

BUILDING COMPONENT REUSE

A primary school in the Boerhaavewijk



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DE NIEUWE GLOBE

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4661494
27-06-2023

Implementing **urban mining** on a neighbourhood scale in order to increase the reuse rate of **building components** and designing these into a **primary school** in the Boerhaavewijk in Haarlem.

CONTENT

CONTENT

Background



Context



Research



Design



CONTENT

CONTENT

Background



Context



Research

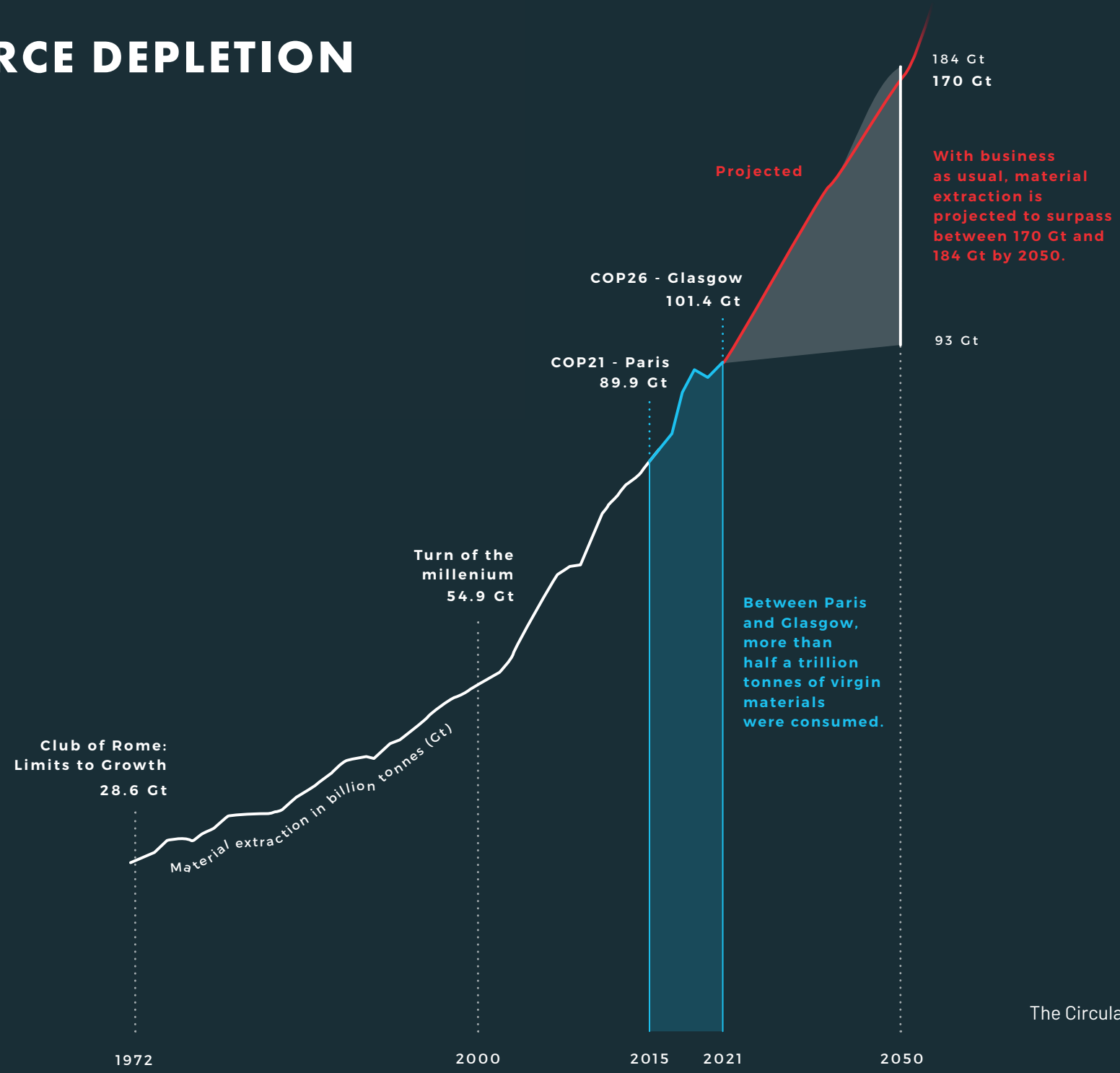


Design



RESOURCE DEPLETION

BACKGROUND



CONSTRUCTION INDUSTRY

BACKGROUND

Natural
resources

30%

CO2 emissions

40%

Waste

30%

CONSTRUCTION WASTE

25

million tons

of demolition and construction
waste is generated every year
in the Netherlands

70x →
the empire state building



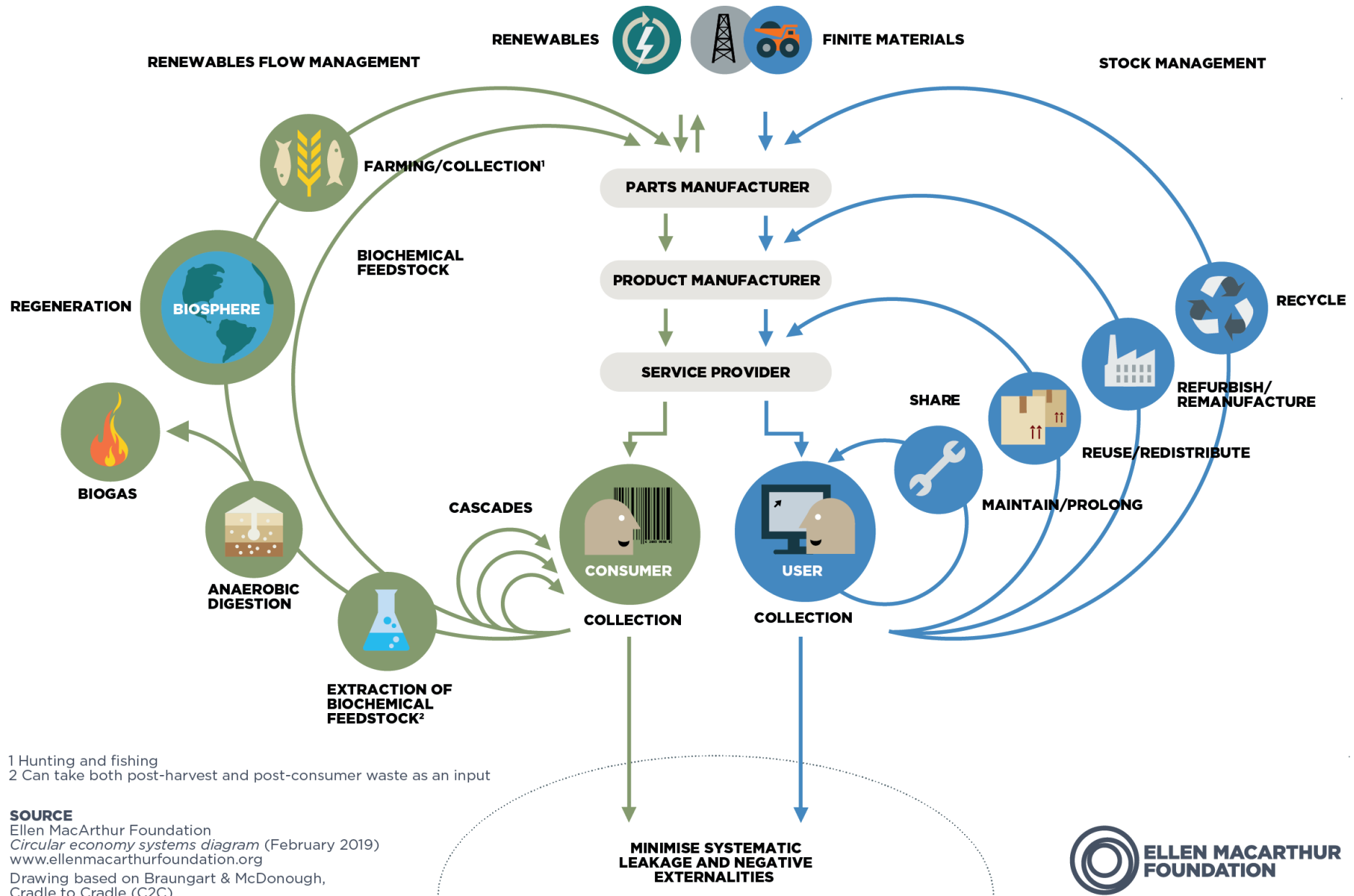
DEMOLITION WASTE

Lost value



TOTAL 800.000 PORTICO FLAT DWELLINGS

CIRCULAR ECONOMY

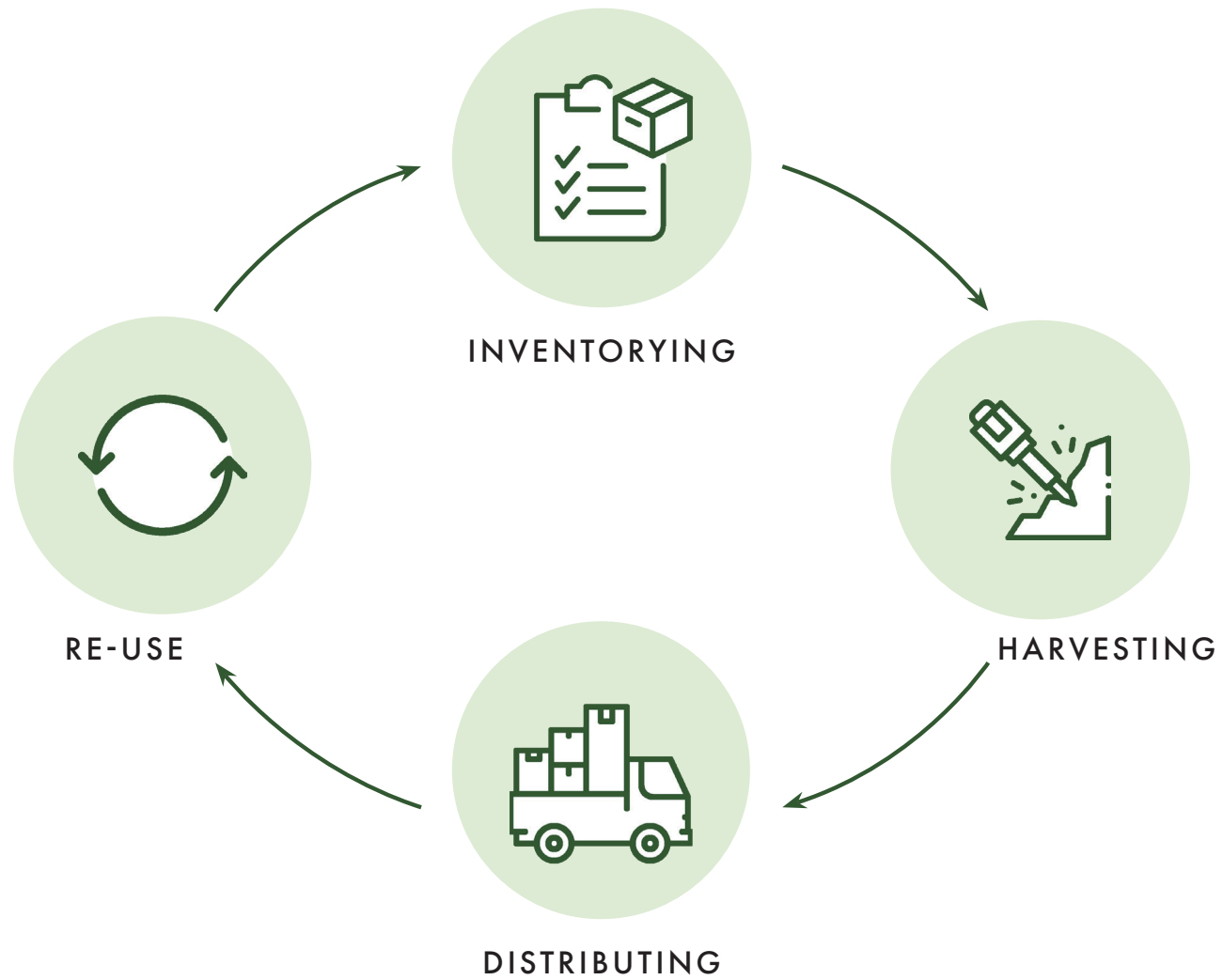






URBAN MINING

URBAN MINING



CONTENT

CONTENT

Background



Context



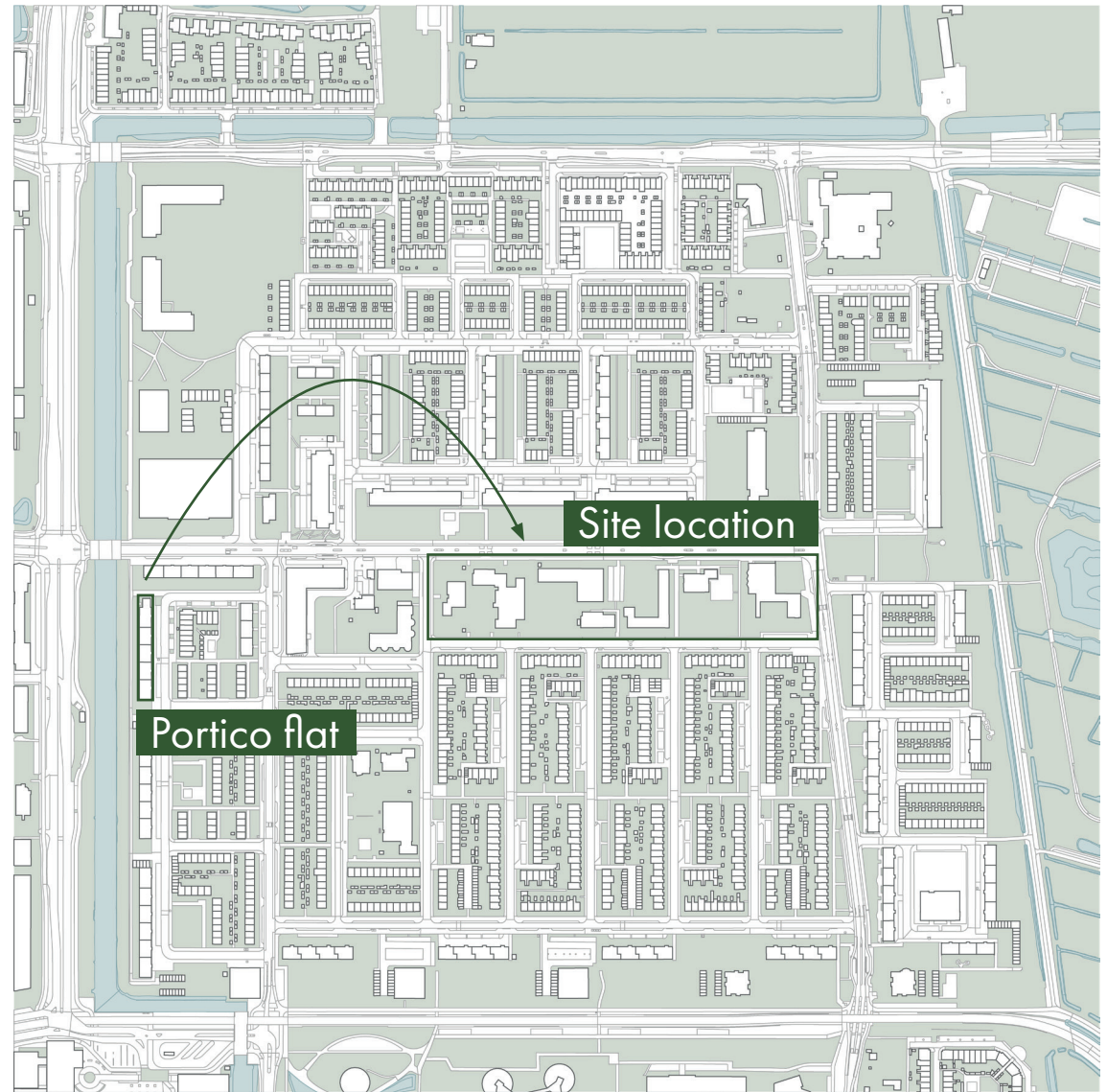
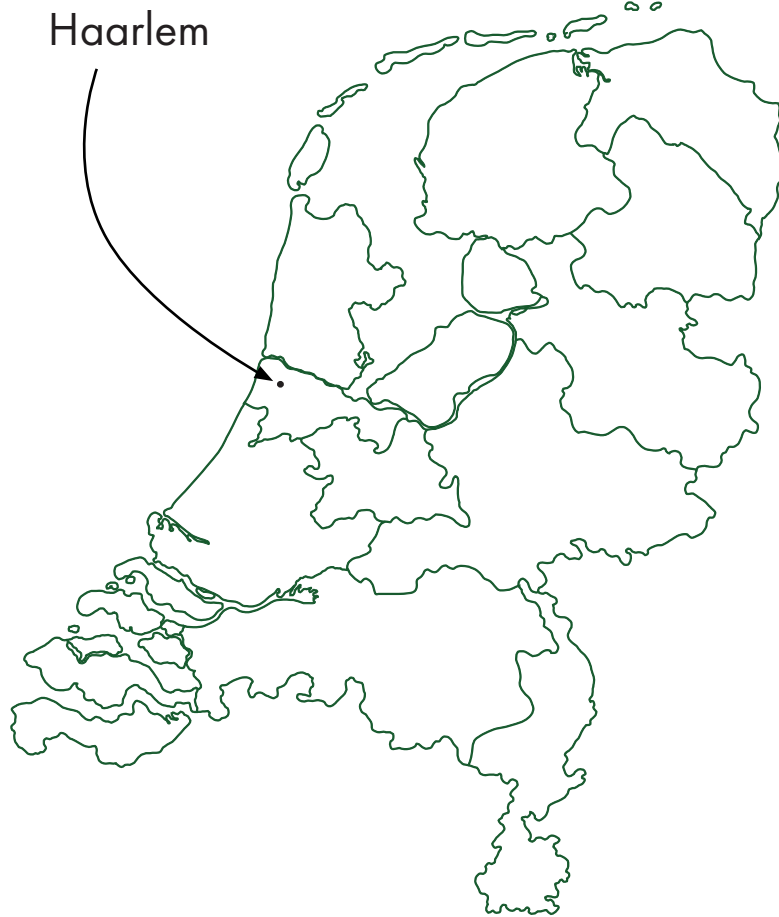
Research



Design



BOERHAAVEWIJK

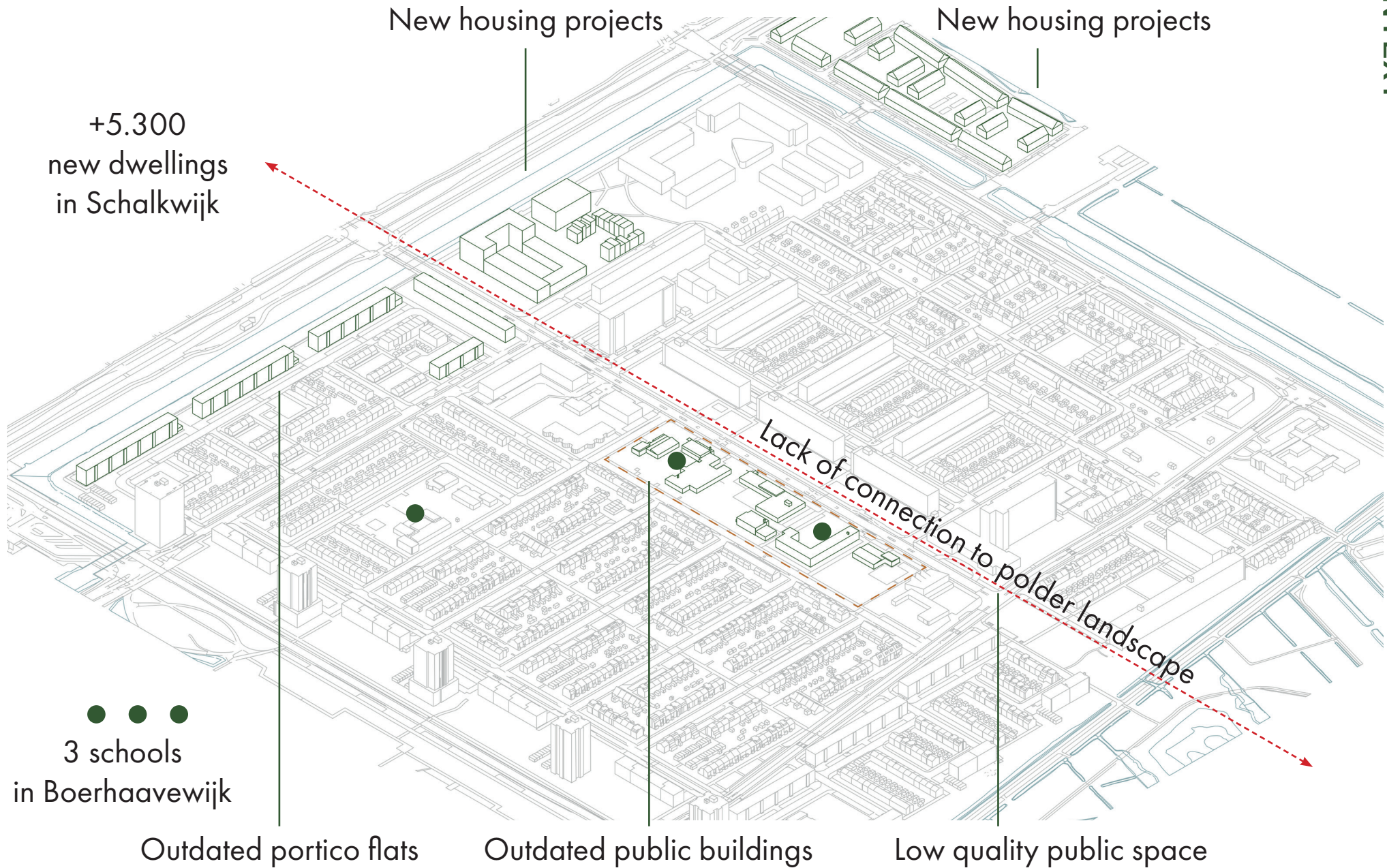


Boerhaavewijk
1:5000

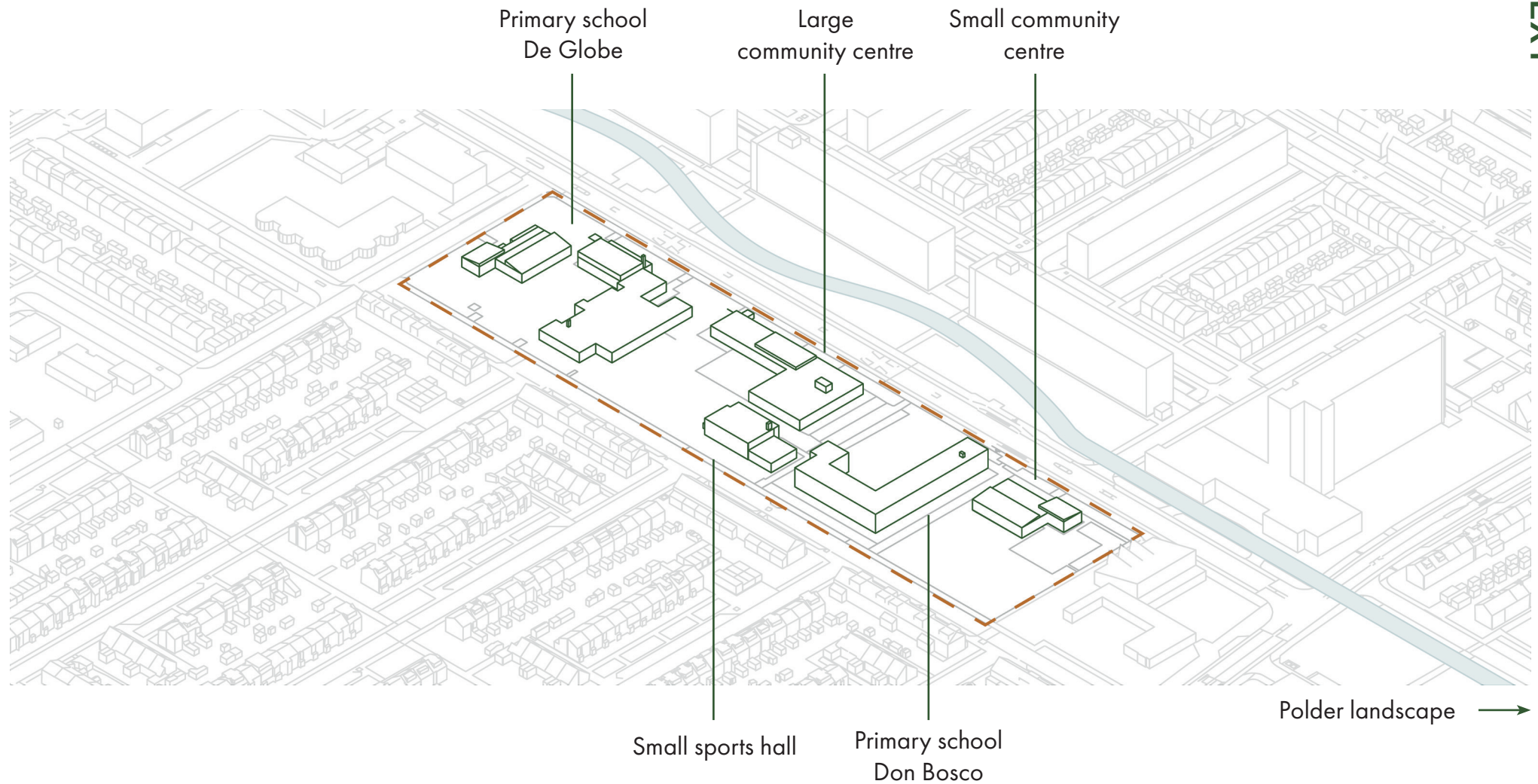
POST-WAR NEIGHBOURHOOD



BOERHAAVEWIJK



CENTRE BOERHAAVEWIJK



COMMUNITY CENTRE

CONTEXT



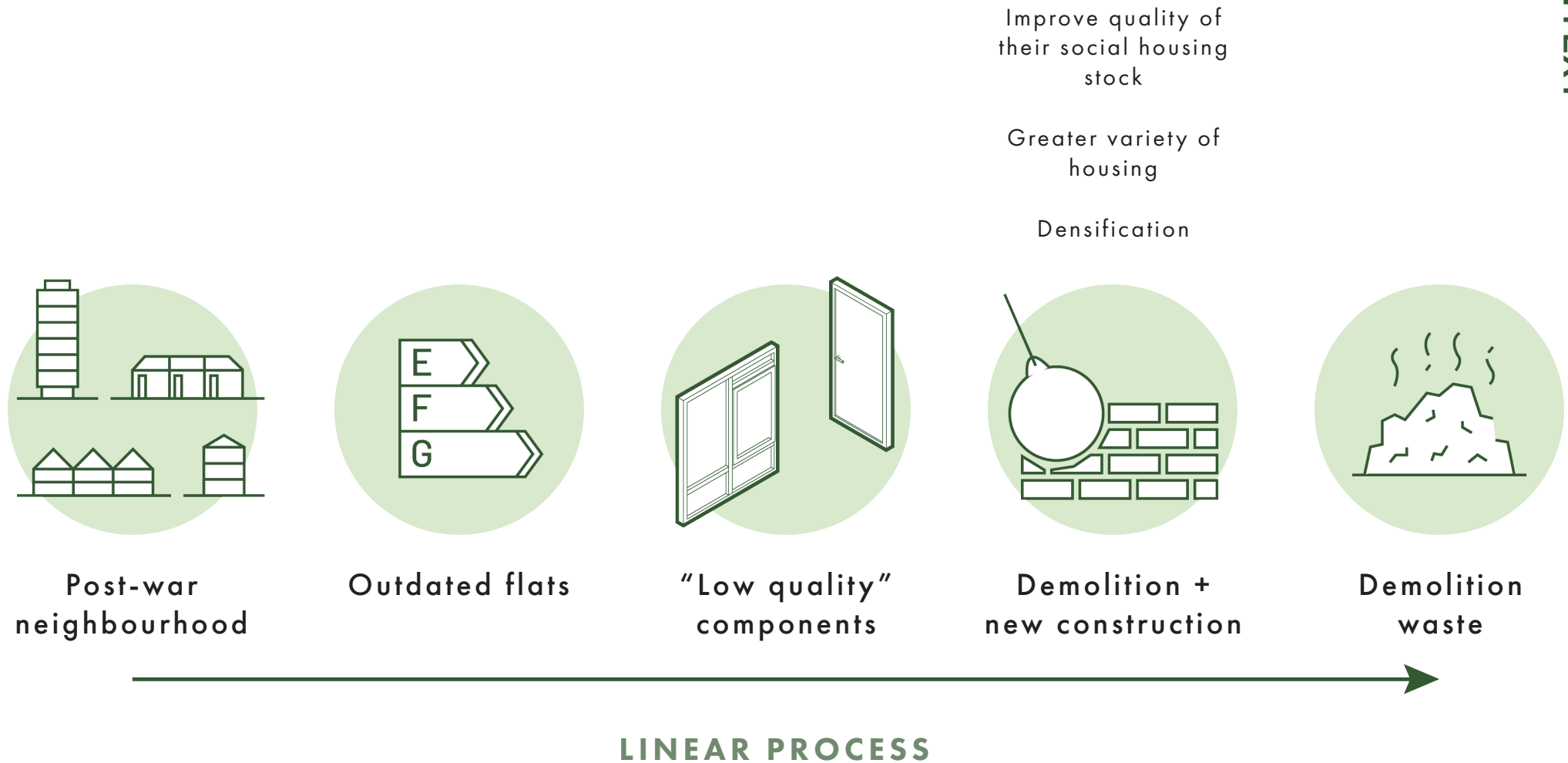
PORTICO FLAT



Outdated portico flats

LINEAR PROCESS

CONTEXT



CONTENT

CONTENT

Background



Context



Research



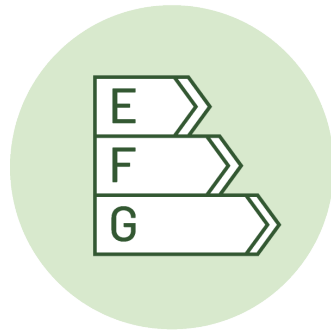
Design



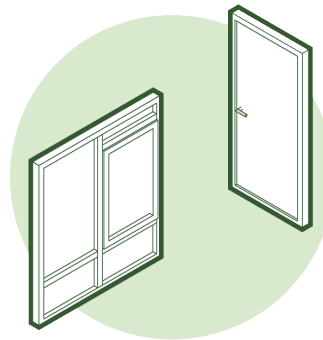
WHY VALUE ANALYSIS?



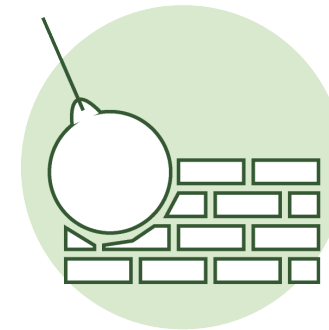
Post-war
neighbourhood



Outdated flats



"Low quality"
components



Demolition +
new construction



Demolition
waste



LINEAR PROCESS



**“Low quality”
components**

The objective of this paper is to define all factors that influence the value of building components in order to increase their reuse rate.

URBAN MINING ON A NEIGHBOURHOOD SCALE



One social housing corporation

Less transportation costs

Less CO2 emissions

Nearby storage location

Value stays in community: more awareness

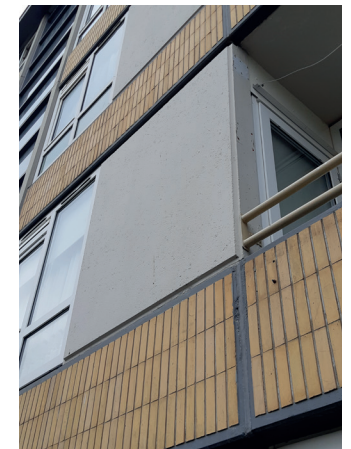
Less design freedom: opportunity?

SYSTEEMBOUW = PREFABRICATED COMPONENTS

1965



2023

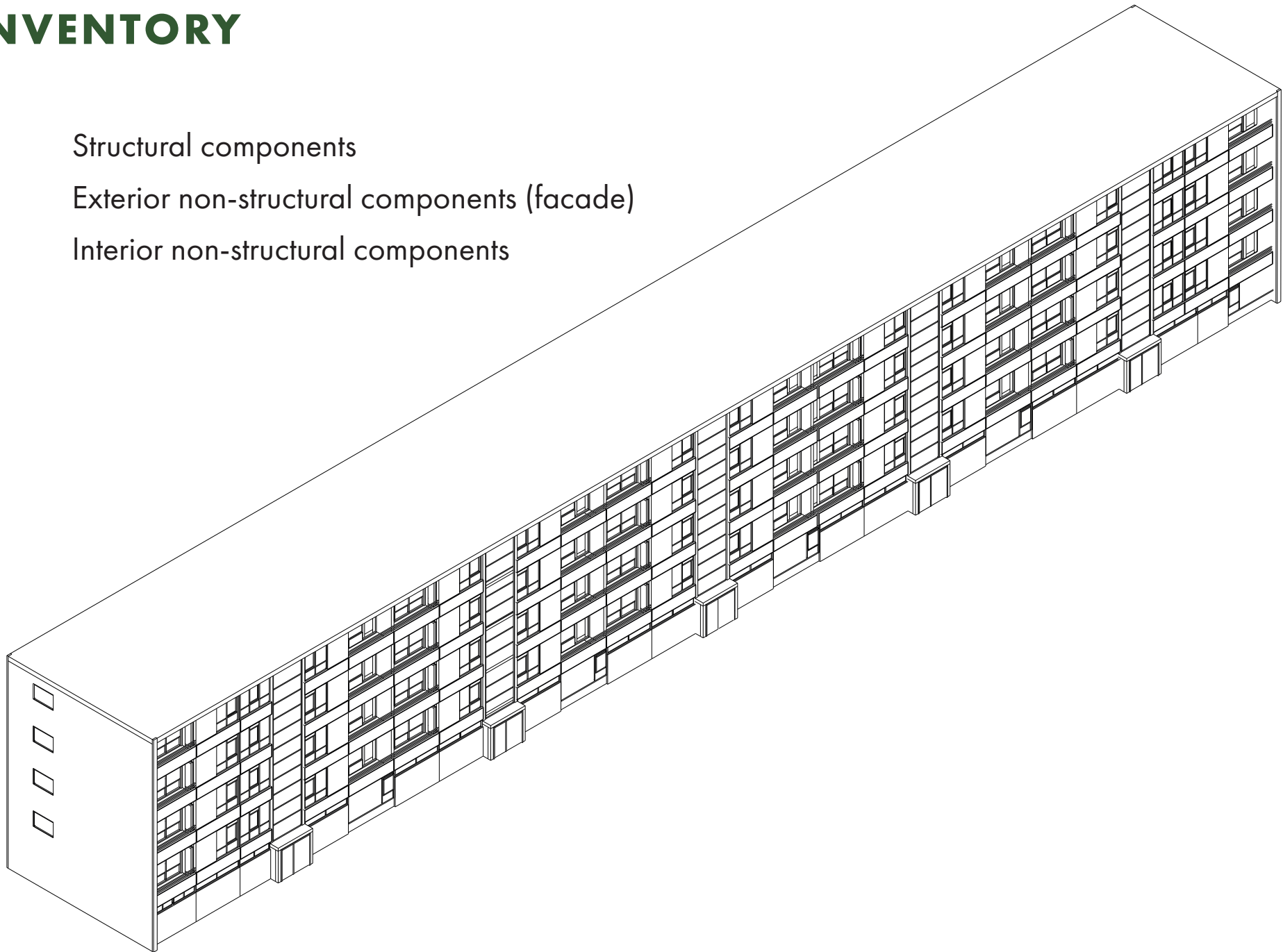


INVENTORY

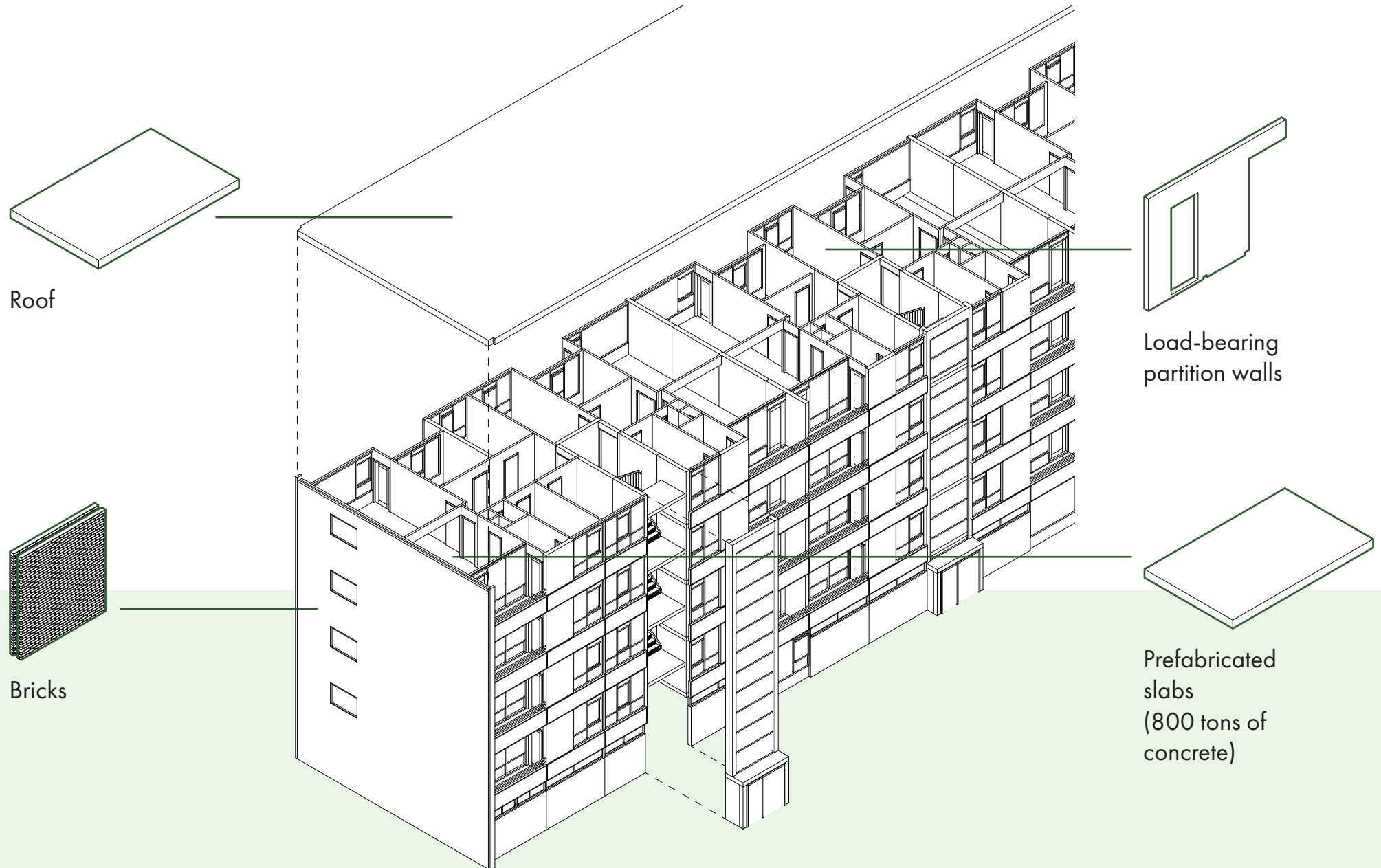
Structural components

Exterior non-structural components (facade)

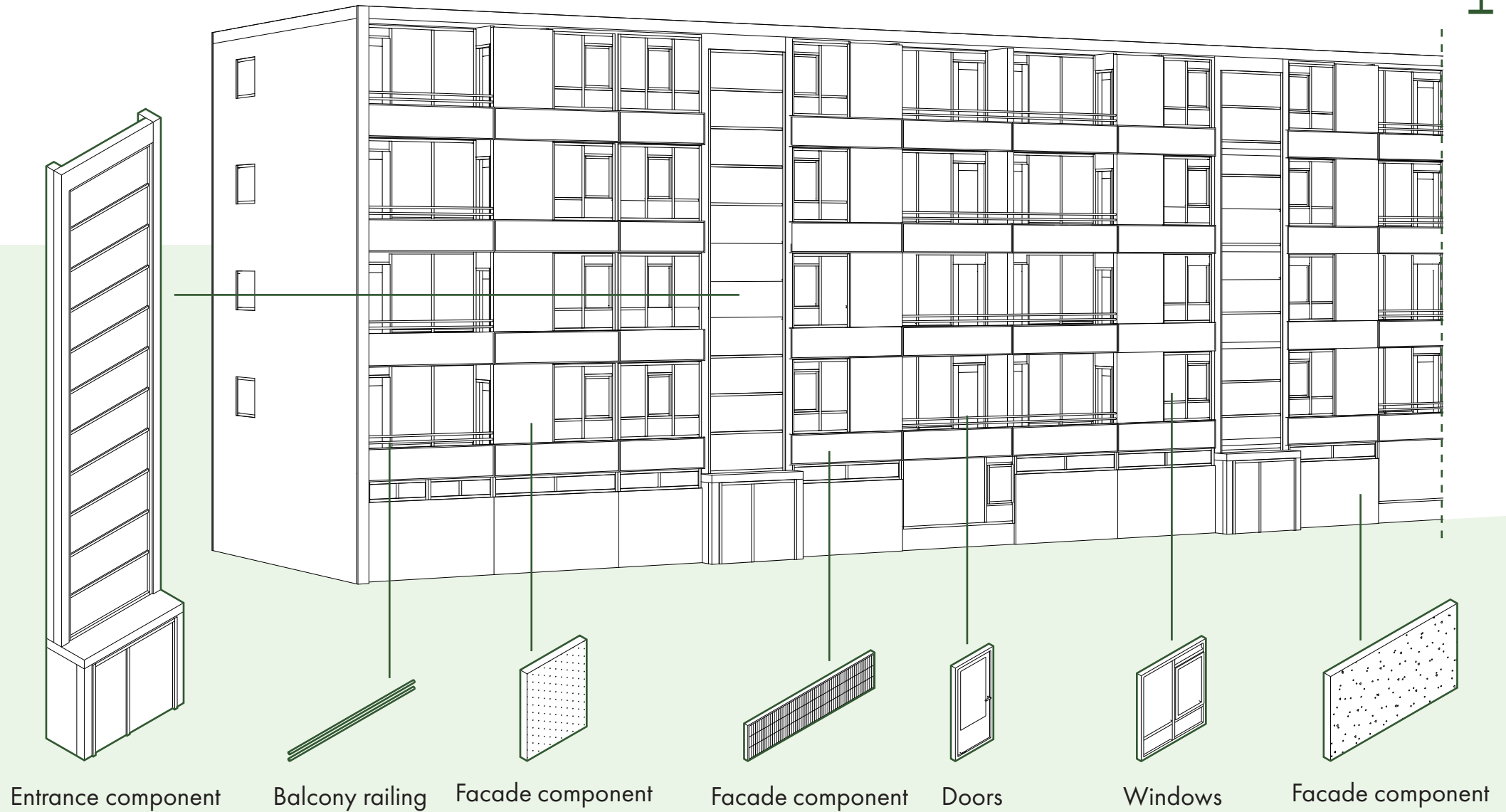
Interior non-structural components



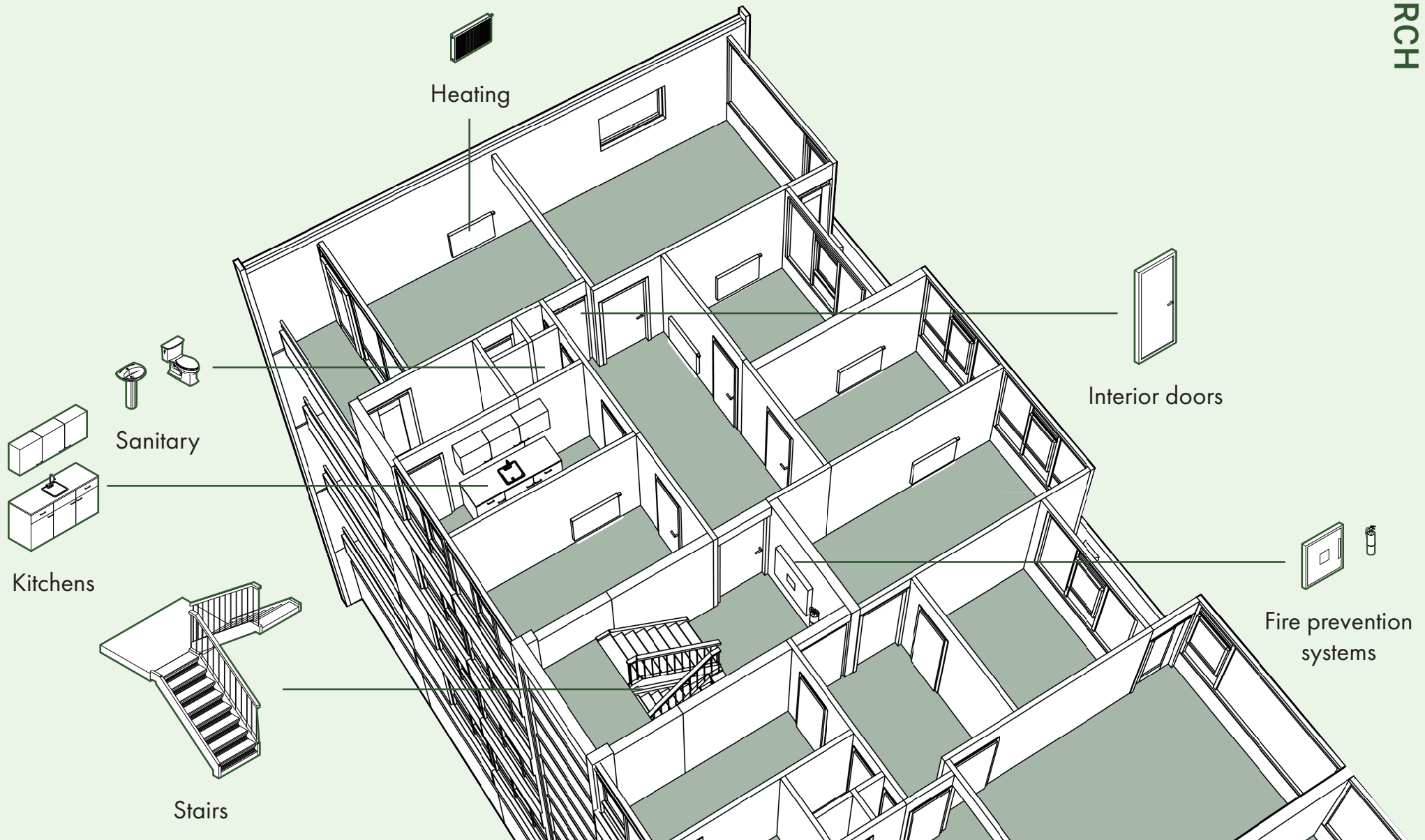
STRUCTURAL COMPONENTS



EXTERIOR NON-STRUCTURAL COMPONENTS



INTERIOR NON-STRUCTURAL COMPONENTS



FACTORS THAT INFLUENCE VALUE



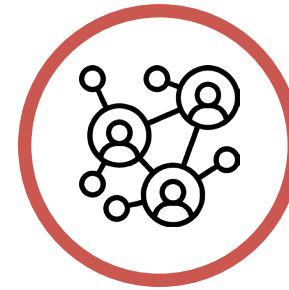
Environmental



Technical



Economic



Social



Organisational

CONCLUSION FACTORS THAT INFLUENCE VALUE



Environmental

Gain importance based on the client and regulations



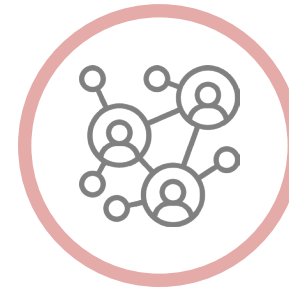
Technical

Important for 1:1 reuse



Economic

More than half is related to economic domain: significant role



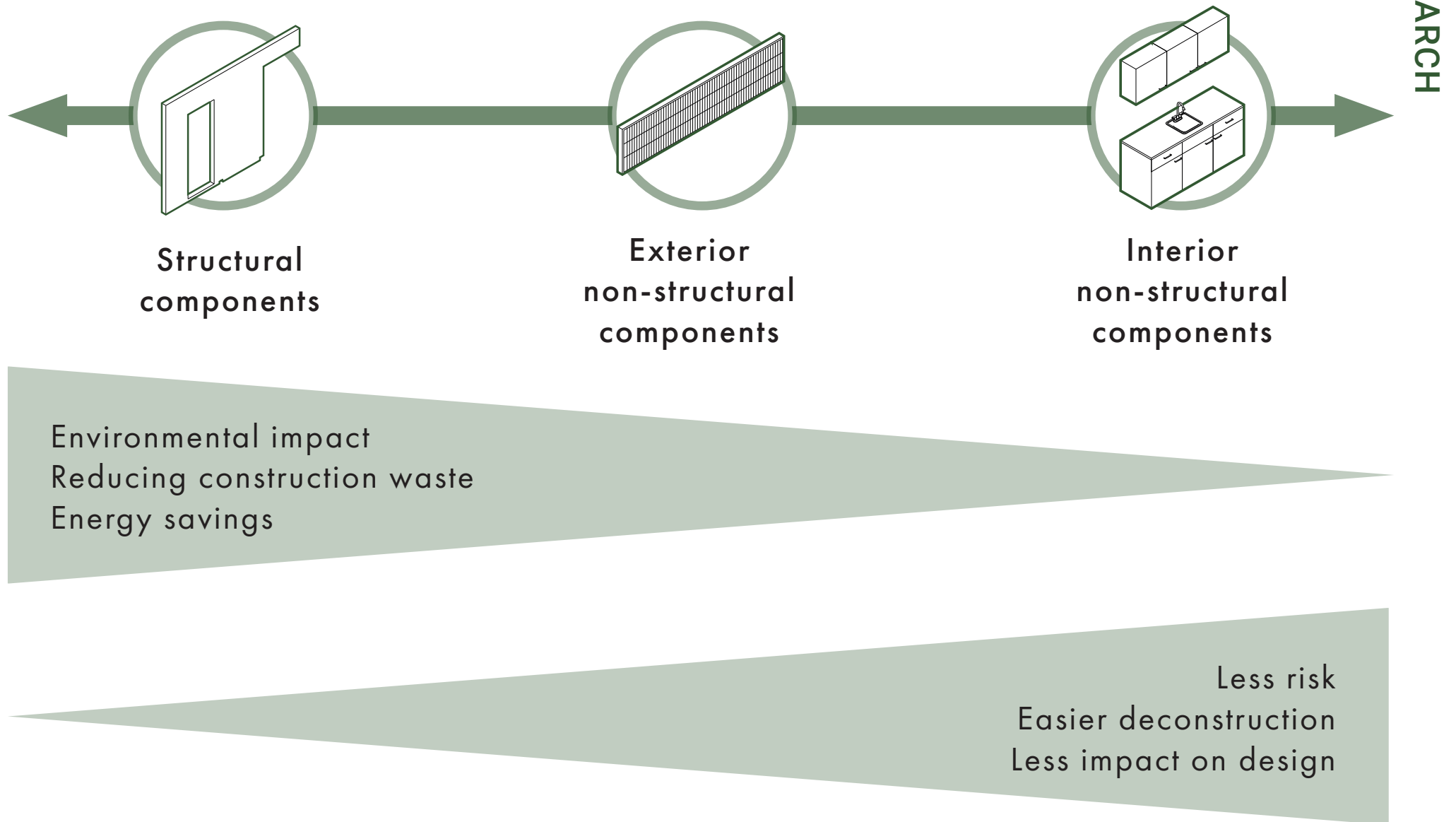
Social

Great influence, but very variable



Organisational

CONCLUSION VALUE COMPONENTS



CONTENT

CONTENT

Background



Context



Research



Design



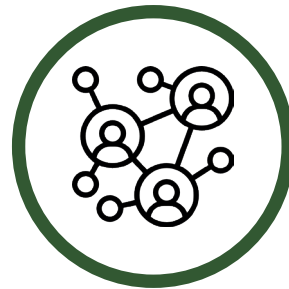
DESIGN PRINCIPLES



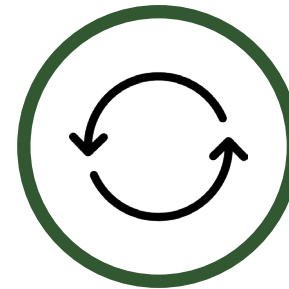
Reuse
integrated from
the start of the
design



Urban mining
in the
neighbourhood

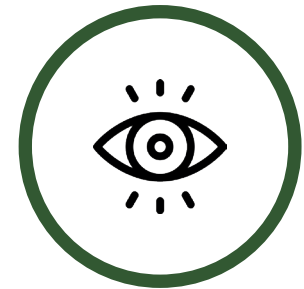


Good
coordination



1:1 reuse

+



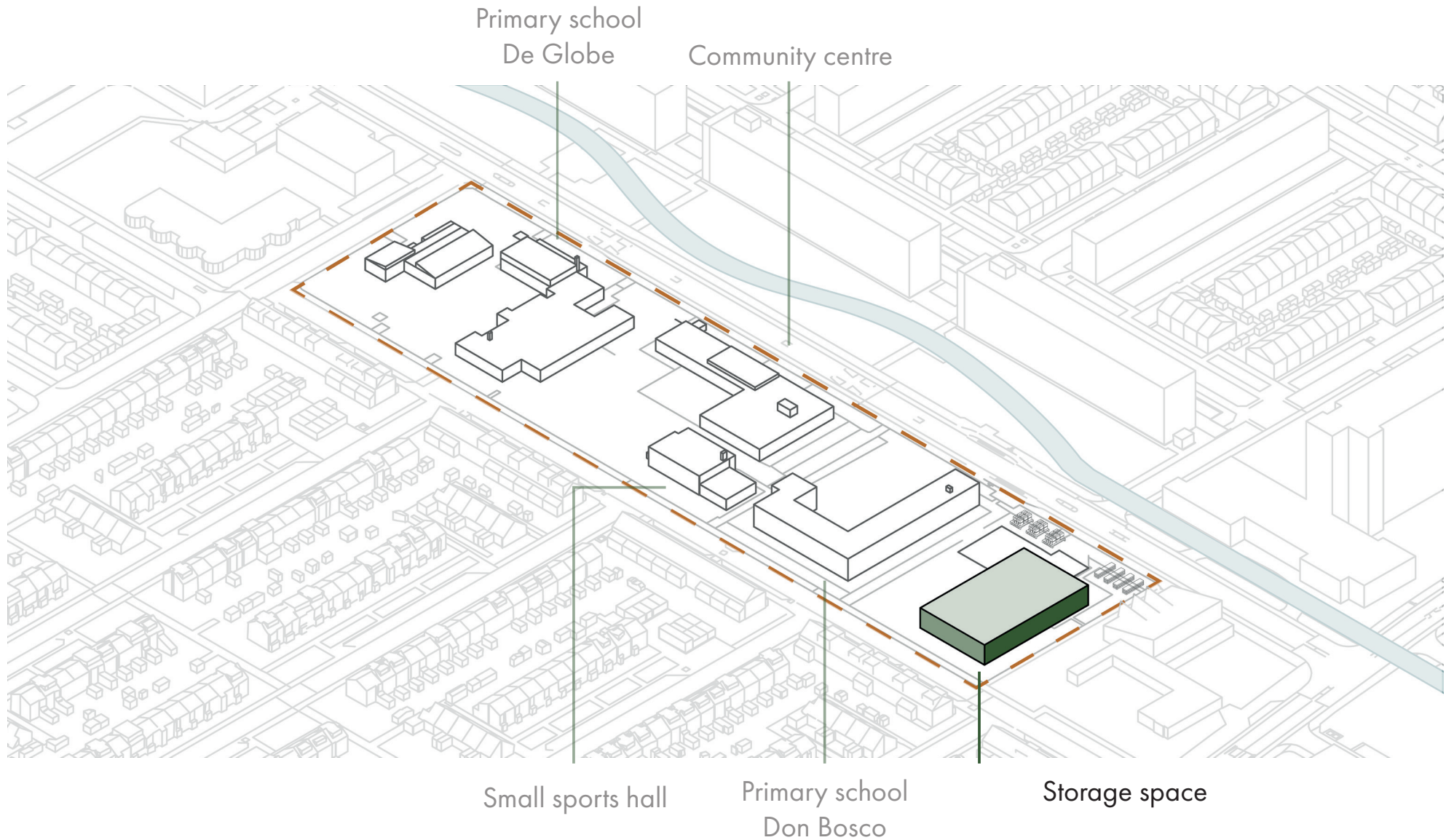
Visible reuse



Bio-based

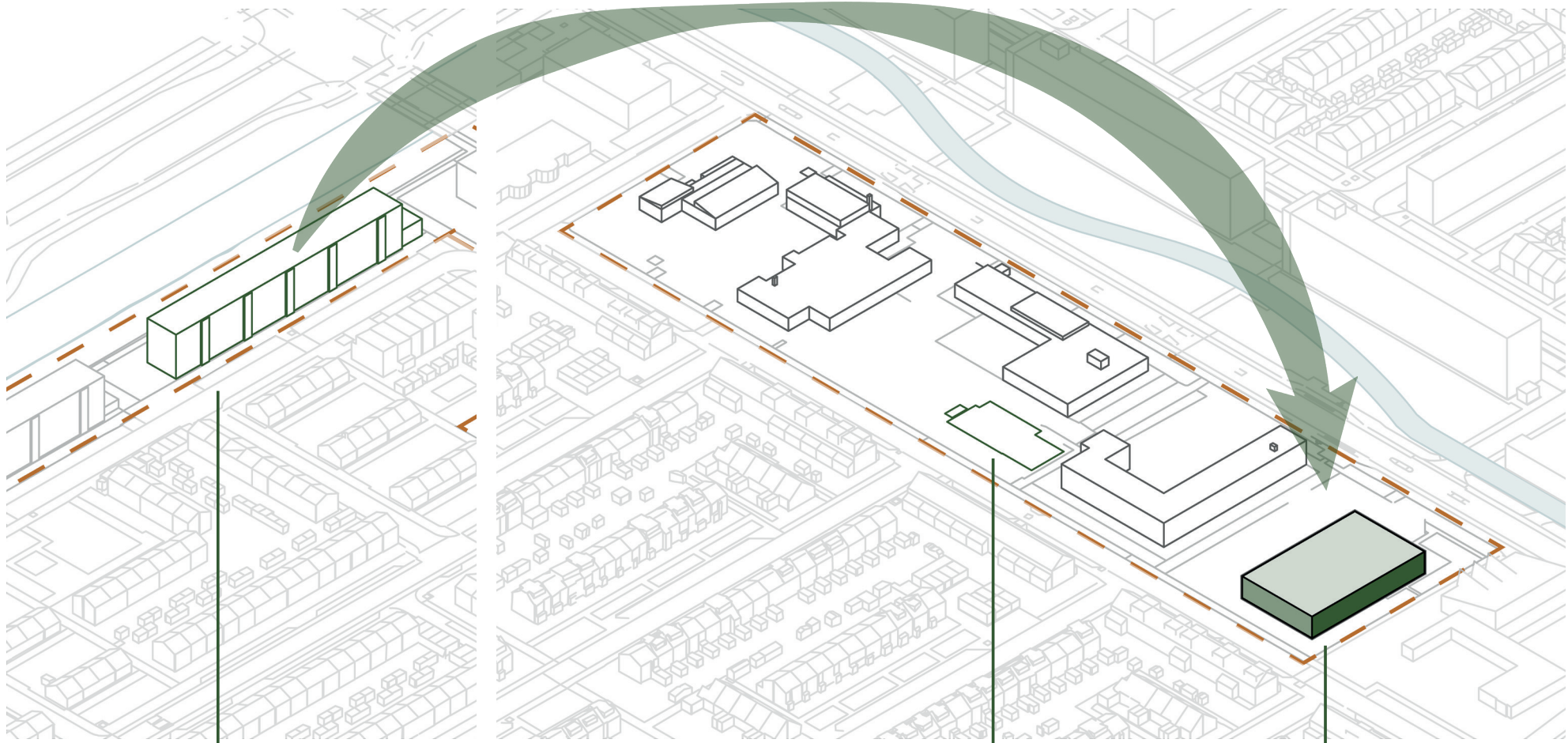
URBAN MINING IN BOERHAAVEWIJK

1 Creating storage space



URBAN MINING IN BOERHAAVEWIJK

2 Deconstruction



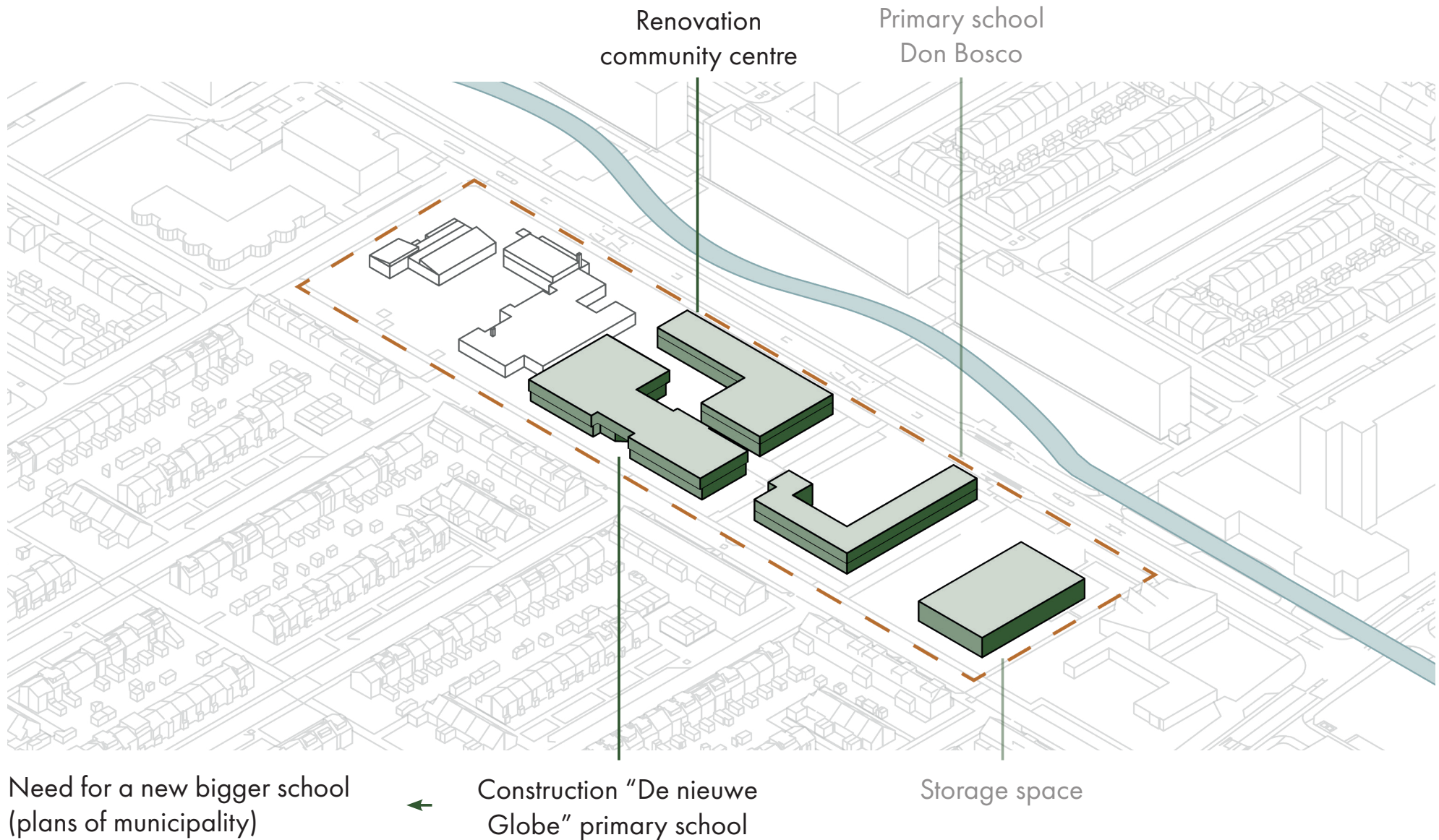
Deconstruction of portico
flat

Deconstruction/demolition of
small sports hall

Storage space

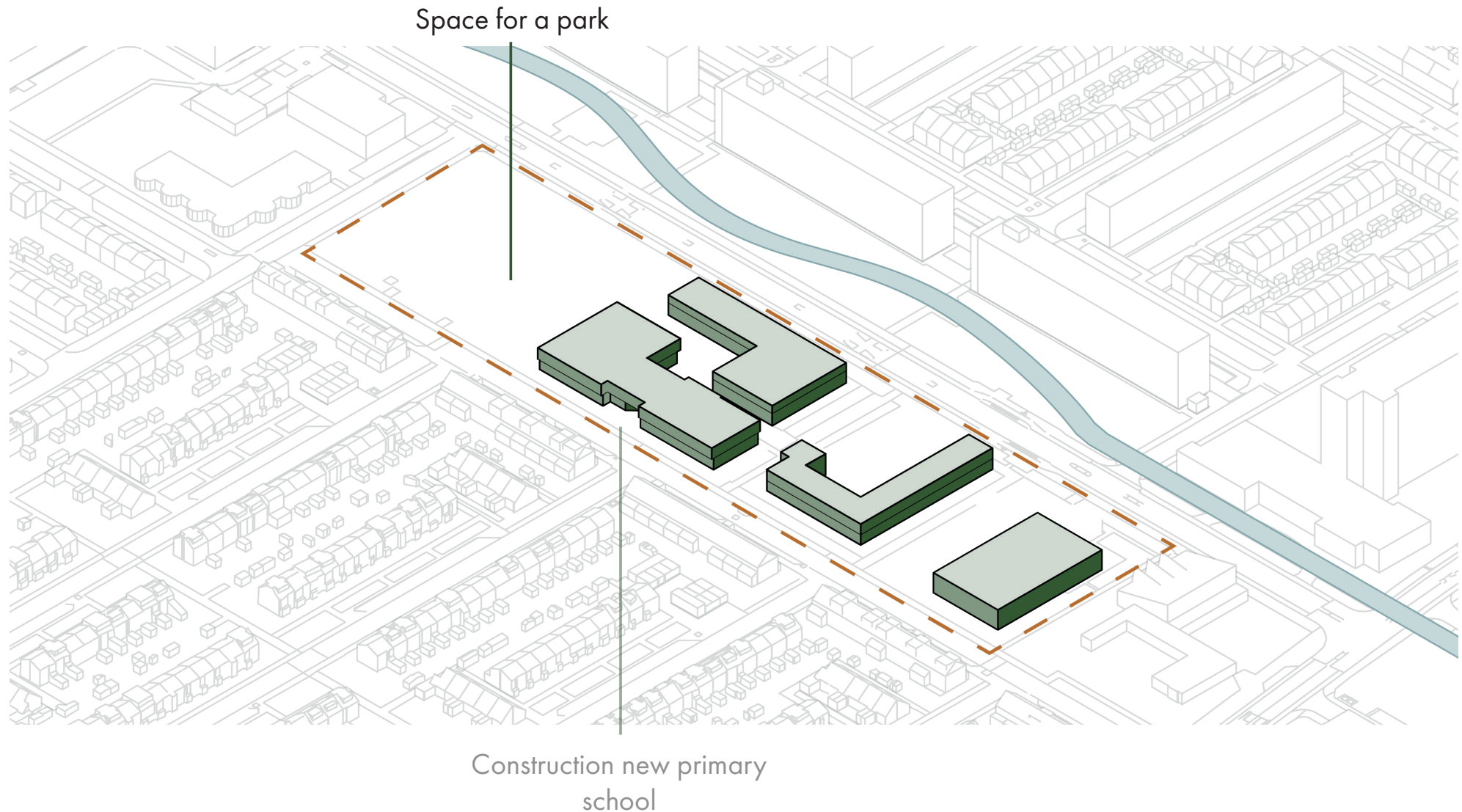
URBAN MINING IN BOERHAAVEWIJK

3 Construction new school



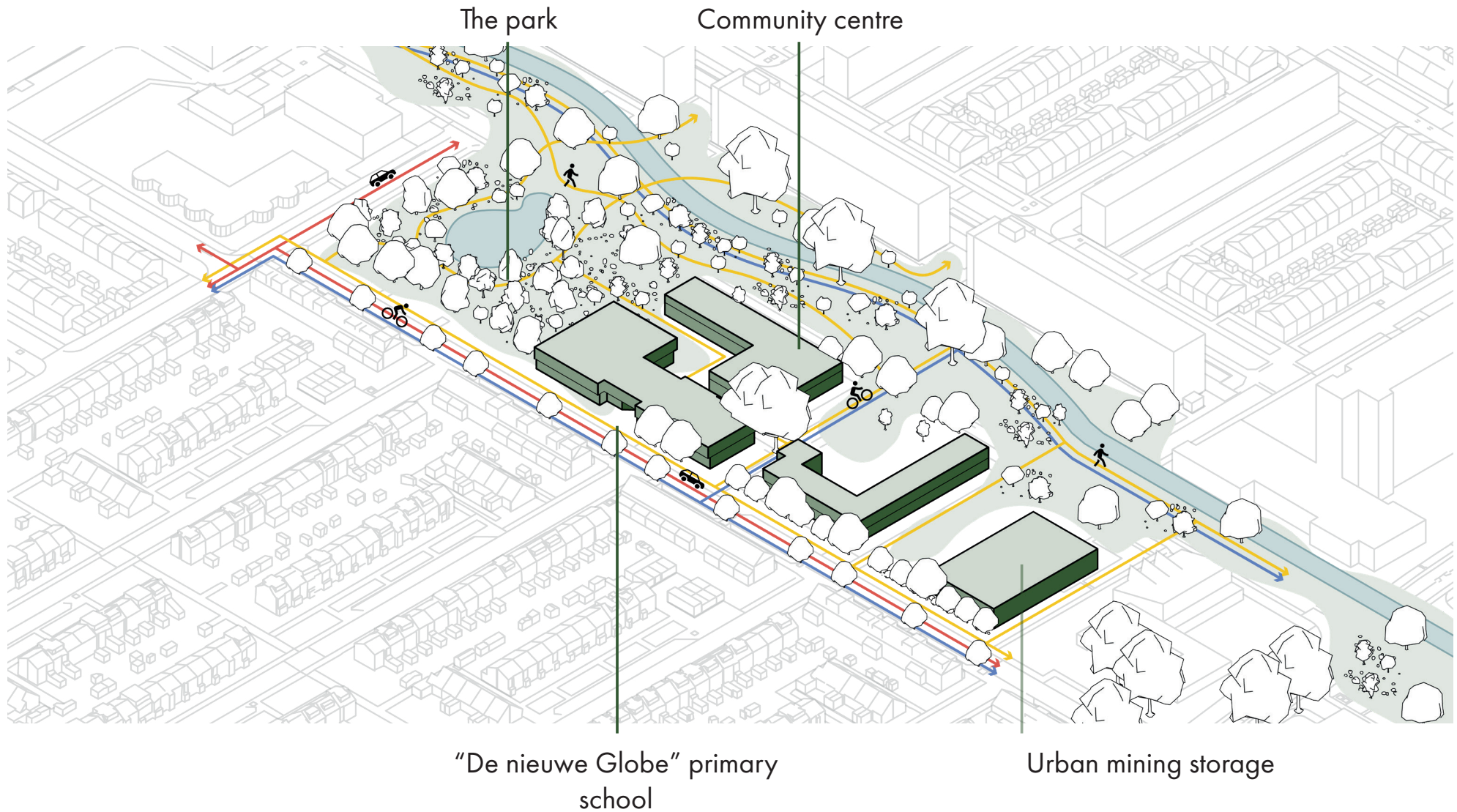
URBAN MINING IN BOERHAAVEWIJK

4 Creating space for the park



URBAN MINING IN BOERHAAVEWIJK

5 The park



THE MODEL

DESIGN

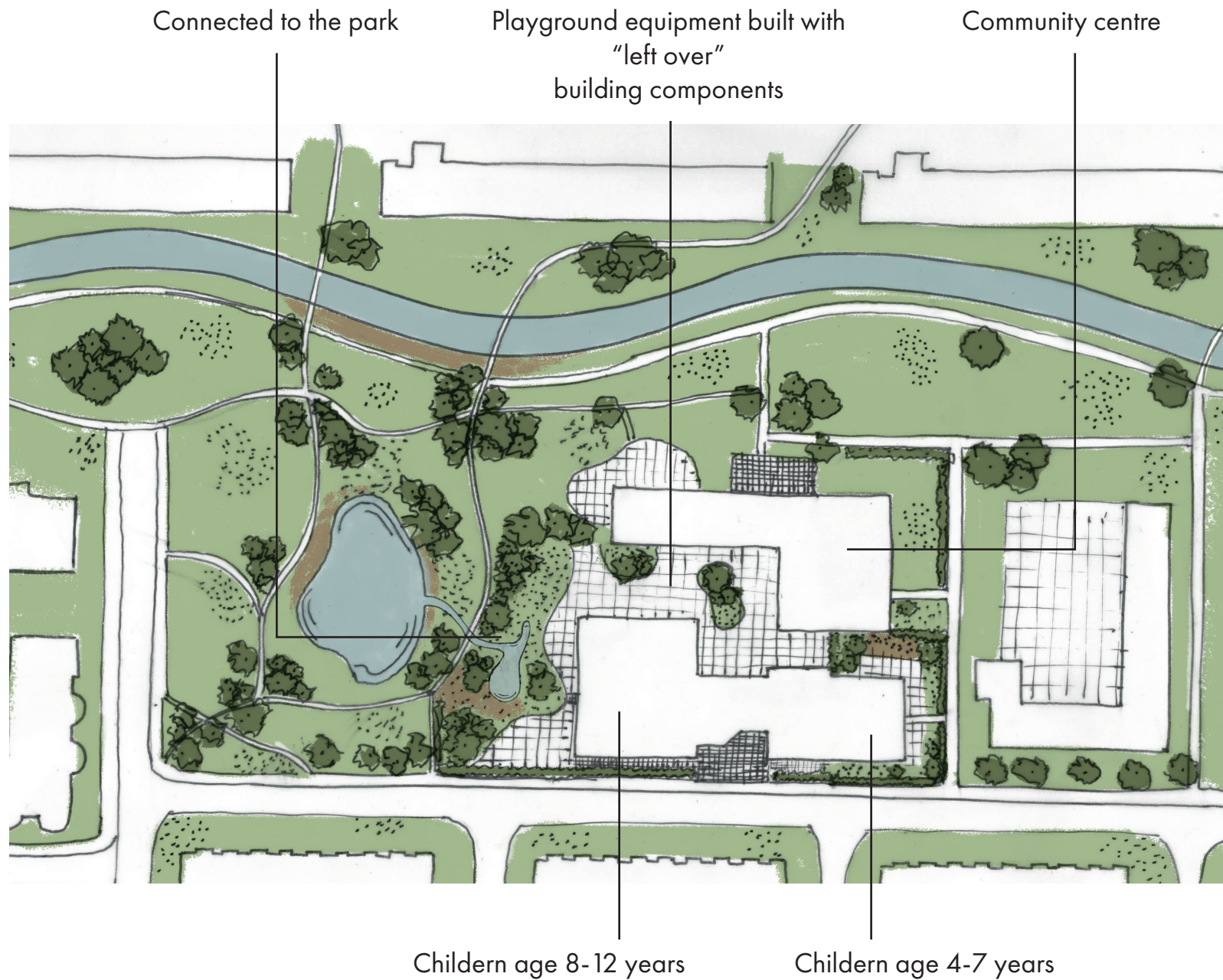


PRIMARY SCHOOL: DE NIEUWE GLOBE

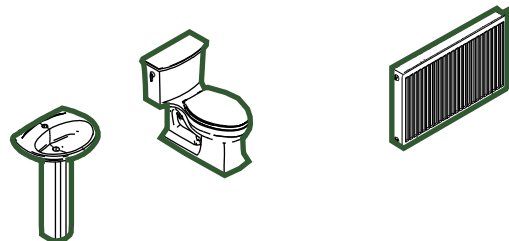
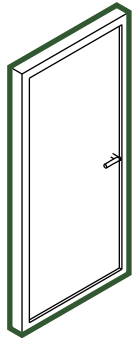
DESIGN



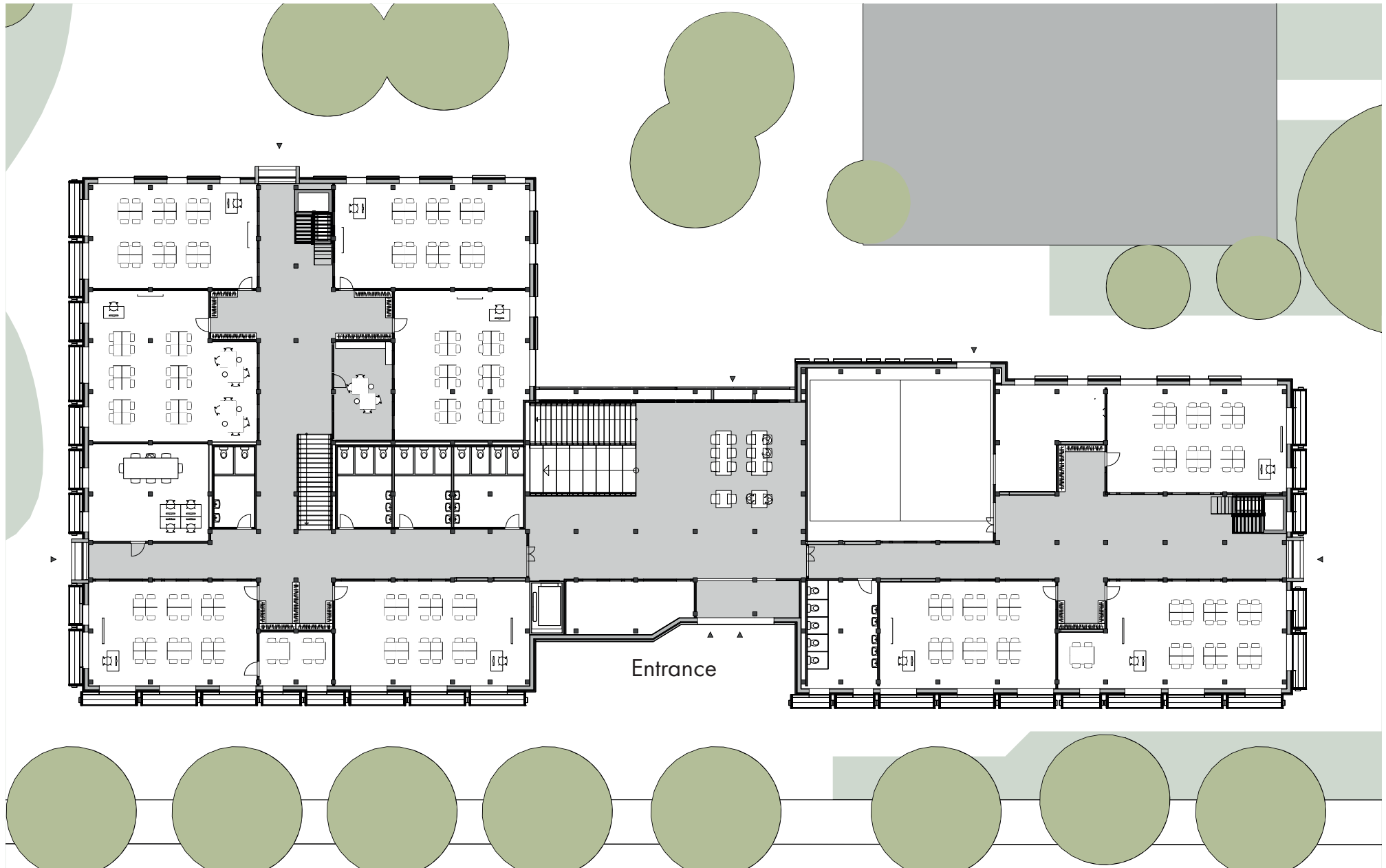
SITE PLAN



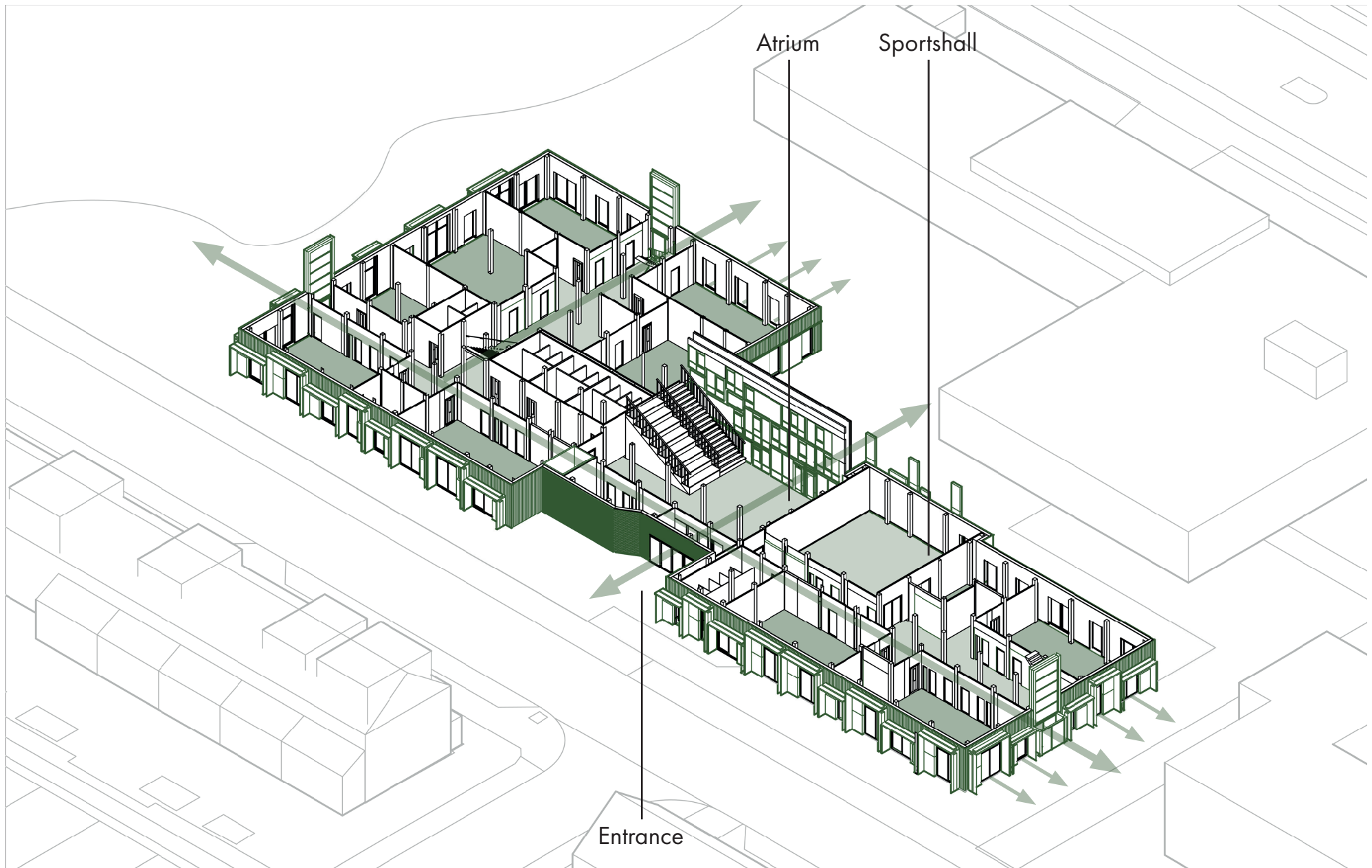
PLAYGROUND



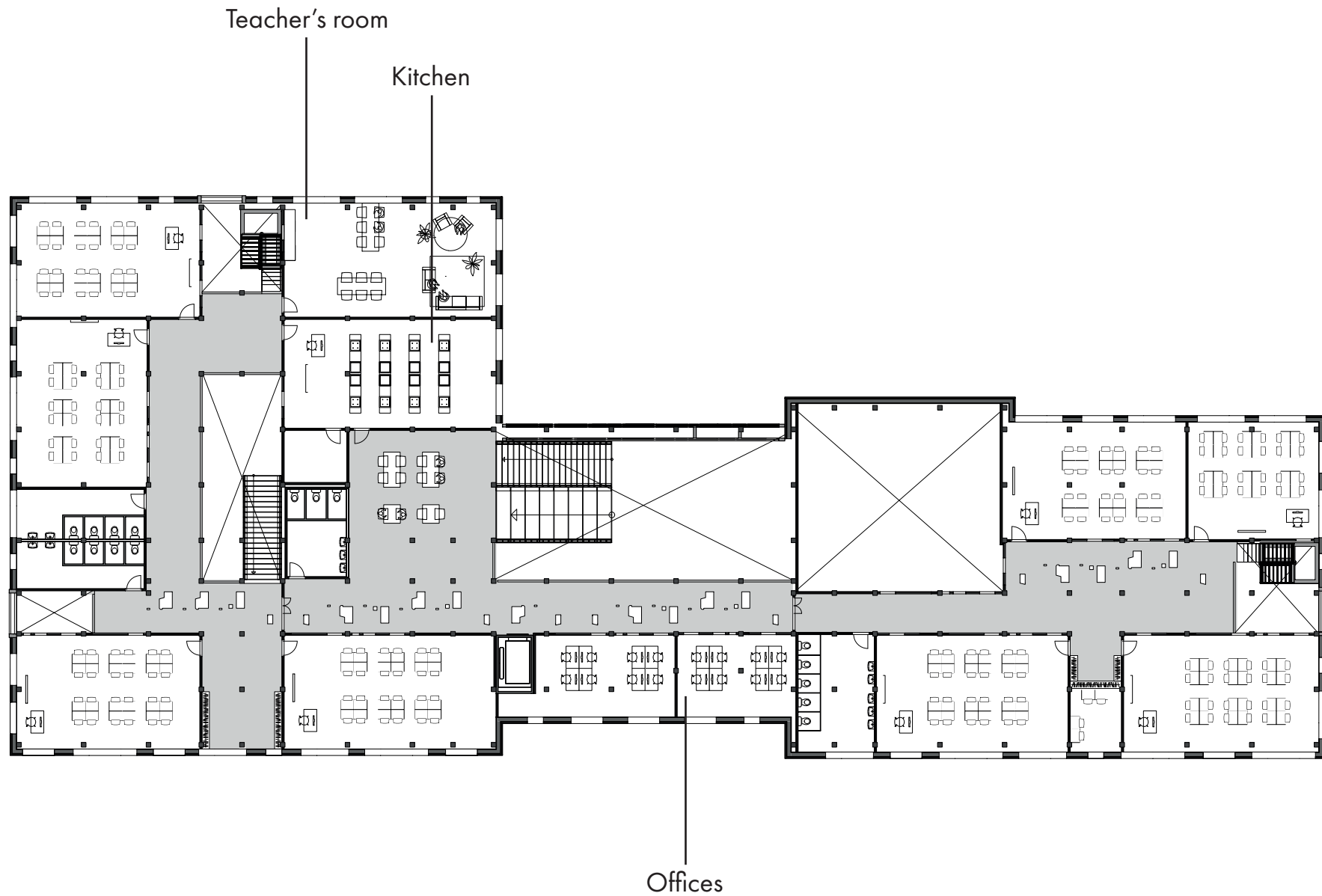
GROUND FLOOR



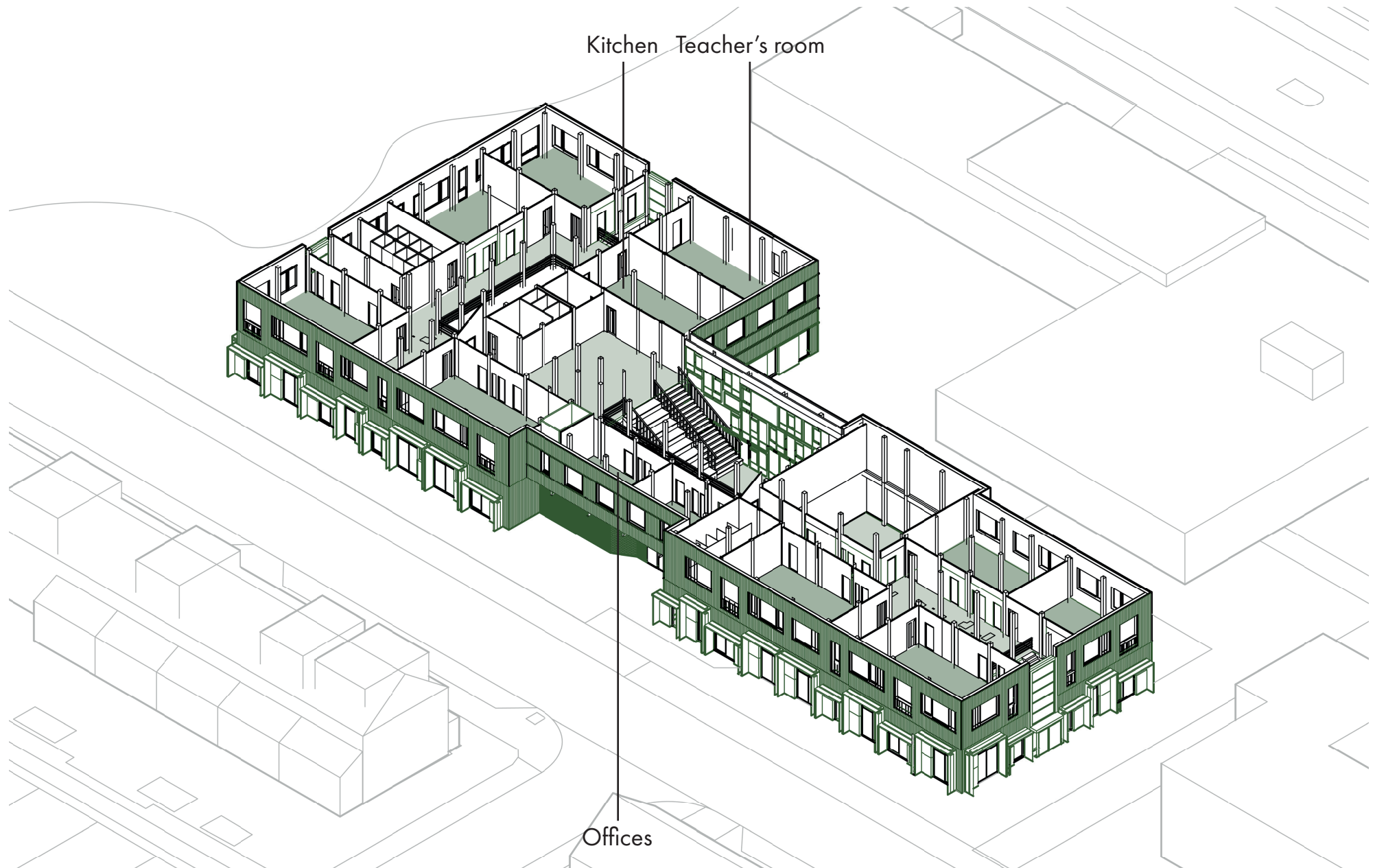
GROUND FLOOR

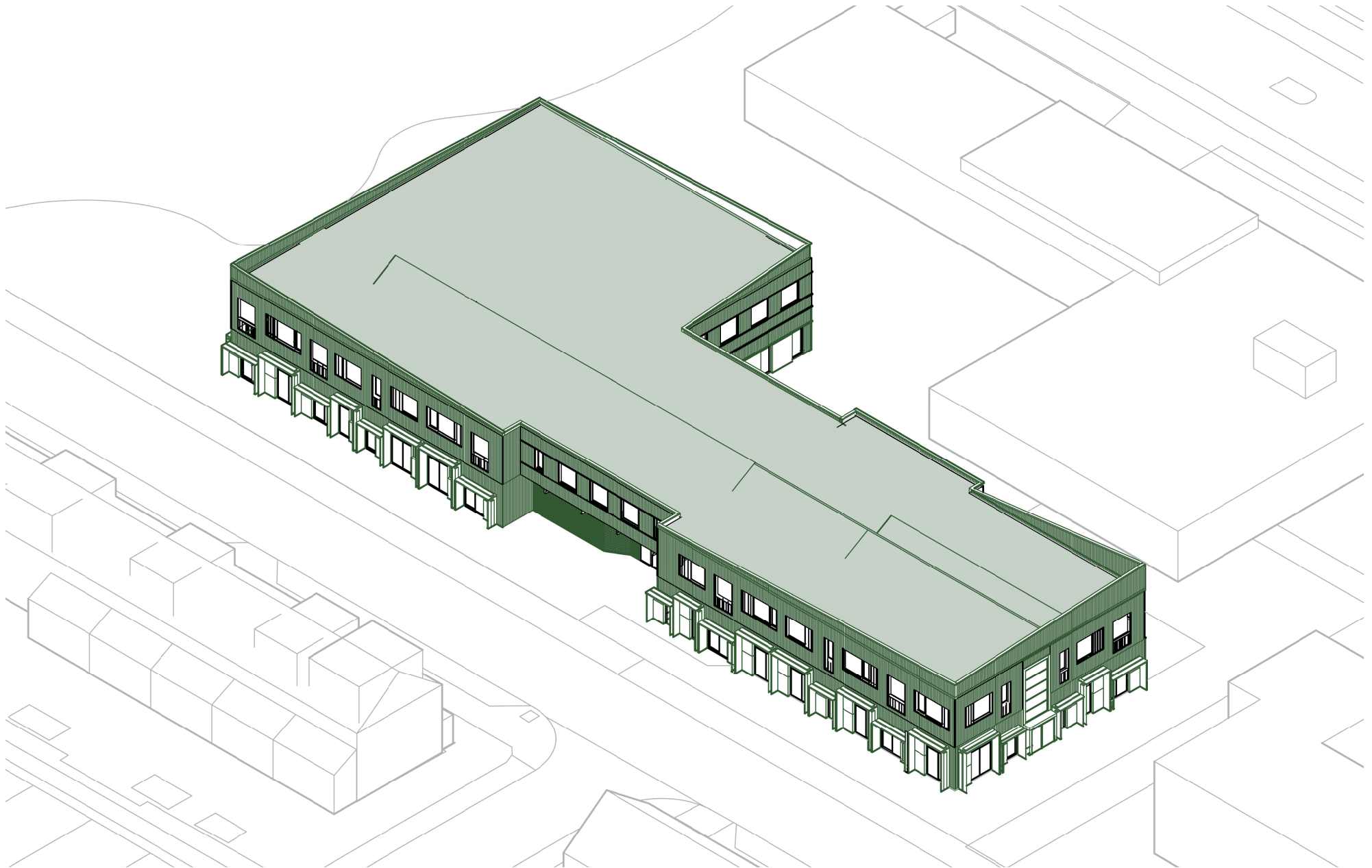


FIRST FLOOR



FIRST FLOOR

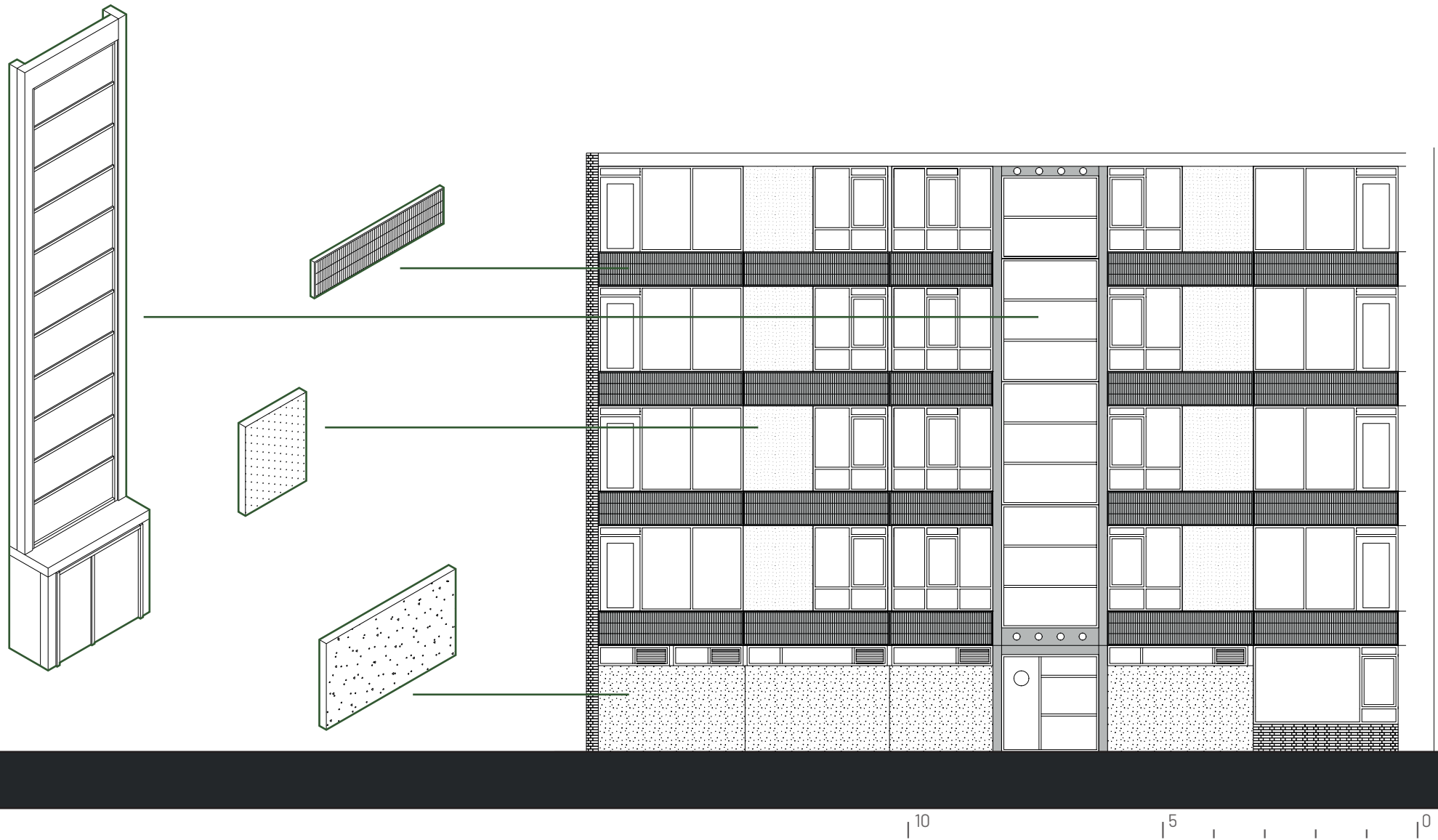




ROOF



CONCRETE FACADE COMPONENTS OF PORTICO FLAT



FACADE PRIMARY SCHOOL

DESIGN



FACADE PRIMARY SCHOOL

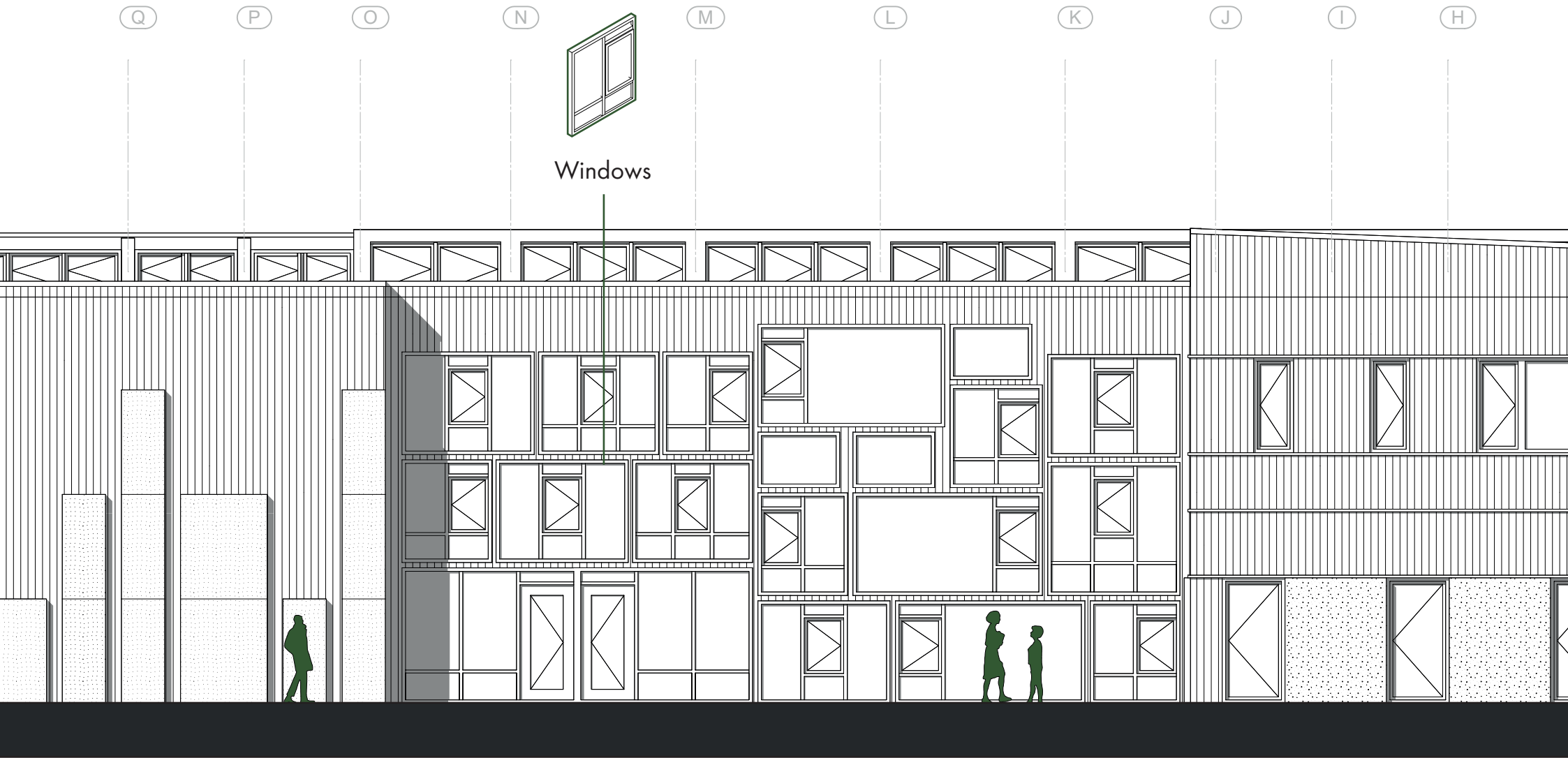
DESIGN



FACADE PRIMARY SCHOOL

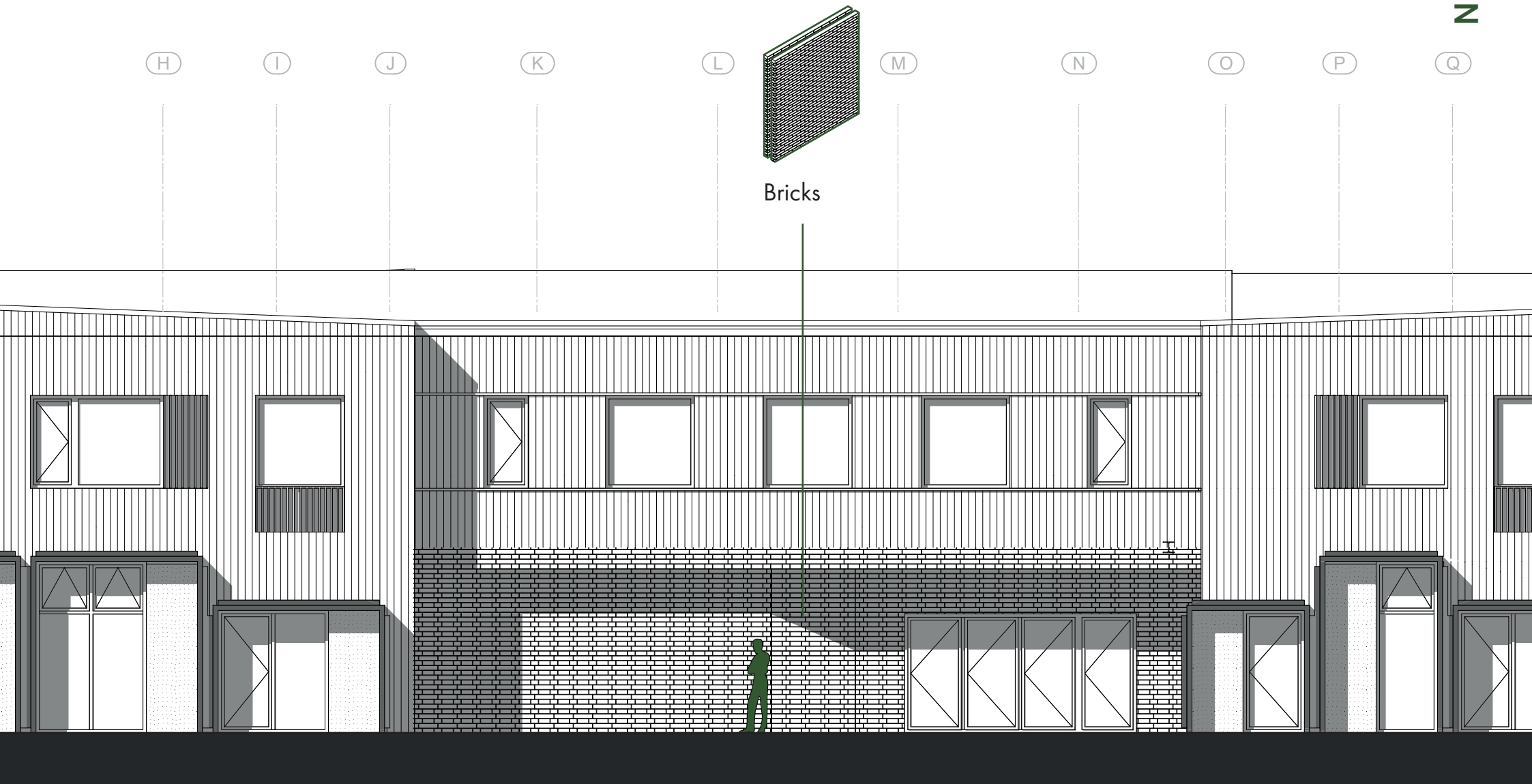


NORTH FACADE

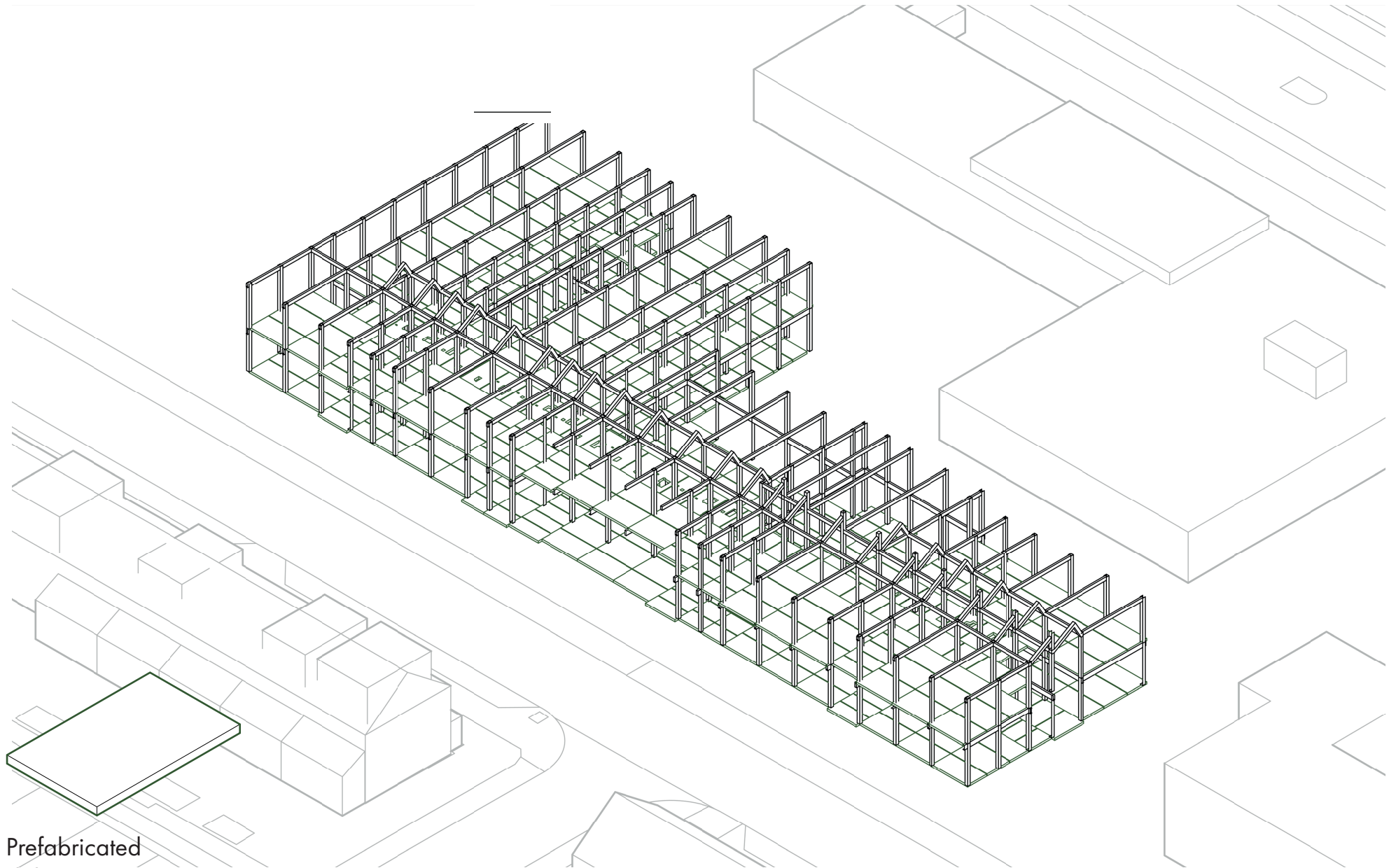


SOUTH FACADE

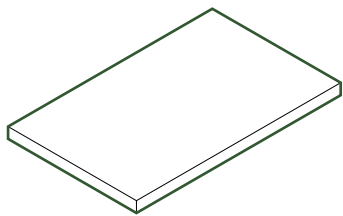
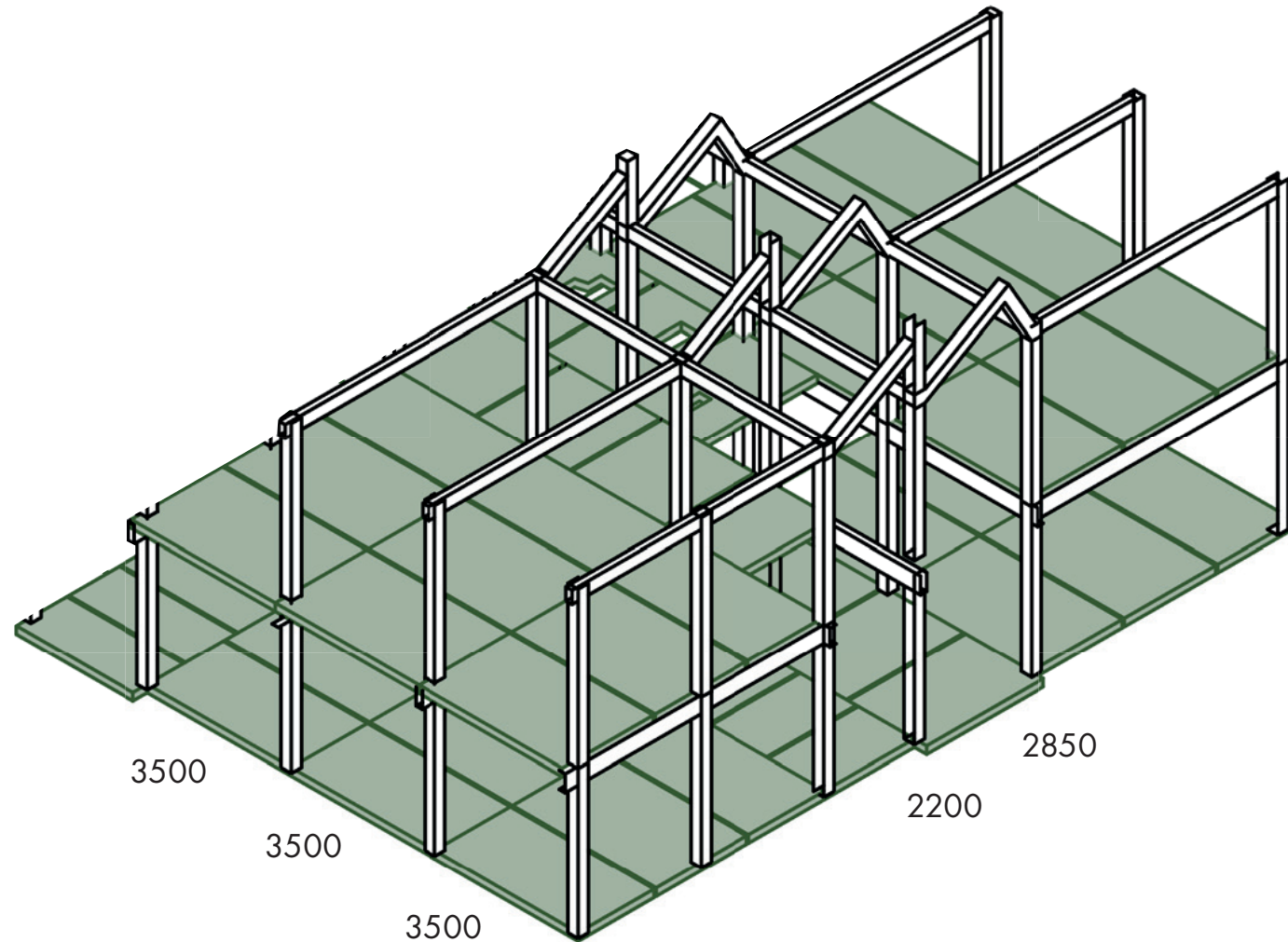
DESIGN





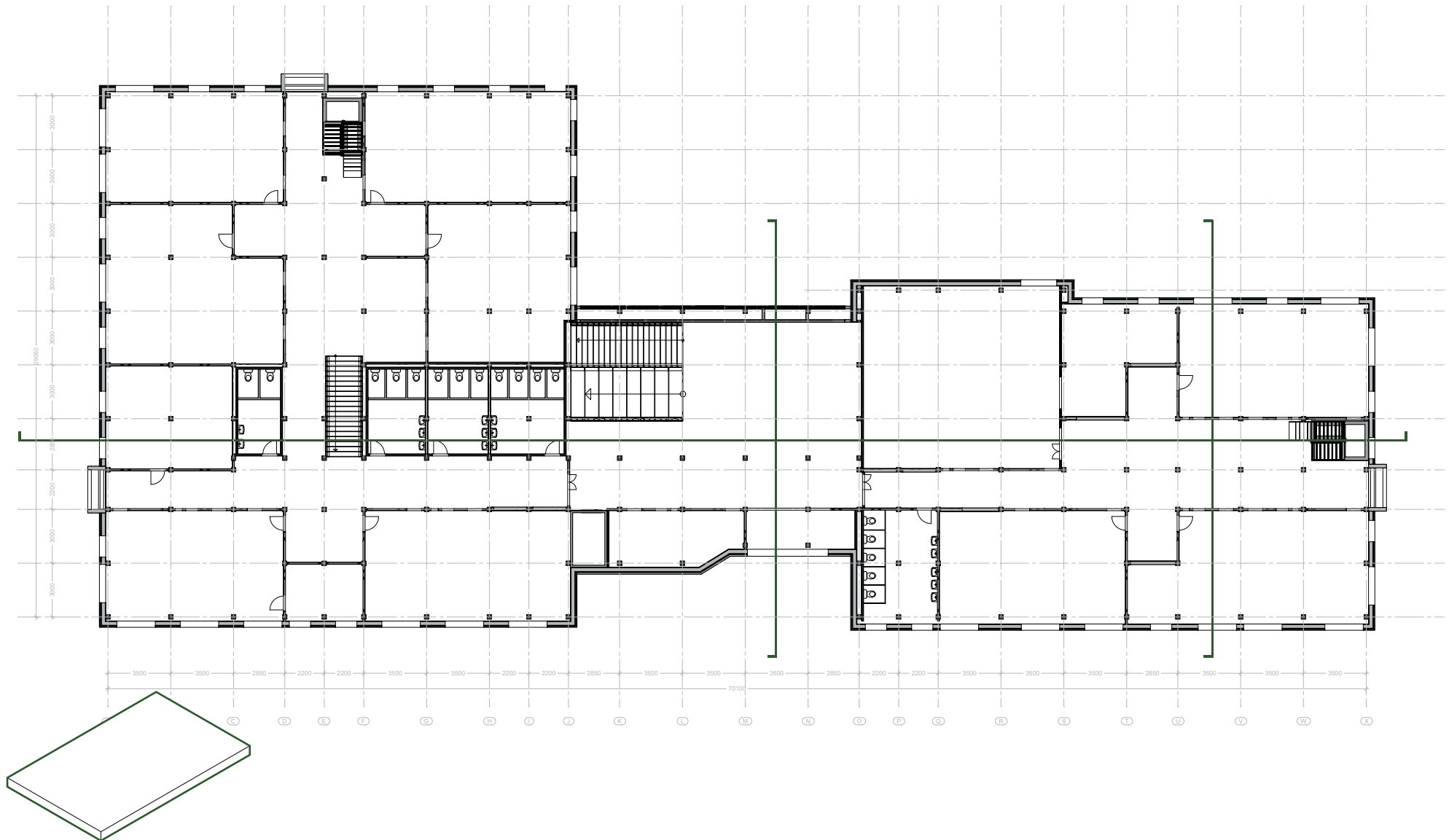


Prefabricated
slabs



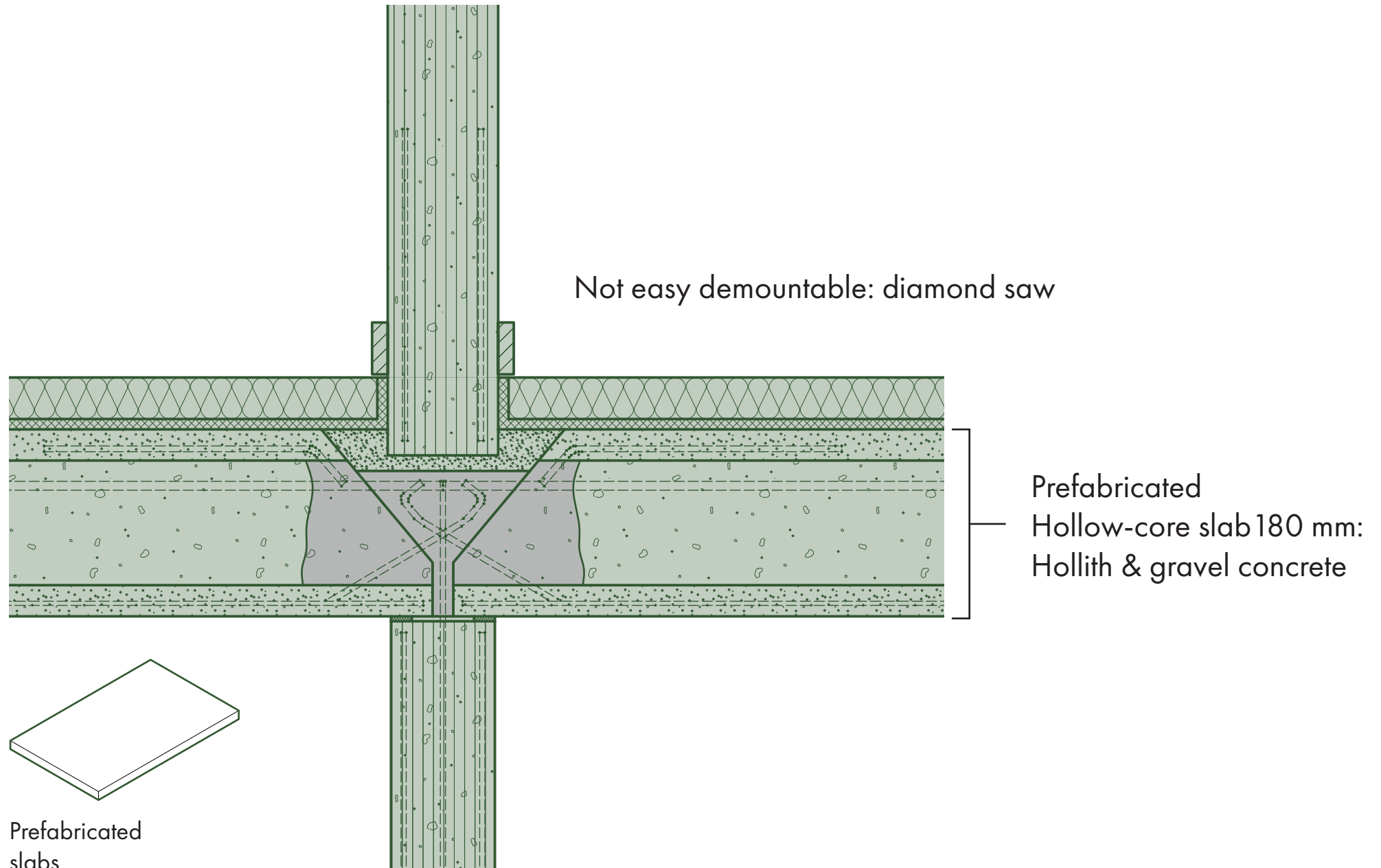
Prefabricated
slabs

GRID



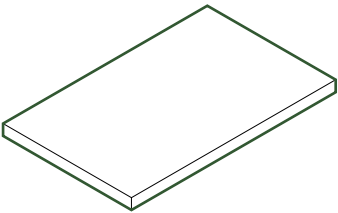
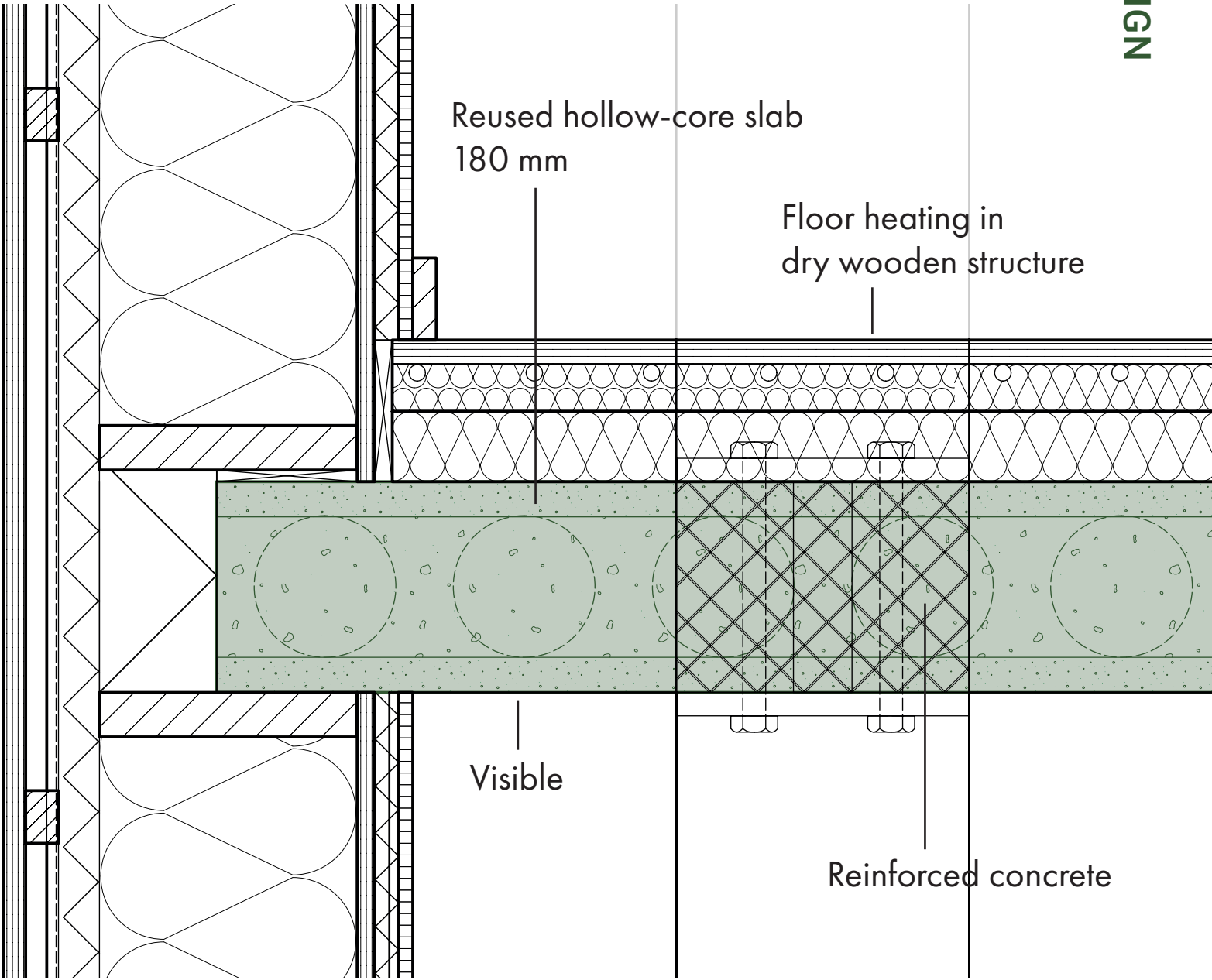
Prefabricated
slabs

CONCRETE SLAB



CONCRETE SLAB

DESIGN



Prefabricated
slabs

CLASSROOM

DESIGN



Prefabricated
slabs

CLASSROOM



Prefabricated
slabs

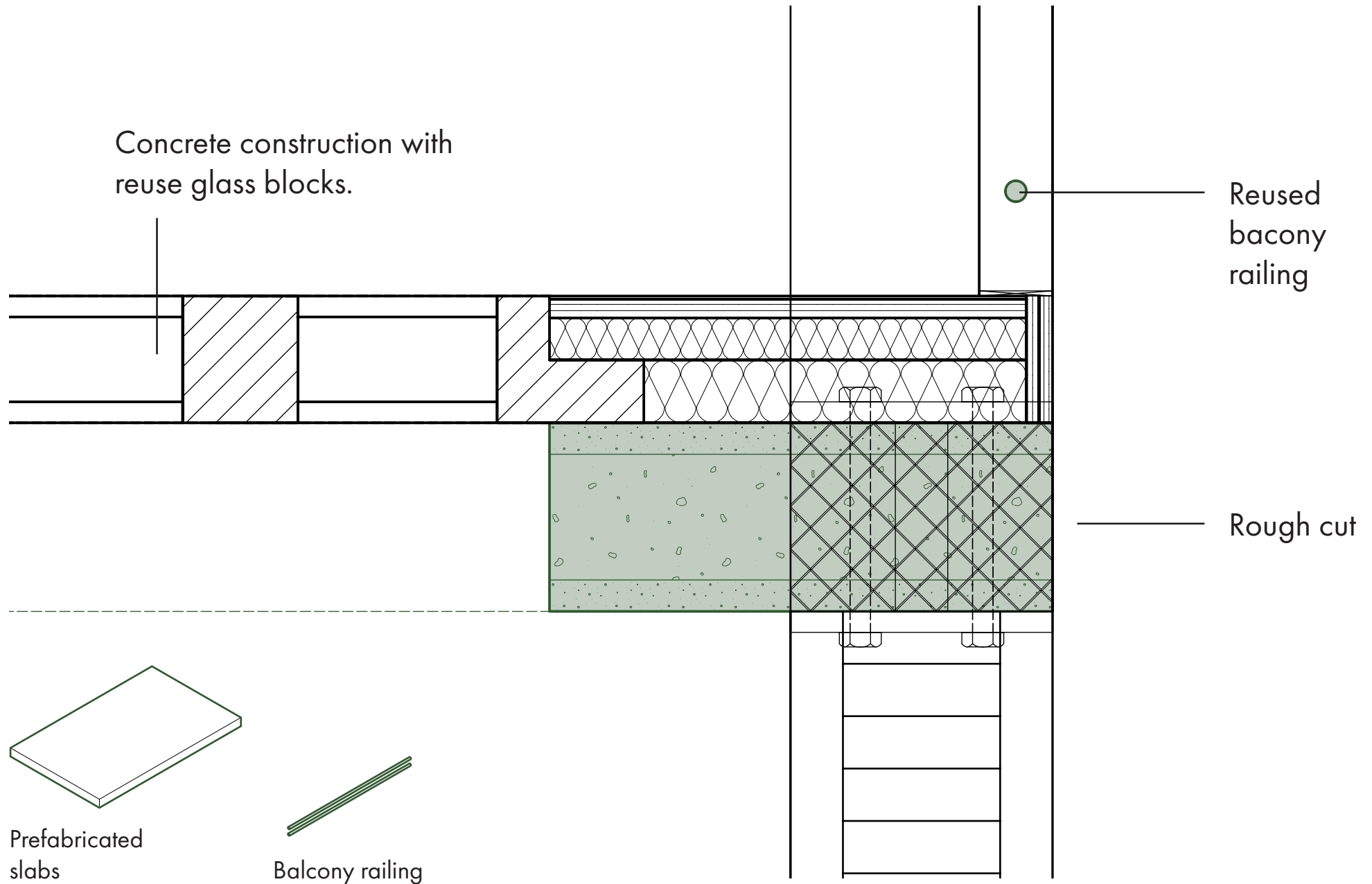
CLASSROOM

DESIGN

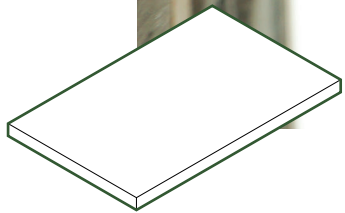


CONCRETE SLAB

DESIGN

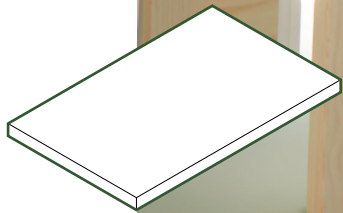


ROUGH CUT



Prefabricated
slabs

GLASS BLOCKS

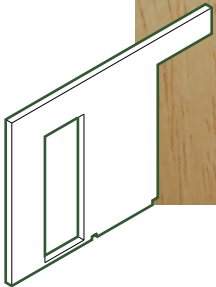


Prefabricated
slabs

PARTITION WALLS

Space for installations

Existing openings

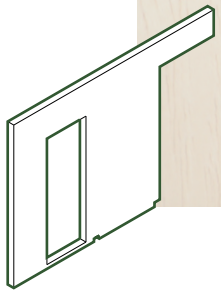


Load-bearing
partition walls

PARTITION WALLS



Visible reuse

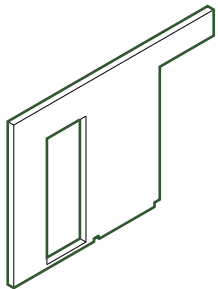
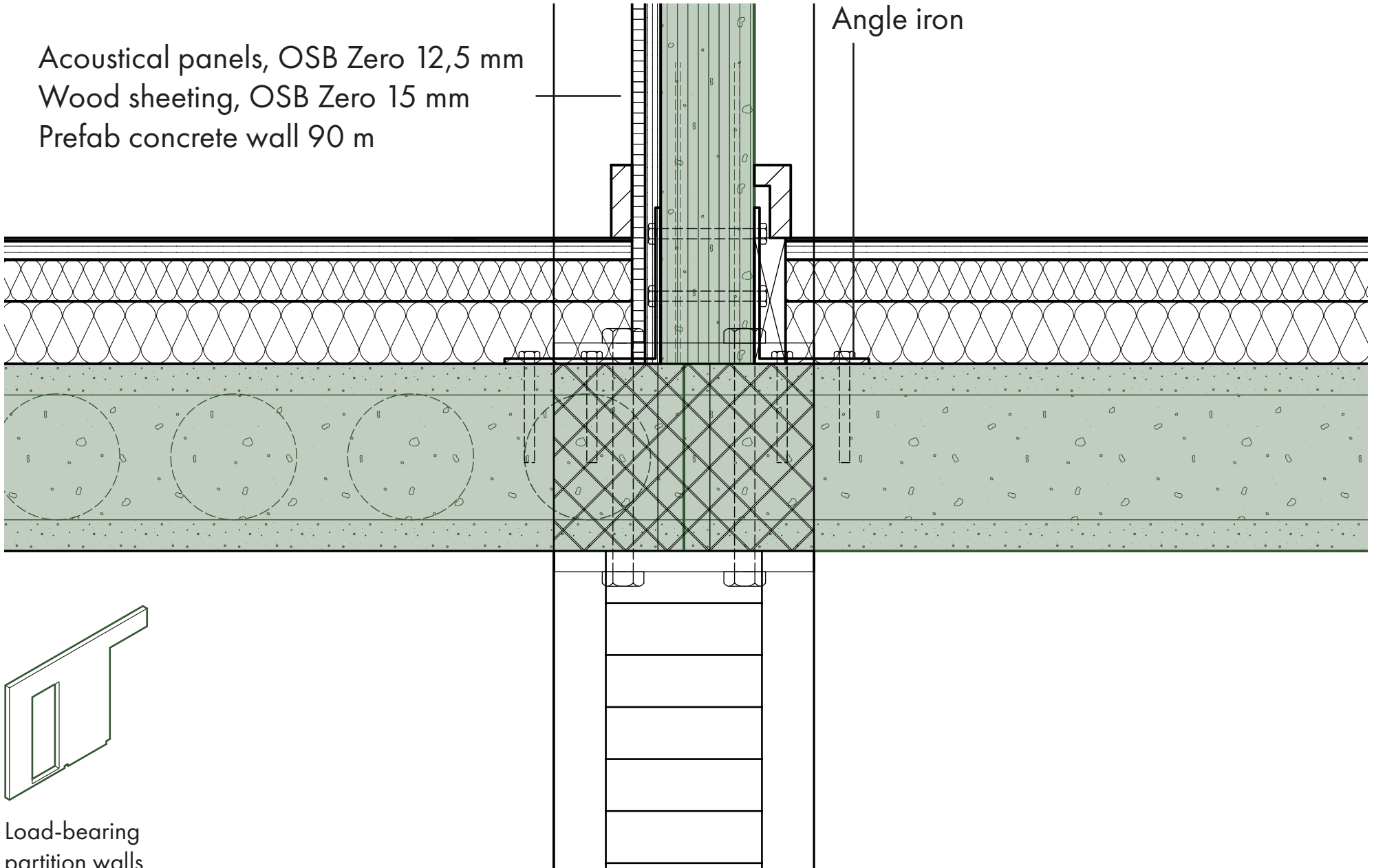


Load-bearing
partition walls

PARTITION WALLS

Acoustical panels, OSB Zero 12,5 mm
Wood sheeting, OSB Zero 15 mm
Prefab concrete wall 90 m

Angle iron

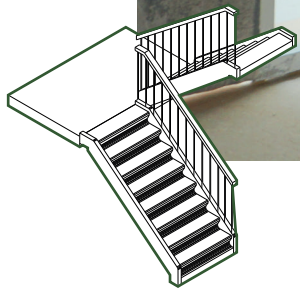


Load-bearing
partition walls

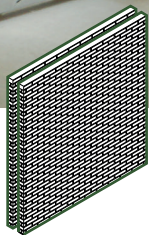
STAIRS

Wood

Bricks

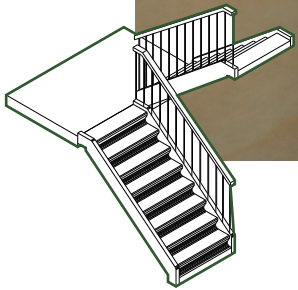


Stairs

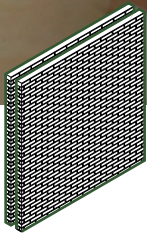


Bricks

STAIRS



Stairs

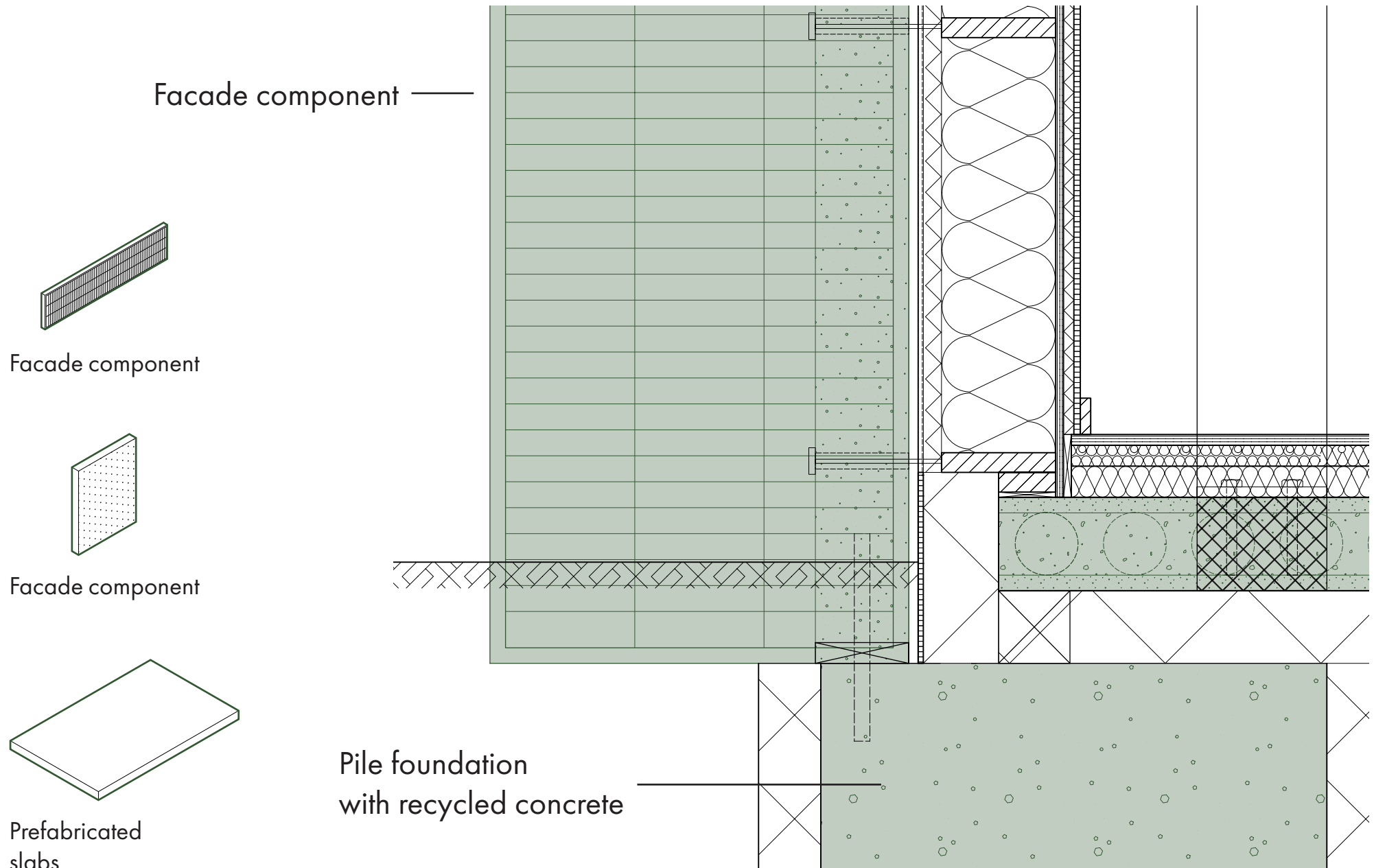


Bricks

CONCRETE COMPONENTS



FOUNDATION DETAIL

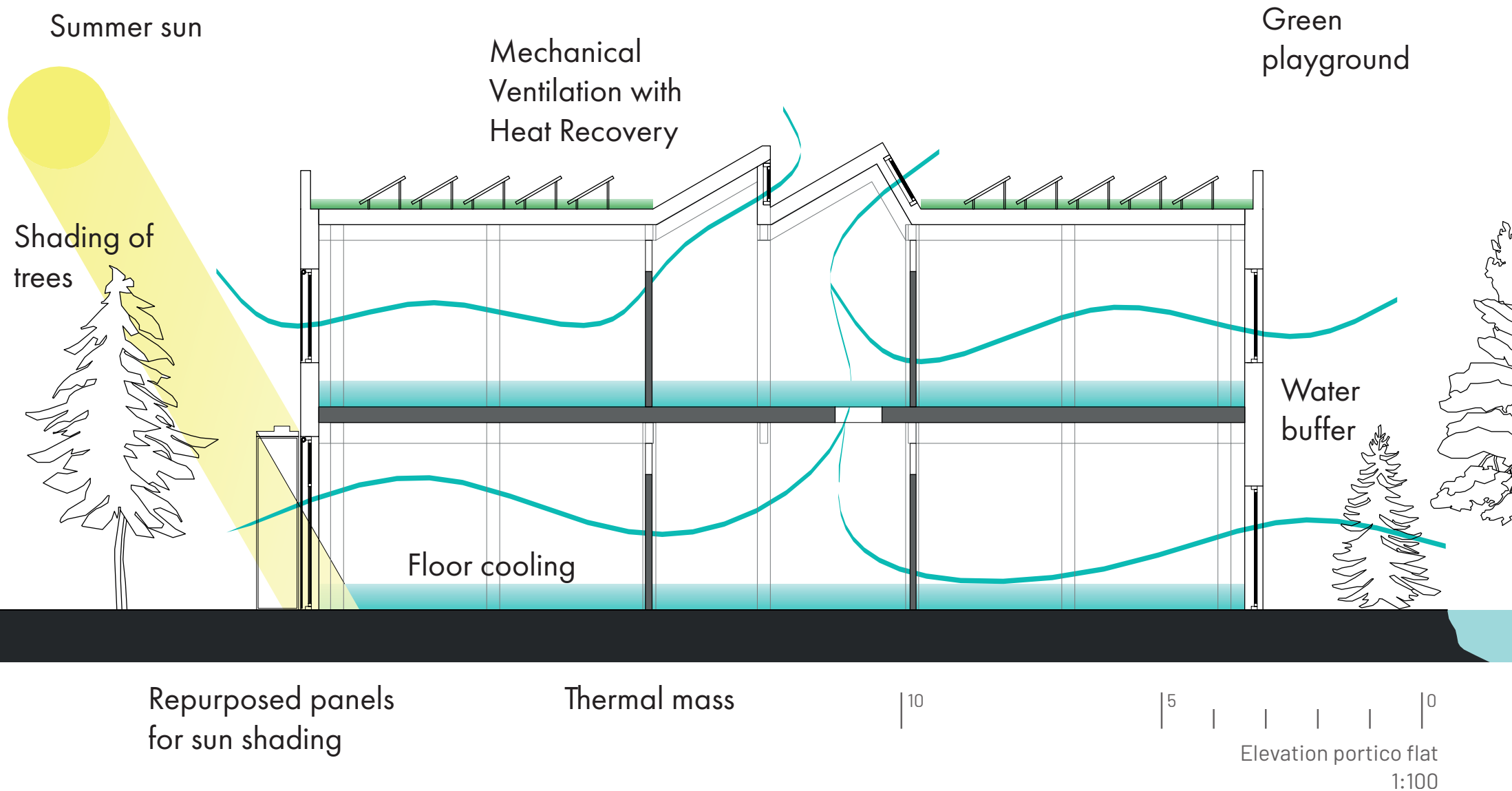


SECTION

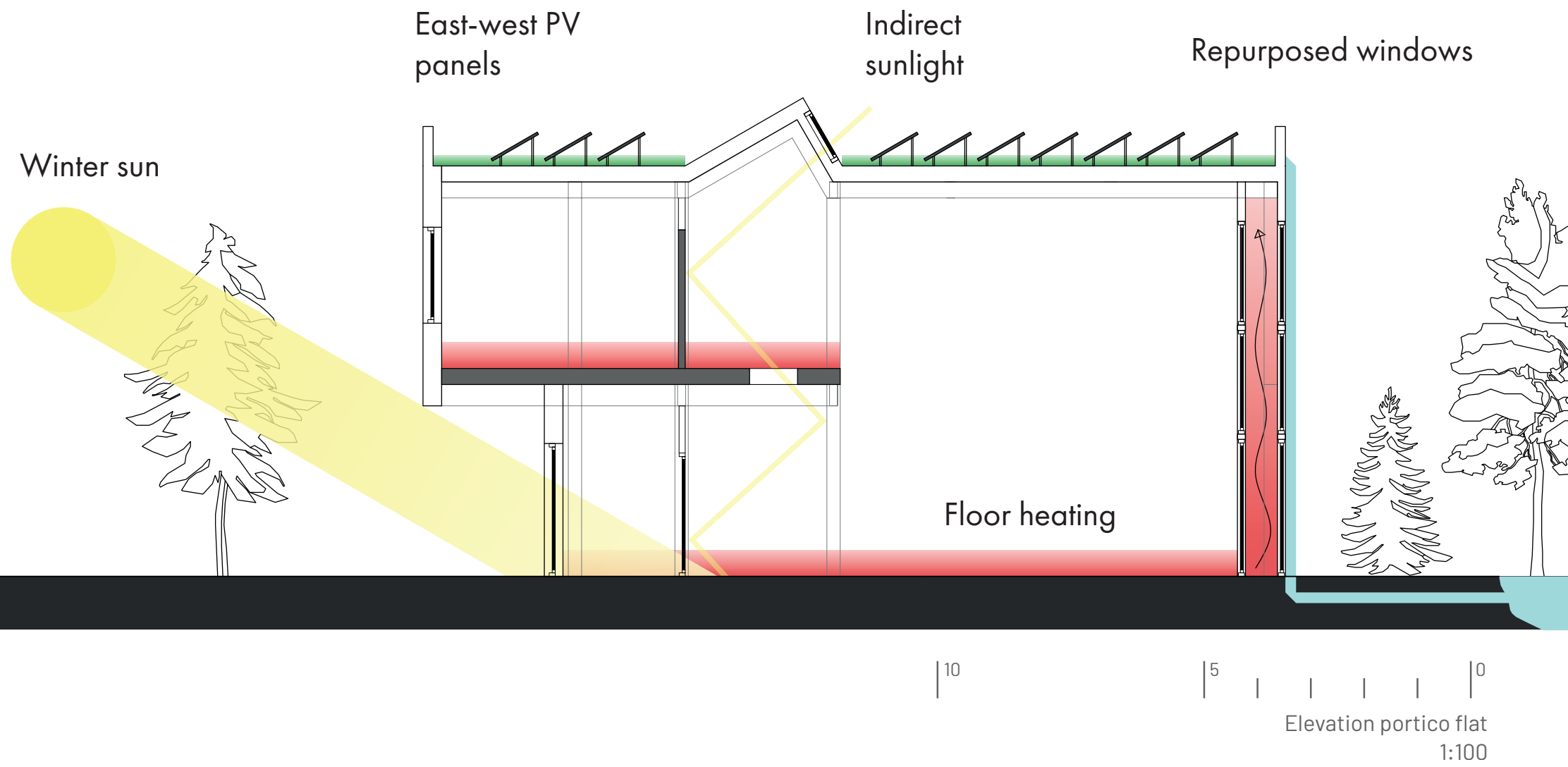


CLIMATE DIAGRAM SUMMER

DESIGN



CLIMATE DIAGRAM WINTER

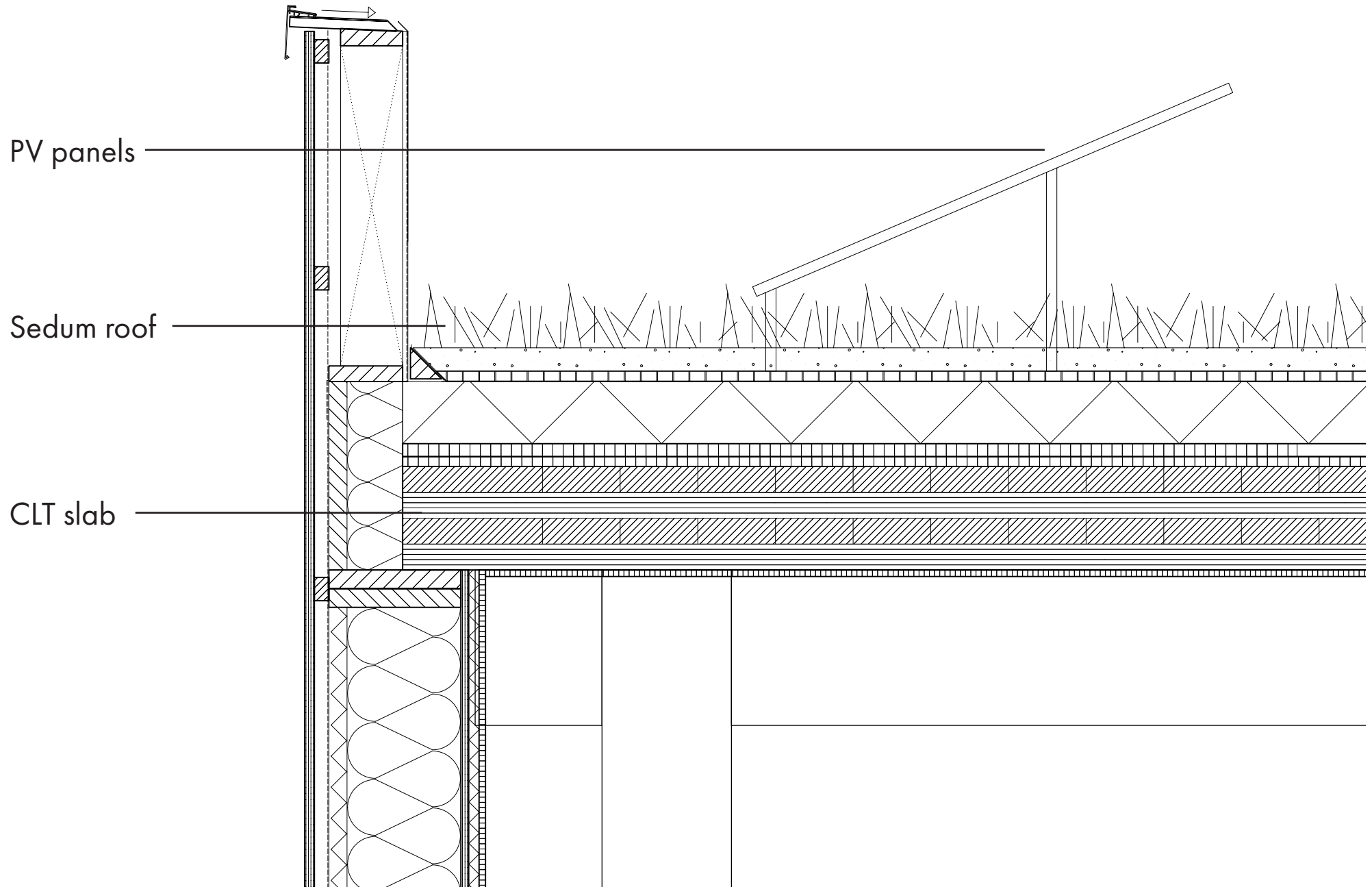


SKY LIGHTS

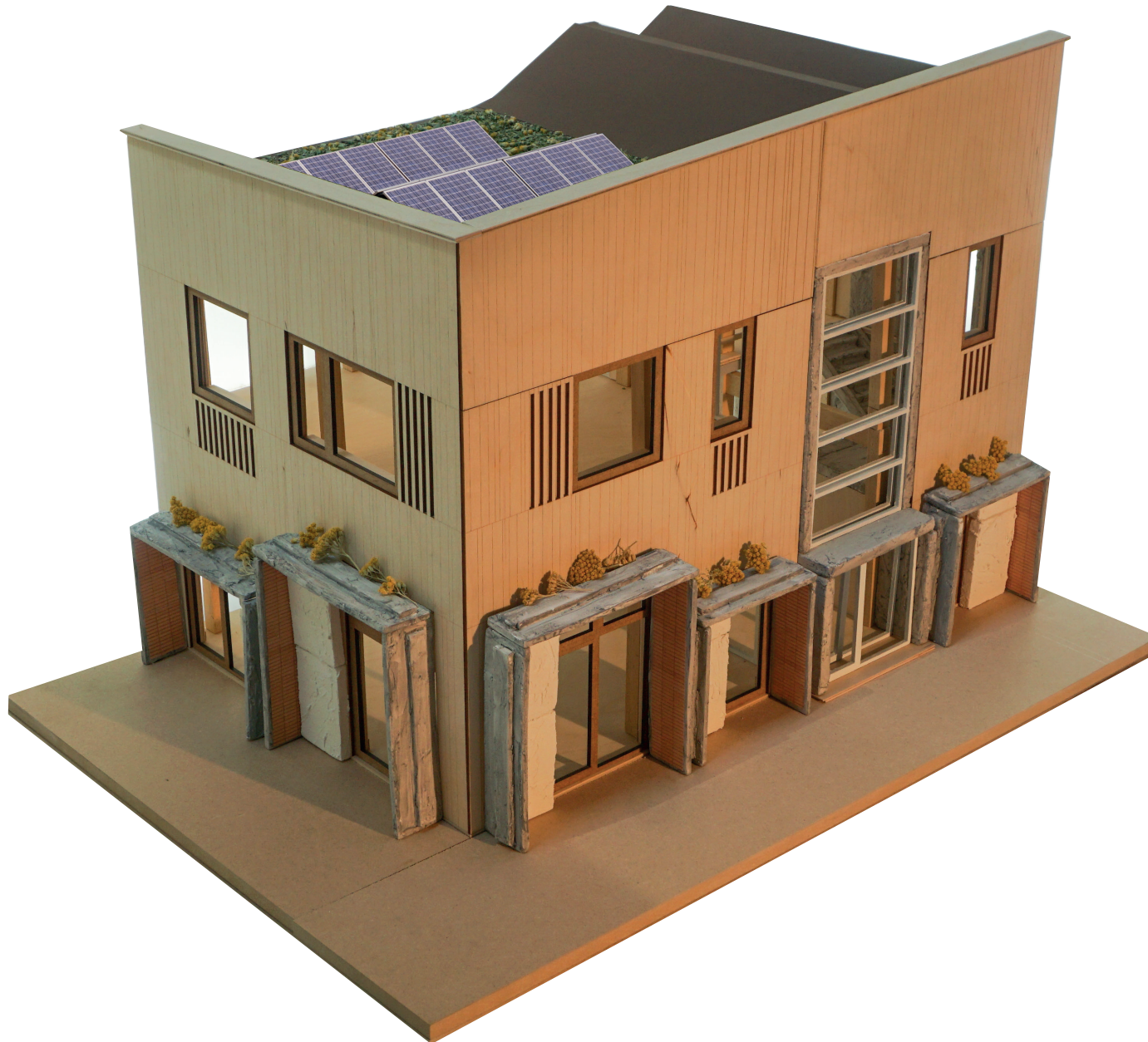
DESIGN



ROOF



ROOF



BUILDING COMPONENT REUSE

A primary school in the Boerhaavewijk



THANK YOU