

# INTRODUCTION

In the summer of 2013, the Tejido Group from the University of Arizona / CAPLA assembled a group of volunteer students from both Schools of Architecture and Landscape Architecture to develop an urban redevelopment master plan for the former International airport of Hong Kong - KAI TAK in East Kowloon Harbor.

The project illustrated a collaborative and interdisciplinary effort among our faculty and students from the University of Arizona. Our design team was graciously hosted by the Chinese University of Hong Kong throughout the four week duration of the project. CUHK faculty and students assisted us greatly in adapting to, and in better understanding the many complex social, economic and environmental issues confronting us in this fascinating project. With strong support from CUHK and their School of Architecture, the students, professors, and all others involved experienced unique design challenges resulting in experiences which fostered both academic and personal growth. This urban redevelopment project for KAI TAK has evolved into an attempt to develop a multipronged approach to the revitalization and conservation of the wonderfully complex urban and natural environment in need of open space, environmetal remediation and an array of urban functions housing, commercial and recreational. We sincerely hope that this "sustainable urban development prototype" may assist the East Kowloon area of Hong Kong in it's revitalization efforts. The area has immense potential. With very special thanks to CUHK and our gracious host Patrick Hwang we offer the following as a brief summary of the design and planning outcomes resulting from this summer's odyssey in Hong Kong.

### KAI TAK DESIGN TEAM:

Marco Juliani | Jaime Sevilla | Kareem Najjar | Cesar Rodriguez | Nada Abdulmohsen Asadullah | Nada Saleh Al Qallaf | Wren Frederickson | Michael Robert Nardoci | Joseph Dimatteo | Yukun Zhou | Pavel Savine | Dr. Mark Frederickson



# HONG KONG

Few urban areas have physical growth limitations equal to that of Hong Kong. This semi-autonomous region of The People's Republic of China occupies 20 percent of its landmass with a dense urban fabric, the remainder left to a complex terrain, dense with vegetation. The juxtaposition of these forces makes for a city in which buildable land is incredibly precious. In an effort to keep the cost of living down, the government of Hong Kong has continually looked toward land reclamation to increase the city's buildable area. After decades of this practice, reclamation on Hong Kong's most populated and accessible areas has reached a point of saturation. Further reclamation on Hong Kong Island or its neighboring Kowloon would result in a shrinkage of Victoria Harbour, an area critical to shipping traffic in this world trade city.

Unlike most major metropolitan areas, Hong Kong is seriously lacking urban relief within the city core. While 80 percent of the territories land mass can be considered urban relief, known as 'country parks' to residents, very few examples of open space exist with the hyper dense urban fabric; primarily a result of a need for affordable housing. Despite the networked and piled-up structure of the city, there exist sharp divides between public, private, and personal space. The hyper density and lack of urban relief within the city forces people to take refuge in mechanically controlled spaces, a means of escaping the pronounced heat island effect. Private shopping centers become a primary means of public interaction and any chance of capturing a breeze outdoors in a shaded area becomes a precious rarity.

Hong Kong faces very serious problems in its future. Without much doubt, its well understood that land allocation will be the biggest challenge facing the city. While more housing is needed, the city must also balance it's desire for increased tourism attractions and seriously consider the city's growth limitations. The people of Hong Kong, unlike that of mainland China, have a history of being vocal and active in government planning and policy, a process which has been ongoing for the last 15 years in one site in particular, the former Kai-Tak Airport.

# KAI TAK AIRPORT

The former airport, located directly across from Hong Kong Island, represents a vast strip of undeveloped open space in one of the densest urban areas of the world. Resting on reclaimed land, the site was once home to the third busiest airport in the world until its discontinuation in 1998. Since its discontinuation as an airport, the site and its future has become subject for debate and speculation. In June 2013 Kai Tak accepted its first cruise ship into the Norman Foster designed cruise terminal, putting the site to use for the first time in over a decade. The land is so precious to Hong Kong that city officials and the public have been engaged in debate as to what to do with the Kai Tak site. Even with the addition of the cruise terminal, a huge majority of the site remains bare. Plans are however underway to bring public transportation to the site via Hong Kong's MTR, hinting at what might be to come for the anomaly that this urban condition has created.







# **DESIGN THEORY**

Our proposal seeks to address the current model for density in Hong Kong, understanding it as a characterization of the city and its inhabitant's way of life. Introducing open space to and along the urban fabric, as a therapeutic urban entity, is a way in which the city will build resilience culturally, economically, environmentally, and functionally. The integration of natural systems, in particular those which existed prior to land reclamation, has proven to be a continuing aspect of our thinking. Views, hydrology, climate, and existing form among other ordering systems begin to shape our collective speculative vision of what the possibilities are for this site.

# Our master plan proposal is predicated on the following critical concepts:

\_Allowing open spaces to be accessible to all residents of Hong Kong, in particular to those of East Kowloon, by means of decentralizing urban relief and instead integrating them within the proposed urban fabric.

\_A restoration of natural systems as a means of positively contributing of the health of Victoria Harbor.

\_ A programmatic appropriation of density, both in the vertical and horizontal sense; within Hong Kong's chaos of density, there is a genuine sense of functionality, this should be respected and replicated when appropriate.

\_ Tourism can not become the primary use of the Kai Tak site. The site and the space it provides must first address the needs of the Hong Kong citizen: housing and open space. In this regard the economics of the Kai Tak site should also remain in local hands. While the experience of the urban environment should not be a compartmentalized one between locals and tourists, the allocation of program must put the people of Hong Kong first.











### **Function**

The city of Hong Kong functions in a way unique to most urban areas, a result primarily of its hyper density. The proposal seeks to replicate this functional density where appropriate, while also providing a sense of urban relief / public open space.

### **Economic**

Critical to the proposal is that economic gain from the area remains within the hands of Hong Kong citizens. Tourism influx is inevitable, however interventions have been proposed to create zones of increased tourism and zones of increased local culture and its preservation. There is an effort to keep tourism income in local hands.

### **Environmental**

A restoration of natural systems can be seen throughout the proposal. The plan looks to thrive off the already existing Kai Tak river and its run-off to create a mangrove sanctuary which will help to clean Victoria Harbour naturally.

### Sociocultural

The proposal seeks to respect Hong Kong's unique way of life, a result of its culture of congestion. The proposed open space will undoubtedly change the way the city and its people interact in ways we can not predict; Hong Kong may at last have its own Central Park.













### North

This edge condition with broader Kowloon serves as a high-traffic activity center characterized by a network of open spaces that blurs the site boundary by bridging the site connecting to the city in multiple ways.

### Runway

The runway brings a lively new economic and social outlet that provides locals with much more centralized businesses, jobs, shopping districts, and open spaces. The runway is divided into three islands that have different functions but are woven together by a continuous urban path that runs along the stretch of the runway.

### East

This waterfront region becomes the venue over which East Kowloon's emerging artistic and entrepreneurial culture is manifested. It will unfold as another destination in Hong Kong's nightlife and entertainment culture. The highway-lined waterfront becomes a vibrant hub of culture.

### **Aquarium**

The Hong Kong Aquarium focuses on revitalizing the flora and fauna of the area, mitigating and enhancing the connection between nature and culture. It becomes a landmark in the project, a civic and cultural destination which celebrates public open space with an acute sensitivity to its environmenal context.



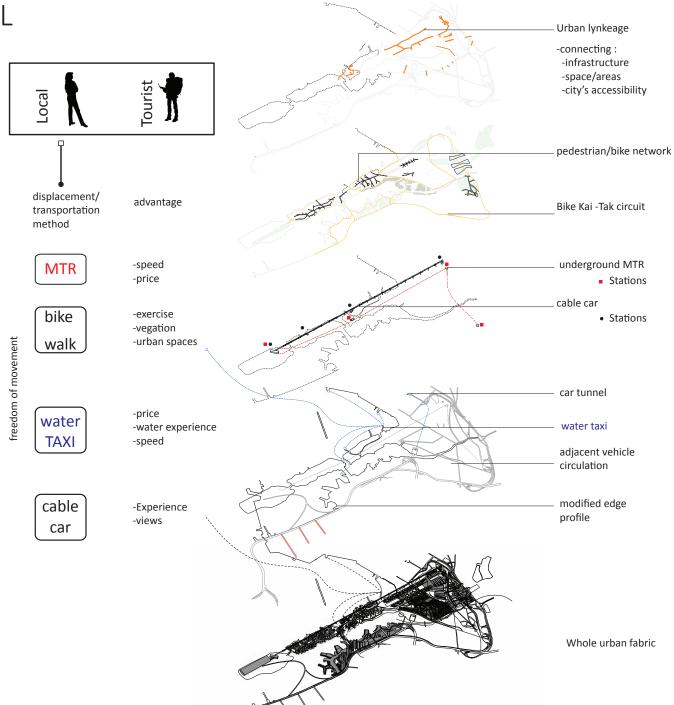


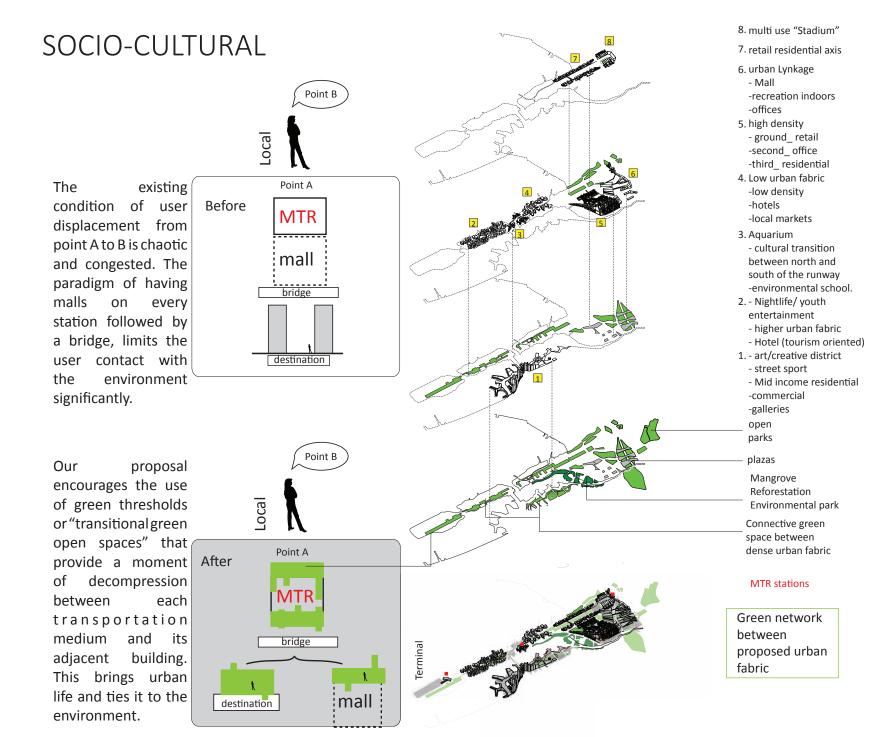


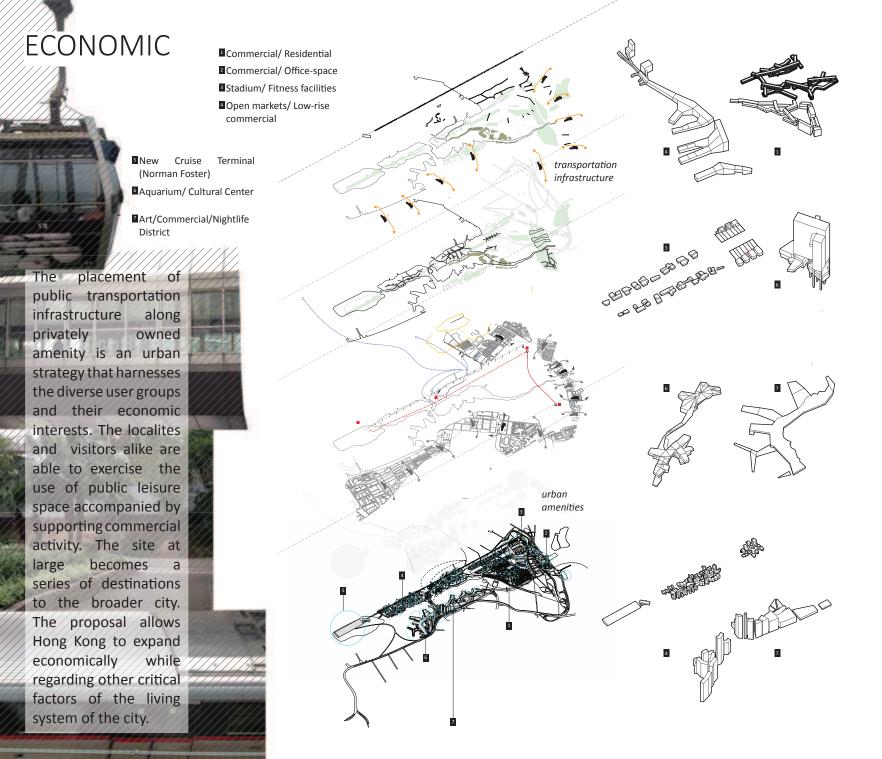


### **FUNCTIONAL**

The proposed variety of transportation modes within our scheme offsets the displaced user within the Kai-Tak masterplan and its linkage to the broader city. While allowing multiplicity for of experiences options, and this networked city reveals itself while allowing unfamiliar for an redistribution of open space for this cluttered urbanism.



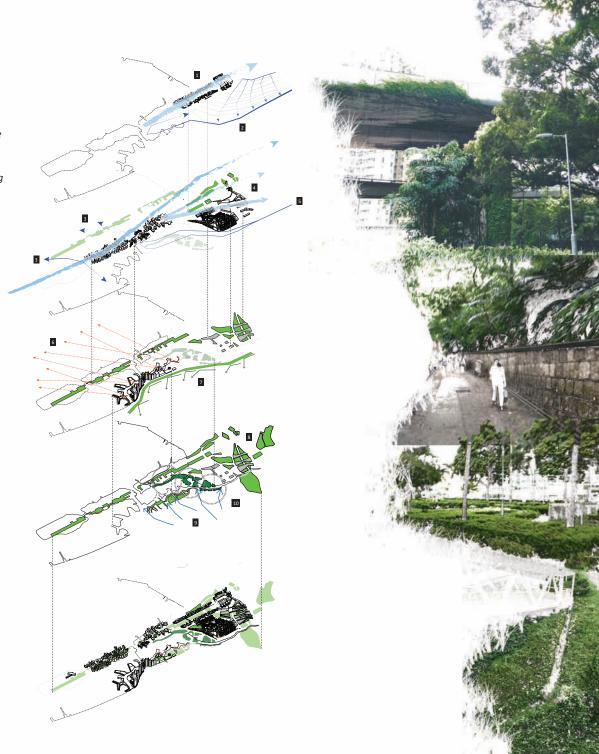




### **ENVIRONMENTAL**

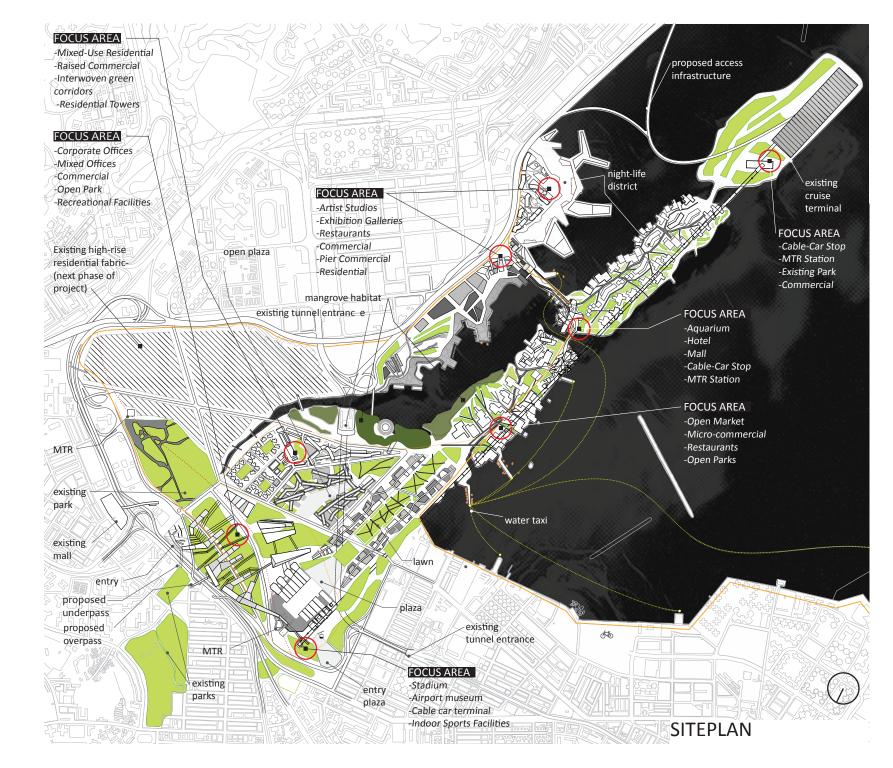
- Mall captures harbor breezes
- 2 Landscape drains into river
- **Exchange** of freshwater and saltwater habitats
- Green belts allow for ventilation into the northern site
- River creates microhabitats along it and drains into Bay.
- Low impact and low-rise developement, uninterfering with view of the harbor from East Kowloon
- Vegetation greenbelt buffers sound pollution
- Vast expanse of uninterrupted landscape
- ☑ Irrigation channels allow for flow into water
- Rich mangrove habitat

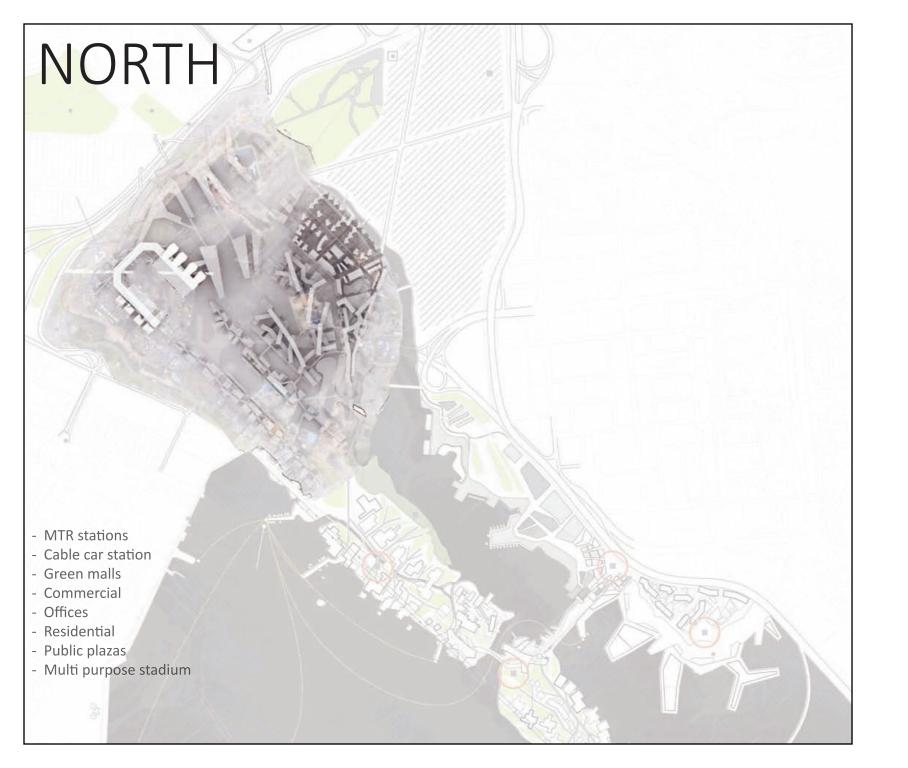
Our multi-layered, microregion specific approach allows for a complex ecosystem to unfold itself. This ecosystem alongside occurs complex network habitable structures that accommodate the kind of activity that will bring out Hong Kong's culture. The juxtaposed these structure of distinct systems seeks to undermine conventional wisdom that delineates a sharp line between building and landscape. Our proposal acts as a portal into the city- a lush patchwork of nature amongst vibrant nodes of activity and culture.



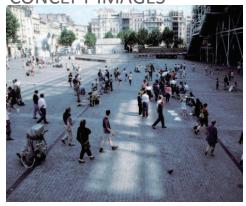
### Master Plan Strategy:

As our time was limited during this three week design charrette effort, our team divided the large and complex site into four design and plannng focus areas: 1) the northern edge that interfaces with existing urban fabric and the Kai Tak river areas. Here we proposed mixed use residential, raised commercial, Interwoven green corridors, residential towers, open parks and numerous recreational facilities; 2) the East Kowloon waterfront and adjacent aging yet dynamic urban neighborhoods. Here we proposed artist studios, exhibition galleries, restaurants, a commercial pier, and commercial-residential mixed use; 3) the former "runway" area of Kai Tak airport. The runway area is dvided into three distinct areas/islands. These areas contain open markets, microcommercial and restaurant opportunities, open space/parks and an array of nightlife options; 4) the aquarium and hotel node contains several malls, a cable car stop, and an MTR public transportation station. All areas of the master plan focus on inter and intra - nodal and neighborhood connectivity strategies - directly relating with one another and with the diverse surrounding urban context as well.





### **CONCEPT IMAGES**







### **Functional**

This northern edge serves as a permeable entry point over which the urbanscape becomes a vast patchwork of natural parks populated with elevated high density buildings. Public open space is redistributed and a heavy connective network of pedestrian bridges brings the city onto this aggregated activity center. The tower adjacent to the stadium is where the cable car and MTR station are located. This transportation hub is the launching point to get around the site.

### Socio-Cultural

The tightly-knit fabric of urbanism that characterizes the neighborhoods flanking the north or the proposal is given a respite. Public amenity is scattered about the proposal, becoming a connective entity in itself. This becomes a transportation corridor of foot-traffic along which sports and performance arenas, along with commercial centers are placed. The anomaly created by this open connective tissue allows for a new kind of cultural expression for the Hong Kong public.

#### **Environmental**

Our proposal seeks to capitalize off of the unique opportunity to create breathing space for a city that is known for having one of the world's greatest densities. The unbearable humidity found in the current urban fabric will be mitigated by the incoming ventilation along the water's edge. This waterfront condition becomes critical, does the cleansing of air that is made possible through a generous redistribution of open green space. This habitat restoration not only allows for a healthy ecology to be reestablished in Kowloon, but it improves the quality of life of its people.

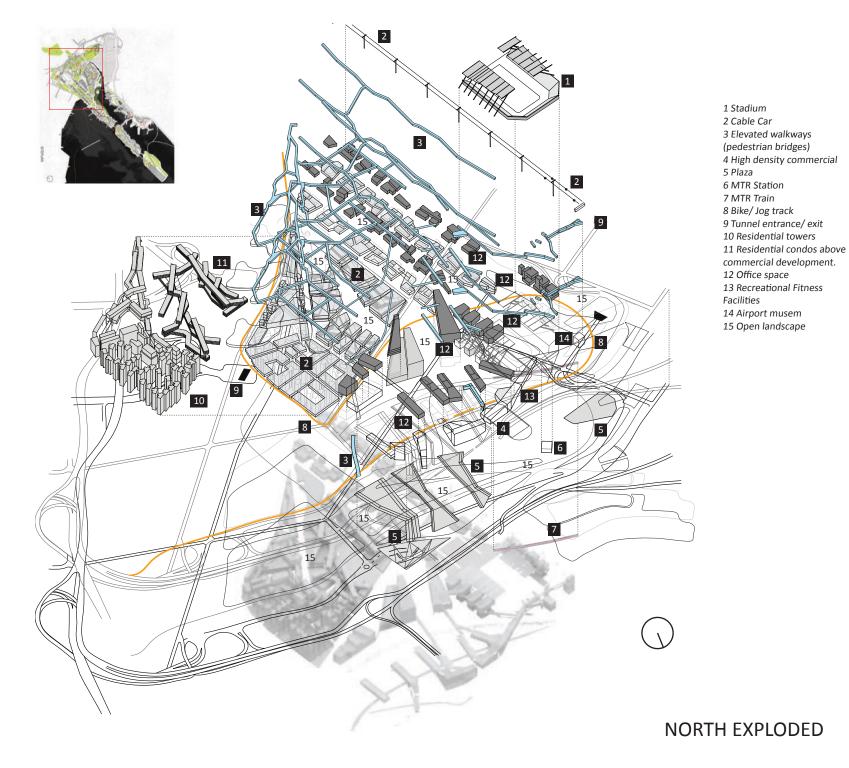
#### **Economic**

Physical infrastructure that bridges commercial and workplace buildings of the existing and proposed neighborhoods allows the site to become a manifold economic ecosystem that thrives off of local and global economic forces. The disparate user groups and their paths are encouraged to overlap and border one another depending on the respective context.

aside from making room for the expansion of the local economy, tourist activity becomes a critical cornerstone of the proposal that shapes much of the design.

#### **Aesthetic**

The aesthetic is one that gently reveals itself through a renewed sense of place. Vastness as it relates to the public goes from being an unfamiliar landscape condition to one that manifests itself as a seductive urban alternative. Among the concentrated pockets of activity along the site, the lush landscape serves as a reminder of the island's innate character.







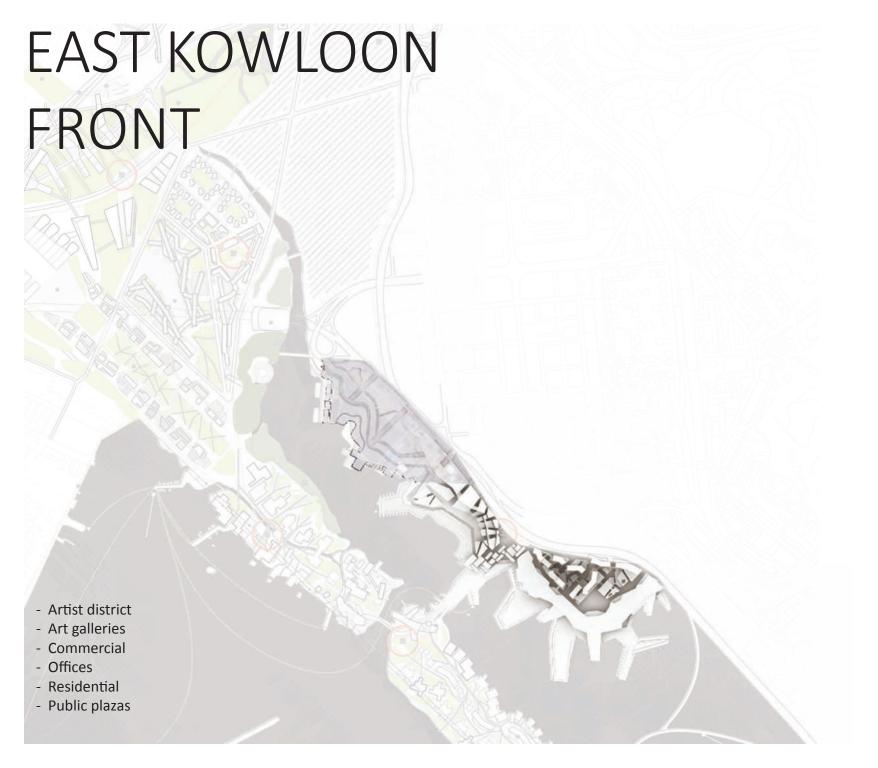
As population continues to grow, housing has become one of the biggest concerns in Hong Kong. In order to diversify and balance the north end of the old airport runway, series of horizontal housing apartments are stacked above local and commercial retail with many open spaces for natural ventilation. The unique language of connectivity in Hong Kong continues to be carried out in this development, elevated walkways are weaved into the building fabric for continuous pedestrian access to the various areas of activities.





- 1. A hybrid mix-use stadium complex for 100,000 spectators and other users. A substantial portion of the stadium is carved into the ground, reducing the spectacle's noise to the surrounding areas. The axis formed the open mall follows the orientation of the old airport runway, allowing the harbor's cool wind draft to channel through this vast mall into the rest of Kowloon. The stadium is the anchor that holds this axis. The complex contains gyms, restaurants, offices, shopping malls, and an airport museum.
- 2. This opposite end of the mall is an outdoor airplane museum and sculpture garden. The intent is to utilize the mall as the connective tissue between the changing activities that occur along it. The museum becomes a cultural and educational landmark that hints at the site's heritage and while allowing for recreational activities of leisure.
- 3. This park serves as a local gathering space for the residential communities than live directly north of it.





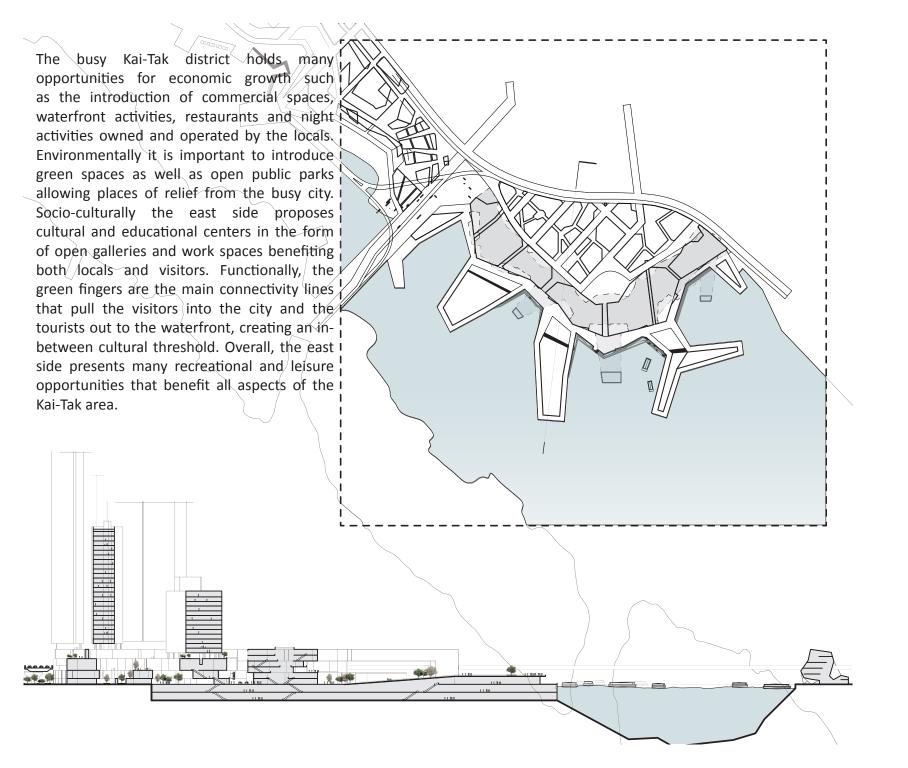
This edge condition with broader Kowloon serves as a high-traffic activity center charactarized by a network of open spaces that blurs the site boundary by bridging the site with to the city in multiple ways.

### **CONCEPT IMAGES**

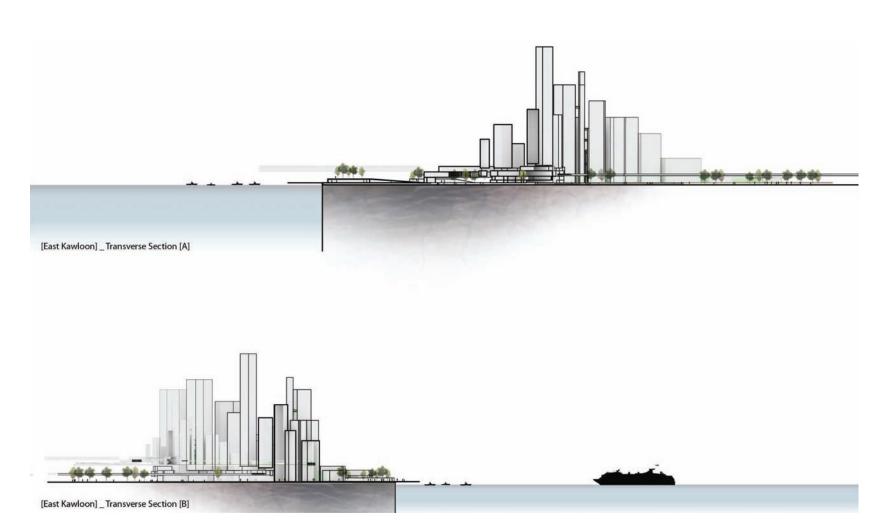


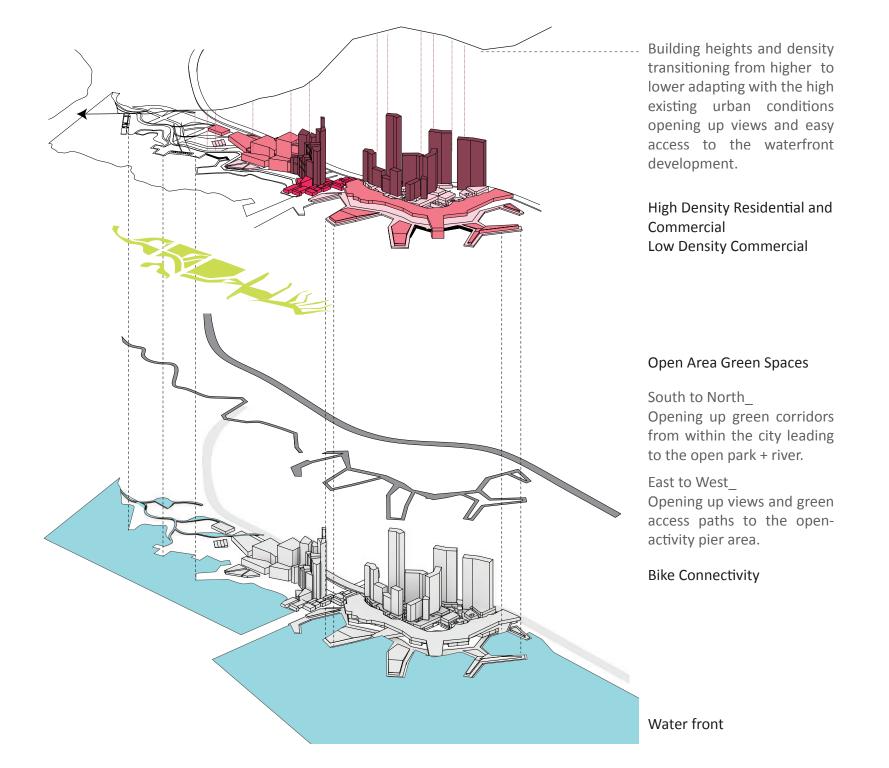












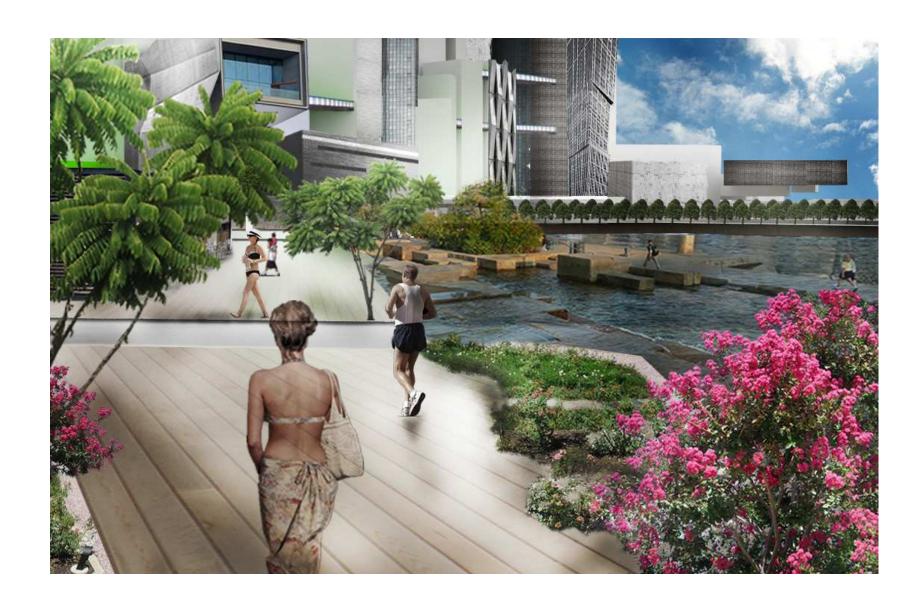
Acting as an active and commercial hub on the east side of the Kai Tak site, the waterfront promenade offers a unique opportunity for commercial and cultural programs to take place adjacent to and on the water. The waterfront release is supported by mixed use and residential zones further inland, with an emphasis on increasing open space and creating multiple levels of connective and outdoor space to create a new paradigm for urban density.



Kai-Tak area's revitalization includes the addition of residential and commercial high rises, as well as open urban areas and green fingers of linear pathways bringing in the city and the ocean in synchronization. Connectivity allows both bikes as well as pedestrians access the waterfront, activating the bay area and creating an economically and environmentally sustainable area.



Environmentally, functionally, and aesthetically, the east side serves both locals and tourists by holding linear pathways for recreational purposes as well as activities along the bay area.





The Hong Kong Aquarium focuses on revitalizing the flora and fauna of the area, mitigating and enhancing the connection between nature and culture. It becomes a landmark in the project, a civic and cultural destination which celebrates public open space with sensitivity to its surroundings.

### **CONCEPT IMAGES**









### **Functional**

The location of the Aquarium provides for programmatic conjunctions such as an MTR station, cable car station, a mall, and a hotel. These functions have direct access to the attraction. The user can circulate to any of these programs on elevated pathways without densifying ground circulation.

### Socio-Cultural

The circulation sequence of the MTR, mall, and main aquarium is fragmented with green spaces in order to provide a visual relief from an otherwise dense programmatic transition. The north and south aquarium are located next to plazas, creating desirable destinations of activity and rest amongst the urban fabric as well as a flow between them.

### Aesthetic

The aquarium's identify is derived from its separation across the channel and the connecting elevated circulation. It is low rise and compliments the dense backdrop of Kai-Tak.

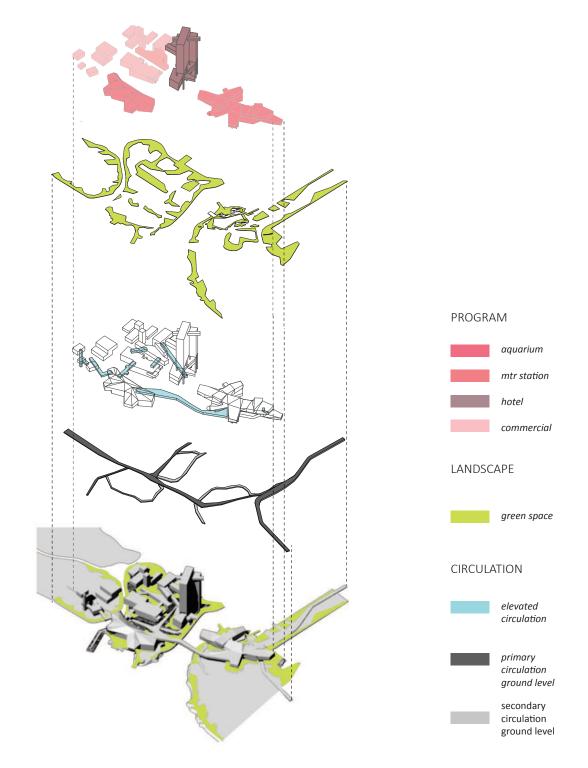
The programmatic addition of an aquarium to Kai-Tak is designed to serve as an enticing attraction and an iconic piece of architecture for Hong Kong. Attracting tourists and locals alike, it generates a large source of revenue for the city. The location capitalizes from the revenue as well as the restoring of the local ecosystems.

### **Environmental**

A channels divides the aquarium into a North and South complex accentuating two main: the freshwater/ saltwater condition and the open harbor. The north focuses on the harbor while the south accentuates the amalgamation of freshwater and saltwater along the channels and coves that rehabilitate mangrove ecosystems.

#### **Economic**

The aquarium is an attraction that generates large amounts of revenue . Its proposed accessibility via MTR and cable car would maximize its economic value. The programmatic inserts that surround the aquarium such as the mall and hotel also generate revenue.



### **North Aquarium [ Facing Victory Harbour]**

Extending south of the Main Aquarium to the coastline is an interactive plaza-like park with enticing venues to sit and play with the sea. The plaza utilizes a play in levels and materials to create a multi-functional space. A wooden deck seamlessly extends sight lines from the interior of the Main Aquarium out into Victoria Harbor, where people can sit and dine comfortably at the waters edge. Amphitheater style seating made of organic stone surrounded by outcroppings of rock transition the level of the Aquarium to the sea level. On this bottom level, pedestrians are able to stroll through the plaza and under the buildings large arms that soar above the harbor. The ocean water is brought into the plaza via a downward sloping concrete surface that gently fills with water with the tides. Blending with the natural rock outcroppings, organic rock blocks protrude into the sea creating venues for play and leisure.



The subterranean level of the Aquarium looks out into the ocean while also containing a separate tanks that house various types of sea creatures and plants. The whole level focuses on the viewing space into the ocean, which can also double as a stage area that uses the large concrete steps as seating.

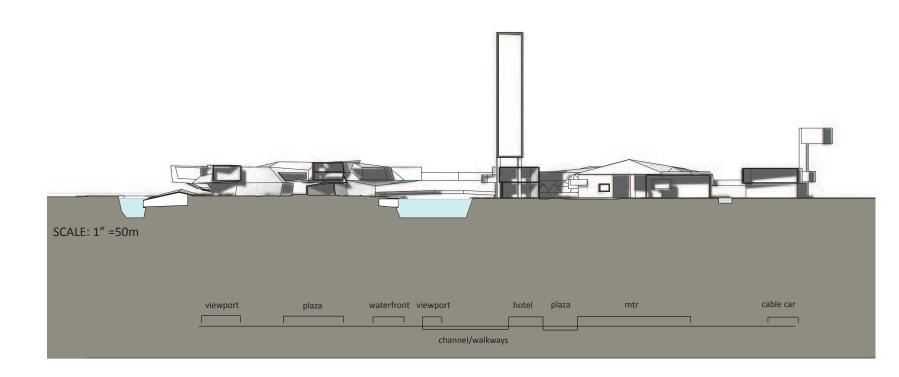


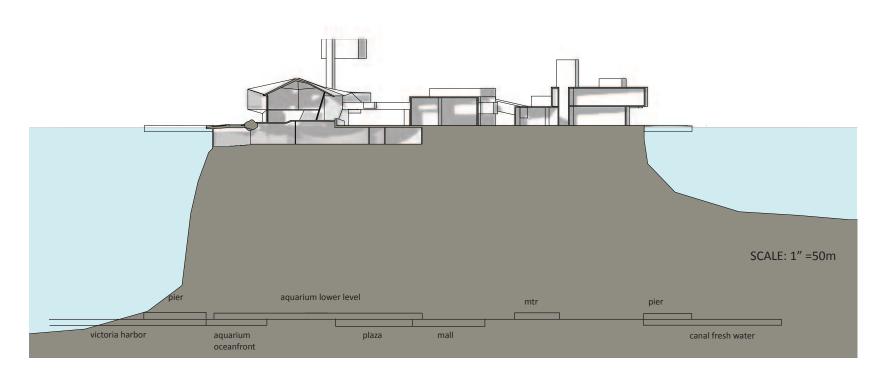
## **South Aquarium [Facing East Kowloon]**

This south side of the aquarium focuses on connecting the multiple social activities with the surrounding nature. Having an underground space to look out into the water, a sensible water edge that introduces the user into the water and flora of the land edge, and the intertwined interior space with the several flowing aquariums.

This public infrastructure becomes a landmark at a micro scale (within Kai- Tak master plan) and a macro scale (Hong kong city) which has the main intention to provide covered public spaces to enjoy the beauty of the surrounding water, flora and fauna and at the same time, become a cultural facility that hosts multiple activities environmentally related which are visually and spatially accessible to the public user.









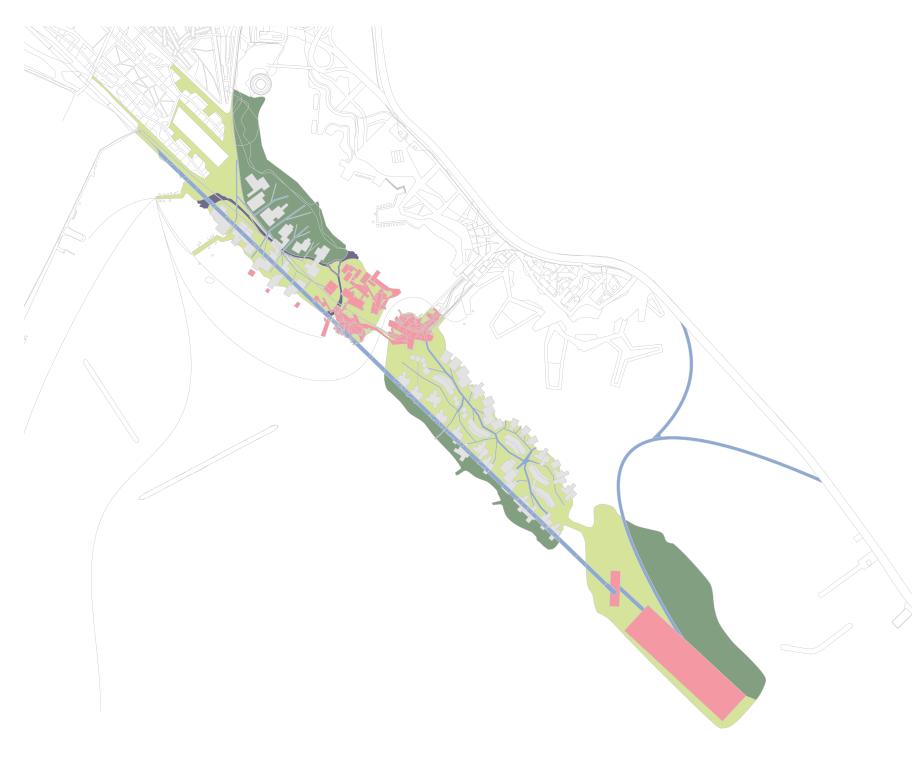
The runway brings a lively new economic and social outlet that provides locals with much more centralized businesses, jobs, shopping districts, and open and green spaces. The runway is divided into three islands that have different functions but are stitched and connected by a continuous urban path that runs along the entire area. The path also connects the runway to the rest of Kai-Tak and Kowloon area on the north and east side. Finally, at a macro scale, the runway is the transition between the tourist and local districts.

## **CONCEPT IMAGES**









The runway is divided into three islands. The first Island incorporates a market and a canal that runs through it, the second island is dedicated to youth entertainment and semi-touristic activity, and the third Island on the south is the primary touristic zone where the cruise terminal is. The density of the Island increases as it moves south. The north island is composed of two to four storey buildings and wider pathways that run through and between the buildings. The second island is the densest, including six to ten storey buildings. The third terminal island is mainly dedicated to the terminal with some high rises.

Economically, the market provides locals with jobs as well as an opportunity to sell their goods to tourists and visiting locals. The ferry system that runs through and around the runway are also a major tourist attraction with also creates jobs. The central island also provides many business opportunities for locals such as hotels and restaurants.

Socioculturally, the runway is now a place of open and shades plazas that are both utilized by local residents and tourists visiting the area. The green edges provide open space that is lacking in the city for locals and tourists to relax and enjoy.

Functionally, the primary shaded path becomes a strong tool for urban connectivity. It is strictly dedicated to pedestrian circulation to enhance walkability along with safety and human comfort. The path is integrated with diverse activity including interior and exterior options. MTR stations, ferries as well as a cable car are all alternative transportation methods to connect and move people and goods around Kai-Tak easily and comfortably without causing major traffic overlap. Vehicles are also accessible in the last island where the terminal is to allow tourists to get to the city easily.

Environmentally, new green and open spaces are introduced to clean the air and block the noise that is coming from the city. Mangroves on the east side of the runway help clean the water before it pours in the ocean and creates new aquatic habitats. The canal that runs through the island helps cool the market and paths in between.

Aesthetically, the design strives to adopt and continue the existing fabric in Kai-Tak and Kowloon to maintain the local identity of the area. Also, local vegetation and trees are used.

This rendering shows us a typical Kai-Tak runway market urban corridor. This area combines multiple programs, including mix use buildings, green urban corridors, connective canals, commercial spaces, and recreational spaces. The area has multiple layers of pedestrian connectivity, allowing for water, ground, and above ground connections. The main path is woven with green spaces, vegetation, and small urban interventions that transform it into a dynamic public space for a great range of activities, as well as providing opportunities for on street commercial space. Finally, the vegetation on the street and in the buildings help offer a green backdrop and relief for the public from the typical dense urban Hong Kong fabric spread throughout most of the city.



The northern portion of the Kai-Tak island has for varying degrees of density. The side of the harbour facing Hong Kong Island (right rendering) is considerably denser than that of the side facing the Mangrove restoration area. (left rendering) Dividing the two densities is a series of circulation routes for pedestrians, small boats and cycles. This area acts as an urban relief and is heavily vegetated. Above ground bridging connects the varied densities, a similar typology can be found all over Hong Kong Island and the Kowloon areas.



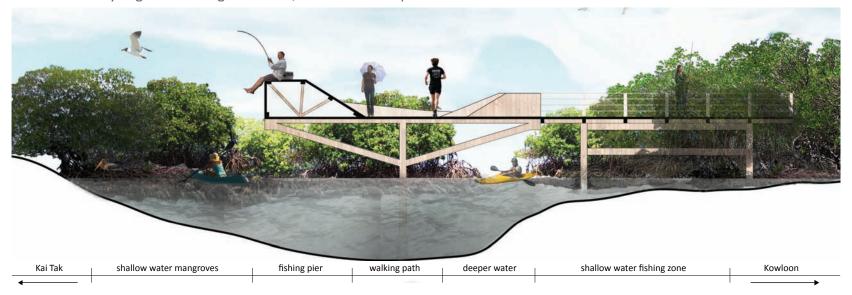
The hotel market place is a mixed use, adaptable waterfront system. A structure spans the river inlet offering simple access for ferries and service boats passing underneath. The span offers views down below to the river market, as well as ameliorating the offshore breeze and its penetration inland.



The hotel spans the river inlet opening views down below to the marketplace, as well as out to the sea and across to the city. It provides simplified access to shopping, restaurants, taxi and ferry boats. It provides enjoyable waterfront space where one can look out across the sea to watch the city in the sodium light, and views out across the river where the seagulls play.



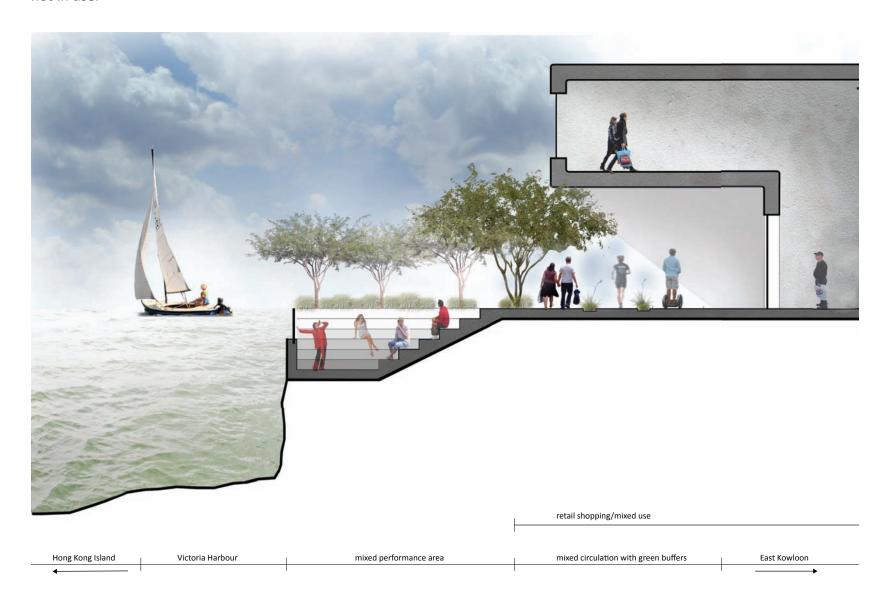
The restored mangrove area incorporates a pier system of varied circulation paths. The center of the path remains consistently a pedestrian pathway whereas the sides provide points of refuge at time for seating and fishing. Diversions from the main path jut out into densely vegetated mangrove areas, where shade is provided and a sense of urban relief is realized.



This is where the mix-use urban program meets the water and park edge; we can see in this rendering how the water canal inserts itself into the land and becomes a connective element in joining the two spaces. The waterfront holds multiple activities such as cafes, park recreation areas, green walkways, and promenade and adjacent to these, there are the revitalized mangroves.



Water front areas of high density (western edge of the northern island and eastern edge of the middle island) incorporate the buildings as a means of providing shaded pathways. Overhangs and vegetation buffers allow for people to walk along the waters edge in the shade. Performance spaces are incorporated at times into the sea wall, allowing people again to sit in shade when not in use.



## CONCLUSION

The Kai Tak site occupies a unique place in both the history and the future of Hong Kong as it offers enormous potential development opportunities to the city. It was a wonderful experience to work within such a complex urban context and on such a pivotal site. This experience catalyzed a better understanding of the potential influences and confines inherent in our design and planning professions regarding their ability to effect meaningful change in urban fabric. As this was both an interdisciplinary and multi-cultural collaboration, cultural and professional commonalities emerged and became increasingly apparent to all participants.

Although urban areas in Hong Kong and the United States are vividly distinct across a range of criterion; both regions must contend with an array of critical environmental and social issues, i.e. uncontrolled growth, economic stagnation, transportation inefficiencies, a dearth of open space and recreational opportunities, environmental degradation, a diminishing sense of place, as well as political intrigue and corruption. Although cultural and political schisms are at times all too apparent, students and faculty in the allied design and planning professions do in fact share many common goals. And, we chose to focus this studio experience on perhaps the most important of these objectives: that of creating urban fabric envisioned and developed across a range of interrelated variables, i.e. economy, environment, culture, function, and aesthetic measures of sustainability.

We trust that the processes employed and the community development solutions generated during this complex and multi-layered project will eventually gain relevance and bear witness in subsequent research and professional work of all student and faculty participants. We sincerely hope that we were able to offer concepts that will assist the future development of this very special place and people.

