Fluid Boundary: Shenzhen River as a Third Territory

HONORS THESIS
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CONTENTS

I. ABSTRACT

1. AIMS

The objective of this research thesis is to navigate water as a matter of both partition and connection, and river as a site of both boundary and memory. This project speculates the materiality of the border between the Hong Kong Special Administrative Region of China and Shenzhen (Mainland China), to convey the history of the frontier area and to envision its future transformation. Focusing on the Shenzhen River, a fluid boundary that separates two administrative areas, this thesis interrogates how the fluidity of water operates with its administrative function as a border. Based on an investigation of the existing management of fluidity, the design proposal aims to overcome the binary of water and land and to situate Shenzhen River as a third territory with a fluid narrative.

2. METHODS

In this project, mapping is an essential method to speculate and represent the physical attributes of the site and the socio-political mechanisms that shape the border. By examining the existing cartography and unfolding the power-knowledge projected on them, mapping is used as a creative practice that re-makes the territory over and over again (Corner, 1999).

3. QUESTIONS

1) How is water used as a tool for partition? i.e. how is the difference of materiality between water and land employed to consolidate the legislative border? How does the material boundary work with the administrative boundary?
2) How can a river as a constantly transforming mechanism be seen as a network that connects both sides?
3) How can landscape design be used to create a scheme that envisions the river as an alternative territory?

4. OUTCOMES

The design outcome of this project is not a concrete suggestion for problem-solving or implementation, but an open framework to stimulate further imagination. Certain speculations are made to reveal and realize the hidden potential of the site.

II. BACKGROUND

1. INTRODUCTION

During the process of this research project, two ongoing events have made significant impacts on global geopolitics. The first one is the 2019-20 Hong Kong protests, which was triggered by the introduction of the Fugitive Offenders amendment bill by the Hong Kong government. Once enabled, the amendment bill would allow the extradition of criminal fugitives to mainland China, thereby undermining the judicial independence of the region, as many concerned (BBC News, 2019). The protests have continued for more than a year and include numerous violent incidents. This series of events is perhaps the most intense and violent conflict between the Communist Party of China and Hong Kong citizens since the handover of Hong Kong. In May 2020, the legislature of China, the National People's Congress (NPC), passed a resolution authorizing its standing committee to impose the law on Hong Kong to outlaw secession, subversion of state power, terrorism and foreign interference in the city (Cheung, 2020). The proposal of the so-called national security law triggered another wave of protests in Hong Kong, deepening the uncertainty of future Mainland–Hong Kong relations.

The second event was the coronavirus disease 2019 pandemic (COVID-19). First identified in Wuhan, China in December 2019, the virus outbreak has been reported in most parts of the world, as of June 2020. To prevent transmission, many states have deployed strategies such as travel restrictions, quarantines, facilities closures, etc., disrupting most people's livelihoods. Increased emphasis has been placed on the boundary between states, communities, and individuals to maintain distancing at all levels. Still in the midst of the crisis while writing this thesis, the consequences of this pandemic remain

unknown to us.

Both events have drastically challenged the existing structures and deeply disturbed social norms at various geographical scales. Living under instability and uncertainty, many have turned to fluidity as a strategy. During the Hong Kong protests, for instance, protesters used the slogan "Be Water," which was borrowed from the quotes of martial arts star Bruce Lee, "Empty your mind. Be formless, shapeless, like water... Be water, my friend." Fluidity was practiced by the protesters as fighting tactics. According to Masato Kajimoto at the University of Hong Kong, "[protesters] are really fluid, and sometimes they get together very quickly and they disperse very quickly, and it really looks like water is flowing and flowing through different parts of the city" (Yamamoto, 2019).

In addition, my personal life was deeply involved with the state of fluidity during the outbreak of COVID-19 in the United States. In mid-March 2020, Cornell University, as well as many other institutions in the United States, announced several policies in a short period including transitioning to virtual instruction and suspension of all courses. Numerous statements from administration phrased the circumstances as "a fluid situation," and suggested individuals to "be fluid," in accordance with the rapidly changing circumstances.

Turning to fluidity amidst disrupted social norms captured my attention. In the case of the Hong Kong protests, fluidity is employed as a tactic against the suppression and constriction of state power (usually represented by police force). Under the circumstances of the pandemic, being fluid became a strategy to situate oneself in uncharted waters and to accommodate oneself outside of regular modes. As one of my professors said, the circumstance requires us to let go of most expectations and not be too attached to anything. In either case, fluidity represents an alternative organization that seeks to accommodate the original stable structure that is unable to maintain itself in crisis.

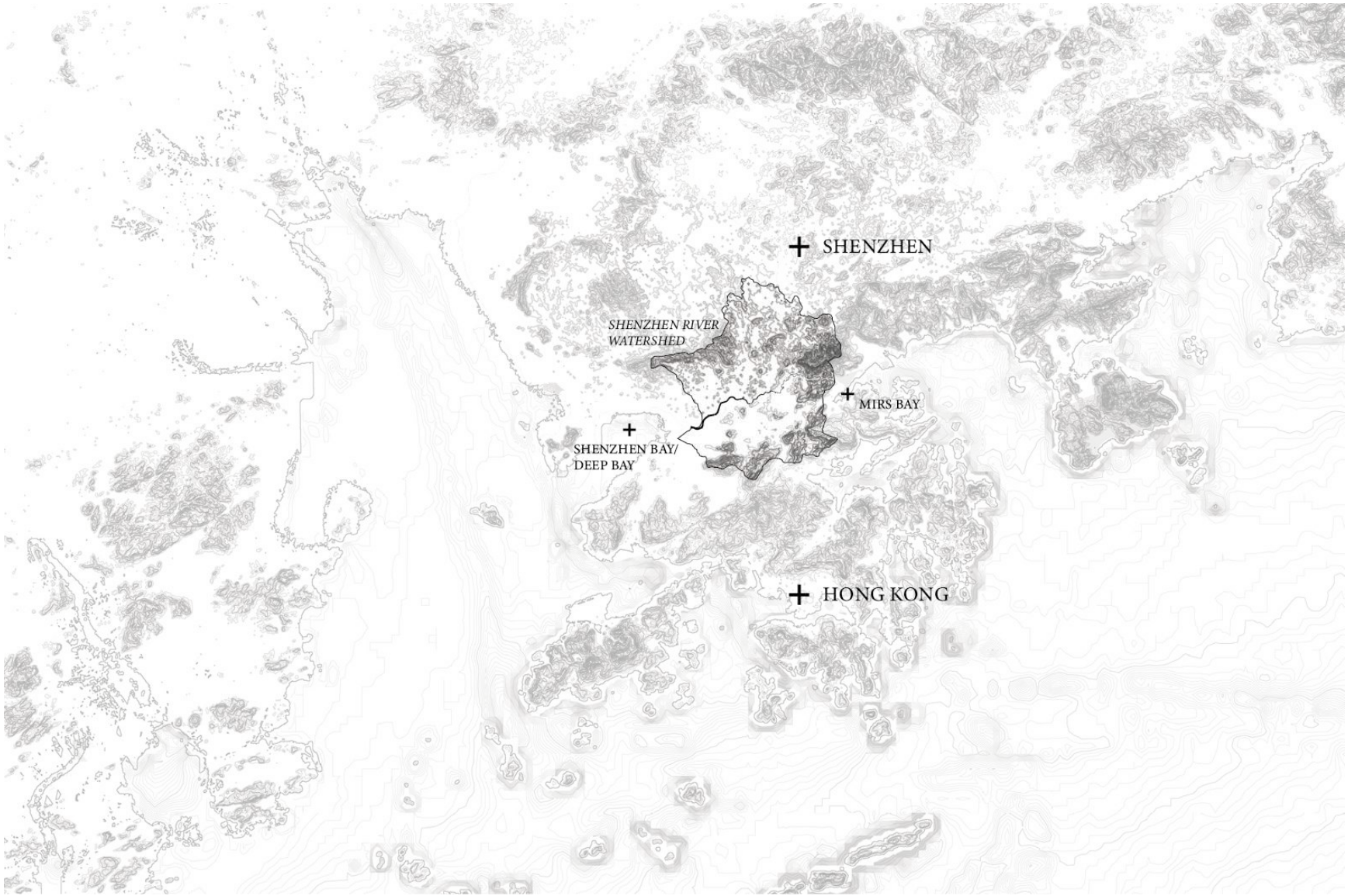
The fact that we seek fluidity as a working model in a time of disturbance, reflects that our common mentality and narrative is usually the opposite. As Bruno Latour asserts, modernization is a practice of partition, which includes constructing boundaries between nature and society, between "us" and "them" (Latour, 1993). The existence of boundaries provides us with identities and a sense of belonging. However, COVID-19 as a highly transmissible disease has significantly challenged the systems of

borders on every level. On the state level, strengthening border control does not eliminate the pandemic spread. On the individual level, the division between workplace and home collapses, leading to a sense of insecurity and chaos. On the level of modernization, the division between nature and society is contested as the biological virus disturbs the social structure. To resist this collapse, many boundaries are strengthened for a feeling of order. For example, nationalism and racism are sometimes deployed as informal practices to strengthen the boundary between ethnic groups for a sense of safety. Living between enforced boundaries, I wonder if it is possible for us to jump out of the existing systems composed of boundaries, and to accommodate the fluid strategy into evolving structures.

The current situation has inspired how I think about landscape and the research questions of this project. Fluidity has been long associated with discordance and often provoked uncertainty and trepidation. The fear of flooding and submergence due to sea level rise has been rooted in most minds. Landscape architecture can be seen as a profession of regulating fluidity spatially through grading or vegetation. With the increasing presence of uncontrollable fluidity in our lives, can landscape architecture be used as a framework to embrace an alternative approach to fluidity?

To investigate my research questions, the rest of the thesis is structures as the following: the next section of the first part elaborates on the theoretical background of the project and explores the intricate relationship between border and fluidity. The third section provides a historical context of the site and beyond. The first part ends with an introduction of methodology, including literature review and site visit. The third part, mainly composed of maps, describes the materiality of the border and creates a visual narrative of the river as territory. The fourth part starts with a close examination of the existing fluidity management strategies. Based on these strategies, four speculations are made to create alternative space that embodies fluidity, which I described as “third space.” The landscape architecture intervention is used as a method to evoke new thinking of fluidity.

CONTEXT MAP


SHENZHEN
SHENZHEN RIVER
WATERSHED
MIRS BAY
SHENZHEN BAY/
DEEP BAY
HONG KONG

April 2020, people in Wuhan memorize the deceased due to COVID-19 in informal ways (source: Shaqiu).

1952, people entered Shenzhen River from Shenzhen side, trying to enter Hong Kong illegally (source: Harrison Forman, edited by me).

The fluidity of river represent many uncertainties await - drown in the river, shot by the border police, expatriated after being caught...

2.

THEORETICAL BACKGROUND: FLUID NARRATIVE

Hong Kong (香港)'s image has been long associated with water. Kong (港) means port in Chinese. The commercial and strategic function of ports composed the city's significance in colonial history. Commonly portrayed as an isolated fishing village before the British's arrival, Hong Kong is often described as having no pre-colonial history. The dismissal of Hong Kong's pre-colonial history is greatly attributed to its geographic location. Located on the southern coast of China, Hong Kong city is surrounded by Southern China sea on all sides except the north, where the city neighbors Shenzhen along the Shenzhen River (Sham Chuan River, 深圳河). Composed largely of hilly lands, Hong Kong was perceived as uninhabitable until the settlement of British colonizers, who acquired vast amounts of lands through numerous land reclamation projects.

The association of Hong Kong with water is closely correlated to the notion of sea as a site of disappearance. Historically functioning as a port city with its demography largely composed of immigrants and refugees, the city's identity is featured with fluidity and instability. Ackbar Abbas asserts that Hong Kong's geographical location as a transit city contributes to its floating identity. For the port mentality, everything is provisional, ad hoc; everything floats-currencies, values, human relations (Abbas, 1997). The floating identity also contributes to what Abbas theorizes as, "a culture of disappearance," that consists of developing techniques of disappearance that respond to, without being absorbed by, a space of disappearance (Abbas, 1997).

Both notions introduced by Abbas are closely associated with the ocean as a

site of disappearance. The difficulty of temporalizing ocean has rendered it as a site void of memories. As Elizabeth DeLoughrey asserts, unlike terrestrial space – where one might memorialize and narrativize a space into place – the perpetual circulation of ocean currents means that the sea dissolves phenomenological experience, and defracts the accumulation of narrative (DeLoughrey, 2017). Hong Kong's limited land resources compared to the vastness of seawater it is surrounded by consequents its struggles of memorialization and consolidating its identity. The city's development based on continuous land reclamation results in a constant fear of losing the city back to the ocean, rendered as void and unaccountability.

As the boundlessness of the ocean threatens the material existence of the city, water on the other hand also gives form to Hong Kong spiritually and materially by forming the border around the city. Water is traditionally seen as a border between territories, which makes it a natural site of partition. Yet the relationship between water and boundary is complicated. Water does not only separate territories but also connects lands through a system of water bodies. For example, lands within a certain river catchment are shaped and transformed by the same source of water, and thereby connected with and influenced by each other.

Recently, the fields of ecocriticism and the environmental humanities have shifted from representations of territory-based place to theorize mobility and displacement across biotic, regional, national, and (post)colonial boundaries. In contradiction, the field of "critical ocean studies" has shifted from a long-term concern with mobility and fluidity across transoceanic surfaces to theorizing ways of embedding, animating, and submerging, rendering vast oceanic space into place. This turn to ontologies of the sea and its implications for temporality and aesthetics is called the "oceanic turn" by Elizabeth DeLoughrey (DeLoughrey, 2017).

Besides, border studies have attracted rising interests in scholarship in recent years, largely stipulated by US President Donald Trump's proposal of building a wall on Mexico-US border during his 2016 presidential campaign (BBC News, 2017). The incendiary proposal has brought the attention of public and intellectual communities to not only the political theories and cultural practices of borders, but also the environmental impacts of physical barriers. For example, Margaret Wild's essay "Exploring the Ecosystem of the U.S.–Mexico Border"

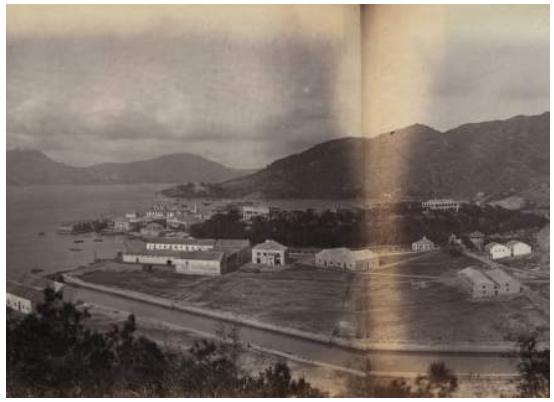
uncovers the potential impact of Trump's wall on the wetlands of Colorado River delta. The essay is subtitled as "Nature is fluid; walls are not" (Wilder, 2018).

Border systems and fluidity are not binary opposite mechanisms, but often coexist in the same space. The practice of constructing boundaries using regulation of fluidity was a common practice in colonialization. Fluidity here takes the definition of "the physical property of a substance [water] that enables it to flow" (Merriam-Webster, 2020). Although water is a natural fluid element in the environment, its fluidity in urban space is socially constructed and regulated. In City of Flows: Modernity, Nature, and the City, Maria Kaika examined the discursive construction of "good water" and "bad water" as part of the Western modernization and urbanization. With the technology of purifying and commodifying water, water was standardized as an economic production. The possibility of incorporating processed water into domestic space pushes the desire to draw a clear boundary between clean water entering domestic space and unprocessed water outside. The reconceptualization of water as a commodity simultaneously conceptually constructed nature as an externalized 'other' for which 'socially constructed places' were created (Kaika, 2005).

The deliberate construction of the boundary between regulated water and uncontrolled water was employed as a colonial statecraft in many contexts. For example, in Dutch Indonesia, the water channeling and its culture was evolving into a usable system of making the colony both dirty and clean (Mrázek, 2002). The partial construction of a sewage system was intended to sharpen the contrast between the "civilized" European quarter and the unregulated native quarter. By linking sanitation to civilization, the colonial government was able to use regulation of fluidity to strengthen the segregation and hierarchy within the colony.

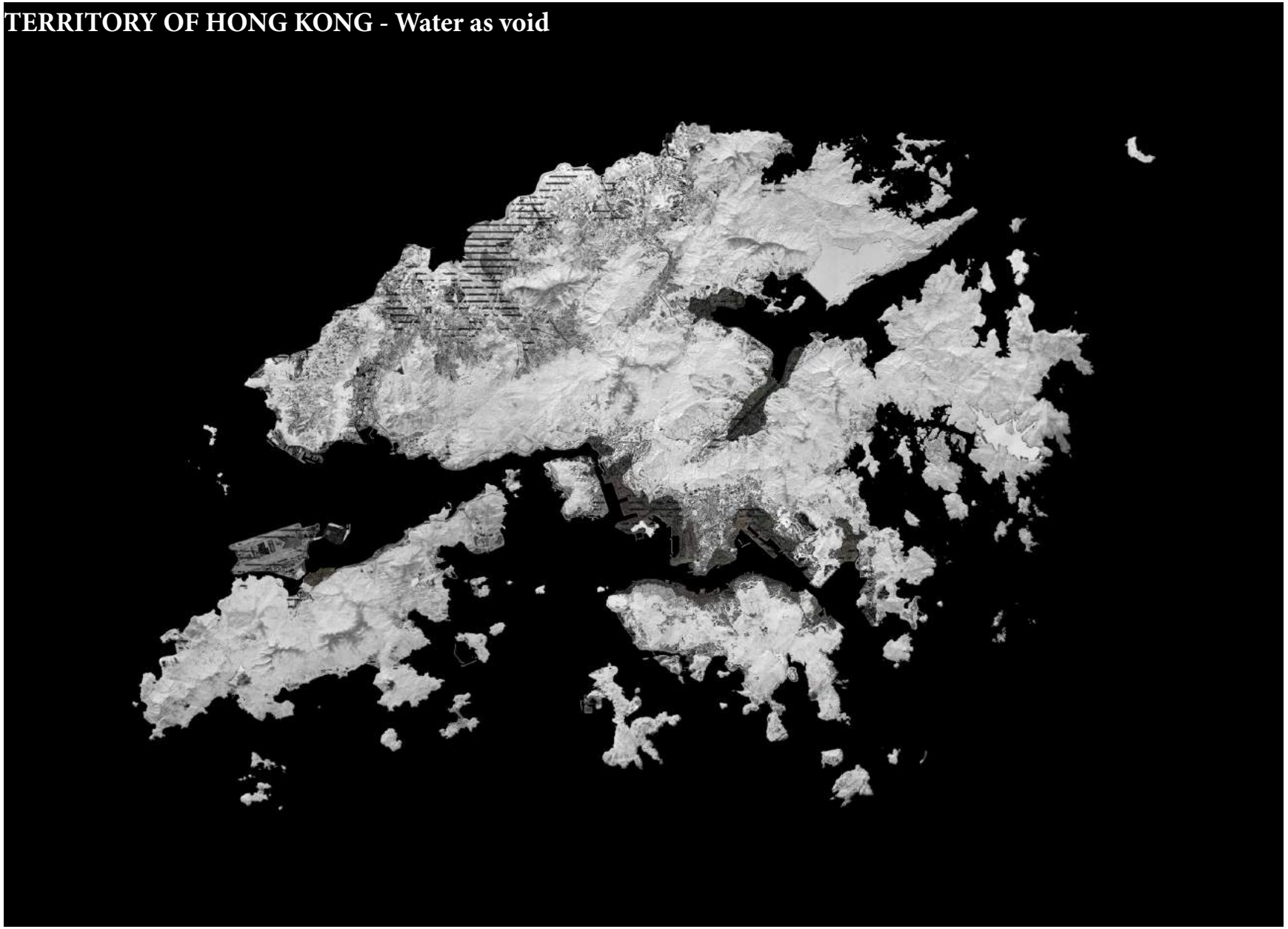
Border Ecologies examines Hong Kong-Shenzhen border as both a heightened space of control and an elastic space of exchange. This tension has given rise to specific flows of groups or individuals who utilize the differences between the two sides for their own benefit. These flows represent loopholes: opportunistic interventions within seemingly impenetrable systems of control (Bolchover, 2017). Based on this observation, this project aims to use Shenzhen River as ground to interrogate the entanglement between fluidity and border. Through analyzing the

landscape context of the river and it as an infrastructure of control, the project seeks to reveal the fluid narrative of the border.



Pre-colonial water landscape in Hong Kong, and the water infrastructure constructed under British colonization (source: Hutcheon, The National Archives).

TERRITORY OF HONG KONG - Water as void



This map illustrates the common representation of territory of Hong Kong, which is based on land. Ocean is seen as a site of “disappearance,” seemingly outside of the territorial and legislative limitations of the state. The tradition of land reclamation in Hong Kong to acquire more space for development has inferred water as void and rendered territory as transient. The instability of the territory is added by the fear of losing land back to the sea due to global sea level rise.

In the map, the opaque areas represent the territory acquired by land reclamation projects in Hong Kong (source: Ngo, 2019). The areas with line pattern represent the areas that would be below annual flood level in 2050, with medium emission scenario (source: Climate Central, Inc. , 2020).

3: HISTORICAL CONTEXT:

SHENZHEN RIVER AND BEYOND

Hong Kong Island had been formally ceded to the United Kingdom in 1842 according to the Treaty of Nanking, after China (under the governance of Qing) lost the First Opium War (1839-42) to the British. In 1898, The Convention between Great Britain and China Respecting an Extension of Hong Kong Territory was signed, thereby annexing the New Territories, and defining Shenzhen River as the border of the colony. In the first half of the twentieth century, the border has been open, allowing free flows from both sides. The sovereignty partition marked by the river did not separate the communities on the two sides, which were closely connected by kinship. In October 1949, People's Republic of China was officially established. With growing influx of refugees and the contested relationship between the Communist Party of China (CPC) and British colonial administration, the border was tightened and consolidated. As a result, Frontier Closed Area on the Hong Kong side was established in 1951. On the other side, Chinese leaders consistently deployed the border as an instrument of domestic development and as a site for adjusting Chinese foreign policy. The Chinese government pursued cross-border infrastructural integration through initiatives such as the East River Shenzhen Waterworks Project, which stabilized living conditions in Hong Kong while putting increased pressure on Bao'an (today's Shenzhen) residents (O'Donnell & Wan, 2017).

The political instability and natural disasters persisting in the early stage of People's Republic of China forced innumerable people to migrate to Hong Kong for refuge. From 1950s to 1980s, the "Tide of Escape to Hong Kong" (逃港潮) prevailed. Due to the enormous influx, the colonial authority turned from accepting

refugees to arresting and repatriating those found by police in 1962. Around 2-2.5 million people successfully crossed the boundary, with innumerable died during the escape. Due to its geographical location, Shenzhen became the primary transit stop for illegal emigration. However, water surrounding Hong Kong constituted the insurmountable obstacles for the refuge seekers. Strictly guarded by police with firearms, Shenzhen River was the shortest yet the riskiest route taken by few. Every single dark night during that time, there were many Mainlanders diving into the deep and dirty Dapeng and Shenzhen bays (Mirs Bay and Deep Bay) and swimming the deadly four-kilometer journey to Hong Kong (He, 2013). A resident living on the Hong Kong side of the river recounts the violent history erased by the unrelenting flows of the river, "Sometimes three or four people tried to swim across the river together, with only one person knowing how to swim. How could one person support three people? When it was unfortunate for them, they sunk altogether. When the water level rose, the bodies floated to Lo Wu. When water level fell the bodies floated to Deep Bay. I saw bodies come and go" (Initium Media, 2016).

On July 1st, 1997, Hong Kong was officially handed over by the United Kingdom to People's Republic of China, thus becoming a special administration region (HKSAR) of China under the "One country, two systems" principle. The "One country, two systems" principle was illustrated by Chinese leadership using the Chinese idiom, "the well water does not interfere with river water" (井水不犯河水), which demonstrates CPC's attitudes of allowing Hong Kong to retain its independent economic and administrative systems. I believe that the imagery of water was deliberately chosen to represent the intertwined relationship between Hong Kong and Mainland China. Well water and river water are not naturally separated. Well water comes from river water and is more regulated and static. The fluidity of water, like the continuous human and material flows between Hong Kong and Mainland, always blurs the boundary between two bodies.

The indeterminacy of boundary is reflected on many social aspects after the handover of Hong Kong, and also materialized by the changing Shenzhen River. Hong Kong and Shenzhen both have long annual flood seasons usually lasting from April to October. The narrow and curvy course of Shenzhen River restricted its discharging capability and led to floods on both sides. From the 1980s, several efforts were made by Shenzhen government to realign

the course of Shenzhen River for flood management. The change of river course brought disputes about the legislative boundary, which according to the previous convention is defined by the centerline of the river. Documents from the British Hong Kong government disclose that at that time, both the Chinese government and colonial authority insist that the border should remain as at present, irrespective of the course of the river (Standnews, 2017). However, the land jurisdiction became ambiguous after several changes of the river course. Before the official handover of Hong Kong in 1997, numerous parcels near the river had transitioned to the other side of the border, while the logic behind the changes was unclear (Alternative HK, 2018).

Two years before the official handover of Hong Kong in 1997, the most significant river management project, Shenzhen River Regulation Project (SZR) was coordinated by the Shenzhen government and Hong Kong. The project consisted of a four-stage scheme. The first three stages straighten, widen and deepen the previous 18km of Shenzhen River into 13.5 km of new river channel. While the main objective of the works is flooding prevention, it also has other associated benefits such as improving the river environment and navigation. Stage IV project further improves 4.5km natural stream at the upstream of the trained Shenzhen River in order to raise the flood prevention standard near the proposed Liantang/ Heung Yuen Wai Control Point (Drainage Services Department, 2019). The four-stage project stretched from 1995 to 2014. The completion of the project should enable the river to discharge flood at the level of fifty-year flood. However, many suspect that the river regulation project has diminished its ecological value. The river training project also significantly changed the tidal propagation and salinity structure of Shenzhen River, as the study of Chan and Lee examined (Chan & Lee, 2010).

The realignment of the Shenzhen River course dramatically changed the landscape context and the lives of residents on both sides of the river, leading to many land ownership and management disputes. According to the Order of the State Council of the People's Republic of China. (No. 221), issued in 1997, after the realignment of Shenzhen River course, the border would change according to the centerline of the new river course. Numerous parcels that once belonged to Shenzhen were transferred to Hong Kong and vice versa. Among many parcels that were transferred to the other side, the largest and the most controversial one is Lok Ma Chau Loop (落马洲河套).

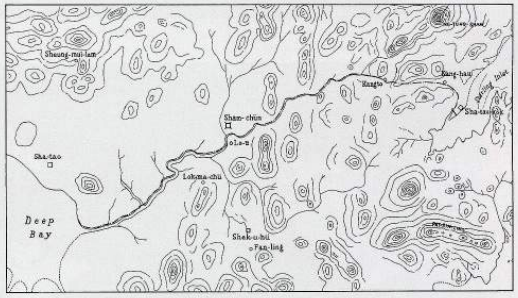
Once on the Shenzhen side of the river, the 87.03 hectare of land was transferred to the Hong Kong side. The parcel was purchased by a company subordinated to the Shenzhen government shortly after the completion of construction in 2000. Therefore, the property belongs to the Shenzhen government, while under the administration of HKSAR. In 2012, Zhengying Liang, Chief Executive of Hong Kong at that time, declared that Lok Ma Chau Loop would become the "special zone inside the special zone." He asserted that, "Hong Kong's development has always been restricted by land shortage. The 80-hectare land at the border is regarded as treasure in need of planning. … The parcel can be transformed into a special zone inside the special zone, and made full use of for economic development. Mainlanders and foreigners can all enter this land without visa. At present many international tech companies have expressed their interests in exploring the potential of the site" (Oriental Daily News, 2012). The message of Liang evoked massive criticism in Hong Kong as going against public will. The underlying fear was that the establishment of a "special zone" would lead to the eventual eradication of the border. The idiom, "The well water does not interfere with river water" has been frequently cited in news article titles, conveying the hope for HKSAR and Shenzhen government to continue respecting the existing border.

In 2017, HKSAR and Shenzhen signed the official memo to cooperate with the development of Lok Ma Chau Loop Technology Park. The construction is ongoing at present, with expected completion in 2020. While it is unlikely that the district will become visa-free, the site will undoubtedly become an experiment field of merging Shenzhen and Hong Kong.

Lok Ma Chau Loop is not the only site complicated by the border condition of Shenzhen and Hong Kong. Existing as an active territory border, Shenzhen River engraves impermeable partition between communities and spatial forms. The border is also the boundary of zoning districts, which separates the authority of land management. Hong Kong and Shenzhen employ different planning methods for the frontier areas. On the Hong Kong side, Shenzhen River is fronted by a massive Frontier Closed Area, which includes numerous villages. Civilian entrances except those of the residents are prohibited. The inaccessibility of the area limits any developments in recent years. On the other side, Shenzhen has significantly developed the frontier area. The dramatic land use differences across the border create visual discontinuity

and spatial fragmentation. It is unclear whether cooperative development like Lok Ma Chau Loop will eventually re-unite the discontinuity.

In 2047, fifty years after the handover, the "One country, two systems" policy governing HKSAR will be terminated or renegotiated, and Hong Kong will be fully subsumed into Mainland China. Whereas the implementation and specification of the integration of Hong Kong remains unclear at present, the border is expected to be dissolved. Climate change impacts add on to the uncertainties faced by Shenzhen River region. In 2050, with medium emission scenario, the global sea level rise is projected to be 0.18-0.35 meters (between the 5th and the 95th percentile) (Kopp, 2014). The Shenzhen River region, composed of low-lying floodplain, would be significantly affected by annual floods. The future of Shenzhen River is caught up in the anxious entanglement of history, politics, and climate change.

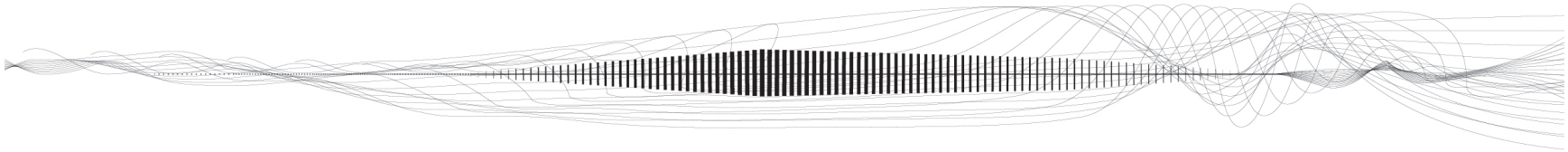


COLONIAL BORDER

Map appended to The Convention between Great Britain and China Respecting an Extension of Hong Kong Territory (1898), on which Shenzhen River is defined as the new border of the colony.

HISTORY OF FLOWS

The diagram illustrates the history of macro flows between Hong Kong and Mainland China, and how the border reacts to the flows.



Free flow Divergence Segregation Infiltration Confluence Turbulence ...

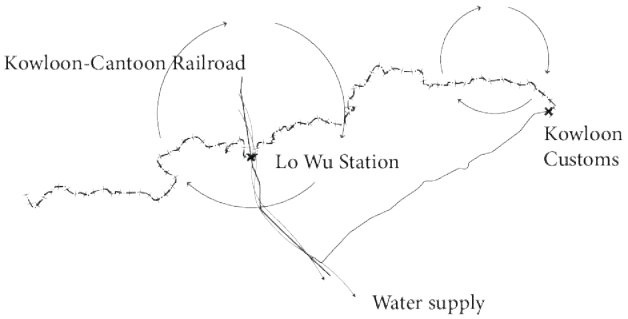
EVOLUTION OF BORDER - Timeline

The border between Hong Kong and Shenzhen (mainland China) is fluid in many ways. Firstly, the border is embodied by Shenzhen River and materialized through the flows of water. Secondly, the connotation and materiality of border are shaped by the constantly changing macro environment. This series of maps aim to capture how the function and materiality of the border change in the broader historical and political context.

PHASE I: Colonization
Cartographic border

1898, the Convention for the Extension of Hong Kong Territory was signed. Shenzhen River became the border of the extended colony

1914, the Kowloon-Cantoon Railroad was opened

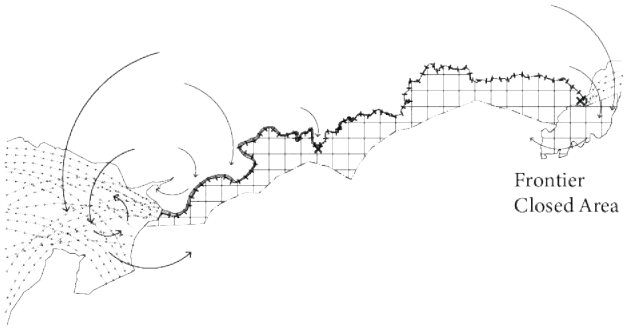


PHASE II: The establishment of PRC
Consolidated border v. infrastructural integration

1949, People's Republic of China was established

1951, Forntier Closed Areas (FCA) was established. A simple chain link wire fence was built but it could be easily crossed

1950s, East River Shenzhen Waterworks Project was implemented. It helped stablise Hong Kong living condition while putting huge burden on mainland workers



Flee to Hong Kong tide
Tidal flow v. human flow

1950-70s, 2-2.5 million people escaped from mainland to Hong Kong seeking for refuge, while inumerable died during the trip

1962, colonial authority started to arrest and repatriate illegal immigrants. FCA was formally consolidated and under strict control

PHASE III: China's Opening-up
Selective regulation

1978, China implemented Opening-up policy

Shenzhen was designated as a Special Economic Zones (SEZ)

1995, Stage I of Shenzhen River Regulation Project started.

PHASE IV: Post-handover
Heightened control and intense exchange

1997, Hong Kong was returned to China

2006, FCA was reduced from 28 to 8 square kilometres

2015, China tightened the border against Shenzhen residents. limiting visiting rights from unlimited to once weekly.

PHASE V: Integration
Dissolving border

2047, "one country, two systems" policy may end

2017, Hong Kong and Shenzhen agreed on jointly developing the technology park at Lok Ma Chau Loop.

2050, with medium emission scenario, global sea level rise is projected to be 0.18-0.35 meters.

2020, China approves national security law for Hong Kong

4. LITERATURE REVIEW AND PRECEDENTS

The frontier area of Hong Kong, mostly composed of agricultural landscape, has not received much attention except some particular periods. In 2012, authorities' vision of Lok Ma Chau Loop as Hong Kong-Shenzhen Innovation and Technology Park raised controversy in Hong Kong society, which has persisted for years. Numerous media outlets reported on the disputes and elaborated on the history of the border to provide citizens with background knowledge of the border, such as Standnews and Alternative HK. Initium Media also published an in-depth article about the "disappearing border." With numerous interviews with villagers living close to the border, the article provides narratives of the history of Shenzhen River and the changing imageries experienced by the locals.

Most precedent projects related to Shenzhen River region focus on its function as a legislative border, or as an abstract site of conflict and exchange between Hong Kong SAR and Mainland China on the macro level, with limited depths on the ecology and materiality of the river itself. For example, Border Ecologies (2017) by Joshua Bolchover and Peter Hasdall presents extensive research on the Frontier Closed Area (FCA) of Hong Kong. The project studies FCA as a synthetic ecology composed of complex human and environmental systems, taking into consideration the macro flows and dynamics of the border region, and studying the micro ecologies to produce a dynamic planning model. The project positions six tactical scenarios and their corresponding micro-ecologies along the border: Enclaves and Codependency, Inbetweeners, Interstitial Infrastructure, Scarred Landscape, Invisible Exchange, and Village Alliances.

Border Ecologies provides an in-depth analysis of flows and tensions on Hong Kong-Shenzhen border. The framework invented by Border Ecologies is effective in categorizing the space into different zones and applying distinctive approaches respectively. However, the partition of space trivializes the continuous flows throughout the frontier area and sometimes arbitrarily frames prevalent phenomenon within a rigid spatial boundary. Furthermore, the analysis of the project focuses mainly on land uses and development, without paying much attention to the ecology and hydrology of the river. While some of the tactics take into consideration the estuary system and aquaculture on the east and west edge of FCA, Shenzhen River is solely considered as an infrastructure for discharge, passively affected by the activities on the land. It is implied that, through river regulation and training, Shenzhen River has lost its ecological value and meaning, and has been abstracted as the border line of the planning study. The limit of the extensive framework provides space for this research thesis.

In recent years, as Hong Kong significantly reduced the size of FCA in 2012, many design competitions and proposals have been raised about the development of frontier areas on both sides. In 2015, Arup, appointed by HKSAR Planning Department and Municipality of Shenzhen, conducted a comprehensive planning and preliminary design study of Lok Ma Chau Loop and adjoining area. The plan envisions the area with higher education as the leading land use and divides the site into five zones: education zone, innovation zone, interaction zone, ecological zone, and riverside promenade zone (Planning Department and Civil Engineering and Development Department, 2015). In 2019, in accordance with the development plan of Lok Ma Chau Loop, the Municipality of Shenzhen opened a design competition for the reconstruction project of Huanggang Port, which is the border control point connected to Lok Ma Chau Loop (Housing and Construction Bureau of Shenzhen, 2019).

Some look further and envision the frontier area after the dissolution of the border, including Border Ecologies mentioned above. Another example is 2047 HKSZ Metropolis, The Forbidden Zone from a Space of Separation to a Central Ecological Eden (2013) by UABB, which envisions the frontier area as an ecological park with commercial and education center, and sustainable energy center etc. (doffice, UABB, 2013).

Many environmental studies are confined with the administrative border and focus on solely either Hong Kong side or Shenzhen side, lacking a transboundary perspective. Border rivers are often missing from such environmental discussion, as its administrative functions overwhelm its ecological ones. For example, the study by Jie Wu from Shenzhen University looks at the evolution of Shenzhen's river system under the rapid urban development, with little mention to the border river and the connection across border (Wu, 2017). On the other hand, Yuk Kam Choi and Cho Nam Ng's study uses river catchment as a landscape scale to understand the ecosystem. The study interrogates land use change within the watershed and its environmental impacts across the boundary (Choi & Ng, 2017), which provides inspiration for analysis of landscape context in this project.

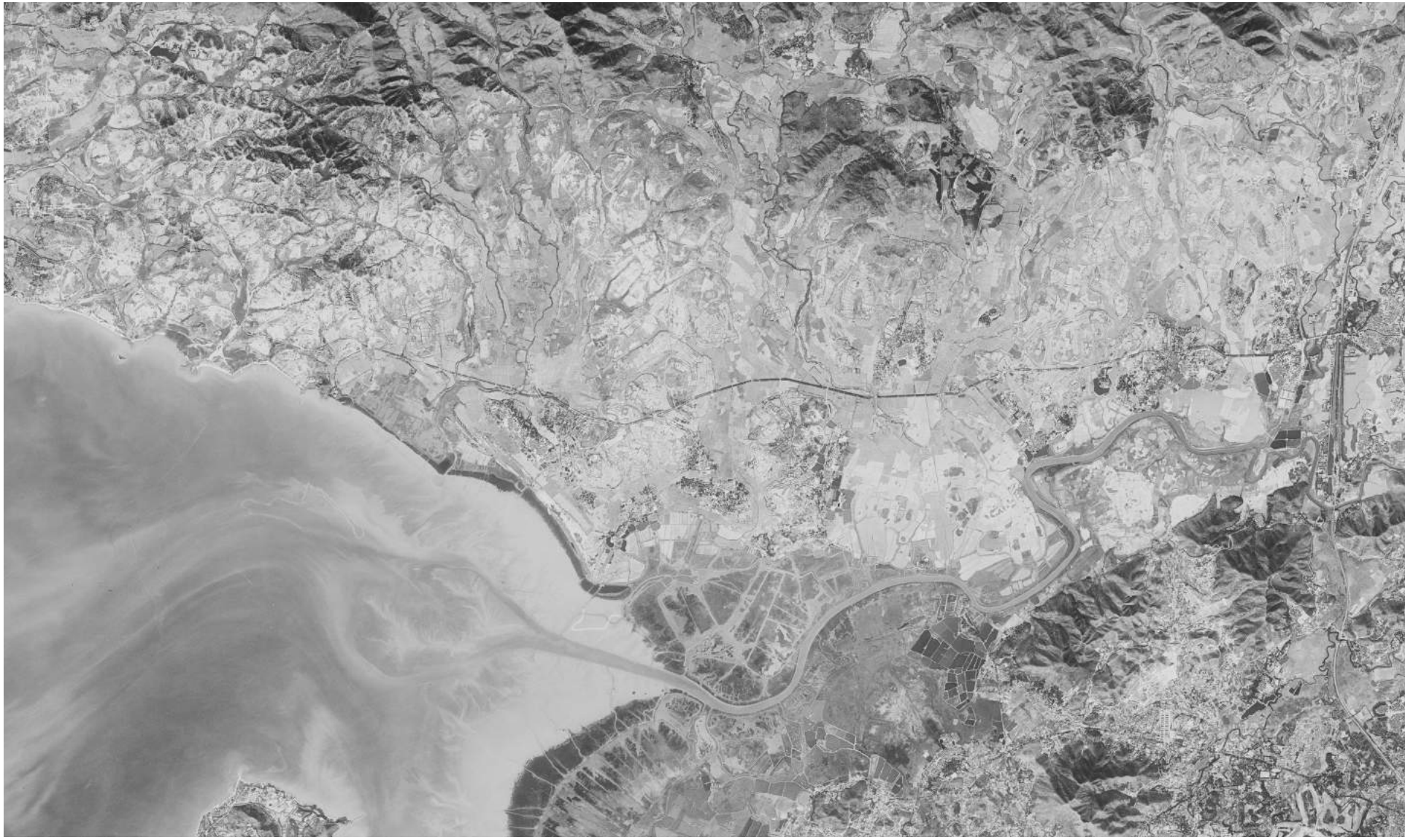
5. SITE VISIT

From January 4th, 2020 to January 10th, 2020, I briefly stayed in Hong Kong and paid several visits to the frontier area. During my trip, I stayed near Sheung Shui (上水), the town closest to Lo Wu and Lok Ma Chau, two major points of cross-border transit. My itinerary included Sheung Shui, Lo Wu Station, Lok Ma Chau Station, Lok Ma Chau Lookout Park, and Yunongcun (渔农村) near Lok Ma Chau Loop. I crossed the border through Lok Ma Chau custom check point. (For detailed itinerary, see appendix.)

The short-term site visit has provided me with initial perception of the spatial qualities at the border. Living near the frontier area of Hong Kong, I sometimes could see the evasive lights from the other side flickering in the darkness of rural Hong Kong at night. It strikes me that although on aerial photos, the spatiality across border presents dramatic differences, for people who live on the border, the image of metropolitan Shenzhen and rural Hong Kong constantly overlaps with each other.

As I spent large amount of time at Sheung Shui, I have also witnessed enormous flows of parallel traders and cross-border students, who are termed by Bolchover and Hasdell as "Inbetweeners," who negotiate and exploit the differences of two sides through daily movement (Bolchover, 2017). From my perception, the continuous trans-border flows evident at Sheung Shui has produced a space of double territories. The presence of mainland is spatialized here through the activities of "inbetweeners." Along the border, several spaces embody this duality.

SITE VISIT PHOTOS



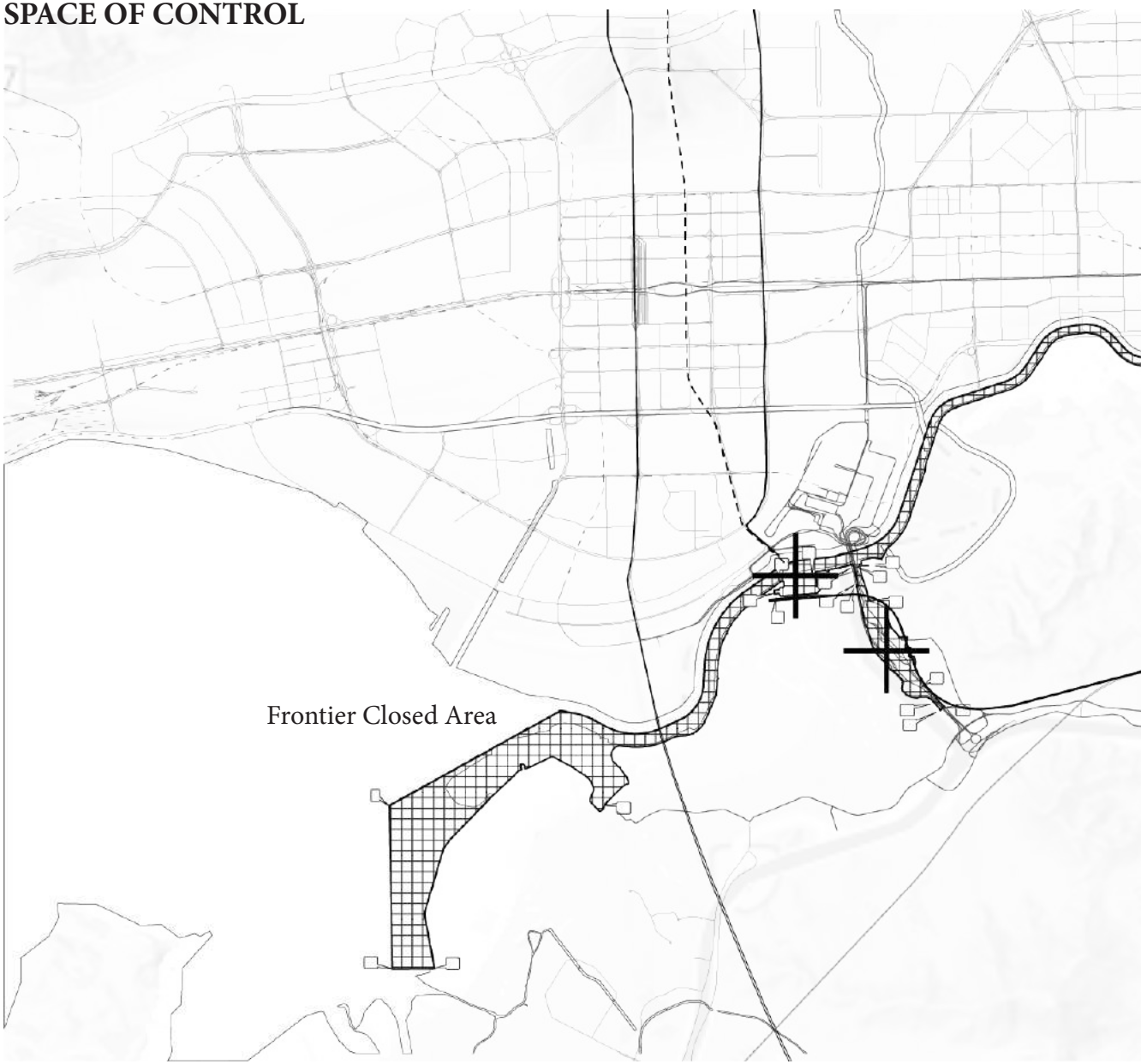
SHENZHEN RIVER AERIAL PHOTO (1970s) (Source: USGS EROS Archive)

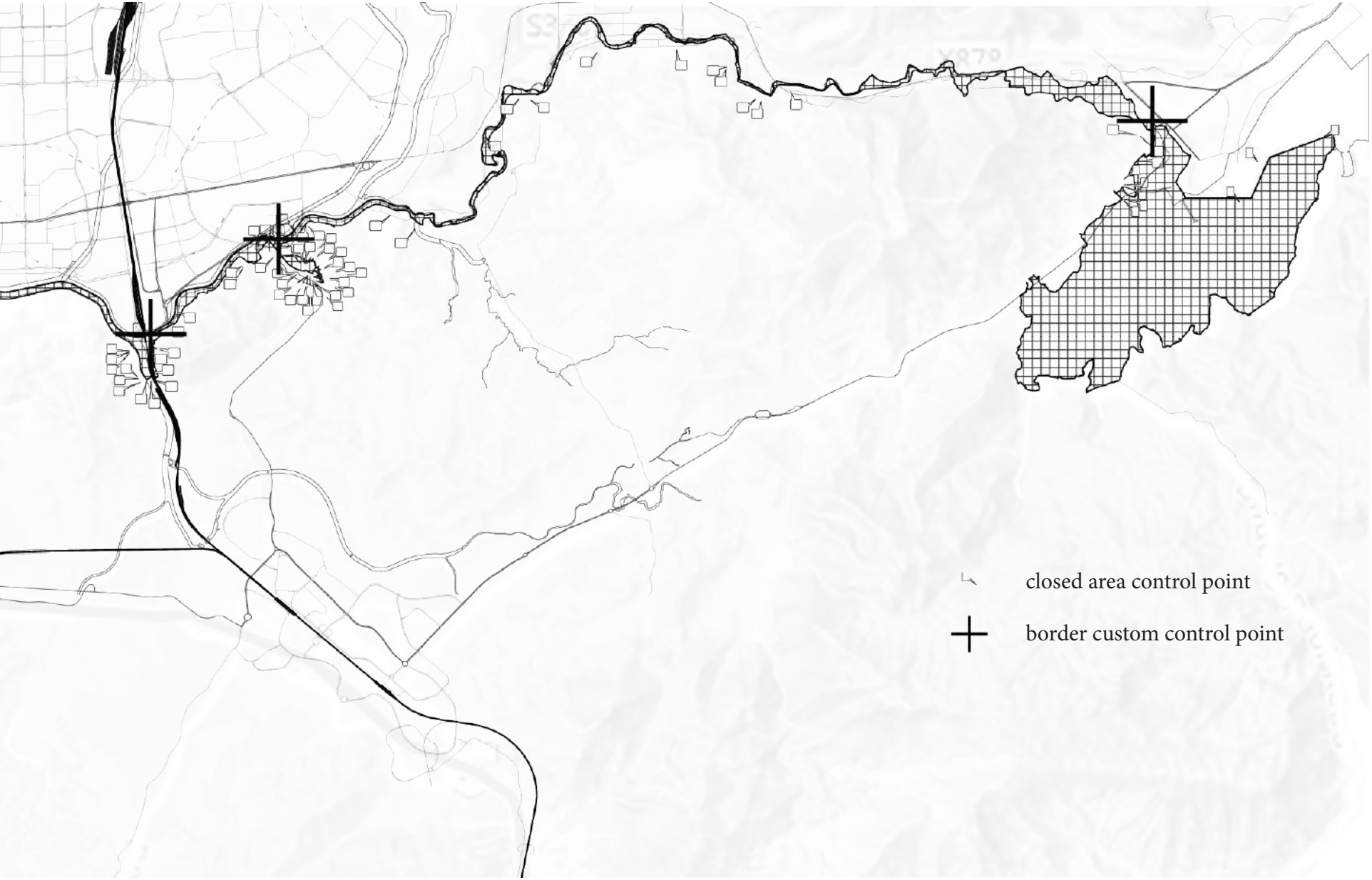
III. MAPPING - WATER AS TERRITORY

SPACE OF CONTROL

Shenzhen River, as a legislative border, is a space saturated with hyper control. When talking to several natives from Shenzhen, I learned that residents would not approach the river because the waterfront is occupied with border crossing points and customs control facilities. The river was highly polluted due to the urban development and had a bad reputation for awful smells. Although water quality has been improved by the river regulation project, the river has been absent from the public life of the city.

However, to understand the river as a territory, it's important to realize that the river exists beyond the boundary defined by the riverbank. The river is a living process that constantly shapes ecological and social systems. It is also transformed by ever changing mechanisms of human management and climate. The overlay of Shenzhen River system with its historical

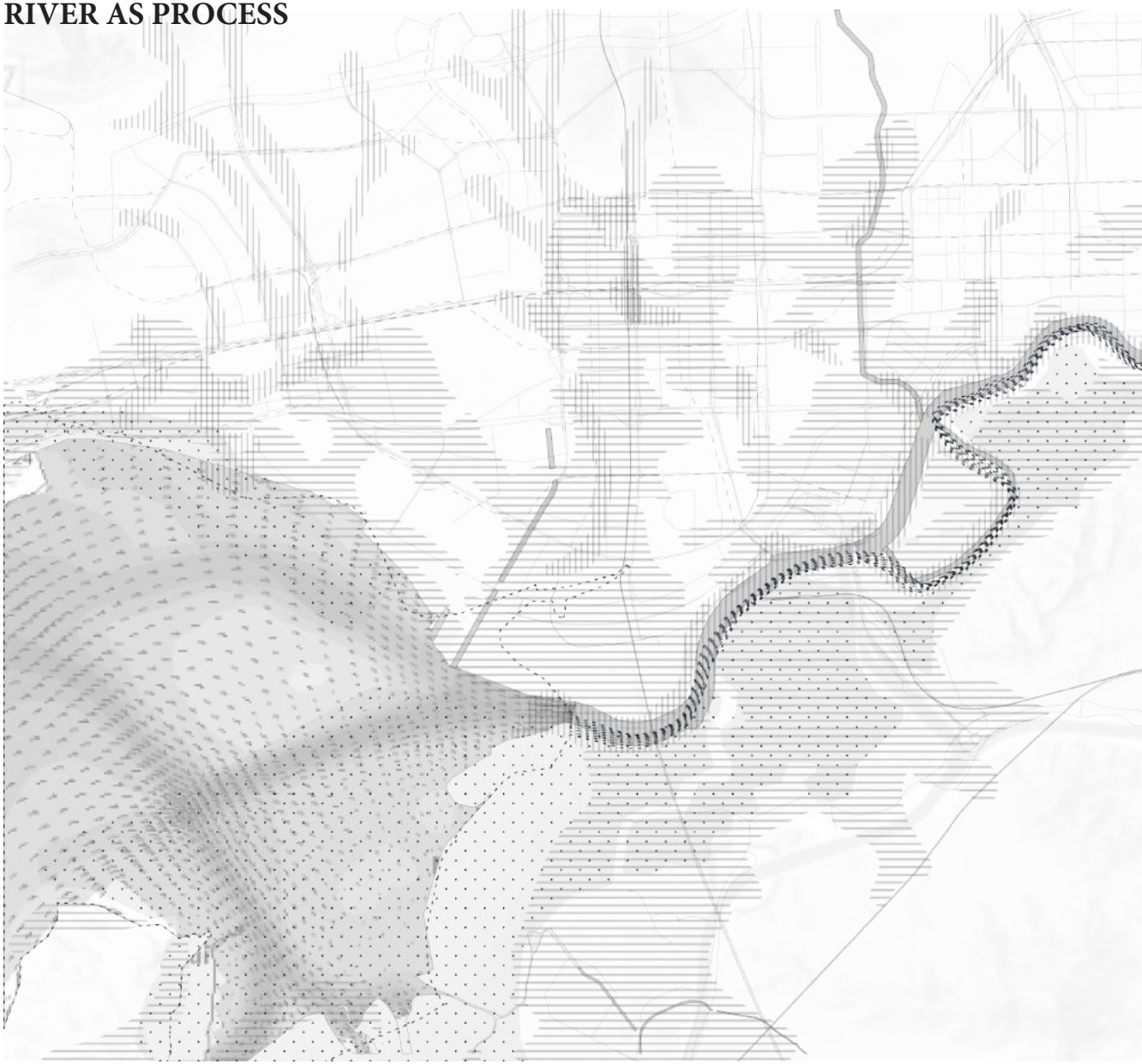


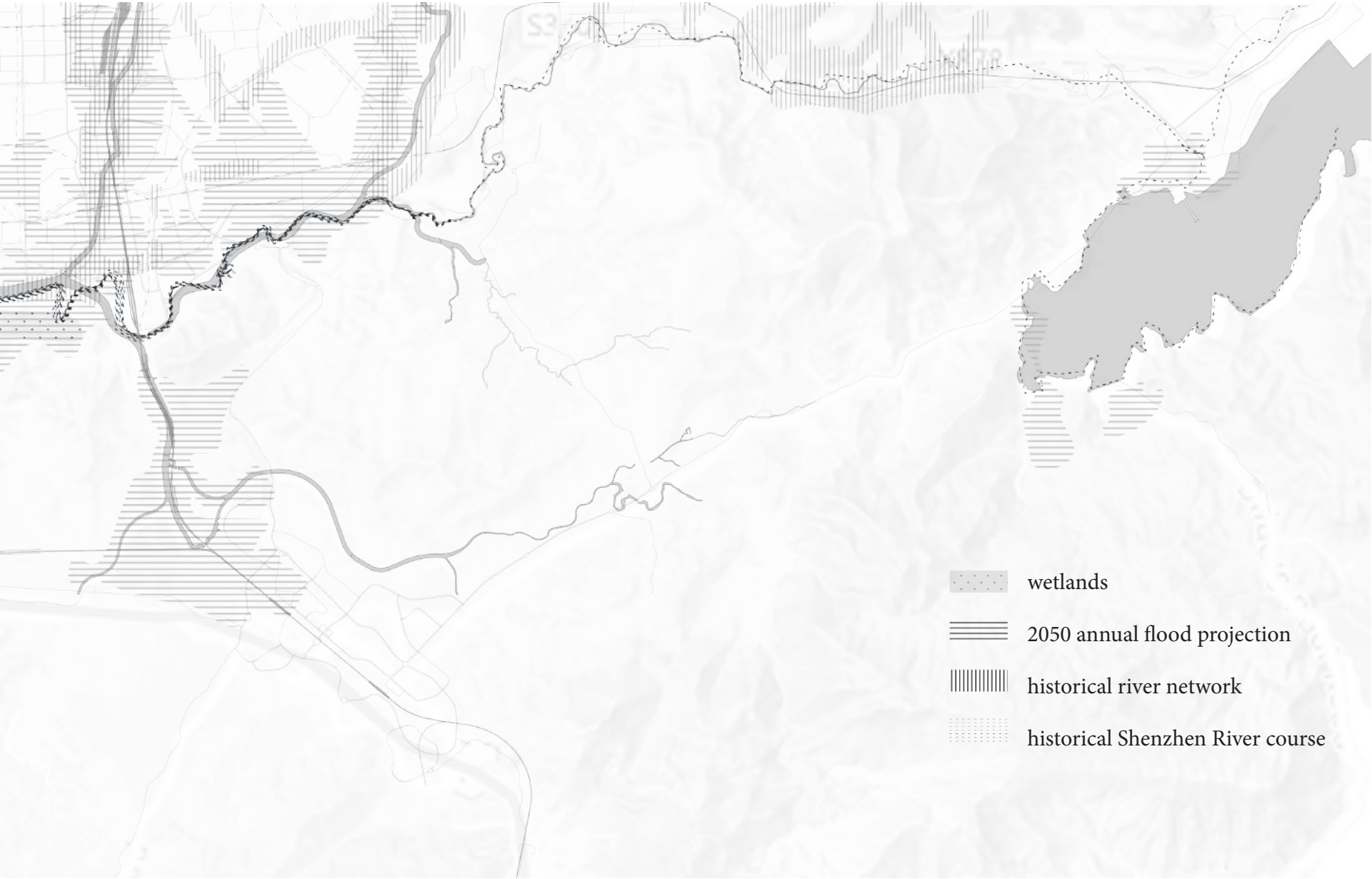

closed area control point
border custom control point

RIVER AS PROCESS

river course before river training, existing wetlands, and areas of annual flood in 2050 illustrates the river as a process. The river regulation project changed the depth of river from 1-3m to 4.5-5.5m, and significantly impacted the hydraulics of the river. Based on Chan and Lee's study, the river training reduced the tidal velocity by 50%. The bottom upstream residual current in the two-layered residual circulation strongly suggests the input of sediment from Deep Bay and sediment trapping in the river. (Chan & Lee, 2010).

The boundary of the river as a territory exists beyond the interface of water bodies and land. The lands within the watershed are integrated in the intricate system of the river, with continuous direct material exchanges with the river. Shenzhen River is approximately 37 km long, with a catchment area of about 730 km2. Of its

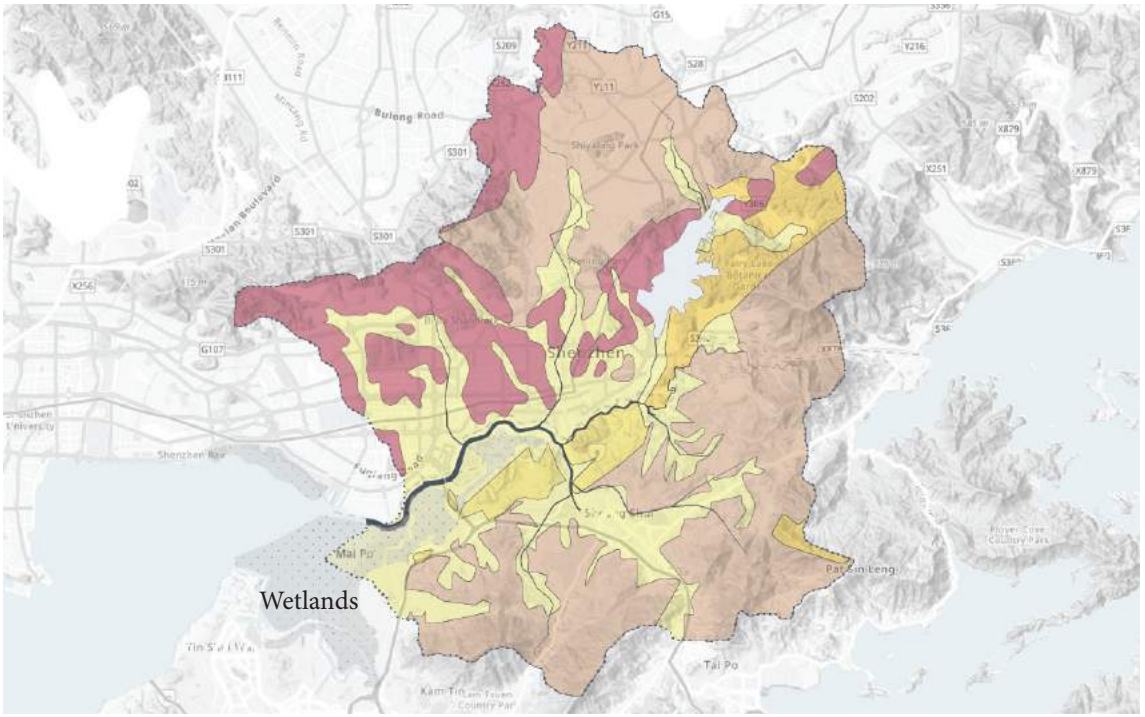



wetlands
2050 annual flood projection
historical river network
historical Shenzhen River course

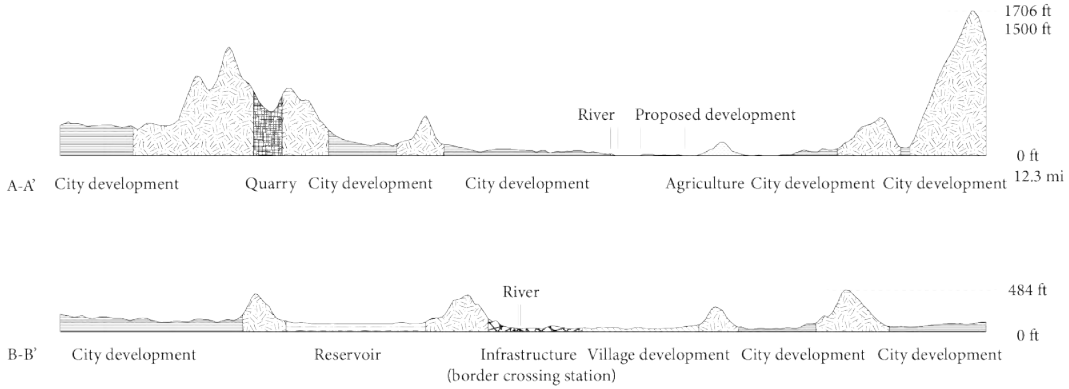
GEOLOGY MAP

catchment area, 43% lies in Hong Kong, and 57% lies in Shenzhen (Choi & Ng, 2017). Although areas beyond watershed have indirect relationships with the river, Shenzhen River watershed is used as the primary study area for analysis.

Shenzhen River catchment has a relatively rich geological composition, which is reflected in the dramatic differences in elevation. Resistant tuffs underlie the higher mountains. A band of metaphoric rock forms a series of low hills on the southern side of the river. Granitic rock forms the lower, rounded hills in the northern side of the river. Most areas adjacent to the river are largely composed of modern silt and sand. These areas are formed by sediments laid down by the river. The processes of stream incision, terrace formation, channel meandering and levee development add dynamics to the landform of floodplains (Owen &



WATERSHED TRANSECT STUDY



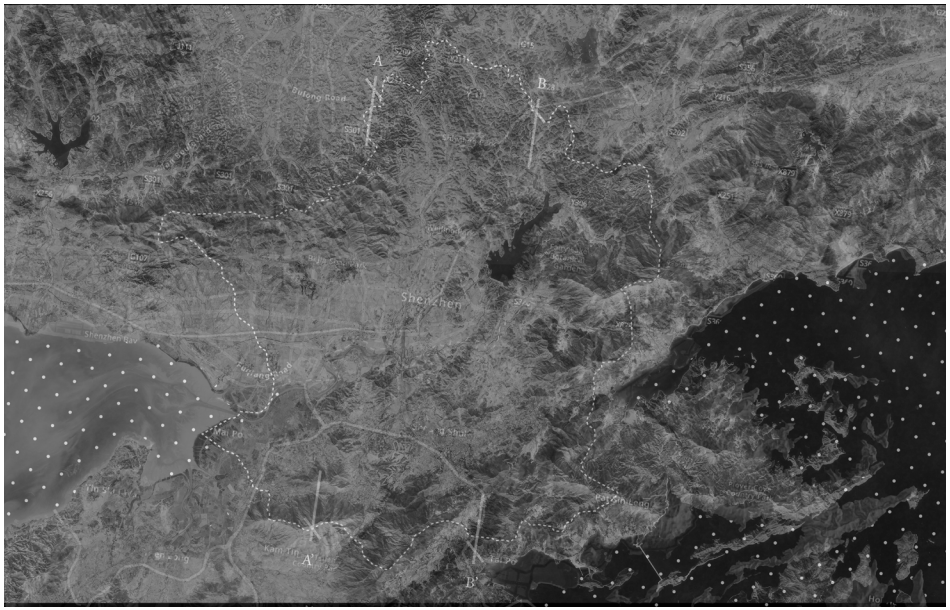
Shaw, 2007).

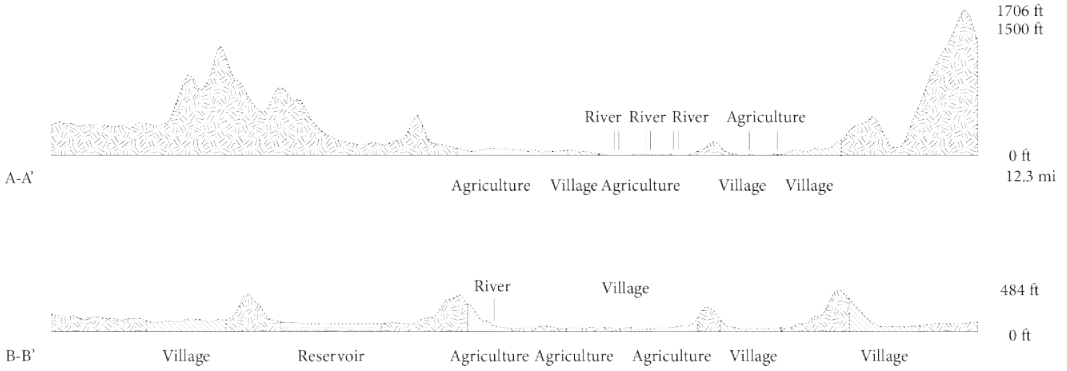
Extensive wetlands occur at Mai Po along the northwest coast. The area is designated as Mai Po Nature Reserve and one of the most important mangroves along the coast of China. The extensive wetlands are formed through the process of progradation and land reclamation for agricultural uses.

To understand the relationship between the river system and the communities on both sides, historical productive landscapes are mapped. The productive landscapes were mainly composed of three forms: fish ponds, gei wai and rice fields, which would be specifically examined in the fourth part of the project. Before the development of Shenzhen SEZ in 1980s, these landscapes were the main life source for the residents on both sides. Due to the productive mode, villages in

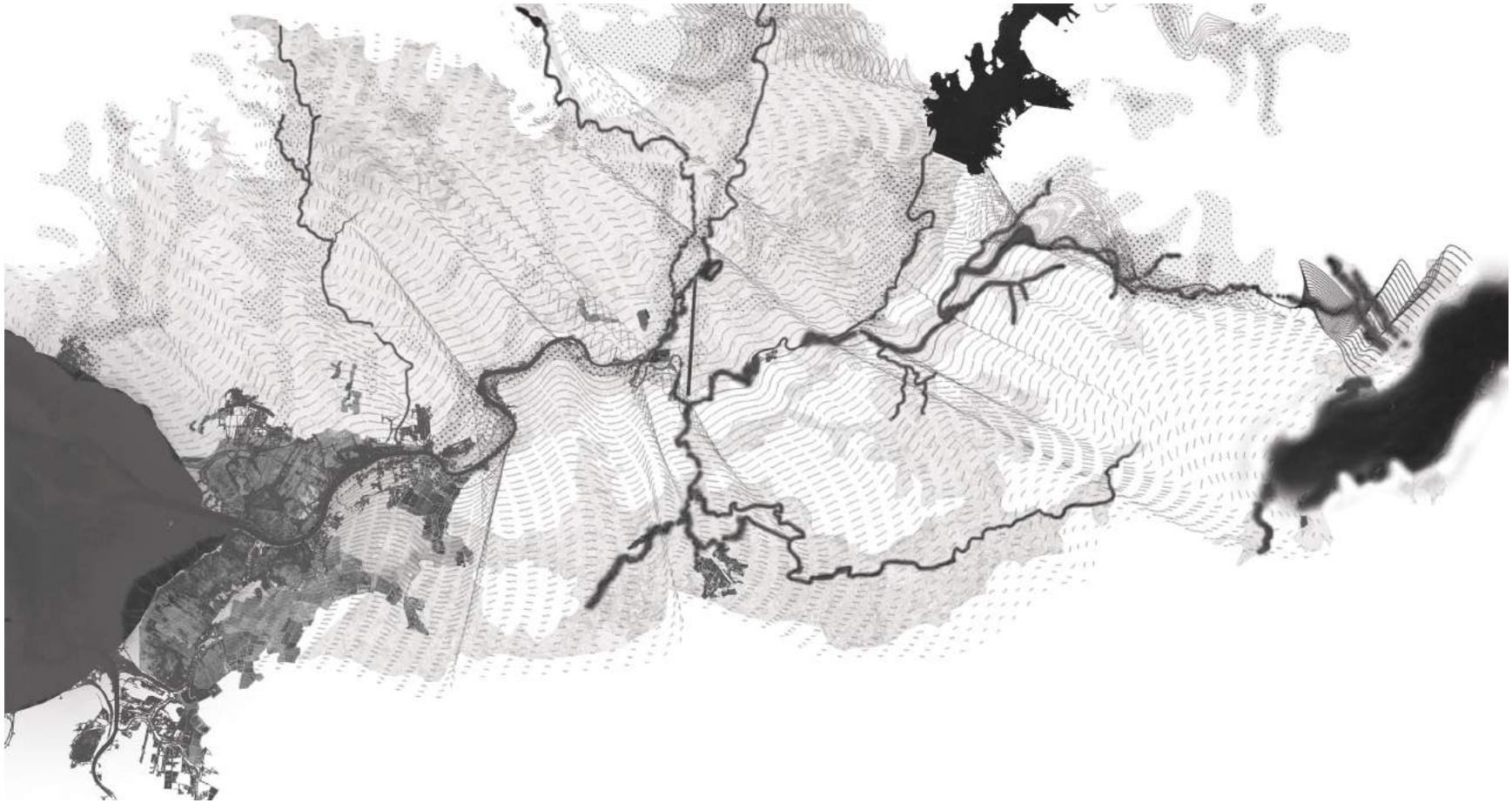
HISTORICAL TRANSECT STUDY

today's Shenzhen and Hong Kong were mostly located adjacent to the streams, and had close relationships with water (Wu, 2017). Therefore, the river system was inseparable from the community historically, and had defined the united territory.





HISTORICAL RIVER SYSTEM



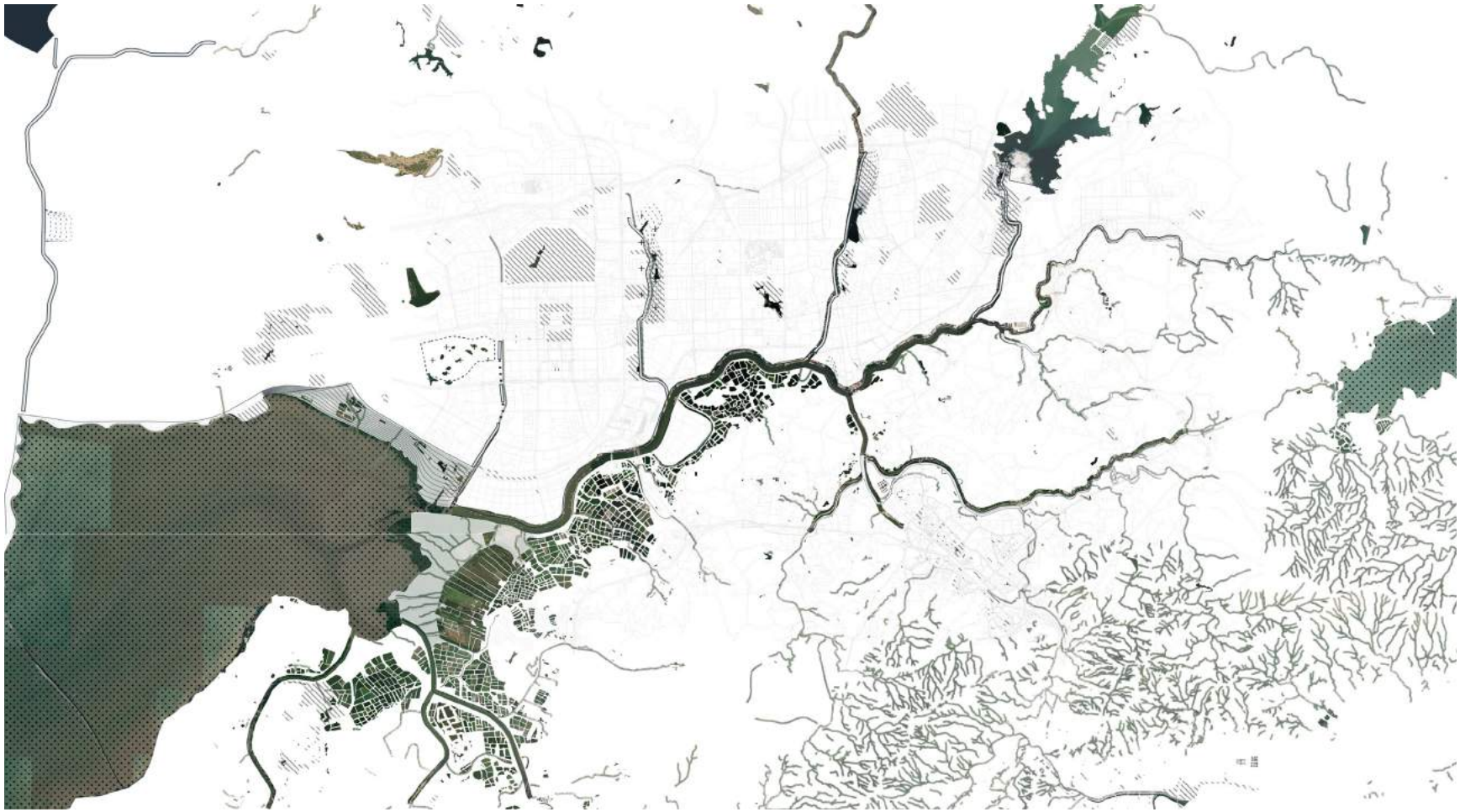
Today, the river system has been drastically transformed. While vast areas of fish ponds and gei wai have remained on the Hong Kong side, rice fields have diminished. In Shenzhen, many rivers have been trimmed or filled, leaving a fragmented waterscape. Although the river system was historically significant to the village dwellers, it has been largely absent from public life after urban development. A resident in Shenzhen has revealed to me that there is not much attractive waterfront landscape for the public in the city, except the linear park along Deep Bay.

The transformation of waterscape has been dominated by the development of Shenzhen. The masterplan of Shenzhen SEZ of 1986 defined a “belt-cluster” development pattern, which left five ecological corridors between the development clusters. The five ecological

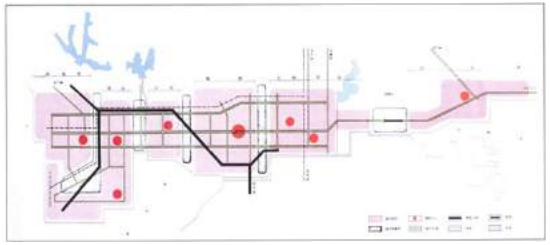
historical gei wai

historical fish ponds

PRESENT RIVER SYSTEM



corridors were determined by the five major river courses. On the one hand, streams outside the corridors were often neglected, cut or culverted. On the other hand, the green areas within the designated corridors have been sometimes privatized or invaded by development, leaving the public with little access to the river system (Wu, 2017). The stemmed and fragmented river system has been largely disconnected from the urban fabric.



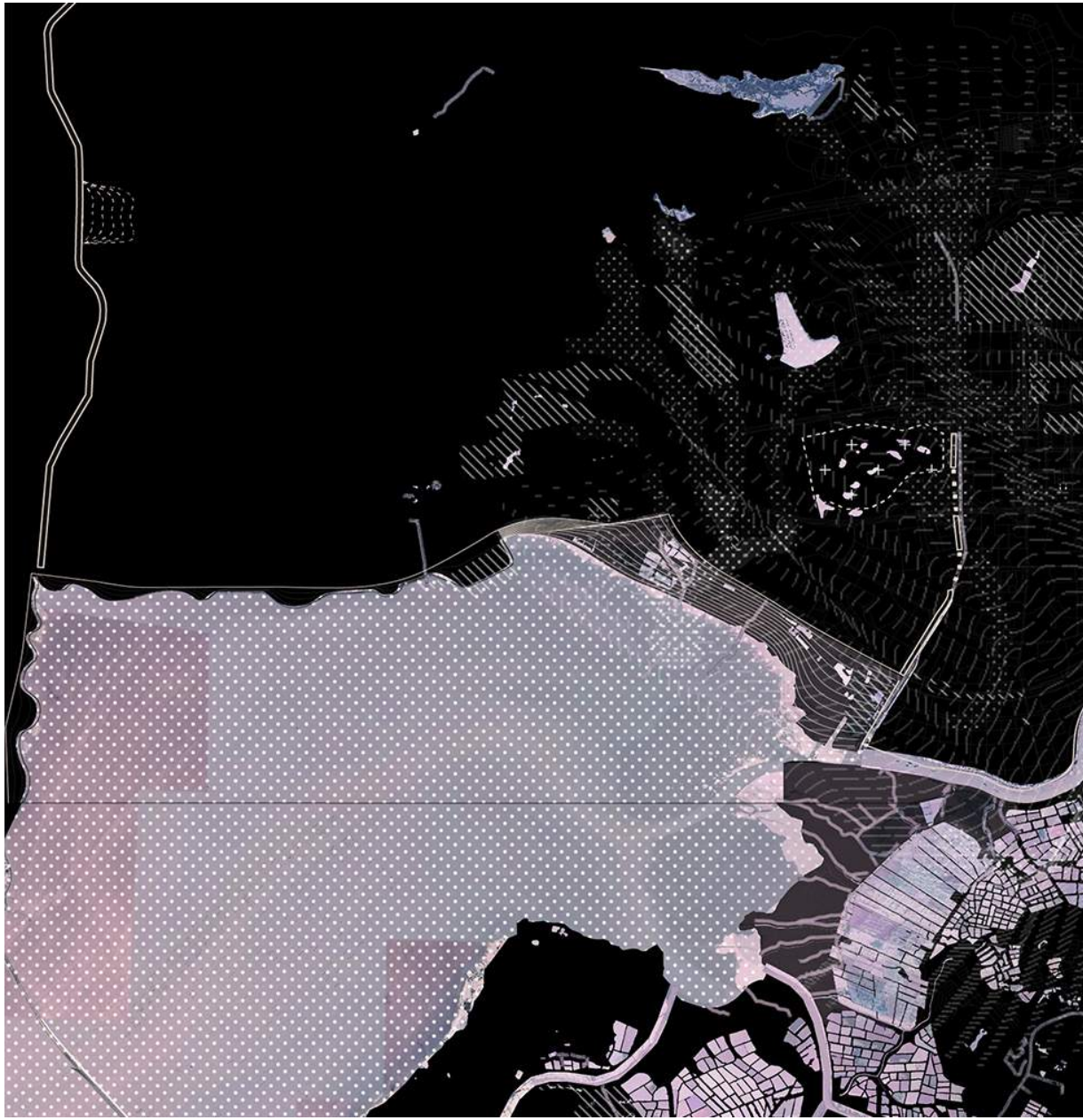
(Above) “Belt-cluster” development masterplan. Five ecological corridors were designated in accordance with the major river courses (source: China Academy of Urban Planning and Design).

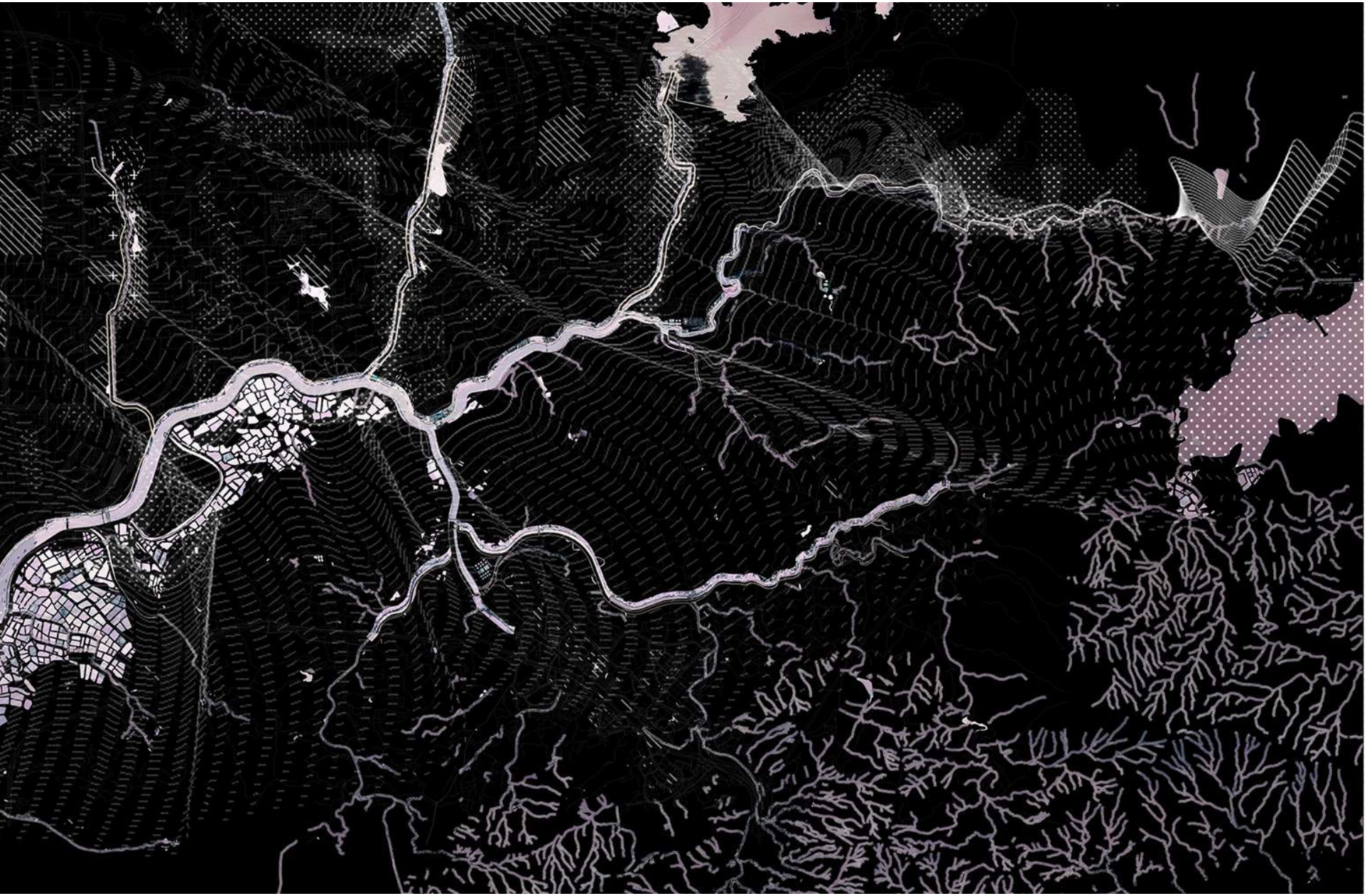
(Left) Evolution of river network in Shenzhen city center (source: Wu, edited by me)

PRESENT RIVER SYSTEM, CONNECTION WITH SHENZHEN'S URBAN SPACE

RIVER AS TERRITORY

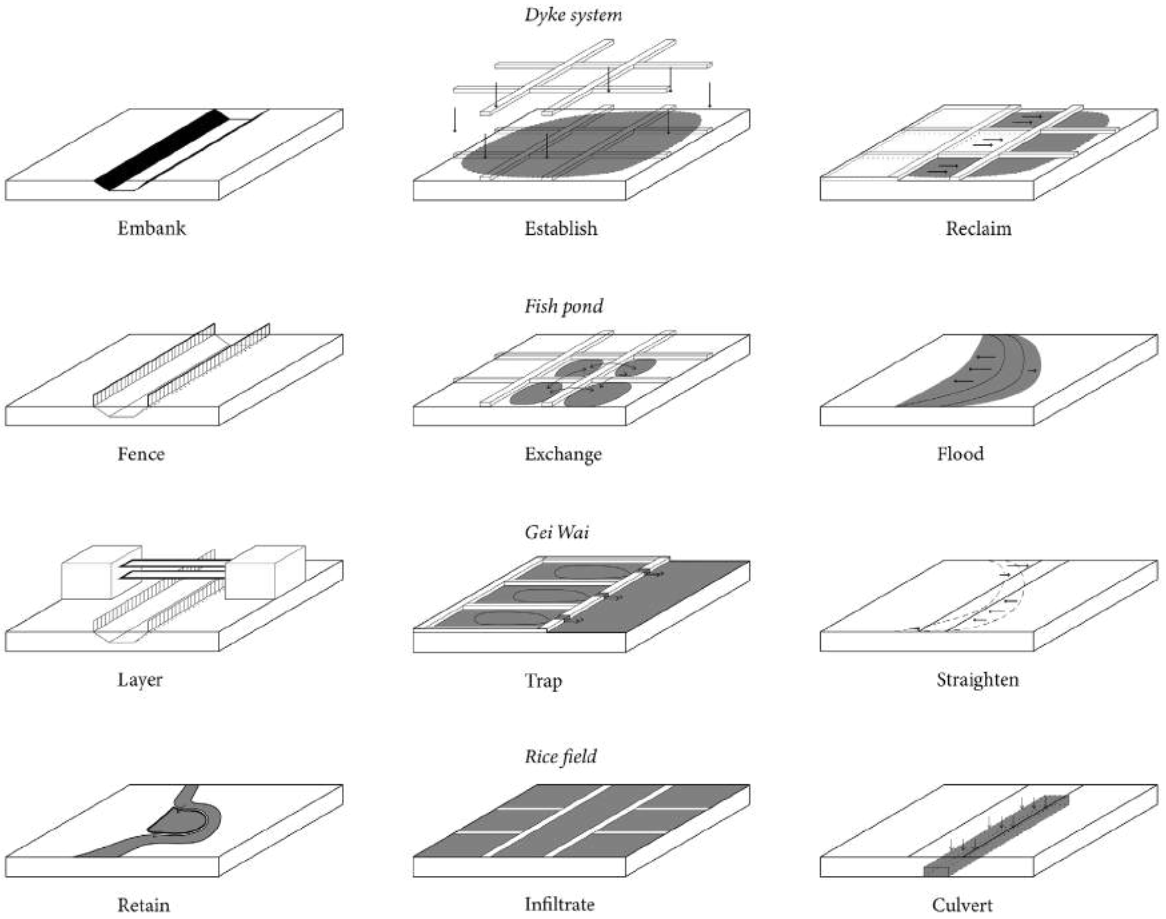
The overlay of trace of historical system and today's remained waterscape illustrates the dynamic change of the system. It registers the river as a territory not restricted within the boundaries where water meets land at present, and signifies revealed potential for the future.





IV. SPECULATIONS - CELEBRATE THIRD SPACE

FLUIDITY MANAGEMENT TYPOLOGY



Separation Co-existence Taking-over

The design investigation starts by examining existing fluidity management practices in the region. I have chosen twelve typical methods and categorized them by the boundary they mark between land and water. The first type is **separation**, which includes practices that enforce clear partition between land and water, such as flood control. Doing so also creates absolute spatial separation between two legislative territories, and strictly separates human activities from water. The second type is **co-existence**, where the boundary between land and water is blurred. Land and water occupy the space based on seasonal variation or agricultural productive cycle. Water, land form and human activities dynamically influence and shape each other. The third one is **taking-over**, where water or land-based human activities completely occupy the space, making the other visually disappear.

Follows are close examinations of each methodology in the region. The investigations aim to deliver an understanding of how the existing relationship between land and water is established, and to provide inspiration for designing space for a new relationship.

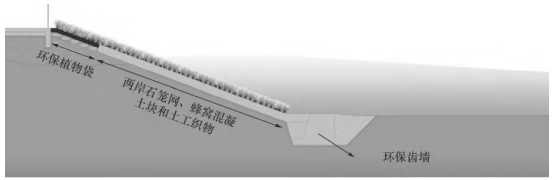
1.a. Embank
In Hong Kong and Shenzhen, many natural river courses were transformed into embanked channels. Traditionally called nullah, the open, usually concrete-lined channel is designed to allow rapid drainage of storm precipitation or industrial wastewater from high ground, to prevent flooding of urbanized coastal areas. The Shenzhen River regulation project also took a similar approach for flood management. However, many consider such constructions address flooding problems only from an engineering perspective and undermines the ecological values of a stream and river (Green Lantau Association).

1.b. Fence
Fences are installed along the border to prevent access to the river.

1.c. Layer
The border control points from both sides are usually connected through bridge. At Lok Ma Chau station, travelers from Hong Kong take the lower deck to Mainland while travelers in the opposite directions taking the upper deck. Staying or procrastinating on the bridge is prohibited. Thereby the circulation is controlled through layering. Human access to the river is completely eliminated.

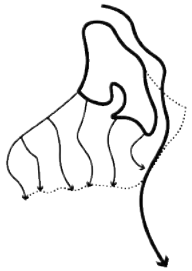
1.d. Retain
The fourth stage of the Shenzhen

Common nullah in Hong Kong (source: Bladezcafo).

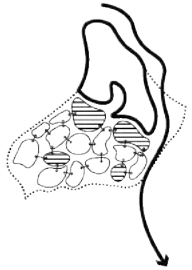


River bank section of Shenzhen River regulation project (source: Lan, Lu & Huang).

The two-story pedestrian bridge at Lok Ma Chau Station and view on the bridge.



stream and tidal dynamics



dyke and pond formation

The formation of fish ponds (source: Bolchover & Hasdell, edited by me).

River Regulation Project includes the construction of a flood retention pool. By retaining water in the designated area after intense precipitation, the practice helps regulate fluidity.

2.a. Establish
Fish ponds are a historically significant typology in the region, and they became widespread in the Deep Bay area in the post-war period, due to an influx of immigrants from the Mainland. The fish ponds are created through regulating runoff from streams by the dyke system. The dykes also established a network of paths, bridges and infrastructures that remain today (Bolchover, Hasdell, 2017).

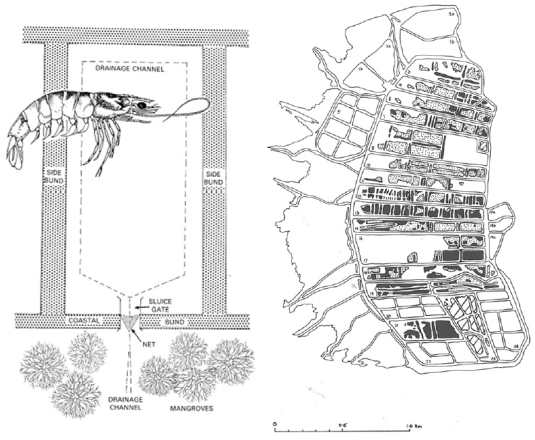
2.b. Exchange
Fish-pond farmers rely on adjacent pond farmers to moderate water levels. The fish-pond system constitutes synthetic landscapes.

2.c. Trap
Gei Wai is considered as an example of the successful co-existence of wildlife conservation and human activities. It is a type of traditional tidal shrimp pond constructed in coastal areas. The practice was first employed by immigrants from Mainland in 1940s. Gei Wai uses a sluice gate to control the inflow and outflow of water which sets water-level heights. By opening the sluice gate during high tide in autumn, young shrimp are flushed into the Gei wai from the adjacent bay. Thus the production of shrimp relies heavily on the natural productivity in the bay (WWF).

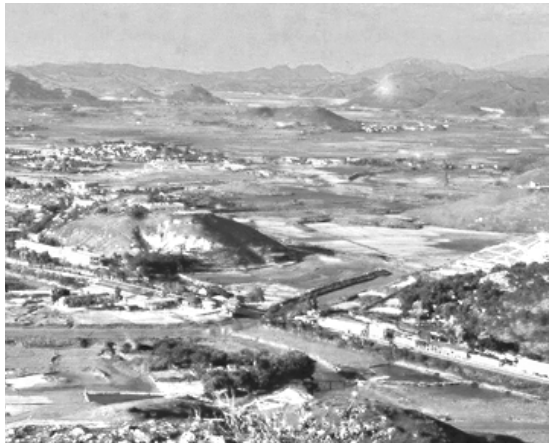
2.d. Infiltrate
Before urban development, the landscape of Shenzhen was dominated by rice fields. Like Gei Wai, the productivity of the rice fields depends on the rhythmic infiltration of the fields.

3.a. Reclaim
Traditionally, the dyke system is used as a framework for reclamation, to expand landholdings and territory. In recent times, maintaining fish ponds in Hong Kong has become less economically viable, owners either abandoned their ponds or look to sell them to real estate developers. Many ponds were filled to become storage units for cross-border trade.

3.b. Flood
Both Shenzhen and Hong Kong are vulnerable to flooding events. Extreme flood events sometimes put Shenzhen's central area into paralysis. The intensity and frequency of flood events are likely to increase due to climate change. The regulation project has straightened, widened and deepened the Shenzhen river, to increase its flood protection level



Gei Wai Configuration (source: Melville & Morton; Young).



The landscape of Shenzhen in 1980s (source: McLeod).

Aerial photo of the filled fish ponds as storage areas (aource: Baidu Map).

to a one-in-50-year return period.

3.c. Straighten
The straightening of the river course has changed what was land into water and vice versa. The legislative border also changed in accordance with the river centerline, which created some parcels with ambiguous ownership.

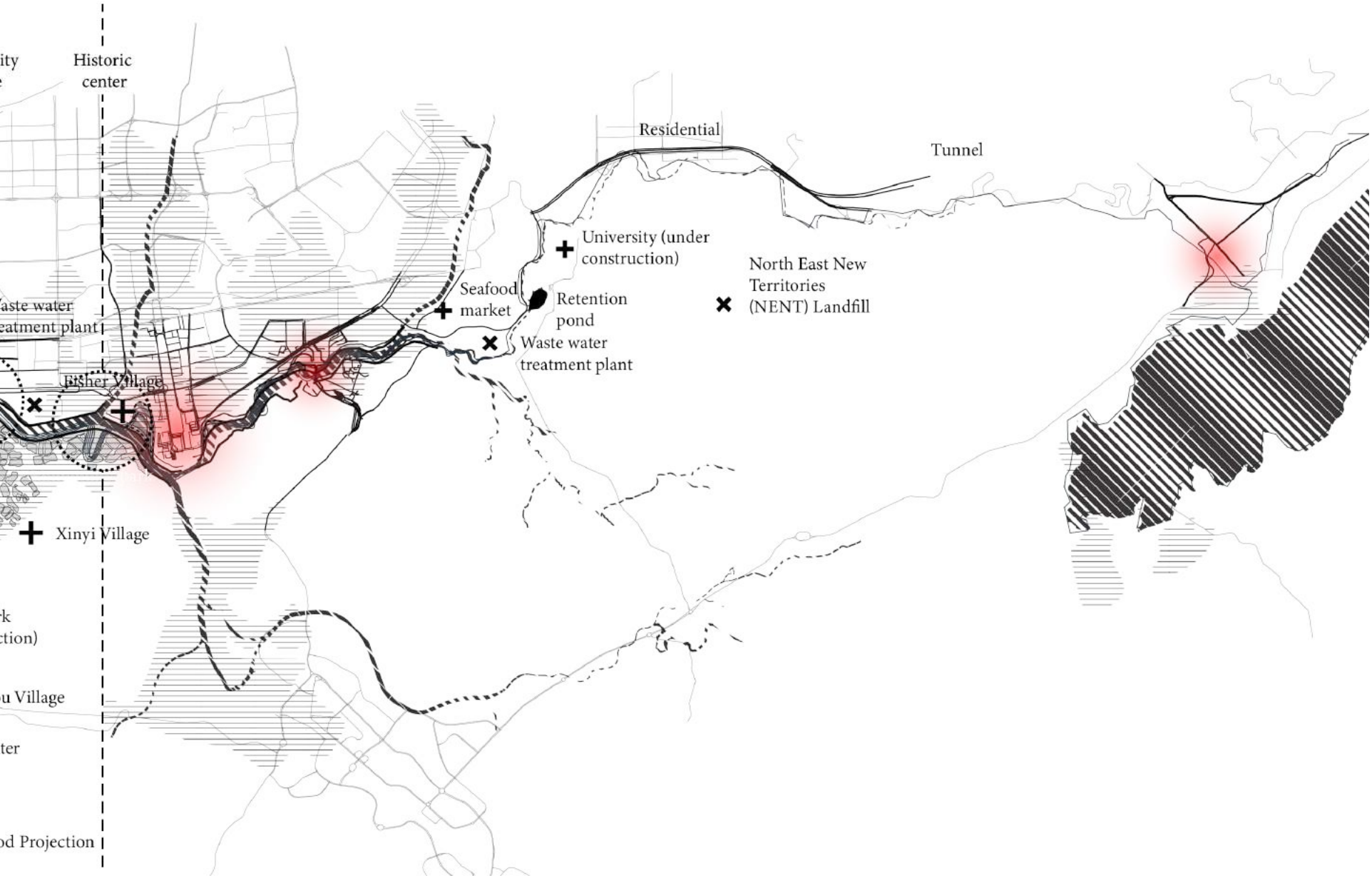
3.d. Culvert
Due to urban development pressure, many rivers in Shenzhen were turned into culverts, fragmenting the waterscape and causing water pollution.

The examination of the existing fluidity management inspires me to think about the presence of "third space." In Border Ecologies, Bolchover describes the two-story bridge at Lok Ma Chau station that, "as a transition space that is part of neither Hong Kong nor the Mainland, it can be conceptualized as a Third Space." He also defines Lok Ma Chau Loop, the land parcel transferred to Hong Kong as Third Space (Bolchover, 2017).

In the design investigation, Third Space is used to describe the place that exists beyond the dichotomy of Hong Kong and Mainland. It is also the space where the boundary between "land" and "water" becomes ambiguous. It is space of hybrid actors and contexts, evolving under changing conditions. Third Space is not confined by the boundary of land-based territory; it embodies the fluid narrative and is transient.

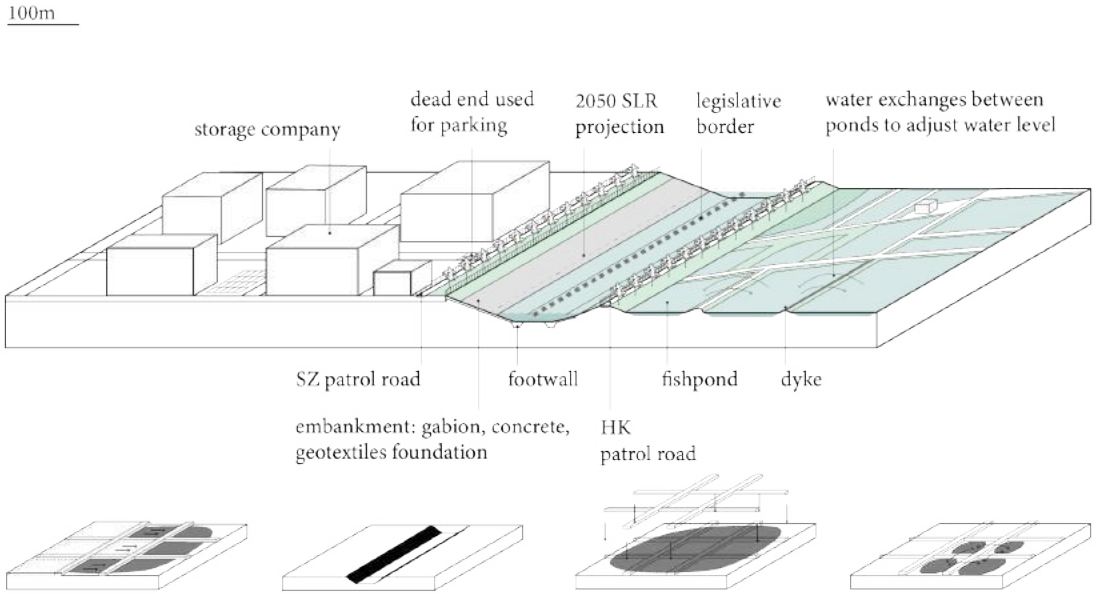
Based on the land use patterns, existing fluidity management and possible future transformation, four locations were chosen for design intervention. The first one is close to Deep Bay, and two important nature preserves of Hong Kong and Shenzhen. With the approaching future of sea level rising, the area will be under influence of marsh migration. The second one is at Lok Ma Chau Loop, where a joint technology park is under development on this transferred land. The third one is near Nanhua Village of Shenzhen, with densely populated residential areas on the Shenzhen side and active fish ponds on the Hong Kong side. The fourth one is near Lo Wu Station, the historical border crossing point, where river straightening also drastically changed the landscape.

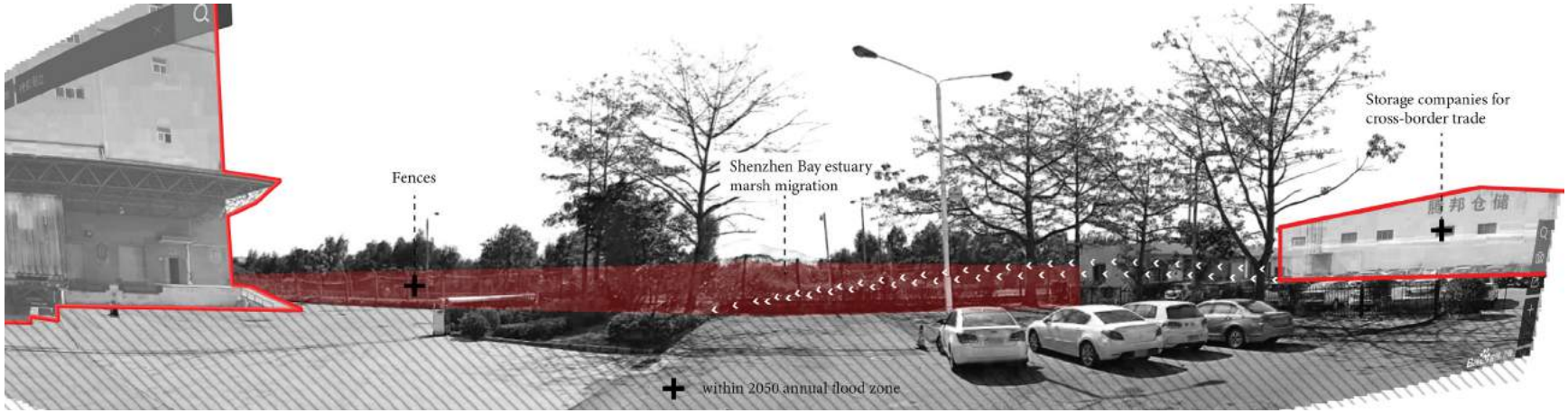
SPATIAL ANALYSIS

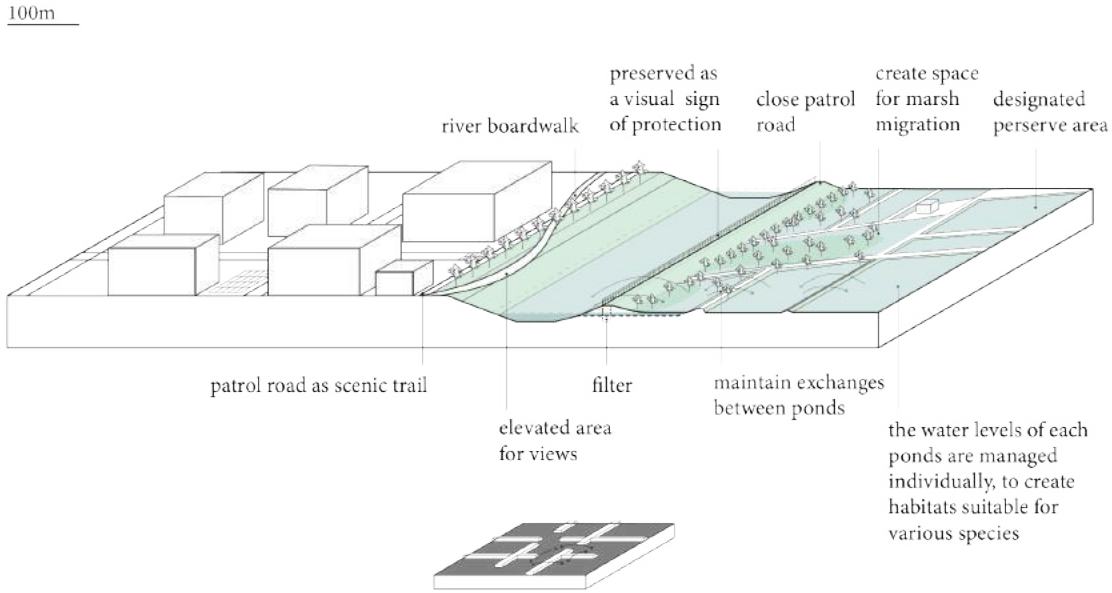

Historic
center
Residential
Tunnel
University (under
construction)
North East New
Territories
(NENT) Landfill
Seafood
market
Retention
pond
Waste water
treatment plant
Fisher Village
Xinyi Village

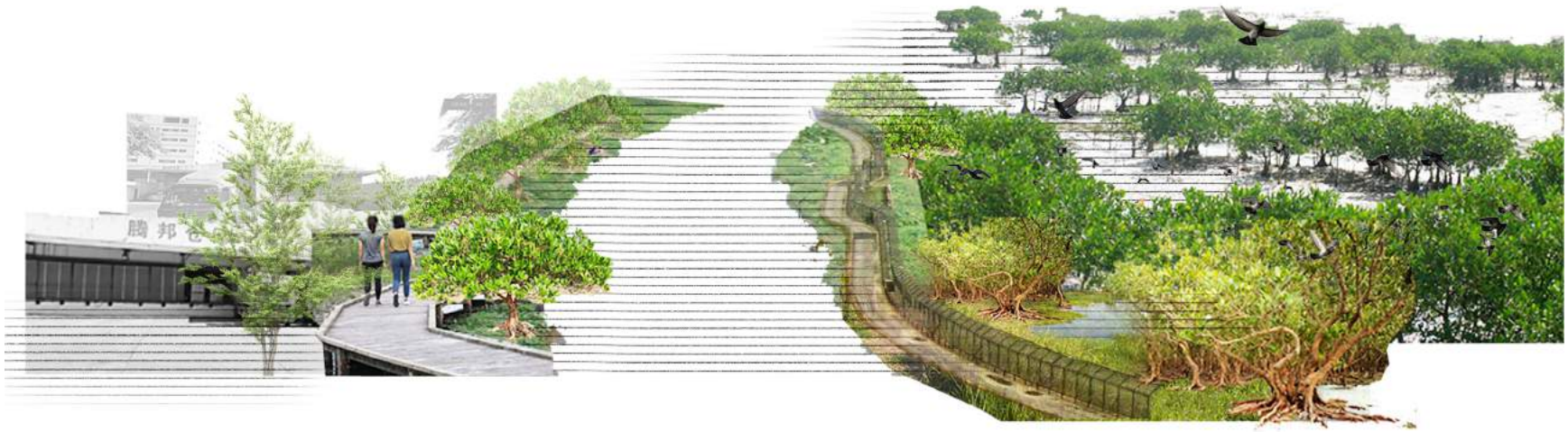
1. MARSH

As the sea level rise will push the brackish communities inland, the area is proposed to be an ecological park for marsh migration. Adjacent to Hongshulin Park of Shenzhen, and Mai Po Nature Reserve of Hong Kong, this location can be a site for collaborative preservation efforts. The existing fish pond forms can serve as a system of modular habitats that adapt to dynamic changes.



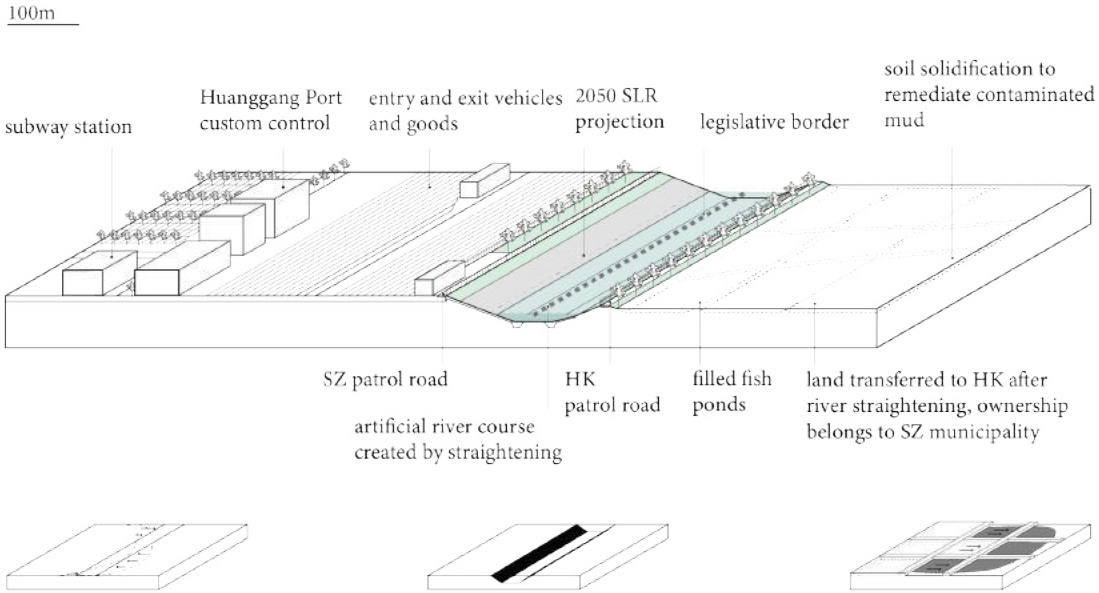


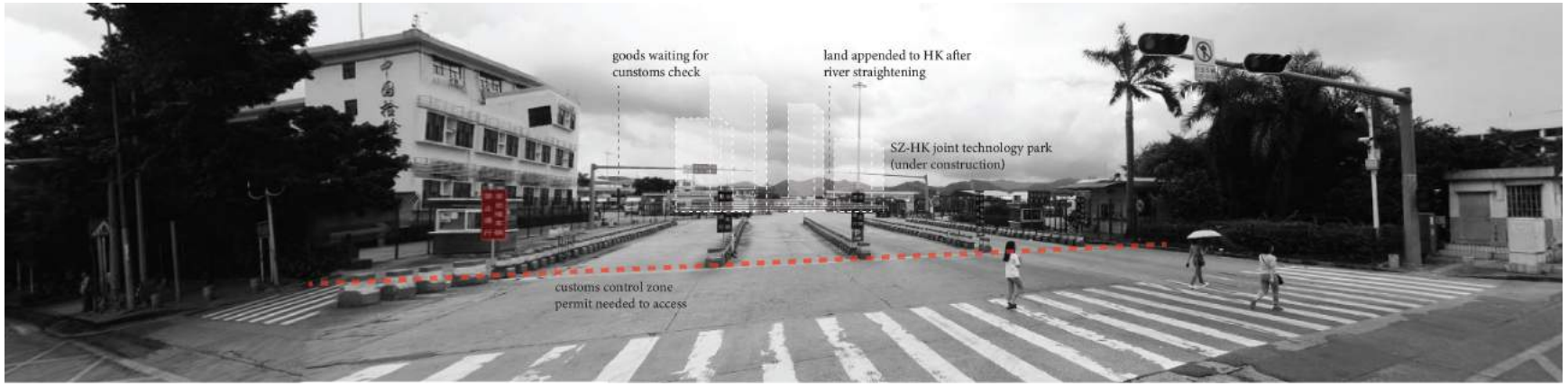

100m
river boardwalk
preserved as a visual sign of protection
close patrol road
create space for marsh migration
designated perserve area
patrol road as scenic trail
filter
maintain exchanges between ponds
elevated area for views
the water levels of each ponds are managed individually, to create habitats suitable for various species

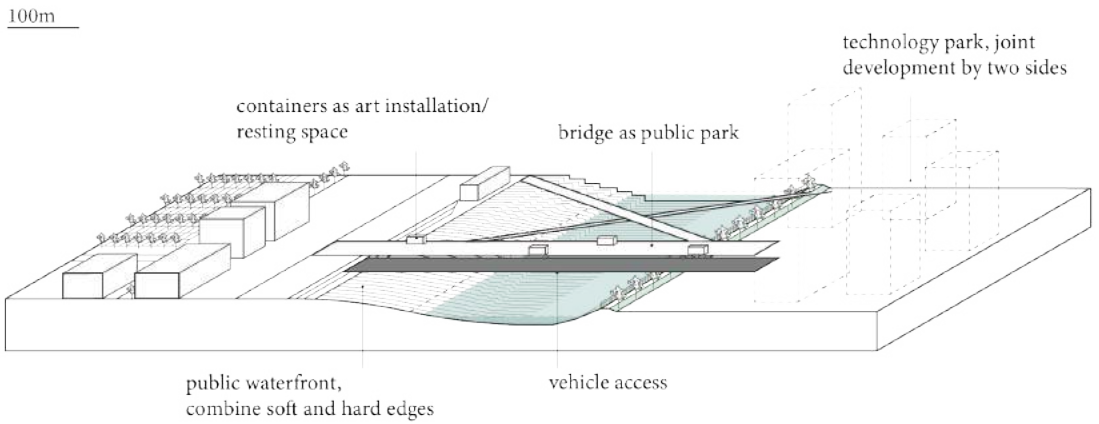


2. BRIDGE

Bridges at the border-crossing points are usually transitional space of hyper control. However, bridges can also be envisioned as an active space that celebrates the lively flows. At Lok Ma Chau Loop where in the future the joint technology park will develop, a bridge system can invite more people to the area, while the bridge itself can be a public park where people are invited to have connection with the river.

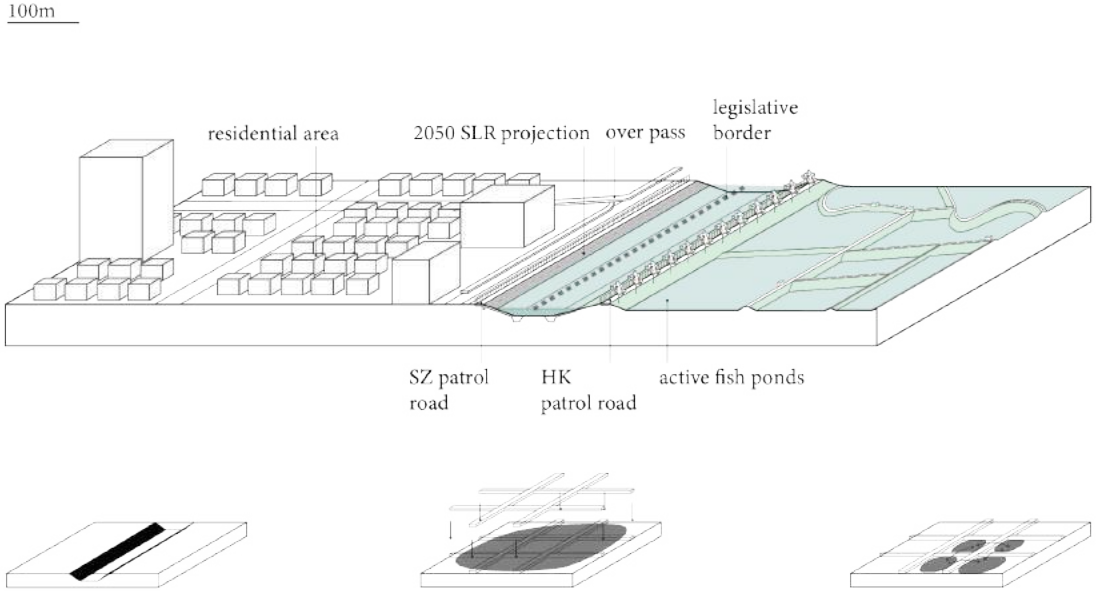


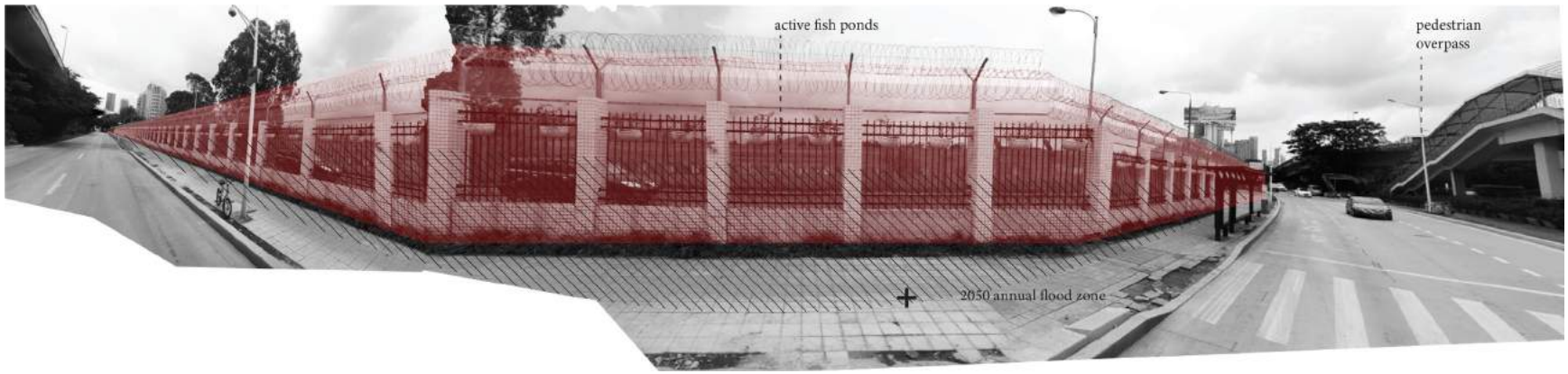



100m
technology park, joint development by two sides
containers as art installation/ resting space
bridge as public park
public waterfront, combine soft and hard edges
vehicle access

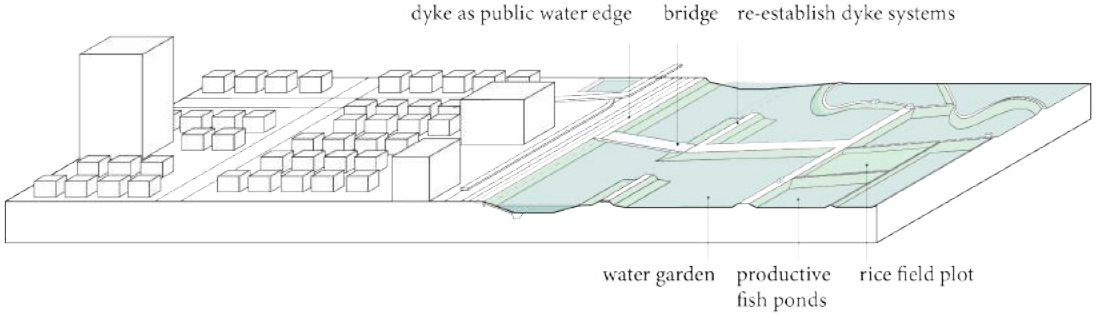
3. WATER GARDEN

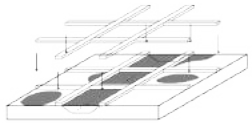
Fish ponds are significant land forms that constitute the identity of the region. This scenario envisions fish ponds as a unifying land form that stitches the communities from both sides together. Various activities like swimming or cultivating can happen in the pond, which allows the river to re-integrate into public lives.





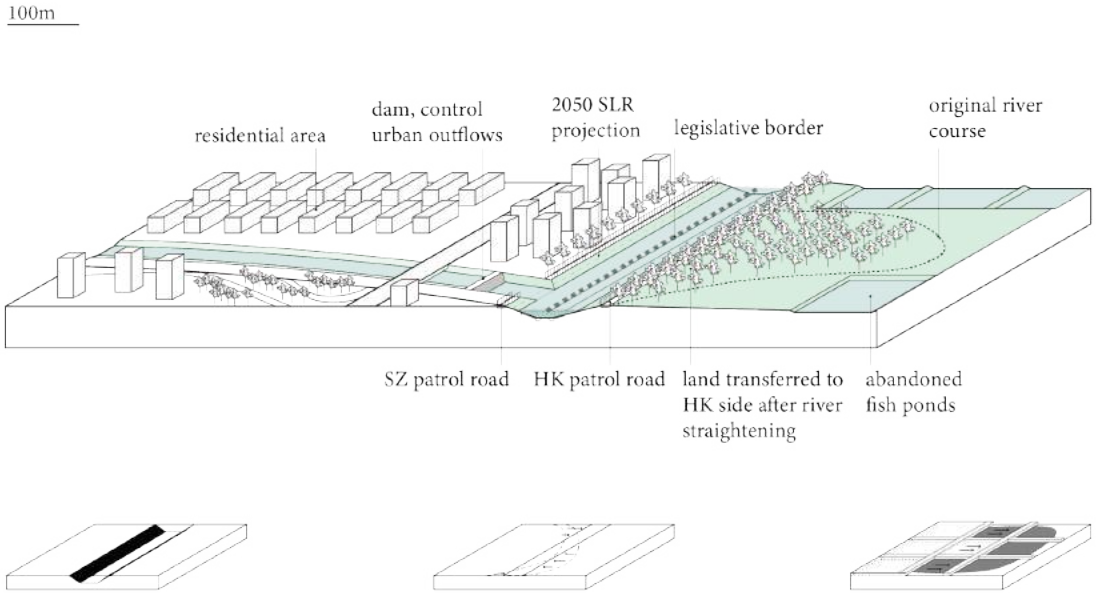
100m

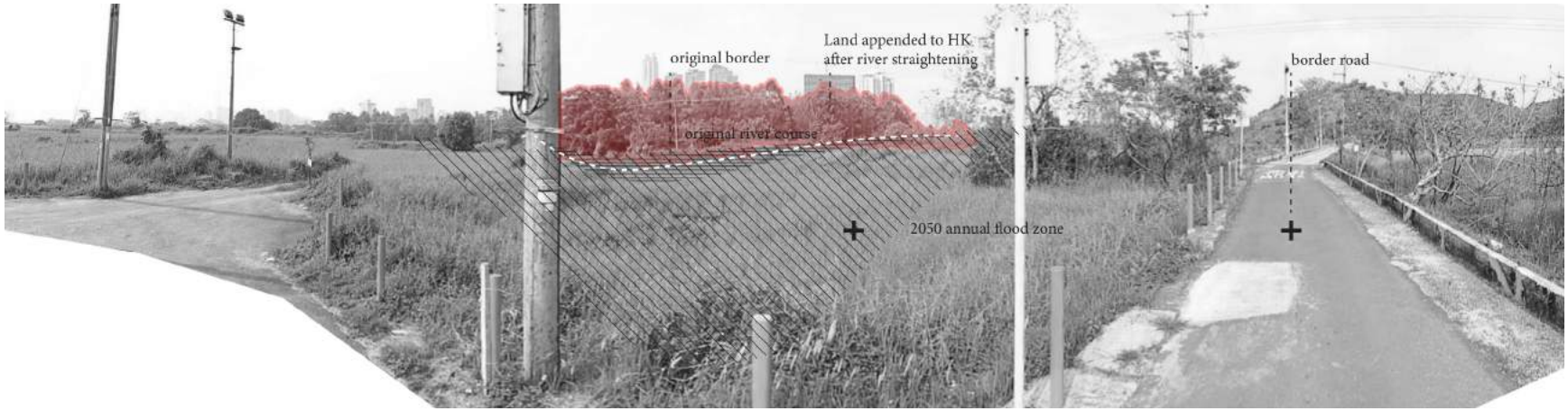

dyke as public water edge
bridge
re-establish dyke systems
water garden
productive fish ponds
rice field plot



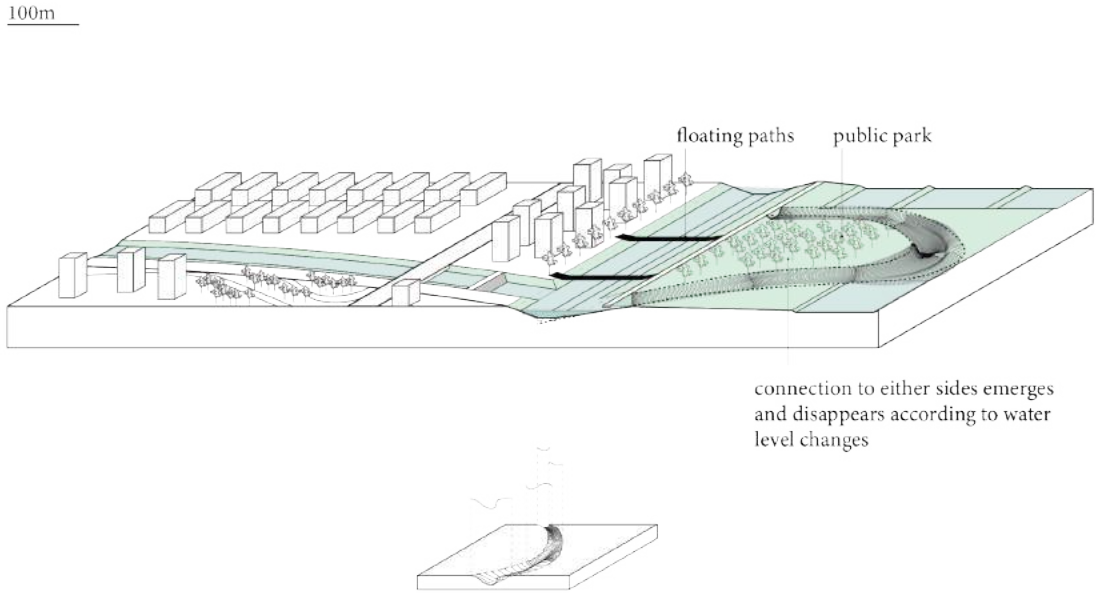
4. ISLAND

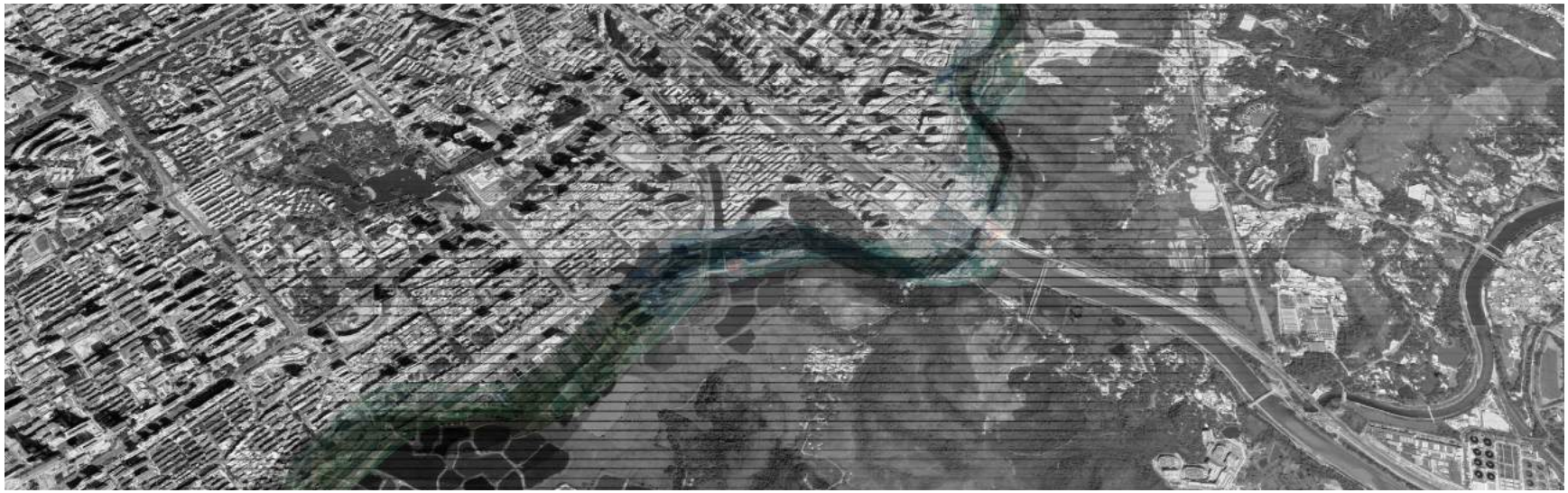
As the river straightening created several parcels with ambiguous ownership, these parcels are spatial representation of the intricate entanglements between river and land, as well as of the two territories. These parcels belong to either side yet neither side; they are fluid yet solid. The design intervention envisions such a parcel as a public park that narrativizes the entanglements. The parcel is connected to the Shenzhen city with floating paths. A stream with varying sections “separates”



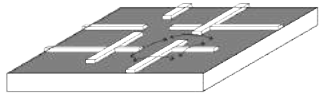


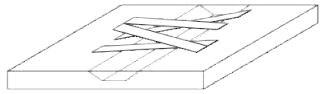
it from Hong Kong. Therefore, the island becomes simultaneously attached to and detached from both sides.

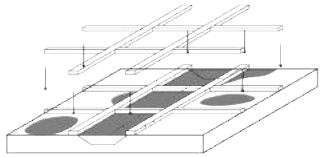


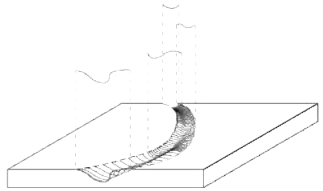


V. CONCLUSION









In the mapping and design process, one major question that I tackled is how to visually represent fluidity, something that changes all the time and contests defined boundary, with fixed images. As the project intends to demonstrate, the site of Shenzhen River is an extremely complex site where enormous political and environmental uncertainties confluence. With the restriction of time and access to resources, this project could not provide a comprehensive report that predicts the future of the region. This project tries to embrace the uncertainties and to use it as a design tool. As I believe, design could not be used to rule out uncertainties, but only to adapt and develop.

The design speculations are examples of how landscape design can be used to expands the conception of territory, which is also constituted by fluidity. Marsh, as the requirement for the river to become, embodies the dynamic process of river. The bridge is an architectural archetype as the expansion of land over river. The water garden is a hybrid of past and future management of the river area, celebrating wetness variability operating at the intersection of conservation and productivity. The island embodies the memory of the flow, and explores attachment through fluidity.

My original research interest that sparkled the project was how state power (mainly colonialism), has managed fluidity and shaped our perception about fluidity. Compared to other spatial practices of control, such as land use planning or construction of mass infrastructure, the management of fluidity is subtler yet no less significant. Indeed, the spatial impacts of colonization have shaped the world facing climate change. Whether in metropolitan areas like New York City

or Hong Kong that were developed near ocean by colonizers for transoceanic trade, or cities like Jakarta that are sinking due to unequal water infrastructure developed by colonial powers, most of the world's population has been influenced by such colonial legacies in some form or another.

Living in a world with more uncontrollable fluidity, humans must adopt a new attitude towards it. The design investigations in this project provide examples of how landscape design can create new space for dialectic thinking of fluidity. Landscape architecture as a profession that manages fluidity, can play a central role in facilitating such transitions. With further studies of ways to manage wetness, landscape architecture can break from colonial ideologies and celebrate the dynamic third space.

VI. APPENDIX

SITE VISIT ITINERARY

i) January 4th. Arrived in Hong Kong. I was able to stay at a friend's place which is close to the border and surrounded by rural landscape.

ii) January 6th. My friend told me that at night, lights from Shenzhen side can be seen on the way from Kam Sheung Road Subway Station to her house. I recorded a clip of video on our way back, but only saw some dim light in the dark.

iii) January 7th. I took my first trip to the border. My trip started at Sheung Shui Subway Station, which is linked to Lok Ma Chau Station and Lo Wu Station, two of the major ports connecting Hong Kong and Shenzhen. I went to Lok Ma Chau Station first. At the station, there was direct view of both Hong Kong side and Shenzhen side, which presented a dramatic contrast. I took some photos at the platform, and then proceeded to the lower level which linked to the customs. There was a specific exit of the station that could only be accessed with permit. The sign read, "It is illegal to enter or leave the Closed Area without a valid permit or violate any condition of the permit. Offenders are liable to a $5,000 fine and 2 years imprisonment."

iv) (Cont.) I returned to Sheun Shui and departed to Lo Wu Station. There were much more travelers to that port. The view in that station was largely controlled and river could not be seen. From the station there was also a special exit for local villagers with permit.

v) January 9th. I took my second field trip to Lok Ma Chau. I took a bus from Sheung Shui Station to Lok Ma Chau (San Tin) Public Transport Interchange, and started walking toward the border on Lok Ma Chau Road. Many areas along the road

were fenced off. Some have the sign saying "Drainage Maintenance Access, No Entry." There were also many parking lots along the road. I visited Lok Ma Chau Lookout Park, which has a great view of Shenzhen. From the park the construction site of Lok Ma Chau Loop is also visible. There was a billboard with various languages showing the history of the park and various bird species that inhabited at the wetlands.

vi) (Cont.) I left Lok Ma Chau Lookout Park and continued walking on Lok Ma Chau Road, which occasionally having truck passing by every five minutes. I walked about 750m and passed by somewhere seeming to be the temporary residence of construction workers. I planned to get to the Lok Ma Chau Station directly and took subway back. But I was soon held back by two construction workers at the fence of construction site. They said there was no way going to the station, and I could only take bus back. As I turned back, I noticed a sign saying I already approached the border of Frontier Close Area. I walked back to Ha Wan Fisherman San Tsuen and took the bus.

vii) January 10th. In the morning, I decided to leave Hong Kong through Lok Ma Chau Station. Again, I took subway from Sheung Shui Station to Shenzhen. After arriving at Lok Ma Chau Station, I went through the automatic custom check at the Hong Kong side and continued to the bridge. The bridge was completely enclosed by glass walls. There were many signs saying "No lingering in frontier area. Procrastination without reasons is liable." The walk continued for about ten minutes, and I arrived at the Futian Port on the Shenzhen side.

SITE VISIT MAP

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