URBAN AGRICULTURE
An Ecological Vision for Hong Kong
IO DESIGN
The Partners at 10 DESIGN have designed and delivered projects in more than 50 cities across 7 regions around the world.
Ecological Footprint measures humanity’s demand for ecological assets.

* WWF. Hong Kong Ecological Footprint Report 2013.
**Biocapacity Deficit** is the difference between Ecological Footprint and the Biocapacity of a region or country.

150x
Hong Kong’s demand for Ecological resources is more than 150 times greater than local biocapacity.

2.6 planets
The number of planets required if everybody in the world consumed resources at the same rate as Hong Kong.

26
The size of Hong Kong’s Ecological Footprint makes it the 26th most demanding country in the world.

* WWF. Hong Kong Ecological Footprint Report 2013.
Footprint Composition: Categories of Consumption

* WWF. Hong Kong Ecological Footprint Report 2013.
URBAN AGRICULTURE
A TRADITIONAL PRACTICE?
URBAN AGRICULTURE
HONG KONG HISTORY

Happy Valley

1850

1970
Pok Fu Lam

1970

2000
Ma Shi Po

Today
URBAN AGRICULTURE
SOCIAL PRACTICE

Bank of America Tower

Hysan Place

University of Hong Kong

City University of Hong Kong
URBAN AGRICULTURE

URBAN FARMING WORKSHOP AT BOA ROOF
OBJECTIVES:

• **Develop an ecological vision** for Central Victoria Harbour that redefines the city’s relationship with its natural and urban connections and heritage.

• **Design interactive resiliency** to protect against the implications of future climate change through a biomimetic design process.

• **Explore new urban forms** through design for a Vertical Farm Centre, cultural moments, pavilions and installations that create a dynamic urban waterfront.
REDEFINE THE TRADITIONAL WATERFRONT

ECOLOGICAL VISION
VERTICAL FARM CENTRE
SYSTEMS DESIGN

ENVELOPE SECTION: OFFICE DOUBLE SKIN GREENHOUSE
VERTICAL FARM CENTRE
ECOSYSTEM CYCLE
WATER
The building purifies 8.7 million gallons of water per year,
Equal to: **3500 POOLS**

WASTE WATER
If all site water were recaptured by the building and neighboring wetlands, the site would purify 40 million gallons per year,
Equal to: **16000 POOLS**
And the water’s value would be: **HKD15 MILLION**

ECOSYSTEM CYCLE
The Vertical Farm Centre and Harbourfront follow an ecosystem cycle, in which all waste is repurposed.
The Principal goal is: **0 WASTE**
AGRICULTURE

VFC introduces a descending production system, comprising of 62,500sm (220,000sm tower), 2/3 of that space doubles as circulation, exhibition, observatory, restaurants and shops. The aero & hydroponic systems yield 5-10 crop cycles per year, are light weight, space efficient, and can be stacked vertically on each floor.

The total vertical growing area is equal to: 172 HECTARES

Annual photosynthesis would capture up to: 900 TONS CO₂

Annual production yield could generate up to: HKD500 MILLION
## Farm and fortune

Hong Kong's agricultural sector

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of farmers and workers</th>
<th>Cultivated area (hectares)</th>
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<tbody>
<tr>
<td>1995</td>
<td>8,900</td>
<td>2,070</td>
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<tr>
<td>2000</td>
<td>5,600</td>
<td>1,430</td>
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<tr>
<td>2005</td>
<td>5,300</td>
<td>833</td>
</tr>
<tr>
<td>2010</td>
<td>4,700</td>
<td>746</td>
</tr>
<tr>
<td>2011</td>
<td>4,600</td>
<td>734</td>
</tr>
<tr>
<td>2012</td>
<td>4,500</td>
<td>732</td>
</tr>
<tr>
<td>2013</td>
<td>4,400</td>
<td>729</td>
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</tbody>
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Source: Food and Health Bureau, SCMP
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FUTURE IMPLICATIONS

PRELIMINARY FEASIBILITY STUDY
ON DEVELOPING THE NEW TERRITORIES NORTH
URBAN AGRICULTURE
INTEGRATED PLANNING

THE SITE
- commercial and retail programs
- along a green civic park
- close proximity to residential buildings
- competition with neighbouring mall

RESPONSE:
- position main retail anchors and entry points

THE SITE
- major traffic from the residential/mall complex next door
- as well as from the central green civic spine

RESPONSE:
- create a central garden meeting space

THE SITE
- facilitate movement through site

RESPONSE:
- position attractive commercial icons

THE SITE
- symbolic corner to be on the south-east corner where views to the site from the HaiZhou Avenue is most prominent

RESPONSE:
- suggest more formally interesting volumes

THE SITE
- garden language will extend its language into the site from the civic green spine

RESPONSE:
- bring gradient of green park into the site

THE SITE
- three major entry points to respond to the three major frontages of the site

RESPONSE:
- locate entry points to maximize traffic into the site and create gateways

THE SITE
- prospect high value areas for retail as predicted from traffic and frontage analysis

RESPONSE:
- position major retail anchors
URBAN AGRICULTURE – 2015
INTEGRATED PLANNING
INTEGRATED PLANNING

- FARMING AREAS
- STORMWATER STORAGE
- GREEN LANDSCAPE