



# The Urban Dyke

Design Concept to Preserve the Future by the increase of valuation

Bastiaan Vrij

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Design Concept to Preserve the Future by the increase of valuation

## Graduation Presentation

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AR3AD100  
Advanced Housing Design Graduation studio  
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rest



Fig. 4: Demolition of Copernicuslaan Boschveld (Photo of Megan Hanegraaf)





Fig. xx Border of Midden Delfland (Own Photo)



Fig. xx Abtswoudse park in Tanthof (Own Photo)



# 'The Urban Dyke'



An architectural rendering of a modern building complex. The buildings feature large windows and a mix of materials. In the foreground, there is a courtyard with a large tree, a circular water feature, and several people walking. A dog is also visible in the courtyard. The overall style is clean and illustrative.

## **Environmental Impact**

Environmental impact refers to the (negative) effects of human actions on the natural environment and the earth's ecosystems

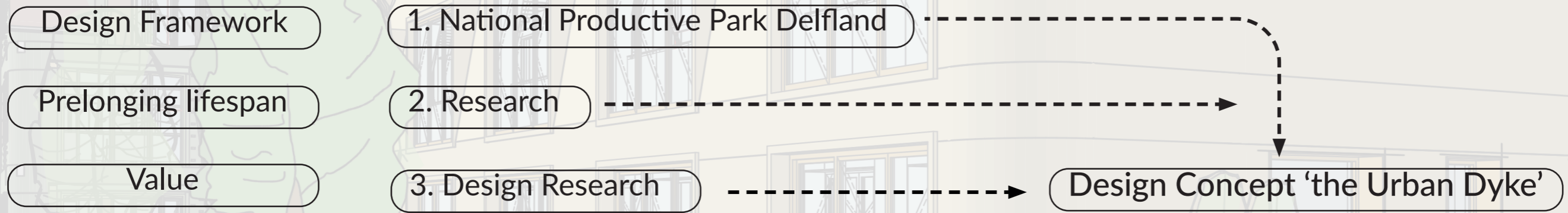
## **Prolonging the lifespan of buildings**

Rather than demolishing buildings unnecessarily, reusing them offers an alternative approach to managing our built environment with minimal environmental impact.

## **Valuation**

The value people attach to the built environment, in the form of sens

# Table of Content



# **1. National Productive Park Delfland**

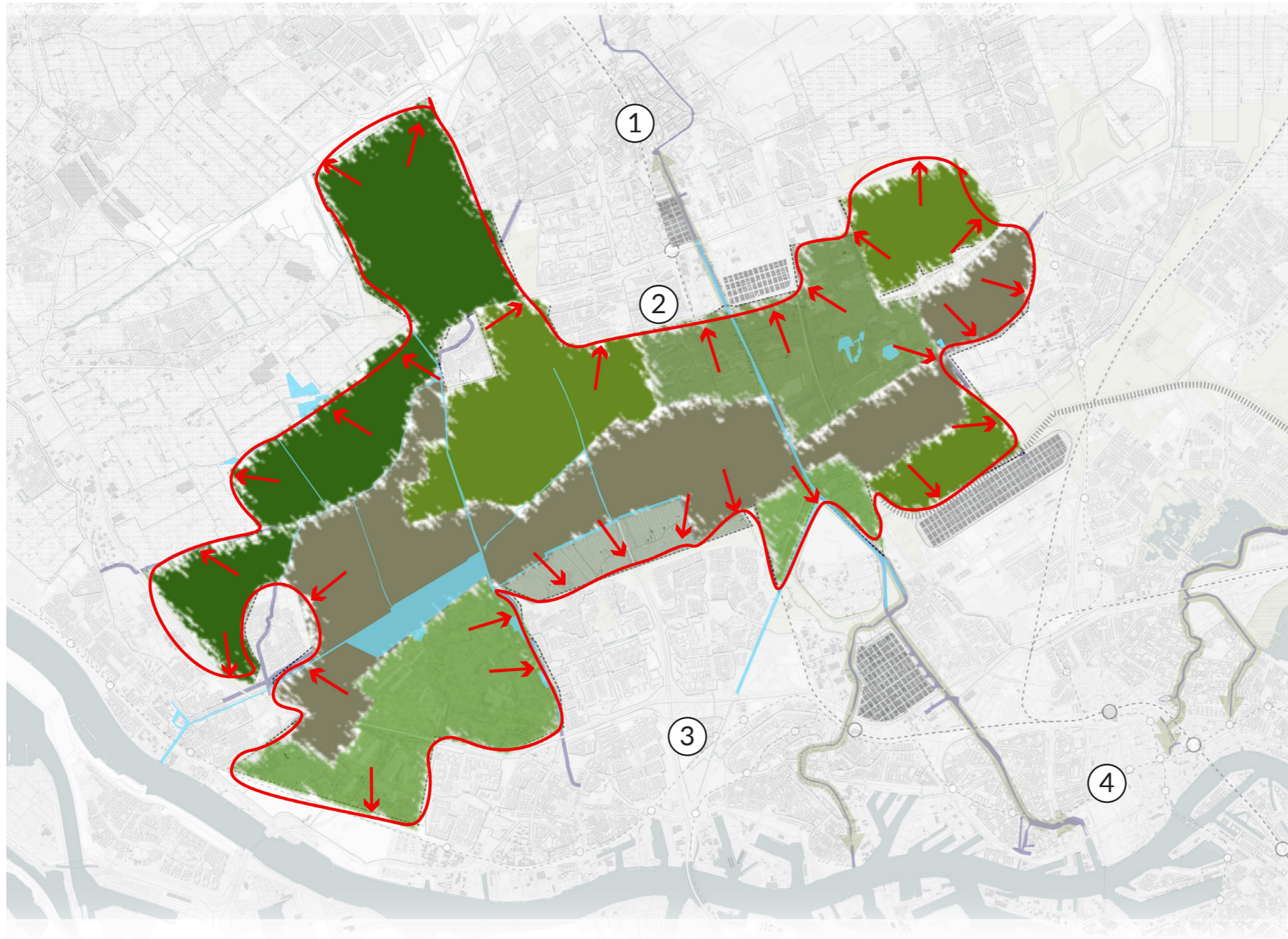


Fig. xx Masterplan Midden Delfland  
(ZUS et al., 2022; Own work)

- Forest
- Dry peat
- Water storage
- Water
- Boundry of Midden Delfland
- ① Delft Centre
- ② Tanthof
- ③ Schiedam
- ④ Rotterdam

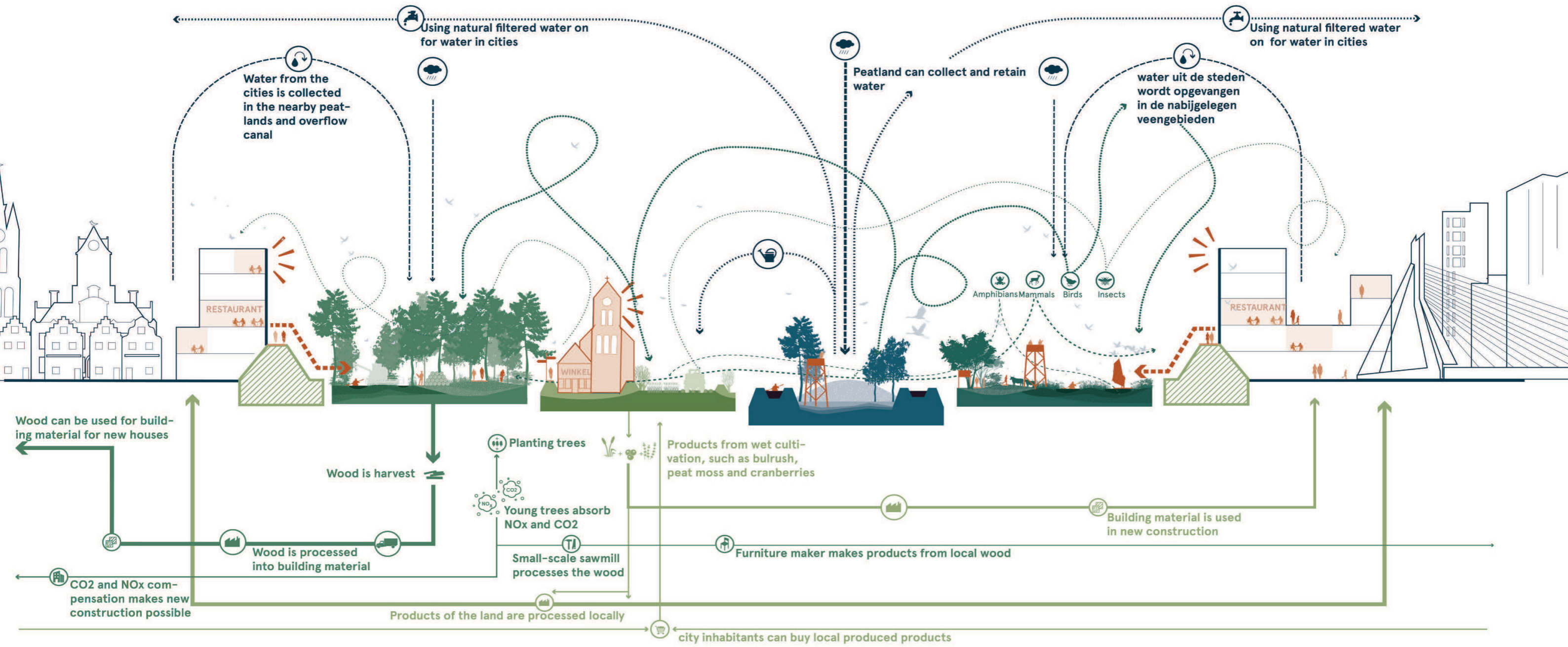


Fig. xx Section Vision National Productive (ZUS et al., 2022)





Fig. 01 Masterplan Midden Delfland  
(ZUS et al., 2022; Own work)










-  Forest
-  Dry peat
-  Water storage
-  Water
-  Dyke
-  Delft Centre
-  Tanhof
-  Schiedam
-  Rotterdam



Fig. 02 Project location in Tanthof with green structures (Own Work)



Fig. 03 Border between Midden Delfland and Tanthof (Google Earth)





Fig. 04 Transition point Midden Delfland and Tanthof (Google Earth)



# 1. Research

An architectural rendering of a modern building complex. The buildings feature large windows and a mix of colors like brown, grey, and yellow. In the foreground, there is a courtyard with a large tree, a fountain, and several people walking. A dog is also visible in the courtyard. The overall style is a clean, illustrative architectural drawing.

**Research question**

**Can architecture contribute to reducing the environmental impact of the building industry by prelonging the lifespan of buildings?**

An architectural rendering of a modern, multi-story building complex. The building features large windows and a mix of brown and grey tones. In the foreground, several stylized figures of people are walking, including a family with a child and a person walking a dog. There are also some greenery elements like trees and bushes. The overall style is clean and illustrative.

## Sub-question 1

Exploring the ecological footprint throughout the entire lifecycle: What environmental impact does each phase of the building-to-demolition process have?

An architectural rendering of a modern, multi-story building with a courtyard. The building features large windows and a mix of brick and concrete. In the foreground, several people are walking in the courtyard, and a dog is visible. The scene is set against a light background with a green hillside at the bottom.

## Environmental Impact of the building sector



Material production



Construction



Maintain



Use



Deconstruction and recycling



## Environmental Impact of the building sector



Material production



Construction



Maintain



Use



Deconstruction and recycling

**28%** of total emissions

(Ng et al., 2012)

## Environmental Impact of the building sector



Material production



Construction



Maintain



Use



Deconstruction and recycling

**28%** of total emissions

**10%** of total emissions

(Ng et al., 2012)

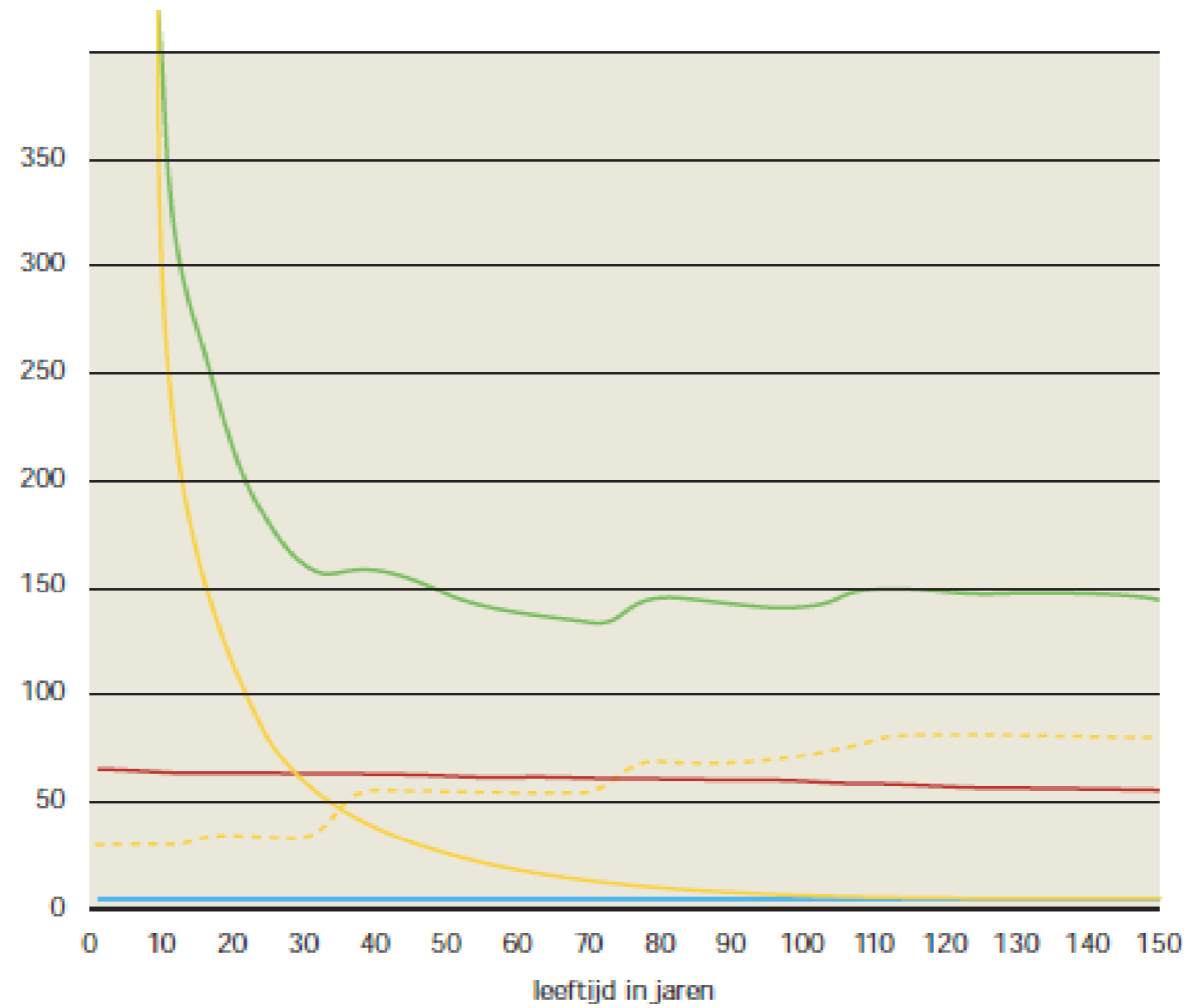


Fig. 05 Environmental Impact over time (Hoogers, 2004)

- Total EQ points
- Energy (reduction 1% per year)
- Water (constant 5 EQ points per year)
- - - Material maintenance/decay (variable)

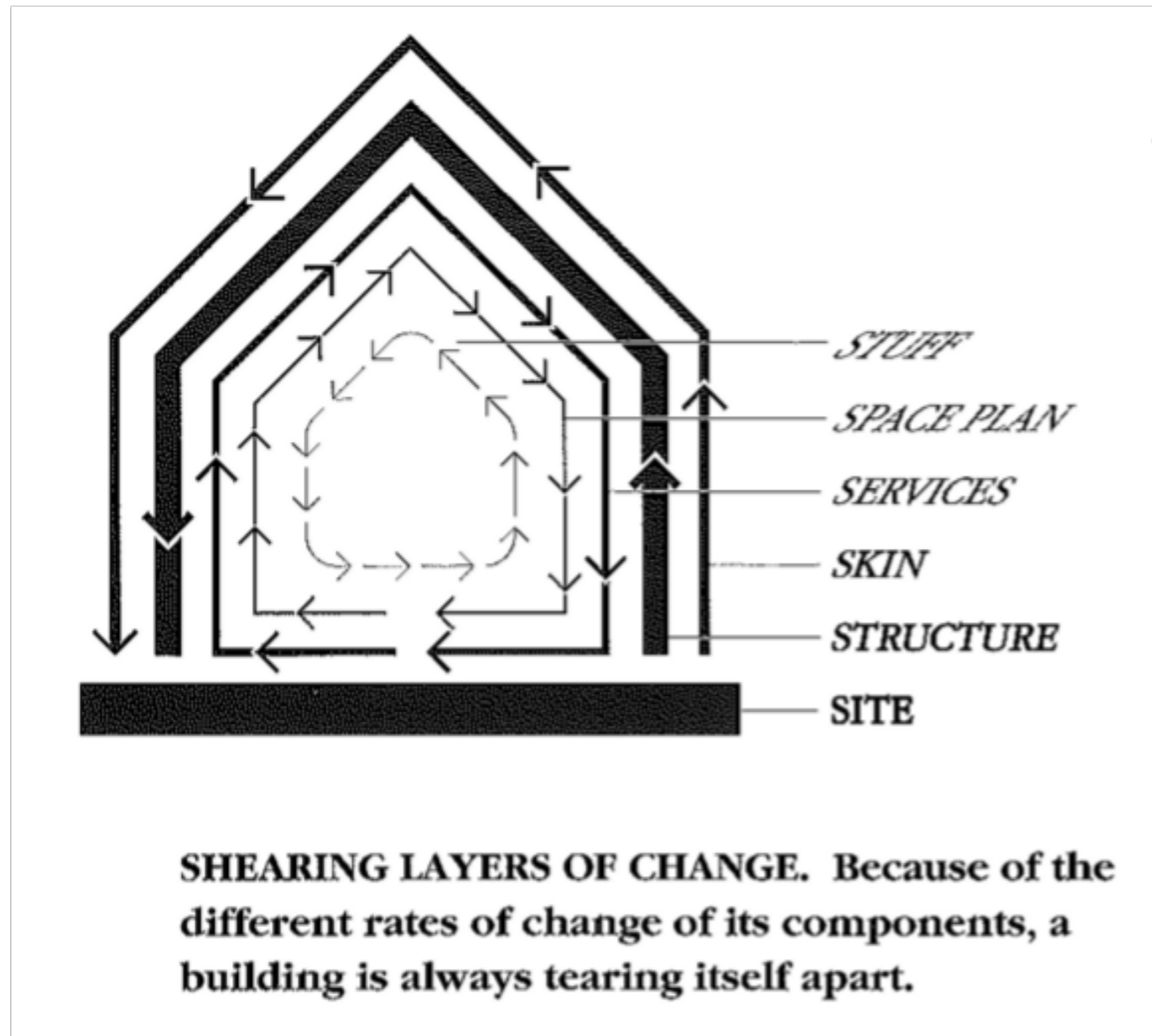


Fig. 06 Shearing Layers of Change by Steward Brand (1994)

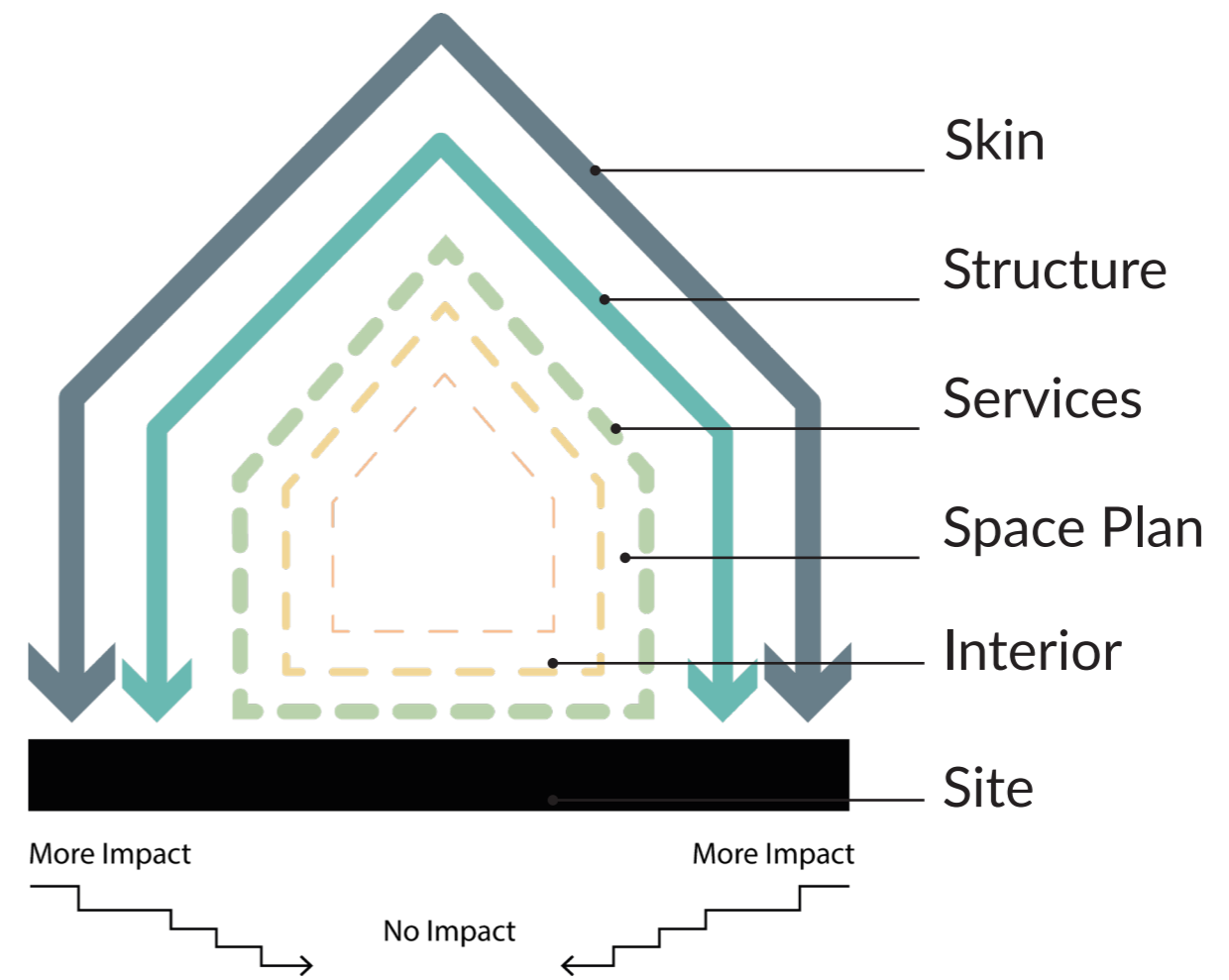


Fig. 07 Shearing Layers of Change and Environmental Impact (Own Work)

An architectural rendering of a modern residential building with a courtyard. The building features large windows and a mix of brick and concrete. In the foreground, there is a paved courtyard with a circular garden bed containing a tree and some shrubs. Several stylized human figures are shown walking in the courtyard, and a dog is visible on the right. The overall style is clean and illustrative.

## Sub-question 2

Investigating the rationale behind demolishing dwellings in the Netherlands: What are the primary motives driving the decision to demolish Dutch dwellings?

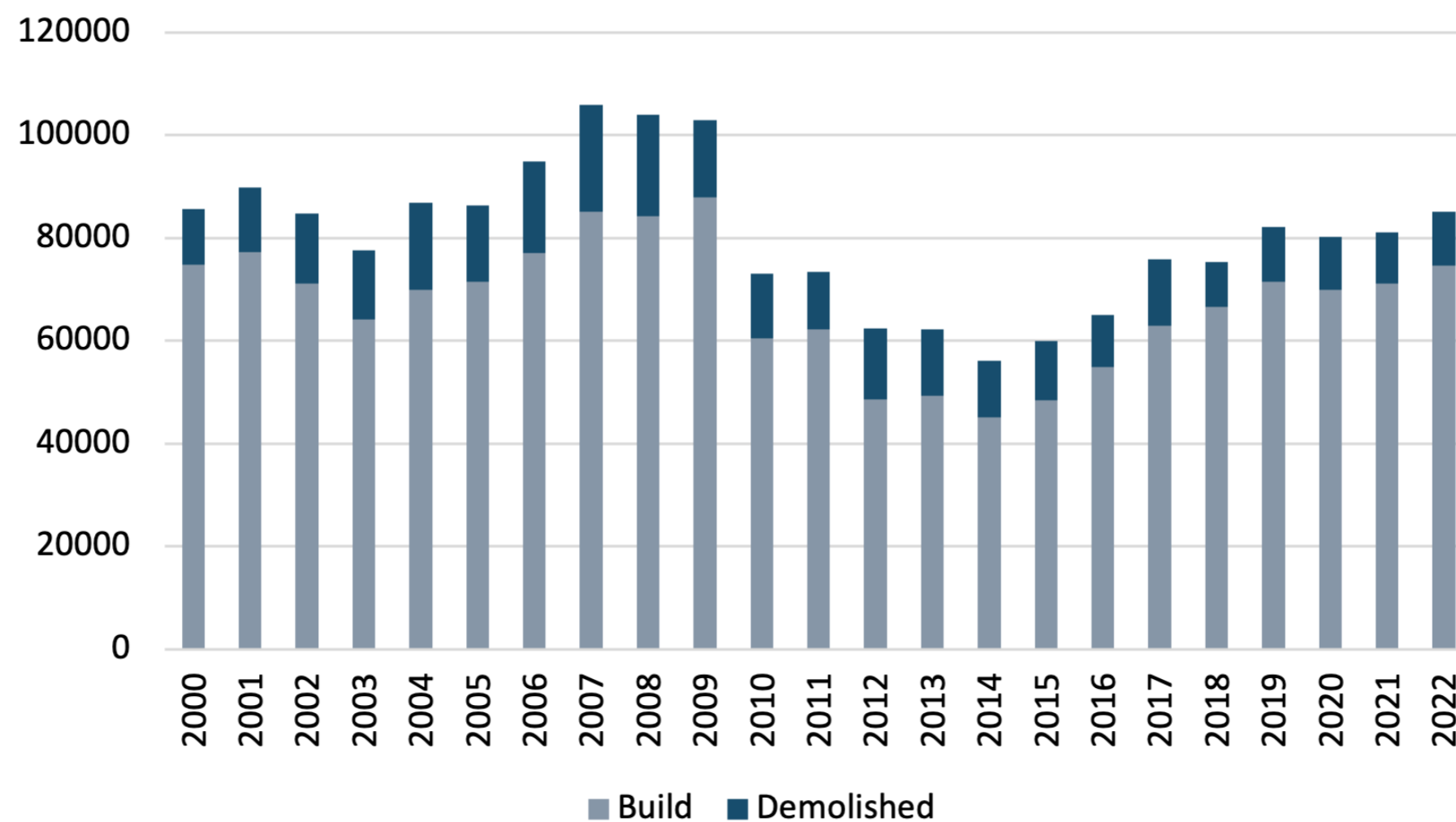


Fig. 08 Dwellings built and demolished in the Netherlands( Centraal Bureau voor de Statistiek, 2023)

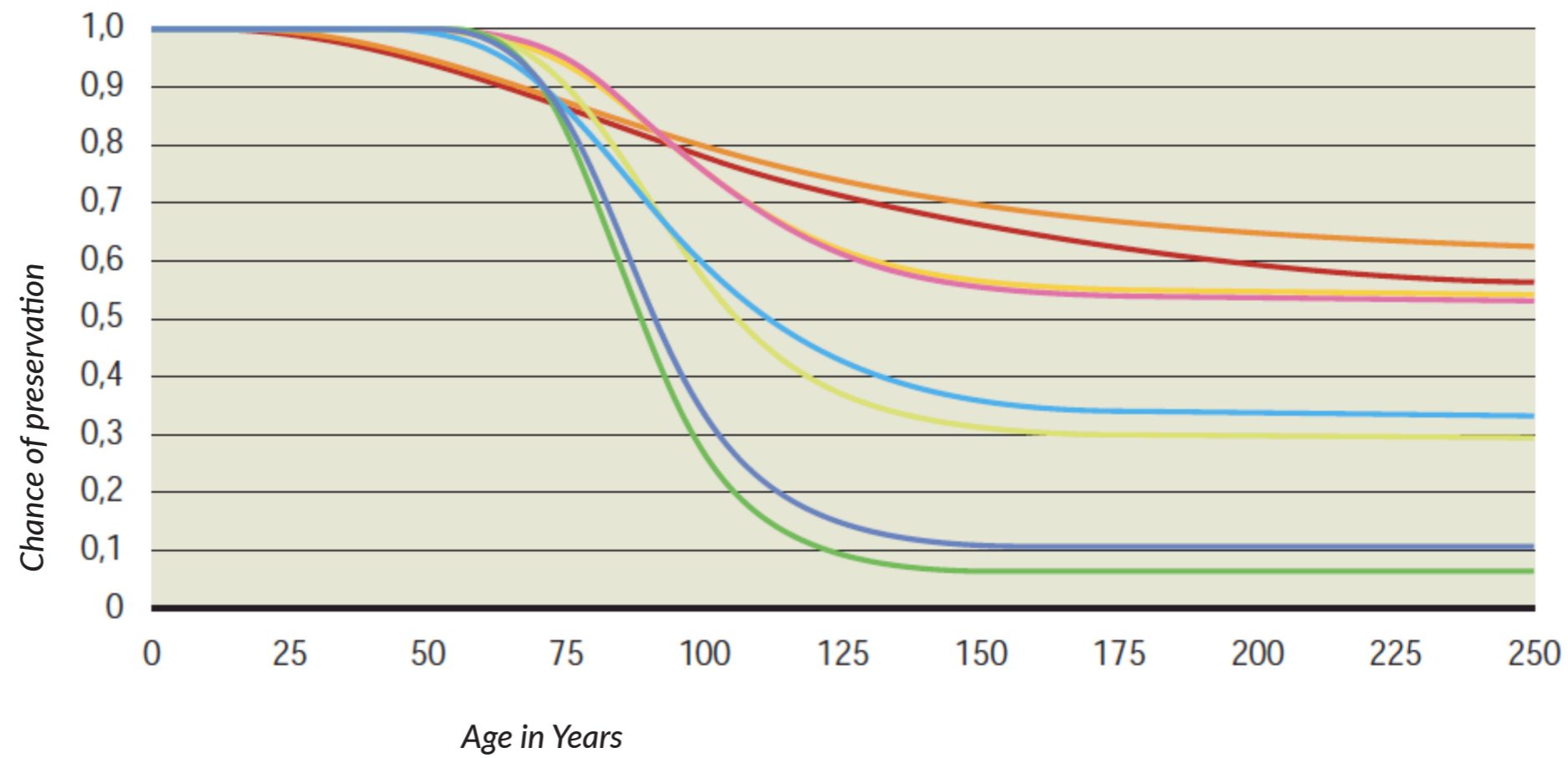


Fig. 09 Chance preservation types of housing (Hoogers, 2004)

- Owner-occupied, Single Family up to 4 rooms
- Owner-occupied, Single Family up to 5+ rooms
- Owner-occupied, Multi Family up to 2 rooms
- Owner-occupied, Multi Family up to 3+ rooms
- Rental, Single Family up to 4 rooms
- Rental, Single Family up to 5+ rooms
- Rental, Multi Family up to 2 rooms
- Rental, Multi Family up to 3+ rooms

## Housing Corporations



Fig. 10 Social Housing block 'Het Schip' (Photo by Museum het Schip)



Fig. 11 Residential block of housing corporation Portaal in Utrecht (Photo by Duic)



# Housing Corporations

- Suspension of subsidies
- Property tax
- Liberalisation limit
- Housing corporations must compete with the private sector

(Thomsen, 2006; Hochstenbach 2022)



Fig. 11 Residential block of housing corporation Portaal in Utrecht (Photo by Duic)



Fig. 12 Boschveld before Demolition (Own Work)

- Buildings
- Neighborhood Boschveld
- Demolished
- City centre
- Train station



Fig. 13 Copernicuslaan, during demolition (Google Street View)



Fig. 14 Copernicuslaan after rebuild (Google Street View)



Fig. 15 Boschveld after Demolision (Own Work)

- Buildings
- Neighborhood Boschveld
- New build dwellings
- City centre
- Train station



Fig. 13 Copernicuslaan, during demolition (Google Street View)



Fig. 14 Copernicuslaan after rebuild (Google Street View)

An architectural rendering of a modern residential building complex. The buildings feature a mix of brick and light-colored facades with large, multi-paned windows. A central courtyard contains a large tree, a circular water feature, and a paved walkway. Several stylized human figures are shown walking in the courtyard, and a dog is visible on the right. The overall style is clean and illustrative.

## Demolition motivations

- Strong correlation between demolition and type of property
- Weak correlation between housing quality and demolition
- Mixing different target groups
- Removing financial reason for demolition

An architectural rendering of a modern building complex. The buildings feature large windows and a mix of materials. In the foreground, there is a courtyard with a circular garden bed, a tree, and several people walking. A dog is also visible in the courtyard. The overall style is clean and modern.

### Sub-question 3

Identifying elements that contribute to the preservation of buildings: What factors supports prolonging the lifespan

An architectural rendering of a modern building complex. The buildings feature large windows and a mix of colors like brown, grey, and yellow. In the foreground, there is a courtyard with a large tree, a fountain, and several people walking. A dog is also visible. The overall style is clean and illustrative.

## Influences of prelonging the lifespan of buildings

- Adoptability and future (re)use

(Georgiadou et al. 2012)

- Financial, environmental and social economic → social inclusion

(Georgiadou et al. 2012; Winston, 2010; Blom & Soomeren, 2015)

- Lifecycle thinking

(Georgiadou et al. 2012)

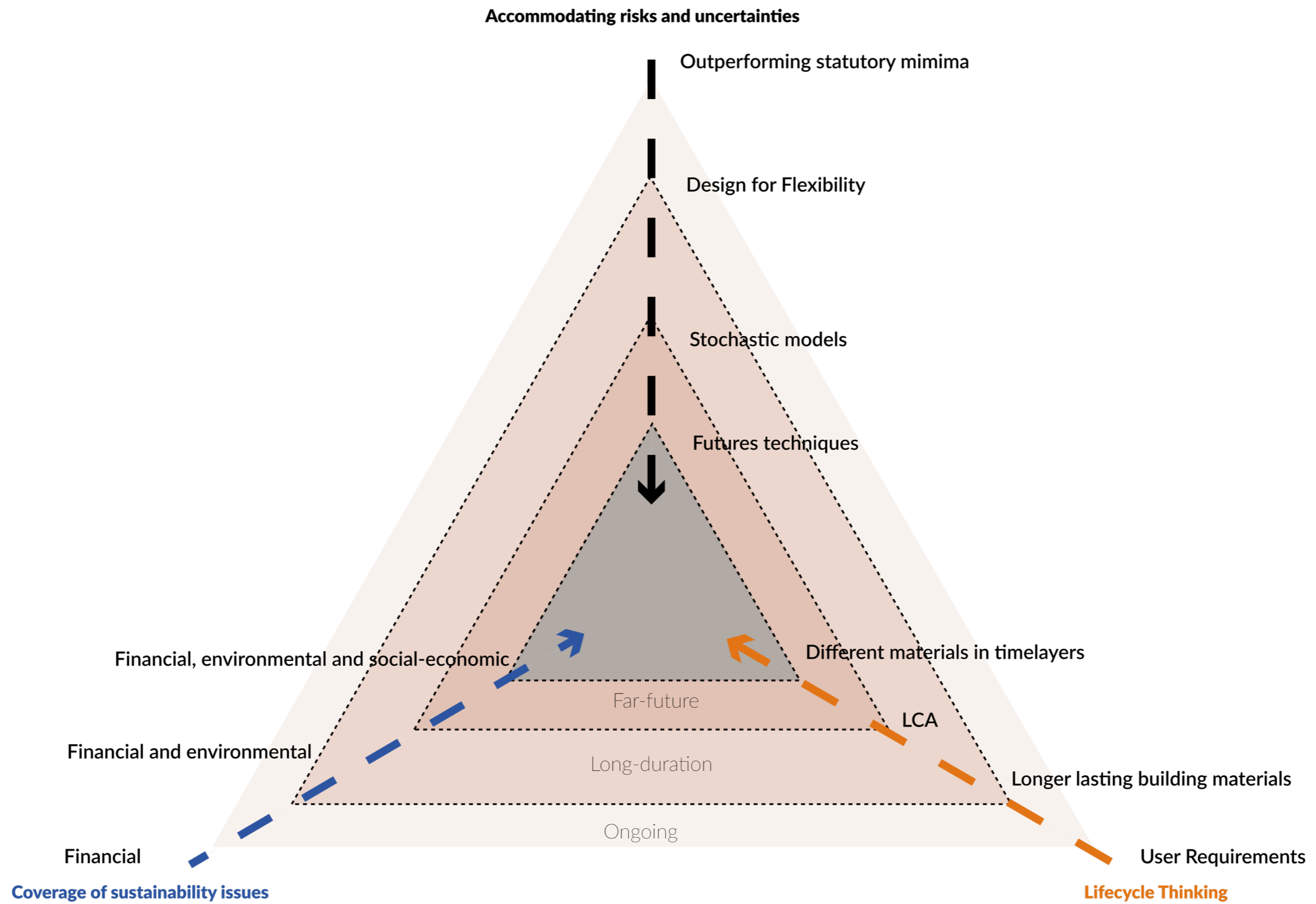
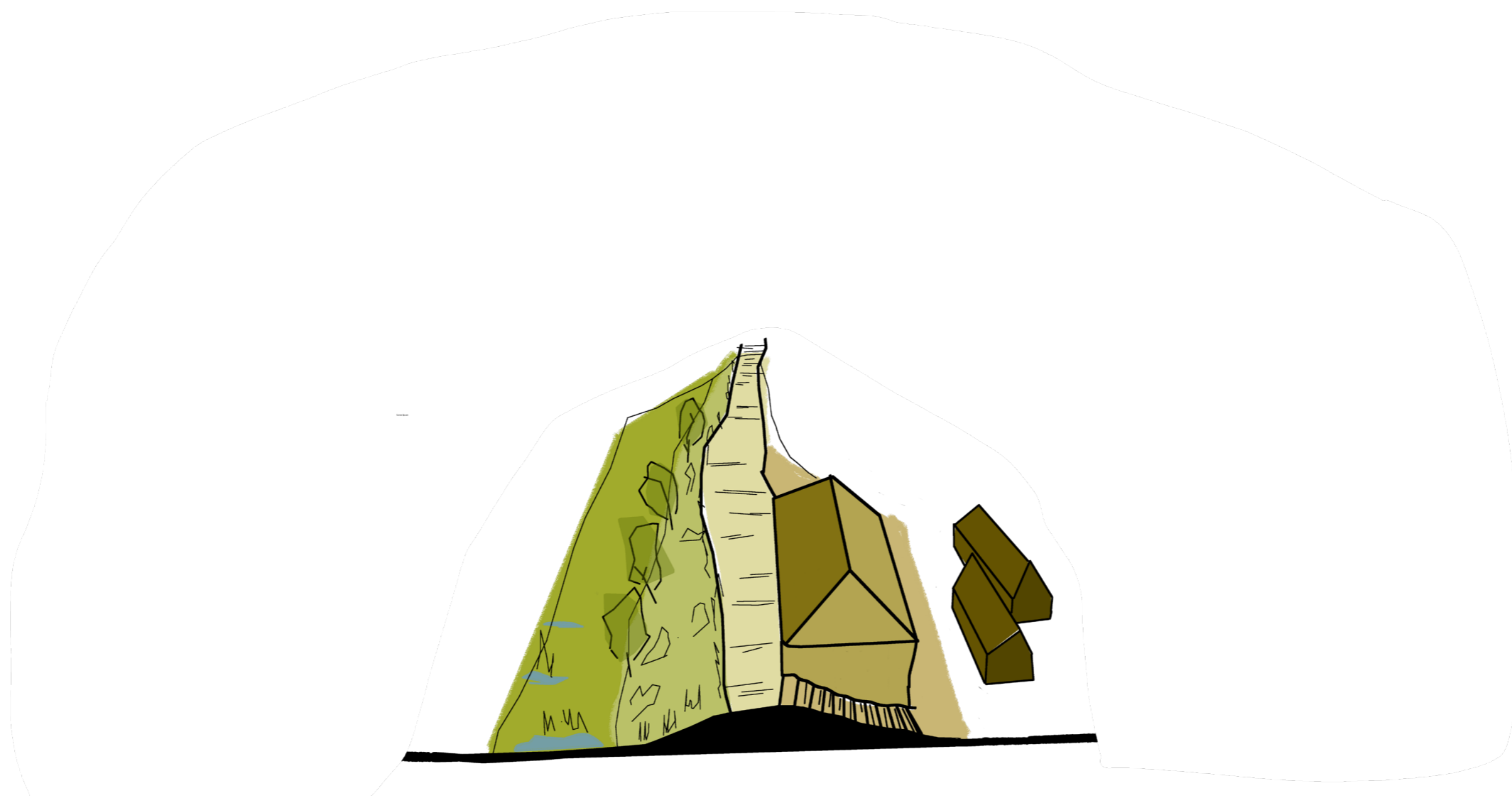
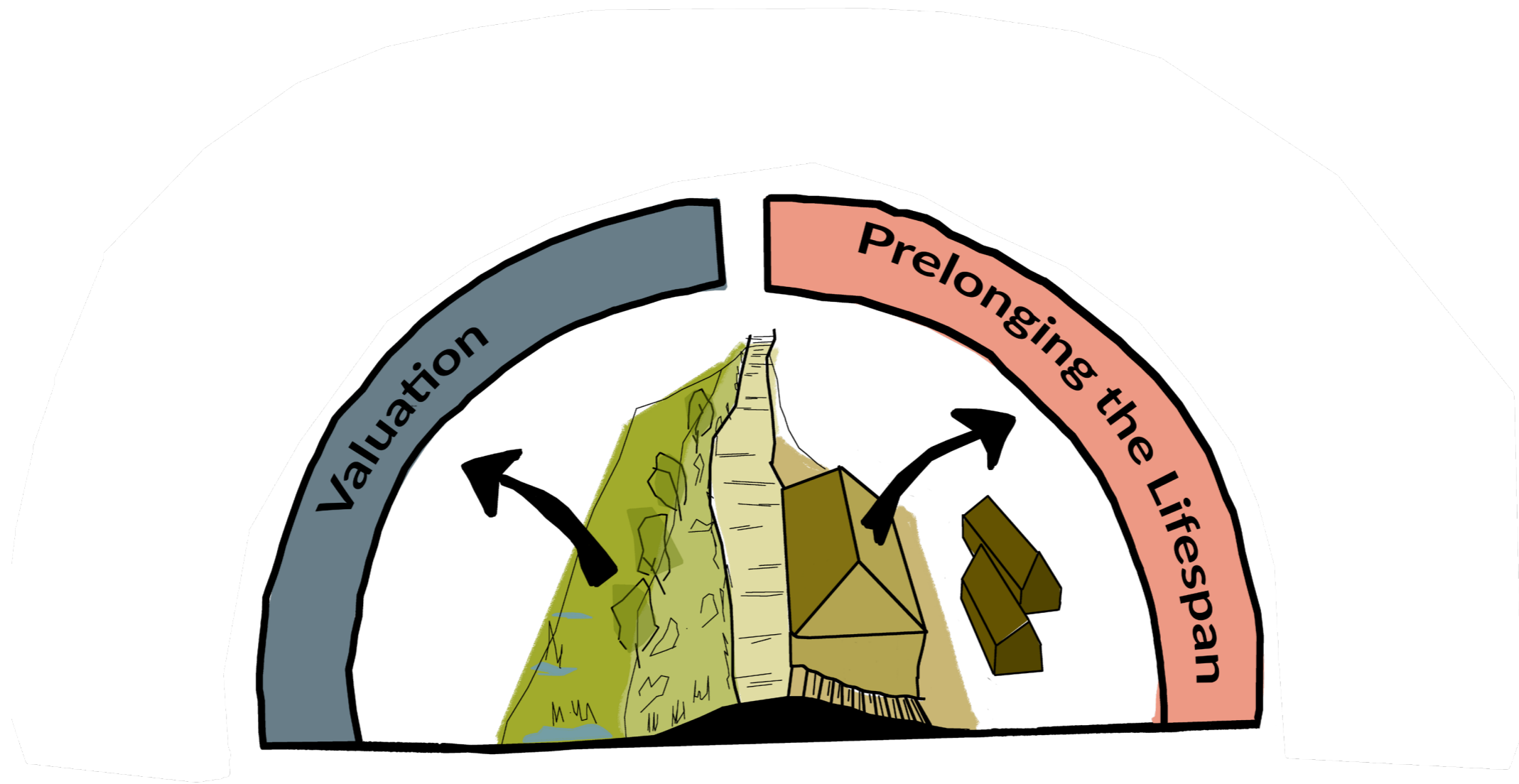


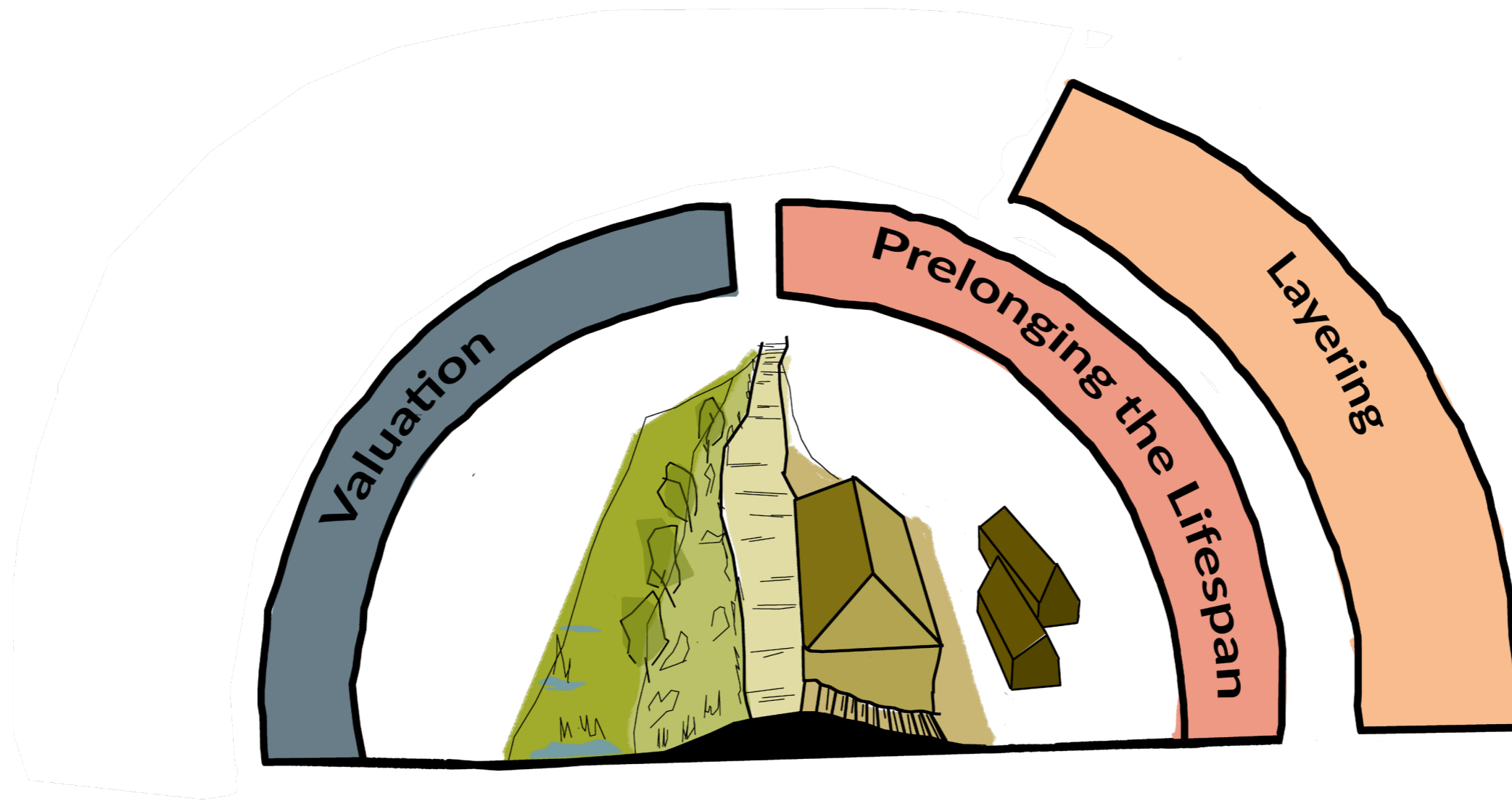
Fig. 16 Knowledge map for prolonging the lifespan of buildings (Own Work; Georgiadou et al. 2012)

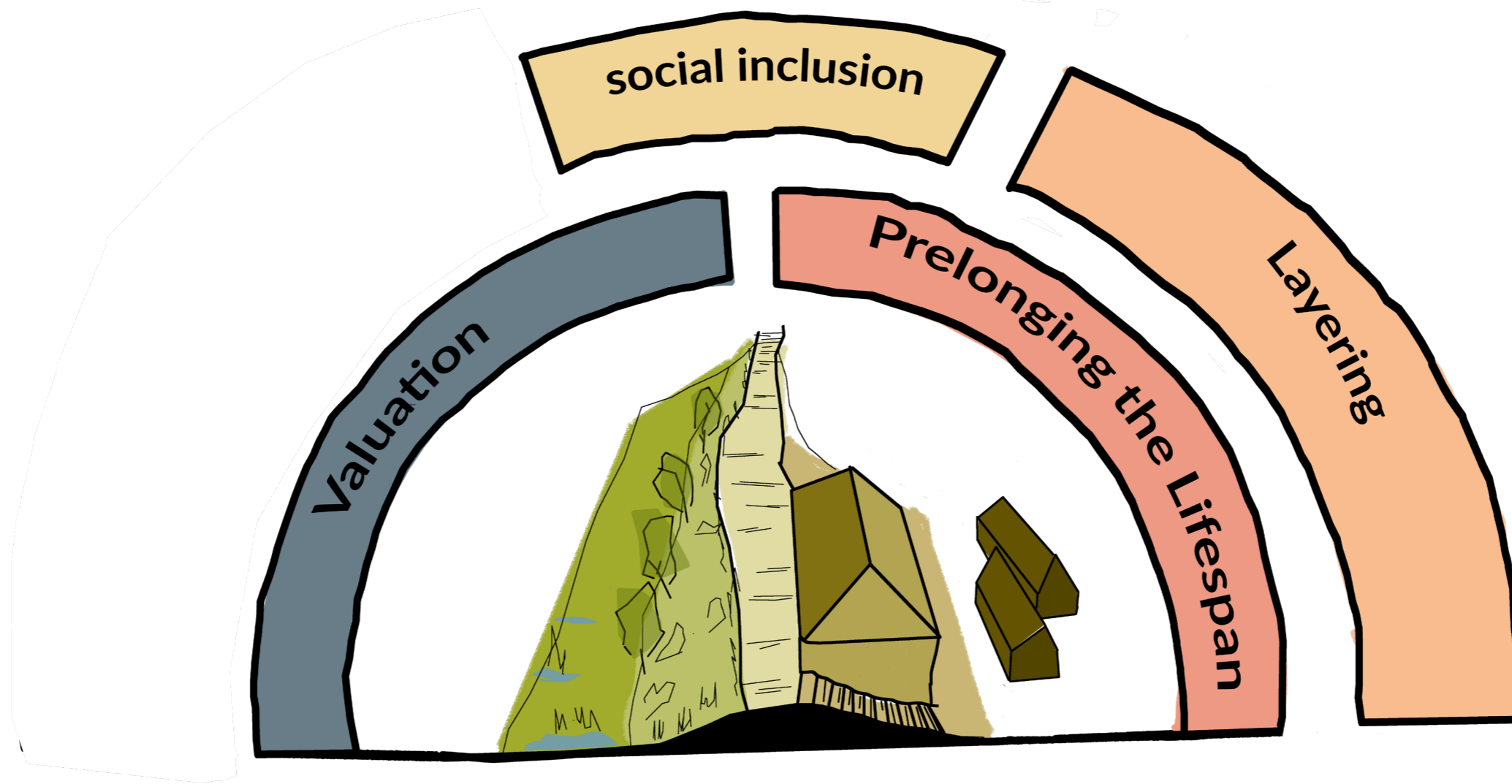
## **3. Research by design**

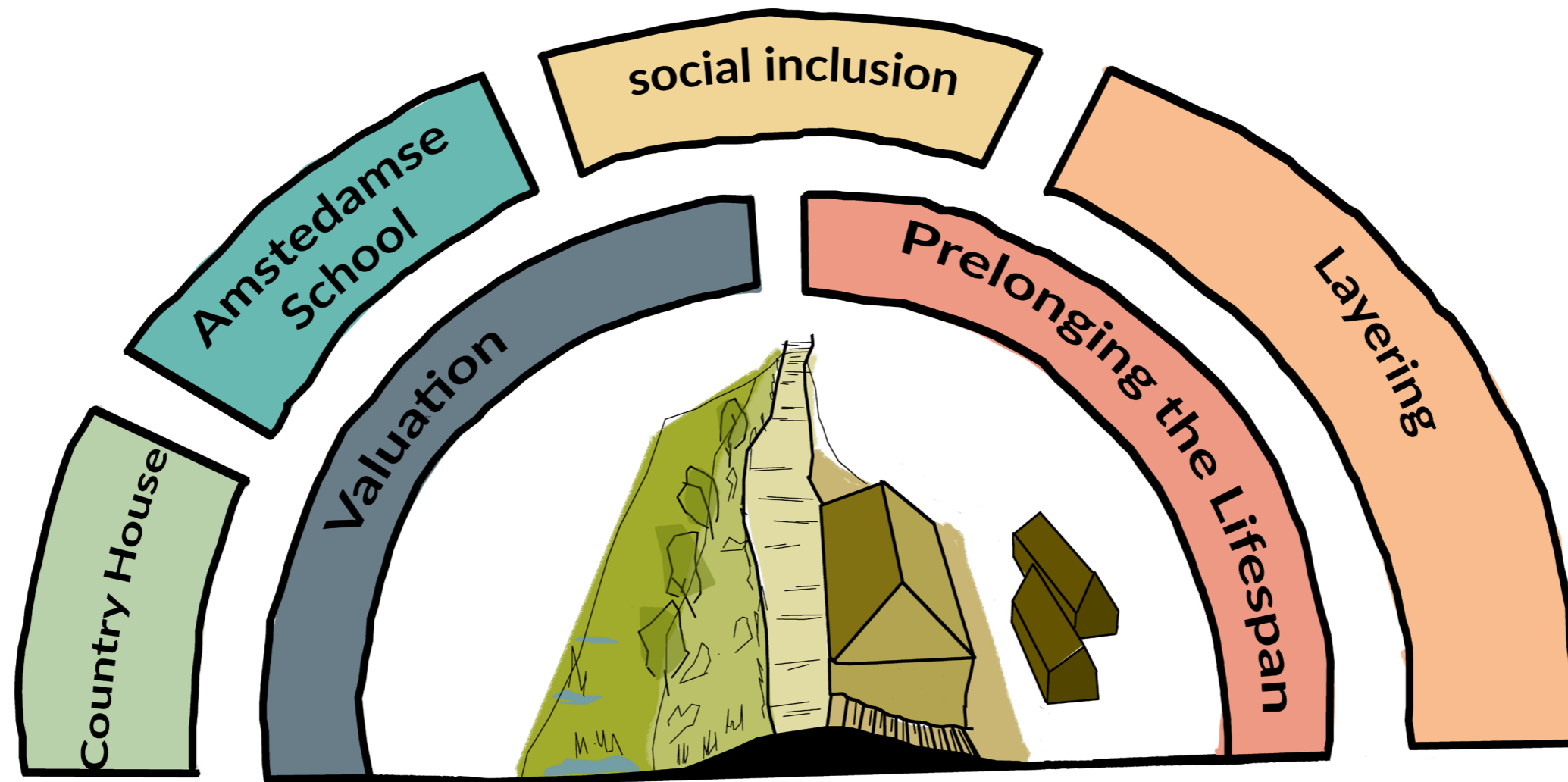


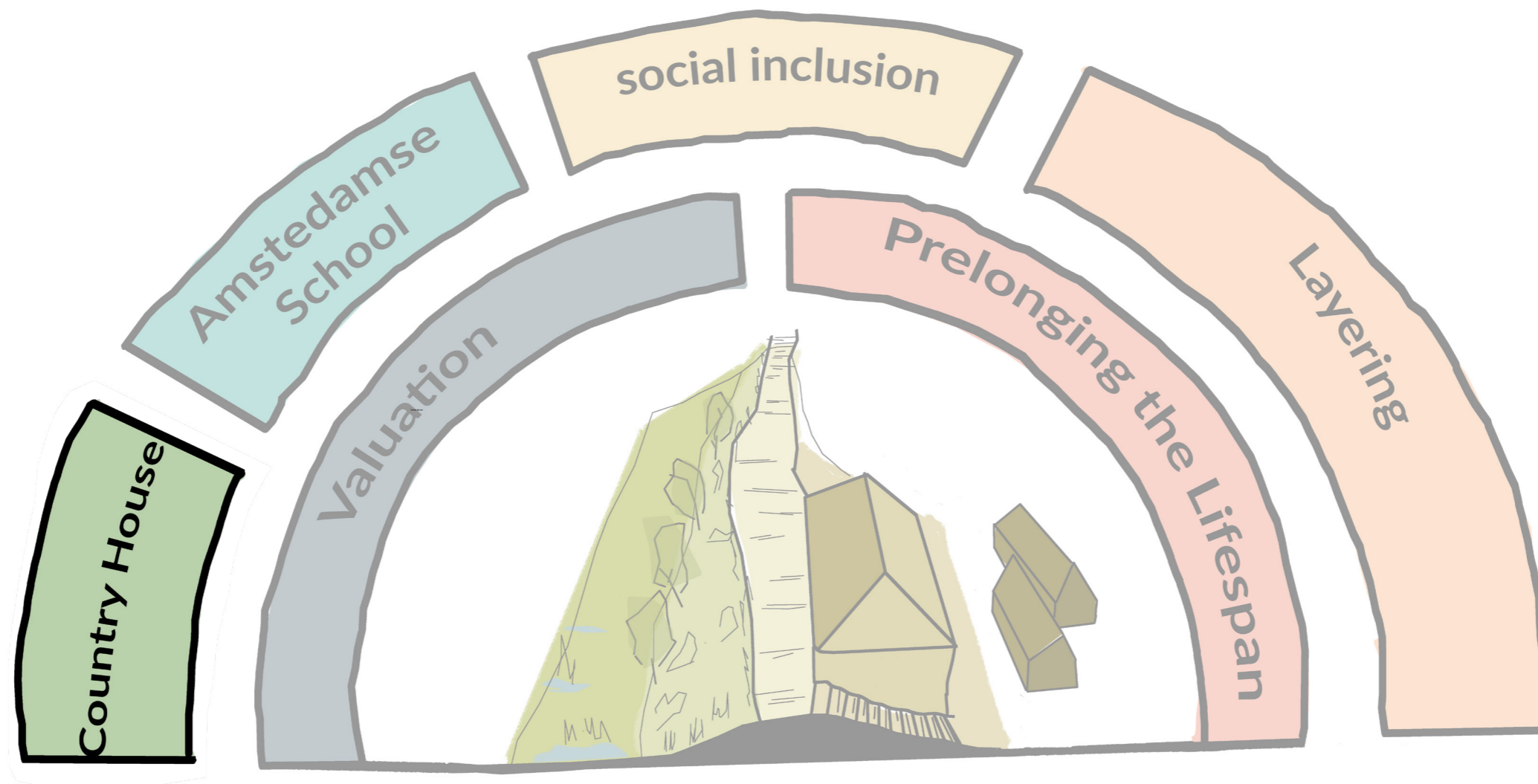












An architectural line drawing of a modern residential building with a courtyard. The building features multiple levels with large, irregularly placed windows and a prominent gabled roofline. The courtyard is landscaped with trees, shrubs, and a central fountain. Several stylized human figures are shown walking in the courtyard, and a dog is visible on the right. The entire scene is rendered in a light green monochrome palette.

# The country house

# The Country House

Value-adding Elements



The Country House



Increase in valuation

Romance  
Assemble  
Arrangement of Volumes  
Organisation public/private



Design Concept 'the Urban Dyke'







Fig. 17 Portret of Sir Edwin Lutyens



Fig. 18 Munstead Wood, Design by Edwin Lutyens

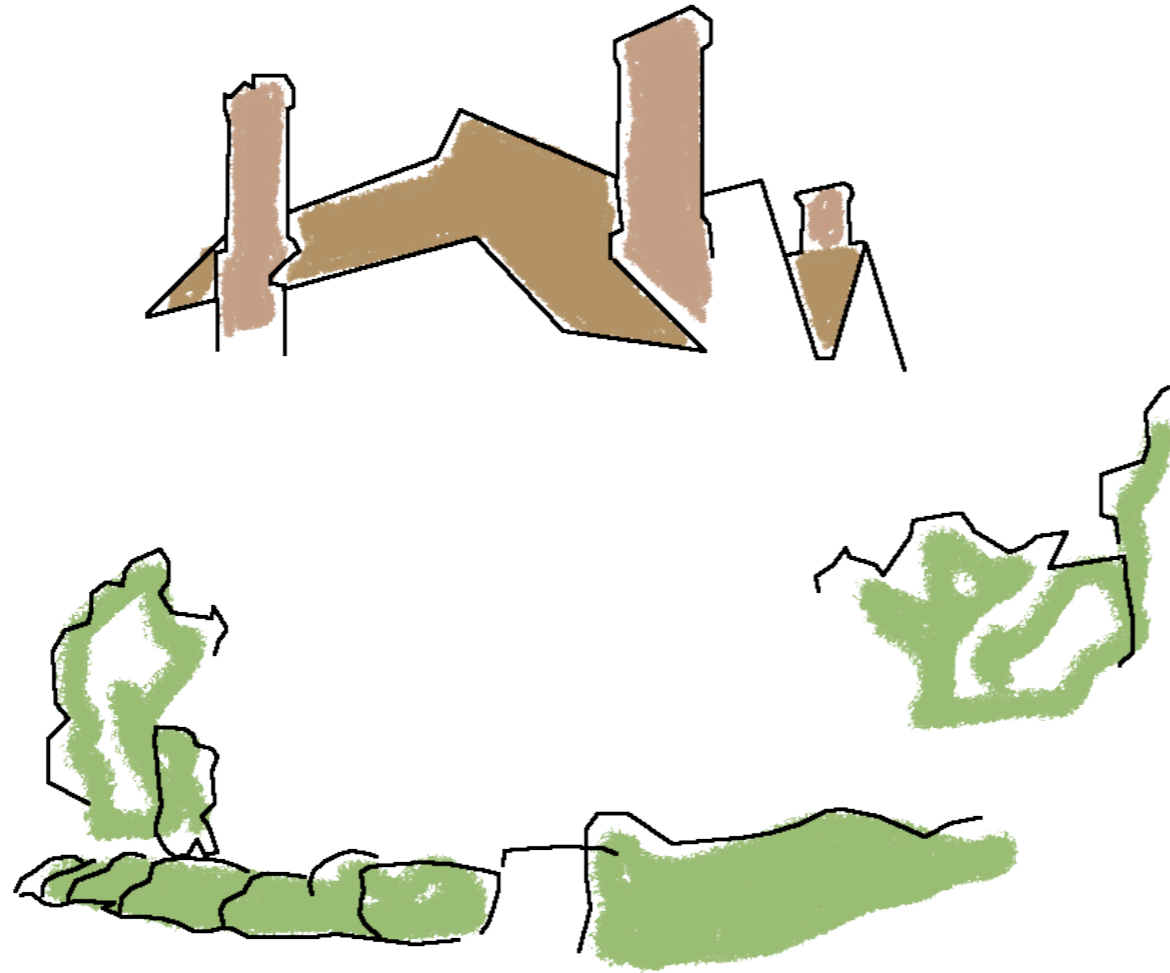


Fig. 19 Assemble of Architecture and Landscape (Own Work)



Fig. 20 Transition between Tanthof and Midden Delfland (Own Work)

- Landscape*
- Farmhouses*
- City*

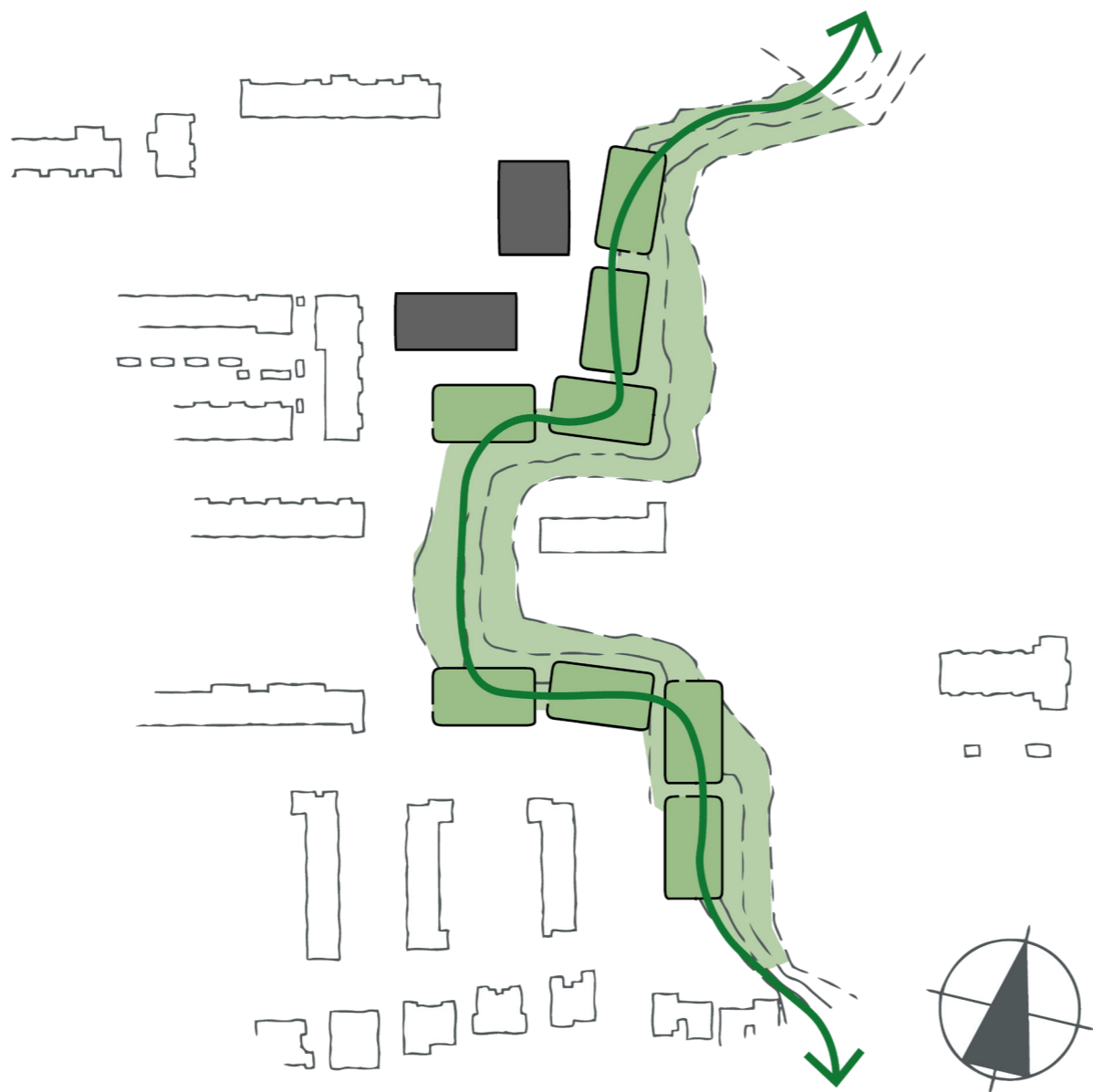


Fig. 21 Assemble architecture and dyke (Own Work)

- Landscape*
- Farmhouses*
- City*

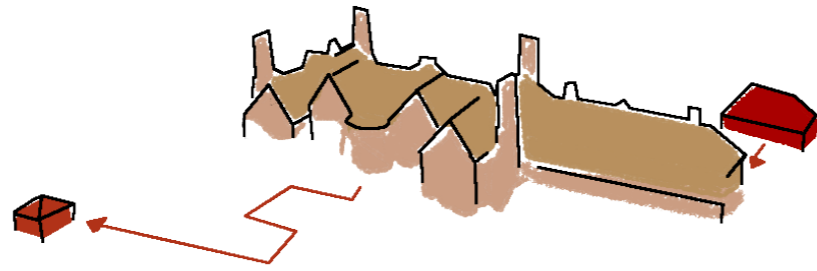




Fig. 22 Ranking of Building Volumes Urban Dyke (Own Work)

-  *Main Volumes*
-  *Subordinate Functions*



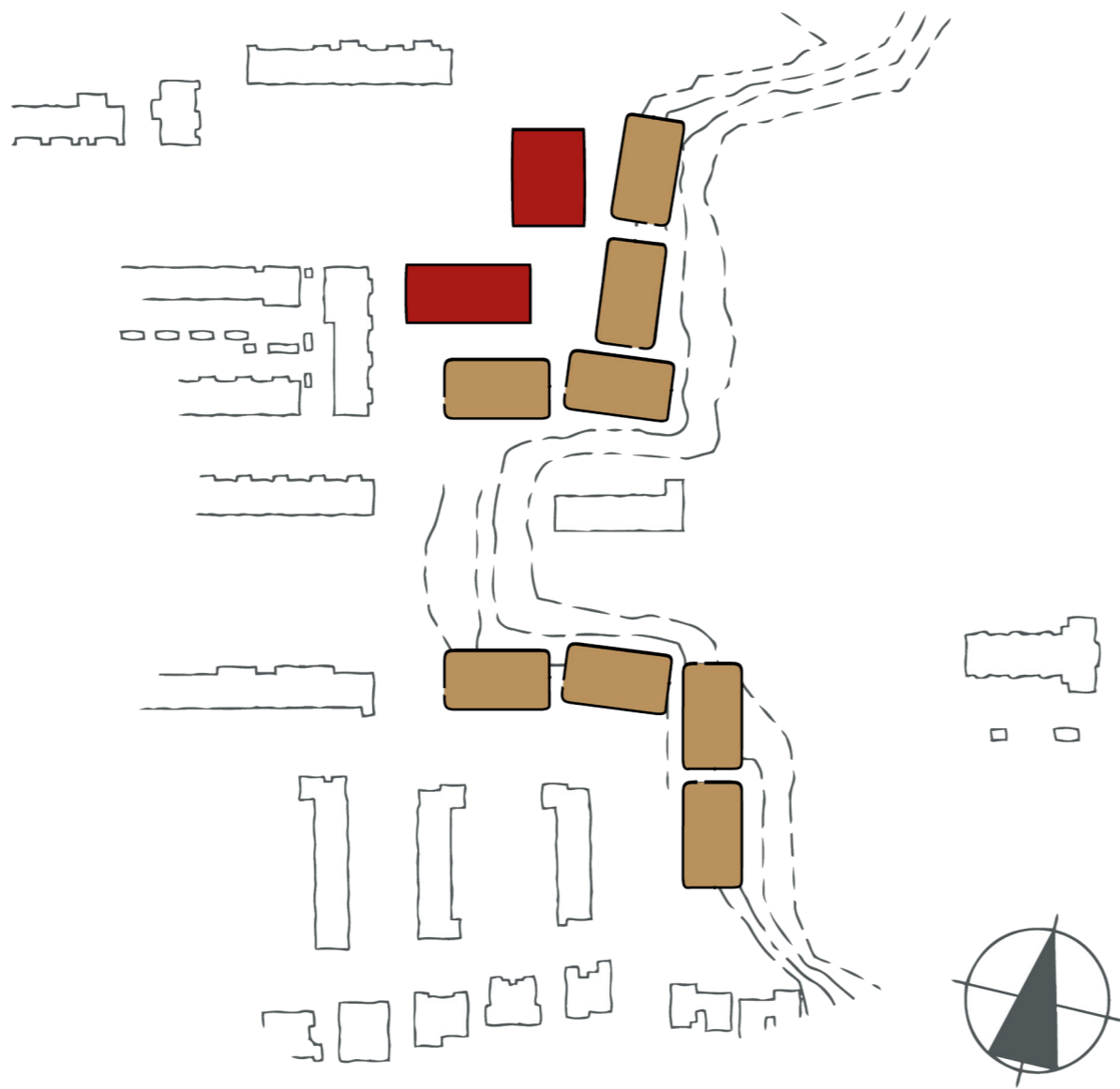
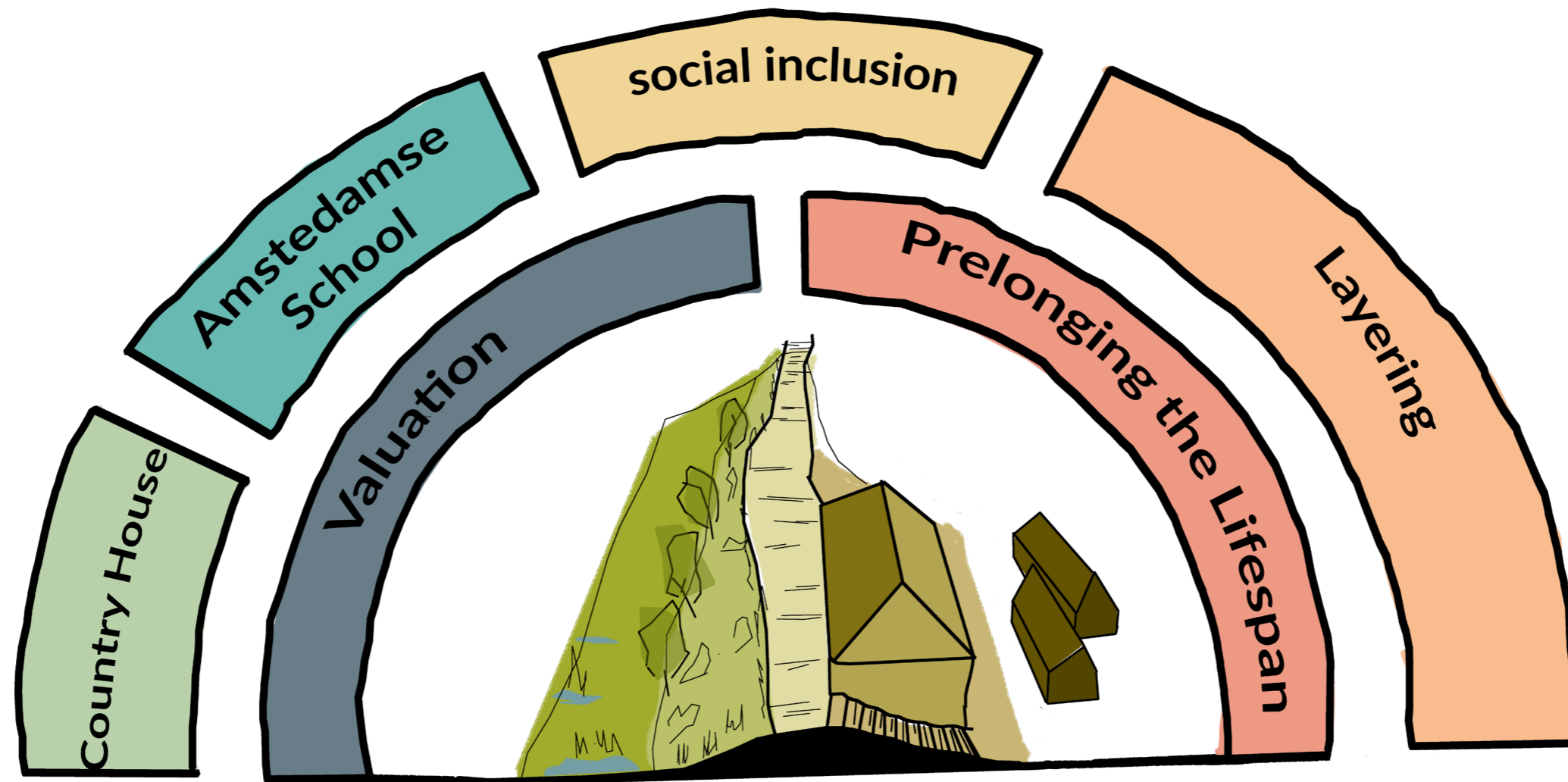
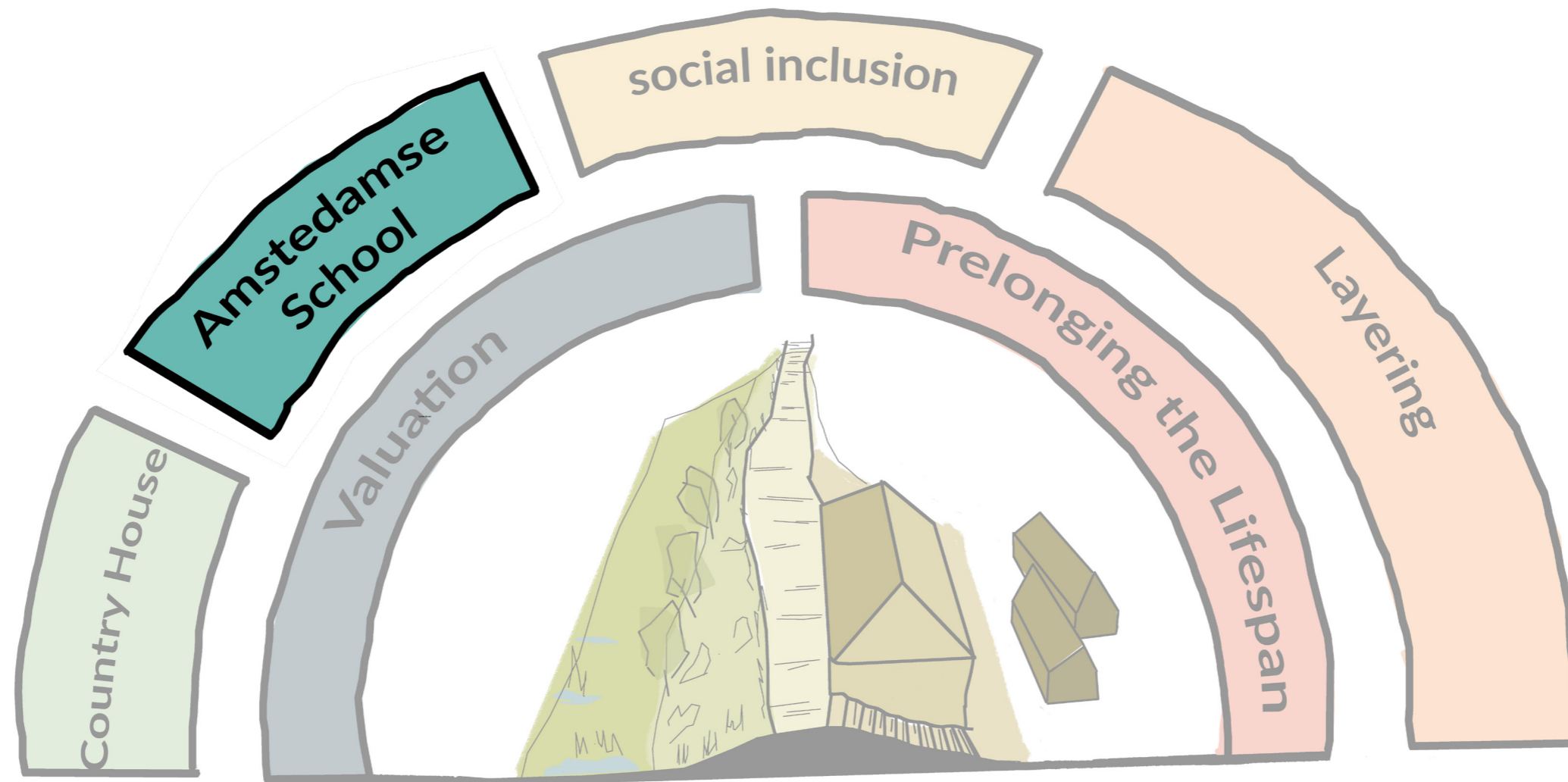


Fig. 23 Ranking of Building Volumes Urban Dyke (Own Work)

- Main Volumes*
- Subordinate Functions*







An architectural rendering of the Amsterdamse School building, a prime example of De Stijl architecture. The building features a complex, multi-level facade with numerous windows of various shapes and sizes, some protruding from the building's surface. The entire image is overlaid with a semi-transparent teal color. In the foreground, there are stylized line drawings of people: a man, a woman, and a child walking together, and another person walking a dog. There are also some trees and a small fountain area on the left side of the building.

# Amsterdamse School

# Amsterdamse School

Value-adding Elements

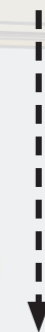


Amsterdamse School



Increase in valuation

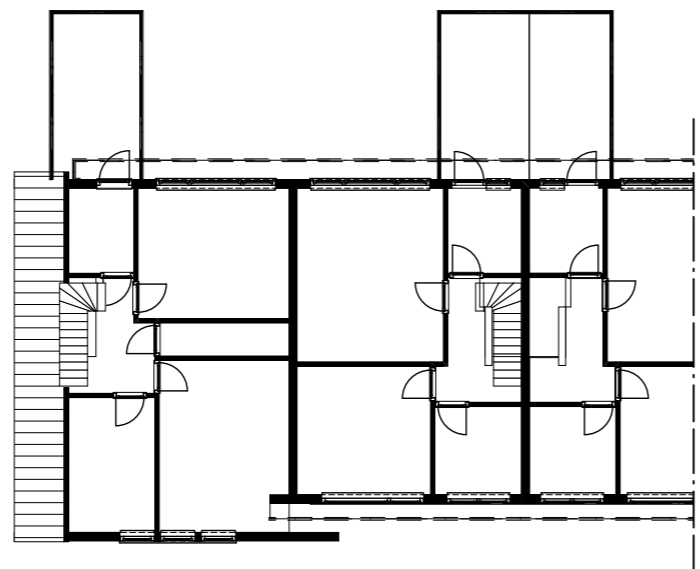
Beauty  
Affordable Housing  
Flexible construction



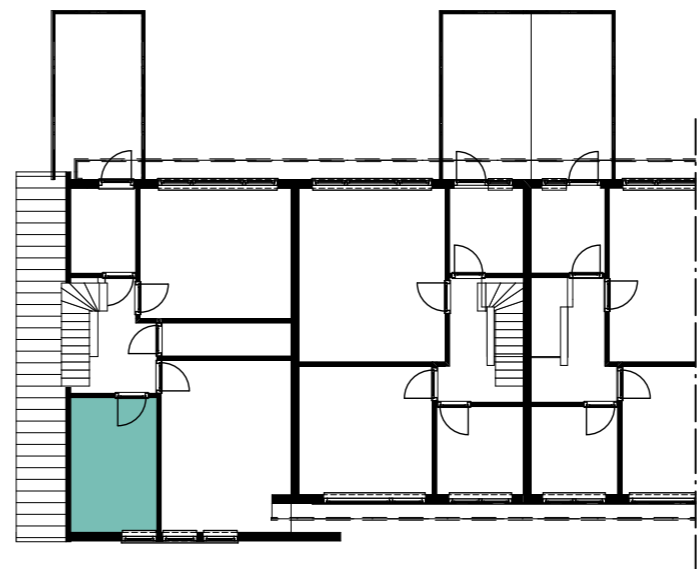
Design Concept 'the Urban Dyke'



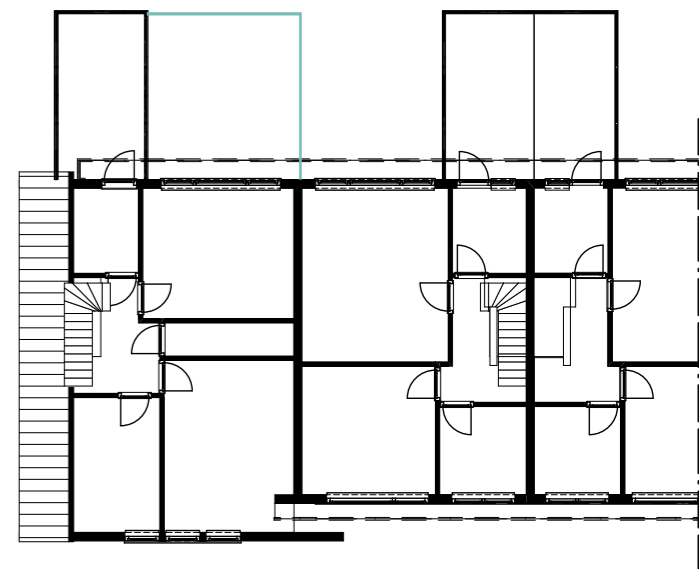
Fig. 24 Social housing Amsterdam, het Schip (photo by Museum het Schip)



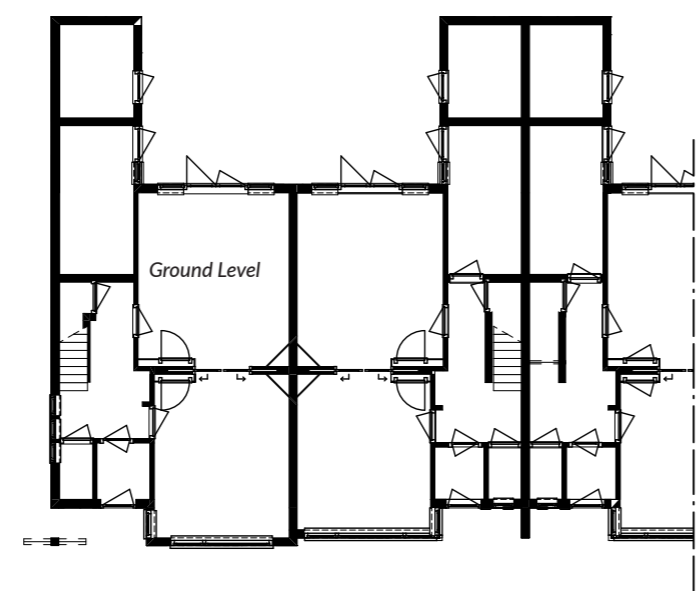
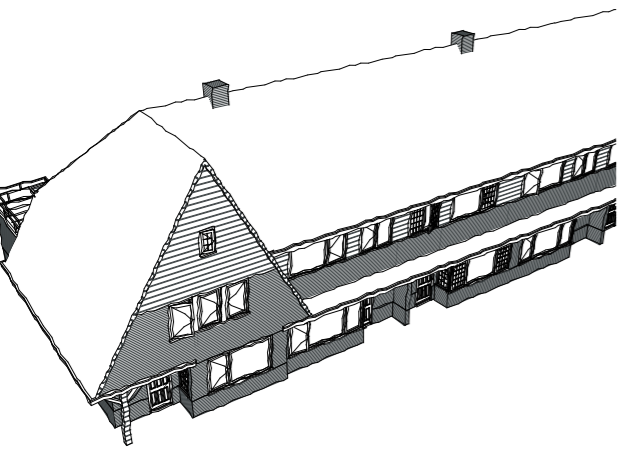
*First Level*



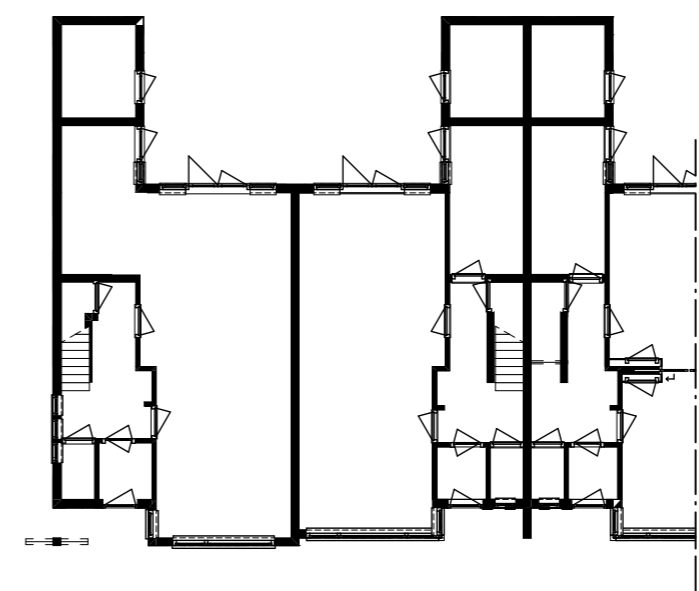
*First Level*



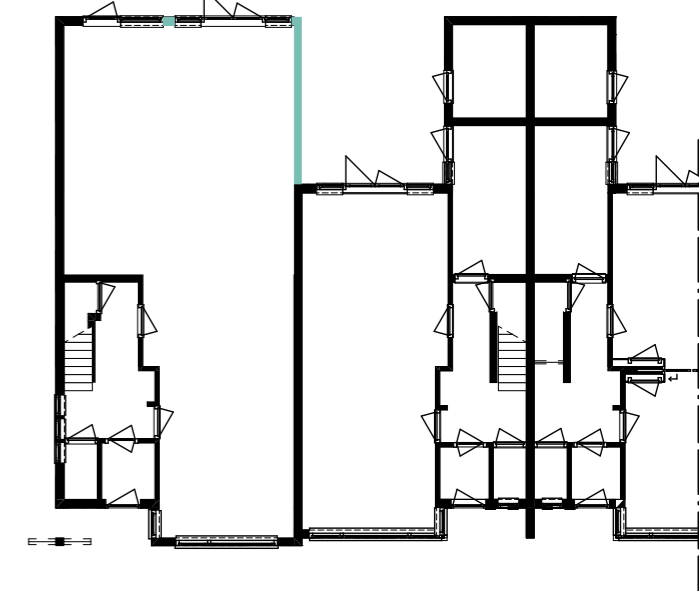
*First Level*



*Ground Level*



*Ground Level*



*Ground Level*

Fig. 25 Changing 1930s floor plan over time (Own Work)

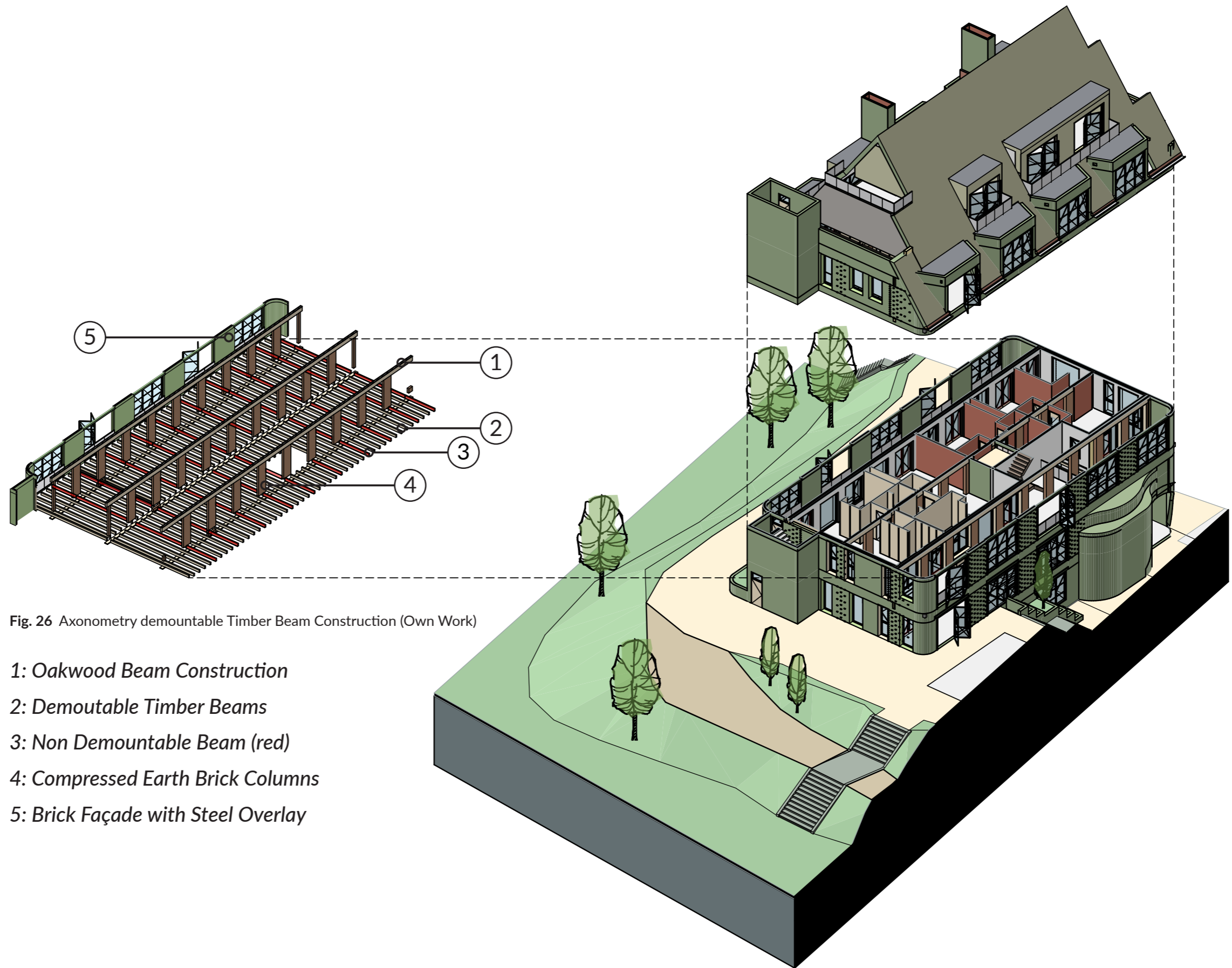
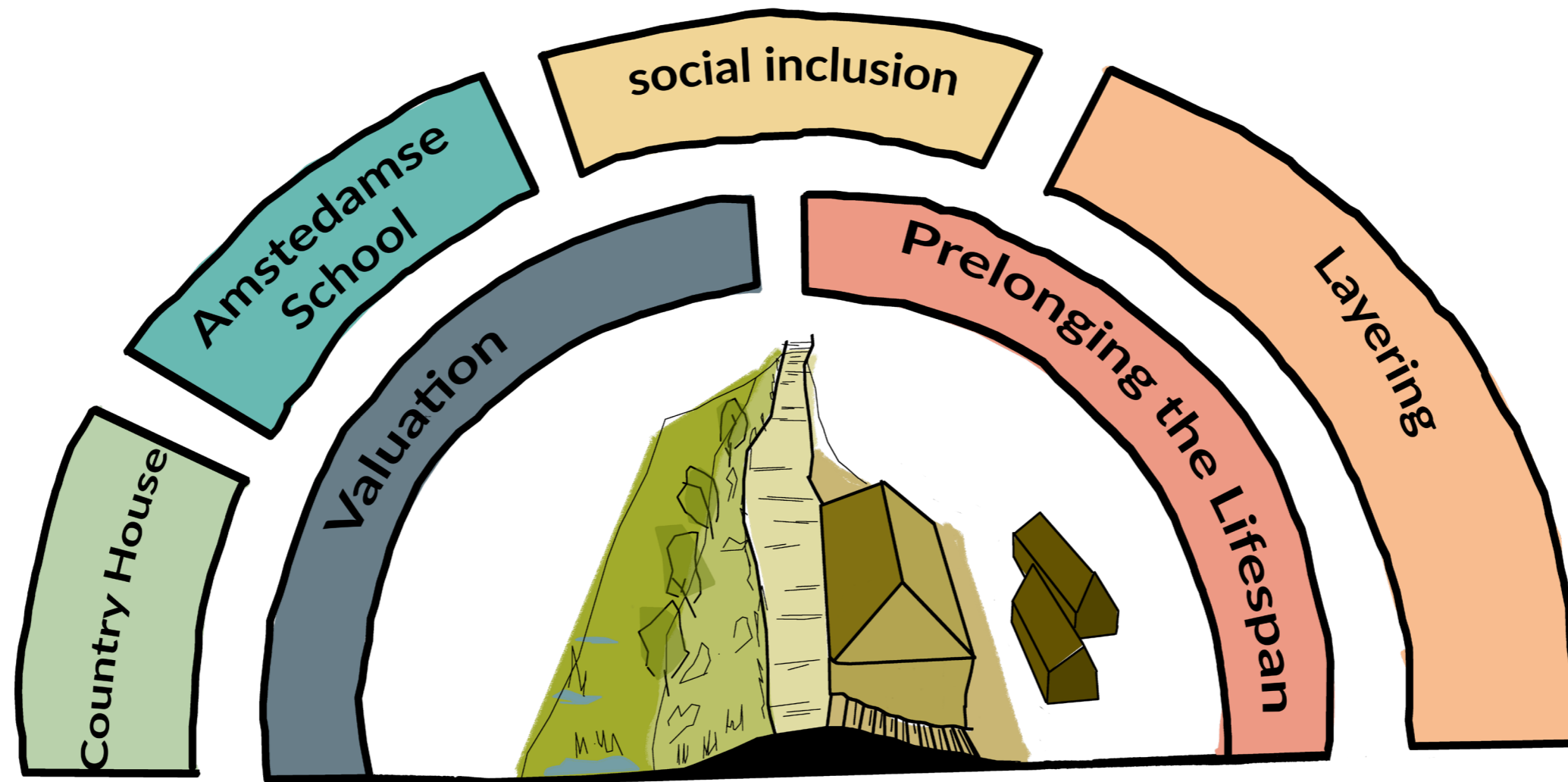
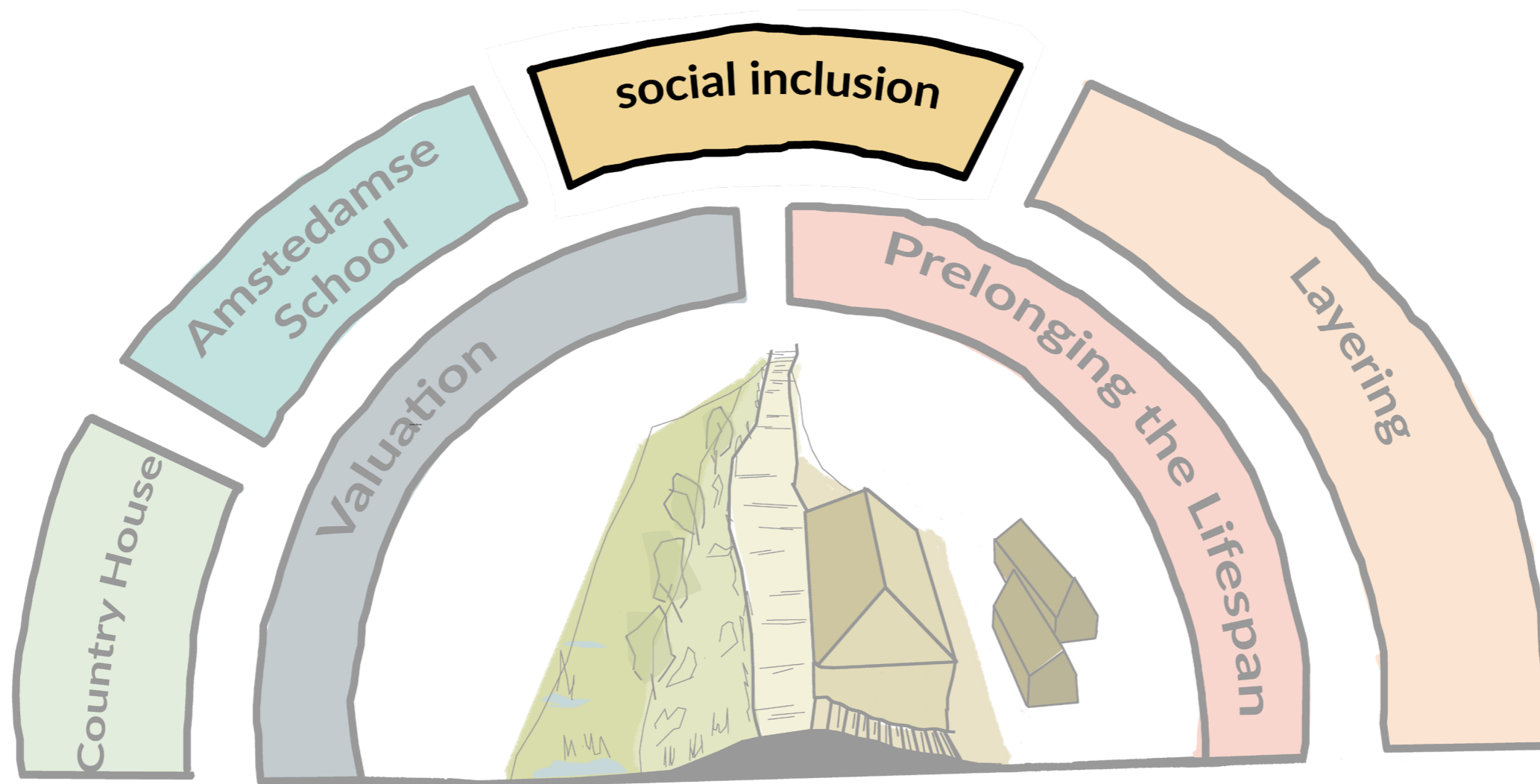


Fig. 26 Axonometry demountable Timber Beam Construction (Own Work)

- 1: Oakwood Beam Construction
- 2: Demountable Timber Beams
- 3: Non Demountable Beam (red)
- 4: Compressed Earth Brick Columns
- 5: Brick Façade with Steel Overlay







# Social inclusion



# Social inclusion

Prolonging lifespan elements



Social inclusion

Diversity  
Affordable Housing



Increase in valuation

+

Increase in lifespan



Design Concept 'the Urban Dyke'



Fig. 27 Socio Economic Group 1 and 2 (Own Work)

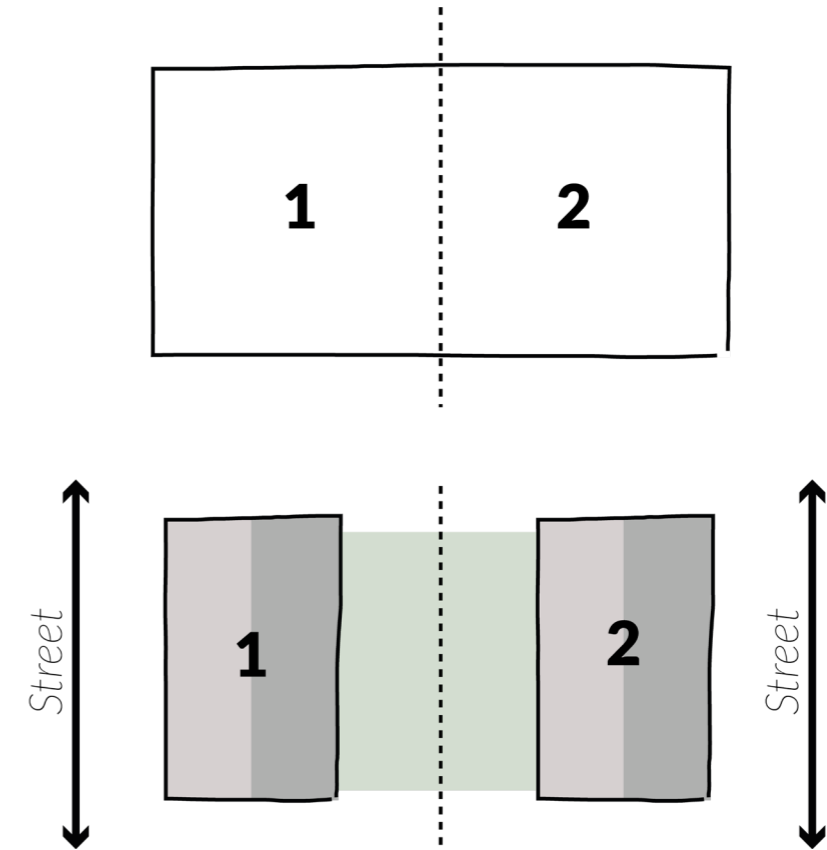


Fig. 28 Socio Economic Groups separated Public Space (Own Work)

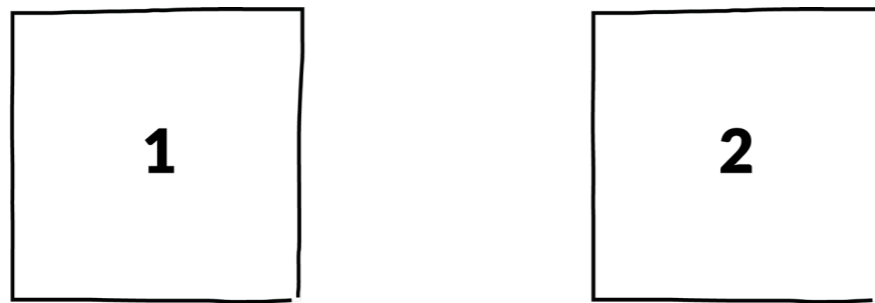


Fig. 29 Socio Economic Group 1 and 2 (Own Work)

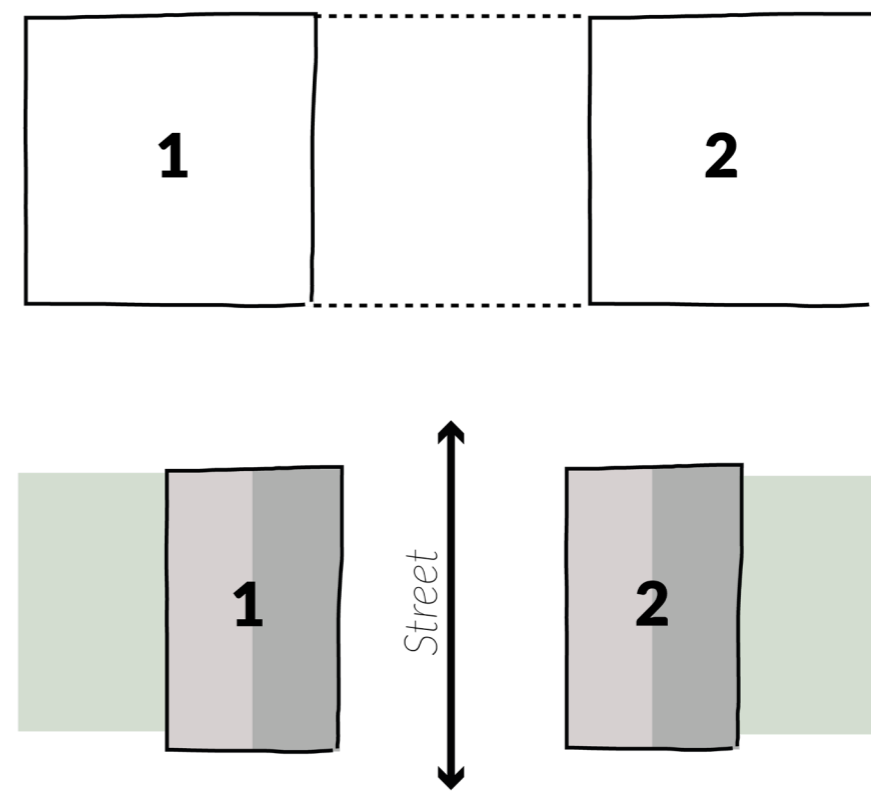


Fig. 30 Socio Economic Groups separated Public Space (Own Work)

<b>3</b>	<b>2</b>	<b>1</b>
<b>2</b>	<b>1</b>	<b>3</b>
<b>3</b>	<b>2</b>	<b>1</b>

Fig. 31 Checkerboard Model by Blom & Soomeren (2015)

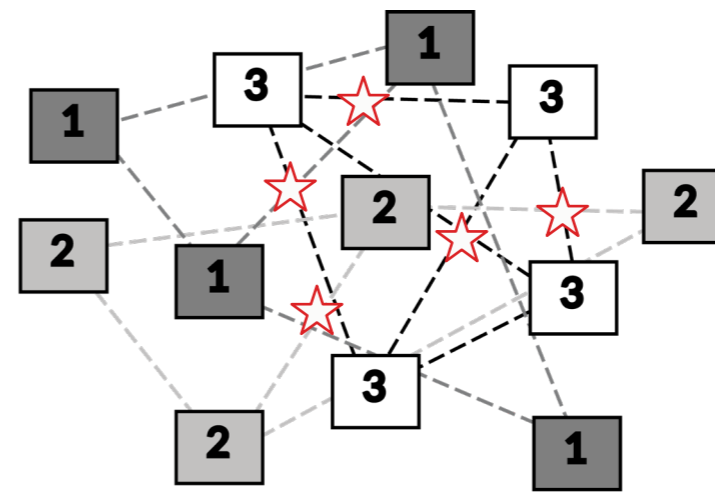


Fig. 32 Social encounters: Public Familiarity (Kullberg, 2022)

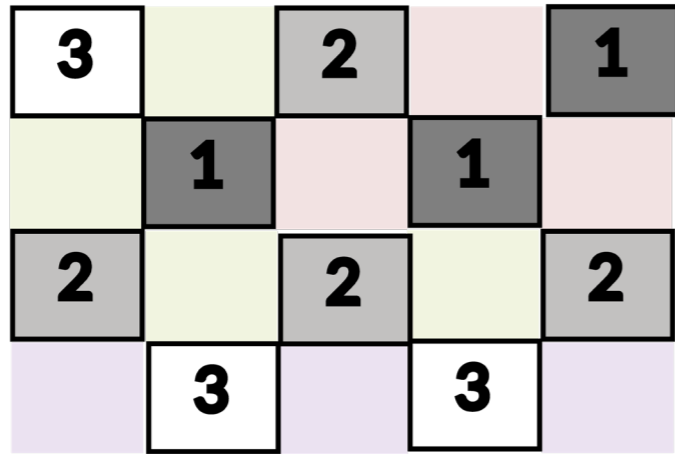


Fig. 33 Advanced checkerboard Model (Own Work)

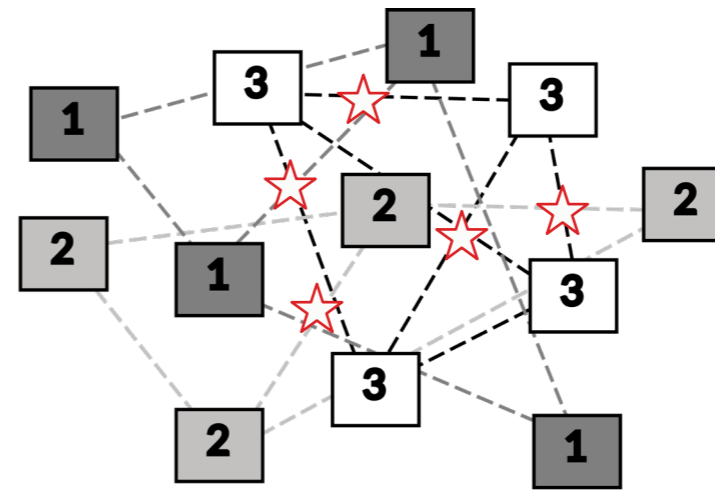


Fig. 32 Social encounters: Public Familiarity (Kullberg, 2022)

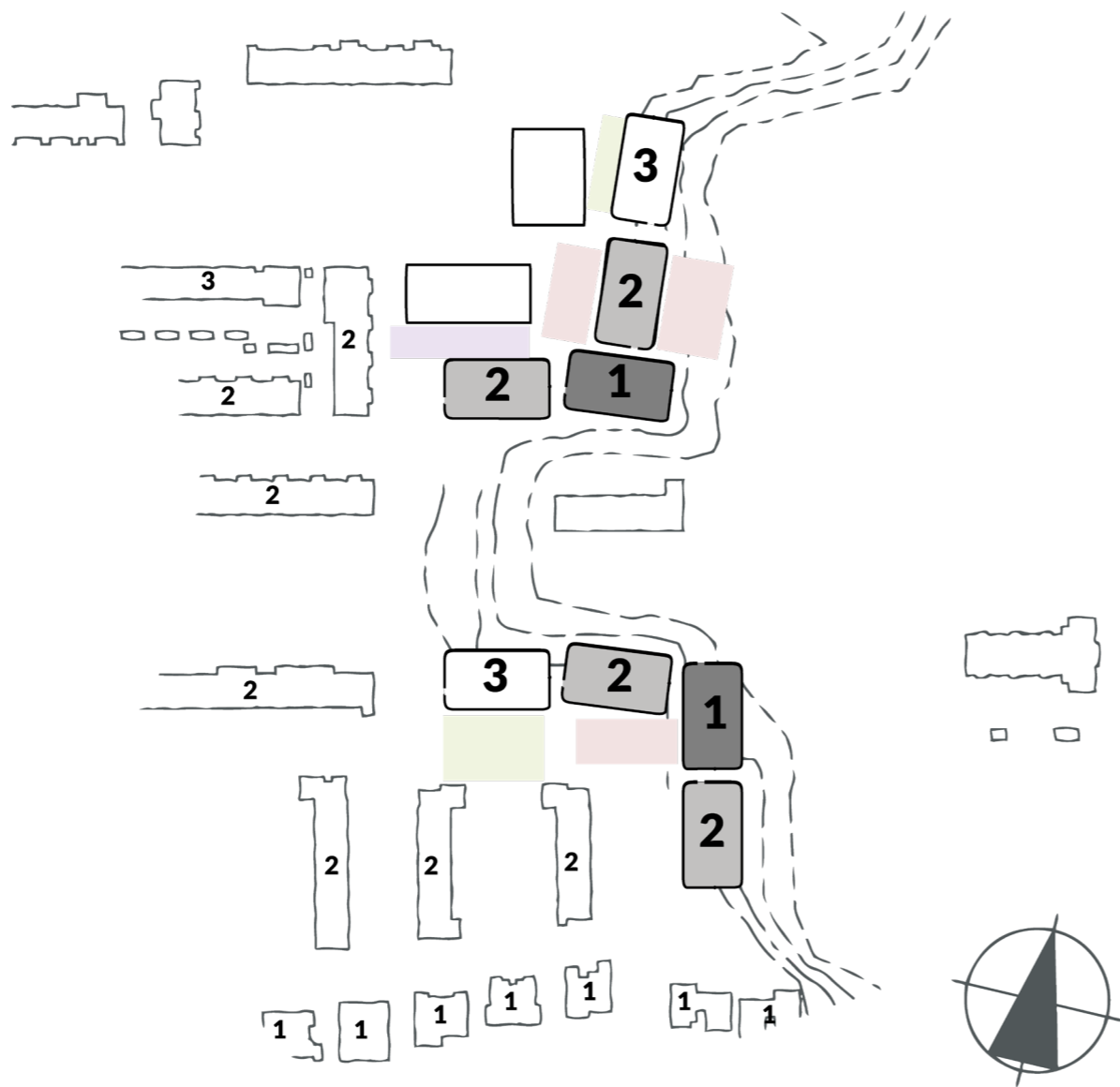
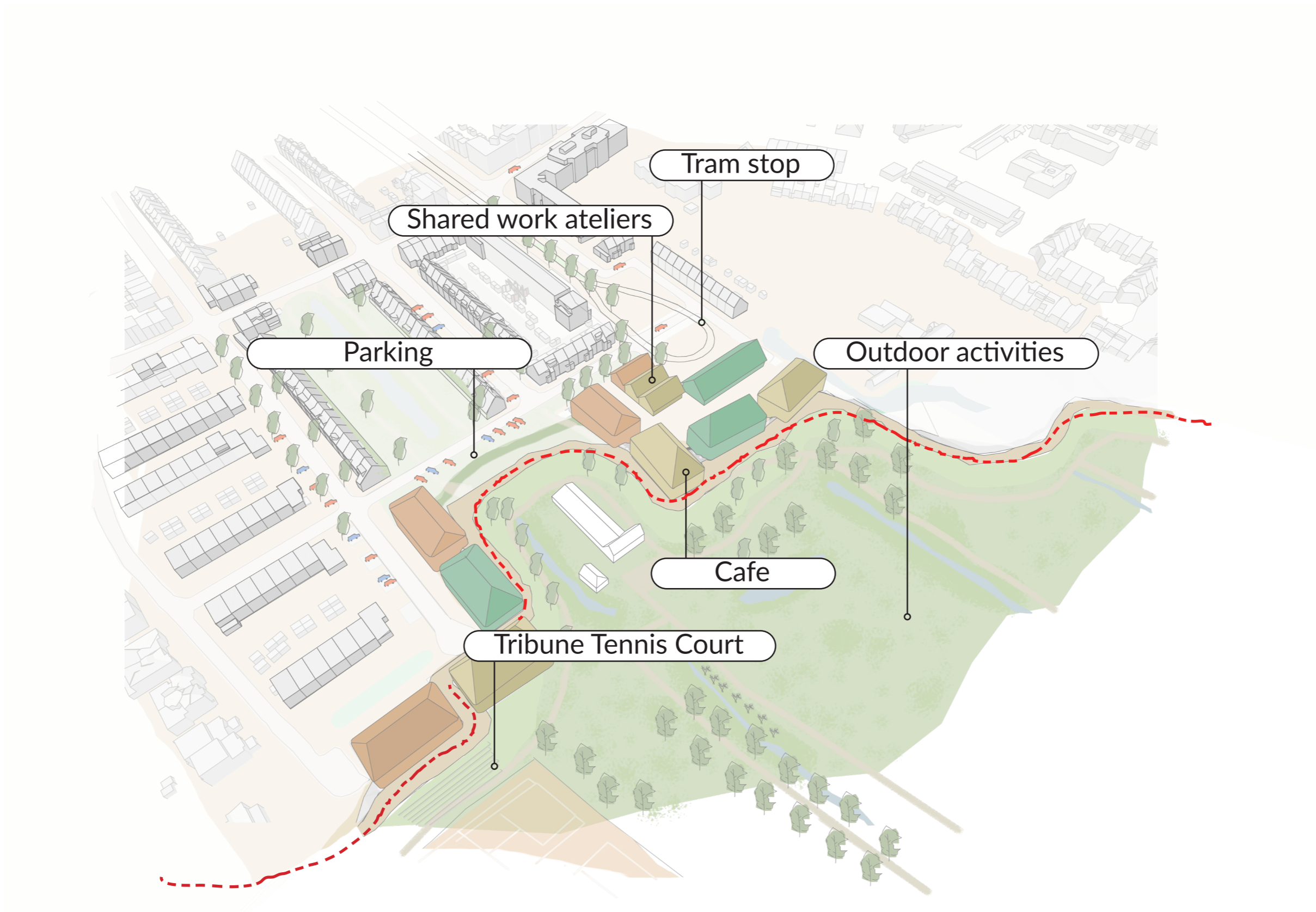


Fig. 34 Organisation Social Economic Status (Own Work)

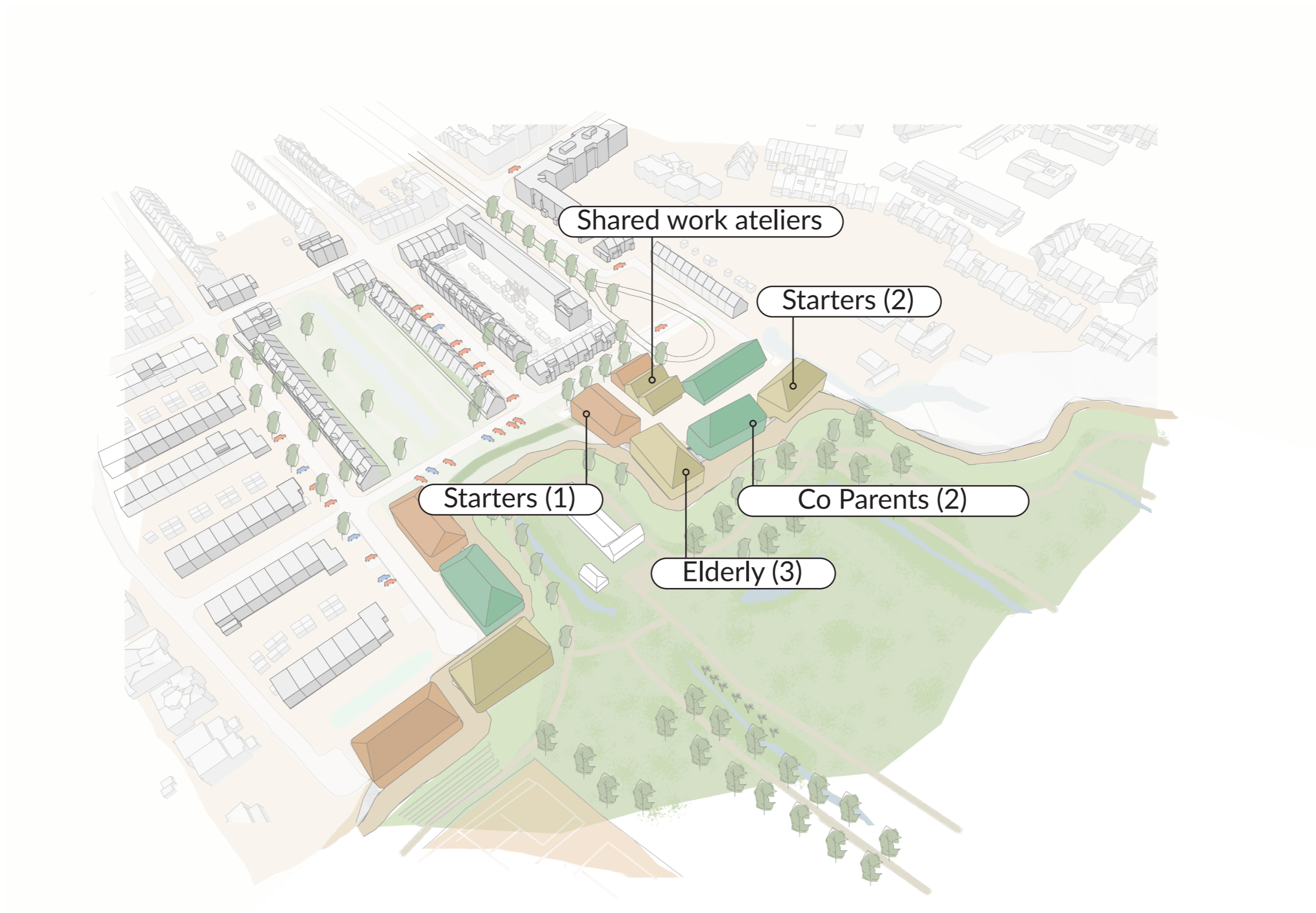












LEGENDA

- 1 Tram Stop
- 2 Shared Bike Parking
- 3 Shared Working Ateliers
- 4 Communal Garden
- 5 Dyke
- 6 Parking
- 7 Residential Block Starters
- 8 Residential Block Elderly
- 9 Residential Block Co-Parants







LEGENDA

- 1 Starters
- 2 Co Parents
- 3 Elderly





LEGENDA

- 1 Starters
- 2 Co Parents
- 3 Elderly



LEGENDA

- 1 Starters
- 2 Co Parents
- 3 Elderly



# **“Co parents”**

## **Co housing concept**

Affordable co-parenting with a child-friendly design

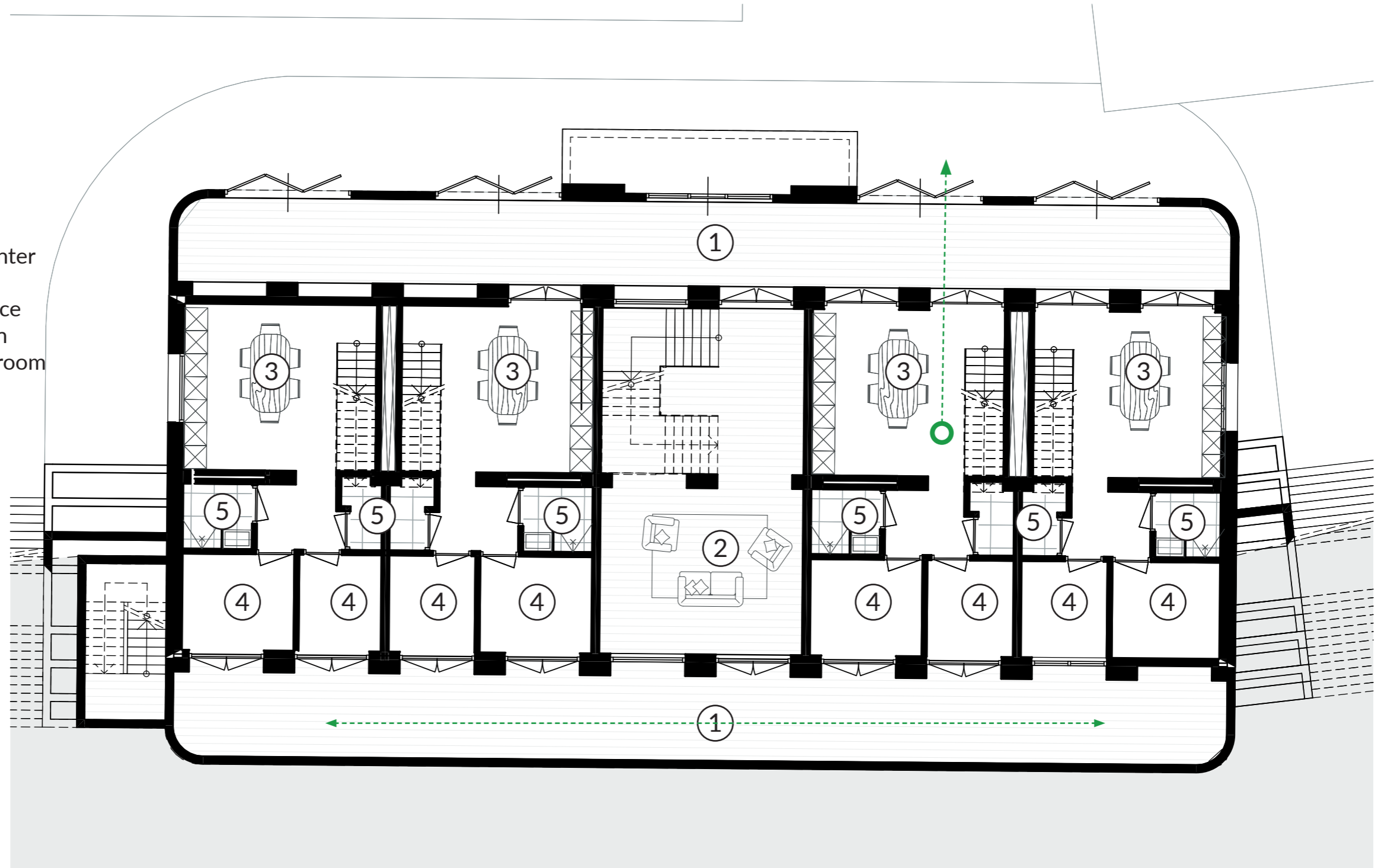
- **100m2 apartments**
- **Shared space to create affordable space for children**





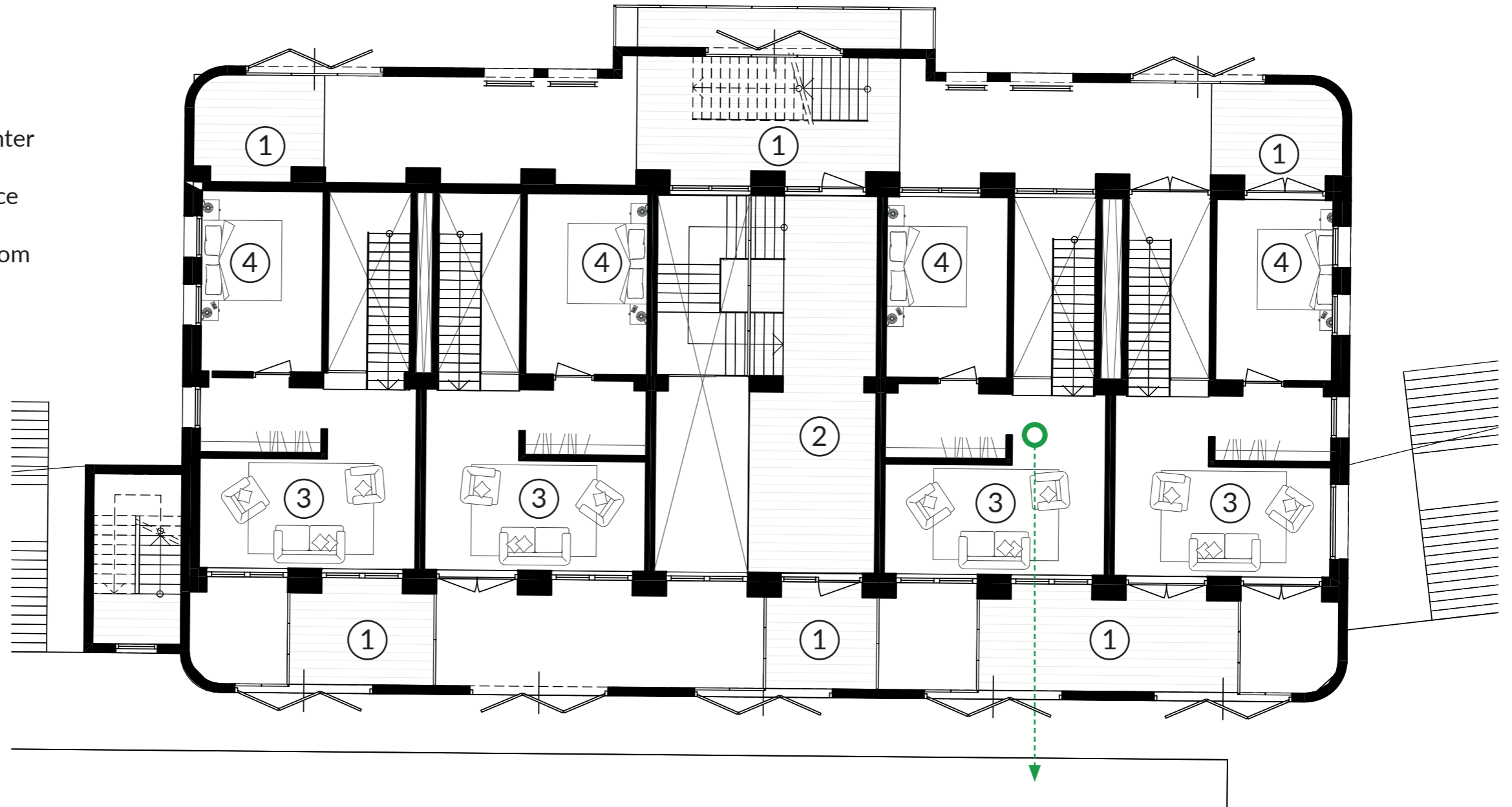
LEGENDA

- 1 Hallway / Winter Garden
- 2 Common Space
- 3 Living Kitchen
- 4 Children Bedroom
- 5 Sanitary



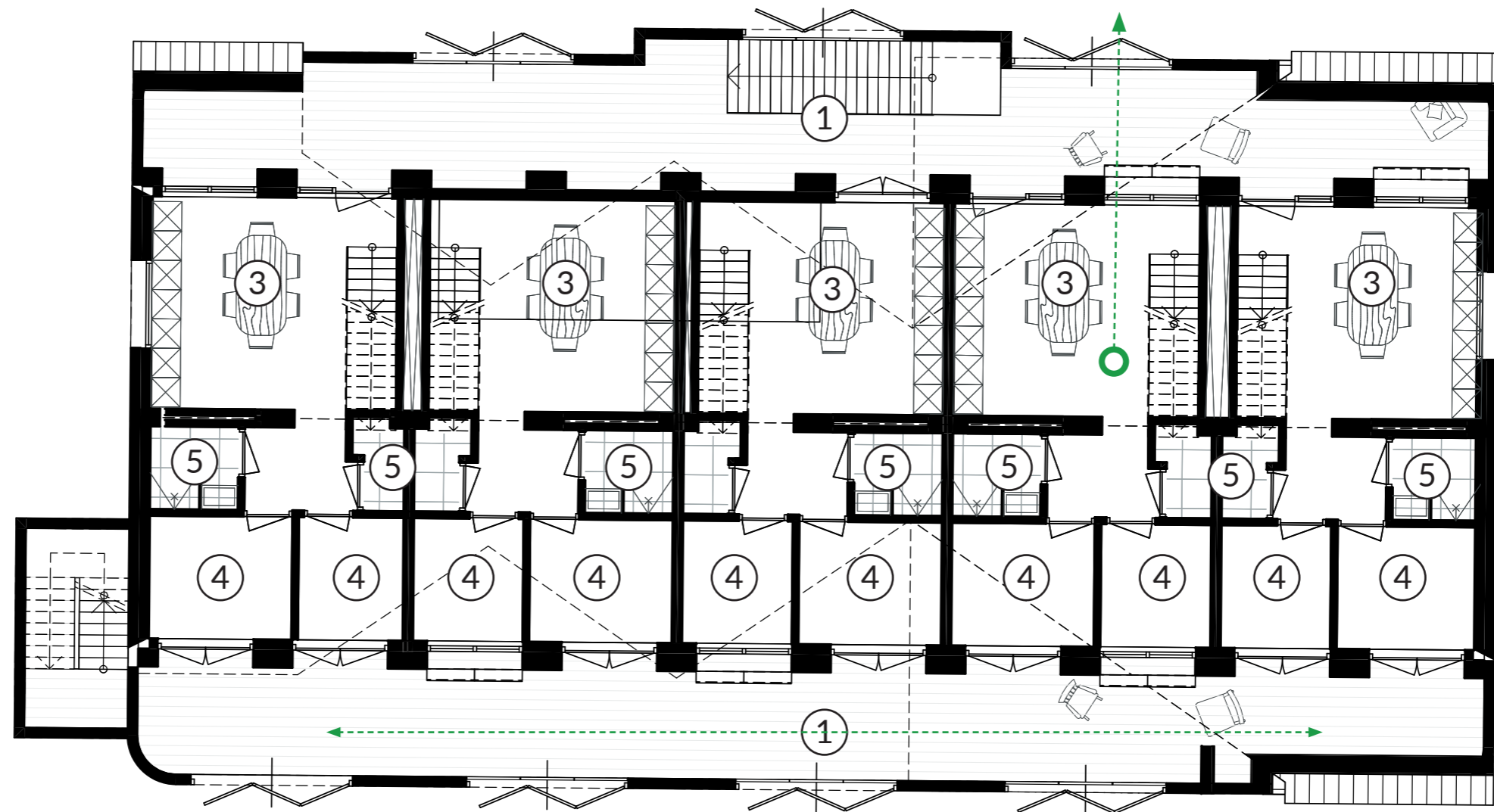
LEGENDA

- 1 Hallway / Winter Garden
- 2 Common Space
- 3 Living Room
- 4 Master Bedroom



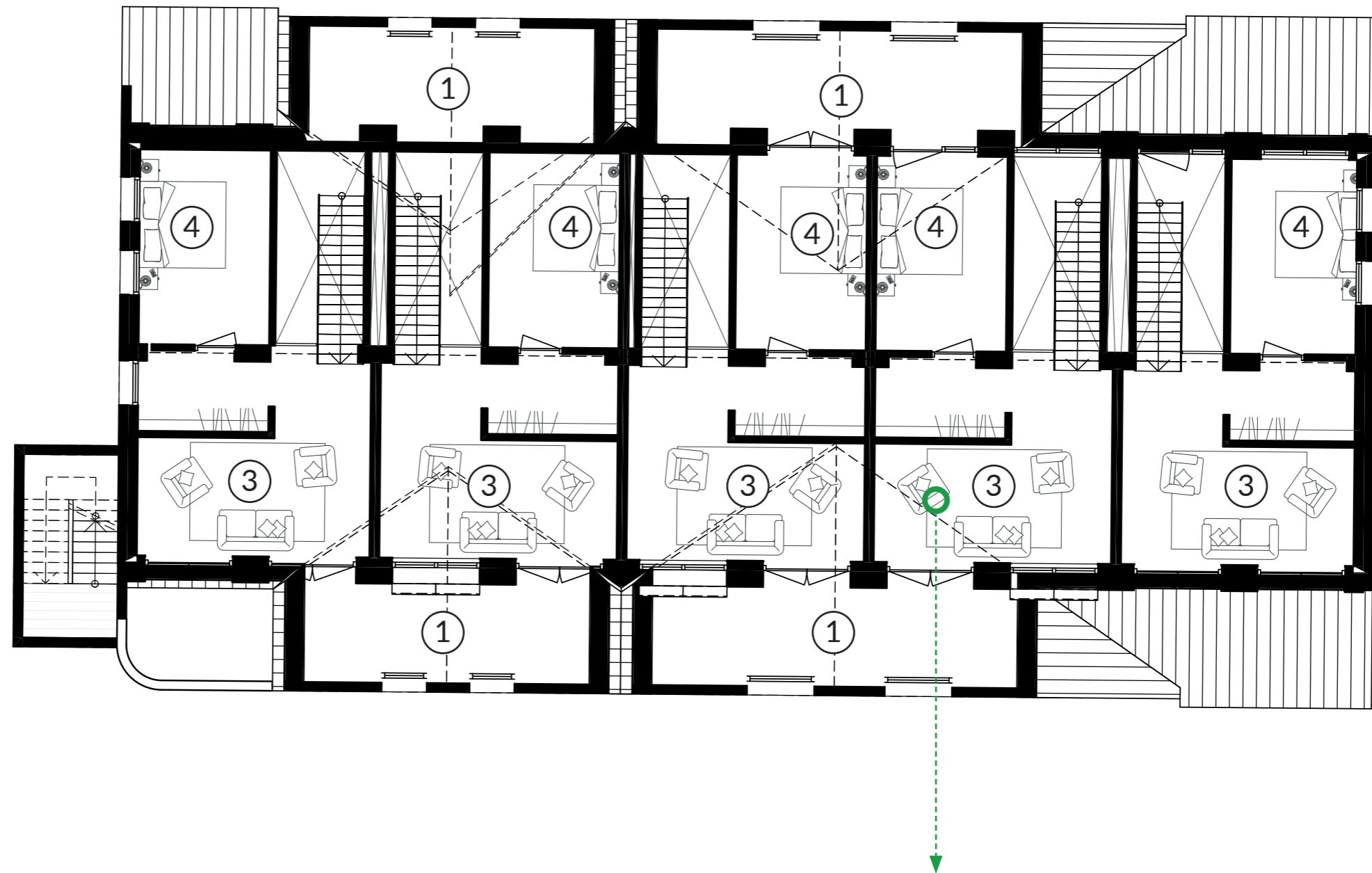
LEGENDA

- 1 Hallway / Winter Garden
- 2 Common Space
- 3 Living Kitchen
- 4 Childern Badroom
- 5 Sanitary



LEGENDA

- 1 Hallway / Winter Garden
- 2 Common Space
- 3 Living Room
- 4 Master Bedroom





# **“Stads veteranan”**

## **Co housing concept**

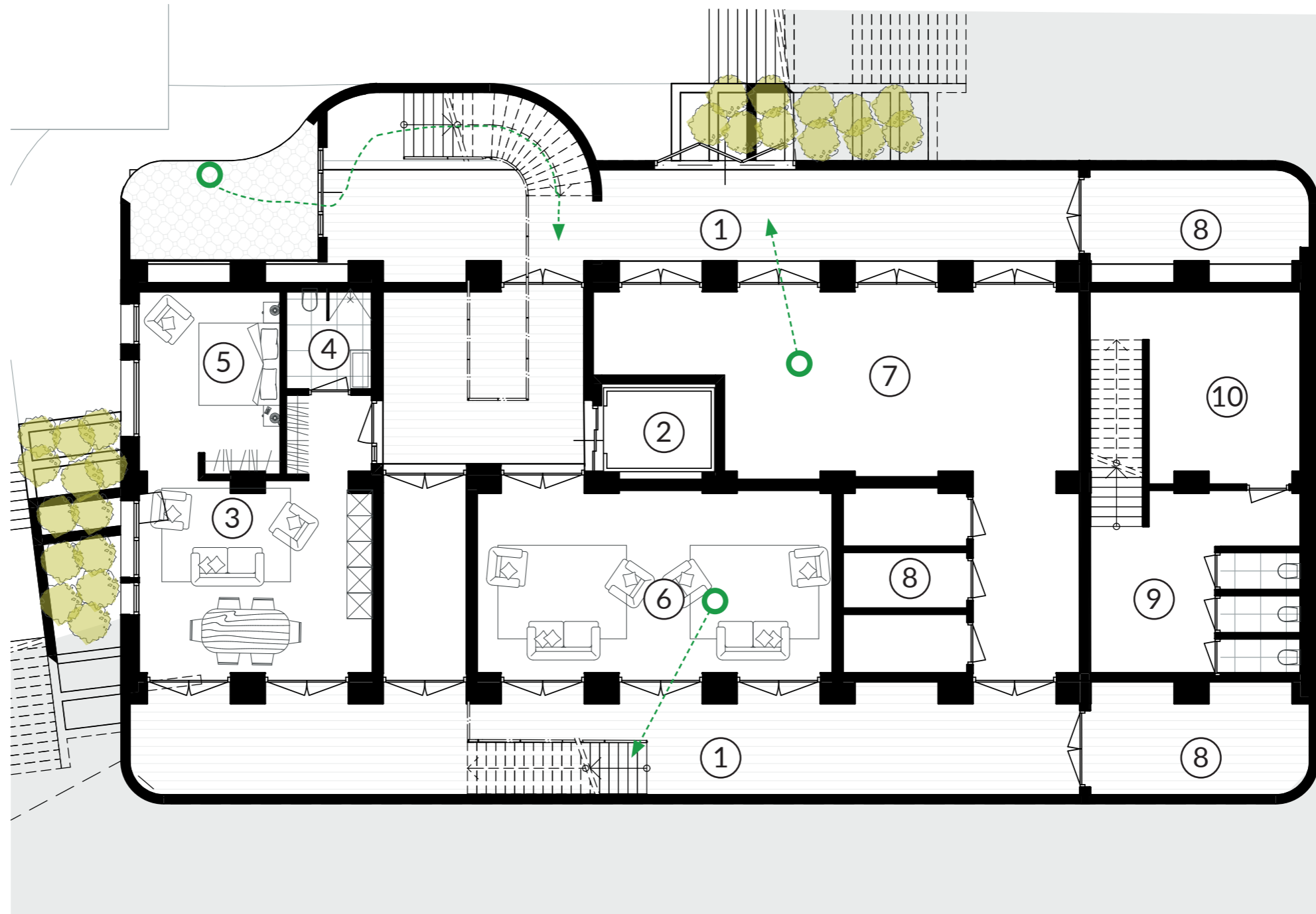
Spontaneous encounters to promote vitality and prevent loneliness

- **70m2 apartments**
- **Shared space to promote spontaneous encounters**



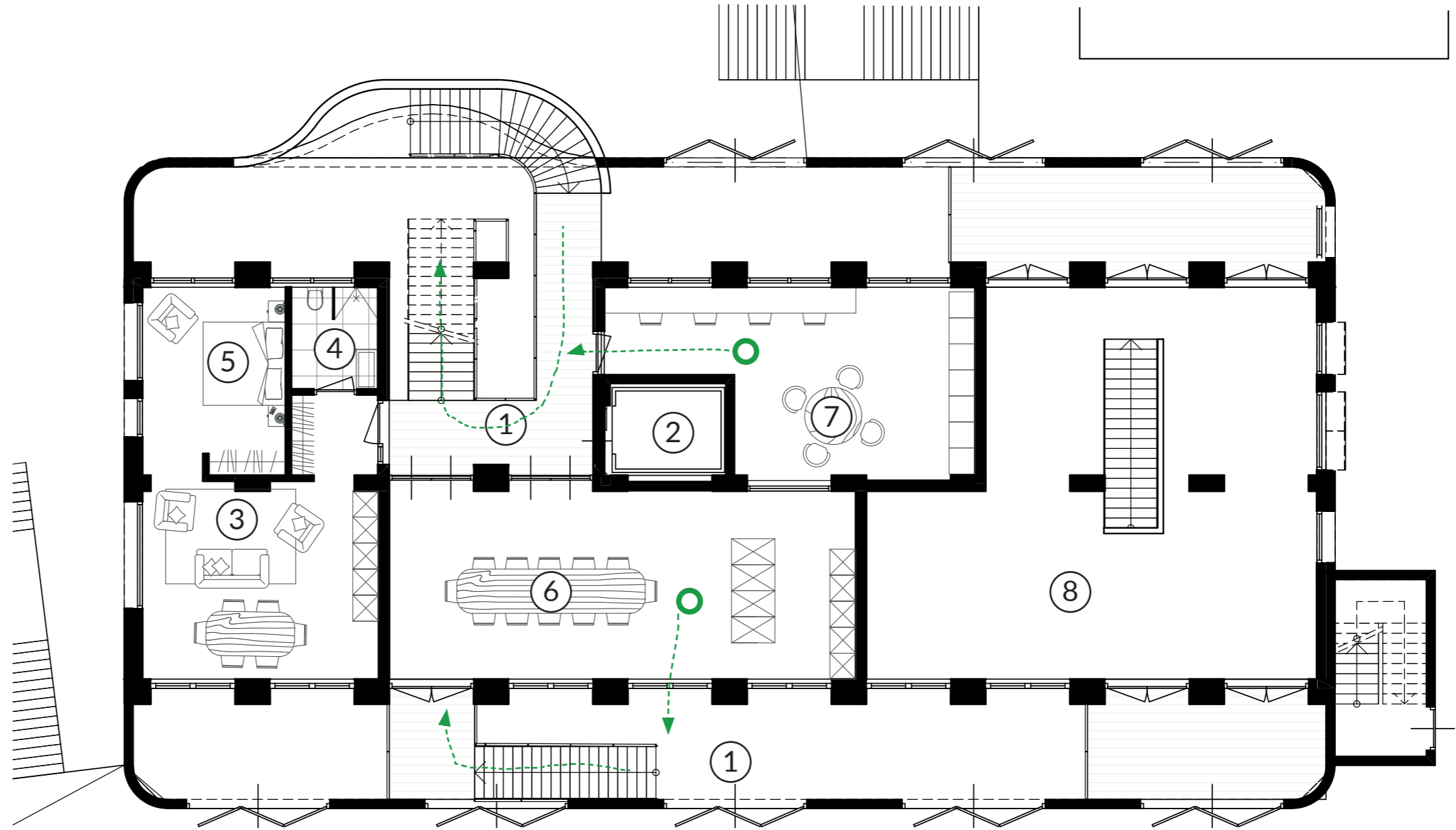
LEGENDA

- 1 Hallway / Winter Garden
- 2 Elevator
- 3 Kitchen and Living Room
- 4 Sanitary
- 5 Bedroom
- 6 Home Cinema
- 7 Atelier / Workshop
- 8 Storage
- 9 Toilets Cafe
- 10 Storage Cafe



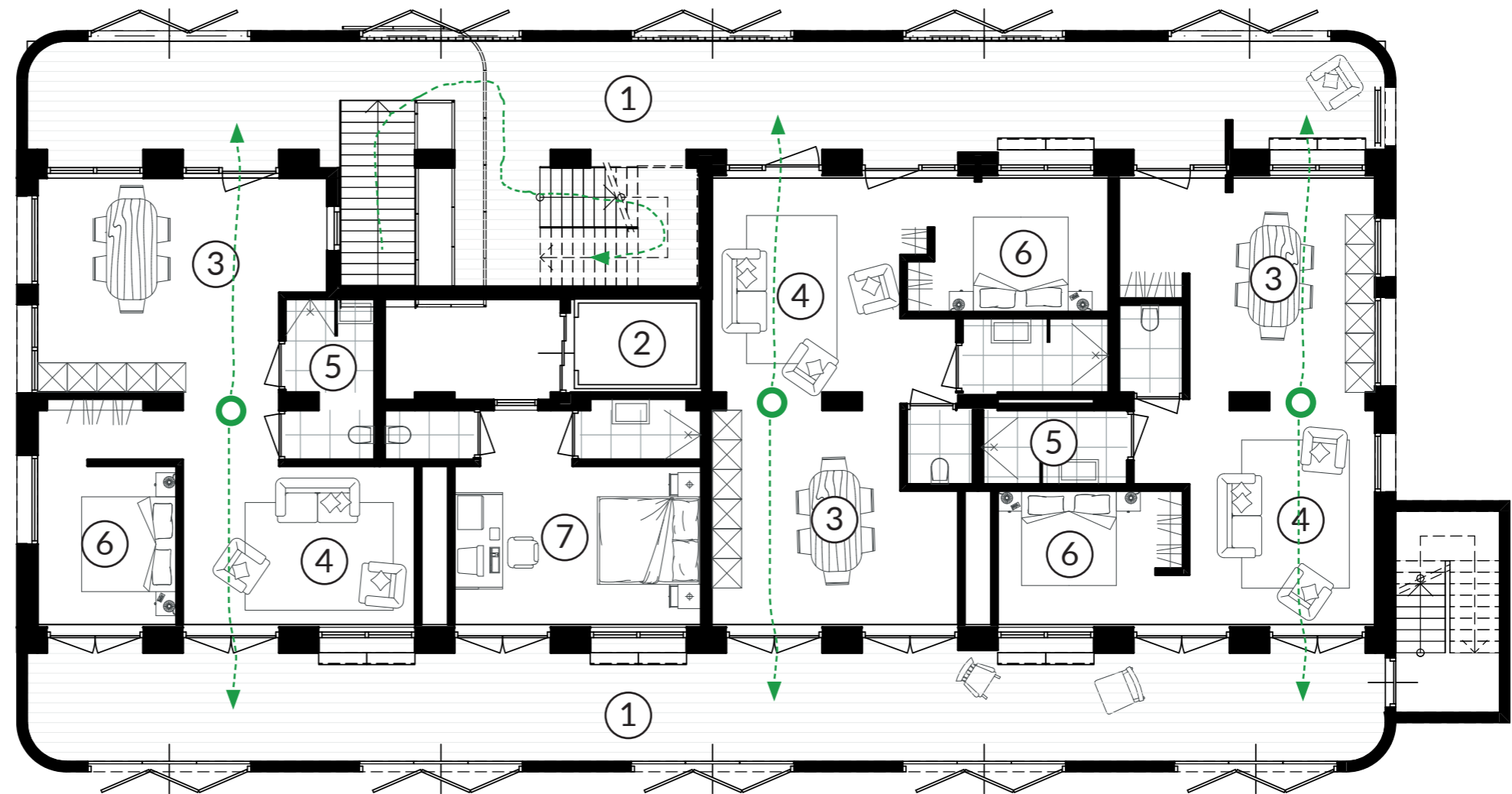
LEGENDA

- 1 Hallway / Winter Garden
- 2 Elevator
- 3 Kitchen and Living Room
- 4 Sanitary
- 5 Bedroom
- 6 Cooking Studio
- 7 Coffee and Laundry
- 8 Cafe



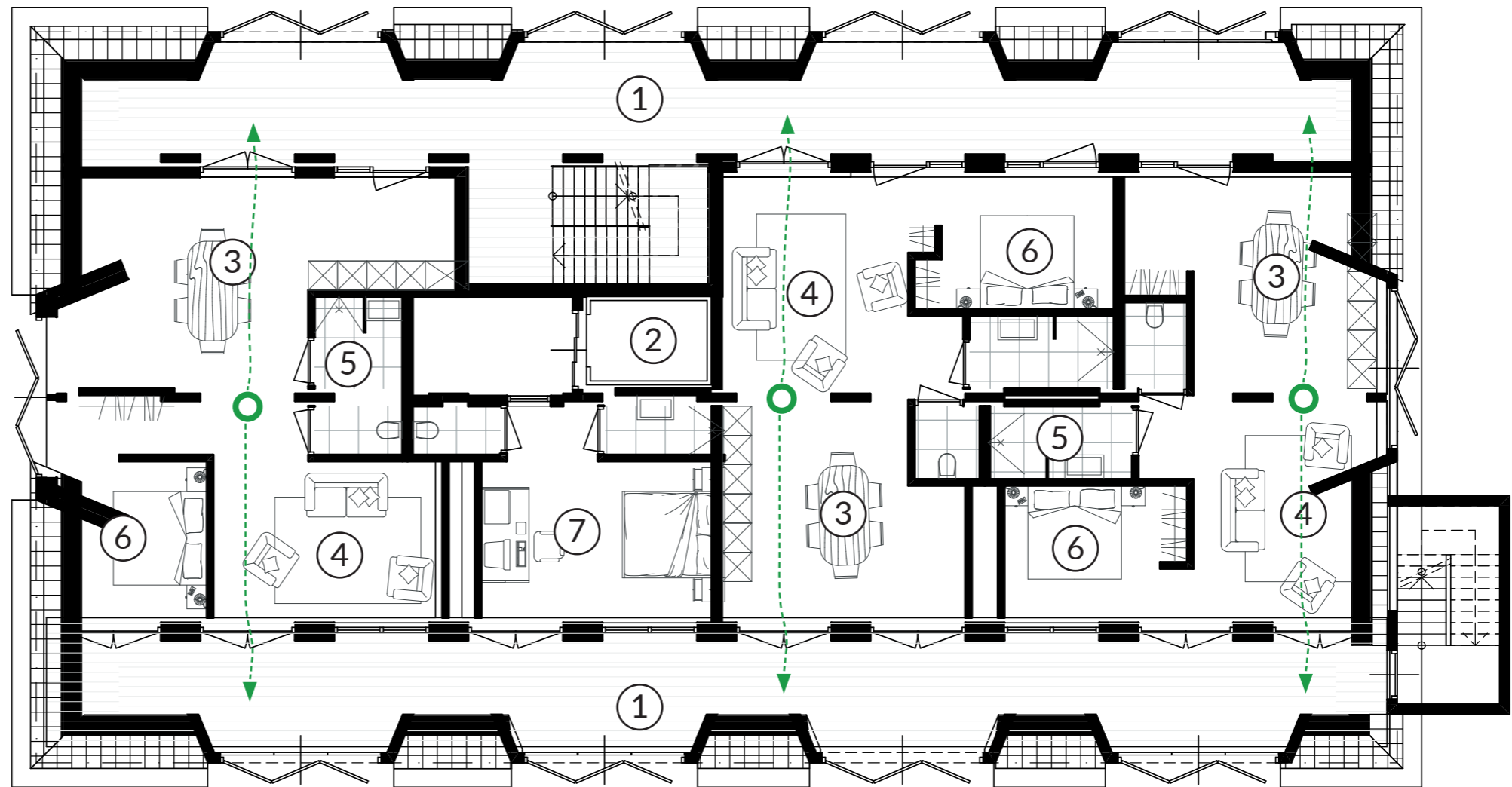
LEGENDA

- 1 Hallway / Winter Garden
- 2 Elevator
- 3 Living Kitchen
- 4 Living Room
- 5 Sanitary
- 6 Bedroom
- 7 Guest suite

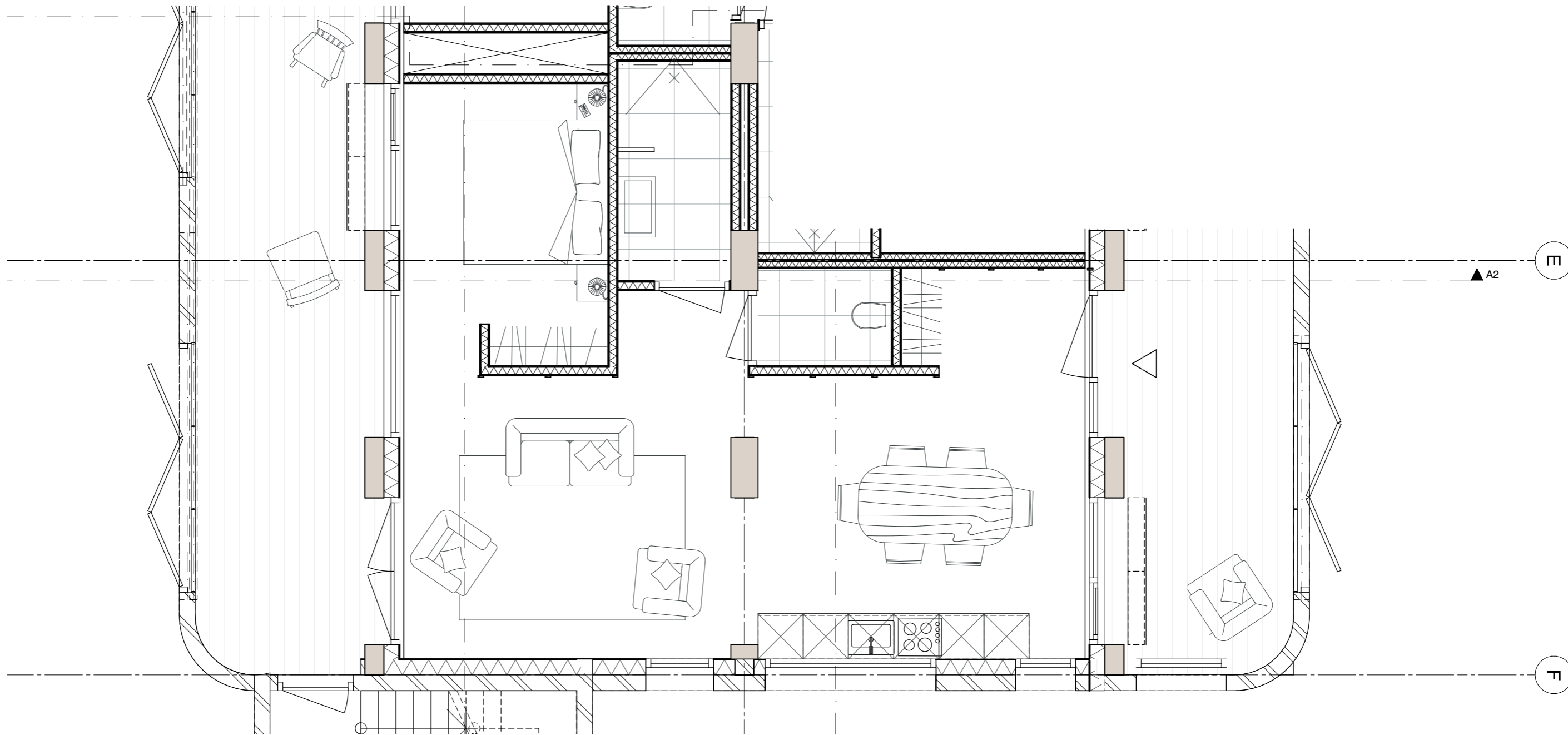
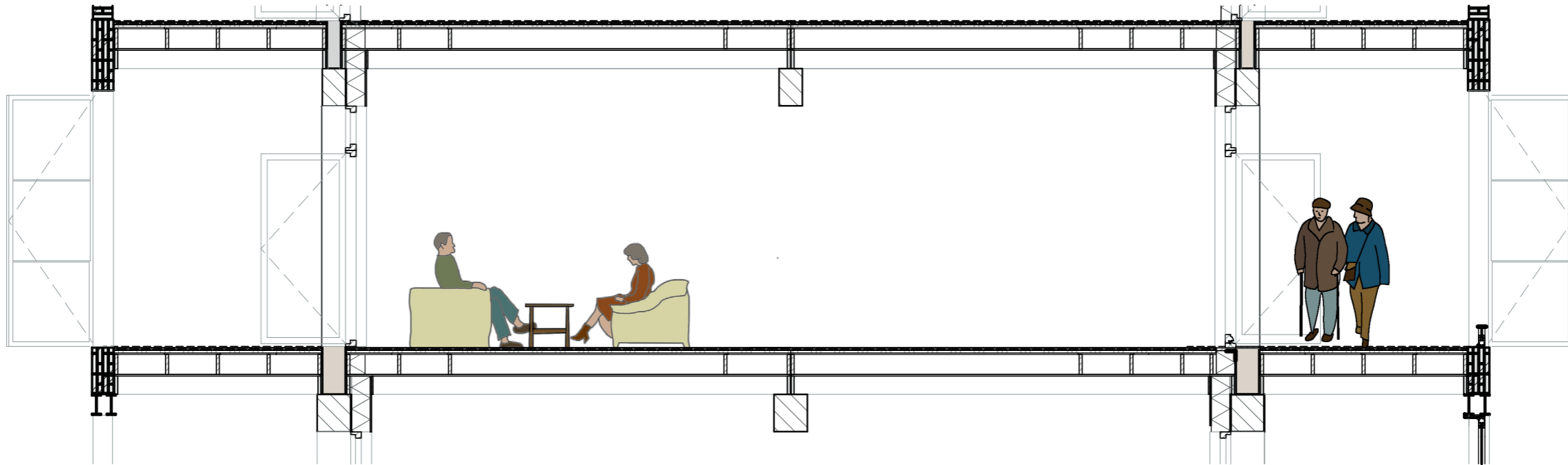


LEGENDA

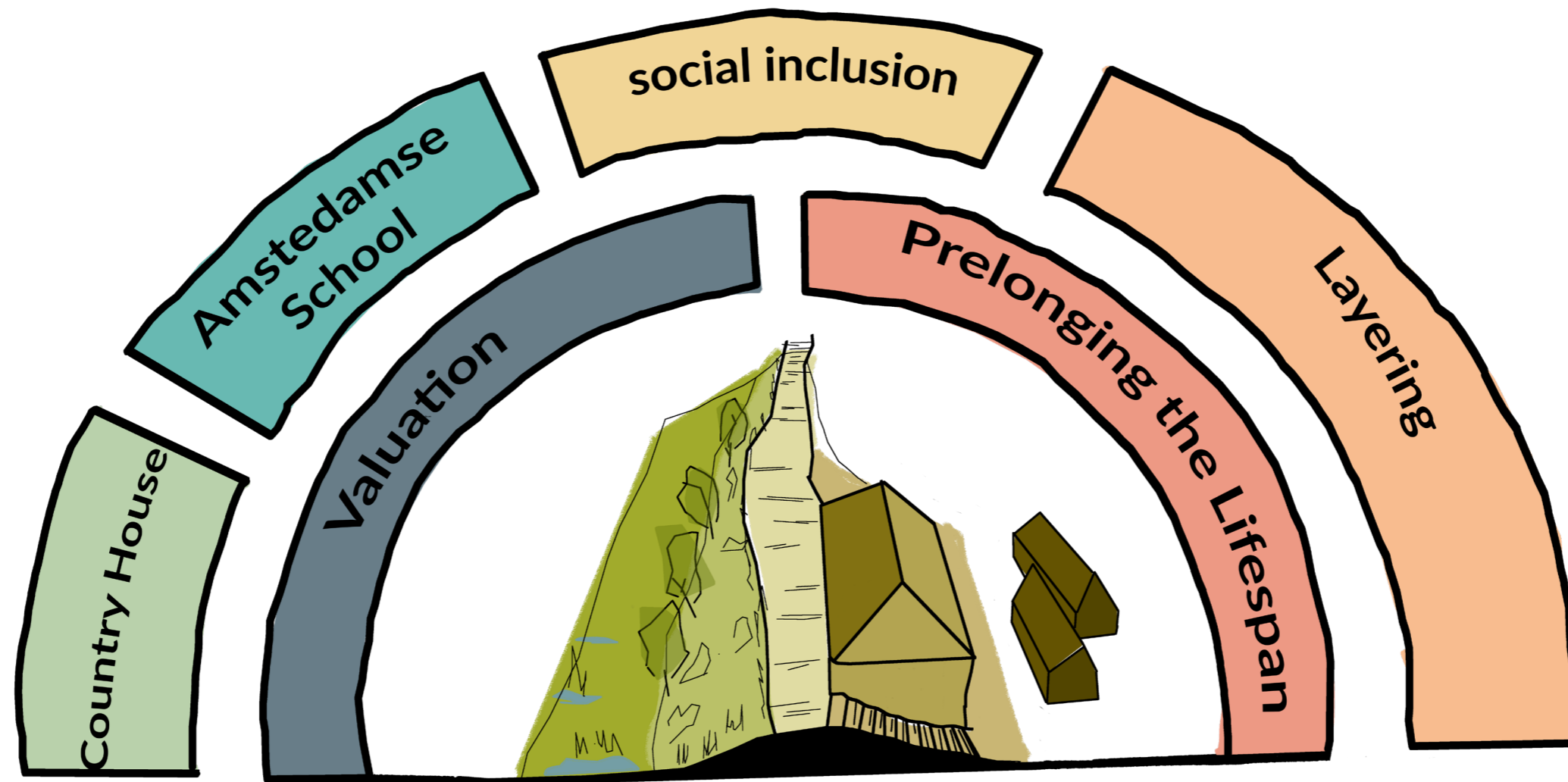
- 1 Hallway
- 2 Elevator
- 3 Living Kitchen
- 4 Living Room
- 5 Sanitary
- 6 Bedroom
- 7 Guest suite

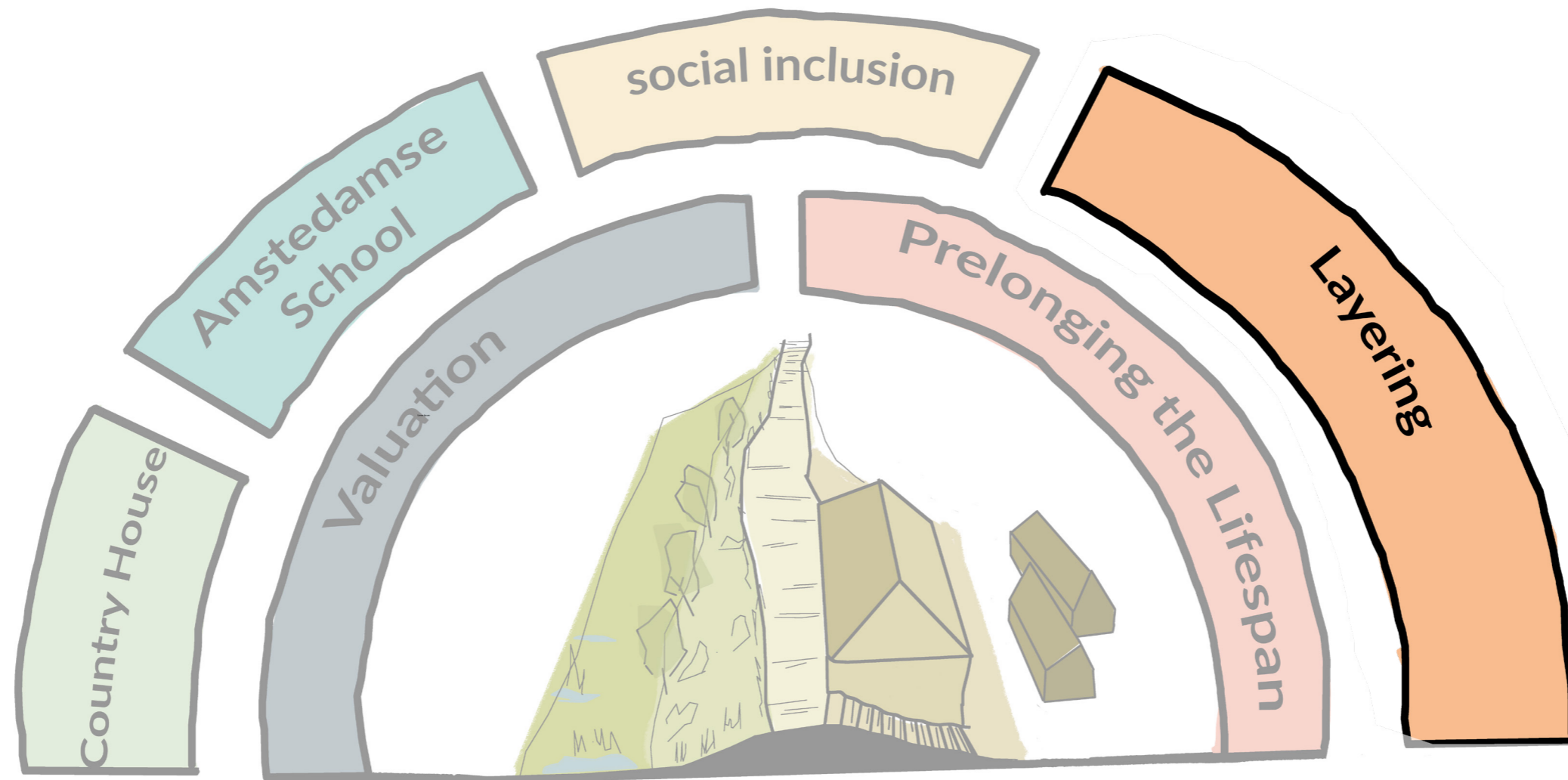












# Layers

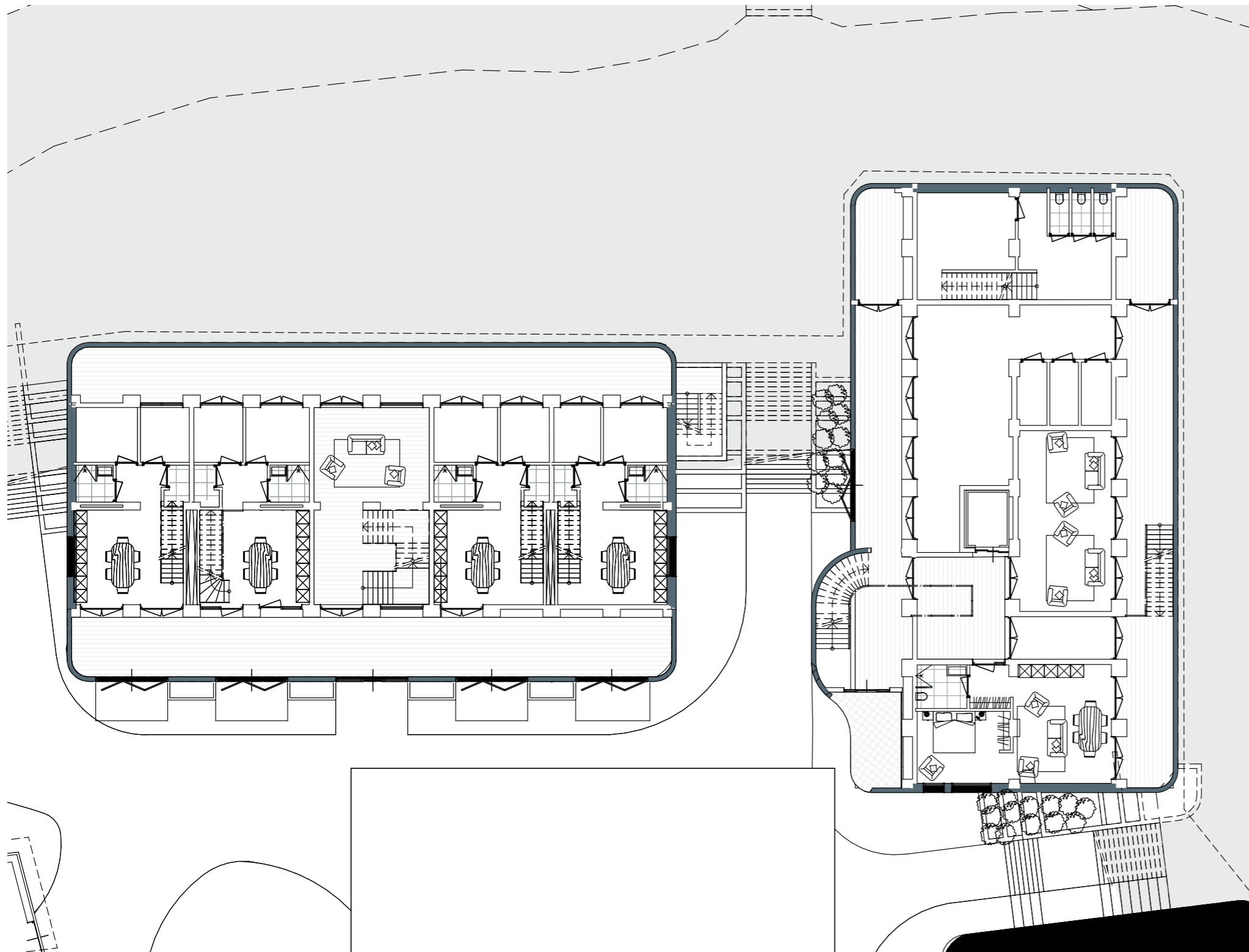


Fig. 35 Layers of Change and Environmental Impact (Own Work)

- Skin*
- Structure*
- Services and Flooring*
- Space Plan*

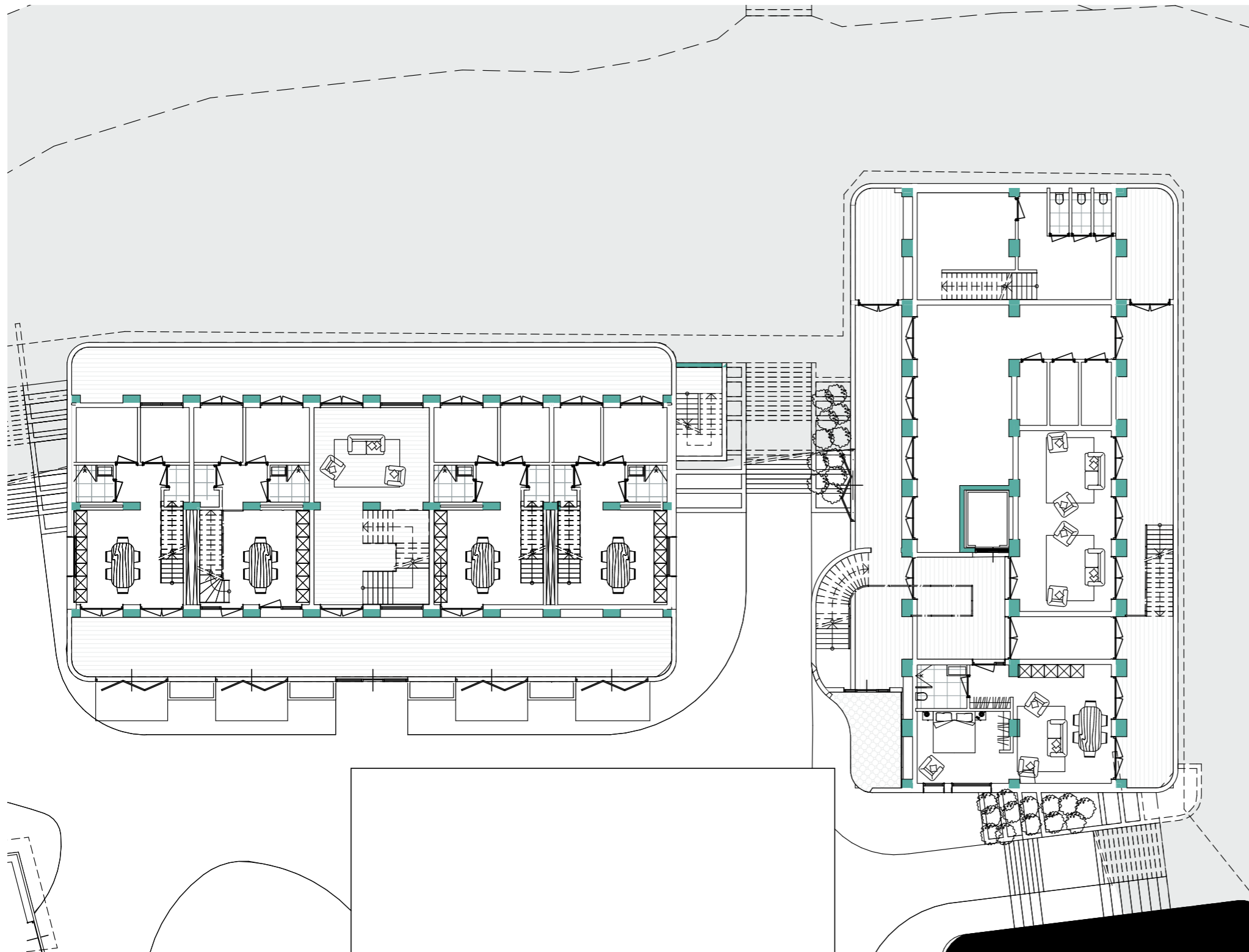


Fig. 36 Layers of Change and Environmental Impact (Own Work)

- Skin
- Structure
- Services and Flooring
- Space Plan

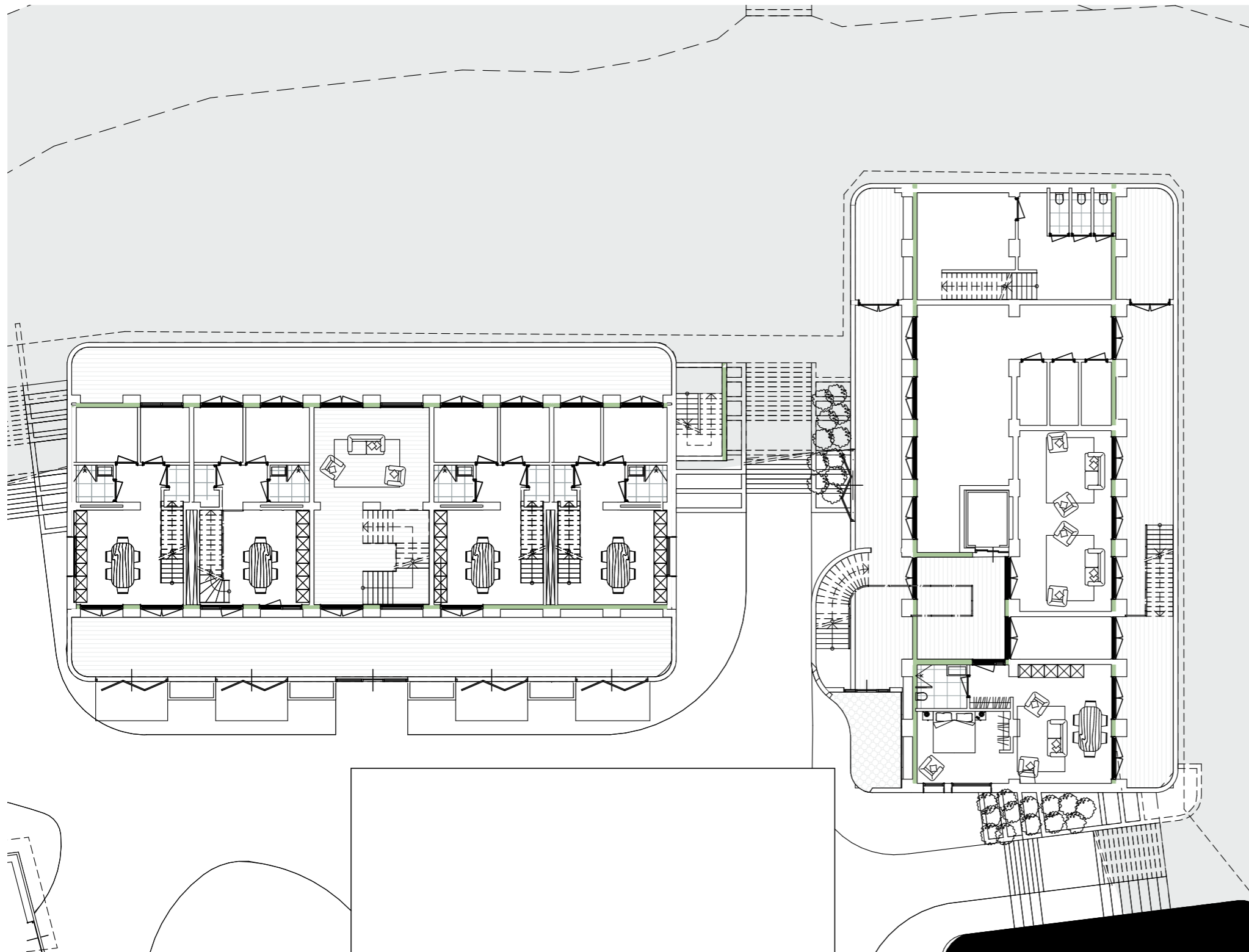






Fig. 37 Layers of Change and Environmental Impact (Own Work)

-  Skin
-  Structure
-  Services and Flooring
-  Space Plan

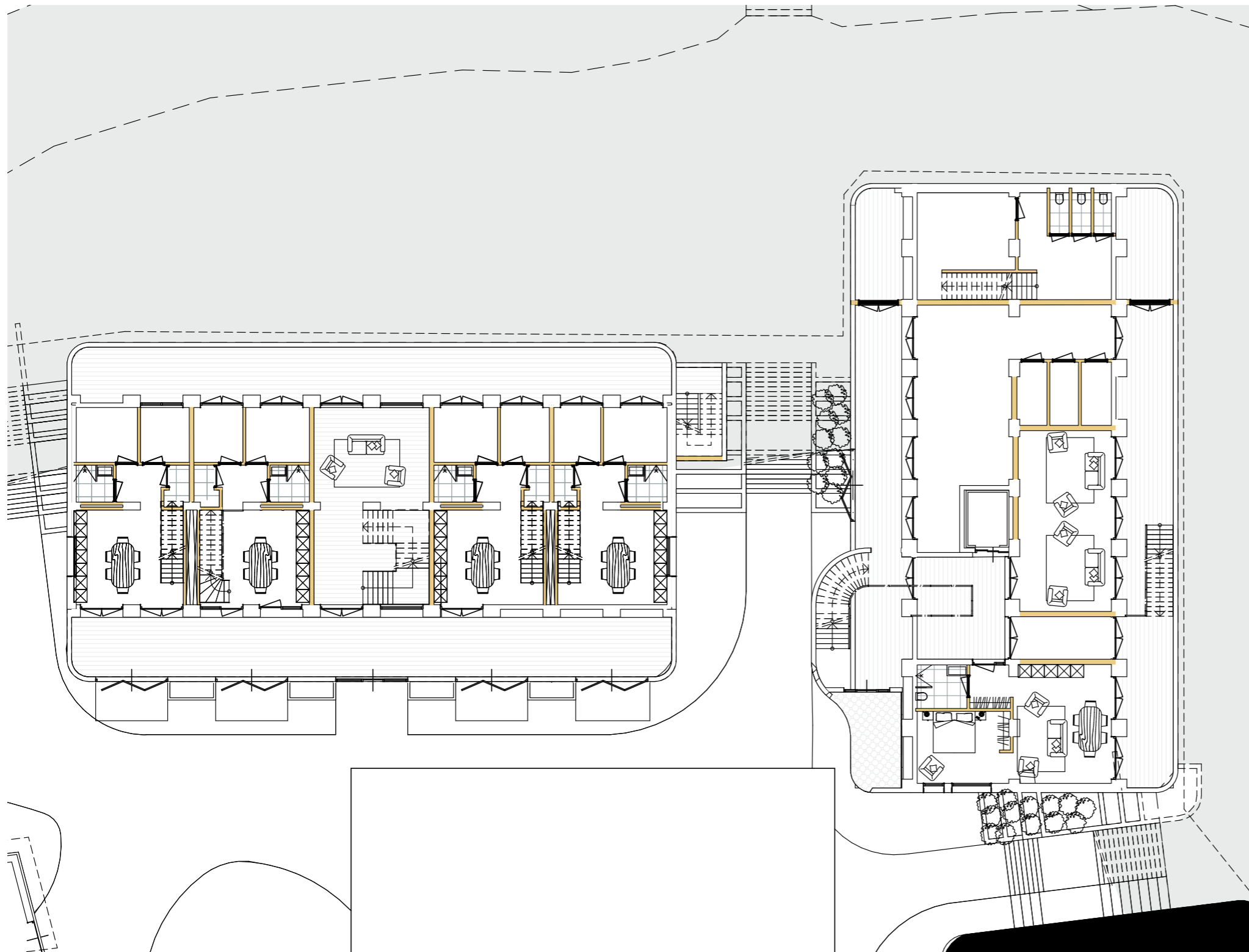






Fig. 38 Layers of Change and Environmental Impact (Own Work)

-  *Skin*
-  *Structure*
-  *Services and Flooring*
-  *Space Plan*



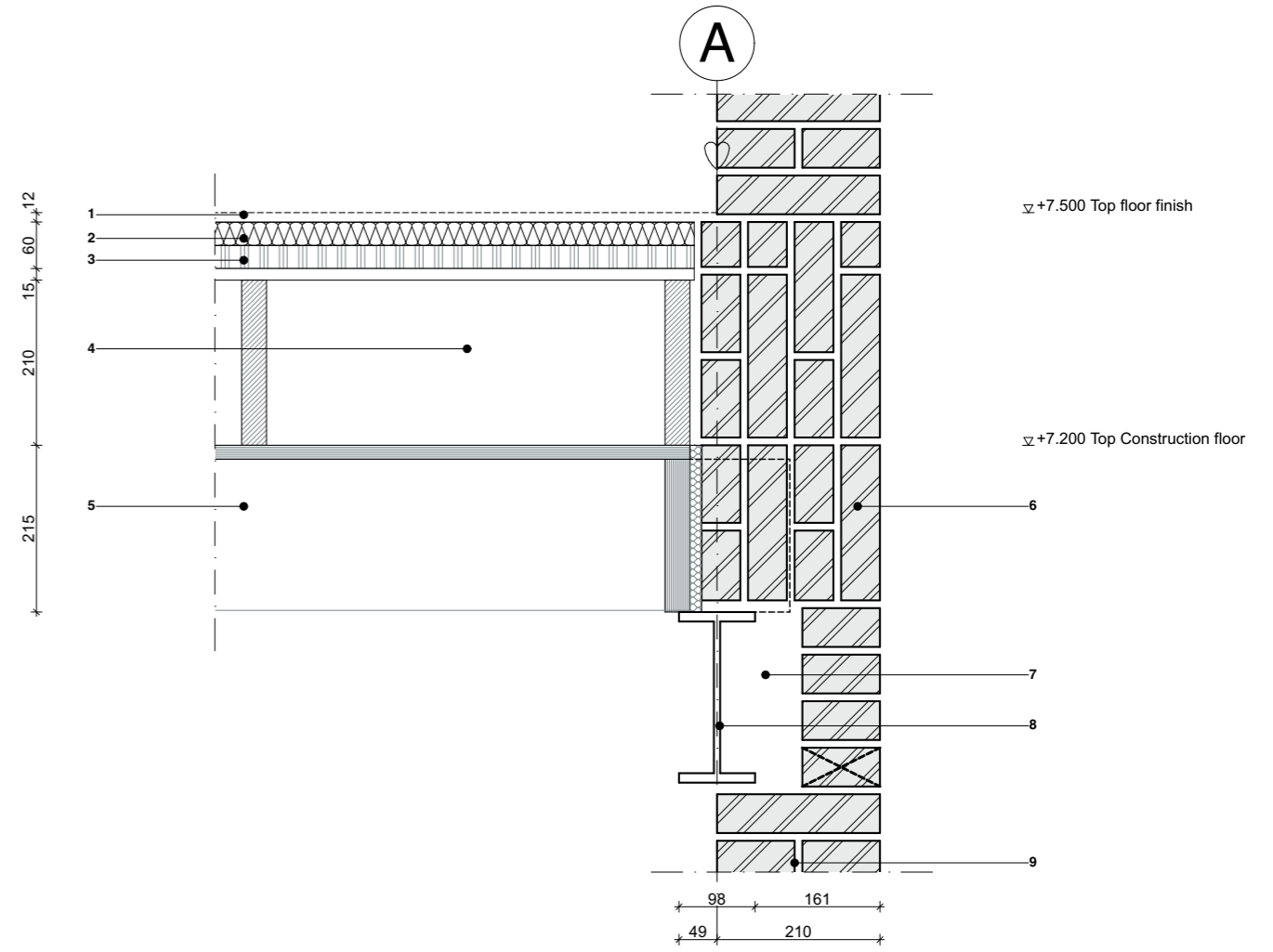
Compressed earth bricks

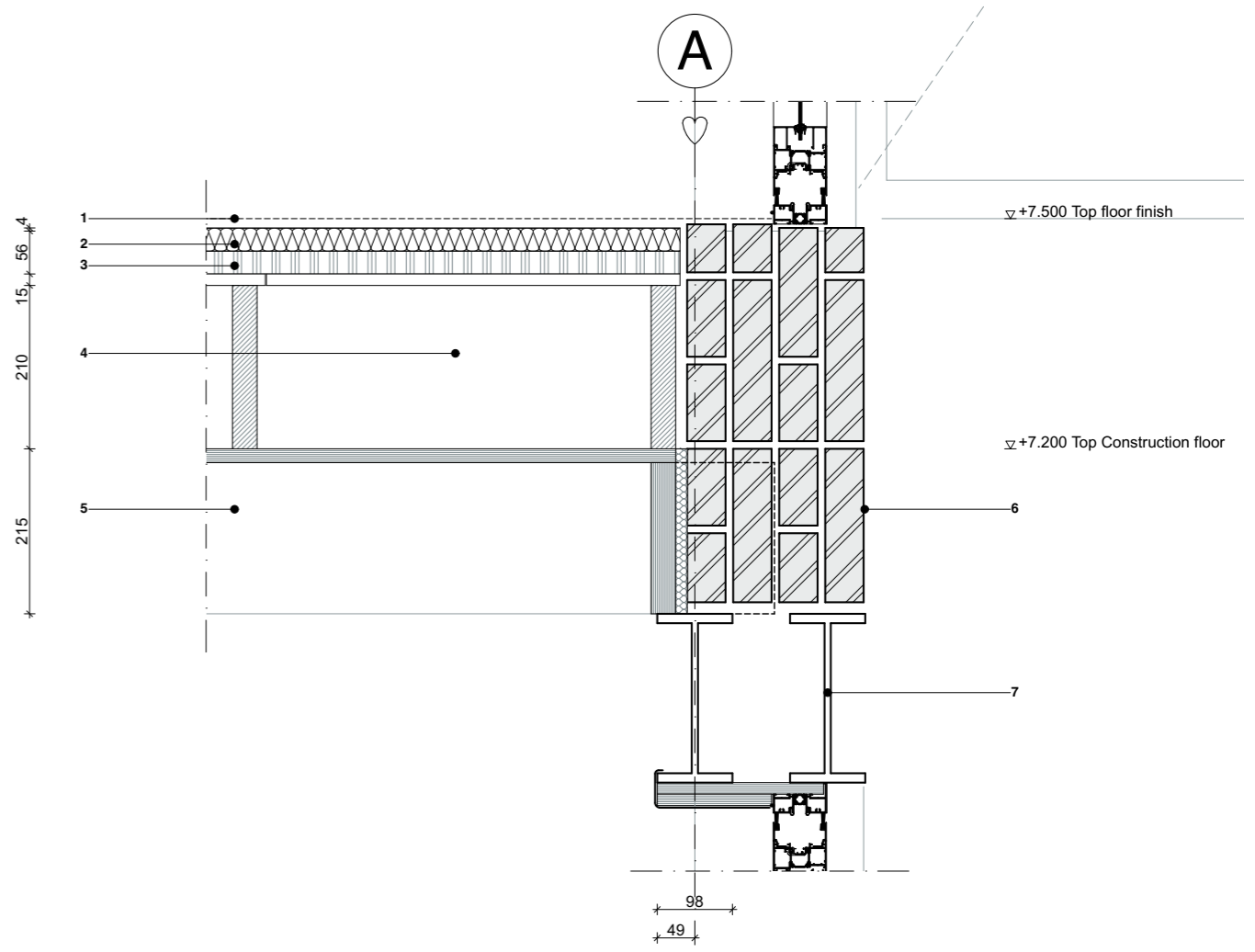
Intergraded seat

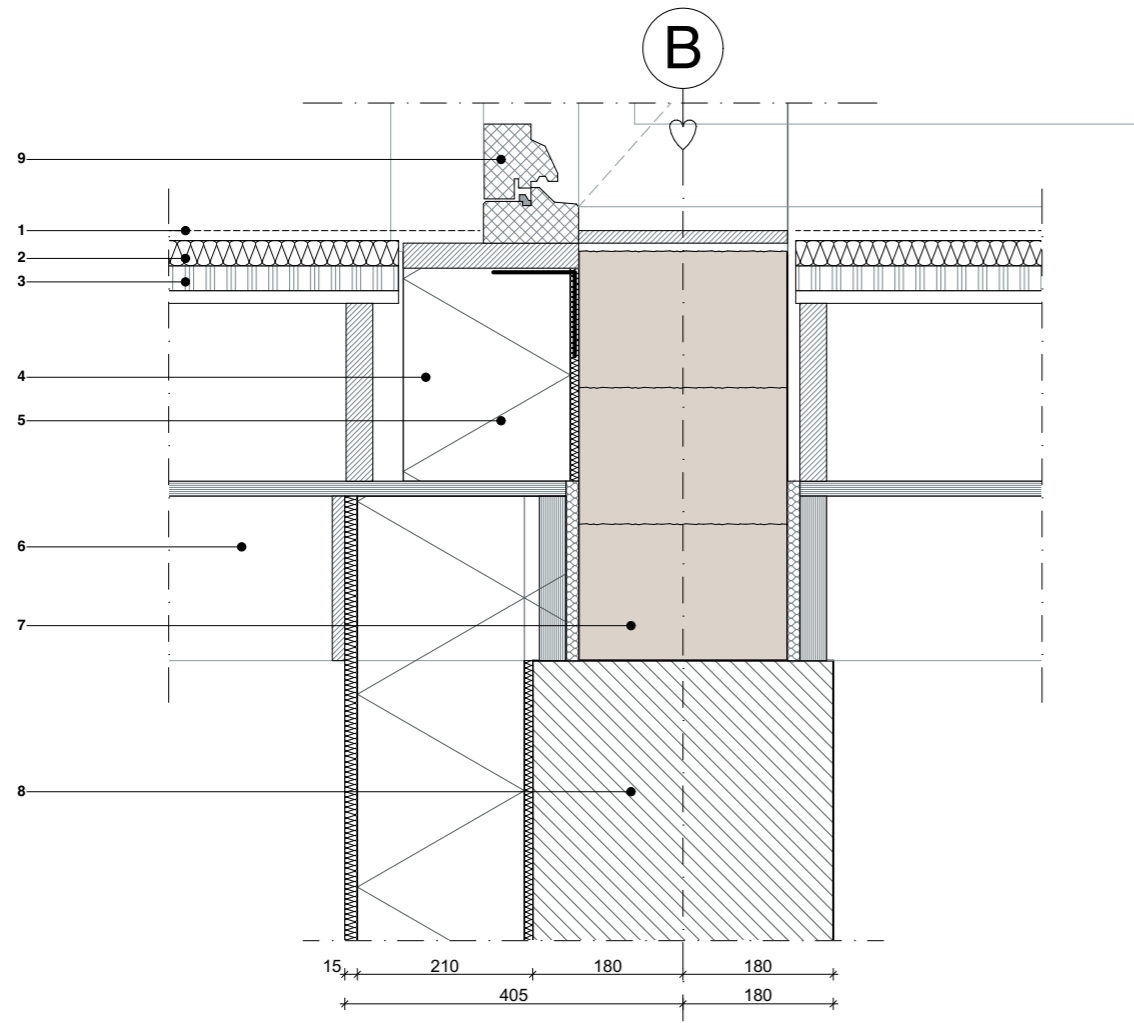
Timber flooring

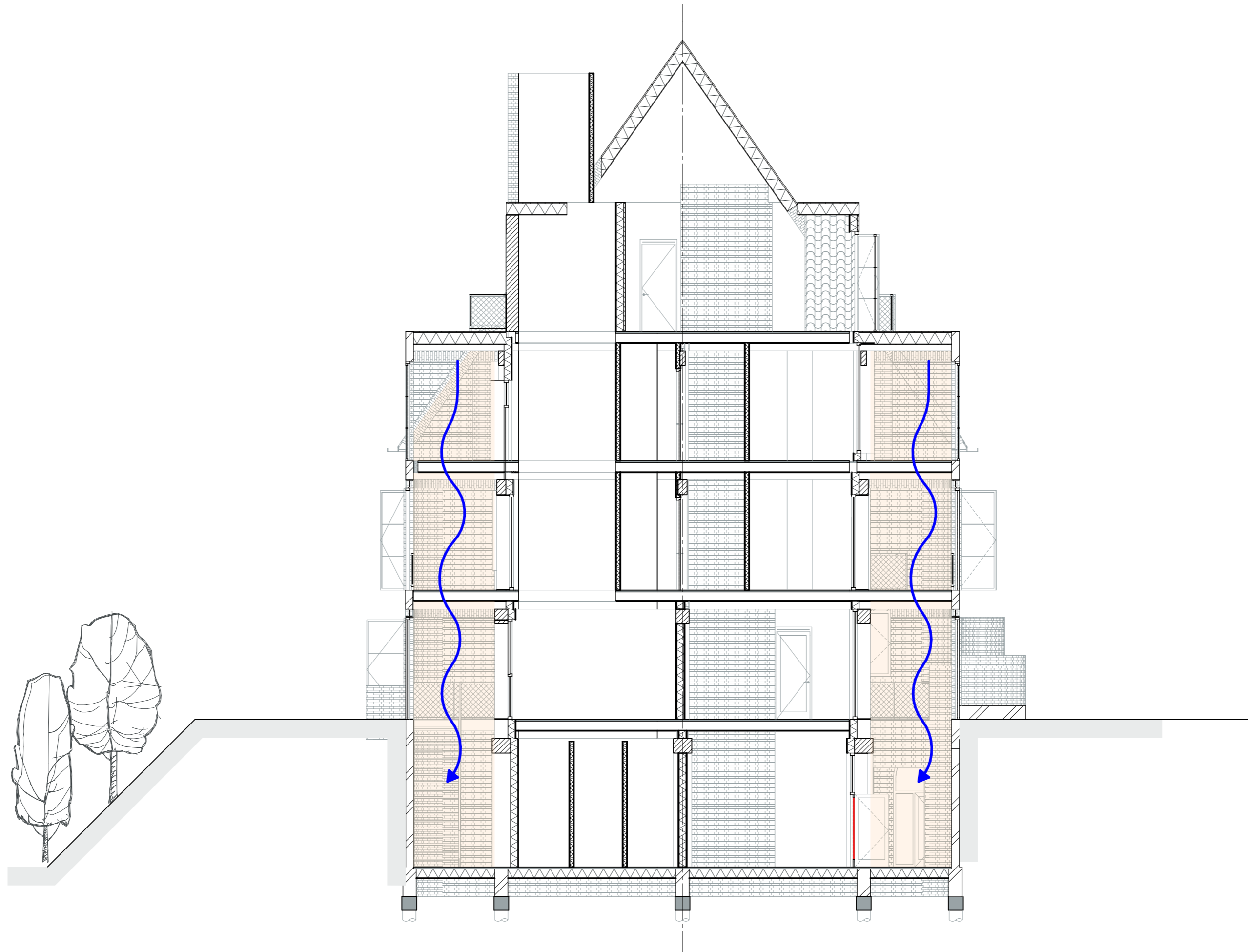
Brickwork







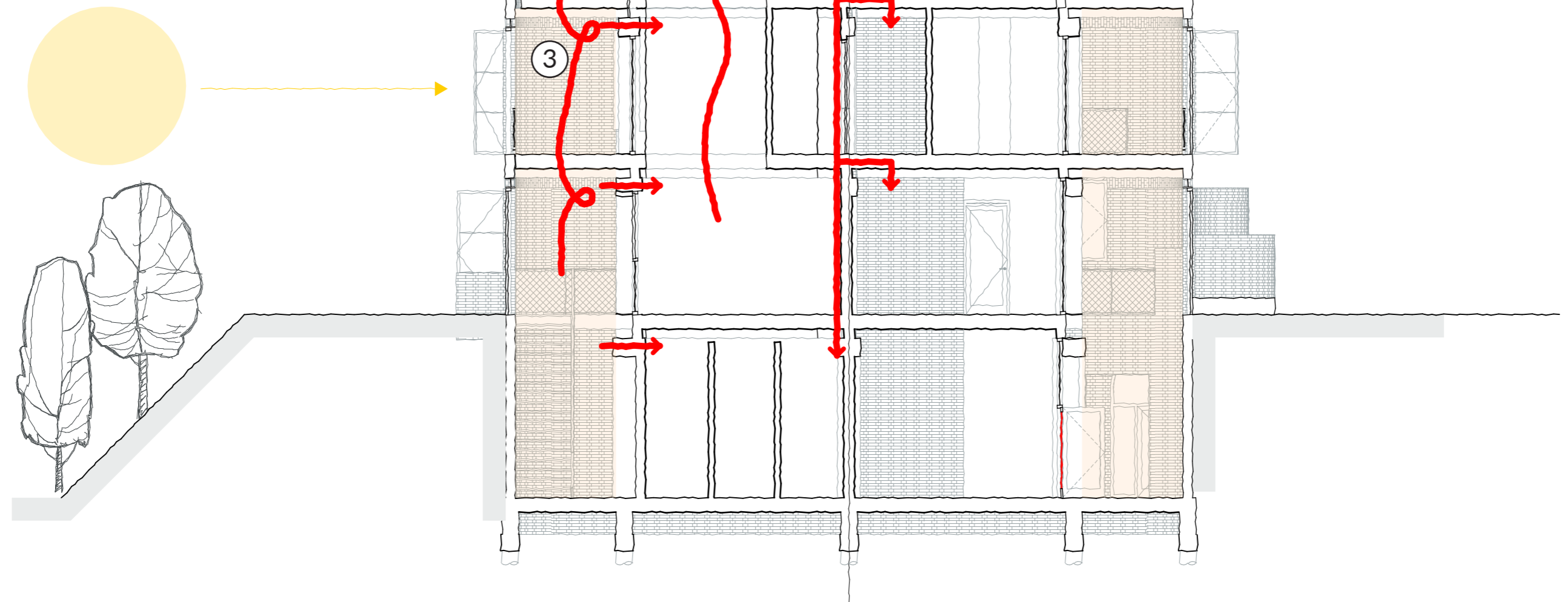




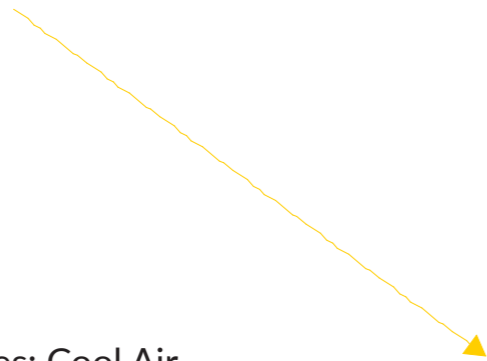
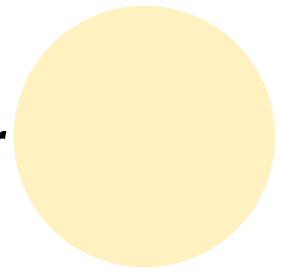
# Winter

## LEGENDA

- 1 Solar Chimney
- 2 Controlled ventilation
- 3 Pre-warmed in Winter Garden

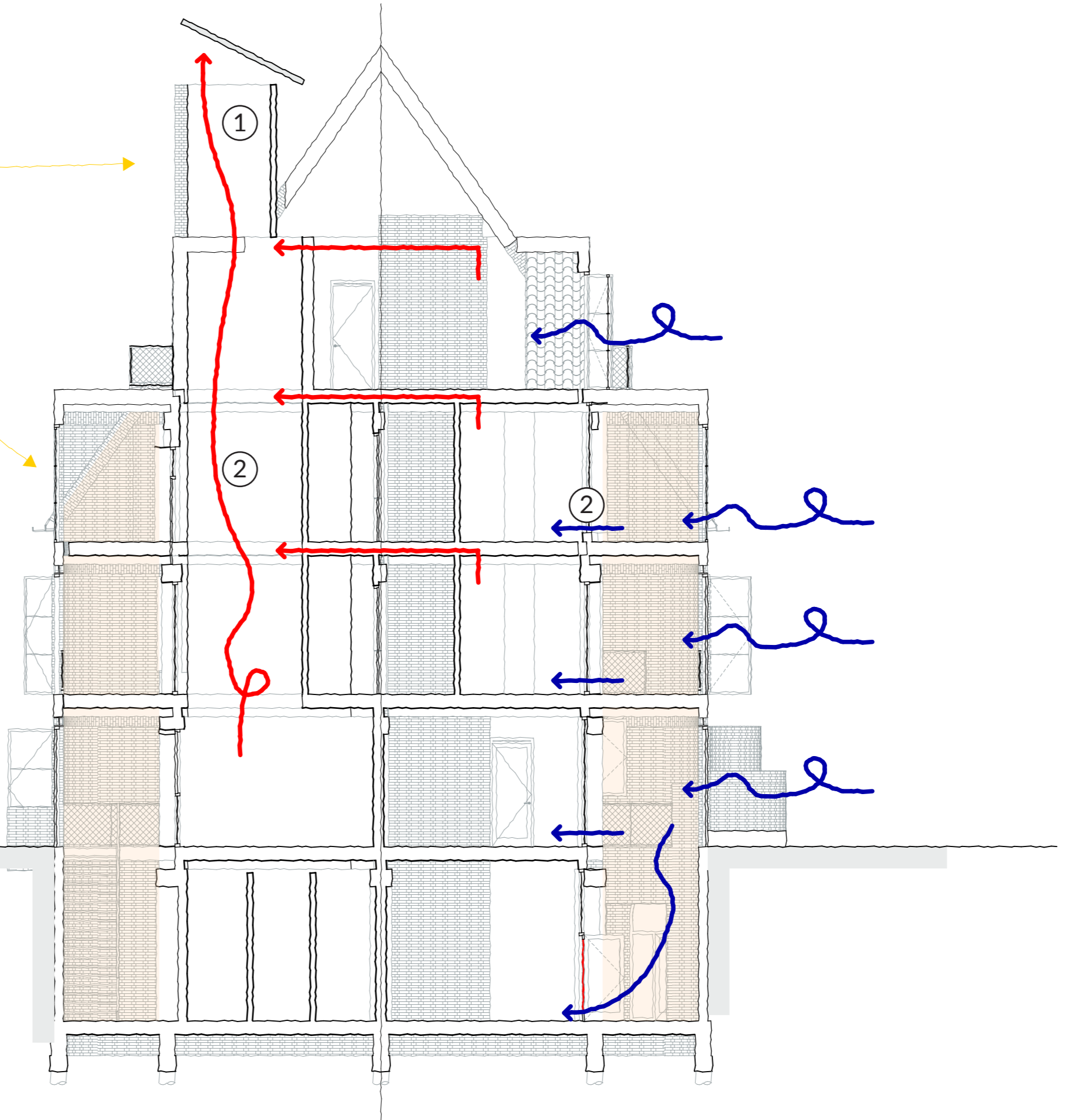
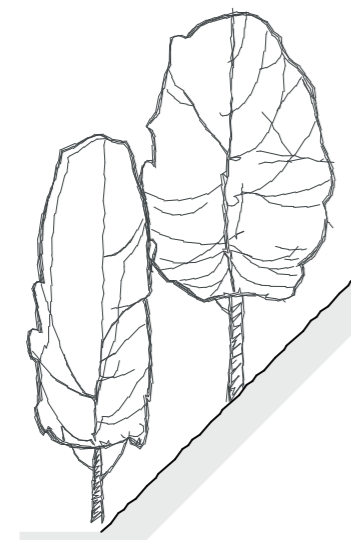


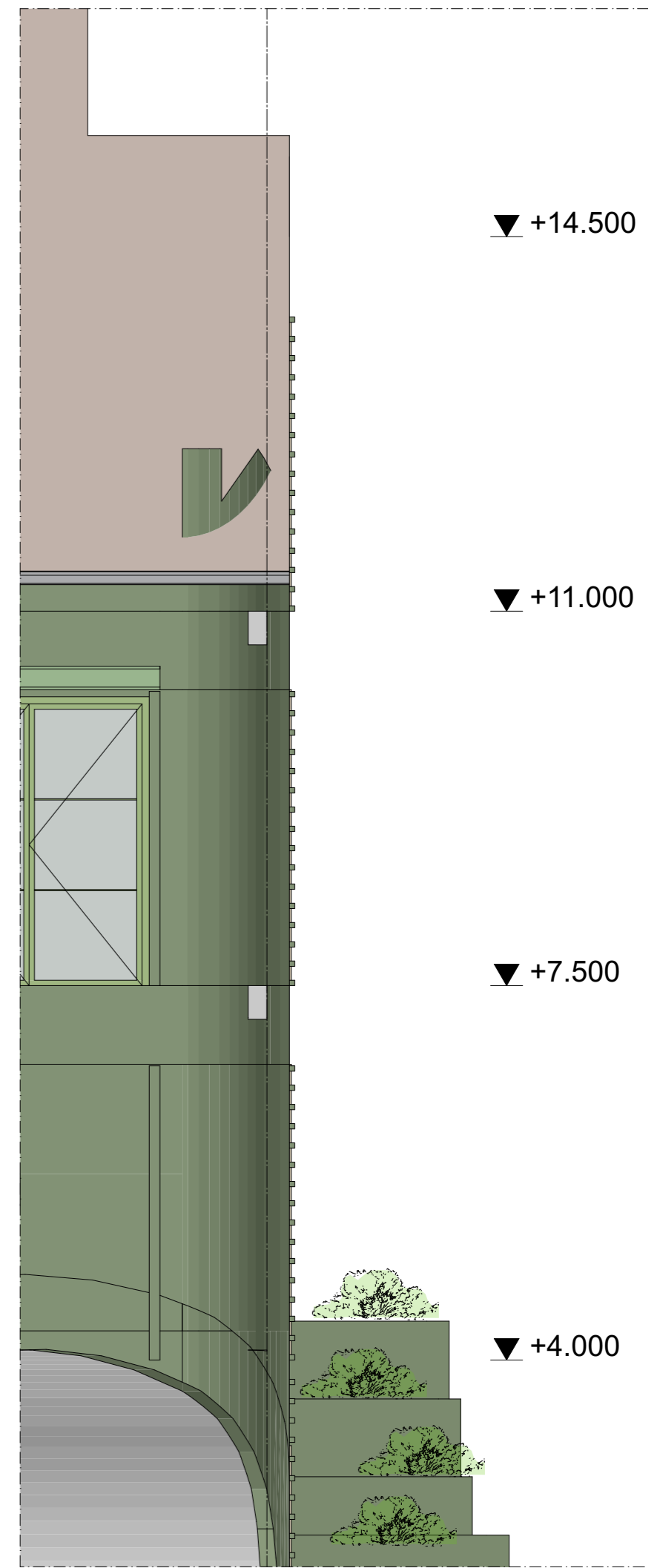
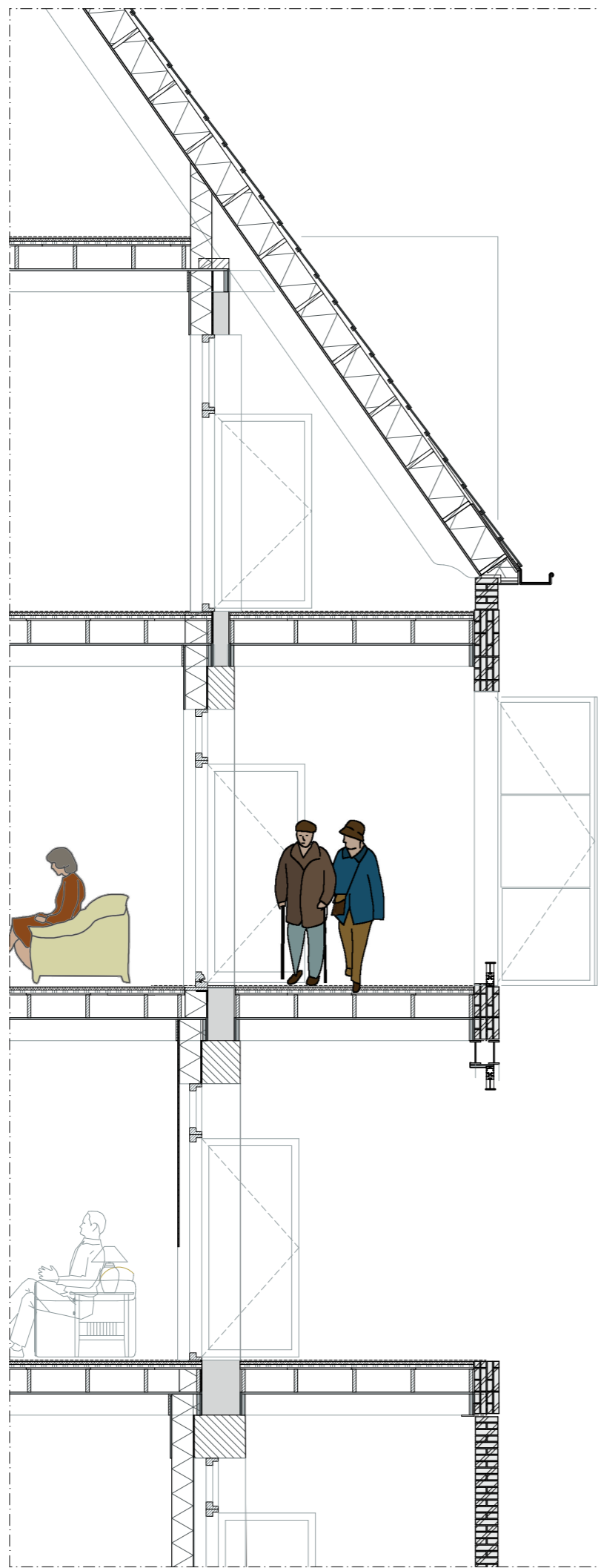
Summer



LEGENDA

- 1 Solar Chimney
- 2 Ventilation Grilles: Cool Air
- 3 "Sticky effect" rising Wind





An architectural rendering of a modern urban street. The scene is viewed from a low angle, looking down a wide, light-colored pedestrian walkway. On the left, a multi-story building with large windows and a light-colored facade is visible. On the right, another multi-story building with a more complex, layered facade and balconies is shown. In the center, several stylized figures of people are walking: one in the foreground is taking a photo, another is on a phone, and a group of three is further down the path. Greenery, including bushes and trees, is planted in raised planters along the walkway. The overall style is clean and illustrative, with a soft, warm light.

**Thanks for listening!**

## **The Urban Dyke**

Design Concept to Preserve the Future by the increase of valuation





Fig. xx Veemarkt 23 Zwolle in 2009 (Google Maps)



Fig. xx Veemarkt 23 Zwolle in 2017 (Google Maps)



Fig. xx Veemarkt 23 Zwolle in 2021 (Google Maps)

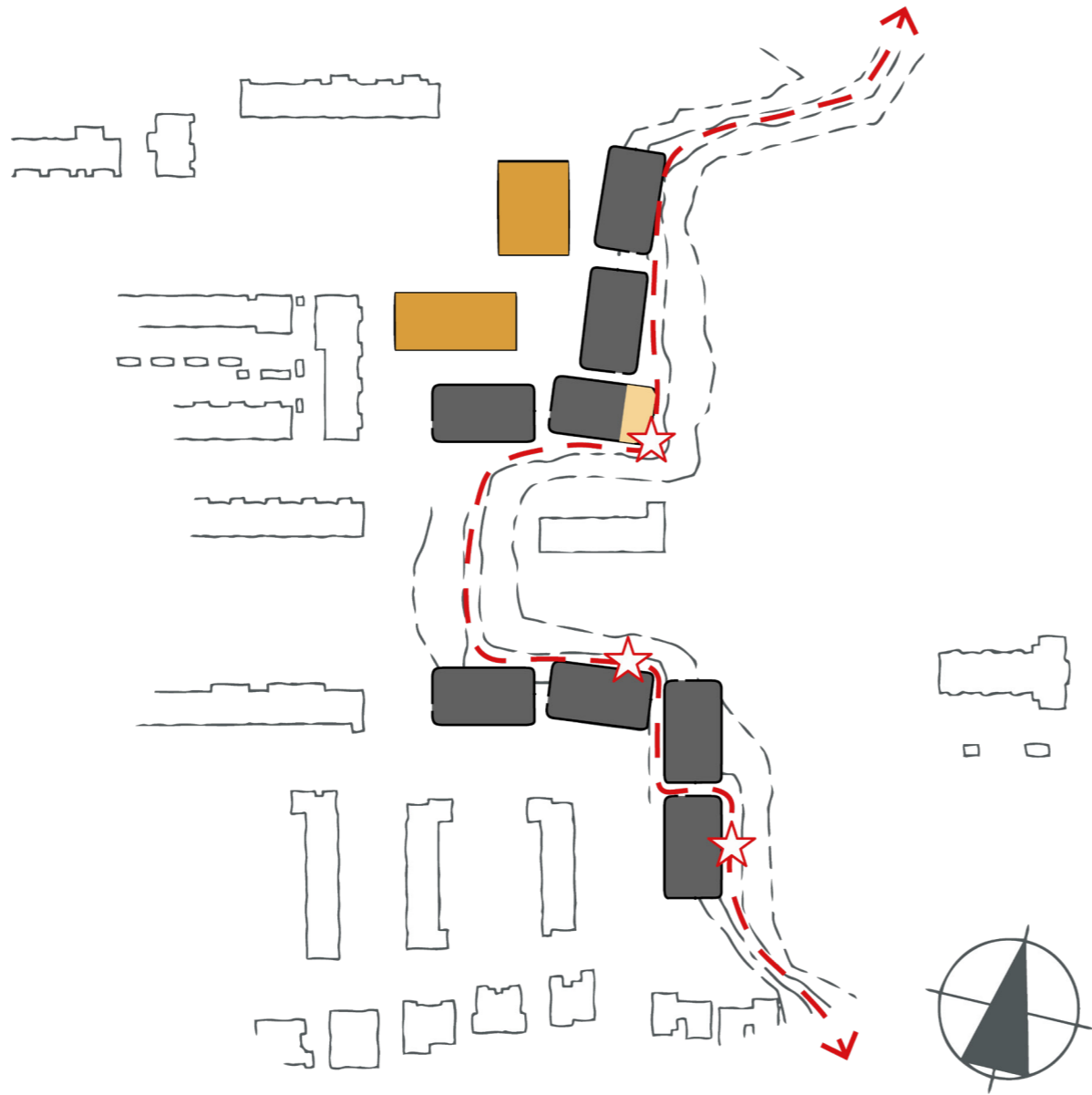


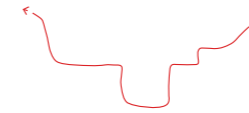
Fig. xx Public Functions (Own Work)



Cafe



Sharing Ateliers



Walking Route



Encounter Places



Fig. xx Diversity in architecture due to different users and needs (Own Work)



Fig. xx Downhill Park House Gardens by Edwin Lutyens

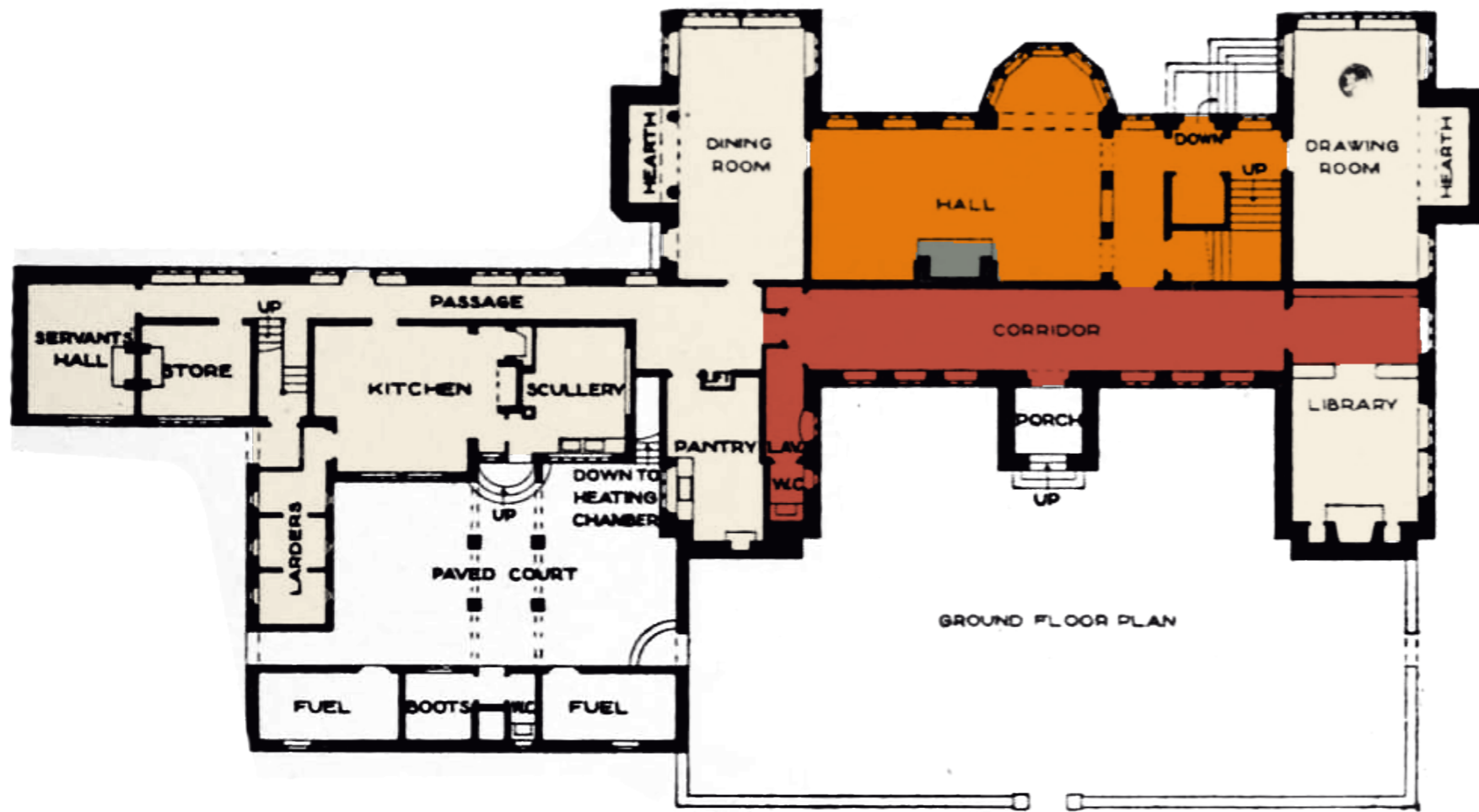


Fig. xx Demolition of Copernicuslaan Boschveld (Photo of Megan Hanegraa)

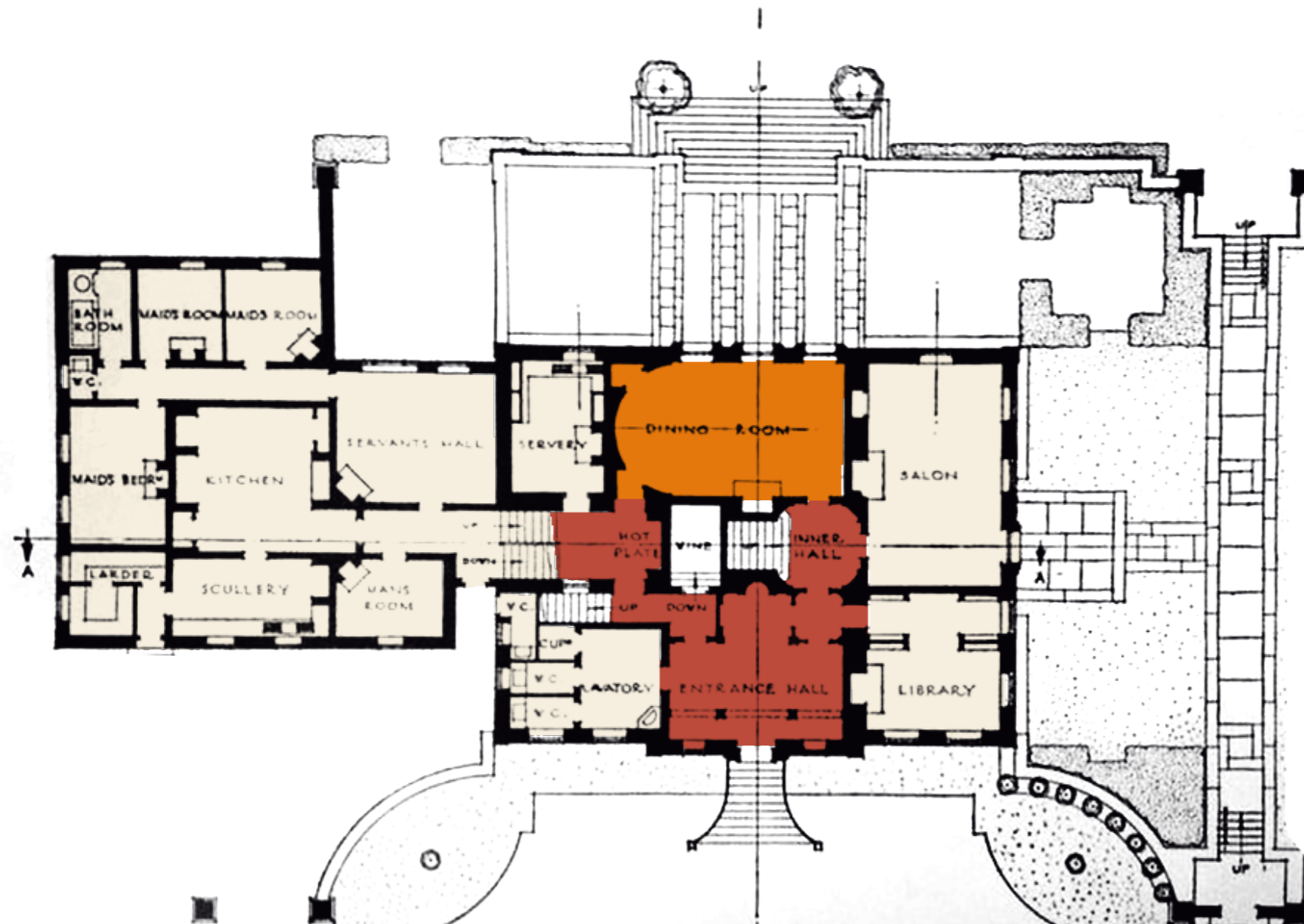
- Vestibule*
- Common Space*
- Private Space*



Fig. xx Demolition of Copernicuslaan Boschveld (Photo of Megan Hanegraa)



Fig. xx Demolition of Copernicuslaan Boschveld (Photo of Megan Hanegraa)






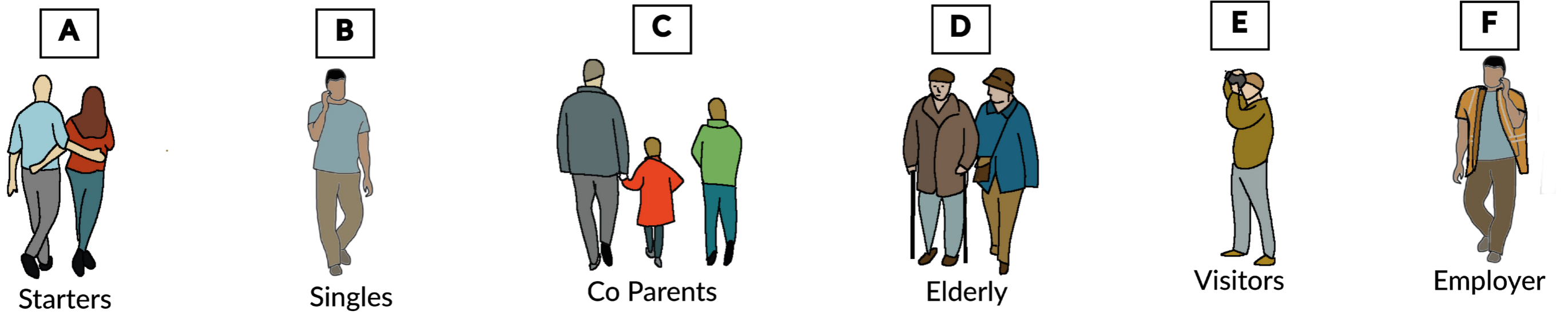
-  Vestibule
-  Common Space
-  Private Space



Fig. xx Project location in Tanthof (Own Work)



**Shared Space**

- Shared Atelier
- Shared Extra Space

**Space to Meet**

- Common Gardens
- Park
- Tennispark
- Local Pub

**Affordability**

- Minimal Rent

**Transport**

- Parking
- Public Transport