces that span from the Flushing Bay to the cultural and recreational destinations in Flushing Meadows Corona Park.

View of Corona

View of Downtown Flushing

TIES TO SURROUNDING NEIGHBORHOODS

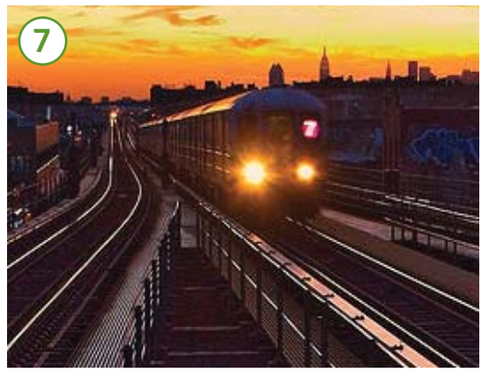
A new culturally and economically diverse neighborhood will connect to and enhance the existing surrounding neighborhoods of Corona and Flushing.

View of Citi Field along 126th Street

View of Citi Field at night

IMMEDIATE CONTEXT: STADIUM

Citi Field presents an opportunity to create a hub of urban activity drawing upon stadium visitors. Inspired by the way Ebbets Field was located within an urban neighborhood, Willets Point can integrate the stadium into a sustainable urban development.



View of the elevated 7 subway line

View of the Pasarelle to the Long Island Railroad and Flushing Meadows Corona Park

OPPORTUNITY: TRANSIT ACCESS

With exceptional mass transit, regional highways, and major airports, Willets Point is uniquely positioned to serve all of Queens, the City, and the region.

EXISTING CONDITIONS

SITE CONSTRAINTS

Site planning and development of Willets Point is affected by a series of existing site conditions. These conditions include wide-spread contamination combined with a high water table, existing major utilities, a lack of sanitary sewer system and limited stormwater infrastructure, site elevations that are largely below the current Federal Emergency Management Agency (FEMA) 100-year floodplain, and height restrictions determined by the LaGuardia Airport flight paths. Together, these conditions create fundamental planning and design repercussions, as shown to the right.

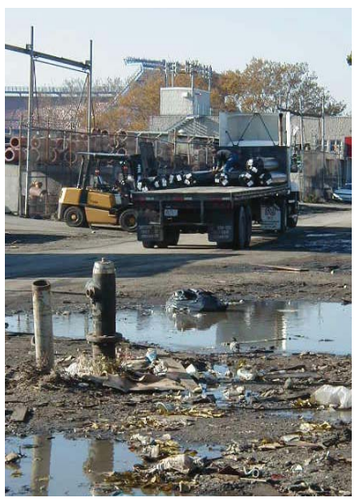
All diagrams on pages 10-11 are for illustrative purposes only. Actual conditions and requirements must be verified with the appropriate authority.

All elevation grades in this document are in feet NGVD29 with a FEMA 100yr floodplain of 14 feet NGVD29.

THE SITE TODAY

CONSTRAINTS: ENVIRONMENTAL CONTAMINATION AND A HIGH WATER TABLE

Willets Point suffers from widespread petroleum contamination, with additional potential contamination from paints, cleaning solvents, and automotive fluids. The high water table is responsible for spreading pollution throughout the site and endangering adjacent water bodies. *See Figure 4.*



Existing conditions at Willets Point

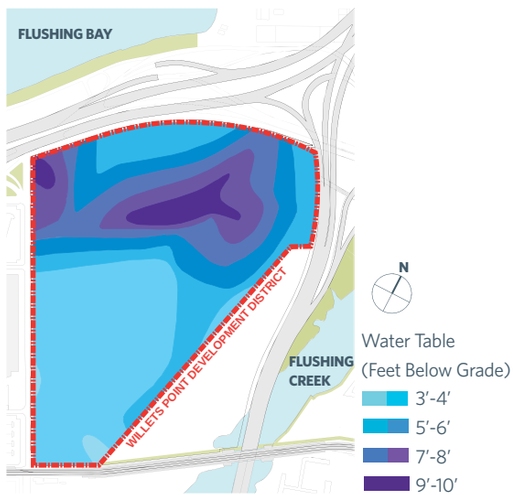


Figure 4. Map of Existing Water Table

RESULTING SITE DESIGN IMPACTS INCLUDE:

- **Contaminated soils are recommended to be capped, removed, or otherwise isolated.**
- **Underground parking garages/basements may be cost-prohibitive and therefore above ground parking garages may need to be considered.**
- **Stormwater management should consider strategies other than permeating water into the ground.**

CONSTRAINT: EXISTING SITE UTILITIES

The site lacks a major sewer system but electric, gas, and water main lines run under existing streets, including a 72" water main below Willets Point Boulevard.

Existing conditions along Willets Point Boulevard

RESULTING SITE DESIGN IMPACTS INCLUDE:

- **Due to the current configuration of major utility lines, Willets Point Boulevard and 34th Avenue will likely remain mapped in their current alignments. Other existing streets are more easily realigned to accommodate new development.**

CONSTRAINTS: FLOOD PLAIN AND SITE GRADES

Most of Willets Point lies within the FEMA 100-year floodplain or the 1% annual flood Zone AE. Portions of the site are in Zone X or the 0.2% annual flood. *See Figure 5.* The existing grades on the site vary from an elevation of +7 Above Mean Sea Level (AMSL) to + 15 AMSL. *See Figure 6.*

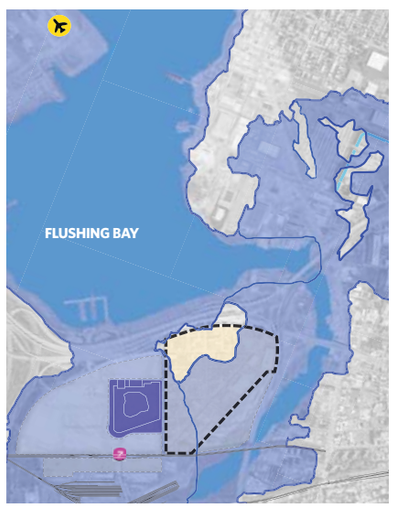


Figure 5. 100-Year Flood Plain Map

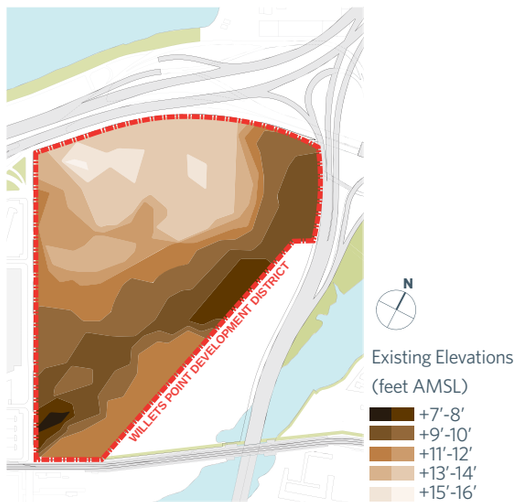


Figure 6. Map of Existing Grades

RESULTING SITE DESIGN IMPACTS INCLUDE:

- **The entire site, including new streets and building ground floors, are recommended to be raised to +14 AMSL** (FEMA 100-year floodplain level). *
- **A grade transition of between 0′ and 4′ is recommended to occur around the entire site perimeter to meet existing surrounding grades.**
- **If an area of the site is left at existing grade, transition zones are recommended to meet the raised building ground floors.**

CONSTRAINT: HEIGHT LIMITATIONS

Most of Willets Point lies within the flight path to LaGuardia Airport and is subject to height limits as determined by the Federal Aviation Administration (FAA) and Port Authority of New York and New Jersey (PANYNJ). Per FAA and PANYNJ, outside the cone of the flight path, the maximum allowed height is +232 AMSL, as determined by the highest elevation of the Citi Field stadium. *See Figures 7 and8.*

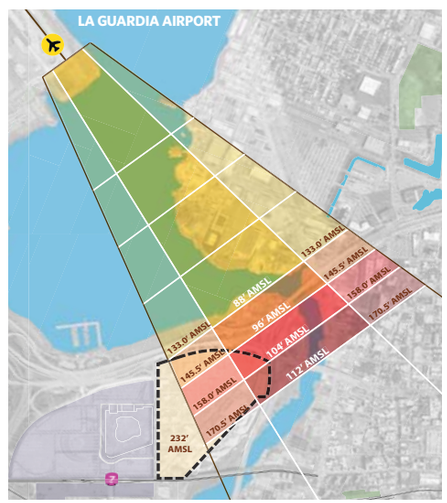


Figure 7. FAA Height Constraints Map

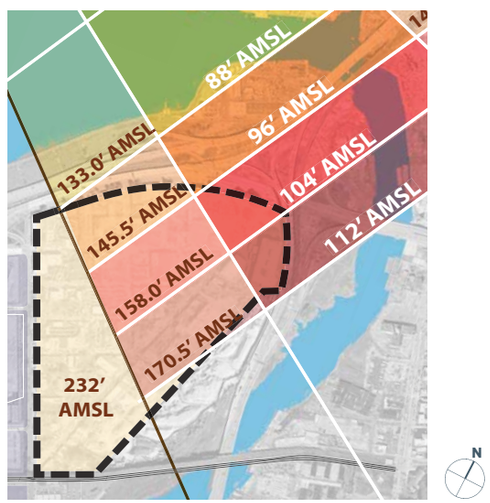


Figure 8. Map of FAA Height Constraints over Site

RESULTING SITE DESIGN IMPACTS INCLUDE:

- **The tallest towers can only be located in the westward zone, where building heights can reach +232′ AMSL.**
- **Building heights are increasingly restricted towards the north/east.**

ILLUSTRATIVE PLAN

ILLUSTRATIVE PLAN

The Illustrative Plan shown here describes one possible design that is based on the Willets Point Special Zoning District and the Willets Point Design Guidelines in this document.

The Illustrative Plan is also based on a development program *(see page 13)* as examined in the Final Generic Environmental Impact Statement and permissible under zoning.

A comparison of the Existing Conditions Plan and Illustrative Plan *(see Figures 9 and 10)* provides an indication of the possible extent of changes to the existing street grid. A new street grid will accommodate mixed-use development and urban design objectives and address floodplain issues. While most streets may be realigned, some streets will likely remain in place (with raised surface elevations).

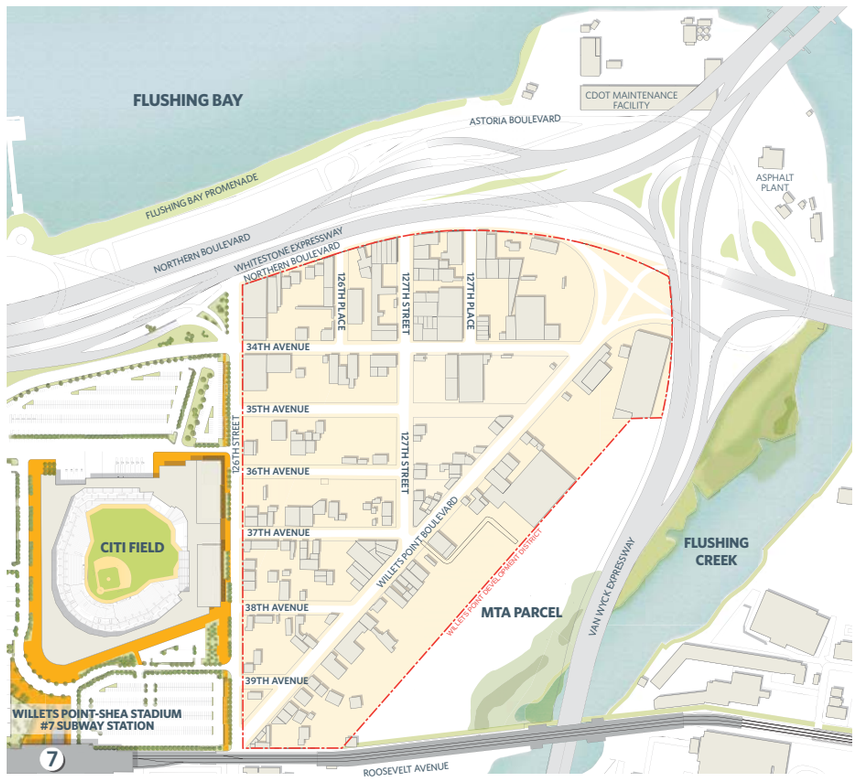


Figure 9. Existing Conditions Map

Figure 10. Illustrative Site Plan
The above image depicts the intent of the design guidelines and is for illustrative purposes only

Low Rise-Mid Rise
High Rise
Public Sidewalk or Plaza
Public Open Space
Rooftop Green Space

MAXIMUM PROGRAM

The Willets Point Design Guidelines are based on a Development Plan that assumed the following maximum program, allowable per zoning, over the approximately 62-acre site:

Retail	1,700,000 GSF
Office	500,000 GSF
Hotel	560,000 GSF
Residential	5,000,000 GSF
Convention Center	400,000 GSF
School	140,000 GSF
Community Use	160,000 GSF
Total:	**8.9 Million GSF**
Parking	6,900 Spaces
Open Space	8 Acres

Actual development may reflect less than the maximum program; however the spirit and principles of the Design Guidelines are relevant regardless of any program variation.

IMPLEMENTATION

The redevelopment of Willets Point will occur through a phased implementation.

Implementation of any portion of the site should occur within the context of, and be informed by, a complete vision and development plan for the entire site.

Phase 1 redevelopment can create a successful mixed-use area that lays the groundwork for a future complete urban neighborhood.

- Design Phase 1 to be sustainable and transit-oriented, with higher densities and public destinations within walking distance to the #7 subway station.
- Create a visible presence for the District at Roosevelt Avenue and 126th Street.
- Leverage existing resources, such as Citi Field, to create a complete urban environment by locating entertainment uses and other attractions adjacent to the stadium.
- Create a complete retail and commercial environment with an appropriate mix of national chains and local stores and an outdoor pedestrian-oriented design.

Phased implementation creates several design challenges that should be addressed in ways that are sensitive to both existing and future occupants.

- Design buildings within the context of the full build-out. Do not locate garages or blank facades facing areas of the site intended for future redevelopment.
- Provide for drainage from the Phase 1 area in a way that does not negatively impact existing areas outside of Phase 1.

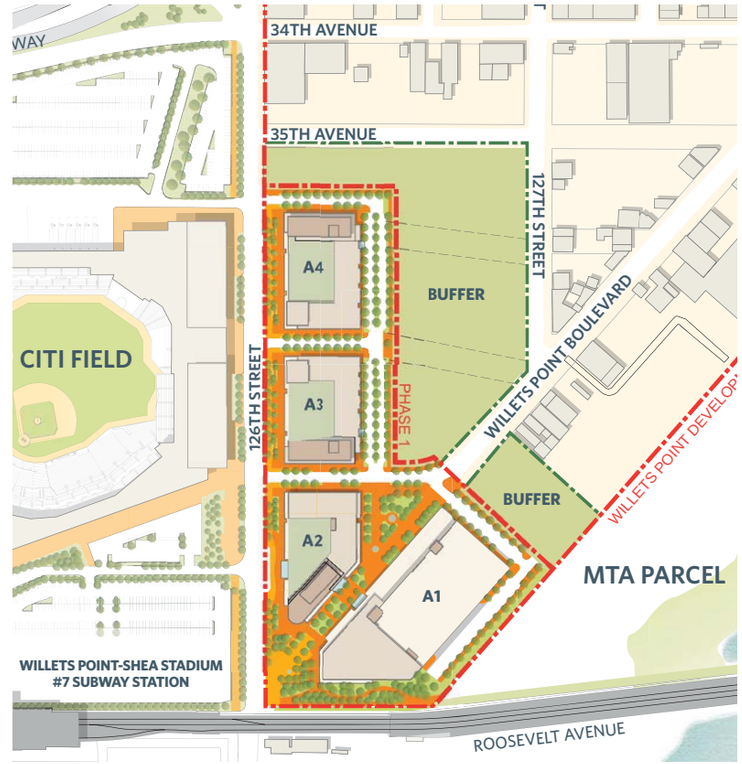


Figure 11. Illustrative Plan of Phase 1 Development Area

Low Rise-Mid Rise
High Rise
Public Sidewalk or Plaza
Rooftop Green Space
Buffer Area

SUSTAINABLE PLANNING PRINCIPLES

The sustainable redevelopment of Willets Point will be based on the following eight principles to create a model new green neighborhood for New York City.

1 TRANSIT-ORIENTED DEVELOPMENT

2 A CONNECTED NEIGHBORHOOD

3 HIGH DENSITY MIXED-USE DISTRICT

4 LINKED NETWORK OF STREETSCAPES AND OPEN SPACES

5 SUSTAINABLE WATER MANAGEMENT

6 AN ENERGY-EFFICIENT DISTRICT

7 GREEN ARCHITECTURE

8 HEALTHY ENVIRONMENT

The eight Sustainable Planning Principles for Willets Point inform these Design Guidelines and integrate sustainability into the planning approach for redevelopment.

District-wide sustainability goals for water, energy and environment complement site planning and design strategies that themselves enhance the environmental performance of the district, such as access to mass transit, density and mixed-use, and pedestrian-friendly streetscapes. The principles form an integrated set of overlapping systems that, in combination, define an overarching vision for Willets Point, and become a guide for the development of a mixed-use community that is socially, environmentally, and economically rewarding.

Drawing upon current thinking in sustainable planning and design, the principles emphasize strategies that bring together individual buildings into a larger vision of a green neighborhood. They respond to increased public awareness of environmental conservation and demand for healthier, high-quality living environments, and seek to minimize the overall carbon footprint of the redevelopment. The United States Green Building Council (USGBC) has granted the District pre-review approval (stage 1 certification) in the LEED Neighborhood Development ("LEED-ND") program.

The principles, and the Design Guidelines which follow, complement the Willets Point Special Zoning District, which was adopted by the City Council on 13th November, 2008. They are intended to further the objectives of the City of New York for environmental cleanup, site preparation, on- and off-site infrastructure, development financing, affordable housing, and other development goals.

The successful implementation of the Willets Point redevelopment will depend on a creative partnership between the City and developers, design professionals, and contractors participating in an early dialogue to ensure the proper and cost-effective realization of sustainable strategies at the scale of the entire neighborhood. These principles and guidelines do not represent a complete resource, but rather a framework of concepts. They are deliberately goal-oriented to allow for creative solutions that take advantage of rapidly changing technologies, policies, regulations, and building codes.

LEED-ND PROCESS

LEED-ND is a rating system that integrates the principles of smart growth, new urbanism, and green building into the first national standard for neighborhood design. It has been developed by United States Green Building Council (USGBC) in partnership with the Congress for the New Urbanism and the Natural Resources Defense Council.

The rating system promotes the location and design of neighborhoods that reduce vehicle miles traveled and communities where jobs and services are accessible by foot or public transit. It encourages more efficient energy and water use - especially important in urban areas where infrastructure is often overtaxed.

The USGBC designated Willets Point as a "LEED-ND" pilot project in 2007 and subsequently granted District pre-review approval (stage 1 certification).

The City is committed to obtaining certification for the Project through the "LEED-ND" program, and the developer(s) will be required to complete the certification process.

See pages 26-27 for more details on the Stage One Application.

PRINCIPLE 1.1 Transit-Oriented Development

OBJECTIVE

Transit-Oriented Development (TOD) emphasizes dense, compact and walkable communities with convenient access to mass transit. The planning of Willets Point should maximize the value of the adjacent #7 subway station, as well the Long Island Railroad and bus routes. The benefits of this approach include reduced traffic congestion and increased safety, reduced parking demands, reduced pollution from vehicles, and healthier lifestyles, resulting in an improved quality of life for residents and visitors.

POTENTIAL STRATEGIES

1.1.1 TRANSIT-ORIENTED LAND USE
Locate high-density uses which generate the largest numbers of daily trips within a five-minute walk of the #7 subway, and maximize the number of residential and other uses within a ten-minute walk of the subway.

1.1.2 WALKABLE LINKS TO TRANSIT
Create a pedestrian-oriented public realm and street system which encourages residents, workers and visitors to walk from transit to their destinations through design, landscaping, and ground-floor uses which create interest and activate sidewalks and plazas.

1.1.3 WAYFINDING
Provide convenient pathways, access points, and wayfinding systems to ensure the shortest possible walking routes and a clear sense of orientation for pedestrians arriving at the #7 subway for destinations within Willets Point.

1.1.4 TRAFFIC & PARKING DEMAND MANAGEMENT
Maximize the opportunity for the use of transit to reduce projected traffic and parking demands.

1.1.5 BIKE SYSTEMS
Provide bike lanes on new streets and bike parking facilities on sidewalks and in buildings. Encourage the easy use of bicycles and other non-motorized transportation to access transit and get to and around Willets Point.

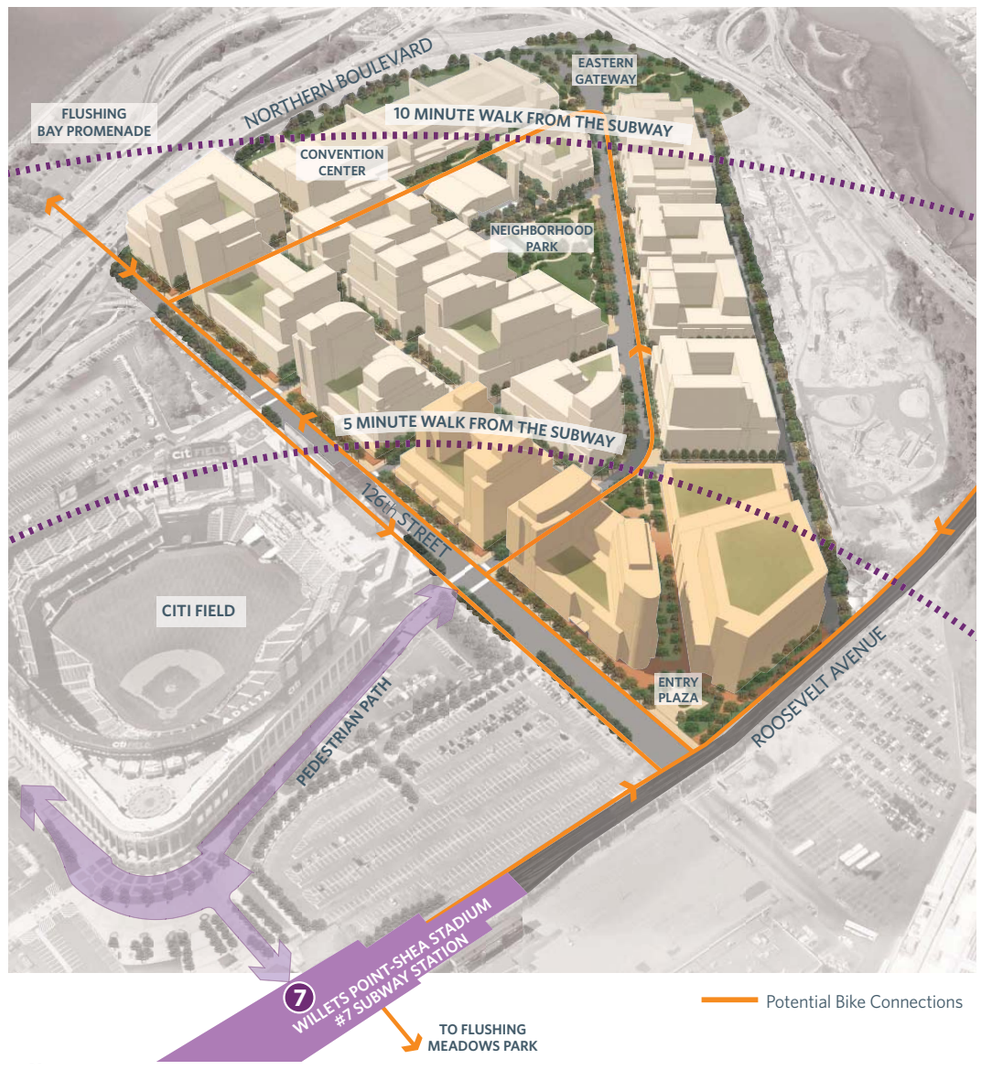


Figure 12. Diagram of the Willets Point Development
The above image depicts the intent of the design guidelines and is for illustrative purposes only

PRINCIPLE 1.2 A Connected Neighborhood

OBJECTIVE

As a new neighborhood for Queens, Willets Point should link to existing communities and destinations, giving new residents access to parks, the waterfront, local services, and amenities, while providing visitors with a larger set of connected destinations, complementing and extending the shopping and business district of Downtown Flushing, and appealing to patrons of Citi Field, the USTA National Tennis Center, and other nearby attractions. A study completed in December of 2008, shown to the right, proposed a series of new and improved bicycle and pedestrian connections between these important destinations.

POTENTIAL STRATEGIES

1.2.1 CONNECTIONS TO NEIGHBORHOODS
Provide easy connections and access to and from the adjacent neighborhoods of Downtown Flushing and Corona.

1.2.2 CONNECTIONS TO PARKS AND DESTINATIONS
Provide easy connections and access to and from important regional amenities and destinations including Flushing Meadows Corona Park, and the Flushing Promenade, Citi Field and the USTA National Tennis Center.

1.2.3 REGIONAL HIGHWAY CONNECTIONS
Take advantage of the existing highway connections and those currently being planned, by closely locating uses that are dependent on regional access.

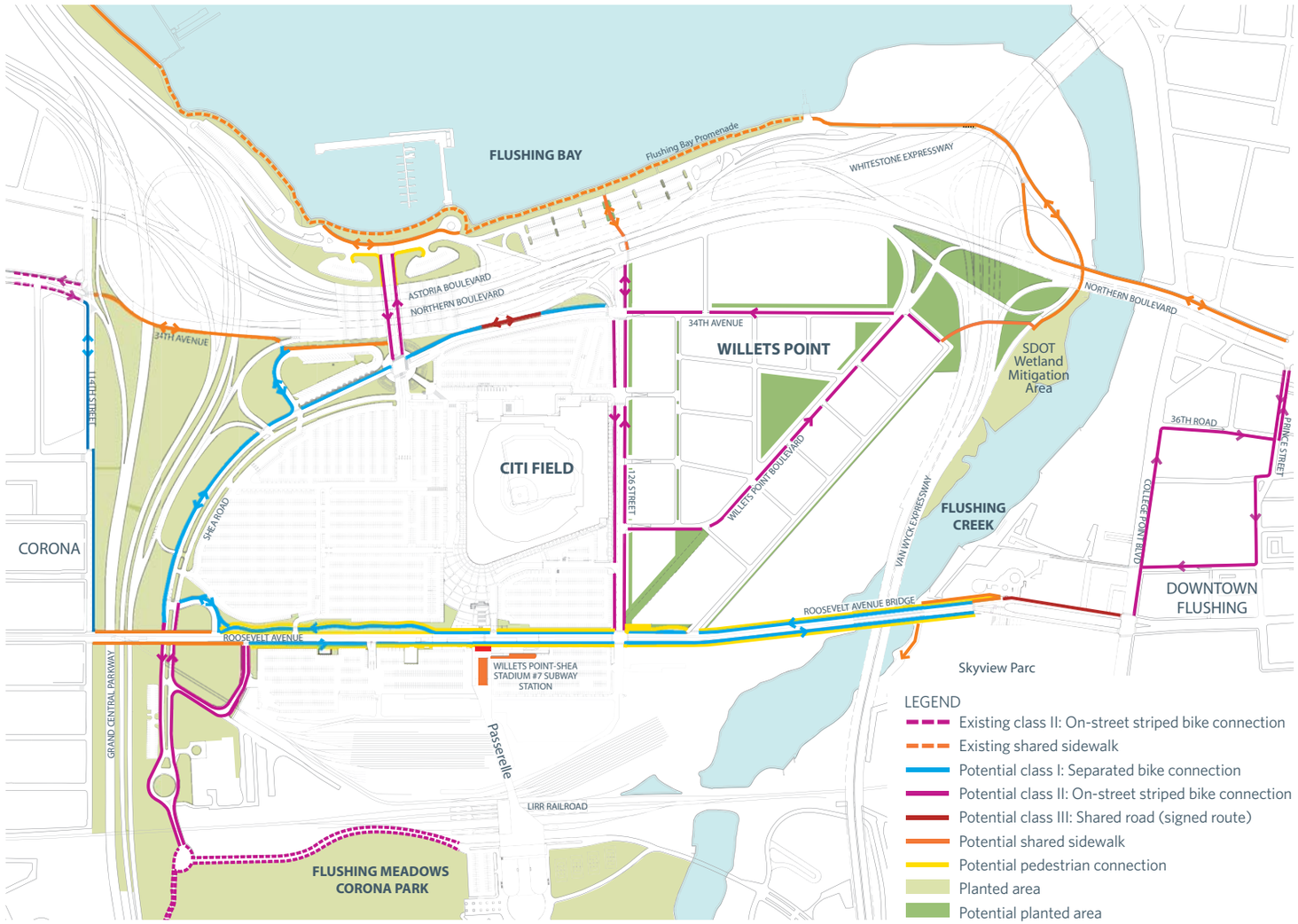


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Figure 13. Area-wide connections proposed in the "Willets Point Bicycle and Pedestrian Connections" study, completed in December 2008
The above image depicts the intent of the design guidelines and is for illustrative purposes only

PRINCIPLE 1.3 High Density Mixed-Use District

OBJECTIVE

Willets Point provides a unique opportunity to create a critical mass of residential and commercial density that supports New York City's strategic goals of increasing the housing supply for a broad range of household incomes and providing new regional retail and services for the outer boroughs. An intense mix of uses both horizontally and vertically will create a sustainable "24/7" neighborhood with active street life, appealing equally to residents, workers and visitors.

POTENTIAL STRATEGIES

SITE-WIDE CRITERIA

1.3.1 ECONOMIC VITALITY
Provide sufficient density and diversity of residential and commercial uses to ensure that the redevelopment of Willets Point creates sustainable long-term economic value.

1.3.2 DENSITY AND SUSTAINABILITY
Realize the objectives of PlaNYC to create needed new housing on underutilized sites where it is less disruptive of existing neighborhoods and promotes sustainable, transit-oriented development patterns.

1.3.3 A VIBRANT COMMUNITY
Ensure that the development program generates the necessary population density of residents, workers and visitors to support a vibrant and active street life and sense of community.

1.3.4 ECONOMICALLY INTEGRATED HOUSING
Support the integration of mixed-income housing in accordance with the City's affordability targets for the site.

SUBAREAS

1.3.5 TWO SUBAREAS, ONE COMMUNITY
The Willets Point Special Zoning District describes two distinct subareas within Willets Point, each with a different character of land uses. These are designated Area A and Area B.

AREA A
MIXED-USE RETAIL, ENTERTAINMENT AND HOUSING
A mixed-use, high-intensity retail and entertainment district which forms the gateway to Willets Point and leverages the presence of Citi Field just across 126th Street. Housing, hotels, and commercial space above retail and entertainment ensure that retail areas have an urban character, and the neighborhood has 24/7 vitality.

AREA B
RESIDENTIAL NEIGHBORHOOD AND CONVENTION CENTER
A residential neighborhood for a diverse community of all ages, organized around residential side streets and a neighborhood park that forms the green heart of Willets Point. The north edge of Area B may support a potential mid-sized convention center.

An entertainment district along Orchard Road in Singapore

A neighborhood residential building in Vancouver

Figure 14. Diagram of the Willets Point Development

The above image depicts the intent of the design guidelines and is for illustrative purposes only

TYPICAL BUILDINGS

1.3.6 AREA A BUILDINGS

Vertically stacked mixed-use buildings may contain a retail base, screened or wrapped parking in the base, and residential, hotel, or office uses above in the mid-rise and tower. Towers in this area rise up to 218′.

1.3.7 AREA B BUILDINGS

Residential buildings may contain accessory retail uses and parking concealed in the interior capped with rooftop courtyards. Mid-rise portions rise up to 156′.

PARKING

1.3.8 SITE-WIDE SHARED PARKING STRATEGY

Provide a site-wide shared parking strategy, in combination with transit modal-split assumptions, with potential for significant reductions in required parking spaces for the entire redevelopment and individual uses.

Reduced parking demand has many aesthetic and environmental benefits, including the reduced bulk and mass of buildings.

Larger public garages serving the retail district are allowed in the Northern and Southern Anchor Blocks.

1.3.9 INTEGRATED PARKING

Carefully integrate parking with site planning and building design, in accordance with the requirements of the Willets Point SZD.

1.3.10 WRAPPED PARKING

On-site parking should be wrapped with active uses (residential, retail) at each level, except for selected areas where parking is permitted to be exposed or architecturally screened.

1.3.11 STACKED & MECHANIZED PARKING

Stackers and mechanized parking within garages can increase efficiency and reduce the effects of parking on building bulk.

1.3.12 ON-STREET PARKING

On-street parking should be maximized, to provide convenience, pedestrian-oriented streets, and reduced off-street parking requirements for retail uses.

PRINCIPLE 1.4 Linked Network of Streetscapes and Open Spaces

OBJECTIVE

Willets Point will be literally "green." A new public realm where none currently exists will combine a landscaped, pedestrian-oriented street grid with new parks and plazas, creating an interconnected network of open space that enhances the livability and attractiveness of high-density development. The street and park system will be in character with the best existing New York City neighborhoods and based upon current city standards for sustainability and design. The network will tie together the entire site, creating a neighborhood designed for pedestrians, with links to the waterfront and surrounding destinations.

POTENTIAL STRATEGIES

1.4.1 COMPLETE STREETS
Design streets as the most important public open spaces in Willets Point. "Complete Streets" include landscaping, sustainability measures, and pedestrian-oriented detailing of roadways and sidewalks. *See Figures 15 and 16.*

1.4.2 126TH STREET OPEN SPACE
Design 126th Street as a Linear Plaza alongside new mixed-use buildings, mitigating the elevation change from street to ground floor level, and creating a pleasant pedestrian connection from Roosevelt Avenue to the Flushing Bay waterfront.

1.4.3 RETAIL PLAZAS
Create plazas within the retail mixed-use area (Area A) to provide open space and a variety of activities for residents, workers, shoppers and other visitors. *See Figure 17.*

1.4.4 NEIGHBORHOOD PARK
Create a two-acre Neighborhood Park providing a "green heart" for the residential neighborhood (Area B). A combination of passive and active spaces allows the park to serve a diverse community of all ages. *See Figure 18.*

1.4.5 GREEN BOULEVARD
Ensure that all residents, workers and visitors have convenient access to walkable streets, parks and open spaces, recreation areas, gyms, playgrounds, and bike facilities, to promote outdoor physical activity.

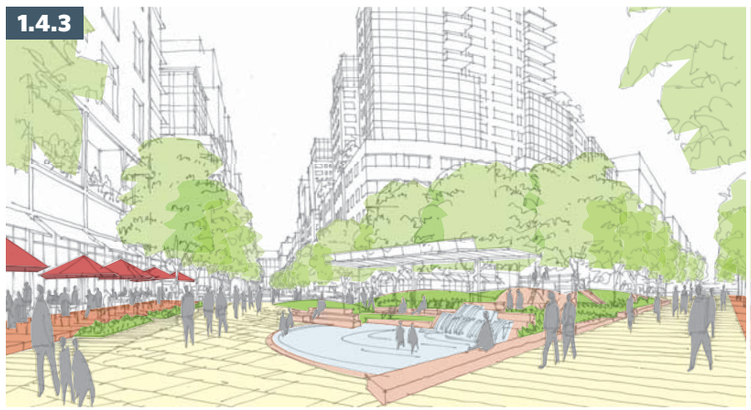
1.4.6 EASTERN GATEWAY
Consider future highway ramp connections to the site as an opportunity to create a "gateway green" that will be the first image of Willets Point for many visitors.

Streets within the retail mixed-use area (Area A) should create an urban, pedestrian-oriented outdoor shopping environment that serves visitors, workers and residents. The Primary Retail Street might include landscaped seating areas and a planted median that support sustainable landscape and stormwater strategies.

Figure 15. Primary Retail Street illustrative sketch
The above image depicts the intent of the design guidelines and is for illustrative purposes only

Streets within the residential neighborhood (Area B) should create an intimate "outdoor living room" for residents with space for shade trees, plantings, and stormwater management landscapes.

Figure 16. Residential Street illustrative sketch
The above image depicts the intent of the design guidelines and is for illustrative purposes only



A Southern Anchor Block Plaza in the retail mixed-use area (Area A) would create a gateway to Willets Point for pedestrians arriving by mass transit. A combination of hardscape, landscape, amenities, outdoor dining and seating serves residents, workers, shoppers and other visitors.

Figure 17. Central Retail Plaza illustrative sketch
The above image depicts the intent of the design guidelines and is for illustrative purposes only

A Neighborhood Park is envisioned as the green heart of the residential neighborhood (Area B) and is likely to be located within a one-block walk of most residential buildings in the area. A balance of active and passive spaces could create a daily destination for a diverse community of all ages.

Figure 18. Neighborhood Park illustrative sketch
The above image depicts the intent of the design guidelines and is for illustrative purposes only

Figure 19. Illustrative view of the streetscape and open space network within Willets Point
The above image depicts the intent of the design guidelines and is for illustrative purposes only.

PRINCIPLE 1.5 Sustainable Water Management

OBJECTIVE

The redevelopment of Willets Point is an opportunity to re-think water use and stormwater and wastewater management planning. A sustainable system could serve to improve regional water quality by eliminating pollutant loading to Flushing Bay and Long Island Sound; eliminate the need to connect with the municipal combined sewer system; integrate native wetland habitat into the urban streetscape in a visible, safe, and attractive manner; and provide high-profile opportunities for education and conservation.

POTENTIAL STRATEGIES

OVERALL ON-SITE STORMWATER

1.5.1 STORMWATER MANAGEMENT
Utilize known and innovative stormwater management tools within the site boundaries in order to efficiently treat and safely discharge stormwater while improving water quality in Flushing Bay.

1.5.2 NATURAL SYSTEMS
Find niche opportunities within open spaces to create natural treatment systems (bioswales, treatment wetlands) that also enhance public spaces and attract native species.

1.5.3 ROOFTOPS
Program rooftop spaces with greenroofs and/or blueroofs that serve to detain and evaporate stormwater prior to discharge.

BUILDING SPECIFIC

1.5.4 WATER CONSERVATION
Provide technologies, fixtures, and appliances that encourage efficient use of potable water and reuse of high-quality treated wastewater within each building. These strategies can be visible and informative.

1.5.5 DETENTION
Utilize opportunities within each building footprint, particularly rooftops, to detain and evaporate stormwater before discharging to the stormwater collection system.

1.5.6 RE-USE
Construct buildings with separate potable and non-potable water supply lines to connect with different usage needs. Non-potable water can be provided from a centralized membrane bioreactor (MBR) plant if constructed.

On-site stormwater management can be incorporated into all open spaces: streetscapes, public open spaces, and building rooftops

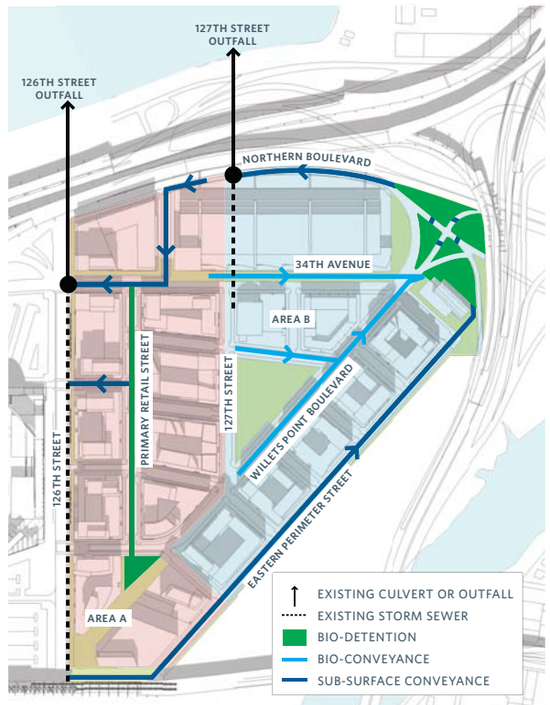


Figure 20. Diagram depicting a possible site-wide stormwater strategy
The above image depicts the intent of the design guidelines and is for illustrative purposes only.

SUPPLY AND SANITARY MANAGEMENT

1.5.7 NATURAL AREAS
Stabilize the hydrologic regime and maximize biodiversity and water quality improvements by discharging treated wastewater to a stormwater network of wetlands and swales leading to Flushing Bay.

1.5.8 SET AN EXAMPLE
Increase local development density without exacerbating the City's existing combined sewer overflow issues while providing an example for future development planning and pollution reduction.

PRINCIPLE 1.6 An Energy-Efficient District

OBJECTIVE

Willets Point can embrace energy efficiency by its reducing energy use and carbon footprint through adaptation, mitigation and generation strategies. A development that limits the impact on utility infrastructure and carbon emissions is encouraged. The reduced operational costs, infrastructure costs, carbon emissions, environmental and climate impact that result will benefit local residents, the broader community, and the global environment.

POTENTIAL STRATEGIES

SITE-WIDE

The following strategies provide a general framework for how the broad goal of reduced energy and carbon might be achieved.

1.6.1 ADAPTION

Consider the use of resources available on-site to generate clean, renewable energy, such as wide-scale photovoltaic installation and/or wind turbines.

Plan for staged development in which infrastructure implemented in the first stage can be expanded or adapted for subsequent stages.

1.6.2 MITIGATION

Minimize energy usage through efficient technologies and infrastructure including efficient site lighting (such as light-emitting diode (LED) technology for traffic and street lights) and efficient site infrastructure and utility distribution (pumps and treatment systems).

1.6.3 GENERATION

Consider the creation of total district energy generation to provide power, cooling and heating for the district with maximum combined efficiency, through the use of cogeneration or combined heat and power, if feasible.

Energy-efficiency should include both site-wide and building specific strategies

BUILDING SPECIFIC

1.6.4 ADAPTION

Consider the use of building integrated renewable energy generation, such as building integrated photovoltaics and solar hot water generation.

Integrate the use of smart building controls to coordinate building use to energy use through the use of programmable thermostats and occupancy sensors.

1.6.5 MITIGATION

Minimize energy use within buildings through the design of high-performance building envelopes, intelligent massing and orientation, and building shading.

Consider the use of building technologies to minimize energy use, such as efficient lighting and controls, energy-saving appliances, daylight dimming, efficient heating, ventilation, and air conditioning systems, chilled beams, geothermal, and variable air volume.

1.6.6 GENERATION

Consider the use of individual building cogeneration and combined heat and power to generate energy on a building-by-building basis.

PRINCIPLE 1.7 Green Architecture

OBJECTIVE

Through the implementation of green building practices, Willets Point has the opportunity to reduce negative environmental impacts through high performance, market leading design and construction practices. Green buildings should encourage a wide variety of energy strategies to reduce the total energy consumed and promote a smarter use of water, inside and out. The selection of sustainably grown, harvested, produced and transported products and materials and the reduction of waste as well as reuse and recycling can be promoted throughout. Strategies that can improve indoor air quality, access to natural daylight and views and acoustics are also encouraged.

POTENTIAL STRATEGIES

The following strategies provide a general framework criteria for green architecture. To meet LEED requirements, consider making at least 50% of the project's square footage achieve LEED certification through one of the LEED rating systems.

RECOMMENDED APPROACHES

1.7.1 MATERIAL USE EFFICIENCY

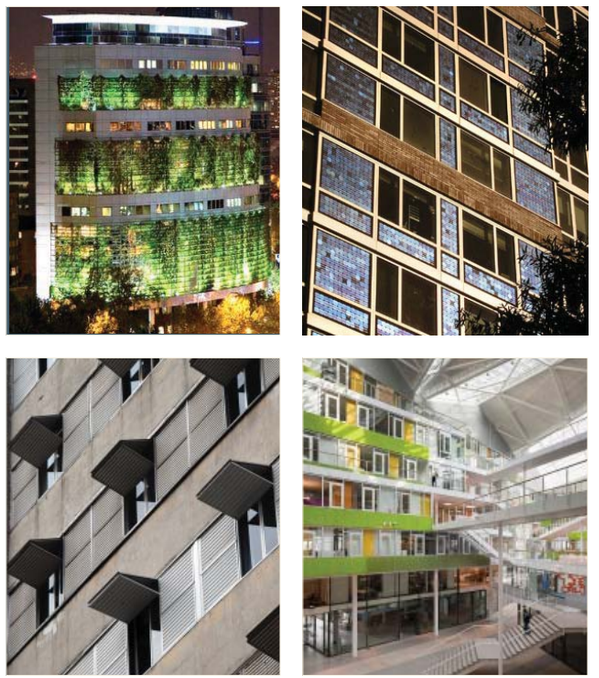
Building materials have major impacts on the sustainability of the construction process and the long-term sustainability of the building. The choice of materials should consider recycled content, local or regional origin, and sustainable sources. In addition, the diversion of construction waste from landfills and the provision of space for the collection and storage of recyclables are important elements.

1.7.2 WATER MANAGEMENT

As discussed in Principle 1.5, water management on a building-by-building basis can be achieved through rooftop collection and treatment (through the use of green and/or blue roofs), the selection of water-efficient appliances, and other technologies.

1.7.3 ENERGY EFFICIENCY

Energy efficiency on a building-by-building basis can be achieved through the design of a high-performance building envelope; solar orientation for daylighting and natural ventilation; efficient building systems, lighting, appliances; and other technologies.



Sustainability strategies should be integrated into the architecture of the building but also give the buildings a unique and identifiable character

VISIBLE SUSTAINABILITY

1.7.4 GREEN IDENTITY

Transform the architectural design of buildings by making green strategies visible and integrated with architectural concepts and the design of facades and public areas. Increase public awareness of sustainability through designs which celebrate the unique green identity of Willets Point.

PRINCIPLE 1.8 Healthy Environment

OBJECTIVE

People are at the center of a sustainable plan. In addition to considering larger impacts on climate change and the environment, the Willets Point redevelopment can create both a healthy living environment and promote a healthy lifestyle for residents of all ages, as well as for workers and visitors. Special attention should be paid to the opportunity of a completely new neighborhood to fully integrate accessible design principles.

Complementing a healthy lifestyle, the creation of a community where members work together and support each other is critical to the long-term sustainability of Willets Point. Promoting educational opportunities in public spaces, fostering a growing consciousness about sustainable design, and providing space for community activities such as markets and gatherings will support a strong sense of neighborhood and community life.

POTENTIAL STRATEGIES

1.8.1 HEALTHY ENVIRONMENT

Create an integrated site-wide approach to strategies such as traffic demand management, improved indoor air quality, natural ventilation, daylighting, and native landscaping to create a healthy living environment for the Willets Point community.

1.8.2 HEALTHY LIFESTYLE

Ensure that all residents, workers and visitors have convenient access to walkable streets, parks and open spaces, active recreation spaces, gyms and playgrounds, and bike facilities, to promote and encourage an active lifestyle and physical fitness. Create connections from the site to mass transit as well as to nearby parks, pedestrian and bike trails, and recreational facilities. Incorporate design strategies from the "Active Design Guidelines" published in 2010 jointly by several NYC agencies.

1.8.3 ACCESSIBLE DESIGN

Ensure that all areas of Willets Point, including residential and commercial buildings as well as parks and open spaces, recreational facilities, and community facilities and amenities, integrate and encourage equal use and access by the elderly and by persons with disabilities.

THE LEED-ND PROCESS

Willets Point is envisioned as a model green neighborhood. To that end, it is anticipated that the development will achieve LEED-ND certification for the ultimate development plan. LEED-ND places emphasis on the specific design and construction elements that bring buildings together into a neighborhood and relate the neighborhood to its larger region and landscape. It recognizes development projects that successfully protect and enhance the overall health, natural environment, and quality of life for communities.

The United States Green Building Council has granted the District pre-review approval (stage 1 certification) in the LEED Neighborhood Development ("LEED-ND") program.

A selection of the sustainable development strategies that contributed to the successful Stage One LEED-ND certification are identified at right. These measures are provided for guidance only, as there is flexibility in the way certification can be achieved.

Principle 1.1
TRANSIT-ORIENTED DEVELOPMENT

- Locate project on a site with transit service of 20 or more easily accessible transit rides per week day. 50% of entrances within 1/4 mile walking distance.
- Use no more than 20% of the total development footprint area for surface parking facilities.

Principle 1.2
A CONNECTED NEIGHBORHOOD

- Have at least 50% of dwelling units / business entrances within 3 miles biking distance from at least four of the diverse uses listed in Appendix A (of LEED-ND). Ensure that at least 15% of off-street parking space is devoted to bicycle parking /storage.
- Promote communities that are physically connected to each other; avoid gated areas.
- Provide bicycle parking spaces equivalent to at least 15% of the total automobile parking for each building on site except for the Convention Center. For that facility, provide bicycle parking for 15% of the employees' automobile parking and for 5% of the visitor parking. Locate all bicycle parking within 200 yards of the entrance to the building that it services.

Principle 1.3
HIGH DENSITY MIXED-USE DISTRICT

- Include a residential component in the project that constitutes at least 25% of the project's total building square footage; at least 50% of dwelling units to be within ½ mile walking distance of at least two diverse uses.

Principle 1.4

LINKED NETWORK OF STREETSCAPES & OPEN SPACES

- Facilitate walking to school - have at least 50% of the project's dwelling units within 1/2 mile walking distance of an existing or planned school.
- Locate a principle functional entry of each building within a front facade that faces a public space such as a street, square, park, paseo, or plaza.
- Provide continuous sidewalks or equivalent provisions for walking along both sides of all streets within the project.

Principle 1.5

SUSTAINABLE WATER MANAGEMENT

- Implement a comprehensive stormwater management plan for the project that reuses or evapotranspirates the specified amount of rainfall from the project's development footprint.
- Construct buildings to achieve a 30% reduction in water use compared to a baseline use.
- Permanent irrigation should not use potable water.

Principle 1.6

AN ENERGY EFFICIENT DISTRICT

- Construct buildings to achieve a 15% reduction in energy use as compared to a baseline energy use derived from a whole building energy simulation.
- Utilize traffic lights, street lights, water and wastewater pumps and treatment systems that can achieve a 15% annual energy reduction beyond an estimated baseline infrastructure energy use.
- Consider traffic lights that use LED technology.

Principle 1.7

GREEN ARCHITECTURE

- At least 50% of the project's square footage should achieve LEED certification through one of the following rating systems: LEED-NC, LEED-EB, LEED for Homes, LEED C&S, LEED for Schools.
- All off -street parking should be covered, and all roofs covering parking should have a solar reflectance index (SRI) of at least 29.
- Apply LEED requirements for recycled content in paving and cement piping. Consider recycling or salvaging at least 50% of non-hazardous construction and demolition debris.
- Provide the project's occupants with information regarding the site's recycling availability and benefits including information regarding the city's nearby hazardous waste drop-off center in College Point, Queens.

Principle 1.8

HEALTHY ENVIRONMENT

- Design approximately 20% of the residential units to comply with the accessible design provisions of The Fair Housing Amendments Act and section 504 of The Rehabilitation Act, as applicable.
- Ensure 75% of all project roof surfaces are a combination of vegetated roofs and materials with an SRI of at least 78.
- Plant vegetation on site (ground-level landscaping and green roofs), using native plants (defined by the NYC Department of Parks and Recreation). Avoid invasive plant species.

A MIXED-INCOME COMMUNITY

AFFORDABLE HOUSING

The redevelopment of Willets Point is intended to achieve a diverse, equitable and integrated mixed-income community through the inclusion of affordable housing. The goal is to develop a minimum of 35 percent of the units as affordable to low and middle income families. It is anticipated that affordable units will be dispersed throughout the District. Therefore, residential development at Willets Point will likely consist of both mixed-income buildings (which provide both market-rate and affordable units within the same building) as well as stand-alone affordable housing buildings (in which all units are affordable).

Maximum integration of affordable units with market-rate units is preferred. However if separate affordable housing building(s) are developed, it is desirable that these buildings NOT be clustered in any one area of the district and that affordable units still be spread throughout the district. For example, one scenario is that buildings are developed as 80/20 (market/low income units) buildings and that one or two stand-alone affordable buildings are also developed to enhance the overall affordability target of 35 percent.

Mixed-income buildings are expected to adhere to the design guidelines outlined in this book and be fully integrated into the fabric of the district with great access to local and surrounding amenities.

Stand-alone affordable buildings should be fully incorporated into the street life of the neighborhood, with close proximity and easy access to retail, open space, and transit. Stand-alone affordable buildings should be designed with the highest quality standards for affordable housing, and to the greatest extent possible also adhere to the guidelines contained in this document (drafted with affordability targets in mind). Massing, orientation, and access goals remain relevant. It is anticipated that sustainability goals will be realized for these particular buildings by achieving Enterprise Green Communities certification. Buildings receiving affordable housing subsidy will be required also to meet the design guidelines of the funding agency.

At right and far-right are case studies of exemplary design in mixed-income and stand-alone affordable housing. Stand-alone buildings are encouraged to reference these case studies as models of high-quality design that is mindful of cost constraints.

CASE STUDIES

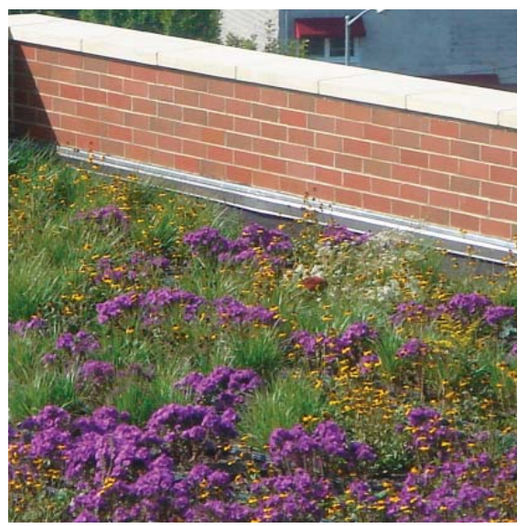
ATLANTIC TERRACE, Brooklyn

Atlantic Terrace is an 80-unit mixed income development, located in Brooklyn. The development is LEED Gold certified and includes a green roof, energy efficient heating and air conditioning, abundant natural light, and locally made and recycled materials. It is a successful example of high-quality design and construction incorporating facade details, material changes, variations in fenestration, and no exposed slab edges or air conditioning units or grilles. The development also includes ground-floor retail and underground parking.

Atlantic Terrace is a great example of high-quality construction in which a variety of materials are integrated into the facade, the slab edges are concealed and there are no visible A/C units or grills

INTERVALE GREEN, Bronx

Intervale Green is a 128-unit mixed-use affordable rental building, located in the Bronx built over a former brown-field. It is the largest Energy Star certified multi-family high-rise in the United States. Its sustainability features include two green roofs; high performance building envelope; efficient building systems, lighting, and appliances; a 33% reduction in energy use over a standard building; landscaped courtyards; and a public garden with artist sculptures as well as over 40 new trees throughout the property. The development also includes ground-floor retail.



Intervale Green includes many sustainability strategies including a green roof and large tree pits

HIGH-QUALITY NYC AFFORDABLE HOUSING DESIGN

The examples shown to the right demonstrate an array of high-quality design and construction of affordable housing that has been achieved in NYC boroughs. These buildings successfully integrate variations in materials, vertically articulated facades, custom artwork, facade construction details, and other desirable design strategies.

The Aurora, Bronx
Successful example of the use of material changes and partially recessed balconies

Intervale Green, Bronx
Successful example of variations in material coordinated with vertical facade recesses

9 Cook Street, Brooklyn
Successful example of the use of articulated massing and the "dormer rule"

1932 Crotona Parkway, Bronx
Successful example of the use of high-quality construction details to articulate the facade

Susan's Court, Manhattan
Successful example special architectural emphasis at the corner using corner windows and metal panels

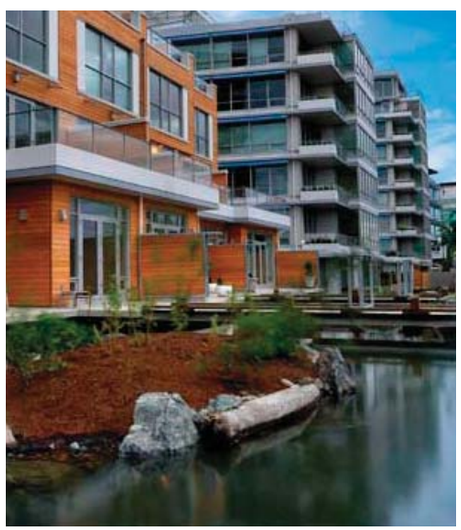
The Eltona, Bronx
Creative example of the incorporation of unique artist-designed elements to enliven the streetscape

CASE STUDIES Sustainable Planning and Design Strategies

The following case studies provide examples of contemporary sustainable planning and design around the world, within the US and within NYC. Each project shown has a specific set of issues that are relevant to Willets Point and demonstrate innovation that can inform the redevelopment of the District.

DOCKSIDE GREEN Victoria, BC

Dockside Green is a 16-acre, 1.3 million square foot mixed-use development located in Victoria, British Columbia. As likely to occur at Willets Point, its development was implemented in stages and took a district-wide approach to sustainable infrastructure. The project includes a centralized biomass gasification system that provides heat and hot water and enables the development to be carbon-neutral from an energy perspective. It also includes a visible greenway system that runs throughout the development to reclaim stormwater and has its own on-site sewage treatment plant, which together provide gray water for toilets, irrigation, and site water features.



Dockside Green includes a naturalized creek and pond system to reclaim and treat its own stormwater with underground storage, eliminating the need to use the municipal storm system

HAFENCITY Hamburg, Germany

HafenCity is a 155-acre, 16-million square foot, mixed-use brownfield redevelopment located in Hamburg, Germany. Situated within the historic port along the River Elbe, the development must be raised above the floodplain, similar to Willets Point. Although already located above mean sea level, the roadways and buildings must be elevated an additional 3-4' in order to be above the stormflood height. To achieve this, a wide public space running along the water's edge is terraced, stepped, and ramped in order to create a gentle grade change that protects the development from flooding, enhances the connection to the water and provides an interesting and accessible public open space. This treatment is similar to what is recommended along 126th Street in Willets Point.

Grade changes occur for pedestrians and cyclists

The waterside edge of HafenCity is a terraced, stepped, and ramped public open space that provides a grade change between the existing water's edge and the new elevated ground plain