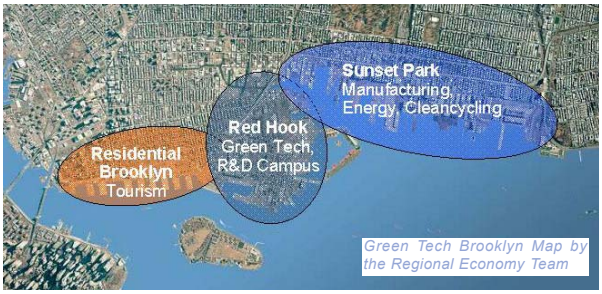
BROOKLYN-ROTTERDAM
WATERFRONT EXCHANGE NEWS



Green Tech Brooklyn Map by the Regional Economy Team

GREEN TECH BROOKLYN

by Bill Ellis, Hans Scheepmaker, and Luc Vrolijks

At its New York Workshop, the Brooklyn-Rotterdam Waterfront Exchange proposed to focus on "Green Tech Brooklyn" as the main economic proposition for the future development of the SW Brooklyn waterfront. The three-part proposal would combine clean, green tech research firms and a new, innovative R&D/academic campus in Red Hook with production facilities for clean recycling ("cleancycling") and renewable energy industries along the Sunset Park waterfront. The waterfront north of Red Hook would become more of a residential/recreational area as well as an attractive destination to visitors for tourism and recreation coupled with the development of Governors Island. Sunset Park would benefit from the innovative "Green Tech" manufacturing and improved maritime facilities on its waterfront because it will deliver new jobs and training opportunities for Sunset Park residents, without com-

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New Vision for Transportation is Key to Development

by Lou Venech

The most important insight of the transportation team came during the first hour, when Dutch participants stressed that success in implementing a sustainable vision for waterfront redevelopment depended largely on starting with a multi-modal transportation program as the foundation for redevelopment planning.

"What transportation program was envisioned for the area?," Pex Langenberg of the Dutch Ministry of Transportation, Public Works, and Water Management wanted to know. New York team members explained that many projects and plans were underway, but that transportation agencies typically found themselves following, rather than leading, decisions about major development plans in the United States.

"In the Netherlands, we develop the strategic transportation framework with or even ahead of the specific development plans," according

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Red Hook with Manhattan in the background (photo by Luc Vrolijks)

WATERPROOFING BROOKLYN

First Climate Resilient Waterfront Community in SW Brooklyn

by Susanne DesRoches, Piet Dircke, and Robin Schlaff

Plans were announced yesterday at a town hall meeting by a trans-Atlantic team for the first scalable model of a climate resilient community as part of a global "City of Water" initiative. Port cities across the globe, including Singapore, Shanghai and Rotterdam have discovered their new, water-related identity and are leading the way towards future 21st Century Cities of Water. Now New York City will join that initiative and SW Brooklyn will be the first waterfront area in the country to gain that designation.

Cities at risk have become cities of opportunity, and that's what's happening in SW Brooklyn. Climate change is providing this opportunity.

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NEW BLUE/GREEN LIFE

in SW Brooklyn

by Angela Licata, Tjitte Nauta and Alan Cohn

Environmental sustainability became a common ideal underlying the themes of economic development, transportation, and land and water use planning at the Brooklyn-Rotterdam Waterfront Exchange.

Linking the blue and the green networks: A shared vision quickly emerged from the team of expert environmental professionals, including engineers, planners and architects that environmental sustainability along the SW Brooklyn waterfront will be achieved by linking the "blue network" with the "green network," or water with land. In the heyday of the maritime industry, the area was defined by this link to the water. However, as the shipping activity that once crowded the harbor shifted away, parts of the waterfront were left to dilapidate.

The opportunity that lies ahead is to once again connect blue and green; to create a welcoming waterfront to bring residents and visitors back to the water.

In order to achieve this goal, the environmental quality of the land

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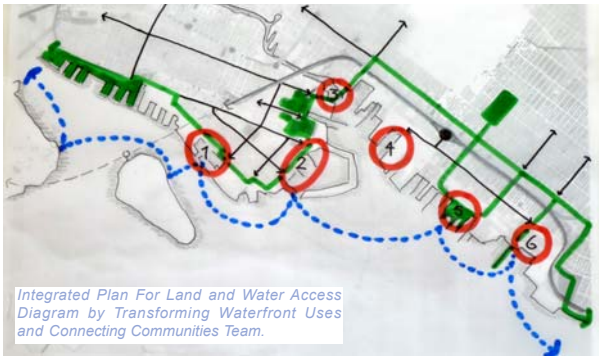

Integrated Plan For Land and Water Access Diagram by Transforming Waterfront Uses and Connecting Communities Team.

WATERFRONT GEMS

Linking Six "Pearls" to form Brooklyn's Maritime Gateway

by Michiel de Jong

The task assigned to one of the teams during the New York Workshop was to develop a holistic proposition for the transformation of waterfront uses in SW Brooklyn. The team identified six 'pearls' as high-potential locations along the SW Brooklyn waterfront.

The six nodes represent opportunities to develop as focal points of the waterfront, but just as important is the 'necklace' connecting the pearls and creating an integrated waterfront with a variety of functions and uses. One of the 'pearls' identified as a key development node on the SW Brooklyn waterfront is Atlantic Basin and its surroundings. Currently the location is an underutilized port area (as shown on the photos of the site).

Part of the area comprises a new cruise terminal facility, developed to provide additional capacity to the Manhattan cruise terminal and catering to large vessels that are unable to call at the Manhattan facility. The location of the cruise terminal directly opposite Governors Island is outstanding and allows for unobstructed views towards downtown Manhattan.

Unfortunately, the terminal building handes cruise liner passengers, but offers not much more. There is no appealing program connected to the cruise terminal, nor are there additional functions that introduce activities at the terminal building when no ship is along the quay.

The cruise terminal is a home port facility, meaning people start or finish their cruise here. Since not everybody arrives just in time, and people often take extra time to visit the city, home port cruise visitors tend to spend quite a large amount of cash during their stay, and should be encouraged to spend it.

Bars, souvenir shops, tax/duty free shops, restaurants, art shops and galleries, museums and hotels are all amenities that serve cruise passengers, crew and interested

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INSIDE

GREEN TECH

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promising the planned Bush Terminal Pier Park.

In this proposed development framework, Red Hook will become the hinge point between the residential Brooklyn waterfront and the more industrial 'working harbor' in Sunset Park. The proposal is in part based on experiences with the Rotterdam "Clean Tech Delta," an innovative collaboration between government, research companies and institutions in the Rotterdam-Delft area. In this proposition, Red Hook would become a research and innovation hub. The area may accommodate university research facilities, innovative start-up firms in research and development of cleancycling and energy technology, and the research facilities of large energy and recycling companies. This will be combined with residences, artist lofts and other innovative businesses. The result would be a vibrant urban district, where development of knowledge, innovation, creativity, and residential quality go hand-in-hand.

For the Sunset Park waterfront, the Workshop envisions a cleancycling economic proposition in which innovative companies would use the waterfront location as a key asset for water-in/water-out cleancycling businesses. The basic synergy would be that the innovative approaches developed in Red Hook would start being tested, implemented and "scaled up" in Sunset Park. This will deliver new jobs for the area, and establish the role of Sunset Park as a major cleancycling facility for the greater New York area. The cleancycling industry would combine well with the innovative industries already established in the area and would deliver new business opportunities for both the waterfront and adjacent communities.

Bill Ellis is Assistant Director of Port Planning & Development, Port Commerce Department at the Port Authority of New York & New Jersey; Hans Scheepmaker is Deputy Director and Area Development Manager for Stadshaven Rotterdam; Luc Vrolijks is the principal of Urban Progress offices in both Amsterdam and New York.

DEVELOPING THE REGIONAL ECONOMY

Team Leaders:
William Ellis
Hans Scheepmaker

Team Members:
Andrew Genn
Stewart Mann
Stephan Raes
Arie Van Tol
Luc Vrolijks

Resources:
Alex Jordan
Dennis Lombardi
Gerry Stoughton

Road Map Clean Tech Brooklyn (adapted from City of Rotterdam)

From Container Port to Cleancycling

by Bill Ellis and Luc Vrolijks

The Regional Economic Team was tasked with the job of identifying economic development opportunities that would be relevant and beneficial to the SW Brooklyn waterfront and its adjacent communities.

The team's deliberations started by looking at SW Brooklyn's assets and identifying its strengths. It concluded that the key asset of the area is SW Brooklyn's location at the heart of a great metropolis, surrounded by a vibrant and diverse regional economy with significant construction, commerce, retail, tourism and entertainment sectors. Other strengths are its residentail communities, many huge warehouses, affordable space, and good marine and rail freight handling facilities. While these are significant strengths indeed, their potential has not been fully realized.

The team held extensive discussions about what direction to follow for the economic proposition and reviewed many potential approaches to the future of the area. The main directions considered were prospects for large-scale container shipping, development potential for creative industries, and requirements for a possible innovative green and clean recycling and energy infrastructure. The team felt that all three development directions could be beneficial for the surrounding neighborhoods as well as the larger New York area. But the team was unsure if the infrastructure of the area would be able to support large-scale container handling.

Guided by the experiences of Rotterdam, in particular in the recent development at Stadshavens where the formation of "Clean Tech Delta" kick-started the transformation of the Vierhaven harbor area, the team concluded that an economic proposition in the form of "Green Tech Brooklyn" had the best chance to deliver a viable economic future for the area and its surrounding neighborhoods. Green Tech Brooklyn would address New York's regional future needs including clean energy, dealing with climate change and, most importantly, the need to recycle and reuse waste. The team emphasized the need to enhance transportation infrastructure (in particular, water-in/water-out*) and highlighted opportunities for using available commercial space and sites as commercial incubators and start-up spaces, including for light manufacturing and creative industries.

In terms of the Road Map for implementation of the economic proposition, the team discussed the need to build partnerships across the whole platform of stakeholders. Government organizations at city, state and federal levels have to work with community leaders, technical innovators, private companies, and educational institutions. From the 'lessons learned' in Rotterdam, the team suggests building an organization that is small, flexible and strategic. The team also considers it important to start early with the implementation of pilot projects; it encourages the involved parties not to wait until all problems are resolved, but to develop and test prototypes almost from Day One.

* "Water-in/water-out" means bringing goods in and shipping them out by water, rather than by rail or truck.

Dutch Urban Solution for a Brooklyn Waterfront

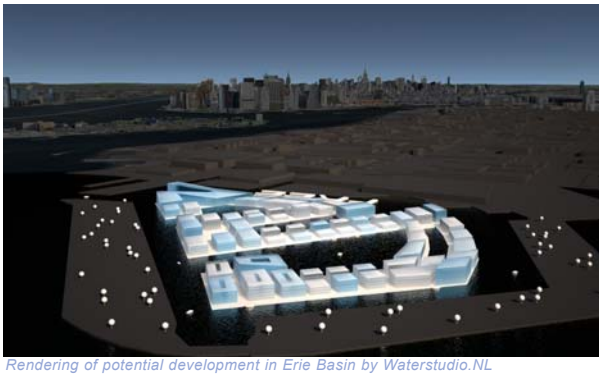
by Luc Vrolijks

As a Dutch urban designer who is based in New York, I have always had a keen interest in the SW Brooklyn waterfront. I got to know New York through bicycle trips, and it was on one of those trips that I ended up in the area, first in Red Hook and later in Sunset Park. I liked the wide-open views - “low skies” we say in Dutch - the massive waterfront buildings, the clear skies and the occasional view of Manhattan in the background, so close and yet so far. And I was surprised how underutilized the waterfront was. Despite the big chunky buildings suitable for just about every use, not very much seemed to be happening in the area. Even now that I understand the complexities of New York waterfront development better, I am surprised at how little of the potential of the area is as yet realized.

So I was very keen to be part of a Dutch-American team to think about the area's future. In my Dutch planning practice I have always worked on the regeneration of waterfronts, and industrial not-working-so-well-anymore waterfronts are my favorite places. I see them as a huge potential for their cities, almost as a promise that new and better futures lie within the boundary of the cities. We came up with a proposition that is rather close to the Rotterdam Stadshavens "Clean Tech Delta" concept. It is for a working waterfront, focusing on innovation for clean recycling and clean and renewable energy for 21st century New York. We termed it "Green Tech Brooklyn" and the proposal suggests that Red Hook develops into innovative mixed-use urban research lab and that the Sunset Park waterfront becomes the New York center for 'cleancycling.'

To me, "Green Tech Brooklyn" may well be the right direction for two main reasons. First, I think that it is good for this particular waterfront to move away from a reliance on residential development as the 'savior' for waterfronts. In the case of the Netherlands, particularly in Amsterdam and Rotterdam, regeneration used to consist primarily of the conversion of industrial harbor areas into prime waterfront real estate for residences. It took a while, but recent proposals have broadened, also addressing the need to deliver jobs and to innovate the urban economy. That is a positive development, and one that also fits the SW Brooklyn context.

The second reason I think that "Green Tech Brooklyn" will be good for New York is that it is an economic proposition that looks forward rather than backward. One of the key lessons the Dutch harbor regeneration specialists have learned over the last decade is that most attempts at keeping ailing industries alive against the economic tide can only be successful if the industries transform thoroughly. I was surprised about the insistence in some of the discussions to try to keep distribution logistics in the area, although the scale of the area - and the employment benefits for that matter - are clearly limited. It seems to me that proposing large scale logistics as a future for the area would be looking the wrong way. "Green Tech Brooklyn" is the more viable option; it looks ahead delivering business opportunities and jobs that suit the area and its future.



Rendering of potential development in Erie Basin by Waterstudio.NL

FLOATING AN IDEA: Erie Basin Showcases Sustainability

by Rolf Peters

Erie Basin is a unique area of some 90 acres (36.4 hectares) of water situated at a key location in SW Brooklyn between Red Hook and Sunset Park. With the skyline of Manhattan and downtown Brooklyn as a backdrop, it offers one-of-a-kind possibilities for attractive developments that respond to both the city's housing needs, as well as promoting public awareness by showcasing New York City's sustainable policy.

Due to the unpredictability of the effects of climate change, normal land use or landfill programs are hardly sustainable solutions to guarantee that New York "keeps its feet dry," as the Dutch say. Raising houses by constructing on stilts may seem a logical adaptation to avoid the problem, but living 10ft above the water certainly spoils the special attraction that contact with the water has in terms of living quality. Direct experience of the water is a potential waiting to be utilized: boating, canoeing, and lounging on a terrace at the waterside. Using the water could provide unique selling points for branding the Erie Basin development.

The true significance of such a floating development, however, would be its educational potential. Imagine a floating development where school buses from all over the country would come to see about climate change and NY's solutions to deal with that change. People would come to learn about taking responsibilities for preventing climate change by seeing the necessity of adapting our built environment to rising water levels, as well as solutions to do so. And all of this is outside with the water right there at your fingertips, not framed in a slideshow under the protective roofs of a dusty museum.

Java Island in Amsterdam is an example of how Erie Basin could look and feel (Photo by Waterstudio.NL)

Floating developments could consist of walkways, parking garages and even roads, ranging in total size from 500,000 to approximately 2,000,000 ft² (185,806 m²). On top of these structures apartment buildings, single houses, offices, and leisure up to 5 stories high can be realized, all exactly the same way as usual in Brooklyn and according to actual demand. All designed based on technology that is tested and approved by certification institutions on Marine Safety with guaranteed insurance and mortgage possibilities.

Currently, the world's largest development of this kind is the project called "The New Water" in a former greenhouse area near Rotterdam, the Netherlands. In this high level development, a total of 1,200 houses will be built within 2 to 8 years, of which some 600 will be floating. Going even another step further, the Erie Basin project could be fully self-supporting, meaning that all power, clean water and climate control utilities are fully provided for within the developments

Floating apartment complex in "The New Water" (Design & image by Waterstudio.NL)

themselves, without needing additional external resources. Electrical power can be generated using tidal energy; heating and cooling by means of heat exchanging systems using the surrounding water; and potable water can be made on the spot by desalination.

By combining the living quality of the waterfront with the latest environmentally-friendly technologies, Erie Basin could be a world leading education center demonstrating sustainable solutions for adapting to climate change, as well as actively contributing to preventing further climate change.

Rolf Peters is a partner at Waterstudio.NL, onwbv.nl, waterstudio.nl.

Waterfront Gems

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visitors and are especially convenient when in close proximity to the terminal.

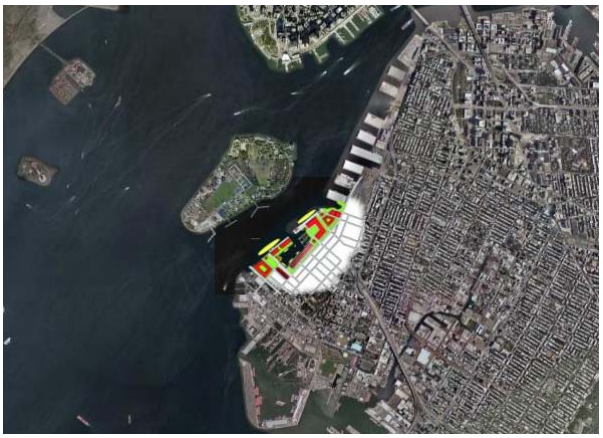
Convenient transportation to and from the city is a prerequisite. Taxis are a major means of transport, as well as tour buses transferring cruise passengers to and from Manhattan mainly. However in this specific case, where road and rail access are not particularly abundant, the opportunity to develop a passenger boat hub in Atlantic Basin is worthwhile exploring. The added value of waterfront locations is to use the water as an amenity. Water taxi shuttles could connect to other parts of Brooklyn, carrying employees of the facilities and other commuters to and from their nearby homes. Water taxis and ferry services could also connect to Governors Island, where a large-scale educational facility may be developed and to Manhattan, for cruise passengers and crews. Berthing of sightseeing boats with itineraries such as Harbor Cruise or Statue of Liberty/Ellis Island as part of the cruise package could also be accomplished in Atlantic Basin.

The Atlantic Basin has sufficient capacity and provides excellent protection from wind and wake waves and thus can additionally serve as a marina for visiting yachts that can berth in a controlled environment where visitors have easy access to facilities and transportation.

Another potential water use can be a floating program for a few larger vessels that are used for various purposes, for instance as part of a museum, educational program or as restaurant. These vessels can have semi-permanent berths in Atlantic Basin, and connect to the building program on land.

This building program comprises restoration of some of the port industrial sheds around Atlantic Basin, characteristic for the heydays of the Port of New York and refurbishing them for use as small commercial spaces, art galleries, and small restaurants.

On the northern side of Atlantic Basin, currently the premises of the Red Hook Container Terminal, new facilities can eventually be established. A potential new use is the extension of the cruise terminal with another berth and terminal building, potentially focusing more on port-of-call services to large cruise liners, including transportation facilities and passenger amenities. The remainder of the area can be developed in a flexible way, tailored to the needs and situation. Hotels for cruise passengers and also related to the new R&D initiatives and educational and recreational facilities on Governors Island is an option; residential and park developments could complement this setting.



The Atlantic Basin Pearl Location in the New York harbor (Image by DHV Consultancy and Engineering based on Google Earth)

As a conclusion, it is clear that there is high potential for the development of the Atlantic Basin area, with a focus on tourism, both international and local. The competitive edge of this area is the opportunity to **use the water** at the waterfront and the beautiful views from the site, providing a "Door to Brooklyn" and a gateway to New York.

Michiel de Jong is a Senior Project Manager at DHV Consultancy and Engineering and teaches at Delft University of Technology.

TRANSFORMING WATERFRONT USES & CONNECTING COMMUNITIES

Team Leaders:
Michiel de Jong
Wilbur Woods

Team Members:
Robert Balder
Sandra Dixon
Rolf Peters
Jennifer Posner
Matthew Seybert
Laura Shabe
Walter de Vrie

Resources:
Jeroen Aerts
Ellen Cavanaugh
Dennis Lombardi
Jessica Pavone
Rob Pirani

New Blue/Green Life in SW Brooklyn

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and water must be restored. Residential and recreational opportunities will need to be created in formerly industrial areas while spurring innovation and jobs in existing and new industrial facilities.

Water quality has improved considerably in recent decades and will continue to improve with added New York City Department of Environmental Protection (NYCDEP) investments to reduce sewage flows along the waterfront and assist with remediation of the heavily polluted Gowanus Canal. Remedial activities will also allow new land uses where pollution from industrial activities still lingers, such as the Bush Terminal Piers, some of which are proposed to become a new waterfront park.

Creating new habitat for plants and animals: In addition to current and planned remediation, restoring the natural ecological functions of the waterfront can be achieved through eco-engineering concepts introducing new plant and animal life. Species can be introduced to improve water quality and provide habitat for the rich biodiversity of the New York harbor between and under piers, and attached to quay walls or other structures. A shallow area just south of Red Hook and west of Sunset Park, known as the Bay Ridge Flats, may also provide a base for creation of a new reef. "Floating wetlands" can provide an additional platform for wetland growth at the surface of the water, supplementing new growth below. Recent initiatives also provide opportunities for new livelihood programs making use of recycled materials.

The restored areas and ecological initiatives will become an attraction, beckoning people to the waterfront for wildlife viewing and onto the water for an even closer perspective by canoe or kayak. These new offshore habitats have the added benefit of providing protection to landward areas from the direct effects of storm waves, which may impact the waterfront more frequently as climate change increases vulnerability to sea level rise and extreme weather.

Easing the transition from land to water: Traditionally, New York City has created "hard" shorelines, such as bulkheads, at the waterfront in order to protect buildings and infrastructure from storm-induced flooding. This new "soft" approach creates a more natural buffer between land and water. Additional buffering will be created along the waterfront by enhancing the land's capacity to absorb and drain water. Areas that are often covered with impervious surfaces, such as parking lots, roads, and trails, can become permeable with the use of innovative materials and design techniques. Trees, shrubs, and grasses can also absorb water as they enhance the appearance of the shoreline and provides additional wildlife habitat.

These features can gradually transition to the aquatic vegetation along the waterfront and in the water by introducing plant species that will be resilient to salinity from occasional storm and tidal flooding. By blurring distinctions between land and water, flood waters will more easily recede. Any development in the flood zone should be built or retrofitted to withstand occasional flooding while minimizing impacts on the surrounding environment when the water recedes.

Bringing people to the revitalized waterfront: Development in SW Brooklyn will complement the region's sustainability goals. By generating wind, solar, and geothermal power onsite, industry can move toward achieving carbon neutrality. There are numerous opportunities for energy efficiency, including capturing heat generated by industry for use in residences and even swimming pools. Furthermore, the community can generate its own food in greenhouses and fish farms; the large warehouses of SW Brooklyn can provide ample space for agriculture and aquaculture while using electricity and heat from local sources. These environments can even be used to generate algae for biofuel and oysters that can be transplanted to the Harbor.

To capture the maritime past, present, and future of SW Brooklyn and attract more residents and visitors, the waterfront will be lined with educational features that highlight the area's history as well as the vision for a sustainable future. Visitors will be guided to sites of historical significance and descriptions of the restoration work that brought new life and prosperity. In addition to markers along the waterfront, this maritime center, nestled within the sustainable technology and climate innovation lab, will become a launching point for a day at the water's edge.

The proposed Brooklyn Waterfront Greenway will provide a link from neighboring communities to each other and to the water, and create a network of destinations ranging from parks to historical sites to sustainability demonstration projects. Co-locating a network of permeable surfaces and vegetation along the Greenway will help capture stormwater and make it more green and enjoyable. In addition, roads to and from SW Brooklyn can utilize similar practices to absorb water and create greenery. Visitors coming by water can also arrive in an environmentally sustainable fashion using boats powered by renewable energy sources.

Ultimately, SW Brooklyn can embrace its past while becoming a showcase of sustainability for New York City and for the world. In keeping with the region's maritime history, the water can once again become a part of the land and life of SW Brooklyn.

Artist impression of piles in substrate (by RWS South Holland)

Adapting green building concepts to Sunset Park (Artist impression by DSA and JA Architecture)

Angela Licata is Deputy Commissioner of Environmental Planning & Assessment at the New York City Department of Environmental Protection; Tjitte Nauta is an environmental planner at Deltares; Alan Cohn is Director of Climate Change Planning at the New York City Department of Environmental Protection.

Industrial heat for recreational use (Image by DeUrbansten, Gemeenteweken en APPM)

SUSTAINING
THE ENVIRONMENT

Team Leaders:
Angela Licata
Tjitte Nauta

Team Members:
Doug Greeley
Sandy Hornick
Yong Kim
Rubi Rajbanshi
Bert Smolders
Christopher Streb
Nico Tillie

Resources:
Alan Cohn
Susannah Drake
Dennis Lombardi
John McLaughlin
Julie Stein

Waterproofing Brooklyn

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By proactively redeveloping SW Brooklyn's waterfront into climate-resilient communities, this green innovation will also stimulate the local economy. These climate resilient communities will be able to recover quickly from climate impacts while maintaining their economic and social viability.

Within SW Brooklyn, three remarkable areas can be distinguished: Gowanus Canal, Red Hook and Sunset Park. These areas were the maritime port industrial backbone of the greater New York area throughout the 19th and 20th centuries. Containerized shipping has resulted in a fundamental shift to these areas' economies, making them the perfect place to integrate a green industry into the existing fabric of the neighborhoods.

The climate vulnerabilities in Red Hook, Gowanus and Sunset Park include increased precipitation and temperature, and flooding due to sea level rise and storm surge. Of particular concern is toxic runoff when industrial neighborhoods are flooded. Flooding can also cause considerable damage to existing housing stock and industrial buildings and infrastructure. Additionally, portions of the waterfront are on landfill, and flooding may cause increased degradation of waterfront infrastructure. Increased rainfall intensity can impact stormwater systems and cause additional sustained flooding following a rain event. With higher temperatures, these neighborhoods will experience increased heat stressors due to heat island effect and lack of green space.

Climate Innovation Lab Logo (design by Susanne DesRoches)

Canal greenway example for the Gowanus Area (Photo from Deltalinqs)

Each area of SW Brooklyn provides different and unique opportunities for climate resilience and showcasing and producing strategies for adaptation. These details are discussed below. Representatives from the Netherlands brought their expertise and real life experiences on how climate adaptation can transform neighborhoods.

Gowanus Area: This area divides two residential neighborhoods and is defined by its waterway, the Gowanus Canal, which has recently become an EPA Superfund National Priorities List site. The opportunities for climate change adaptation include a small flood barrier (vertical lifting gate type), suitable also as a bridge at the mouth of the canal, which can be an important connection between the Gowanus and Sunset Park communities. The green spaces along the Canal can be formed as a linear park and will serve as a neighborhood-friendly storm water retention and treatment facility. Due to the low elevation of the area surrounding the Canal, the existing housing stock will be retrofitted and flood-proofed.

Red Hook: The Red Hook area's vulnerability to flooding creates a unique opportunity for the Climate Innovation Lab, a showcase for climate-resilient strategies. Through engagement with the community, especially local urban youth, this educational lab will develop and implement climate resilient onsite retrofitting and other innovative strategies. The lab will offer both green education and job development in an emerging industry where job opportunities are likely. The neighborhood will also benefit from showcase projects such as safe, clean and child-friendly urban storm water storage areas that double as ornamental water parks and provide environmental education to youngsters in the area.

Red Hook Waterfront (Photo by Nautilus International Development Consulting, Inc.)

In Rotterdam, a similar innovation lab has been created to revitalize the local community at the RDM Campus in Stadshavens, or City Harbors, a redeveloped, former dock area. RDM now stands for "Research, Design and Manufacturing." Rotterdam University for Applied Sciences is developing RDM, with support from the City of Rotterdam and the Port of Rotterdam, as an innovation lab for "moving, powering and building" in cooperation with innovative, young and small companies. Workforce education for "blue collar" scholars can contribute to innovations, from new innovative water transport, floating homes and hydrogen-driven, green racing cars in the reconstructed old warehouses and dock buildings. In Red Hook, a comparable campus, the heart of the Climate Innovation Lab, could be developed.

Sunset Park: Sunset Park, with its existing industrial infrastructure, is an ideal location to provide manufacturing support for the Climate Innovation Lab. Additionally, this neighborhood could benefit from the existing highway becoming a superlevee to protect the neighborhood from flooding. This superlevee with the highway hidden inside could provide needed green space and, acting like a bridge, would allow safer access to the waterfront for neighborhood residents and visitors. The levee is not a barrier but an important connection between two areas and invites residents and tourists alike to walk along its crest and enjoy the views of the skyline.

In Rotterdam, these strategies for climate resilience are already under construction or in place. People from the local community at the RDM campus and other nearby waterfronts study there, have their jobs here, enjoy the waterfront, use new public water transport, and visit recreational facilities in the lively surroundings of the campus that attract restaurants, bars and other facilities.

In Brooklyn, a similar transformation can happen where water retention basins are now water parks, superlevees connect residents to the waterfront, and floating apartments have become the hottest real estate. Through knowledge sharing between Rotterdam and SW Brooklyn, these effective strategies can be integrated into a planning effort that will protect against the inevitable effects of climate change while preserving and stimulating viable communities. Proponents of this plan hope to show how SW Brooklyn can become the first planned waterfront climate resilient community.

Susanne DesRoches is Sustainable Design Manager, Engineering Department, at the Port Authority of New York & New Jersey; Piet Dircke is Director, Global Water Management, Arcadis Netherlands, & Professor, Rotterdam University of Applied Sciences; and Robin Schlaff is Director of the Sea Level Rise Task Force, New York State Department of Environmental Conservation.

Superlevee example for Sunset Park (Source: Rotterdam Climate Initiative)

BEING PROACTIVE ABOUT CLIMATE CHANGE

Team Leaders
Piet Dircke
Robin Schlaff

Team Members
Susanne Des Roches
Adam Freed
Corjan Gebraad
Rutger de Graaf

Resources
Alan Cohn
Dennis Lombardi
Christopher Zeppie

Multi-Modal Mobility by Lou Venech

Achieving a successful and sustainable future for the SW Brooklyn waterfront depends on developing improved and carefully integrated multi-modal transportation connections. Transportation decision-makers must step up current efforts to coordinate planning on separate projects and work together to create an areawide strategic framework to support and guide the proposed redevelopment effort.

Reflecting the Dutch experience, the Multi-Modal Transportation team reported that a comprehensive mobility strategy would include standards for sustainable transportation and adequate multi-modal capacity to move people and goods. This in turn would help define the scope and limits of redevelopment plans and support phased implementation of improvements through the next 20 years.

This is as much an institutional challenge as a planning problem. Transportation agencies and others planning projects in SW Brooklyn include multiple divisions of both the New York State and City transportation departments, as well as the NYC Economic Development Corporation and City Planning Department, Port Authority of New York and New Jersey, Metropolitan Transportation Authority, and Empire State Development Corporation.

Several national government agencies also play roles that generally emphasize compliance with various federal laws rather than implementation of development projects. Separate divisions of the US Department of Transportation are sources of essential funding support used to improve local transportation facilities and services, also bound by regulation and funding limits. In contrast, the national government in the Netherlands takes a more active role in directing and supporting waterfront development projects, though strict environmental standards and local agencies are part of the process.

SW Brooklyn Transportation: Achieving System-Level Coordination: Coordination among the transportation and planning agencies serving SW Brooklyn tends to focus on specific projects and their intersection with others' jurisdictions. Chronic budget constraints hinder efforts to integrate the scope and schedule for transportation improvements.

An essential early step towards a SW Brooklyn mobility plan would be creating an interagency group including the major transportation and development agencies. This interagency group would provide a forum to coordinate mobility and development strategies involving government decision-makers for zoning, economic development, and transportation. An organized process also would foster effective community input and help attract private investors.

Building on Historic Assets: SW Brooklyn presents an exciting combination of revitalizing communities, diverse local businesses, historic working-waterfronts, and industrial properties that can be adapted for a wide range of uses. The area's transportation assets include facilities vital to local and regional transportation today, and infrastructure that provides a head start in creating a more integrated and sustainable mobility network for the future.

Team members and resource people saw an extraordinarily complex, somewhat disconnected mix of legacy infrastructure, programmed rehabilitation projects, and fragmented but ambitious visions for the future. Outmoded and congested, the Gowanus Expressway/BQE is a vital link for local access and regional commuter-bus and truck traffic. NYSDOT is investing in essential near-term reconstruction and considering replacement of some segments as a long term goal.

Other key transportation improvements include extension of a "greenway" for cyclists through the entire study area, modernization of freight rail car float service for cross-harbor shipments and enhanced public access to working waterfront sites in Sunset Park. Plans to attract more diverse activities to the dense mix of uses already in SW Brooklyn present real challenges to transportation agencies in safely and efficiently managing auto, truck, bus transit, bicycle, and pedestrian needs.

The overall workshop's vision for SW Brooklyn requires a transformative strategy for mobility of people and goods - introducing services that encourage shifting to a more sustainable mix of modes for commuter, recreational, and freight transportation.

The team identified four main layers for the mobility strategy (see Diagram). Each of these layers can provide both internal circulation within SW Brooklyn, and external or regional connectivity to and from the area. This multi-modal framework also provides more alternatives to auto and truck dependence than most parts of the region.

Supporting the Overall SW Brooklyn Vision: Many details remain to be addressed, but the transportation team agreed that its conceptual strategy offered the capacity and flexibility to support the ambitious goals for economic and community benefits, sustainability, and management of climate-change impacts.

The major transportation corridors to and through the area are overlaid here. Black lines highlight the primary vehicular routes as well as the rail car float link and Bay Ridge rail line extending into Brooklyn. Red lines show the main routes for internal circulation parallel to the waterfront, including improved connections for the Red Hook redevelopment area. Red dashed lines show ferry links at Brooklyn Bridge Park and Bush Terminal Park with Governors Island and other recreational sites in the harbor, and along the Brooklyn waterfront itself.

Rail freight transfer at the car float facility, highlighted in brown, links the cross-harbor barge service with transfer inland as well as along the existing First Avenue rail freight line to support the working waterfront. The planned Brooklyn Waterfront Greenway route promises attractive bicycle and pedestrian access throughout the area.

By deploying this range of transportation options across SW Brooklyn, it becomes possible to support a more intense and varied range of uses. Within the study area, transportation plans for each redevelopment zone would depend on the access needs of the uses prioritized for each sub-area. For example, the vision emphasizes recreational uses at Brooklyn Bridge Park and nearby waterfront sites, supported with bikeway and pedestrian access and ferry connections. To serve the educational complex and innovative manufacturing incubators in Red Hook, the network must deliver improved local circulation and enhanced regional access by road, transit, and water. That should include more direct vehicular connections to the BQE/Brooklyn-Battery Tunnel.

To support manufacturing and working waterfront uses in Sunset Park, the mobility plan calls for enhanced access to the highway network, better truck routing through local streets, and expanded rail and waterborne goods movement to reduce truck dependence. Sunset Park needs improved pedestrian and local-transit access for residents working at industrial and waterfront job sites. Bush Terminal Pier Park also requires new pedestrian and bus transit links to help residents safely across the transportation corridors and commercial zone between the community and the park.

Most ambitious is a potential opportunity for an innovative transportation project in Sunset Park that also would address the long-term risk of storm surges and sea level rise. Planners anticipate the eventual replacement of the existing elevated Gowanus Expressway. Ongoing reconstruction is expected to extend the life of the structure for only another 20-25 years. Inspired by ideas from the Netherlands, the team explored the concept of combining this essential highway replacement with a climate change strategy by moving the replacement highway one avenue closer to the water, and constructing it above-grade within a berm. The replacement highway could provide improved regional mobility and local flood protection. This concept could incorporate bike-ped access on top of the covered highway. The roadway structure also could be flanked on the waterside with buildings for light-manufacturing and distribution, designed at their base to anticipate rising waters.

Finally, an areawide mobility plan could foster maximum use of non-polluting transportation equipment with recharging facilities, ample bicycle storage, flexible infrastructure for waterborne access, and other environment-friendly transportation concepts. Innovative vehicle types for moving people and goods within the zone could mitigate the demand to bring larger vehicles into the area, and could make the pedestrian environment safer and more attractive for residents, workers, and visitors.

INVESTING IN MULTI-MODAL TRANSPORTATION SYSTEMS

Team Leaders:
Michiel Couperus
Larry Malsam

Team Members:
Manju Chandrasekhar
Leon Goodman
Pex Langenberg
Kevin Rutkowsky
Lou Venech

Resources:
Rich Barone
Dennis Lombardi
Joshua Nelson
Theodore Wright

BLACK: The **roadway network** including the Gowanus Expressway/BQE and local streets;

DARK RED: The **freight rail network,** linking Sunset Park with cross-harbor and inland Long Island distribution, as well as rail freight service to working waterfront sites;

RED: The **waterway network**, for commuter and recreational ferries, and potential new waterborne freight services;

GREEN: The **greenway,** providing a safe, continuous cycling route area and new pedestrian amenities.

New Vision from page 1

to Michiel Couperus, a transportation planner for Rotterdam's city government. "Look at the economic, environmental, and community development goals set out for this Workshop; an integrated and multi-modal transportation system is essential to achieve any of them, especially to meet standards of sustainability."

The team worked together from this starting point. Key steps included an inventory of the existing transportation assets serving the area and several important - but largely uncoordinated - plans to upgrade them. How they might be integrated to serve different needs and minimize circulation conflicts was considered, and the most sustainable options available to provide access for people and goods to this area was discussed.

In parallel with the other teams, a conceptual plan was developed for coordinated multi-modal transportation serving the SW Brooklyn waterfront that could deliver the services most critical to support the preferred mix of land uses and community needs at each location. The conceptual transportation plan also builds in flexibility to evolve as new land uses and new opportunities for improved regional access unfold over the next 20-30 years.

Lou Venech is the General Manager, Regional Transportation, at the Port Authority of New York & New Jersey.

Global Solutions / Local Innovations

by Hans Scheepmaker

If we look at things from a wide perspective, it might be justified to assume that the impact of the challenges facing us is so enormous, that no country can solve these on its own. The climate and energy issues are global challenges. They present a paradigm shift in human society that needs global solutions.

But these solutions have to be invented and implemented locally. This implies that collaboration between deltas with mainports might be of great value in securing our futures. We face the same challenges; and we could greatly benefit from joining forces by working together on finding the right solutions.

There's no doubt that the combination of global warming and the shortage in energy supply will drastically change the way our society is organized. Currently our economy is completely dependent on fossil fuels: to generate electricity, to manufacture products, to transport products and people, etc.

If we want to reduce the effects of climate change to manageable levels, we will have to fundamentally restructure our economic system: reduction of CO_2 emissions based on the existing industrial infrastructure may not be effective enough in the long run.

So we will need to implement renewable energy sources on a much larger scale, use low carbon (building) materials, create energy efficient and smart products, design climate proof constructions, and establish clean transportation systems. These are some of the important areas where a socially and economically sustainable future will take shape. In order to make this happen we will have to make the deliberate choice to innovate on a grand scale.

Rotterdam has set an ambition to be ahead of this development. The importance of our mainport for the Dutch economy requires decisive action to maintain our economic competitiveness. This urgency is shared by the business community, knowledge institutes, and the local and national government.

Therefore we have combined our resources and have jointly set up the Clean Tech Delta: a new green deal for innovation and clean technology in the Rotterdam region. Our objective is to design and apply clean tech innovations in the fields of energy, water, mobility and materials to create a sustainable and resilient delta.

The Clean Tech Delta aims to invigorate the region economically and socially, while offering solutions on an international level. The lowest lying industrialized delta in Europe is perhaps the ideal place for the development and realization of clean tech solutions: if it works here, it will work anywhere.

Rotterdam has the space available to make this happen: Stadshavens (City Harbors) is a 4,000 acres (1,600 hectares) transition area that will be employed as a testing ground for the application of clean tech innovations and will be made into a paragon of sustainable & climate proof urban delta.

Of course we realize that we cannot do this on our own. The exchange of expertise with other cities & regions throughout the world with similar ambitions is mandatory if we want to be successful. Finding the right solutions will require the collaboration of many other local initiatives. SW Brooklyn might be one of these.

The workshops have confirmed that there is a common agenda and that there are many similarities between Stadshavens and SW Brooklyn. This has resulted in an economic proposition for SW Brooklyn that is comparable to the Clean Tech Delta. The workshops have proposed the term "Green Tech Brooklyn". This concept is explained further in this newspaper on page 1.

It is important that New Yorkers have acknowledged that clean tech innovation might be a necessary first step in securing a sustainable future for the city. To coin a phrase that was used during the workshops: "New York City runs on cheap oil and cheap oil is running out". The limitless energy and vitality of New York are perhaps its greatest strengths, but in order to sustain them the City will have to come up with new and innovative approaches to their sources.

Hans Scheepmaker is Deputy Director and Area Development Manager for Stadshaven Rotterdam.

Economies of Scales

by Michiel de Jong

Waterfronts appear in all shapes and sizes. This is particularly true in 'old' waterfront cities and makes modern day waterfront development a complex matter. Decision-makers and planners need to balance all the claims put on the waterfront, from large-scale port proposals and commercial developments to public parks. The right scale of development needs to be applied to each waterfront. Not to try to fit everything in the plan, but to dare to choose. In that respect, the following might be concluded for the SW Brooklyn Waterfront:

The current scale of port functions in SW Brooklyn is modest, compared to modern-day container port facilities. For instance, a modern post-Panamax container terminal with 2.5M TEU throughput generally requires 4,000' of berth length at 2,000' width (8M sf or 180 acres/575 M^2 or 75 hectares). In fact, such a development would use a large piece of the current Sunset Park waterfront and require significant investments for creating deep draft quay walls, extensive earth works, and transport infrastructure. The aerial photograph overlays a visualization of the Suez Canal Container Terminal and shows how it would impact the Sunset Park waterfront.

Anticipating that such a terminal would employ up to 700 people, its effectiveness in terms of social-economic development is limited and provides few benefits for the adjacent community. Such a terminal is often involved in transshipment of containers to smaller vessels, rather than adding value to the contents of the container. When containers leave the terminal, thousands of trucks clog the upland routes. Here those are adjacent to a low-scale residential community and not suited to receive such volumes. This alone will reduce the competitiveness of the terminal: other terminals in the port with better transportation connections will be able to operate more efficiently.

Finding niche segments along the waterfront would therefore be a more suitable approach, for the following reasons:

1. Smaller volumes, smaller area requirements, less impact: fitting the scale
2. Niche markets generally require larger numbers of skilled and dedicated labor than large container terminals
3. Value-added activities often complement niche terminals
4. Opportunities for joint use of the waterfront, including public access, open space, and tailored combinations of industry and urban/leisure functions, since the waterfront area is not claimed by large-scale port facilities; and
5. Diversification of port activities, including cargo commodities and industrial activities, calls for more than container terminals alone. SW Brooklyn, due to its position in the port and city network, could offer this diversification.

Visualization of a 4,000' x 1,750' container terminal at Sunset Park (Source: DHV based on Google Earth)

One such niche was identified during the New York Workshop: the "cleancycling" industry. This is an industry with relatively high numbers of employees. Facilities can be fed mostly by barge or rail carts. Products are processed and produced in modern industrial facilities with low carbon footprint. Output products are delivered to customers both by truck, rail and barge. A similar niche could be the biotech industry connecting the Brooklyn Army Terminal with Lutheran Medical Center.

Environmental legislation regarding the proposed port facilities will be important due to their close interaction at the SW Brooklyn waterfront with the residential community, This applies both to impacts on the marine environment (due to reclamation and dredging) as well as the community (noise, air pollution, views, light, etc.). This issue is one of the major show-stoppers of port development in general and needs to be considered with care, and from the start.

As a conclusion, economies of scale need to be applied in their appropriate context: large-scale operations in areas with ample space that are less impacted by the operations / small-scale niche operations in areas with limited space, significant available workforce and close proximity to other waterfront users and urban activities.

For New York and New Jersey ports, the advice is to create an integrated master plan covering at least a 20-year period in which holistic planning of future functions and optimized layouts can be developed and benchmarked against the competition. I am confident that the conclusions of that study would show an interesting result for the development proposition of SW Brooklyn.

Michiel de Jong is Senior Project Manager, DHV Delta Development, and teaches at Delft University of Technology.

Future of the South West Brooklyn Waterfront

by "Born in Brooklyn"

I was born in Brooklyn in 1949 and my Mom was born in Brooklyn in 1925. My grandfather ran his medical practice on the first floor of his home, as was a common practice by "family doctors" in those days. My uncle worked in the Brooklyn Navy Yard and many of his friends, and my grandfather's patients, worked on the docks handling cargo, as did many Brooklyn residents in those days. Most of them walked to work. Life was much simpler and a return to the simplicity of those days is a nice thing to dream about. But these are not "the dreams that stuff is made from."

There has been much talk over the last decade of trying to recreate this glorious past by building a mega-containerport in SW Brooklyn. It's good to have a vision for the future, to give people hope and something to strive for. But, let's face it folks, this is one vision that is not likely to happen. Too much has changed over the past 50 years, economically and structurally, in the shipping, inland transportation, and the distribution/logistics industries. Times have changed. Our streets, our roads, our schools and our neighborhoods are already too congested. We don't need 5,000 more trucks a day trying to get in or out of South Brooklyn. There is no more chance of bringing back an army of family doctors' practices to the South Brooklyn neighborhood, than there is to bring back the huge flow of ocean-borne cargo that once crossed our docks.

Both of these things might be physically possible, yes. It's just that they are not economically possible in today's competitive world that focuses on speed, efficiency, and cost. We need a new dream and vision for SW Brooklyn. One that does not try to recreate the glorious days of past generations, but one that can create a new glorious future for our future generations. The "Green Tech Brooklyn" development concept that emerged at the recent Dutch Exchange Program sponsored by the Port Authority of New York and New Jersey, City of Rotterdam and Dutch Government, provides one such dream that some "real stuff" could be made of in the future.

CLEAN TECH DELTA : Innovation in the Rotterdam-Delft Region

Clean Tech Delta delivers innovative solutions to climate and energy challenges. It is the New Green Deal for innovation and clean technology in the Rotterdam-Delft region; a collaboration of trade and industry, education and government to stimulate innovation and clean technology - and then implement it.Clean Tech stands for clean technologies, i.e. technologies which optimize the use of natural resources and minimize negative environmental impact. To achieve this, it is essential to combine increased economic value with environmental benefit. Furthermore, the Clean Tech Delta focuses on innovative, future-proof solutions in the lowland river delta.

Clean Tech market sectors are:

Energy efficiency	*Water and deltatechnology*	*Sustainable energy generation*
Sustainable mobility	*Efficiency of materials*	*Waste disposal and recycling.*

Trade and industry, education and government are convinced that the Rotterdam-Delft corridor is becoming increasingly important to the reinforcement of the socio-economic structure. They need each other to achieve their ambitions and form a coalition to set an example at both national and international levels. They have shaken hands and agreed on the New Green Deal, so that they can form associations, speed up processes and make things happen. Their aim is to develop new solutions in relation to energy and quality of life, which will have a direct effect on the region itself, as well as creating a much sought-after international export product with significant economic value.

Innovation and clean technology in the Delft-Rotterdam region are creating sustainable solutions that can be applied at both regional and international levels. The situation and conditions of the region are ideal: a port/industrial complex and a densely populated urban environment, with the necessary space and technological potential. Furthermore, the region Rotterdam-Delft is situated in the heart of the Dutch Delta. Development and implementation of innovations for city water management and delta technology create the Clean Tech Delta that is an inspiring example for other delta cities in the world.

Clean Tech Delta is a collaboration of trade and industry, education and government to stimulate innovation and clean technology and then implement it. Supporters include ARCADIS, Delft City Council, Delft University of Technology, Deltalinqs, Rotterdam City Council, and Rotterdam University. Source: compiled from www.cleantechdelta.com

BROOKLYN-ROTTERDAM WATERFRONT EXCHANGE NEWS

COORDINATING TEAM

Team Leaders:
Richard Friedman
Bonnie A. Harken
Tineke de Vries

Team Members:
Marcia M. Brewster
Ivo Demmers
Avery E. Harken
Femke J. M. Smeets
Adam A. Szlachetka

BROOKLYN-ROTTERDAM WATERFRONT EXCHANGE:

An exchange of waterfront expertise about redeveloping port areas in New York and the Netherlands

Sponsors:
City of Rotterdam
Empire State Development Corporation
Government of the Kingdom of the Netherlands
Netherlands Water Partnership
Stadshavens, Rotterdam
The Port Authority of New York & New Jersey

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Additional Contributors:
Embassy and Consulate-General of the Kingdom of the Netherlands
Netherlands Water Partnership
Stadshavens, Rotterdam

Exchange Consultant:
Nautilus International Development Consulting, Inc.

What is the Brooklyn-Rotterdam Waterfront Exchange?

During this time of urgent global economic and environmental challenges, a central question facing many port cities is how to combine economic development with environmental sustainability - a question with many facets from modernization of industry and innovations in international shipping to reconfiguration of transportation systems and mitigation of climate change. In response to this need, the City of Rotterdam, the Port Authority of New York & New Jersey, and Dutch Government jointly agreed to structure a cross-Atlantic cooperation to exchange waterfront expertise.

The Brooklyn-Rotterdam Waterfront Exchange is a forum for American and Dutch leaders and experts to share experiences, innovative solutions, new strategies, development models, and best practices about the potential of redeveloping port areas for new life. Some of the most strategically positioned waterfronts in many port cities are undergoing redevelopment. Among these districts in Brooklyn's southwestern waterfront, located in the mouth of the New York harbor, and Rotterdam's Stadshavens (City Harbors), being redeveloped as newer port areas move farther west into the North Sea.

The Exchange is taking place in both New York and Rotterdam and started with a 3½-day professional workshop from April 14 to 17, 2010 in New York. The first Workshop examined waterfront development in the context of SW Brooklyn with the goal of bringing together and growing cross-disciplinary knowledge about key challenges for port-related areas and applying international best practices to long-range decisions for SW Brooklyn. In June, policy-makers will spend 2½ days visiting the Netherlands to share expertise about public policies that have been instrumental in implementing innovative solutions in both cities. Stadshavens in Rotterdam will provide the counterpoint case study.

The ideas, images and materials generated by the New York Workshop are summarized in this edition of the newspaper. A similar newspaper will be produced after the Rotterdam Workshop and both will be edited into a publication in October or November 2010. The ultimate goal is to uncover concepts and solutions that result in world-class redevelopment of port-related areas in both New York and the Netherlands.

Along the way, we are generating a fresh and lively dialogue and helping forge international business relationships that will grow into meaningful long-term partnerships. The New York delegation in the first Workshop included representatives of both New York City and State public agencies that play major roles in shaping the waterfront - from the Port Authority of New York & New Jersey, Empire State Development Corporation and New York State Department of Environmental Conservation to the New York City Departments of City Planning, Economic Development, and Environmental Protection. In addition, there were leaders from SW Brooklyn, prominent New York non-profit organizations, and top professional consulting firms. From the Netherlands, we were honored to be joined by members of the Dutch Embassy, national government and City of Rotterdam, as well as civic leaders and professionals in architecture, landscape architecture, water management, civil engineering, transportation, and urban planning.

Together, we are exploring how the reshaping of outdated port-related areas can contribute to the economic prosperity and environmental sustainability of the surrounding metropolitan regions.

Bonnie A. Harken, AIA May 2010

Bonnie A. Harken, AIA, is President of Nautilus International Development Consulting, Inc. (nautilus-international.com), which is the consultant to the Port Authority of New York & New Jersey on the Brooklyn-Rotterdam Waterfront Exchange.

SW Brooklyn Waterfront (photo by Nautilus International Development Consulting, Inc.)