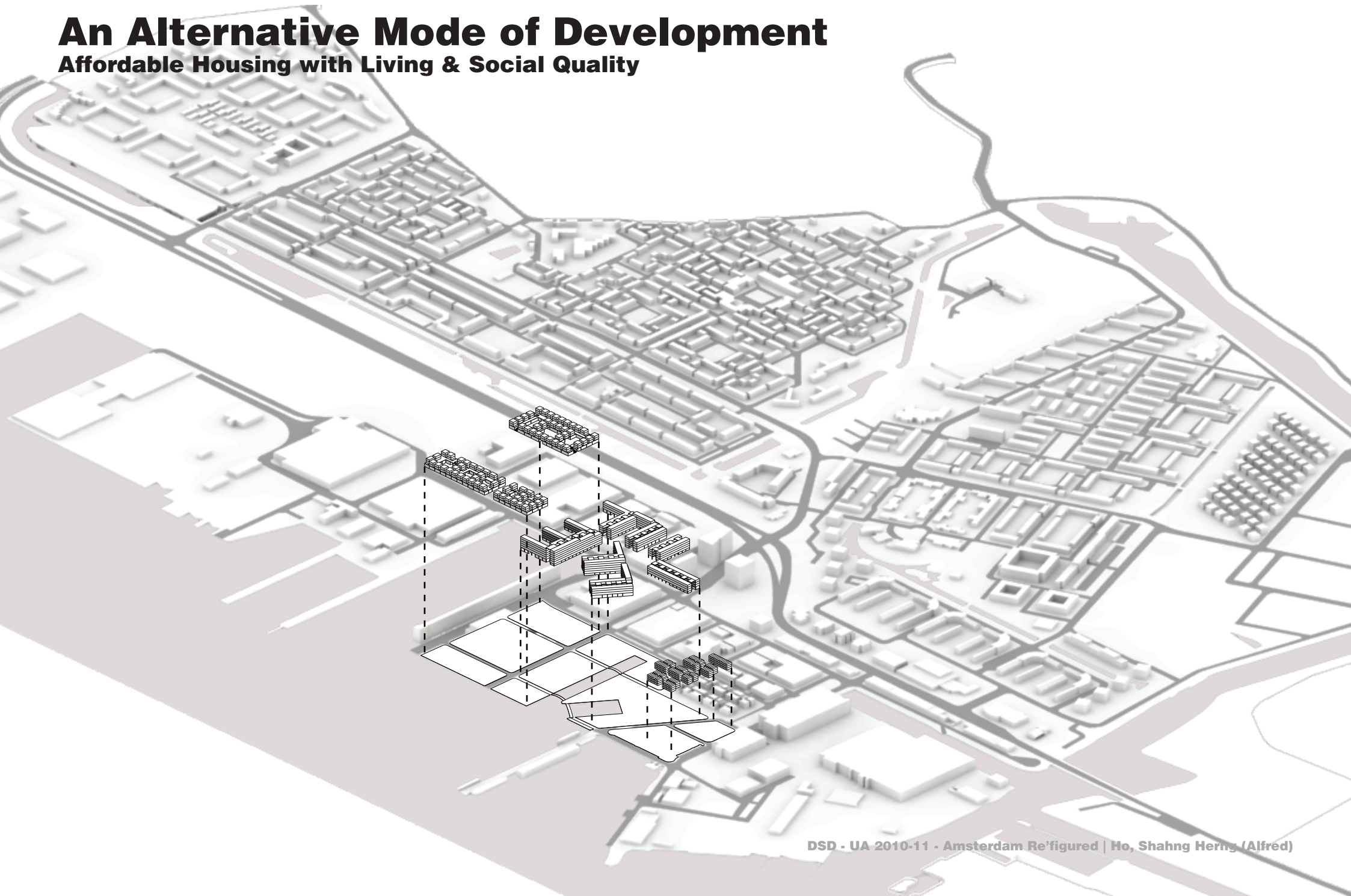


# An Alternative Mode of Development

## Affordable Housing with Living & Social Quality



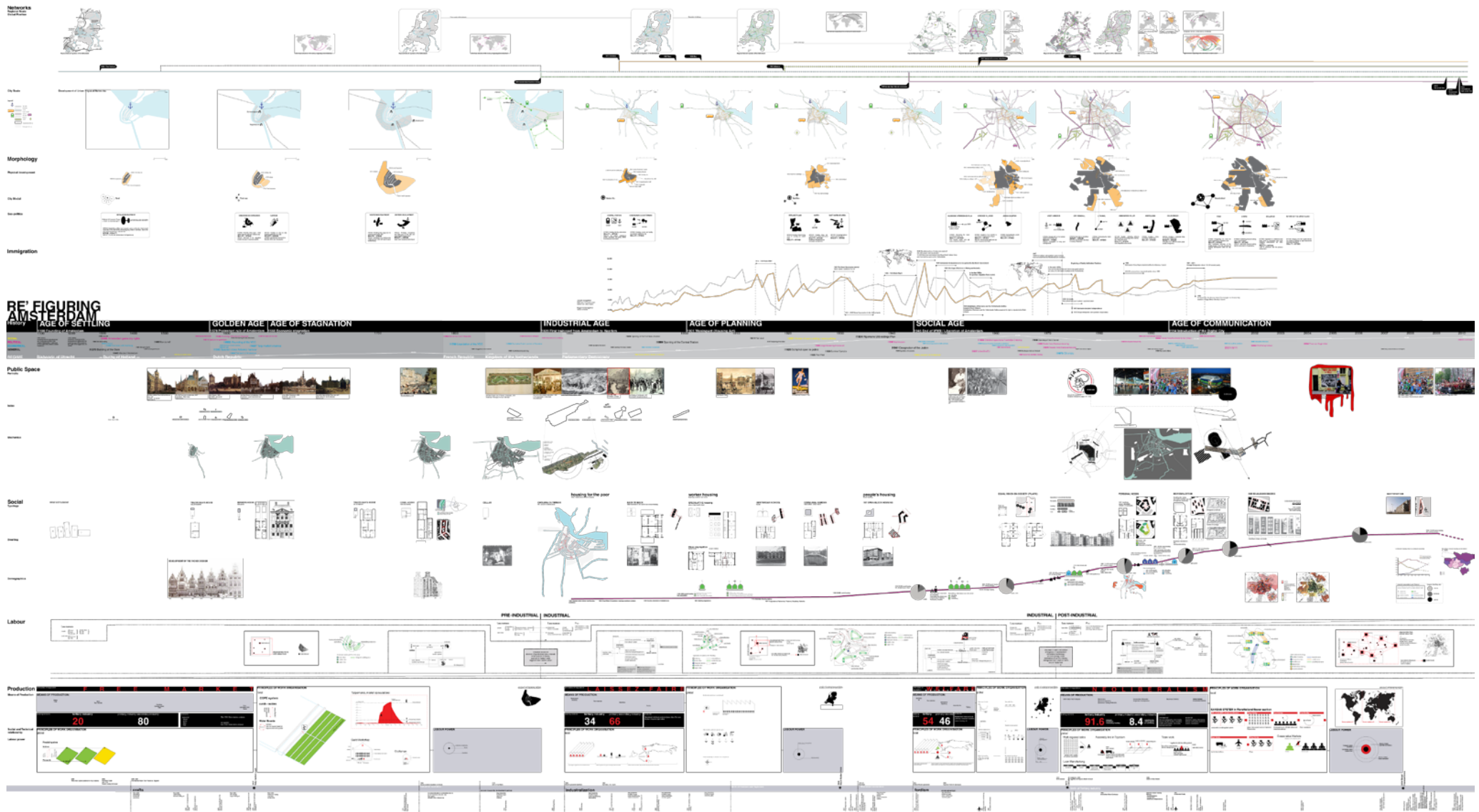
**Research City - Amsterdam**



Amsterdam City Centre from the South (Photo taken from *Amsterdam from Above* by Allard Jolles, 2005)

# Background Research

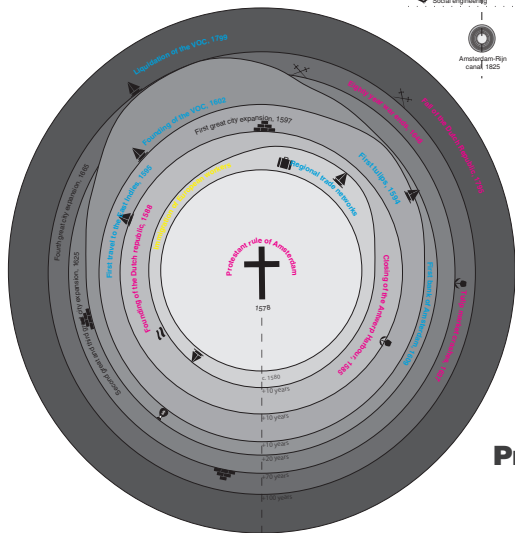
## Chronological Research - Timeline of Amsterdam



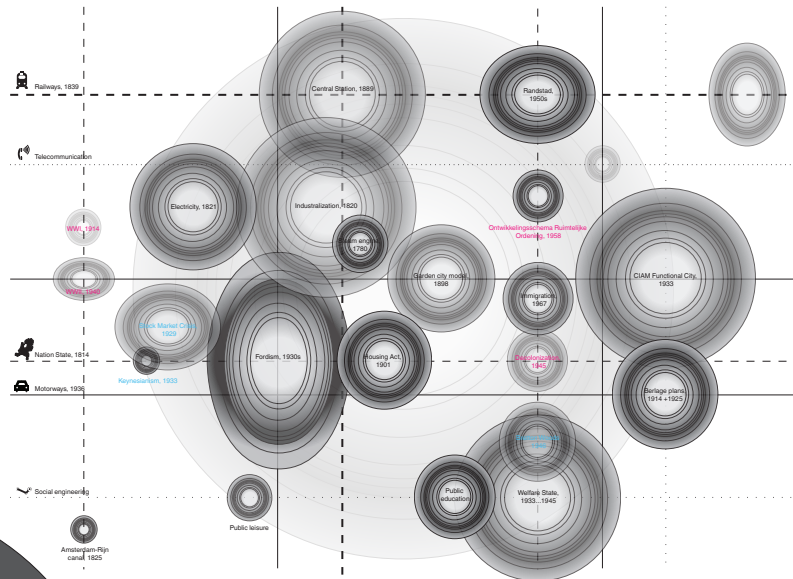
Timeline done by: D. Aumele, P. Balat, R. Carati, J. Delahaye, D. Gurecka, S. H. Ho, K. van Olphen, N. Parmaksizoglu, Y. Yang

# Background Research

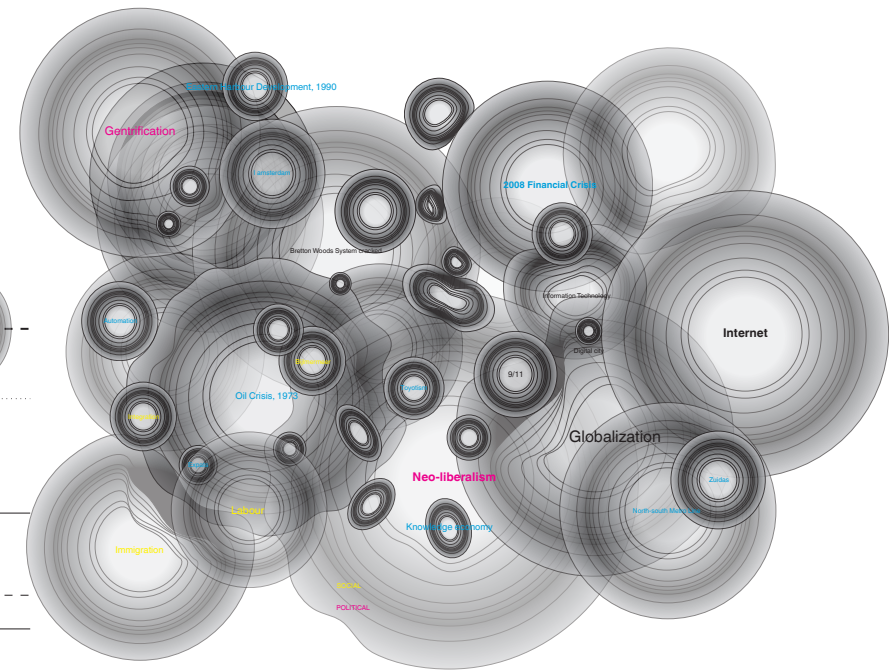
## Urban Models of Amsterdam through Times



**Pre-industrial Age**



**Industrial Age**



**Post-industrial Age**

**Social**  
**Political**  
**Economical**  
**General**

Amsterdam urban models done by: J. Delahaye, D. Gurecka, S. H. Ho

DSD - UA 2010-11 - Amsterdam Re'figured | Ho, Shahng Herng (Alfred)

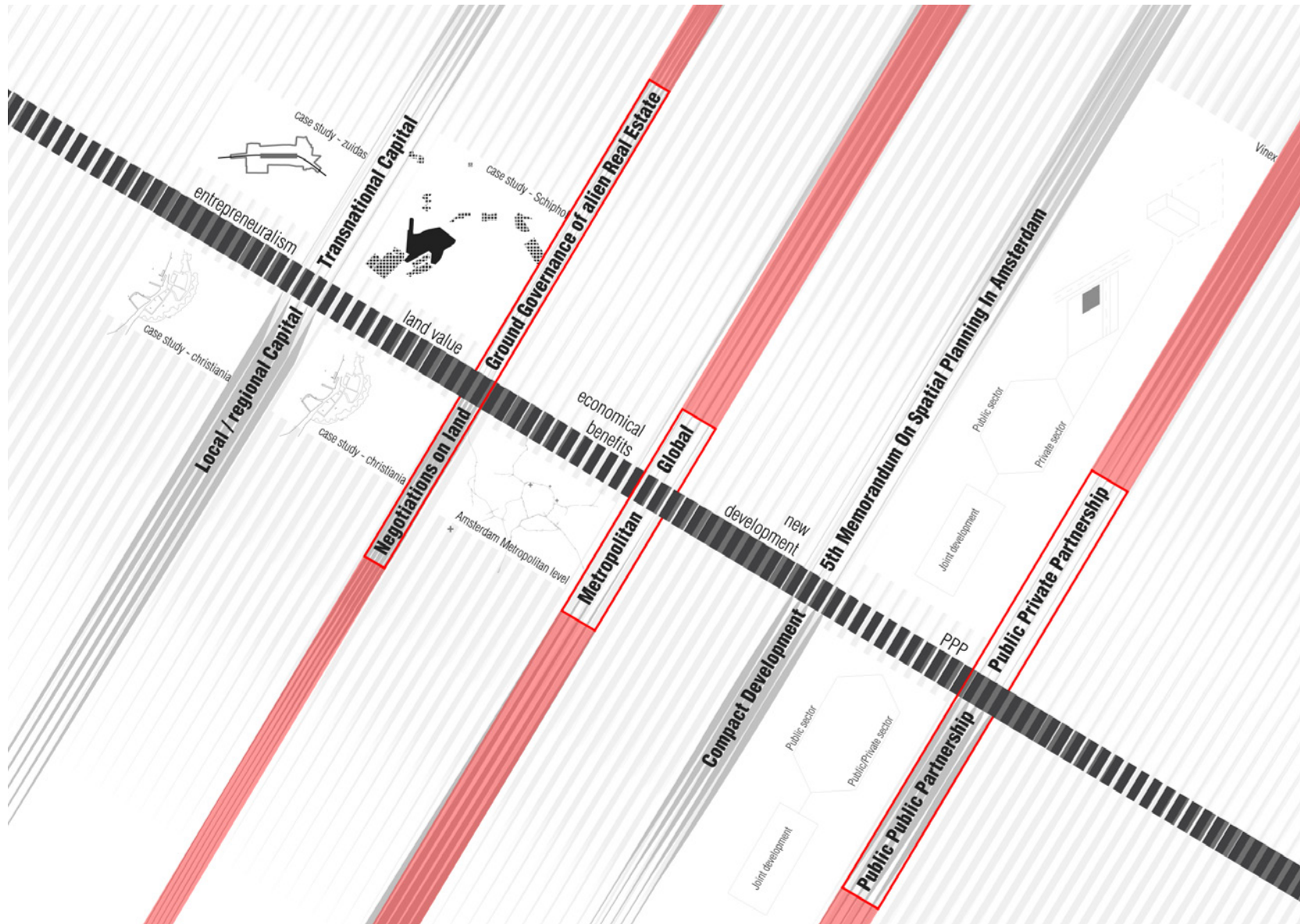
**Region of Interest - Amsterdam North**



Amsterdam North and the Surrounding from the South (Photo taken from *Amsterdam from Above* by Allard Jolles, 2005)

# □□□□□□ Background Research

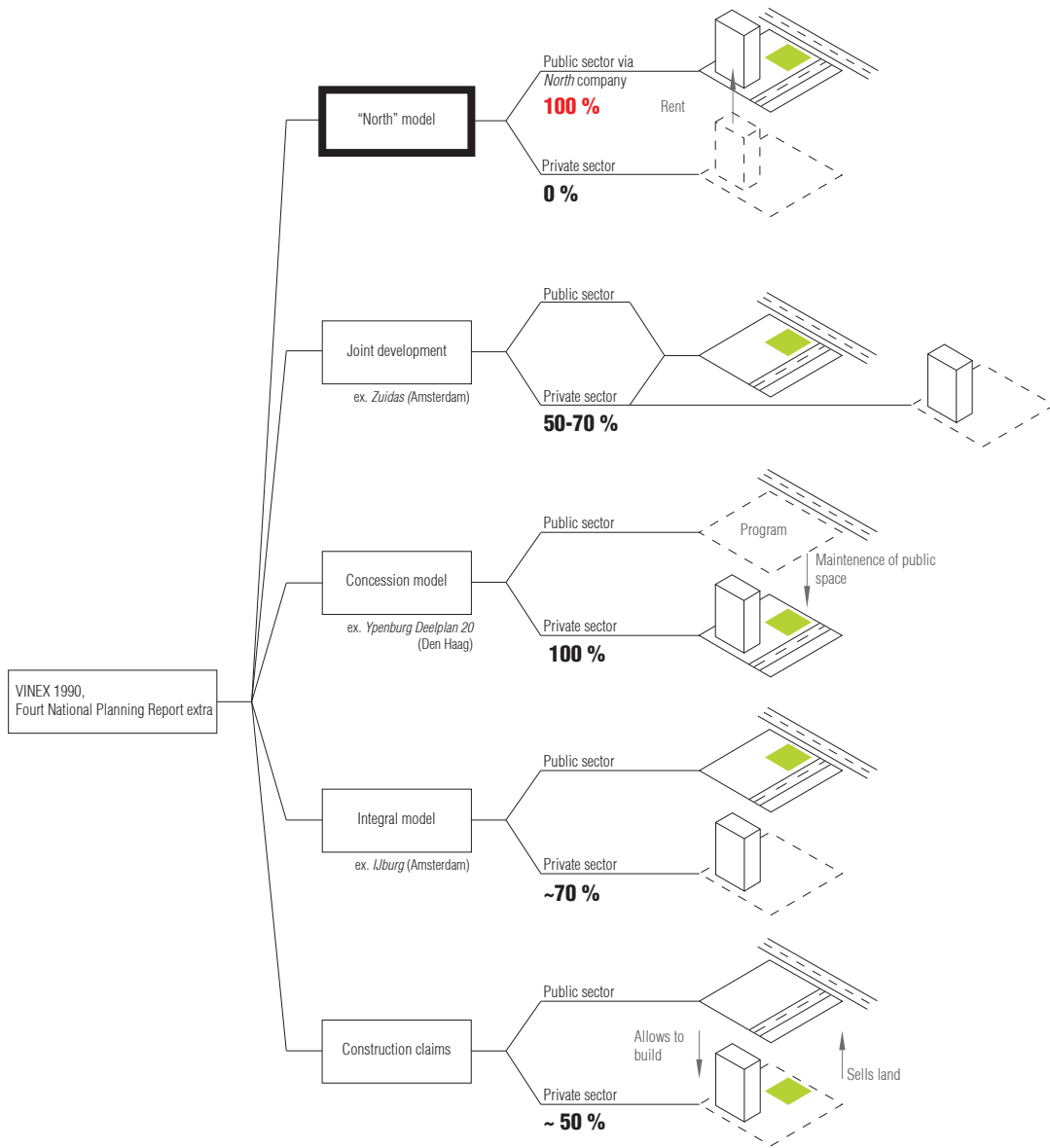
## Analysis and Urban Strategy of Amsterdam North



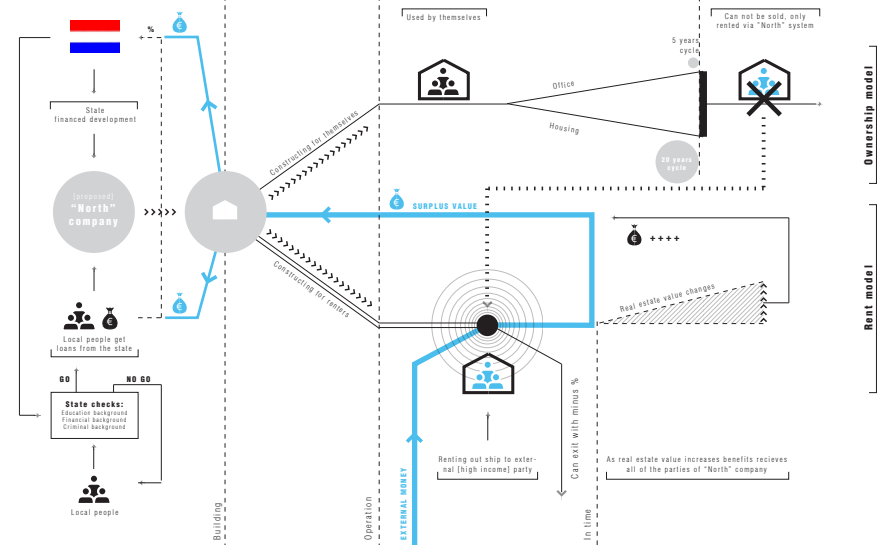
# Background Research

## Analysis and Urban Strategy of Amsterdam North - Private Public Partnership and Financial Mechanism of the 'North Company'

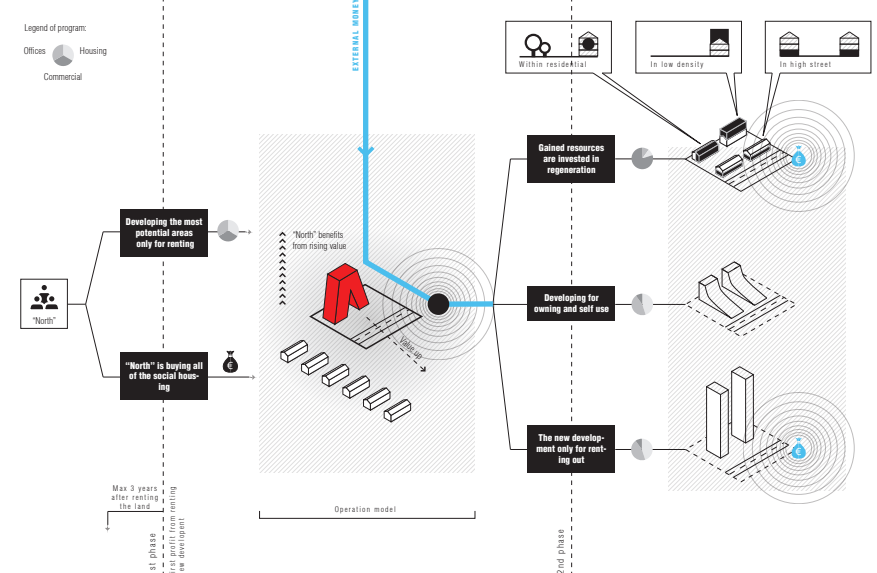
### Proposed Model of Private Public Relationship



### Process of 'North Company' Development Mode



### Sequence of financial mechanism



**Is a new mode of development necessary and possible for Amsterdam?**



Research Question

Precedent Studies - Existing Modes of Development



Centrum Amsterdam Noord (CAN)



Zuidas (South Axis) Amsterdam



Oostelijk Havengebied (Eastern Docklands)

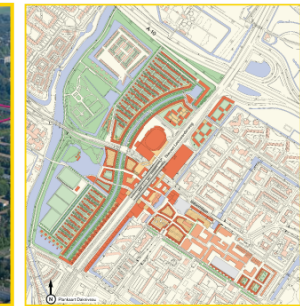


Westerdokseiland (Western Docklands)

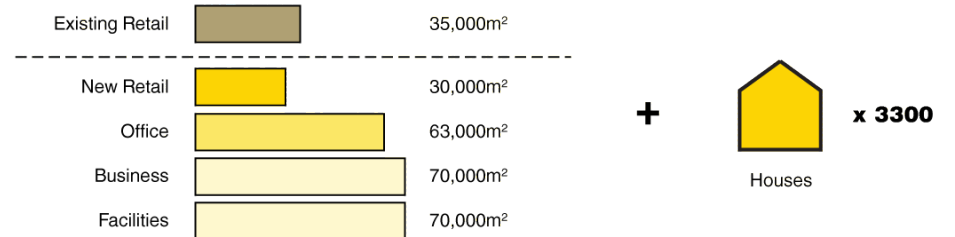


# Research Question

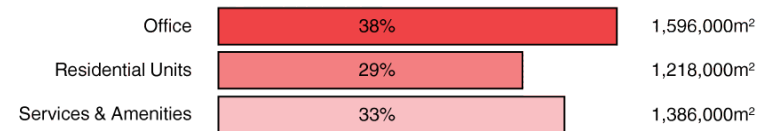
## Precedent Studies - Existing Modes of Development - Commercial-driven Models - Precedent 1 & 2



**Centrum Amsterdam Noord (CAN)**



**Zuidas (South Axis) Amsterdam**



Sources: (1) <http://www.centrumamsterdamnoord.nl/>; (2) <http://www.noordwaarts.nl/>; (3) <http://www.zuidas.nl/en>

# Research Question

## Precedent Studies - Existing Modes of Development - Commercial-driven Models - Precedent 1 & 2

### Centrum Amsterdam Noord (CAN)



x 3300

Houses

**Social Rent**



**990 (30%)**

**Medium-priced Sale & Rent**



**1320 (40%)**

**Expensive**



**990 (30%)**

**Amsterdam North**

Owner-occupied houses	<b>18.3%</b>
Number of rooms in average	<b>3.3</b>
Property price in average	<b>€168,000</b>

Sources: <http://http://www.amsterdam-expats.info/districts/noord>

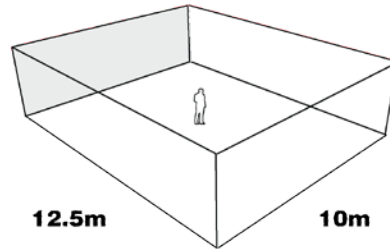
### Zuidas (South Axis) Amsterdam



x 9744

Houses

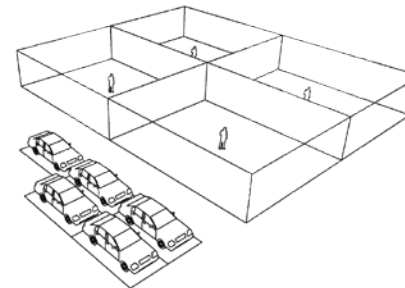
3.3m



12.5m

10m

**Average size of unit = 125m<sup>2</sup>**



**Residential Units : Car Parks = 4 : 5**

**By 2040**

Daily users	<b>200,000</b>
Permanent residents	<b>25,000</b>
Employees	<b>80,000</b>
Students	<b>30,000</b>

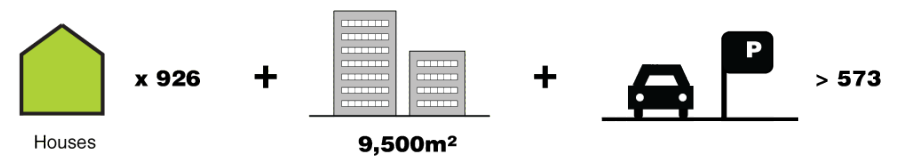
Sources: <http://www.zuidas.nl/en/facts-and-figures>

# Research Question

## Precedent Studies - Existing Modes of Development - Residential Projects - Precedent 3 & 4



**Westerdokseiland (Western Docklands)**



**Oostelijk Havengebied (Eastern Docklands) (1988 - 2000)**



Sources: (1) [http://www.archined.nl/oem/reportages/jsa/jsa\\_en.html](http://www.archined.nl/oem/reportages/jsa/jsa_en.html); (2) [http://www.west8.nl/projects/master\\_plans/borneo\\_sporenburg/](http://www.west8.nl/projects/master_plans/borneo_sporenburg/); (3) Koster, Egbert. Oostelijk Havengebied Amsterdam. Architectura en Natura, 1995.  
P.S.: Findings and their sources are in the following page.

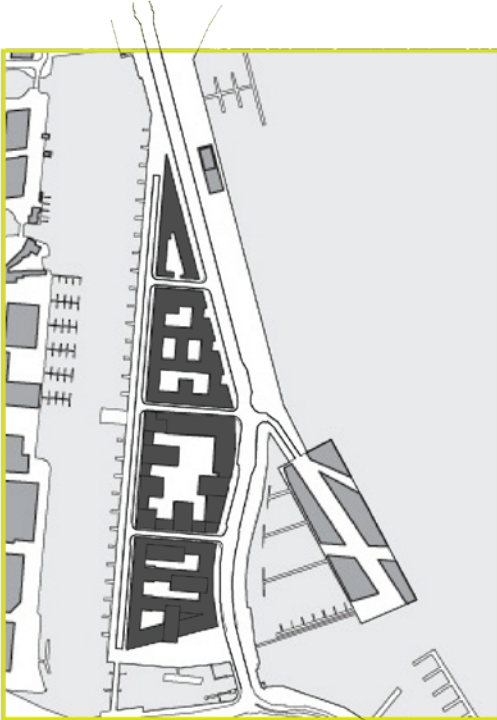
# Research Question

## Precedent Studies - Existing Modes of Development - Residential Projects - Precedent 3 & 4

### Westerdokseiland (Western Docklands)



Master plan by OD 205



#### Westerkaap I & II

Gross floor area: ?m<sup>2</sup>  
Investment: €94,000,000 - ex VAT

Social housing 98  
Free rental home 50  
Budget home for sale 47  
Free home for sale 112



x 307

+



4,000m<sup>2</sup>

+



x 310

#### Westerdoks Island

Gross floor area: 18,080m<sup>2</sup>  
Construction cost: €15,820,000



x 366

+



3,000m<sup>2</sup>

+



#### La Grande Cour

Gross floor area: 46,800m<sup>2</sup>  
Investment: €80,000,000

Government sponsored rental home: 80  
Middle and top range rental home: 23  
AMH private property: 30  
Owner-occupied home: 120



x 253

+



2,500m<sup>2</sup>

+



x 263

Sources:

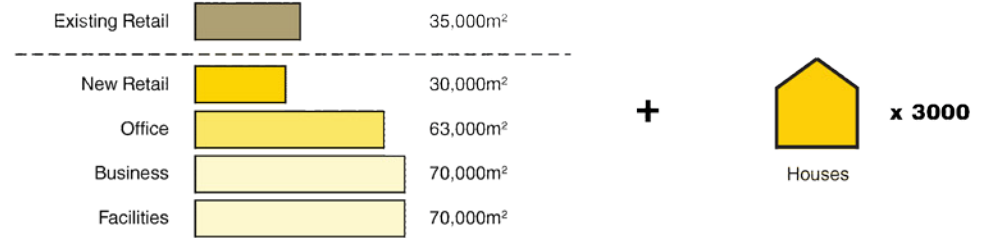
- (1) <http://www.archined.nl/en/reviews/engels/westerdoksdiik-amsterdam/>;
- (2) <http://www.meyer-vanschooten.nl/project/detail/29/la-grande-cour/>;
- (3) [http://www.archined.nl/oem/reportages/jsa/jsa\\_en.html](http://www.archined.nl/oem/reportages/jsa/jsa_en.html);
- (4) [http://www.dkv.nl/projecten/woningbouw/0010-westerkaap\\_eng.html#](http://www.dkv.nl/projecten/woningbouw/0010-westerkaap_eng.html#)
- (5) <http://www.amvest.nl/sites/AMVEST/Project/Pages/Westerkaap.aspx>

# Research Question

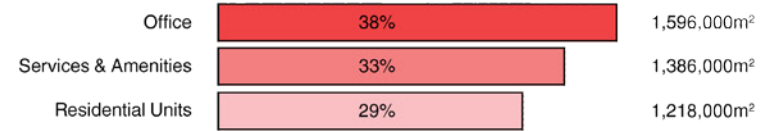
## Precedent Studies - Existing Modes of Development - Summary - Programmes Composition and Ratio - Precedent 1, 2, 3 and 4



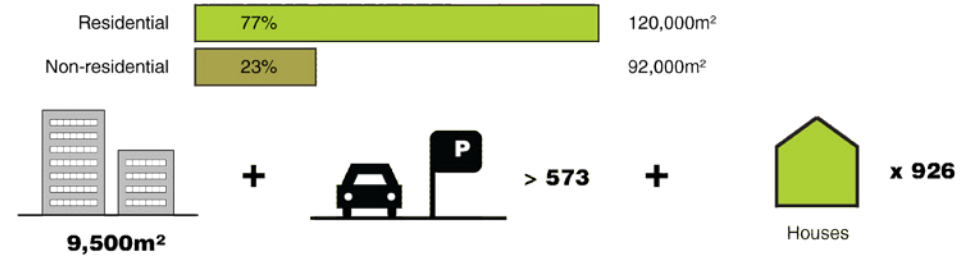
### Centrum Amsterdam Noord (CAN)



### Zuidas (South Axis) Amsterdam



### Westerdokseiland (Western Docklands)



### Oostelijk Havengebied (Eastern Docklands) (1988 - 2000)



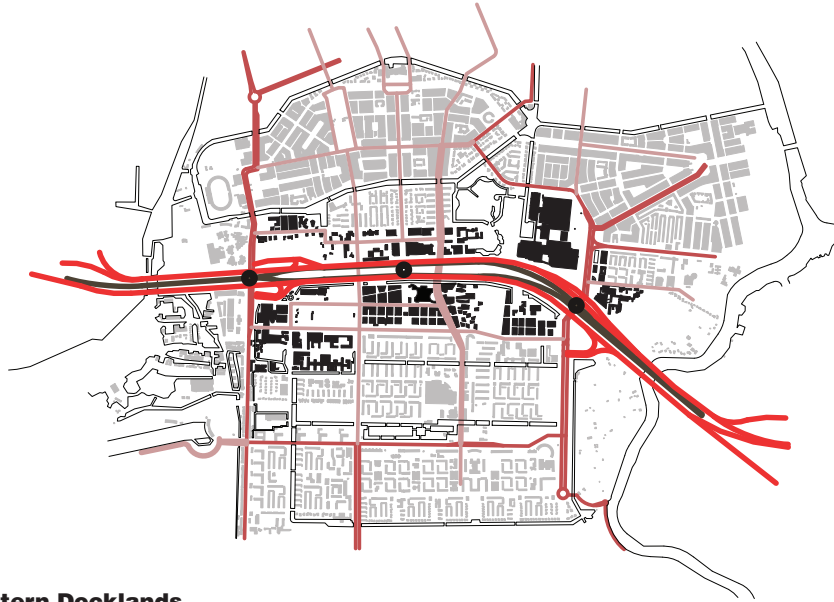
□□□□□□ **Research Question**

**Precedent Studies - Existing Modes of Development - Summary - Urban Networks - Precedent 1, 2, 3 and 4**

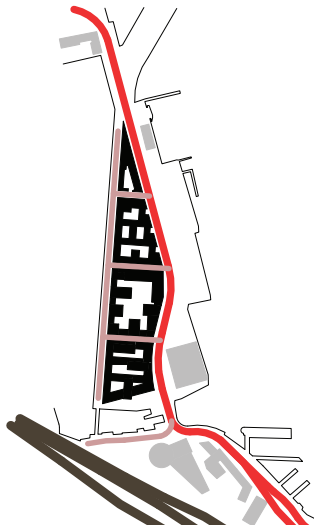
**Centrum Amsterdam Noord (CAN)**



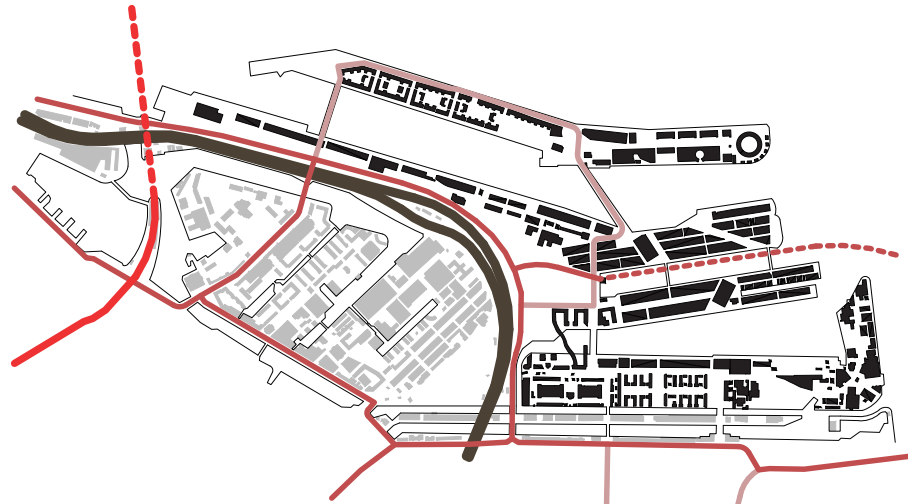
**Zuidas (South Axis) Amsterdam**



**Westerdokseiland**



**Eastern Docklands**

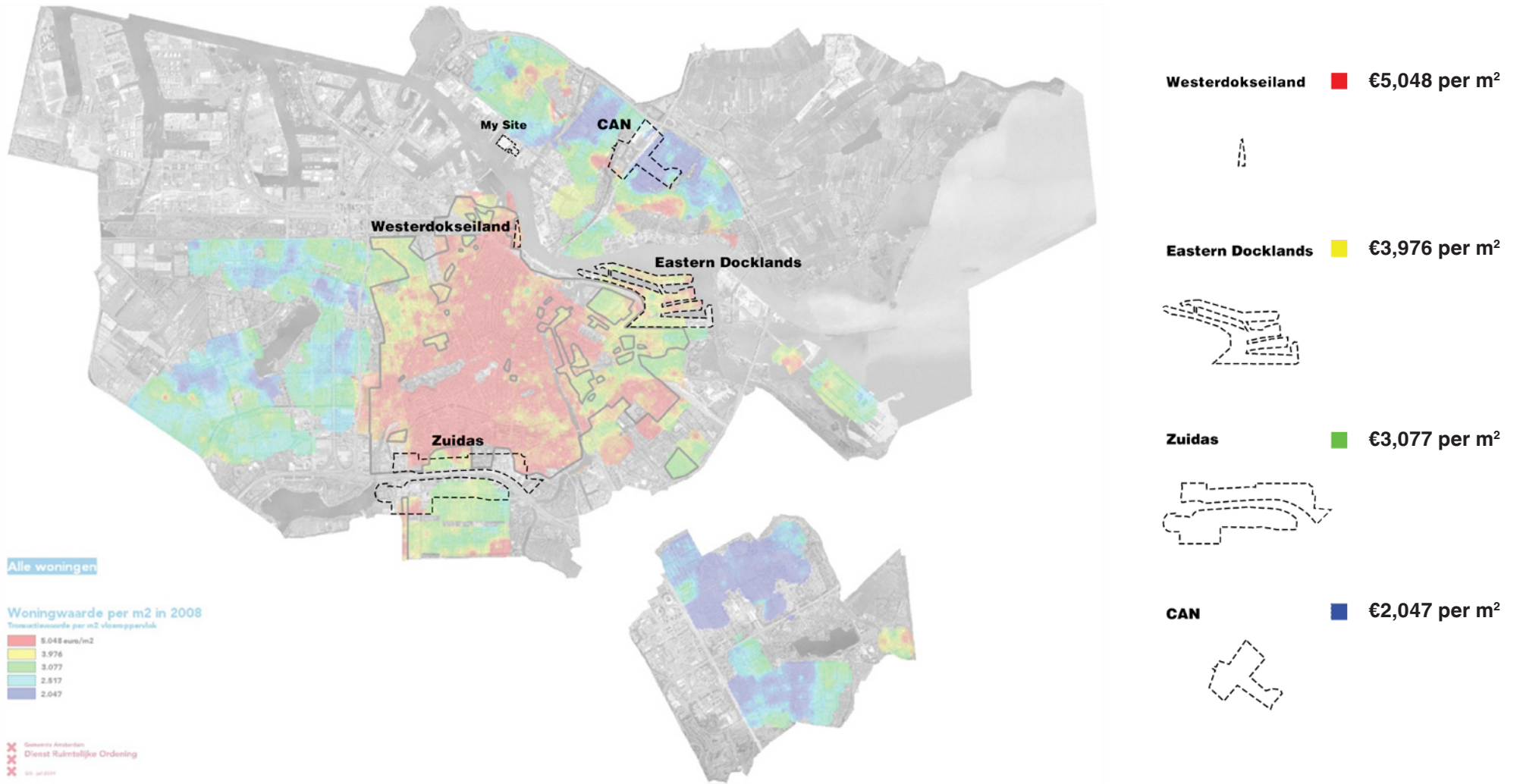


**Legends**

- Planning scope
- Concerned building
- Surrounding building
- Metro / Train station
- Railway
- Primary Road / Highway
- Secondary Road
- Tertiary Road

Research Question

Precedent Studies - Existing Modes of Development - Summary - Real Estate Values - Precedent 1, 2, 3 and 4





## Problems and Opportunities

### Needs and Mismatch (Netherlands)

**Research question: Is a new mode of development necessary and possible for Amsterdam?**

#### **I. Need of Housing**

- No less than 80,000 to 100,000 new houses are needed each year
- The housing supply has simply been insufficient

(from source (1))

#### **II. Mismatch of the Demand and Supply of Housing in the Netherlands**

- Every year the number of single-person households in Holland increases, growing faster than the overall population, and faster than the rate at which dwellings are constructed.

(from source (1))

- Oversupply of cheap housing
- Needs for social housing of better quality

(from source (2))

Sources:

(1) <http://www.globalpropertyguide.com/Europe/Netherlands/Price-History>

(2) Kempen, B.G.A. and N. van Velzen. *Werken aan wonen - 75 jaar Nationale Woningraad*. Almere: Nationale Woningraad, 1988.

## Problems and Opportunities

### Needs and Mismatch (Amsterdam North)

#### i) Needs

The population of the Amsterdam North is expected to grow from 90,000 to 130,000.

#### ii) Mismatch of Demand and Supply

The size of the households is shrinking but the new houses are mostly the middle-size ones.



Single person household	223,124	54%
Two-person household without children	80,936	20%
Multiple person household with children	62,450	15%
Single parent family	38,536	9%
Other	4,396	1%
<b>Total</b>	<b>409,442</b>	

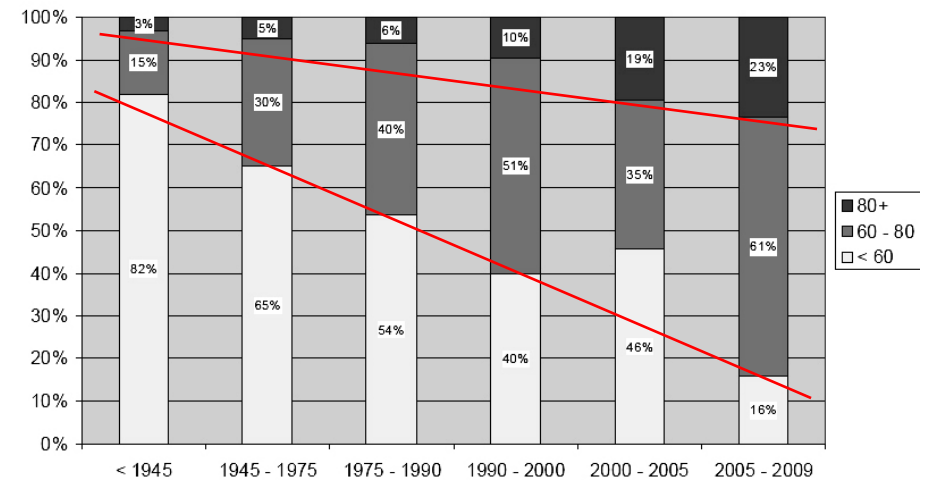


One and two-person households	29,546	67%
Families	14,553	33%



Single person household	2,241	44%
Two-person household without children	1,265	25%
Multiple person household with children	1,624	32%

Size of Social Housing in Square Metres



Source:

(1) <http://www.ingcommercialbanking.com/smartsite.shtml?id=21648&showdetail=1>

(2) O+S, Amsterdam in cijfers 2008, origin of figures CBS 2007

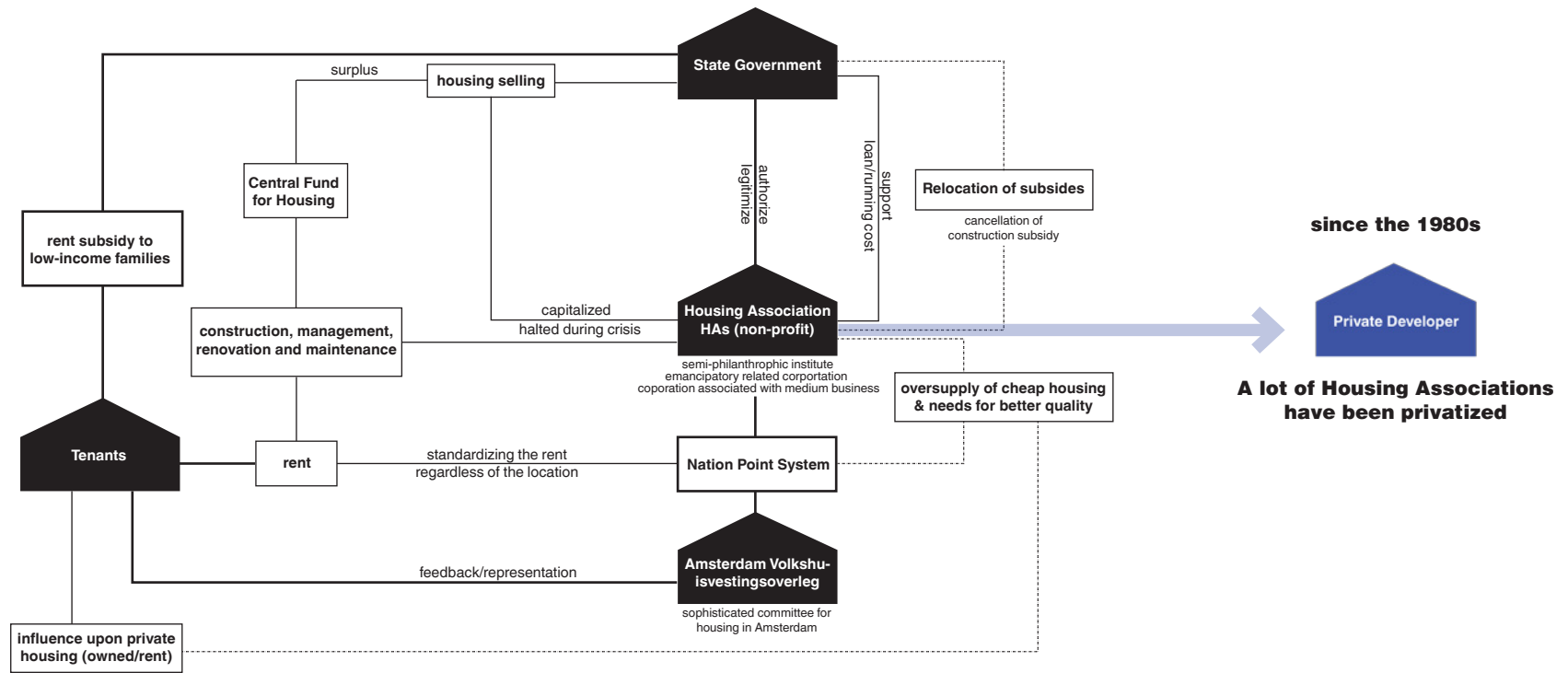
(3) Stadsdelen in cijfers 2008, O+S, Amsterdam, 2008

(4) <http://www.funda.nl/buurtinfo/amsterdam/tuindorp-oostzaan/kenmerken/?ref=47667124>

(5) Kempen, B.G.A. and N. van Velzen. *Werken aan wonen - 75 jaar Nationale Woningraad*. Almere: Nationale Woningraad, 1988. **DSD - UA 2010-11 - Amsterdam Re'figured | Ho, Shahnig Herng (Alfred)**

# Problems and Opportunities

## Administrative Framework of the Housings in the Netherlands - Change of the Role of the Agency



1900s



The state functions as bank  
 replacement of poor housing  
 50% state subsidies  
 50% municipal responsibility

1910s



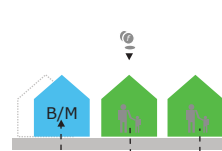
Crisis management  
 1915 positive interest rates  
 1916 subsidies on materials (object subsidies)  
 1919 state takes larger account (75% - 25%)

1940s - 1970s



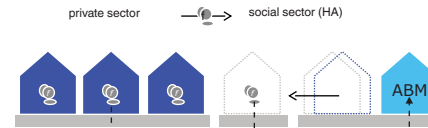
Rebuilding: state takes over all control  
 allocating  
 building  
 maintaining

1970s



Quality upgrade  
 replacement of old property  
 rent subsidy (subject subsidies)  
 rent-income HA's increases

since 1980s



The revolving fund  
 sale of old property  
 sale of new property  
 social housing  
 allocating  
 building  
 maintaining

money flow  
 interest rate  
 material subsidies  
 subject-related  
 state  
 municipal  
 housing association  
 private ownership

Source: Kempen, B.G.A. and N. van Velzen. *Werken aan wonen - 75 jaar Nationale Woningraad*. Almere: Nationale Woningraad, 1988.

Research by: D. Aumele, P. Balat, K. van Olphen, Y. Yang

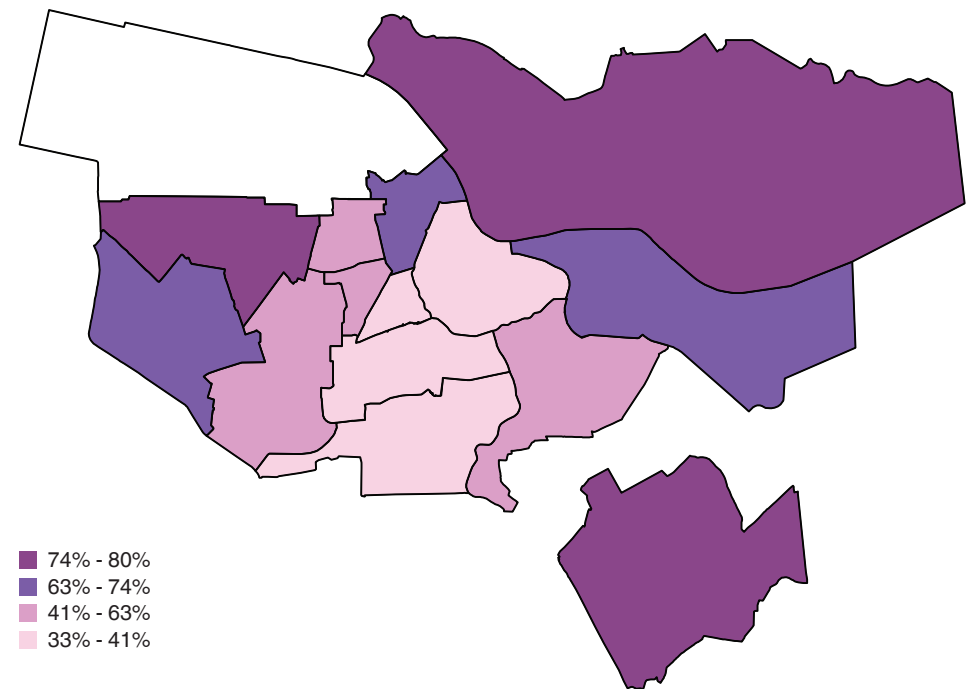
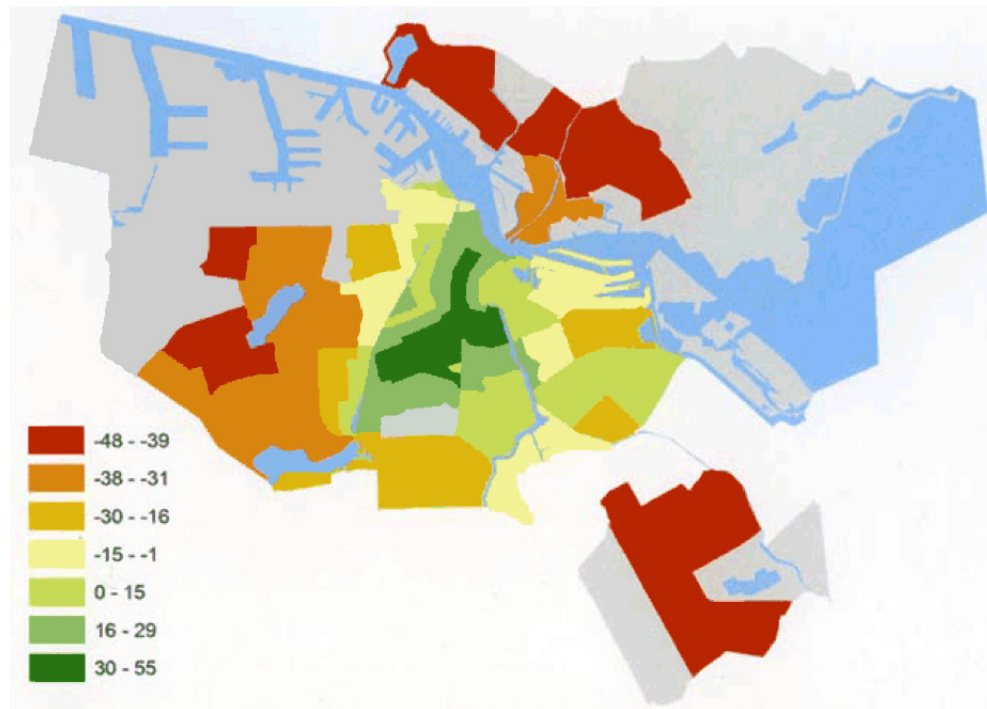
## Problems and Opportunities

### Financial Situation of the Social Housings in Amsterdam

#### Decrease in Value and Increase of Maintenance Cost

The real estate values of the districts with a high percentage of social housing has been decreasing dramatically, especially after the 2007 global financial crisis, when compared to other districts with less social housings.

The maintenance cost of the social housings has becoming a more significant part of the expenses for the housing companies.

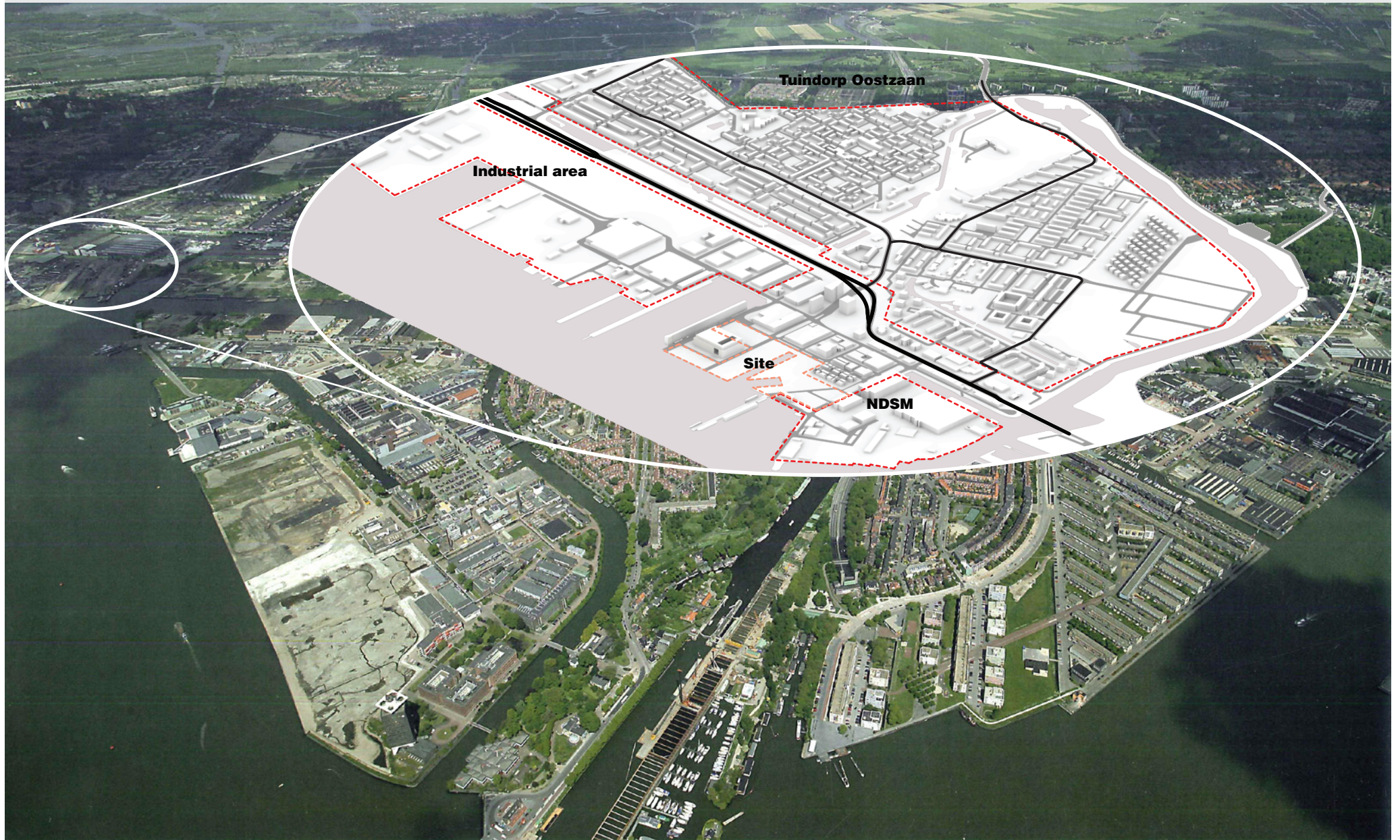


Percentage of Social Housing per City District ( 2003)

Source:  
Kempen, B.G.A. and N. van Velzen. *Werken aan wonen - 75 jaar Nationale Woningraad*.  
Almere: Nationale Woningraad, 1988.

Urban Framework

Site Context

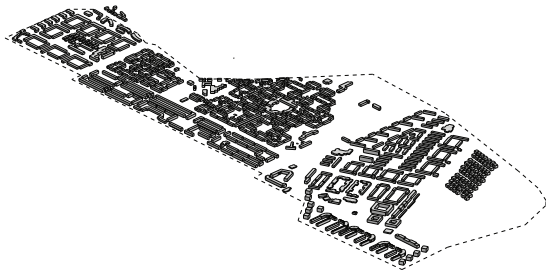


Amsterdam North and the Surrounding from the South (Photo taken from *Amsterdam from Above* by Allard Jolles, 2005)

Urban Framework

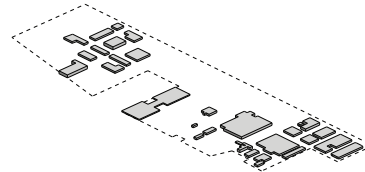
Site Context

Tuindorp Oostzaan



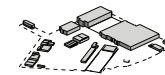
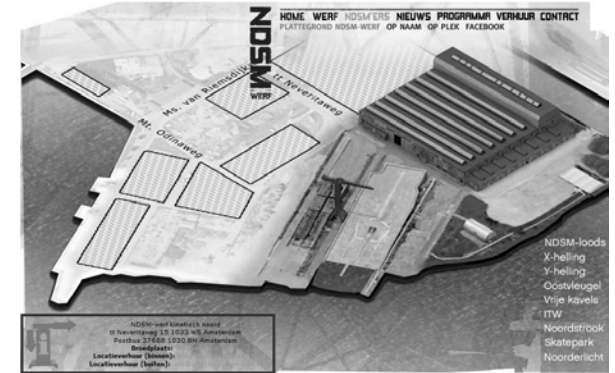
Number of houses	<b>4,585</b>
Average house value (WOZ)	<b>€151,000</b>
Population	<b>10,330</b>
Population density	<b>6,256/km<sup>2</sup></b> <b>62.56/ha</b>
Number of income recipients	<b>7,300 (71%)</b>
Avg. disposable income per recipient	<b>€15,300</b>
Avg. disposable income general	<b>€11,800</b>
Low incomes	<b>47%</b>
High incomes	<b>8%</b>

Industrial area

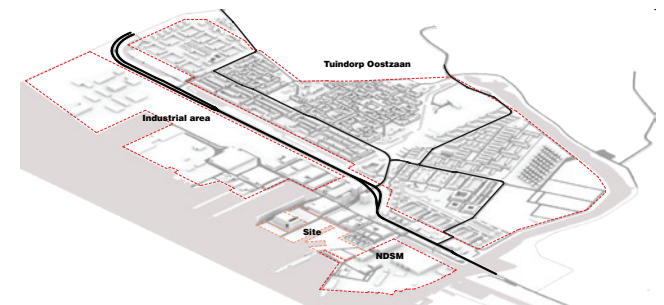


Heavy industry  
Ship yards and warehouses

NDSM



A centre for underground culture in Amsterdam offering facilities for individual artists, craftsmen and independent organizations.



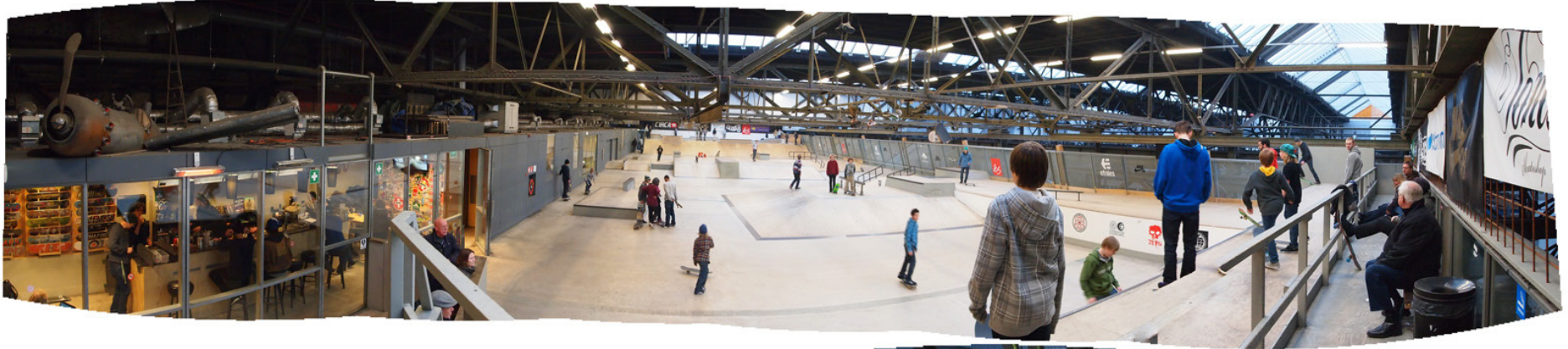
Urban Framework

Site Photos



Urban Framework

Site Photos

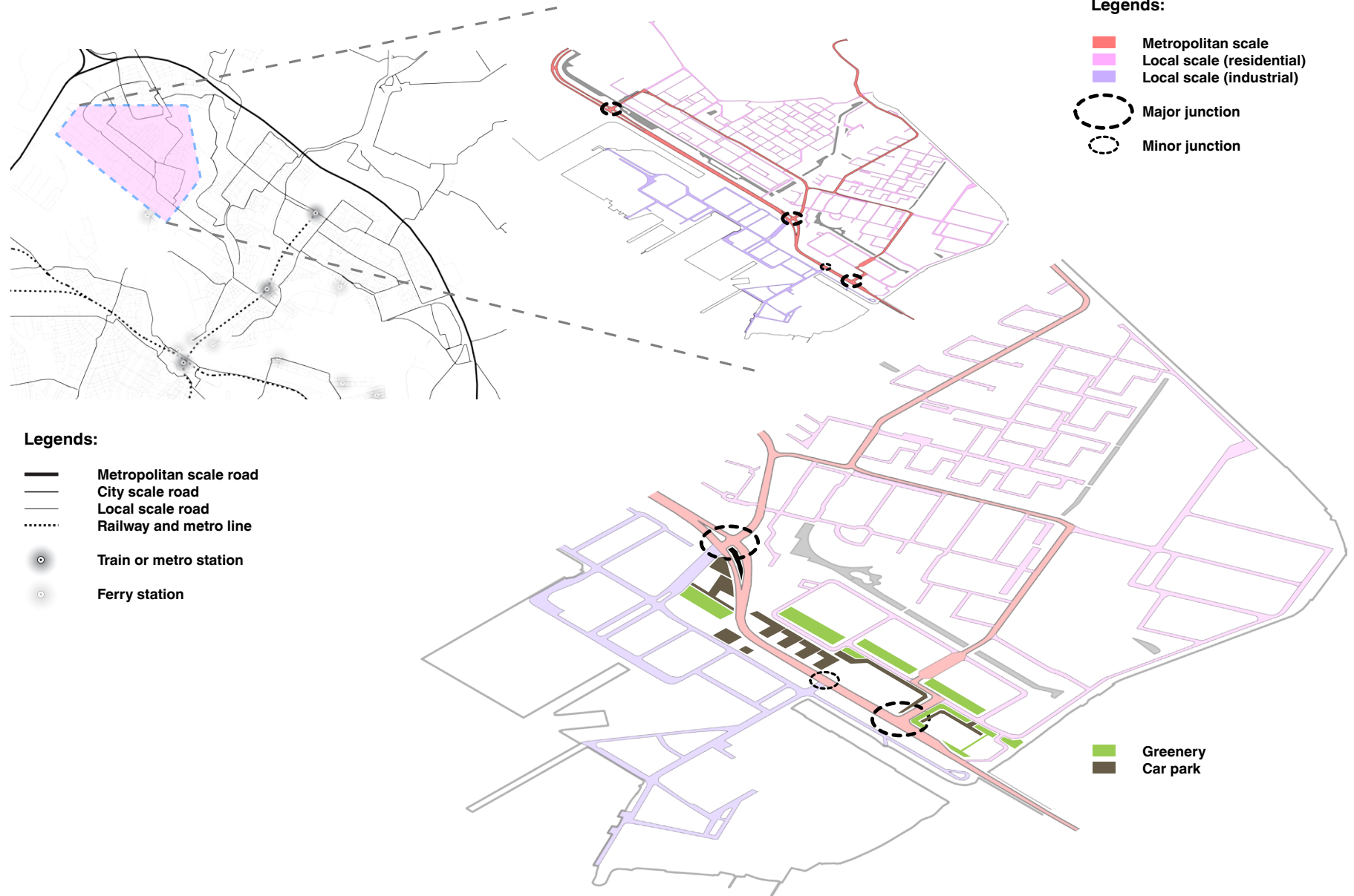


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# Urban Framework

## Site Analysis - Metropolitan versus Local Scale - Traffic Network



Urban Framework

Site Analysis - Metropolitan versus Local Scale - Non-residential Programmes



Legends:

- Companies
- Offices
- Retail
- Catering
- Social
- Leisure
- Storage and Unclear



Metropolitan

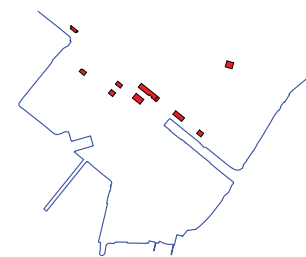
Companies



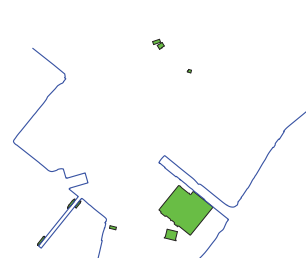
Offices



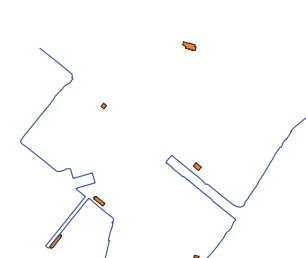
Retail



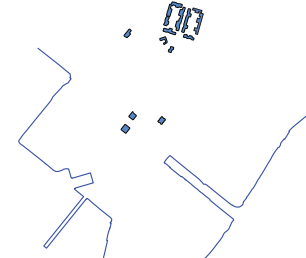
Leisure



Catering



Social



Metropolitan

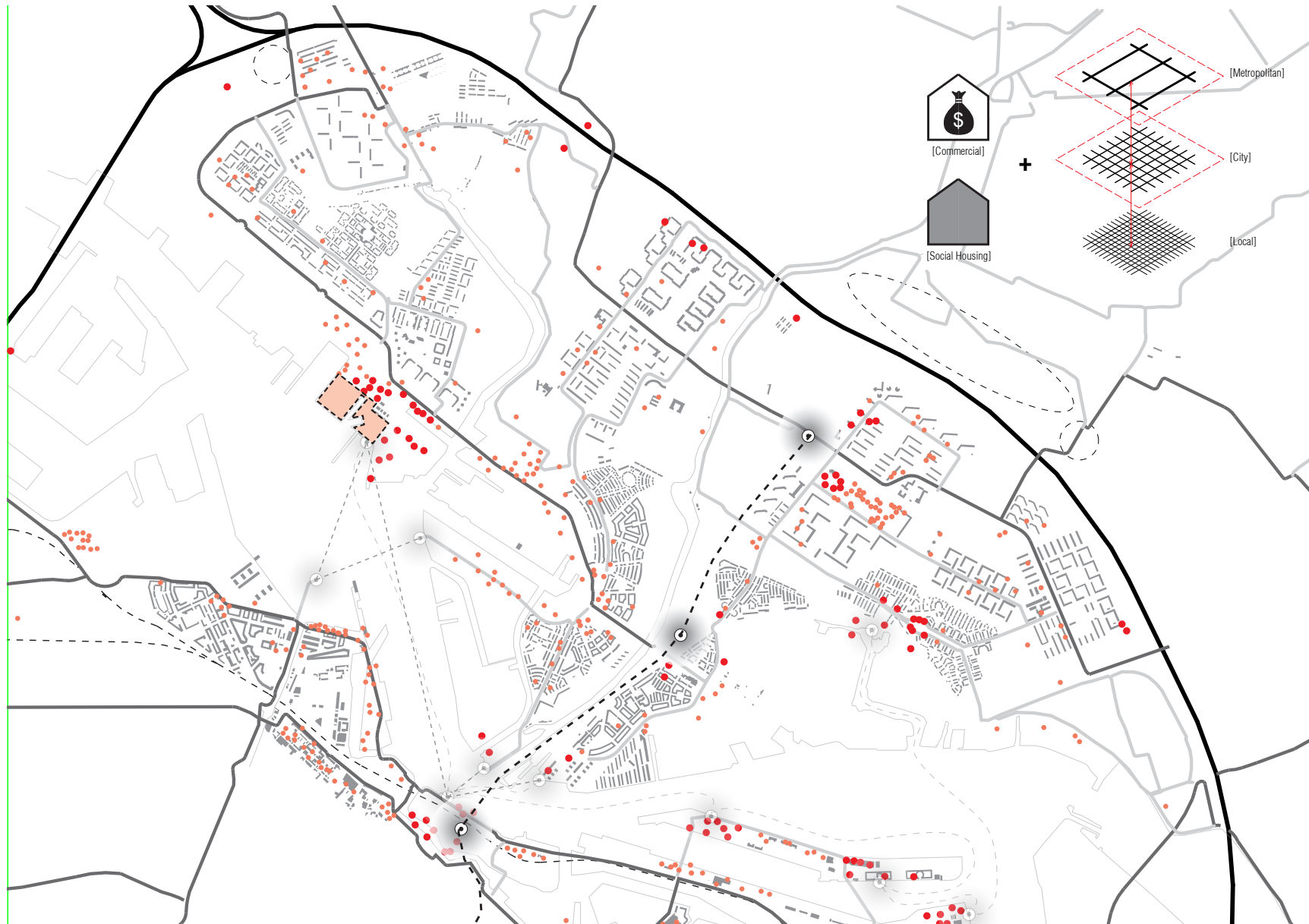
+



Local

Urban Framework

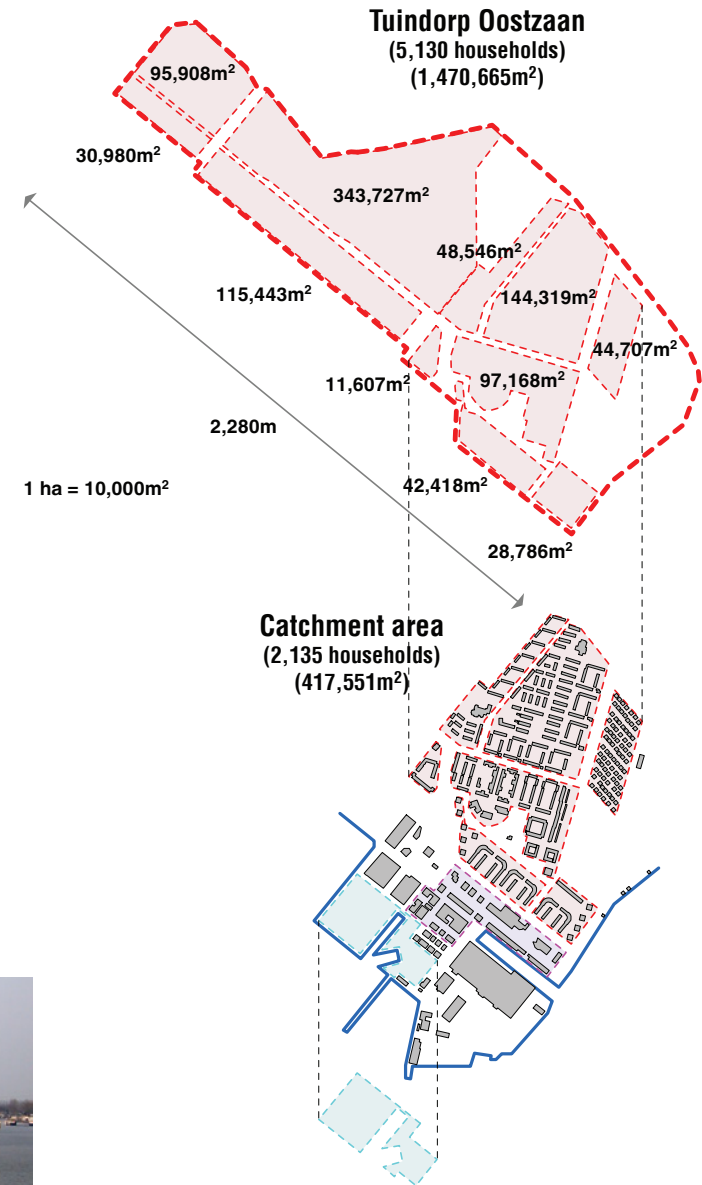
Site Analysis - Traffic Networks + Commercial Activities + Social Housings



Site Analysis - Home Density

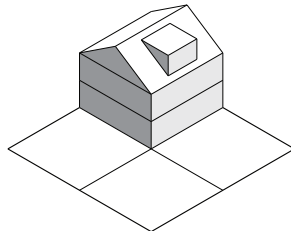
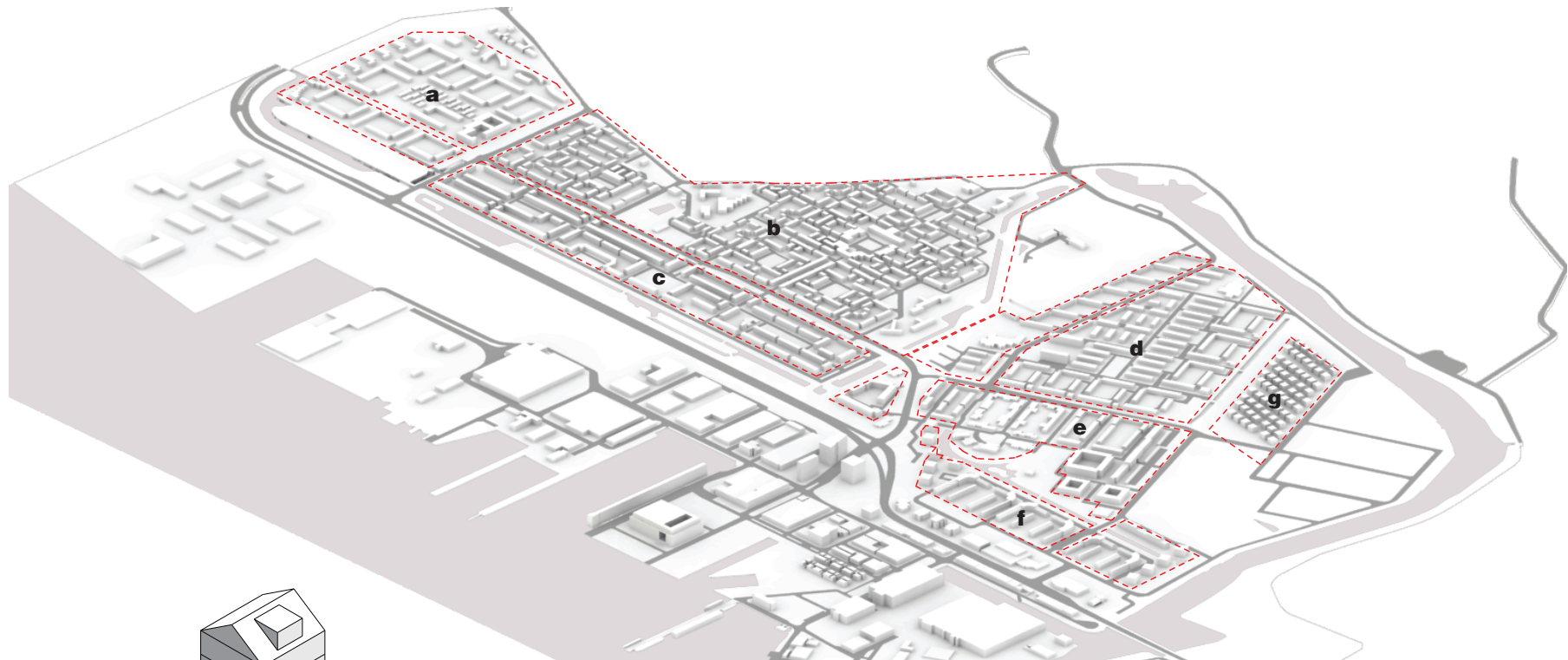
The home density indicates the number of homes per unit area of land. The ratio between a number of homes and a hectare (ha) of land is recommended for density calculation in the Netherlands (*Handleiding bij de voorbereiding van uitbreidingsplannen, 1942*). This measure is still widely used in town planning practice today.

[Meta Berghauer Pont and Per Haupt, *Spacemate: The Spatial Logic of Urban Density* (Delft: DUP Science, 2004), 22.]



Urban Framework

Site Analysis - Density Research



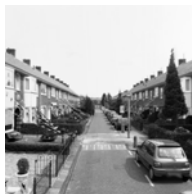
**Built area : Fabric area = 1:4**  
**Average number of floor: 2.5**



**a**  
 Fabric area: 126,888m<sup>2</sup>  
 Built area: 33,940m<sup>2</sup>  
 Built area : Fabric area = 1 : 3.74  
 Average number of floor: 2



**b**  
 Fabric area: 343,727m<sup>2</sup>  
 Built area: 79,411m<sup>2</sup>  
 Built area : Fabric area = 1 : 4.33  
 Average number of floor: 2



**c**  
 Fabric area: 115,443m<sup>2</sup>  
 Built area: 32,065m<sup>2</sup>  
 Built area : Fabric area = 1 : 3.60  
 Average number of floor: 2.5



**d**  
 Fabric area: 192,864m<sup>2</sup>  
 Built area: 41,471m<sup>2</sup>  
 Built area : Fabric area = 1 : 4.65  
 Average number of floor: 2



**e**  
 Fabric area: 108,775m<sup>2</sup>  
 Built area: 22,103m<sup>2</sup>  
 Built area : Fabric area = 1 : 4.92  
 Average number of floor: 2.5



**f**  
 Fabric area: 71,204m<sup>2</sup>  
 Built area: 15,790m<sup>2</sup>  
 Built area : Fabric area = 1 : 4.51  
 Average number of floor: 3.5



**g**  
 Fabric area: 44,707m<sup>2</sup>  
 Built area: 13,053m<sup>2</sup>  
 Built area : Fabric area = 1 : 3.43  
 Average number of floor: 3

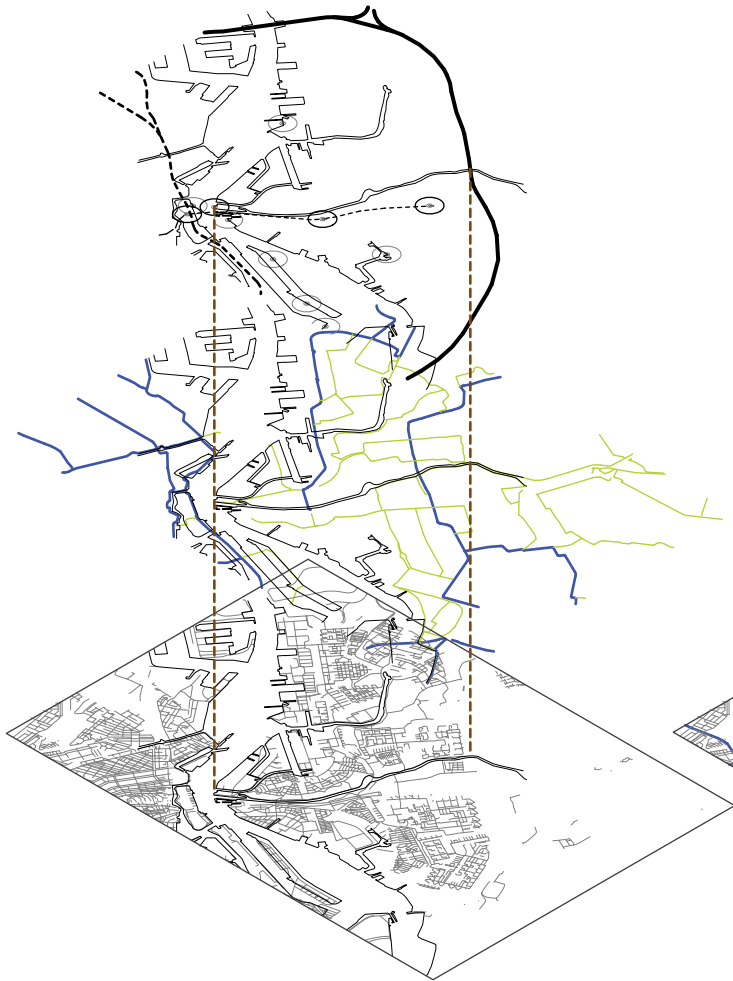
**How could we turn these problems into opportunities  
while developing the city?**

**Strategies realized in a master plan with the focus on three aspects:**

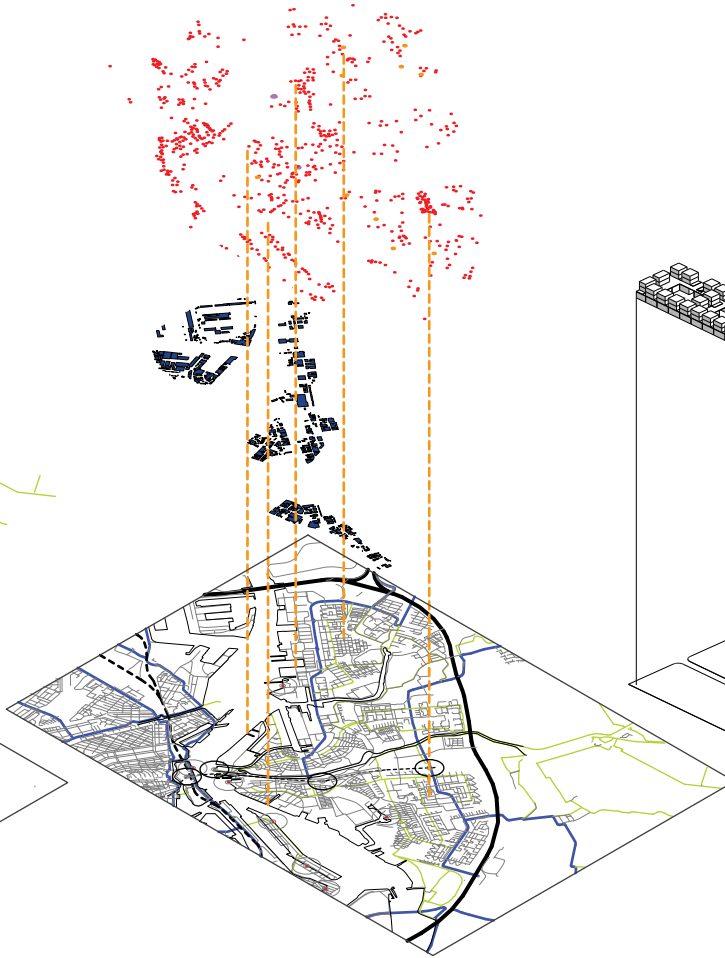
- 1. Traffic Networks**
- 2. Landuse and Programmes**
- 3. Density**

Implementation

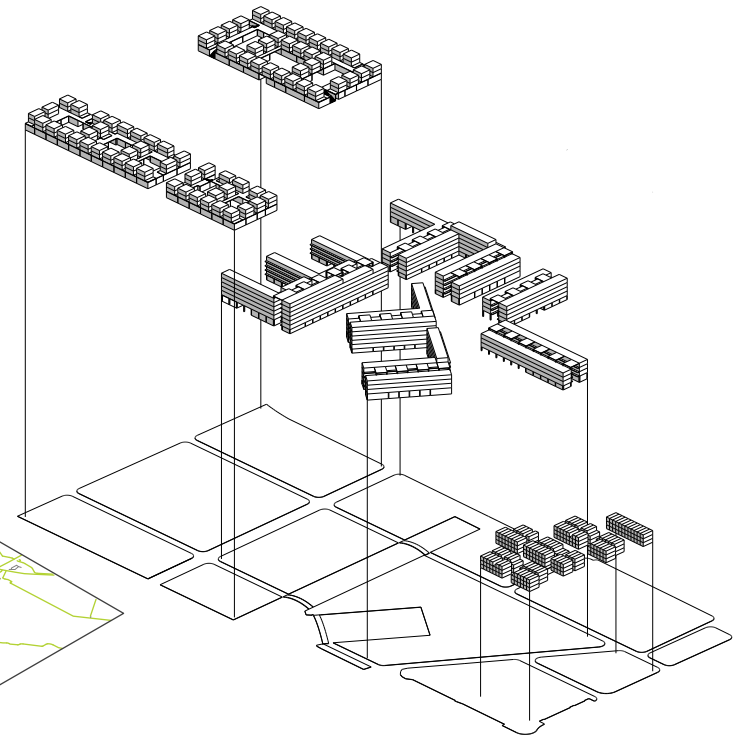
Focus on Three Aspects



**Tool 1: Traffic Networks**

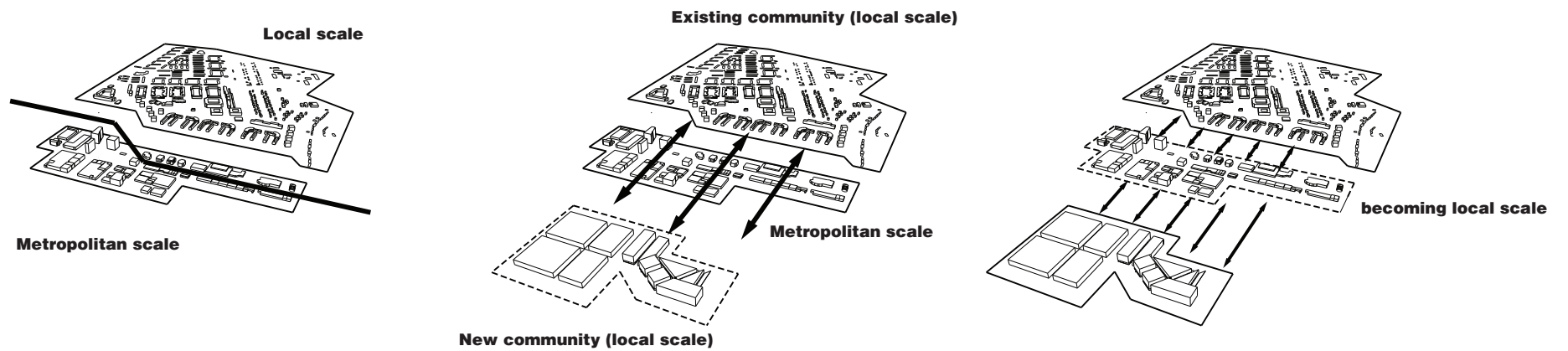


**Tool 2: Landuse and Programmes**



**Tool 3: Density**

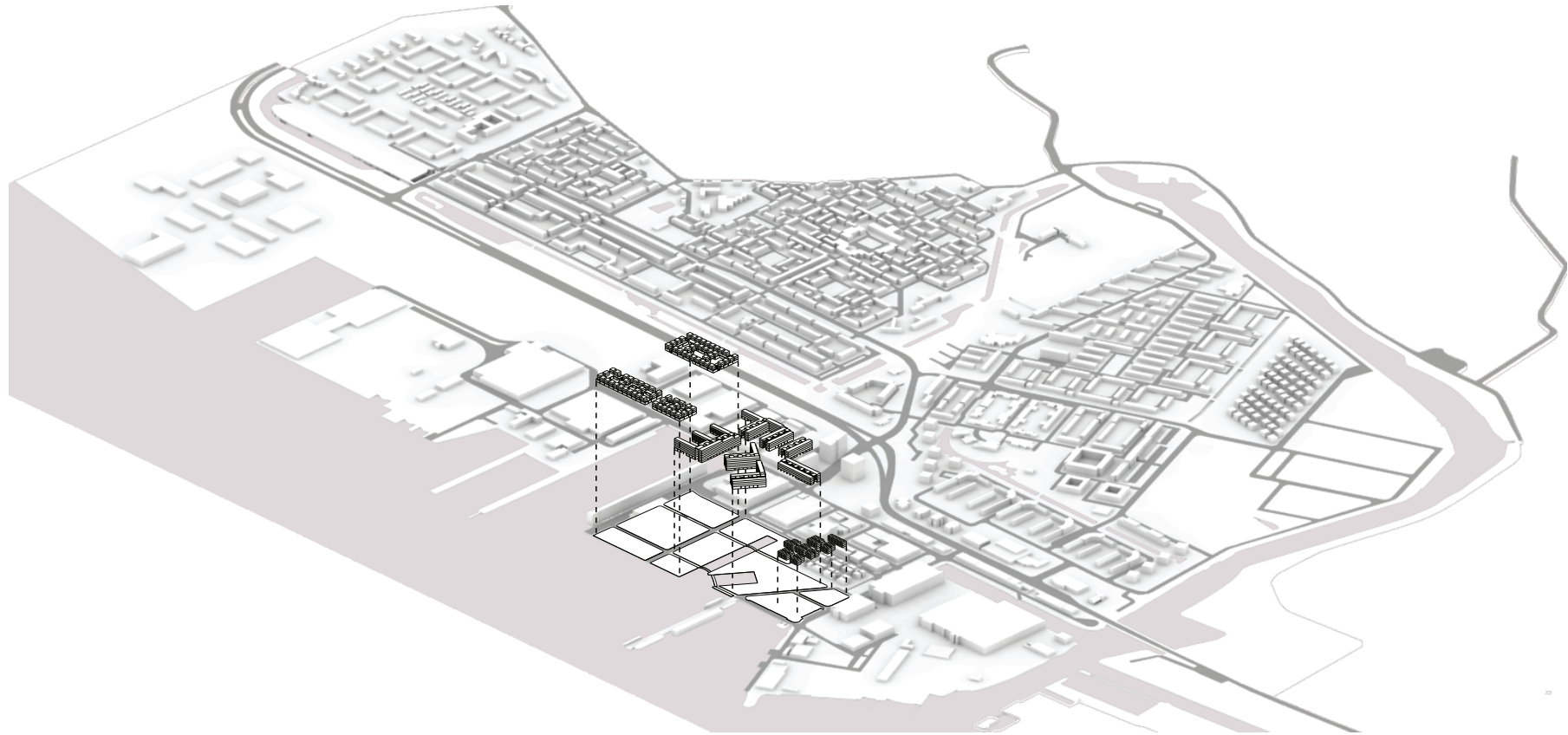
### Linking the Metropolitan and Local - urban strategy



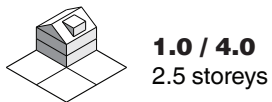


Implementation

Densification

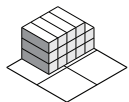


Tuindorp Oostzaan



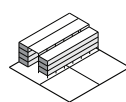
1.0 / 4.0  
2.5 storeys

Phase 1



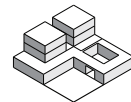
1.4 / 4.0  
3 storeys

Phase 2

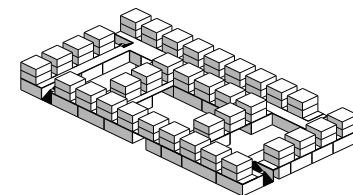
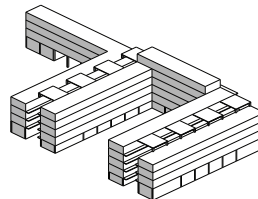
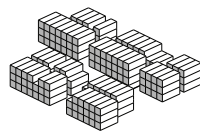


1.7 / 4.0  
4.5 storeys

Phase 3



2.5 / 4.0  
3 storeys

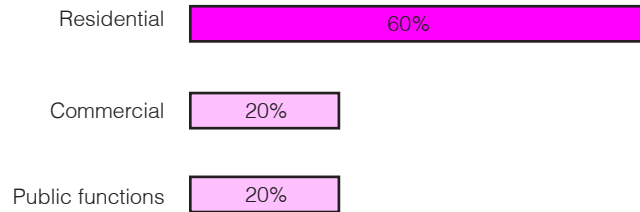


Implementation

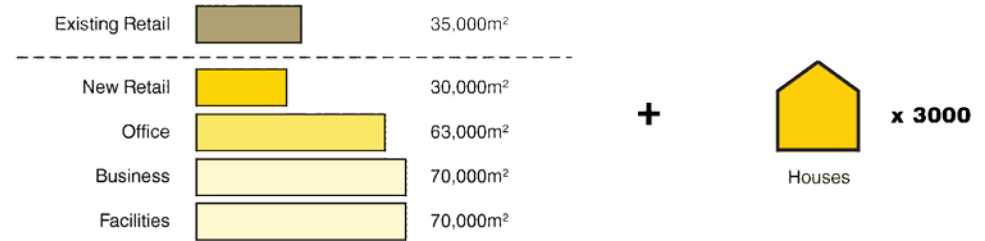
Additional Requirements

Mix of Programmes

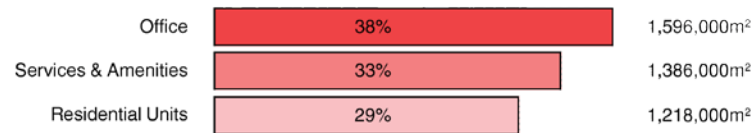
- enhancing the urban life of the surrounding neighbourhood
- attracting more people to the area



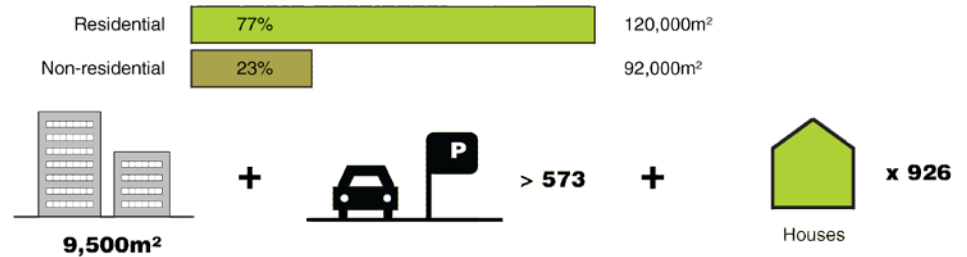
Centrum Amsterdam Noord (CAN)



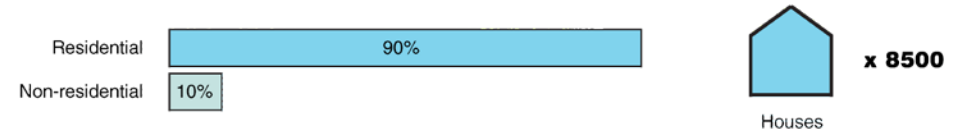
Zuidas (South Axis) Amsterdam



Westerdokseiland (Western Docklands)



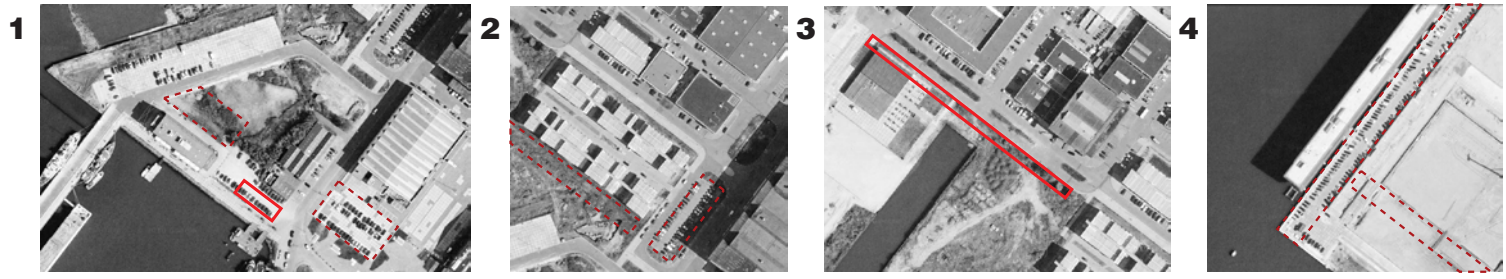
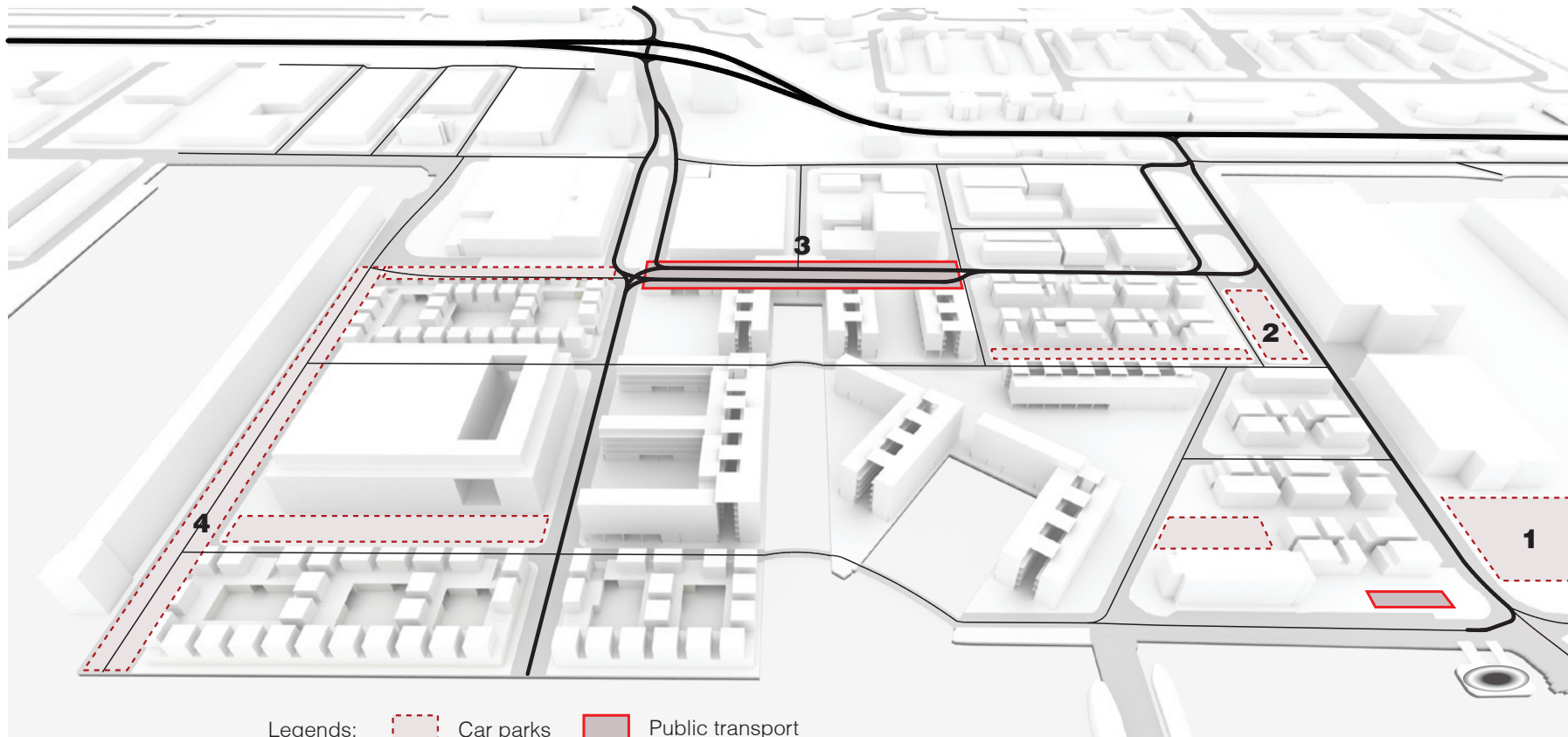
Oostelijk Havengebied (Eastern Docklands) (1988 - 2000)



## **Spatialization of these Strategies**

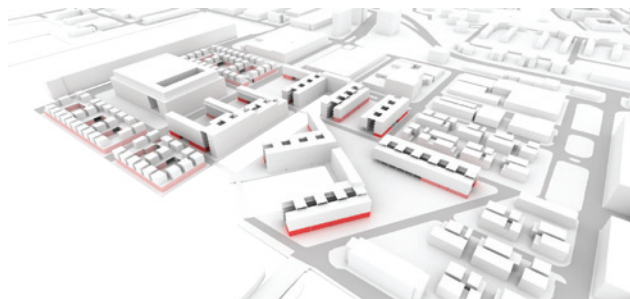
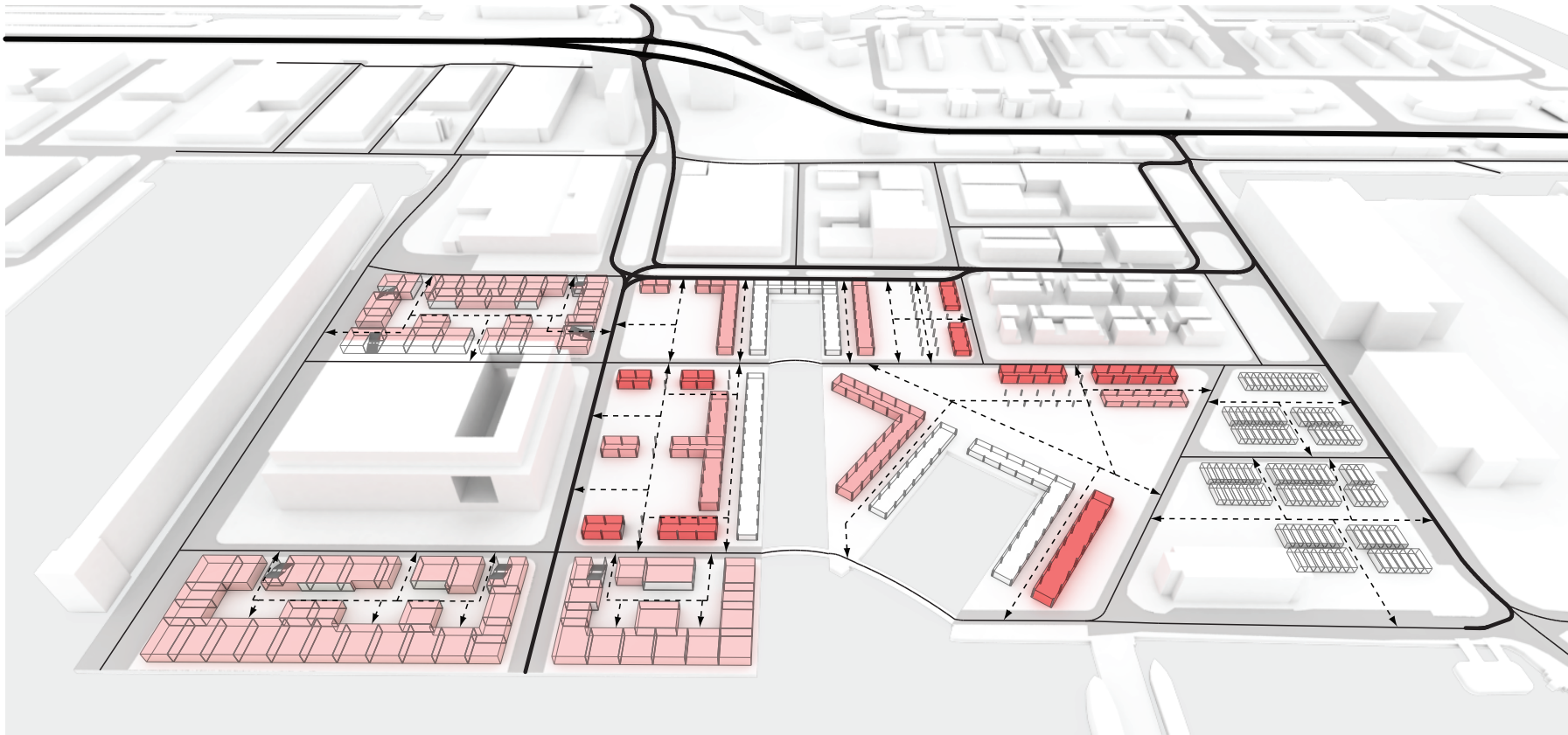
Implementation

Master Plan - Accessibility and Connectivity



Implementation

Master Plan - Ground Floor Conditions - Programmes and Layout



**Commercial**



Shop  
Office  
Agency

[1827m<sup>2</sup>]

**Public Programme**



Library  
Gallery  
Community centre  
Media centre  
Learning centre

[2888m<sup>2</sup>]

**Flexible Unit**

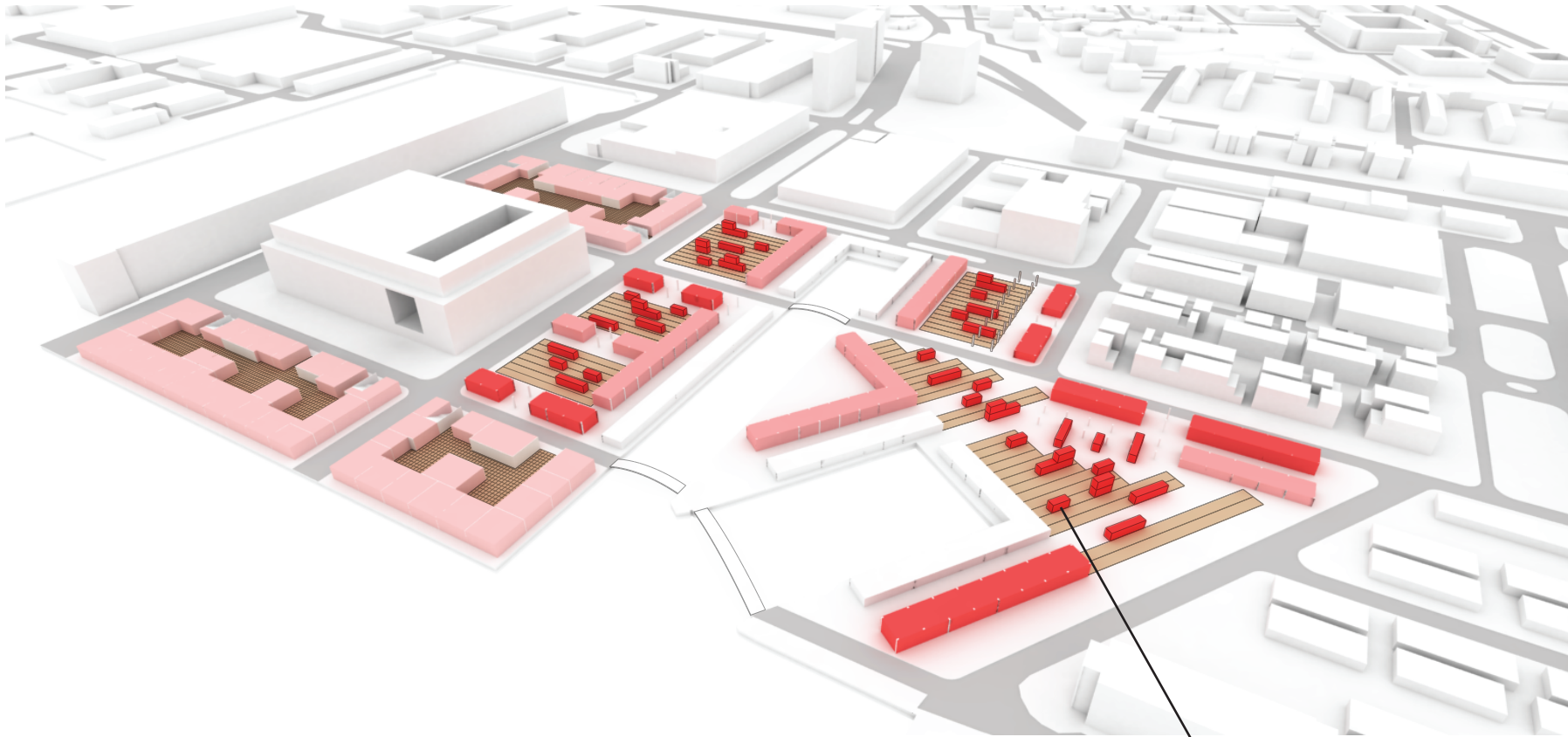


Artist studio  
Dwelling  
Garage

[9297m<sup>2</sup>]

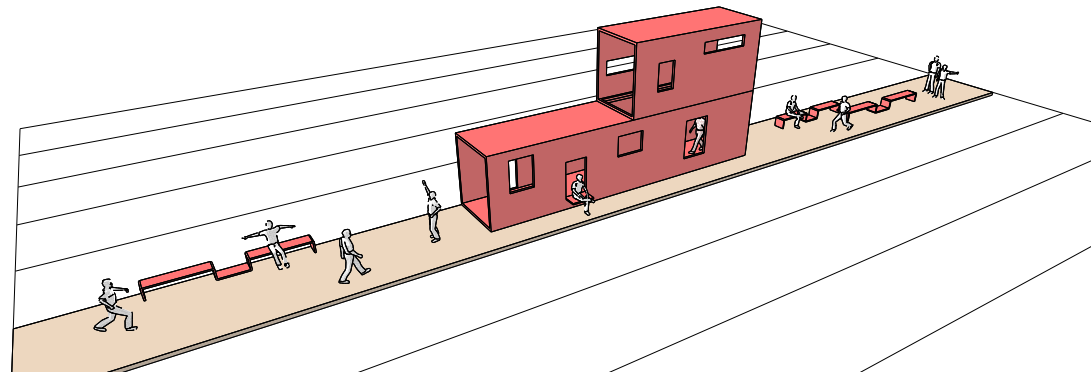
## Implementation

### Master Plan - Ground Floor Conditions - Uses of Open Spaces - An Alternative Mode of Production within the Dwelling Systems



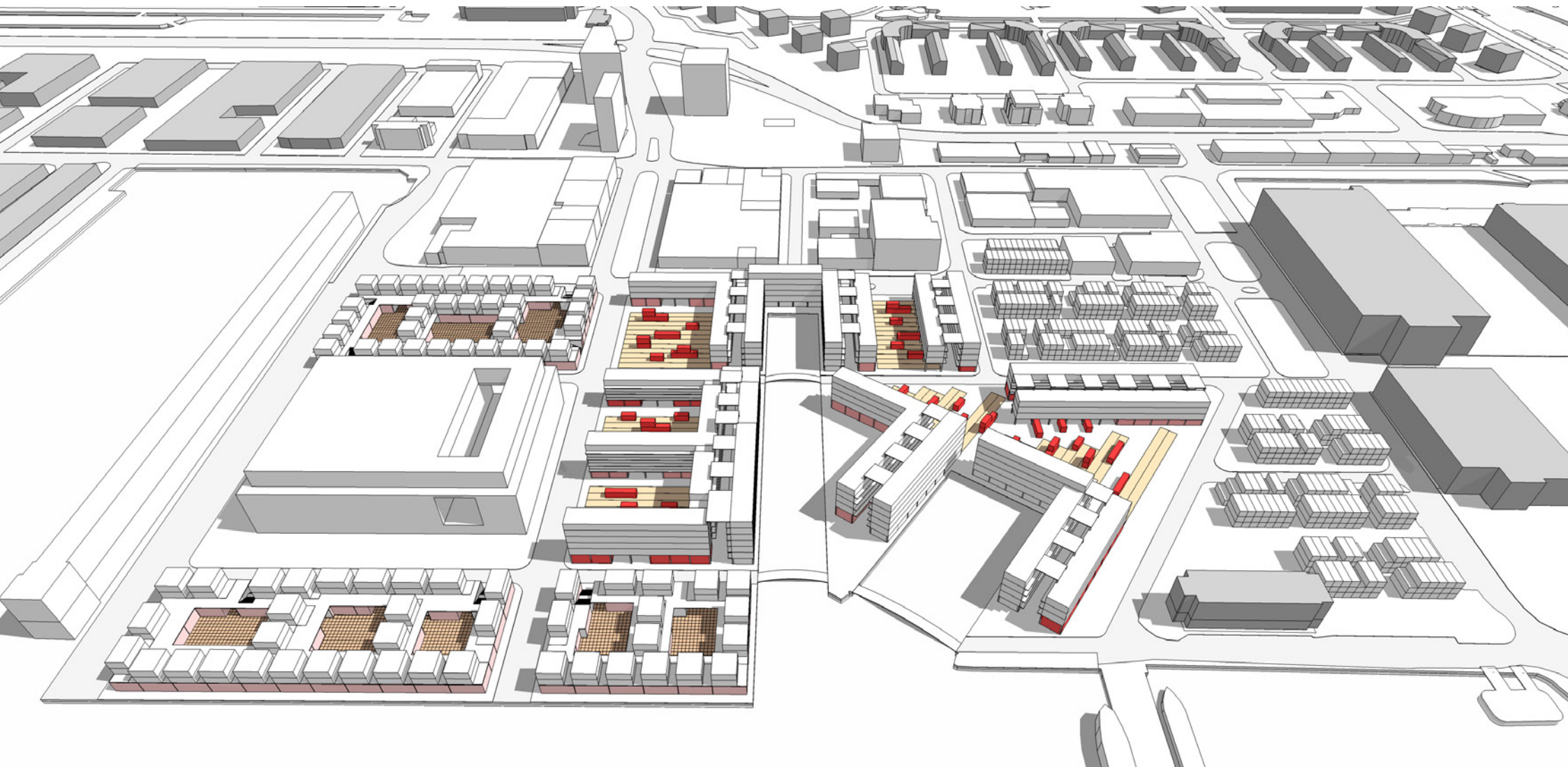
#### Artist Units

The strips of the open spaces are leased to artists, artist groups and non-profit organizations as showcases which evoke activities in the open areas.



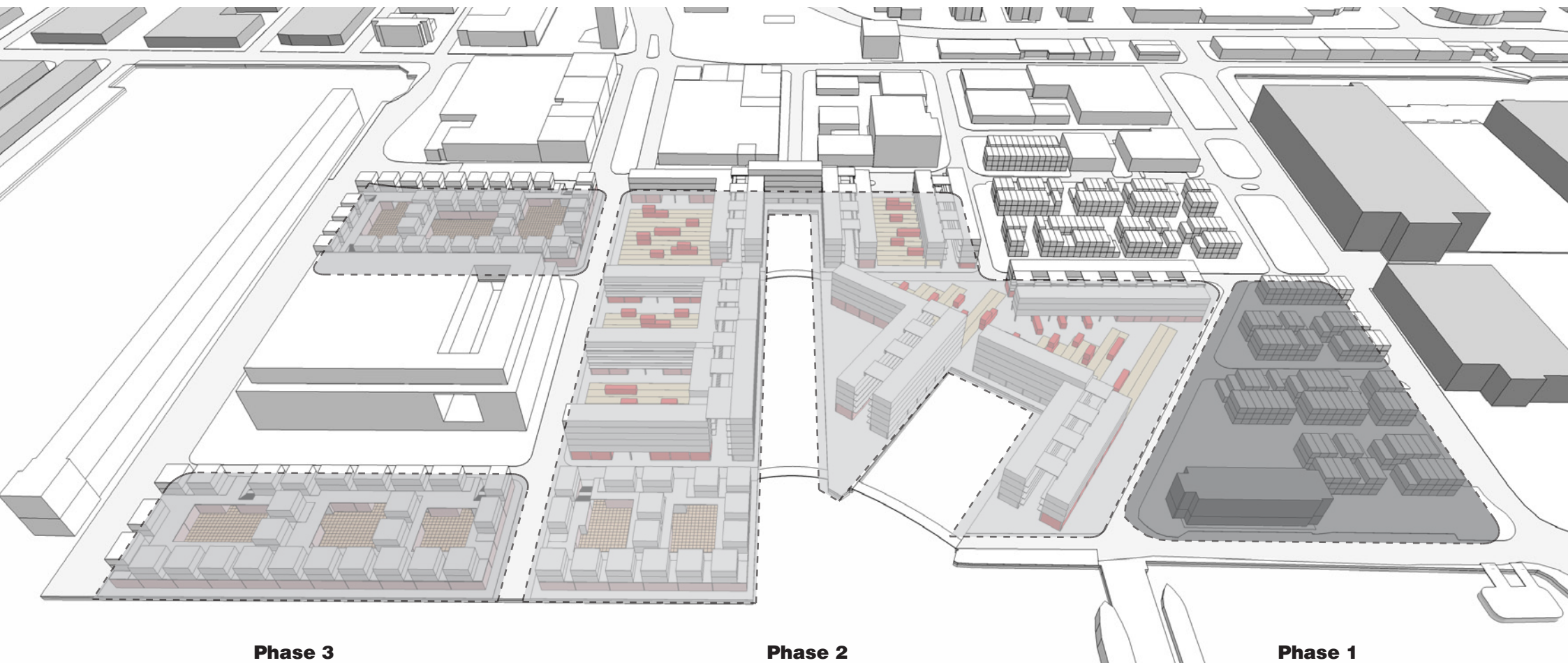
■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Implementation**

**Master Plan - Overview**



Implementation

Master Plan - Construction Sequences and Implications



Phase 3

- For rent and for sale
- Flexible units on the ground floor for different purposes

Phase 2

- For rent and for sale
- Generating capital by maximizing the waterfront line for living units
- Short stay housings in light weight structure on the roofs
- Opening of public programmes on the ground

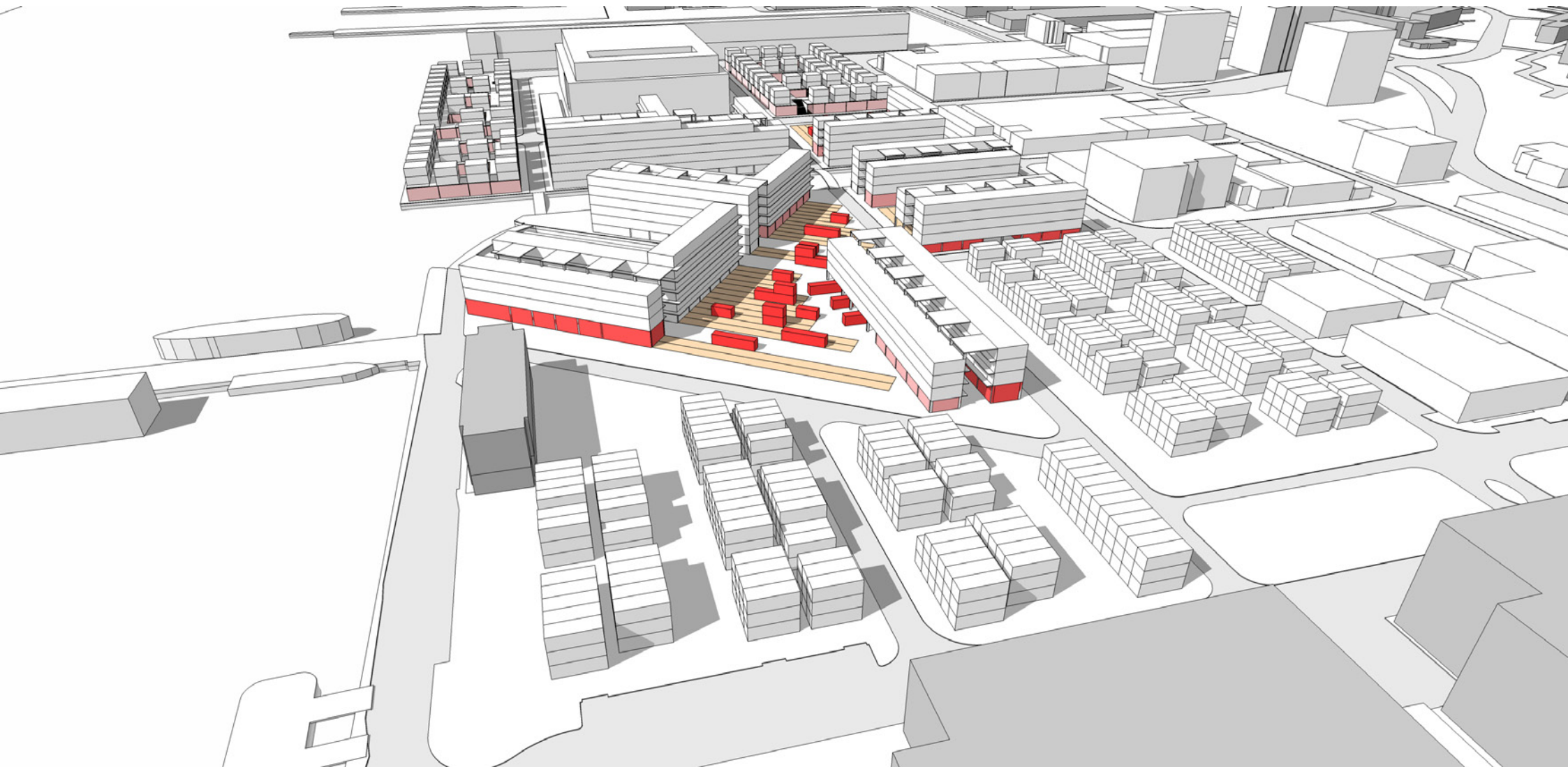
Phase 1

- Temporary livig units
- Landuses and programmes would be re-vised after Phase 2 or 3 was/were built



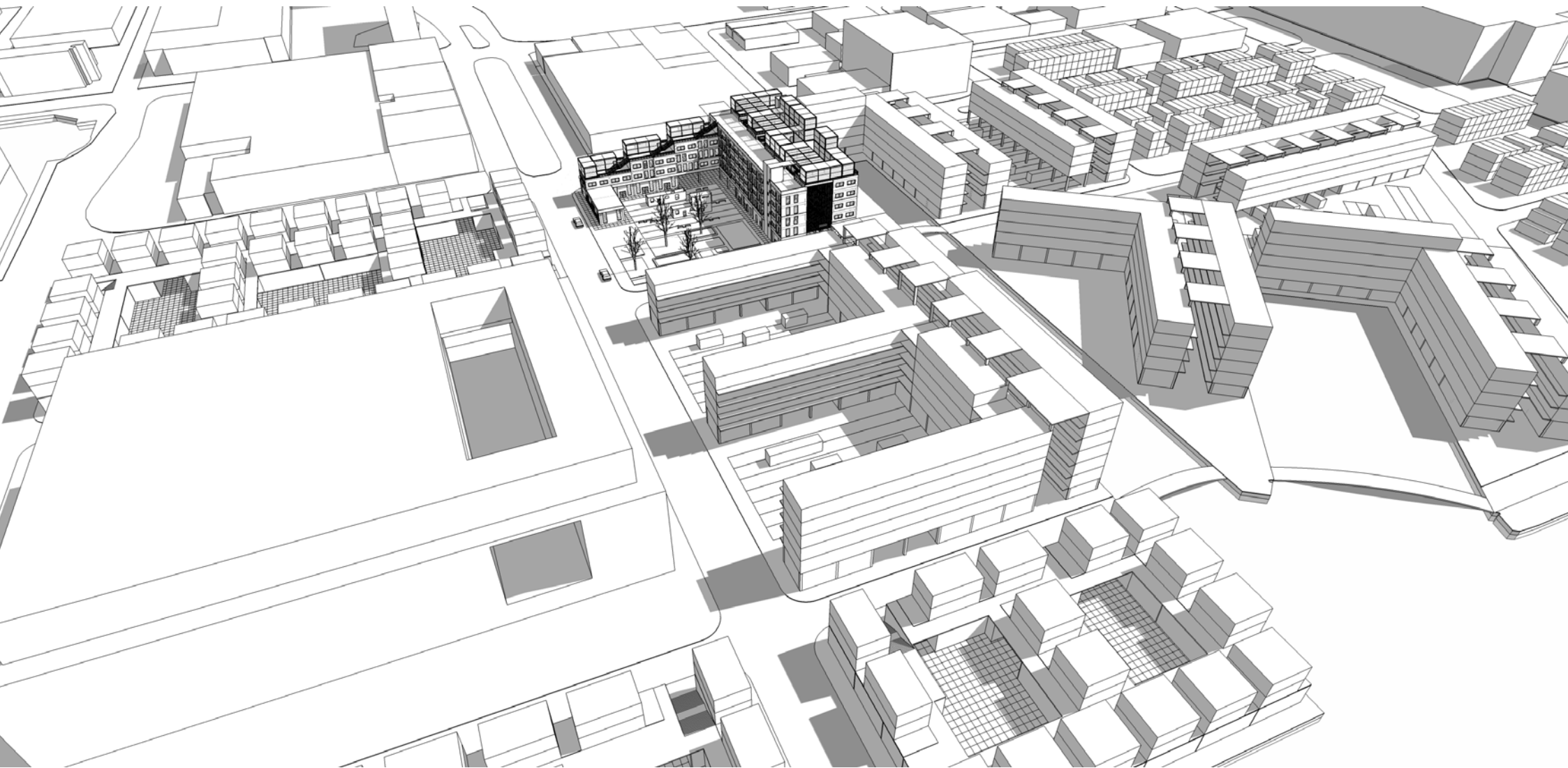
■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Implementation**

**Master Plan - Overview**

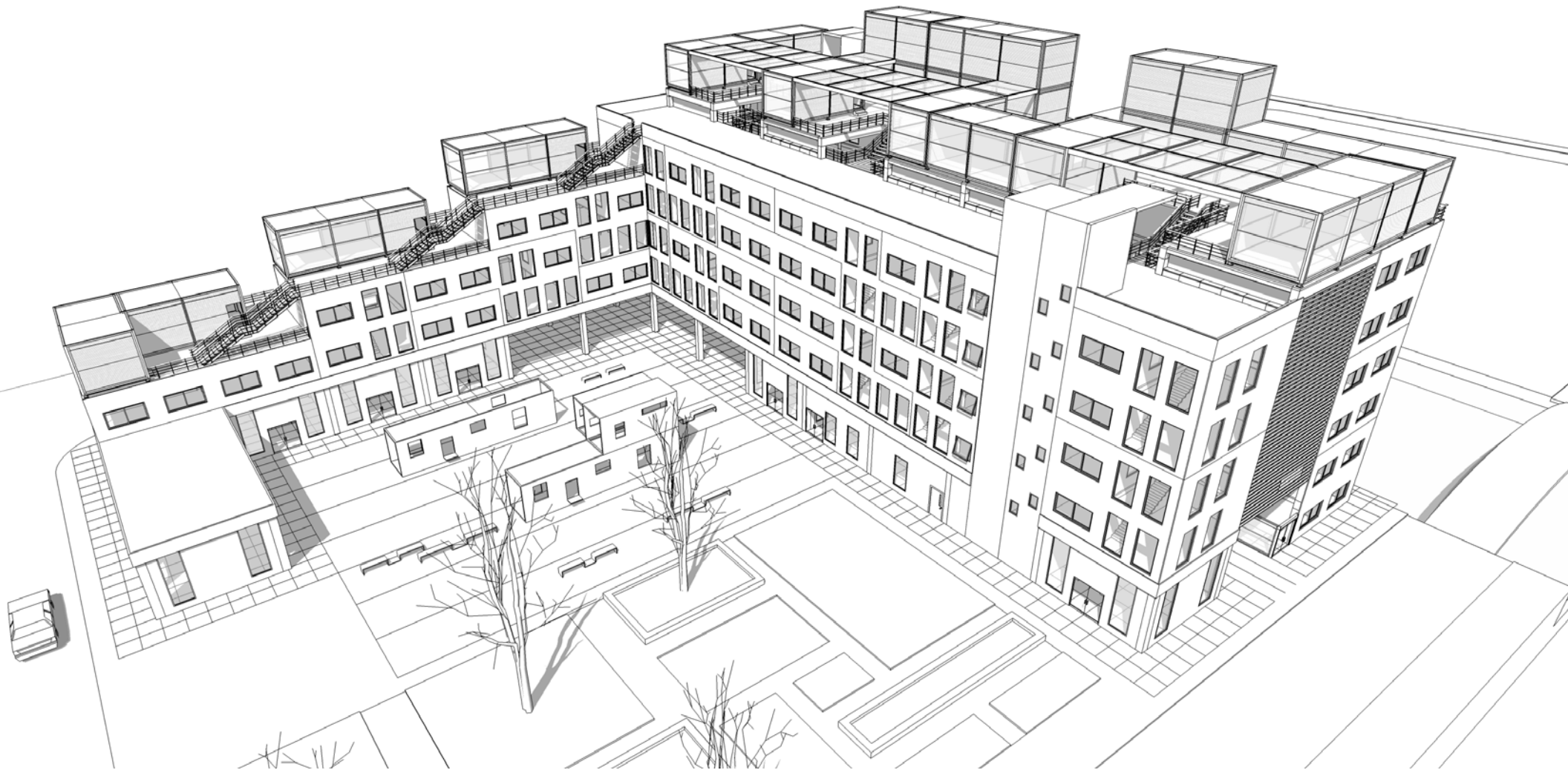


Implementation

Master Plan - From Urban Scale to Building Scale

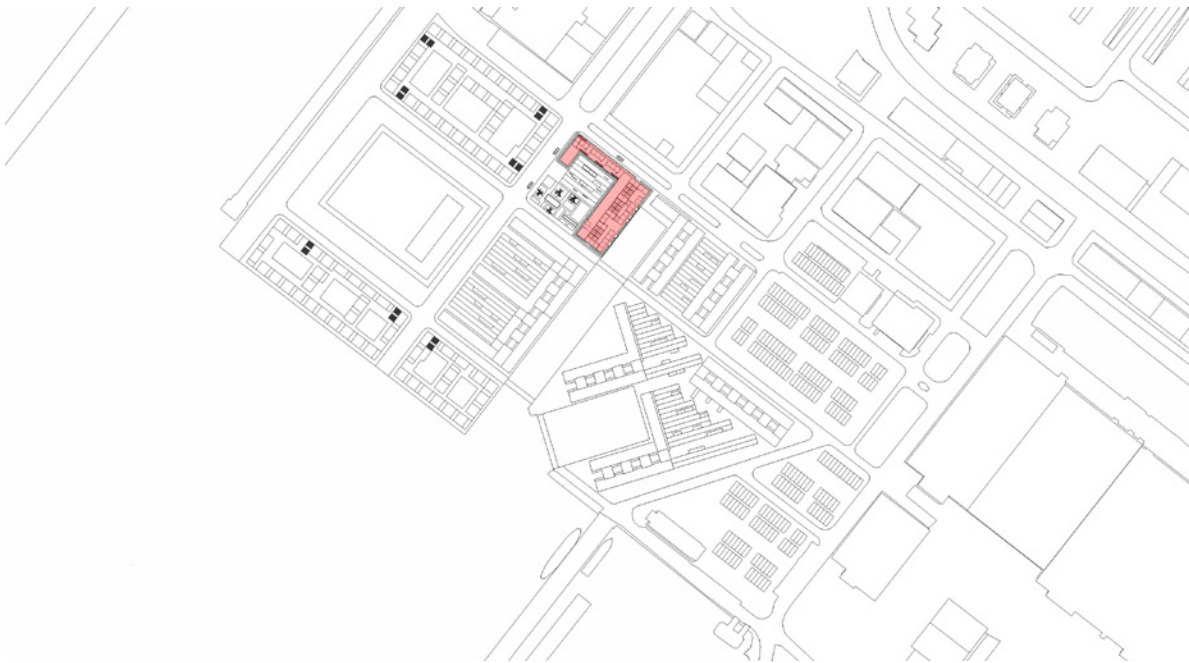


Architectural Configuration

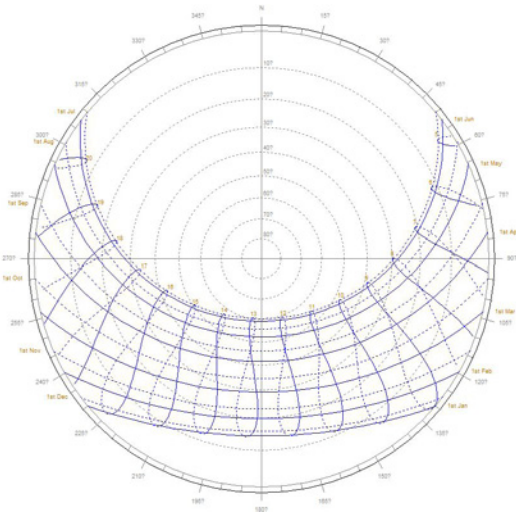


# Architectural Configuration

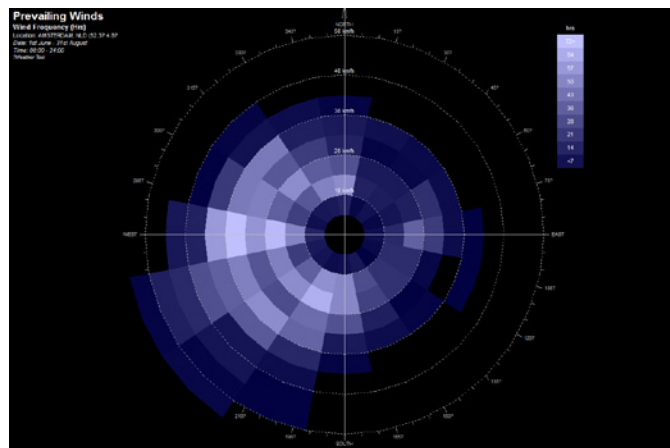
## Orientation of the Building



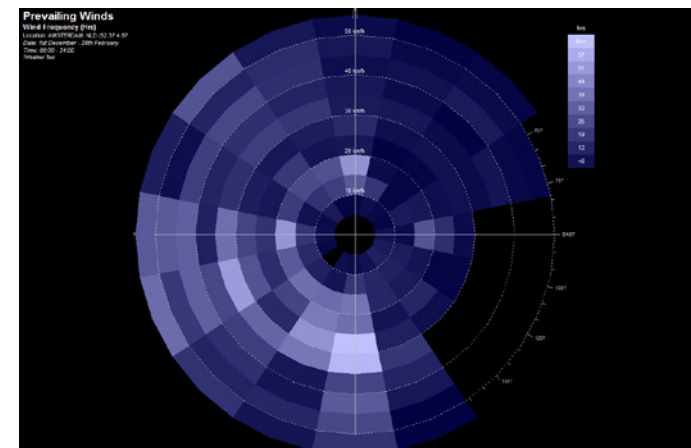
### Sun path diagram (Stereographic diagram)



### Prevailing winds in summer

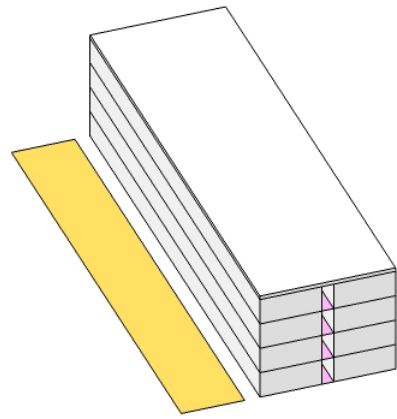


### Prevailing winds in winter

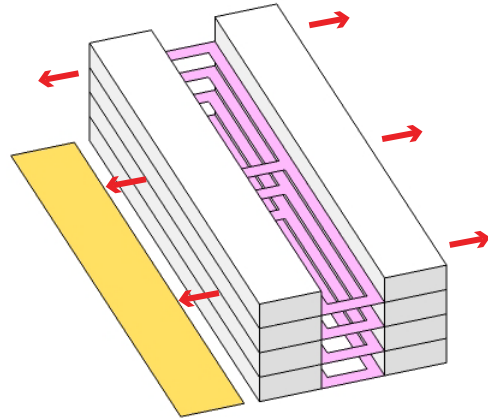


Architectural Configuration

Spatial Arrangement of the Building

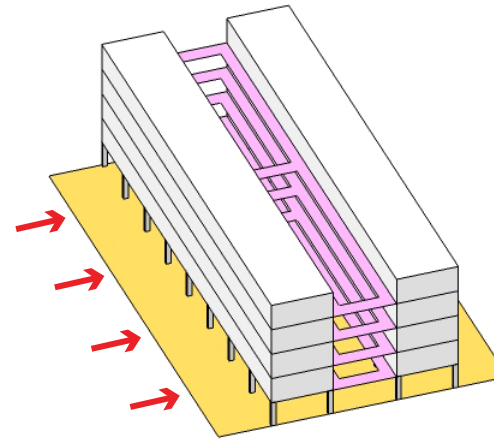


**A common collective housing**



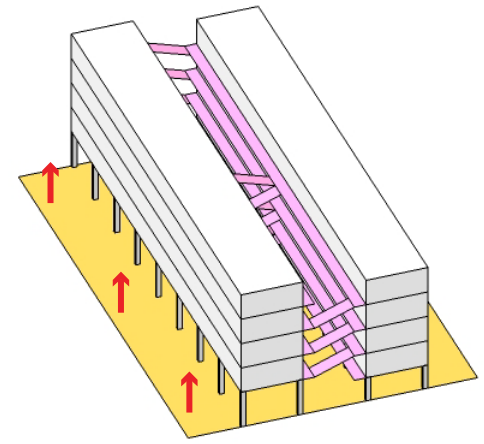
**Introducing atrium**

- natural light
- cross ventilation



**Building lifted**

- draw in public space
- providing shaded area

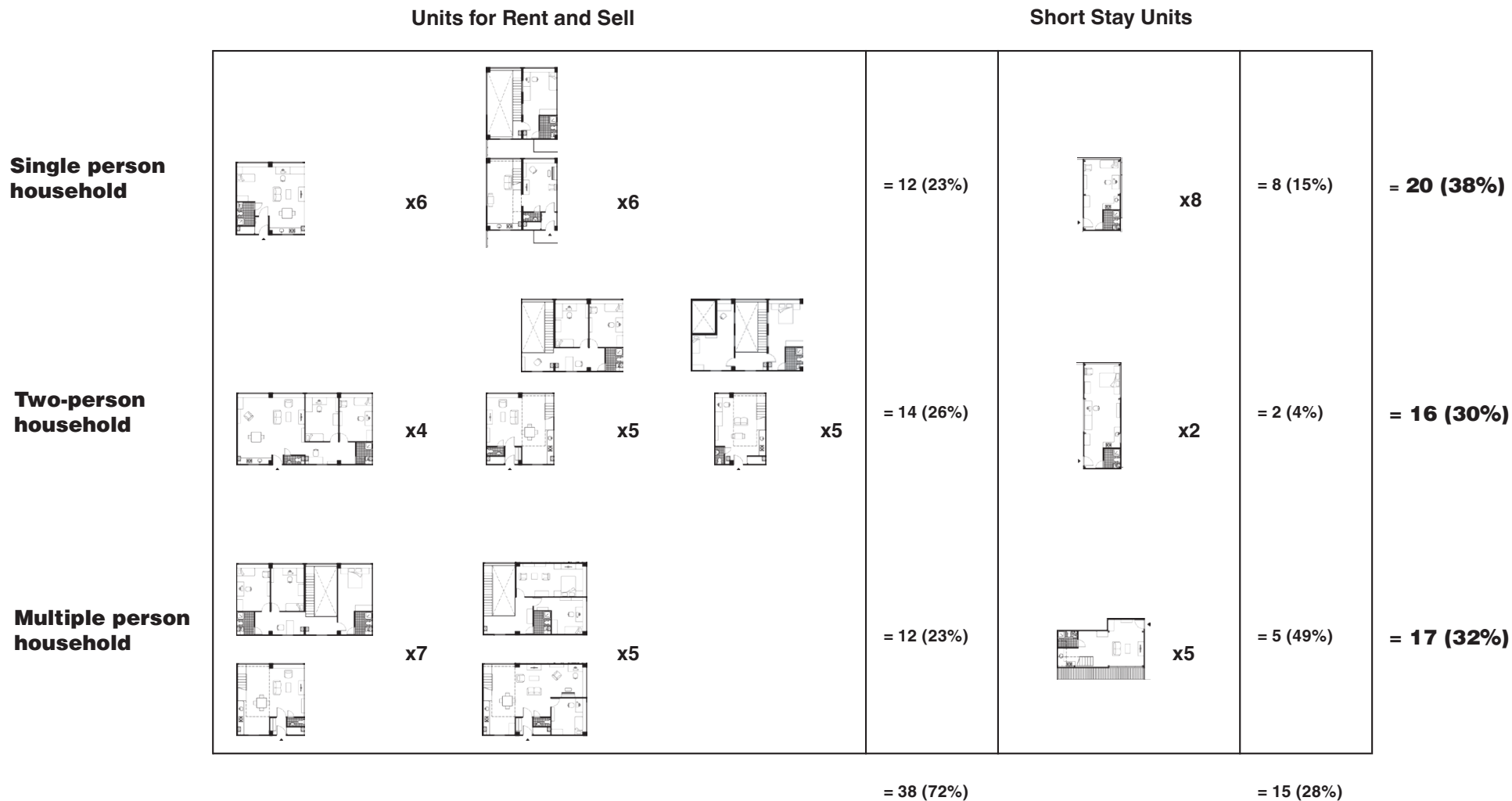


**Split floor**

- enhance physical movement between floors
- foster communication between residents

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Building Level**

**Number and ratio of different units**



One and two-person households  
Families

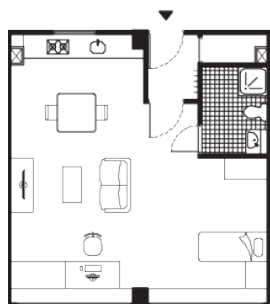
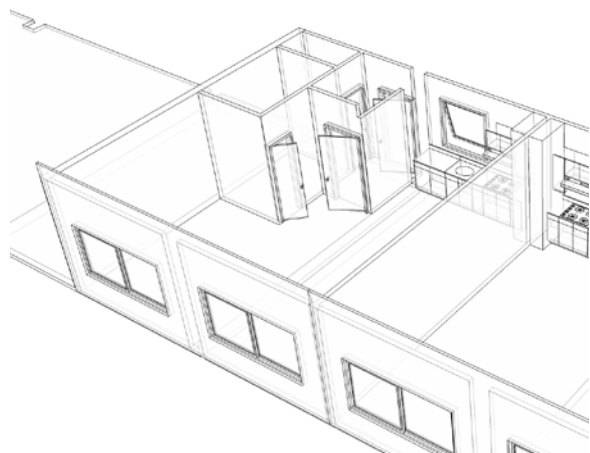


Single person household  
Two-person household without children  
Multiple person household with children

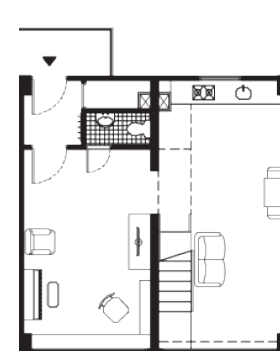
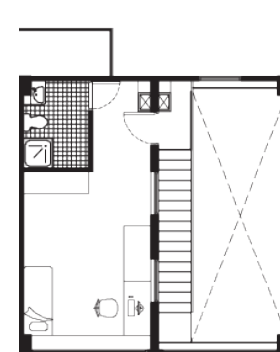
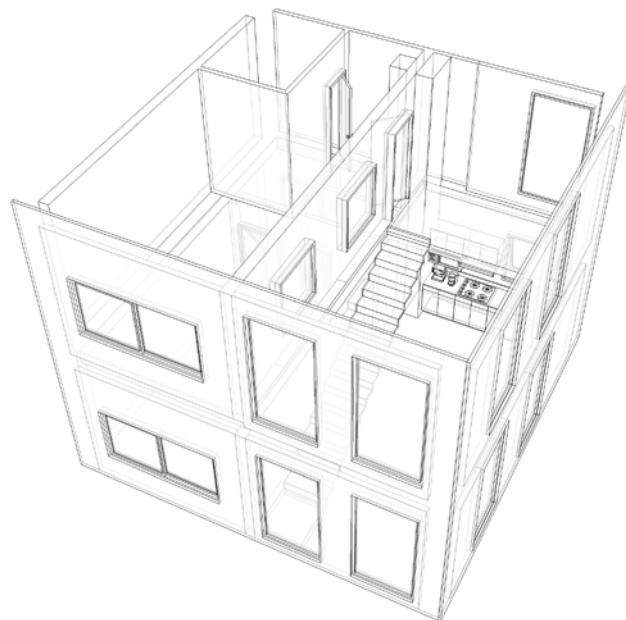


■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Building Level**

**Single Person Household Units**



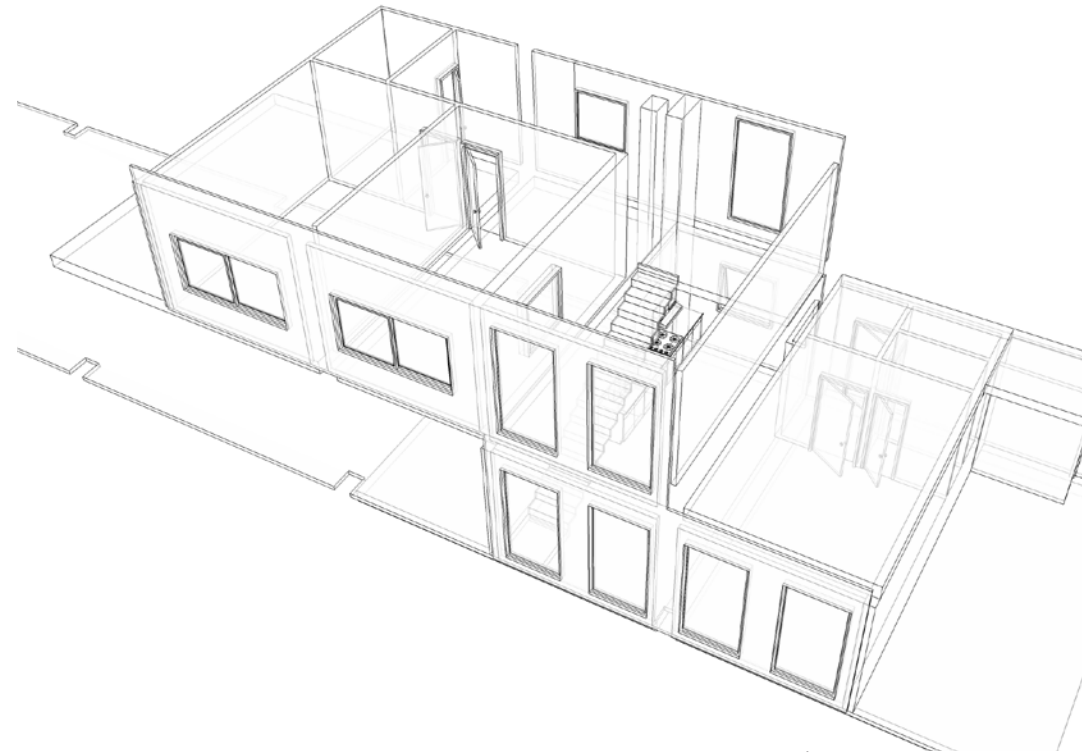
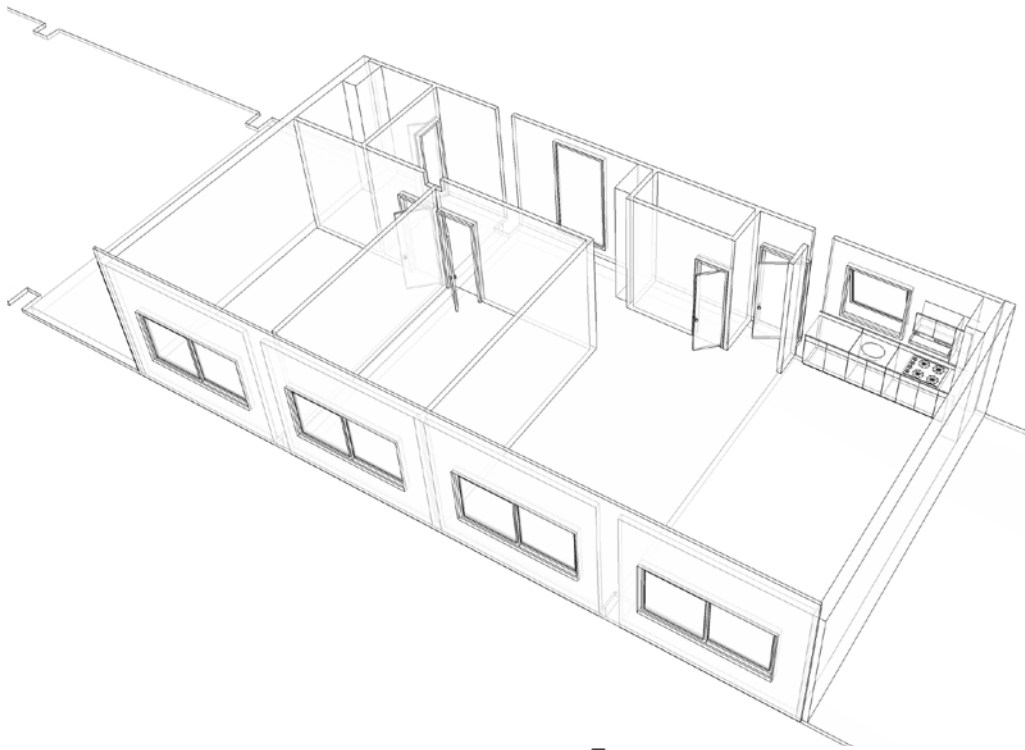
**50m<sup>2</sup>**  
**1 bedroom**



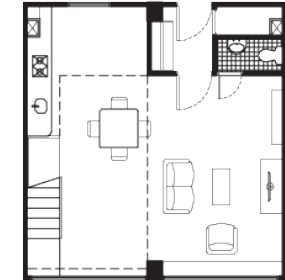
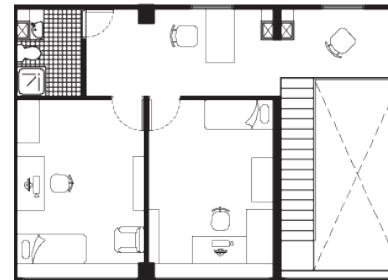
**75m<sup>2</sup>**  
**1 bedroom**

■■■■■ Building Level

Two-person Household Units



100m<sup>2</sup>  
2 bedrooms

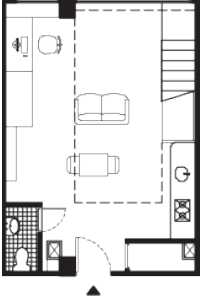
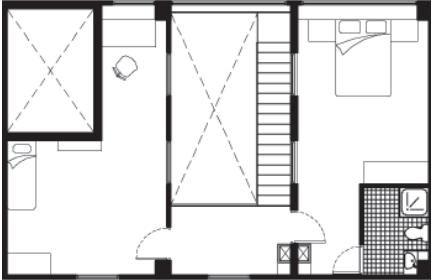
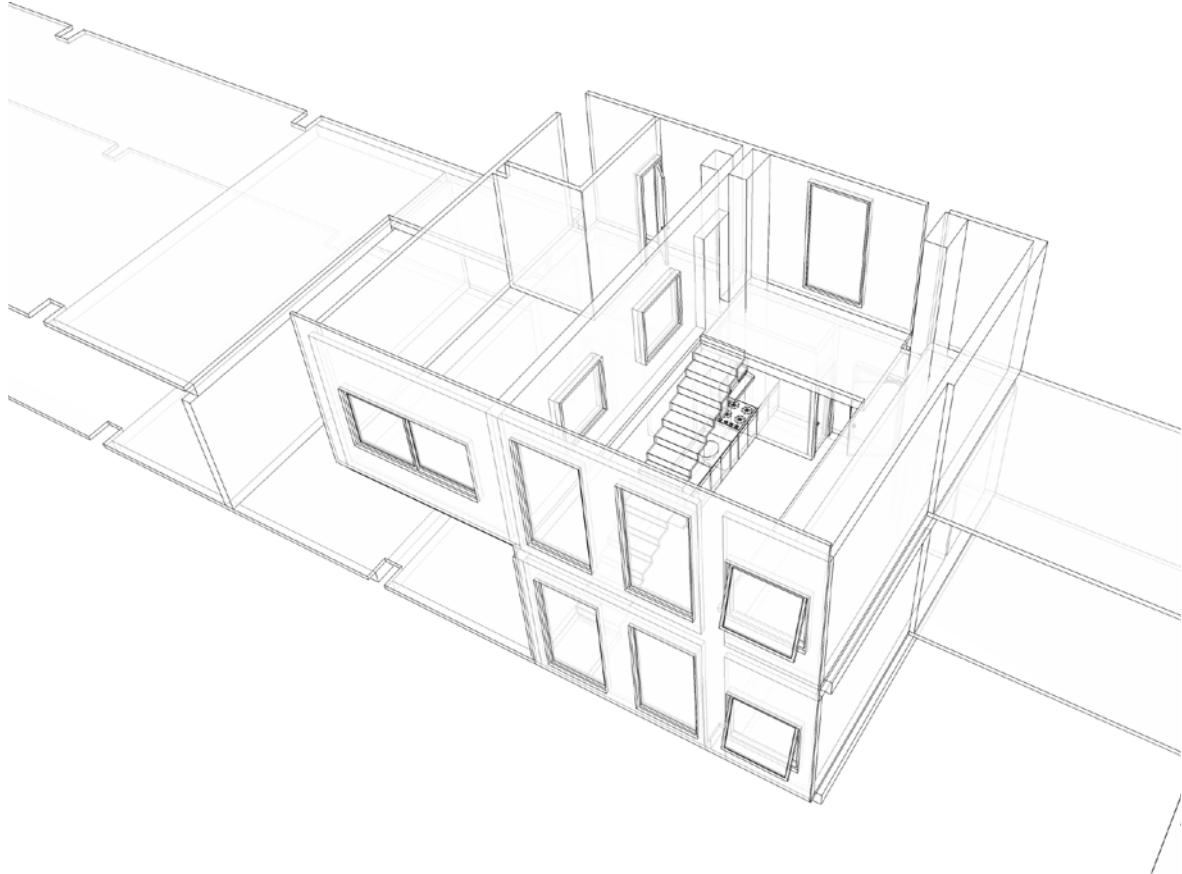


100m<sup>2</sup>  
2 bedrooms



■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Building Level**

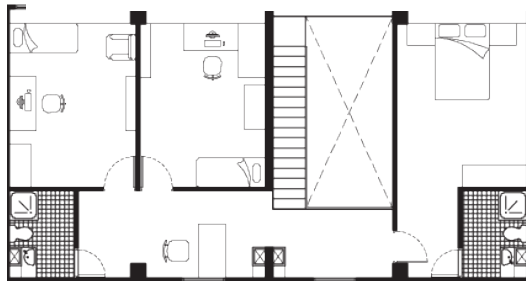
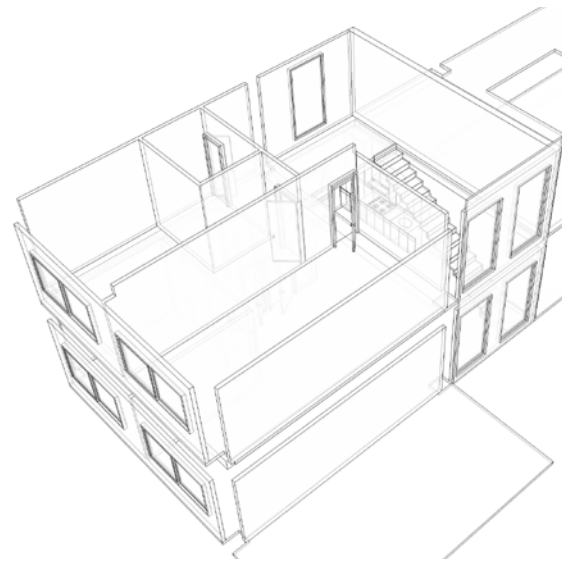
**Two-person Household Units**



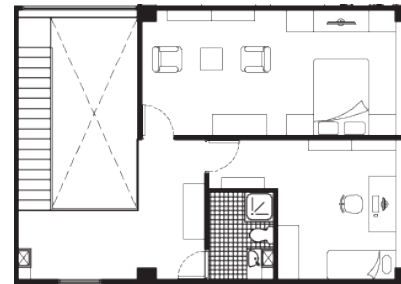
**100m<sup>2</sup>  
2 bedrooms**

■ ■ ■ ■ ■ ■ ■ ■ **Building Level**

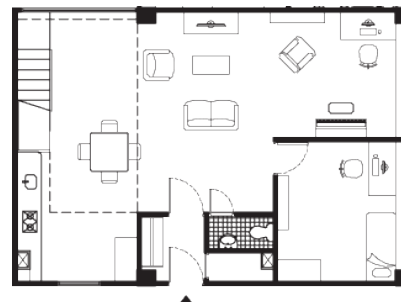
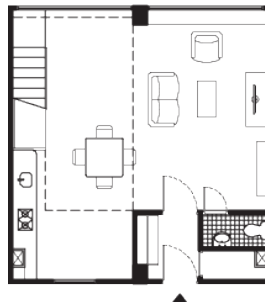
**Multiple-person Household Units**



**130m<sup>2</sup>  
3 bedrooms**

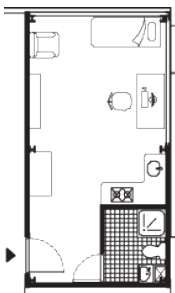


**130m<sup>2</sup>  
3 bedrooms**

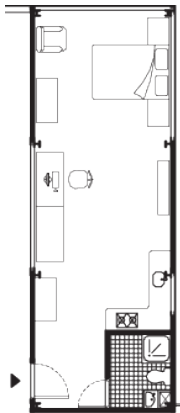


■■■■■ Building Level

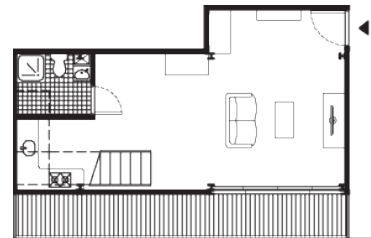
Short Stay Living Units



**25m<sup>2</sup>**  
**Single household**  
**Open plan**



**38m<sup>2</sup>**  
**Two-person household**  
**Open plan**



**50m<sup>2</sup>**  
**Two-person household**  
**Open plan**



▣▣▣▣▣▣ **Building Level**

**North Elevation**



Building Level

East Elevation



■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Building Level**

**South Elevation**



Building Level

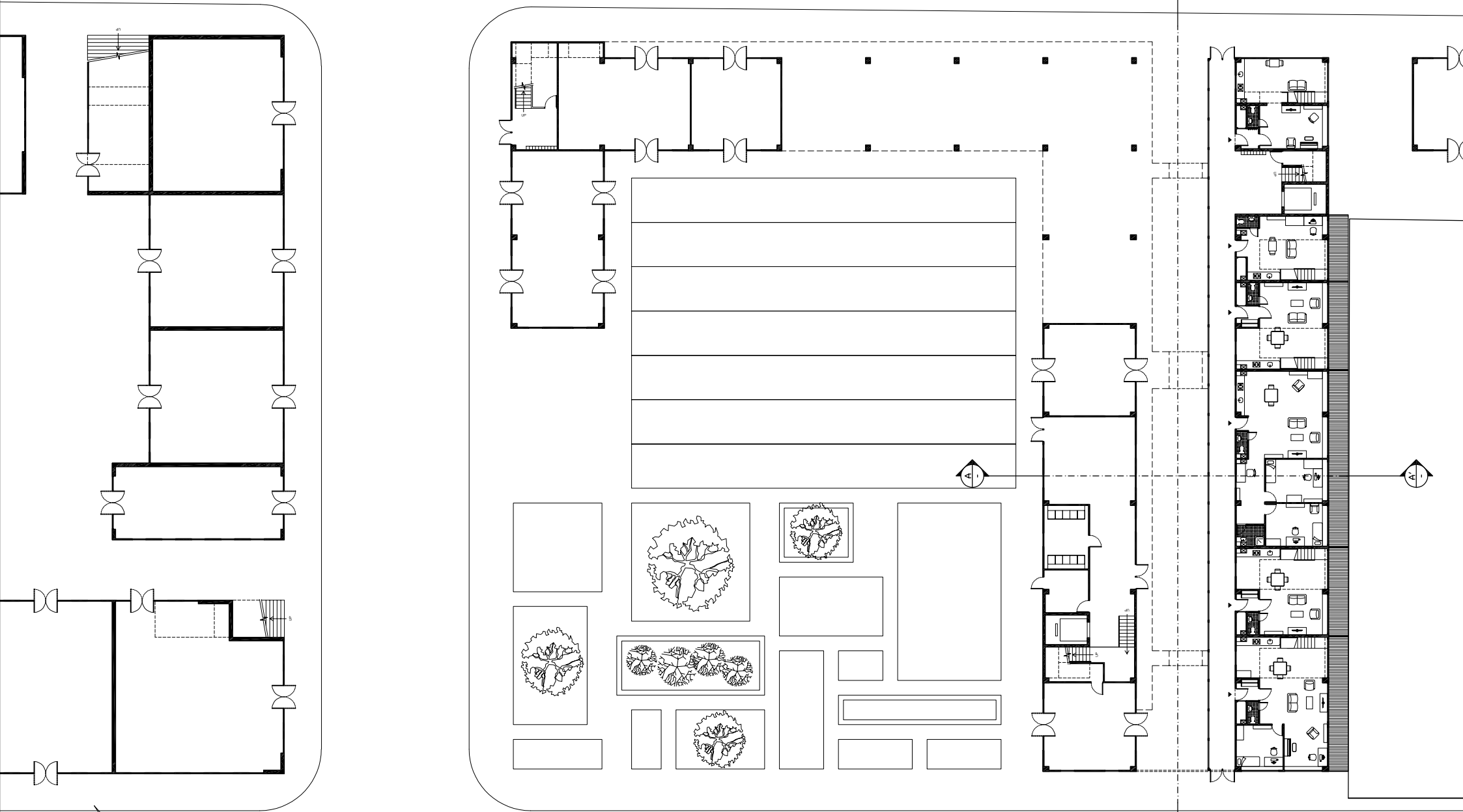
West Elevation





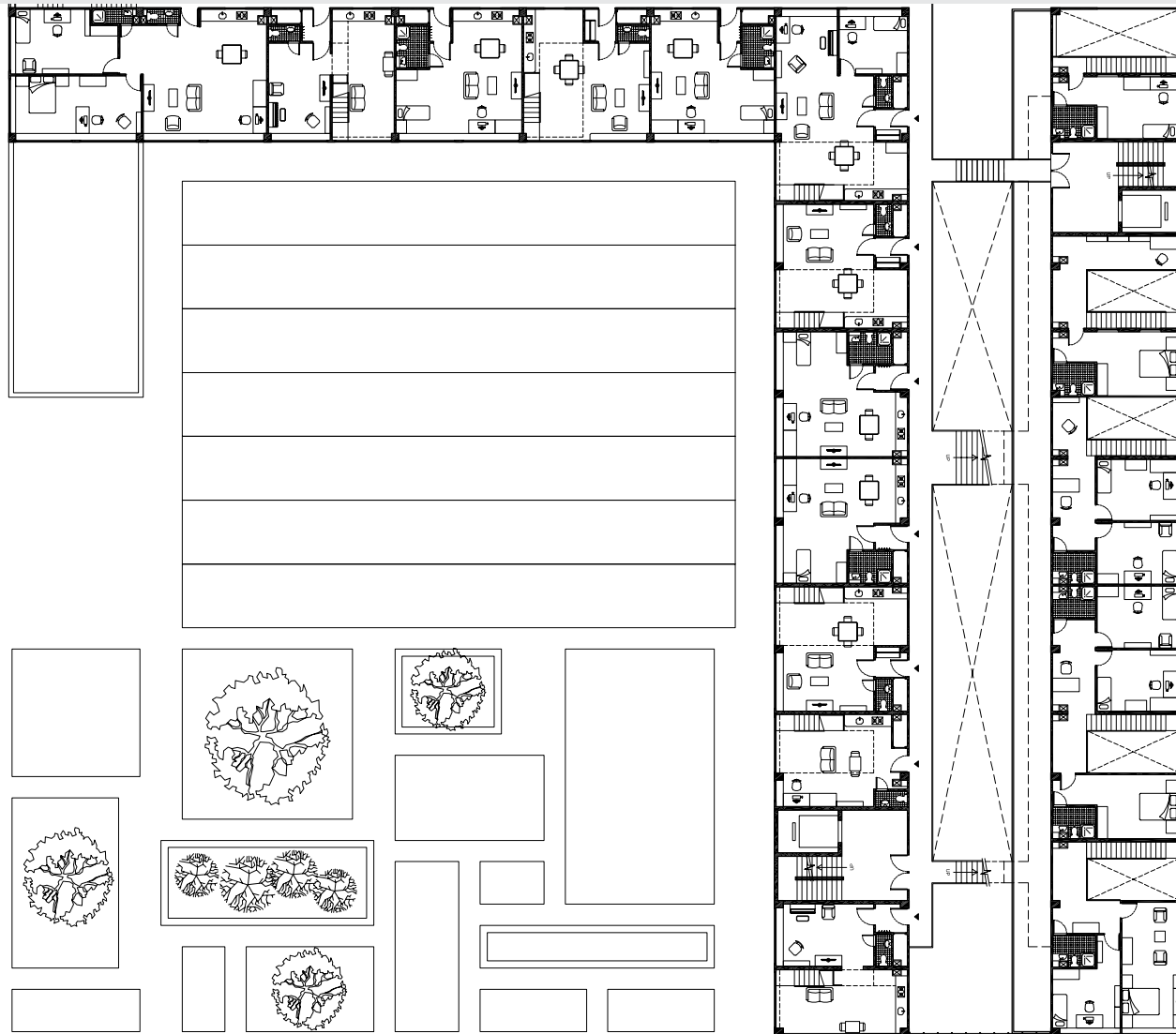
# ■ ■ ■ ■ ■ Building Level

## Plans



■ ■ ■ ■ ■ ■ ■ ■ ■ ■ Building Level

Plans



2 First Floor Plan (+05.70M)

1:200

Building Level

Plans



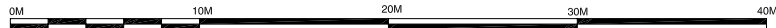
3

Second Floor Plan (+09.00M)

1:200

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ Building Level

Plans



SCALE 1:200

4 Third Floor Plan (+12.30M)

1:200

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ Building Level

Plans



5 Fourth Floor Plan (+15.60M)

1:200

**Building Level**

**Plans**



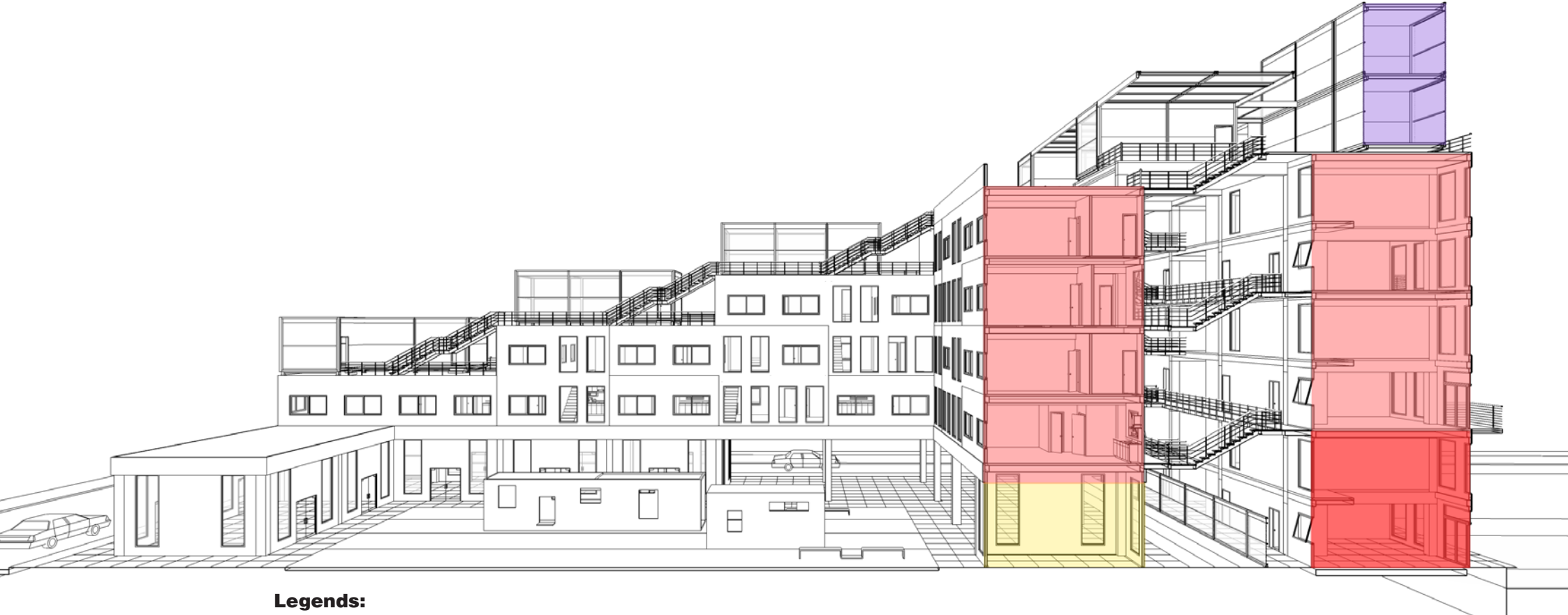
6 Fifth Floor Plan (+18.90M)

1:200



■ ■ ■ ■ ■ ■ ■ ■ ■ ■ **Building Level**

**Sectional Perspective (Section AA')**



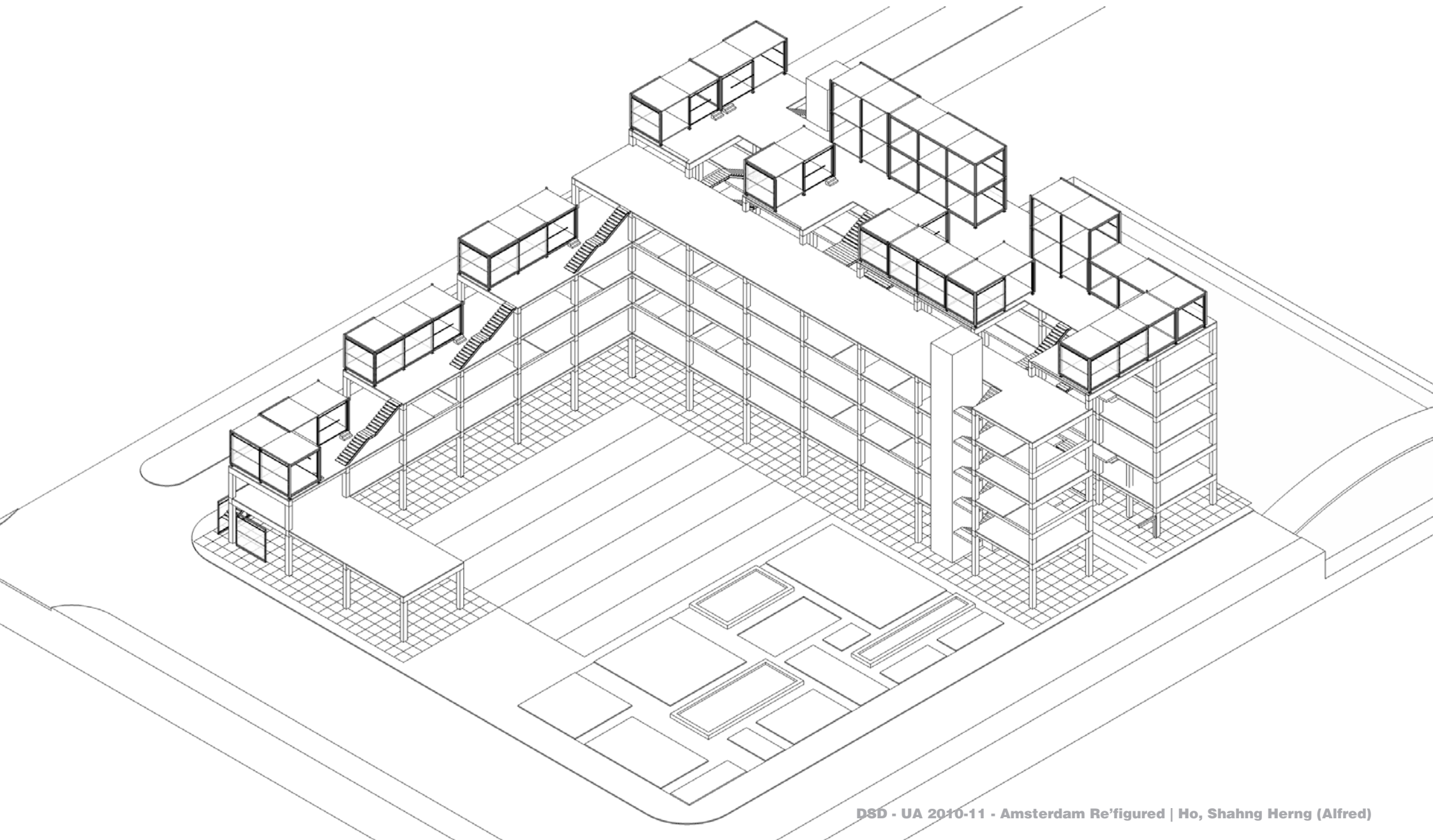
**Legends:**

- Short stay housing
- For rent and sale
- Luxurious Flats
- Galleries or Studios



Building Level

Structure



■■■■■ **Building Level**

**Structure - Precast Hollow-core Concrete Slabs with Columns and Beams**





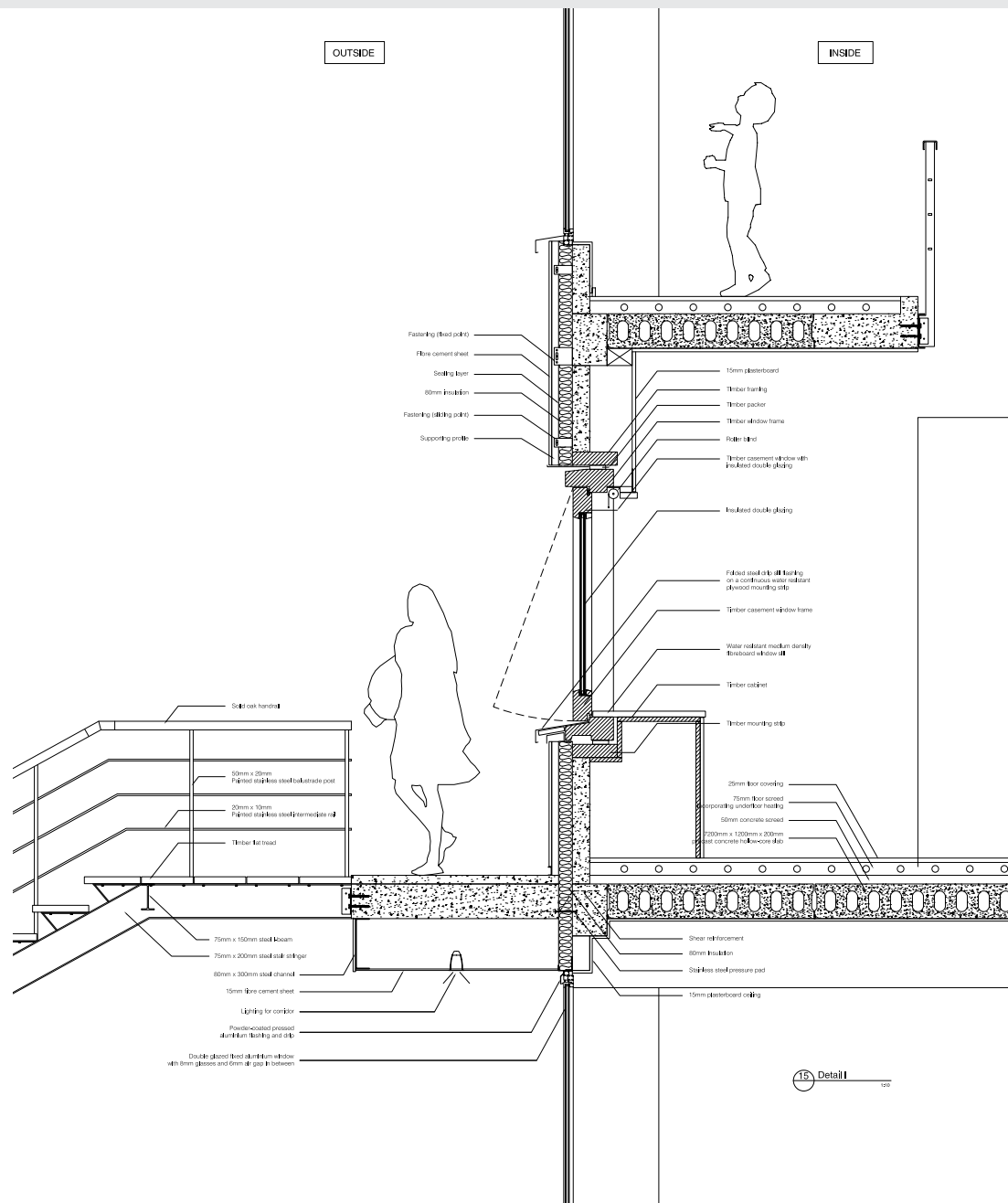








**Details**







Details

