HEALING BY TRANSFORMING
CREATING THE EMPOWERED HEALING ENVIRONMENT

P5 presentation by:
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Studio: Architectural Engineering / Second Life
Tutors: Anne Snijders (A), Paddy Tomesen (BT) & Andy Jenkins (R)

Contents:

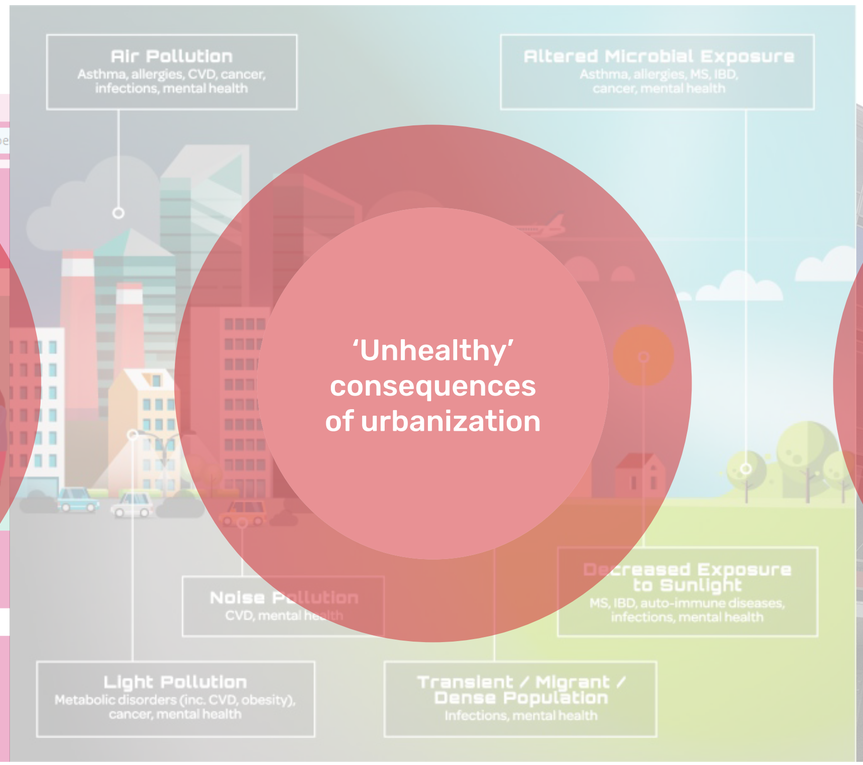
What does architecture mean for healthcare facilities?

Source: Reformatorisch Dagblad

Source: Getty Images

Changing the design approach for healthcare design?

Developments in healthcare that need interference. Focus on the environment of healthcare facilities



'Unhealthy' consequences of urbanization

Vacant (large) post 65 buildings which can have negative environmental impact when demolished

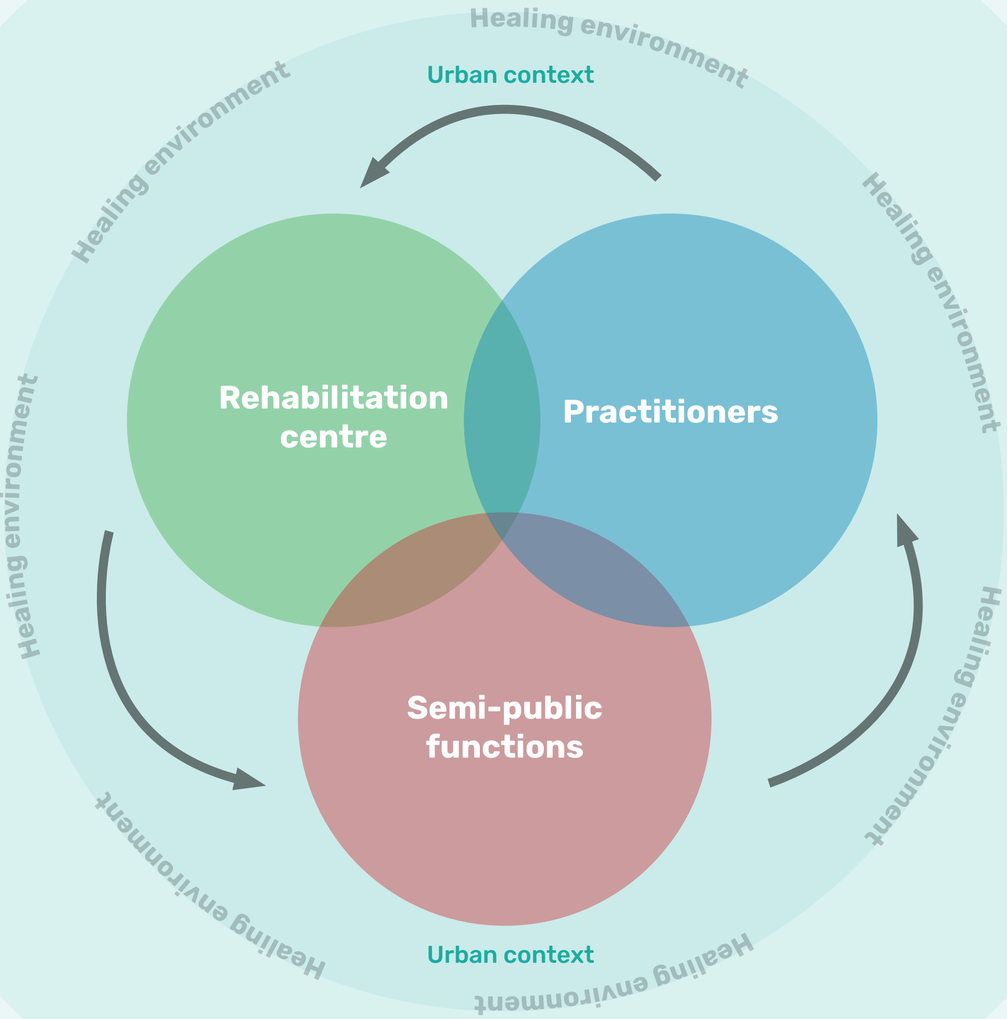
Existing trend: the healing environment

‘‘An environment which supports recovery, well-being and experience in such a way that it benefits the healing process.’’

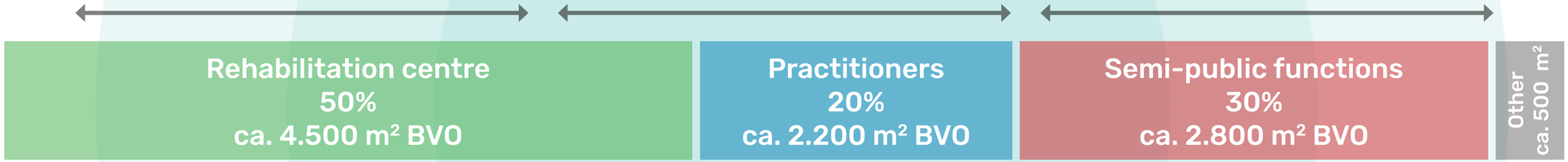
Source: RIVM

Overall design question:

In what way can the healing environment as an user-centred design approach of a rehabilitation hotel within an urban context be of value for the (medical) well-being of the users, the surrounding context and all its inhabitants?


Healing environment
Urban context
Healing environment
Healing environment
Rehabilitation centre
Practitioners
Healing environment
Semi-public functions
Healing environment
Urban context
Healing environment

Design program:
a short stay rehabilitation hotel with semi-public functions



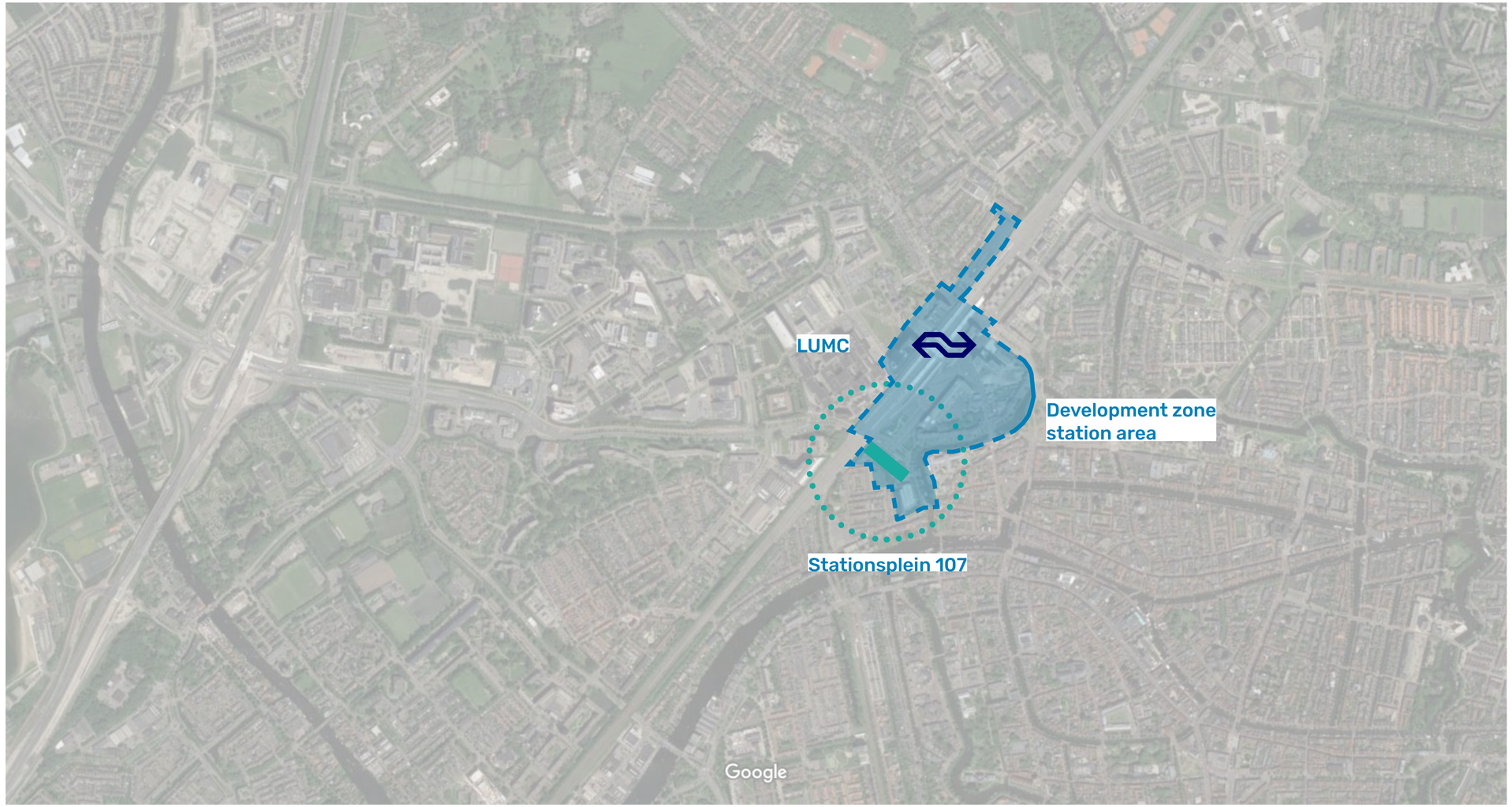
- Patient rooms short-stay (ca. 15 m² per room)
- Sanitary spaces (ca. 4 m² per 2 rooms)
- Communal spaces for patients
- Private spaces for patients (ca. 10 m² per room)

- Practitioner spaces (16-25 m² p.r.)
- Private gymnasium ca. 60 m²
- Meeting rooms (20-25 m² p.r.)
- Communal spaces

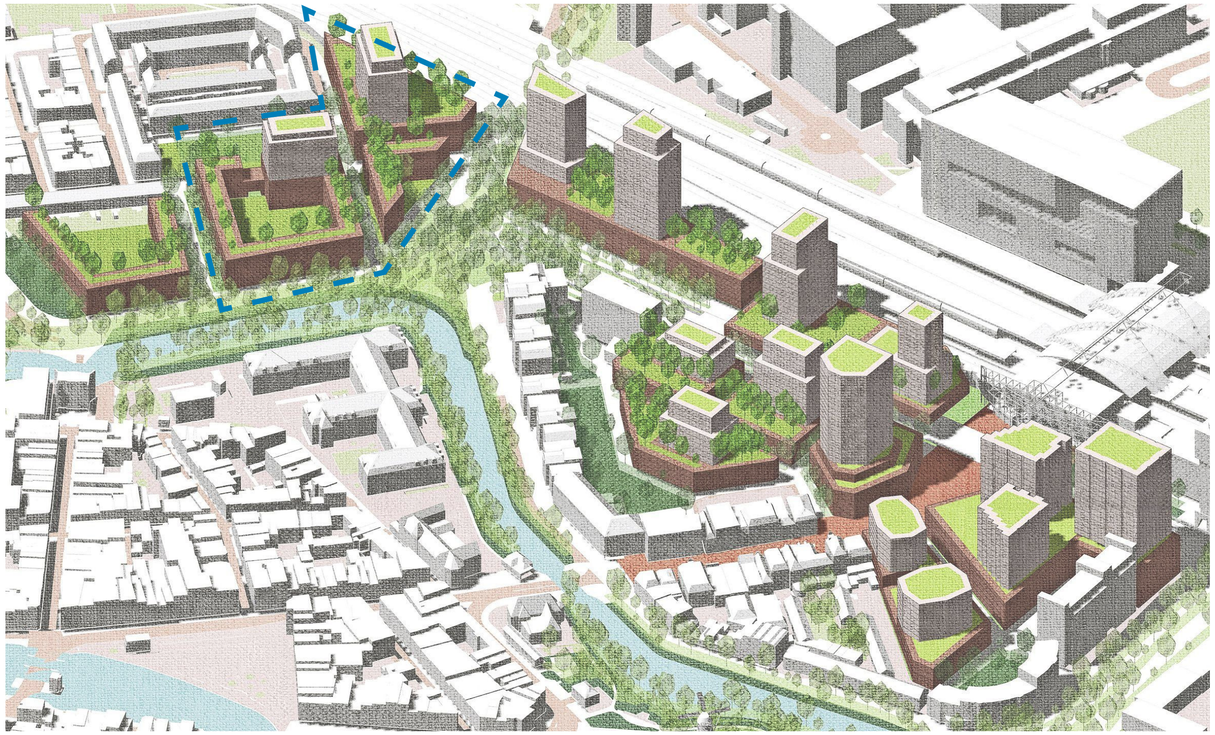
- Fitness centre	ca. 450 m²
- Sports hall	ca. 300 m²
- Welness/spa (with swimming pool)	ca. 450 m²
- Auditorium	ca. 750 m²
- Cafetaria (ca. 1,8 m² per person)	ca. 600 m²
- Communal spaces/ retail spaces	ca. 250 m²

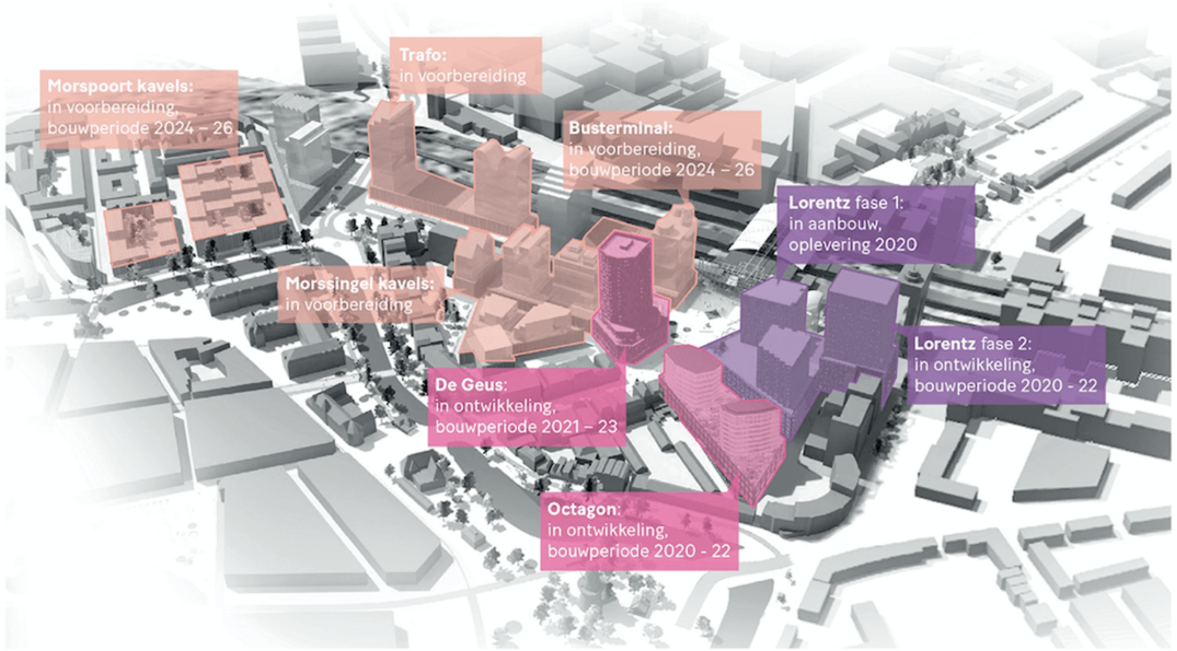

Amsterdam >
Amsterdam >
A44
LUMC
Leiden centre
< The Hague
< The Hague
Google
Afbeeldingen ©2022 Aerodata International Surveys,Maxar Technologies,Kaartgegevens ©2022
200 m

Leiden station area as casus location for using existing building stock



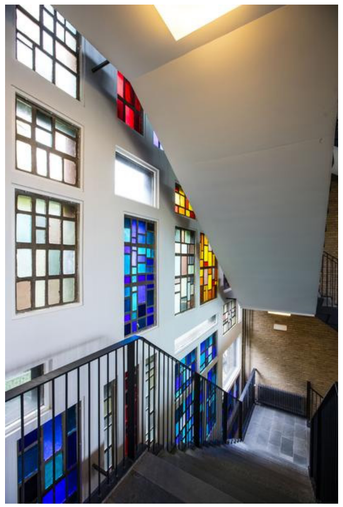
Development station area Leiden





Source: Gemeente Leiden & Leidsch Dagblad

Casus environment: Stationsplein 107 - Leiden



- Ca. 10.000 m^2 building space
- Designed by: Ir. J. Jonkman & P. van Dorp
- Built in 1963-1966
- High ground floor level
- Availability of soutterain
- (Monumental) staircase facade
- Close to LUMC (Leiden Medical University)
- Two faces, each with own character (busy north, calm south)

‘Classical recipe of the healing environment’ - Van den Berg (2005):

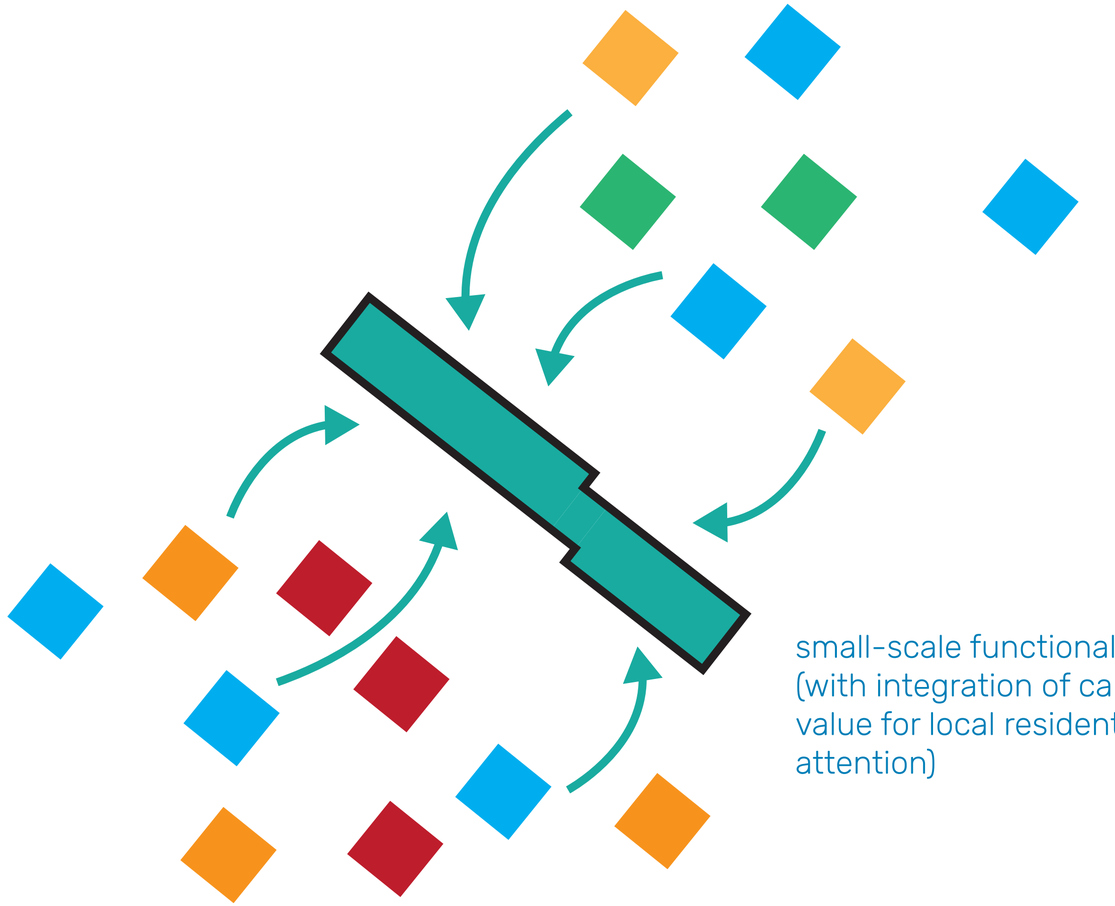
Daylight - Nature - Fresh air - Silence (acoustic comfort)

Where to start designing a healing environment?

Where to start designing a healing environment?

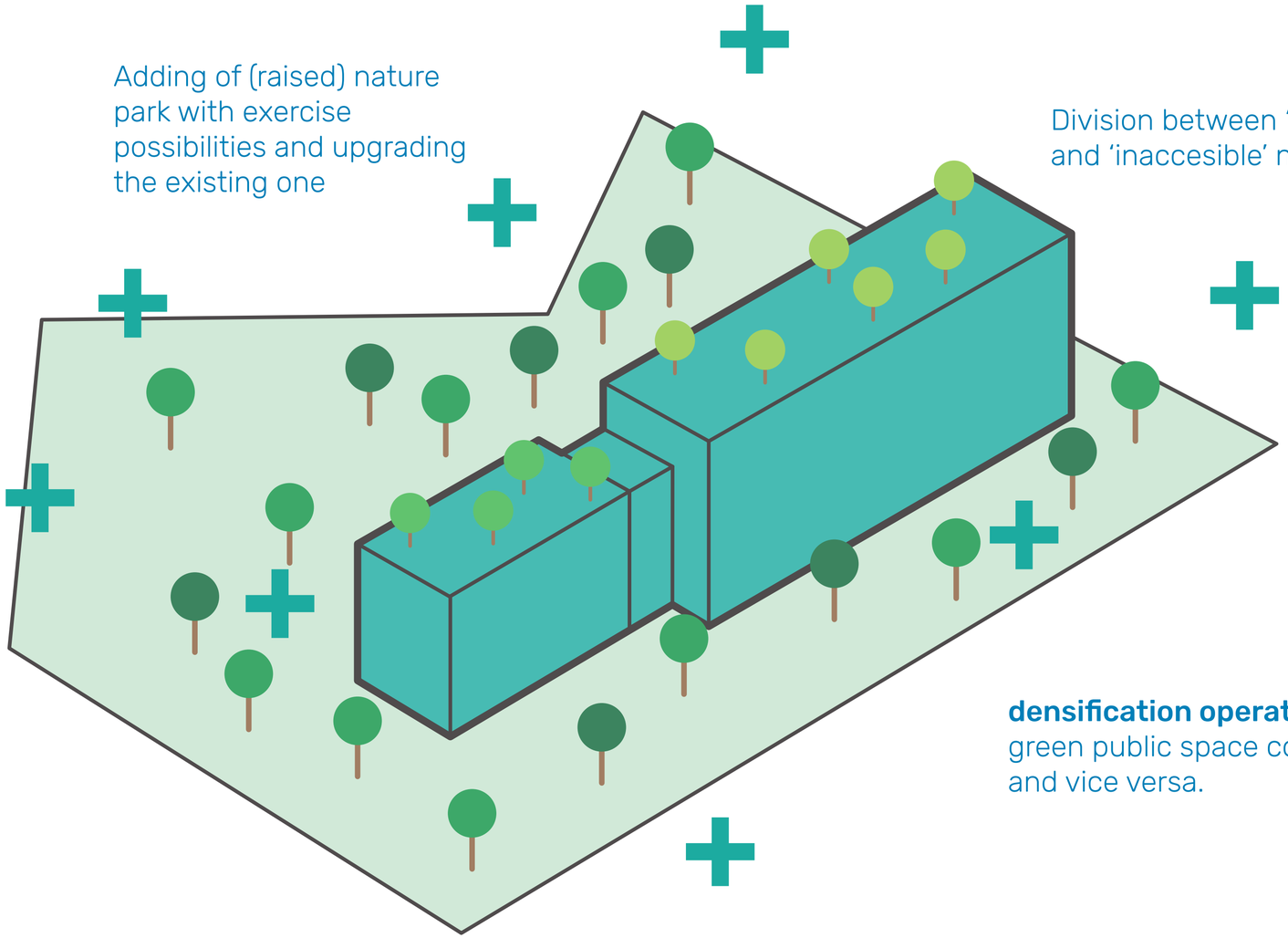
> Macro-scale, the direct context

Area vision: decreasing ‘local healthcare segregation’



small-scale functional differentiation (with integration of care and user value for local residents as points of attention)

Area vision: making the local area healthier



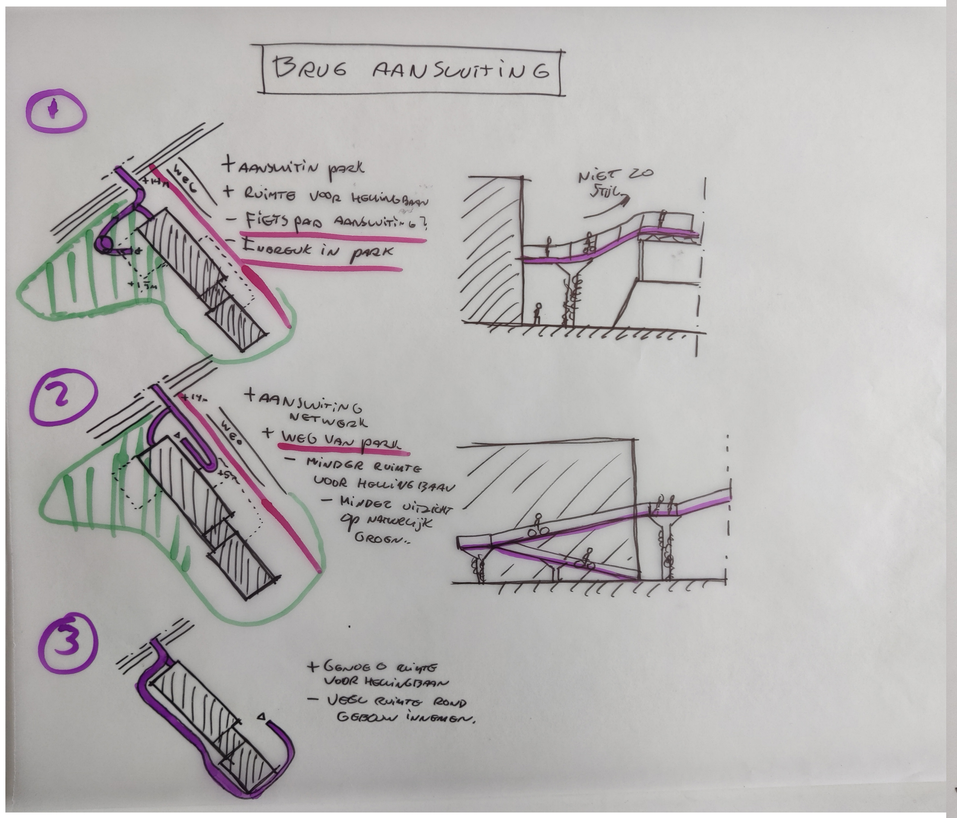
Adding of (raised) nature park with exercise possibilities and upgrading the existing one

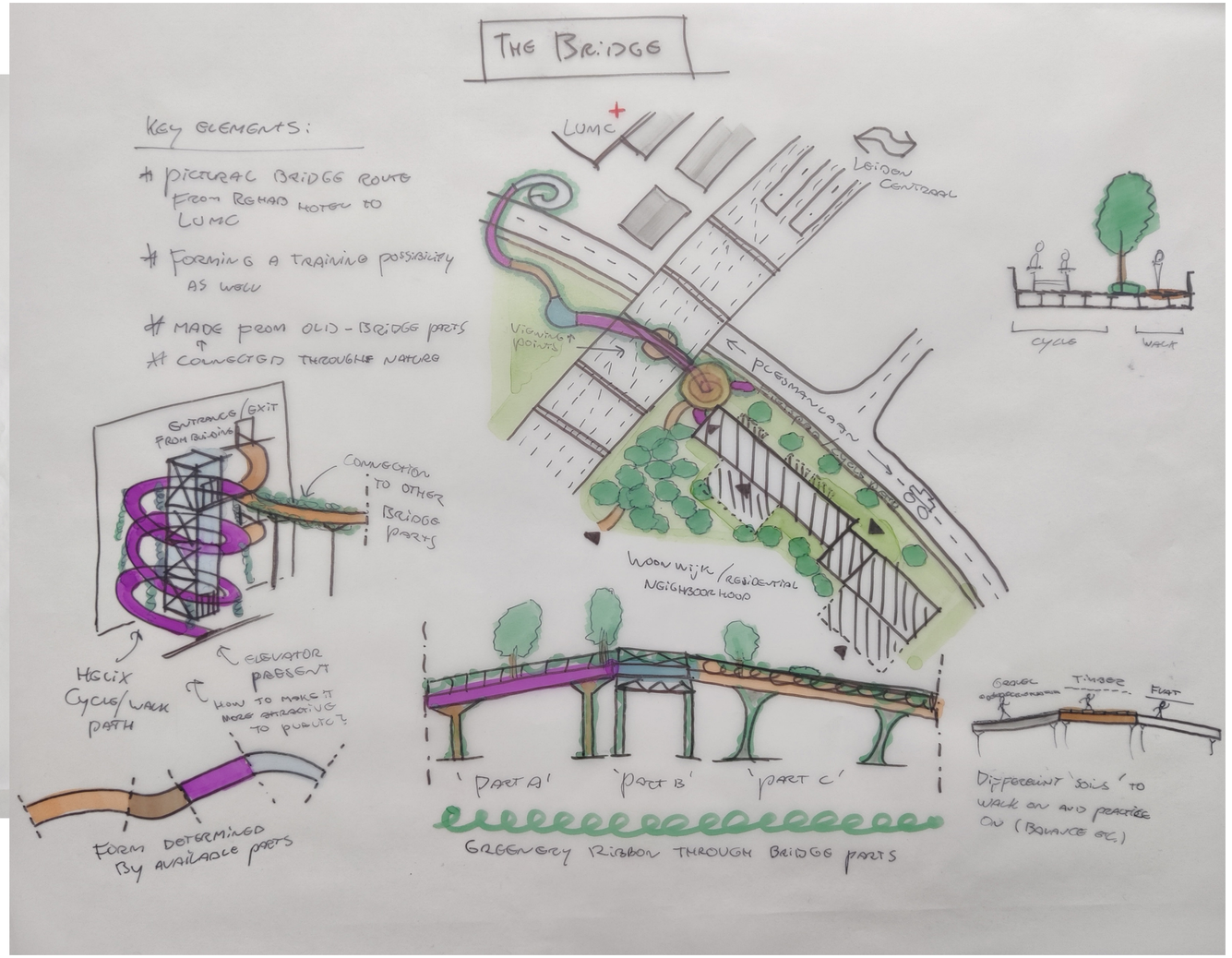
Division between ‘accesible’ and ‘inaccesible’ nature

Healthier

densification operation = greening: new green public space continues into the building and vice versa.

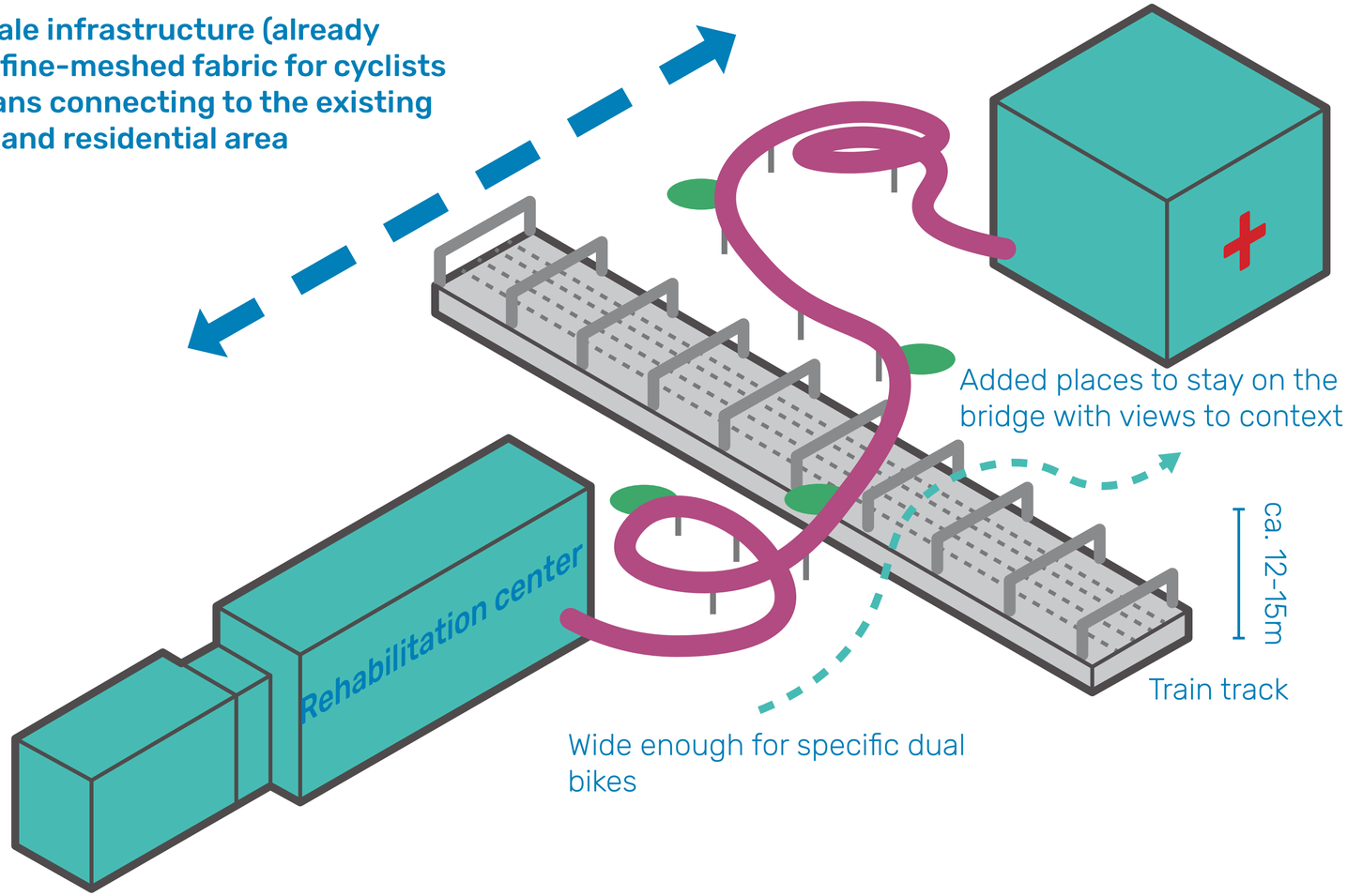
Area vision: Physical connection between rehab and LUMC

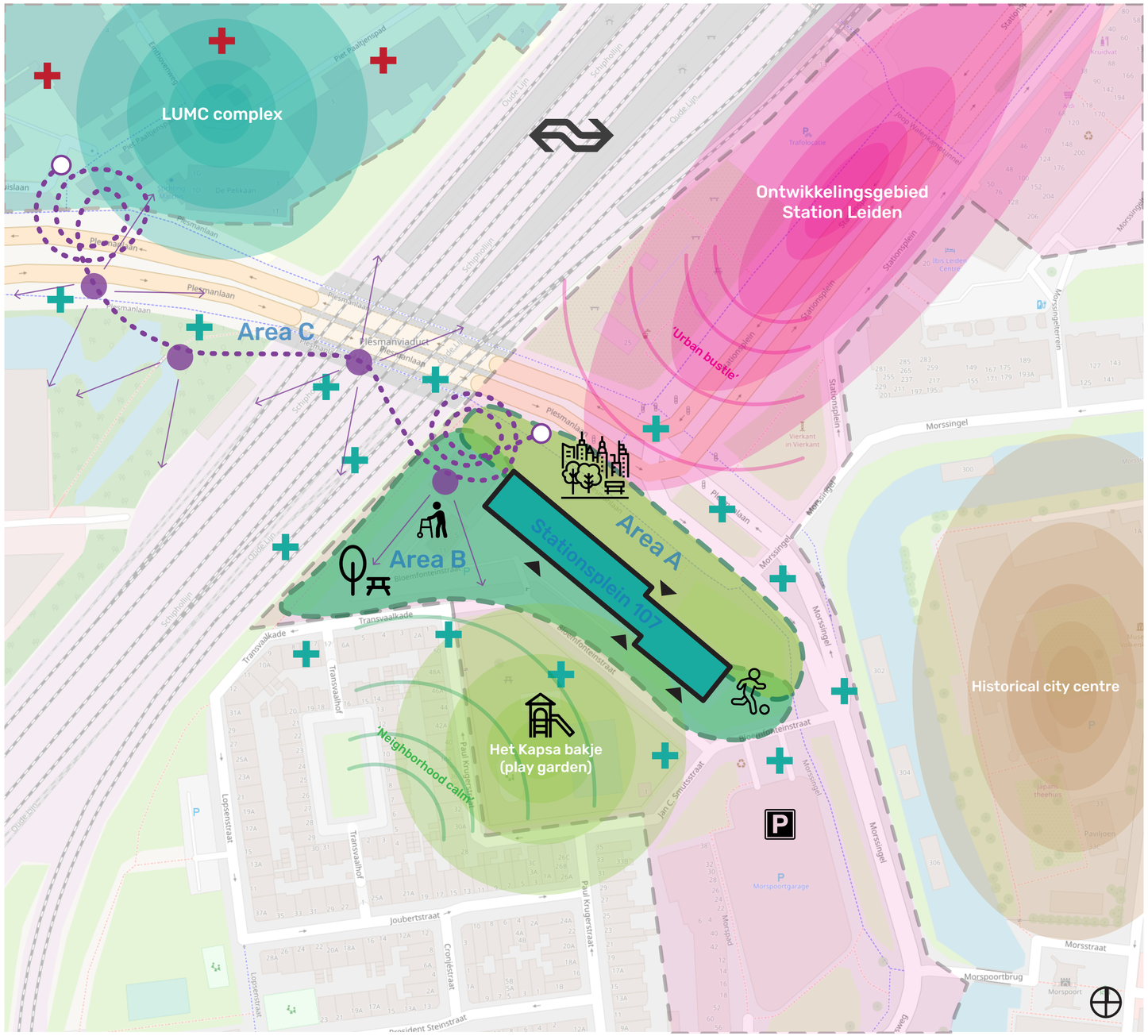




Area vision: Physical connection between rehab and LUMC

> No large-scale infrastructure (already exists), but a fine-meshed fabric for cyclists and pedestrians connecting to the existing environment and residential area





Area vision for design

Area A: 'Entrance to the city'

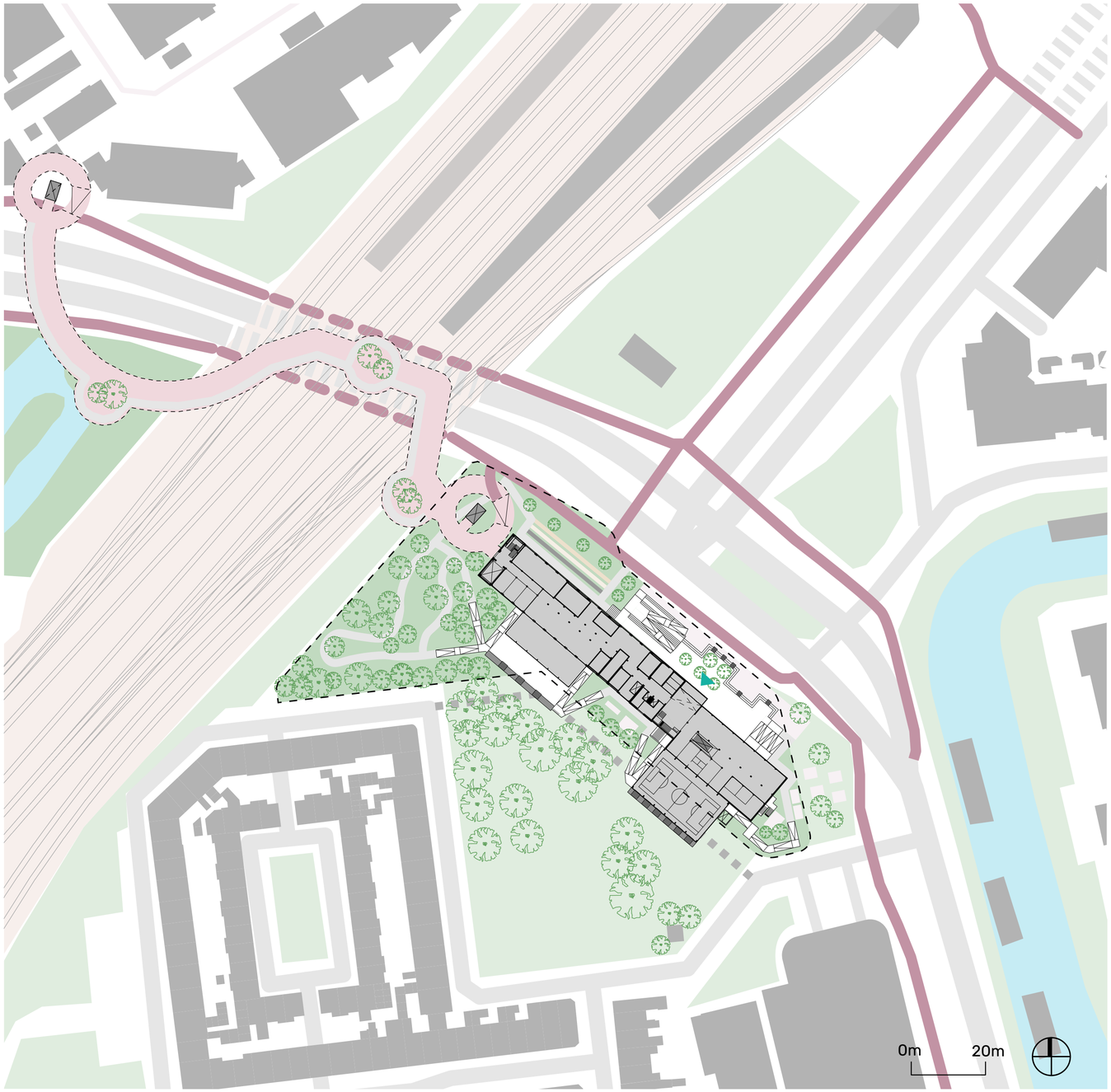
- Public atmosphere
- Urban bustle, spaces to rest and meet
- Main entrance to the building
- Enlarged 'terp' to provide extra seating spaces on tribune structure
- Training facilities on different substrates

Area B: 'The quiet backyard'

- Practice at rest in an calming space
- Public park but with a private feeling of calmness
- Much greenery
- Enlarged 'terp' by undeground functions (auditorium), providing space for terrace

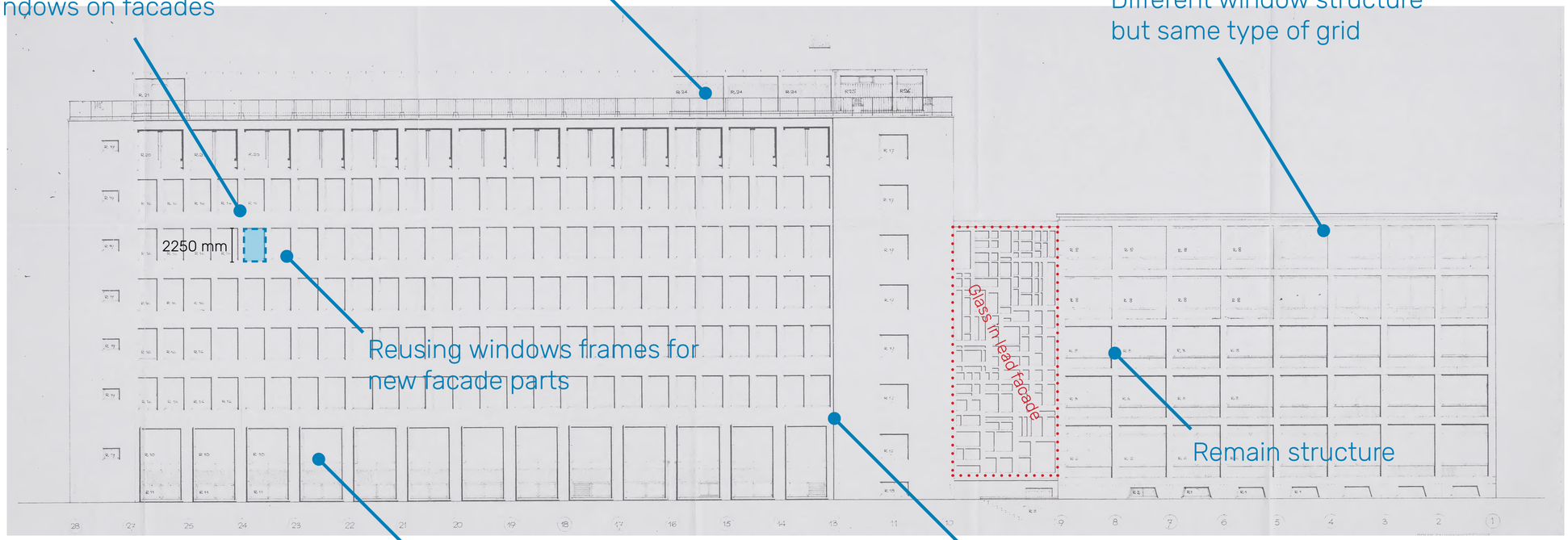
Area C: 'The pictorial bridge'

- Continuing the green ribbon
- Viewpoints on the route
- Practise space for mobility excercises
- Connection to the medical area of Leiden (LUMC)



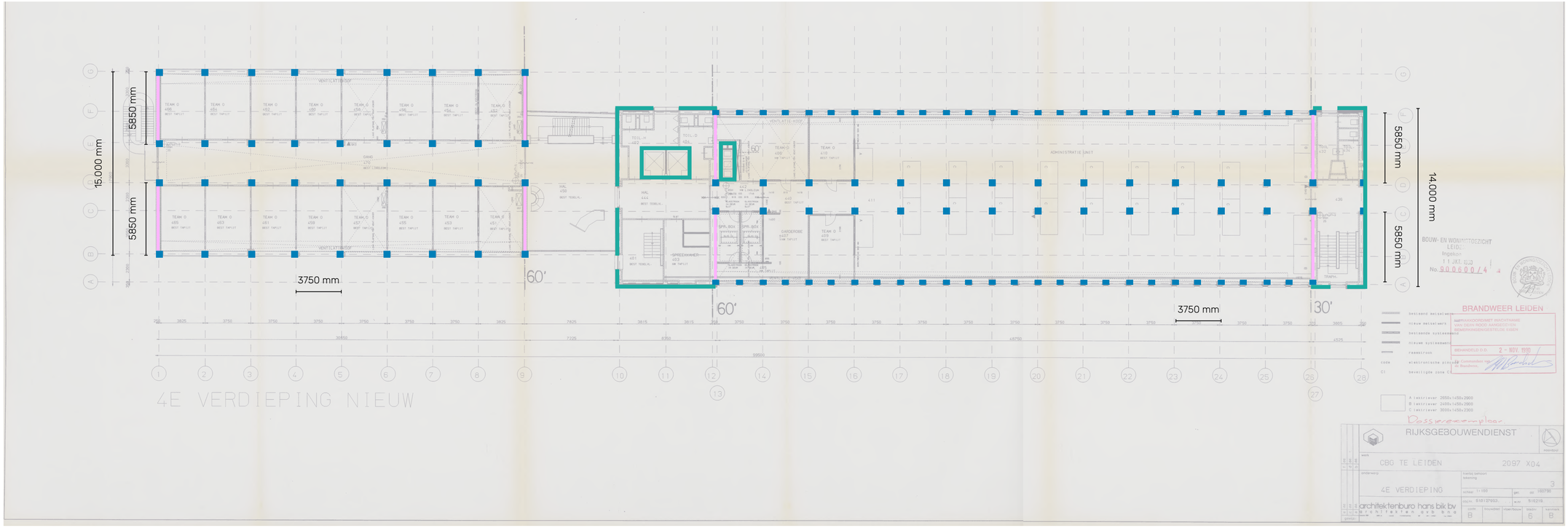
Site plan (with ground level)

The existing building



Southwest facade

The existing building



Overall structure

- Columns
- Stability wall/girders
- Structural wall

Now: Brutalistic, not embedded in the surrounding area...

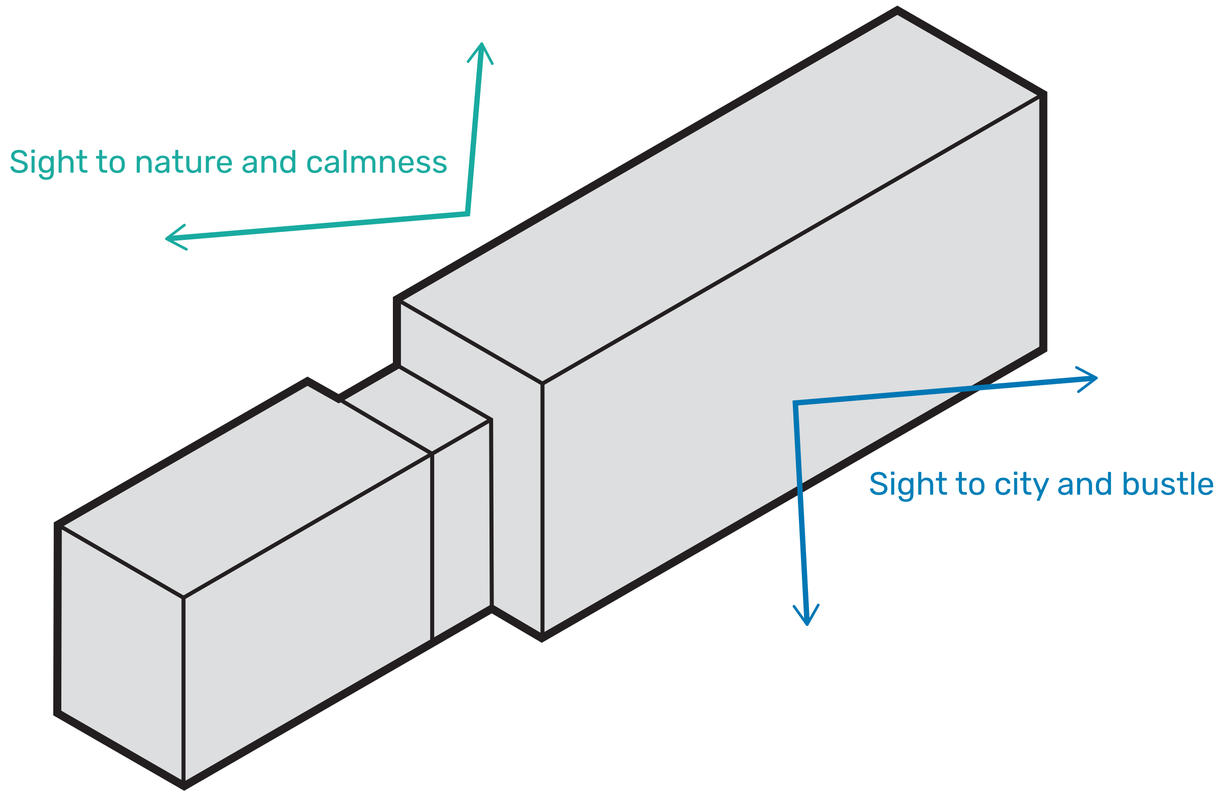
After: ‘Softening’ the building and anchoring it in the environment, which is also transformed > focus is shifted to the landscape

Now: Brutalistic, not embedded in the surrounding area

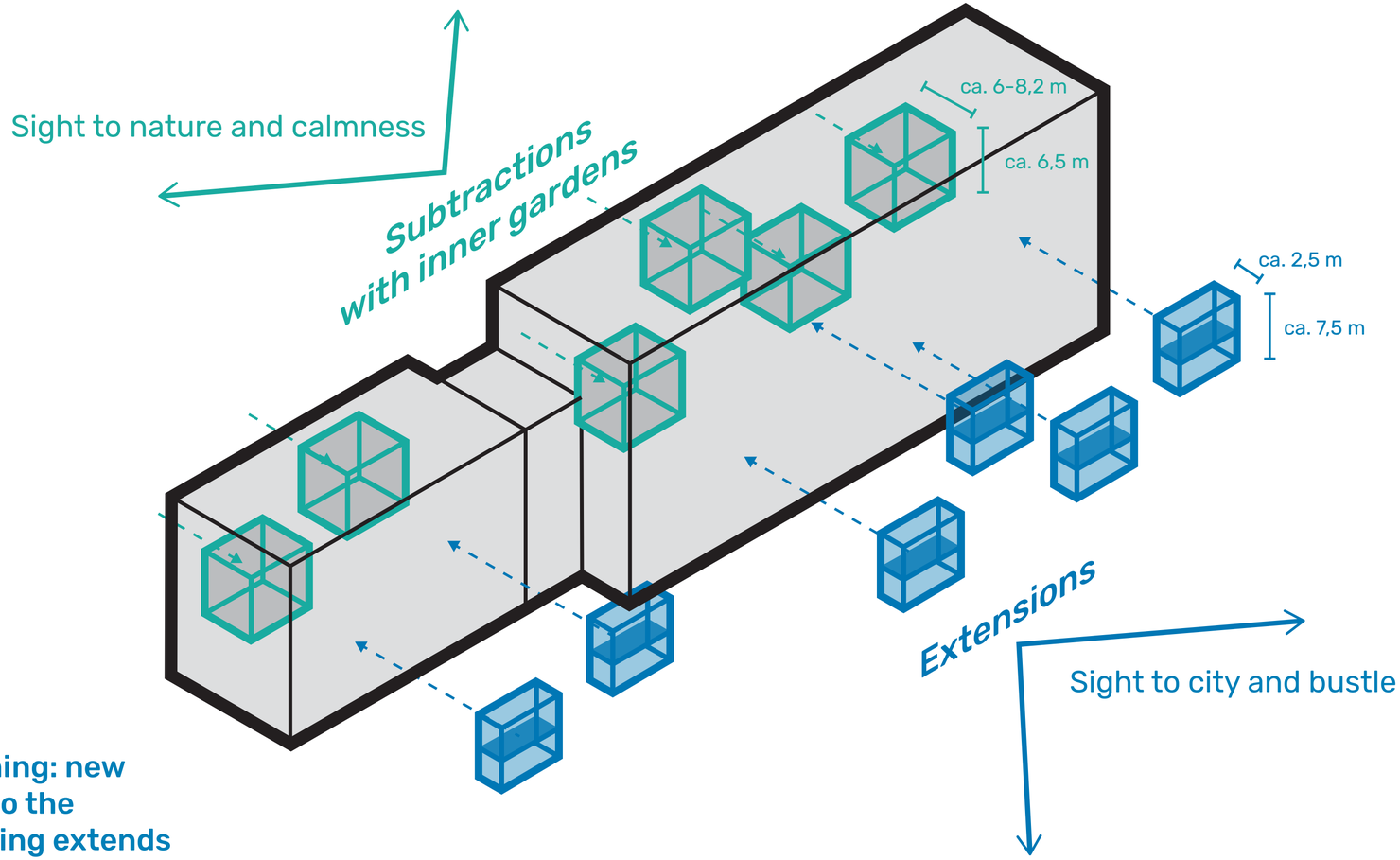
After: ‘Softening’ the building and achoring it in the environment, which is also transformed > focus is shifted to the landscape

> The intervention of adaptive reuse needs to transcend the level of the building as an object, and concerns the environment in its totality and all its facets

Main interventions: interaction with the environment

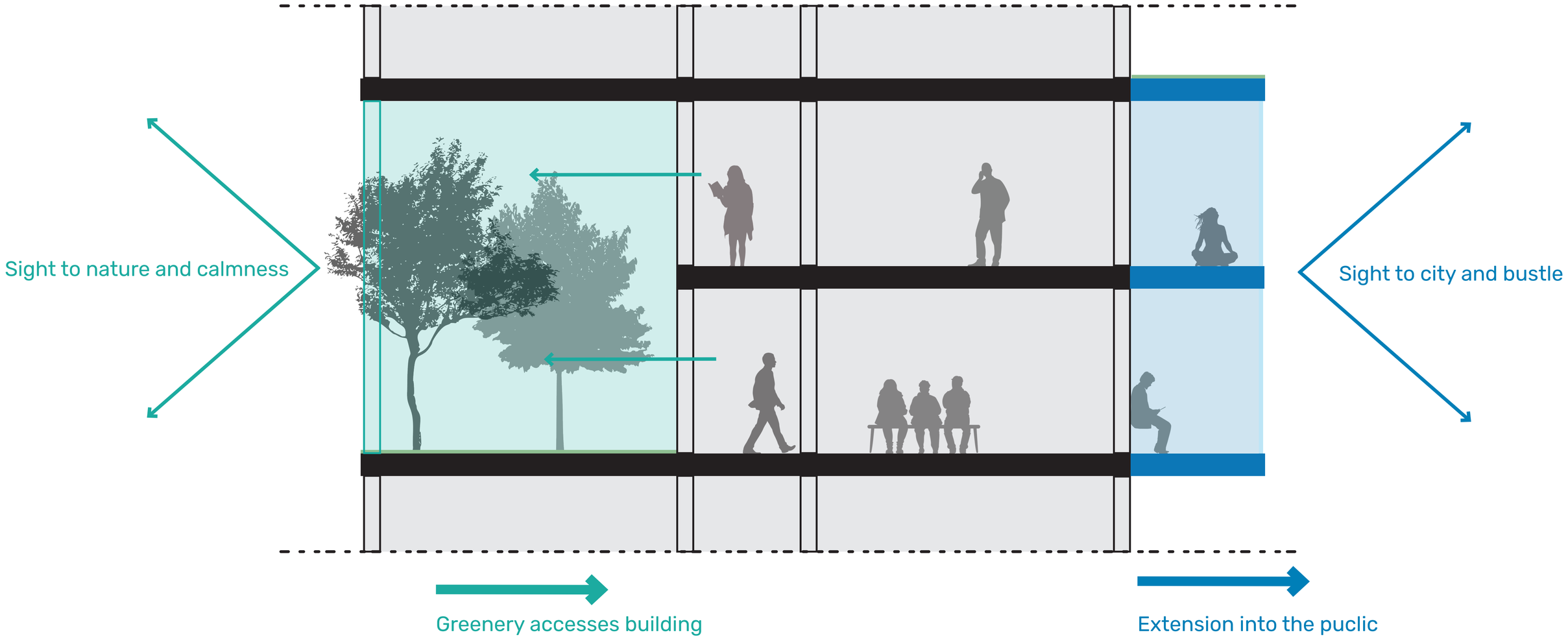


Main interventions: interaction in- and outside

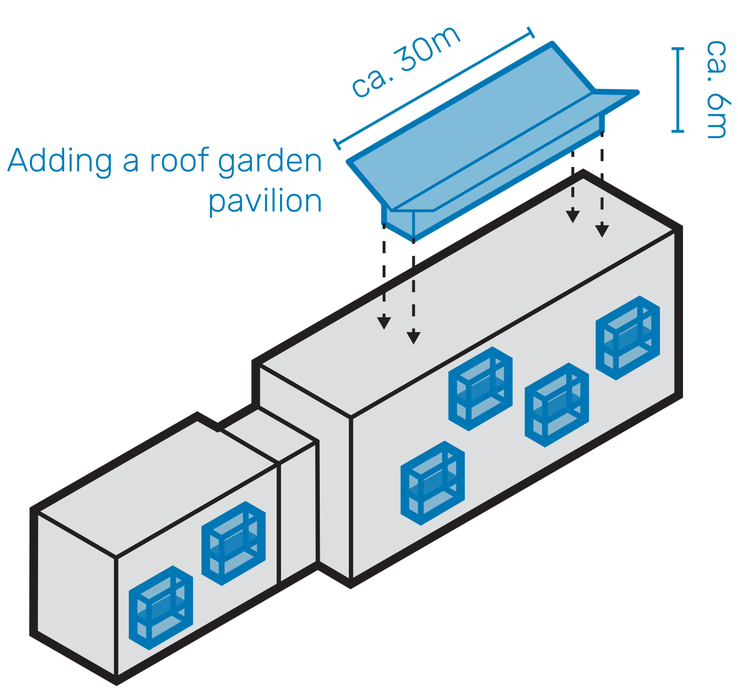


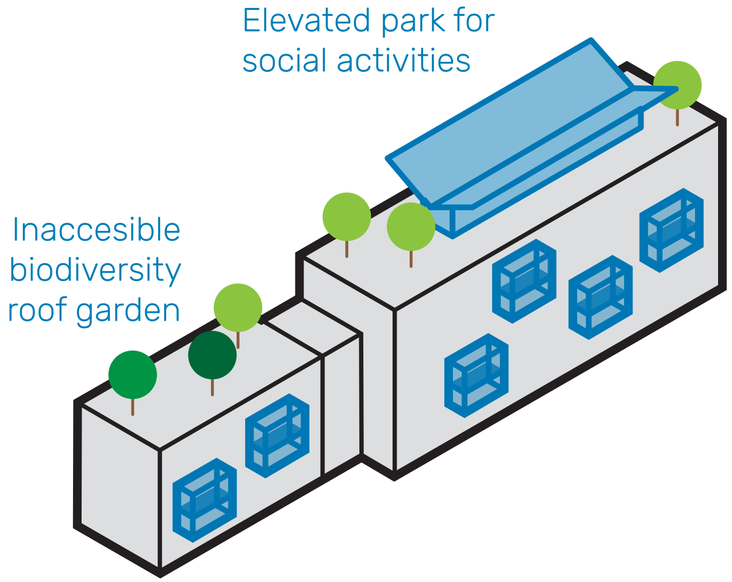
> Densification operation = greening: new green public space continues into the building and vice versa, the building extends more into the public space.

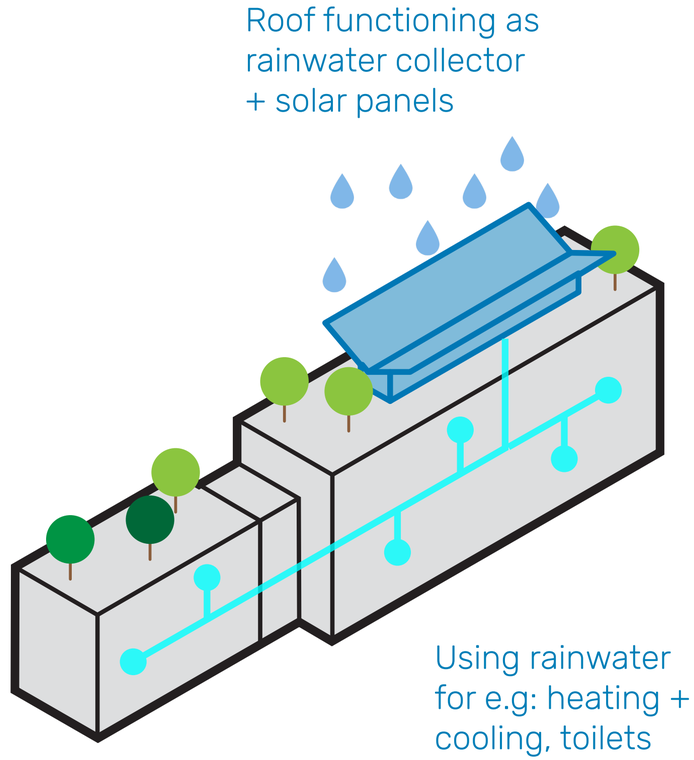
Main interventions: interaction in- and outside



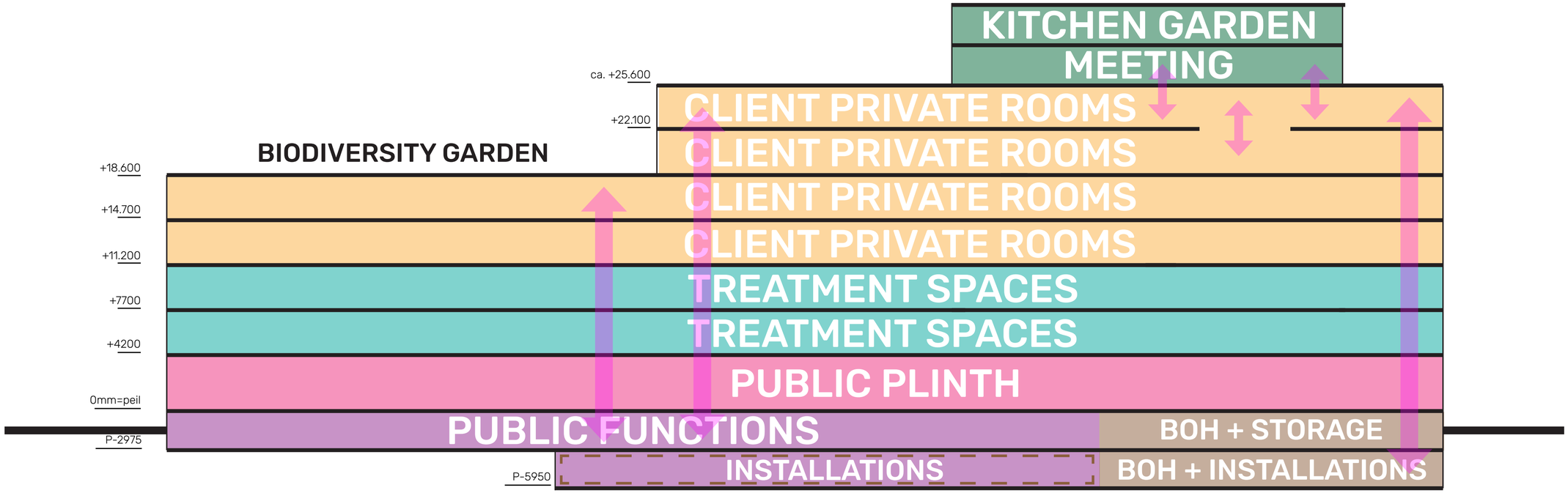
Main interventions: the roof garden pavilion



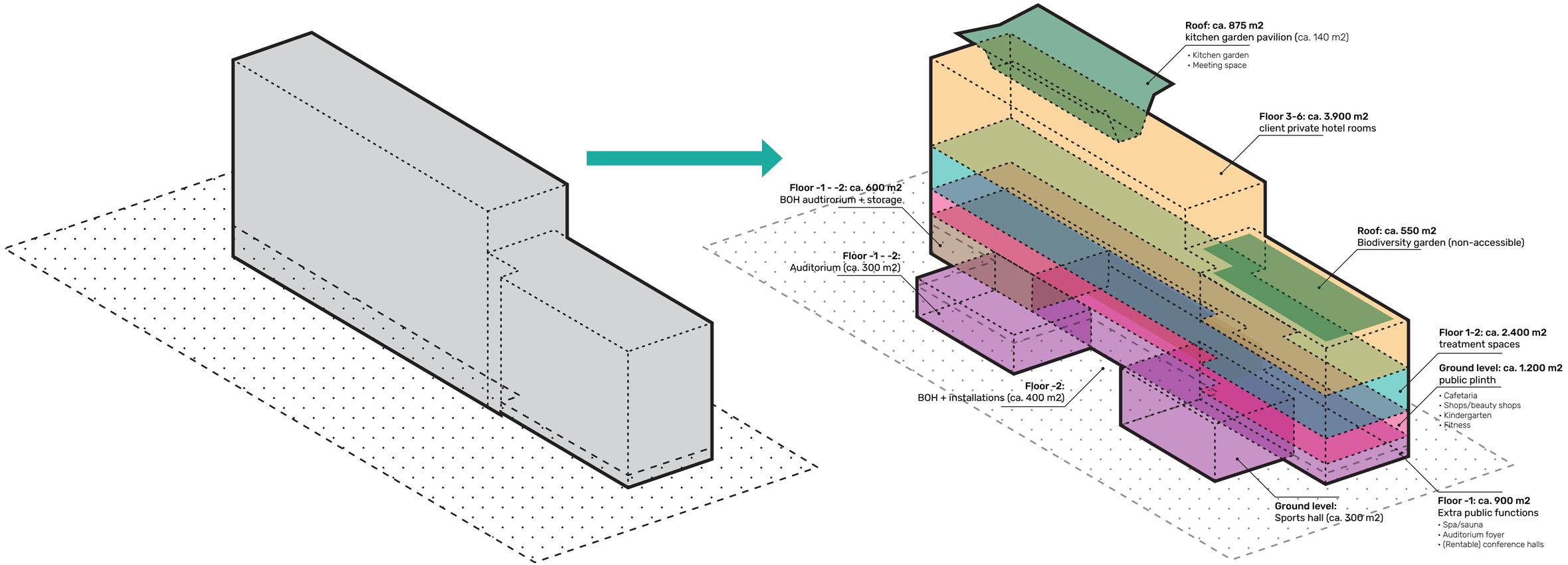




Integrating the program into the building



Integrating the program into the building



Empowering the healing environment

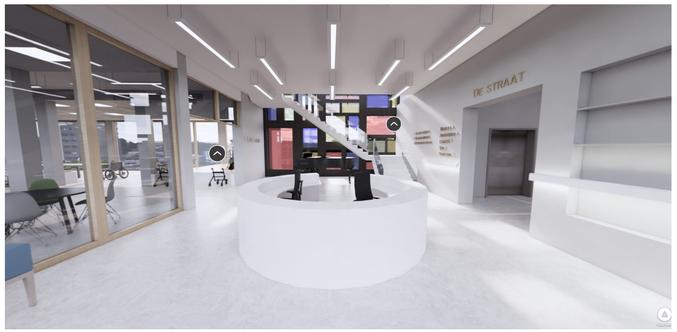
Optimizing the experience of various users: ‘the user is central’.

Key concepts: Nature, light, air, space, color, acoustic comfort, material properties and relaxation by social interaction.

(Results from research phase)

Creation of user-centered ‘atmospheres’

Sterile iteration



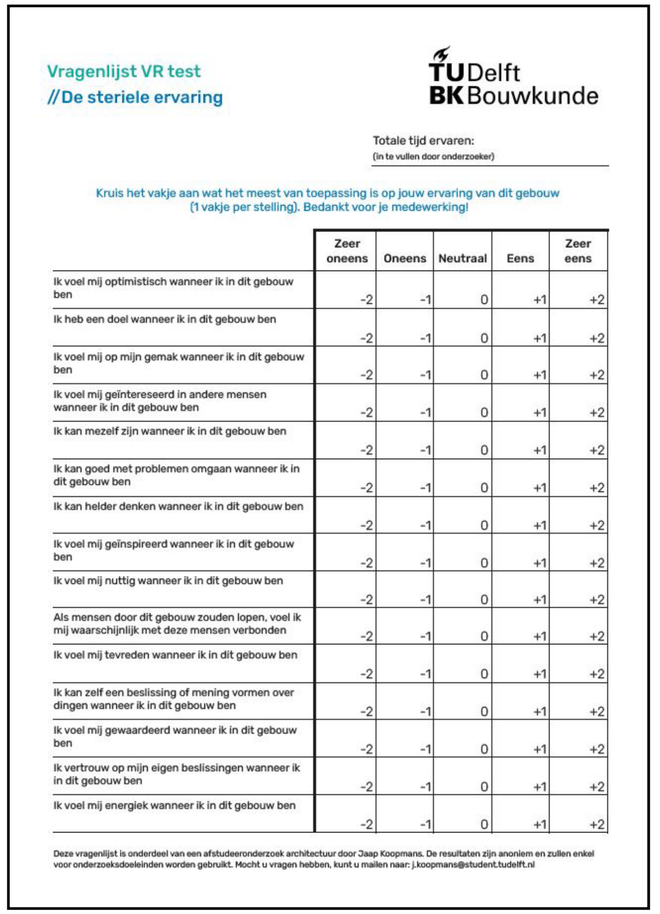
Biophilic iteration

Balanced iteration

Virtual reality tests - Survey

Satisfaction	
I feel useful when I'm in this building	WEMWBS
I have purpose when I'm in this building	QEWB
I feel fulfilled when I'm in this building	QEWB
Affect	
I feel Optimistic when I'm in this building	WEMWBS
I feel at ease when I'm in this building	WEMWBS
I feel energised when I'm in this building	WEMWBS
Competence	
I deal with problems well when I'm in this building	WEMWBS
I think clearly when I'm in this building	WEMWBS
I can apply myself to what I'm doing when I'm in this building	QEWB
Relatedness	
I feel interested in other people when I'm in this building	WEMWBS
I feel close to other people when I'm in this building	WEMWBS
I feel valued when I'm in this building	WEMWBS
Autonomy	
I can make up my own mind about things when I'm in this building	WEMWBS
I can be myself when I'm in this building	QEWB
I trust my own decisions when I'm in this building	QEWB

Sub themes of wellbeing scale from Watson (2018)



Vragenlijst VR test
//De steriele ervaring

TU Delft BK Bouwkunde

Totale tijd ervaren:
(in te vullen door onderzoeker)

Kruis het vakje aan wat het meest van toepassing is op jouw ervaring van dit gebouw
(1 vakje per stelling). Bedankt voor je medewerking!

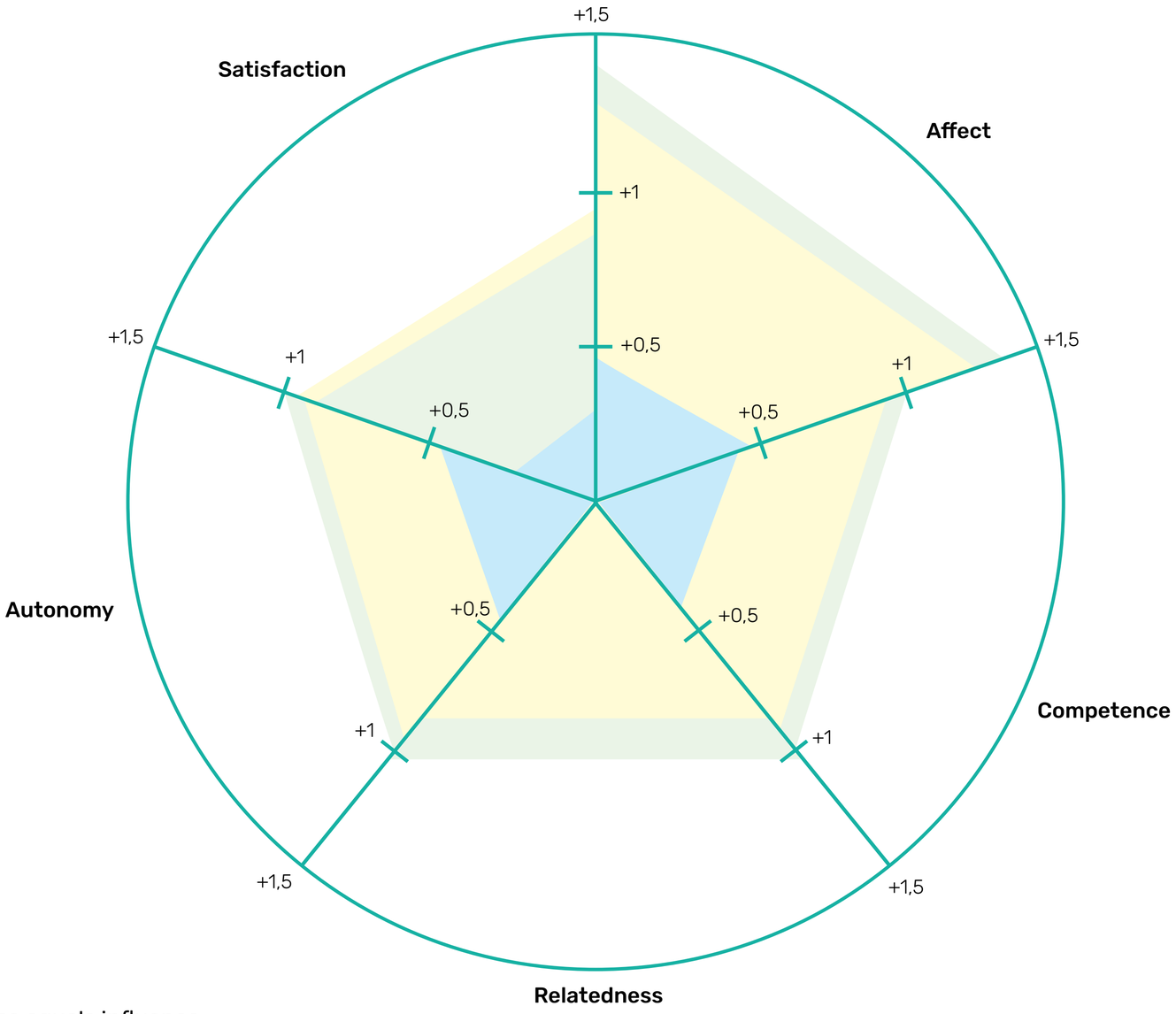
	Zeer oneens	Oneens	Neutraal	Eens	Zeer eens
Ik voel mij optimistisch wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik heb een doel wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik voel mij op mijn gemak wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik voel mij geïntereseerd in andere mensen wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik kan mezelf zijn wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik kan goed met problemen omgaan wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik kan helder denken wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik voel mij geïnspireerd wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik voel mij nuttig wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Als mensen door dit gebouw zouden lopen, voel ik mij waarschijnlijk met deze mensen verbonden	-2	-1	0	+1	+2
Ik voel mij tevreden wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik kan zelf een beslissing of mening vormen over dingen wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik voel mij gewaardeerd wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik vertrouw op mijn eigen beslissingen wanneer ik in dit gebouw ben	-2	-1	0	+1	+2
Ik voel mij energiek wanneer ik in dit gebouw ben	-2	-1	0	+1	+2

Deze vragenlijst is onderdeel van een afstudeeronderzoek architectuur door Jaap Koopmans. De resultaten zijn anoniem en zullen enkel voor onderzoeksdoeleinden worden gebruikt. Mocht u vragen hebben, kunt u mailen naar: j.koopmans@student.tudelft.nl

-2 —— **+2**

Stronly disagree — Stronly agree

Creation of ‘atmospheres’



* Scores equals influence
(based on wellbeing questionnaire)

Sterile materiality

- Concrete (flooring)
- Linoleum (flooring)
- Plaster (walls/ceiling)
- Cast (suspended ceiling)
- Light timber (window frames)

> Suitable for:

- Spaces without distraction of other people
- Low infection rate spaces
- Calming space for people with too many incentives
- Specific treatment spaces which do require not having any chances of infection or external incentives

Balanced materiality

- Timber (flooring)
- Concrete (flooring)
- Plaster (walls)
- Cast (susepended ceiling)
- Light timber (window frames)
- Dark wood (extra floor wall/ ceiling elements)
- Greenery (wall elements)
- Plywood (walls)

> Suitable for:

- Spaces demanding less distraction/incentives
- Welcoming spaces to feel at ease
- Treatment/exercise spaces

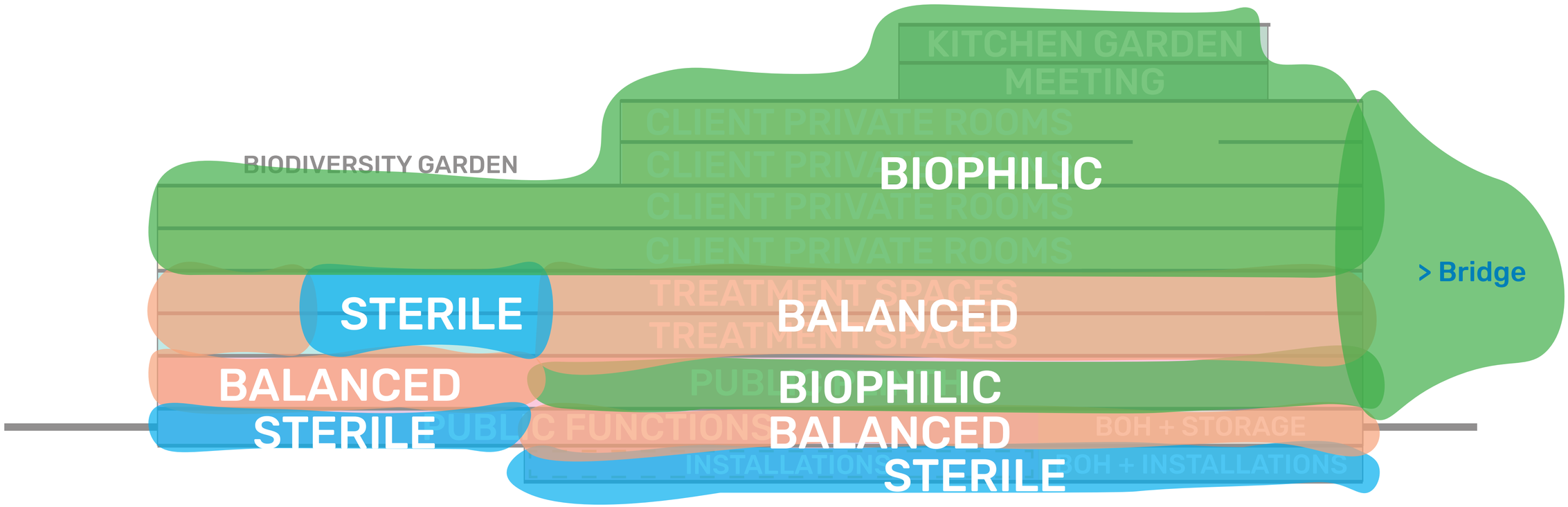
Biophilic materiality

- Timber (flooring)
- Concrete (flooring)
- Carpet (flooring)
- Plywood (construction/walls)
- Fibreboard (wall elements)
- Extensive greenery (walls/ ceiling)
- Natural stone (wall elements)
- Lime plaster (ceiling)
- Dark wood (extra floor/wall/ ceiling elements)
- Wood (window frames)

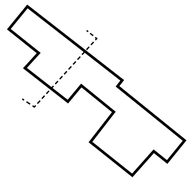
> Suitable for:

- Entrance spaces where people are introduced to the building
- Cafeteria/restaurant spaces
- Spaces where people can meet each other
- Patient rooms where people can feel at home

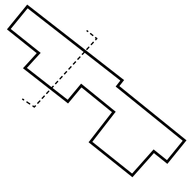
Integrating atmospheres into the building

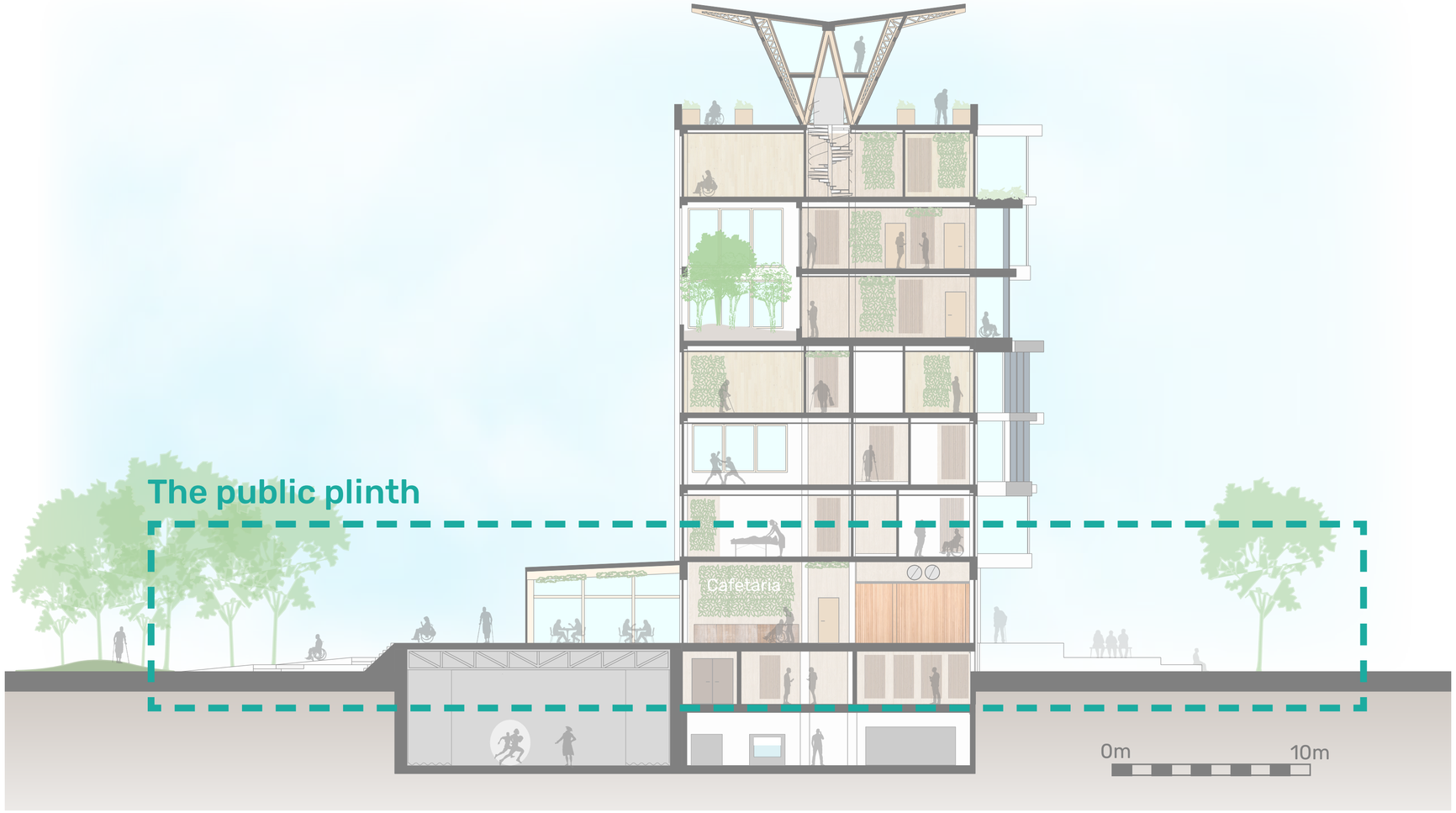



0m
10m

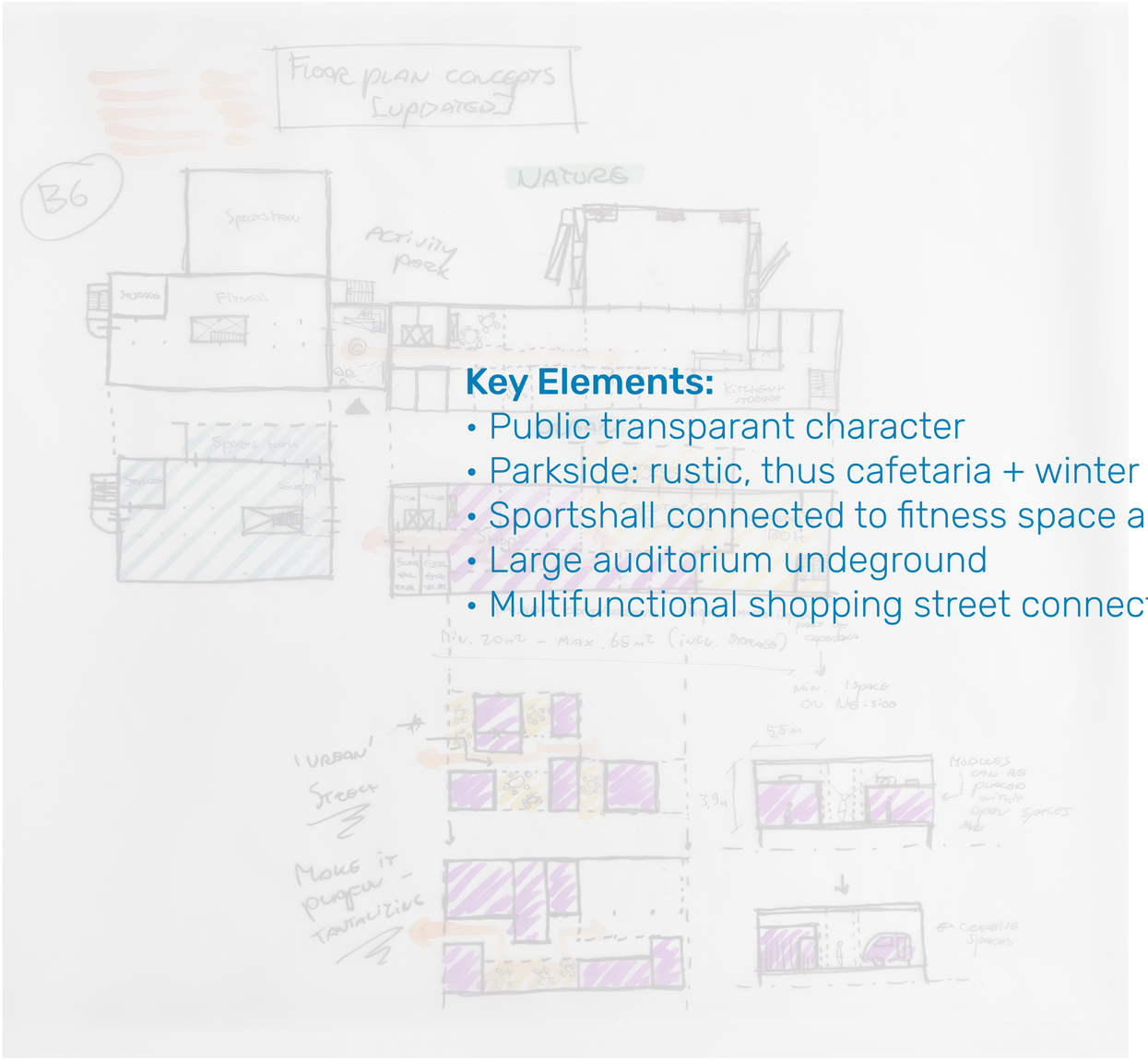



Cafetaria
0m
10m



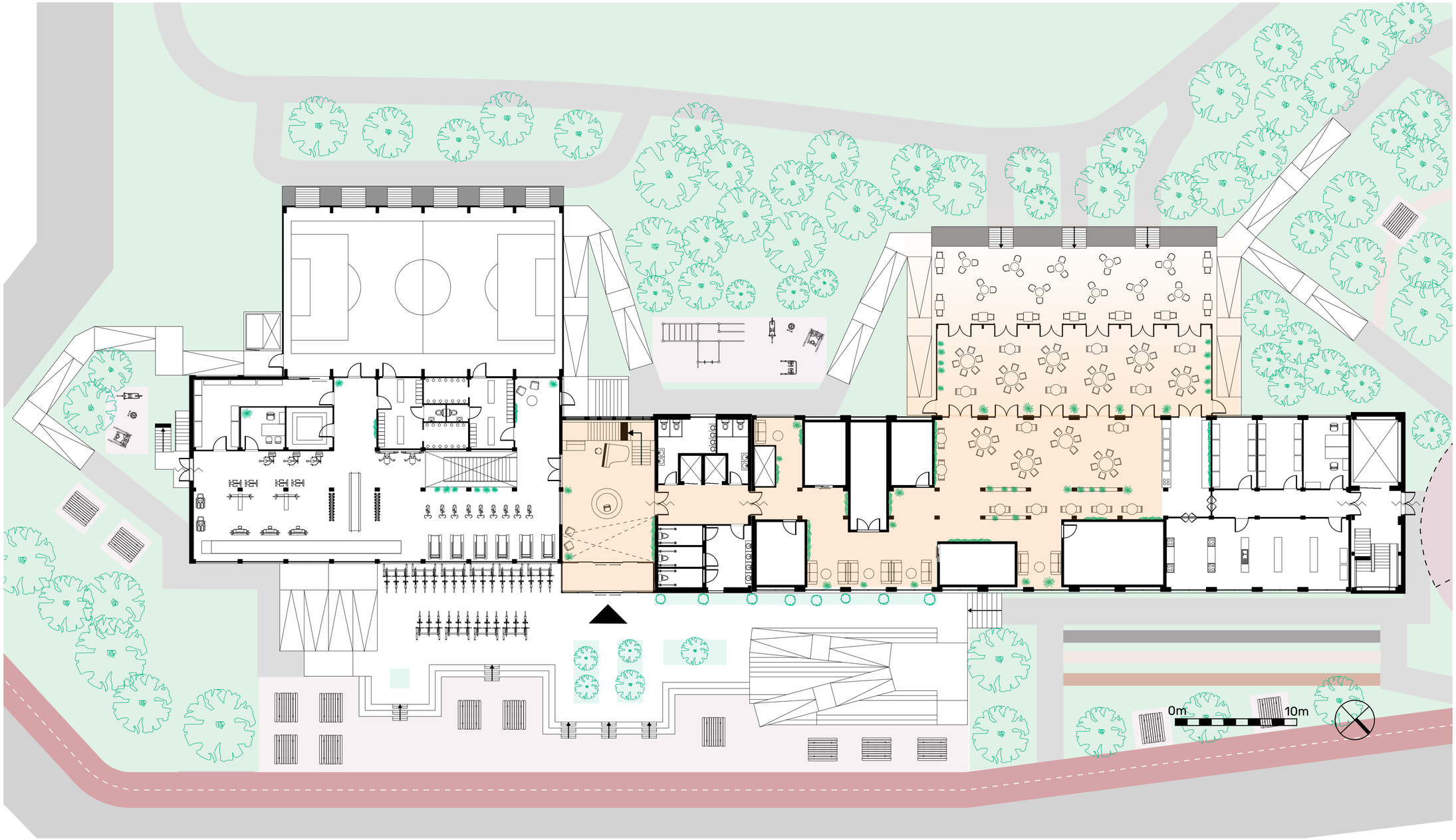

The public plinth
Cafetaria
0m
10m

Creating the public plinth: sketching

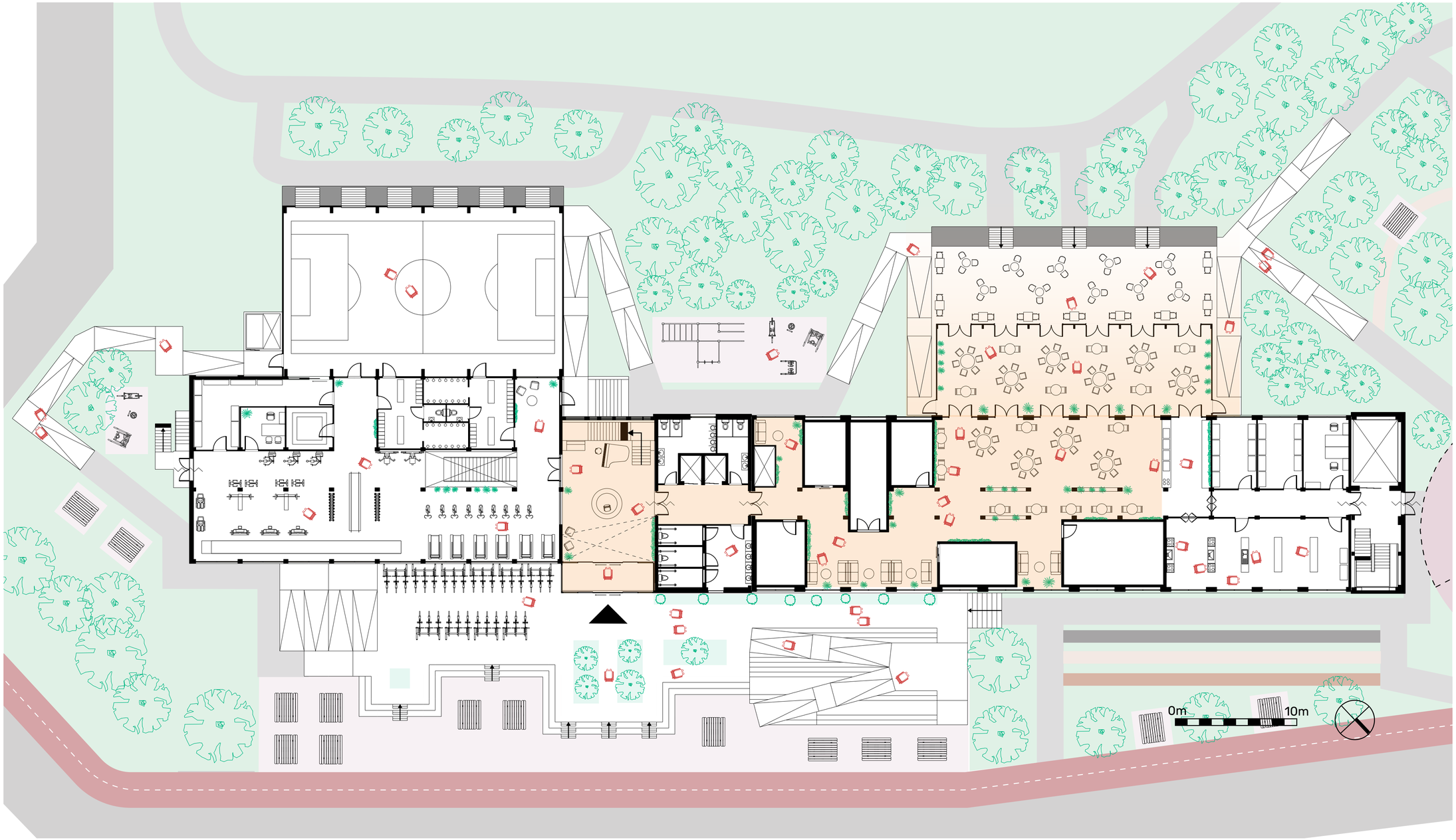


Key Elements:

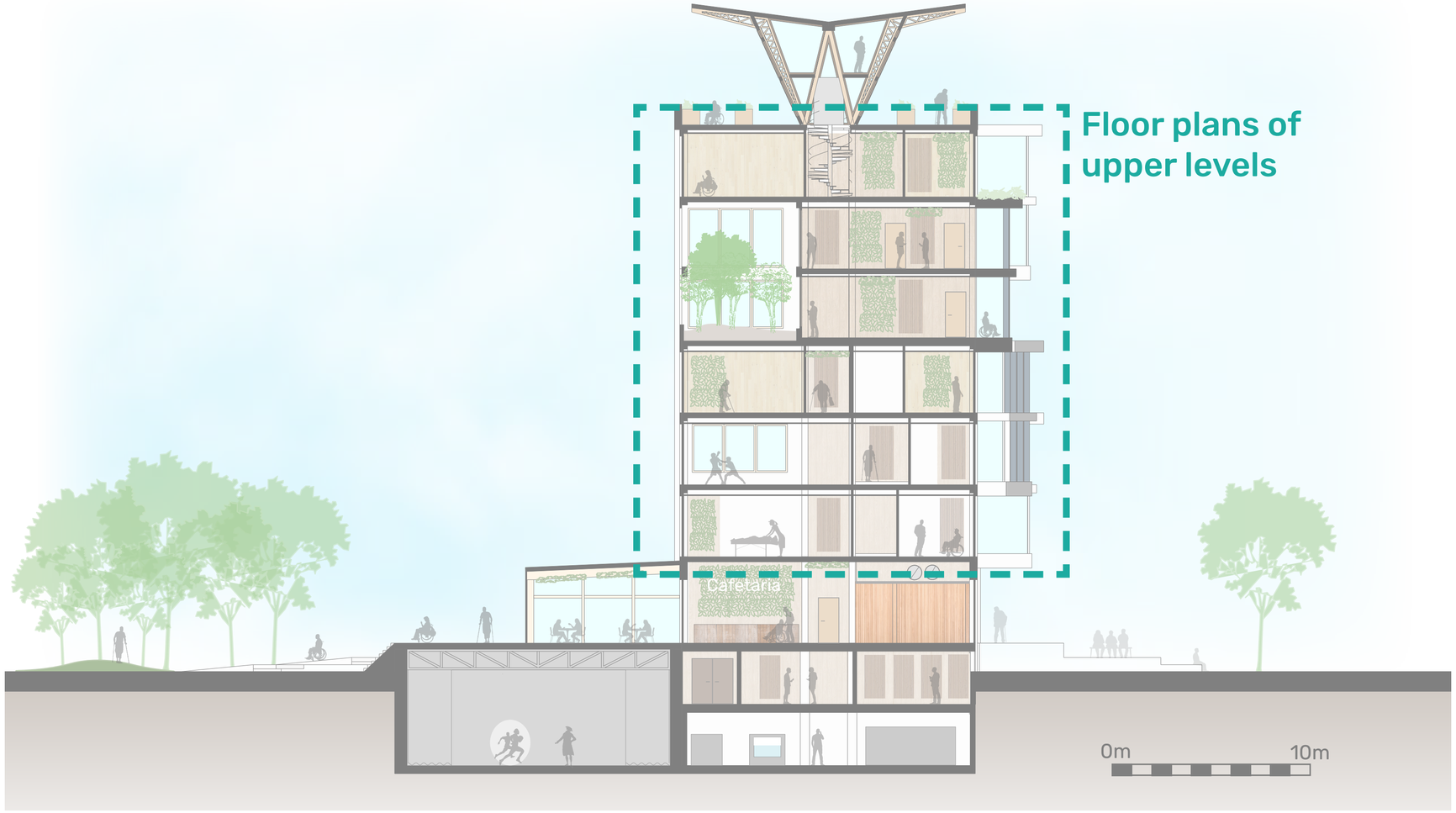
- Public transparant character
- Parkside: rustic, thus cafetaria + winter garden terrace
- Sportshall connected to fitness space and spa
- Large auditorium undeground
- Multifunctional shopping street connected to cafetaria



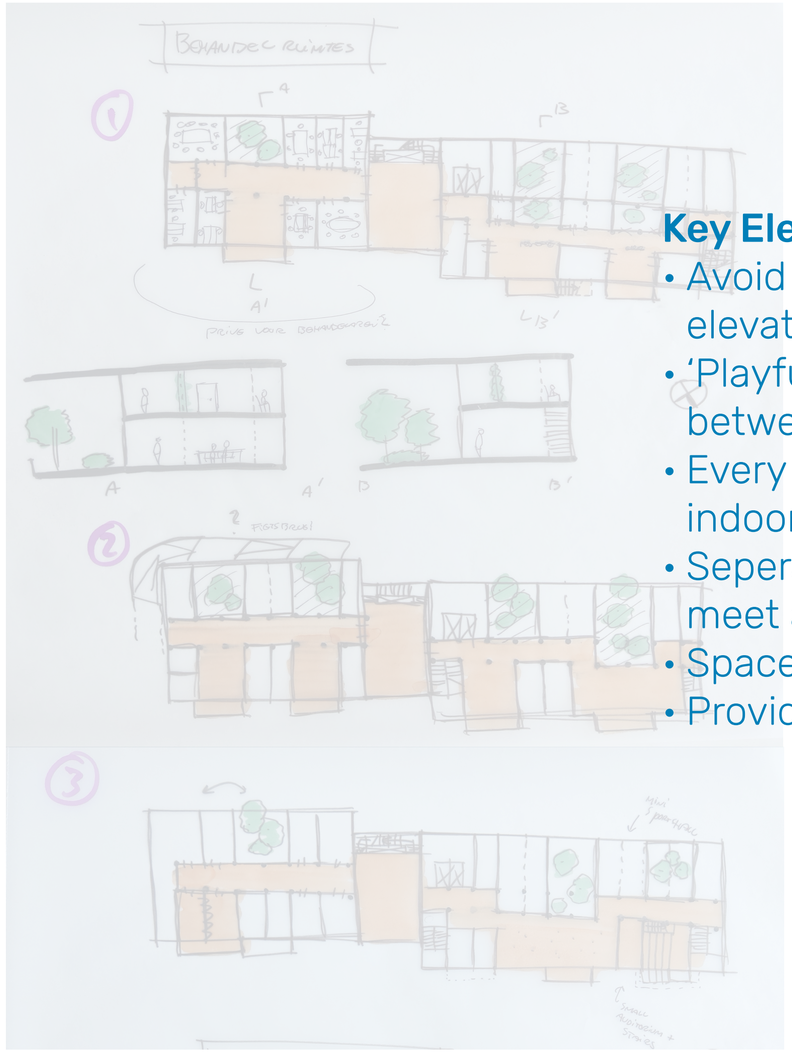
Ground level plan



Ground level plan

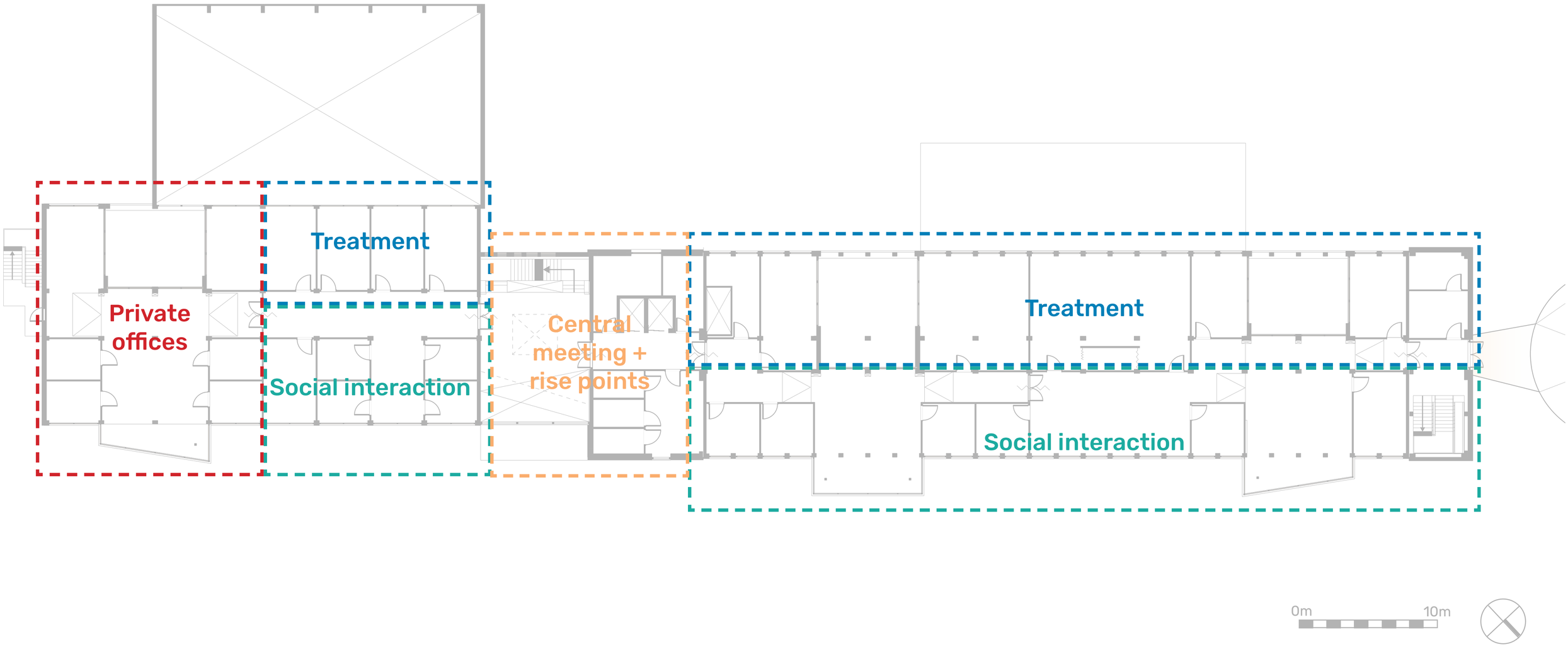

Floor plans of
upper levels
Cafetaria
0m
10m

Creating the treatment spaces: sketching



Key Elements:

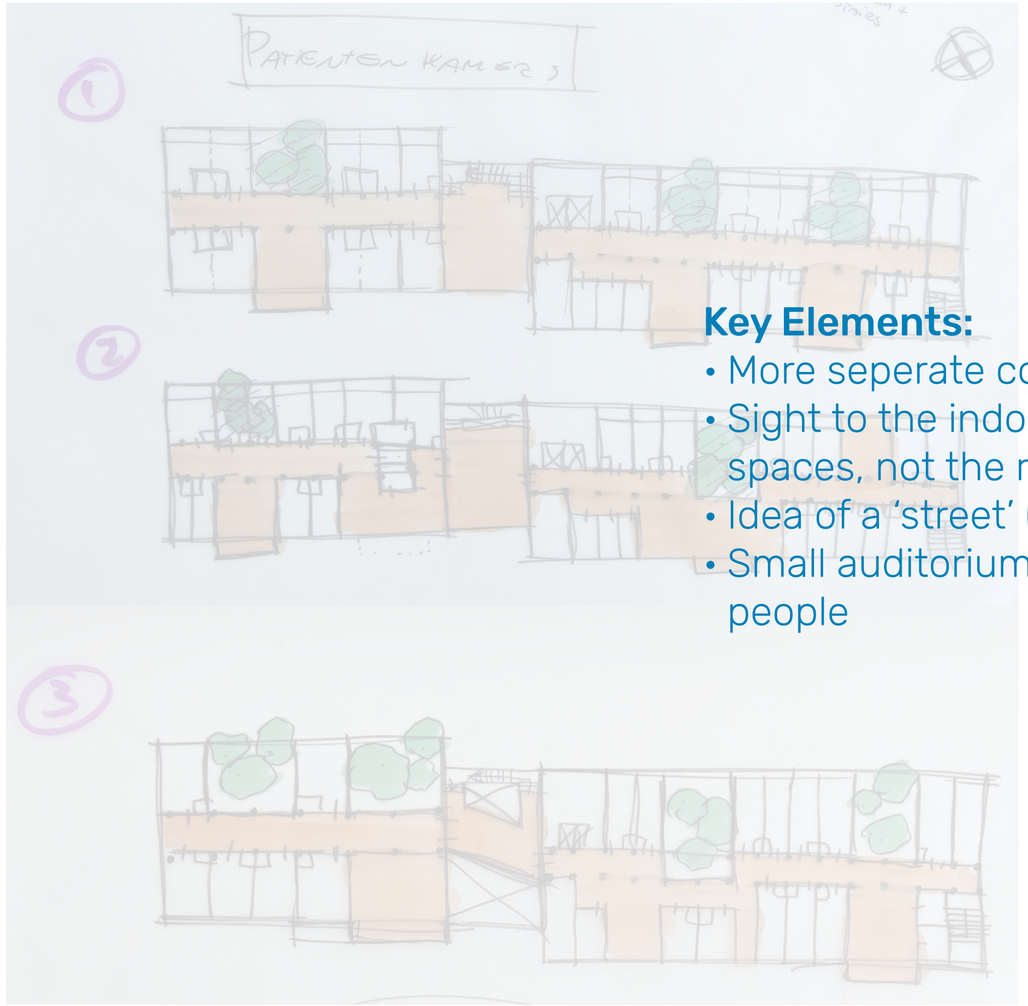
- Avoid ‘long and straight’ hallways and treat them as elevated streets
- ‘Playful’ structure with activating elements in the in-between spaces
- Every large treatment space should have sight to the indoor gardens
- Seperate part of the treatment area where staff can meet and work
- Space for small (private) gymnasium
- Providing tantalizing but also less tantalizing zones


Private offices
Treatment
Social interaction
Central meeting + rise points
Treatment
Social interaction
0m
10m

1. Treatment space
2. Meeting space
3. Gymnasium
4. Private space
5. Workspace staff
6. Toilets
7. Disabled toilet
8. Activity space
9. Community space
10. Back of house/ storage

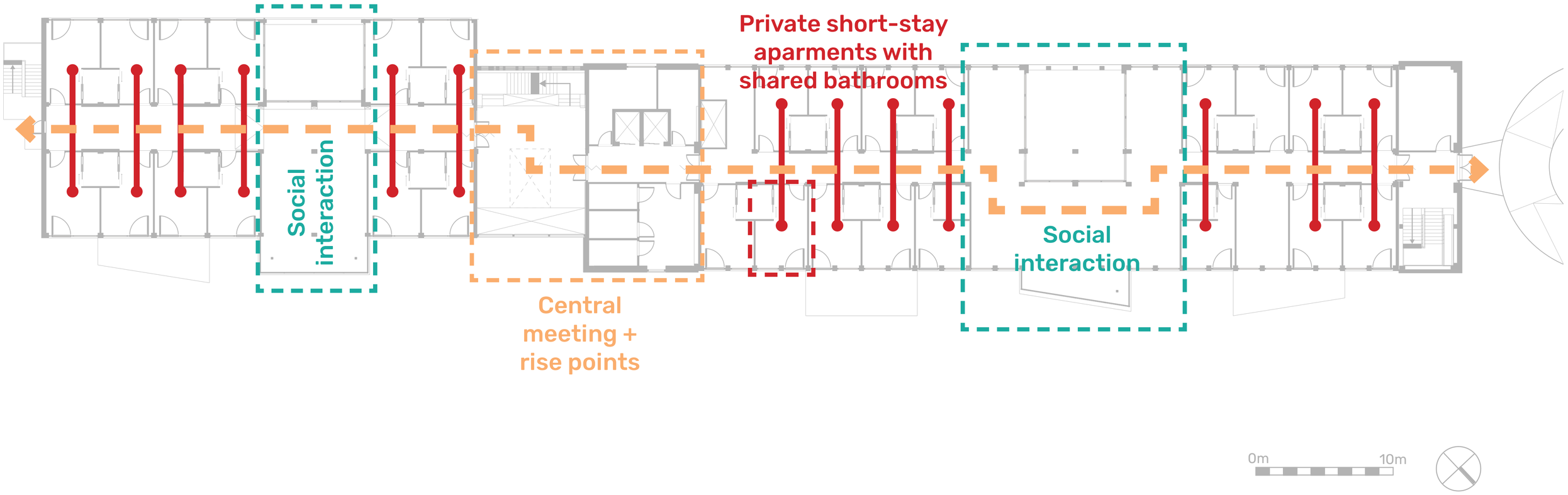
+1 (Treatment spaces) floor plan

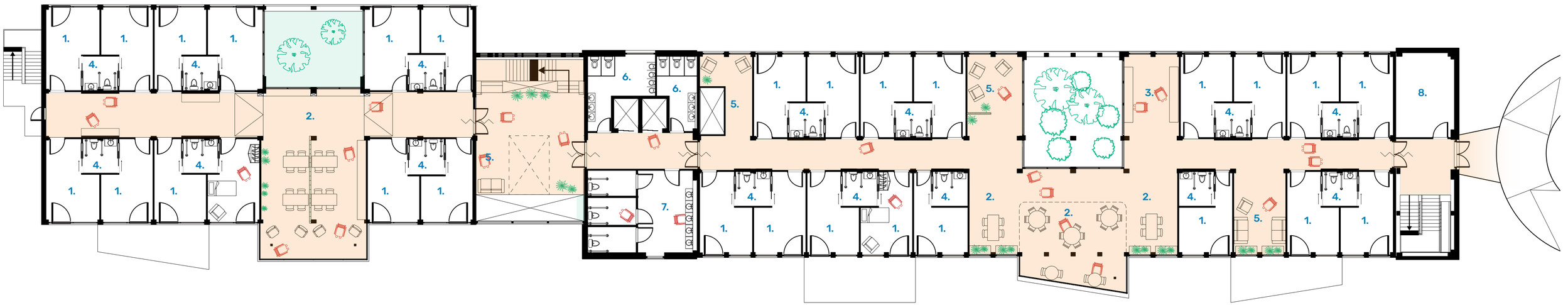
Creating the short-stay private rooms: sketching



Key Elements:

- More seperate community spaces instead of one big space
- Sight to the indoor gardens focused for the community spaces, not the rooms.
- Idea of a ‘street’ (no straight lines) instead of hotel concept
- Small auditorium space on upper floor to connect with people


Private short-stay
aparments with
shared bathrooms
Social
interaction
Central
meeting +
rise points
Social
interaction
0m
10m



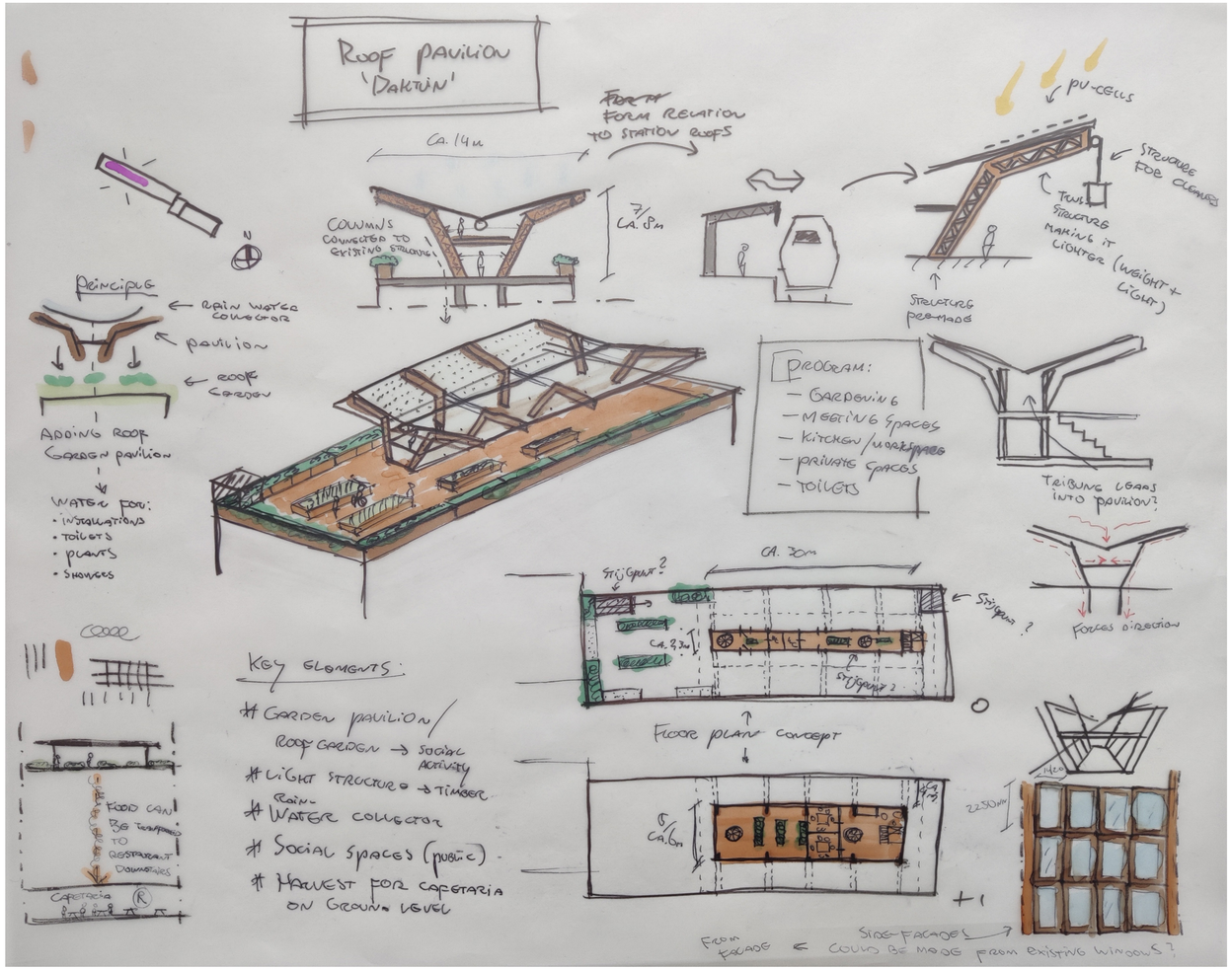
1. Private short-stay room
2. Community space
3. Kitchen
4. Disabled bathroom
5. Meeting space
6. Toilets
7. Disabled toilet
9. Back of house/ storage

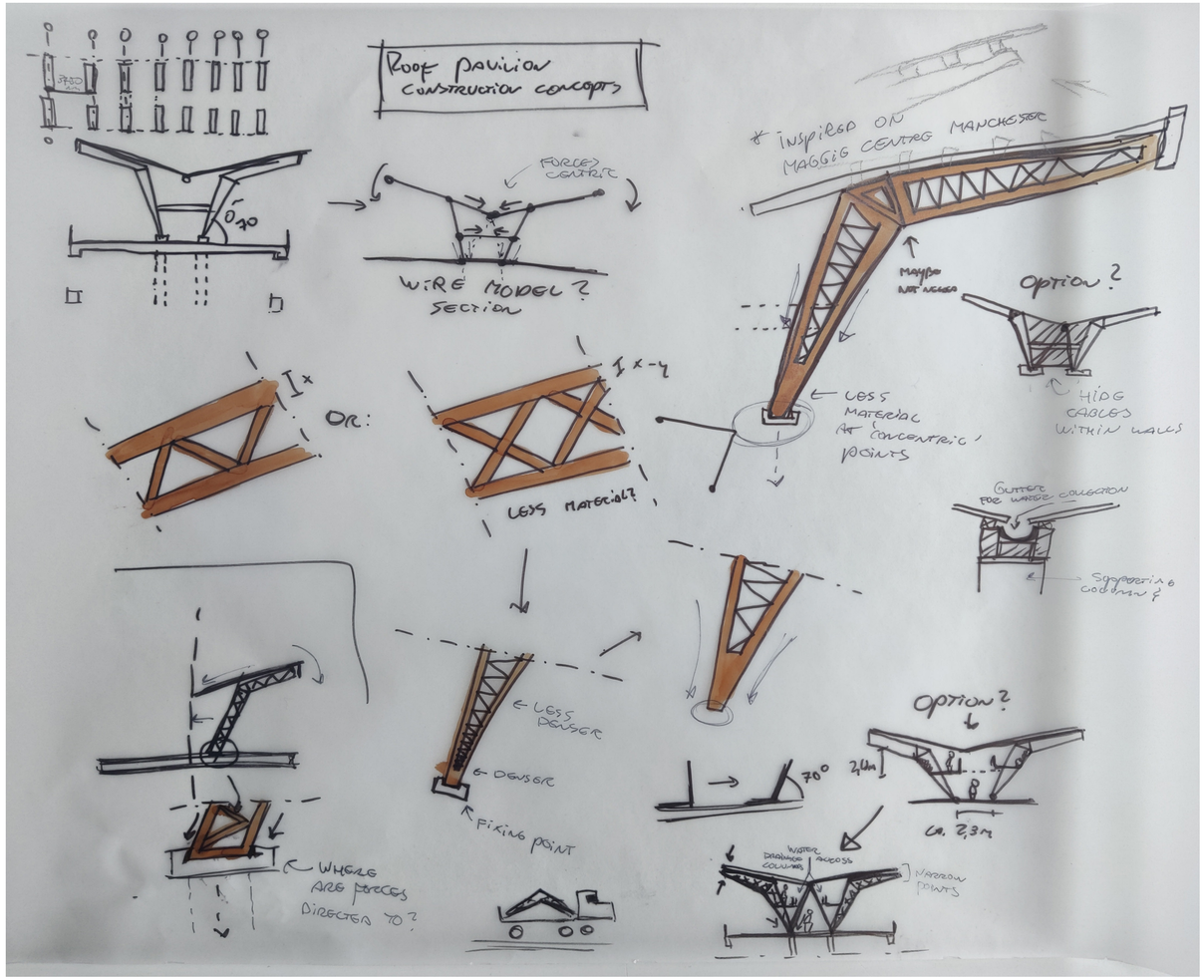
0m 10m

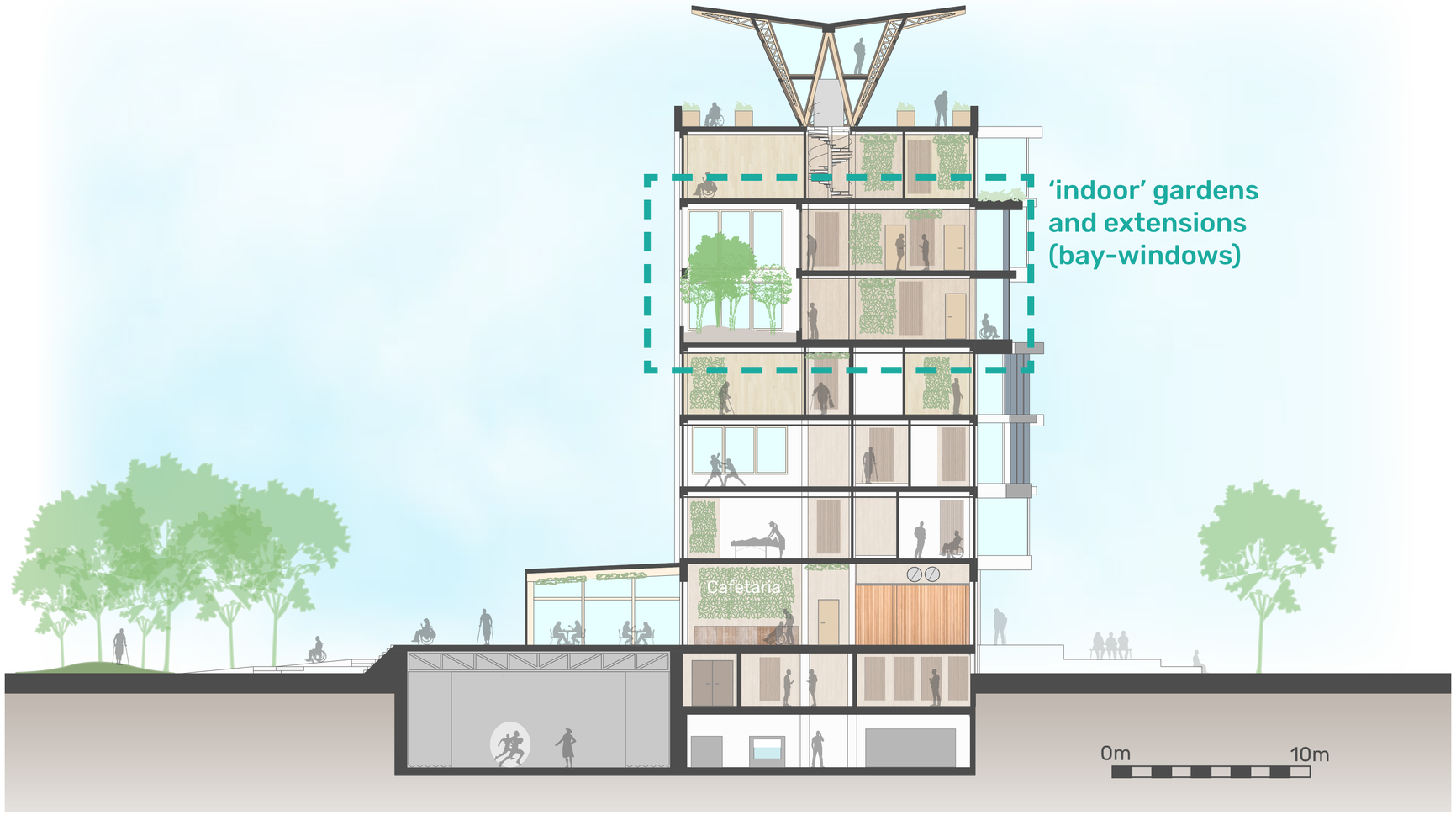
+3 (client private rooms) floor plan


Roof pavilion
Cafetaria
0m
10m

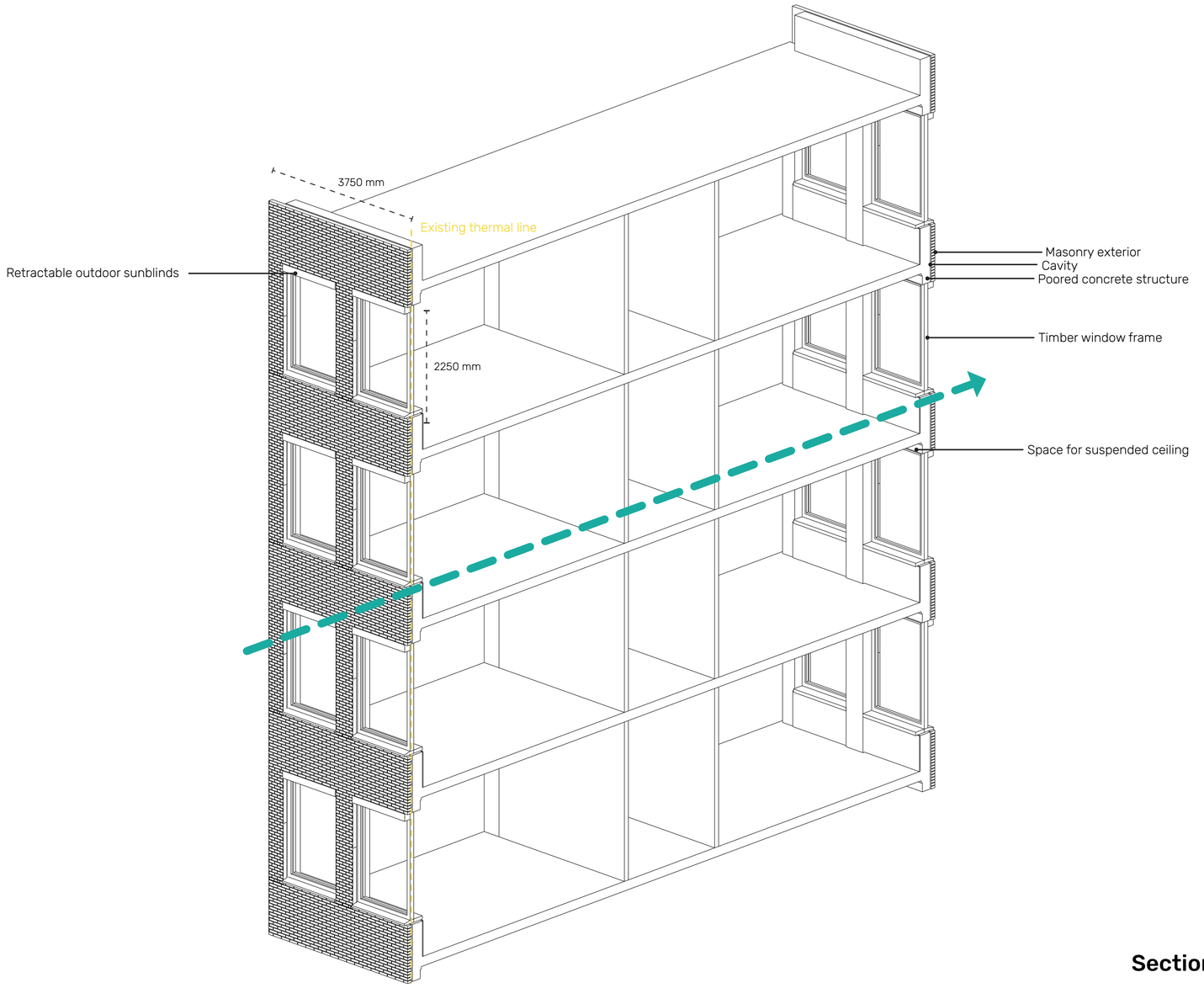
Roof pavilion





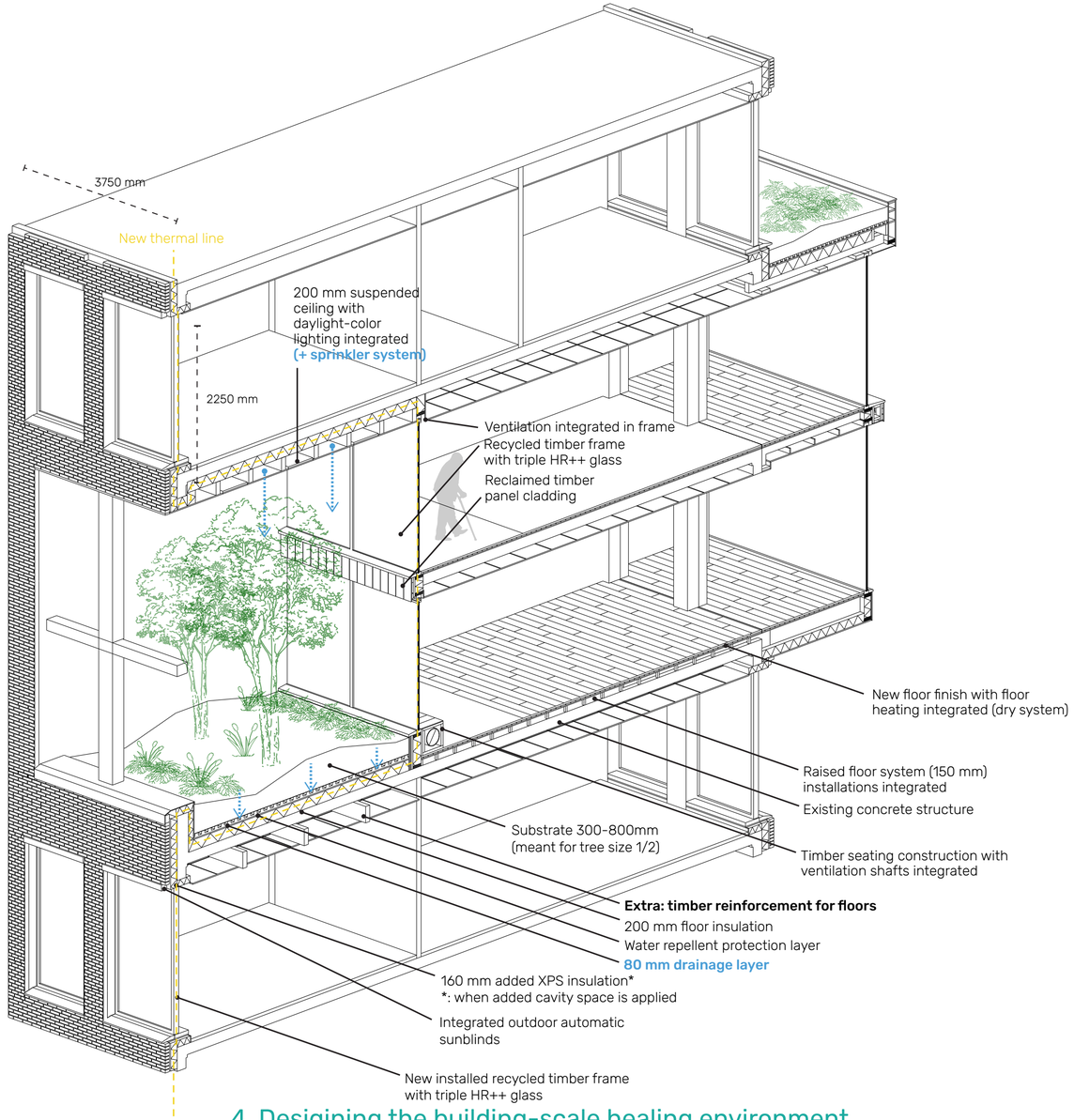

‘indoor’ gardens
and extensions
(bay-windows)
Cafetaria
0m
10m

Existing situation



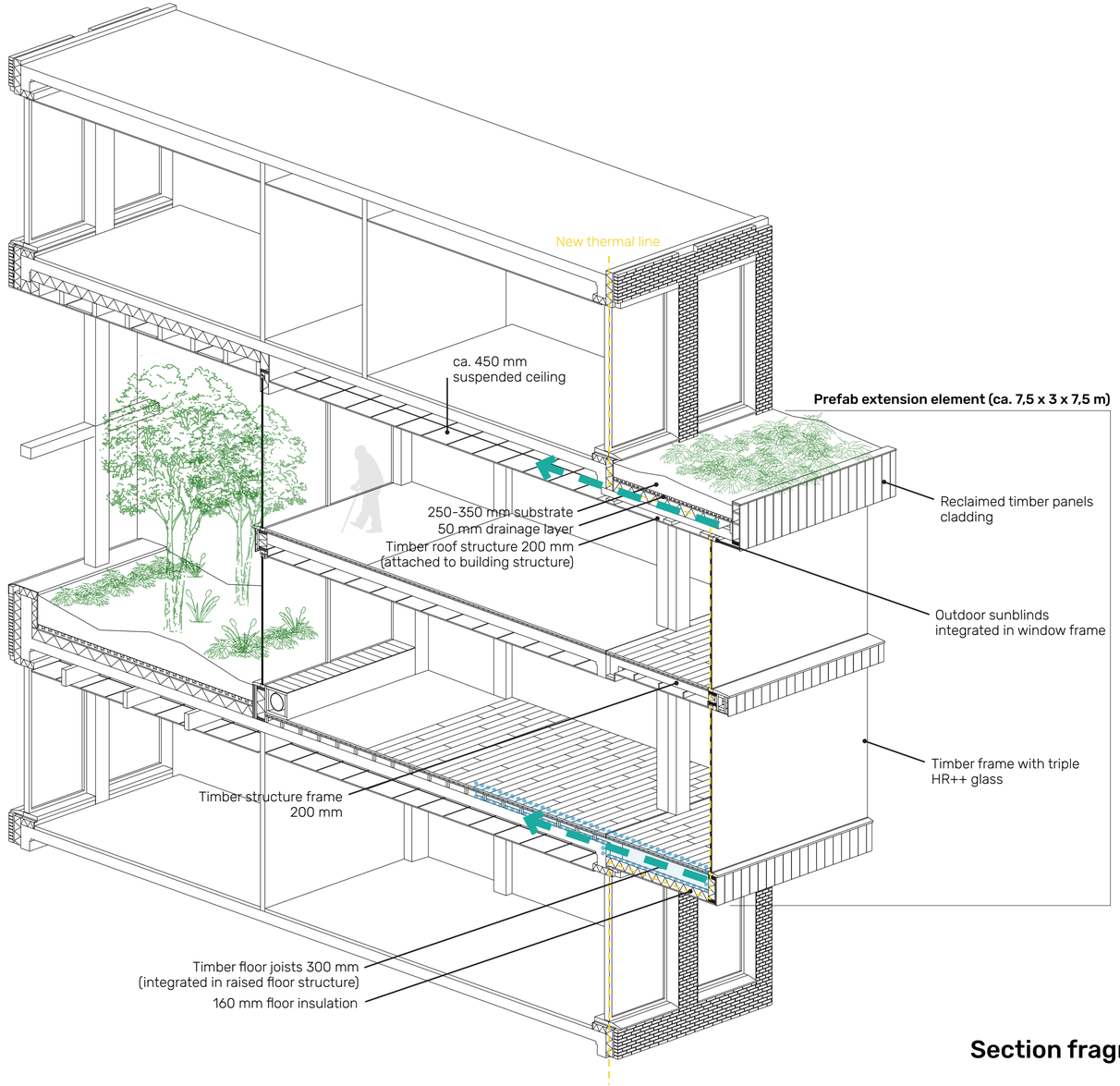
Section fragment: existing situation

Section elaboration: indoor garden & extensions (‘erkers’)



Section fragment: new situation

Section elaboration: indoor garden & extensions (‘erkers’)

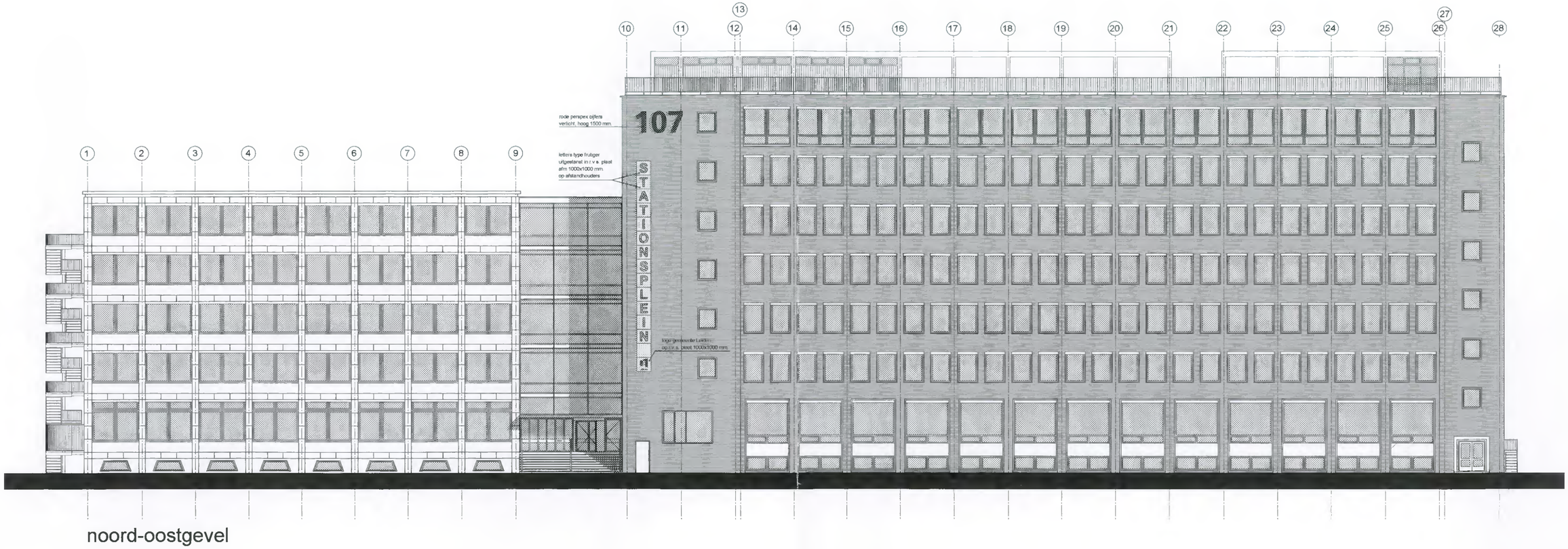


Section fragment: new situation (north-east view)

Creating the external architectural expression:

Interact with the direct environment and let daylight in, but re-use as much as possible (and showing it...)

Before



North-east facade

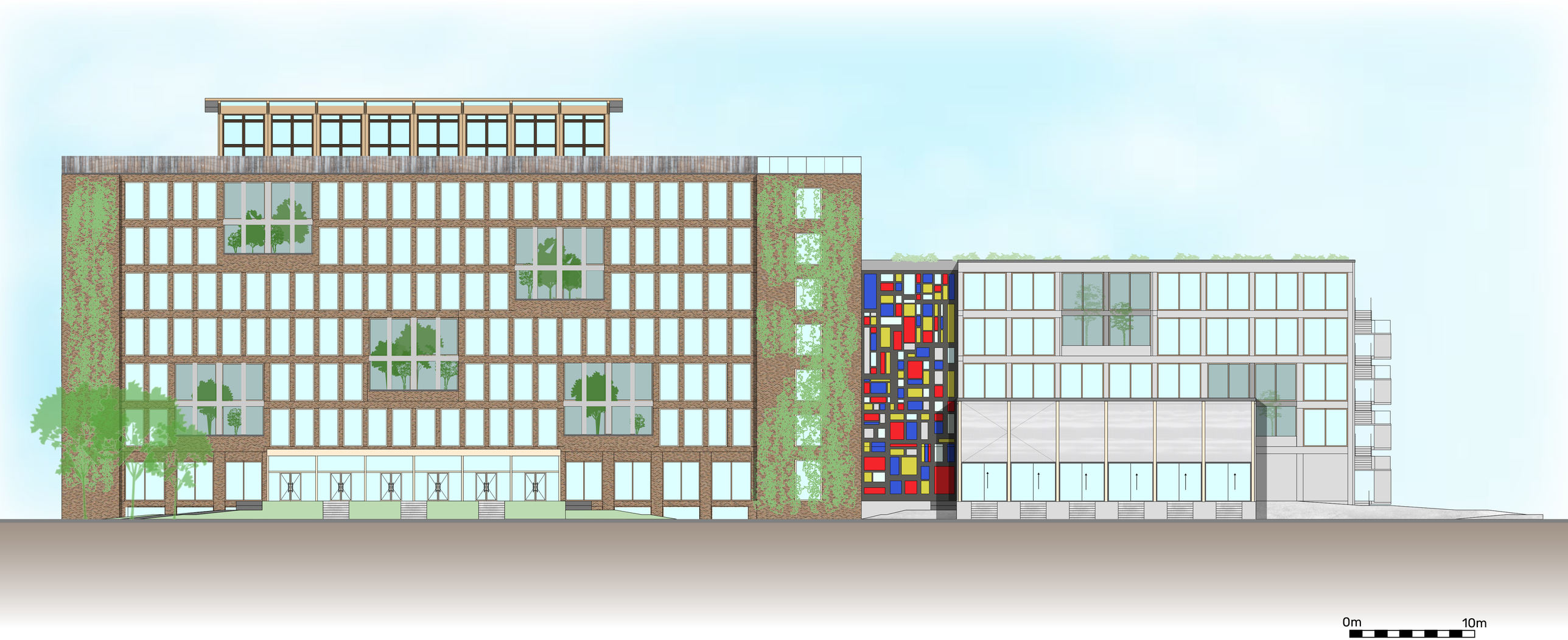
After

North-east facade

Before

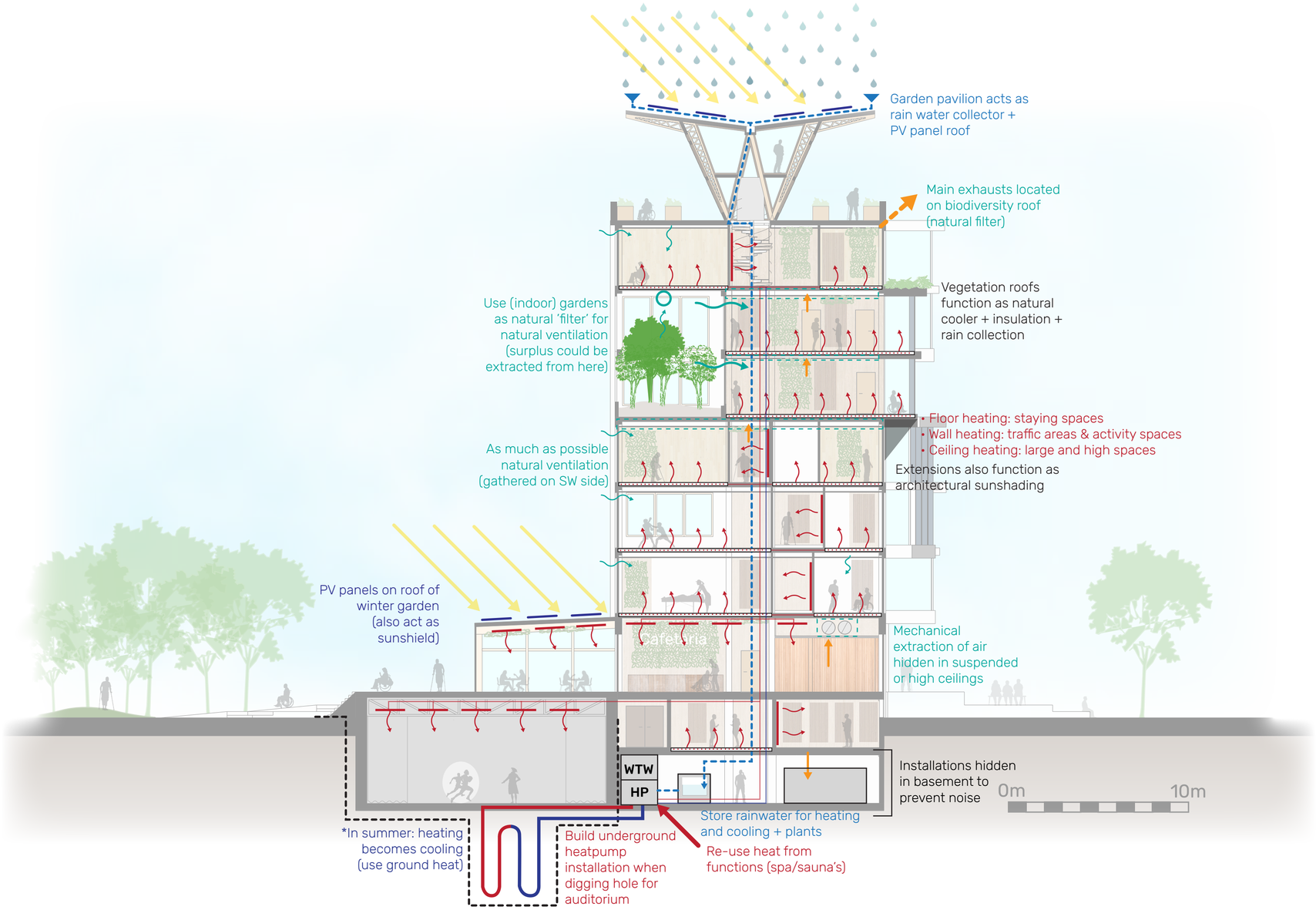
South-west facade

After



South-west facade

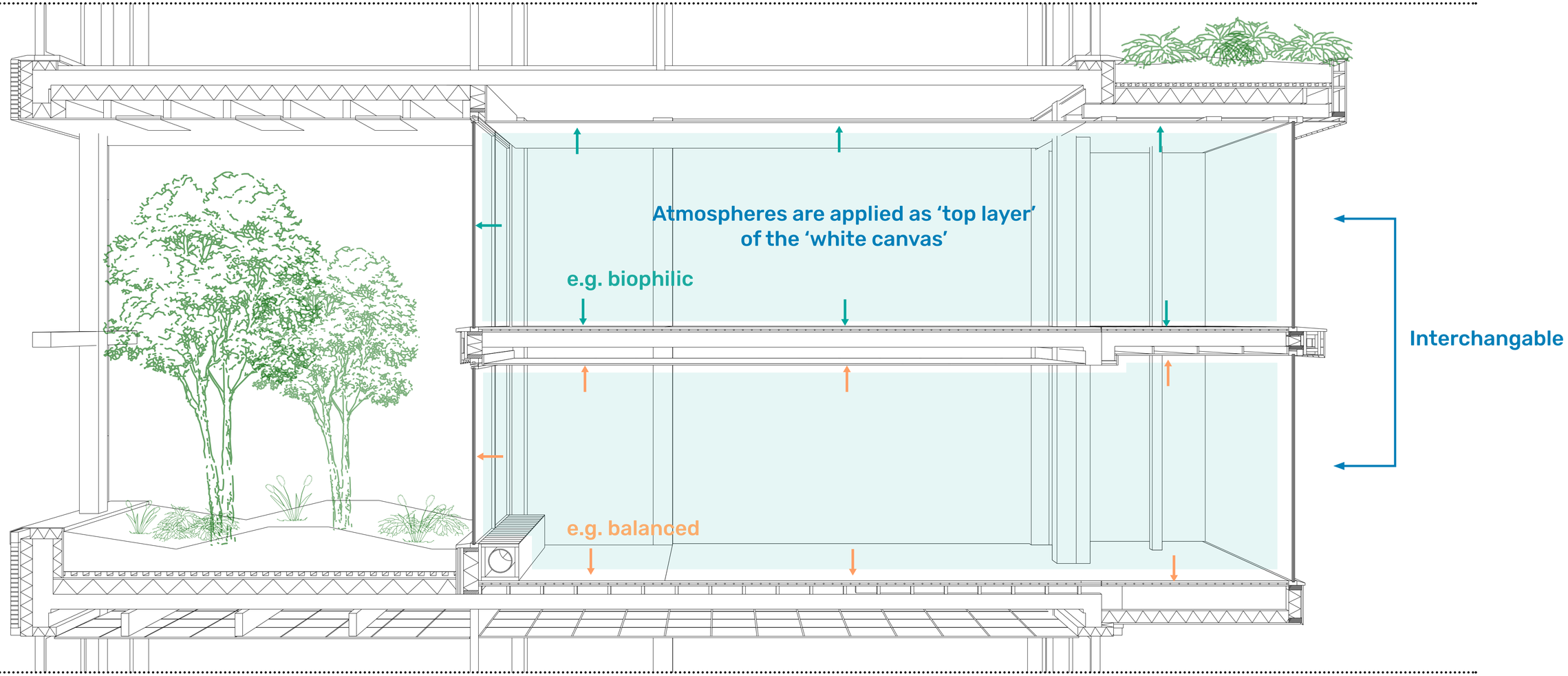
Climate concept



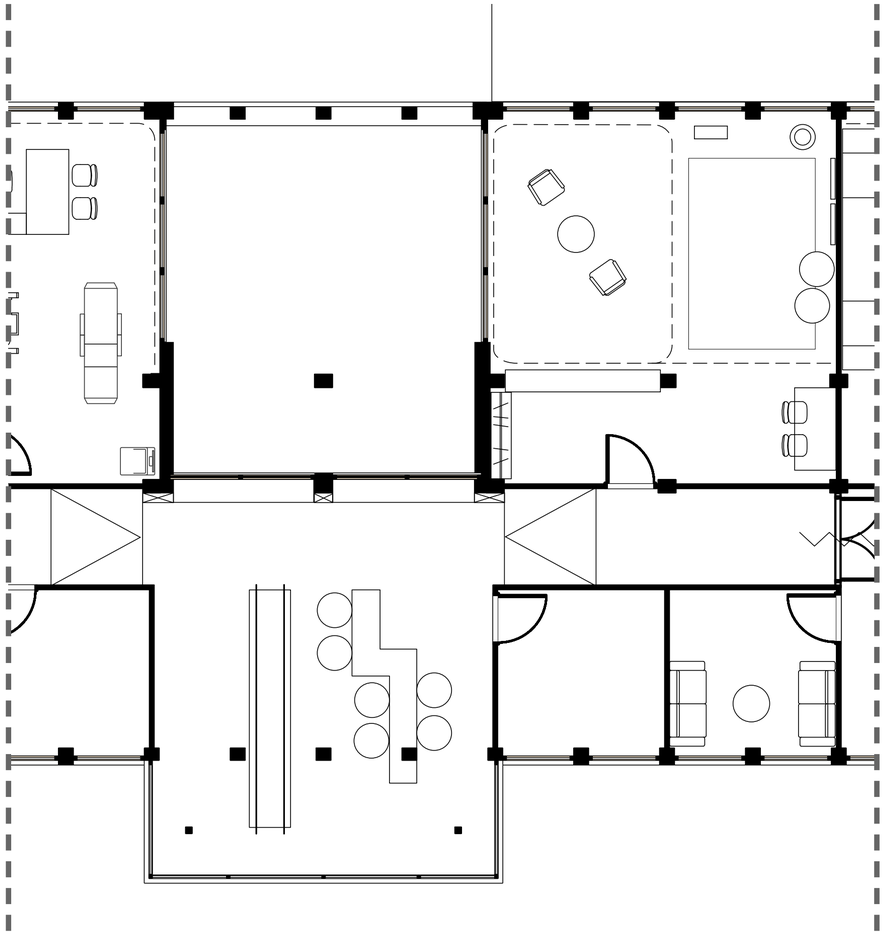
One more thing...


User's experience:
the atmospheres
Cafetaria
0m
10m

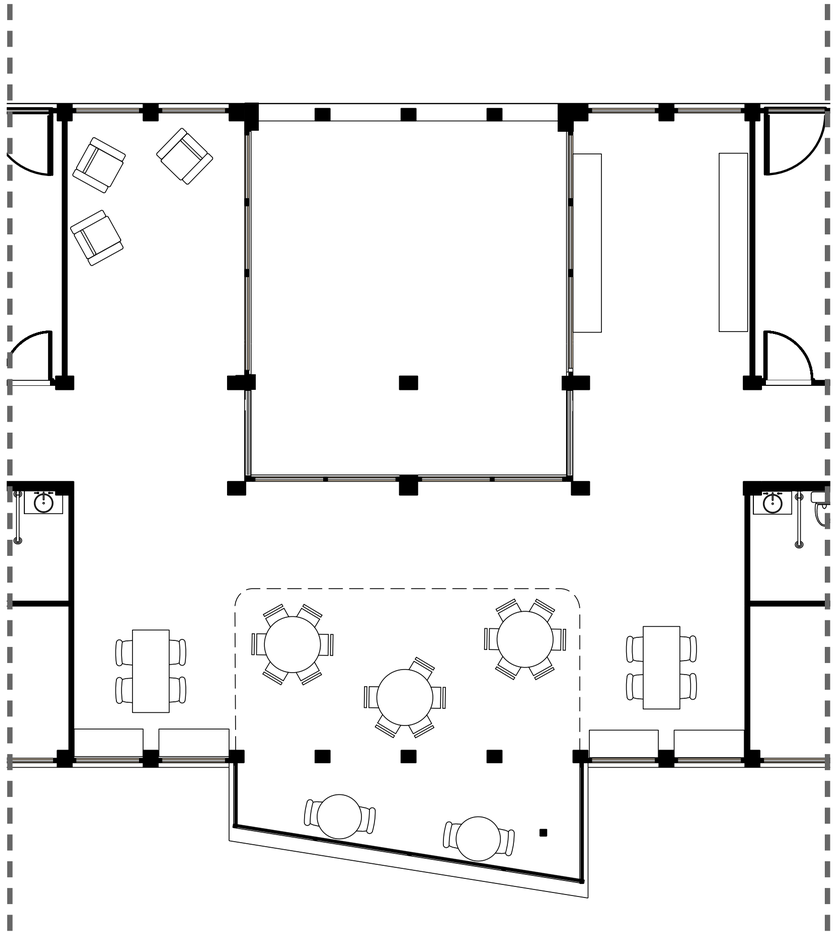
Creating the atmospheres



Creating the atmospheres: two examples



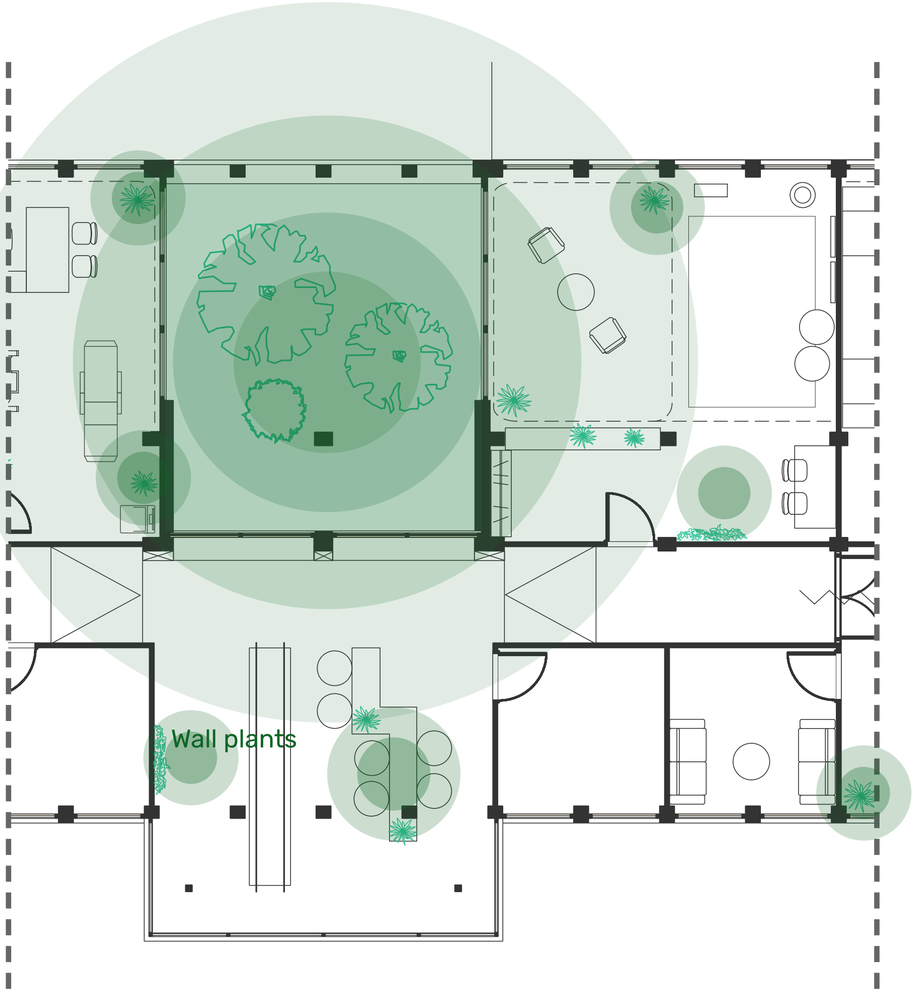
Key ingredients:
- Nature
- Light
- Air
- Space
- Color/material
- Acoustic comfort
- Material properties
- Relaxation by social interaction



Floor: +1
Functions: Treatment spaces & communal activity spaces
Overall atmosphere: balanced

Floor: +4
Functions: Communal meeting space for short-stay residents
Overall atmosphere: biophilic

Creating the atmospheres: two examples



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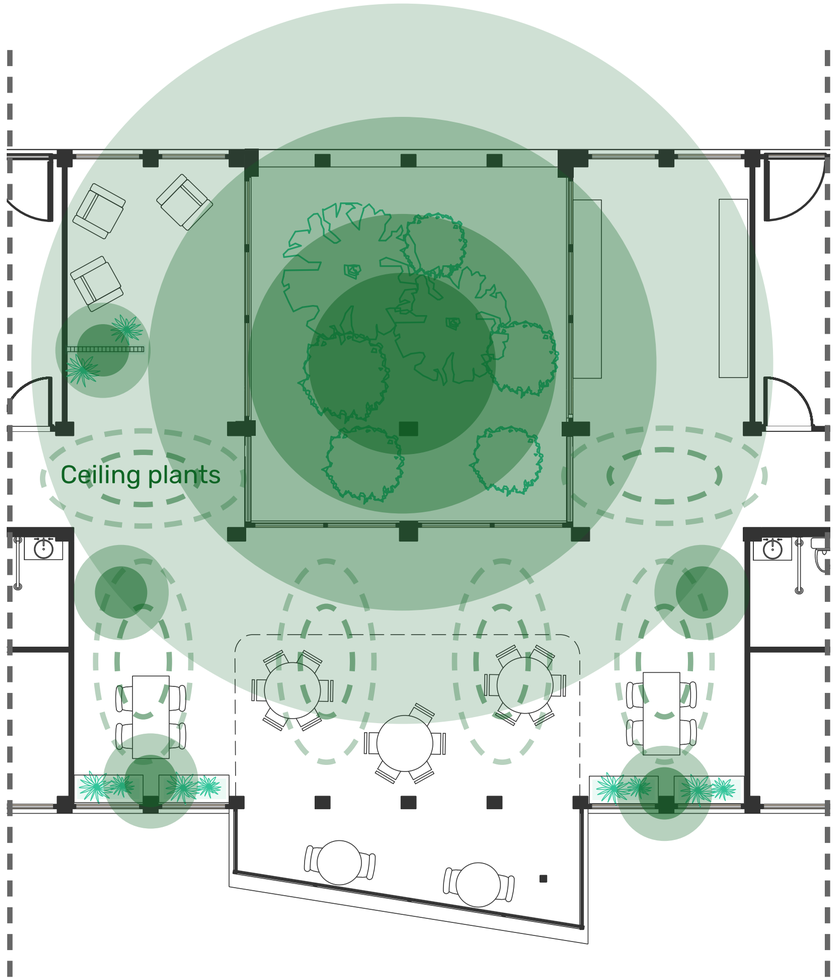

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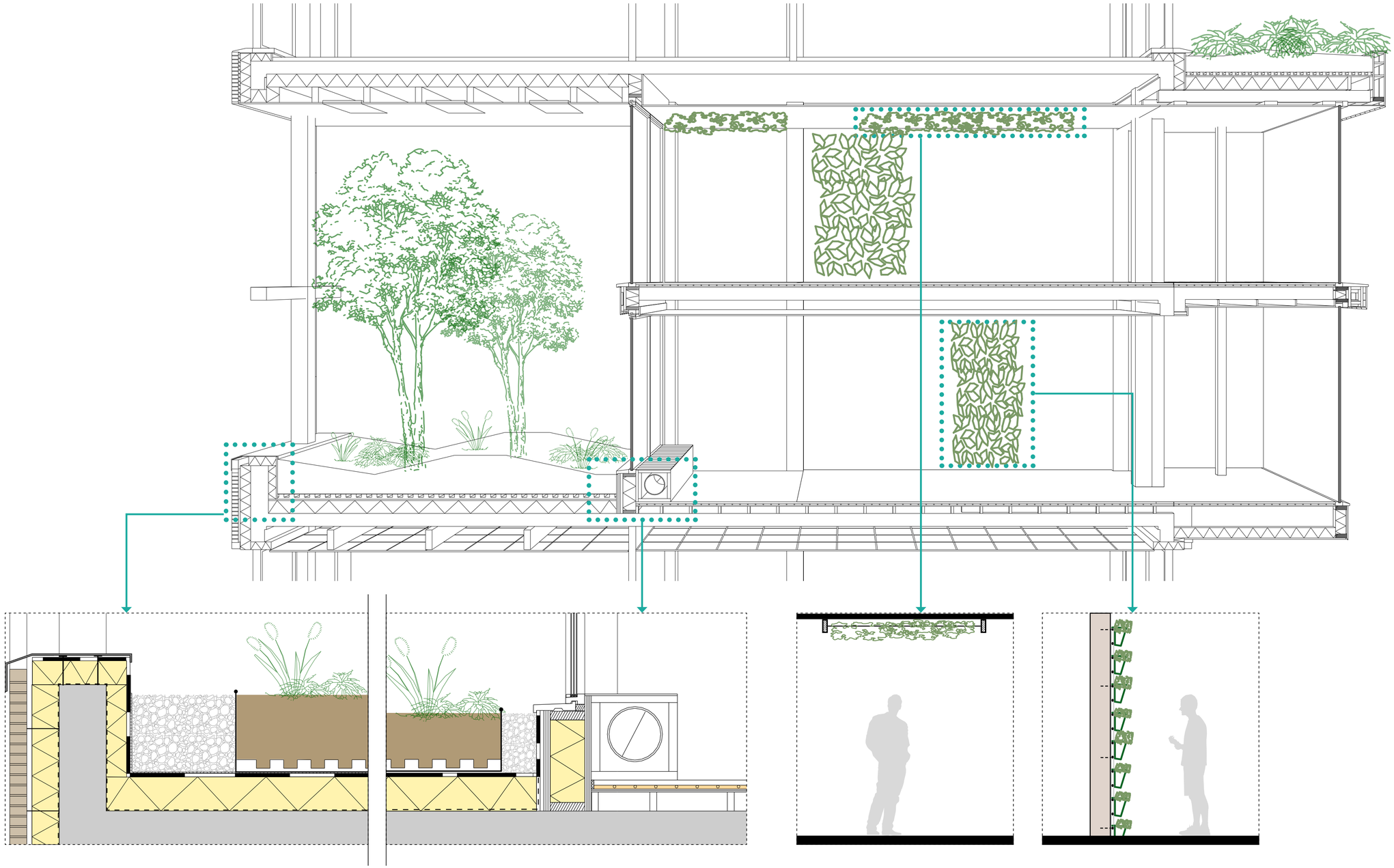

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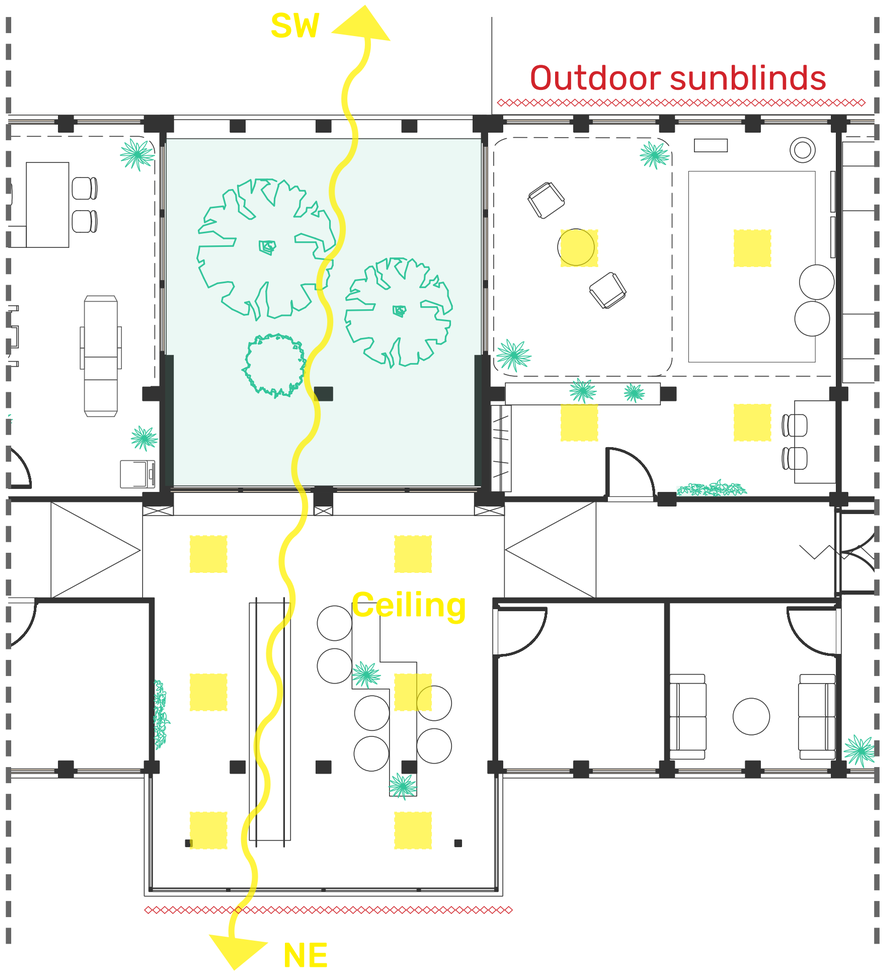

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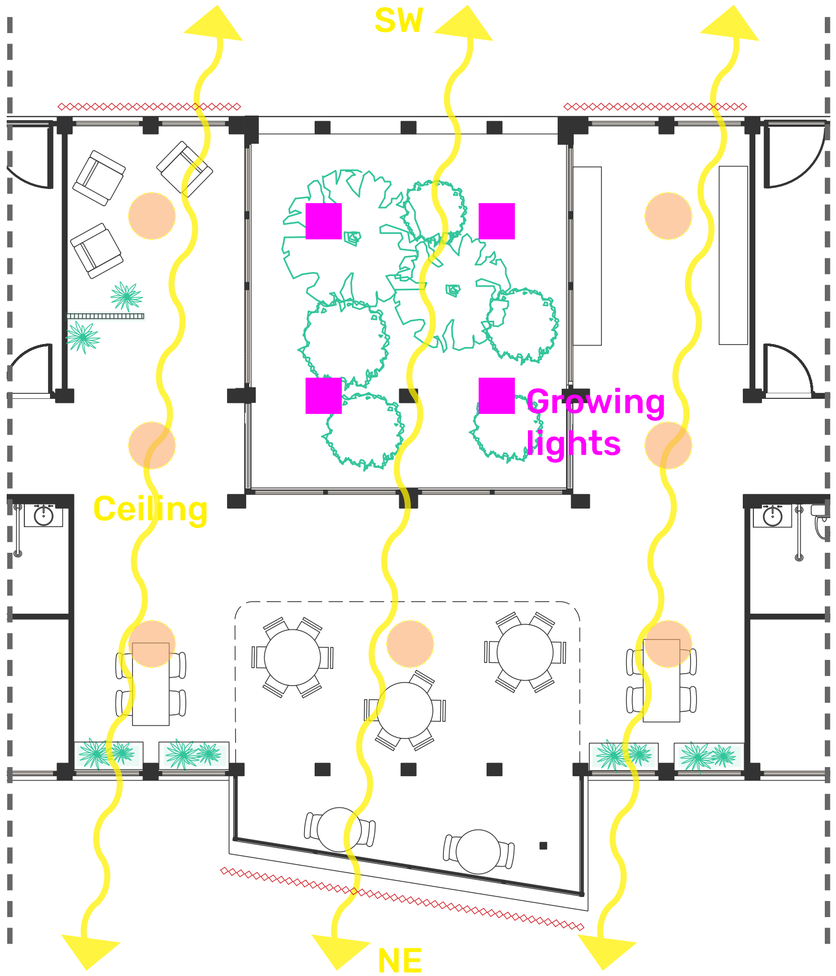

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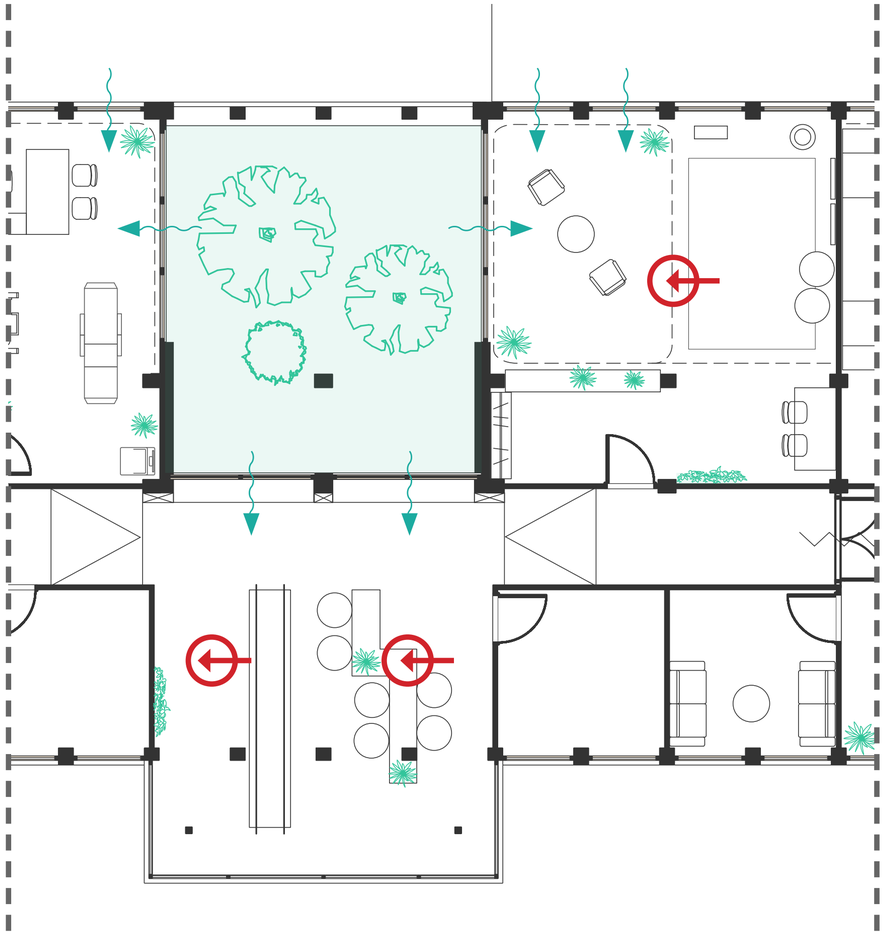

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- Light
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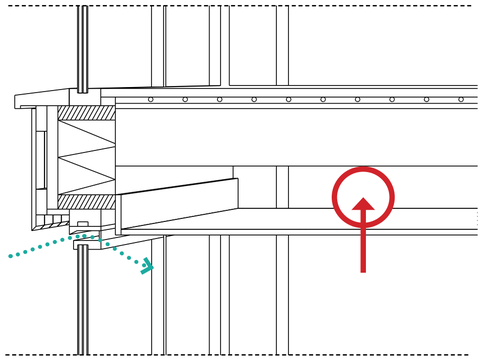

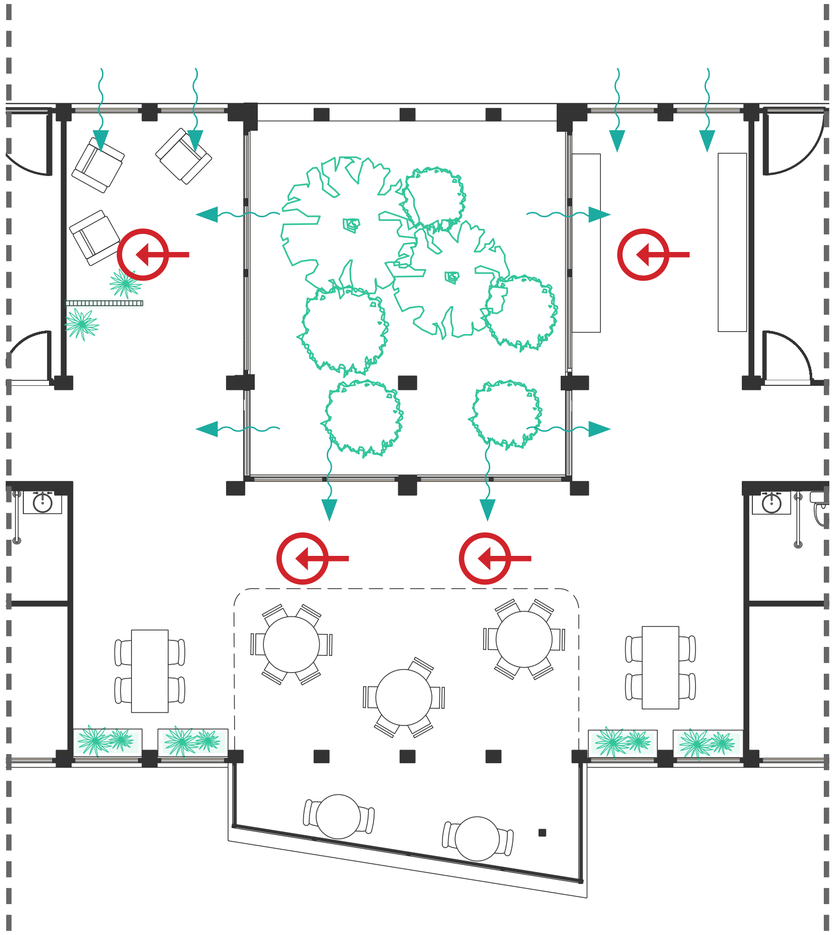

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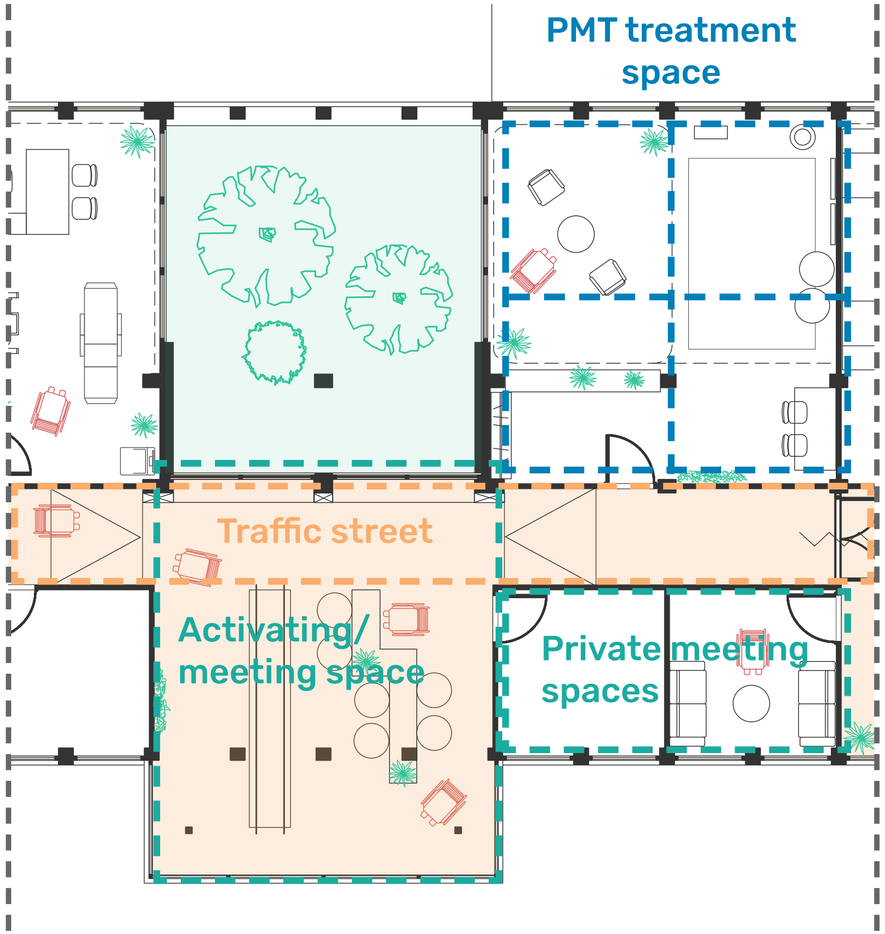

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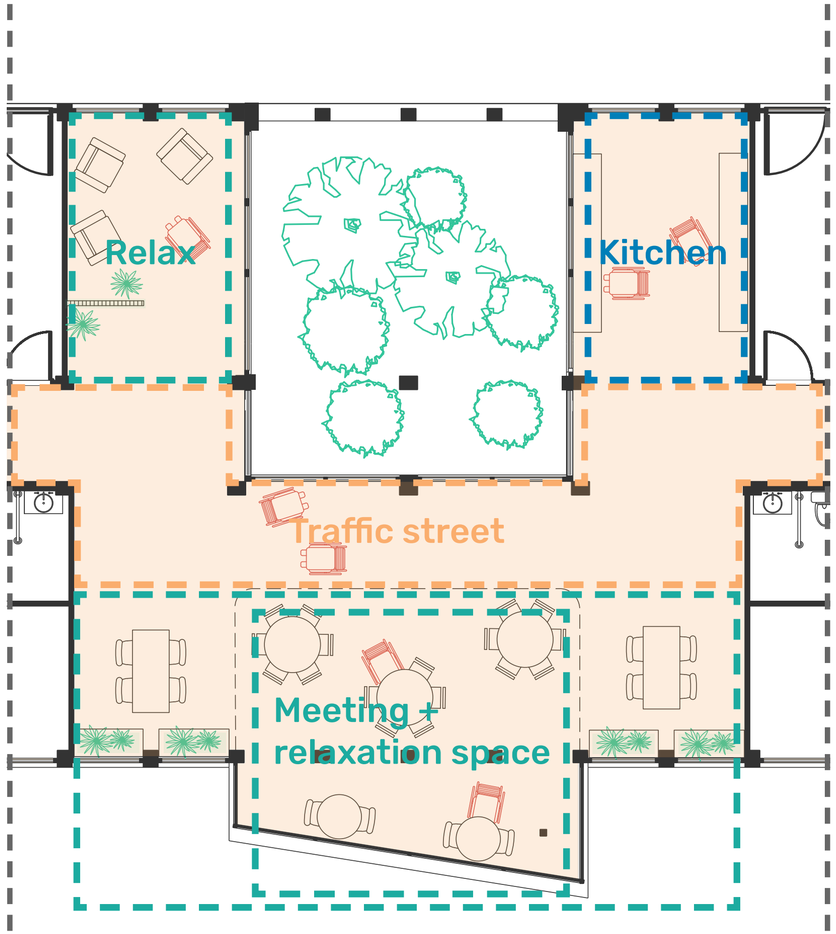

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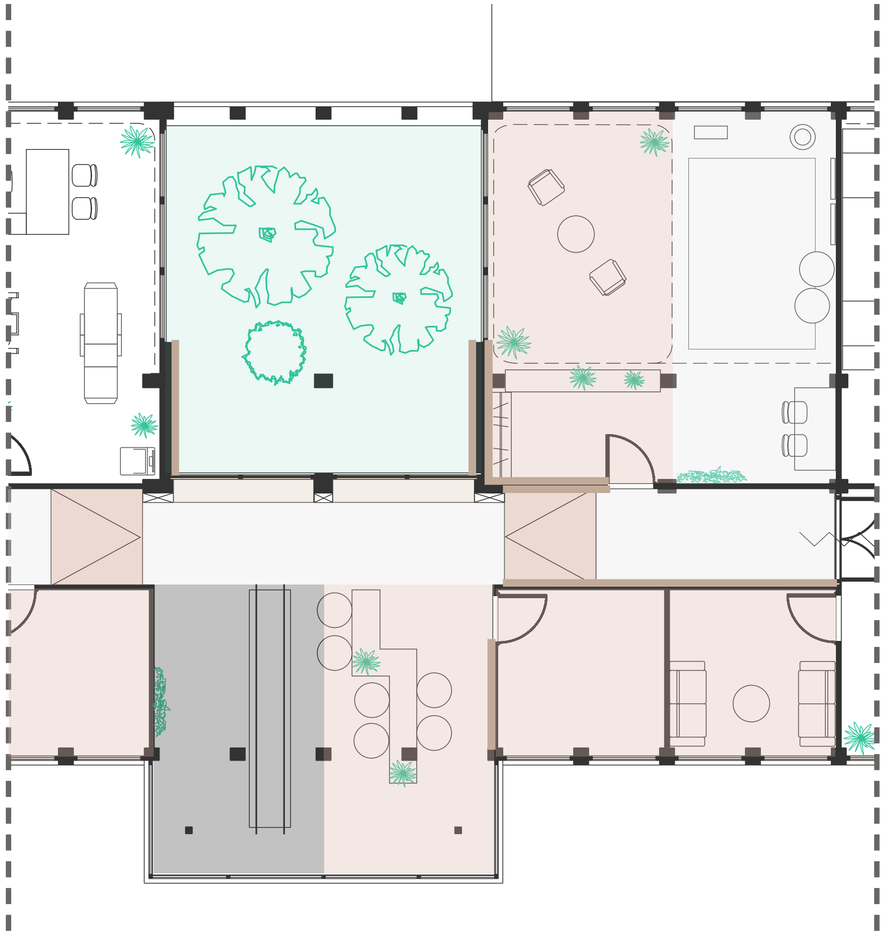

Key ingredients:
- Nature
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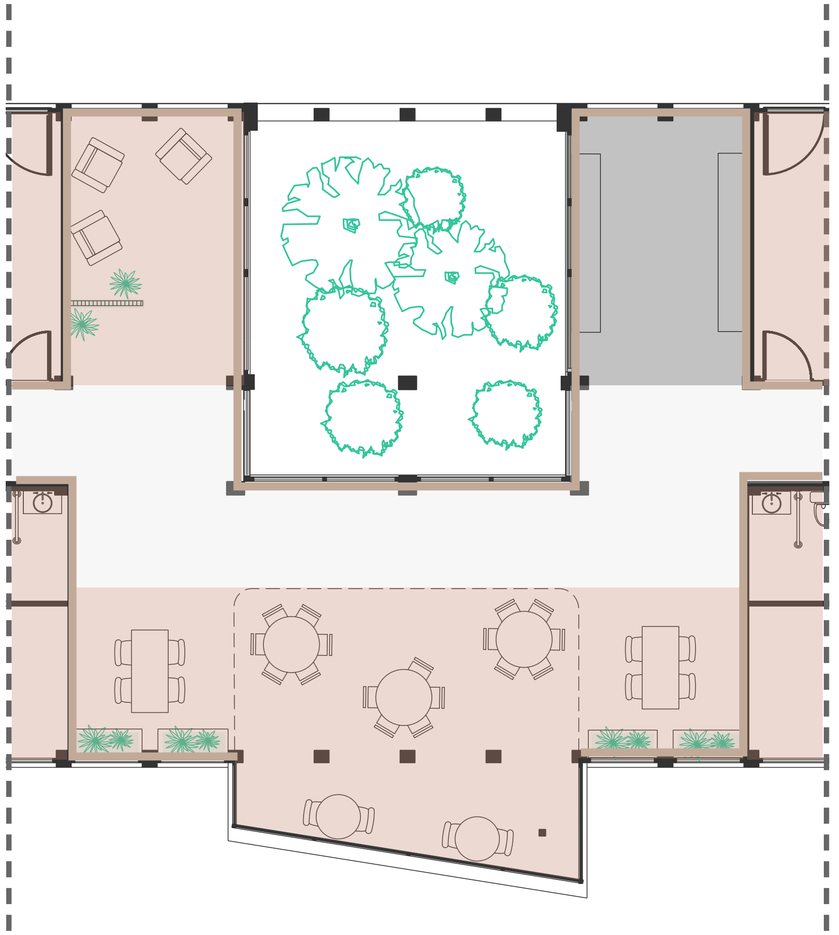
Less distracting

More natural (material)

Modularity



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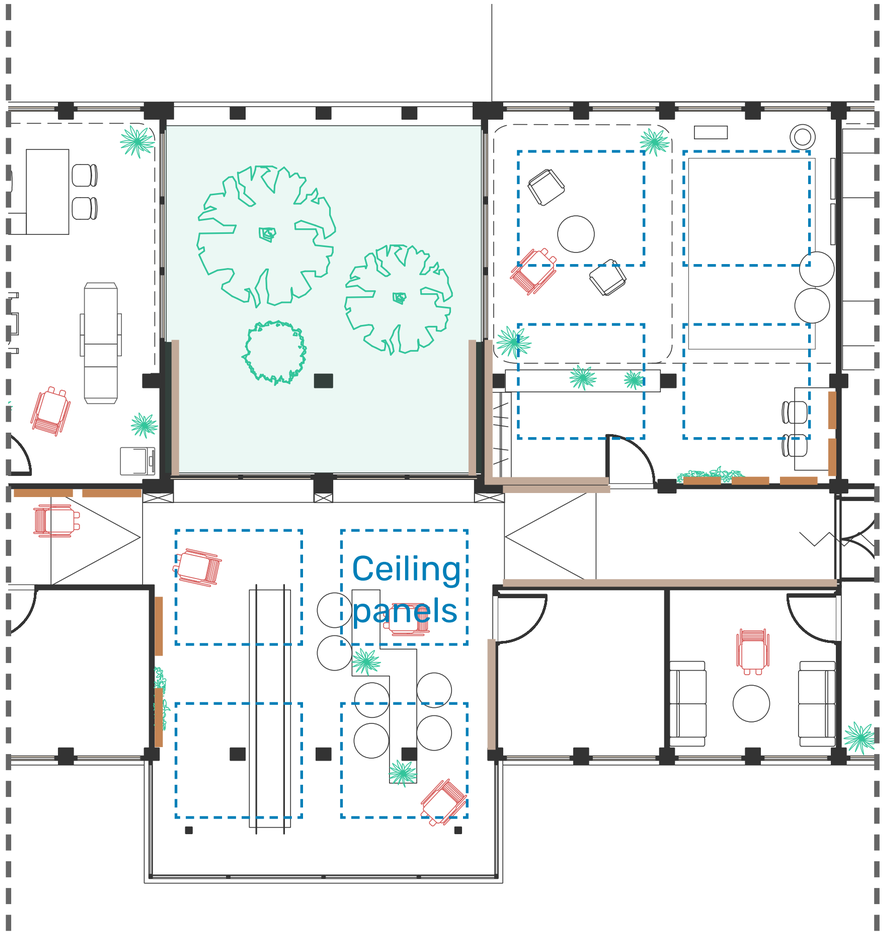

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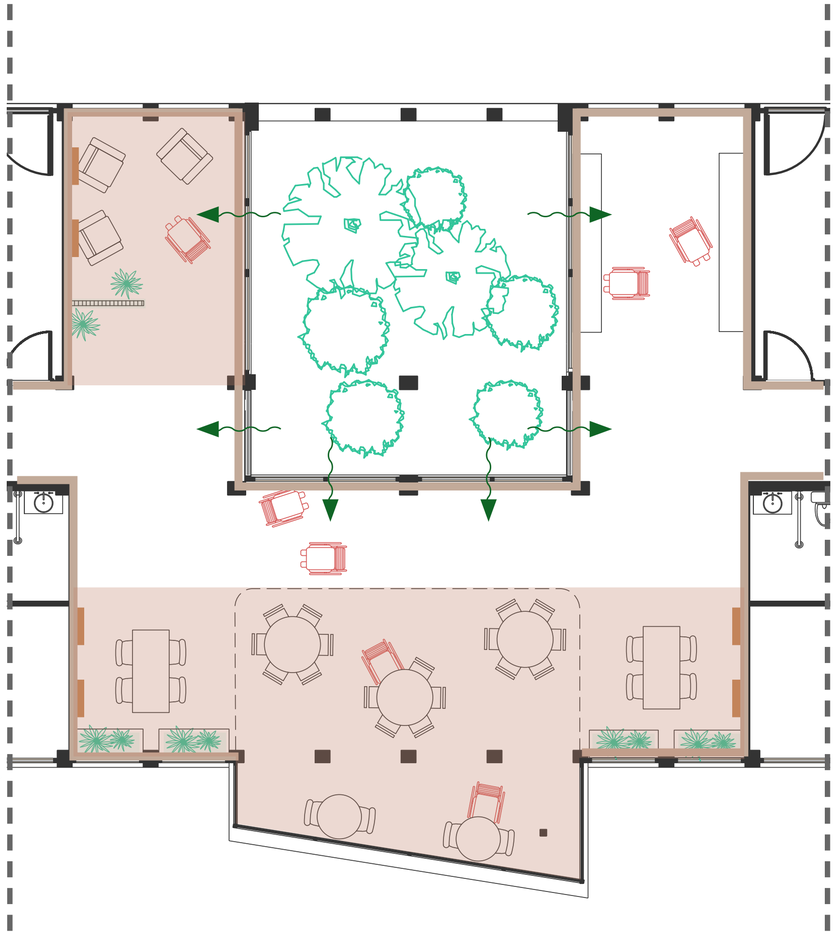

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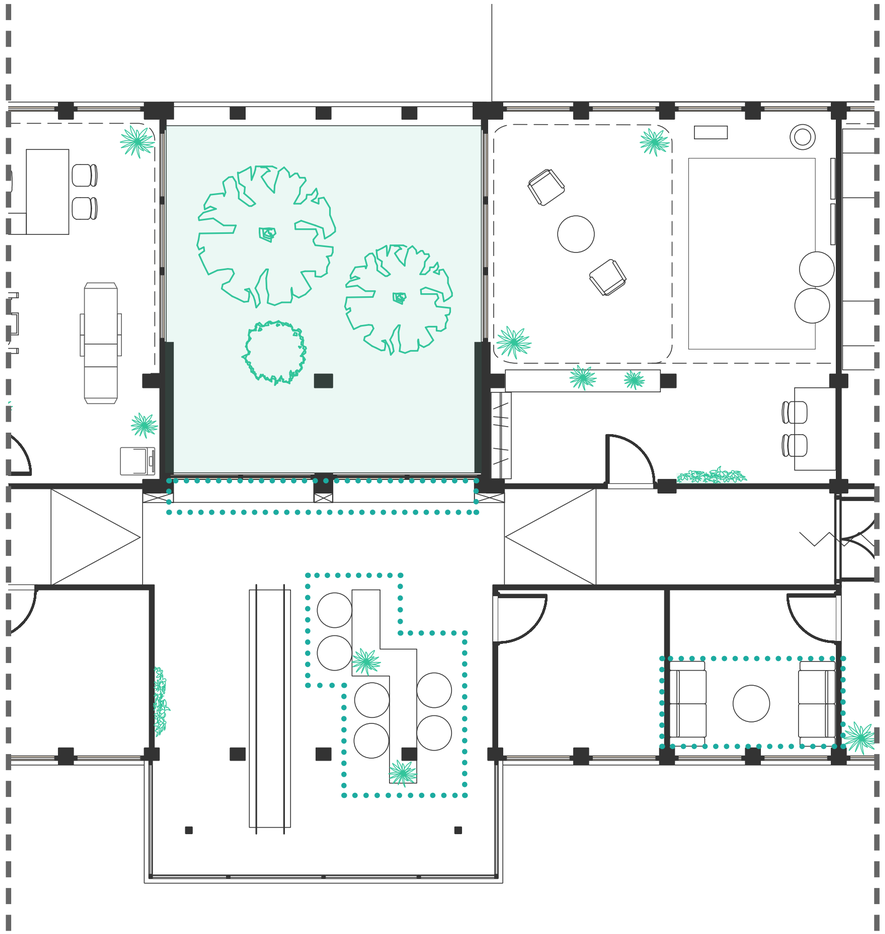

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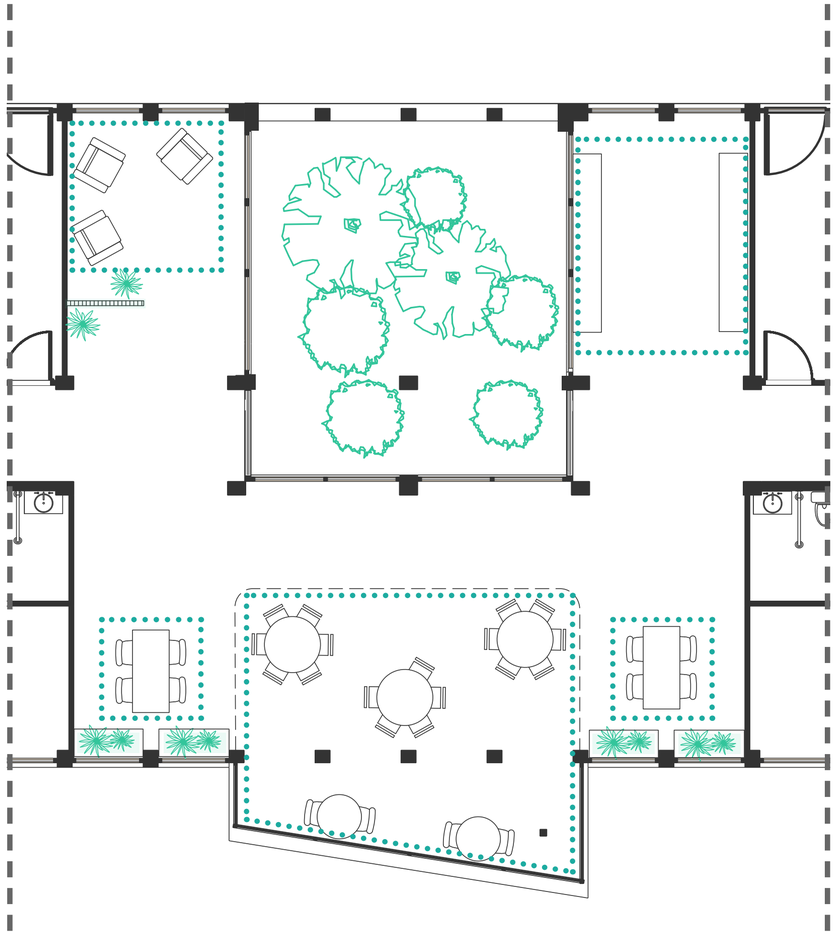

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An experience is hard to show in just pictures...

Overall design question:

In what way can the healing environment as an user-centred design approach of a rehabilitation hotel within an urban context be of value for the (medical) well-being of the users, the surrounding context and all its inhabitants?

Overall design question:

In what way can the healing environment as an user-centred design approach of a rehabilitation hotel within an urban context be of value for the (medical) well-being of the users, the surrounding context and all its inhabitants?

Design strategies

People empowering the graduation project

Ir. Anne Snijders
Architecture tutor

Sophy Duwel
Exercise agog
@Zuiderhout

Wil Weijers
Activities supervisor
@Ons Tweede Thuis

Nelleke Visser
PMT therapist
@Parnassia group

Dr. Andy Jenkins
Research tutor

Martina van der Linden
Junior PMT therapist

Ton de Ruiter
Teacher & Physiotherapist
@ALO Amsterdam

Janneke Dolman-Aarts
PMT therapist
@Curium-LUMC

Ir. Paddy Tomesen
Building technology tutor

Marcel Teunissen
Architectural historian

Claudia Emck
Assistant professor PMT
@VU Amsterdam

Luc Willekens
Architect
@OOMarchitects

When do we start?