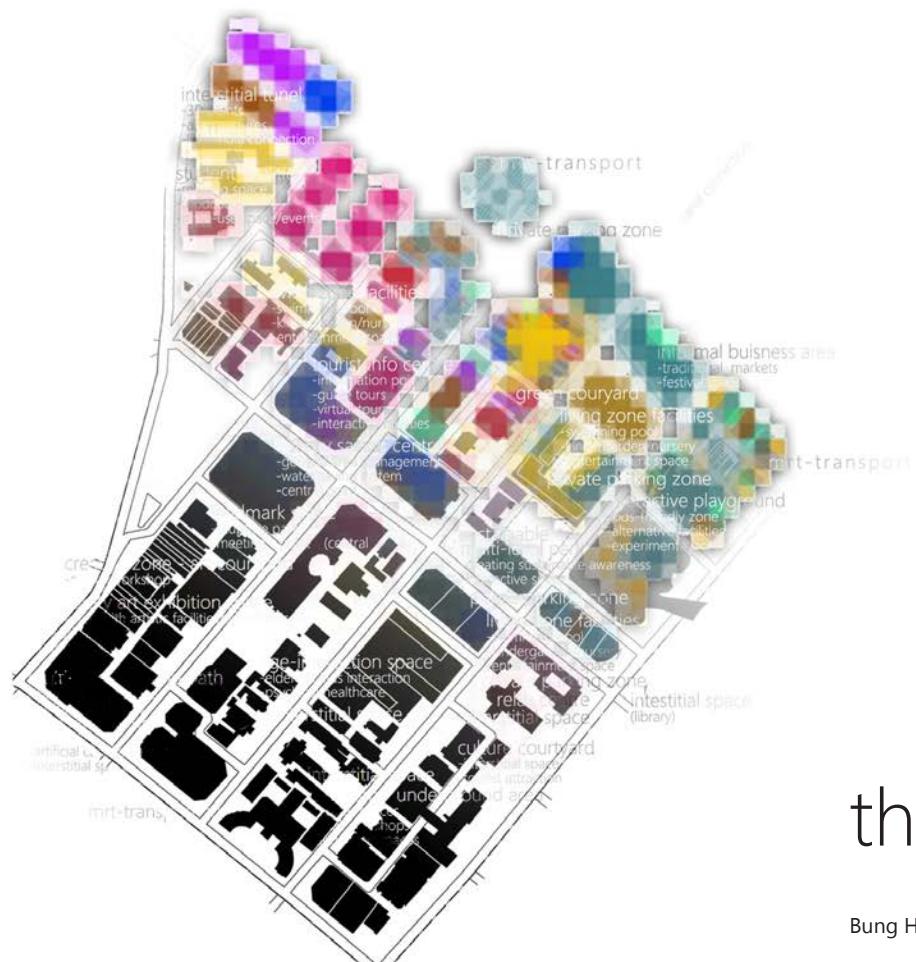


URBANISM & MOBILITY

the compact city

Associate Professor Tan Teck Kiam
 Bung Horungruang, Celia Wong, Desmond Sim, Eleanor Xu
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FOREWORD

PHASE 1: RESEARCH | HISTORY | LOCALITY

History	Timeline
Contextualizing Bras Basah	Figure Ground
	Bras Basah within Singapore
	Bras Basah v 4 districts

PHASE 2: MAPPING | PROGRAM | MOBILITY

Site context	Programmatic
	Plot ratio
	Mapping in Layers
People & Movement	People Density Analysis
	People Demography

PHASE 3: ACTIVATION OF STRATEGY PLAN

Mind map	Ideals of a choice city
Intervention	Choice of Site – Waterloo Street
	Urban Strategy – Proposal
	Section along Waterloo Street



Victoria (Bugis) Street

PHASE 4: INDIVIDUAL PROJECTS

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foreword

Mobility and Urbanism Section
Assoc Prof Tan Teck Kiam
Year 4 Studio
AY 2013-14 Semester 1

The program explores high density living in a smart compact city.

Studies have revealed interaction between inhabitants of a city is instrumental to the vibrancy, diversity, dynamics, heritage and appeal (social, cultural and economics) of a city. A city is a conglomeration of processes, uniquely intertwined with their own character. These processes typify the condition of living, working, learning, playing and care in a social environment. The resulting city form is to a great extend a manifestation of those processes. From time to time, human intervention in city or urban planning such as in Paris, Beijing and New York has significant impact and alter social behavior; and in turn frame the form of a city.

Many cities in Asia today are growing at phenomenal rate. Today more than half the population in Asia lives in a city. Cities are faced with the challenge to house ever increasing number of people attracted to them by job opportunity, amenities and better life, among many reasons. As a result cities grow from the old centers organically. The sprawling city with its conglomerate suburbia created unsatisfactory transportation problem in addition to uneven distribution of amenities and public services. In recent decades, high rise (building) physical planning model found favour with city planners. Yet tall buildings inefficiently planned and designed to fill the number may not be the right approach environmentally and socially.

What then?

Some scholars have taken an approach to examine fundamental relation between urban and rural. Other scholars pointed to the need to maintain legibility of city preserving its heritage and cultural values in the face of technological progress (or assault?). The challenge could be rethink how to optimize space usage in a city as well as how people move across buildings

within existing urban fabric.

The studio program is a rethink on how public spaces and in buildings are planned and connected; and the notion of mobility addressed in a compact city.

The studio would map half a square kilometer of a city and strategize an urban planning model that consider:

1. usability,
2. diversity,
3. connectivity and mobility,
4. sustainability (technology, social and environmental), including
5. program mix/optimization within buildings, between buildings and public open spaces.

The first part (3 weeks) of the studio is research, forum and developing a planning model at group level. The latter part which is individual effort translates the planning ambition into design narrative.

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history

timeline of major events in the urban morphology

Jackson Plan was implemented, segregating the settlement near the mouth of Singapore River into various ethnic areas.

The Bras Basah district evolved from a part of the former European Town.

The construction of the main streets in Bras Basah such as Victoria St, Queen Street, Bencoolen St and Church St (now Waterloo St) were completed by this time.

Straits Chinese Church, known as Malay Church because services were for Straits Chinese, was built in Prinsep Street by Reverend Benjamin Peach Keasbury.



Various religious buildings started to line Waterloo St such as the Jewish Maghain Aboth Synagogue in 1878, the Chinese Kwan Im Thong Hood Cho temple in 1884, the Hindu Sri Krishnan temple in 1870 with a Sri Krishnan figure under a Banyan Tree, and the Catholic Church of St Peter and St Paul by Pierre Paris, built in the same year.



1822

Late 1830s

1842

1870s

1800



1824

1835

1850

1852

1875



Construction on the Middle Road Church was completed, which turned into the Straits Chinese Methodist Church in 1894, and was the Methodist Girls' School until 1900.
In 1996 it was transformed into Sculpture Square together with the nearby former budget hotel.



6

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Straits Chinese Church was demolished and rebuilt, and became Prinsep Street Presbyterian Church by 1956. Singapore Boys' Brigade began here in 1930.

Designed by Swan and Maclaren's C. J. Stephen, it is of modern fresco style.

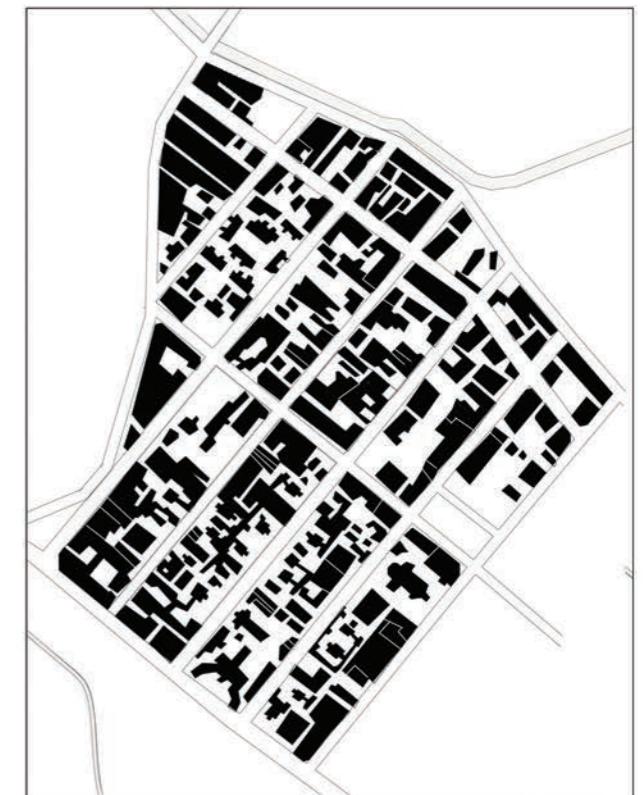
1931

1900

1912



Central Sikh Temple was built along Queen Street but was moved to a new location in 1980s after government acquired surrounding land for new developments.



1945



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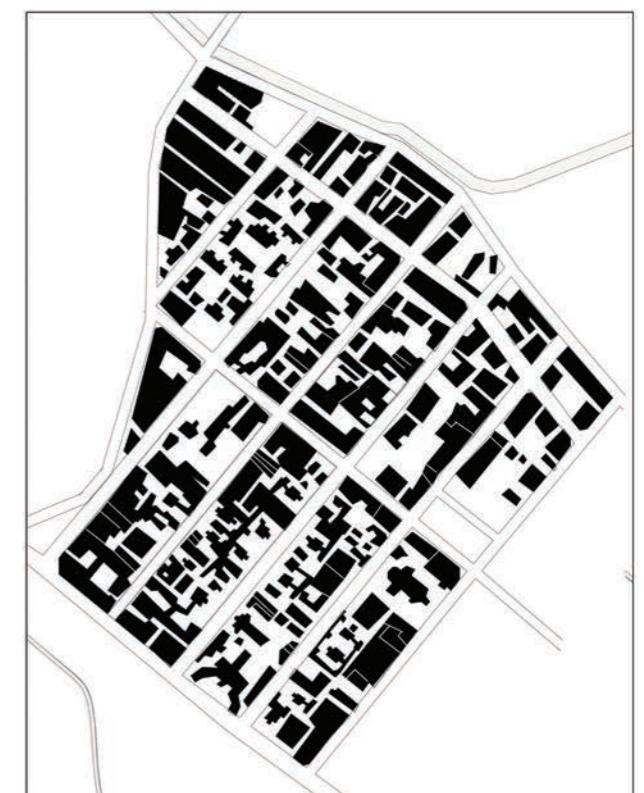
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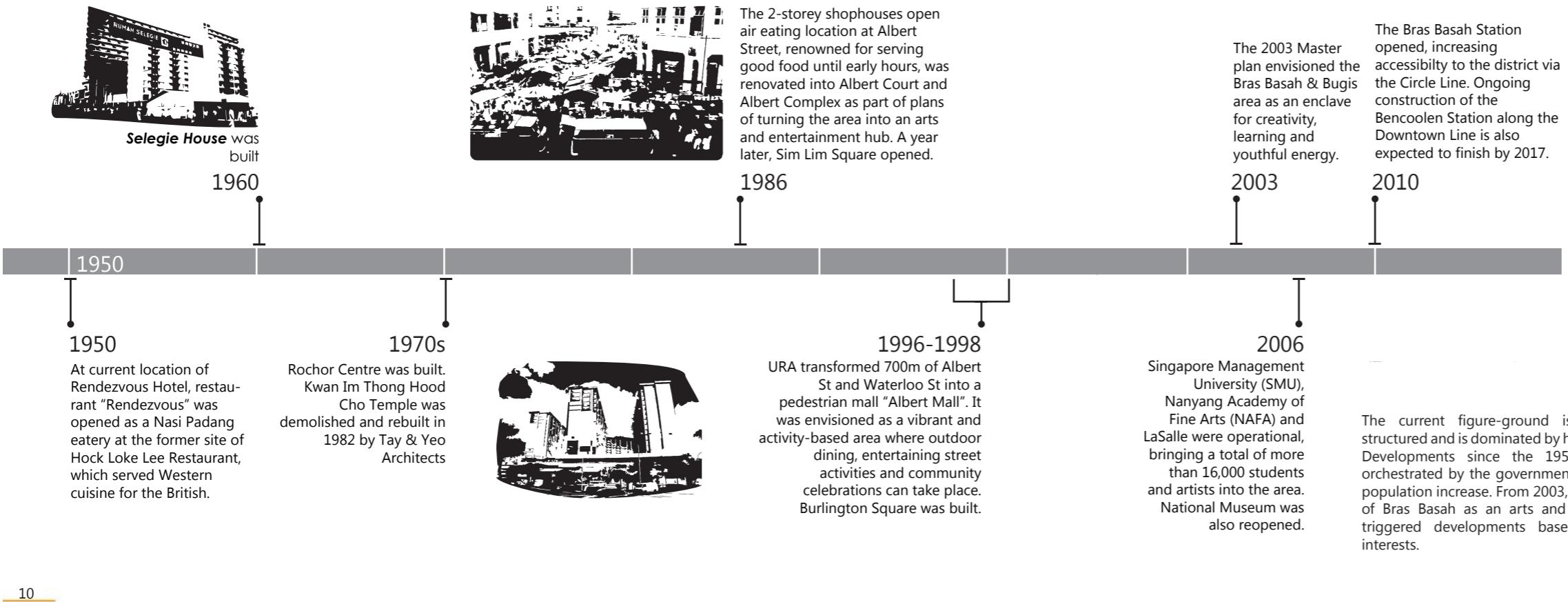


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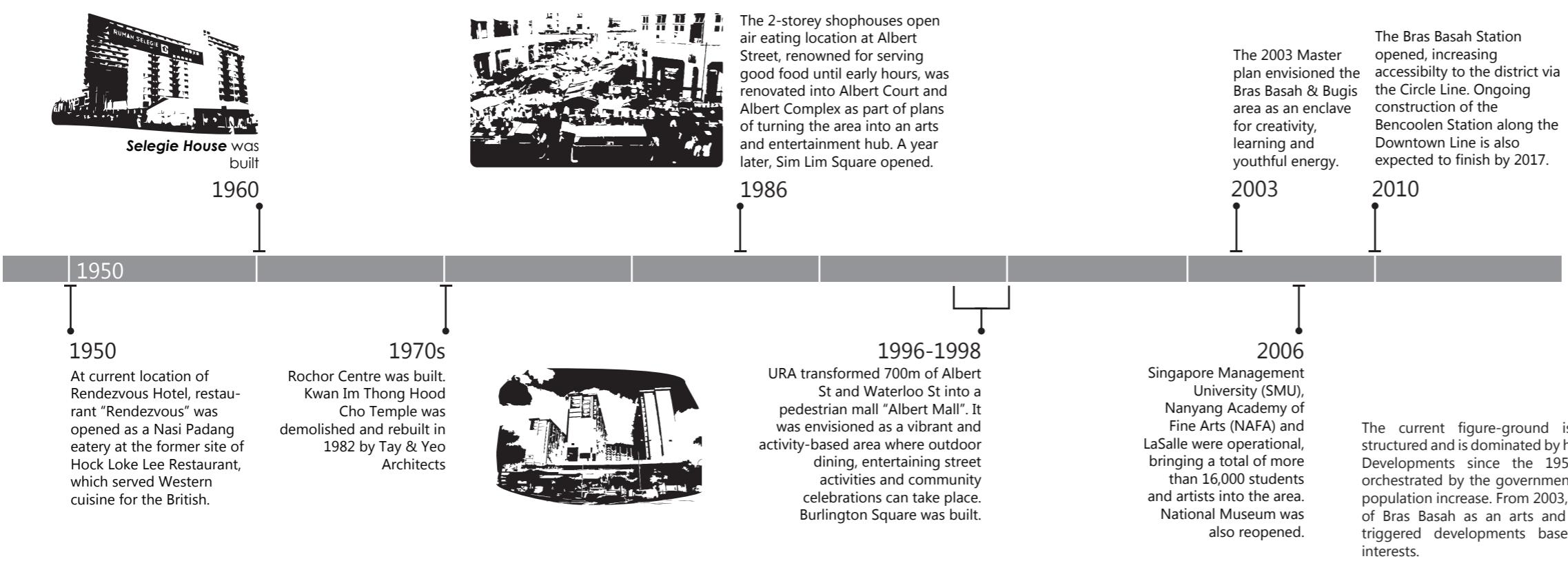


1945

The 1945 figure-ground map reveals a dense yet relatively fine-grained texture of Bras Basah at the time. At the time, the national population was 750,000. Other than the construction of the main roads in a strict grid, developments in the area mostly took the form of small to medium-scale religious buildings and schools that sprouted up naturally, driven by community needs.



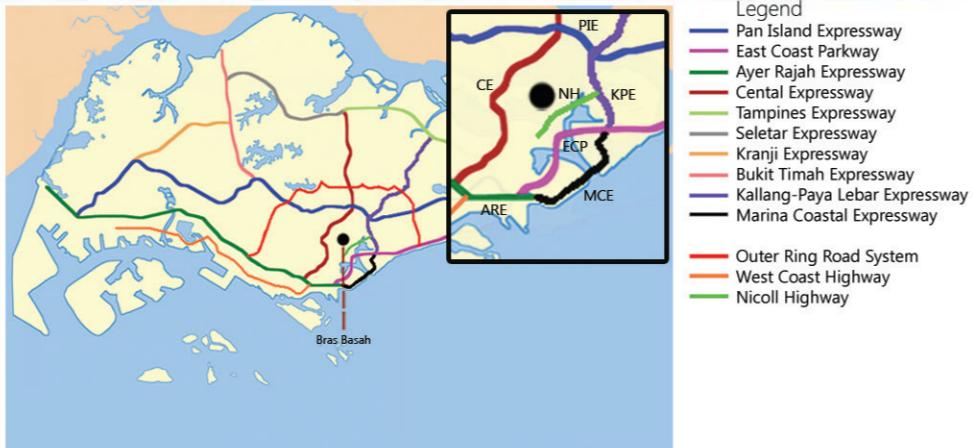
2013



2013

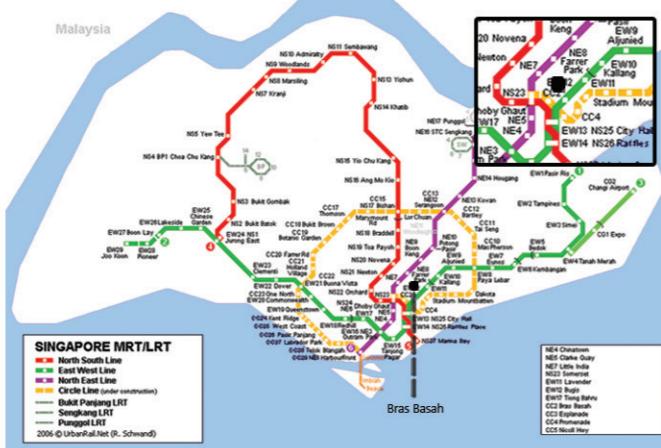
contextualizing

Bras Basah within
Singapore



Legend

- Pan Island Expressway
- East Coast Parkway
- Ayer Rajah Expressway
- Central Expressway
- Tampines Expressway
- Seletar Expressway
- Kranji Expressway
- Bukit Timah Expressway
- Kallang-Paya Lebar Expressway
- Marina Coastal Expressway
- Outer Ring Road System
- West Coast Highway
- Nicoll Highway



Legend

- North South Line
- East West Line
- North East Line
- Circle Line
- Bukit Panjang LRT
- Sengkang Lrt
- Punggol LRT

12



Bras Basah is bordered by 4 major arterial roads:

Bras Basah Road, that links the Orchard area to Raffles Boulevard

Selegie Road, that links to Little India

Rochor Road, that links Bukit Timah to Raffles Boulevard

Victoria Street, that links to Kallang

Bencoolen Street, another arterial road running through the site, links to Jalan Besar area

As a result of so many arterial roads concentrated in the area, road traffic is incredibly dense

13

contextualizing

Bras Basah within
Singapore



Legend

- Pan Island Expressway
- East Coast Parkway
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- Central Expressway
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contextualizing districts in five cities

Bras Basah

Arts, Culture, Learning & Entertainment district

City data

Singapore, Singapore

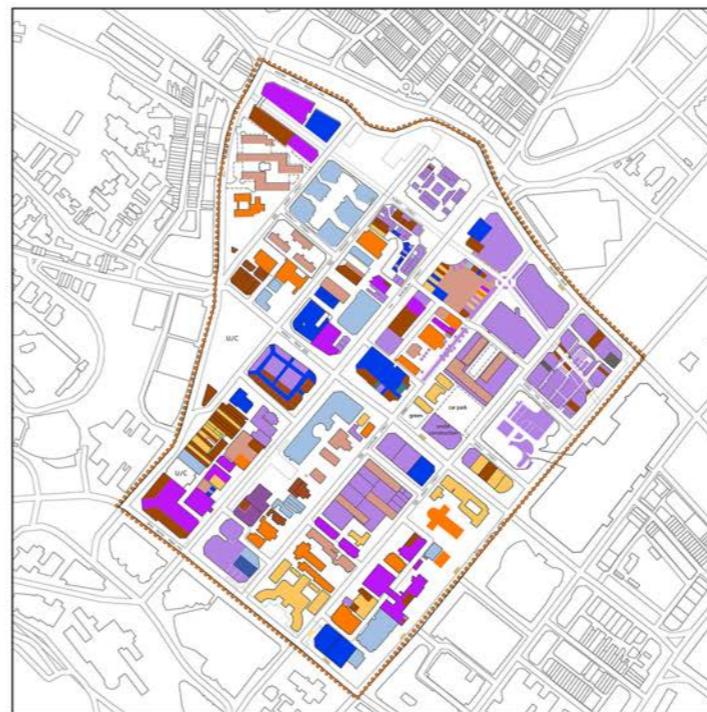
Land area : 710 km²

Population : 5,300,000

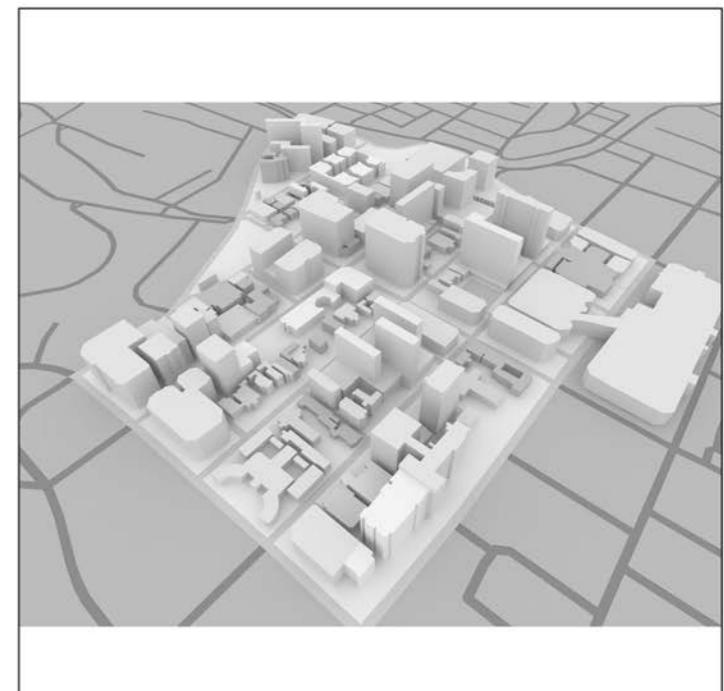
Density : 7,350 people/km²



Coarse-grain, densely packed
Several arterial roads in perpendicular grid
2 primary public transportation modes (Bus, Train)
>10 transportation nodes



Variety of ground-floor programs
Presence of mixed-use within single large buildings



Mix of high, mid and low-rise buildings of different characters

contextualizing districts in five cities

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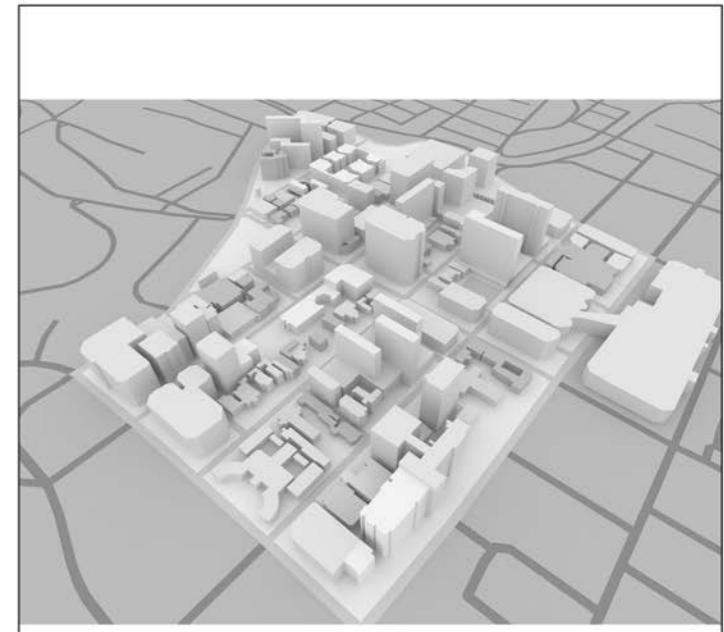
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contextualizing districts in five cities

Tha-Dindaeng

City of angels/Economic and cultural heritage

City data

Bangkok, Thailand

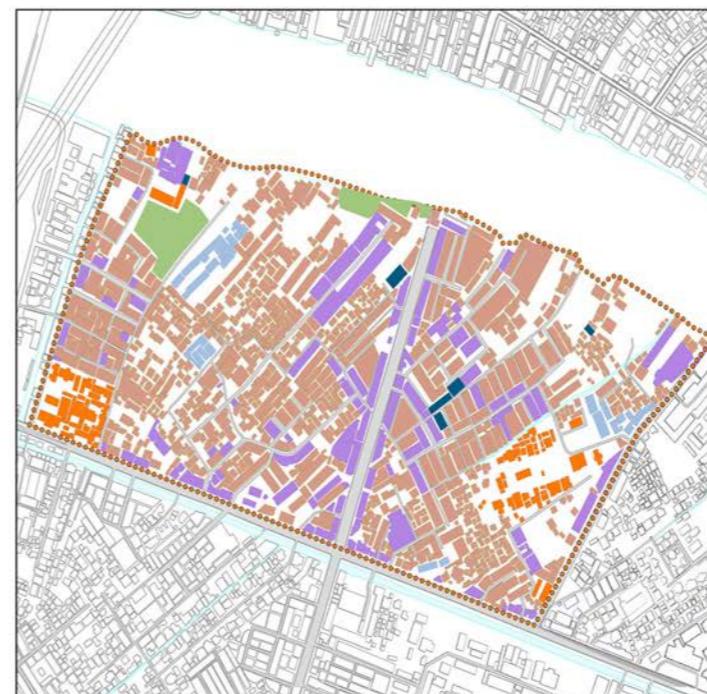
Land area : 1569 km²

Population : 8,300,000

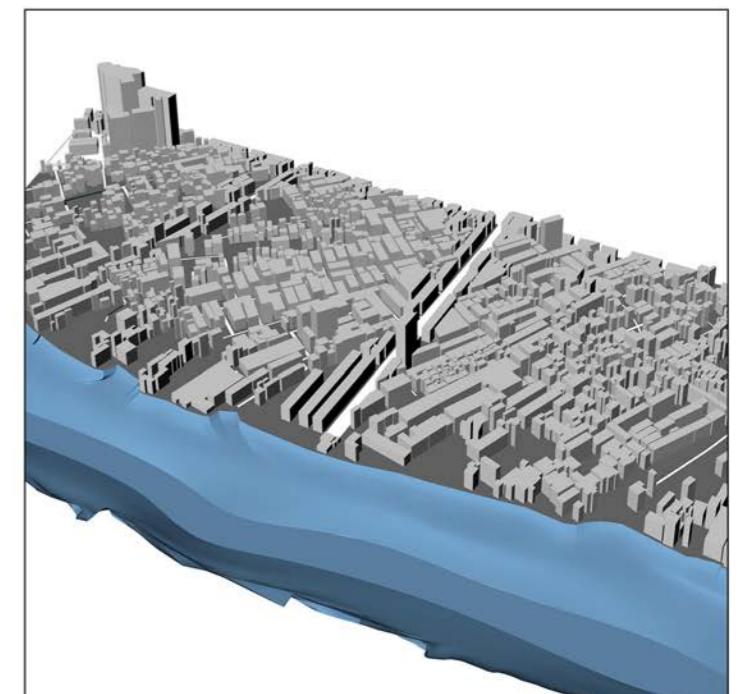
Density : 5,300 people/km²



Fine-grain, densely packed but with open spaces near river
Single arterial road imposed onto diagonal grid
5 primary public transportation modes (Bus, Rail, Taxi, Boat, Tuk-tuk,)~10 transportation nodes



Commercial ground-floor activity near main road
Main program: residential and commercial
Buildings mostly mono-use



Low to mid-rise buildings of similar character

contextualizing districts in five cities

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City of angels/Economic and cultural heritage

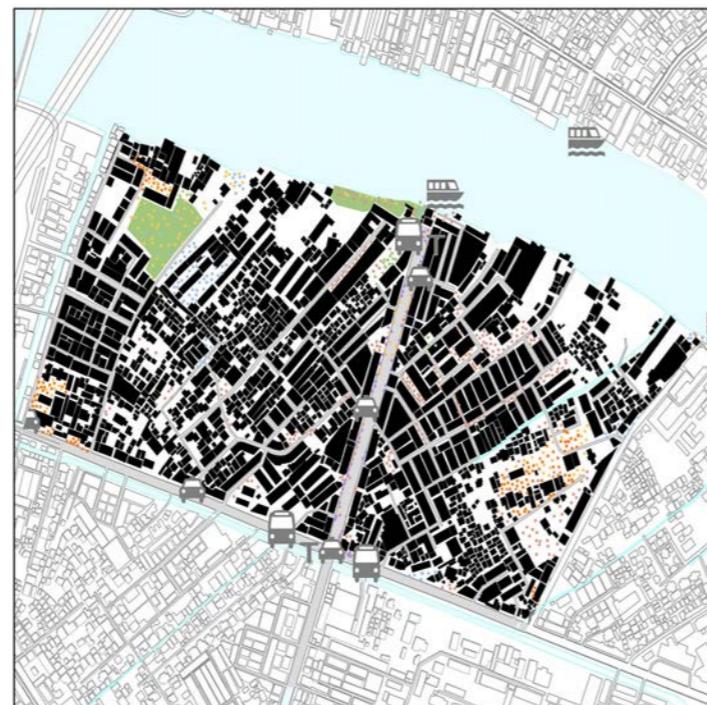
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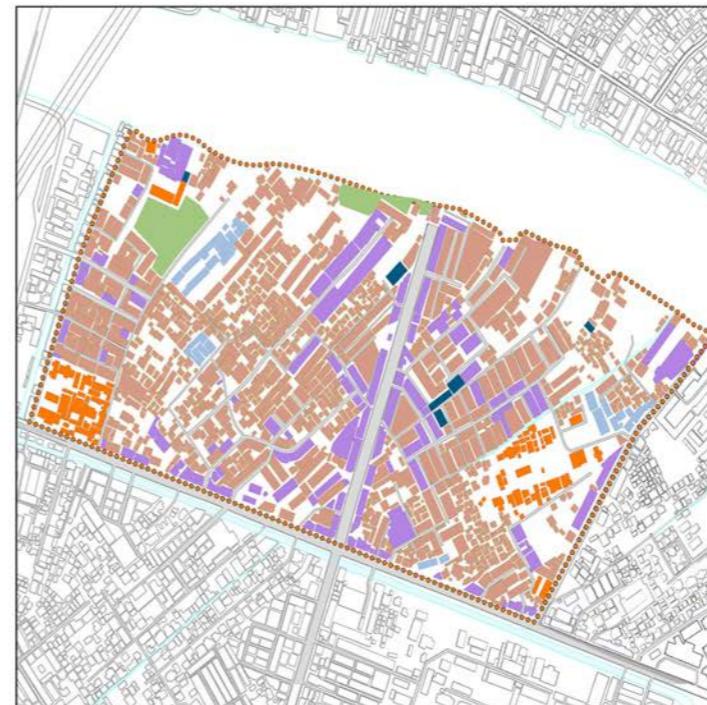
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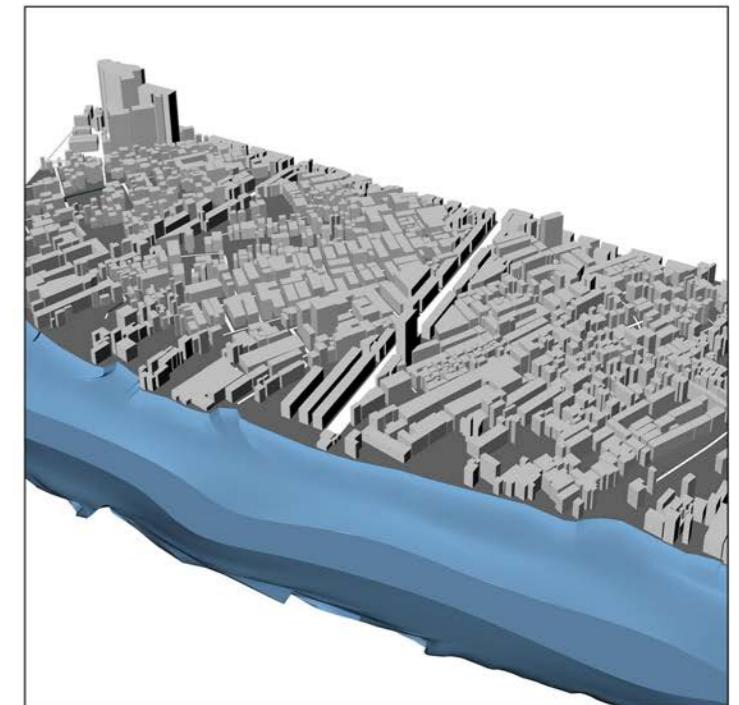
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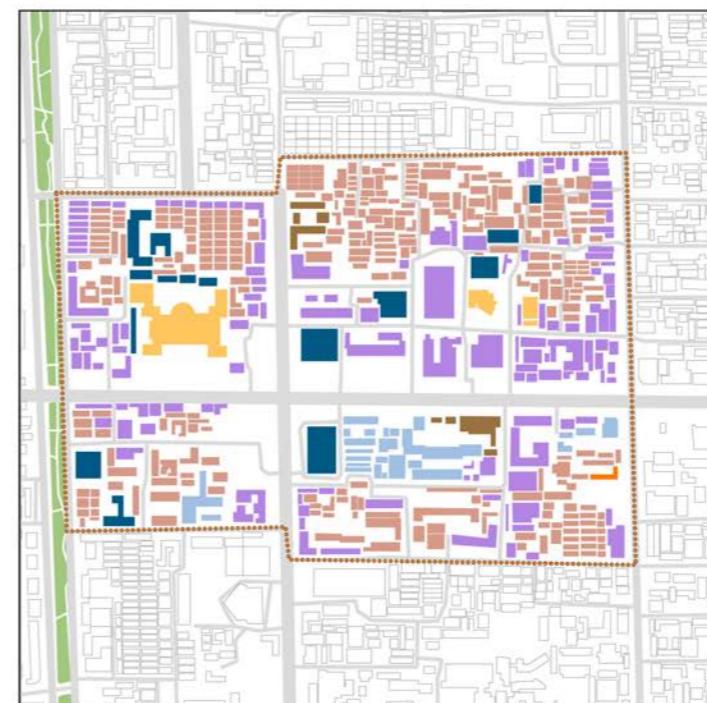
contextualizing districts in five cities

National Arts Museum district
Political, cultural and education heart

City data
Beijing, China
Land area : 16,411 km²
Population : 20,700,000
Density : 1,300 people/km²



Mix of fine and coarse-grain, densely packed
2 arterial roads with smaller roads and perpendicular "hutongs"
2 primary public transportation modes (Bus, Rail)
3 transportation nodes



Variety of ground floor programs
Commercial ground-floor activity near main road
Buildings mostly mono-use



Mix of low and high-rise buildings
Buildings of similar characters/functions are grouped together

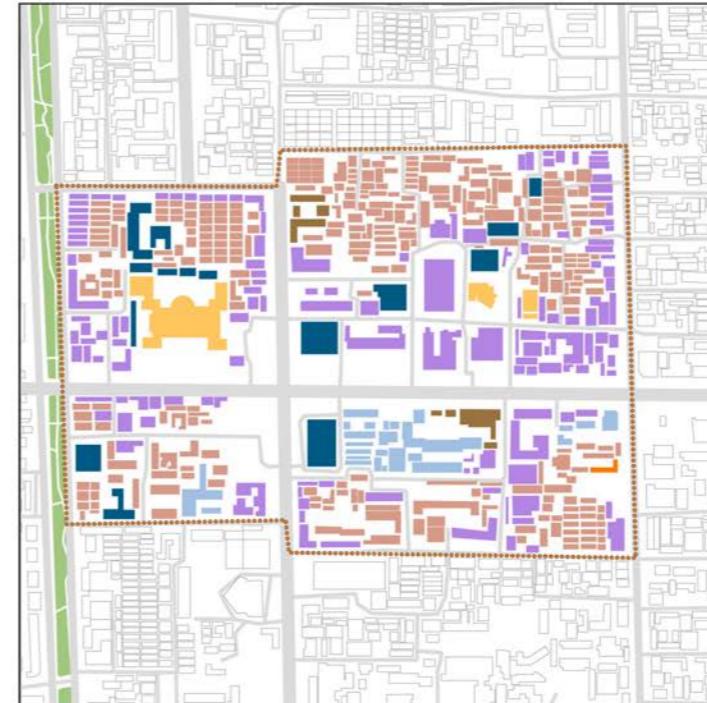
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Panadura

Domestic city of Colombo/Transition hub

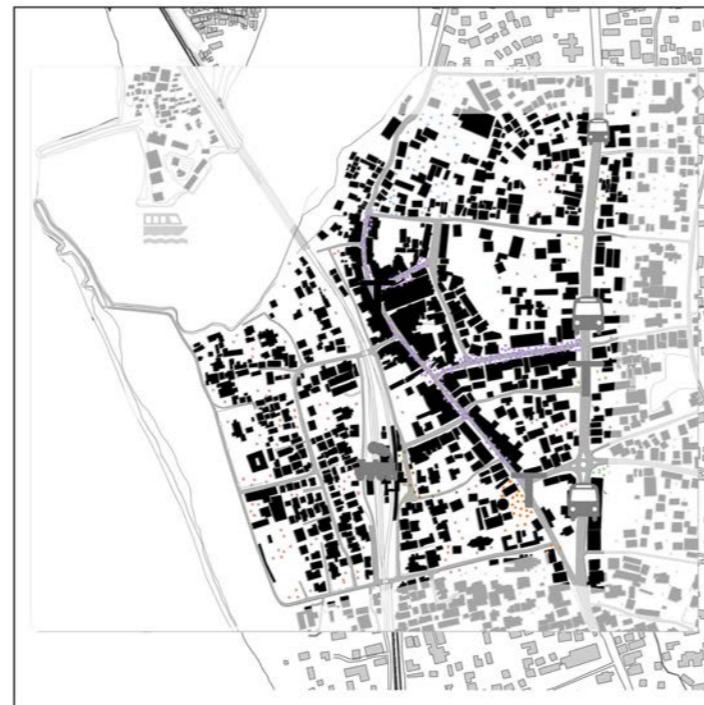
City data

Colombo, Sri Lanka

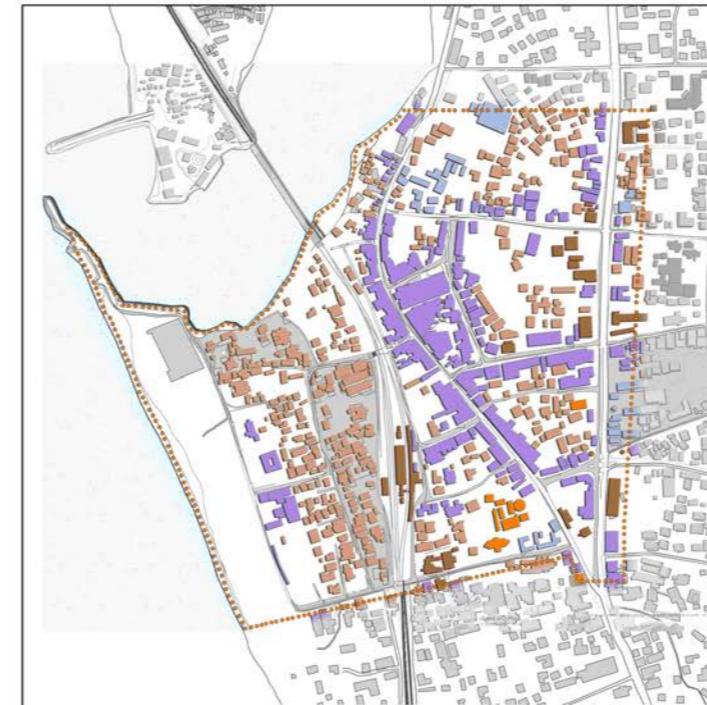
Land area : 37.3 km²

Population : 760,000

Density : 20,000 people/km²



Fine-grain, densely packed along arterial roads
Several arterial roads within organic network of roads
3 primary public transportation modes (Bus, Train, Bicycle)
4 transportation nodes



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Low-rise buildings of similar character

contextualizing districts in five cities

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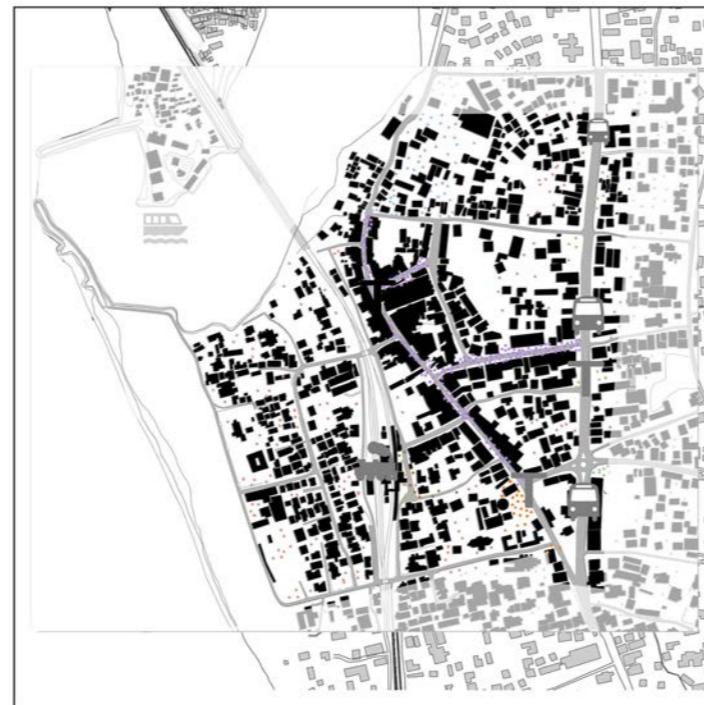
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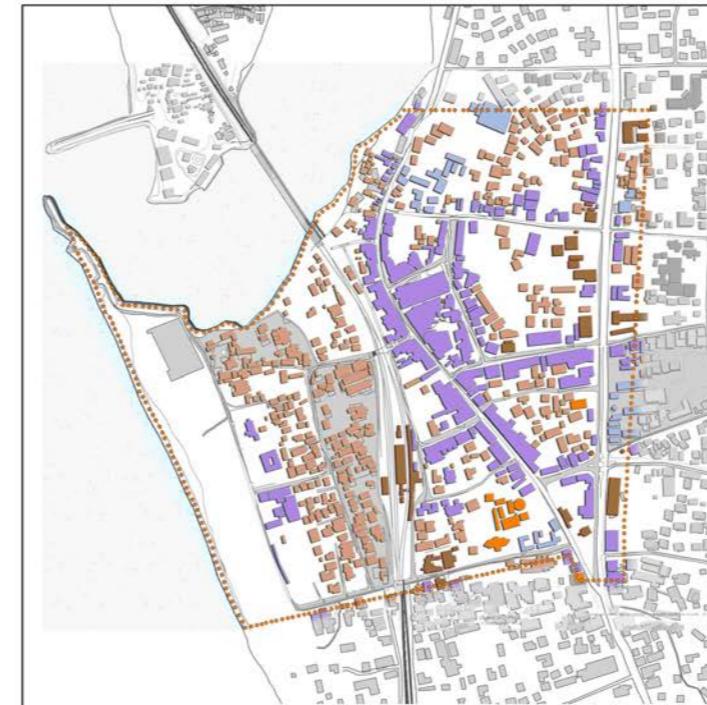
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Low-rise buildings of similar character

contextualizing districts in five cities

Grzegorzyki

Historical heart of Poland/City with soul

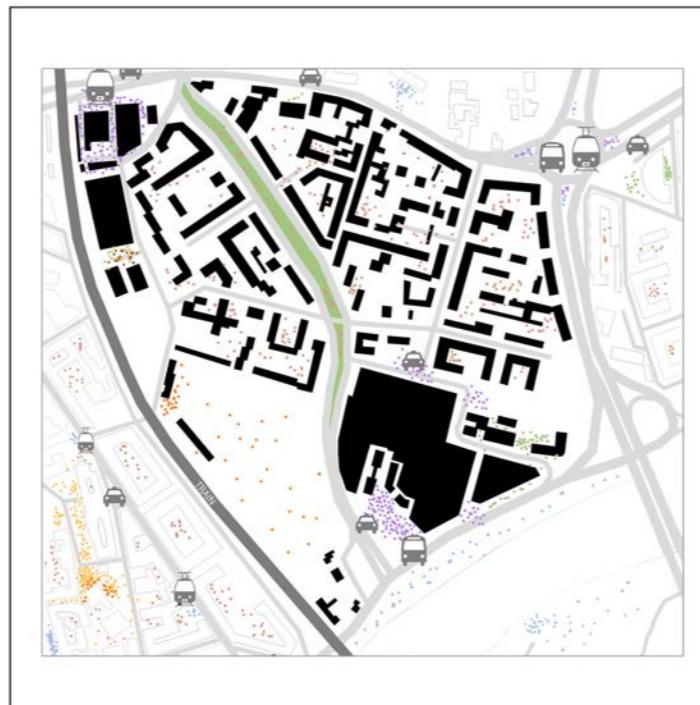
City data

Krakow, Poland

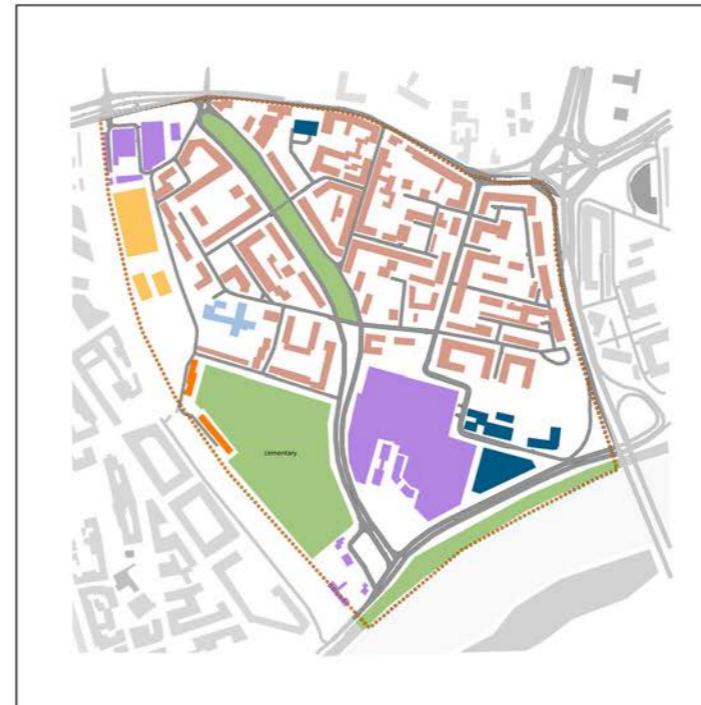
Land area : 327 km²

Population : 780,000

Density : 2,322 people/km²



Buildings enclose huge open spaces
Ring roads linked by organic network of smaller roads
3 primary public transportation modes (Bus, Rail, Taxi)
5 transportation nodes



Main program: residential and commercial
Buildings mostly mono-use



Low to mid-rise buildings
Residential buildings of similar character

22

23

contextualizing districts in five cities

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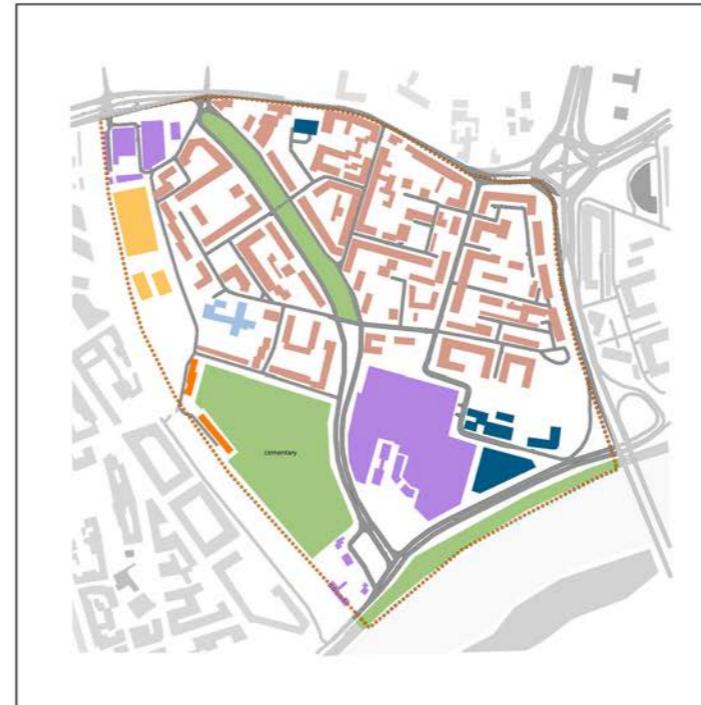
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Low to mid-rise buildings
Residential buildings of similar character

22

23

on pixellation

Mr Tan Eng Kiat

Architecture is too often an exercise in isolation – inward-looking spaces enclosed in a stylized skin that insulates the building from the surrounding landscape. The interior is divorced from the exterior, even in public institutions. Contemporary architectural discourse and stylistic direction places too much emphasis on the objectification of architecture as an icon to be admired from afar, and the public realm becomes simply a context to respond to, or to hide from.

In any city, the movement of pedestrians and the incessant flow of vehicles define the character of the urban space. This is the lifeblood of the city. The points of interactions, whether it is a street peddler selling the day's papers or a gaggle of traffic at a street corner, bring life and vibrancy to any city. This urban flotsam and laissez-faire movement of people through the urban space becomes the context to be engaged, orchestrated and celebrated.

Any building situated in an urban environment needs to react to this context of movement and mobility. Urban design and architecture is no longer Cartesian and two-dimensional: spaces and interfaces need to engage the human context at various levels – the street, the underground, the above-ground. The architect needs to look beyond the context of his site and see himself as a facilitator (or even as an agent provocateur) of interaction between human activity and the urban space.

In order to create more inclusive spaces, the way land use is currently regulated and defined needs to change as well. A building can be an organic structure, with ancillary uses changing and adapting to economic and social needs. Traditional land use planning defines use as a primary programme ascribed to a parcel of land. This creates a 2-dimensional reading of activities in a city and the result is poor interaction between buildings or spaces. Yet, with the prevalent use of Geographic Information

Systems (GIS) in managing land use allocation, it is technologically possible to create a 3-dimensional map of the city where spaces and uses can intersect and be intertwined.

Taking this one step further, use of a space will change in time. The current planning mechanism and structure, whilst acknowledging this change, attempts to institutionalise it via land use reviews. While this site-level control affords the authorities control over the various developments, it lacks the flexibility in adapting to change. Land use at a zoning level allows for greater flexibility, with development intensity ascribed to a cluster of parcels and the distribution of uses market- and user-driven. This creates a situation where a building can take on multiple uses. Like how a LCD pixel is essentially comprised of 3 individual diodes and the combination of these 3 diodes give the various colours of the spectrum, this 'land use pixellation' more closely approximates how spaces are used and developed.

In incorporating this forth-dimension of time, the mapping of an urban space needs to take into account the changing use and dynamics of how these spaces are used at different times of the day, and different times of the week. A 'pixel' approach allows for dynamic adaptation of use, and as a result a more responsive space that reacts to the needs and demands of the urban context.

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mapping

program
(ground floor)

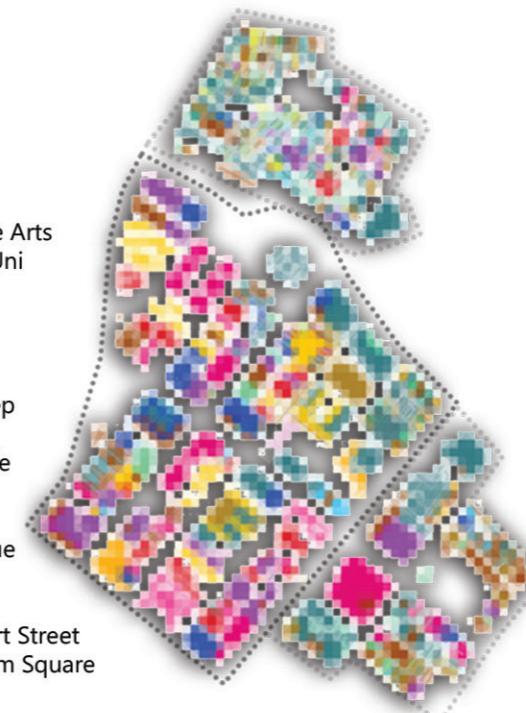


Through our ground floor activity mapping, we realised that there is a huge variety of activities that coexist within Bras Basah.

Part of the reason is the conservation of older religious and residential buildings alongside conscious injection of new programs to further cultivate the area into an vibrant arts and culture district.

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pixellation analysis



BRAS BASAH DISTRICT

Main Programmes:

- --e.g Laselle Sch of the Arts
Nanyang Academy of Fine Arts
Singapore Management Uni
- --e.g Waterloo Center
Cheng Yan Court
Selegie House
SMU Residences @ Princep
- --e.g Kwan Im Tong Hood Temple
Sri Krishnan Temple
St Joseph's Church
Maghain Aboth Synagogue
- --e.g Bugis Street shops
Informal stalls along Albert Street
Electronics retail at Sim Lim Square
Clothing, accessory retail
at OG Departmental Store

LITTLE INDIA DISTRICT

Main Programmes:

- --e.g Wholesale/ distributor items
Electronics spare parts
Handphone-related retail
Indian clothing and jewellery
- --e.g Internet Cafes
Cargo and shipping services
Electronics repair services
Spa and Beauty

BUGIS DISTRICT

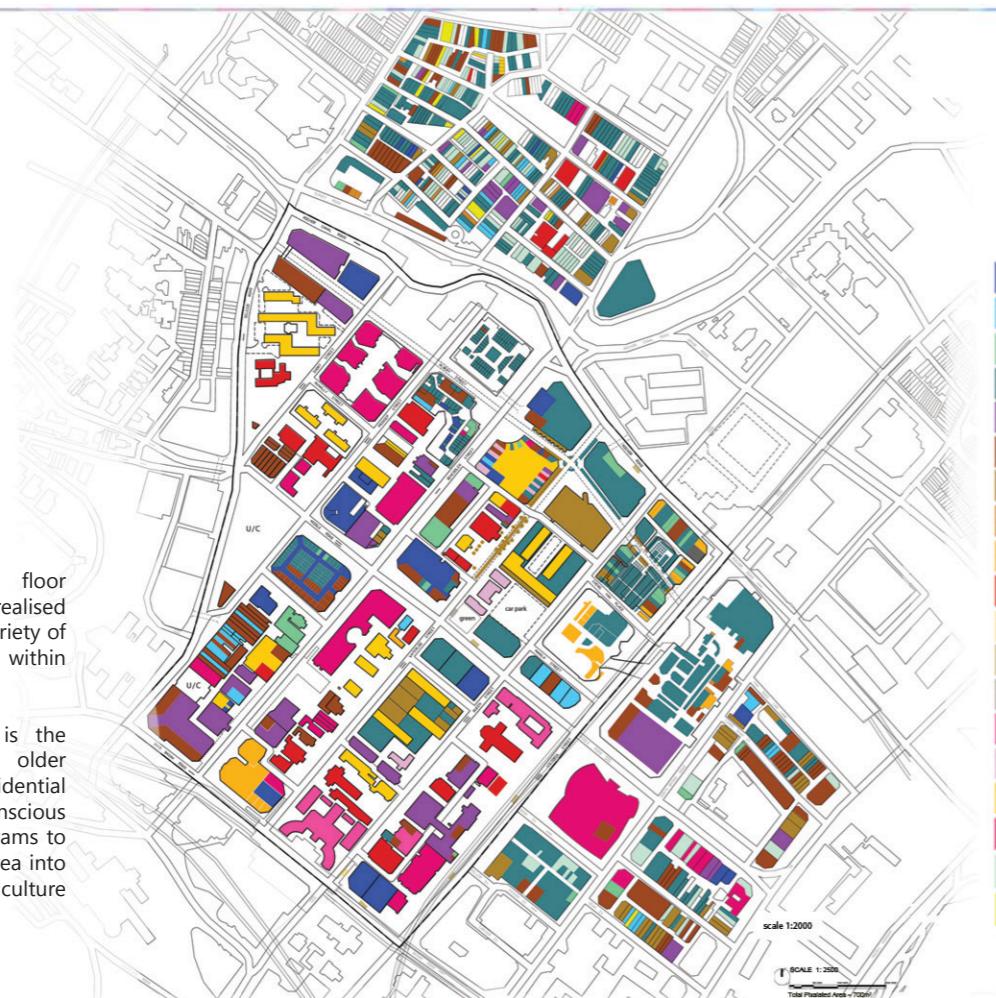
Main Programmes:

- --e.g Mall retail at Bugis Junction
Second-hand bookstores and
art supplies at Bras Basah Complex
- --e.g Restaurants, eateries and hawkers
along Liang Seah Street
and Purvis Street
- --e.g National Library

27

mapping

program
(ground floor)

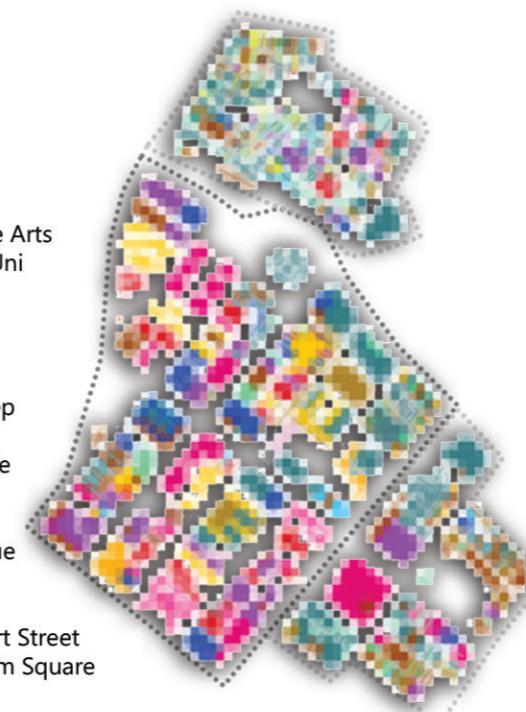


Through our ground floor activity mapping, we realised that there is a huge variety of activities that coexist within Bras Basah.

Part of the reason is the conservation of older religious and residential buildings alongside conscious injection of new programs to further cultivate the area into an vibrant arts and culture district.

26

pixellation analysis



BRAS BASAH DISTRICT

Main Programmes:

- --e.g Laselle Sch of the Arts
Nanyang Academy of Fine Arts
Singapore Management Uni
- --e.g Waterloo Center
Cheng Yan Court
Selegie House
SMU Residences @ Princep
- --e.g Kwan Im Tong Hood Temple
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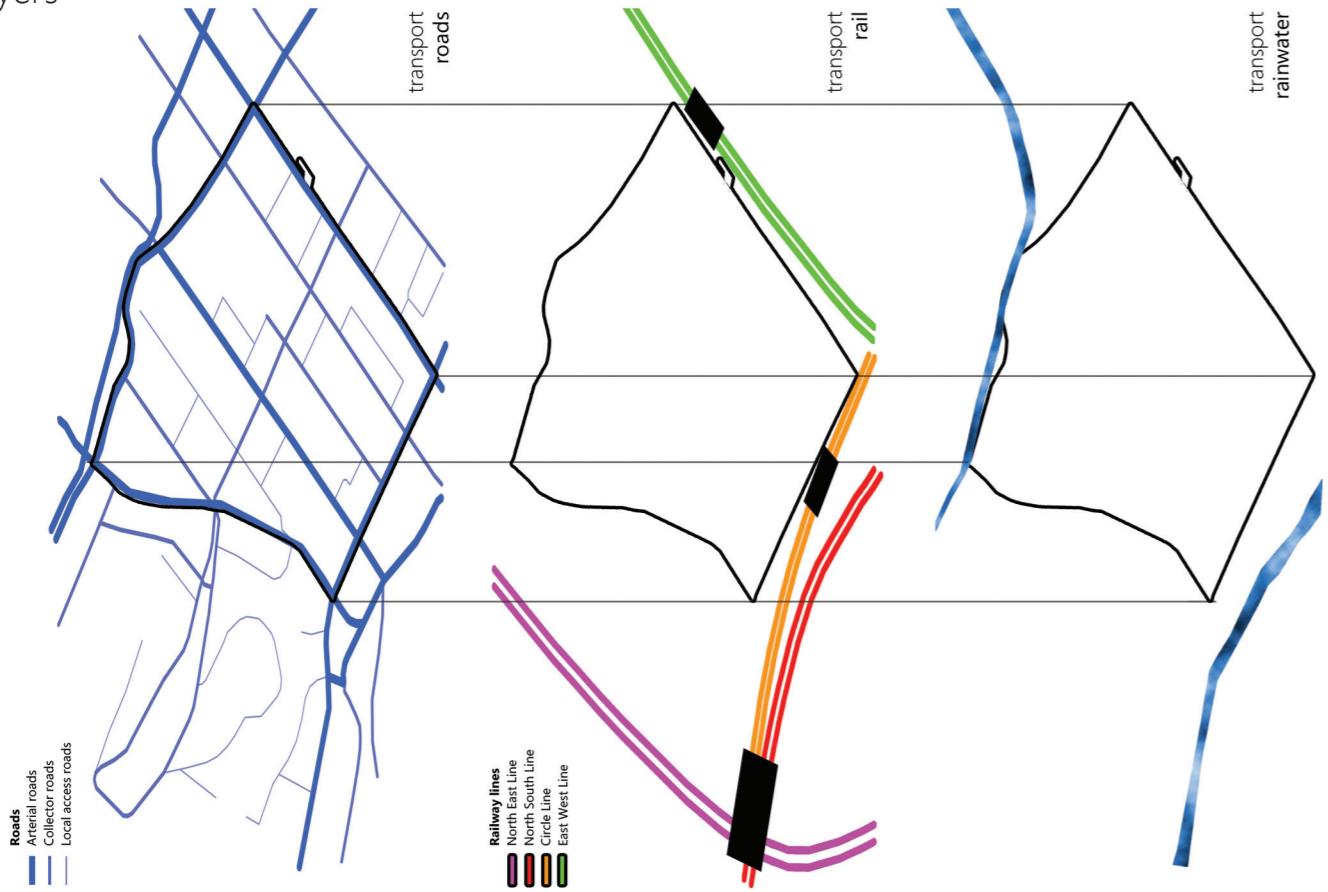
BUGIS DISTRICT

Main Programmes:

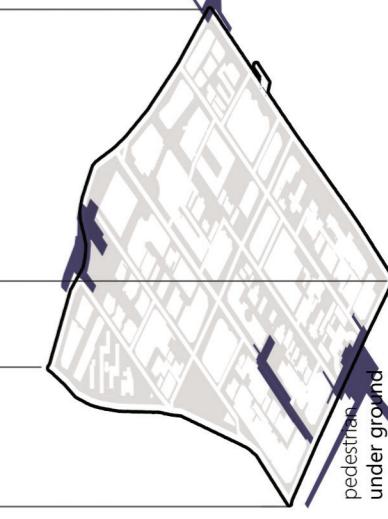
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27

mapping in layers

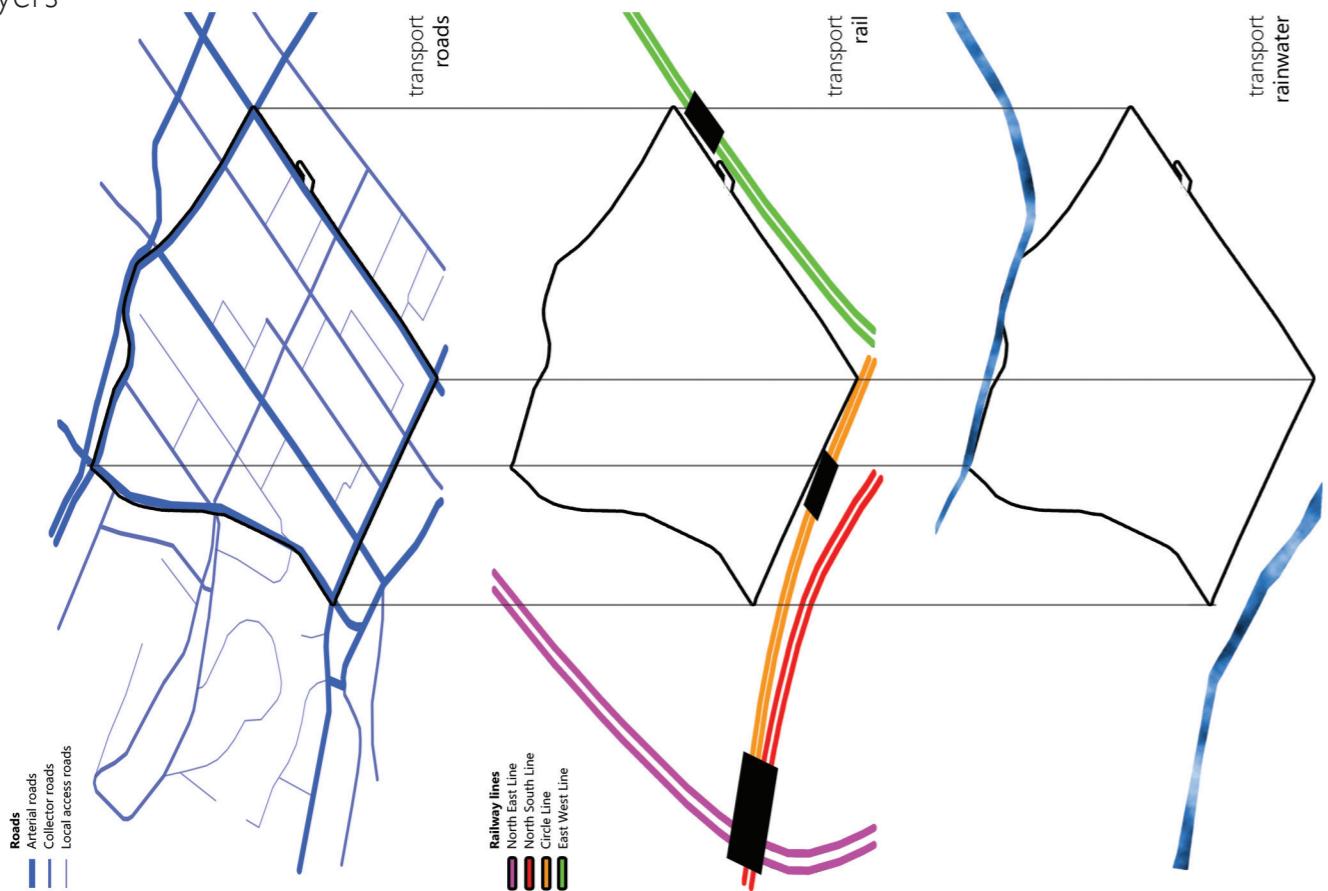


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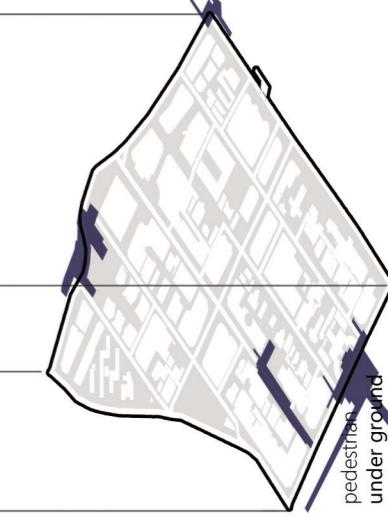


29

mapping in layers

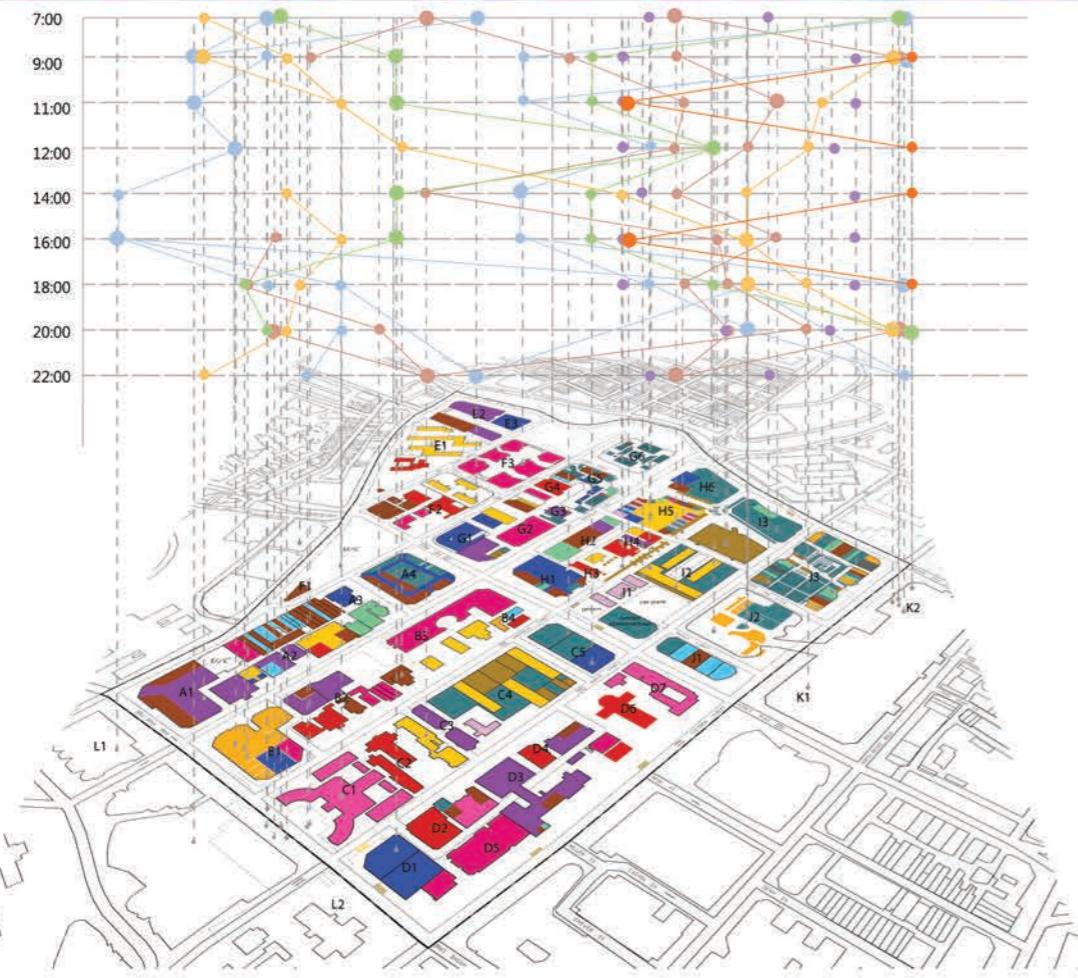


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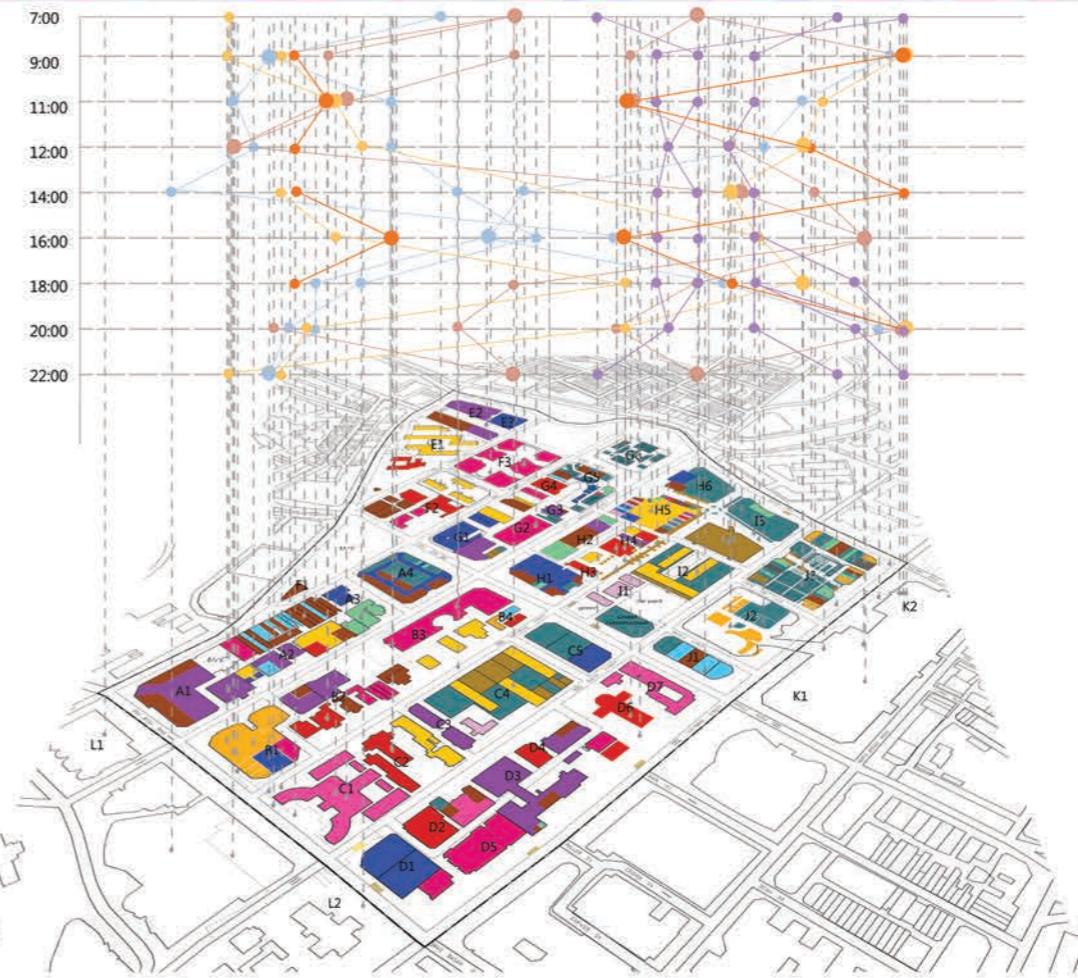
29

mapping people demography



30

31



LEGEND

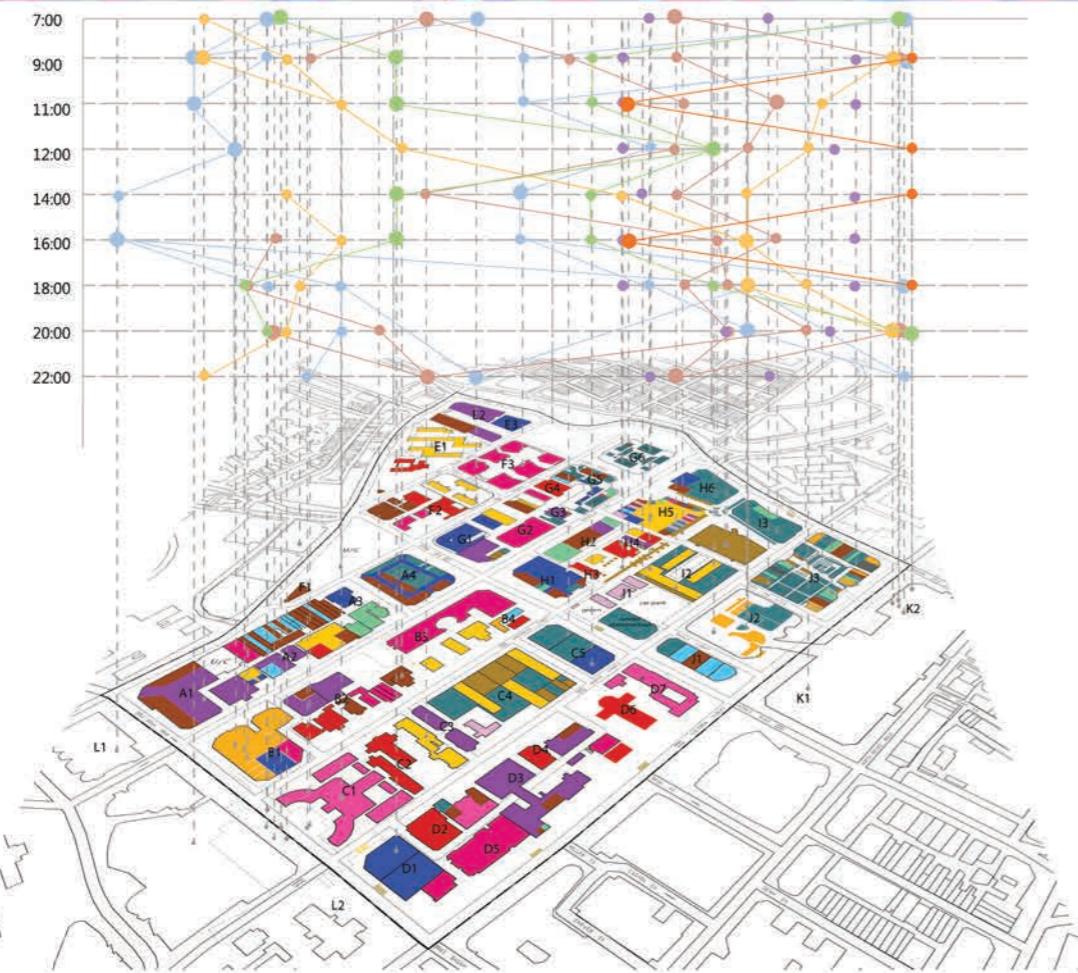
- residents
- tourists
- students
- office workers
- hawkers
- worshippers

● > 10 people / 10 m²
● > 5 people / 10 m²

PROGRAM

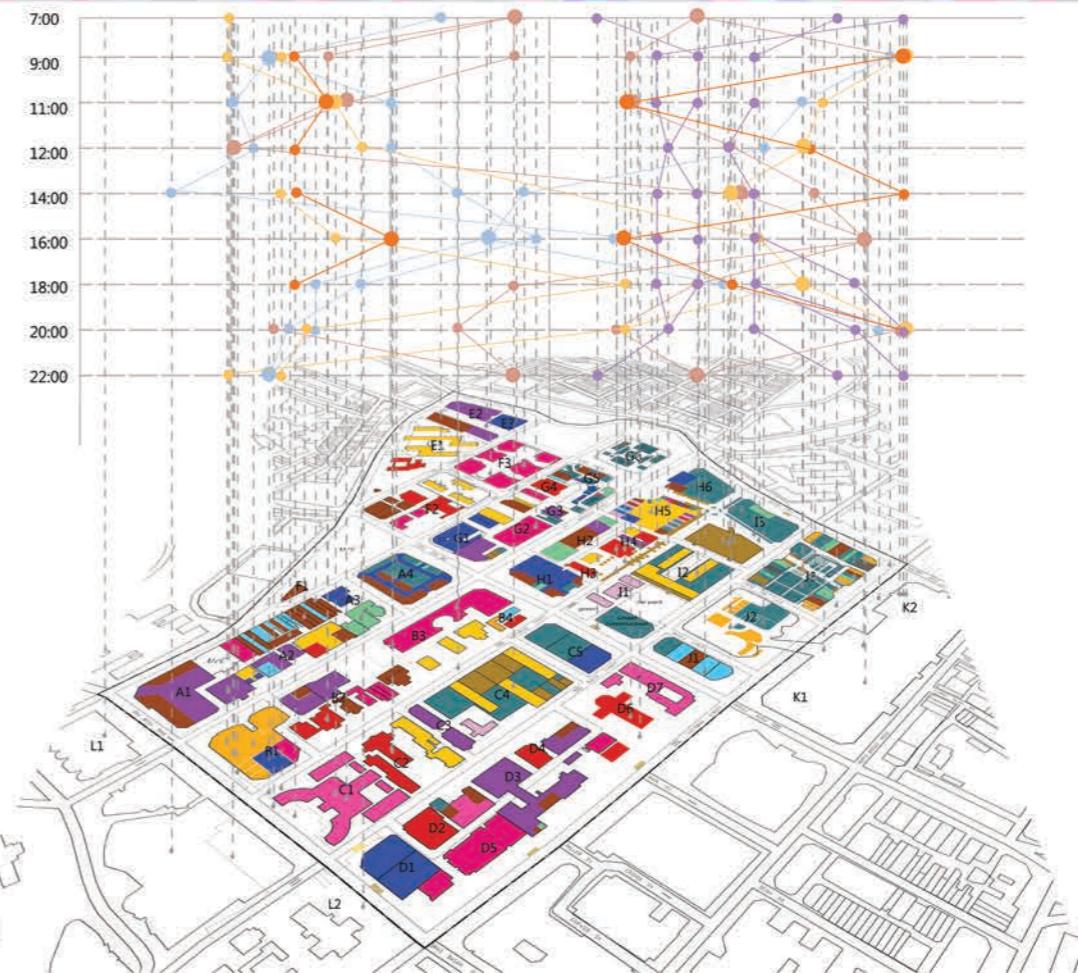
- 1 office
- 2 entertainment
- 3 chain
- 4 private retail
- 5 hotels
- 6 restaurants
- 7 hawker
- 8 street
- 9 fast food
- 10 religious
- 11 mrt
- 12 bus
- 13 taxi
- 14 museum
- 15 societies
- 16 residential
- 17 education

mapping people demography



30

31



LEGEND

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- tourists
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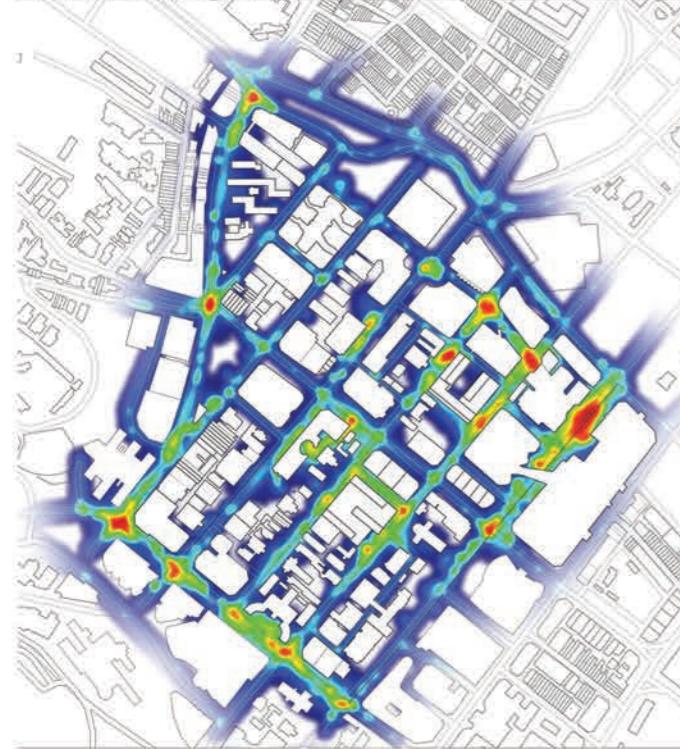
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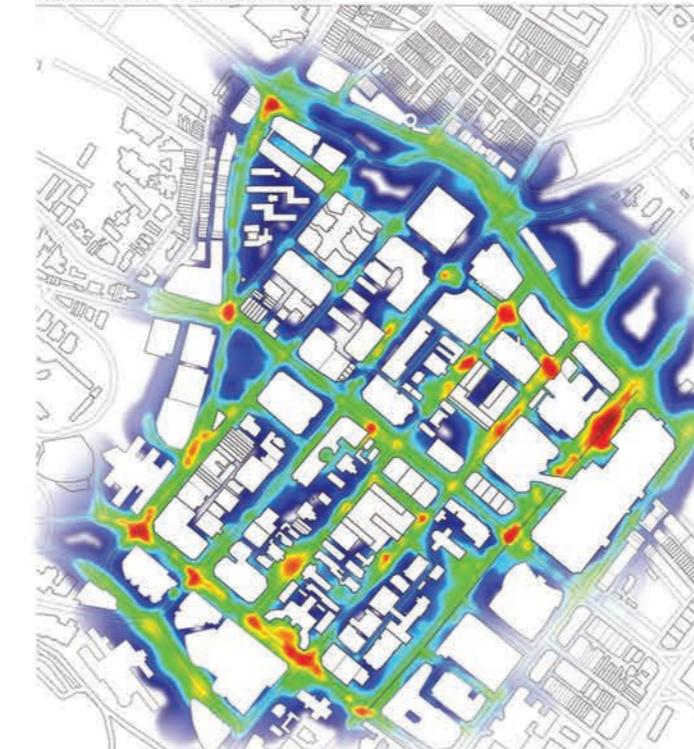
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mapping people density

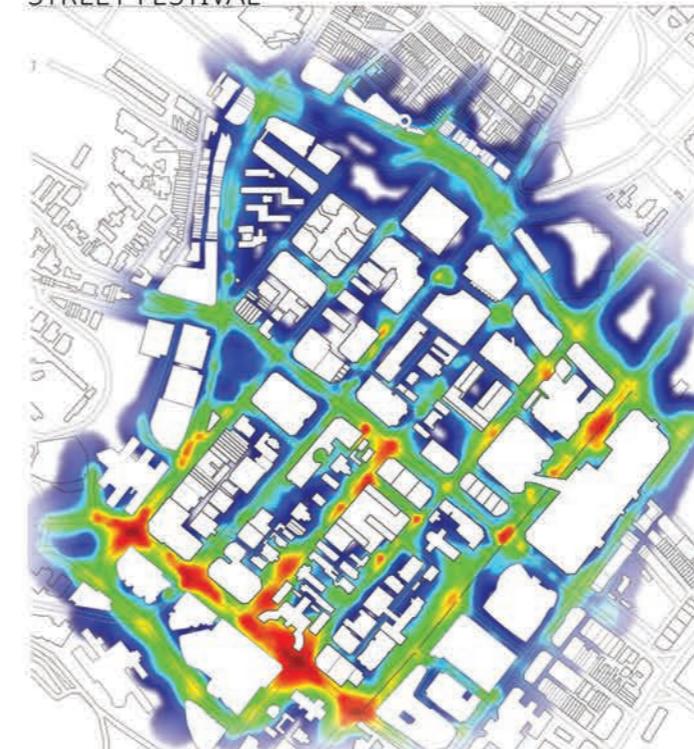
NORMAL WEEKDAYS



NORMAL WEEKENDS



STREET FESTIVAL



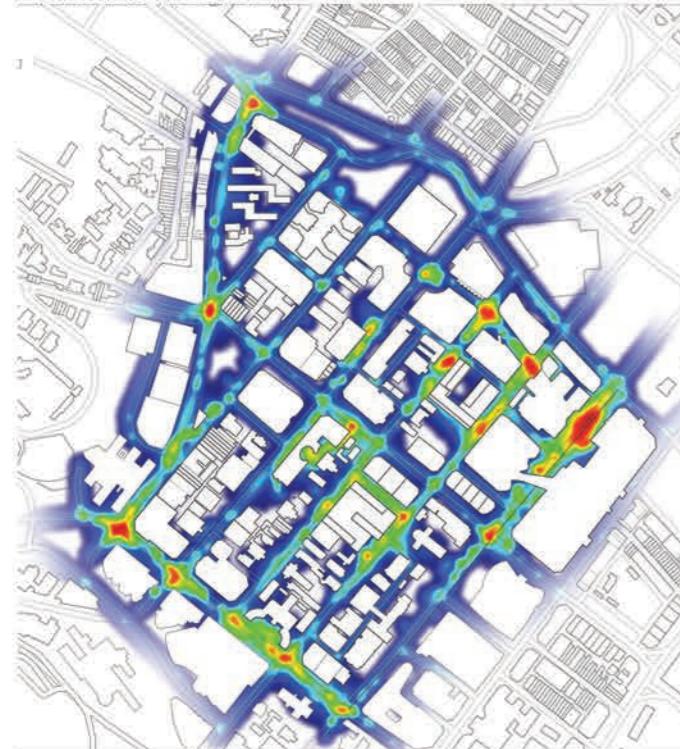
The mapping of human density was done for weekday, weekend and on special occasions like during the Singapore Night Festival. This allowed us to compare the activation of the site at different time of the week as well as identify "hotspots" within the site.

Eventually, this mapping aids in identifying potential routes and junctions in which our urban intervention can situate or tap on.

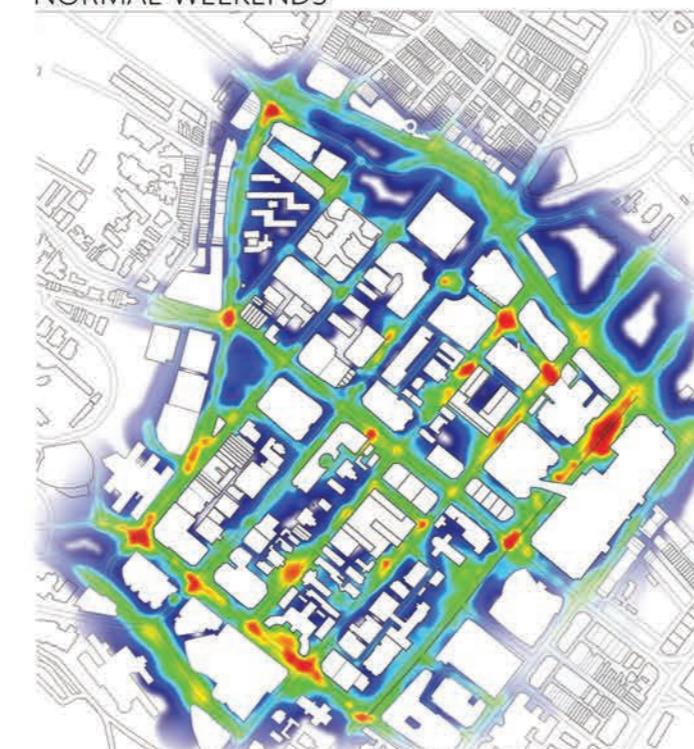
33

mapping people density

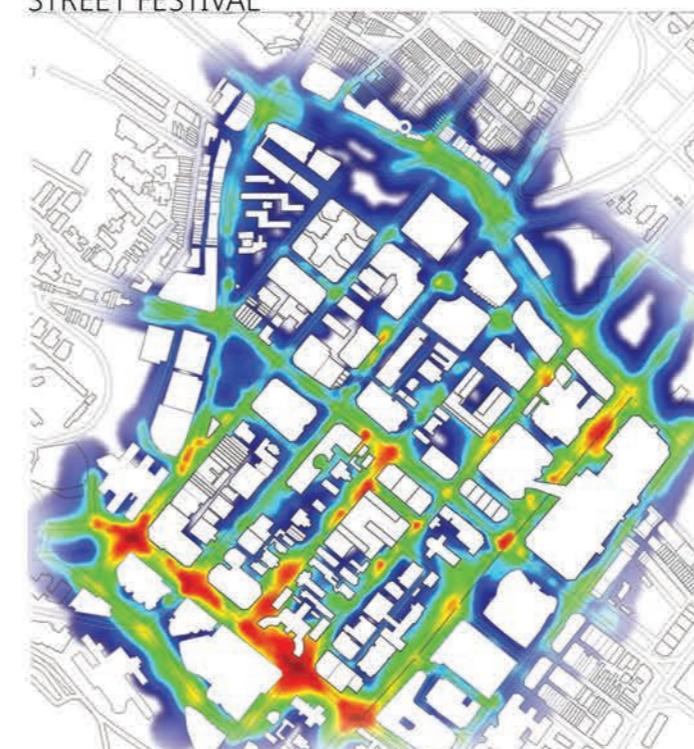
NORMAL WEEKDAYS



NORMAL WEEKENDS



STREET FESTIVAL

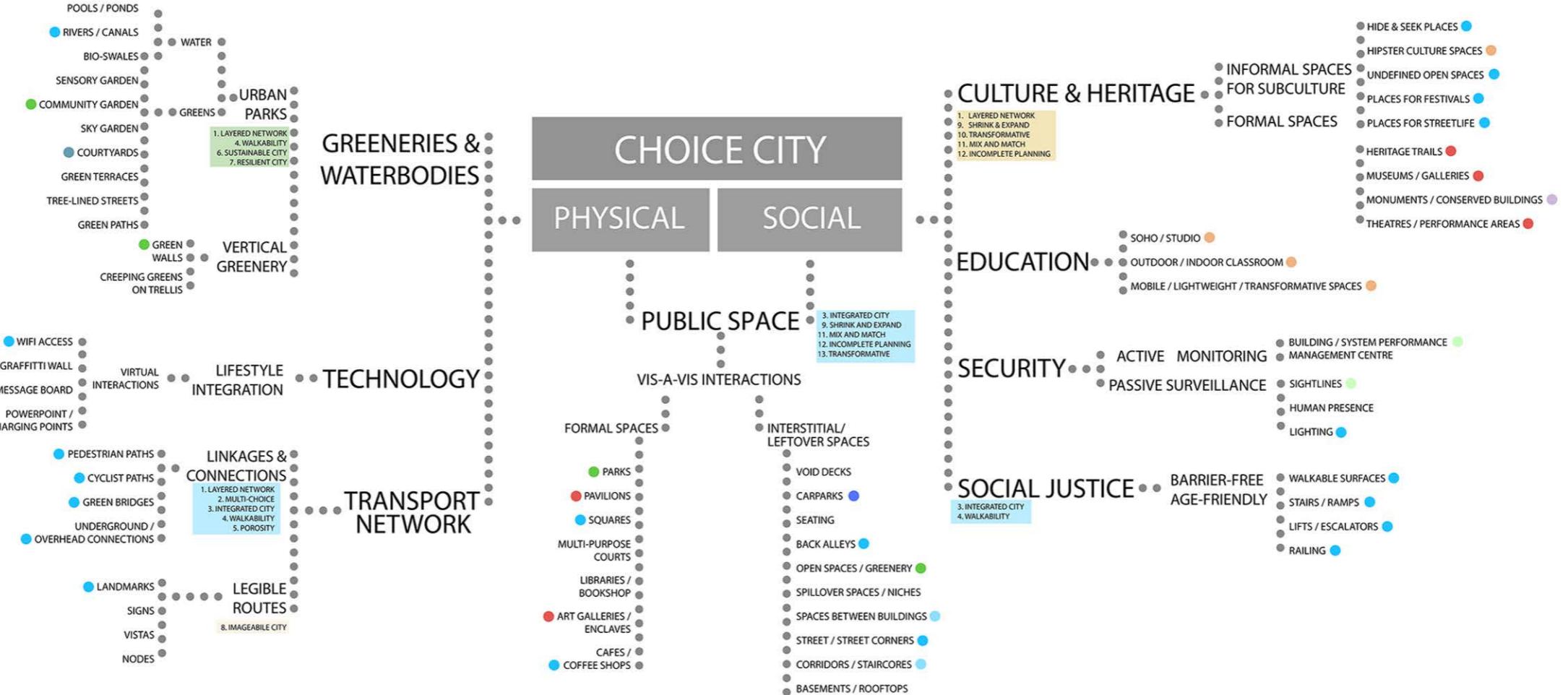


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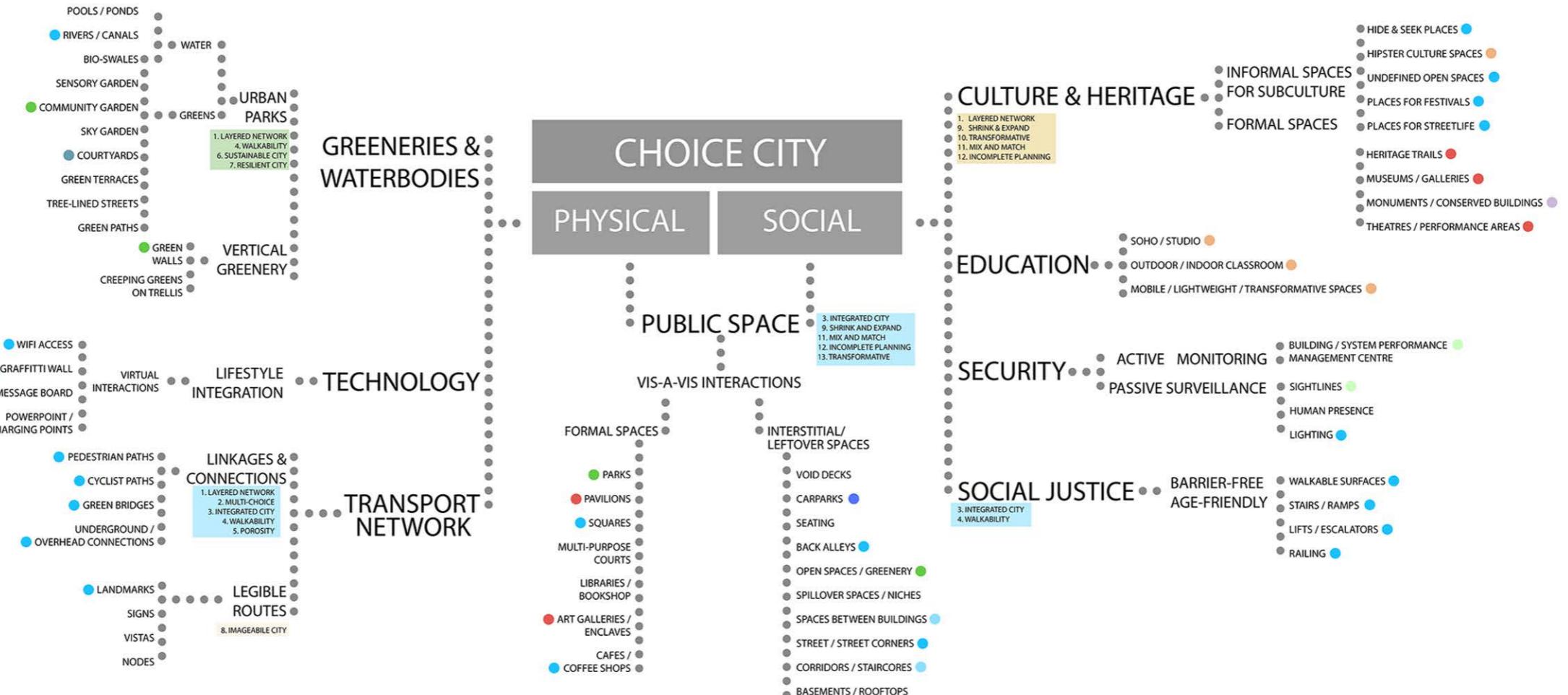
mind map "Choice City"



34

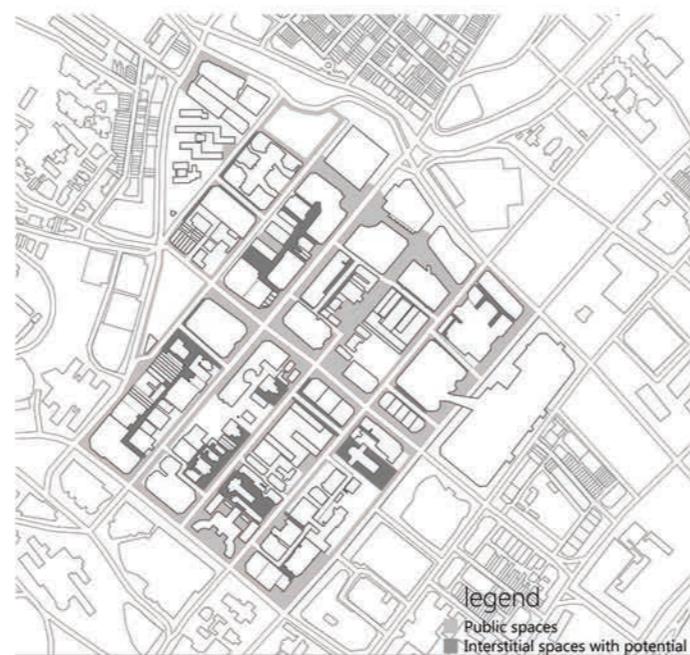
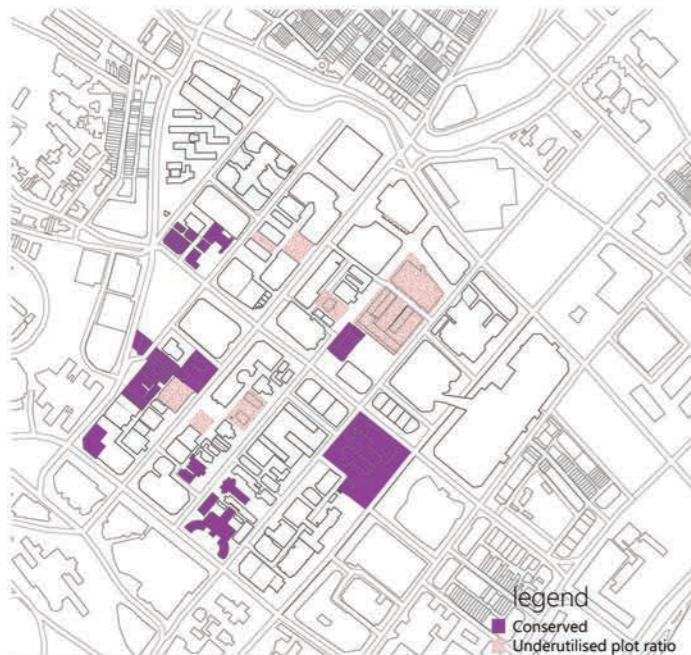
35

mind map "Choice City"



activation of strategy plan

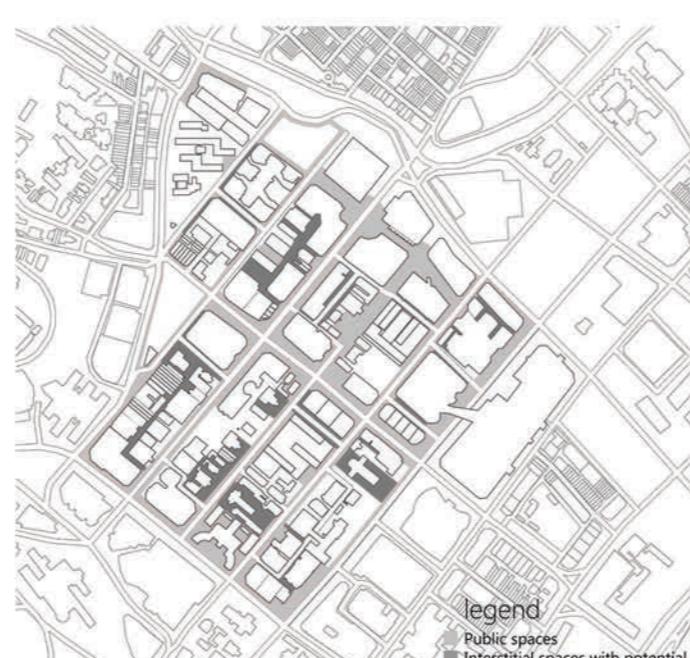
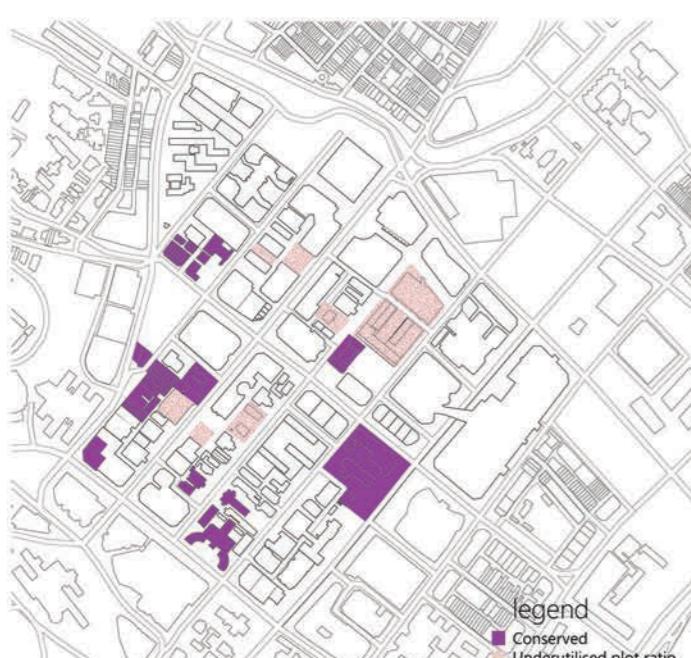
utilization of space



36

activation of strategy plan

utilization of space

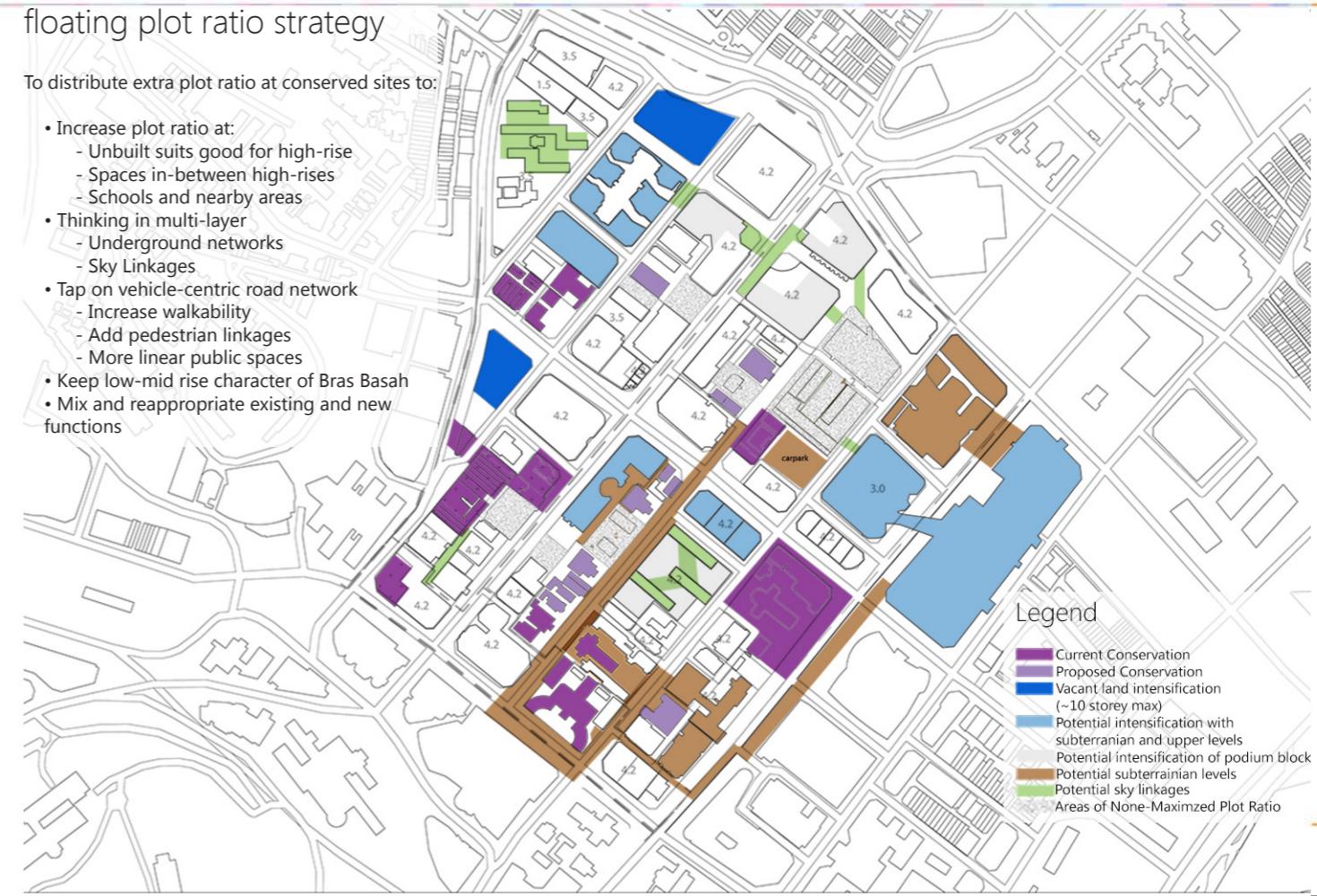


36

floating plot ratio strategy

To distribute extra plot ratio at conserved sites to:

- Increase plot ratio at:
 - Unbuilt suits good for high-rise
 - Spaces in-between high-rises
 - Schools and nearby areas
- Thinking in multi-layer
 - Underground networks
 - Sky Linkages
- Tap on vehicle-centric road network
 - Increase walkability
 - Add pedestrian linkages
 - More linear public spaces
- Keep low-mid rise character of Bras Basah
- Mix and reappropriate existing and new functions

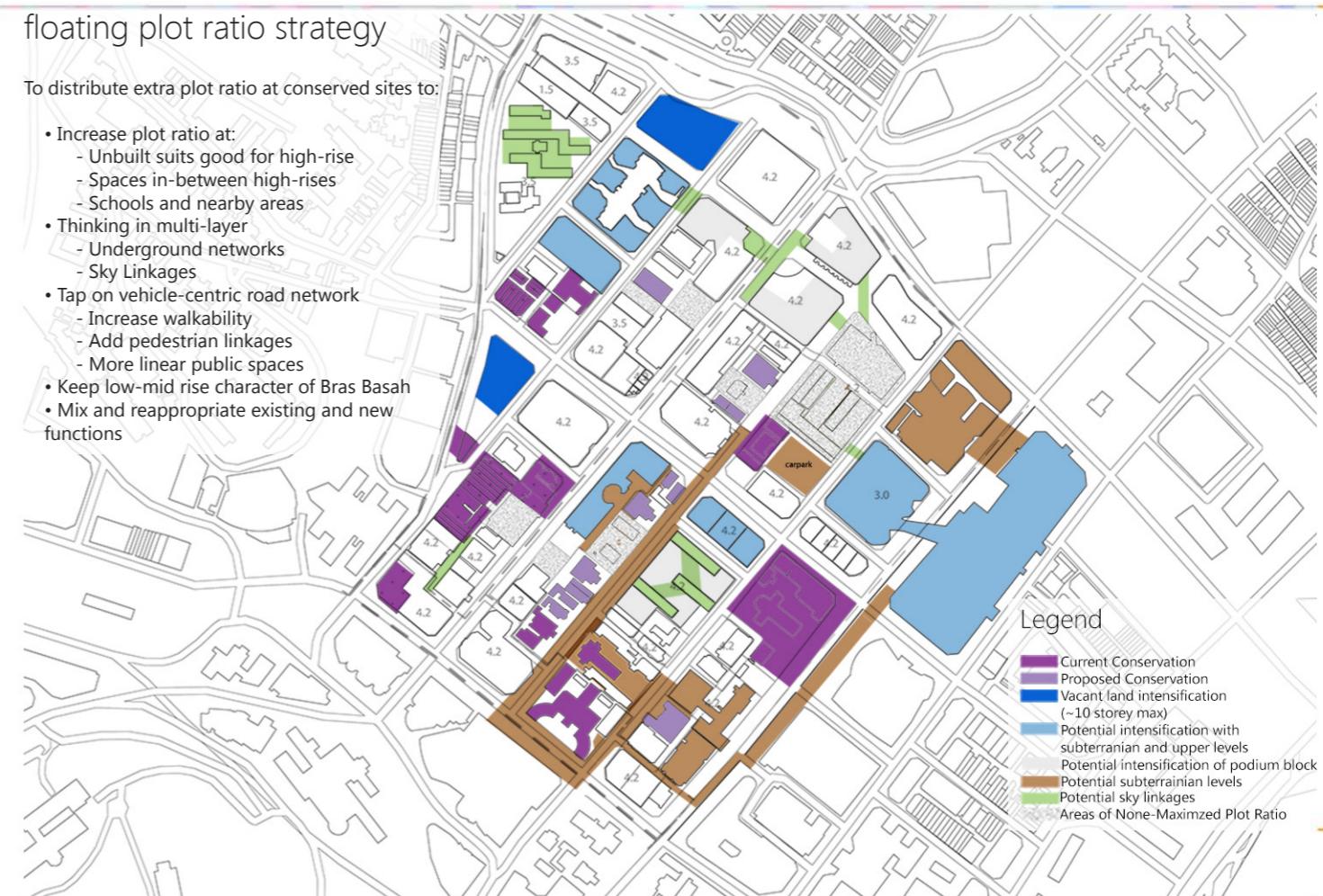


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37

city comparison conclusion

bangkok:

- commercial area along main street
- enclosed residential areas
- small roads in residential area enough as only residents use them
- schools near religious places
- green spaces along riverside

beijing:

- important to keep context and form of historical buildings
- context is a coordinated style and height of surrounding buildings
- vibrant public spaces encourage development around
- people like to stay in more human-scaled pedestrian streets
- more interactions on small streets

krakow:

- place pedestrian movement between important spaces along one main path to generate public space
- car movement affects walkability
- pedestrian links above/underground for walkability
- lack of connection between districts prevents accessibility beyond central area

panadura:

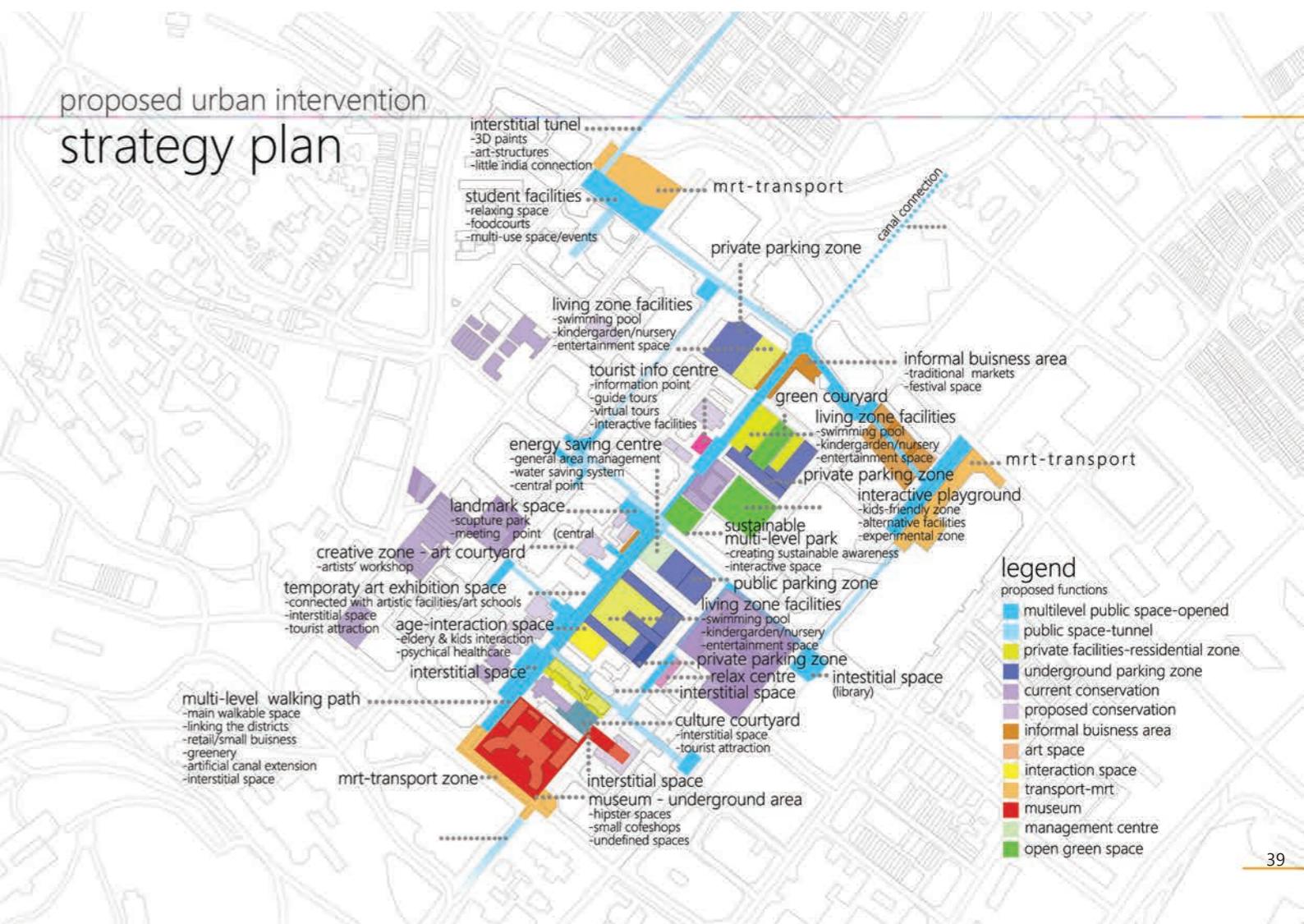
- pedestrians have identified main routes about city to fit their needs
- more commercial areas are easily identifiable from more residential areas through buildings and patterns of pedestrian movement
- pedestrians accumulate along main road to generate biggest densities

38

kuehlapiscity activation ideas

- waterloo street - main pedestrian path roughly equidistance to most places around high pedestrian movement along main street mixed-use character
- improving lifestyle level restore existing residential buildings add facilities to improve the standard create more public spaces
- culture & art as big values museum expansion - temporary exhibitions cooperating with art schools 'cre-art' space

proposed urban intervention strategy plan



legend
proposed functions

- multilevel public space-opened
- public space-tunnel
- private facilities-residential zone
- underground parking zone
- current conservation
- proposed conservation
- informal business area
- art space
- interaction space
- transport-mrt
- museum
- management centre
- open green space

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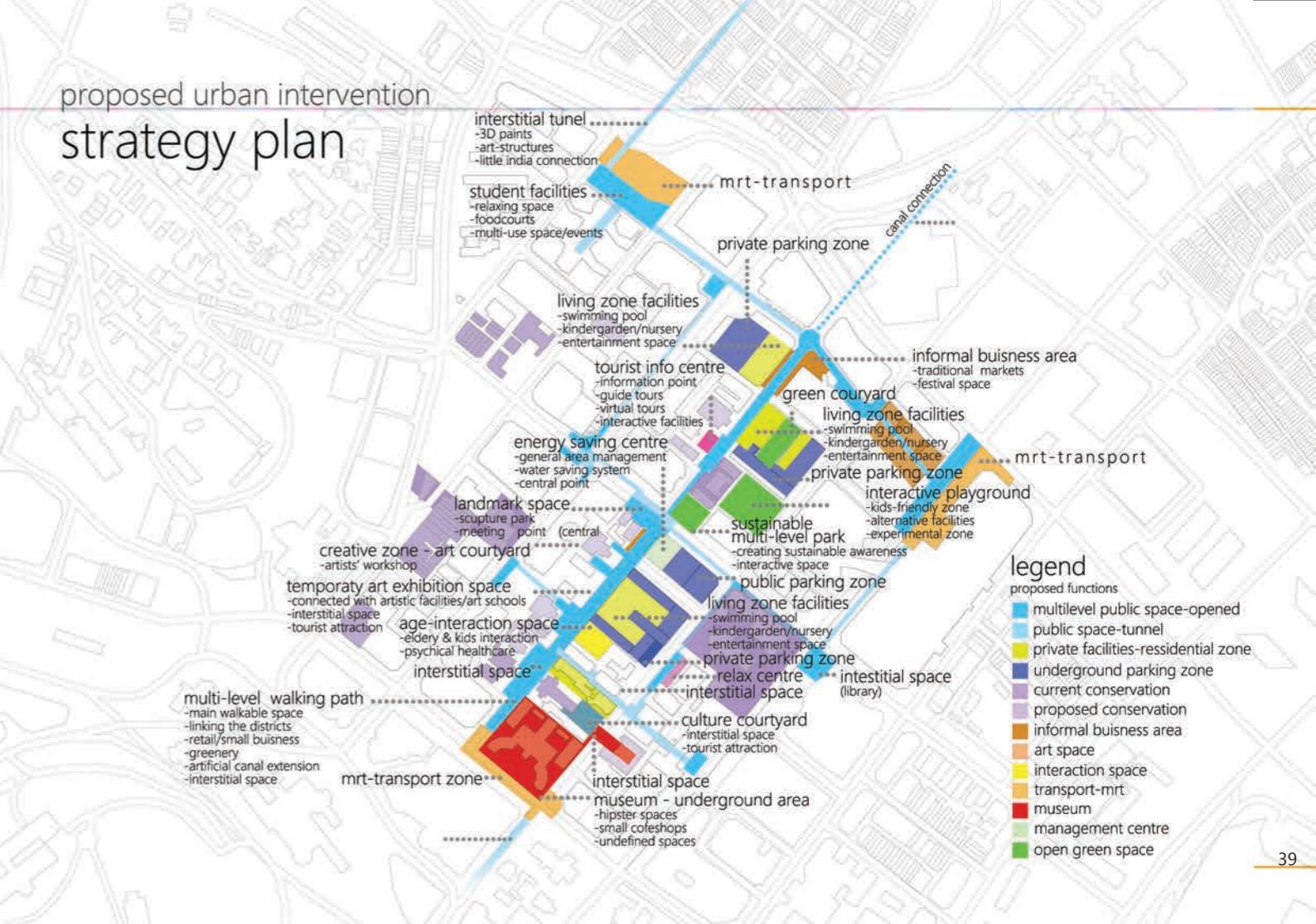
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activation of strategy plan

section along Waterloo St

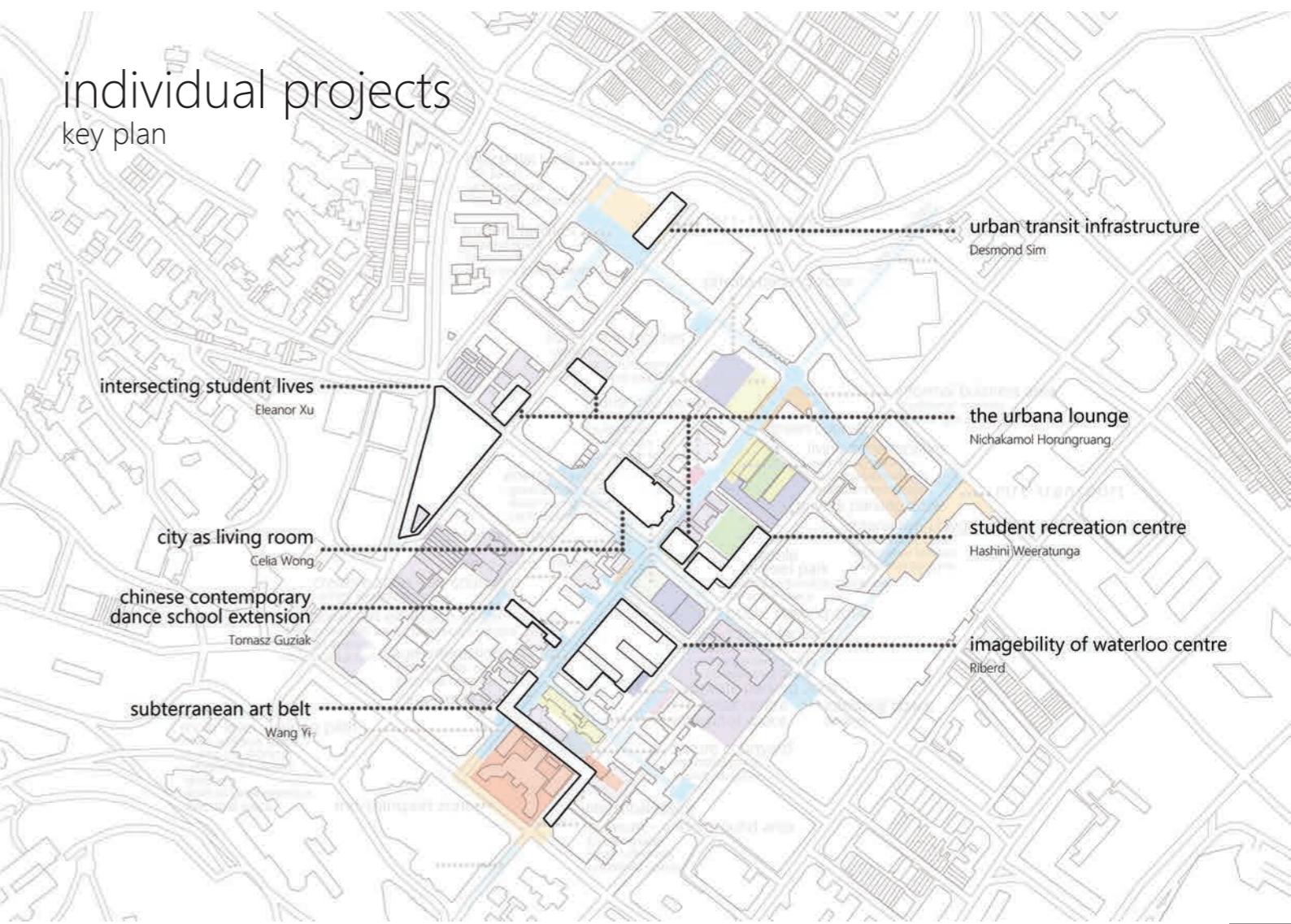


activation of strategy plan

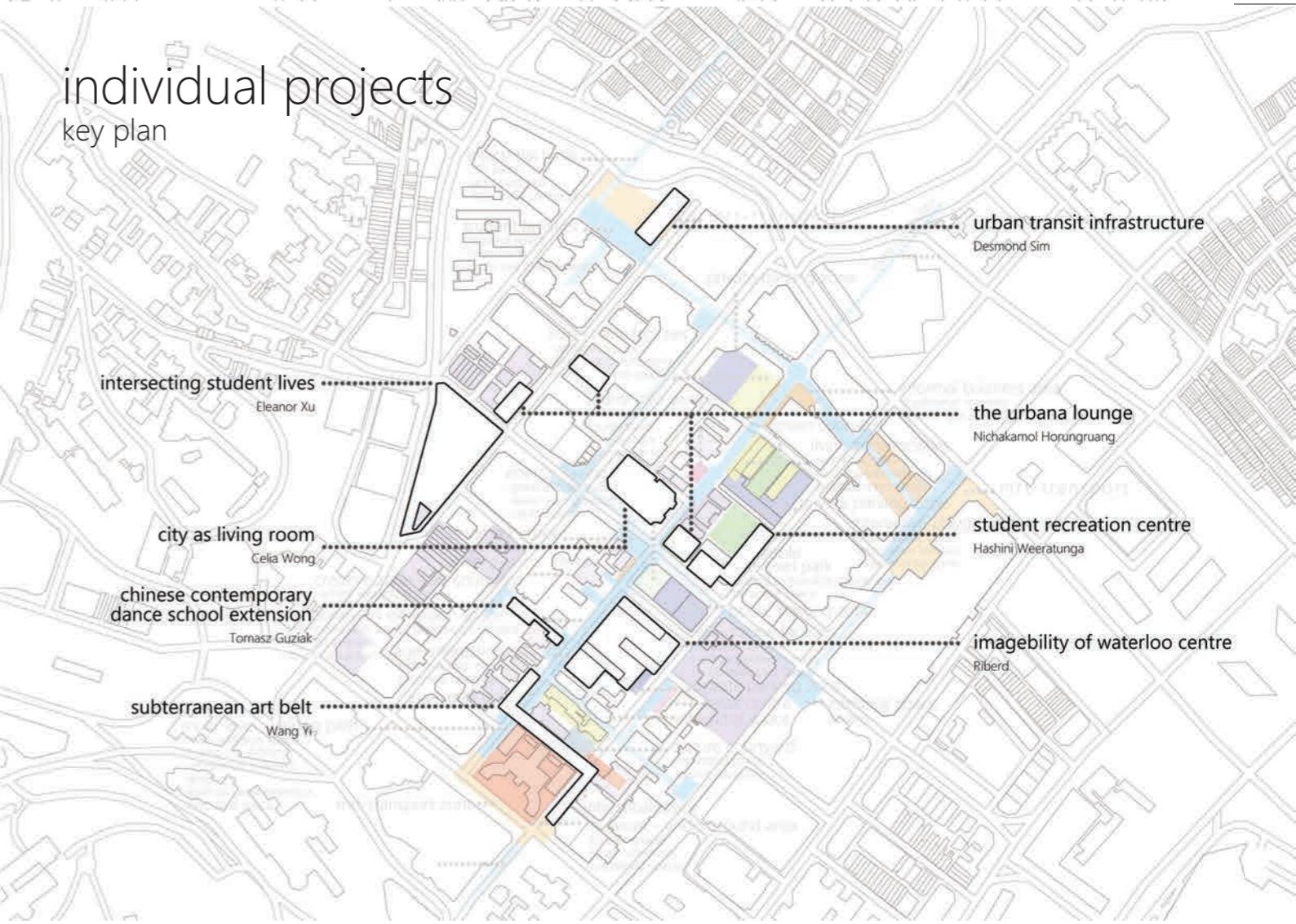
section along Waterloo St



individual projects key plan

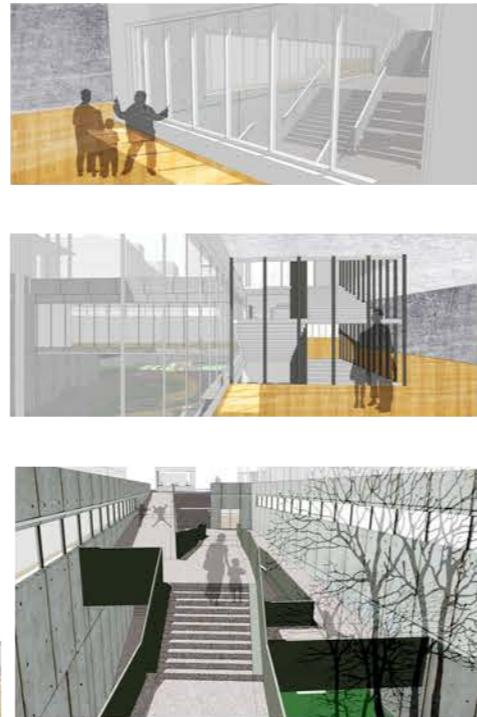
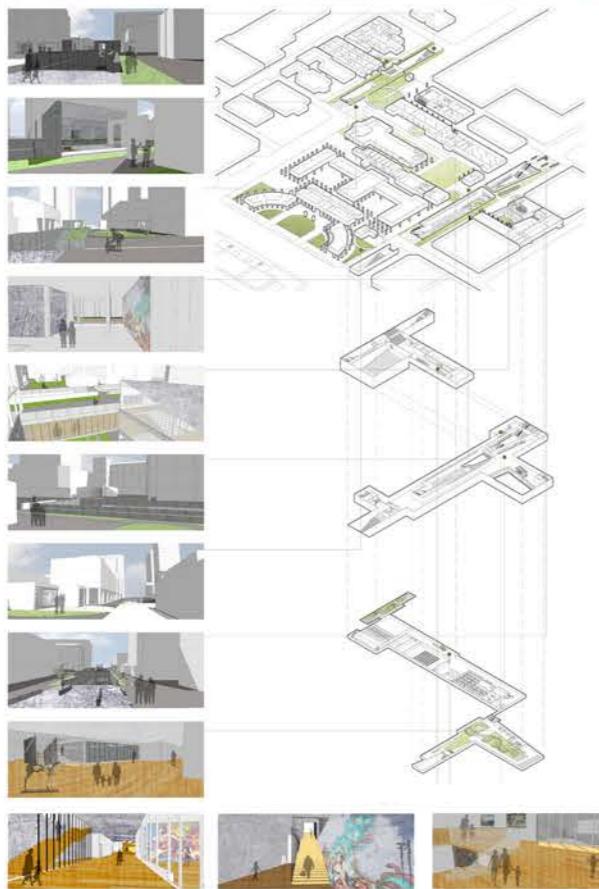


individual projects key plan



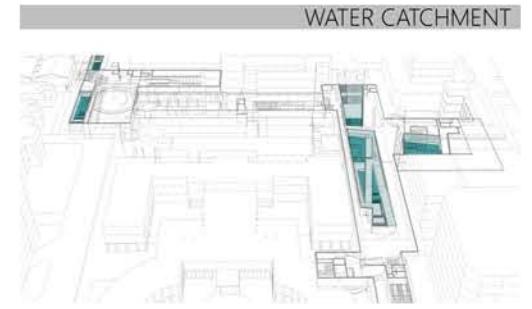
subterranean art belt

Wang Yi



The project aims to tie those separated art galleries and institutions up as a complex which can reinforce them as a whole. It will also deal with the flood issue by serving as a temporary water reservoir.

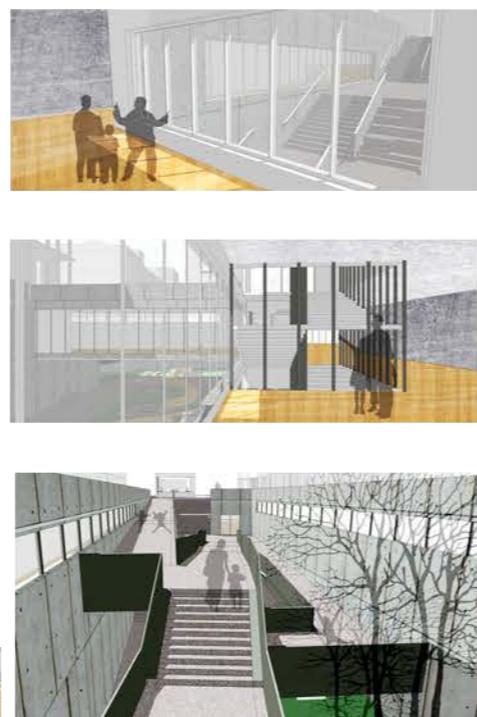
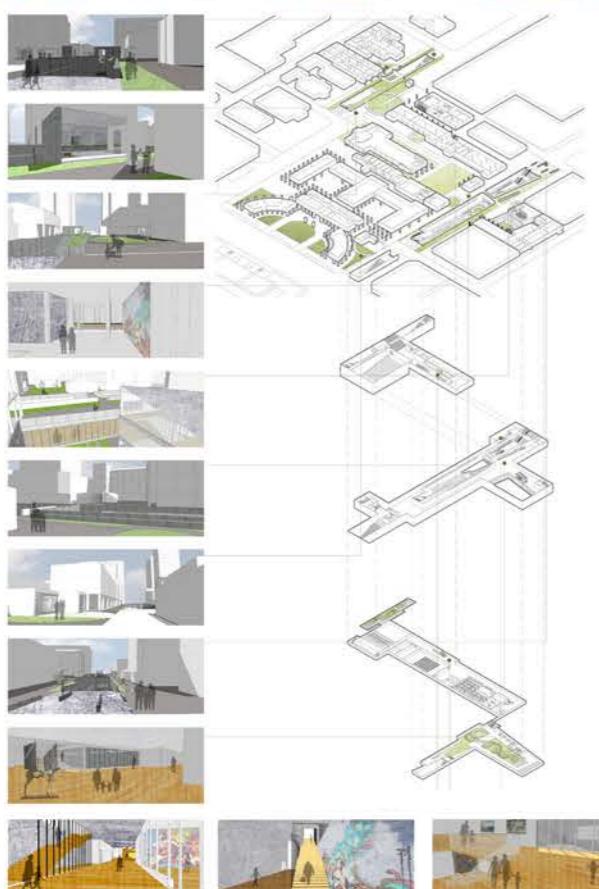
44



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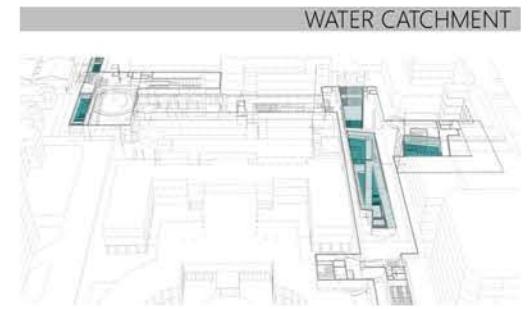
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the urbana lounge

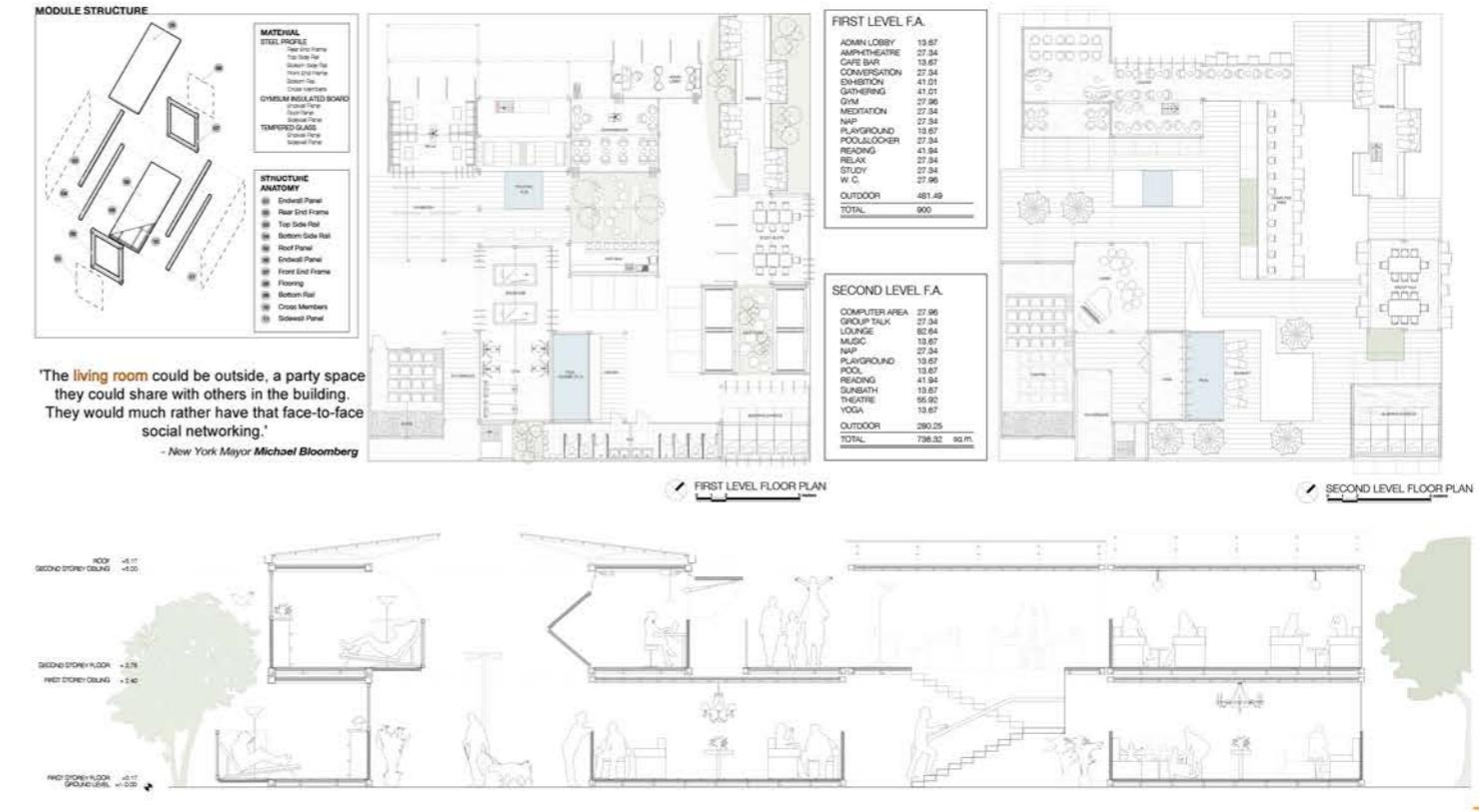
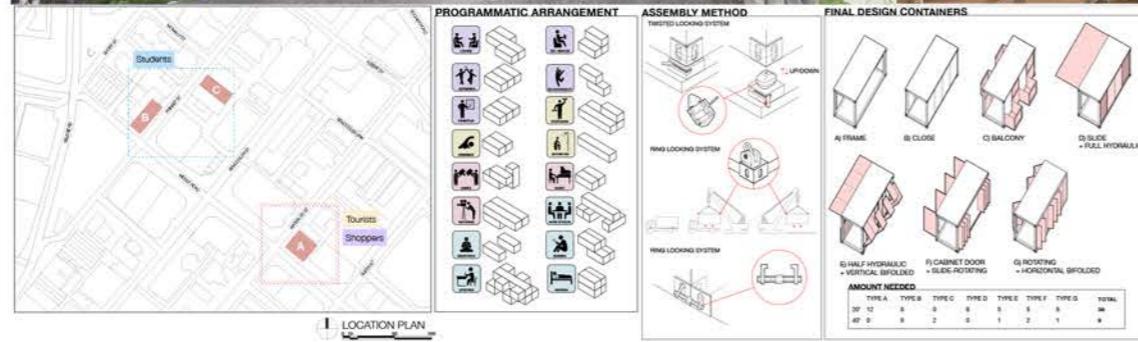
Nichakamol Horungruang



The Urbana Lounge is a mobility-based project that mainly includes living room, recreational gym, and public event spaces made from standard container size.

With the idea of a catalyst for fulfilled Bugis community building, the project aims to provide a friendly space for all local and traveling users.

46



47

the urbana lounge

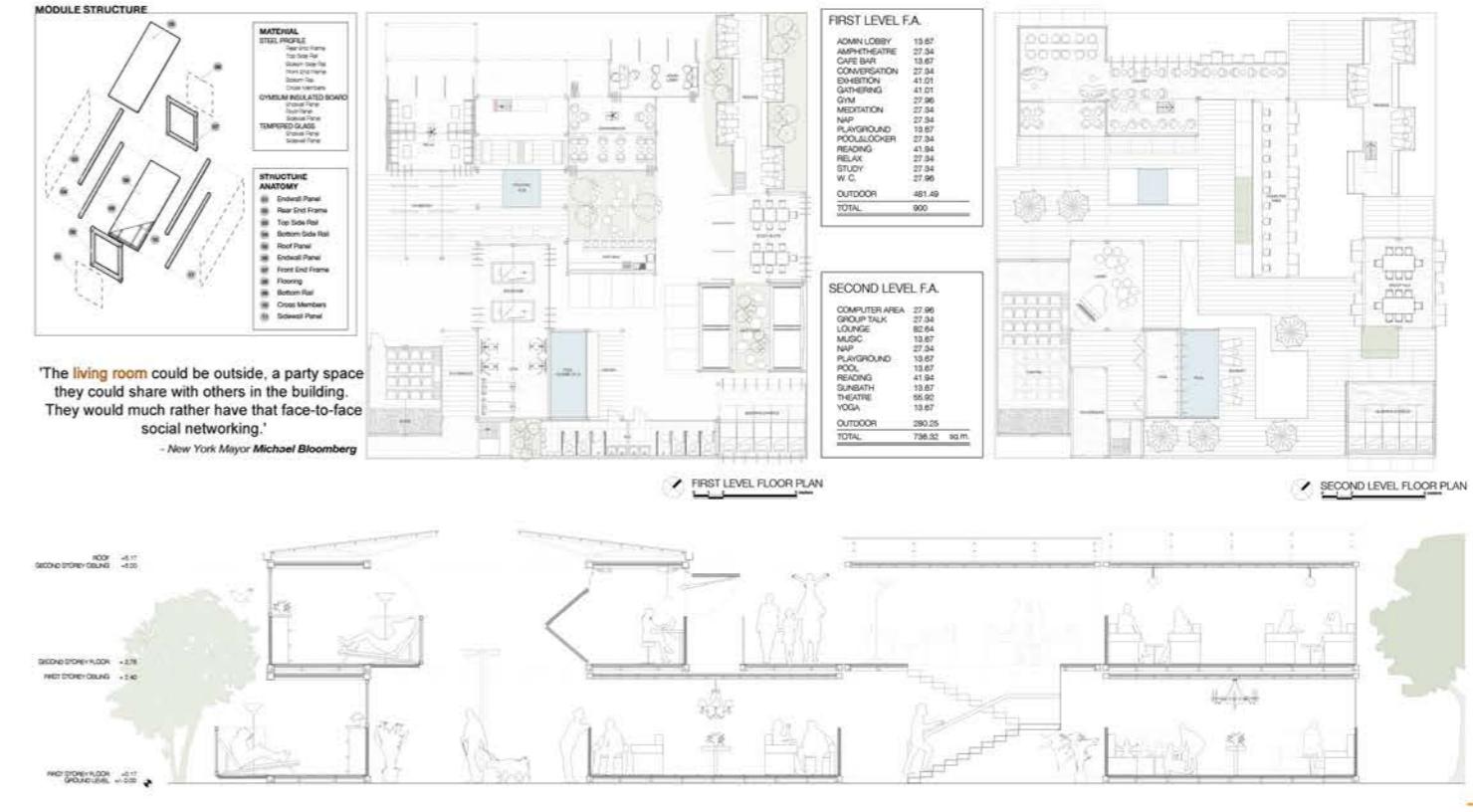
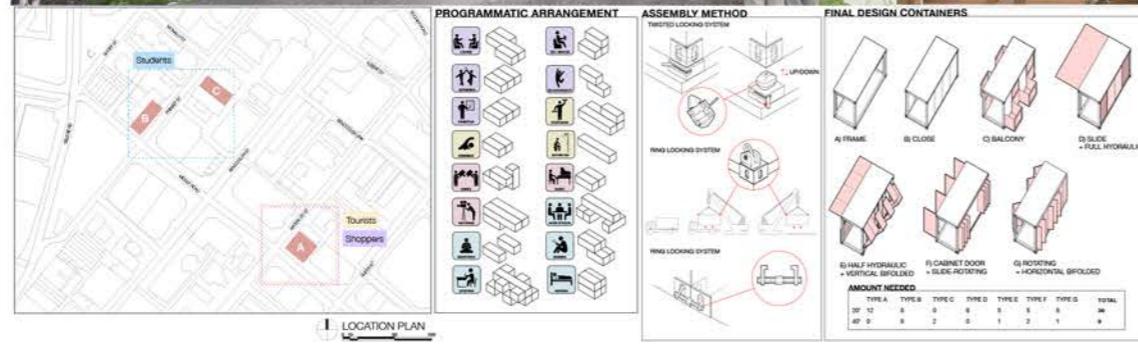
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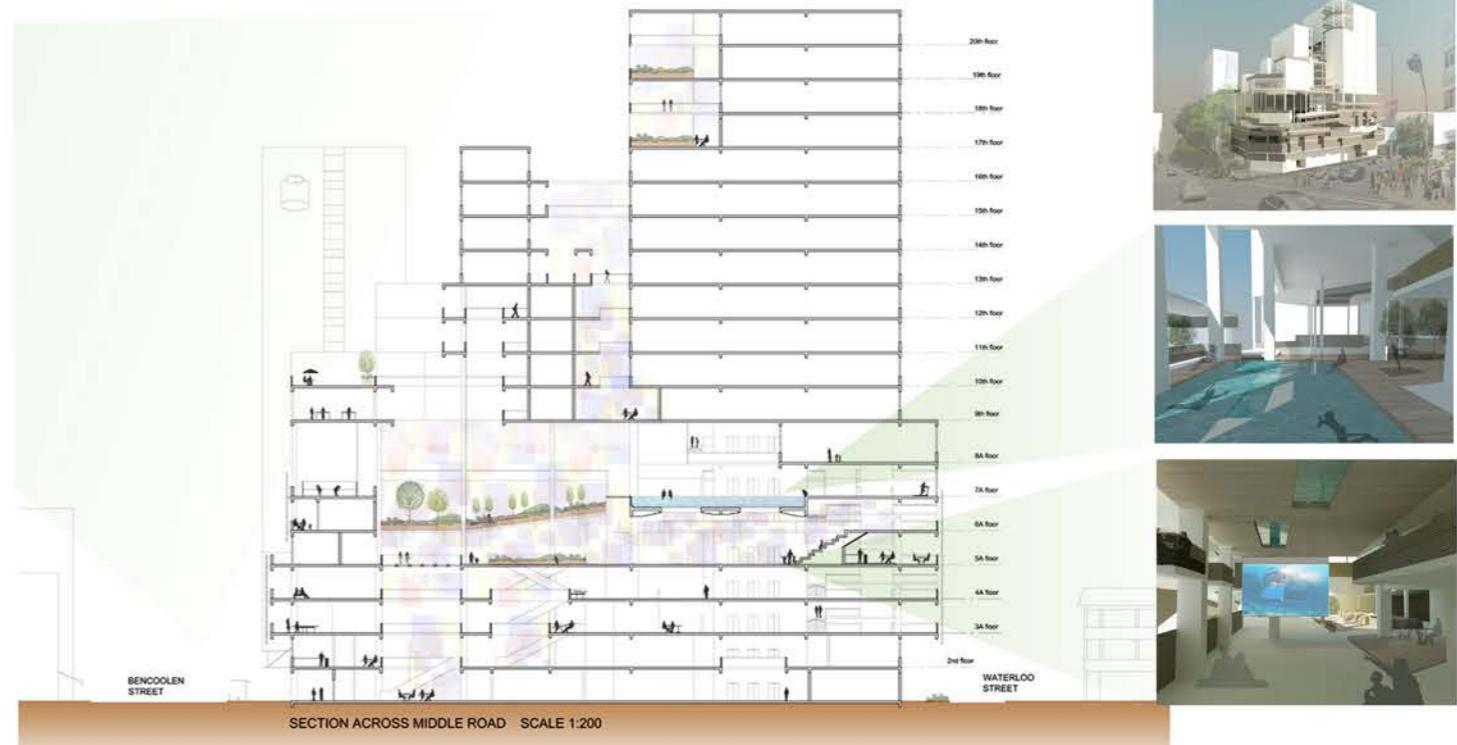
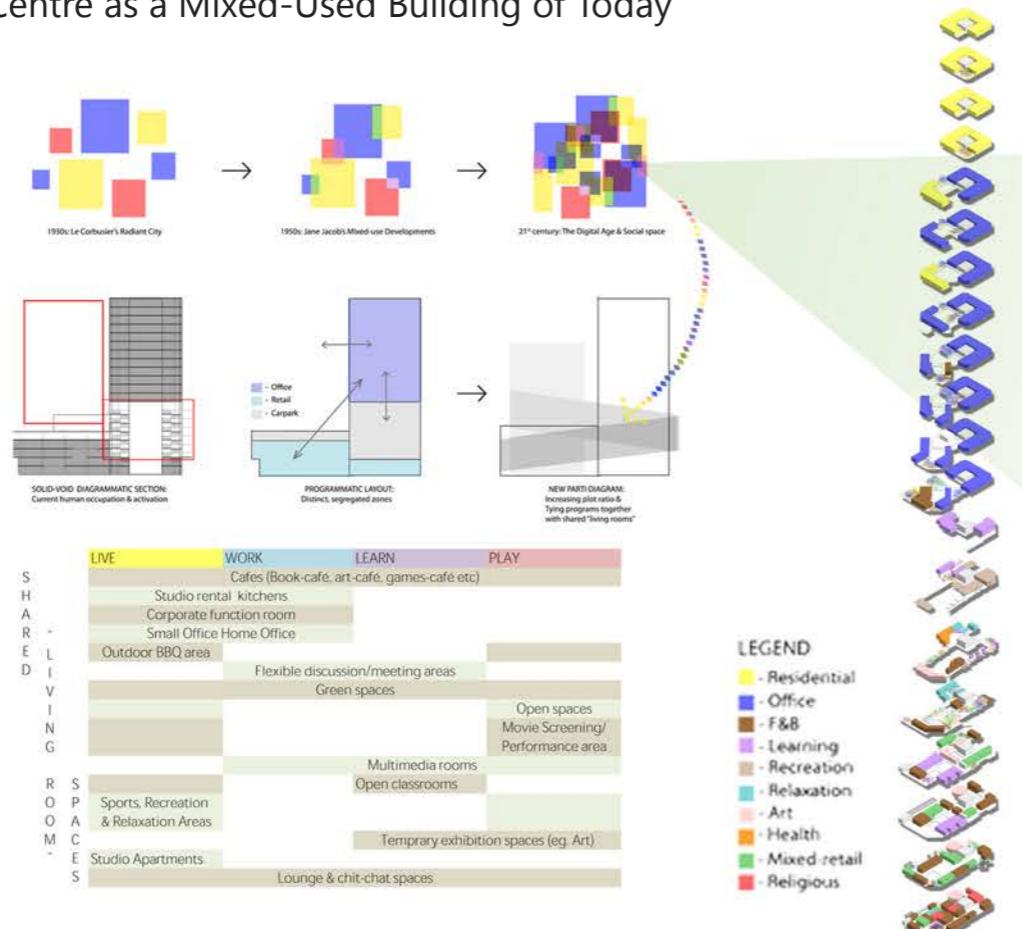
city as living room

Re-envisioning Fortune Centre as a Mixed-Used Building of Today

Celia Wong Min Yi

Traditional mixed-use developments in Singapore, as in the case of the existing Fortune Centre, have strictly zoned functions within the building with little space for the different users to come together and intermingle. Ironically, in today's context of the Digital Age, the need for face-to-face interactions and shared social space becomes ever more crucial.

This project thus explores the re-envisioning and modification of Fortune Centre as a modern mixed-used building that integrates different functional zones together through a variety of meaningful shared spaces termed as "Living Rooms." These flexible "Living Rooms" become alternative spaces for living, working, learning and playing all at once. Ultimately, they echo the whole City as our home in today's ever-more connected urbanscape.



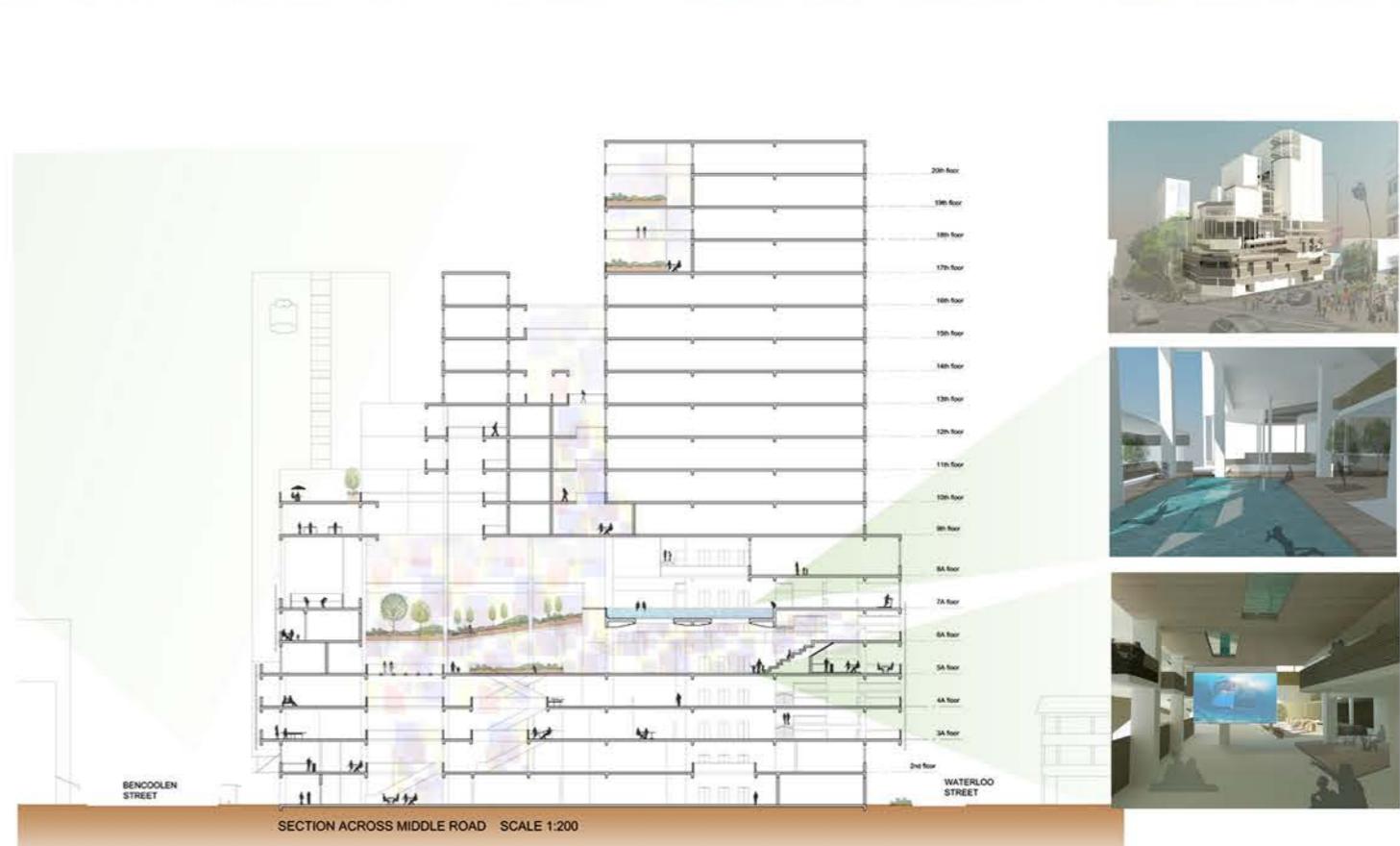
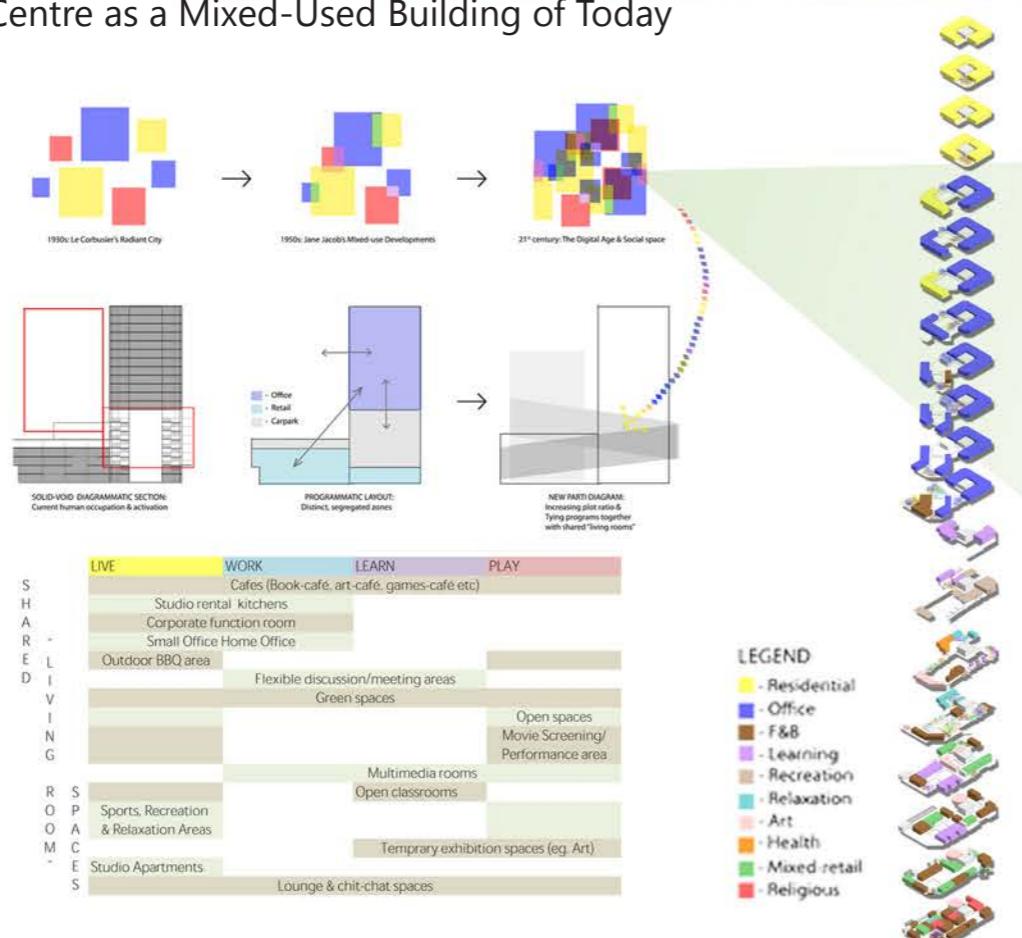
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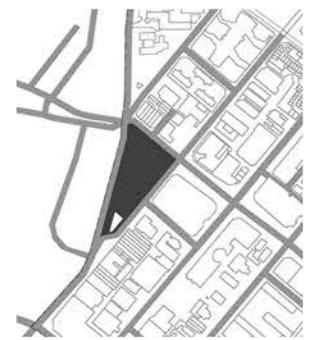
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intersecting student lives

Eleanor Xu



The student centre situated at the cross of Prinsep St, Middle Rd and Selegie Rd draws upon rich student activities in the area and intersects their interactions by providing a range of functions currently lacking in the area with circulatory paths that encourages interaction of different student groups. Extra focus is given to a quality of openness to public areas, something which is lacking in the insular nature of many current educational buildings.

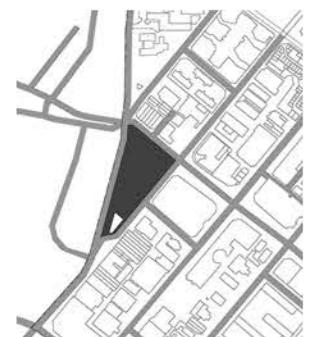
50



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51

chinese contemporary dance school extension

Tomasz Guziak

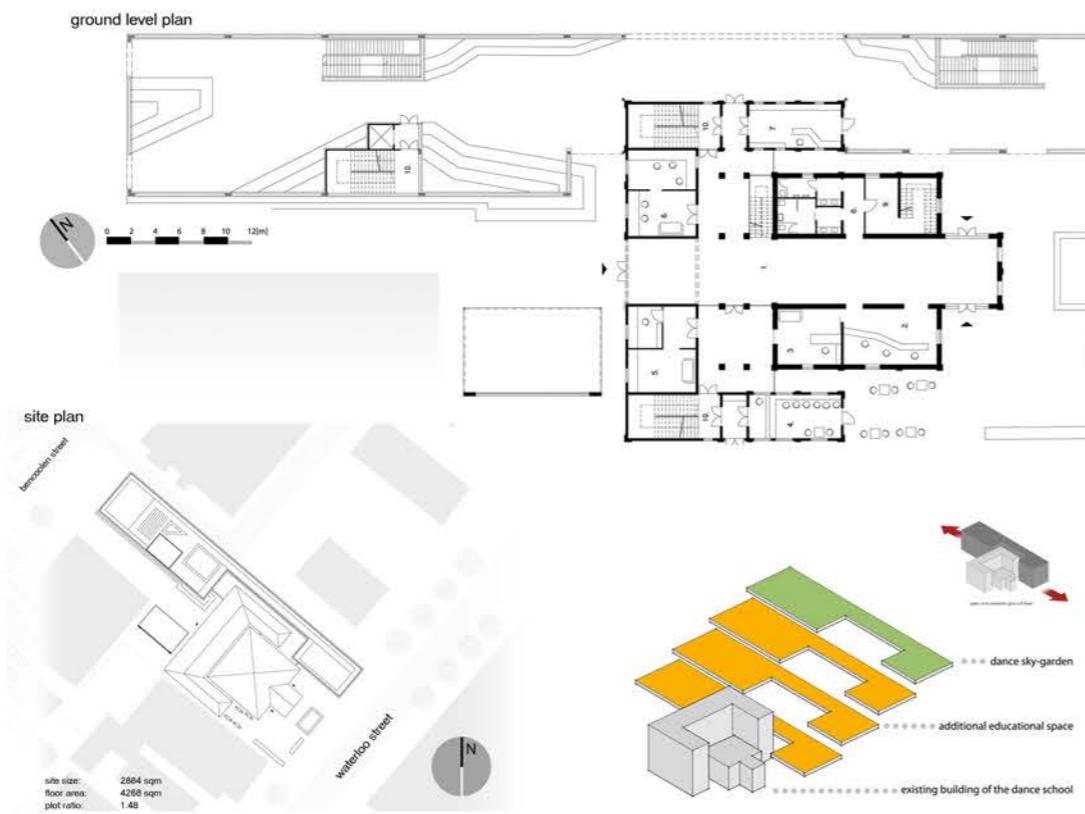
The projects' objective was to respect the existing building, extending the dance school, but also making the area walkable, that would improve the access to the mrt station constructed beside the plot.

This extension keeps the most valuable design features of the old dance school; the cornices and columns are marked by the partly movable panel facade system.

There are 5 additional dance halls, facilities necessary to dance development, and the main stage with 120 seats.

The important aspect of the extended school is definitely a way of public participation, generated by outdoor stage, and also underground part containing an interactive exhibition space, which shows the history of the chinese dance to the public.

52



53

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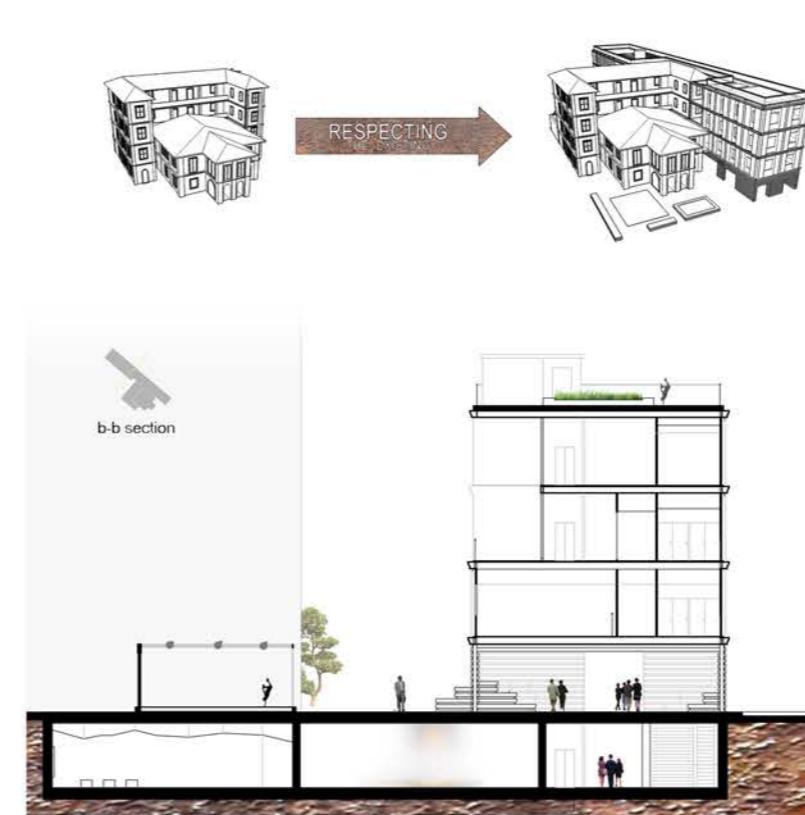
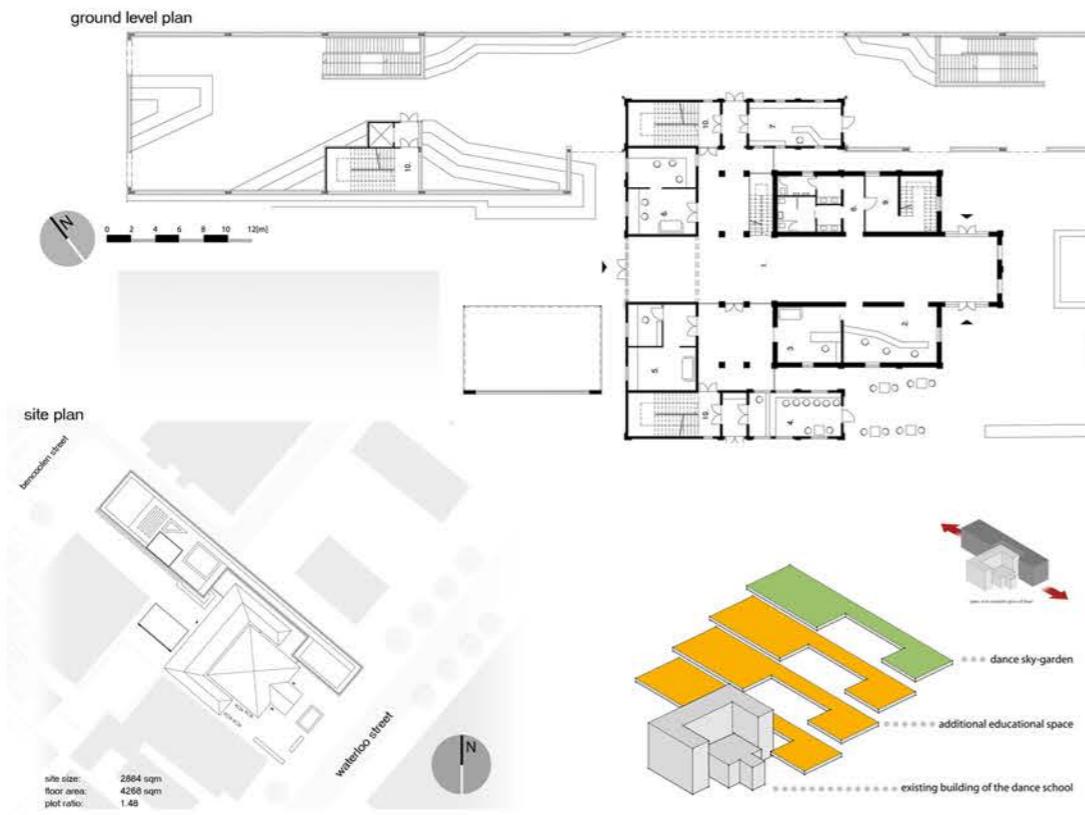
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urban transit infrastructure

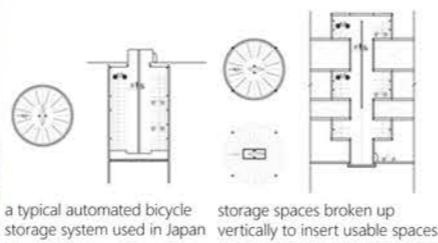
Desmond Sim

Urban Transit Infrastructure imagines a city where cycling is a major form of transportation with all the supporting amenities and facilities. In such a scenario, urban space is used up to provide parking spaces and facilities for cyclists. This project looks to intensify the usage of the space by inserting other programs and engage the site through its public spaces.

Transit . Transient

The bicycle park fulfills the needs of cyclists commuting to the Downtown and is a transitory space. Taking the idea of the transitory nature of the bicycle park, and extending the transient nature of the spaces, a diverse set of programs such as urban camping and coworking spaces are generated.

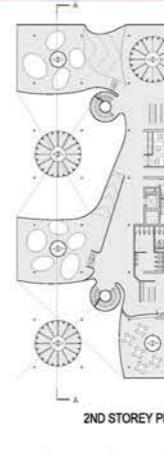
The spaces are generated through the circular plan of the automated bicycle storage system and freeform curves, placing the utilitarian storage spaces in sharp contrast with the playful spaces.



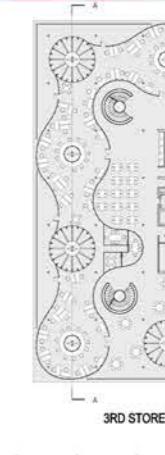
54



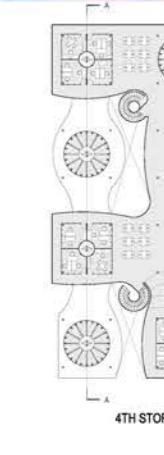
1ST STOREY PLAN



2ND STOREY PLAN



3RD STOREY PLAN



4TH STOREY PLAN



55

urban transit infrastructure

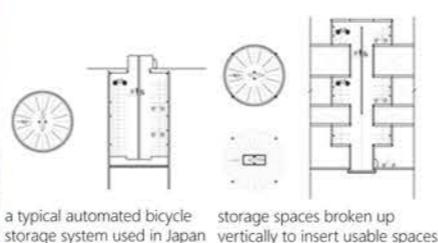
Desmond Sim

Urban Transit Infrastructure imagines a city where cycling is a major form of transportation with all the supporting amenities and facilities. In such a scenario, urban space is used up to provide parking spaces and facilities for cyclists. This project looks to intensify the usage of the space by inserting other programs and engage the site through its public spaces.

Transit . Transient

The bicycle park fulfills the needs of cyclists commuting to the Downtown and is a transitory space. Taking the idea of the transitory nature of the bicycle park, and extending the transient nature of the spaces, a diverse set of programs such as urban camping and coworking spaces are generated.

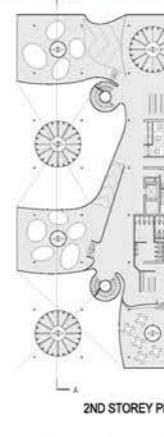
The spaces are generated through the circular plan of the automated bicycle storage system and freeform curves, placing the utilitarian storage spaces in sharp contrast with the playful spaces.



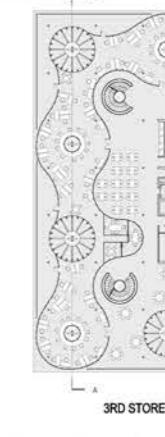
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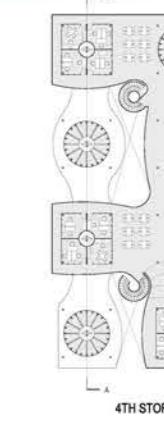
1ST STOREY PLAN



2ND STOREY PLAN



3RD STOREY PLAN



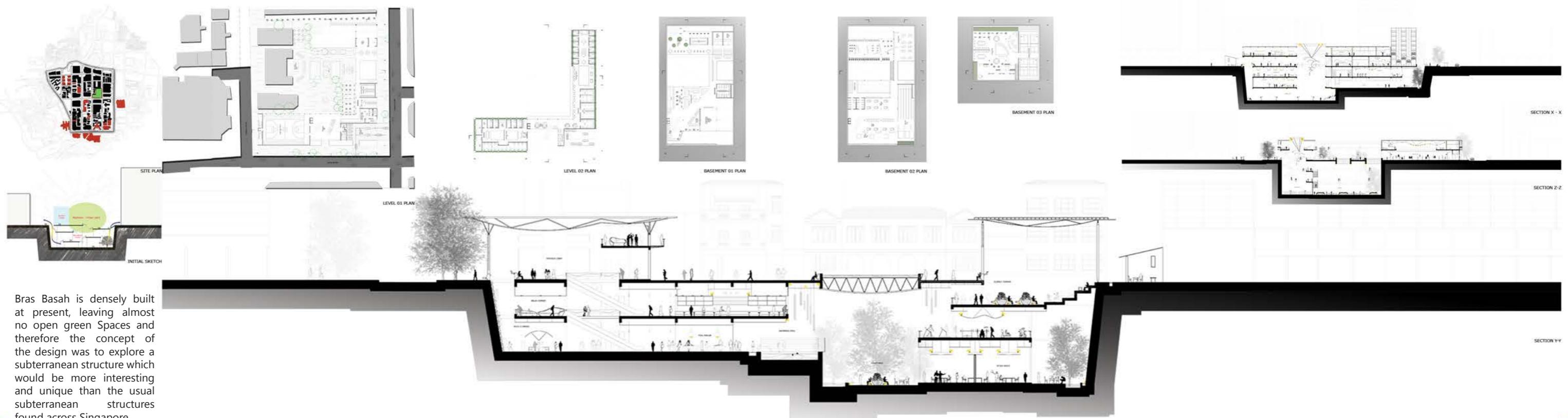
4TH STOREY PLAN



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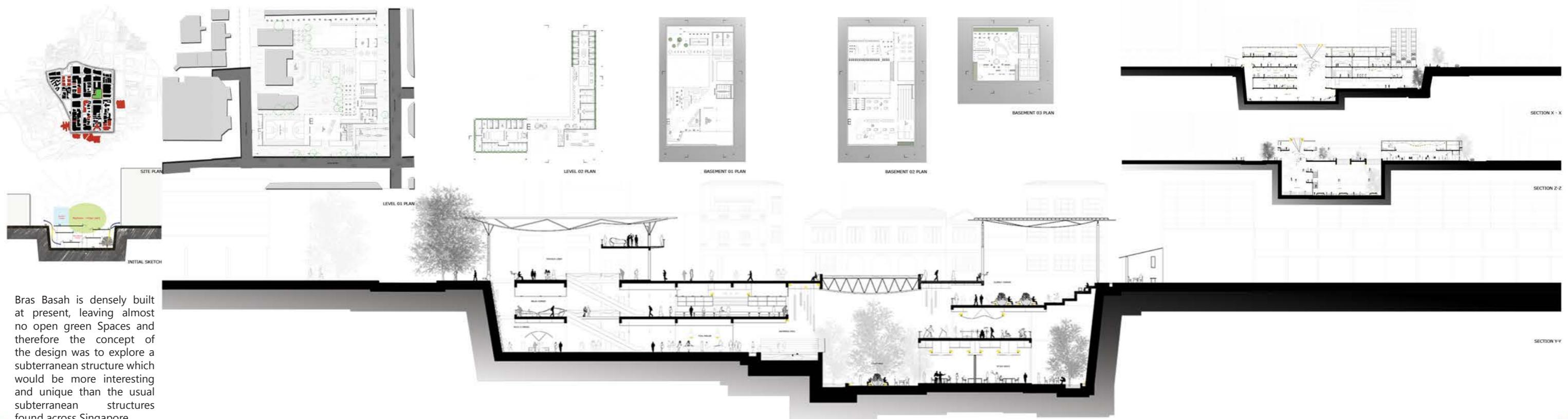
student recreation centre - bras basah

Hashini Chamindi Weeratunga



student recreation centre - bras basah

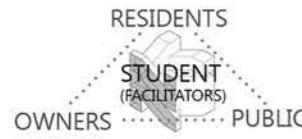
Hashini Chamindi Weeratunga



imageability of waterloo centre

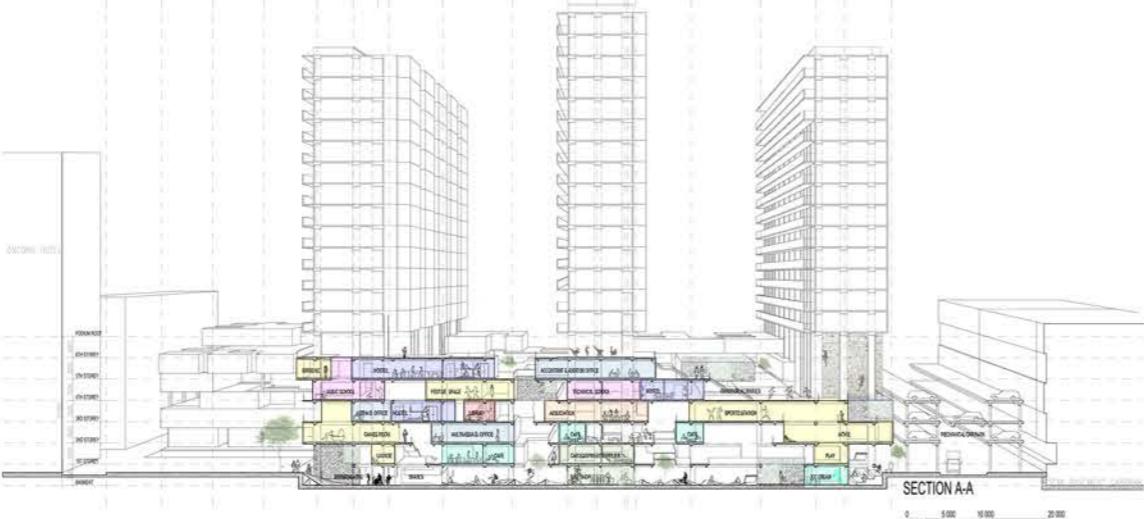
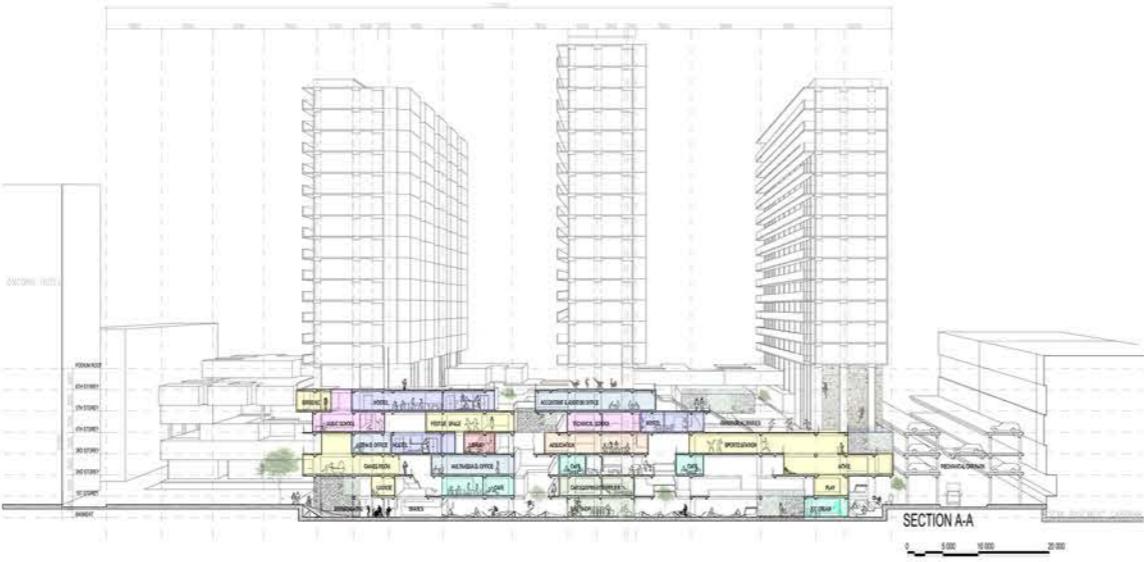
making movement legible in a collaborated public & living space

Riberd



Introducing Student Hosteling in the City (Waterloo Centre). Engaging the owners of the podium, residents of HDB blocks & public users, by integrating 'Live, Learn & Play' spaces along with the intensification of existing podium block. Insertion of a new demography - students take ownership as occupants, (students' role as facilitators in exchange for accommodation) gives rise for opportunities for shared facilities such as sports facilities (street soccer court), art studios (yoga or music recording) & entertainment rooms (pool & small lecture halls). Pixelation of activities & users can be seen. Reconfiguration of the existing layout to accommodate hosteling & injection of shared/public spaces, consisting of three layers: private (student hostel, existing offices & shops), semi-private (immediate amenities) & public (shared facilities).

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imageability of waterloo centre

making movement legible in a collaborated public & living space

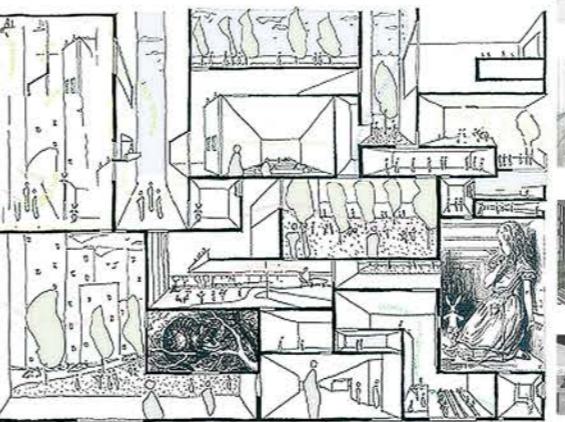
Riberd



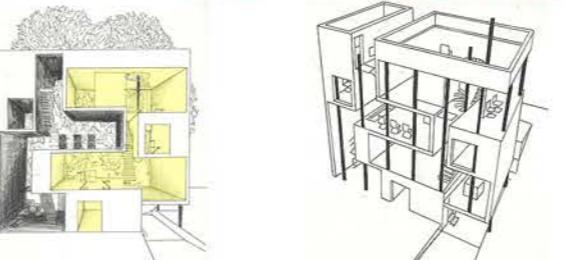
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Ideas & Sketches



Inter-play of spatial volume: Labyrinth of interstitial spaces

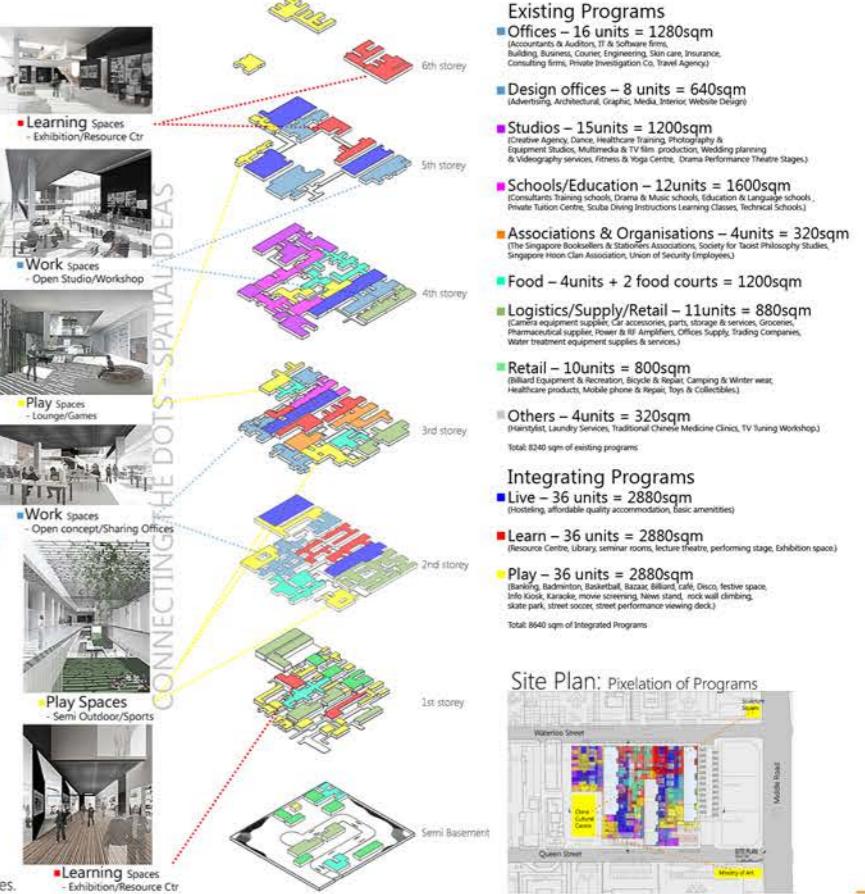


Legibility of activities observed from building elevation while maintaining privacy of individual units.



Perspective shows the concept of interlocking spaces by abandoning strict vertical party wall for shared spaces.

Mix & Match Spaces LIVE LEARN PLAY Configuration Program Allocation

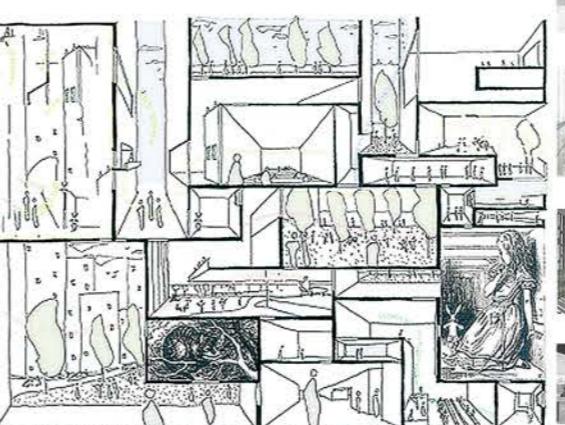


Site Plan: Pixelation of Programs

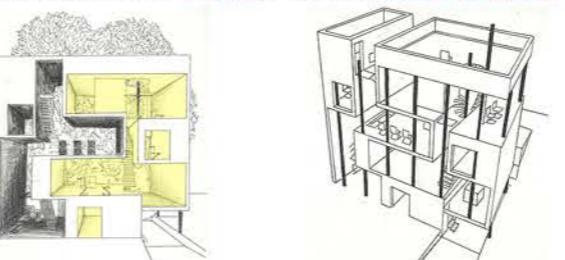


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Ideas & Sketches

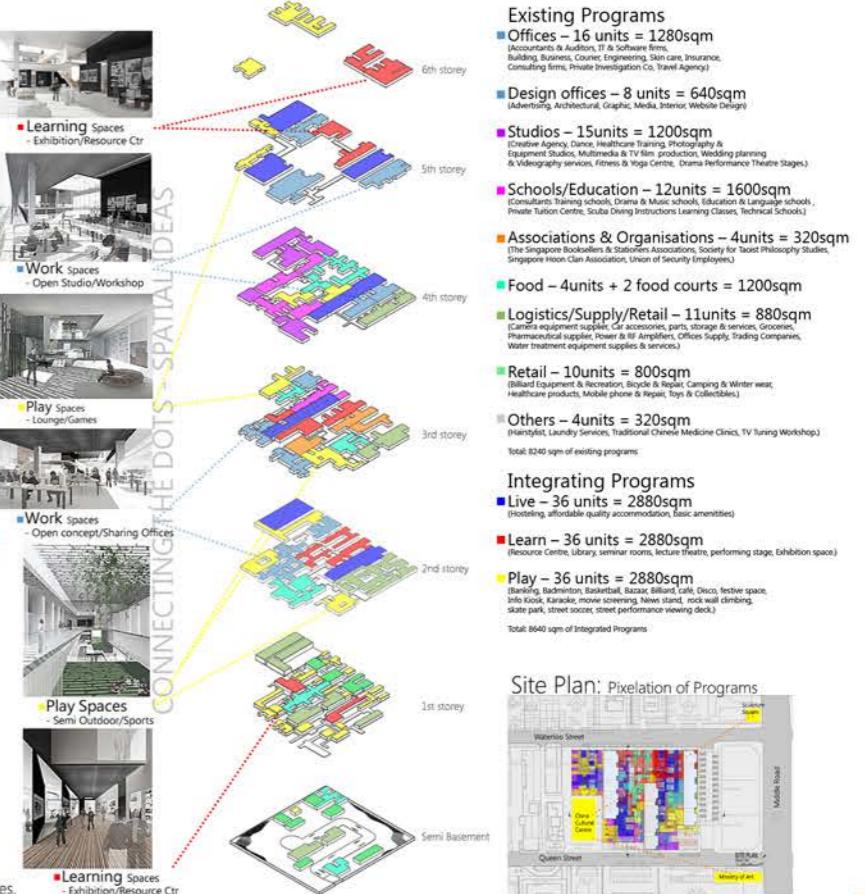


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