

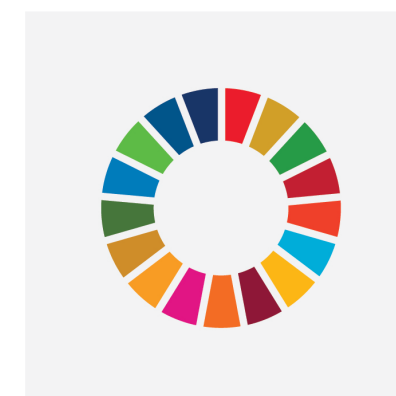
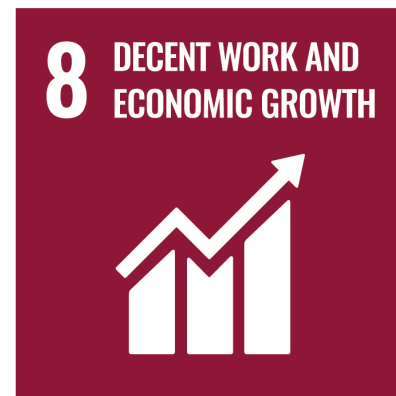
Designing Healthy Density

Tejon Tomas Kraan

5014050

*Under the supervision of
1st mentor Marjolein van Esch
2nd mentor Deepti Adlakha*

SUSTAINABLE DEVELOPMENT GOALS



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY



2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION




5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE, JUSTICE AND STRONG INSTITUTIONS



17 PARTNERSHIPS FOR THE GOALS







The paradox of urban density: sustainability versus health





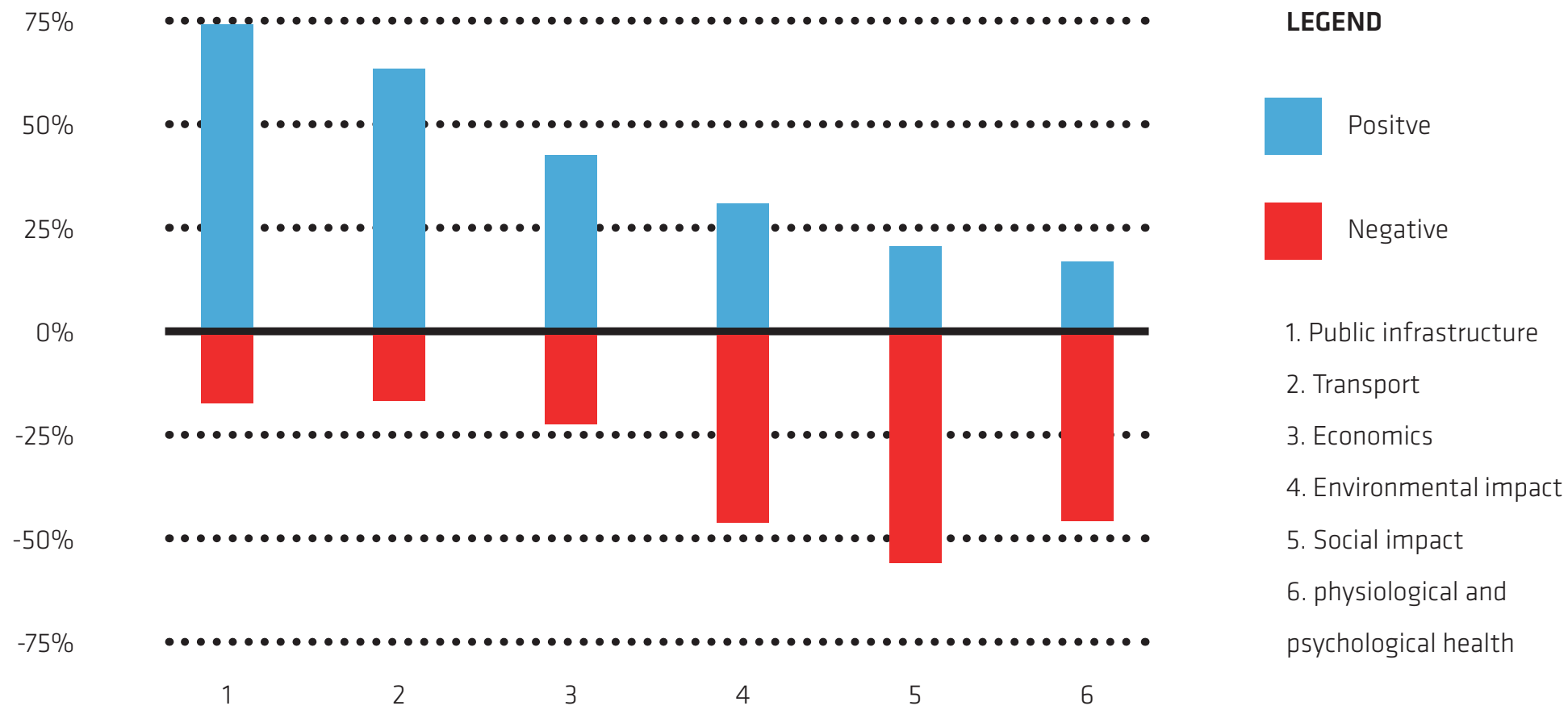
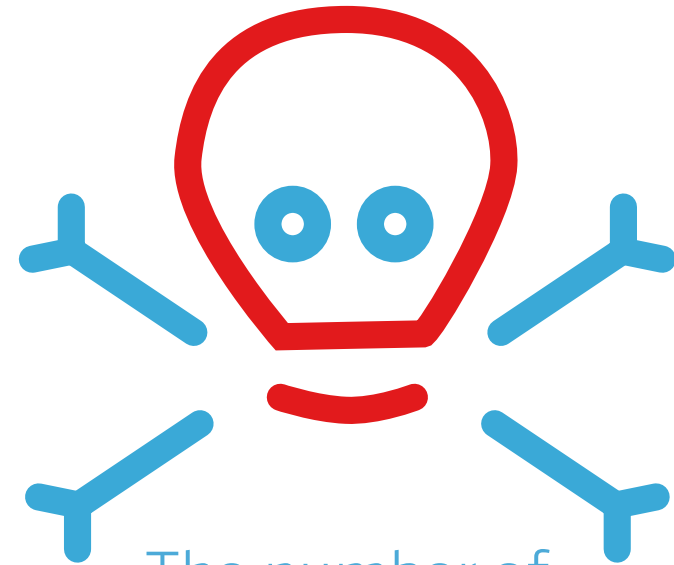


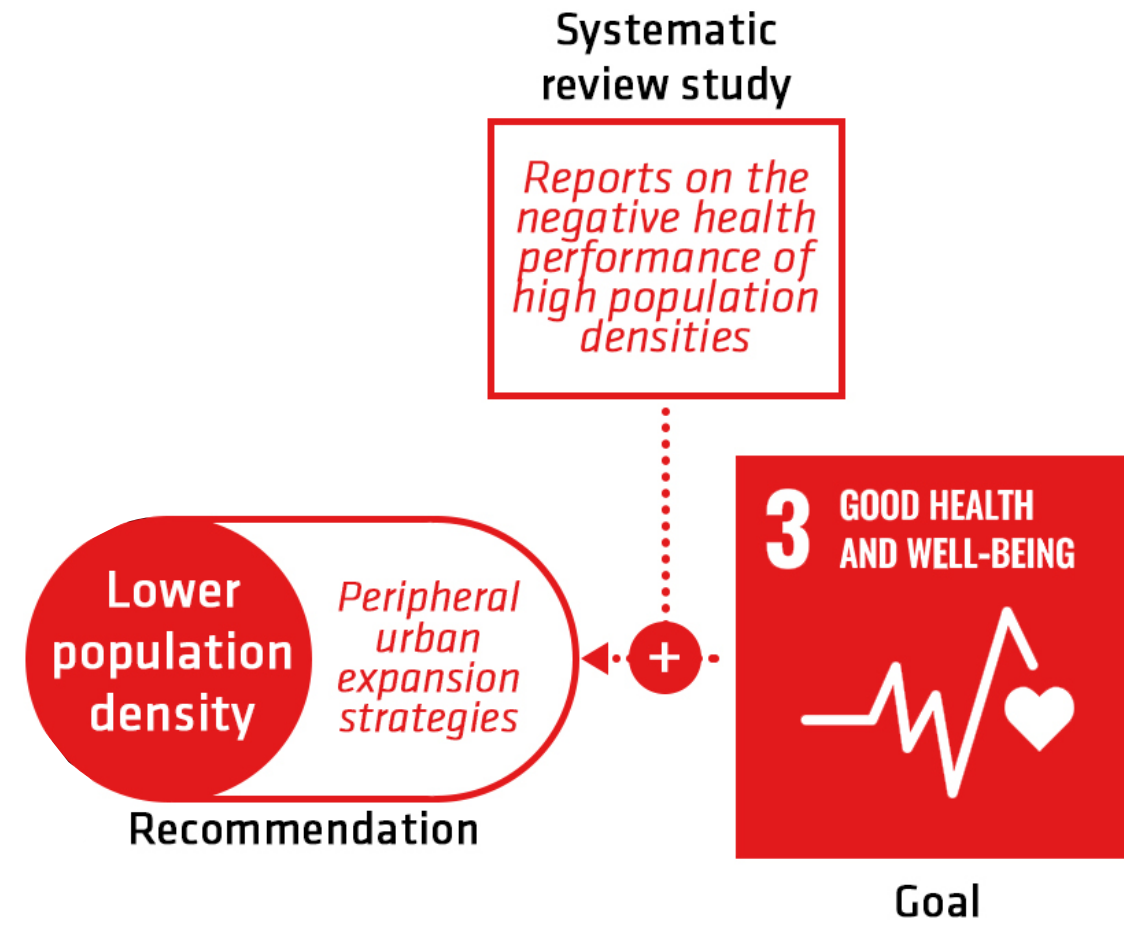
FIGURE A diagram showing the performance of high urban density. from Spacematrix. Space, Density and Urban Form (1st ed., p. 152), by Berghauer Pont & Haupt, 2021, nai010 publishers.

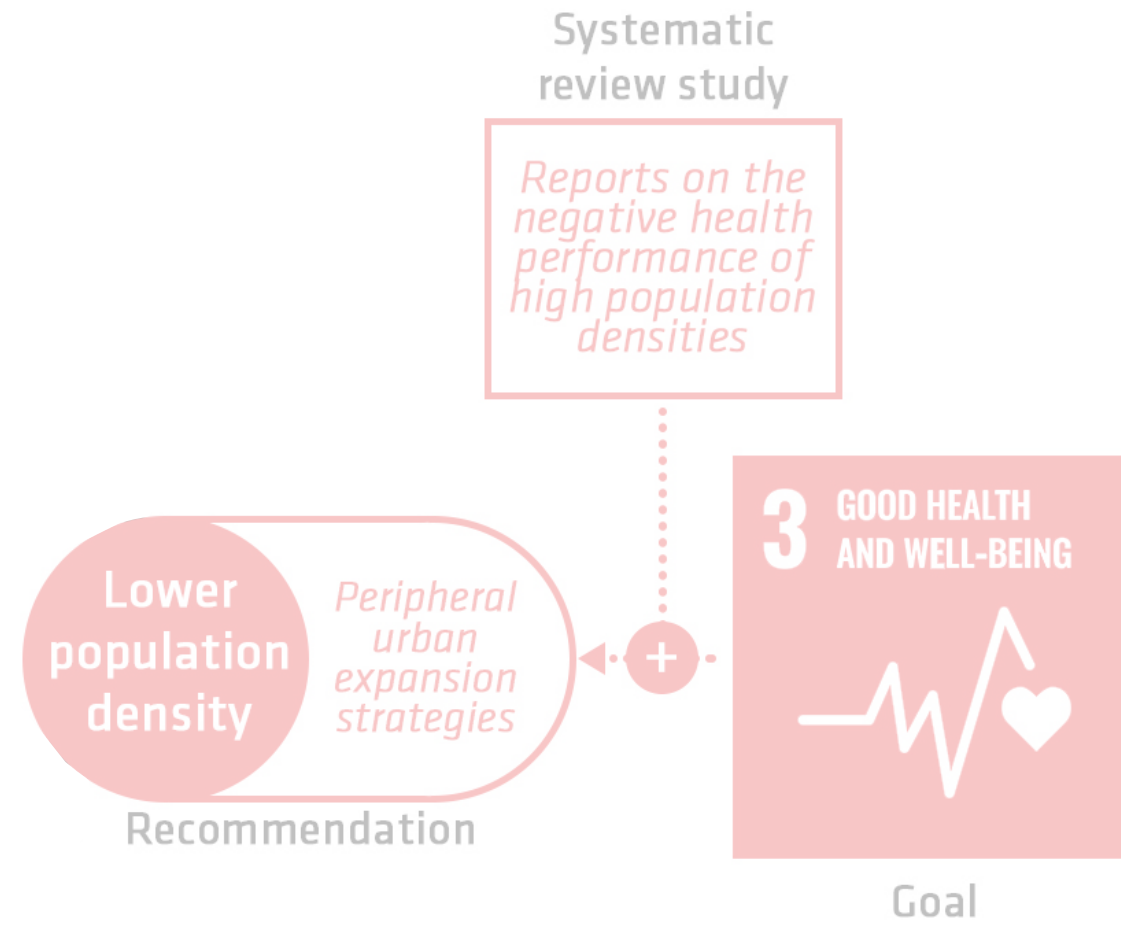


The number of
natural deaths
in densely populated
cities is **12% higher**
compared to less densely
populated cities.

(Lungman et al., 2014)







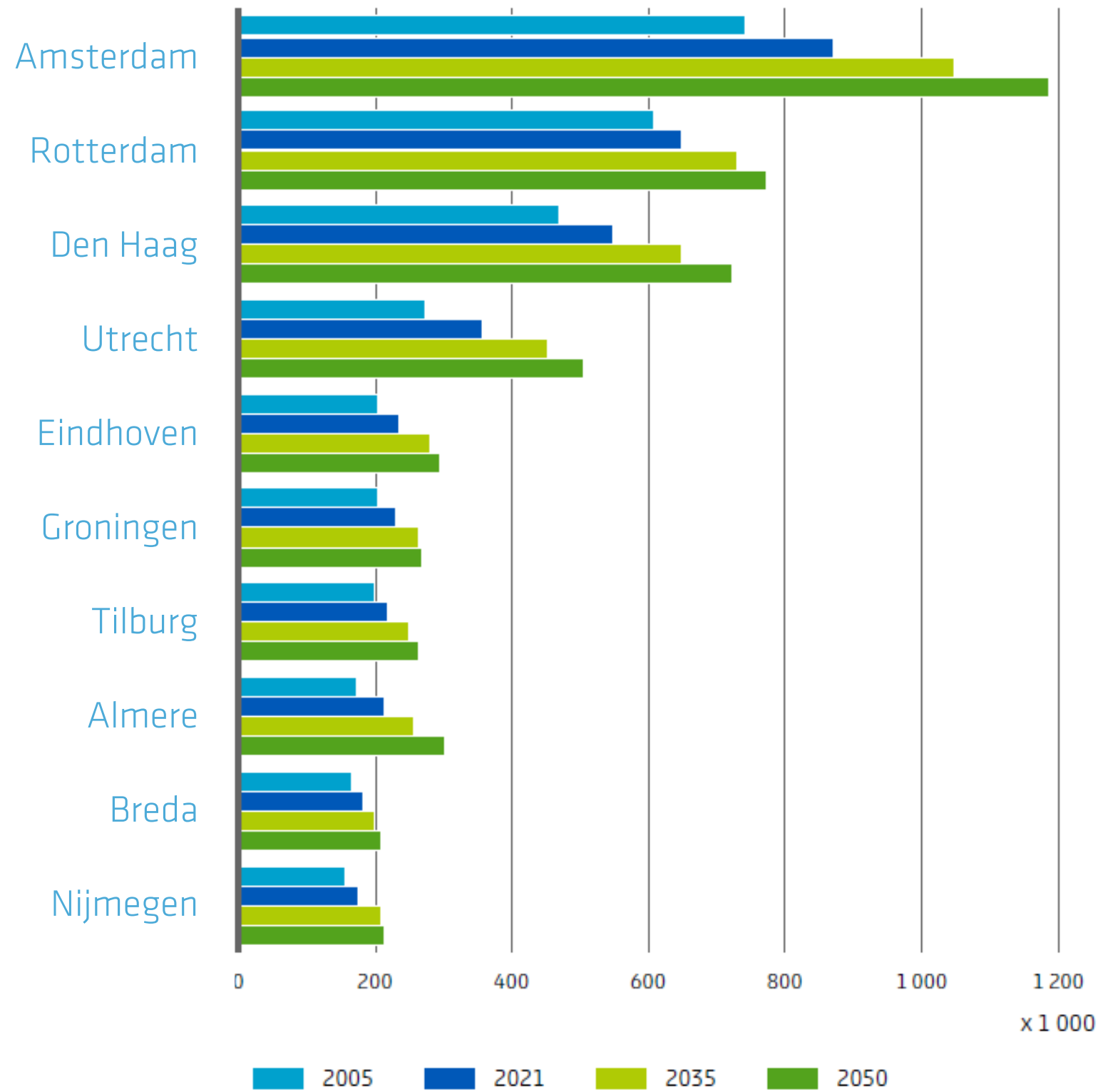
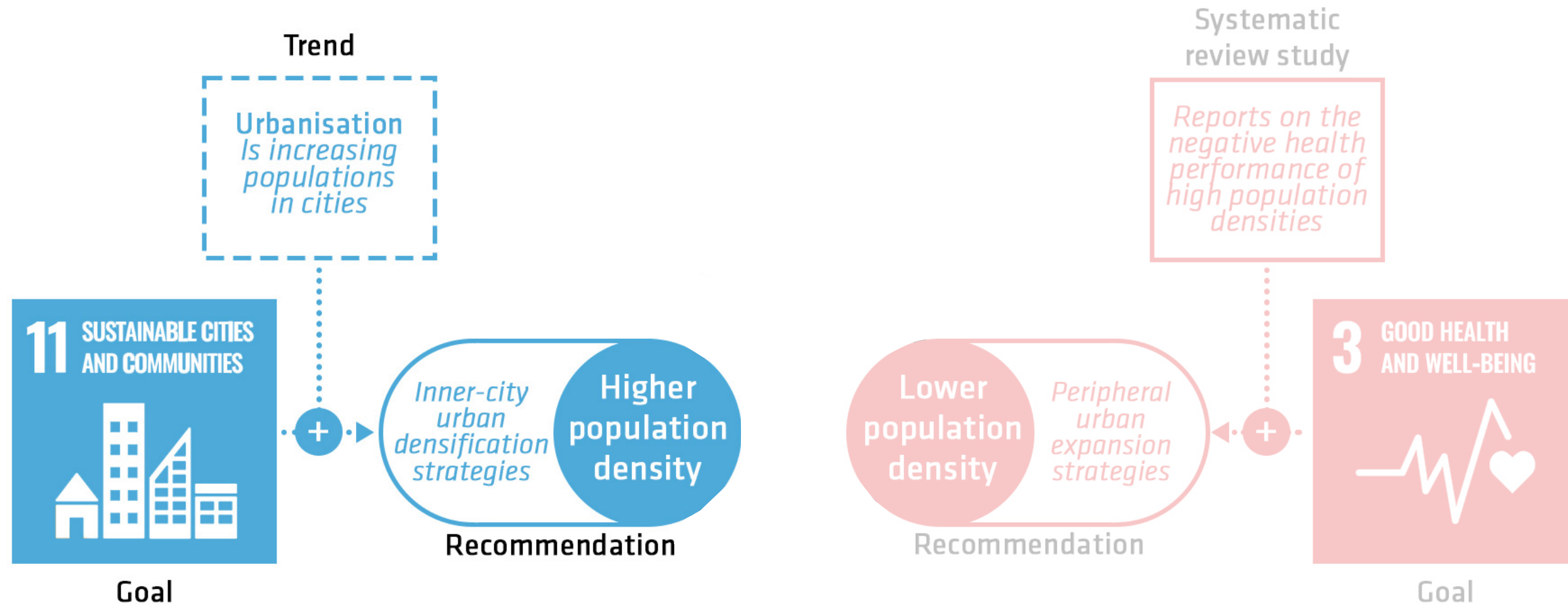
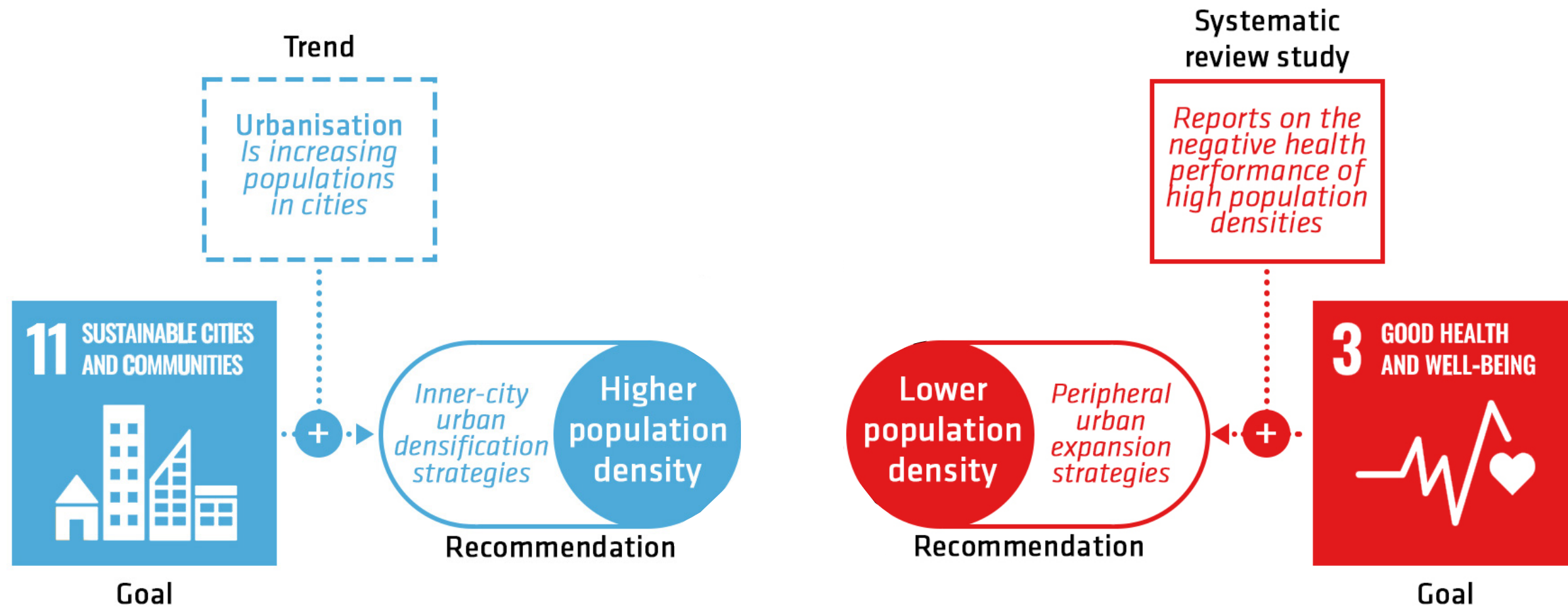
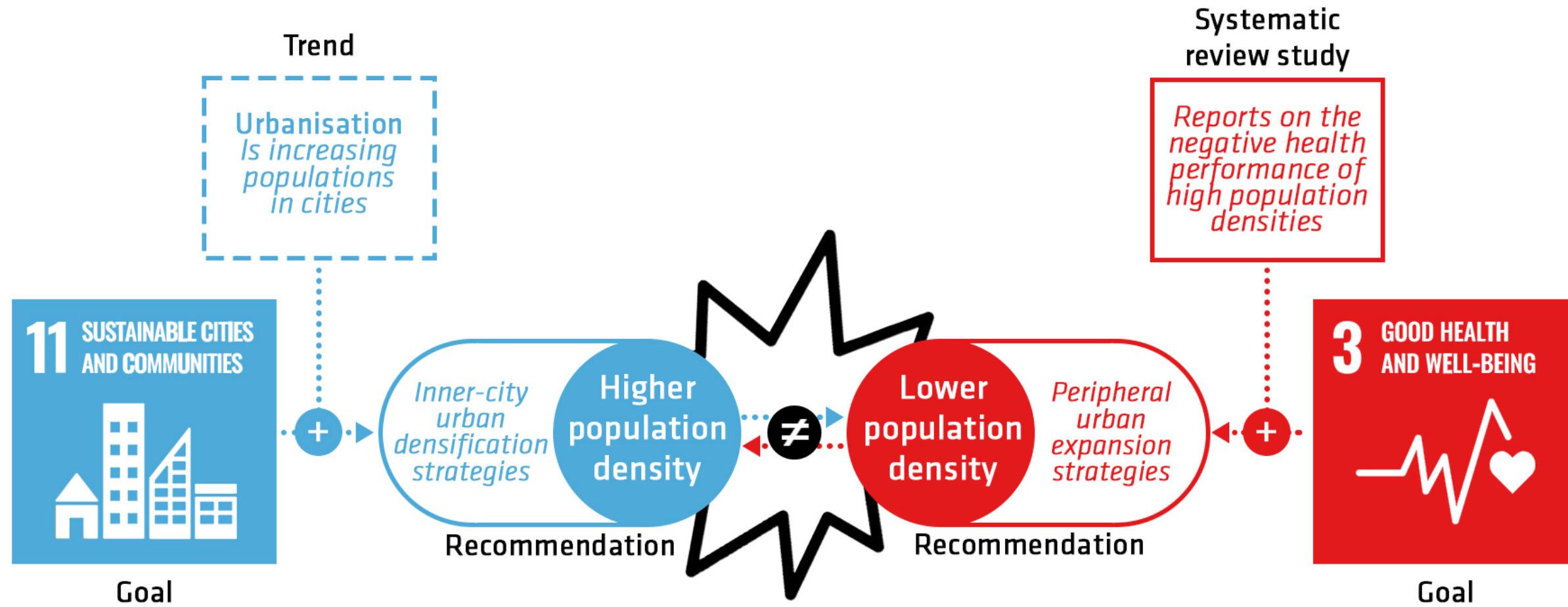


FIGURE A graph showing the predicted population growth in the ten largest cities of the Netherlands, from “PBL/CBS Regionale bevolkings- en huishoudensprognose 2022-2050, Steden en randgemeenten groeien verder”, by Planbureau van de leefomgeving, and Centraal Bureau voor de Statistiek, 2020







Health-Density paradox

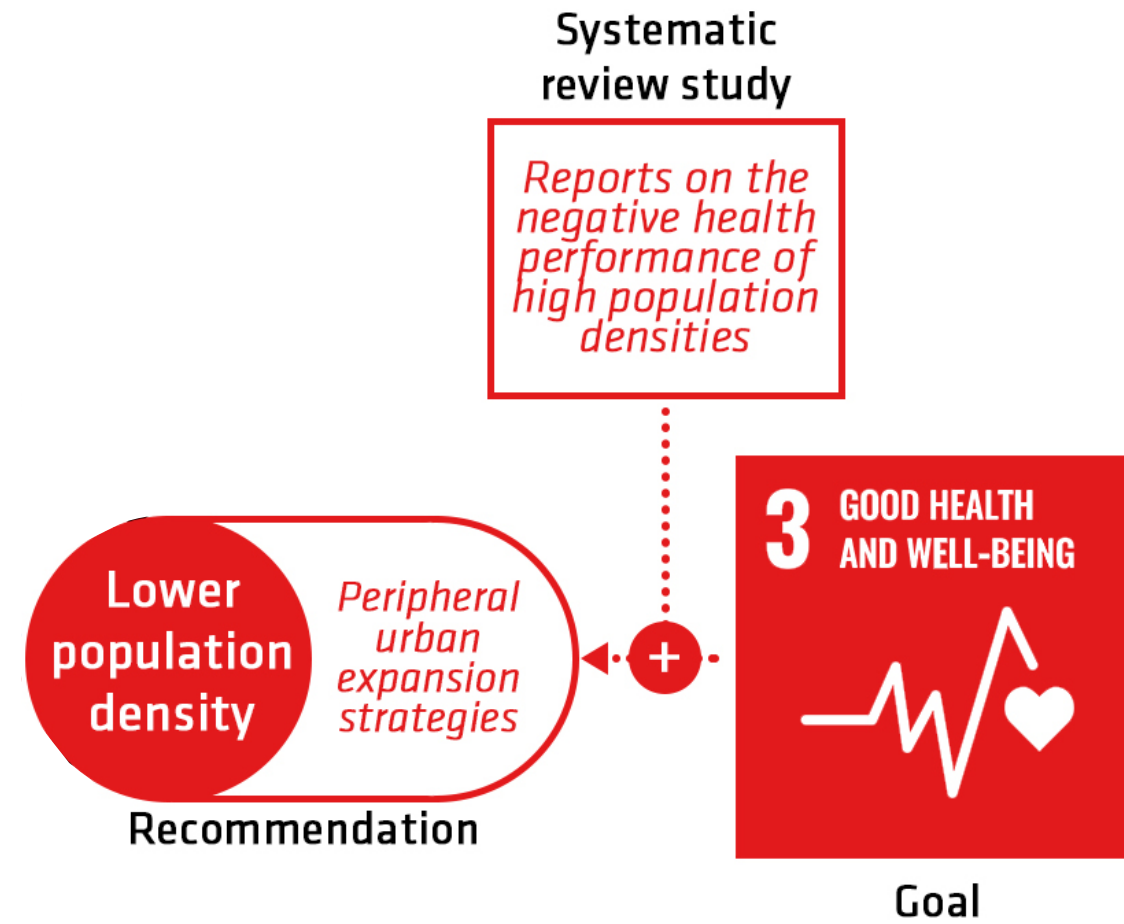
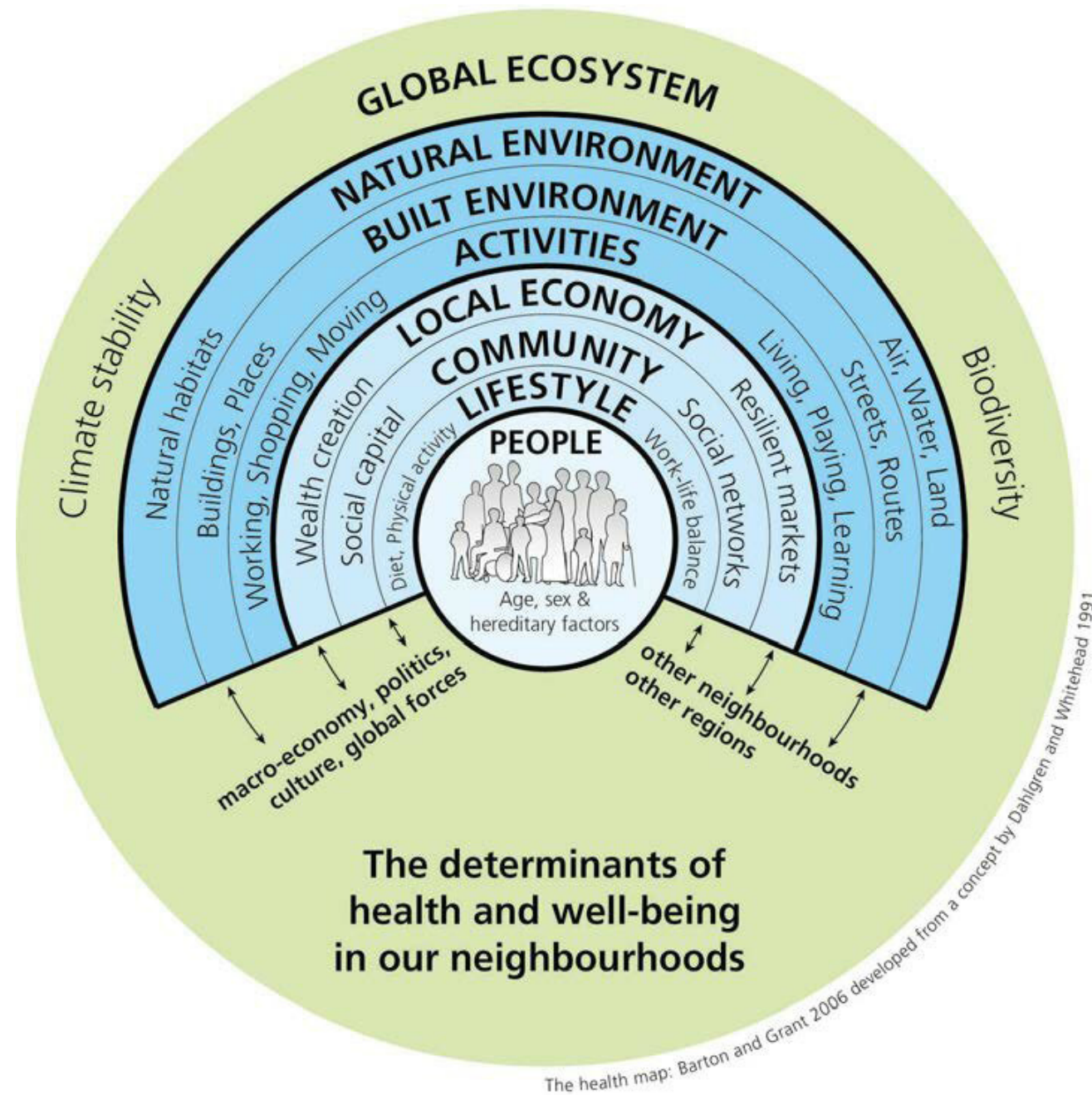


FIGURE A framework called the health map showing the eight determinants of health and well-being in our neighborhoods, by Barton and Grant, 2006.

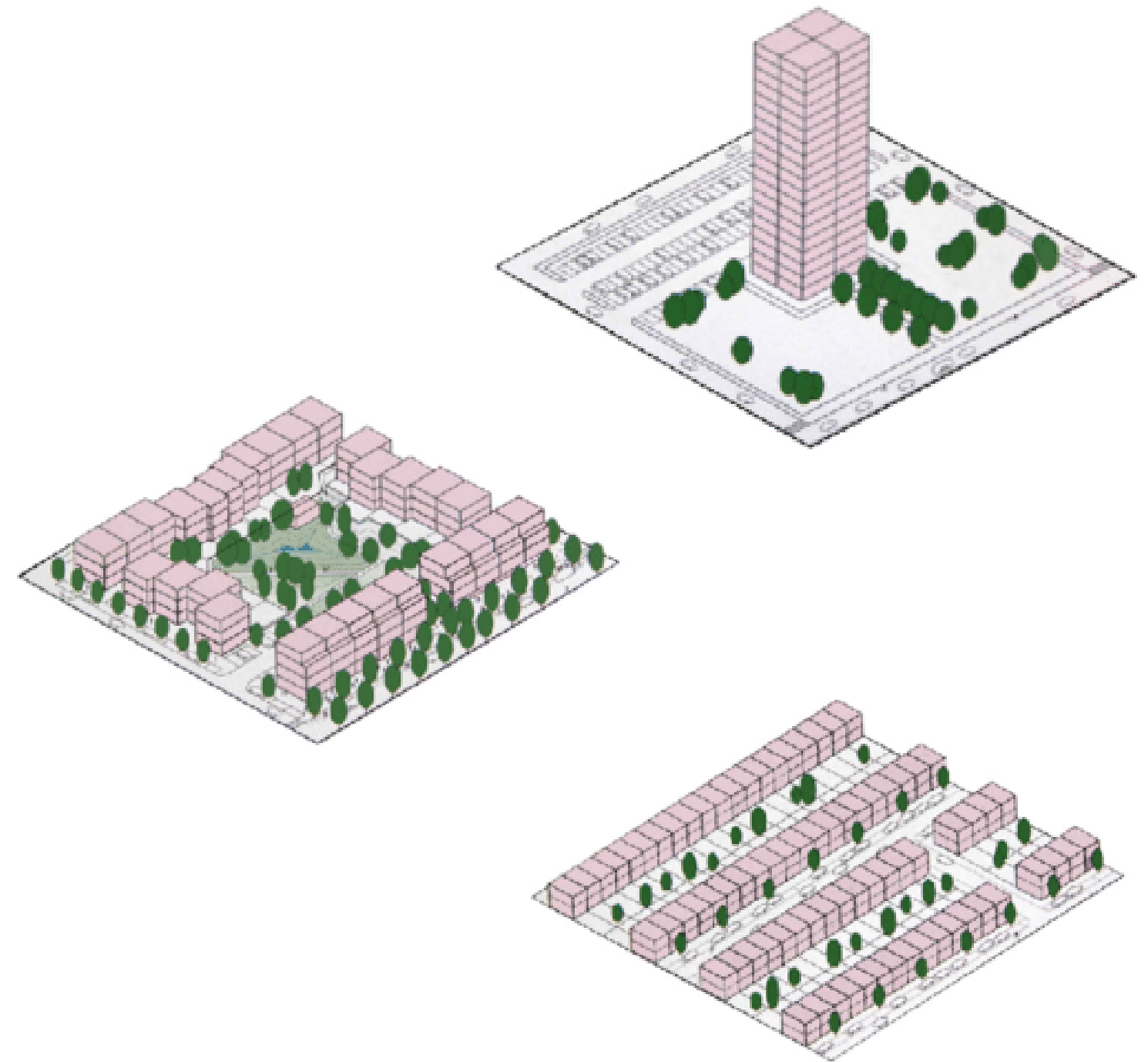
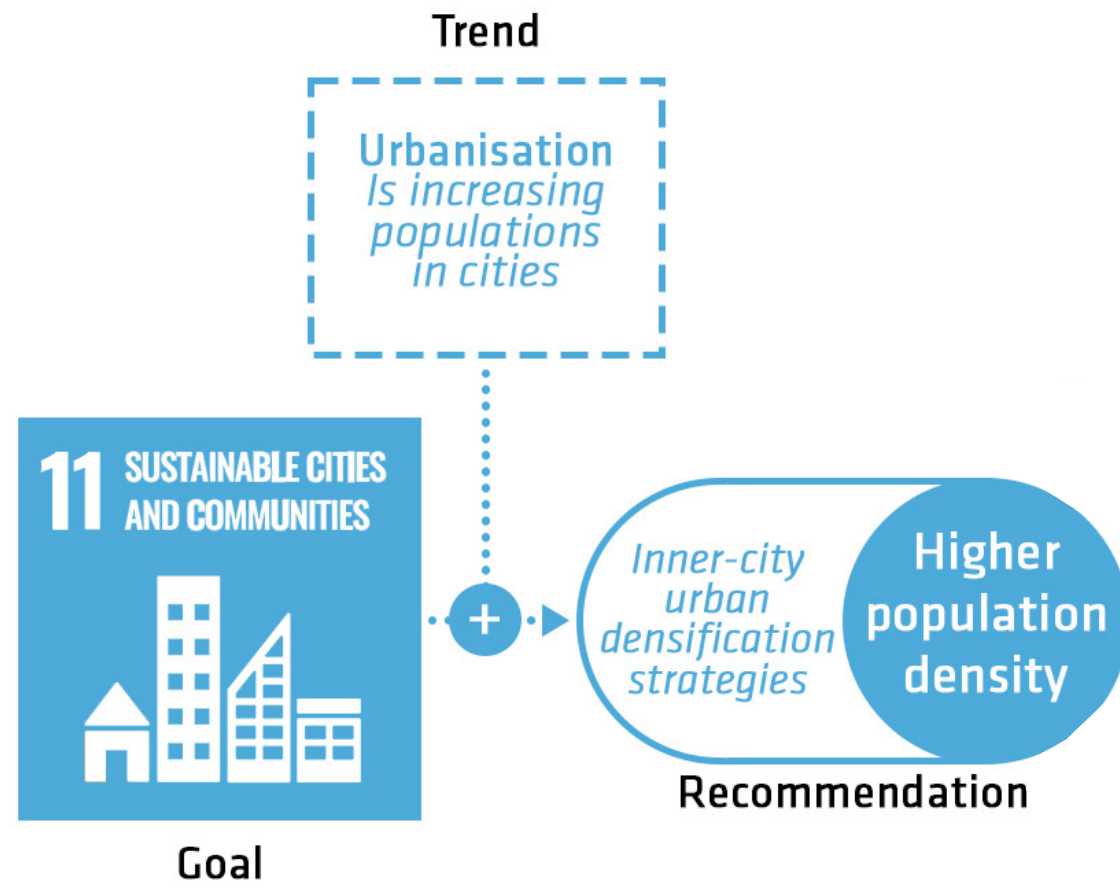
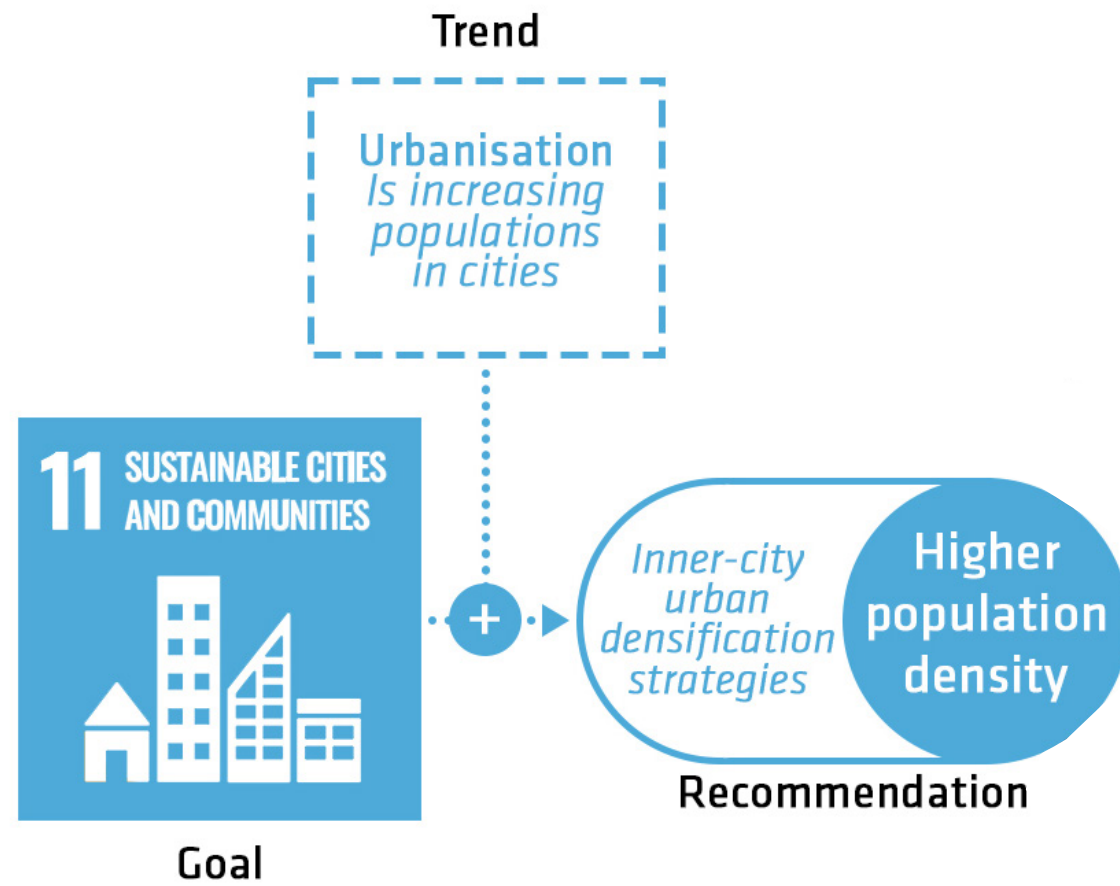


FIGURE A drawing illustrating the lack of relation between density and urban form when using conventional density measures. Three areas with 75 dwellings per hectare, by Fernandez Per & Mozas, 2004.



Descriptive urban density measures

Building intensity
Floor space index (FSI)

Compactness
Ground space index (GSI)

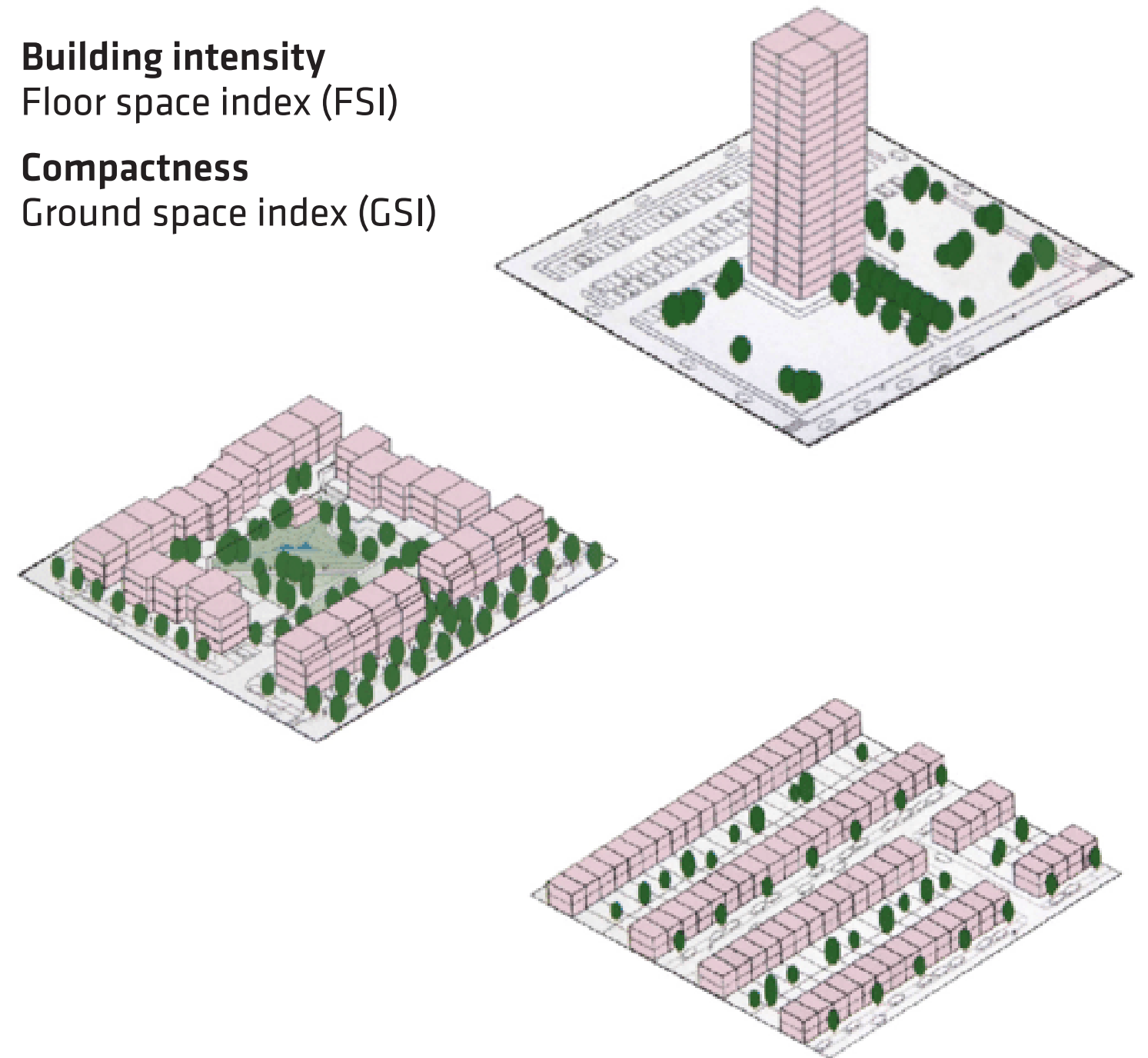
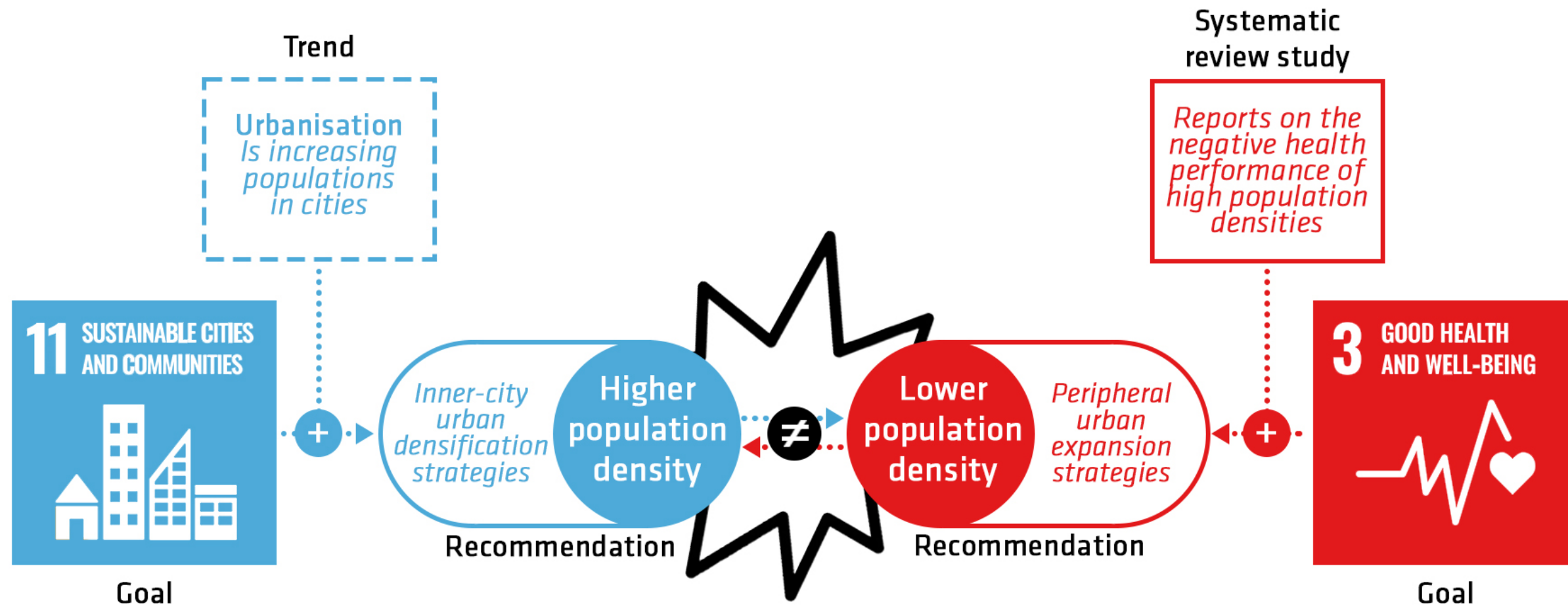
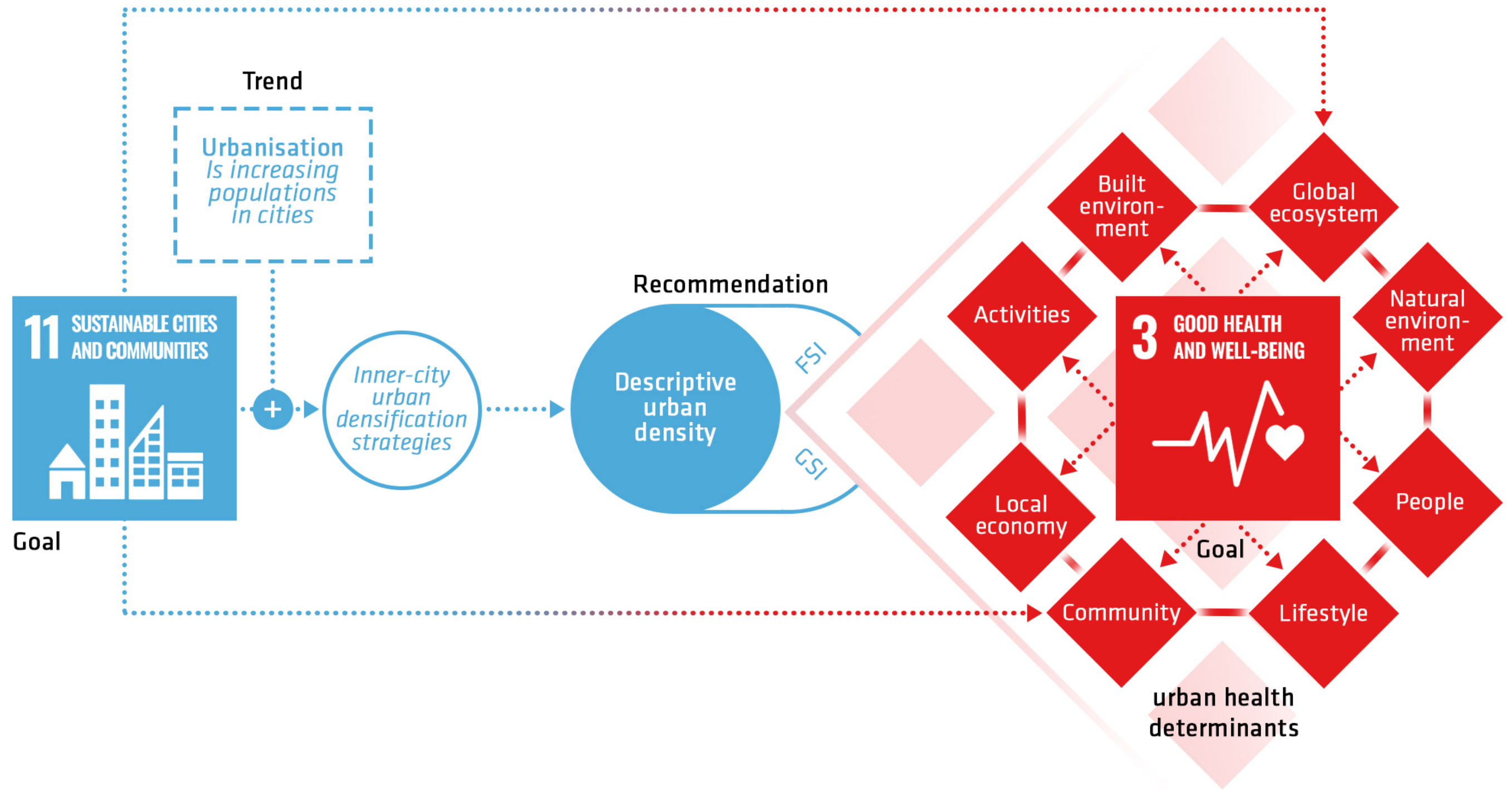


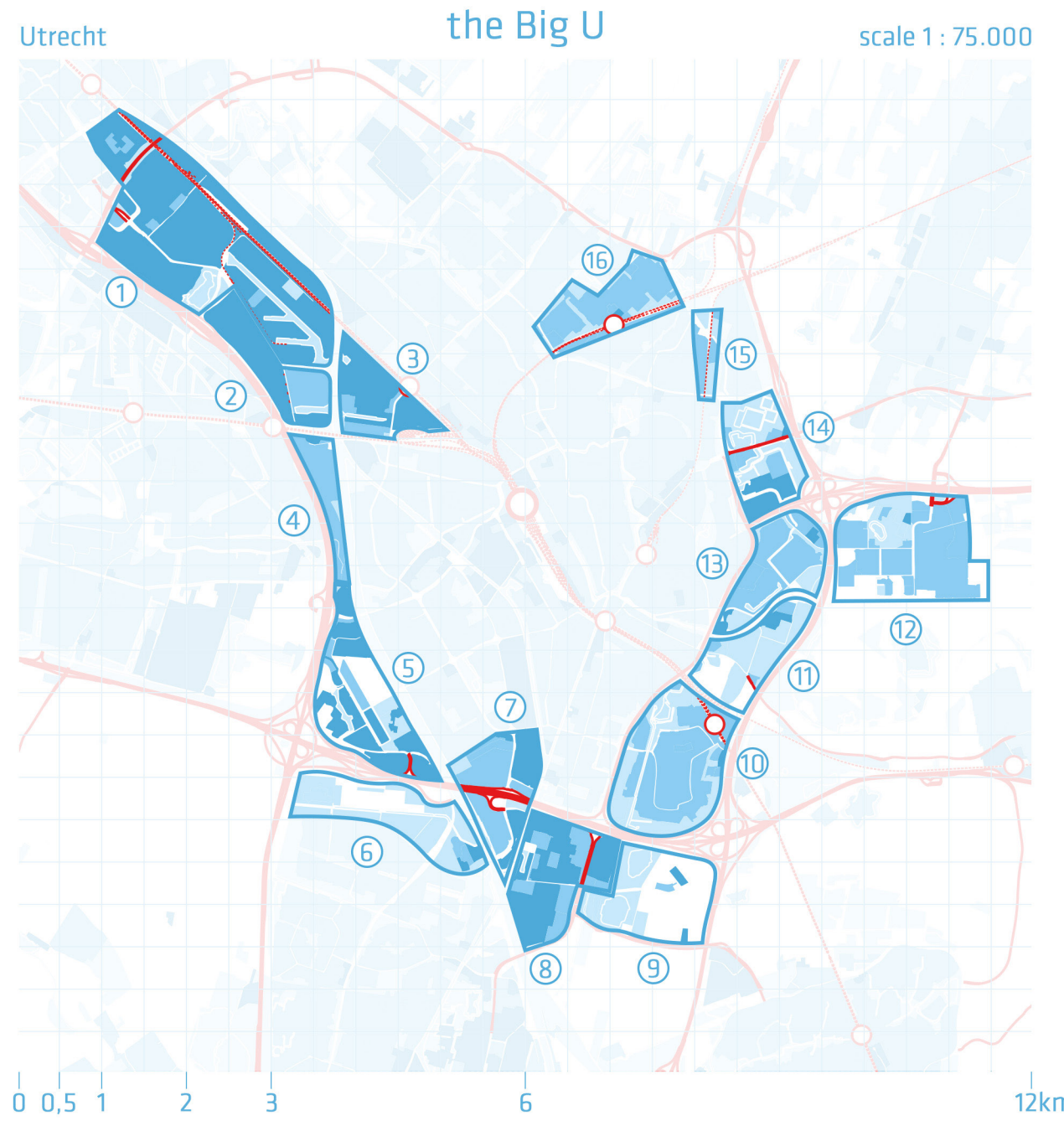
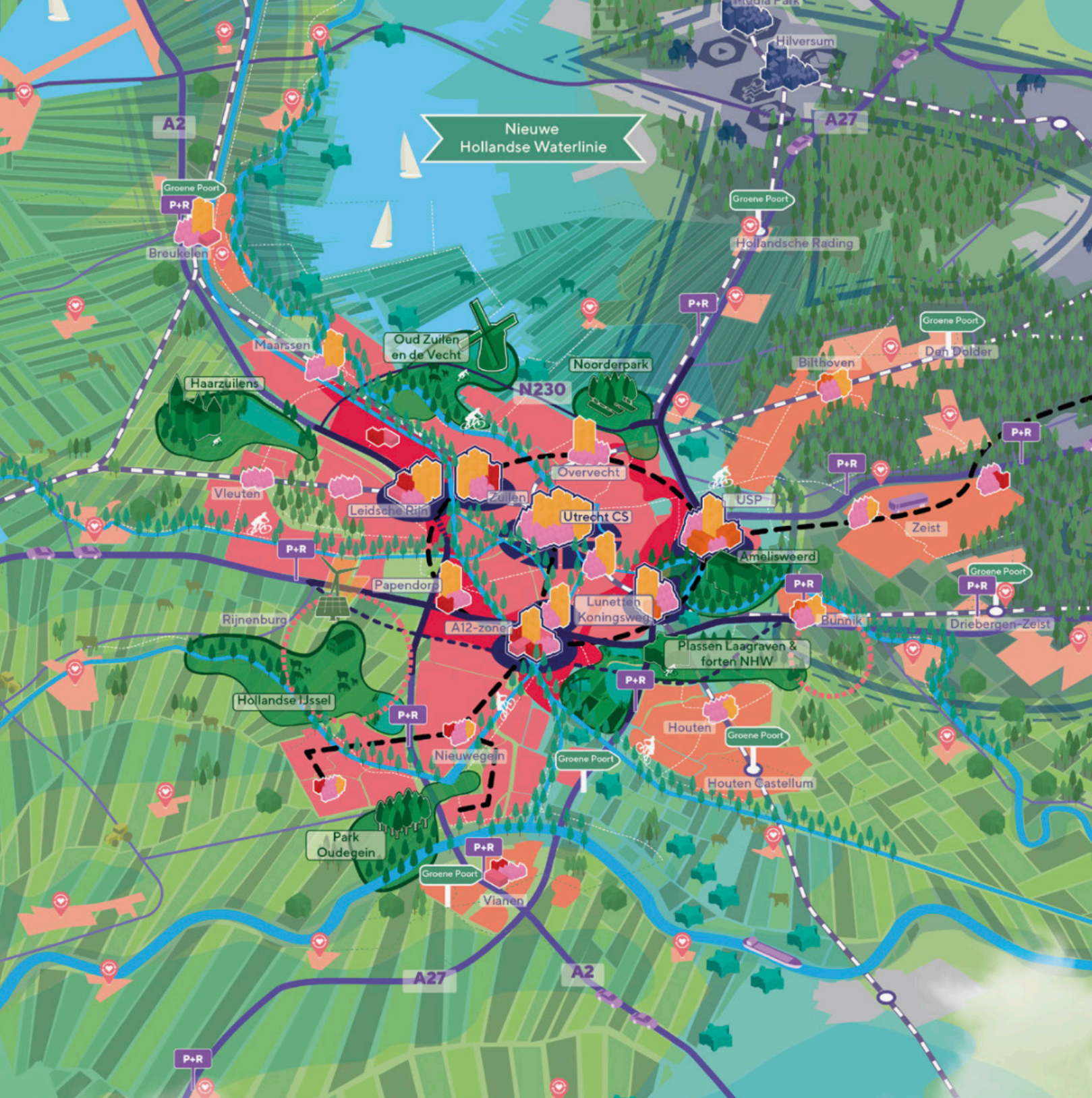
FIGURE A drawing illustrating the lack of relation between density and urban form when using conventional density measures. Three areas with 75 dwellings per hectare, by Fernandez Per & Mozas, 2004.





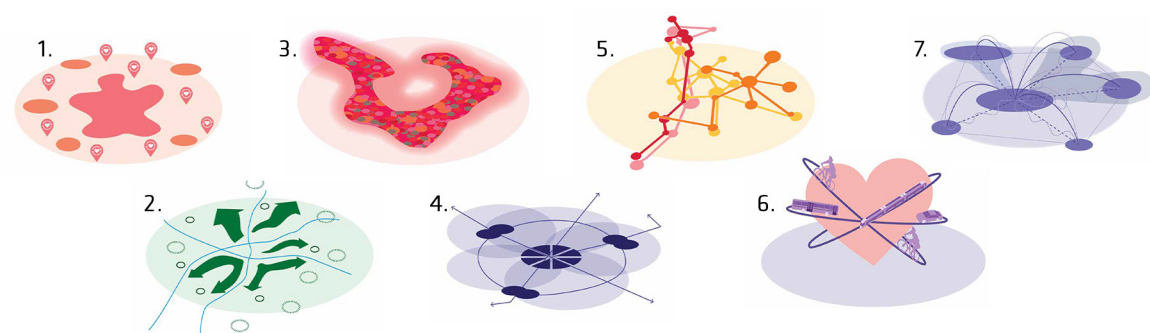


Health-Density nexus

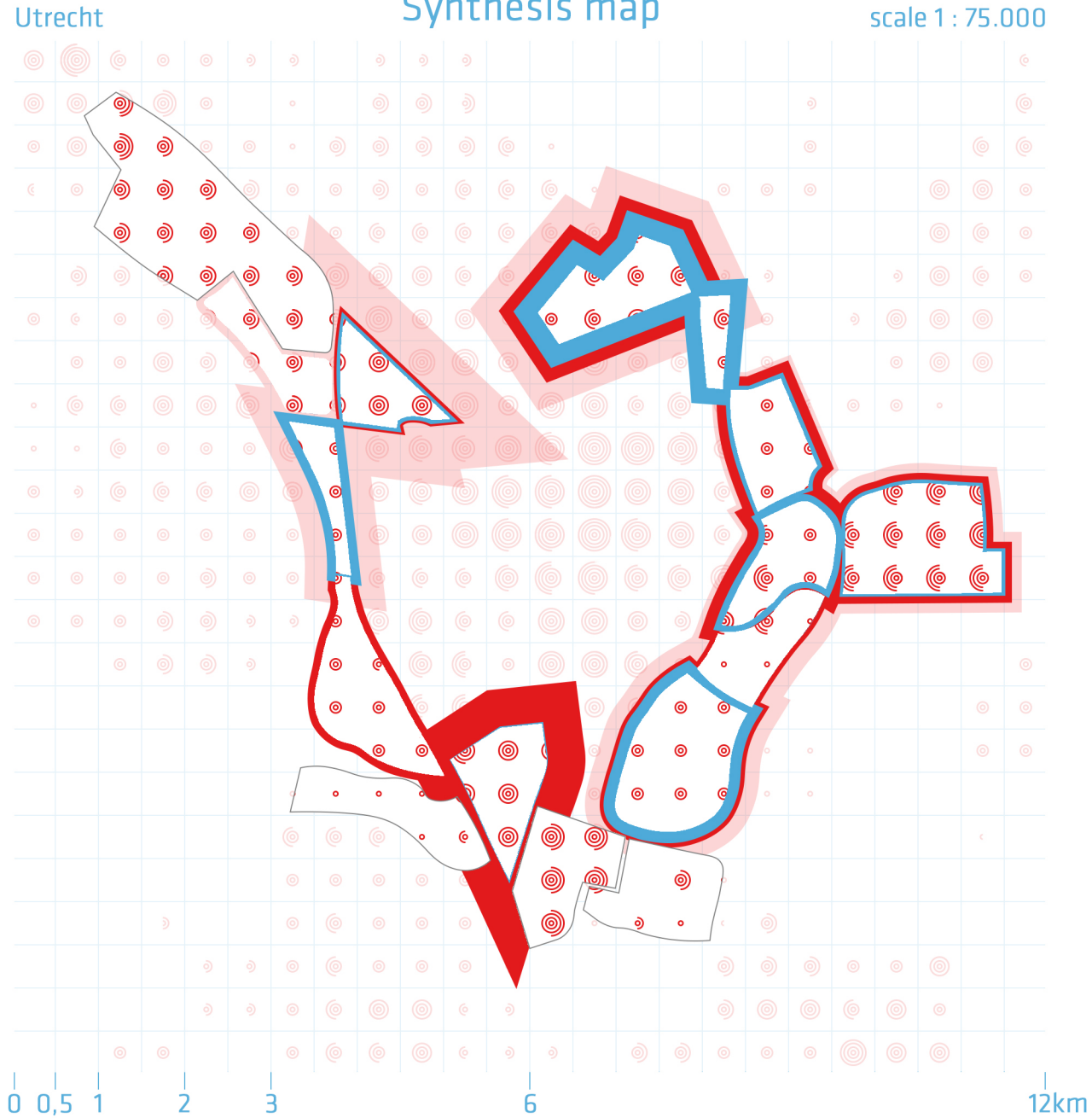


Legend

- | | | | |
|-------------------------|-------------------------|------------------------|-------------------------|
| ① Lage weide | ⑤ Papendorp | ⑨ Laaggravense plassen | ⑬ Rijnsweerd Zuid |
| ② 4e Kwadrant | ⑥ Galecopper zoom | ⑩ Lunetten | ⑭ Rijnsweerd Noord |
| ③ Werkspoort kwartier | ⑦ Westraven | ⑪ Maarschalkenweerd | ⑮ Zone museum-spoorlijn |
| ④ Leidsche Rijn centrum | ⑧ Liesbosch / Laagraven | ⑫ Utrecht Science Park | ⑯ Overvecht Zuid |



Urban Density Synthesis map

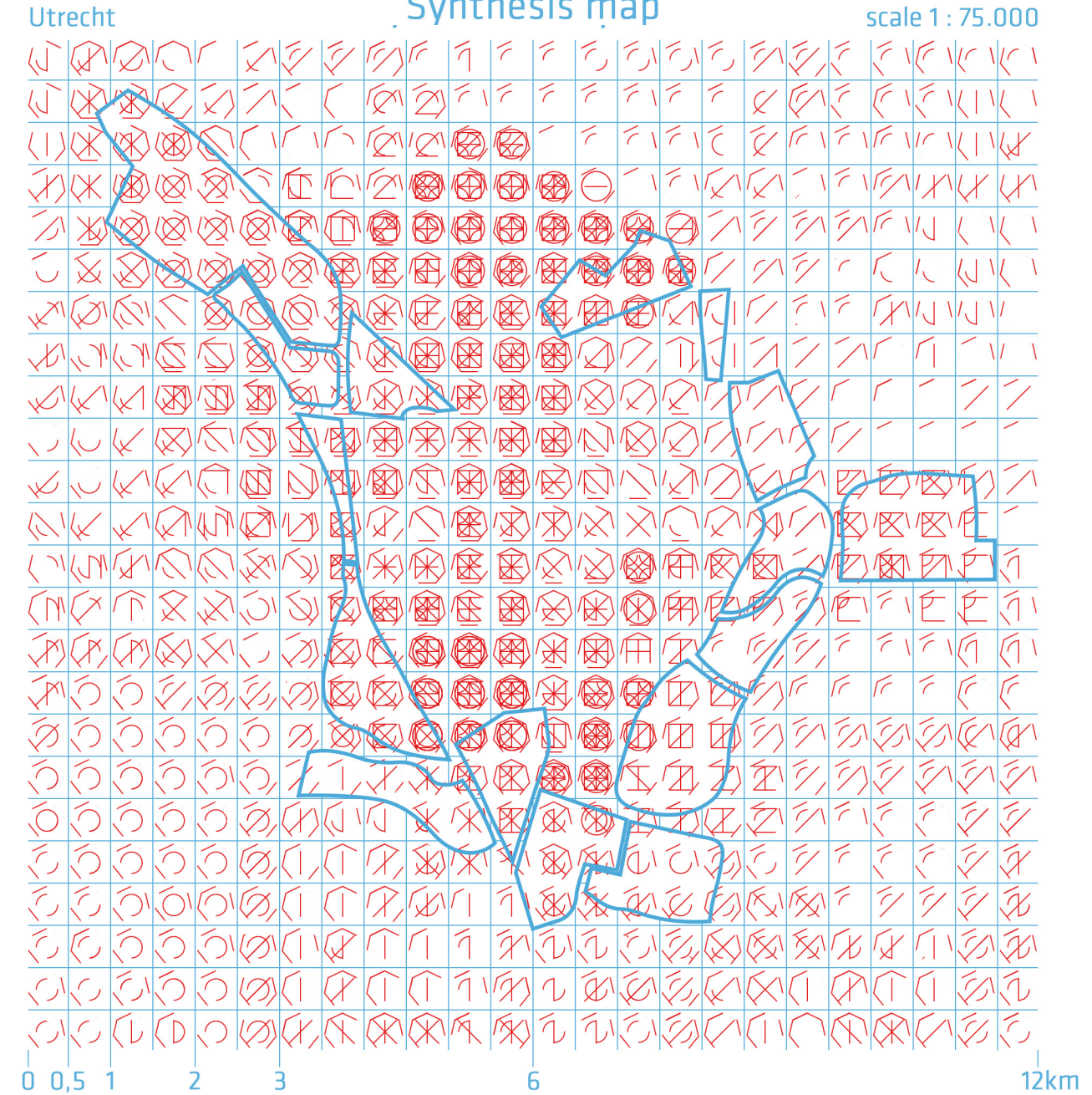


Legend

- No data
- Max. planned dwelling density by 2040
- Min. planned dwelling density by 2040
- Current dwelling density
- 15.000 Dwelling km²

	None			
	Very low			
	Low			
	Moderate			
	High			
	Very high			

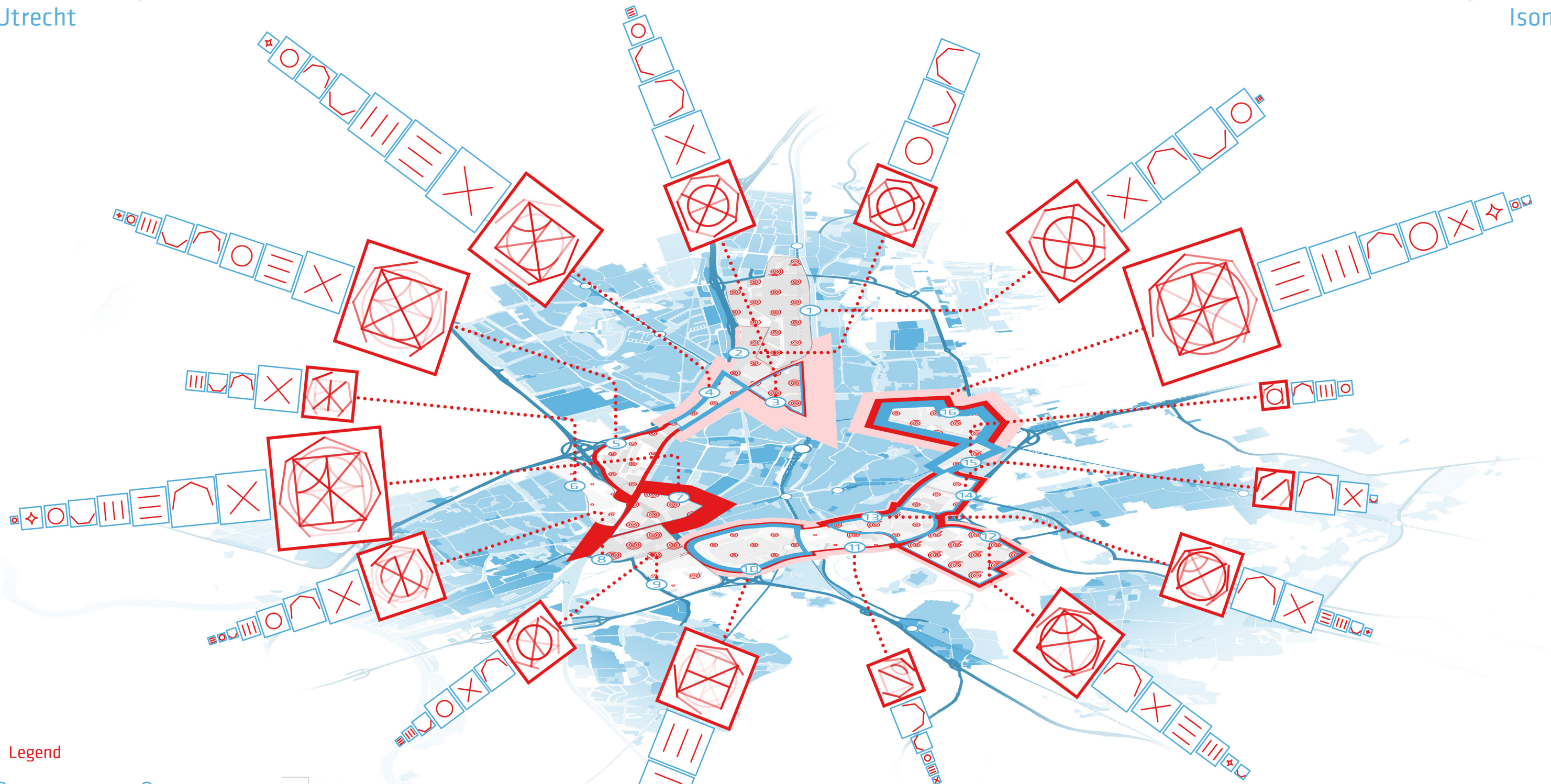
Urban Health Risks Synthesis map



Iconography Legend

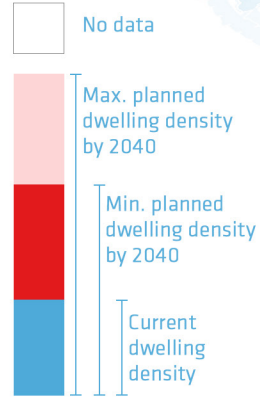
Urban health indicators based on the Health map (Barton and Grant, 2006).

Global ecosystem	Natural environment	Built environment	Activities	Local economy	Community	Lifestyle	People

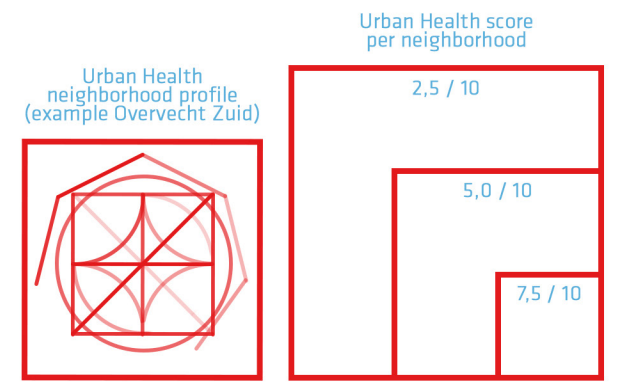
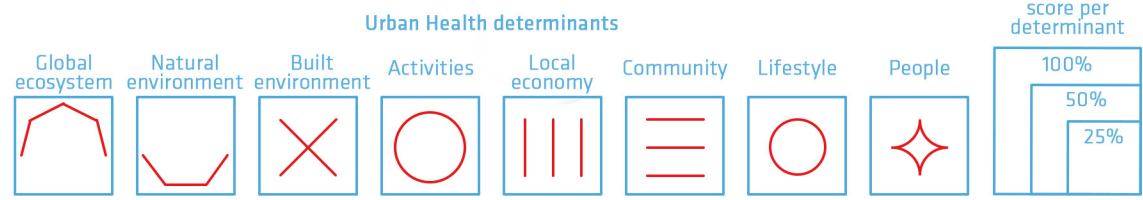


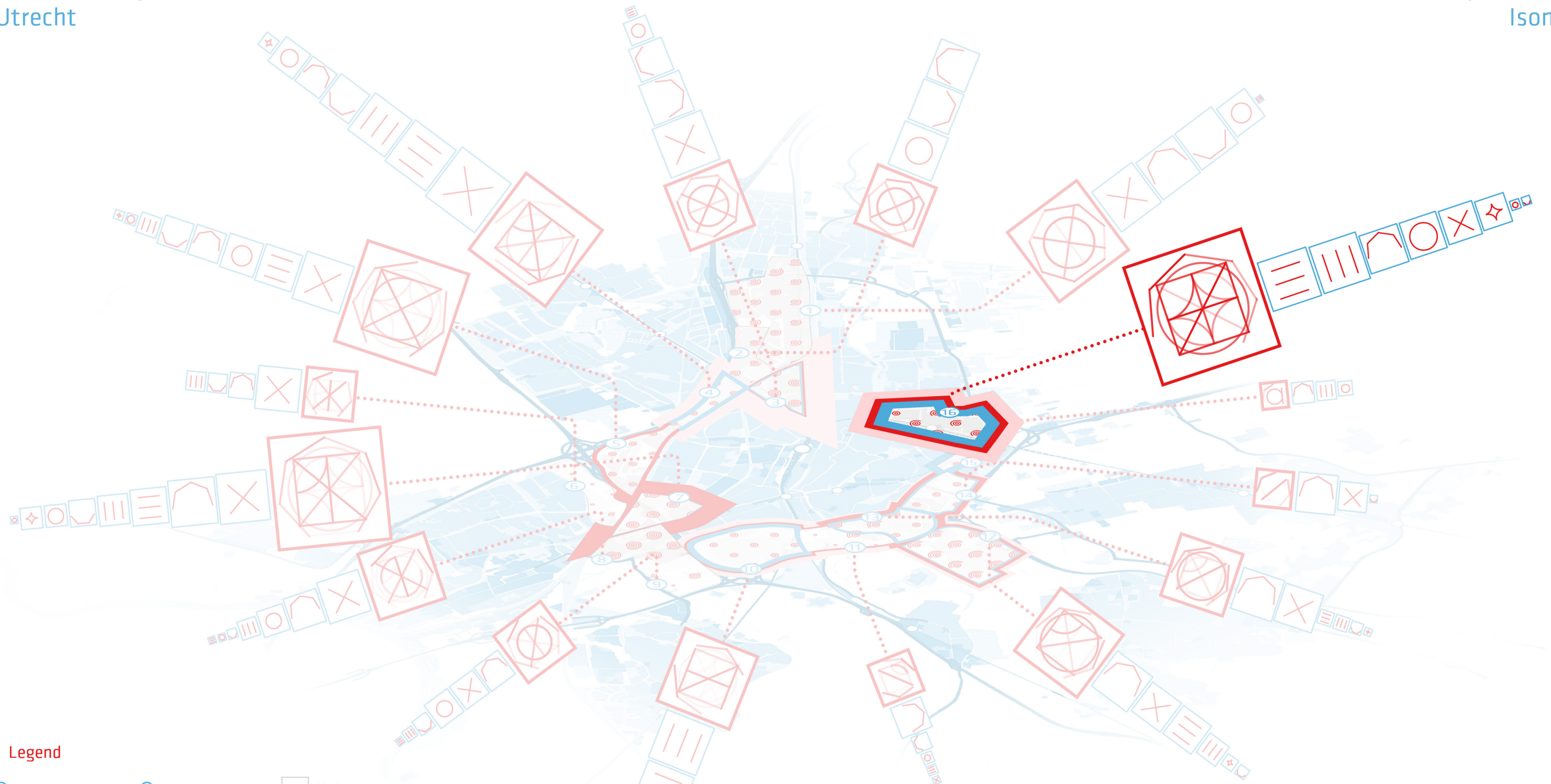
Legend

- | | |
|-------------------------|------------------------|
| ① Lage weide | ⑨ Laaggravense plassen |
| ② 4e Kwadrant | ⑩ Lunetten |
| ③ Werkspoor kwartier | ⑪ Maarschalkenwaard |
| ④ Leidsche Rijn centrum | ⑫ Utrecht Science Park |
| ⑤ Papendorp | ⑬ Rijnsweerd Zuid |
| ⑥ Galecopper zoom | ⑭ Rijnsweerd Noord |
| ⑦ Westraven | ⑮ Zone Museumspoorlijn |
| ⑧ Liesbosch / Laagraven | ⑯ Overvecht Zuid |



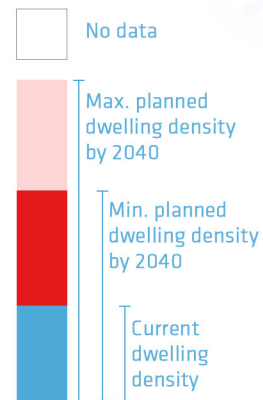
- | | |
|--|---------------|
| | Very high GSI |
| | High GSI |
| | Moderate GSI |
| | Low GSI |
| | Very low GSI |
| | Very low FSI |
| | Low FSI |
| | Moderate FSI |
| | High FSI |
| | Very high FSI |





Legend

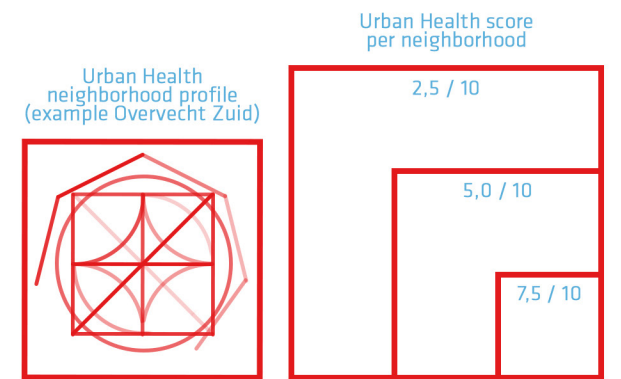
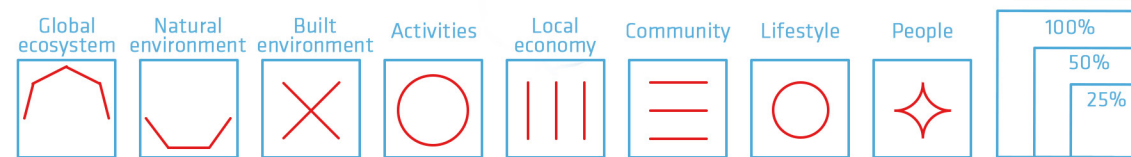
- | | |
|-------------------------|------------------------|
| ① Lage weide | ⑨ Laaggravense plassen |
| ② 4e Kwadrant | ⑩ Lunetten |
| ③ Werkspoor kwartier | ⑪ Maarschalkenweerd |
| ④ Leidsche Rijn centrum | ⑫ Utrecht Science Park |
| ⑤ Papendorp | ⑬ Rijnsweerd Zuid |
| ⑥ Galecopper zoom | ⑭ Rijnsweerd Noord |
| ⑦ Westraven | ⑮ Zone Museumspoorlijn |
| ⑧ Liesbosch / Laagraven | ⑯ Overvecht Zuid |



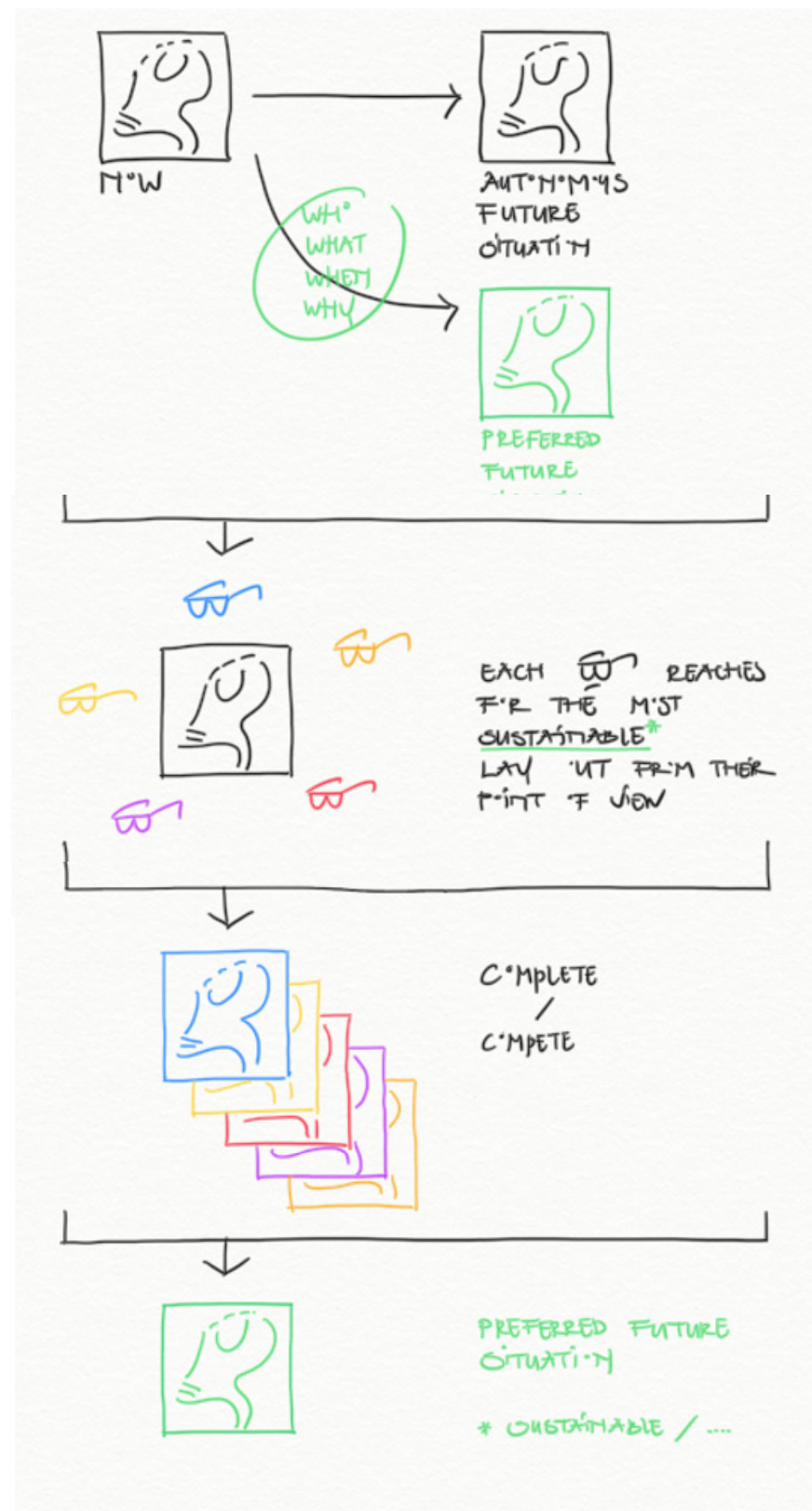
- Very high GSI
- High GSI
- Moderate GSI
- Low GSI
- Very low GSI
- Very low FSI
- Low FSI
- Moderate FSI
- High FSI
- Very high FSI



Urban Health determinants



How could the Health-Density paradox be converted into a Health-Density nexus in the urban densification strategy for Overvecht Zuid, Utrecht?



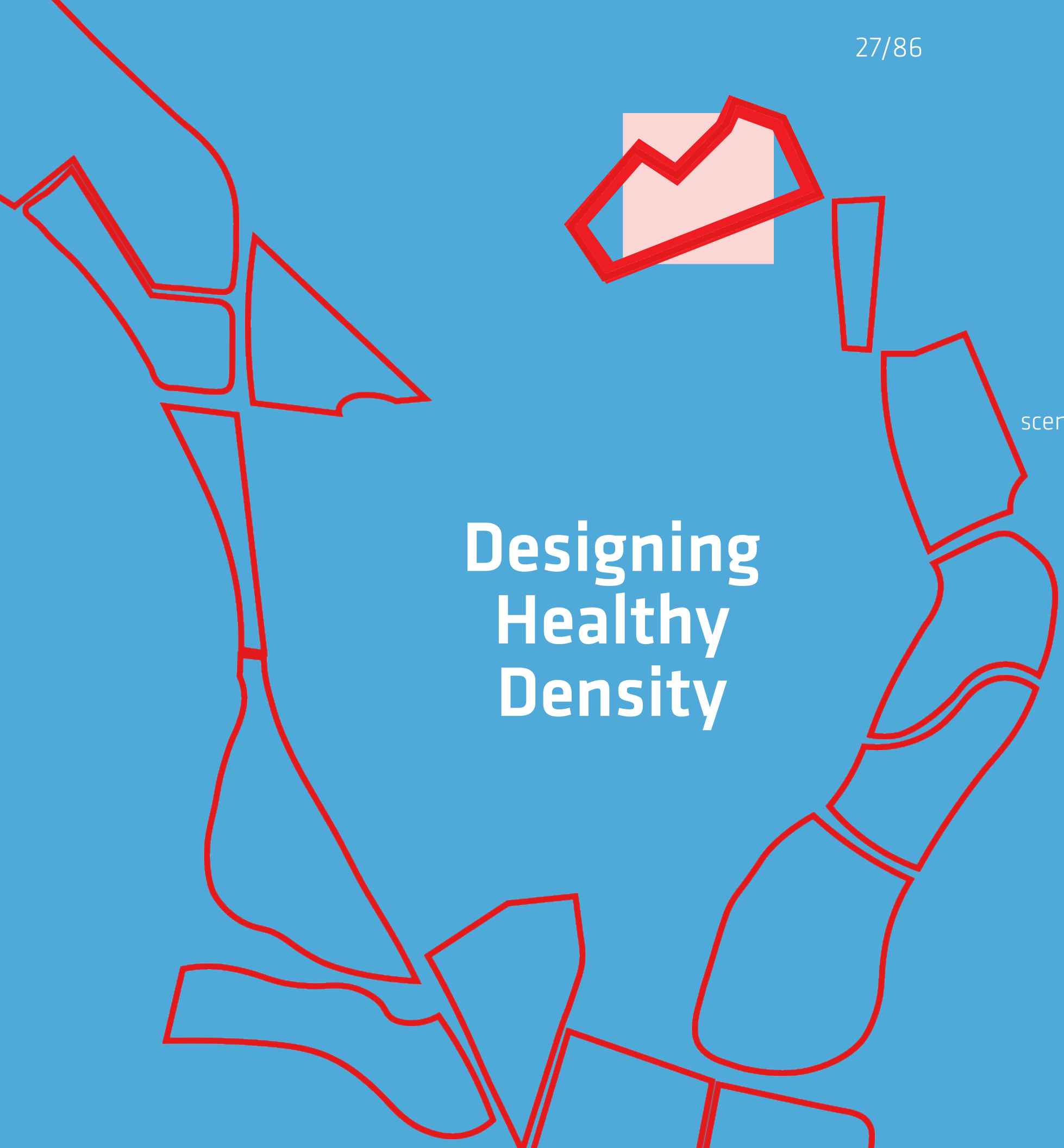
1. Analysis

2. Maximisation

3. Optimisation

4. Integration

FIGURE An drawing presenting the four steps of the maximisation method, by Kristel Aalbers, 2024.



Designing Healthy Density

Spatial analysis
understanding Overvecht Zuid

Maximisation
scenarios of healthy urban densification

Optimisation
complete / complete

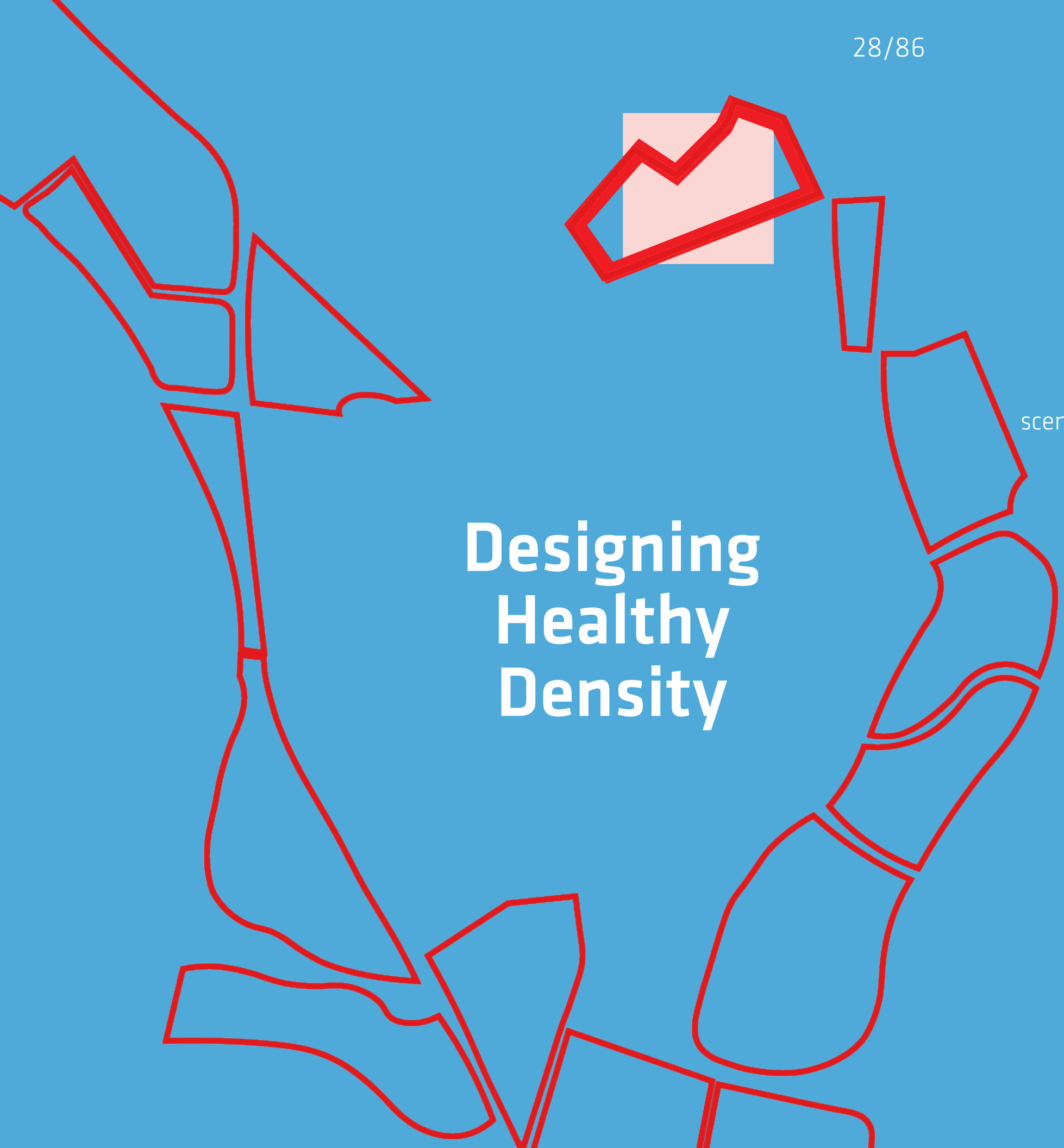
Integration
urban design

1

2

3

4



Designing Healthy Density

Spatial analysis
understanding Overvecht Zuid

Maximisation
scenarios of healthy urban densification

Optimisation
complete / complete

Integration
urban design

Conclusion

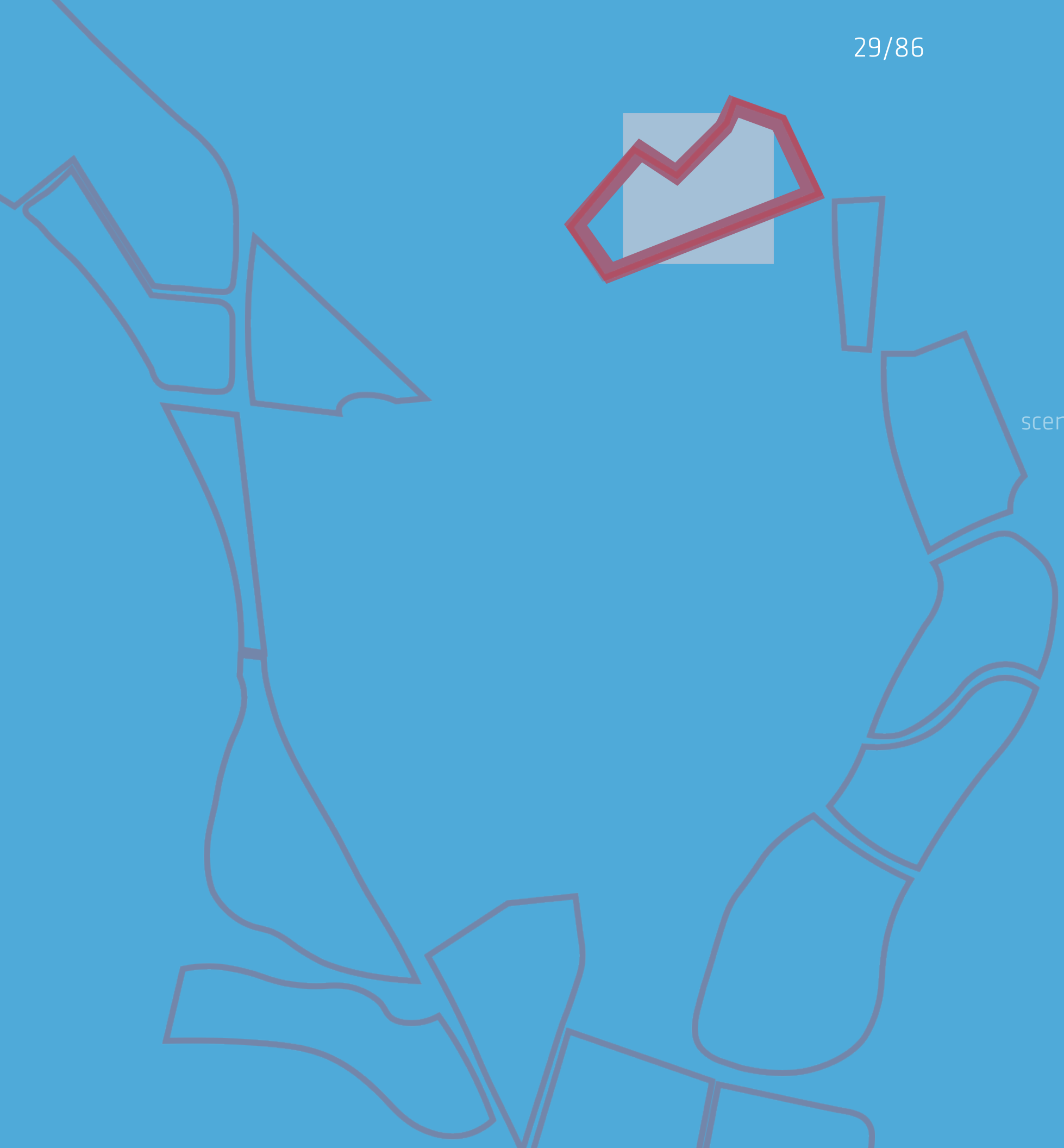
1

2

3

4

5



Spatial analysis

understanding Overvecht Zuid

1

Maximisation

scenarios of healthy urban densification

2

Optimisation

complete / complete

3

Integration

urban design

4

Conclusion

5

1. Analysis

Original conceptualisation

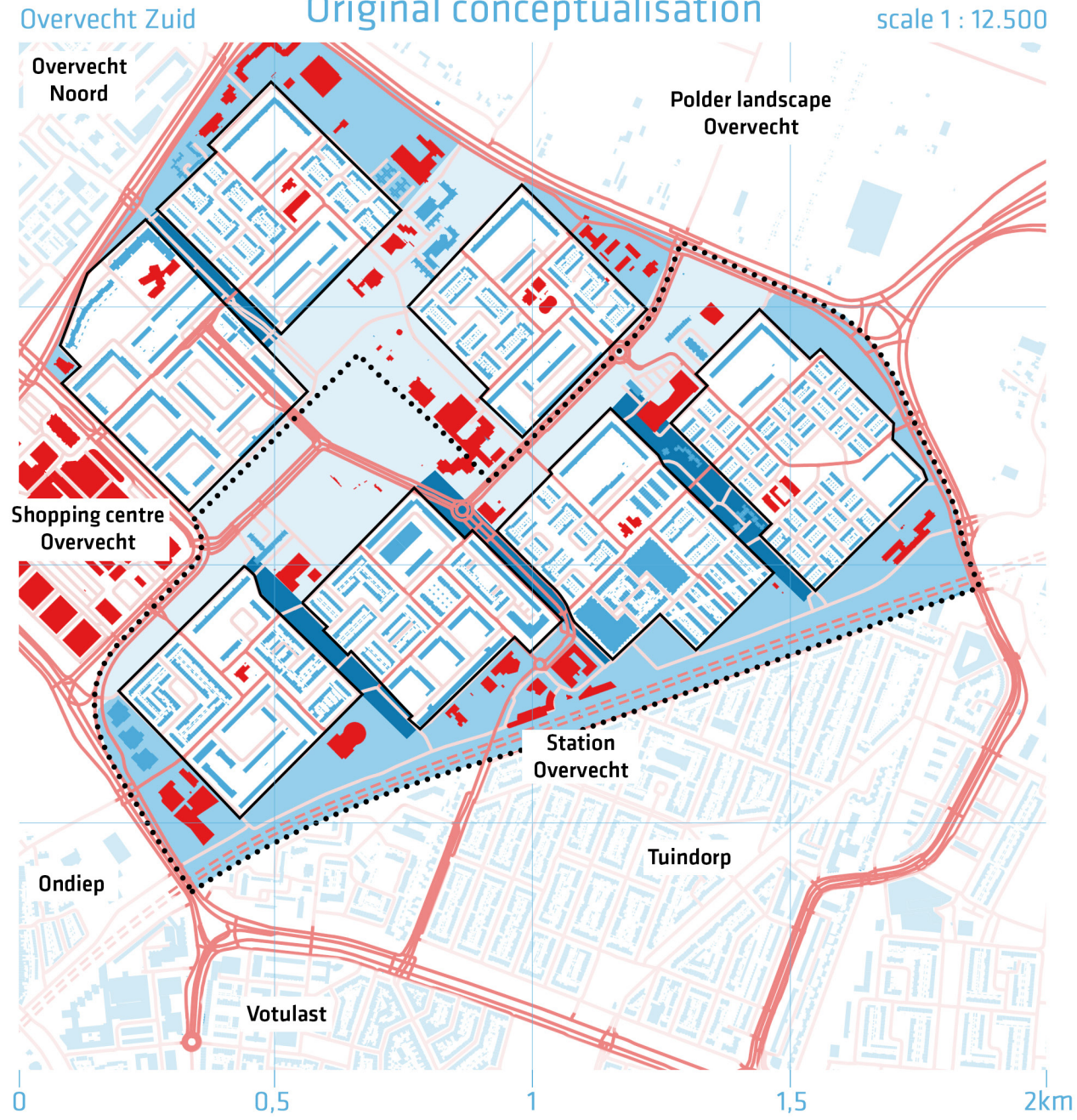
30/86



Analysis map

Original conceptualisation

scale 1 : 12.500



Base map

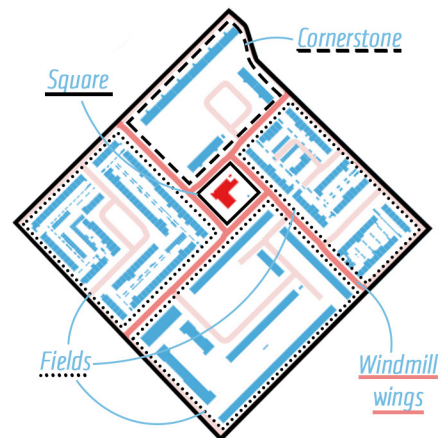
scale 1 : 12.500



Legend

- Dwelling
- Public building
- Neighbourhood unit
- Project area in Overvecht Zuid
- Watertoren park
- Green buffer zone
- Green recreational strip
- Car road network

Highlight Neighborhood unit



Original conceptualisation

scale 1 : 12.500

Overvecht Zuid

scale 1 : 12.500

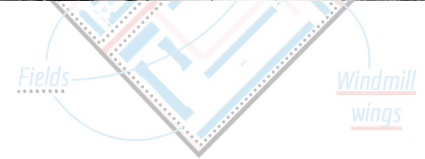
Overvecht Zuid



- Legend**
- Dwelling
 - Public building
 - Neighbourhood unit
 - Project area in Overvecht Zuid



From Het Utrechts Archief, by fotodienst GAU, 1985



Original conceptualisation

scale 1 : 12.500

Overvecht Zuid

scale 1 : 12.500

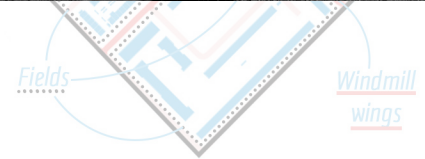
Overvecht Zuid



- Legend
- Dwelling
 - Public building
 - Neighbourhood unit
 - Project area in Overvecht Zuid



From Het Utrechts Archief, by fotodienst GAU, 1987

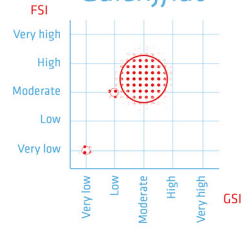


1. Analysis

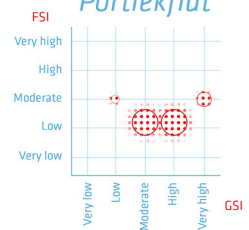
Urban density



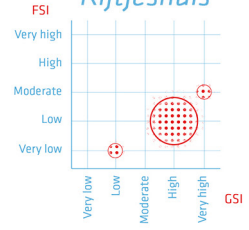
Urban density type 4:
high rise buildings
"Galerijflat"



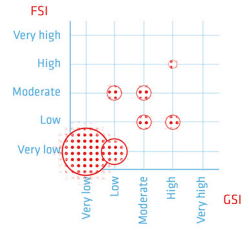
Urban density type 3:
medium rise buildings
"Portiekflat"



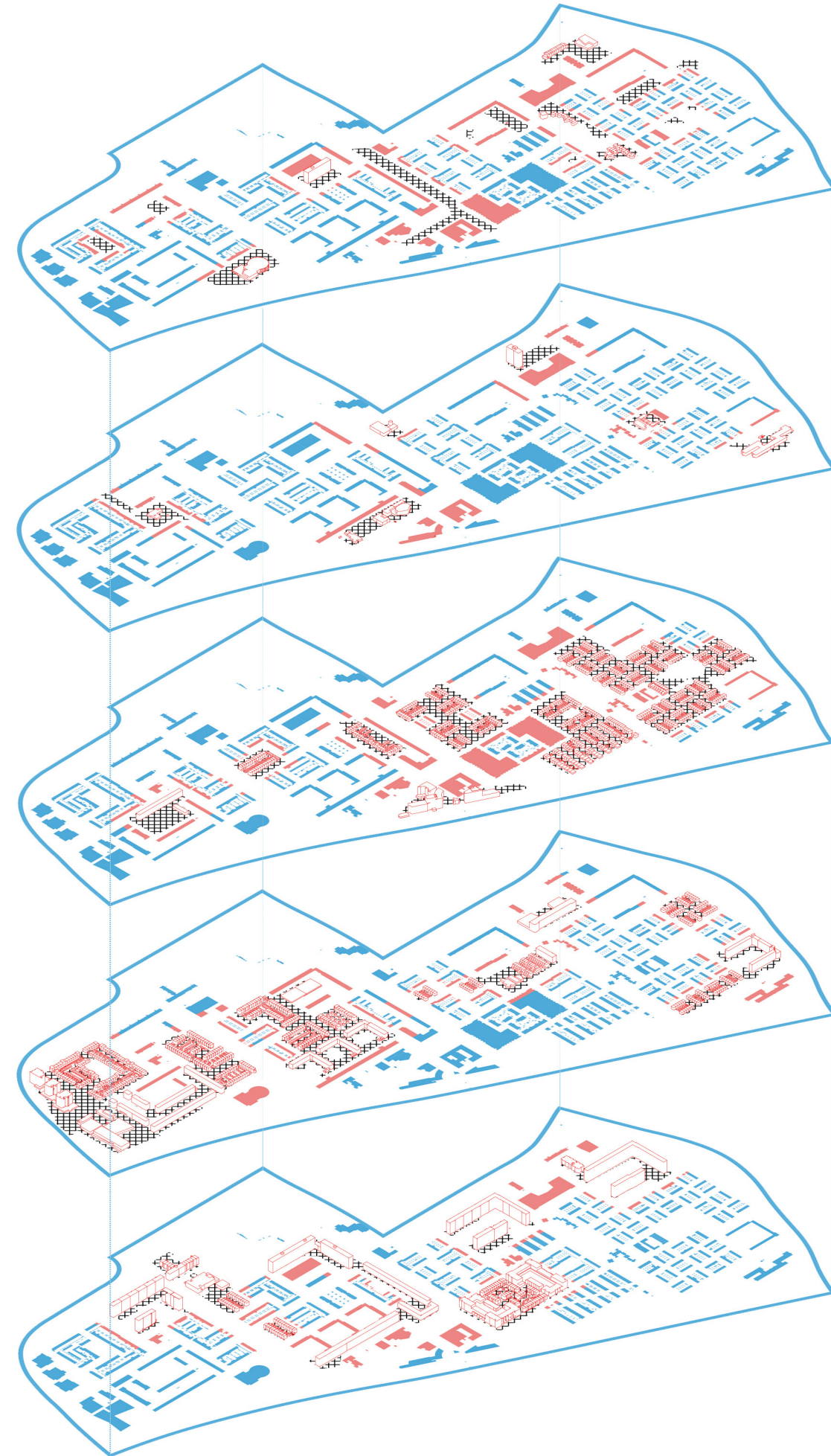
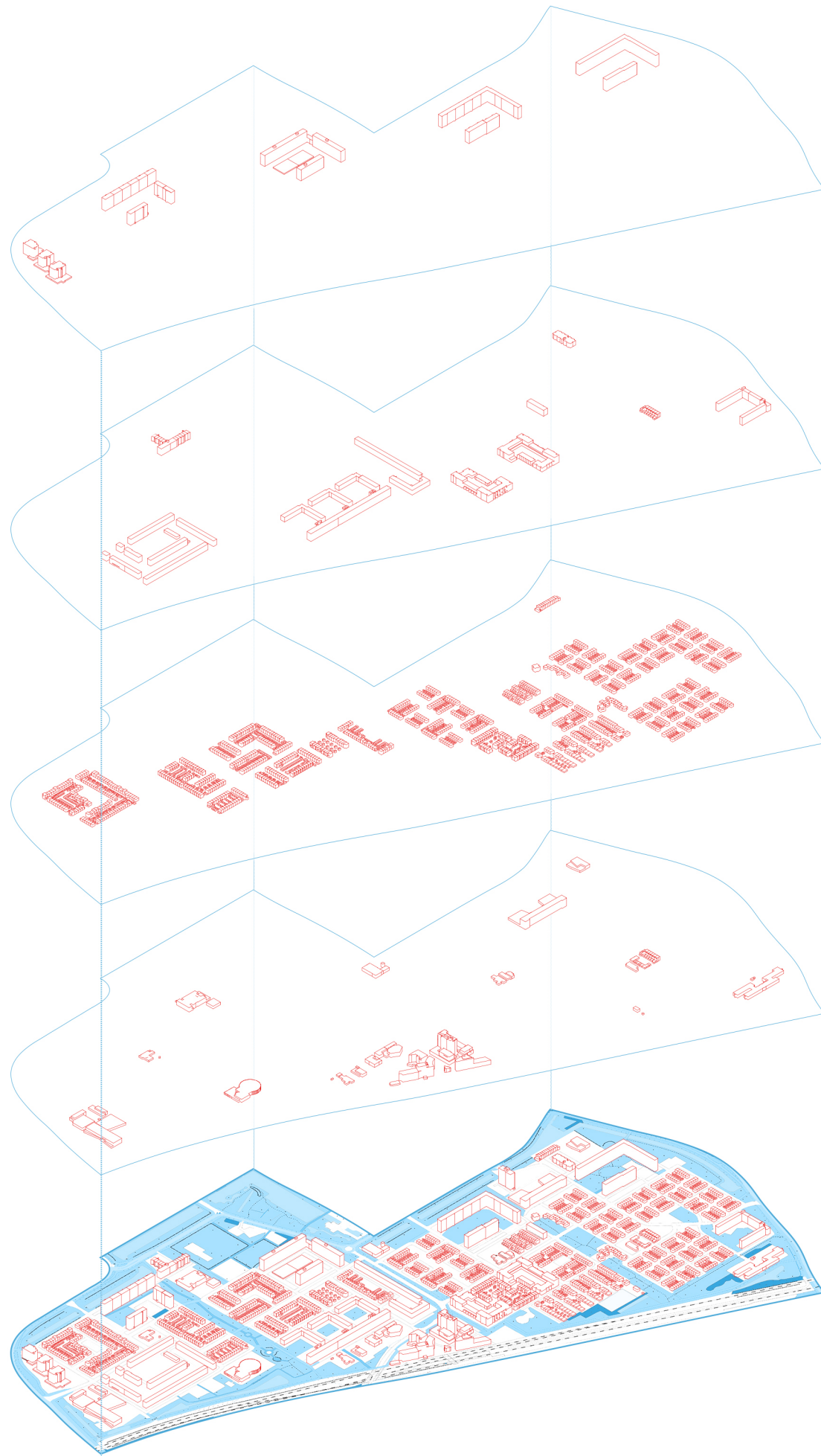
Urban density type 2:
low rise buildings
"Rijtjeshuis"



Urban density type 1:
public buildings
"Object in space"



Overvecht Zuid



OSR type 5:
very high OSR
= more than 5

OSR type 4:
high OSR
= 2 tot 5

OSR type 3:
moderate OSR
= 1 tot 2

OSR type 2:
low OSR
= 0,6 tot 1

OSR type 1:
very low OSR
= 0 tot 0,6

1. Analysis Urban health

Base map



Legend

- Roads
- Railways
- Train station
- Buildings
- Water

1. Analysis

Urban health

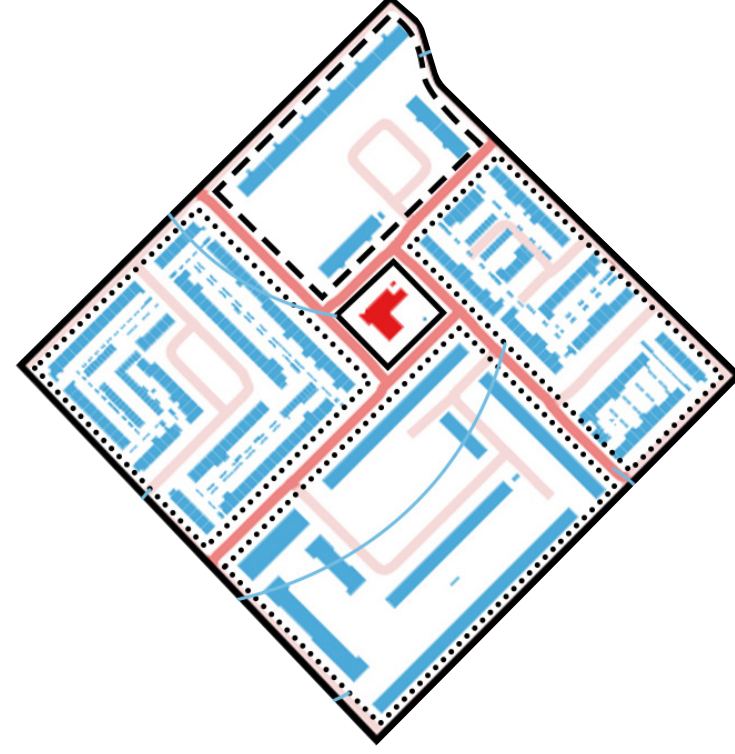
37/86

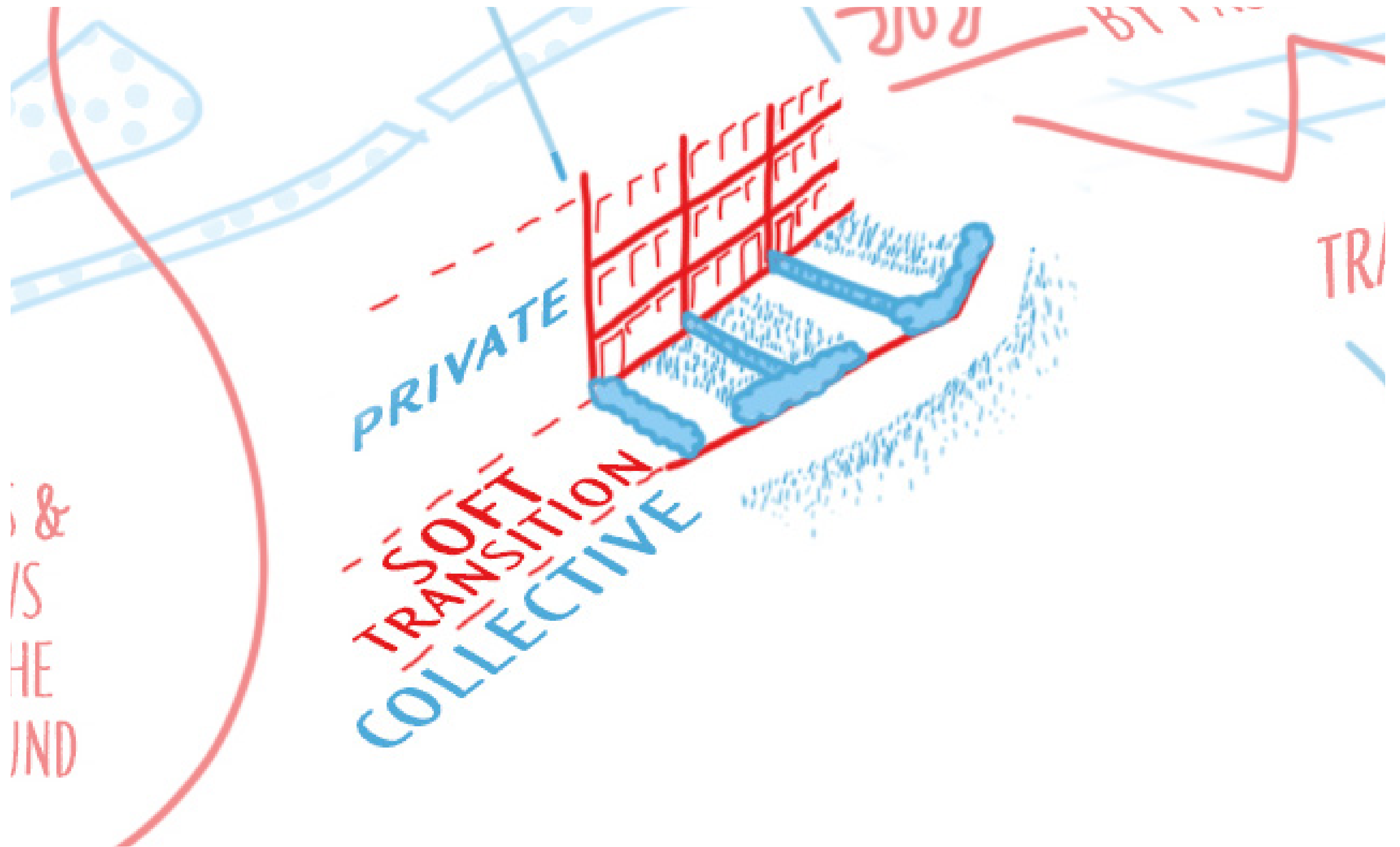


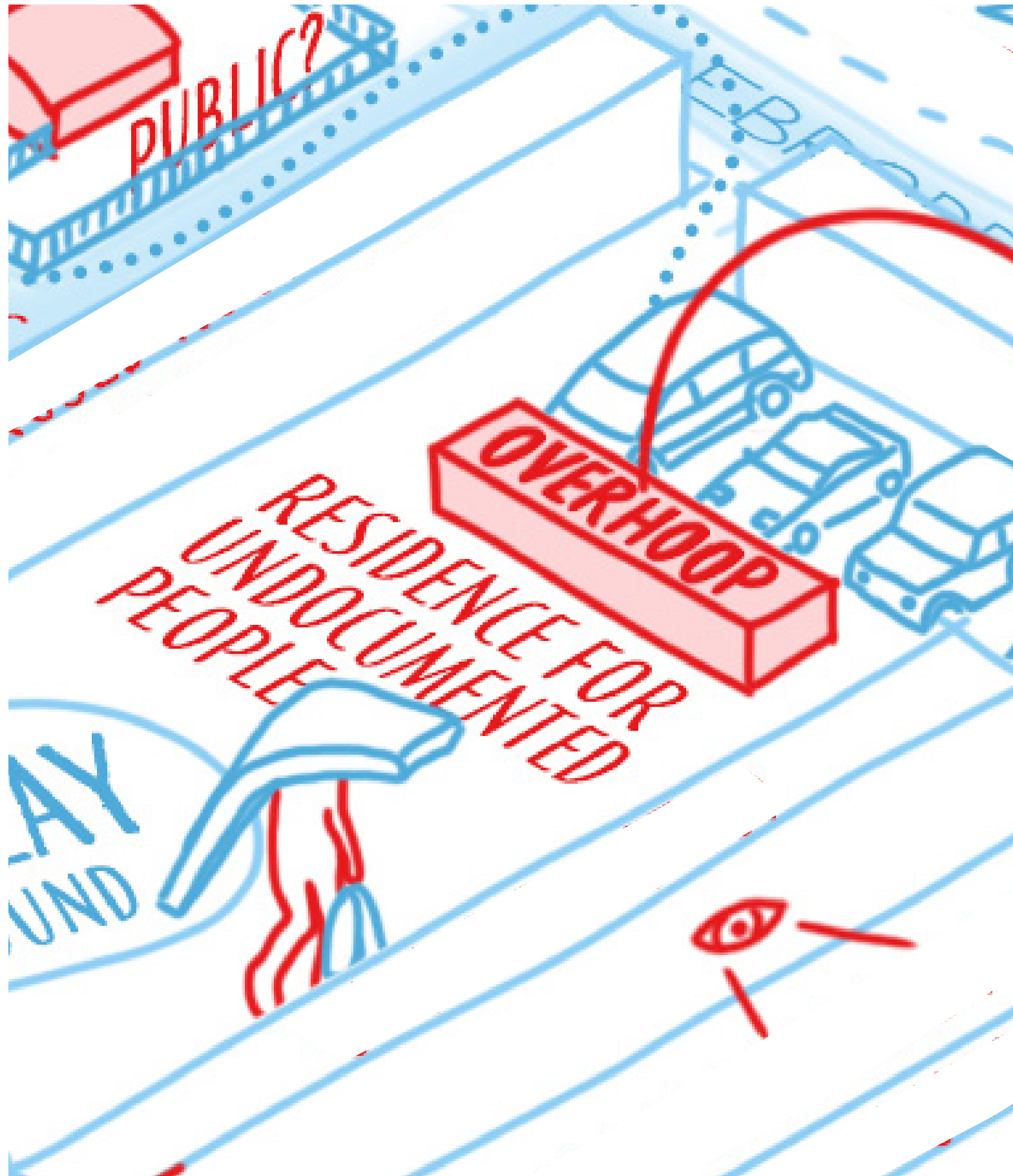
1. Analysis

Urban health

Community



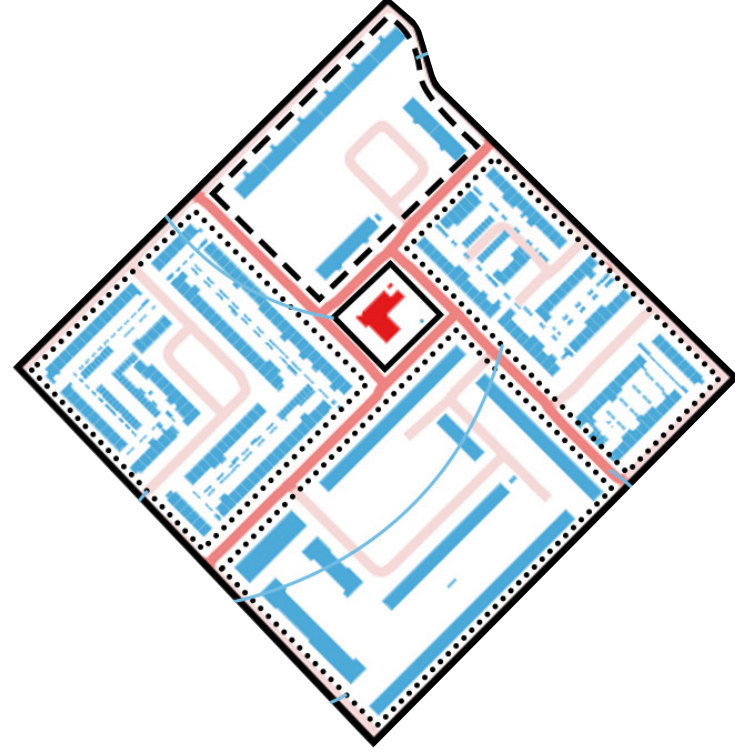


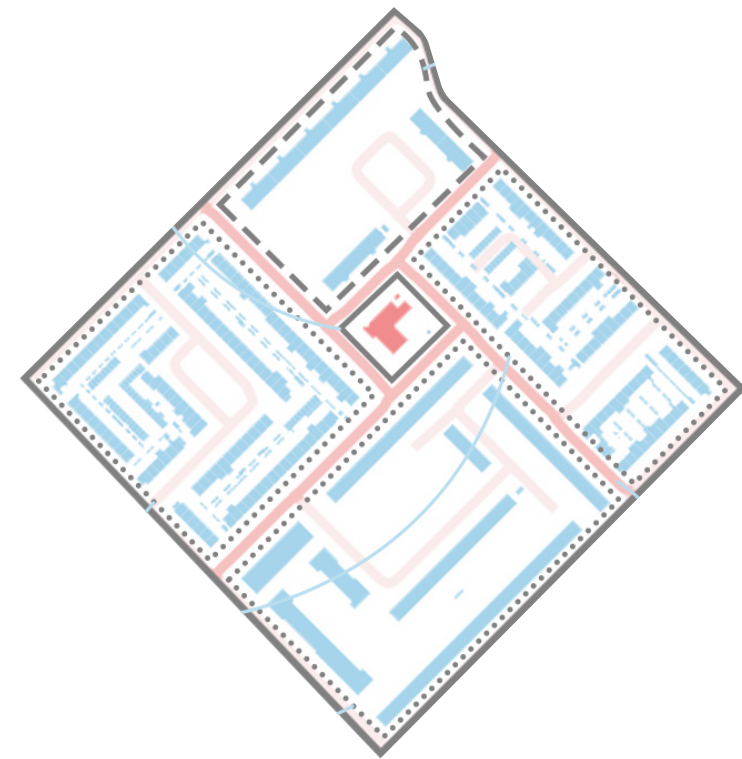
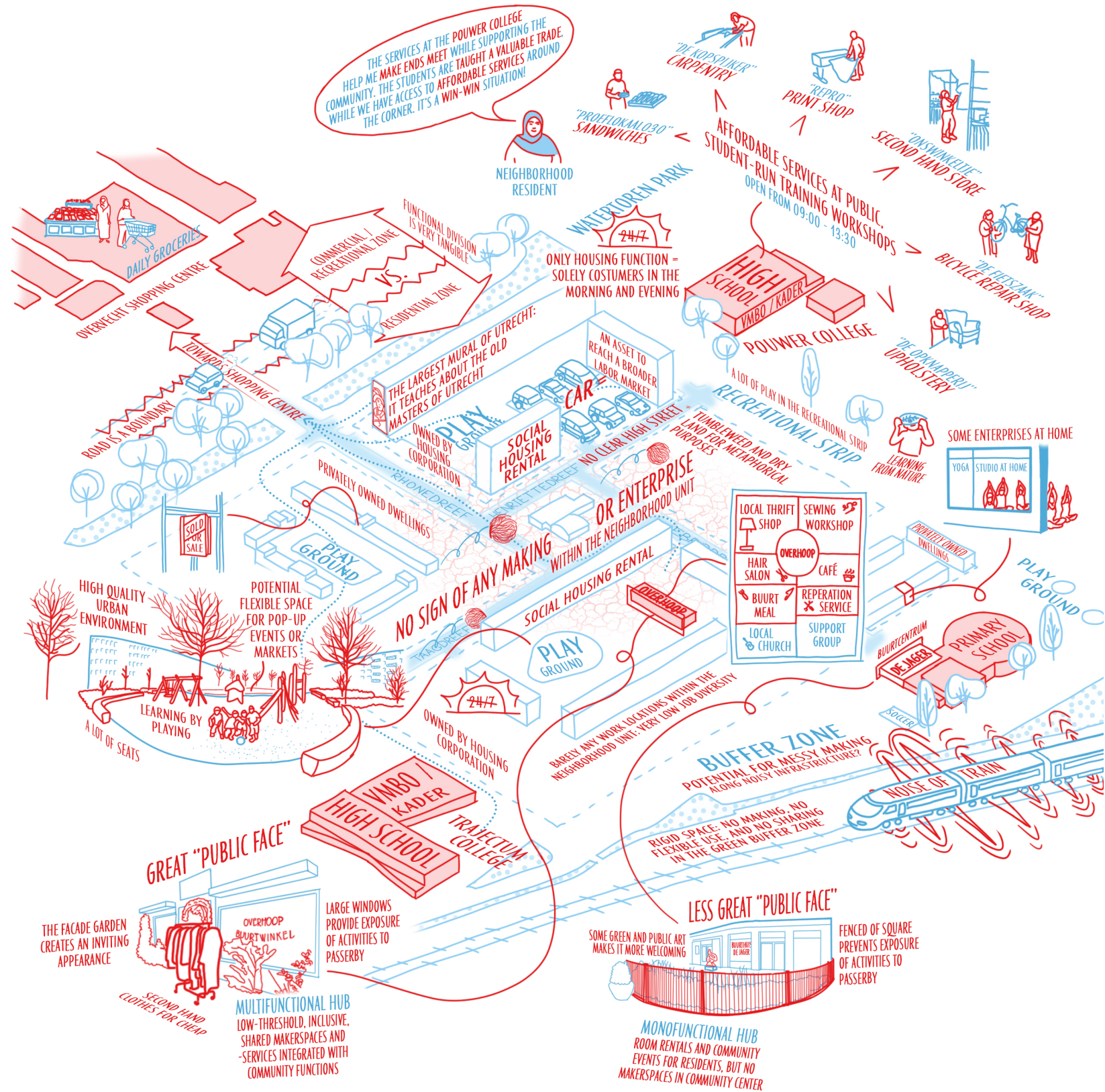


1. Analysis

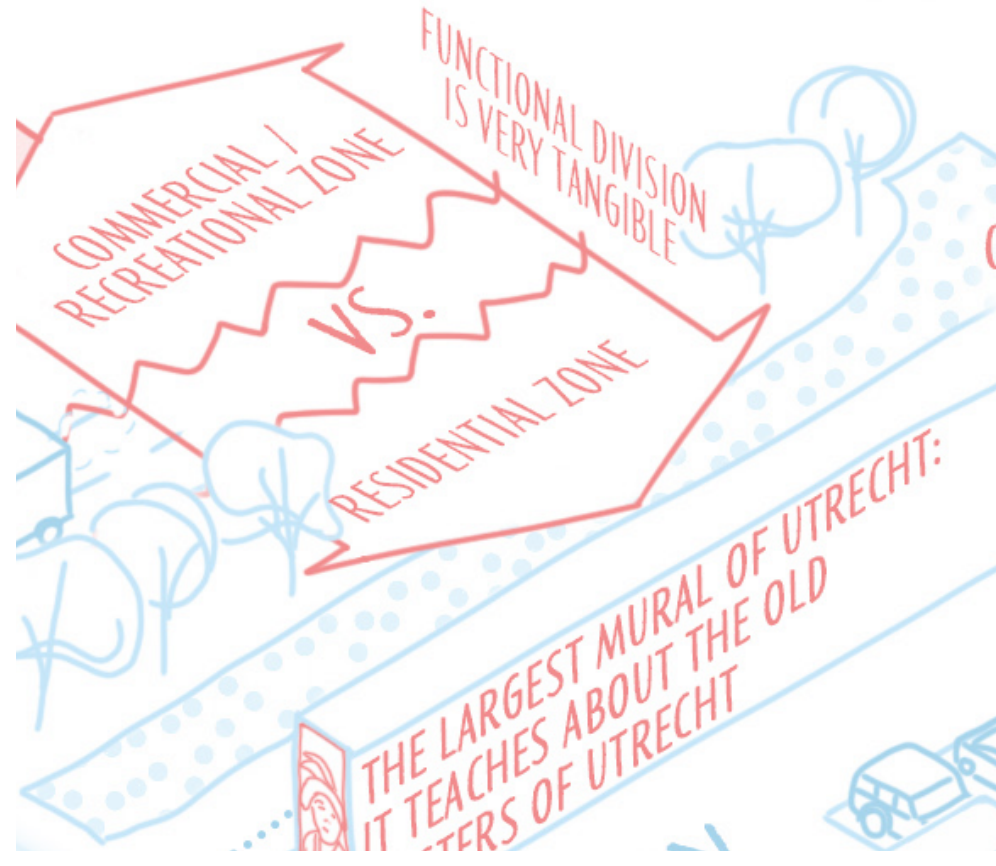
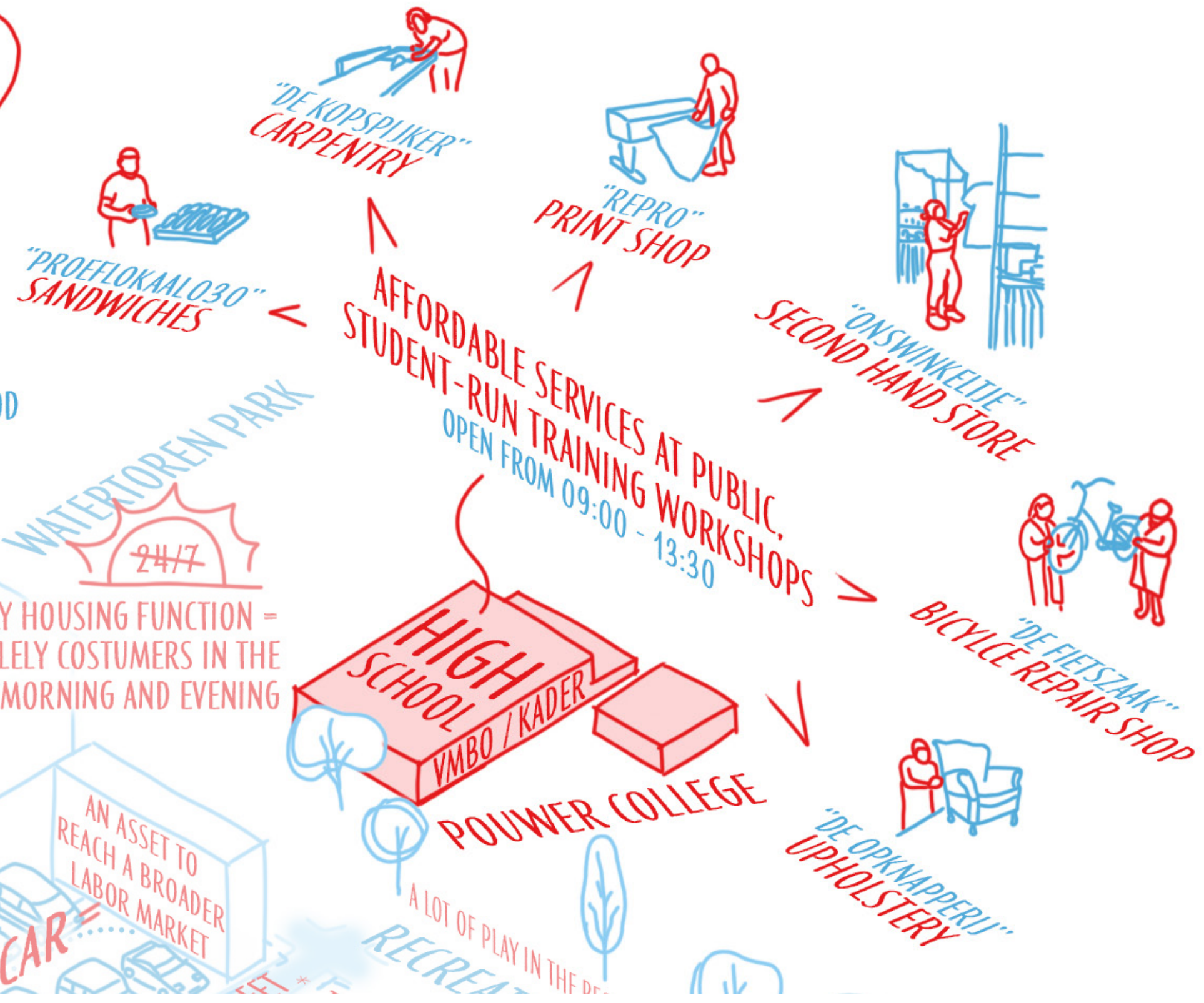
Urban health

Local economy





THE SERVICES AT THE POUWER COLLEGE HELP ME MAKE ENDS MEET WHILE SUPPORTING THE COMMUNITY. THE STUDENTS ARE TAUGHT A VALUABLE TRADE, WHILE WE HAVE ACCESS TO AFFORDABLE SERVICES AROUND THE CORNER. IT'S A WIN-WIN SITUATION!

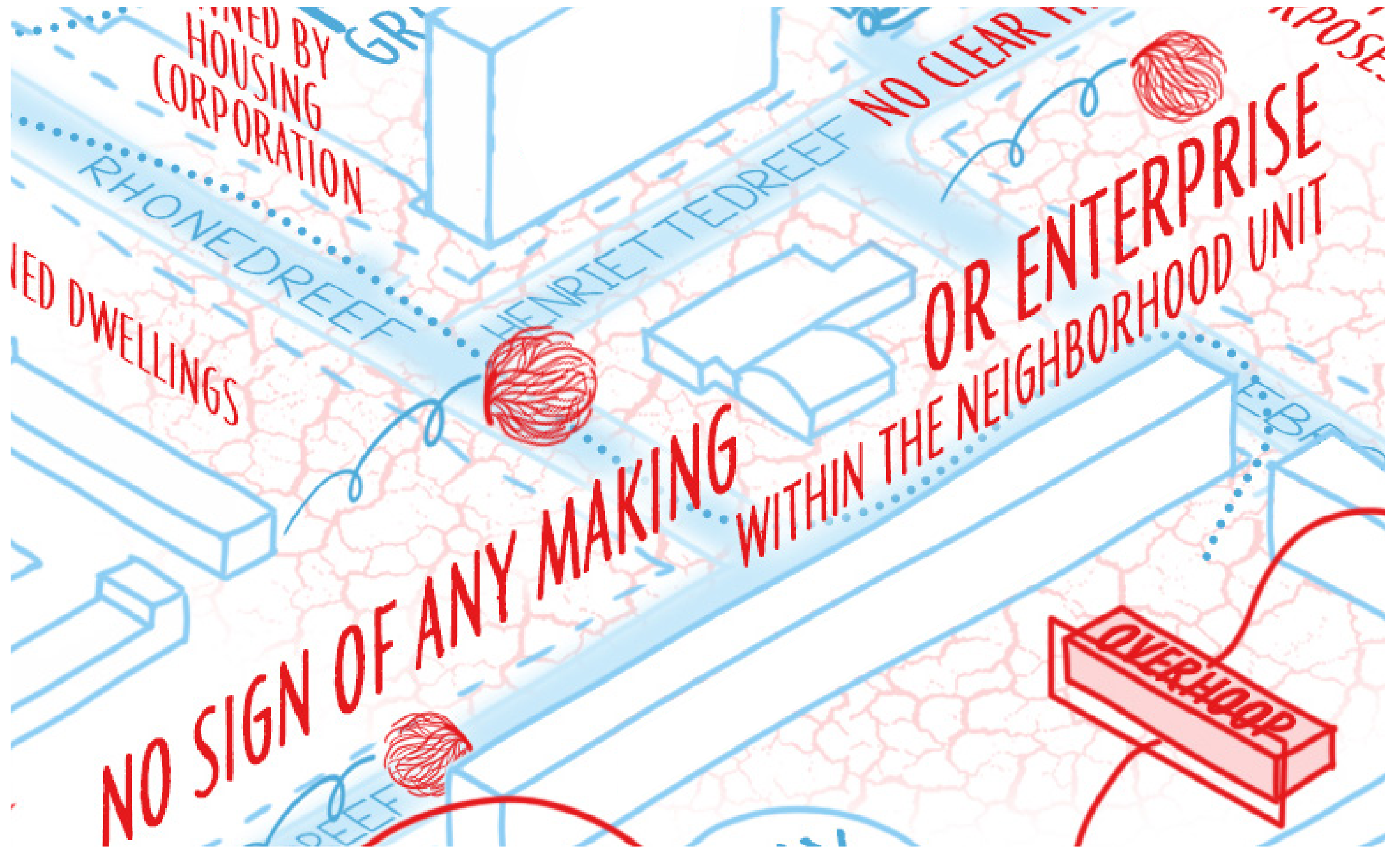


ONLY HOUSING FUNCTION = SOLELY CUSTOMERS IN THE MORNING AND EVENING

AN ASSET TO REACH A BROADER LABOR MARKET

CAR

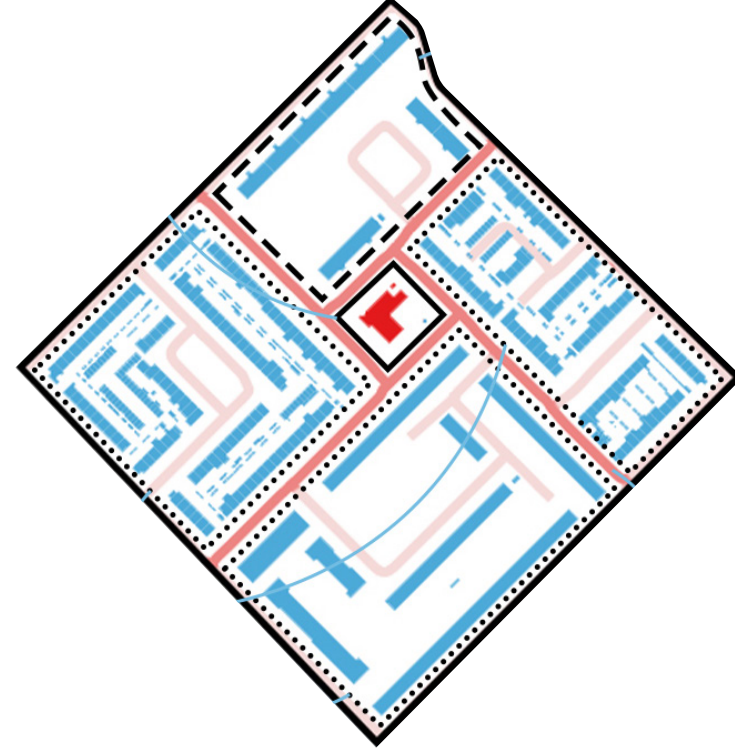
A LOT OF PLAY IN THE DE RECREATION

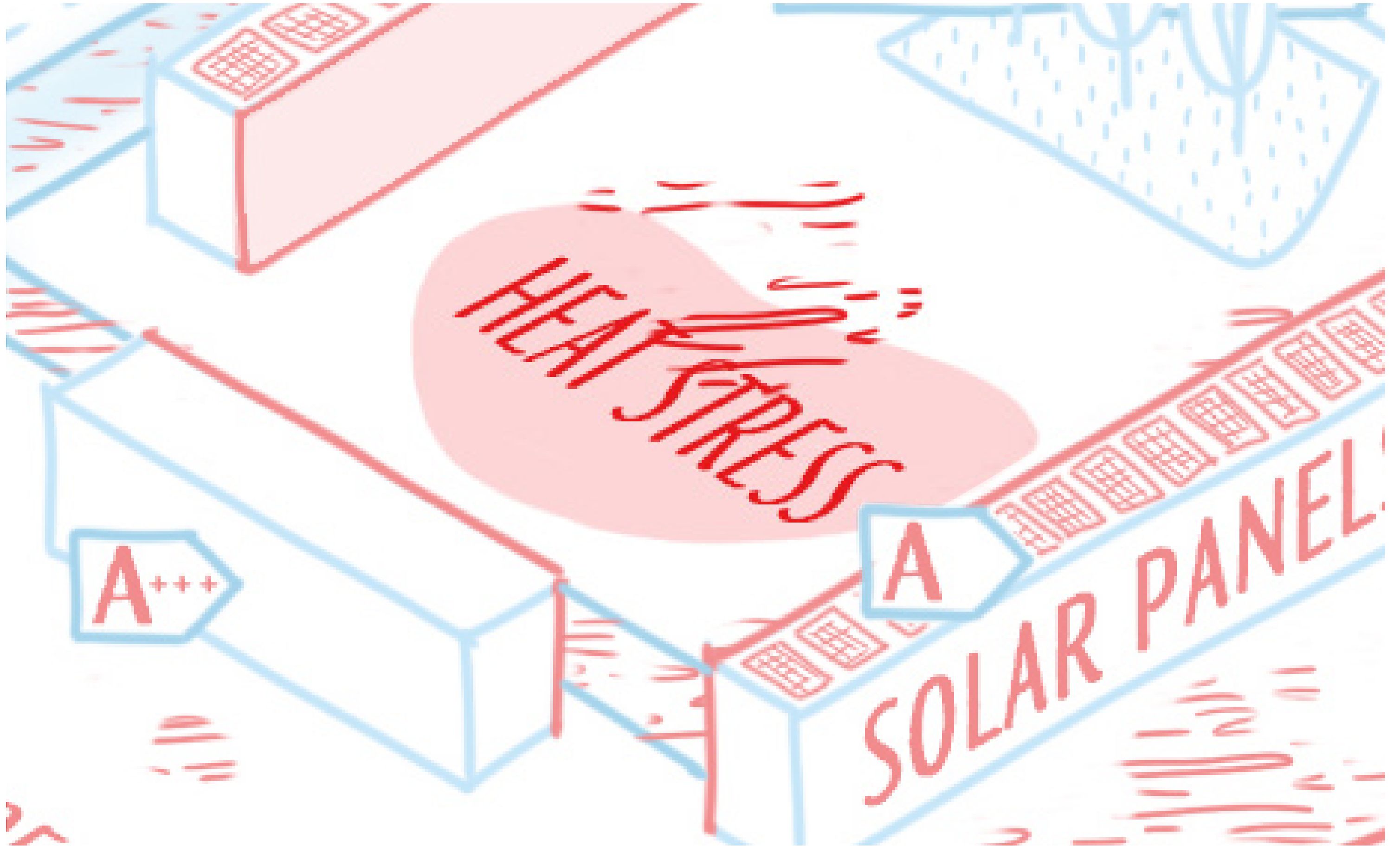


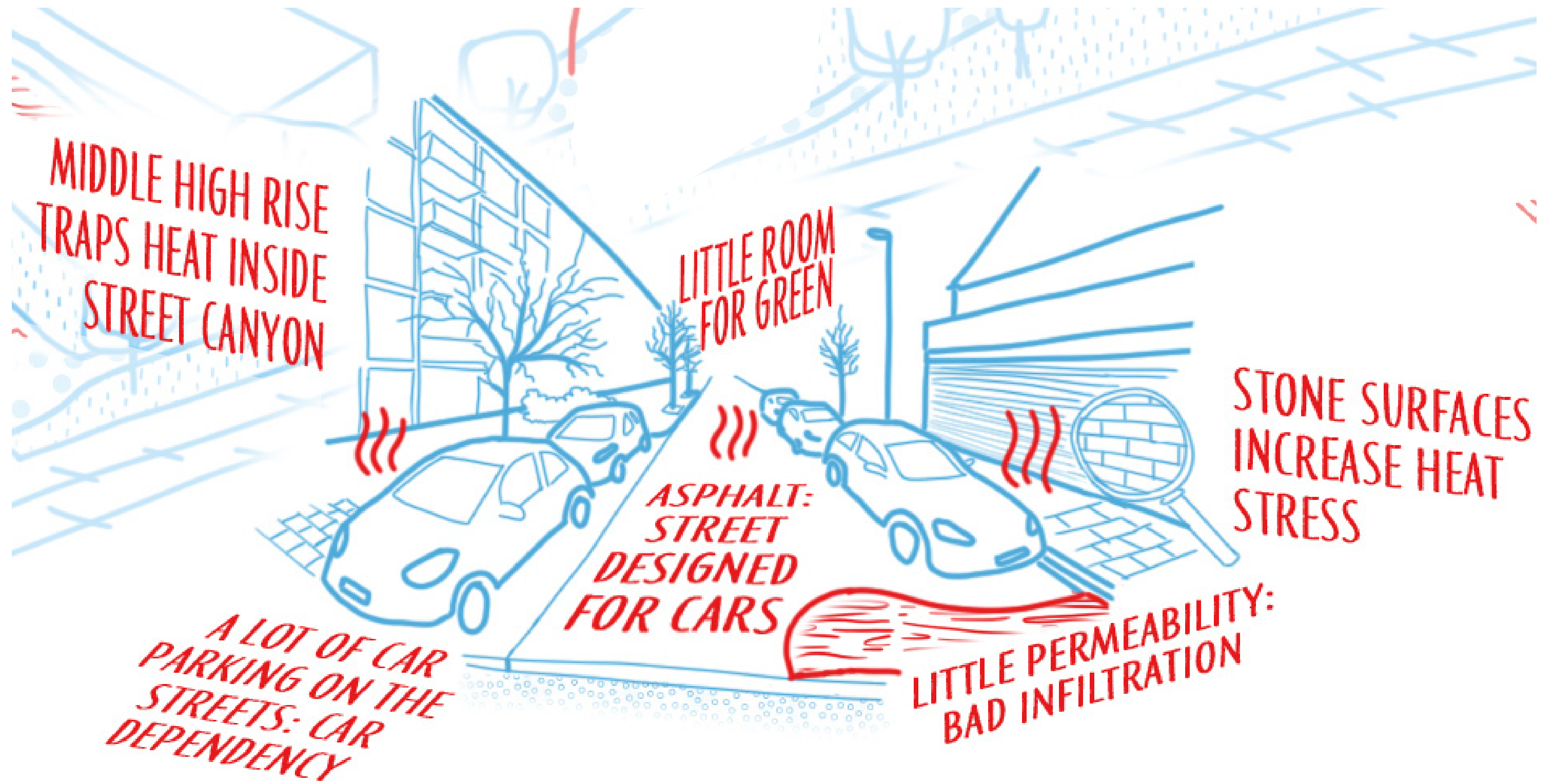
1. Analysis

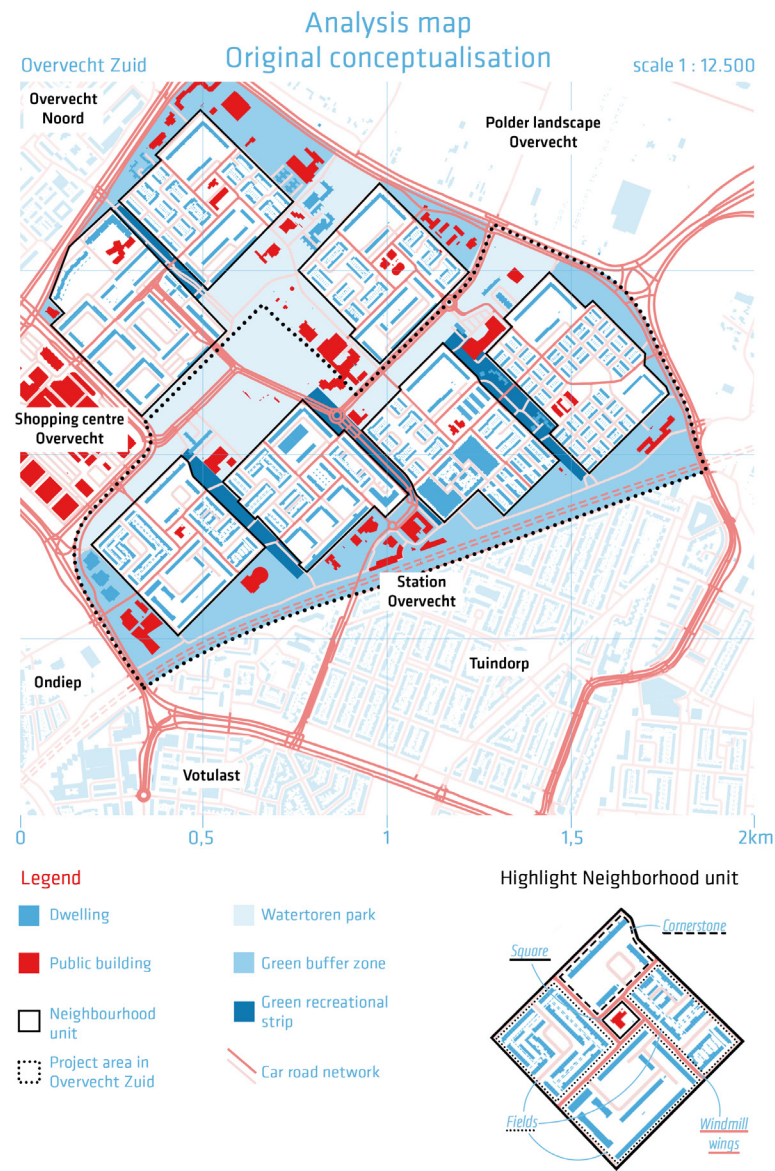
Urban health

Global ecosystem

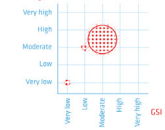




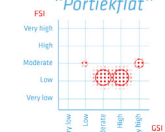




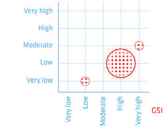
Urban density type 4:
high rise buildings
"Galerijflat"



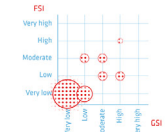
Urban density type 3:
medium rise buildings
"Portiekflat"



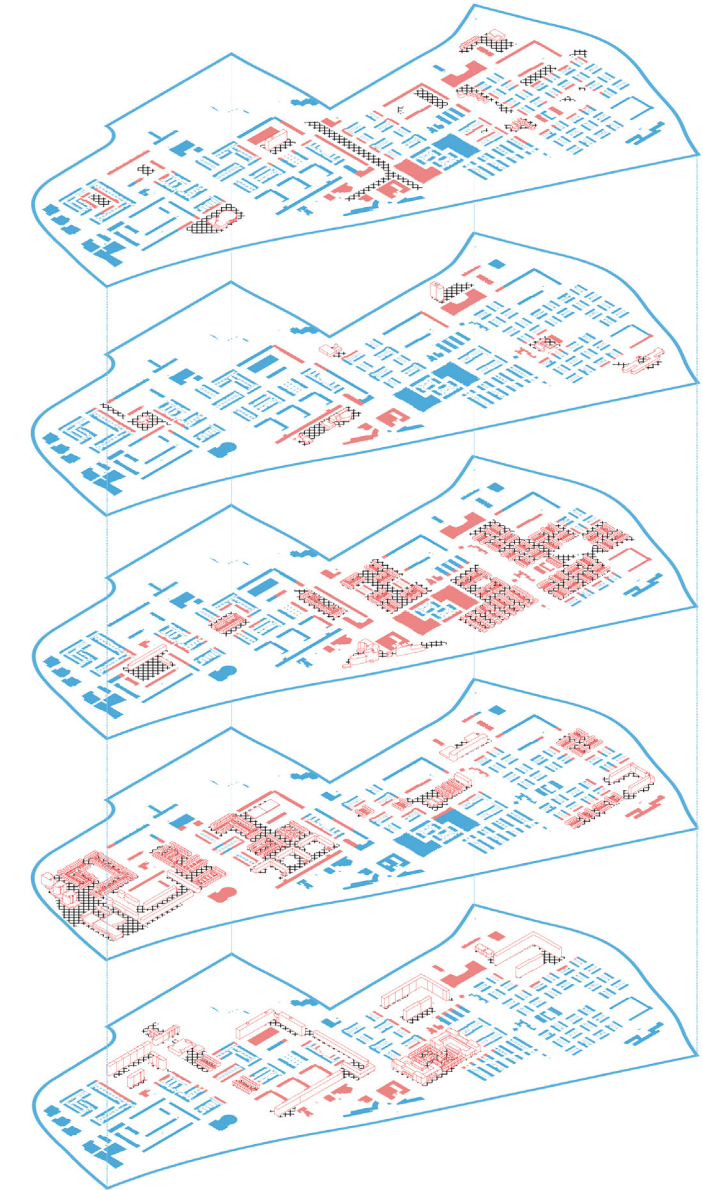
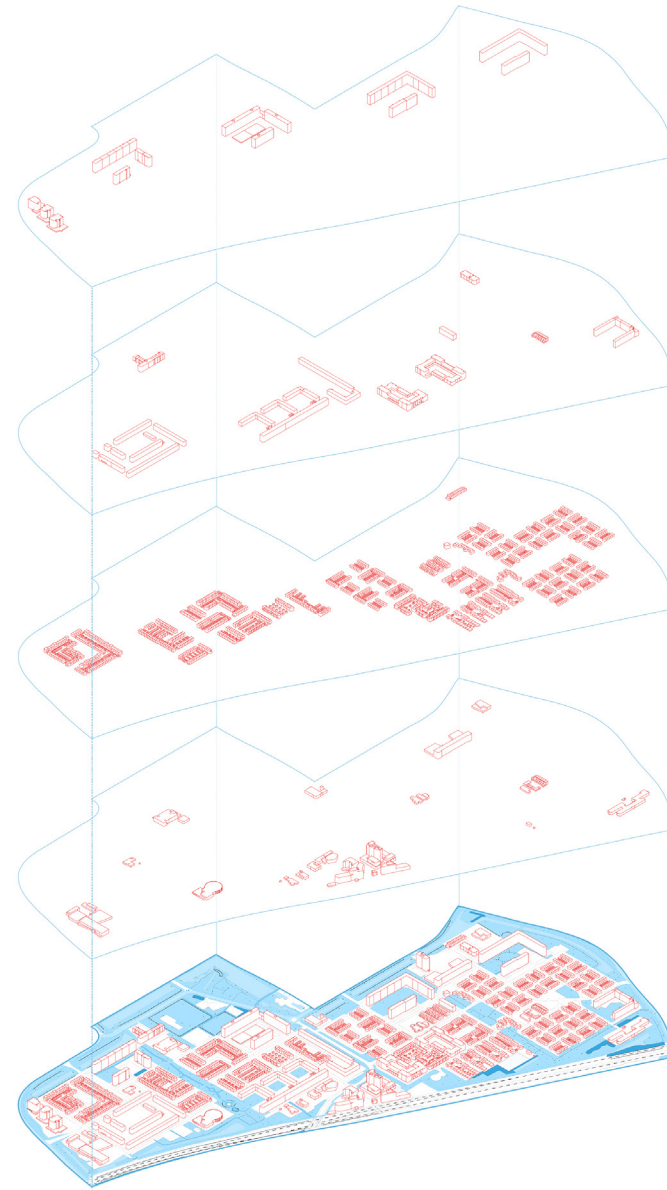
Urban density type 2:
low rise buildings
"Rijtjehuis"



Urban density type 1:
public buildings
"Object in space"



Overvecht Zuid



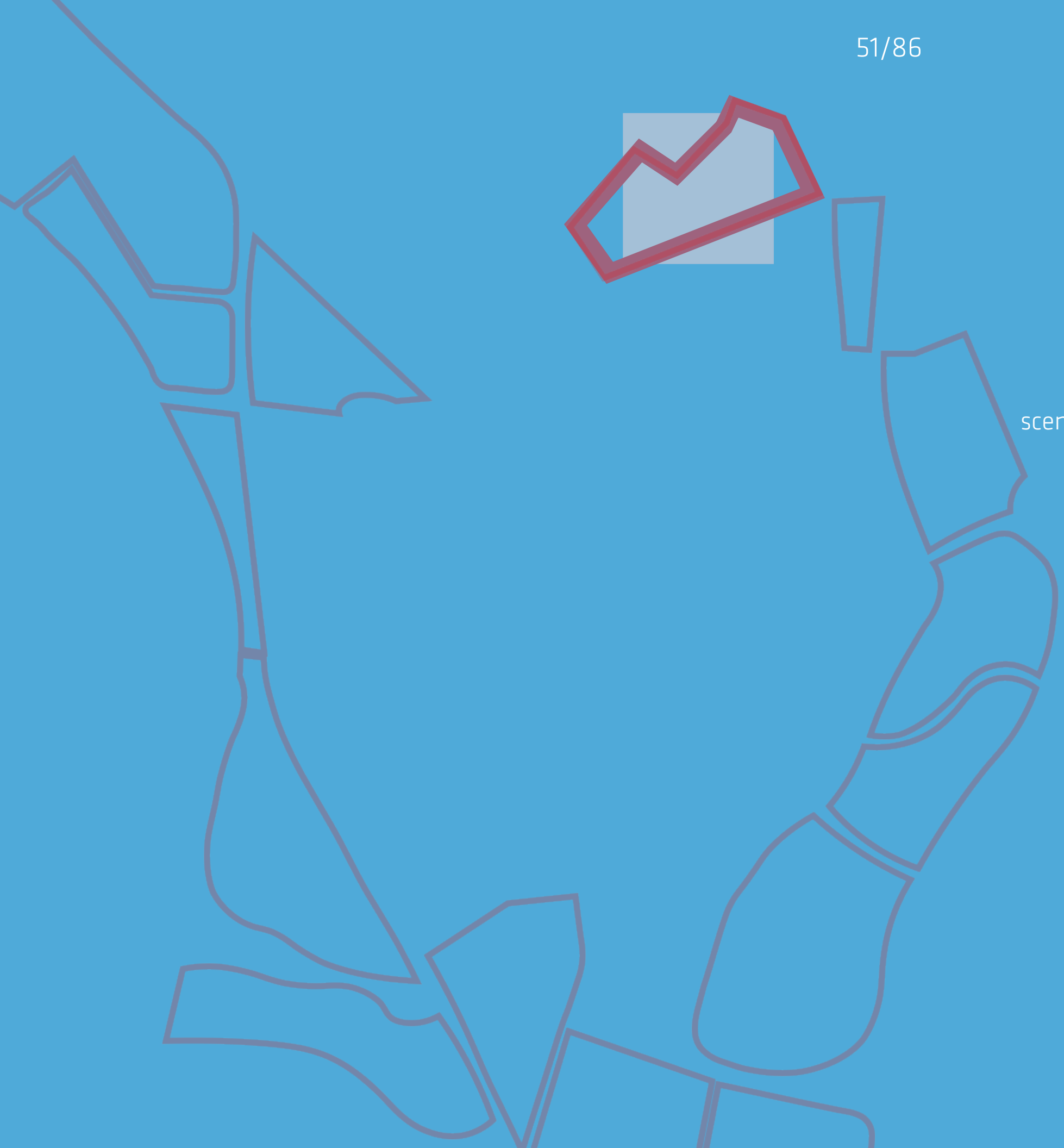
OSR type 5:
very high OSR
= more than 5

OSR type 4:
high OSR
= 2 tot 5

OSR type 3:
moderate OSR
= 1 tot 2

OSR type 2:
low OSR
= 0,6 tot 1

OSR type 1:
very low OSR
= 0 tot 0,6



Spatial analysis
understanding Overvecht Zuid

1

Maximisation
scenarios of healthy urban densification

2

Optimisation
complete / complete

3

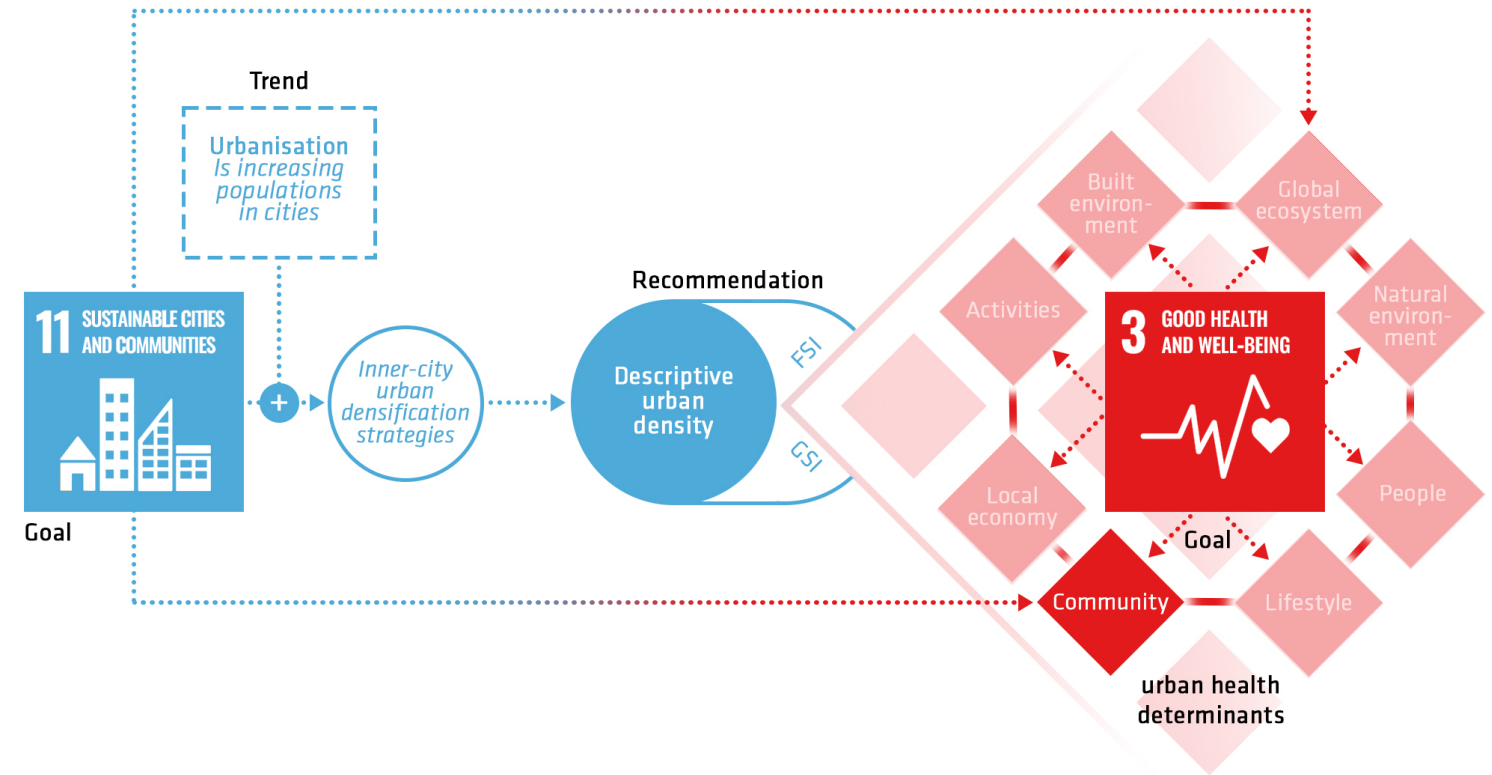
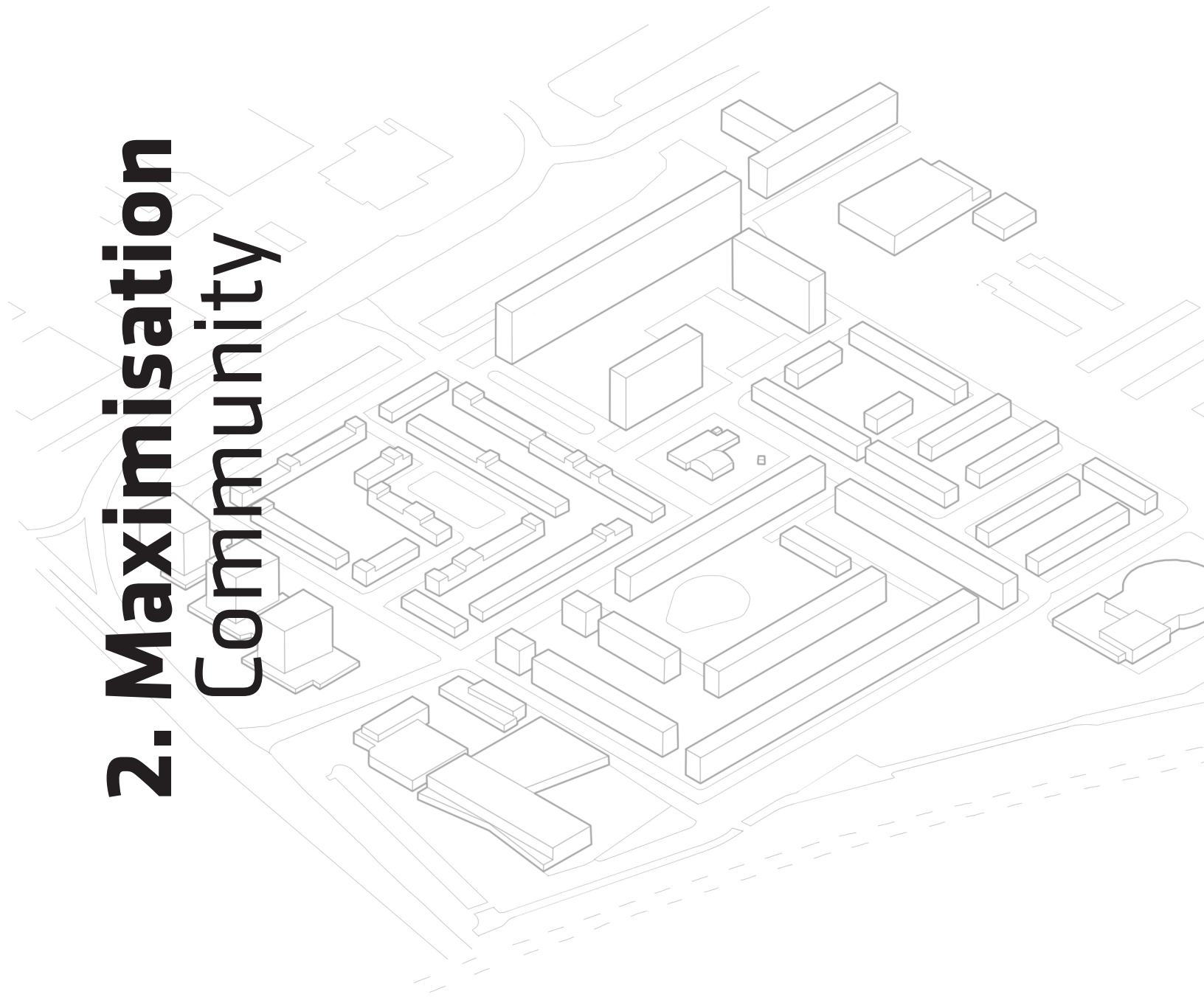
Integration
urban design

4

Conclusion

5

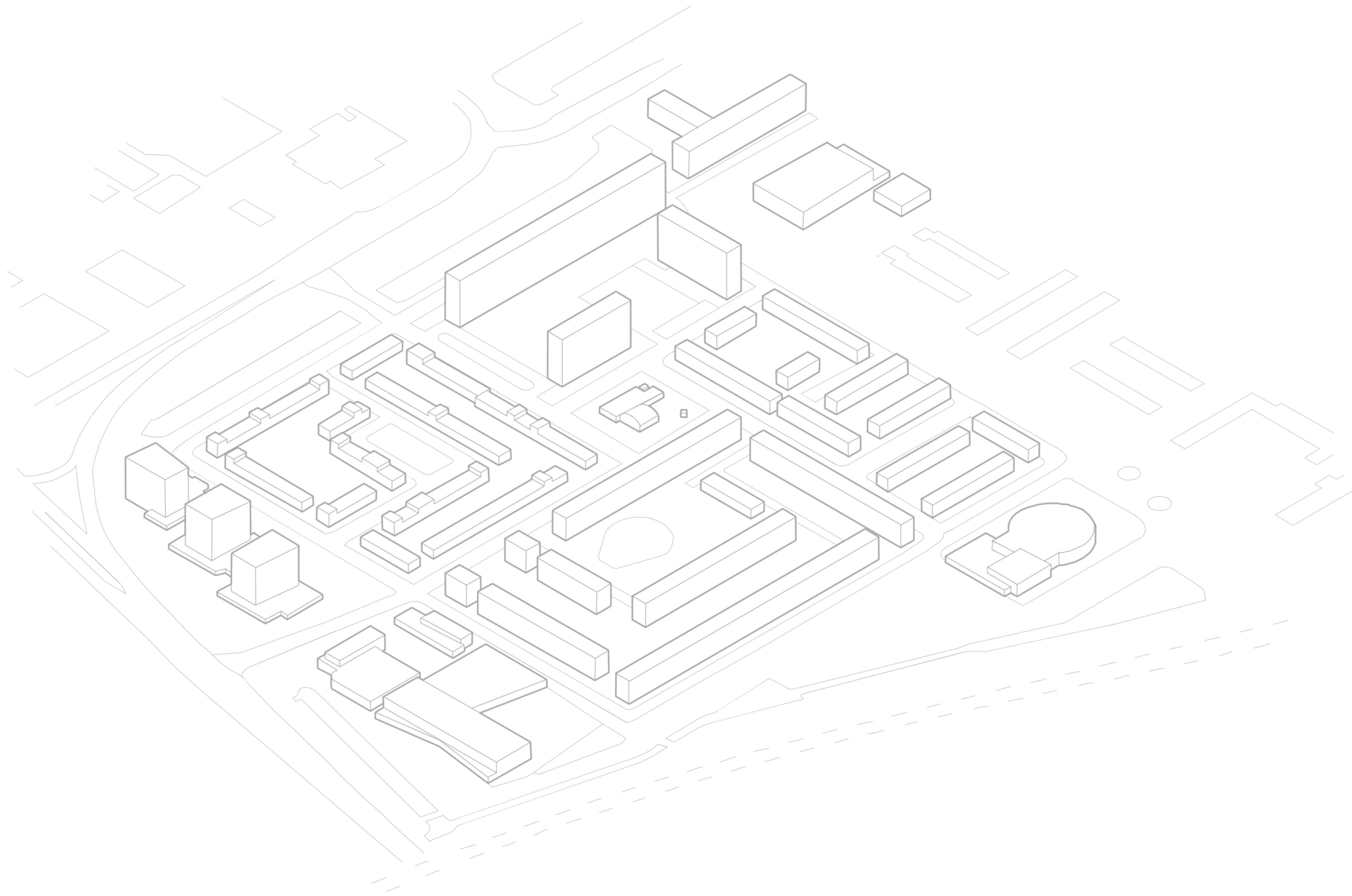
2. Maximisation Community



Health-Density nexus

Community
enhancing a sense of local community

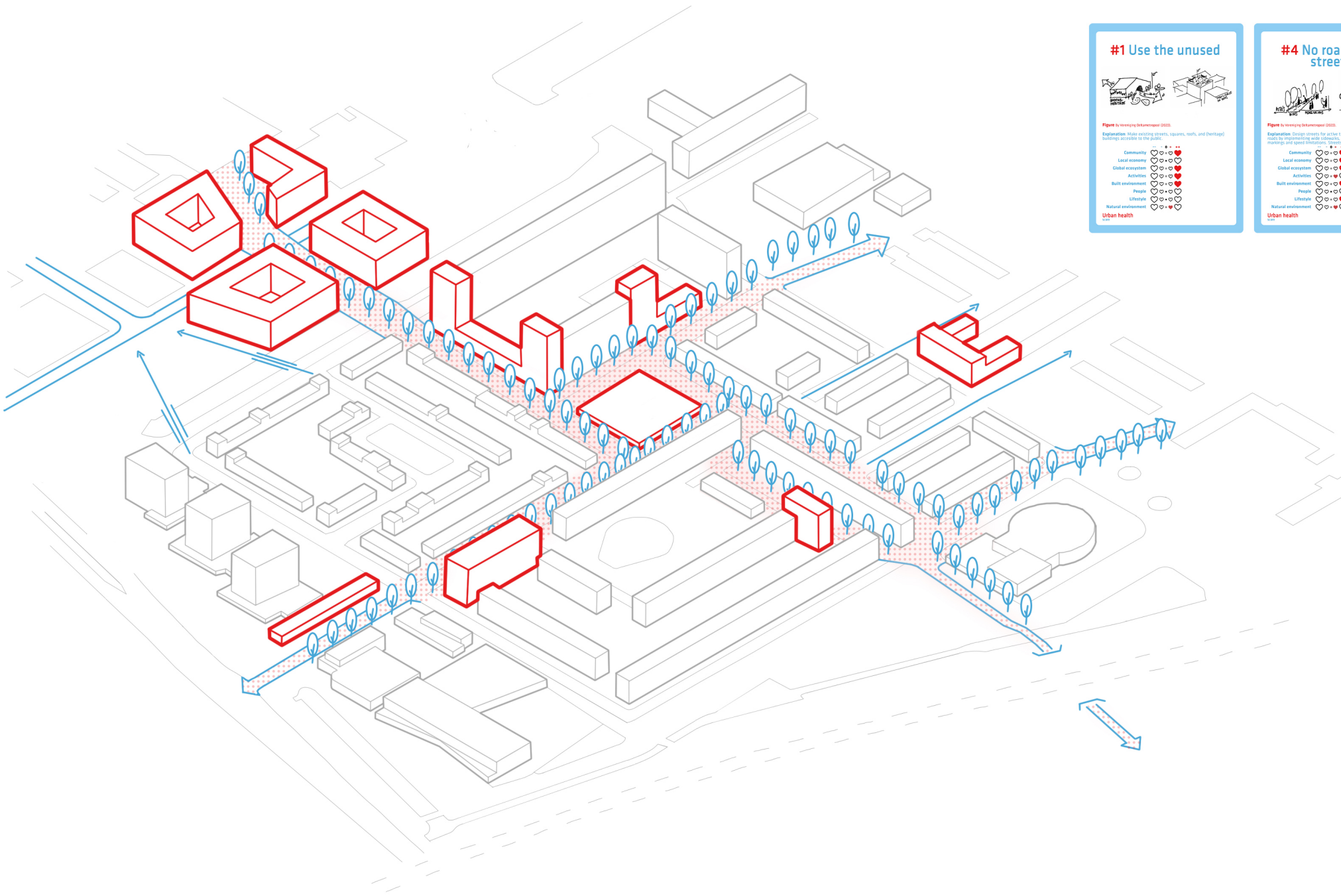
1. Sustain current community > preserve existing dwellings



Community

enhancing a sense of local community

1. Sustain current community > preserve existing dwellings
2. Add safe streets connected to the surroundings



#1 Use the unused

Figure 10: Reviving Detached DSDs

Explanation: Make existing streets, squares, parks, and heritage buildings available to the public.

Community	+	+
Local economy	+	+
Global ecosystem	+	+
Activities	+	+
Built environment	+	+
People	+	+
Lifestyle	+	+
Natural environment	+	+
Urban health	+	+

#4 No roads, but streets

Figure 11: Reviving Detached DSDs

Explanation: Design streets for active travel instead of conformity with the car. Use narrow, low-traffic, low-velocity, clear markings and signage to create safety in public space and a sense of ownership.

Community	+	+
Local economy	+	+
Global ecosystem	+	+
Activities	+	+
Built environment	+	+
People	+	+
Lifestyle	+	+
Natural environment	+	+
Urban health	+	+

#5 Eyes on streets

Figure 12: Reviving Detached DSDs

Explanation: With a clear layout and balconies or windows to provide views on the street to create safety in public space and a sense of ownership.

Community	+	+
Local economy	+	+
Global ecosystem	+	+
Activities	+	+
Built environment	+	+
People	+	+
Lifestyle	+	+
Natural environment	+	+
Urban health	+	+

#7 Transform transitions

Figure 13: Reviving Detached DSDs

Explanation: By designing clear transitions between private and public spaces, clear paths, public and open public spaces to increase a sense of ownership and safety.

Community	+	+
Local economy	+	+
Global ecosystem	+	+
Activities	+	+
Built environment	+	+
People	+	+
Lifestyle	+	+
Natural environment	+	+
Urban health	+	+

#12 Active plinths

Figure 14: Reviving Detached DSDs

Explanation: Plinths of buildings can be linked with cafes and small public spaces. The connection to a local entrepreneur and a sense of ownership.

Community	+	+
Local economy	+	+
Global ecosystem	+	+
Activities	+	+
Built environment	+	+
People	+	+
Lifestyle	+	+
Natural environment	+	+
Urban health	+	+

#13 Fill-in spaces

Figure 15: Reviving Detached DSDs

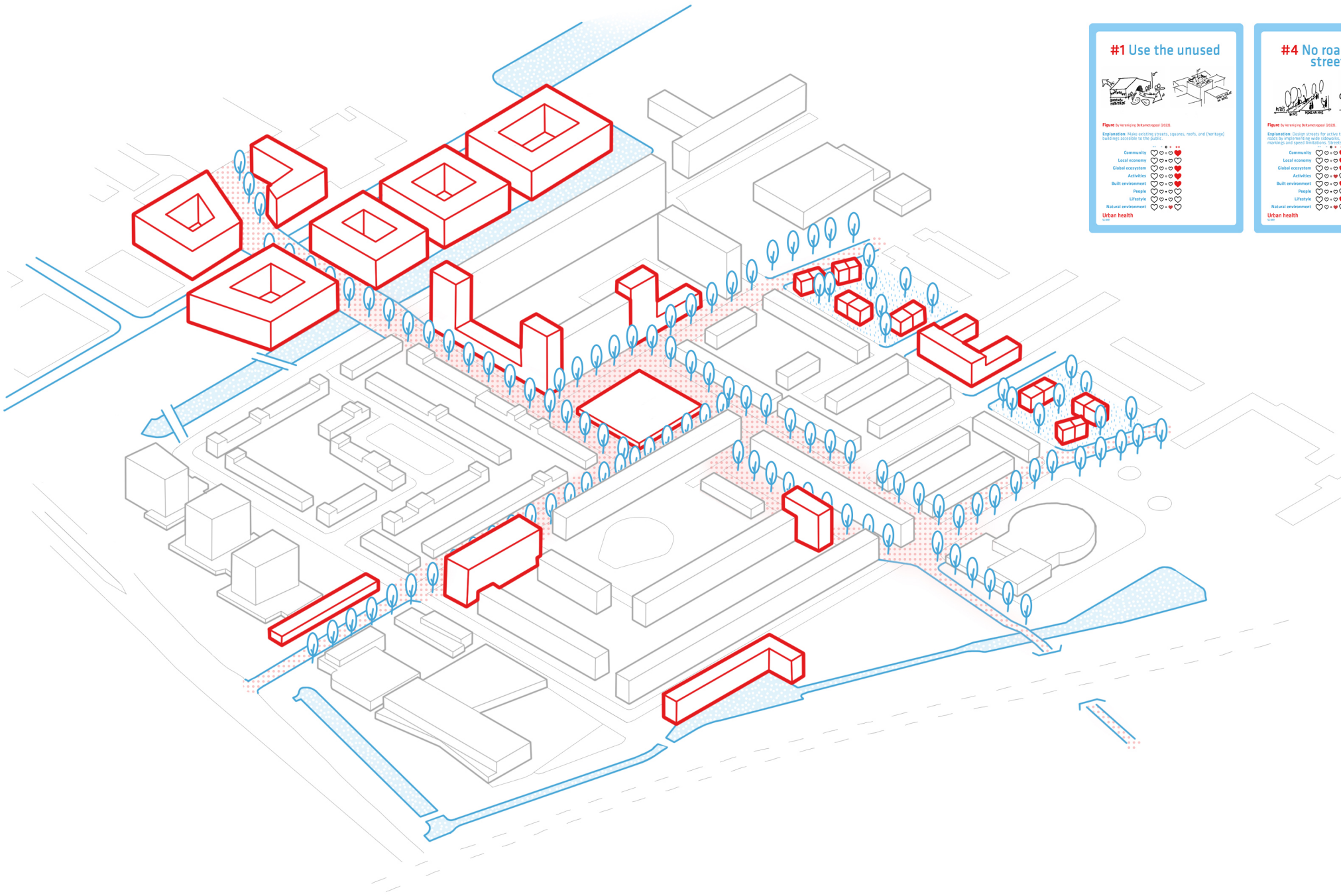
Explanation: Plinths and usable outdoor spaces for neighborhood social space or other events/activities. They create a sense of safety and ownership.

Community	+	+
Local economy	+	+
Global ecosystem	+	+
Activities	+	+
Built environment	+	+
People	+	+
Lifestyle	+	+
Natural environment	+	+
Urban health	+	+

Community

enhancing a sense of local community

1. Sustain current community > preserve existing dwellings
2. Add safe streets connected to the surroundings



#1 Use the unused

Figure 10 *Use the unused* (2020)

Explanation: Make existing streets, squares, parks, and heritage buildings available to the public.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

#4 No roads, but streets

Figure 11 *No roads, but streets* (2020)

Explanation: Design streets for active travel instead of conformity with the requirements of cars, for example, low floors, clear markings, and street furniture.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

#5 Eyes on streets

Figure 12 *Eyes on streets* (2020)

Explanation: With a clear layout and balconies or windows to provide views on the street to create safety in public spaces and a sense of ownership.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

#7 Transform transitions

Figure 13 *Transform transitions* (2020)

Explanation: By designing clear transitions between private and public spaces, clear paths, and open public spaces to increase a sense of ownership and safety.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

#12 Active plinths

Figure 14 *Active plinths* (2020)

Explanation: Windows of buildings can be opened with coffee and other public services. This contributes to a lively environment and a sense of safety.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

#13 Fill-in spaces

Figure 15 *Fill-in spaces* (2020)

Explanation: Flexible and usable outdoor spaces for neighborhood events or other activities. This creates a sense of safety and ownership.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

3. Diversify community

#3 Diversify

Figure 16 *Diversify* (2020)

Explanation: Introduce a wider range of facilities to attract a diversity of people of all ages. This contributes to urban vitality.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

#25 A home for every need

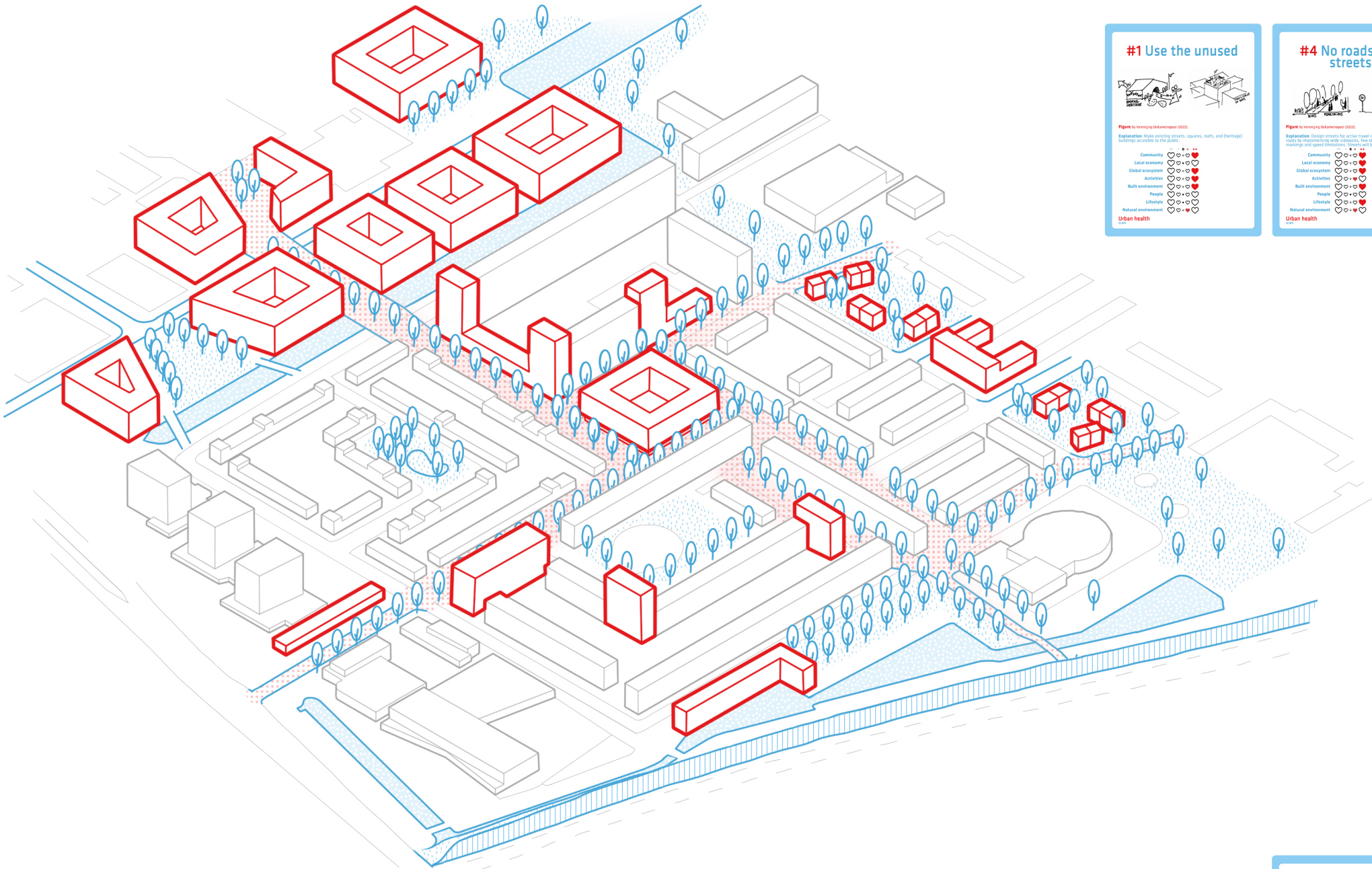
Figure 17 *A home for every need* (2020)

Explanation: Implementing a wider range of overall properties will make the neighborhood affordable for current and diverse residents in the long run.

Community	+	+	+
Local economy	+	+	+
Global ecosystem	+	+	+
Activities	+	+	+
Built environment	+	+	+
People	+	+	+
Lifestyle	+	+	+
Natural environment	+	+	+
Urban health	+	+	+

Community *enhancing a sense of local community*

1. Sustain current community > preserve existing dwellings
2. Add safe streets connected to the surroundings



#1 Use the unused

Figure by *Living Urbanism (2015)*

Explanation: Make existing streets, squares, parks, and heritage buildings available to the public.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#4 No roads, but streets

Figure by *Living Urbanism (2015)*

Explanation: Design streets for active travel instead of conformity with the car. Create public and open spaces to increase a sense of ownership and responsibility.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#5 Eyes on streets

Figure by *Living Urbanism (2015)*

Explanation: With a clear layout and balconies or windows to provide views on the street, public and open spaces to increase a sense of ownership and responsibility.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#7 Transform transitions

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: By designing clear transitions between private and public spaces, the environment can be made more inviting and accessible.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#12 Active plinths

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: Plinths and usable outdoor spaces for neighborhood events and other activities help create a sense of identity and place.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#13 Fill-in spaces

Figure by *Living Urbanism (2015)*

Explanation: Plinths and usable outdoor spaces for neighborhood events and other activities help create a sense of identity and place.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

3. Diversify community

#3 Diversify

Figure by *Living Urbanism (2015)*

Explanation: Introduce a range of facilities to attract a diversity of people of all ages. This contributes to urban vitality.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#25 A home for every need

Figure by *Living Urbanism (2015)*

Explanation: A range of housing types and tenures will make the neighborhood affordable for current and future residents of all ages and incomes.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

4. Create opportunities for encounters

#2 Sharing is caring

Figure by *Living Urbanism (2015)*

Explanation: Introduce shared facilities where people can meet each other. This contributes to urban vitality.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#6 Less door = more

Figure by *Living Urbanism (2015)*

Explanation: Urban densification offers the opportunity for more common spaces. These contribute to more connected, inclusive, and vibrant communities.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#8 Unplanned encounters

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: By designing spaces to meet in the same places and some shared spaces (landmarks) will happen more often.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#9 Community hub

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: By placing a community hub the inhabitants will have a location to meet for community events. This contributes to a sense of community and place.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#10 Take a seat

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: Providing enough seats people can sit down and enjoy public spaces for longer which can lead to incidental encounters.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#11 Garden together

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: Community gardens can strengthen a sense of community. Growing your own food can reduce grocery costs, provide a healthy diet and be educational for all ages.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#14 Gather around

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: Encouraging groups of public space to gathering with larger groups can support outdoor community events and places to meet.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

#24 Makers community

Figure by *Chris de Waard (2015)*

Explanation: Combining hobby studios with a community hub supports knowledge sharing, strengthens a local network of makers and promotes collaboration.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

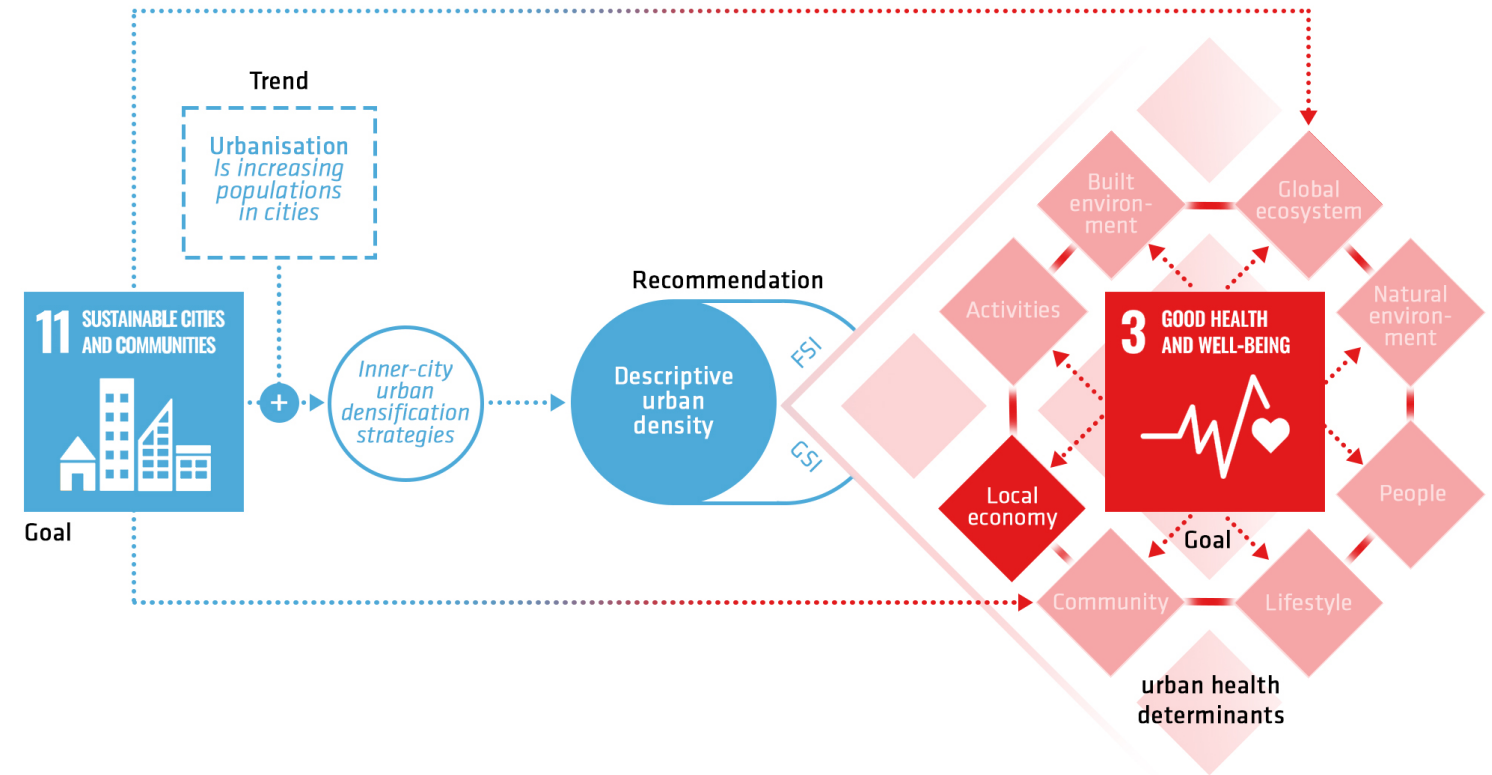
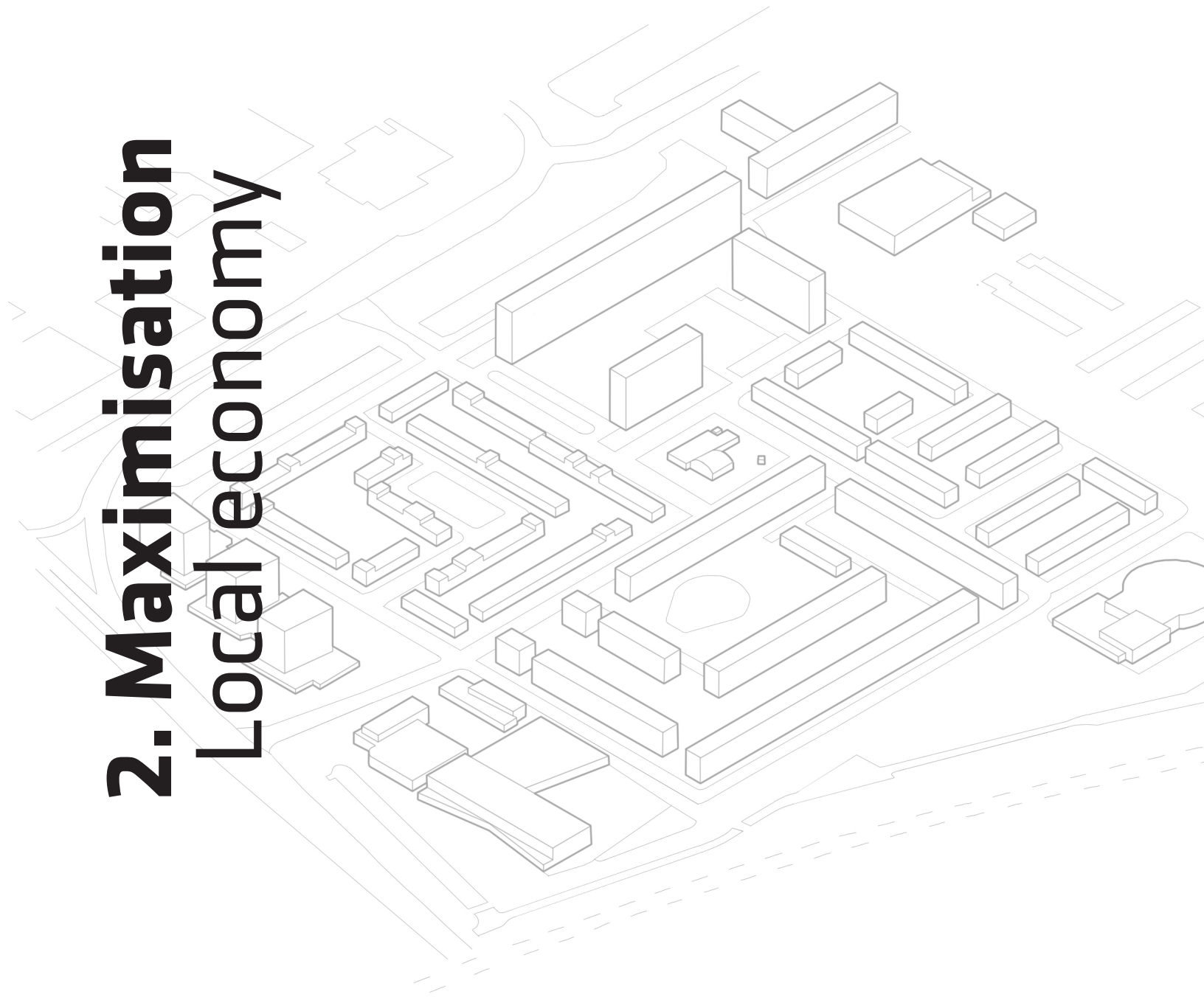
#28 Learn by playing

Figure by *Paul Monon, Strategy & Design (2015)*

Explanation: Playing is crucial to child development because it supports a wide range of physical, cognitive, emotional, and social growth. Learning by playing is integral to child development.

Community	+
Local economy	+
Global ecosystem	+
Activities	+
Built environment	+
People	+
Literacy	+
Natural environment	+
Urban health	+

2. Maximisation Local economy

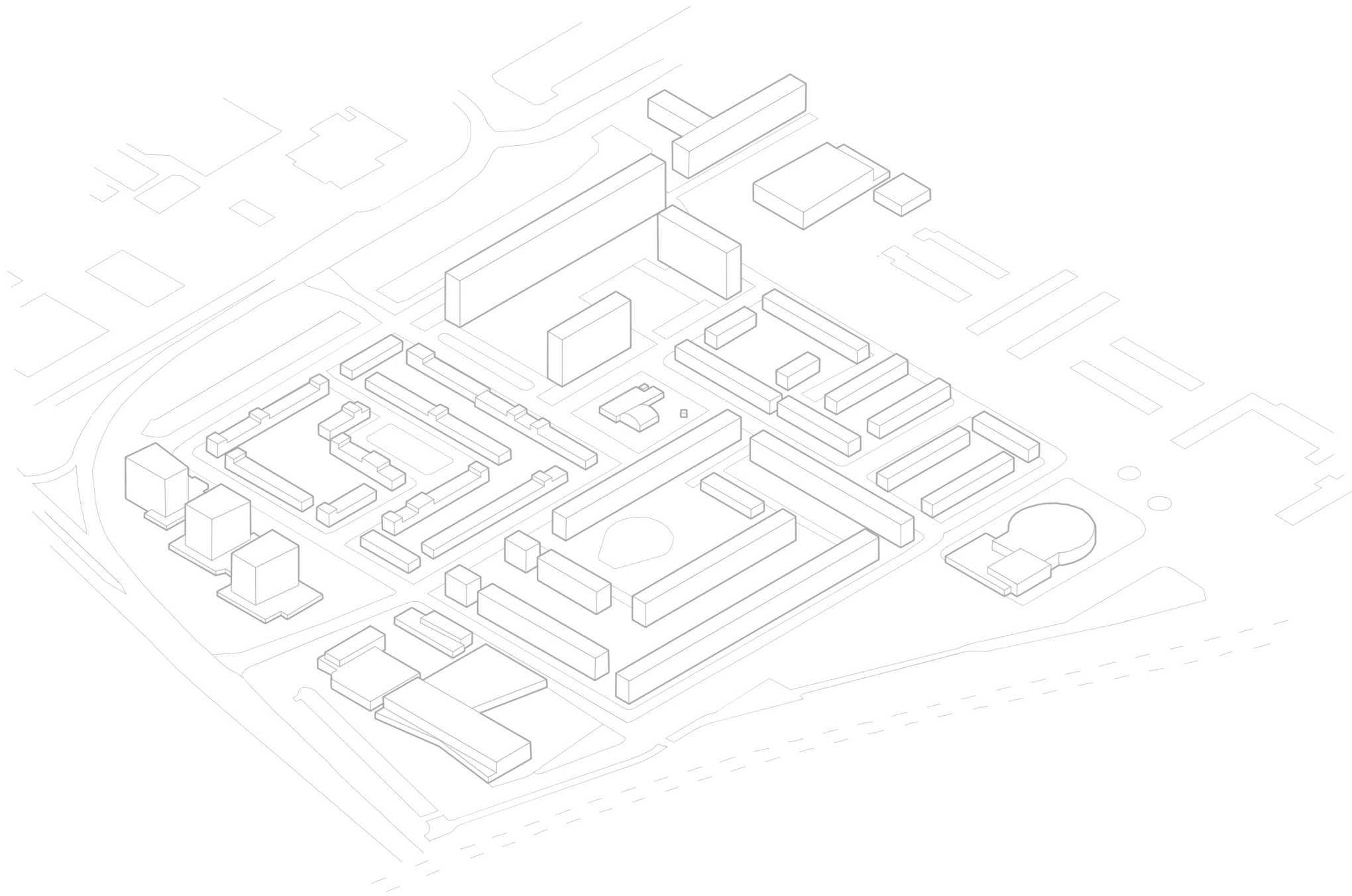


Health-Density nexus

Local Economy

promoting enterprise and employment

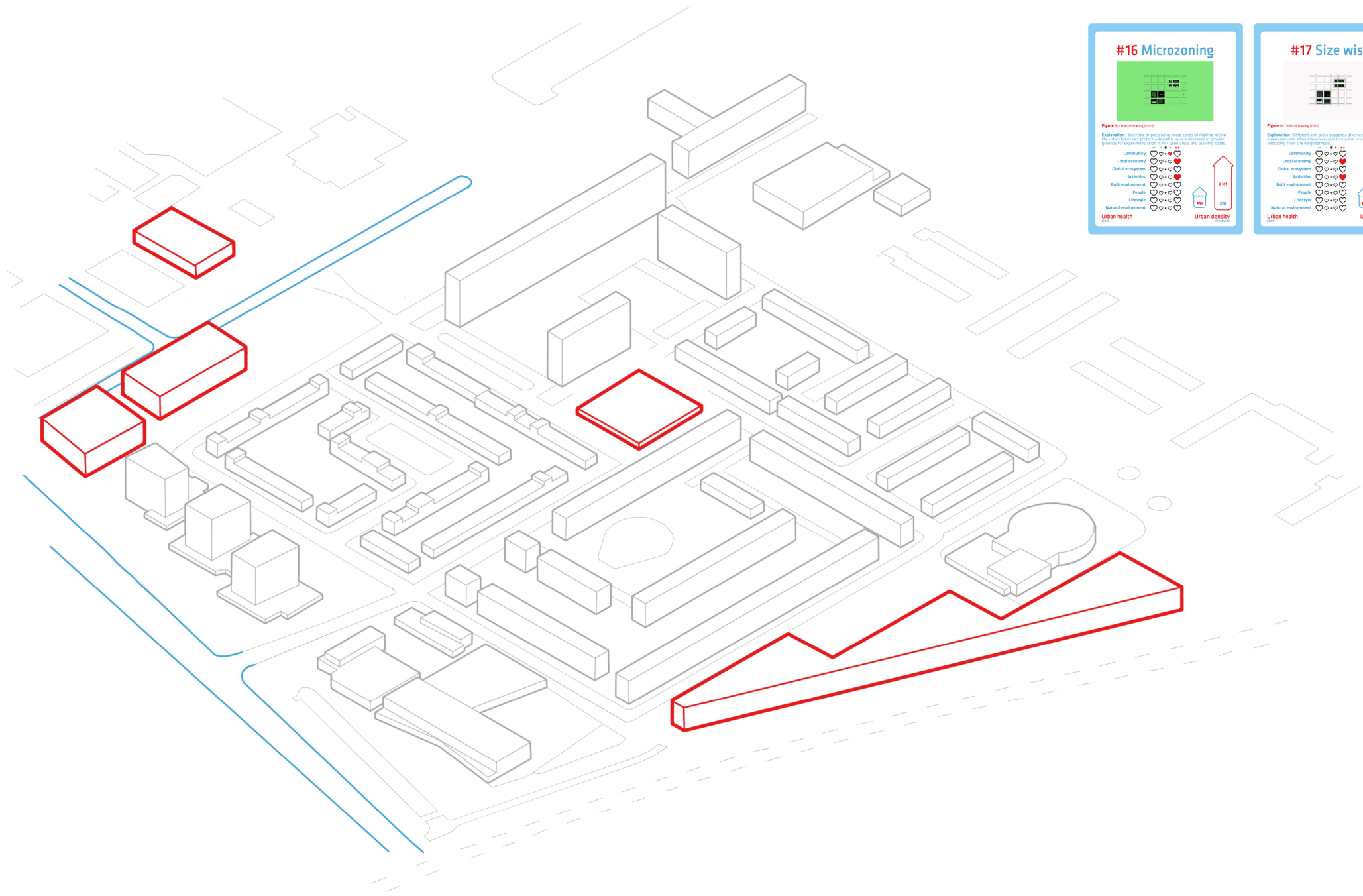
1. Prevent displacement by gentrification > keep existing dwellings



Local Economy

promoting enterprise and employment

1. Prevent displacement by gentrification > keep existing dwellings
2. Insert making into the neighborhood



#16 Microzoning

Explanation: Inserting or preserving micro zones of making within the urban fabric can attract residential local businesses or create grounds for experimentation with new uses and building types.

Community	+	+	+	+
Local economy	+	+	+	+
Global ecosystem	+	+	+	+
Activities	+	+	+	+
Built environment	+	+	+	+
People	+	+	+	+
Lifestyle	+	+	+	+
Natural environment	+	+	+	+
Urban health	+	+	+	+

Urban density: ↑ 10%

#17 Size wise

Explanation: Different unit sizes support a diverse range of businesses and allow opportunities to expand or diversify without reducing floor area requirements.

Community	+	+	+	+
Local economy	+	+	+	+
Global ecosystem	+	+	+	+
Activities	+	+	+	+
Built environment	+	+	+	+
People	+	+	+	+
Lifestyle	+	+	+	+
Natural environment	+	+	+	+
Urban health	+	+	+	+

Urban density: ↑ 10%

#18 Messy making

Explanation: Creating manufacturing activities that generate noise, dust, and involve messy infrastructure helps reduce displacement.

Community	+	+	+	+
Local economy	+	+	+	+
Global ecosystem	+	+	+	+
Activities	+	+	+	+
Built environment	+	+	+	+
People	+	+	+	+
Lifestyle	+	+	+	+
Natural environment	+	+	+	+
Urban health	+	+	+	+

Urban density: ↑ 10%

#22 Vertical making

Explanation: Freight elevators and strong load-bearing floors in multi-story buildings support vertical growth and make flexible space available.

Community	+	+	+	+
Local economy	+	+	+	+
Global ecosystem	+	+	+	+
Activities	+	+	+	+
Built environment	+	+	+	+
People	+	+	+	+
Lifestyle	+	+	+	+
Natural environment	+	+	+	+
Urban health	+	+	+	+

Urban density: ↑ 10%

#23 Flexible spaces

Explanation: Flexible spaces can allow makers to share facilities. This allows small scale start-ups, micro-business, and enterprises in the neighborhood with limited resources.

Community	+	+	+	+
Local economy	+	+	+	+
Global ecosystem	+	+	+	+
Activities	+	+	+	+
Built environment	+	+	+	+
People	+	+	+	+
Lifestyle	+	+	+	+
Natural environment	+	+	+	+
Urban health	+	+	+	+

Urban density: ↑ 10%

#24 Makers community

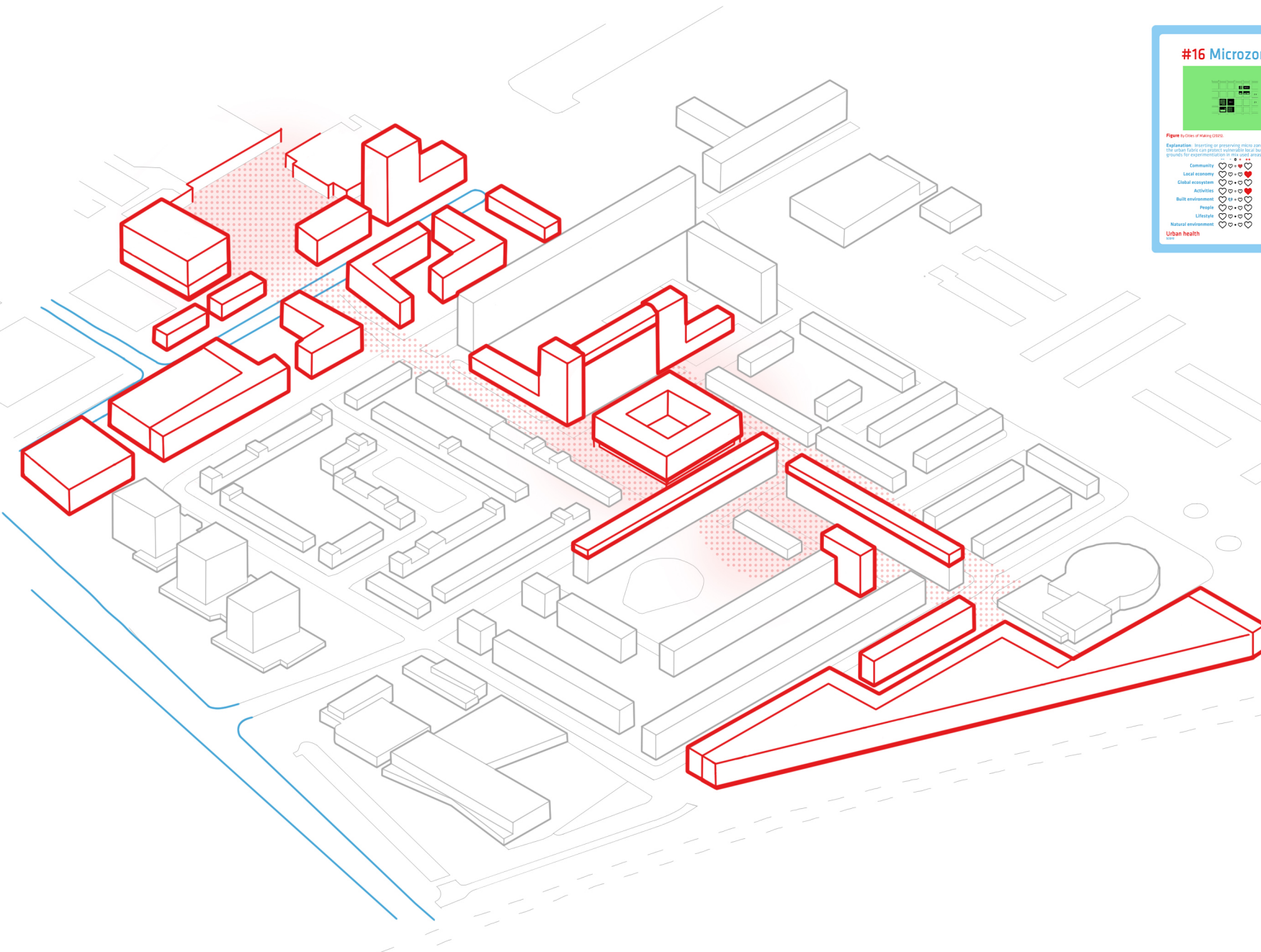
Explanation: Combining making facilities with a community hub fosters knowledge sharing, encourages a local network of makers and provides collaboration.

Community	+	+	+	+
Local economy	+	+	+	+
Global ecosystem	+	+	+	+
Activities	+	+	+	+
Built environment	+	+	+	+
People	+	+	+	+
Lifestyle	+	+	+	+
Natural environment	+	+	+	+
Urban health	+	+	+	+

Urban density: ↑ 10%

Local Economy *promoting enterprise and employment*

1. Prevent displacement by gentrification > keep existing dwellings
2. Insert making into the neighborhood



#16 Microzoning

Figure by Cities of Making (2020).
Explanation: Inserting or preserving micro zones of making within the urban fabric can attract responsible local businesses or people (shops for experimentation) and use vacant and building types.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#17 Size wise

Figure by Cities of Making (2020).
Explanation: Different unit sizes support a diverse range of businesses and allow opportunities to expand or diversify without stepping back the neighborhood.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#18 Messy making

Figure by Cities of Making (2020).
Explanation: Creating manufacturing activities that generate noise, dust, and involve messy infrastructure helps reduce displacement.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#22 Vertical making

Figure by Cities of Making (2020).
Explanation: Flexible spaces and strong load-bearing floors in multi-story buildings support industrial growth and make healthy, lively adjacencies.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#23 Flexible spaces

Figure by Cities of Making (2020).
Explanation: Flexible spaces can allow makers to share facilities. This allows space to be used more frequently and encourages a local network of makers and producers.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#24 Makers community

Figure by Cities of Making (2020).
Explanation: Combining making facilities with a community hub fosters knowledge sharing, encourages a local network of makers and producers.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

3. Develop into a mix-use neighborhood

#3 Diversify

Figure by Housing Intervention (2020).
Explanation: Introduce a wider range of facilities to attract a diversity of people all day long. This contributes to urban vitality.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#13 Fill-in spaces

Figure by Housing Intervention (2020).
Explanation: Flexible and usable outdoor spaces for neighborhood festival days or pop-up events/markets helps create a sense of identity and health related life.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#15 Job diversity

Figure by Cities of Making (2020).
Explanation: A wider range of job opportunities, evenly distributed throughout the neighborhood, ensures more workers that align with the skills, abilities, and interests of the local workforce.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#20 High street

Figure by Cities of Making (2020).
Explanation: Encouraging maker use activities along high streets, improves regional accessibility and high pedestrian traffic, and the vitality.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#25 A home for every need

Figure by Housing Intervention (2020).
Explanation: Implementing a wider range of tenured properties will meet the regional objectives for diverse and therefore welcome a wide variety of income earners.

Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#26 Around the corner

Figure by Housing Intervention (2020).
Explanation: Having public, creative and work spaces to easily access and make good use of in peripheral zones can help the local economy thrive.

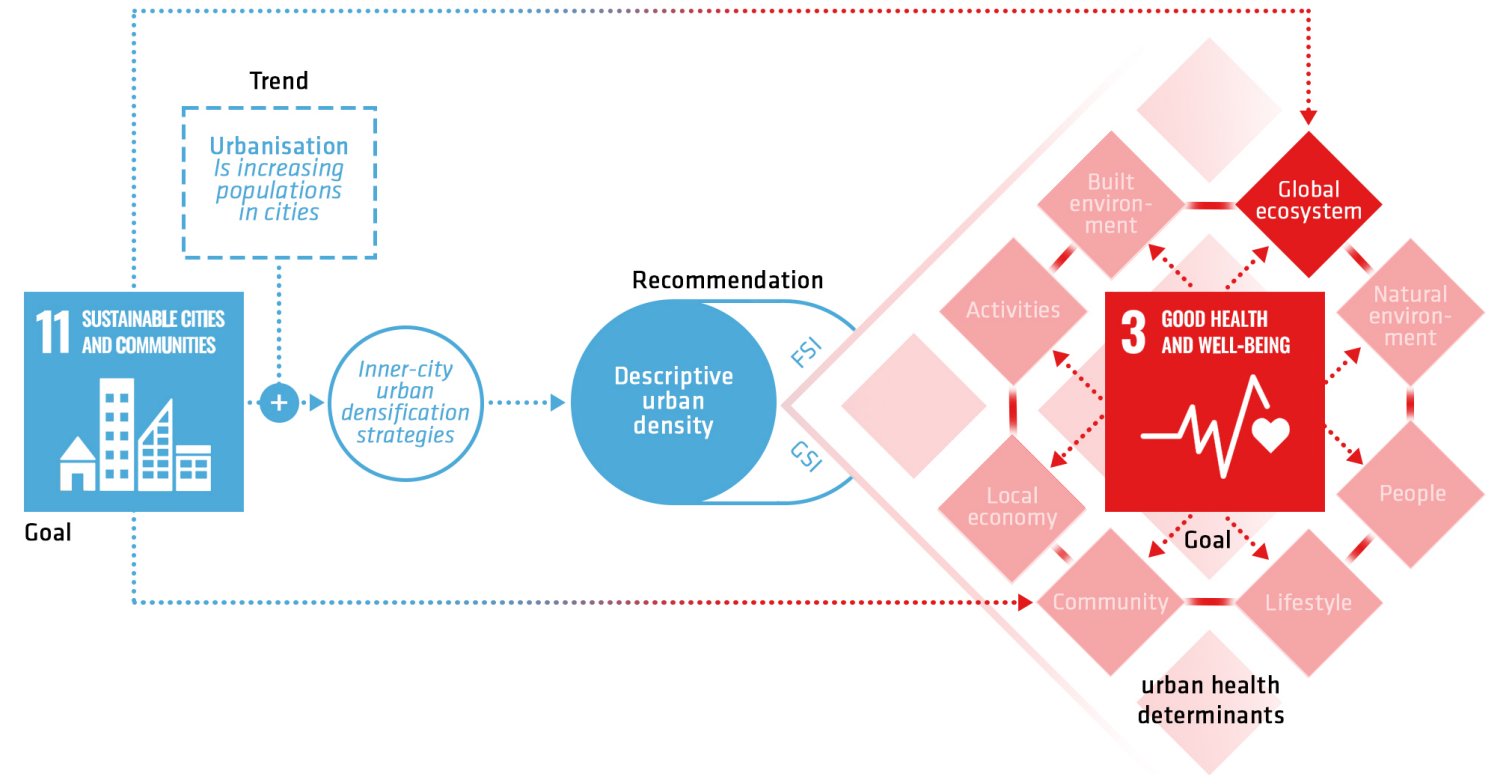
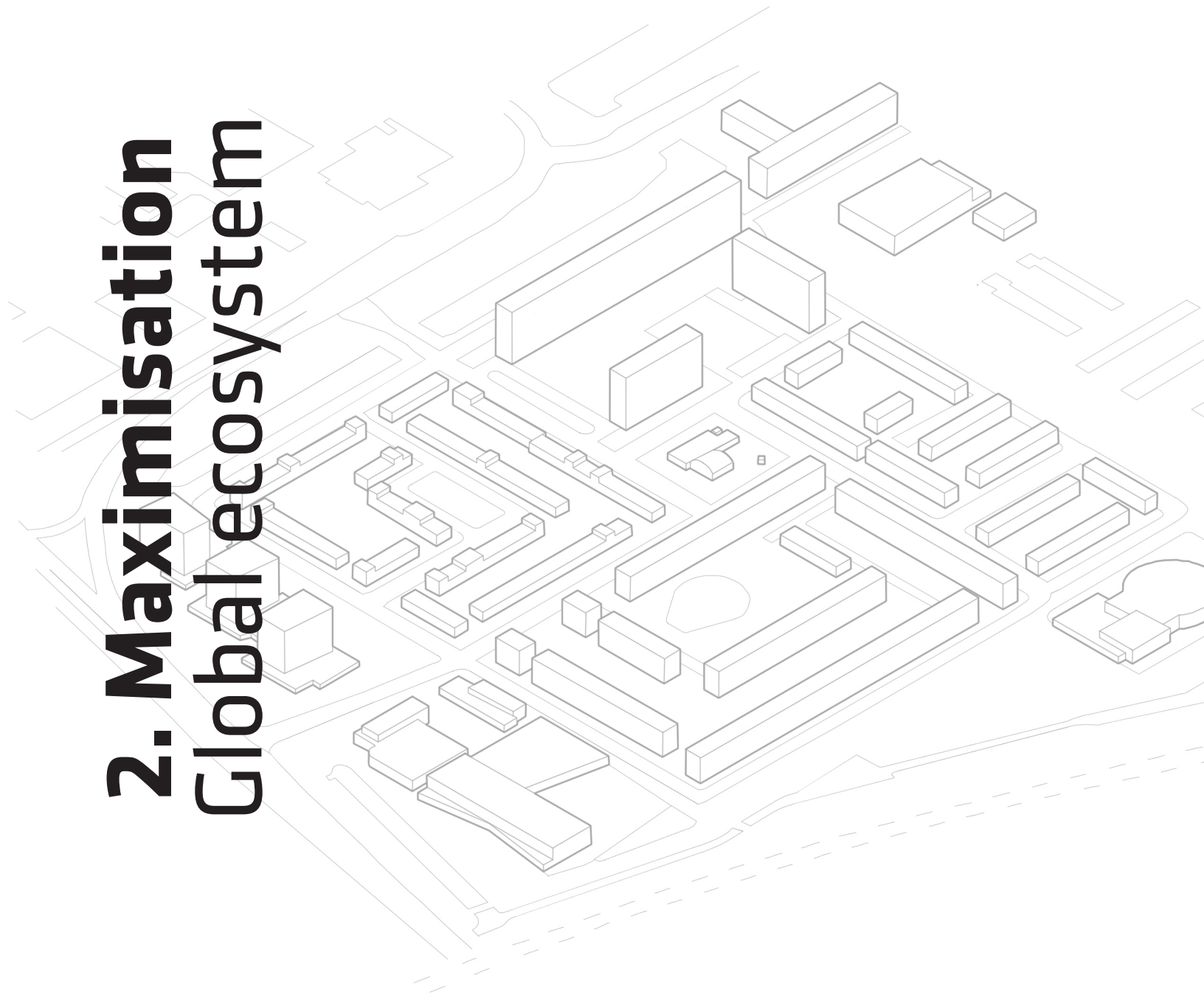
Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

#27 Twentyfour-seven

Figure by Housing Intervention (2020).
Explanation: Create space for public amenities, work and making spaces with a functional mix and programming as much as possible throughout the day.

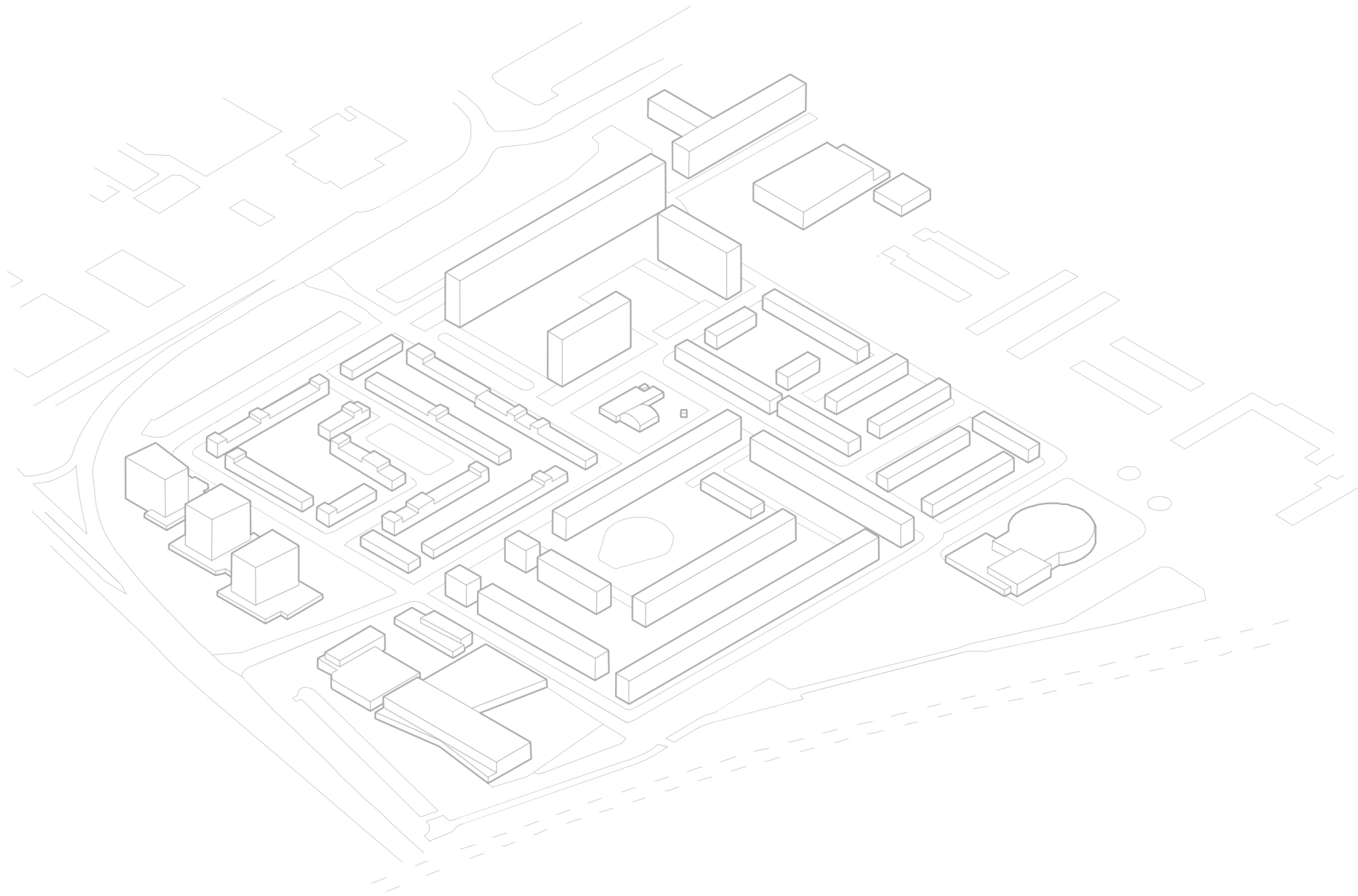
Community	+	+	+	+	+
Local economy	+	+	+	+	+
Global ecosystem	+	+	+	+	+
Activities	+	+	+	+	+
Built environment	+	+	+	+	+
People	+	+	+	+	+
Lifestyle	+	+	+	+	+
Natural environment	+	+	+	+	+
Urban health	+	+	+	+	+

2. Maximisation Global ecosystem



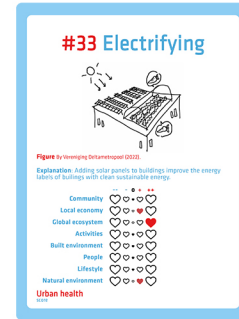
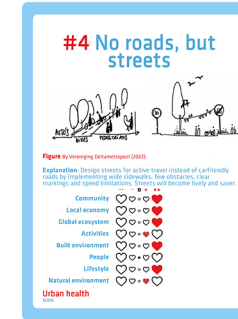
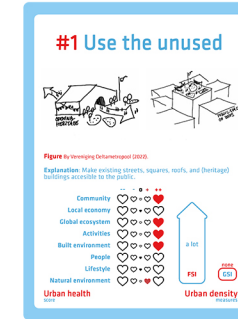
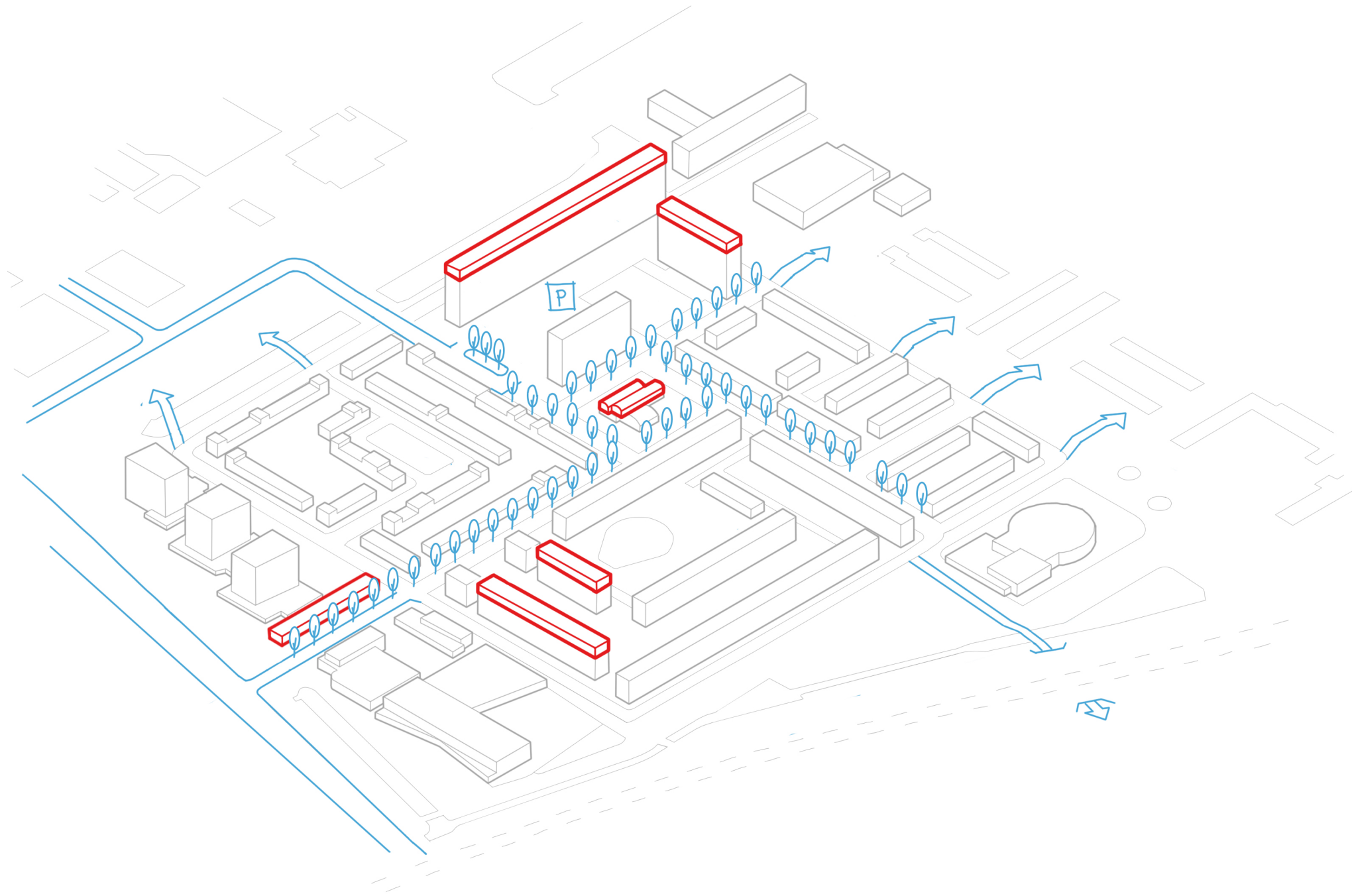
Health-Density nexus

1. Embedded energy > preserve existing buildings



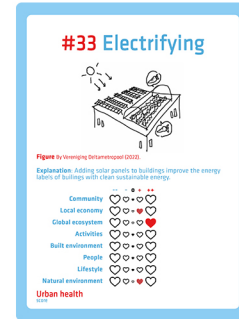
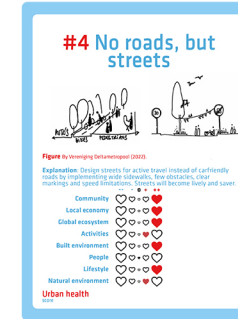
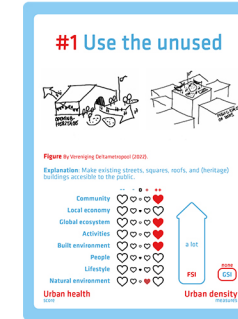
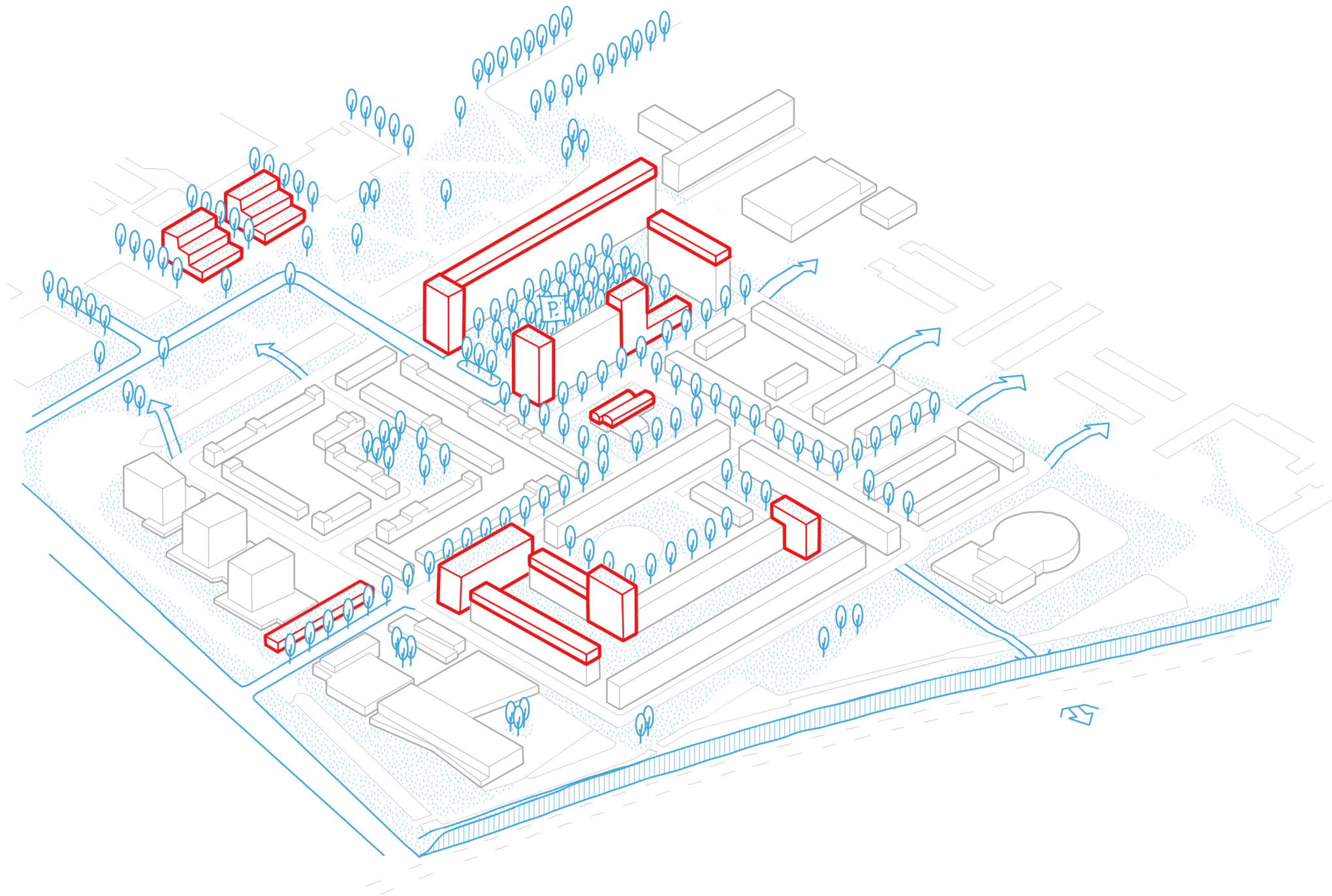
Global Ecosystem *adapting to climate change*

1. Embedded energy > preserve existing buildings
2. Green house gas emission reduction

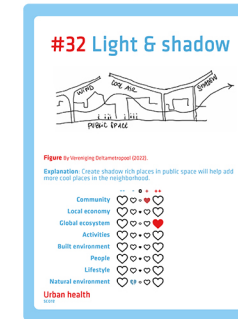
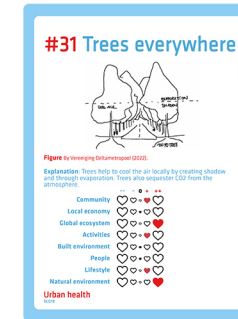


Global Ecosystem *adapting to climate change*

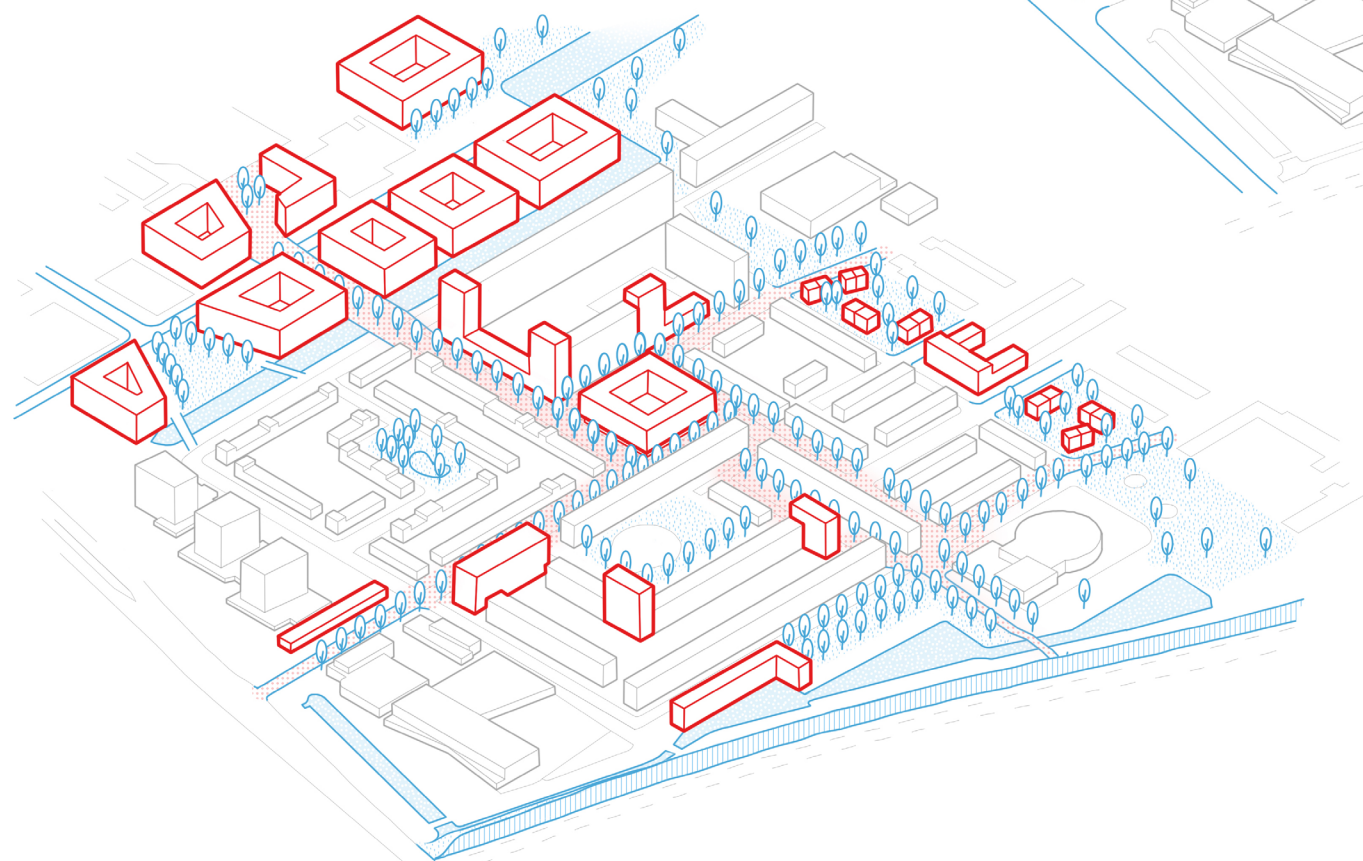
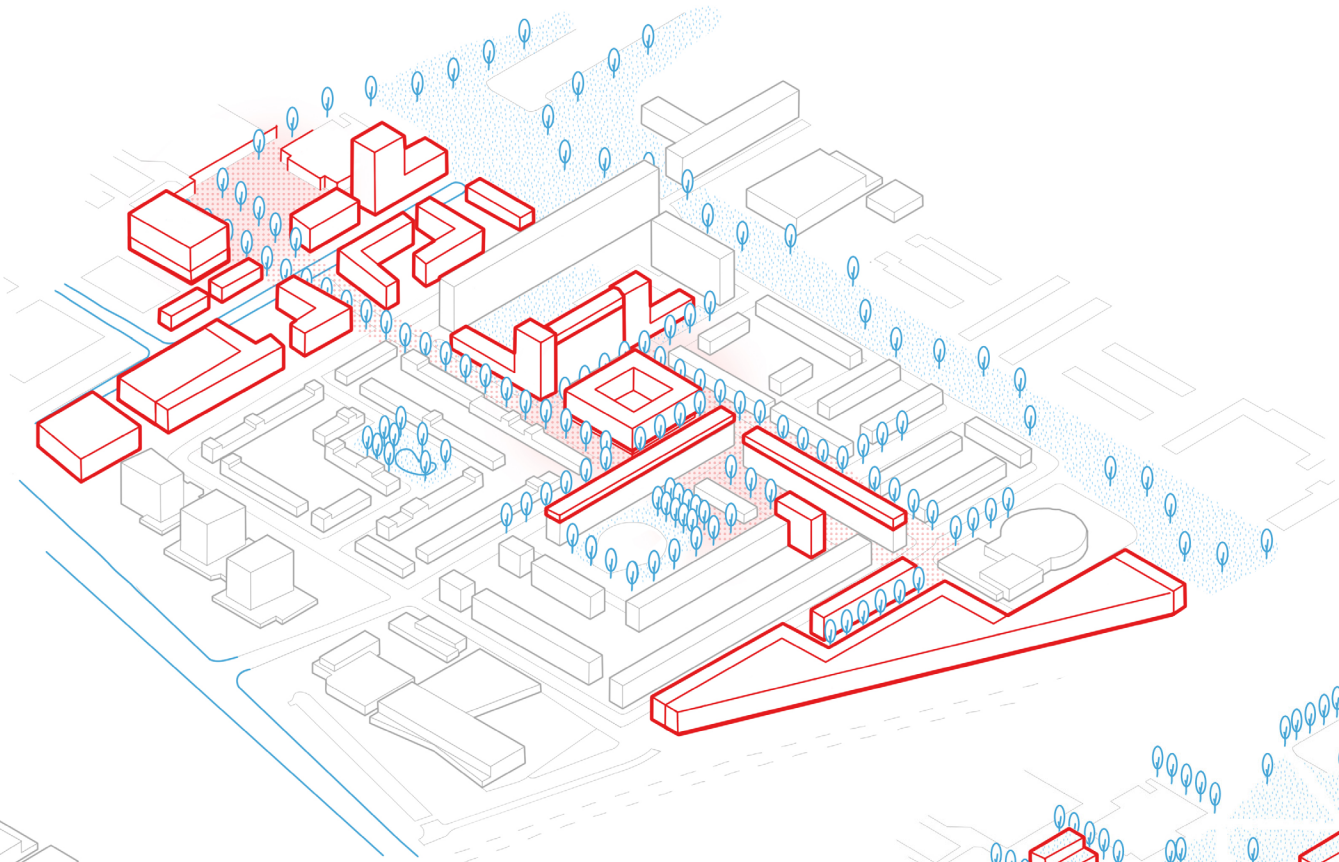
1. Embedded energy > preserve existing buildings
2. Green house gas emission reduction



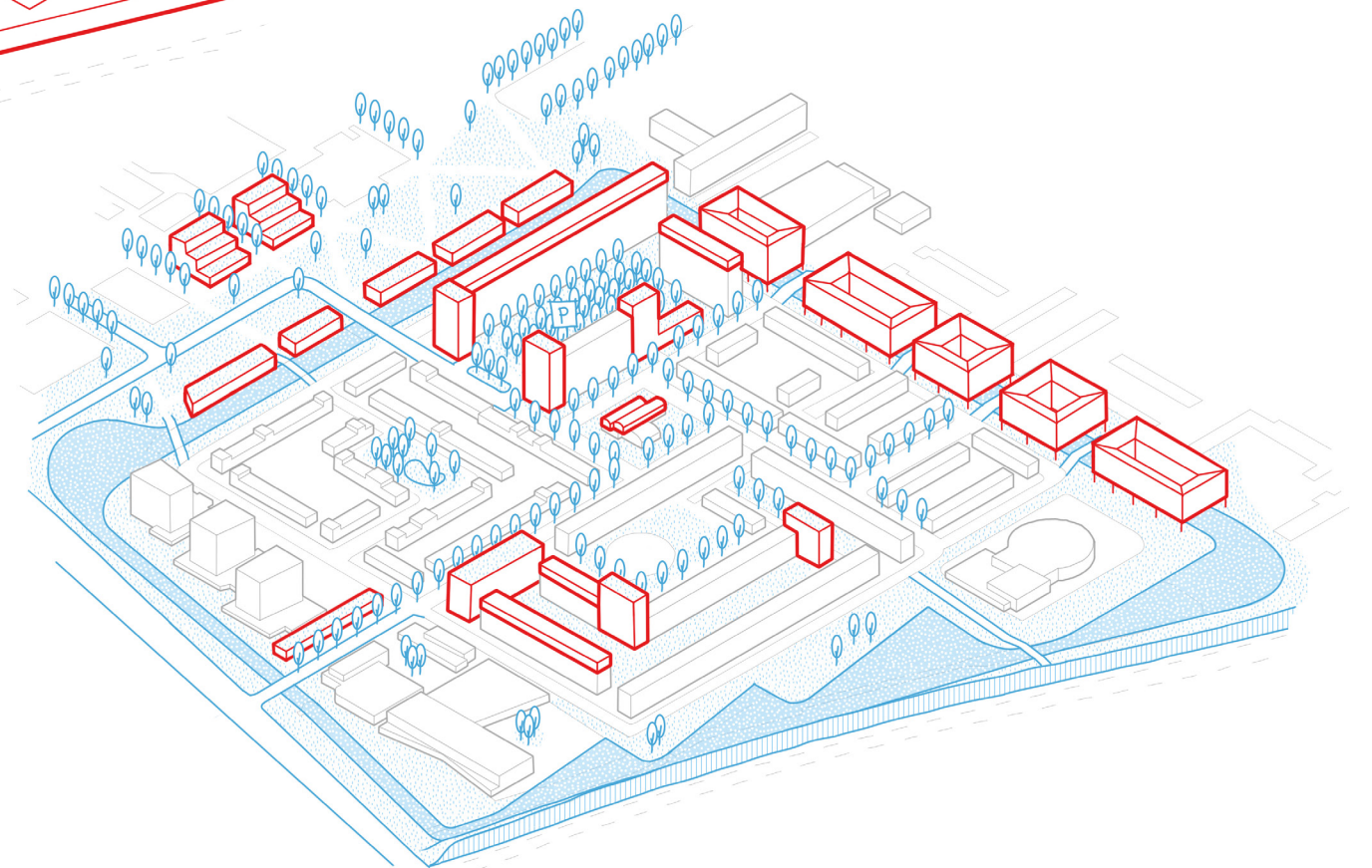
2. Heat stress mitigation



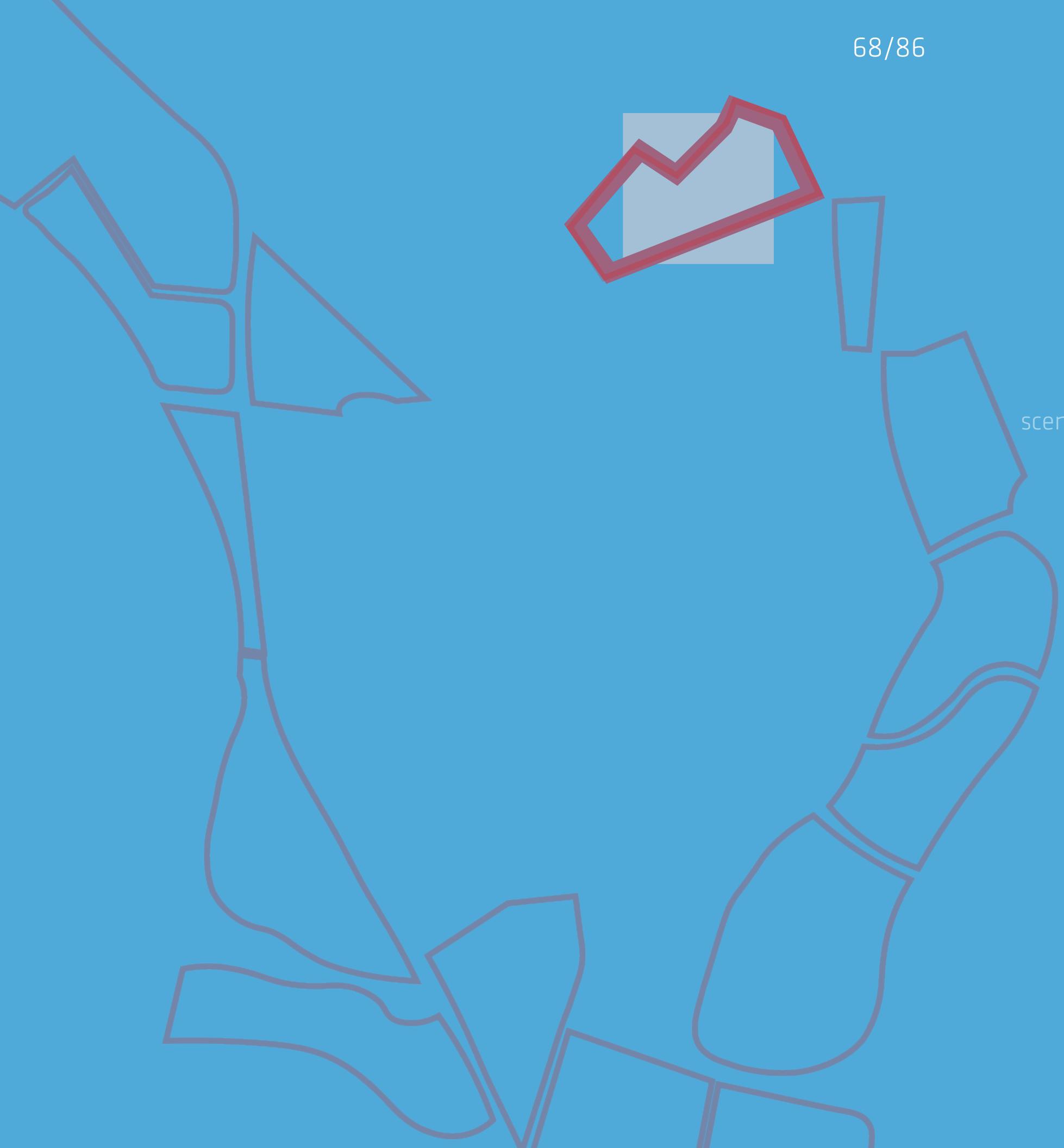
Local economy



Community



Global ecosystem



Spatial analysis
understanding Overvecht Zuid

1

Maximisation
scenarios of healthy urban densification

2

Optimisation
compete / complete

3

Integration
urban design

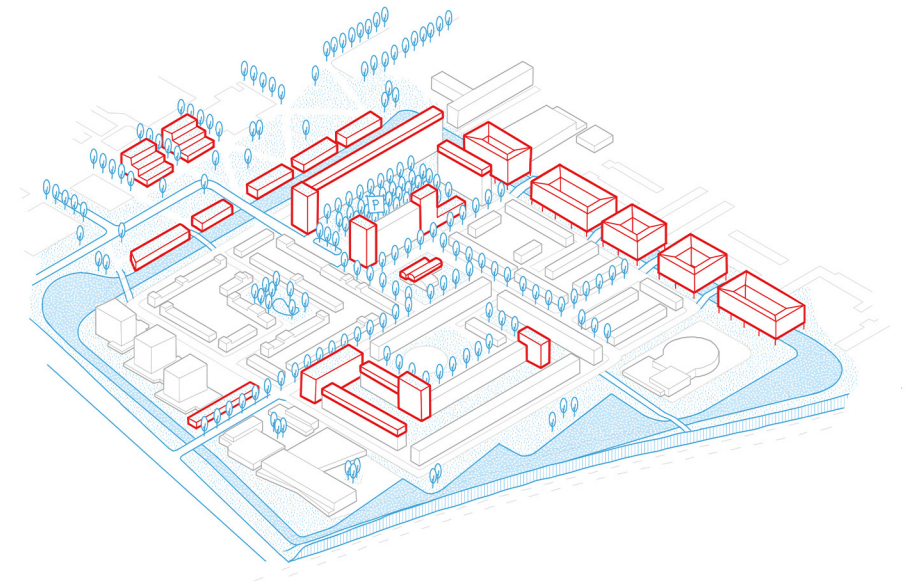
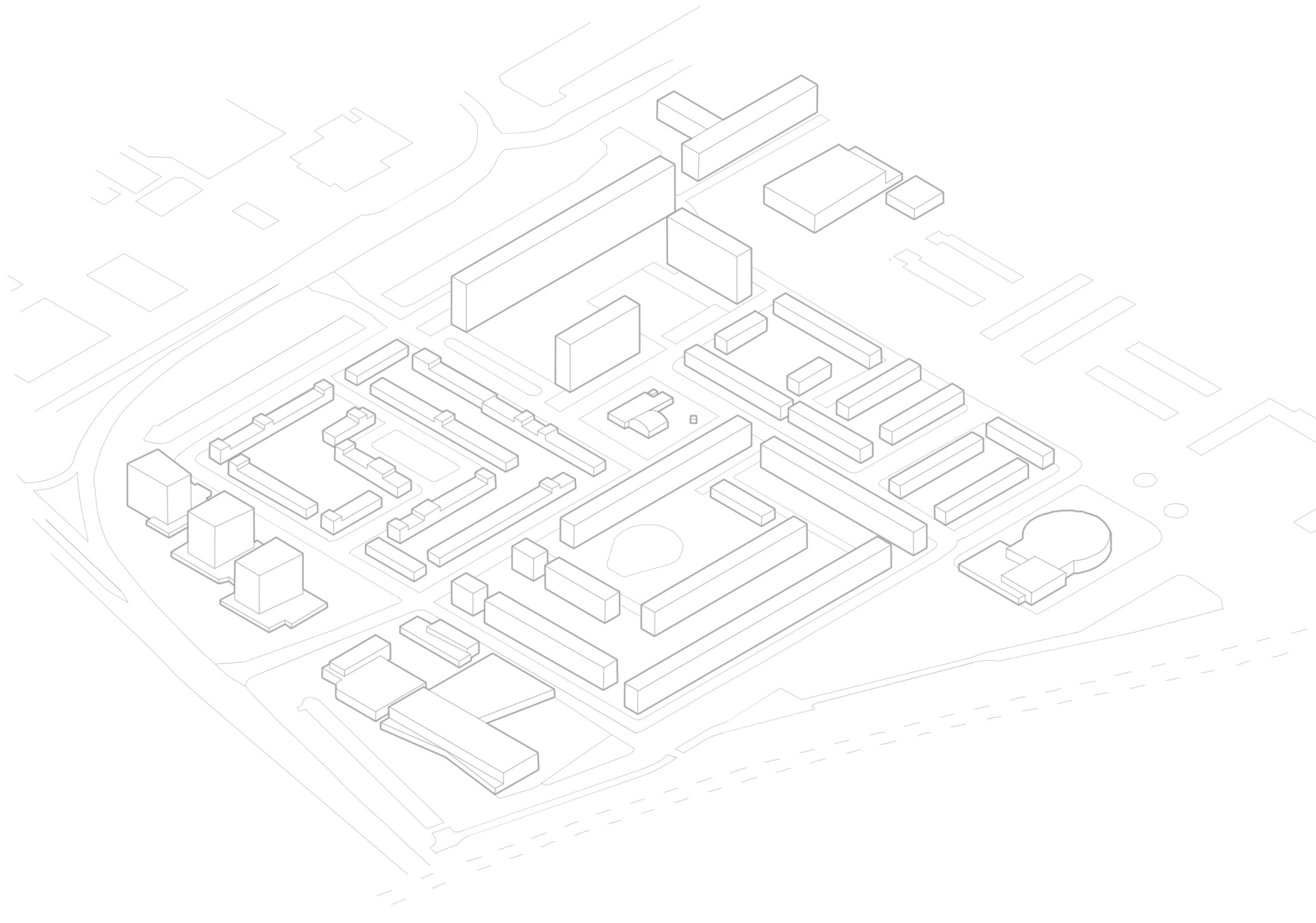
4

Conclusion

5

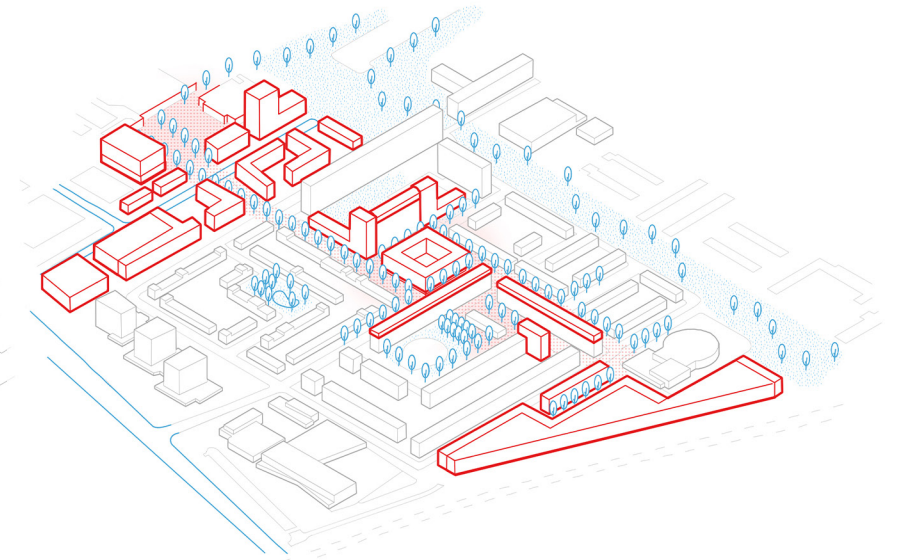
Optimisation

complete / compete



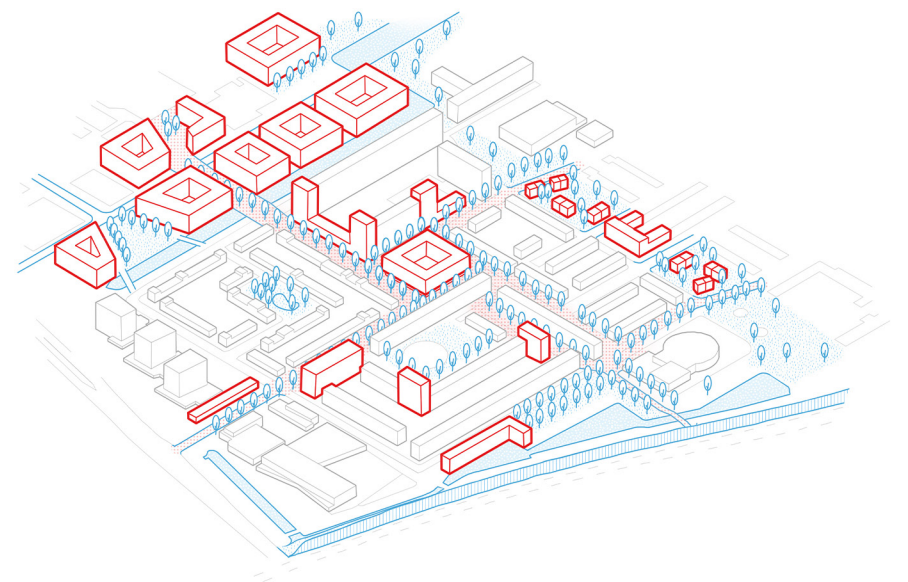
Global ecosystem
maximisation

+



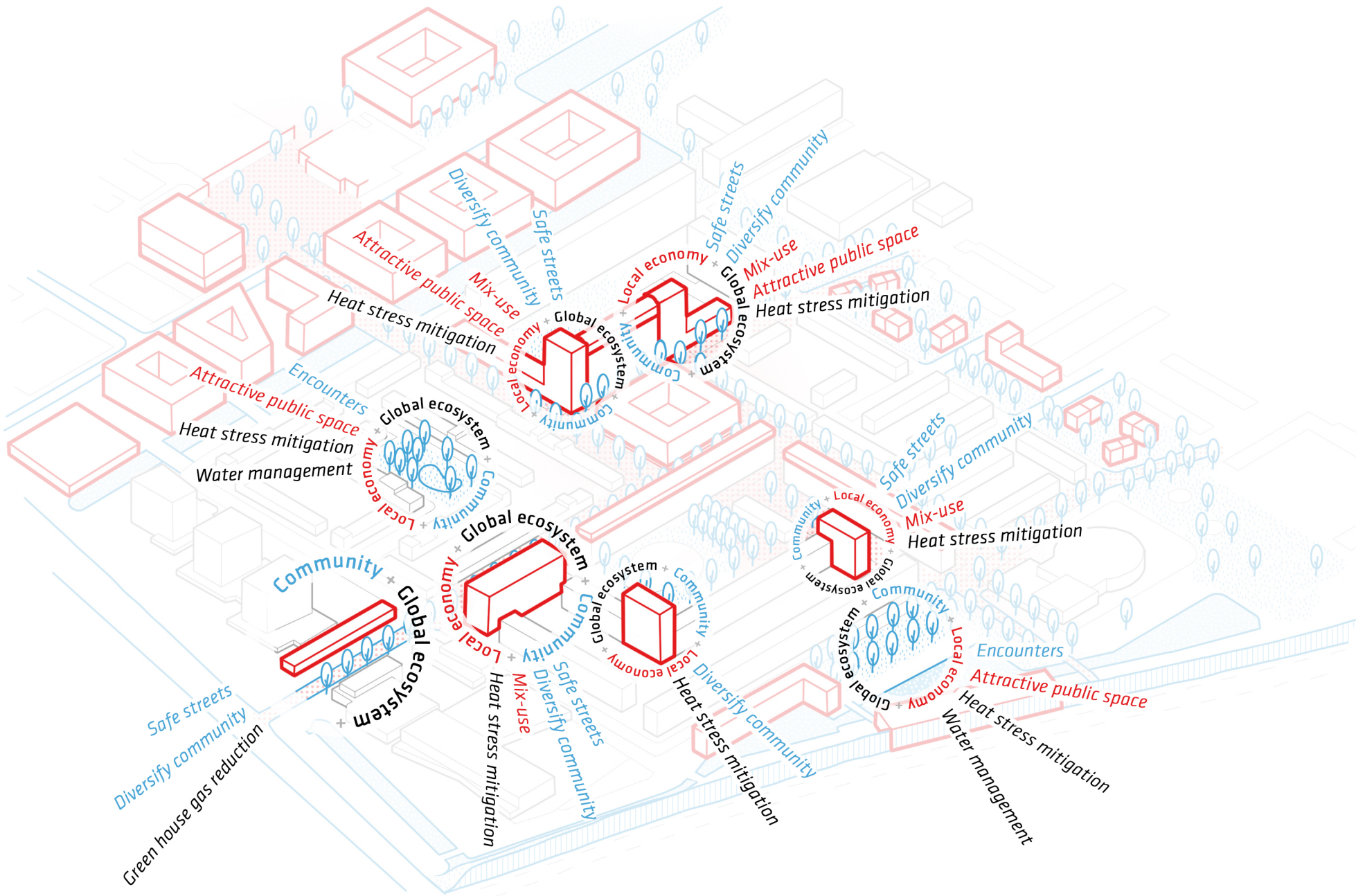
Local economy
maximisation

+

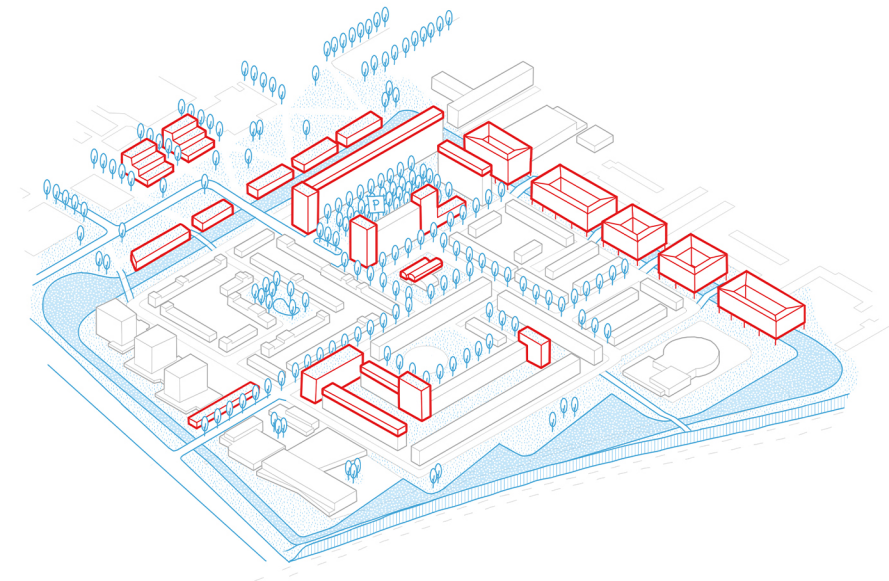


Community
maximisation

Optimisation *complete / compete*

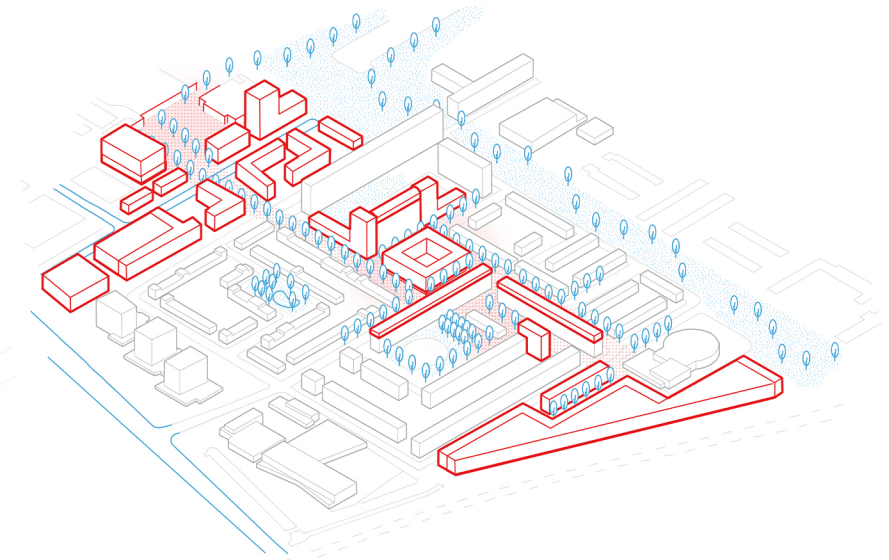


Community + Local economy + Global ecosystem



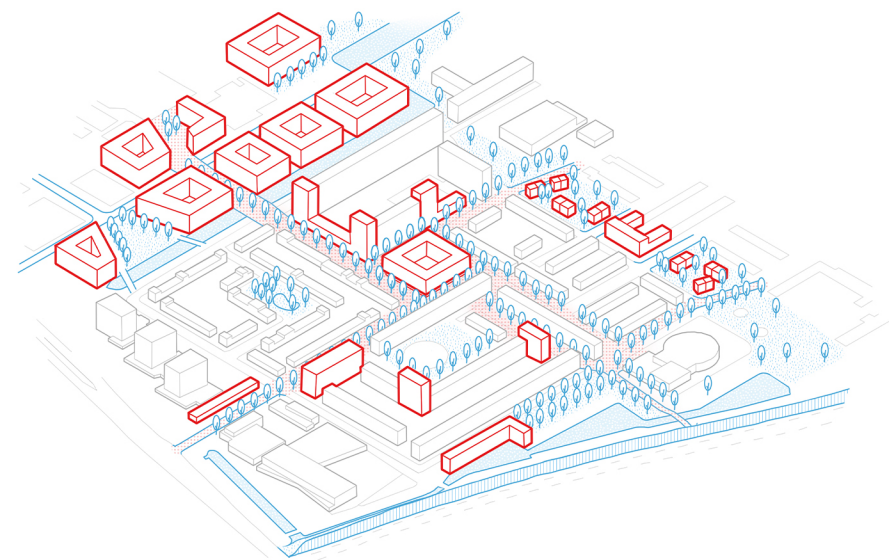
Global ecosystem
maximisation

+



Local economy
maximisation

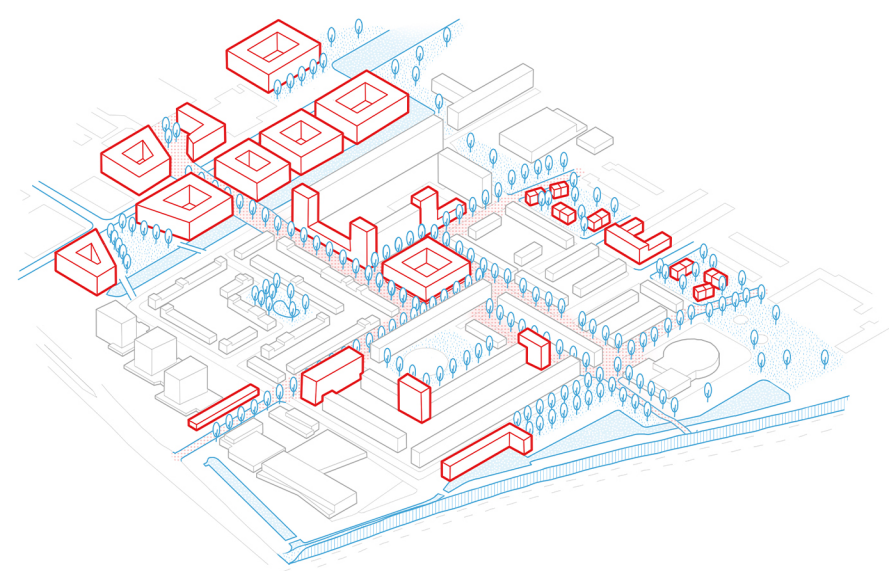
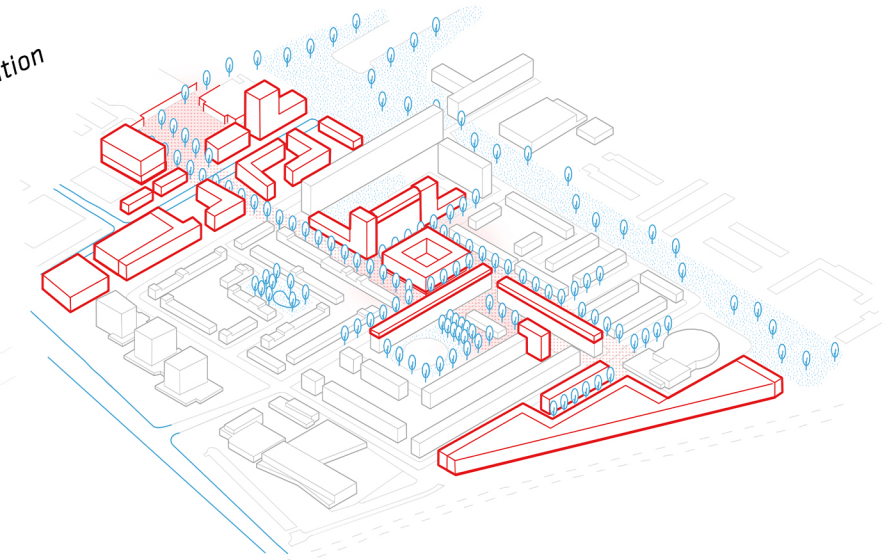
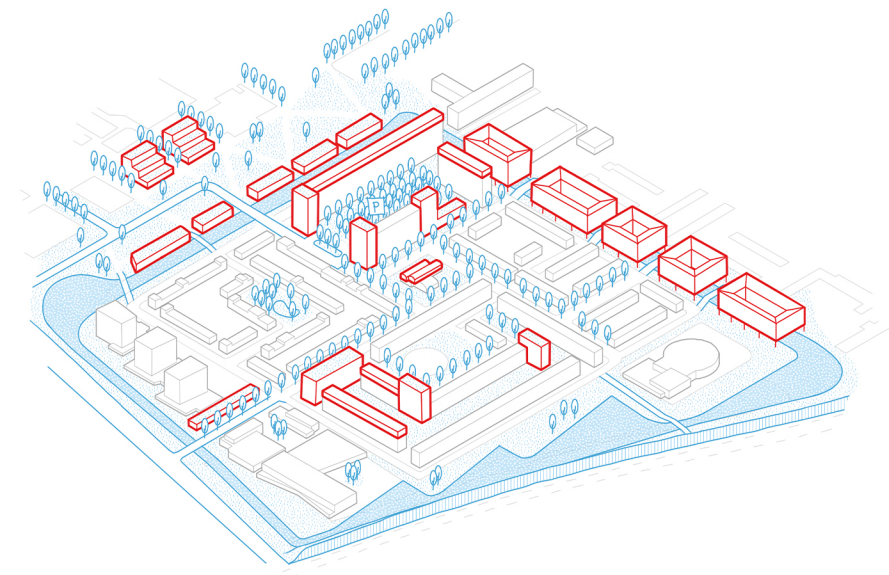
+



Community
maximisation

Optimisation

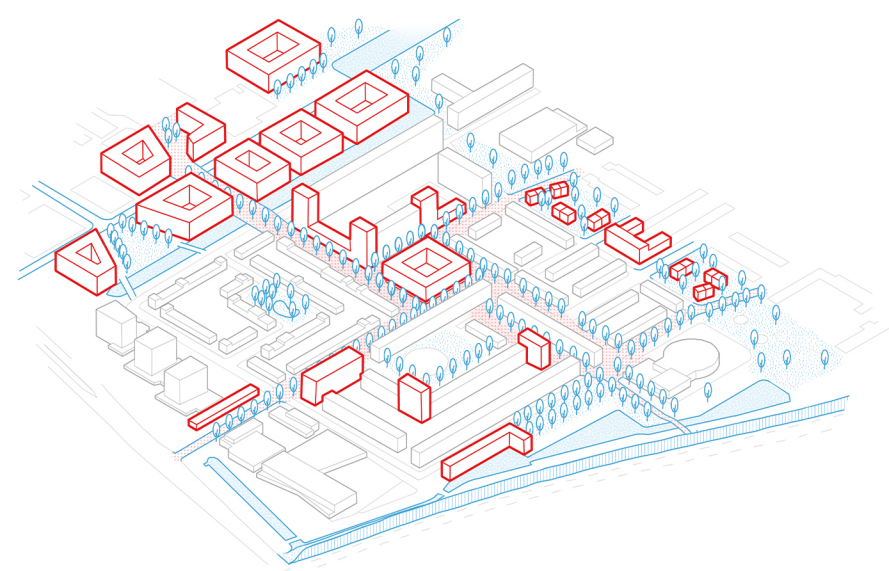
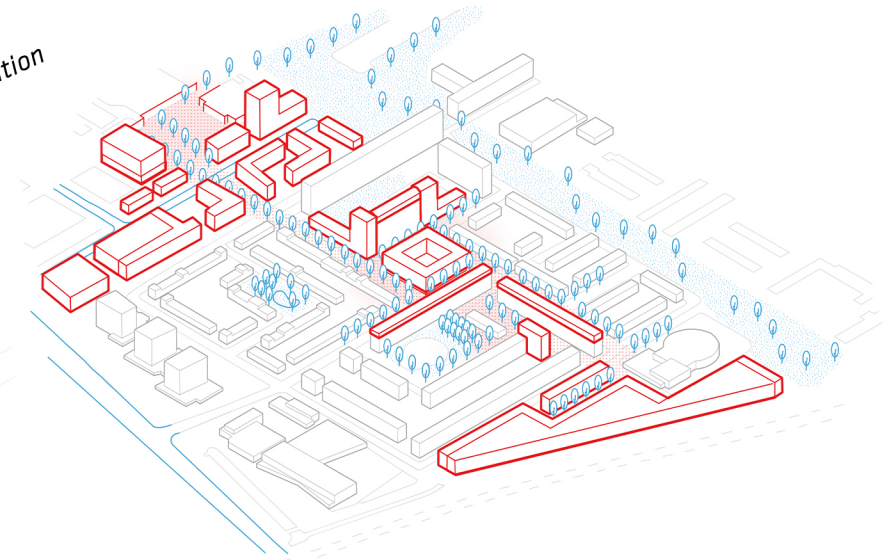
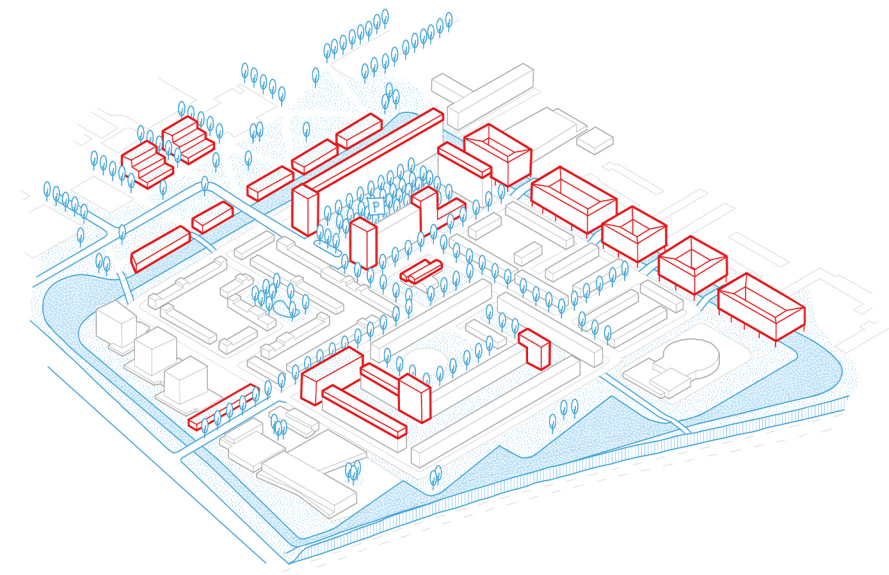
complete / compete



Global ecosystem maximisation + Local economy maximisation + Community maximisation

Community + Local economy + Global ecosystem

Optimisation *complete / compete*

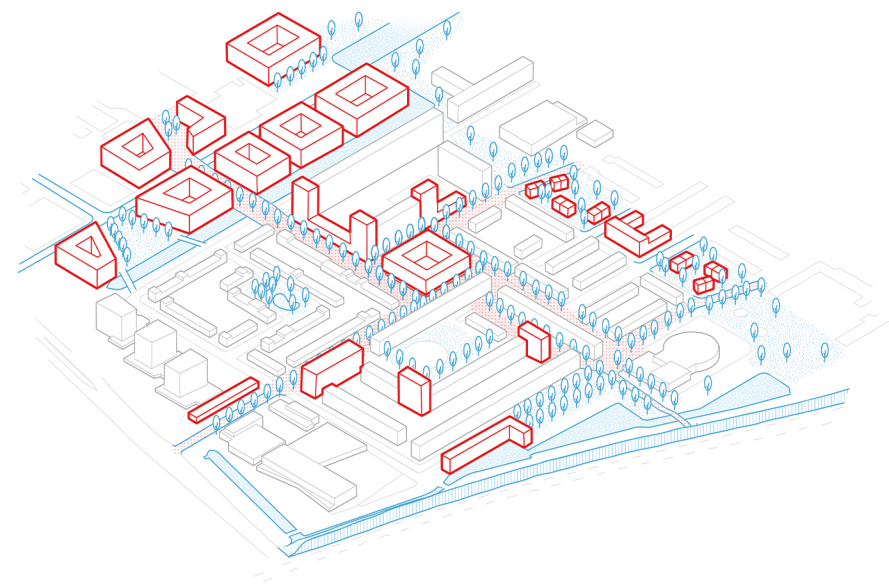
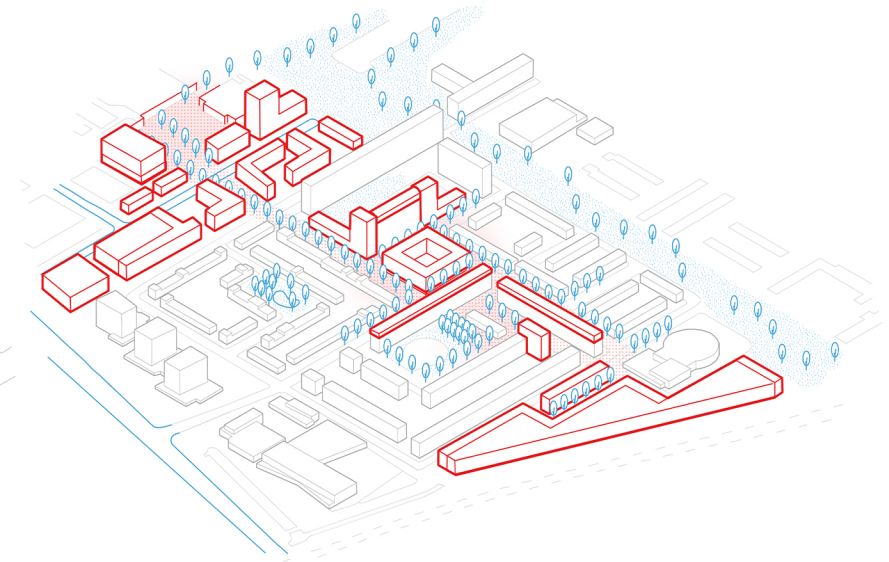
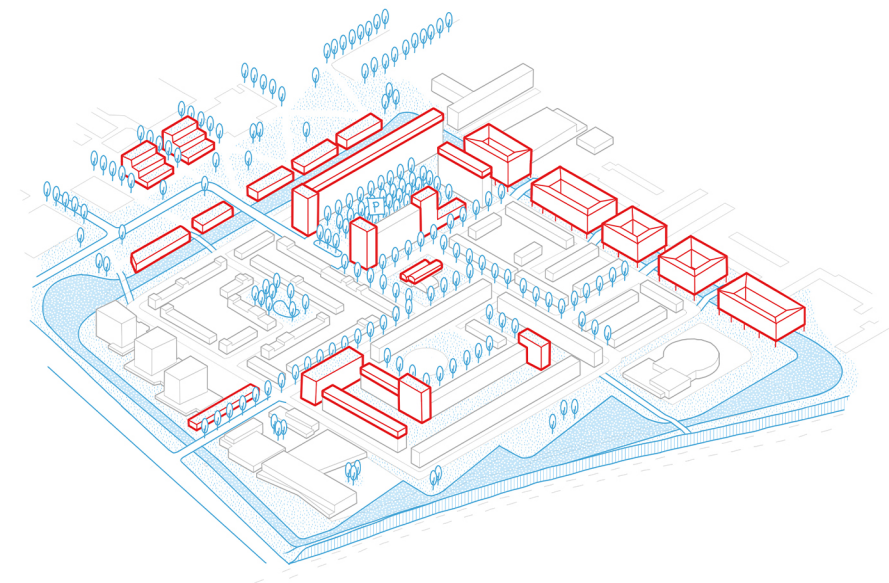
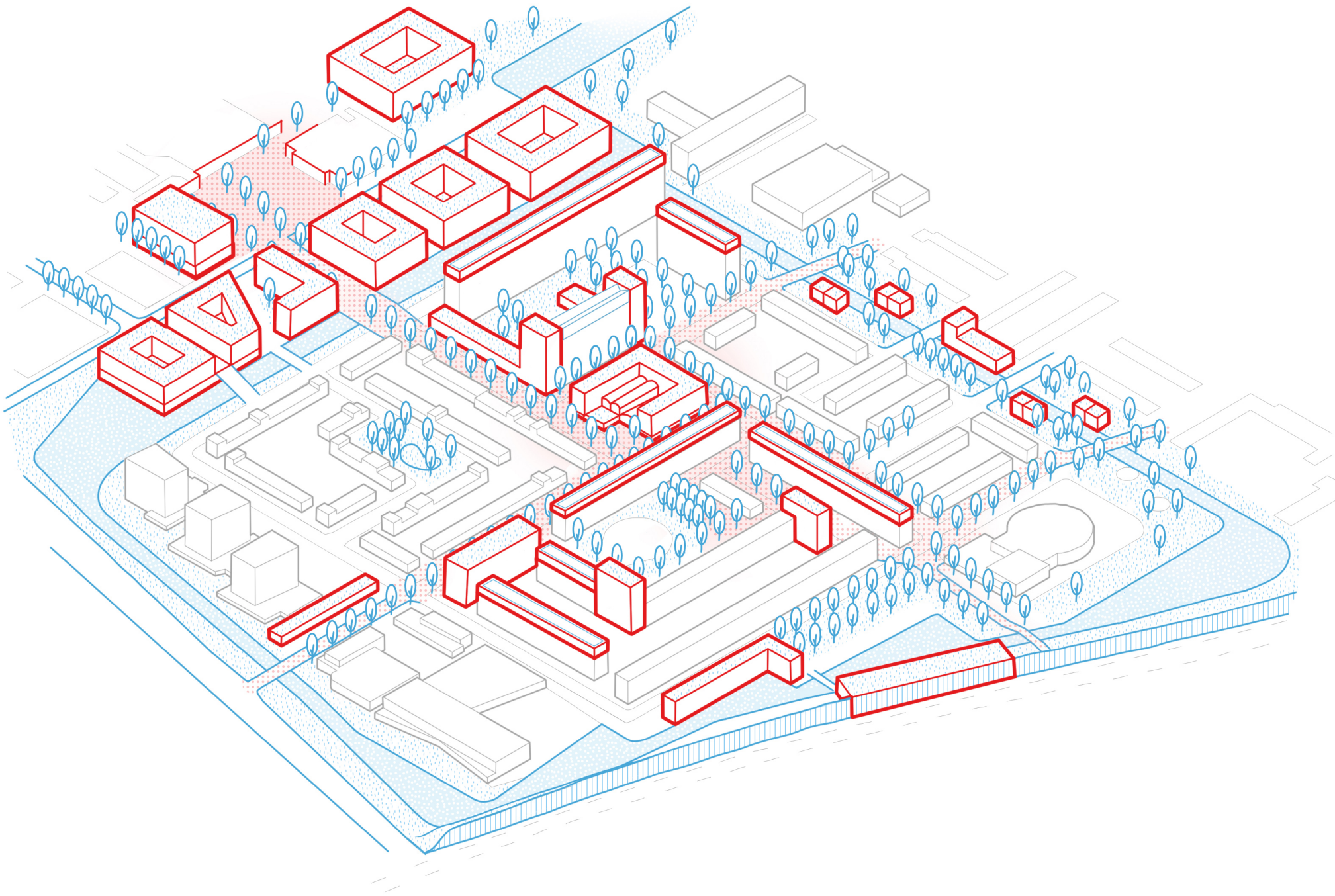


Community + Local economy + Global ecosystem

Global ecosystem
+
Local economy
+
Community
maximisation

Optimisation

complete / compete



Global ecosystem
+
maximisation

Local economy
+
maximisation

Community
+
maximisation

Community + Local economy + Global ecosystem



Spatial analysis
understanding Overvecht Zuid

1

Maximisation
scenarios of healthy urban densification

2

Optimisation
compete / complete

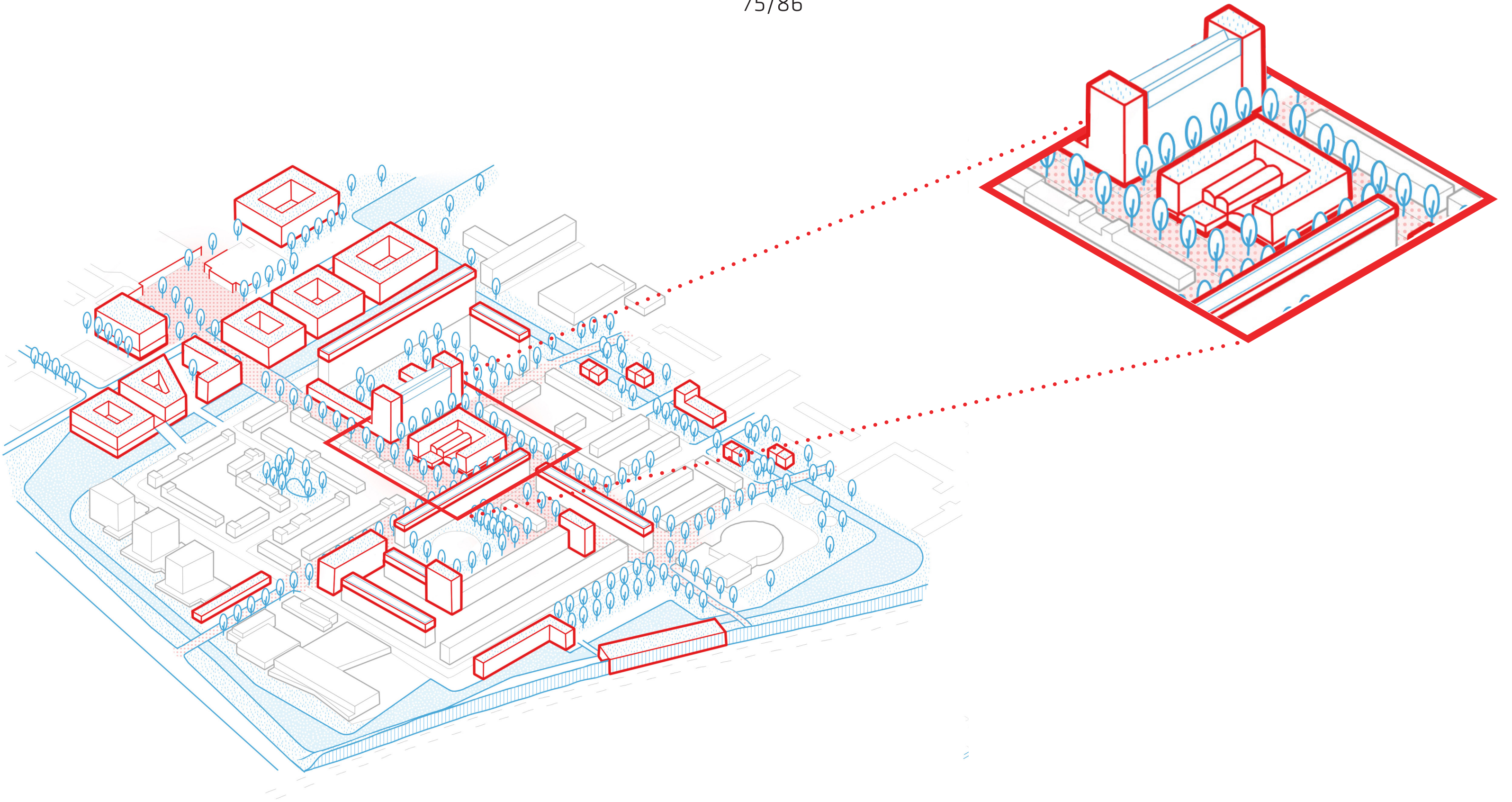
3

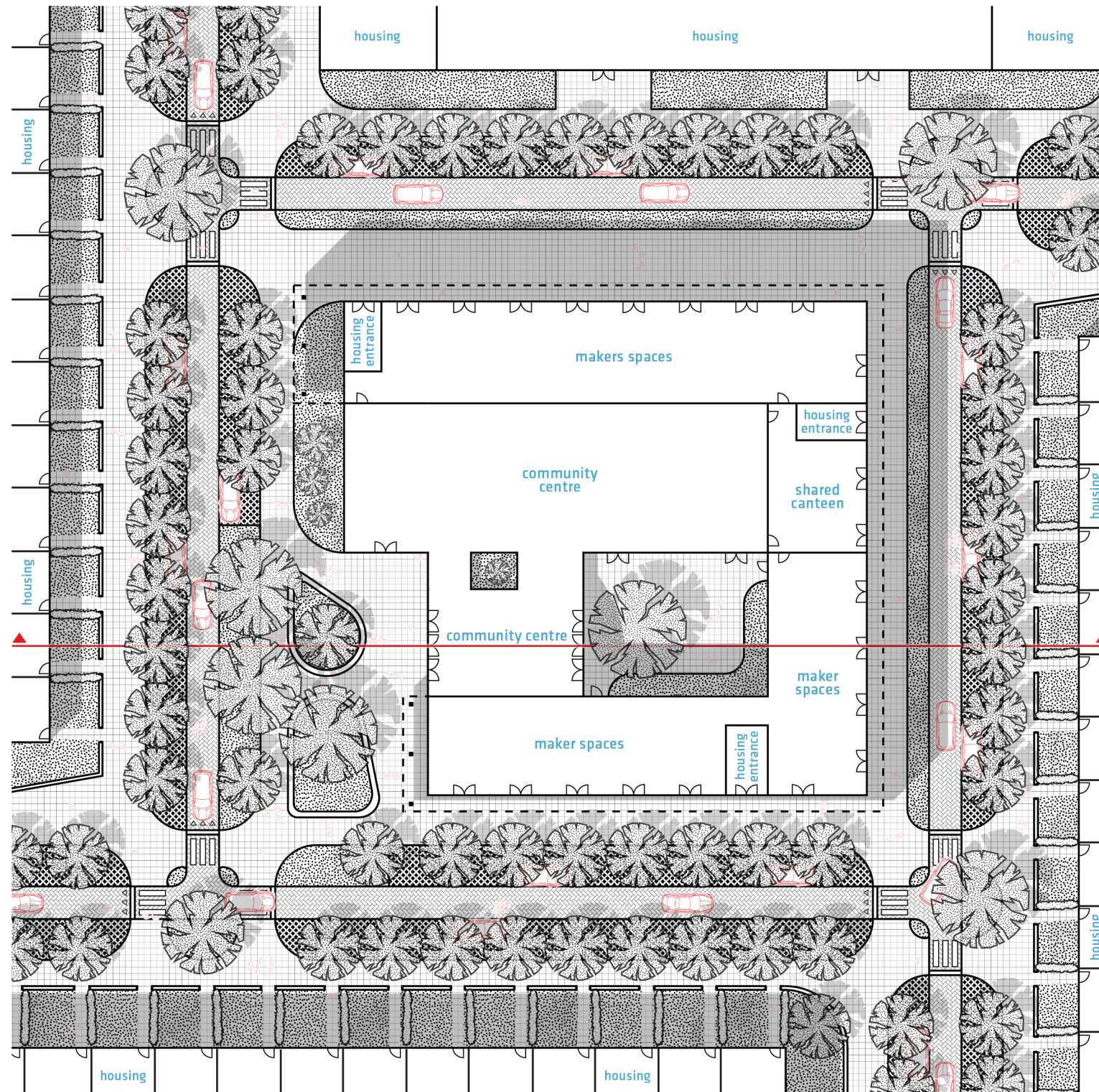
Integration
urban design

4

Conclusion

5





Section

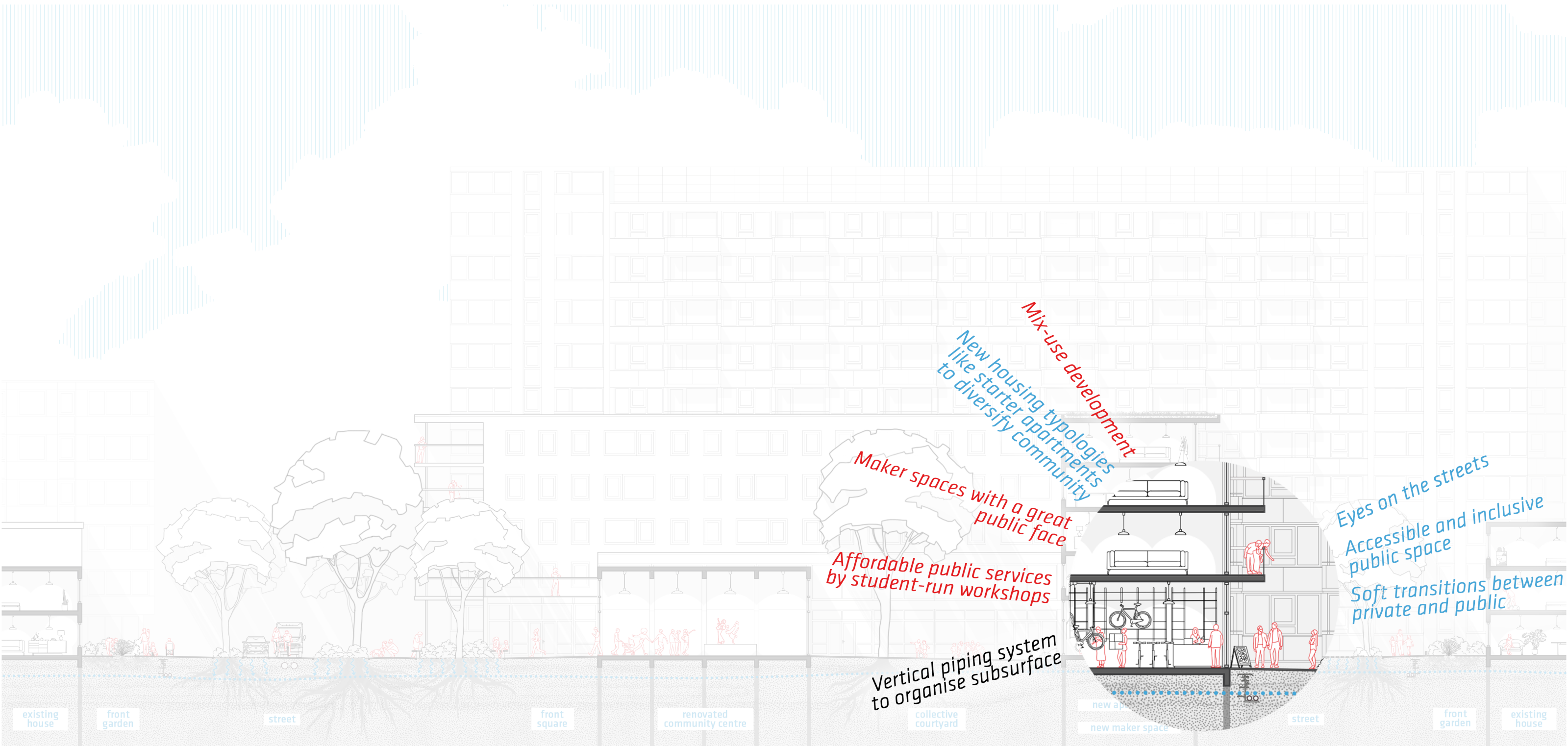
scale 1:250



Section

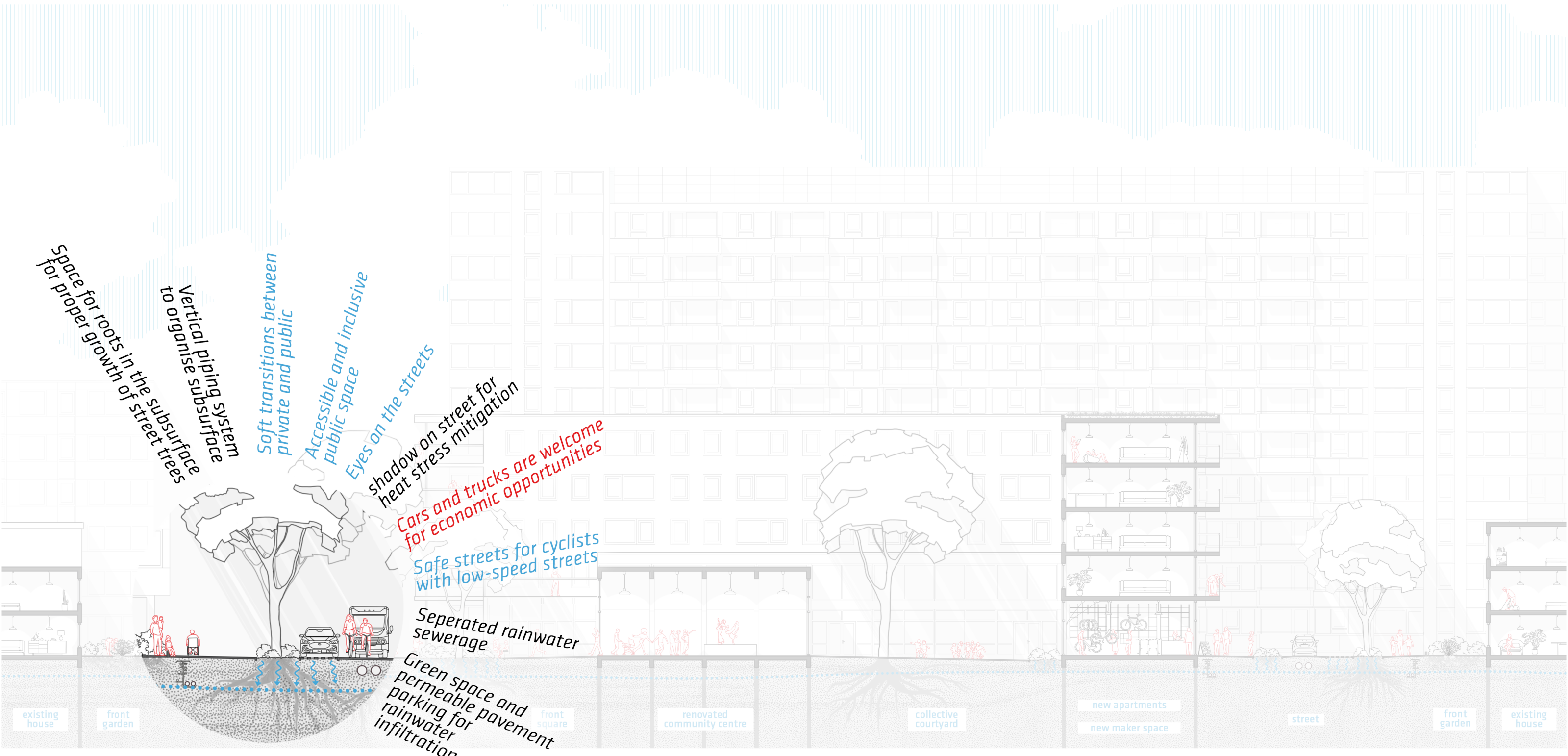
scale 1:250

0 1 5 10m



Section

scale 1:250



Space for roots in the subsurface for proper growth of street trees

Vertical piping system to organise subsurface

Soft transitions between private and public

Accessible and inclusive public space

Eyes on the streets

Shadow on street for heat stress mitigation

Cars and trucks are welcome for economic opportunities

Safe streets for cyclists with low-speed streets

Seperated rainwater sewerage

Green space and permeable pavement parking for rainwater infiltration

existing house

front garden

front square

renovated community centre

collective courtyard

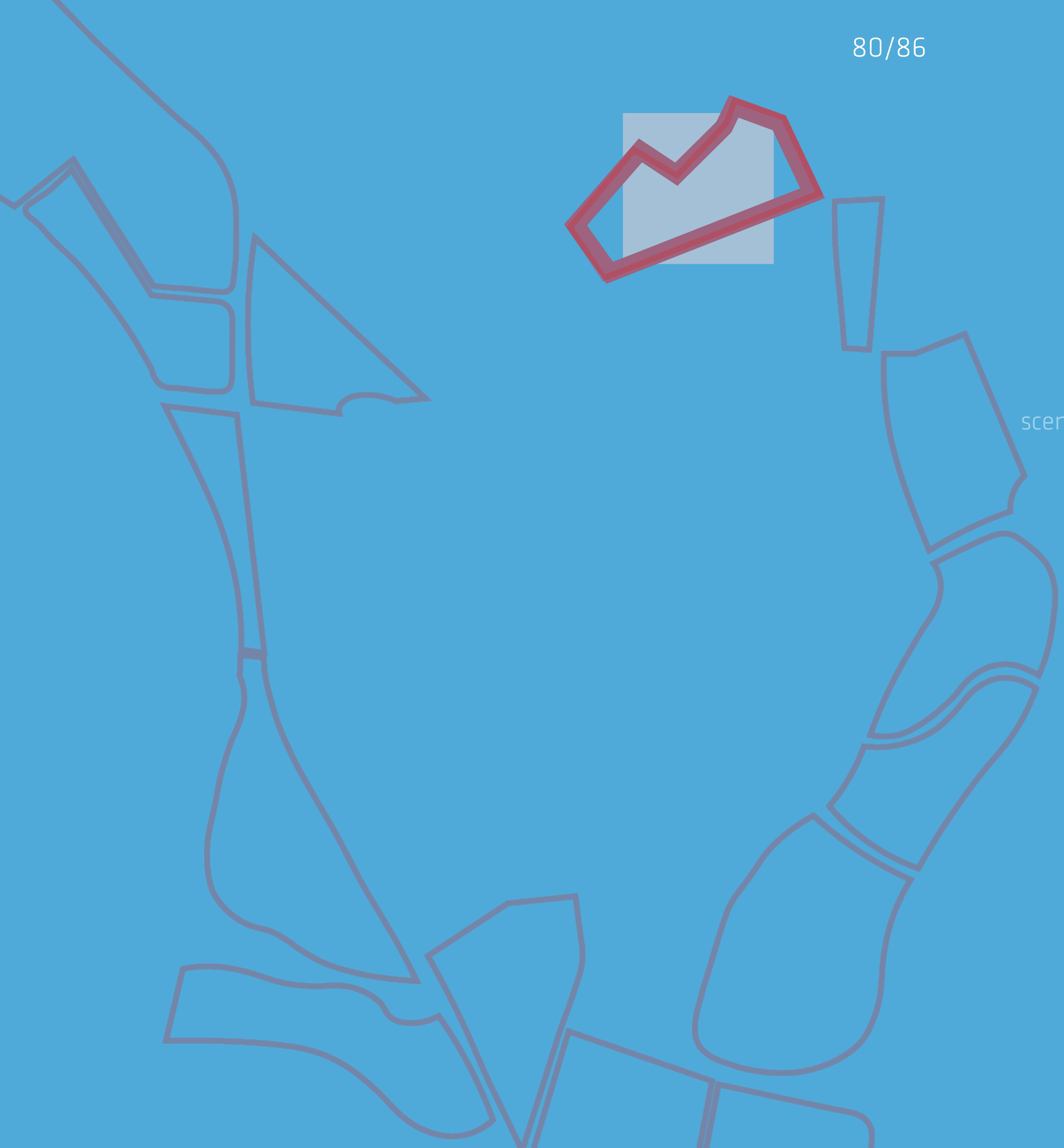
new apartments

new maker space

street

front garden

existing house



Spatial analysis
understanding Overvecht Zuid

1

Maximisation
scenarios of healthy urban densification

2

Optimisation
compete / complete

3

Integration
urban design

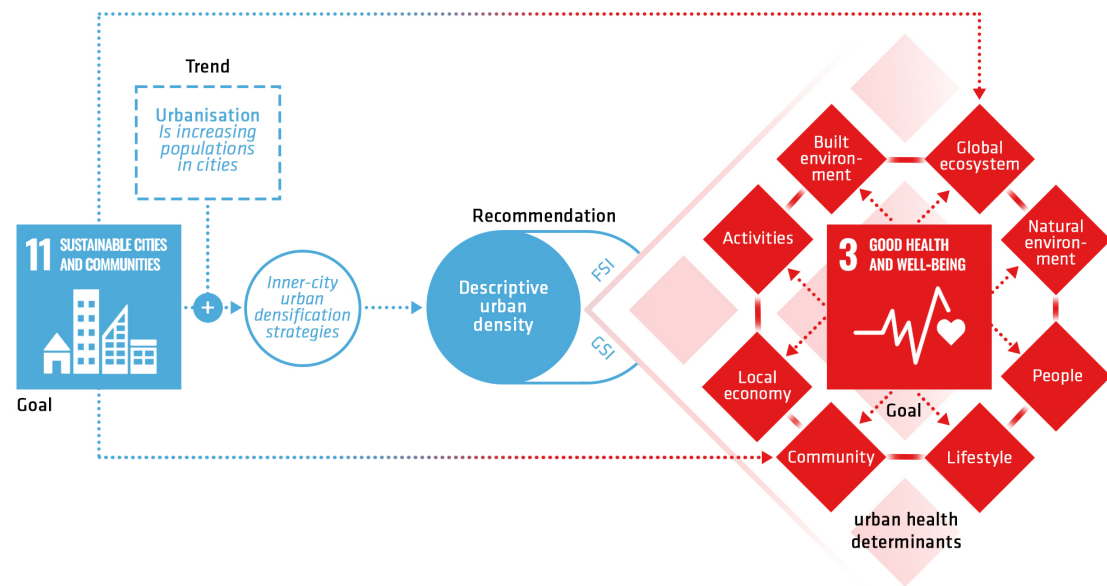
4

Conclusion

5

How could the Health-Density paradox be converted into a Health-Density nexus in the urban densification strategy for Overvecht Zuid, Utrecht?

How could the Health-Density paradox be converted into a Health-Density nexus in the urban densification strategy for Overvecht Zuid, Utrecht?



Health-Density nexus

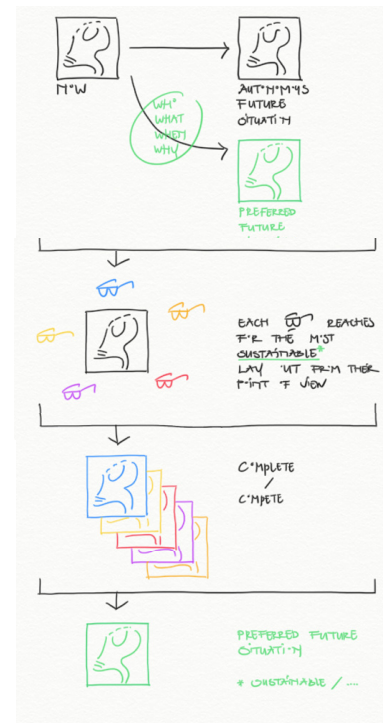


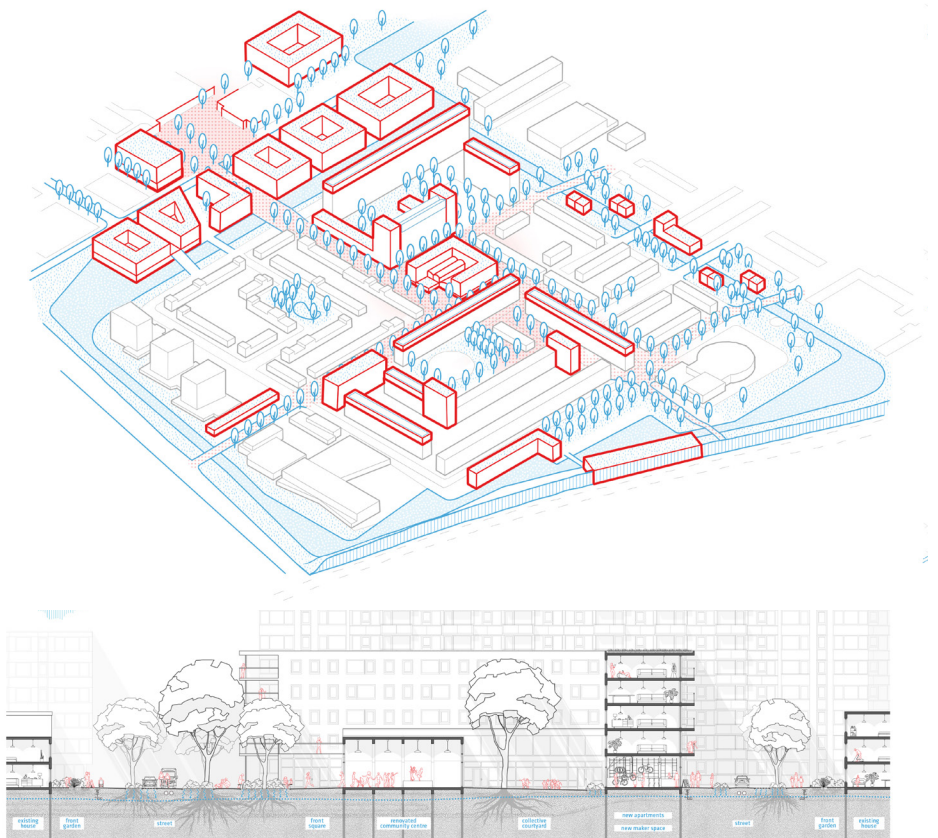
FIGURE 32 An drawing presenting the four steps of the maximisation method, by Kristel Aalbers, 2024.

1. Analysis

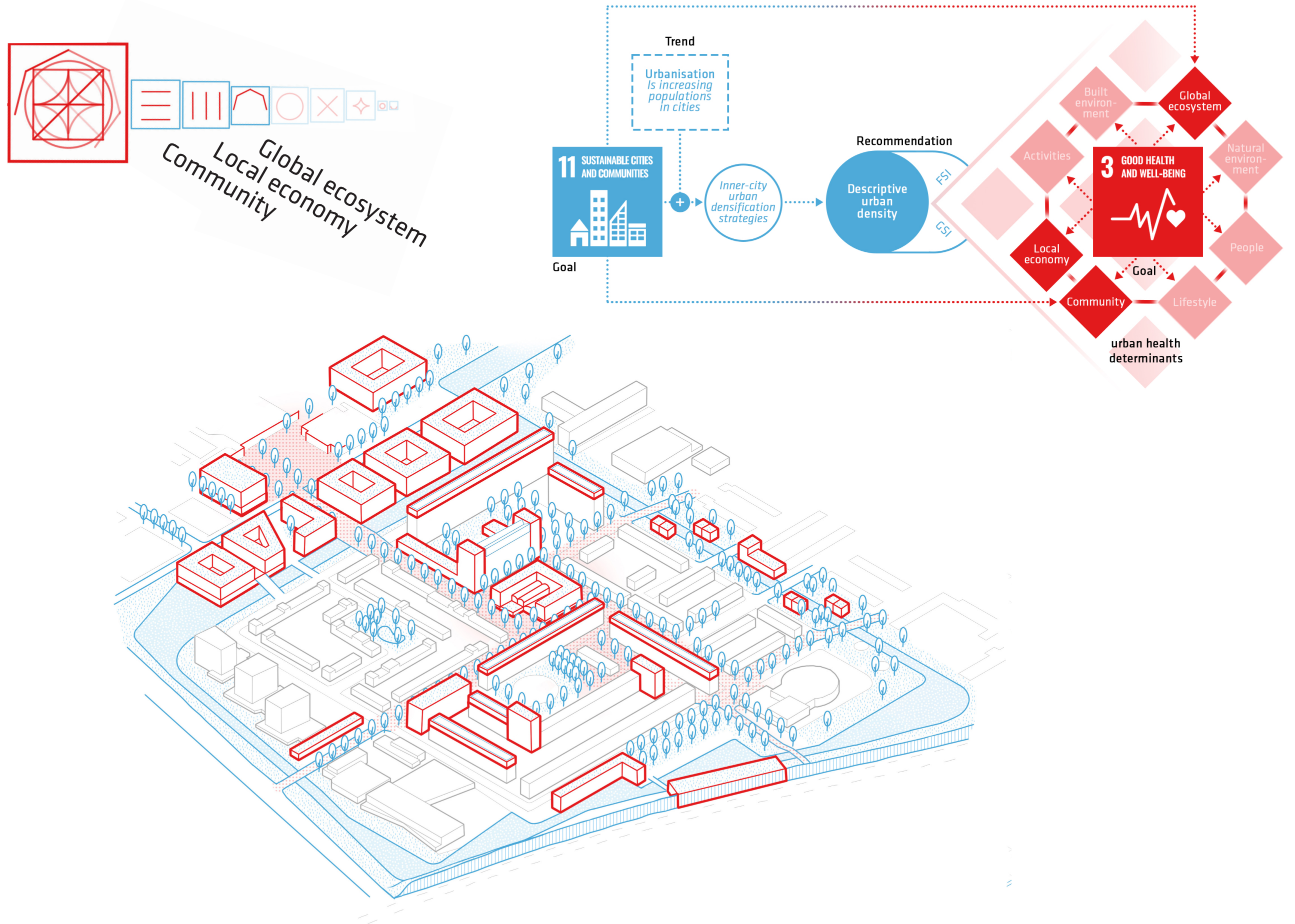
2. Maximisation

3. Optimisation

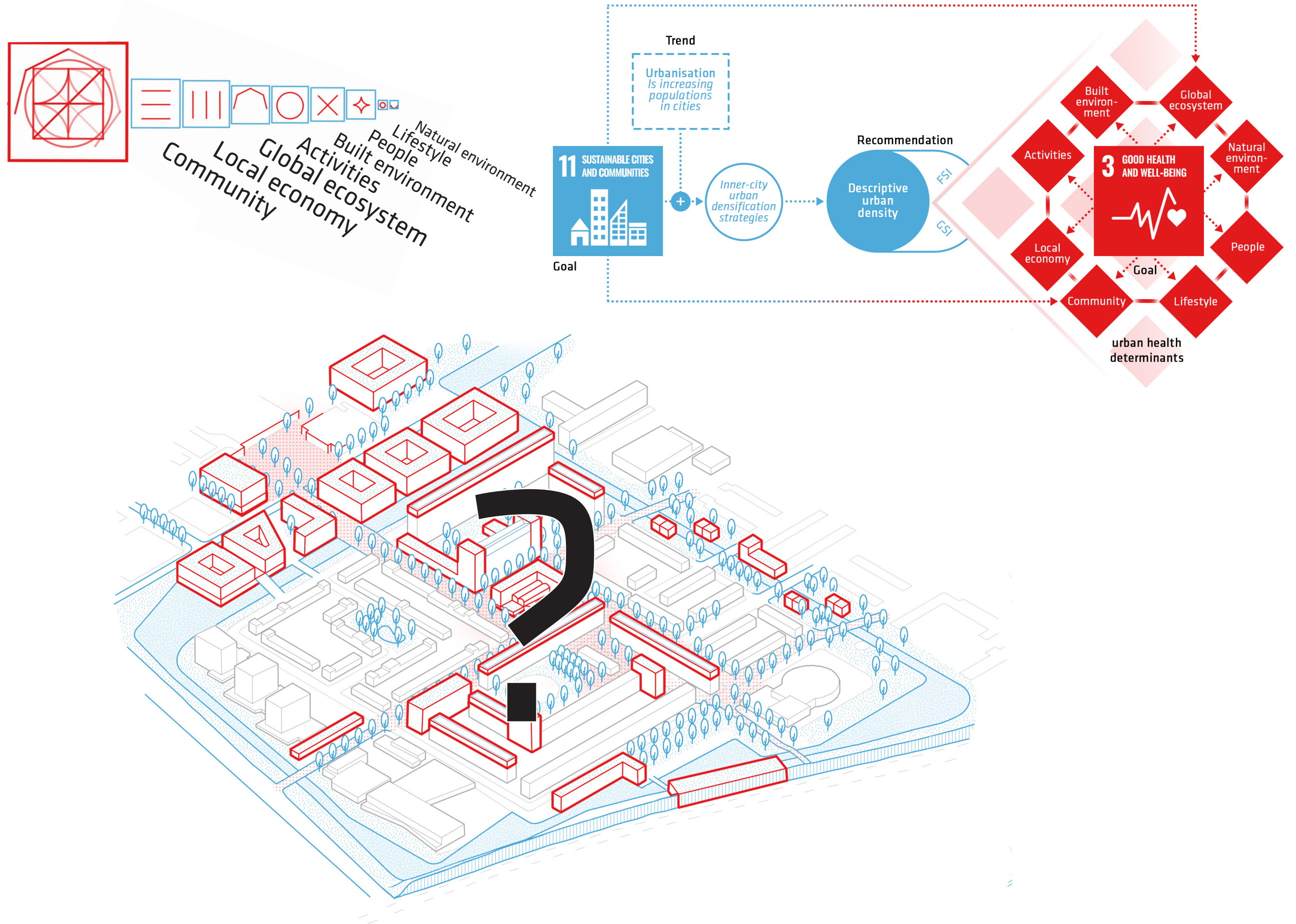
4. Integration



5. Conclusion Discussion



5. Conclusion Discussion



5. Conclusion Reflection

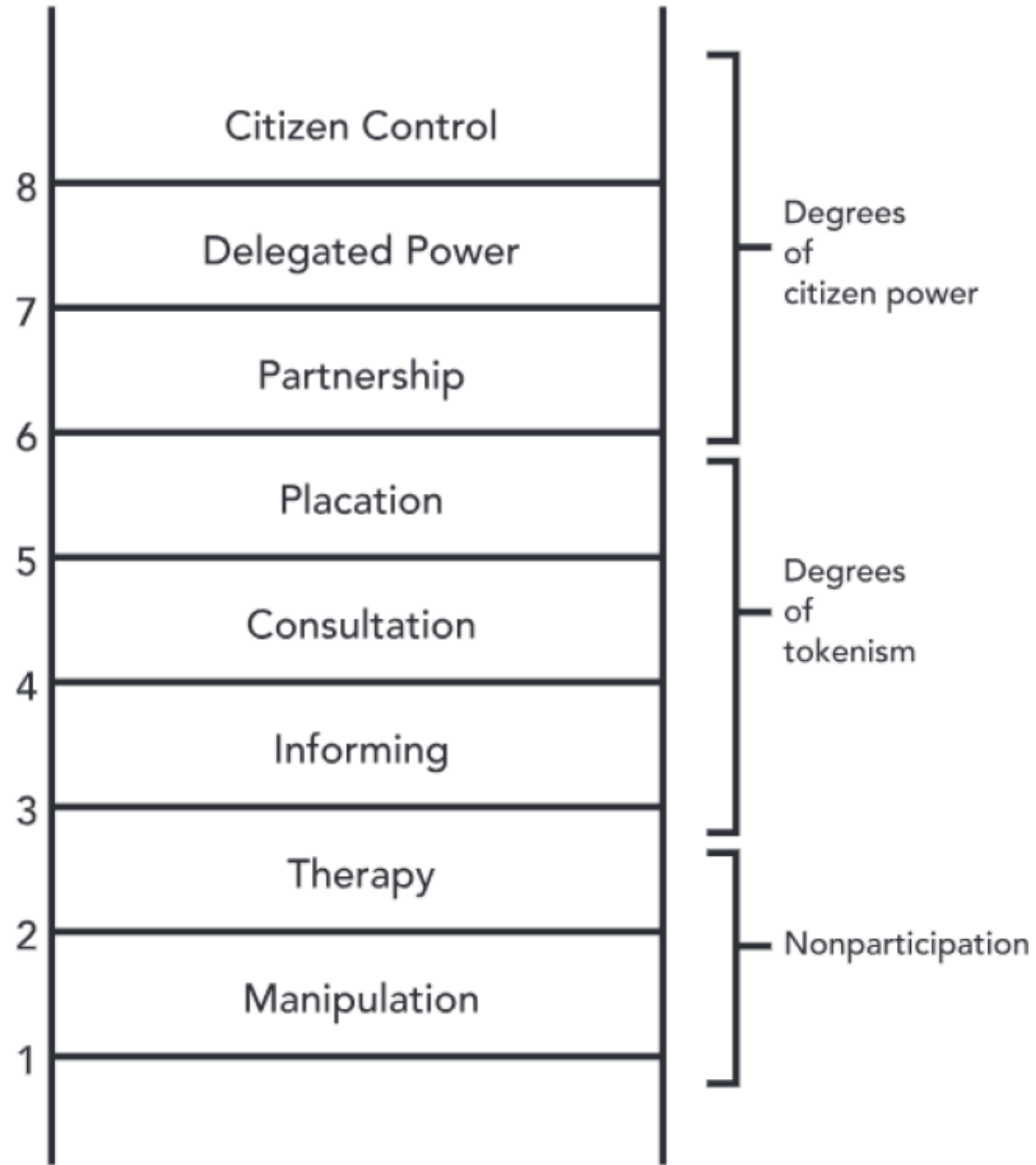


FIGURE 49 The ladder of citizen participation, by Arnstein (1969).

Designing Healthy Density

Tejon Tomas Kraan

5014050

*Under the supervision of
1st mentor Marjolein van Esch
2nd mentor Deepti Adlakha*