Redevelopment of Old Harbour Area

Back To Street Life

Singapore steers for a knowledge-based city

MSC4 Globalization Studio
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Presentation Structure

> 1. Introduction

> 2. Main Research Questions

> 3. Compulsory Analysis

> 4. Approaching

> 5. Design Apply

> 6. Epilogue & Question
1. Introduction
Singapore, which is located in Southeast Asia, is such a tiny island country with area no more than 700 km².

But such limited place, was and is important as a port city and beneficial of its rapid economical development.

Especially having an amazing change in the last 3 decades.
Introduction
Introduction

Back To Street Life - Redevelopment of Old Harbour Area

Political

Port City

Economical & Industrial

Dependence → Manufacture

Colony (1819) → Independence (1965)

Singapore as a Port City (Status of Harbour)
Introduction
Singapore is steering towards a knowledge-based city.
Definition of KB city

“A KC is a city that aims at a knowledge-based development, by encouraging the continuous creation, sharing, evaluation, renewal and update of knowledge. The citizens’ knowledge-sharing culture as well as the city’s appropriate design, IT networks and infrastructures support these interactions.”

Phase 1: Started From the Seashore

1840s

Growth of Singapore 1819-1945
Phase 2: Towards the Hinterland

“Singapore is incredibly ‘Western’ for an Asian city, the apparent victim of an out-of control process of modernization. Almost all of Singapore is less than 30 years old; the city represents the ideological production of the past three decades in its pure form.” - Rem Koolhaas (1995)
Phase 3: Refocusing the Seashore

“The ‘Western’ is no longer our exclusive domain. Except perhaps in the regions of its origins, it now represents a condition of universal aspiration … Now that the time is ripe for Singapore city itself to be renewed.”
- Rem Koolhaas (1995)
Old Harbour Area as a Strategic Project

According to the analysis and conceptual plan, several Strategic Projects are proposed to strengthen the idea of ‘knowledge corridor’.

What is the fortune of old harbour area after the functional transfer? What it will be?

Main Research Questions
2. Main Research Questions
Main Research Questions

1. What is the position of Old Harbour area within the Knowledge Commercialization Node?

2. How can the regeneration of Old Harbour area in accordance with the new requirement of Knowledge Society in Singapore with its unique situation?

After the transfer of harbour function?
Main Research Questions - How to Answer?

1. What is the **position** of Old Harbour area within the Knowledge Commercialization Node?
   - Existing physical relation
   - Existing functional relation
   - The data requirement (Housing & Office) of Singapore towards knowledge society

2. How can its regeneration in accordance with the **new requirement** of Knowledge Society in Singapore with its **unique** situation?

   - Position of Old Harbour area (answer of 1st question)
   - Spatial requirement from the theory of knowledge-based city
   - Extra analysis?

   Design Method & Design Apply
> 3. Compulsory Analysis
Physical Relation - Infrastructure
Physical Relation - Infrastructure

Highway

Surrounding Road System

Analysis
Physical Relation - Green

Activities category of green space
- Tourist
- Recreation
- Studying Relax
- Living Relax
- Working Relax

Overlapping scale

Linear green structure along seashore

Analysis
Functional Relation - Public Function

Possible old industry regeneration for new working places.

New green spot proposed by government.
Old harbour can be a transitional area in the spatial meaning.
Data Requirement - Population & Housing

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Data Requirement - KB Employee & Office

Proportion of occupation development trend

KB employee population forecast

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<th>labor force (15-65)</th>
<th>KB employee</th>
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<td>extreme</td>
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1. There will be 1.62 million new labor force (age between 15-65) till 2030
2. The proportion of high-tech related worker is increasing, based on the growth rate there will be 61% employment working in this sector.
Old Harbour Area as an Opportunity & Example

To meet the population growth. If we only develop the **19% living area** in Knowledge Corridor according to Master plan from municipality. The density of vacant area reserved for housing within the 19% area will be **5 times higher** than that of existing living area.
Approaching - Two Ways of Design Method

- For Harbour as a Whole

Connecting to the other part of the city with the criteria: High efficiency, Continuity, Diversity and Strong identity
By defining important Nodes and Corridors together as a Public System.

- For Scale Overlapping Area & Neighborhood

Extra analysis & Theory support
Existing HDB Model - Negative Aspects

- Separated Public Functions
- Lack of Linear Public Space
- Only Commercial Function in Vicinity of Basic Unit
- Weak Identity of Street
- Weak Connection between Yard and Street
- Diverse Housing unit but Mono Precinct Model
Theory – Spatial Requirement of KB City

In Modern Society, there is a risk of public space: the decline and privatization of public life.

“They are now subsumed under a broader narrative of loss that emphasizes an overall decline of the public realm and public space... It has been suggested also that the decline of the public realm is paralleled by a corresponding decline in the public spirit, which resides in the very core of our collective intuitions of civil society.” (Tridib Banerjee, 2001)

Contradictive to Spatial Requirement of KB City:

- The continuous interaction between its citizens themselves and at the same time between them and other cities’ citizens
- Greater opportunities to share the wealth through investment in the public domain (parks and gardens, public transport, cultural facilities etc)
- Creation of a tolerant environment towards minorities and immigrants
- Creation of knowledge communities that provide ‘just-in-time’ knowledge when it is needed (SGS Economics, 2002)
Other Cities - Street Life as Strong Identity in Asian Cities

Approaching
Approaching Back To Street Life - Redevelopment of Old Harbour Area

Historical Model of Singapore - Street Life

As a strong identity in Singapore History

Now

Before
Historical Model of Singapore - Street Life

Approaching...
Historical Model of Singapore - Street Life

China Town (1840s)

Historical Residential (1950s)

Major City Road
Major Neighborhood Road
2nd Neighborhood Road
Housing
Backyard

No Hierarchical Road System

Three Hierarchical Road System

Section A

Section B

Section C
Historical Model of Eastern Culture - Street Life

Approaching Historical Model of Eastern Culture - Street Life
Grid Structure of Old Harbour area

A Good Opportunity for Keeping Harbour Memory & Developing Street Life

China Town

120 M

50 M

History Residential

350 M

100 M
Approaching – Two Ways of Design Method

- For Harbour as a Whole

Connecting to the other part of the city with the criteria: High efficiency, Continuity, Diversity and Strong identity **By** defining important **Nodes** and **Corridors** together as a Public System.

- For Scale Overlapping Area & Neighborhood

**Street as an Instrument & Street Life as an Objective:**
- Meets the traditional identity of Singapore/Eastern history
- Creating such linear space for continuous interaction and ‘sharing culture’ in Knowledge Society
5. Design Apply
Nodes & Corridors - Existing Surrounding
Nodes & Corridors - Possibility
Nodes & Corridors - Important Nodes

- Office & Leisure Mixed
  - Existing: Old Industry
  - New: MRT Station, Offices, Open Space, Leisure Facilities

- Office & Commercial Mixed
  - Existing: Office, Railway Station
  - New: MRT Station, Office Extension, Commercial

- Office & Community Service Mixed
  - New: Office Extension, Community Center, Linear Park, Leisure Facilities

- Culture & Exhibition Mixed
  - New: Media Center, Culture Center, Cafe & Restaurant

- Commercial & Leisure Mixed
  - Existing: Shopping Mall, Harbour Industry
  - New: MRT Station, Shopping Mall, Hotel

- Waterfront Service & Community Service Mixed
  - New: Water Sport Facility, Community Center, Cafe & Restaurant

Design Apply
Nodes & Corridors - Important Corridors

Transition Corridor
From Office, Commercial to Leisure, Cultural

Warehouse Regeneration Corridor
Existing: Old Harbour Industry
New: Artist Workshop, Studios, Temporary Exhibition, Indoor Sport

Green Corridor
New: Waterfront Linear Park
City Linear Park
Community Linear Park

Waterfront Seashore Corridor
New: Natural Beach
Café, Bars & Restaurant Entertainment Facilities

New Connection (dike/bridge)
Street System - Define the Streets

High Efficient and Diverse Streets as an Objective and Instrument

- Keeping the streets which are well-connected to outside area
- Defining new streets connected to each vital node and along important corridors

Neighborhood Domain
- Each block should at least face one main public street that has high efficiency to integrate within public space system
- Maintaining most of the blocks' direction and size for keeping the memory of harbour
- Adjusting some block that avoid the low efficient model: 600M x 300M
Street System - Streets Typology
Street System - Complicated Street Area
Nodes & Corridors - After Define
Nodes & Corridors - Green Axis

Green Structure within Road & Texture system

Main Green Continuous Axis
Neighborhood - Density Prediction

Future Singapore Density Prediction: 187 houses/ha (7.5 million population)

In knowledge-based society, diversity & high efficiency is necessary. The diverse density area division is based on the location (public in vicinity, waterfront in vicinity, green park in vicinity) and area size.

Plot ratio: \( 2.5 + 1.5 + 1 \)
Total houses amount: around **25,000**
Density: around 200 houses/ha
(remets the requirement of future density development)

Testing example area
Plot ratio: \( 2.5 + 1.5 \)
Size: 800m x 350m (around 1 HDB unit)
Total houses amount: around **6,000**
Hierarchical System of Neighborhood Center - Position of Old Harbour area

- Singapore
  - Region
    - New Town
      - Neighborhood
        - Precinct
          - Residential Building
    - Regional Center
      - Town Center
        - Neighborhood Center
          - Precinct Center
  - Old Harbour Area
    - Neighborhood 1
    - Neighborhood 2
    - Neighborhood 3

Estimate: (plot ratio 2.5, 1.5, 1)
Around 25,000 houses, Density: 233 houses/ha
Around 6,000 houses
Area: 460,000 sqm
Hierarchical System of Function - New Function Insert

Office
Commercial: Super Market, Department Store, Shops, Food Court
Artist Workshop
Soho Studios
Temporary Exhibition
Indoor Sport
Media Center
Culture Center
Cafe & Restaurant

City Extension
M, L, XL

New Function
S, M, L, XL

Town Center
M, L

Neighborhood Center
S, M

Entertainment Facilities
Bank
Post Office
Super Market
Department Store
Shops
Restaurant
Fast Food
Library
Health Center
Stadium
Park

@Cafe & Restaurant
@Working Studio/Soho Studio
@Training Station: Updated Information, Temporary
@Corridor: Open Office, Office Park
@Access Center: Private, Relaxation, Workspace and Entertainment
@Space Offer: Outdoor/Indoor Sport, Temporary Exhibition
@Living: SOHO Housing, Single Apartment, Apartment Hotel

35 Synthesis Stores
2 Food Centers
1 Supermarket
1 Food Market
Health Center
School
Kindergarten
Compulsory shops:
Bakery, Stationery, Toggery, Glasses Shop, HairCut, Daily Shops, Book Shop
Family Recreational Center

Strengthening the “flexibility, interaction, sharing and just in time” identity of Knowledge Society with Street Life Style from working, playing and living aspects.
Three Main Areas
General Plan - General Spatial Character

- Linear
- Linear
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- Linear/Spot
- Spot
- Spot
- Diverse & Flexible
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General Plan - General Spatial Character

Design Apply
General Plan - General Spatial Character

Linear

Linear A

Linear B

Spot

Warehouse Regeneration Corridor

Seashore Waterfront Corridor

Green Corridor

Neighborhood Prototype Applying

Office
Office + Commercial
Office + Leisure
Cultural + Leisure

Office + Overlapping Function
Important Nodes
Important Crossing

Design Apply
General Plan - General Spatial Character
General Plan – Area for Further Design

A Street:
Connecting two important nodes & two important crossings
Overlapping different functional layers

Three neighborhood blocks:
Possible changeable rhythm

Two corridors
Warehouse regeneration
Seashore

An area not only a challenge of functional conflict
But also a challenge of texture and block conflict.
Further Design – Design Method

Requirement of Knowledge-based City

A

Function + Programme

B

Existing Situation + General Plan

C

Category of Street Segment

A+B+C

Building Prototype

D

Public Domain Apply

Street Life

Neighborhood Prototype
Further Design – Category of Street Segment

According to the three basic aspects mention before, the general guideline of the major street design is:

- High density
- Mixed & diverse programme
- Diverse building prototype
- Changeable linear street’s spatial rhythm
- Diverse crossings linking to public or neighborhood
Further Design – Functional Division

- City Extension
- Town Center
- Neighborhood Center
- City Upgrade

- @Package
- @General Function
- @Street Category

Street Category:
- Highway Crossing Area
- Hybrid
- Crossing Area 1
- Living+Office
- Area in between
- Neighborhood & Office
- Living+Transition
- Crossing Area 2
- Living+Leisure
- Cultural Node Area
- Culture+Leisure

Back To Street Life - Redevelopment of Old Harbour Area
Further Design – New Functional Combination

Functional Combination

- **FC1**: Artist Workshop, Temporary Exhibition, Super Market, Department Store, Food Market
- **FC2**: Super Market, Department Store, Shops, Library
- **FC3**: Complimentary Shops, Bank, Post Office
- **FC4**: Entertainment Facilities, Family Recreational Center, Food Court, Super Market, Department Store
- **FC5**: Stadium, Cultural Center, Floating Stage

Street Category

- **Highway Crossing Area**
- **Crossing Area 1**: Living + Office
- **Crossing Area 2**: Living + Transition
- **Area in between Neighborhood & Office**: Living + Transition
- **Cultural Node Area**: Culture + Leisure

Design Apply

Back To Street Life – Redevelopment of Old Harbour Area
Further Design – Category of Building Prototype

A: Living + Mixed Prototype

B: Office + Mixed Prototype

C: Mono – Public Prototype

D: Existing Regeneration Prototype
Back To Street Life - Redevelopment of Old Harbour Area

Density: Low --------- Median --------- Median --------- High --------- High

- 10 - 30 Houses
- Around 130 Houses
- Around 400 Houses
- Around 500 Houses
- Around 500 Houses

Possible Function:

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Description:

- A1: Historical Building Size (flexible height & housing unit)
- A2: HDB Flat
- A3: HDB Flat Array
- A4: Hybrid High Rise A
- A5: Hybrid High Rise B

A1: Neighborhood Public Function
A2: Leisure: @Cafe & Restaurant @Working Studio/SOHO Studio Shops
A3: Cafe & Restaurant @Working Studio/SOHO Studio Shops
A4: Commercial: Sup Market & Department Store
A5: Living & Mixed Prototype

Design Apply
Back To Street Life - Redevelopment of Old Harbour Area

Density: High & Median Median Median High High & Median

Possible Function: Office + Office + Office + Office + Office +
Parking (Indoor & Outdoor) Super Market Department Store Food Market Library @Training Station @Cafe & Restaurant Temporary Rental SOHO Housing Commercial: Super Market & Department Stores SOHO Housing Bank & Post Office @Training Station @Cafe & Restaurant

Description: B1 Mono - Office B2 Linear Office B3 Office with Yard B4 Hybrid High Rise C B5 Hybrid High Rise D

Appropriate Apply in the Block Size

Existing CBD Block Size

Design Apply
Further Design – Public Domain Apply
Further Design – Public Domain Apply

High density priority: 40 - 80M
- Public domain (office)
- Crossing area

Low density priority: <25M
- Warehouse regeneration corridor
- Major entrance block towards neighborhood
- Cultural & Leisure area
- Seashore waterfront
<table>
<thead>
<tr>
<th>Functional Combination</th>
<th>Existing Situation + General Plan</th>
<th>Possible Applying Prototype</th>
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<tbody>
<tr>
<td>FC1 Hybrid Area</td>
<td>Warehouse Regeneration Corridor</td>
<td>B1, C2</td>
</tr>
<tr>
<td>FC2 Living + Office</td>
<td>Corssing</td>
<td>B1, B2</td>
</tr>
<tr>
<td>FC3 Living + Transition</td>
<td>Street Side of Neighborhood Block</td>
<td>A1, A2</td>
</tr>
<tr>
<td>FC4 Living + Leisure</td>
<td>Street Side of Neighborhood Block</td>
<td>B1, B2</td>
</tr>
<tr>
<td>FC5 Culture + Leisure</td>
<td>Seashore</td>
<td>C1, C2</td>
</tr>
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</table>

Design Apply
Further Design – Street System
Further Design – Street Facade
Further Design – Street Section

Design Apply
Further Design – Neighborhood Existing

What kind of appropriate Neighborhood Prototype can apply in this area?

(Focusing on “Street Life” as well as having diverse housing programme.)
Further Design – Neighborhood Existing

General guideline

Median + Low rise priority

With public function surrounded

Major neighborhood street with diverse options of secondary street or open space towards inner block

Section prototype:
- The relation between building and major street
- The inner neighborhood sections with strong relation towards street

Block prototype:
- At least one side with public function
- At lease one side with diverse linear system towards secondary street
Further Design – Neighborhood Section Prototype

The first three typologies of sections show three different (high/median rise) building layouts facing the major city road and with linear open space/secondary road to the back side.

Median rise building is parallel with major city road with small open public façade

Median rise building is vertical with major city road with small open public façade

High rise building facing major city road with large scale public function
Further Design – Neighborhood Section Prototype

The next three typologies of sections show three different (low rise) building layouts facing the secondary road and with linear open space / yard / secondary road to the back side.

- Low rise building is parallel with secondary road and with semi private yard to the back side.
- Low rise building is vertical with secondary road and with semi private garden to the other side.
- Low rise building is facing secondary road (other side is public function) and with semi private yard to the back side.
Further Design – Neighborhood Prototype

Density:
Combination Principle:
Section Prototype:
Combination Prototype:

Legend
Major Road
Secondary Road
Thirdly Road

Possible Apply Prototype

Design Apply
Further Design – Neighborhood Prototype

Building, Street & Yard:

Legend
- Major Road
- Secondary Road
- Thirdly Road

Density:

Combination Principle:

Section Prototype:

Combination Prototype:

Possible Apply Prototype

Design Apply
**Further Design – Neighborhood Existing**

- Facing the secondary important neighborhood street
- Neighborhood focusing the corner
- Neighborhood facing one important street with its short side
- Neighborhood facing two different important streets
Further Design – Prototype Apply
Further Design – Neighborhood Realization

The same size in HDB area:
2000 houses – 70sqm/house

New Model:
A. 3000 houses – 70sqm/house
B. 2000 houses – 100sqm/house

A: 200 houses/ha
Further Design – Neighborhood Zoom in

Zoom in A

Zoom in B
Zoom in

**Neighborhood road side:**
With small leisure functional facade and some compulsory shops.
Large scale commercial at the corner
Focus on different levels connection
Open space in the backyard

**The major road:**
Road parking priority
Green structure along boulevard

**Waterfront road side:**
Linear green structure but more diverse space
Flexible public function according to the location
Maintain some image of old harbour with new function
**The border:**
Except the corner of important crossing, small scale public functional facade is priority
Public function with backside towards neighborhood street

**The Neighborhood inside:**
Car and pedestrian mixed ring road between neighborhood and public backside
Pedestrian road well connect to major neighborhood roads
Small open space is with close relation to different streets
Further Design – Neighborhood Street Comparison

China Town in Singapore: Local Historical Street Life (1840s–)

Hutong in Beijing: Eastern Historical Street Life (1900s–)
Further Design – Neighborhood Street Comparison

New Eastern & Knowledge Society
New Street Life in Singapore Old Harbor Area
(face to 2050s)
Diverse Road Options & Open Space Along the Road Side for Users Sharing & Choosing

VS

Homogeneous Road System & Collective Space

Hutong in Beijing: Eastern Historical Street Life
(1900s - )

Homogeneous Private Yard
Further Design – Neighborhood Street Comparison

Street Life in Singapore Neighborhood Area (1840s - , 1950s - , 1970s - )

Homogeneous Housing with Central Linear Yard (lack of public space)
Homogeneous Housing with Private Yard

VS

New Eastern & Knowledge Society

New Street Life in Singapore Old Harbor Area (face to 2050s)

Diverse Road Options & Open Space Along the Road Side for Users Sharing & Choosing

Fragmented Public & Private Street Life

Commercial School

Design Apply
Further Design – Position of new model in Singapore

<table>
<thead>
<tr>
<th>Testing Size</th>
<th>China Town</th>
<th>New Model</th>
<th>Historical Residential</th>
<th>HDB Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 M</td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
</tr>
<tr>
<td>600 M</td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
<td><img src="https://via.placeholder.com/150" alt="Diagram" /></td>
</tr>
</tbody>
</table>

Number of crossings:
- China Town: 3
- New Model: 4
- Historical Residential: 2
- HDB Flat: 2

Number of streets:
- China Town: 2
- New Model: 3
- Historical Residential: 2
- HDB Flat: 0

According to the number of important crossings, car & pedestrian roads related to public function. The position of new model is in between Chinatown and historical residential model. That means the objective of the new model is trying to find out a balance of the density of public street life.
Bird's eye view
Street Comparison

**Testing distance**

<table>
<thead>
<tr>
<th>New Singapore</th>
<th>Tokyo</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changeable major street rhythm</td>
<td>Homogeneous small blocks with median rise public buildings</td>
<td>Homogeneous short side of living blocks facing major street</td>
</tr>
</tbody>
</table>

550M
Street Comparison

Testing distance 550M

New Singapore

Homogeneous small blocks with median rise public buildings

Diverse block prototype

Tokyo

Homogeneous living blocks with tedious linear backyard

New York
Finally, a route of street tour is selected, from point A to H, except the last two points, each selected point is between around 100M, which represents a changeable street rhythm, both spatial atmosphere and function transition.
A: Warehouse & Neighborhood
Design Apply
Design Apply
Back To Street Life - Redevelopment of Old Harbour Area
C: Living + Office

Design Apply
Back To Street Life - Redevelopment of Old Harbour Area

Design Apply
D: Living + Transition
F: Cultural + Leisure
G: Seashore Waterfront
Back To Street Life - Redevelopment of Old Harbour Area
If we consider “a Knowledge City “

“As a milieu which triggers and enables an intensive, ongoing, rich, diverse and complex flow of Knowledge Moments.” - Ron Dvir (2005)

And this flow could not only be the information but also the intellectual.

The “Street Life”, is able to provide a platform to achieve this target.
If we consider the **Singapore**

“As an island – its territory is known – it is endowed with indispensable elements for the construction of a mythology: it is small, it is threatened, it has to be protected, it is finite – and enclave – **it is unique**.” - Rem Koolhaas (1995)

When the island is turning itself into an **intelligent island**, the process will be continued…

We do believe that the brand new “**Street Life**” is and is going to provide an **unique** spatial quality & life style for Singaporean and the others with “interaction, sharing and just in time” identity in the **unique** old harbour area within the **unique** Singapore Knowledge Society.
thank U

Questions?