



**700 X 300 M HONG KONG**  
**HONG KONG | SURFACE**



# 700 X 300 M HONG KONG

ANALYSIS AND TRACING OF HONG KONG SURFACE

ETH Studio Basel | Institut der Gegenwart  
June 2004

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# KWAI CHUNG

**Kwai Chung is situated in the north west of Kowloon between the harbour and steep mountains. The chosen site contains typical elements of Hong Kong's urban landscape, such as reclaimed land, large infrastructure networks and stabilized hills on few square meters.**



**The location of the site**



Map of Kwai Chung

# A YOUNG TERRAIN

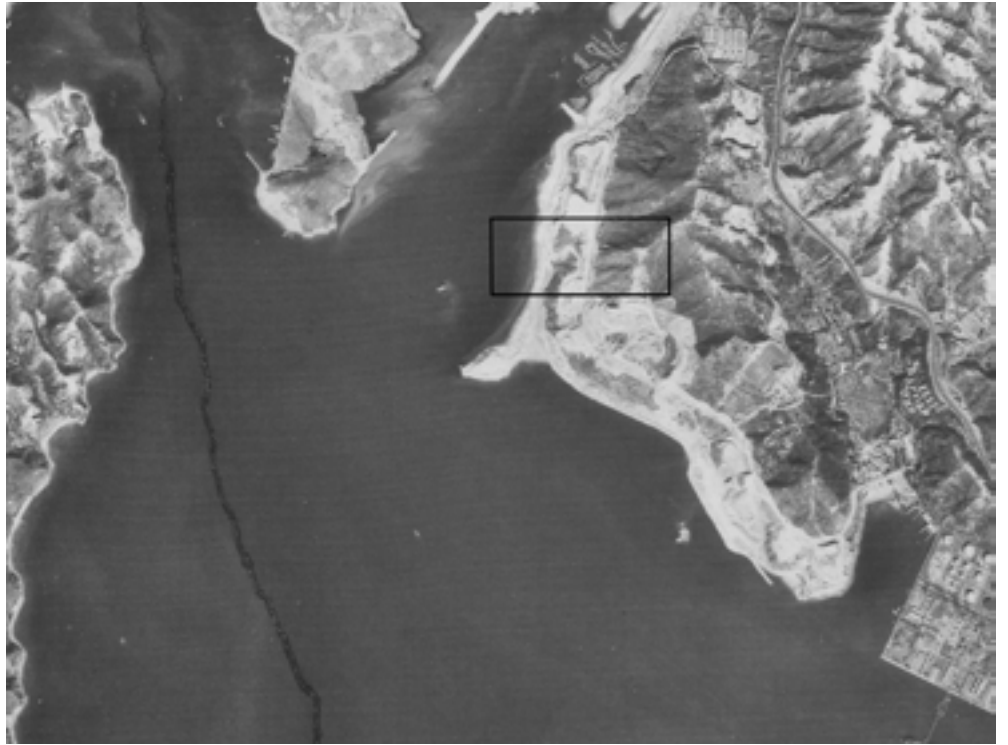
**30 % of the site is reclaimed land. Reclamation started in this area in the 1960's.**



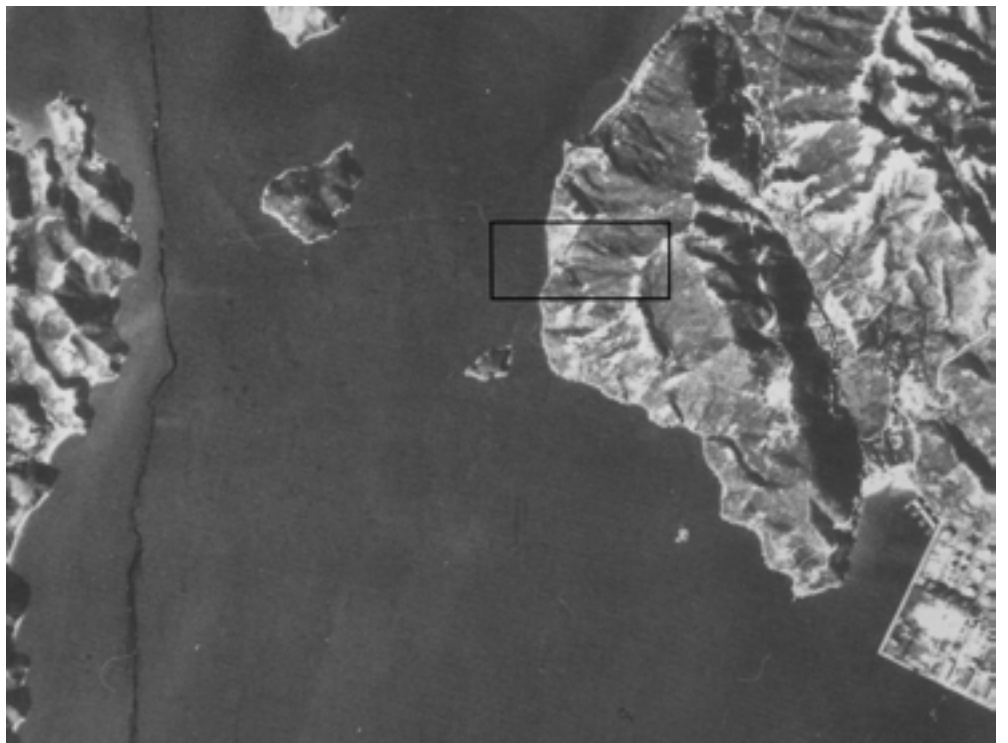
**2002**



**1989**



**1964**



**1954**

# THE SITE

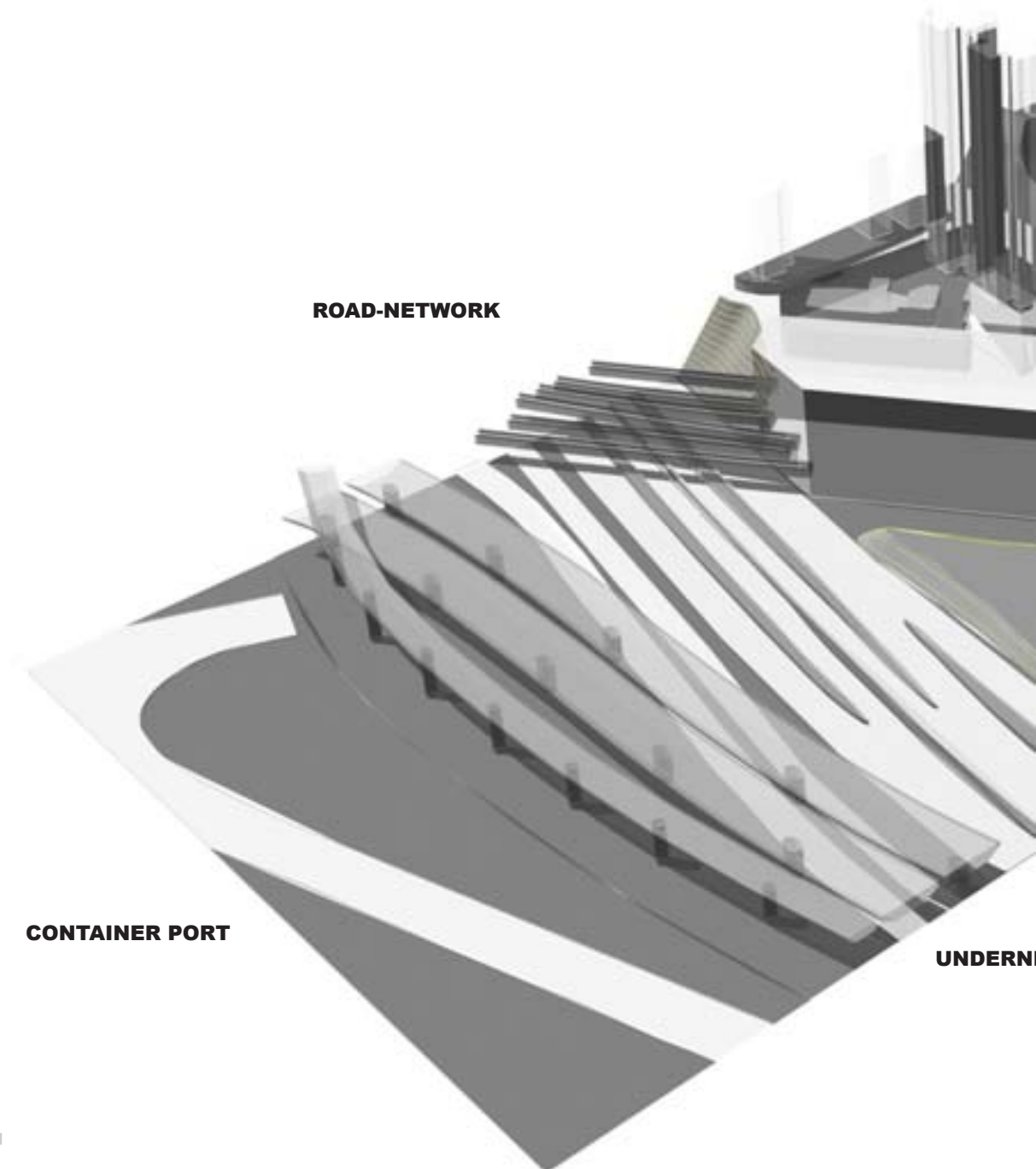






# TOPOGRAPHY X

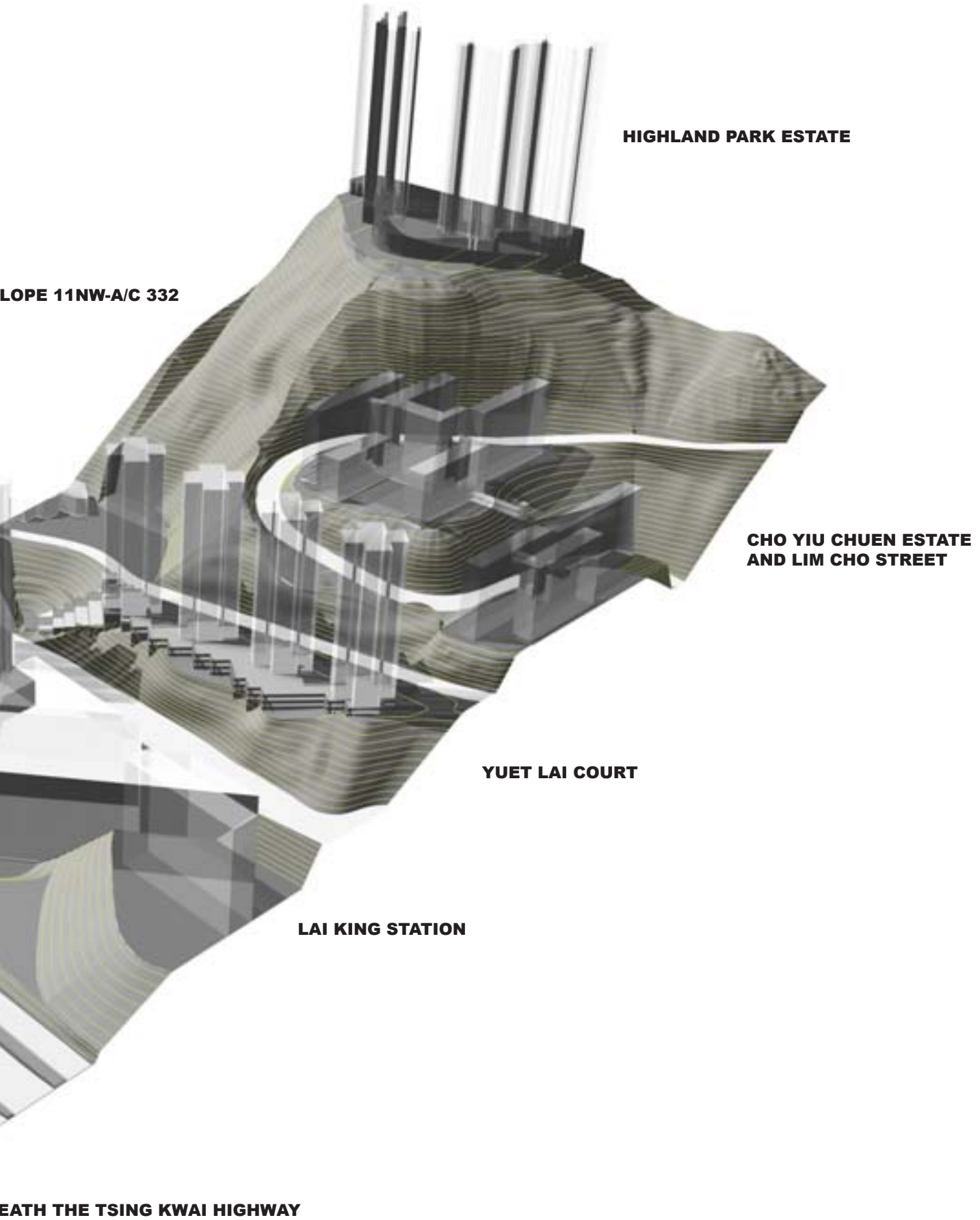
The topography rises from the sealevel up to 160 meters within a distance of 400 meters.



CONTAINER PORT

ROAD-NETWORK

UNDERN



**LOPE 11NW-A/C 332**

**HIGHLAND PARK ESTATE**

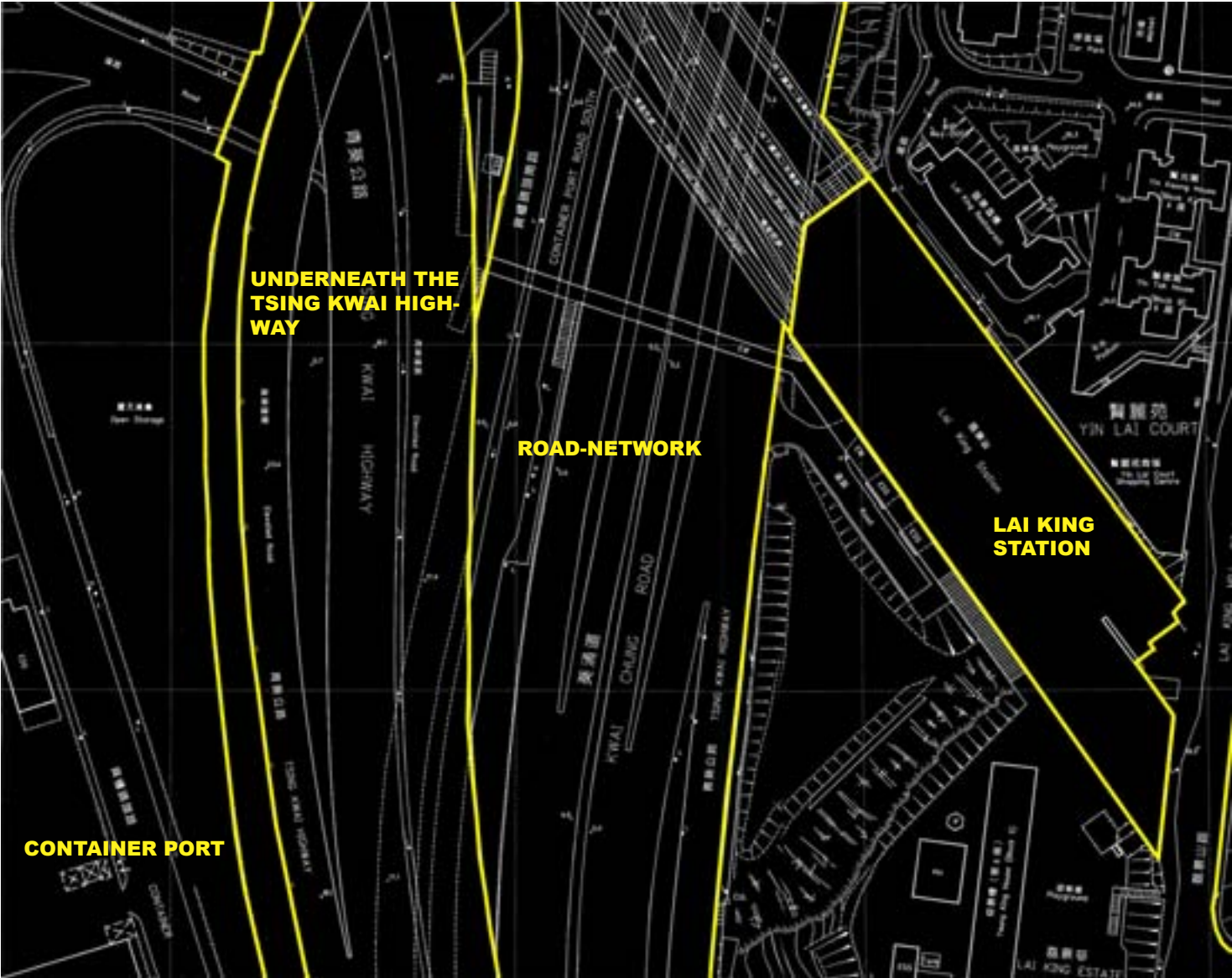
**CHO YIU CHUEN ESTATE  
AND LIM CHO STREET**

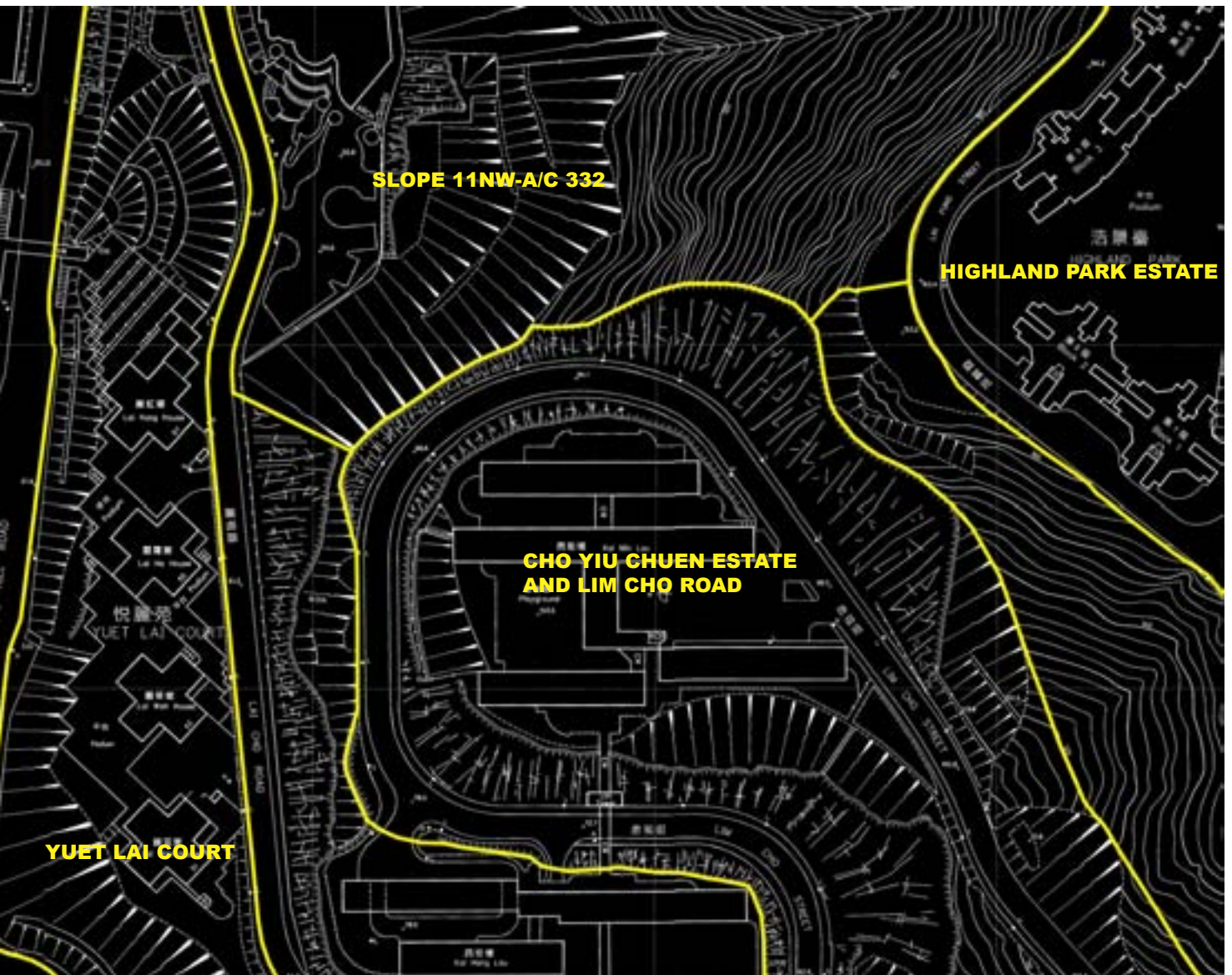
**YUET LAI COURT**

**LAI KING STATION**

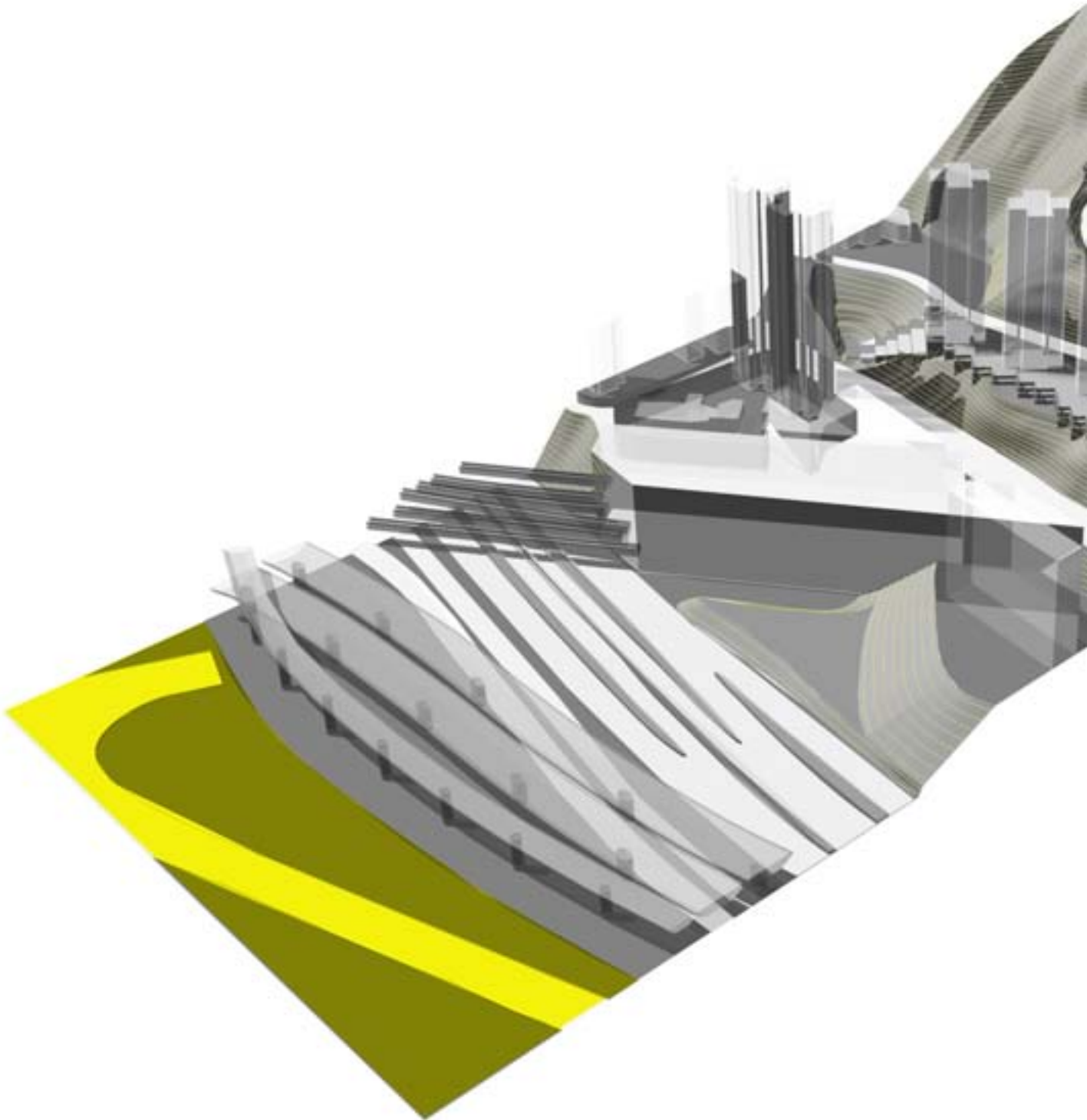
**BEATH THE TSING KWAI HIGHWAY**

# SCANNING A SITE - EIGHT SECTORS



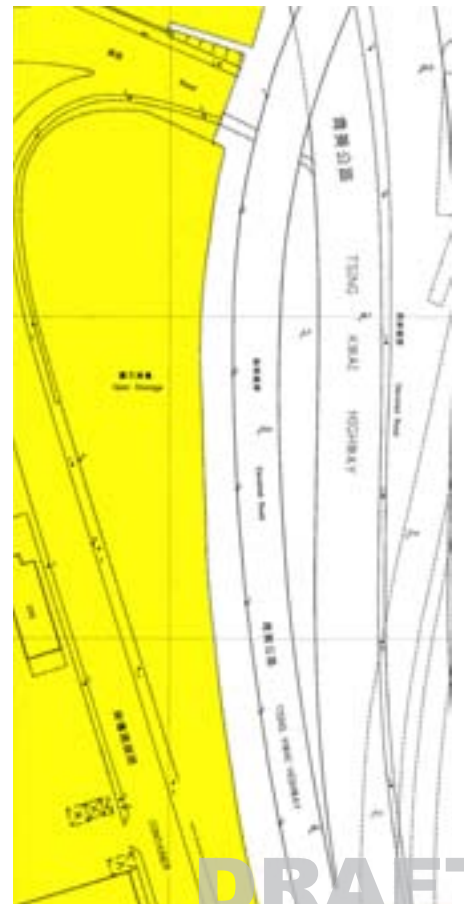
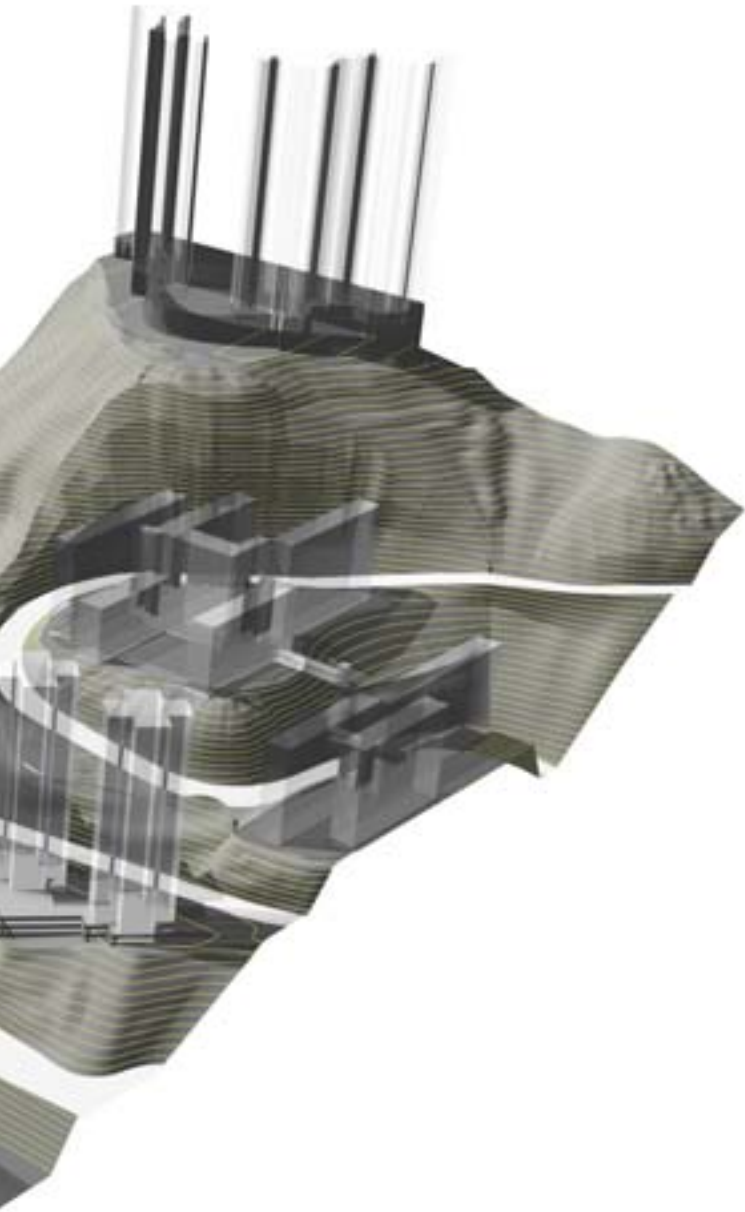


**Sitemap**



# CONTAINER PORT

LAND ON DEMAND



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# FILLING

The terrain of the container port terminal was reclaimed 40 years ago



CONTAINER HILLS

WALKWAY TO THE MTR-STATION



CONTAINER LOADING

CONTAINER PORT ROAD



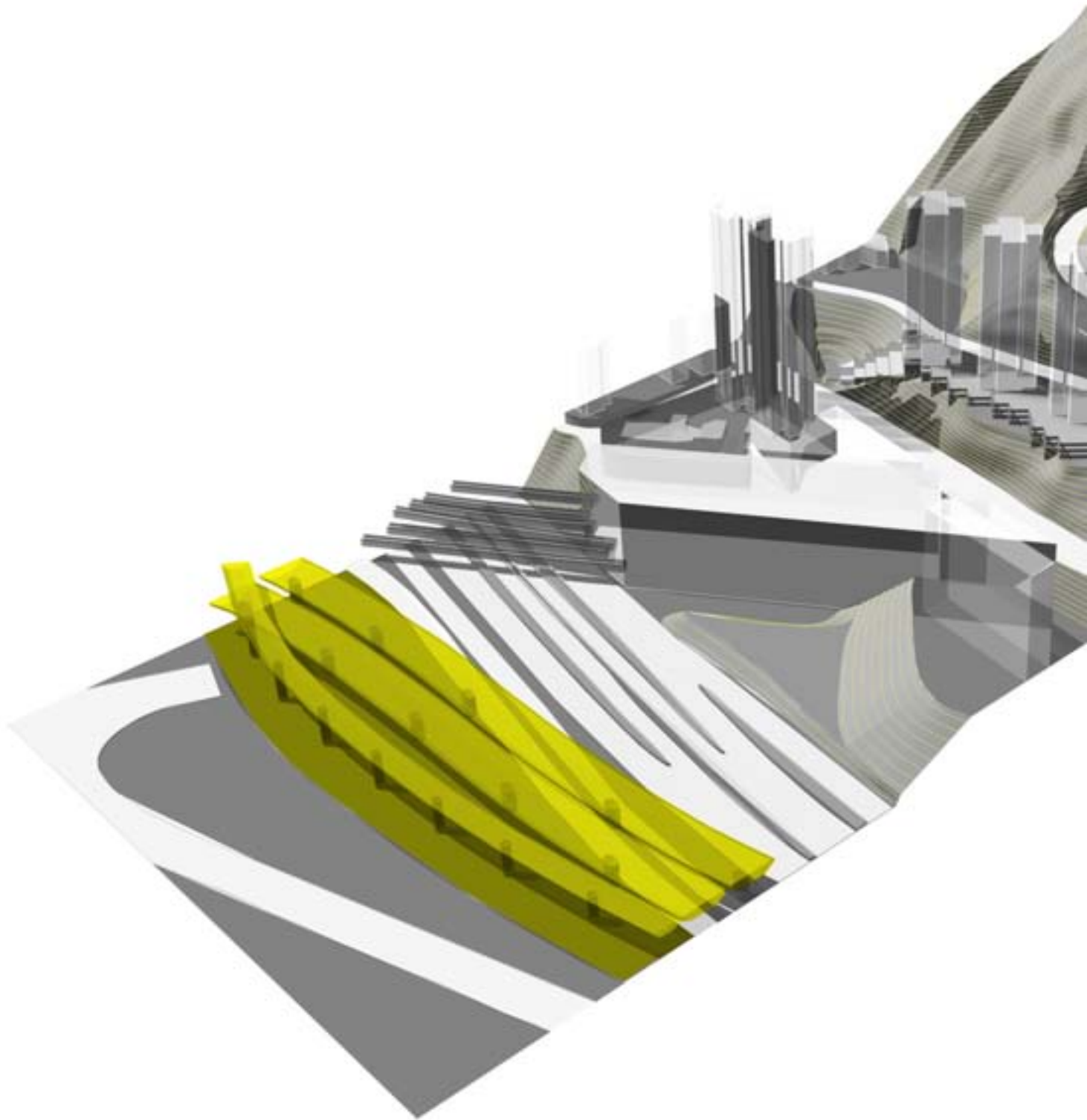


**CONTAINER PORT OFFICE**

**FENCED WALKWAY TO THE CONTAINER PORT OFFICE**

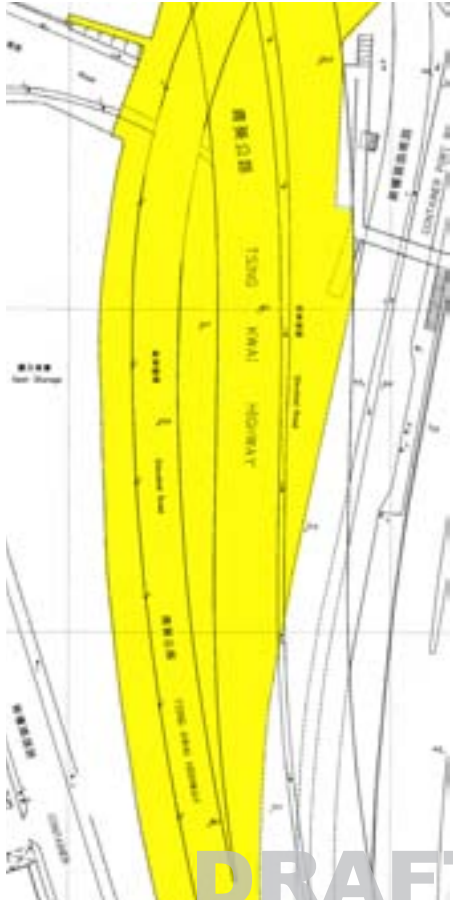
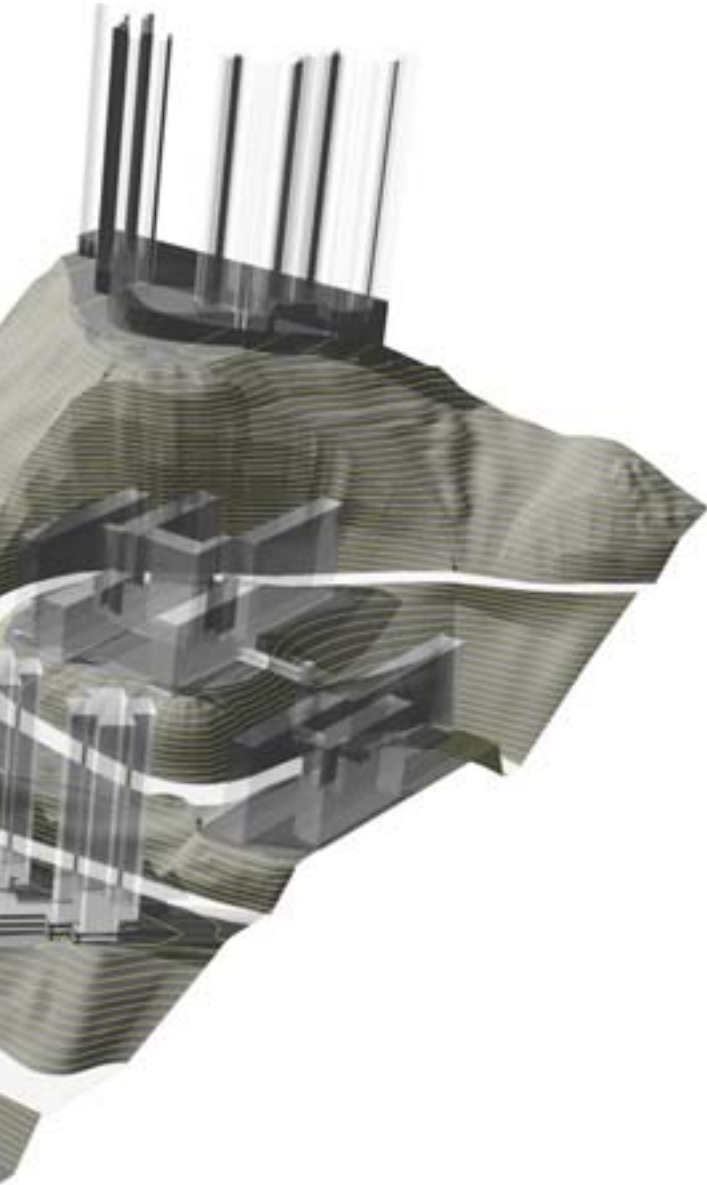


**CONTAINER LOADING**



# UNDERNEATH THE TSING KWAI HIGHWAY

USE TO THE MAX



**DRAFT**  
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# MORE THAN A BYPRODUCT

TSING KWAI HIGHWAY

CONTAINER PORT ROAD SOUTH

EXIT FROM TSING KWAI HIGHWAY

TSING KWAI HIGHWAY

TRUCK CARPARK



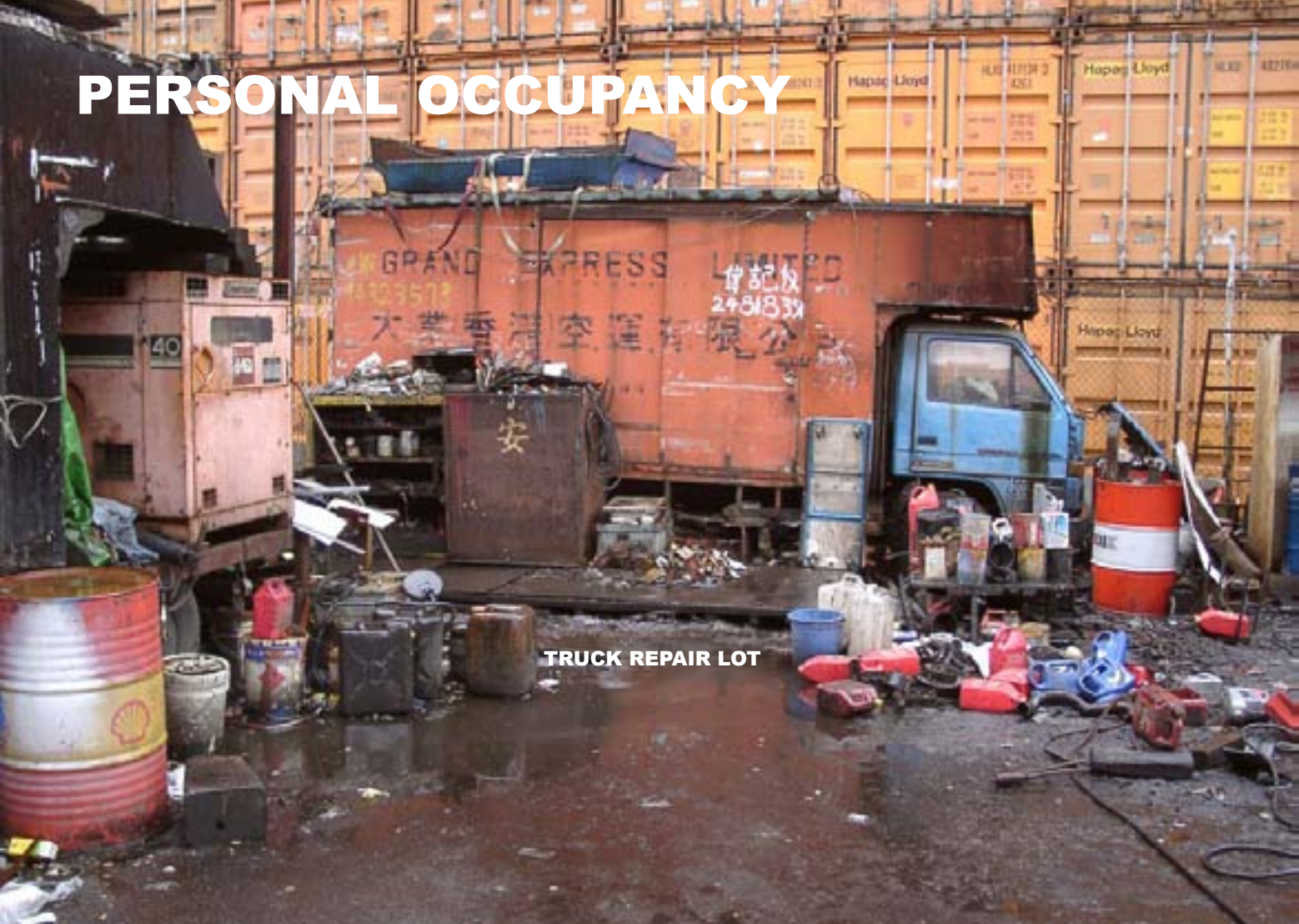
TRUCK CARPARK

ENTRANCE GATE



TRUCK REPAIR LOT

# PERSONAL OCCUPANCY



TRUCK REPAIR LOT



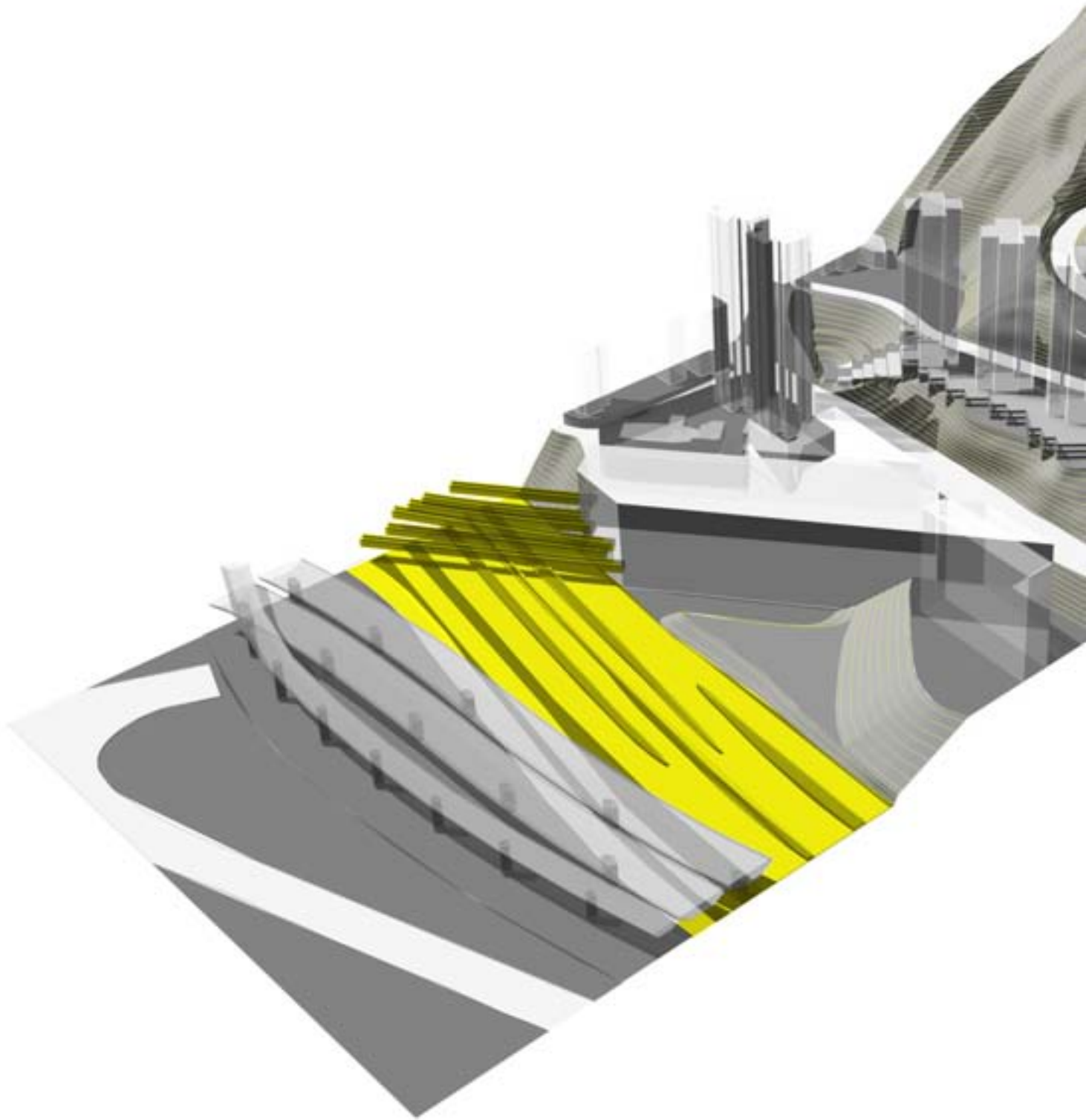
OFFICE



OFFICE



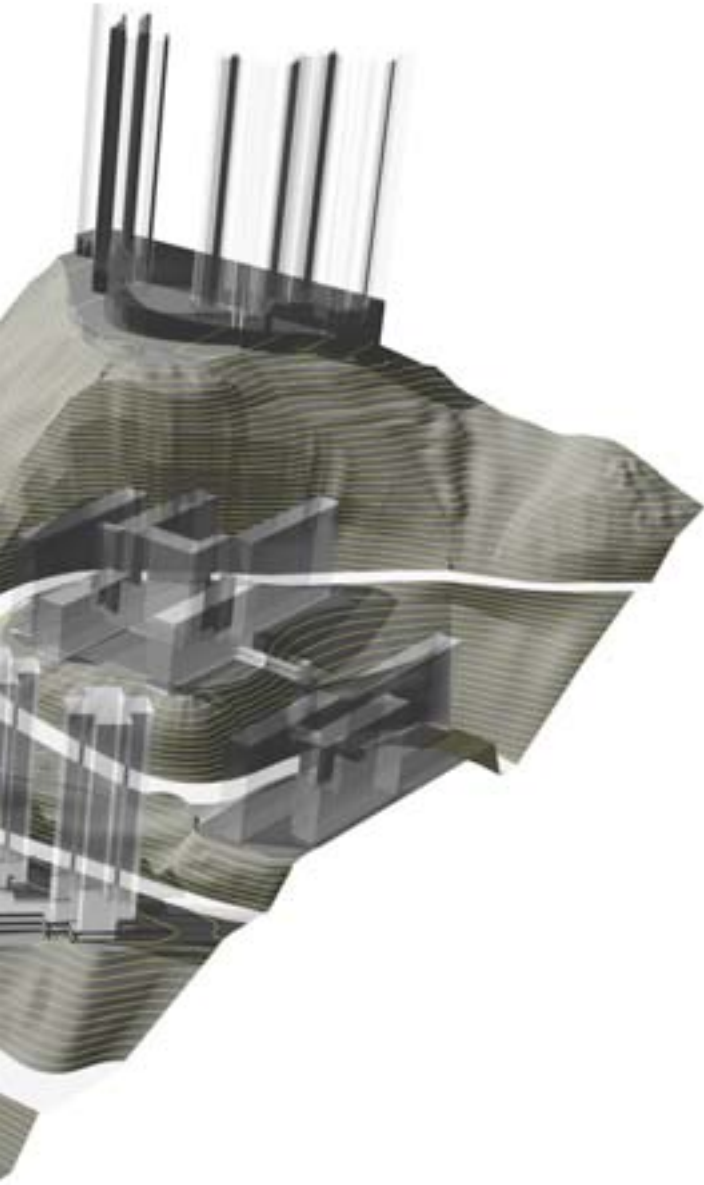
GARDEN



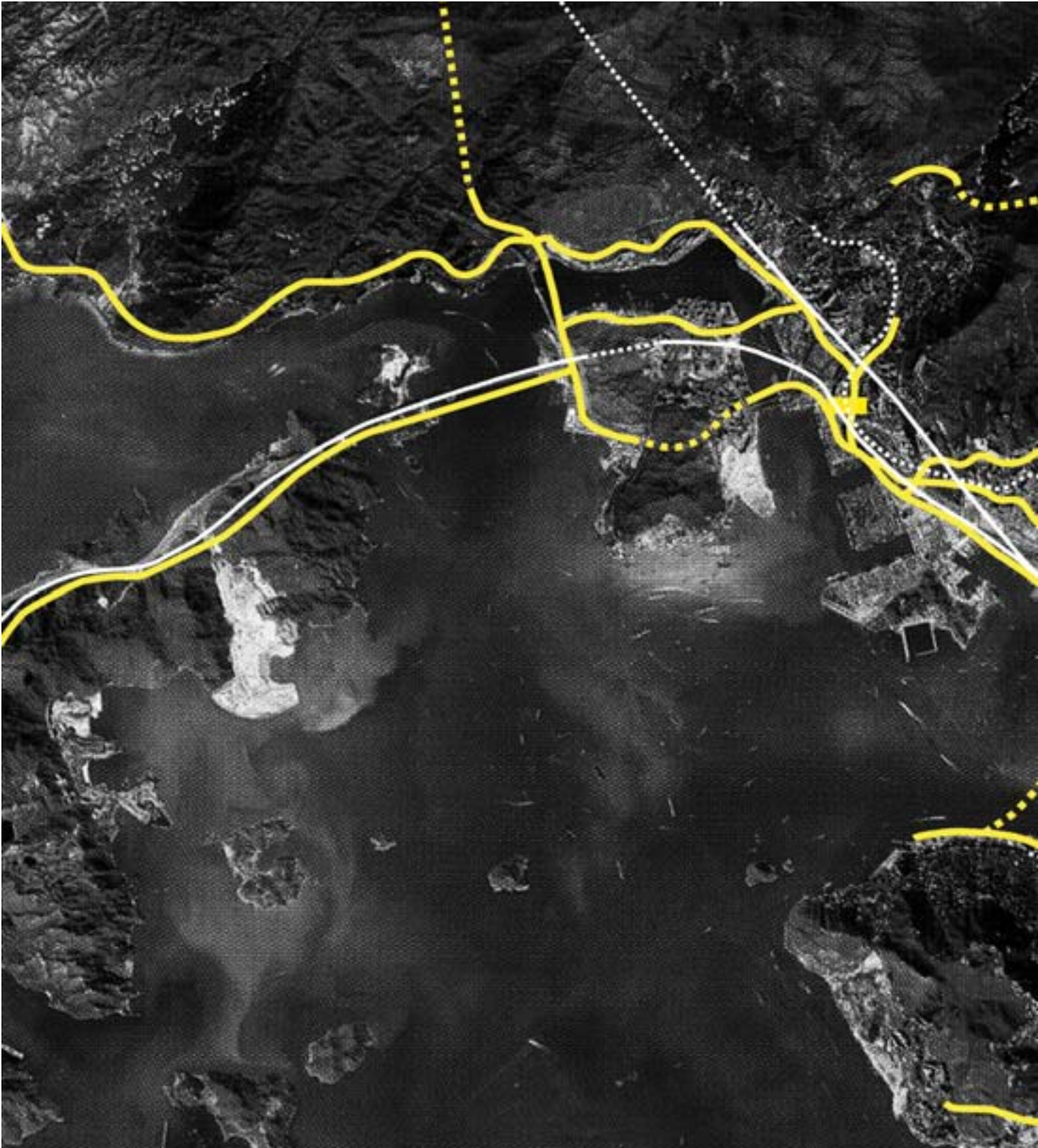


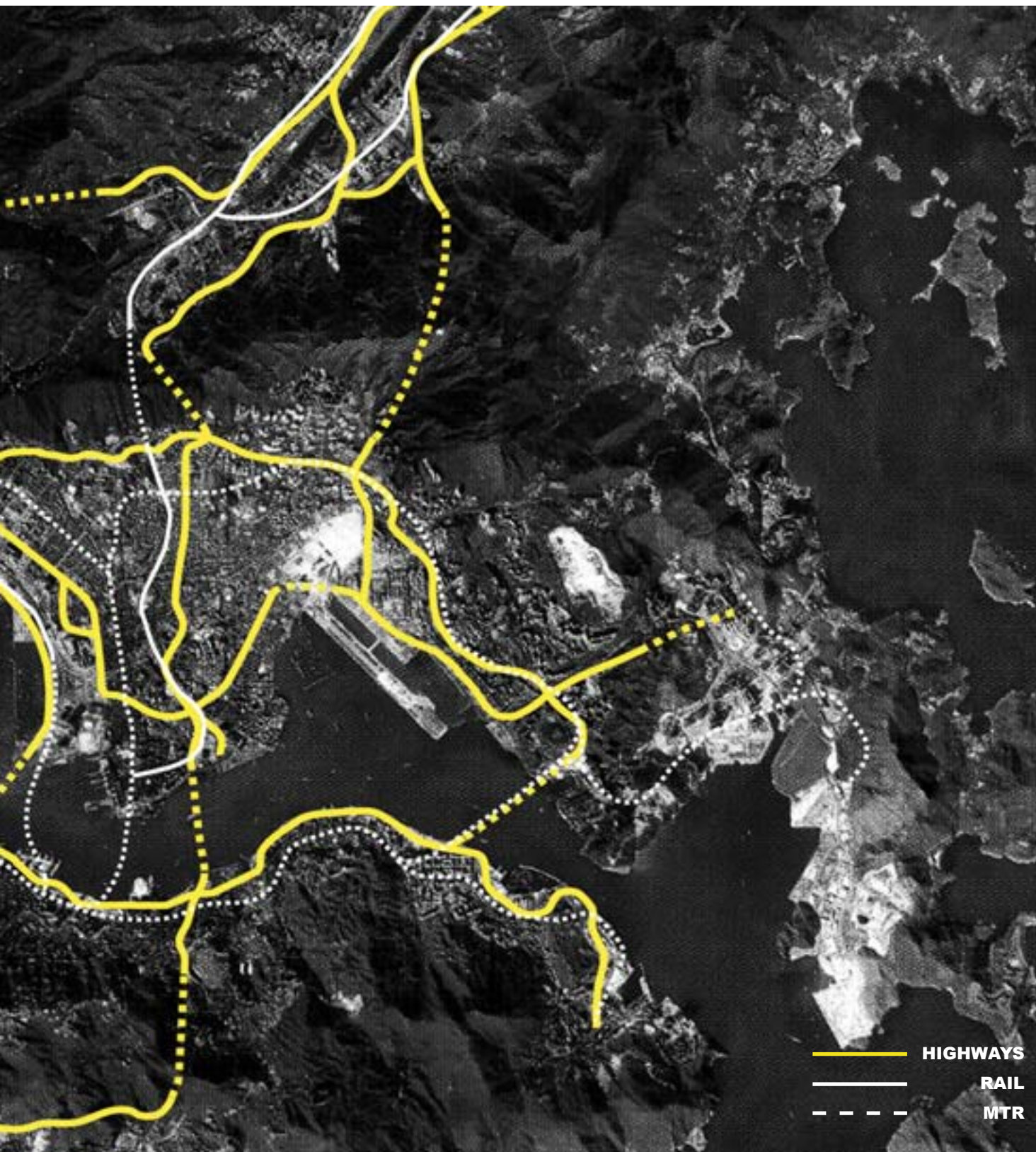
# KWAI CHUNG ROAD

## CONDENSED INFRASTRUCTURE



# HIGHWAY AND RAIL SYSTEM





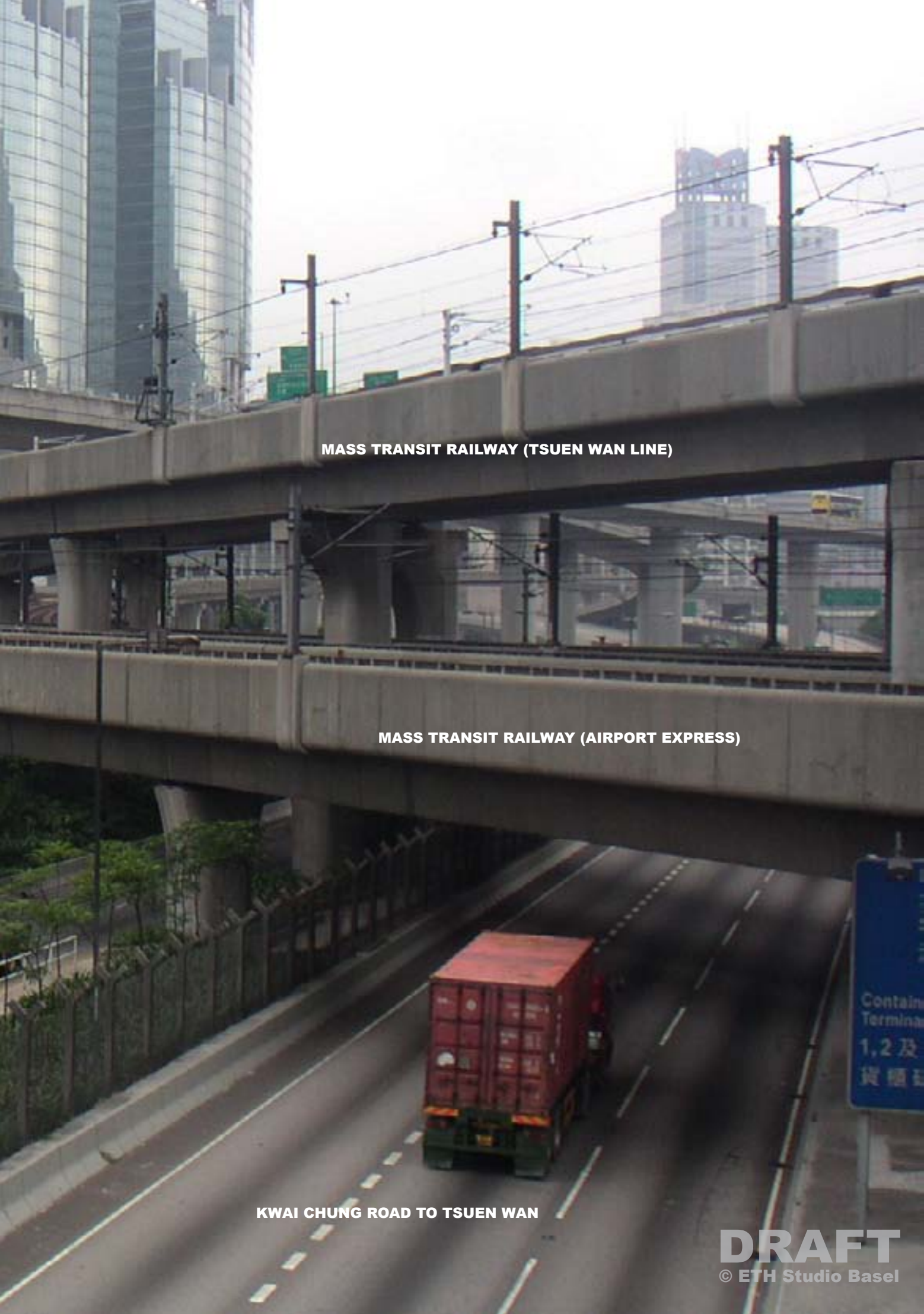
— HIGHWAYS  
— RAIL  
- - MTR

# OVERLAID

TSING KWAI HIGHWAY TO THE AIRPORT

TSING KWAI HIGHWAY EXIT

CONTAINER PORT ROAD SOUTH



**MASS TRANSIT RAILWAY (TSUEN WAN LINE)**

**MASS TRANSIT RAILWAY (AIRPORT EXPRESS)**

**KWAI CHUNG ROAD TO TSUEN WAN**

**DRAFT**  
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# ADJOINT



ENTRANCE TO TSING KWAI HIGHWAY

KWAI CHUNG ROAD TO KOWLOON



**TSING KWAI HIGHWAY**

**CONTAINER PORT ROAD SOUTH**

**KWAI CHUNG ROAD TO TSUEN WAN**

# IN BETWEEN

Massive concrete structure and artificial greening are the main elements of the in-between-space. The Kwai Chung Road is separated by a fence.

MASS TRANSIT RAILWAY

KWAI CHUNG ROAD TO TSUEN WAN

MASS TRANSIT RAILWAY

KWAI CHUNG ROAD TO TSUEN WAN





**KWAI CHUNG ROAD TO TSUEN WAN**

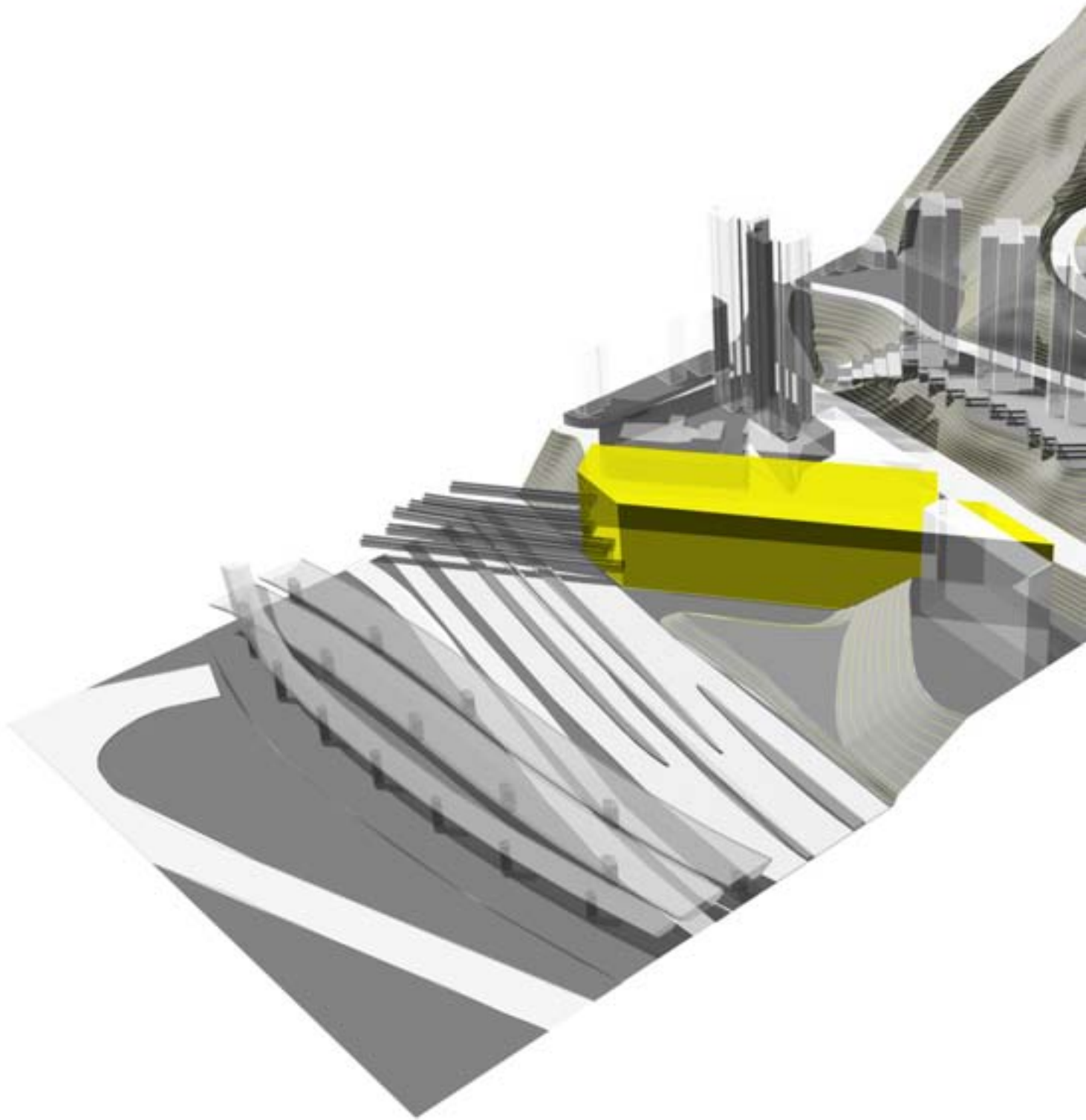
**WALKWAY TO MTR-STATION**

**CONTAINER PORT ROAD SOUTH**



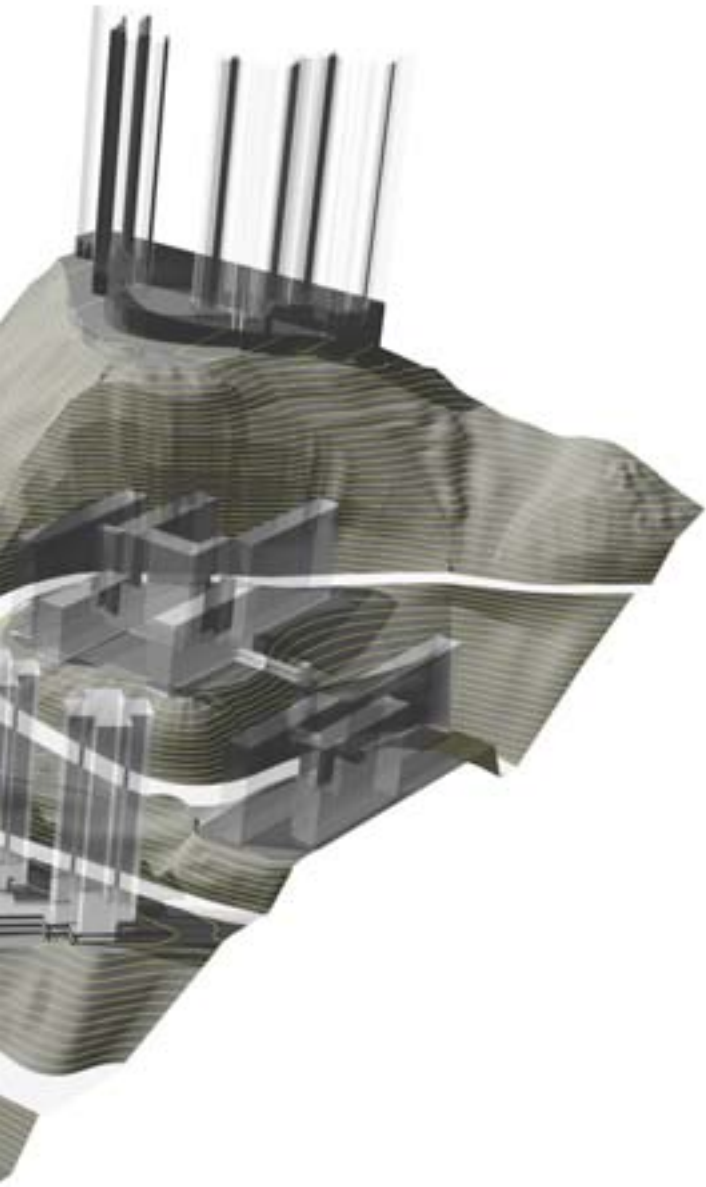
**CONTAINER PORT ROAD SOUTH**

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# LAI KING STATION

## INVISIBLE GIANT



# DISSAPPEARANCE

Prominent buildings are hardly perceived in a conglomeration of large scale objects. They become part of the urban texture.



MTR

ENTRANCE



PORT OFFICE

EXIT TO PORT

R STATION

YIN LAI SHOPPING CENTER

LAI KING HILL ROAD

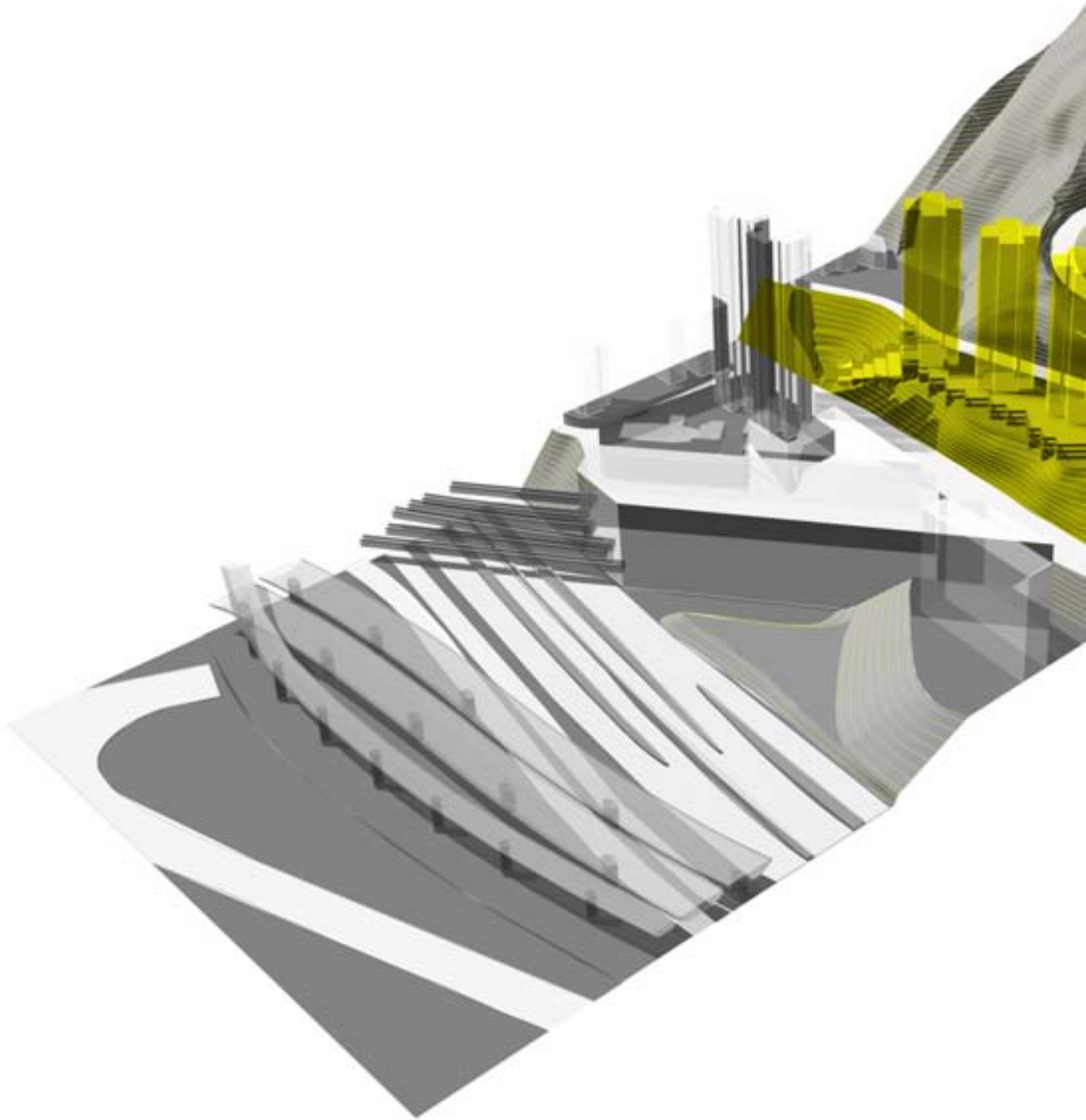
**DRAFT**  
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# ONLY A TRANSIT

In the perception of the user the building is reduced to an uniform transit space.





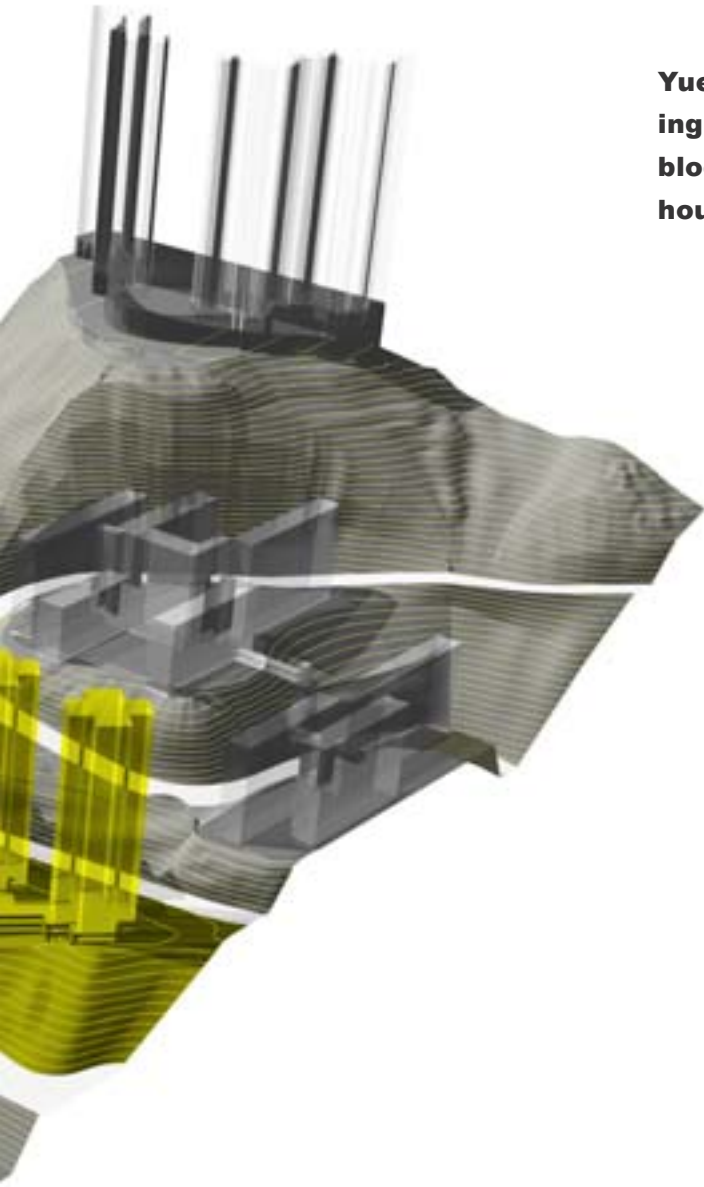




# YUET LAI COURT

## FIGHT FOR SPACE

Yuet Lai Court was completed by the Hong Kong Housing Authority in 1981. It consists of four 'non standard' blocks with totally 704 flats and was planned as public housing estate. The flats size is between 39 - 48m<sup>2</sup> and are sold for 90'600 - 122'300 \$.



# OVERHANG

The podium is built on stilts regardless of the slope topography. The two artefacts behave in a contradictory way.



SHOTCRETED  
ROCK SLOPE

FRESH WATER PIPE



PLANTS BREAK  
THROUGH SHOTCRETED  
SURFACE



**PARK DECK**

**LAI KING  
HILL ROAD**



**PODIUM**

**SHOTCRETED  
CUT SLOPE**

# CUT IN

On the hillside the podium is carved into the slope.



RETAINING WALL



PODIUM

PARK DECK



ENTRANCE GATE

STAIR TO  
PODIUM



FILL SLOPE

**DRAFT**  
© E.A. Studio Basel

# ON THE PODIUM

The podium is designed in a uniform insignificant manner. People bring their own chairs to recreate in the shadow.





# TERRACED SLOPE

The slope is formed to terraces for public use. The stairway connects the estate to the Lai King Hill Road.







# PRIVATE GARDENS ON PROHIBITED GROUND

Elderly inhabitants use the slope as garden in the lack of balconies.

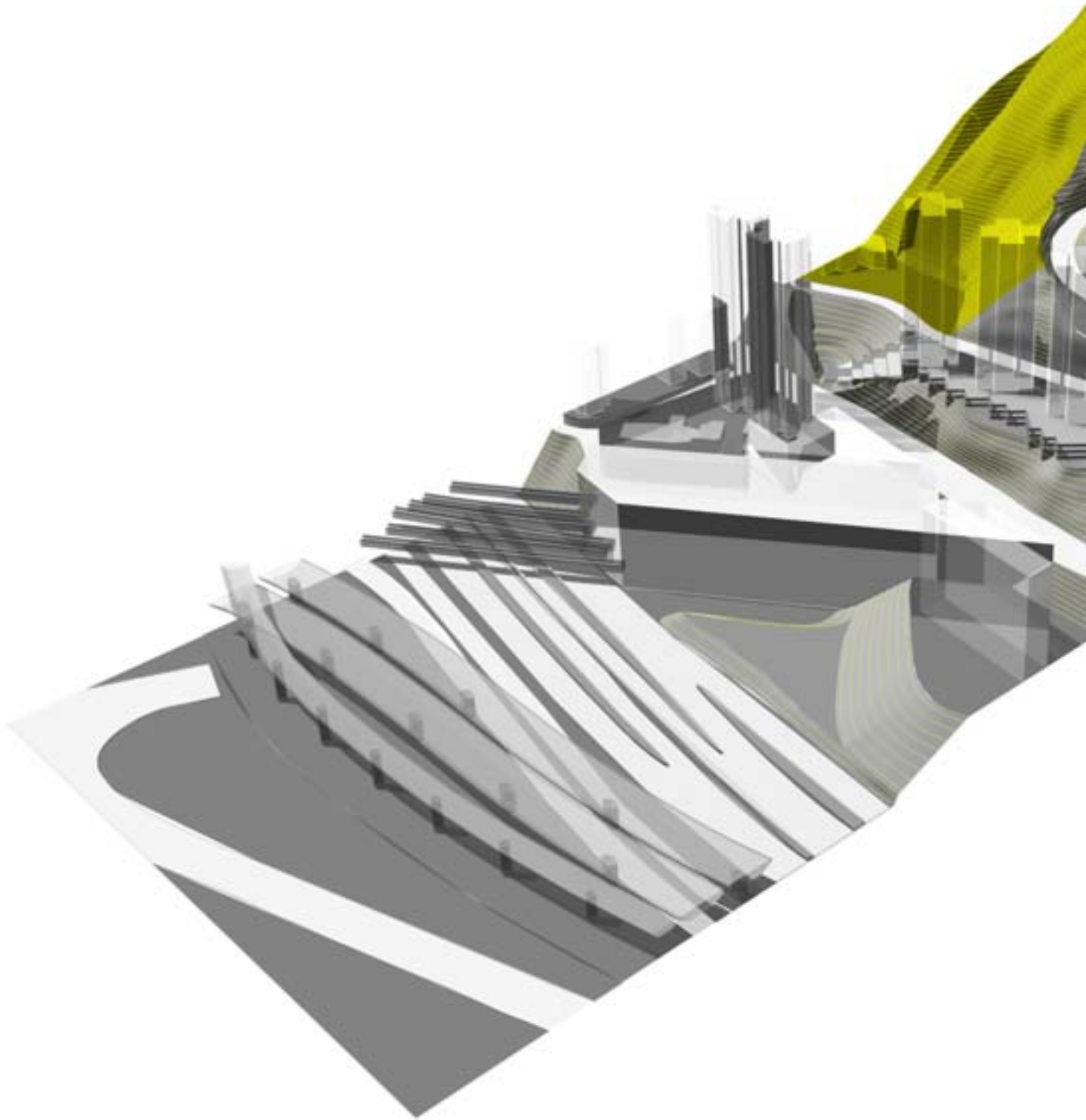




**GARDENING STUFF**

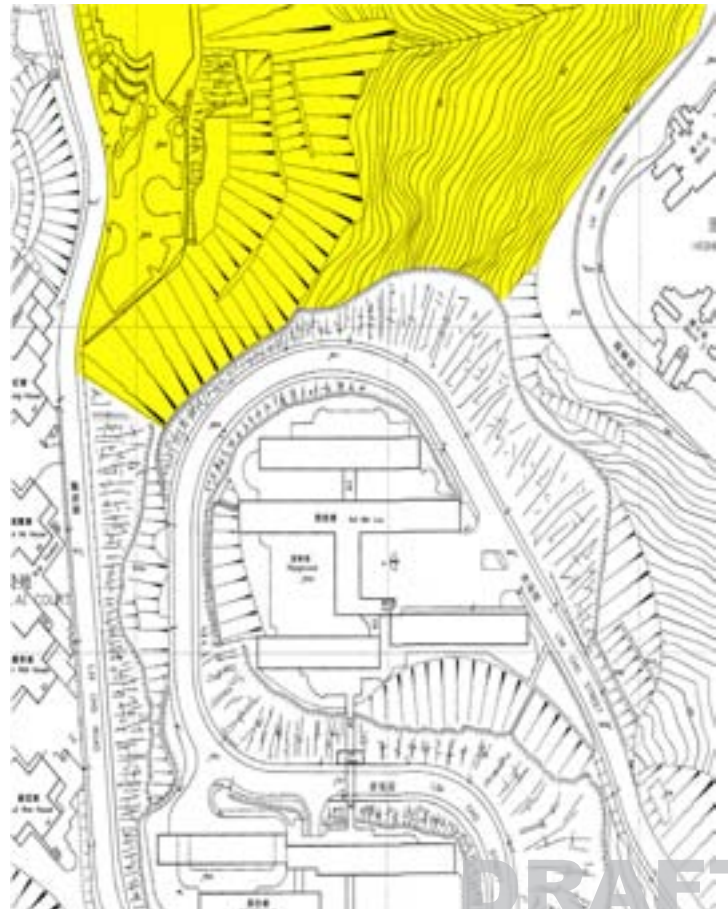
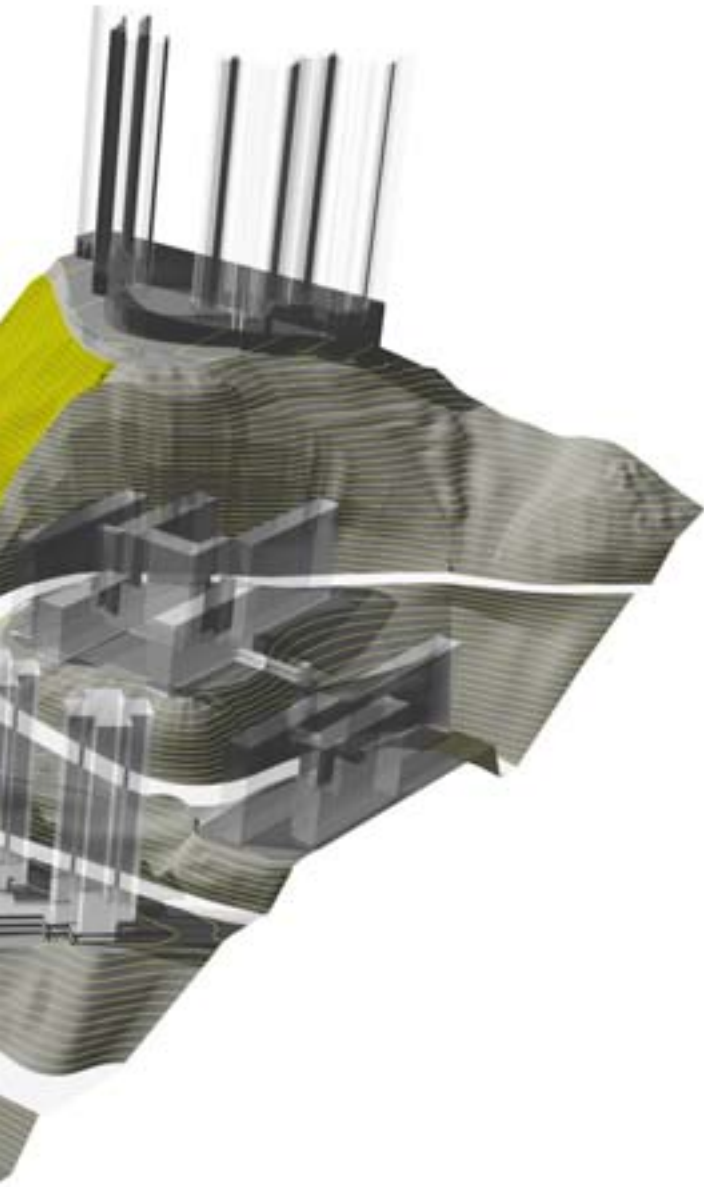


**ESTATE MANAGEMENT  
ORDERS TO REMOVE**



# SLOPE 11NW-A/C 322

## THE GREEN WALL



**UNDER CONTROL**

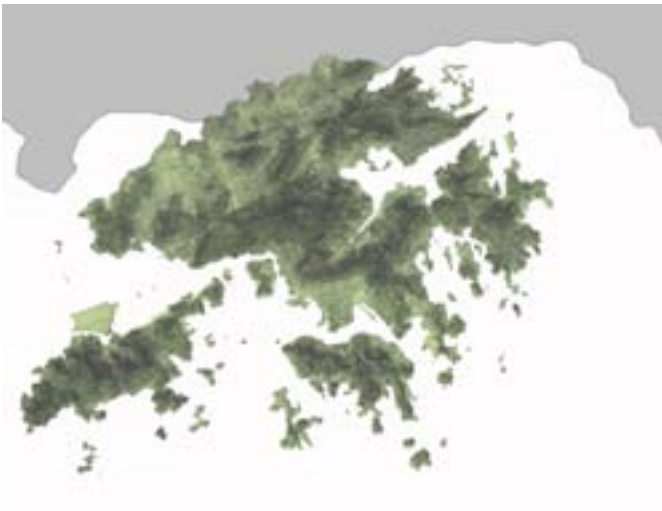




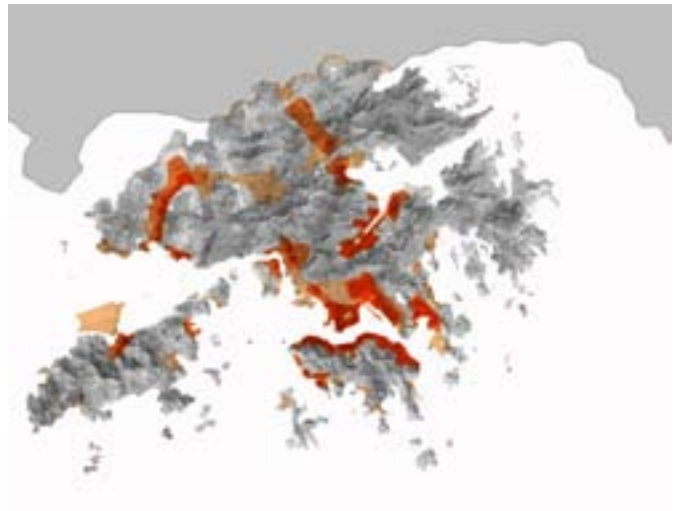
# DIFFICULT CONDITIONS

Hong Kong's topography is formed by special climatic and geomorphical conditions. Intensive rainfalls, hilly terrains and a sandy type of soil effects a huge number of landslides every year.

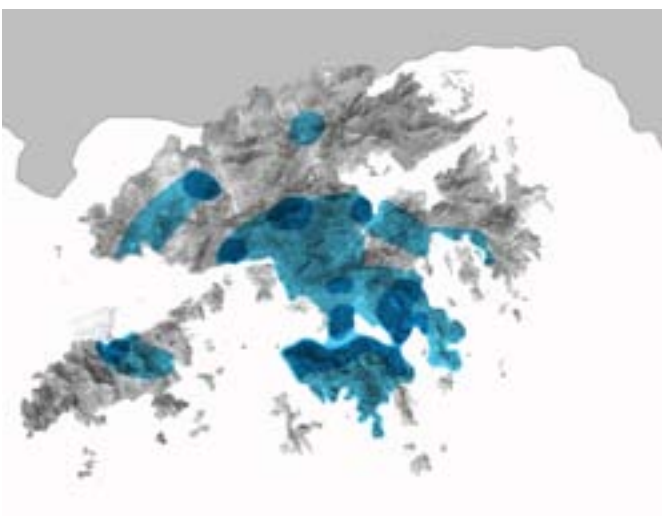
The fast increase of the population during the 20th century and the lack of space to expand, Forced the urban developers to deal with this threat. The measures to protect the building and infrastructure sites from the danger of landslides, creates an artificial landscape of man-made slopes and afforrested terrain.



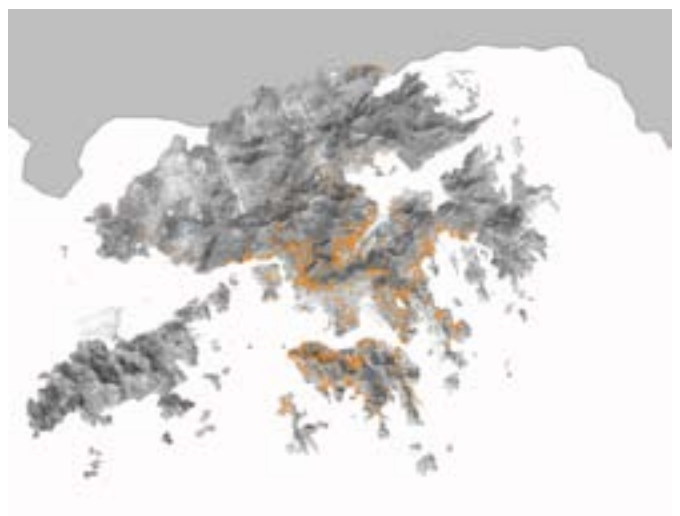
**Geografic relief of Hong Kong**



**Dense urban areas, 2000**

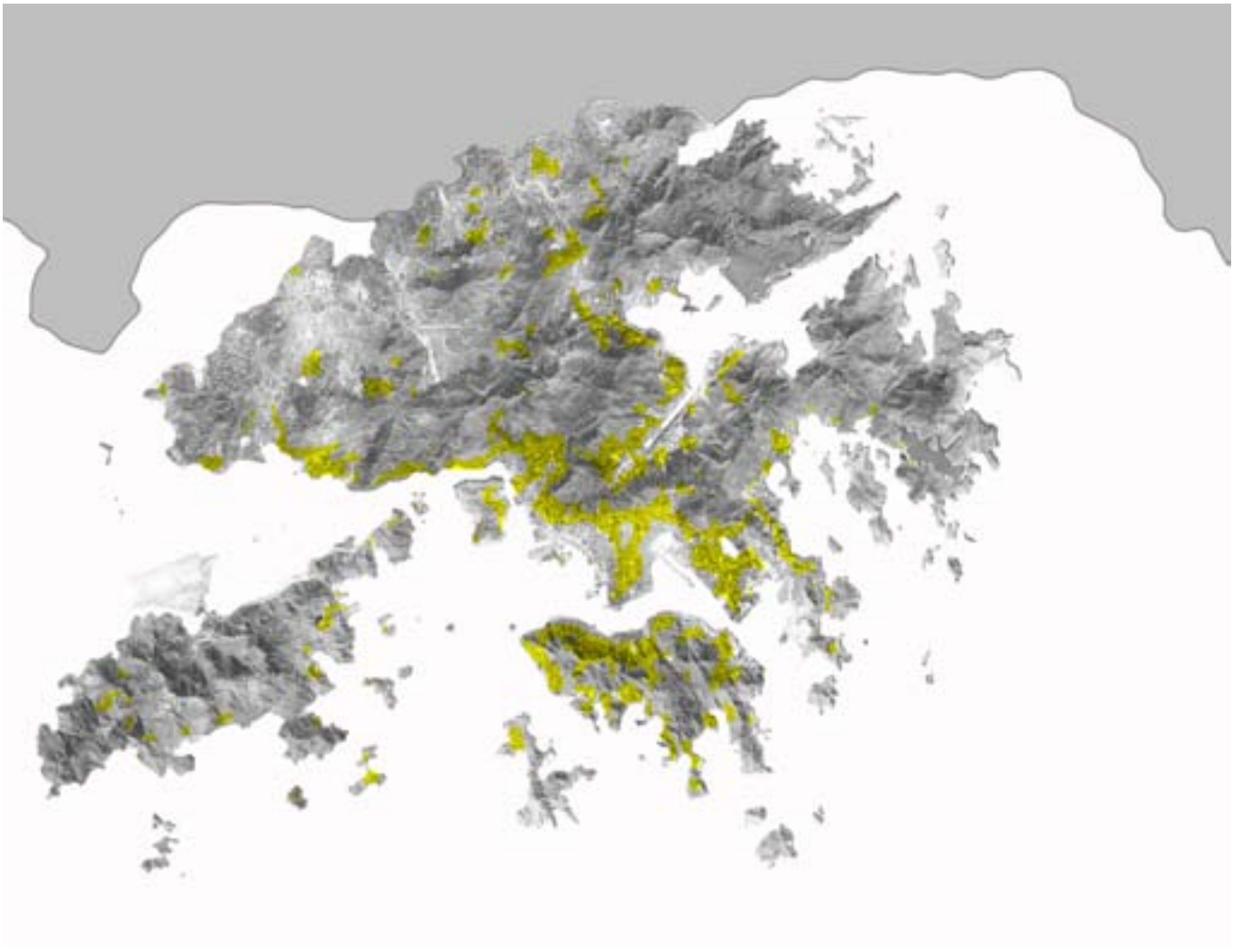


**areas with intense rainfall incidence  
(1979-1995) — >70mm p.h.**



**landslide incidence in hong kong area,  
1994-1998**





**Slope areas, 57 000 registered secured slopes**

# DANGER OF LANDSLIDES

**“If you imagine 200 years ago, this is just small fishing village at the coast of china. When the British came in 1840, Hong Kong harbour was a wonderful port to use as base. If your`re starting town and country planning today with a green field site, this is, my view, one of the last places in the world you would try to build a city of five million people, because there is not much flat land.”**



**“I think Hong Kong is unique. It’s the only city in the world, with such an extensive steep development on these types of slopes. Rio de Janeiro, Caracas or some european cities also got some areas of the urban development on steep slopes, but not to the same extend as Hong Kong.”**

**“So the impact of landslides and soil erosion is more direct in terms of consequence in this urban area than in another city in the world. That’s why we afford a very strong governmental control on these slopes.”**



**“The population was only half a million at the end of Second World War. Now it’s nearly seven million. So landslide incidence starts to become a big problem. Through the 50, 60 and 70`ties, we started to have landslide disasters.”**

**“This is one of the famous ones in 1972, when part of the hillside at mid-levels area felt down and knocked down housing, about 67 people were killed that day. On the same day, under intense rainfall another 71 people were killed when a big loose fill slope collapsed. In one day we had 138 people killed in 1972.”**



**“For the last 30 years nearly, Hong Kong government has a very strong control over really three main things. First of all is checking new building site formation projects, to make sure, that people, who form new slopes by cutting and filling, build the slopes to modern standards. The second main thing in the governmental plan is to start a long term program of stabilizing the old cut and fill slopes and retaining walls to bring them up to modern standard. We’re currently spending at least 100 000 000 US\$ a year upgrading all these thousands and thousands of old slopes. And the third thing was this try, starting to encourage all slope owners, the people who form the slopes to maintain the slopes, cause slopes are like your own body or a car, they need to be looked after.”**

**Mr. R. P. Martin  
Chief of the Geotechnical Engineering Office**

# CONTROLLED LANDSCAPE

57.000 slopes in the Hong Kong region are registered in an online database. The website is provided by the Geotechnical Engineering Office, which is responsible for the maintenance and planning of the slopes.



11NW-A/C 332

03 Dec 1999

Photo 1 : General View

# 11NW-A/C 332

● 1 : 500

● 1 : 1000

● 1 : 2000



HONG KONG SLOPE SAFETY WEBSITE

# SLOPE CONSTRUCTION

The stabilisation of the terrain is usually made with soil nails. Therefore a 15 meter deep hole is drilled into the slope. The drill bits are screwed together in order to reach the required deepness. The distance between the drill holes averages one to two meters.



The soil nails are inserted into the hole and it is filled up with concrete. Often the treated terrain will be covered by a concrete surface for better drain and to prevent soil liquification. This process is called 'shotcreting'.



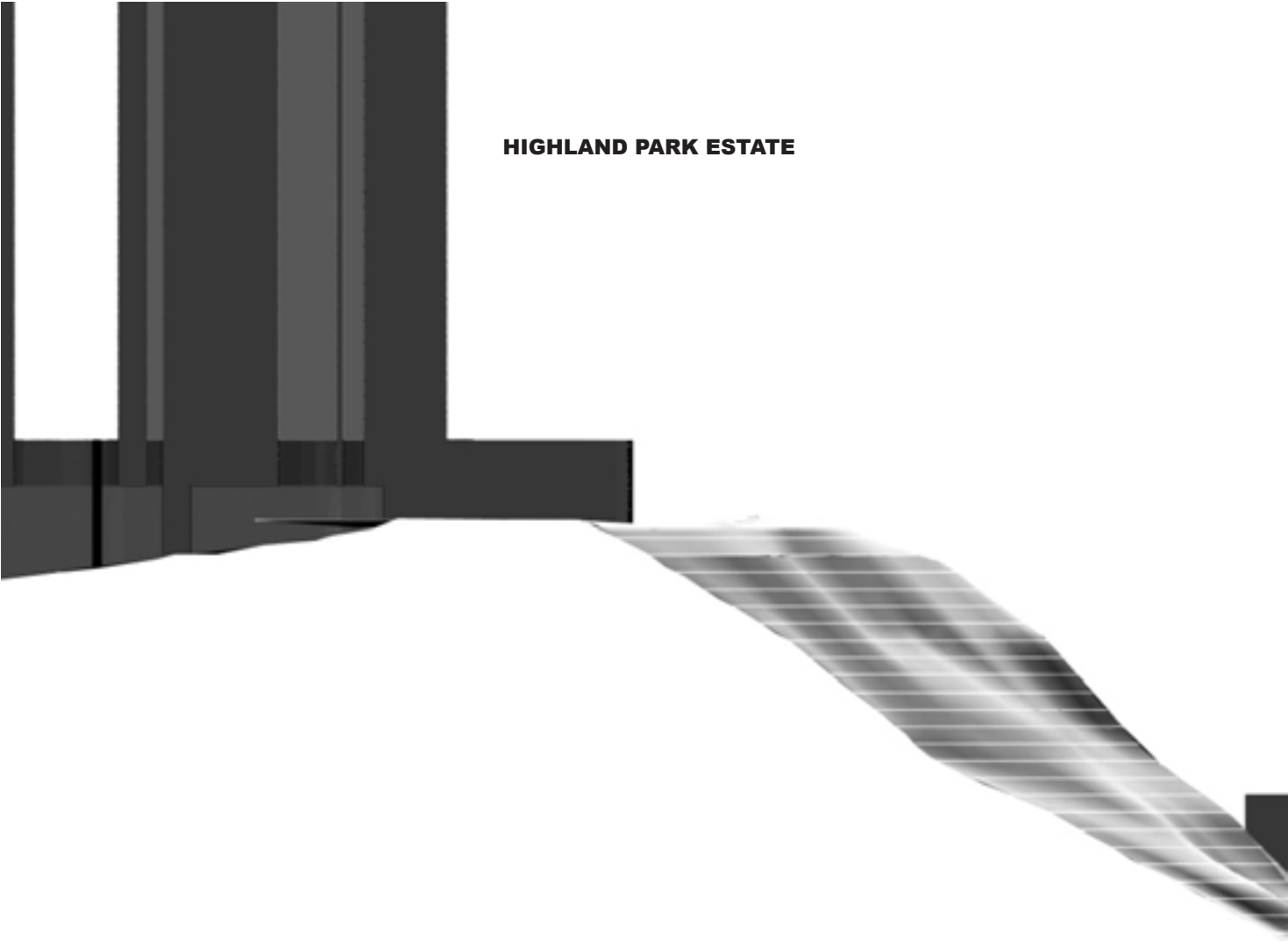
drill bits



soil nails



# SECTION OF SLOPE 11NW-A/C 332

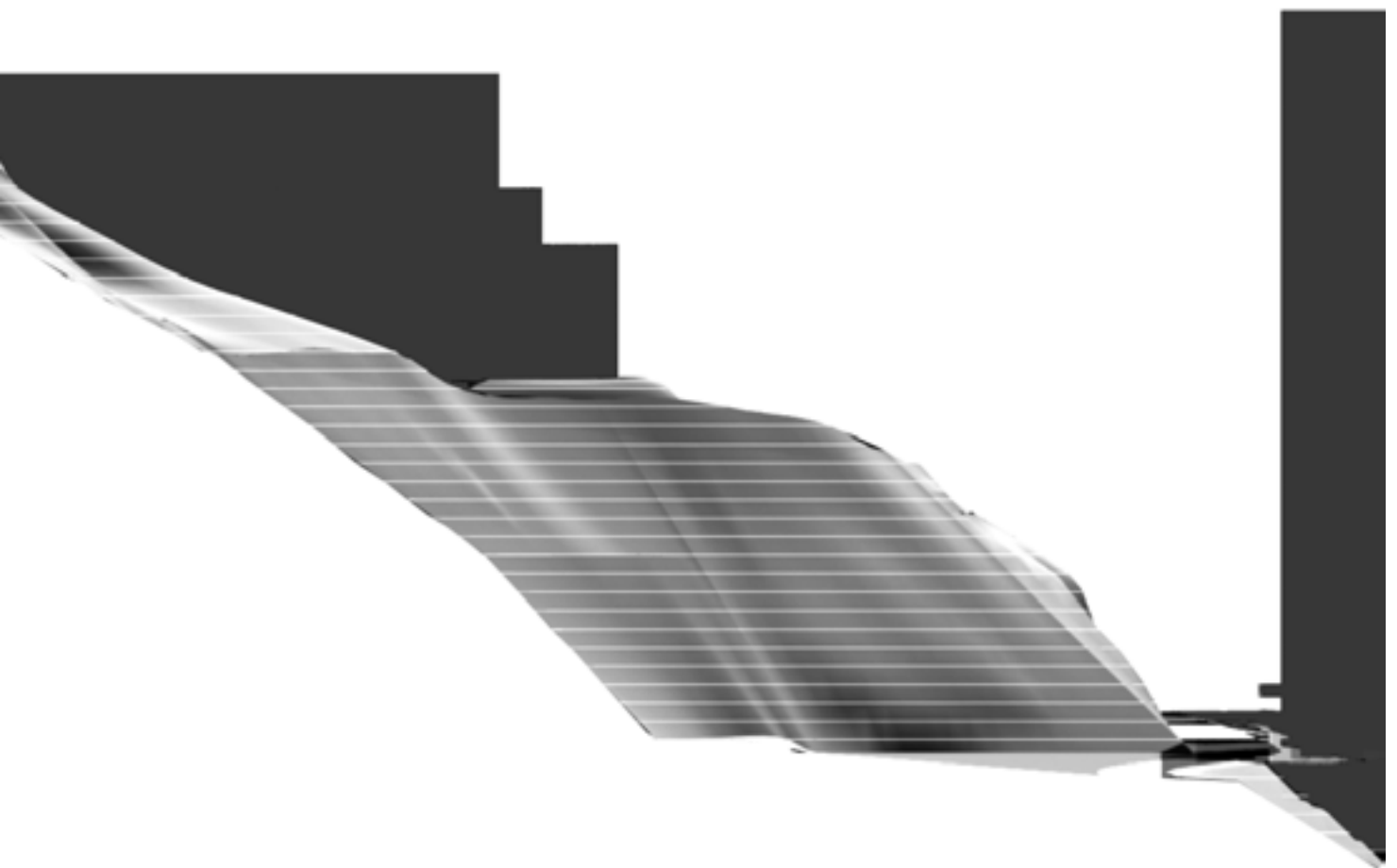


HIGHLAND PARK ESTATE



**KAI MIN LAU BUILDINGS**

**YUET LAI COURT**



# CONCRETE SURFACE WITH SOILNAILS

SLOPE STABILIZED  
WITH SOILNAILS



**PLANTS ON WEEP-  
HOLES**



**CONCRETE CAP  
OF SOILNAIL**

# MAINTENANCE STAIRS AND DRAIN CHANNEL

ROCKSLOPE COVERED  
WITH WIRE GAUZE  
AGAINST ROCKFALL



**MAINTENANCE STAIR  
FOR DRAIN CHANNEL**



**CHANNEL IS STEPPED TO DE-  
CELERATE DRAIN WATER**

# CLEAR BORDER SEPARATES PUBLIC SPACE FROM SLOPE



WATER DRAIN



WIRE GAUZE



**PUBLIC SPACE**



**ACCESS PROHIBITED TO  
MAINTENANCE STAIR**

# WALKWAYS ON SLOPES ARE FOR MAINTENANCE USE ONLY







**DRAFT**  
© ETH Studio Basel

# ARTIFICIAL FOREST

The forest is nerved with artificial drain elements.



CATCHPIT OF THE MAIN  
WATER CHANNEL



STEPPED DRAIN CHANNEL



**NATURAL DRAIN COVERED  
WITH CONCRETE**



**SPRAYED CONCRETE ON  
FOREST GROUND**

**The stabilizing and drain elements reveal the artificiality**

**DRAIN CHANNEL**

**PLANT MAT STABILIZE  
FOREST GROUND**

**PLANTS GROWING  
OUT OF WEEPHOLES**



**START OF DRAIN CHANNEL**



**PLANT MAT ON FOREST GROUND**

**DRAIN OF THE SOIL**

# DIFFUSE BORDER

PLANTS BREAK THROUGH  
CONCRETE SURFACE



**NO UNAUTHOR-  
ISED ENTRY**

**WIRE GAUZE**



**WEEPHOLE  
FOR DRAIN**

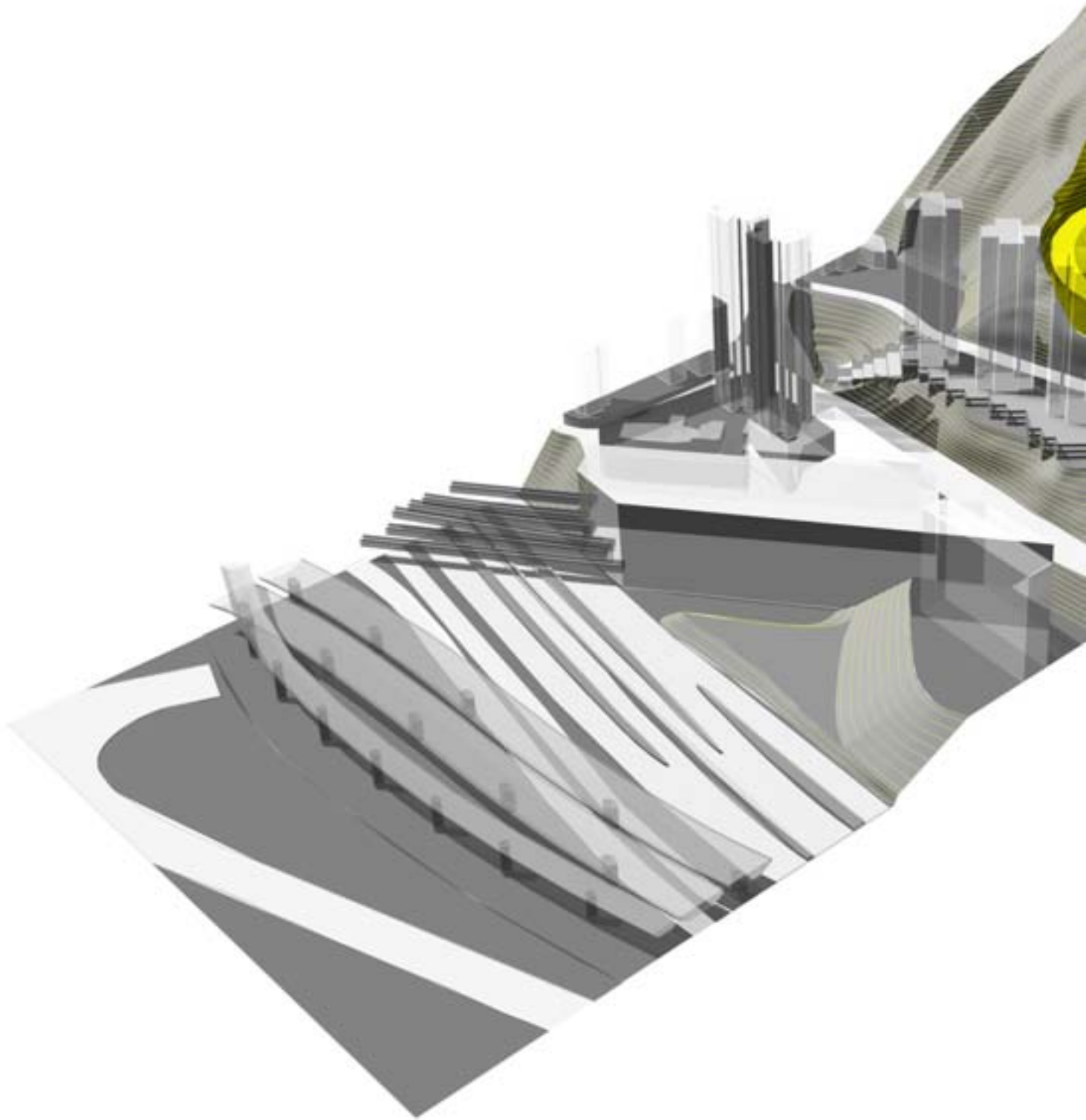
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# SLOPE FOREST PLANTS



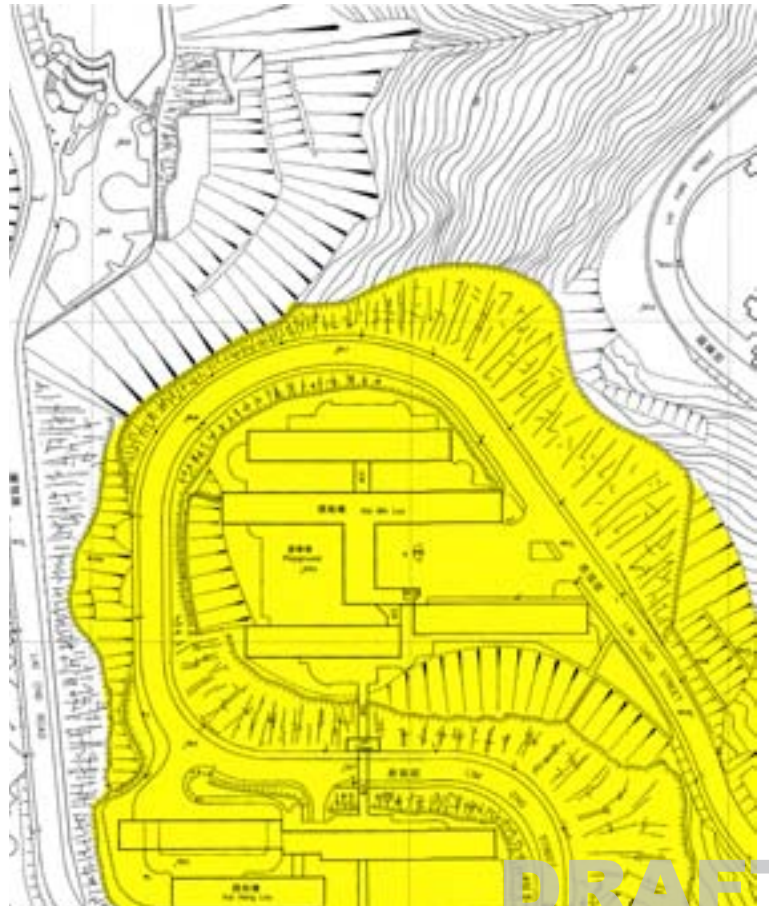
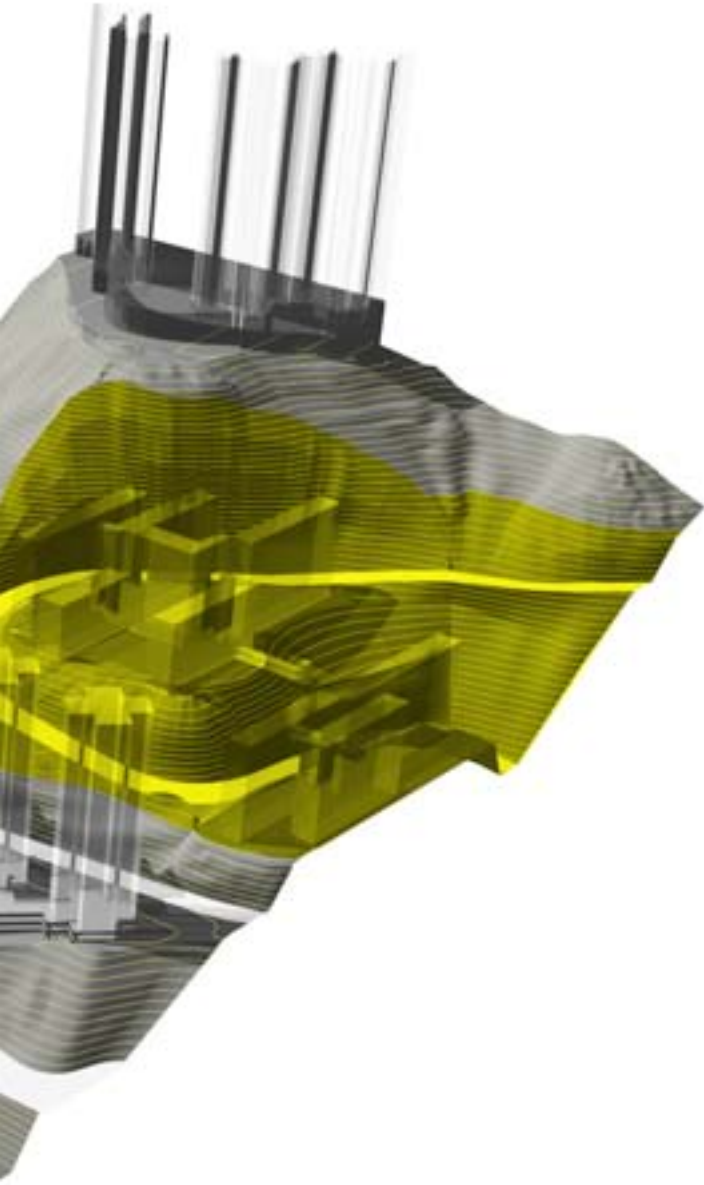






# LIM CHO STREET

## CUSTOMIZED TOPOGRAPHY



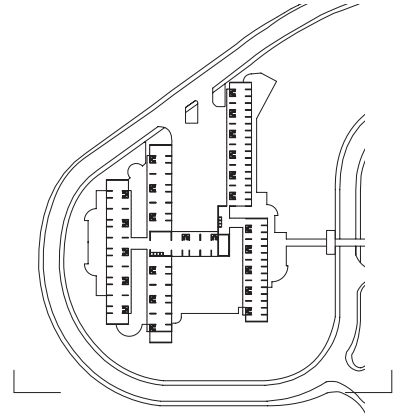
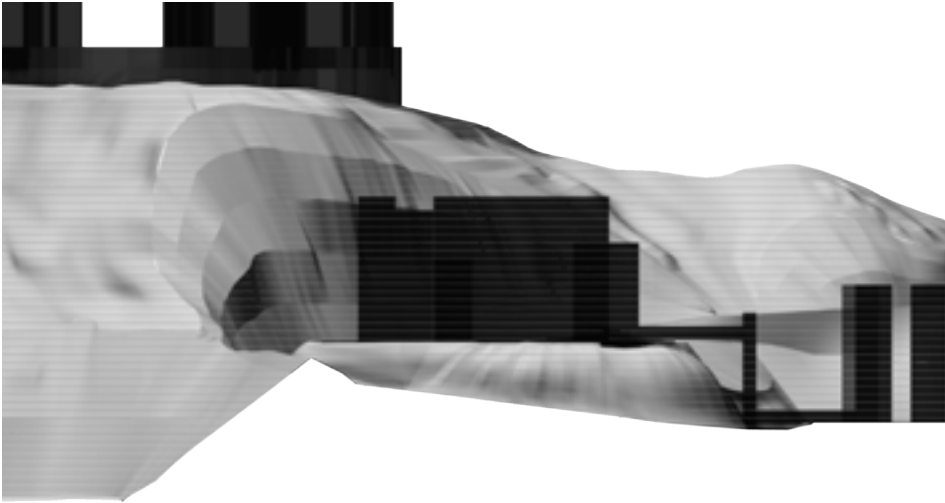
# CARVED

The street is carved into the terrain with a constant inclination.

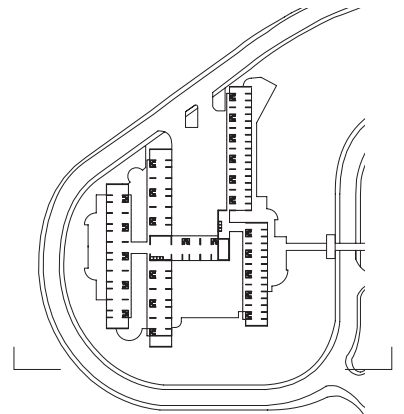
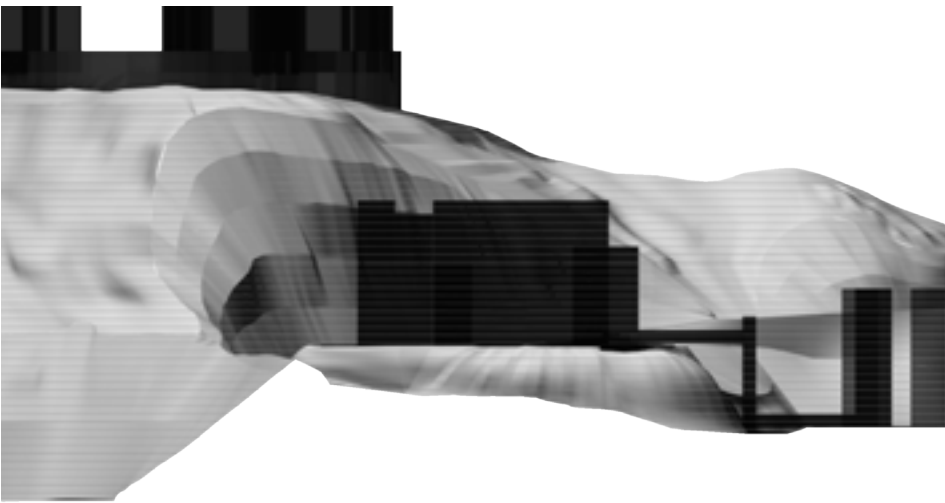




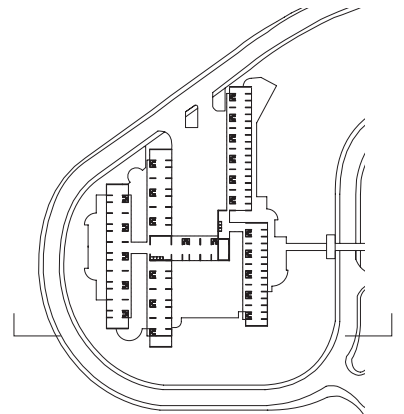
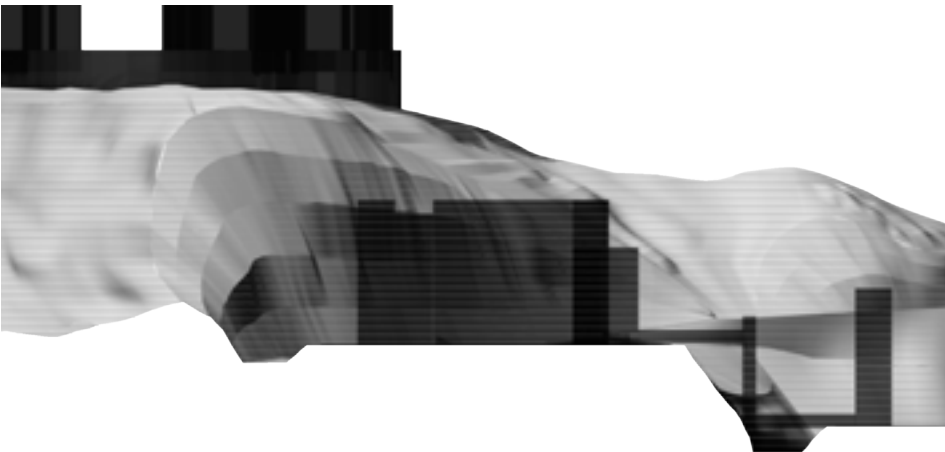
# LIM CHO STREET



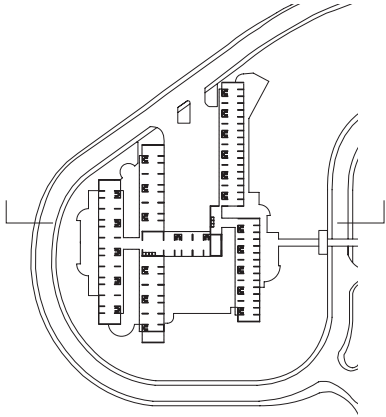
**section 1**



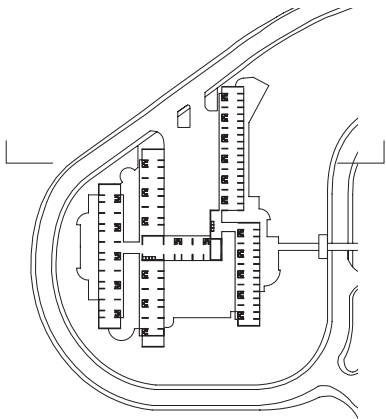
**section 2**



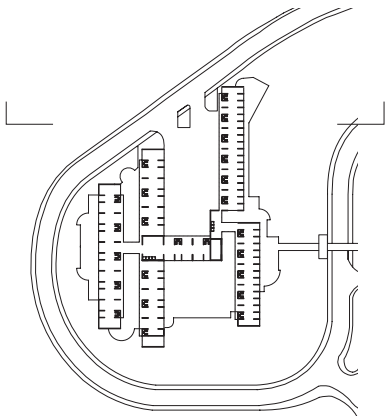
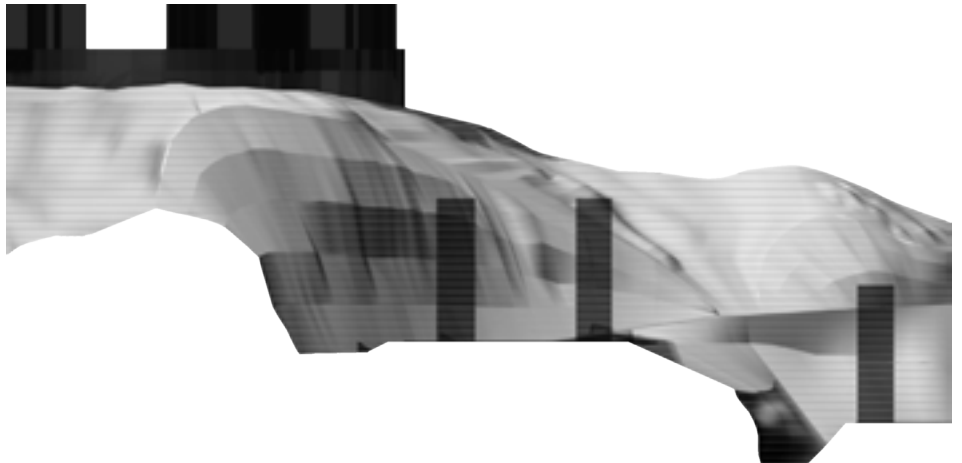
**section 3**



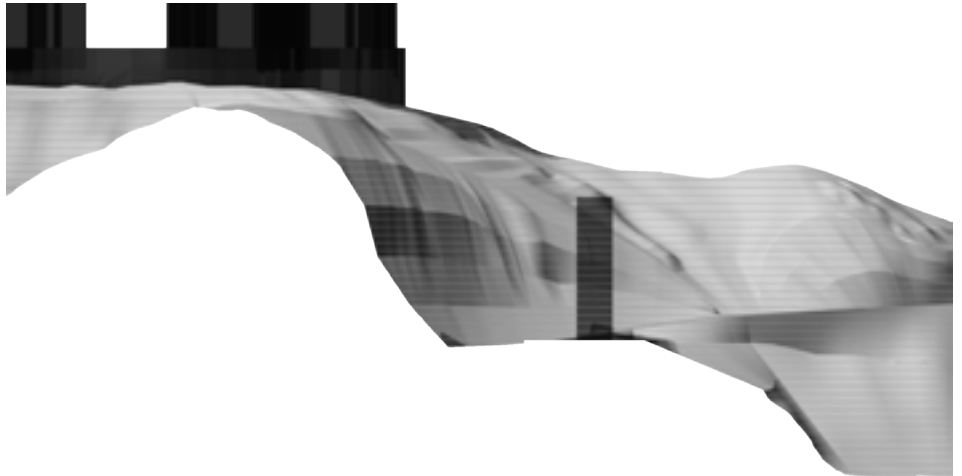
**section 4**



**section 5**



**section 6**



# TEXTURES

Different states of artefact and nature create divers textures







SHOTCRETED AFTER 1999

ROCK SLOPE



**WEEPHOLE**

**DRAIN WATER SEDIMENTS  
COLOURS SURFACE**



**SOIL NAILS**

**ROCK SLOPE**



**SOIL NAILS**

**WEEPHOLE**

**SHOTCRETE SURFACE**

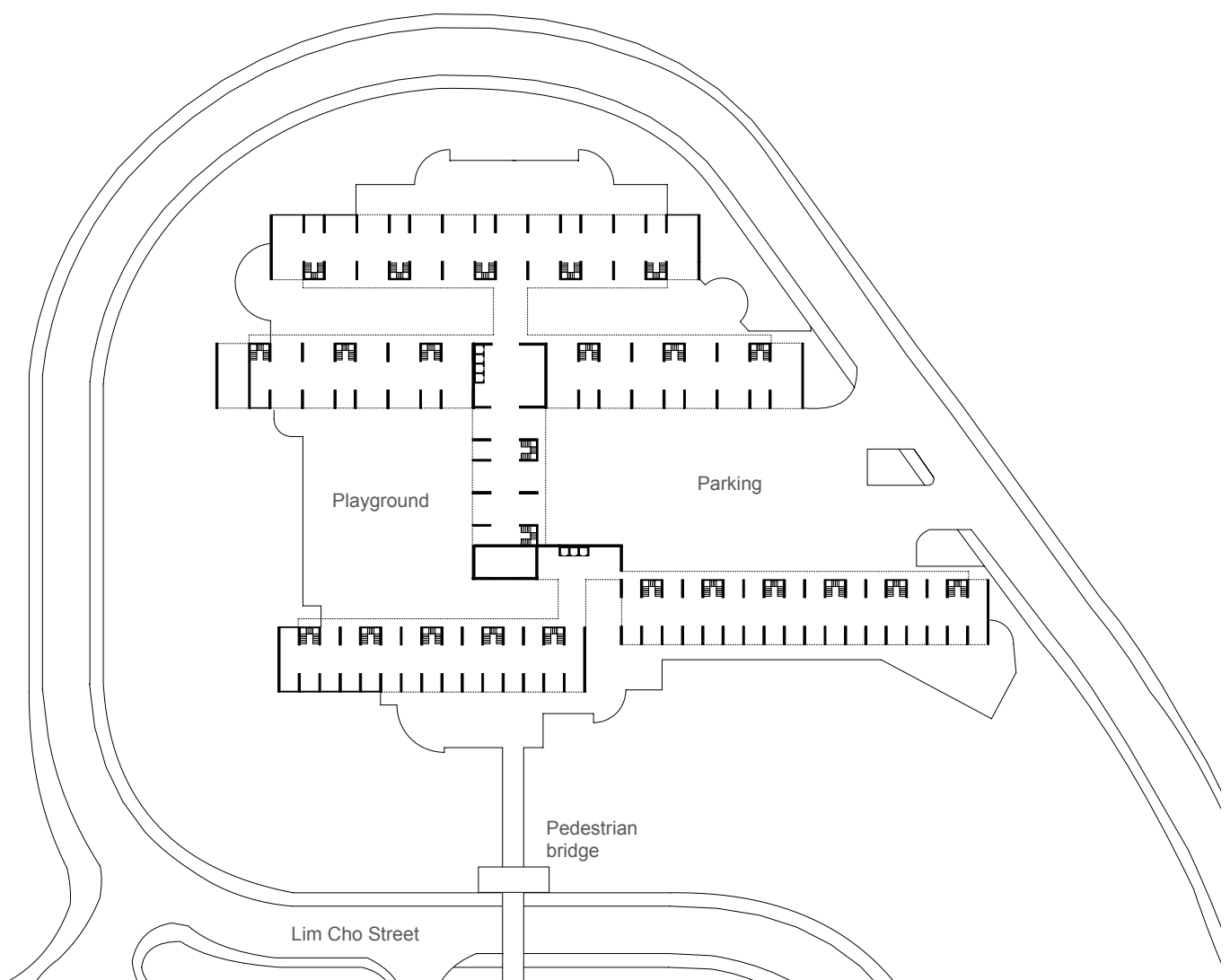


**ROCK SLOPE**

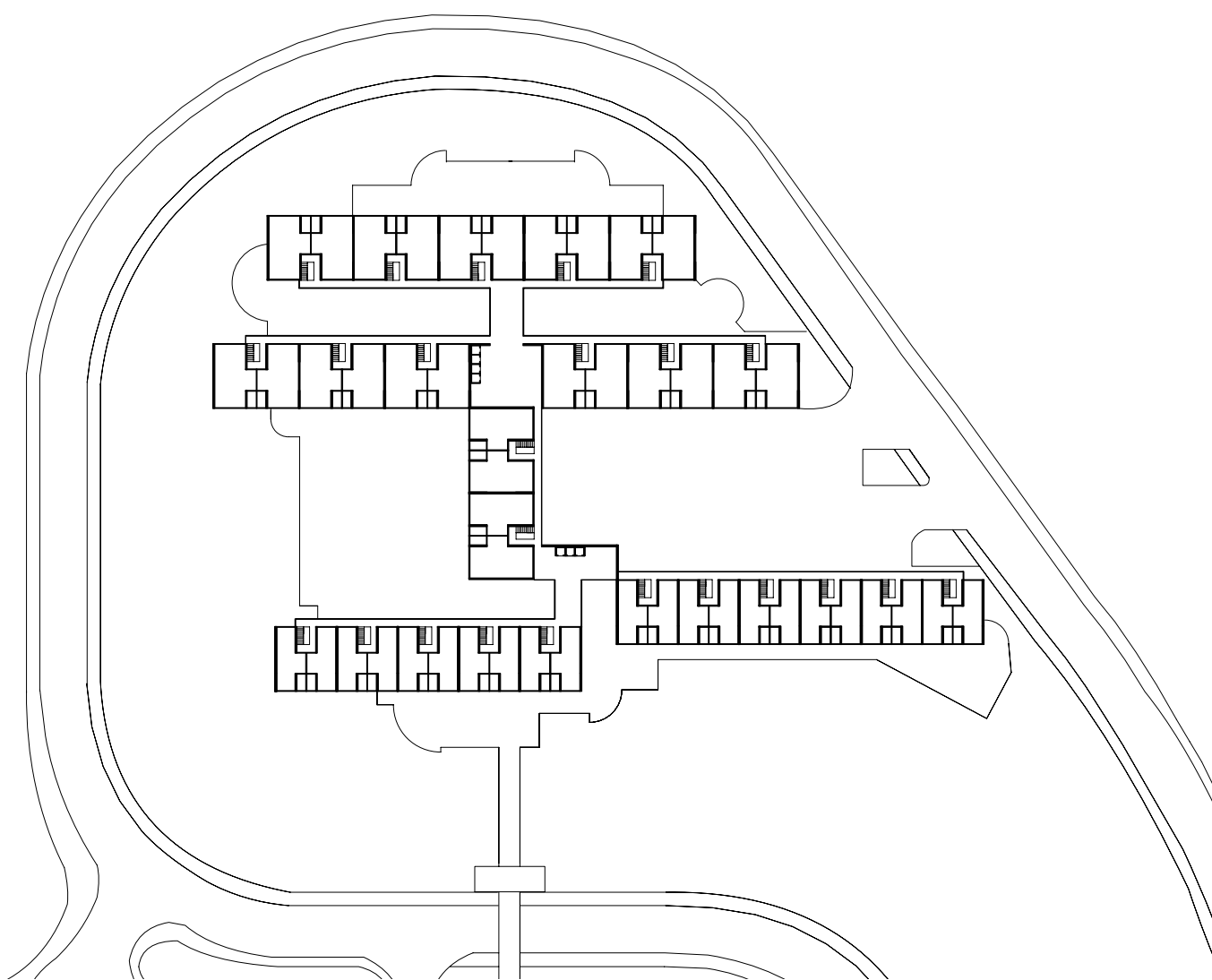
**WIRE GAUZE AGAINST ROCKFALL**

# KAI MIN LAU BUILDINGS

The construction of Cho Yiu Chuen Estate was started in 1977 by the Hong Kong Housing Society and completed with Kai Min Lau Buildings in 1981. The form of the buildings belong to the 'Slab type'. Lim Cho Street separates Kai Min Lau from Cho Yiu Chuen Estate and its surroundings like an island. The only direct connection is the pedestrian bridge with elevator.



**Podium level**



**Third floor**

# ADJUSTED

The slope is formed to a flattened plateau for the building platform used as public space.





# OVERLAP

The building structure overlaps the platform, adapted to the slope inclination.

CHILL OUT IN  
THE SHADOW

PLAYGROUND





**PODIUM LEVEL**

**FOR MAINTENANCE  
USE ONLY**



**FLATTENED SLOPE**

**DRAFT**  
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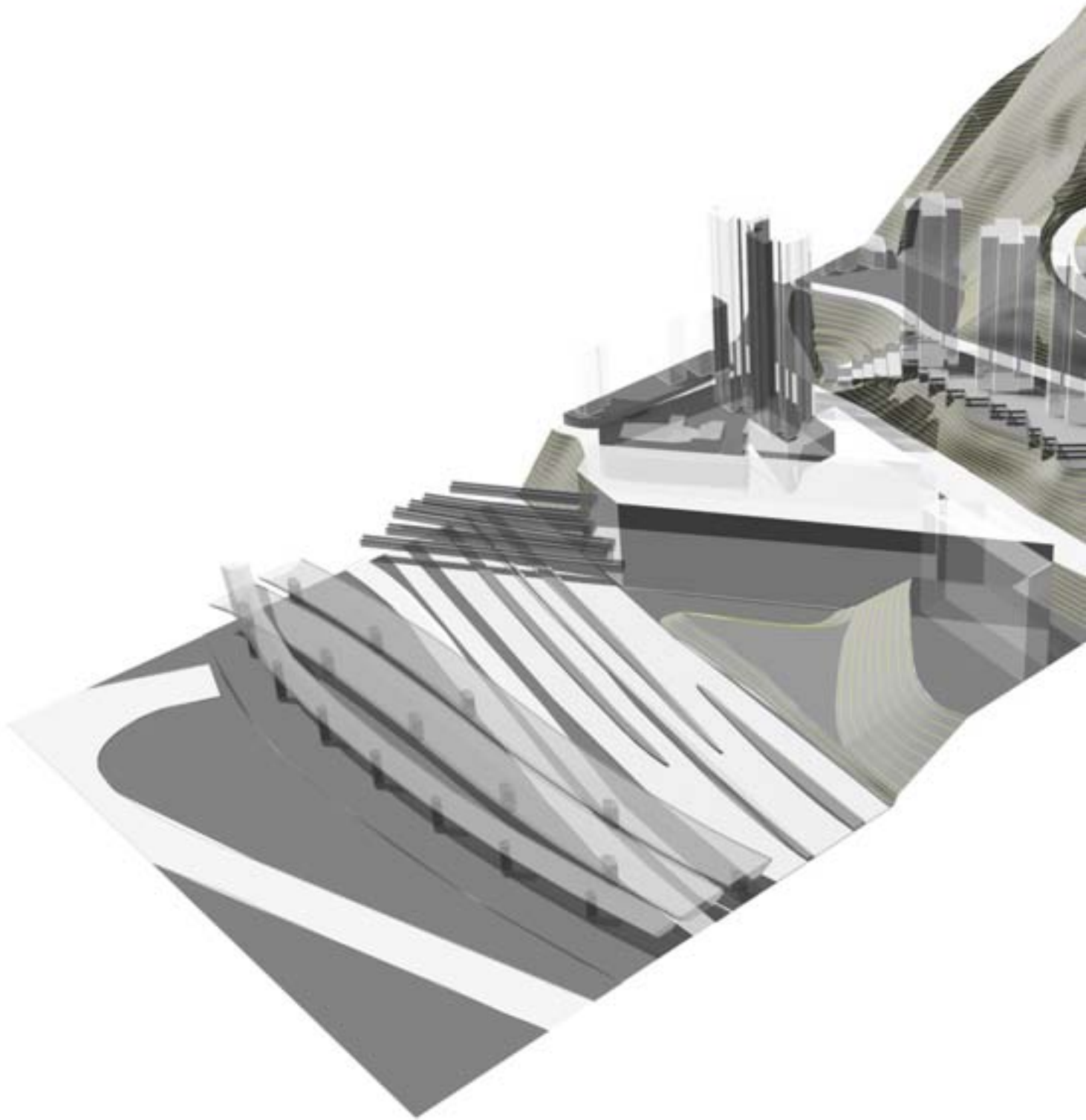
# DETACHED

The pedestrian bridge between the two platforms is detached from the terrain and divides the slope inclination into horizontal and vertical.



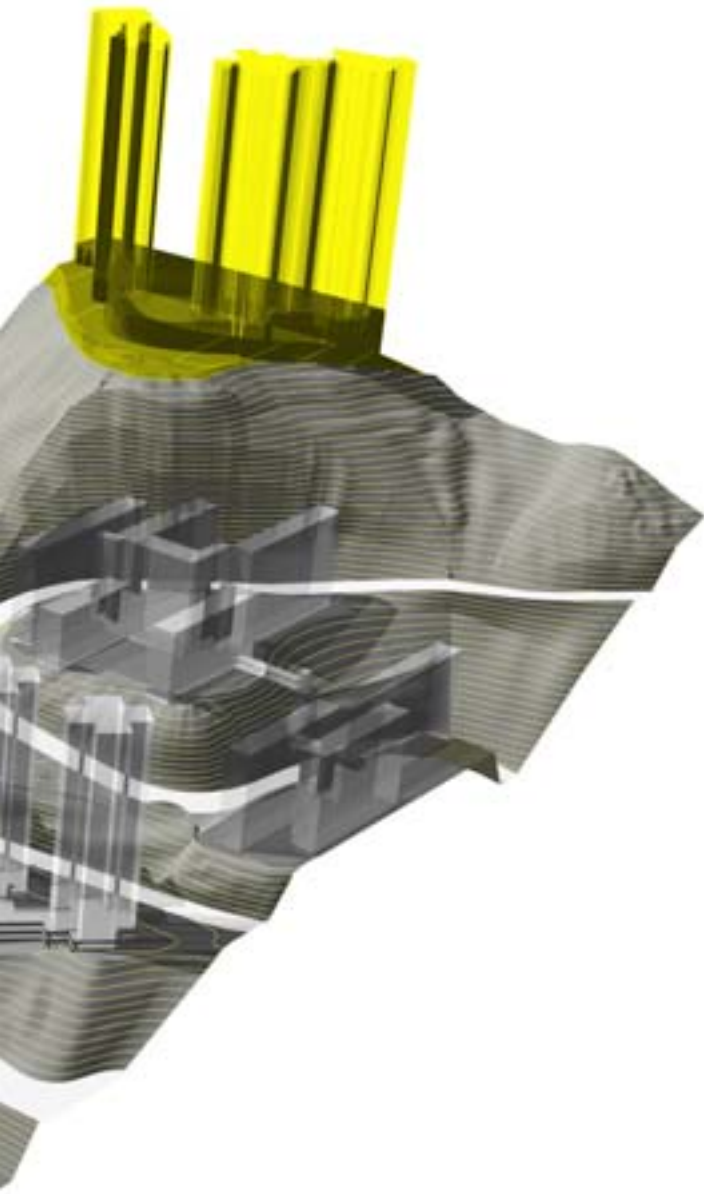


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# HIGHLAND PARK ESTATE

PRIVATE HILL

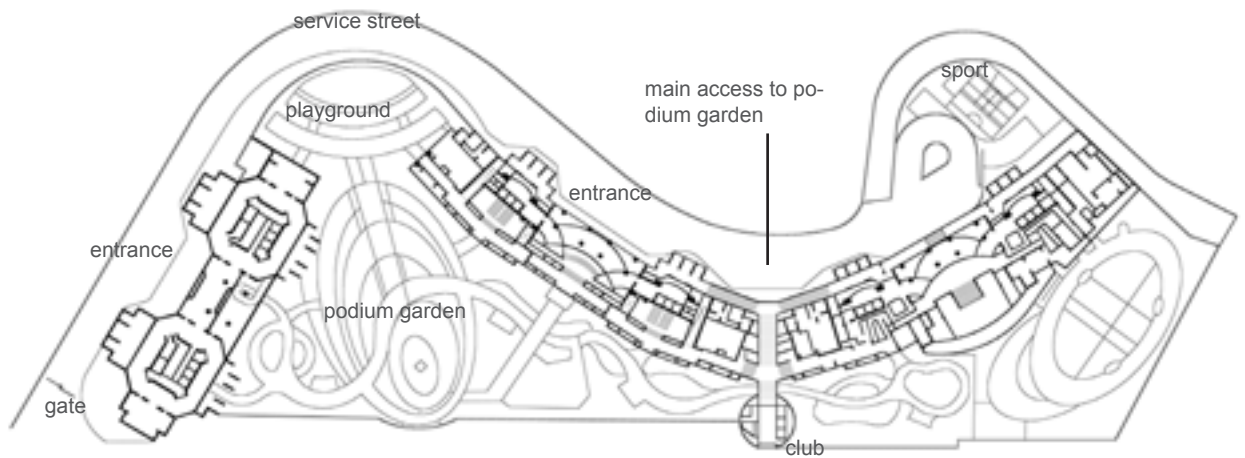


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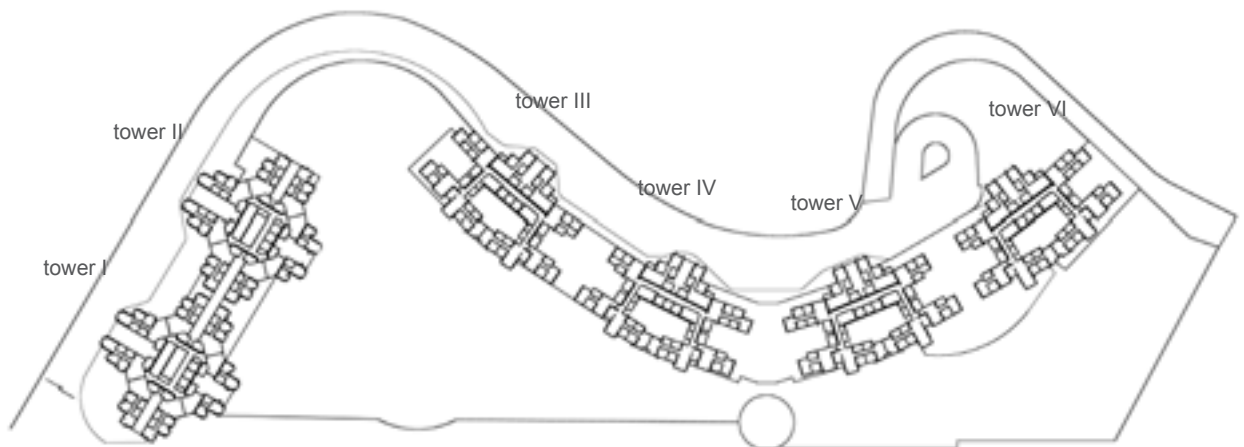
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# HIGHLAND PARK ESTATE

Highland Park Estate was completed in 1999 and is one out of 13 built estates that belongs to the Sandwich Class Housing Scheme. In the early 90's, the Society was invited by the Government to develop properties for sale at concessionary prices to eligible middle-income families.



## Podium level



## Flat level



# SECLUDED

Public space is turned into a private artificial garden elevated onto the podium and secluded from its surroundings. The podium is referencless to the topography.

FOREST SLOPE  
11NW-A/C 332

LAI FUNG  
STREET







**PLAYGROUND AT  
EXPOSED POSITION**



**PRIVATE GARDEN**

# RESTRICTED VIEW

The view from the top of the hill is entitled to those with permission to enter.



ENTRANCE GATE TO LAI FUNG STREET



PODIUM GARDEN

SERVICE FACILITIES

LAI FUNG STREET

**FENCE TO FOREST  
SLOPE 11NW-A/C 332**



Car Park Shroff  
← 往停車場繳費處



**MAIN ENTRANCE  
TO ESTATE**

**DRAFT**  
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# EIGHT HONG KONG PRINCIPLES



**PRIVATE HILL**

**THE GREEN WALL**

**DRAFT**

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**LAND ON  
DEMAND**

**USE TO  
THE MAX**

**CONDENSED IN-  
FRAStructure**

**FIGHT FOR  
SPACE**

**CUSTOMIZED  
TOPOGRAPHY**

**INVISIBLE  
GIANT**



## **internet websites:**

Lands Department:  
<http://www.info.gov.hk/landsd/>

Highways Department:  
<http://www.hyd.gov.hk/welcome/index.htm>

Planning Department:  
<http://www.info.gov.hk/planning/>

MTR Hong Kong:  
<http://www.mtr.com.hk/prehome/index.html>

Hong Kong Slope Safety:  
<http://hkss.ced.gov.hk/hkss/index.htm>  
Slope Information System:  
<http://hkss.ced.gov.hk/hkss/eng/slopeinfo/siswelcome.asp>

Hong Kong Housing Society:  
<http://www.hkhs.com/>  
Cho Yiu Chuen Estate:  
<http://www.hkhs.com/eng/business/10.asp?contentid=1&estid=10>  
Highland Park Estate:  
<http://www.hkhs.com/eng/business/33.asp?contentid=1&estid=33>

Hong Kong Housing Authority:  
<http://www.housingauthority.gov.hk/en>