

An aerial architectural rendering of a waterfront development in Hastings-on-Hudson. The scene shows a large body of water on the left with a small boat and birds. A paved walkway runs along the shoreline, bordered by lush green trees and vegetation. In the center, a large, modern building complex with multiple stories and extensive glass facades is situated. The building has a flat roof with solar panels. To the right of the main building, there are smaller, modern structures with green roofs and elevated platforms over the water. The background shows a hilly area with more buildings and trees under a clear sky.

Fostering Resilient Ecological Development

Hastings-on-Hudson
Waterfront Vision Study

ennead

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Building smarter to live better at the water's edge

Hastings-on-Hudson, NY Waterfront Vision Study

1 Railroad Avenue Ventures LLC, the new owner of the Ulrich waterfront site, has asked Ennead Architects and Michael Van Valkenburgh Associates to prepare a conceptual vision study to begin a dialog with the Village of Hastings-on-Hudson.

After reviewing a number of earlier Village studies, and reports, we have attempted to develop ideas for building at the water's edge to maximize the site's potential for the Village.

Our approach seeks to increase the presence of water and native habitats on the site as a resilient, character-defining component of the eventual design approved by the Village. We imagine opportunities to:

- Build smarter in a flood prone area, developing resilient design strategies that can flexibly respond to long-term climate change;
- Return much of the site to its native ecology, developing natural landscapes and other passive flood mitigation strategies in lieu of more structured solutions, while minimizing some of the longer-term costs associated with constructed bulkheads and other physical fortifications;
- Maximize the amount of public space by providing extensive parkland supplemented with public access to a resilient, natural landscape that flows through much of the tax generating private development;
- Maximize the number and quality of connective corridors between the Village and the Waterfront.

While the specific architectural forms are placeholders, we have attempted to offer a flexible kit of resilient parts. Comprised of a system of ecological landscapes, piers, and elevated housing clusters, the design proposes practical solutions that we believe can adapt to rising sea levels, maintain intended ecological and recreational functions, protect the Village against storm events, and create a strong identity and a unique sense of place.

Fostering Resilient Ecological Development Systematic Approaches

Be efficient

- To minimize roads and infrastructure
- To maximize open space
- To balance the costs of public amenities with an appropriate scale of development
- To conserve resources

Be adaptable

- To accommodate flood waters
- To accommodate rising sea levels
- To allow for multiple uses and a diversity of housing sizes and types

Maximize ecological potential

- For coastal protection
- For habitat
- For site identity and character

Be a good neighbor

- An economic engine for the larger community
- A source-zero consumer of carbon
- A generator of social resilience
- An open and welcoming neighborhood
- Connected both physically and characteristically to the village

Marshlands & Ecological Landscapes



Protecting and enhancing the native landscape ecology is by far the most effective and affordable way to achieve long-term resilience within a tidal riverfront context. The native marshlands and river landscapes of the Hudson River are also unique and beautiful environments in which to live, and can become a destination for Village residents and other visitors alike.

Can we create a vibrant village neighborhood that promotes river ecology?

Piers & High Ground



Vibrant pedestrian-friendly streets and paths are the life-blood of successful neighborhoods. On sites that may be subject to sea-level rise and/or flooding and where housing is raised off the ground, elevated pedestrian streets echo the coastal river language of piers and boardwalks and keep the community connected, regardless of rising waters.

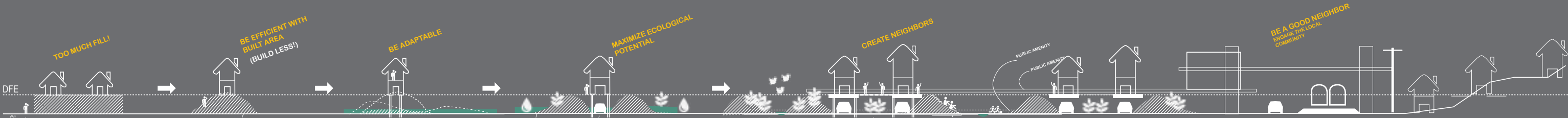
Can we create a new type of pedestrian street that stays above the floodplain?

Elevated Housing Clusters



To maximize open space and to allow a marshland ecological system to function effectively, housing should be clustered together and interspersed above and between open space across the site. Strategically locating higher densities of diverse housing types helps sponsor neighborhood cohesion and connectivity.

Can we create a tight-knit riverfront community that fosters social resilience and connection?

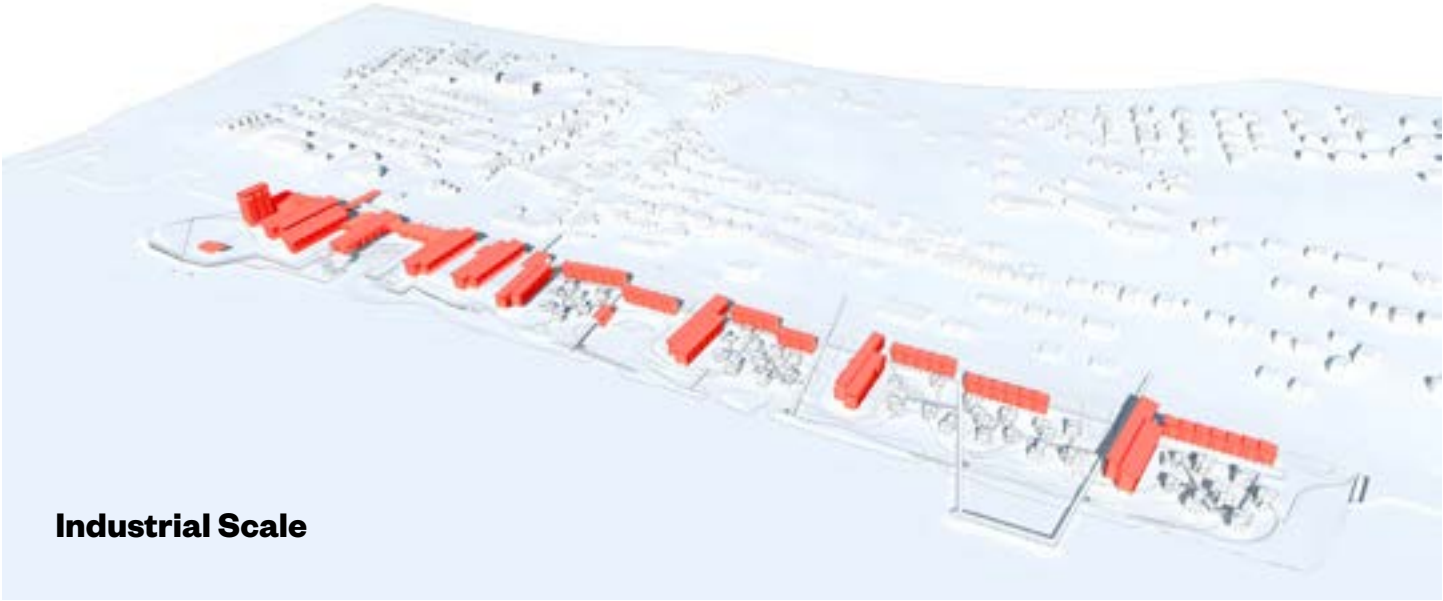


Do we have to raise the ground to build above the floodplain?

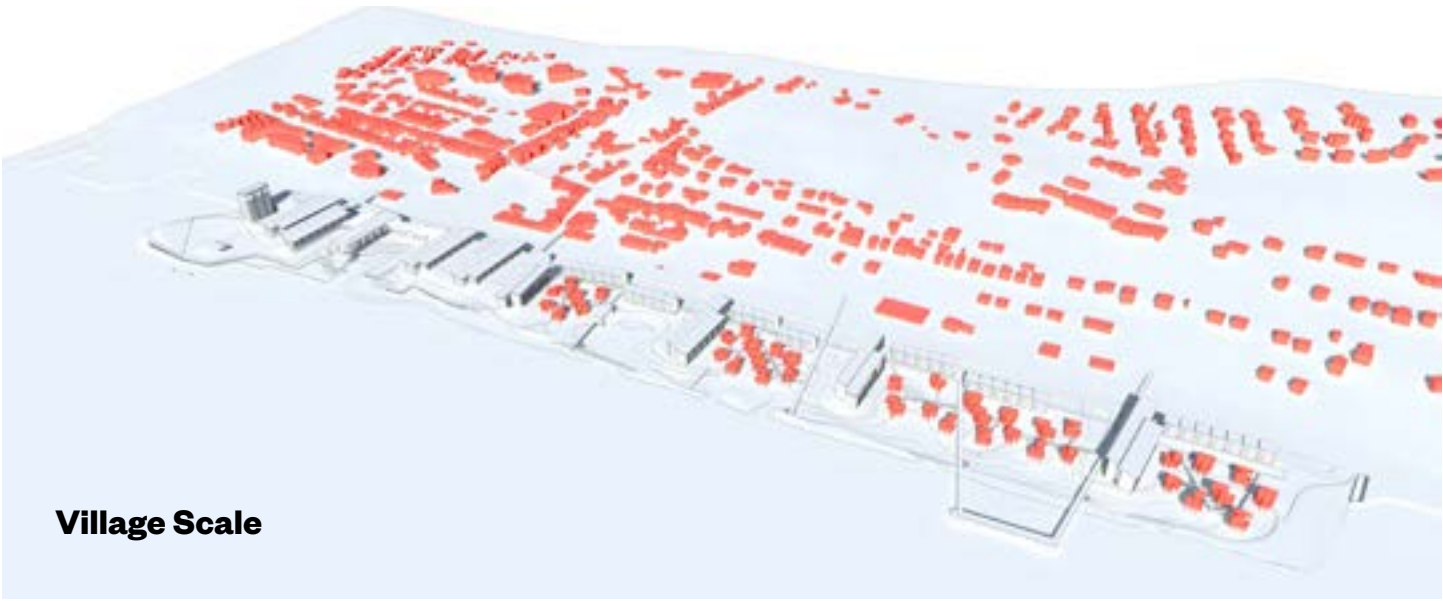
By treating building structure independent of the ground, can natural ecologies be better protected, enhanced, or restored?

Can this approach better connect neighbors and return more open space to the Village as a public asset?

How can the project best connect the existing Village to the Waterfront, and new residents back to the existing Village?



Industrial Scale



Village Scale



River Ecology

Industry+Village+River

Our design is directly influenced by three scales of the site's past, present, and future: The scale and east-west directionality of the site's past industrial buildings; the intimate scale of the Village; and, the forest and marshland landscapes of the Hudson River Valley.

Industrial Scale

The design's larger buildings echo the linearity and sawtooth rooflines of the site's industrial predecessors. The largest of these buildings run east-west for three primary reasons: first, we wanted to keep the existing views from upland Village buildings as open as possible; second, these linear buildings help frame the project's primary pedestrian street connections from the train station and extended Main St., and from the Washington Avenue corridor; and third, these buildings' orientation capitalizes on potential solar power as well as the the upriver and downriver views from the site, maximizing the number of housing units with these views.

Village Scale

Adding diversity to the potential housing types on the site, the design introduces a second scale of buildings to the project. This both creates additional visual diversity on the site and unifies the new neighborhood with the existing Village, echoing the scale of detached and semi-detached buildings seen just up the hill in the Village.

River Ecology

The Master Plan's overall design is rooted in two primary landscape ideas. First, the design brings the dense forest landscape of the upland down into the site, helping blend new buildings into the overall context. Second, the design returns approximately a quarter of the overall site to a more natural wetlands/marsh landscape, helping return the site to its original river ecology, developing natural flood mitigation strategies for the site, and creating a diverse water-focused park landscape for the Village.





Re-connecting to the River

This Master Plan maximizes public access and use of the Waterfront by studying the site holistically, seeking synthesis and potential symbiotic relationships between public uses, private development, and their shared responsibility as ecological and economic stewards for the site.

As such, primary site strategies, building locations, and bulk distribution shown within this study are established by three main parameters:

- The need to remediate the site and the opportunities this represents to maximize ecological landscapes on site, including the restoration of natural wetlands wherever possible, following the management plans of the site's various consent decrees.
- The potential to create a riverfront village gateway & hub of activity by supporting greater densities of mixed-use programs (residential, commercial retail, and commercial office and light industry) in the northern third of the property due to its proximity to regional transit and the existing downtown area of the Village.
- The desire to create an open, walkable neighborhood that acts as an active and welcoming conduit, rather than an impediment between the Village and the River.



The Site

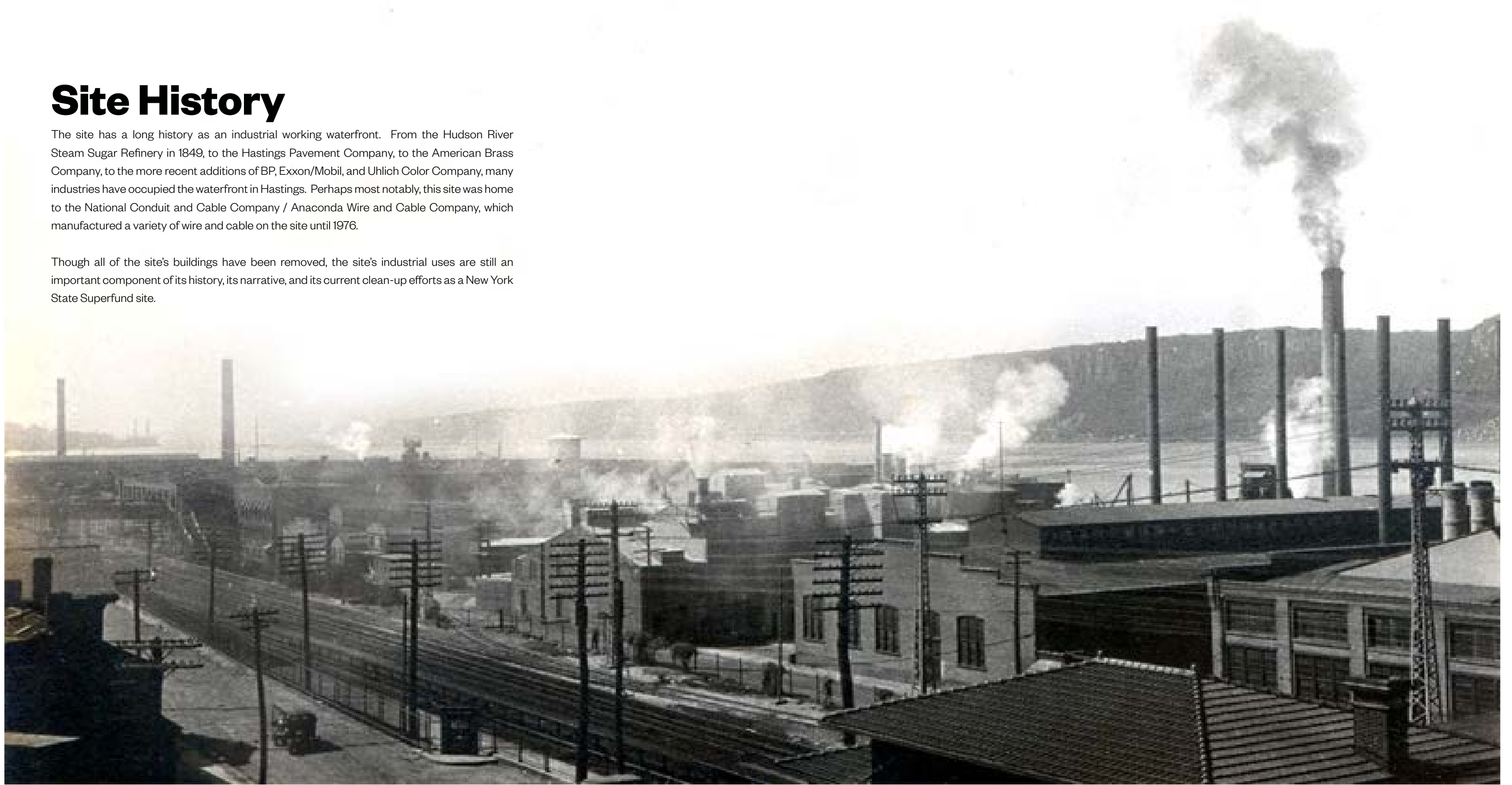
The site is one of the Village of Hastings-on-Hudson's 6 main gateways, containing two out of six key economic development sites identified in the Village's 2011 Comprehensive Plan. Located on the Hudson River, the site has direct access to both existing commuter rail service and potential future ferry service, and affords direct views of the Palisades, the George Washington Bridge, and the Manhattan skyline, located just over 20 miles to the south.

The 42-acre site is currently composed of three separate parcels: the 28-acre Anaconda site to the north, and the 14 acre Tappan Terminal site to the south, currently divided into two separate parcels utilized most recently by Exxon/Mobil and the Uhlich Color Company.

Site History

The site has a long history as an industrial working waterfront. From the Hudson River Steam Sugar Refinery in 1849, to the Hastings Pavement Company, to the American Brass Company, to the more recent additions of BP, Exxon/Mobil, and Uhlich Color Company, many industries have occupied the waterfront in Hastings. Perhaps most notably, this site was home to the National Conduit and Cable Company / Anaconda Wire and Cable Company, which manufactured a variety of wire and cable on the site until 1976.

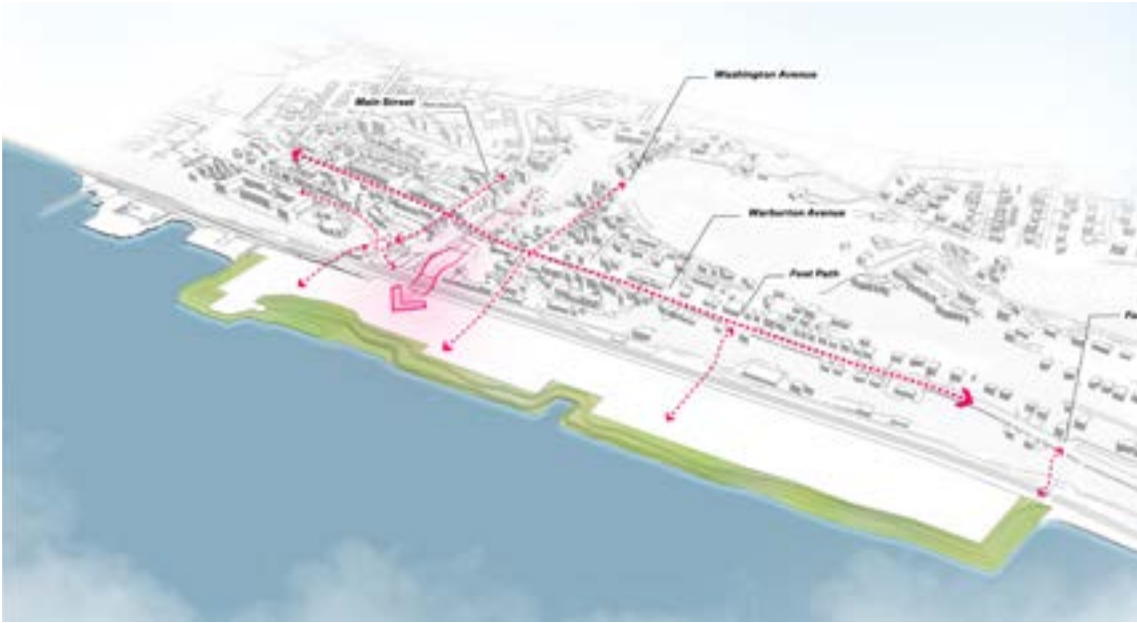
Though all of the site's buildings have been removed, the site's industrial uses are still an important component of its history, its narrative, and its current clean-up efforts as a New York State Superfund site.



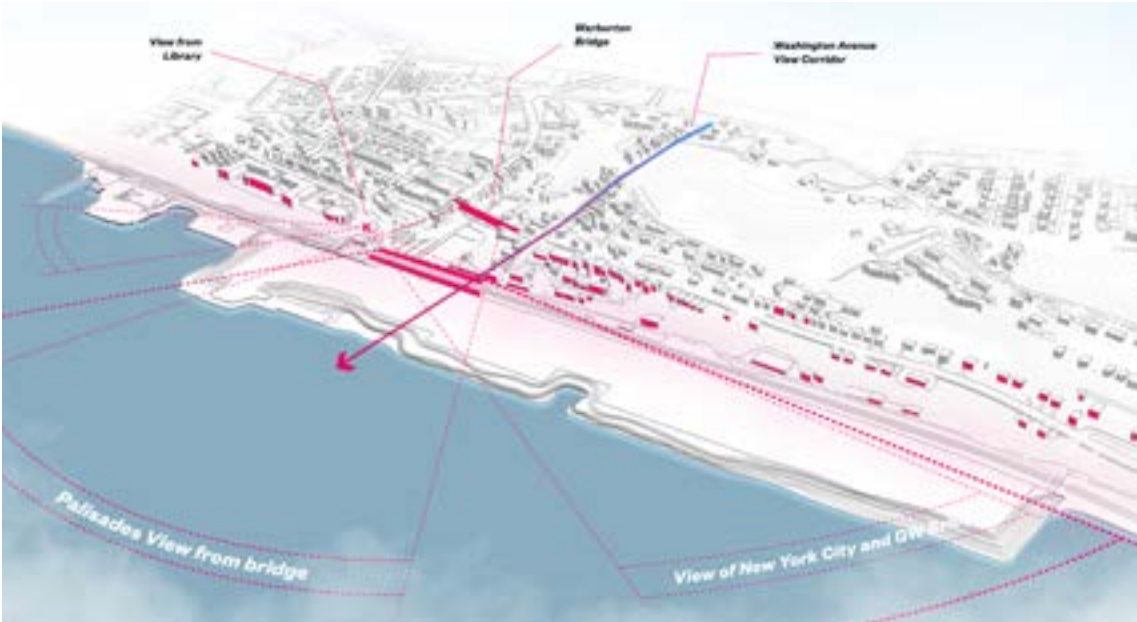
Create a Gateway



Connect the Village to the River



Protect & Enhance View Corridors



Previous Village Reports & Studies

This Waterfront Vision Study builds upon the many diverse committees, reports, and studies that have been compiled or completed over the last decade for the site. In particular, our team took many of the recommendations from the Waterfront Infrastructure Committee's 2015 Final Report, the Village's June 2013 Public Survey, the Village's 2011 Comprehensive Plan, and the Conceptual Shoreline Plan Study as the primary parameters and strategic framework for this Study.

When reviewed in combination, the many various reports and studies commissioned for the site all point to a few critical, site-scaled goals and parameters. These include: 1) The importance of the site as a main gateway or front door to the Village; 2) The importance of a number of existing view corridors, including those from the Warburton Avenue Bridge, from the Library site, from Washington Avenue, and from the existing upland homes east of the site; and, 3) the critical importance of reconnecting the Village to the waterfront, maximizing pedestrian access to the river.

2011 Comprehensive Plan
Waterfront Objectives

- Ensure fiscally responsible development.
- Design a plan for the Waterfront that promotes appropriately-scaled development that will provide economic support for the Village.
- Maximize public enjoyment of the Waterfront.
- Ensure environmentally smart development.
- Preserve public views of the Hudson River, Palisades and New York City skyline.
- Preserve the historical architectural features in the area.
- Investigate improvements to circulation to and through the Waterfront.
- Proactively seek out opportunities for the Waterfront that are consistent with the goals and vision of the Plan and the (future) Form-Based Code for the Waterfront.
- Ensure that built areas do not create self-contained enclaves that impede public access to the Waterfront.



Maximize Public Space

The design builds upon the recommendations of the Conceptual Shoreline Plan as well as the Waterfront Infrastructure Committee's Form-Based Planning Studies, merging opportunities from both their "Linear" and "Node" approaches. The resultant design keeps all private buildings outside of the site's 100' setback easement, but purposely blurs the parkland boundary to the east, utilizing the need for elevated structures as an opportunity to maximize public access to the site at the ground level, as well as along the design's elevated boardwalks.



Pedestrian Connections

The design creates multiple connections between the existing Village and the waterfront. Pedestrian routes cross the train tracks at the train station, at Washington Ave., at the current Zinsser Bridge location, as well as at two additional locations connecting uphill to Warburton Avenue. These primary east-west connections are then joined by a cross grid of north-south walkways. In combination, this system creates a welcoming neighborhood environment that recalls the pedestrian-friendly, human scale of Fire Island, Seattle's house boat communities, and the many walkable new island districts in Amsterdam.



View Corridors

The design both frames a number of existing views and provides new view corridors for visitors. These include the existing view corridors from the Warburton Avenue Bridge, the Library, and Washington Avenue, as well as new framed panoramas of the Palisades, the Tappan Zee Bridge, and the New York City skyline from the river path, the new Wharf District, the Wetlands, the Southern Point Beach, and from the elevated Anaconda Point.



Traffic Access & Circulation

Similar to the recommendations of the Waterfront Infrastructure Committee, the design keeps most primary vehicular circulation to the east edge of the site, connecting back to the Village across two bridges: one at the train station, and a second at the Zinsser Bridge location. While fire access is provided deeper into the site, most vehicular traffic is kept from extending past the primary buildings on the site, under which ground parking is provided.



Emergency Access

The design assumes primary emergency access along the eastern road, providing emergency vehicle access into the site in parallel with the master plan's primary east-west residential buildings. This keeps all larger structures within 150' of an access point, and assumes the smaller two-family structures provide sprinkler protection and are within 300' of an emergency vehicle access route. The height of the boardwalk connectors is also set by the clear height requirements for a fire truck to pass beneath.



Infrastructure

Following the recommendations of the Waterfront Infrastructure Committee, the design places most primary infrastructures running north-south along the eastern edge of the site. However, in order to minimize the amount of fill needed at the southern half of the site while still keeping all primary services above future design flood levels, the design places all electric, data, gas, and potable water supply lines within the superstructure of the network of elevated boardwalk piers.



Zoning & Area Distribution



Zoning Information

Open Space

100' easement only = approx. 477,000 SF (10.9 acres)
100' easement + additional public access = approx. 1,061,700 SF (24.4 acres)
Proposed increase = approx. 584,700 SF (13.5 acres)

Built Area

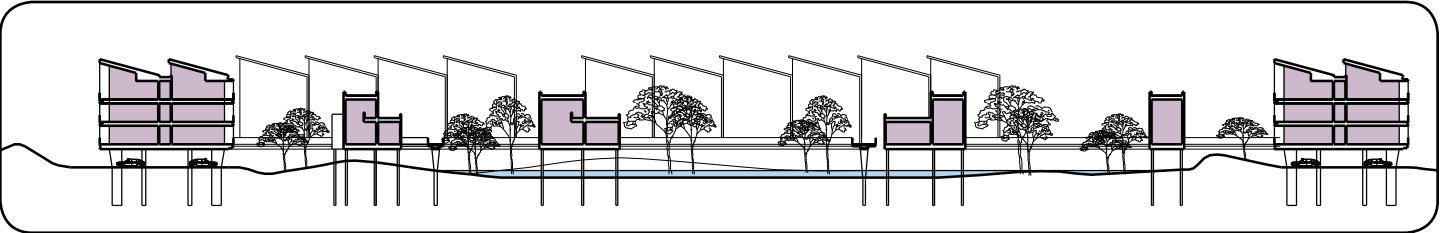
Residential (approx. 650 units at 1,100 GSF each)	711,870 GSF
Commercial (Retail/F&B, office, and/or light industry)	73,550 GSF

Total GFA	785,420 GSF
Total buildable site area (excluding public easements)	approx. 1,377,600 SF

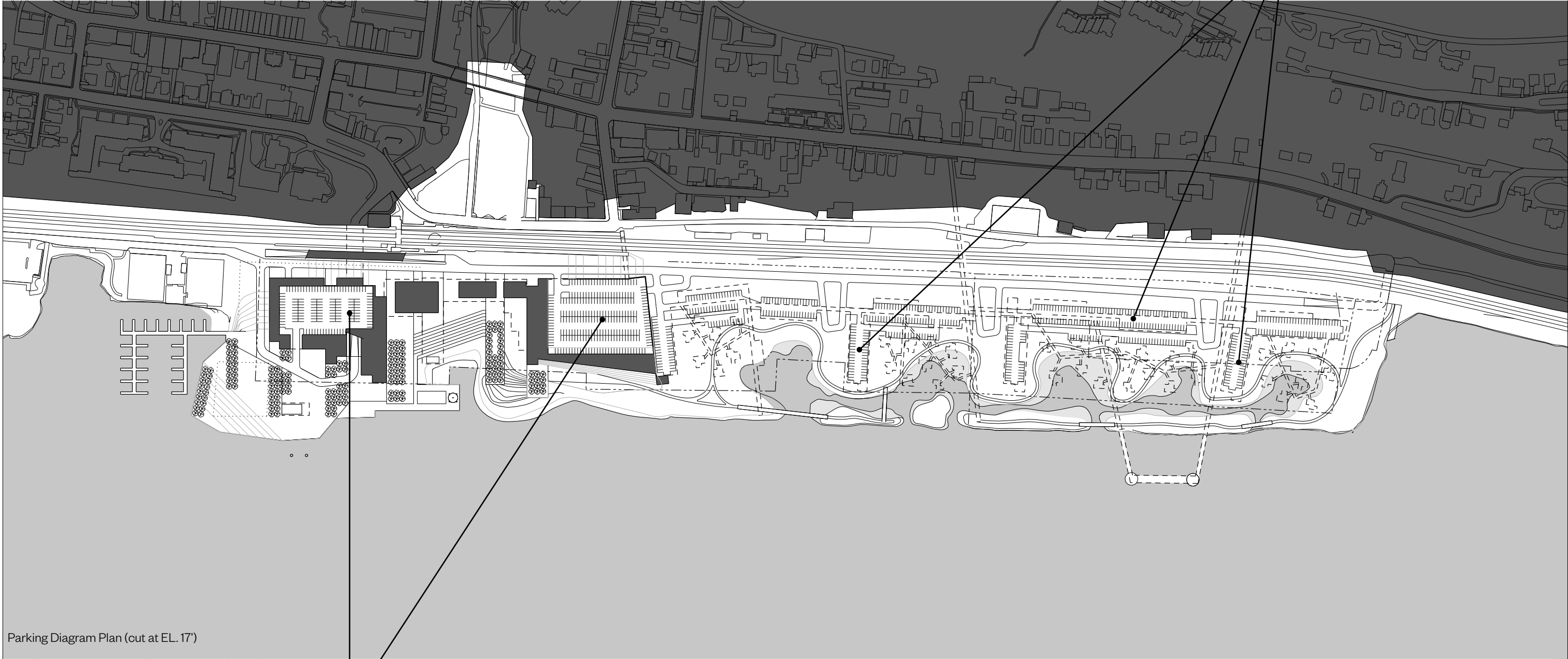
Equivalent FAR	0.6
Site Coverage (excluding public easements)	
Buildings only	20%
Buildings + landscape-topped parking & walkways	35%

Parking & Open Space

The design assumes an initial target of 1,300 parking spots, providing parking to support both residents of the new housing on site, as well as retail and other visitors to the site. In order to visually minimize the parking on the site, the design incorporates ground parking underneath the residential structures at the southern areas of the site, while providing two parking structures, hidden beneath raised ground levels within the residential and commercial mixed-use buildings at the northern part of the site. The design as currently shown strategically keeps all parking above the current Base Flood Elevation of EL. 7'



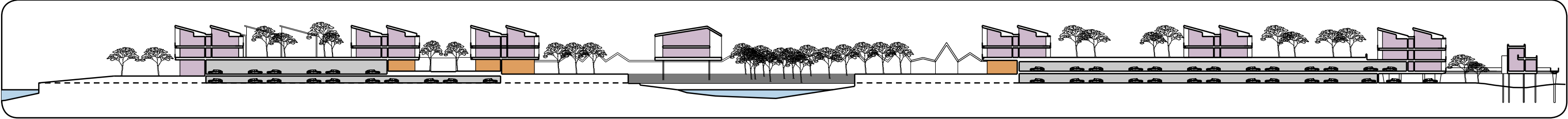
South End of Site Parking is primarily located at EL +7' beneath the larger elevated housing structures.



Parking Diagram Plan (cut at EL. 17')

North End of Site Parking structures hidden beneath occupied landscape spaces are accessible from ground levels at EL. +7' and EL +16'.

Total Parking Spots = 1,297



Be a Good Neighbor

"View from Hastings on Hudson, 1834", George Harvey

Connect the Village to the River

Pedestrian Connections

Connectivity is a central goal of the project. The design provides multiple pedestrian paths to connect the existing Village to the Waterfront and the new neighborhoods of the proposed development. These lines of connectivity are foundational to the design, creating the network of human-scaled, activated pedestrian spaces which unify the site and create multiple and diverse ways of interacting with the water's edge.



Connect the Village to the River

View Corridors

Just as important as the physical pedestrian connections between the existing Village and the site, the design utilizes a number of existing view corridors to further unify the site with its uphill neighbors.





Connect the Village to the River
Create new view corridors

Connect the Village to the River

An Activated Waterfront

Building upon the ideas and recommendations of the Shoreline Conceptual Plan, the design creates multiple formal and informal opportunities to engage with the waterfront, including the creation of five named public amenity sites. These include ferry service at Anaconda Point, kayaking and other watersports within the Cove and the adjacent wetlands, access onto the river at the Pier, and direct access to the water at the Southern Point Beach.





Temporary Art & Event Installations



Wildflower Park



Construct the South Point Beach & kayak launch



Creative public event programming

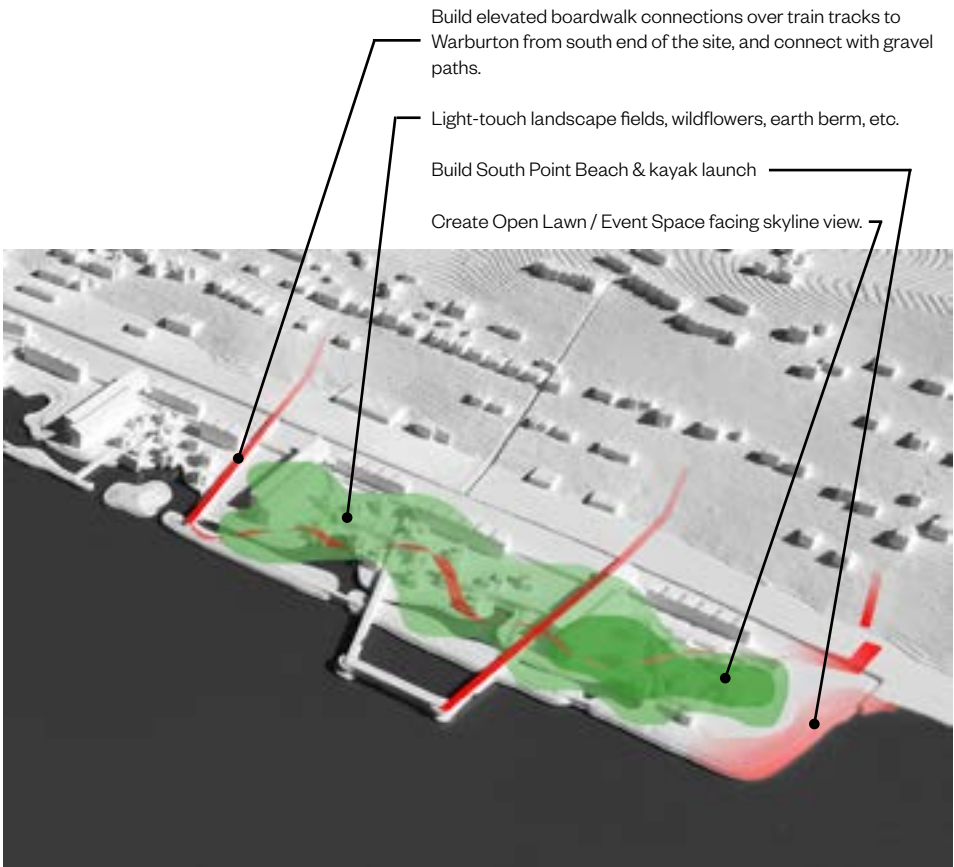


Connect the Village to the River

Temporary Initial Uses

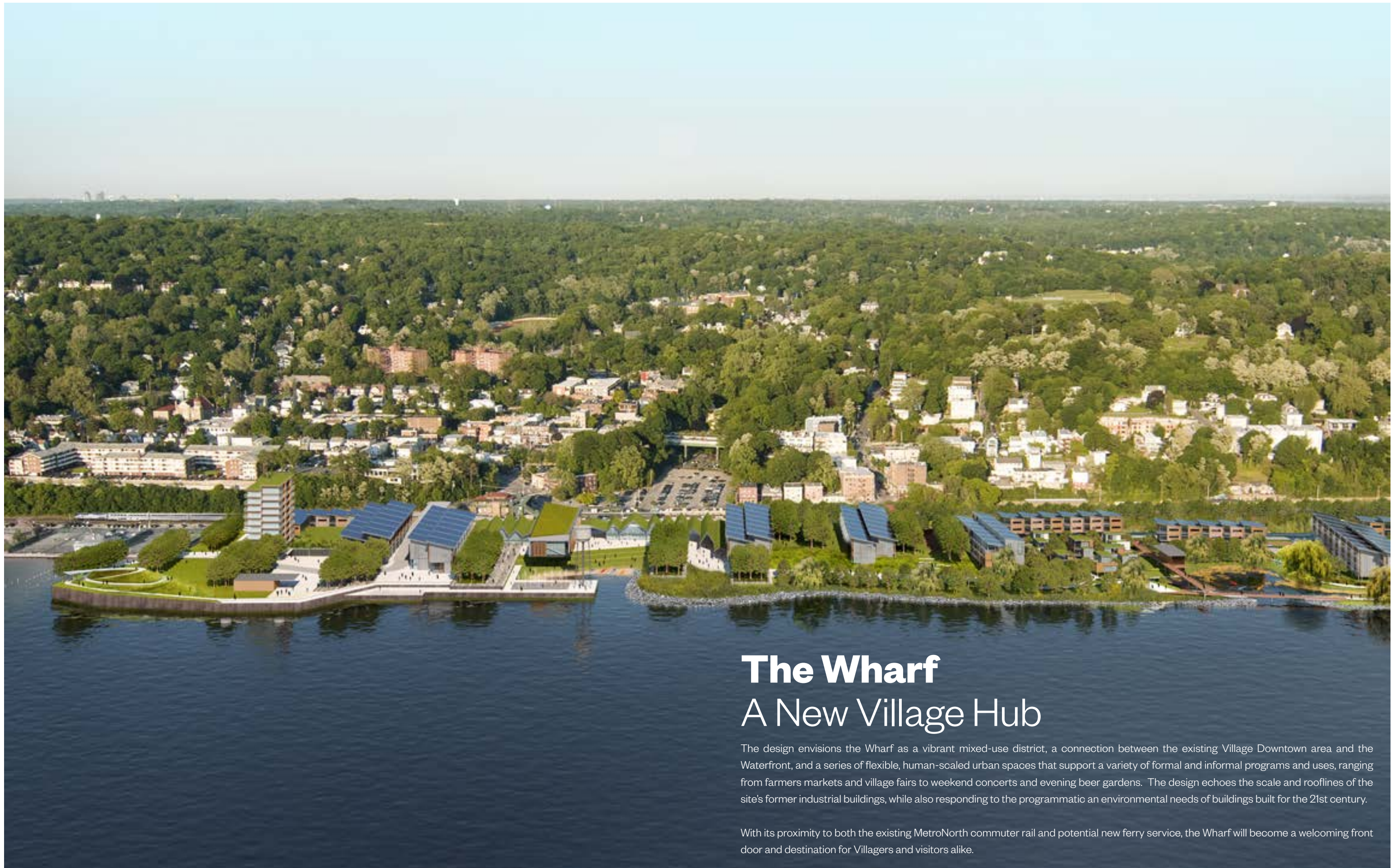
While it is important to establish the long-term vision for the site, strategies should also be developed to begin utilizing the site in the near future, as soon as the site can be cleaned to a safe level for use. Can certain investments in the site be made in the near term, including the construction of pedestrian bridges over the tracks as outlined in the Master Plan? Whenever possible, can efforts be made to safely open components of the site to the public as soon as possible?

Much like Governor's Island and the Highline in New York City, can we identify temporary and/or "light-touch" uses that can help activate the site in the near term, helping create programmatic connections to the site, and re-connecting Villagers to the River long before the full completion of the site's re-development? In addition to utilizing the site as a public asset, such temporary programs also function as beta tests for potential future programs and investments within the longer-term development of the site.





Two Neighborhoods



The Wharf

A New Village Hub

The design envisions the Wharf as a vibrant mixed-use district, a connection between the existing Village Downtown area and the Waterfront, and a series of flexible, human-scaled urban spaces that support a variety of formal and informal programs and uses, ranging from farmers markets and village fairs to weekend concerts and evening beer gardens. The design echoes the scale and rooflines of the site's former industrial buildings, while also responding to the programmatic and environmental needs of buildings built for the 21st century.

With its proximity to both the existing MetroNorth commuter rail and potential new ferry service, the Wharf will become a welcoming front door and destination for Villagers and visitors alike.



The Wharf

Inspiration & Precedents

The Wharf District takes inspiration both from the scale and industrial character of the site's former buildings as well as from a series of successful, small town waterfront spaces, including precedent examples from northern Italy's famed seaside villages, to small fishing communities in Britain. Though each is distinct, these spaces share a number of key characteristics, including:

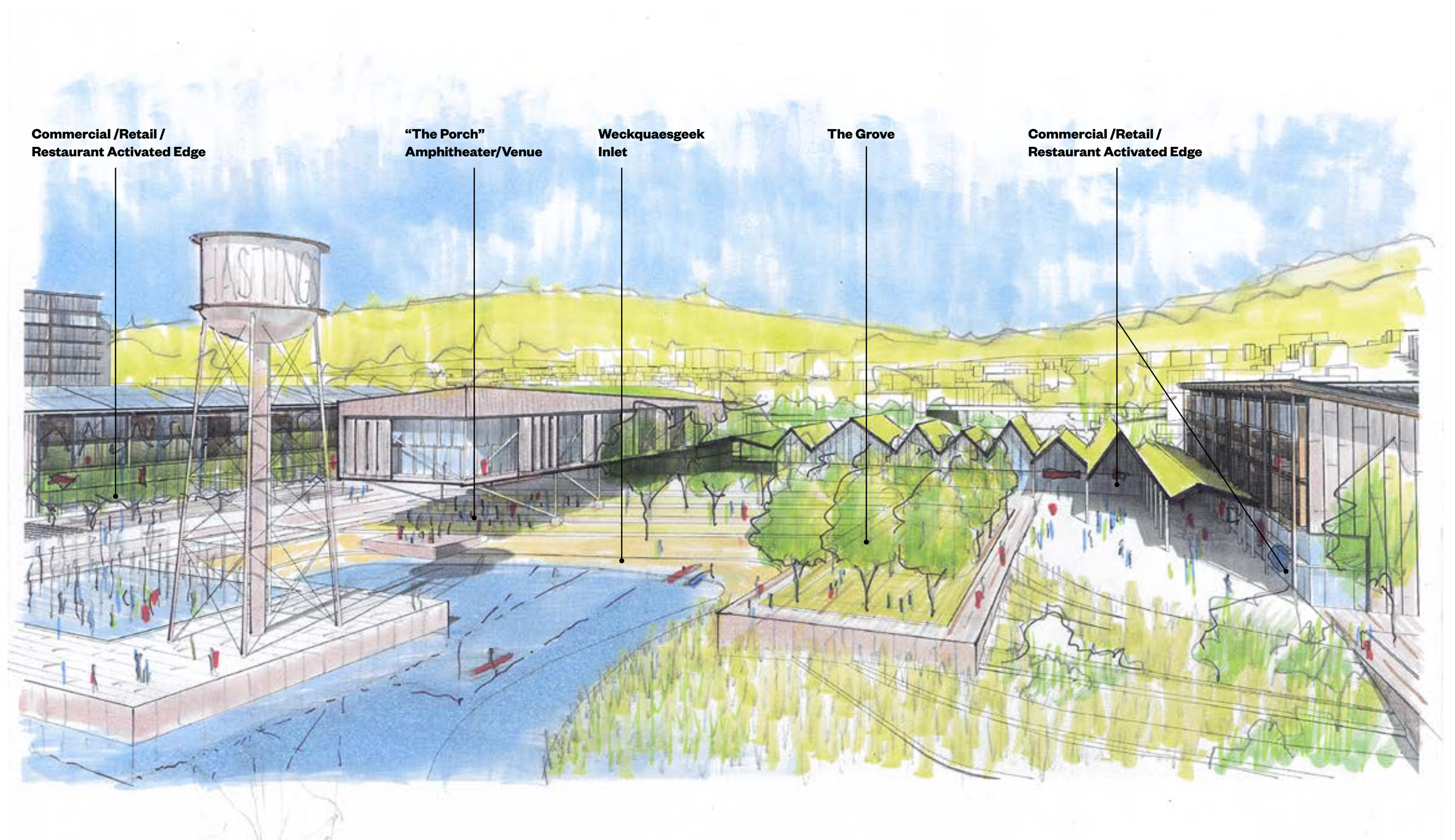
- Direct Access to the Water.
- A complex section that condenses multiple uses within a relatively small distance from buildings to water's edge.
- Human-scaled spaces that support a variety of public, cultural, and/or retail uses that activate the pedestrian routes through the district.



From River to Village

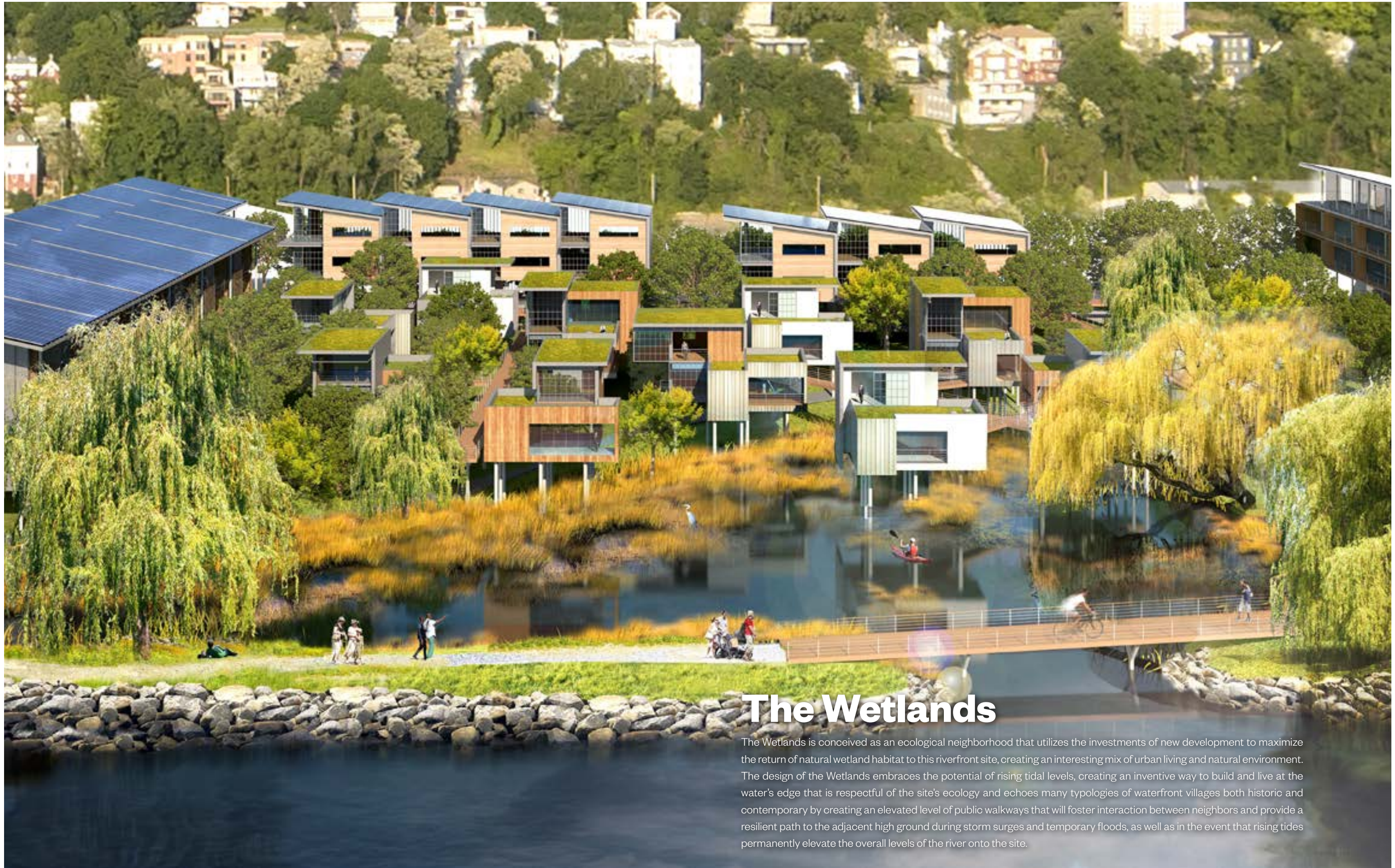


A New Destination





**Active, human-scaled
pedestrian spaces**



The Wetlands

The Wetlands is conceived as an ecological neighborhood that utilizes the investments of new development to maximize the return of natural wetland habitat to this riverfront site, creating an interesting mix of urban living and natural environment. The design of the Wetlands embraces the potential of rising tidal levels, creating an inventive way to build and live at the water's edge that is respectful of the site's ecology and echoes many typologies of waterfront villages both historic and contemporary by creating an elevated level of public walkways that will foster interaction between neighbors and provide a resilient path to the adjacent high ground during storm surges and temporary floods, as well as in the event that rising tides permanently elevate the overall levels of the river onto the site.



The Wetlands

Inspiration & Precedents

The Wetlands takes inspiration from both the natural beauty of the Hudson River and its surrounding marshland. Areas such as Constitution Marsh are valuable ecological habitats; they should be emulated, bringing ecological investments back to this riverfront site. Similarly, this inventive ecological neighborhood is inspired by a number of historic and contemporary precedents of water-based housing and village typologies. In particular, our design is inspired by the Floating Houses in Amsterdam, an ingenious housing complex in the Netherlands which places half of its units onto the water. Though we are not proposing actual floating homes, our design is similarly utilizing a smaller scale of construction to create a cooperative housing model elevated above and merged within the new marshlands on the site.

Maximize Public Space & Access to Water





Diverse & Activated Public Spaces



The River Trail

Part of a larger continuous pathway along the Hudson River



A Walkable Neighborhood

Sharing public & private access over
publicly accessible wetlands





The Wetlands
Combining Urbanity & Ecology

A scenic landscape photograph showing a large body of water (a lake or bay) in the background, surrounded by rolling hills and mountains. In the foreground, there is a wetland area with a winding stream or channel. The trees in the foreground and on the hillsides are in various stages of autumn, with some showing vibrant yellow and orange leaves, while others are still green. The sky is a clear, pale blue.

**Be Efficient,
Be Adaptable &
Maximize Ecological
Potential**


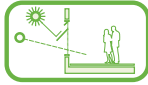





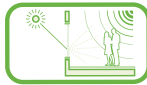








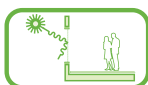


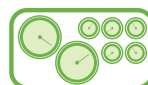

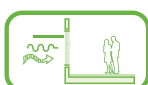
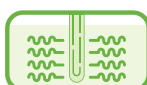


Site Systems &
Approaches

An Environmental Engine

Sustainable Design Strategies



Sustainable Design Opportunities

SITE & VEGETATION	MASSING & FACADES	ENERGY SYSTEMS	OPERATIONS & MAINTENANCE	PERFORMANCE MONITORING
 Increase Vegetation	 Passive Solar Design	 Energy Efficient Lighting	 Water Saving Fixtures	 Efficiency Education
 Connection to Nature	 Natural Ventilation	 Daylighting & Dimming	 Rainwater Capture	 Monitor Energy Use
 Active / Green Roofs	 Thermal Mass	 Solar Water Heating	 Recycling	 Meter Water Use
 High Reflective Surfaces	 Quality Glazing & Facade	 Heat Recovery	 Recycling	 Auto Sensors & Controls
 Light Pollution Reduction	 Solar Shading	 Ground Source Heat Pump	 Green Power	 LEED Benchmarking



Ecological / Resilient Design Strategies

The presence of water is a critical driver for the site, and it steers the Master Plan both in terms of ecological design and resilience strategies.

Water

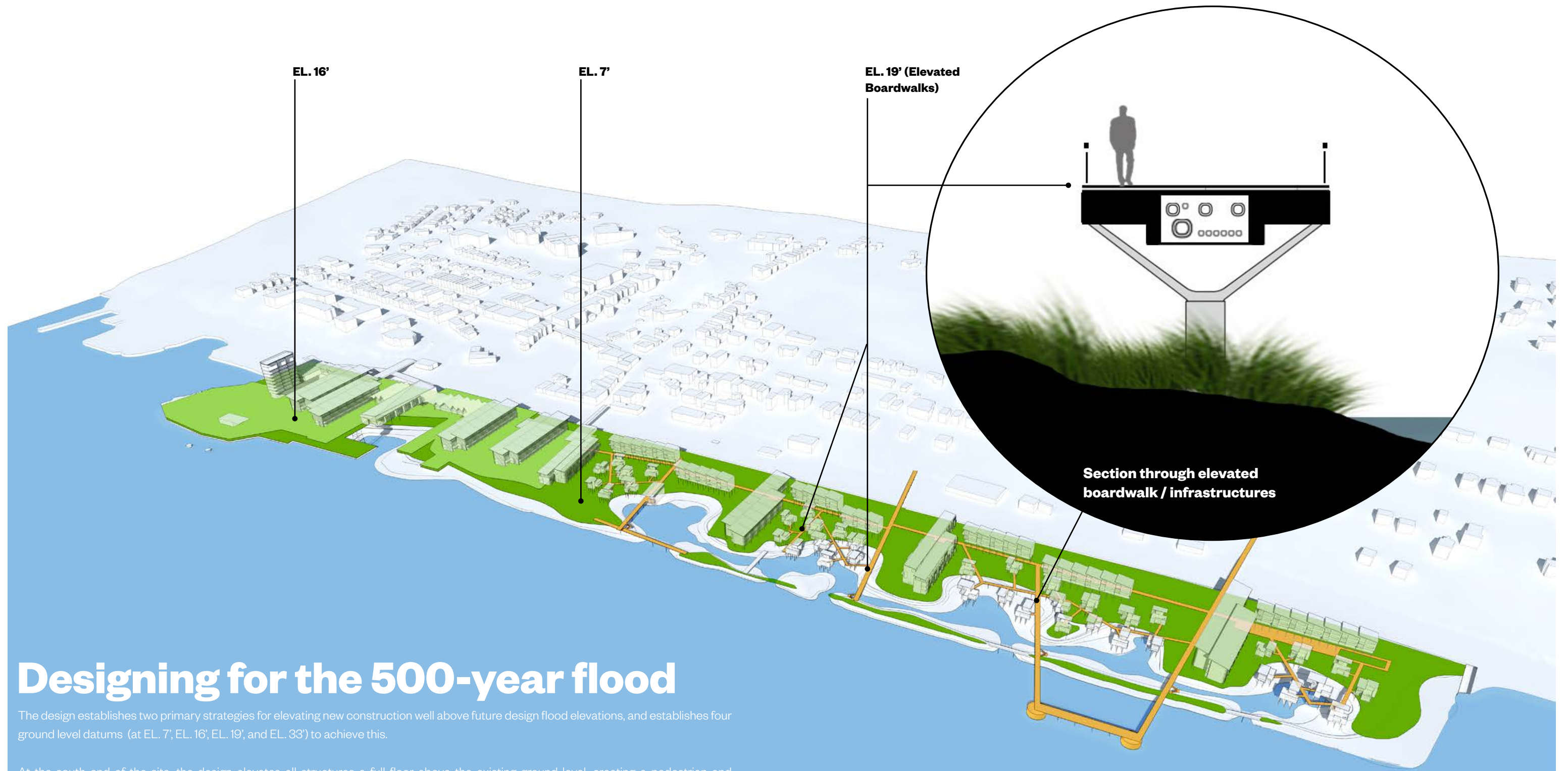
Rather than elevate the entire site with fill and develop over-sized sub-surface retention systems to address large storms, the master plan utilizes multiple strategies to retain water on the surface, as part of the natural topography and ecology of the site. The design furthers these goals by minimizing the amount of impervious roads and walkways on the site and providing multiple green roofs throughout the site.

River's edge

Following many of the recommendations of the Waterfront Infrastructure Committee, the design incorporates multiple cross-sections at the river's edge, minimizing the overall amount of structured bulkhead and sheet-piling needed on the site, and maximizing the use of softer shoreline options, including rip-rap, soft shores, beachfront, and marsh wetlands.

Resilience

The design places great emphasis on pedestrian connectivity and the importance of keeping many of these constructed connections above the flood elevation both currently and well into the future. The design assumes that water will one day infiltrate the site, yet simultaneously the design assumes that people will still live here at that time, and that we must develop strategies that will accommodate these long-term site evolutions, ensuring that this new neighborhood stays connected with the upland portions of the Village even during a storm-surge event.



Designing for the 500-year flood

The design establishes two primary strategies for elevating new construction well above future design flood elevations, and establishes four ground level datums (at EL. 7', EL. 16', EL. 19', and EL. 33') to achieve this.

At the south end of the site, the design elevates all structures a full floor above the existing ground level, creating a pedestrian and infrastructural boardwalk at EL. 19' across the site. This keeps all services well above the current design flood elevation, even above the 500-year flood elevation, and allows for parking beneath the occupied building spaces, while also keeping all parking at or above the current EL. 7' Base Flood Elevation.

At the north end of the site, the design follows the recommendations of the Waterfront Infrastructure Committee, using fill to elevate the ground level to EL. 16' and the second floor to EL. 33', the elevation of the current bridge level across the train track (this datum would be established in the future by the necessary level of any future bridge). These levels keep all structures at or above the 500-year flood elevation, while also providing occupiable ground-level spaces, important for incorporating successful retail programs on the site.



Cut & Fill Strategies

Balance cut and fill. In order to minimize the amount and cost of removing brownfield soils from the site, the design proposes a balance of cut and fill on the site, for example using the cut from the south wetlands to provide fill for the north site and to create large elevation-varied landscapes across the site. As stated above, all such adjustments must ensure that the site cap is replaced where impacted on the site.

3-to-1. Similarly, following the recommendations of the Shoreline Conceptual Plan and the requirements of the Consent Decree, the design assumes a minimum 3-to-1 remediation of land to river, offsetting any encroachment or overshadowing on the river with the addition of river area and wetlands onto the site.

Energy Strategies

Efficient Design & Building Systems

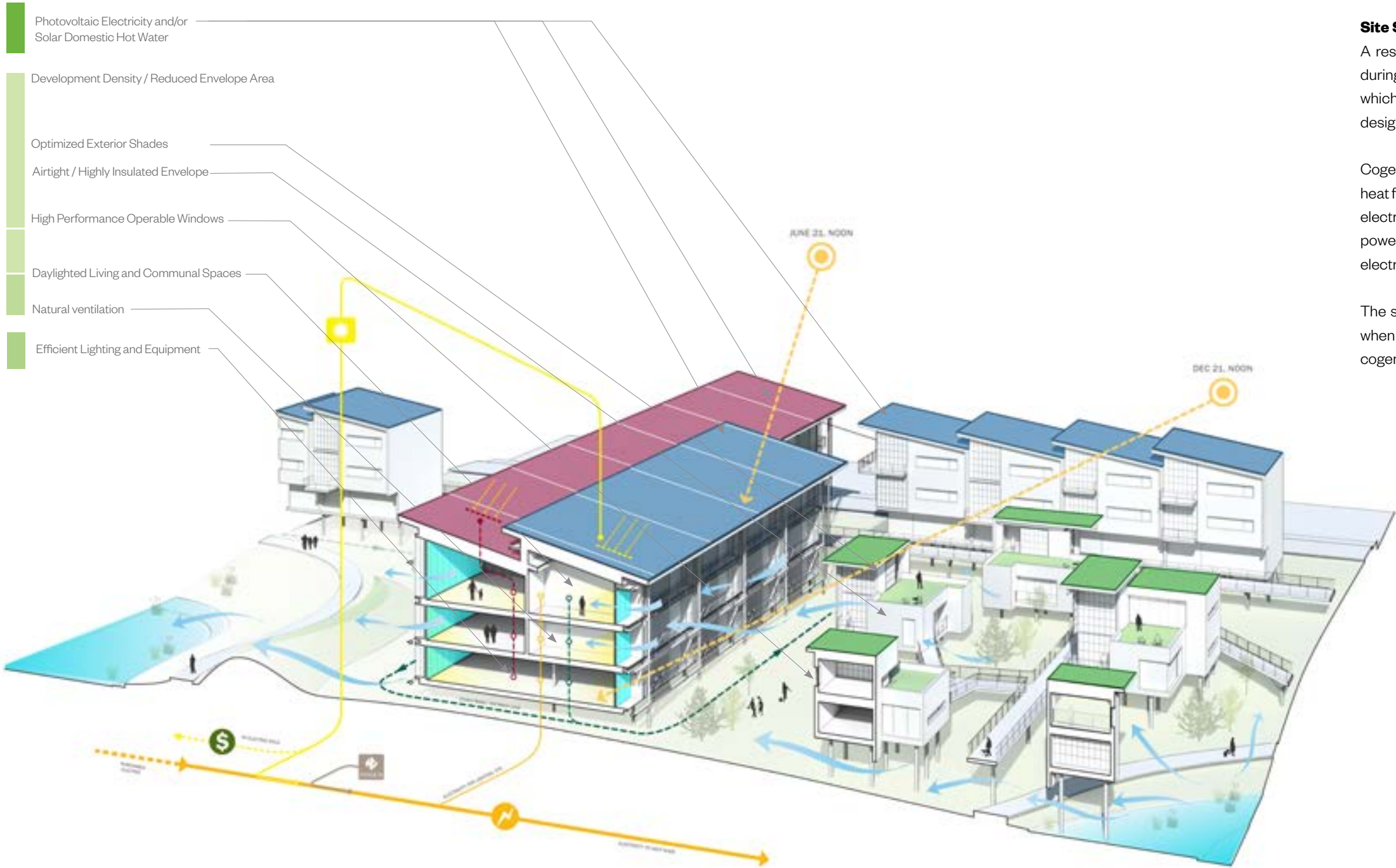
The design sets an overall strategy to conserve energy and maintain critical life-support conditions with as little input from fossil fuels as possible in the event of flooding or other cause of power-loss. This begins with a consideration of the density, massing and orientation of the buildings to drive the success of climate sensitive passive conditioning strategies, such as natural ventilation and passive solar heating. These strategies, combined with high efficiency building systems and appliances, reduce the overall energy consumption of the development. Given the specific remediation issues of the ground on this brownfield site, ground-source heating and cooling are likely not feasible, but should be studied further.

Site Systems

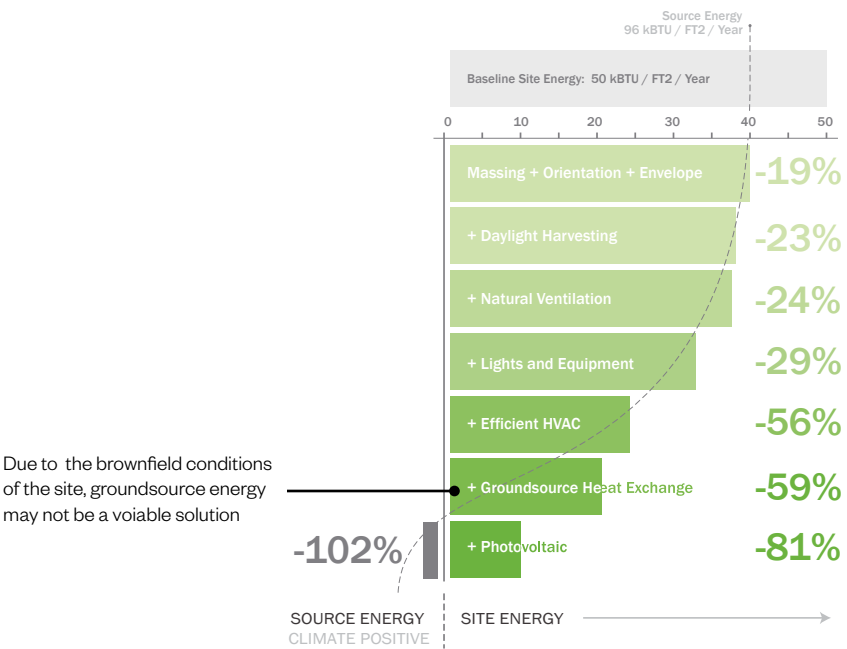
A resilient design must provide a diversity of energy resources, allowing for backup power during utility interruptions. Renewable energy and cogeneration become viable means by which to meet energy consumption demands due to the high performance of the building design and the clustering of housing development within the site.

Cogeneration efficiently meets the critical energy demand of the site while recovered waste heat from the process is used for heating and cooling of public amenity programs. Photovoltaic electricity is generated from the rooftop canopies and sold back to the utility when there is a power surplus. Given the minimized energy consumption of the project, the annual photovoltaic electricity production could offset the source energy consumption of the site.

The site electrical grid should be interconnected with the utility grid, but able to disconnect when there is a disturbance in the system. Smart controls provide onsite backup power (PV/ cogen) to critical loads while non-critical loads are shed.



Energy Systems Strategies for Energy Efficiency





Conclusion

Initial Assessments

As stated in multiple previous studies and commission reports, the Hastings-on-Hudson Waterfront offers tremendous opportunities to reconnect the Village to its riverfront, to create an economic and recreational asset from a brownfield site, and to responsibly re-incorporate the site into its surrounding river ecology. This site also represents a once-in-a-century opportunity to establish a new precedent for responsible, coastal riverfront development, creating opportunities and processes for collaboration between public and private development to create a holistic, civic-minded agenda. It represents an incredible opportunity to develop a new public asset, and an active, thriving neighborhood.

