

An aerial photograph of a rural landscape. In the foreground, a river flows horizontally across the frame. Below the river, there is a cluster of residential buildings, including houses and barns. The middle ground is dominated by large, rectangular agricultural fields, some of which are divided by narrow paths or ditches. The background shows a flat expanse of land with scattered trees and distant structures under a clear sky.

WETLAND HOUSING SERVICE

Advanced
Housing



Oskar
Hermans

OVERVIEW

An aerial architectural rendering of a residential development. The scene shows a cluster of multi-story residential buildings with varied rooflines and facades, interspersed with green spaces, walkways, and a central courtyard. In the background, a body of water is visible with a sailboat and a row of white rectangular structures along the shore. The overall style is a soft, painterly architectural sketch.

Context analysis

Personal focus

Group strategy

Personal research

Urban strategy

Building strategy

Technical strategy

INTRODUCTION

Housing crisis

Lack of affordable housing

Wetland Housing Service, page

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Group work



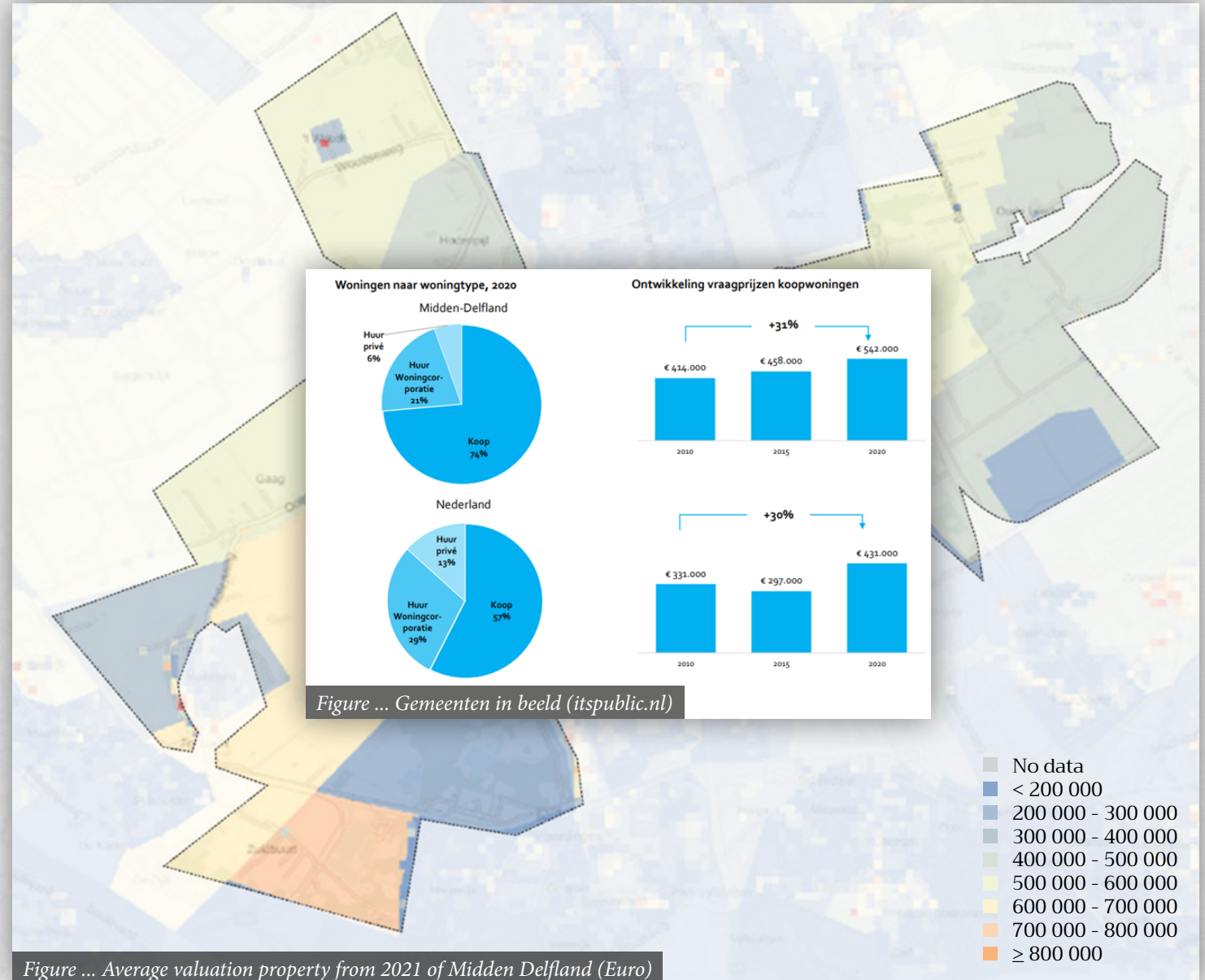
INTRODUCTION

Wetland Housing Service, page

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Group work



CONTEXT

Available space?

Between cities

Lack of affordable housing

Green space

Space for water

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Group work



EXISTING LANDSCAPE



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Group work

*Bodemdaling door de eeuwen heen.
In de details: het zichzelf versterkend proces van
grondwaterpeilverlaging en het gevolg ervan.*

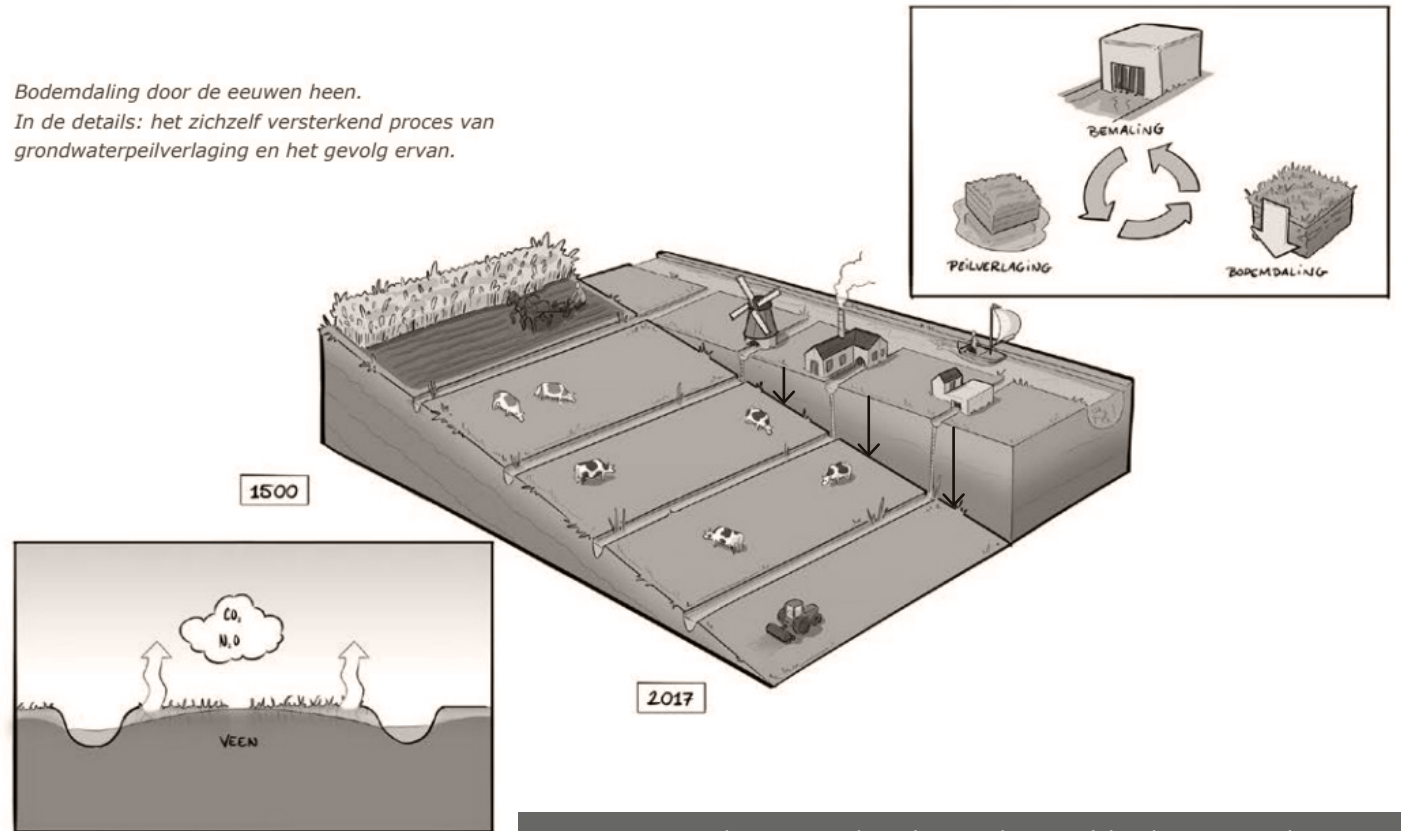
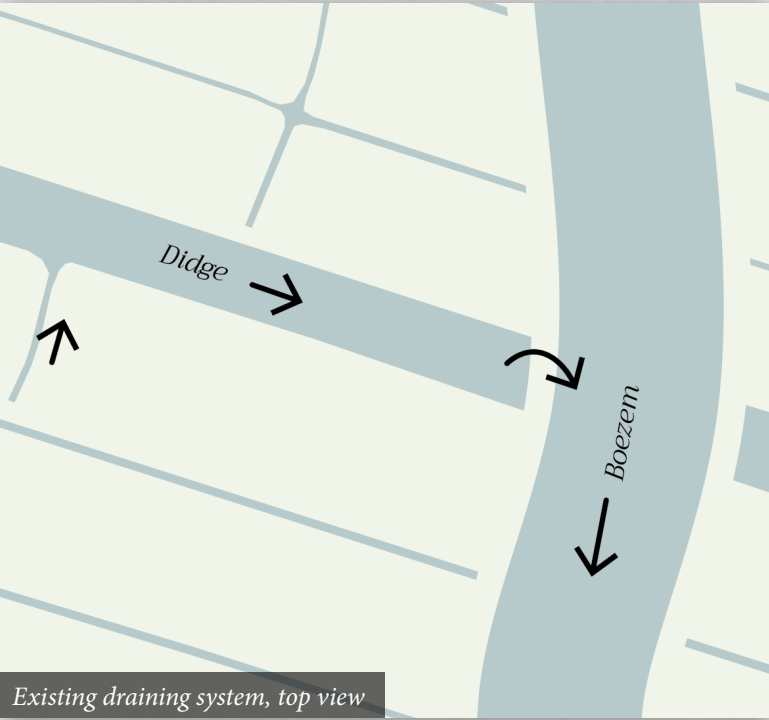
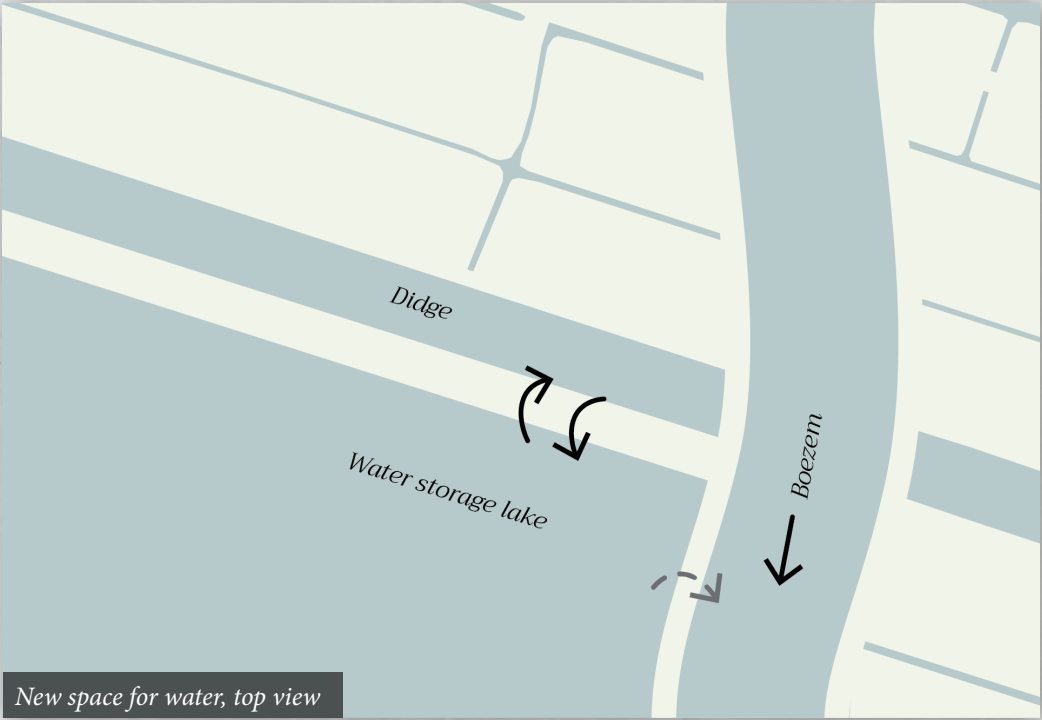


Figure ... Sinking peatland, accelerated by low groundwater

SPACE FOR WATER



Existing draining system, top view



New space for water, top view

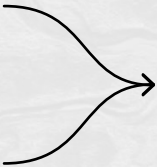
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Space for storm water

Evaporation (dry periods)



Water storage

CHANGE LAND



Figure ... reference of existing polder

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ROAD ACCESS



Figure ... reference of existing polder



STARTING POINTS

Future landscape design →
Affordable housing → ?

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FINDING TARGET GROUP

Tourism, Catering,
Entertainment, Argiculture

No regular contracts

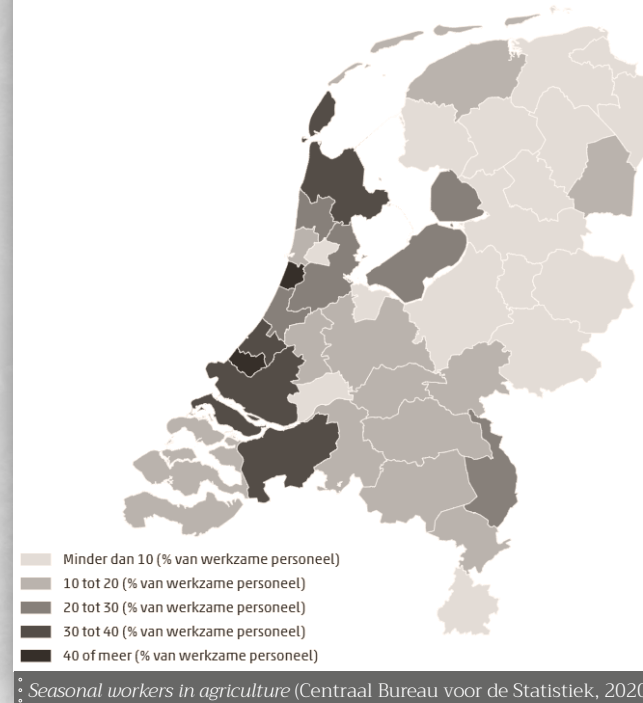
Low income

max. 100 days in horticulture

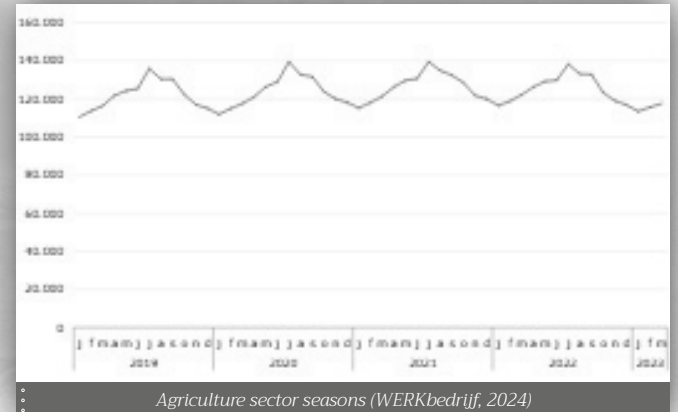
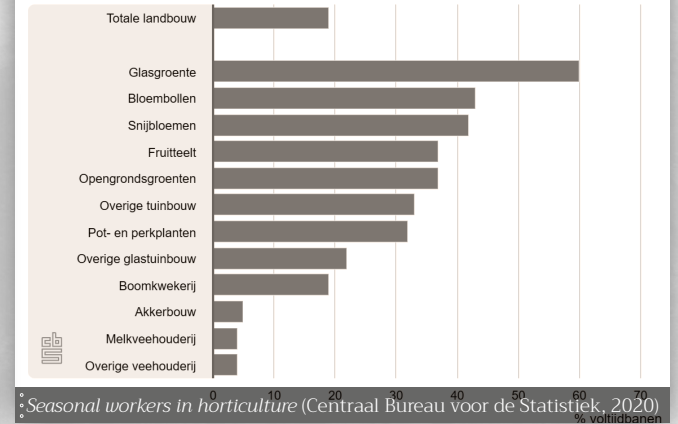
max. 50 days in argiculture

max. 100 days on dairy farm

Seizoenkrachten in de landbouw, corop, 2019



Niet-regelmatig werkzaam personeel, bedrijfstype, 2019



WHO?

Tourism, Catering,
Entertainment, Argiculture

No regular contracts

Low income

Flexible duration of stay

Individuals



Couples



Small family



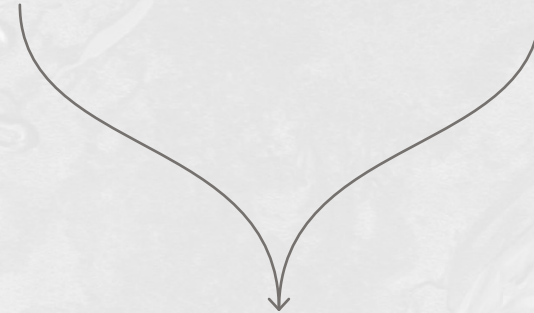
Small family



PROBLEM STATEMENT

No available
housing for staying
indefinitely

Little to no shared
affordable housing



How can **affordable** housing be designed to provides the
service of housing for short and long stay residents?



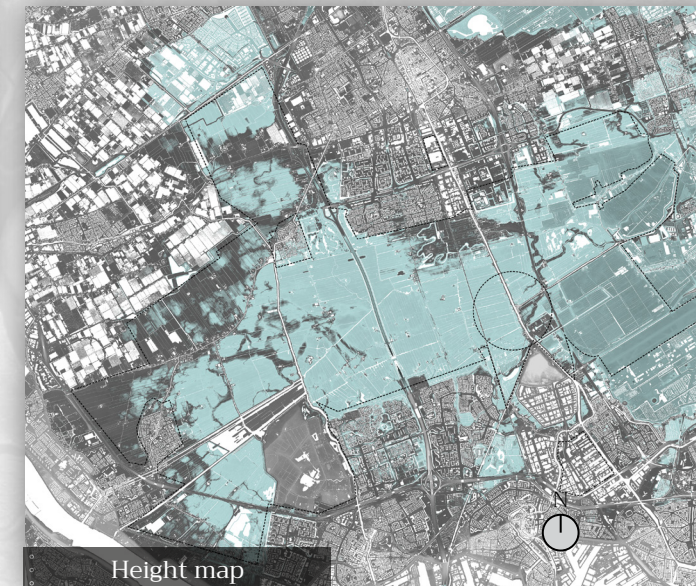
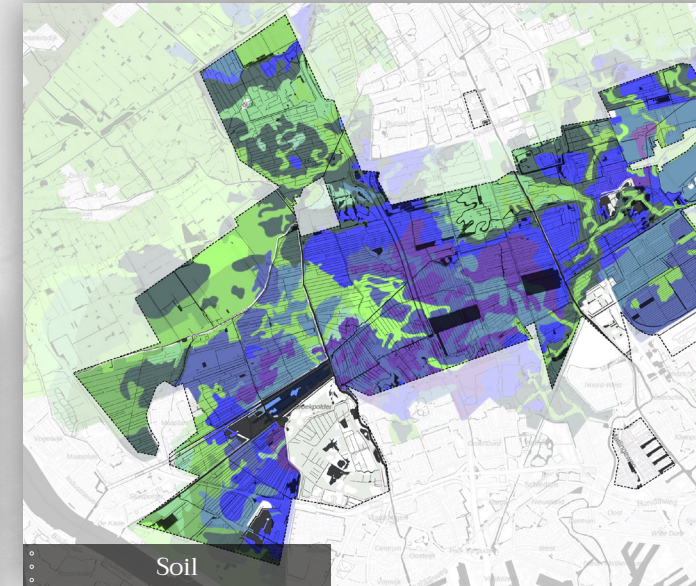
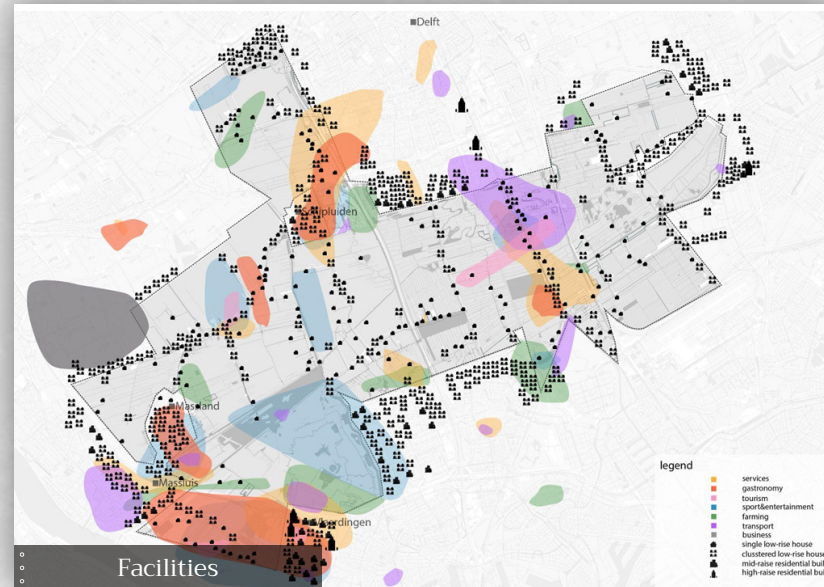
LANDSCAPE ANALYSIS

Existing facilities

Connection of infrastructure

Space to expand

Economic opportunity



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Group work

OPPERTUNITY

Mobility

Travel time to Rotterdam Central Station:

Cycling 19 mins

Car 15 mins

Public transport 23 mins

Travel time to Delft Central Station:

Cycling 19 mins

Car 15 mins

Public transport 23 mins

case studies, page

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Group work



DE ZWETH



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Group work

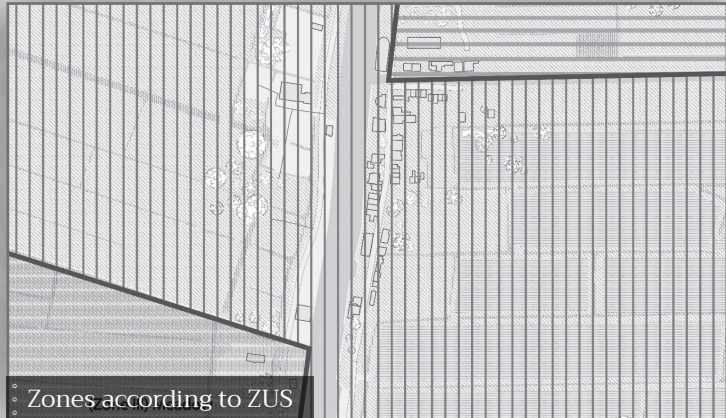
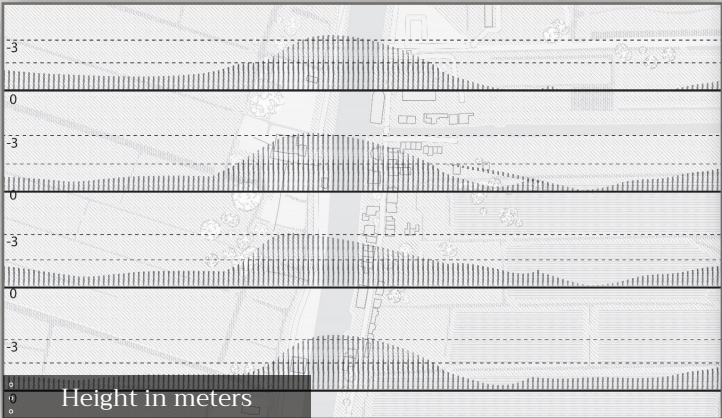
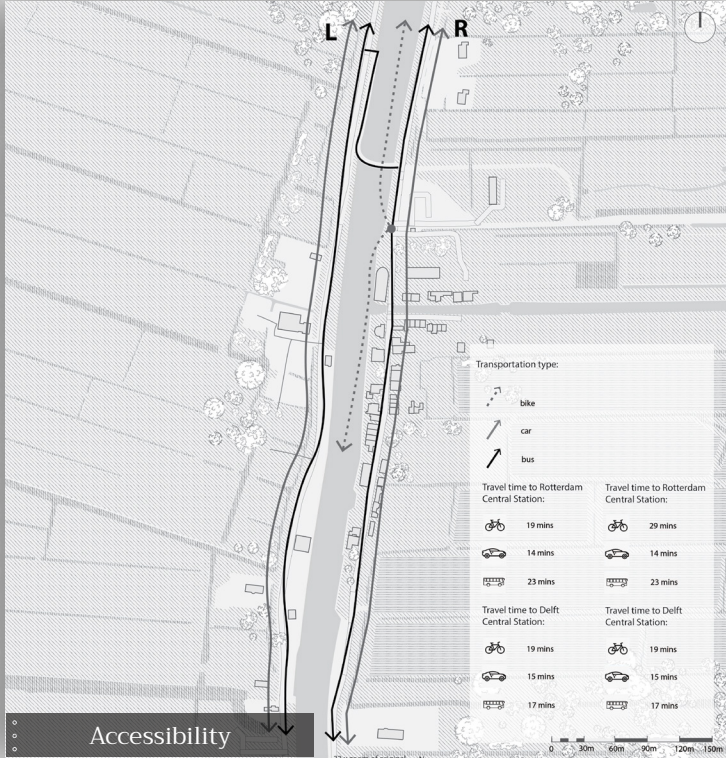


REGIONAL ANALYSIS

Bad West to East connection

Village not utilizing the Schie

Oppertunity for activity



NEW ECOLOGY

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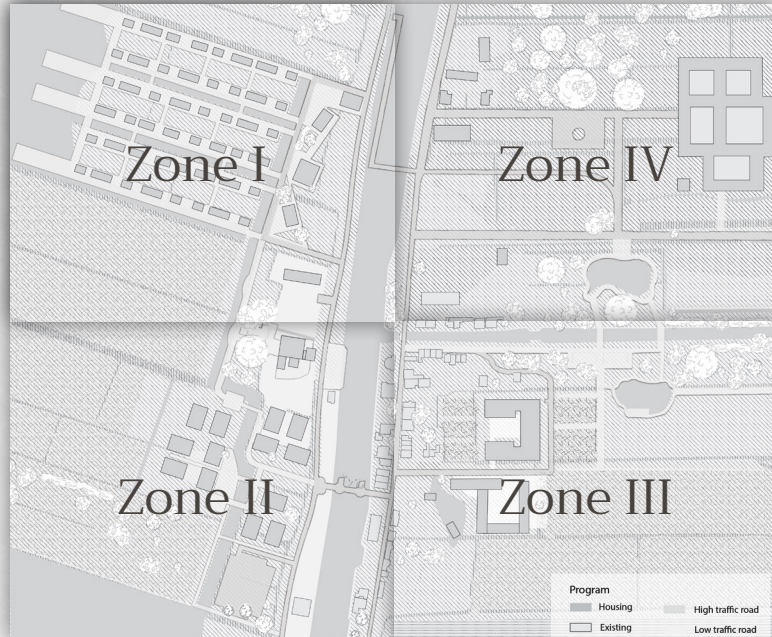
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Group work



NEW ECOLOGY

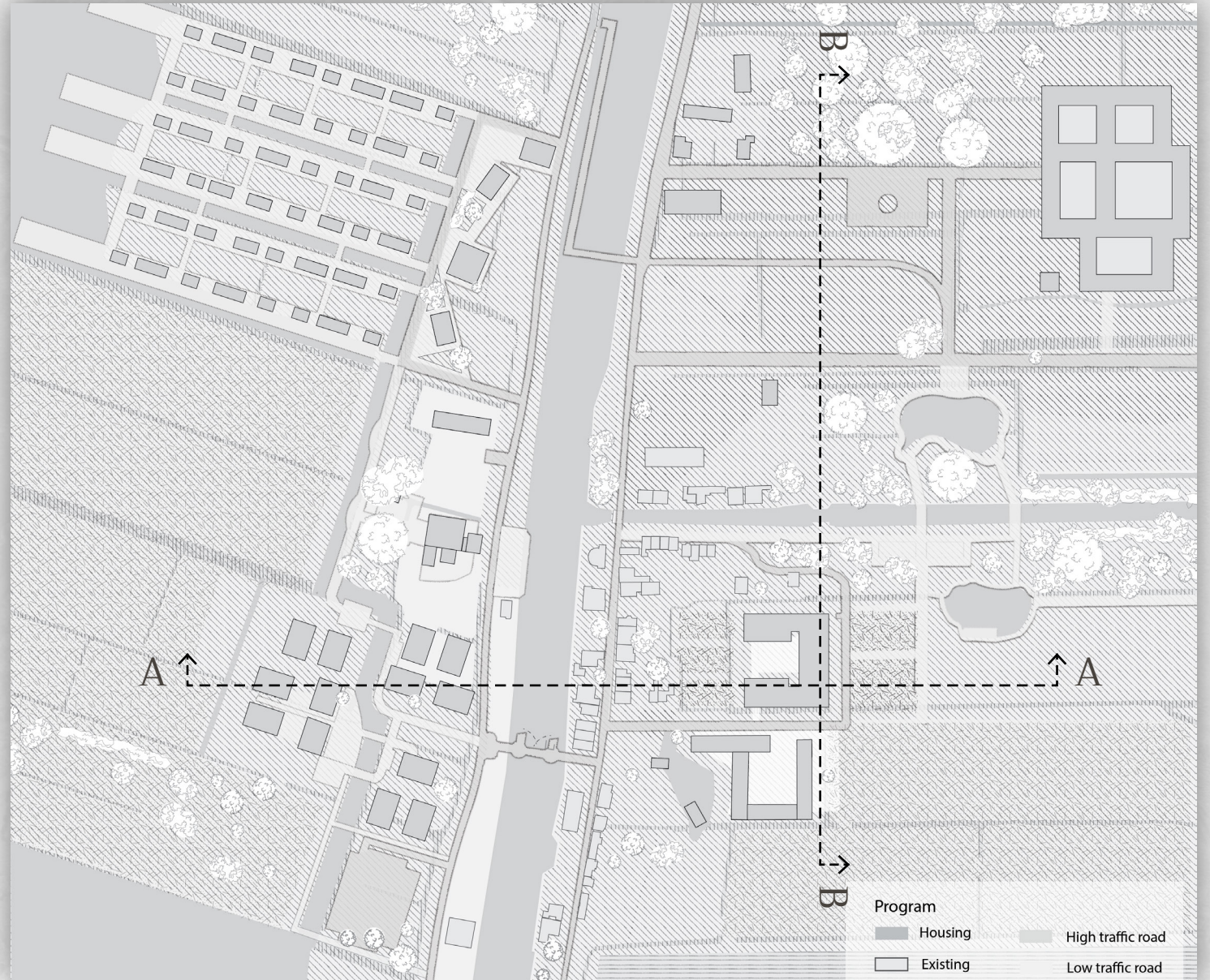


Wetland Housing Service, page

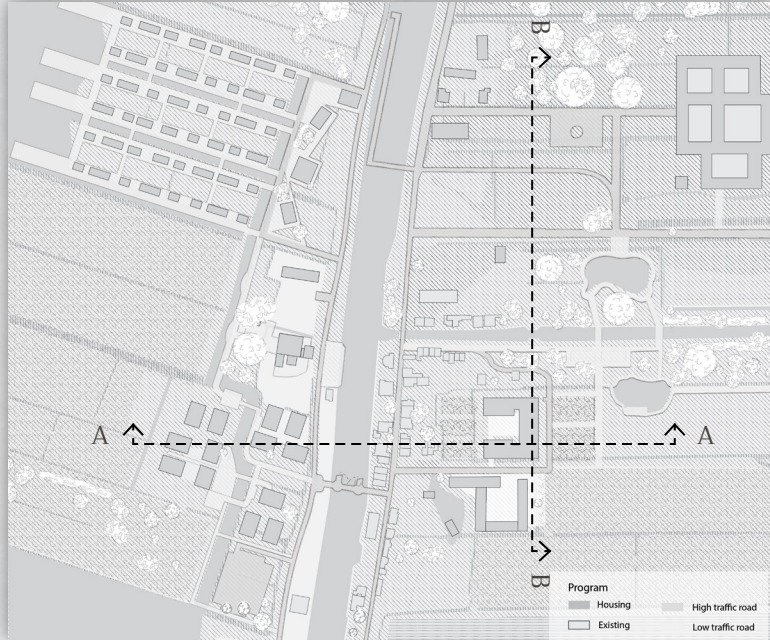
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Group work



NEW ECOLOGY

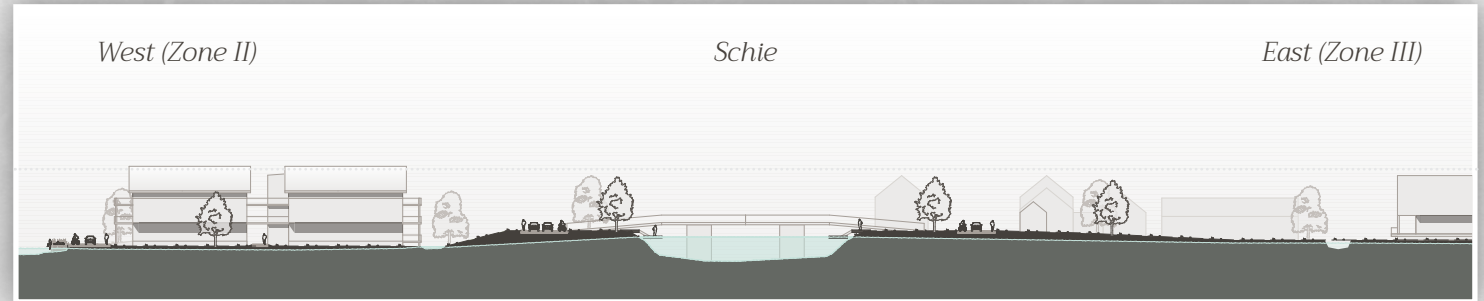


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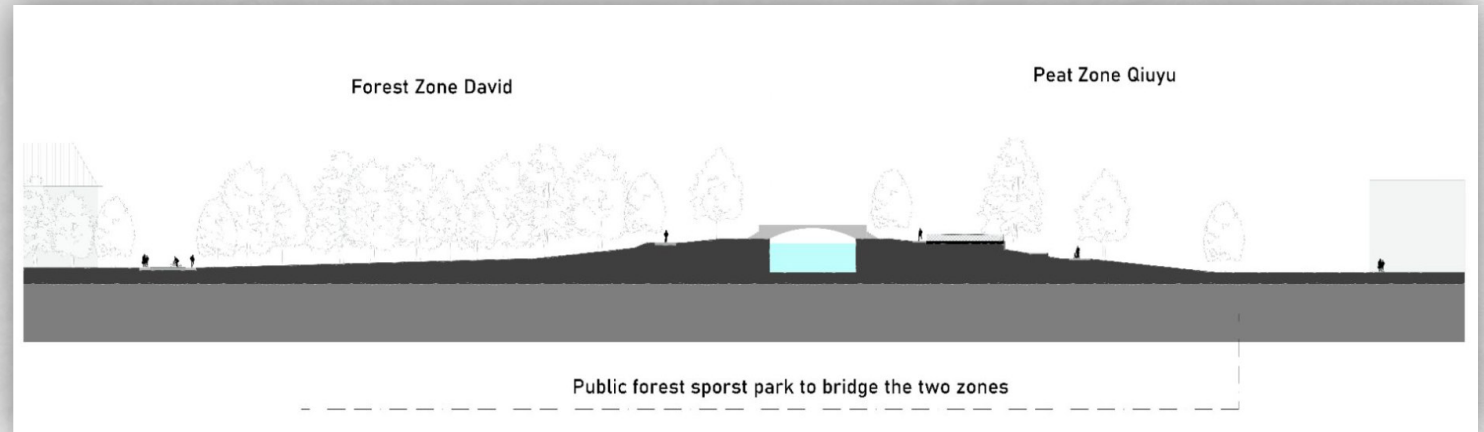
20



Group work



Urban section A-A



Urban section B-B

NEW ECOLOGY

Expanding ecology

Four plans

Different target groups

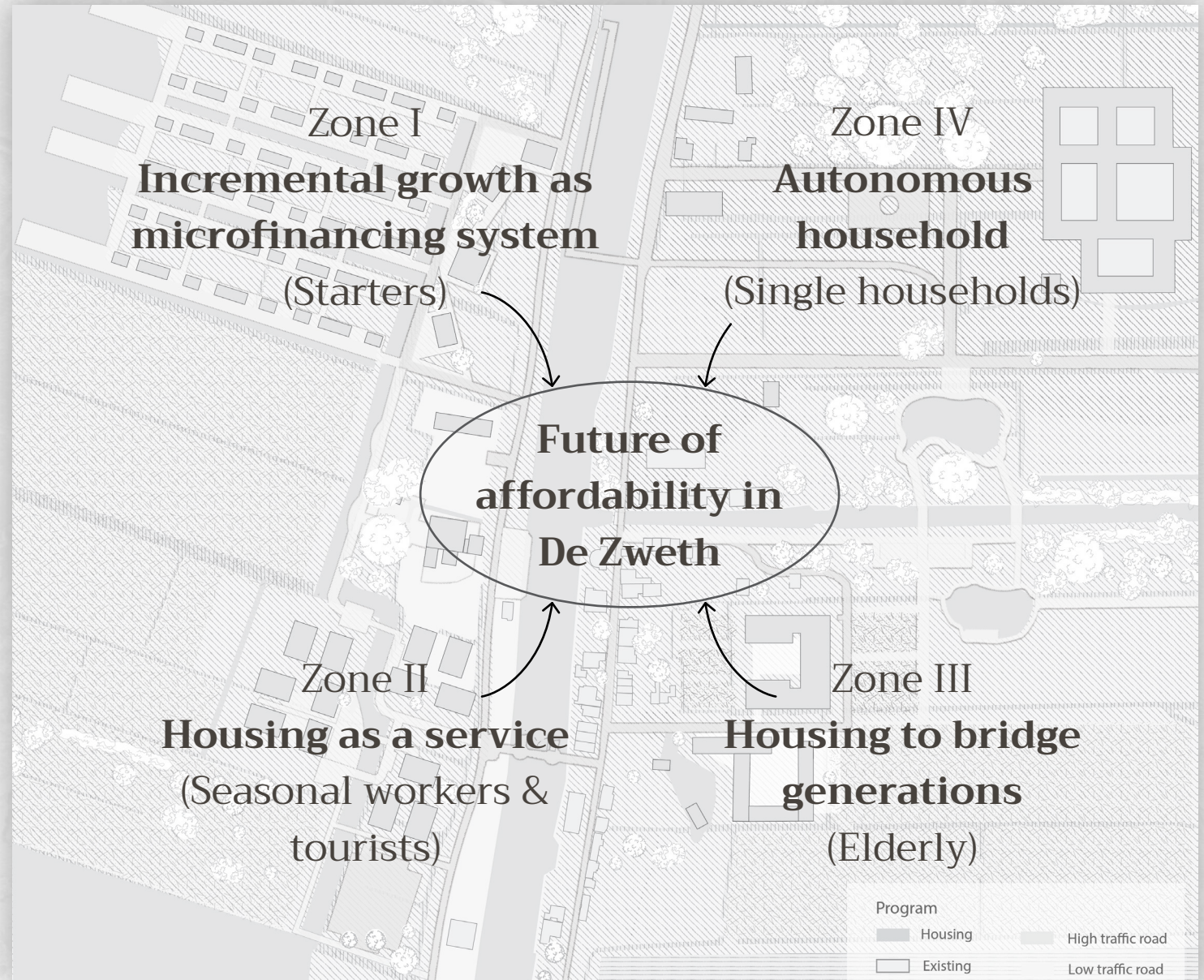
Affordable market

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Group work



RESEARCH HOUSING TYPOLOGY

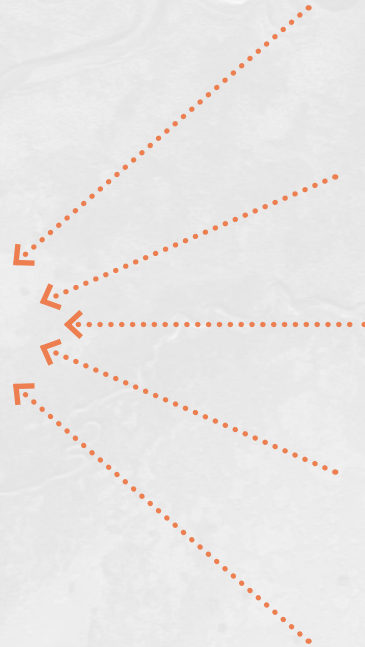
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CASE STUDY SELECTION

Wetland housing service



Case 1929

The Narkomfin building, Russia

Collective living, Affordable, Employees

Case 1998

Windsong CO-Housing, Canada

Collective street, C.P.C.

Case 2009

Satelliten-Wohnung Haus A, Switzerland

Collective living, Affordable

Case 2017

Bremer Punkt, Germany

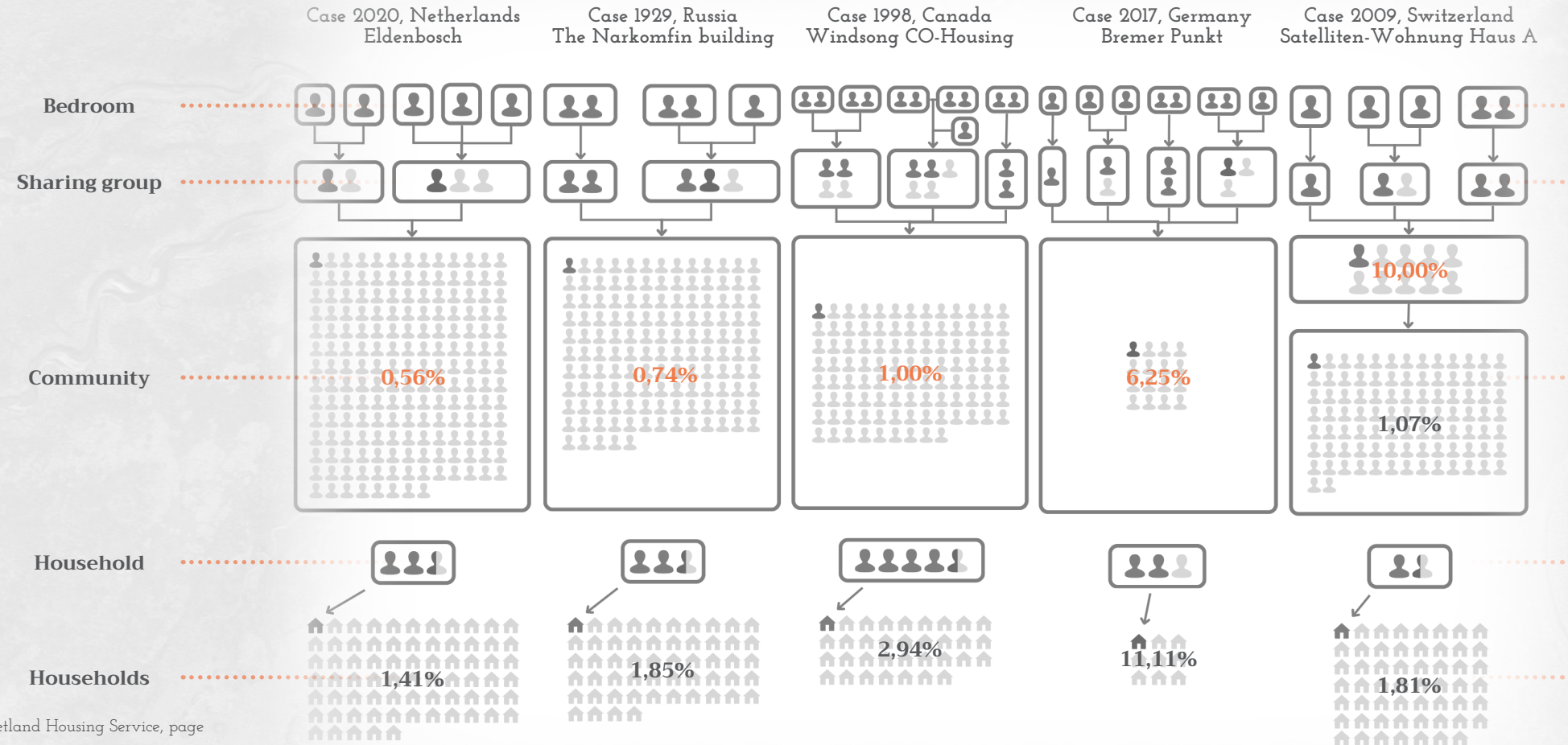
Versatile, Social mix, Affordable

Case 2020

Eldenbosch, Netherlands

Shared living, Affordable, Temporary stay

ANALYSIS



CASE

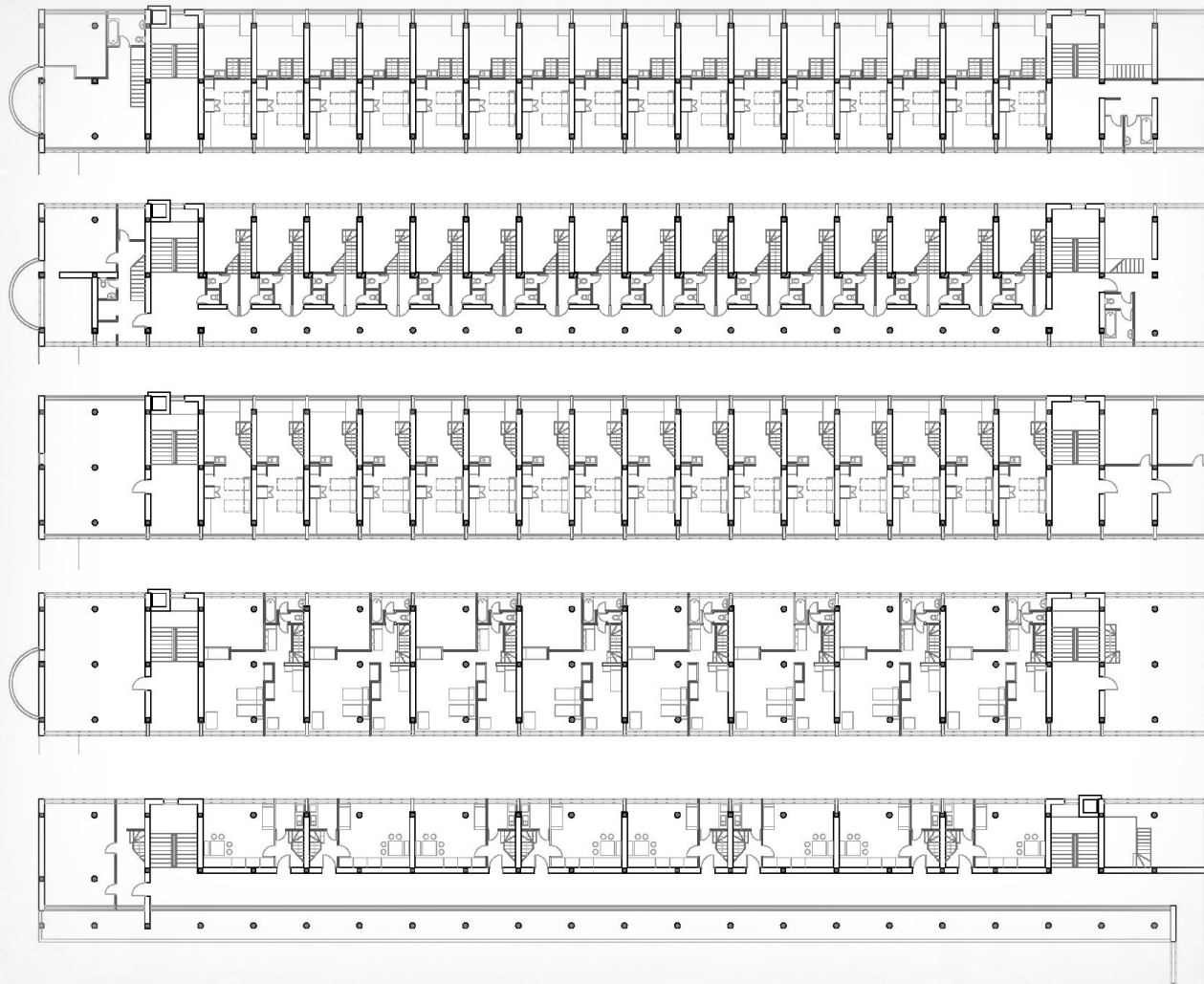
Case 1929, Russia
The Narkomfin building



135 people sharing:
play area for children
kitchen (in the early times)

case studies, page

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ANALYSIS

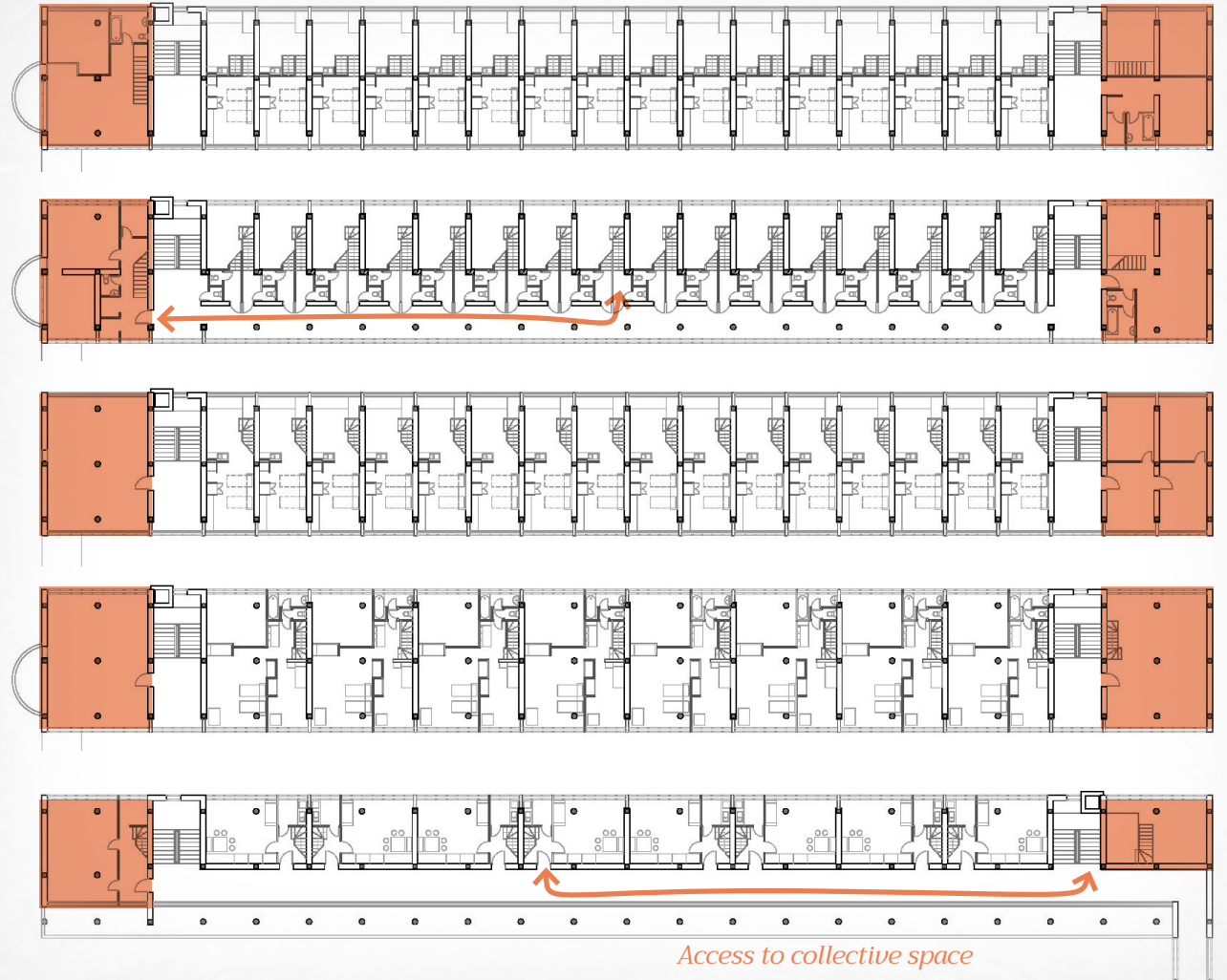
Case 1929, Russia
The Narkomfin building



135 people sharing:
play area for children
kitchen (in the early times)

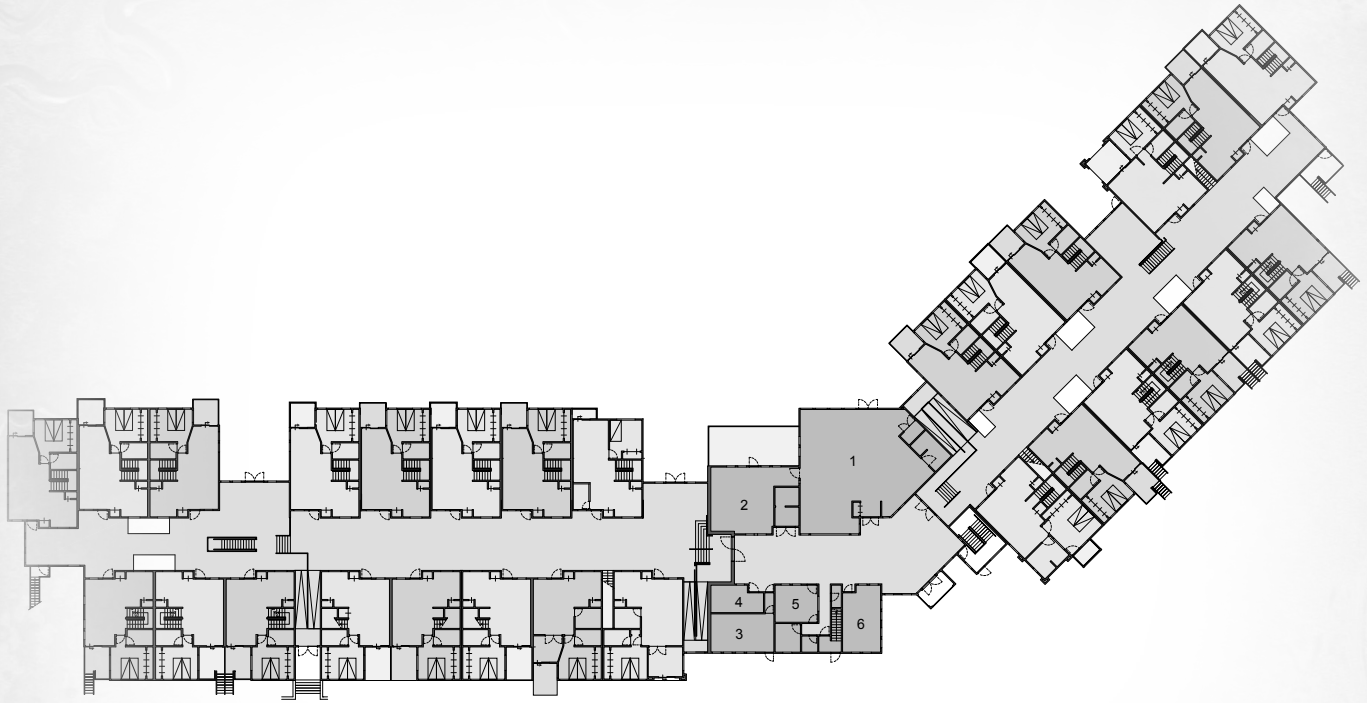
case studies, page

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CASE

Case 1998, Canada
Windsong CO-Housing



RESULTS

Case 1998, Canada
Windsong CO-Housing

Ambition

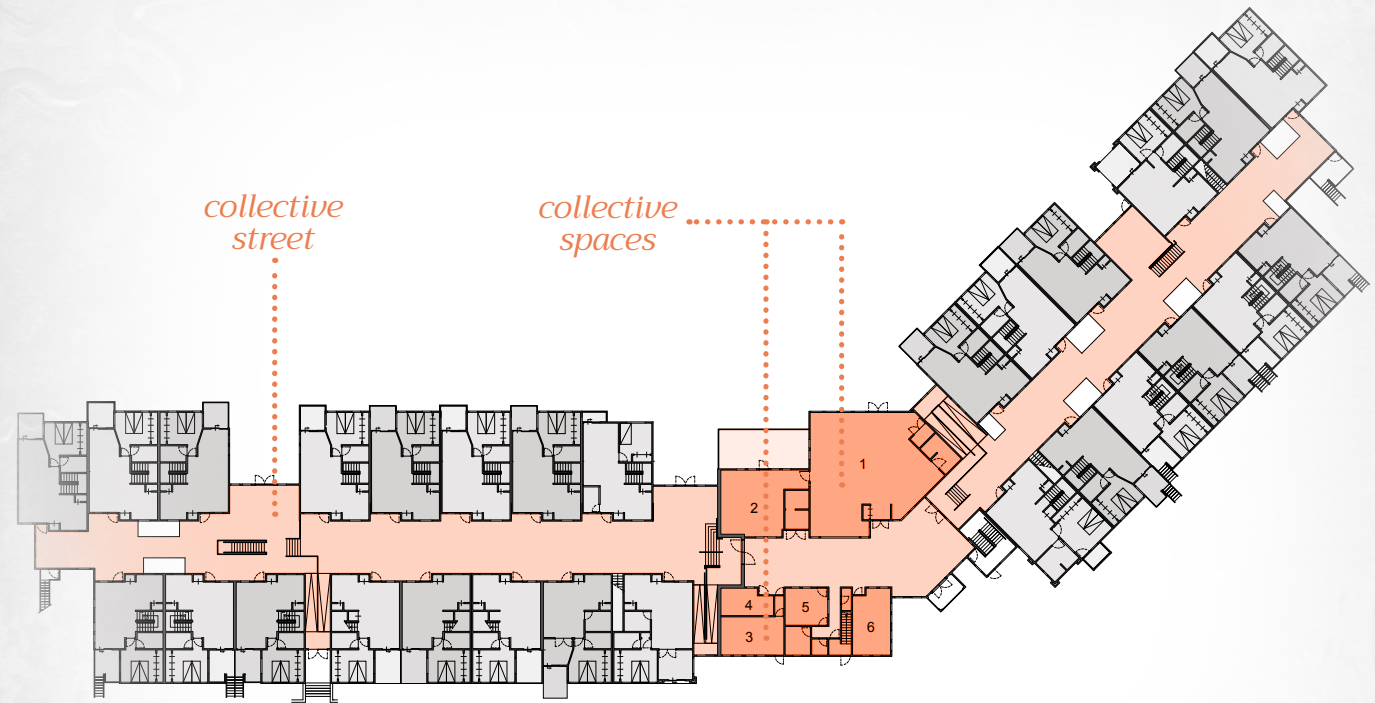
Social inclusive design

Principle

Centrilizing collective space

Strategy

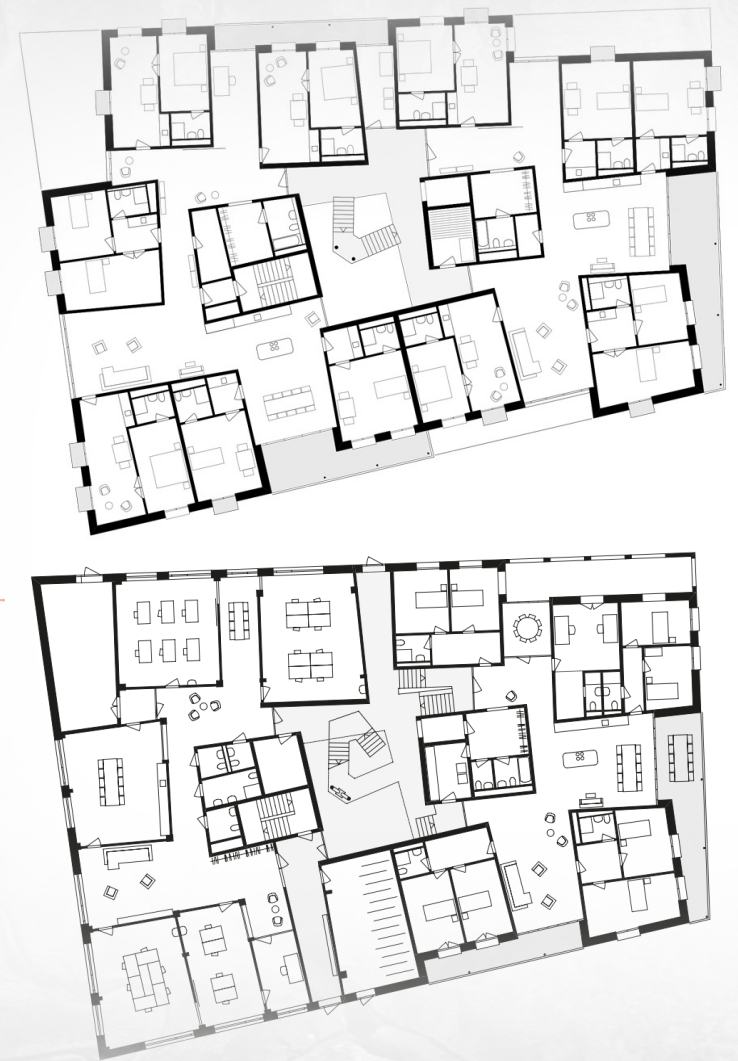
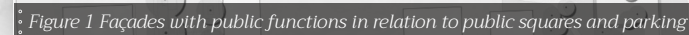
Connect front doors of dwellings to
collective spaces



Case 2009, Switzerland

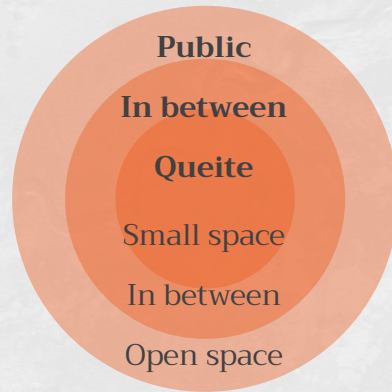
Satelliten-Wohnung Haus A

Satelliten-Wohnung Haus A



EXAMPLE URBAN SCALE

Social inclusive

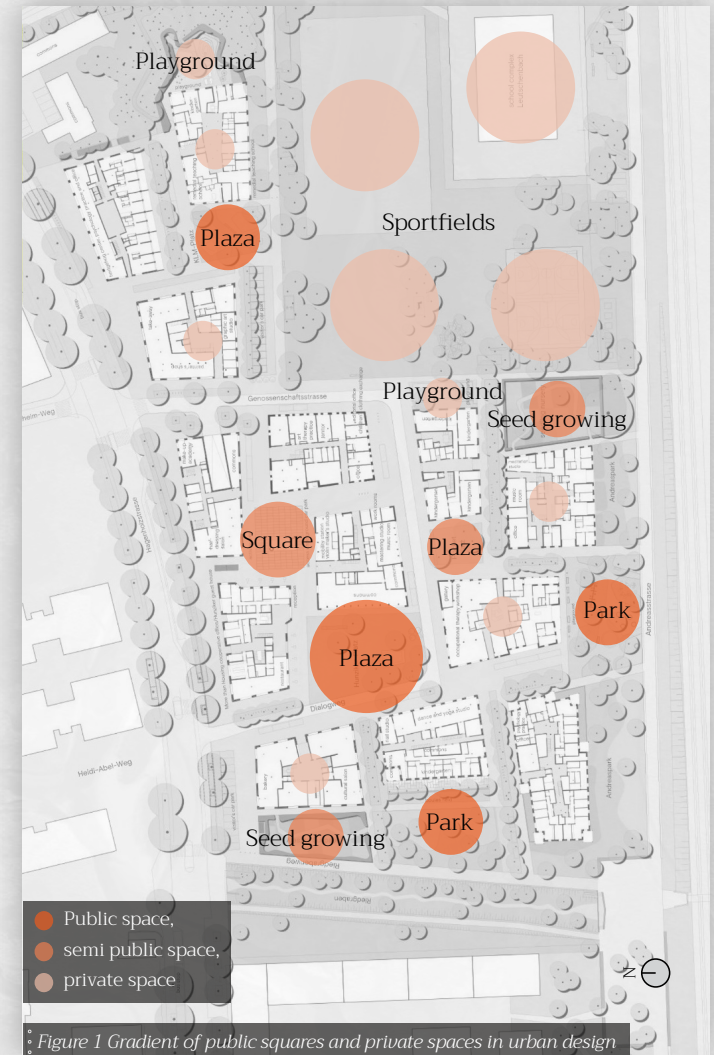


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Case 2009, Switzerland



EXAMPLE BUILDING SCALE

Ambitions

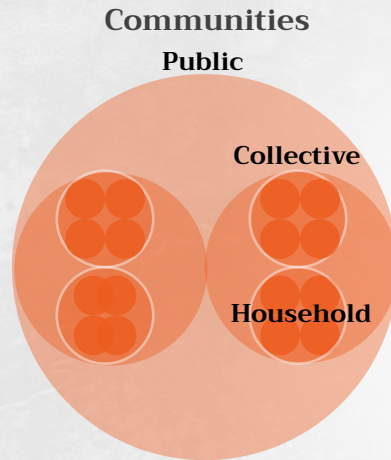
Managable community size

Principle

Limit size of sharing

Strategies

Share kitchen & living room
with no more than 8-10
people



CASE

Case 2017, Germany
Bremer Punkt



Bremer Punkt 1, 1st floor



floor plans Bremer Punkt 1-7

case studies, page

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RESULTS

Case 2017, Germany
Bremer Punkt

Ambitions

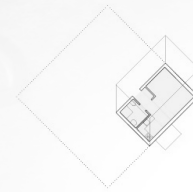
Affordable choice

Principle

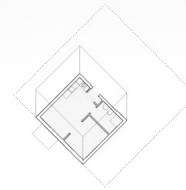
Pay for space you need

Strategies

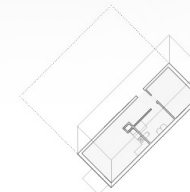
Masterplan dwelling variation



1 Zi 30m²

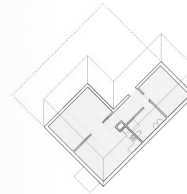


2 Zi 42m²

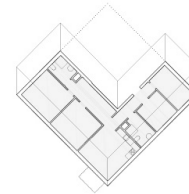


2 Zi 58m²

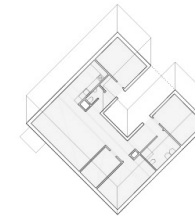
*variations in
dwelling size*



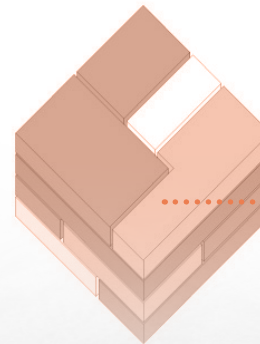
3 Zi 80m²



5 Zi 107m²



5 Zi 130m²



*configuration
combination*



RESULTS

Case 2020, Netherlands
Eldenbosch

*3 bedroom
apartment*



*shared:
living
kitchen
bathroom*

*2 bedroom
apartment*



*shared:
living
kitchen
bathroom*



RESULTS

Case 2020, Netherlands
Eldenbosch

Ambition

Multi functional apartments

Principle

Appartments as shared living
& family living in masterplan

Strategy

Dwellings with 2-4 bedrooms

*3 bedroom
apartment*



*shared:
living
kitchen
bathroom*

*2 bedroom
apartment*



*shared:
living
kitchen
bathroom*



CASE STUDY RESULTS

Ambitions

Social inclusive design

Share space & costs

Respect the individual

Managable community size

Pay for space you need

Principle

Centrilizing collective space

Share functions
(that allow for social interaction)

Boundry between collective & private

Limit size of sharing communities

Dwellings for
individuals, couples, & families

Strategies

Connect front doors of dwellings to
collective spaces

Share
kitchen, living room, circulation

Bedroom not connected to collective

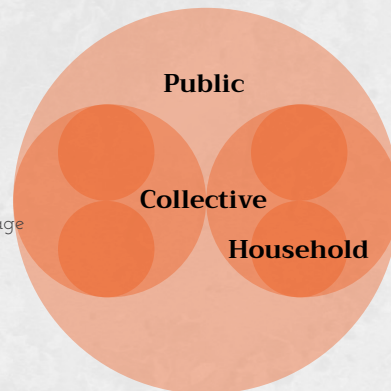
Share kitchen & living room with no
more then 8-10 people

Dwellings with 1-2 bedrooms

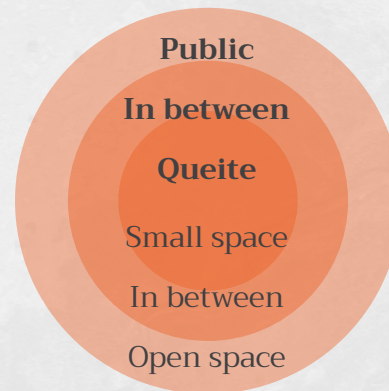


URBAN STRATEGIES

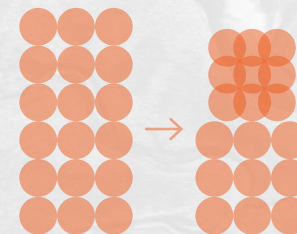
Community size



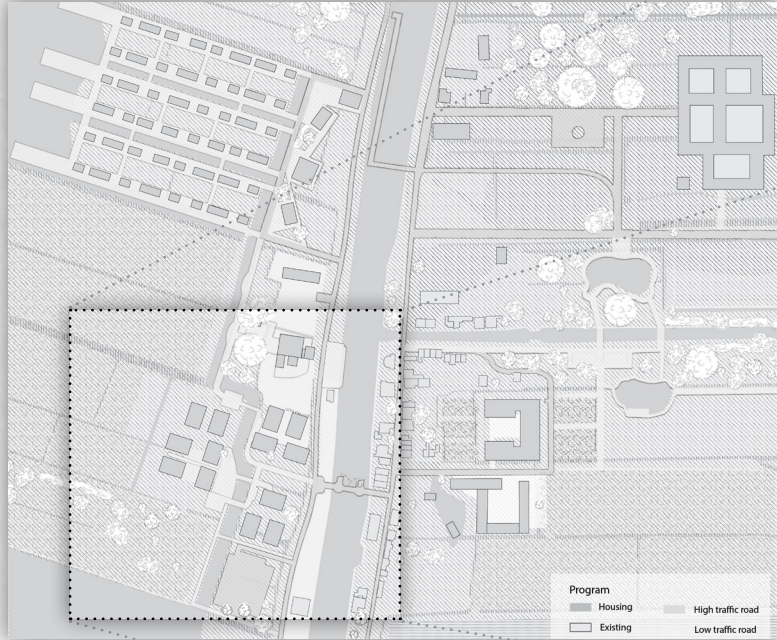
Social inclusive



Reducing by sharing



URBAN RESPONDSE



URBAN RESPONDSE

Case studies

100-200 people

1 building

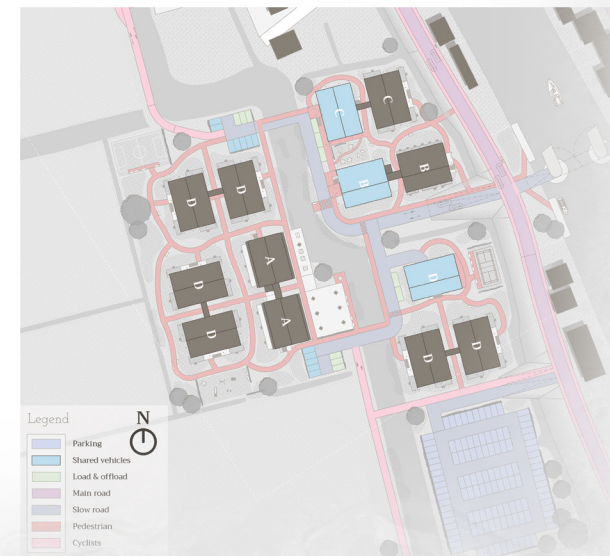
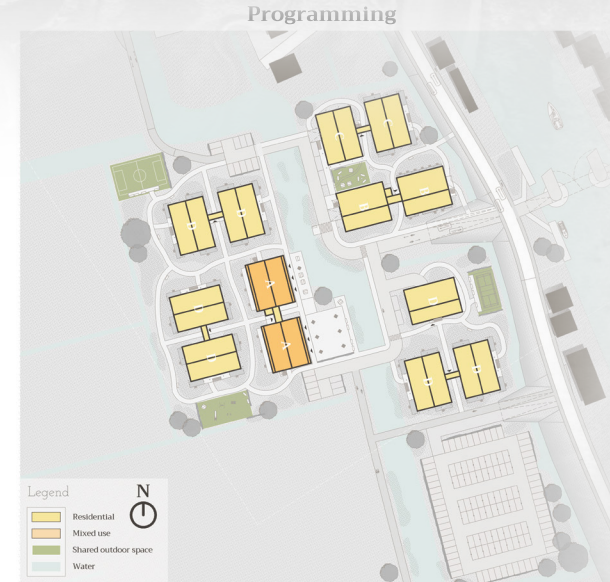
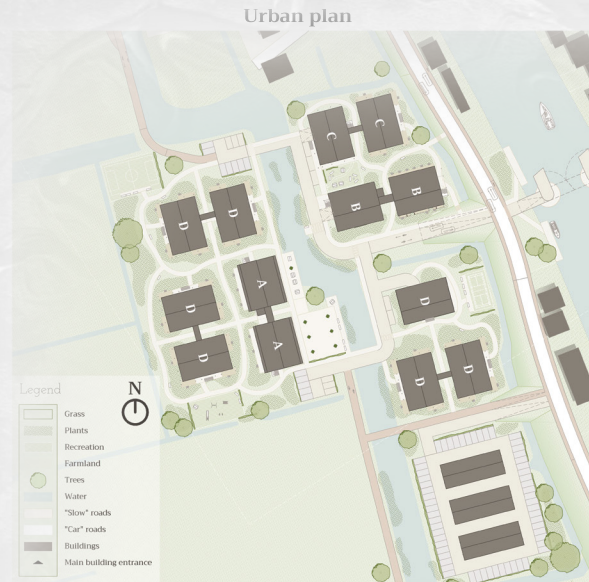
My urban plan

~160 people

multiple buildings

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COMMUNITIES & MORPHOLOGY

Ambition

Group communities

Principle

Cluster buildings and functions

Strategies

Create small clusters of max 4 buildings that stand within the wetland.

Community

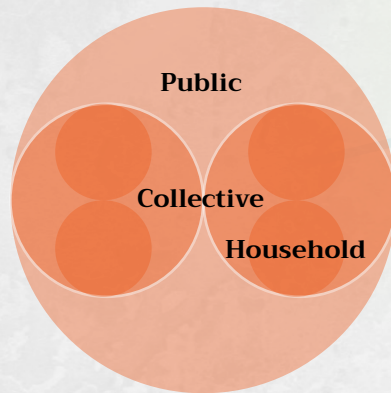
Public

Collective

Household

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Water storage

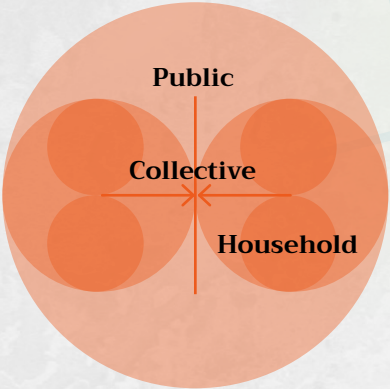
WETLANDS

Ambition
Centerilize public space

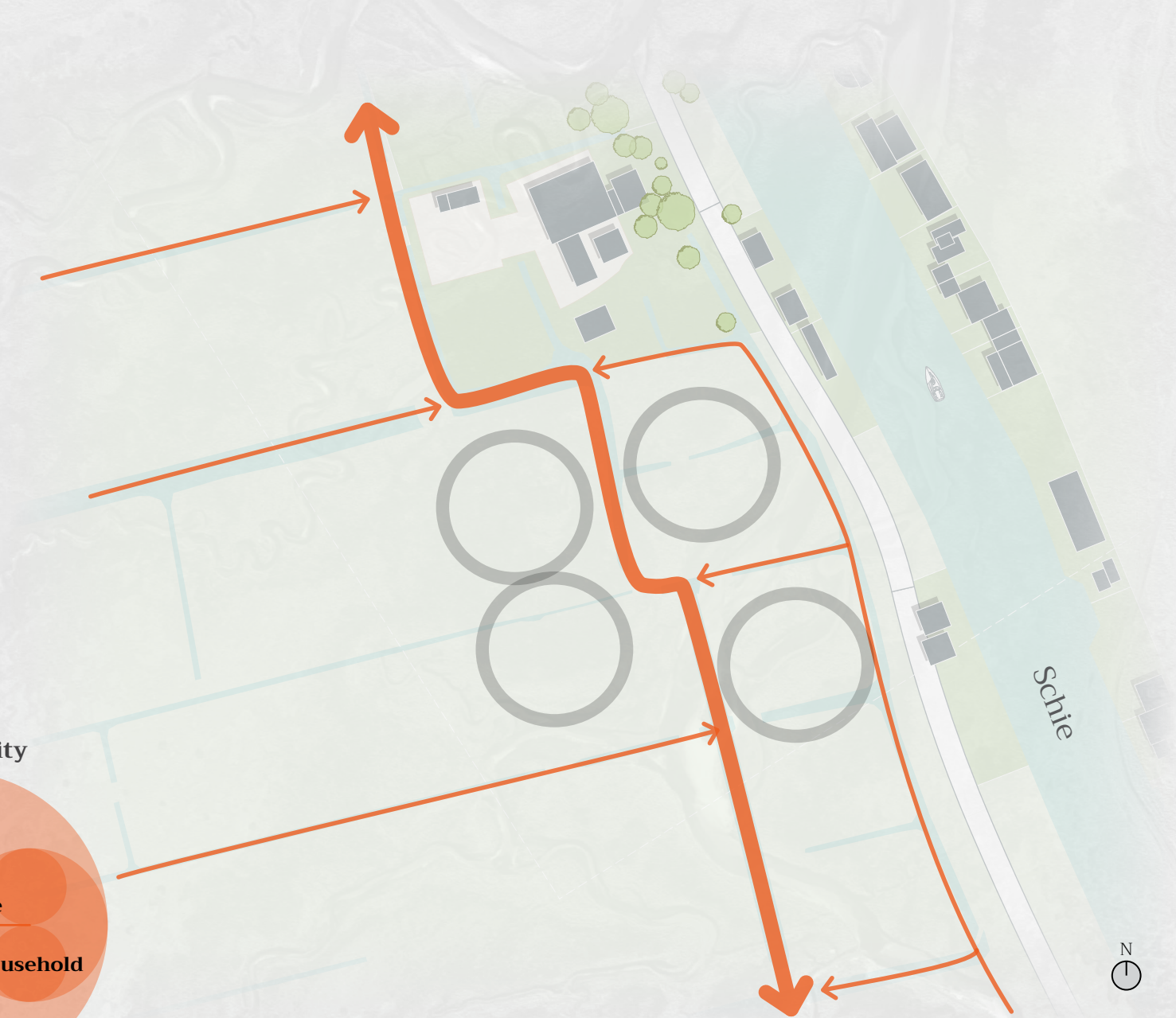
Principle
Center digde as open space for the spine of the project

Strategies
Widen main water way to water storage

Community



Wetland Housing Service, page
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Water storage

PUBLIC CENTER

Ambition

Centerize public functions

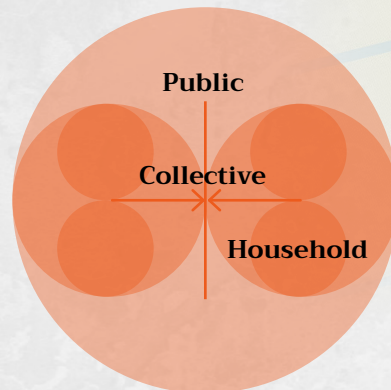
Principle

Emphasize public functions with open space

Strategies

Large center space for events and public activity with public ground floor functions

Community



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AMENITIES

Front facing, the public center

Employee area

Laundry service, Mobility service, Store space, Small supermarket, Work space

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WETLANDS

Ambition

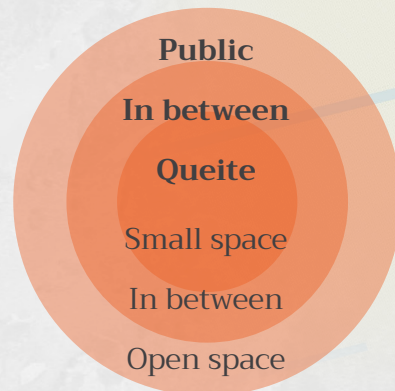
Social inclusive

Principle

Different form of public spaces

Strategies

A gradient of public space from open active spaces to smaller quiet spaces



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PUBLIC SPACE

Ambition

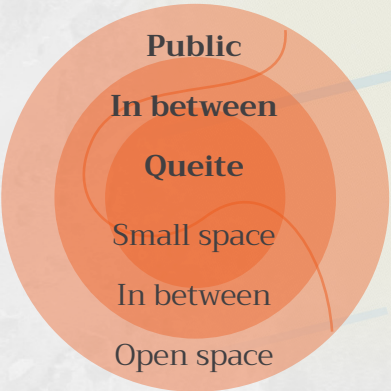
A natural urban plan

Principle

Setting buildings within the landscape, creating a park structure

Strategies

Connecting the different public areas, for everyone to be accessable, rather then repition of same space



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MOBILITY

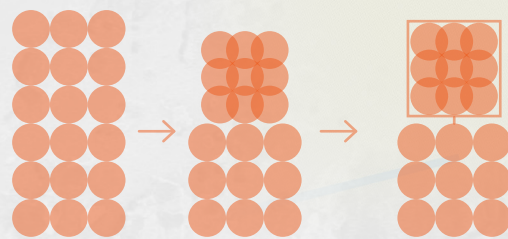
Ambition
Reduce by sharing

Principle
Minimize new infrastructure
Sharing vehicles close to home

Strategies
Directly connecting shared mobility to clusters and centralised road.

Distribubute shared vehicles for each cluster.

Reducing by sharing **Priority**



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BUILDING STRATEGIES

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DESIGN CONCEPT

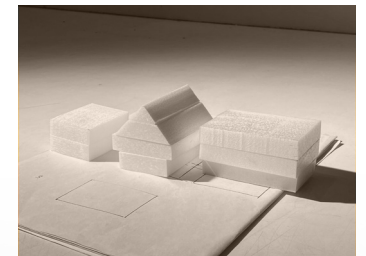
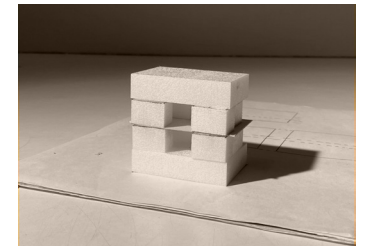
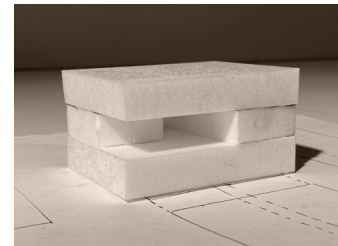
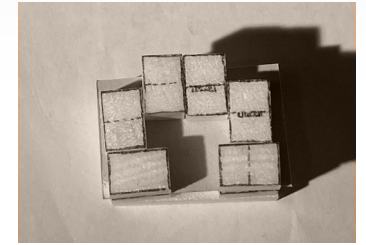
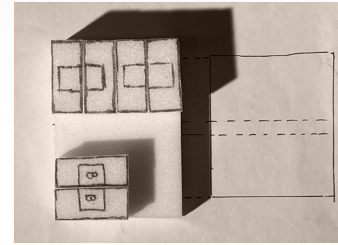
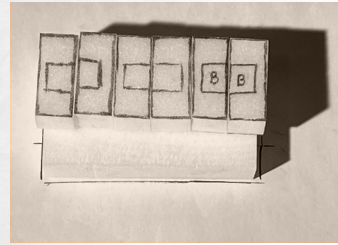

Single households


Densify


Splitting up volumes


Horizontal


Breaking volume



case studies, page

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DESIGN CONCEPT

Collaborative housing

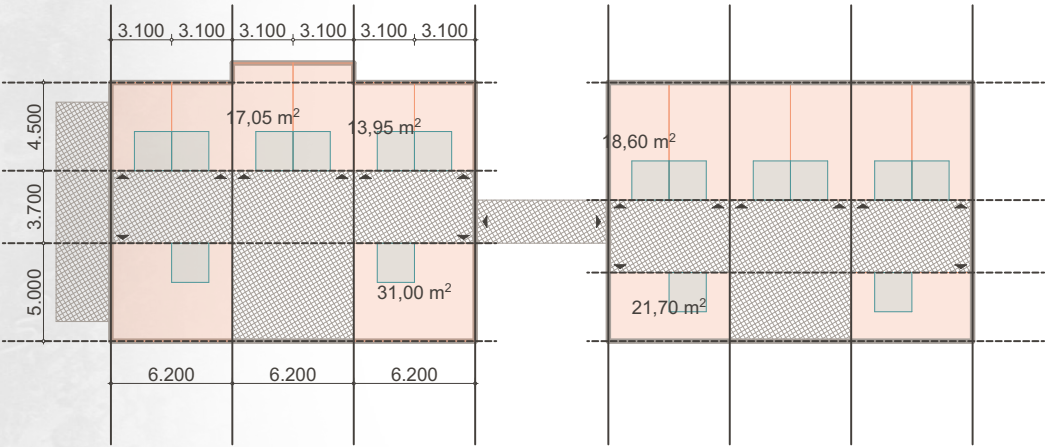
Individuals
12-20 m²



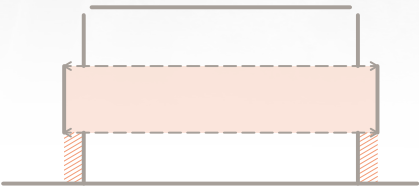
Couples
20-28 m²



Building B



Breaking volume

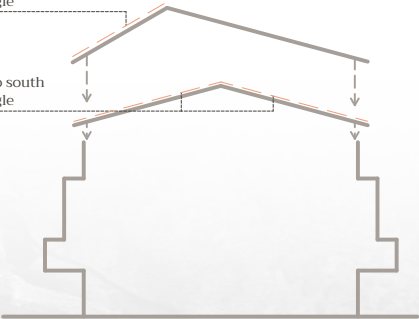


Outdoor space



PV panels to south
with 30° angle

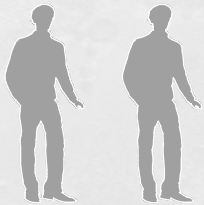
PV panels to south
with 20° angle



DESIGN CONCEPT

shared apartment 80m²

Individuals



Couples

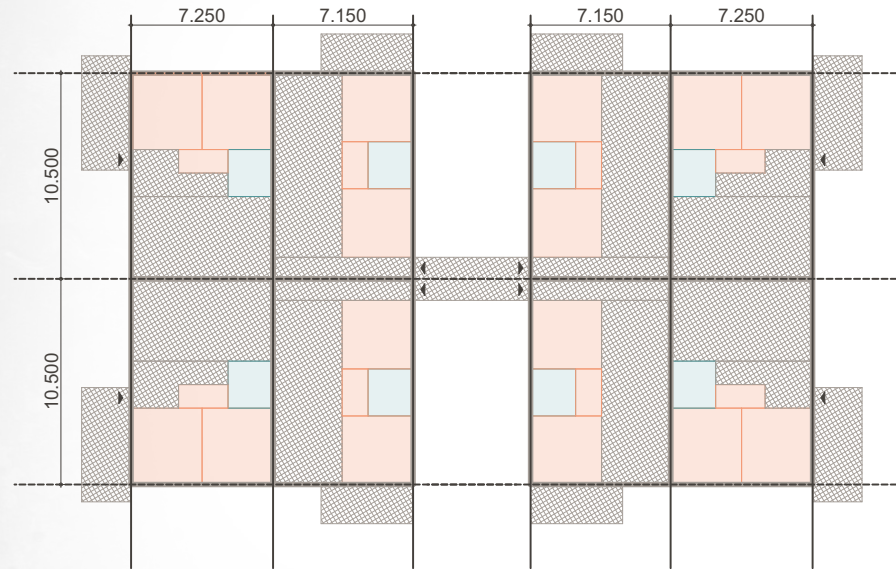


family apartment 80m²

Small family

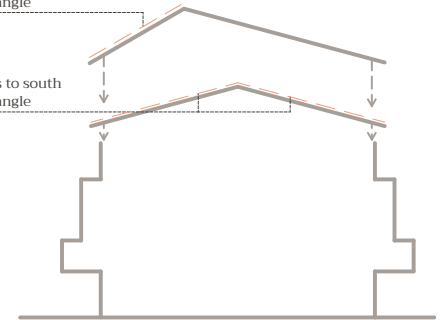


Small family



PV panels to south
with 30° angle

PV panels to south
with 20° angle



case studies, page

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GROUND FLOOR

Shared mobility (service)

Extra storage (service)

Zoning

Access

Building C

Building B

Wetland Housing Service, page

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BUILDING B CIRCULATION



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Advanced Housing

Building B Circulation

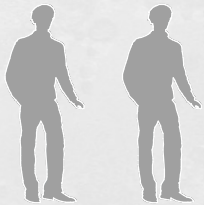
Oskar Hermans

BUILDING C DWELLING TYPES

shared apartment 80m²

Individuals

Couples



family apartment 80m²

Small family

Small family



Wetland Housing Service, page

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Advanced Housing
Building C Floorplan 50 A1
Oskar Herrmann

BUILDING B DWELLING TYPES

Collaborative housing S

Individuals

12-20 m²



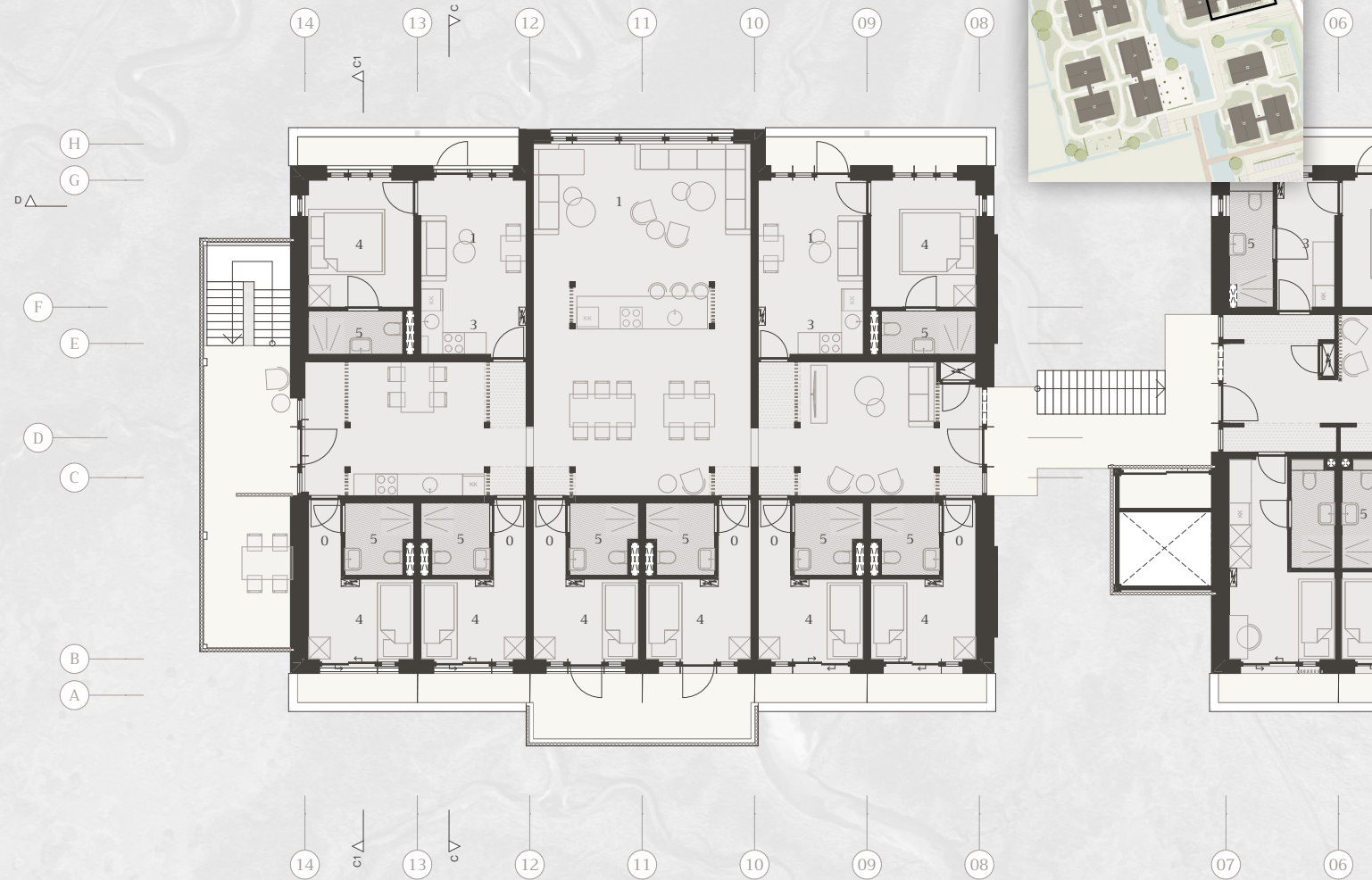
Couples

20-28 m²



Wetland Housing Service, page

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Advanced Urban
Building & Floorplan S. S.
Oskar Herrmann

BUILDING B DWELLING TYPES

Collaborative housing L

Individuals

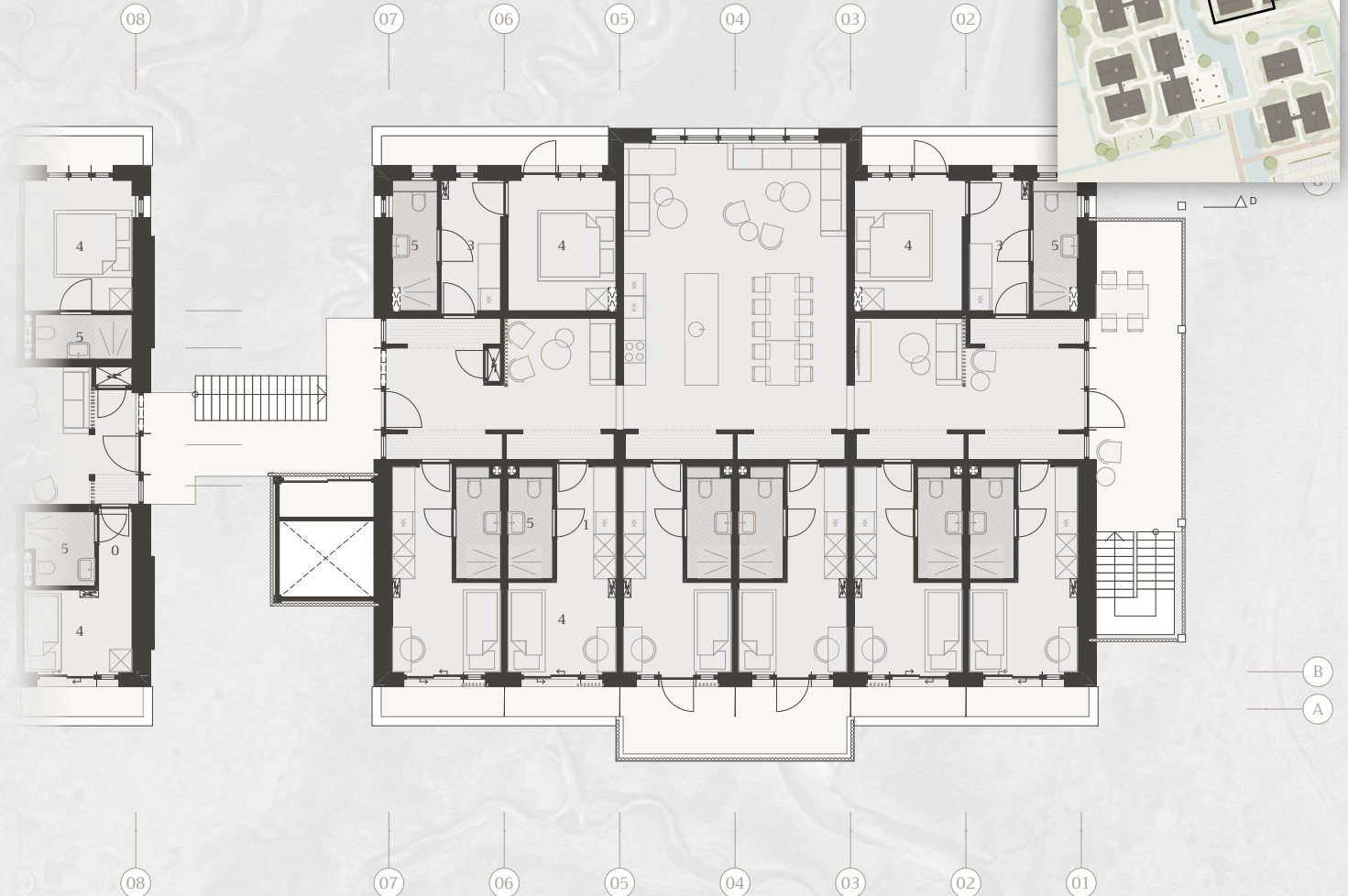


Couples



Wetland Housing Service, page

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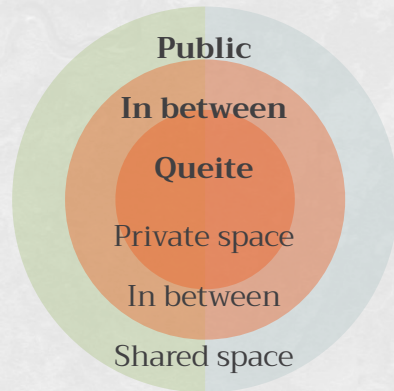


BUILDING B



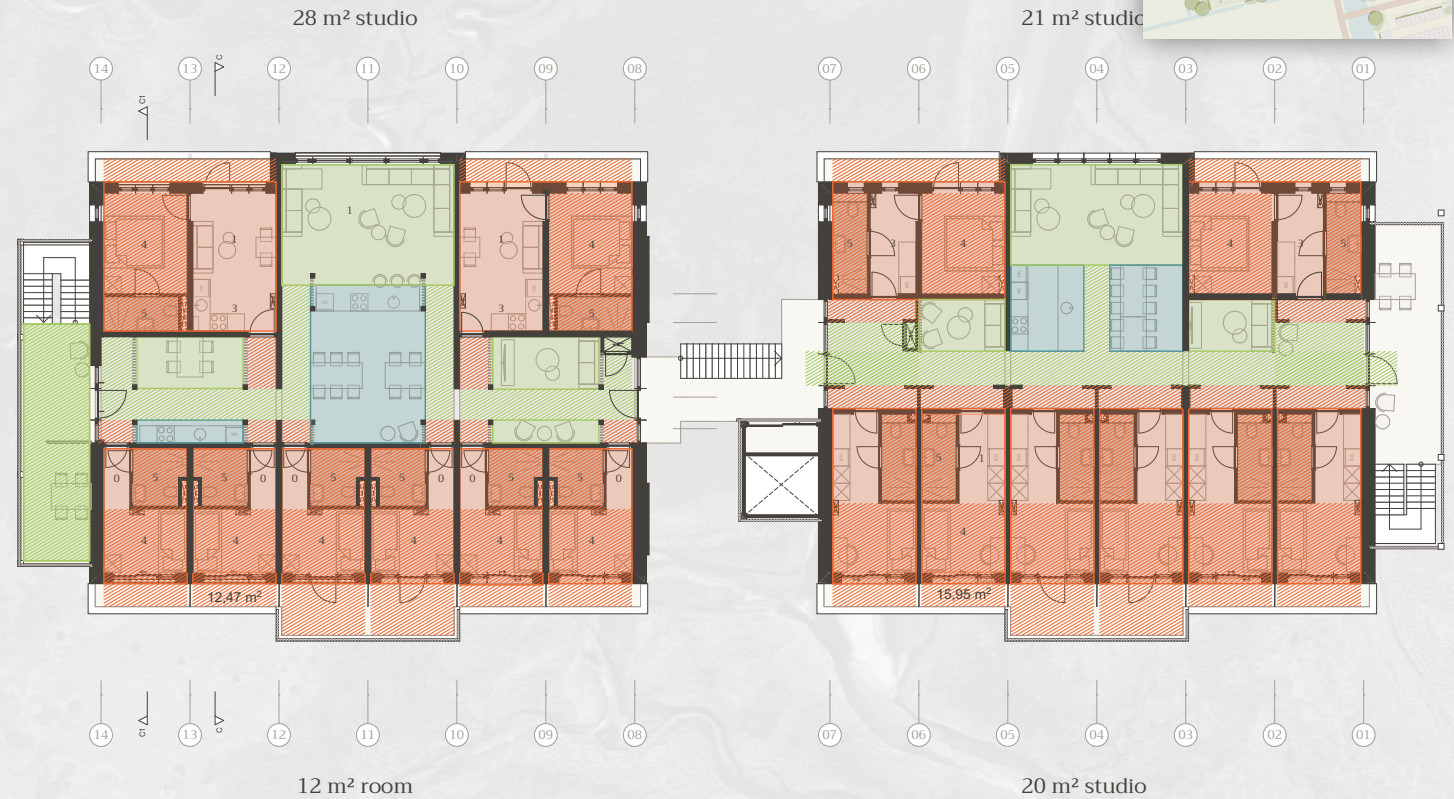
Collaborative housing

Gradient of shared space



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BUILDING STRATEGIES

Green roof (water buffer)



Wetland Housing Service, page

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FACADES BUILDING B

Dividing volume, material,
and therefore functions

Groundfloor material

Large windows



Façade facing East



Façade facing South

Wetland Housing Service, page

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FACADES BUILDING C



Façade facing South



Façade facing East

Wetland Housing Service, page

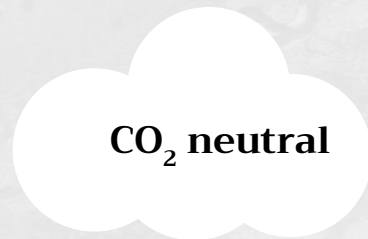
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TECHNICAL STRATEGIES



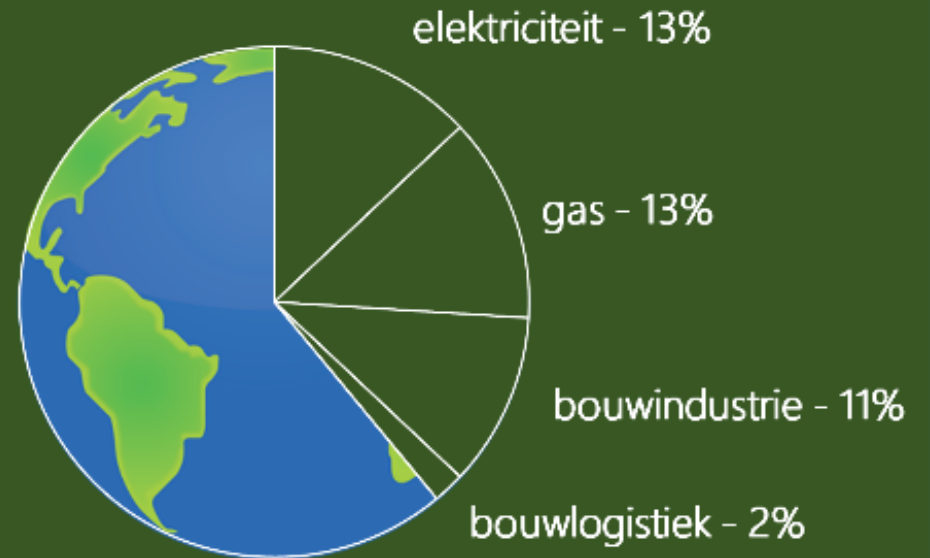
TECHNICAL AMBITION



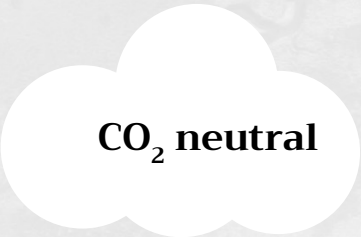
why? →

39%

van de CO₂ uitstoot in NL komt uit de gebouwde omgeving



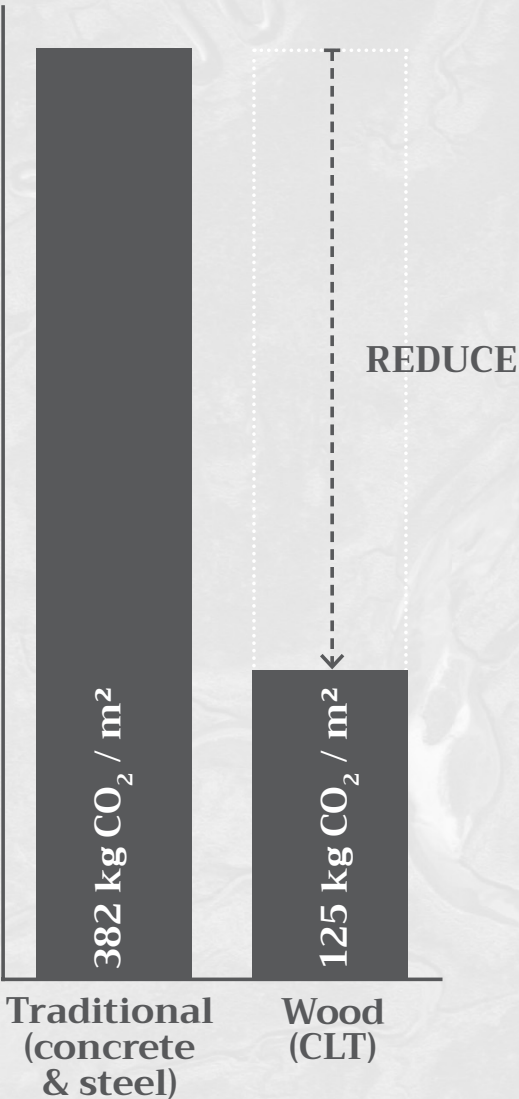
TECHNICAL AMBITION



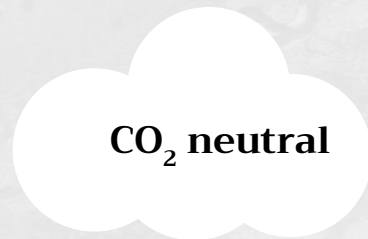
why? & how?



CO₂ emissions building materials



SUSTAINABILITY STRATEGIES



how?

Strategies



Energy: Energy neutral



Environment: Reduce fresh water use



Resources: Sustainable source



Climate: Reduce need for energy



Sustainability: Design for expected lifetime



Circularity: Aim for demountability



Green roof
+ Biodiversity
+ Rainwater buffer



Kerto Ripa

- + Fast assembly**
- + Embodied CO2 positive**
- + Max. span of 10,2m**
- + Incl. sound insulation space**

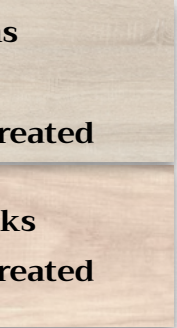


**S
+ Finish & E**



+ Fa
+ Embod
+ Dwelling

+ Dwelling



on
positive
material

TECHNICAL DESIGN

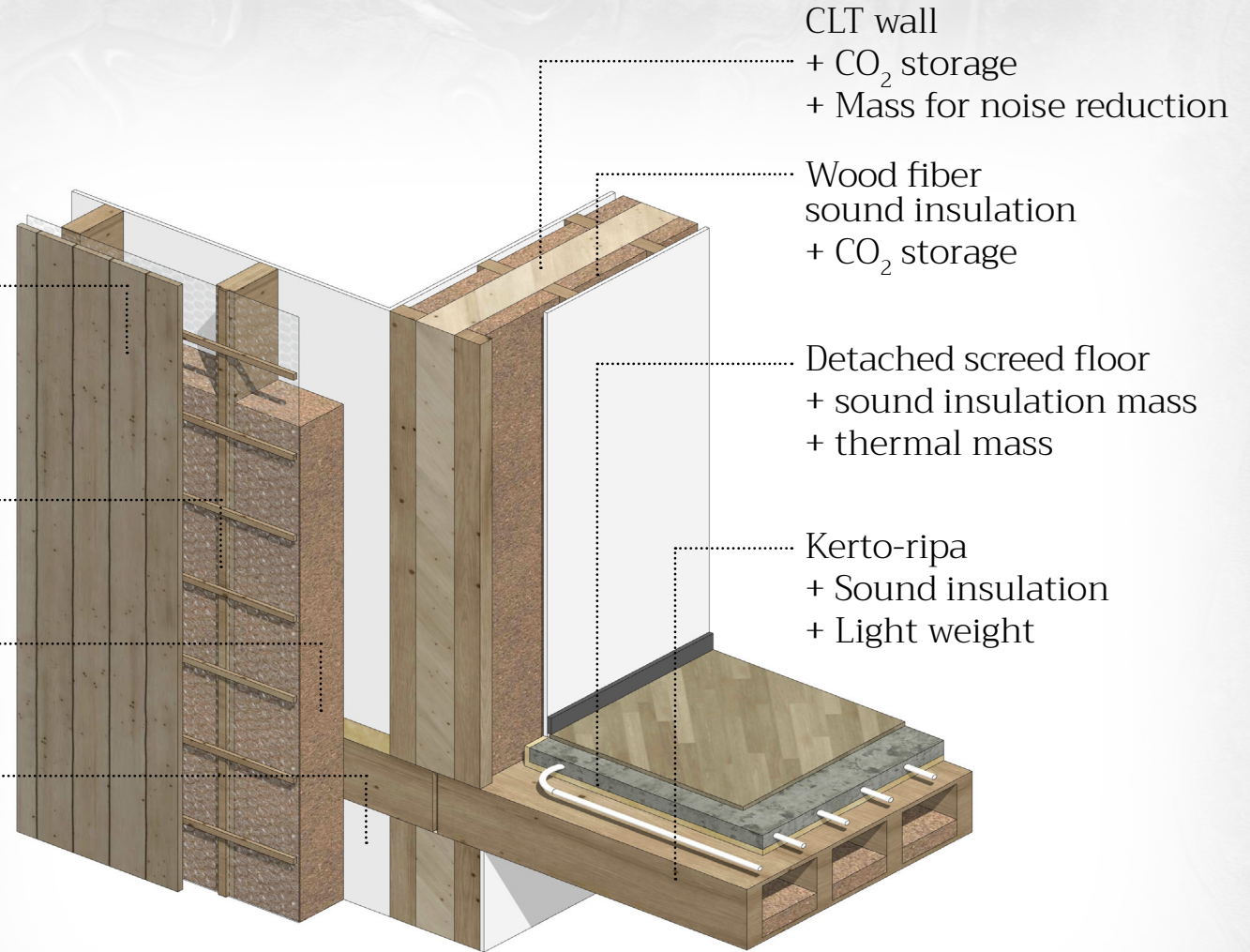
CO₂ Positive
=
CO₂ emissions are
below zero

Vertical wood cladding
+ CO₂ storage
+ Lifespan ~20 years
+ Natural aesthetic

Wood cladding frame for
ventilation

Wood fiber insulation
+ CO₂ storage

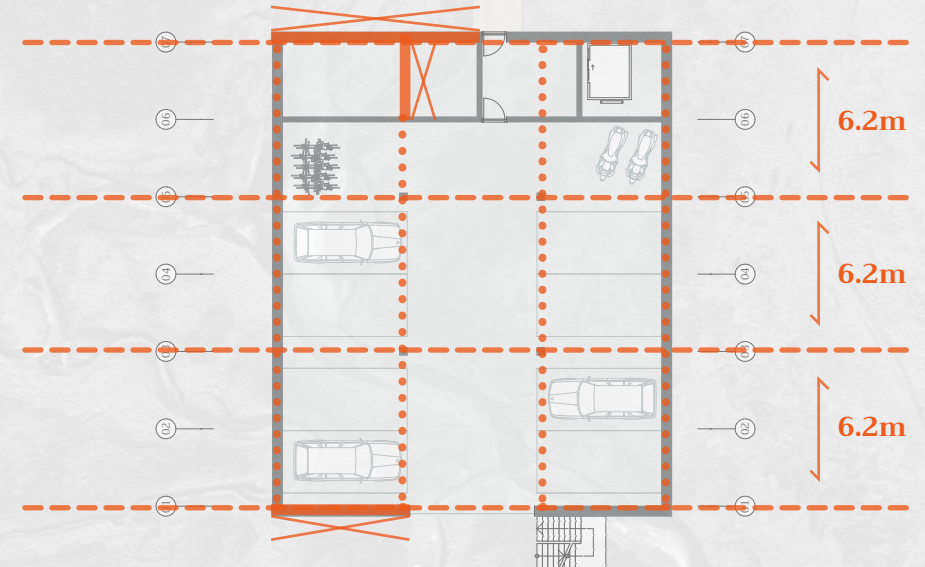
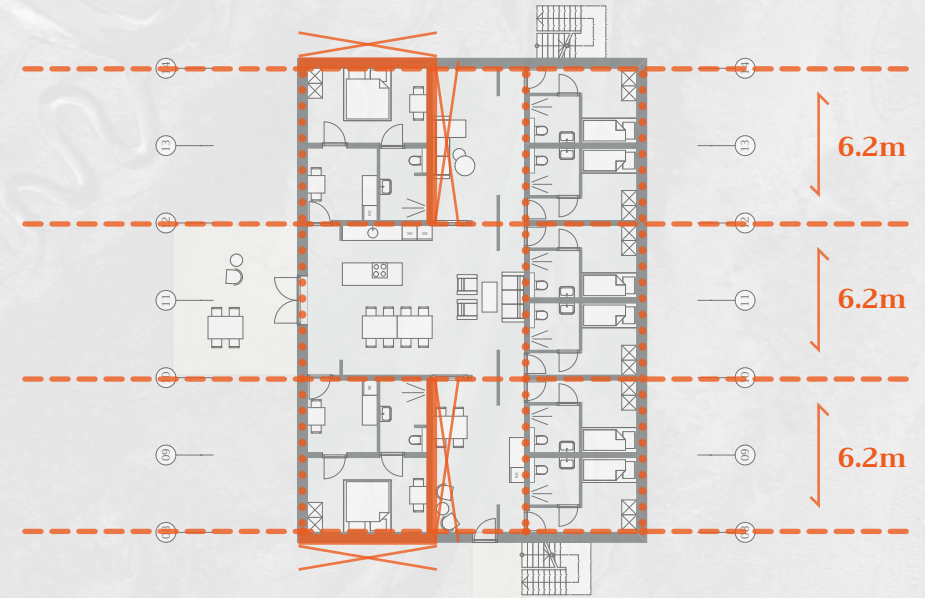
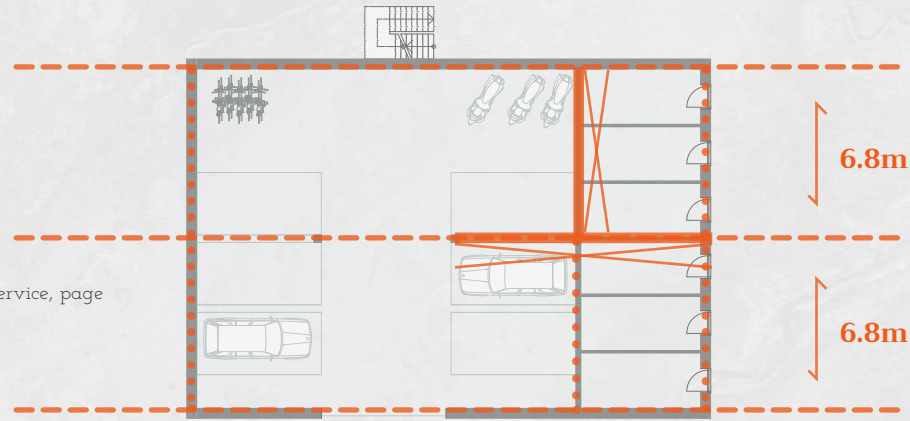
Plasterboard
+ Fire resistance
+ Thermal mass



GRID

Grid that fits
different dwelling
sizes

6m spans for wood
construction



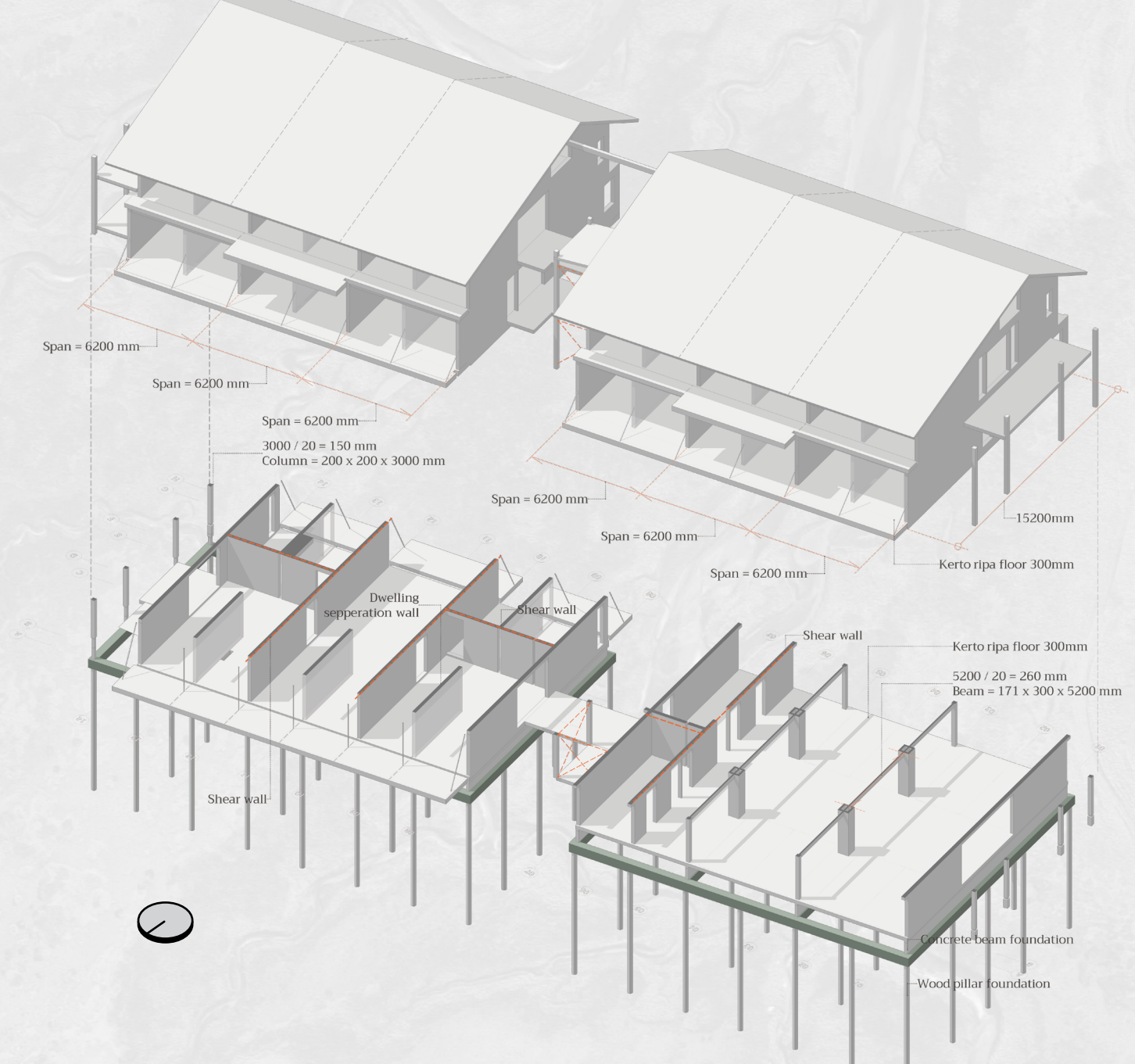
LOADBEARING STRUCTURE

Short spans, reducing material
Light weight, reducing impact
Loadbearing walls
Stable with shearwalls

CO₂ neutral

Wetland Housing Service, page

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CLIMATE STRATEGIES

2. Reduce need

Heat recovery

Sunscreens

Rainwater collection

Operable windows

3. Sustainable sources

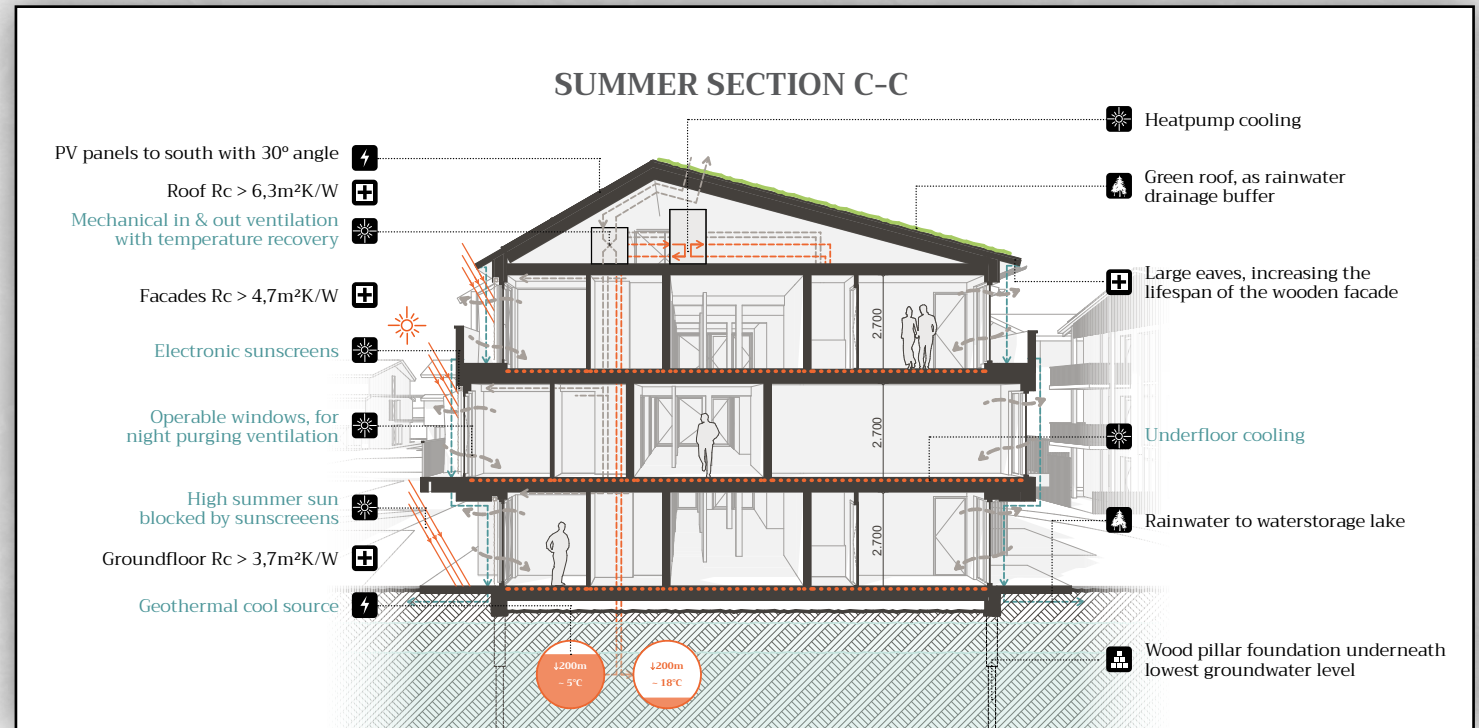
Geothermal cooling

PV-panels

CO₂ neutral

Wetland Housing Service, page

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CLIMATE STRATEGIES

1. Reduce need

Heat recovery

Rainwater collection

Thermal mass

2. Sustainable sources

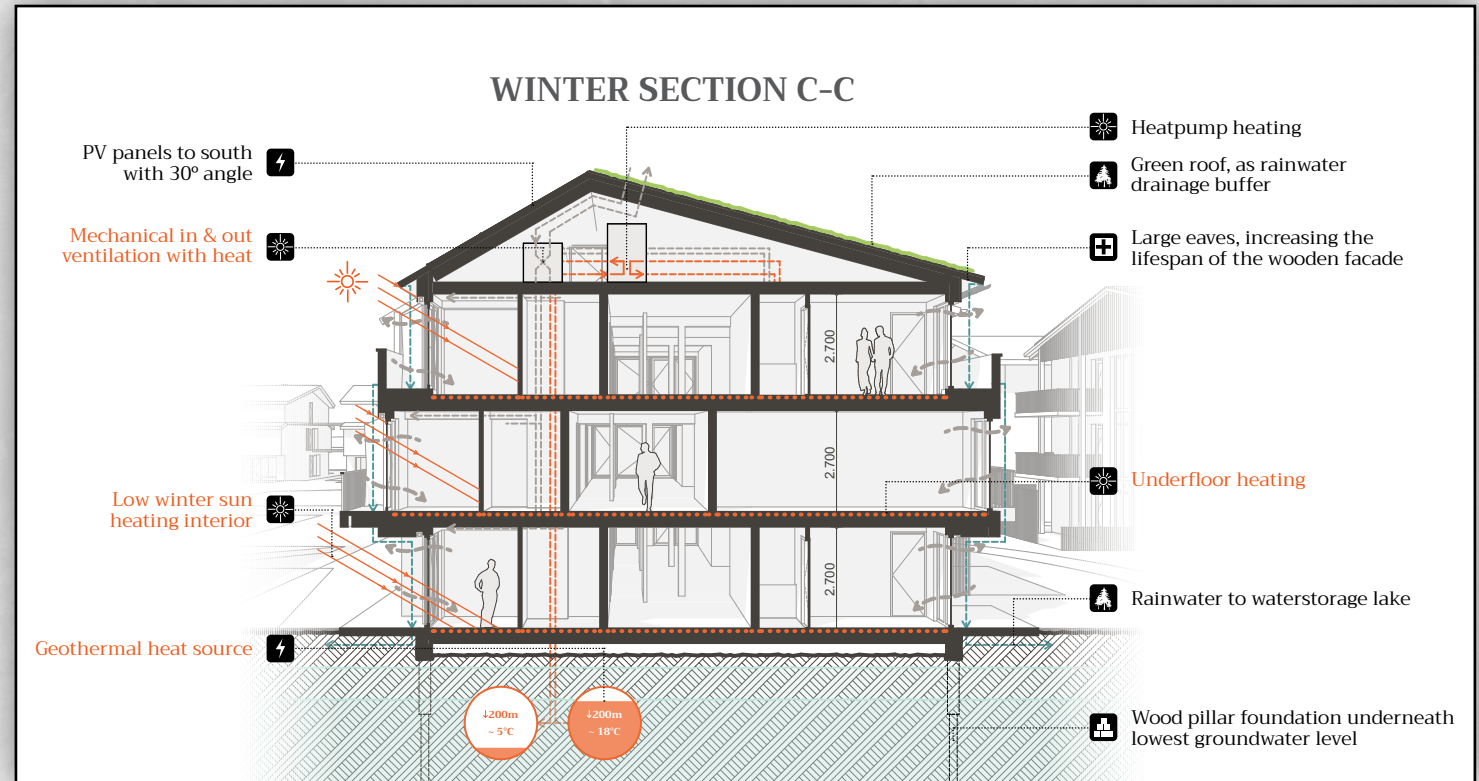
Geothermal heating

PV-panels

CO₂ neutral

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FACADE FRAGMENT

Overeaves protecting wood facade

Wood window frames

Pruge ventilation

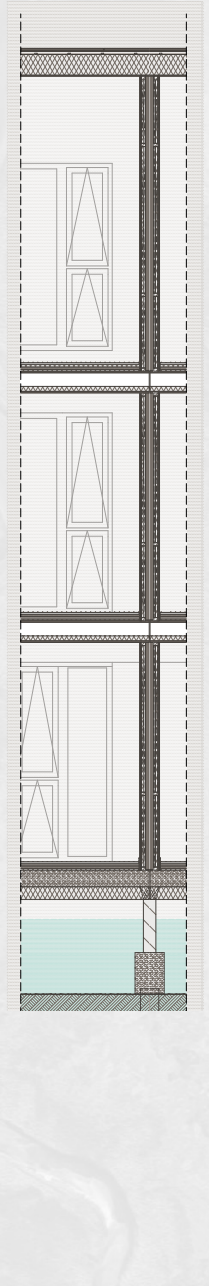
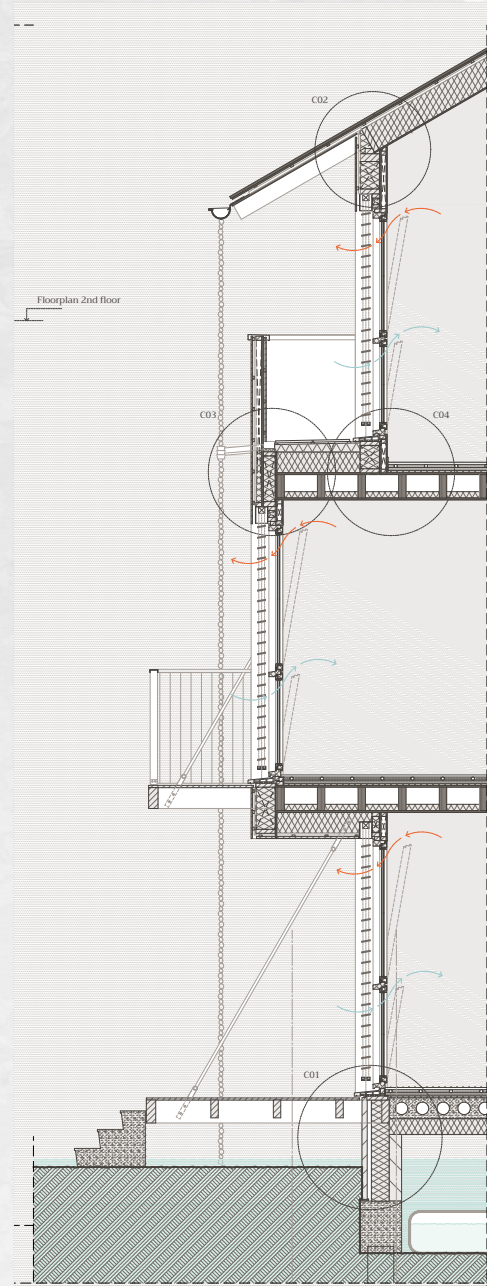
Private outdoor space

CO2 neutral materials

Solar gain

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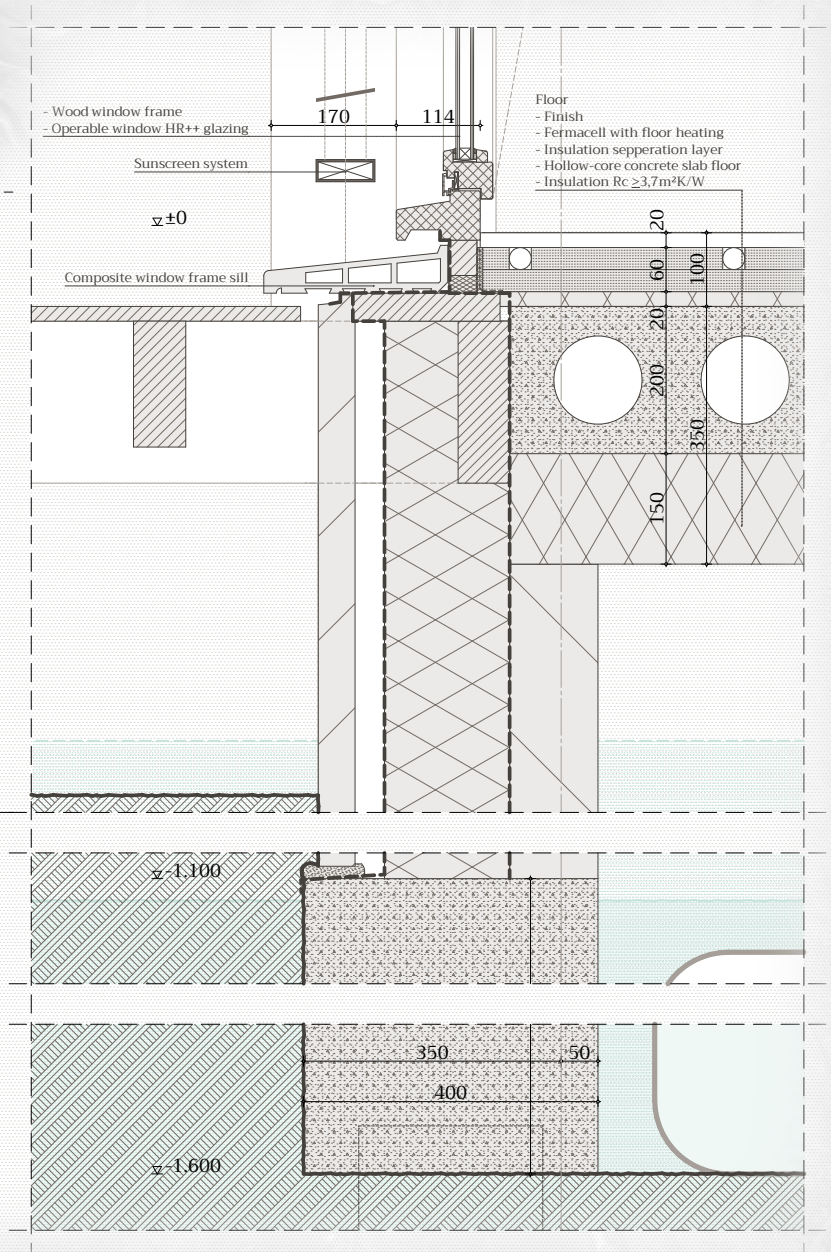
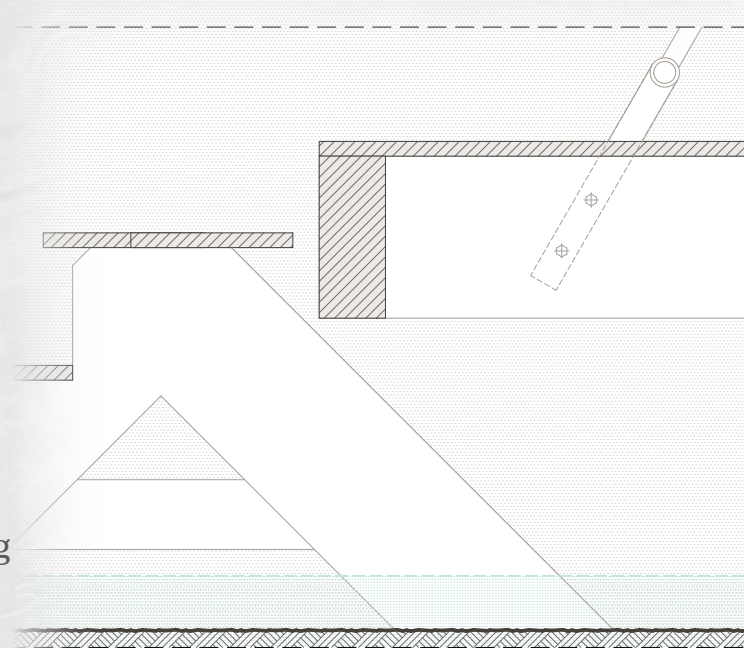
DETAIL

Building in wetland

Building higher

Using wood pillar foundation

Everything supported by the building



THANK YOU!



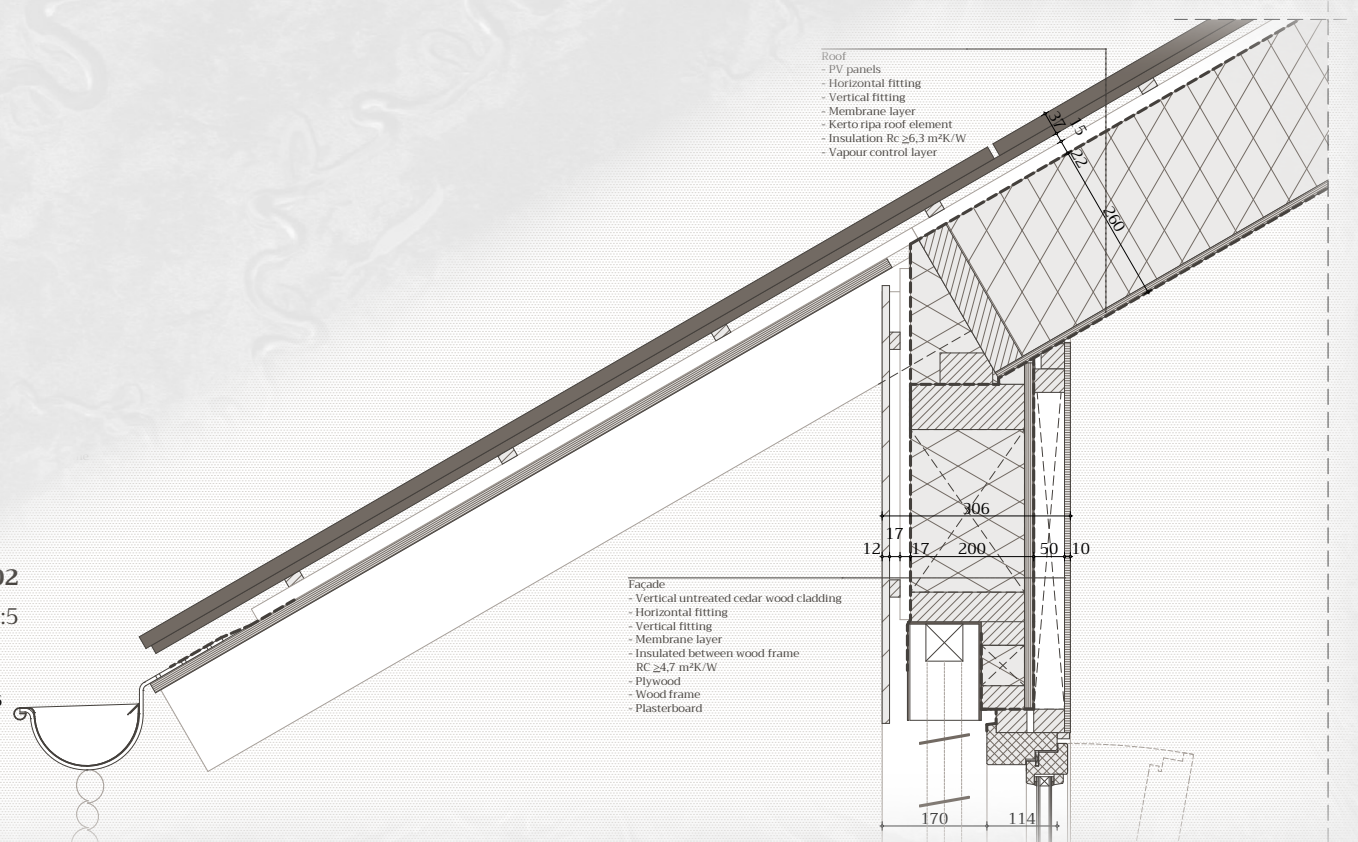
DETAIL

*

Detail C02

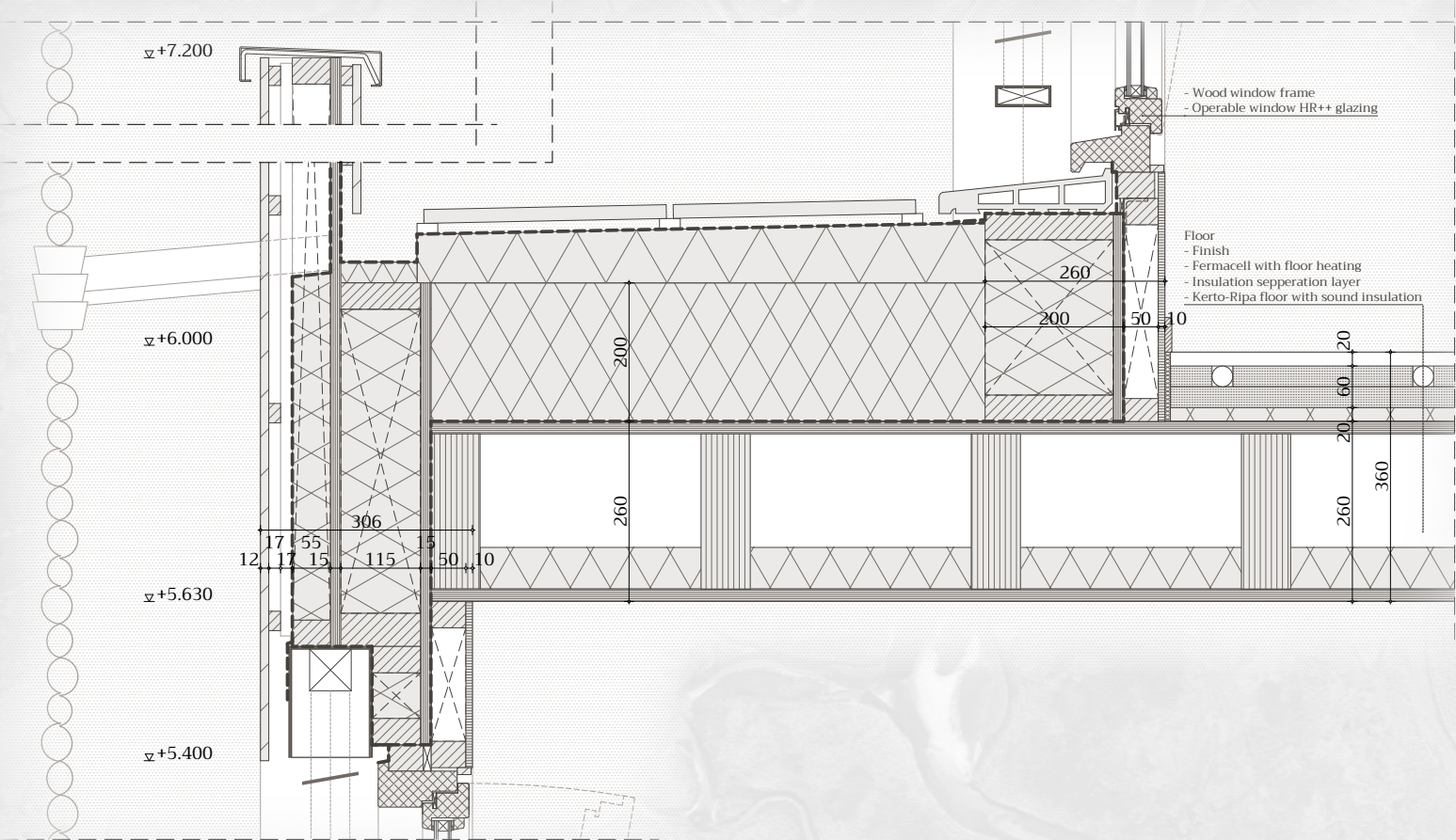
1:5

±8.426



DETAIL

*



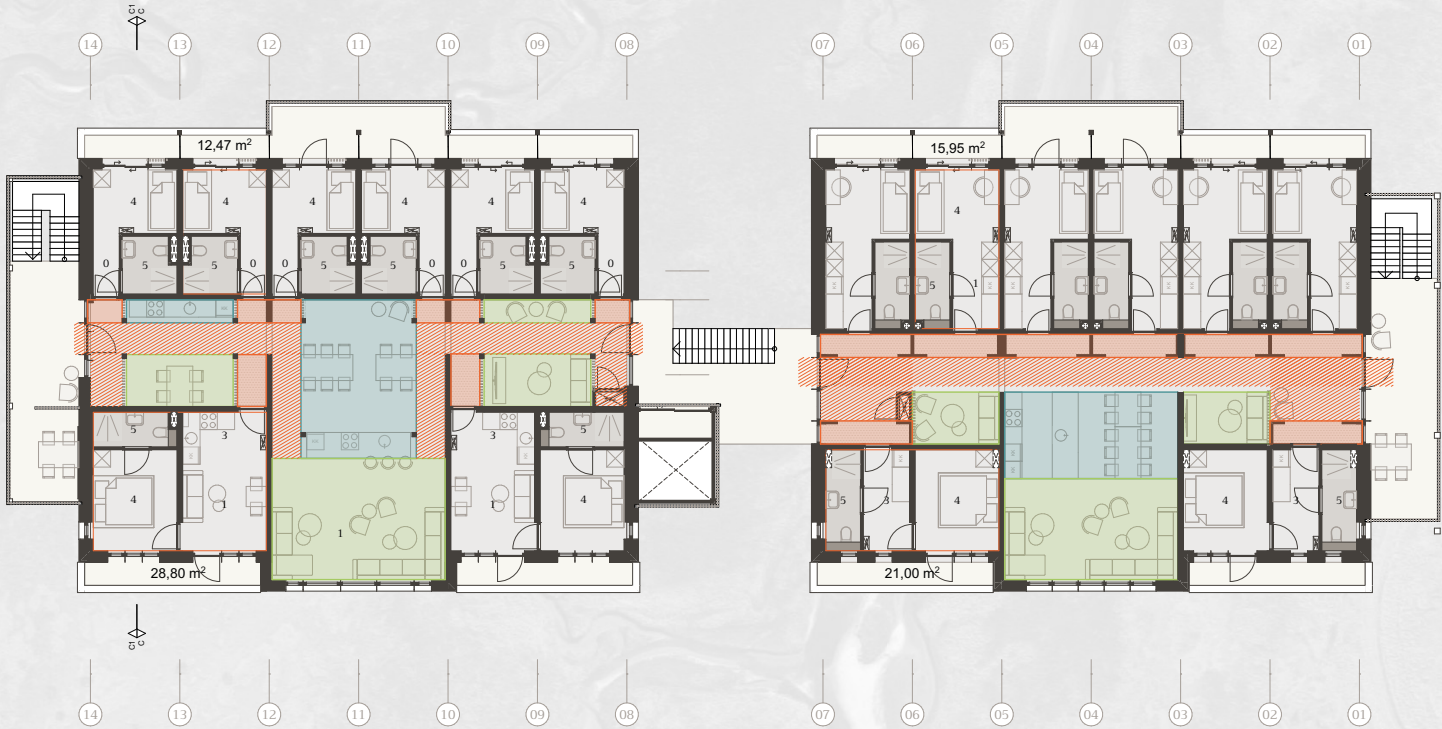
VISUALISATIONS

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SHARING ZONES



Building B-L

Building B-R



SHARING ZONES



Building B-L

Building B-R



HOUSEHOLD SHARING



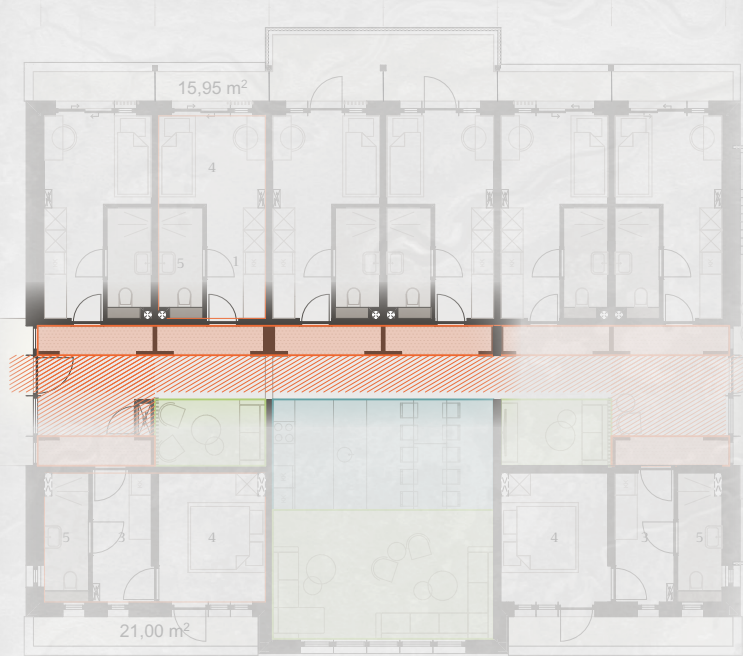
Building B-R

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HOUSEHOLD SHARING



Building B-R

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HOUSEHOLD SHARING



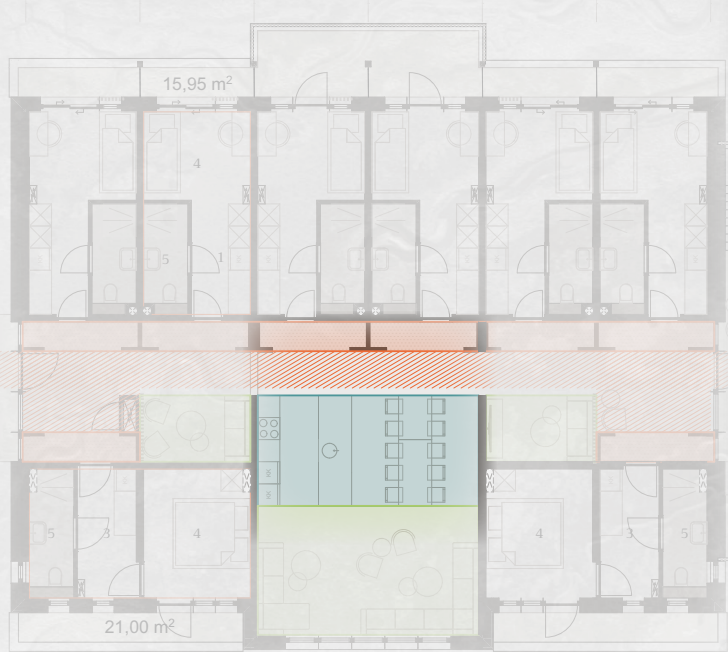
Building B-R

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HOUSEHOLD SHARING



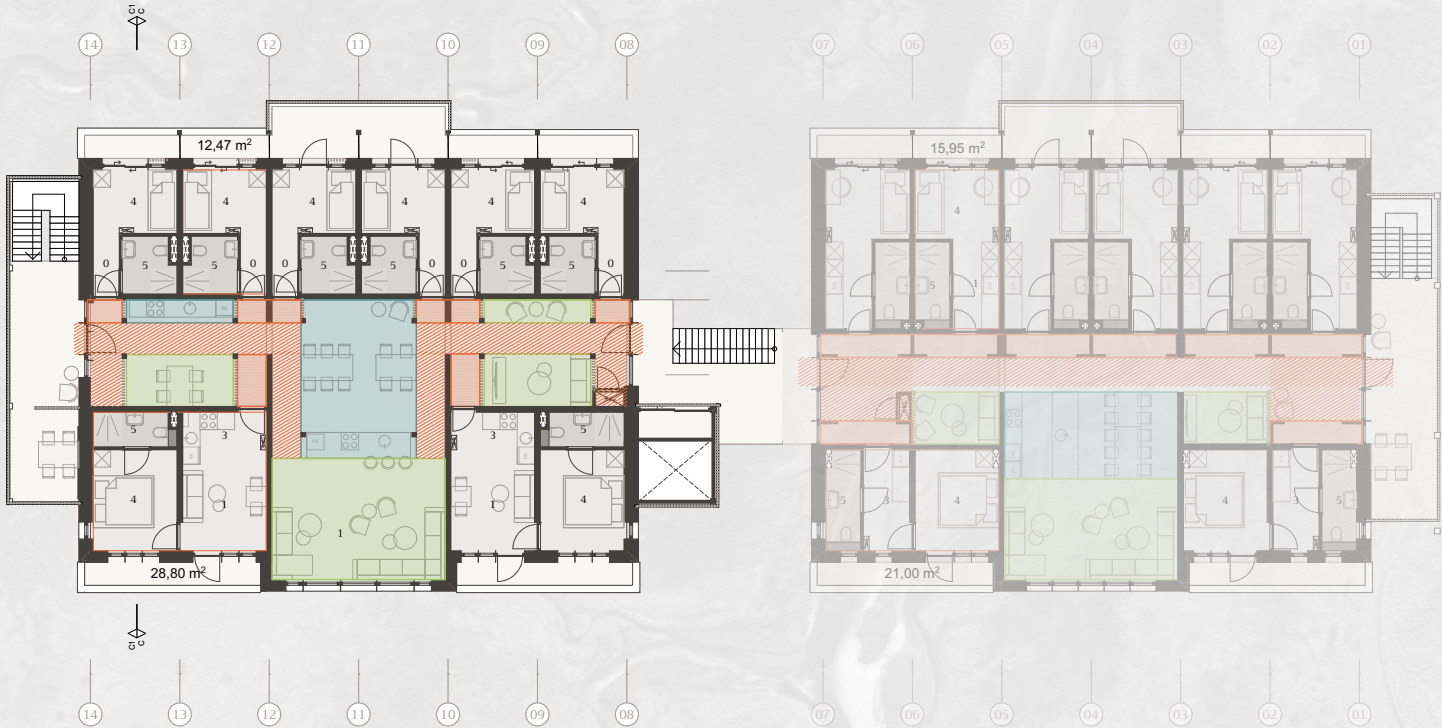
Building B-R

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SHARING ZONES

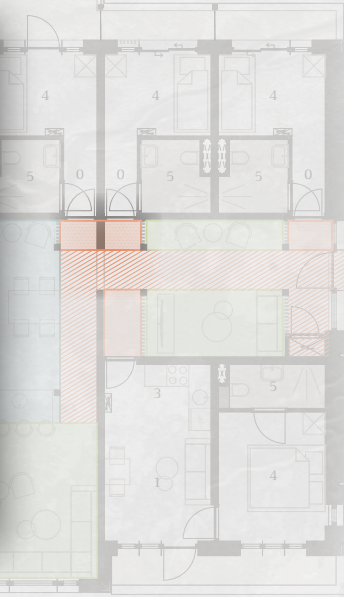


Building B-L

Building B-R



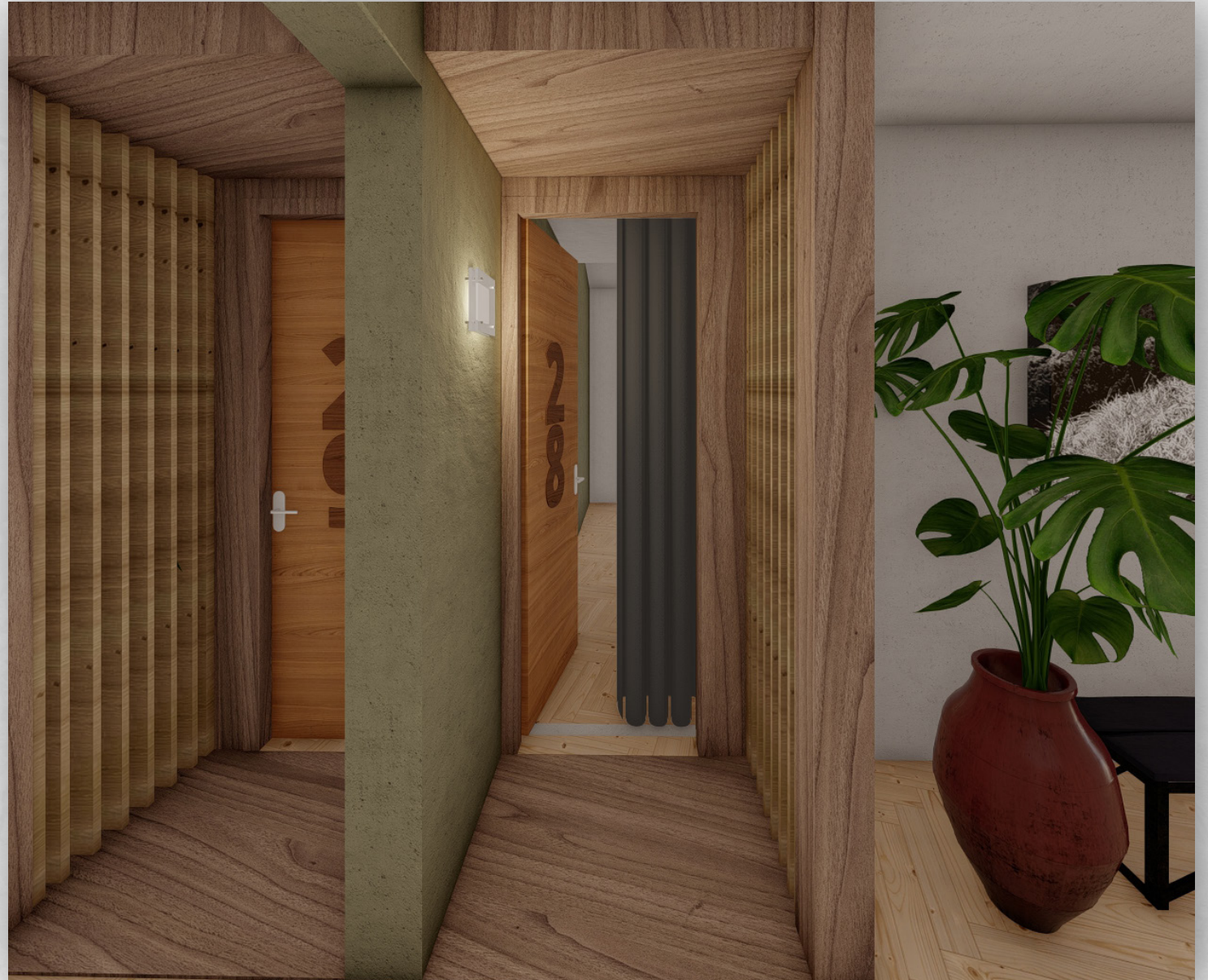
HOUSEHOLD SHARING



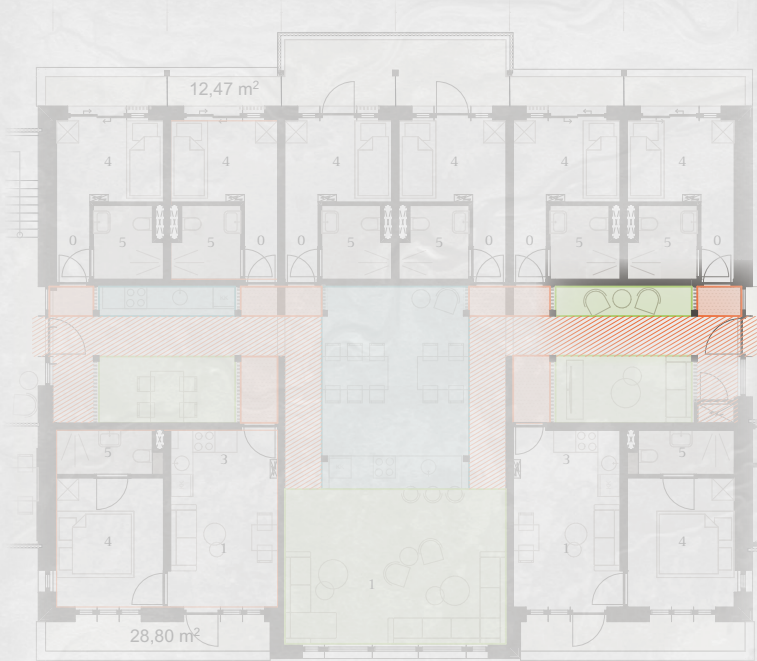
Building B-L

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HOUSEHOLD SHARING



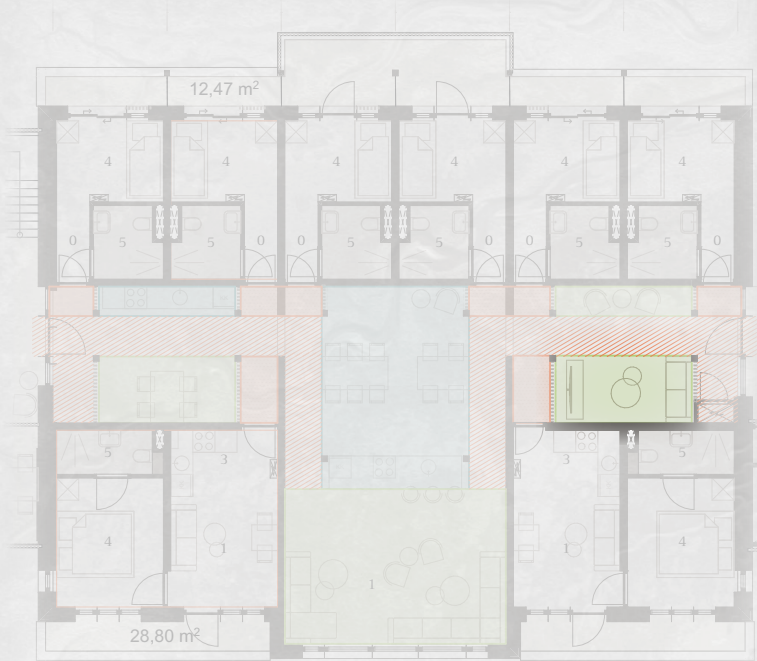
Building B-L

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HOUSEHOLD SHARING



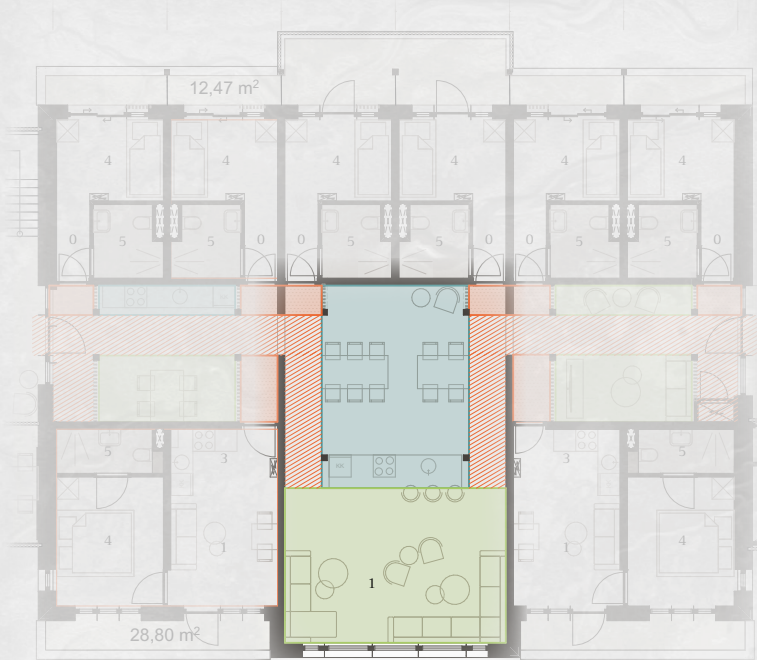
Building B-L

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HOUSEHOLD SHARING



Building B-L

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