

Kai Tak and Kowloon East Hong Kong SAR

Formulating a Sustainable and High-Quality
Urban Environment

11–16 December 2011

About the Urban Land Institute

THE MISSION OF THE URBAN LAND INSTITUTE is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide.

ULI is committed to

- Bringing together leaders from across the fields of real estate and land use policy to exchange best practices and serve community needs;
- Fostering collaboration within and beyond ULI's membership through mentoring, dialogue, and problem solving;
- Exploring issues of urbanization, conservation, regeneration, land use, capital formation, and sustainable development;
- Advancing land use policies and design practices that respect the uniqueness of both built and natural environments;
- Sharing knowledge through education, applied research, publishing, and electronic media; and
- Sustaining a diverse global network of local practice and advisory efforts that address current and future challenges.

Established in 1936, the Institute today has nearly 30,000 members worldwide, representing the entire spectrum of the land use and development disciplines. Professionals represented include developers, builders, property owners, investors, architects, public officials, planners, real estate brokers, appraisers, attorneys, engineers, financiers, academicians, students, and librarians.

ULI relies heavily on the experience of its members. It is through member involvement and information resources that ULI has been able to set standards of excellence in development practice. The Institute has long been recognized as one of the world's most respected and widely quoted sources of objective information on urban planning, growth, and development.

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About ULI Advisory Services

THE GOAL OF ULI'S Advisory Services Program is to bring the finest expertise in the real estate field to bear on complex land use planning and development projects, programs, and policies. Since 1947, this program has assembled well over 400 ULI-member teams to help sponsors find creative, practical solutions for issues such as downtown redevelopment, land management strategies, evaluation of development potential, growth management, community revitalization, brownfields redevelopment, military base reuse, provision of low-cost and affordable housing, and asset management strategies, among other matters. A wide variety of public, private, and nonprofit organizations have contracted for ULI's Advisory Services.

Each panel team is composed of highly qualified professionals who volunteer their time to ULI. They are chosen for their knowledge of the panel topic and screened to ensure their objectivity. ULI's interdisciplinary panel teams provide a holistic look at development problems. A respected ULI member who has previous panel experience chairs each panel.

The agenda for a panel assignment is intensive. It includes an in-depth briefing composed of a tour of the site and meetings with sponsor representatives; hour-long interviews of key community representatives; and a day of formulating recommendations. Long nights of discussion precede the panel's conclusions. On the final day on site, the panel makes an oral presentation of its findings and conclusions to the sponsor. A written report is prepared and published.

Because the sponsoring entities are responsible for significant preparation before the panel's visit, including sending extensive briefing materials to each member and arranging for the panel to meet with key local community members and stakeholders in the project under consideration,

participants in ULI's panel assignments are able to make accurate assessments of a sponsor's issues and to provide recommendations in a compressed amount of time.

A major strength of the program is ULI's unique ability to draw on the knowledge and expertise of its members, including land developers and owners, public officials, academicians, representatives of financial institutions, and others. In fulfillment of the mission of the Urban Land Institute, this Advisory Services panel report is intended to provide objective advice that will promote the responsible use of land to enhance the environment.

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Executive Summary

THE URBAN LAND INSTITUTE WAS RETAINED by the Government of the Hong Kong Special Administrative Region to conduct an Advisory Services Panel on 11–17 December 2011, to provide strategic advice on land use and real estate development issues so as to achieve sustainable development at the former airport (Kai Tak) and the nearby Kowloon East area.

After reviewing briefing information, touring the area, and participating in an in-depth briefing from the sponsor, the panel conducted a series of stakeholder interviews with more than 30 individuals. Considering this information and insight, the panel then deliberated and framed the following recommendations:

- Renew the vision for Kai Tak and Kowloon East to reflect the broader objectives of the new central business district (CBD2).
- Adjust the master plan to conform to the renewed vision.
- Remove the stadium hub from the site.
- Create a large new central park to act as the central organizing feature for the Kai Tak portion of the study area.
- Open up the park, restore the Kai Tak River, and enhance the waterfront.
- Introduce residential into Kowloon Bay and Kwun Tong.
- Introduce a university campus into Kowloon East.
- Improve the connectivity for the entire Kowloon East area.
- Provide a destination at the end of the runway.
- Create a development corporation to implement the vision.

Foreword: The Panel's Assignment

THE KAI TAK AIRPORT was Hong Kong's principal airport from 1925 through its closure in 1998. The Kai Tak Development (KTD), along with the hinterlands of Kowloon City, Kowloon Bay, Wong Tai Sin, and Kwun Tong Kowloon, offers an unprecedented development opportunity in one of the most spectacular world-class cities.

In July 2011, the Civil Engineering and Development Department (CEDD) of the Government of the Hong Kong Special Administrative Region (SAR) entered into agreement with the Urban Land Institute for an Advisory Services panel to provide strategic advice upon measures and initia-

tives required for a sustainable development that reflects the unique character of a place.

Background

Hong Kong was a British colony from the 1850s through 1997. On 1 July 1997, the transfer of sovereignty from the United Kingdom to the People's Republic of China occurred, making Hong Kong China's first SAR. The SAR status permits the city to operate with a high degree of autonomy under a chief executive and legislative council. For more than a century, Hong Kong acted as China's

Area map.



window to the outside world, especially with respect to international trade, banking, and business. Hong Kong is one of the world's leading financial centres and an East Asian economic engine. Hong Kong is renowned for its impressive skyline, its bustling activity, and its deep natural harbour.

With a land mass of 1,104 square kilometres (426 square miles) and a population of more than 7 million, Hong Kong is one of the world's most densely populated areas. The value of land and the lack of space have caused demand for denser construction. As such, the city has developed into a centre for modern architecture and the world's most vertical city. The dense space also led to a highly developed transportation network, and the subway and bus systems are extensive and modern. The Government owns most of the land in Hong Kong, so the real estate development industry operates under a structure where long-term leases, rather than fee ownership, hold sway. Kai Tak, located on the Kowloon Peninsula, was created by filling in a portion of Victoria Harbour to cater for the airport development.

The city's land use, planning, and development are guided by a collection of strategic plans and policies. The Planning Department began a multiyear planning process that included a significant and comprehensive public engagement process in 2004. The KTD is a huge and highly complex development project spanning a total planning area of more than 320 hectares (791 acres) covering the former airport site together with the adjoining hinterland districts. To coordinate and realize these efforts, a Kai Tak Outline Zoning Plan (OZP) was created for the airport site. The CEDD, responsible for planning and implementation of various major development projects spanning the territory, established the Kai Tak Office (KTO), which is responsible for the KTD.

The Panel's Assignment

As part of a Project Analysis Session at the October 2010 ULI Fall Meeting in Los Angeles, the panel met with a CEDD representative to further refine the panel's December 2011 assignment. The panel's assignment was summarized as follows:



- How can the vision of KTD be translated to make it a distinguished, attractive, and vibrant community?
- What makes a vibrant urban development, and how can we make it happen for KTD and the waterfront?
- With 11 kilometres (6.8 miles) of waterfront, would parks and promenades be sufficient to make it vibrant? What alternative uses are suggested for the water bodies surrounding KTD?
- How should we brand KTD and make it a sustainable and high-quality urban development on par with world-famous communities?
- How can coherence be achieved in urban design to reflect the distinct character of KTD?
- Does the Kai Tak OZP, the disposition and composition of different land uses, serve the purpose; if not, how can it be supplemented, given the constraints set by the OZP?
- What other enhancements should be made beyond townscape, development potential, connectivity, and sustainability initiatives?

The Urban Land Institute advisory panel visiting the Cruise Ship Terminal construction site.



Hong Kong's Victoria Harbour is one of the great natural anchorages in the world. Bounded on the south by Hong Kong Island and on the north by the Kowloon Peninsula, it is the central unifying feature for the Hong Kong SAR. The Kai Tak Development and Kowloon East are located in the northeast portion of the harbour.



- How can the underground shopping street be made to work?
- How can the prevailing compartmentalized and fragmented administrative approach be overcome in implementing the KTD?
- What expertise and corresponding mix are required to sustain the implementation of KTD?
- How should KTD be considered in light of turning Kowloon East into another core business district, which is a new initiative in the Chief Executive's 2011–2012 policy address.

CBD2

A CBD, or central business district, is the focal point of a city. It is the commercial, office, retail, and cultural centre of the city and usually is the centre point for transportation networks. CBDs are often the densest and most vertical portions of a city. In Hong Kong, Central acts as the city's primary CBD, which can no longer satisfy the growing demand for office space. Therefore, it was decided to develop another core business district in Kowloon East; thus, the concept of CBD2 in Hong Kong was established.

The Panel Process and Summary of Recommendations

As with all ULI Advisory Services panels, the week of 11–16 December 2011 was a busy but extremely productive exercise. Beginning with an in-depth briefing and tour from the sponsor and followed by a series of extensive interviews with major stakeholders, the panel was able to provide a set of recommendations that will be helpful in assisting CEDD to move forward on the KTD and Kowloon East. These recommendations include the following:



- Renew the vision for Kai Tak and Kowloon East to reflect the broader objectives of CBD2.
- Adjust the master plan to conform to the renewed vision.
- Remove the stadium hub from the site.
- Create a large new central park to act as the central organizing feature for the Kai Tak portion of the study area.
- Open up the park, restore the Kai Tak River, and enhance the waterfront.
- Introduce residential into Kowloon Bay and Kwun Tong.
- Introduce a university campus into Kowloon East.
- Improve the connectivity for the entire Kowloon East area.
- Provide a destination at the end of the runway.
- Create a development corporation to implement the vision.

The Kai Tak Development site under construction with Kowloon City in the background. The site offers Hong Kong one of its largest opportunities for a new development to achieving economic, social and environmental sustainability.

Economic Perspective

ONE OVERARCHING ECONOMIC GOAL for property development in Hong Kong is to create increased value. Increased value permits an improved revenue stream to help permit infrastructure construction and transformation of land to space for both commercial and residential development and to provide for the social, recreational, and entertainment needs of the citizens. This study area is intended to help provide a sustainable supply of office space in greater Hong Kong.

The financial services industry is currently experiencing global slowdown; however, Asia-based financial services are likely to outperform those of other regions. The growth of Hong Kong financial services is very dependent on Chinese economic and regulatory policies, but the Chinese banks continue to expand their international business. This growth, supplemented by other industries with growth opportunities in China, likely will provide important diversification from financial services demand. That said, financial services remains the lifeblood of office development in Hong Kong, and the projected space needs, even with a likely market correction, continue to be strong and considerable.

Office Market

Kowloon East is an economically compelling alternative commercial location to Central with unmatched potential for community, recreational, and open-space resources. According to Royal Institution of Charter Surveyors (RICS) Research's October 2011 *Grade A Office Market Study Report for Hong Kong*, Kowloon East is expected to provide 40 percent of the total office supply between now and 2014.

Existing office space of about 1.4 million square metres (15.1 million square feet) in Kowloon Bay and Kwun Tong will be supplemented by 1.06 square metres (11.4 million square feet) of new office at KTD and conversion of another 2.9 million square metres (31.2 million square feet) of industrial space in Kowloon Bay and Kwun Tong. The current projection for office needs is about 5.4 million square metres (57.7 million square feet) over the next 15 years. Locational decisions for new office will hinge not only on the available of space but also on tenant requirements and amenities that can make Kowloon East extremely competitive within the Hong Kong market.

Office Space in Kai Tak, Kowloon Bay, and Kwun Tong

	Existing Space in millions of square metres (square feet)	Planned new space in millions of square metres (square feet)	Potential conversion space in millions of square metres (square feet)	Total space in millions of square metres (square feet)
Kai Tak	0	1.06 (11.4)	0	1.06 (11.4)
Kowloon Bay/Kwun Tong	1.4 (15.1)	0	2.9 (31.2)	4.3 (46.3)
Total	1.4 (15.1)	1.06 (11.4)	2.9 (31.2)	5.4 (57.7)

Tenant Requirements and Competitiveness

Financial services firms in Hong Kong make locational decisions based on a combination of various quantitative and qualitative factors. Some of these factors include

- Cost;
- Local access such as Mass Transit Railway (MTR) access to Central and Tsim Sha Tsui;
- International access such as an airport link or China high-speed rail;
- Community (residential proximity for workers and hotel space);

- Amenities (retail, restaurant, open space, educational, and recreational opportunities);
- Scale (expansion, co-location, critical mass of similar firms and operations); and
- Customization (floor plate, signage, access).

The panel believes that Kowloon East has a decided advantage in many of these factors, especially in cost, scale, and customization. How the Hong Kong SAR and KTD deal with the issue of community and amenities will be critical to making CBD2 in Kowloon East successful. The panel recommends that KTD and Kowloon East focus on improving the community and amenity components that will lead to greater market share within the Hong Kong market.

	Central	Hong Kong East	Kowloon West/TST	Kowloon East
Size (NetMM SF)	13.5	5.8	11/4	9.9
Cost				
Local Access				
Int'l Access				
Community				Opportunity
Amenities				Opportunity
Scale				
Customization				

Legend:



A Renewed Vision for Kai Tak and Kowloon East

THE PANEL BELIEVES THAT A FIRST step toward a more successful program for Kai Tak is a renewed vision that takes into account the broader objectives of KTD, Kowloon East, and its place in the larger scheme of land development in Hong Kong as CBD2. The panel believes that a statement articulating this vision is essential and offers as an example the following:

“Kai Tak, Kowloon Bay, and Kwun Tong (East Kowloon) will together provide an economically compelling commercial and civic location with an unmatched community environment, recreational resources, open space, and water access to strengthen Hong Kong’s global competitiveness.”

This renewed vision need not be a wholesale revision to the already completed planning community engagement effort but rather a refinement of existing plans. The panel believes that some specific subjects such as improved connectivity (pedestrian, road, and rail), removal of the stadium, introduction of residential to selected areas, and creation of a large central open space are essential components of this refinement effort. Such actions will improve immensely Kowloon East’s community and amenity features, which will lead to increased consideration by firms looking for new office and employment space.

A New Master Plan for Kowloon East

The planning vision for Kai Tak calls for “a distinguished, vibrant, attractive, and people-oriented community by the Victoria Harbour.” The Government has recognized that the transformation of this 323-hectare (798-acre) site presents an extraordinary opportunity to showcase Hong Kong’s “world city” qualities and has spent over five years in developing a master plan for the site.

In reviewing the Kai Tak development plan, the panel noted the exemplary multiyear public engagement process that the Hong Kong Government carried out over several years with the greater Hong Kong community. This thoughtful planning and public engagement process has resulted in a series of important sustainable development principles for the site, including preservation of Victoria Harbour through “zero reclamation”; daylighting of Kai Tak River; preservation of the historic remnants of Lung Tsun Stone Bridge; requiring podium-free building development; encouraging a comprehensive mobility system of pedestrian, bicycle, and transit ways; provision of 30 percent open space in the Kai Tak Master Plan; bio-remediation treatment of the water body of Kai Tak Approach Channel and Kwun Tong Typhoon Shelter to improve its water quality; and provision of a continuous green waterfront promenade.

A number of the questions posed to the panel addressed the urban design characteristics of the Kai Tak Master Plan, including its sustainable characteristics, vibrancy of urban development, connectivity, coherence in urban design, and branding.

Urban design concerns the arrangement, appearance, and functionality of cities and urban districts and in particular the shaping and use of urban public space. Urban design operates at the intersection of urban planning, landscape architecture, and architecture and is about making connections between people and places, movement and urban form, nature and the built fabric. The palette of the urban designer is mixed land use within the pattern and scale of open space, pedestrian ways, vehicular streets, and development parcels fitted to the distinctive culture and context of an urban place. With respect to the urban design characteristics of the Kai Tak Master Plan, the panel noted the following:



- A solid foundation of sustainable site development principles has been established through the public engagement process in Hong Kong.
 - Although the master plan has a full range of community land uses, they are segregated. Mixed-use characterizes contemporary development planning for urban districts such as Battery Park City in New York City and Marina Bay in Singapore.
 - The plan has collected several unrelated uses, including the cruise terminal and stadium complex, that occupy large, prominent sites within the master plan area.
 - Although 30 percent of the site is designated for open space, much of this allocation is fragmented into smaller parcels and formal spaces that are less effective for community recreation use.
 - The proposed pattern of primary arterial vehicular circulation reinforces the isolation of the Kai Tak site from its adjoining neighbourhoods and limits access to the waterfront.
 - The proposed use of cul de sac streets internally to the Kai Tak Master Plan limits internal connectivity.
 - The concept of a second CBD, Kowloon East, with the addition of the urban regeneration areas of Kowloon Bay and Kwun Tong will require a regeneration plan for Kowloon Bay and Kwun Tong. To integrate the regeneration plan with Kai Tak, the Kai Tak Master Plan will require revisions.
 - The existing subway with its three stations in Kowloon Bay and Kwun Tong is a critical asset to the success of the proposed Kowloon East. New and improved pedestrian accessibility to these stations to Kai Tak and the waterfront is an essential need.
 - A variety of residential opportunities should be introduced to Kowloon East. As Hong Kong pursues a more diverse economy, housing near employment will be an
- The panel suggests establishing a large open space in the form of a central park that is bordered by a grand boulevard. The park can act as a central organizing element for the entire development, provide a location for iconic structures, and provide recreational amenities for not only the KTD residents but also those of larger Kowloon East.*

important means of attracting talent. Housing should be considered in a vertical mix of uses including office, retail, and residential.

Urban Design Principles for Kowloon East

The new master plan for Kowloon East should respond to the distinguishing characteristics of the site's context: its large size in a city bereft of developable land, its extraordinary location on Victoria Bay with its 11 kilometres (6.8 miles) of waterfront, its extraordinary views, the presence of several million residents within five kilometres (three miles) of the site, and the scale and intensity of development throughout the Hong Kong community. The panel recommends consideration of the following urban design principles in the formulation of a sustainable and high-quality urban development model for Kowloon East:

- Capitalize on the site's extraordinary location by orienting the urban pattern of open space, pedestrian ways, streets, and development blocks towards Victoria Harbour. The visual orientation to Victoria Harbour will create a distinctive sense of place and help maximize the site's real estate values.
- Minimize or remove any highway barriers between the bay front and the proposed new community. In some cases, this action can be as simple as improving visual access from nearby roadways. In other instances, it will require more substantial action such as eliminating dead-end streets and constructing pedestrian connections.
- Consolidate as much as 60 percent (60 hectares, or 148 acres) of the proposed open space in the Kai Tak Master Plan into a large, world-class central park for Hong Kong.
- Use a central park as a branding device. World-class cities such as New York, London, Paris, and Boston are characterized and branded by their great central parks.
- Frame the central park with a beautiful boulevard or "great street" to define the park, and provide access and visibility. Use this "great street" concept to create an extraordinary address for residential and commercial properties. A "great street" concept can be defined as a strategy to use public investments in infrastructure, streetscape improvements, land use planning, and development assistance to catalyse private investment that improves neighbourhood quality of life and creates a pleasing physical environment. The "great street" at Kai Tak will be the centre of life for the entire development.
- Extend the neighbourhood street grid into Kai Tak to maximize connectivity to existing adjoining neighbourhoods.
- Connect the existing subway stations in Kowloon Bay and Kwun Tong to the waterfront and Kai Tak with European-style shared pedestrian primary streets.
- Orient development parcels for mixed-use development to the central park and the waterfront to enhance real estate values.
- Animate the waterfront promenades with "destinations" and supporting retail and food services.
- Use the water body of Kai Tak Approach Channel and Kwun Tong Typhoon Shelter and adjoining shoreline for the development of a water sports centre.

The urban design vision for achieving a sustainable and high-quality urban development model for Kowloon East lies in the pattern and scale of open space, pedestrian ways, streets, and development blocks in response to this extraordinary waterfront site on Victoria Harbour.

Establishment of a Large, Central Park

Great world-class cities are characterized by great public spaces and great streets. A large-scale central park as a focus for the new Kai Tak district of Hong Kong will bring attractive addresses and distinctive presence and brand to the district within the region in addition to its recreational and environmental benefits.

As noted previously, the current KTD plan includes 30 percent open space, but that open space is fragmented in a manner that minimizes its overall effectiveness. The panel believes that a large, well-planned, central open space on the north-eastern side of Kai Tak can act as a central organizing element for the entire development, provide a location for iconic structures, and provide recreational amenities for not only the KTD residents but also the larger Kowloon East. If planned correctly, the park can be not only an amenity but also a destination that people from across the region can enjoy. It is important, then, to take some cues from other large urban open spaces to understand how such spaces match or differ from the current open space on KTD.

Central Park, New York

Central Park is a 341-hectare (843-acre) multipurpose park located in Midtown Manhattan. Conceived by the eminent landscape architect Frederic Law Olmsted in the 1850s, the park was intended to create a place where people could relax and meditate. Olmsted saw the park as a kind of social experiment where people from both upper and lower classes would meet, a rather revolutionary idea. Central Park is one of the most recognized and visited locations in the United States, and it inevitably is on the “must visit” list for most people who are travelling to New York.

Boston Common, Boston

Boston Common is a 20-hectare (50-acre) park located in downtown Boston, Massachusetts. Steeped in colonial and early American history, the Common evolved from a utilitarian common ground for activities such as grazing, militia formations, and public hangings to the locus for many events before and after the American Revolution. Located adjacent to the Massachusetts State House, the Common has acted as public assembly space for many momentous events from Civil War abolitionist gatherings to end-of-war celebrations after World War II to Vietnam War protests. Its primary function is as a passive open-space park, and it is a significantly more intimate space than Central Park.



An overlay of Central Park, New York City, on Kai Tak.



An overlay of Boston Common, Boston, Massachusetts, on Kai Tak.

An overlay of Kowloon Park, Hong Kong, on Kai Tak.



Kowloon Park

Kowloon Park is a 13.3-hectare (33-acre) park located in Tsim Sha Tsui. Relatively new by some standards, Kowloon Park is home to a variety of active and passive uses such as a mini-soccer pitch, fitness trails, children's playgrounds, a Chinese garden, a bird lake, and an aviary. Like Boston Common and Central Park, Kowloon Park is an identifiable and easily accessible part of the Hong Kong landscape drawing in thousands of visitors each day.

Hundreds of examples of similar parks exist in other cities that serve the same purpose as the three described here. These parks have become not only identifiable symbols of "place" but also a gathering place for people to enjoy the arts and the company of others. The panel believes establishment of such a park will help organize the larger Kowloon East area.

Creation of a Town Square

Great places are financially and socially successful. True places are based on a variety of factors such as people route analysis, correct mix of uses, function, adaptability, and value creation. An important concept in such a place-making exercise is to establish and design the public space first and let the leftover spaces becoming buildings. Consistent with the urban design principles above, it is essential that Kai Tak create an authentic place that can be wholly and uniquely identified as its own. Creation of a town square should be considered on or near the central park previously mentioned. The town square should include a range of retail, civic activities, medical facilities, and after-school educational opportunities. Where appropriate, office space should be designed to attract technology, media, and telecommunication companies. The town square should include a civic building such as a library that would give the district the feeling of an established,

caring place. Other uses should include restaurants, art galleries, cinema, art centre, tourist information, convention and meeting space, shops, and meeting place with a big screen for public events and sports.

Instruments of control and management need to be organized and considered at the earliest possible stages of development planning. Taking a cue from Chiswick Park in the United Kingdom, the office buildings, restaurants, shops, and public space should be of the highest design quality and should be run like a hotel, with added-value services and goods supplied to enhance businesses.

Connectivity

The panel suggests that connectivity between and among the uses at KTD and Kowloon East should be a primary planning goal. It should be accomplished externally by extending the street grid of the new KTD development into Kowloon East and internally by organizing the already approved uses on the KTD site around the park. Also, the correct and timely phasing of infrastructure, particularly mass transit, greatly influences values of underlying land. Two excellent examples are the Jubilee Line extending to Canary Wharf in London and the #7 subway line extension to Hudson Yards in New York City. Neither project would have been successful without the commitment to public transportation.

The transportation system for Kai Tak must consider neighbourhood adjacencies and be able to accommodate future additional capacity. External connectivity is as important as the internal links; movement to and from the site is as critical as movement on site. The creation of a second CBD significantly expands the needs and opportunities for Kai Tak. Current plans for the creation of a Shatin station and line to the Central Line and Kowloon is critical to the execution of the plan. The panel believes that the initial commitment from MTR to begin building the station at Kai Tak is an important first step.



Kai Tak should create an authentic place that can be wholly and uniquely identified as its own. A town square can provide a stage for the type of social interaction that is an important element of successful place making endeavours. The panel recommends a town square on or near the central park with a variety of employment, retail, and civic uses.





Connectivity is an essential element for a successful Kai Tak development. For many years, Kai Tak has been inaccessible to the public. The panel recommends the extension of the adjacent street grids into the Kai Tak site and the creation of the boulevard that links the Kowloon East waterfront with the new development. From a transit perspective, the commitment to MTR access will be an excellent start.

External Connectivity

Future commercial space users will require efficient access to Kowloon, Central, the high-speed rail to the mainland, and the airport. The proposed access to connections to Central Line, high-speed rail, and the airport should be well received by developers and space occupiers. The connectivity from Kwun Tong and Kowloon Bay is important when connecting the neighbourhoods and people with the waterfront. Connection to the Shatin to Central Link from the Kowloon line at Diamond Hill requires an additional two to three stops but should still be perceived as attractive to occupiers, particularly in Kowloon Bay. The capacity of existing design is reportedly appropriate for phased density and occupation by more than 200,000 people. The start of construction of the Kai Tak stations in 2012 should instil confidence in the private sector necessary to build real interest in occupying the site, particularly for residential users.

Internal Connectivity

Internal connectivity is not as clear. The movement of cruise ship passengers and cruise ship cargo could be an issue. Residential and commercial occupiers may find the traffic congestion caused by parading tour buses

an issue, particularly if terminal use is relatively high. Connection from the runway end north to Kwun Tong, by either transit system or roadway, should be considered as an alternative disembarkation route for cruise ship passengers. The three-kilometre (two-mile) span of the old runway argues for a transit alternative that reaches from end to end. The system should connect to the MTR station at Kai Tak and should also effectively connect with the MTR stations on the Kowloon line. The distance from any MTR station should be an easily manageable walk. Shadowing exiting major roadways and avoiding neighbourhood streets should minimize any intrusiveness. The panel encourages the concept of an elevated system in Kwun Tong and Kowloon Bay; however, the cost-efficiency of an elevated transit system should be balanced against the aesthetics and impact on land value of an at-grade or subgrade installation.

Land Use and Planning Strategies

The panel reviewed the Kai Tak OZP and various other documents that lay out the land uses for the KTD site. The comprehensive public engagement process used by PlanD resulted in a superior product, and the panel

believes that most of the land use recommendations for KTD were well thought out and consistent with the establishment of a large mixed-use development. However, the panel felt specific subjects need more refinement, and the following section of this report outlines the panel's recommendations for those subjects.

Kai Tak River

Until recently, the Kai Tak River was heavily polluted and not at all the kind of public waterway that would be identified as an amenity to a new development. The Kai Tak River, with a length of 2.4 kilometres (1.5 miles), is the waterway situated between Kowloon City and San Po Kong. The Kai Tak River was constructed in the course of airport expansion during the Japanese occupancy in 1940s. For more than 60 years, the river acted as an open drainage way; it was used for a variety of sewage and industrial waste. To resolve the pollution problem, the Government undertook fundamental changes to the drainage system, including the sewage collection project in Eastern Kowloon and the construction of a water gate to prevent reverse flows of polluted rainwater in dry seasons. At the same time, the Government cleared squatters' huts around the catchment area, thereby reducing the volume of untreated sewage discharge into the stream. Flow volume was also increased, and the result was improved water quality along the whole waterway. Since then, the downstream of the river has become a natural habitat that attracts fish and birds. With the improvement of drainage works, the Kai Tak River has become an important and integral part of the KTD scheme.

A restored river, with its landscape design and associated water features can ease people's senses after a stressful day. The river can also be an attraction for both tourists and residents looking for a break from the monotony of an urban landscape. The panel feels that the river can be an important component of the suggested central park, acting as a boundary and providing access and vistas that will make the park successful. The river will function as an active recreational amenity while bringing a natural ecosystem into the heart of the development.



The Kai Tak River could be an incredible opportunity to create an exciting amenity such as that done on the Cheonggyecheon River in Seoul, South Korea.

Waterfront

Waterfronts are magical places of recreation and commerce, of activity and relaxation—they are places to inspire human creativity. Cities across the world are recapturing their waterfronts. This renaissance is recapturing the value of the waterfronts for citizens' spirit and for commerce. By envisioning the waterfronts differently from their present conditions, cities as diverse as London, New York, Chattanooga, Amsterdam, or Singapore and a thousand others have created areas of enormous new vitality with the waterfront as the centrepiece. In creating that vitality, the public access and use of the waterfront have inspired billions of dollars of new investments, becoming the best place to live, work, and play in many locations.

The treatment of the waterfront along the Kowloon Bay is a good start; however, more should be done to encourage a direct connection to the water's edge.



Nothing extols the magic of the waterfront more than direct and near-direct interface with the water, as in the example here from Zadar, Croatia.



Hong Kong has one of the great waterfronts of the world. Kai Tak, with 11 kilometres (seven miles) of waterfront and spectacular views of the harbour, presents an opportunity to be truly world class. Unfortunately, under the present plan the waterfront is seen as an afterthought, a place for a simple promenade in some areas and nothing in others. For example, the first construction activity of the cruise terminal denies public access to the waterfront completely and severely compromises the runway property for further waterfront uses.

The present plan along the Cha Kwo Ling waterfront, the Kwun Tong waterfront, and the south apron area compromises the ability to maximize the value of the waterfront. The plan should be reconsidered. The entire south apron area should not be built up until the end of the channel. The property, about 200 metres (655 feet) wide, should be dedicated to a large open area and graded down to give direct access to the water. Iconic features, such as interactive water features, should be designed for the park, and a specially designed imaginative playground celebrating Kai Tak's aeronautical history should be designed through a competition and built. The goal is to create a unique place in Hong Kong where children will want to come to play and use their imaginations and where families will be able to enjoy the outdoors.

The road along the waterfront in Kwun Tong ideally should be moved from the waterfront, allowing the first row of buildings to be directly on the waterfront. They then should be encouraged to open waterfront cafés and restaurants directly fronting onto the expanded park and waterfront.

The same type of development ought to be encouraged on the property at the end of the channel. At the channel end of the south apron park, connections need to be made into the proposed expanded Kai Tak River greenway and the continued waterfront park on the remainder of the Kai Tak property.

The Kai Tak Channel represents an ideal location to create an Olympic-qualified rowing facility and an ideal dragon-boat racing course. The south apron park would provide a viewing place for the races and as well as a great park. The runway park closest to the end of the channel should be designed to accommodate as many as 20 boat clubhouses. The design of this area, while accommodating the boathouses, needs to continue to maximize public access and open space. Floating platforms should be considered in this area. The waterfront itself, as on the opposite side, will need to be graded down directly to the water's edge.

The remainder of the waterfront on both sides of the runway to Ma Tau Kok Road should be continuously connected and incorporated into developments (housing, hotels,

offices, etc.) adjacent to the waterfront. Where possible, continuous public access should be accommodated along the entire waterfront.

Much as West Kowloon is being built as a cultural hub with a threshold of activities that will very much define the area, so too, Kai Tak should be thought of as the place that will create a threshold of activity in active sports. Rowing, boat racing, jogging, biking, playgrounds inspiring active play, and other opportunities will build vitality for Kai Tak that will help brand it as a great place to work and live.

An active, energetic place like this is particularly appealing to young professional people. Integrated into the proposed university, an innovation economy centre, the hospital, and an expanding financial services sector along with a variety of housing choices from more traditional large block apartment living to quirky live/work style lofts in the older industrial buildings and consistently great design in both the public and private structures creates a powerful new 21st-century neighbourhood for Hong Kong.

Landmark Buildings

An important component of any new town or development is signature buildings. Just as the Taj Mahal, Hagia Sophia, and the Great Wall are known from history, the Guggenheim in Bilbao, the Sydney Opera House, and the Empire State Building are all instantly recognizable in the world of modern city architecture. In the words of panellist Sir Stuart Lipton, “One space can change a city and its international reputation.” The current plan calls for a vaguely described “iconic tower” near the cruise terminal. The panel suggests that such a facility be better articulated and that perhaps additional signature buildings be considered near or in the new public space that will be created through a central park.

Runway

The panel considered a number of recommendations for uses at the end of and along the old runway. These considerations included an aircraft museum with a harbour-front theme, an aquarium, an aquatic park with multiple pools, a multipurpose centre, an iconic lighthouse, as

well as programming schemes such as a festival of lights, searchlight-style beacons, outdoor concerts, or a theatre. The panel also asked whether any significant heritage or historical theme at Kai Tak could be celebrated. Rather than trying to program this site, the panel determined the best approach would be for a future development entity to conduct a use and design competition that would energize the entire Hong Kong creative community.

Cruise Terminal

The cruise terminal is currently under construction. The panel felt that the buildings and facilities that form part of the cruise terminal should be designed or programmed in a manner that gives the structures more life than just on those days when the cruise ships dock. The terminal has significant space that could be programmed for receptions, concerts, conventions, or similar events that require large spaces and could benefit from the prominent location of the terminal.

Sports Stadium

An important element in the overall KTD master plan is the proposed Kai Tak Sports Hub in the southwest corner of the site. Some 20 hectares (49 acres) has been earmarked for this purpose. The key components of the Sports Hub are

- An indoor stadium with a retractable roof and a seating capacity for 45,000 people; and
- A smaller 5,000-seat outdoor arena.

These facilities are of state-wide significance and are meant to be used and enjoyed not only principally by residents from all over Hong Kong but also by tourists. The provision of such facilities at Kai Tak is in keeping with Government policy to

- Promote Hong Kong as an attractive venue for major sporting events and concerts, thereby promoting tourism and providing entertainment for local residents;
- Promote more participation in active sports by Hong Kong residents; and

- Provide a venue superior to the existing Hong Kong Sports Stadium (seating capacity 40,000) and avoid the local residential noise disturbance problems this venue experiences.

A wide range of views appear to exist in the community about the need for this facility, the level of demand, and its overall viability and contribution to both Kai Tak and Hong Kong as a whole. The panel further understands that PricewaterhouseCoopers has recently been commissioned to undertake some more detailed research on this proposed facility in relation to market demand and financial viability.

Regardless of the need issue, a major question the PricewaterhouseCoopers work is hoped to adequately address, the panel has some fundamental concerns regarding the inclusion of the sports hub on the KTD site as well as its current proposed location within the site. These concerns particularly relate to the 45,000-seat indoor major stadium and include the following:

- Stadiums by their very nature are inward-looking facilities, and they do not relate well to their immediate external environment. In many cases they represent an ugly blot on the landscape.
- The stadium will occupy a large, valuable part of the site but will be used infrequently and therefore will sit empty and unused most of the time.
- Its location is too prime for a facility of this type, and the land could be put to better use.

If Hong Kong really requires the stadium, the panel recommends that alternative sites should be considered and a proper cost/benefit analysis undertaken comparing the sites before a final decision is made. If KTD is indeed the preferred location, and a facility of the type and scale proposed is required, then the panel would recommend that some alternative less prime and prominent sites within KTD be evaluated before committing to the current location.

The panel's considered opinion is that the proposed sports stadium complex (sports hub) should not be located on the KTD site. The inward-looking and monolithic nature of

a sports stadium would add little to the concept of place and community. Such facilities are infrequently used and expensive to build. The currently proposed stadium would be located on land that is extremely valuable and from the panel's point of view key to the success of KTD acting as the driving force for CBD2.

If the stadium is required to be built on the site, then at least it should be located where it will not interfere with the idea of creating a mixed-use community and where it will not interrupt attempts to maximize connectivity between KTD and the surrounding neighbourhoods and the creation of a central organizing park and its appurtenant amenities.

Underground Retail

Underground retail is planned for the concourse leading to the proposed MTR station on the northeast side of the KTD site. Underground retail can be successful in locations with sufficient foot traffic, and Hong Kong has a long history of successful underground retail for uses such as convenience retail. The panel suggests that locating more of the retail above ground with a significant concentration close to the MTR station and the town square that will be part of the large open space of the central park may be more appropriate.

The correct mixture of above- and below-ground retail and restaurant space can be refined with additional study. The panel recommends that a comprehensive retail, dining, and entertainment strategy be prepared for the entire KTD site.

University Opportunities

KTD is conceived as an important new district of Hong Kong with typical mixed-use characteristics albeit with particular emphasis on sports, tourism, heritage, and green space. Elsewhere the panel comments on the effectiveness of this as a vision for KTD. However, the panel interpreted this vision as sustainable in the broadest sense; the mix of uses should be complementary, efficient, productive, and self-supporting (while integrating into the broader physical area around Kai Tak).

The panel recommends that further consideration be given to introducing a university campus into KTD as part of the Government, institution, and community uses. The panel assumes the Government of Hong Kong already promotes the growth of higher education as part of a national plan to deliver new and diversified wealth-generating activity. The term “higher education” is used to represent both learning and discovery—or teaching and research. The panel is aware of certain initiatives such as the new Science Park, but it has not had the opportunity to become familiar with the entire higher-education sector in Hong Kong.

Successful universities are clear about how they function as contributors to national progress and, more narrowly, as contributors to their own city and district. An “open campus” in which the university functions are not segregated from the normal life of a city integrates the activity of the university into other economic activity. First, the presence of students enlivens society, contributing energy and enthusiasm through social activity. Undergraduate students are demanding and inventive members of society and create informal, spontaneous changes in the daily life of a community. Postgraduate students as knowledge workers and postdoctoral research executives are a growing component of top-class universities; a higher proportion of these are likely to be from overseas, improving local diversity in an open setting.

Learning and discovery produce ideas that are capable of translating into businesses. Well-integrated universities are more effective at matching pure research to entrepreneurs and the capital needed to produce new businesses. The opportunity for Hong Kong to enter new industries could be enhanced by locating a university or research institute at such a prominent site as KTD.

In the absence of a single university wishing either to move its entire campus or to add another campus, the panel recommends that the Government consider the creation of a specialist campus, related to an appropriate specific technology or industry it wishes to develop.

A university will generate demand for hospitality and general business services. Some thought would need to



be given to the physical integration of the uses required, according to the precise nature of the institution.

As a general principle, the panel suggests that any university should be physically well integrated inside the project and not isolated so that the wider objectives can be met. The panel recommends that discussions be held with existing universities to review the appetite to participate.

Underground retail opportunities will depend greatly on the volume of pedestrian traffic; Hong Kong has had some wonderful successes in its existing MTR. The panel recommends creating unique and interesting public space underground, which can be accomplished by daylighting.

Implementation Strategies

GREAT PLANS ARE GREATLY INFLUENCED

BY solid execution and implementation strategies. The feasibility and private sector participation will be greatly influenced by confidence in public sector delivery of infrastructure. As part of the background research for the Kai Tak assignment, the panel reviewed the RICS Research document *Grade A Office Market Study Report for Hong Kong*. The RICS report is a comprehensive market analysis focused on the supply of office space that will facilitate sustainable long-term growth for the Hong Kong SAR. The authors conclude with some observations that are instructive and relevant to the Kai Tak and East Kowloon area. They say that Government action can translate into increased land supply for development in two main areas: (1) streamlining the building plan approval process, and (2) easing land restrictions.

Creating a Development Corporation

Whilst Hong Kong benefits from a well-proven, highly competent planning system, that system plays only a partial role in the regeneration and development of sites on a long-term basis. Development corporations are set up outside the planning system. Large sites take many years to develop and need land controls in place to maintain quality, value, goals, and objectives and to allow change over time. Government creation of development corporations would establish control and promotion of regeneration and development with town-planning regulation under the control of the corporation.

The panel believes that both of these actions can be accomplished with the creation of a development corporation for KTD and Kowloon East. The panel believes the goal of formulating a sustainable and high-quality urban environment can be best brought about by an efficient,

business plan-oriented and time-responsive entity that can process proposals, react to evolve the various plans, and oversee the urban design components outside the current general development process structure. The autonomy of a public development authority with its dedicated management insures a long-term focus on targeted results. Implementing a streamlining of the approval process and easing of land restrictions, as noted by the RICS report, will be considerably easier with a development corporation.

Organizational Examples

Looking at a couple of models of successful development corporations is instructive to understand how the management of large-scale, highly visible projects can be conceived and the benefits this method brings to the table.

Battery City Park

Battery Park City is one of the most significant “new towns” built in America in the last century. Built on reclaimed land, Battery Park City is a uniquely successful mix of attractive office and residential buildings and has been a major contributor to the revitalization of New York City’s downtown.

The overarching approach at Battery City Park is to reinforce the goals of long-term development. The seven board directors are nominated by the mayor and confirmed by the legislature. Each individual’s term is six years (which exceeds the terms of elected officials) and is staggered over a three-year period, thereby minimizing the potential for undue political pressure.

While the creation and implementation of Battery Park City highlights the conflicts between planning and design priorities on one hand and political desires on the other,

its success in delivering world-class space and its record of delivering significant economic benefits confirm that the organizational structure contributes to its success.

Hudson Yards

A more recent example of the challenges faced in long-term mixed-use development is Hudson Yards on the Hudson River in midtown New York City. Hudson Yards is the largest undeveloped single piece of property remaining in Manhattan. The master plan comprises 5,000 residential units, 1.2 million square metres (13 million square feet) of commercial space, unique cultural facilities, a new public school, and more than five hectares (12 acres) of grand public open space

The establishment of Hudson Yards Development Corp has given the city the ability to begin the transformation of a gritty old industrial area on the far West Side of Manhattan. Dedicated management and a development framework identify the key public sector actions that would be necessary to attract private development central to its future success including expansion of mass transit service to the area; establishing a new open space network; flexibility of zoning guidelines for appropriate densities and uses, with “bonuses” for additional contributions for public benefits.

The impetus for Hudson Yards came from New York City’s unsuccessful bid for the 2012 Olympic Games. Critical to winning the award for the Olympics was the existence of a major sports stadium. Although the Olympic bid was not successful, Hudson Yards is poised to be a dramatic long-term success.

Numerous other examples exist of development corporations that manage large, long-term development projects: Milton Keynes in Buckinghamshire, the Olympic Park Legacy Company for the London 2012 Games, the Cincinnati Center City Development Corporation, the Sentosa Development Corporation in Singapore, and Dubai Land. For Kowloon East, a new and entirely unique model of a development entity must be created that can meet the financial and economic goals of Hong Kong SAR while encouraging the new vision for the area.



Battery City Park in New York City.



Also in New York City, Hudson Yards.



Timing

World-class developments take time to plan, develop, and mature. For example, Battery City Park in New York City has been under development for more than 40 years. The panel cautions that Kowloon East will need time to mature. Not all the development options or urban planning solutions are currently known. The new master plan needs to take the long view and provide a flexible vehicle to achieve a vision. It is entirely possible part of that vision will need to change.

International Advisory Board

Finally, the panel recommends that an international advisory board be established to provide guidance and input for the long-term development of Kowloon East. The advisory board would consist of developers, Government officials, academics, urban planners, architects, designers, and financiers who would provide periodic critiques of the development plans and policies. Such individuals would come from an independent and decidedly international point of view.

Conclusion

THE REDEVELOPMENT OF KOWLOON EAST is a once-in-a-lifetime opportunity for Hong Kong. Kai Tak, Kowloon Bay, and Kwun Tong will together provide an economically compelling commercial and civic location with an unmatched community environment, recreational resources, open space, and water access to strengthen Hong Kong's global competitiveness.

The ability of the Hong Kong Government to translate this vision into reality will depend on a variety of factors. The ULI panel believes that the good work already completed can be enhanced by embracing the CBD2 concept, making the logical adjustments to KTD and Kowloon East to unite the planning vision for these areas.

Design, quality, and innovation should be strongly emphasized, as well as the flexibility of the zoning plans to evolve and respond to change over the long haul. The removal

of the stadium hub and the establishment of a large consolidated open space in the form of a central park should be considered. The enhancement of the entire waterfront coupled with actions that trigger near-term results (that is, permitting residential uses in Kwun Tong, building a landmark building or space on KTD, creating a dragon-boat race course) can make Kowloon East a financial and social success like no other locations in the city. Introducing new uses such as a university will help diversify the area and provide the types of social and community amenities that attract technology, media, and telecommunication companies. A new governance structure in the form of a development corporation will ensure that implementation is timely and consistent. Finally, an international advisory group will help provide a periodic check on progress and ensure Kowloon East's success.



Kowloon Bay.



About the Panel

Jeremy Newsum

Panel Chair

London, United Kingdom

Newsum has been the executive trustee of the Grosvenor Estate since 1993. The Grosvenor Estate comprises all of the business and private investments of the Grosvenor family. From 1989 to end-June 2008, he was also group chief executive of Grosvenor, the real estate development, investment and fund management company with interests in Central London, elsewhere in the United Kingdom, continental Europe, Southeast Asia, North America, and Australia. The group operates in all sectors of the property market and manages total assets of £10.9 billion.

Newsum is a member of the Council of Imperial College London, a member of Cambridge University's North West Cambridge Syndicate Board, and a director of Grupo Lar. His past appointments include chairman of the Urban Land Institute (2009–2011); president of the British Property Federation (2001–2002); director, Société Foncière Lyonnaise (1997–2002); and church commissioner (1993–2000).

Richard Galehouse

Watertown, Massachusetts

Galehouse is a planner and architect with more than 40 years of experience directing complex urban, new community, resort, institutional, and environmental planning and design projects, including the University of South Carolina Master Plan and the Crown Center

development in Kansas City, Missouri. He also led the team that developed the Master Planning Template for the University System of Georgia and has continued to work with the Georgia Board of Regents on numerous campus master plan updates for the university system.

The leader of the planning group at Sasaki for more than 30 years, Galehouse has focused on the issues of new community, urban, and institutional planning in his project work, writings, and frequent speaking engagements. He has served as a guest lecturer and critic at colleges, universities, and professional organizations and is an active member of the Urban Land Institute, where he is a member of the Recreation and Development Council.

He has written several articles for *Urban Land* magazine, including "Measurements of Community" (June 1999), and he was the responsible contributing author for the chapter on place making in ULI's book *Transforming Suburban Business Districts*.

Galehouse received a bachelor of architecture degree from the University of Notre Dame and a master's in city and regional planning from the Harvard University Graduate School of Design.

Peter Holland

Melbourne, Australia

Holland has 28 years of experience consulting in property and retail economics to a wide and impressive range of clients. He has a strong interest in the shaping of the built environment, and most of his work involves large property projects. In addition to having specialist skills in the retail and entertainment sectors, Holland has wide experience in other property sectors including office, residential, and hospitality.

Over recent years most of Holland's time has been devoted to assignments in Asia and the Middle East in both mature and emerging markets. Areas outside his homeland Australia in which he has undertaken retail assignments include Singapore, Hong Kong, Malaysia, China, Taiwan, Korea, Japan, the United Arab Emirates, Qatar, Saudi Arabia, Egypt, Morocco, Syria, Libya, and Pakistan.

Holland holds a bachelor of architecture from the University of Melbourne and a master's of city and regional planning and property investment from Harvard University. He is a past chairman of the Property Council of Australia, National Research Committee, and a member of the International Council of Shopping Centers, Asia Research Committee, and the Urban Land Institute, South Asia Executive Committee.

Robert C. Lieber

New York, New York

Lieber joined Island Capital Group in July 2010, after having served under New York City mayor Michael R. Bloomberg as deputy mayor for economic development. Prior to joining the Bloomberg administration in January 2007, Lieber retired from Lehman Brothers after 23 years, serving most recently as a managing director in Lehman's Real Estate Private Equity Fund and before that as the global head of Real Estate Investment Banking.

Lieber's efforts were recognized by *Institutional Investor* magazine for "Deal of the Year" awards in 1998 and 2003, as well as having earned the title "Financier of the Year" in 2005 from *Commercial Property News*. He serves as a trustee for the Urban Land Institute and as vice chairman of the Zell-Lurie Real Estate Center at the Wharton School, University of Pennsylvania. Lieber holds a BA from the University of Colorado and an MBA from the Wharton School.

Sir Stuart Lipton

London, United Kingdom

Lipton has been a commercial developer since the late 1960s. As chairman of Stanhope PLC, he has developed more than 12 million square feet in more

than 40 projects, including Broadgate in the City of London, Stockley Park at Heathrow, Chiswick Park in London, and the 1 million-square-foot Treasury Building, Whitehall, London.

Lipton's work includes a series of projects around London focusing on mixed-use, high-density development around transit nodes. A key component of these projects—which include Bracknell Town Centre, Stevenage Town Centre, and Stratford in East London—is the use of public space and regional shopping centres. Lipton recently retired as chairman of the Commission for Architecture and the Built Environment, an organization representing the U.K. Government on place making, parks, and new buildings.

Lipton was the 2007 laureate of the Urban Land Institute J.C. Nichols Prize for Visionaries in Urban Development.

Tom Murphy

Washington, D.C.

Murphy is a senior resident fellow, ULI/Klingbeil Family Chair for urban development. His extensive experience in urban revitalization—what drives investment, what ensures long-lasting commitment—is a key addition to the senior resident fellows' areas of expertise.

Since January 2006, Murphy had served as ULI's Gulf Coast liaison, helping coordinate with the leadership of New Orleans and the public to advance the implementation of rebuilding recommendations made by ULI's Advisory Services panel.

Prior to his service as the ULI Gulf Coast liaison, Murphy served three terms as the mayor of Pittsburgh, from January 1994 through December 2005. During that time, he initiated a public/private partnership strategy that leveraged more than \$4.5 billion in economic development in Pittsburgh. Murphy led efforts to secure and oversee \$1 billion in funding for the development of two professional sports facilities and a new convention centre that is the largest certified green building in the United States. He developed strategic partnerships to transform more than 1,000 acres of blighted, abandoned industrial properties

into new commercial, residential, retail and public uses; and he oversaw the development of more than 25 miles of new riverfront trails and urban green space. From 1979 through 1993, Murphy served eight terms in the Pennsylvania State General Assembly House of Representatives.

Murphy is a 1993 graduate of the New Mayors Program offered by Harvard University's Kennedy School of Government. He holds a master of science in urban studies from Hunter College and a bachelor of science in biology and chemistry from John Carroll University.

He is an honorary member of the American Society of Landscape Architects; a board member of the Pennsylvania League of Cities and Municipalities; and a board member of the National Rails to Trails Conservancy. He received the 2002 Outstanding Achievement of City Livability Award from the U.S. Conference of Mayors and was selected as the 2001 Pittsburgh Man of the Year Award by Vectors Pittsburgh.

Spiro N. Pollalis

Cambridge, Massachusetts

Pollalis is professor of design technology and management at the Harvard Design School, Cambridge, Massachusetts. He received his first engineering degree from the National Technical University of Athens and his master's and PhD from MIT. His MBA in high technology is from Northeastern University. He also has an honorary master's degree in architecture from Harvard.

Specializing in project management, information technology in design, and in signature bridge design, Pollalis's research extends to remote collaboration and remote teaching. He has taught synchronously across continents via the Internet, and his practice is based on remote collaborators located in the United States and Europe, brought together by advanced multimedia communications.

Pollalis is the founder and director of the Center for Design Informatics, dedicated to the exploration of Internet and technology in the design, real estate, and construction fields. He is also the adviser in the area of project management at the Master in Design Studies program.

He has practiced as a bridge designer in the United States and Europe for signature bridges, central to urban and regional development. He has also consulted extensively on management and information technology in design and construction projects.

He is the author of numerous papers and several books including *The Making of Bilbao Guggenheim Museum* (forthcoming), *Stretching Time and Space* (2001), *Remote Teaching* (2000), and *What Is a Bridge?* (1999, 2002); the editor of *Uncertainty and Risk in International Construction Markets* (1996) and the co-inventor of the patented Task Management (1991). He has conducted research for the National Science Foundation and has been visiting professor at the ETH-Zurich and at the TU-Delft.

Owen D. Thomas

Bronxville, New York

Thomas is a former managing director of Morgan Stanley where he was most recently CEO of Morgan Stanley Asia, chairman of Morgan Stanley Real Estate Investing, chairman of Mitsubishi UFJ Morgan Stanley Securities, and a member of the firm's Management Committee.

He joined Morgan Stanley in 1987 in the real estate group within the Investment Banking Division and has over 20 years of investment industry experience. Thomas began managing the firm's real estate investing business in 1994, was named managing director in 1995, head of Morgan Stanley Real Estate (investing and banking) in 2000, president of Morgan Stanley Investment Management in 2005, CEO of Morgan Stanley Asia in 2008, reinstated as chairman of Morgan Stanley Real Estate Investing in 2009, and appointed chairman of Mitsubishi UFJ Morgan Stanley Securities in 2010.

Thomas is a director of the University of Virginia Investment Management Company and the National University of Singapore Business School Centre for Asset Management, a trustee of the Urban Land Institute and Woodberry Forest School (where he also serves on the endowment investment committee) and is the former chairman of the Pension Real Estate Association. He received a BS from the University of Virginia and an MBA from Harvard Business School.