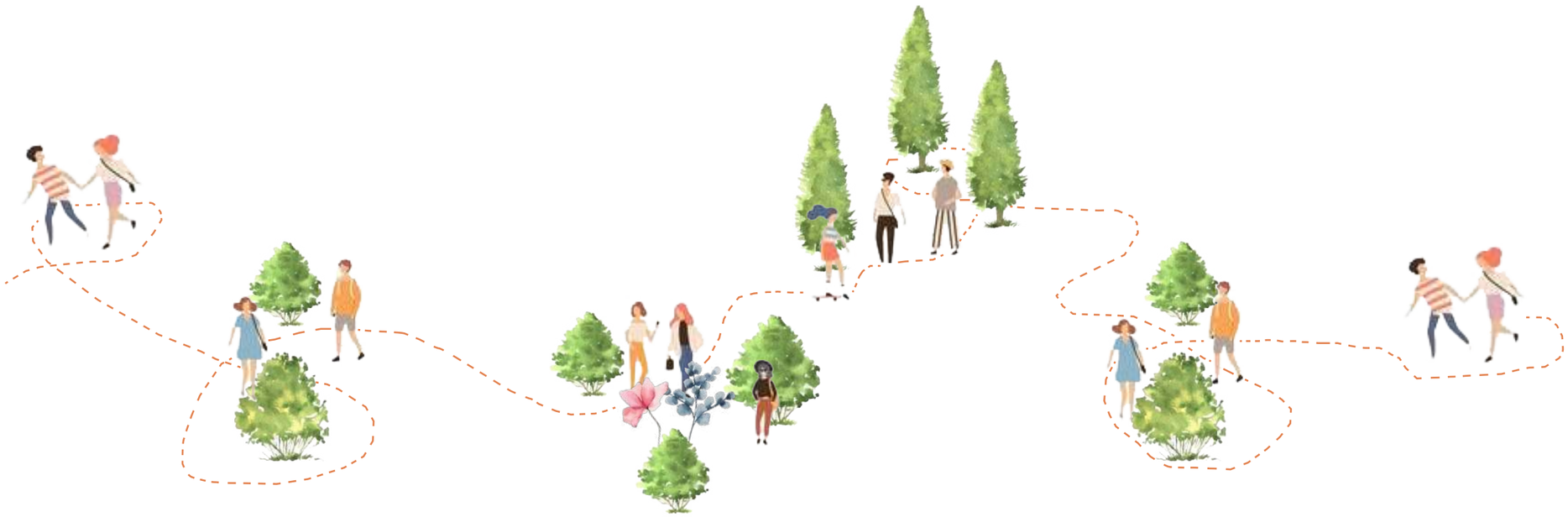
The post-war neighborhood

a green and active city



Date 29/05/2020

Tutors: Elise van Dooren, Sjap Holst, Cor Wagenaar
Examinator: Marietta Haffner

PHYSICAL INACTIVITY

+ is worlds largest long-term pandemic..

+ 4th risk factor
of deaths worldwide

+ 6 out of 10 people
are inactive in Europe

+ 62% of Dutch
people sit >5,5 hr/day!

PHYSICAL INACTIVITY

+ 4th risk factor
of deaths worldwide

Biggest sitting culture
in Europe!

+ 6 out of 10 people
are inactive in Europe

+ 62% of Dutch
people sit >5,5 hr/day!

PHYSICAL INACTIVITY

is part of your daily life

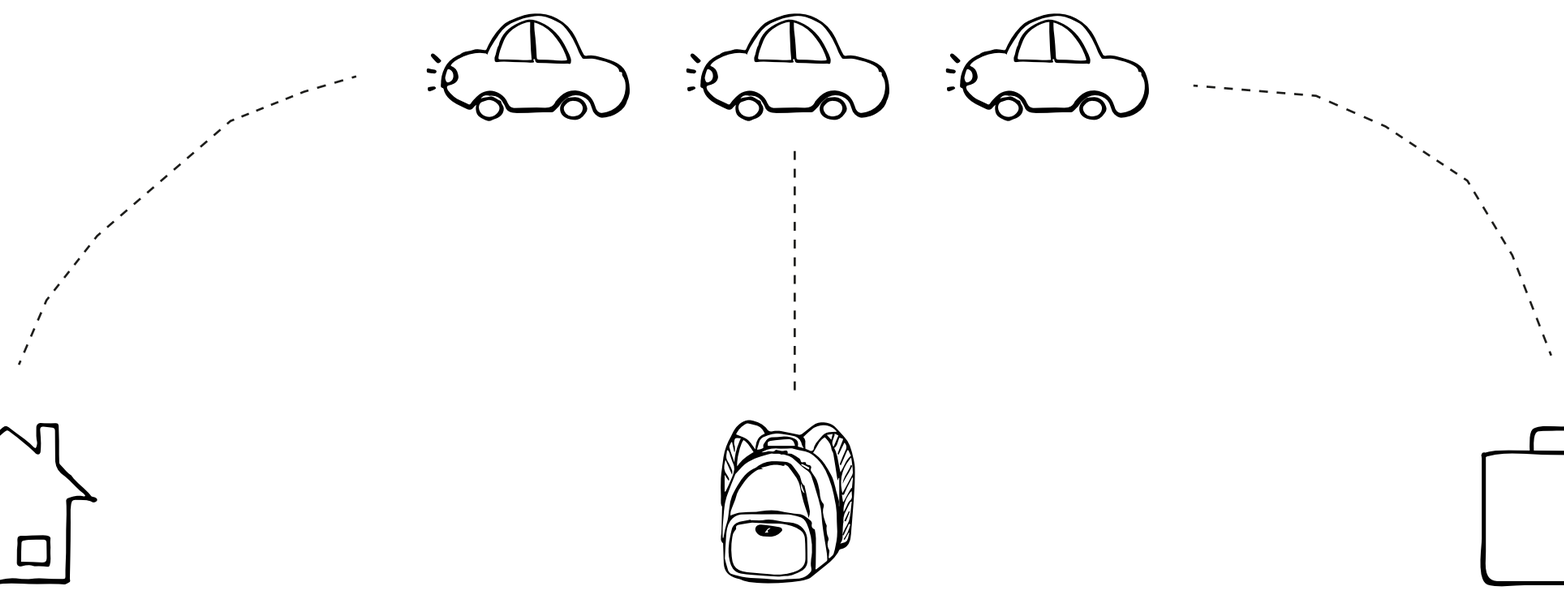
..sitting at home

..sitting at school

..sitting at work

PHYSICAL INACTIVITY

is part of your daily life



using mostly **passive transportation** modes

PHYSICAL ACTIVITY

health & planet benefits

+ life expectancy +10 years

+ reduction of diseases like diabetes type 2, lung-/coloncancer etc.

+ generates energy

+ increases social interactions

+ stimulates the congnital brain function

+ increasing air quality due to active transport

+ decreasing CO_2 emissions due to active transport

PHYSICAL ACTIVITY

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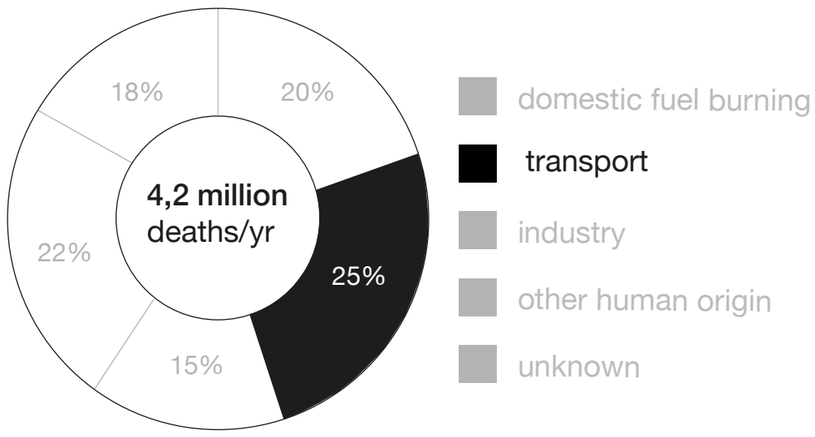
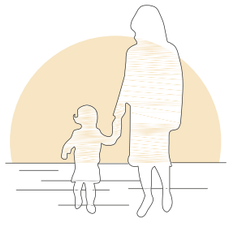


Global sources of Urban ambient $PM_{2,5.}$
COP24 Special Report, WHO (2018)

PHYSICAL ACTIVITY

means



walking

+ for transport
or recreation

doing sports

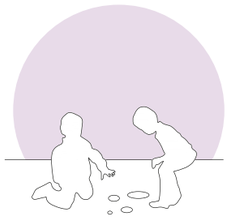
+ in parks,
societies,
playgrounds

gardening

+ in your yard,
on the street,
communal garden

biking

+ for transport
or recreation



playing

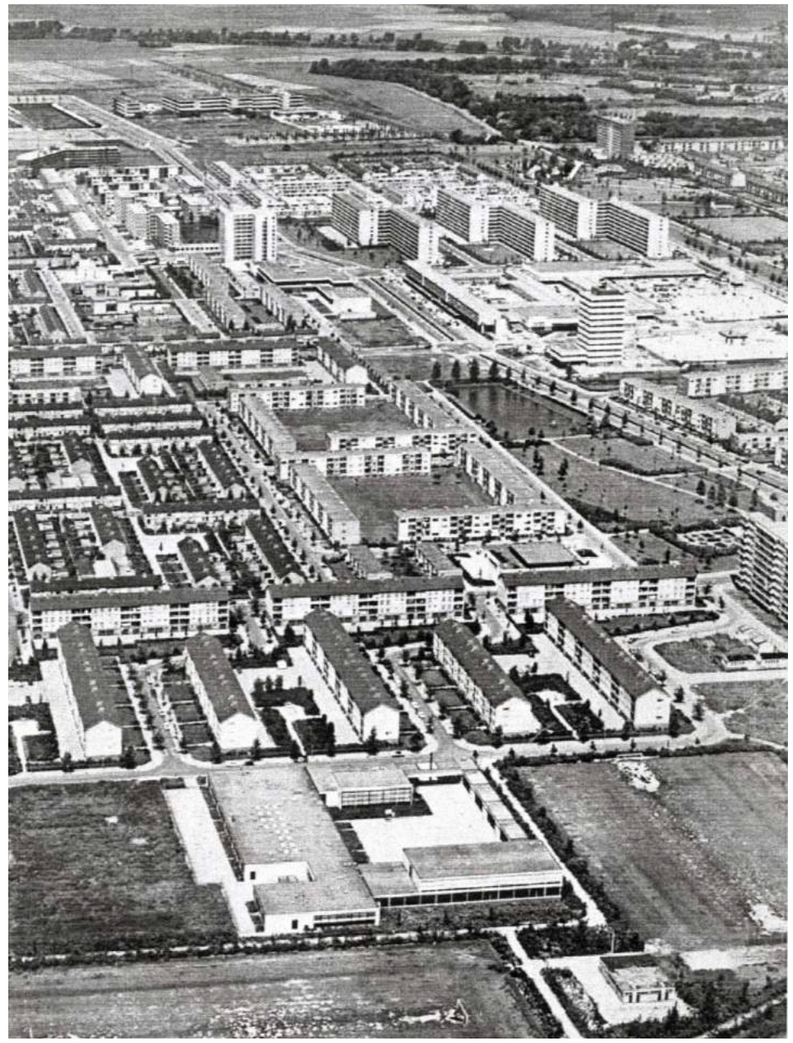
+ on the street,
playground,
communal garden

balance exercises

+ in the park,
the communal garden,
at home, or at a society

post-war neighborhoods

+ children living in post war neighborhoods are even **less active** compared to other Dutch neighborhoods



Focusgroningen: focuspaddepoel.blogspot.com

RESEARCH QUESTION

How to redesign the built environment of the post-war neighborhood to stimulate physical activities in our daily life?

CONTEXT

How to redesign the built environment of the post-war neighborhood to stimulate physical activities in our daily life?

But first:

How did the design of the post-war neighborhood emerge and why?

POST-WAR NEIGHBORHOOD

original design concept

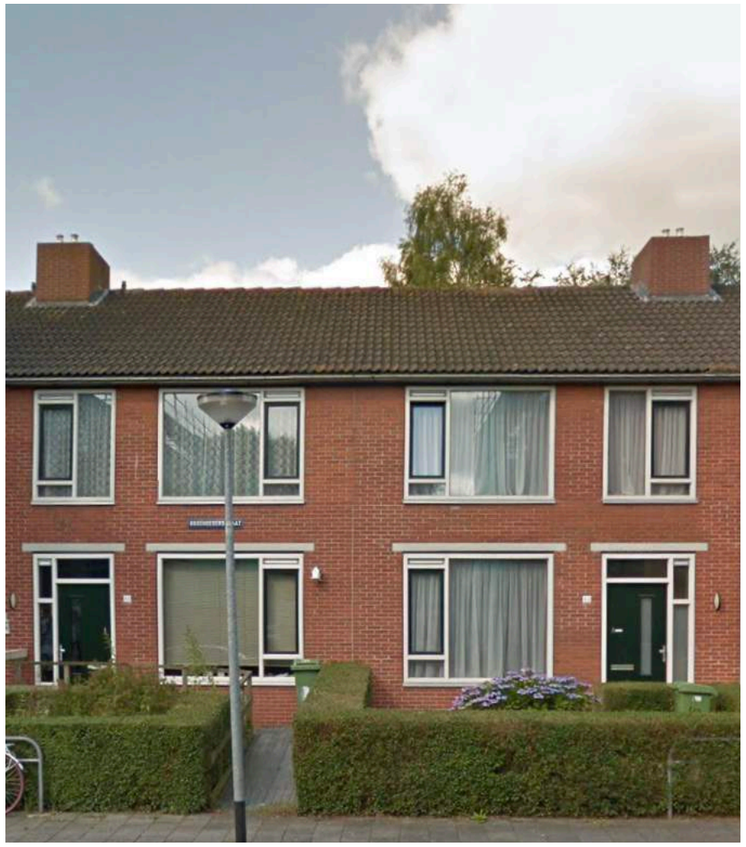
urban / architectural concept

marginal amount of workers

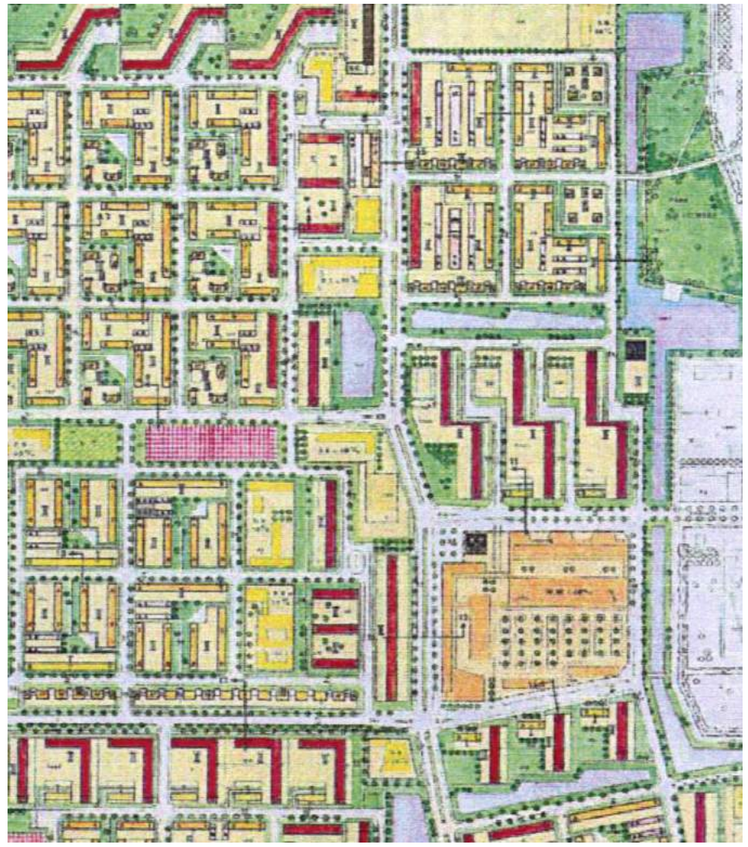
political movement

POST-WAR NEIGHBORHOOD

urban / architectural concept



large windows



seperation of functions /
car based

POST-WAR NEIGHBORHOOD

marginal amount of workers available

systematic building
processes

cheap materials

POST-WAR NEIGHBORHOOD

political movement

large scale top-down
planning

top-down planned
social communities

RESEARCH

RESEARCH

main question

How to redesign the post-war neighborhood structure to encourage people to be more physically active?

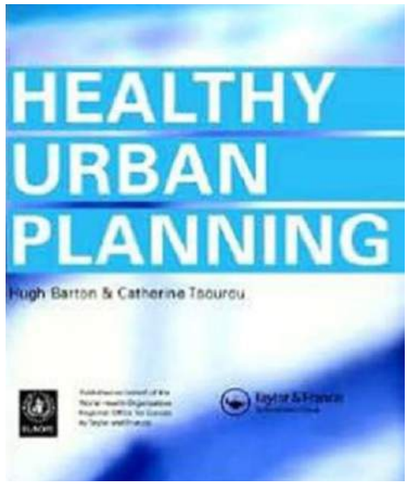
RESEARCH

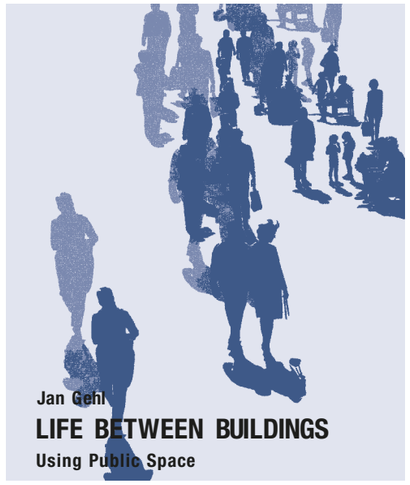
main question

How to redesign the post-war neighborhood structure to encourage people to be more physically active?

+ the street network
+ the building blocks

RESEARCH INPUT





Studying cities to learn about minds: some possible implications of space syntax for spatial cognition†

Bill Hillier
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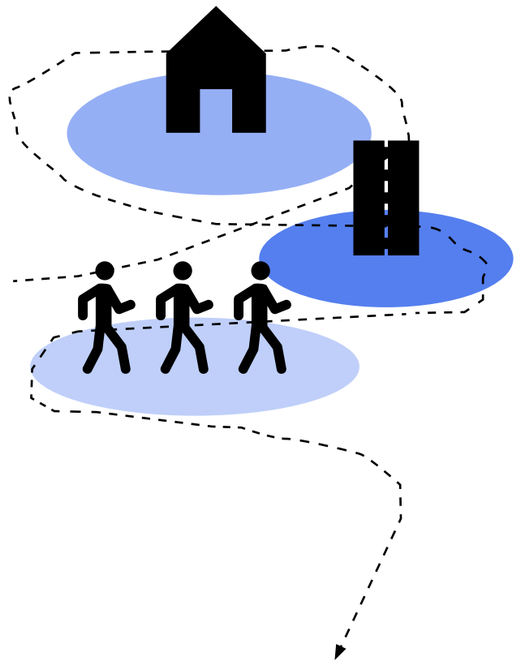
Received 9 May 2007; in revised form 1 July 2008; published online 2 October 2009

Abstract. What can we learn of the human mind by examining its products? The city is a case in point. Since the beginning of cities human ideas about them have been dominated by geometric ideas, and the real history of cities has always oscillated between the geometric and the 'organic'. Set in the context of the suggestion from cognitive neuroscience that we impose more geometric order on the world than it actually possesses, and intriguing question arises: what is the role of the geometric intuition in how we understand cities and how we create them? Here I argue, drawing on space syntax research which has sought to link the detailed spatial morphology of cities to observable functional regularities, that all cities, the organic as well as the geometric, are pervasively ordered by geometric intuition, so that neither the forms of the cities nor their functioning can be understood without insight into their distinctive and pervasive emergent geometrical forms. The city is often said to be the creation of economic and social processes, but here it is argued that these processes operate within an envelope of geometric possibility defined by the human mind in its interaction with spatial laws that govern the relations between objects and spaces in the ambient world.

De stedenbouwkundige kwaliteiten van de Nederlandse probleemwijken

Arjan Harbers*

Het Planbureau voor de Leefomgeving (PBL) heeft in zijn studie "Krachtwijken met karakter"[1] de Nederlandse probleemwijken vanuit stedenbouwkundig oogpunt geanalyseerd. Een algemene ruimtelijke oplossing voor de probleemwijken is niet te geven. Wel kunnen per type wijk kwaliteiten, in positieve en negatieve zin, worden genoemd die als leidraad kunnen gelden voor de verdere ontwikkeling van de wijken.

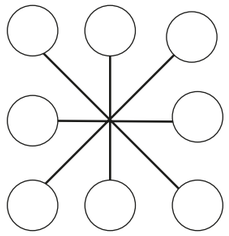


literature studies

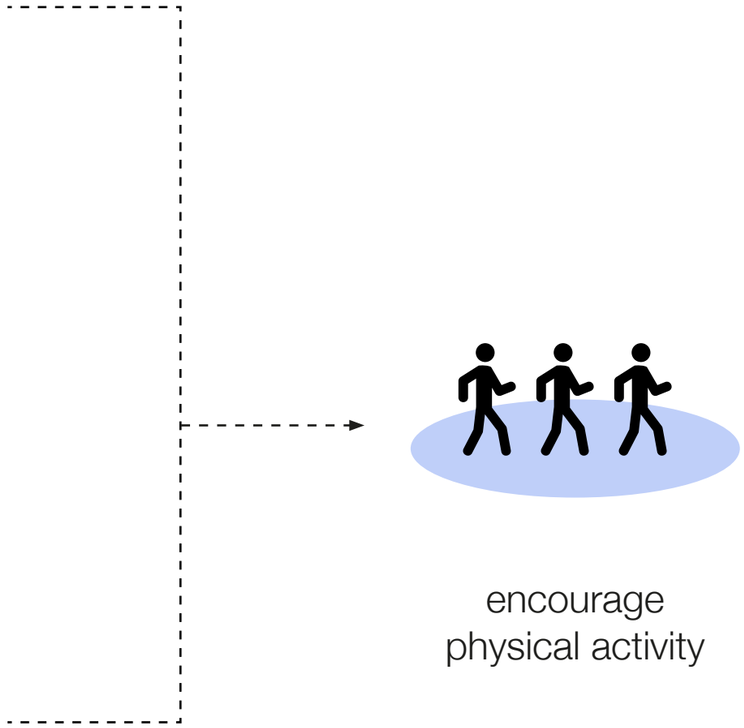
understanding

1. STREET LEVEL

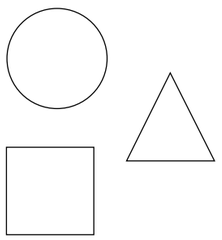
findings



high connectivity
of the neighborhood



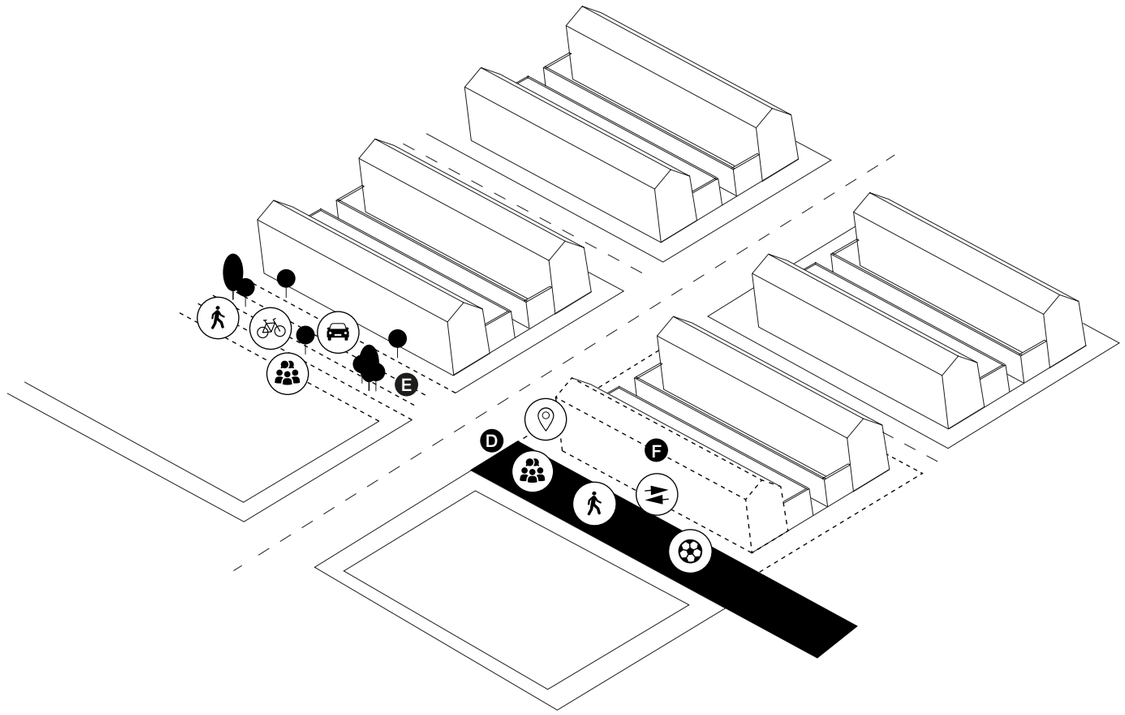
encourage
physical activity



diversity of streets
(in use and form)

1. STREET LEVEL

transform street into living environments



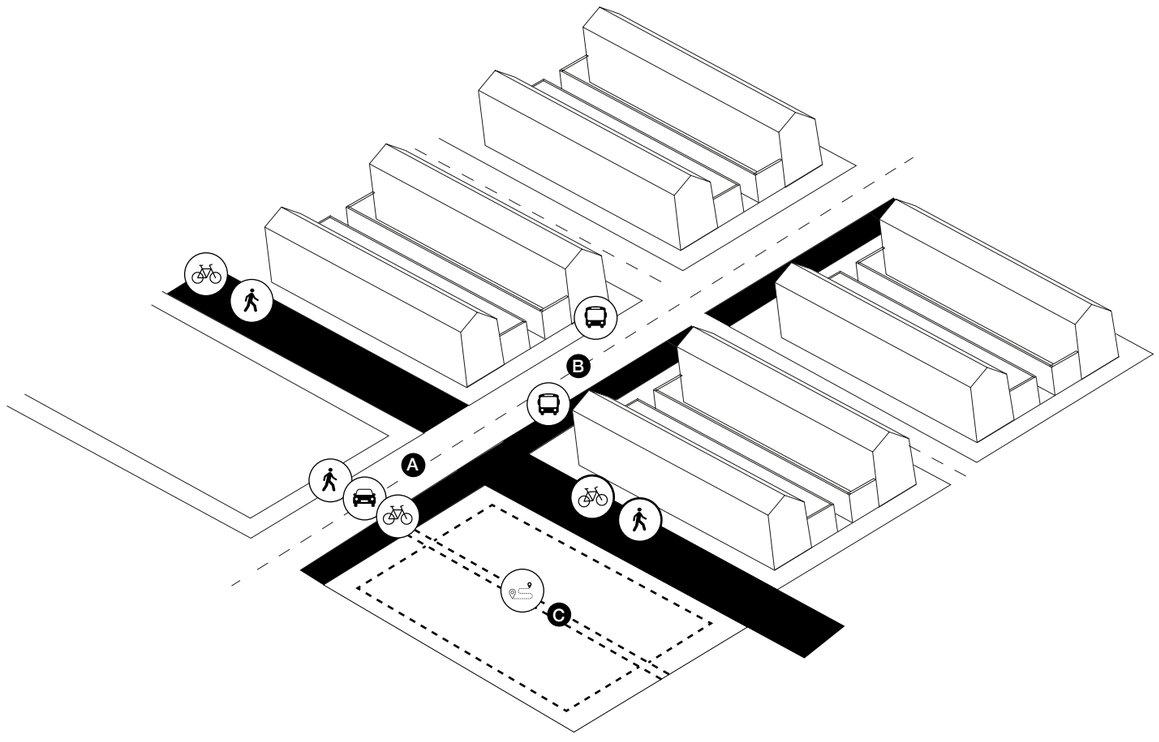
D Reclaim the street for pedestrians and inhabitants

E Design meeting and resting places, fostering social interactions

F Make soft transitions between private (indoor) and public (outdoor) space

1. STREET LEVEL

high connectivity and safety on the street



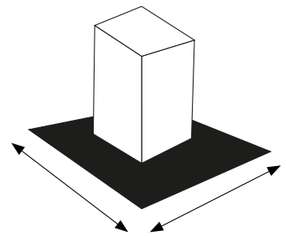
A Design streets for multiple users, not only the car

B Public transport stops within walking distance

C Transform big parcels into smaller ones, creating a denser network of streets.

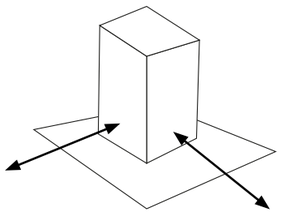
2. BUILDING LEVEL

findings



small plot size

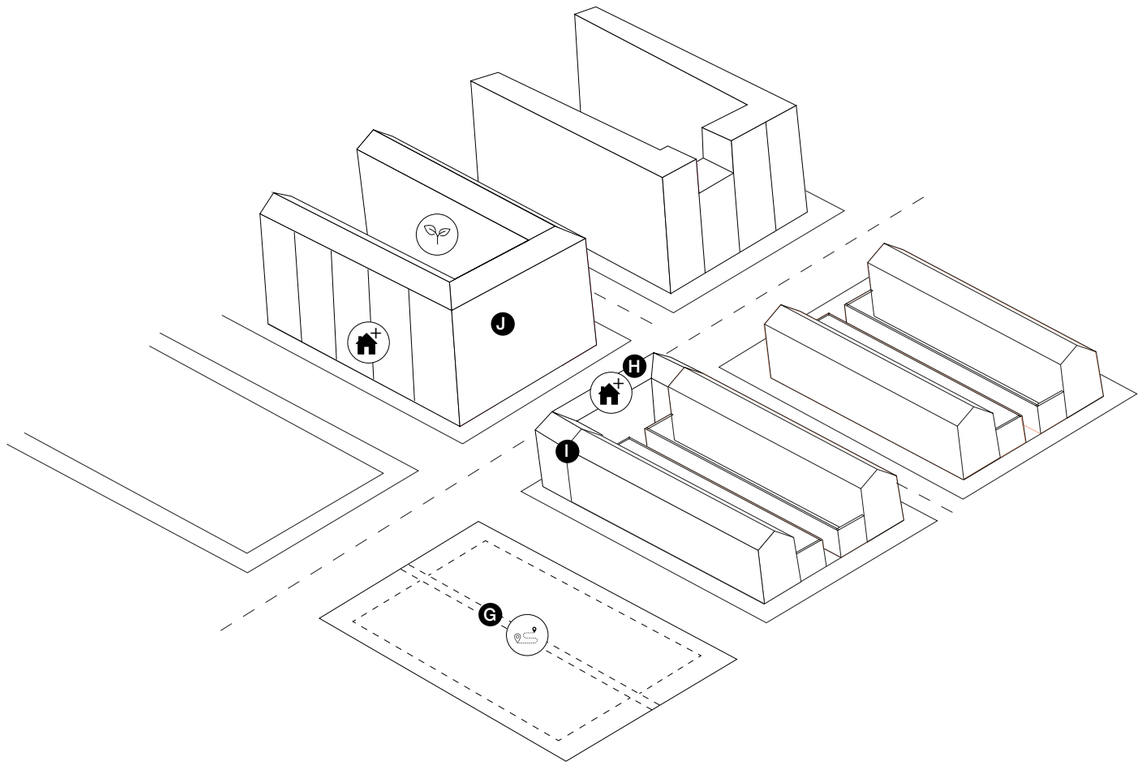
encourage
physical activity



interaction between
building & street

2. BUILDING LEVEL

make building blocks compact



G Split big plots into smaller ones

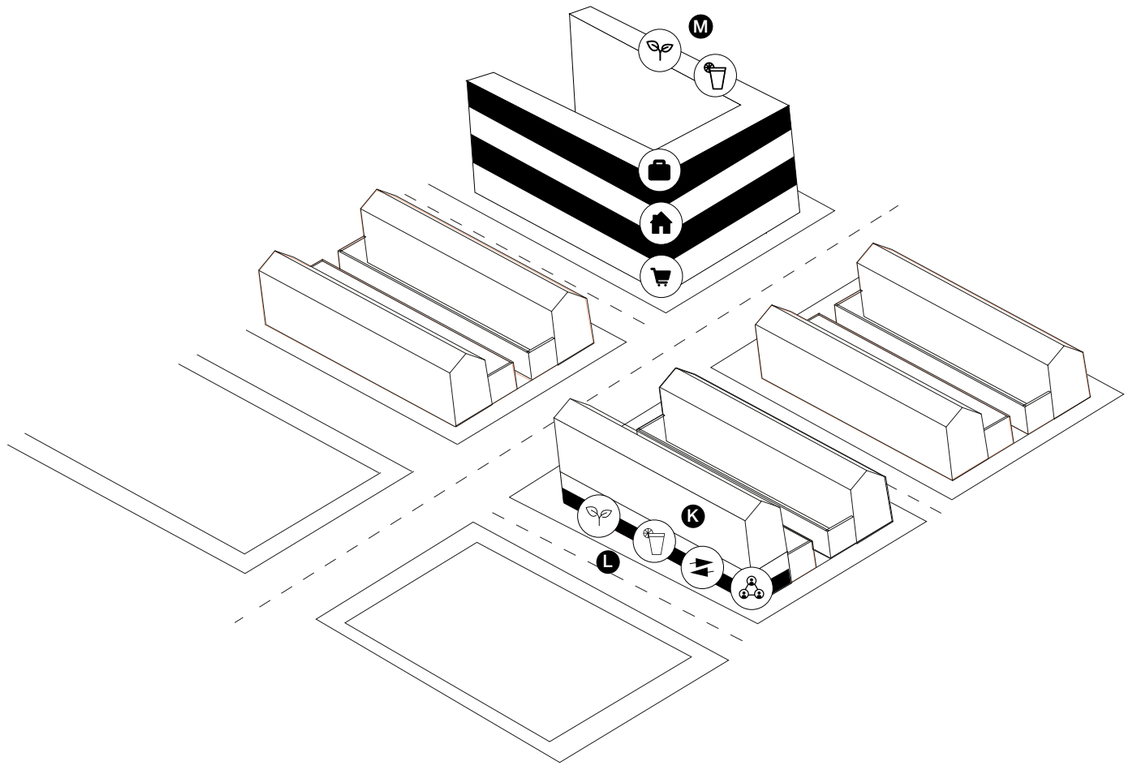
H Join buildings and make close blocks

I Make sure while transforming, building block keep their own identity

J Increase block density (4- 6 floors)

2. BUILDING LEVEL

allow function mix within the building



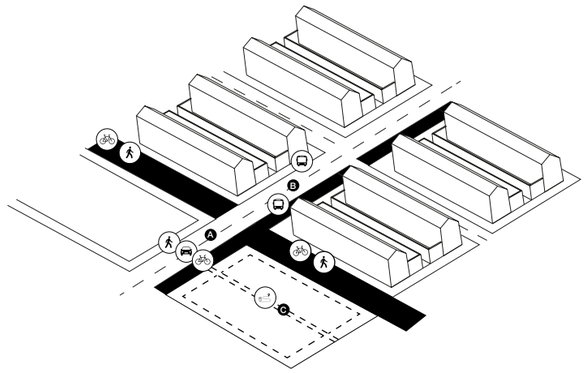
K Use the potential of the ground floor level

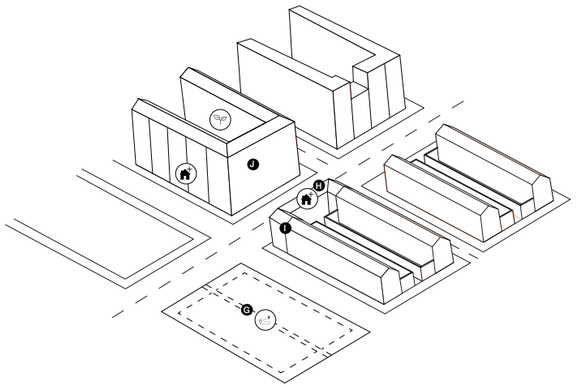
L Soften the transition between inside and outside environments

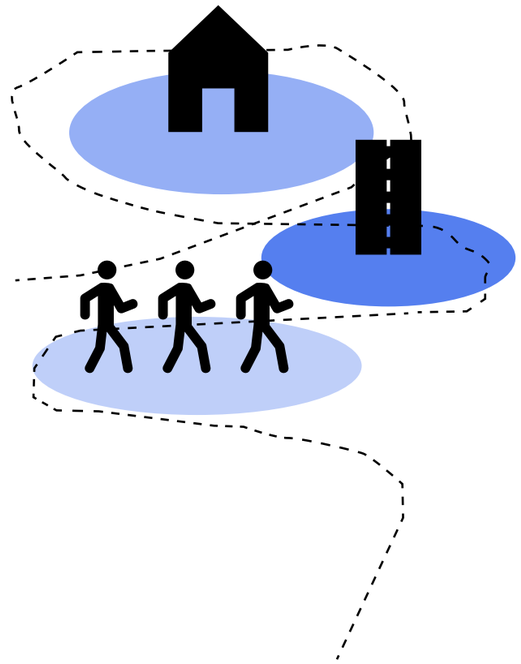
M Use the rooflandscape

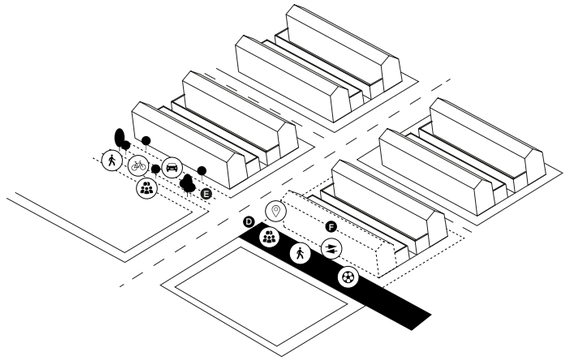
TOOLBOX

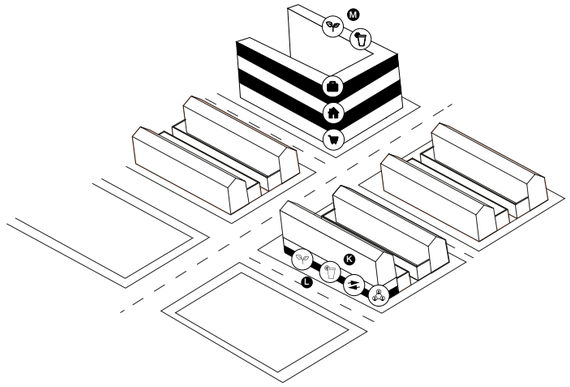
to design active living environments



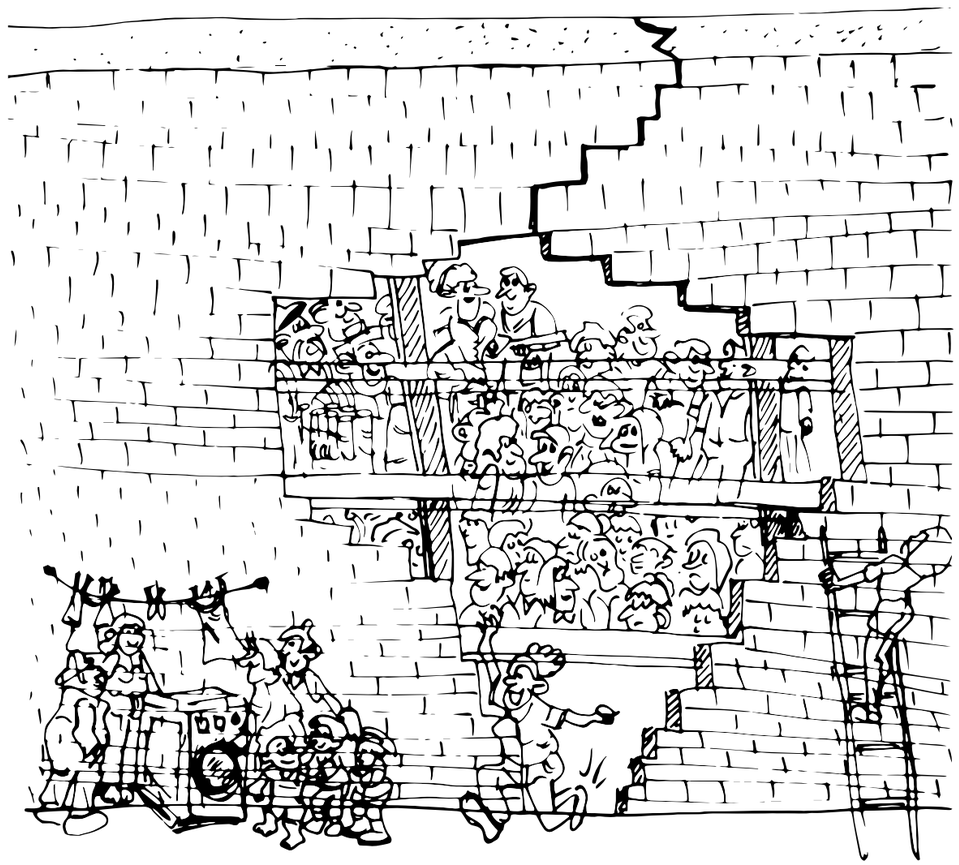






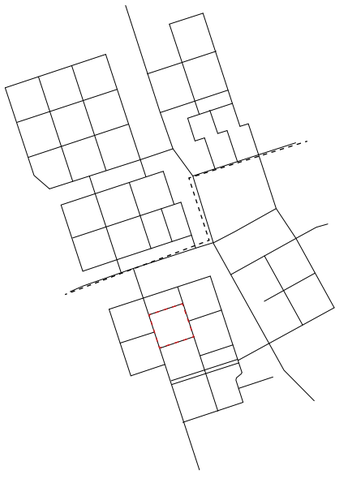


THE DESIGN

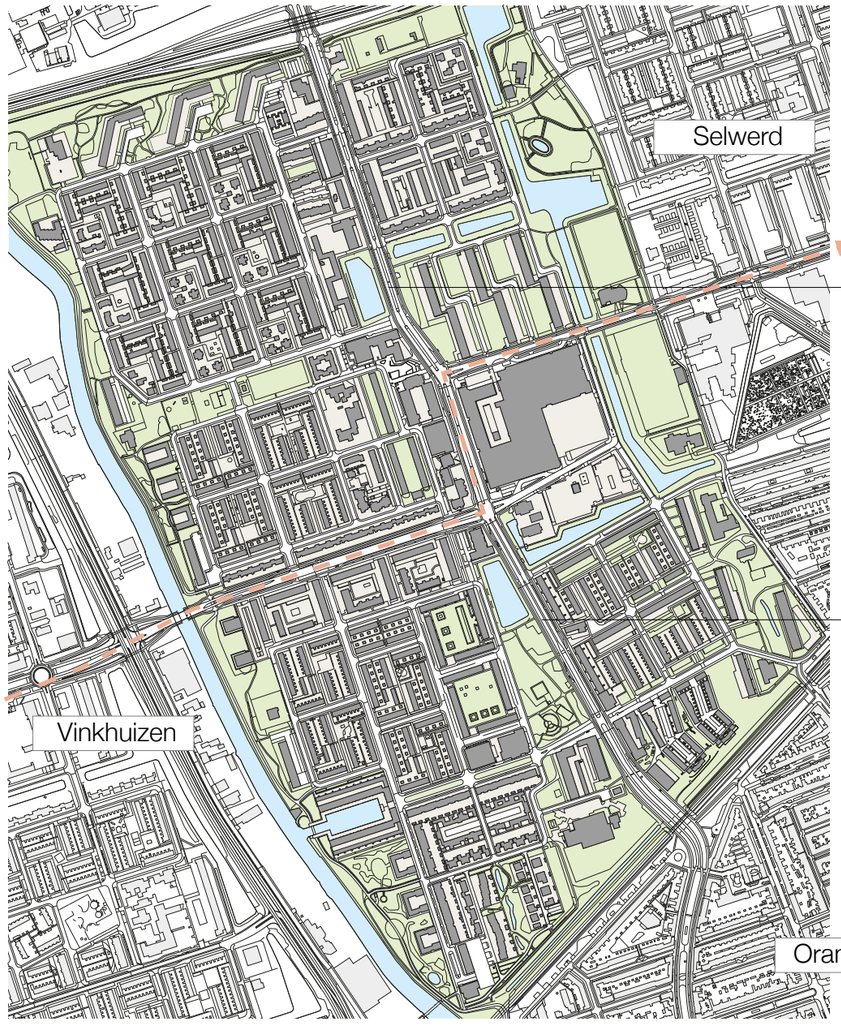


LOCATION

Paddepoel, Groningen



120 x 120 m

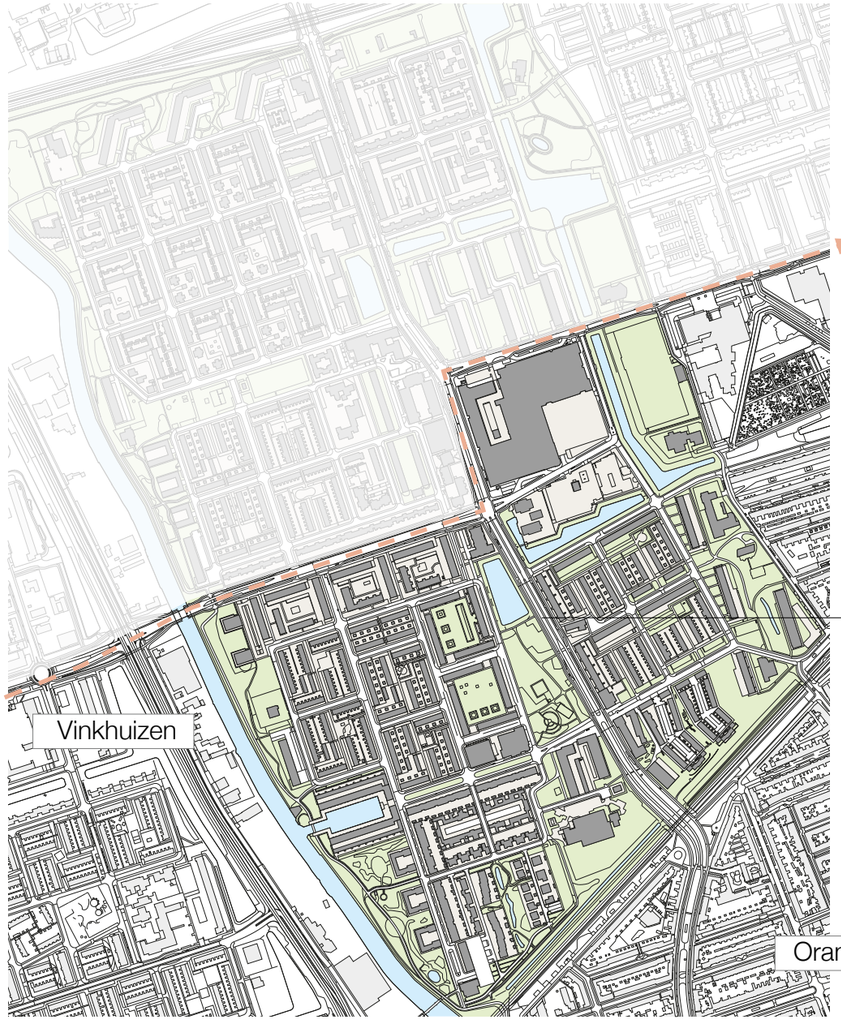


Paddepoel Noord
private ownership housing

Paddepoel Zuid
mainly social housing

LOCATION

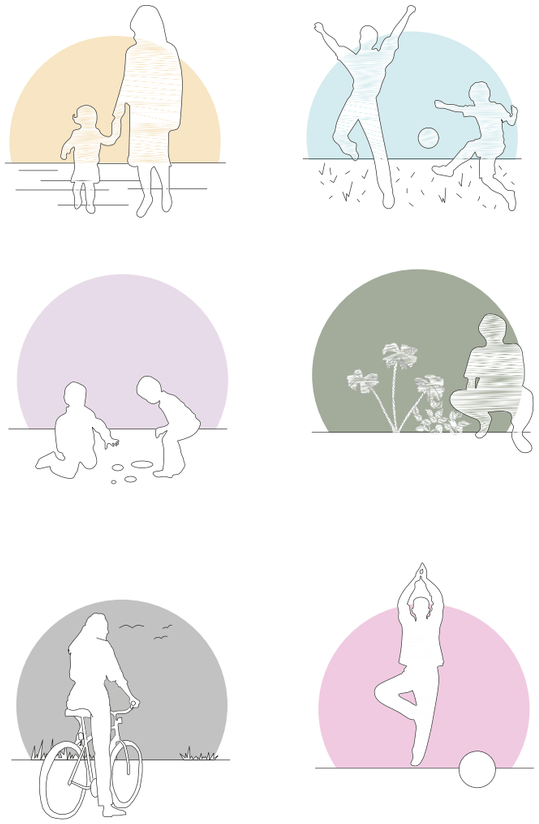
Paddepoel, Groningen



Paddepoel Zuid
mainly social housing

DESIGN BRIEF

Paddepoel, Groningen



1. Neighborhood scale

where to design *places*
in Paddepoel that stimulates
active transport and recreation?

design location

DESIGN BRIEF

Paddepoel, Groningen

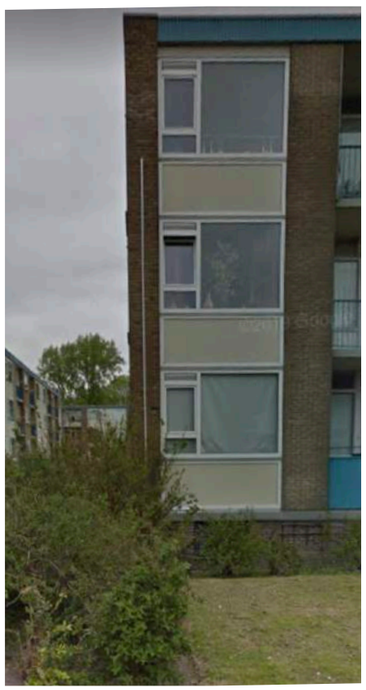
2. Building scale

how should the building block be transformed to *support physical activities* and to be *future proof* for the next generations?

design location

THE NEIGHBOORHOOD

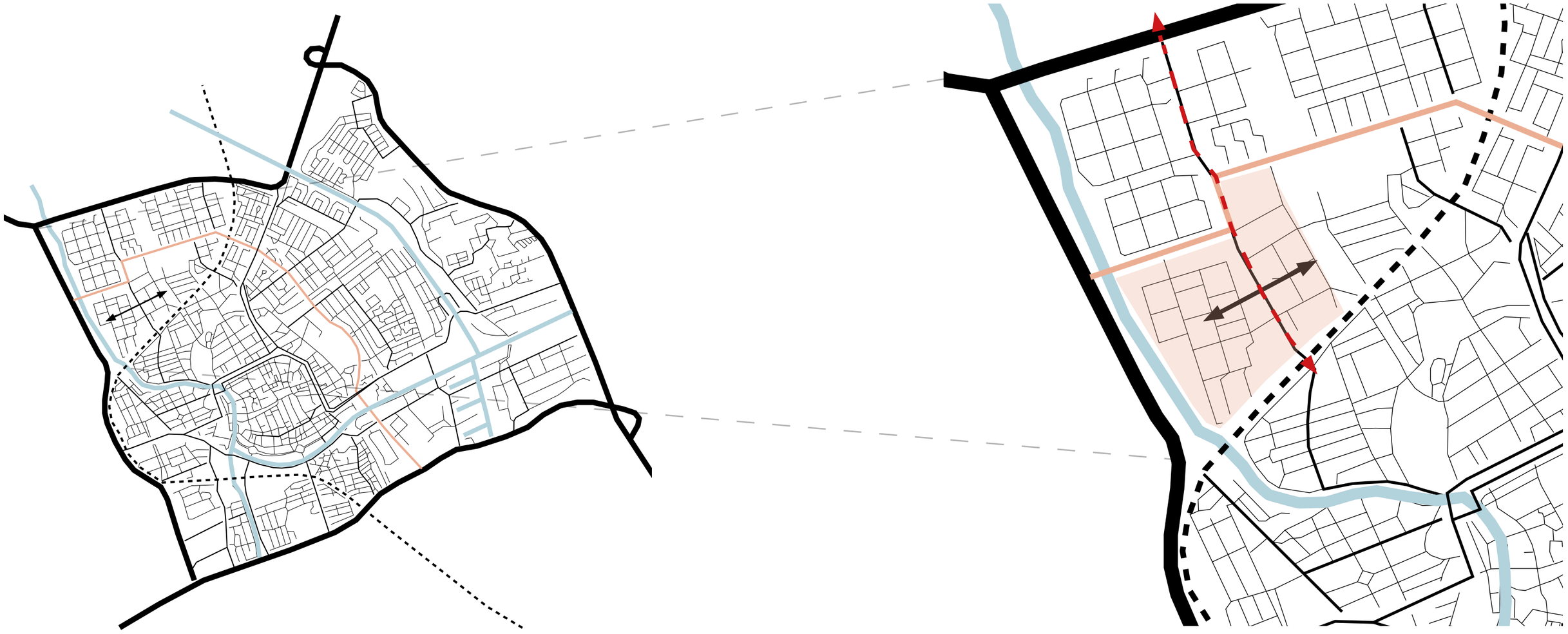
current situation



STARTING POINT

strengths of the neighbourhood

MAKE USE OF THE CITY RING



OPENING UP THE GREEN

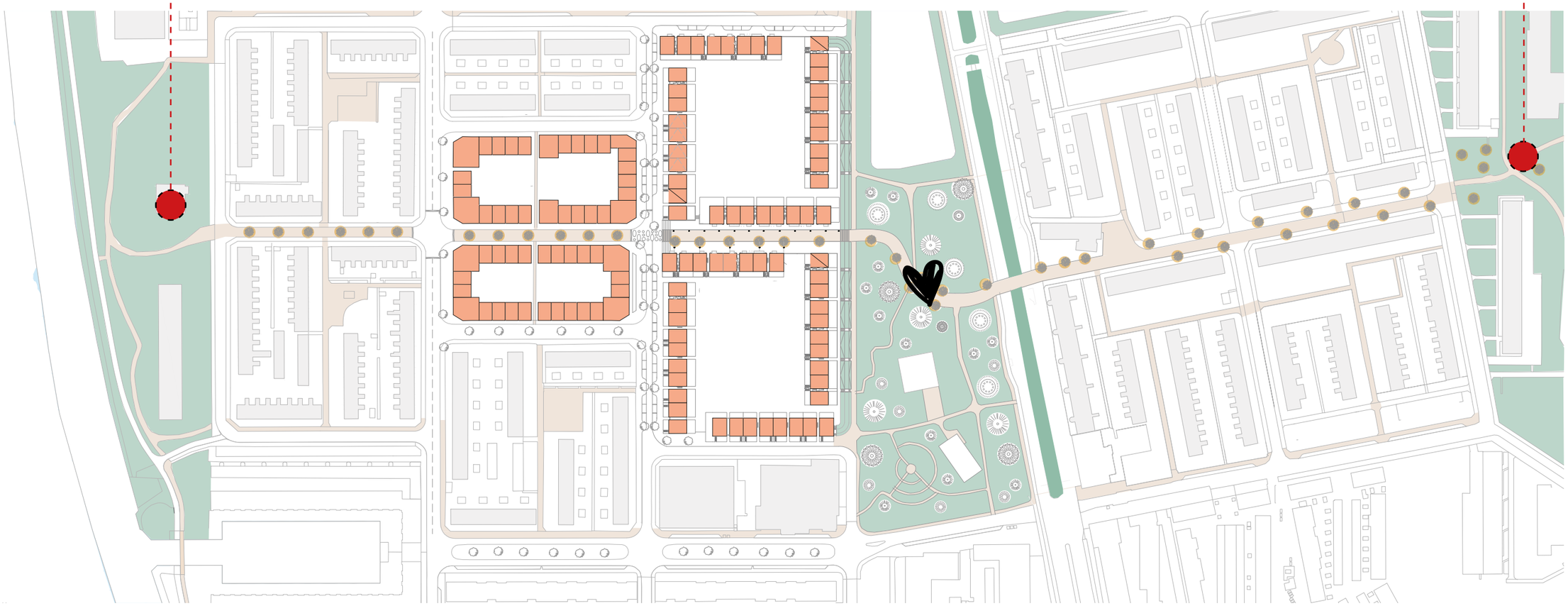
OPENING UP THE GREEN

A ROUTE

connect the green structures by a walking route

community center

community center



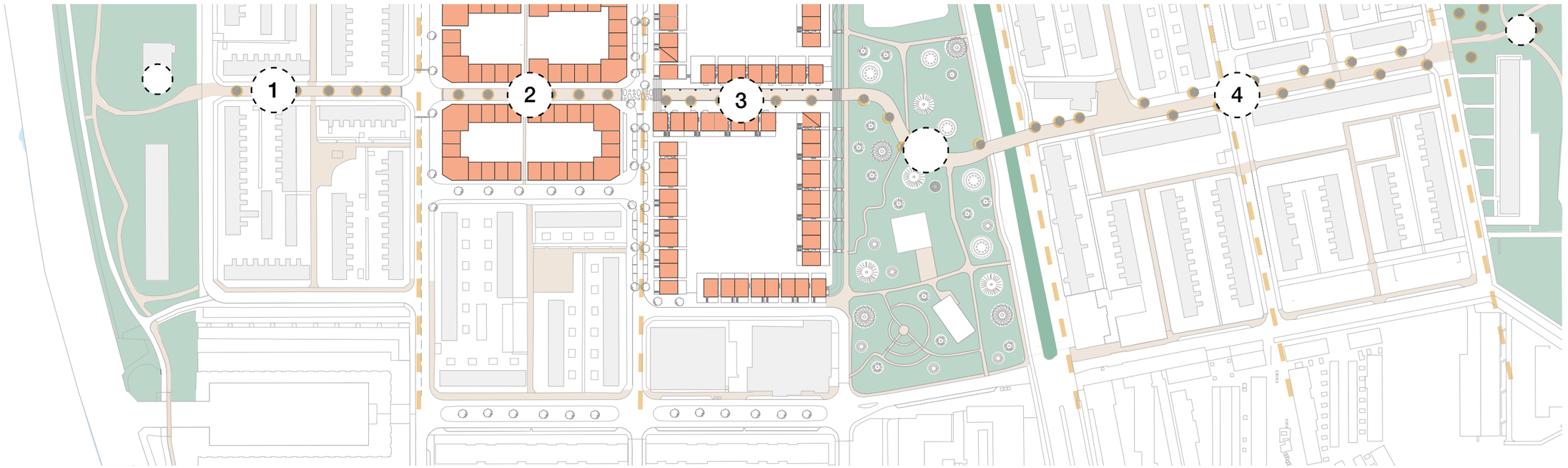
THE STREETS

1

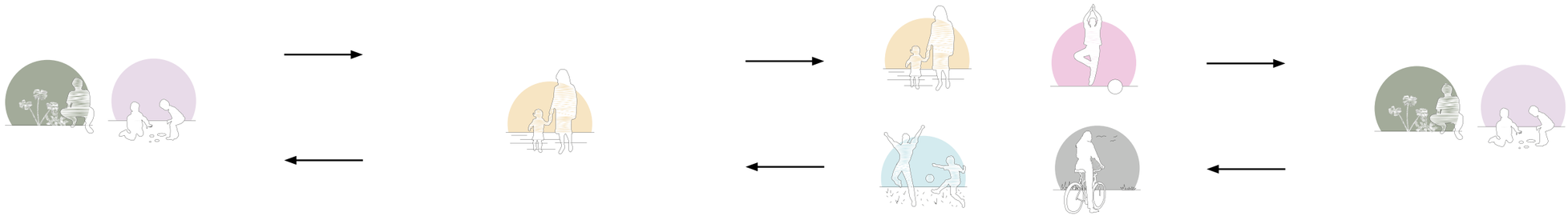
2

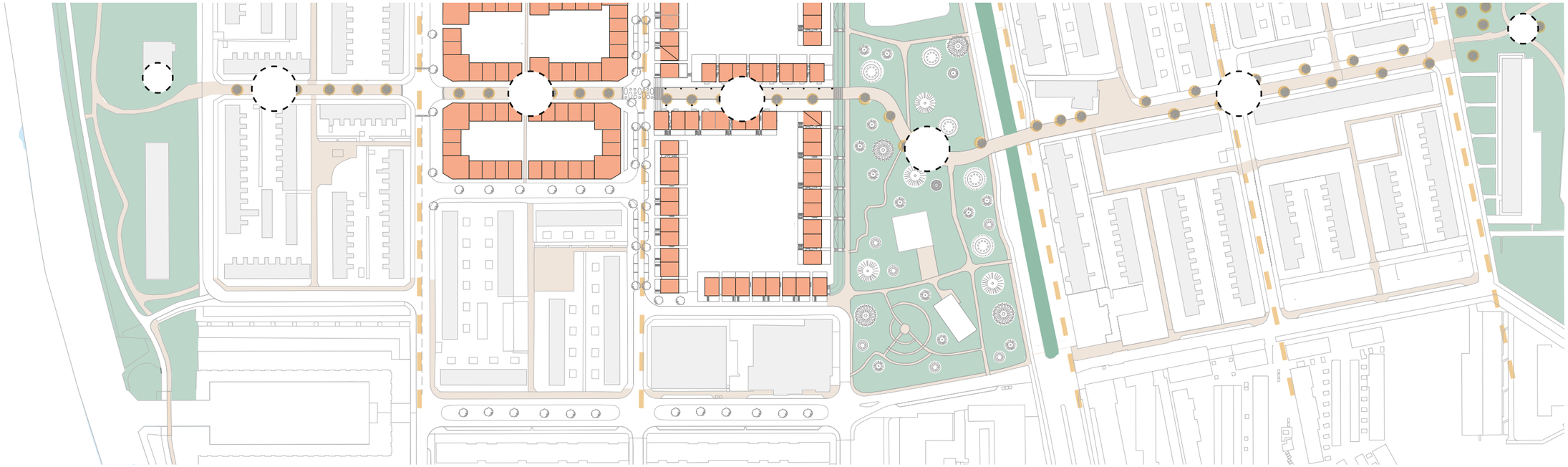
3

4



THE HUBS





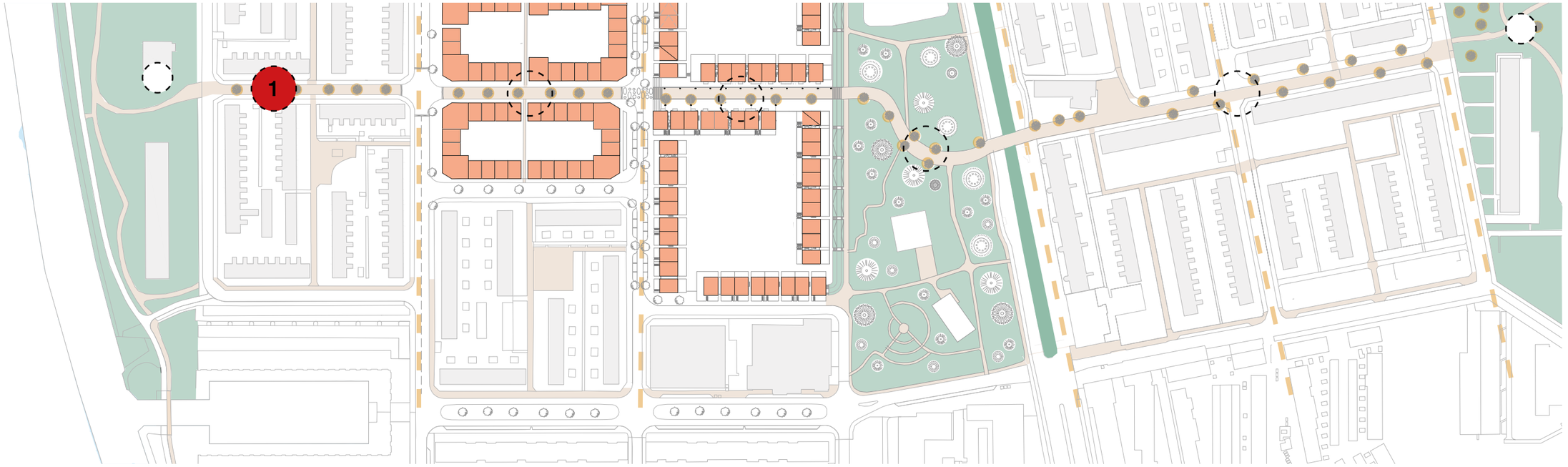
1

tools

D Reclaim the street for inhabitants and pedestrians

F Design soft transitions between public and private space

encouraging activities



1

SCHORPIOENSTRAAT

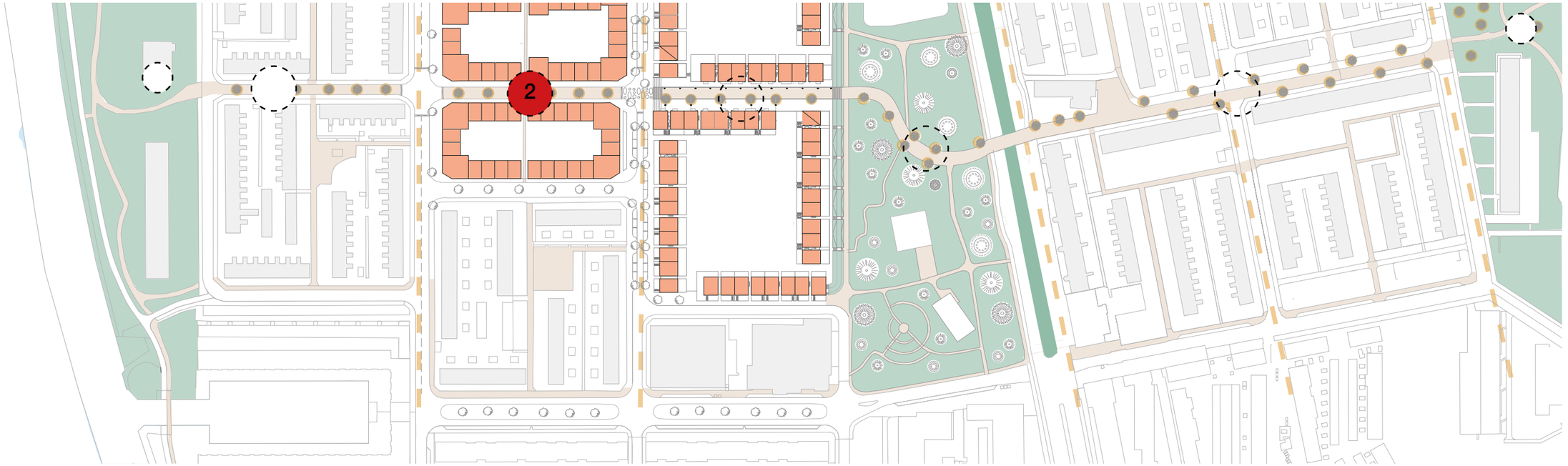
2

tools

E Design meeting and resting places, fostering social interactions

G Split big plots into smaller ones

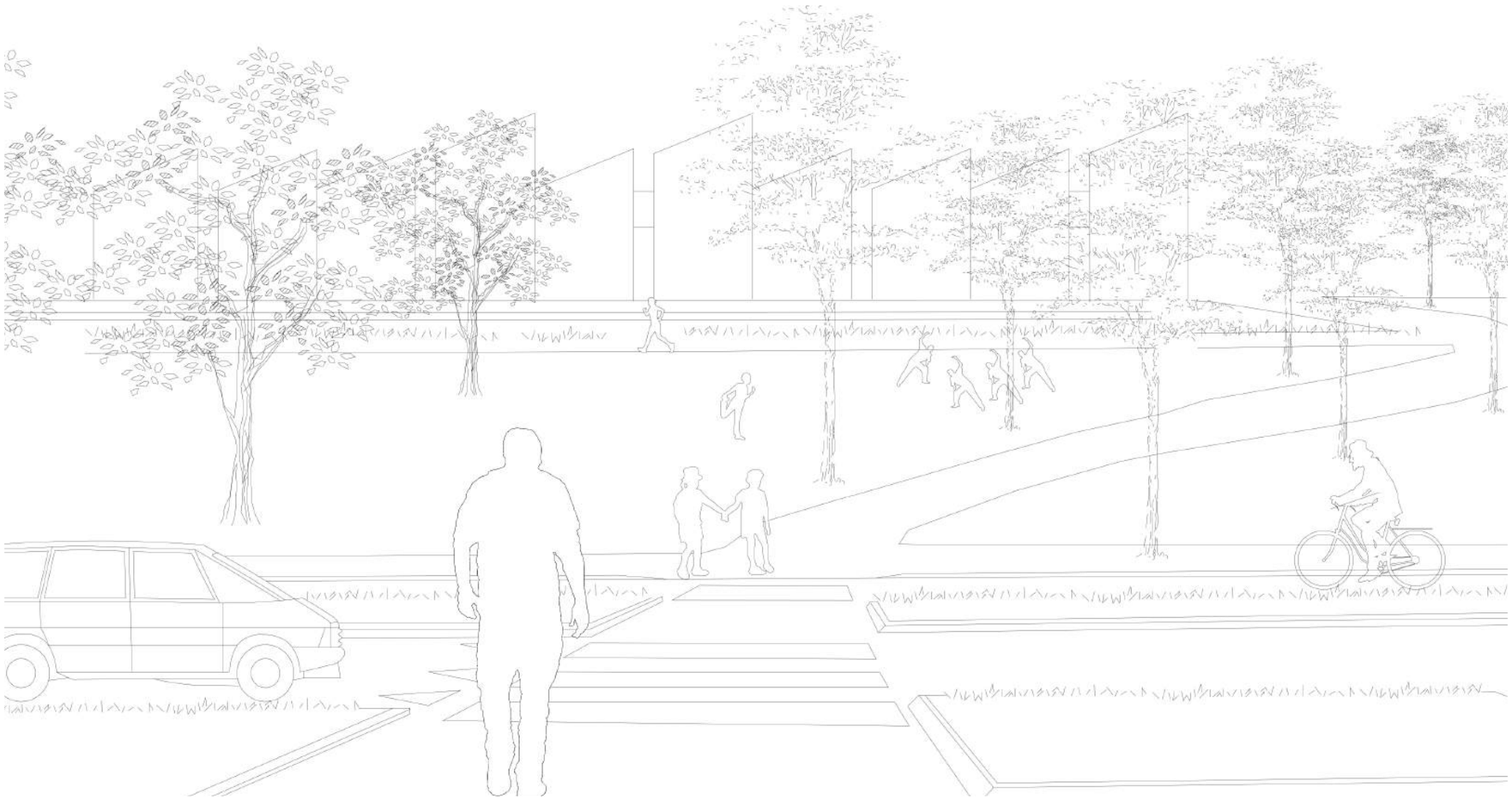
encouraging activities



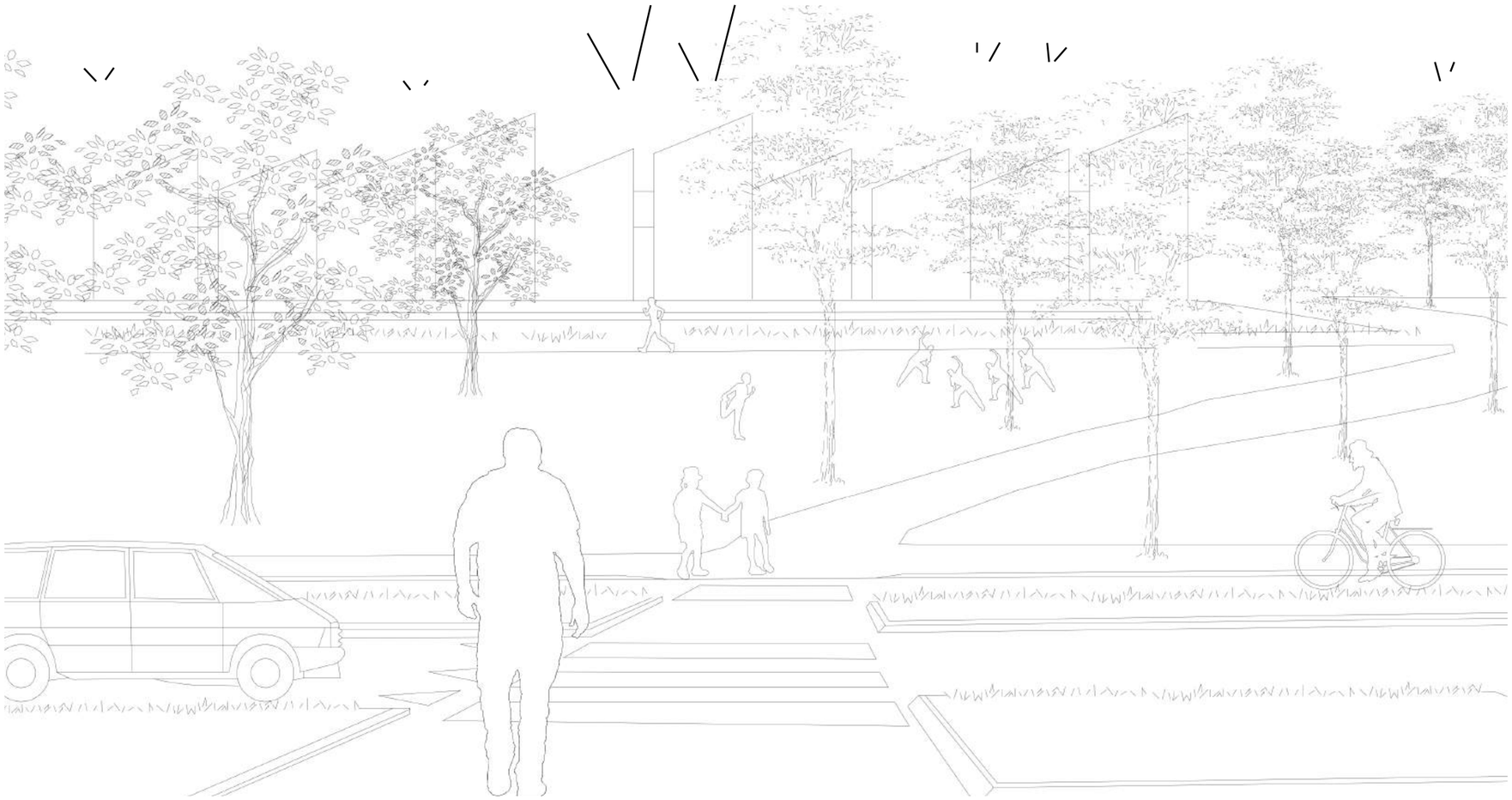
2

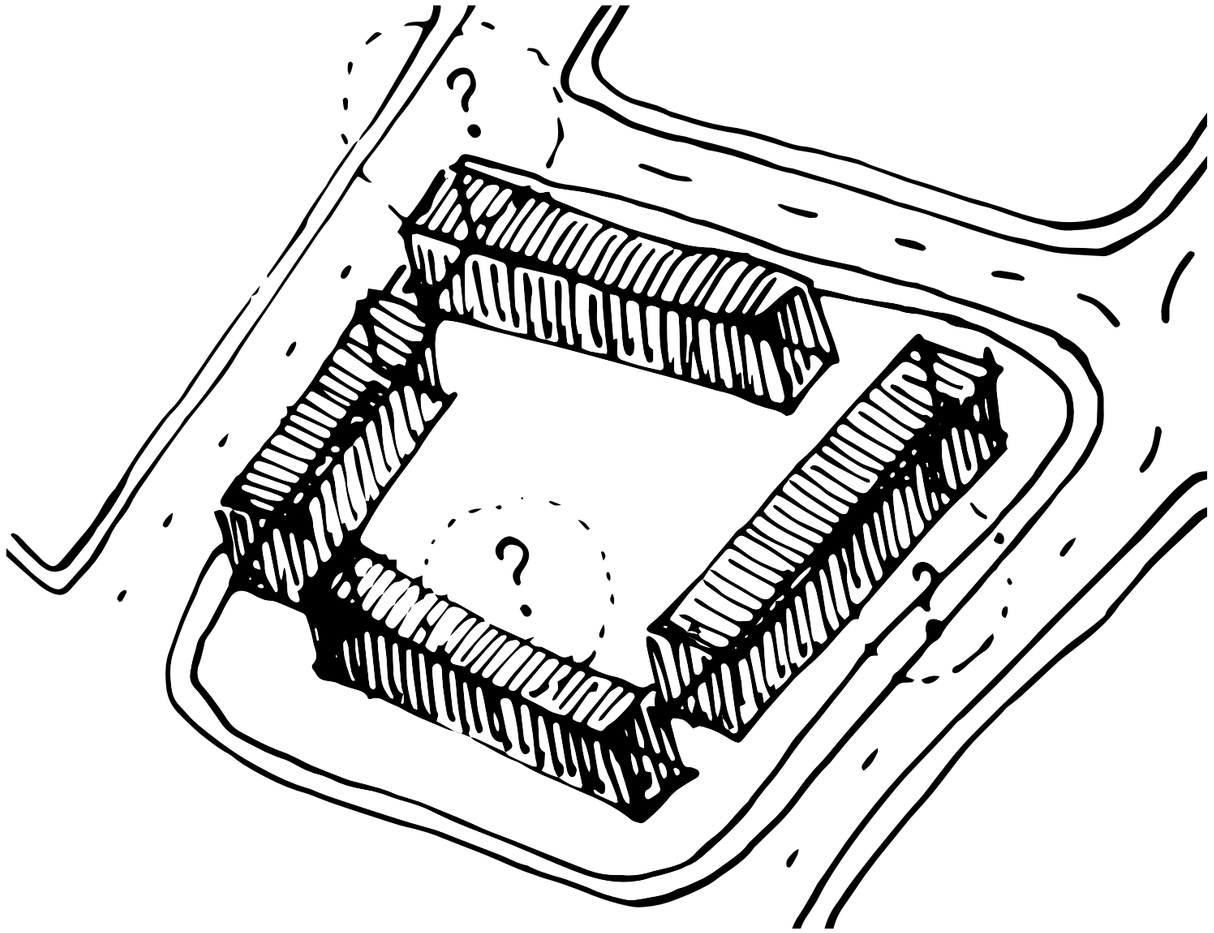
KREEFTSTRAAT

THE PARK



AND THE BLOCK?



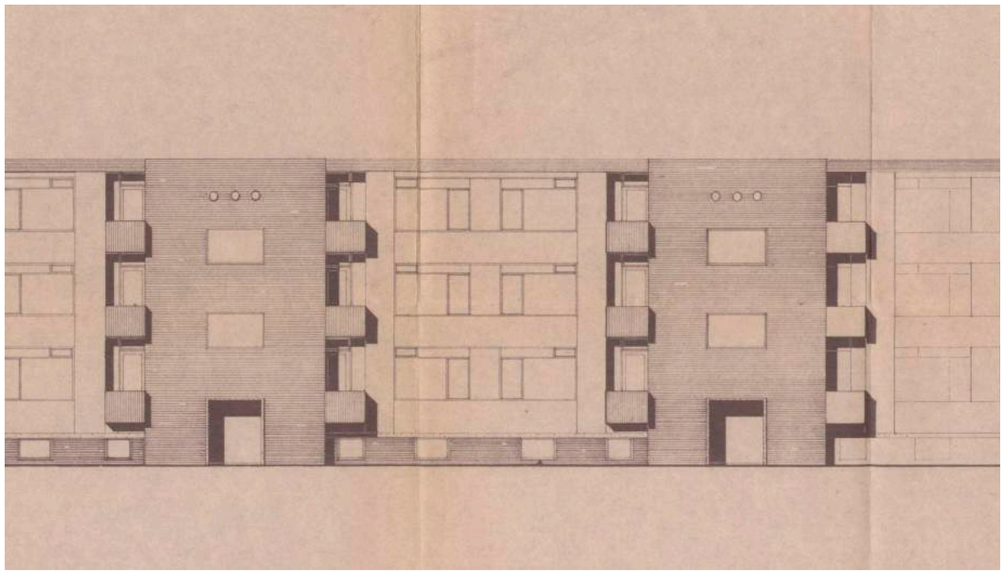


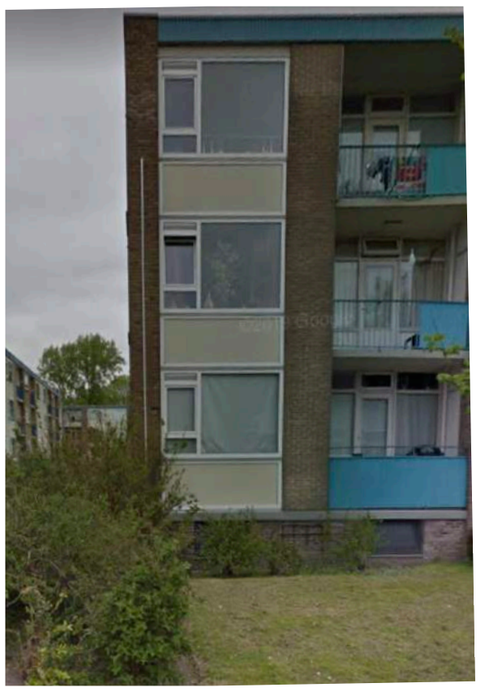
2.

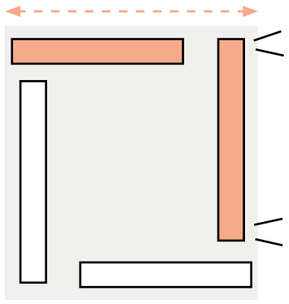
how can the portiekflat support physical activities outside while being future proof for the next generations?

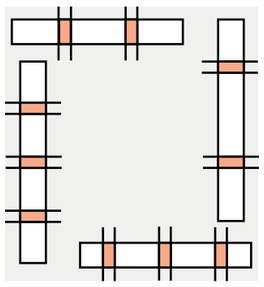
THE BLOCK

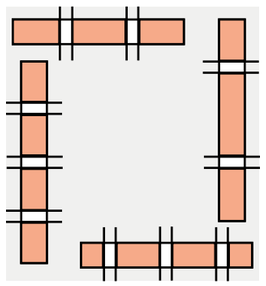
current situation

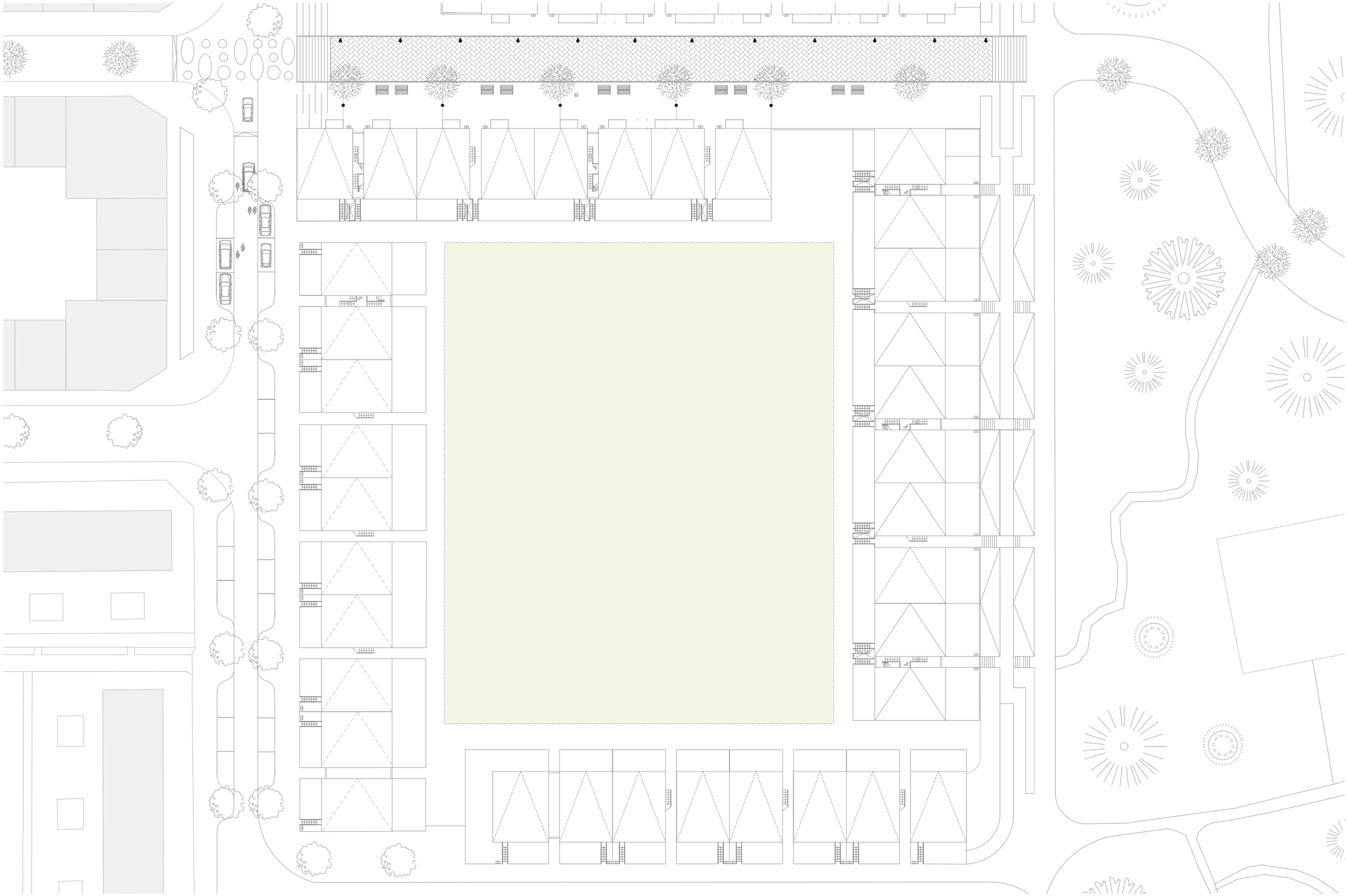


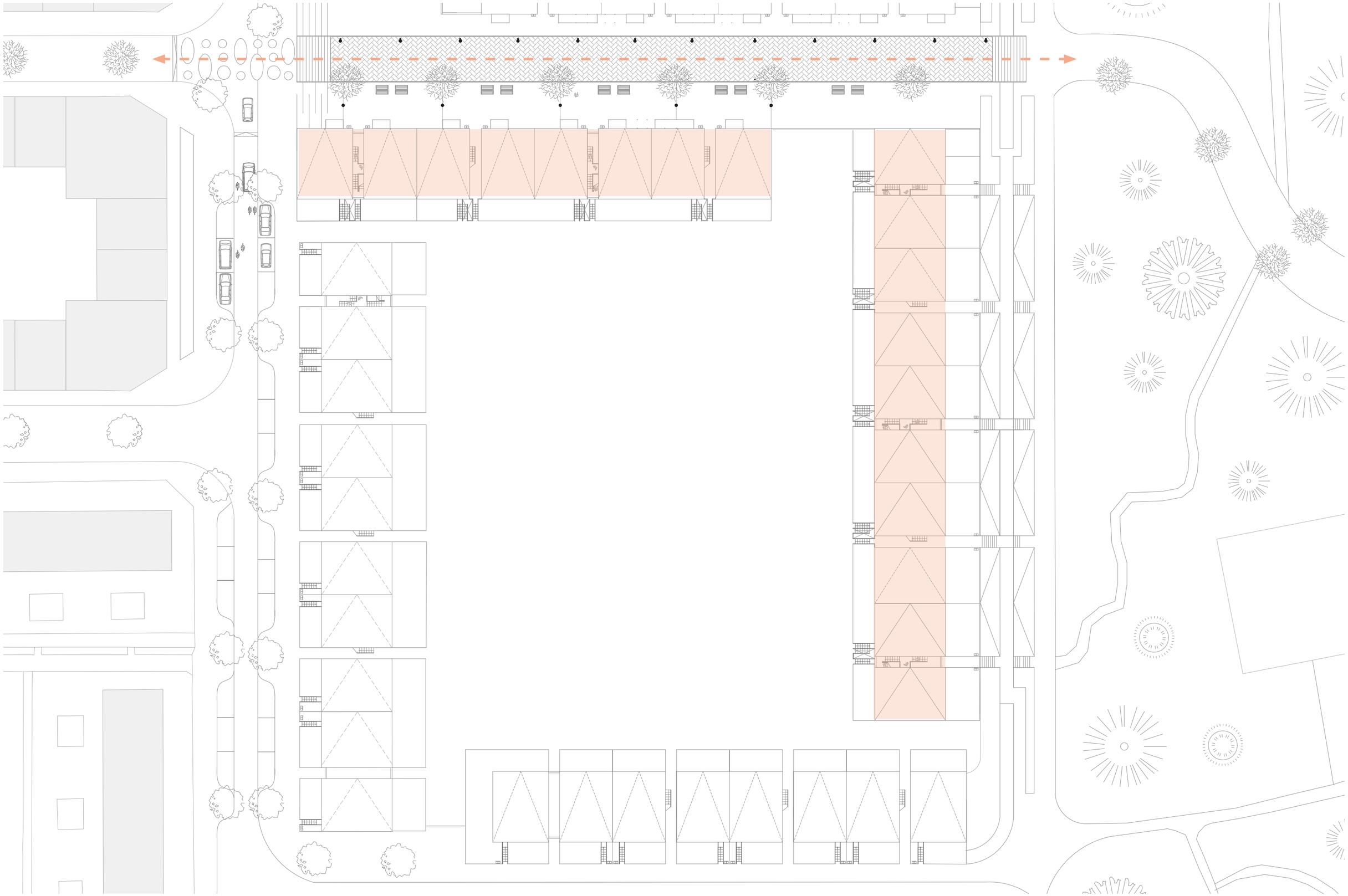


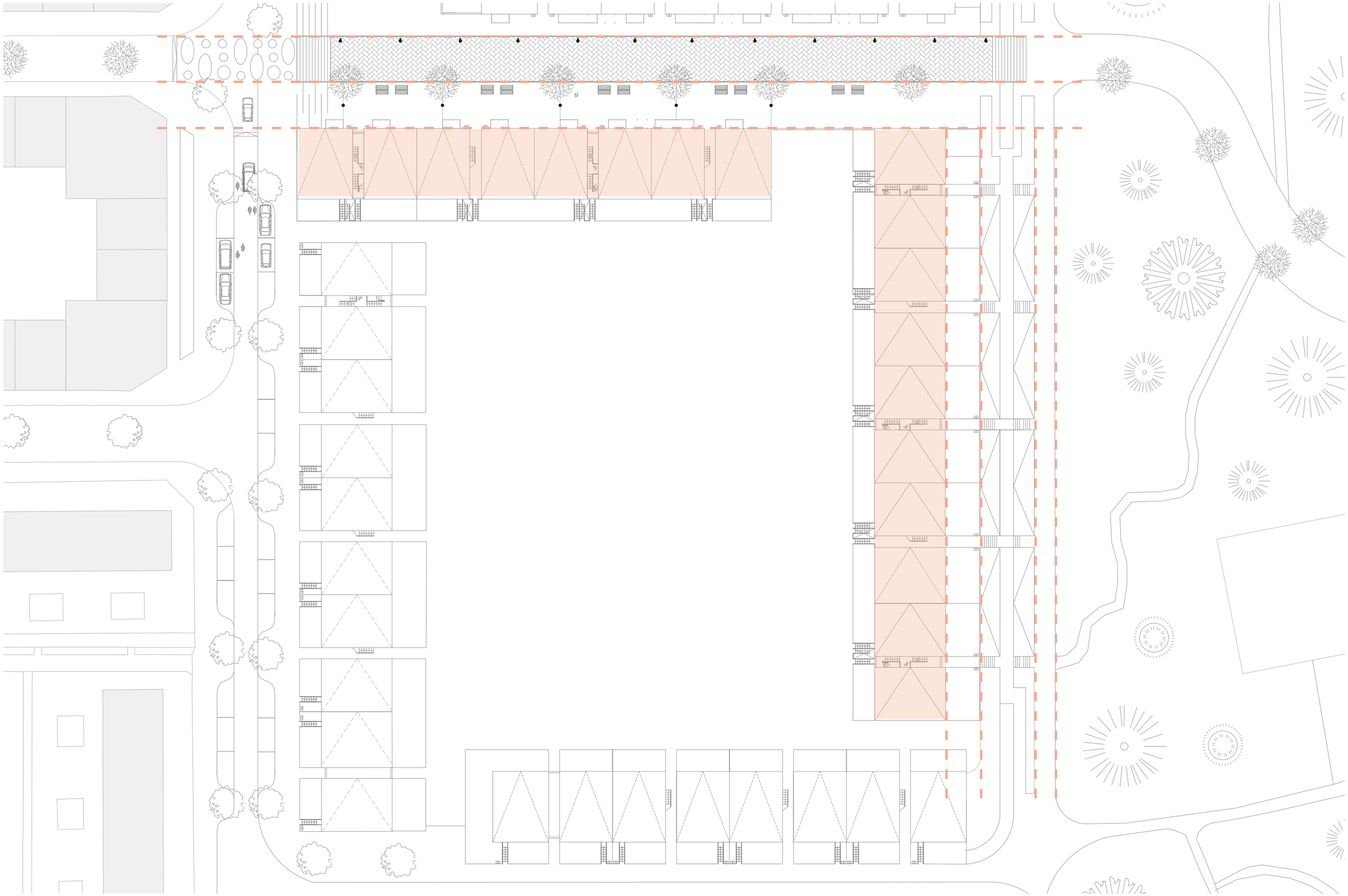






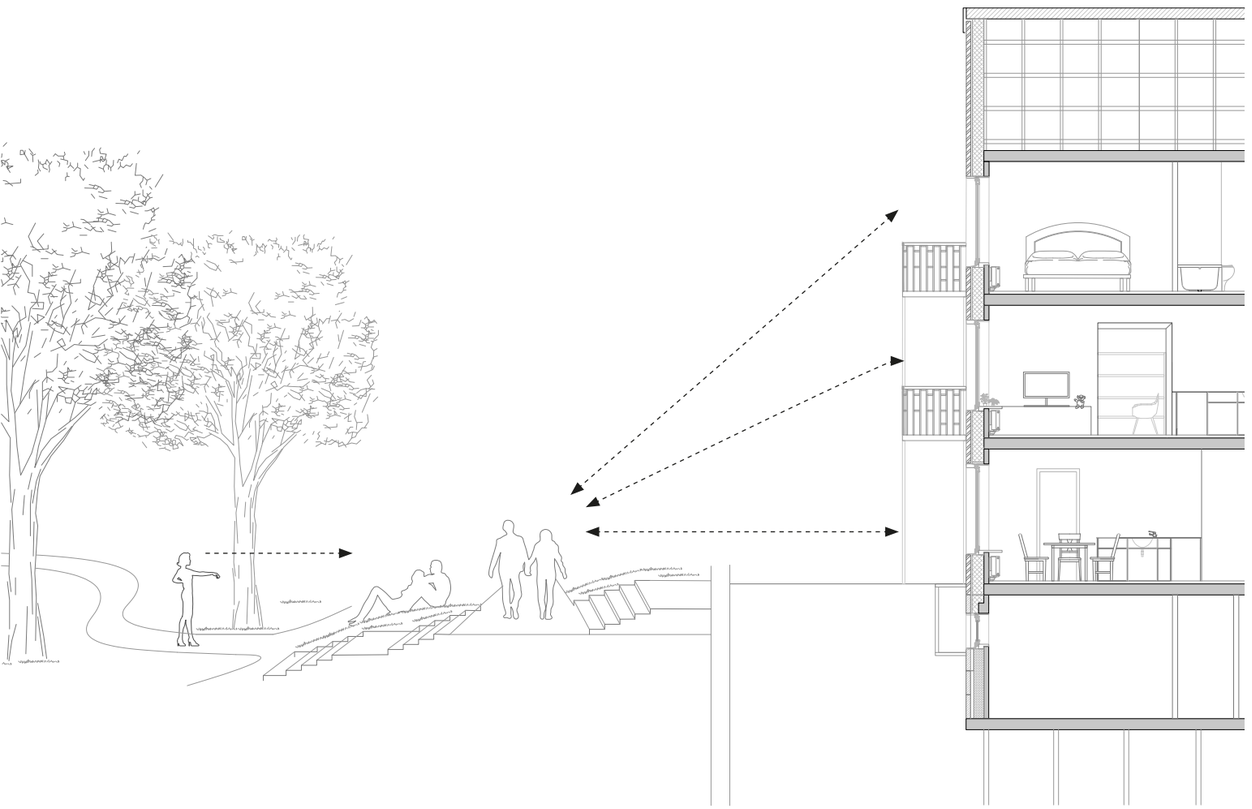




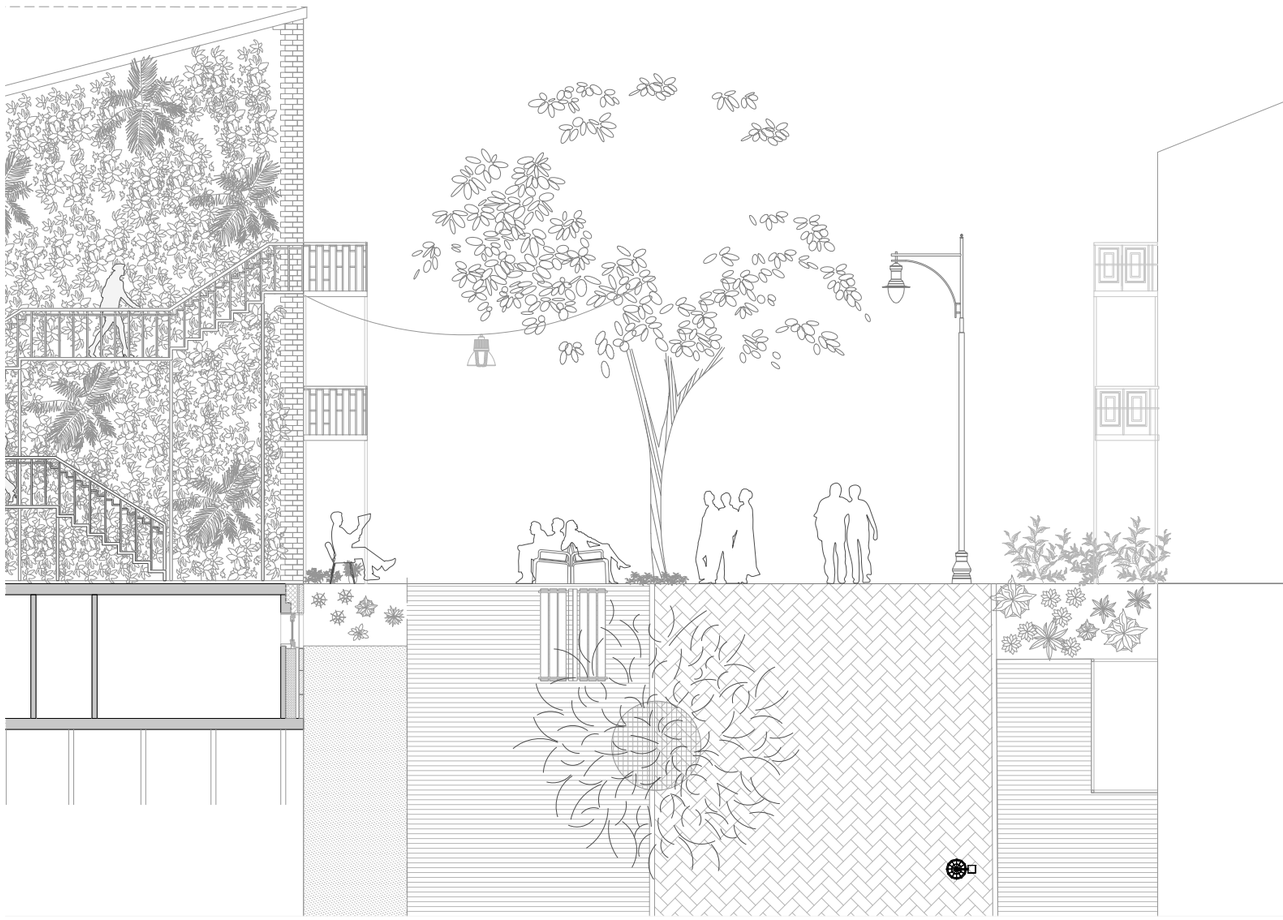


SOFT TRANSITION, INTERACTION

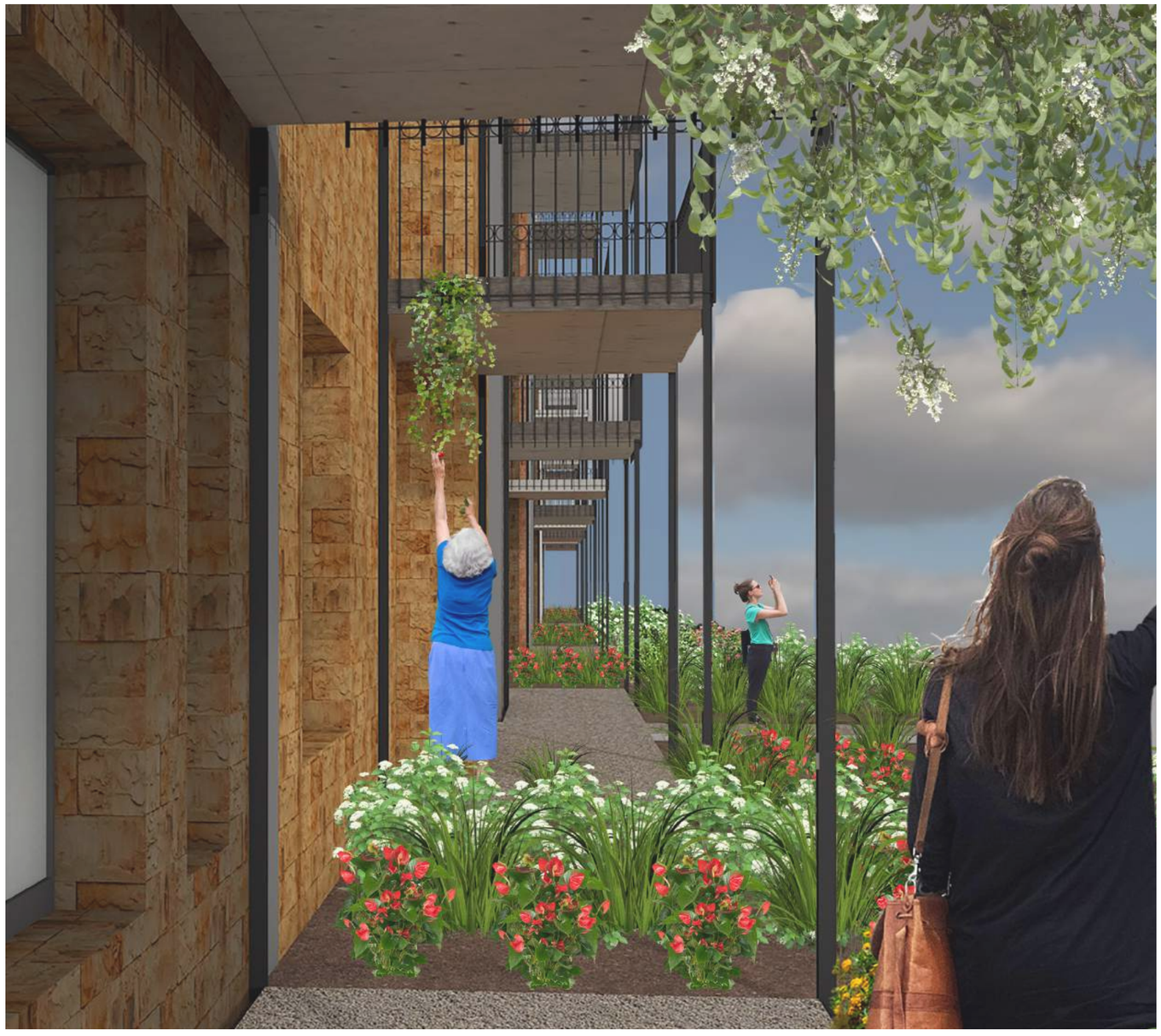
park - building

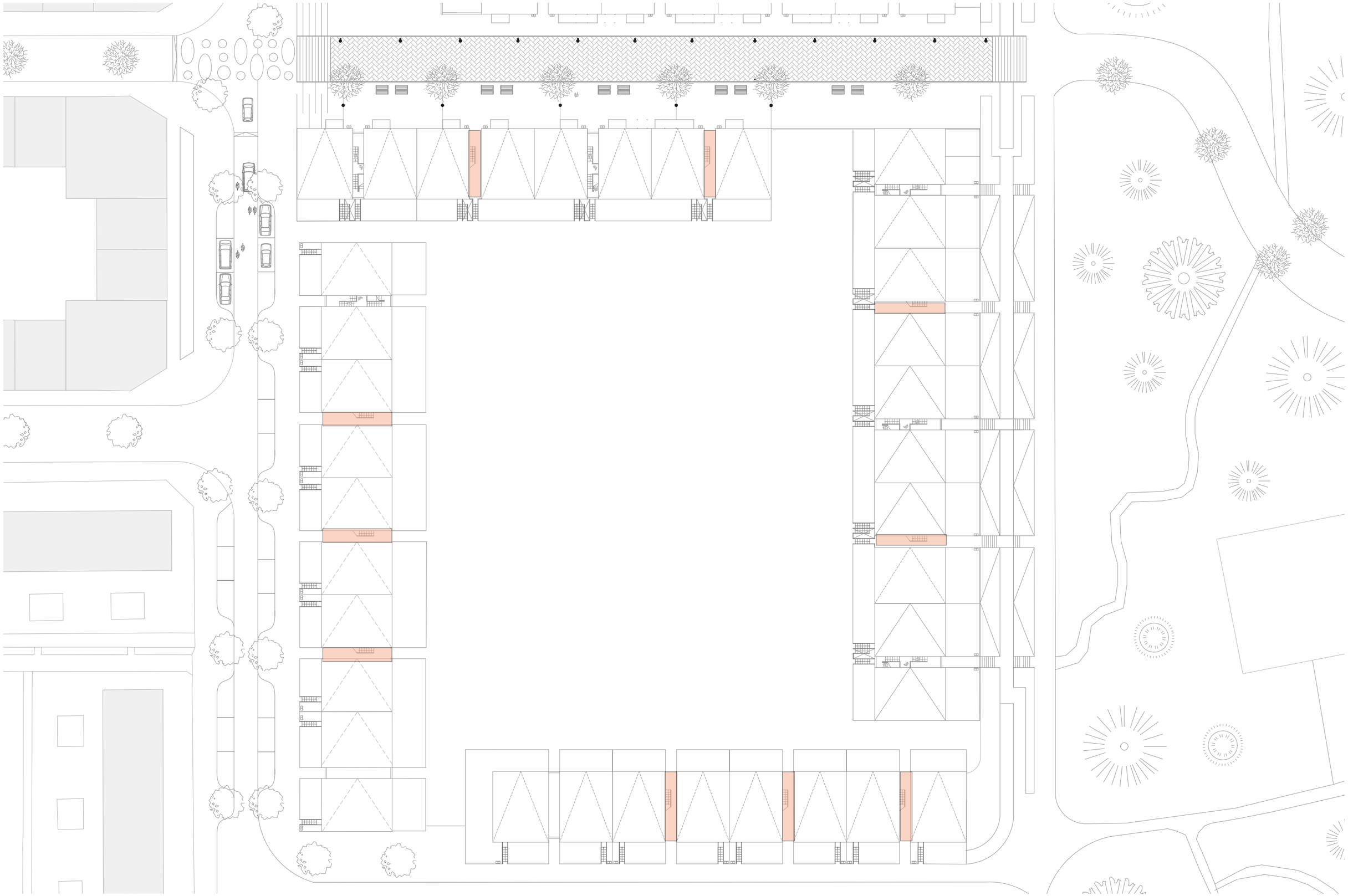


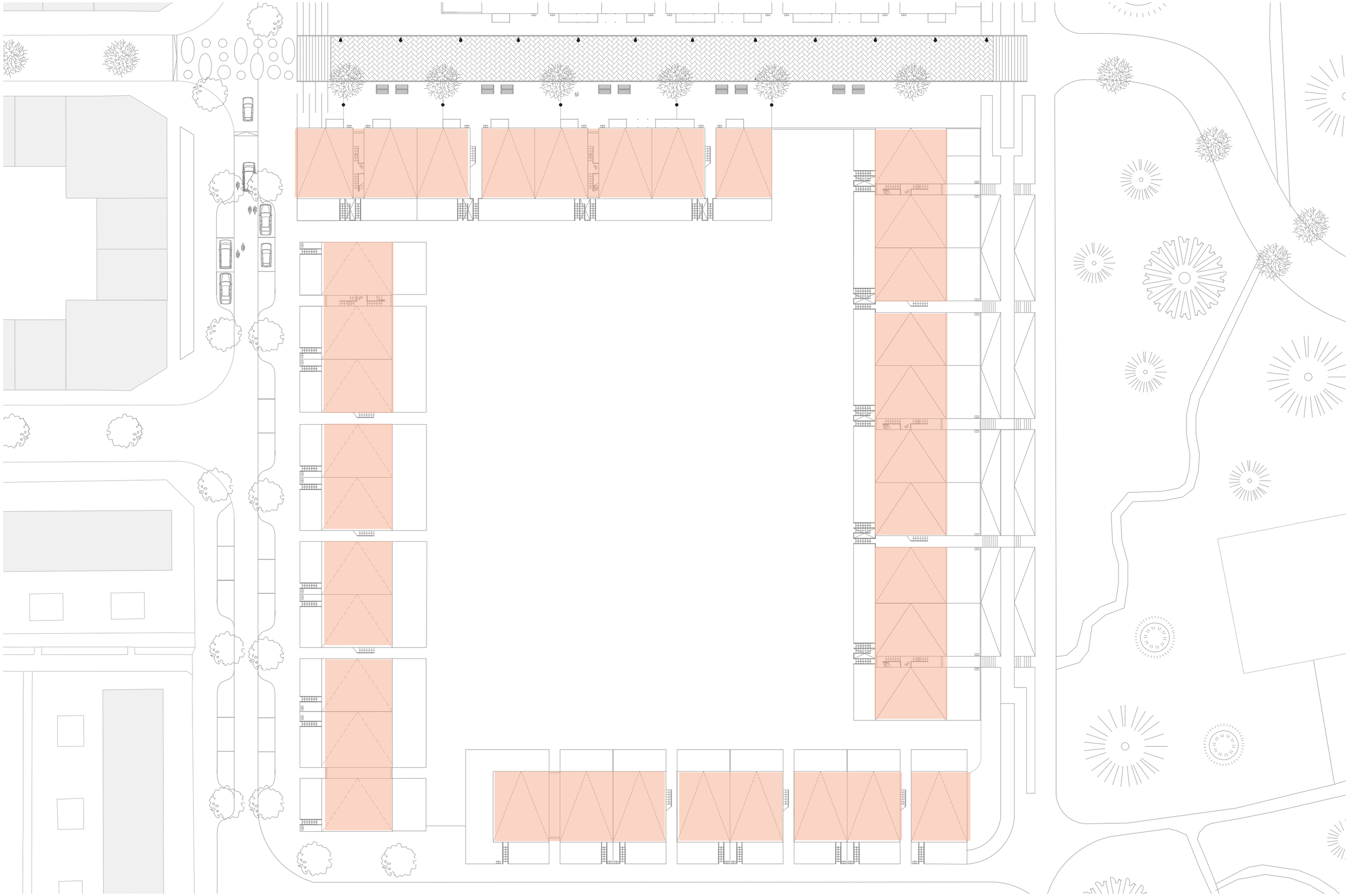
route - building

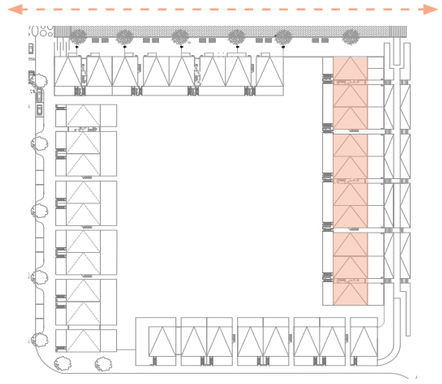


ENCLOSURE







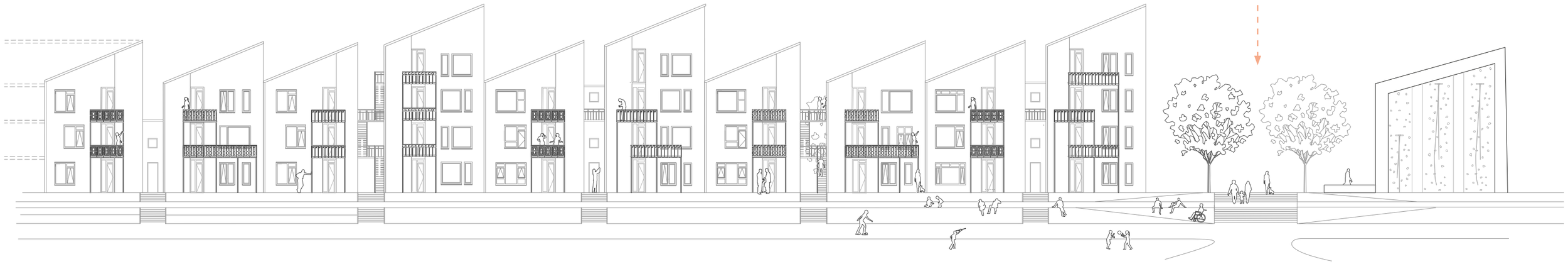


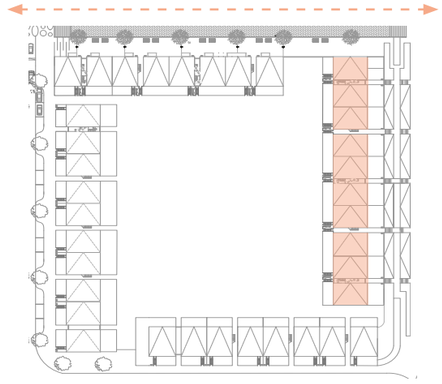
Type A

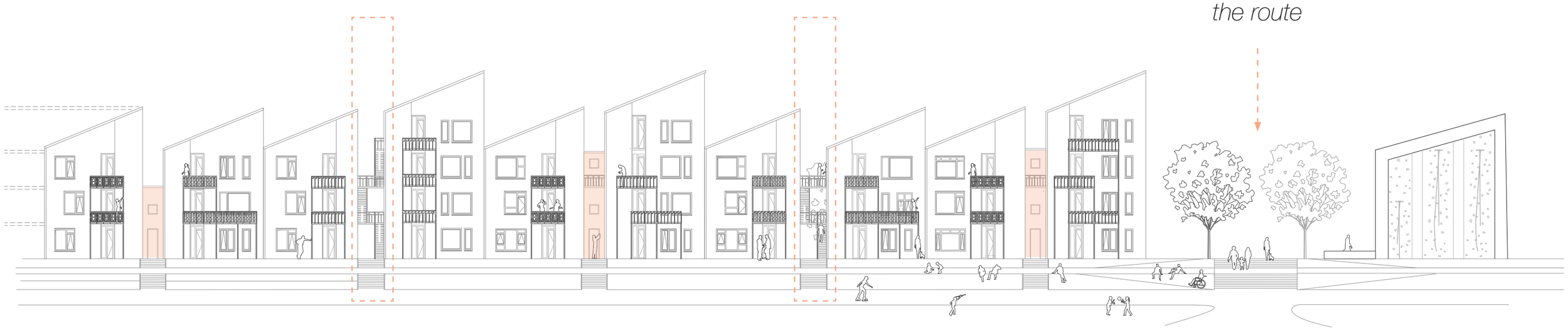
Type B

Type C

the route



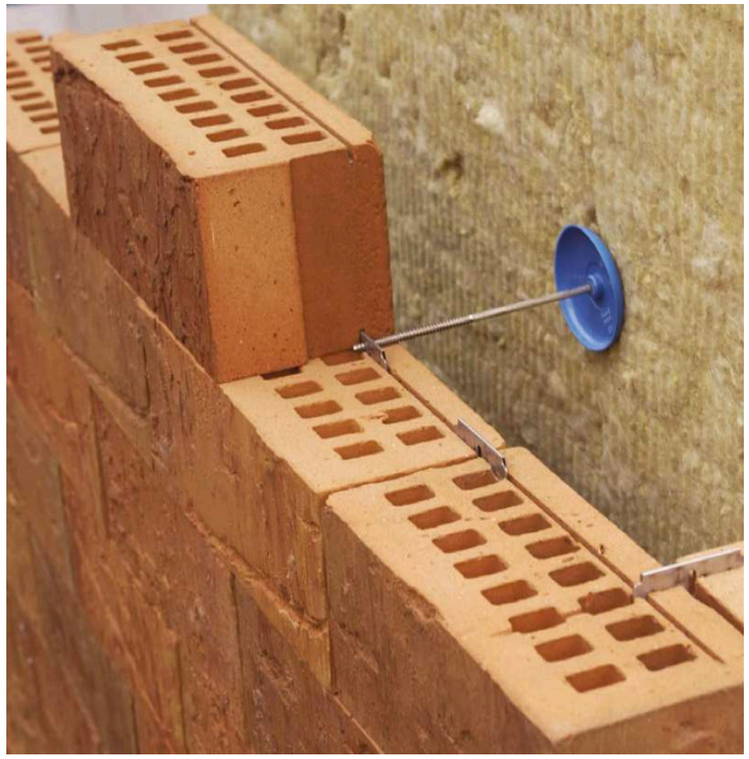



the route

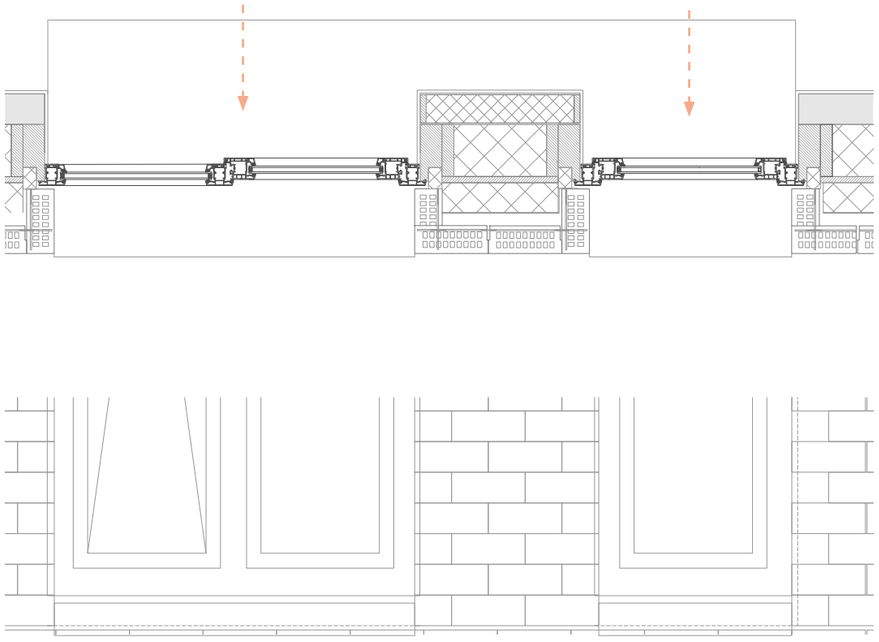
COMPOSITION

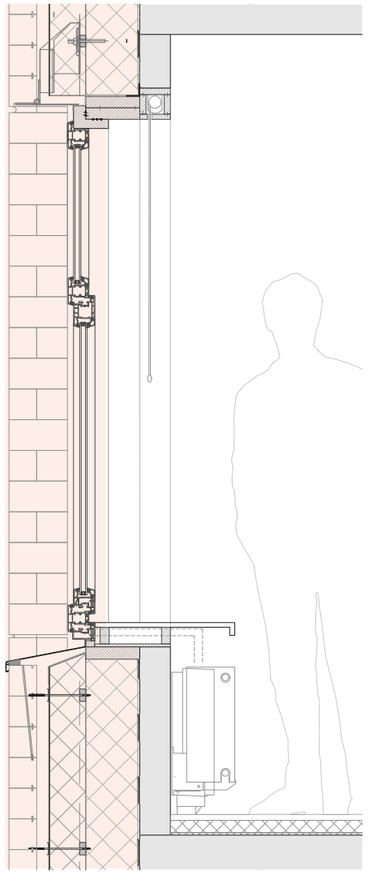
VISUAL LINES

CLICKBRICKS

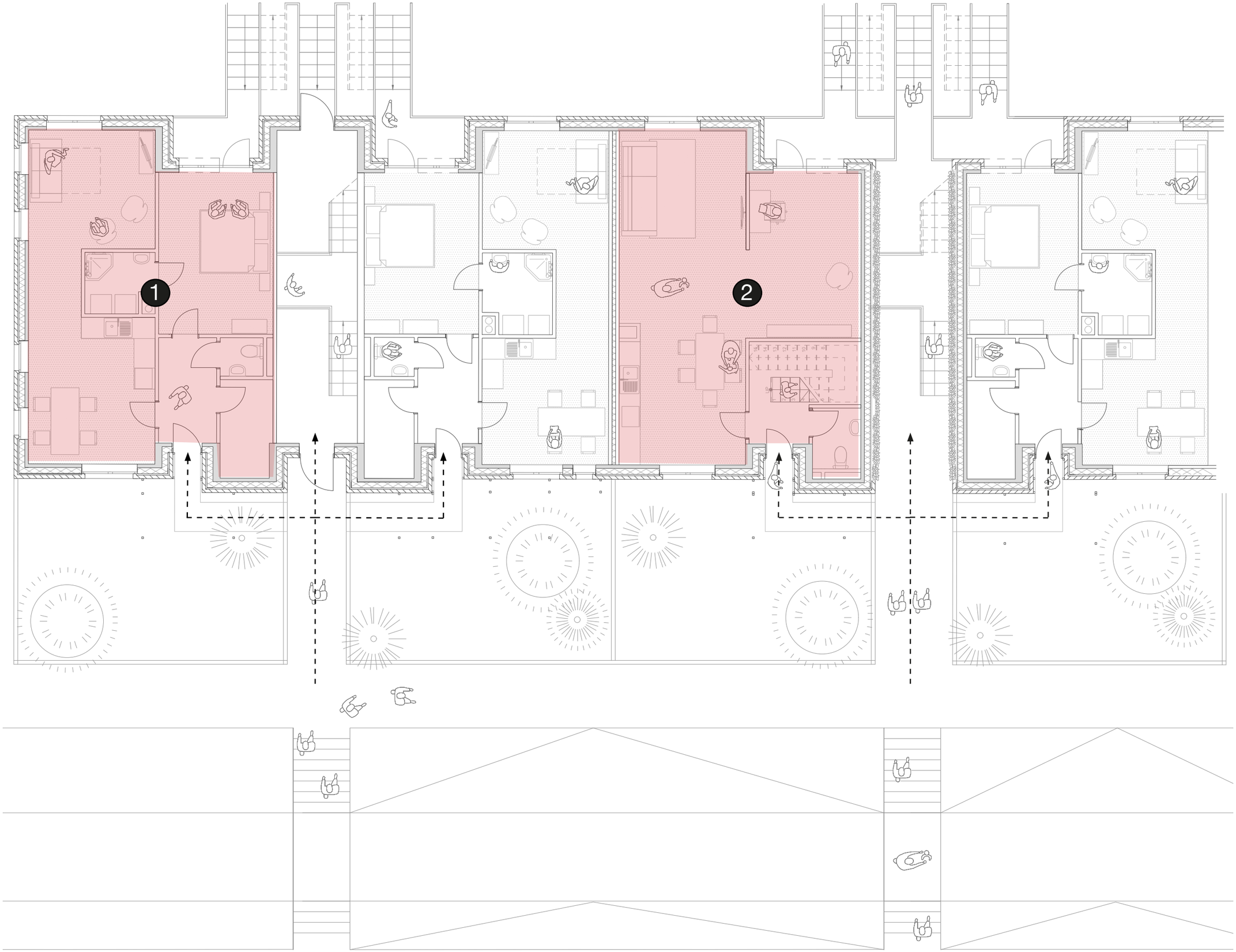


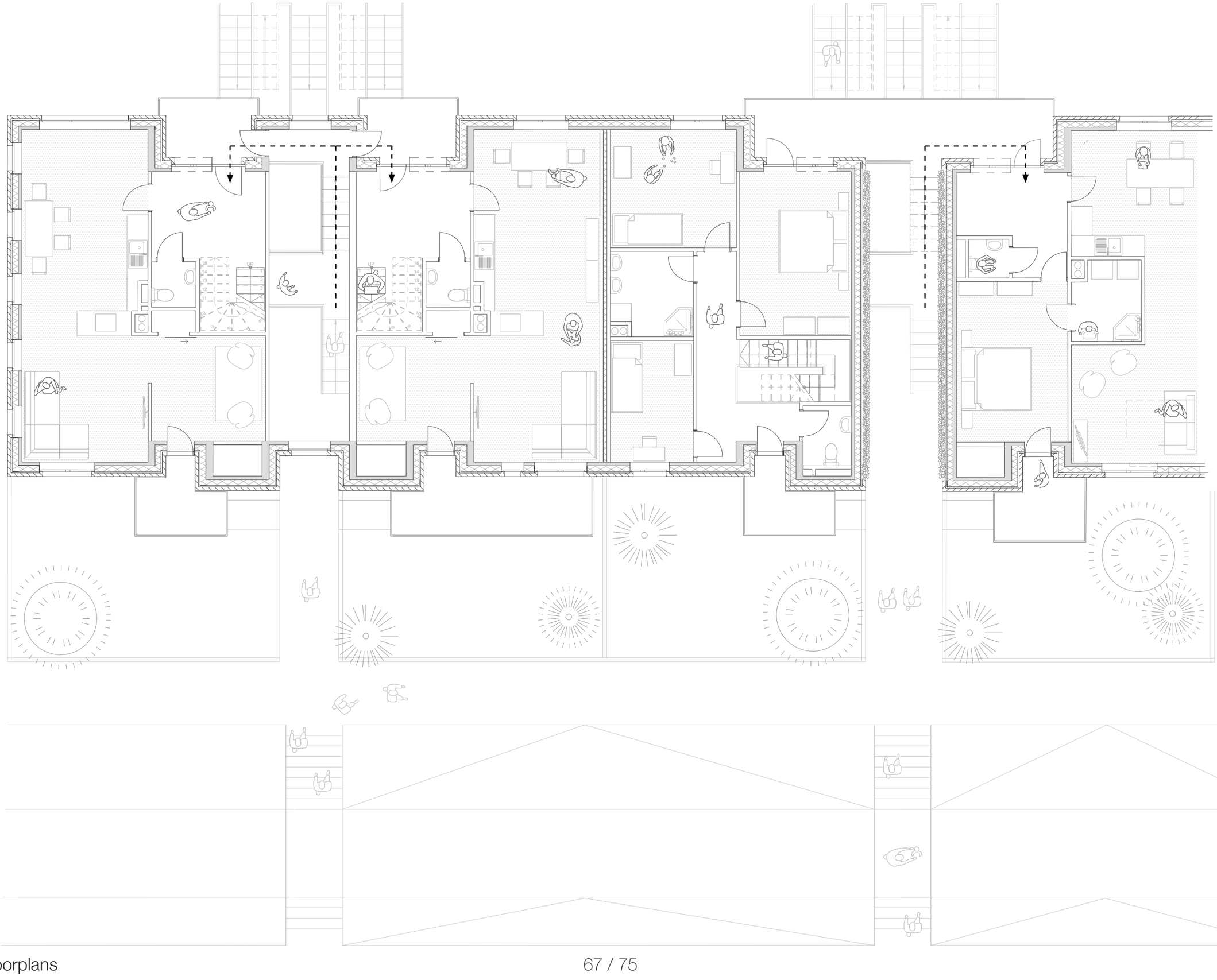
RECYCLEBLE, DEMOUNTABLE

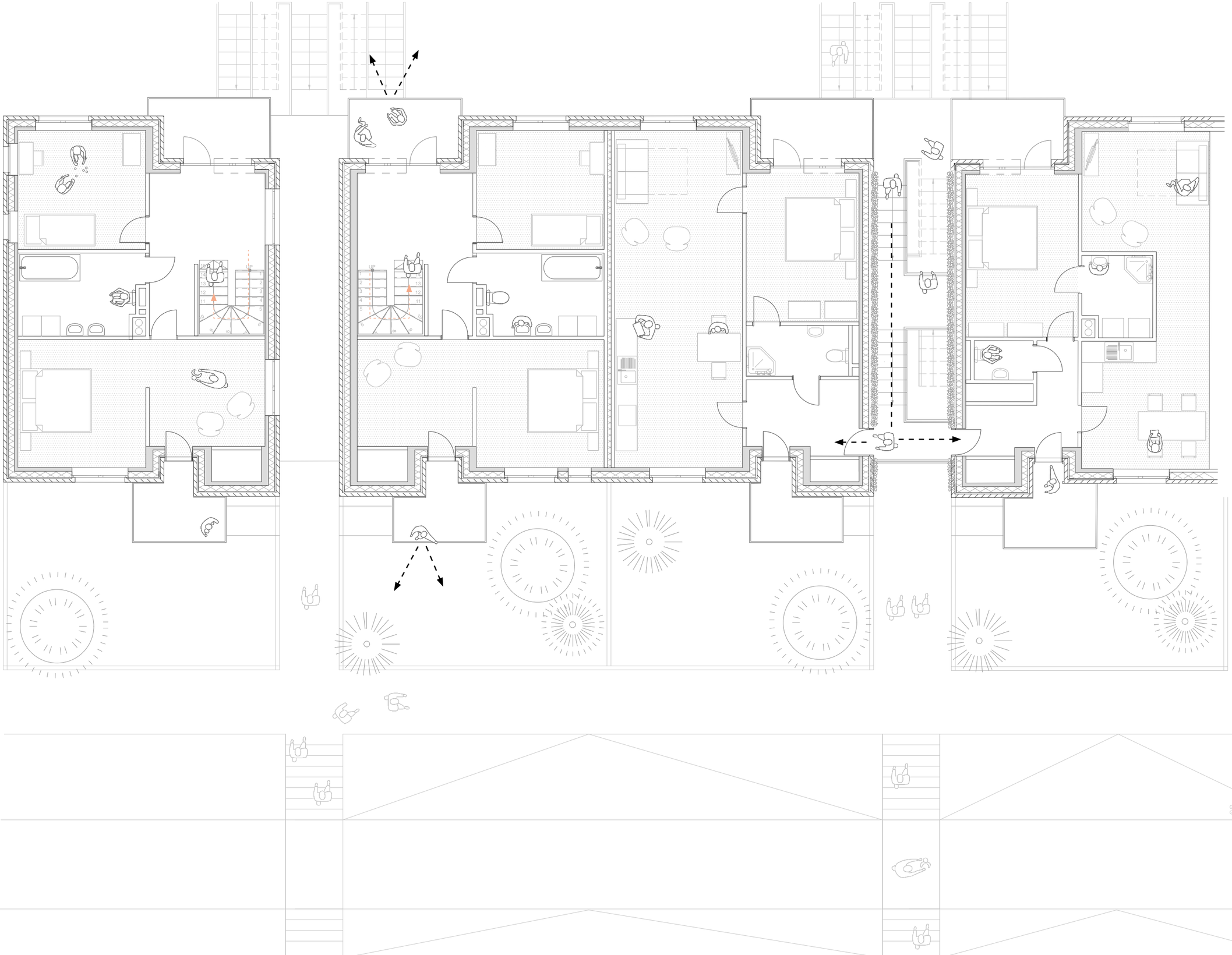




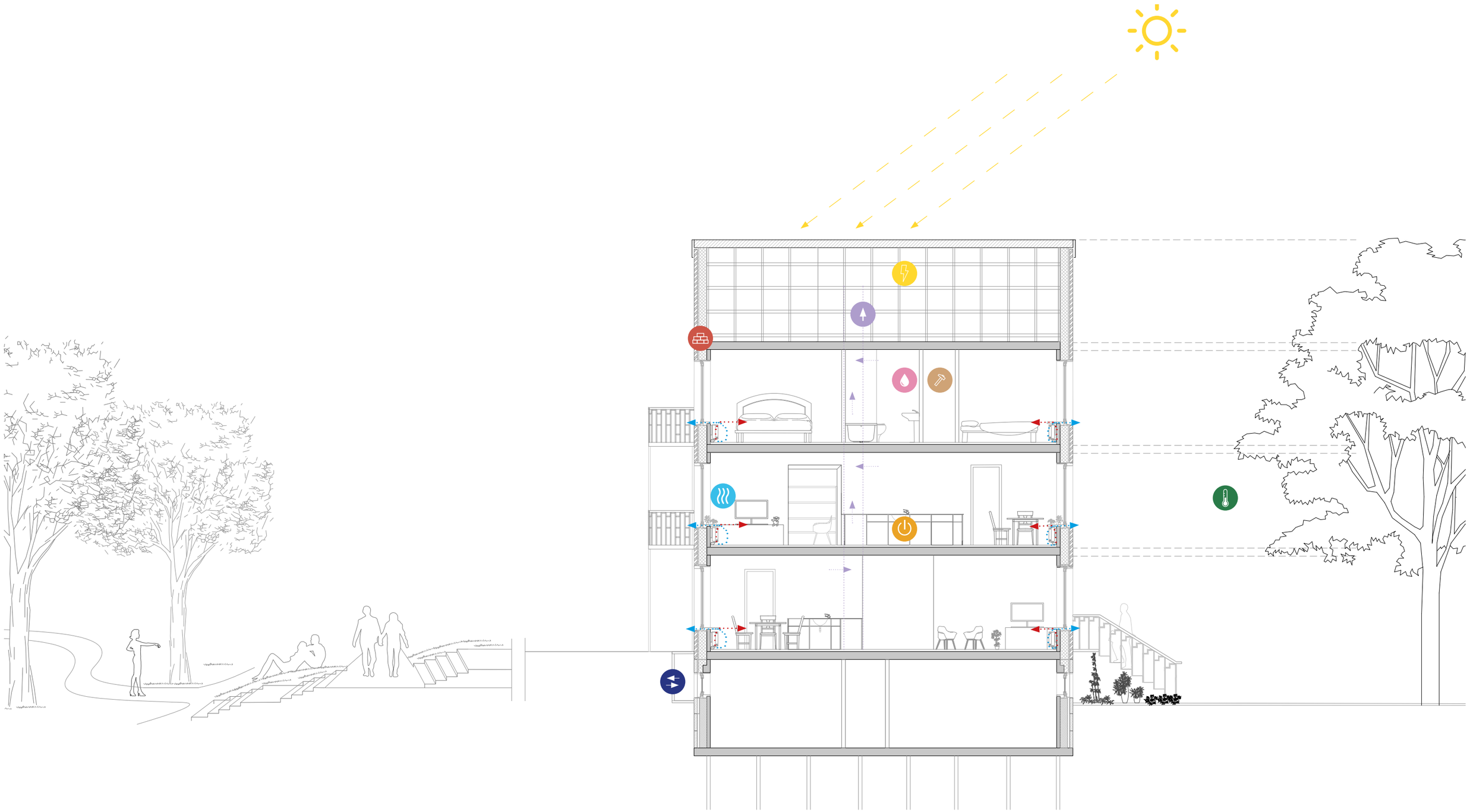
EXPERIENCE


1
2





SUSTAINABLE & HEALTHY



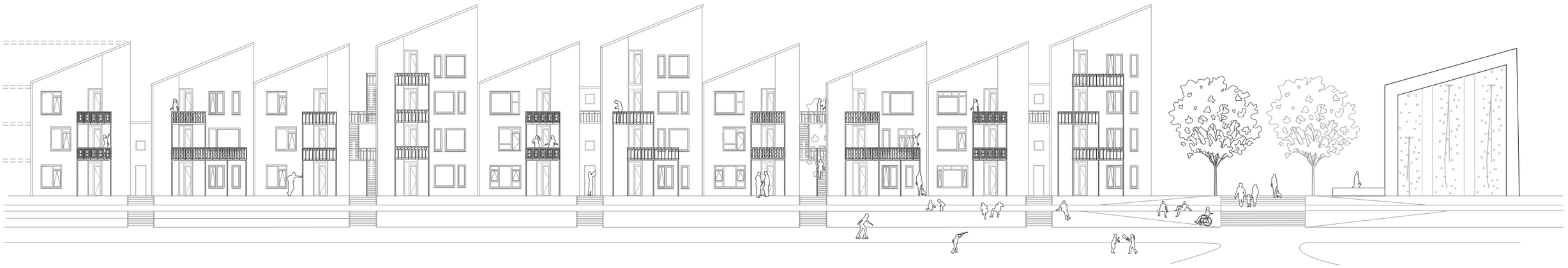
The post-war neighborhood

the green and active neighborhood of the future!

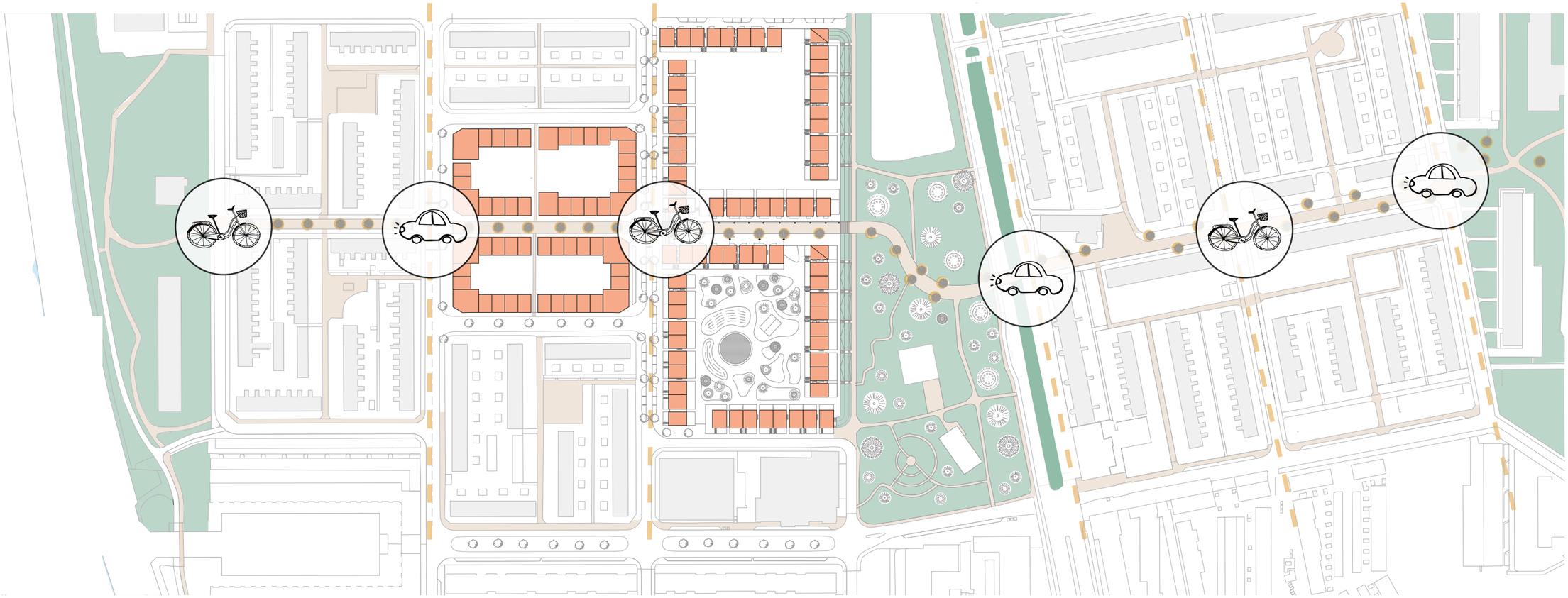
APPENDIX

FACADES

FACADES



HIERARCHY OF STREETS



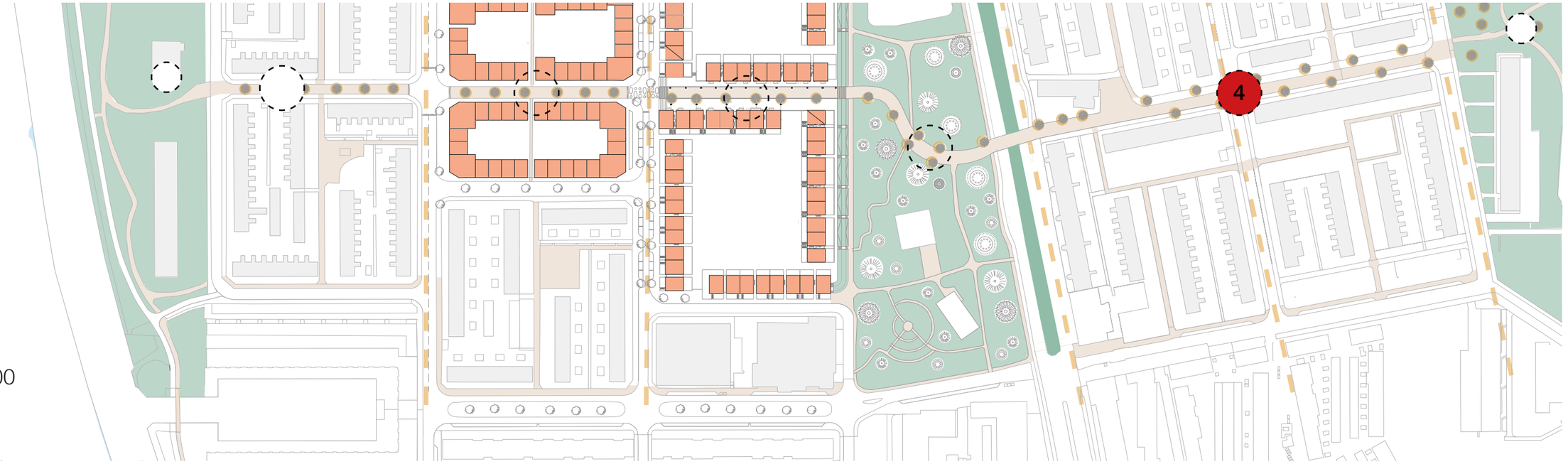
4

tools

D Reclaim the street by pedestrians and inhabitants

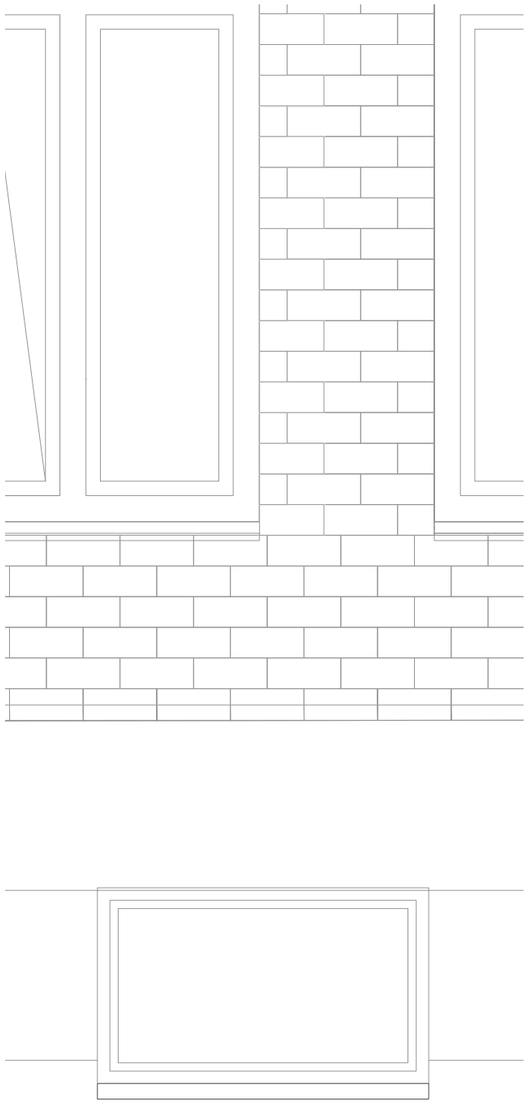
F Design soft transitions between public and private

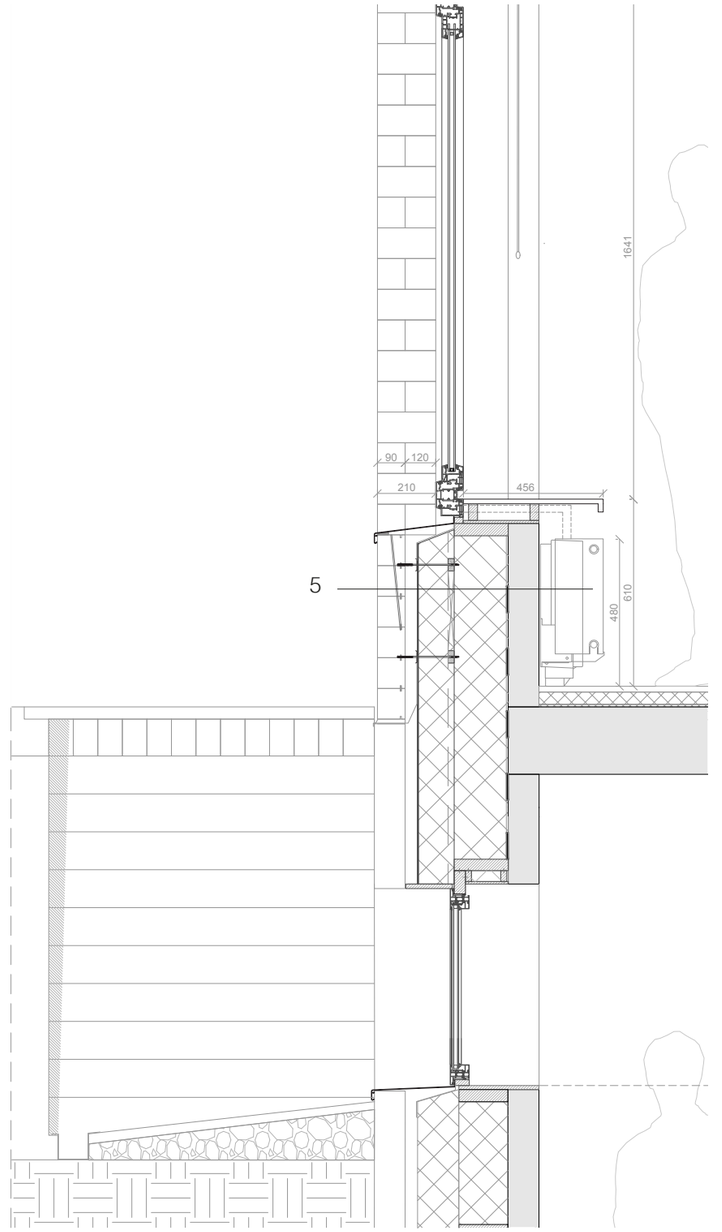
encouraging activities



scale 1:2500

DETAIL 1 20

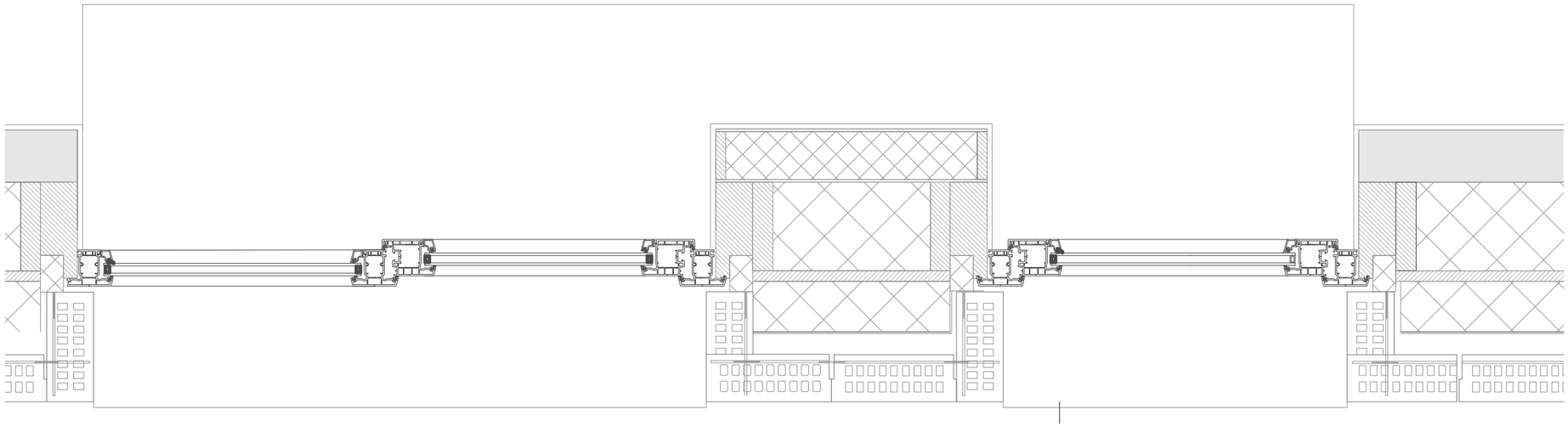




5.

90mm ClickBricks,
muurdrager,
40 mm luchtspouw,
RVS Spouwankers, voorzien van hout-
draad voor HSB achterconstructie,
Isolatieklemschijf met druppelafvoer,
damp open en waterafstotende laag,
120mm GUTEX Multiflex isolatie,
176/40mm houtskeletbouw,
176mm GUTEX Thermoflex isolatie,
dampremmende laag,
100mm betonskelet,
ClimaRad 2.0.

DETAIL 1 10



1 90/100 Wienerberger ClickBricks,
40mm luchtspou
damp open en waterafstotend folie,
120 mm GUTEX Multitherm isolatie,
176/40mm houtskeletbouw,
176mm GUTEX Thermoflex isolatie,
dampremmende laag,
100mm voorzetwand,
breedte op te meten in het werk
(afhankelijk van kozijnmaten)
afgewerkt met stuclaag

DETAIL 1 5

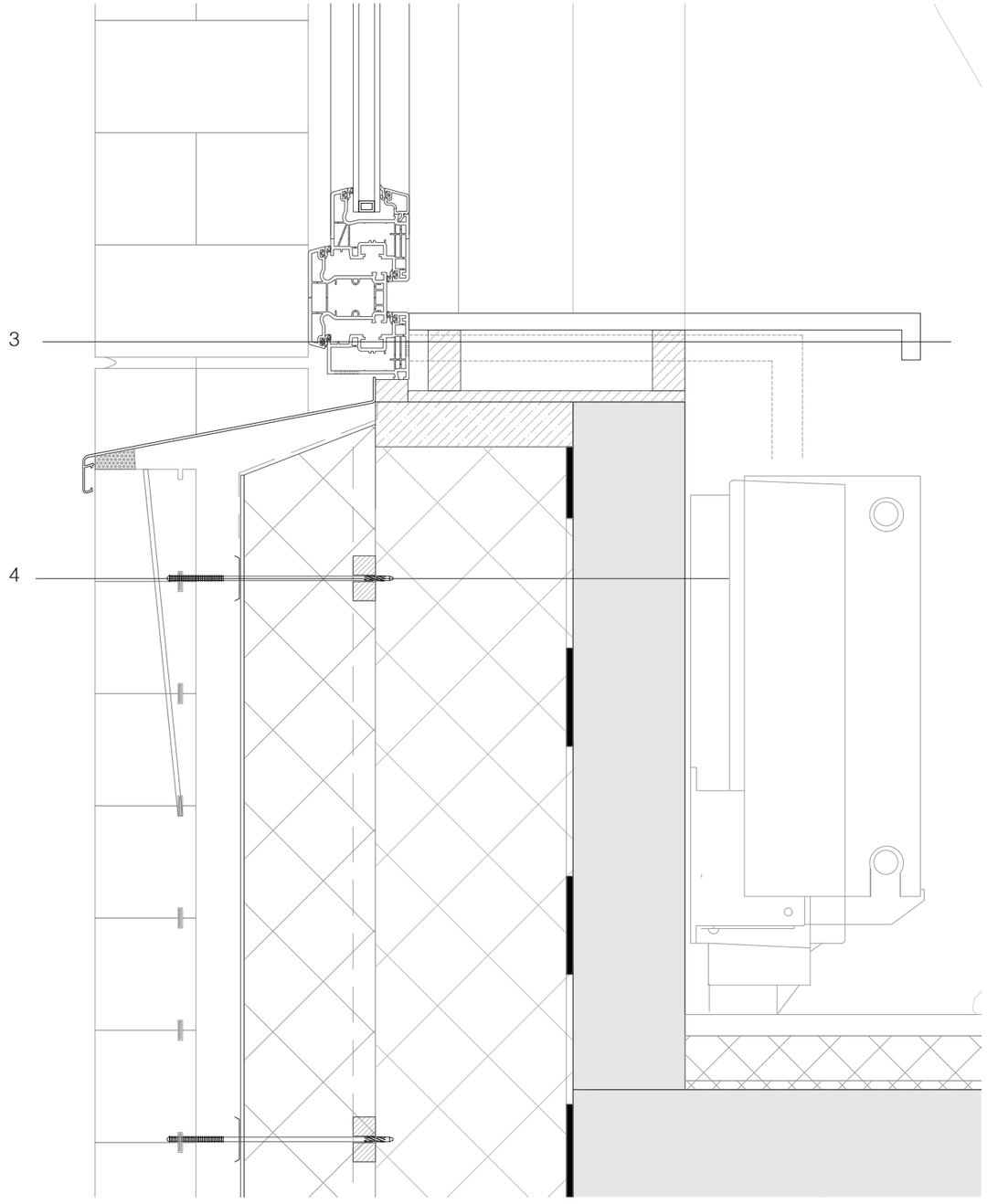
:5

3.

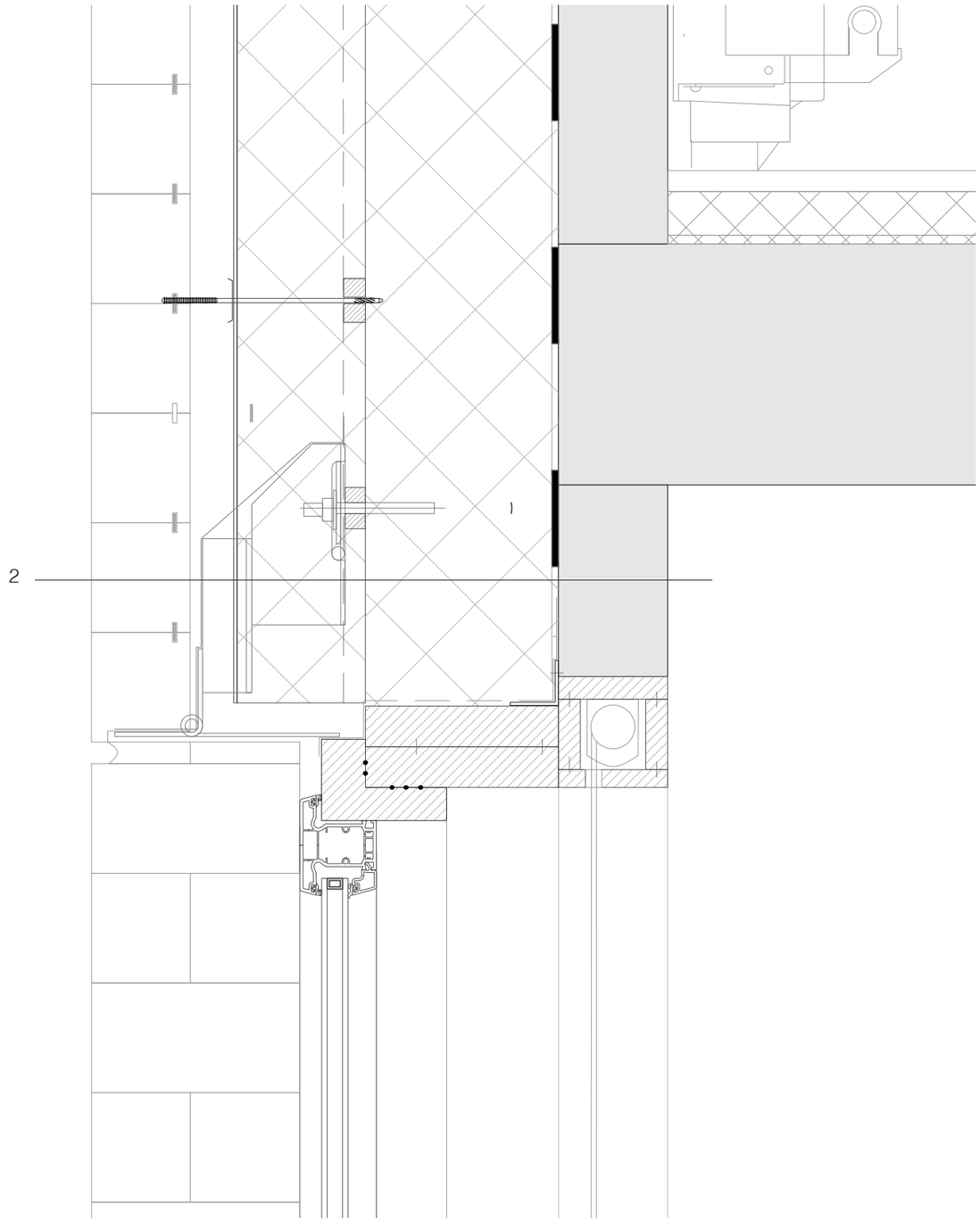
passteen + sponningsdiepte in te meten in het werk,
Movair onderdorpel *(natuurlijke ventilatie),*
55mm verhoogde vensterbank
ClimaRad 2.0.

4.

90mm ClickBricks,
muurdrager,
40 mm luchtspouw,
RVS Spouwankers, voorzien van hout-draad voor HSB achterconstructie,
Isolatieklemschijf met druppelafvoer,
damp open en waterafstotende laag,
120mm GUTEX Multiflex isolatie,
176/40mm houtskeletbouw,
176mm GUTEX Thermoflex isolatie,
dampremmende laag,
100mm betonskelet,
ClimaRad 2.0.



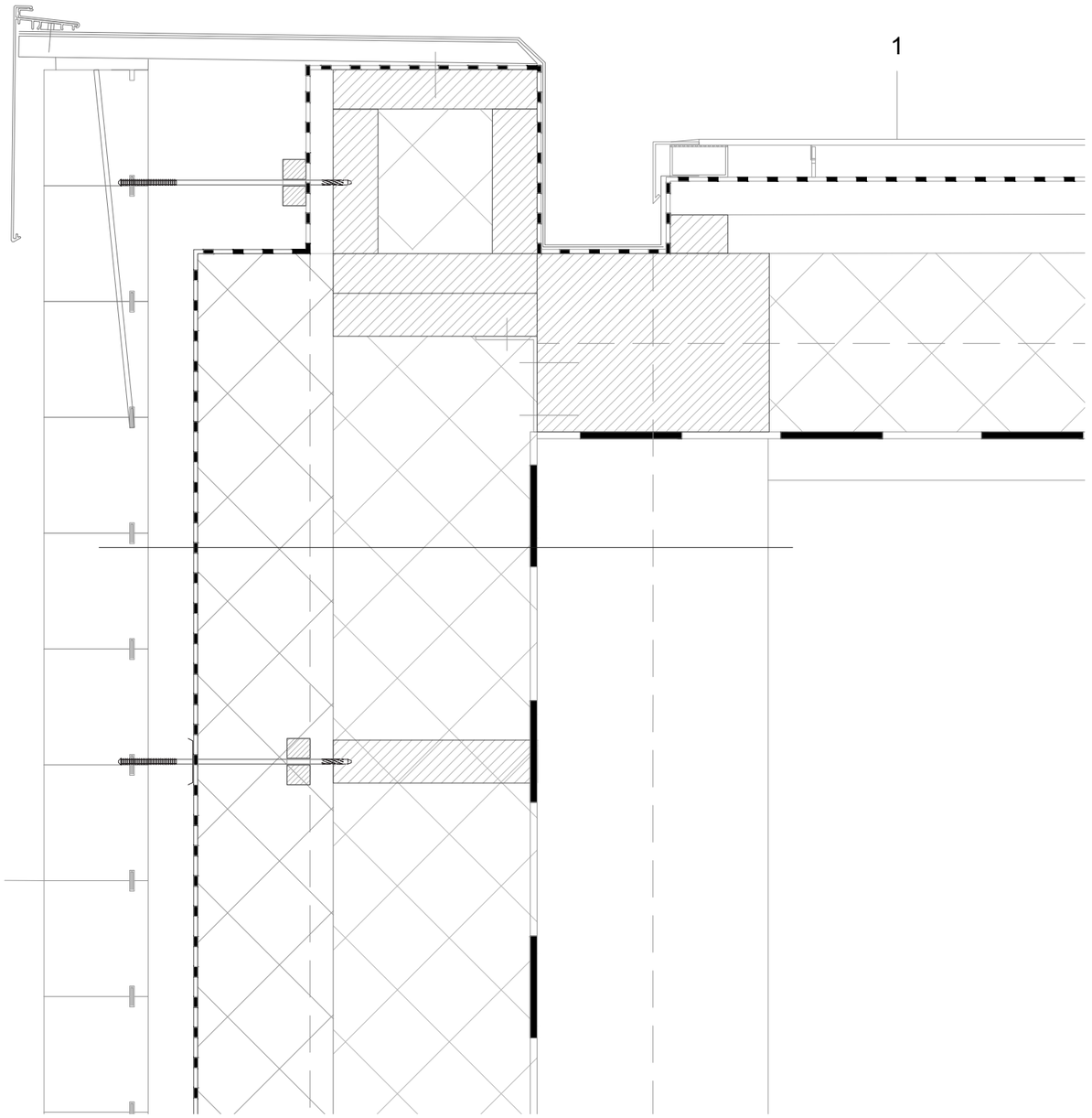
DETAIL 1 5



2.

90mm ClickBrick lateisteen,
40mm luchtspouw,
geveldrager,
stel en regel werk,
damp open en waterkerende laag,
120mm GUTEX Multitherm isolatie,
176/40 mm houtskeletbouw,
176mm Thermoflex isolatie,
dampremmende laag,
100mm betonskelet,
inbouw binnenzonwering Verosol.

DETAIL 1 5



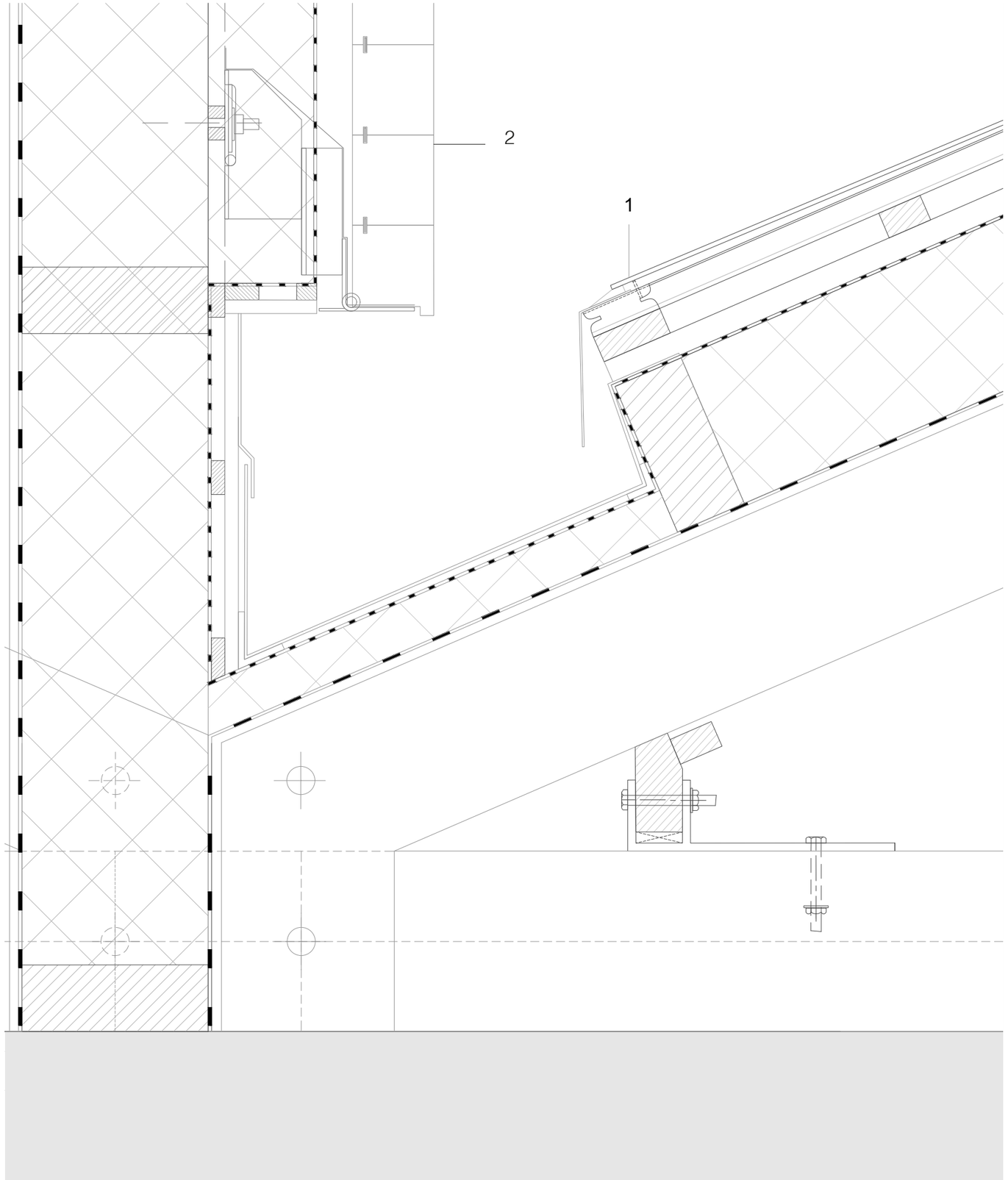
1.

glas-glas BIPV panelen
rubberen afdichting,
30/40 aluminium regel,
30/80 aluminium stelprofiel,
30/80 mm panlatten,
30/40 mm tengels,
damp open &waterafstotend folie,
40/172 mm houtskeletbouw,
172 mm GUTEX Thermoflex islolatie,
dampremmende laag,
300mm houten balk.

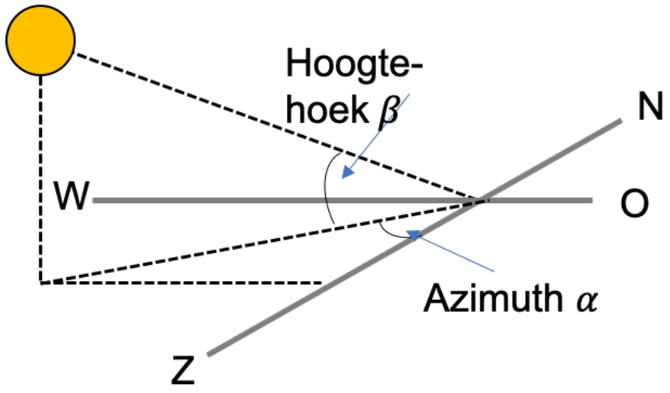
DETAIL 1 5

1 glas-glas BIPV panelen
rubberen afdichting
30/40mm aluminium regel
30/80mm aluminium profiel,
30/80mm panlatten
27mm tengels,
damp open en waterafstotend folie
80/180mm houtskeletbouw,
180mm Thermoflex isolatie,
dampremmende laag,
10mm OSB plaat,
afgewerkt met stuclaag,
steun regel met F-beugel

2 100/90 ClickBricks Wienerberger,
40mm spouw,
damp open en waterafstotende laag,
geveldrager,
120mm Multitherm isolatie,
210/100 mm houtskeletbouw,
210mm Termoflex isolatie,
dampremmende laag,
12 mm OSB steunplaat,
afgewerkt met stuclaag

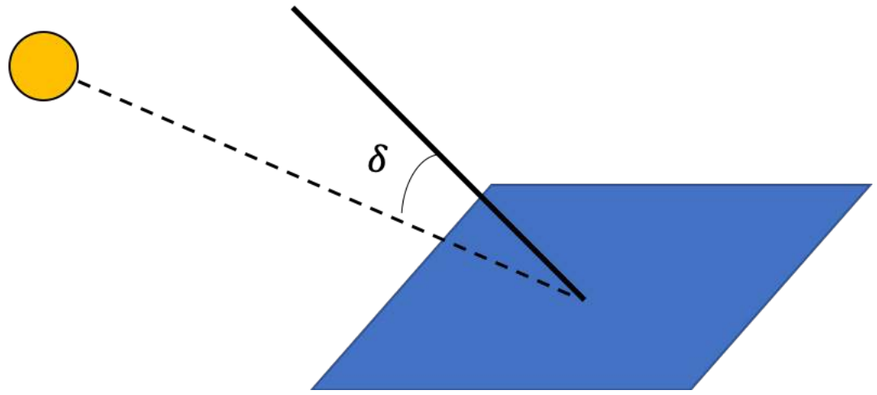


Stap 1. Berekening van de zonnehoeken



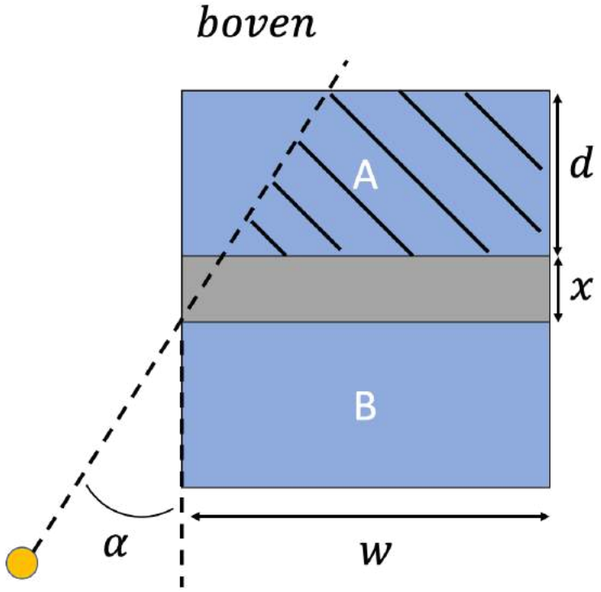
Hoeken a & b berekend als functie van tijd van de dag, voor iedere dag van het jaar Zonnebaanformules (bouwkundewiki)

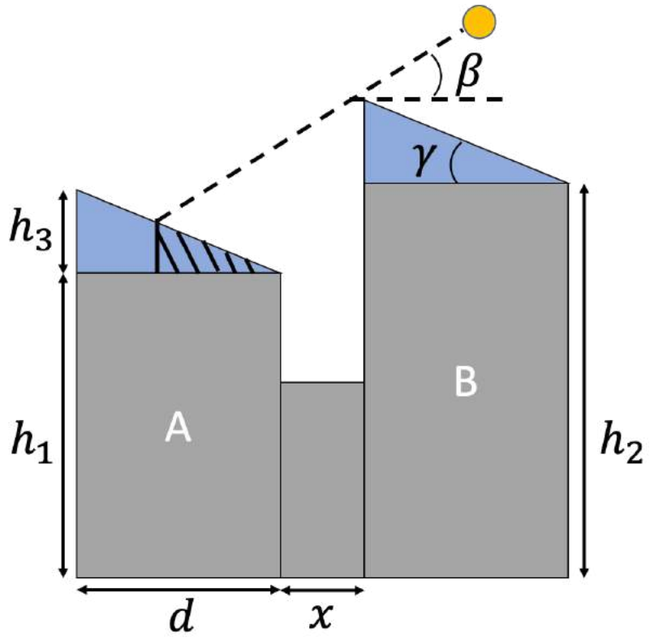
Stap 2. Bepaal de hoek waarop de zon schijnt t.o.v. de lijn loodrecht op het zonnepaneel: $n_{effcientie}$= cos (d)



Bereken de basisefficientie ‘n’ van het zonnepaneel, doordat het licht onder een hoek op het panel valt.
Als het licht loodrecht op het panel valt geldt ‘n’$_{zon}$ = 1

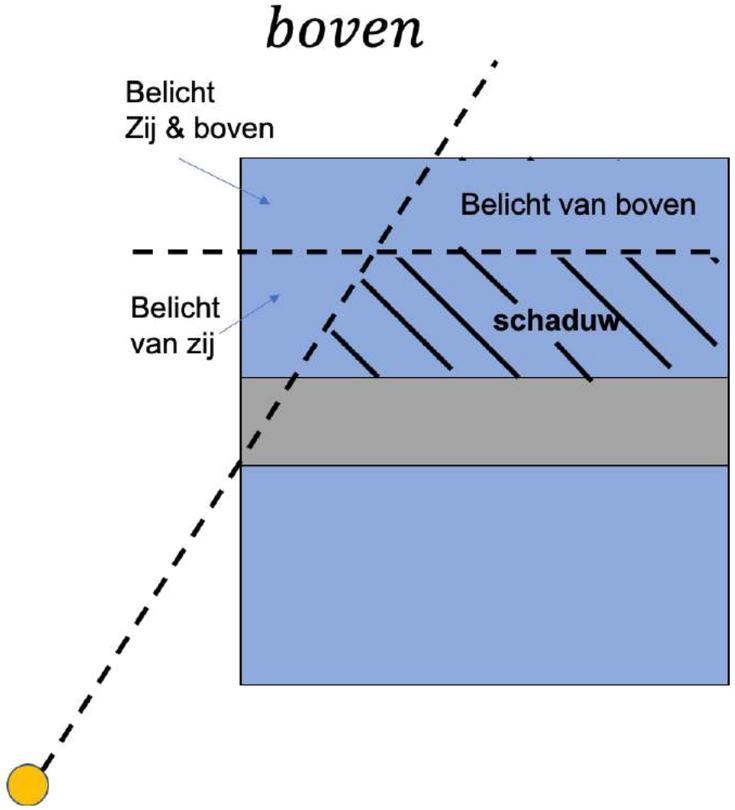
Stap 3a. Het bepalen van de verschillende schaduw die op het paneel vallen gedurende dag.



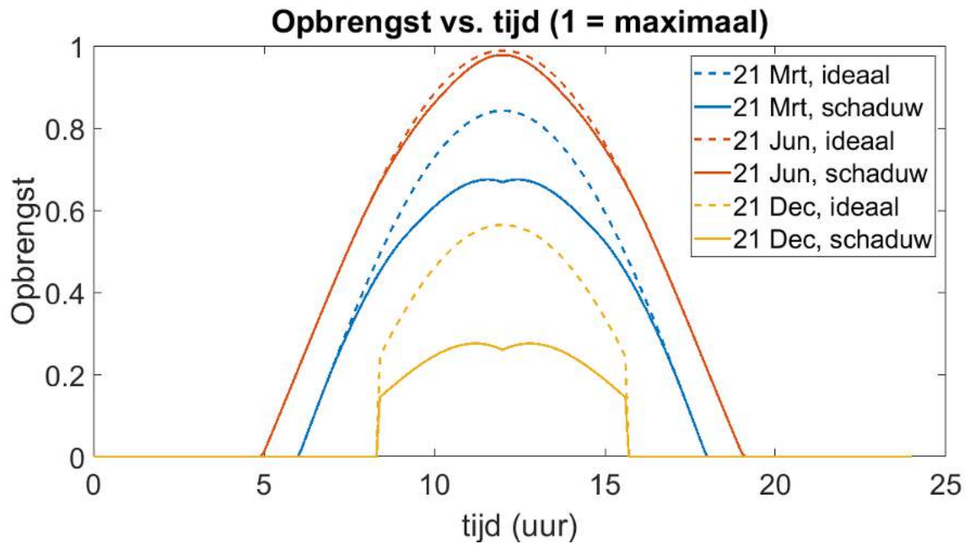


We weten de hoeken, en de geometrie van het gebouw.

Stap 3b. We combineren de schaduwkanten om te kijken hoe de schaduw op het paneel zich verhoudt over de hele dag



Stap 3c. Bereken de opbrengst van een ‘schaduwpaneel’ ten opzichte van een ideaal paneel per dag.



Stap 4. Bereken de efficiëntie per dag door