

Bridge generations

Collective intergenerational living community

Qiuyu Yang
25 June, 2024



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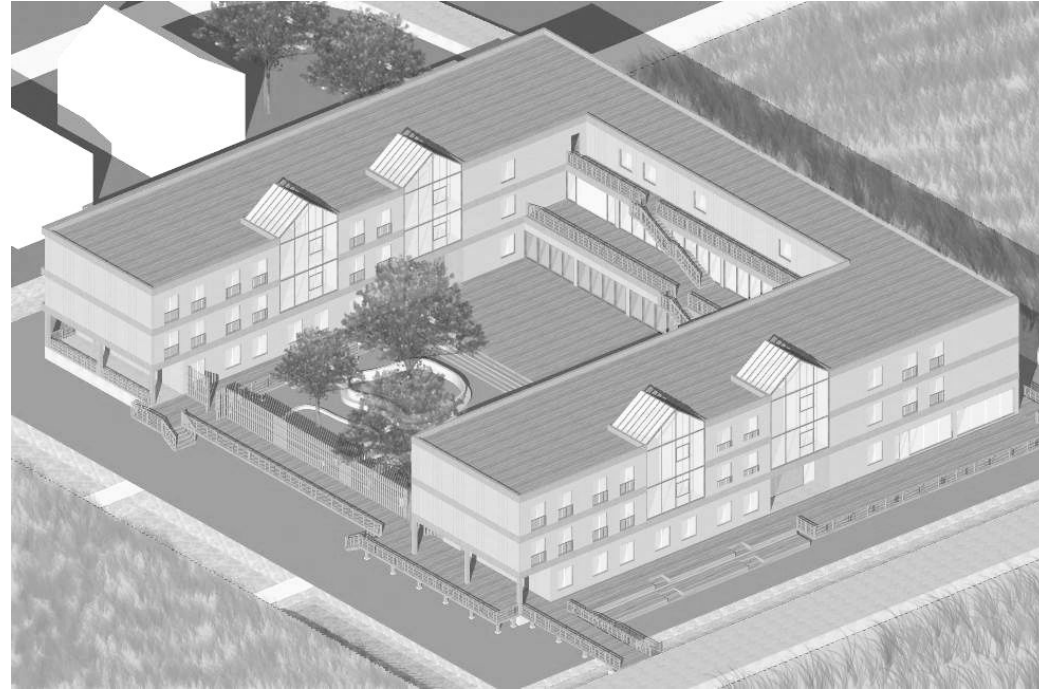
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Site Introduction

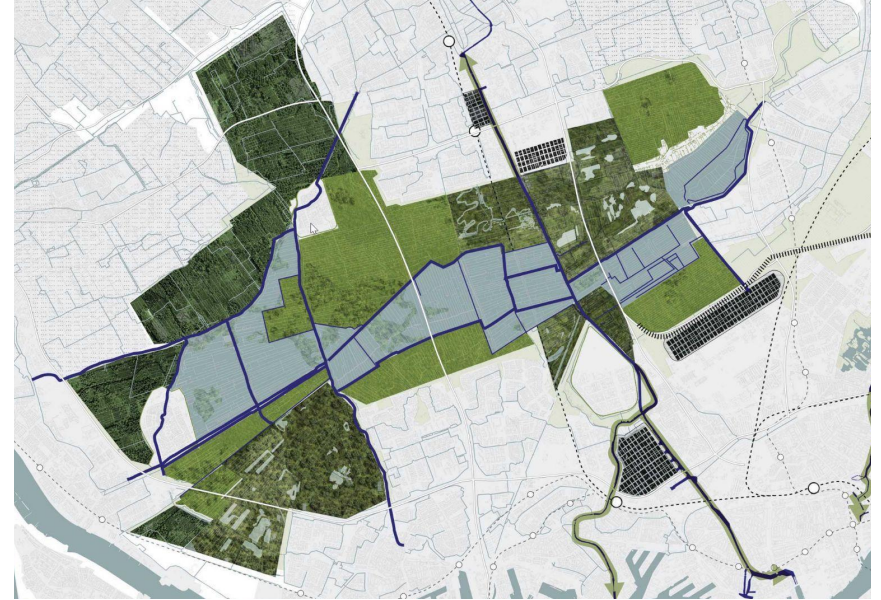
Group plot selection
Individual plot selection

Site Introduction

Site information



midden delfland



ZUS plan

Site Introduction

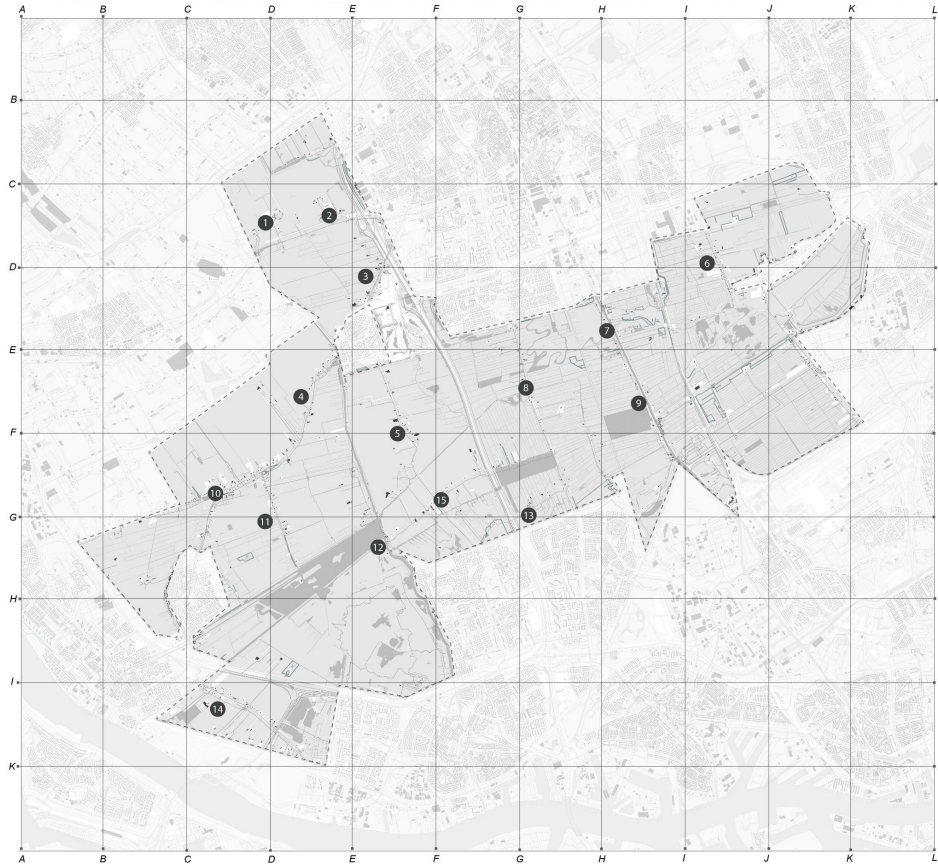
Water



wet areas after 0.5m rise of “new swamp” water level

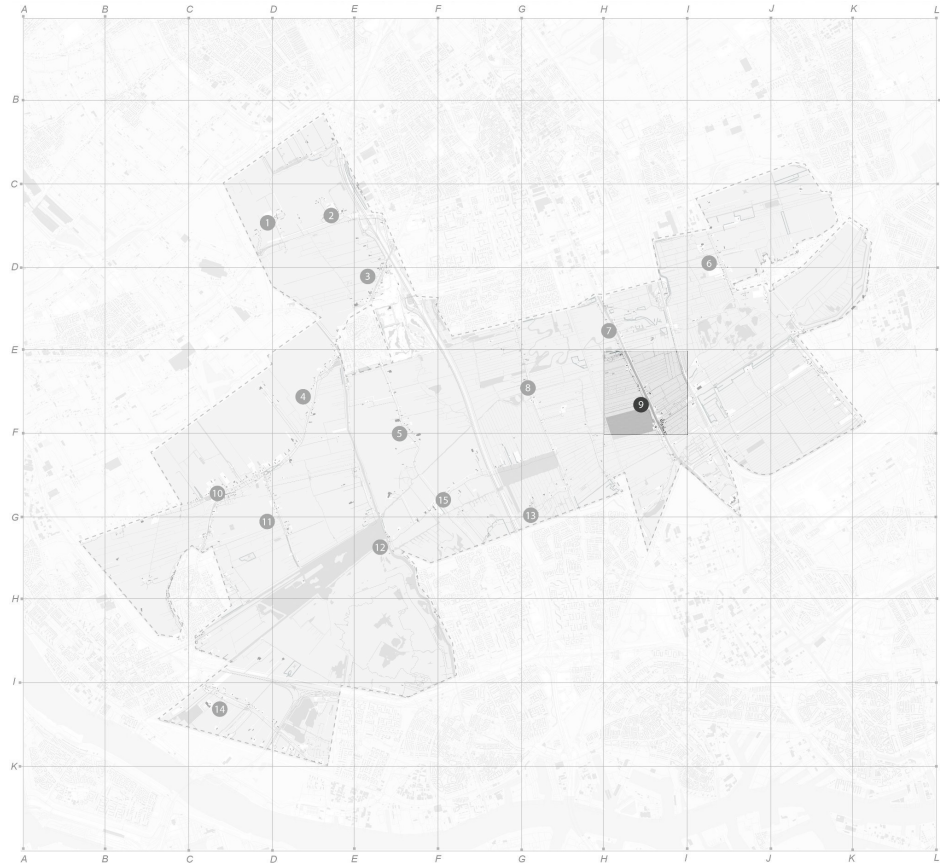
Site Introduction

Group plot selection

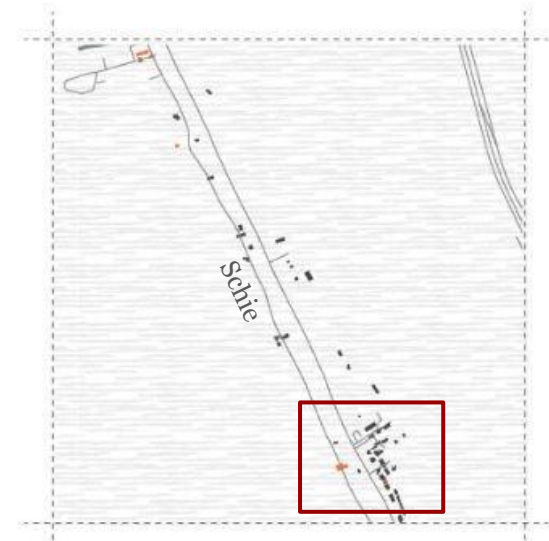


Site Introduction

Group plot selection



Zweth

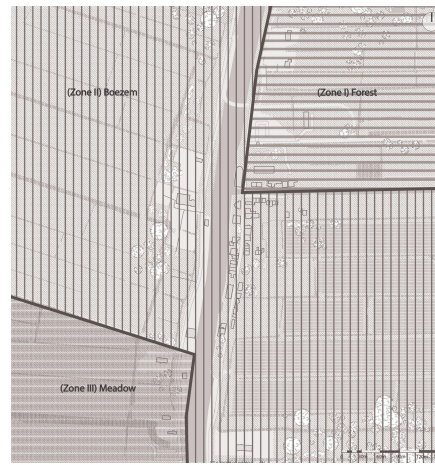


Site Introduction

Group plot selection



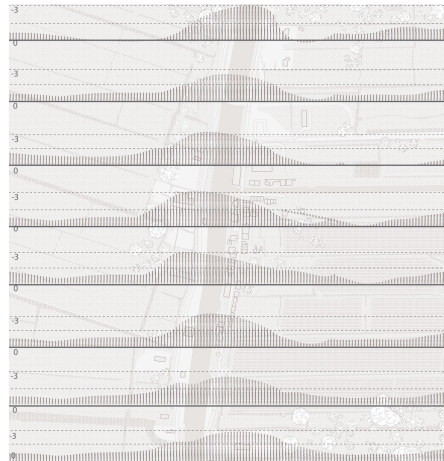
Situation in November 2023



Zones according to ZUS Plan



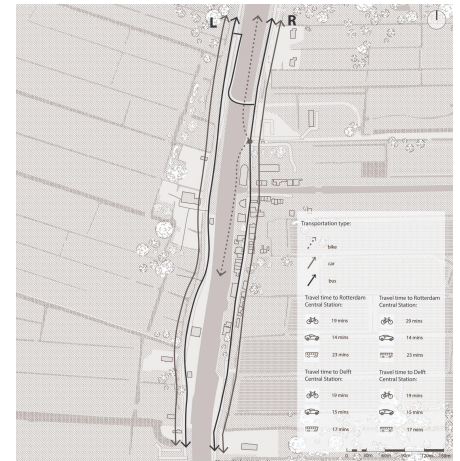
Program



Height [m]



Household types



Accessibility

Site Introduction

Group plot selection



Site Introduction

Individual plot selection



Motivation

Housing phenomenon

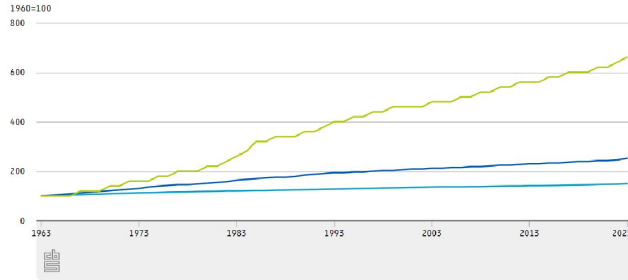
Site observation

Target group

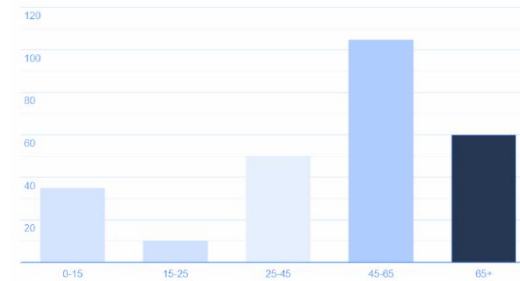
Research questions

Motivation

Housing phenomenon



Single Households in the Netherlands
(Centraal Bureau voor de Statistiek, 2023)



Number of inhabitants by age group in Delftweg
(AlleCijfers, 2022)

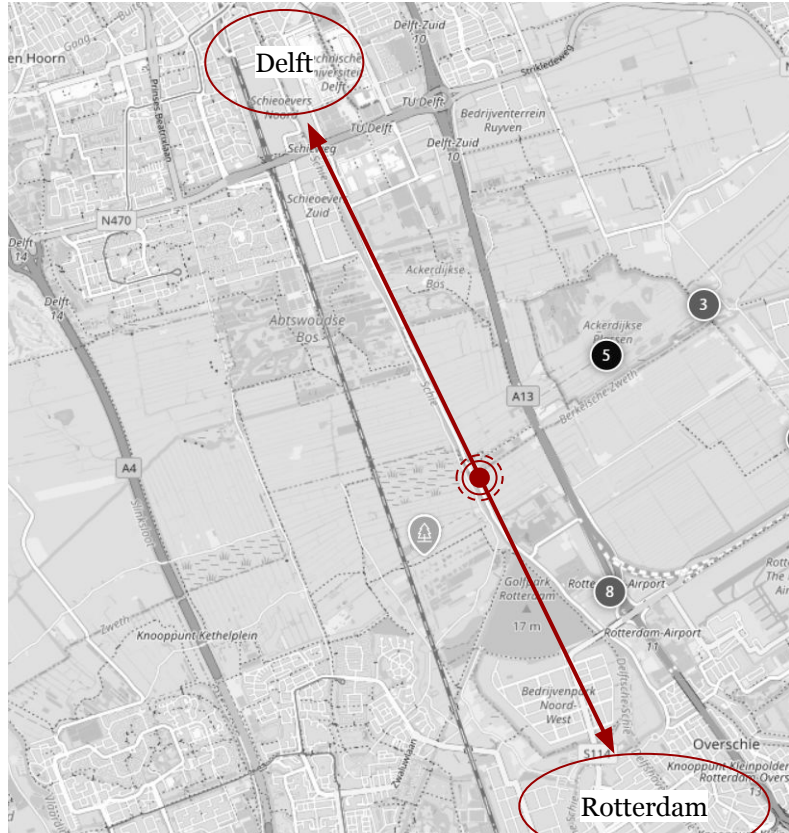


Student housing protests
(DutchReview, 2023)

- The trend of living alone
- ageing
- Students housing crisis

Motivation

Site observation



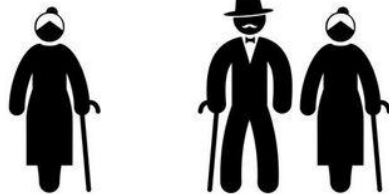
Motivation

Target group

- Students



- Old people



Motivation

Research question

What can architects do for intergenerational communities to alleviate living loneliness?

Motivation

Sub questions

- Is there a relation between **built environment** and **living loneliness**?
What kinds of environment features can help alleviate living loneliness?
- What are the **housing needs** of different age groups? How to balance different housing the differences?
- How to design **shared spaces** to facilitate different interaction?

Research findings

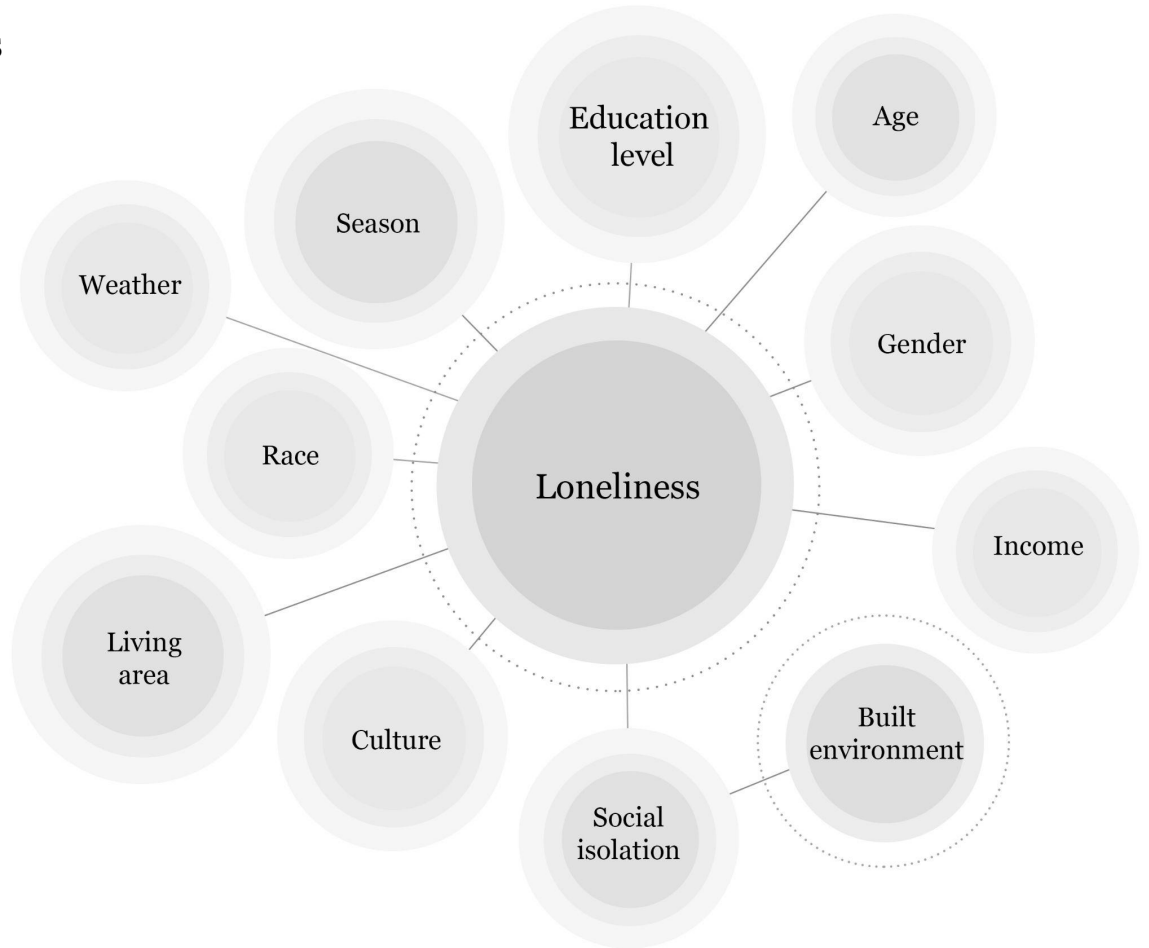
Built environment and Living loneliness

Housing needs

Case studies

Research findings

Built environment and Living loneliness



Savikko, N., Routasalo, P., Tilvis, R. S., Strandberg, T. E., & Pitkälä, K. H. (2005). Predictors and subjective causes of loneliness in an aged population. *Archives of gerontology and geriatrics*, 41(3), 223-233.

Ojembe, B. U., & Ebe Kalu, M. (2018). Describing reasons for loneliness among older people in Nigeria. *Journal of Gerontological Social Work*, 61(6), 640-658.

Snell, K. D. M. (2017). The rise of living alone and loneliness in history. *Social History*, 42(1), 2-28.

Research findings

Built environment and Living loneliness

Bergefurt, L., Kemperman, A., van Den Berg, P., Borgers, A., van Der Waerden, P., Oosterhuis, G., & Hommel, M. (2019). Loneliness and life satisfaction explained by public-space use and mobility patterns. *International journal of environmental research and public health*, 16(21), 4282.

Bower, M., Kent, J., Patulny, R., Green, O., McGrath, L., Teesson, L., ... & Rugel, E. (2023). The impact of the built environment on loneliness: A systematic review and narrative synthesis. *Health & place*, 79, 102962.

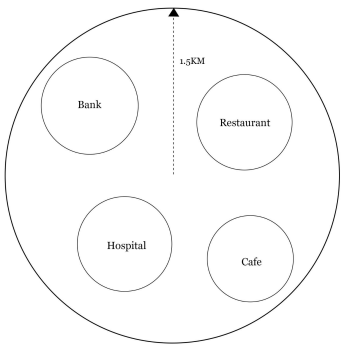
Rosso, A. L., Auchincloss, A. H., & Michael, Y. L. (2011). The urban built environment and mobility in older adults: a comprehensive review. *Journal of aging research*, 2011.

Van Dyck, D., Sallis, J. F., Cardon, G., Deforche, B., Adams, M. A., Geremia, C., & De Bourdeaudhuij, I. (2013). Associations of neighborhood characteristics with active park use: an observational study in two cities in the USA and Belgium. *International journal of health geographics*, 12, 1-9.

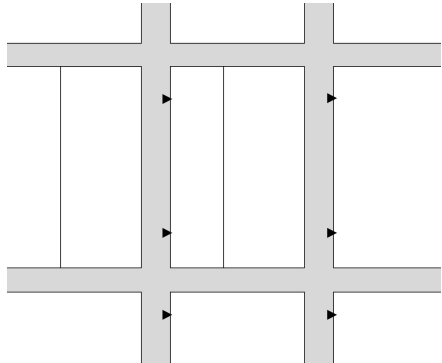
Location	Amenities within walking distance Convenient transportation Good accessibility & walkability
Public spaces	Flexible use of space Collective community center Good distribution of common/public areas Clear distinction between public and private
Landscape	Good view and exposure to natural space High-density greenspace
Others	Diverse neighbourhoods Good-quality housing materials

Research findings

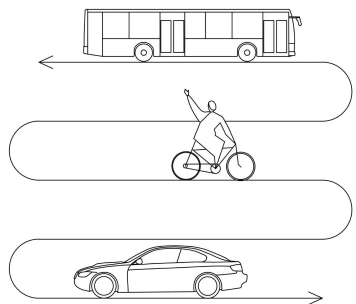
Built environment and Living loneliness



Amenities within walking distance



Good accessibility & walkability



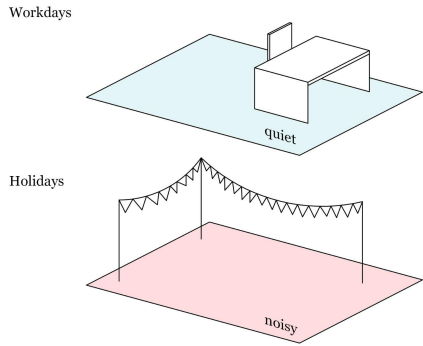
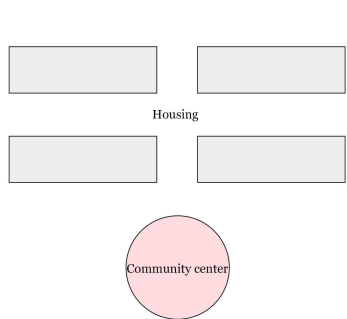
Convenient transportation

References



Research findings

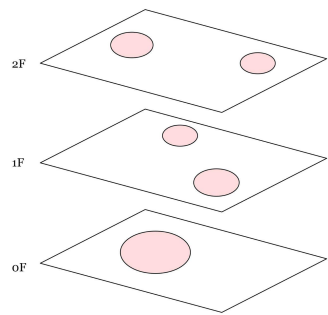
Built environment and Living loneliness



References

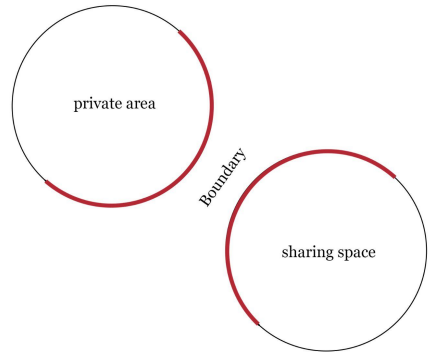


Collective community center

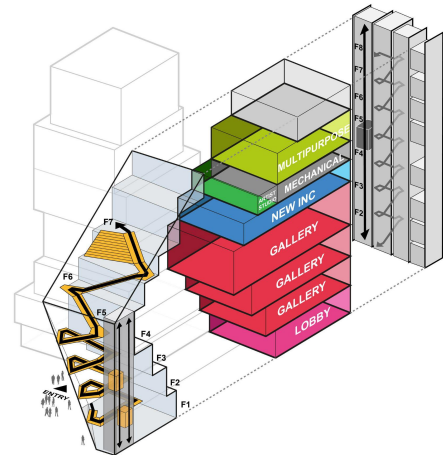


Good distribution of common/public areas

Flexible use of space

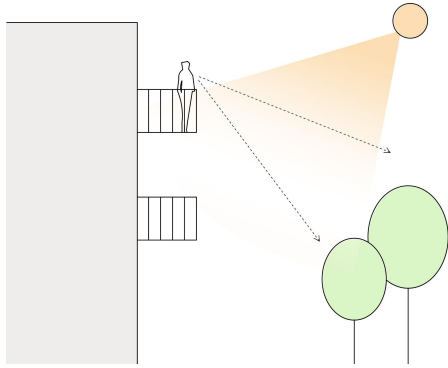


Clear distinction between public and private

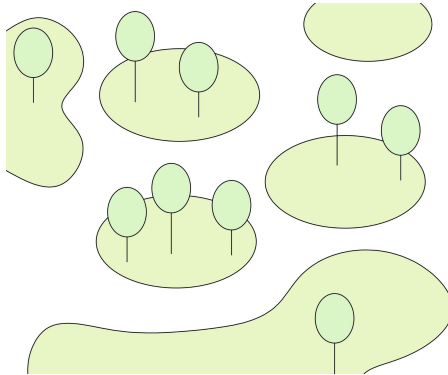


Research findings

Built environment and Living loneliness

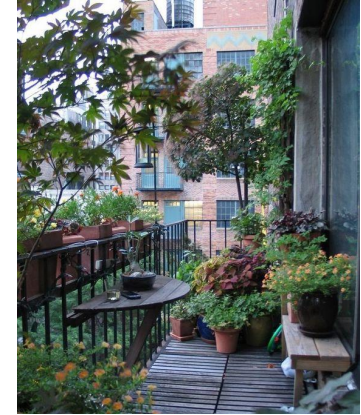


Good view and exposure to natural space



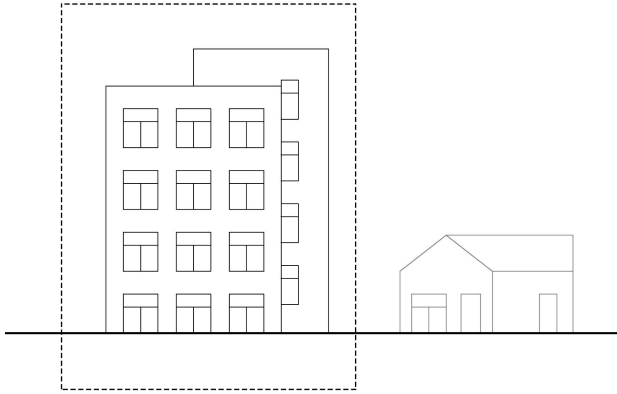
High-density greenspace

References

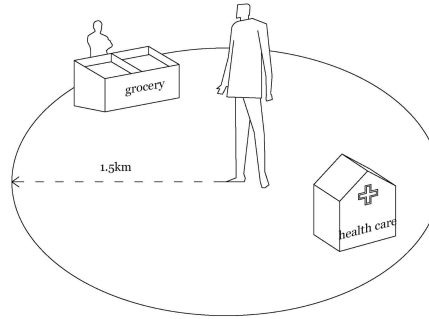


Research findings

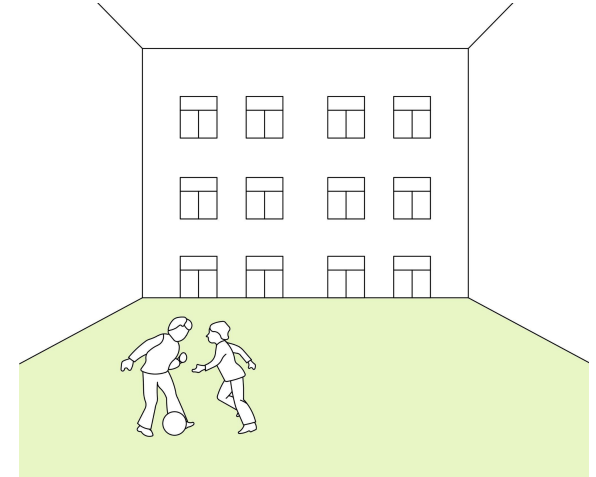
Housing needs - Old



Apartment VS Detached house



Amenities within walking distance



Public areas for recreational activities

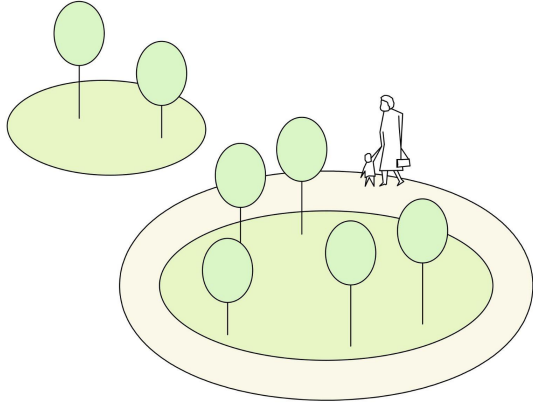
Abramsson, M., & Andersson, E. (2016). Changing preferences with ageing—housing choices and housing plans of older people. *Housing, theory and society*, 33(2), 217-241.

de Jong, P., Rouwendal, J., & Brouwer, A. (2022). Staying put or out of choice or constraint? The residential choice behaviour of Dutch older adults. *Population, Space and Place*, 28(4), e2553.

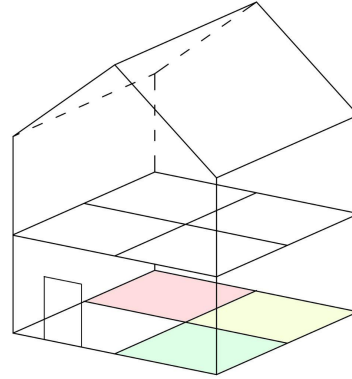
Bergefurt, L., Kemperman, A., van Den Berg, P., Borgers, A., van Der Waerden, P., Oosterhuis, G., & Hommel, M. (2019). Loneliness and life satisfaction explained by public-space use and mobility patterns. *International journal of environmental research and public health*, 16(21), 4282.

Research findings

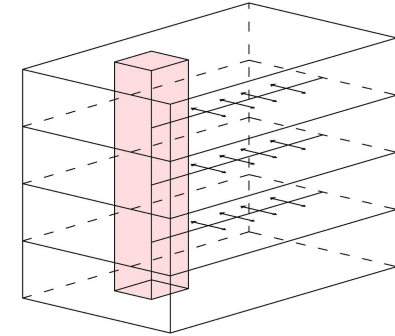
Housing needs - Old



Green spaces and trails



Living room, kitchen, bathroom, and at least one bedroom located on the same floor



Buildings equipped with elevators

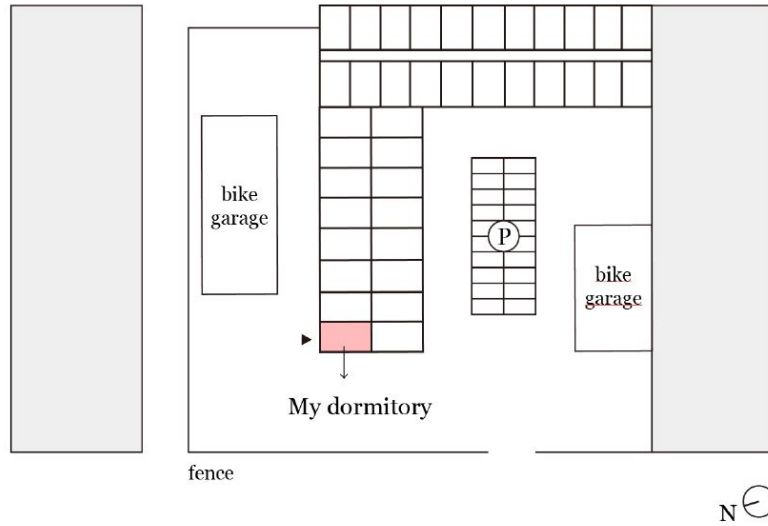
Sun, Y., Phillips, D. R., & Wong, M. (2018). A study of housing typology and perceived age-friendliness in an established Hong Kong new town: A person-environment perspective. *Geoforum*, 88, 17-27.

Mulliner, E., Riley, M., & Maliene, V. (2020). Older people's preferences for housing and environment characteristics. *Sustainability*, 12(14), 5723.

Jaspers, M. J. J. E. (2017). Housing Preferences of an Ageing Population. *Urban Systems*.

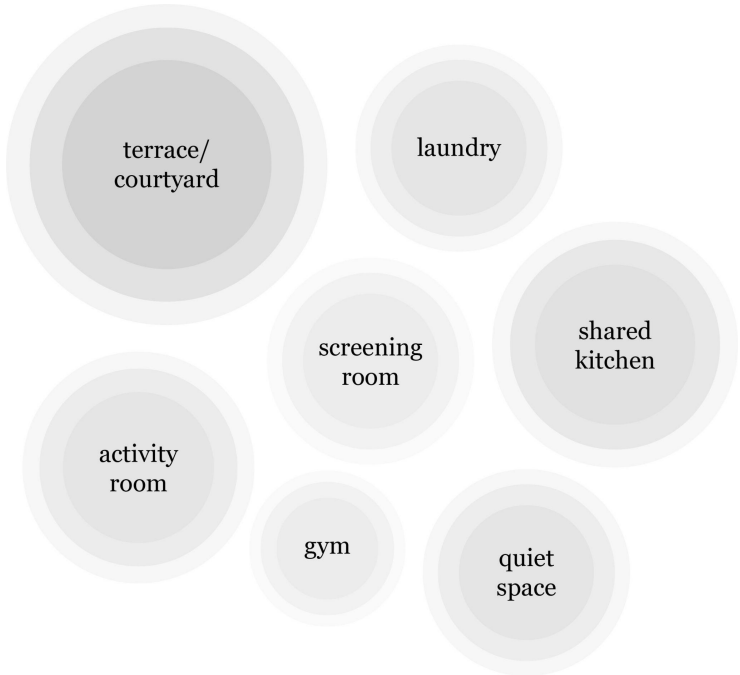
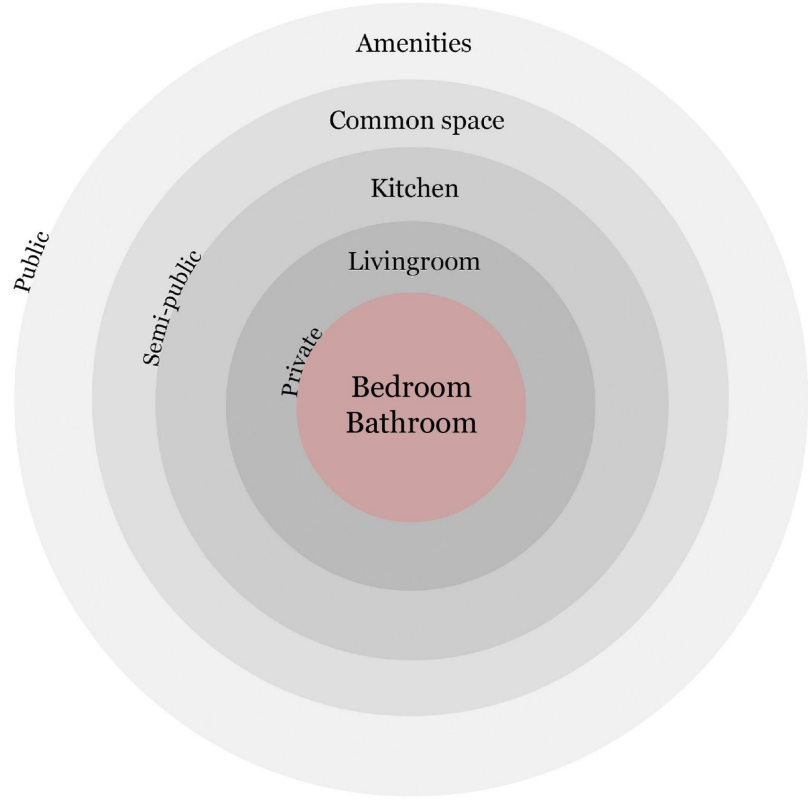
Research findings

Housing needs - Students



Research findings

Housing needs - Students



Research findings

Case studies

1. Programme

health care
entertainment places
creativity rooms
sports facilities

2. Greenery

3. Boundary

4. Shared space



Centre de Salut de Campoamor



Zwei+plus Intergenerational Housing



Marmalade Lane Cohousing



Bridge Meadows

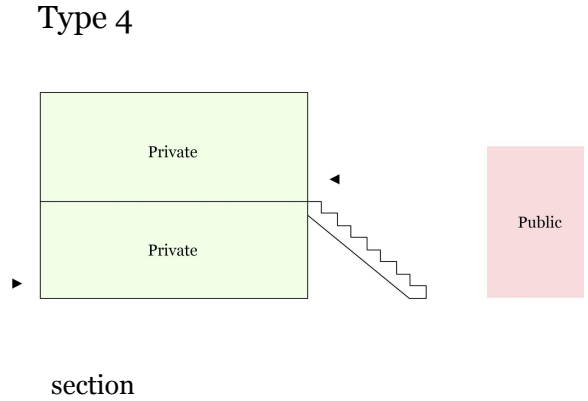
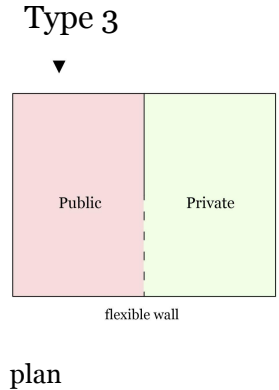
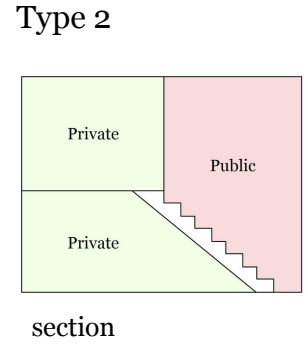
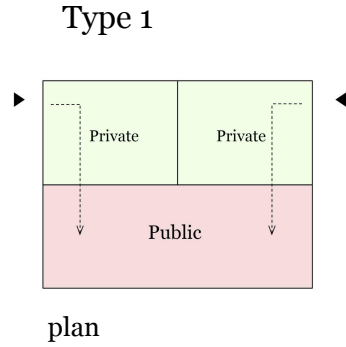


Two Front Doors

Research findings

Case studies

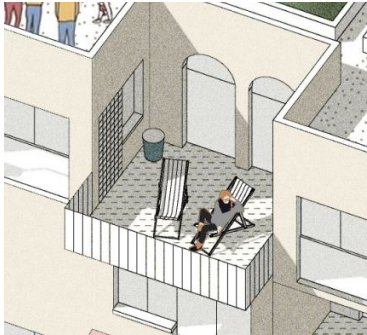
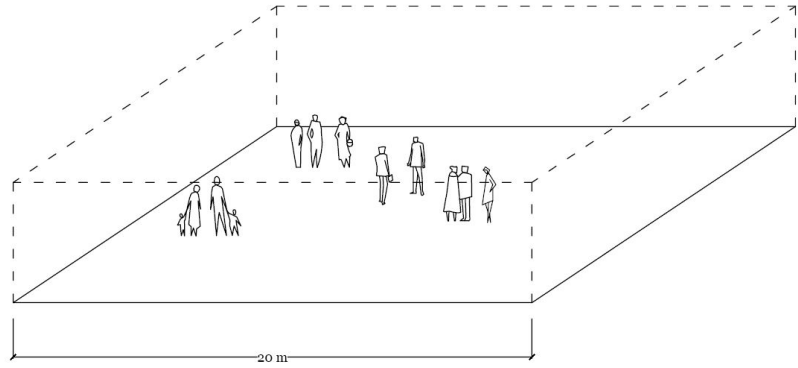
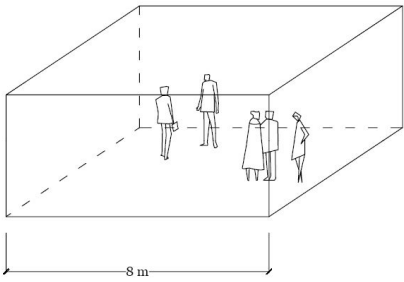
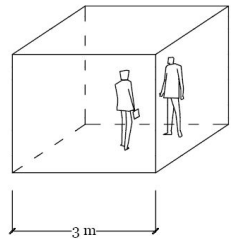
- **Boundary**



Research findings

Case studies

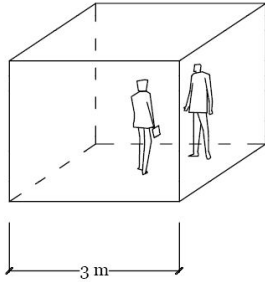
- Shared spaces



Research findings

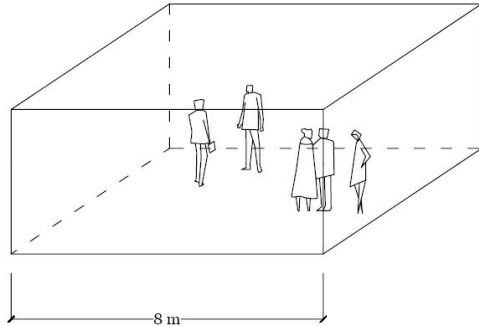
Case studies

- **Shared spaces**



Small

- similar size as a “room”
- for 2-3 person
- close relationship



Medium

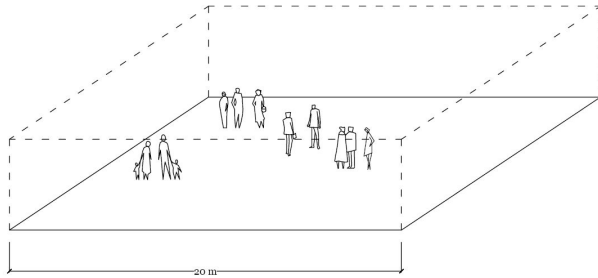
- similar size as a “hall”
- for several households
- neighbourhood



Research findings

Case studies

- **Shared spaces**



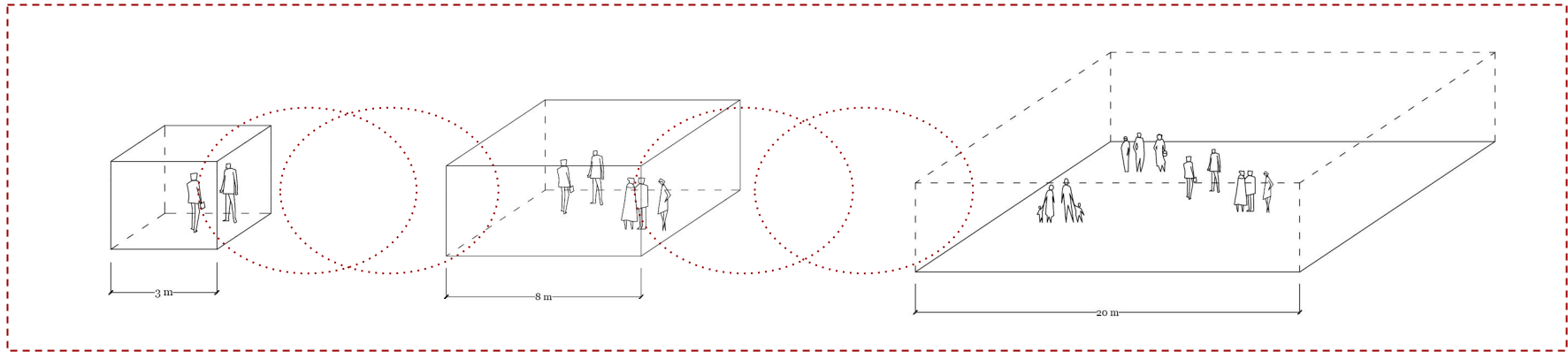
Large

- similar size as a courtyard for the community
- could be strangers



Research findings

Conclusion



Design Strategy

Urban master plan

Block mass model

Floorplans

Dwelling typology

Facade

Section

Structure

Climate

Design Strategy

Urban master plan

Step 0: Original situation



farmland

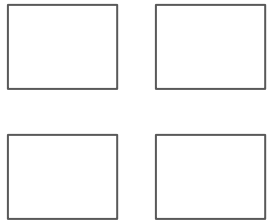
greenery

Design Strategy

Urban master plan

Step 1: What to build?

a collective complex



farmland greenery

Design Strategy

Urban master plan

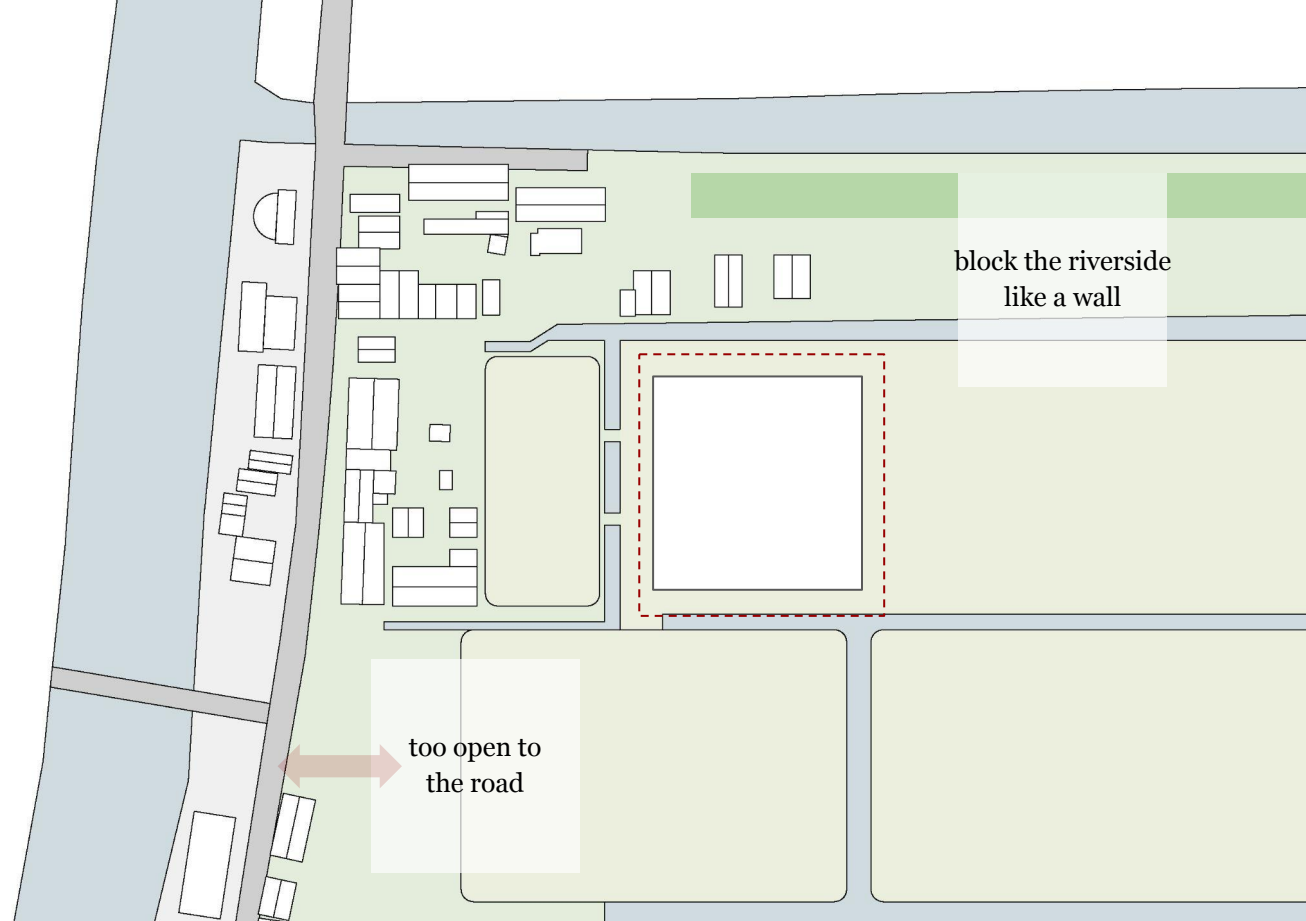
Step 2: Where to build?



Design Strategy

Urban master plan

Step 2: Where to build?

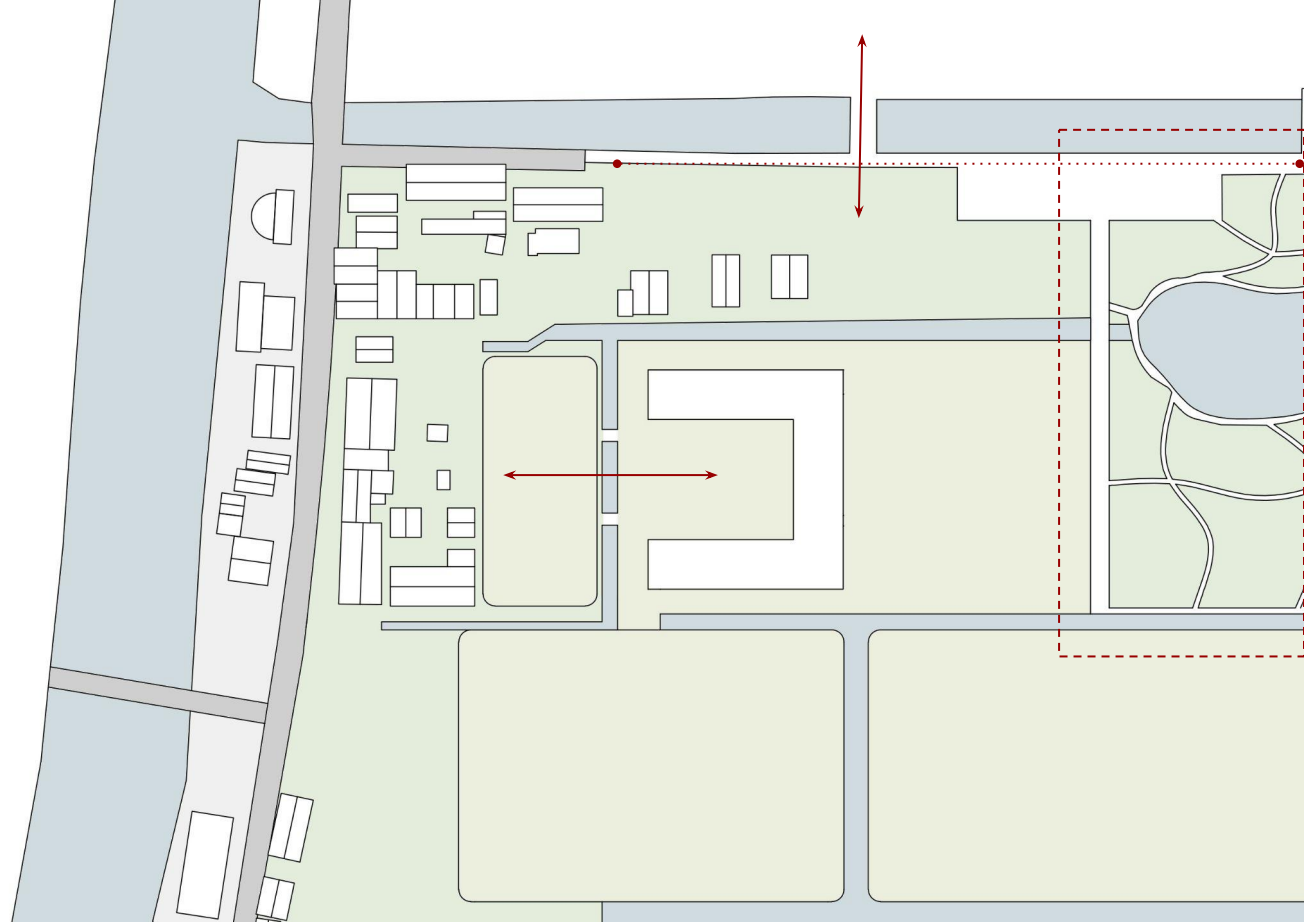


Design Strategy

Urban master plan

Step 3: Connection

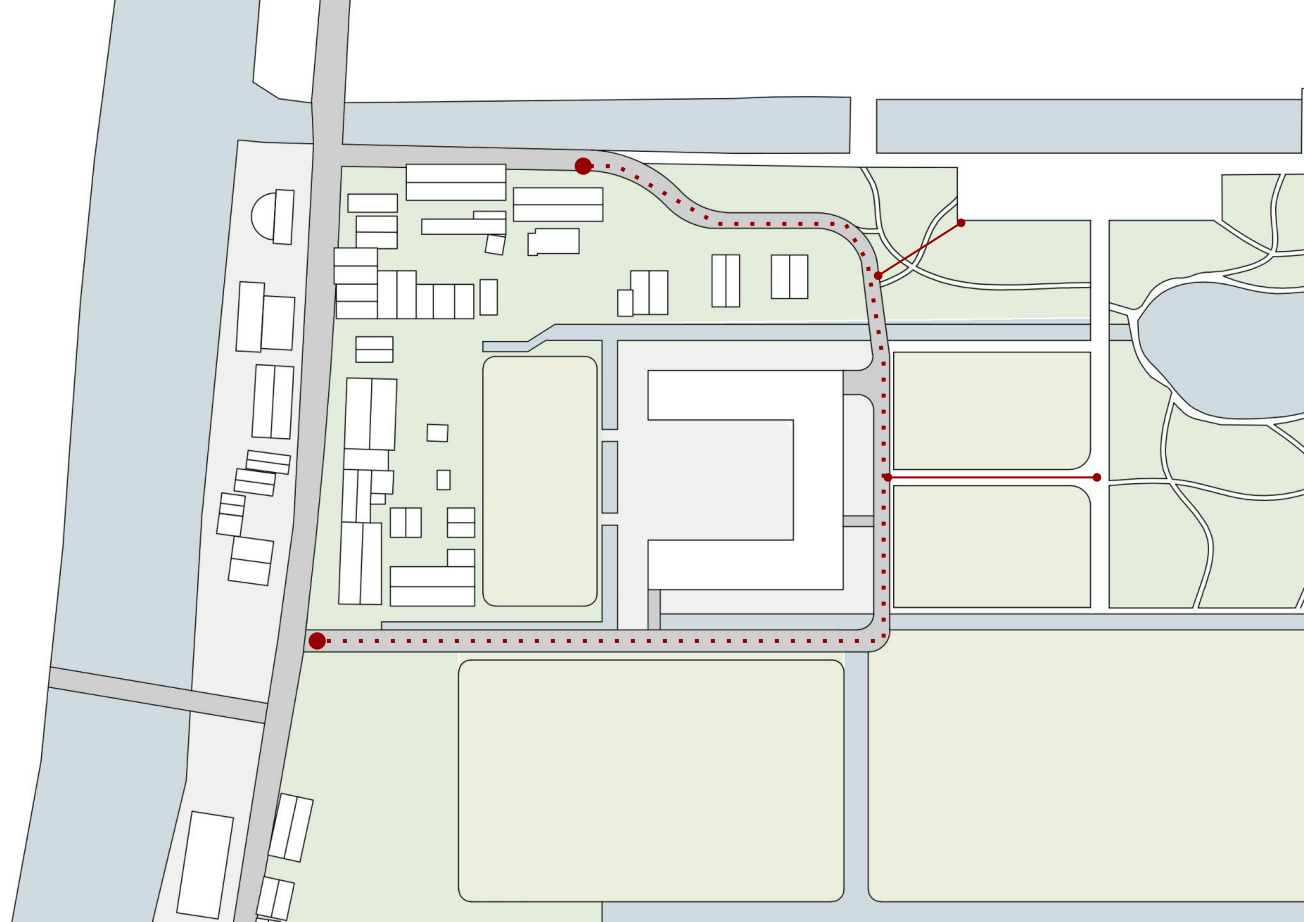
- with the existing village
- with the other plot



Design Strategy

Urban master plan

Step 4: Accessibility



Design Strategy

Urban master plan

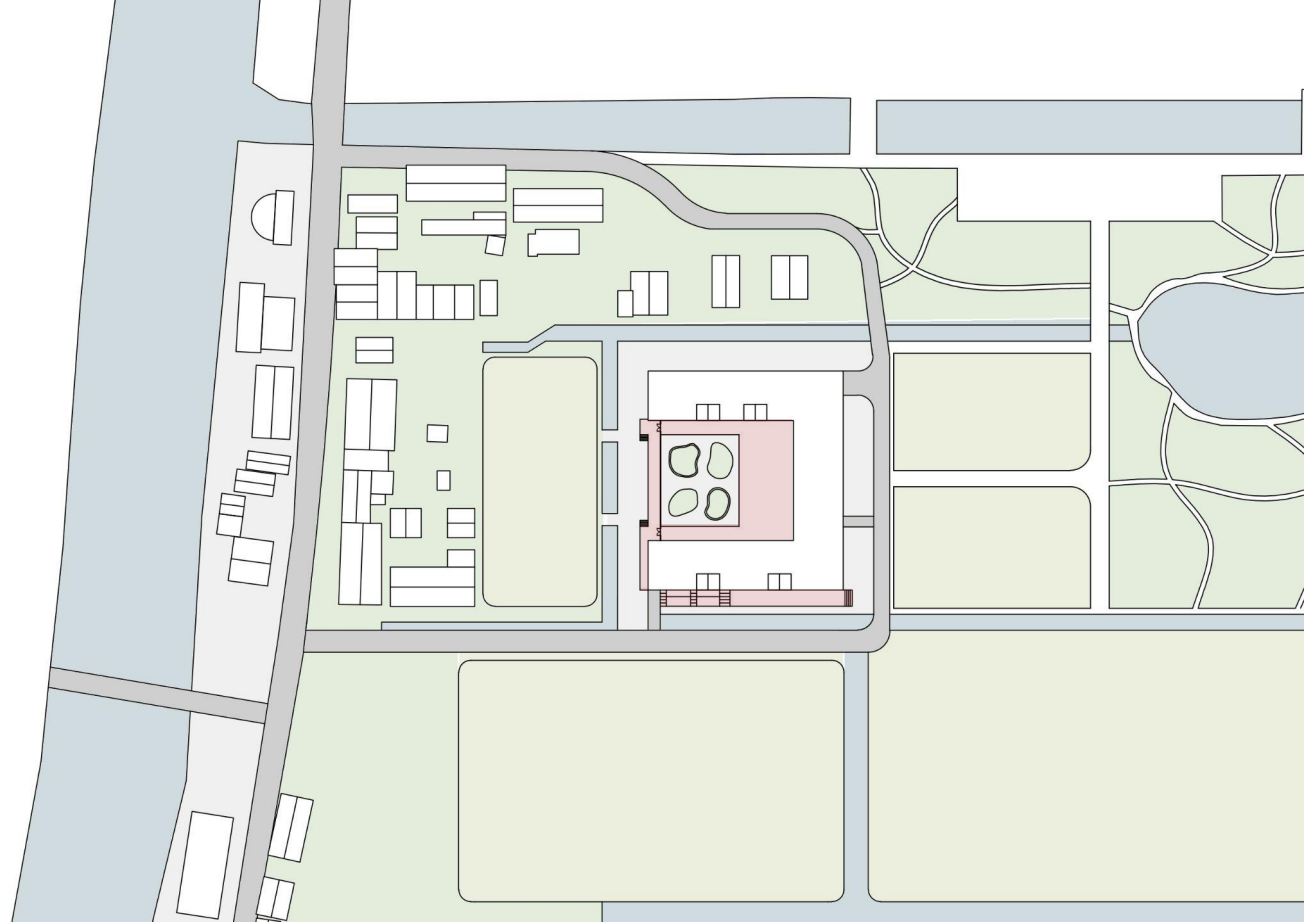
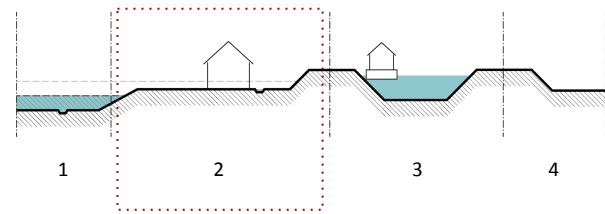
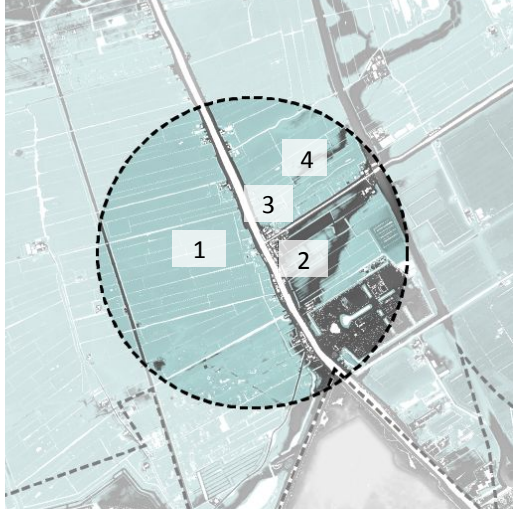
Step 5: Landscape



Design Strategy

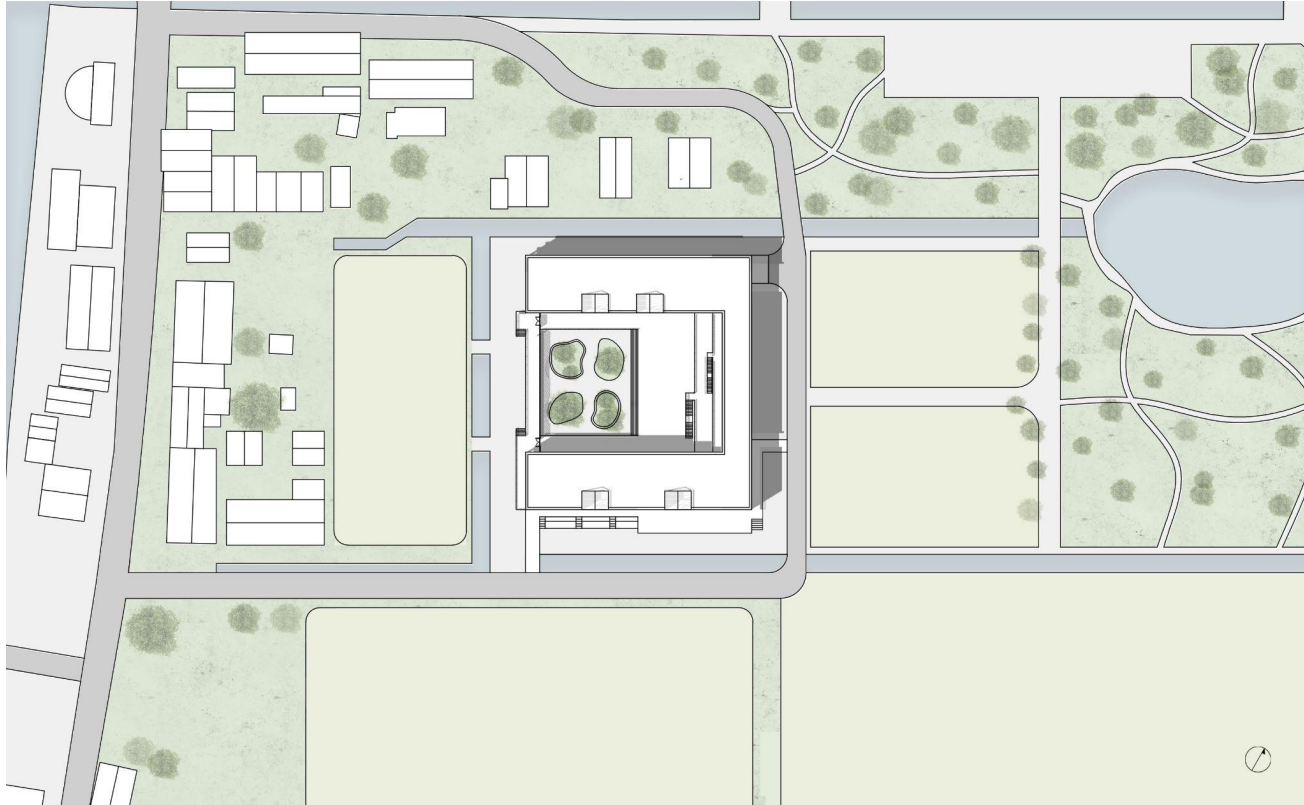
Urban master plan

Step 6: Flood control



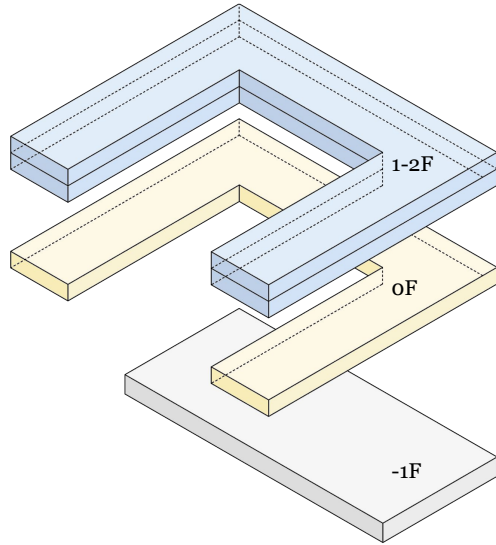
Design Strategy

Urban master plan

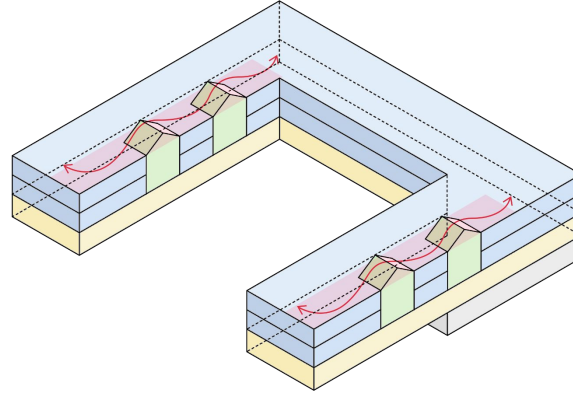


Design Strategy

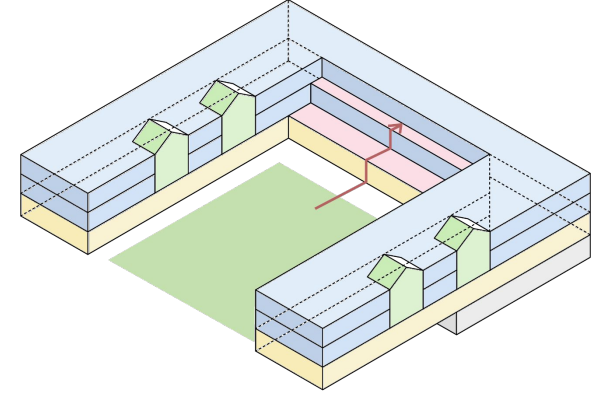
Block mass model



- public plinth
- underground garage



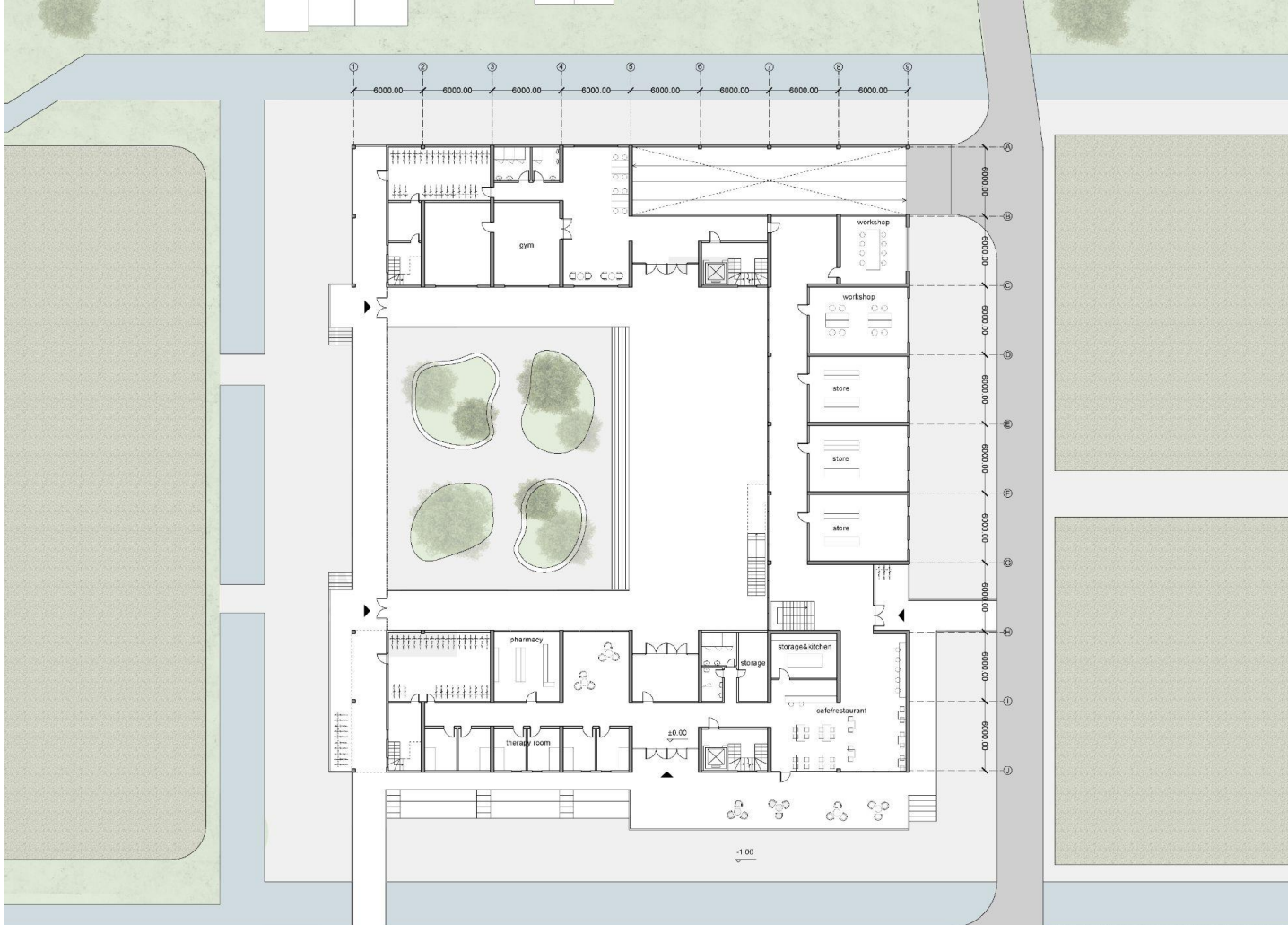
- greenhouse in dwelling



- public terrace

Design Strategy

Ground floor plan



Design Strategy

Ground floor program

- private
- public



Design Strategy





Ground floor program

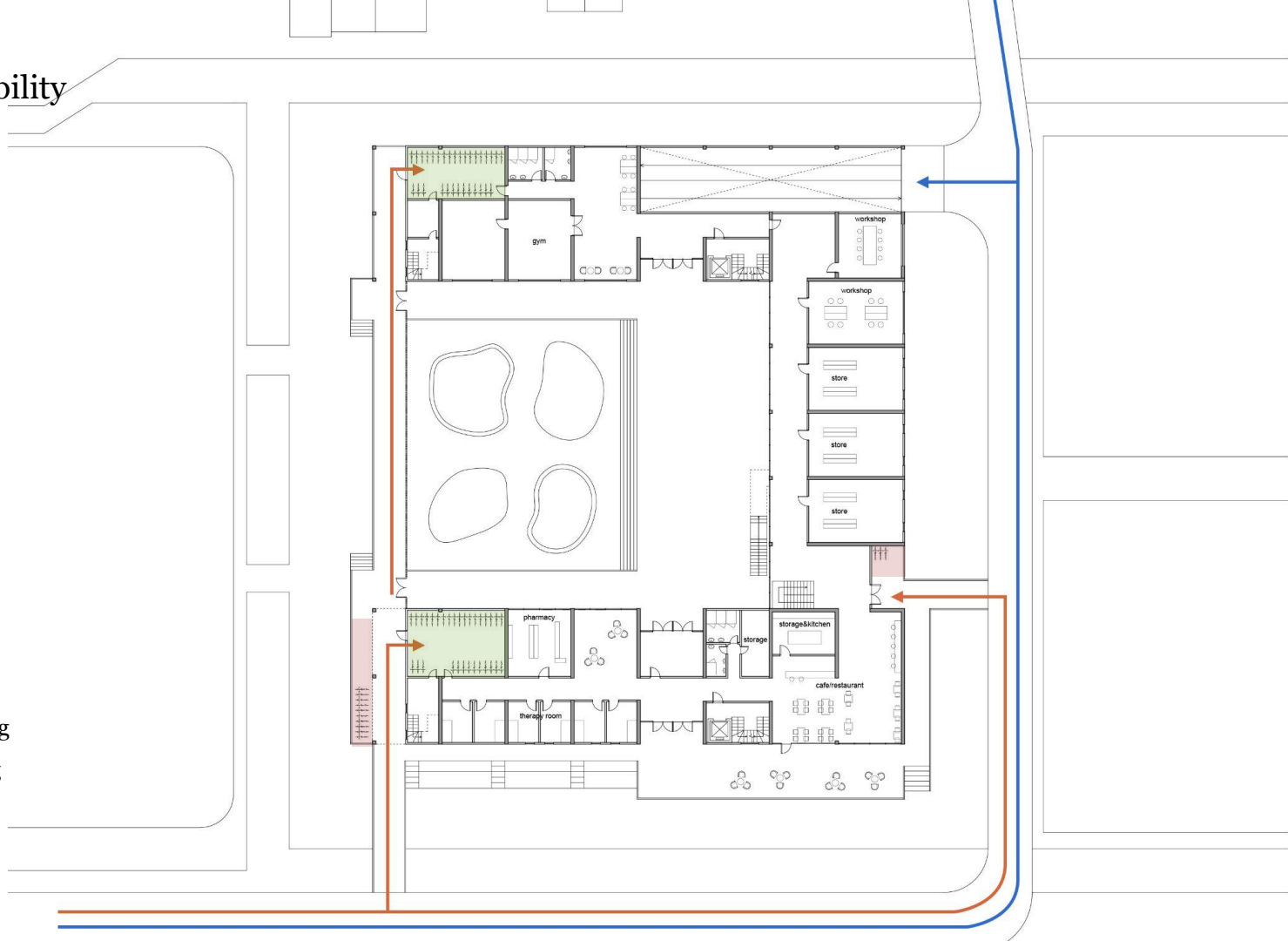
- care center
- therapy room
- pharmacy
- restaurant
- stores



Design Strategy





Ground floor accessibility

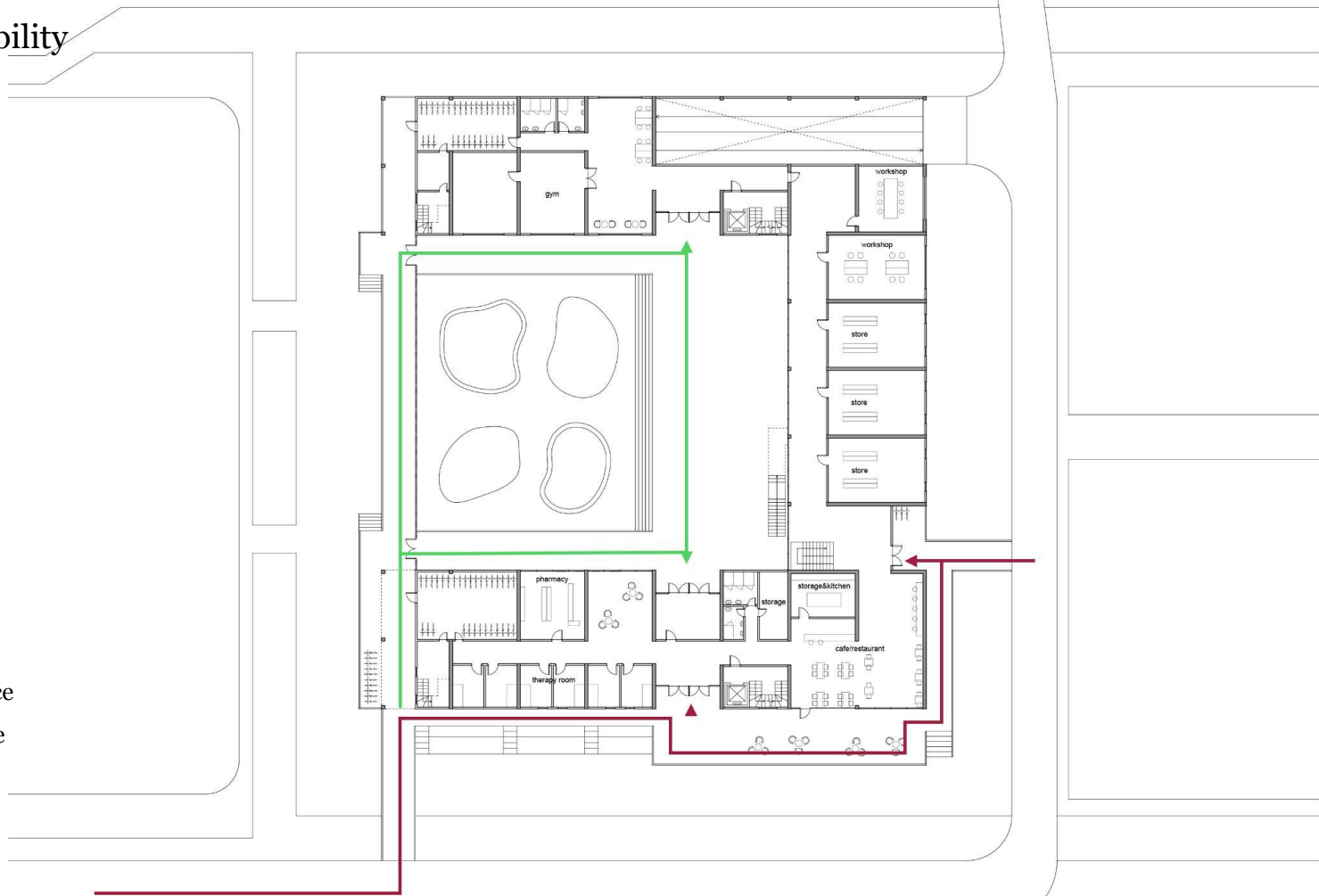
-  private parking
-  public parking
-  bikes
-  cars



Design Strategy

Ground floor accessibility

-  private entrance
-  public entrance
-  public
-  residents





Design Strategy

First floor plan



Design Strategy

First floor plan



-  outdoor terrace
-  public area



Design Strategy

First floor plan





-  greenhouse (living room)
-  kitchen

Design Strategy

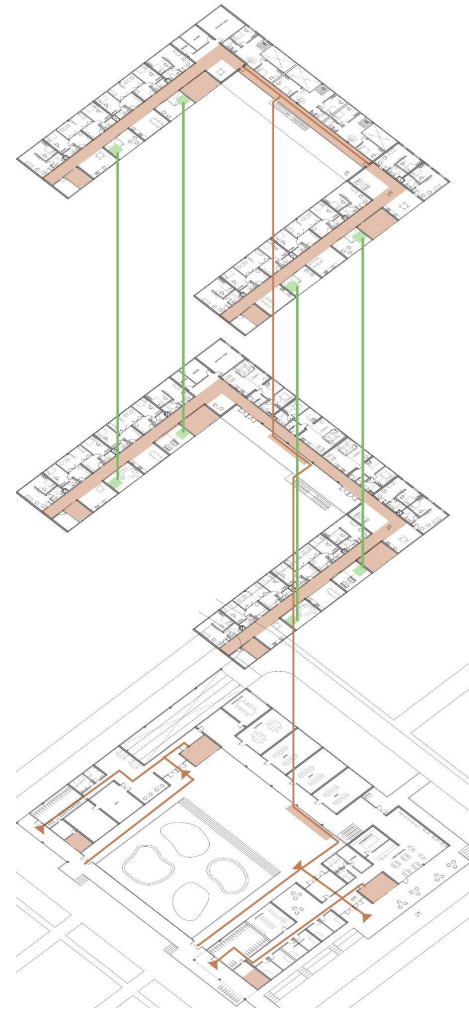
Second floor plan



-  outdoor terrace
-  public area

Design Strategy

Accessibility



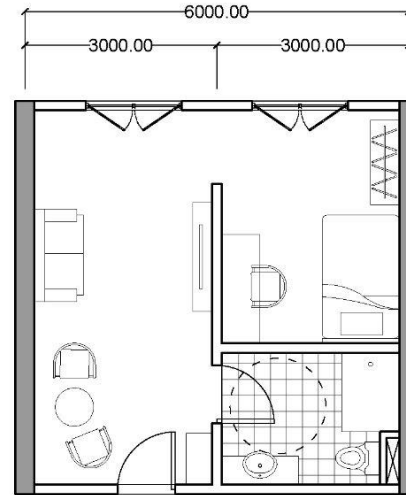
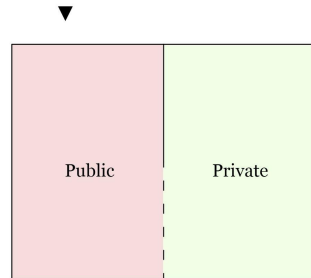
Design Strategy

Dwelling typology

TypeA

Single house

1-2 person 36 m²



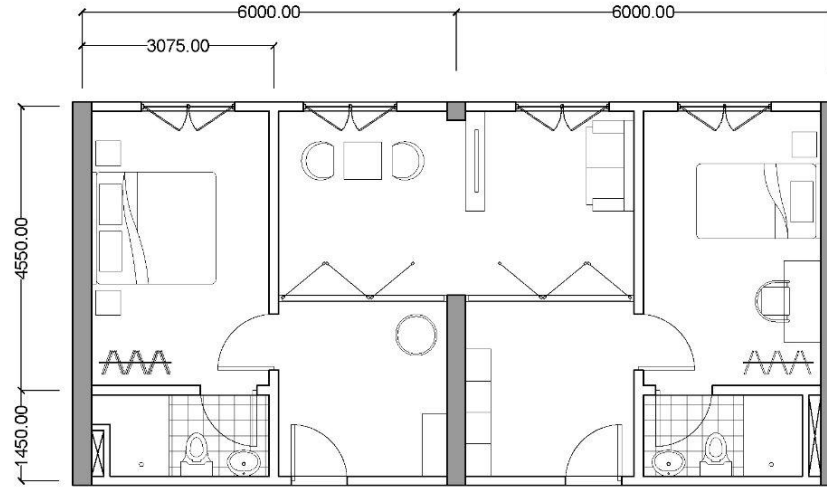
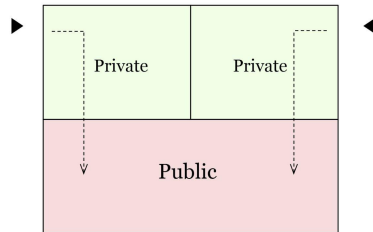
Design Strategy

Dwelling typology

TypeB

Sharing house

2-3 person 72 m²



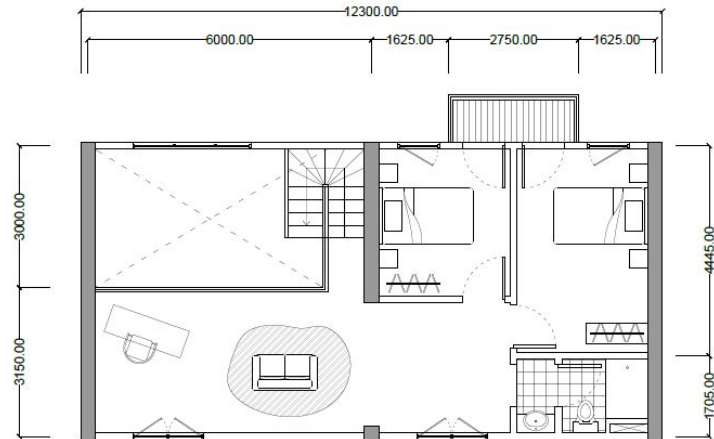
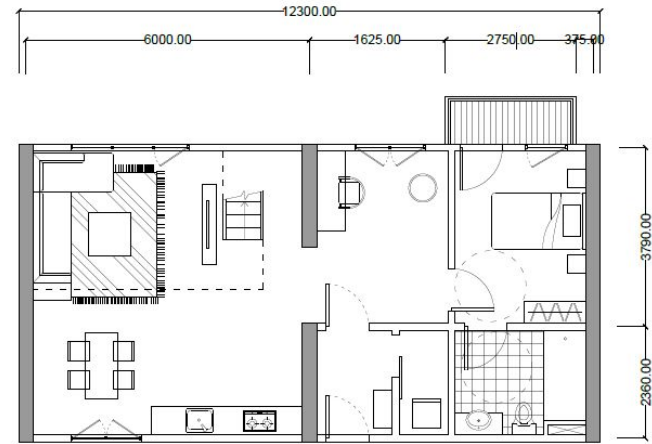
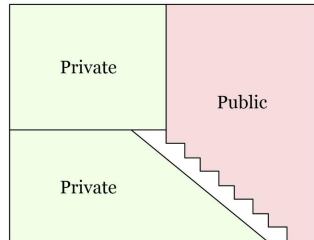
Design Strategy

Dwelling typology

Type C

Duplex house

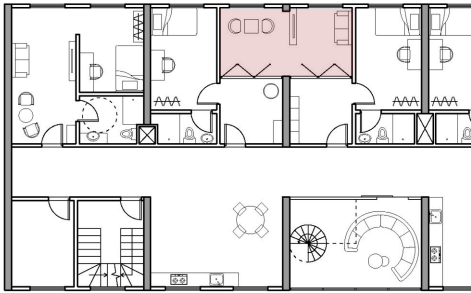
3-4 person 126 m²



Design Strategy

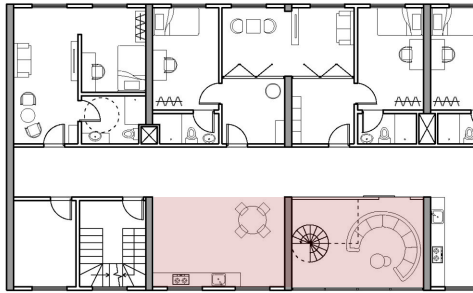
Public & Shared spaces

“Small”



Design Strategy

Public & Shared spaces



“Medium”



Design Strategy

Public & Shared spaces

“Large”



Design Strategy

Section East-west



Design Strategy

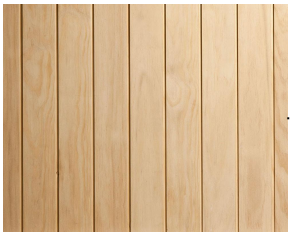
Section North-south



Design Strategy

Facade Materialization

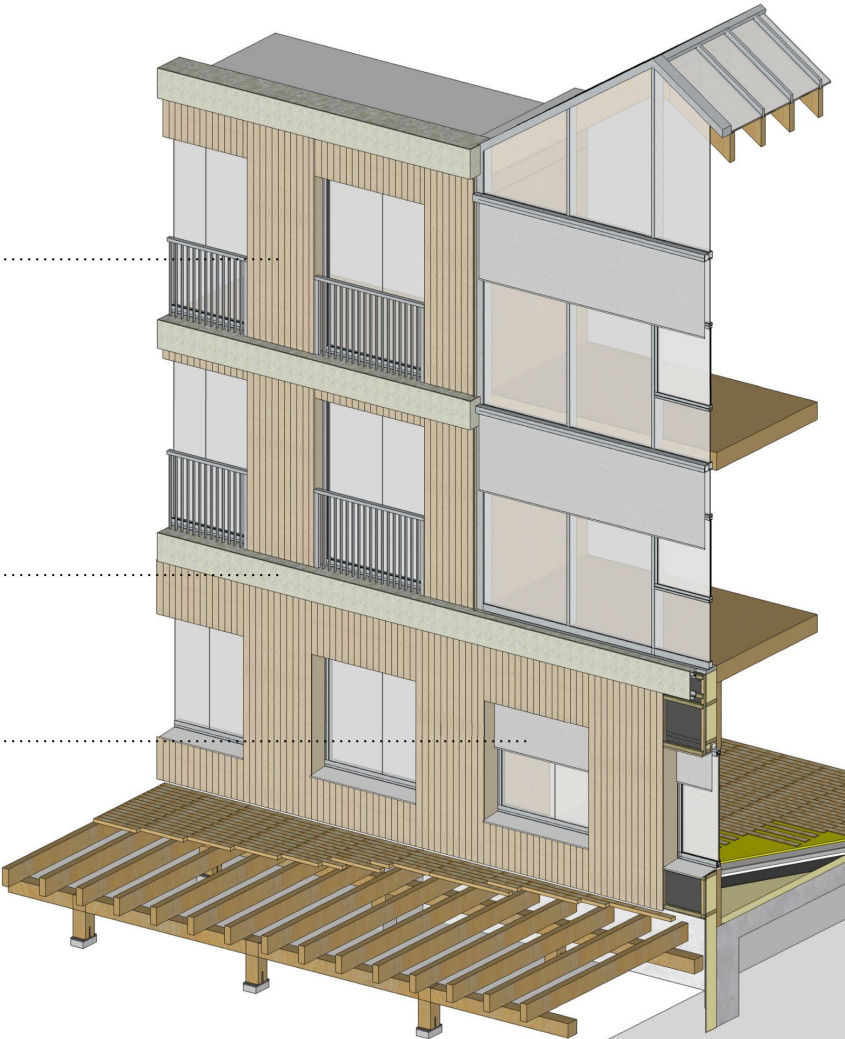
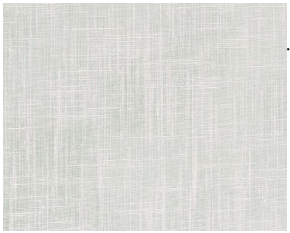
Oak



Standstone veneer strips



Greenscreen Sea-Tex



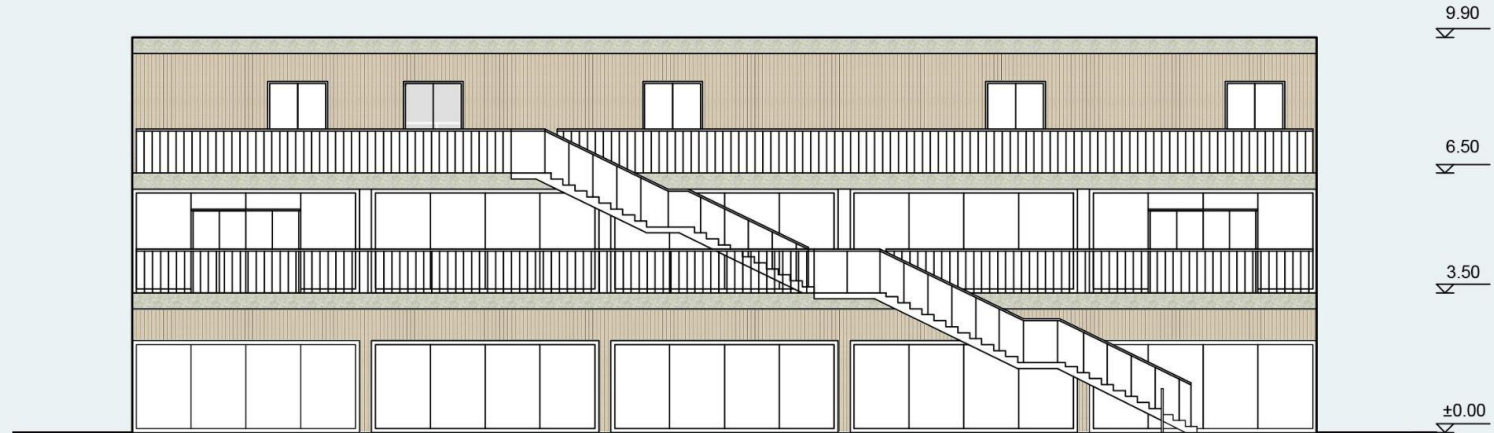
Design Strategy

Outer South Facade



Design Strategy

Inner West Facade



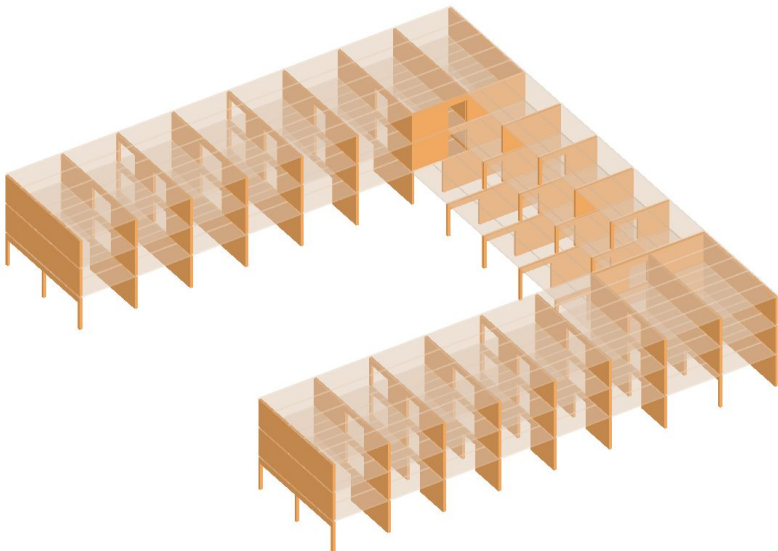
Design Strategy



Outer East Facade

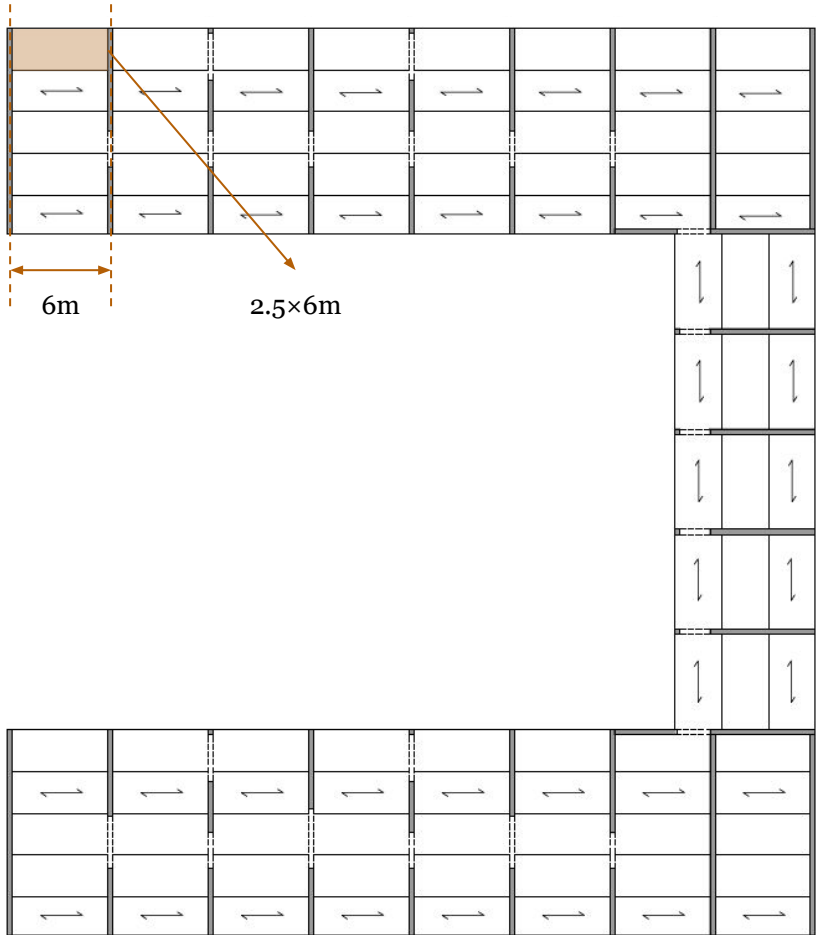


Design Strategy

Structure



-  CLT wall 300mm
-  CLT floor 200mm

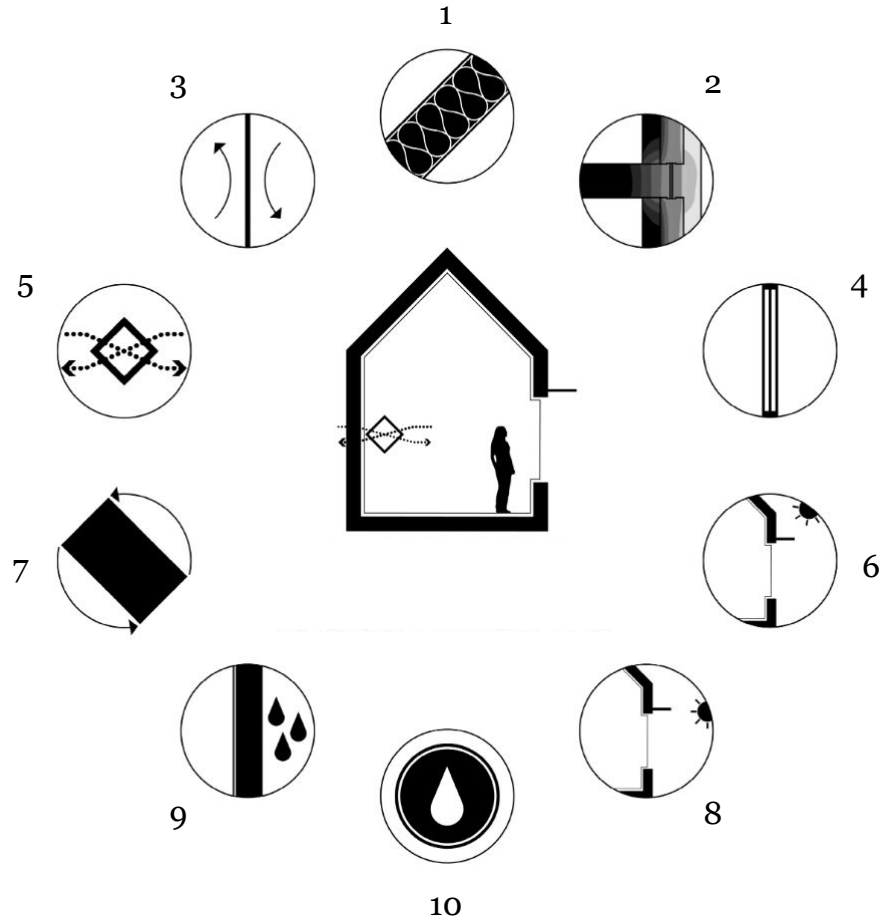


Design Strategy

Sustainability

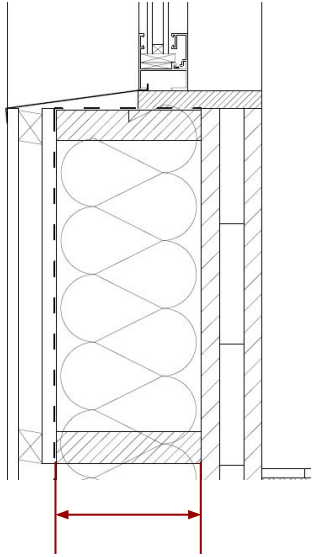
Passive principles

1. Continuous Insulation
2. No Thermal Bridges
3. Airtight
4. High Performance Windows + Doors
5. Fresh Air with Heat Recovery
6. Shading
7. Orientation + Form
8. Daylighting + Solar Gain
9. Moisture Management
10. Efficient Water Heating + Distribution

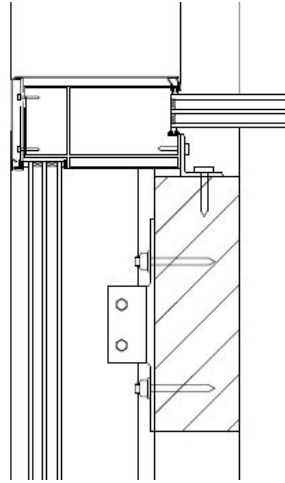


Design Strategy

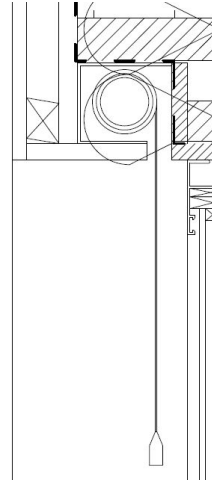
Sustainability



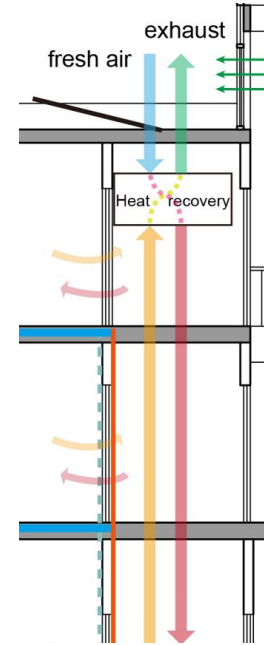
wood fiber 240mm
 $R_c > 6$



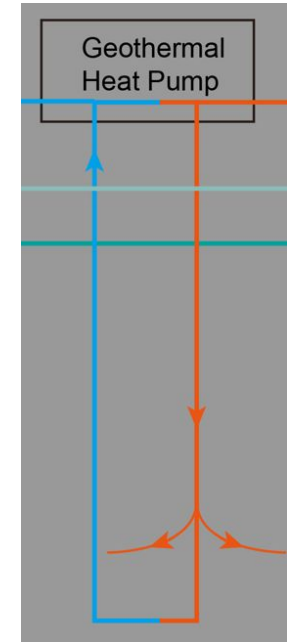
triple glazing



outdoor sunshade



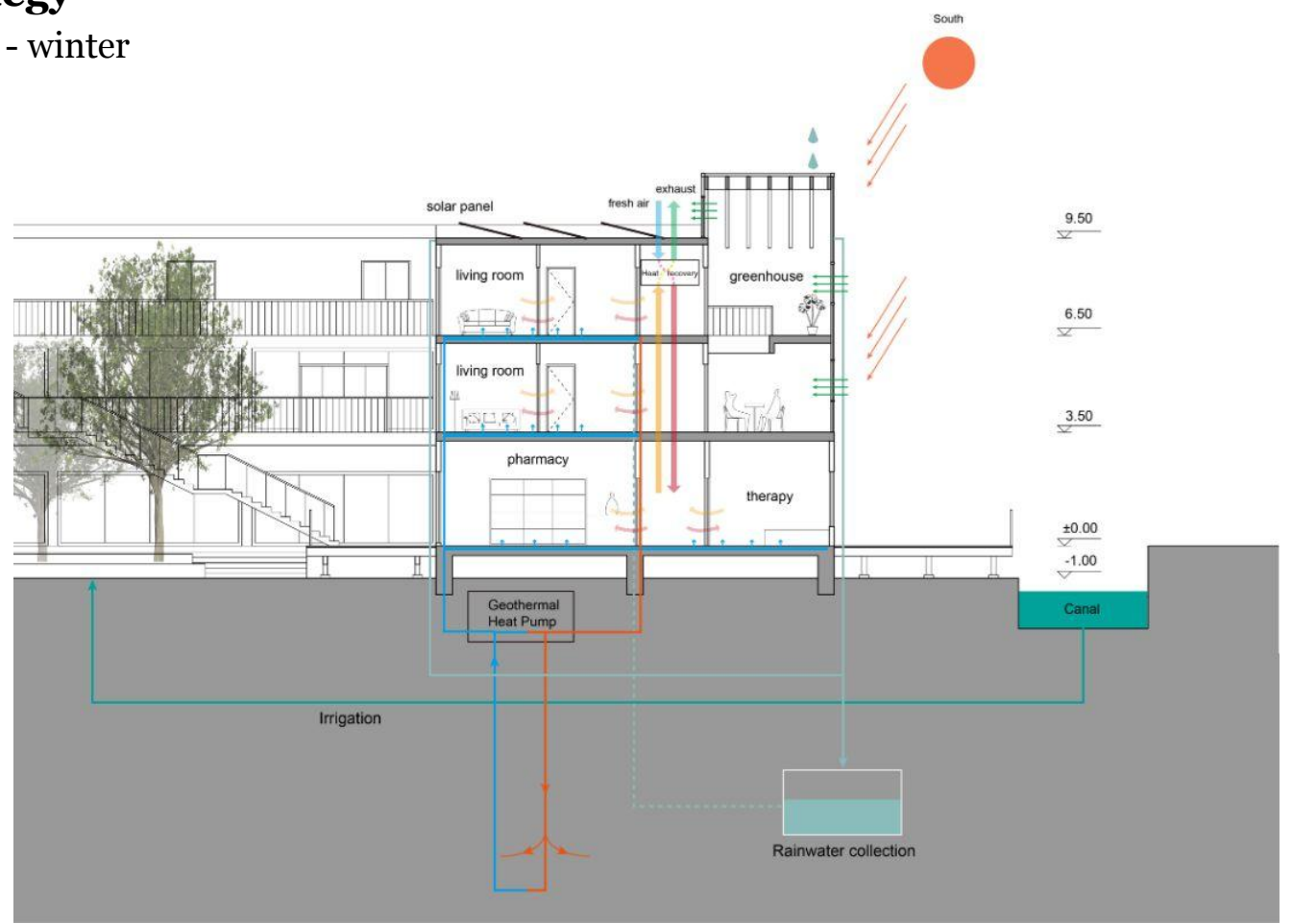
heat recovery



natural heating system

Design Strategy

Climate Scheme - winter



Design Strategy

Climate Scheme - summer

South

