GRADUATION

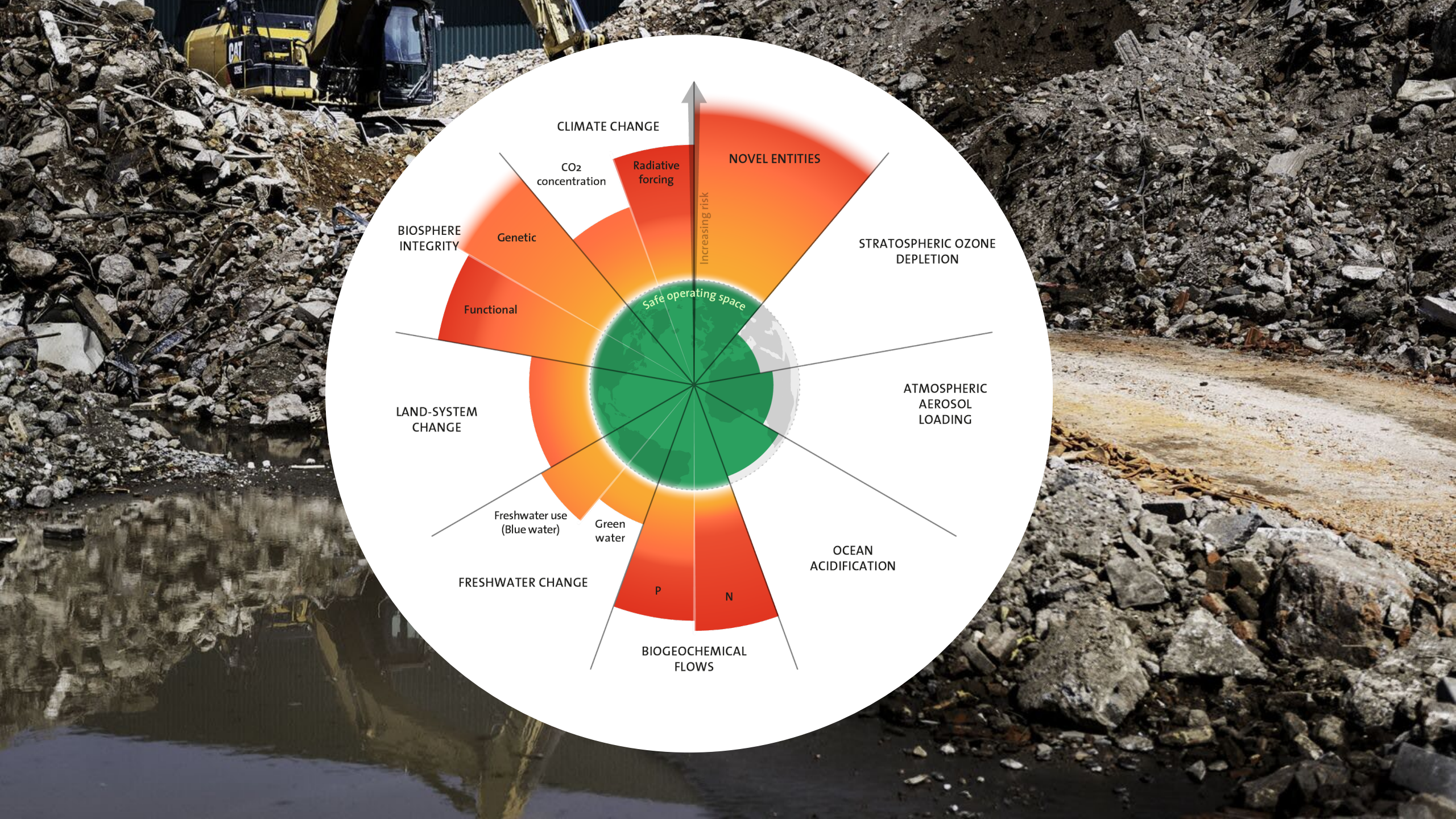
DELTA HABITAT

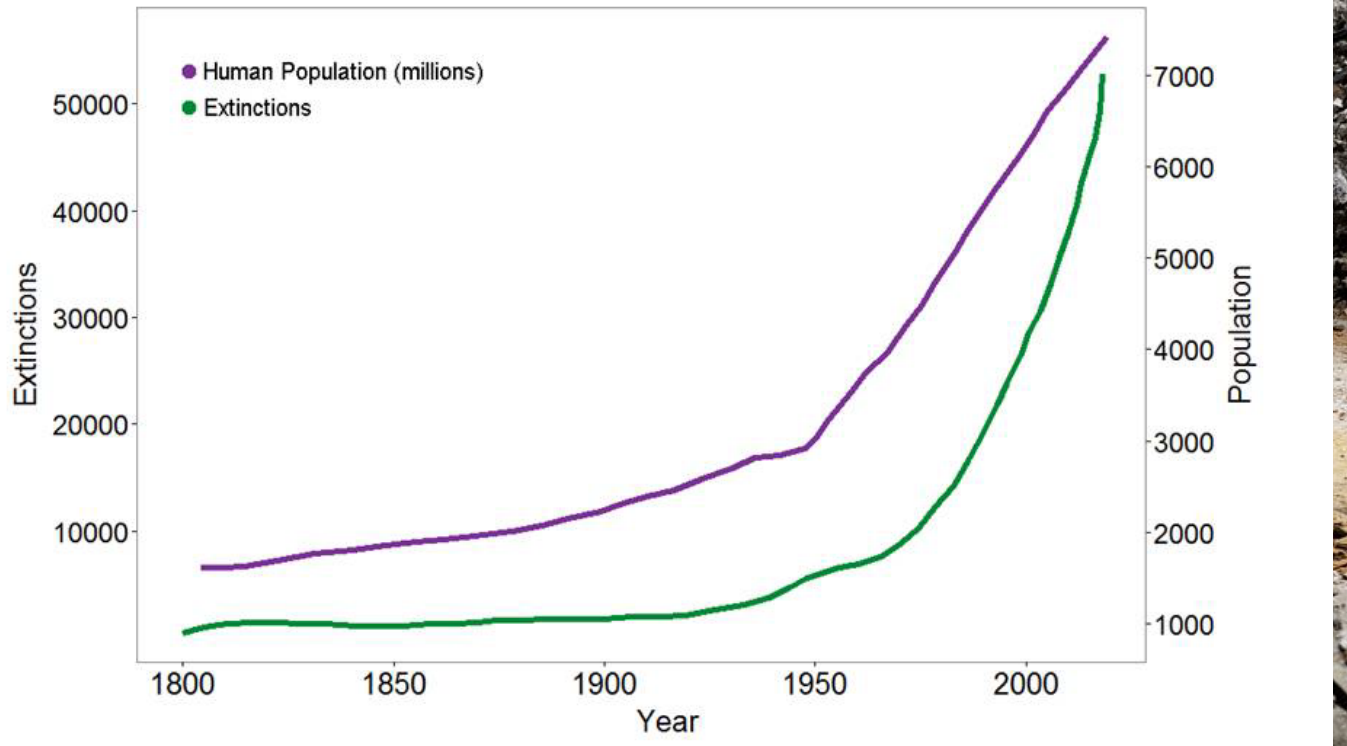
Tijmen Kuyper

9:00 – 9:30 Presentation
9:30 – 9:45 Questions

NATURAL HABITAT

An **environment** that provides a species its **living conditions**


CLIMATE CHANGE
CO_2 concentration
Radiative forcing
NOVEL ENTITIES
Increasing risk
BIOSPHERE INTEGRITY
Genetic
Functional
STRATOSPHERIC OZONE DEPLETION
Safe operating space
LAND-SYSTEM CHANGE
ATMOSPHERIC AEROSOL LOADING
Freshwater use (Blue water)
Green water
OCEAN ACIDIFICATION
FRESHWATER CHANGE
P
N
BIOGEOCHEMICAL FLOWS

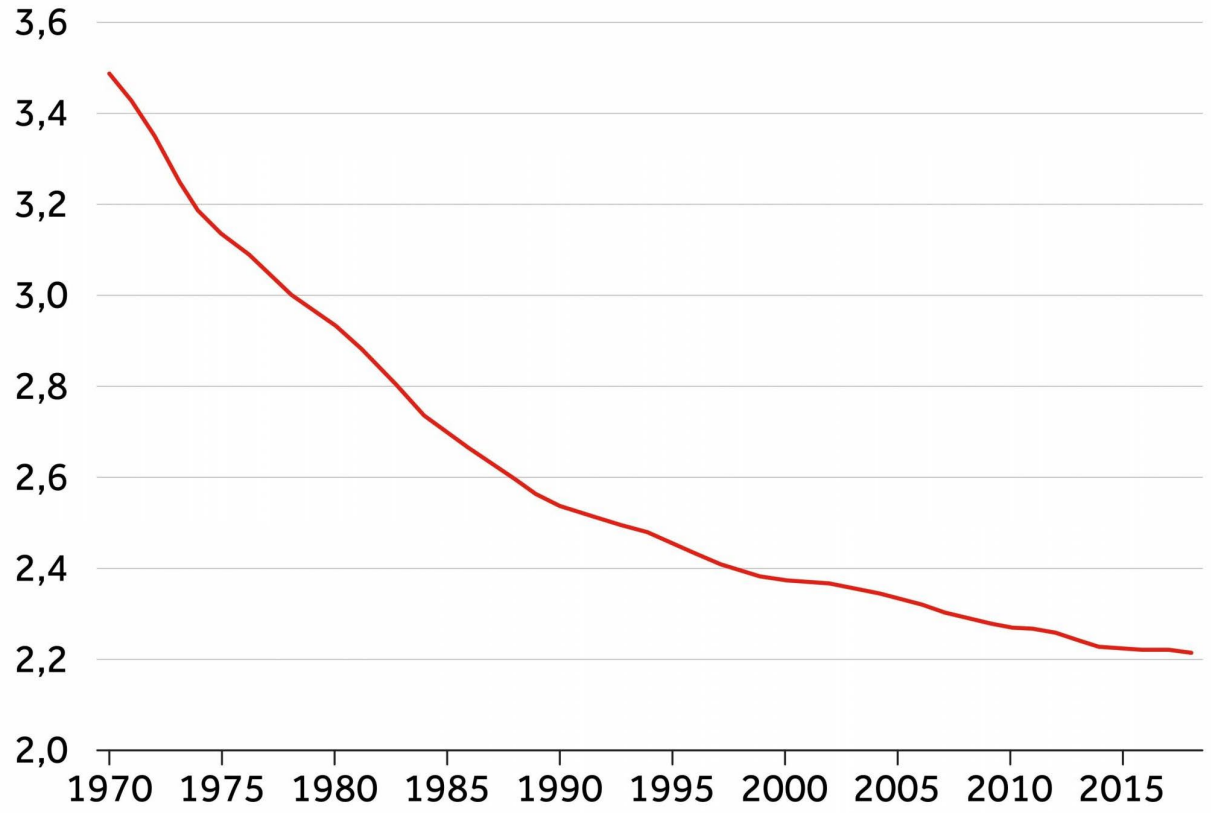


Data source: Scott, J.M. 2008. *Threats to Biological Diversity: Global, Continental, Local*. U.S. Geological Survey, Idaho Cooperative Fish and Wildlife, Research Unit, University Of Idaho.

RIVM start landelijk onderzoek naar pfas in eieren van hobbykippen

Households are shrinking

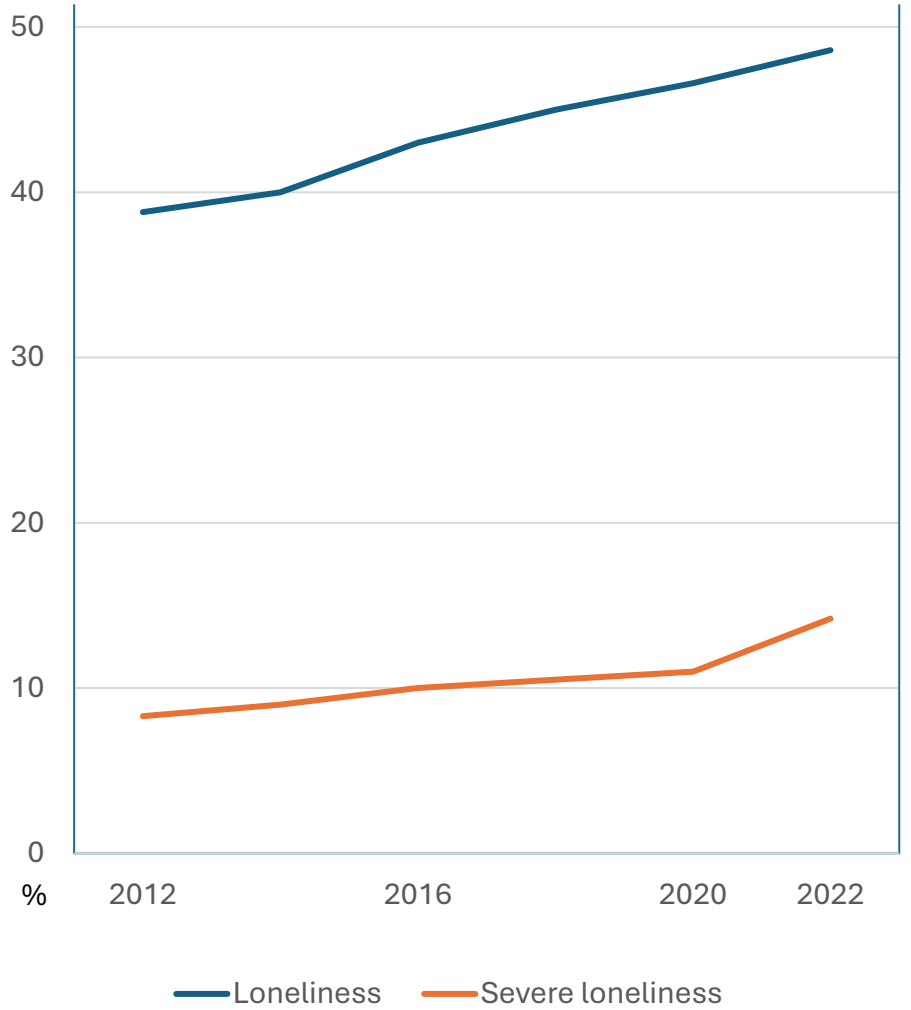
Average number of persons per household



bron: CBS

1 in 2 Dutch persons suffer loneliness

1 in 7 Dutch persons suffer severe loneliness



DE OMGEVING
VAN DE MENS
IS DE MEDEMENS

J.A. Deelder

We are destroying our **living conditions**
We lost balance with our natural surroundings: **community**

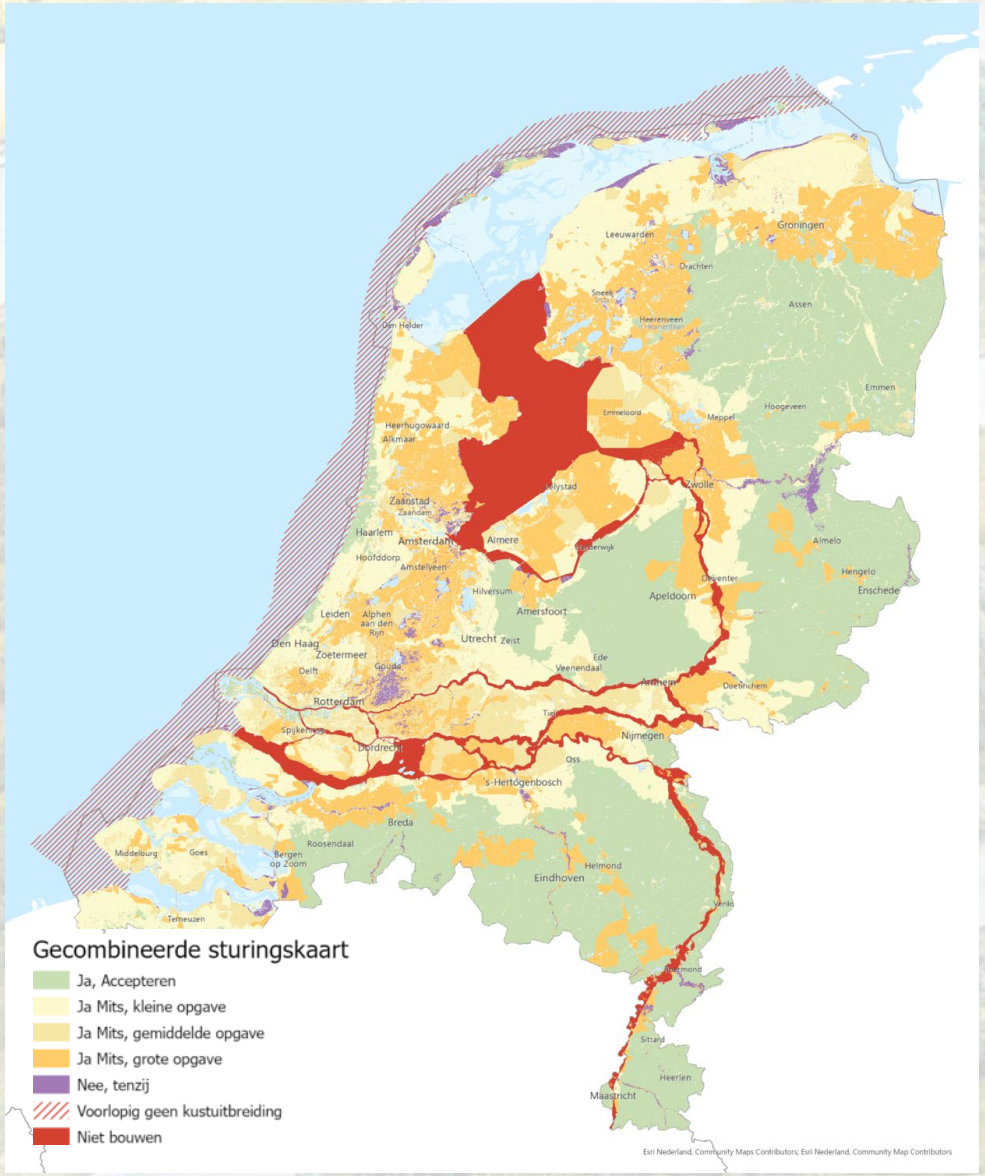
We are loosing our Natural Habitat

Delta Habitat

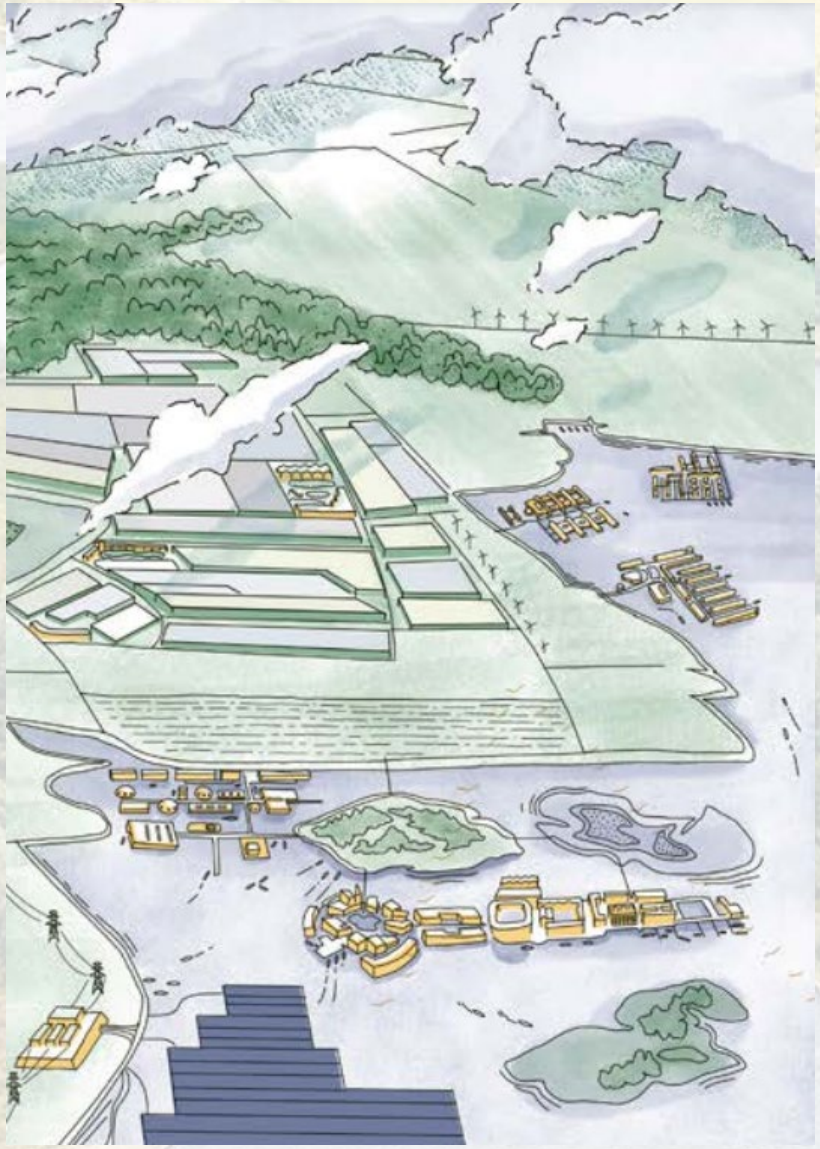
Delta Habitat
BACK TO BALANCE

DELTA HABITAT

BACK TO BALANCE



Ruimtelijk afwegingskader klimaatadaptieve gebouwde omgeving - April 2024

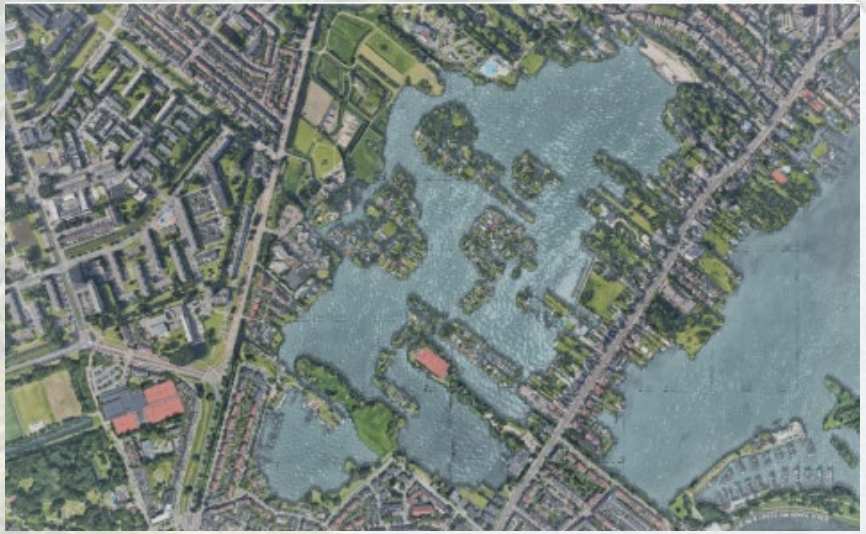


Ruimte voor wonen – TU Delft – April 2024

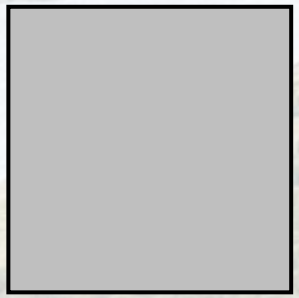
Water retention areas

River floodplanes (*uiterwaarden*)

Sandextraction lakes (*zandwinningplassen*)



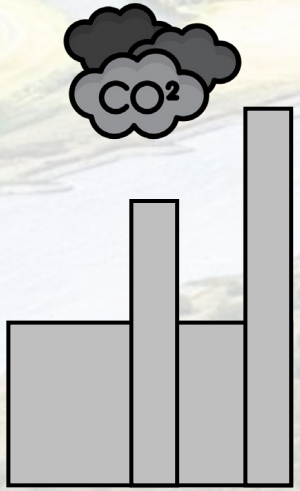
Peat ponds (*veenplassen*)



Materials and form not in contrast

Habitat in context

Form and materials fits natural delta context



Avoid polluting materials

Habitat in balance

Biobased, nature inclusive, passive, autarkic

Minimal impact during construction

Not just for the happy few

Habitat for all

Affordable and scalable

Habitat

in context

in balance

for all

MAST Land On Water system

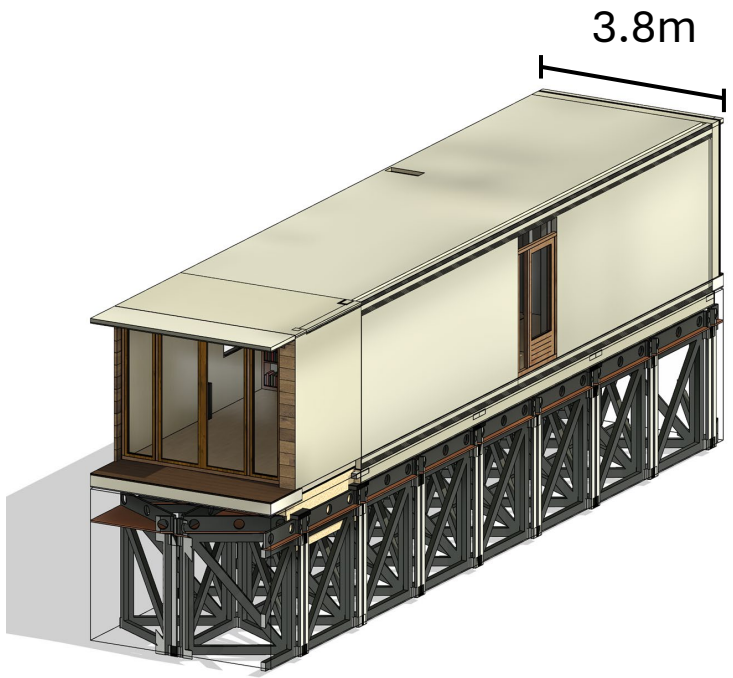
- Recycled plastic
- Many shapes possible
- Nature inclusive
- Modular
- Scalable

Habitat

in context

in balance

for all



CLT pre-fabricated modules

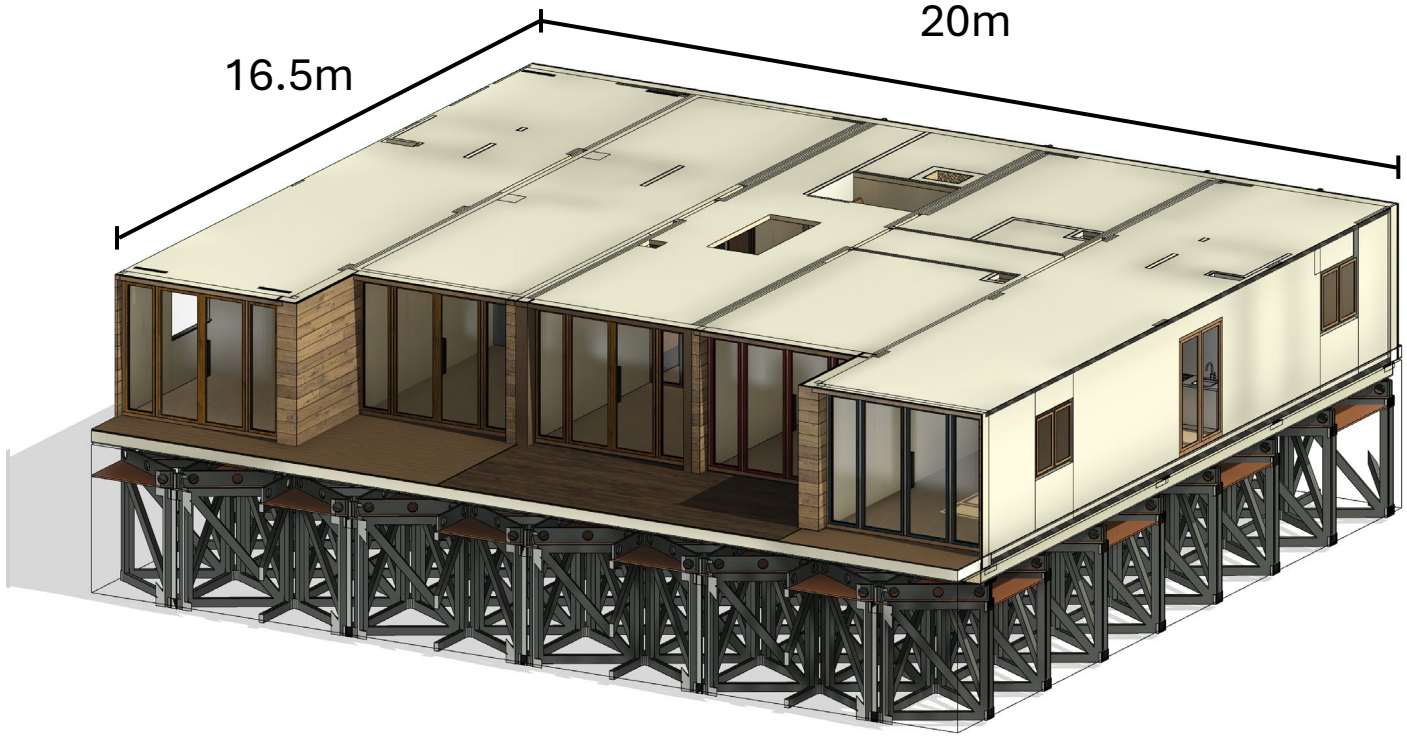
- Biobased materials
- Modular
- Affordable
- Scalable

Habitat

in context

in balance

for all

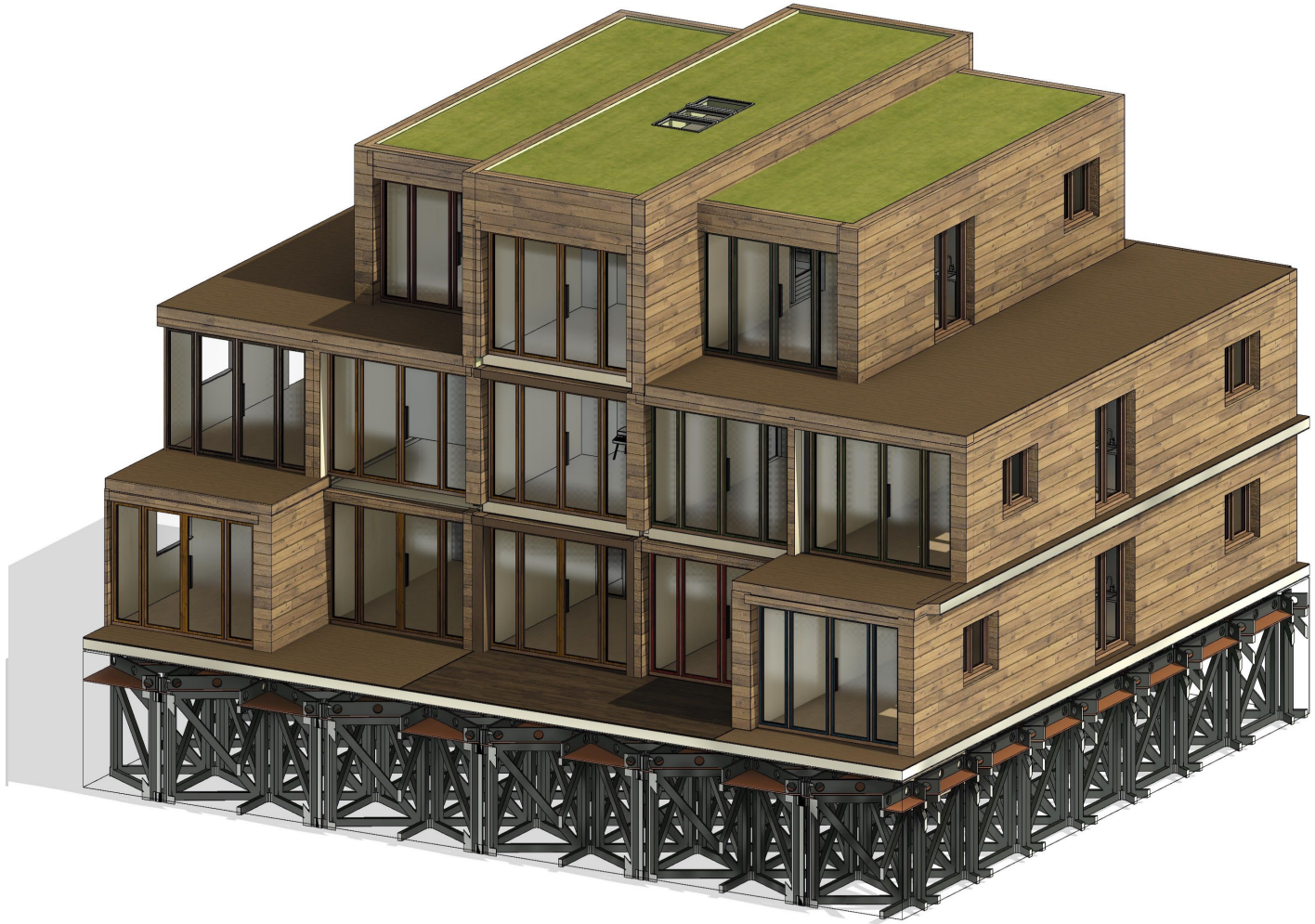


Habitat

in context

in balance

for all



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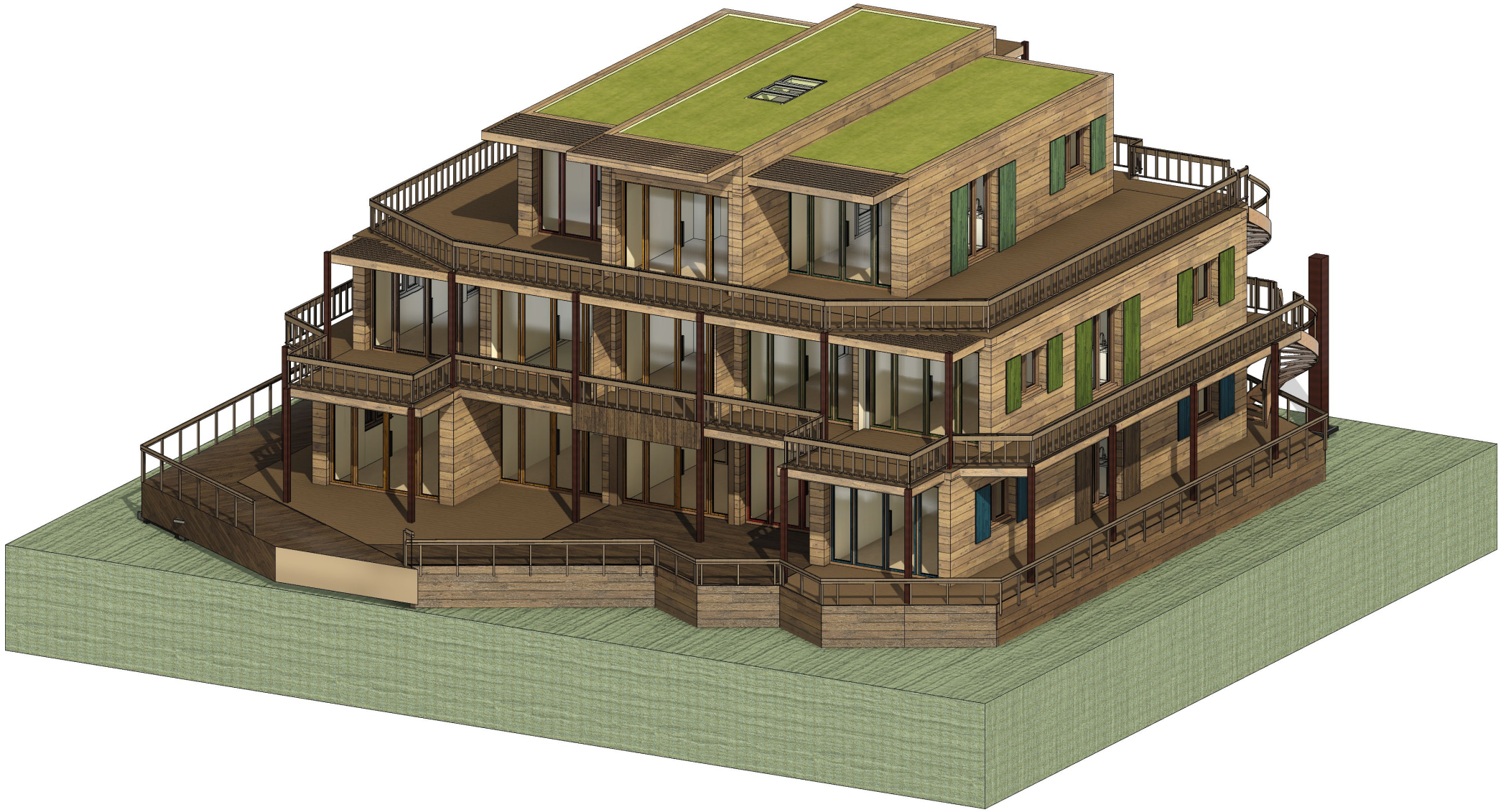
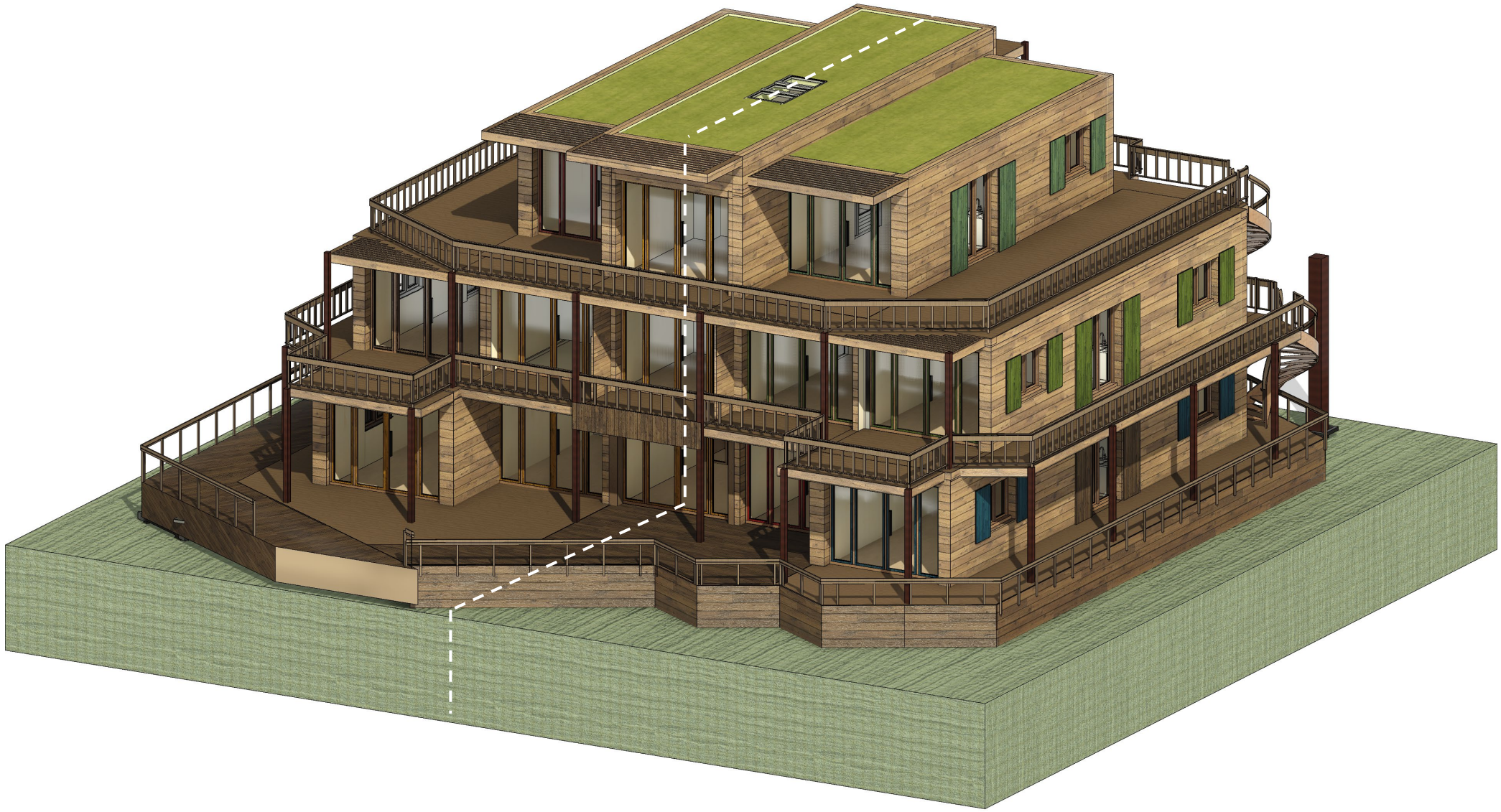
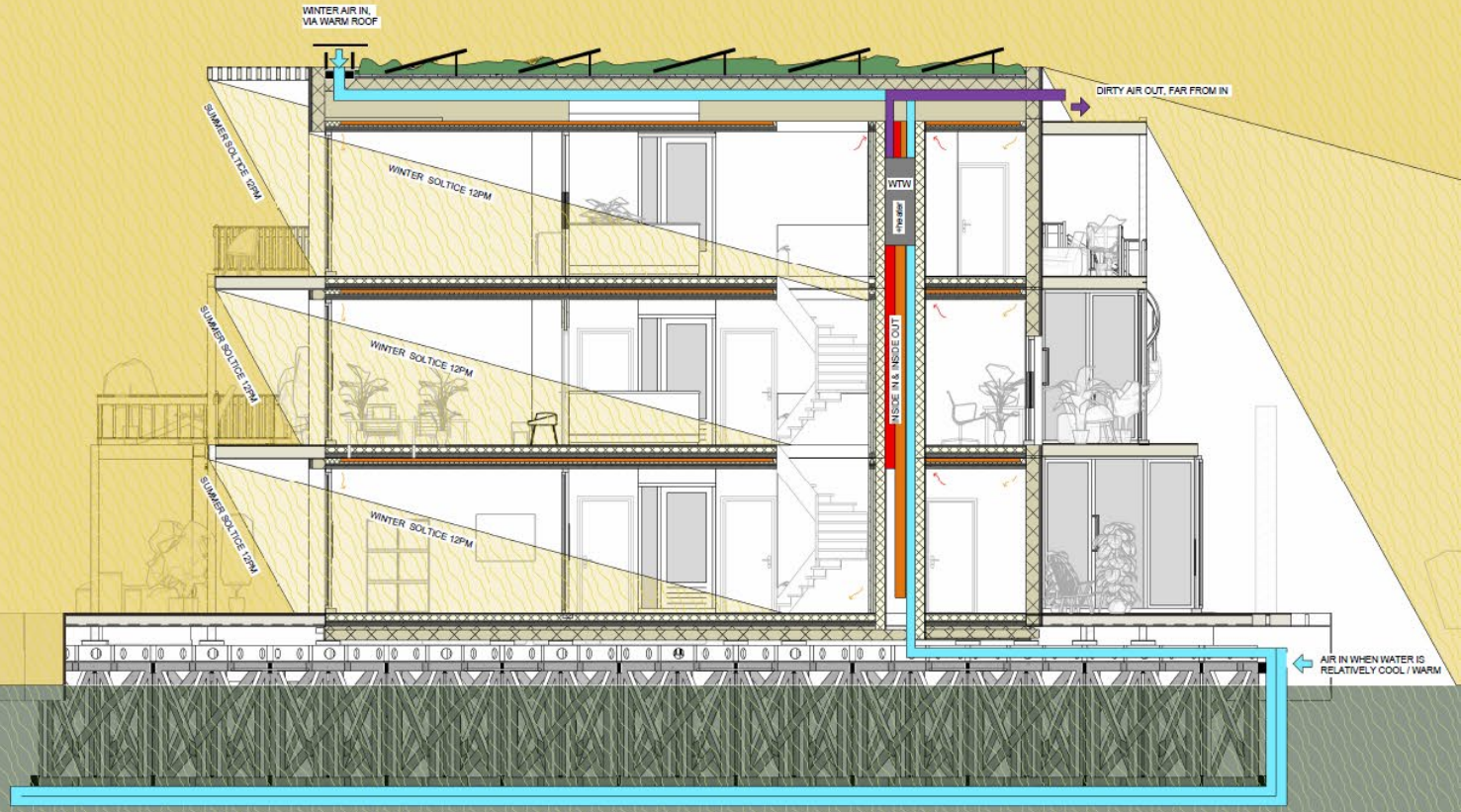


Habitat




WINTER AIR IN,
VIA WARM ROOF
DIRTY AIR OUT, FAR FROM IN
SUMMER SOLTICE 12PM
WINTER SOLTICE 12PM
WTW
heater
INSIDE VIA INSIDE OUT
AIR IN WHEN WATER IS
RELATIVELY COOL / WARM

WATERMEENT

DELTA HABITAT
BACK TO BALANCE
WATERMEENT

‘Het uitgangspunt is dat we bij iedere gebiedsontwikkeling inzetten op vormen van collectief wonen’,

Woonvisie Breda - 2024

> **“We moeten óf kleinere woningen bouwen, óf meer gaan samenwonen” – Peter Boelhouwer**

Wooncongress - 2024

CoHousing

VEEL BEHOEFTE AAN COLLECTIEVE WOONCONCEPTEN

Vastgoedjournaal – mei 2024

- Het wegnemen van juridische en financiële belemmeringen voor een nieuwe derde sector: coöperatief wonen.

Hoofdlijnenakkoord PVV, NSC, VVD & BBB - 2024

Deze woonvorm voor ouderen is immens populair: 44.000 mensen staan op de wachtlijst

De Gelderlander – over Knarrenhofjes - 04-02-2024

80.0000 geclusterde woonvormen zoals hofjes ter bevordering van het sociaal contact

Programma Wonen en Zorg voor Ouderen - 2022

Ruimte voor wonen – TU Delft – April 2024

Kans 2: Ondersteun collectieve en gemengde wooninitiatieven

CoHousing…

can be more **environmentally friendly** than typical housing (Tummers, 2017)

may reduce **loneliness** (Kesler, 1991; Kleeman et al., 2023)

can improve **physical and mental health** (Carrere et al., 2020)

residents generally provide more informal **care** to their neighbours (Hamers, et al., 2023)

*But only **if** residents **engage** with the community.*

How to design cohousing so that it facilitates community engagement?

For the latest online version:
Go to **CoWonen.com**

How can architectural design facilitate community engagement?

Amidst growing bottom-up and top-down interest in cohousing, this study highlights that it is not simply shared spaces but an engaged community that is the source of cohousing benefits such as informal care, mental health and sustainability. While much attention has been paid to the political, financial and organisational factors involved in making cohousing a reality, this publication addresses the gap in attention to architecture.

Through literature reviews, participatory design, and site visits across the Netherlands, Belgium, and the UK, a "pattern language" of base principles and design solutions has been developed. These principles and patterns transcend specific contexts and architectural typologies, making them widely applicable. The report also links design the patterns to aspects like financial, legal and social considerations in the Dutch cohousing context.

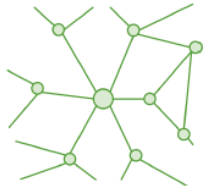
This report is written for people who want to analyse an existing project, people who want to develop new cohousing projects and architects.

Architecture that facilitates community engagement in

7 base principles

40 design patterns

8 steps to implement



TUDelft

Tijmen Kuyper

ARCHITECTURE FOR COMMUNITY

ARCHITECTURE FOR COMMUNITY

a cohousing pattern language

Best practice design insights for the many forms of collective housing

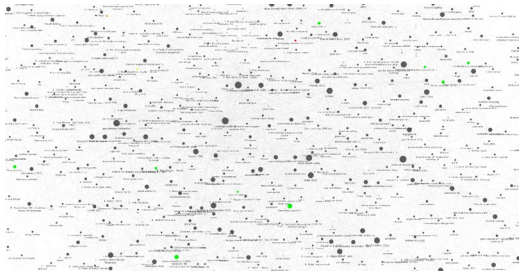
Tijmen Kuyper

TUDelft

ARCHITECTURE FOR COMMUNITY

9 Case visits

In Netherlands, UK & Belgium



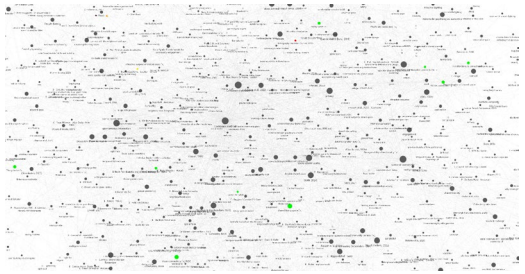
Literature review

Testing
Presentations, workshops with coops, DDK design team, individual design

How to design cohousing so that it facilitates community engagement?

ARCHITECTURE FOR COMMUNITY

Case visits



Literature review

Testing

How to design cohousing so that it facilitates community engagement?

What **base principles** explain how cohousing design facilitates community engagement?

What **design patterns** explain how cohousing design facilitates community engagement?

How can the patterns and principles be implemented in the **development of Dutch cohousing**?

A longer not-now-route [19]

Problem

Sometimes you don't want to meet your neighbours

Proposition

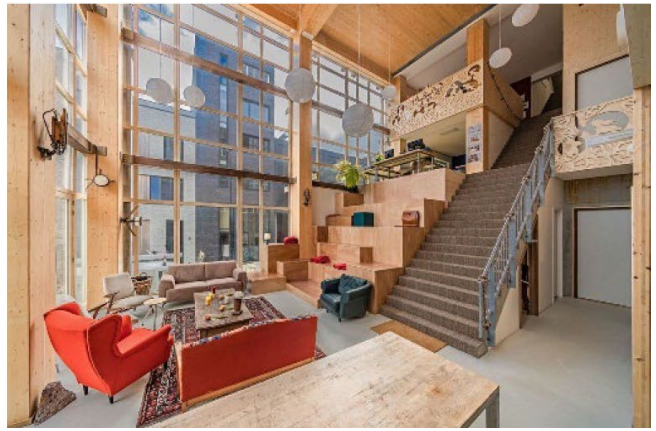
Design not-now-routes

Precedent

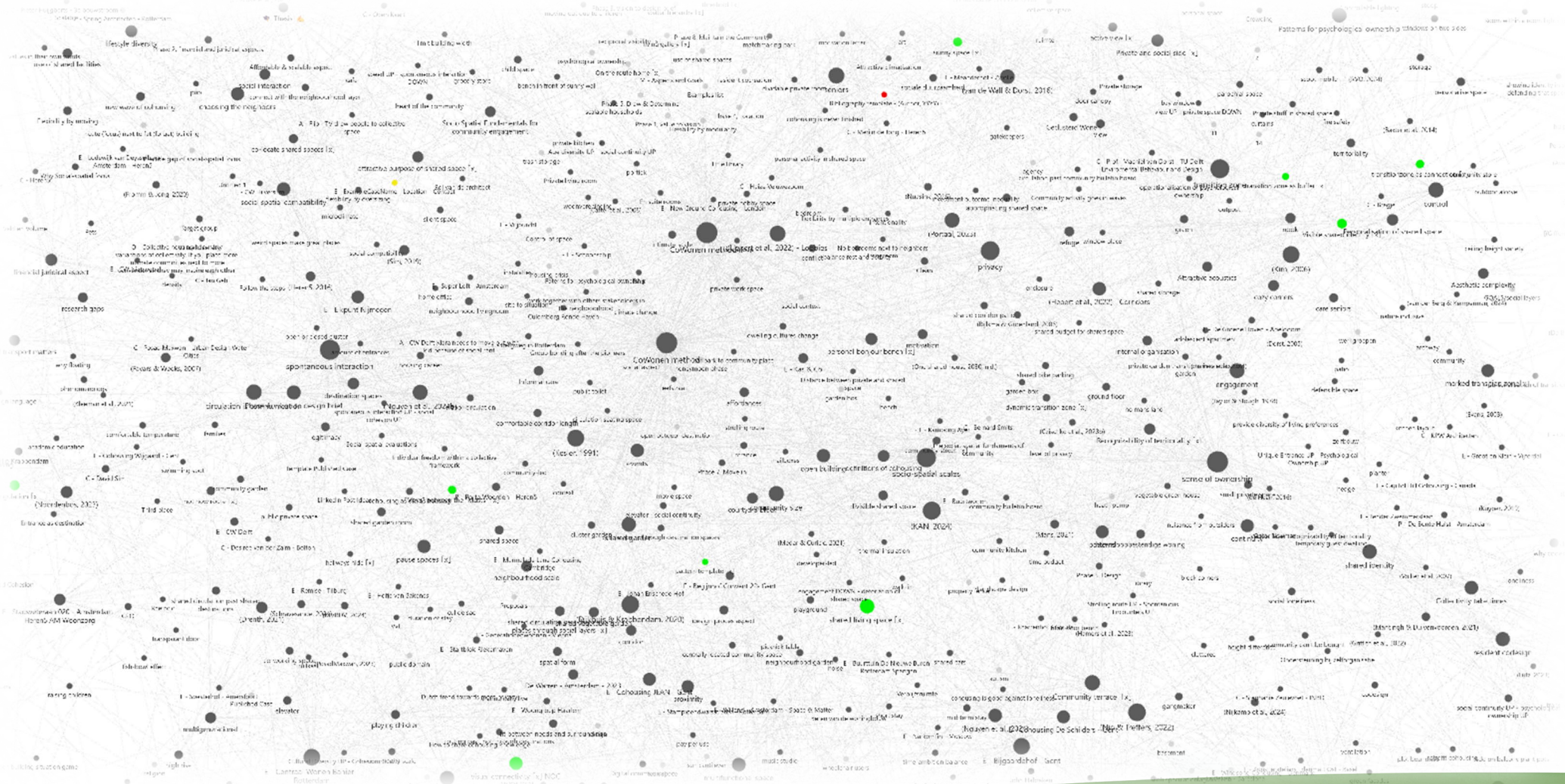
De Warren in Amsterdam

Relations

Circulation is communication [14]



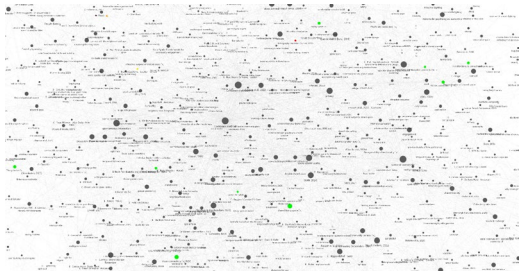
ARCHITECTURE FOR COMMUNITY



a cohousing pattern language

ARCHITECTURE FOR COMMUNITY

Case visits



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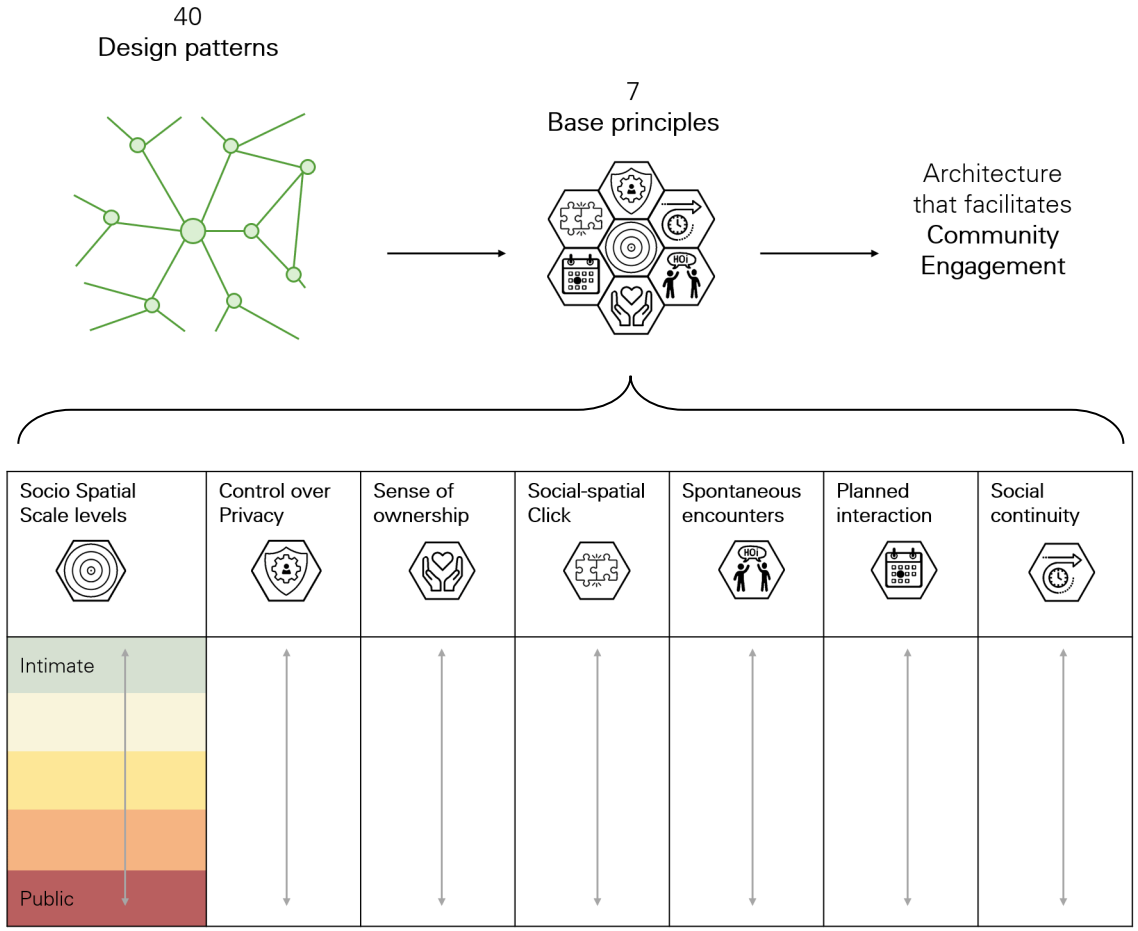
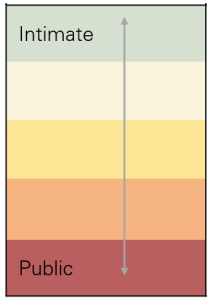


a cohousing pattern language

SOCIAL SPATIAL SCALES

What do you want to share with **whom?**



SOCIAL SPATIAL SCALES

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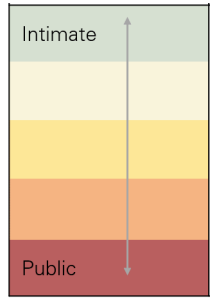
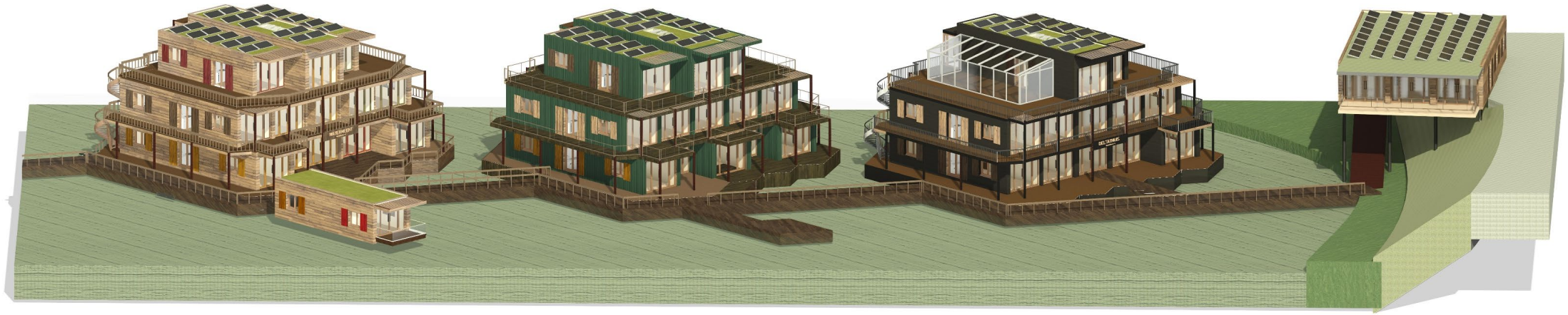




SOCIAL SPATIAL SCALES

Neighboorhood
Shared event space

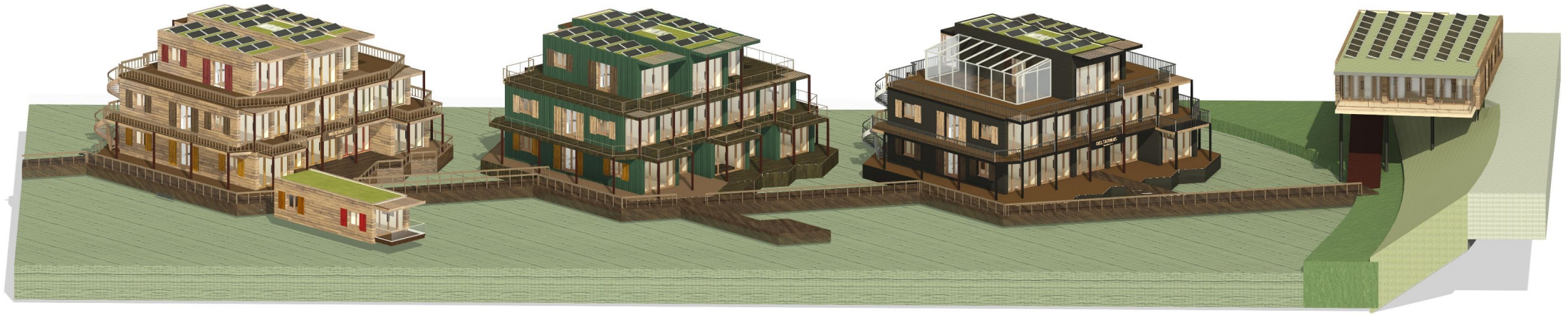
Cooperative Community
Shared music studio, guest rooms, silent space, gym, woodworking

Cluster
Shared laundry, living space

Household
Bathroom

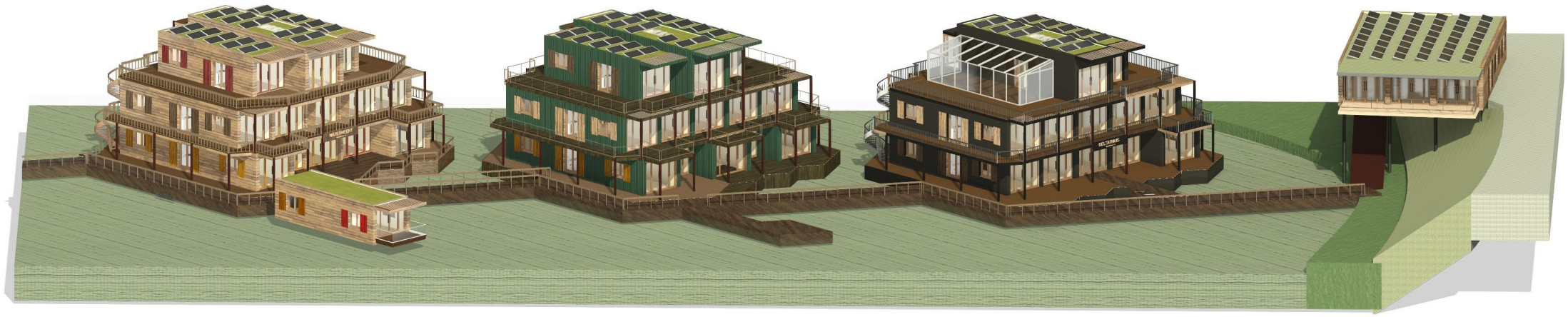
Intimate
Bedroom

A layered community [1]



SOCIAL SPATIAL SCALES

Home, ***community***, and similar concepts are **not binary** but exist along a **spectrum** of scales



SENSE OF OWNERSHIP

People **care** for things that feel a **sense of ownership** for

SENSE OF OWNERSHIP

Show those scales and clusters [3]

SENSE OF OWNERSHIP

Framework for expression [4]

CLICK

The **people**, their **lifestyle** vision and the **design** to facilitate that, should ***click*** with each other

CLICK

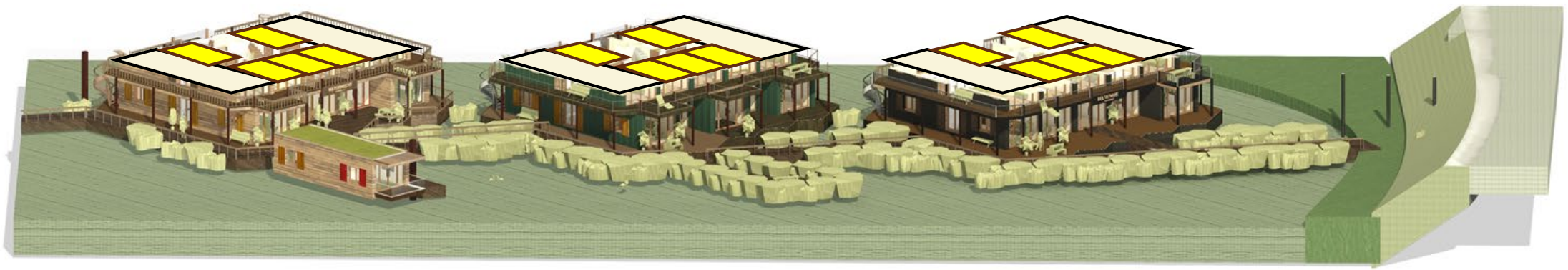
Neighboorhood
Shared event space

Cooperative Community
Shared music studio, guest rooms, silent space, gym, woodworking

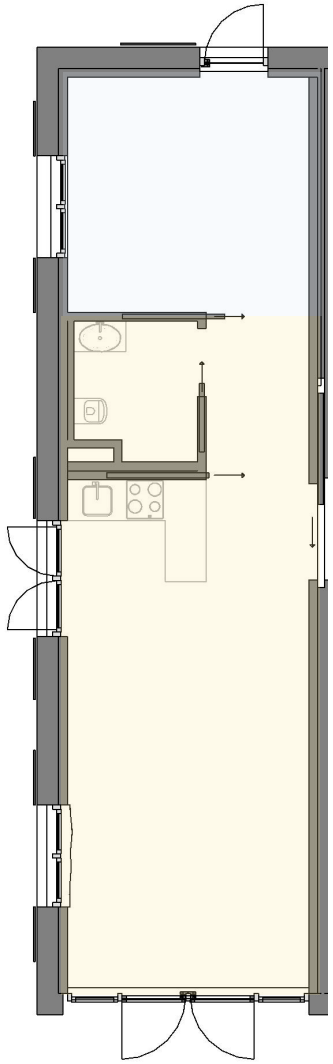
Cluster Cohousing	Shared Living	Classic Cohousing
Cluster Laundry, shared living space	**Cluster** Laundry, living room, bathroom(s), Kitchen(s)	**Cluster** Laundry
Household Bathroom, kitchen, living room		**Household** Bathroom, kitchen, living room
Intimate Bedroom	**Intimate** Bedroom	**Intimate** Bedroom

CLICK

CLICK

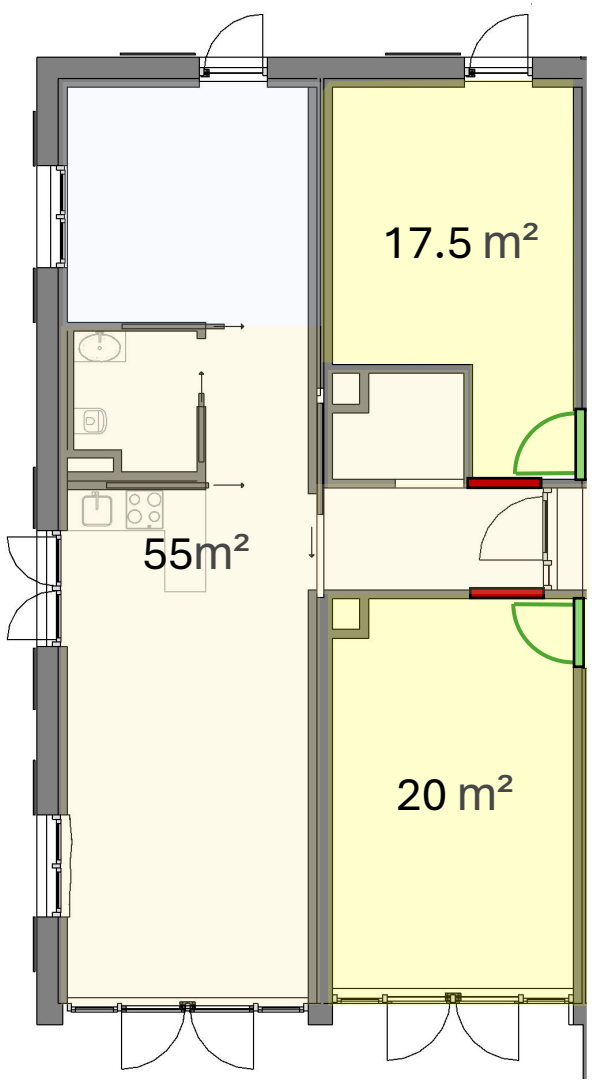


CLICK



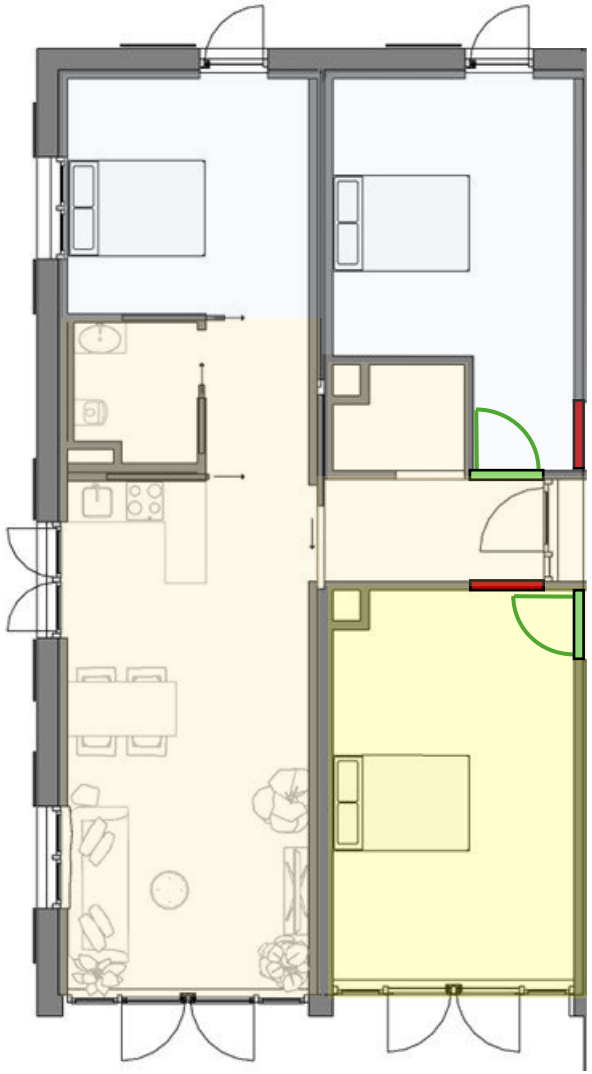
Complementing indoor and outdoor spaces [24]

CLICK



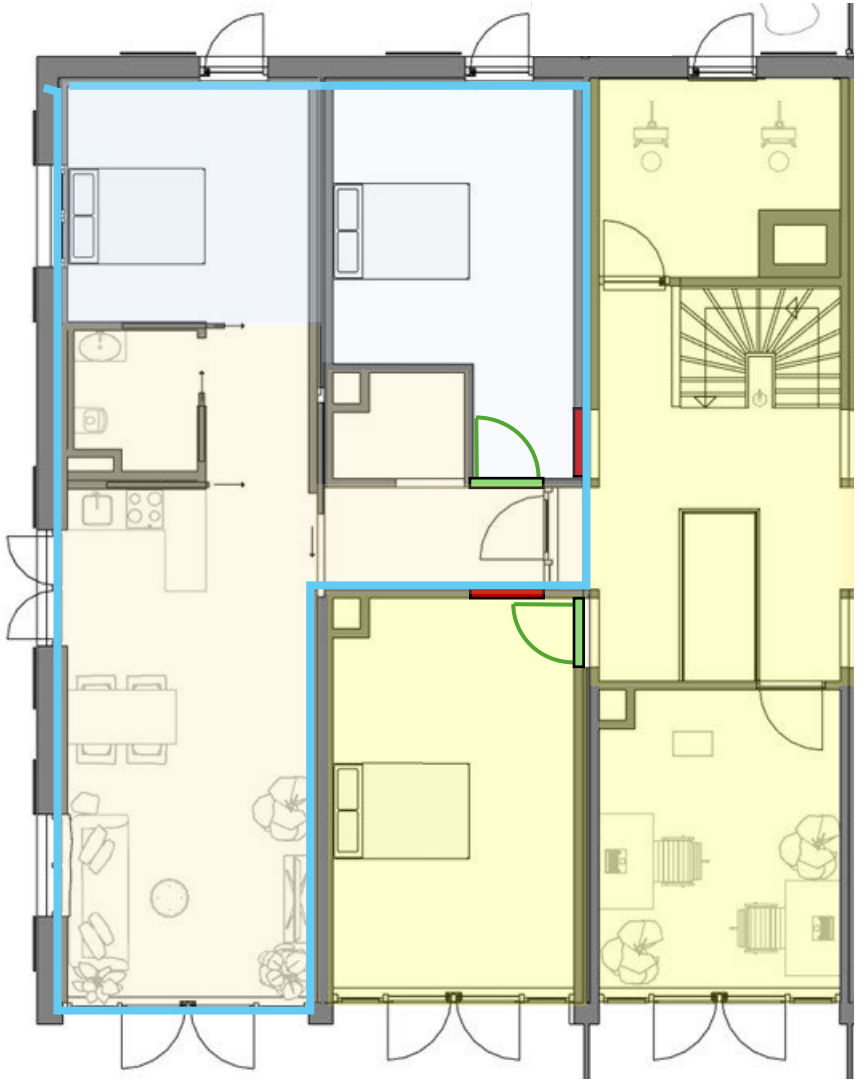
Swap rooms [39]

CLICK



Swap rooms [39]

CLICK



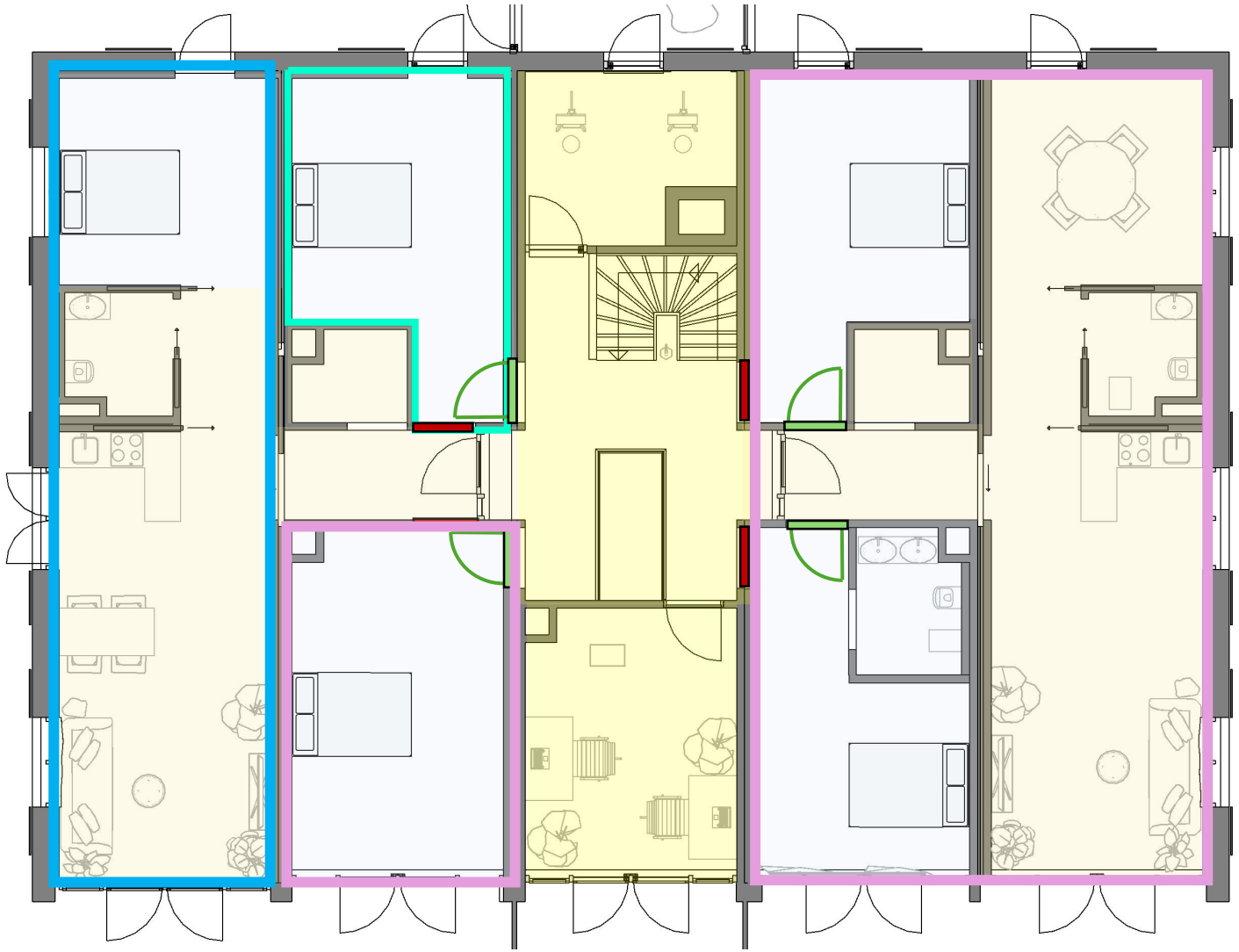
Swap rooms [39]

Option space [27]

CLICK

CLICK

CLICK



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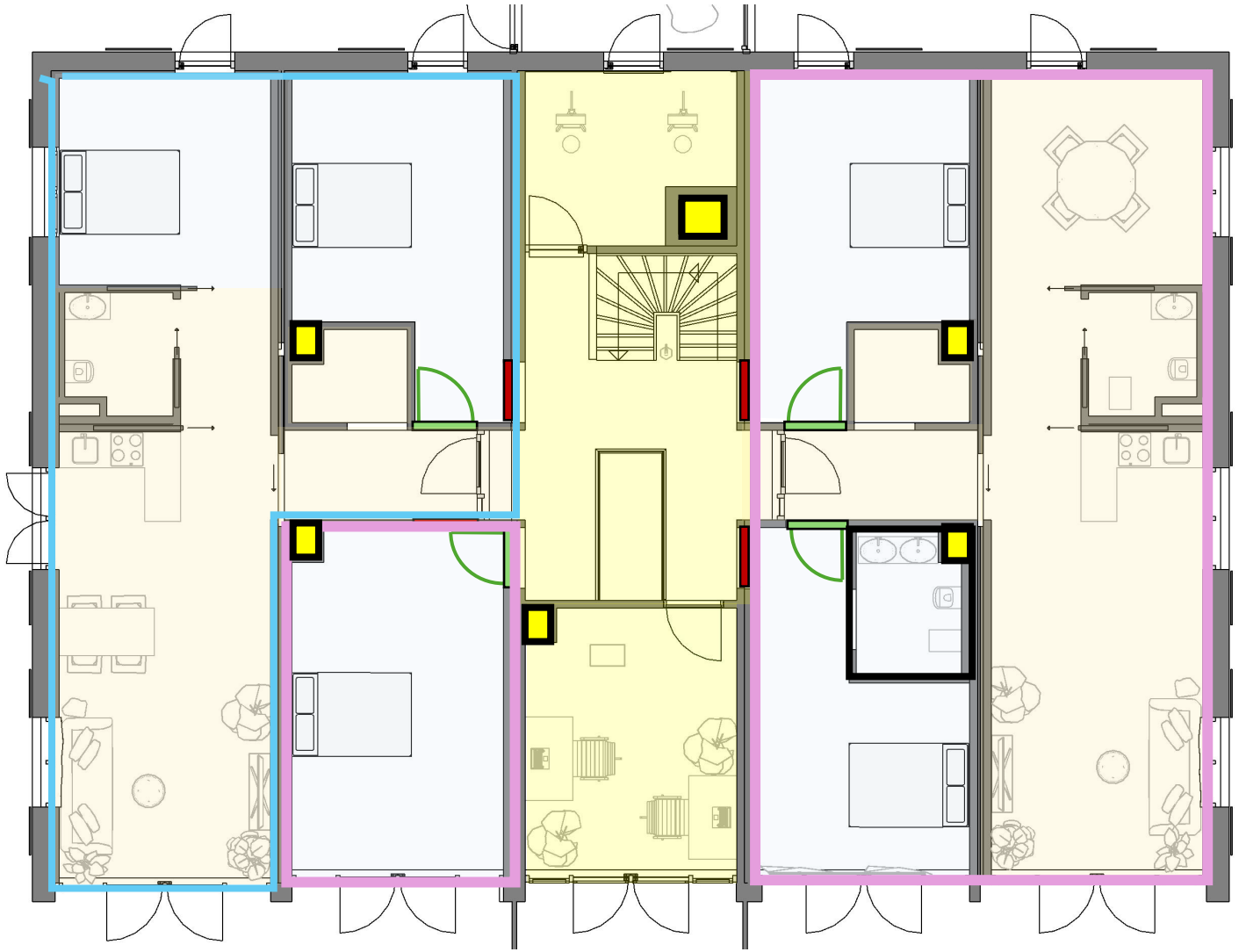
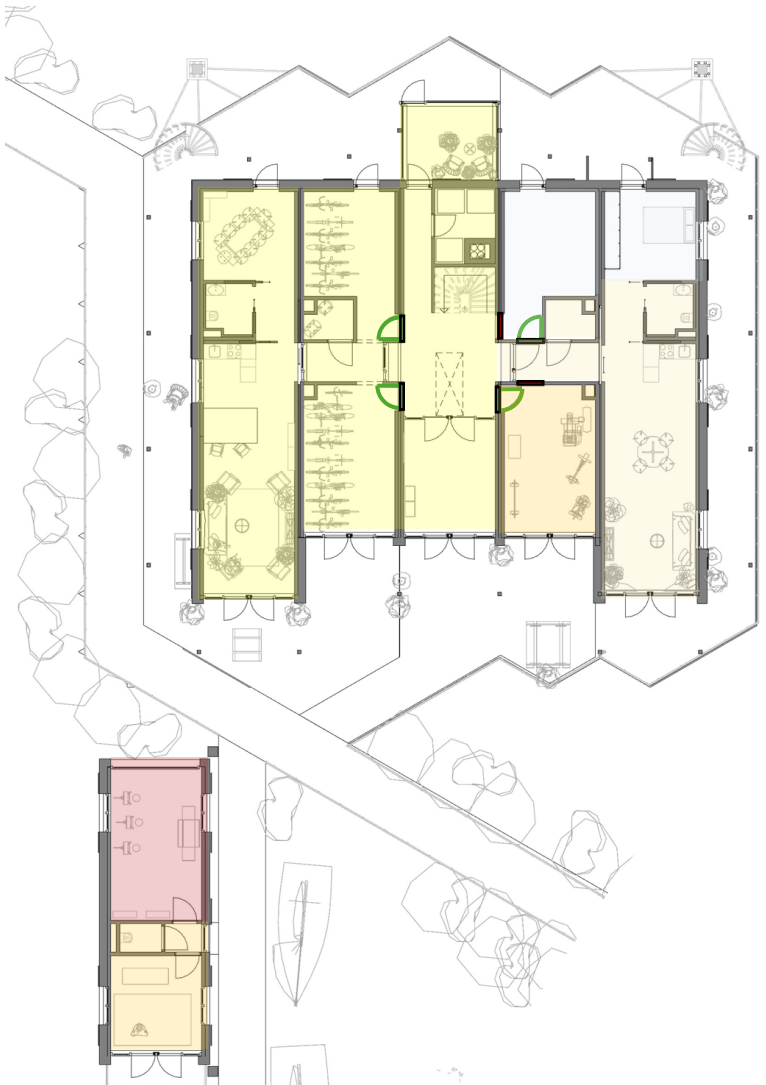


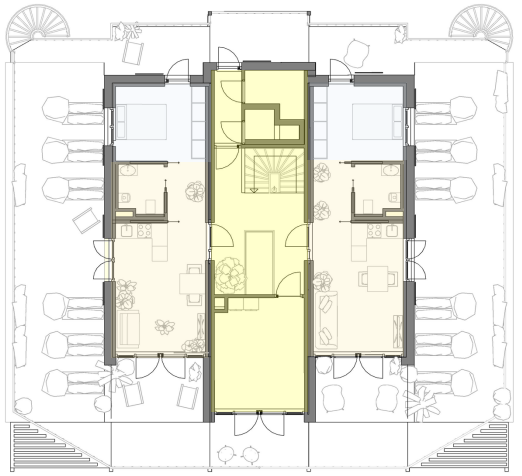
CLICK

Ground floor



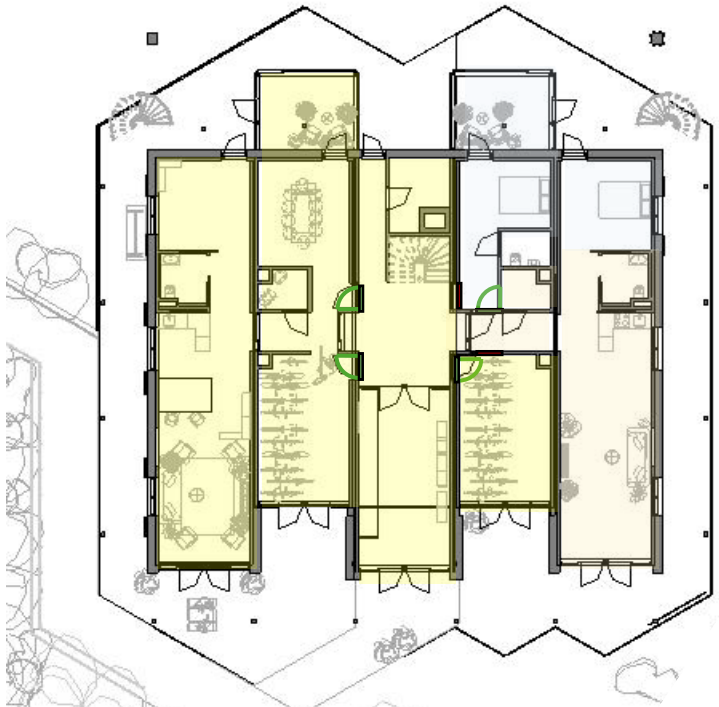
1st floor

2nd floor



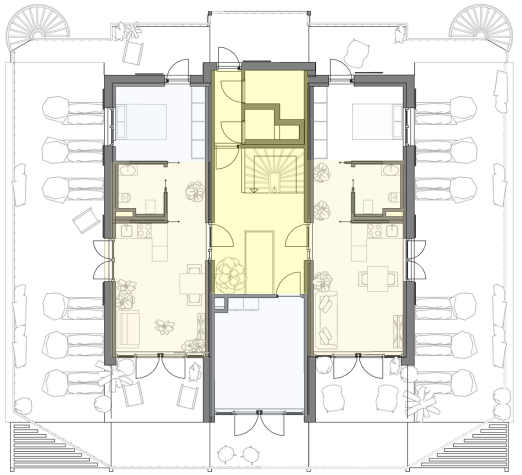
CLICK

Ground floor



1st floor

2nd floor

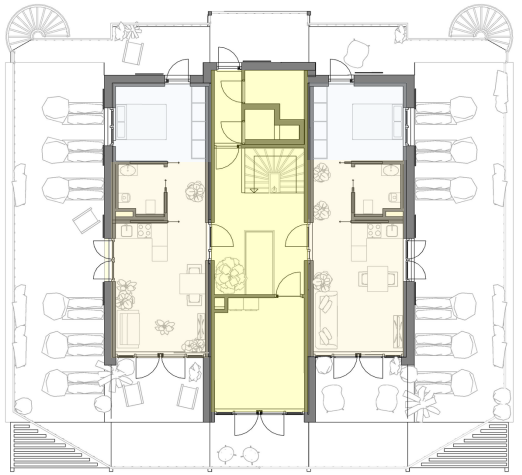


CLICK

Ground floor

1st floor

2nd floor



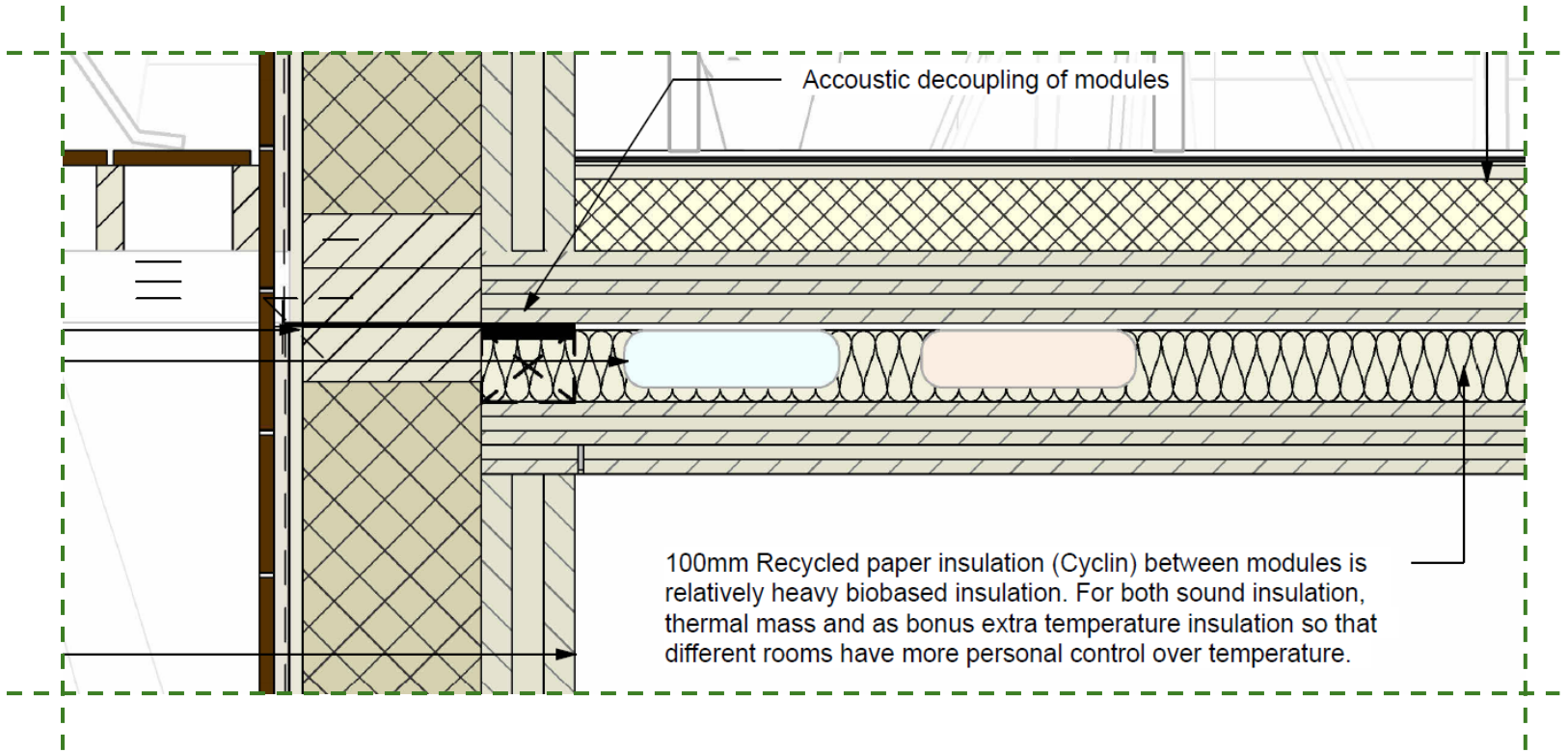
SOCIAL CONTINUITY

PRIVACY

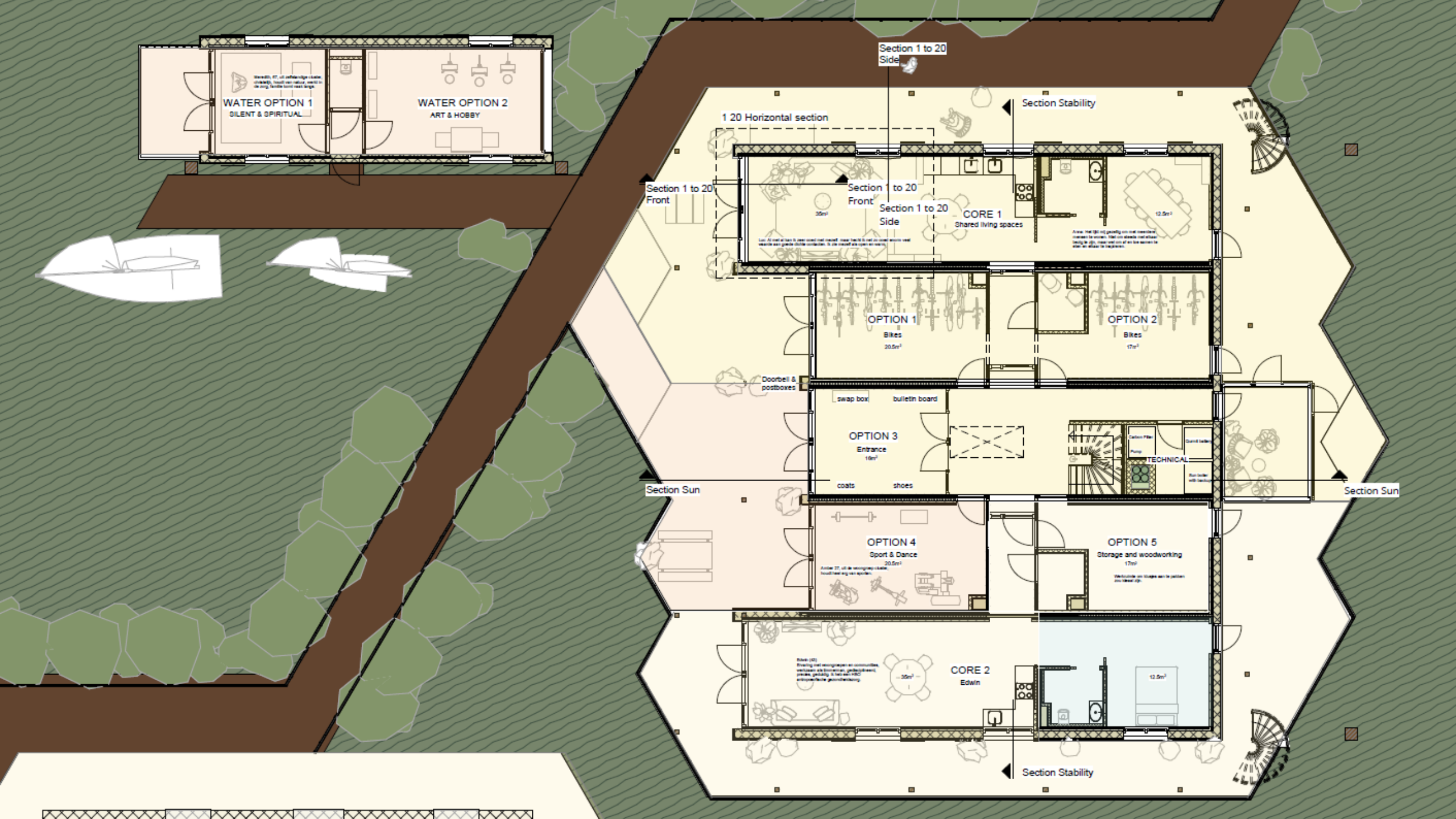
Control over **less or more access** to the self or one's group.

PRIVACY

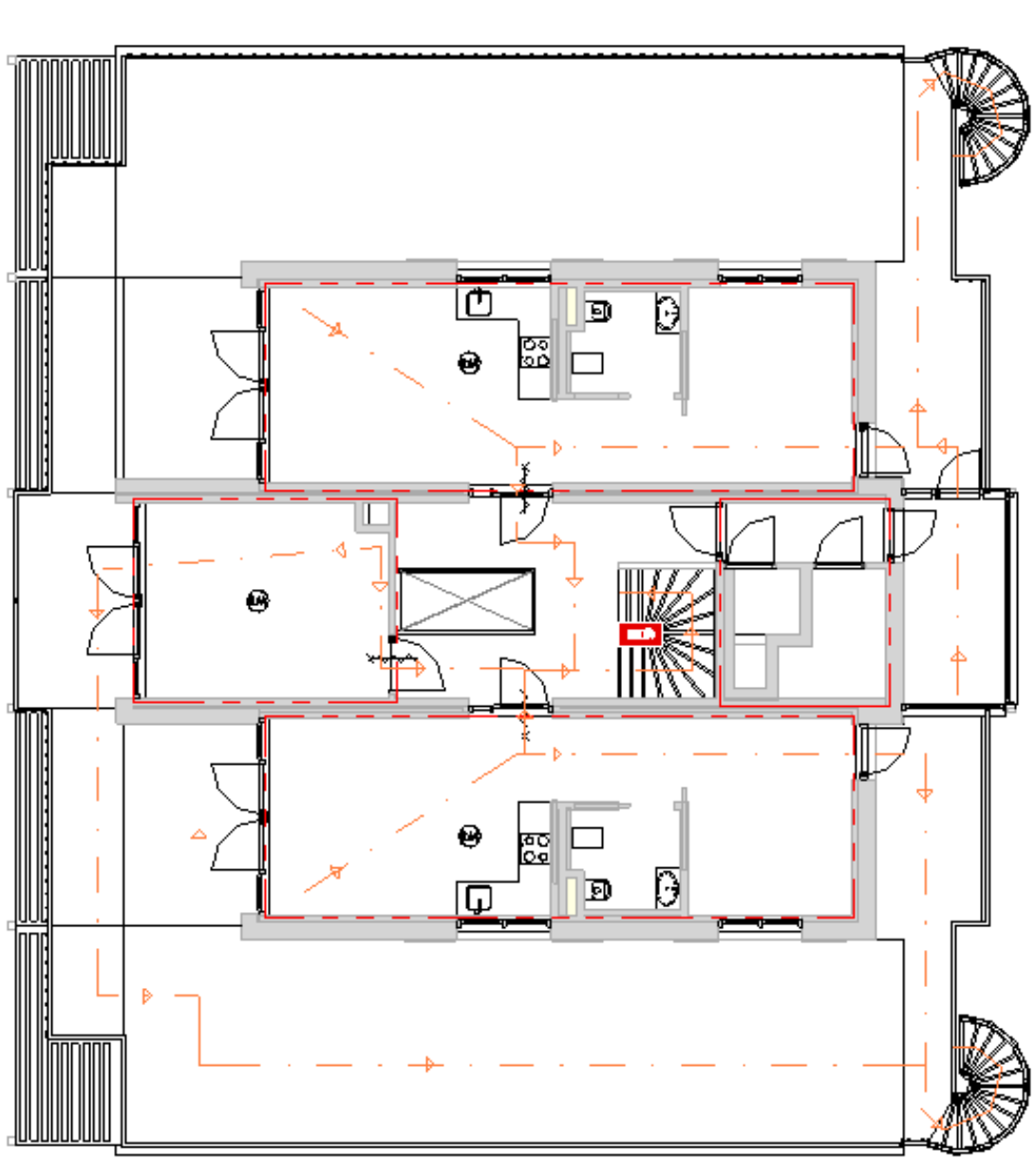
Serious sound insulation [40]

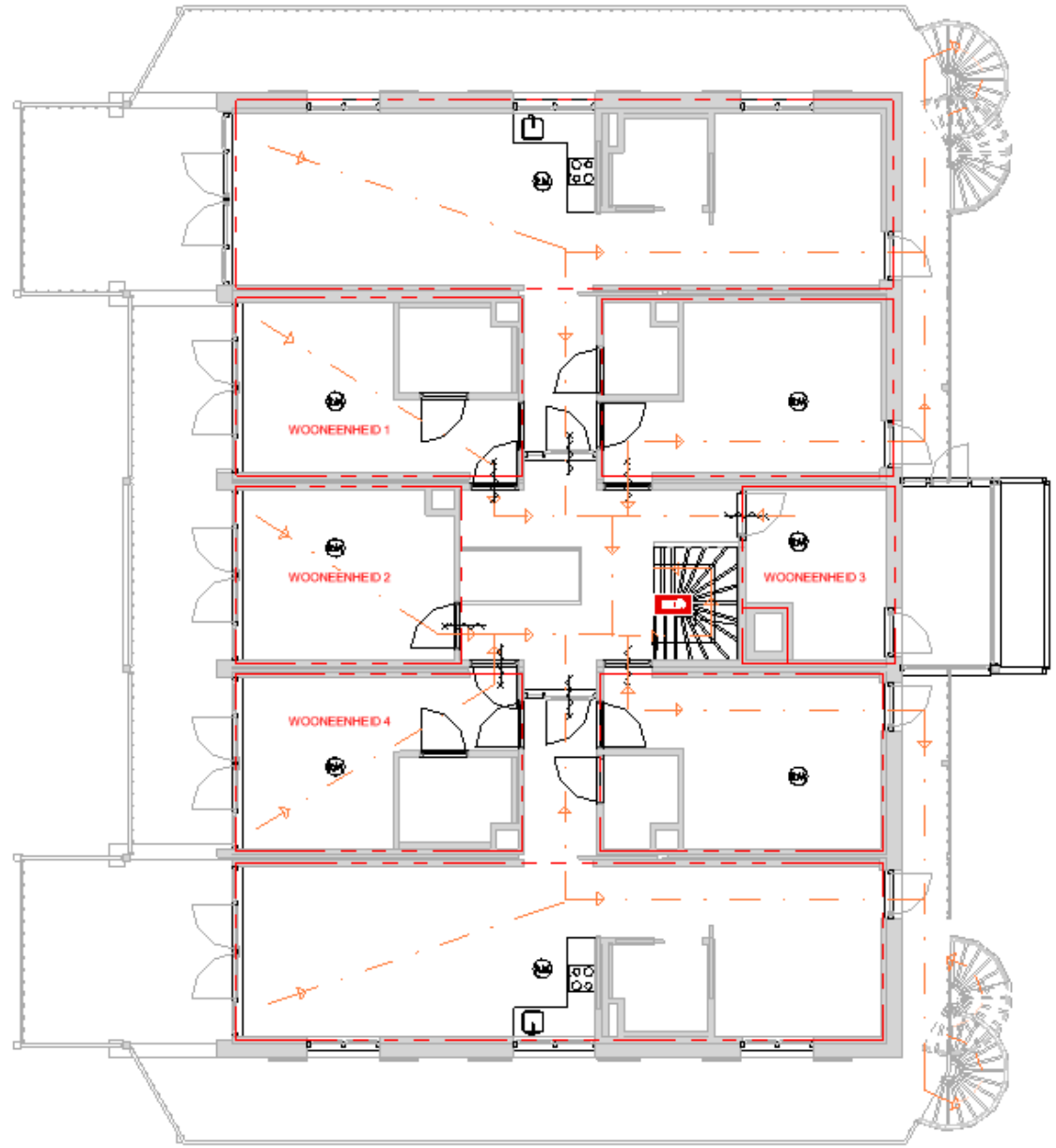


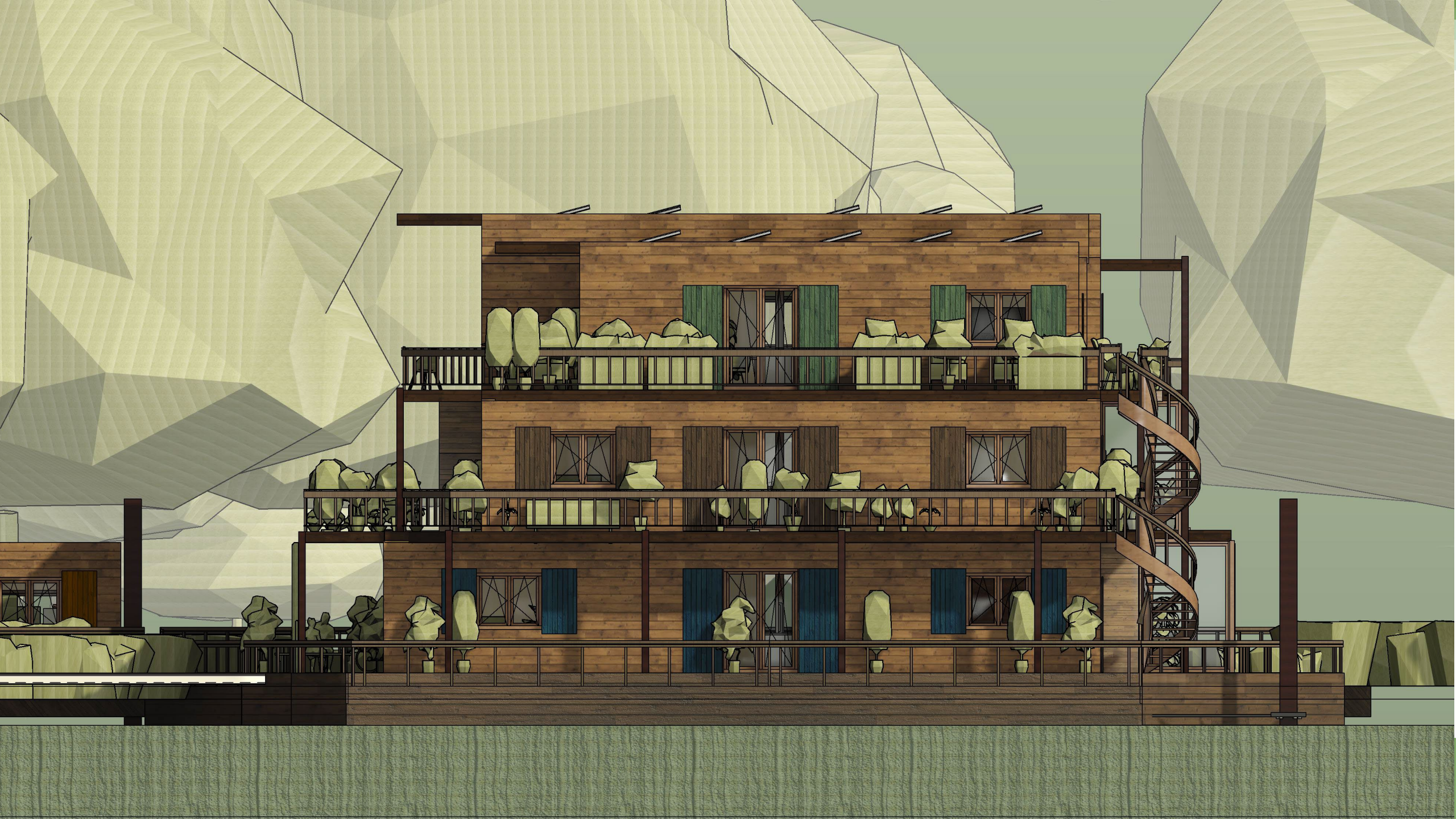
RC = 8,2
Residident flooring of choice
6mm Gutex Happy Step
25mm OSB R=0,19
100mm Gutex Presure Woodfiber . R = 2,5
100mm CLT R = 1,28
100mm Recycled paper insulation. R=2,56
130mm CLT R = 1.67


WATER OPTION 1
SILENT & SPIRITUAL
WATER OPTION 2
ART & HOBBY
Section 1 to 20
Side
Section Stability
1 20 Horizontal section
Section 1 to 20
Front
Section 1 to 20
Front
Section 1 to 20
Side
CORE 1
Shared living spaces
OPTION 1
Bikes
OPTION 2
Bikes
Doorbell &
postboxes
swap box
bulletin board
OPTION 3
Entrance
coats
shoes
TECHNICAL
Section Sun
Section Sun
OPTION 4
Sport & Dance
OPTION 5
Storage and woodworking
CORE 2
Edwin
Section Stability

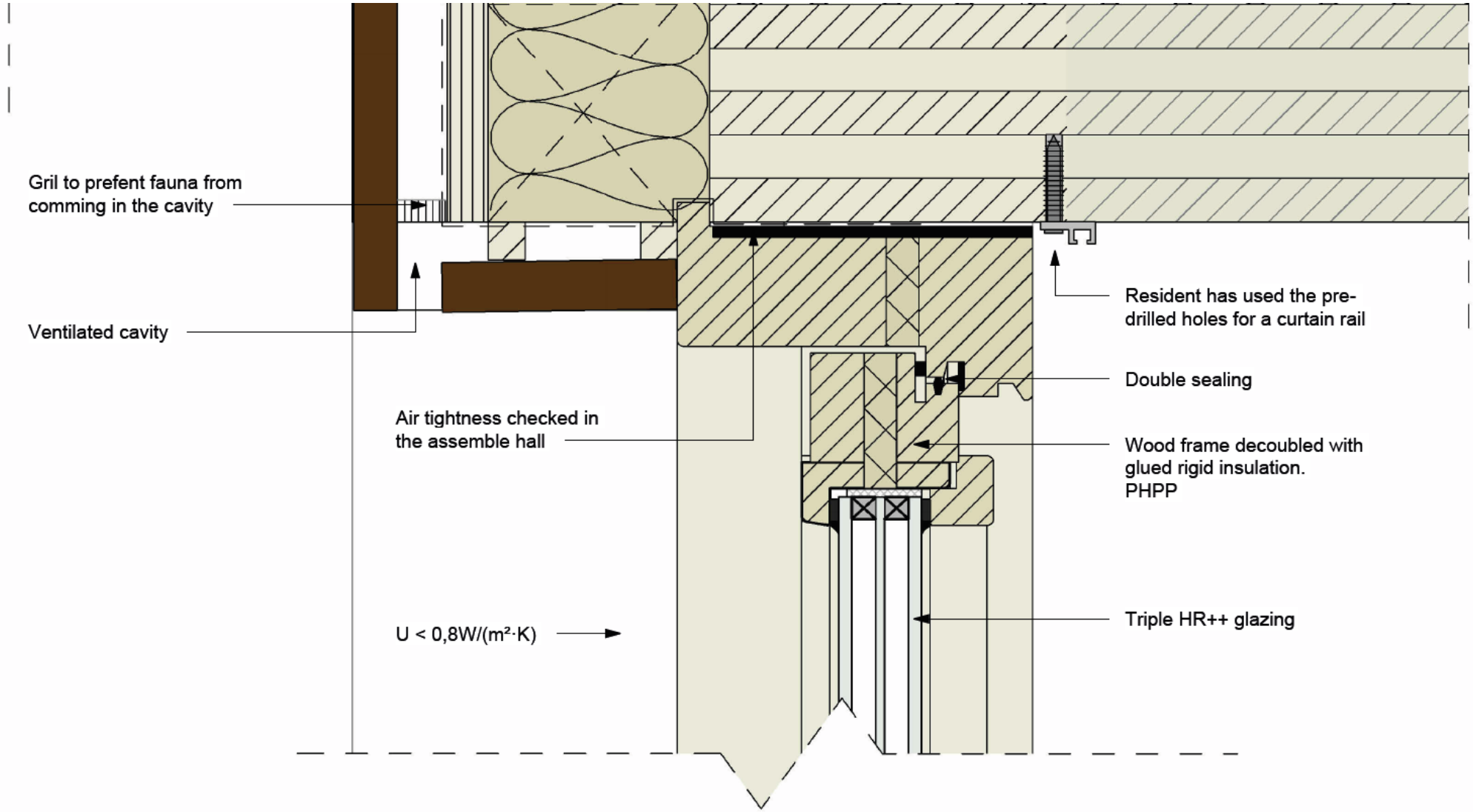
A longer not-now-route [19]




WOONEENHEID 1
WOONEENHEID 2
WOONEENHEID 3
WOONEENHEID 4



WATERMEENT
Ronde Haven 1-4

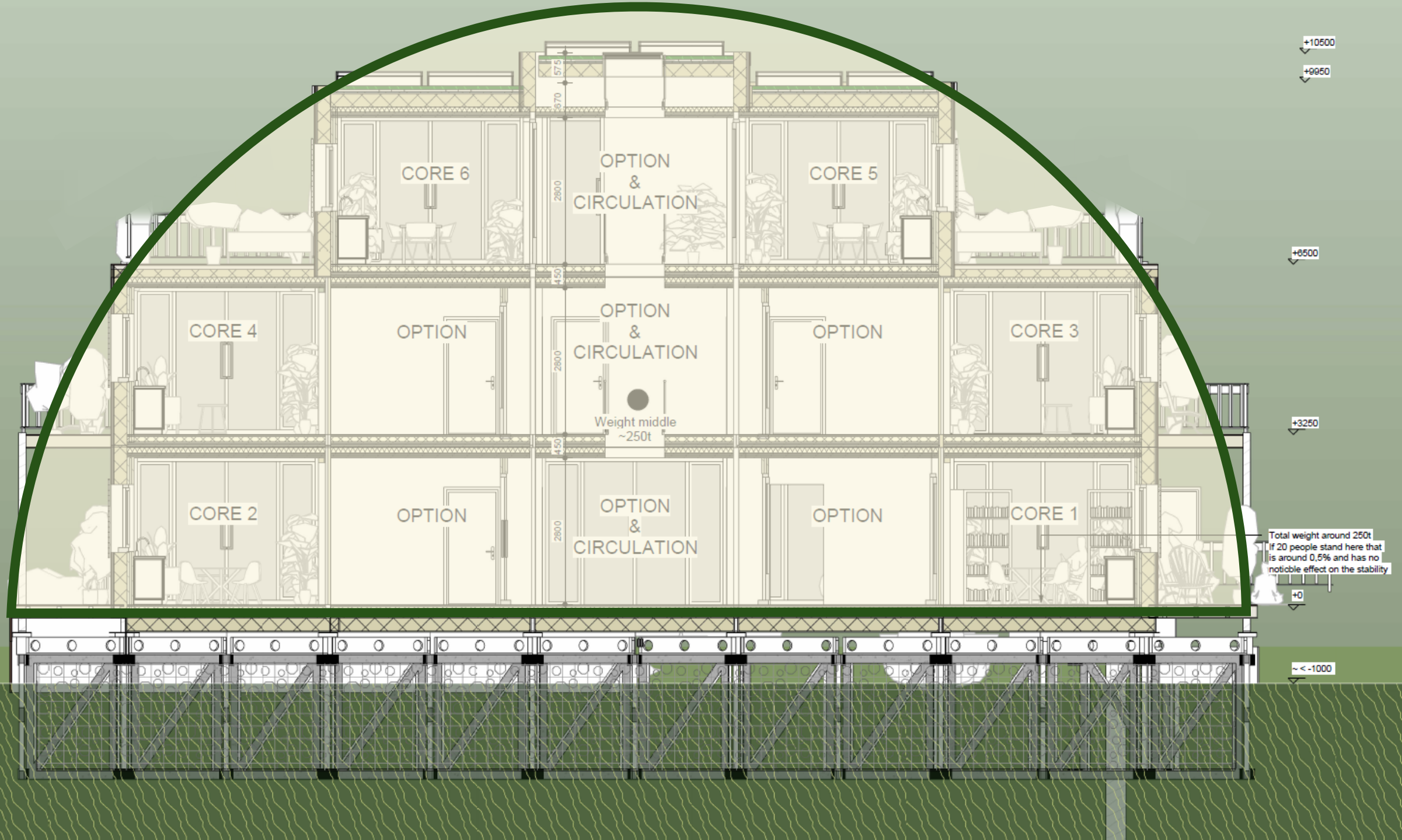

Gril to prefent fauna from comming in the cavity
Ventilated cavity
Air tightness checked in the assemble hall
U < 0,8W/(m²·K)
Resident has used the pre-drilled holes for a curtain rail
Double sealing
Wood frame decoubled with glued rigid insulation. PHPP
Triple HR++ glazing

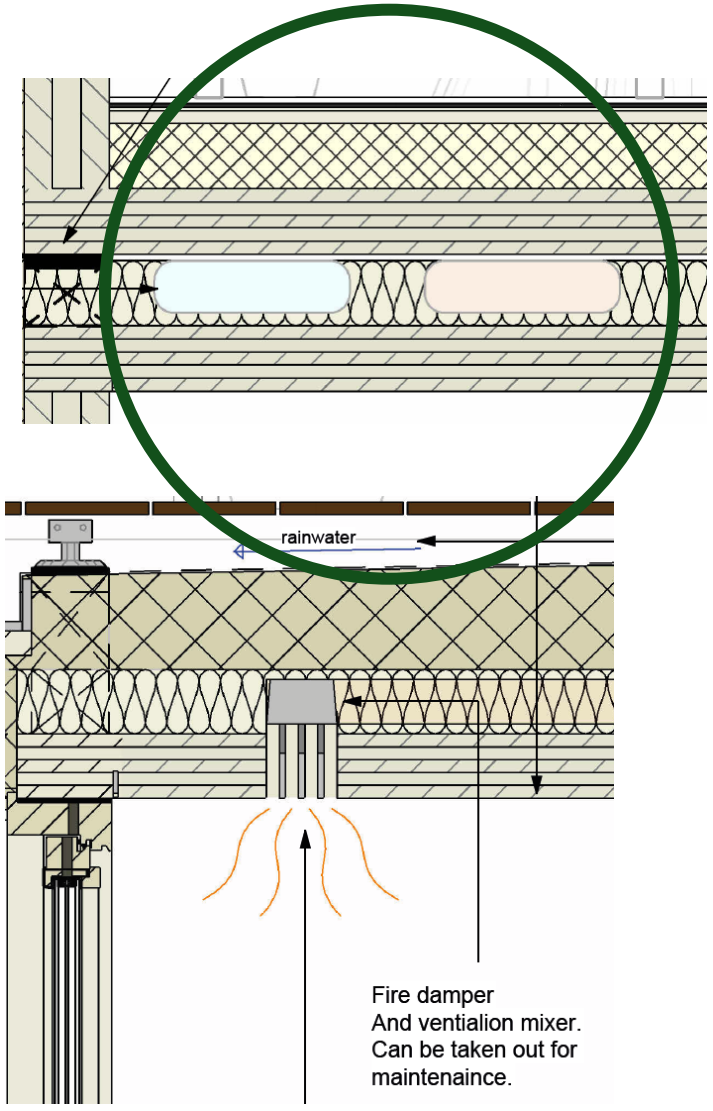
SPONTANIOUS INTERACTION

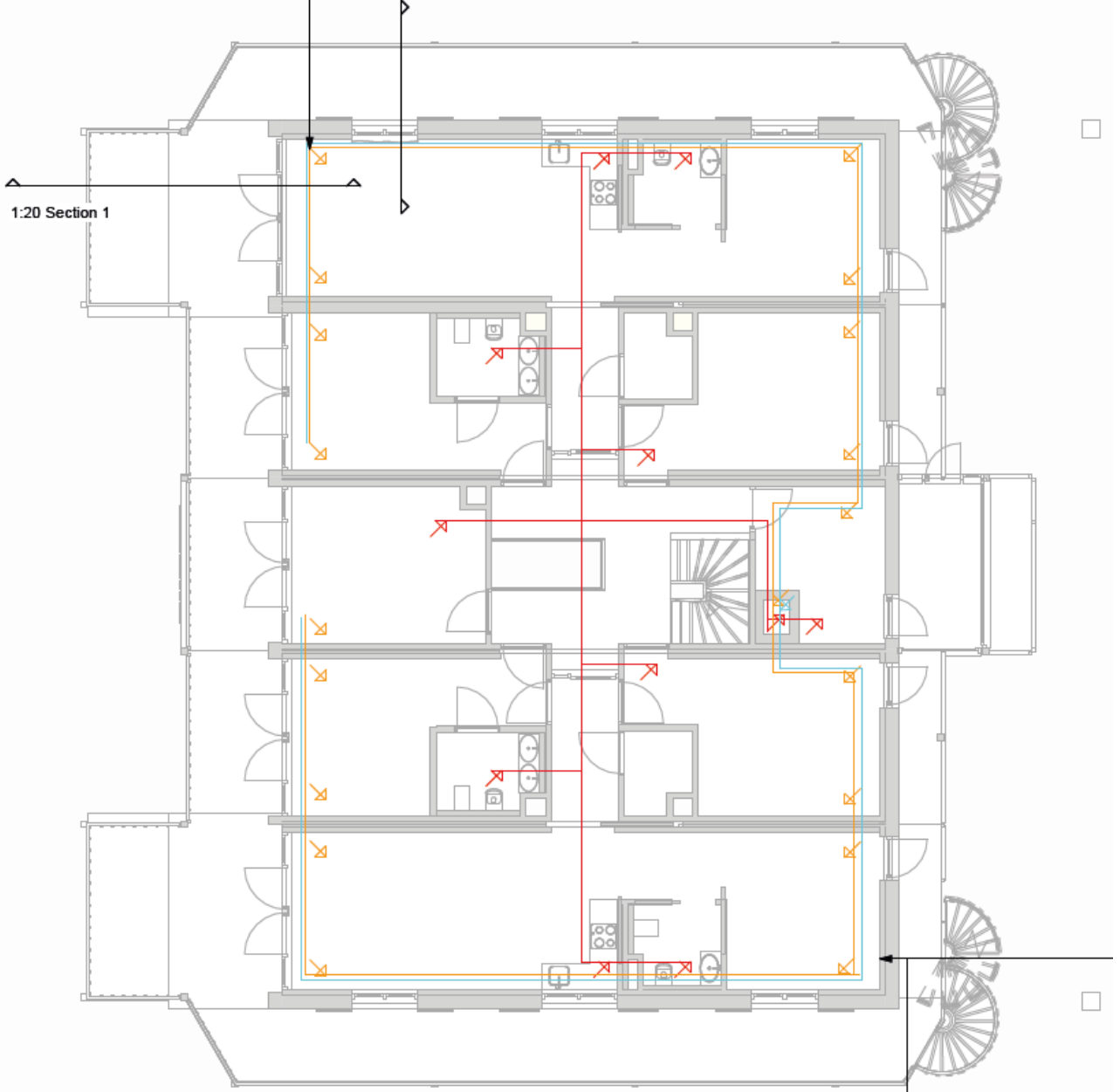
Unplanned, informal, light-hearted encounters, are the oxygen of any **community**.

PLANNED INTERACTION

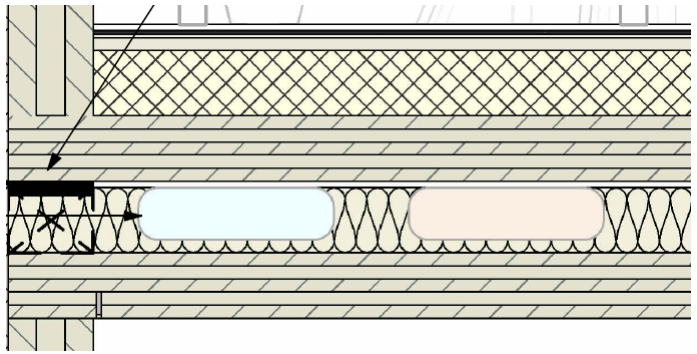
Traditions, rituals and **events** provide social **structure** and **identity** in a community

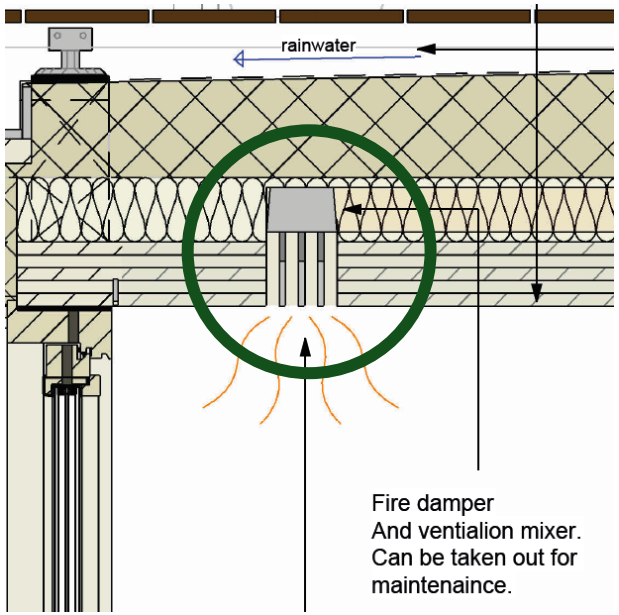

+10500
+9950
+6500
+3250
+0
~ < -1000
575
370
2800
450
2800
450
2800
CORE 6
OPTION
&
CIRCULATION
CORE 5
CORE 4
OPTION
OPTION
&
CIRCULATION
OPTION
CORE 3
Weight middle
~250t
CORE 2
OPTION
OPTION
&
CIRCULATION
OPTION
CORE 1
Total weight around 250t
If 20 people stand here that
is around 0,5% and has no
noticble effect on the stability

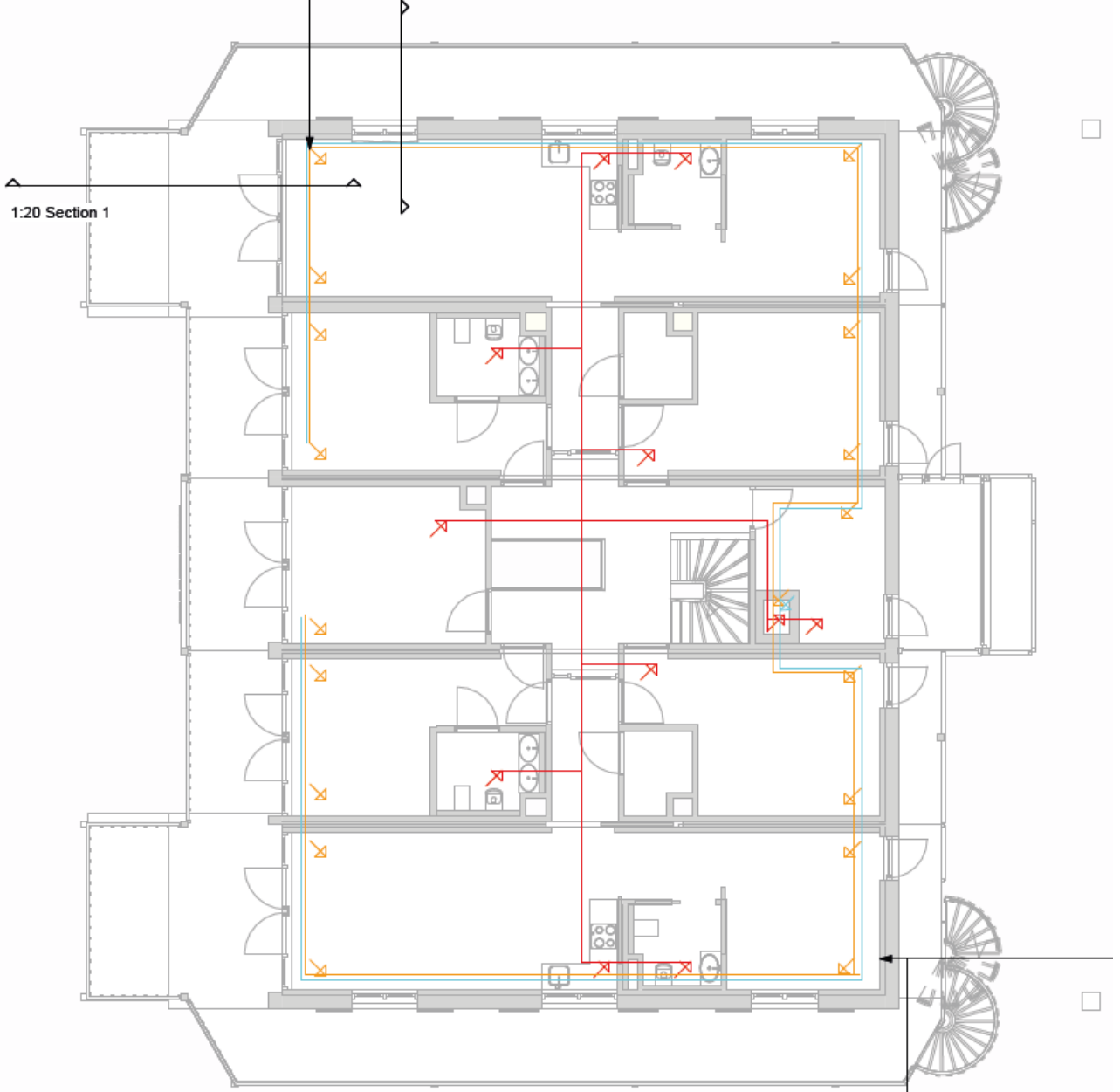




Air from outside (via roof natural pre-heat or via water natural pre-heat/cool
Air from WTW (and if neccesary pre-heat)
Air out towards WTW
Air out
Air in via mixer




rainwater
Fire damper
And ventialion mixer.
Can be taken out for
maintenaince.


1:20 Section 1
Air from outside (via roof natural pre-heat or via water natural pre-heat/cool
Air from WTW (and if neccesary pre-heat)
Air out towards WTW
Air out
Air in via mixer

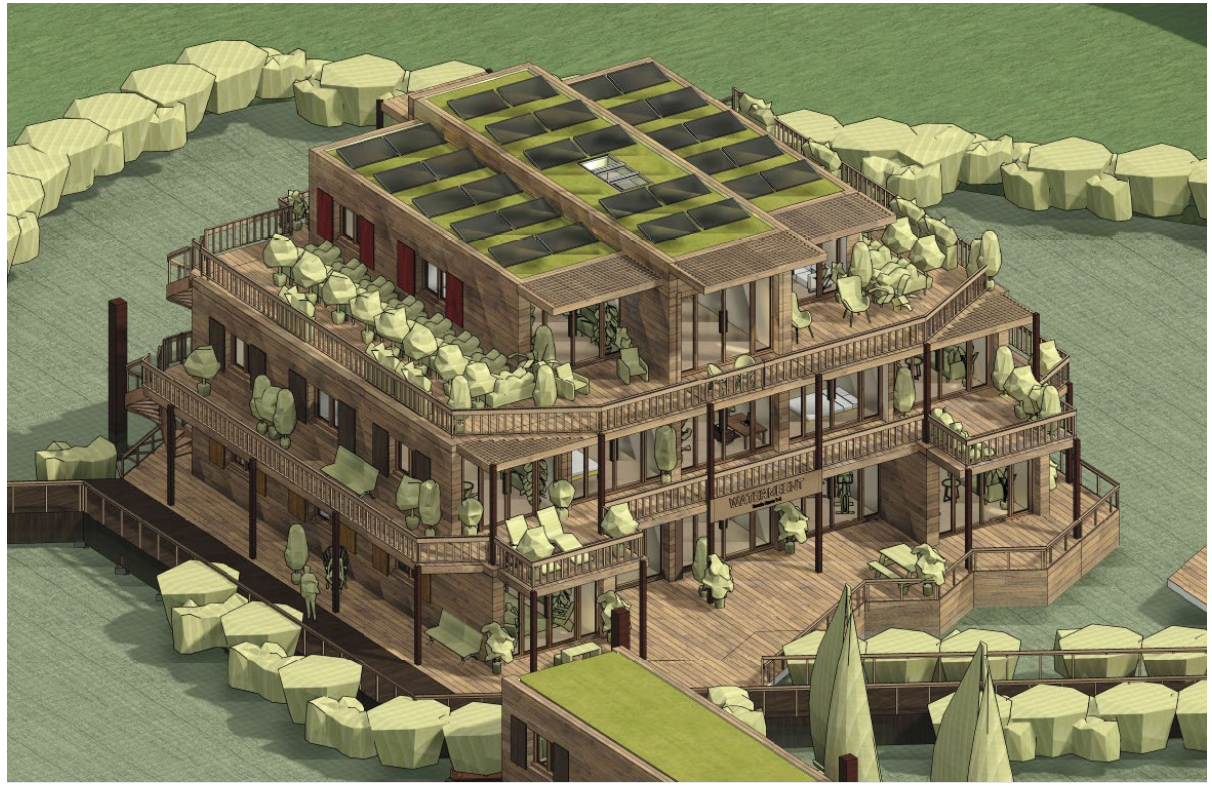
ARCHITECTURE FOR COMMUNITY

Socio Spatial Scale levels	Control over Privacy	Sense of ownership	Social-spatial Click	Spontaneous encounters	Planned interaction	Social continuity
Intimate Public						

in context

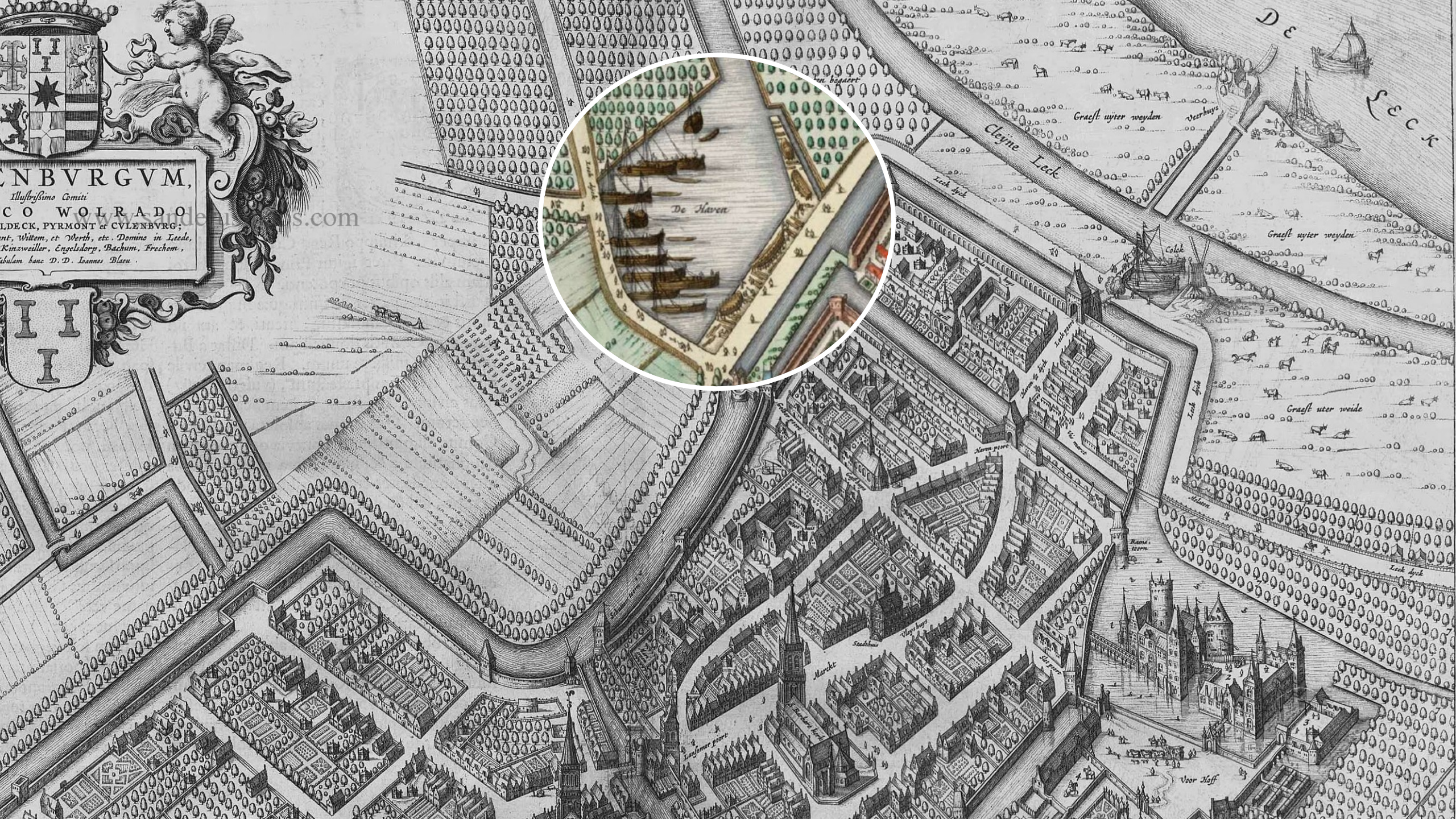
in balance

for all



Culemborg

RONDE HAVEN


CLENBVRGVM,
Illustrissimo Comiti
CO WOLRADO
LDECK, PYRMONT et CVLENBVRG;
nt, Wittem, et Werth, etc. Domino in Leede,
Kinzweiller, Engelsdorp, Bachum, Frechom,
tabulam hanc D. D. Ioannes Blaeu.
De Haven
Cleyne Leck
Graeft uyter weyden
Veerhuys
Graeft uyter weyden
Colck
Graeft uter weide
Leck dyck
Markt
Voor Hoff

Culemborg

RONDE HAVEN

Culemborg

RONDE HAVEN

WOONCOOPERATIE

RONDE HAVEN

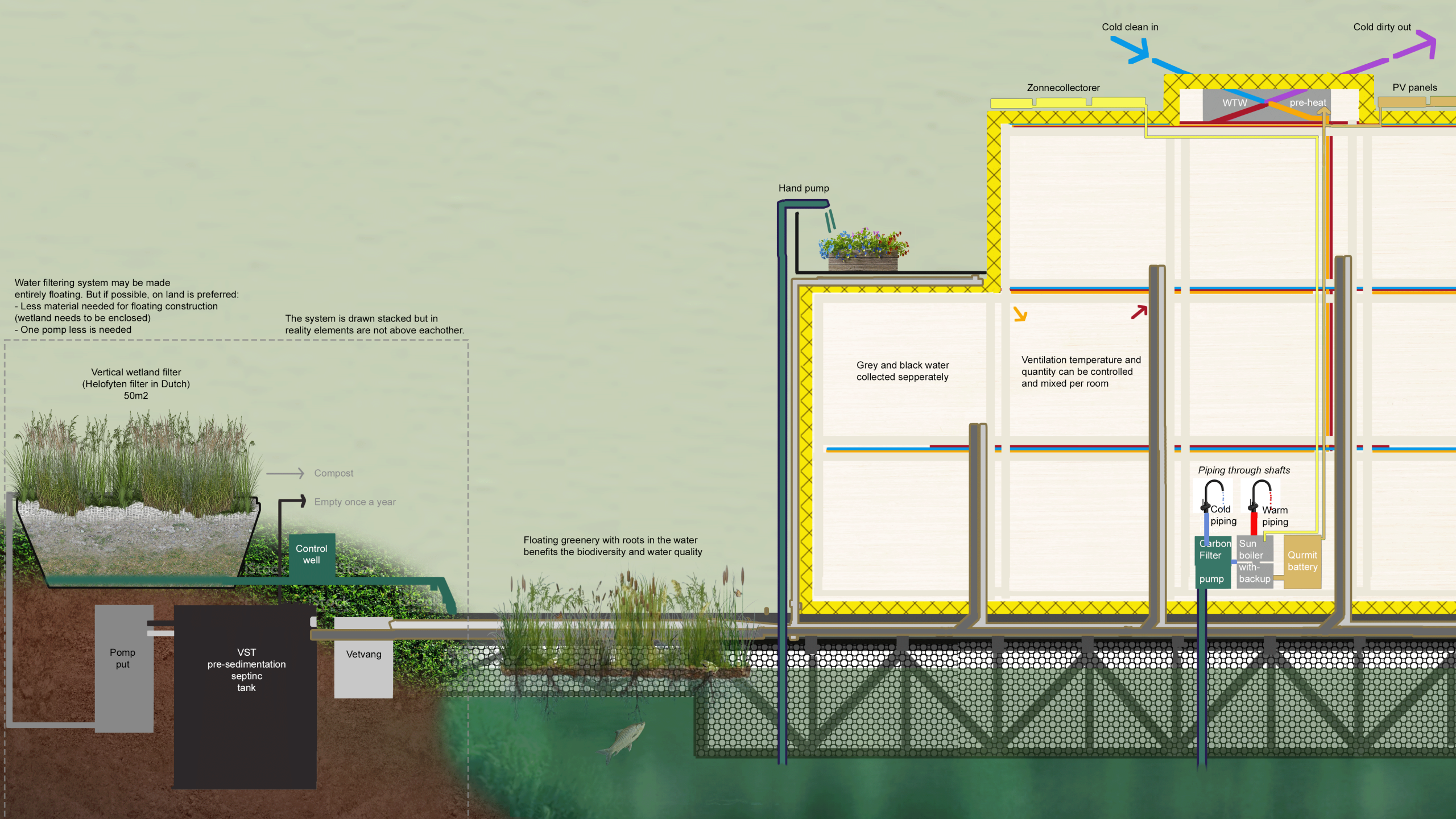
DELTAHUIS

Loud space [30]

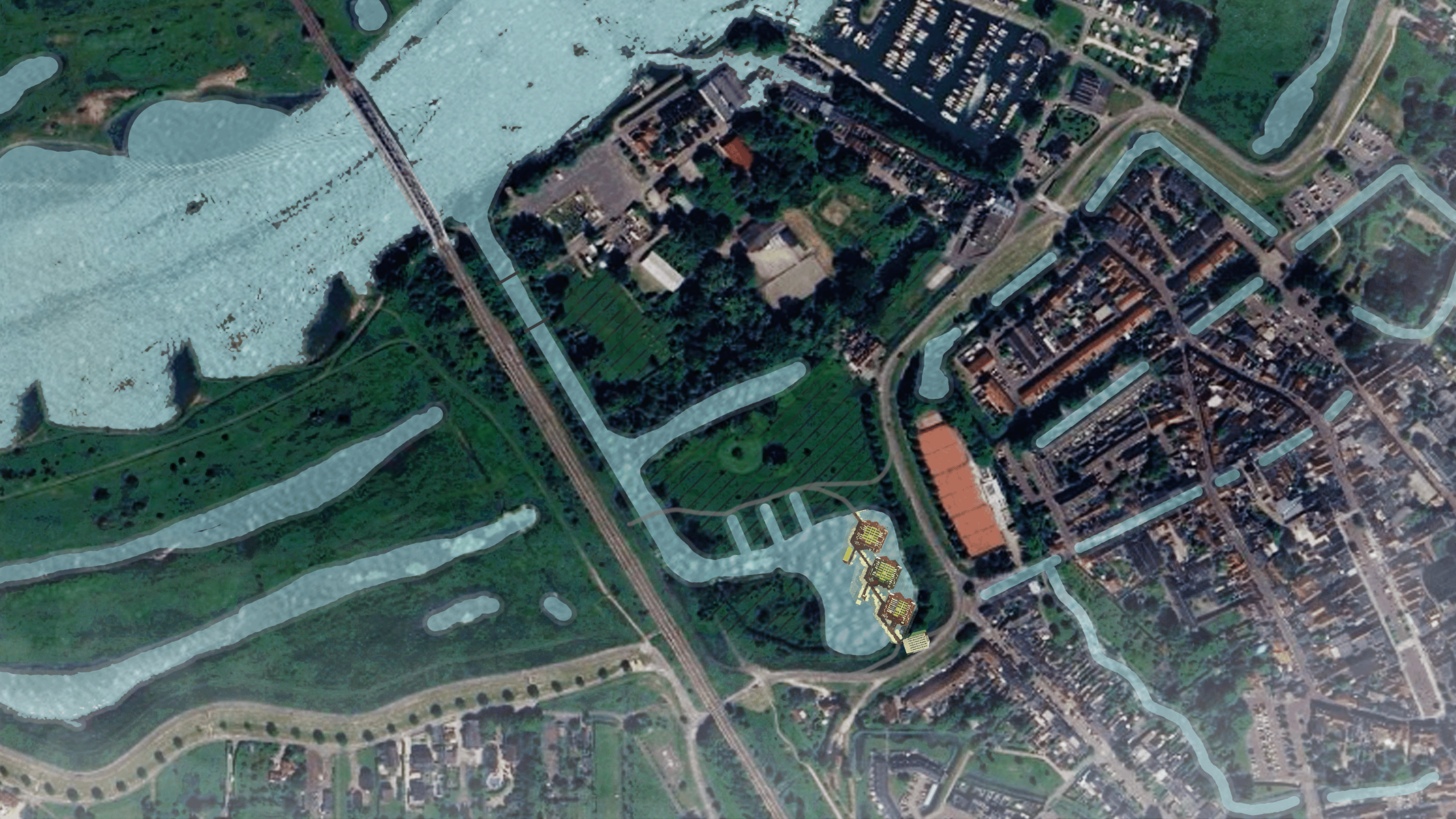
Multifunctional space [26]
DELTAHUIS

Circulation is communication [14]

Comfortable connections [15]


Cold clean in
Cold dirty out
Zonnecollectorer
PV panels
WTW
pre-heat
Hand pump
Water filtering system may be made
entirely floating. But if possible, on land is preferred:
- Less material needed for floating construction
(wetland needs to be enclosed)
- One pomp less is needed
The system is drawn stacked but in
reality elements are not above eachother.
Vertical wetland filter
(Helofyten filter in Dutch)
50m2
Compost
Empty once a year
Control
well
Grey and black water
collected sepperately
Ventilation temperature and
quantity can be controlled
and mixed per room
Piping through shafts
Cold
piping
Warm
piping
Carbon
Filter
pump
Sun
boiler
with-
backup
Qurmit
battery
Floating greenery with roots in the water
benefits the biodiversity and water quality
Pomp
put
VST
pre-sedimentation
septinc
tank
Vetvang

DELTATHUIS



+ 10 years
DELTATHUIS
Fietspad afgesloten
in verband met
hoogwater

DELTA HABITAT

BACK TO BALANCE

For the latest online version:
Go to **CoWonen.com**

How can architectural design facilitate community engagement?

Amidst growing bottom-up and top-down interest in cohousing, this study highlights that it is not simply shared spaces but an engaged community that is the source of cohousing benefits such as informal care, mental health and sustainability. While much attention has been paid to the political, financial and organisational factors involved in making cohousing a reality, this publication addresses the gap in attention to architecture.

Through literature reviews, participatory design, and site visits across the Netherlands, Belgium, and the UK, a "pattern language" of base principles and design solutions has been developed. These principles and patterns transcend specific contexts and architectural typologies, making them widely applicable. The report also links design the patterns to aspects like financial, legal and social considerations in the Dutch cohousing context.

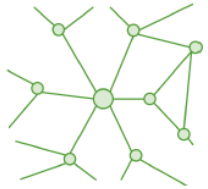
This report is written for people who want to analyse an existing project, people who want to develop new cohousing projects and architects.

Architecture that facilitates community engagement in

7 base principles

40 design patterns

8 steps to implement



TUDelft

Tijmen Kuyper

ARCHITECTURE FOR COMMUNITY

ARCHITECTURE FOR COMMUNITY

a cohousing pattern language

Best practice design insights for the many forms of collective housing

Tijmen Kuyper

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