SYM | BIO

Sharing as a way to dwell.

Szymon Marciniak

P5 presentation | 26.06.2020

design tutor: Mo Smit

research tutor: Pieter Stoutjesdijk

building technology tutor: Ferry Adema

research conclusions

neighbourhood scale

typology scale

building system

Domain of residential architecture

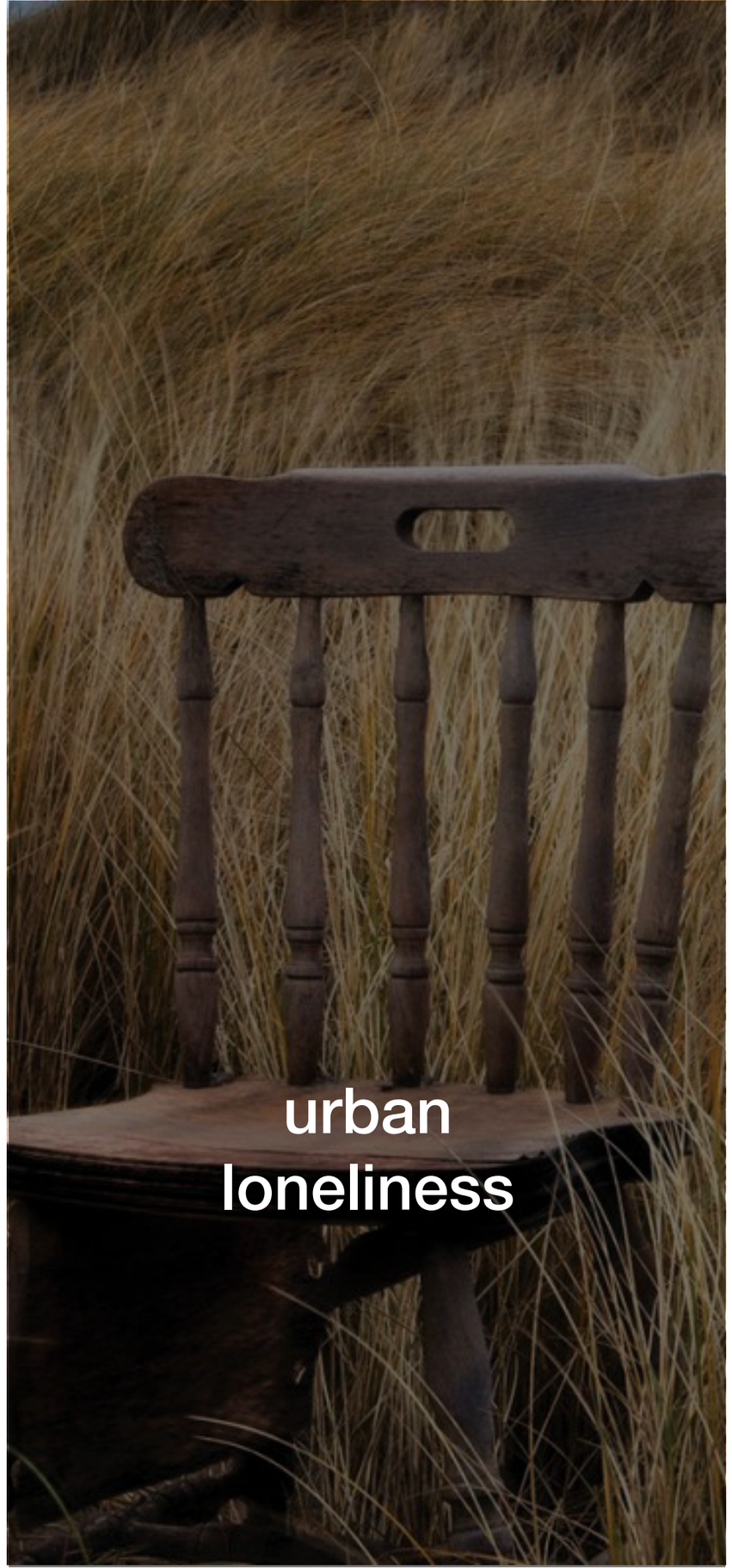
Valuable Neighbourhoods

Problem statement

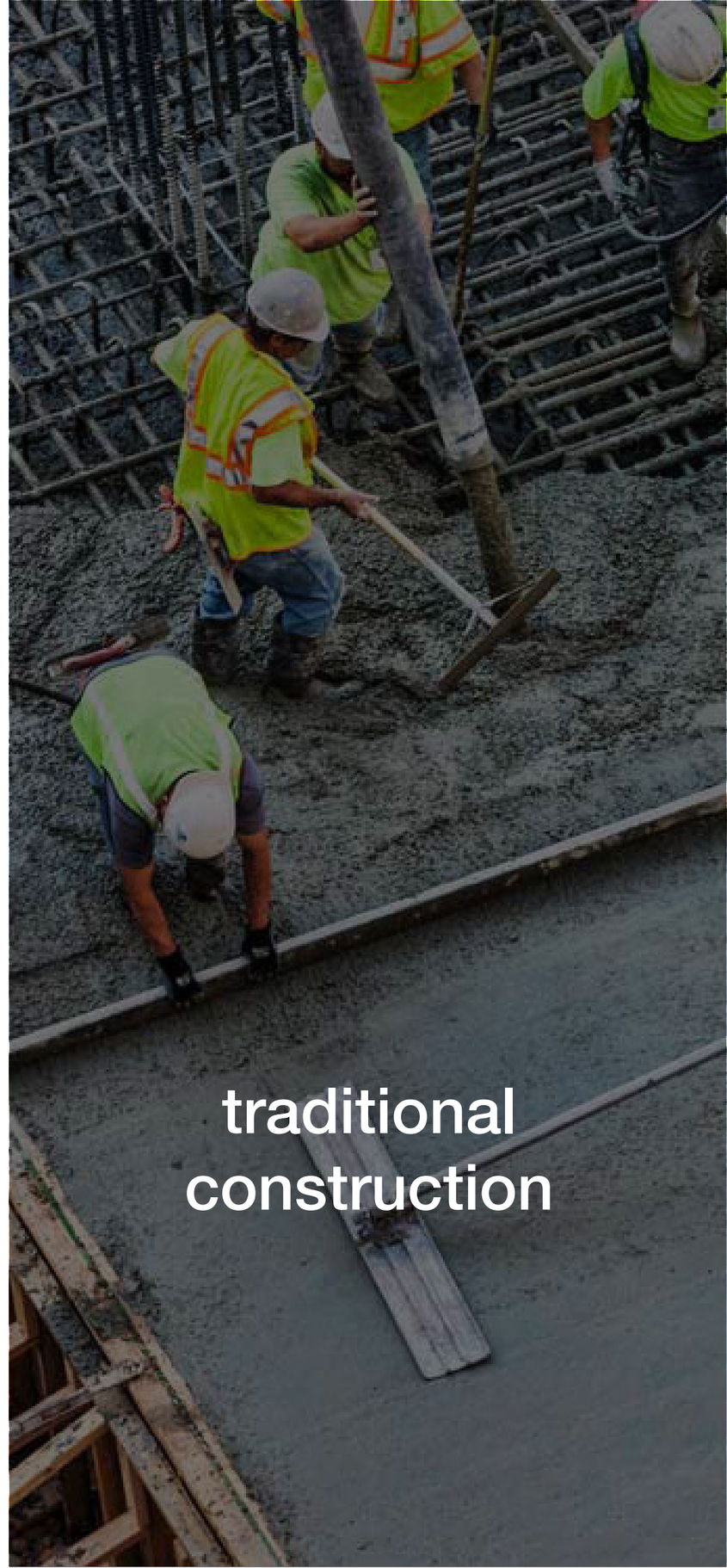
Housing Crisis?

Contemporary housing market observations.

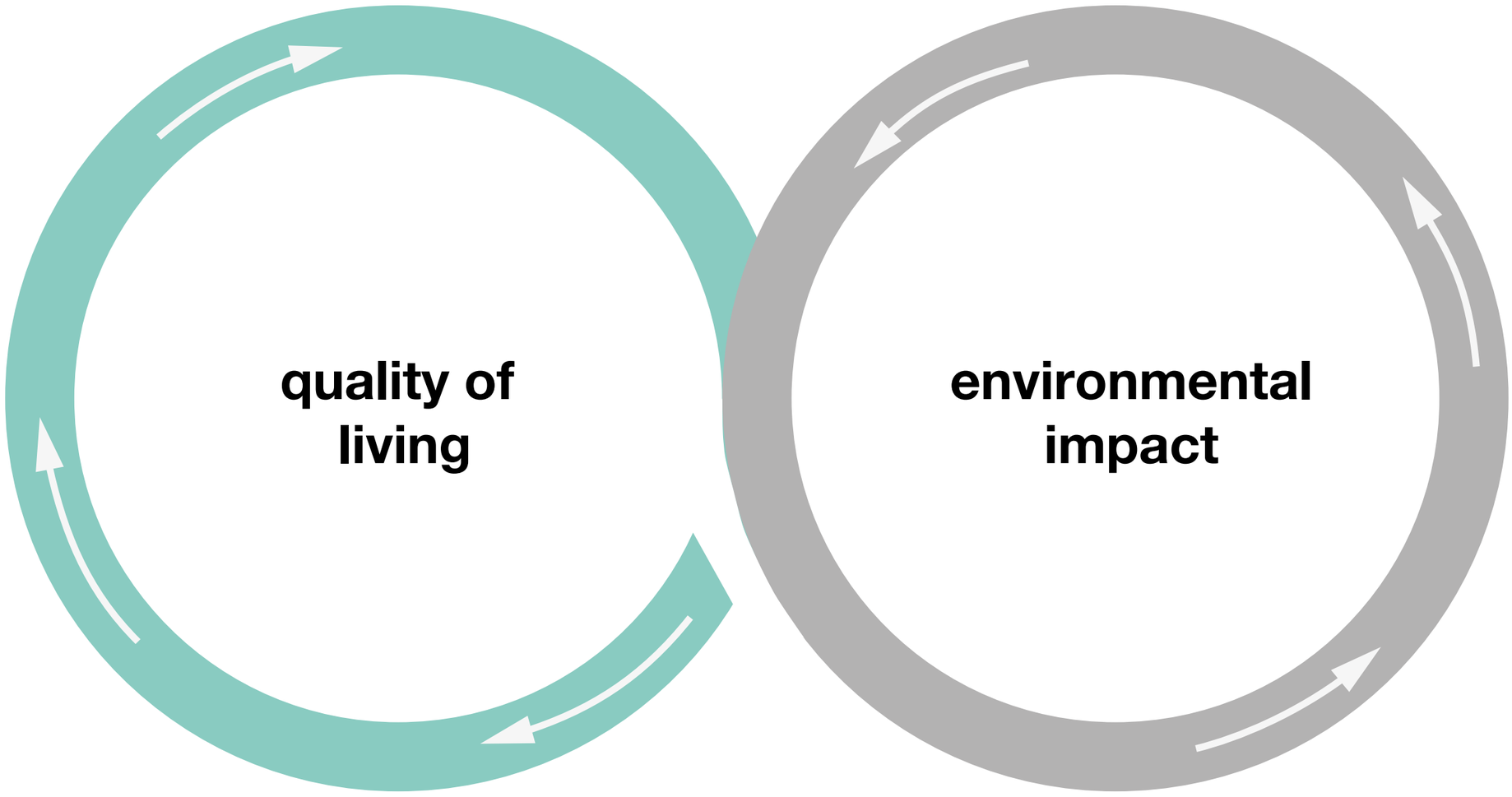
housing
unaffordability



urban
loneliness

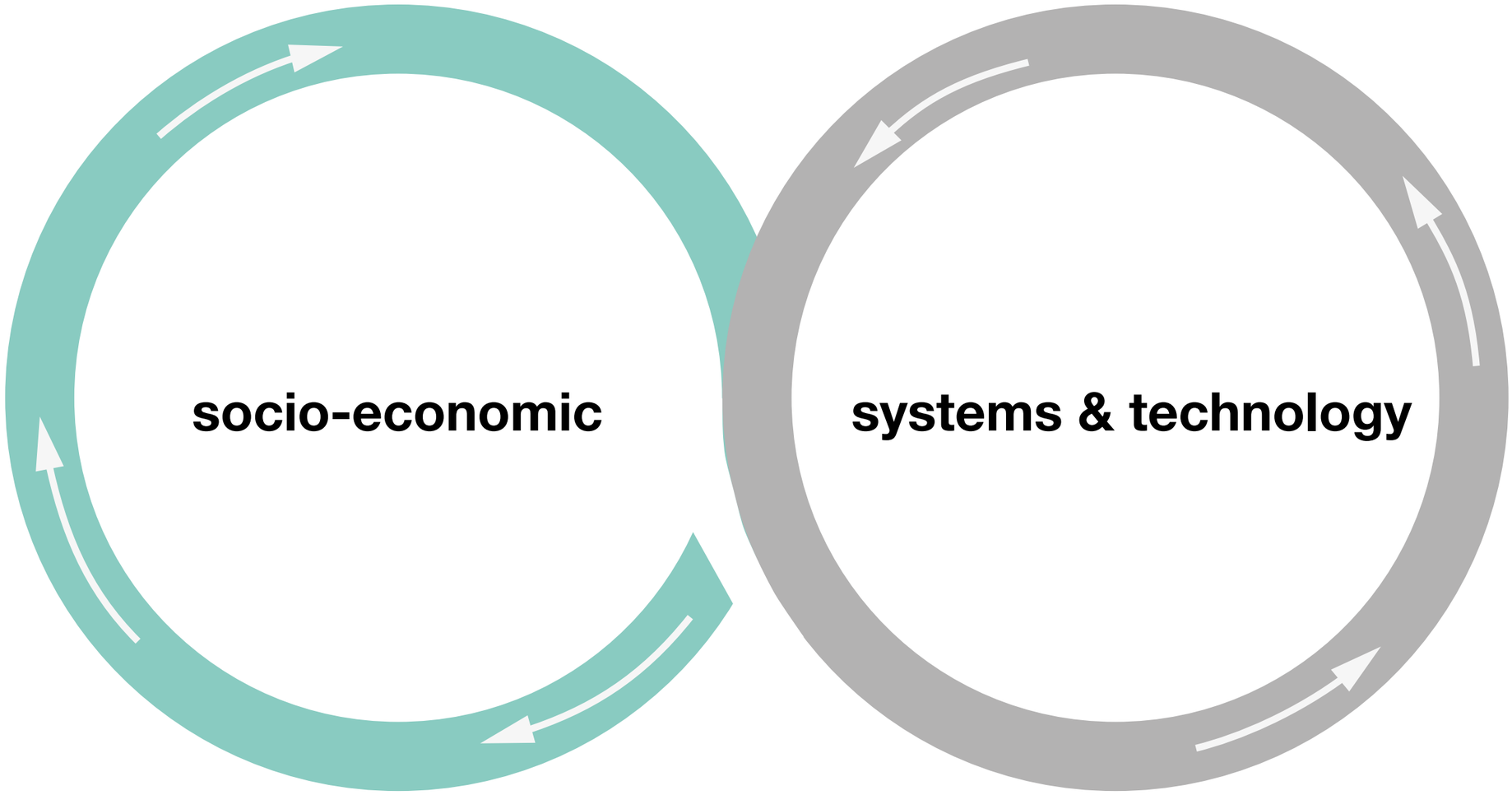


traditional
construction



SYM | BIO

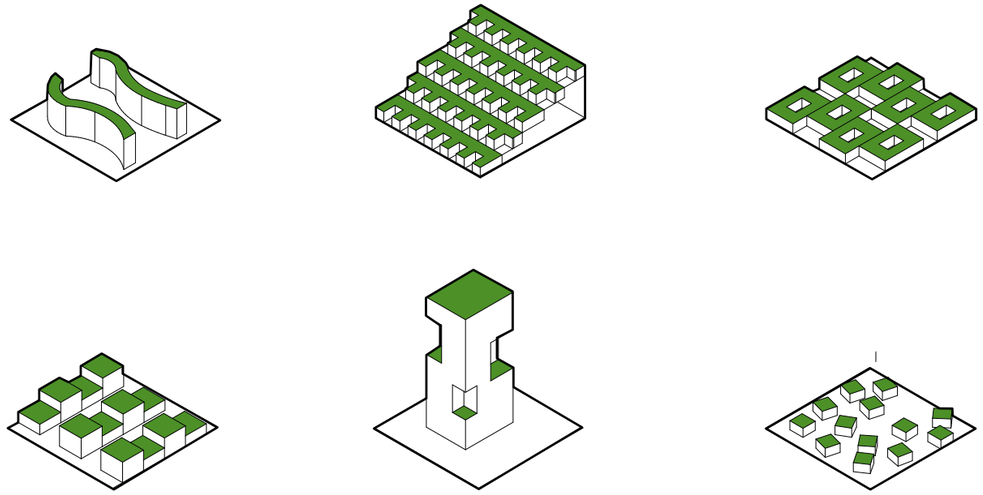
Reflection on the social impact of architecture & technological potentials



SYM | BIO

Reflection on the social impact of architecture & technological potentials

Towards **future-proof, sustainable healthy living** achieved by a evolution not a revolution of existing ingredients.



Available models

Initial exploration of housing models

„**Share** oriented living **models**” possess the biggest potential to approach the problem, as they have **no profit-oriented entity** and are based-on **bottom-up communities** that share **common awareness**

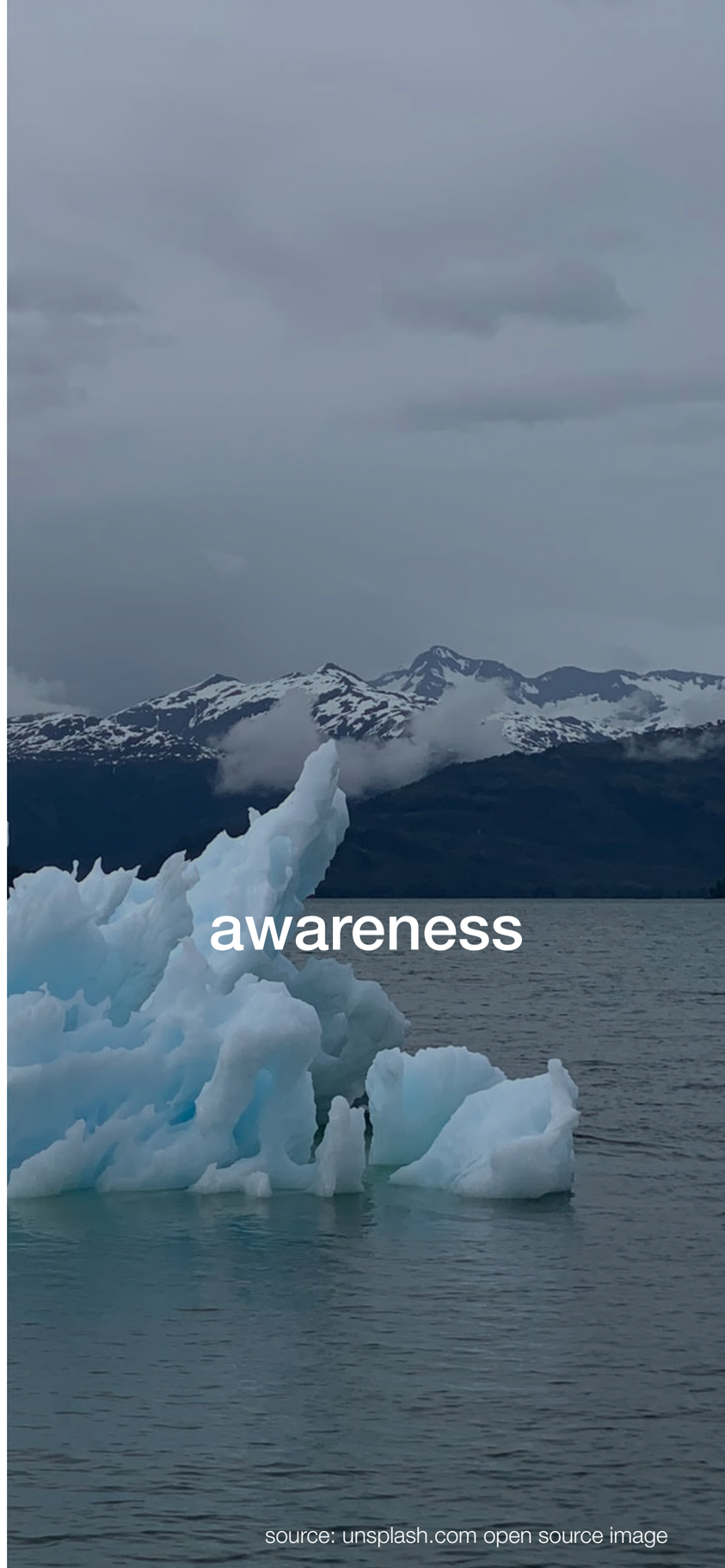
Hypothesis

„What qualities & values can sharing on the scale of the neighbourhood provide in social, spatial and technical domains for living environment?”

Research question


social
resiliency
source: Dortemandrup, Lange Eng


affordability
source: unsplash.com open source image


awareness
source: unsplash.com open source image

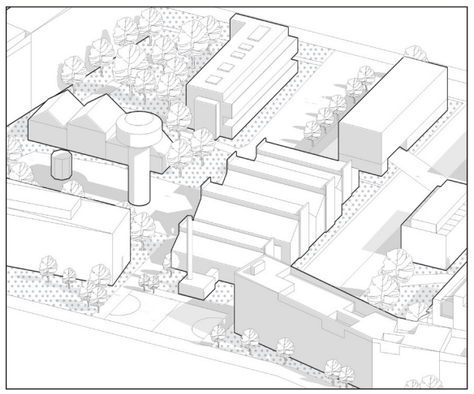
Thematic research

Shared living models.


source: unsplash.com open source image

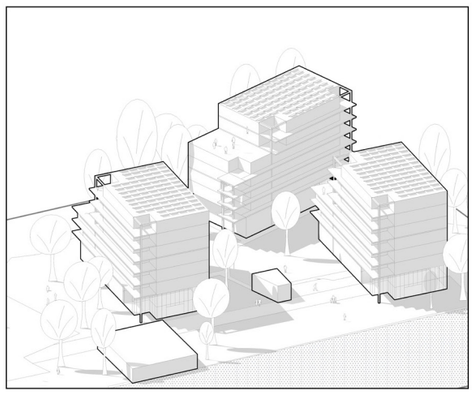
Research direction

Exploration of the share-oriented living models.



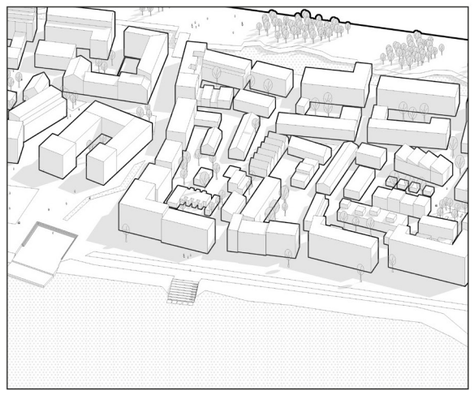
GWL Terrein

Multi-corporation



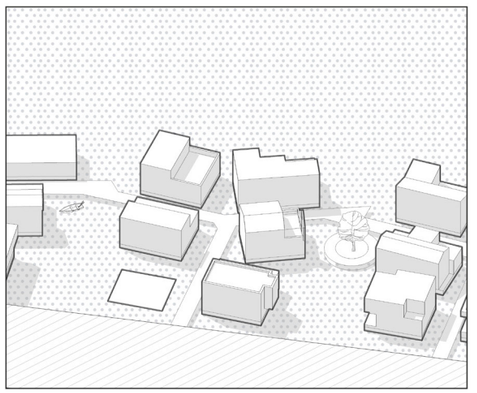
Spreefeld

Living cooperative



BO01

Public-private cooperation

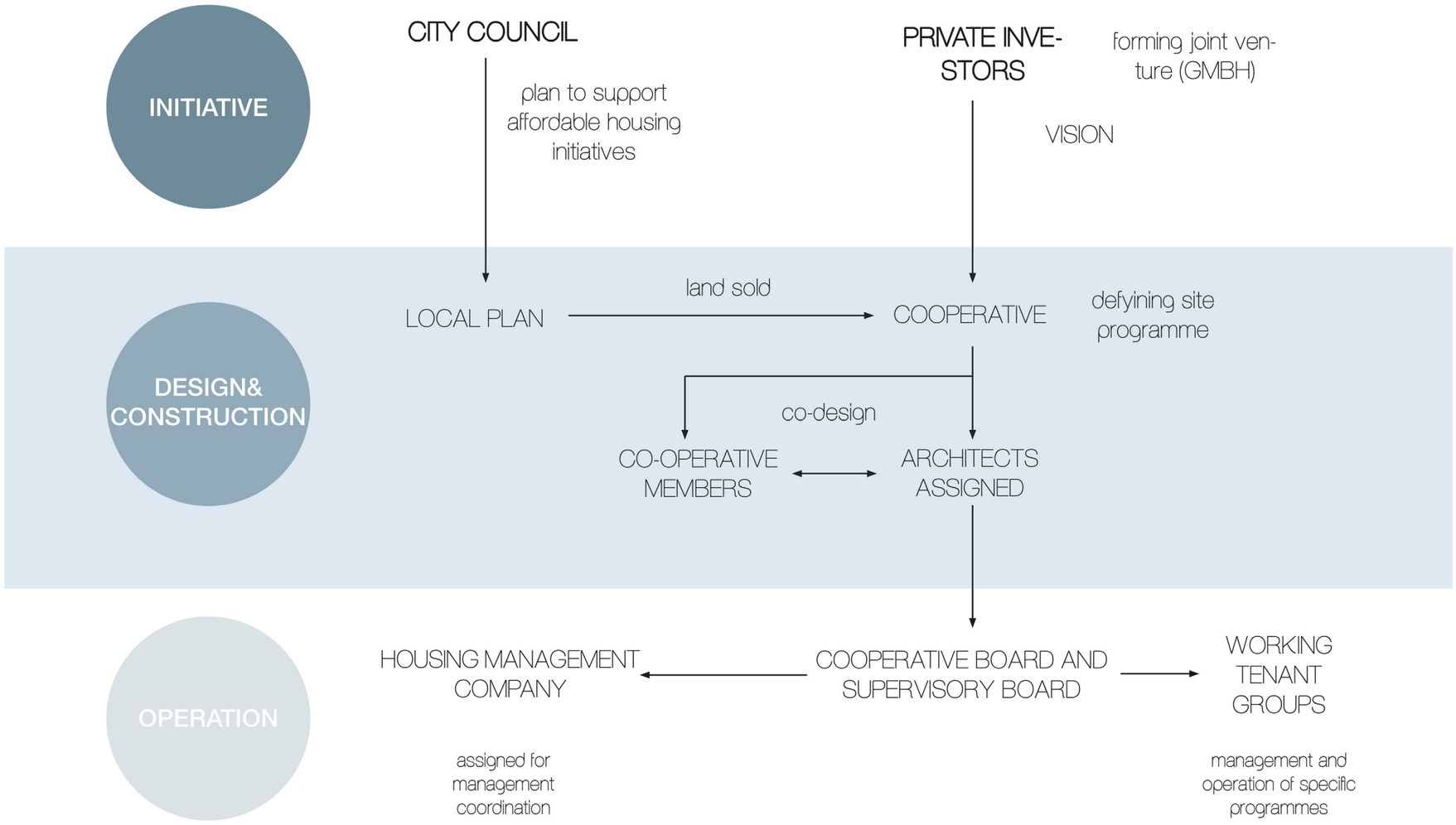


Schoonship

CPO

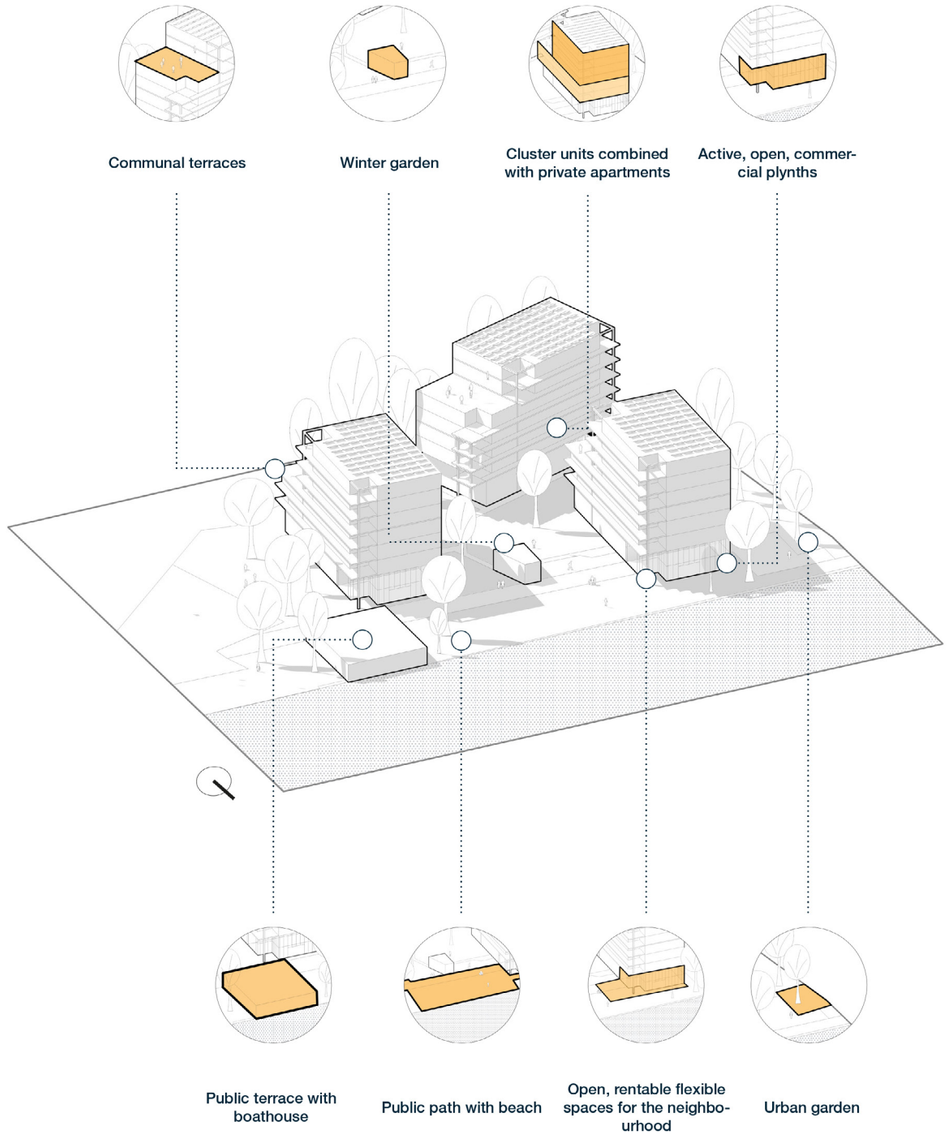
Case studies

Case chosen with relevancy to thematics & context site.



Initiative

Analyzes of the project realisation process.



Architectural outcome

Reflection on programme & spaces related to sharing.

SHARED FUNCTIONAL PROGRAMME

MULTI-FUNTIONAL RENTABLE SPACE

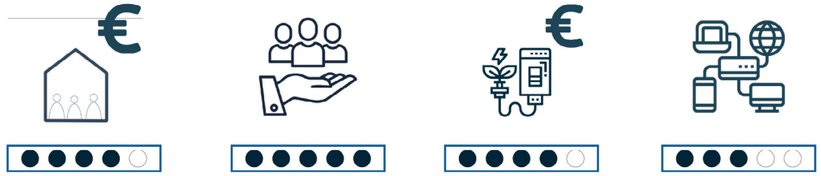
CO-WORKING PROGRAMME

ELEVATED COLLECTIVE SPACE

GUEST APARTMENTS

KIDS SPACE

ECONOMIC & SOCIAL VALUES



AFFORDABLE HOUSING

ADDED VALUE FOR WHOLE DISTRICT

LONG-TERM ECONOMIC VALUES

KNOWLEDGE SHARING

SHARED USE OF SPACE | OBJECTS

SHARED KITCHENS

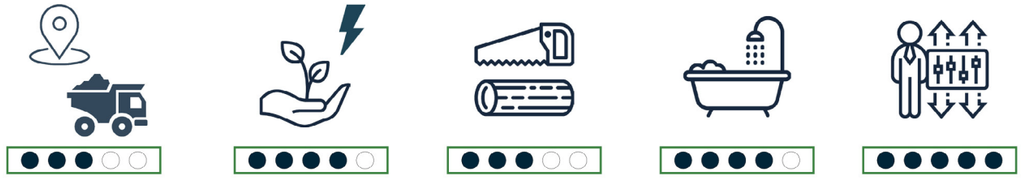
SHARED LIVING ROOMS

SHARED STORAGE SPACE

SHARED LAUNDRIES

EVENT SPACE

BUILDING COMPONENTS



LOCAL MATERIALS

LOW-EMBODIED ENERGY

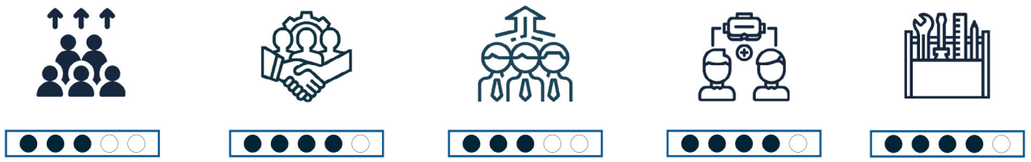
TIMBER COMPONENTS

BATHROOM CATALOG

FLEXIBILITY VIA STRUCTURE

SIMPLICITY

USERS PARTICIPATION IN DECISION-MAKING



FORMING SHARED VISION

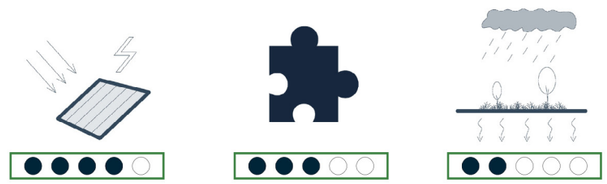
CO-DESIGN WITH ARCHITECTS

COOPERATIVE BOARD

WORKING TEAMS

DIY INTERIORS OF APARTMENTS

ENERGY & MATERIAL FLOWS



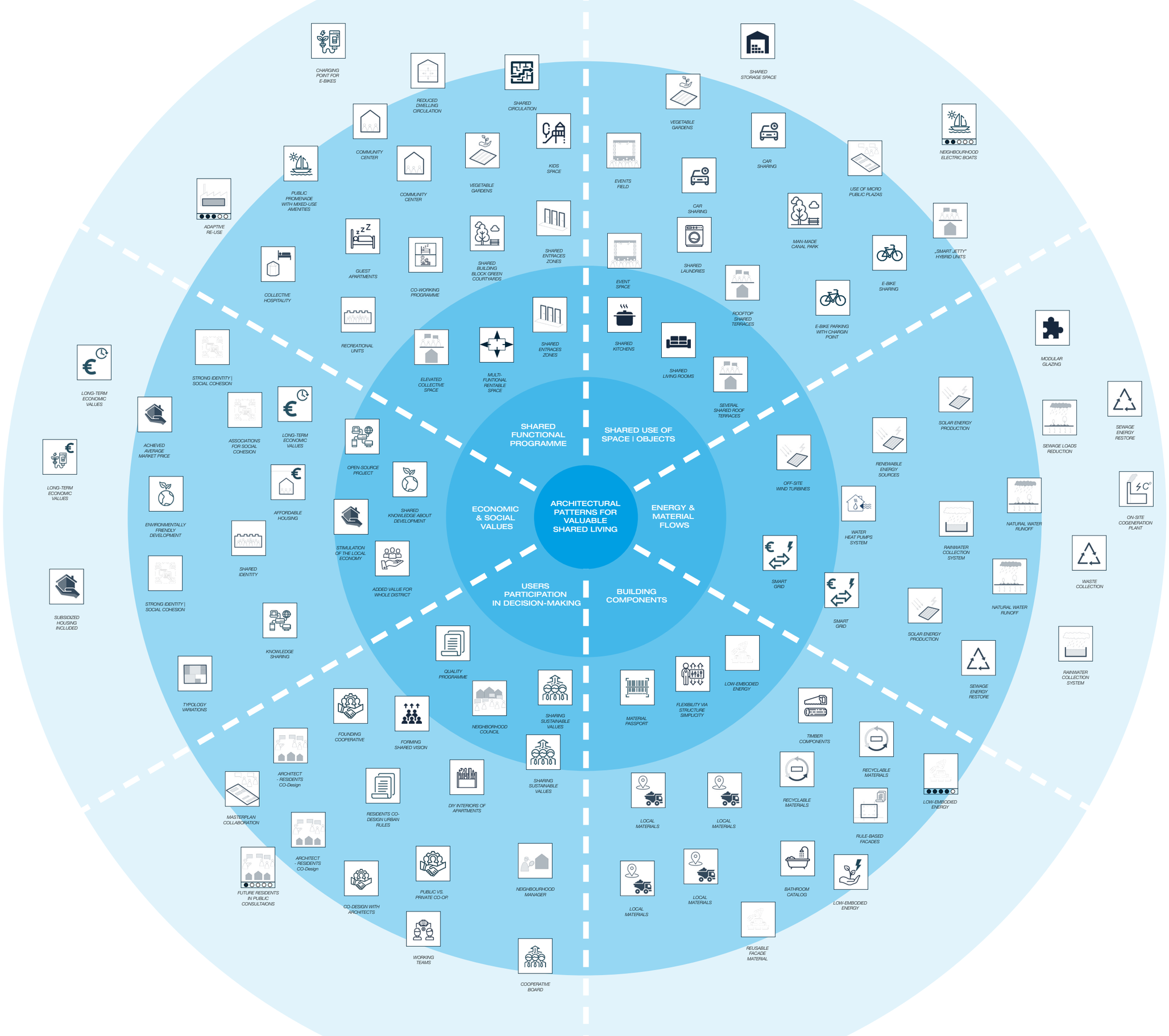
RENEWABLE ENERGY SOURCES

MODULAR GLAZING

NATURAL WATER RUNOFF

Patterns

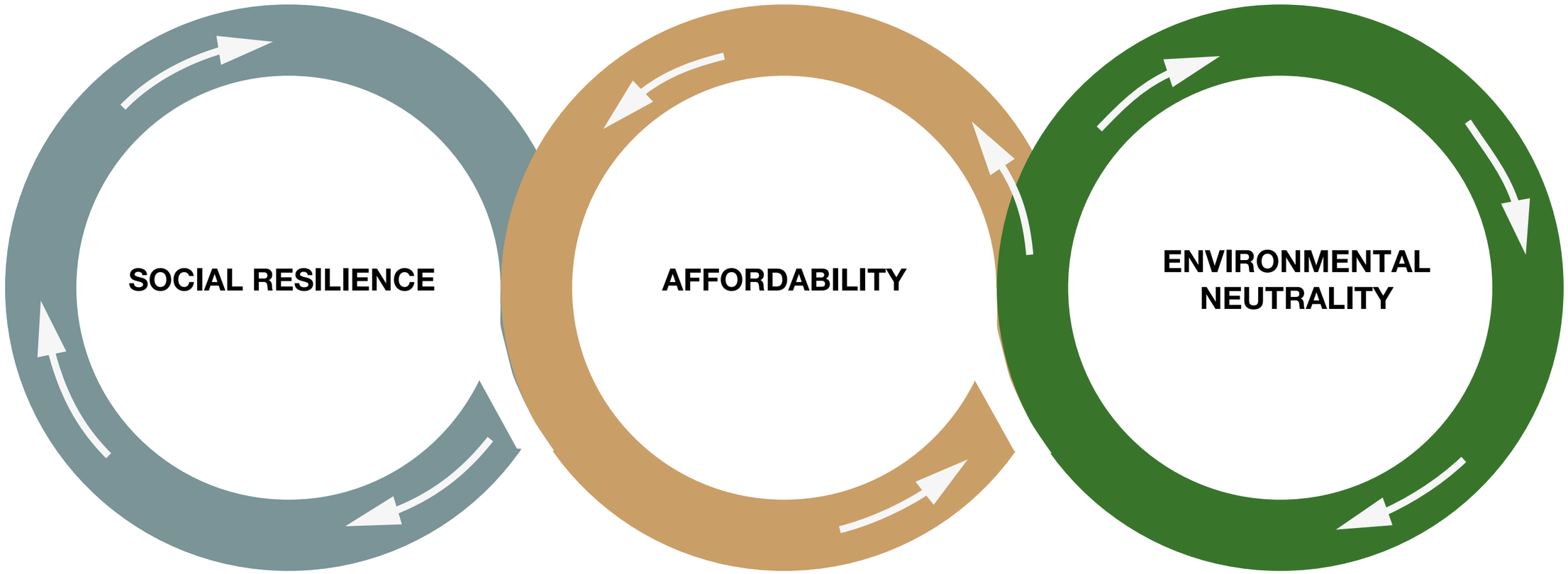
Catalog of solutions related to qualities of shared living.


SHARED FUNCTIONAL PROGRAMME
SHARED USE OF SPACE | OBJECTS
ECONOMIC & SOCIAL VALUES
ARCHITECTURAL PATTERNS FOR VALUABLE SHARED LIVING
ENERGY & MATERIAL FLOWS
USERS PARTICIPATION IN DECISION-MAKING
BUILDING COMPONENTS
CHARGING POINT FOR E-BIKES
REDUCED DWELLING CIRCULATION
SHARED CIRCULATION
SHARED STORAGE SPACE
COMMUNITY CENTER
VEGETABLE GARDENS
KIDS SPACE
VEGETABLE GARDENS
NEIGHBOURHOOD ELECTRIC BOATS
PUBLIC PROMENADE WITH MIXED-USE AMENITIES
COMMUNITY CENTER
EVENTS FIELD
CAR SHARING
CAR SHARING
USE OF MICRO PUBLIC PLAZAS
ADAPTIVE RE-USE
SHARED BUILDING BLOCK GREEN COURTYARDS
SHARED ENTRACES ZONES
SHARED LAUNDRIES
MAN-MADE CANAL PARK
„SMART JETTY" HYBRID UNITS
GUEST APARTMENTS
CO-WORKING PROGRAMME
EVENT SPACE
E-BIKE SHARING
COLLECTIVE HOSPITALITY
ROOFTOP SHARED TERRACES
E-BIKE PARKING WITH CHARGIN POINT
RECREATIONAL UNITS
SHARED ENTRACES ZONES
SHARED KITCHENS
MODULAR GLAZING
STRONG IDENTITY | SOCIAL COHESION
ELEVATED COLLECTIVE SPACE
MULTI-FUNTIONAL RENTABLE SPACE
SHARED LIVING ROOMS
SEVERAL SHARED ROOF TERRACES
LONG-TERM ECONOMIC VALUES
SOLAR ENERGY PRODUCTION
SEWAGE ENERGY RESTORE
ACHIEVED AVERAGE MARKET PRICE
ASSOCIATIONS FOR SOCIAL COHESION
LONG-TERM ECONOMIC VALUES
SEWAGE LOADS REDUCTION
OPEN-SOURCE PROJECT
OFF-SITE WIND TURBINES
RENEWABLE ENERGY SOURCES
LONG-TERM ECONOMIC VALUES
SHARED KNOWLEDGE ABOUT DEVELOPMENT
ON-SITE COGENERATION PLANT
AFFORDABLE HOUSING
ENVIRONMENTALLY FRIENDLY DEVELOPMENT
WATER HEAT PUMPS SYSTEM
NATURAL WATER RUNOFF
STIMULATION OF THE LOCAL ECONOMY
RAINWATER COLLECTION SYSTEM
SHARED IDENTITY
WASTE COLLECTION
ADDED VALUE FOR WHOLE DISTRICT
SMART GRID
NATURAL WATER RUNOFF
STRONG IDENTITY | SOCIAL COHESION
SUBSIDIZED HOUSING INCLUDED
SOLAR ENERGY PRODUCTION
KNOWLEDGE SHARING
SEWAGE ENERGY RESTORE
RAINWATER COLLECTION SYSTEM
QUALITY PROGRAMME
LOW-EMBODIED ENERGY
TYPOLOGY VARIATIONS
FOUNDING COOPERATIVE
NEIGHBORHOOD COUNCIL
SHARING SUSTAINABLE VALUES
FORMING SHARED VISION
MATERIAL PASSPORT
FLEXIBILITY VIA STRUCTURE SIMPLICITY
TIMBER COMPONENTS
RECYCLABLE MATERIALS
ARCHITECT - RESIDENTS CO-Design
SHARING SUSTAINABLE VALUES
DIY INTERIORS OF APARTMENTS
RESIDENTS CO-DESIGN URBAN RULES
LOCAL MATERIALS
LOCAL MATERIALS
RECYCLABLE MATERIALS
LOW-EMBODIED ENERGY
MASTERPLAN COLLABORATION
RULE-BASED FACADES
ARCHITECT - RESIDENTS CO-Design
FUTURE RESIDENTS IN PUBLIC CONSULTATIONS
PUBLIC VS. PRIVATE CO-OP
NEIGHBOURHOOD MANAGER
BATHROOM CATALOG
LOW-EMBODIED ENERGY
CO-DESIGN WITH ARCHITECTS
LOCAL MATERIALS
LOCAL MATERIALS
WORKING TEAMS
REUSABLE FACADE MATERIAL
COOPERATIVE BOARD

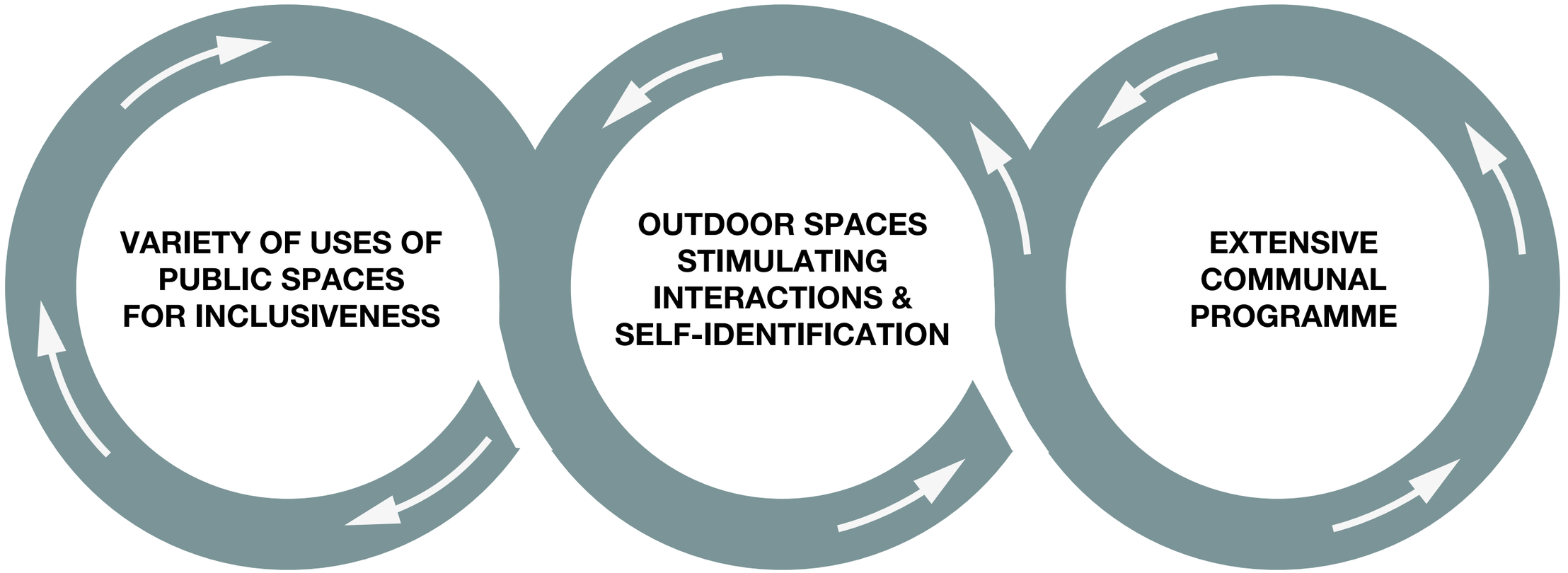
Research conclusions

Shared living models.

RESPONSE TO THE PROBLEM



SOCIAL RESILIENCE

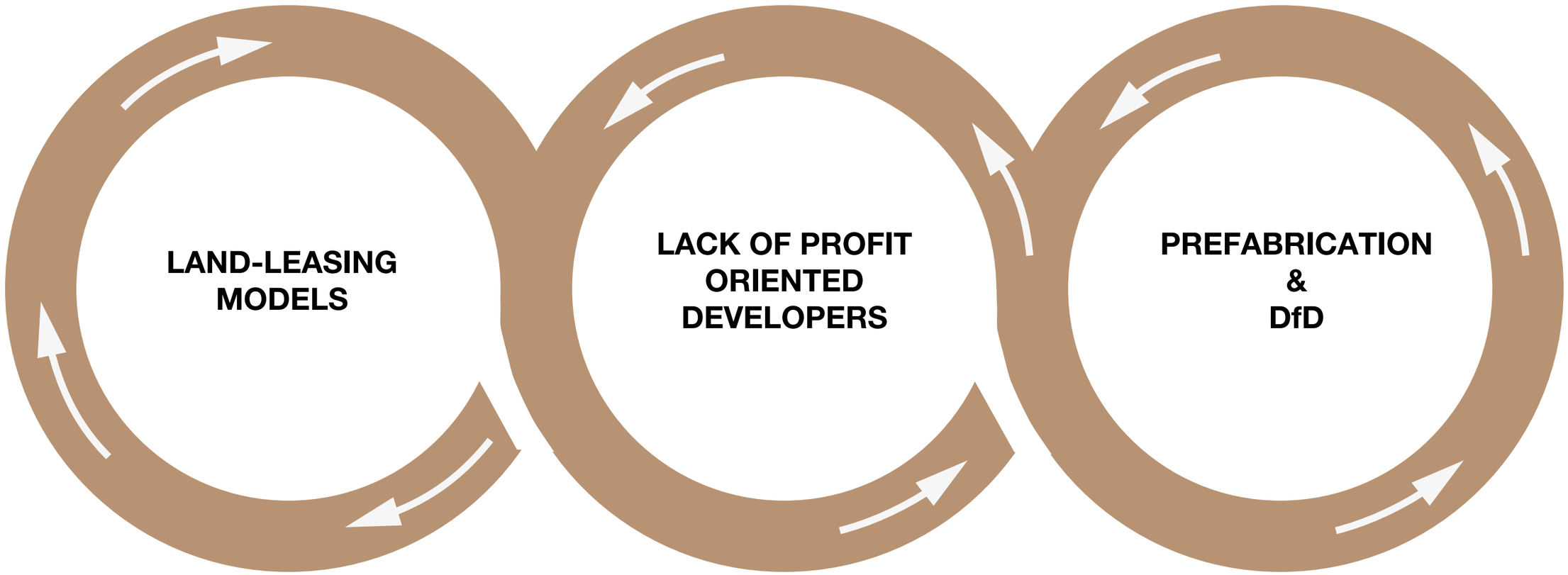


NEIGHBOURHOOD

URBAN BLOCK

BUILDING

AFFORDABILITY

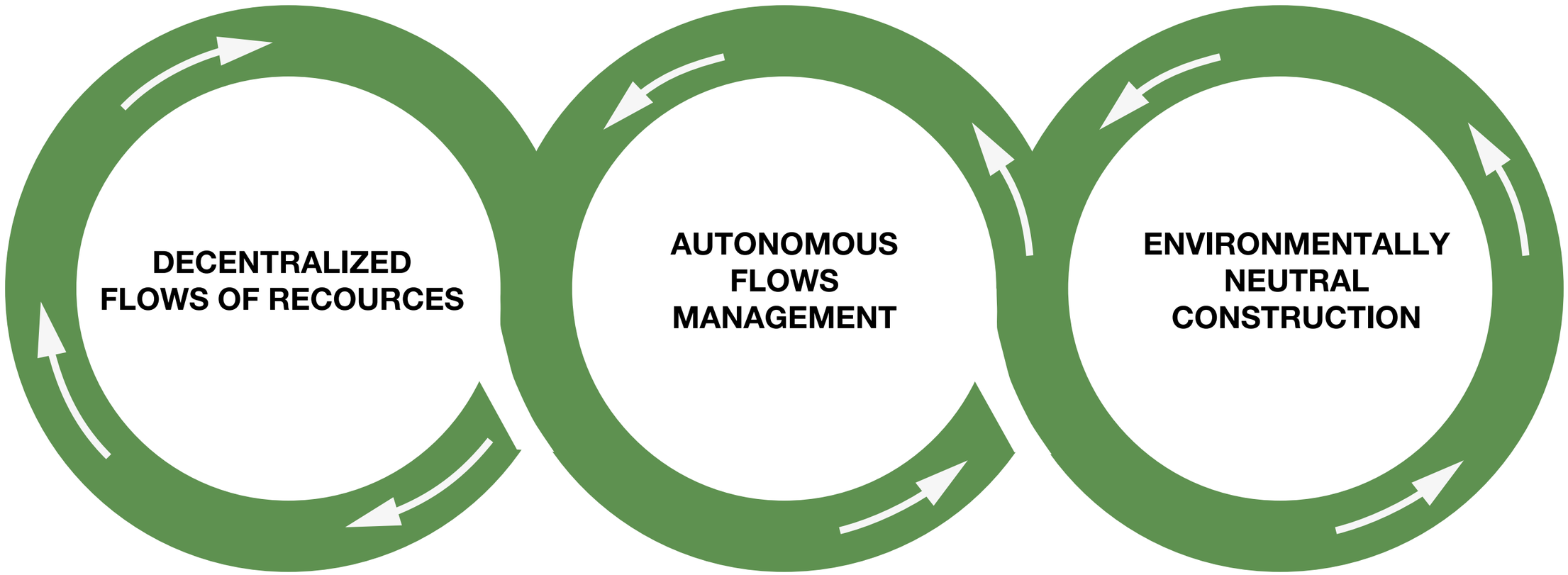


NEIGHBOURHOOD

URBAN BLOCK

BUILDING

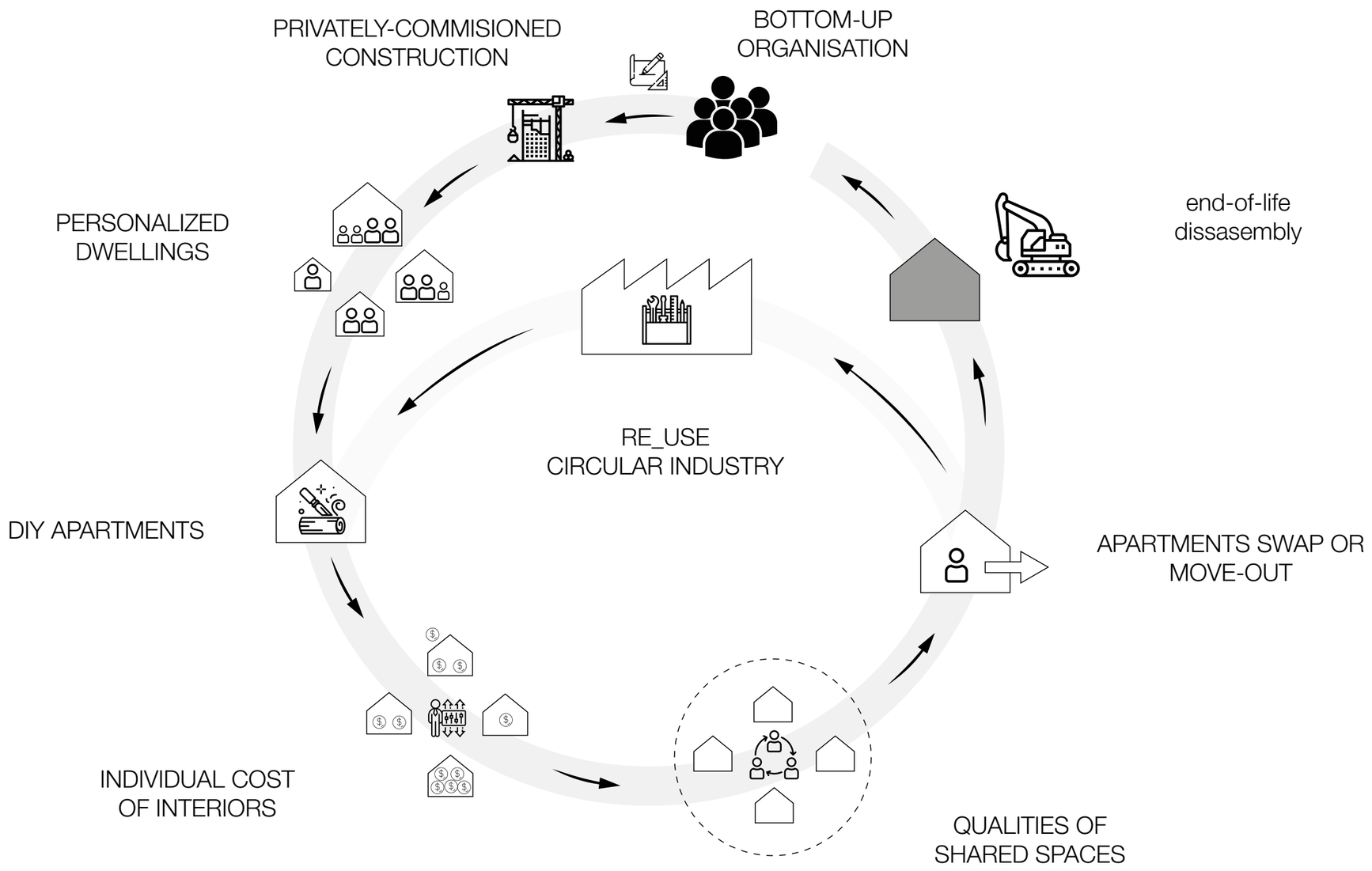
SUSTAINABILITY



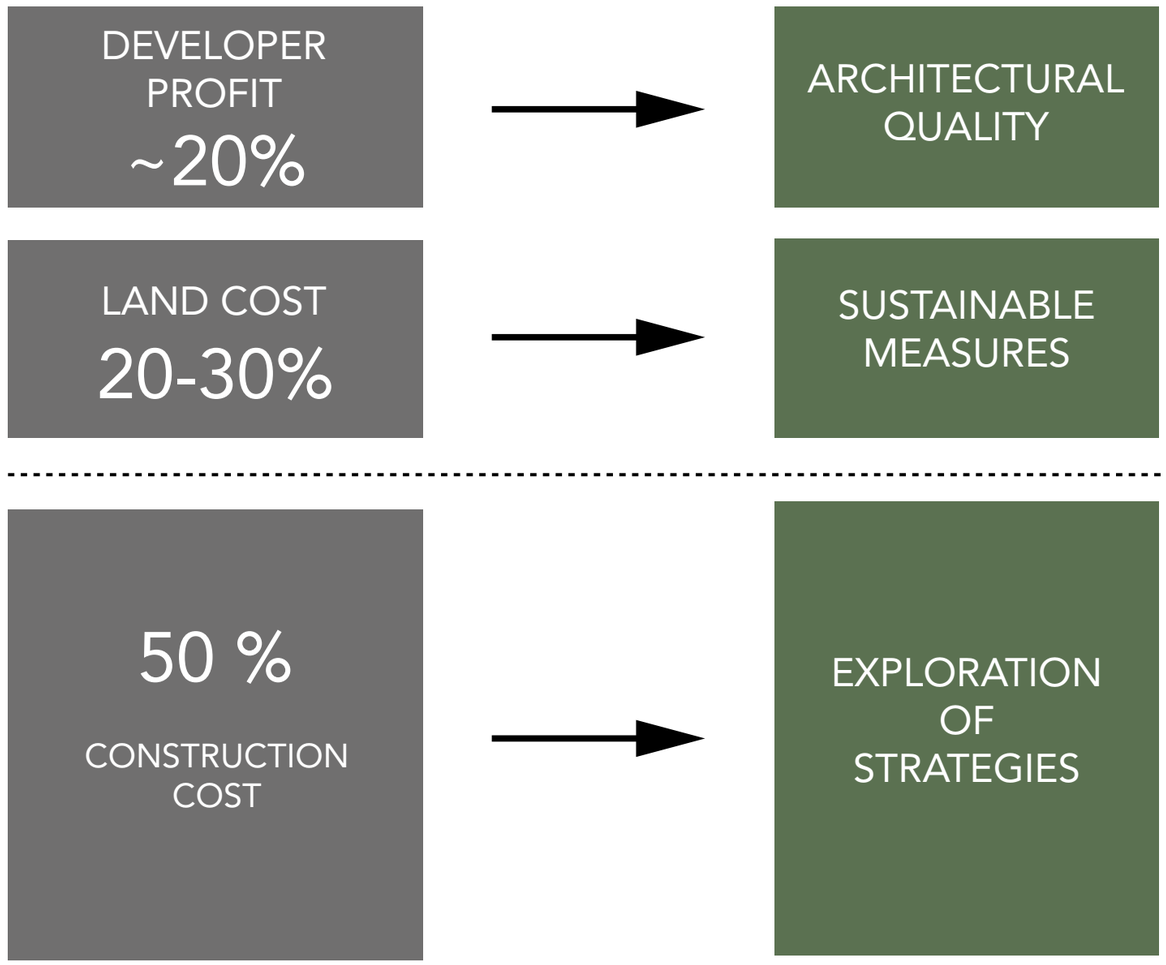
NEIGHBOURHOOD

URBAN BLOCK

BUILDING



Conclusive organisation

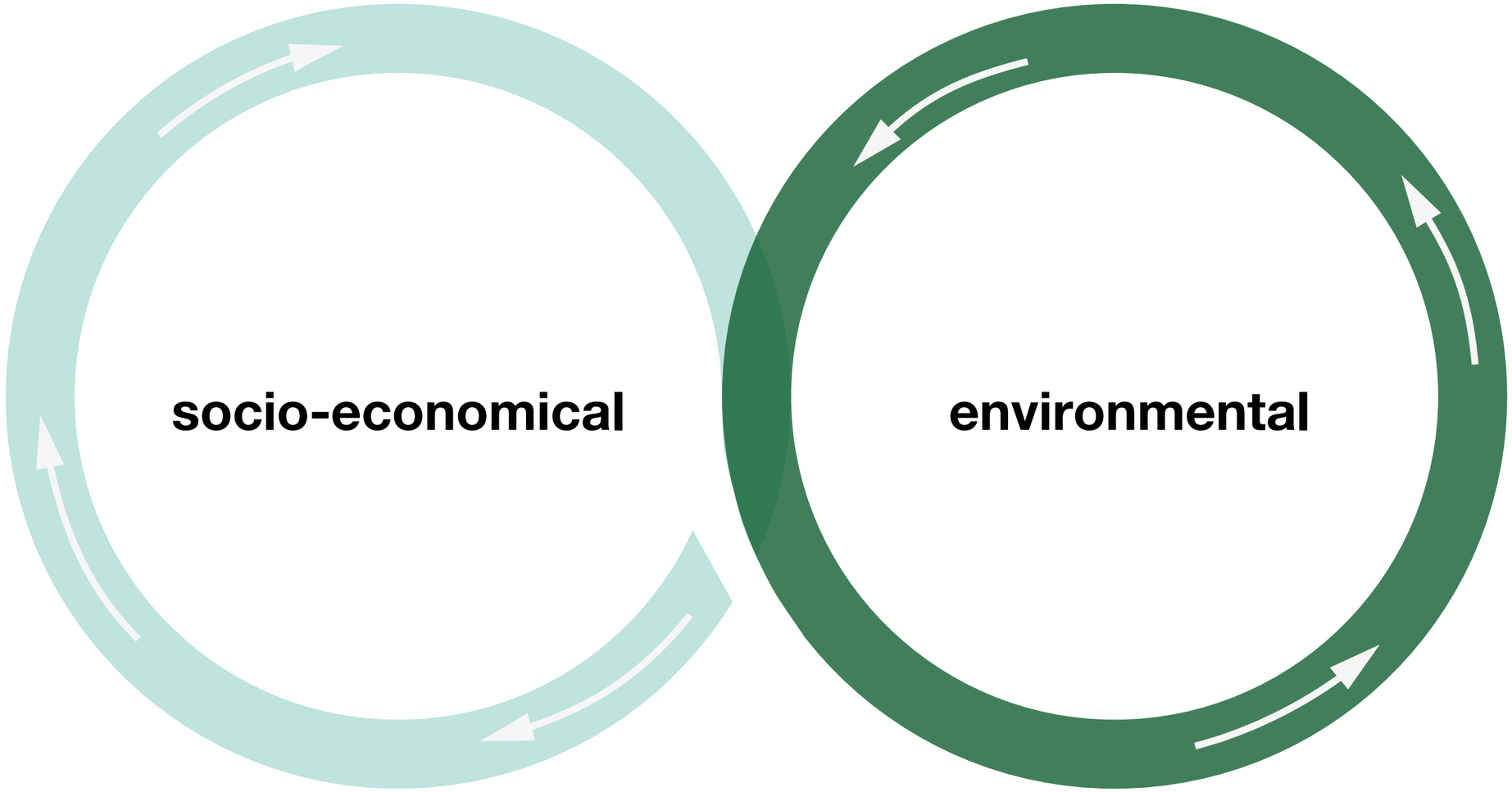


Conclusive justification of model.

Lack of profit of developer and municipal policies for land management creates opportunities for qualitative yet affordable housing.

Trajectory

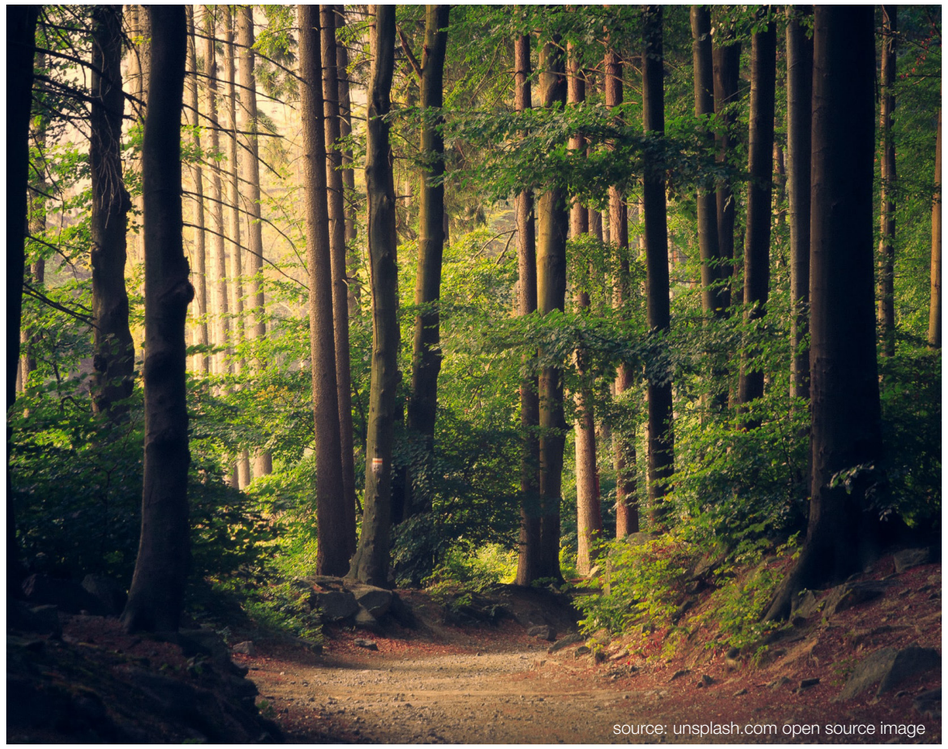
Concept



SUSTAINABILITY


source: unsplash.com open source image

SYM - together


source: unsplash.com open source image

BIO - life | nature

SYM | BIO

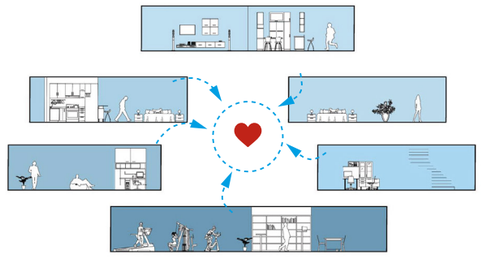
Concept of integrating environmentally-friendly strategies with shared living models to achieve qualitative, future-oriented residential design direction.

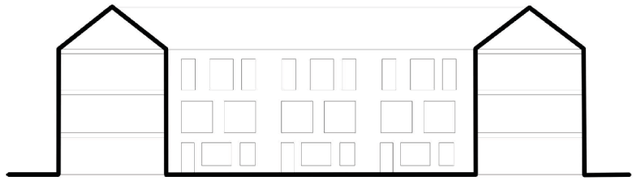

source: www.zoover.be

Learning from the vernacular

Traditional dutch Plaggenhut | Natural circular housing.

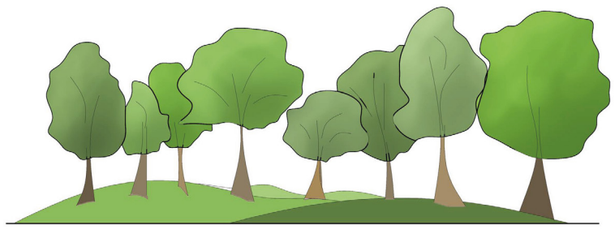
shared typology





urban shared living

?



natural landscape

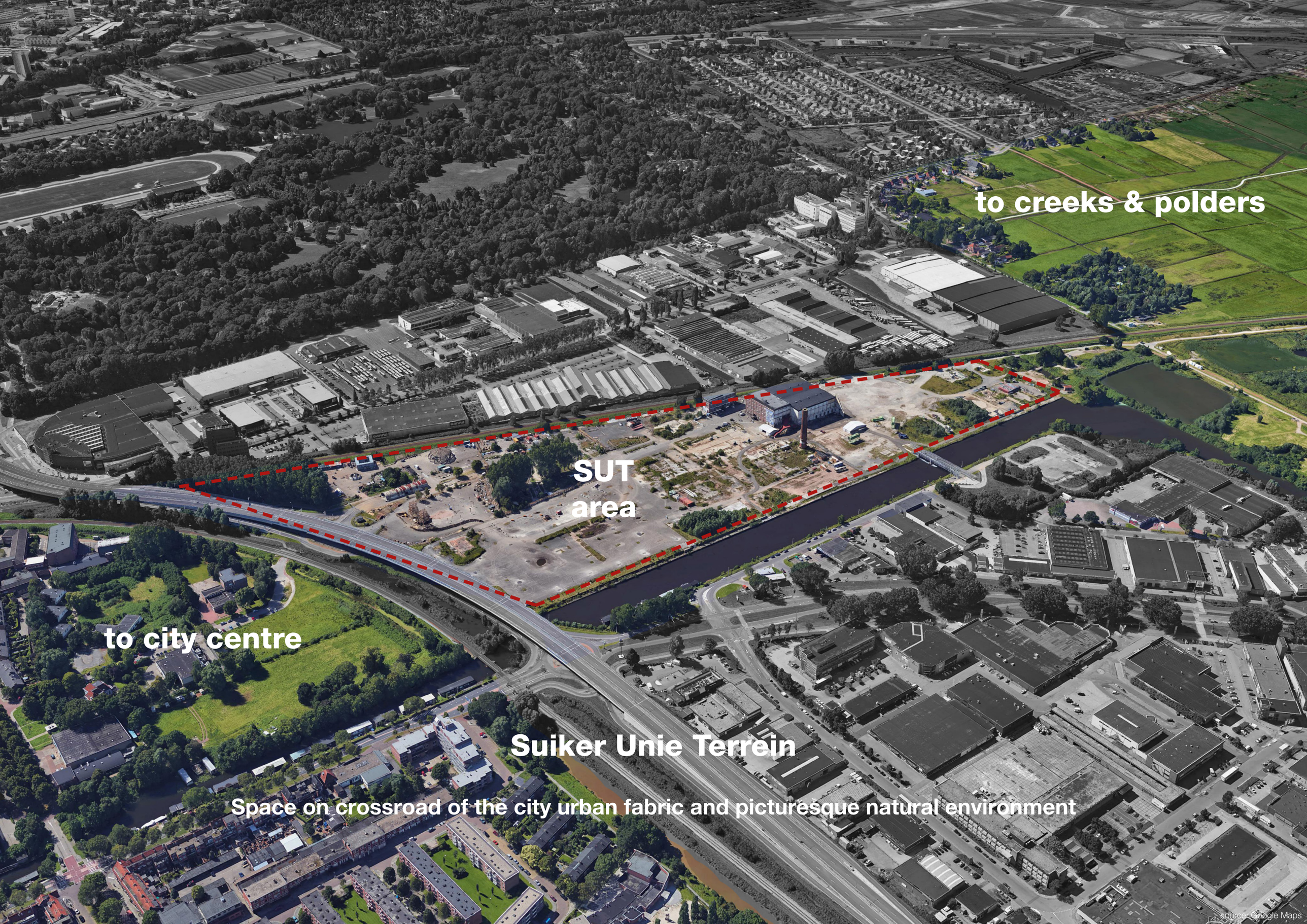
eco construction

Context

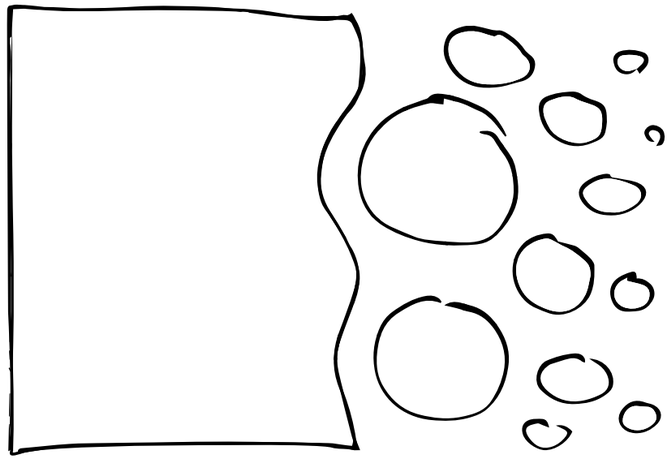
Suiker Unie Terrein Groningen

Site choice


POLDERS & CREEKS
WESTRING
road
CITY CENTER
GRONINGEN-LEUWAARDEN
railway
Suiker Unie Terrein
Post-industrial site predicted for sustainable housing developments.
source: Google Maps


to creeks & polders
SUT
area
to city centre
Suiker Unie Terrein
Space on crossroad of the city urban fabric and picturesque natural environment
source: Google Maps


source: own photography



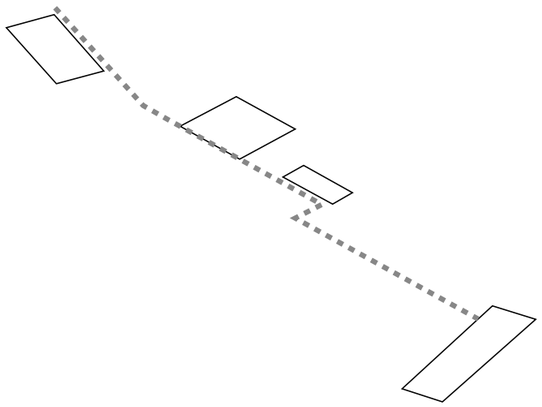

source: Google maps

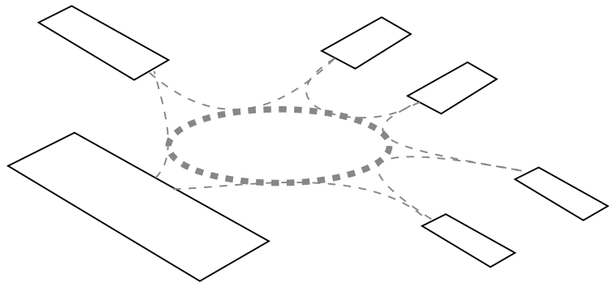
In-between

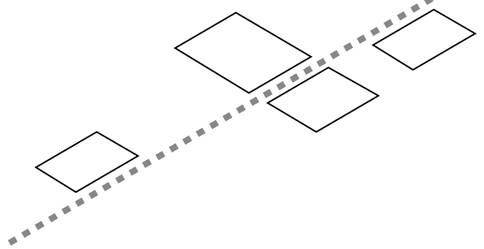
Main concept for the site design is development of connector between urban city life and the polders.

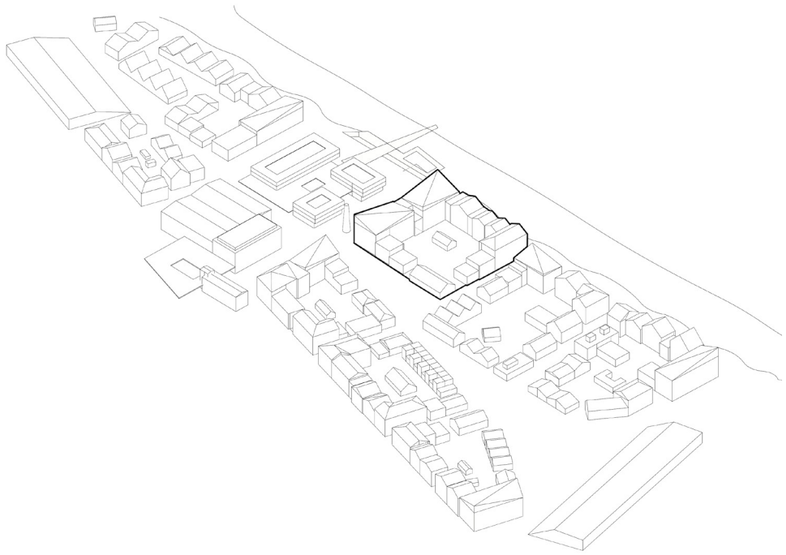
Exploration

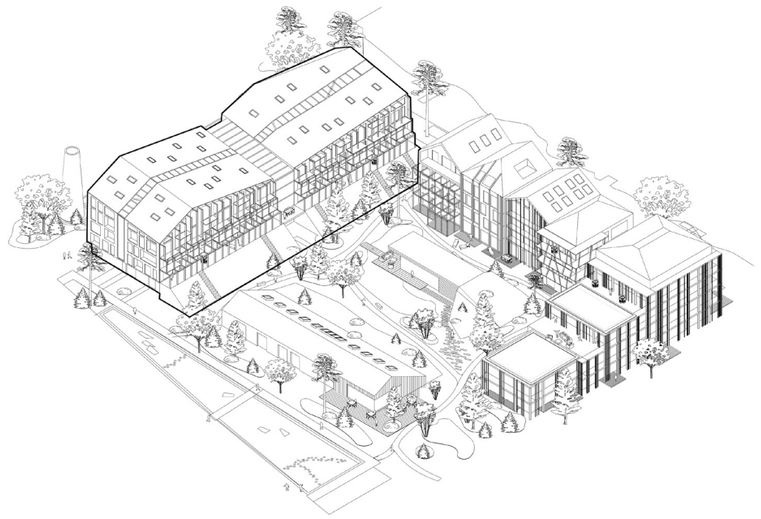
Project organisation.

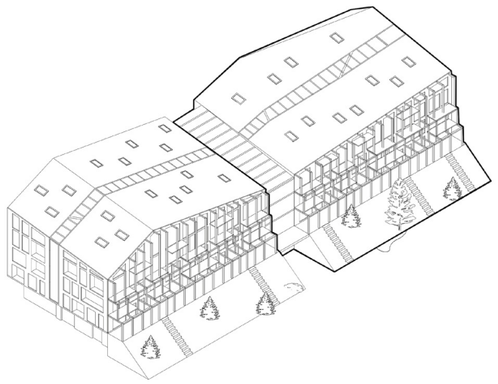










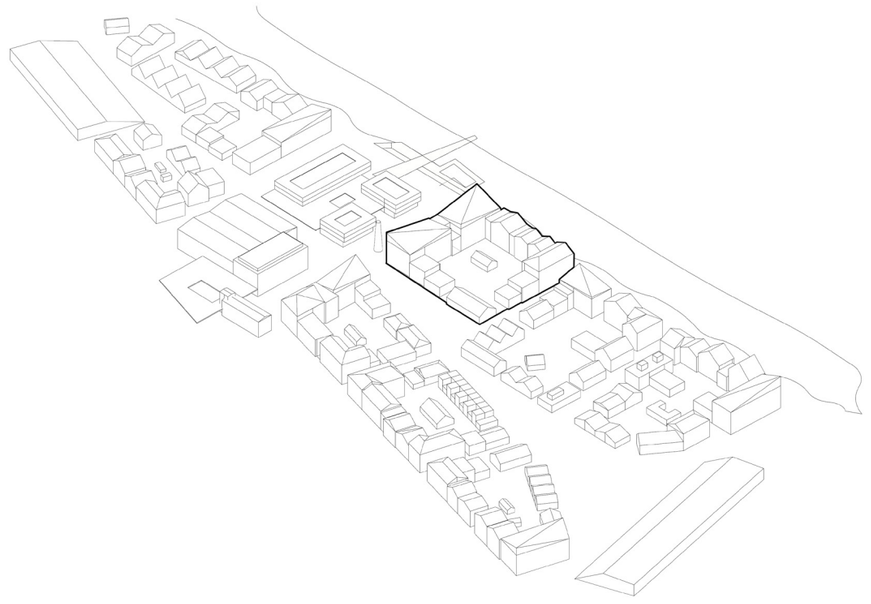


Nature for social inclusiveness

Nature as social&well-being stimulator

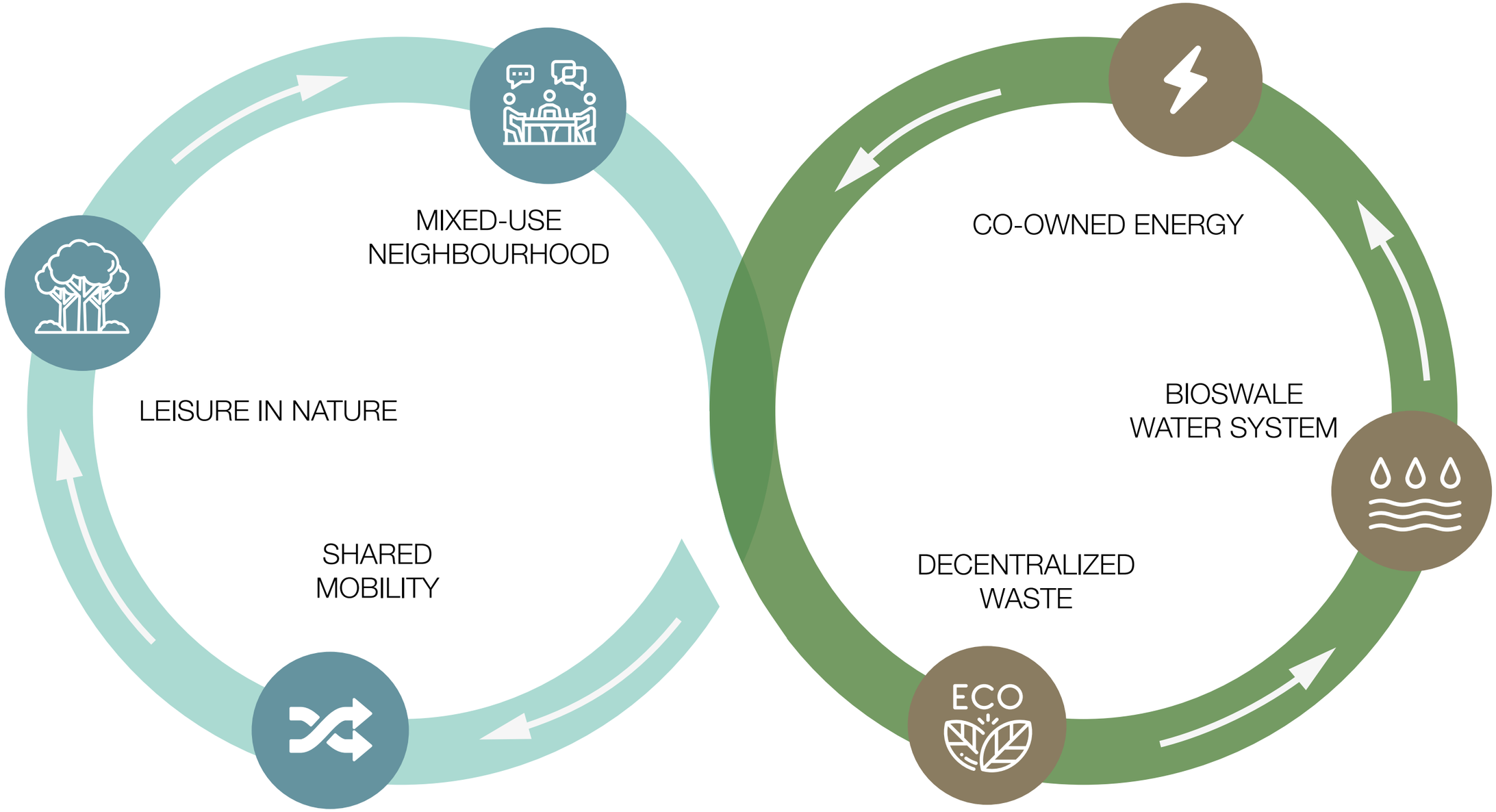
Qualities of living together

Backbones



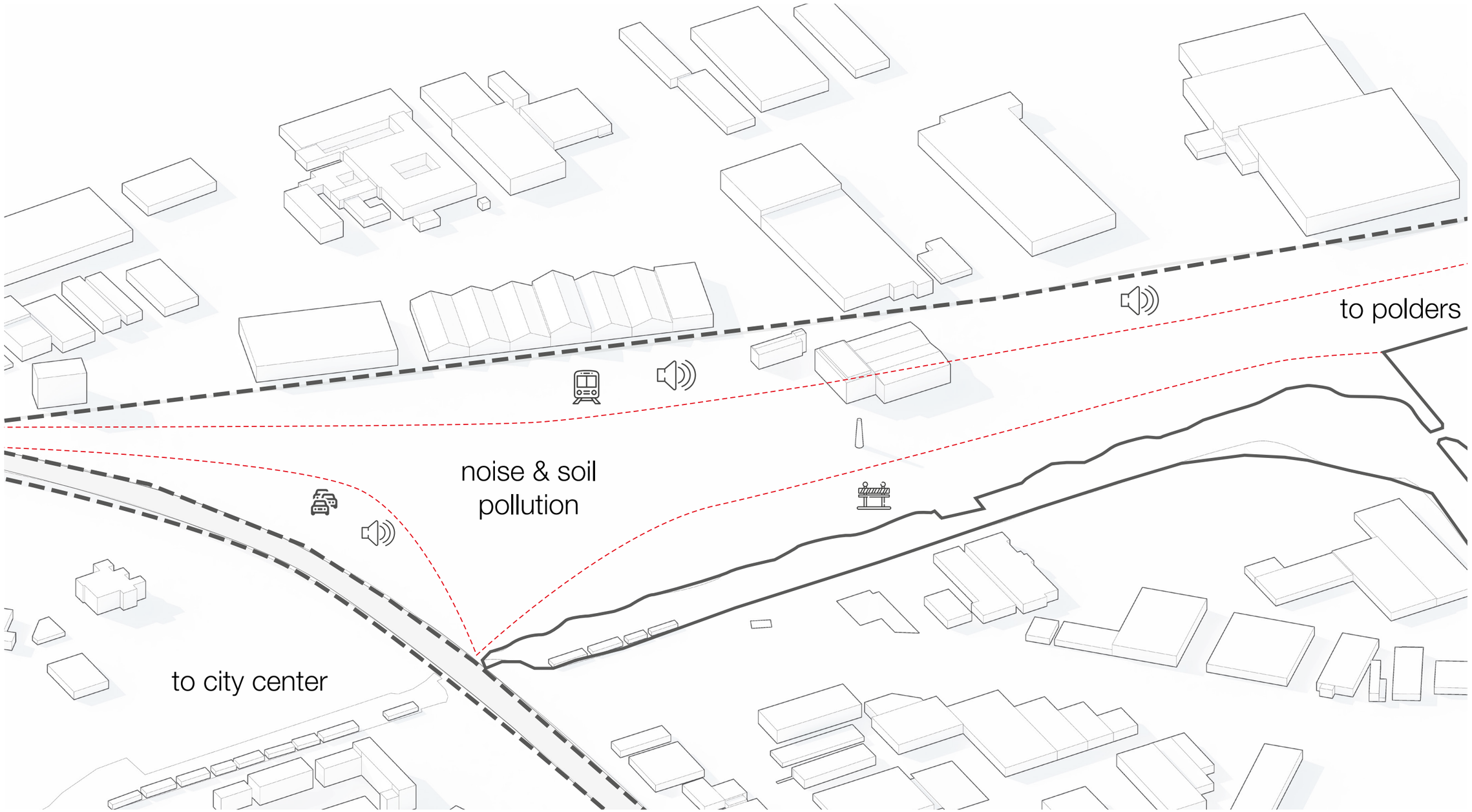
New SuikerUnie

Masterplan scale

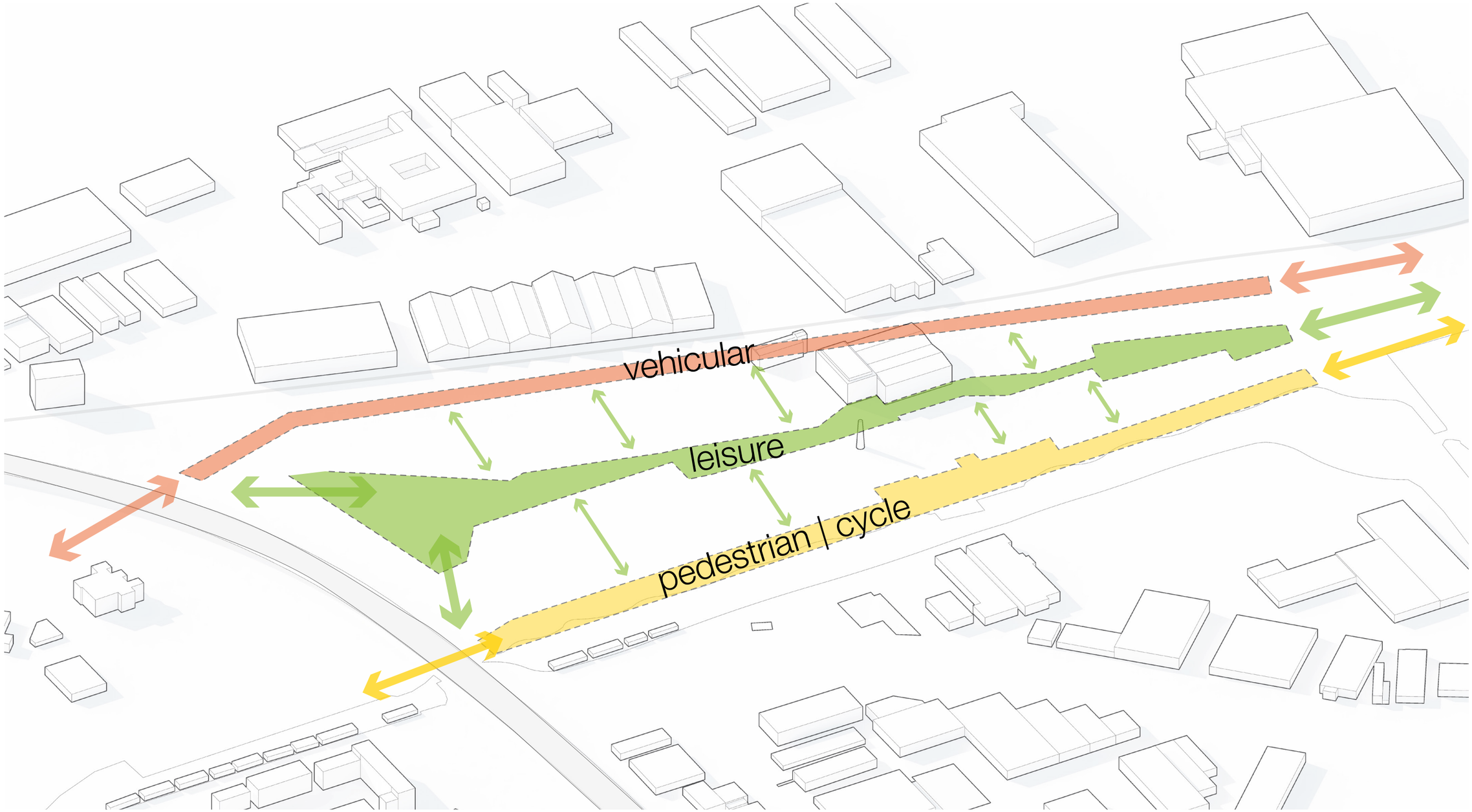


SYMBIO strategies

Masterplan ambitions focused on co-owned ways of use&management of recources flows.

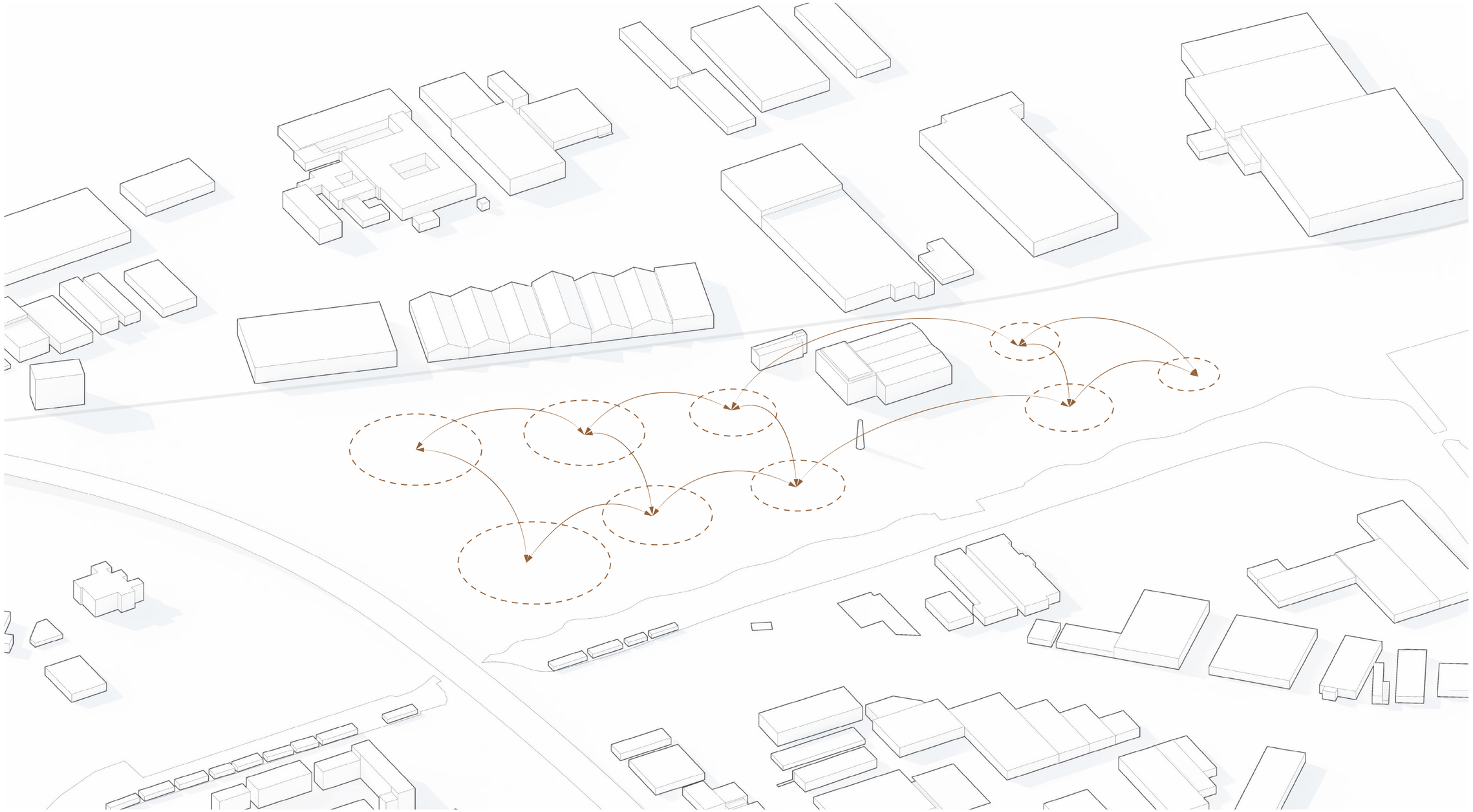


Reclaiming industrial zone to the city

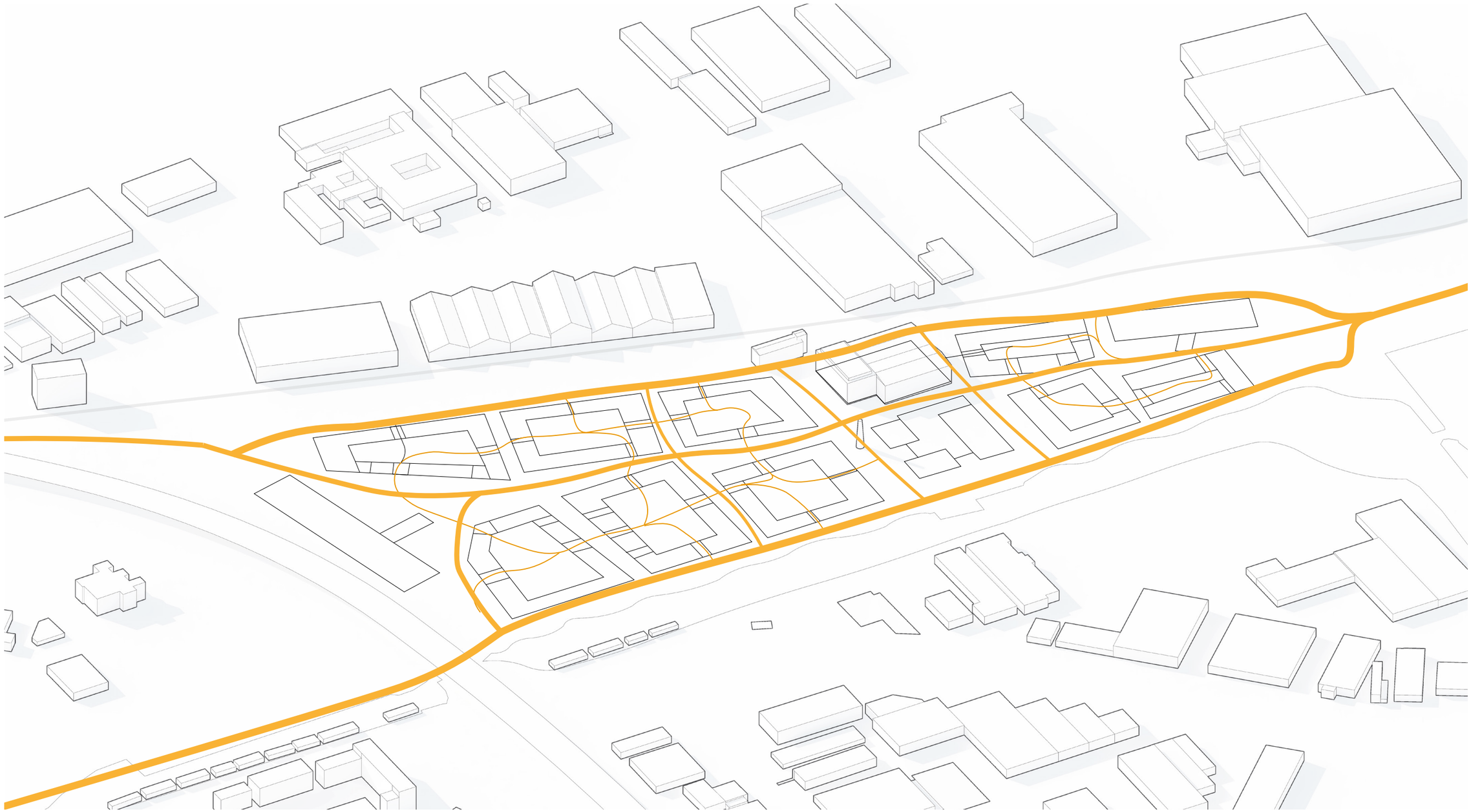


TRIPLE MOBILITY

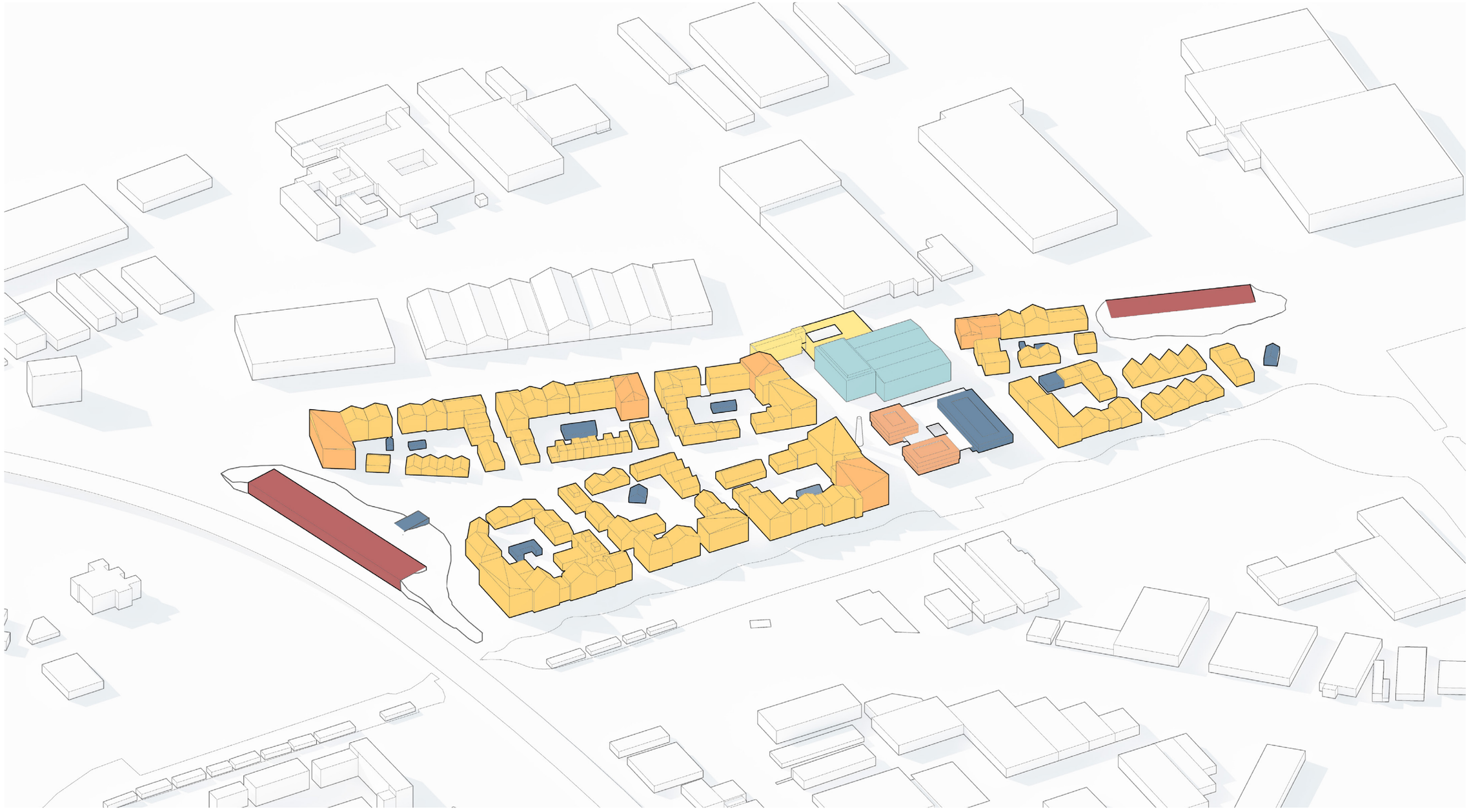
MOBILITY & ENERGY HUBS



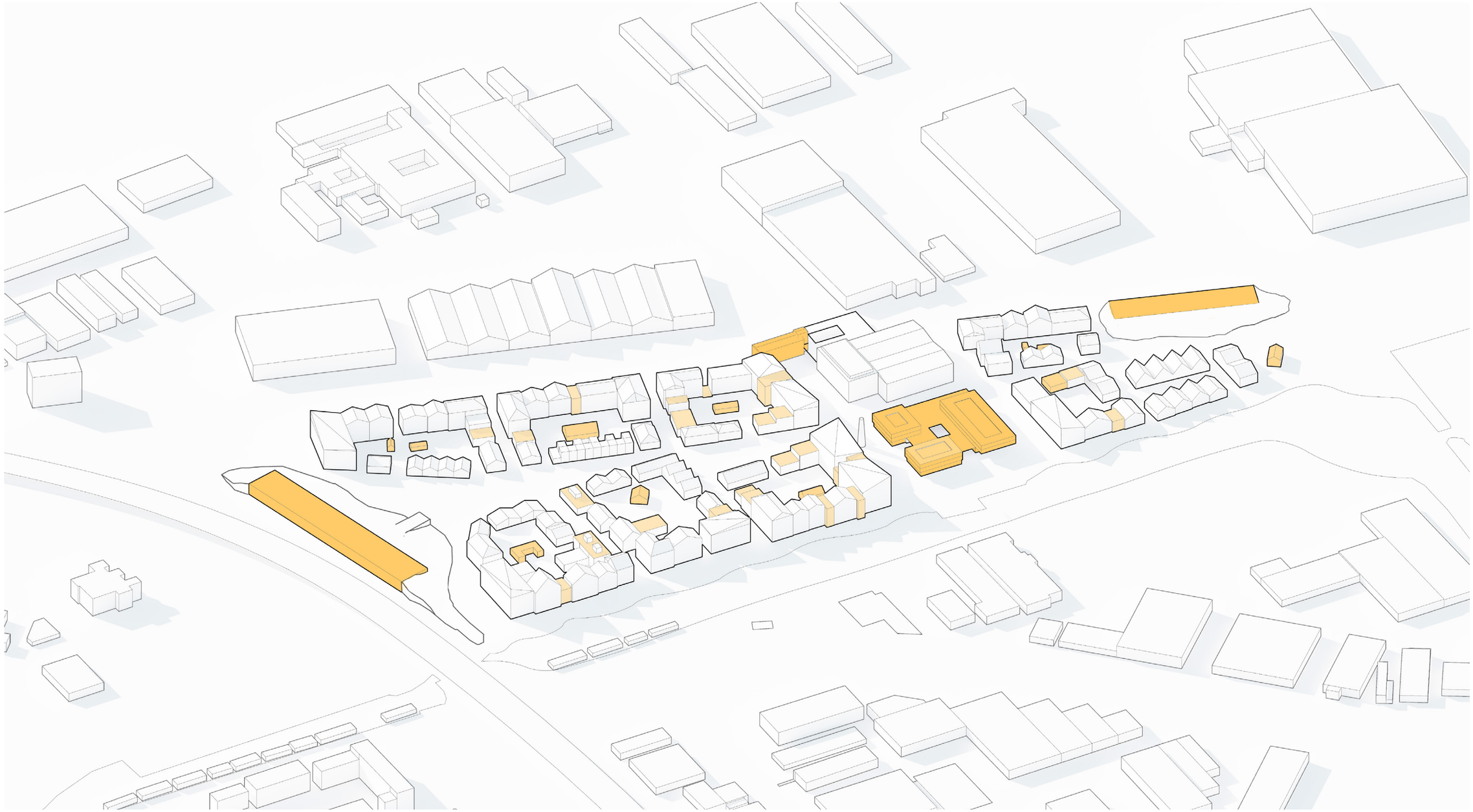
INTERCONNECTED BLOCKS



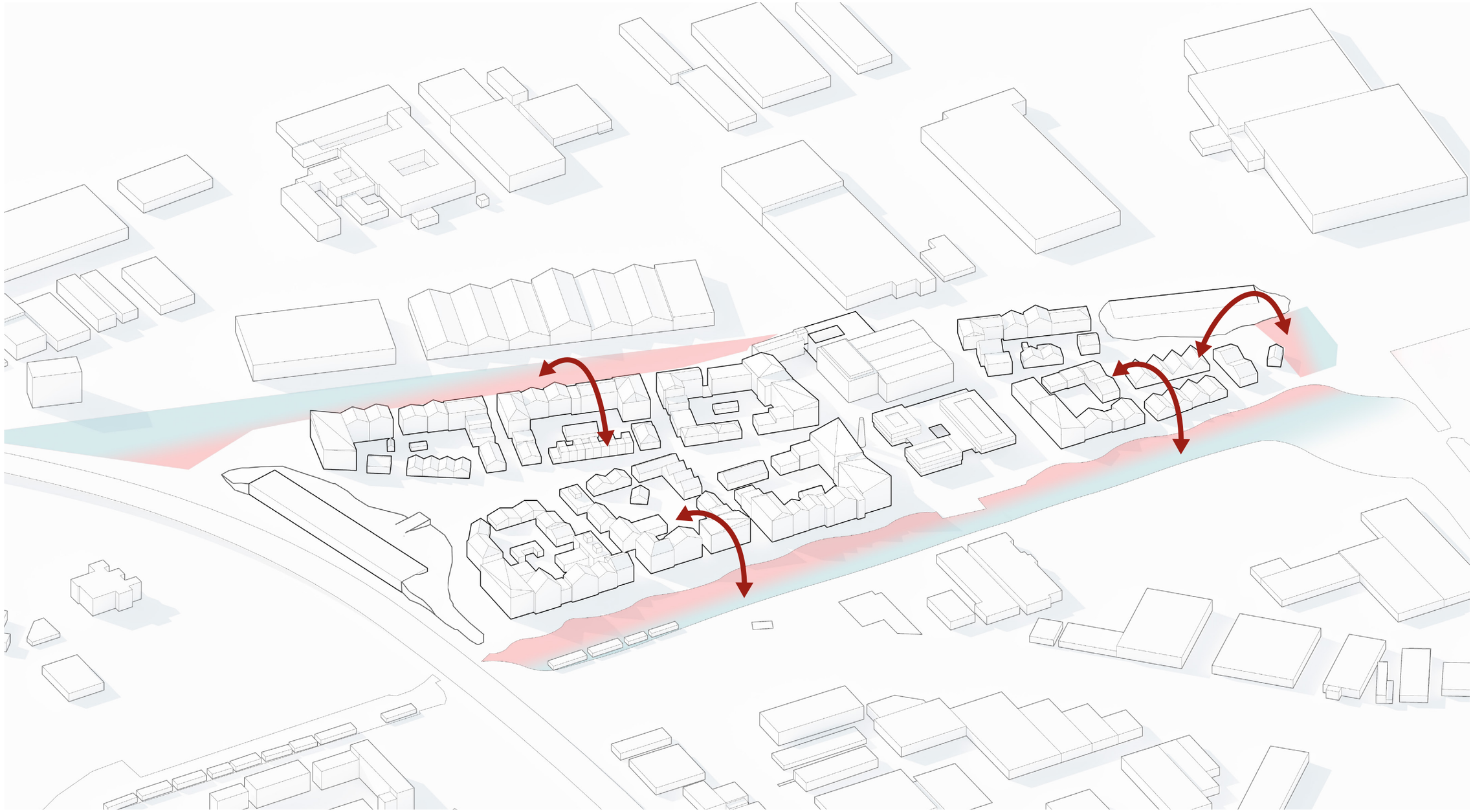
DENSE PEDESTRIAN NETWORK



MIXED_USE



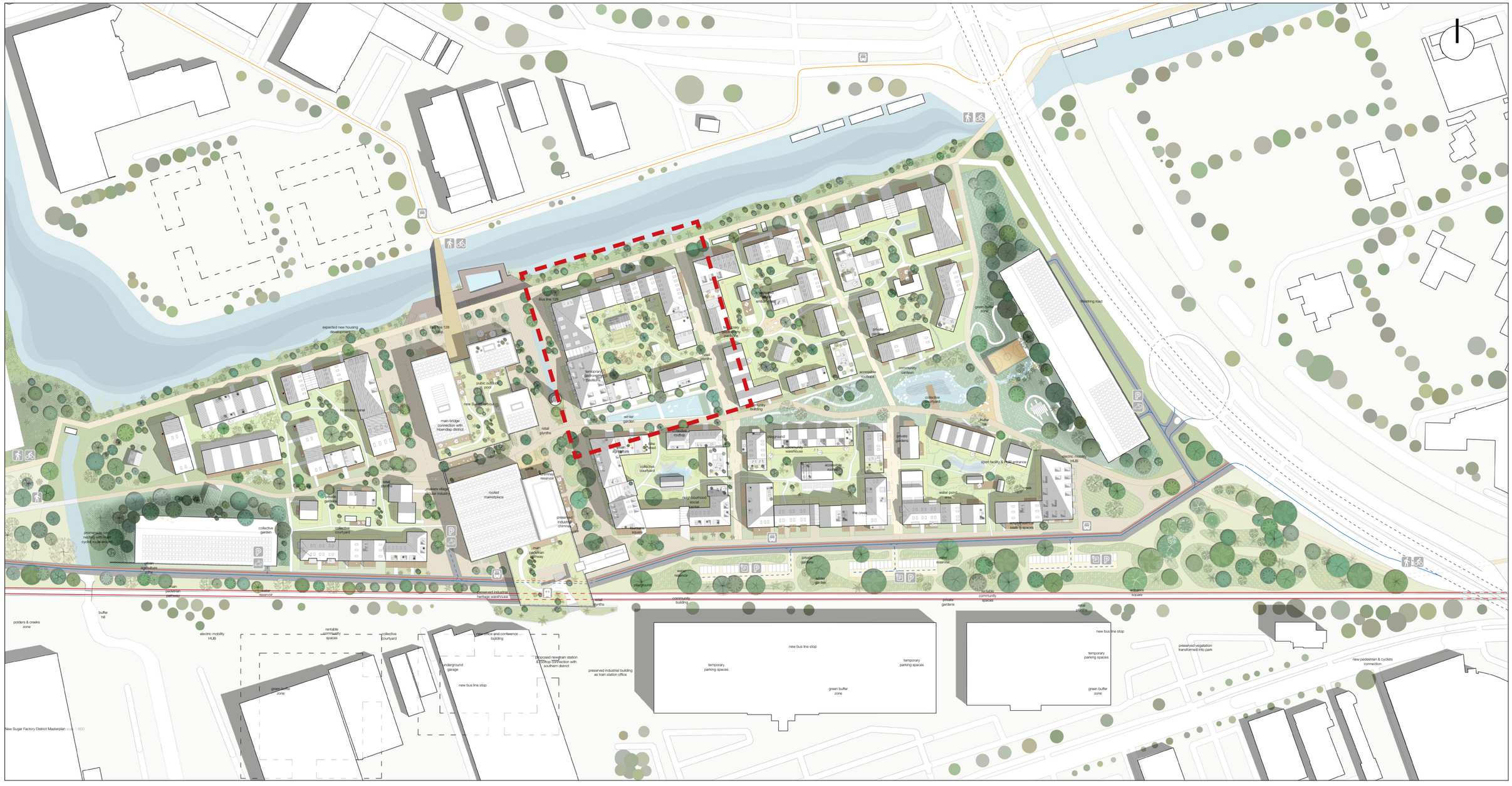
SHARED-USE PROMOTED



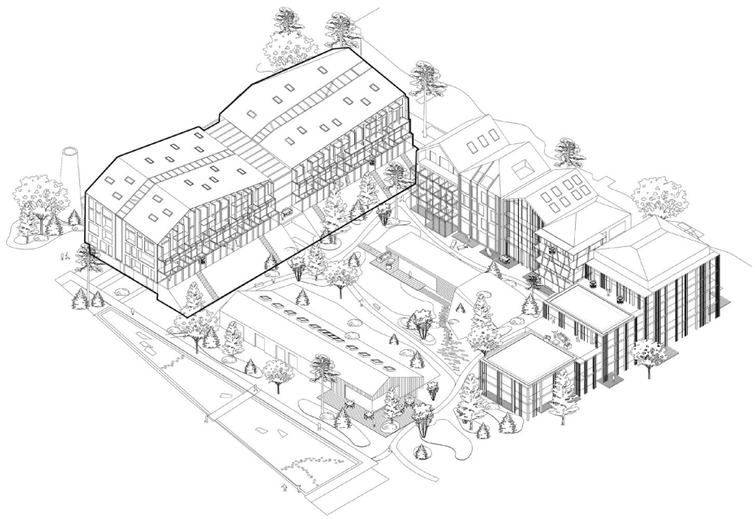
DECENTRALIZED ENERGY FLOWS

LEISURE BY NATURE

GREEN CONNECTOR



Masterplan as framework

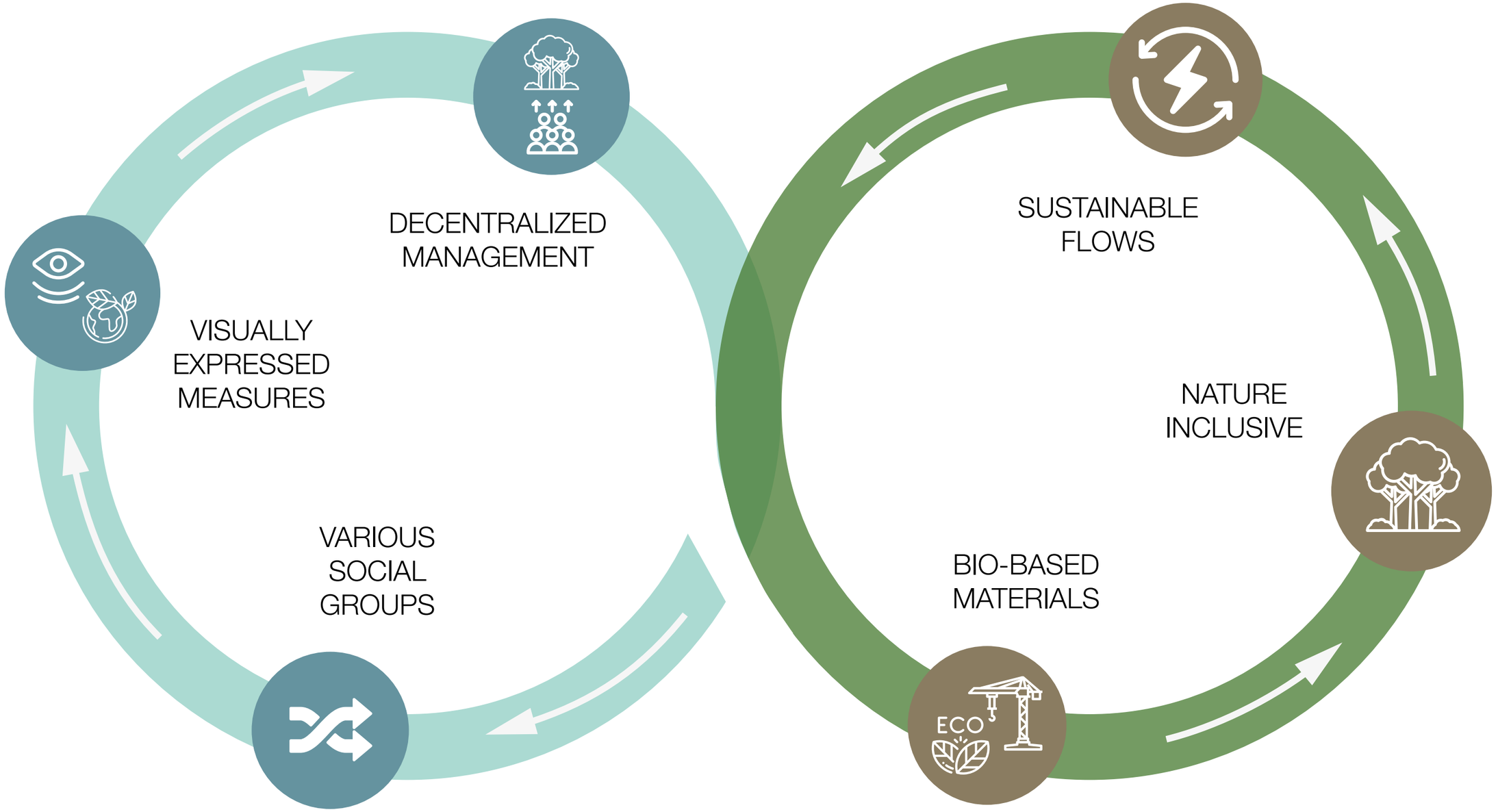


Urban blend

block scale

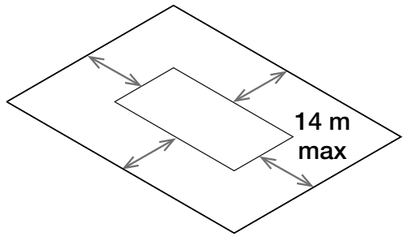
Blend of nature and architecture

Residential quartier where vegetation and shared living create a vibrant unifying social structure.

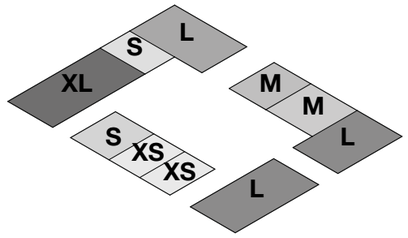


Strategies

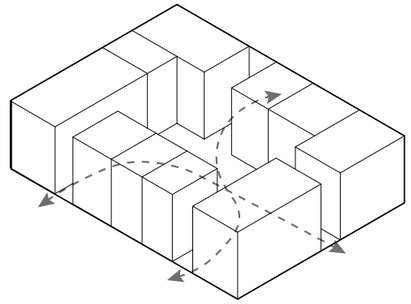
Courtyard block challenges focused on creation of highly urban environment with qualities of nature inclusive design.



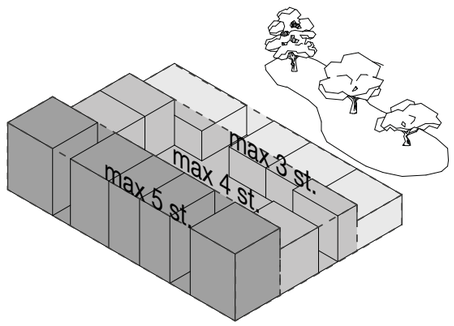
Footprint



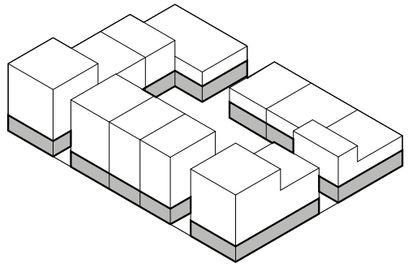
Plot sizes



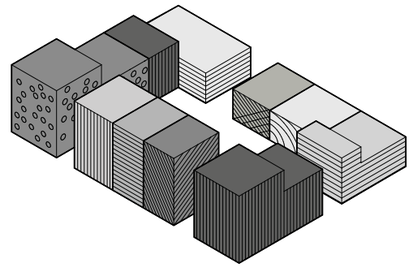
Connectivity



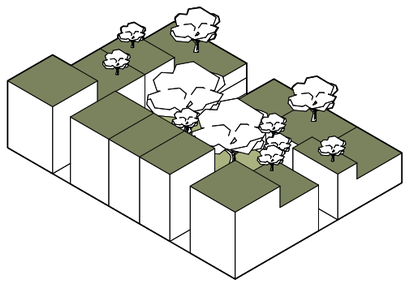
Scale



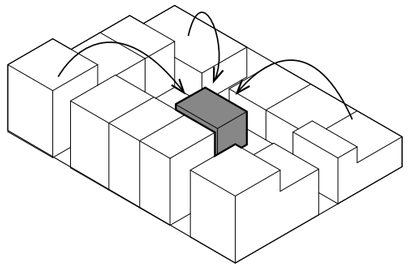
Active plynths



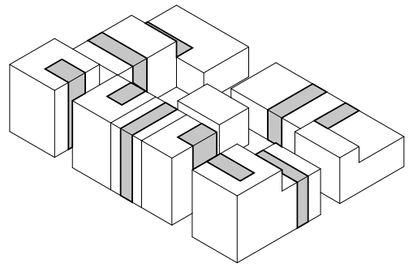
Identity stimulation



Nature inclusive

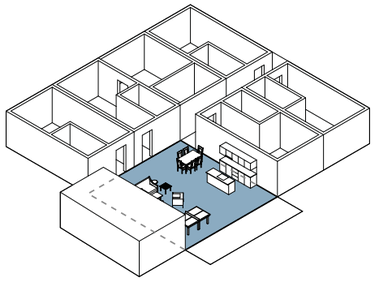


Community buildings

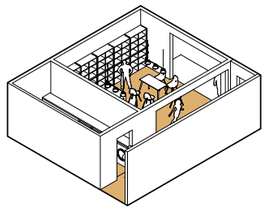


Shared cores

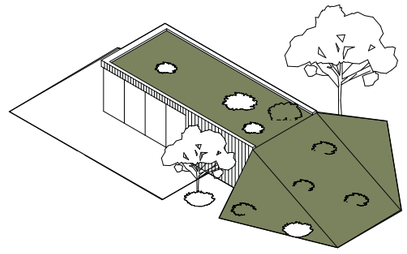
Block rules



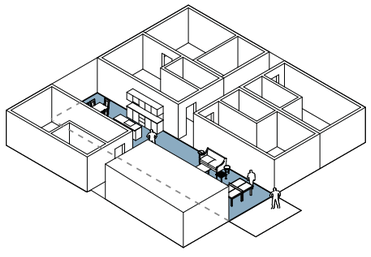
Shared cluster type A



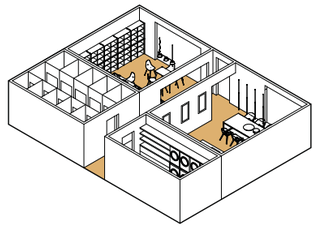
Shared core size S



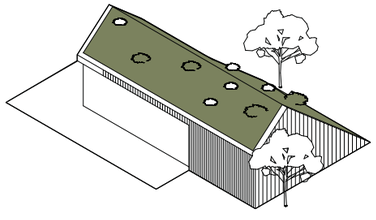
Block building type A



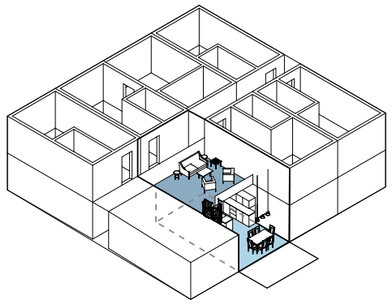
Shared Cluster type B



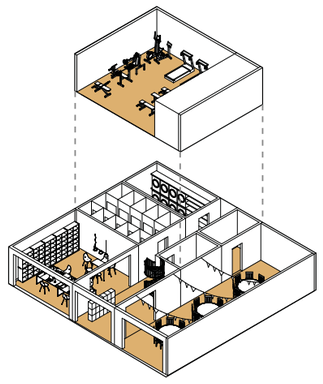
Shared core size M



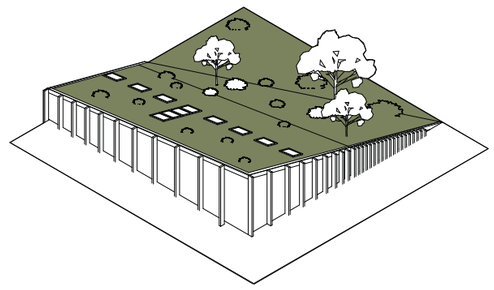
Block building type B



Shared Cluster type C

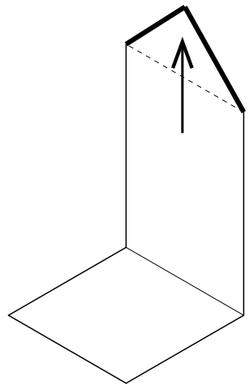


Shared core size L

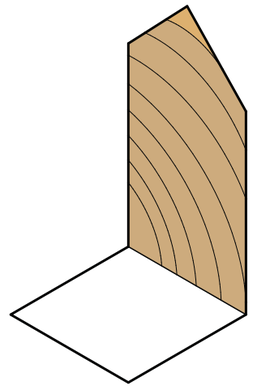


Local community center

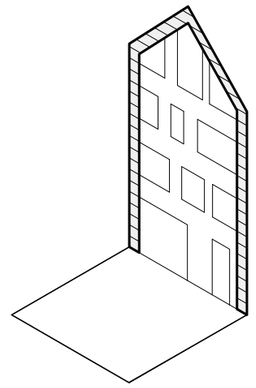
Programme rules



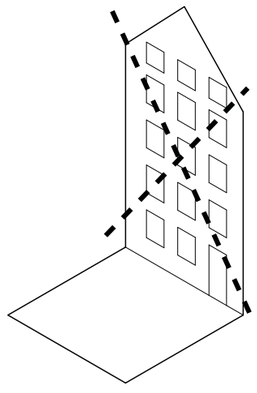
Context related massing.



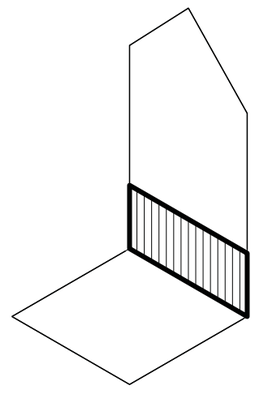
Nature materials exposed.



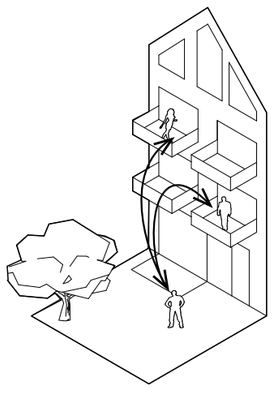
Organised composition.



Non-repetitive rythms.

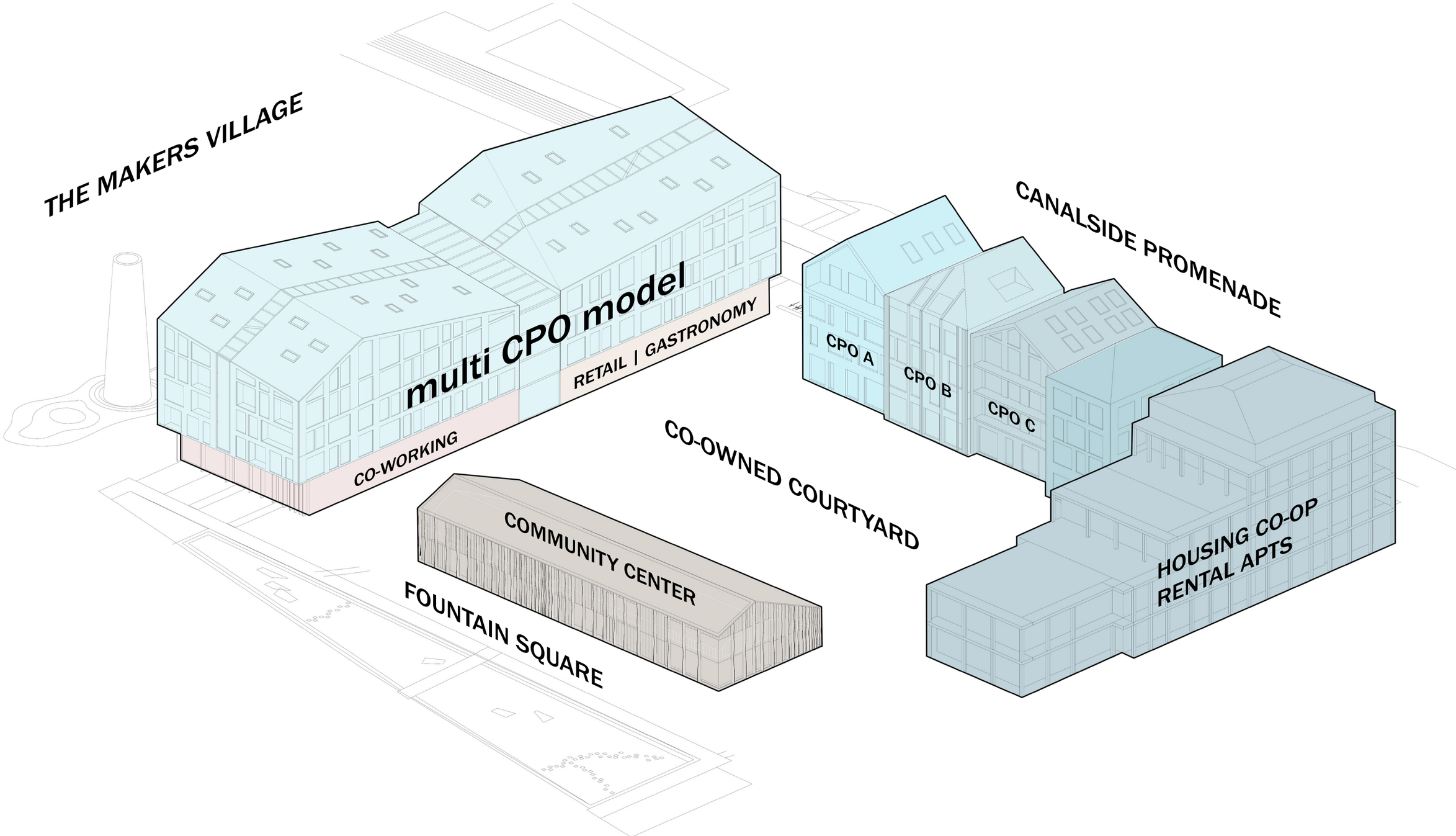


Emphasized plynths.



Facades porosity.

Materialisation rules



Programme

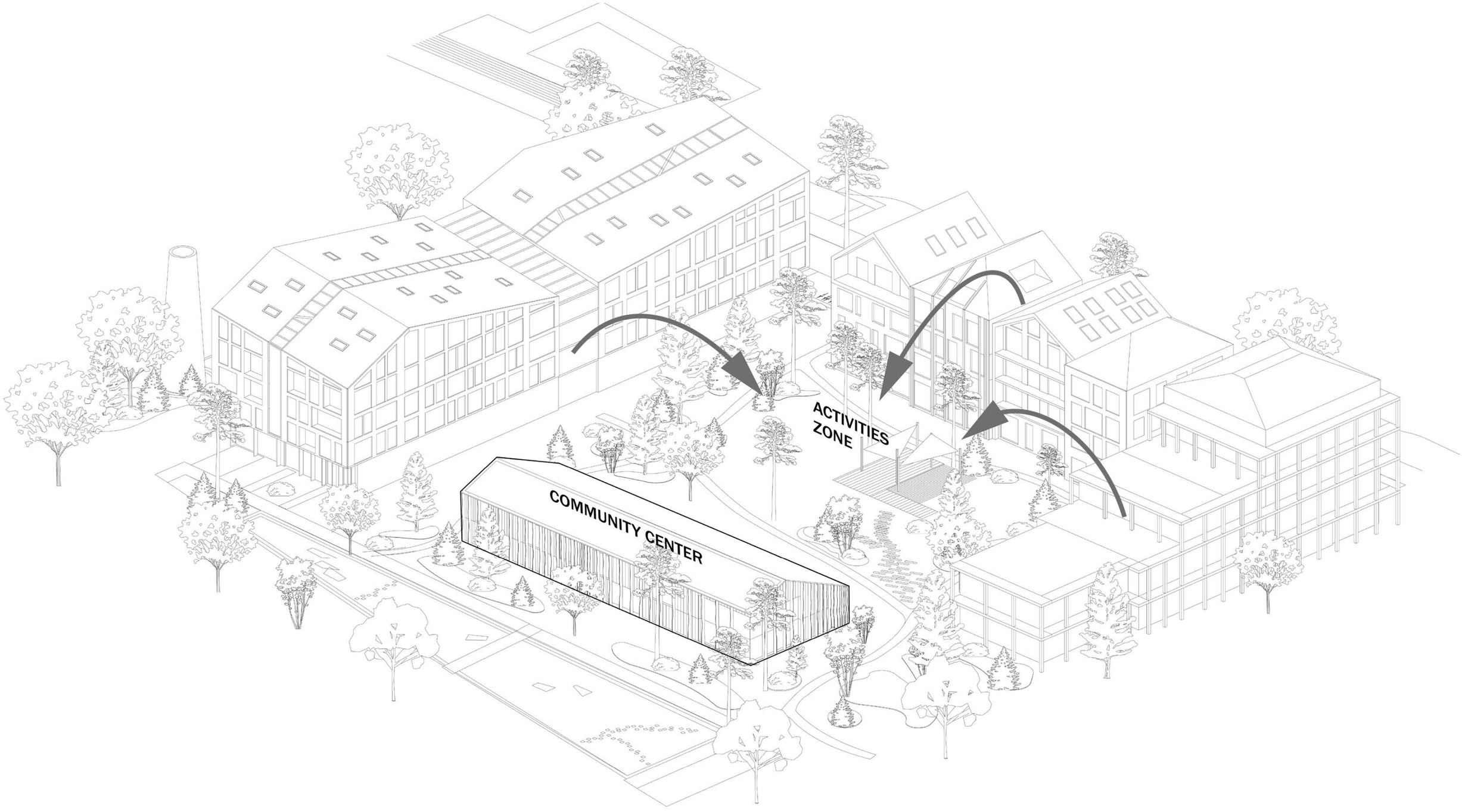
Variation of organisational models to shorten the timeline of the bottom-up developments.

Nature inclusive

The synergy between buildings and the nature starts with extensive forest-like environment.

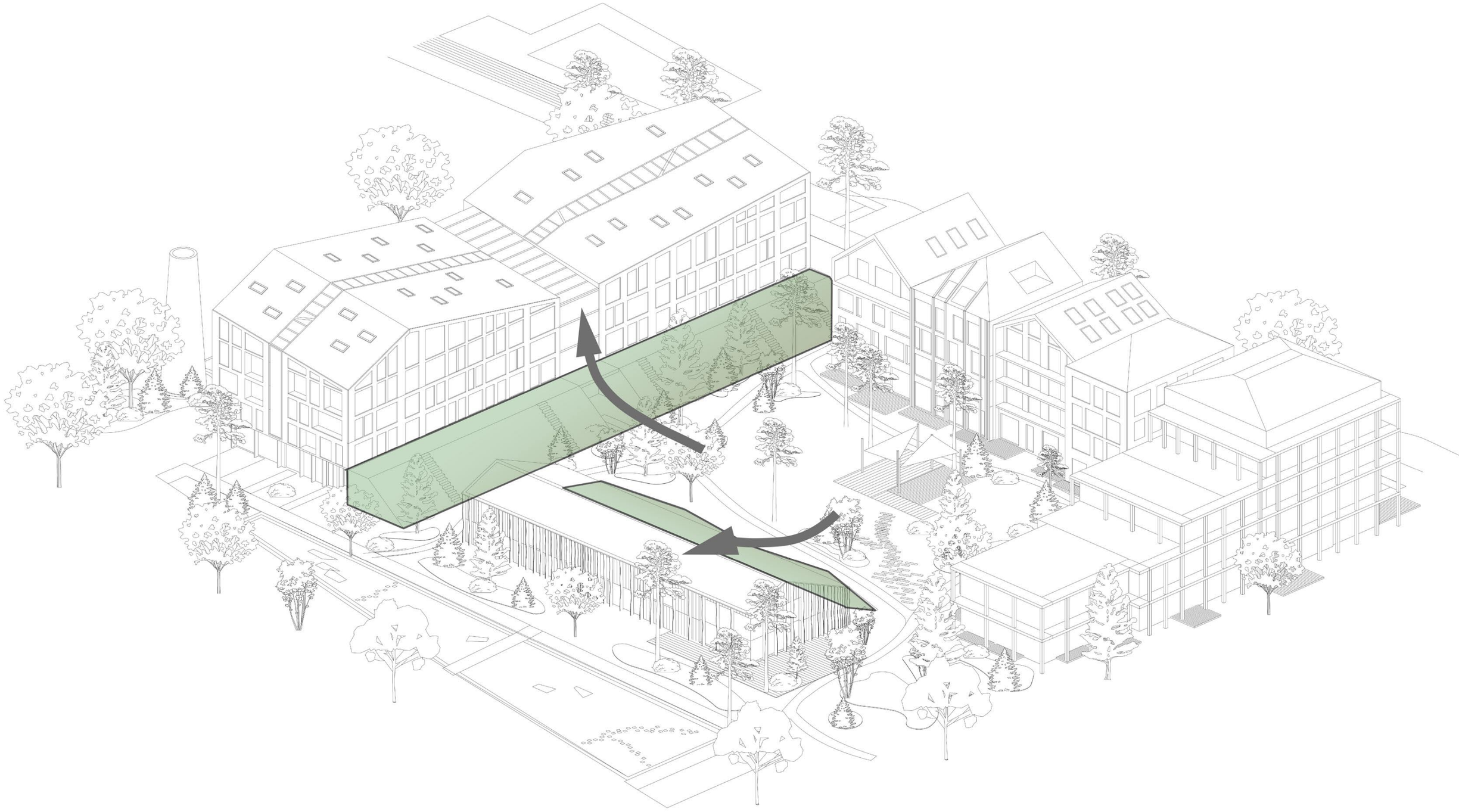
Connectors

The key paths respons to the gravity points of the masterplan in direct surrounding of the site.



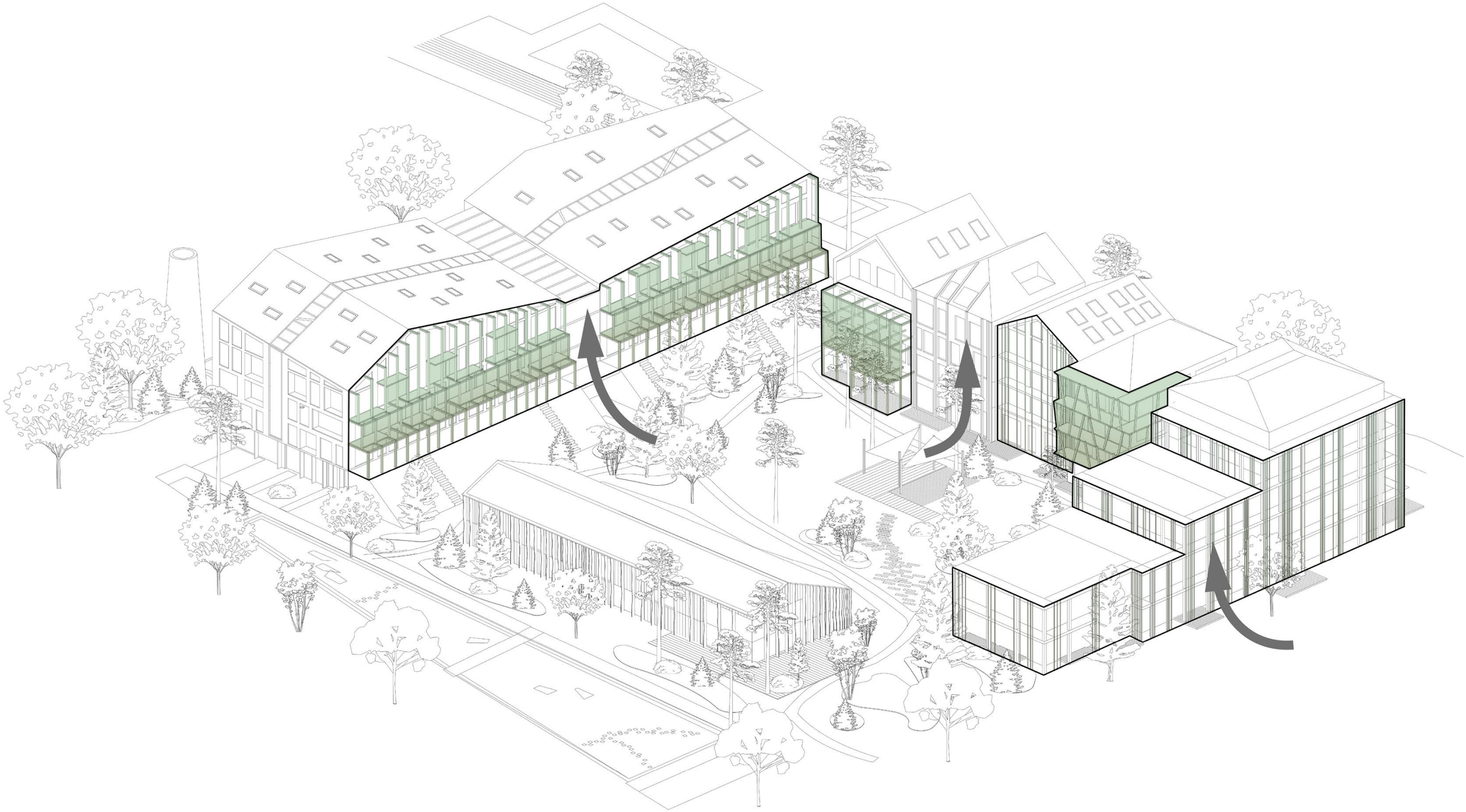
Social courtyard

Block residents configure their community space, that serves as a framework for their activities.



Landscape

Second phase of the synergy with nature is differenciation of the topography to integrate it with architecture and use as an spatial, functional advantage.

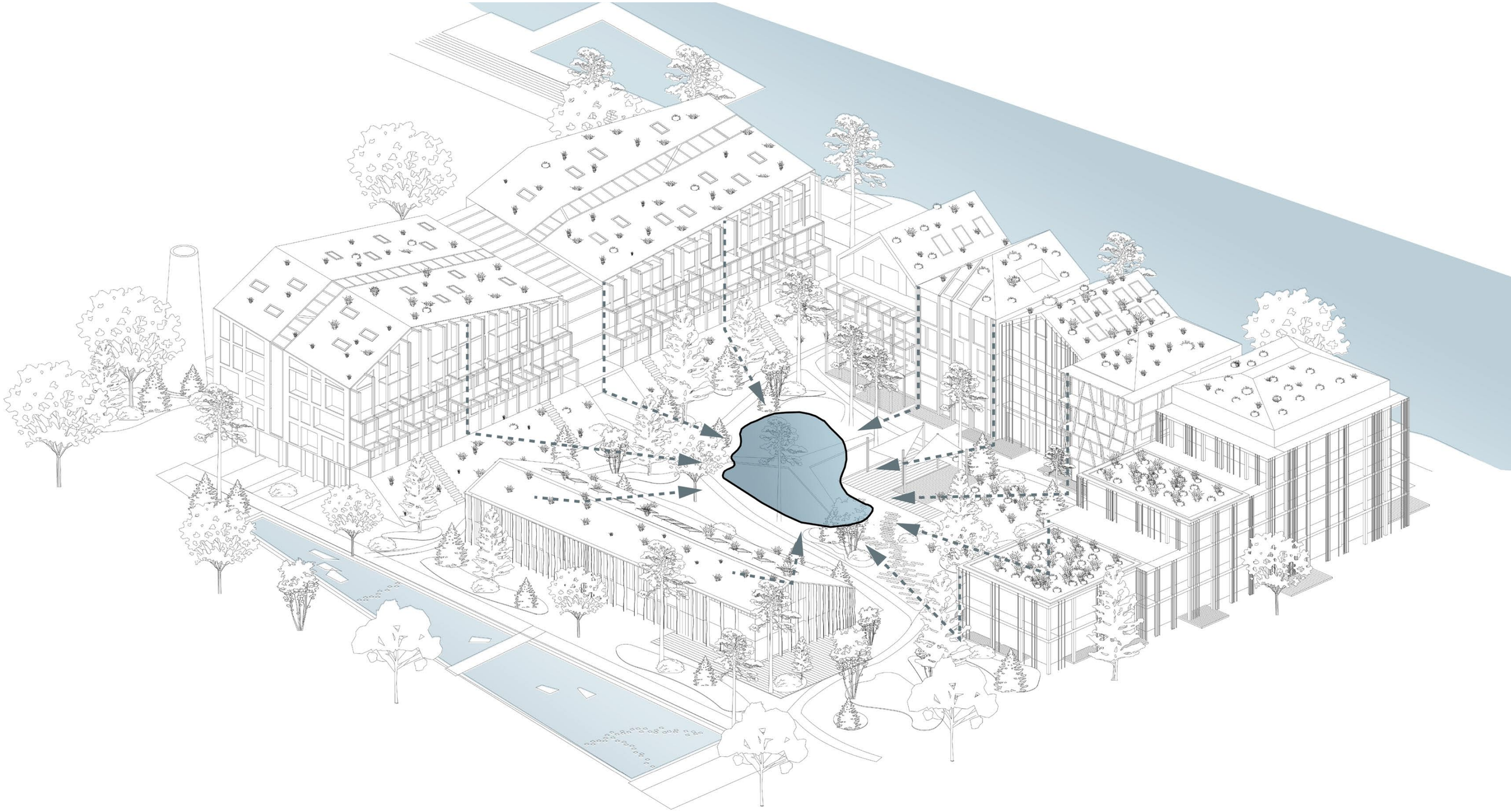


Green facades

Further blend of architecture and nature by porosity of internal facades, design to accomodate extensive vegetation.

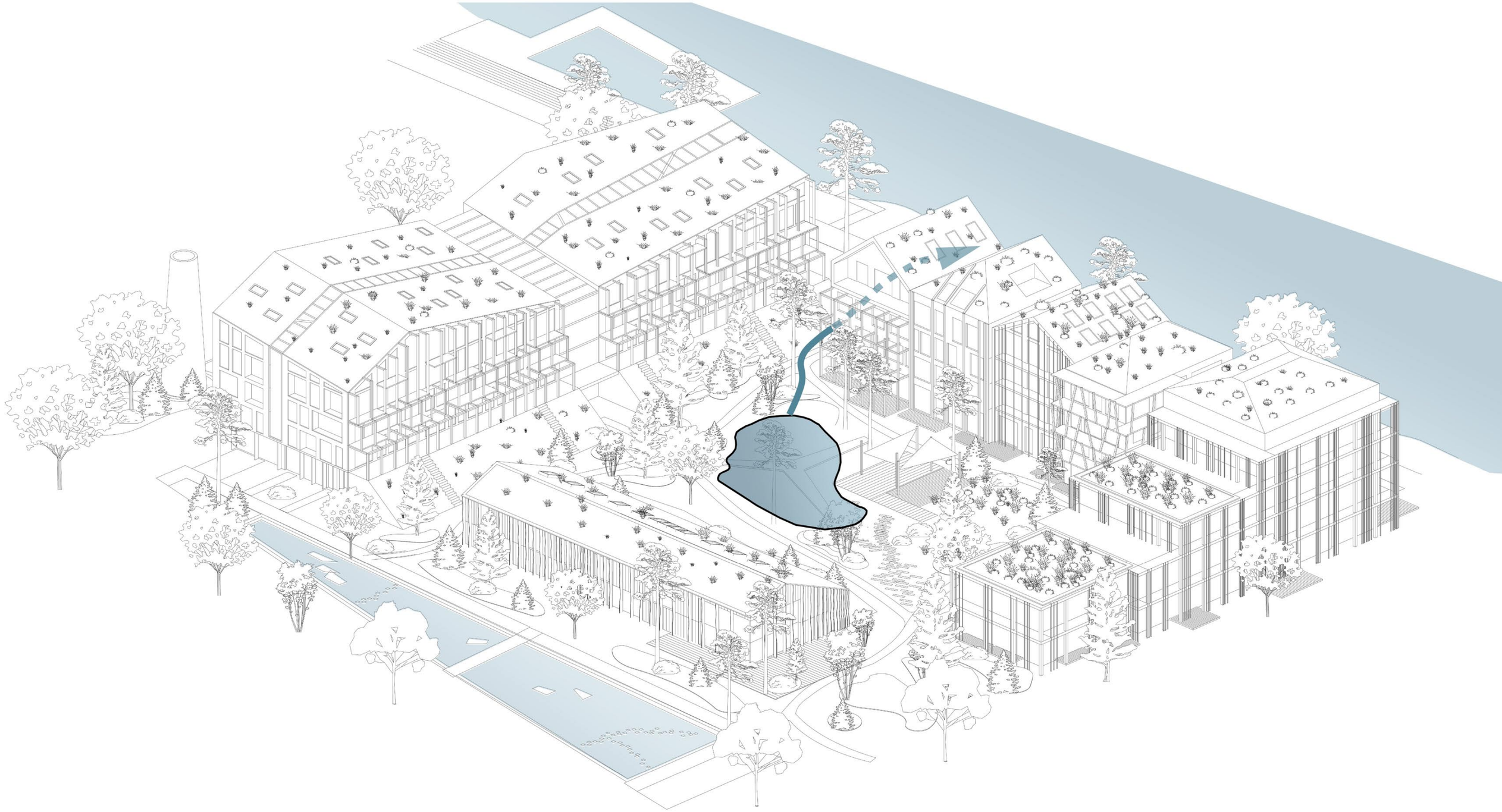
Green roofs

The nature incorporates courtyard park, facades systems, finally rooftops compliment the blend.



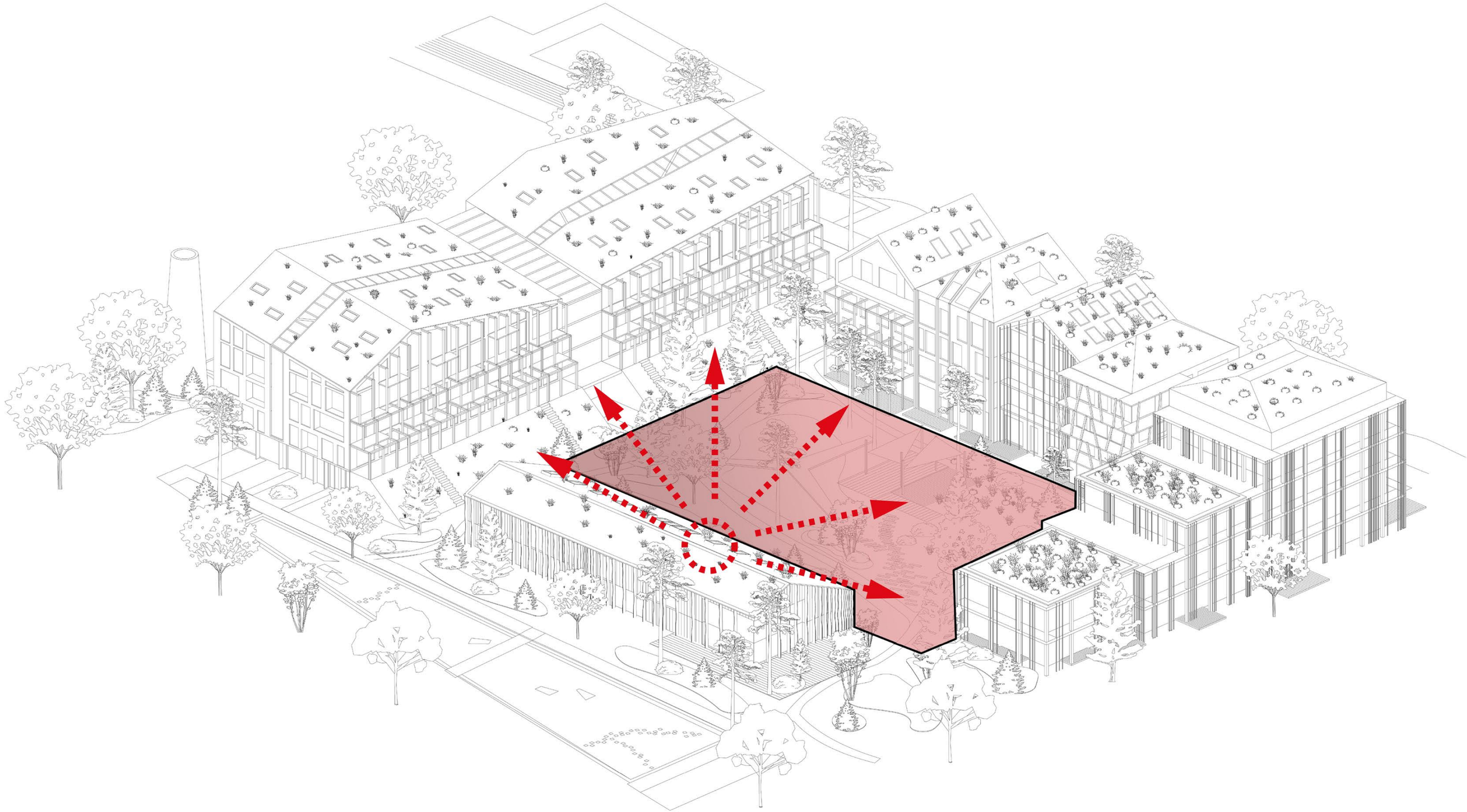
Water management

The landscape proposal includes topography formed to accomodate stormwater management and water leisure features.



Water management

Natural runofff of stormwater from the courtyard to the Hoendiep canal.



Heating & cooling

Ground heat pumps centralized system, with heat pump untis and heat water cylinders in central building with distribution to the adjacent residential buildings.

Towards SYM BIO

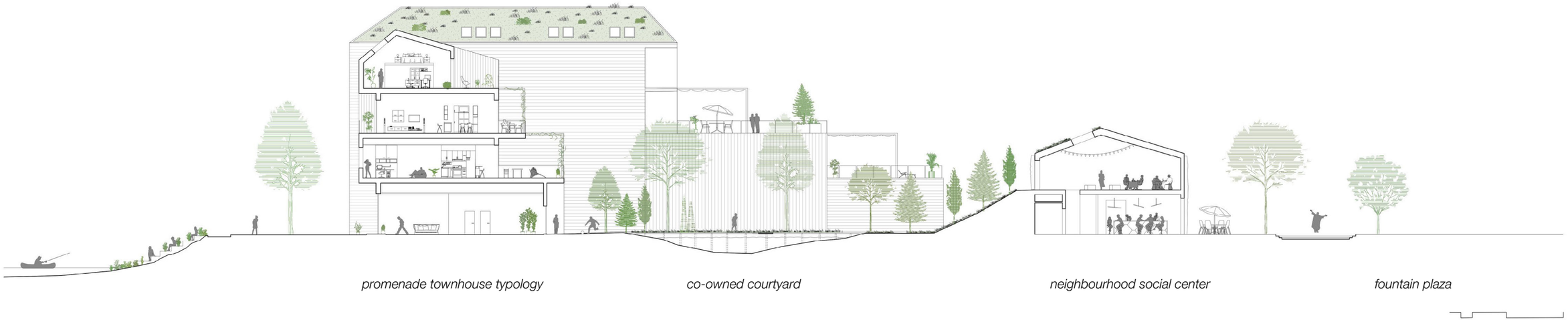
The result is public domain that provides residents with the qualities of urban life and rural natural environment.

The plynth

Courtyard block ground floor is organized inwards natural courtyards and responding to adjacent public spaces.

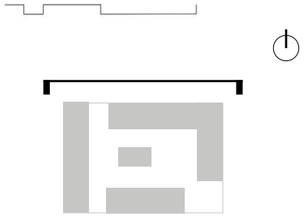
Shared cores

Each of the buildings incorporates logic of cores with shared amenities.



The courtyard

Londitudinal section through stormwater pond and activities zone.



Materiality application

Materiality rules use scenario, using natural materials for facades, each of the buildings received individual architectural exppresion to stimulate self-identification of the residents.

rooftop meadow environment

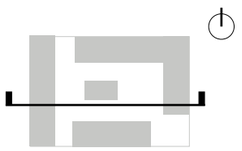
extensive roofs vegetation

green facades planting

extensive slopes vegetation

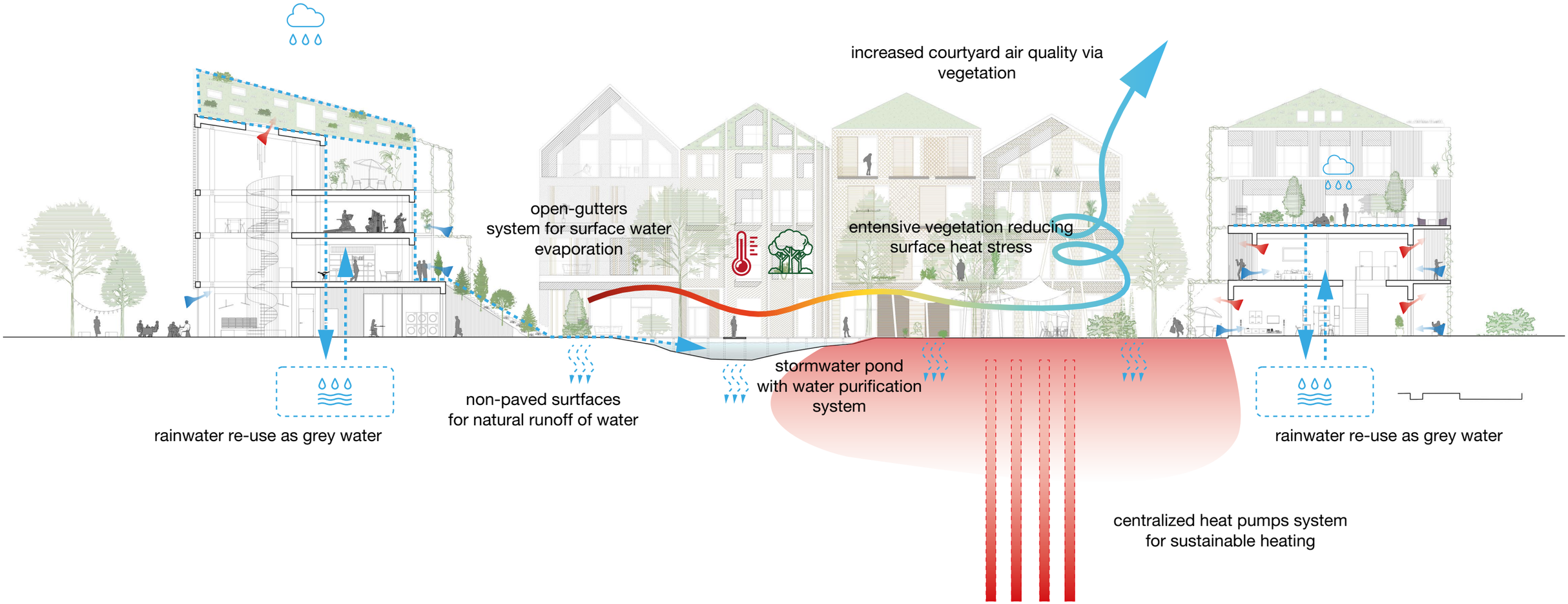
stormwater pond

extensive tree planting



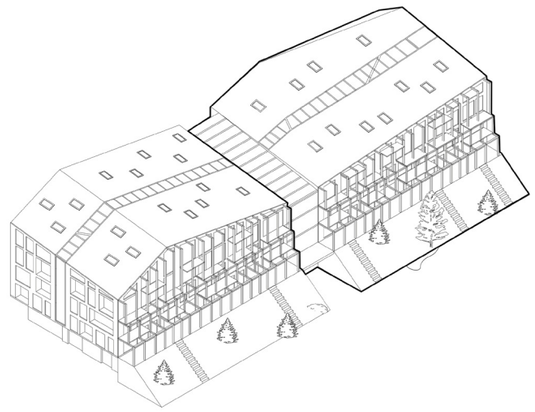
Bioswale strategy

Extensive bioswale to purify stormwater, control climate, reduce heat stress.



Climate design

Extensive bioswale to purify stormwater, control climate, reduce heat stress.



Shared backbone

Typology scale

YOUNG FAMILIES

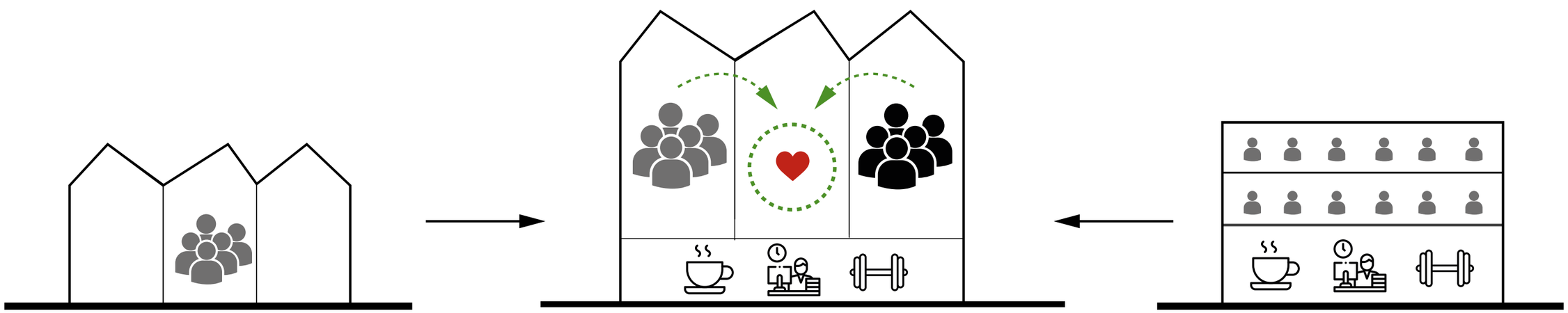
SHARING CORE

STARTERS

PROFIT-MAKING AMENITIES

Organization

Combination of more than one CPO to achieve economical potential of realisation of extensive mixed programme.



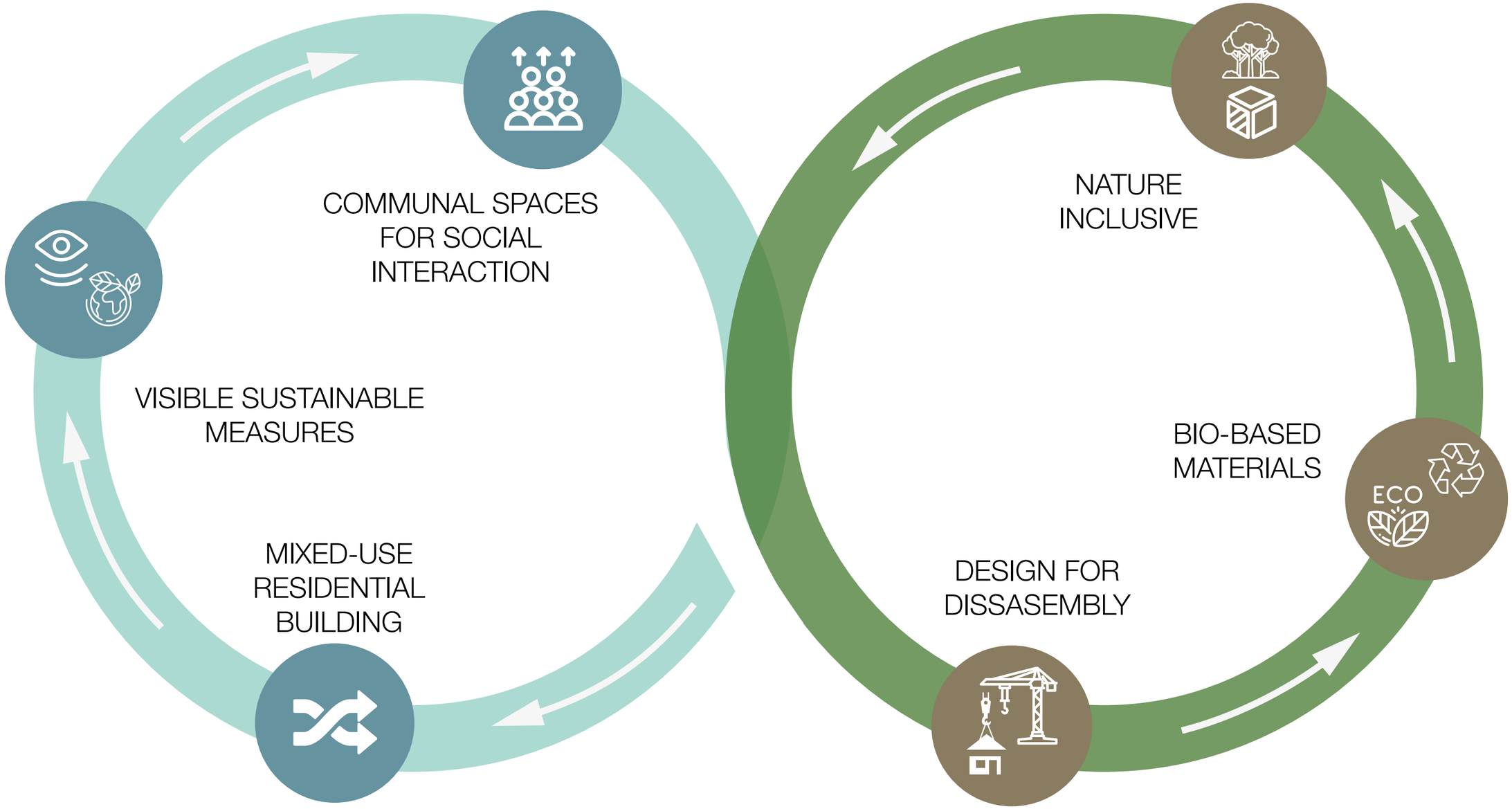
URBAN
CPO’S

Shared-CPO

COMMERCIAL
CO-LIVING

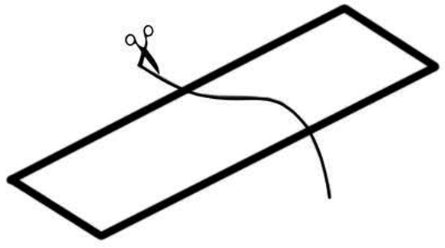
Organization

Exploration of model on the edge between bottom-up and top-down shared living models.

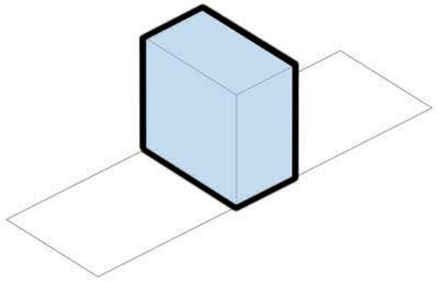


Strategies

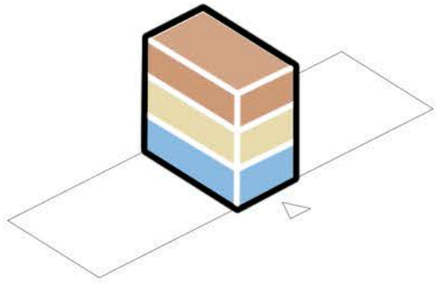
Creation of building that via its shared amenities forms a social life incubator.
Architecturally expressing the SYM BIO concept.



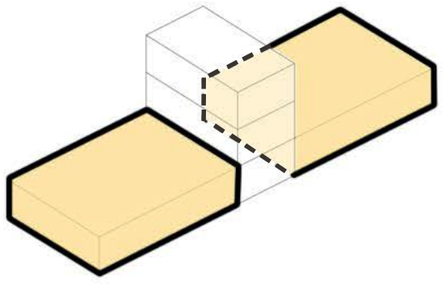
URBAN PLAZA | COURTYARD CONNECTOR



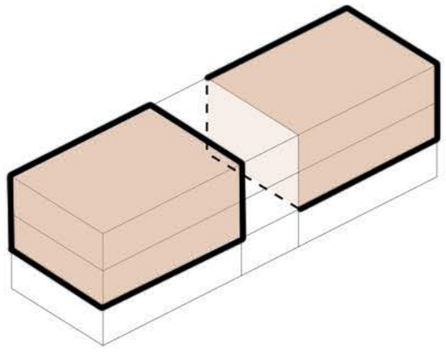
CENTRAL SHARED CORE



BEYOND DWELLING PROGRAMME



COMMERCIAL PLYNTH



RESIDENTIAL PROGRAMME

CLUSTER LIVING

CLUSTERS APARTMENTS

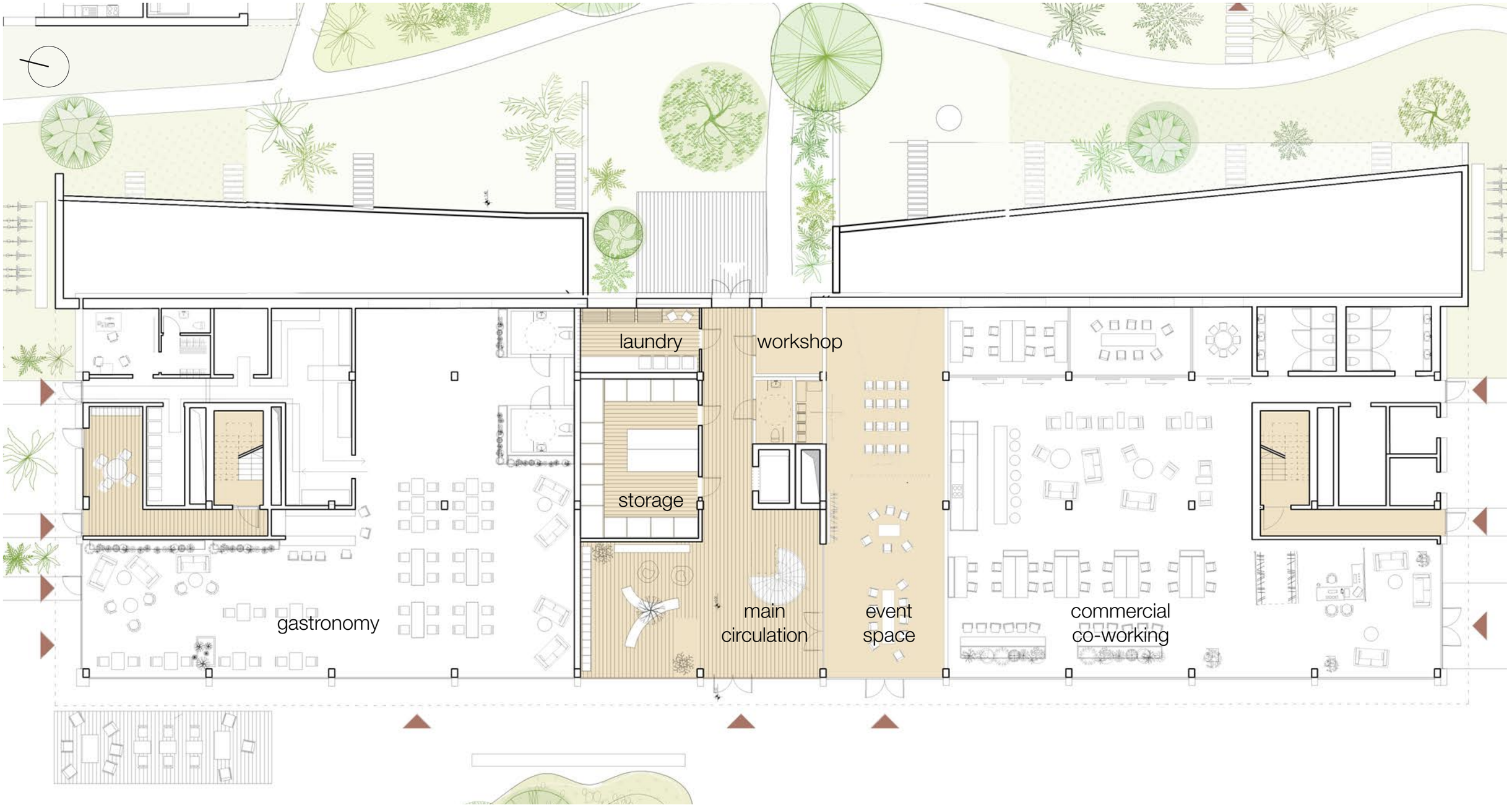
Local connector

Core of shared amenities

Commercial spaces exposed

Plynth logic

Building ground floor expresses strategies responding to adjacent conctext and integrates the beyond dwelling functions.



Ground floor

Central core with shared storage, workshop, laundry room and rentable event space

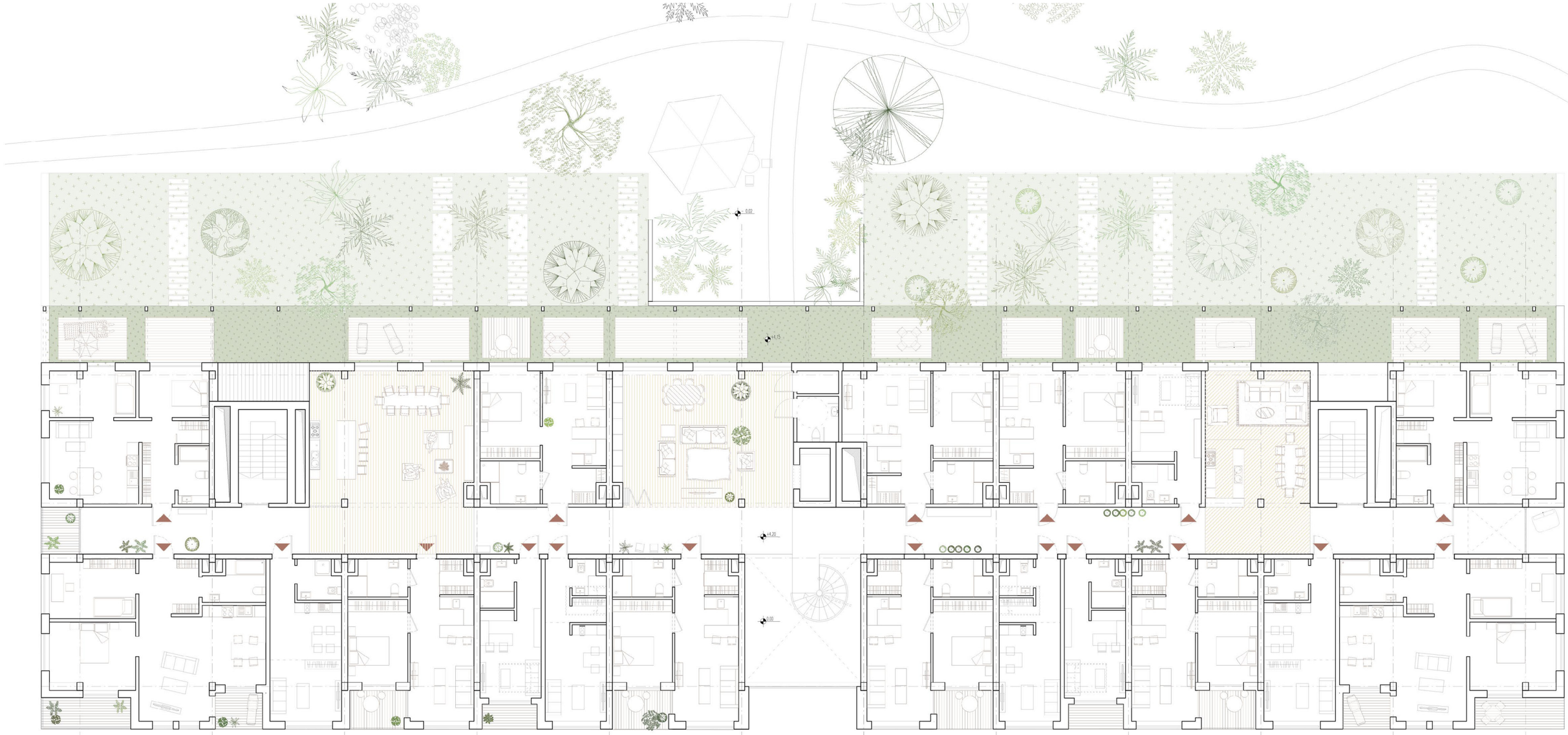
Exploring corridor typology

Internal street extended

Community backbone

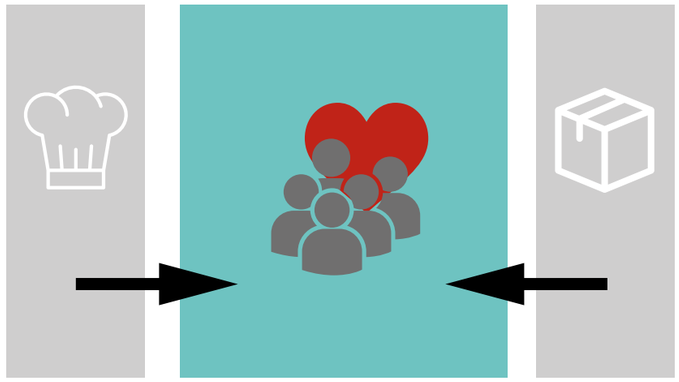
Typology logic

Based on efficient corridor typology transformed into system of interconnected community spaces.

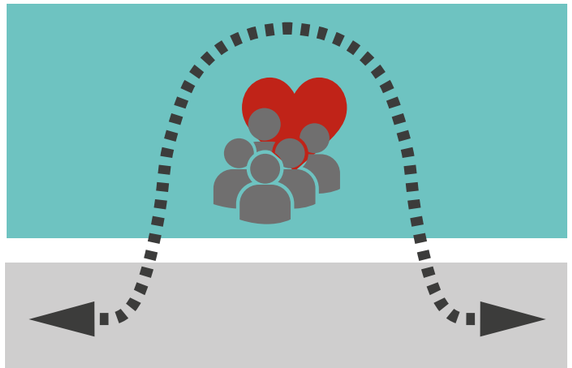


Typical floor

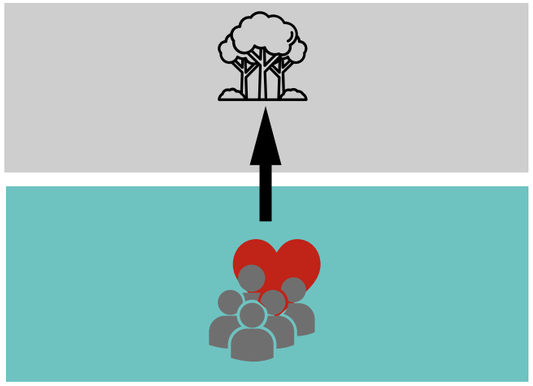
Internal street connects community rooms and central core with additional shared ammenities.



Service & Served



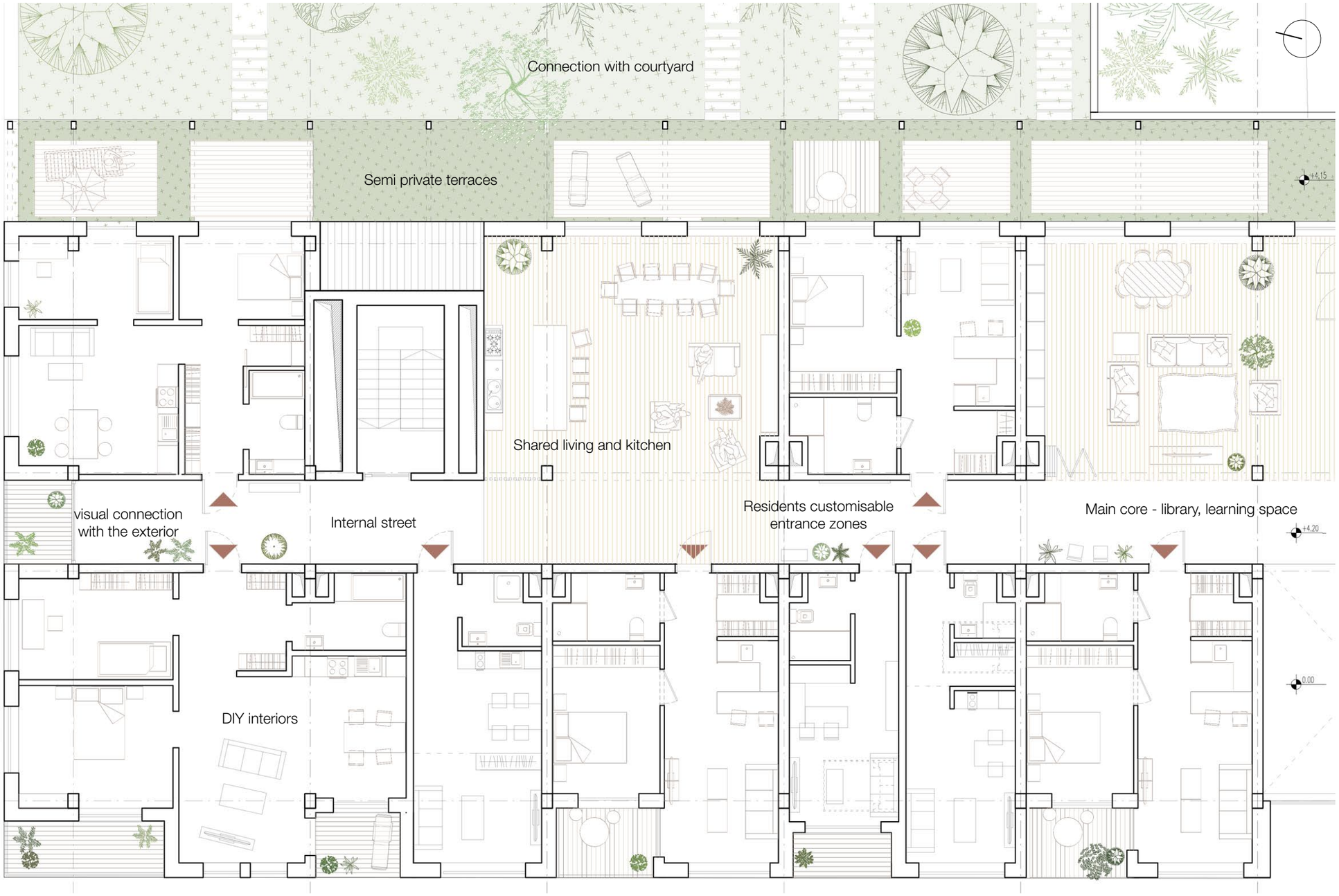
Extension of circulation



In - outdoor connected

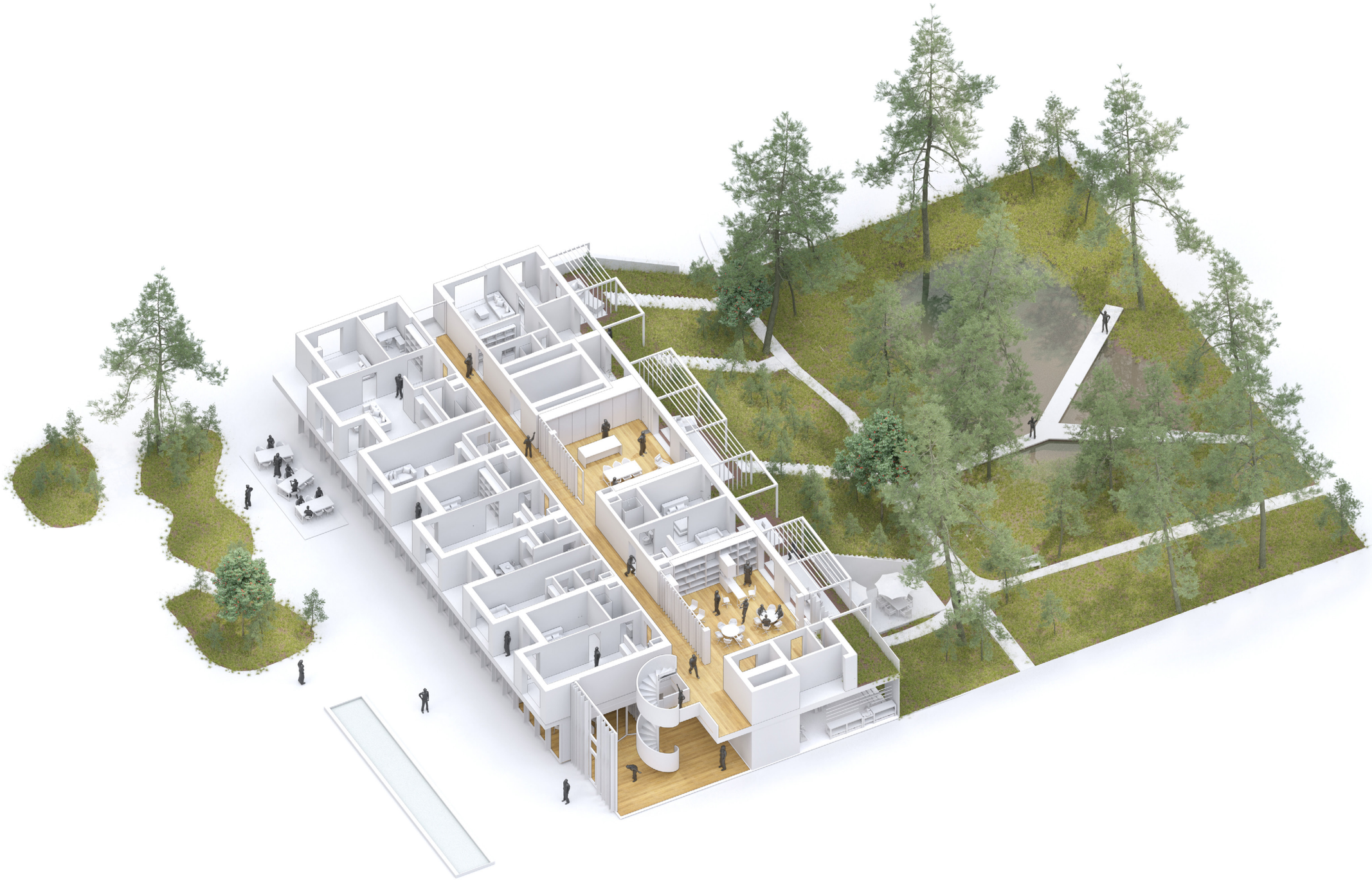
Common rooms

Organized between individual apartments, open spaces supported by funtional „service” spaces.



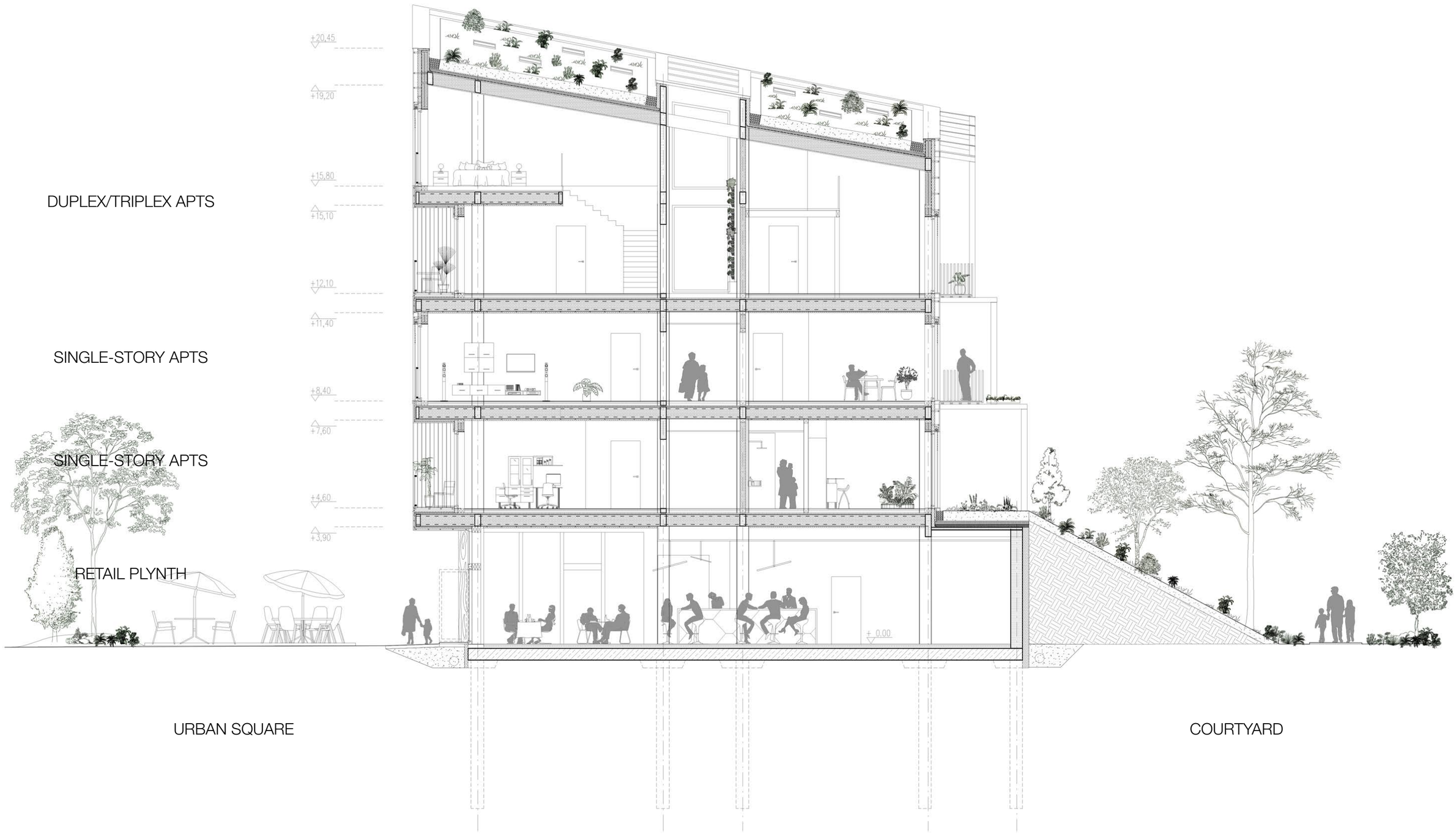
Common room

Organized between individual apartments, open spaces supported by funtional „service” spaces.



Shared living

Highlighted communal spaces constitute of the backbone of the building. Spaces for social interactions.



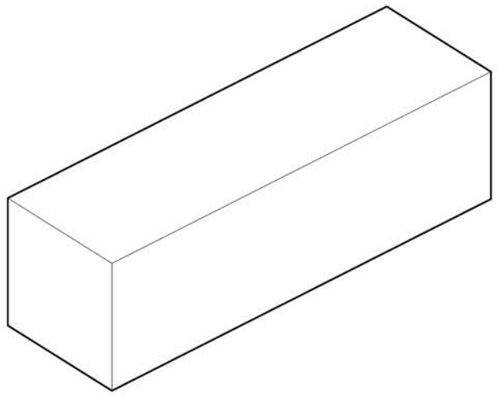
Typical section

Floor heights relates to the programme, elevated ground floor with retail, followed by residential levels.

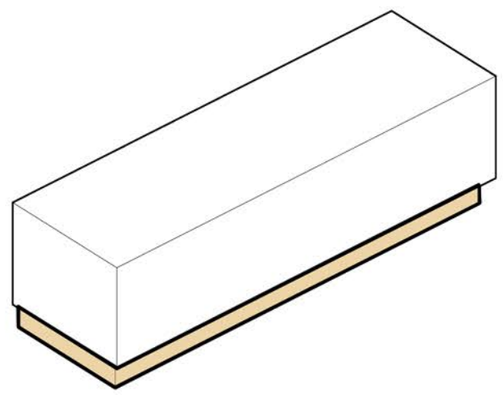

Meet
&
Play

Materiality

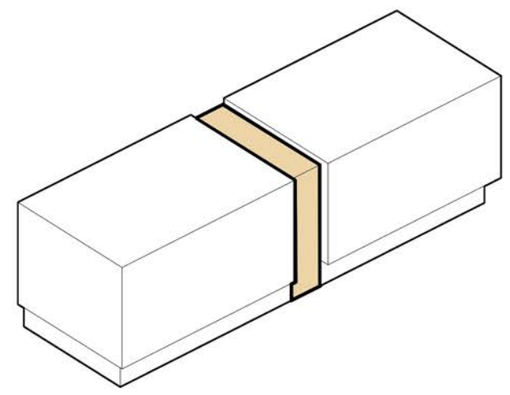
building scale



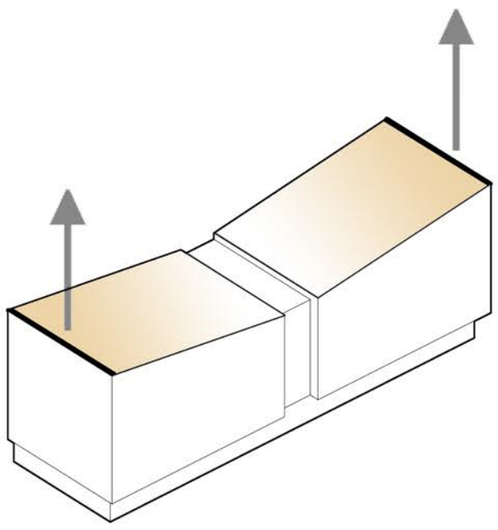
Programme volume



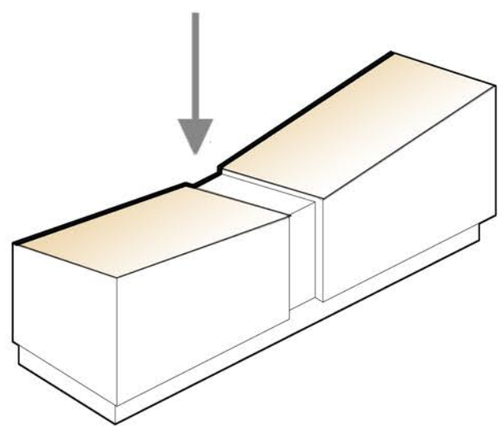
Exposed plynth



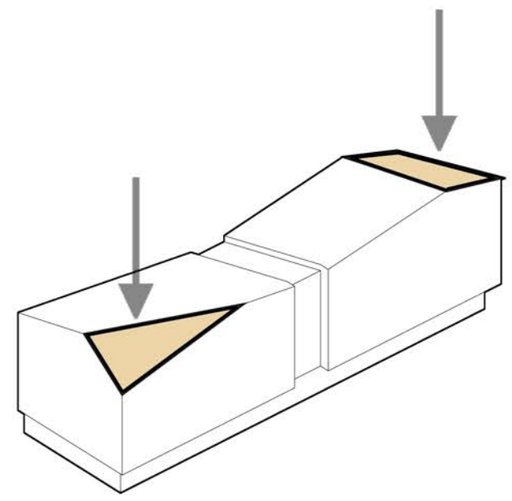
Highlighted core



Response to context
buildings height



Reduced scale
towards courtyard



Human scale related
corcers height reduction

Massing

Context & programme related development of the building form.

Extensive green roofs

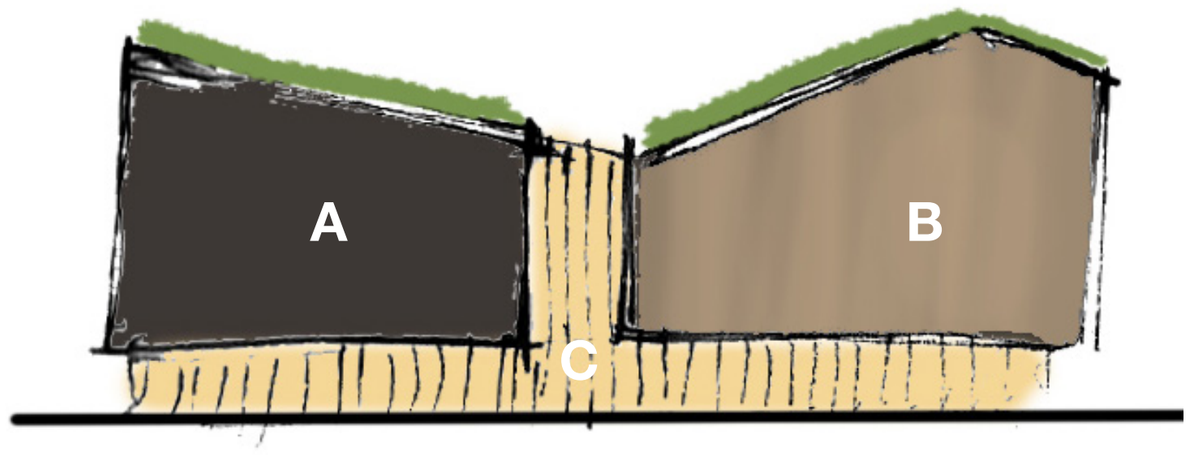
Facade major - charred wood

Facade minor - conifer wood

Interior key accents -
reused containers

Architectural expression motives

Following strategy to express the SYM BIO logic of environmentally-friendly development.



Key architectural components

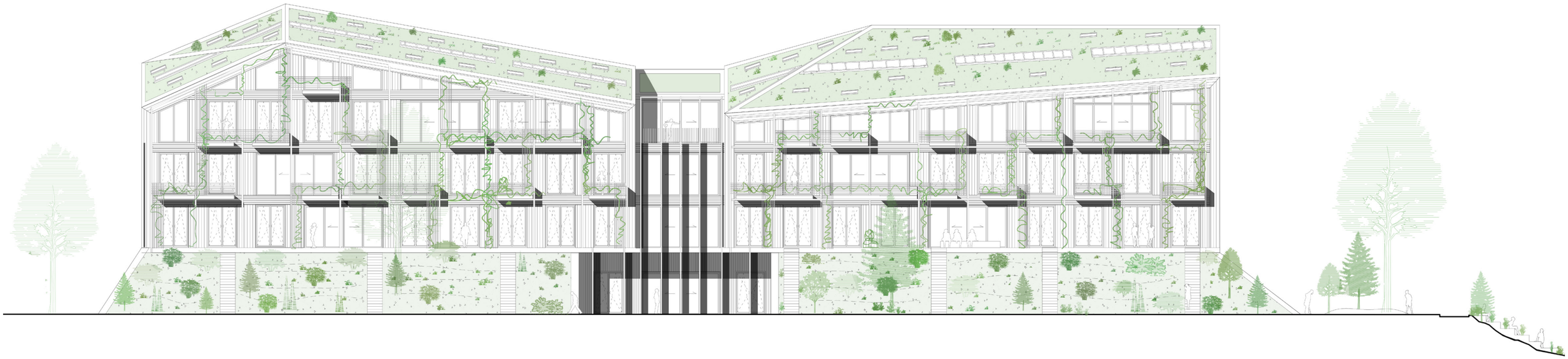
Two CPOs expressed by different massing and facade cladding. Unified by a common language of the plynth and core.

Western facade.

Urban facade

Western (main) facade. Adjacent to the public square.

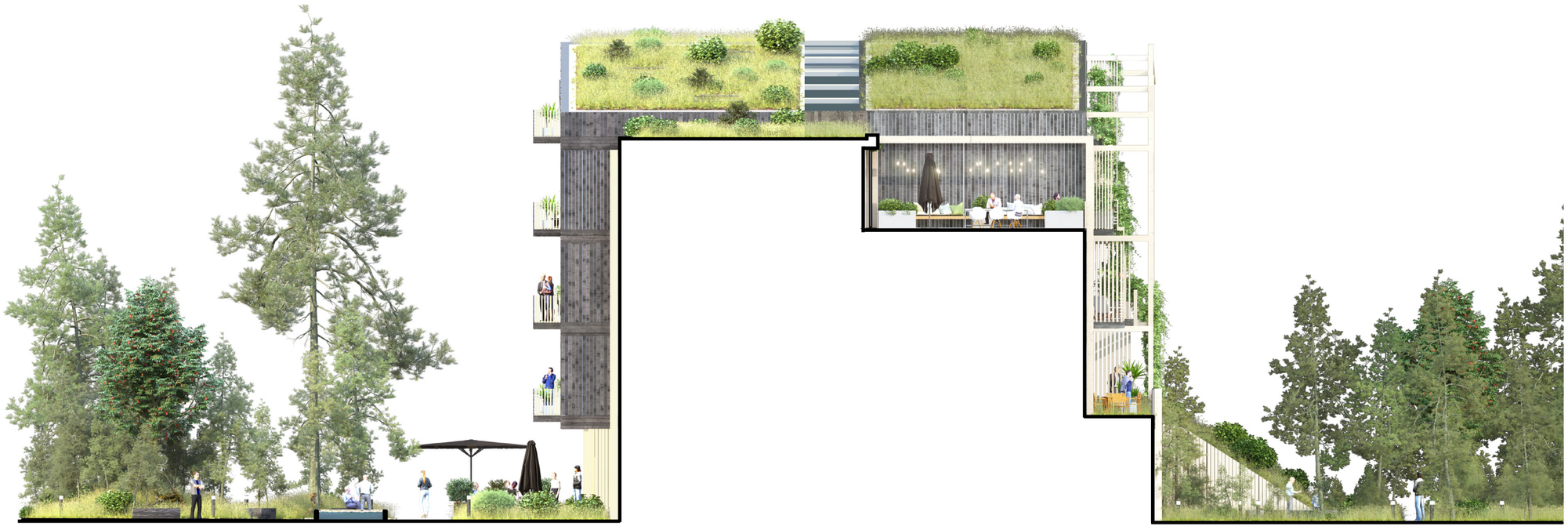

GRONINGSE COFFEE



Eastern facade.

Courtyard facade

Eastern facade. Adjacent to the main courtyard.



From urban square to intimate courtyard

Urban facade opening towards the urban square and courtyard facade „stepping” towards nature of the courtyard.


GRONIGNGSECOFFEE


GRONINGSE COFFEE
WORK SHARE

Constructability

building scale


source: unsplash.com open source image


source: unsplash.com open source image

Affordable

Sustainable

optimized
prefabrication

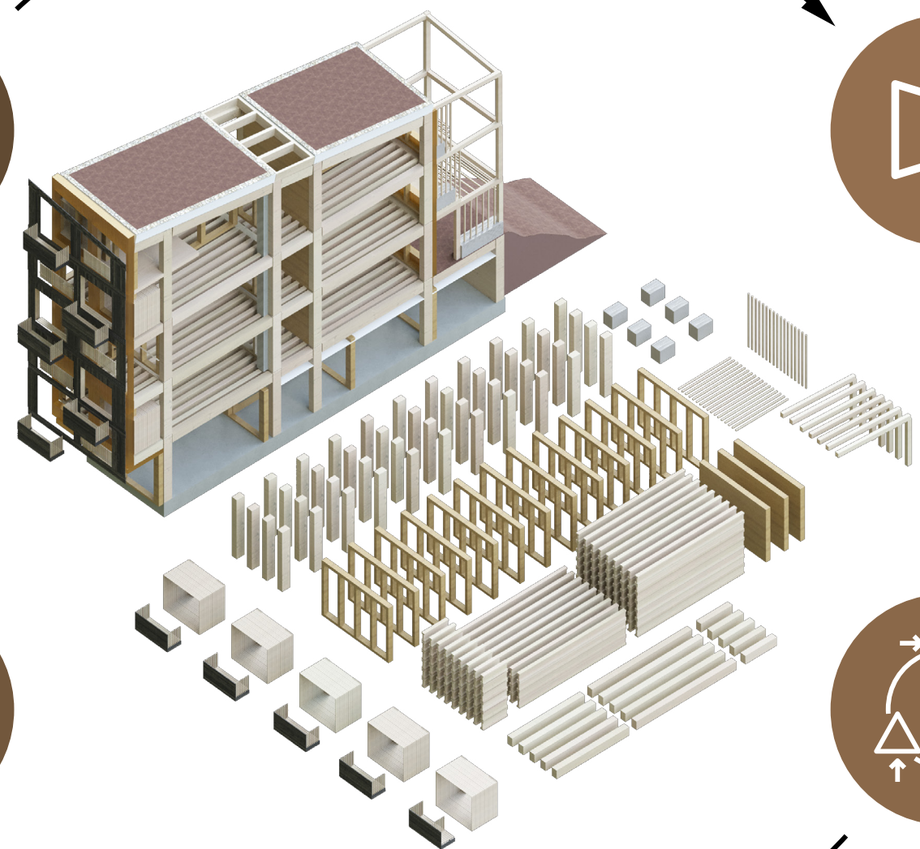
repetitive
components

adaptability of
programme

reduced use of
materials

long material
lifecycle

designed for
dissasembly



sustainably sourced

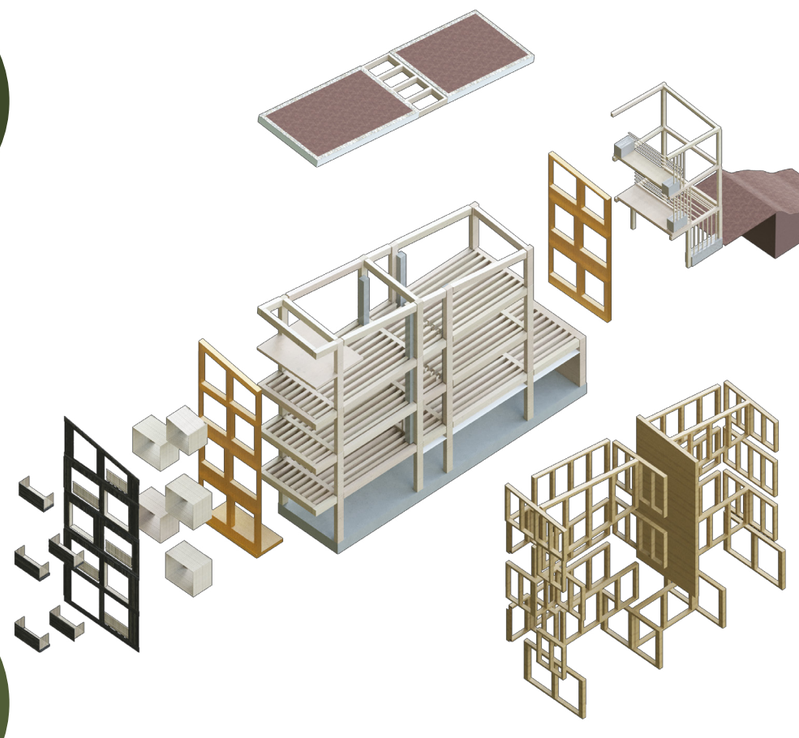
lightweight construction

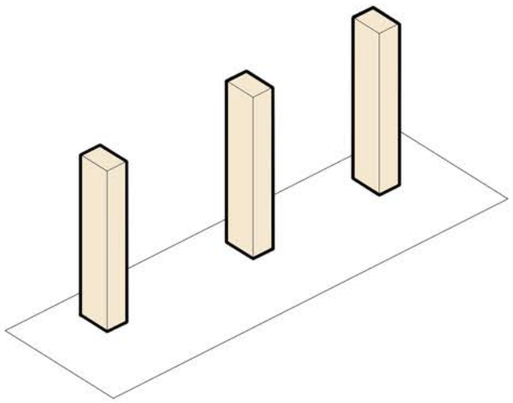
maximized use of natural materials

prefabrication = reduced waste

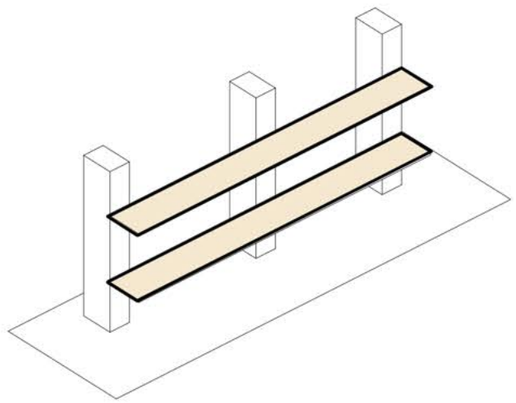
healthy indoor climate

designed for dissasembly

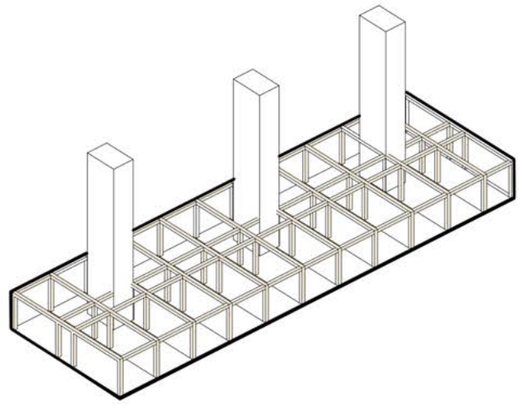




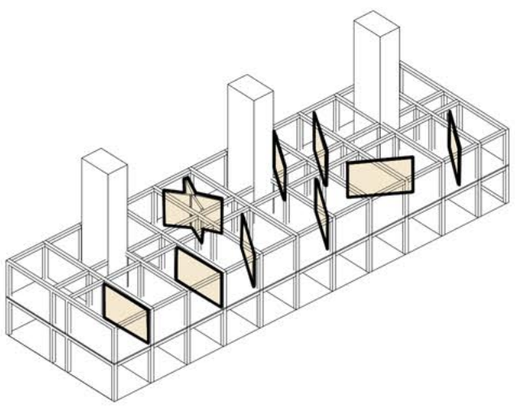
Main cores



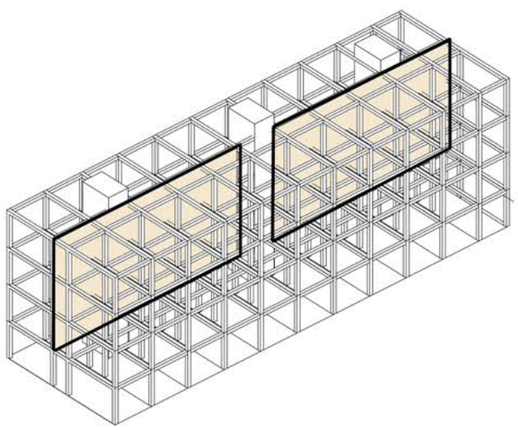
Compact circulation



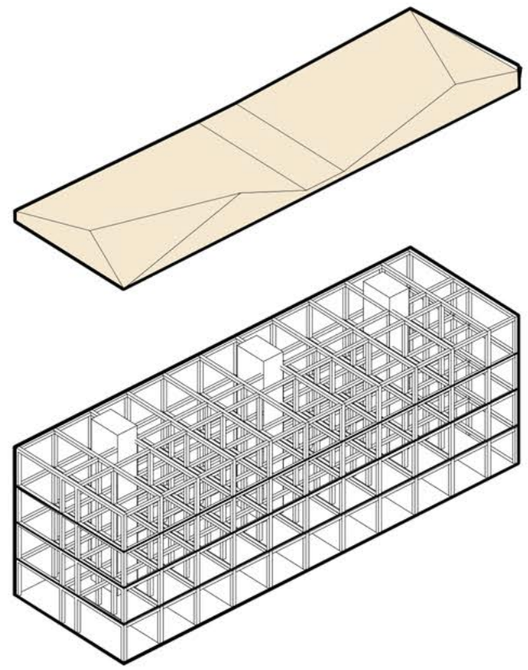
Post-beam glulam system



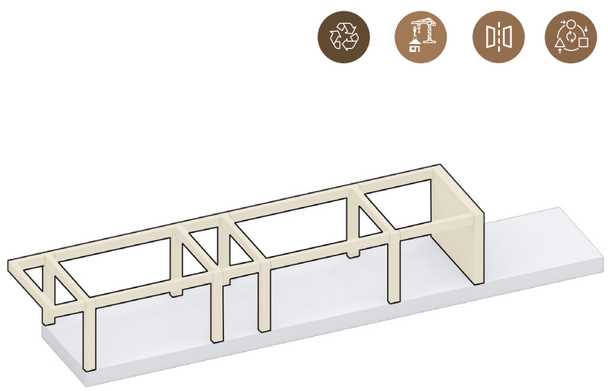
Flexibility of partitioning



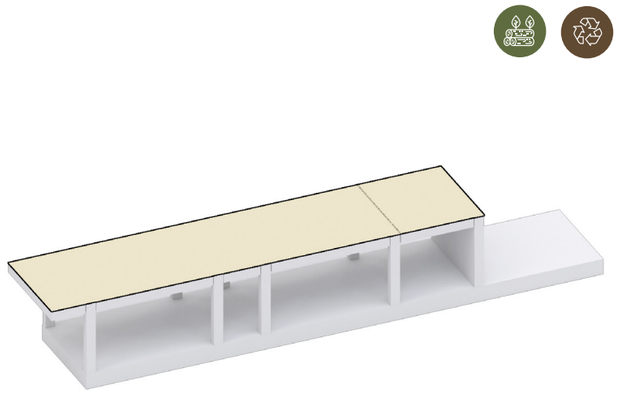
Longitudinal stability walls



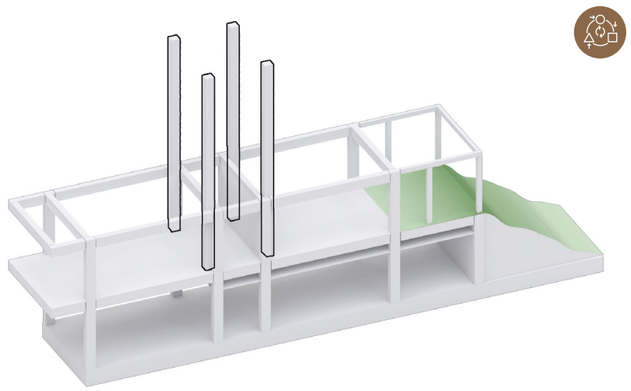
Repetitive prefab structure with custom-made roof structure



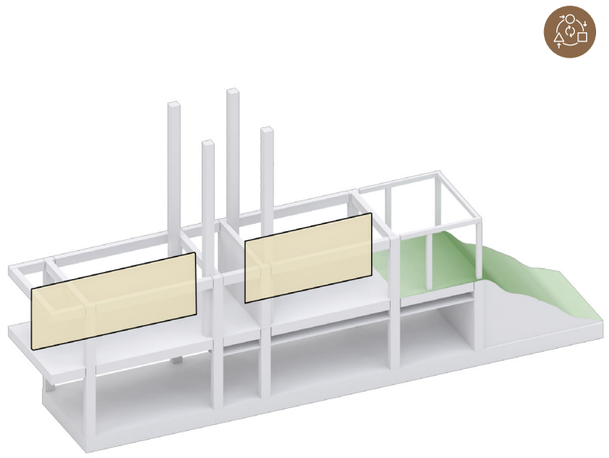
Glulam timber post-beam framework



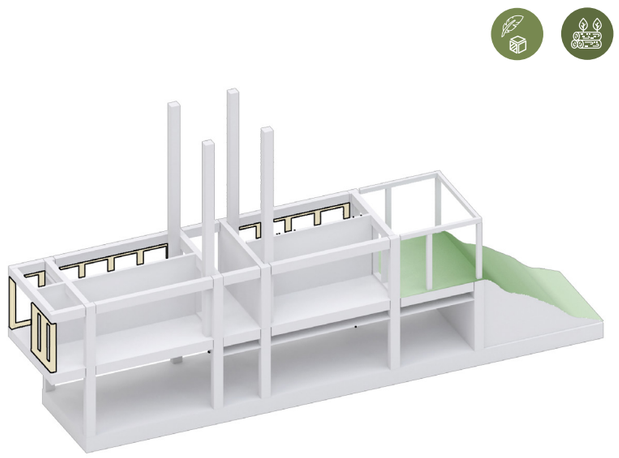
Demountable floor system



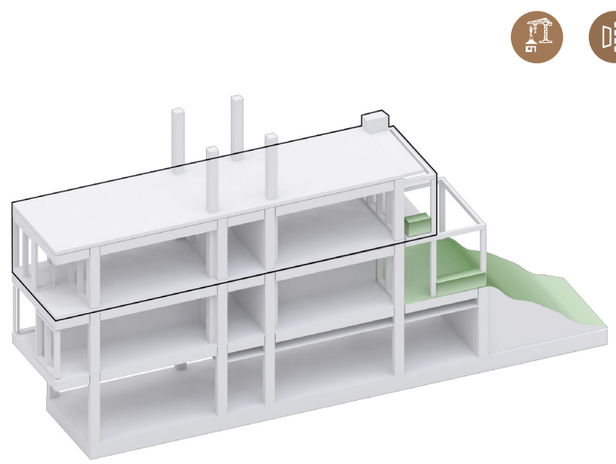
Doubled-shafts



Frexible placement of partitioning walls

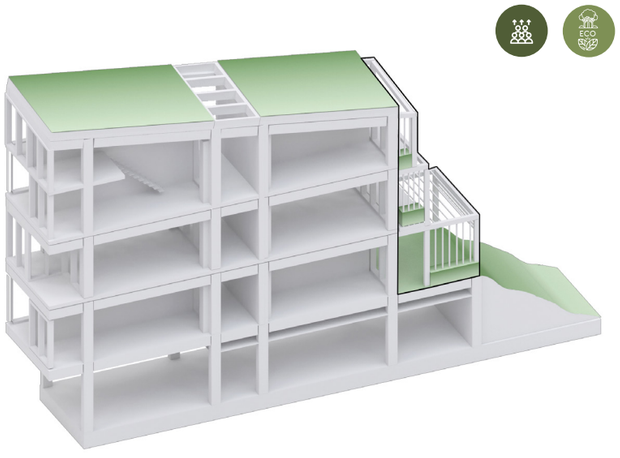


Lightweight skeleton walls system

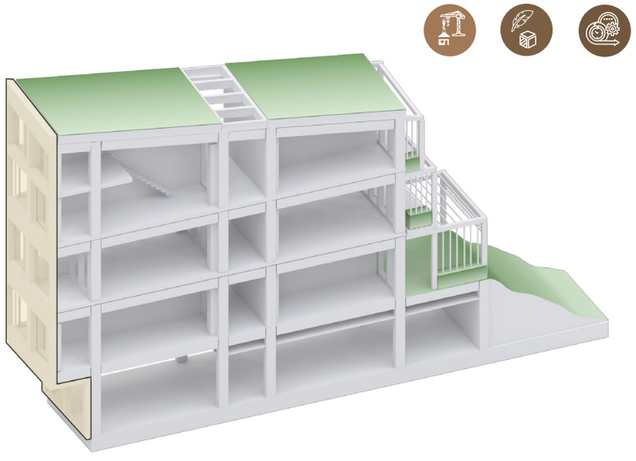


Repetitive floor

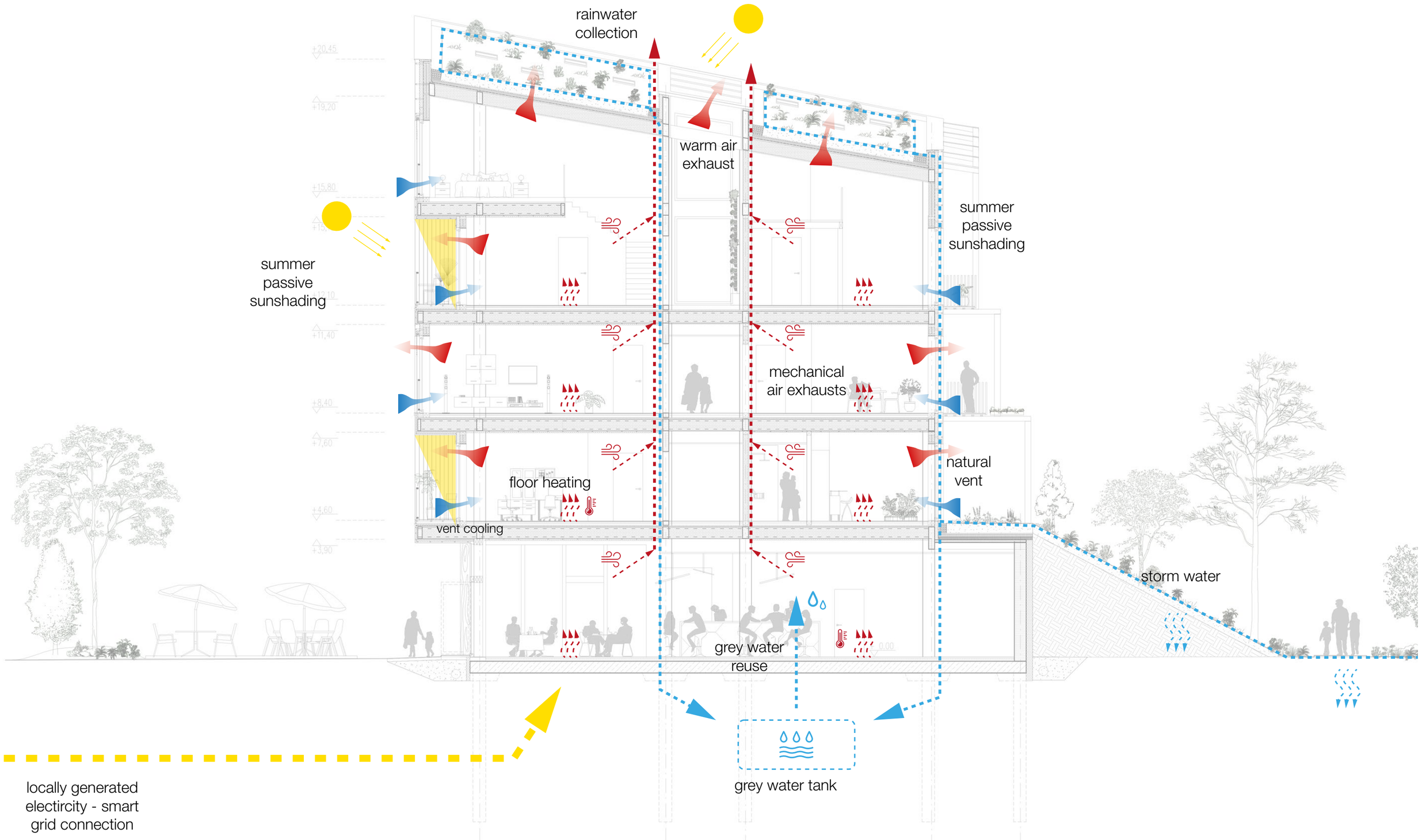
Additional sub-levels in duplex/triplex apartments



Pergolas



Timber facade

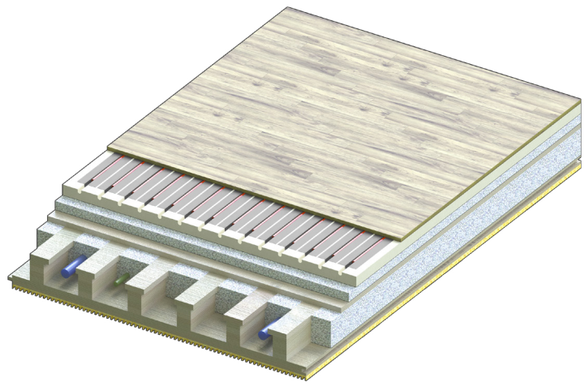


Climate design

Components

details

facade system

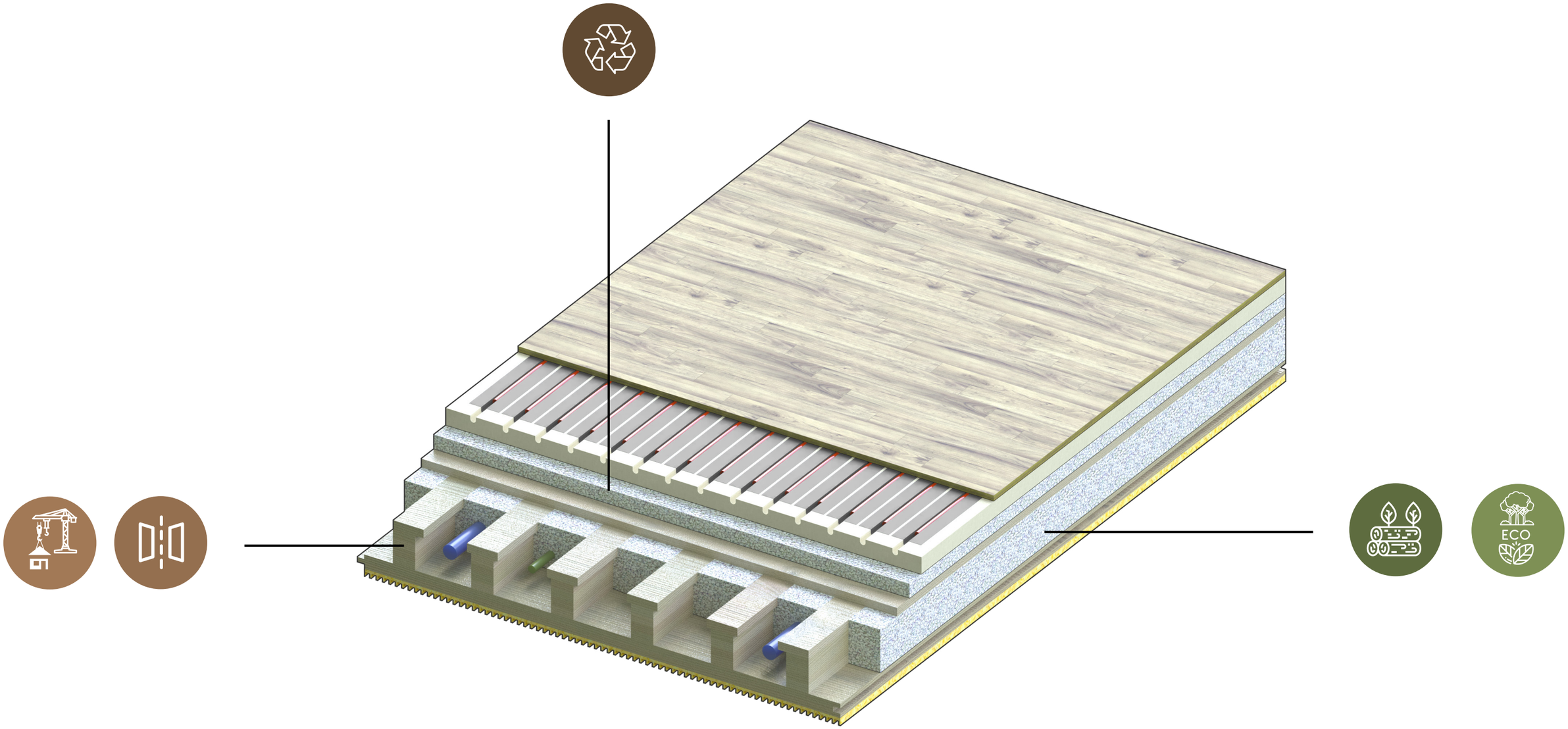


flooring system

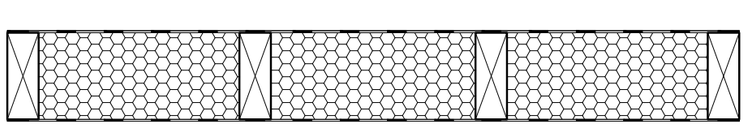
partitioning system

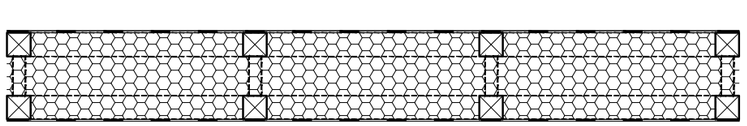
Key components

Elaboration on the most important building components in relation to design for dissasembly.



Flooring system

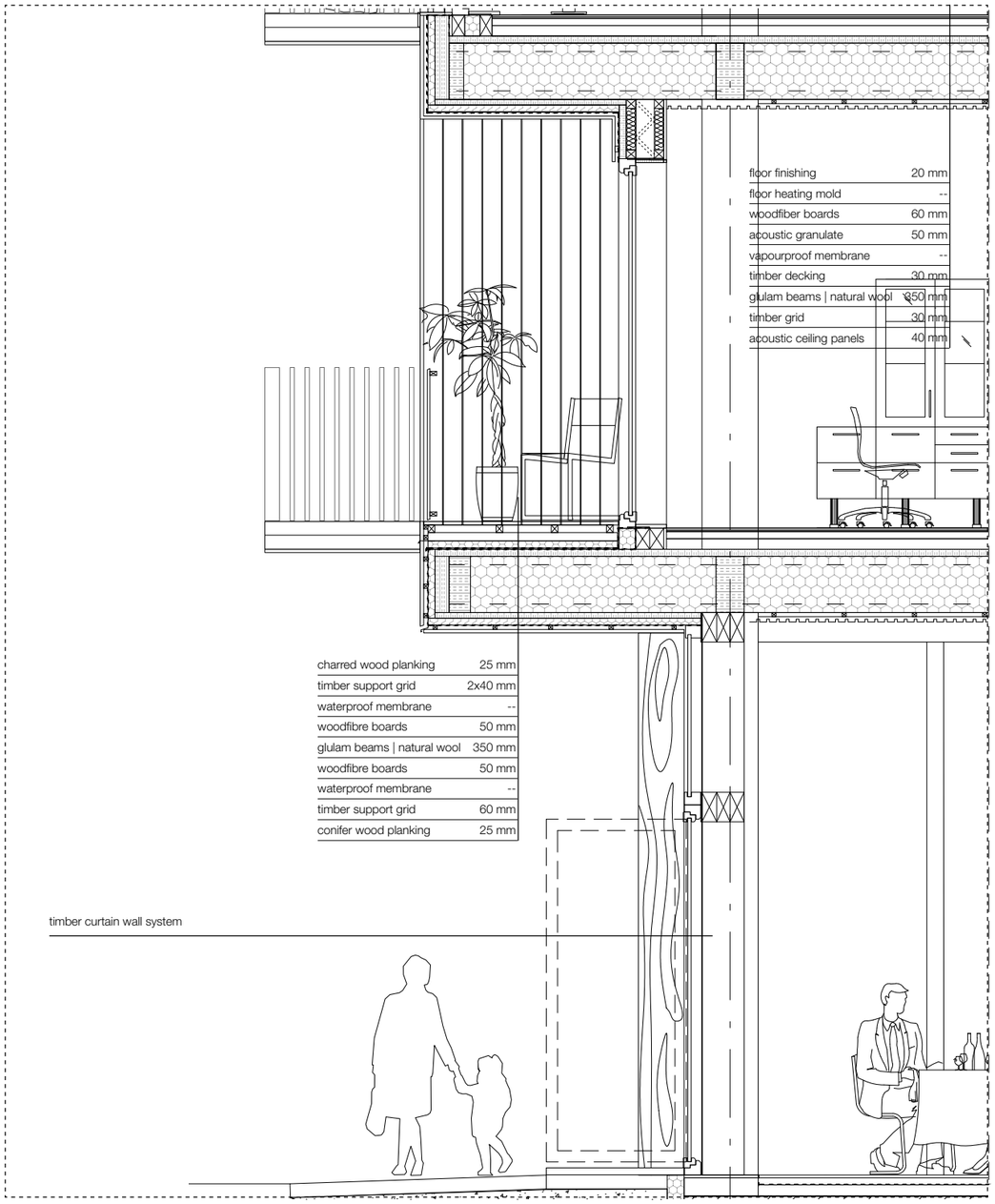




Skeleton walls exploration

Facade

Lightweight non-load bearing facade, with use wood-fibre & natural wool insulation.



Assembly

Lightweight non-load bearing facade, with use wood-fibre & natural wool insulation.

economic & social sustainability

environmental sustainability

https://poly.google.com/view/8gPuMk-WZ3b

Thank you