

# ROTTERDAM URBAN SCHOOL

Hotel New York



Complex Projects

Main mentor  
2nd mentor  
3rd mentor  
Board of Examiners delegate

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Sjap Holst  
Hrvoje Smidihen  
Dirk Dubbeling

Name  
Student number  
Date  
Presentation

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4478037  
20/01/2021  
P5.0

Introduction

Design Brief

Concept

Design

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Structural Design

Facade & Detail

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# INTRODUCTION



# GLOBAL URBANIZATION



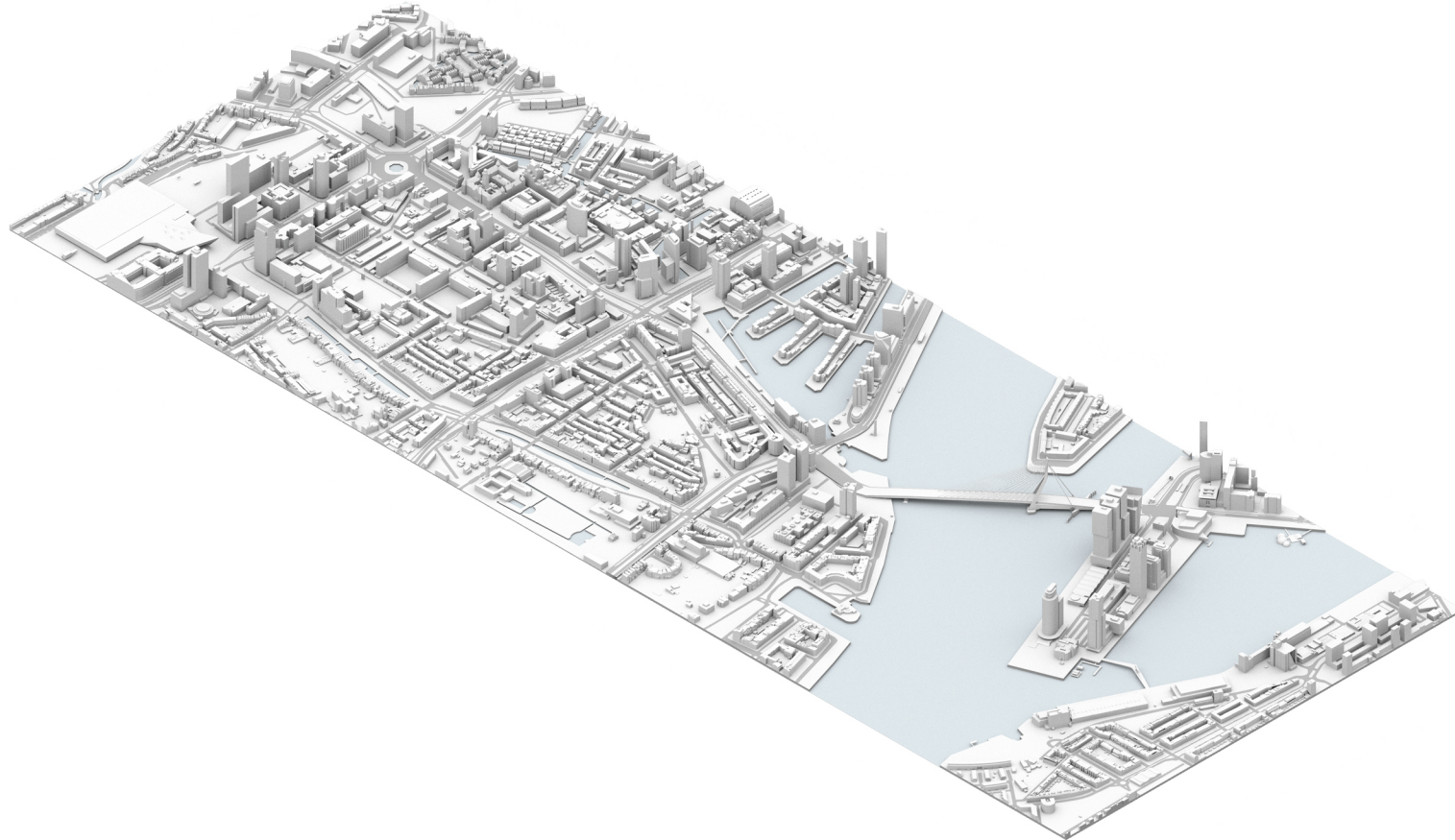
## GLOBAL URBANIZATION

**FOR CITIES CONSIDERATIONS  
SUCH AS LIMITED GROUND  
SPACE, SEPARATED CLUSTERS  
AND POOR PUBLIC AMENITY  
PROBLEMS ARE BECOMING ALL  
THE MORE PRESSING**

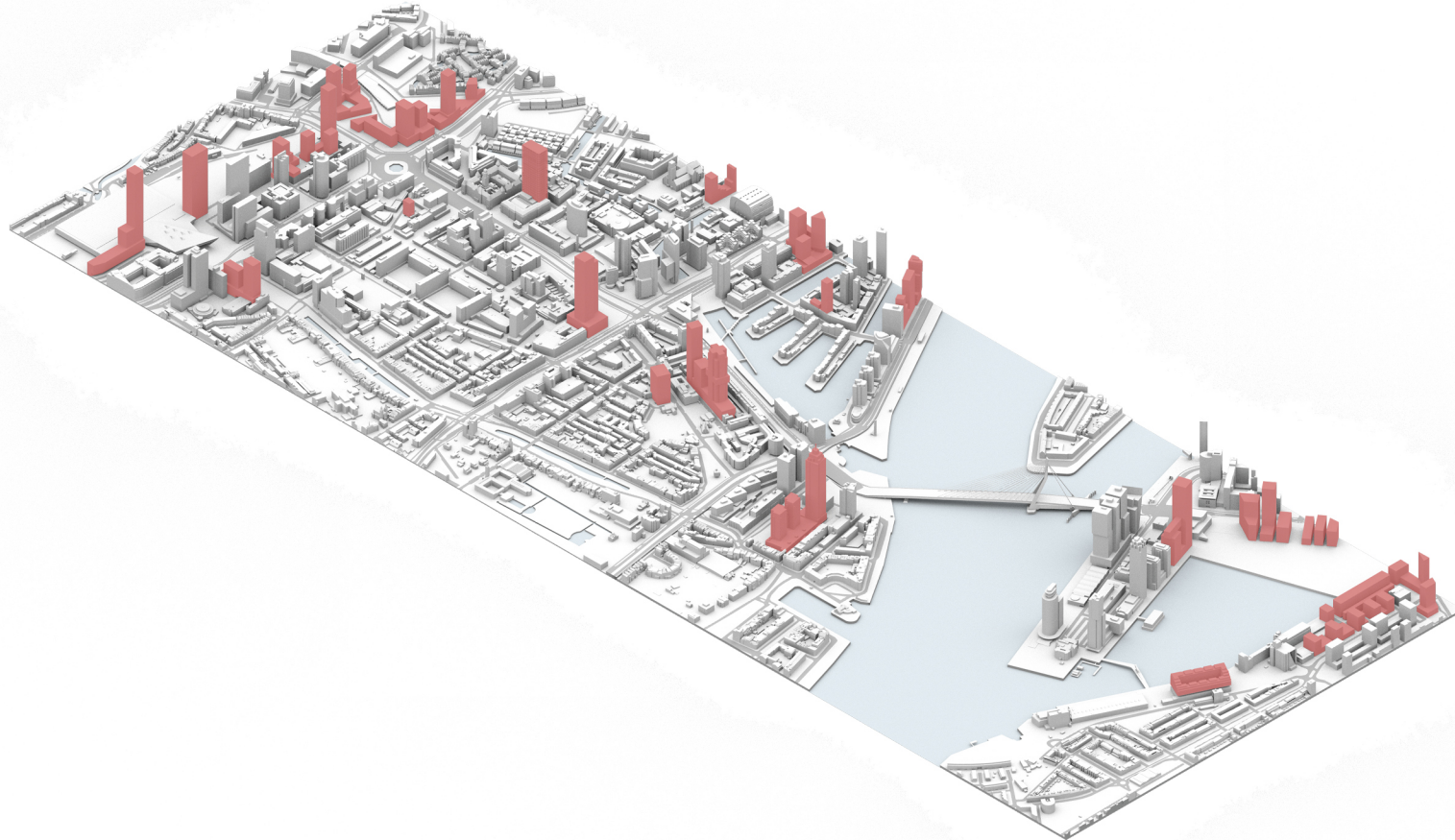
# ROTTERDAM



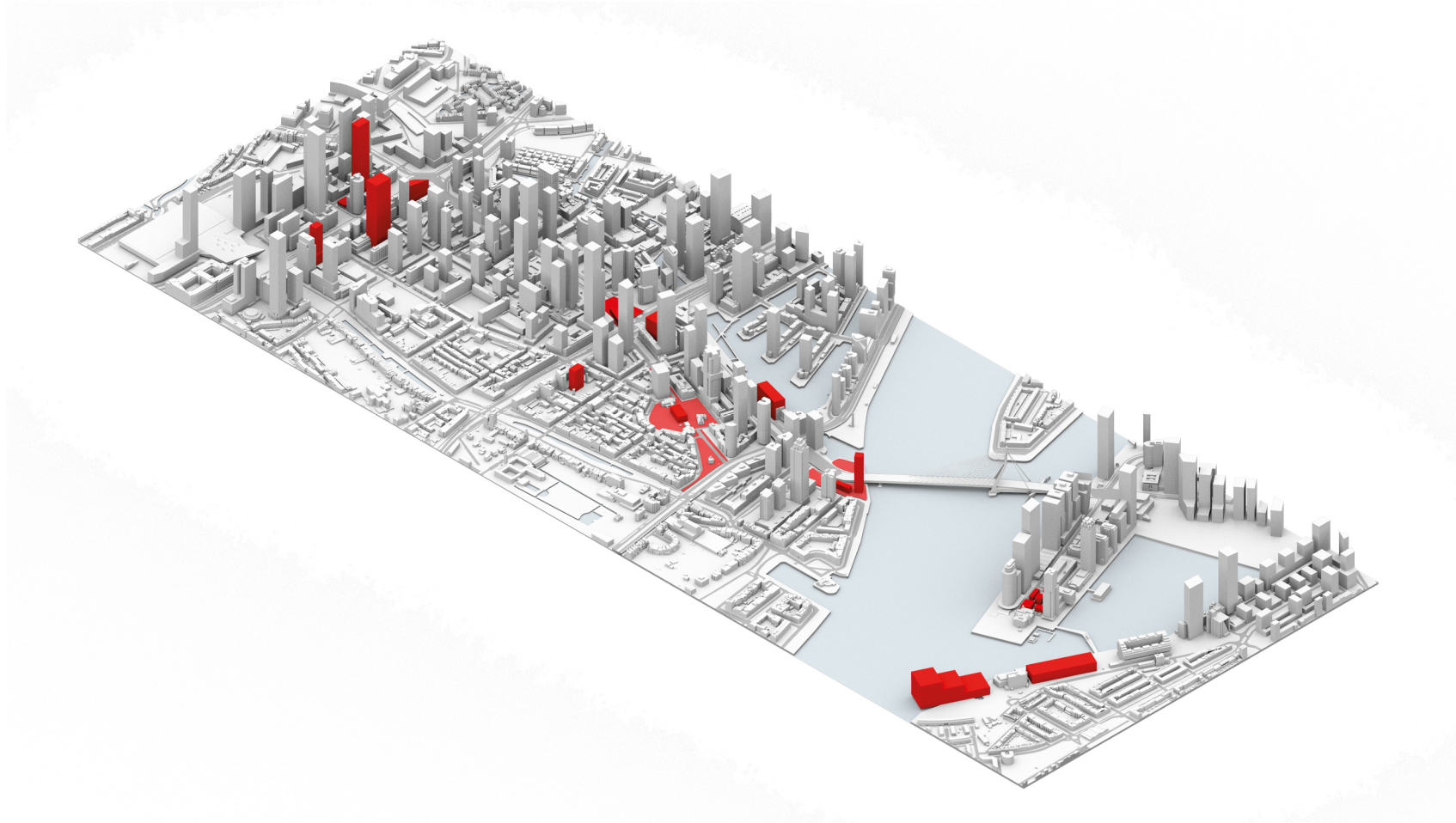
# CURRENT SITUATION



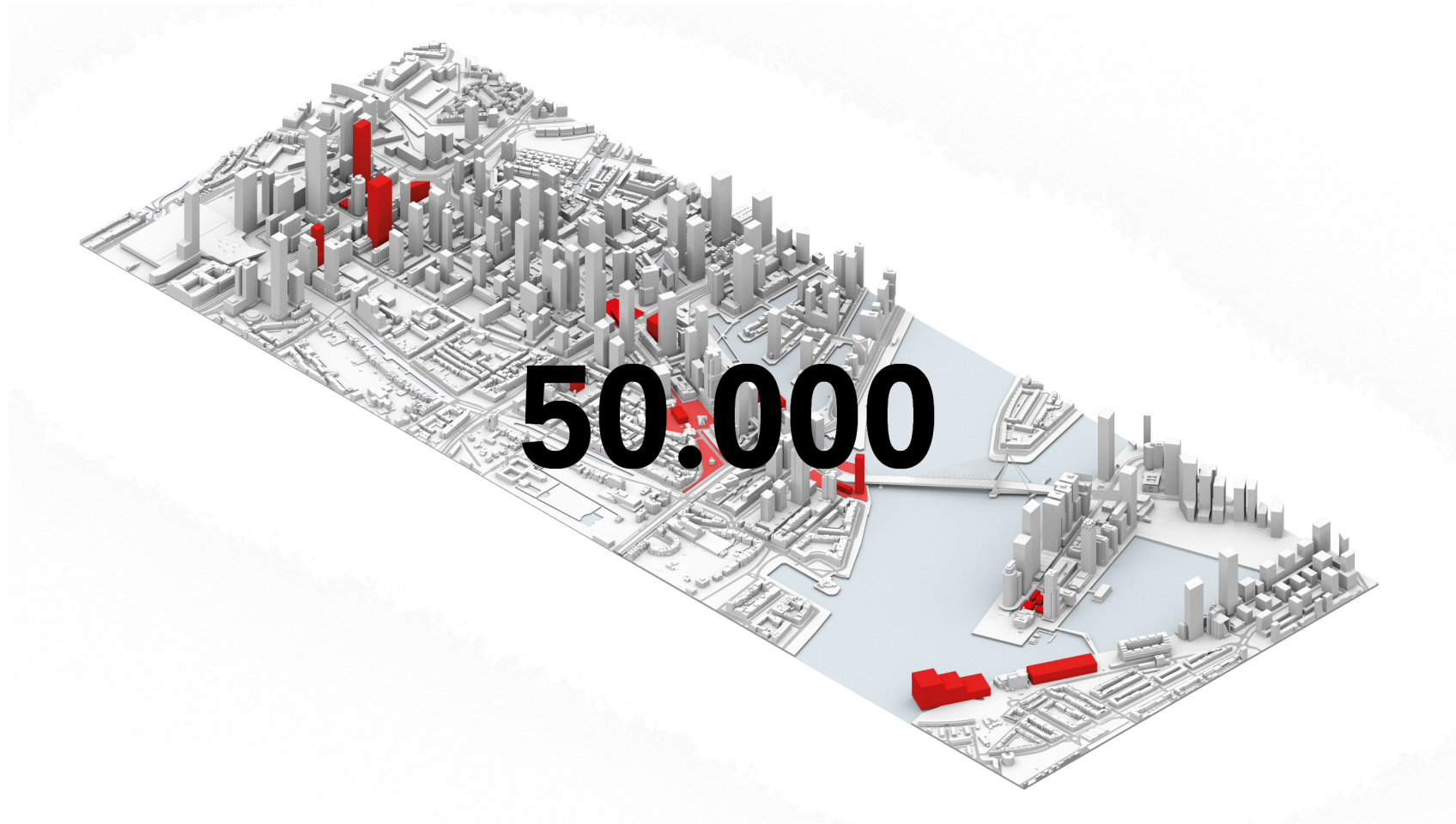
# PLANNED HIGH-RISE



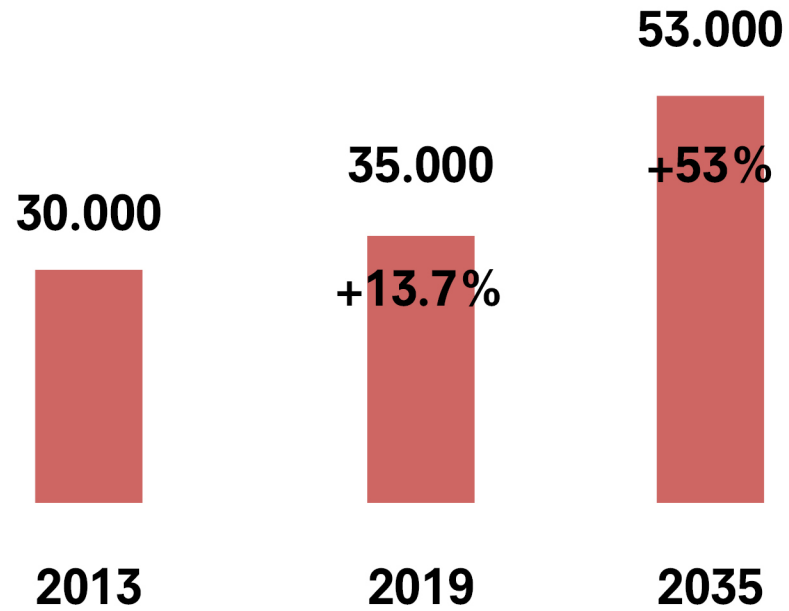
# FUTURE PREDICTION



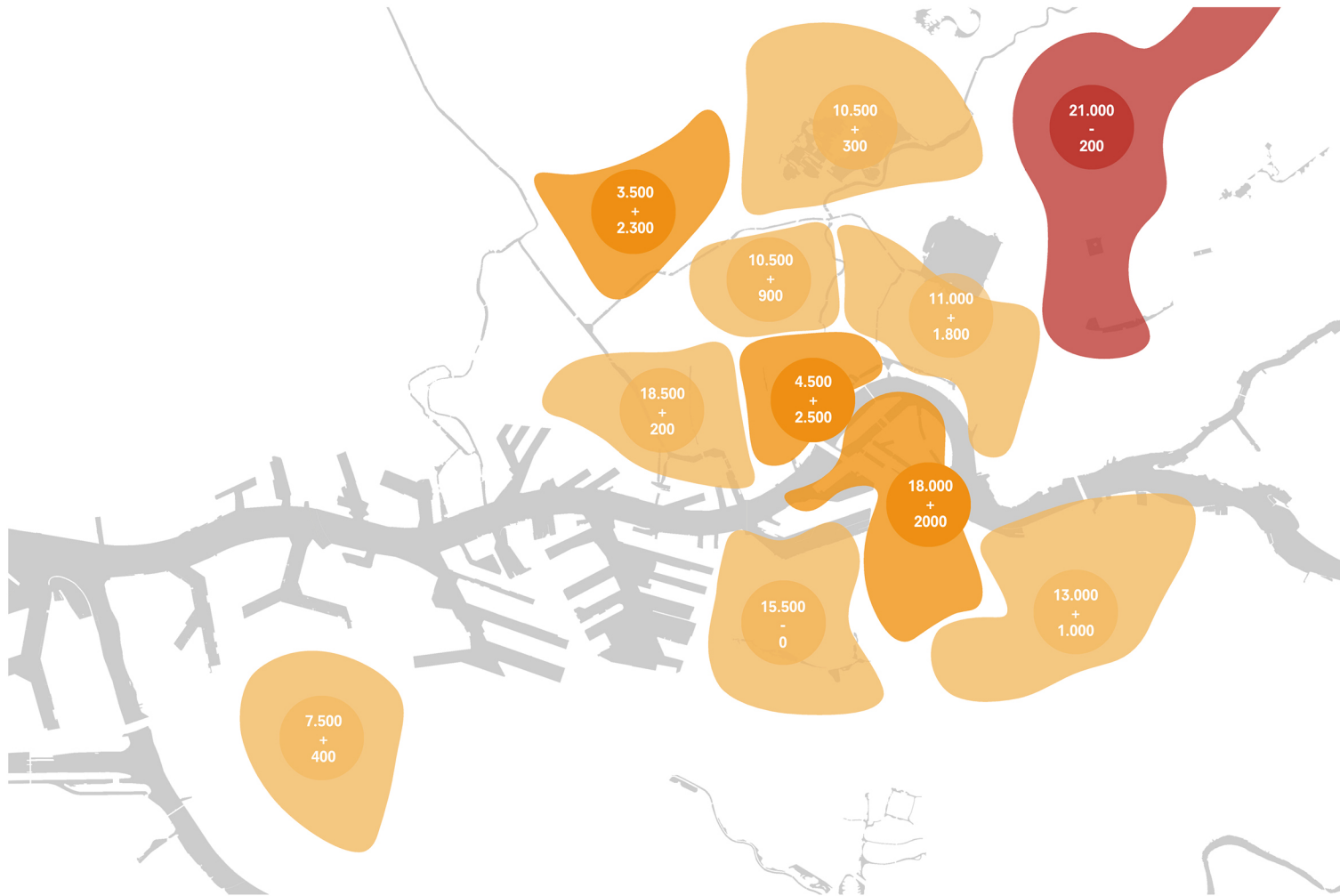
# FUTURE PREDICTION



# ROTTERDAM CITY CENTRE POPULATION GROWTH

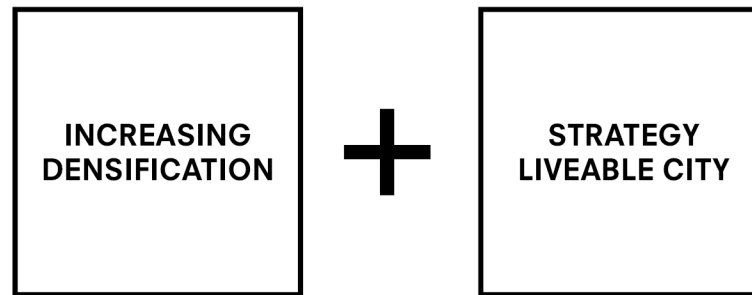


# 2019-2035 POPULATION 0-19 INCREASE

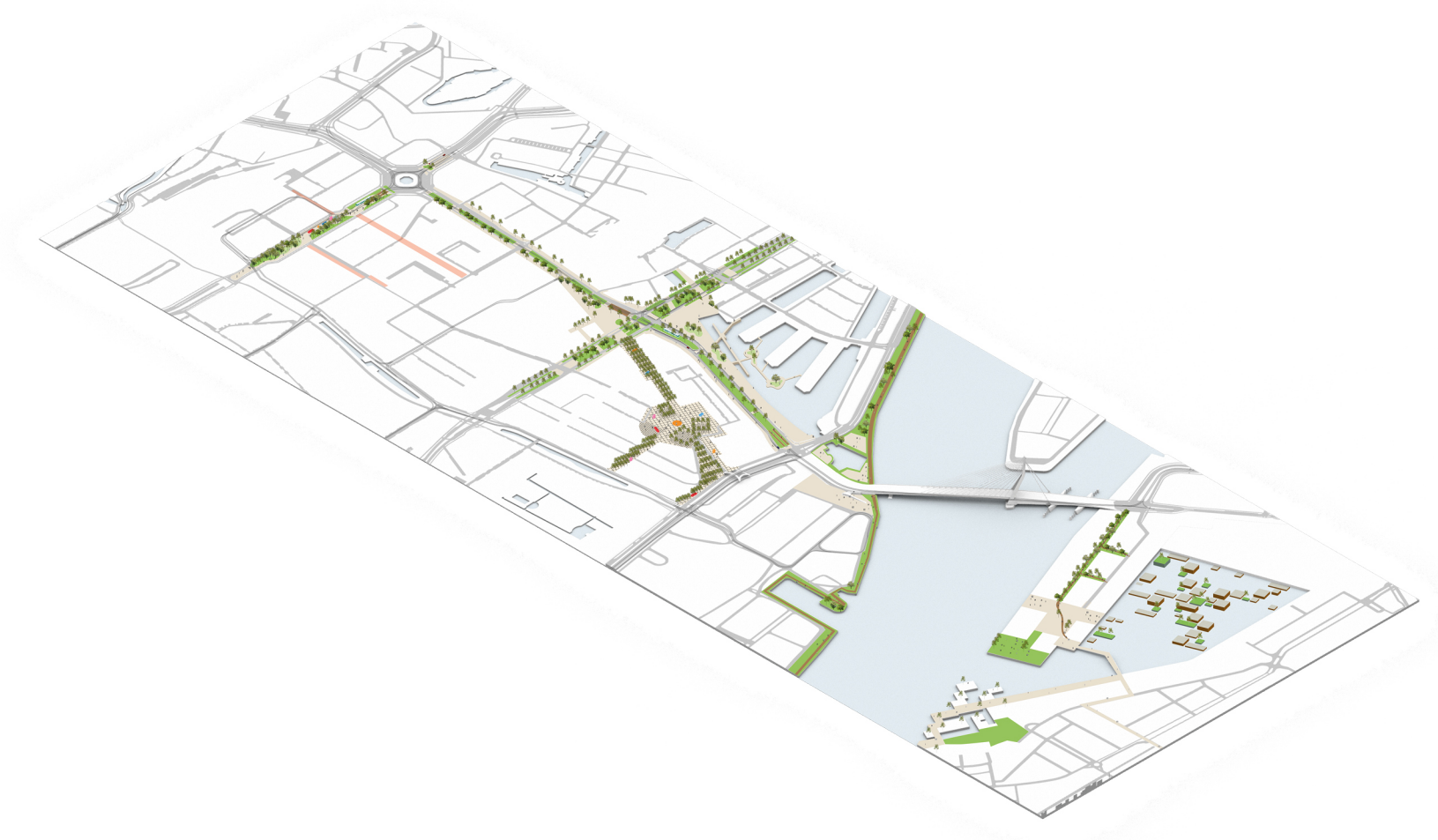


0000 — 2019 Population 0-19  
+ — Increase (+) or decrease (-)  
0000 — 2035 Population increase 0-19

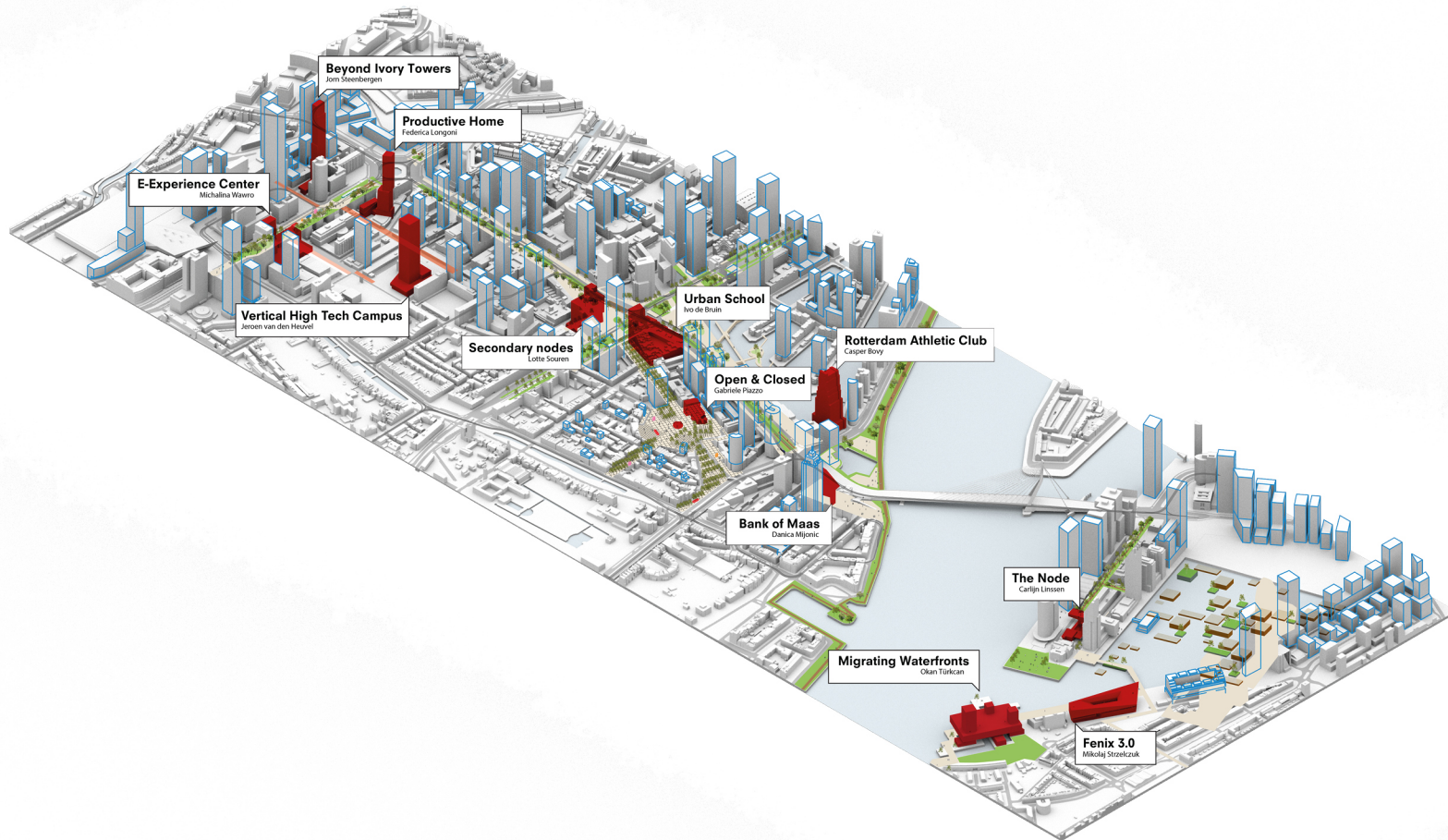
# CITY IN TRANSITION



# THE UNFINISHED CITY



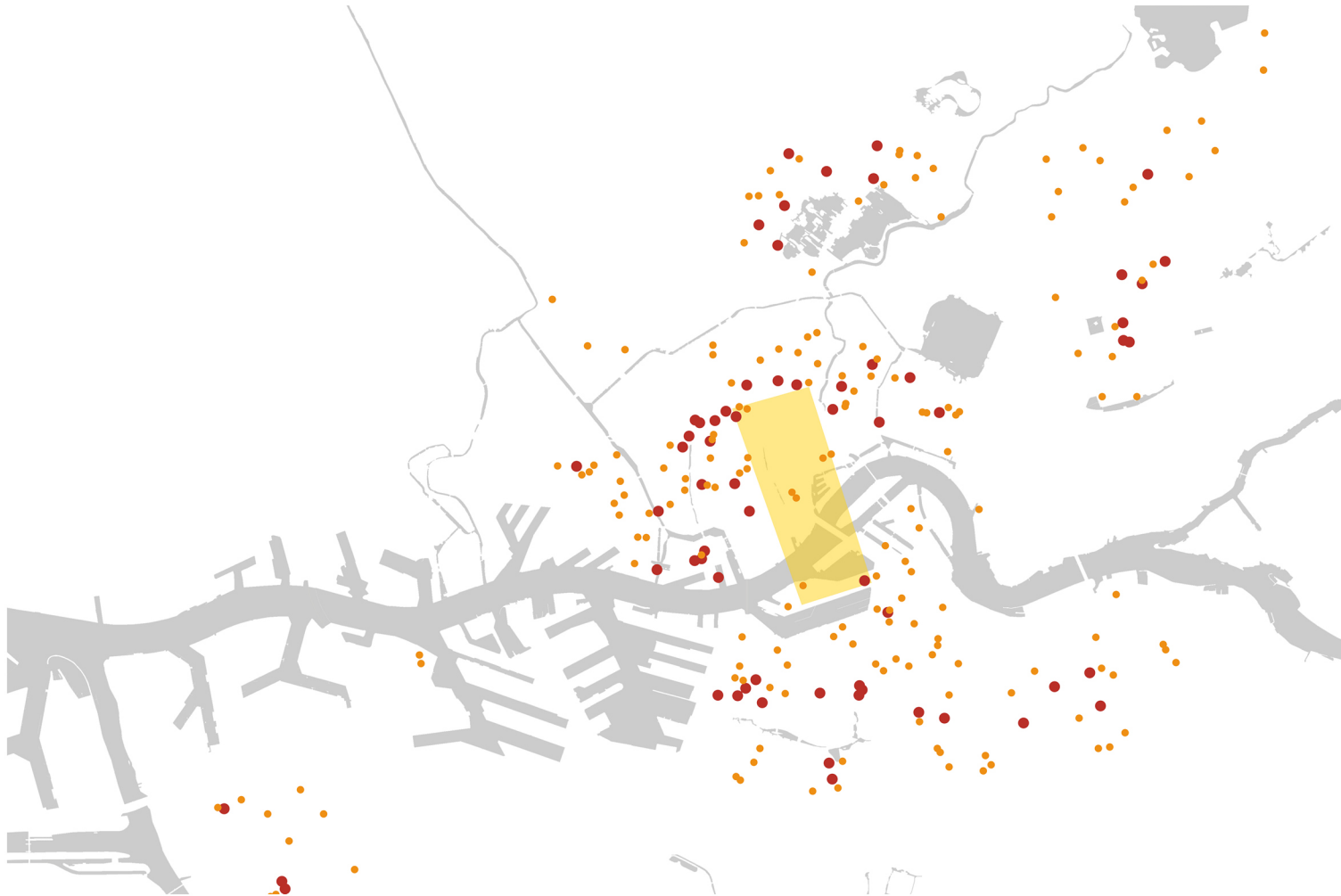
# THE UNFINISHED CITY



## MISSING FUNCTION

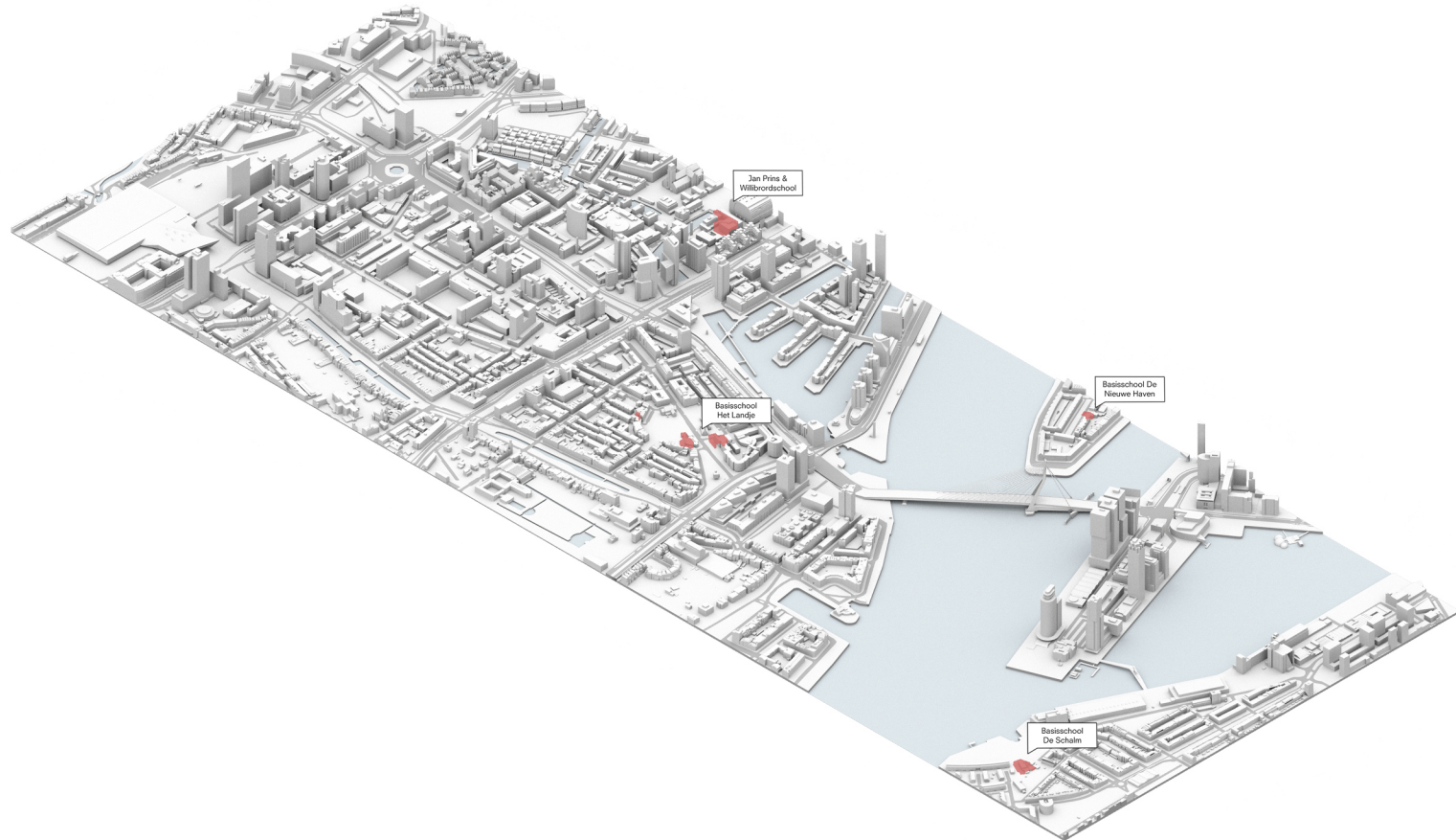
# EDUCATION

# PRIMARY & SECONDARY SCHOOLS - LOCATIONS

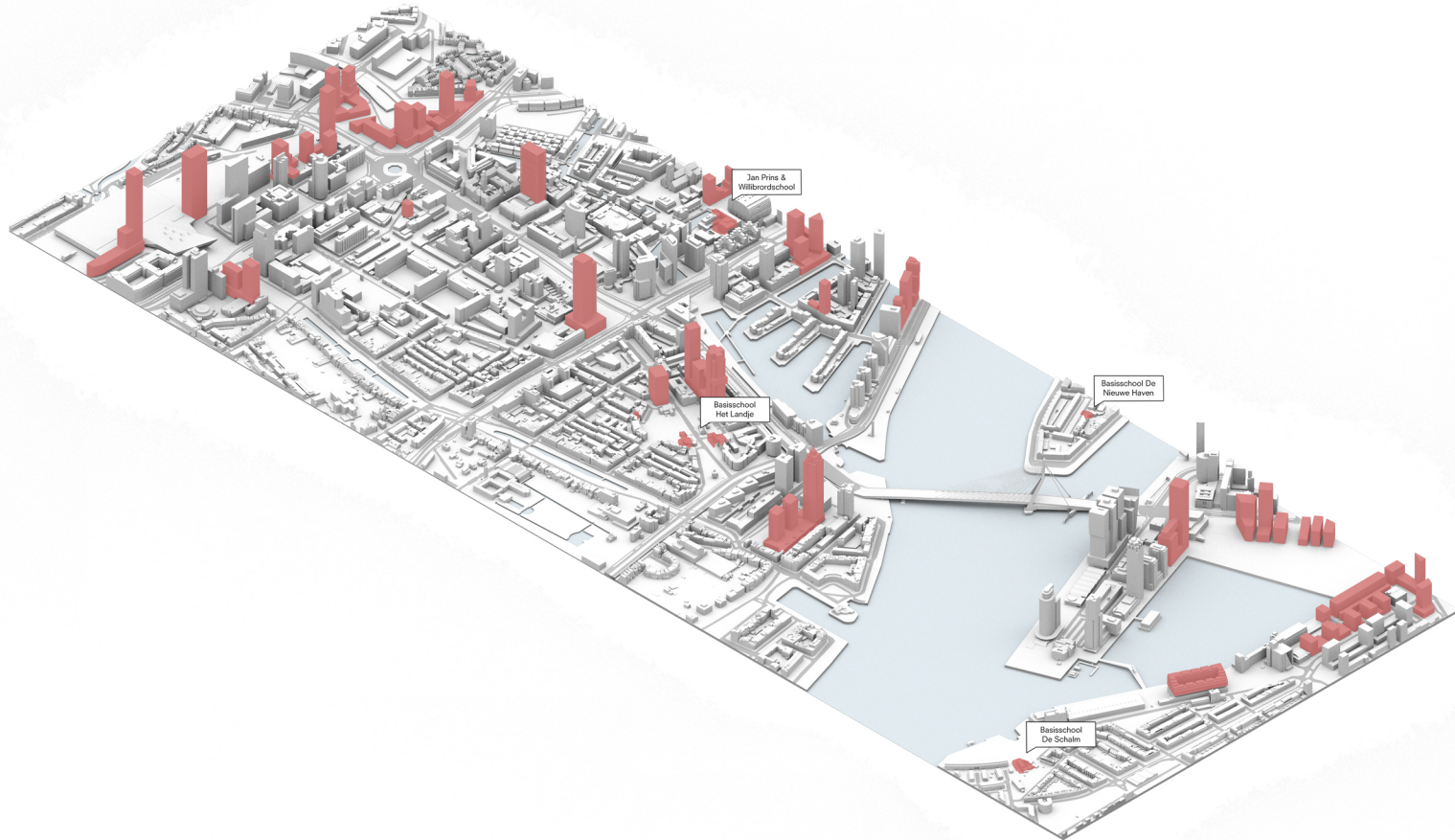


- Primary School
- Secondary School
- Assigned area
- Water

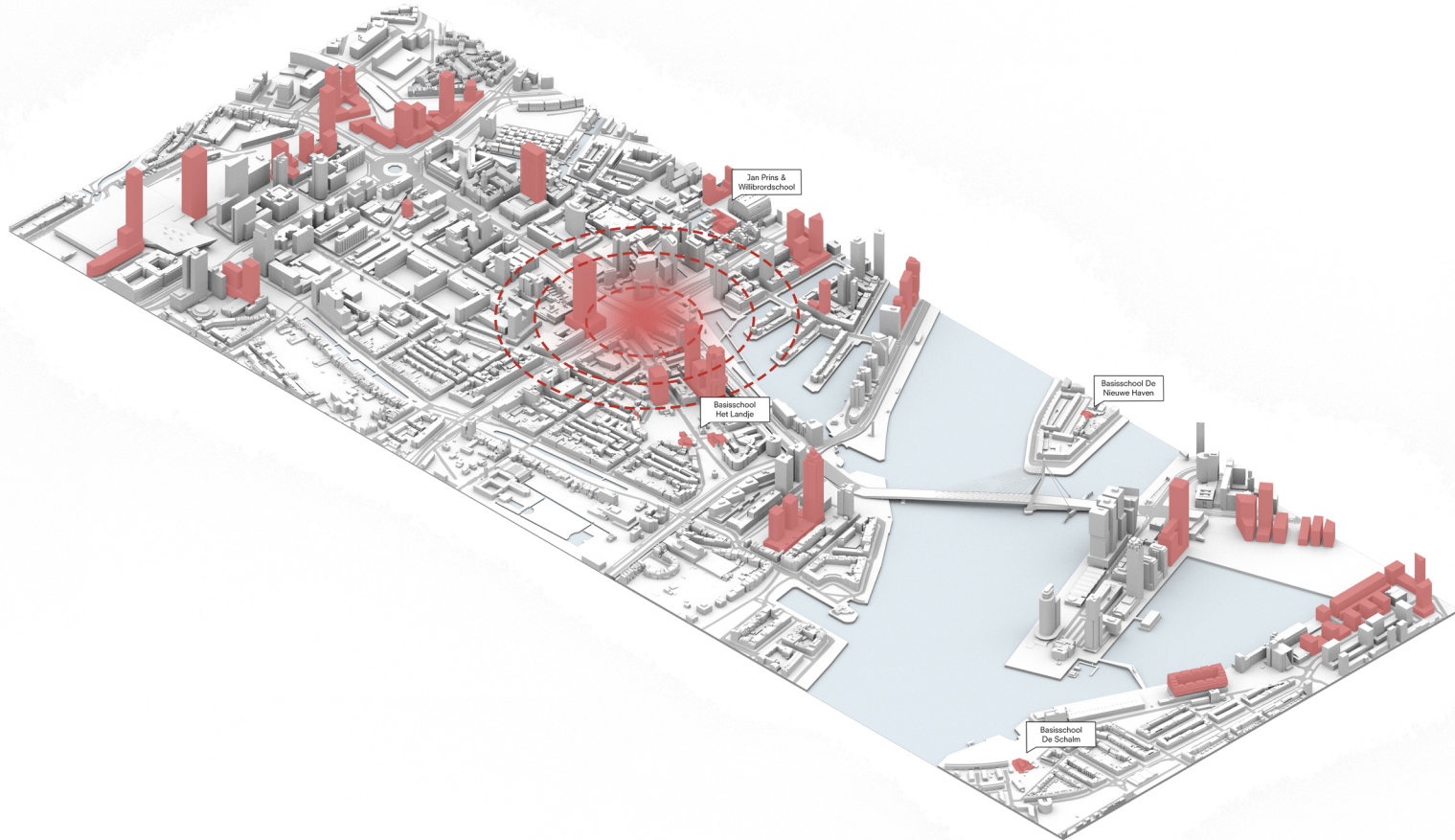
# PRIMARY & SECONDARY SCHOOLS - LOCATIONS



# RESIDENTIAL DEVELOPMENTS



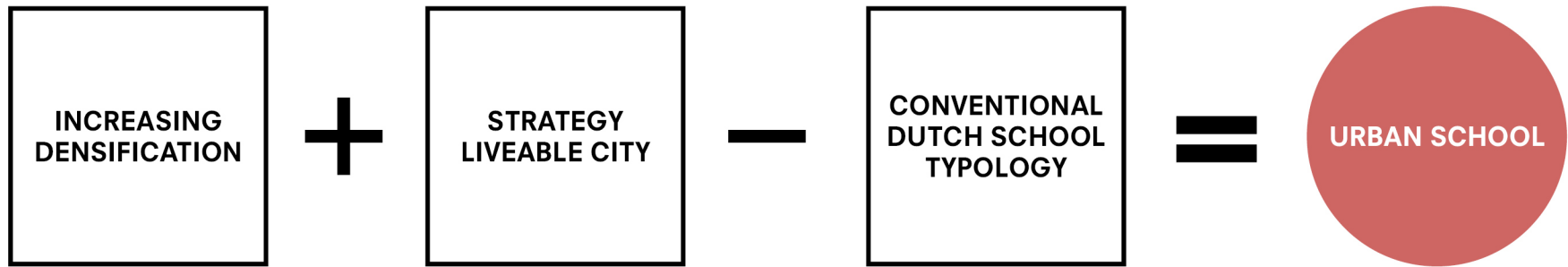
# NEW SCHOOL?



# CONVENTIONAL DUTCH SCHOOL TYPOLOGY



# URBAN SCHOOL



## RESEARCH QUESTION

**How is densification influencing the urban education within the Rotterdam City Centre?**

## HOTEL NEW YORK STUDIO

**IN LINE WITH THE FOCUS OF  
THE HOTEL NEW YORK STUDIO  
TOPIC OF MIGRATION, THE NON-  
PHYSICAL MIGRATION OF IDEAS  
AND CONCEPTS IS USED AS  
EXPLORATION AND INSPIRATION  
FOR THE URBAN SCHOOL**

## MIGRATION OF URBAN SCHOOL TYPOLOGY



**Singapore**

Singapore international  
FXCollaborative  
2016



**London UK**

Hackney school  
Henley Halebrown  
2015



**New York USA**

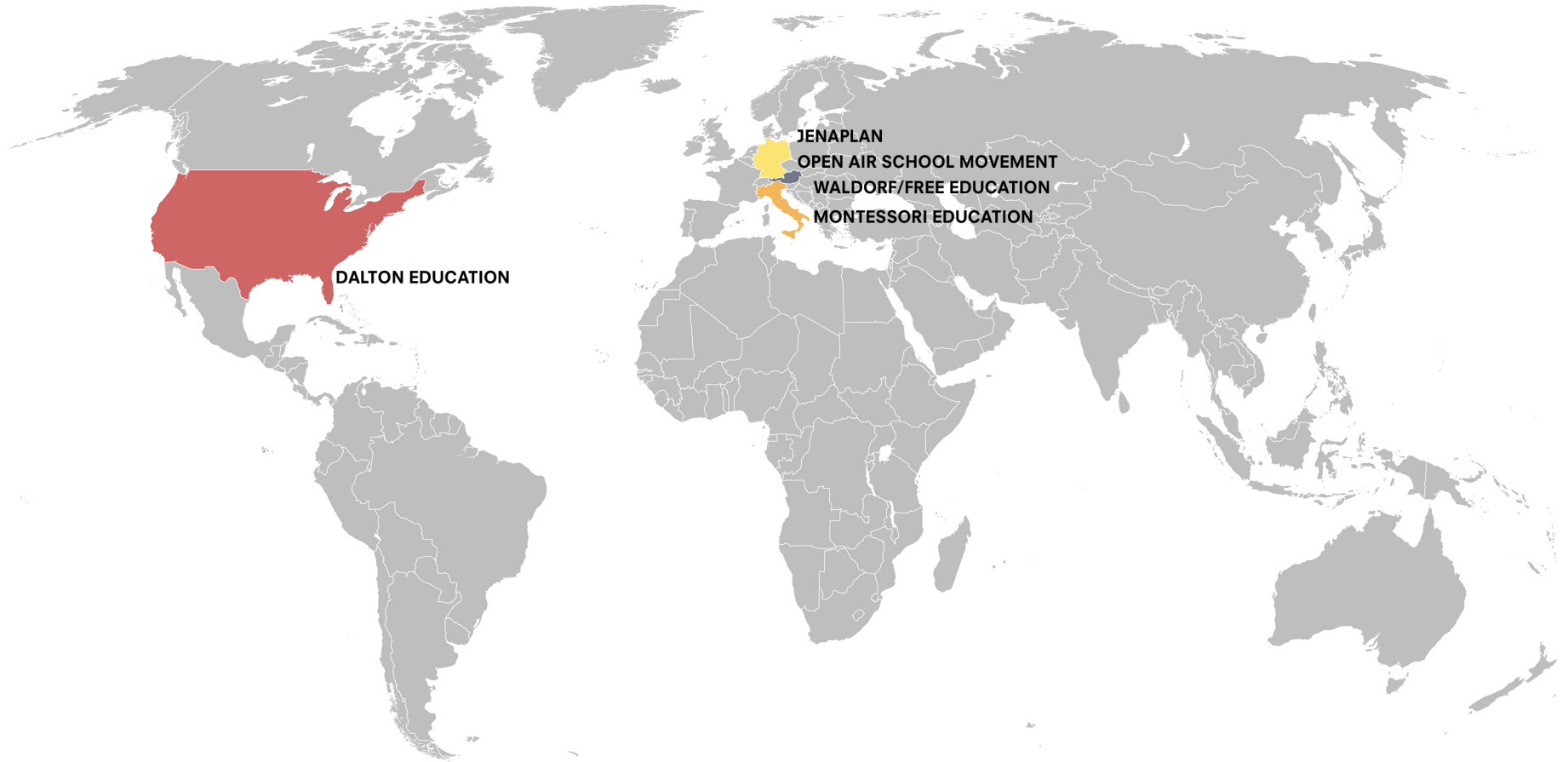
Xavier school  
MKPL Designs Pte Ltd  
2012



**Washington D.C. USA**

The heights building  
BIG Architects  
2018

# DUTCH HISTORY WITH MIGRATION OF IDEAS IN EDUCATION



# OPEN AIR SCHOOL - JAN DUIKER, 1930



# DELFTSE MONTESSORI SCHOOL - HERMAN HERTZBERGER 1966



# DESIGN BRIEF

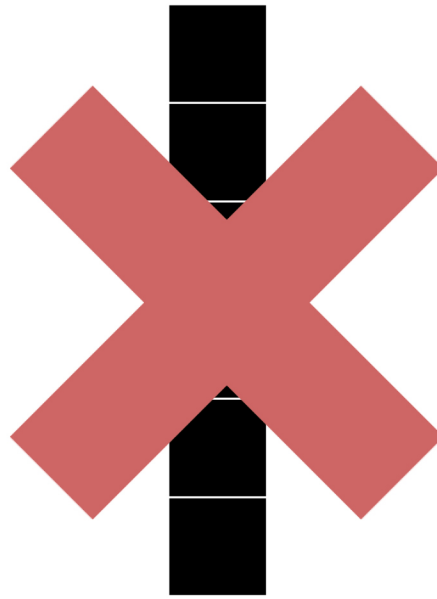


# VERTICAL SCHOOL



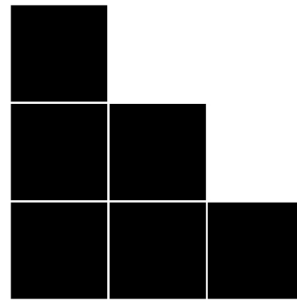
## VERTICAL HIGH RISE SCHOOL

# VERTICAL SCHOOL



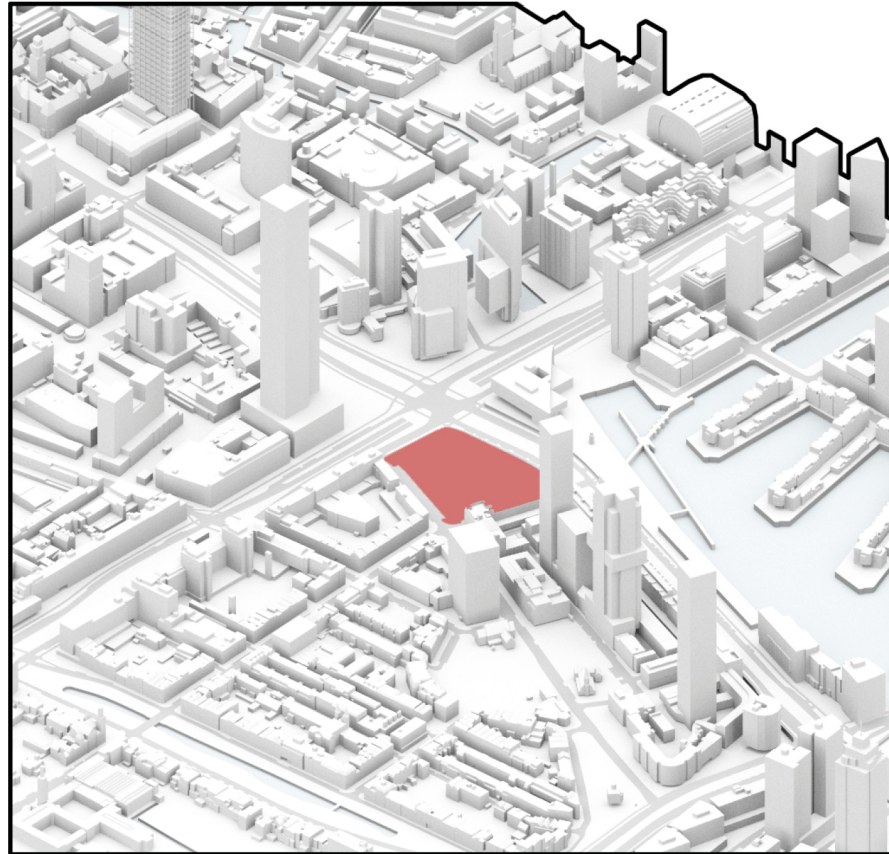
# VERTICAL HIGH RISE SCHOOL

## MID-RISE-TERRACED SCHOOL

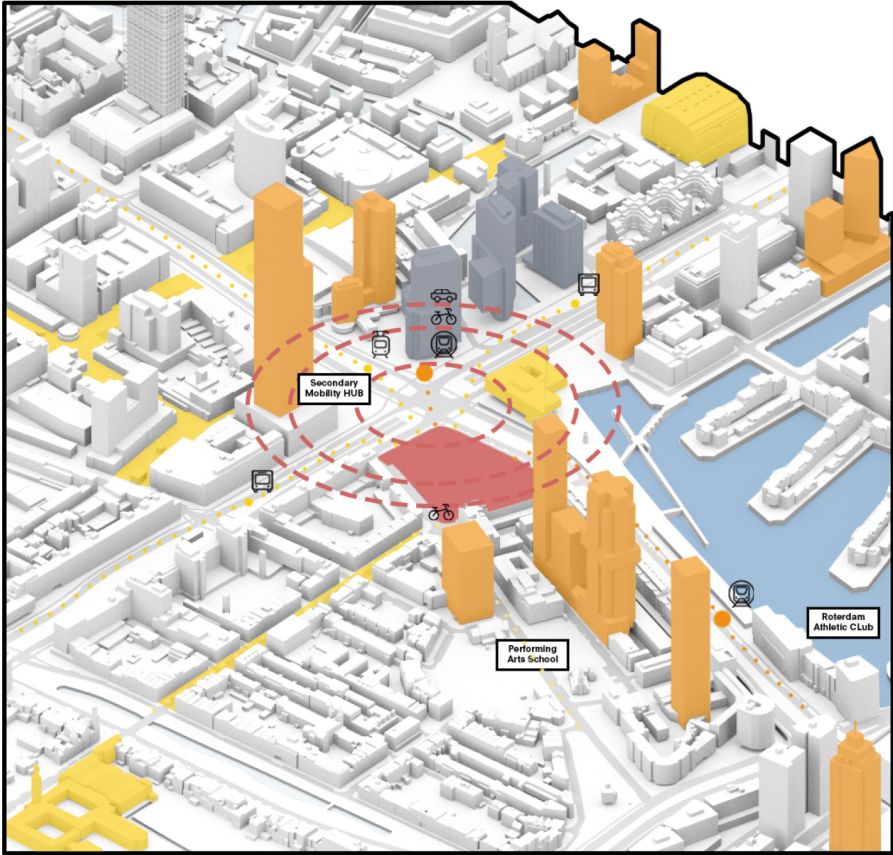


## STACKED MID-RISE SCHOOL

# LOCATION BEURS



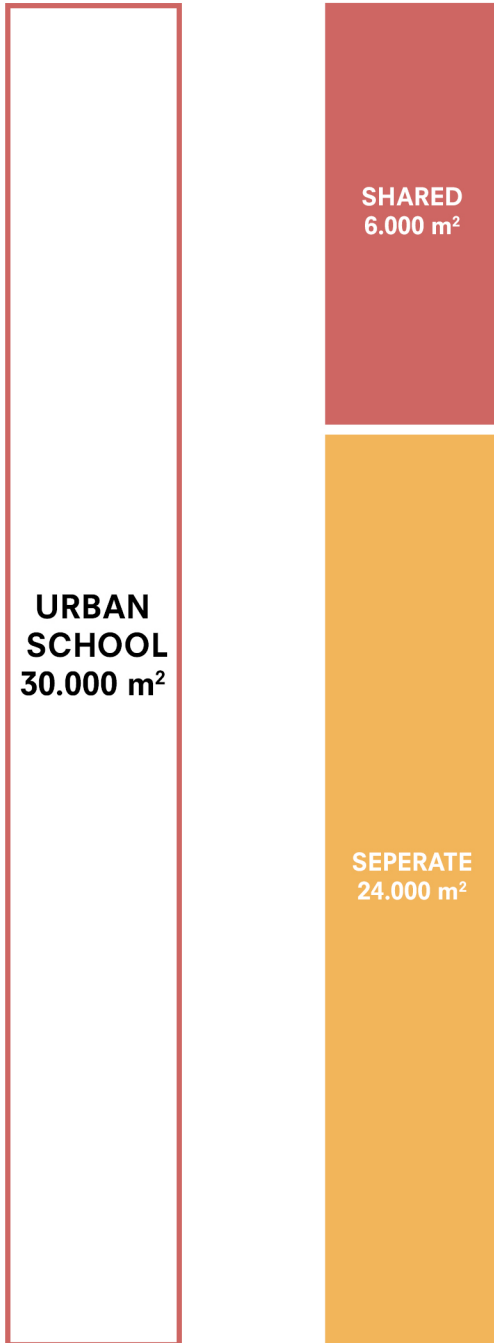
# BEURS



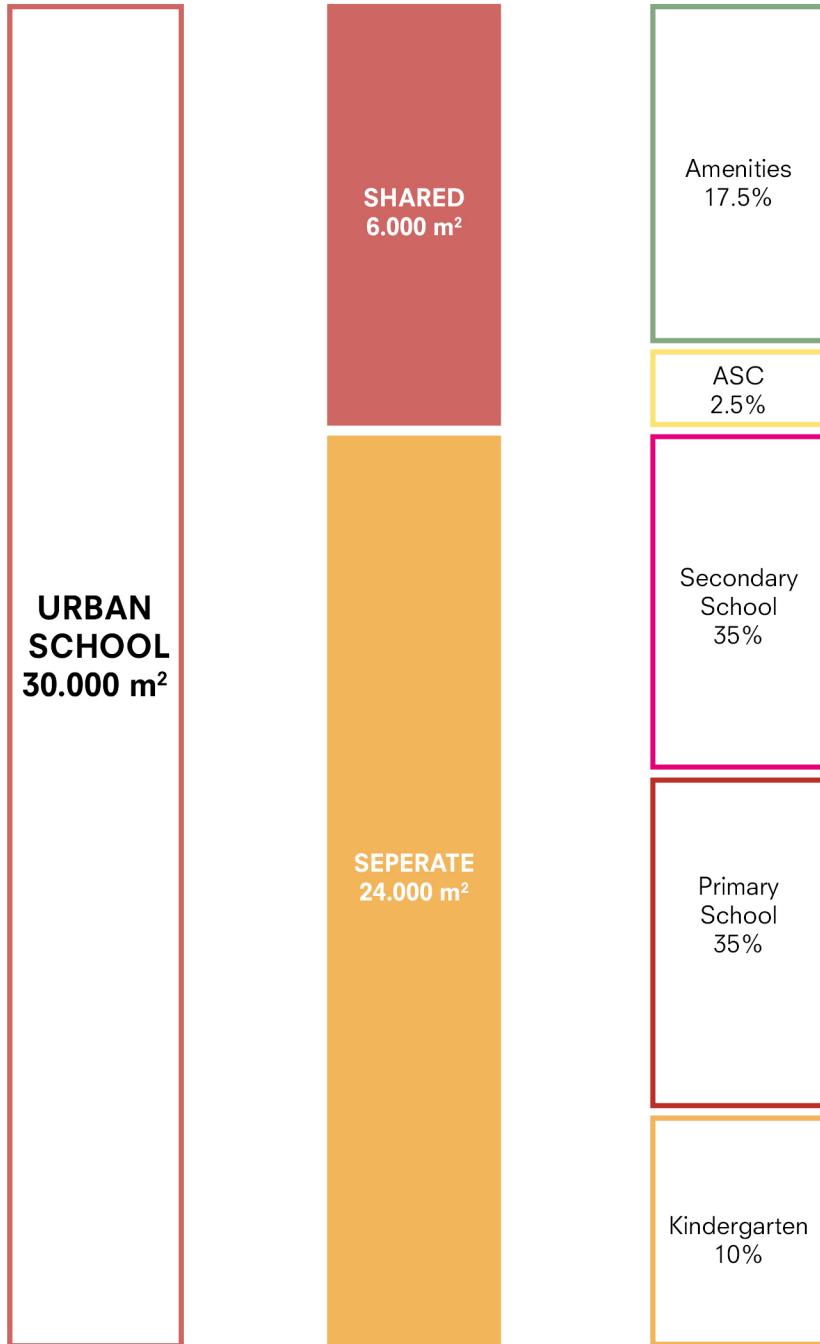
## PROGRAM

**URBAN  
SCHOOL  
30.000 m<sup>2</sup>**

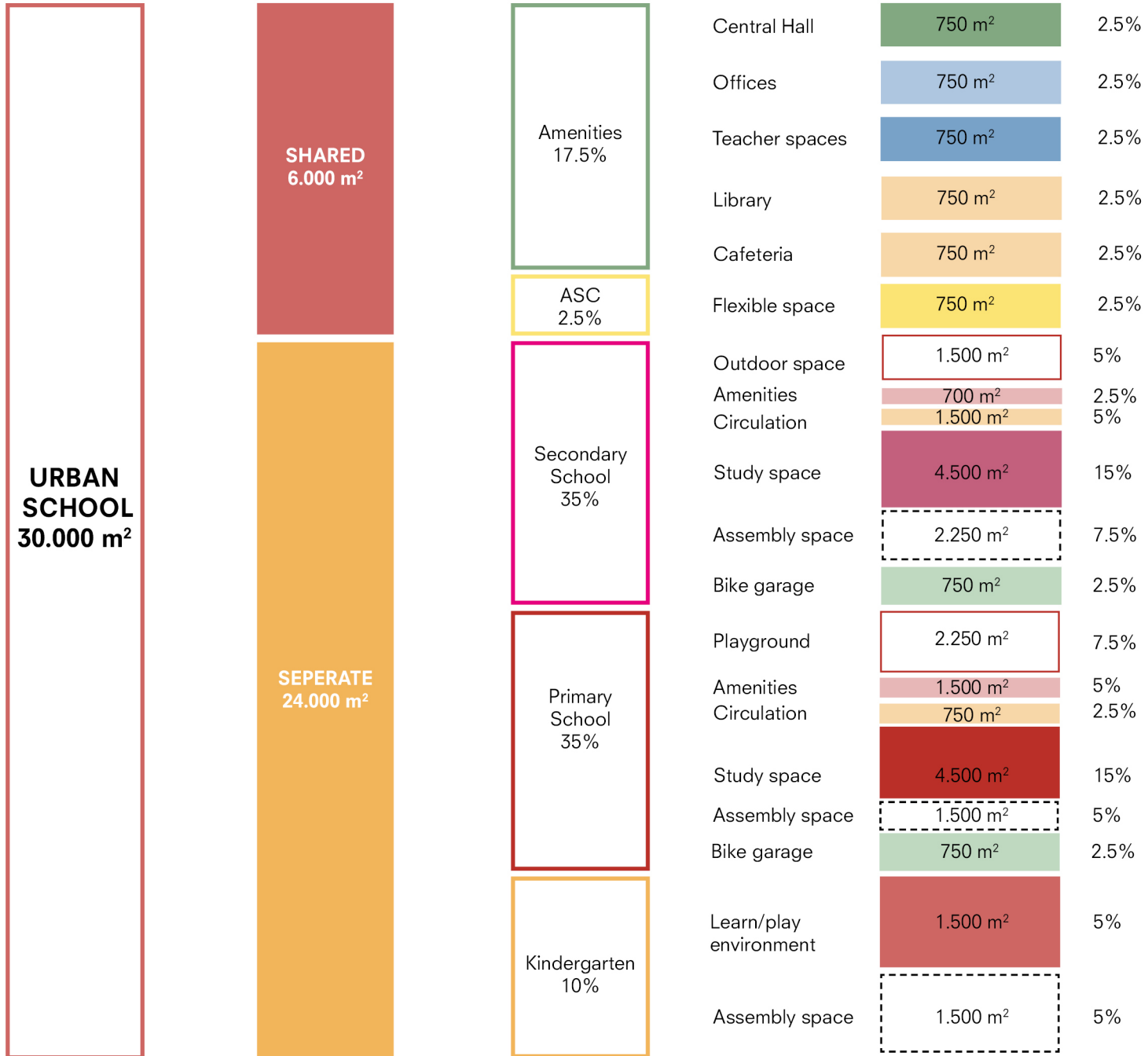
# PROGRAM



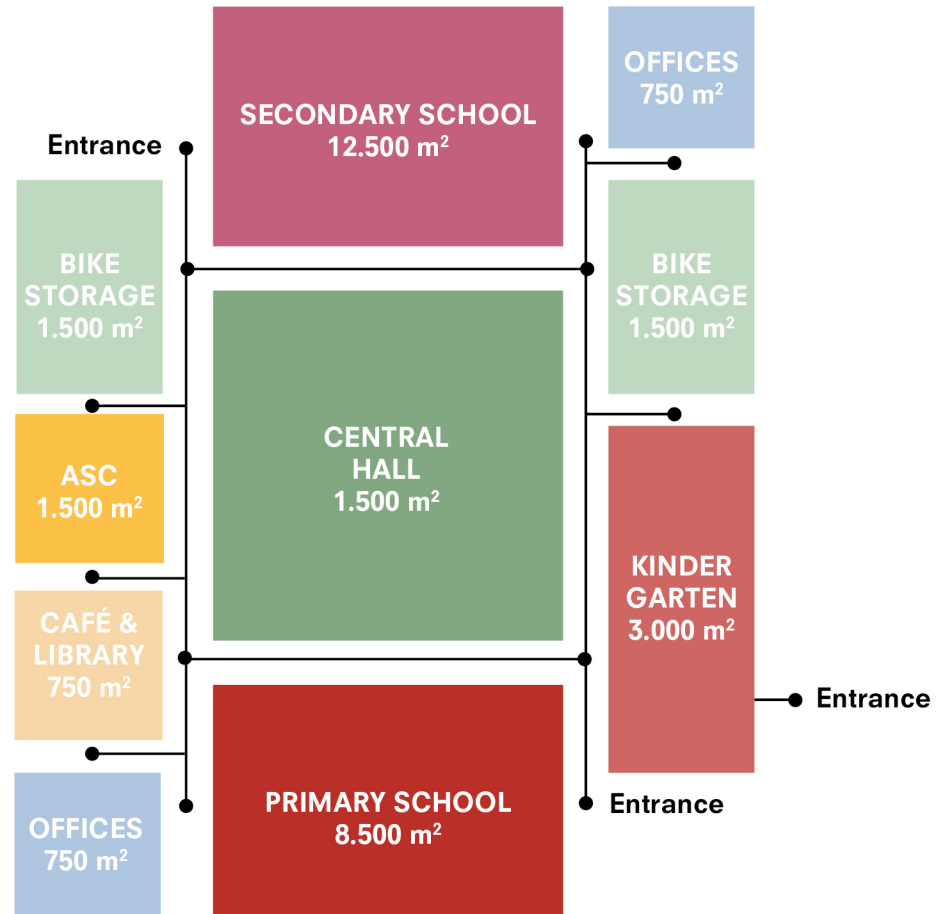
## PROGRAM



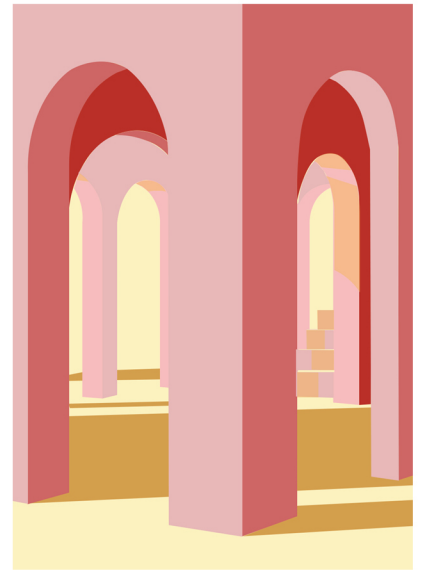
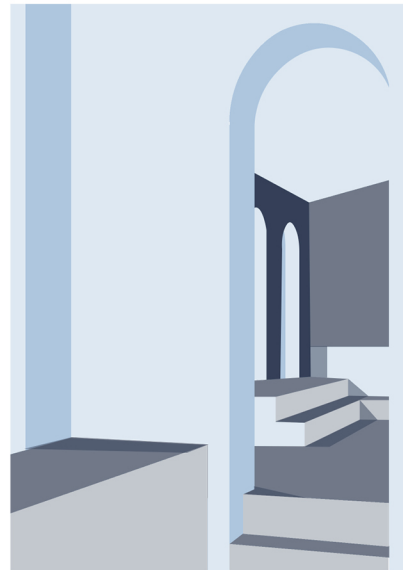
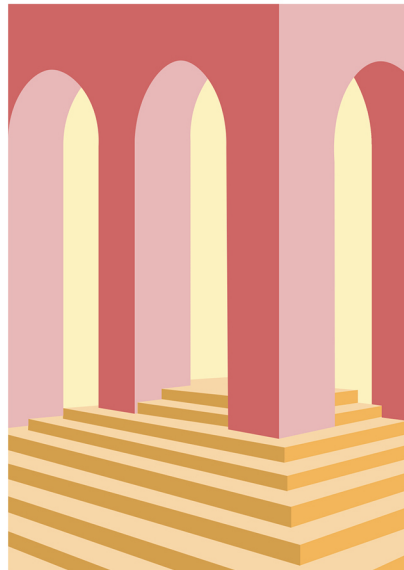
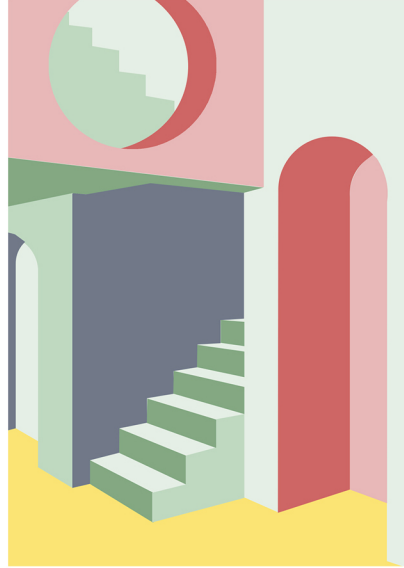
**PROGRAM**



# CENTRALIZED PROGRAM



# AMBITION COLLAGES



# CONCEPT



# 21ST CENTURY EDUCATION

## Foundational Literacies

How students apply core skills to everyday tasks



1. Literacy



2. Numeracy



3. Scientific literacy



4. ICT literacy



5. Financial literacy



6. Cultural and civic literacy

## Competencies

How students approach complex challenges



7. Critical thinking



8. Creativity



9. Communication



10. Collaboration

## Character Qualities

How students approach their changing environment



11. Curiosity



12. Initiative



13. Persistence



14. Adaptability



15. Leadership



16. Social & Cultural awareness

Concept

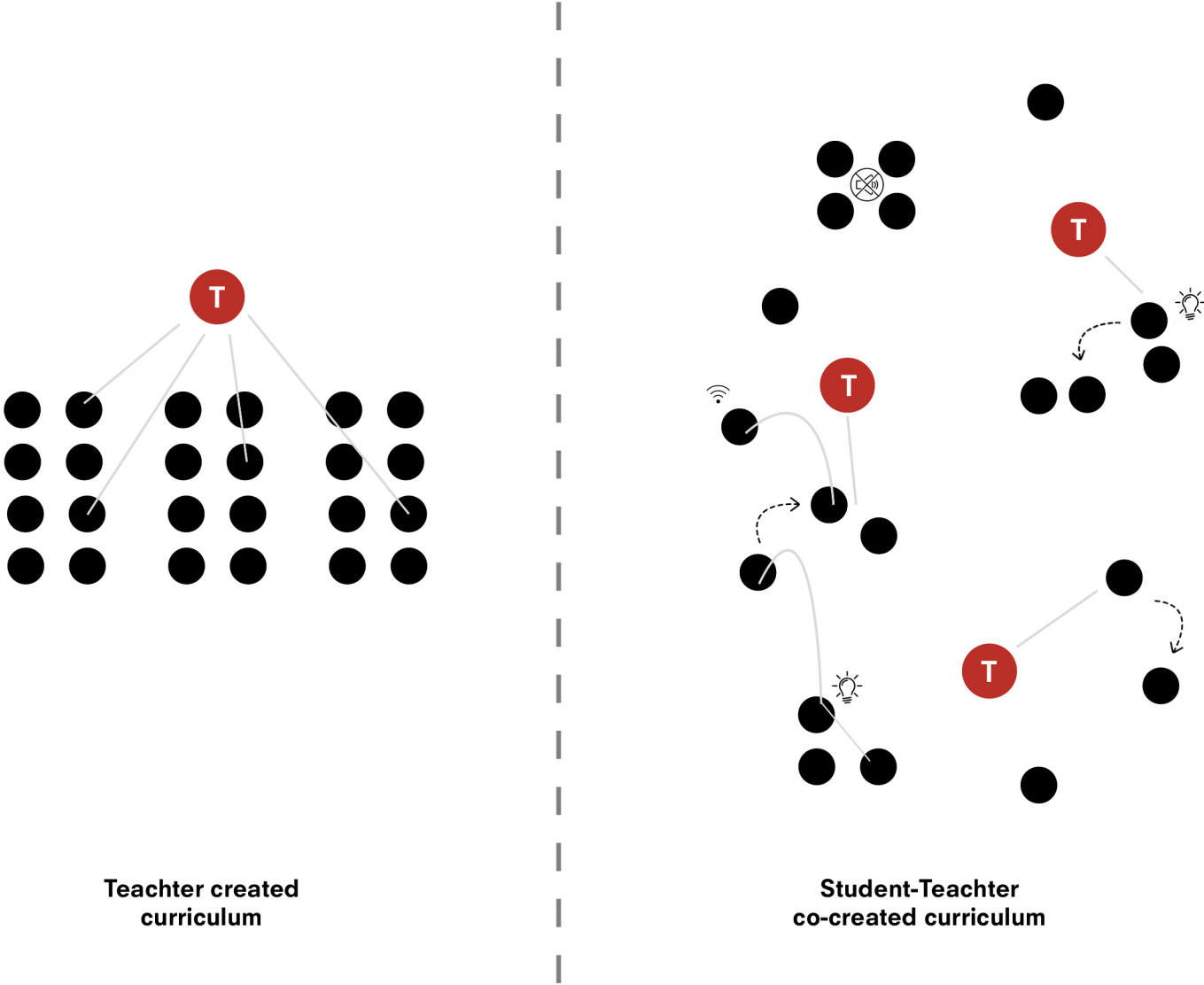
# STANDARD SCHOOL DESIGN



## 21ST CENTURY LEARNING

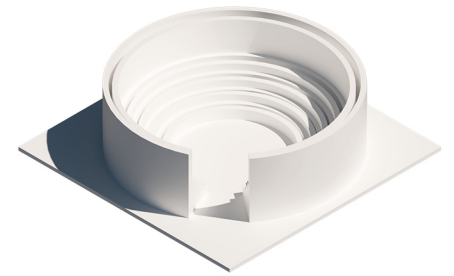
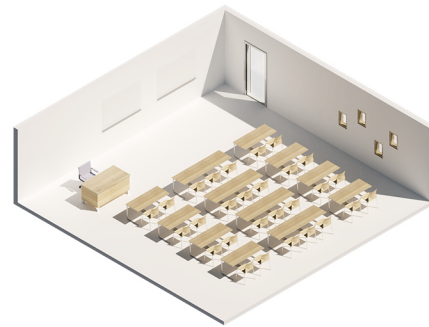
**THE SHIFT TO 21ST CENTURY  
REQUIRES A CHANGE TO A MORE  
OPEN STUDENT-TEACHER  
CO-CREATED CURRICULUM.  
WE AS DESIGNERS CAN  
TURN THESE EDUCATIONAL  
CONCEPTS INTO THE SPATIAL  
REQUIREMENTS THAT NEW  
CONCEPTS REQUIRE**

# 21ST CENTURY LEARNING



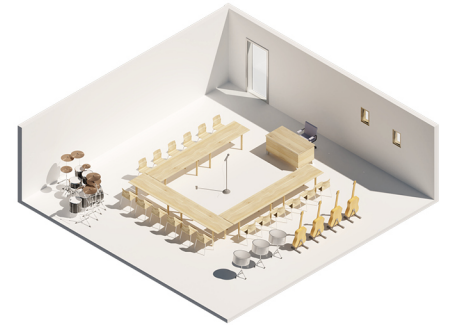
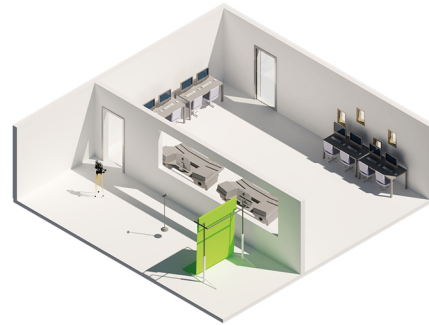
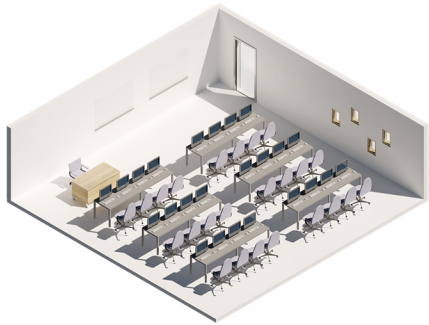
Concept

# VARIETY IN CLASSROOMS



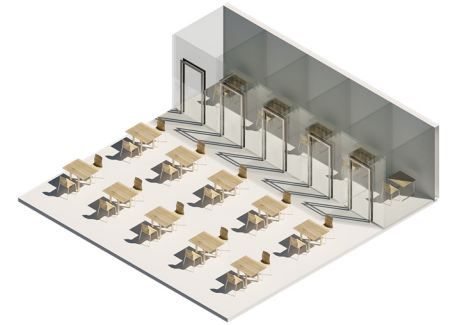
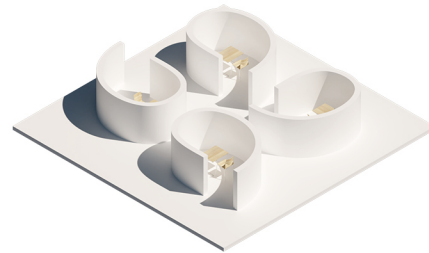
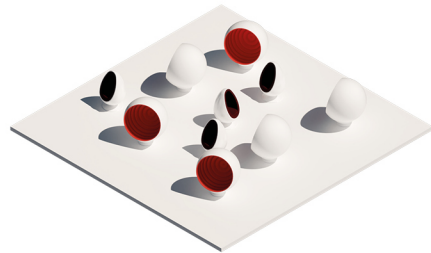
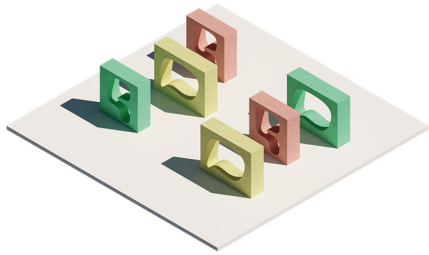
Concept

# COURSE SPECIFIC CLASSROOMS

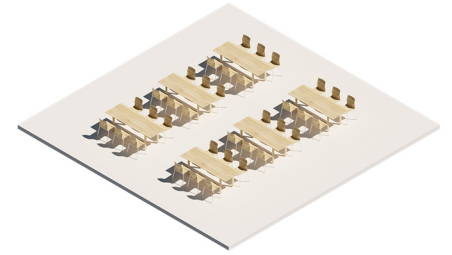
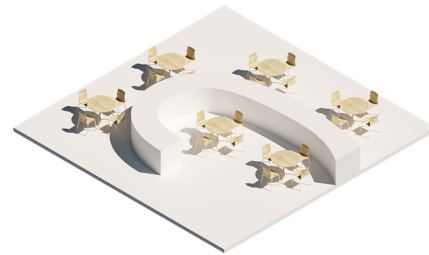
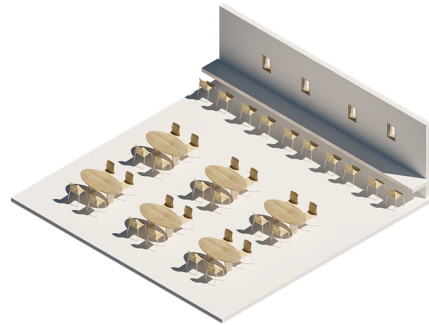
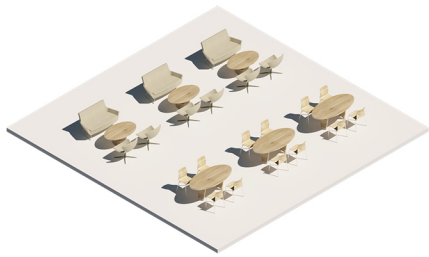


Concept

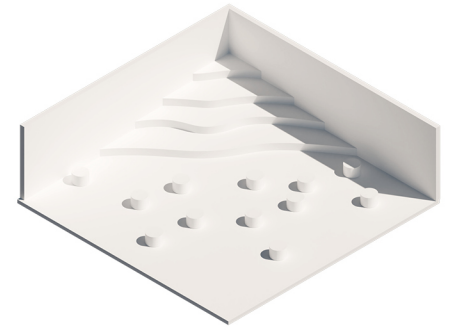
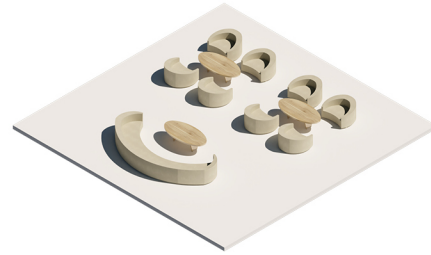
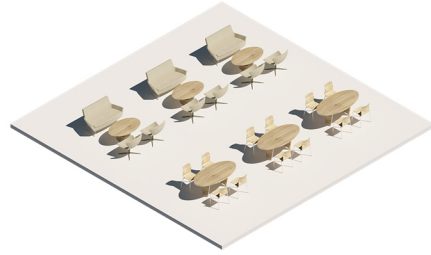
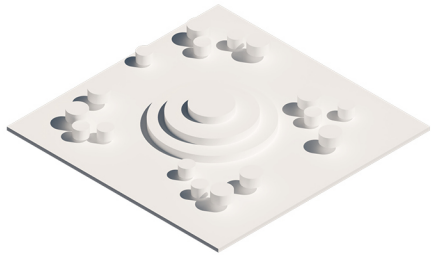
# QUIET INDIVIDUAL



Concept  
**GROUP WORK**

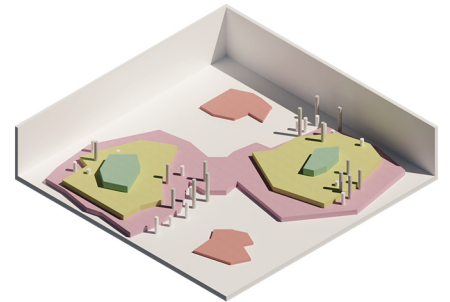
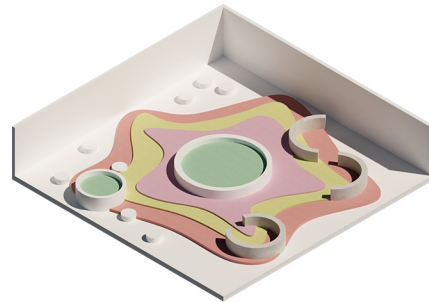
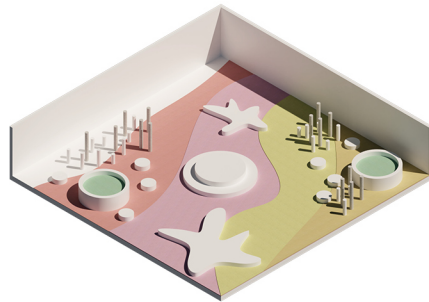
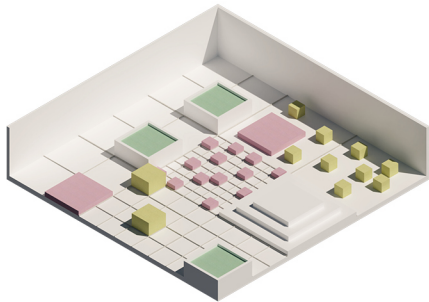
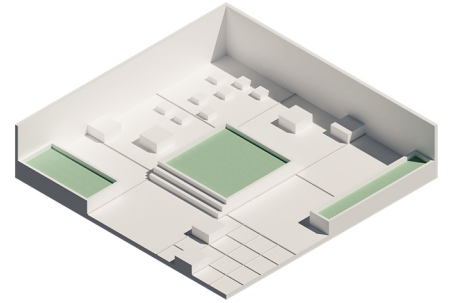
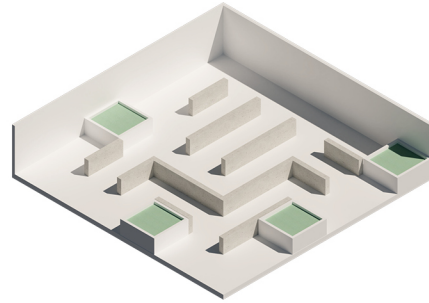
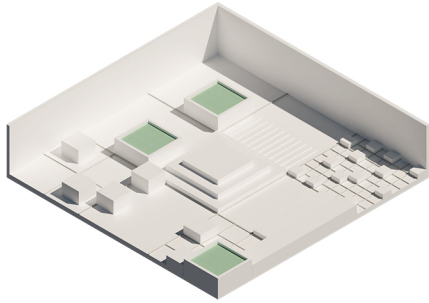


# PRESENTATION & RELAXATION



Concept

# OUTDOOR SPACES



Concept  
**CATALOG**



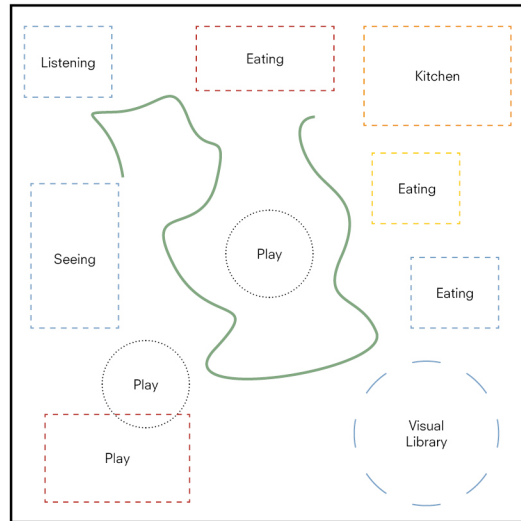
Concept

# DIFFERENT USERS

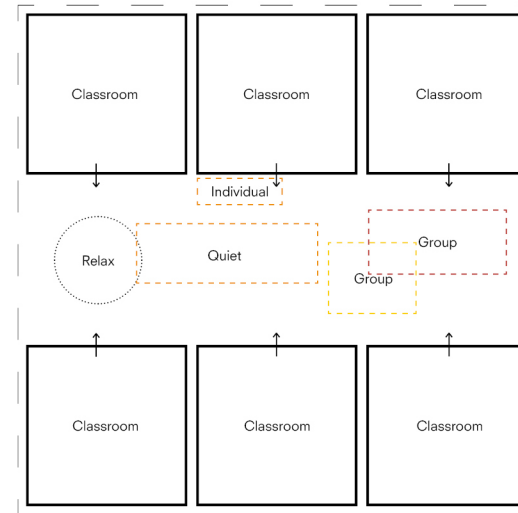


# ZONING

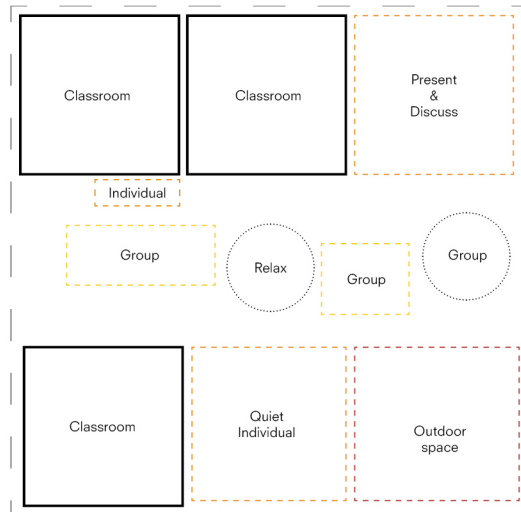
## KINDERGARTEN



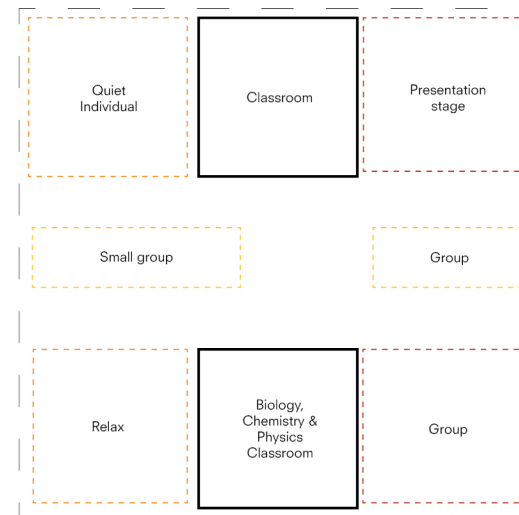
## PRIMARY SCHOOL 1-4



## PRIMARY SCHOOL 5-8

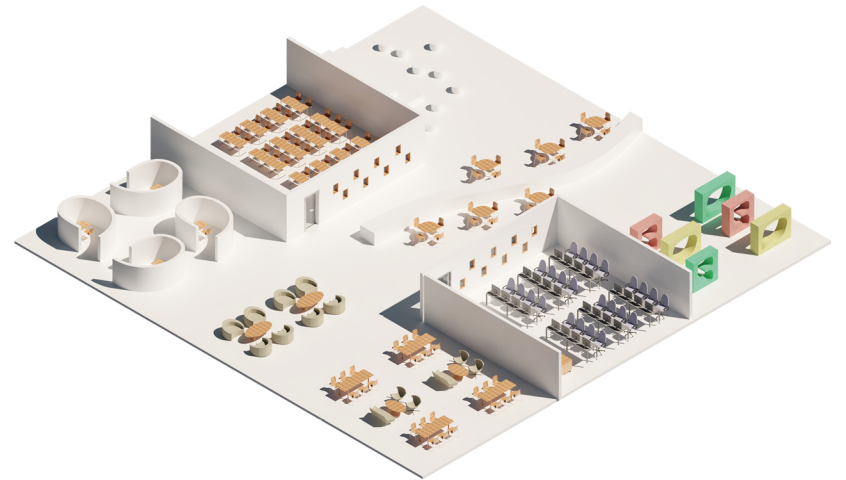
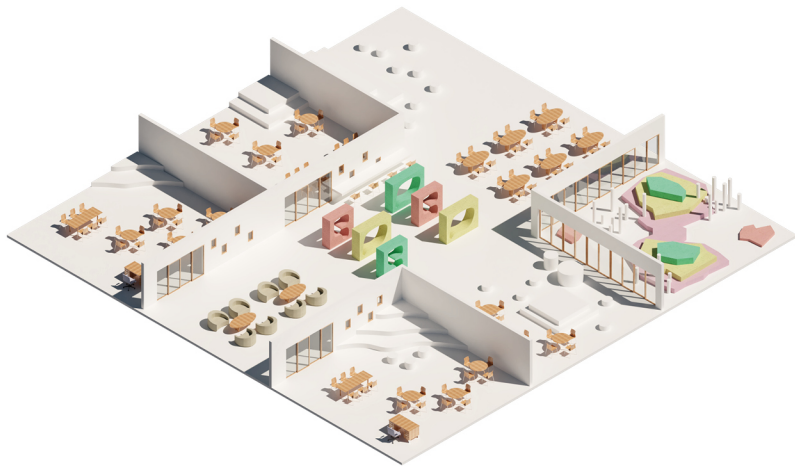
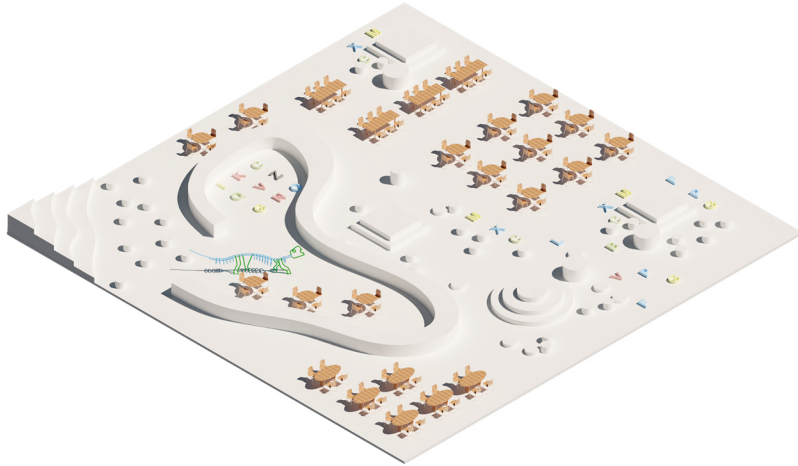


## SECONDARY SCHOOL

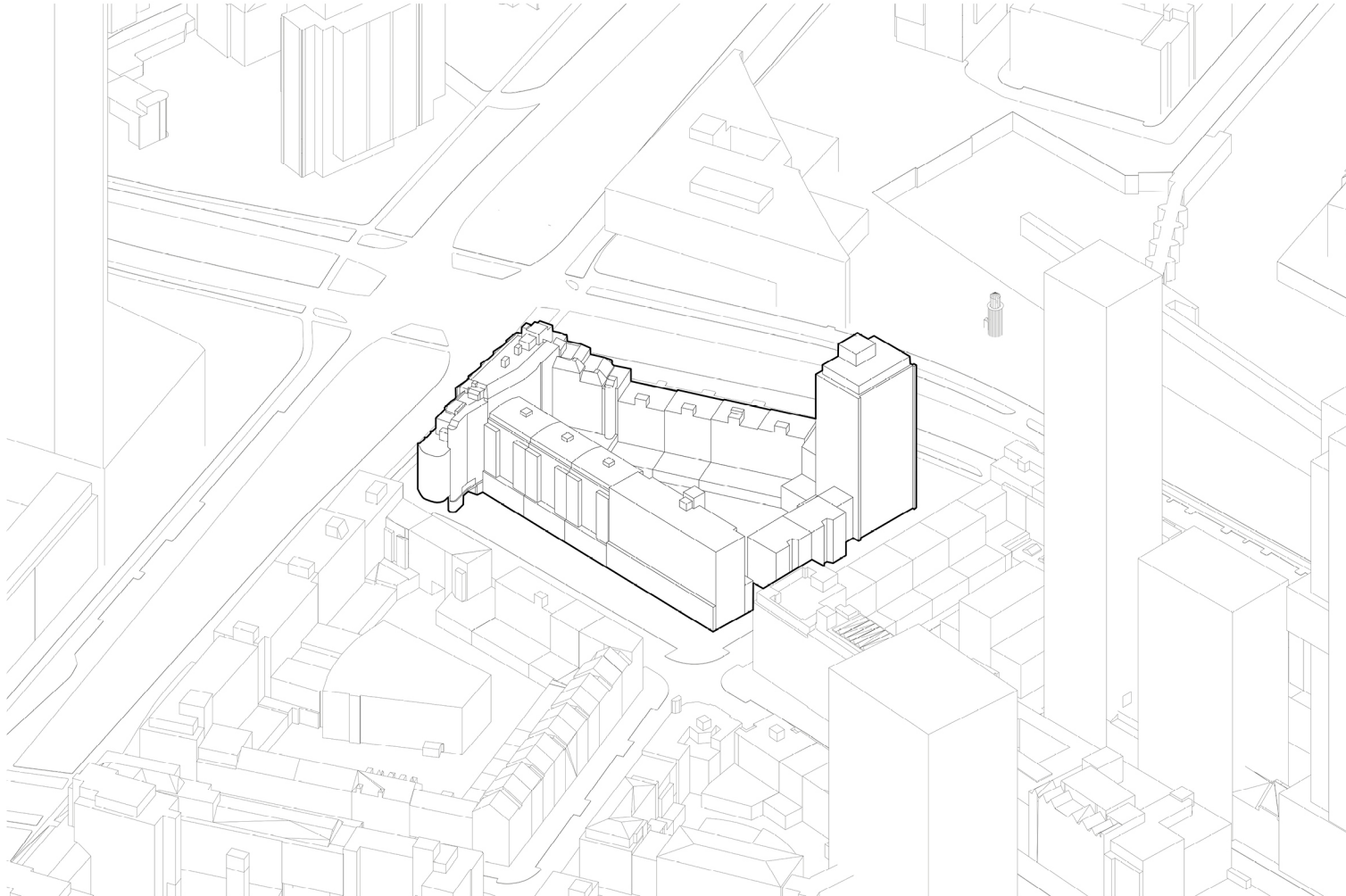


Concept

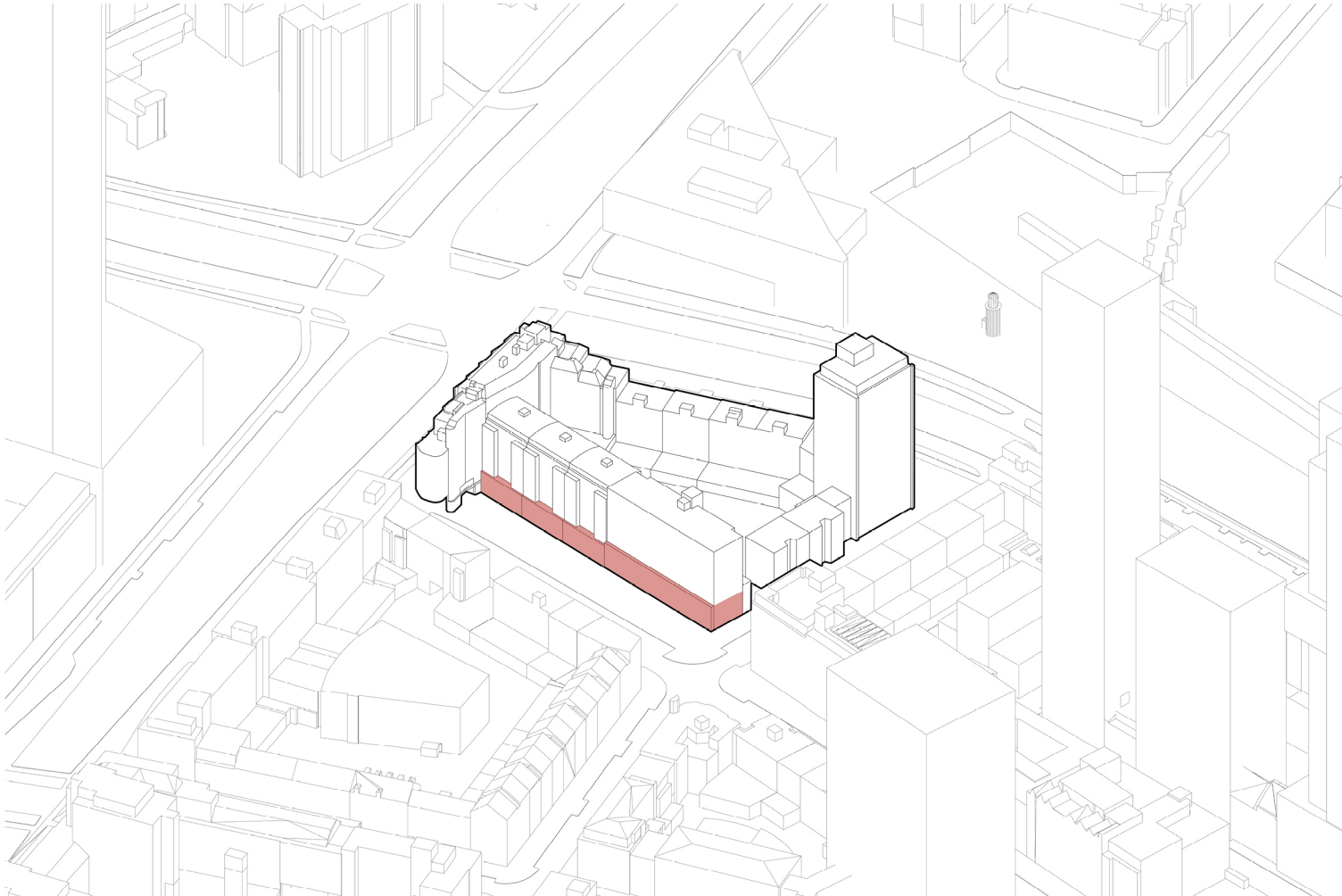
# ZONING > SPATIAL DESIGN



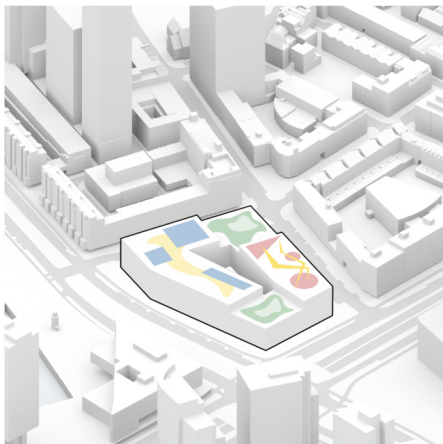
# EXISTING SITUATION



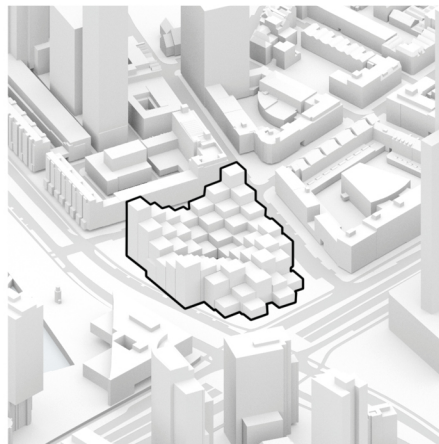
# POTENTIAL EXISTING SITUATION



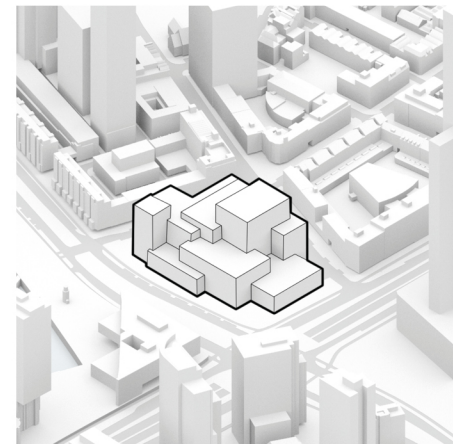
# VOLUME STUDIES



**MID-RISE**



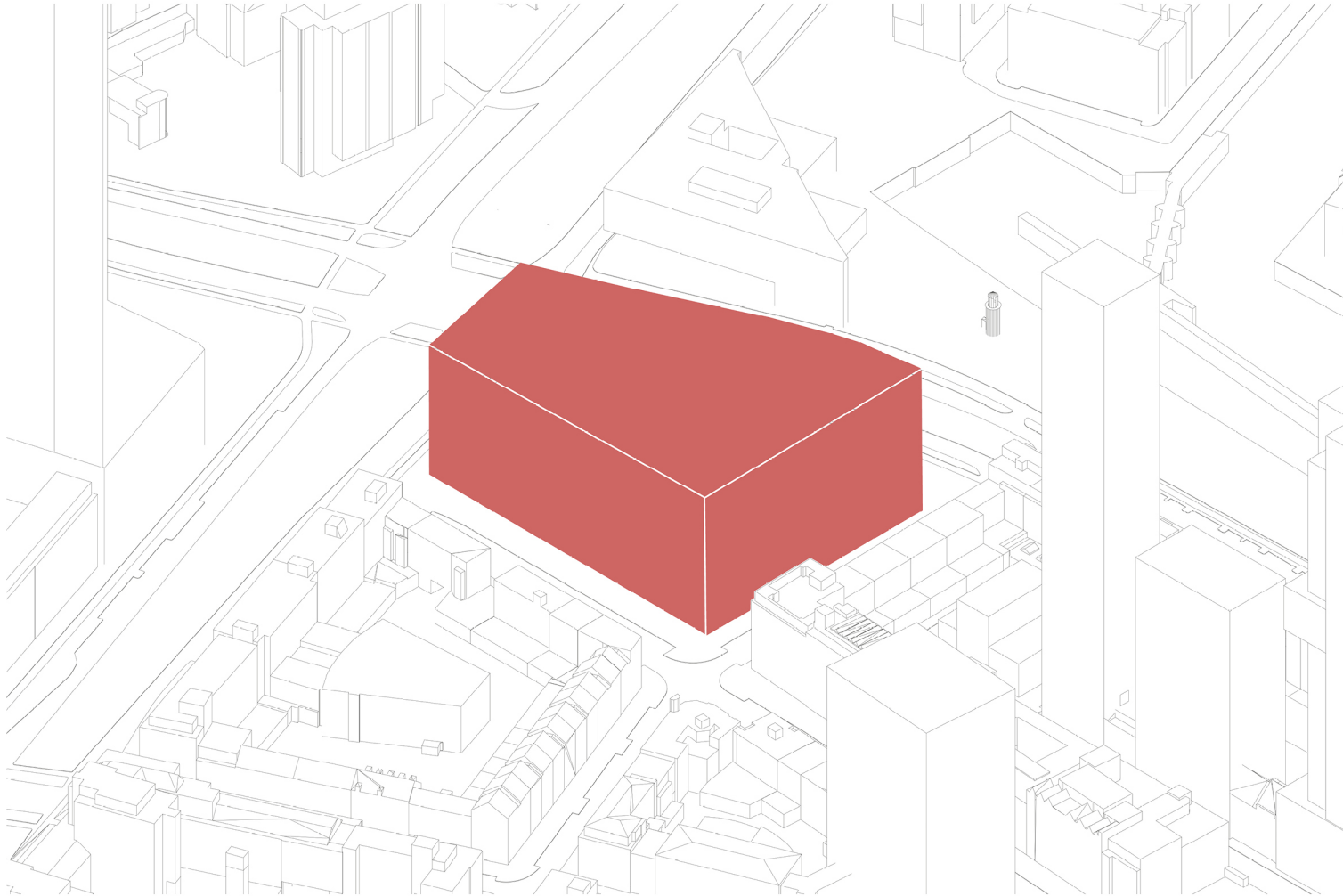
**TERRACED**



**STACKED**

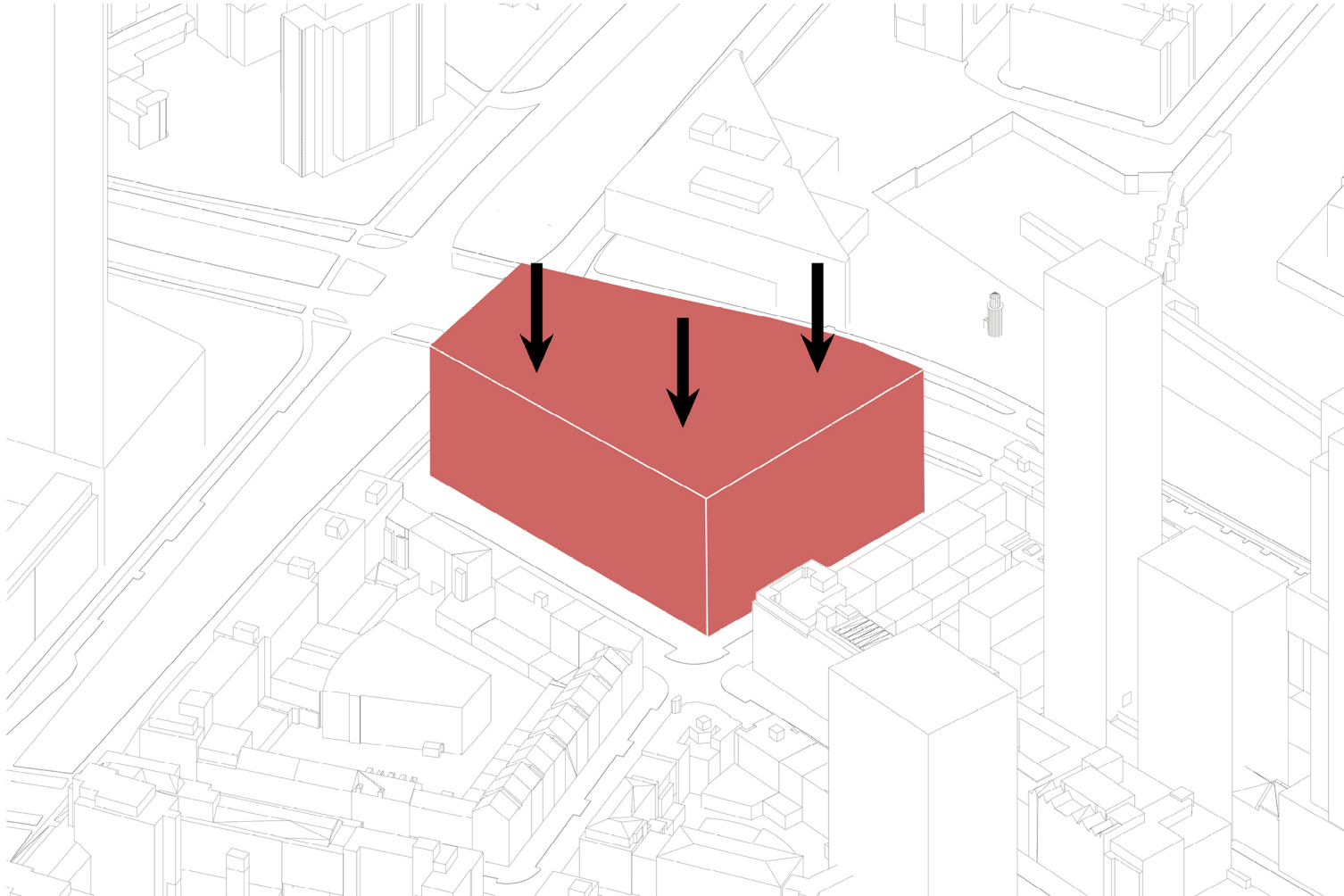
Concept

# URBAN FABRIC VOLUME



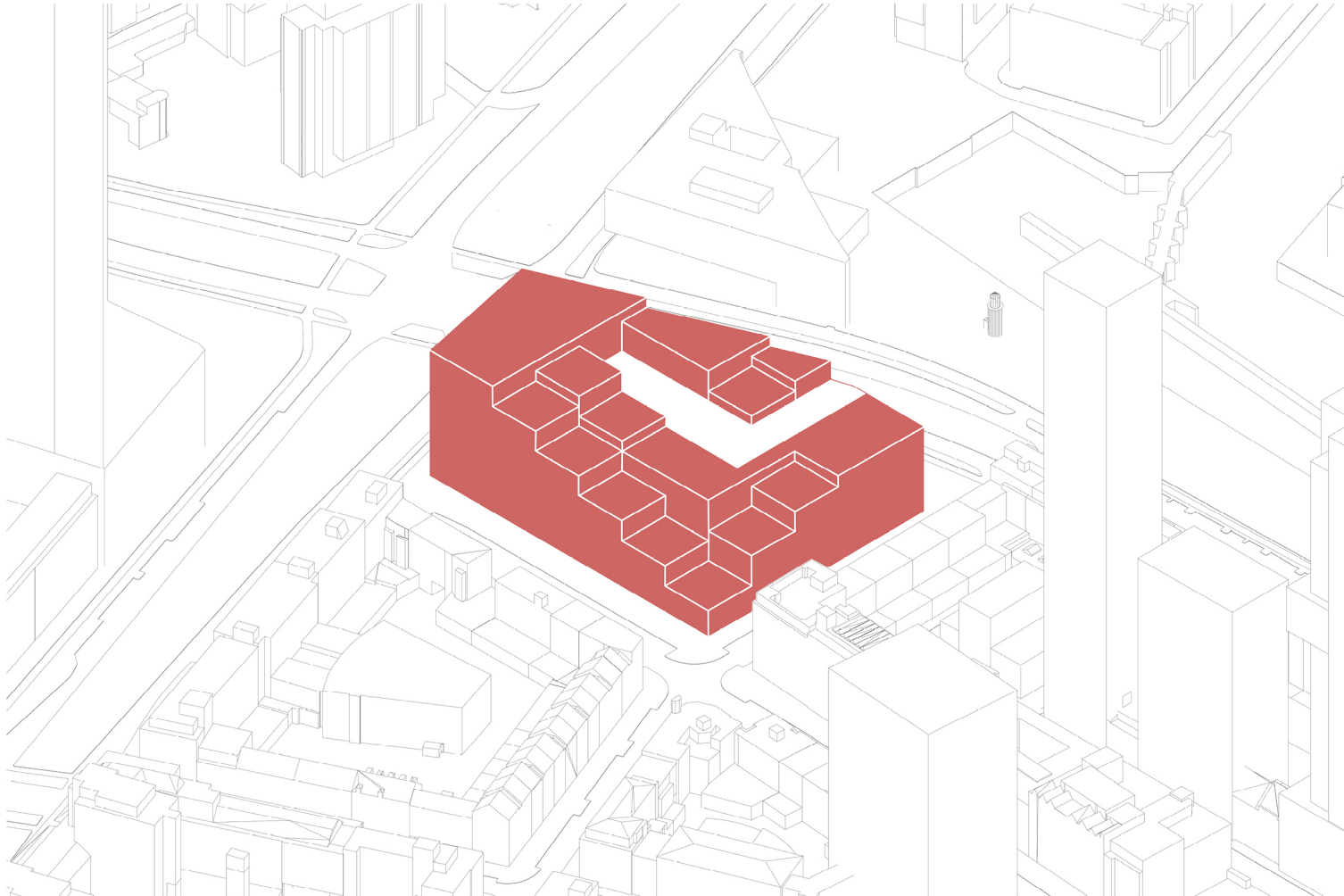
Concept

## MID-RISE PUSH DOWN



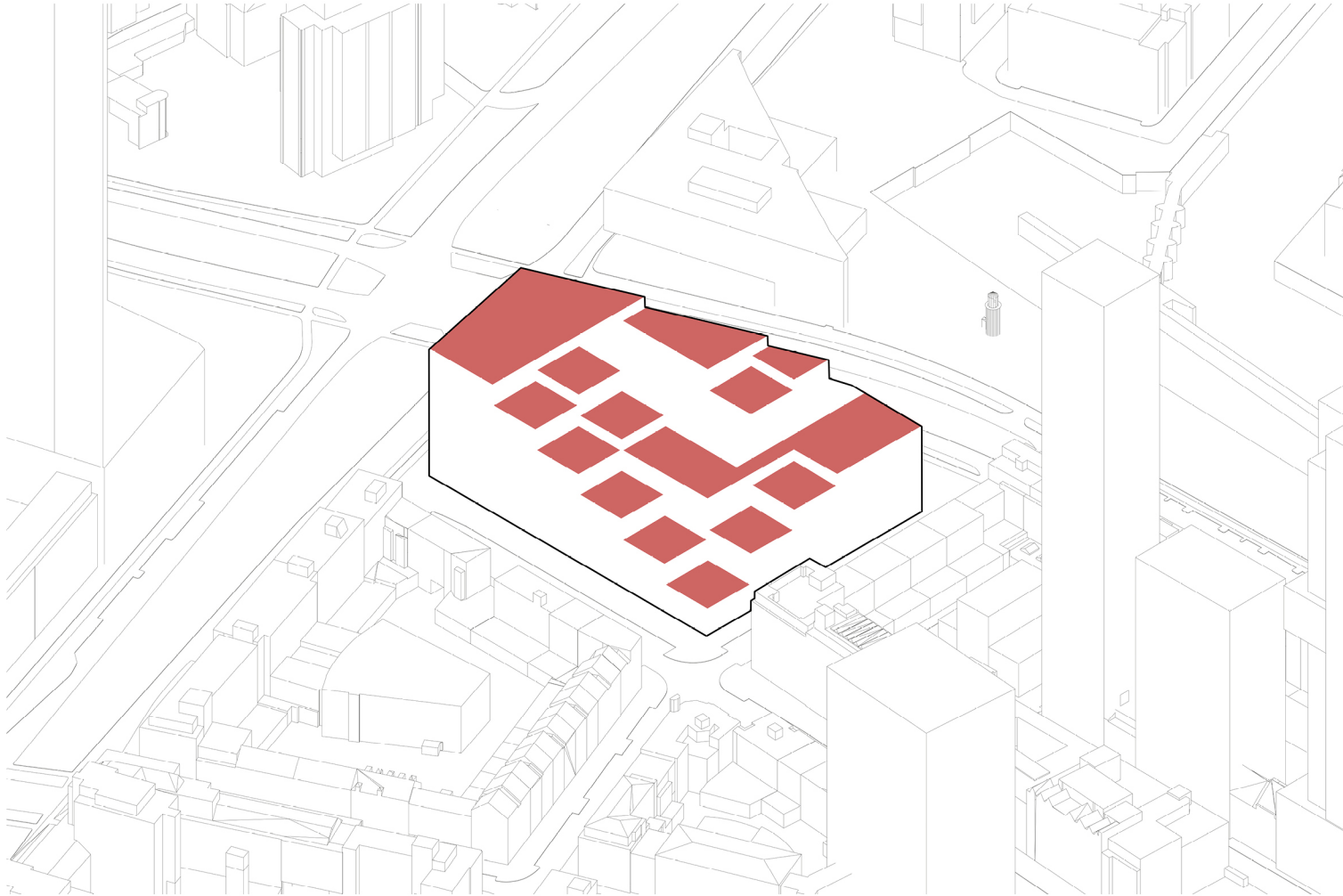
Concept

# BUILDING VOLUME



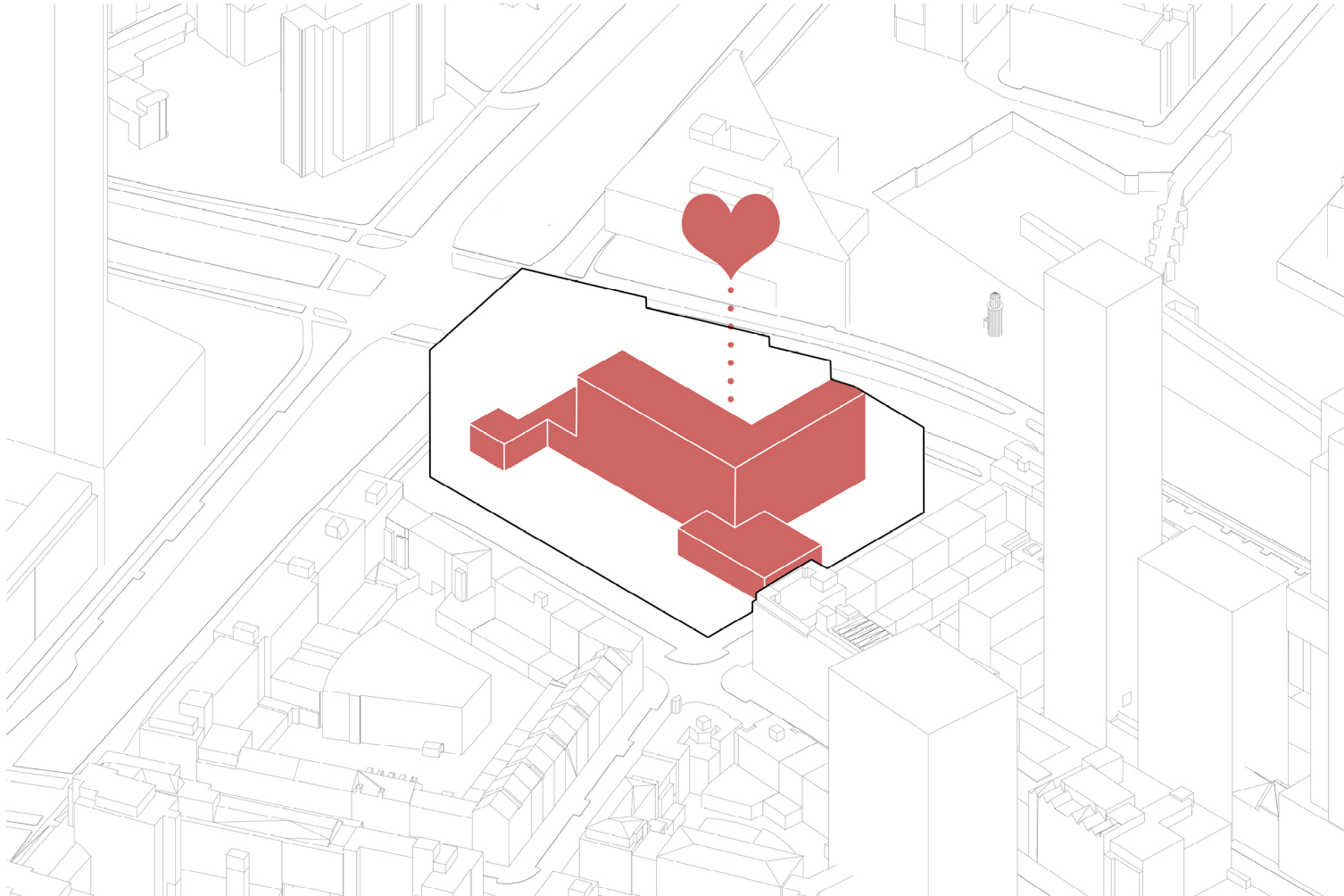
Concept

# TERRACES

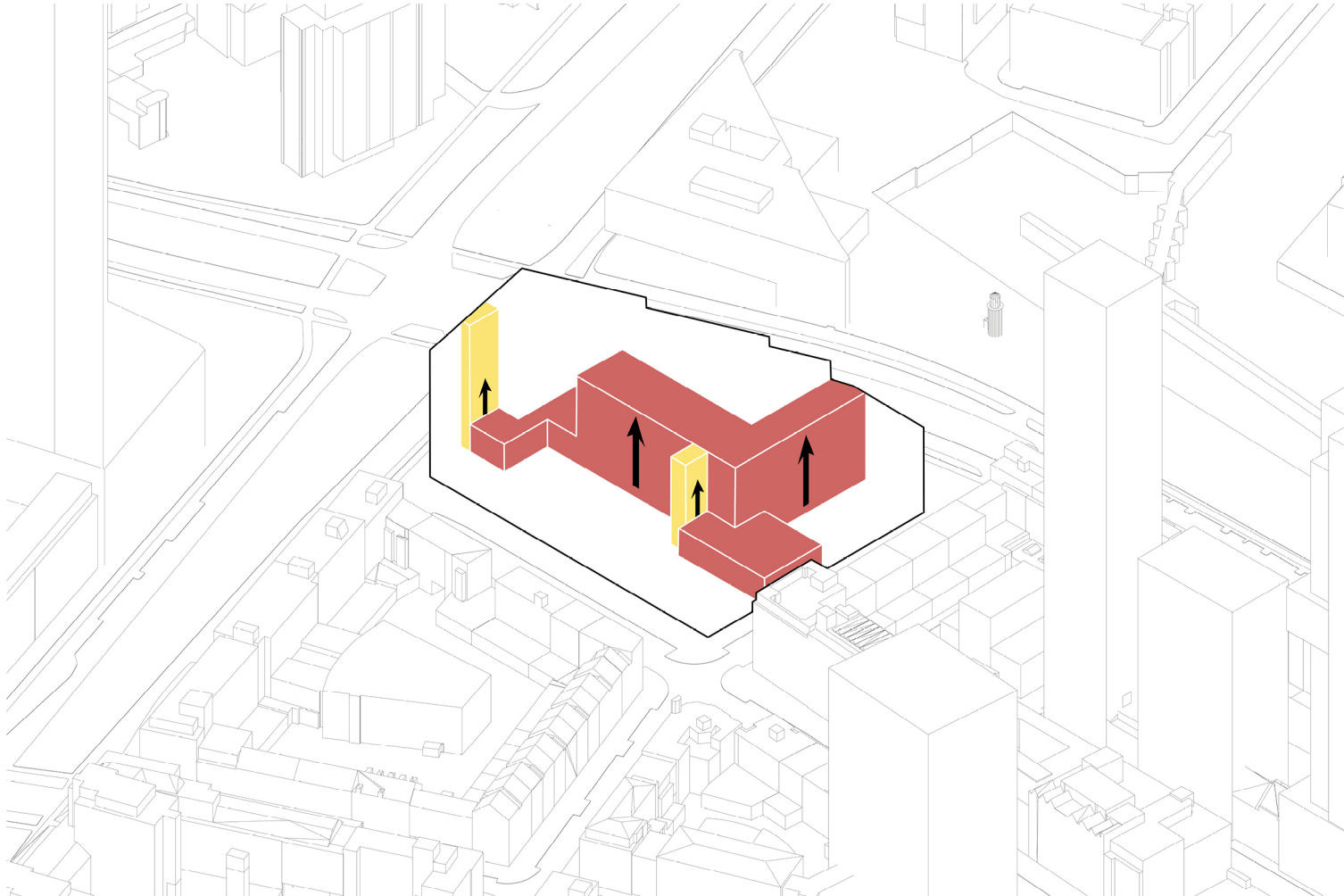


Concept

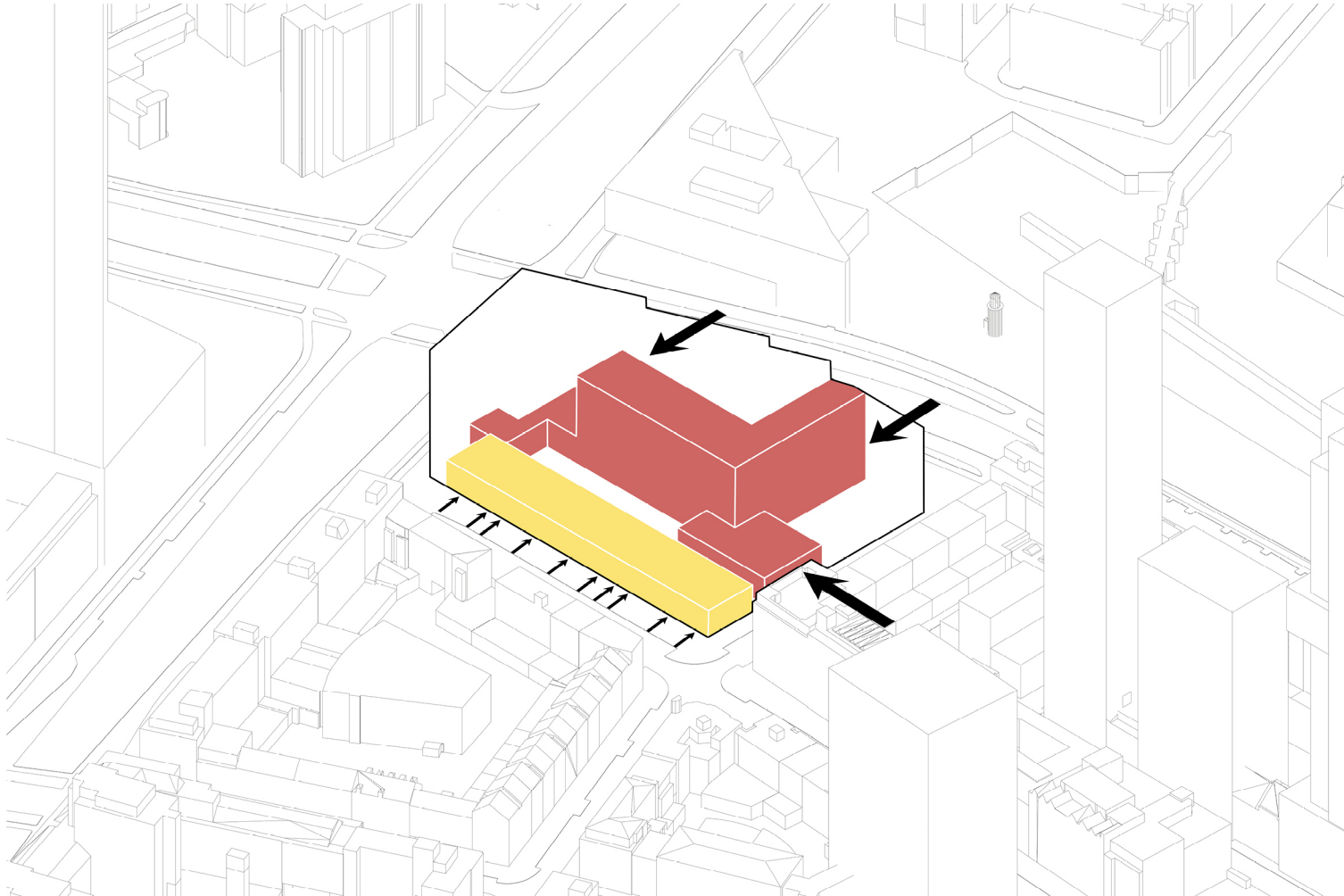
# CENTRAL HALL



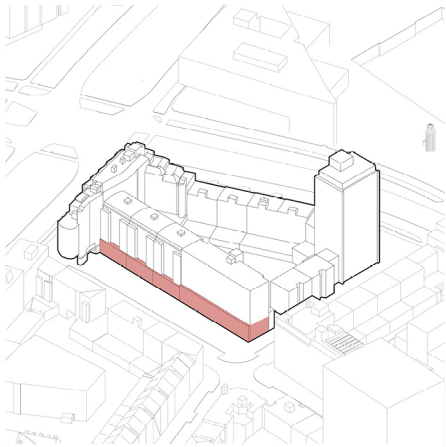
# VERTICAL CIRCULATION



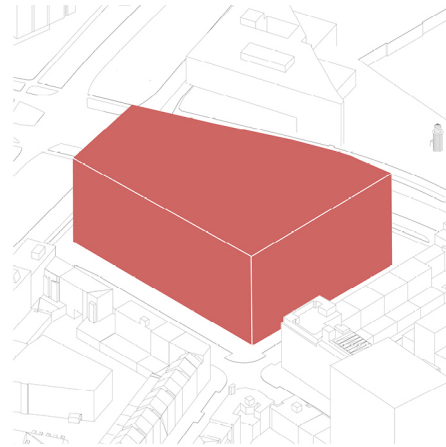
# ENTRANCES & PLINT ENGAGEMENT



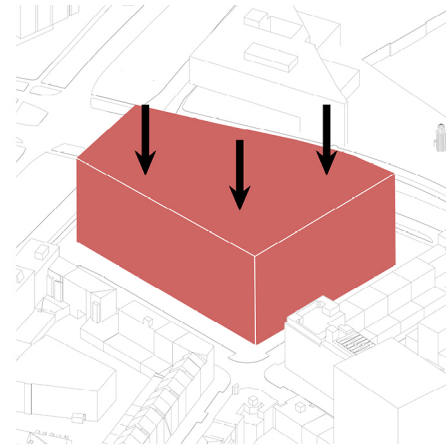
# SUMMARY



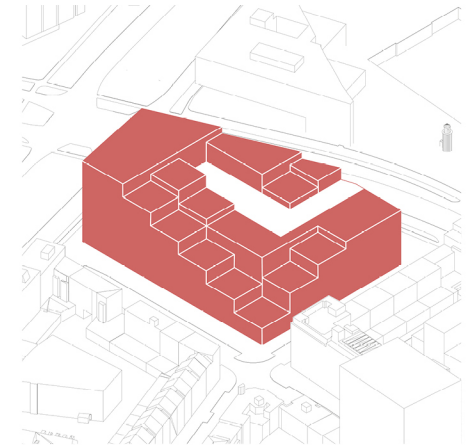
**EXISTING SITUATION**



**URBAN FABRIC VOLUME**



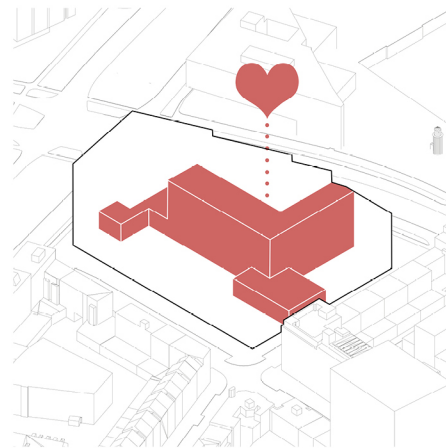
**MID-RISE PUSH DOWN**



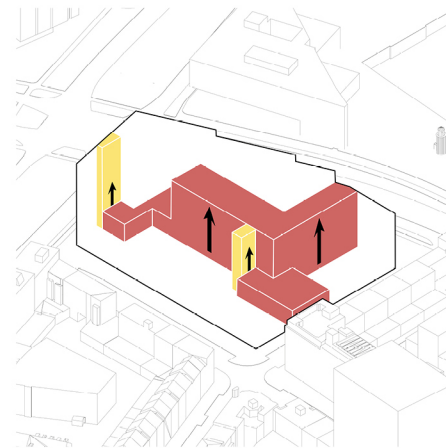
**BUILDING VOLUME**



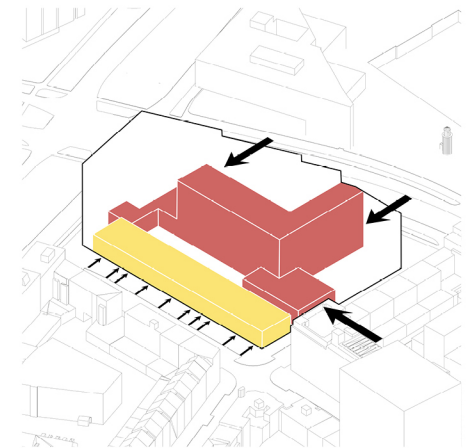
**TERRACES**



**CENTRAL HALL**



**VERTICAL CIRCULATION**

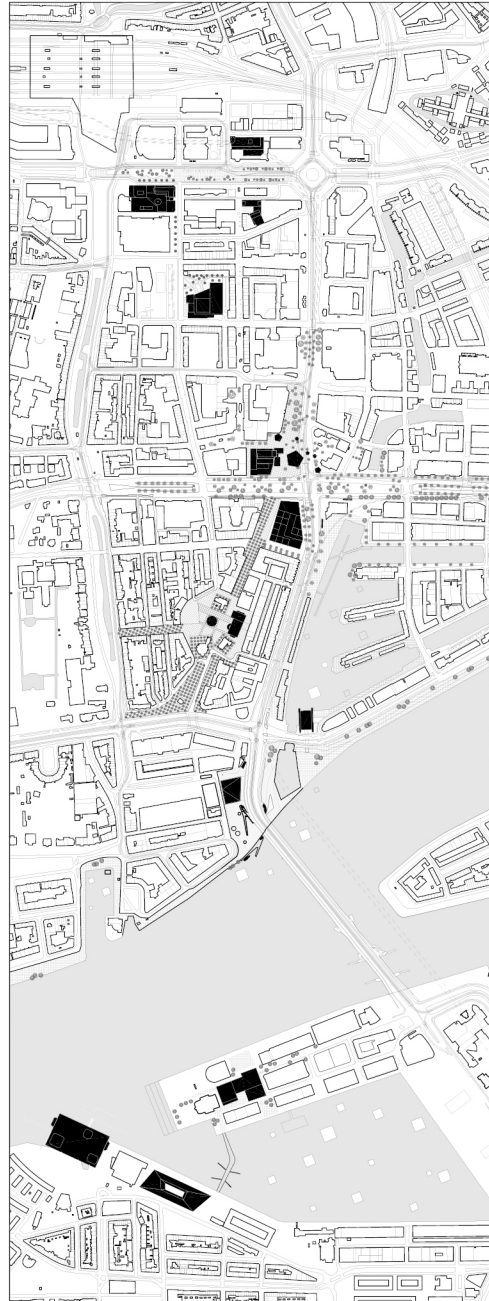


**ENTRANCES & ENGAGEMENT**

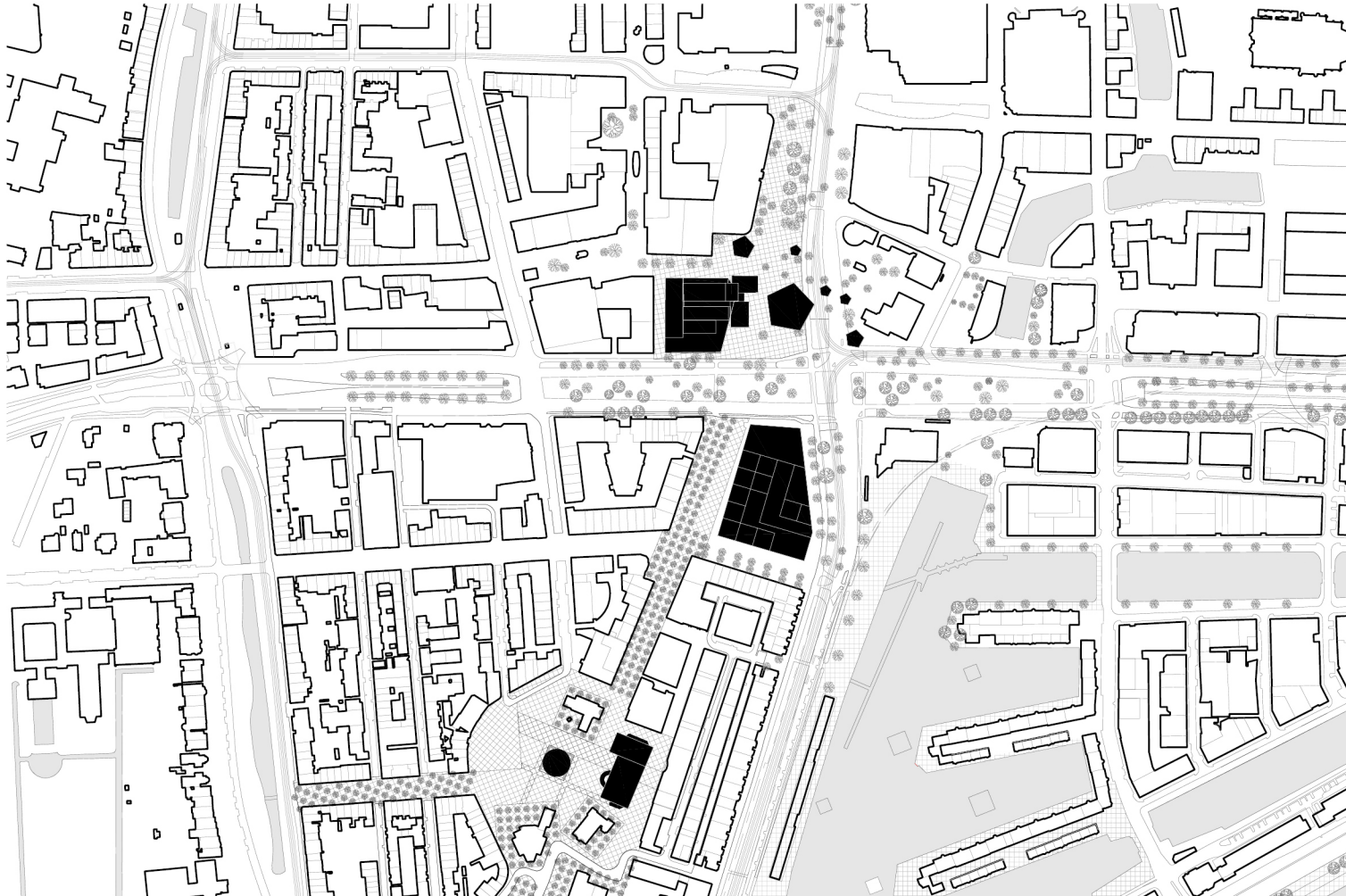
# DESIGN



# SITE PLAN



# SITE PLAN

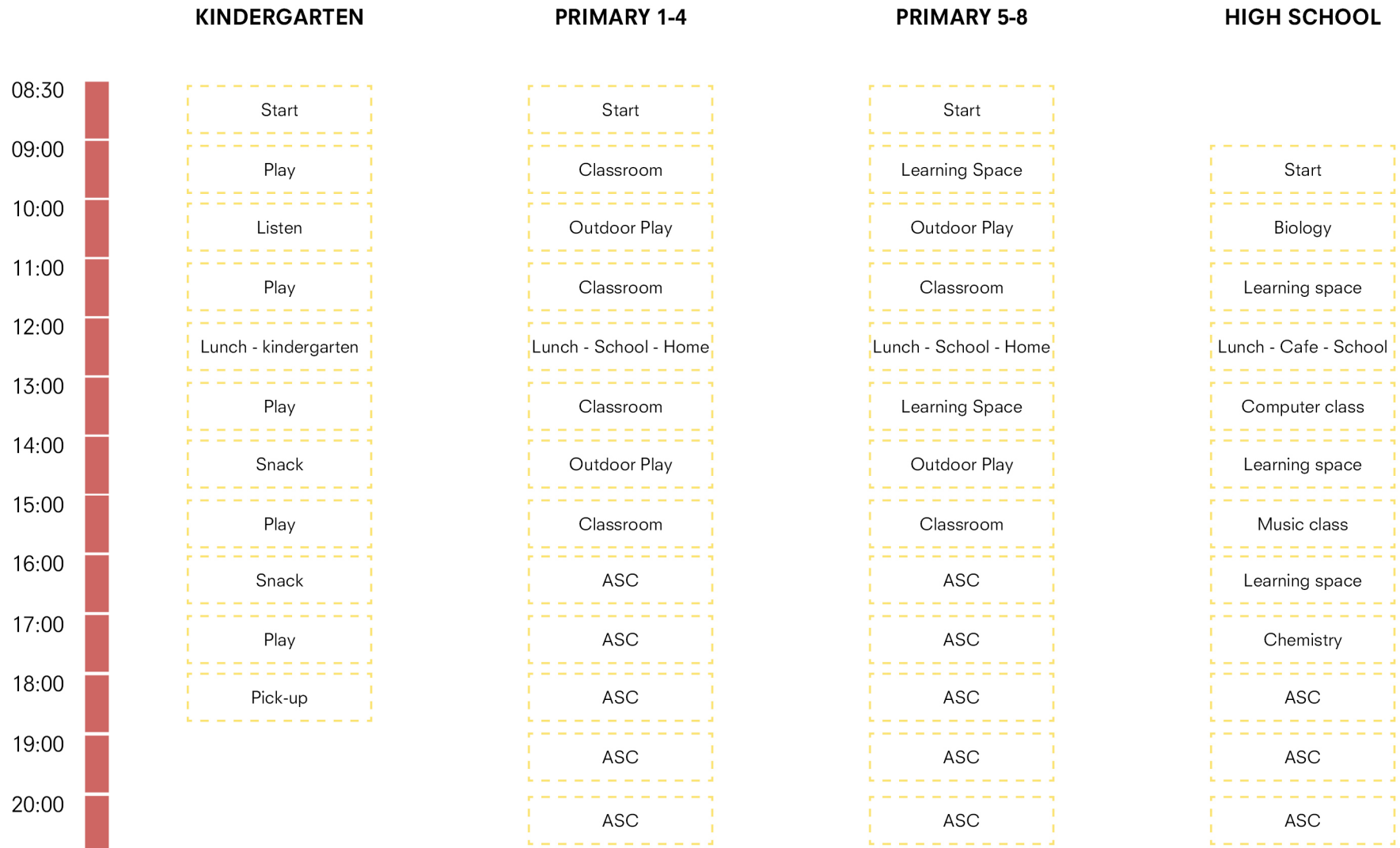


Design

# DIFFERENT USERS



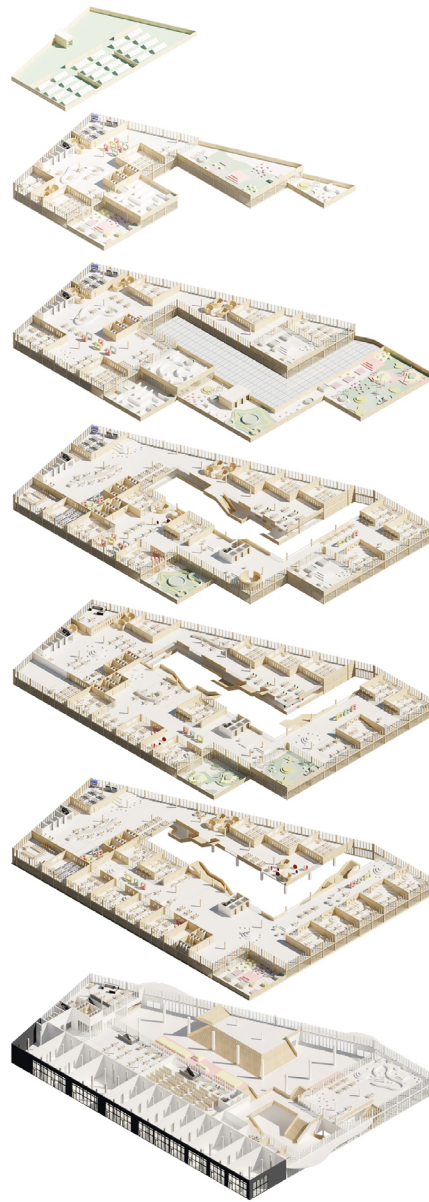
# AGE CLASS SCHEDULES





Design

# AXONOMETRIC



Design

# AXONOMETRIC



Design

# AXONOMETRIC



Design

# AXONOMETRIC



Design

# AXONOMETRIC



Design

# AXONOMETRIC



Design

# AXONOMETRIC



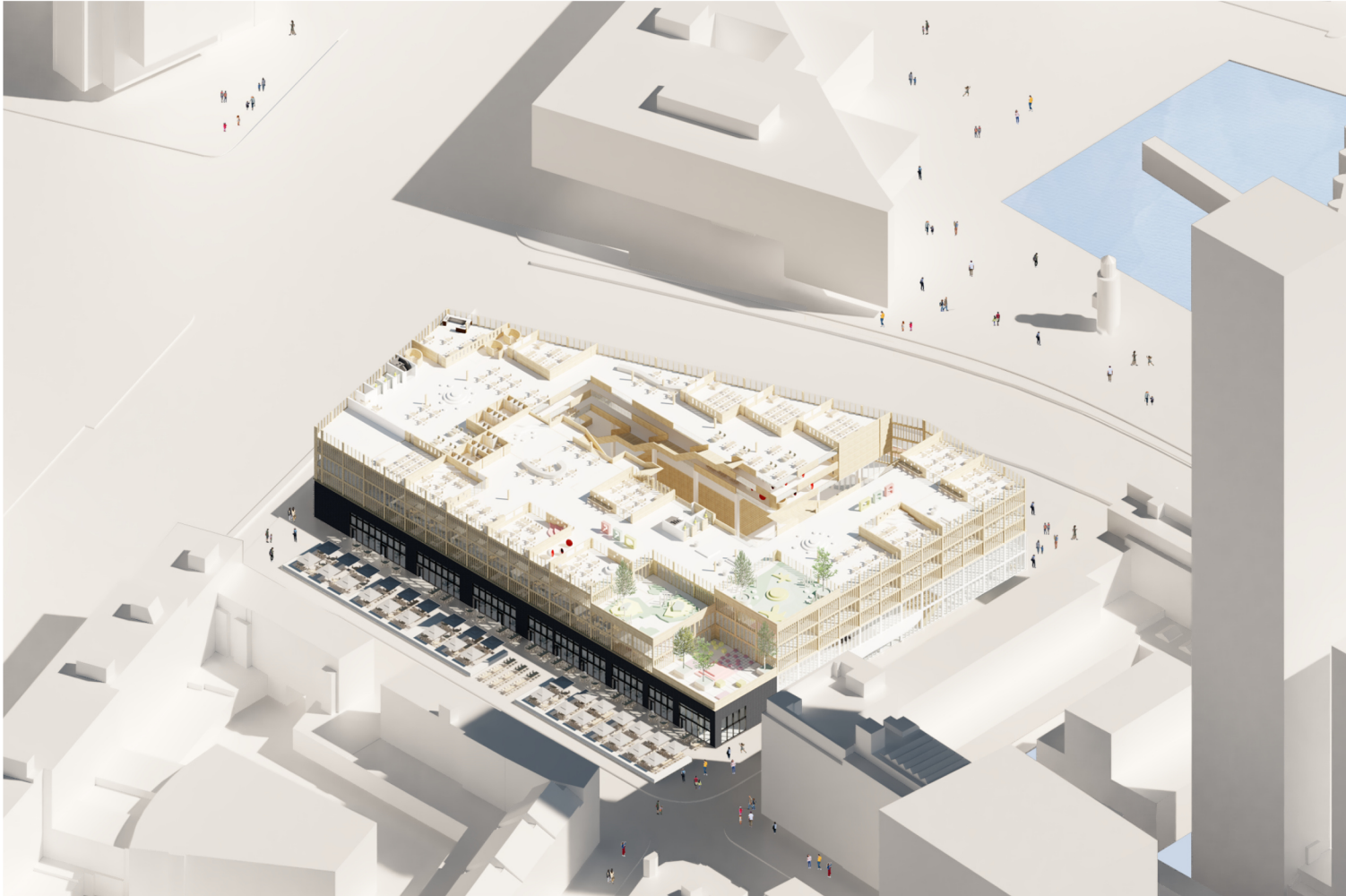
Design

# AXONOMETRIC



Design

# AXONOMETRIC



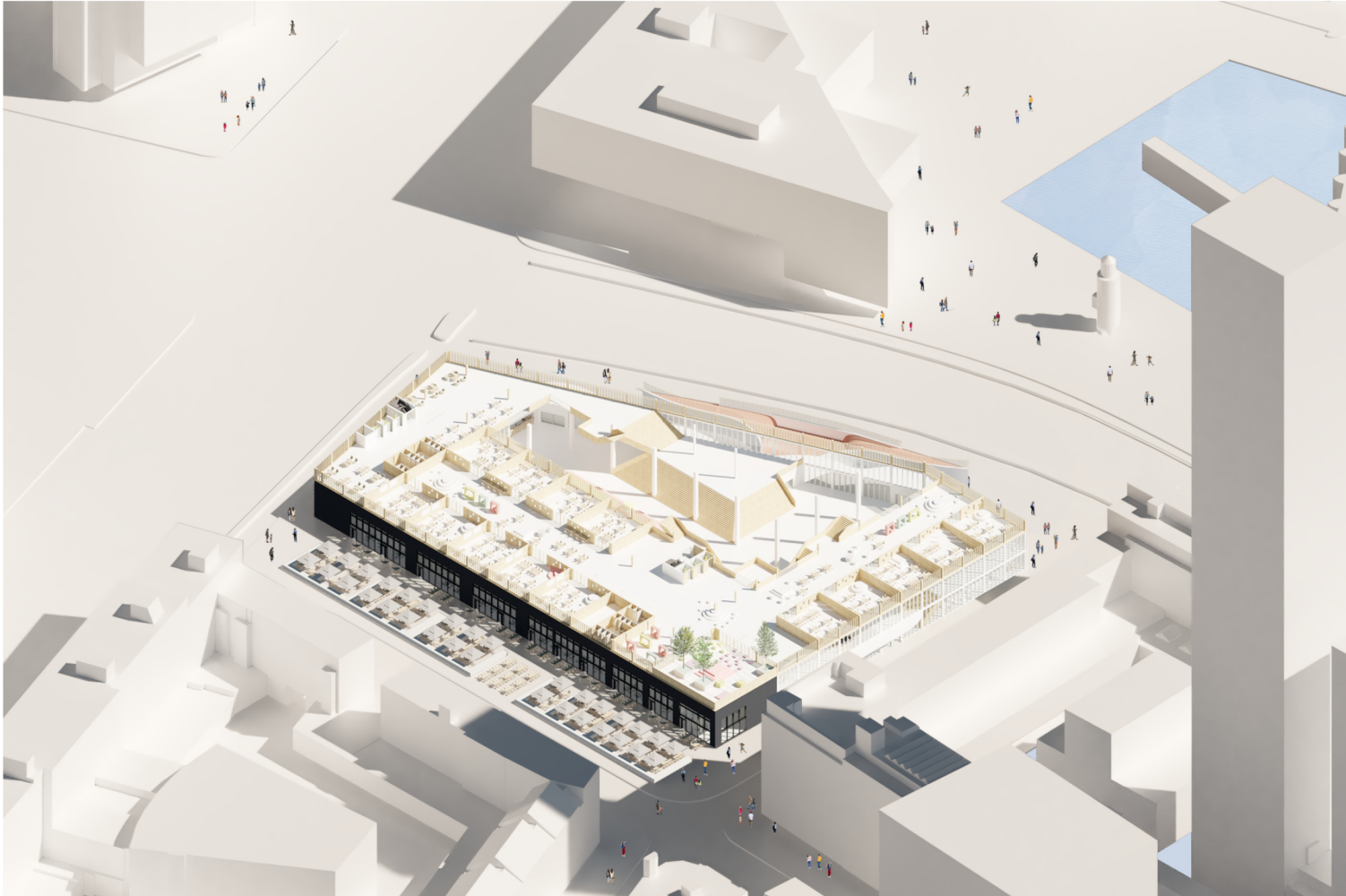
Design

# AXONOMETRIC



Design

# AXONOMETRIC

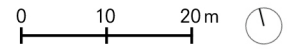
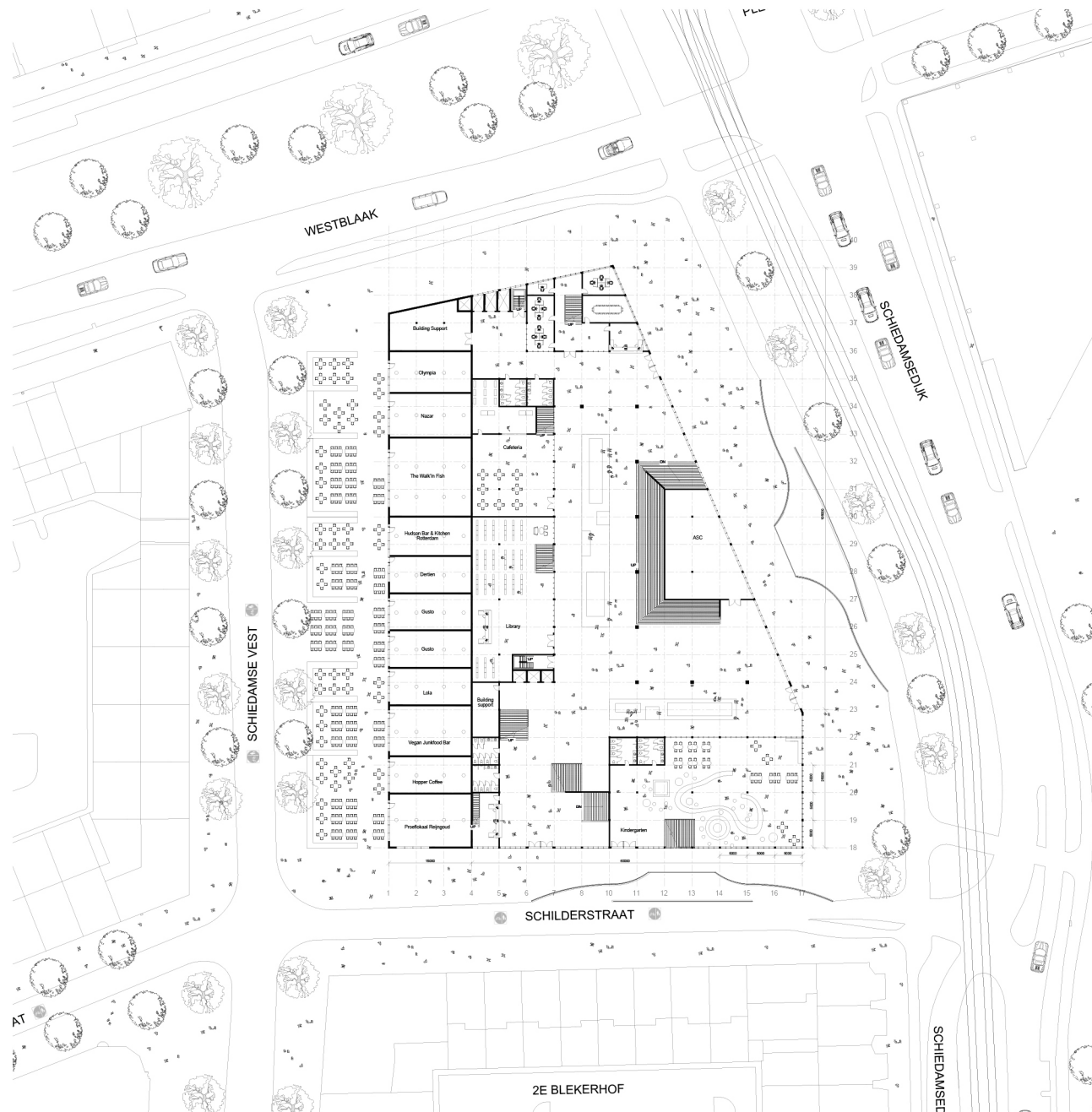


Design

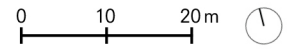
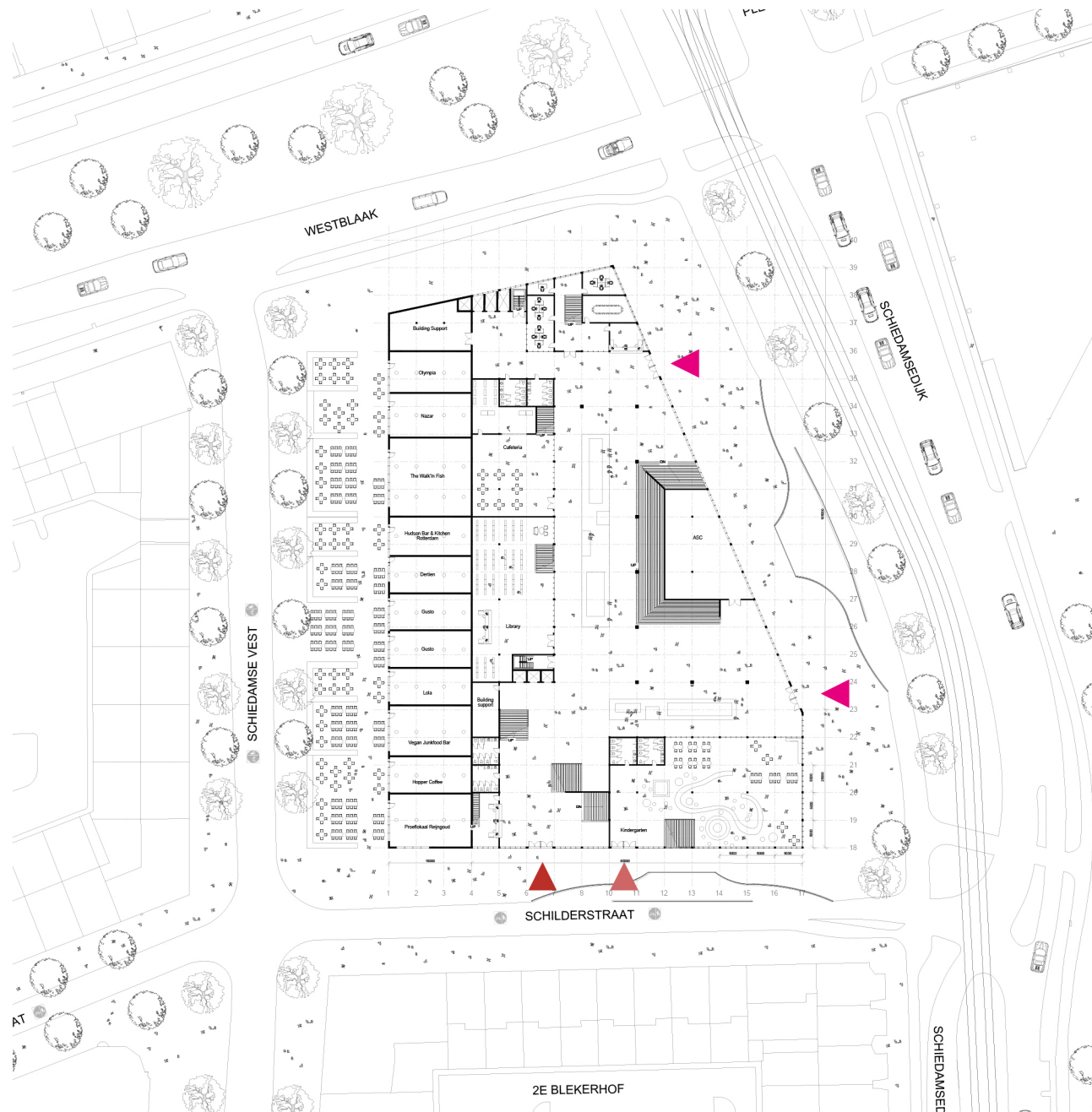
# AXONOMETRIC



# URBAN IMPLEMENTATION - BG +00



# URBAN IMPLEMENTATION - BG +00



# PRIMARY SCHOOL & KINDERGARTEN



Design

# WITTE DE WITH

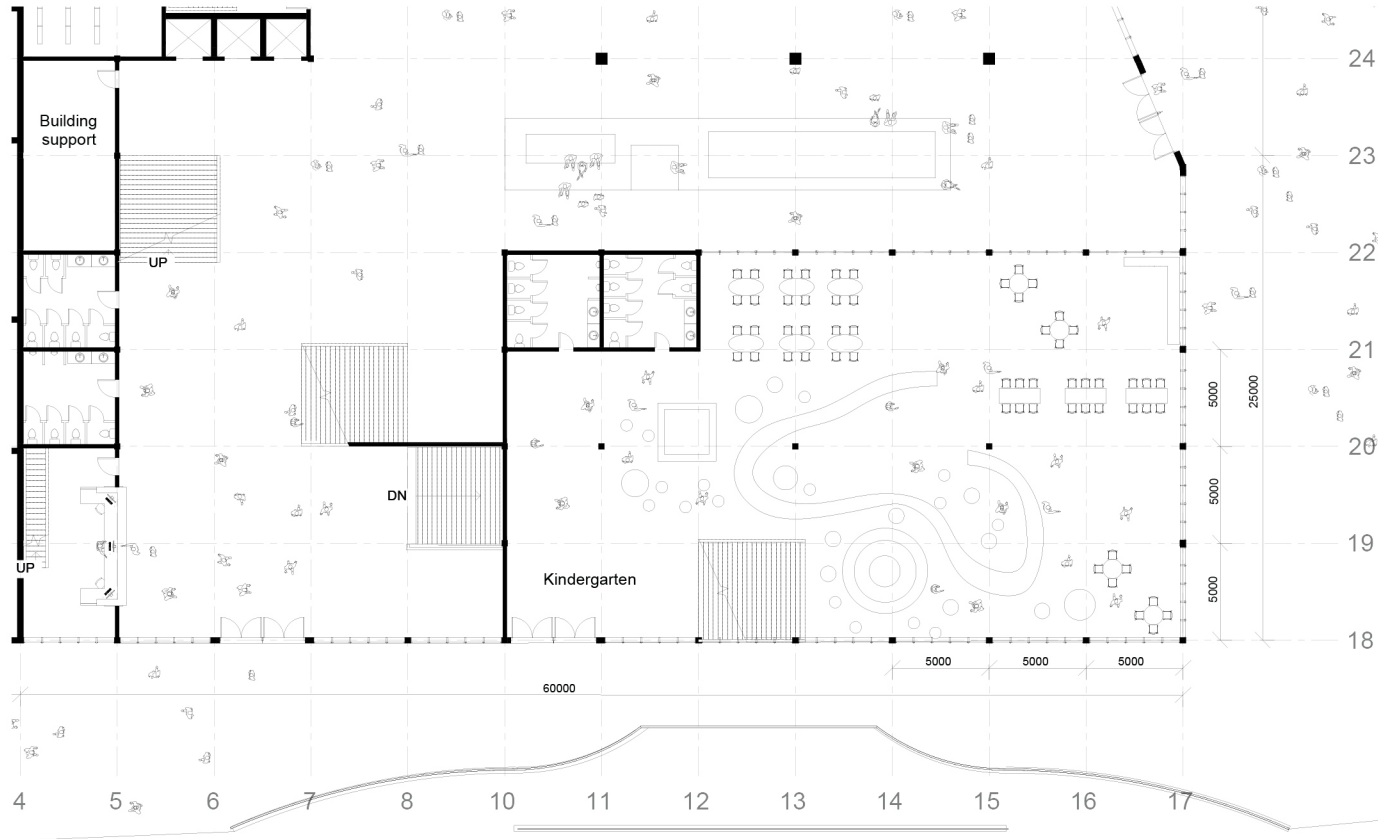


Design

# KINDERGARTEN & PRIMARY SCHOOL ENTRANCE

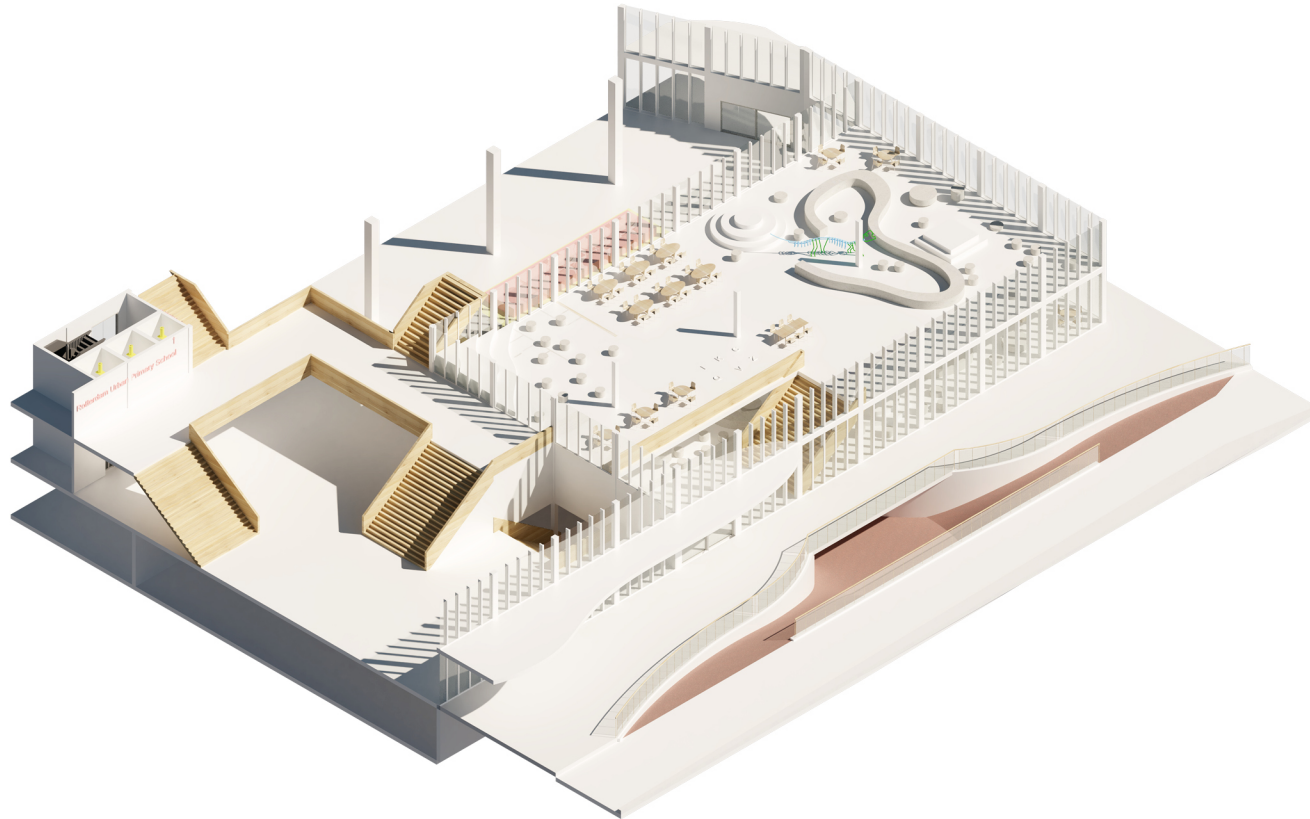


# KINDERGARTEN & PRIMARY SCHOOL ENTRANCE



Design

# PRIMARY SCHOOL ENTRANCE



Design

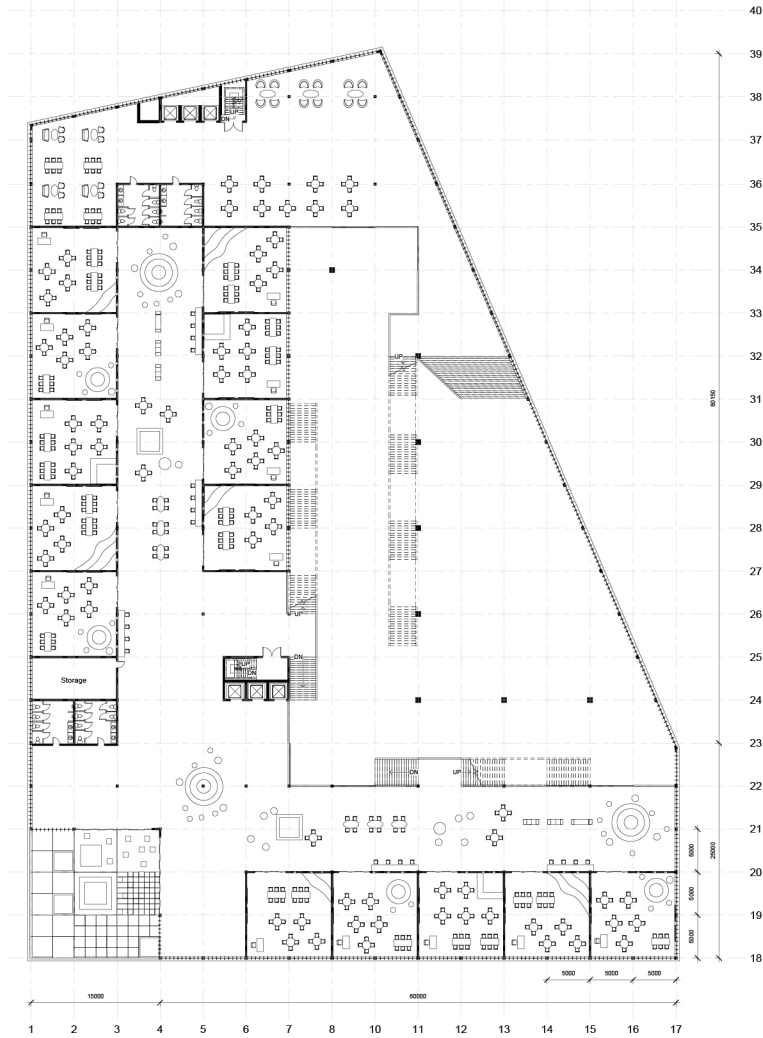
# PRIMARY SCHOOL ENTRANCE



Design  
**CENTRAL HALL**

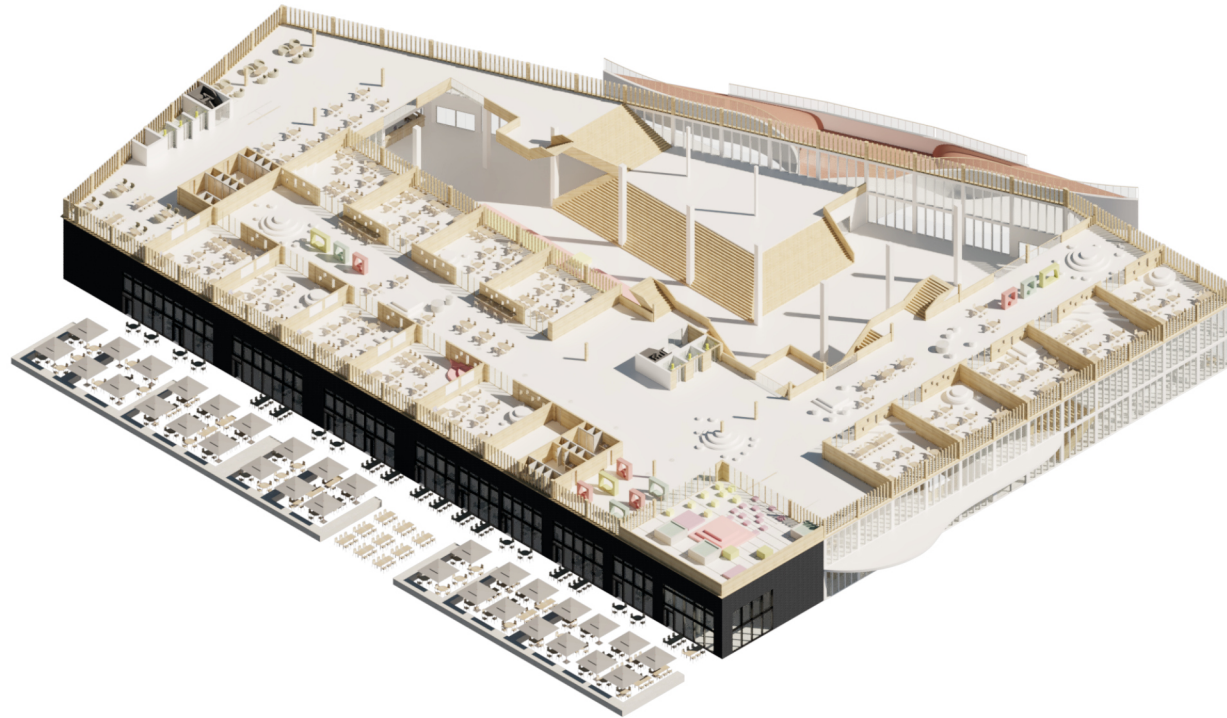


# LEVEL +02



Design

# LEVEL +02 - PRIMARY SCHOOL



Design

## LEVEL +02 - PRIMARY SCHOOL

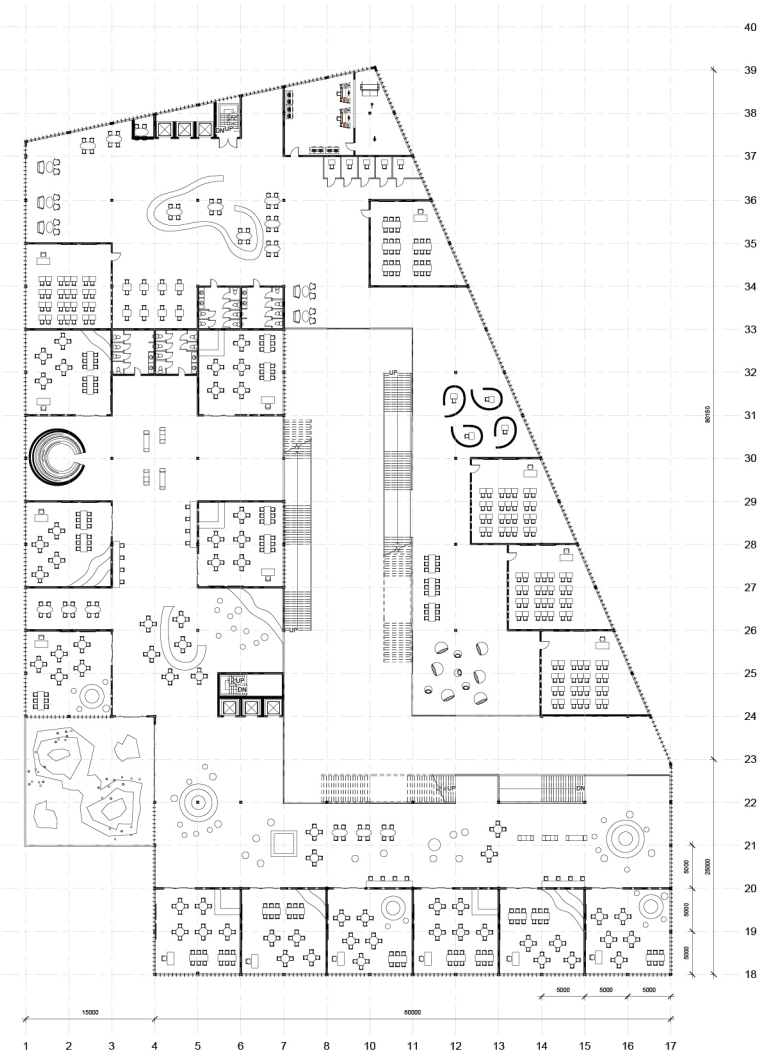
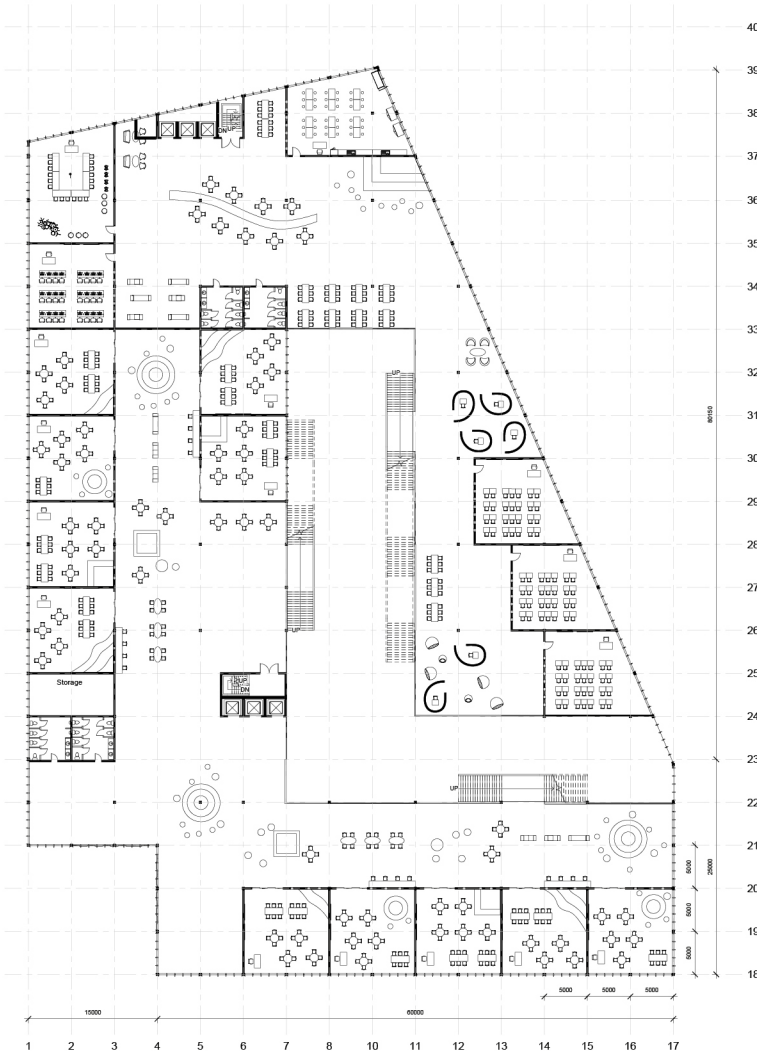


Design

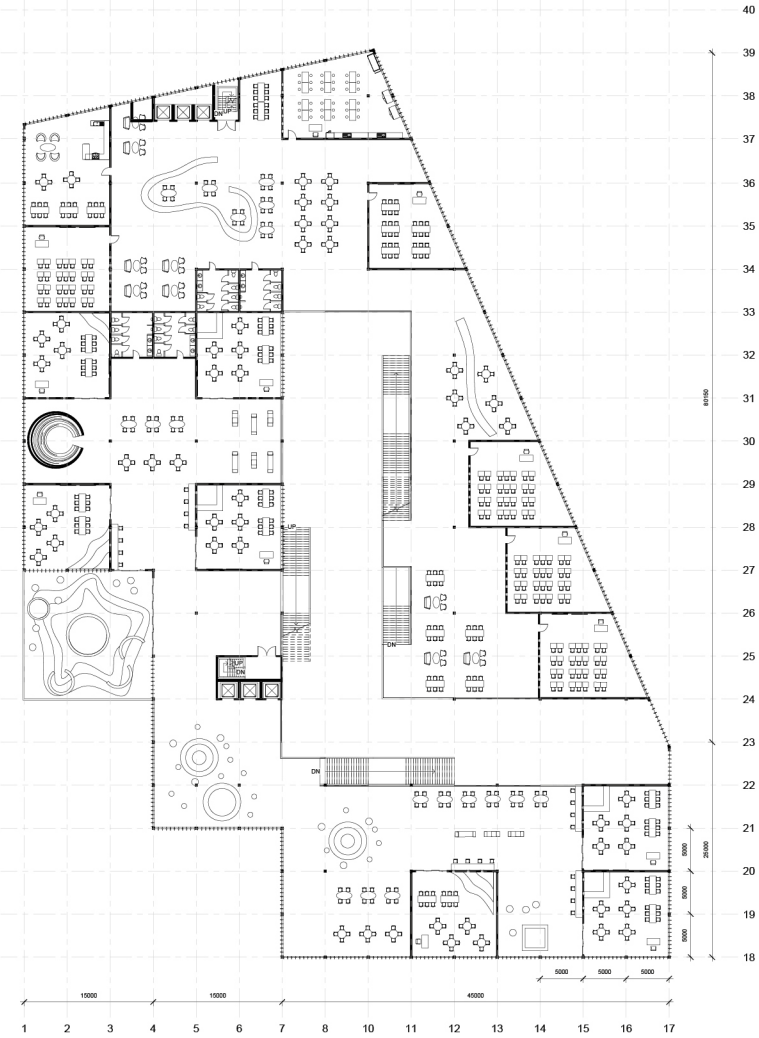
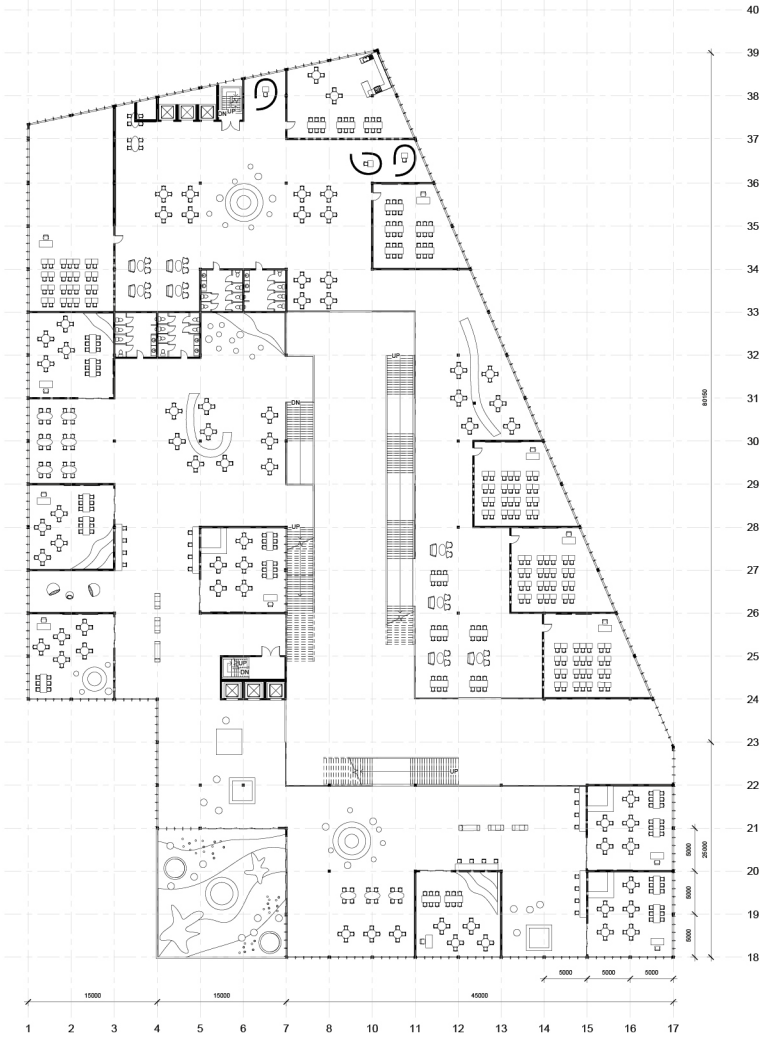
# LEVEL +02 - PRIMARY SCHOOL



# LEVEL +03-04

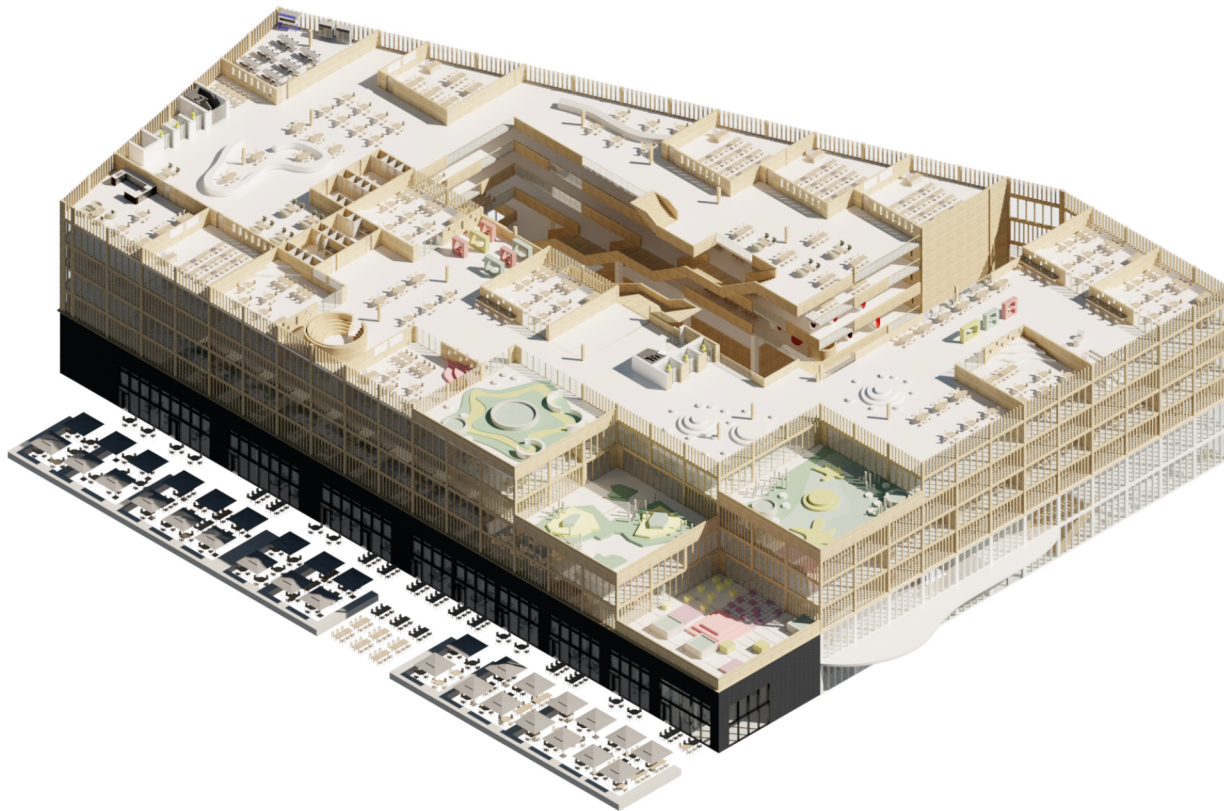


# LEVEL +05-06



Design

**LEVEL +05-06**



Design

# OUTDOOR SPACE

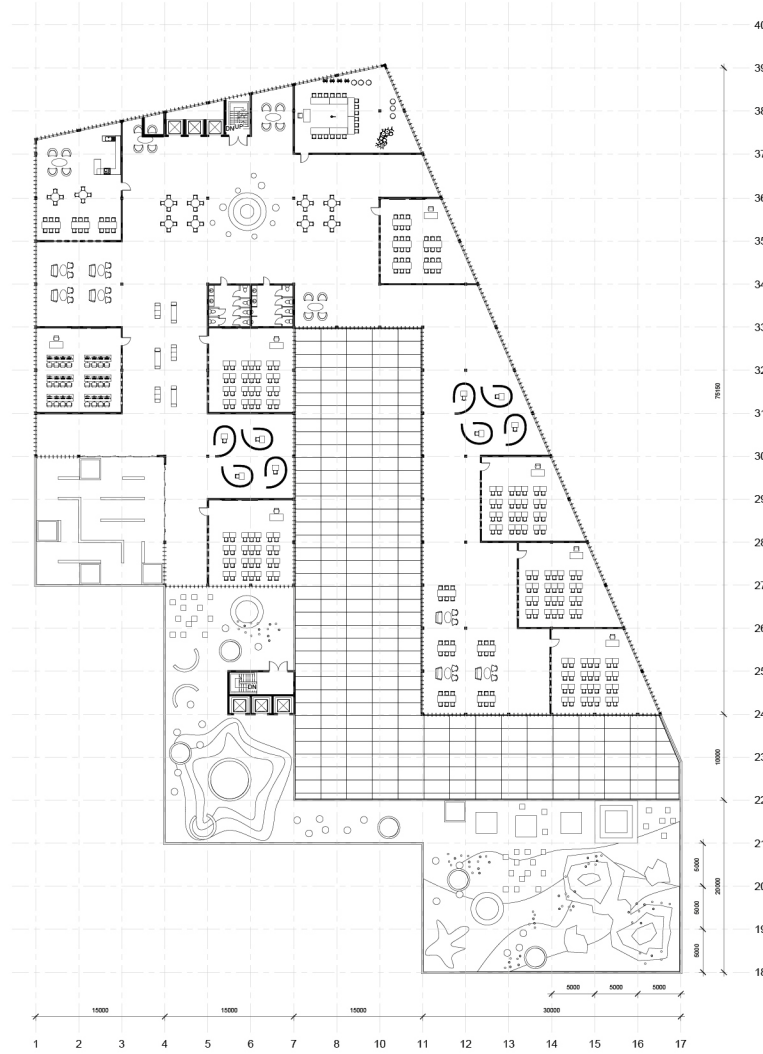
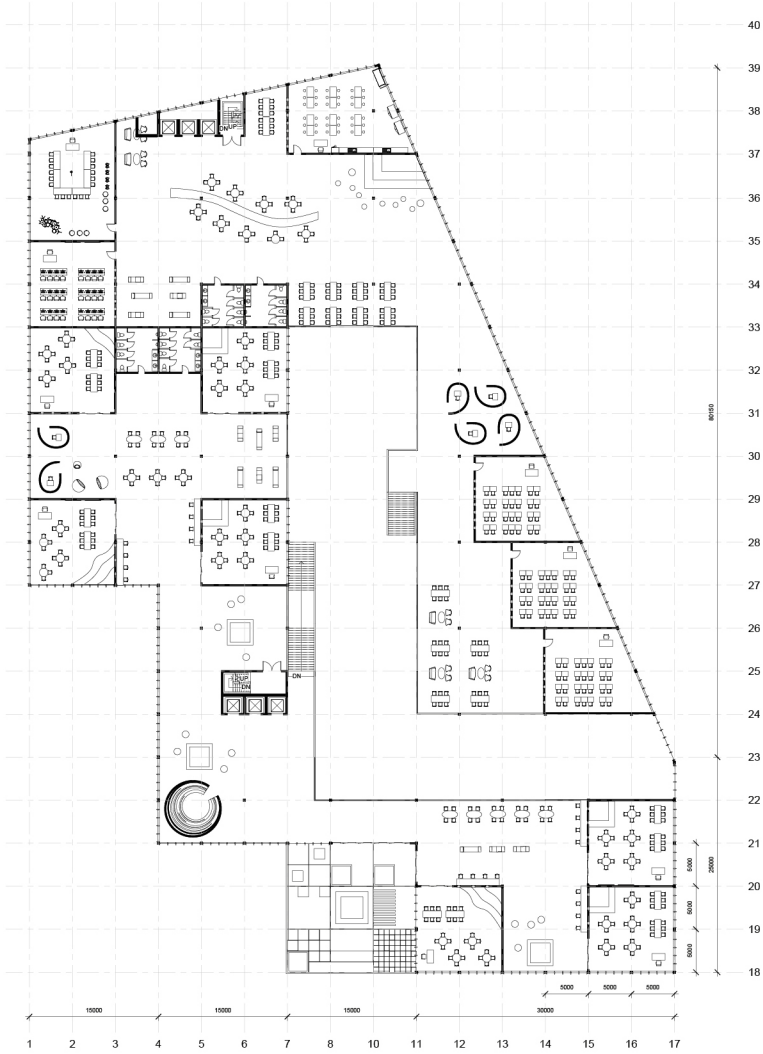


Design

# OUTDOOR SPACE

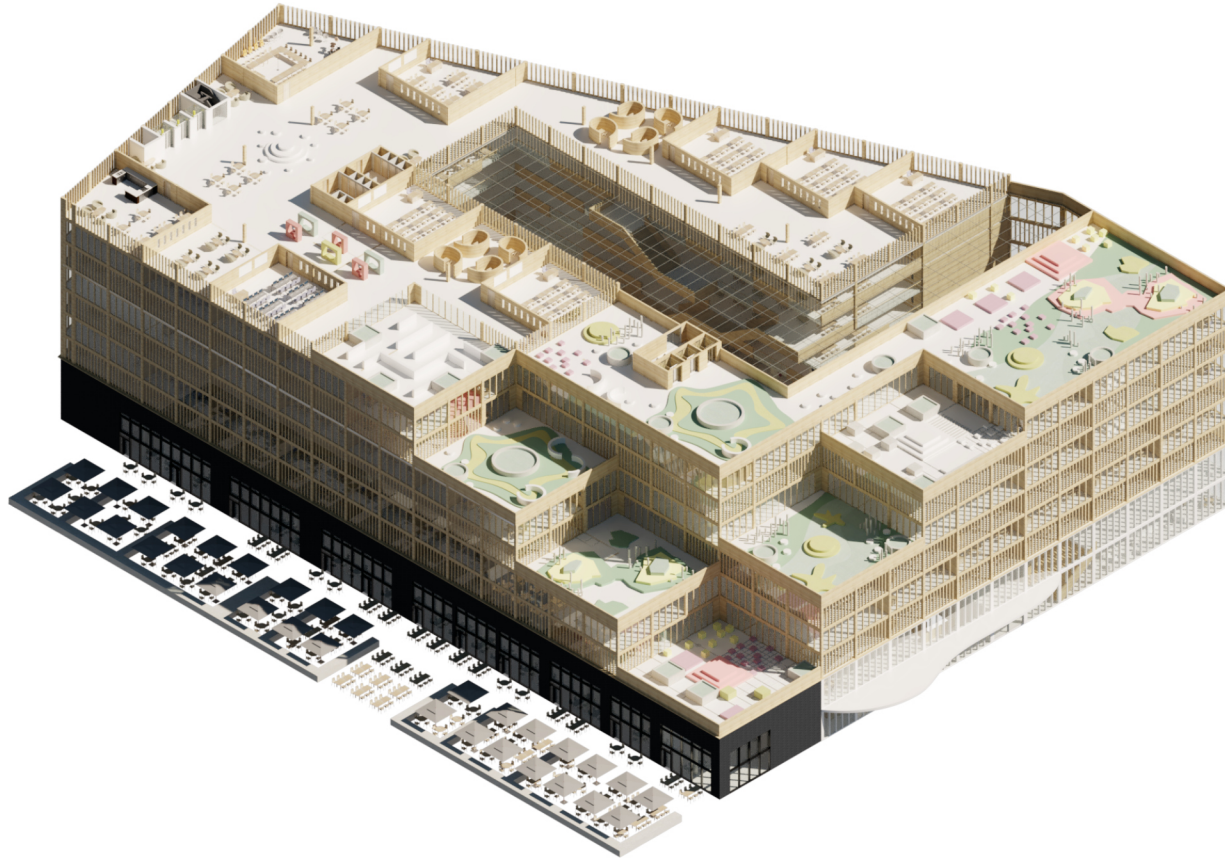


# LEVEL +07-08



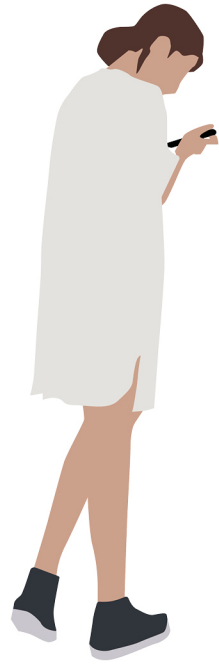
Design

# LEVEL +07-08

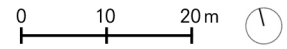
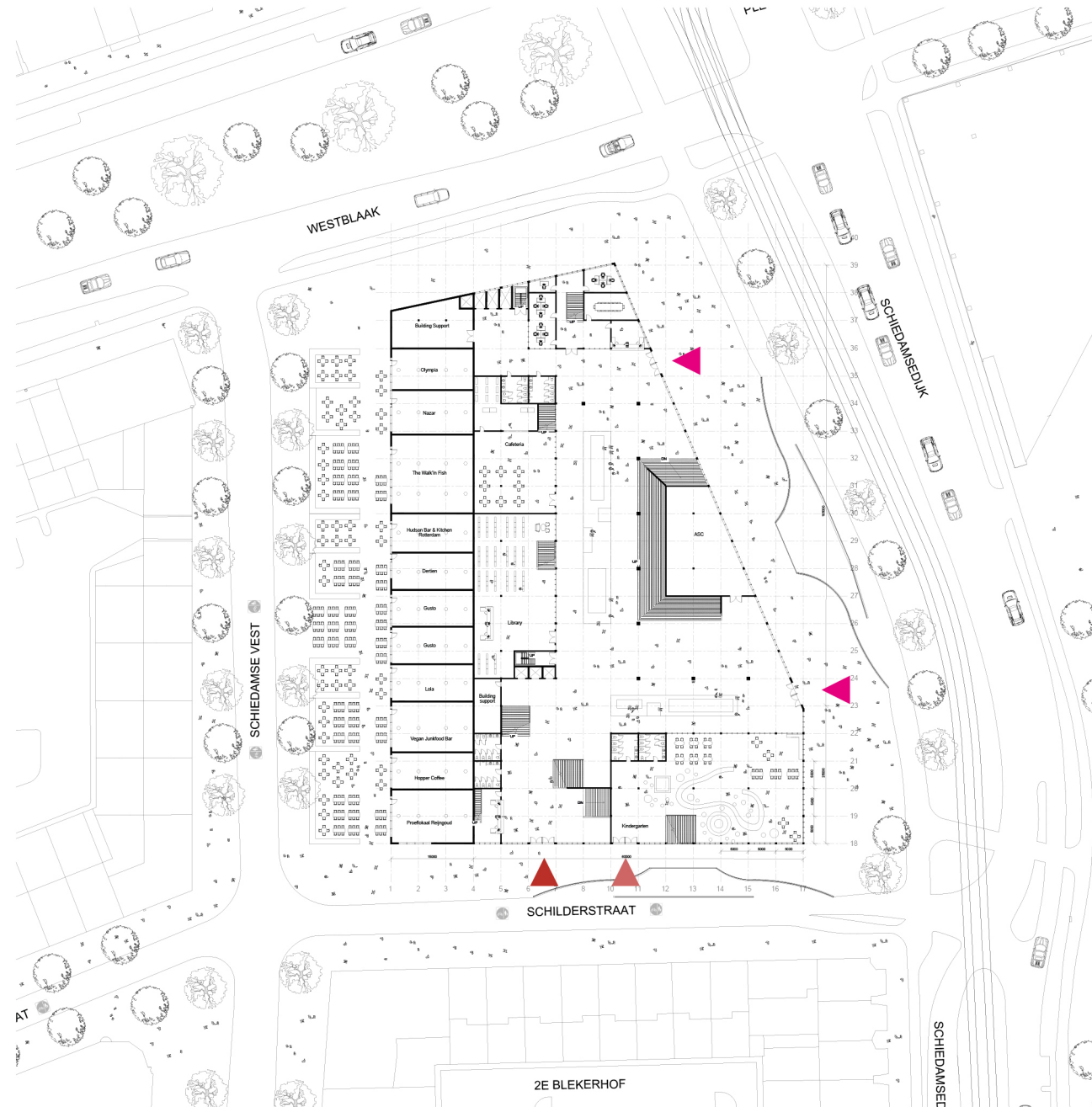


Design

# SECONDARY SCHOOL



# URBAN IMPLEMENTATION - BG +00

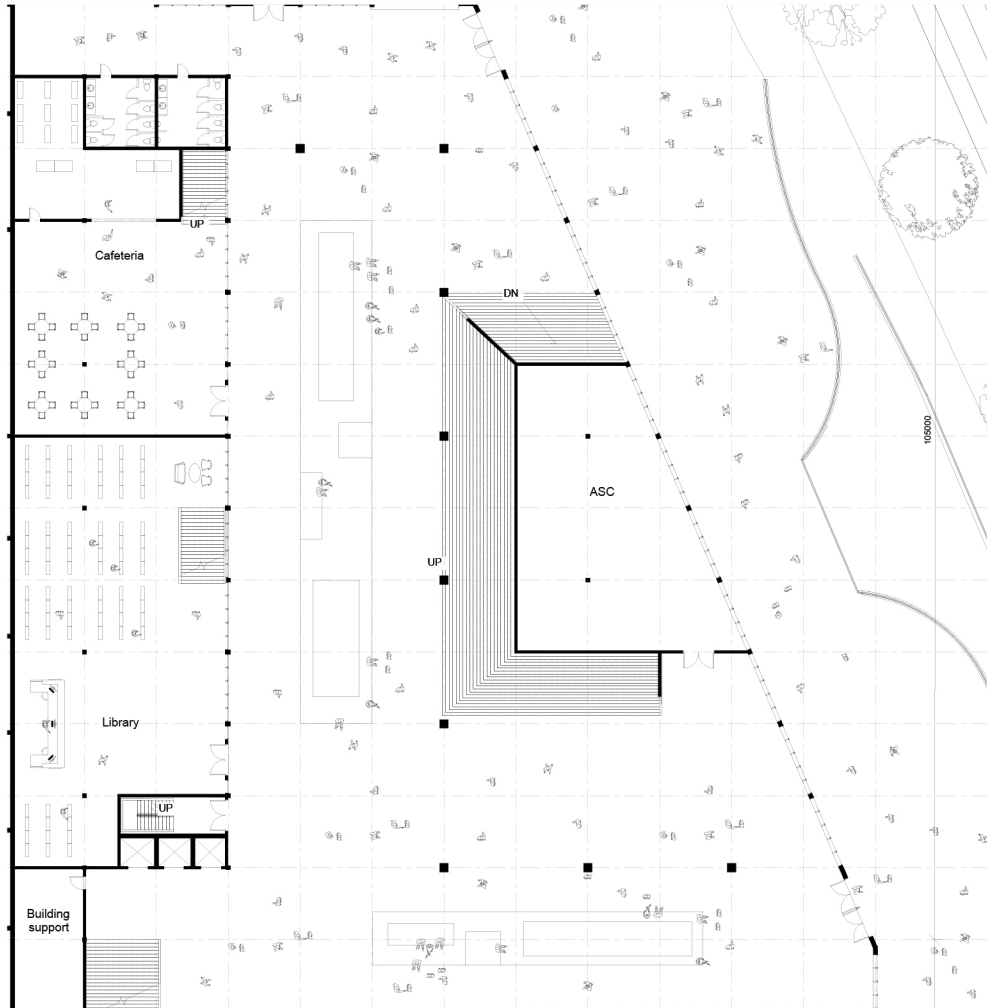


Design

## CHURCHILL SQUARE (BEURS) - VIEW

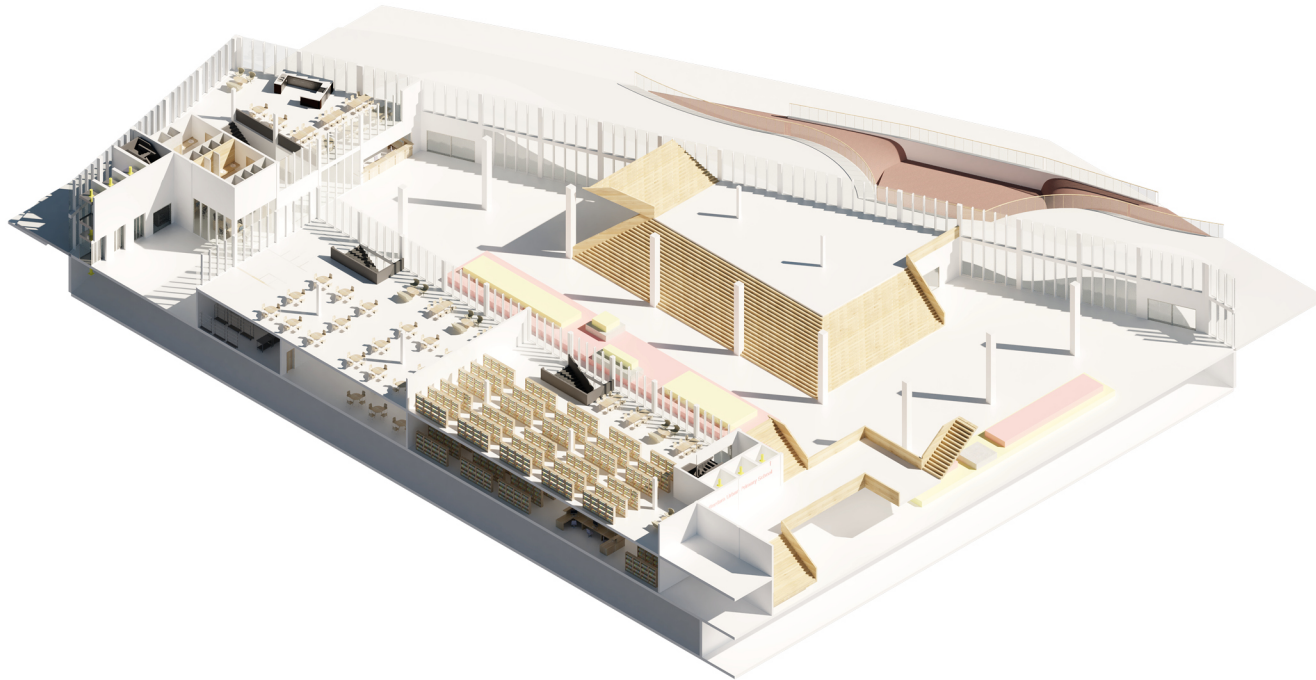


# SECONDARY ENTRANCE



Design

## SECONDARY ENTRANCE - CENTRAL HALL



Design

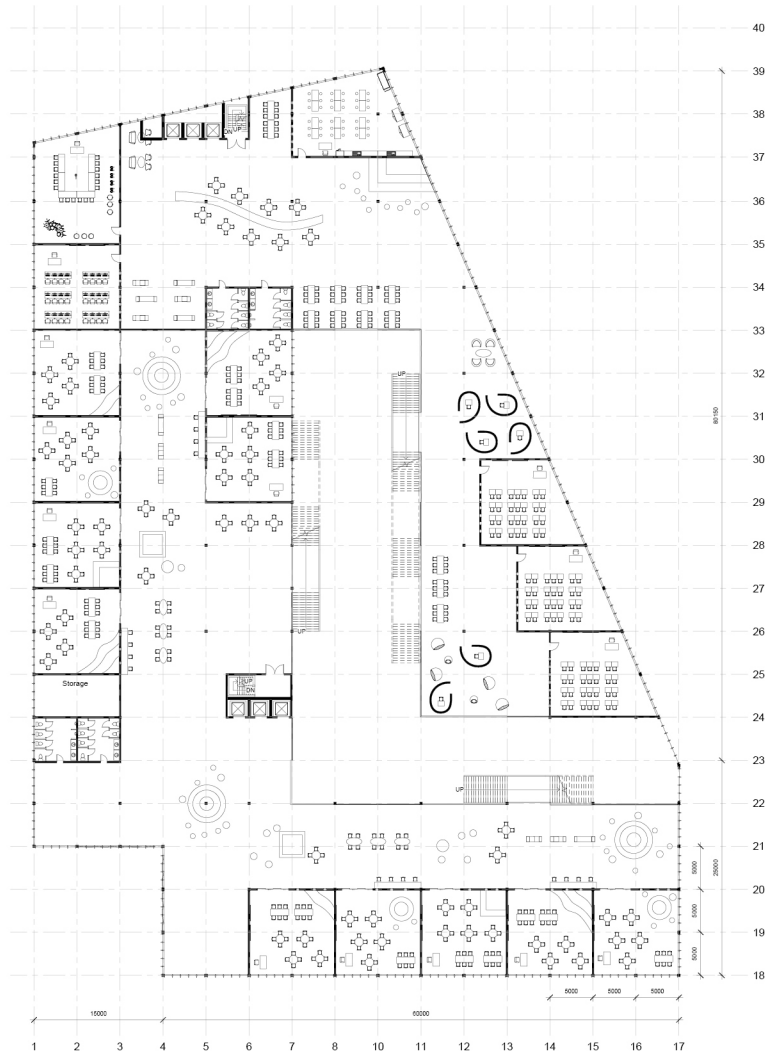
# CENTRAL HALL



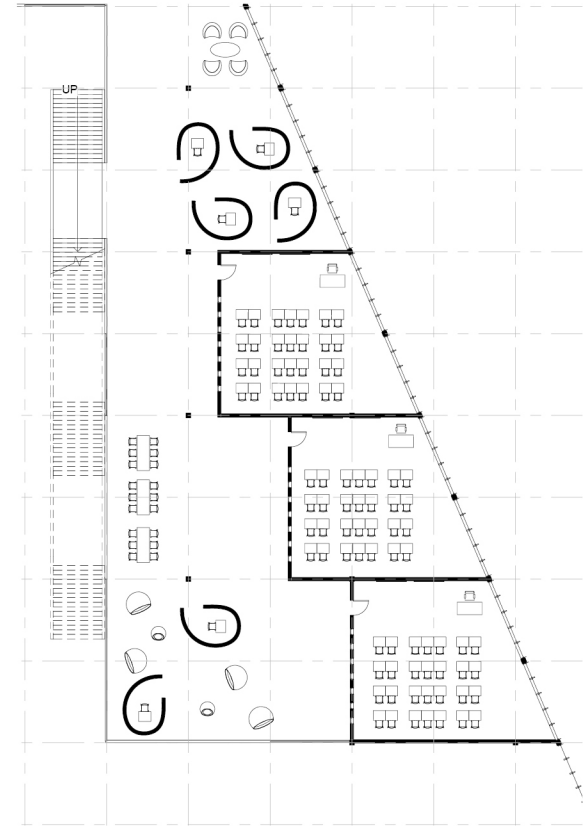
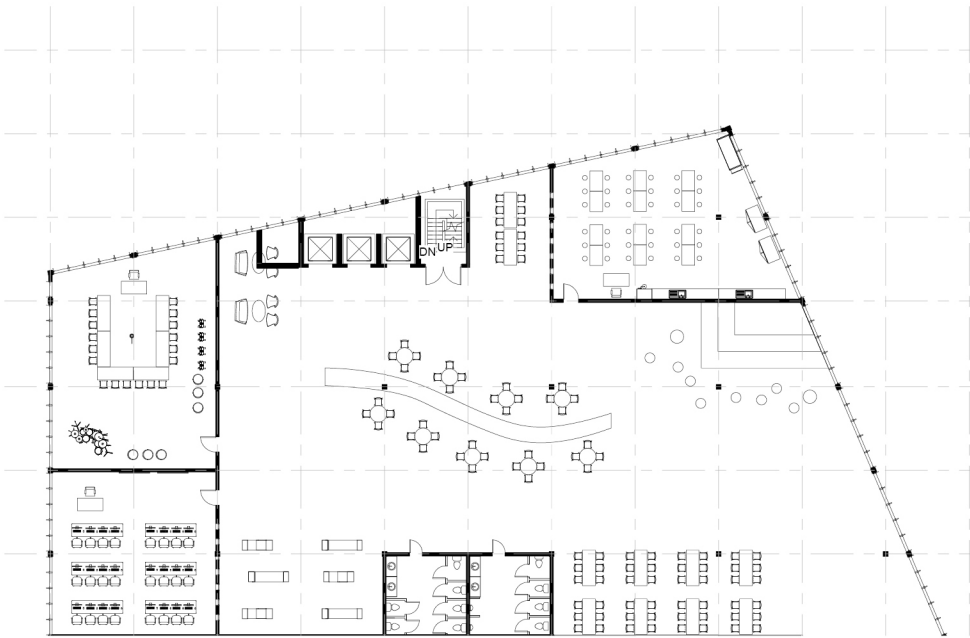
Design  
**CENTRAL HALL**



# LEVEL +03

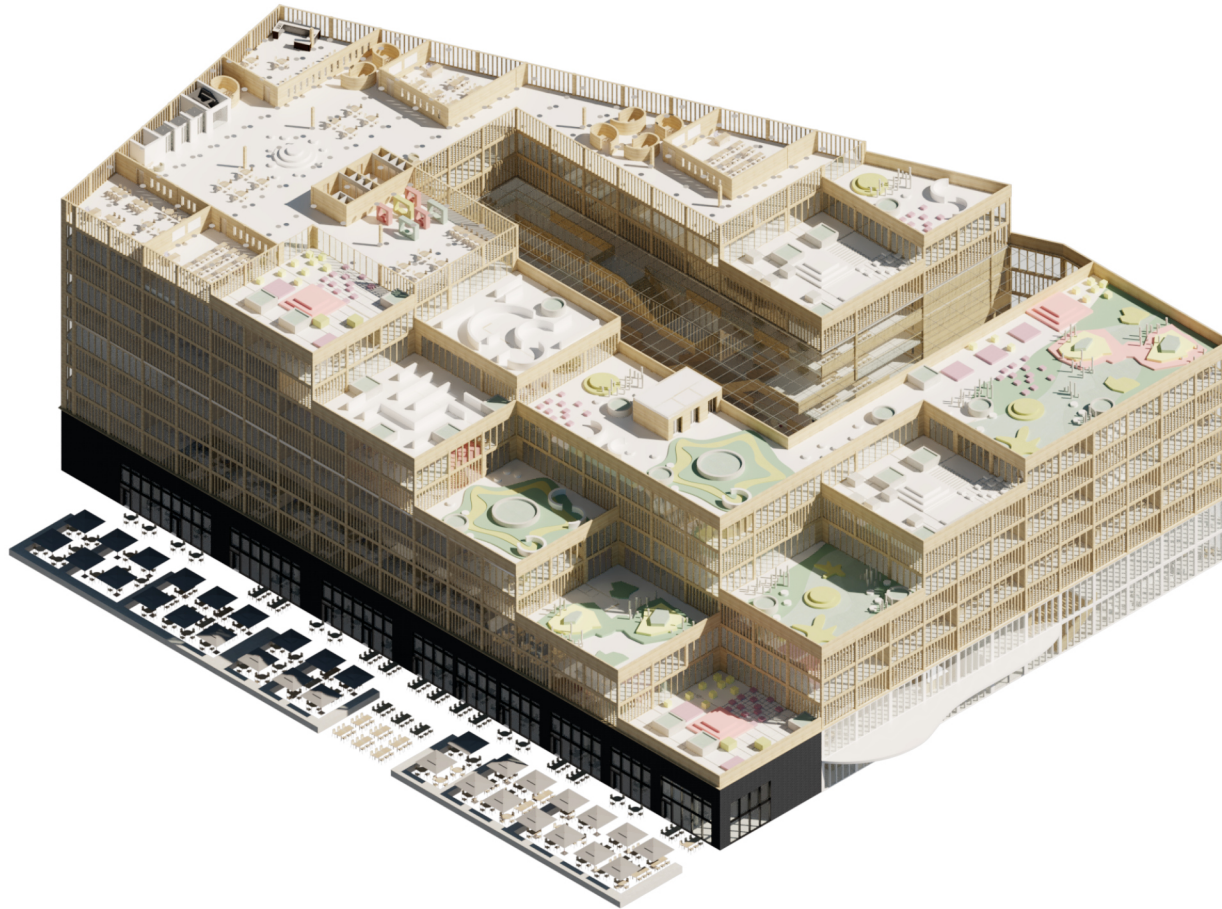


**LEVEL +03**



Design

# AXONOMETRIC



Design

# LEARNING SPACE



Design

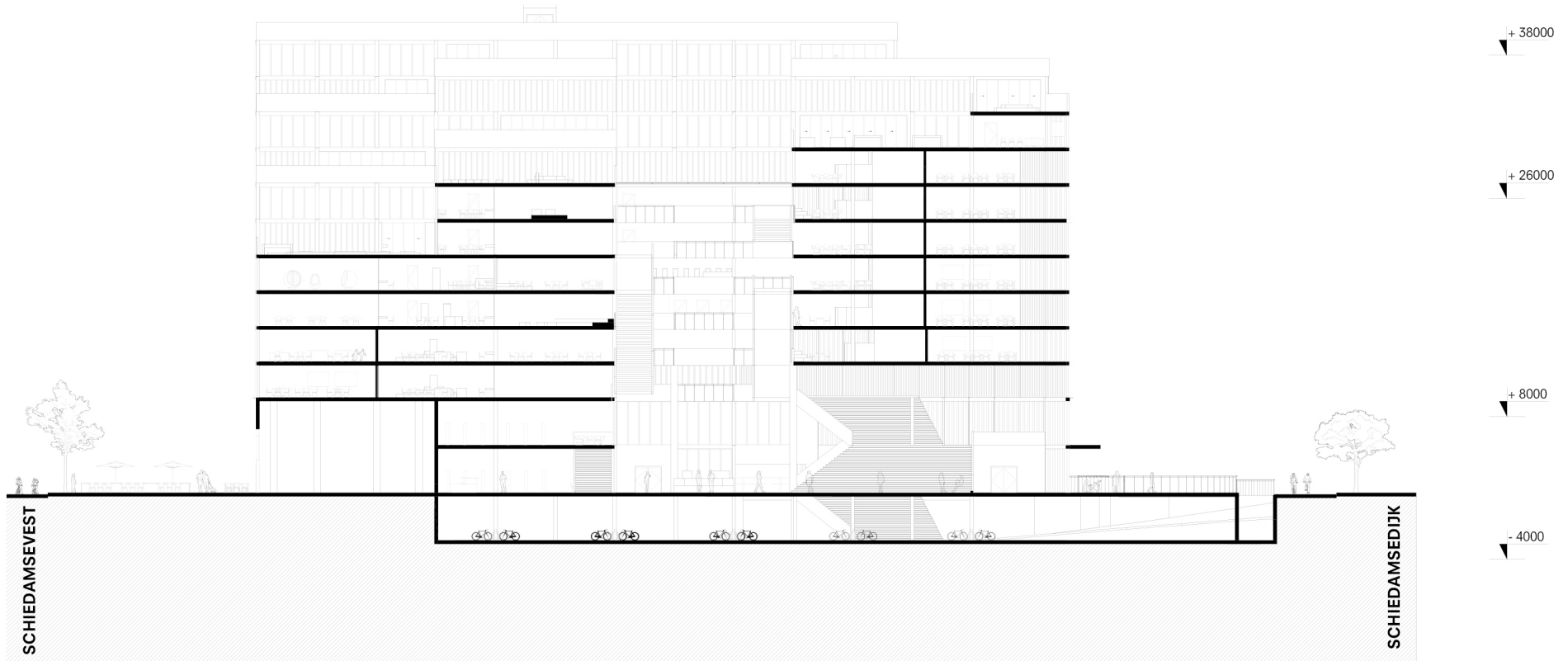
## COURSE SPECIFIC CLASSROOMS



Design  
**SECTION**



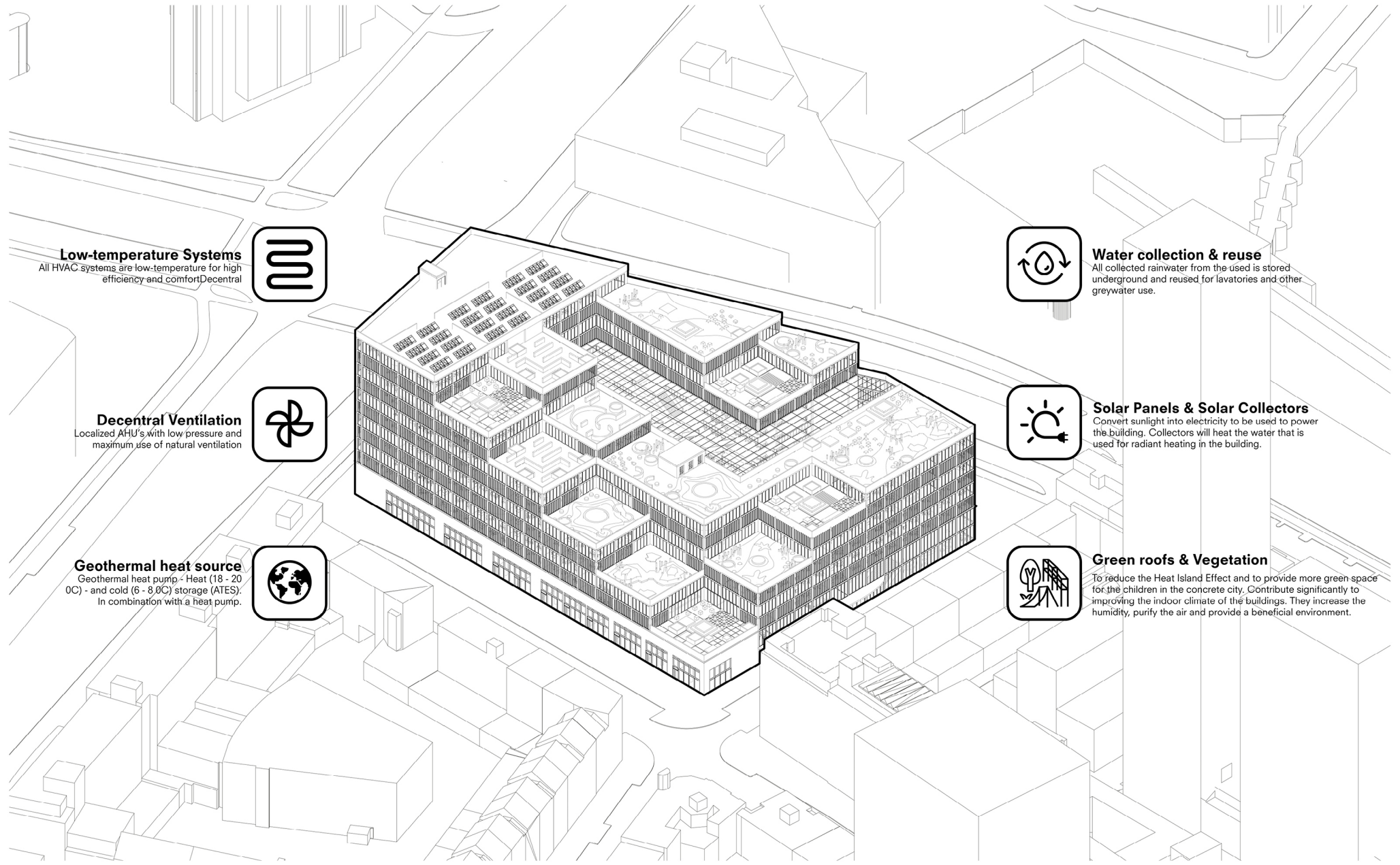
Design  
**SECTION**



# CLIMATE DESIGN



# CLIMATE SCHEME



### Low-temperature Systems

All HVAC systems are low-temperature for high efficiency and comfort. Decentral



### Decentral Ventilation

Localized AHU's with low pressure and maximum use of natural ventilation



### Geothermal heat source

Geothermal heat pump - Heat (18 - 20 0C) - and cold (6 - 8,0C) storage (ATES). In combination with a heat pump.



### Water collection & reuse

All collected rainwater from the used is stored underground and reused for lavatories and other greywater use.



### Solar Panels & Solar Collectors

Convert sunlight into electricity to be used to power the building. Collectors will heat the water that is used for radiant heating in the building.

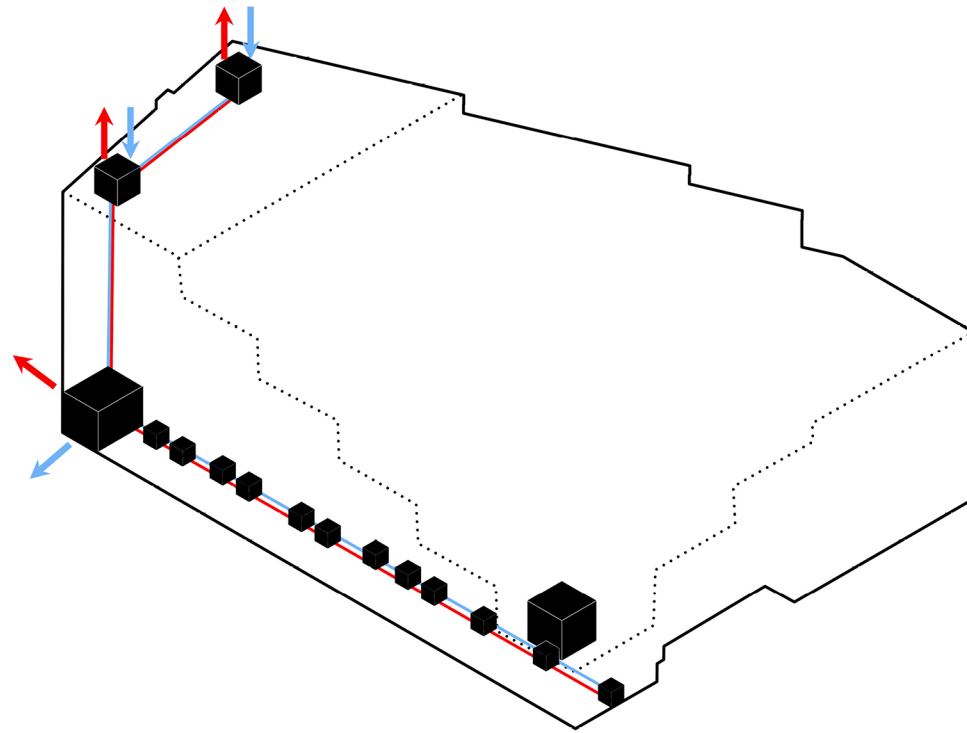


### Green roofs & Vegetation

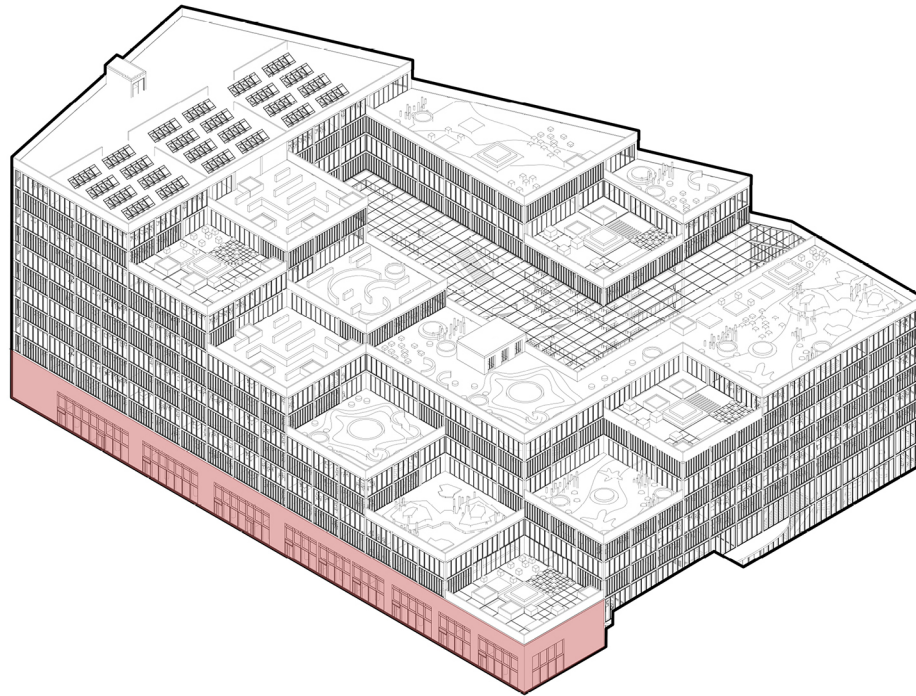
To reduce the Heat Island Effect and to provide more green space for the children in the concrete city. Contribute significantly to improving the indoor climate of the buildings. They increase the humidity, purify the air and provide a beneficial environment.



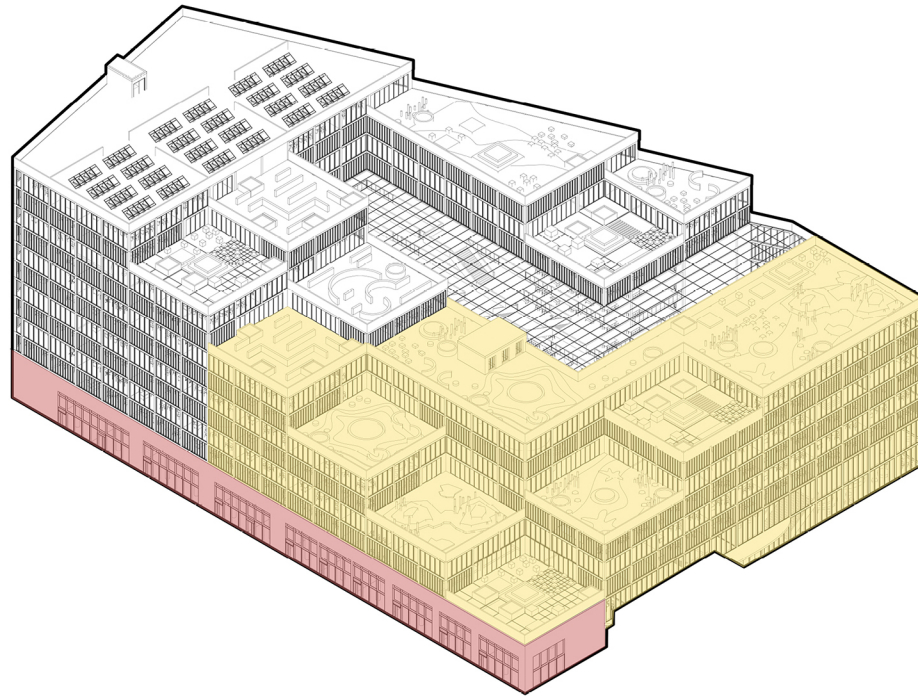
# VENTILATION - AIR TREATMENT UNITS



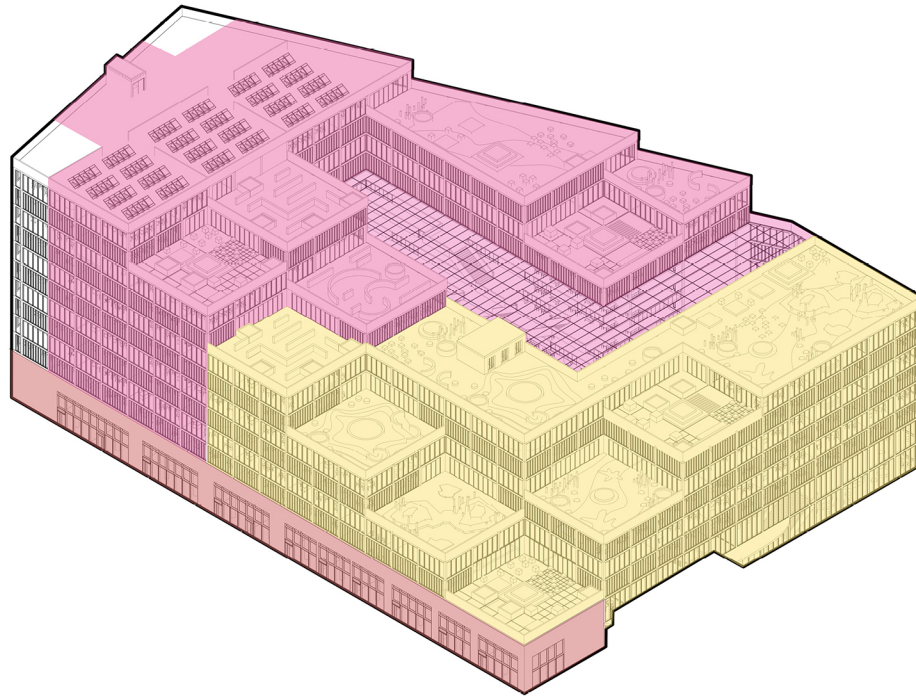
# VENTILATION ZONES



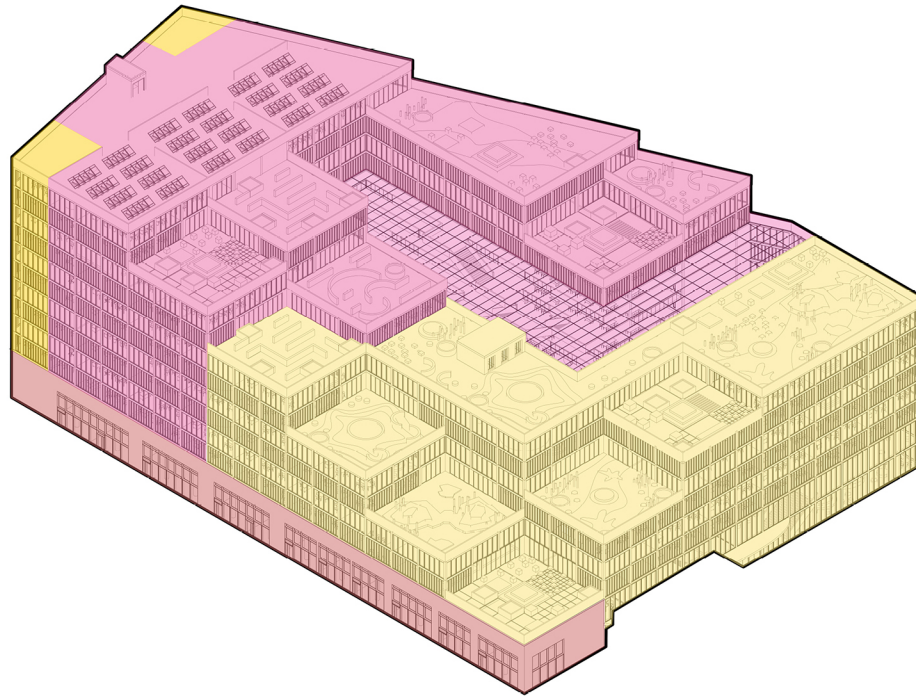
# VENTILATION ZONES



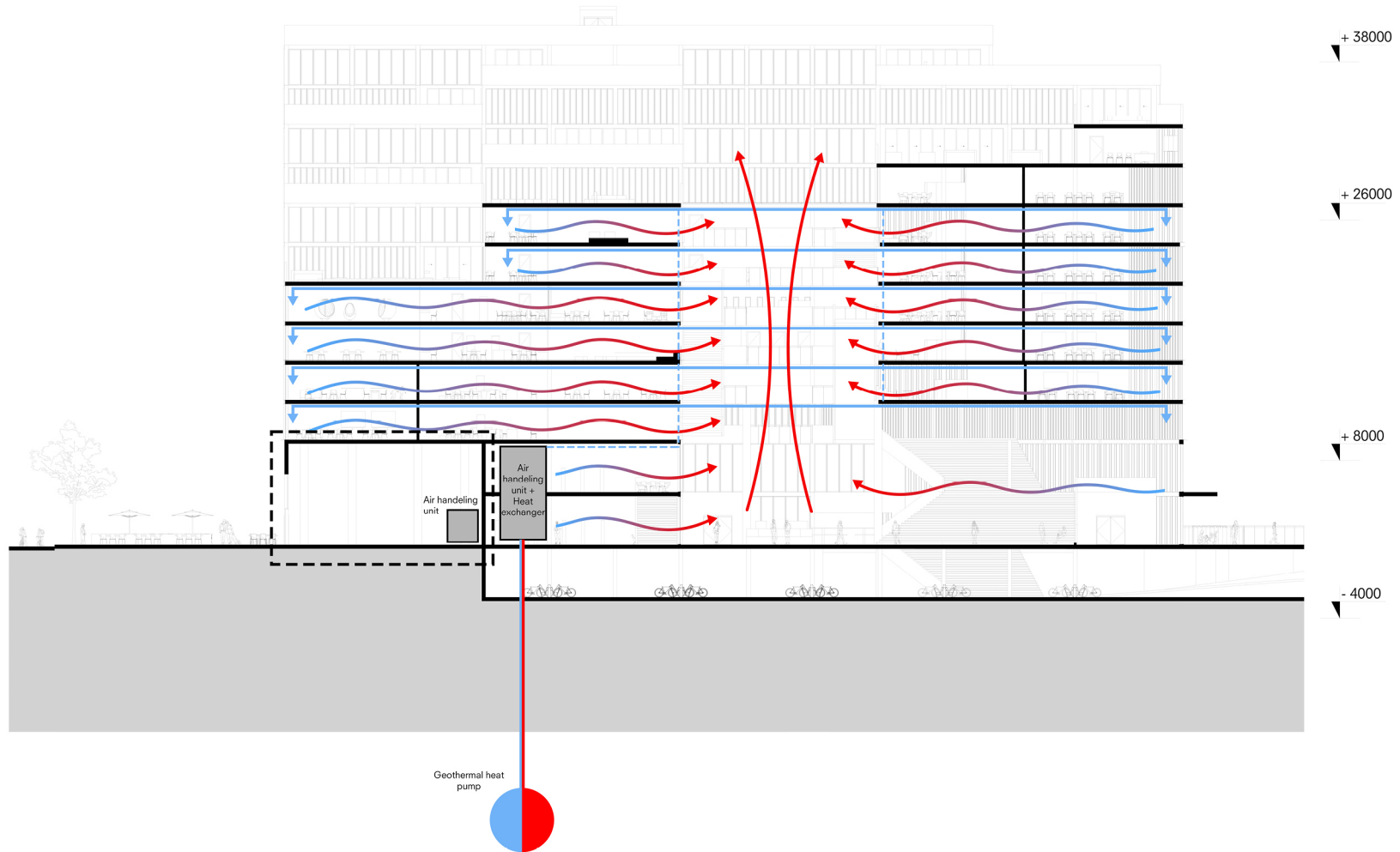
# VENTILATION ZONES



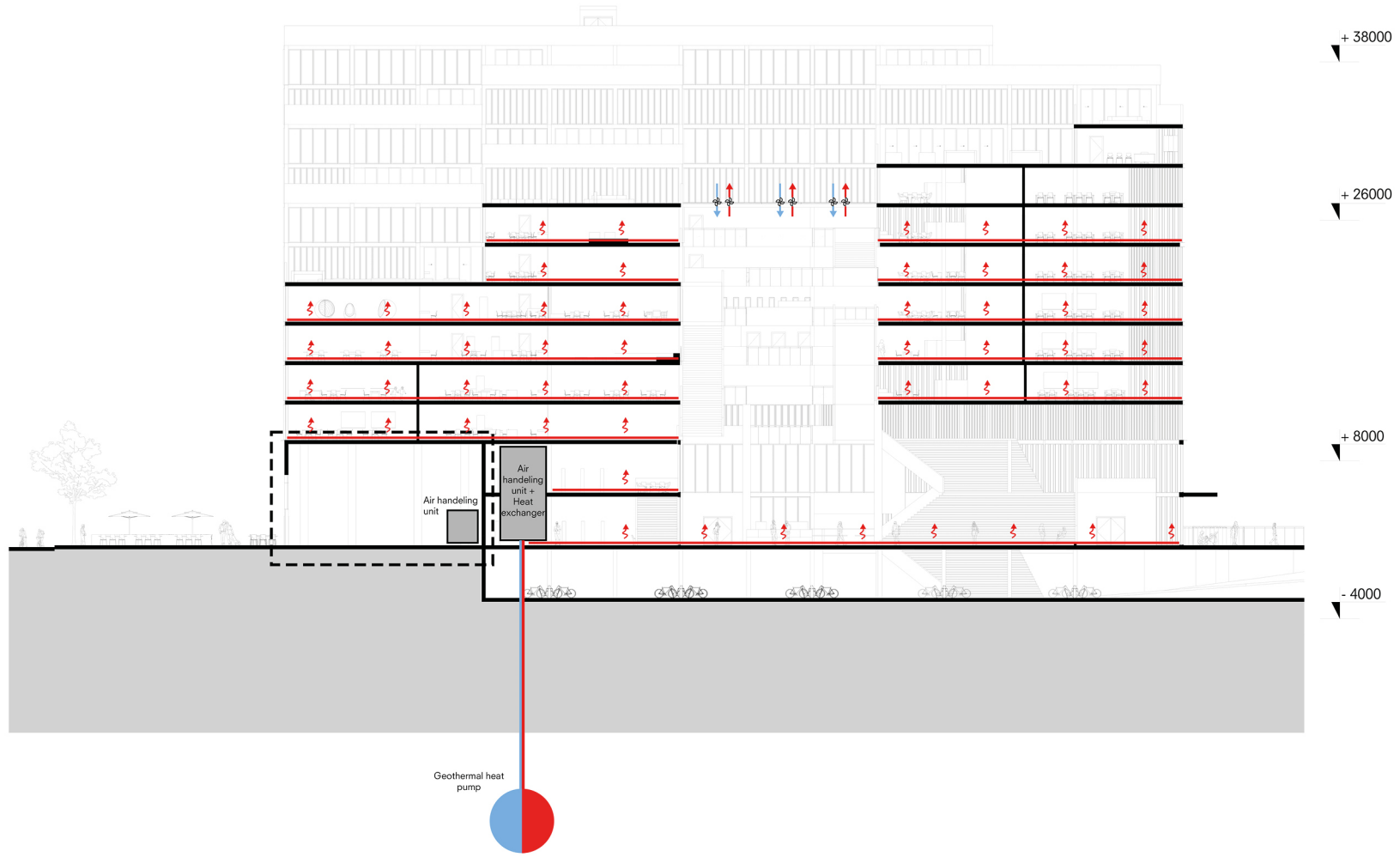
# VENTILATION ZONES



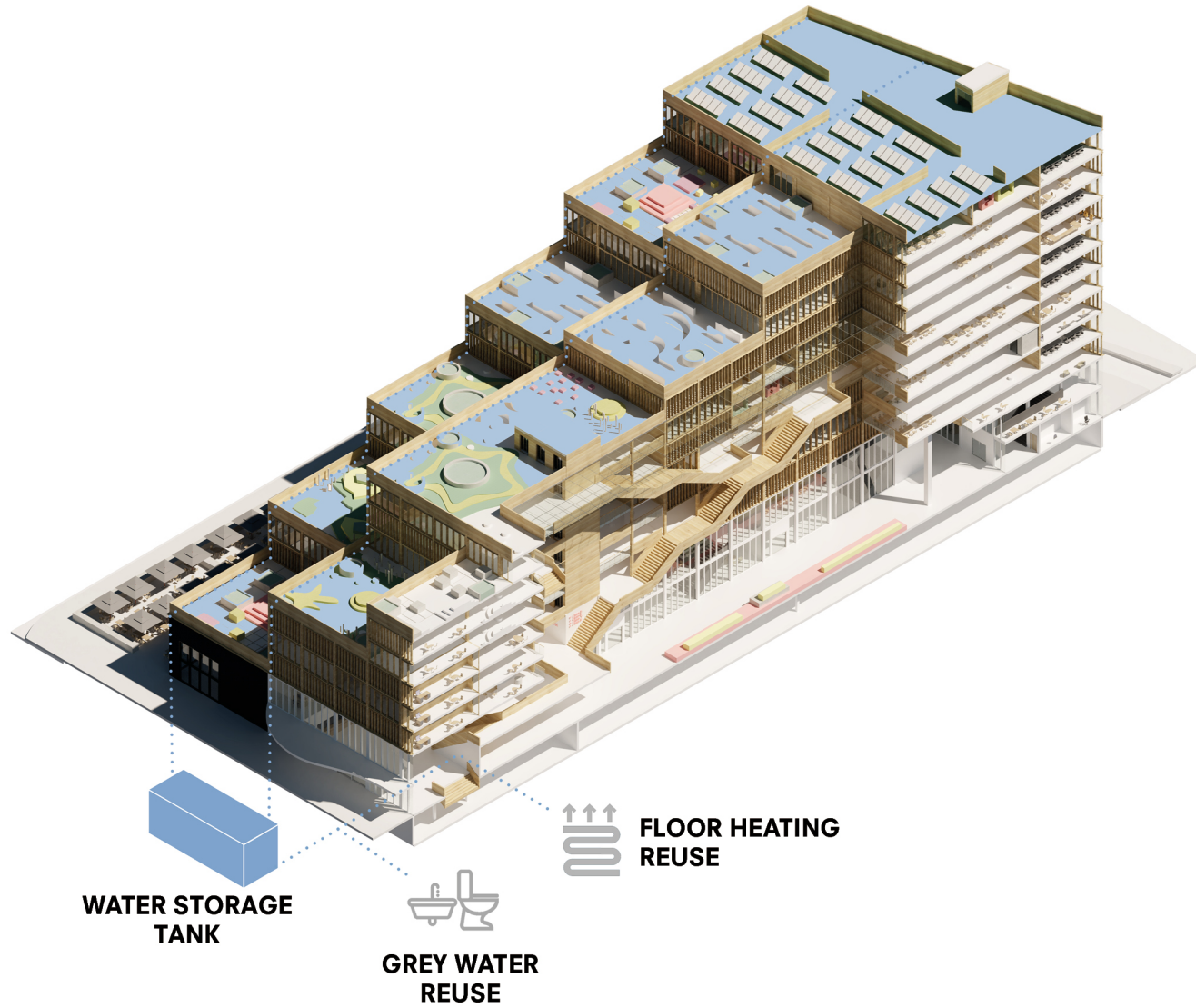
# CLIMATE SUMMER - HVAC



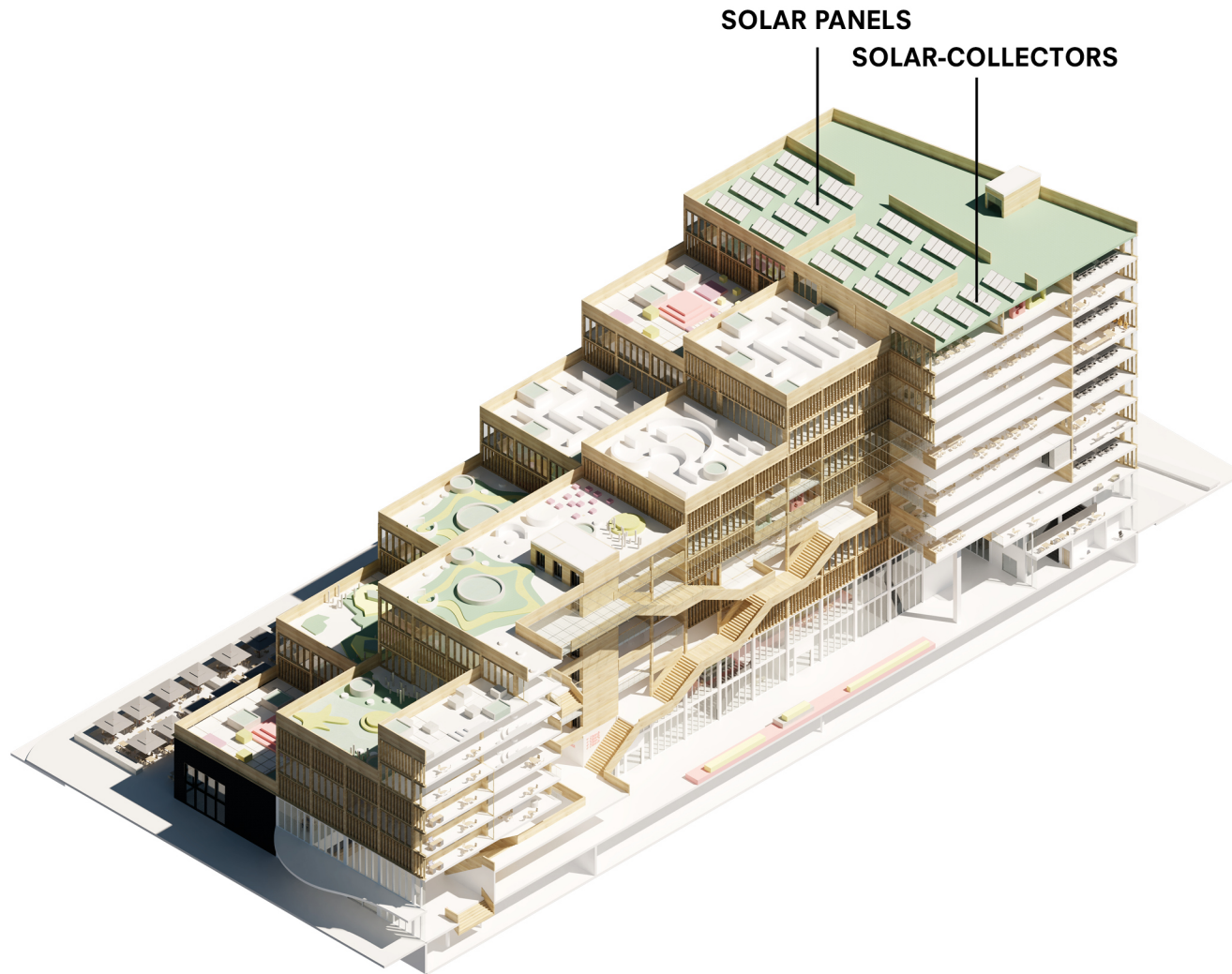
# CLIMATE WINTER - HVAC



# WATER



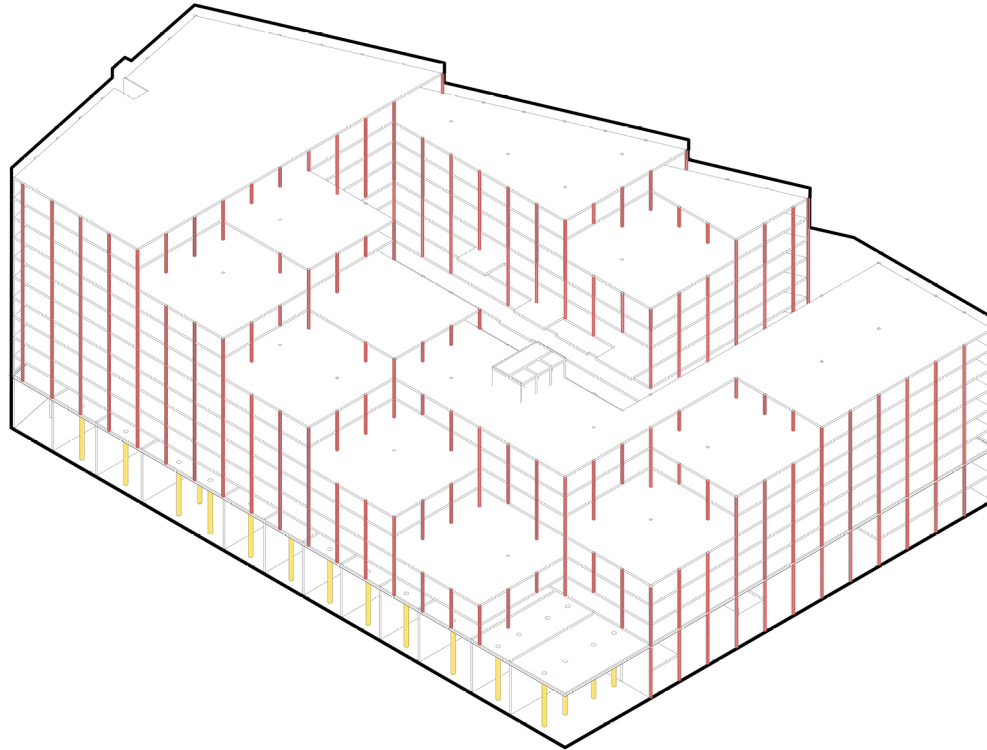
# ENERGY



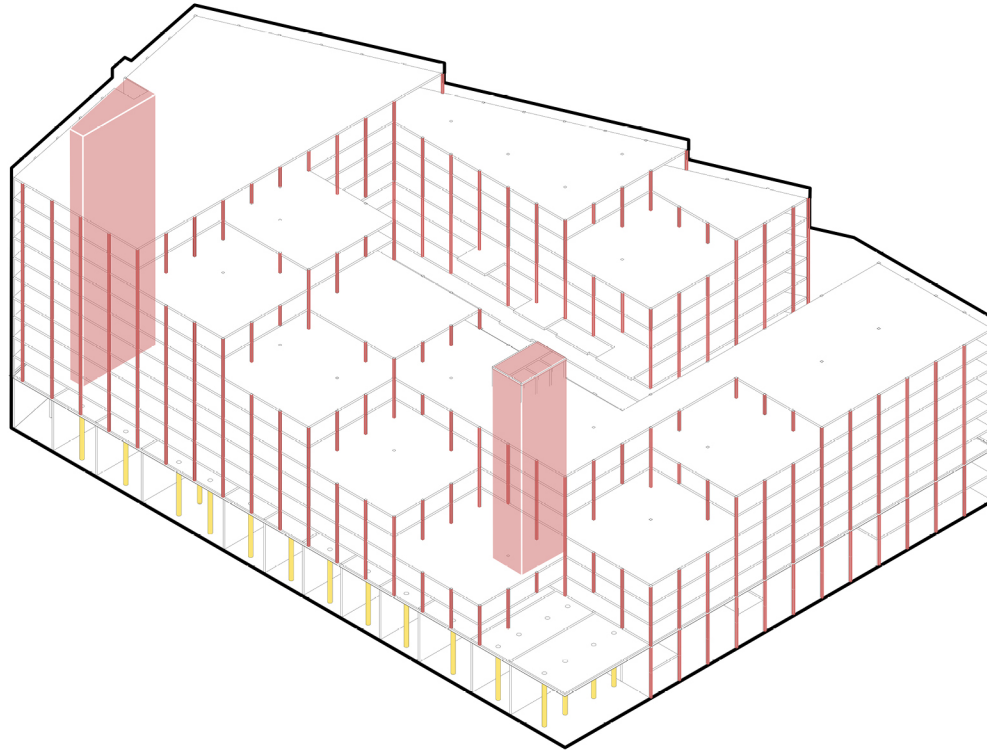
# STRUCTURAL DESIGN



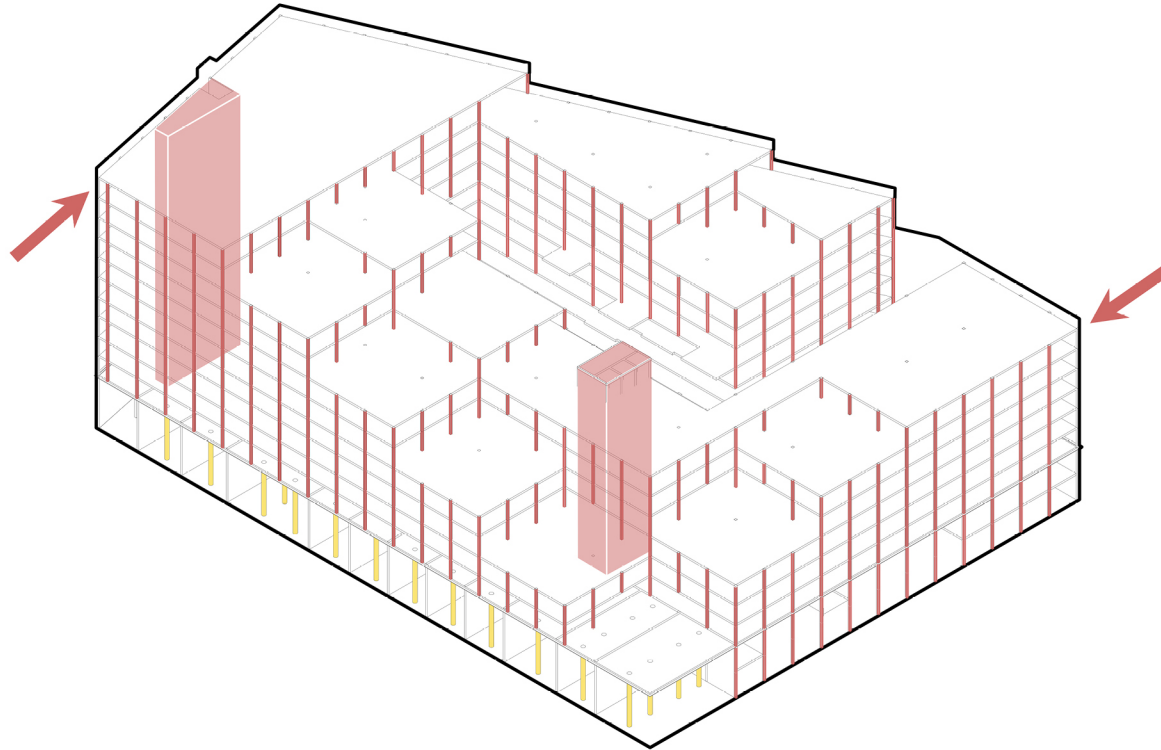
# OVERALL STRUCTURE



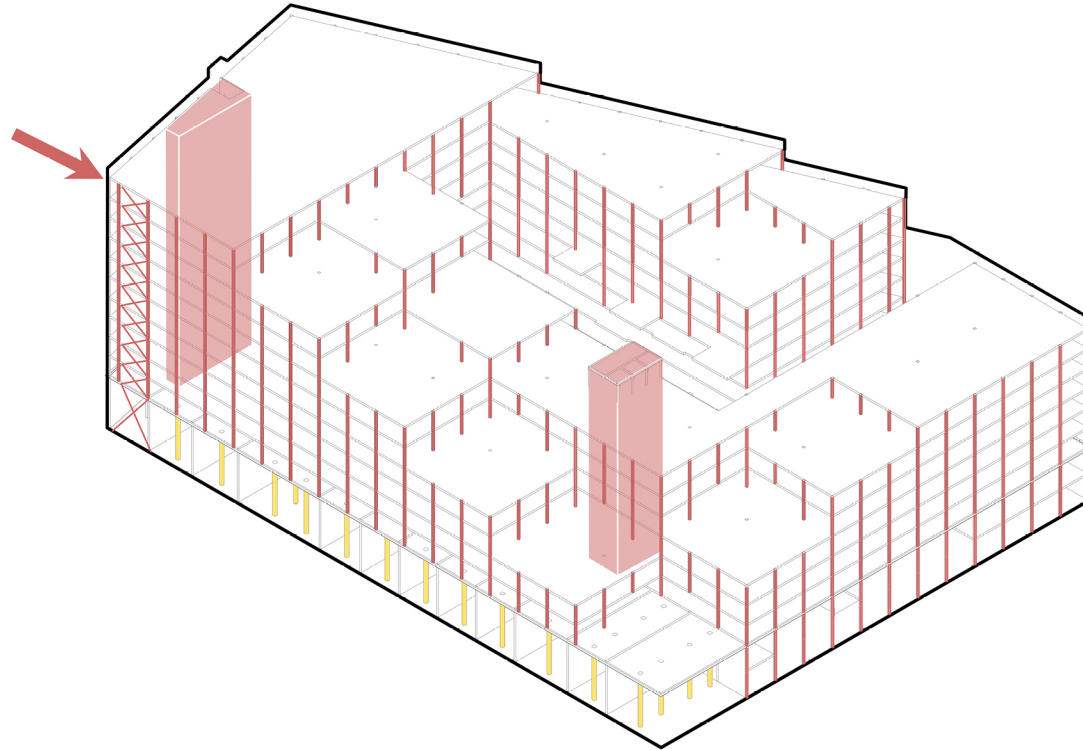
# OVERALL STRUCTURE



# OVERALL STRUCTURE



# OVERALL STRUCTURE



# COLUMNS & BEAMS

## COLUMNS

### HEA 300

Weight (kg/m)  
90

Height (mm)  
290

Width (mm)  
300



## BEAMS

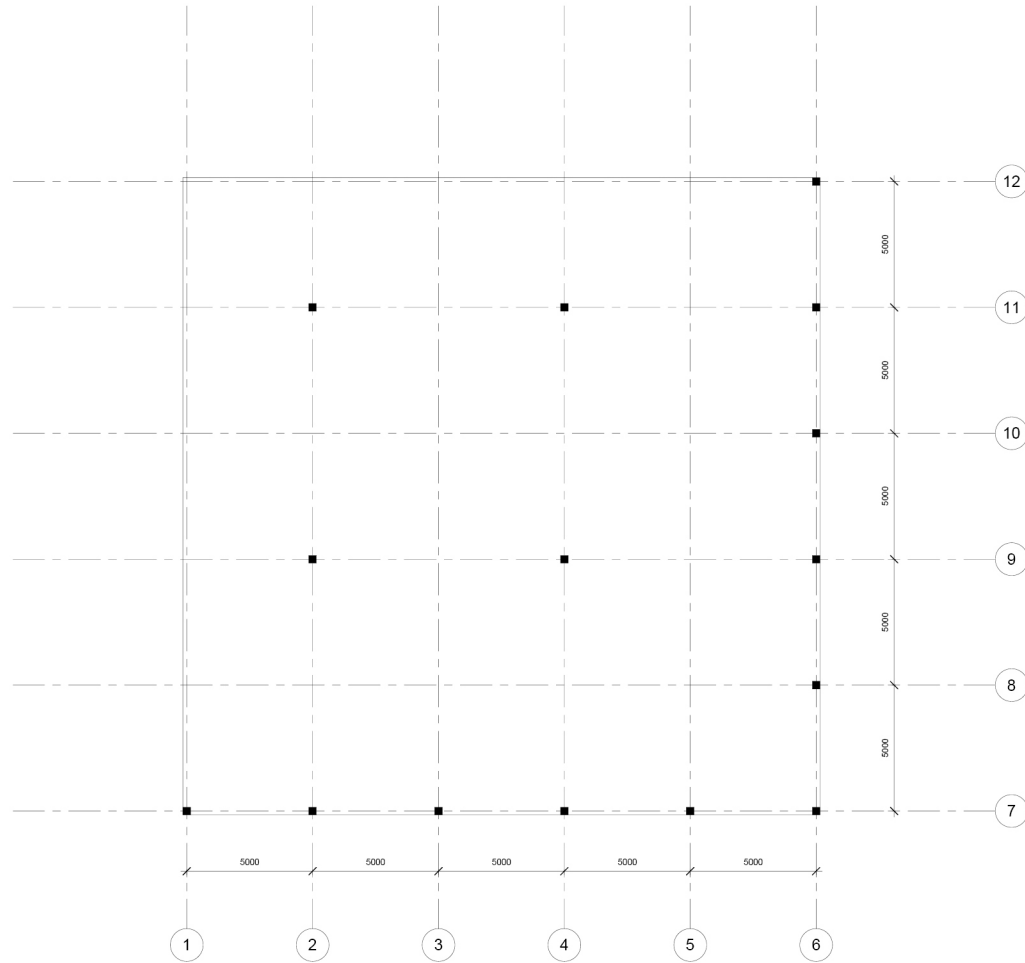
### HAT-BEAM



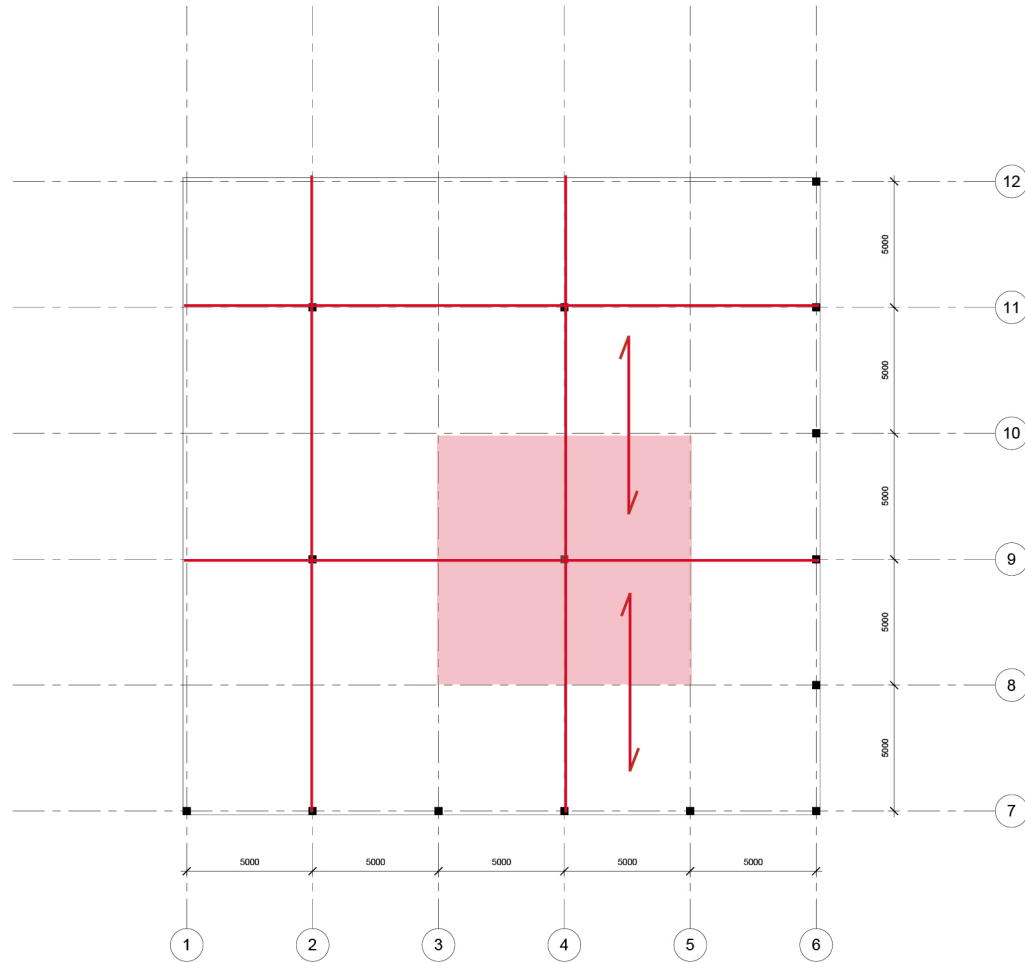
### PET-BEAM



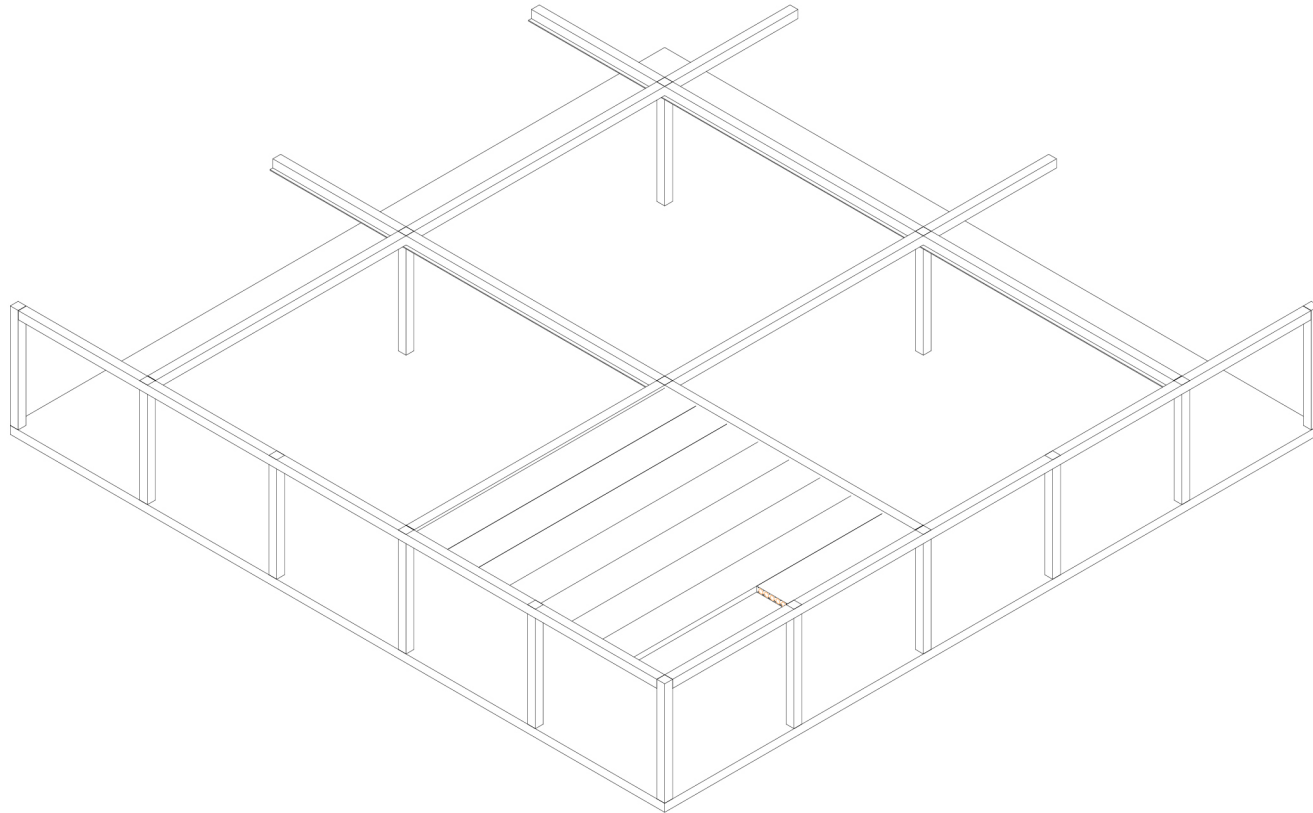
# COLUMNS & BEAMS LAYOUT



# COLUMNS & BEAMS LAYOUT



# COLUMNS & BEAMS LAYOUT



# COLUMNS EXCEPTION

## HEA 600

Weight (kg/m)  
181

Hoogte (mm)  
590

Width (mm)  
300



# FACADE & DETAIL



# MATERIAL



**ACCOYA**



**BEECH WOOD**



**EPOXY**

## MATERIAL - EXTERIOR



**ACCOYA**

### **ASPECTS OF ACCOYA**

Durability class 1

Not susceptible to wood-destroying insects and fungi

Guaranteed rotting resistance

Sustainable forest management (FSC / PEFC)

100% recyclable and circular

Accoya is gold certified from Cradle to Cradle

## MATERIAL - INTERIOR



**BEECH WOOD**

### **ASPECTS OF BEECH WOOD**

Hard-wearing wood, non-porous and has a solid density and a strong surface

Shock absorbing

Cost efficient

Light-colored and often used for furniture

## MATERIAL - INTERIOR



**EPOXY FLOORING**

### **ASPECTS OF EPOXY FLOORING**

Extremely durable (protects against all types of impact)

Often industrial use

Combine well with underfloor heating

Safe - slip resistant, shock resistant, and less abrasive

Minimal look, seamless and smooth

# FACADE & SUNSHADING



# FACADE



# FACADE



# FACADE BY DAY



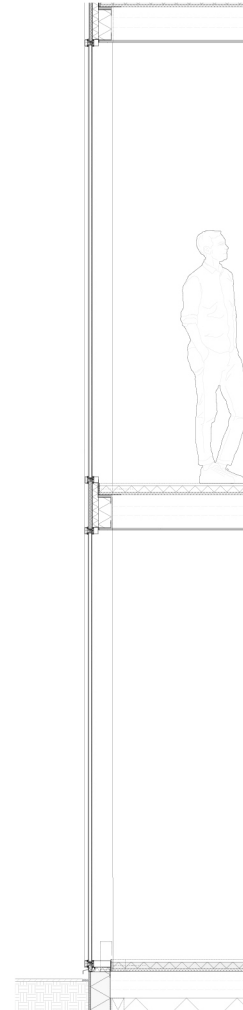
# FACADE WITH SUNSHADING



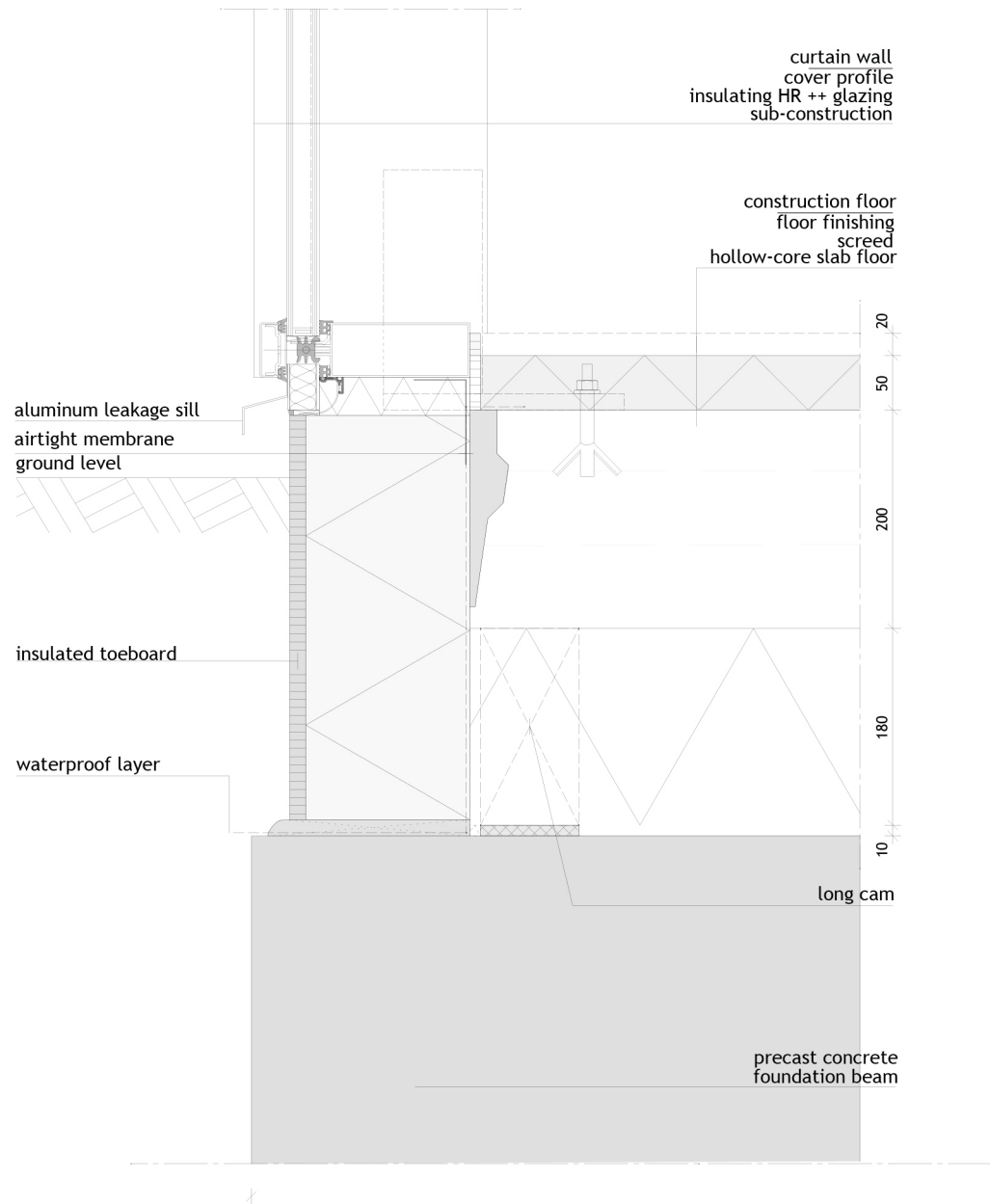
# FACADE BY NIGHT



# LEVEL 00-01 FACADE

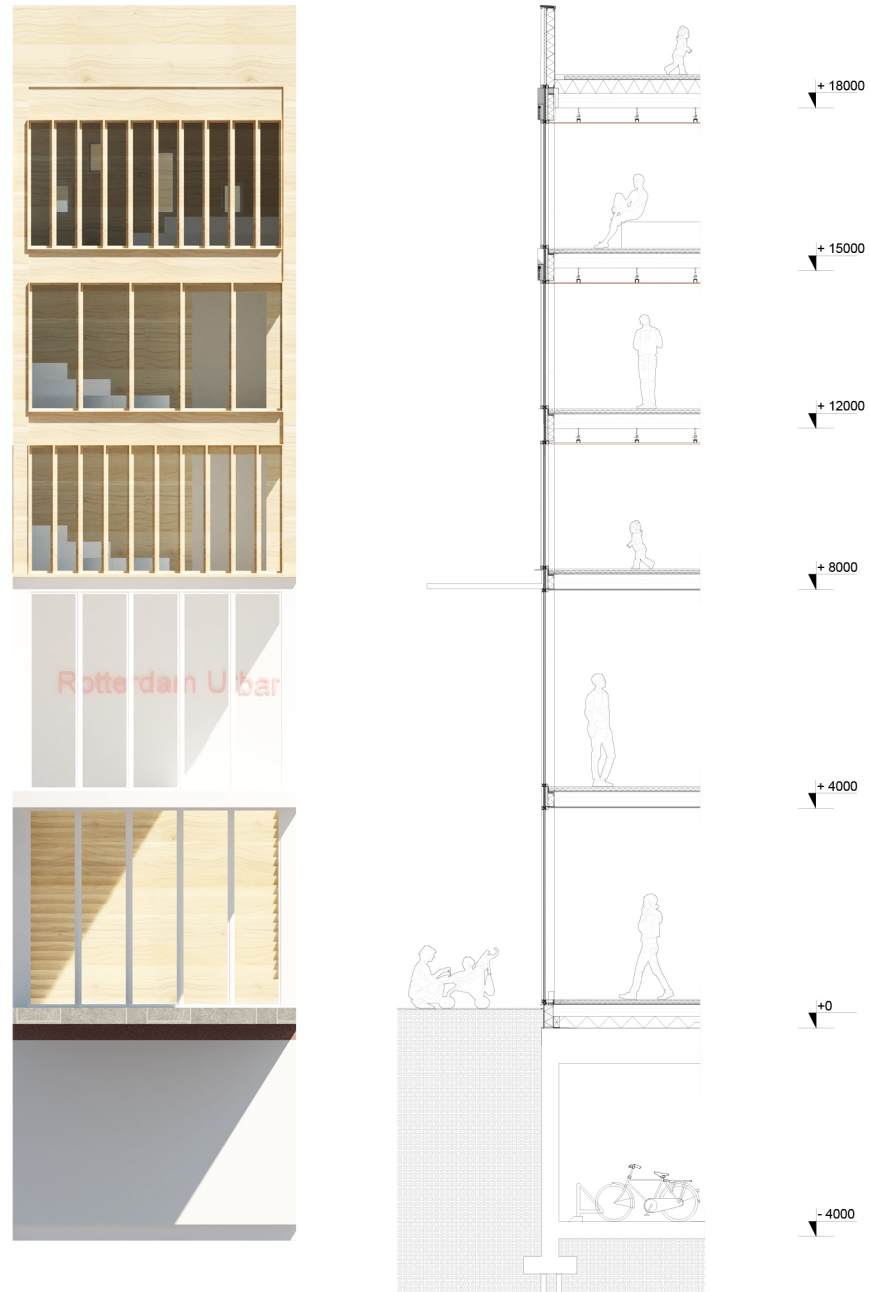


# 1:5 DETAIL GROUND FLOOR

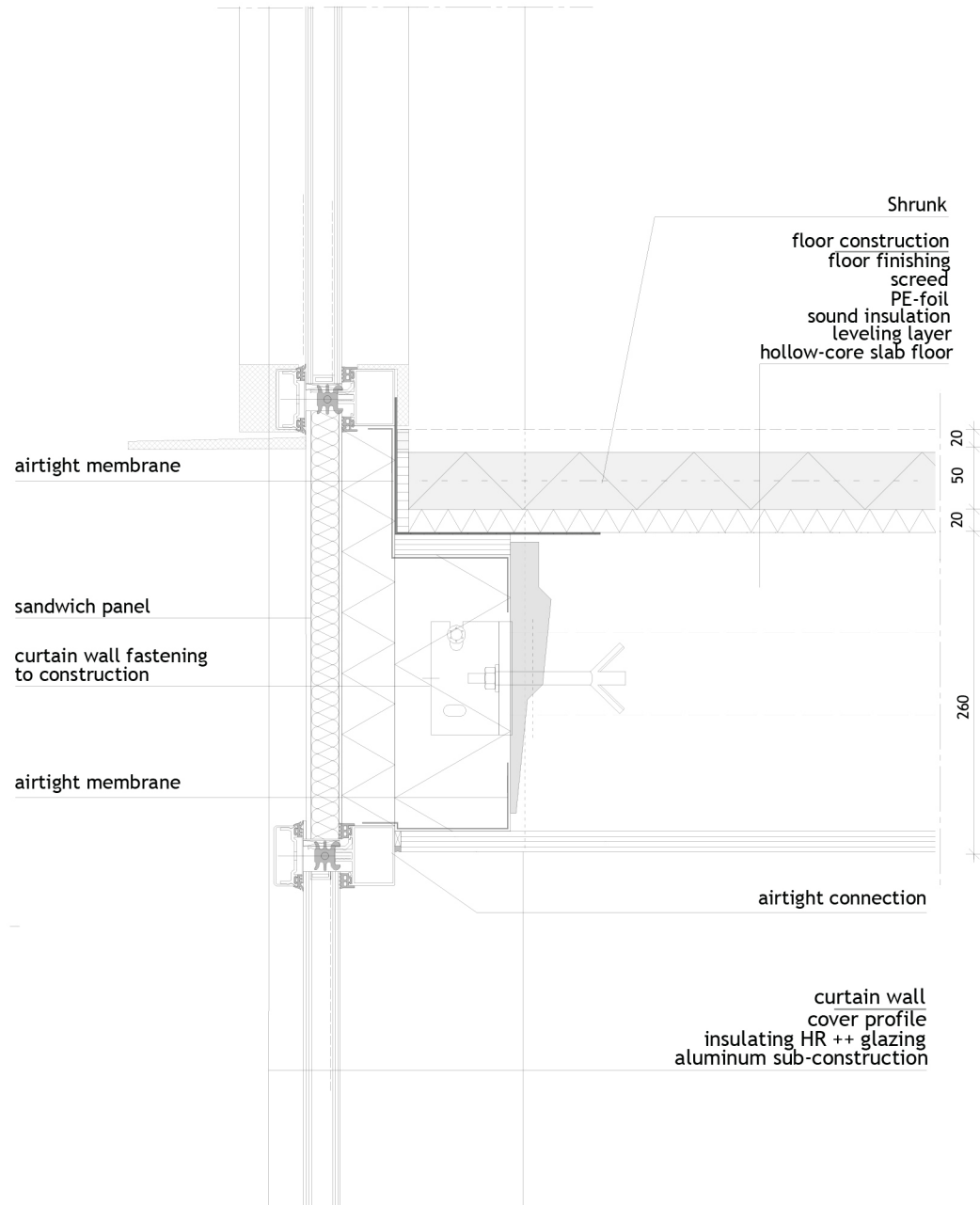


Facade & Detail

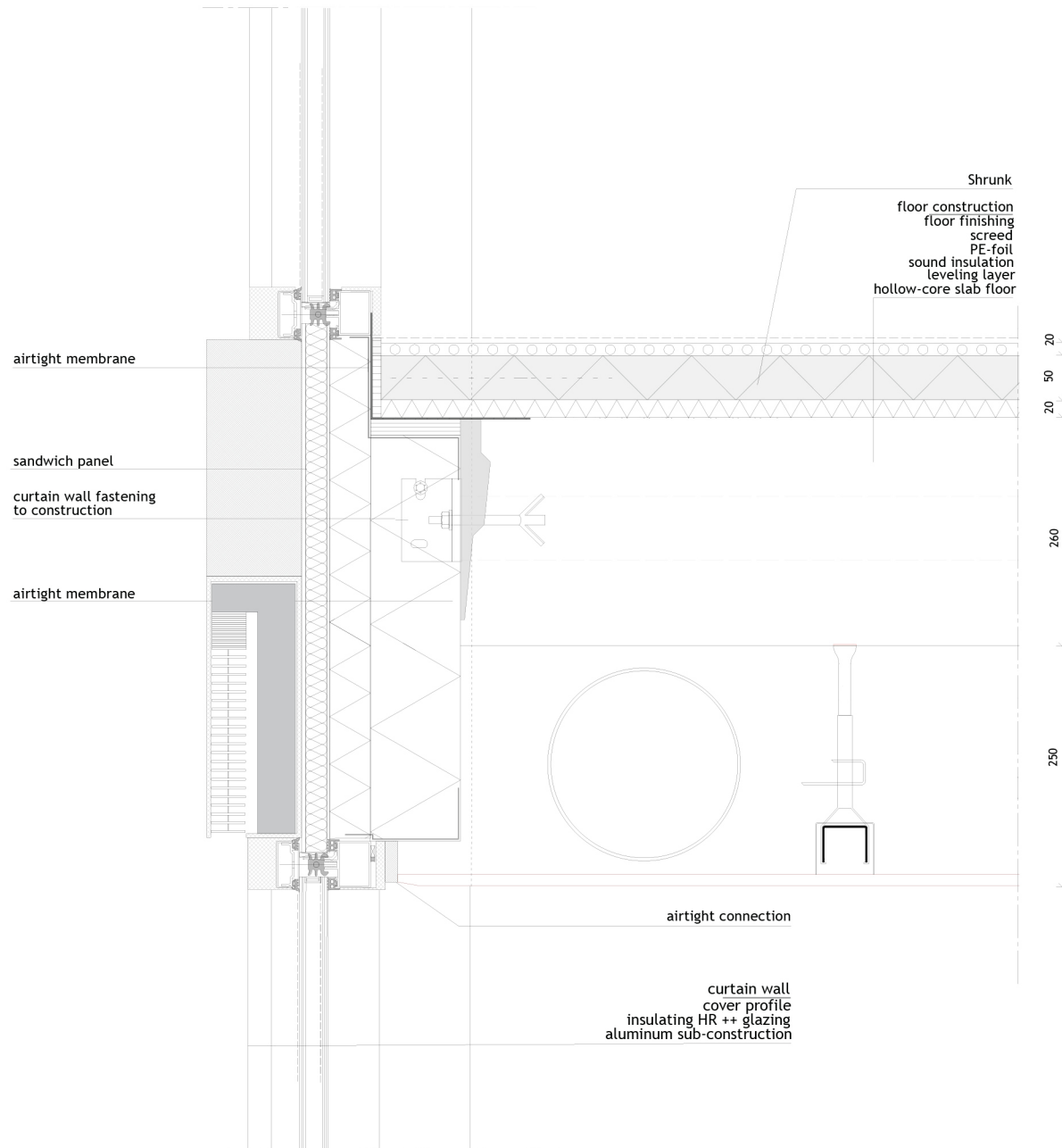
1:50 FACADE



# 1:5 DETAIL FLOOR



# 1:5 DETAIL FLOOR



# CONCLUSION



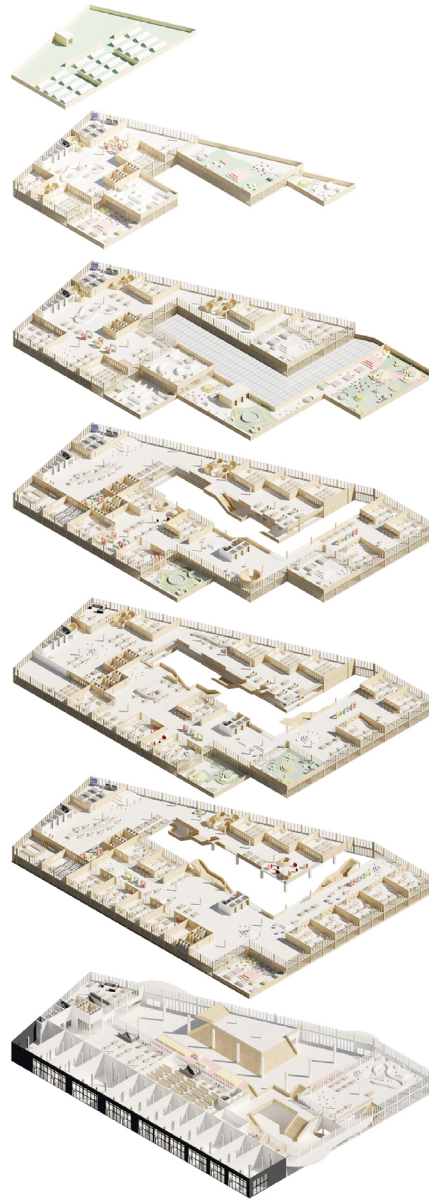
Conclusion

# THE URBAN SCHOOL



Conclusion

# THE URBAN SCHOOL



Conclusion

# THE URBAN SCHOOL



**THANK YOU.**



complex projects