

Activating the “glass box“

2022

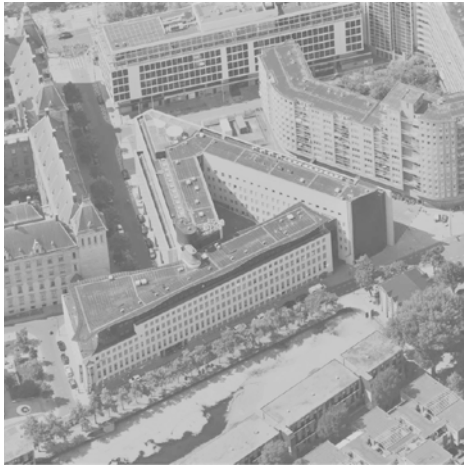
Aisté Mankuté

4918851

Vacant Heritage Studio

locations

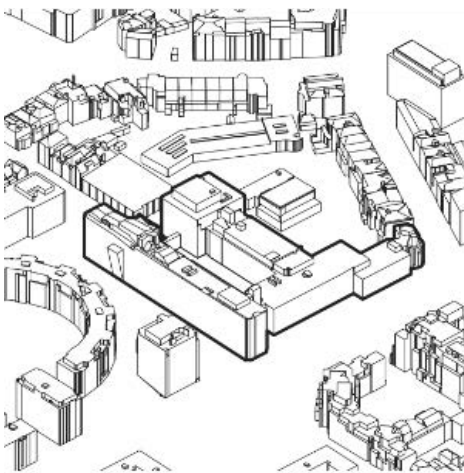
police real estate



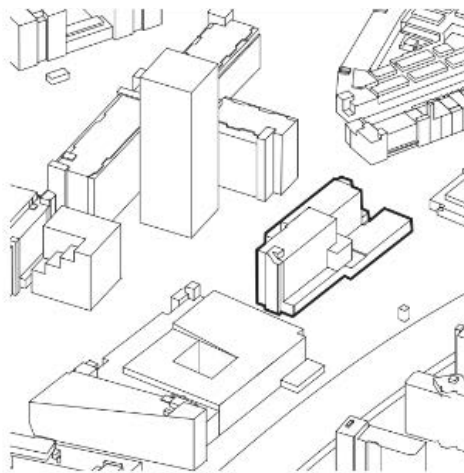
ROTTERDAM DOELWATER



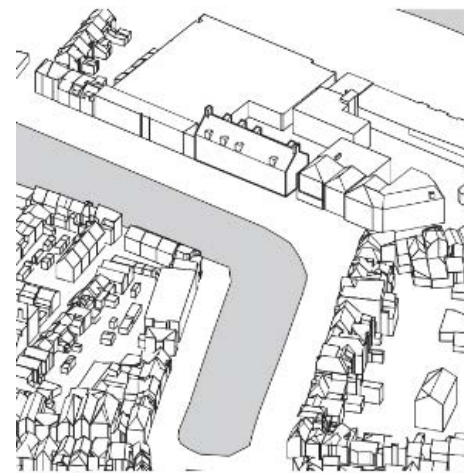
IJMUIDEN



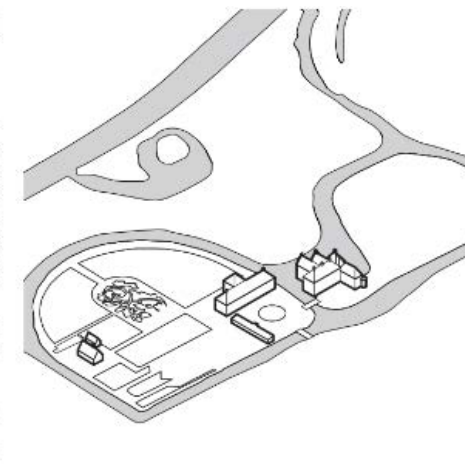
DEN HAAG



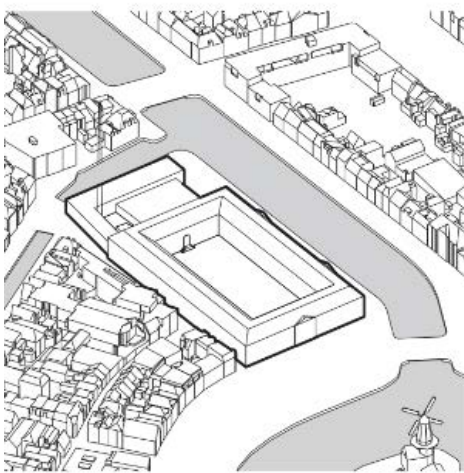
EINDHOVEN



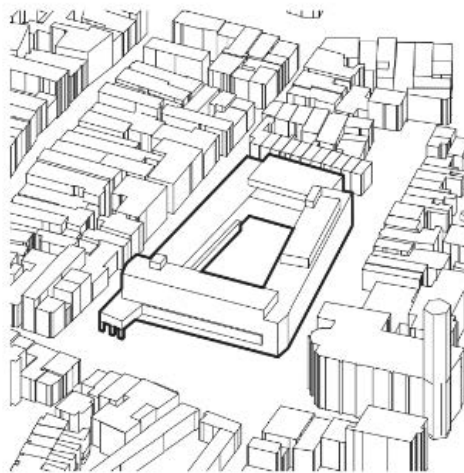
MIDDELBURG



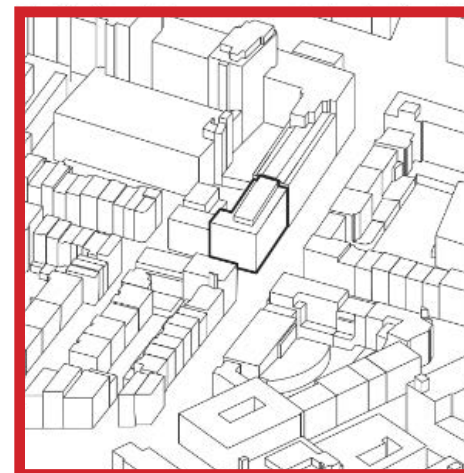
WARNSVELD



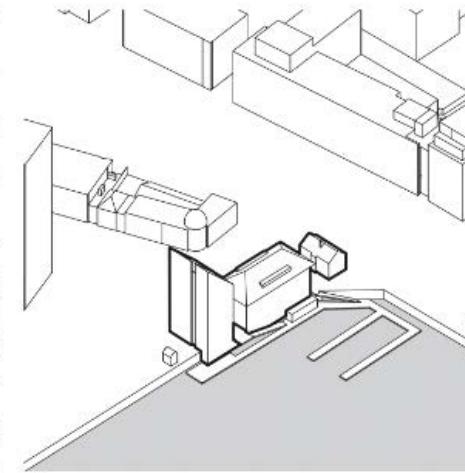
HAARLEM



GRONINGEN

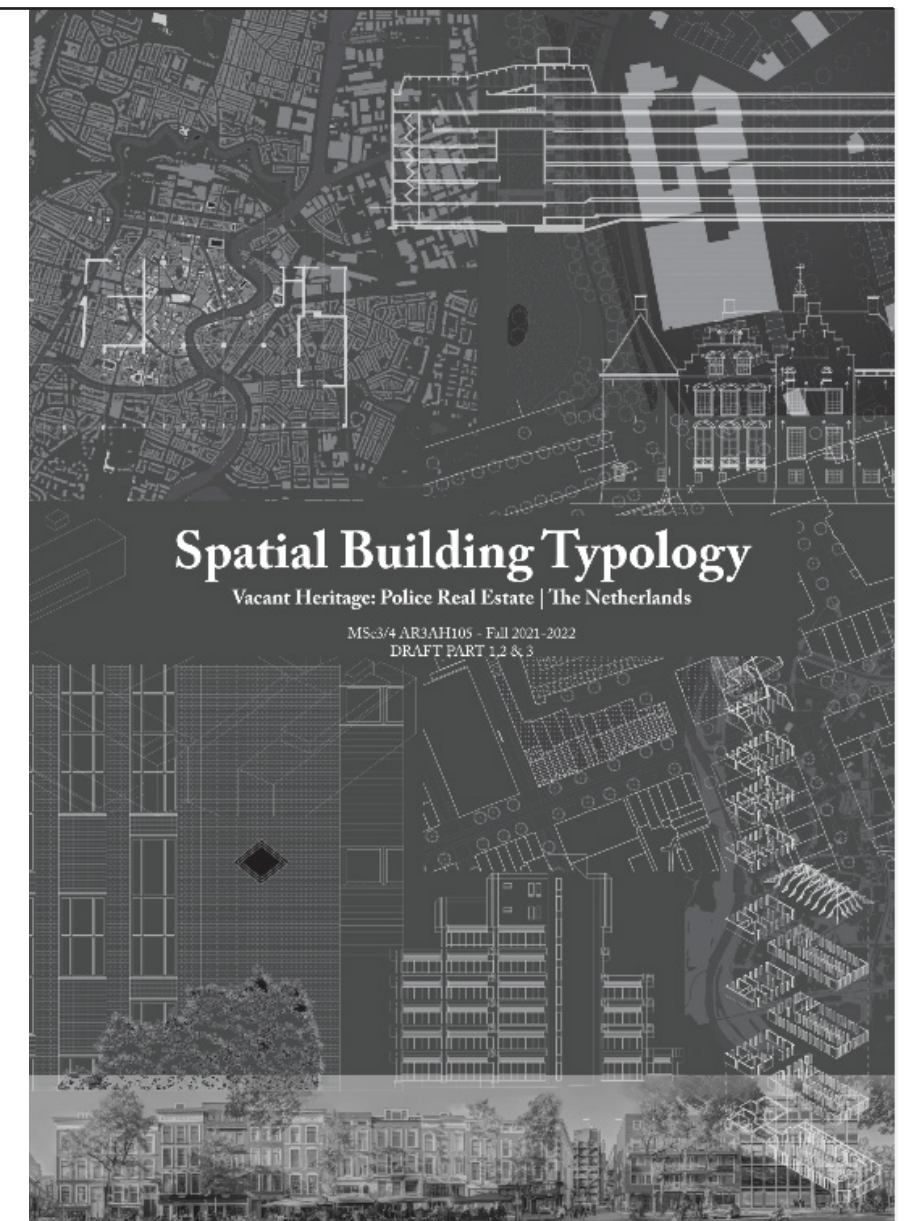


ROTTERDAM WITTE DE WITH

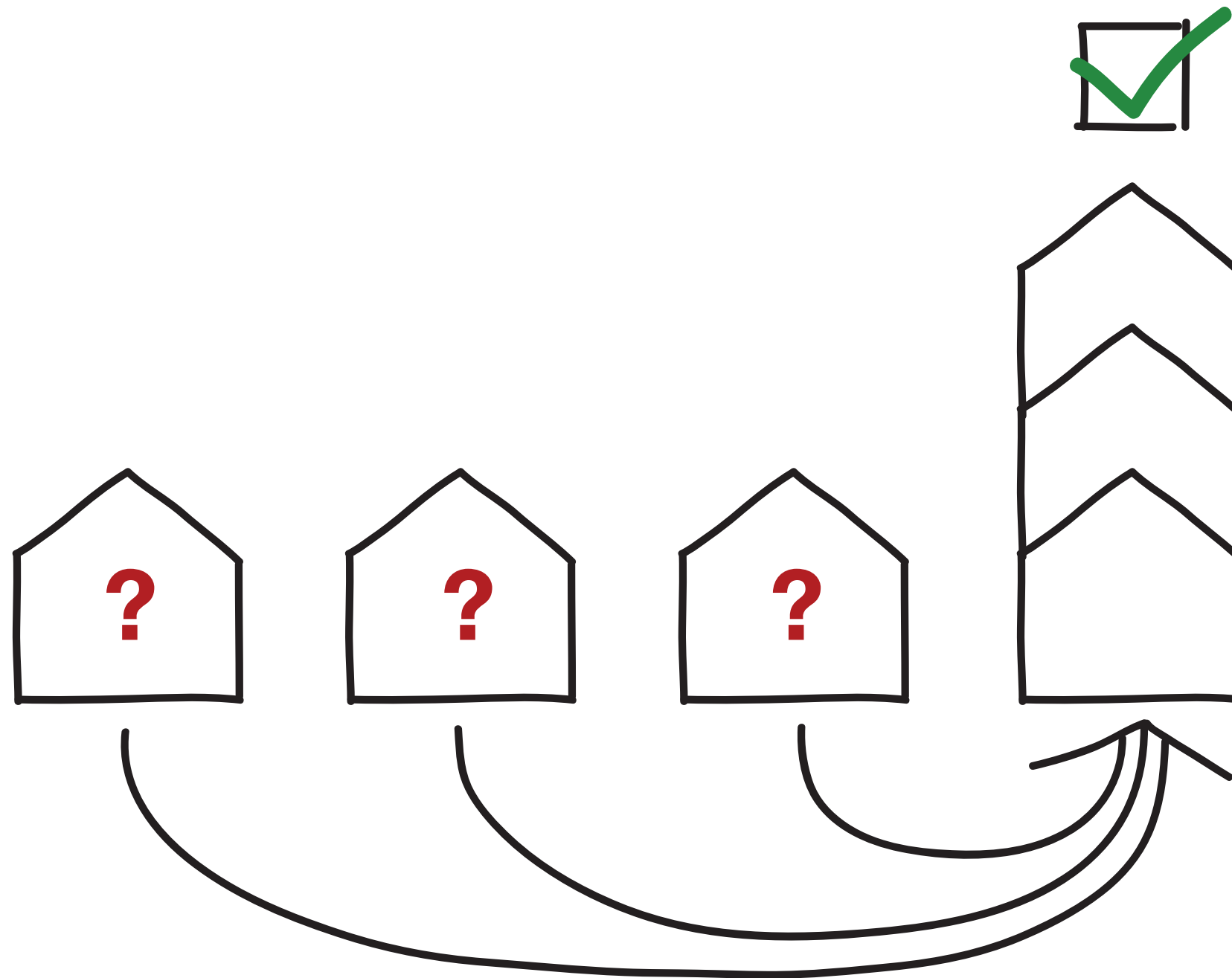


ROTTERDAM HAVEN

2nd Volume of SBT book series



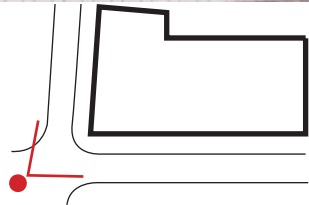
new organisation: larger teams in fewer places



Witte de Withstraat 25

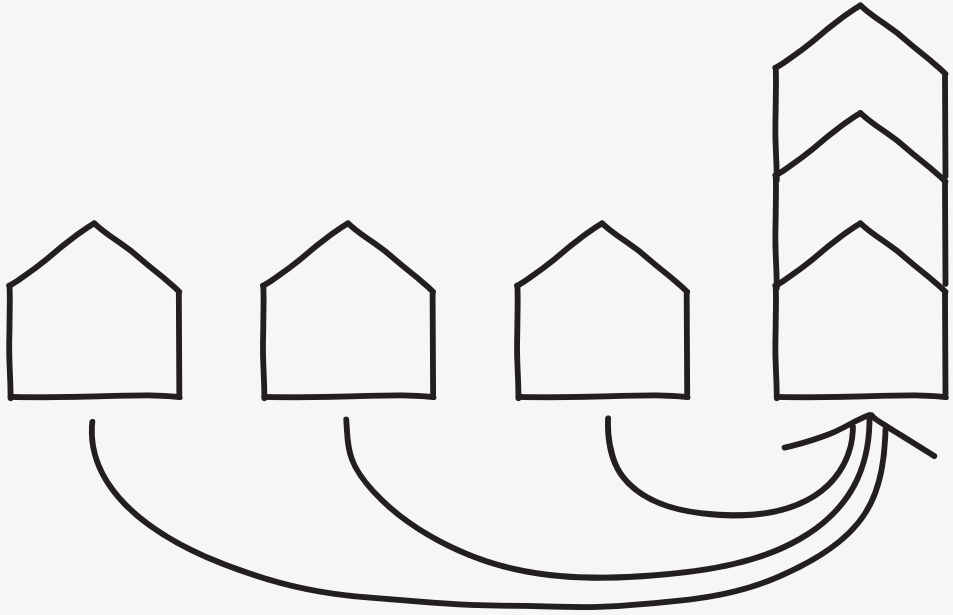


WdW25

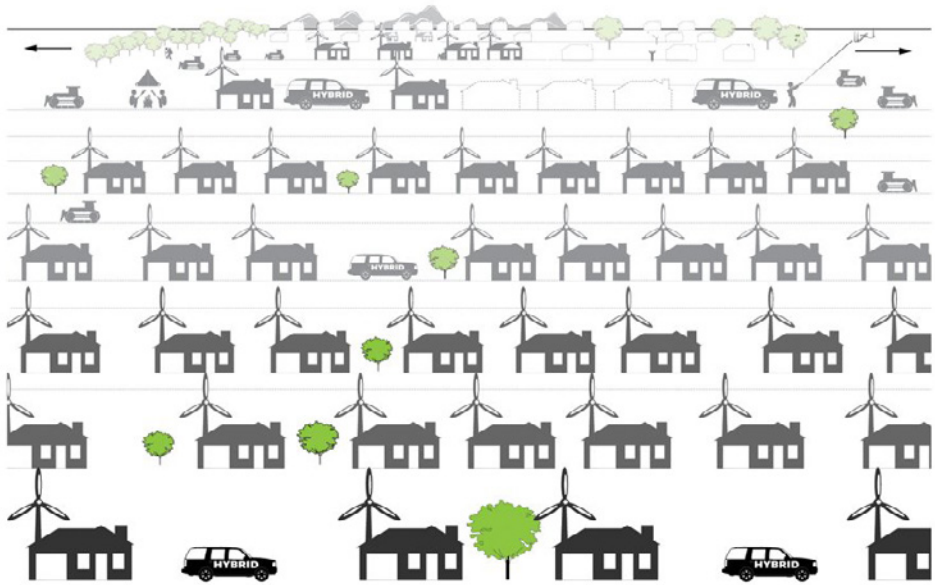


Why?

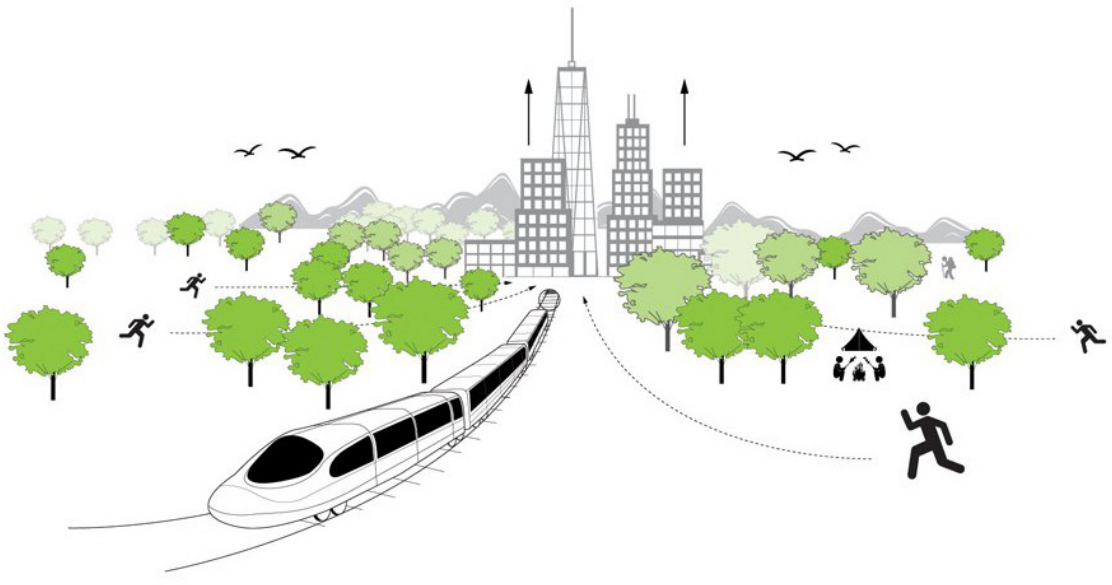
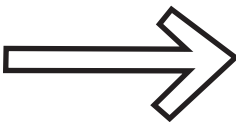
Densification: nationally, globally



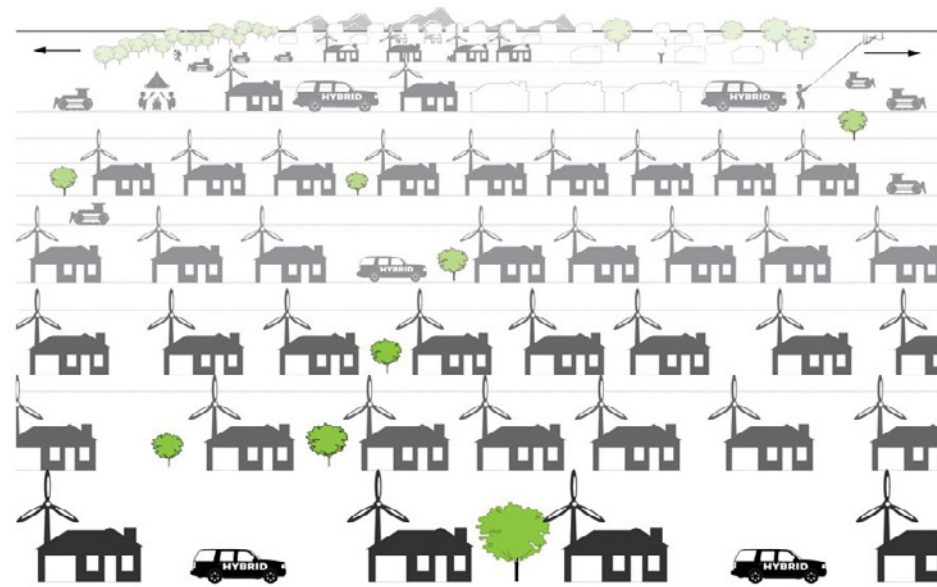
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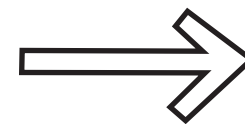
TODAY: Green suburban sprawl



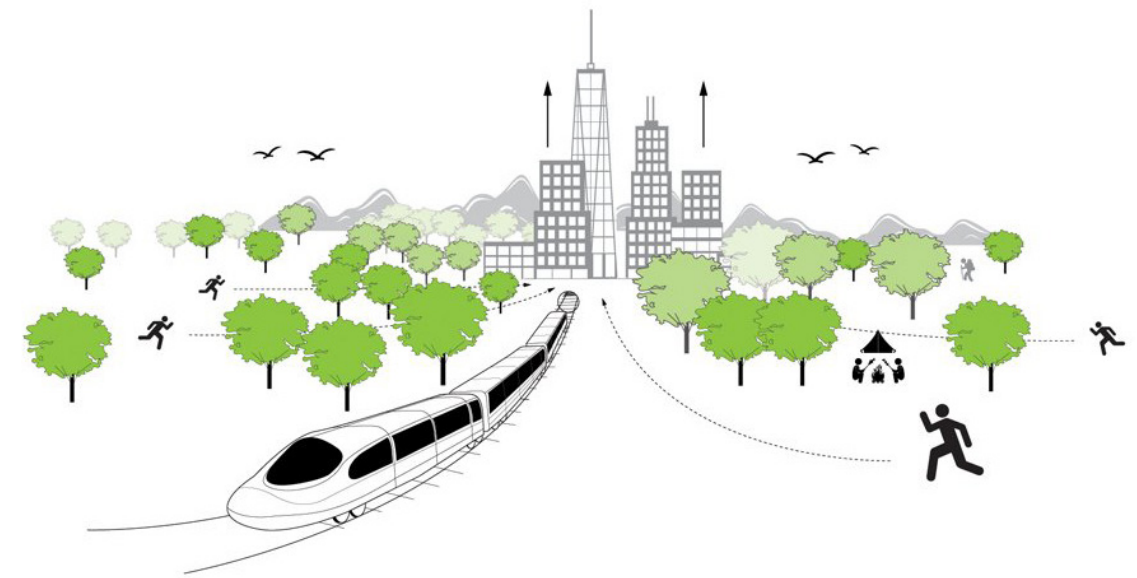
TOMORROW: Hyperdense cities and nature



TODAY: Green suburban sprawl



ROTTERDAM !



TOMORROW: Hyperdense cities and nature

Rotterdam: the testing ground

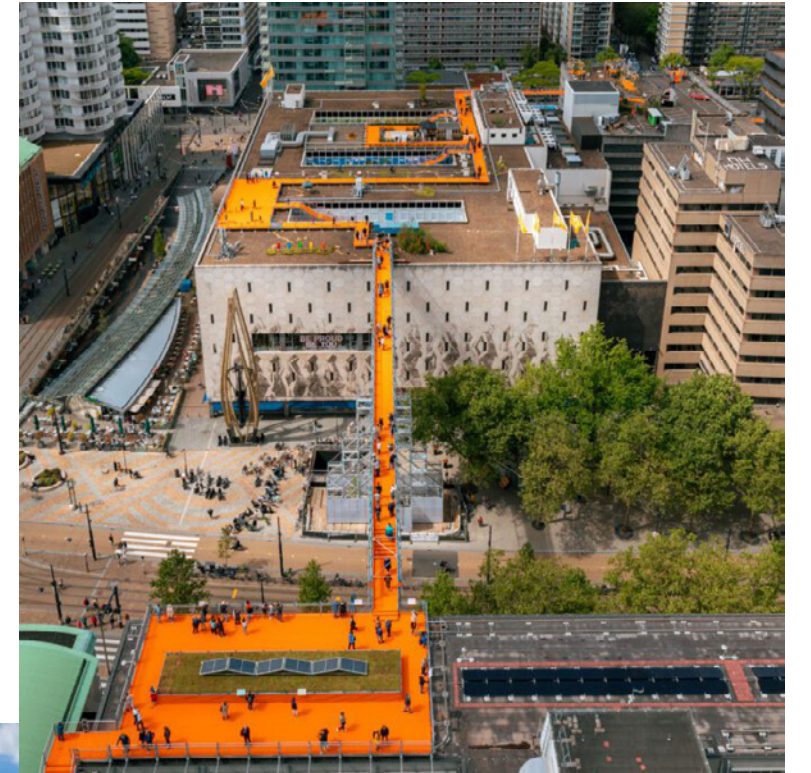
2000



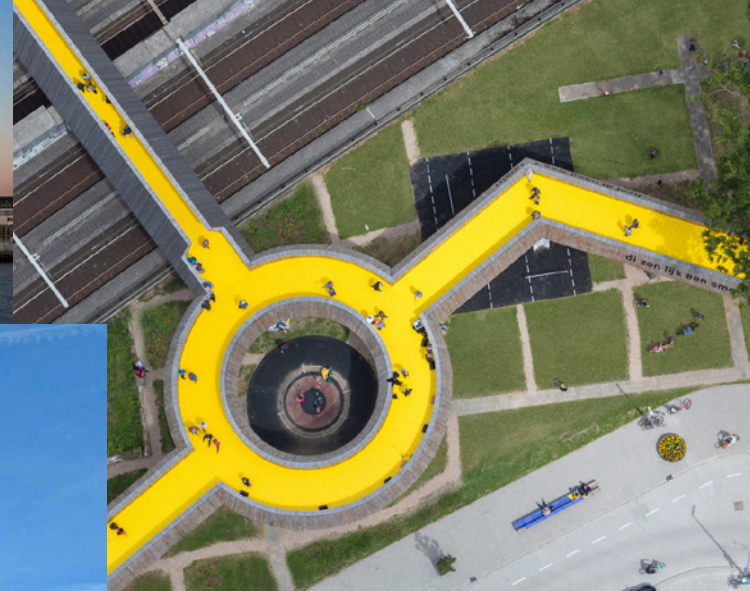
1977
1984



2022



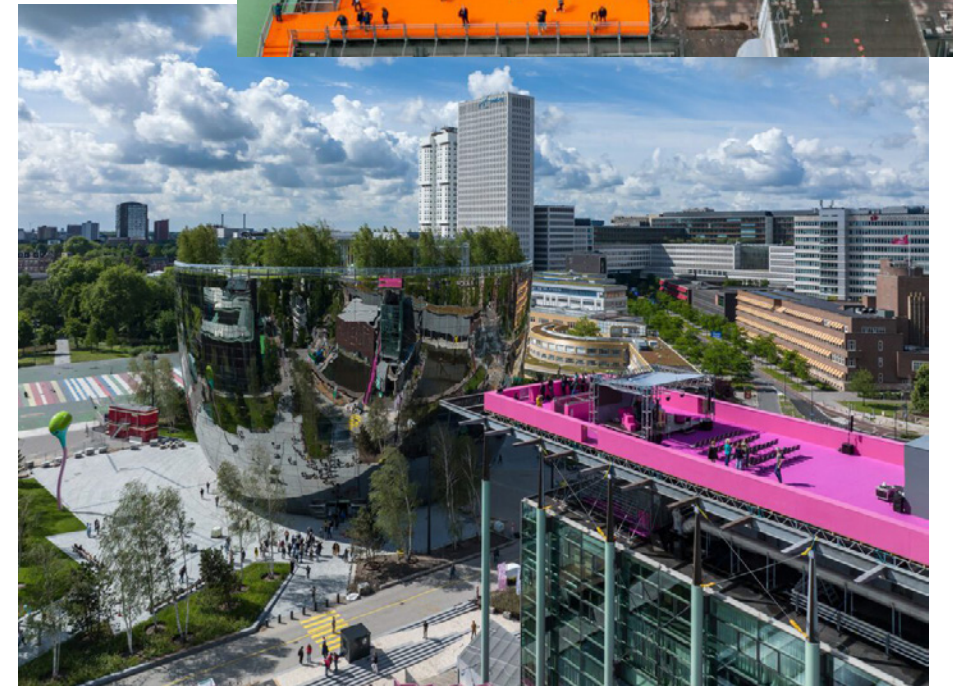
2014



2013



2015

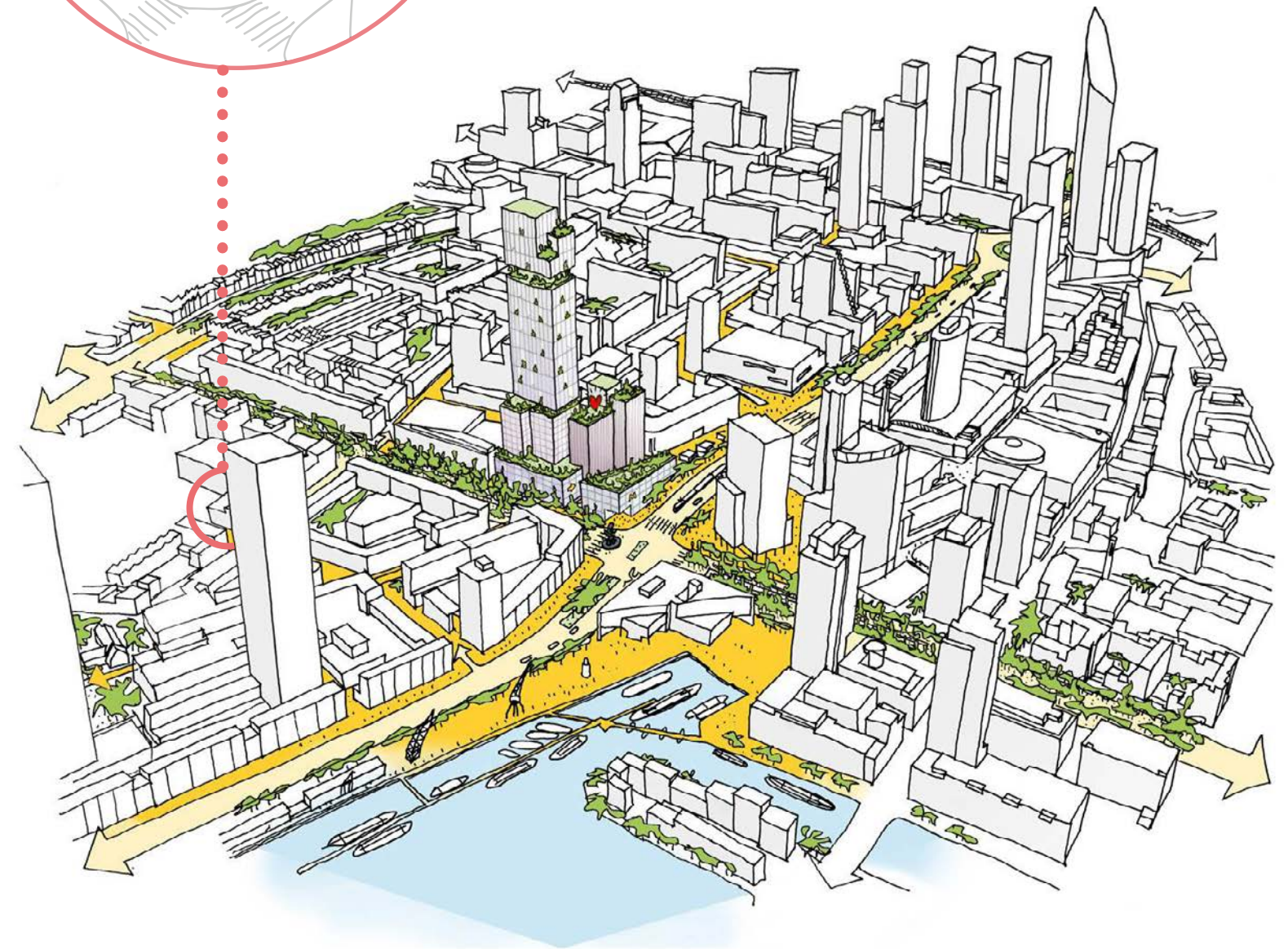
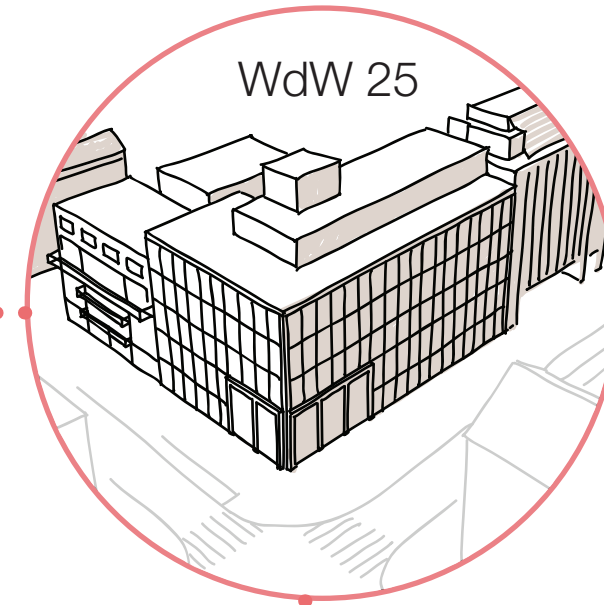


1983

What is in need to test right now?

Challenge: densification

Centre of Rotterdam extending to the sky



Challenge: vacant buildings



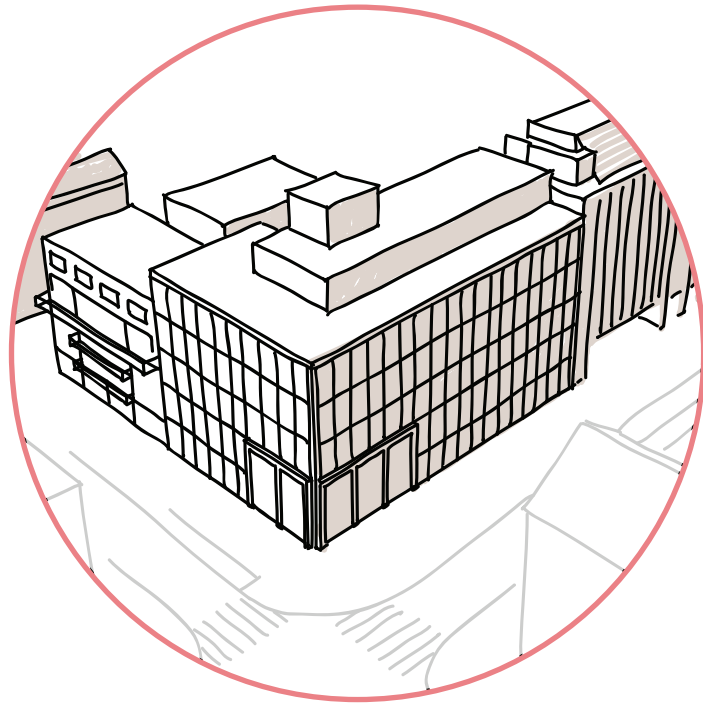
portrait of the building

The **austere/disengaged** corner building at WdW

Task: revealing its cultural carrying capacity*
& contribute to densification challenges



*direction to ideal approach, but depends on realistic & achievable)



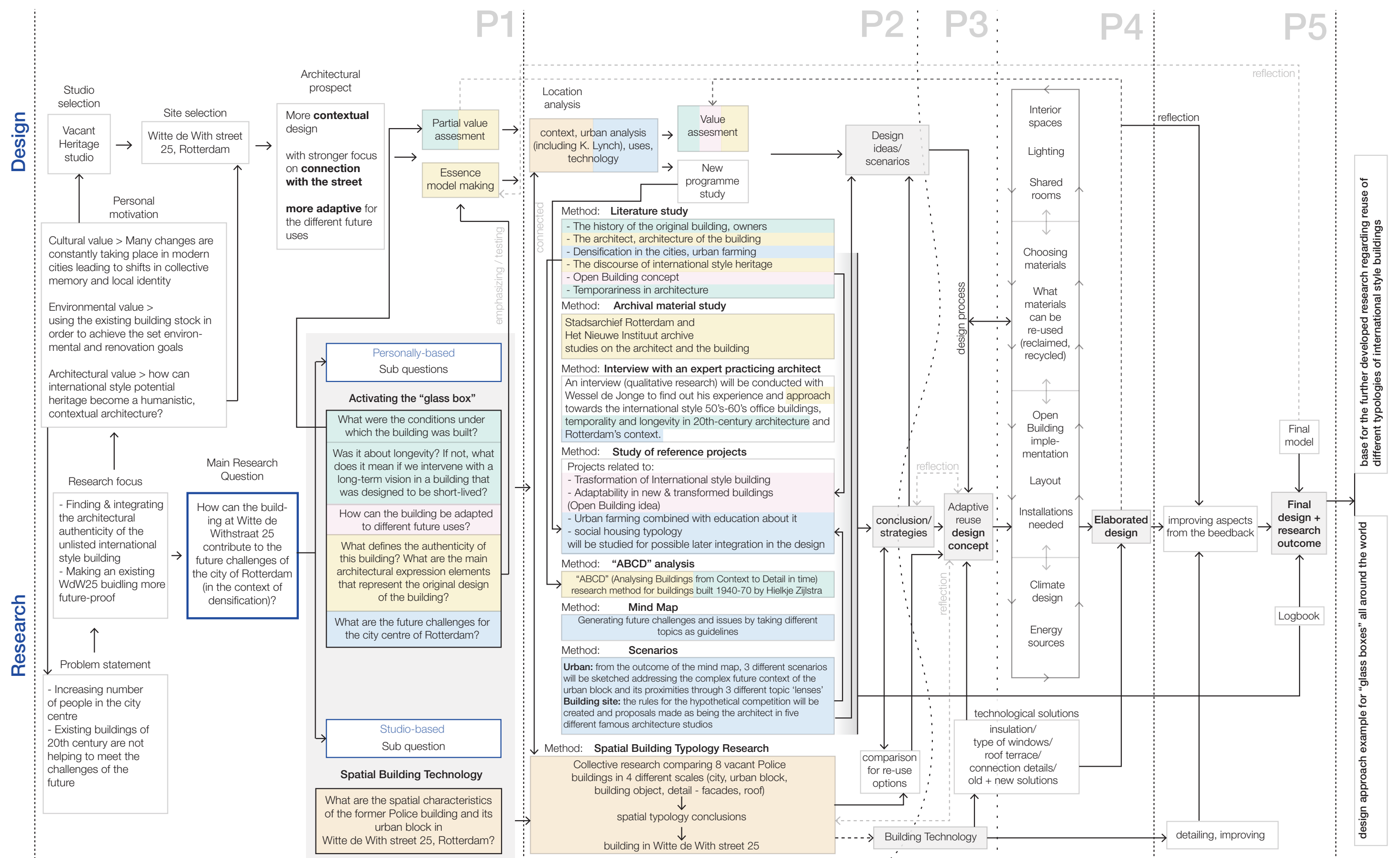
heritage component

longevity
adaptability

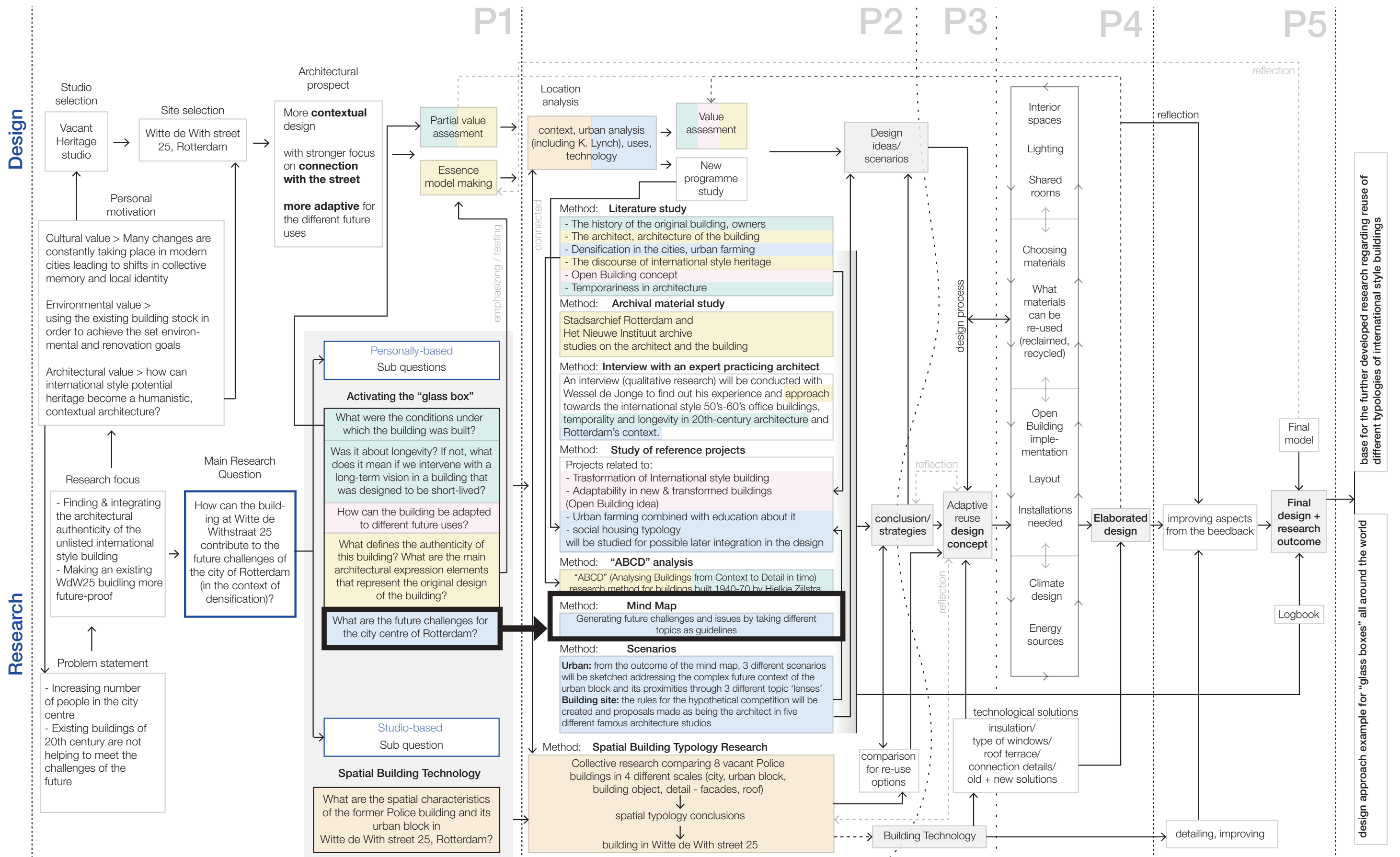
How can the **building at Witte de Withstraat 25** contribute to the **future** challenges of the city centre of Rotterdam (in the context of **densification**)?

different problems
than now

Research Plan structure

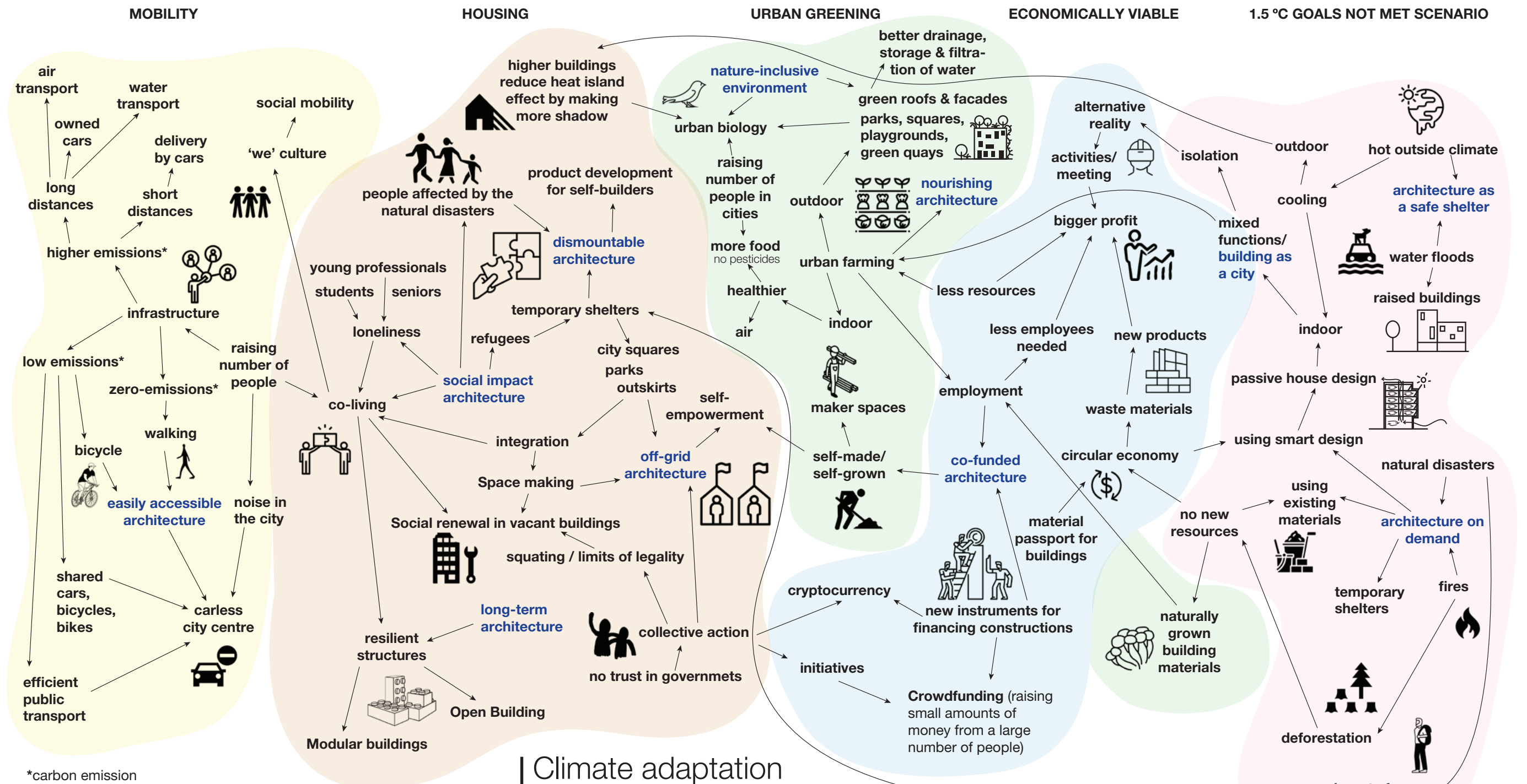


Research Plan structure



Densification in the central Rotterdam

thinking about the future: Mind map



*carbon emission

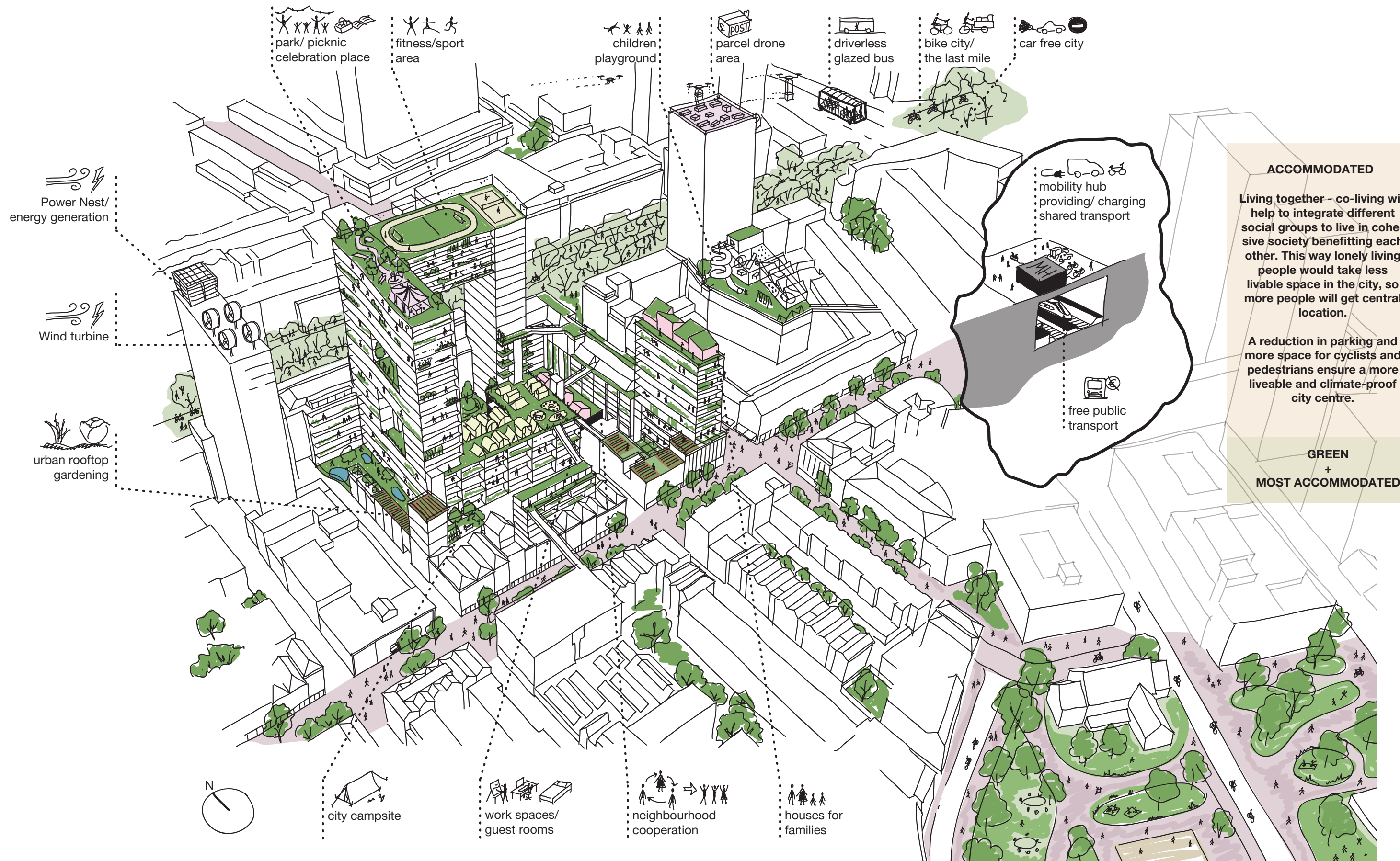
Climate adaptation
 Energy transition
 Urban challenges
 Quality of life in the city
 Growth of the city
 Inclusive & diverse city
 Social & active city

**URBAN BLOCK
IN ROTTERDAM**

<p>GREEN</p> <p>local plants, shrubs and grass wherever possible cools the surroundings and improves air quality, creating green parks, public spaces for the city centre. Greenery is home for birds and insects, and will result in better drainage, storage, and filtration of water.</p> <p>Feeding large numbers of people with the least amount of energy will be ensured by the urban farms.</p>	<p>ACCOMMODATED</p> <p>Living together - co-living will help to integrate different social groups to live in cohesive society benefitting each other. This way lonely living people would take less livable space in the city, so more people will get central location.</p> <p>A reduction in parking and more space for cyclists and pedestrians ensure a more liveable and climate-proof city centre.</p>	<p>RESILIENT</p> <p>New structures must be either long-lasting and flexible, or they can be assembled and dismantled - temporary.</p> <p>Long-term structures have to be able to adapt to changing social and natural conditions. Short-term structures will be used for people affected by the natural disasters, refugees, migrants from unlivable areas.</p> <p>Inclusive city - value all people, their needs and contributions equally.</p>	<p>ECONOMICALLY VIABLE</p> <p>The city will be a productive one. Regarding the food cultivation, individual production as well as urban agriculture farms will be the key elements in the city.</p> <p>Luxury real estate will conquer the best locations in the city center.</p> <p>New ways of financing constructions will lead to various urban initiatives.</p> <p>Alternative reality will be part of the real environment.</p>
<p>SCENARIOS:</p>	<p>GREEN + MOST ACCOMMODATED</p>	<p>GREEN + MOST RESILIENT</p>	<p>GREEN + MOST ECONOMICALLY VIABLE</p>

Densification in the central Rotterdam

Future scenario 1: GREEN + MOST ACCOMMODATED



ACCOMMODATED

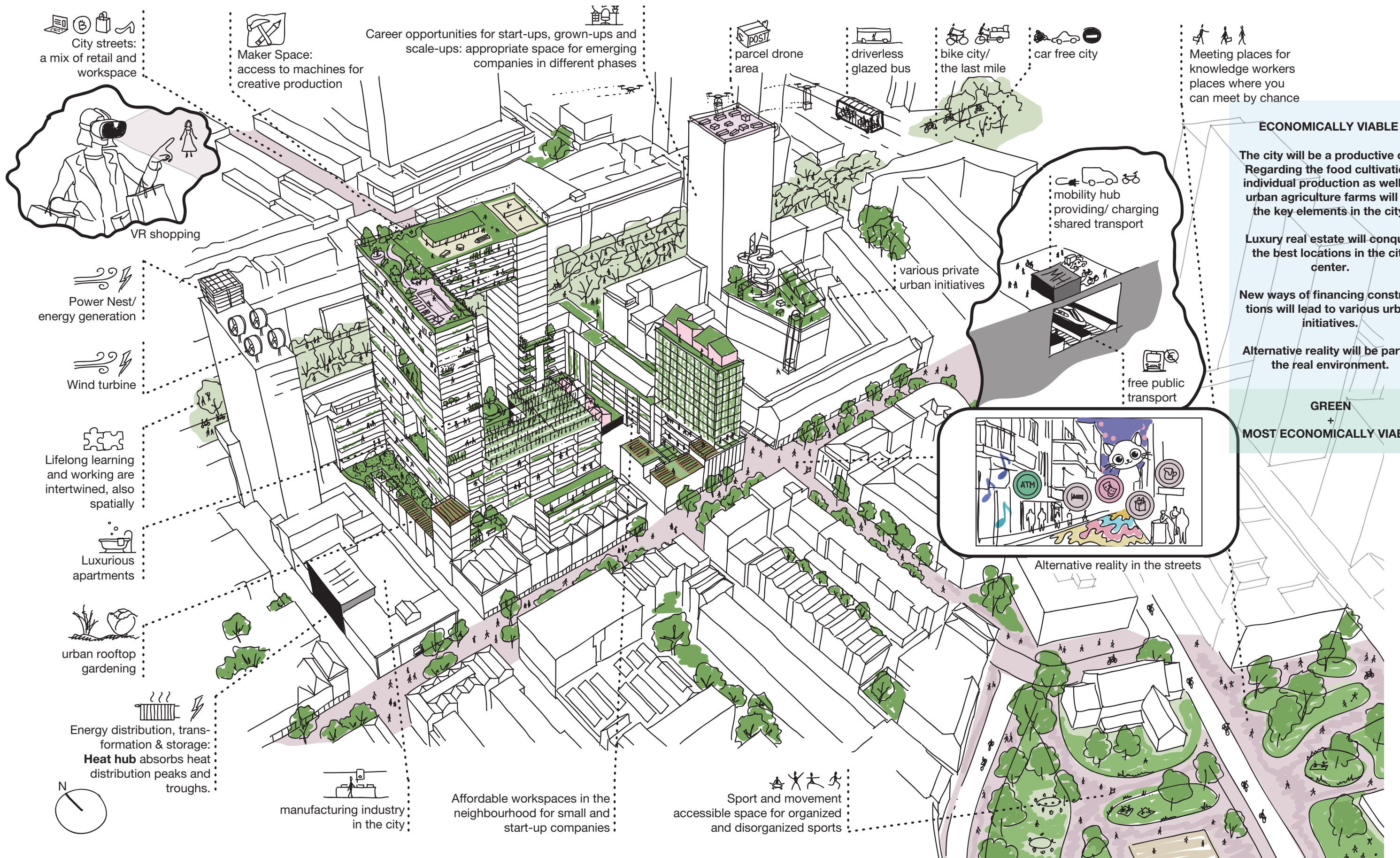
Living together - co-living will help to integrate different social groups to live in cohesive society benefitting each other. This way lonely living people would take less livable space in the city, so more people will get central location.

A reduction in parking and more space for cyclists and pedestrians ensure a more liveable and climate-proof city centre.

GREEN
+
MOST ACCOMMODATED

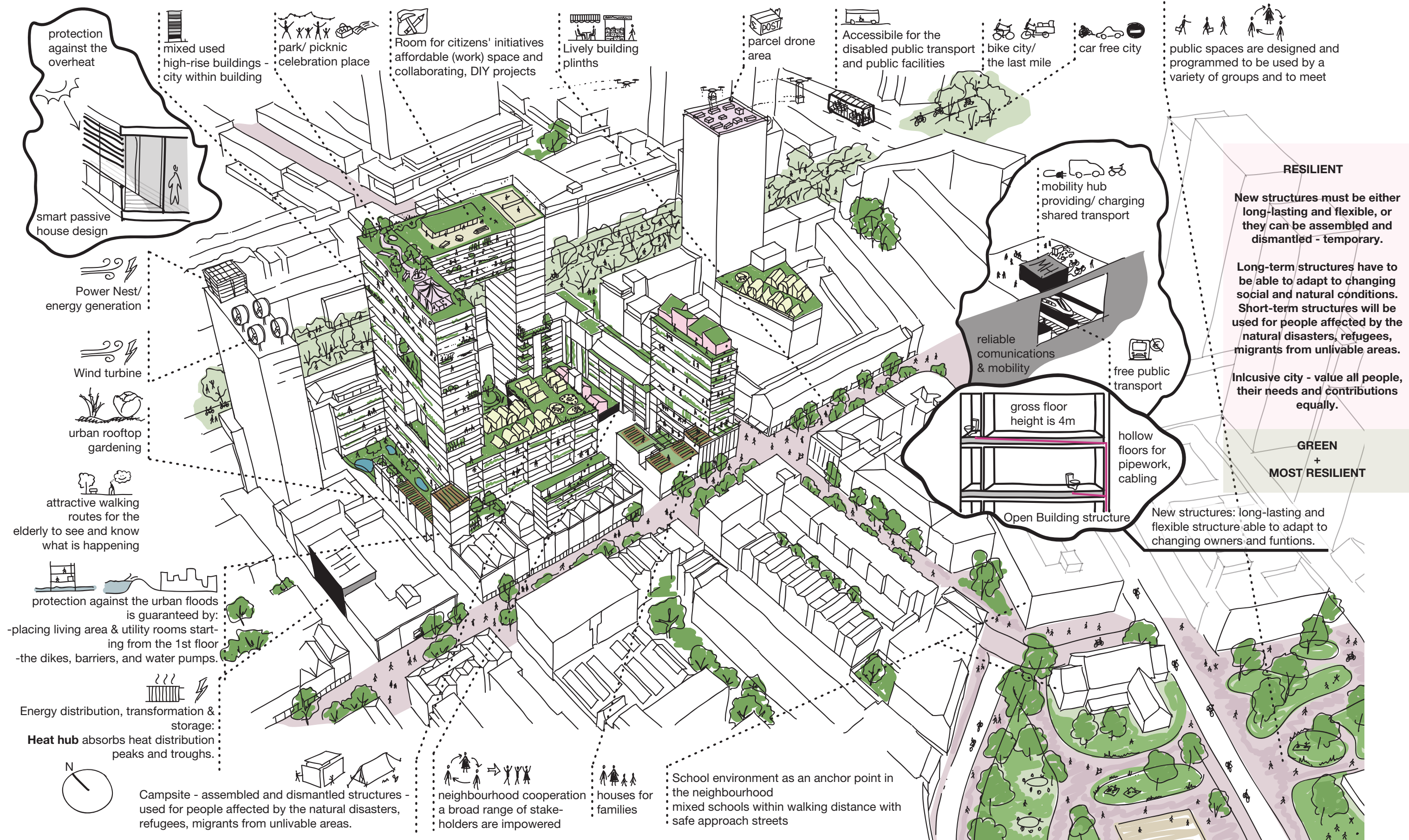
Densification in the central Rotterdam

Future scenario 2: GREEN + MOST ECONOMICALLY VIABLE



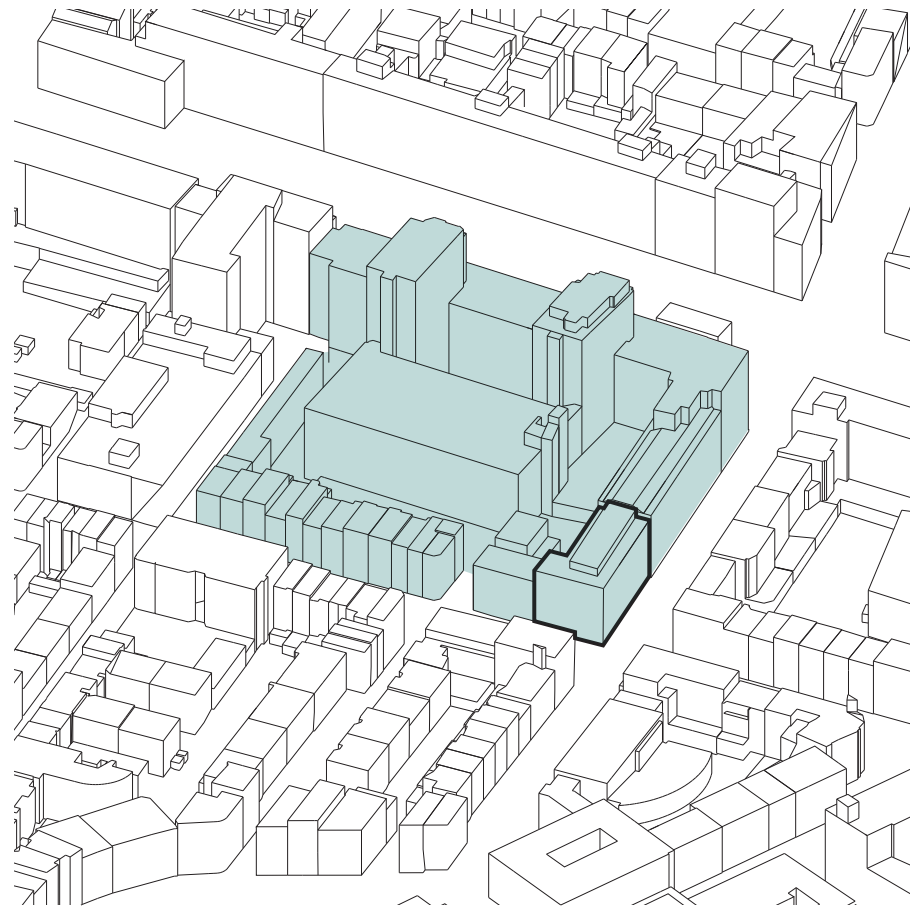
Densification in the central Rotterdam

Future scenario 2: GREEN + MOST RESILIENT



Densification in the central Rotterdam

Future scenarios: outcome directions



Urban block:



Urban farm, urban gardens

> producing food locally for the urban block/ horeca street



Green/ public roofs where possible

> meeting places for the community

> nature inclusivity



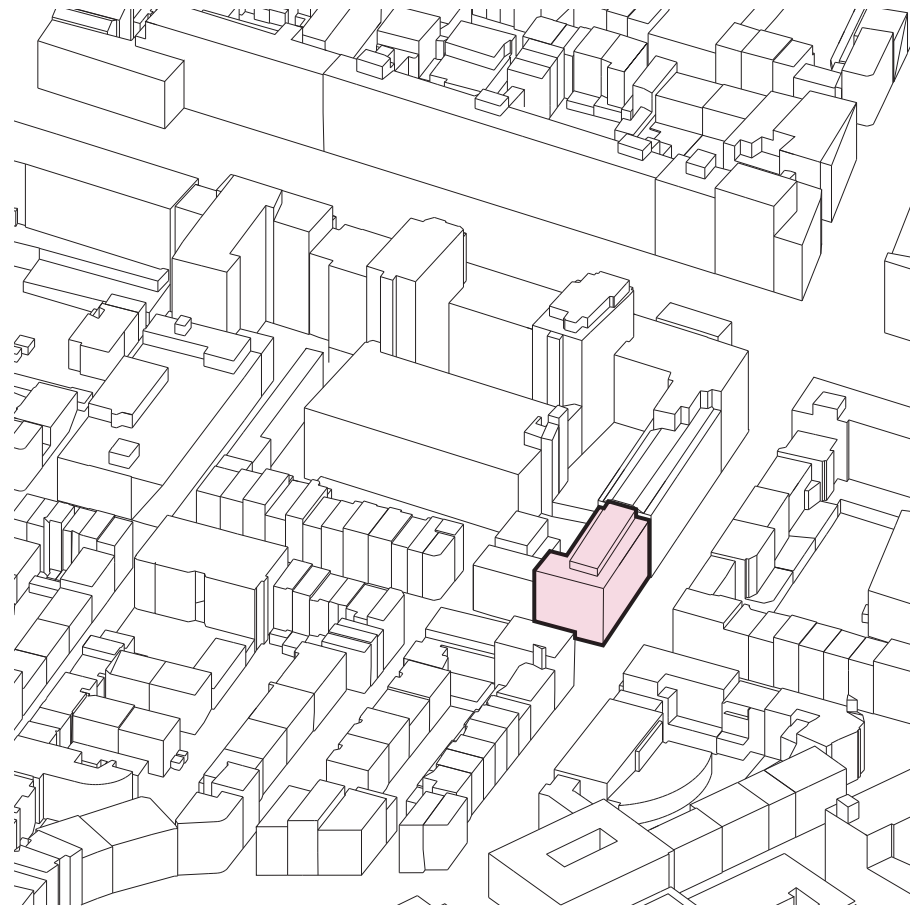
More space for people rather than cars

> less noise

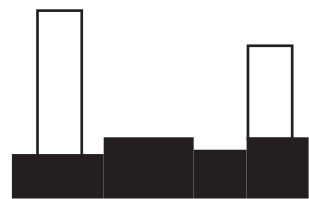
> accessible by foot, bike, efficient public transport

Densification in the central Rotterdam

Future scenarios: outcome directions

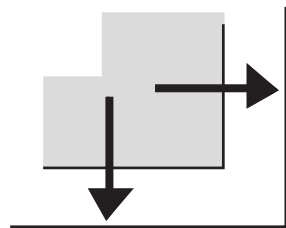


The WdW25 building:



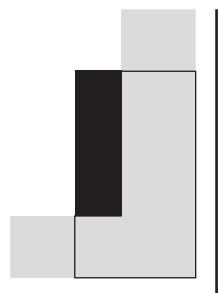
Extension

- > good location for a tower in the urban block
- > adaptable structure for various future uses



Public plinth on both streets

- > re-connecting with lively Witte de With
- > contributing to the activation of Hartmansstraat

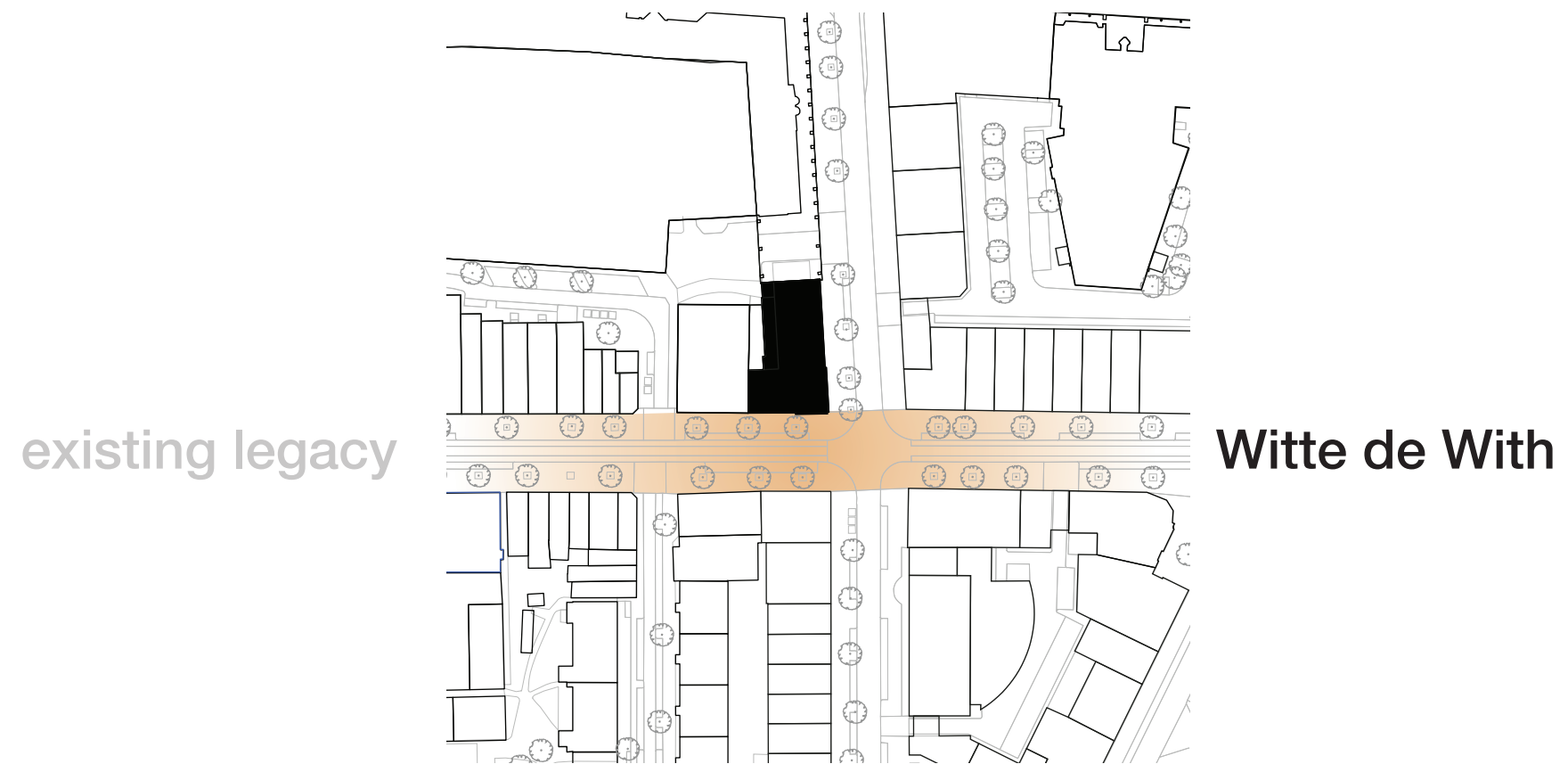


Back of the building

- > access for service, staff, more private area

WdW25 in the city





Cultural route

(Museum park - Maritime museum)



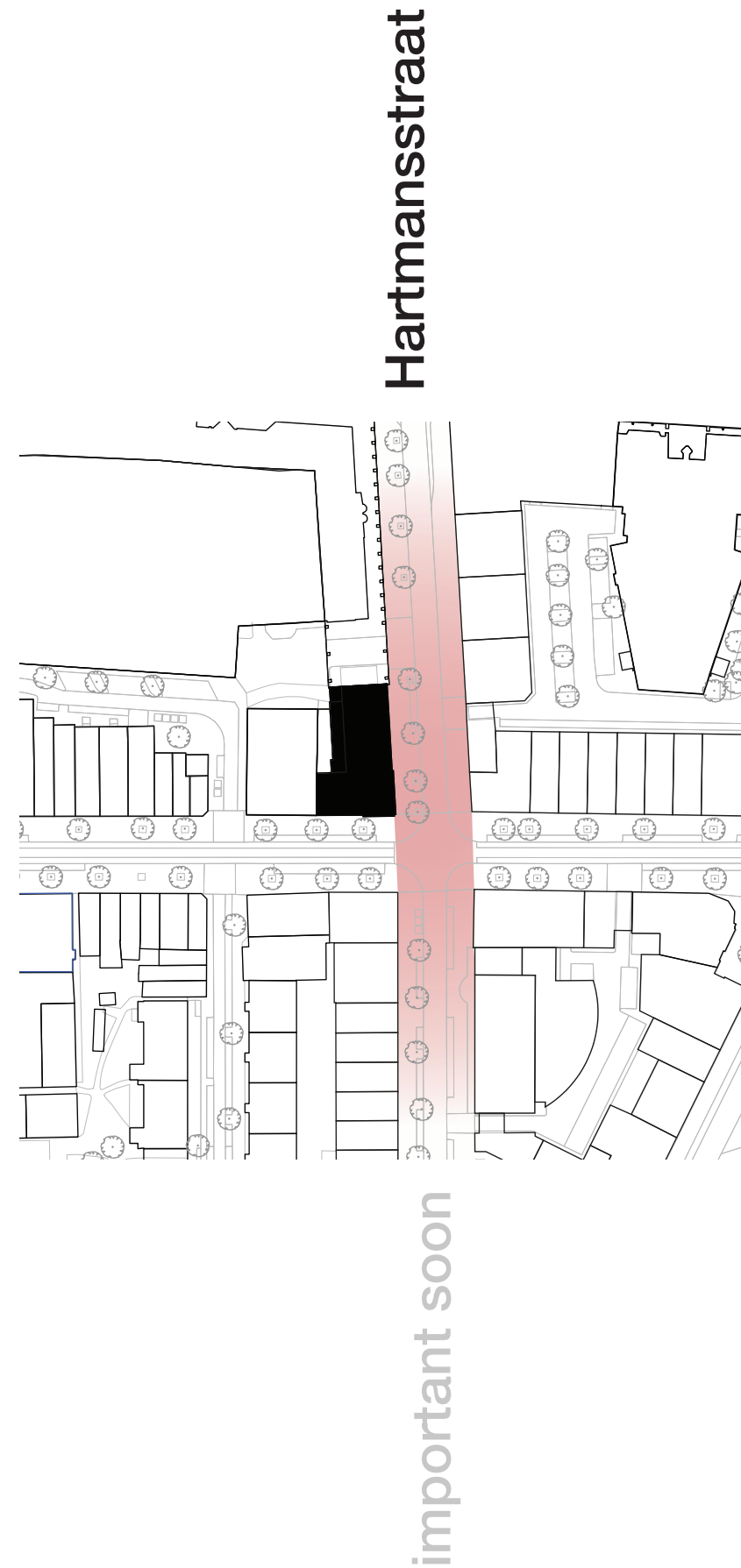
Horeca cluster building

Horeca - Hotel/Restaurant/Café



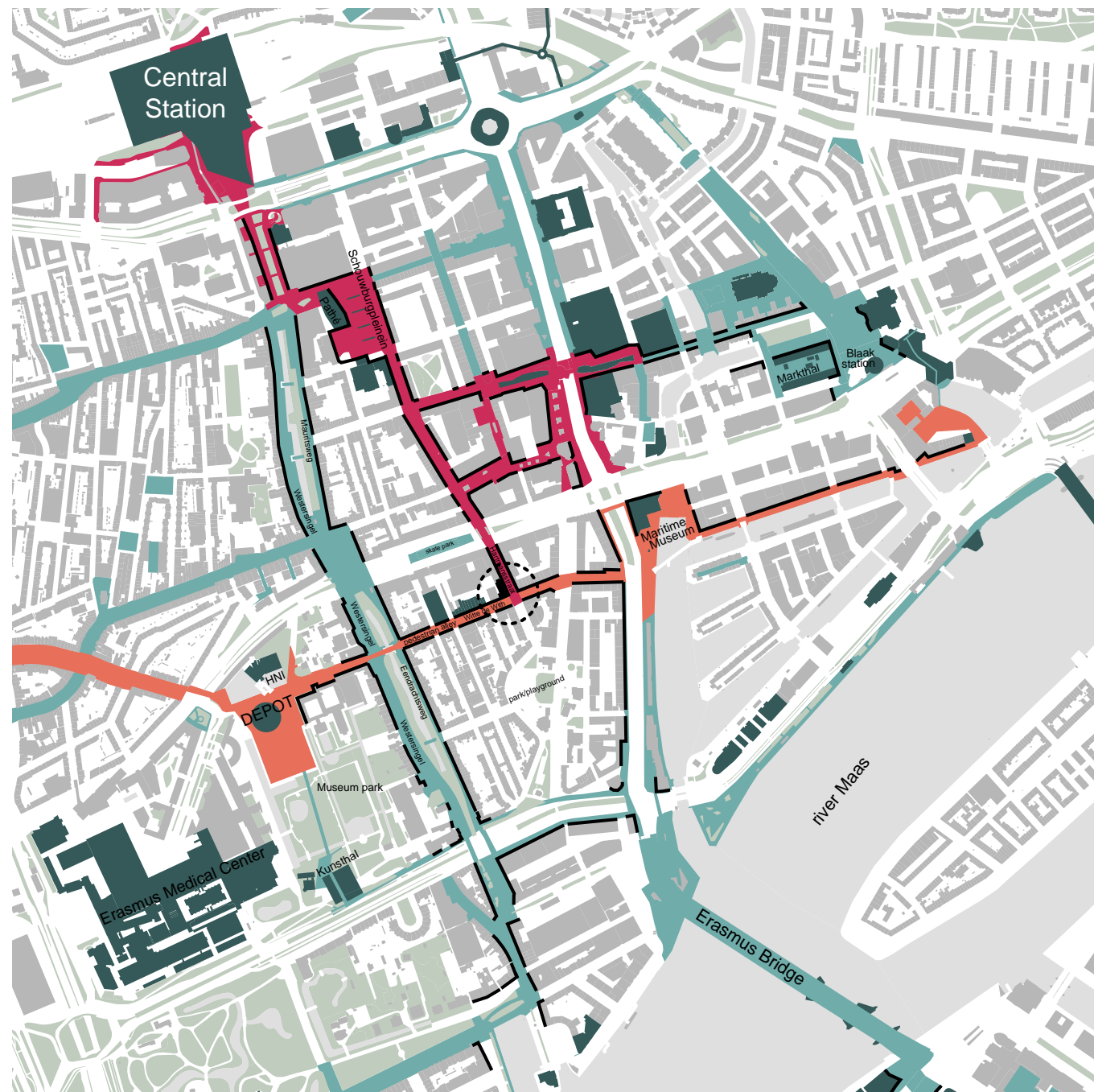
Active/ inviting plinth

Hartmansstraat towards the future



inhabitants in **Rotterdam Centrum** district:
2013 y: 30 494
2021 y: 36 600
20% increase in the last decade
low-rise -> high-rise since the 80s

existing routing in the city centre

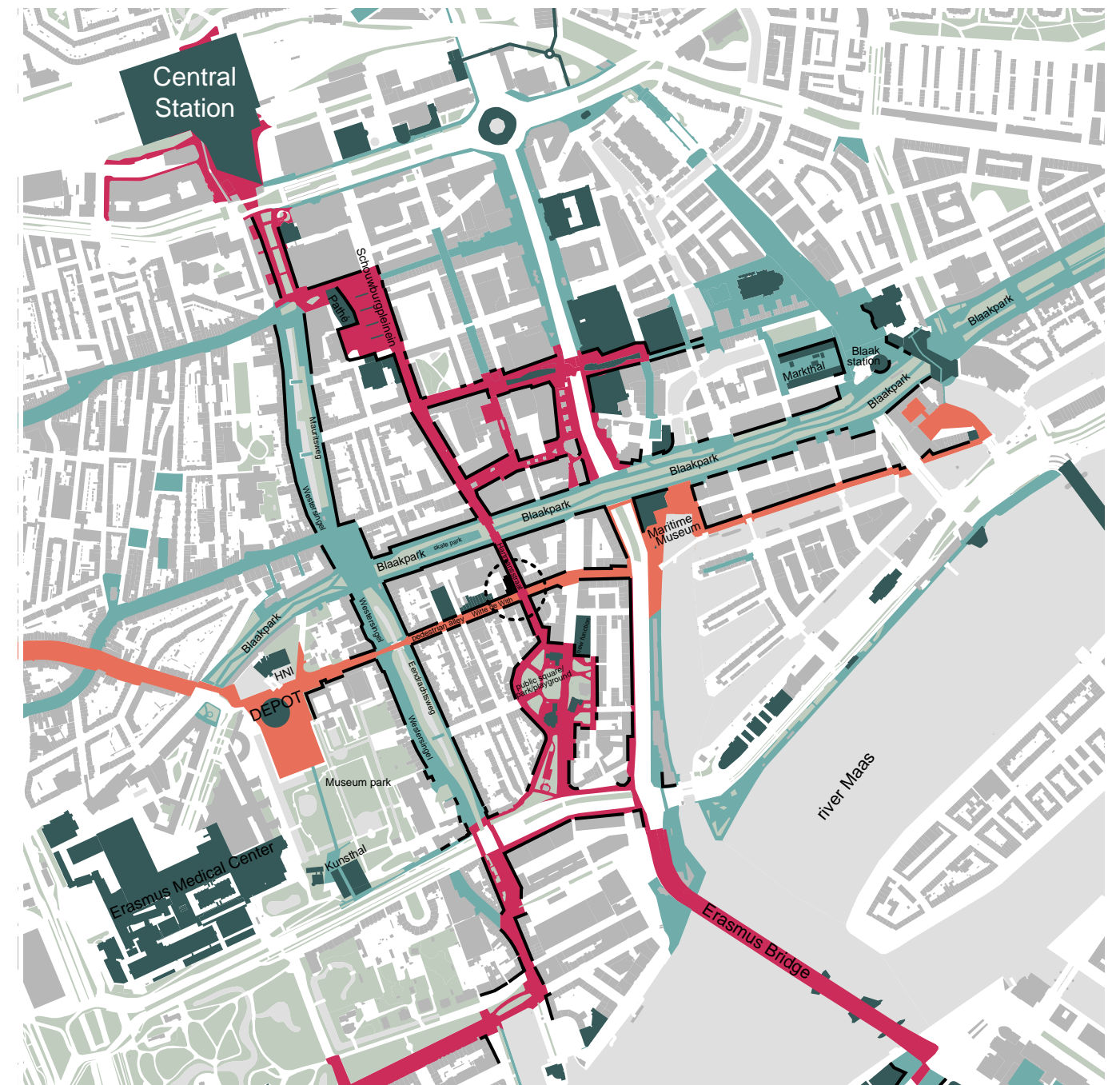
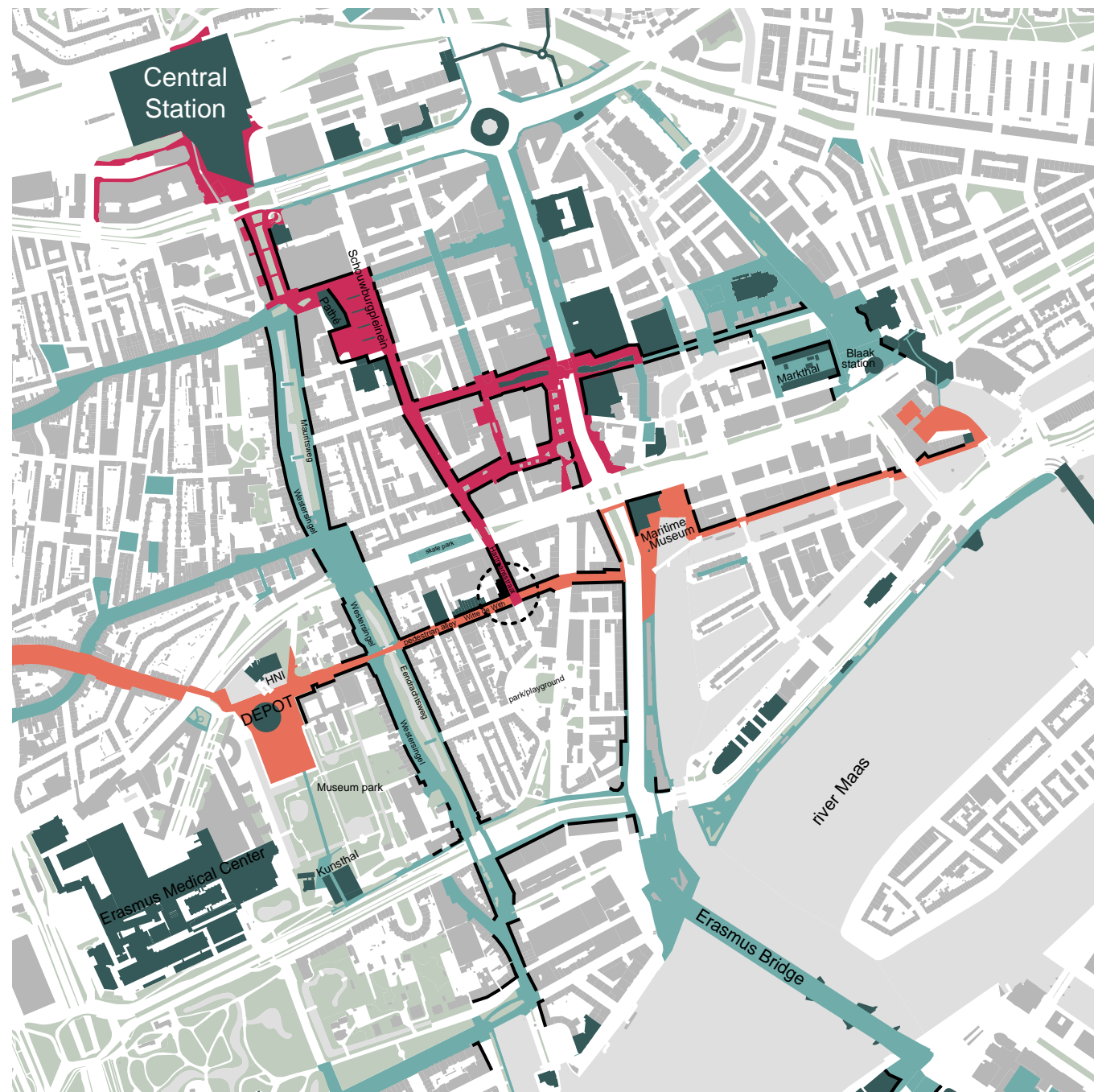


Towards the future

Centre of Rotterdam
extending to the south

existing routing in the city centre

prospective routing in the city centre

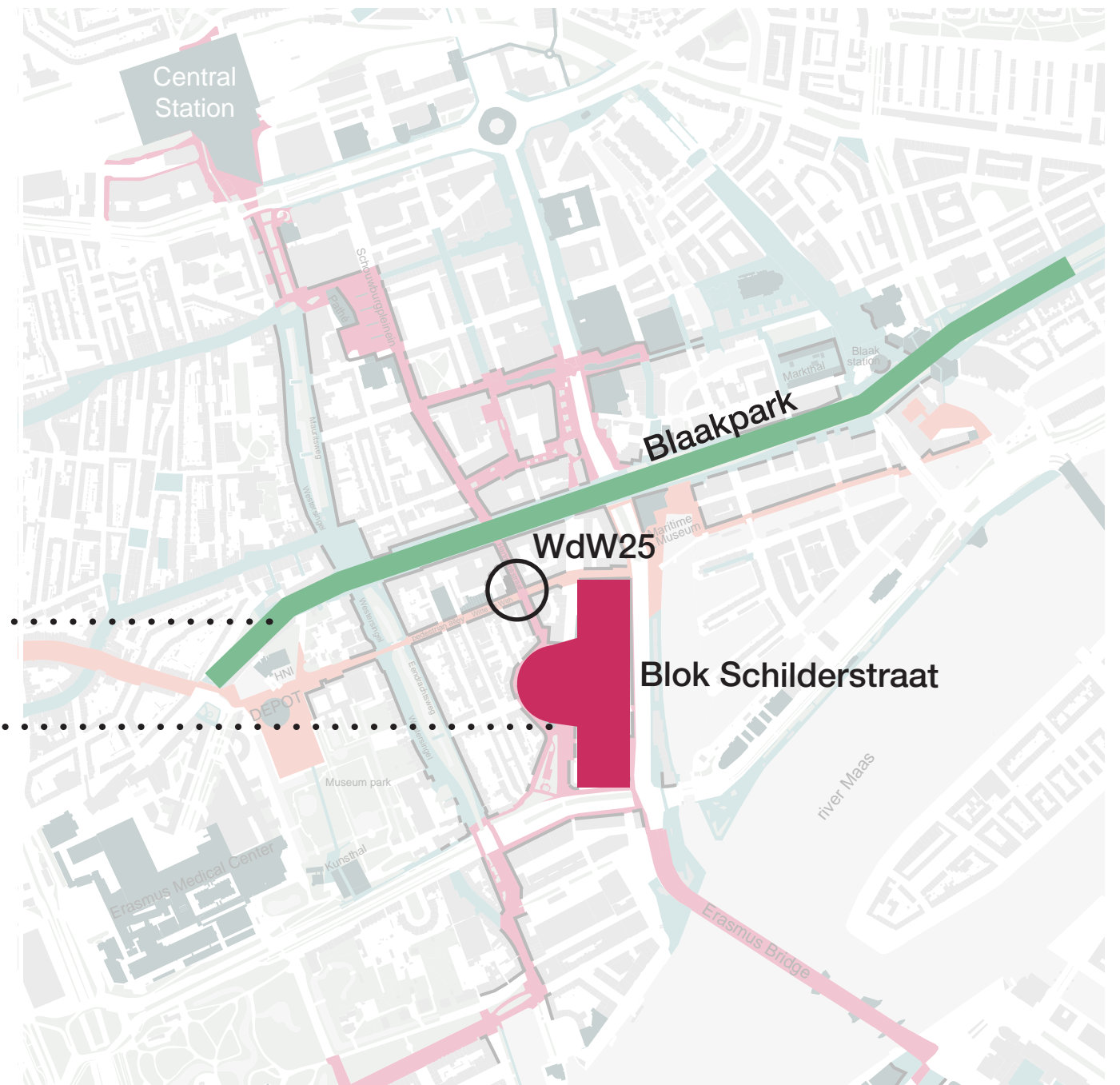


Centre of Rotterdam extending to the south

prospective routing in the city centre



Intense WestBlaak street to become
the longest city centre park in the NL



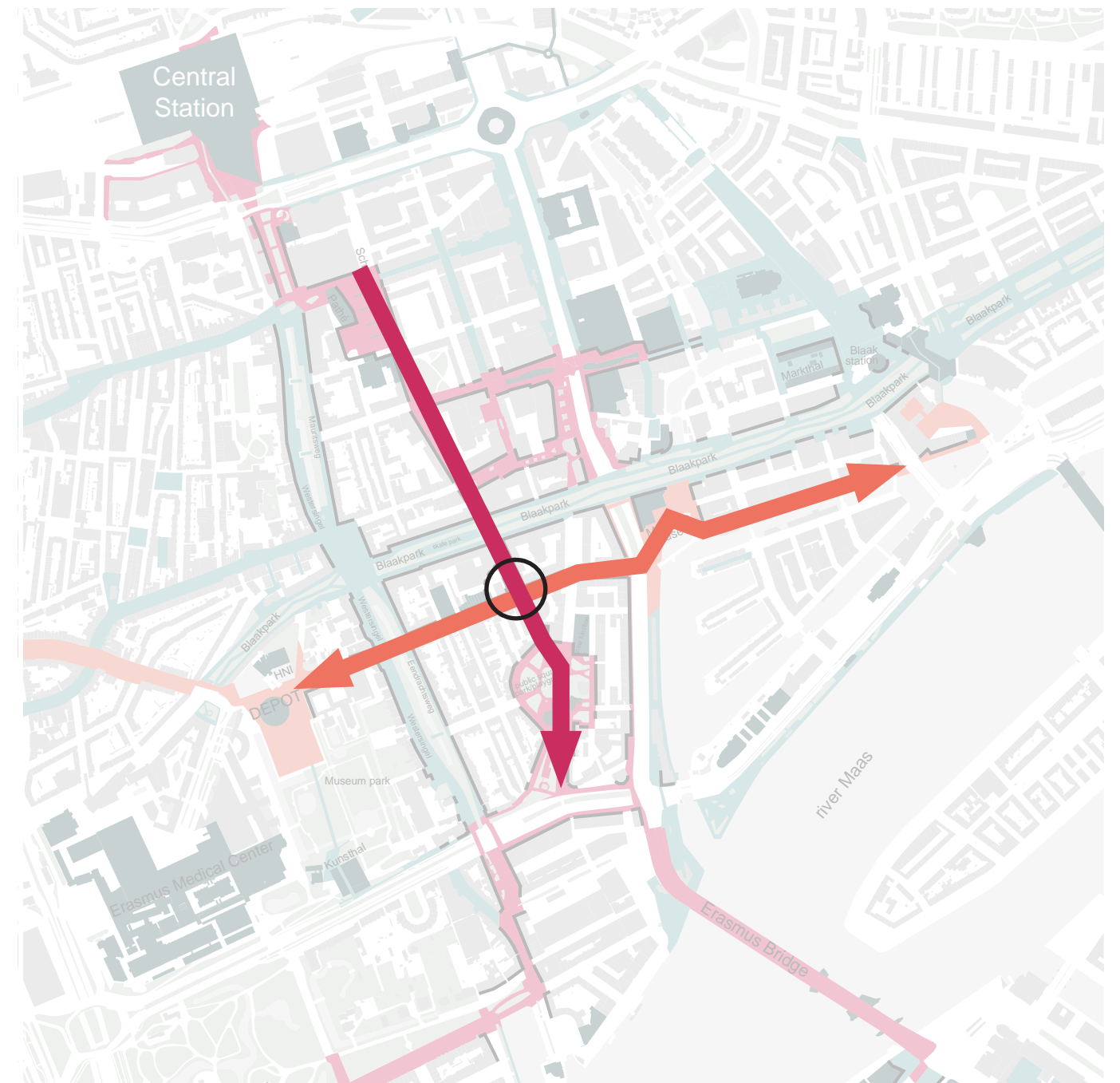
Blok Schilderstraat -
transforming the neighbourhood



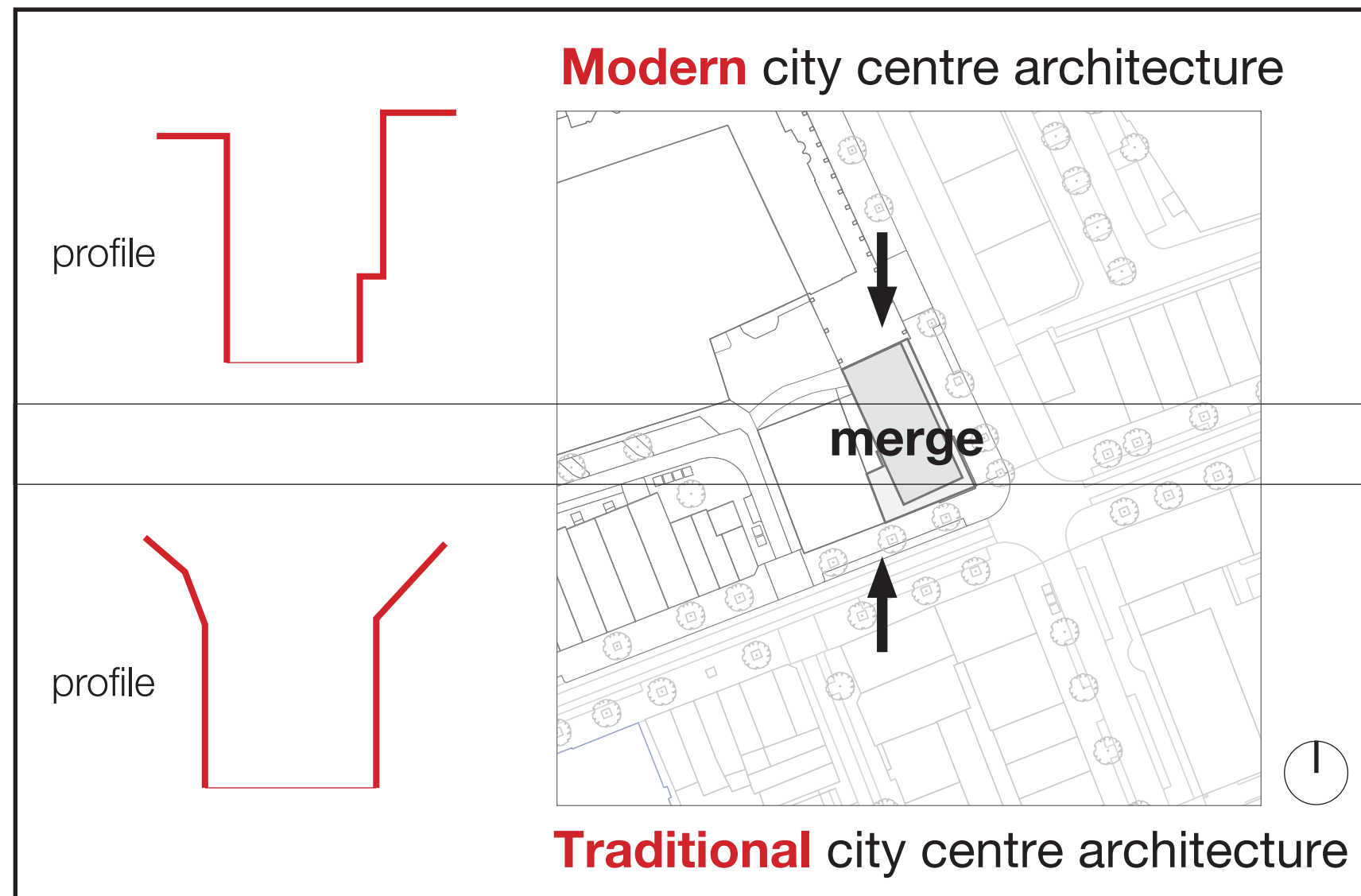
Centre of Rotterdam extending to the south

existing routing in the city centre

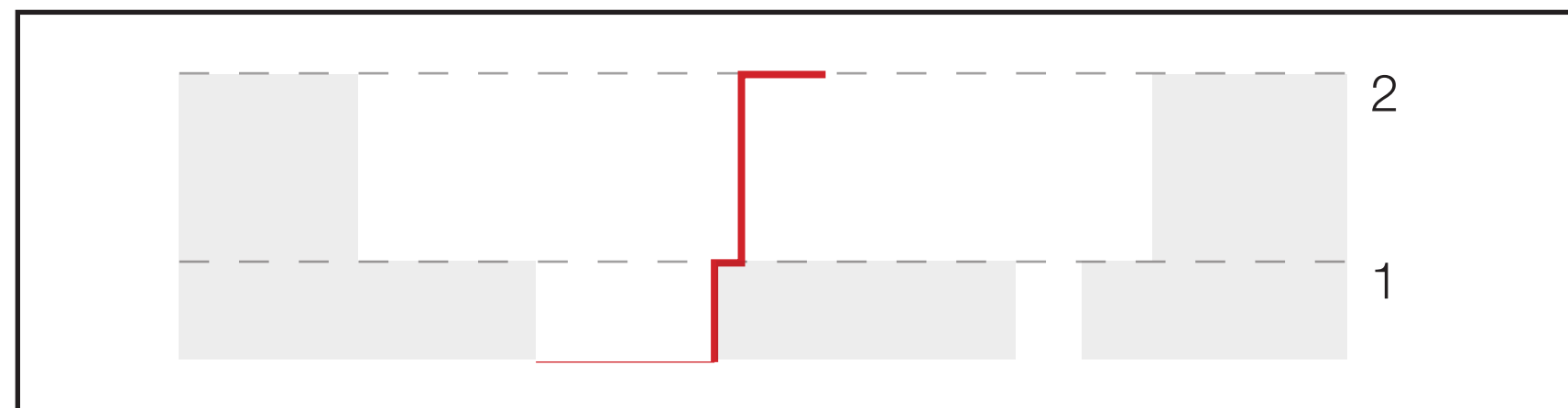
prospective routing in the city centre



Starting points: urban scale



2 identities merging

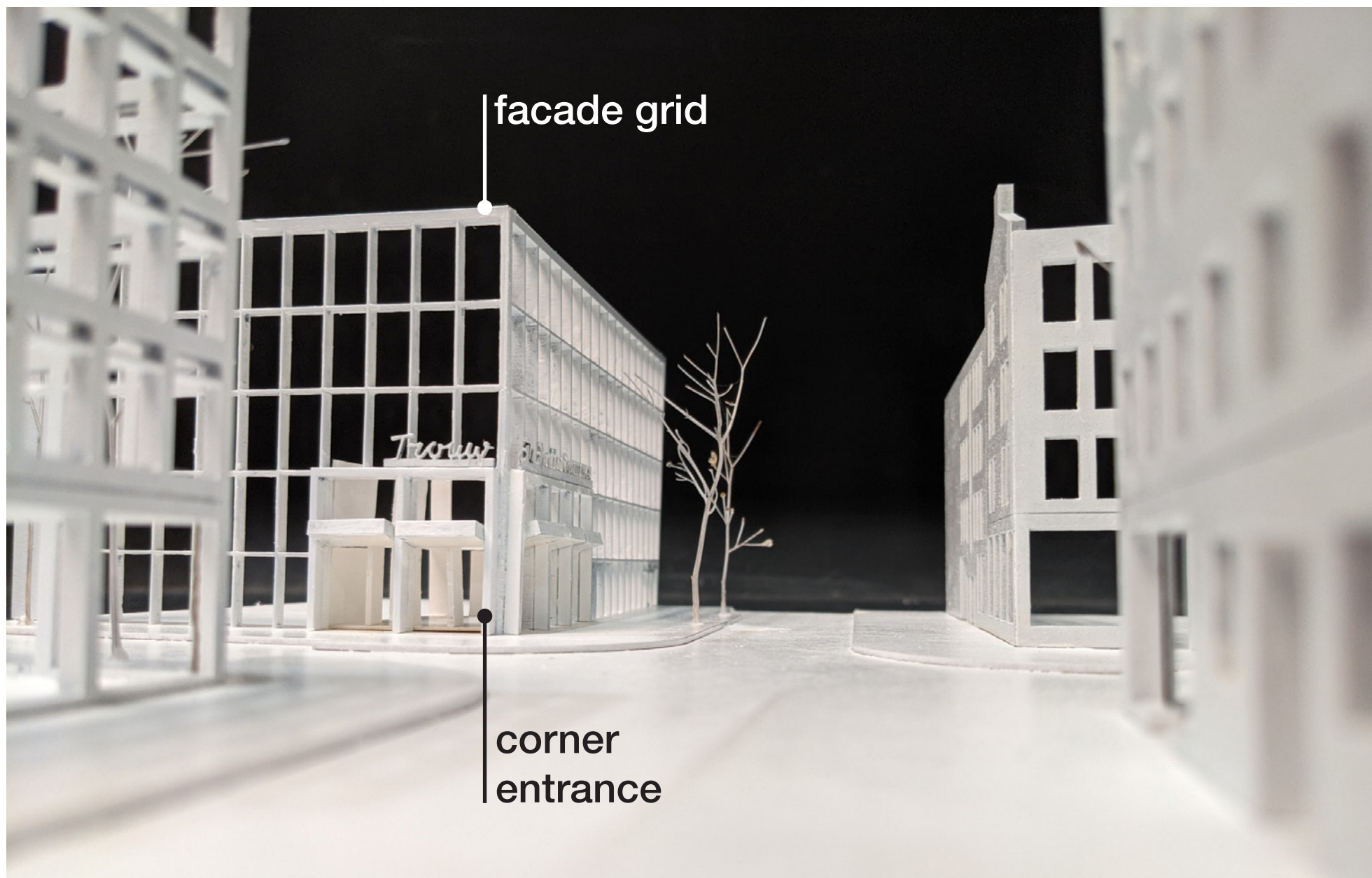


Tower set-back from the street
keeping the lowest Rotterdam's urban layer

existing building

Values

What are the **cultural values**?



Heritage aspects:

It is not listed as a monument

It was not about longevity

authenticity -
idea, not materials

important elements to use in
the re-design:

- **facade grid**
- **corner entrance**

Physical conditions of the WdW25:

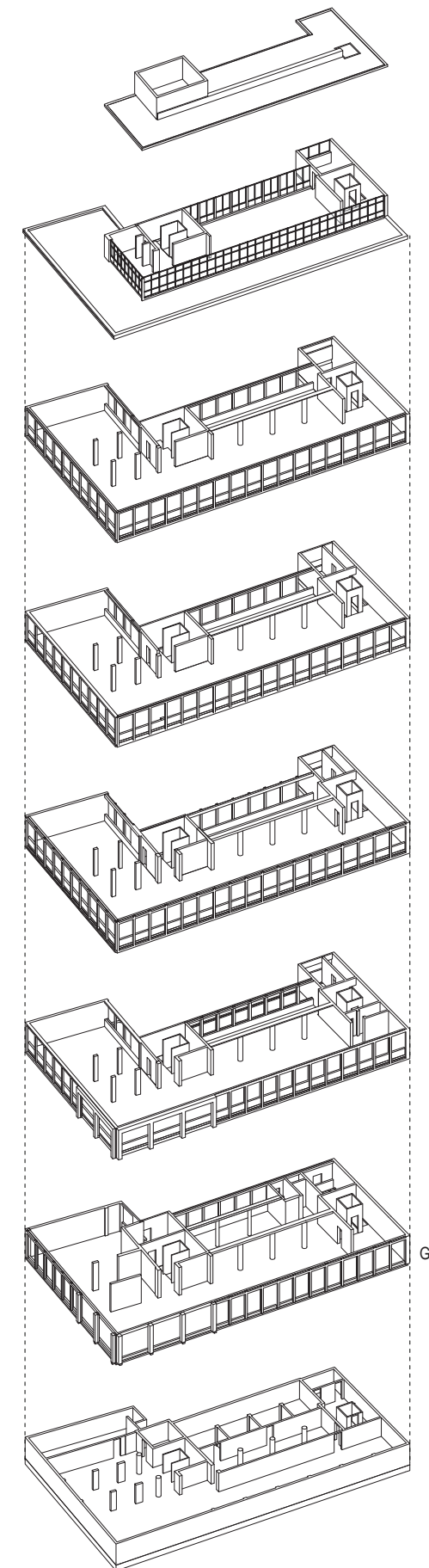
- typical floor height (1st-4th floors, floor to floor) - 3,5 m
- higher ground floor (floor to floor)- 3,675 m
- basement height (floor to GF floor) - 2,975 m



Physical Values

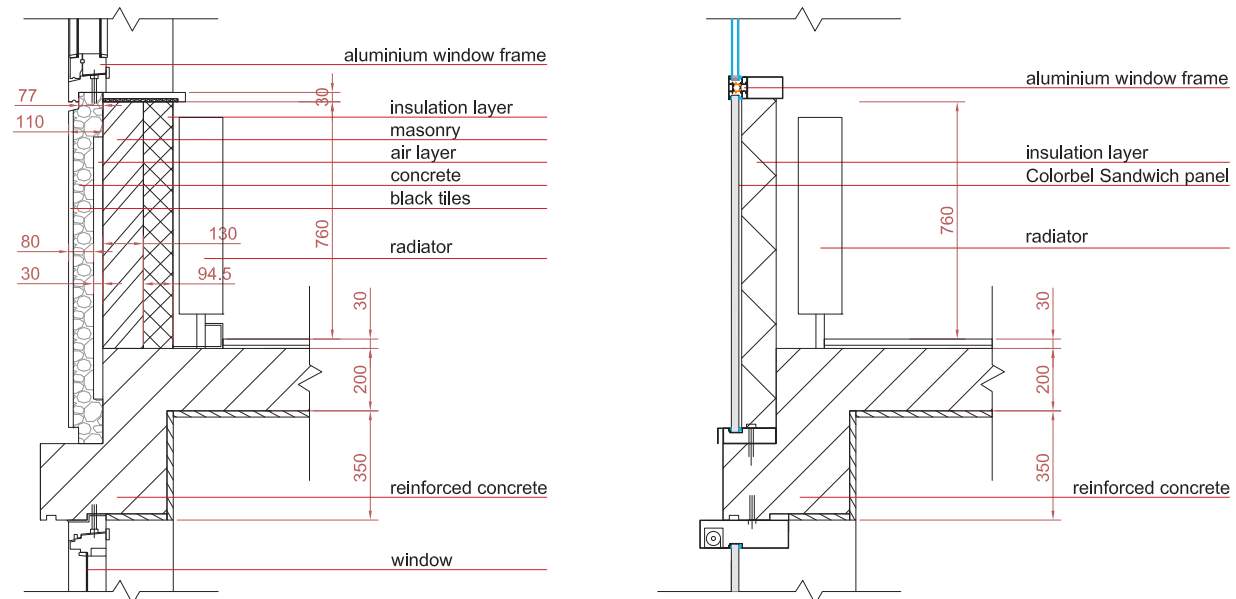
Physical conditions of the WdW25:

- the load-bearing column structure allows open plan flexibility



Physical conditions of the WdW25:

- facade system has been changed from the original one



original facade detail → existing facade detail

- facades are in good/usable shape
- insufficiently insulated (cold bridges)



Design

Changing owners + program over time

then



(1972)

architect Kees Elffers

built in 1959

Newspaper office
'De Rotterdammer', 'Trouw'



(1988)

1979-1992

Newspaper office
'Het Vrije Volk'

now

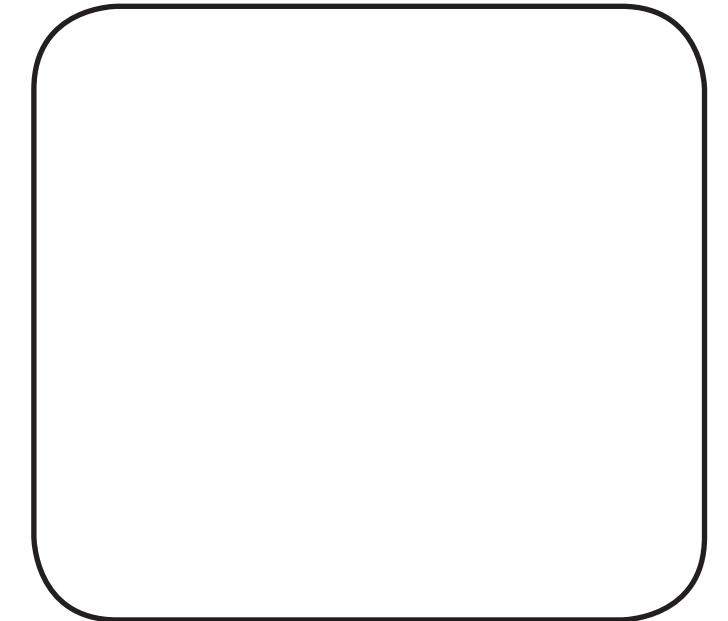


(2021)

1993-2022

Police office

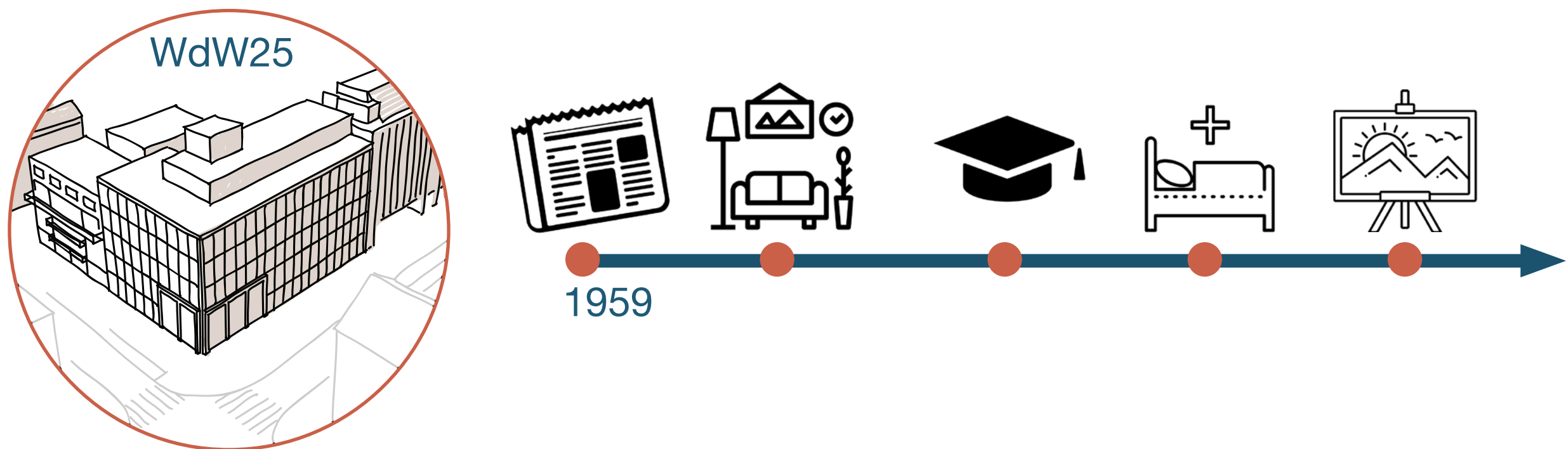
soon



2022-...

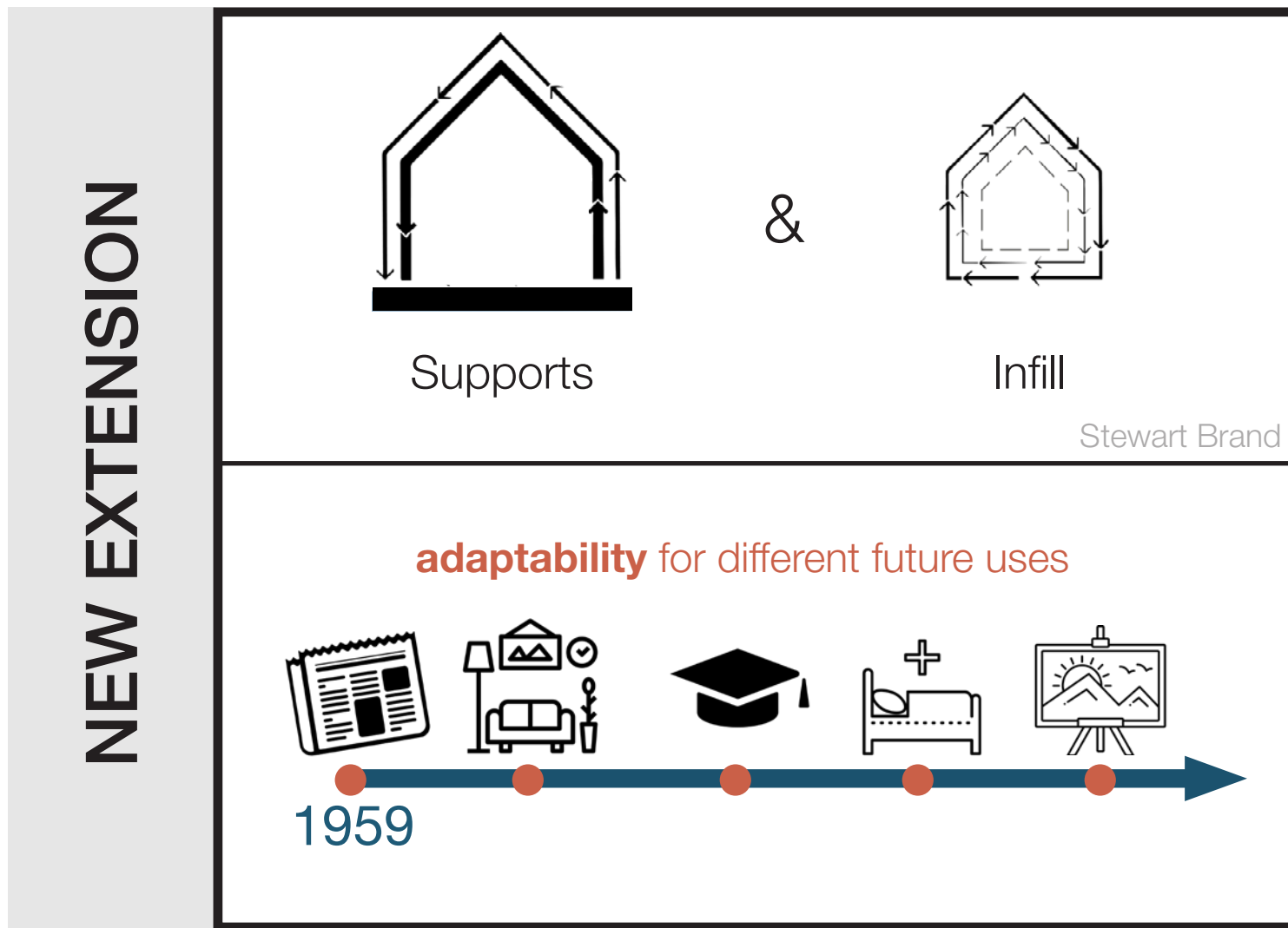
Testing the limits of flexibility:

How can the building be more **adaptable** for the different future uses?

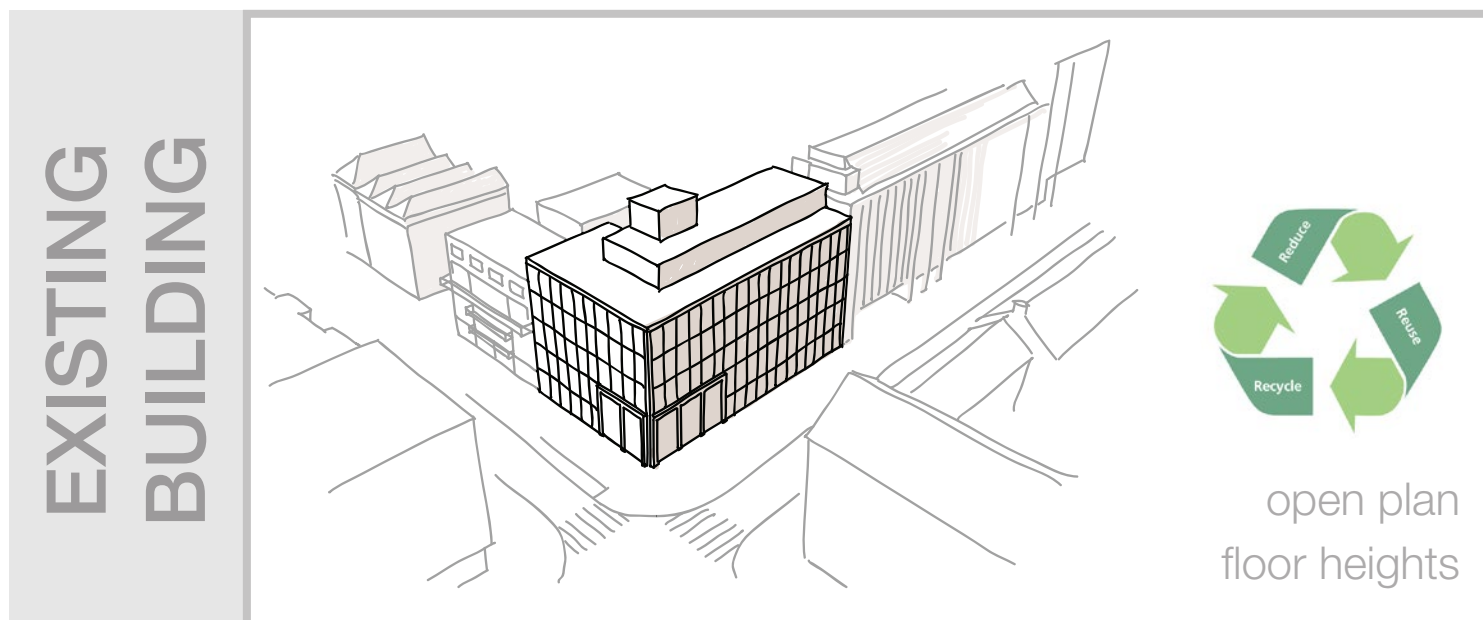


adaptability plan for the building

Open Building idea



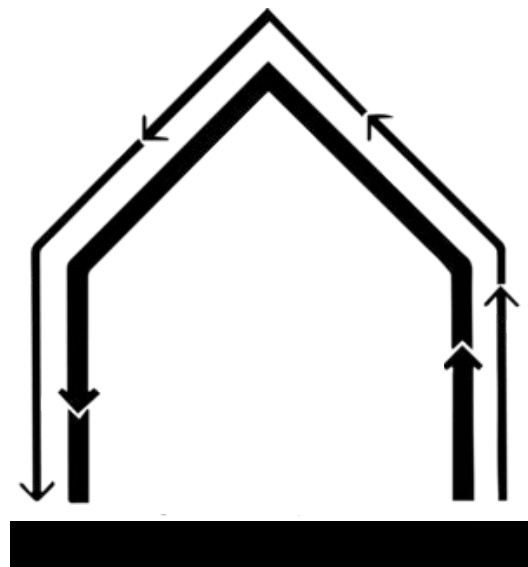
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Reusing / improving what is there

Design for disassembly: Open Building idea

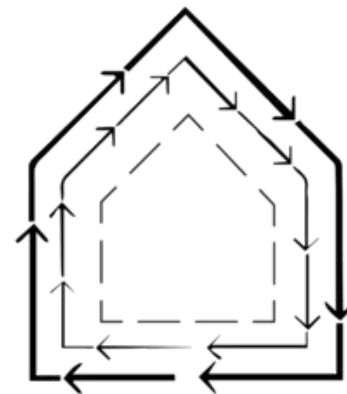
N. John Habraken:



Supports

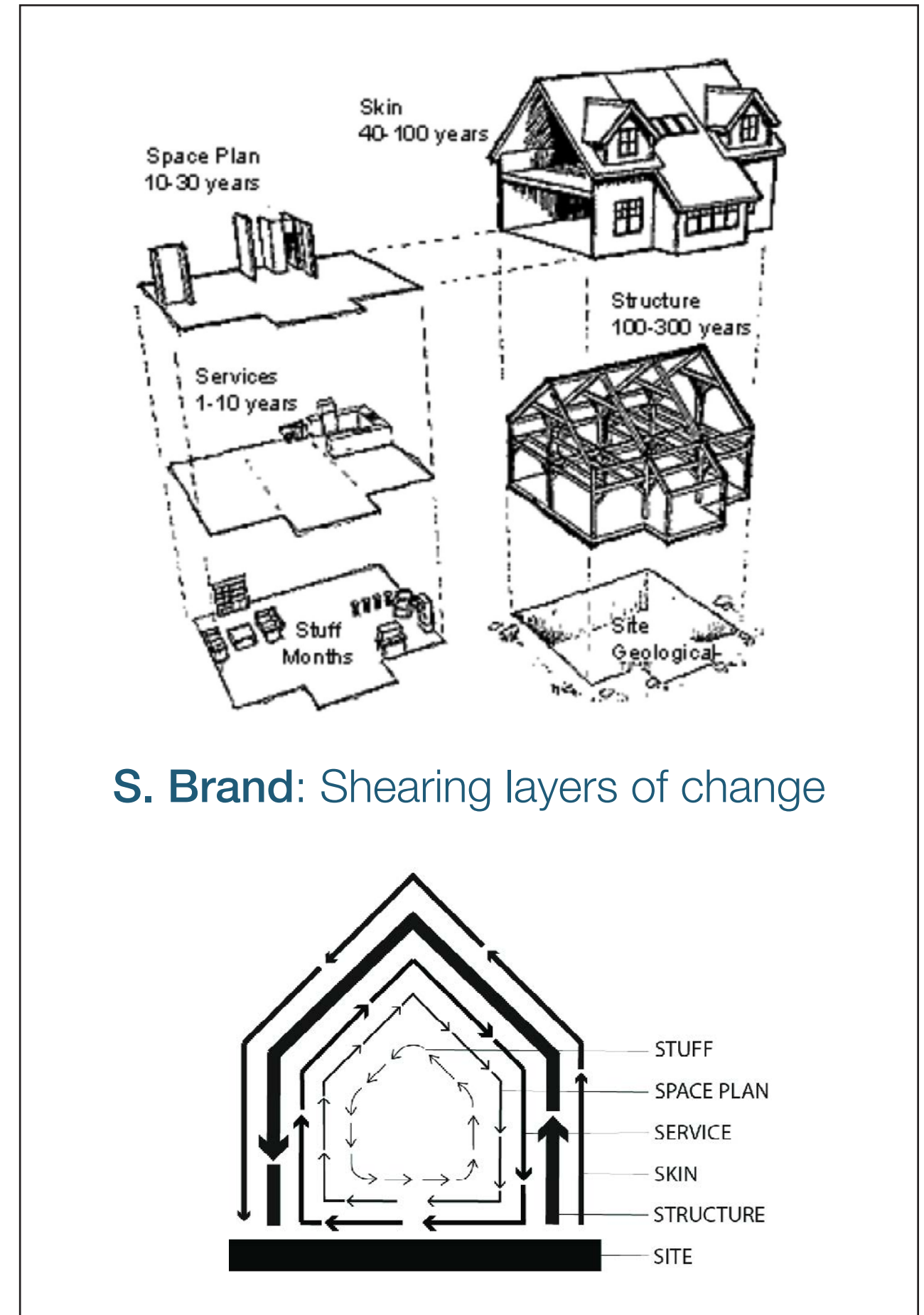
- part of public domain
- permanent

distinction



Infill

- **personal influence**
- changeable



S. Brand: Shearing layers of change

Testing the limits of flexibility -> Program
-> Storey height & Installations
-> Floor
-> Facade



How to activate this “glass box“?

Testing: the program that could be changed in the future

Was WdW25 “active” before?



1959 – The original design as newspaper office of “De Rotterdammer” & “Trouw”



1979 – Renovation for new owner - newspaper “Het Vrije Volk”



1993 – Renovation for the Police
2005 – Refurbishment for the Police



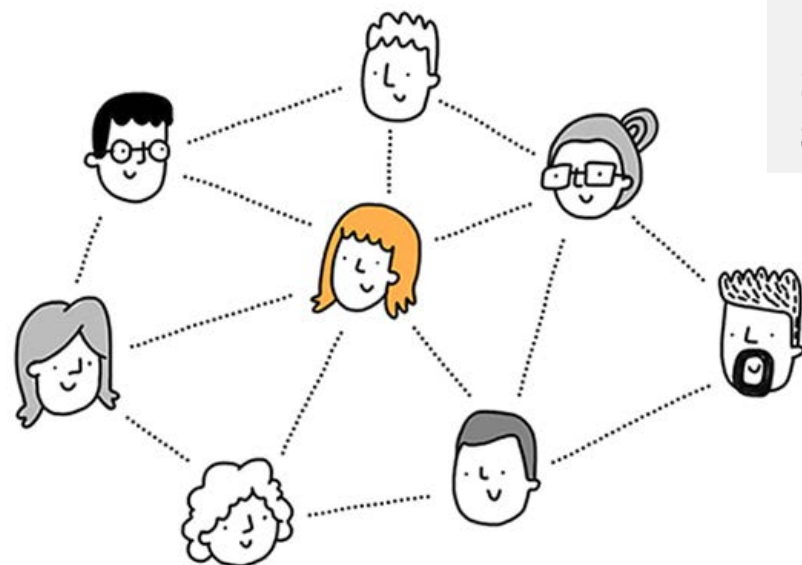
Activating the “glass box“



1. **1. Activating by public plinth**
2. Re-connecting with the street life
- 3.



1. **2. Activating by food production**
2. urban farm catering for the Horeca sector
- 3.

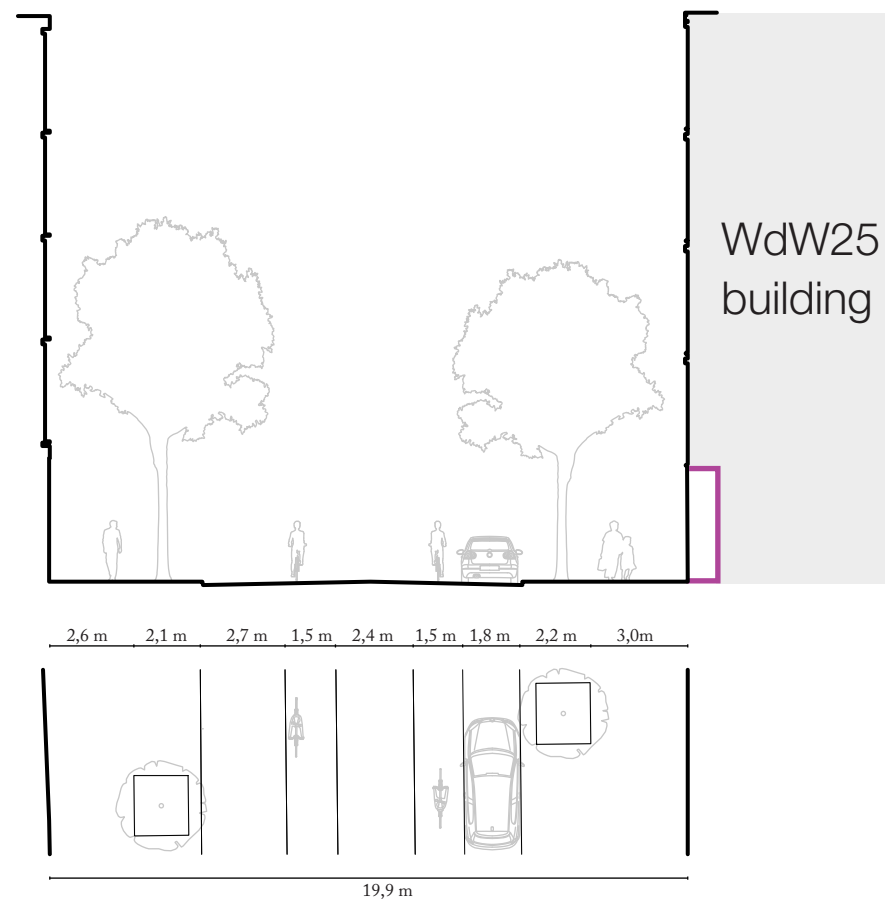


1. **3. Activating by accommodating**
2. Co-living
- 3.

1. **1. Activating by public plinth**
2. Re-connecting with the street life
- 3.

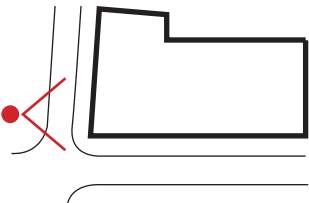
Jan Gehl - The Human Scale

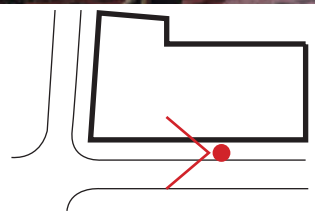
“First life, then spaces, then buildings - the other way around never works.”



Witte de Withstraat street: **car-free**

- make the facade more **open and approachable**
- place the **public function**

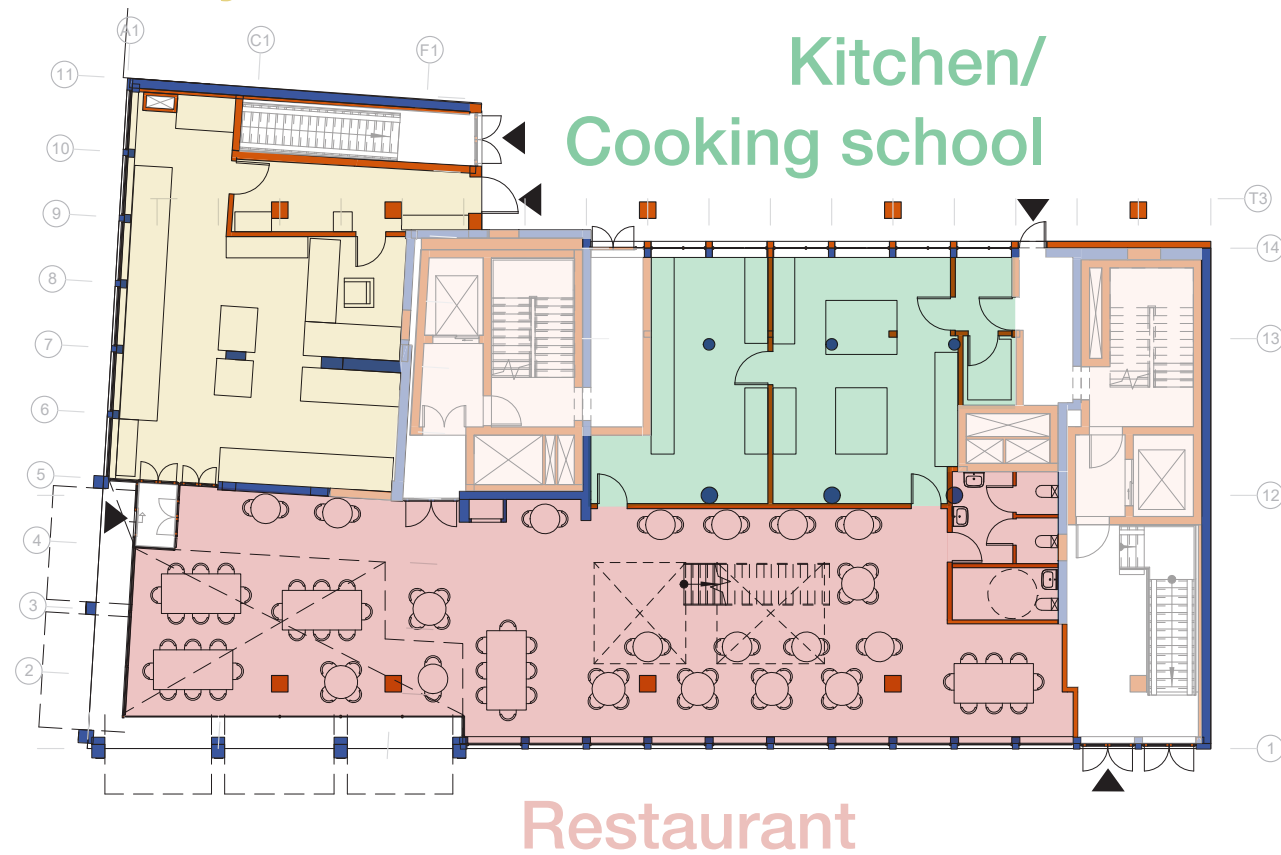




Plinth in plans

Grocery store

Kitchen/
Cooking school



Ground Floor

Lecture rooms for
workshops &
cooking school

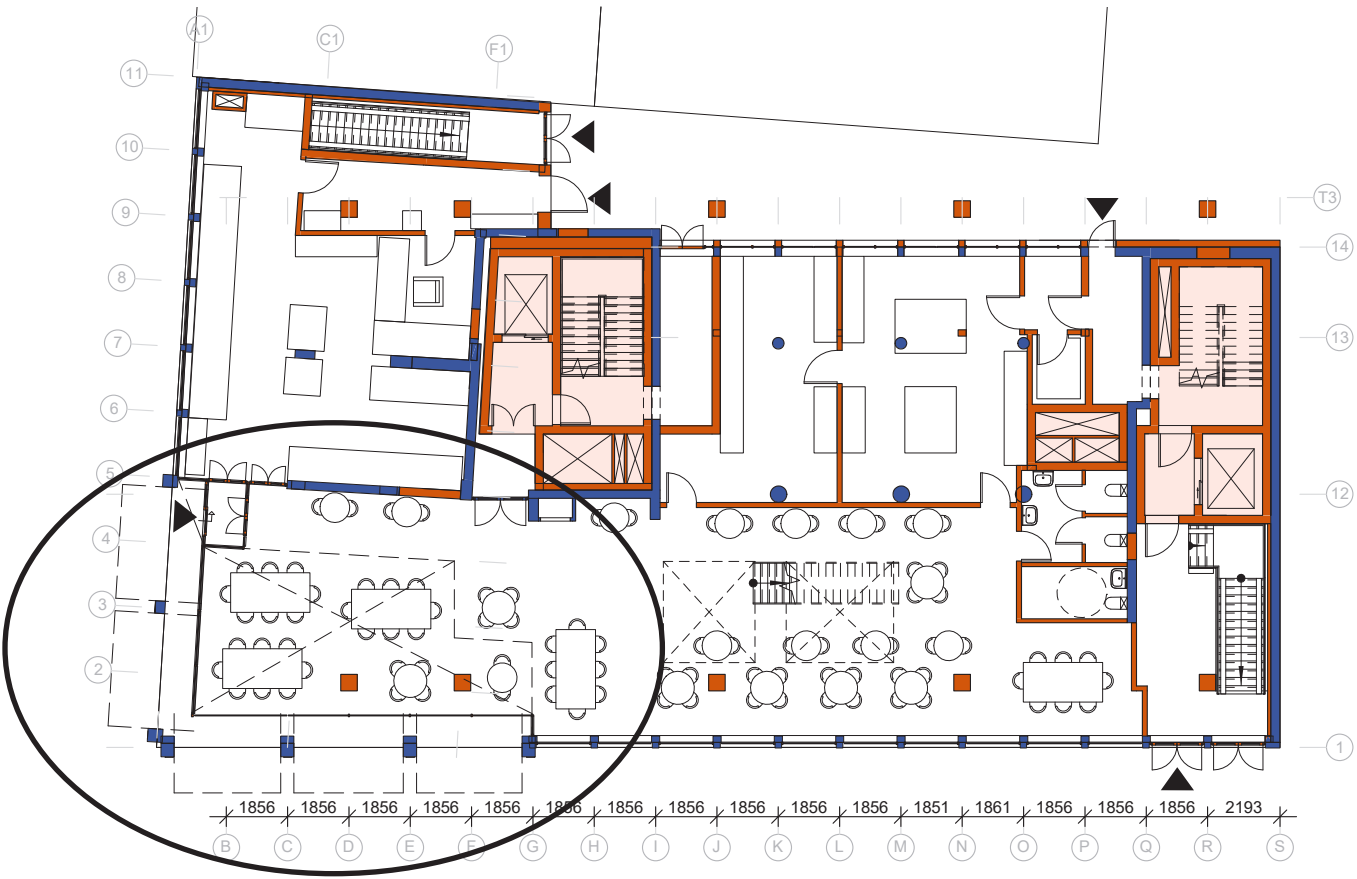


1st floor

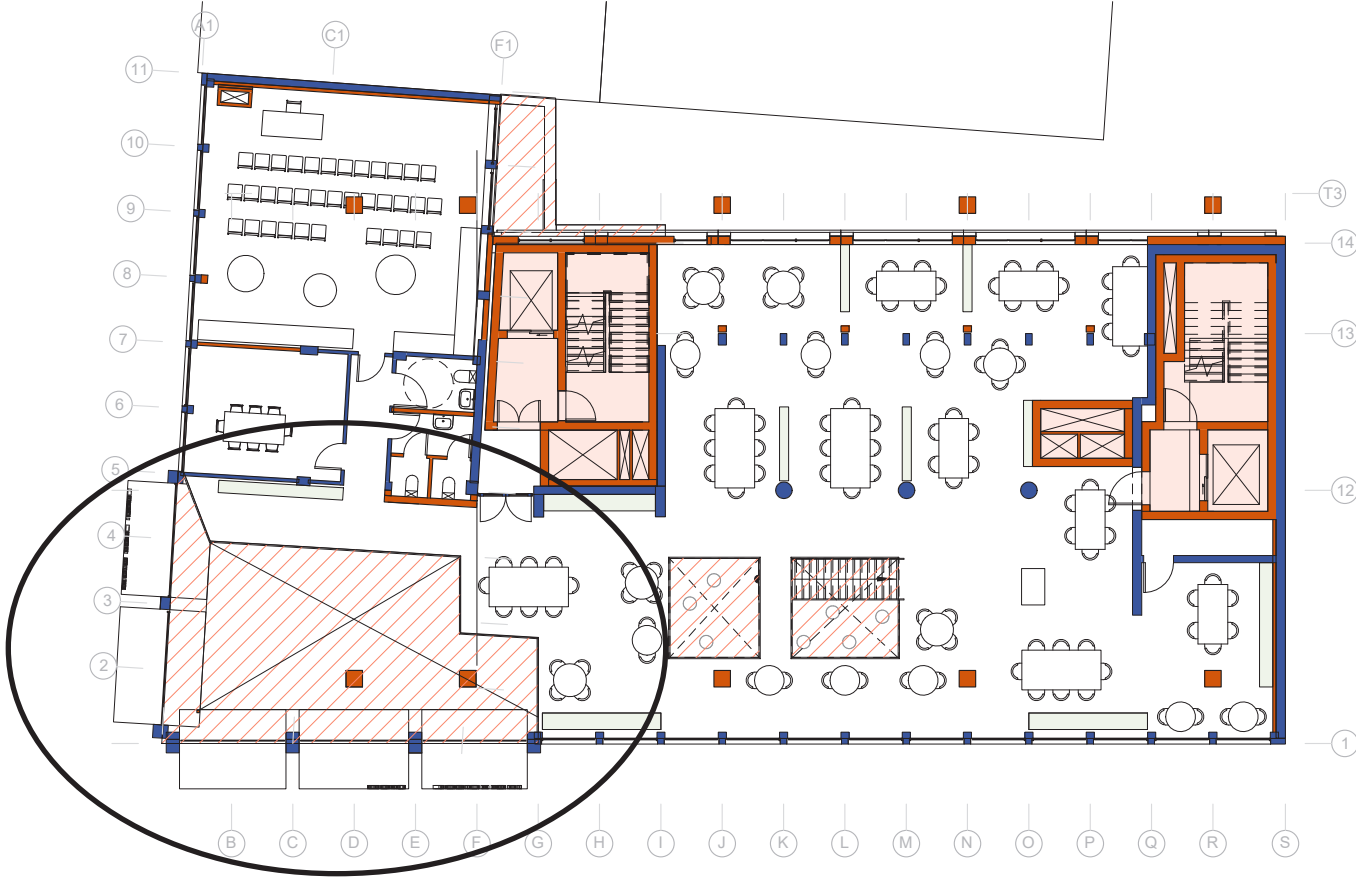


Restoring the original entrance lobby

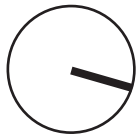
plans_old & new



Ground Floor



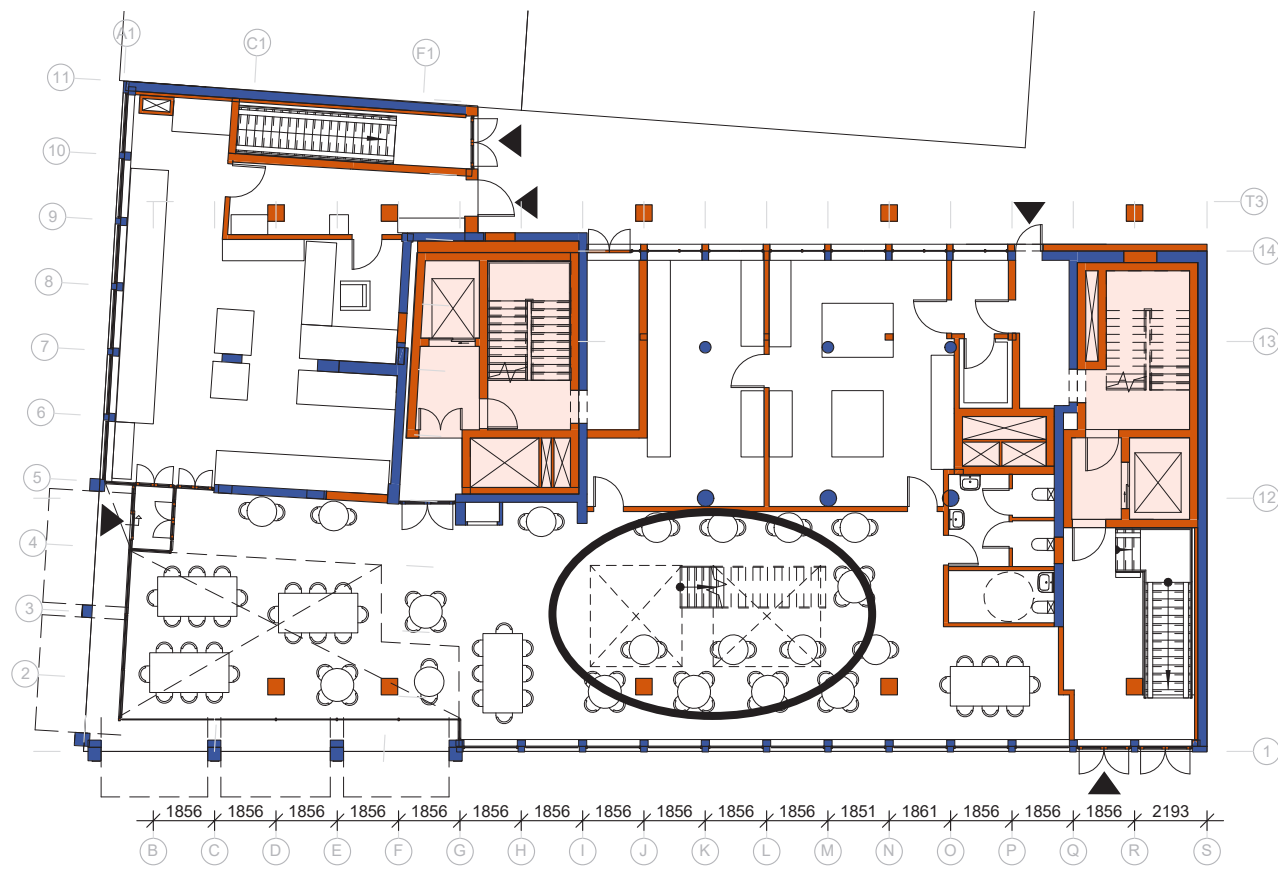
1st floor



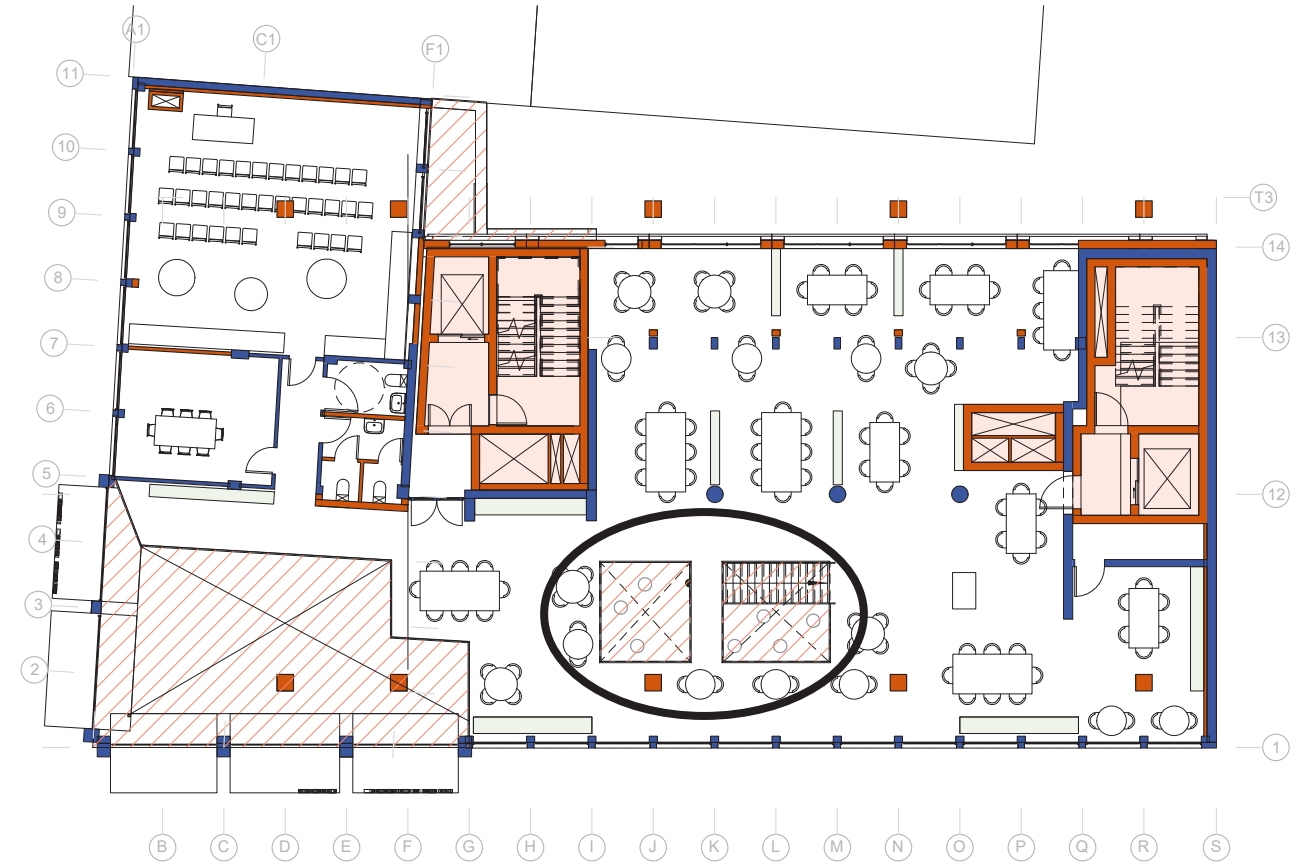


new voids in restaurant space

plans_old & new



Ground Floor



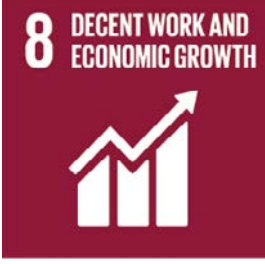






1st floor

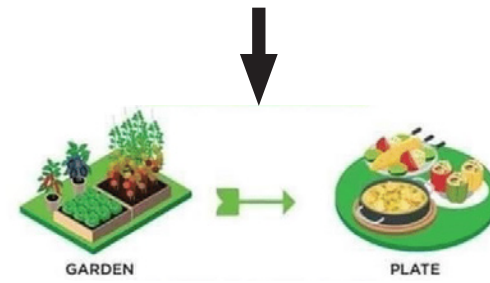




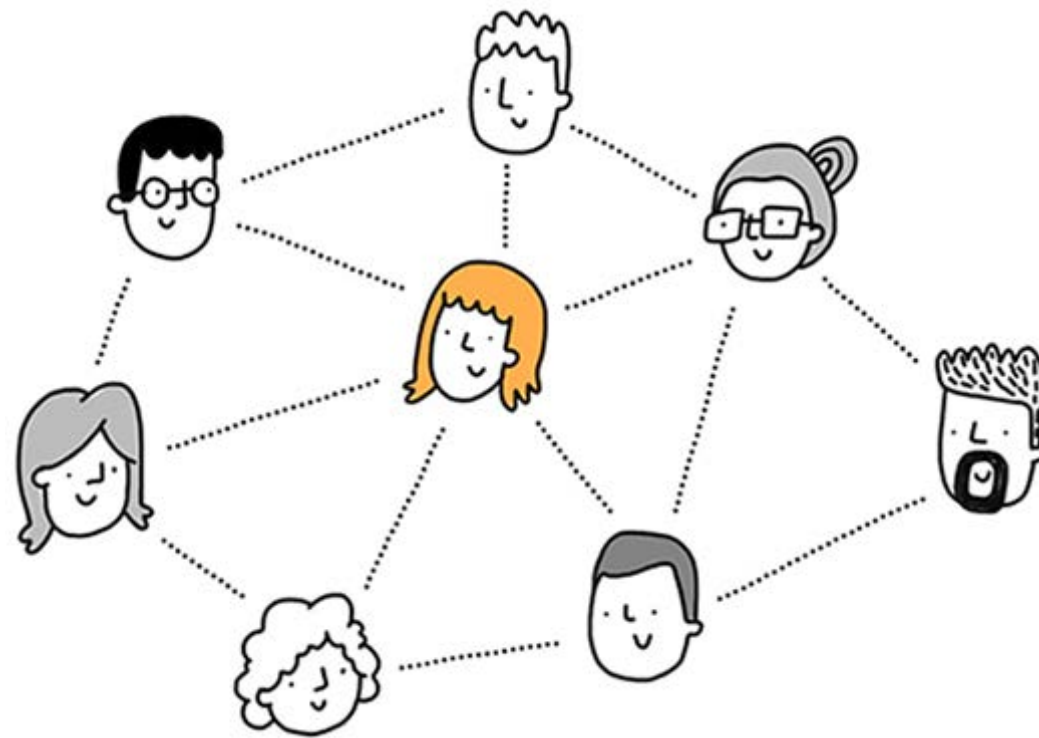
Sustainable Developments Goals & Values

1.	 <p>3 GOOD HEALTH AND WELL-BEING</p>	<p>space for additional greenery quiet spaces in a busy city space for children to play sports</p>	<p>environmental value social value</p>
2.	 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>reducing energy consumption (by using existing buildings & insulating them) rooftop space for generating renewable energy in the city energy saving by water collection (drainage of rainwater for irrigation, reusing as 'grey' water)</p>	<p>environmental value aesthetic value economic value</p>
3.	 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>full and productive employment in urban farm and public functions at the plinth</p>	<p>economic value</p>
4.	 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>space for social community functions making neighbourhood more inclusive by adding a new type of program, provided education, more inclusive living program better quality public space</p>	<p>social value environmental value cultural value aesthetic value</p>
5.	 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p>urban farming and allotment gardens shortening food supply chains, healthier fresh food densification by means of sustainable construction methods (e.g. long lasting, circular construction, use of sustainable materials)</p>	<p>environmental / health value</p>
6.	 <p>13 CLIMATE ACTION</p>	<p>adaptation to climate climate mitigation making building stock more sustainable</p>	<p>environmental value</p>
7.	 <p>15 LIFE ON LAND</p>	<p>more space for greenery place for animals such as birds and insects increasing biodiversity</p>	<p>environmental value</p>

long supply chain = heavy carbon footprint



short supply chain



locally produced, healthy food

circularity

more inclusive neighbourhood

job opportunities

more accomodation

social mobility

helpful & not lonely society

- 1.
- 2.
- 3.

2. Activating by food production

urban indoor farm for Horeca sector



for education

showcasing the technology
for lectures, workshops
school for cooks



private use

for residents



production

for Horeca street,
restaurant & shop on the GF

vertical
farming

https://www.ice.edu/sites/default/files/content/program/header-video-image/Sauces-030-72dpi_1440x850.jpg

<https://waldenlabs.com/nutritower-indoor-vertical-farm/>

[https://images.adsttc.com/media/images/5cc0/0f66/284d/d1ee/9200/004a/slideshow/cepezed_-_The_Green_House_-_Lucas_van_der_Wee_\(13\).jpg?1556090705](https://images.adsttc.com/media/images/5cc0/0f66/284d/d1ee/9200/004a/slideshow/cepezed_-_The_Green_House_-_Lucas_van_der_Wee_(13).jpg?1556090705)

<https://services.urbankisaan.com/UploadDocuments/blogs/34.jpg>

<https://www.researchgate.net/profile/Cherryline-Villarino/publication/331639279/figure/fig11/AS:735248253984773@1552308252439/Panasonic-Indoor-Vertical-Farming-using-LED-AVA-2017.png>

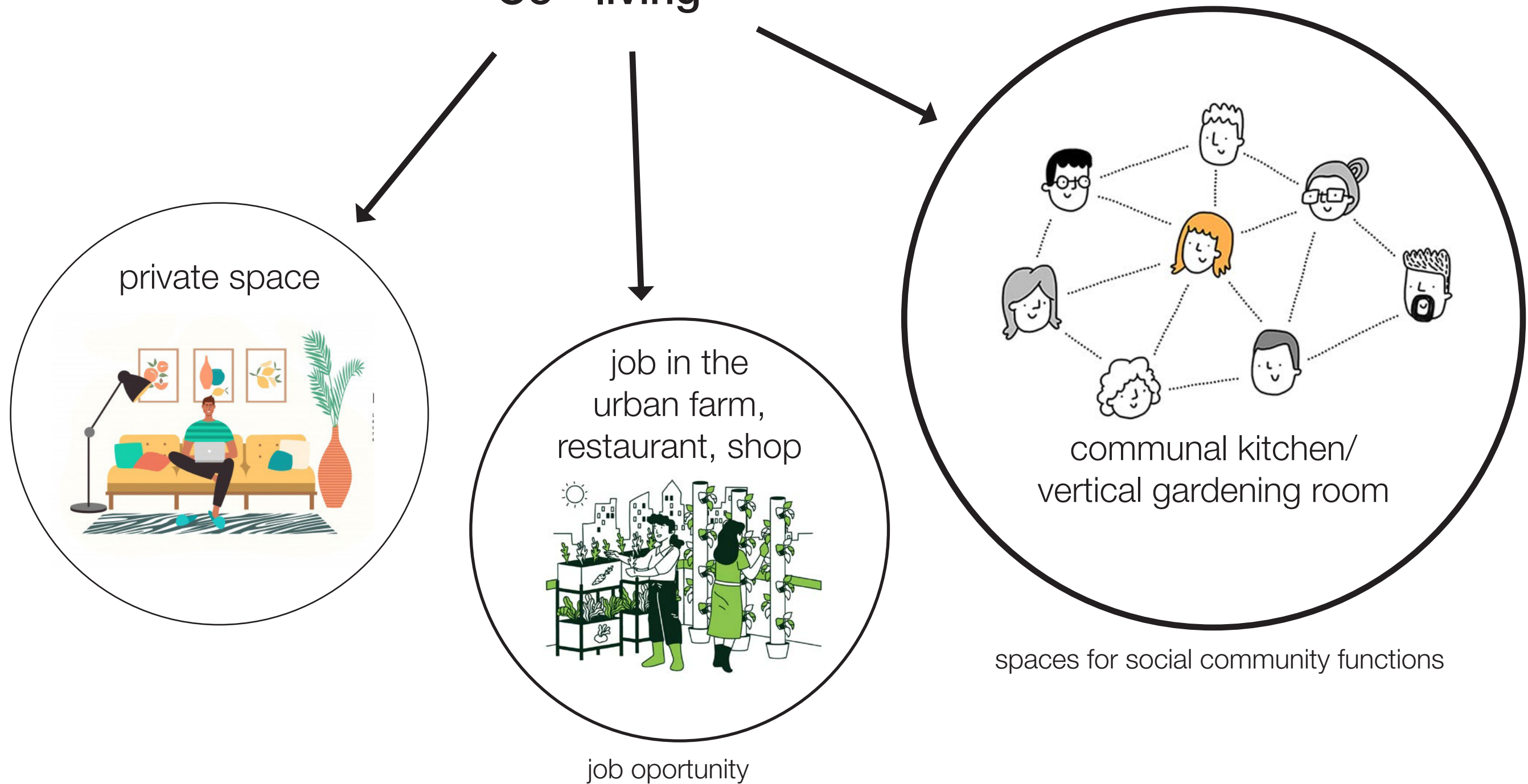
<https://i1.wp.com/starfarm.co.id/wp-content/uploads/2021/01/teknik-vertikultur.jpg?resize=1051%2C699&ssl=1>

- 1.
- 2.
- 3.

3. Activating by accommodating

more inclusive living

Co - living



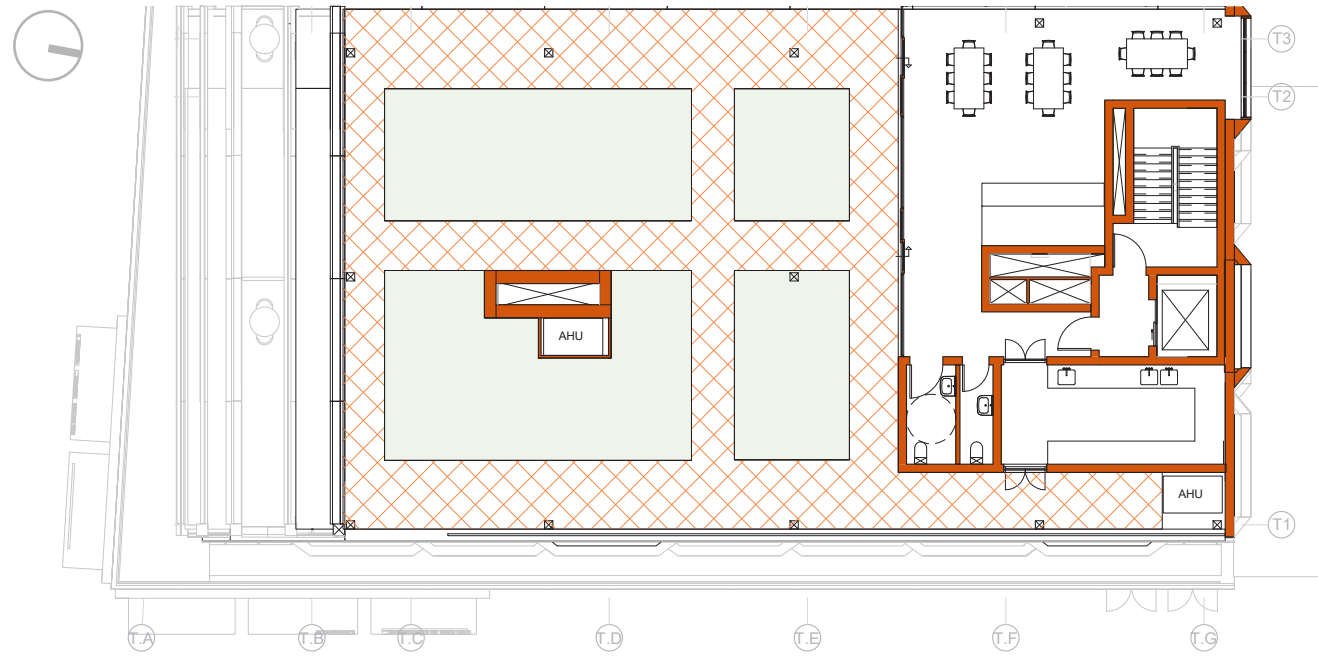
New tower plan: 12 floor



Communal kitchen/ indoor gardening space



Roof terrace



Green outdoor space is a must while densifying the city centre



private balconies



roof terrace on the 5th floor

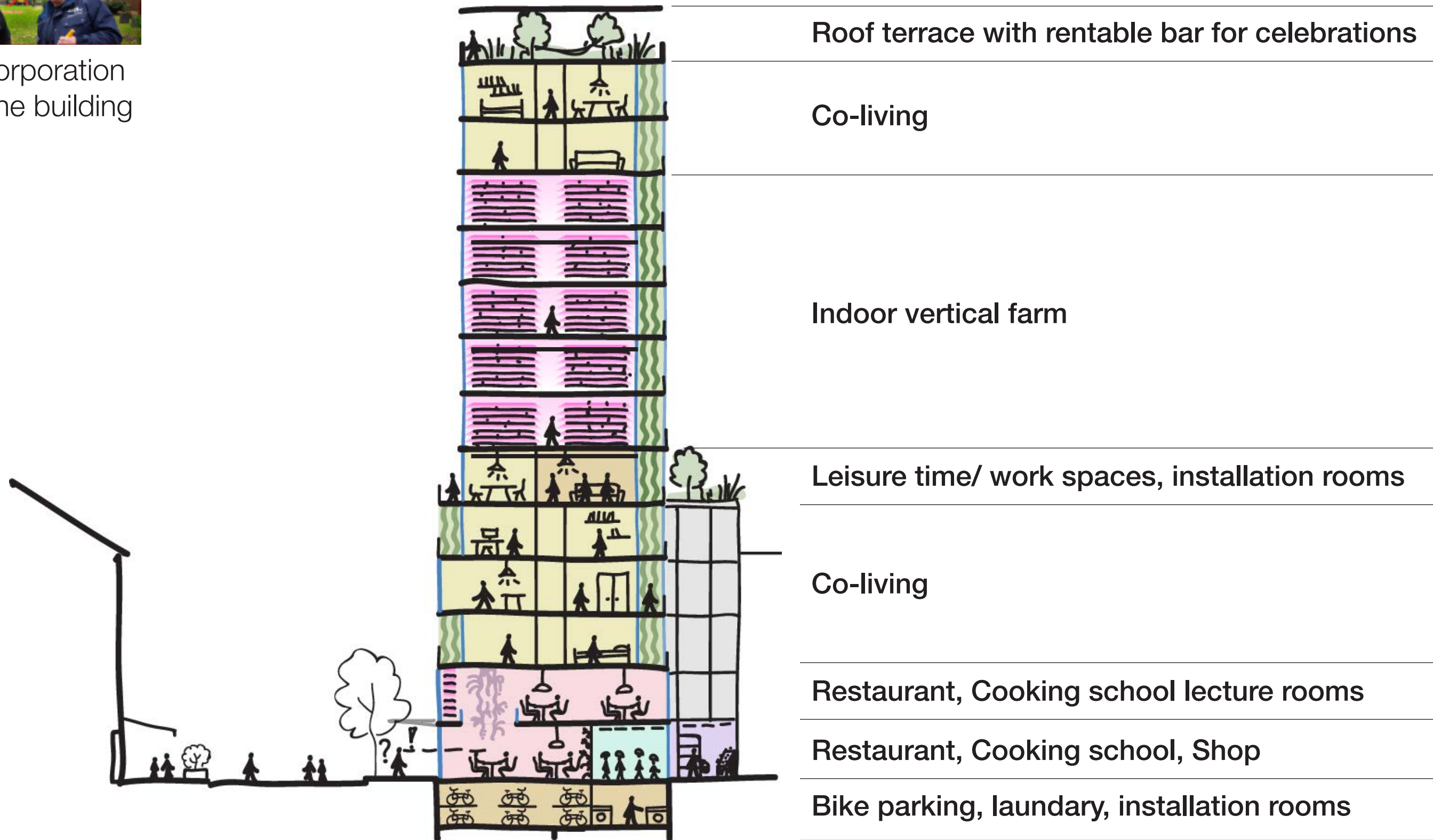


roof terrace on the 13th floor

Architecture program in section



Housing Corporation
manages the building



Roof terrace with rentable bar for celebrations

Co-living

Indoor vertical farm

Leisure time/ work spaces, installation rooms

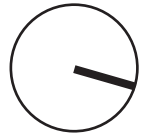
Co-living

Restaurant, Cooking school lecture rooms

Restaurant, Cooking school, Shop

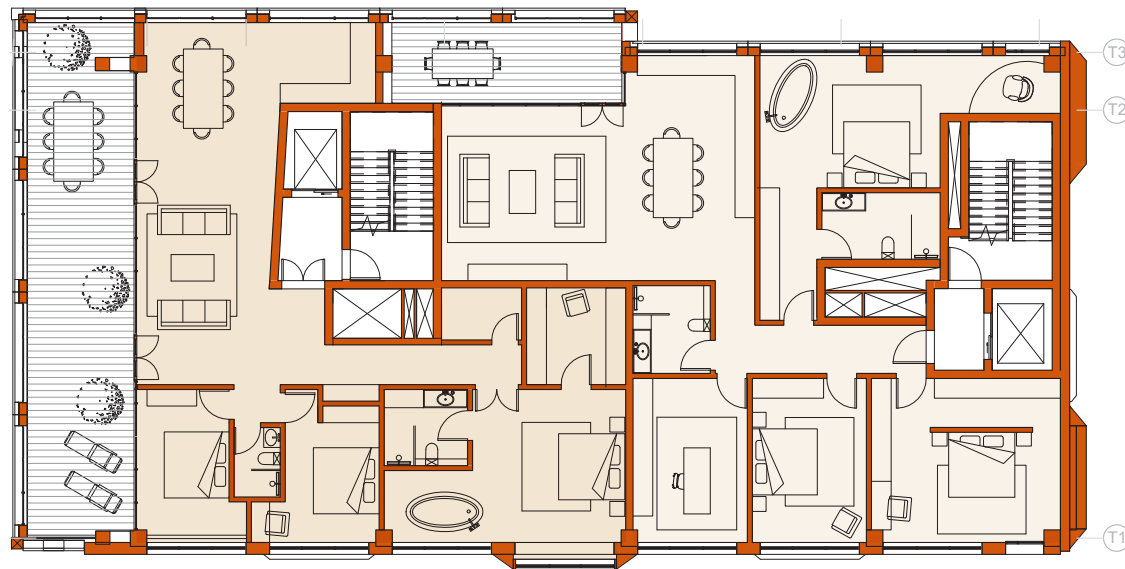
Bike parking, laundry, installation rooms

Flexibility -> Program



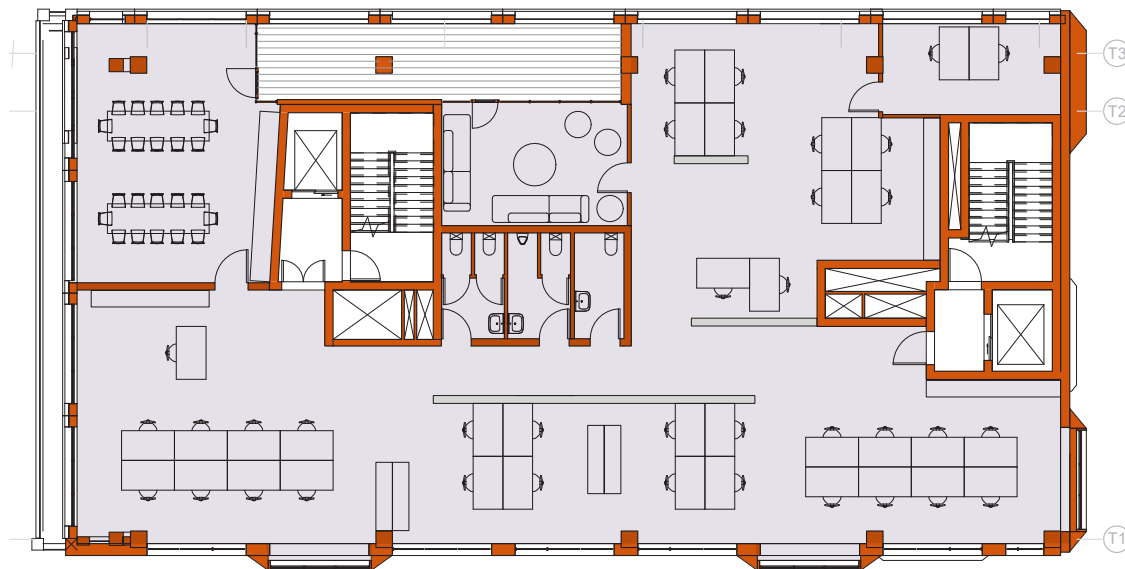
Adaptability for different functions

2 luxurious apartments (aprox. 170 m²) 9



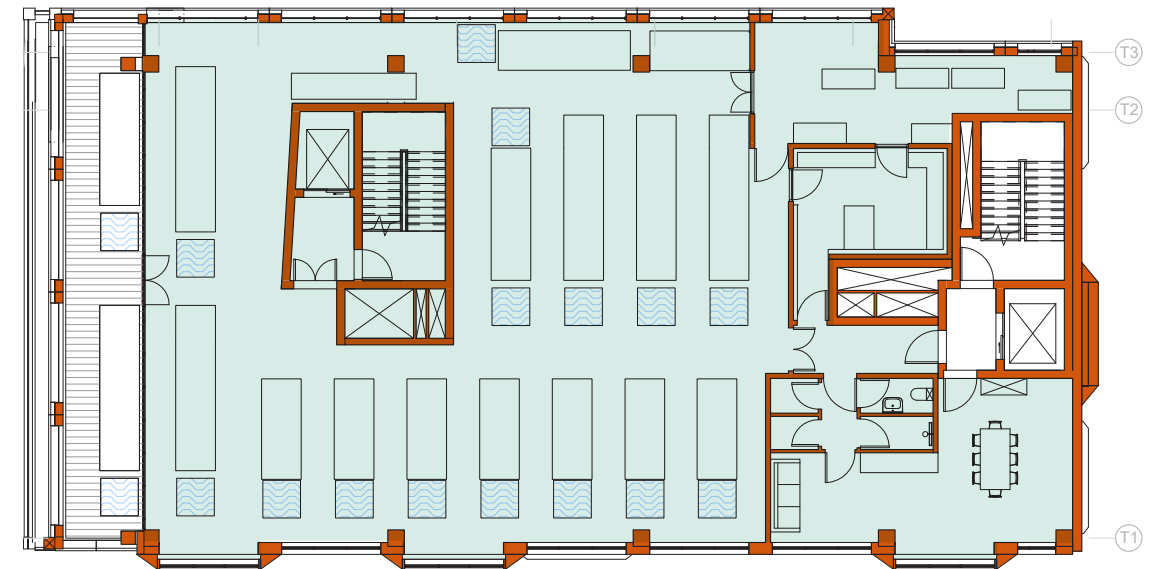
T.A T.B T.C T.D T.E T.F T.G

Office space 11



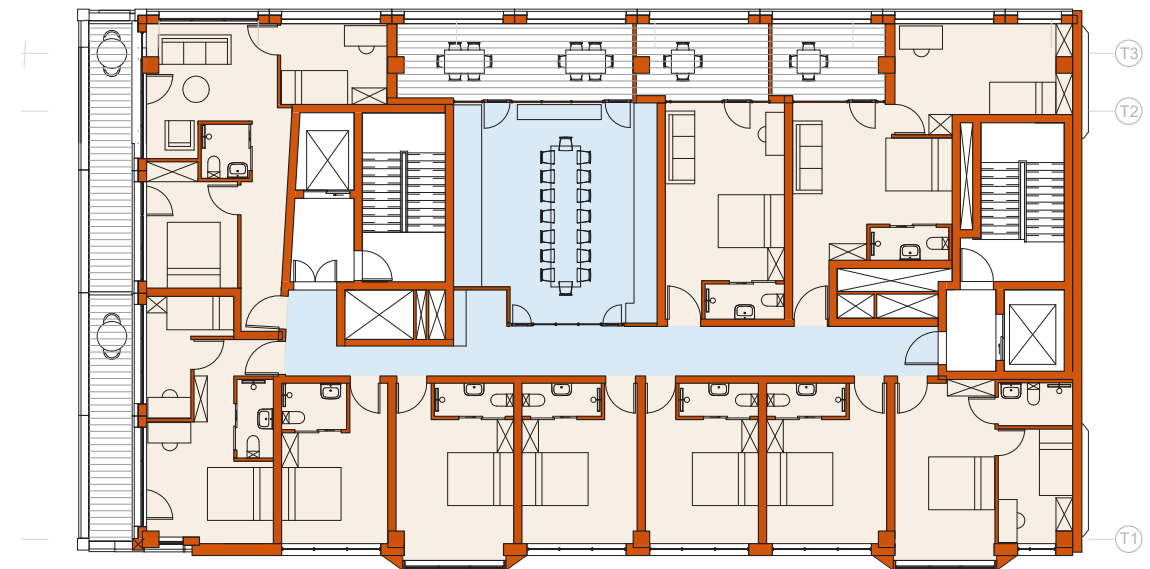
T.A T.B T.C T.D T.E T.F T.G

Indoor farm 10



T.A T.B T.C T.D T.E T.F T.G

Co-living apartments 12

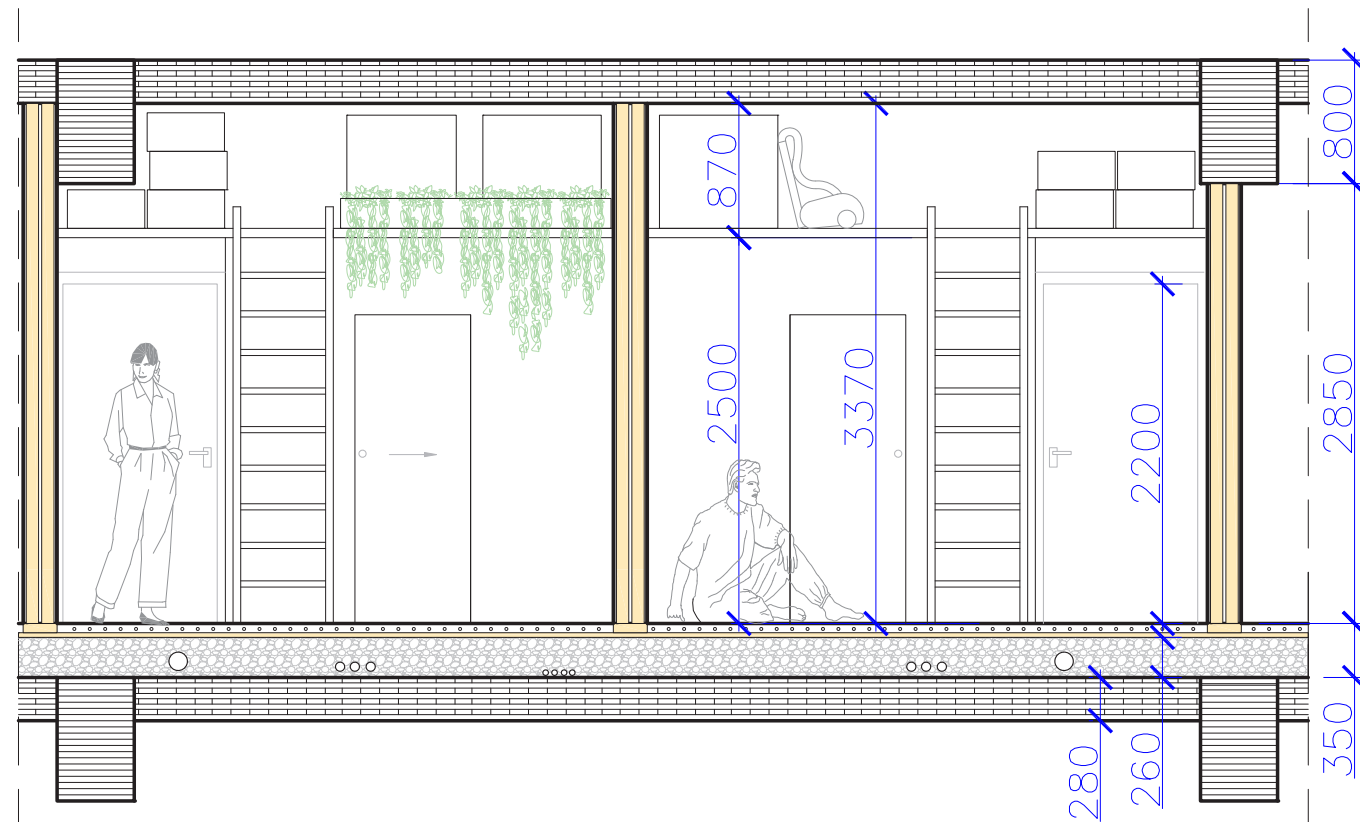


T.A T.B T.C T.D T.E T.F T.G

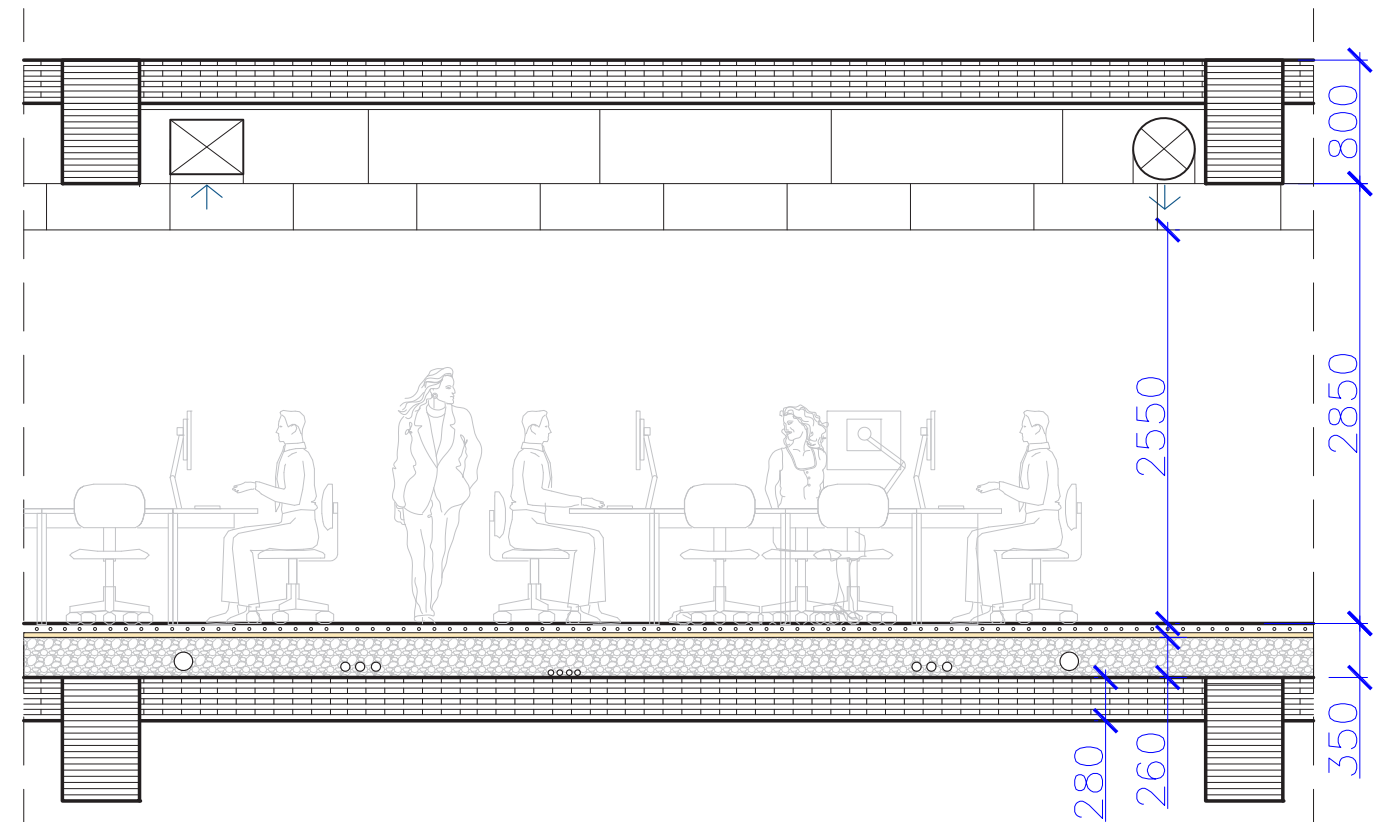
! **the limit :** the building cannot host special equipment-intensive functions as laboratory, hospital, industrial production, big scale cultural...
allowance for change: it can host functions like residential, office, education, horeca, small production, small scale cultural, farming...

Flexibility -> Storey height & Installations

Storey height & installations



Co-living apartments

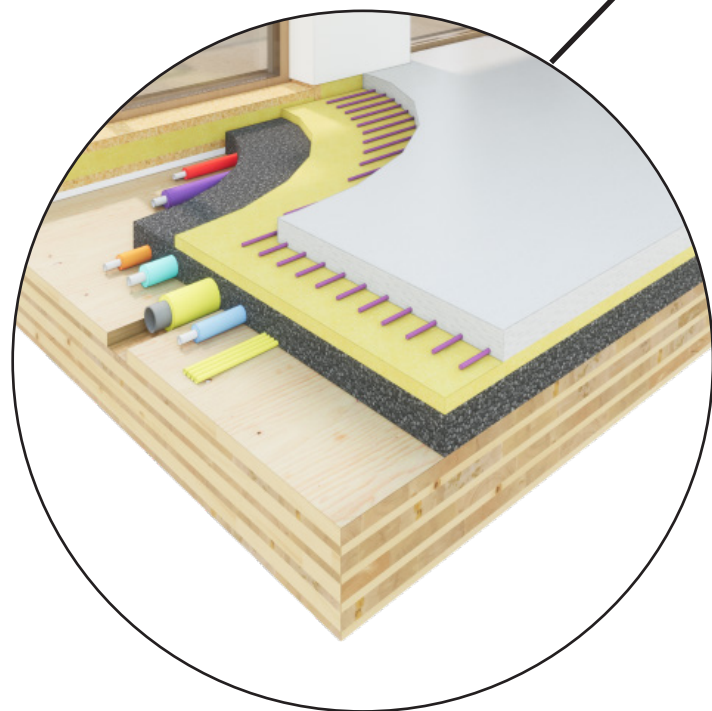
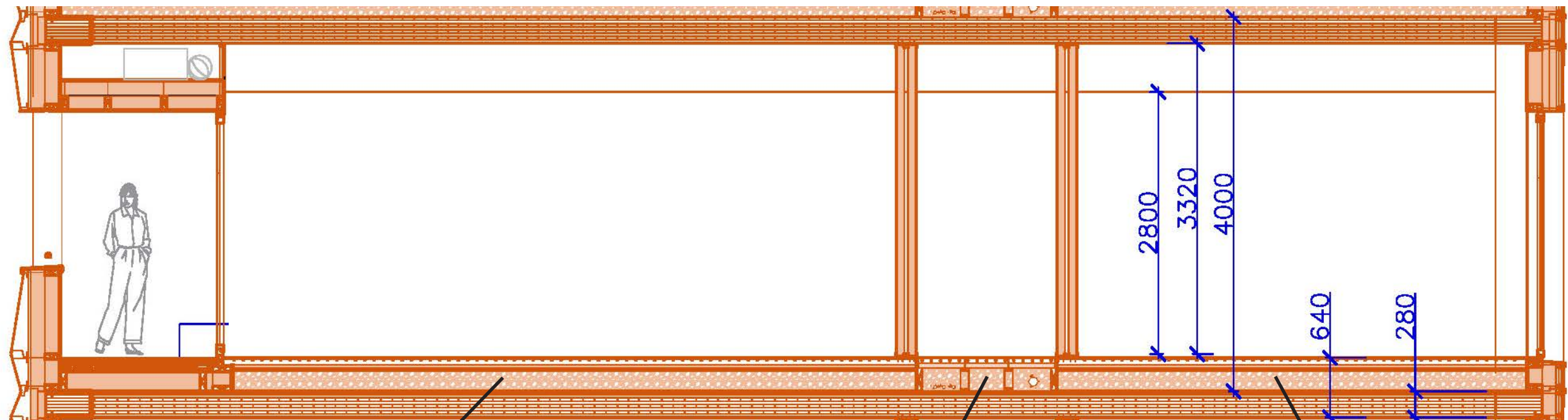


Office space

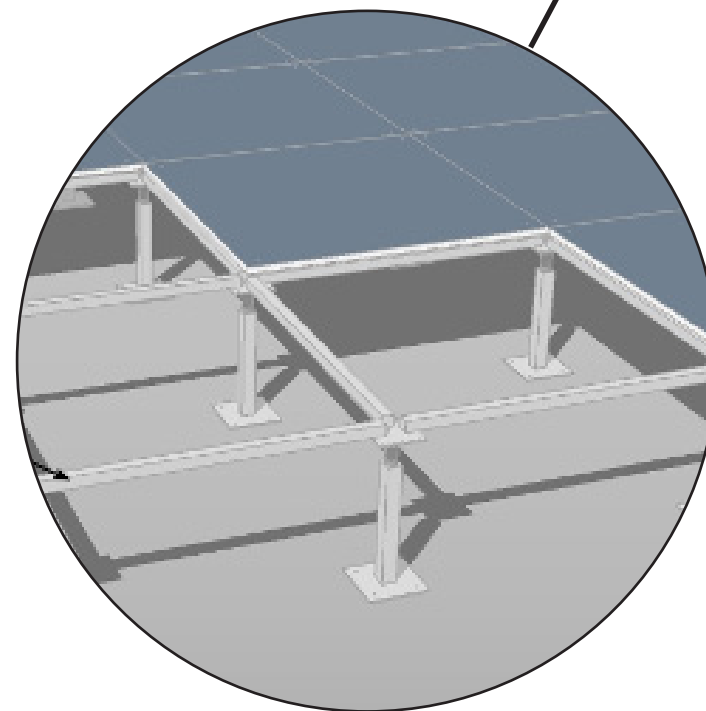
- ! **the limit** : the open plan is achieved by sacrificing the 52 cm height that is taken up by the glulam beams
- **the limit** : Installations in the floor are less adaptable than those on the ceiling

Flexibility -> Floor

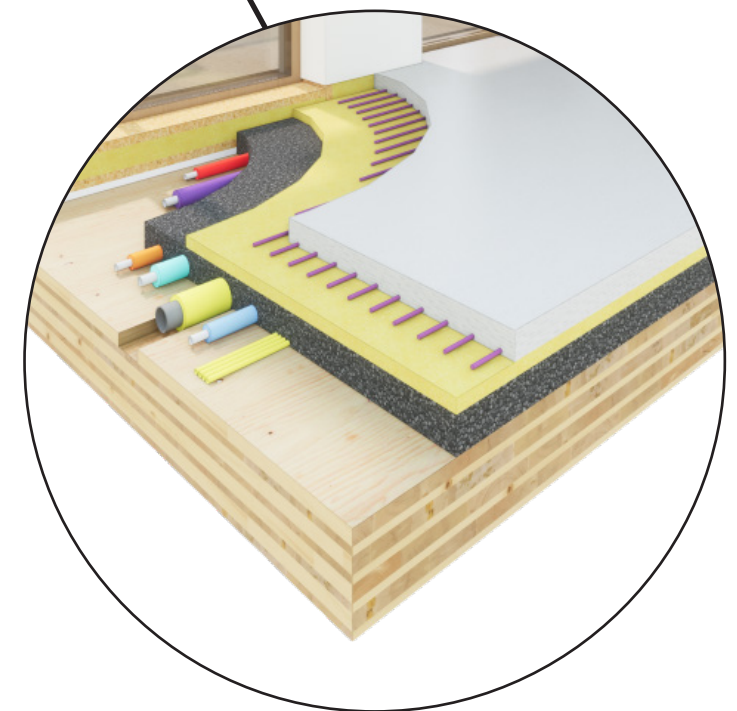
Open Building principles: raised floor for installations



raised floor for dry disassembly of installations



access floor for adjustment of installations



raised floor for dry disassembly of installations

! the limit : ventilation should not go into floor - it can take a lot of space

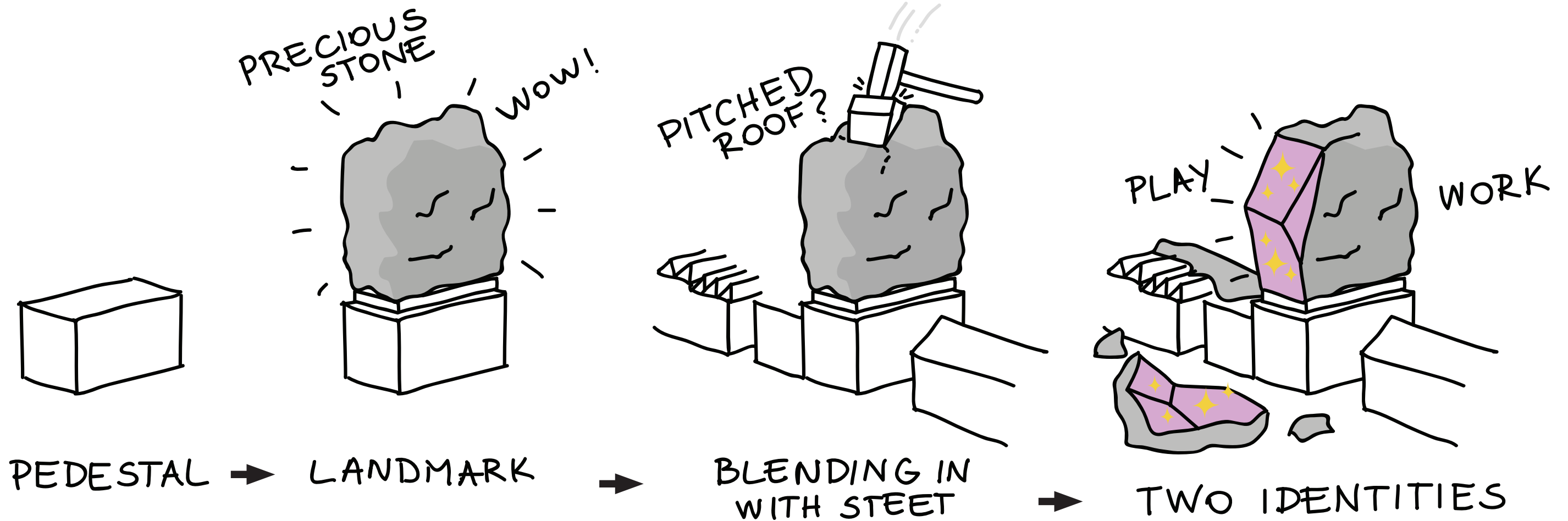
the limit : access floor has poor impact sound insulation, difficult with floor heating, expensive

allowance for change: access floor is introduced only in the corridor

Flexibility -> Facade

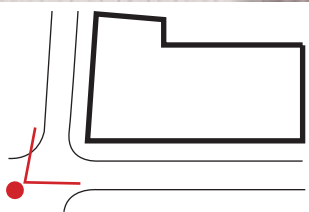
Facade

methaphor / concept



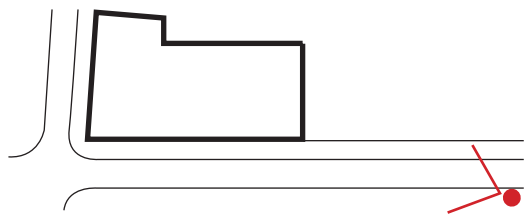


view from the crossroad

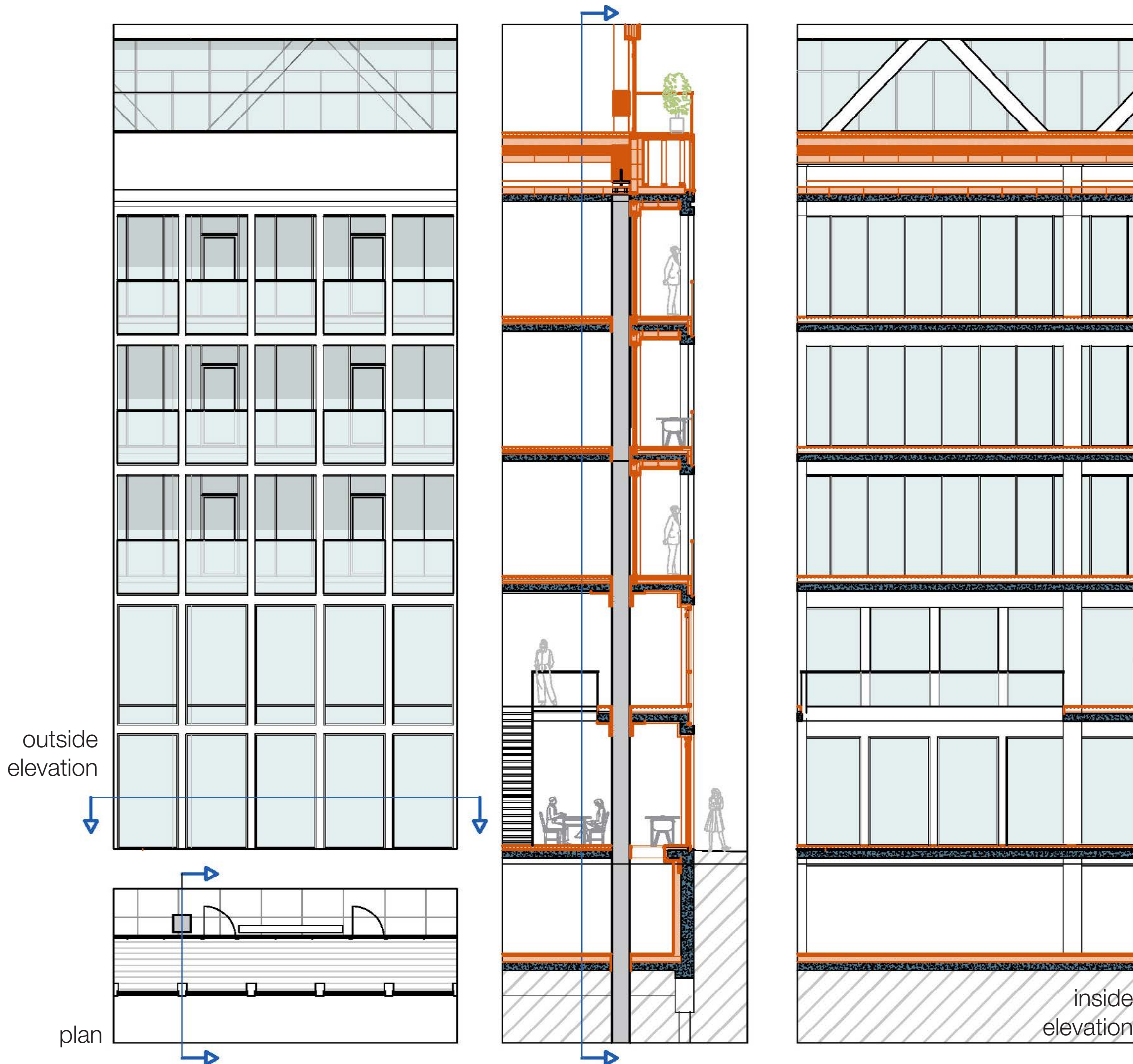




view from the Hartmansstraat



Fragment existing building



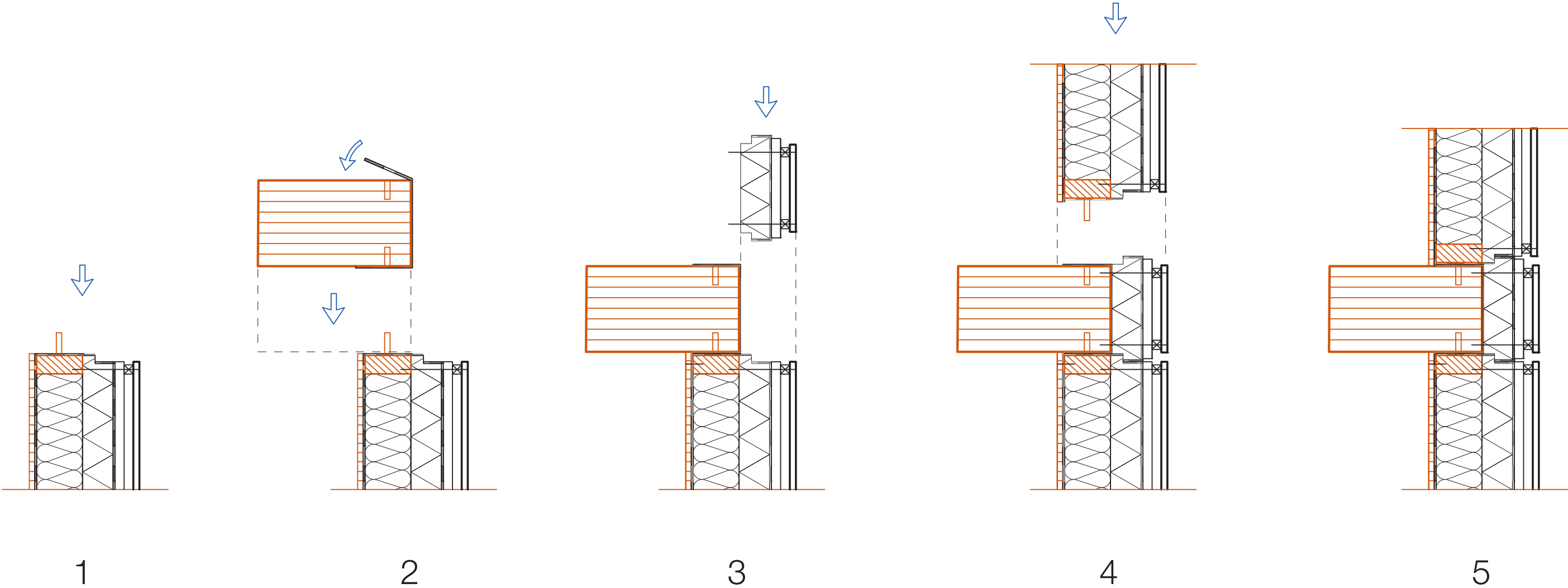
the limit : when raising the floor, the height of the floor decreases, stairs and doors need to be adjusted accordingly



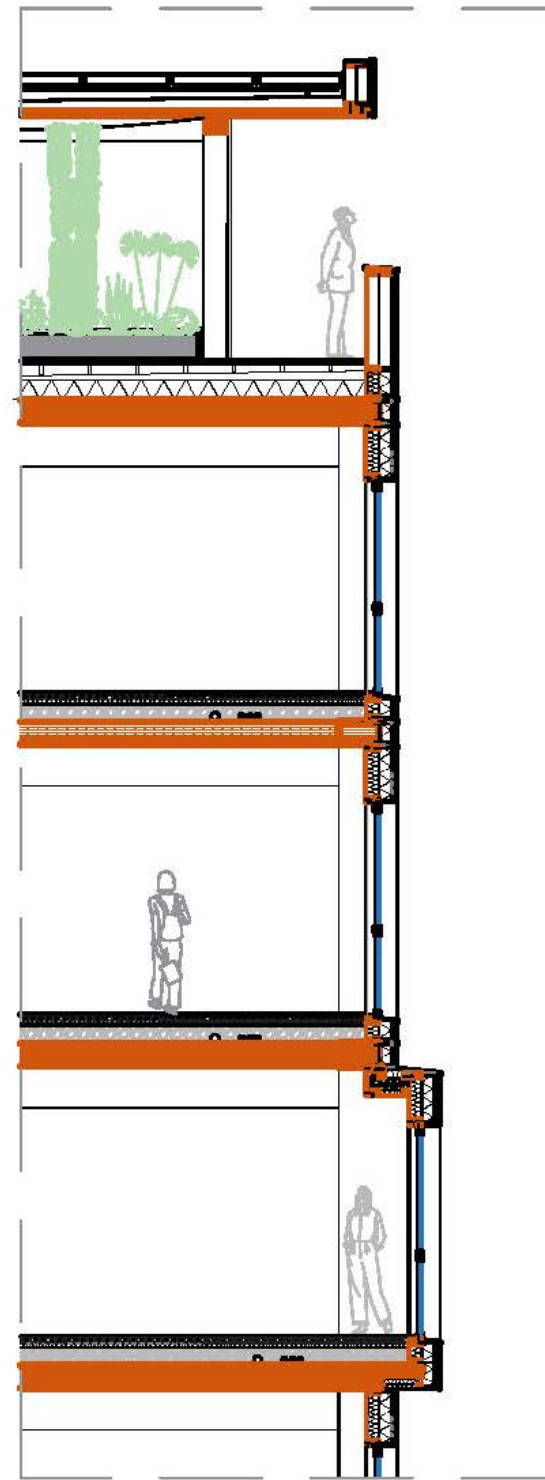
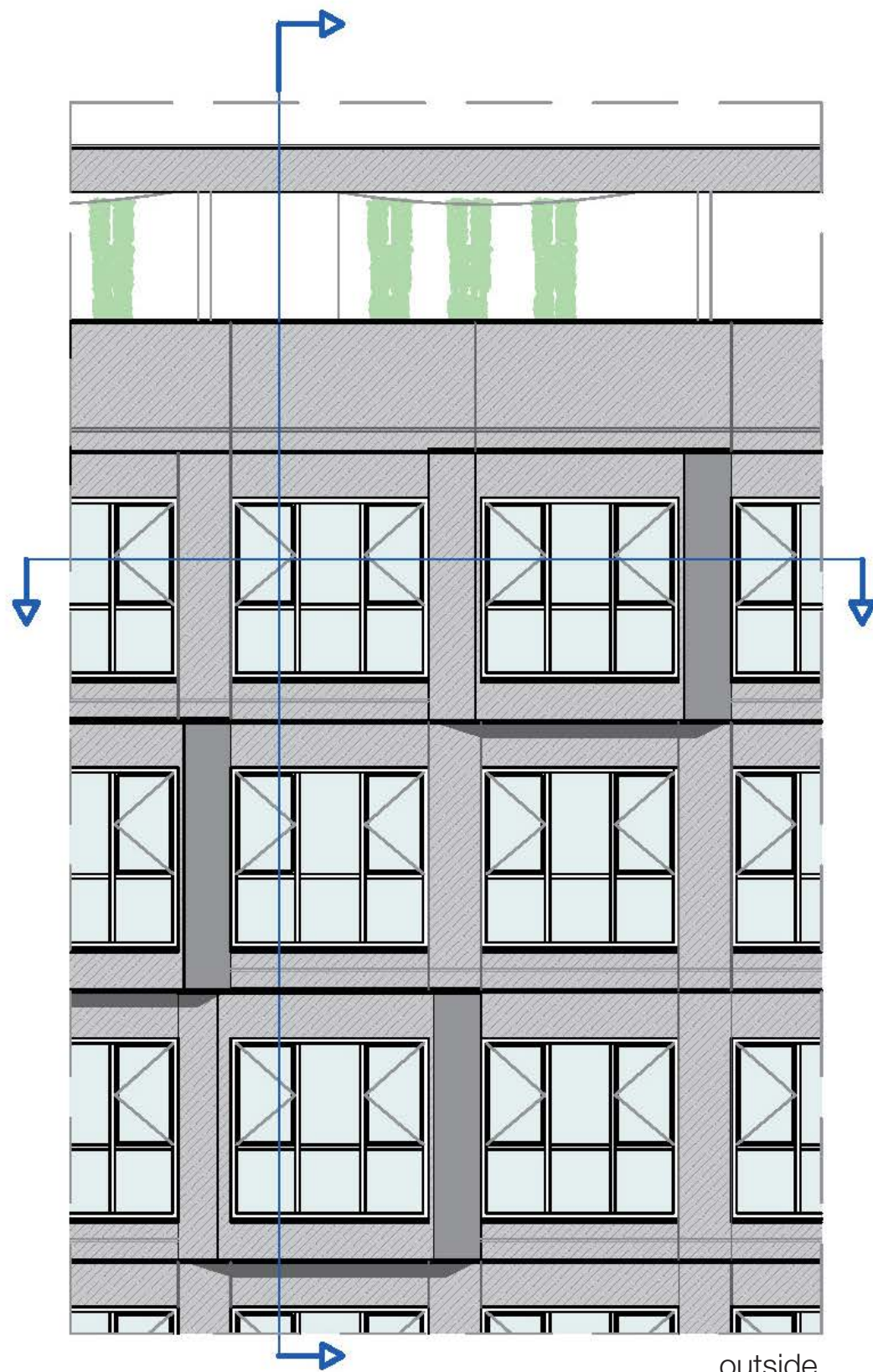


new extension

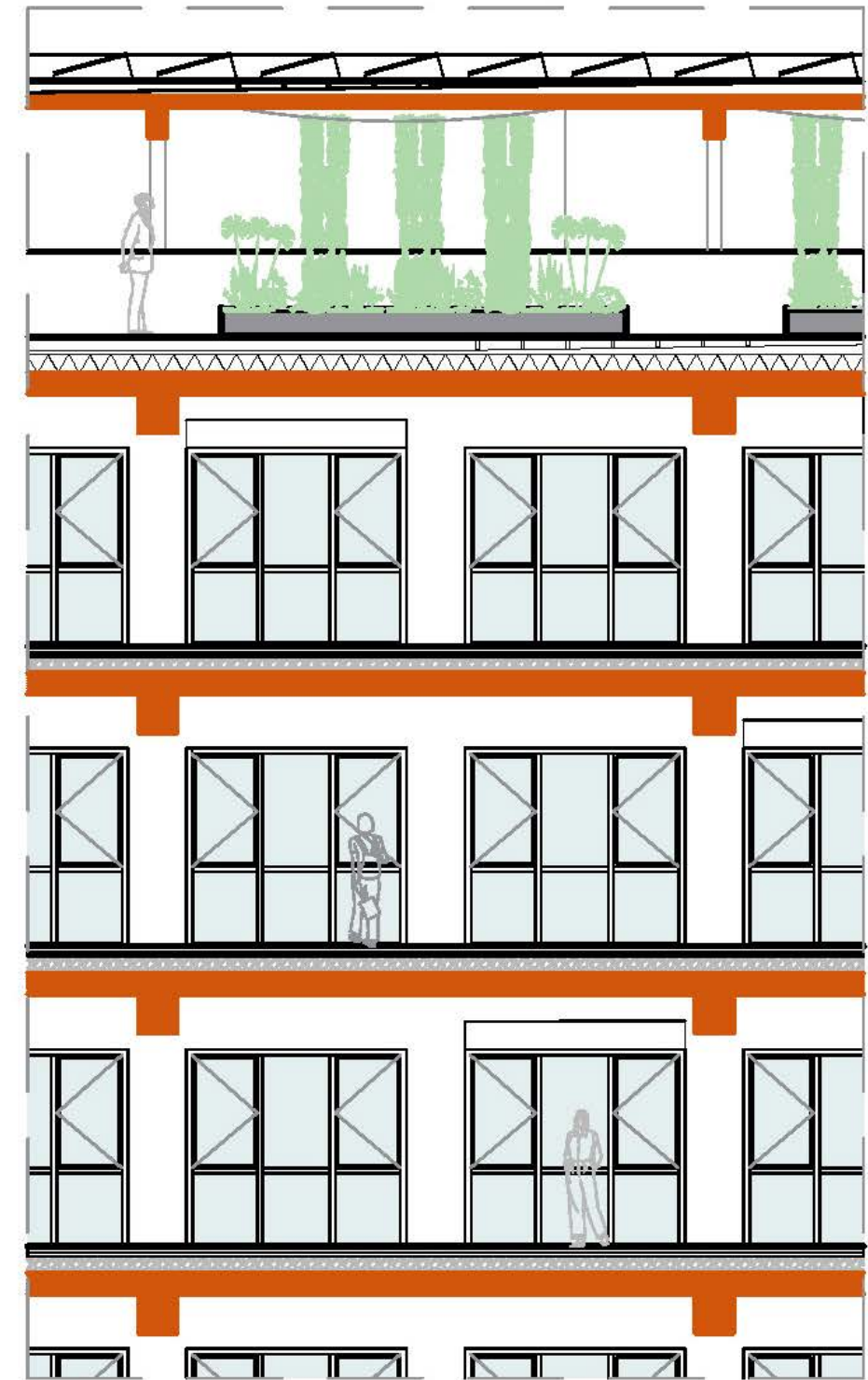
assembling of the modules
in section



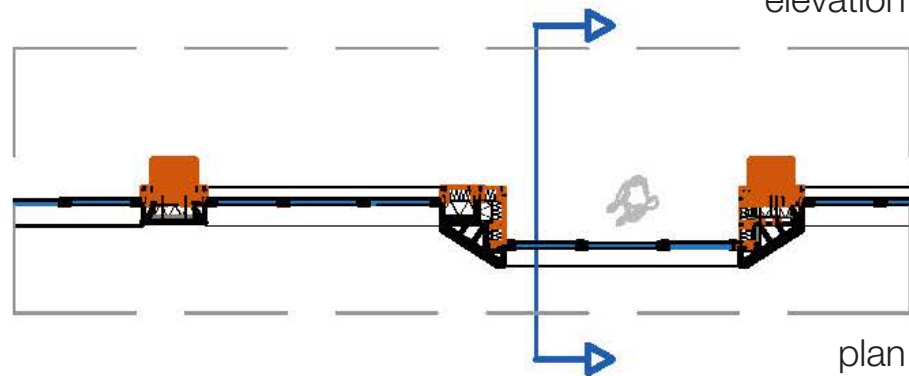
! **the limit :** replacing the whole facade module - was decided that the user will not change the “support”
allowance for change: cladding can be replaced



section

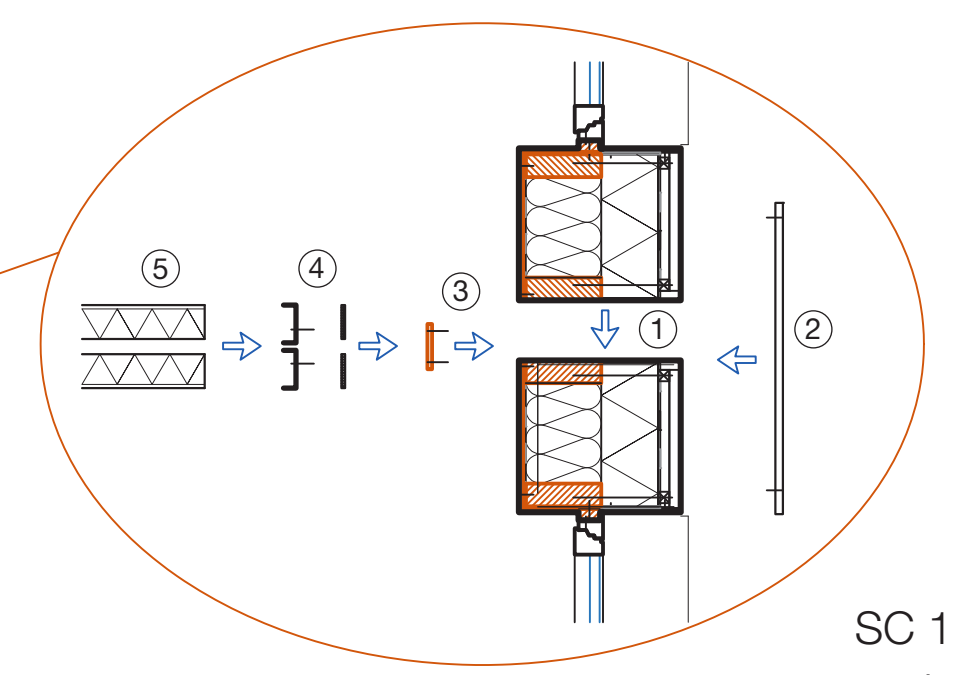
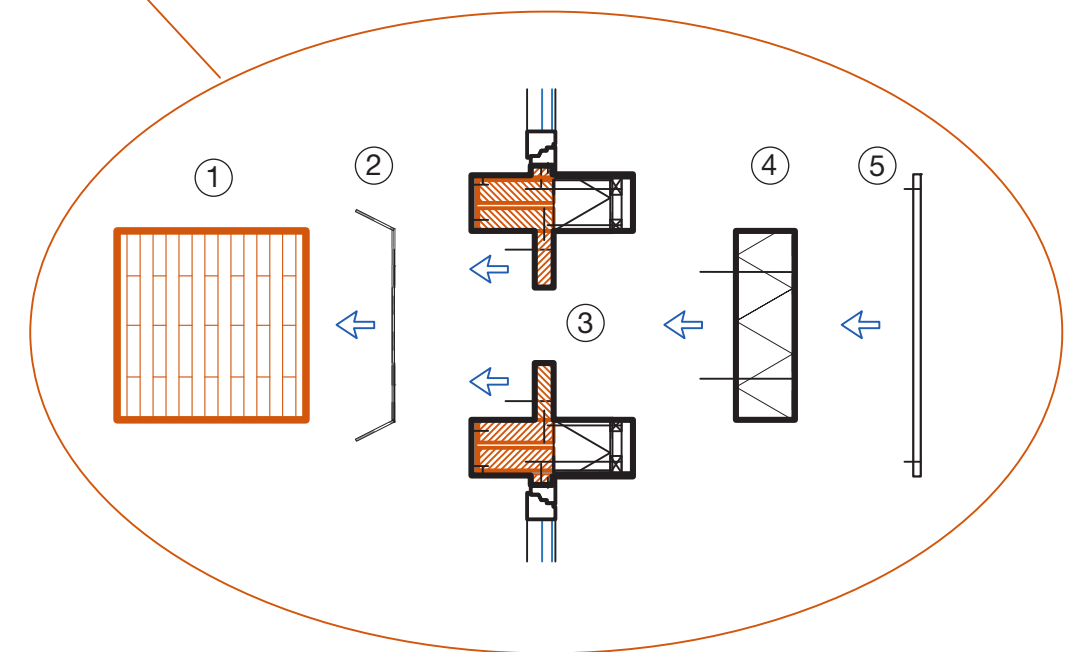
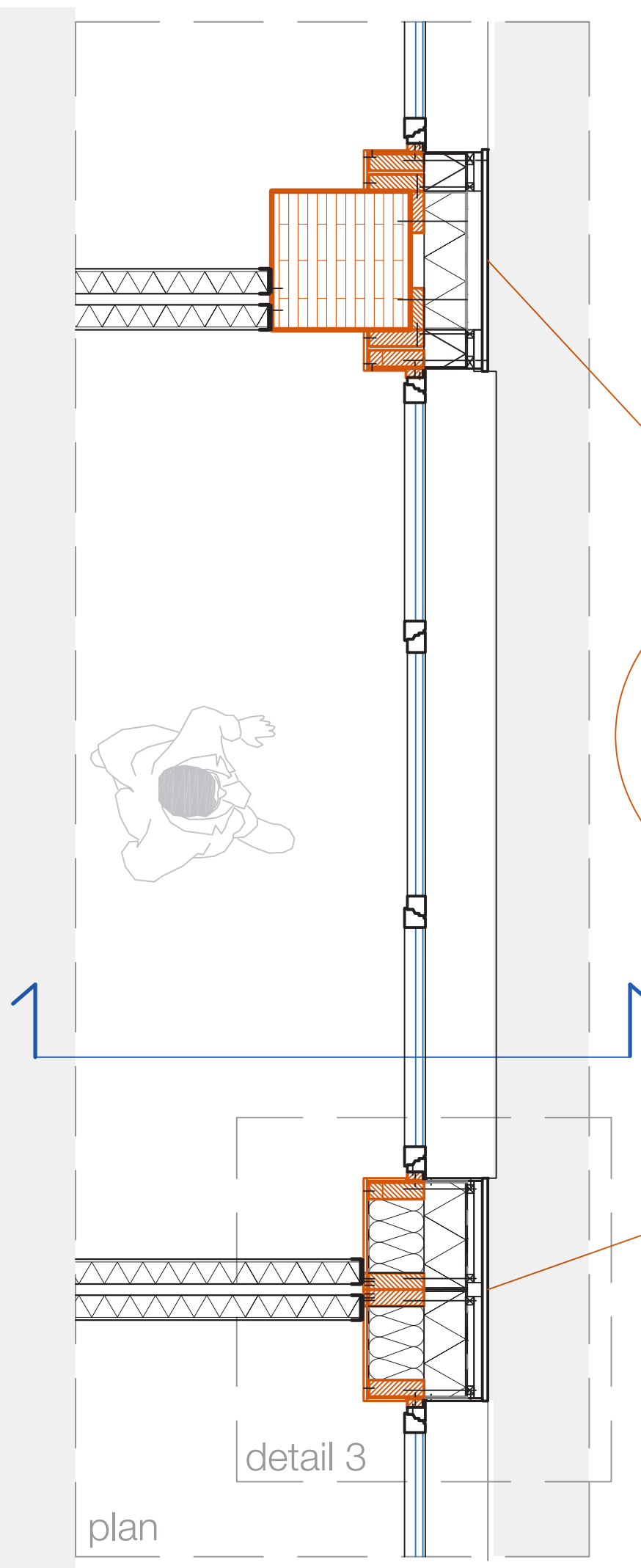
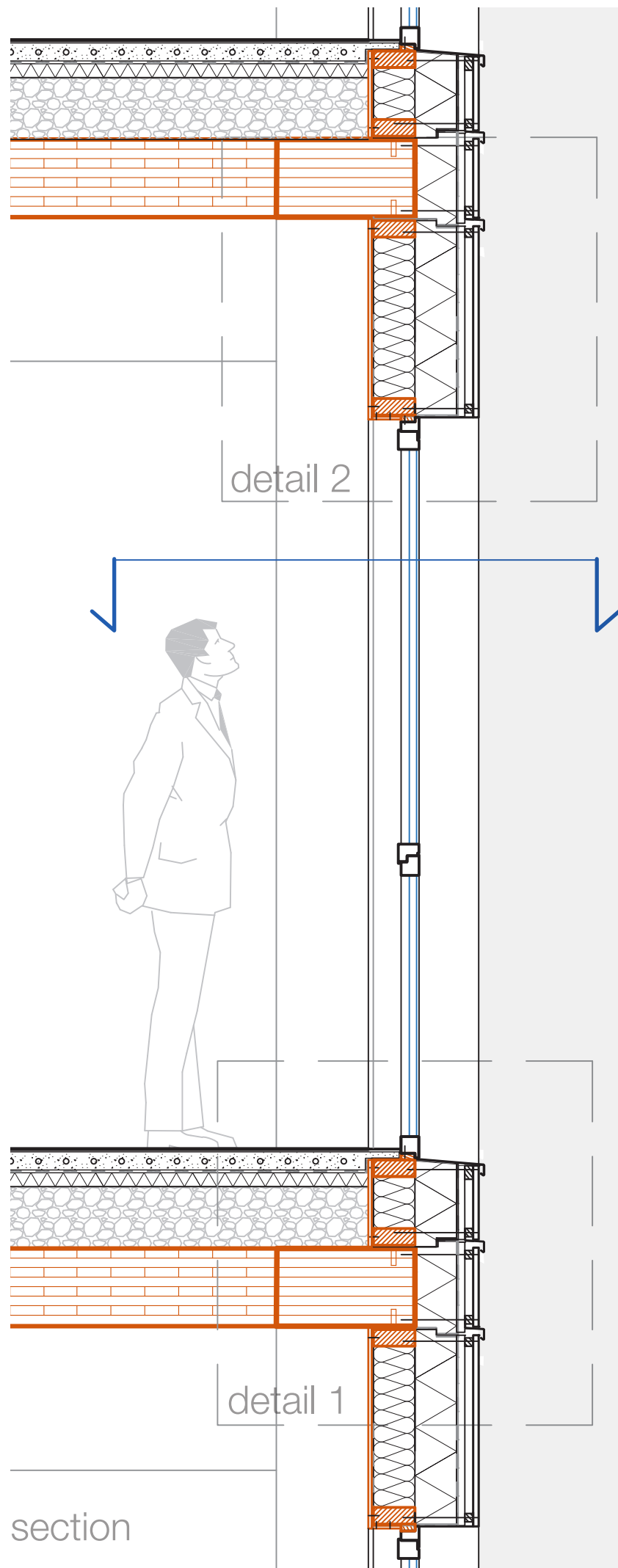


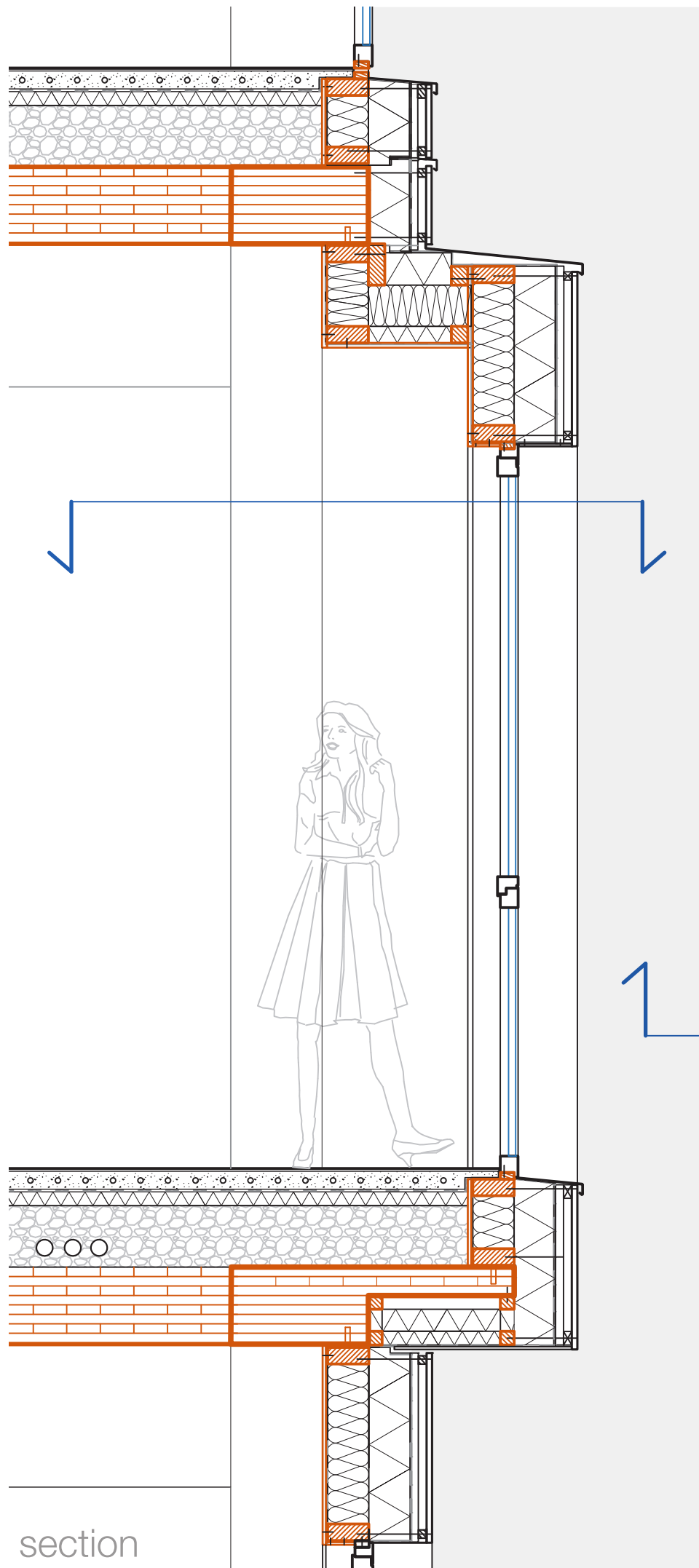
inside elevation



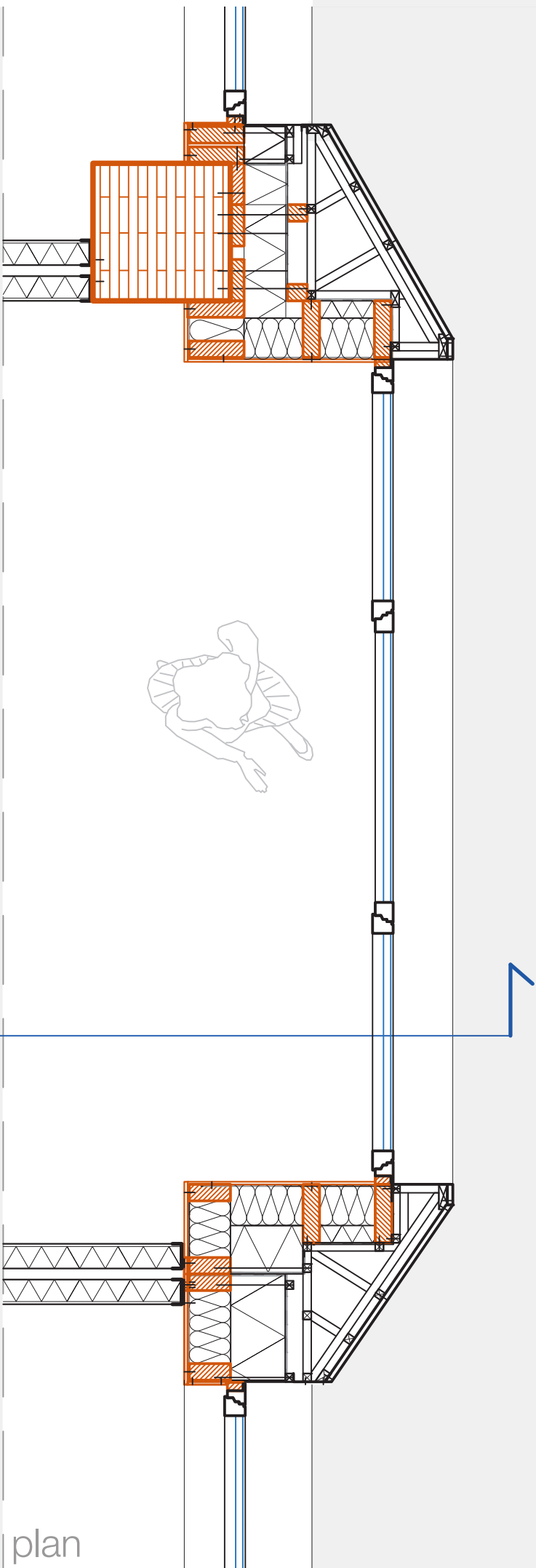
plan

“rock” facade
fragment 1

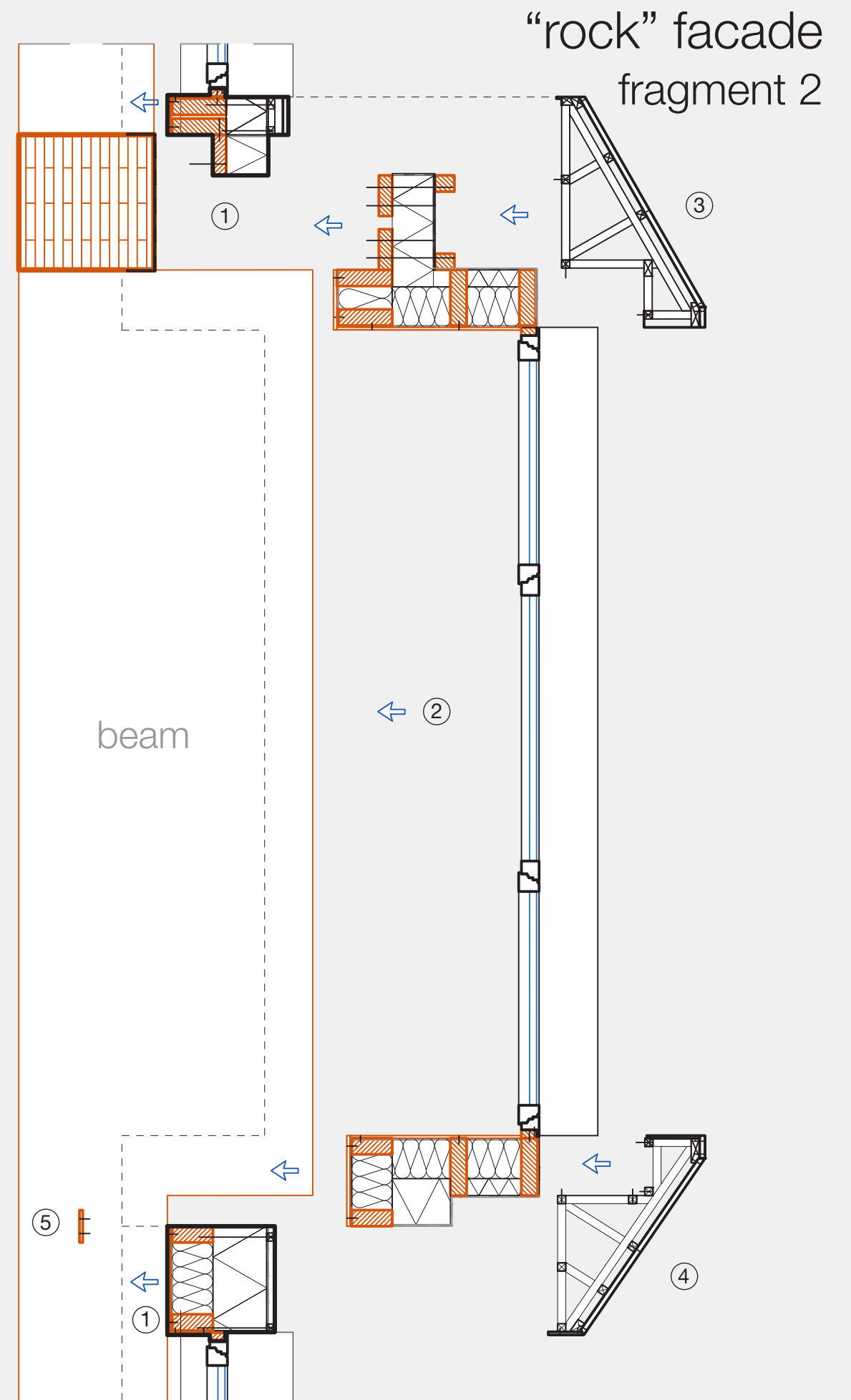




section

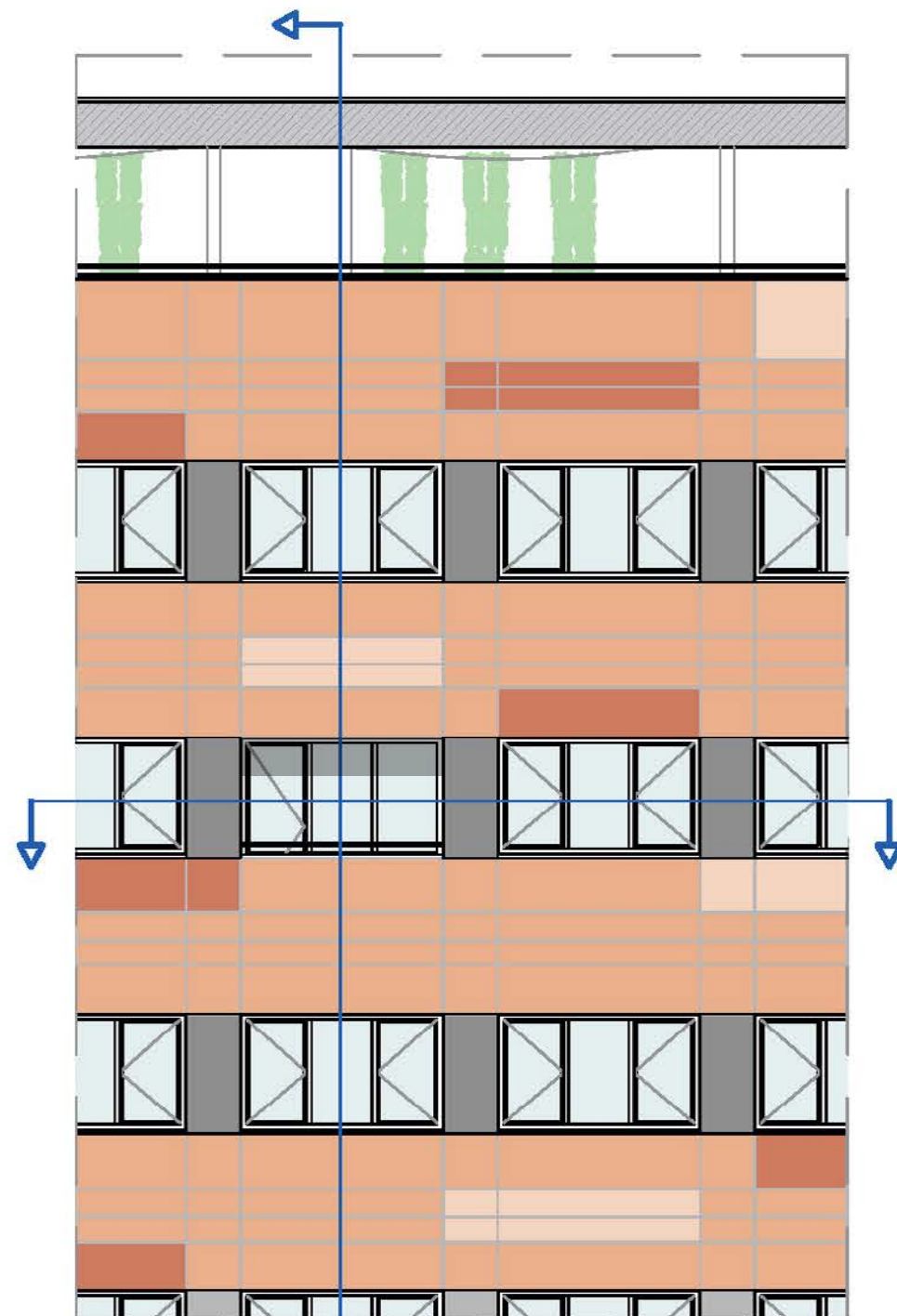


plan

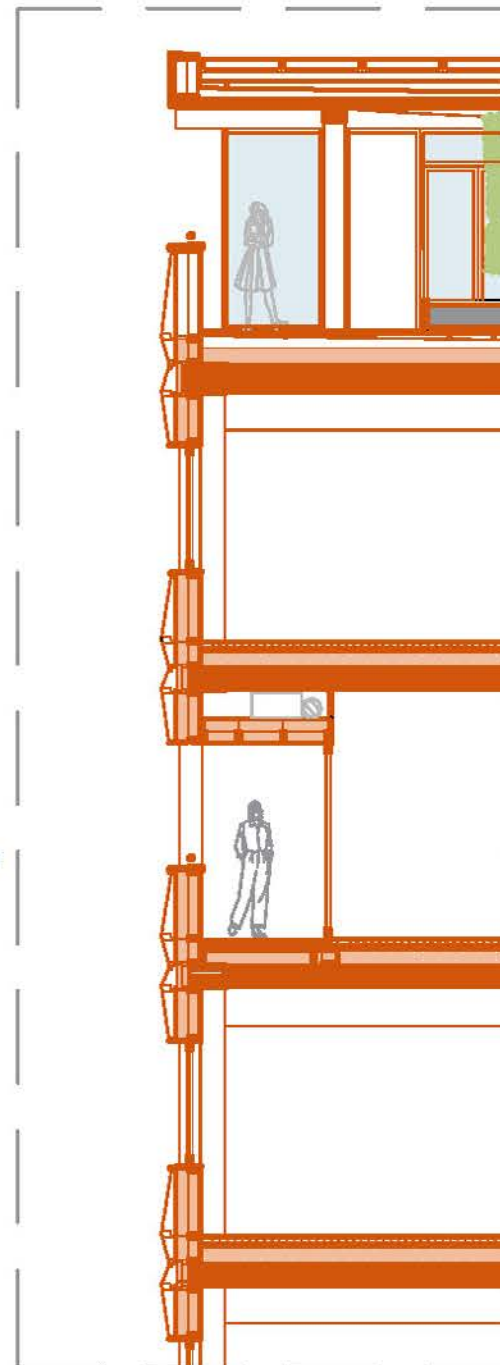


Fragment

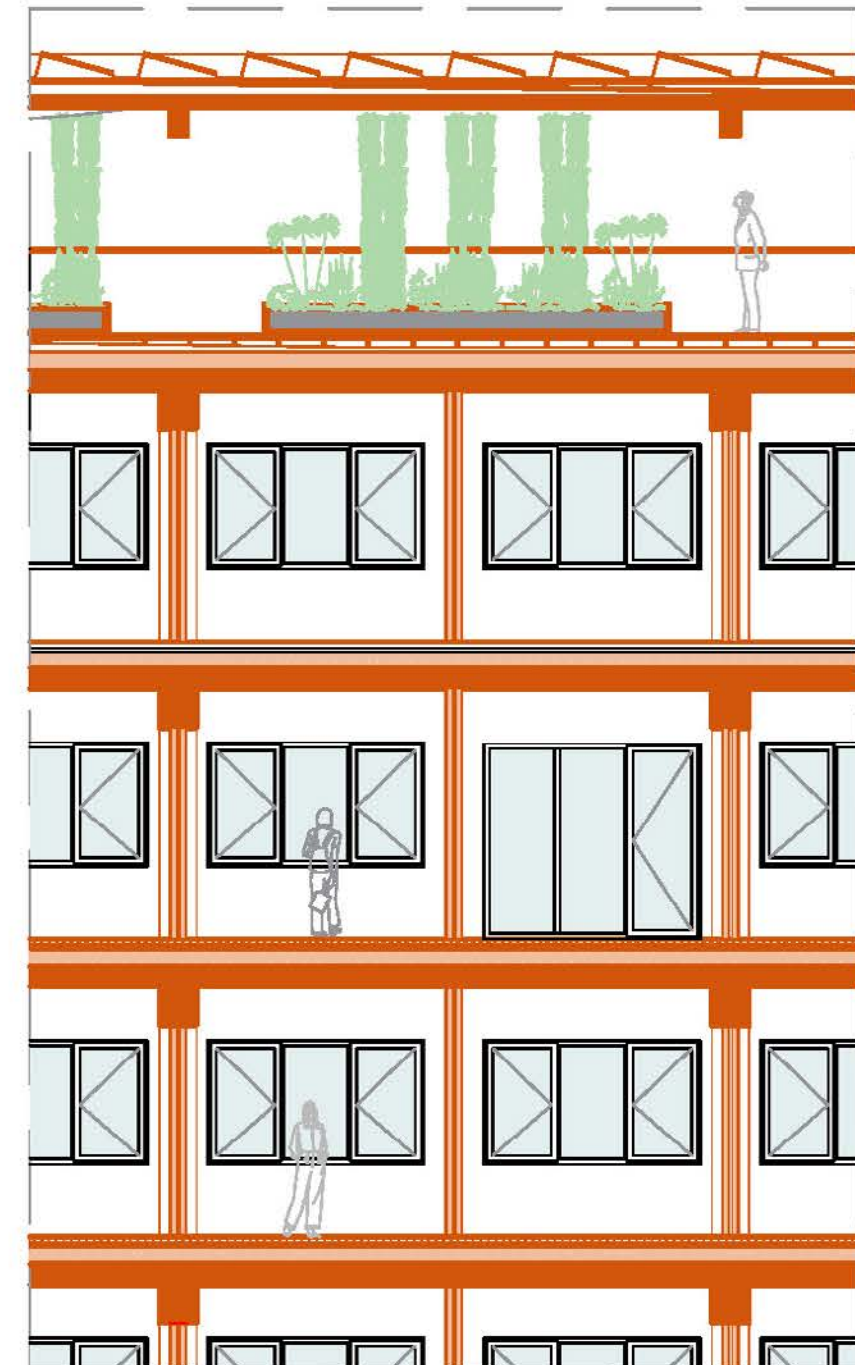
“extrovert” facade



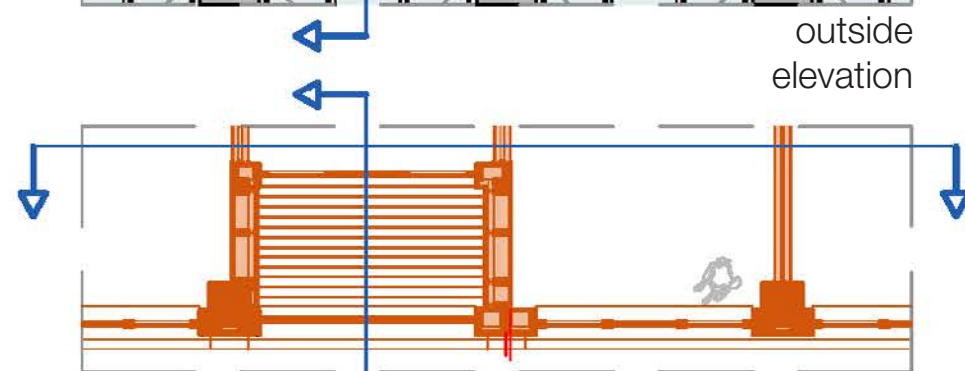
outside elevation



section



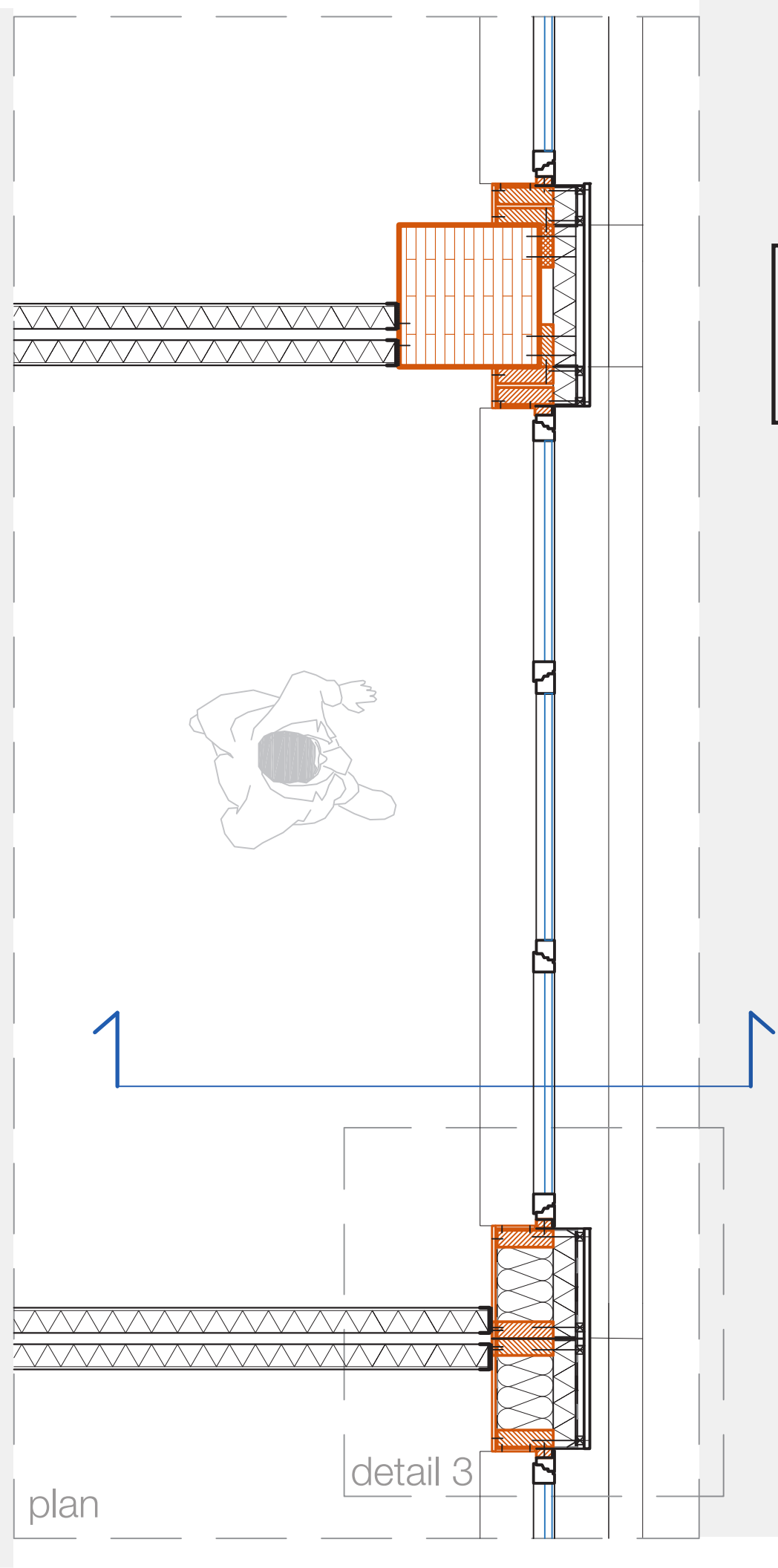
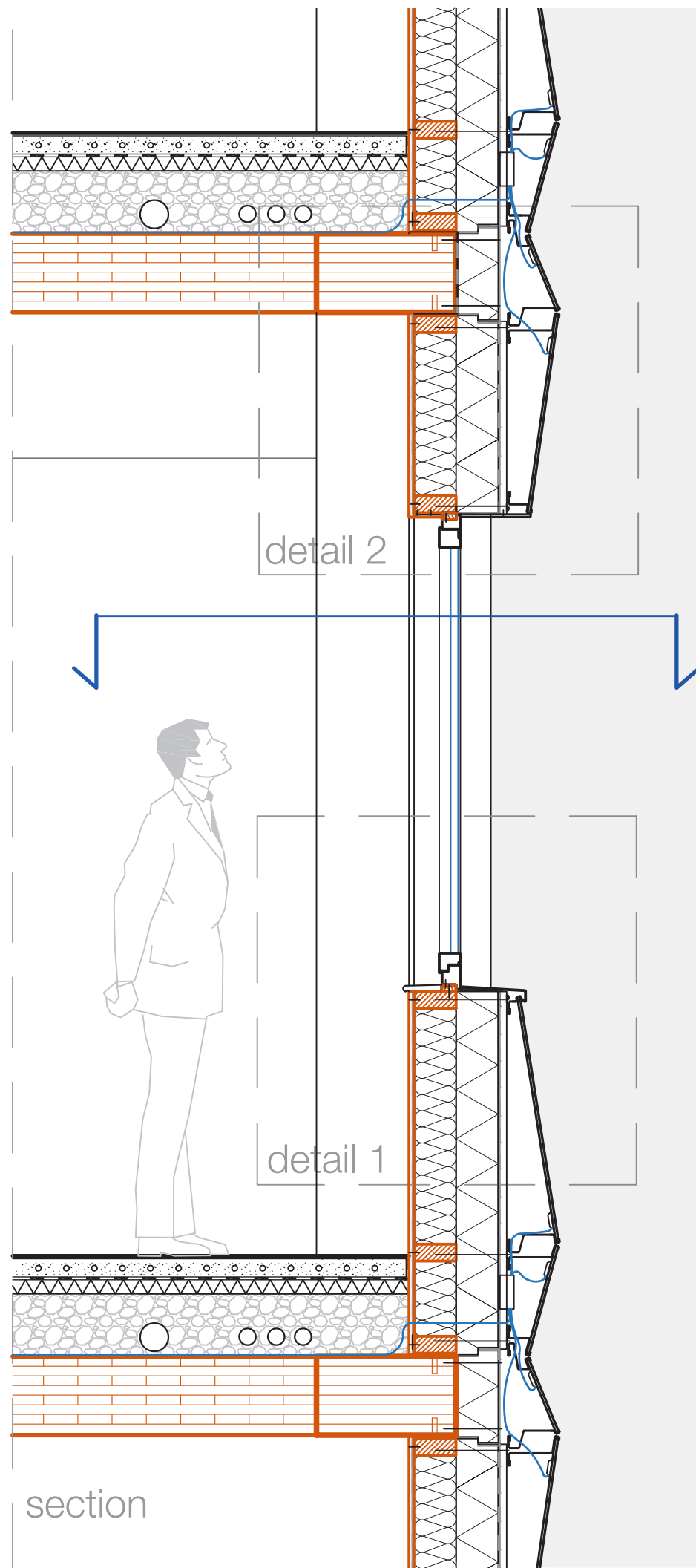
inside elevation



plan

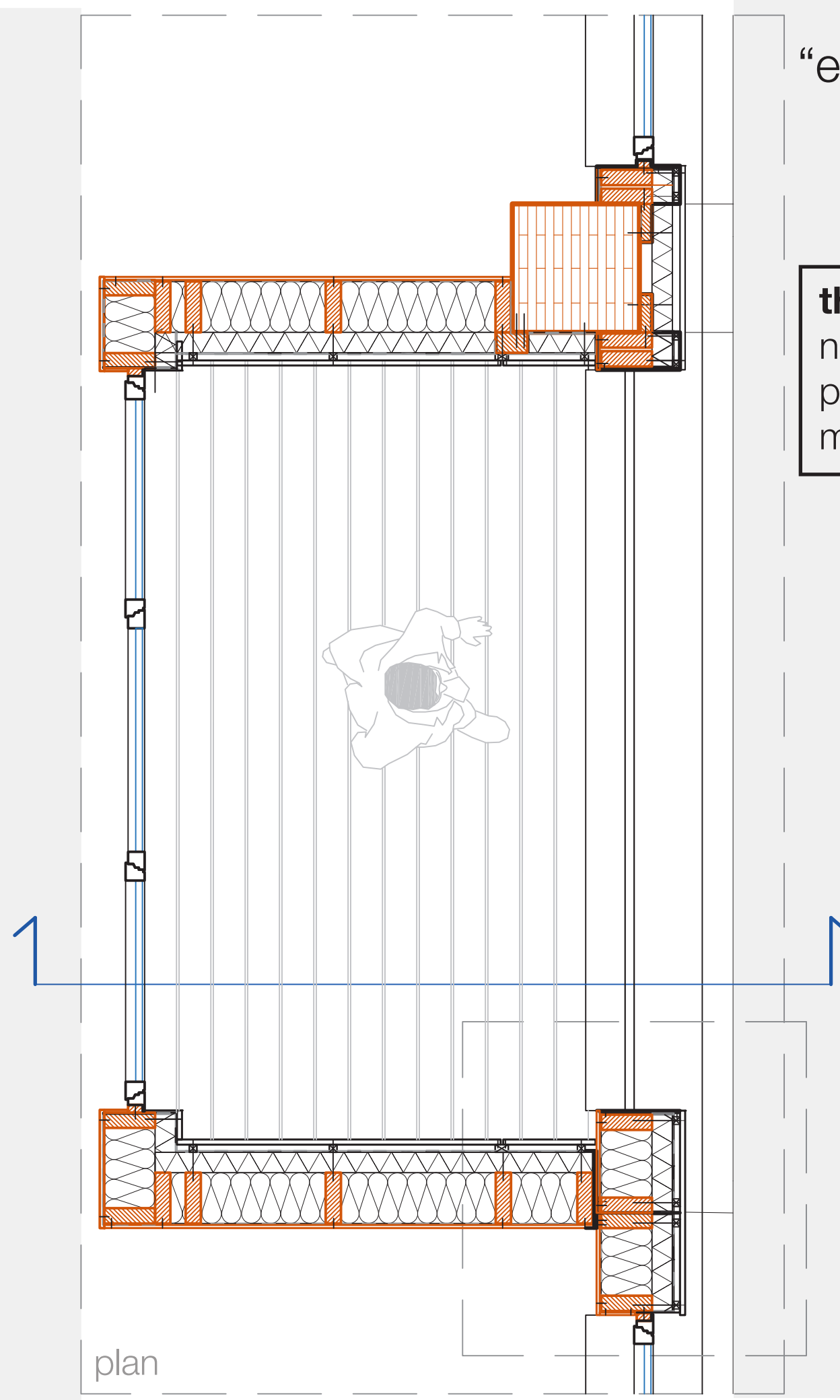
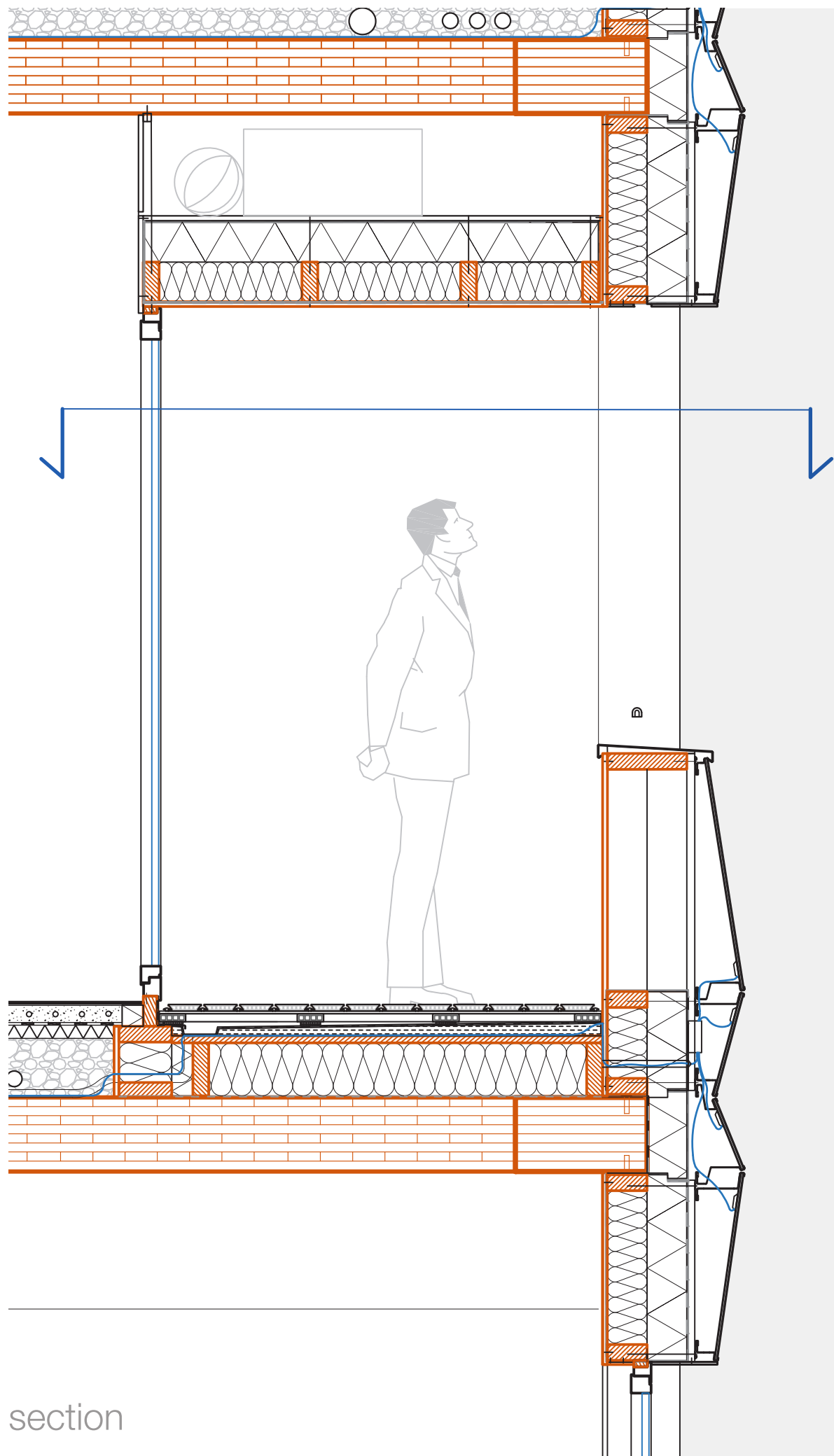
“extrovert” facade fragment 1

the limit : inside wall
position is dependent
on the facade modules



“extrovert” facade
fragment 2

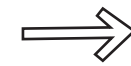
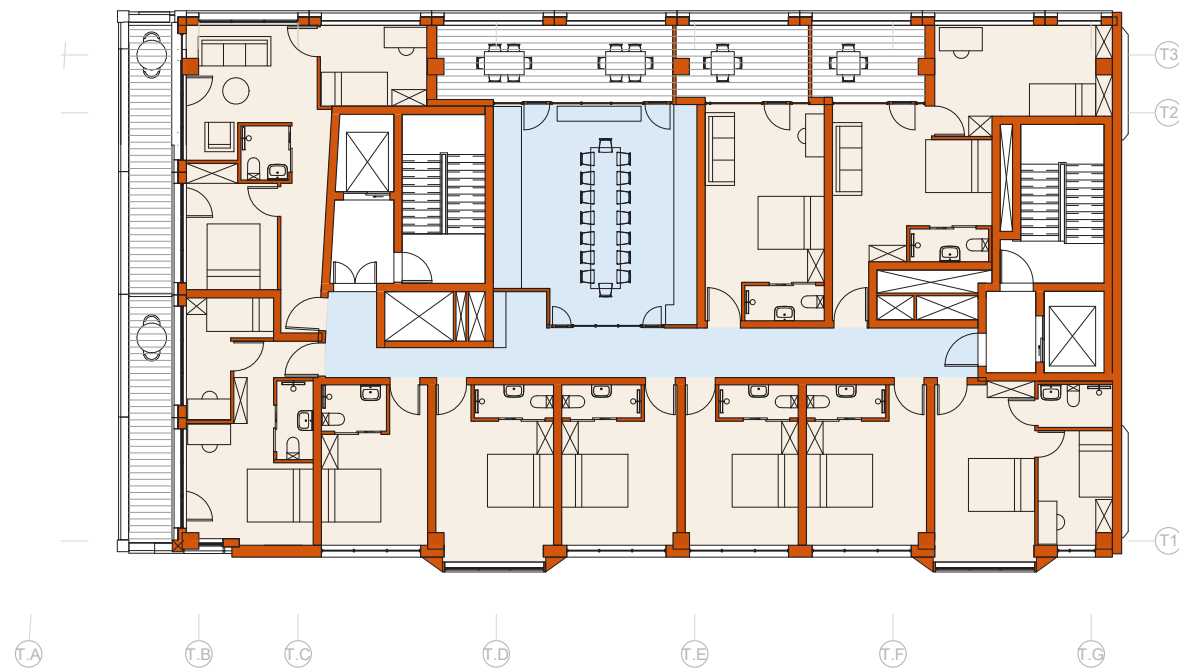
the limit : balcony
niche position is de-
pendent on the facade
modules



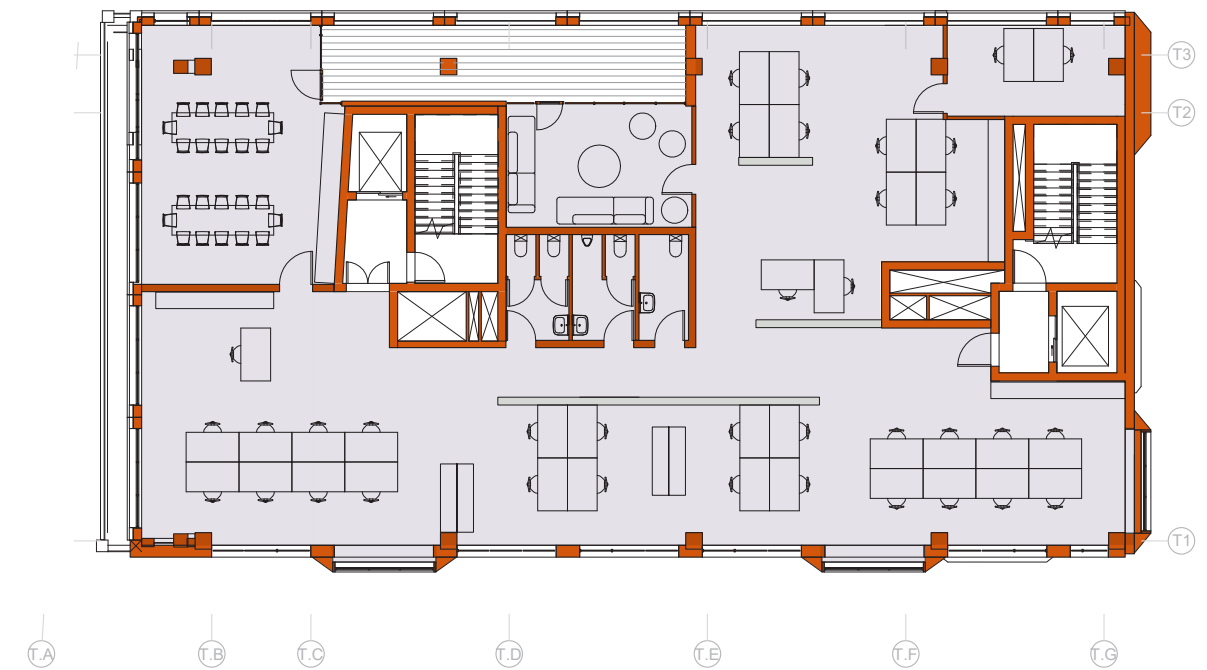
Flexibility -> How to change the function?

Changing the function of a storey residential to office

Co-living apartments

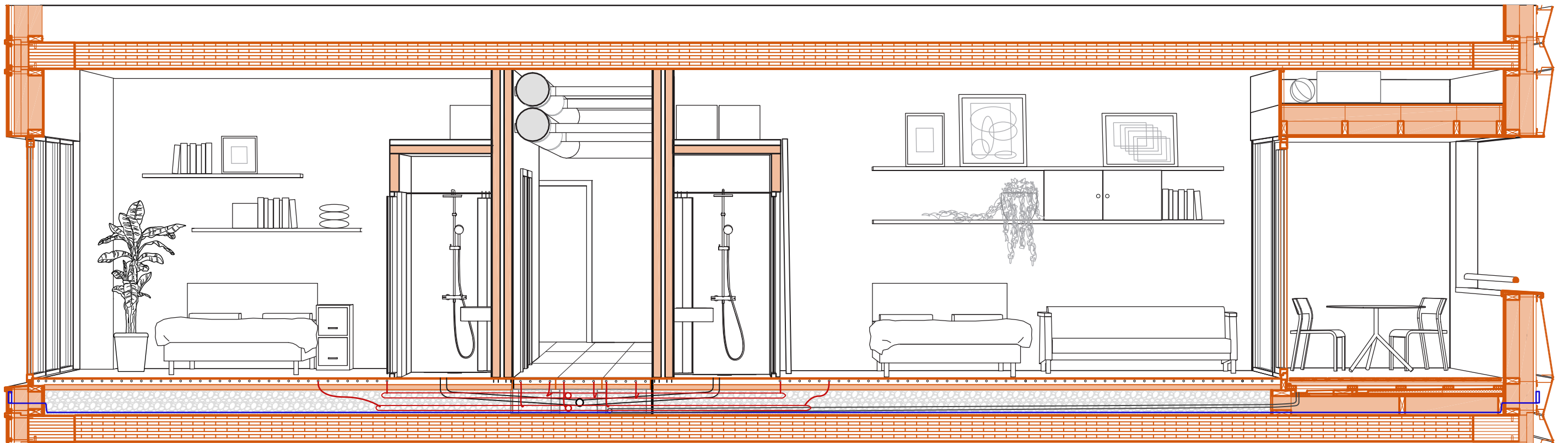
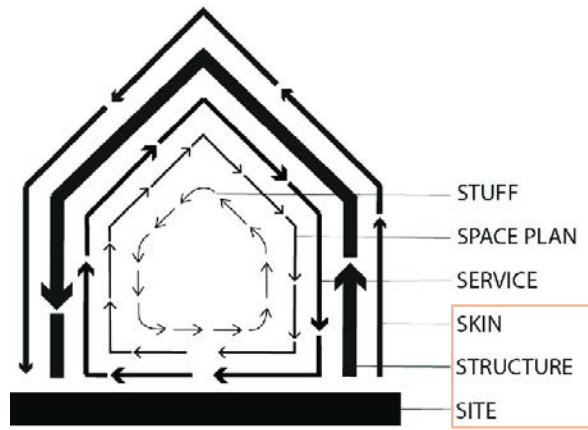


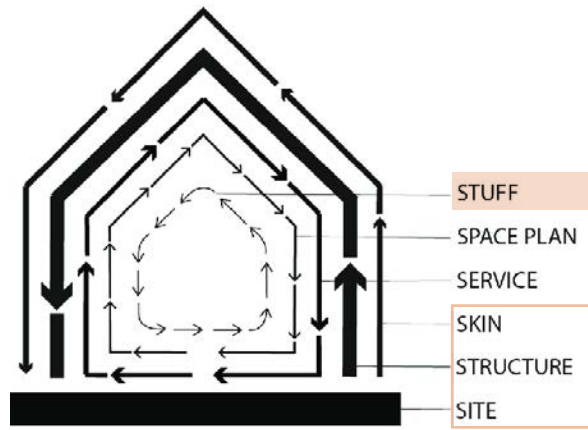
Office space



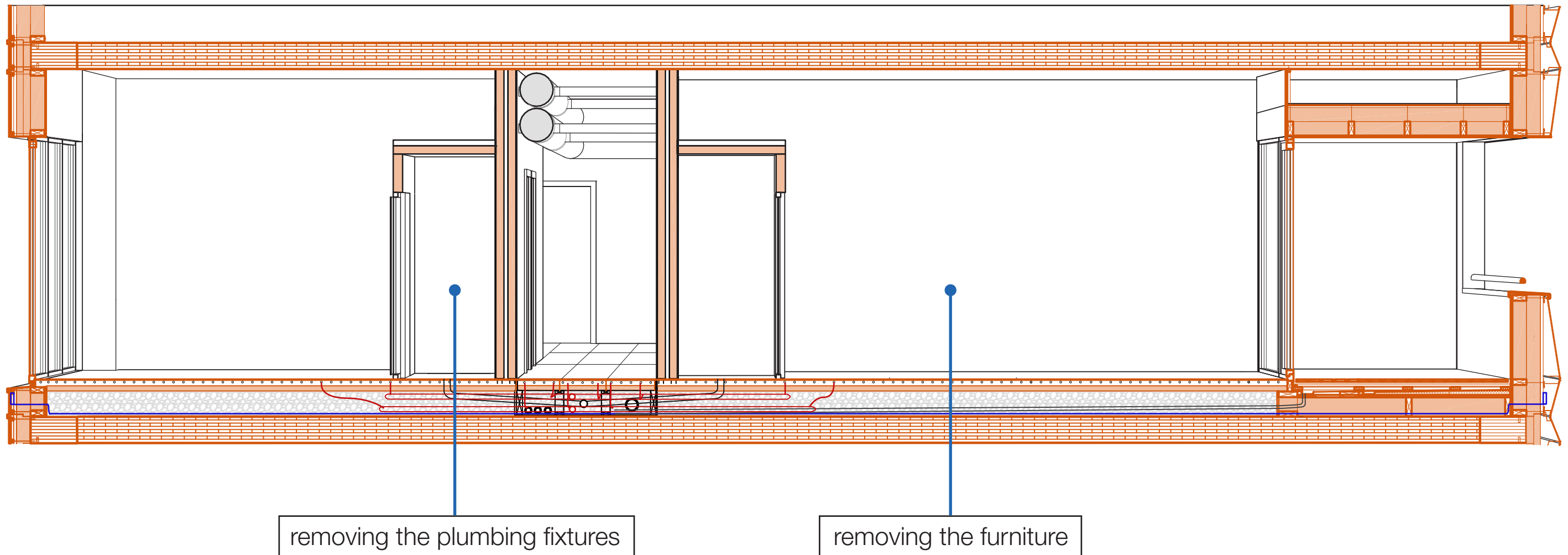
Changing the function of a storey

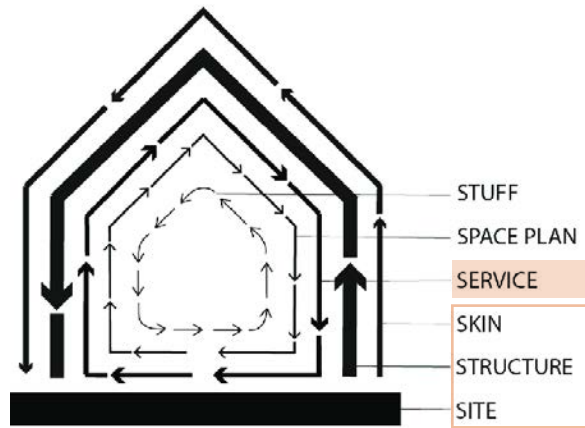
Co-living apartments



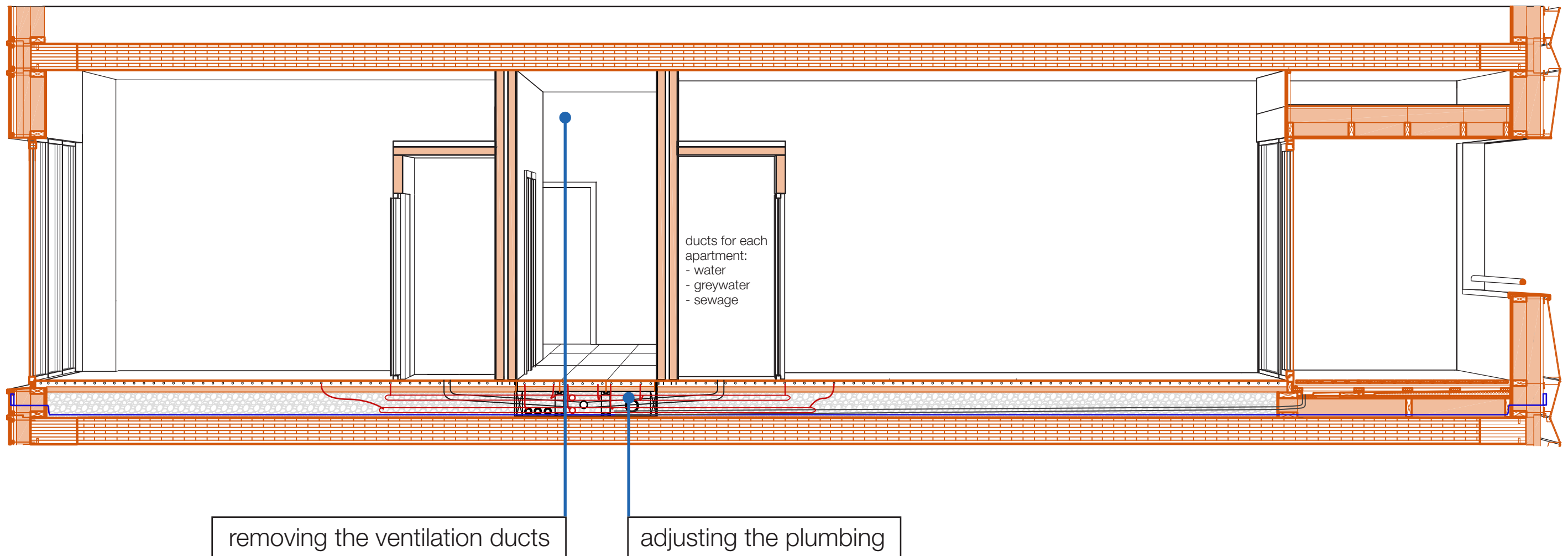


Step 1: removing the STUFF layer

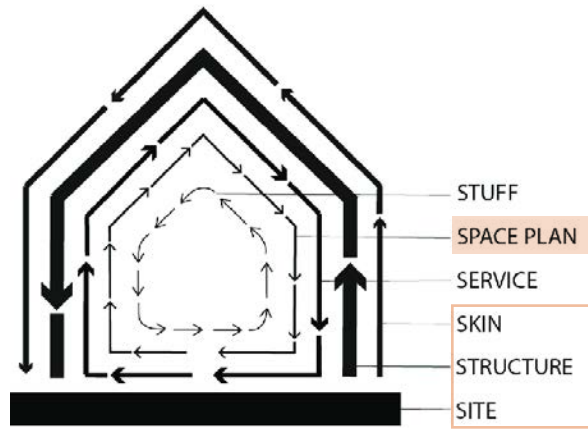




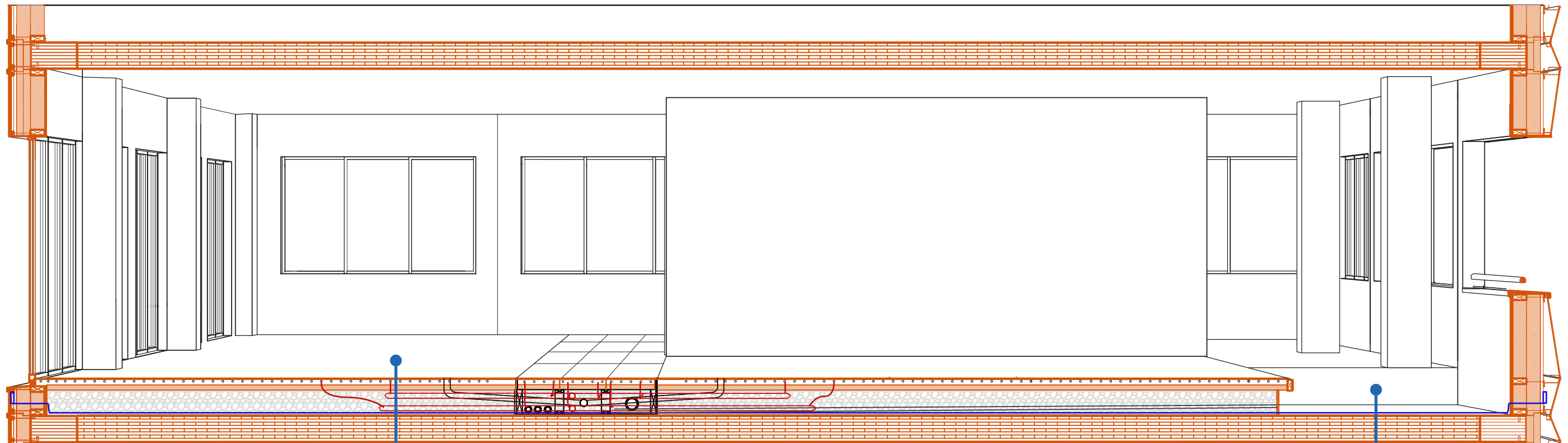
Step 2: removing the SERVICES layer



! the limit : the installations in the raised floor are difficult to dismantle, for drastic change of function can require partial re-flooring
allowance for change: the floor under the top layer is made for dry disassembly, ceiling installation are quite easily dismantled



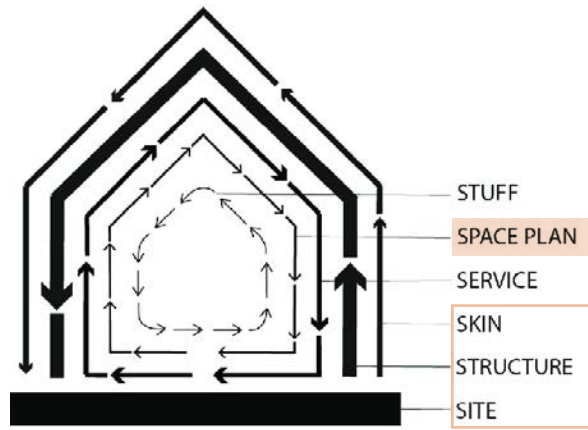
Step 3: removing the SPACE PLAN layer



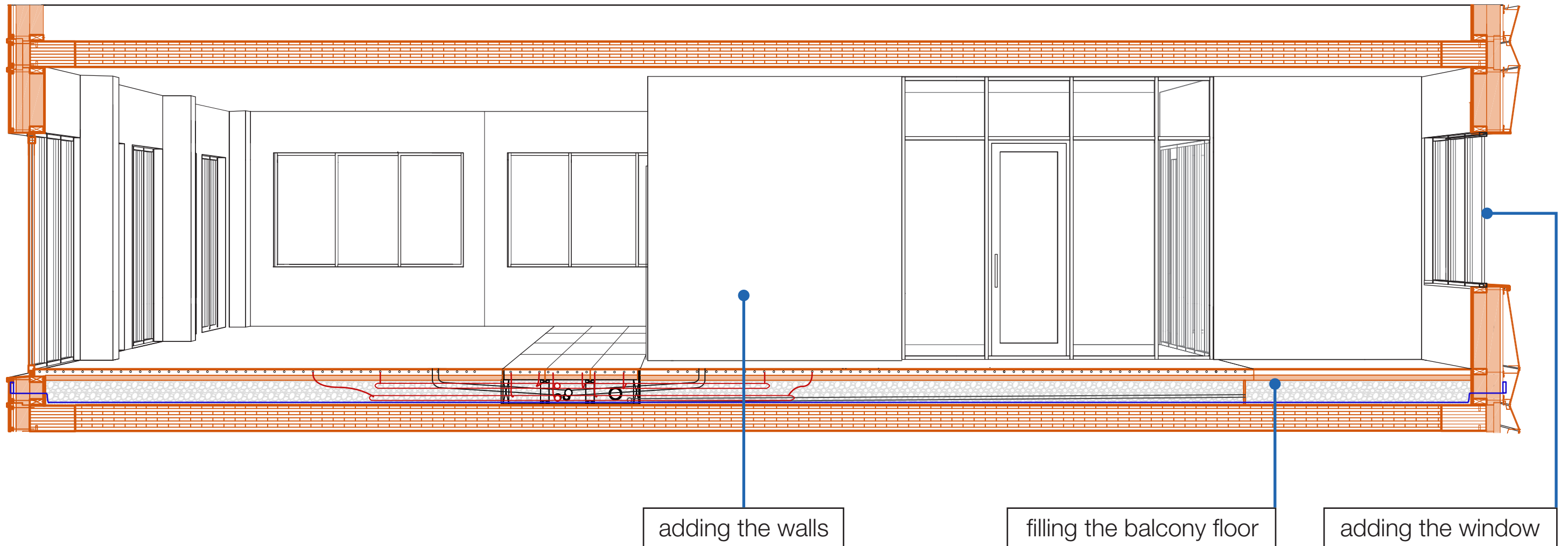
removing the walls

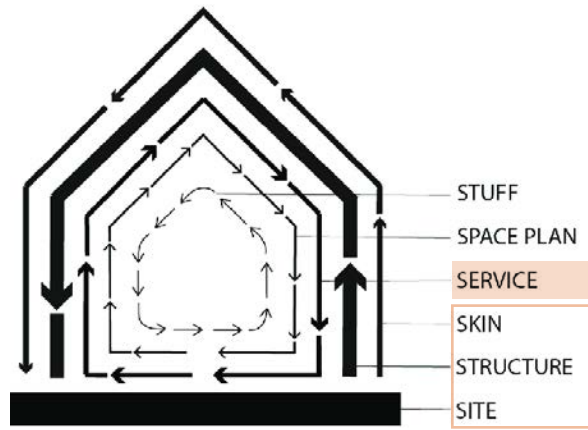
removing the balcony floor

unnecessary walls & other materials can be reused in other part of the building or in other project

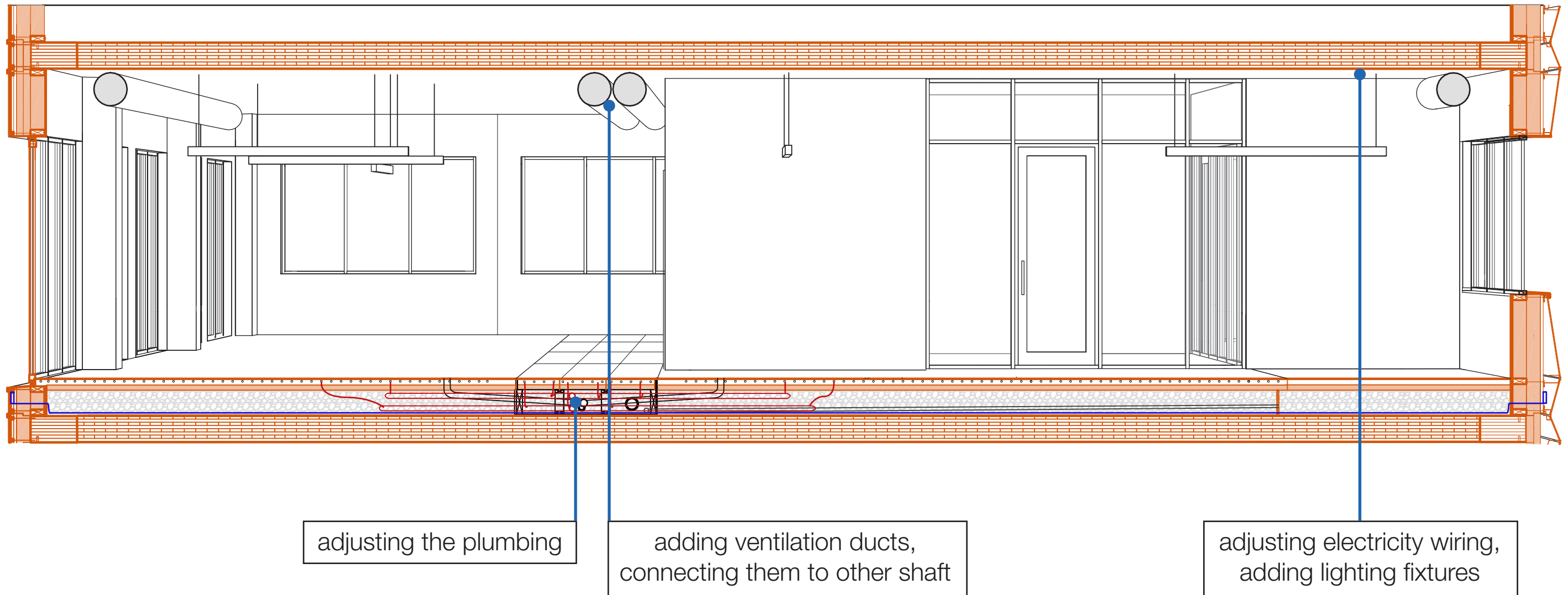


Step 4: adding the SPACE PLAN layer





Step 5: adding the SERVICE layer

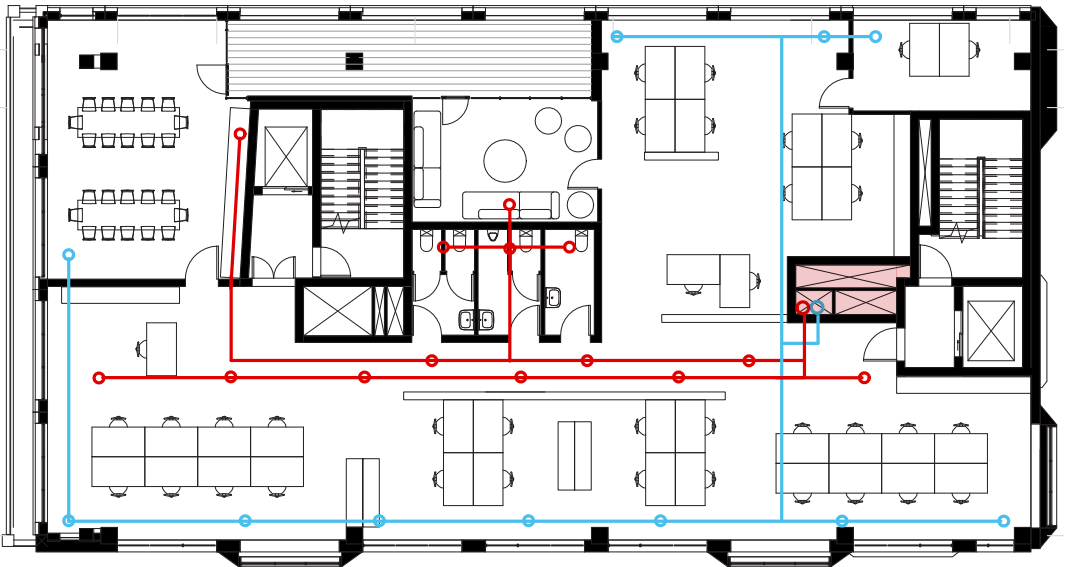
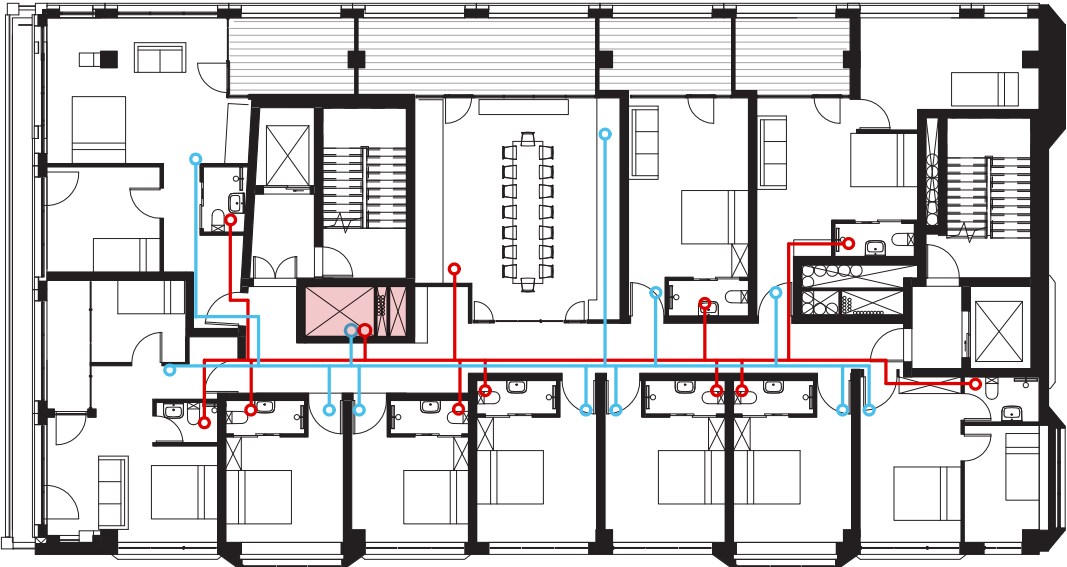


SERVICE layer

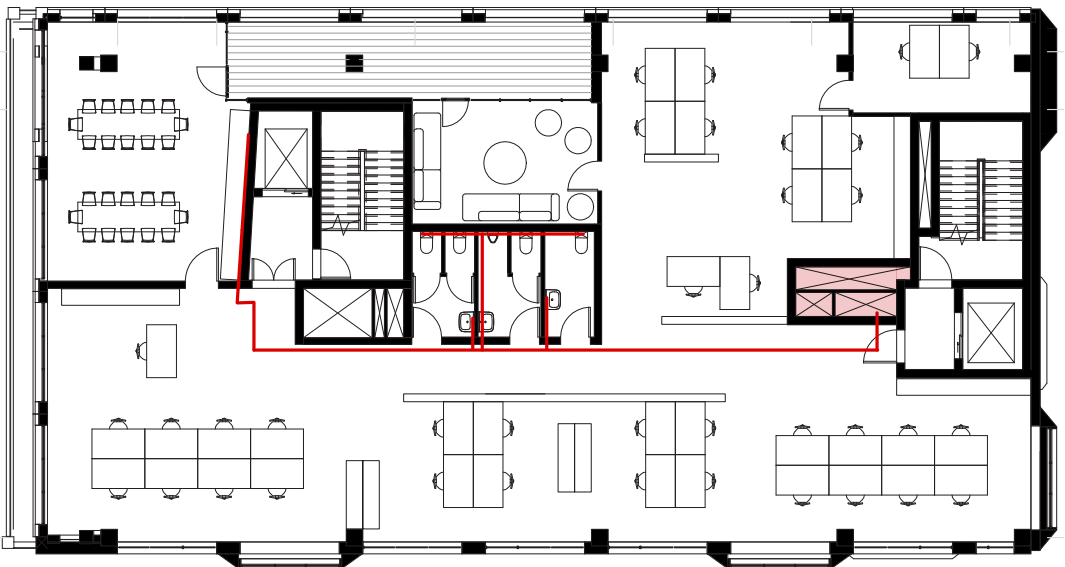
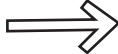
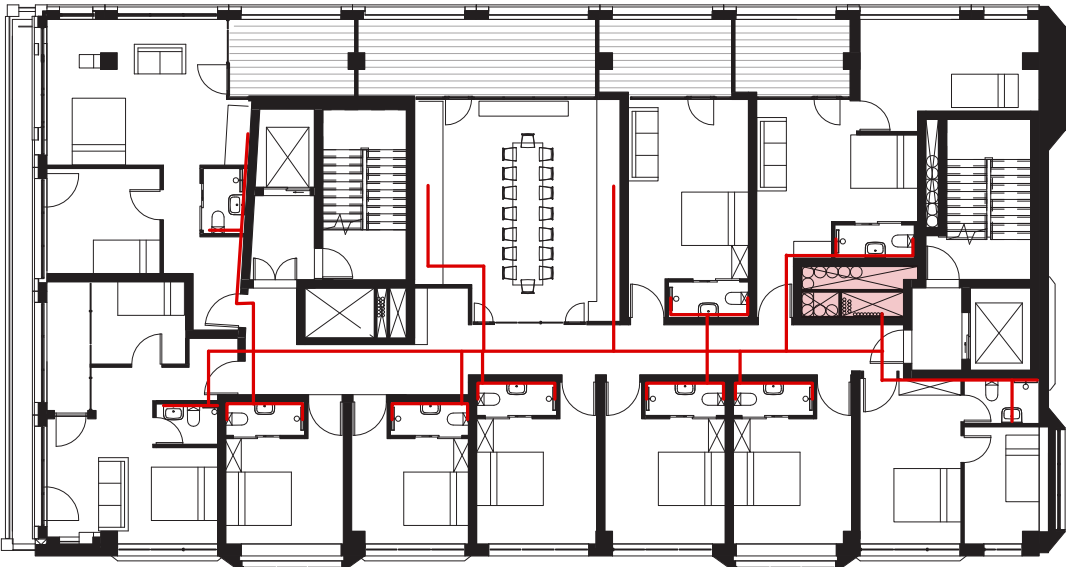
Co-living apartments

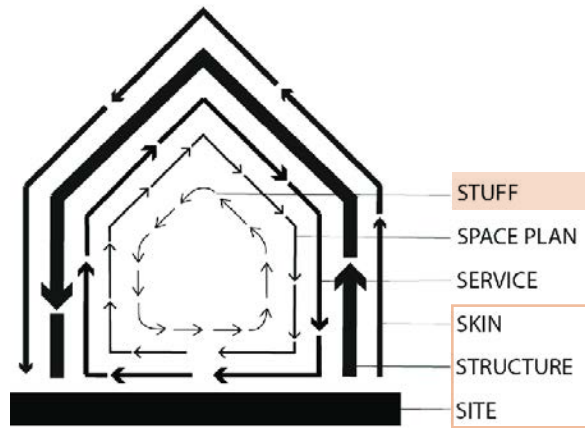
Office space

Ventilation

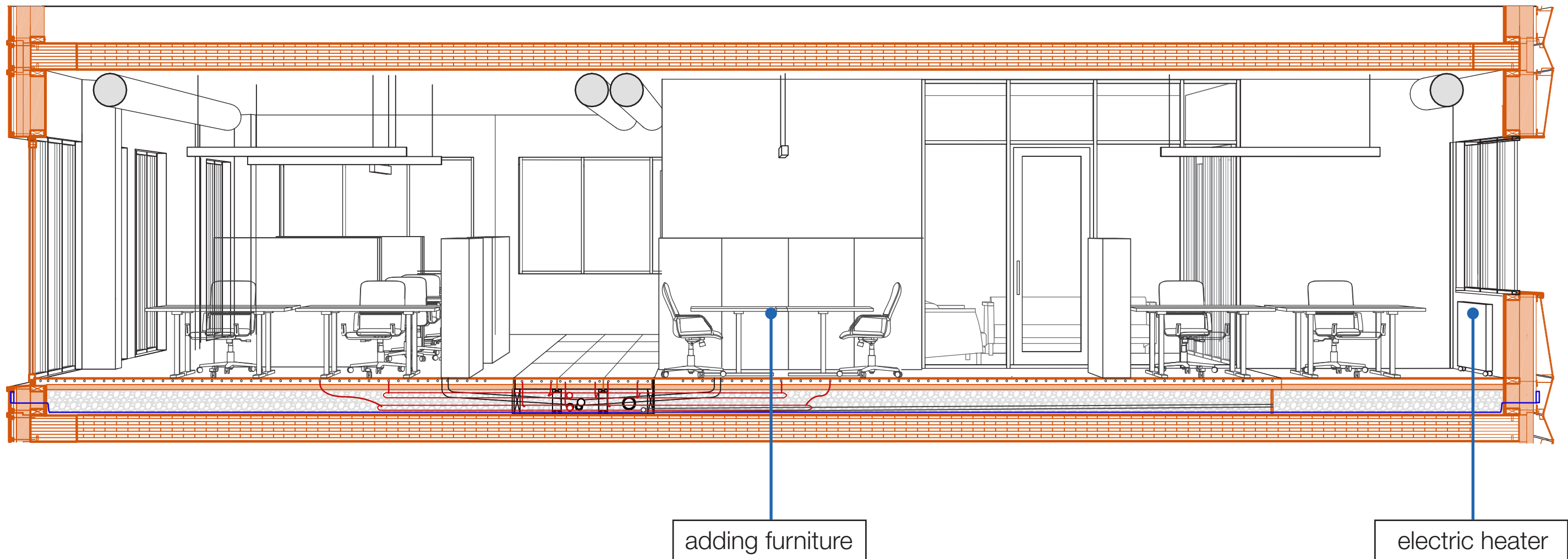


Plumbing ducts



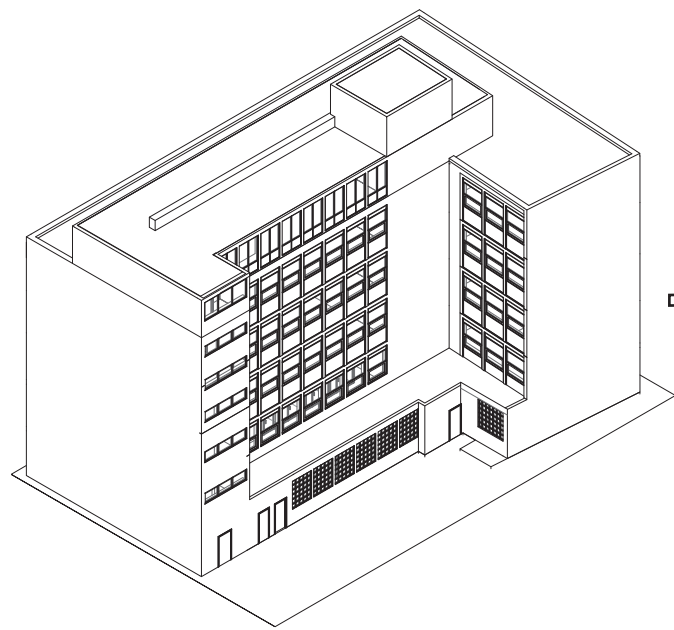


Step 6: adding the STUFF layer

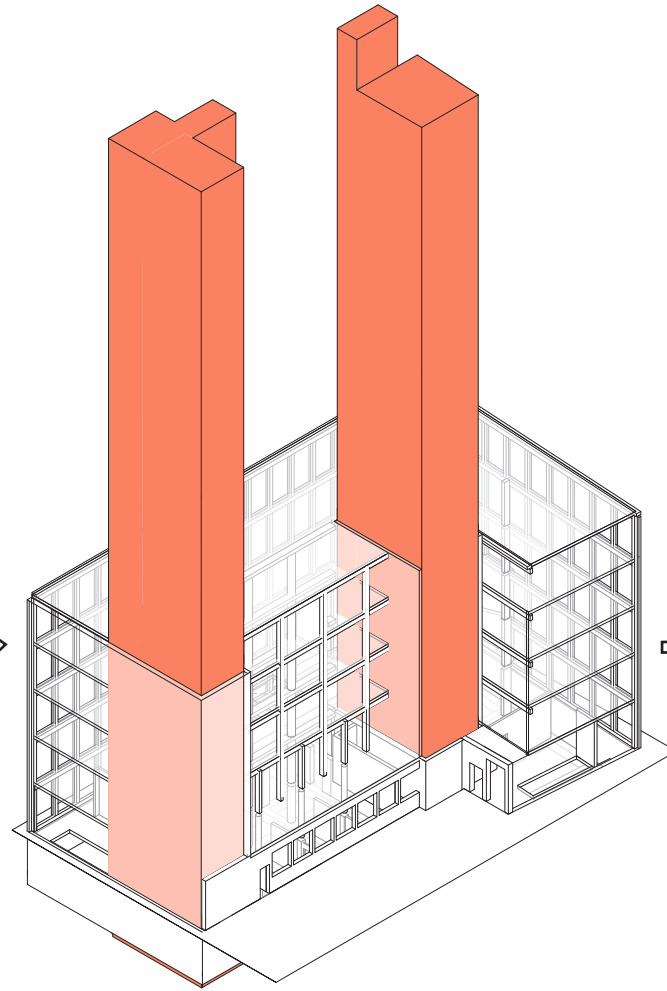
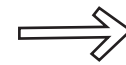


! **the limit :** electric heater might be needed in the former balcony place to avoid condensation on the windows
allowance for change: the floor can be re-done in that area to implement the floor heating

Technical scale

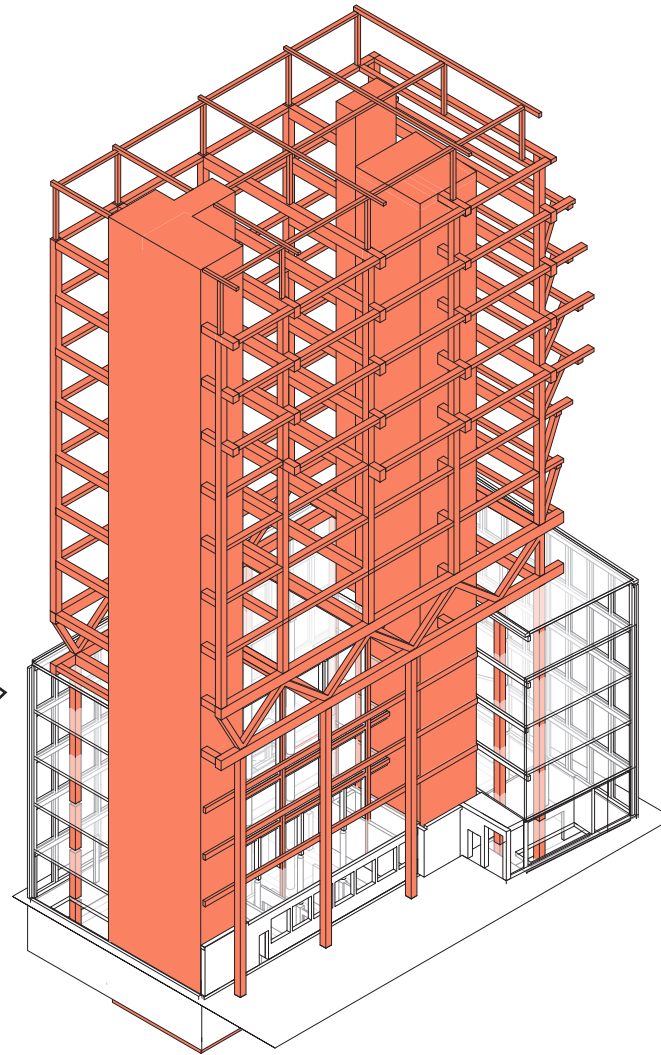
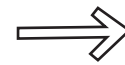


existing building



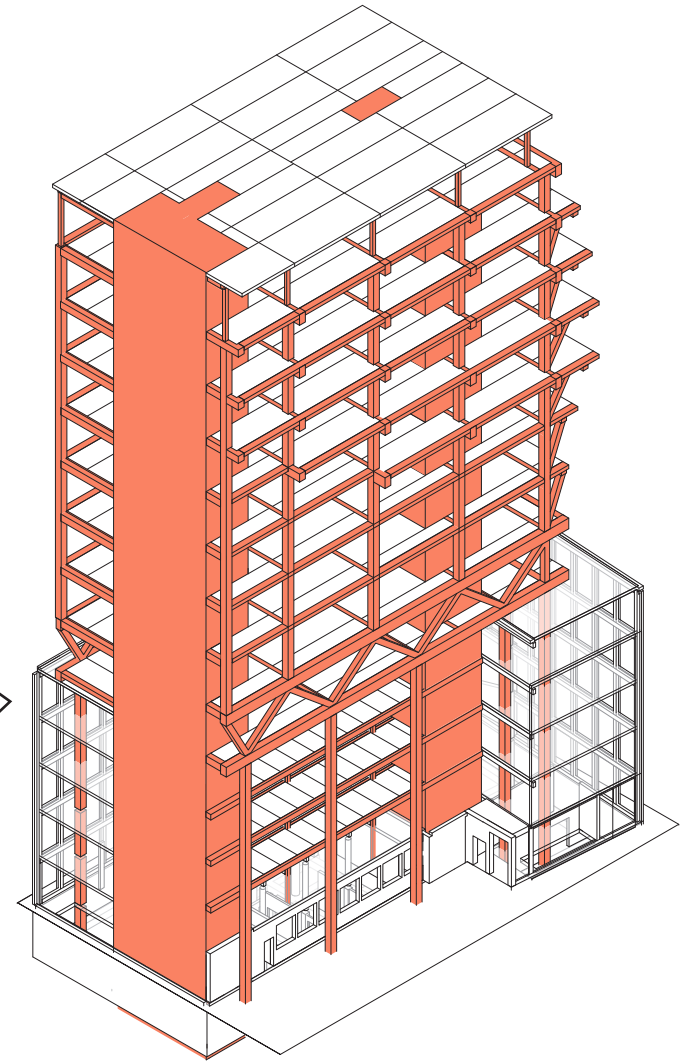
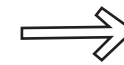
new cores introduced inside the existing ones

the limit : the new cores cannot exceed the existing cores' boundaries as they carry the loads



new post & beam structure

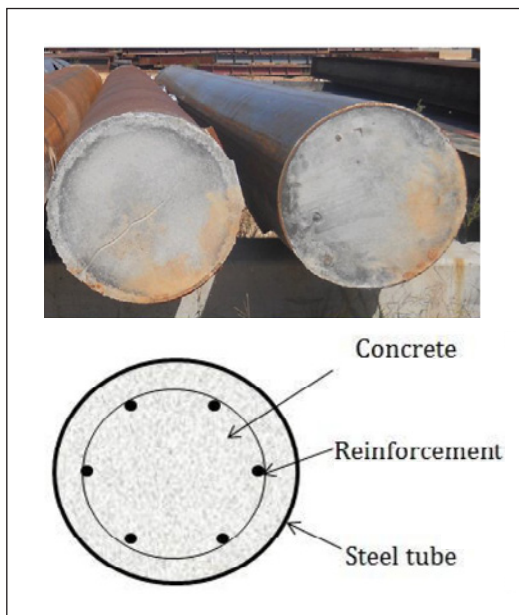
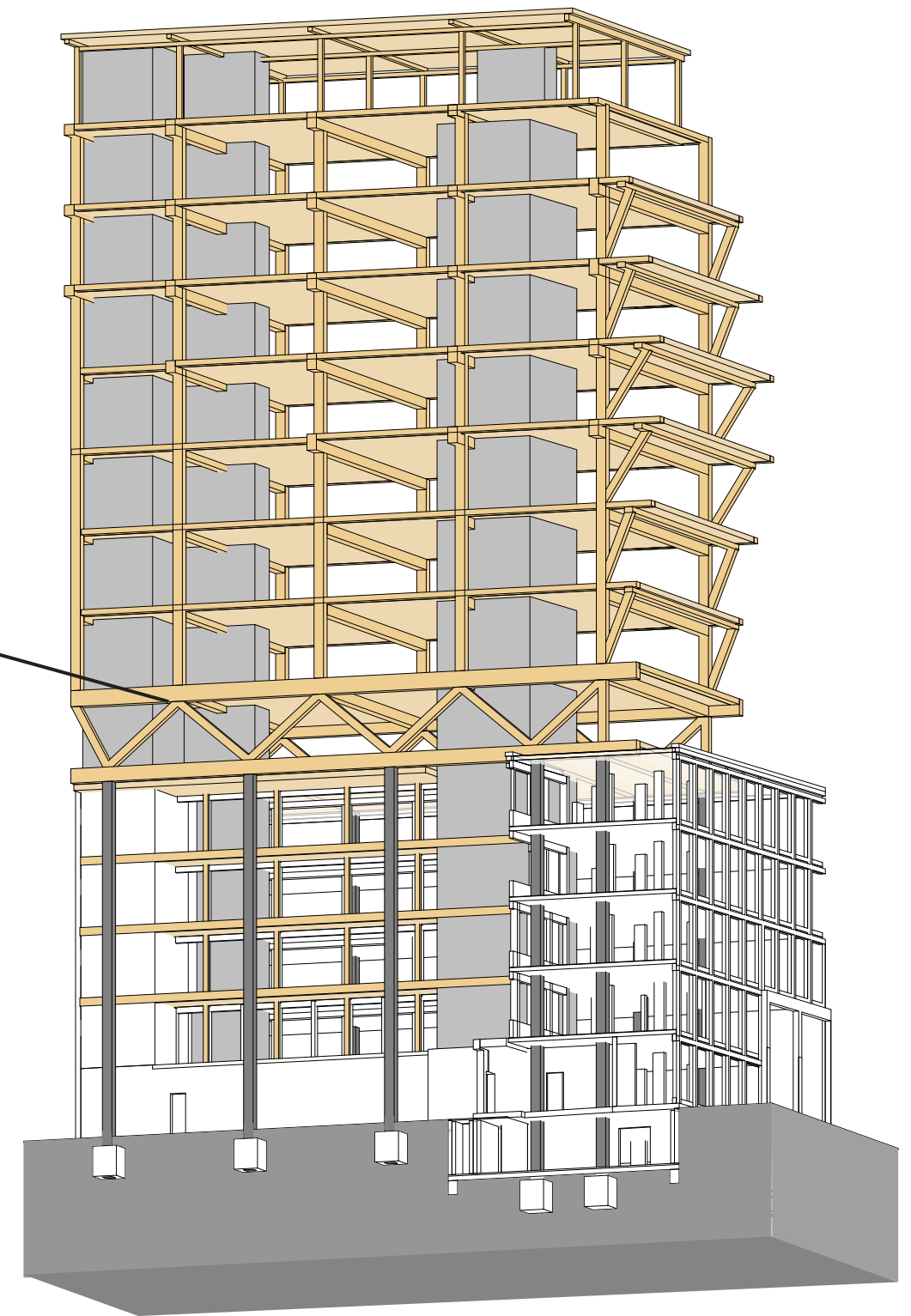
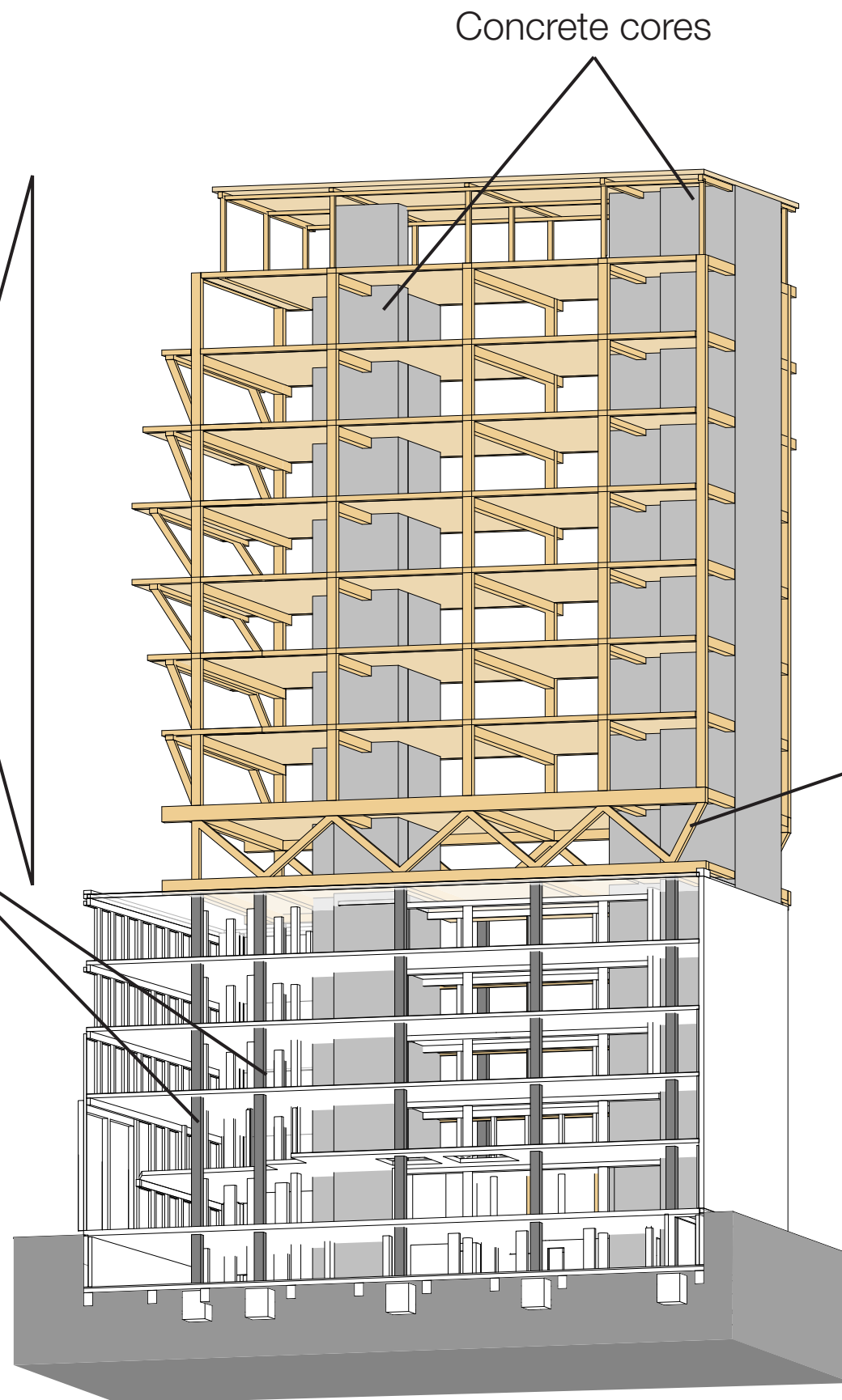
the limit : the new structure and facade modules has to follow the rules of the existing foundation



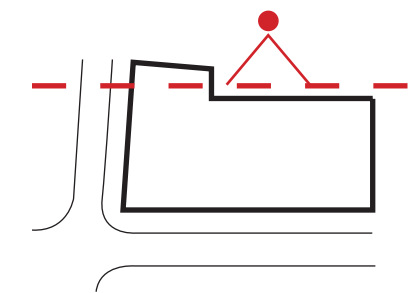
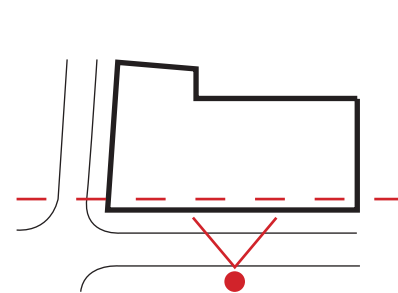
floor slabs

Building technology

structure: sections



the limit : thick CLT columns would take up too much plan area



Materials

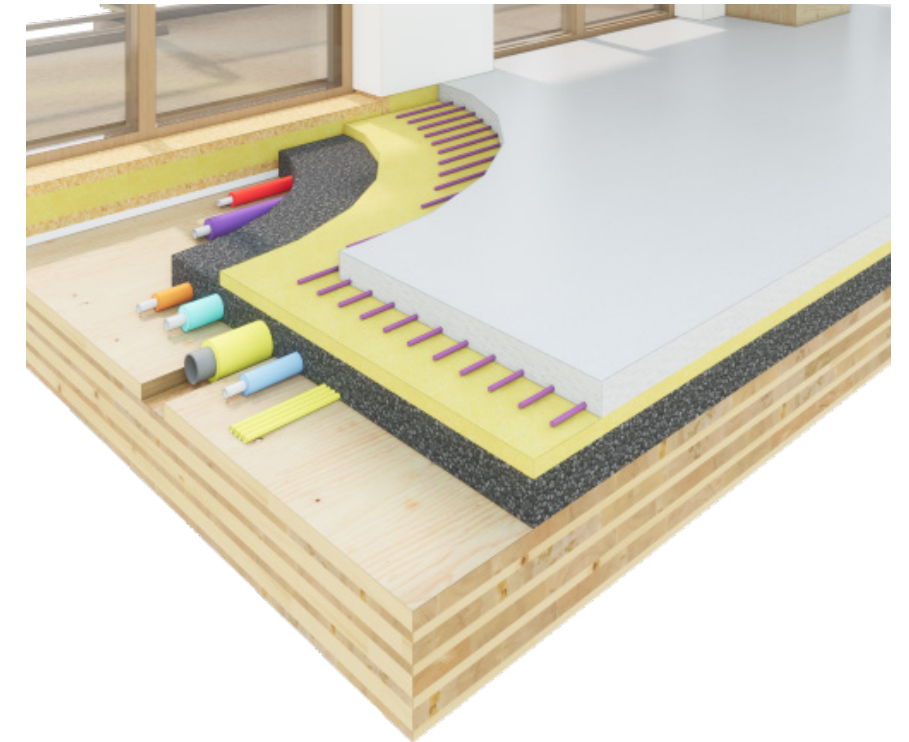
Designing with material recovery



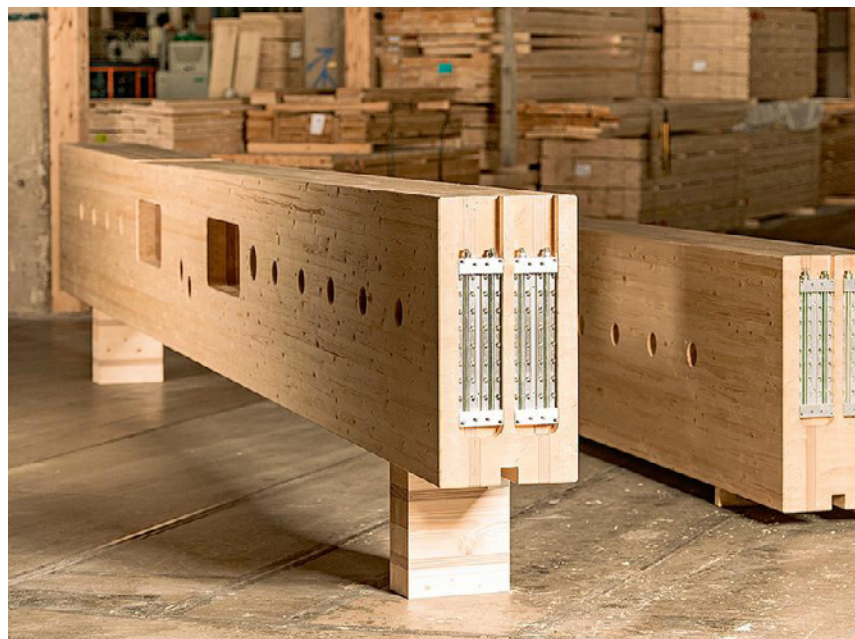
demountable prefab concrete elements for cores



adaptable and reusable partitioning systems



raised floor for dry disassembly of installations



demountable prefab CLT elements



Recycled plastic boards can be recycled again



modular facade elements
(as it was in the existing building)

<https://www.concrete-international.nl/wp-content/uploads/2016/03/BETONELEMENTEN.jpg>

<https://www.juunoo.com/waarom-juunoo/>, https://mei-arch.eu/wp-content/uploads/2021/11/19010_SAWA_openbouwen_open-trans-vk-Large.png?image-crop-positioner-ts=1642759479,

https://www.hess-timber.com/fileadmin/_processed_/csm_20160612_00054_HessSydney__c_RenstphThompson_6609760a2c.jpg, <https://www.s-polytec.com/plastic-sheets/abs-sheets.html>

Climate design winter situation

Heat demand



incoming solar radiation angle



High Efficiency PV panels



Rain water collection

-13 - +12°C

Thermal insulation

Thermal insulation & HR++ glazing saving the energy

+18 / +21°C

+18 / +21°C

Rain water storage

Floor heating

electricity shortage is covered by the grid electricity from renewable sources

+14 / +16°C

+60°C water from the electrical boiler

water is extra heated in electrical boiler

+40°C water from the heat pump

Water boiler/storage

Heat pump system

Heat exchanger

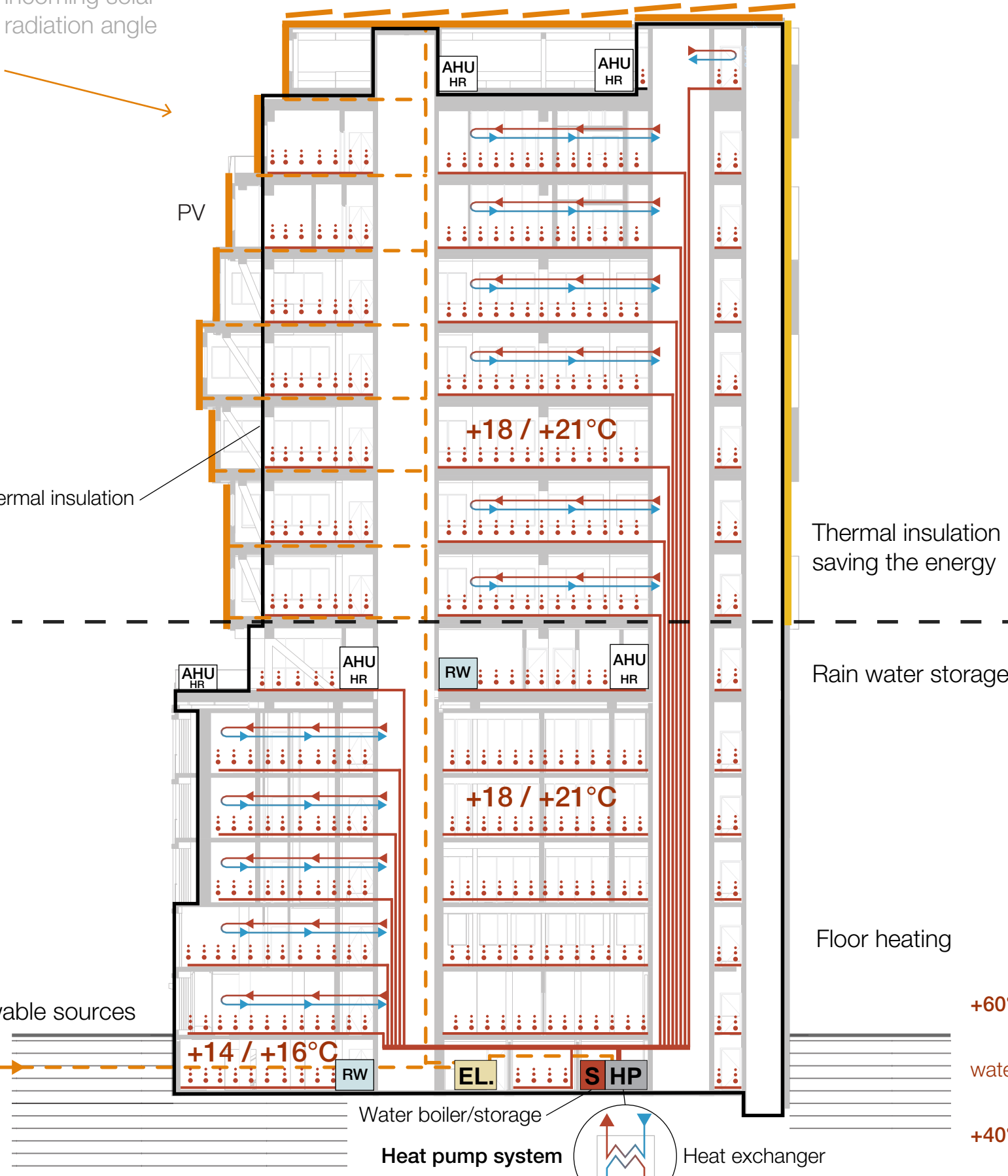
Aquifer layer

Cold well

Heat well

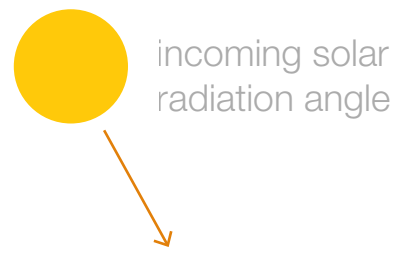
ATES - Aquifer Thermal energy storage*

*connected to shared large-scale open system (hot & cold storage located off-site)



Climate design summer situation

Cooling demand



High Efficiency PV panels

Air Handling Unit for **residential** function

Air Handling Unit for **indoor farm**

+23 / +27°C

Passive cooling by facade shading

Thermal insulation

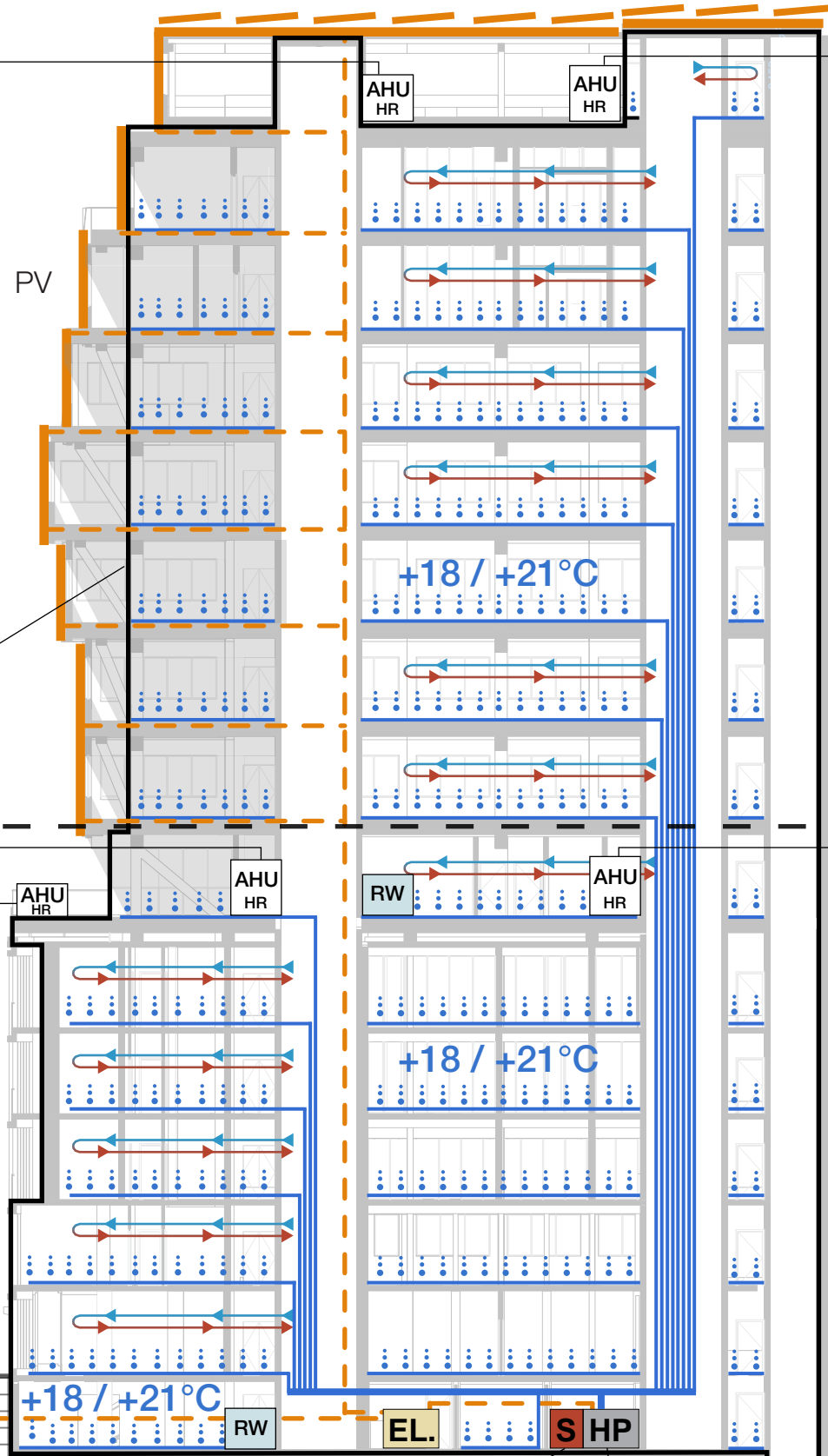
Air Handling Unit for **residential** function

Air Handling Unit for **restaurant, cooking school, bike parking, laundry**

Air Handling Unit for the **groceries store**

Floor cooling

surplus electricity is stored in electricity grid



Water boiler/storage

Heat pump system

Heat exchanger

Aquifer layer

Cold well Heat well

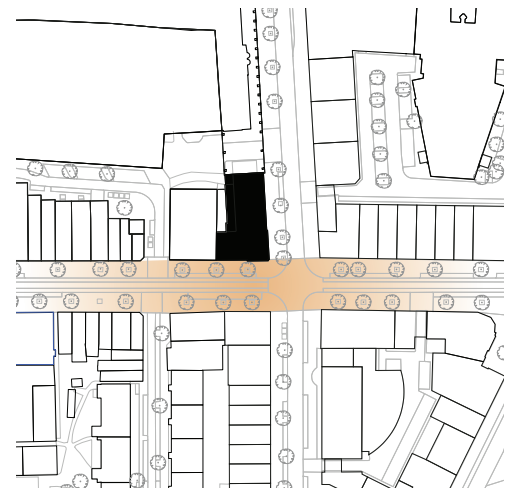
ATES - Aquifer Thermal energy storage*

*connected to shared large-scale open system (hot & cold storage located off-site)



Conclusion & Reflection

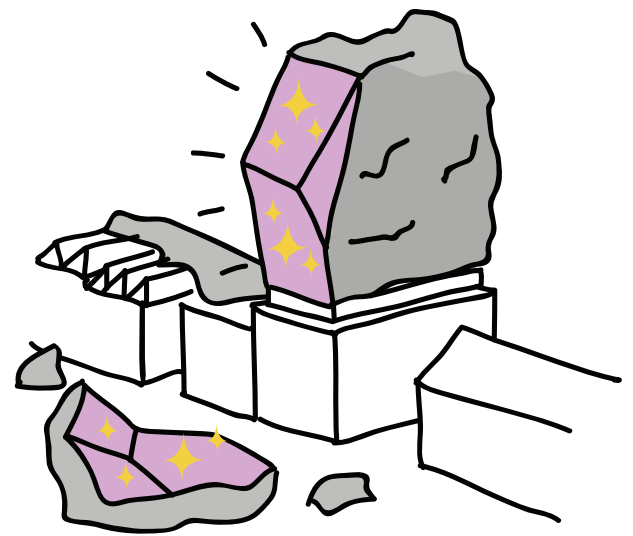
How can the **building at Witte de Withstraat 25** contribute to the **future** challenges of the city centre of Rotterdam (in the context of **densification**)?



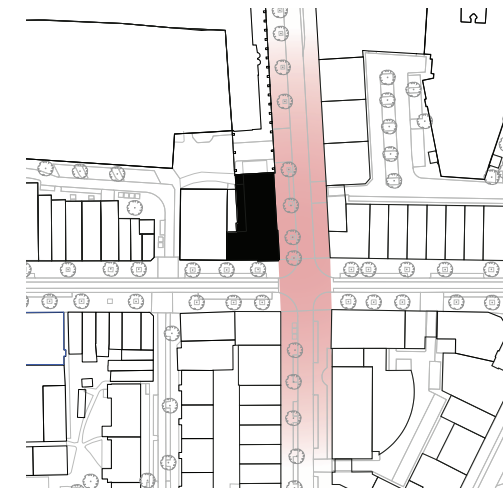
addition to:

existing legacy

architectural/ heritage	<p>Active plinth Building is reused (pedestal in composition), recreating the original entrance space, keeping the collective memory</p>
urban	<p>Urban farm for the street Architectural landmark</p>



TWO IDENTITIES



addition to:

future

social	<p>Co-living Education Jobs Local source of food</p>
technical	<p>Open Building based construction Modular facade elements new extension on top</p>

Number of inhabitants:
minimal space + location
+ social qualities =
more people in the same
area

Flexibility

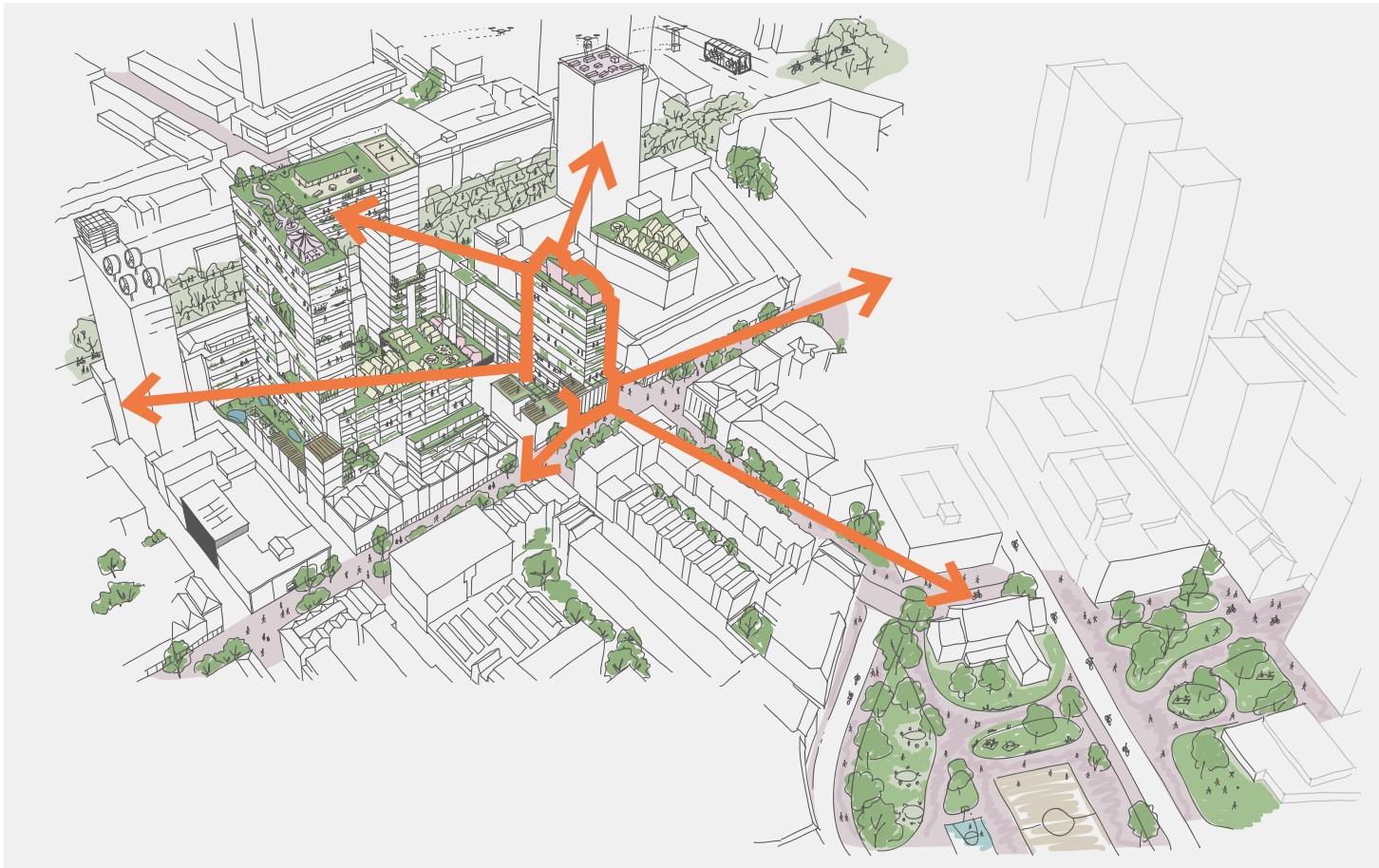
Limits | facade, floors, modules, higher expenses

Possibilities | adaptability to different functions over time, easy change of the layout

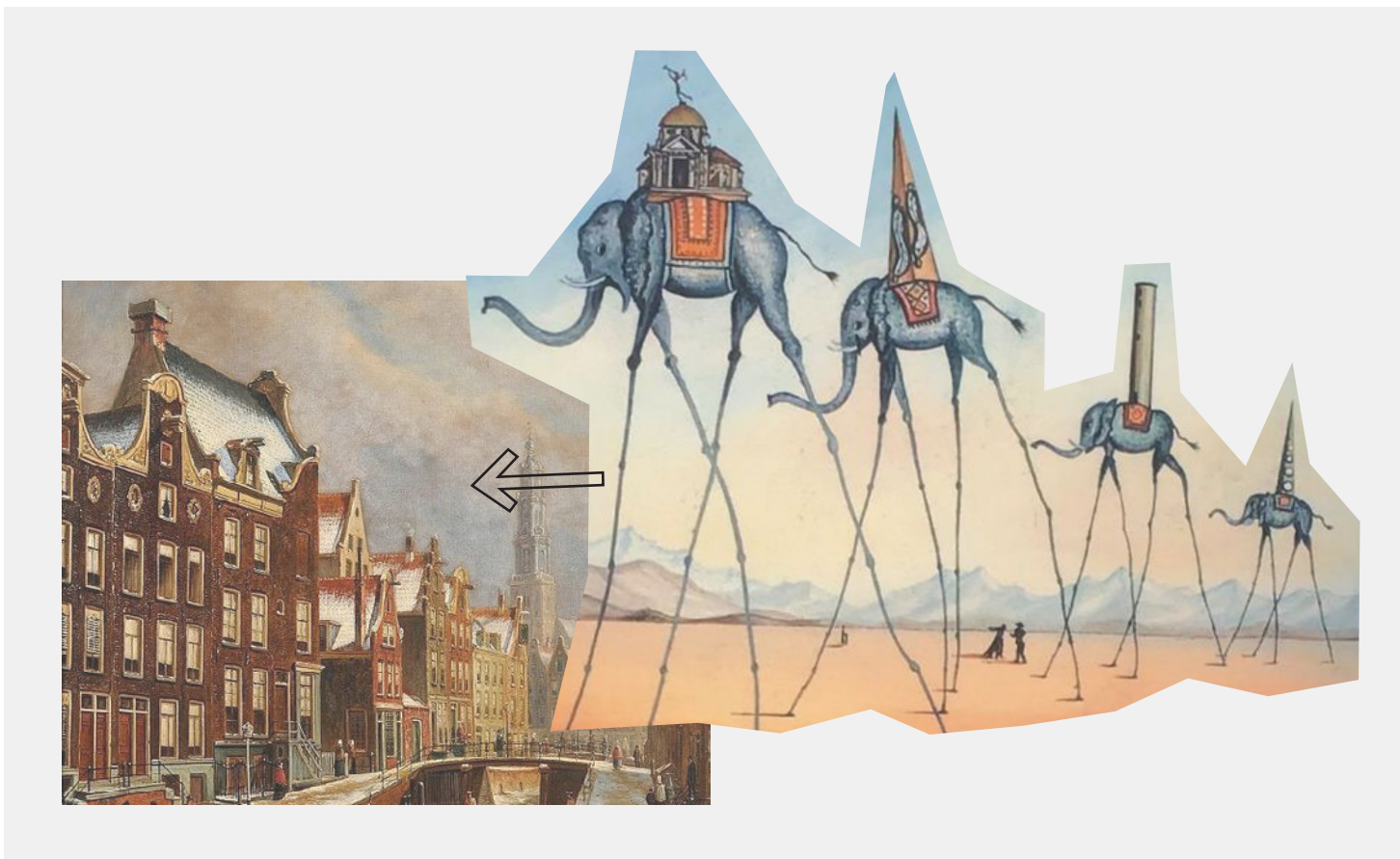
Is building for flexibility an answer to densification?

It can be! | WdW25 proves it - flexible building - easy to reuse

part of a bigger change



start for the change in the neighbourhood

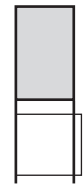


wider scope in the context of densification

1 - own drawing, 2 - <https://i.pinimg.com/236x/9c/38/3f/9c383fa0d3ba4108cf13748f0b769dd--dutch-painters-cityscapes.jpg>
3 - <https://assets.catawiki.nl/assets/2019/12/23/6/9/8/69899af2-e068-45aa-a73c-f1b38ba138d4.jpg>

Use from this project:

GENERAL



New structure (timber structure on the steel&concrete tube columns)



Adaptability over time (access floors, regular facade system, material recovery)



Climate design (water collection, energy generation, sharing)



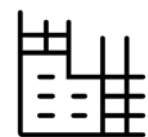
Green outdoor spaces (roof terraces, balconies)

Take care of:

SPECIFIC



Analysis (site, history of the building, future plans)

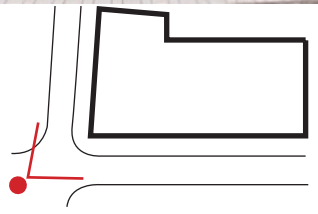


Existing load bearing structure (possible or not to hold an extension)



Contextual facade cladding (reflect / contrast the surroundings)

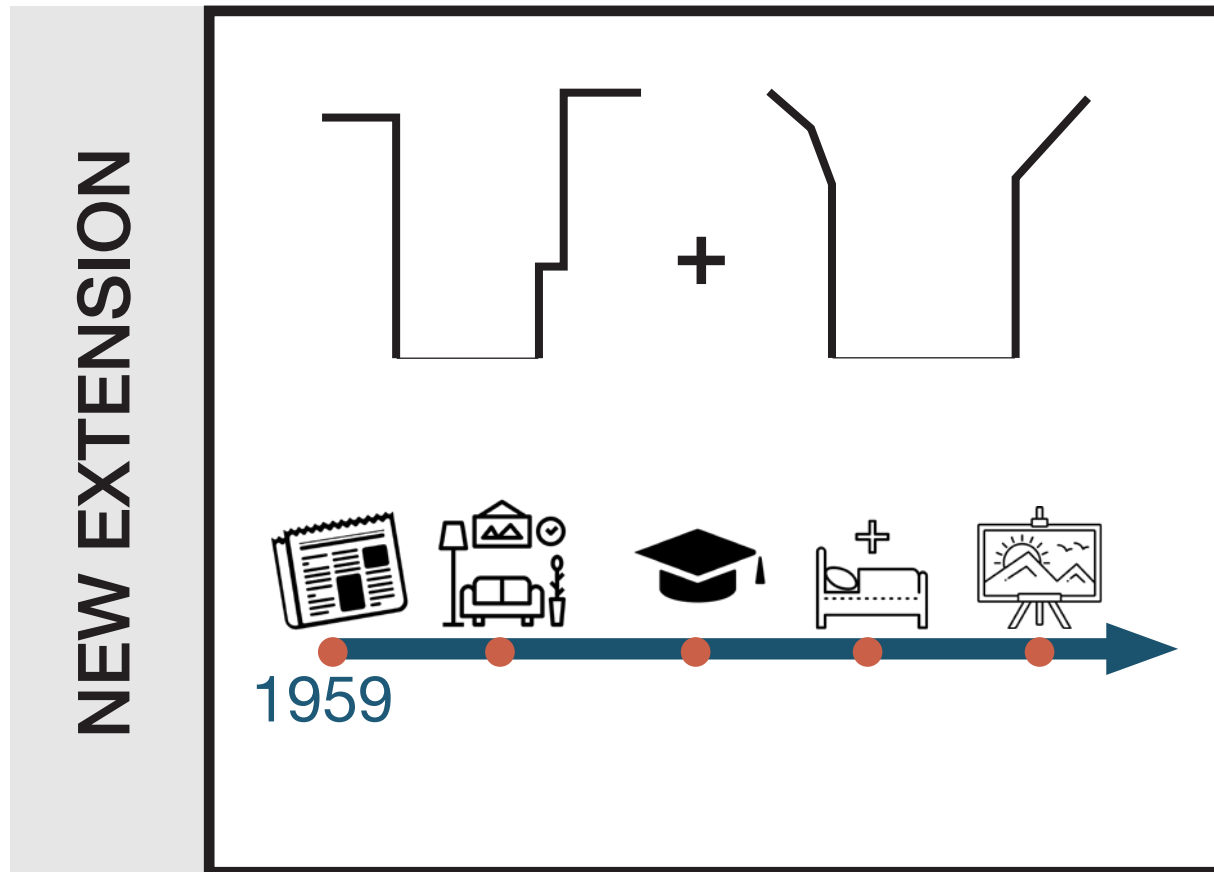
Thank You For Your Attention!



extra

Starting points: architectural scale

green outdoor roof terrace

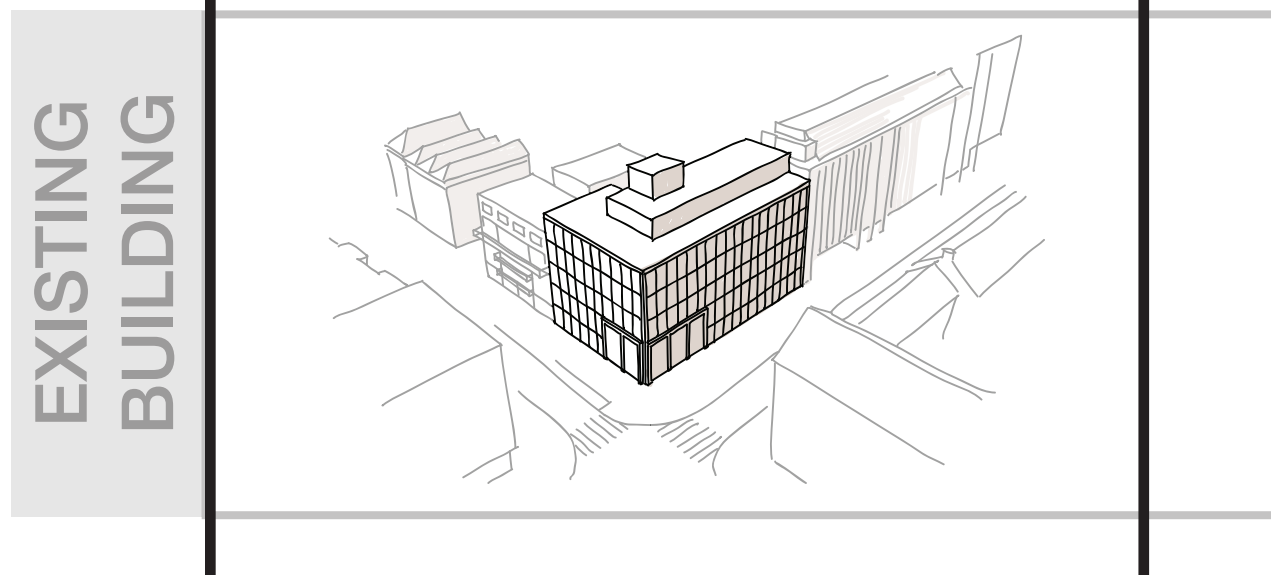


2 identities seen in the facade

New facade is continuing existing building's idea with today's tools

adaptability for different future uses

intermediate floor is different



introducing outdoor space
in 2-4 floors

reconnect the plinth with the street
Ground floor

Site plan + ground floor



parking garage

Hartmansstraat

cinema

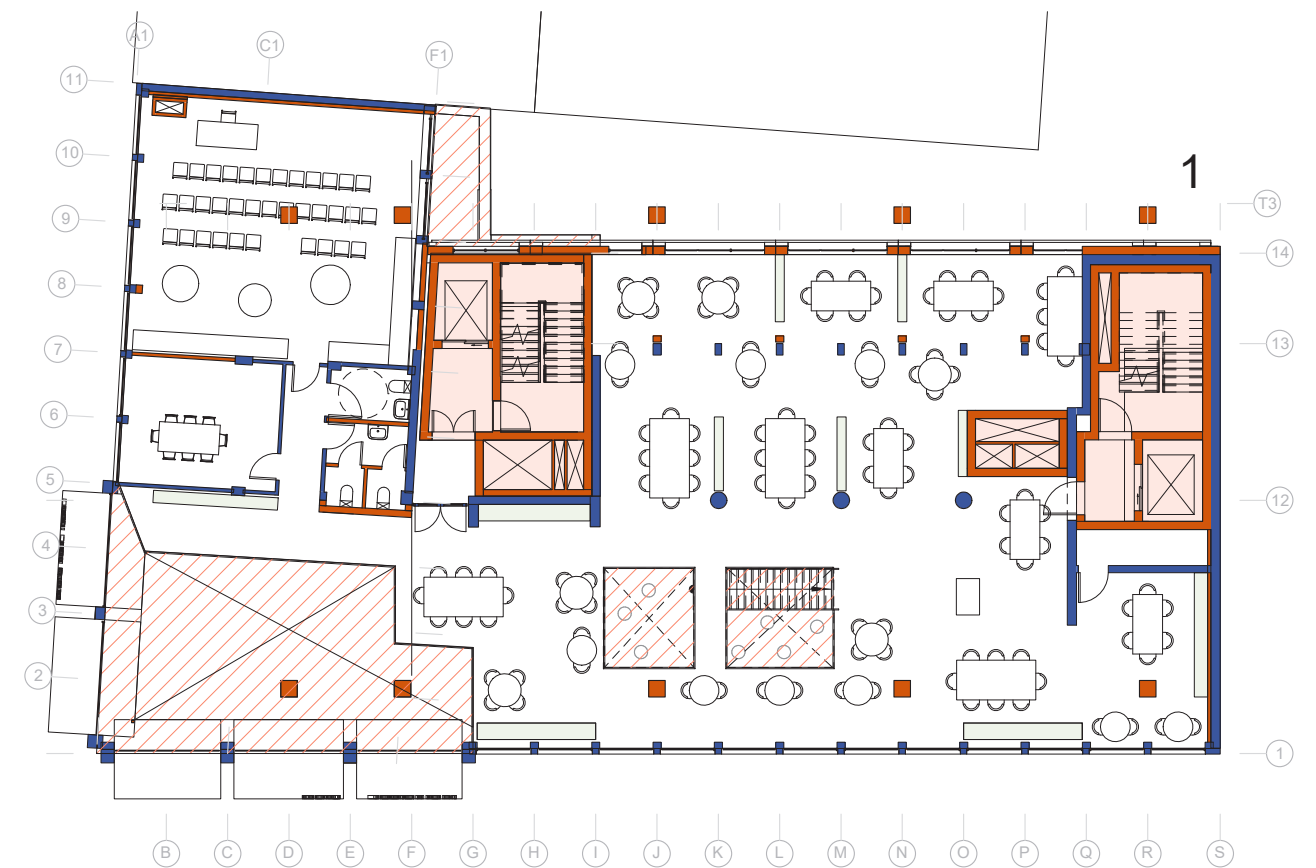
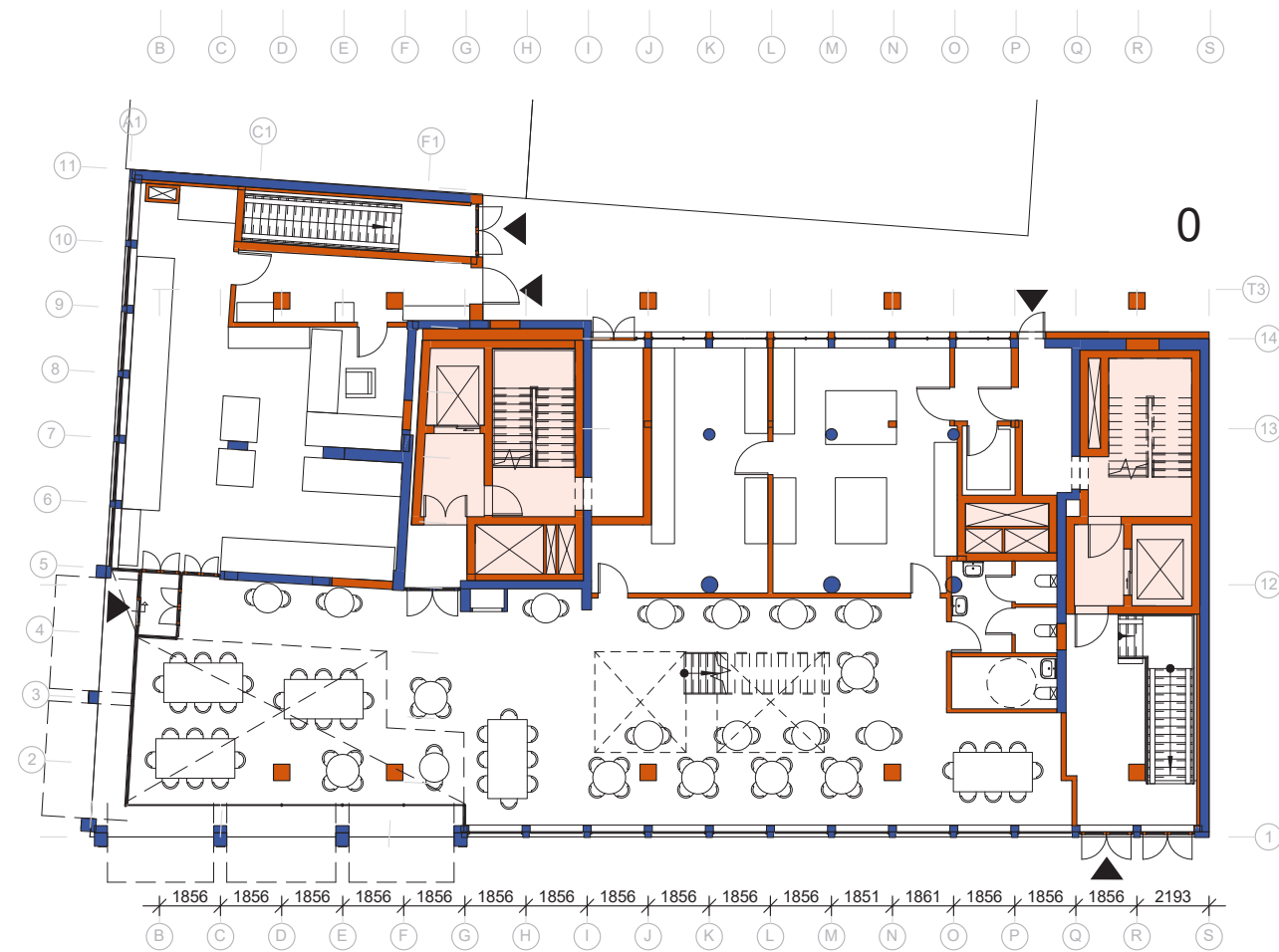
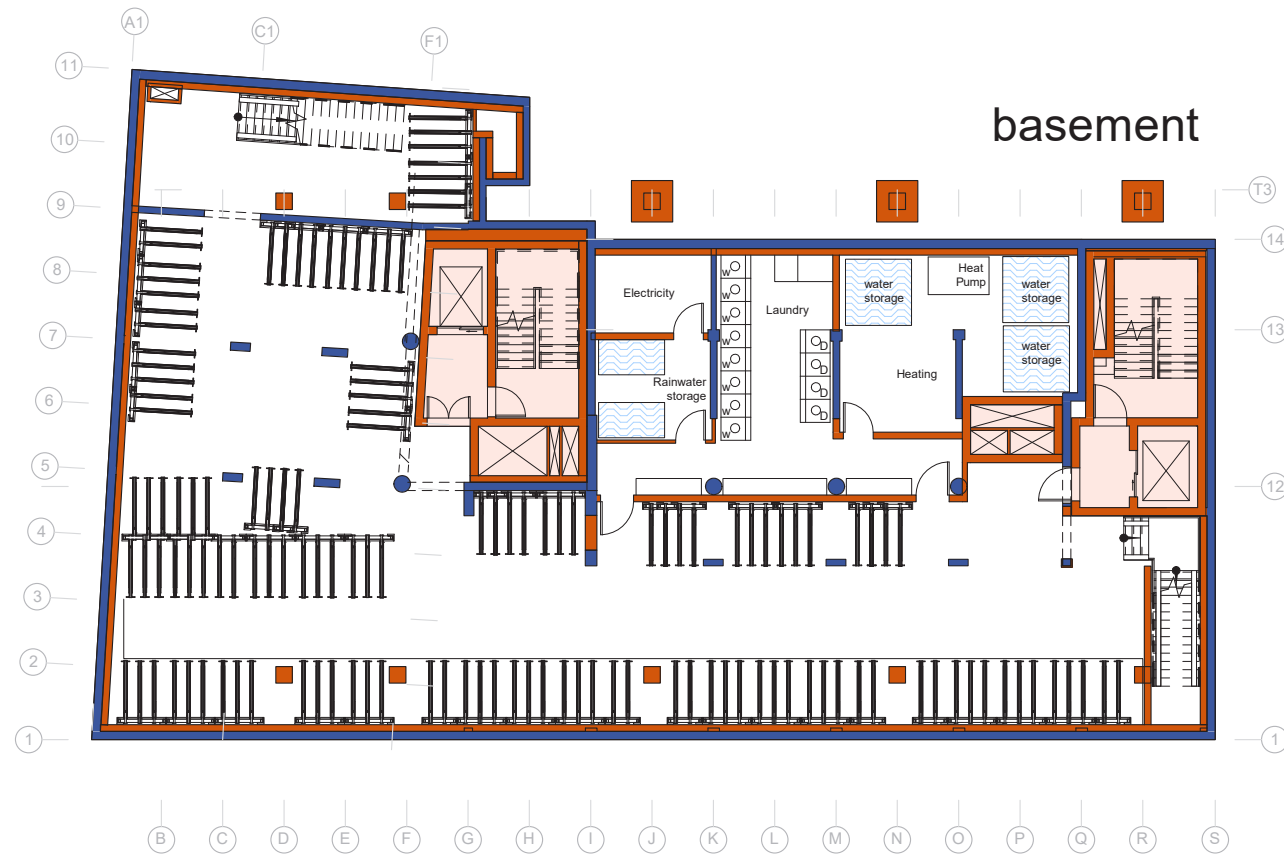
Witte de Withstraat



Existing building

plans_old & new

< 43 m² apartments - no car parking



Existing building

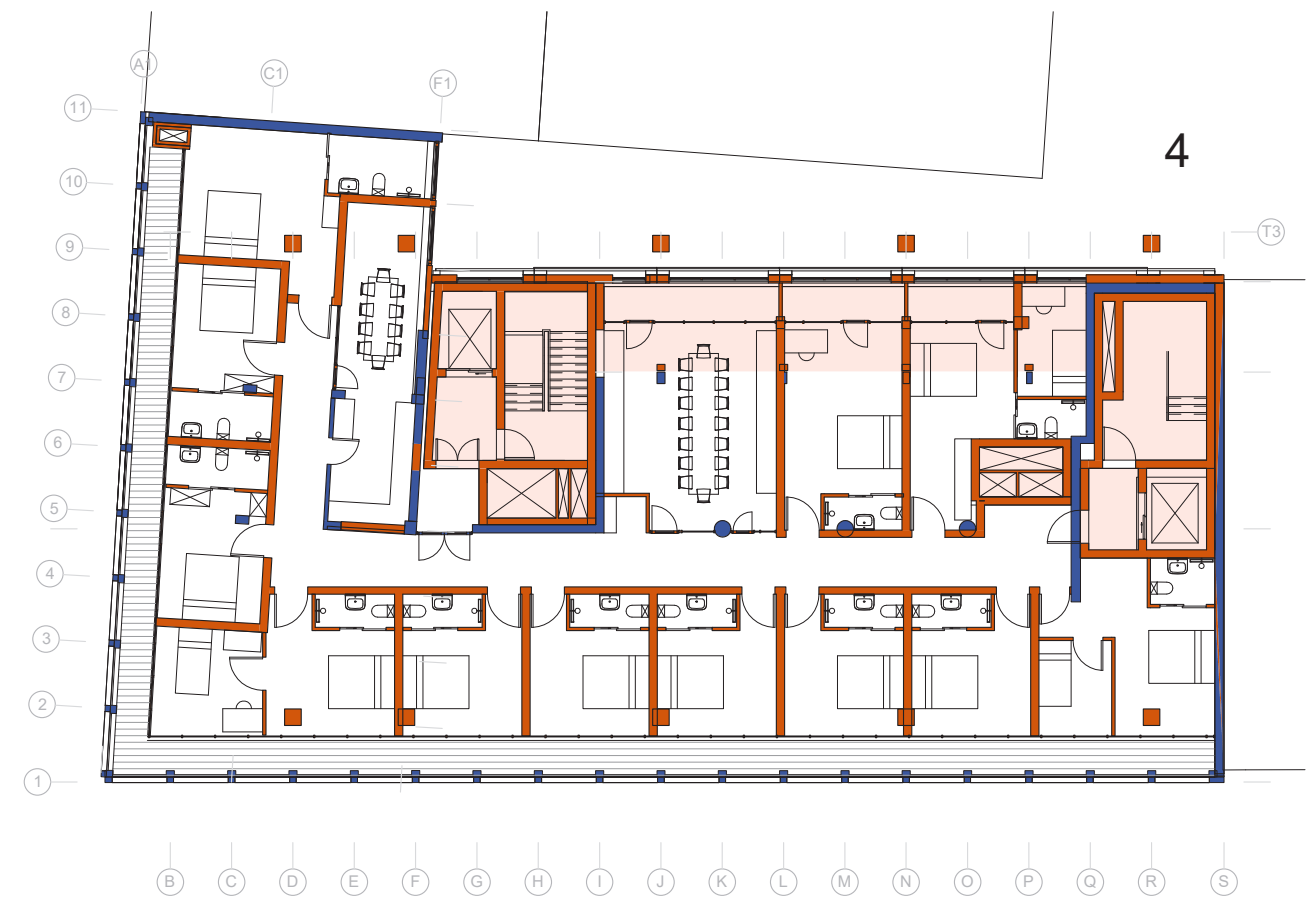
plans_old & new



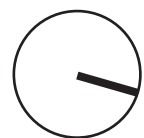
was: 3357 m²

restaurant	470m ²
indoor farming	1930m ²
residential	1740m ²
circulation	880m ²
food store	110m ²

reuse: approx. 5500 m²

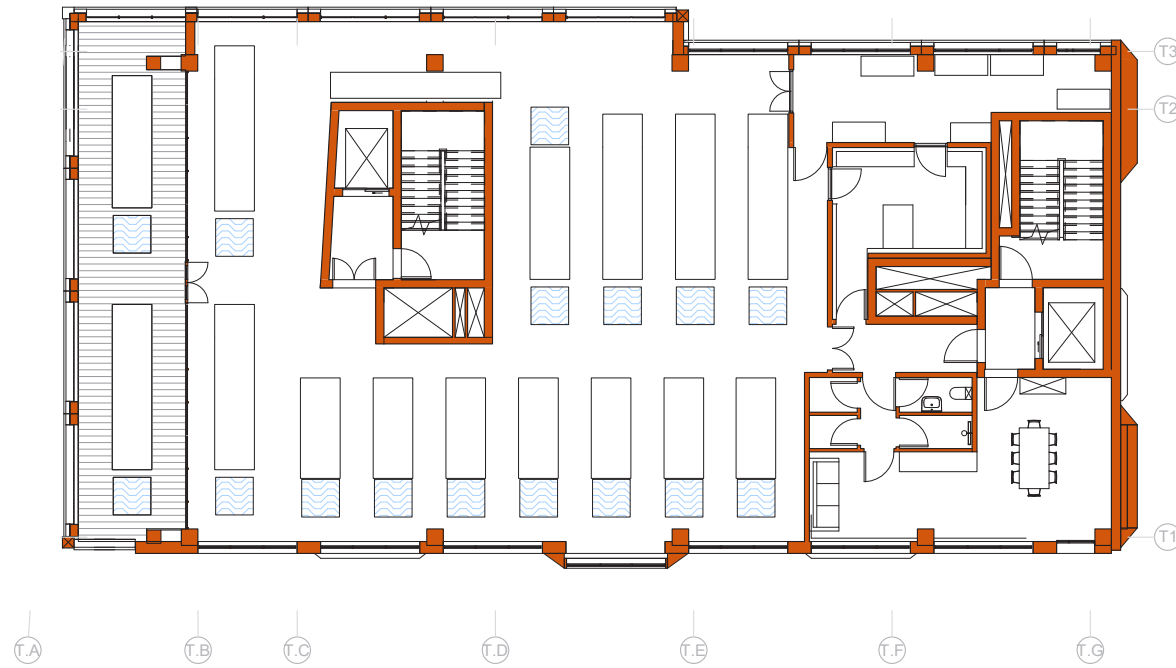


New tower plans

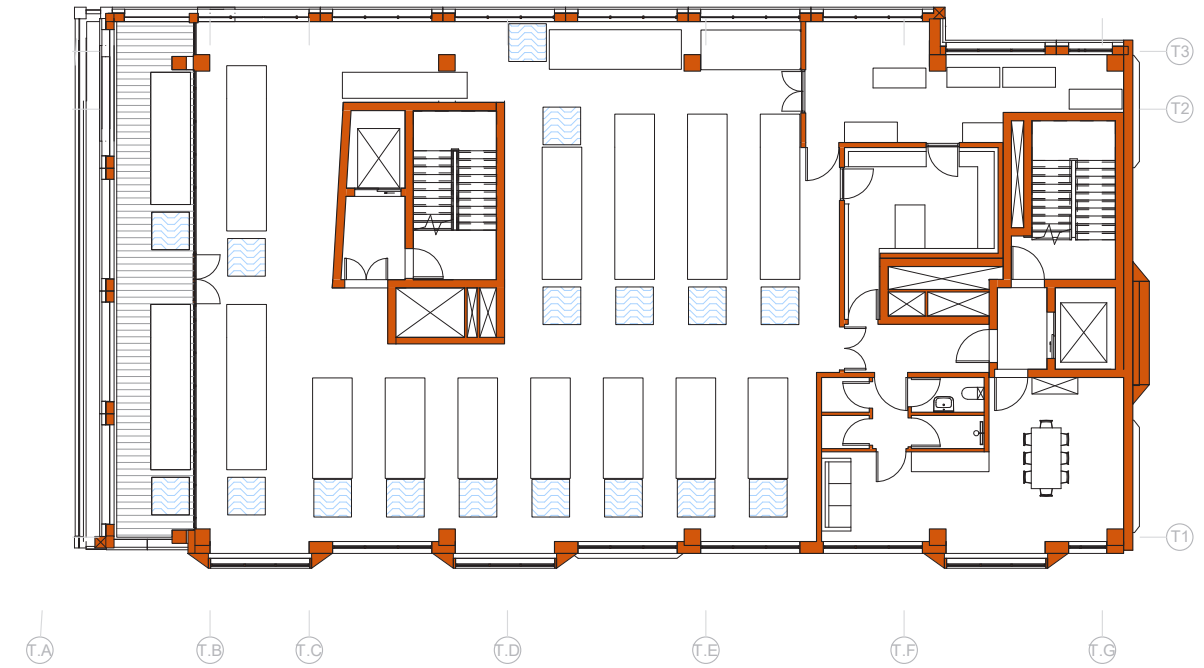


New tower plans

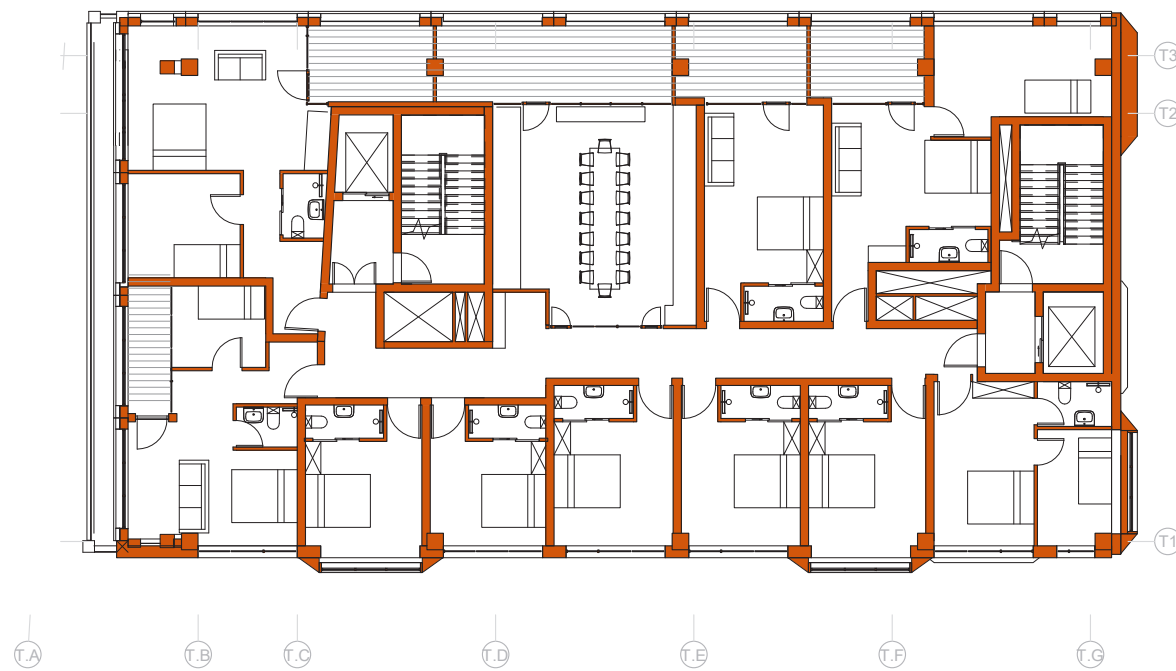
9



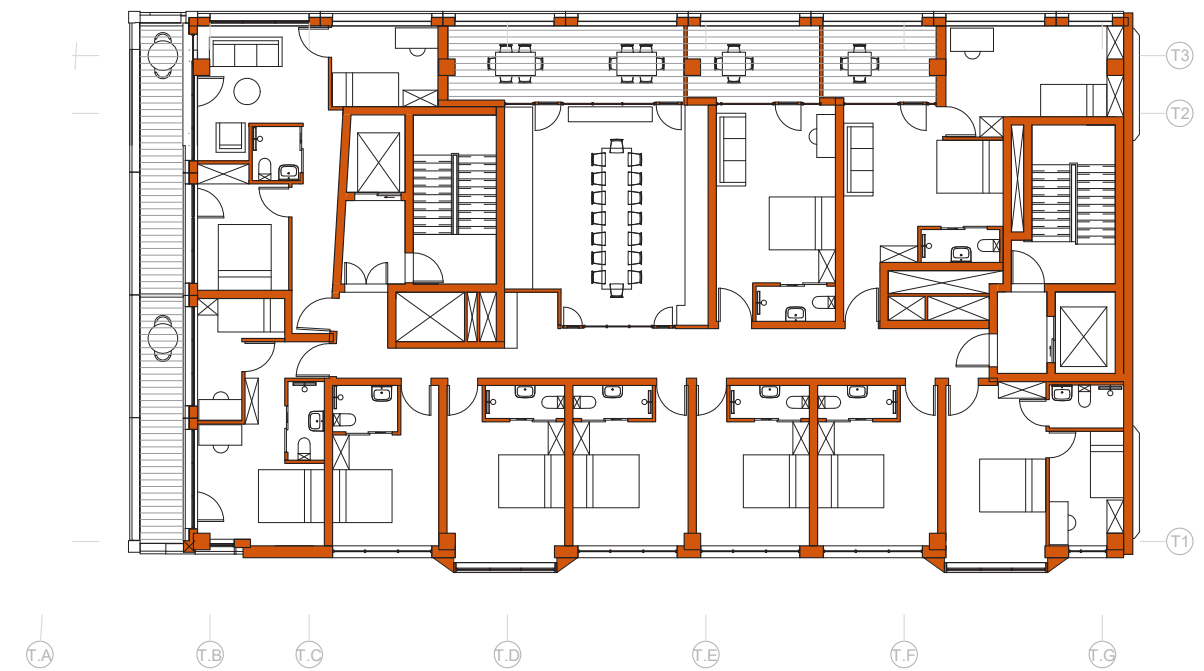
10



11



12



relation between spaces
regularity



existing



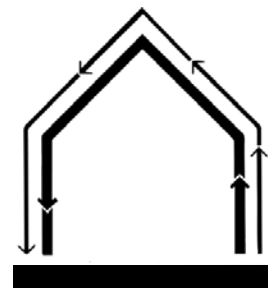
new existing



extension

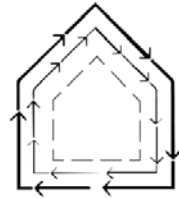
Starting points:
technical scale

NEW EXTENSION



Shell

&



Infill

Energy producing building

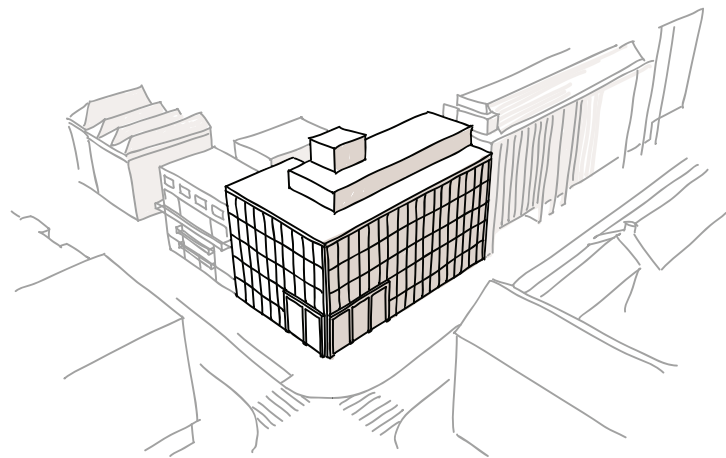
(generating solar energy, water collection, sustainable materials)

Open Building principles

(raised floors, high storey height, adaptability)

new extension going
through the existing building

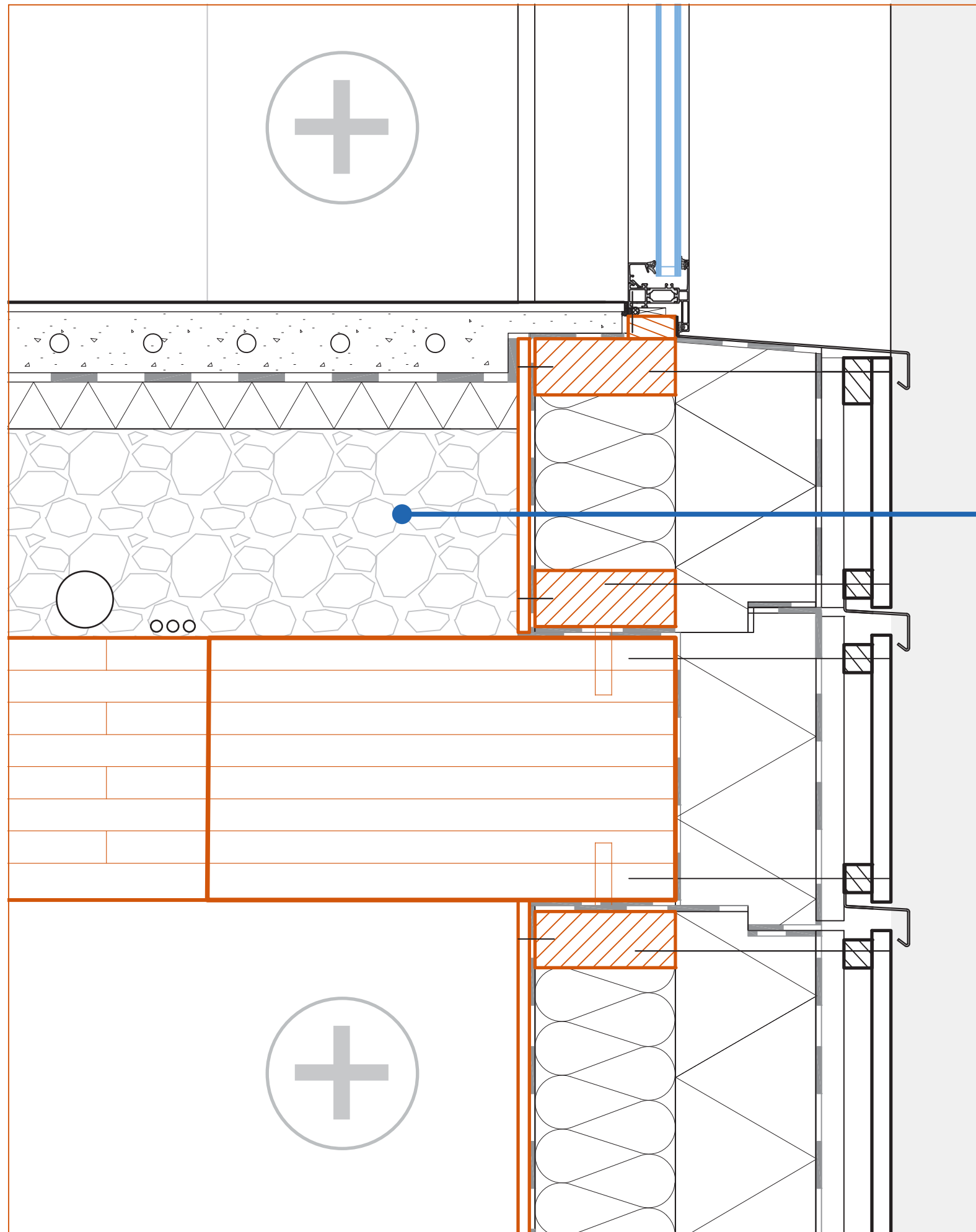
**EXISTING
BUILDING**



Insulating & Improving

(insulation, more efficient heating and ventilation system)

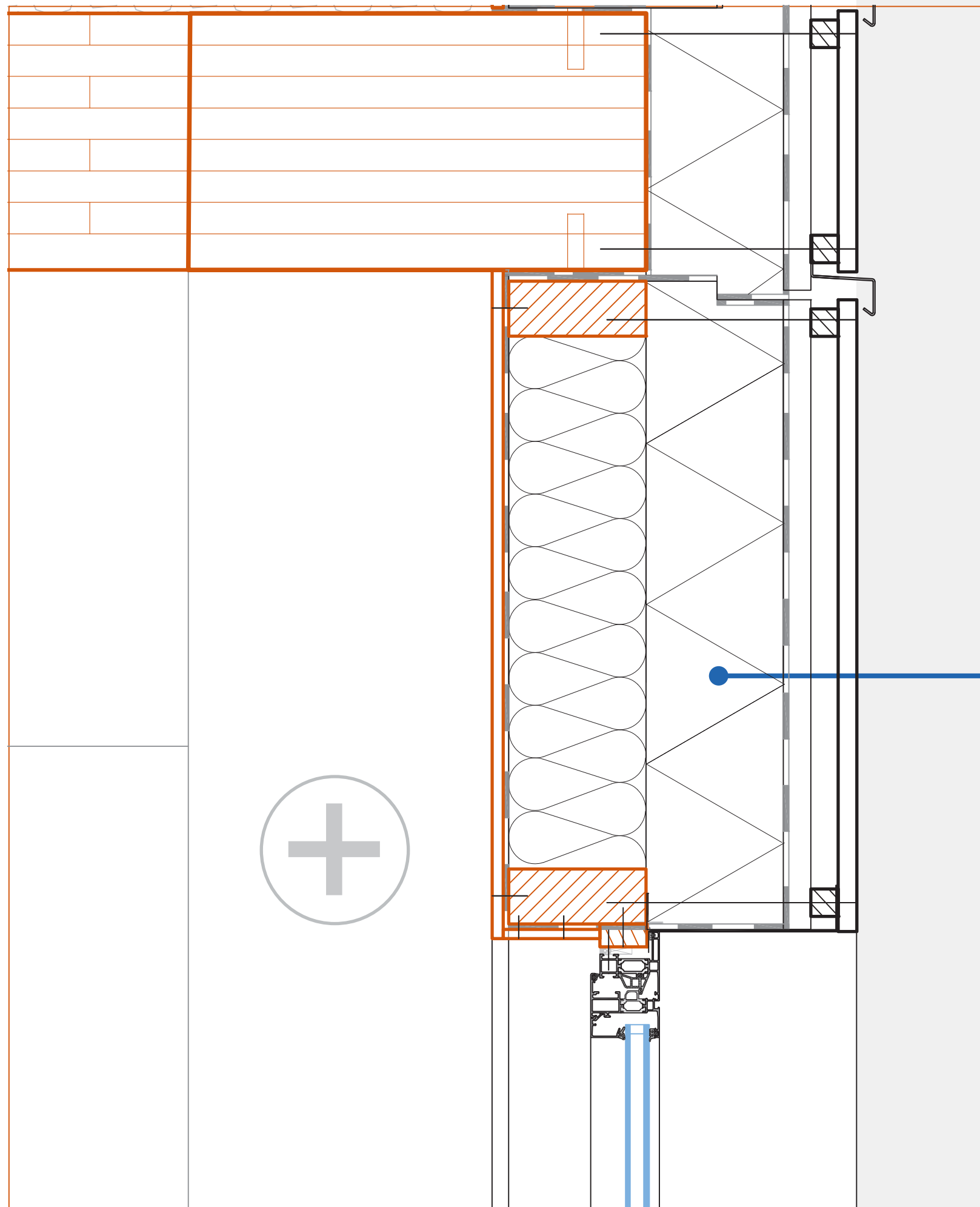
“rock” facade detail 1



Floor (360 mm):

- 10 mm linoleum flooring from recycled waste materials
- 65 mm screed with underfloor heating
- 1 mm separating layer (plastic sheet)
- 50 mm rigid wood fibre impact sound insulation
- 220 mm dry crushed stone ballast/ infill
- 280 mm cross-laminated timber floor (spanning 7,4 m between 800 mm deep glue-laminated beams)

“rock” facade detail 2



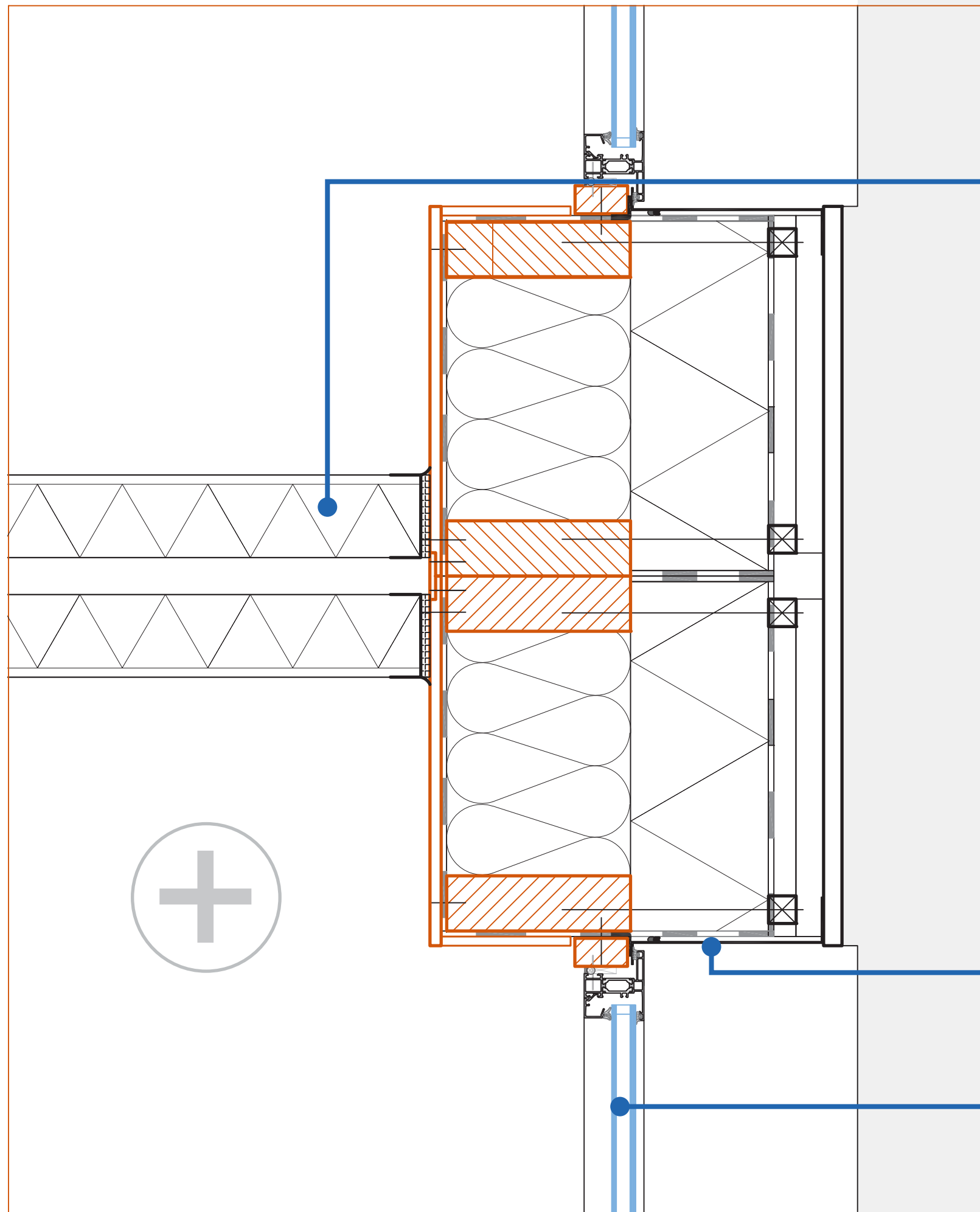
Wall:

outside

- 20 mm Recycled plastic board cladding
- 30x30 vertical timber batten facade cladding
- fixing framework
- 30x30 horizontal timber batten facade cladding
- fixing framework
- breather membrane
- 150 mm rigid wood fiber thermal insulation
- 150x60 mm timber batten facade structure filled with 150mm soft wood fibre thermal insulation
- damp proof/ vapour membrane
- 18 mm plywood

inside

“rock” facade detail 3



Wall between apartments:

- 18mm plywood
- 80 mm rigid wood fiber thermal insulation
- 40 mm air cavity
- 80 mm rigid wood fiber thermal insulation
- 18mm plywood

in the ends fixed through the aluminum framing
and separating acoustic strip + silicon seal

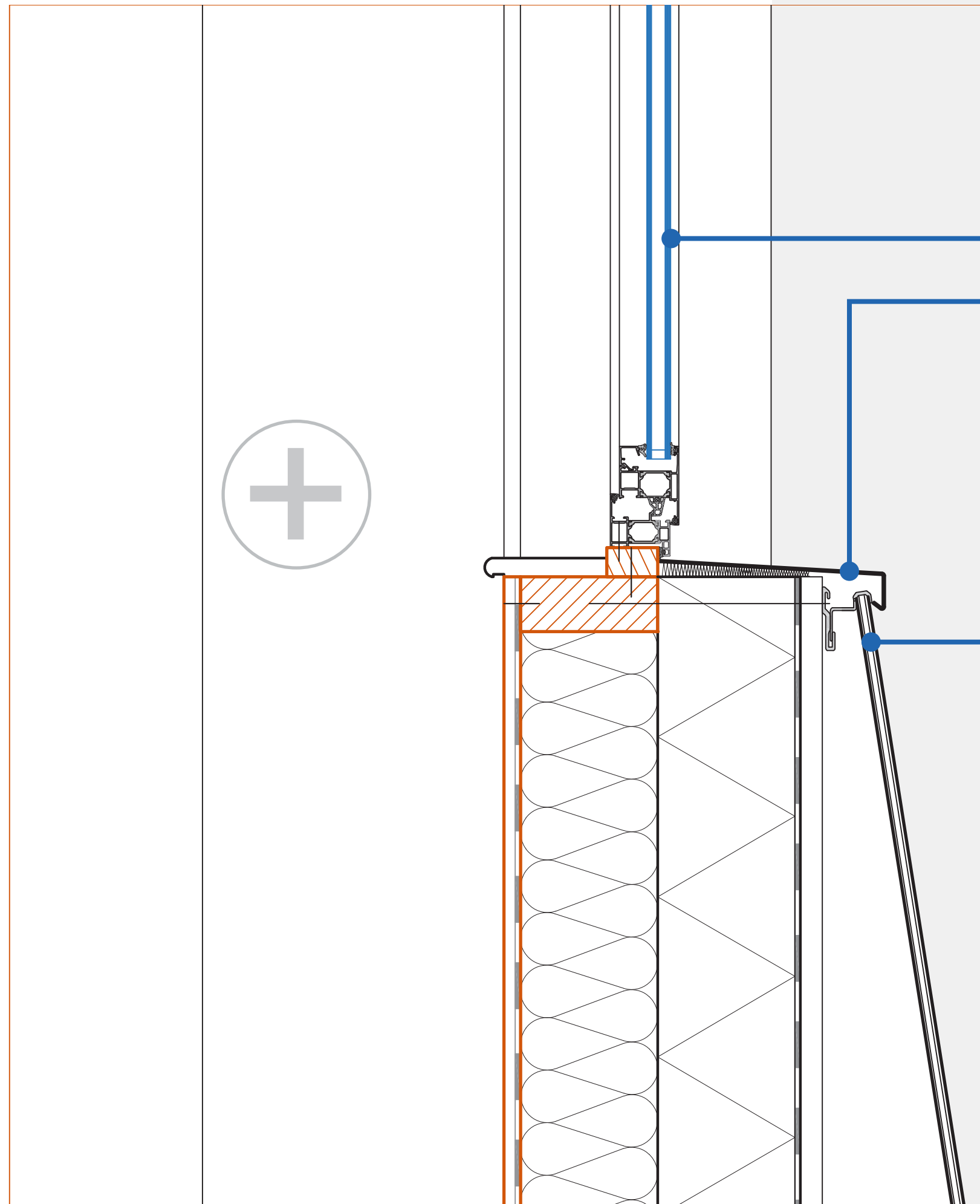


Aluminum sheet wrapping around

Window:

- Double glazing in aluminum frame

“extrovert” facade detail 1

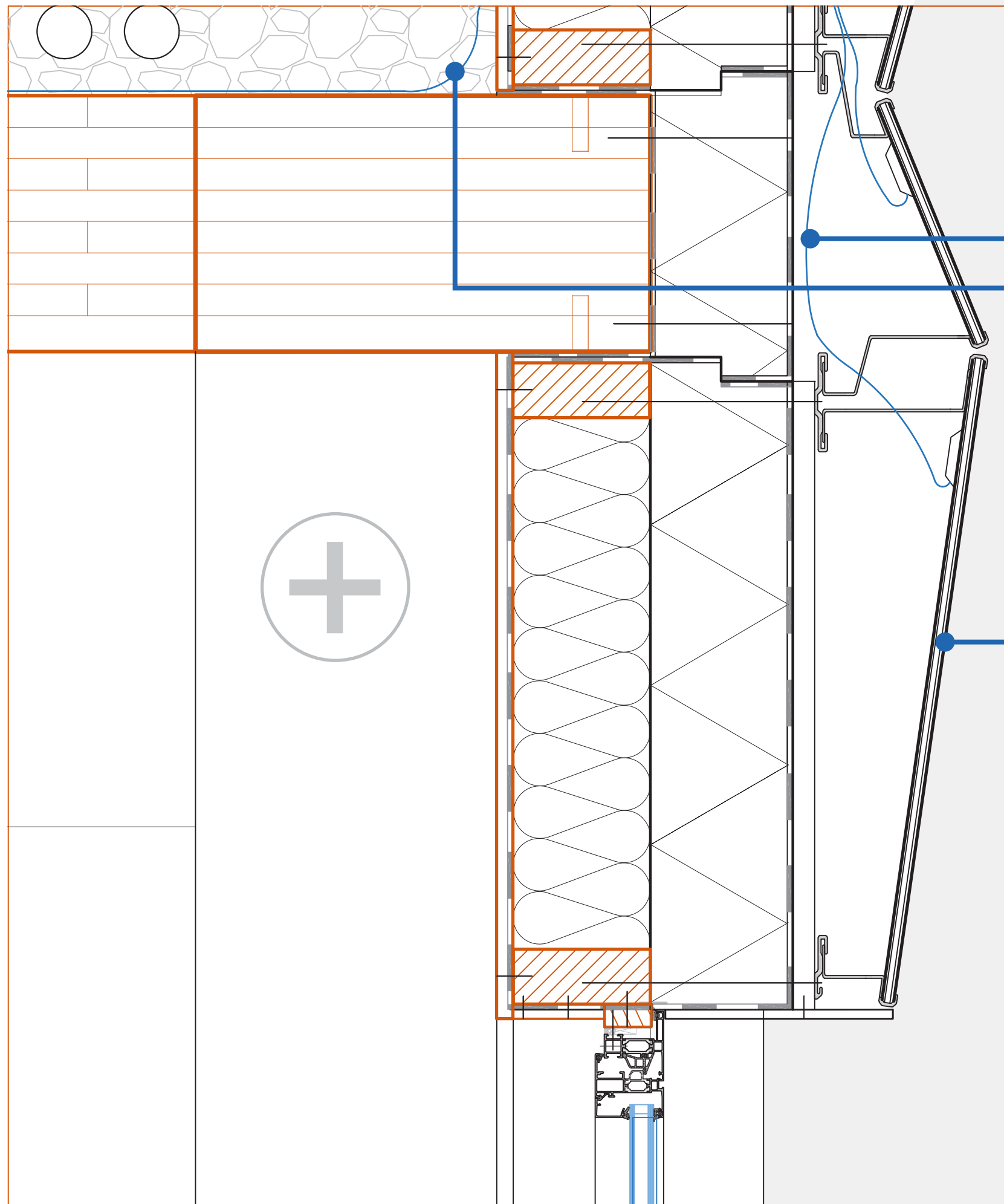


Openable window:
- Double glazing in aluminum frame

Window sill:
- Aluminum sheet profile

Wall:
outside
- PV panel with coloured glass
- < 60 mm air cavity for better PV panel performance
- Horizontal aluminium rainscreen cladding fixing system, screwed to vertical timber battens
- 30x30 mm vertical timber batten framework
- breather membrane
- 150 mm rigid wood fiber thermal insulation
- 150x60 mm timber batten facade structure filled with 150 mm soft wood fibre thermal insulation
- damp proof/ vapour membrane
- 18mm plywood
inside

“extrovert” facade detail 2



PV panel cable wiring



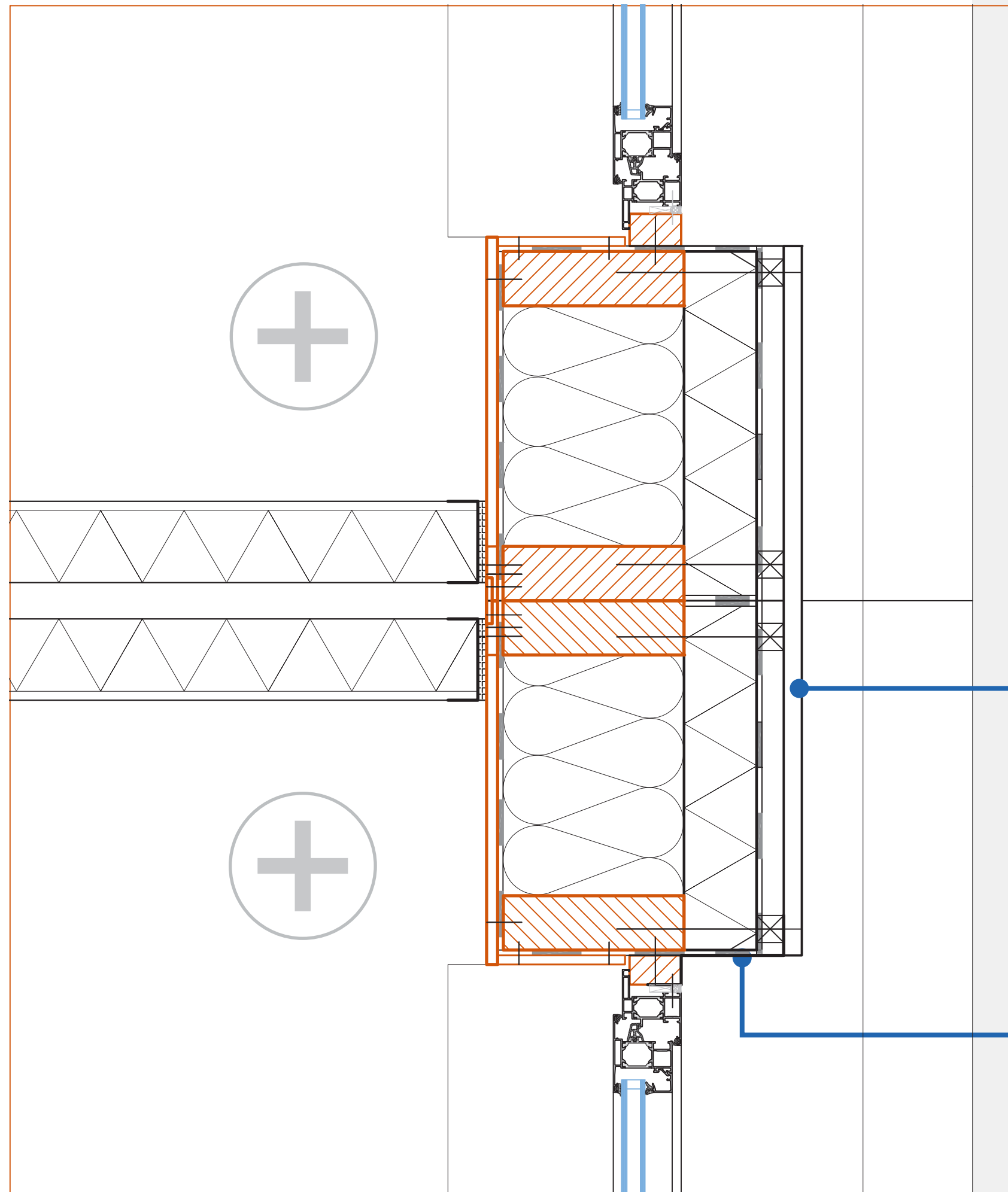
Wall:

outside

- PV panel with coloured glass
- < 60 mm air cavity for better PV panel performance
- Horizontal aluminium rainscreen cladding fixing system, screwed to vertical timber battens
- 30x30 mm vertical timber batten framework
- breather membrane
- 150 mm rigid wood fiber thermal insulation
- 150x60 mm timber batten facade structure filled with 150 mm soft wood fibre thermal insulation
- damp proof/ vapour membrane
- 18mm plywood

inside

“extrovert” facade detail 3

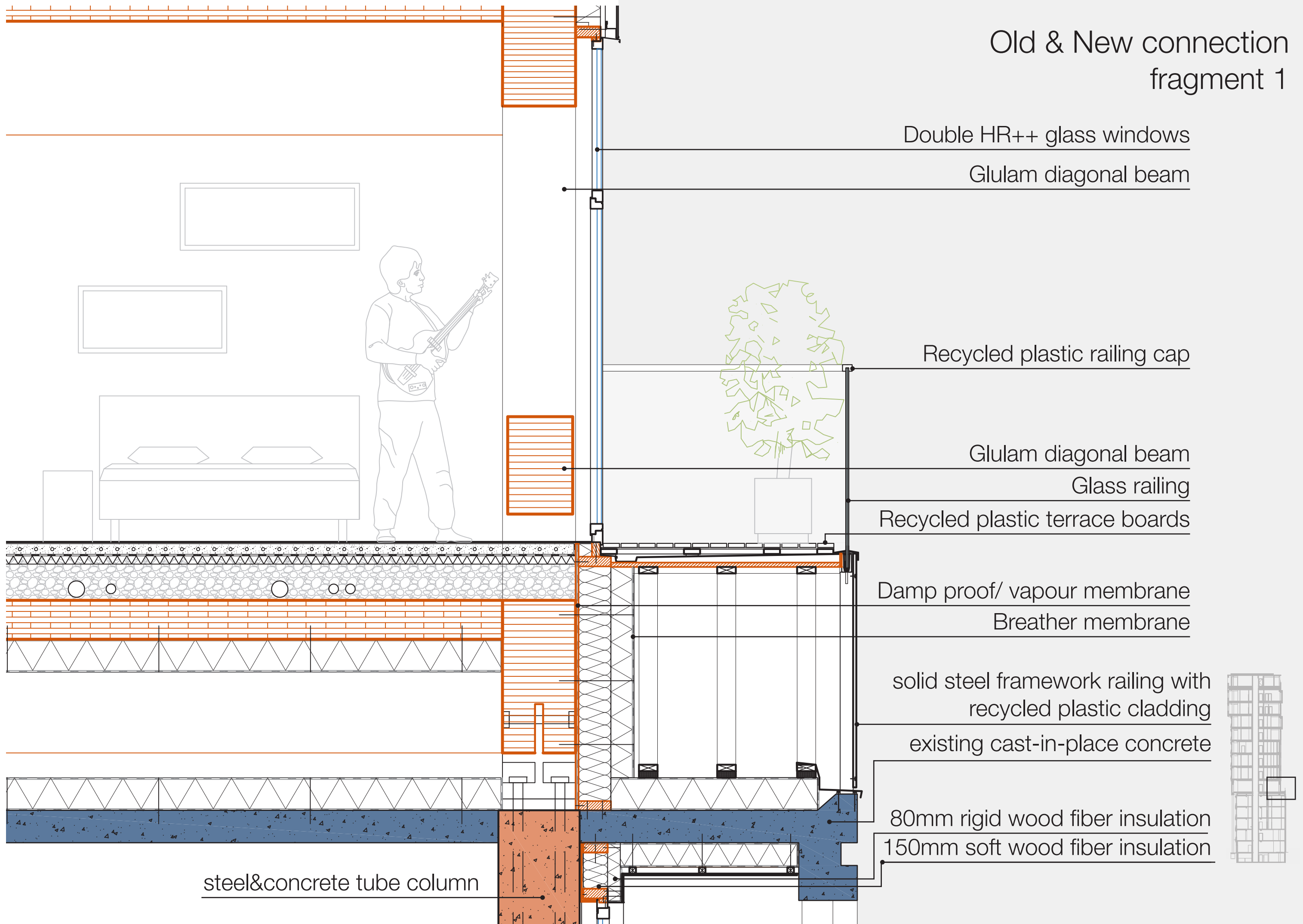


Wall section between windows:
outside

- 20 mm Recycled plastic board cladding
 - 30x30 mm Vertical timber batten facade cladding
 - fixing framework
 - breather membrane
 - 80 mm rigid wood fiber thermal insulation
 - 200x60 timber batten facade structure filled with 200 mm soft wood fibre thermal insulation
 - damp proof/ vapour membrane
 - 18 mm plywood
- inside

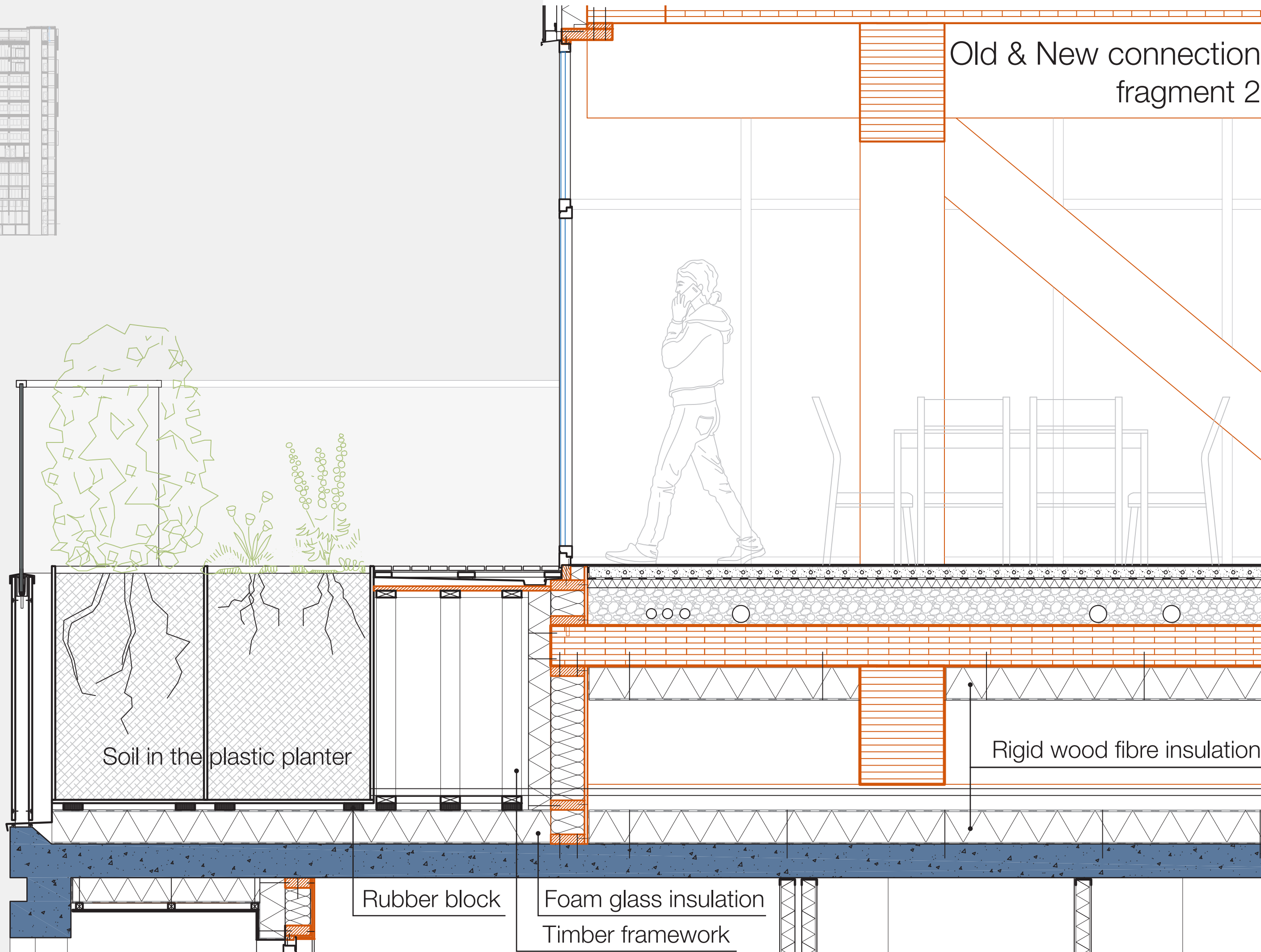
Aluminum sheet wrapping around

Old & New connection fragment 1



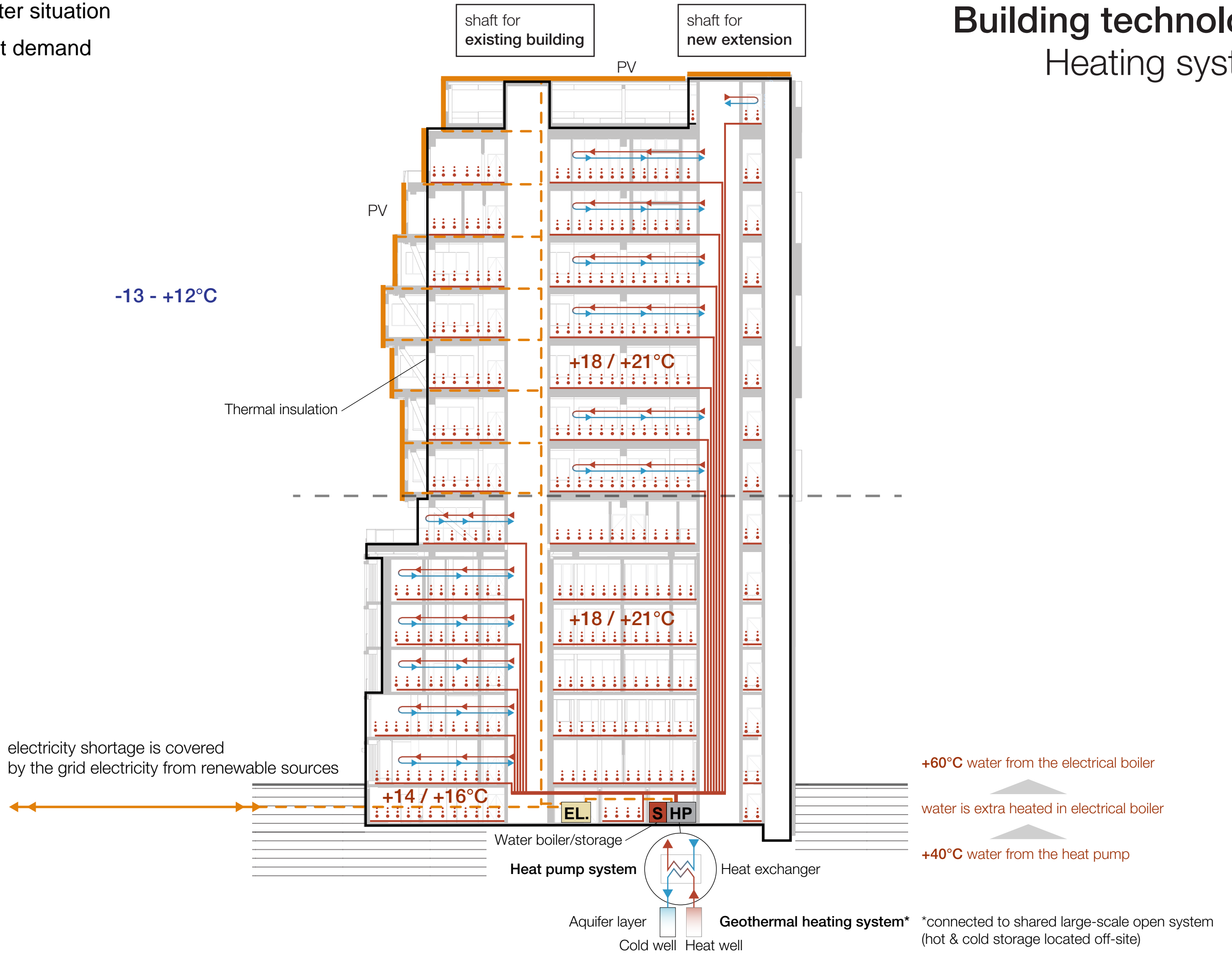


Old & New connection
fragment 2



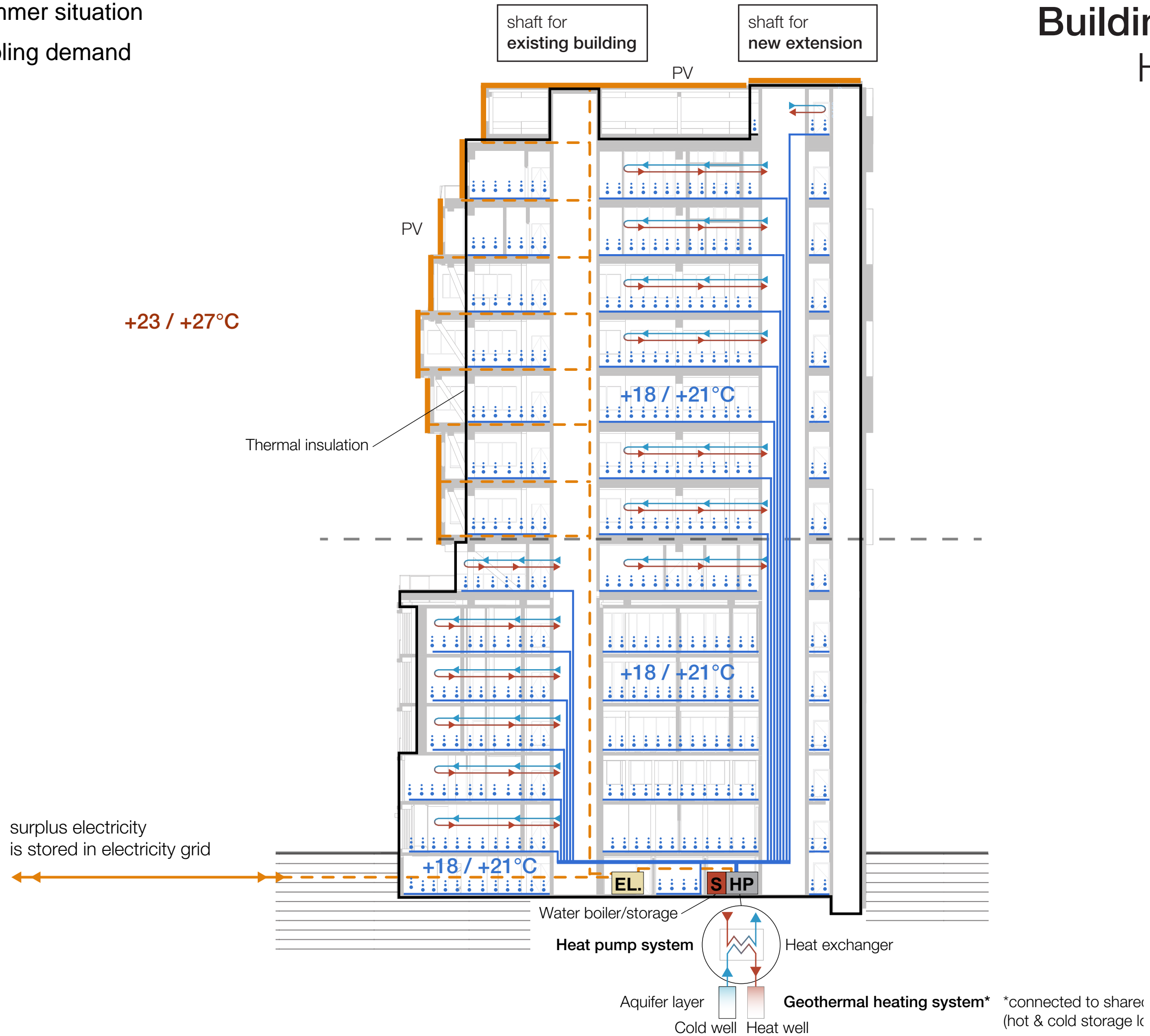
Winter situation
Heat demand

Building technology Heating system



Summer situation
Cooling demand

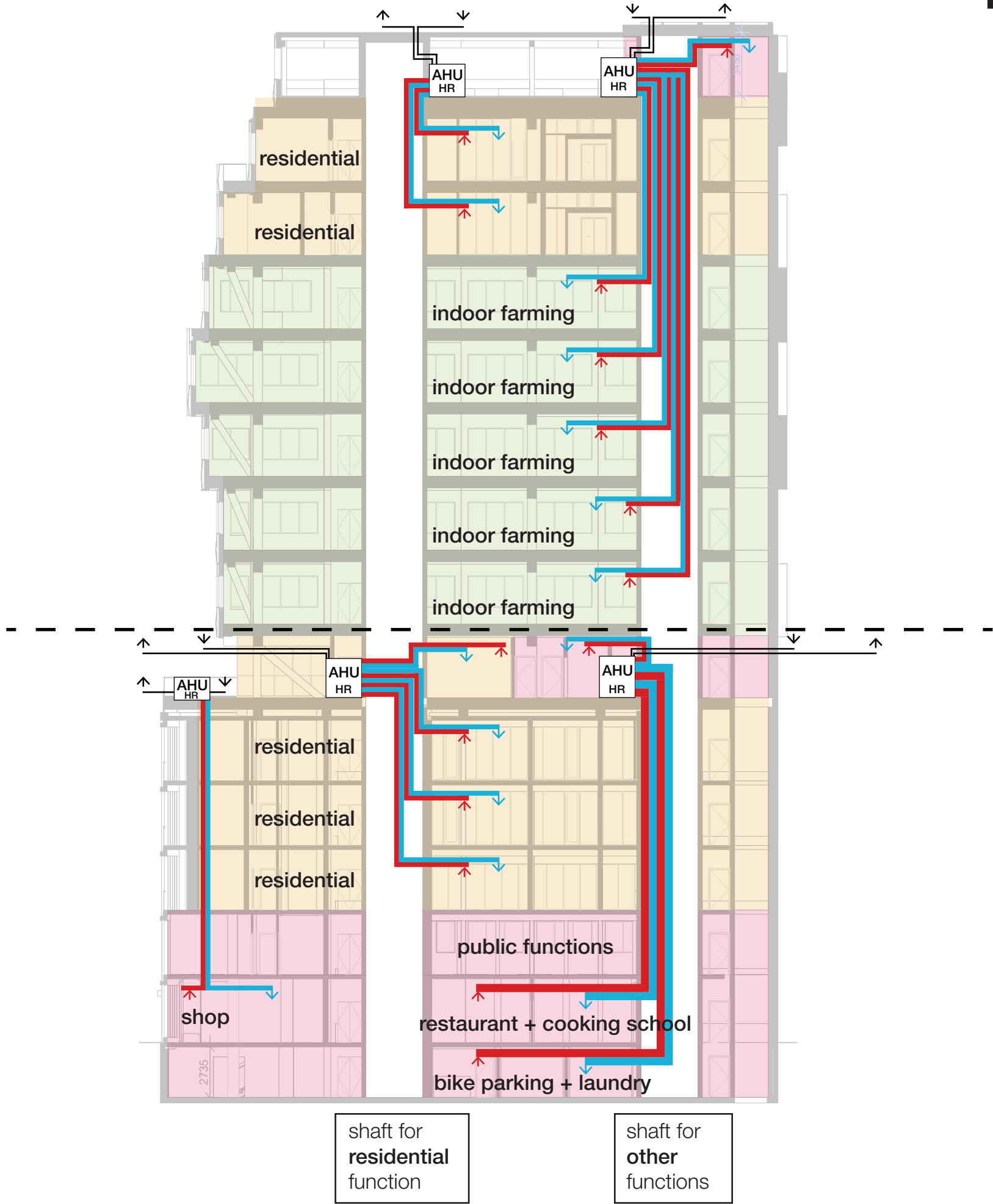
Building technology Heating system



Building technology

Ventilation strategy

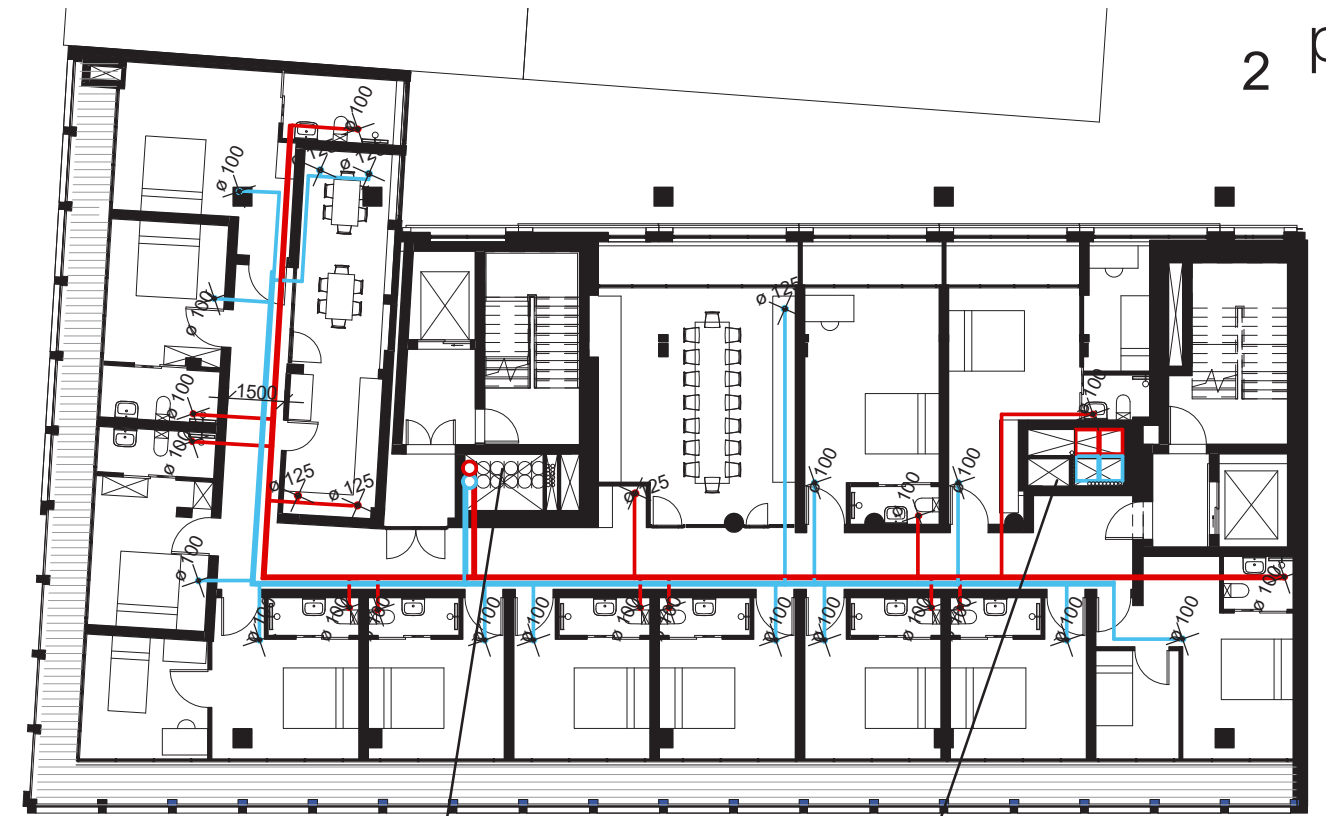
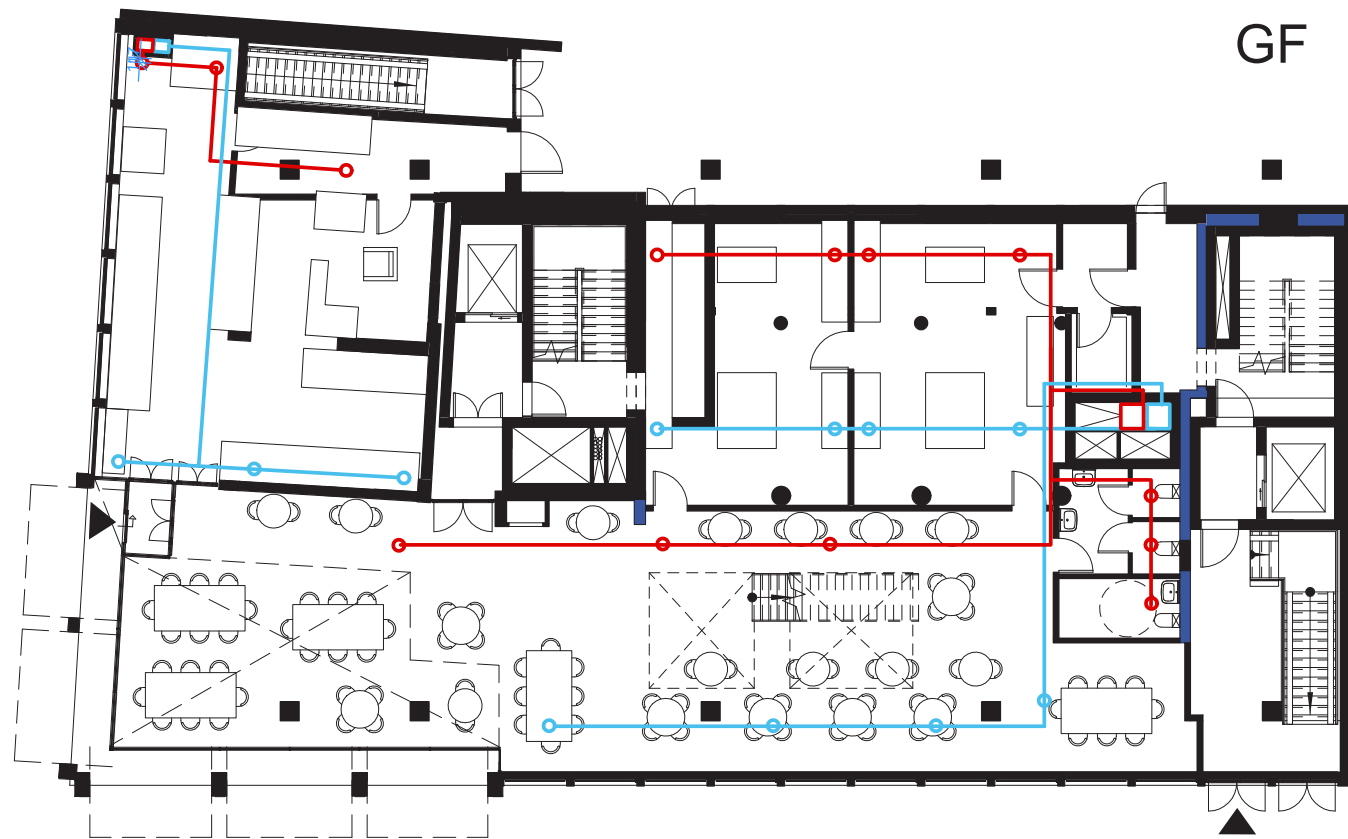
longitudinal section



Building technology

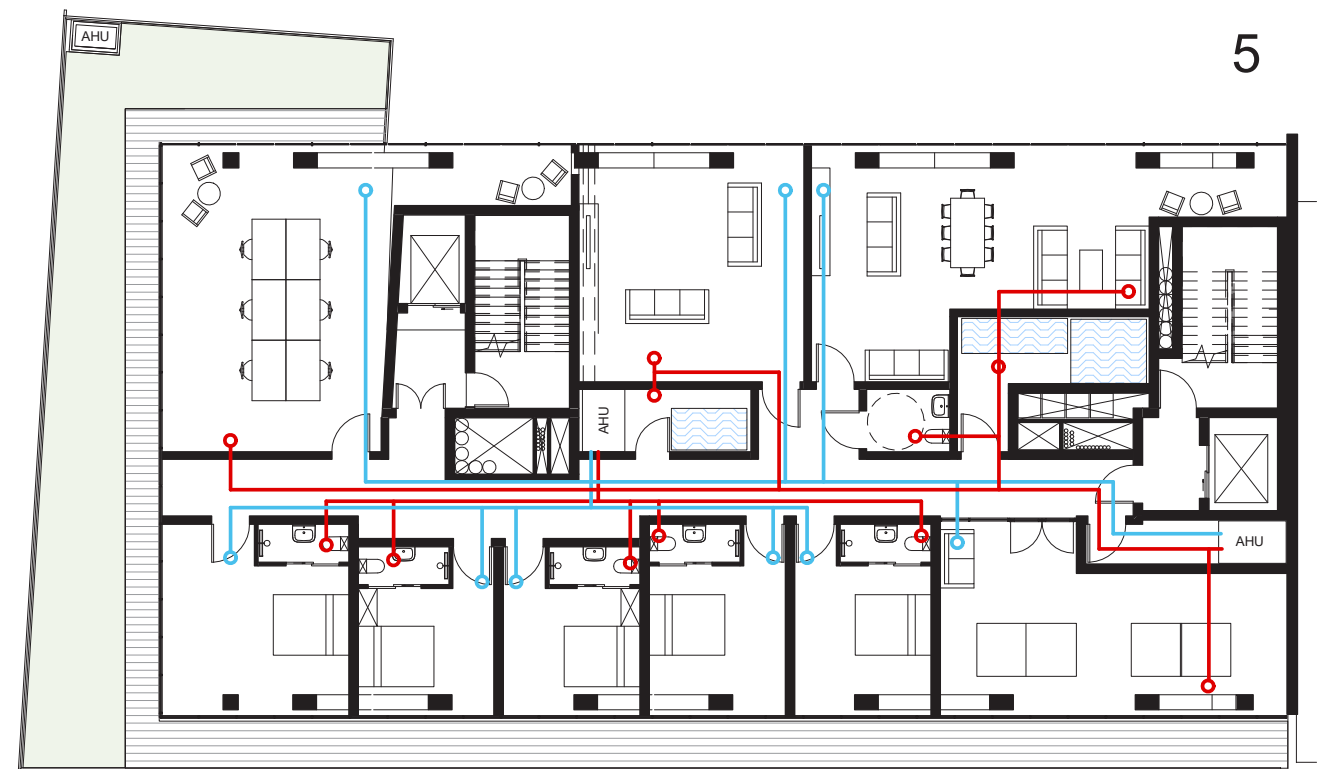
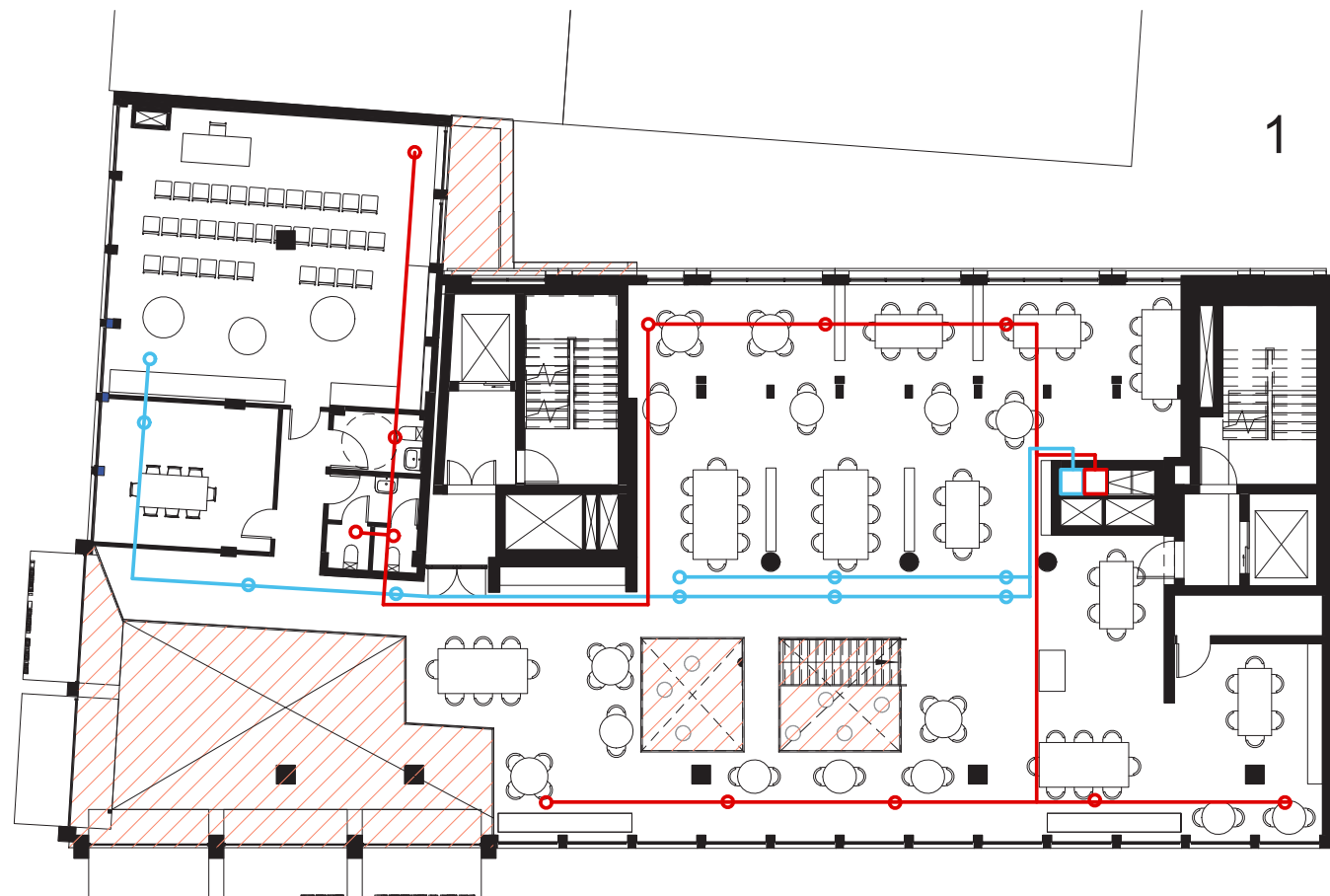
Ventilation strategy

2 plans



ventilation for apartments

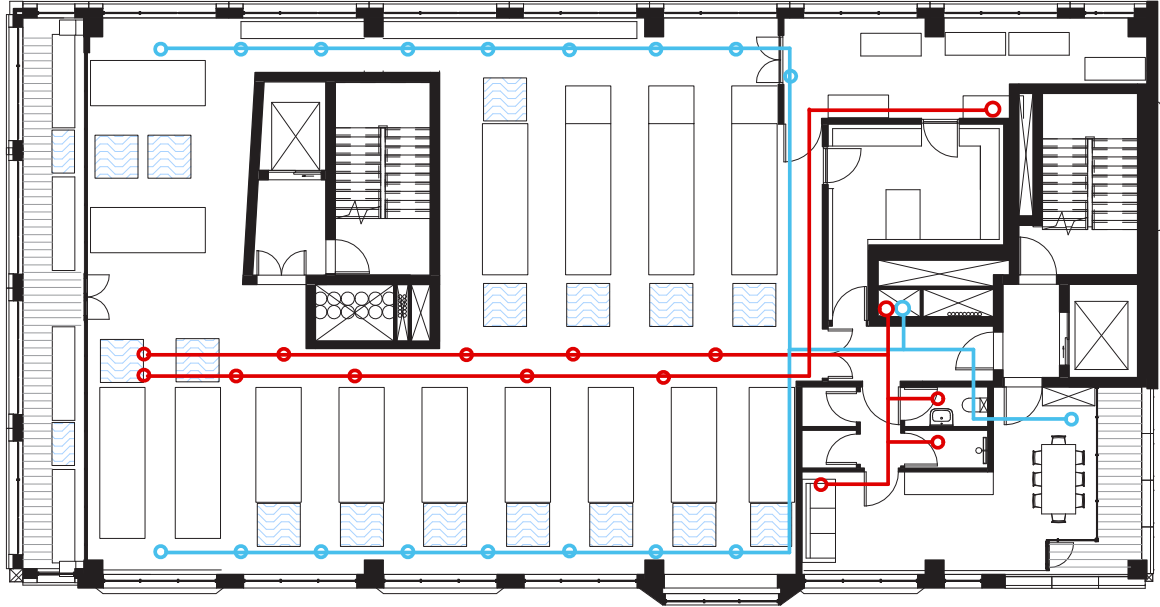
ventilation for indoor farm,
GF, 1st floor, roof, basement



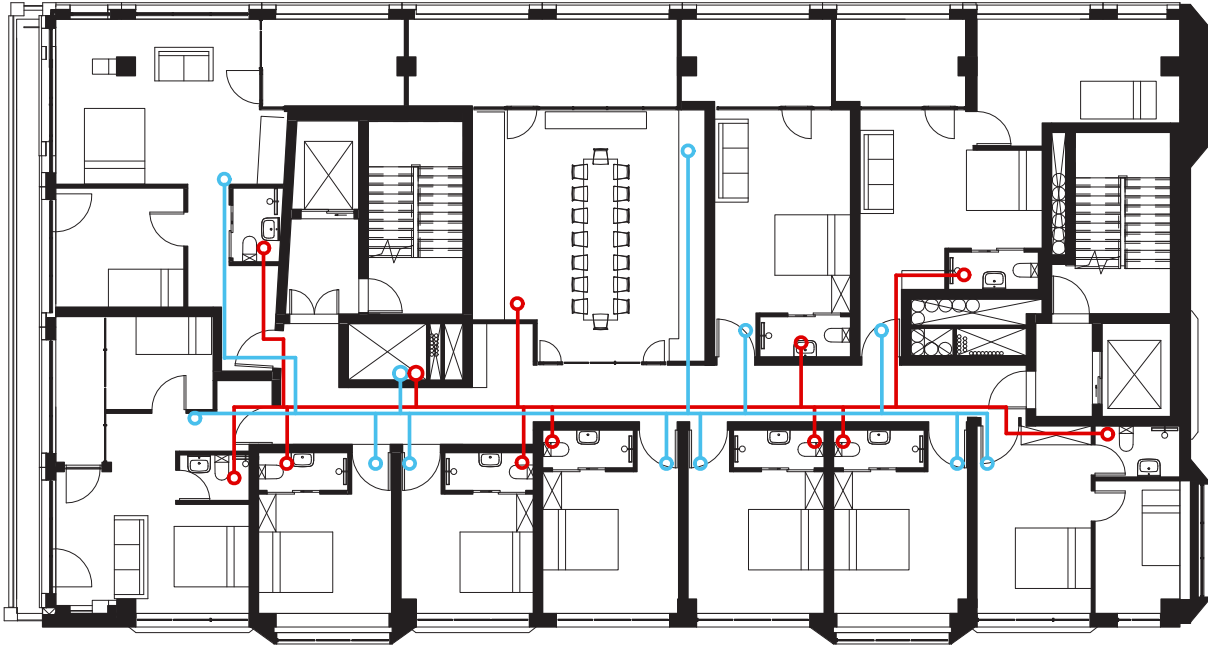
Building technology

Ventilation strategy plans

7



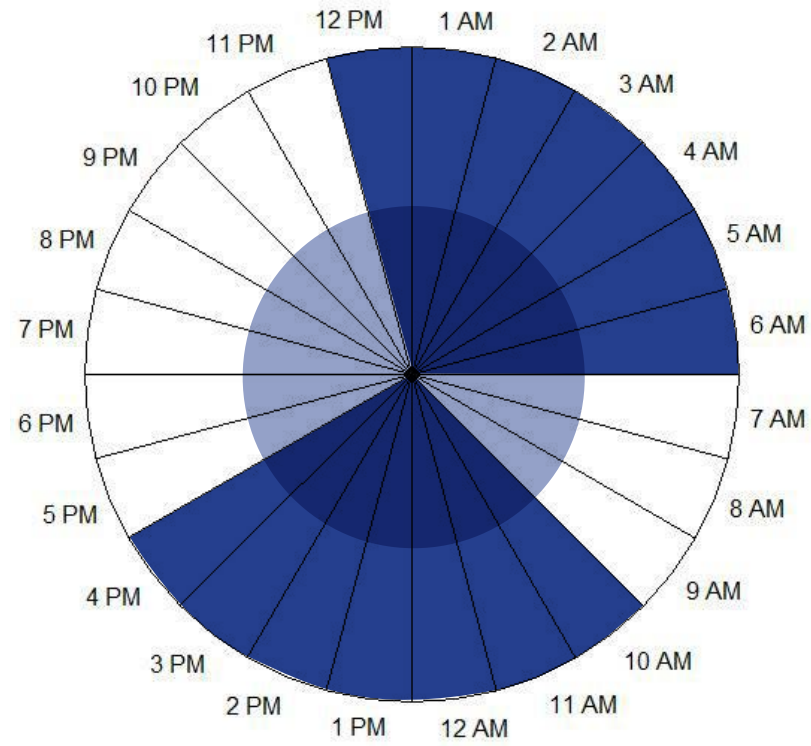
11



Climate design

electricity use during daytime

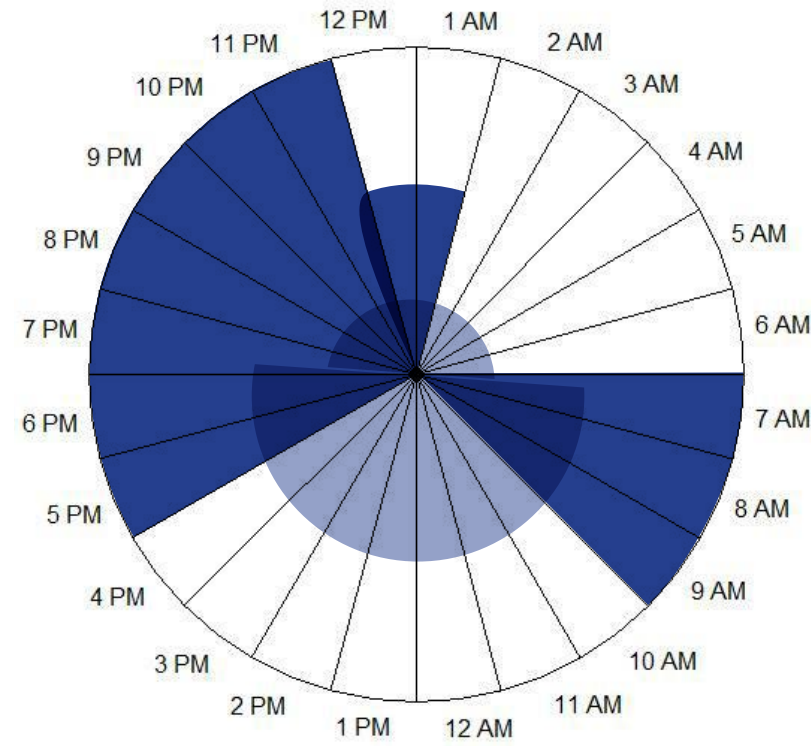
43,5 % in total usable area



urban farm

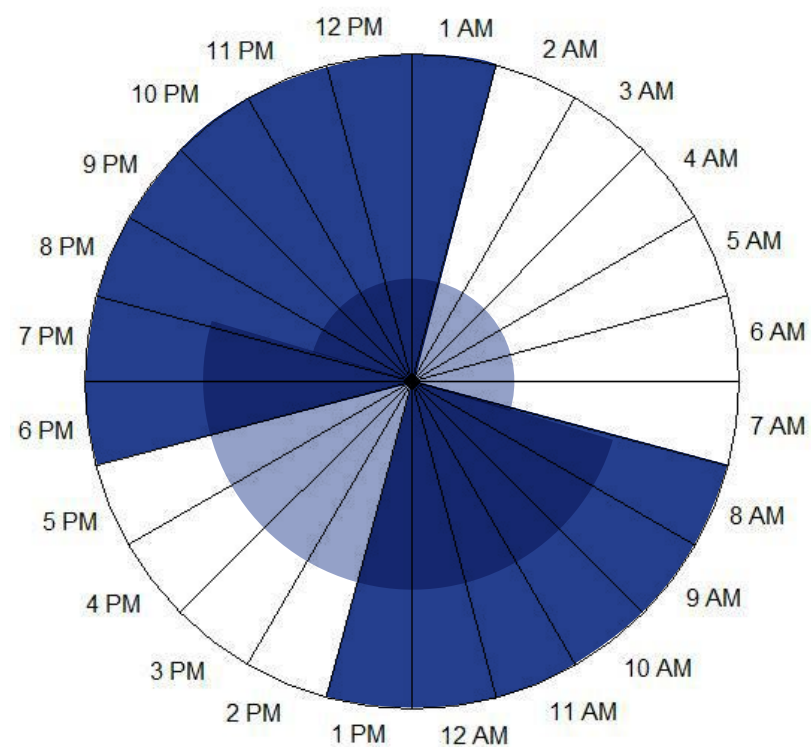
LED lamps (65%), air conditioners (20%)
mostly in use during nighttime and working hours

39,2 % in total usable area



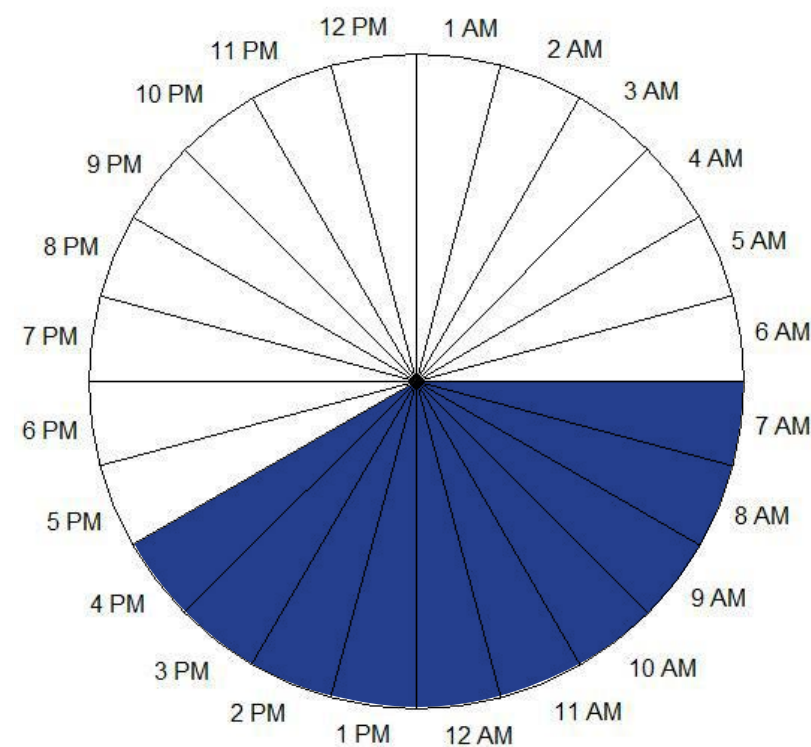
residential

10,6 % in total usable area



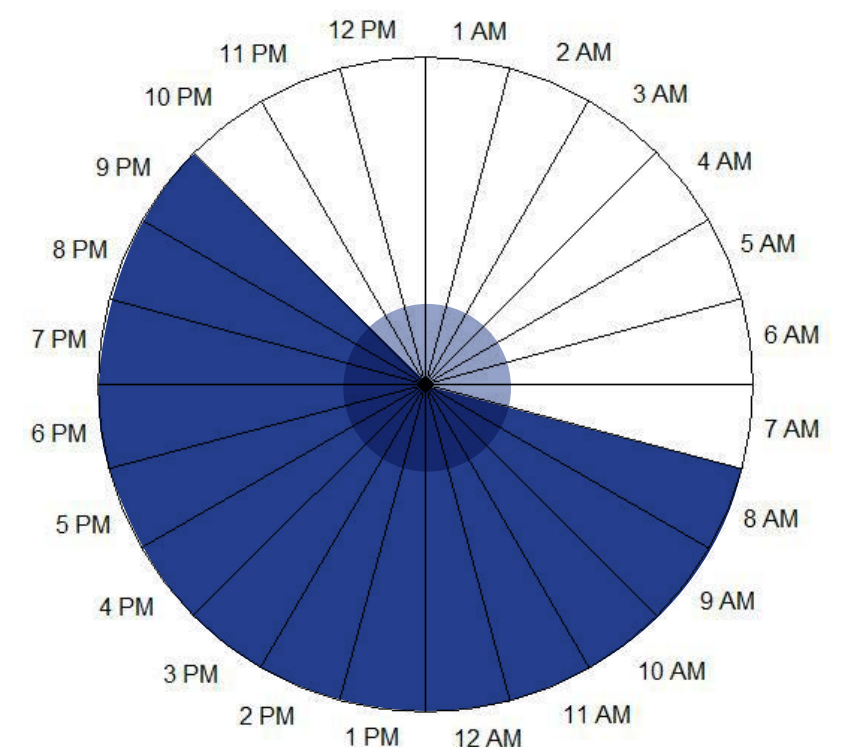
restaurant

4,2 % in total usable area



cooking school

2,5 % in total usable area

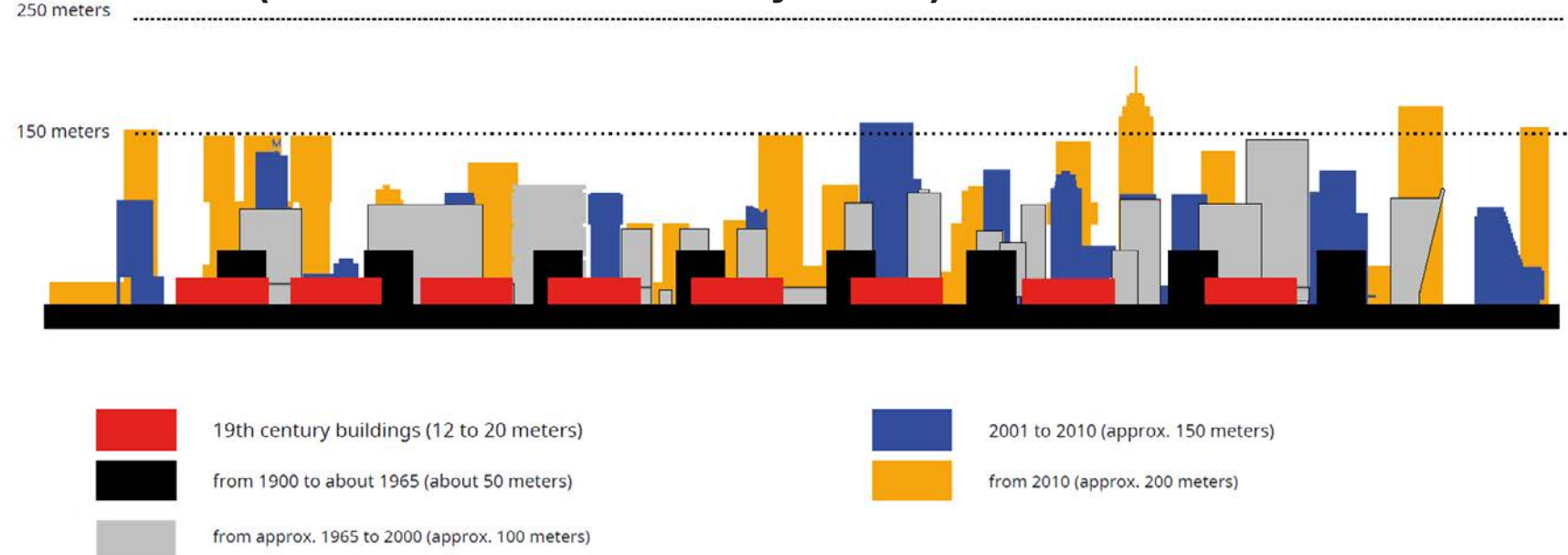


food shop



HIGH BUILD VISION 2019.

The former Police station building now reaches **20,7m** height (or **23,7m** including the installation room on top of the 5th floor) and to reach **50m (the second level in the city centre)** 7 additional floors could be added.



High-rise buildings are considered to be higher than 70 metres. In this high-rise vision, a maximum height of approximately 250 meters is set for the city center along the city axis. For the other areas where high-rise buildings are made possible, the maximum height is 150 meters.

The plinth must be transparent and vertically articulated and have multiple spaces (with doors) to do justice to the city at eye level. In addition, the height of the substructure depends on the so-called Rotterdam layer. This Rotterdam layer can differ per area and is the average building height in an area, usually between 15 and 25 metres.

CHAPTER 1: CITY IN TRANSITION

- Densification of the city
- 5 perspectives for Rotterdam

CHAPTER 3: STREET

- Ground scraper
- Rotterdam layer
- Cultural history
- Architecture
- Appearance
- Program and plinth
- Wind
- Sun

CHAPTER 2: CITY

- High-rise zone
- Expansion high-rise zone
- Height
- Substrate
- Safety

CHAPTER 4: BUILDING

- Meeting
- Flexibility
- Waste
- Energy and climate
- Green
- Multifunctional roof landscape
- Parking