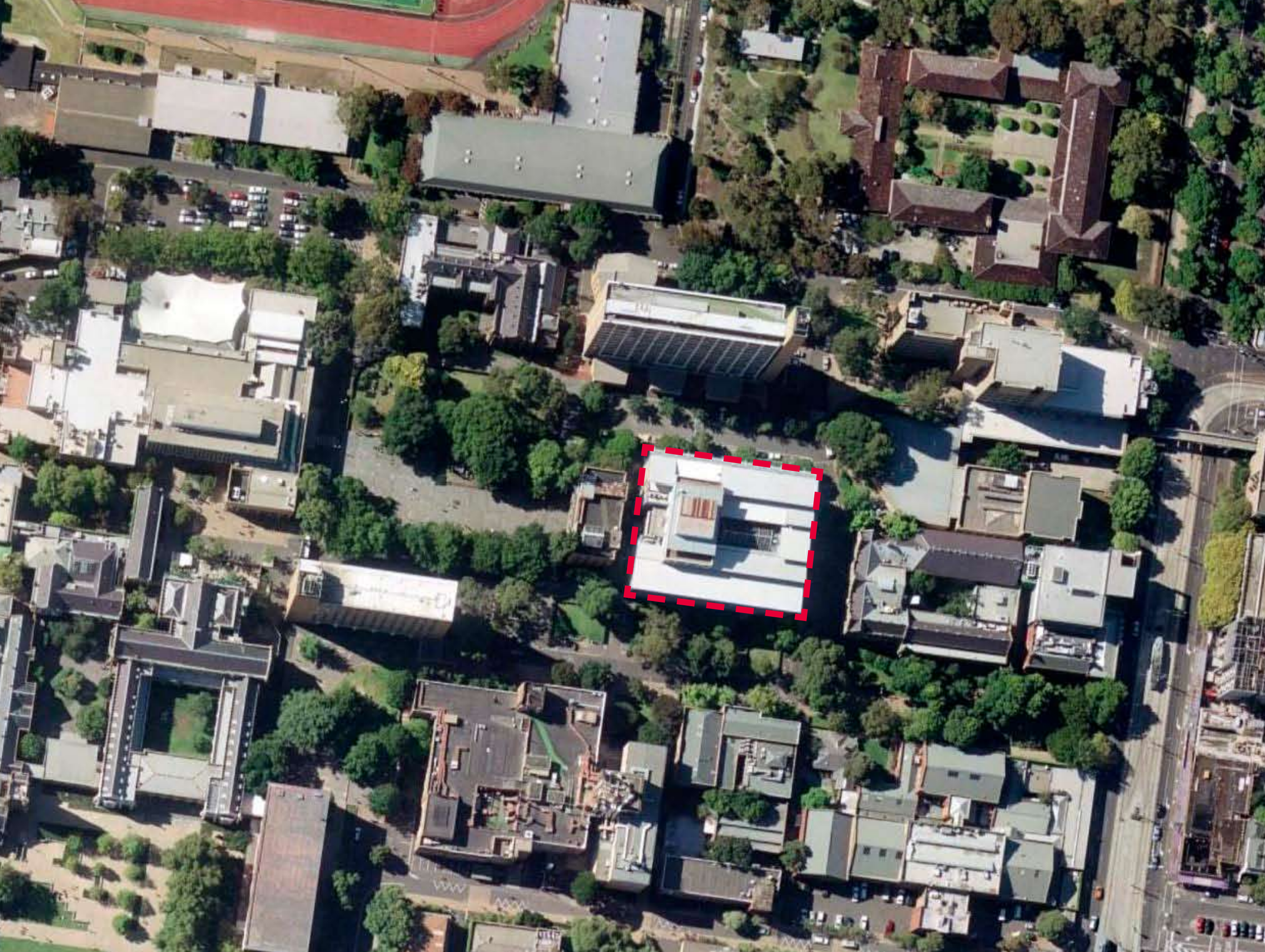
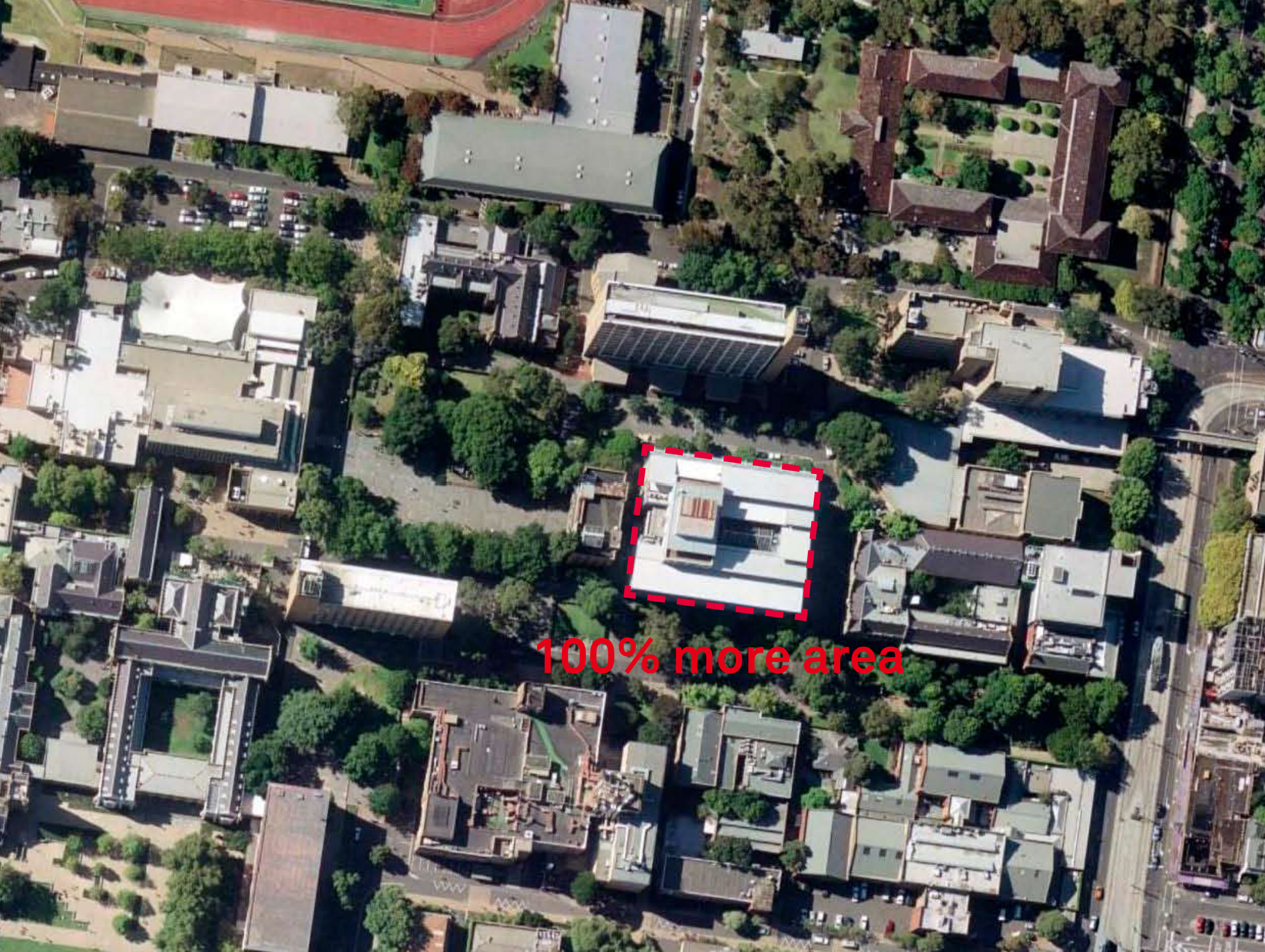
sauerbruch hutton with NH Architecture

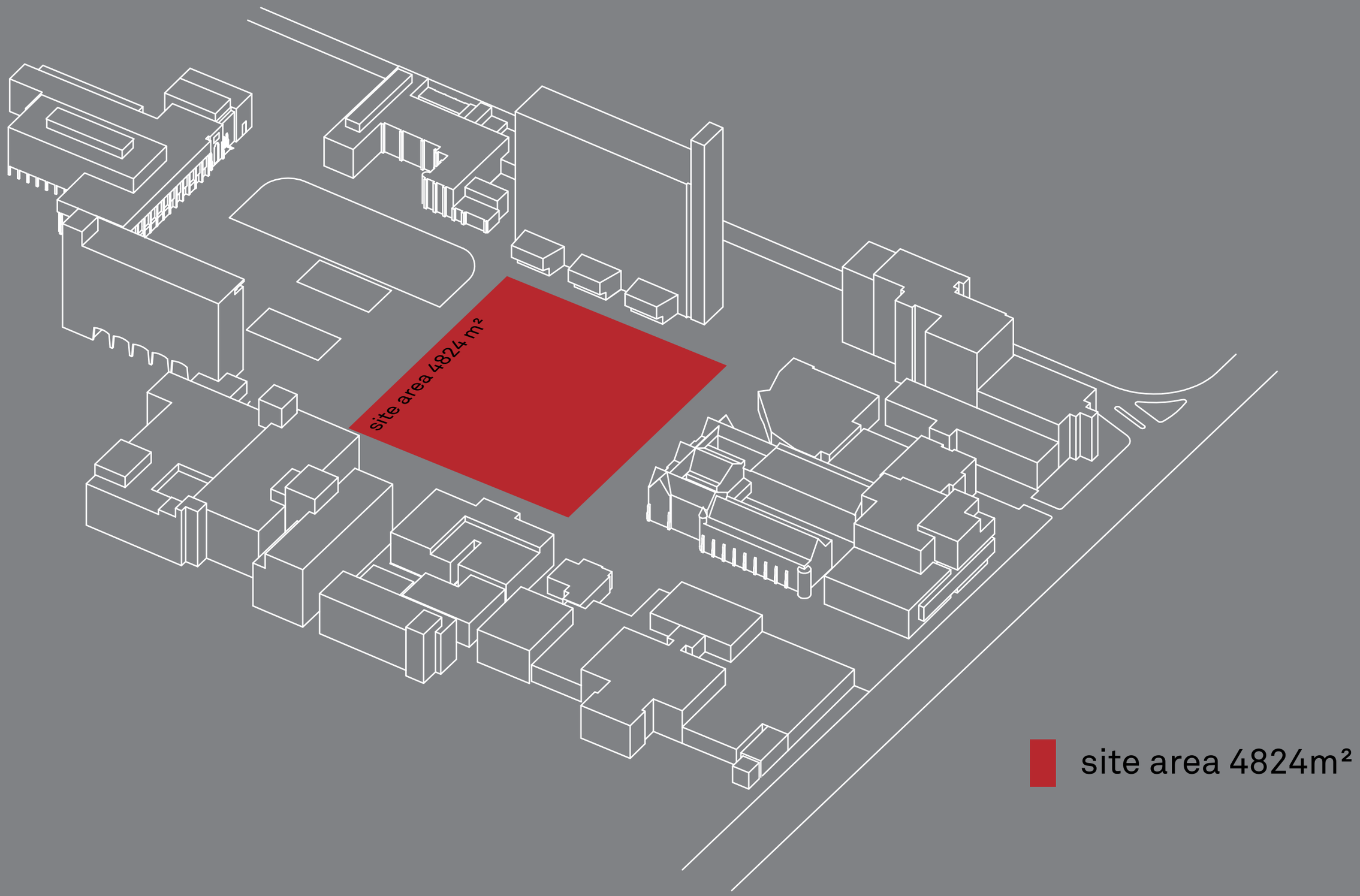
faculty of architecture, planning and building

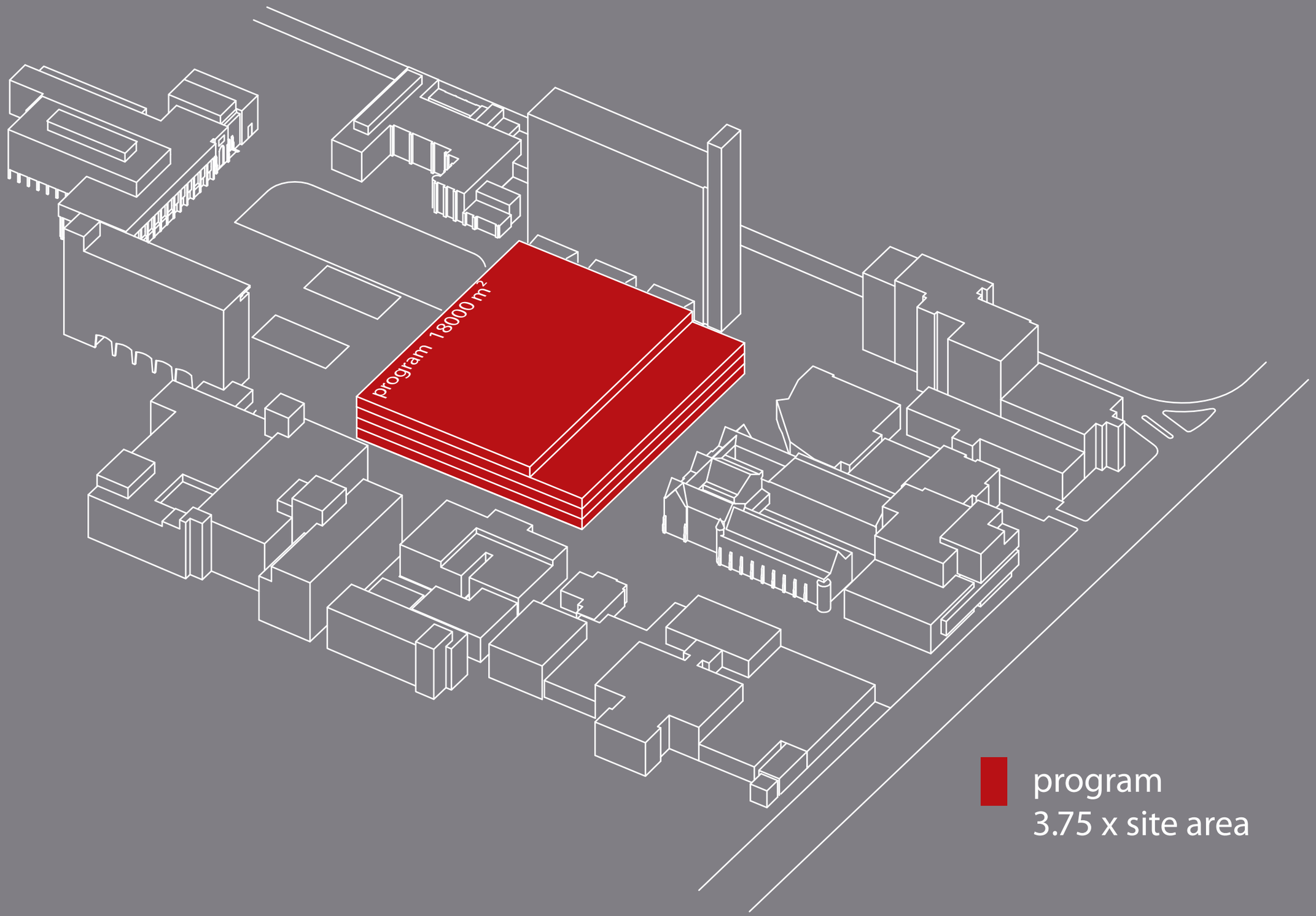
university of melbourne

brief



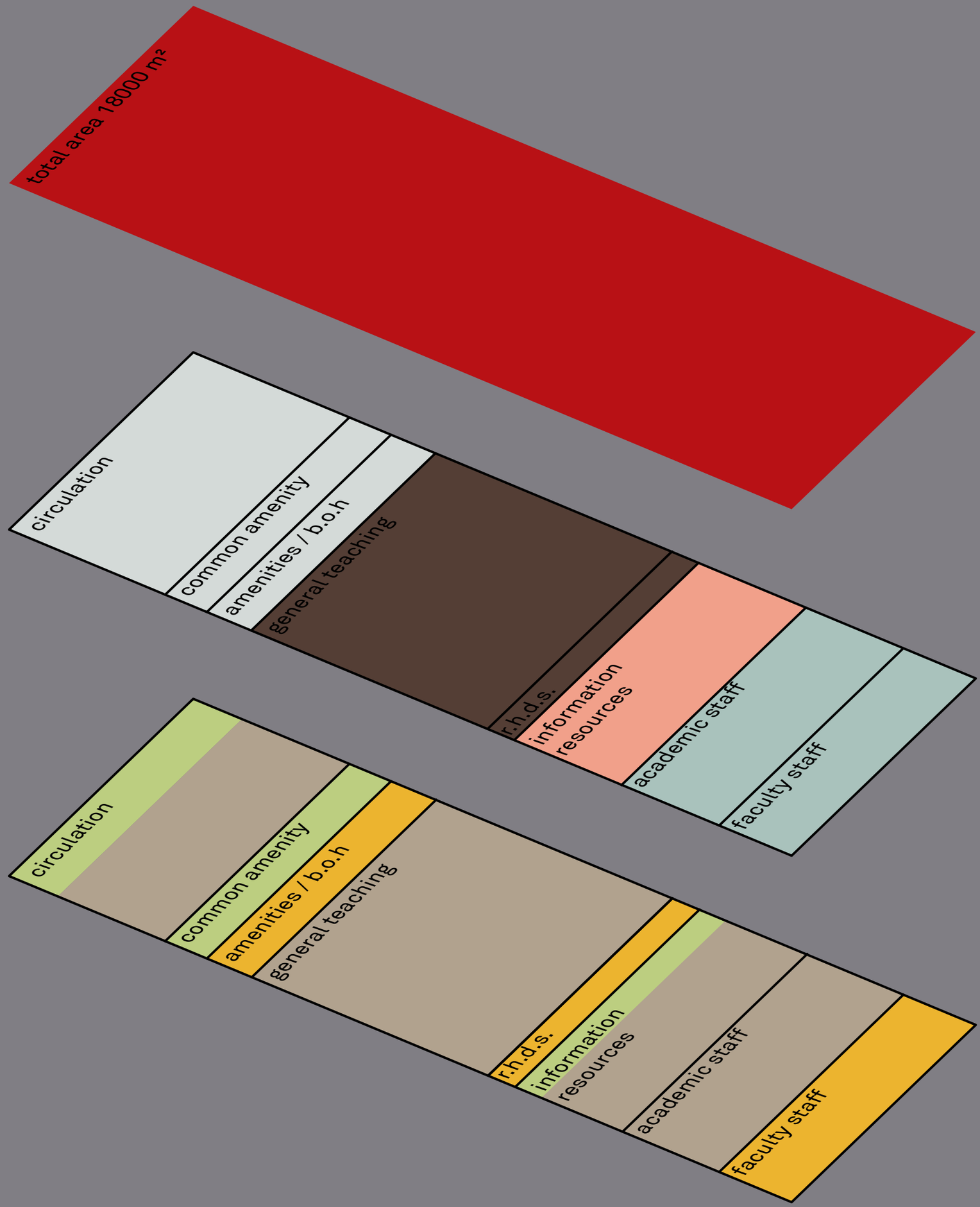

100% more area


site area 4824 m²
site area 4824m²



program
3.75 x site area

total area 100%



total area 100%

circulation 25%
teaching 38%
resources 15%
offices 22%

public 16%
invited 61%
private 23%

Design Principles

- architectural presence
- responsive building
- campus activation
- public Interface
- collaborative learning
- flexibility
- staff Amenity
- operational efficiency
- 24 hour access
- flexible, safe and integrated engineering
- efficient structure
- occupational health and safety, universal access

urbanism

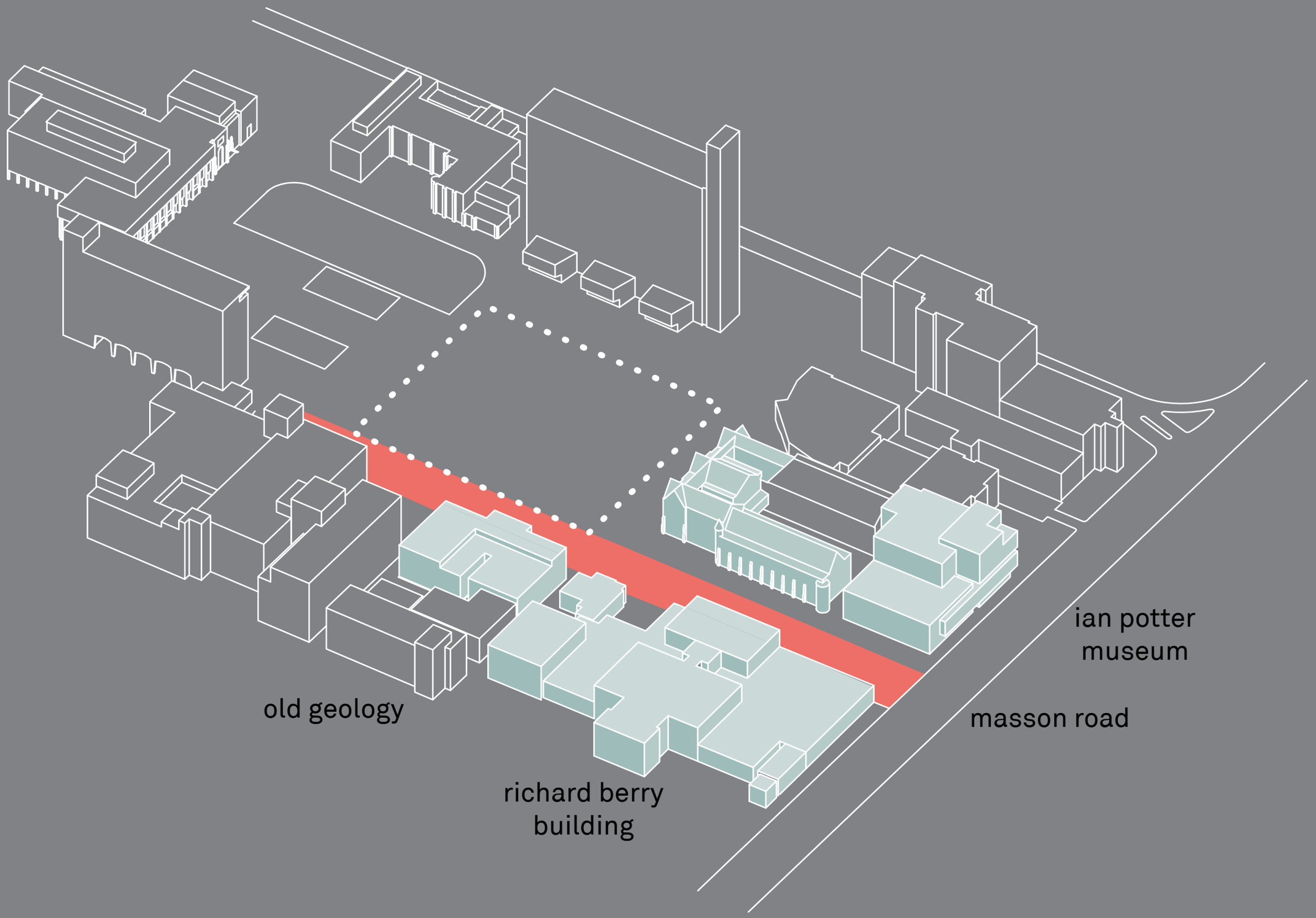
union house

baldwin
spencer
building

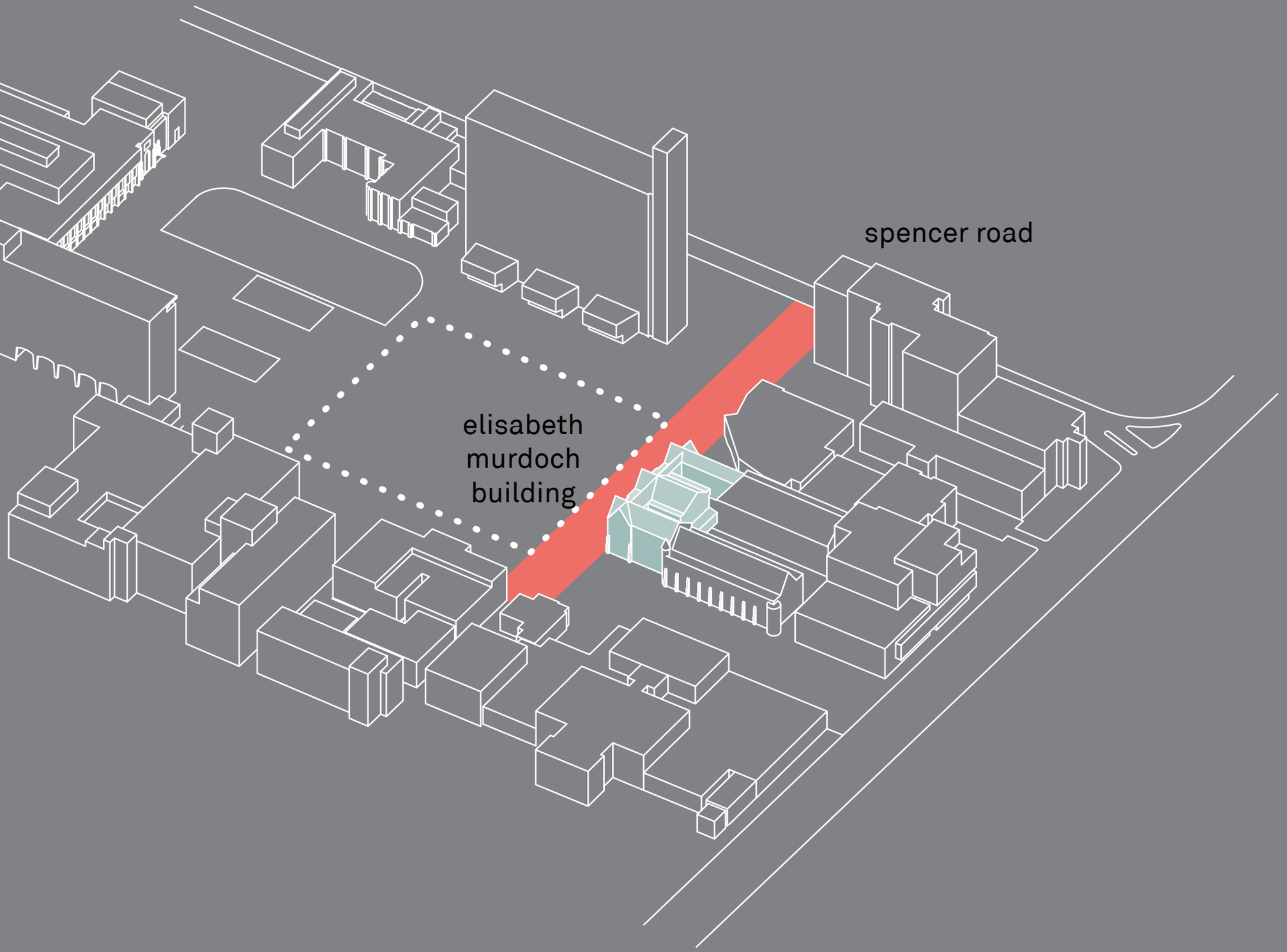
union lawn

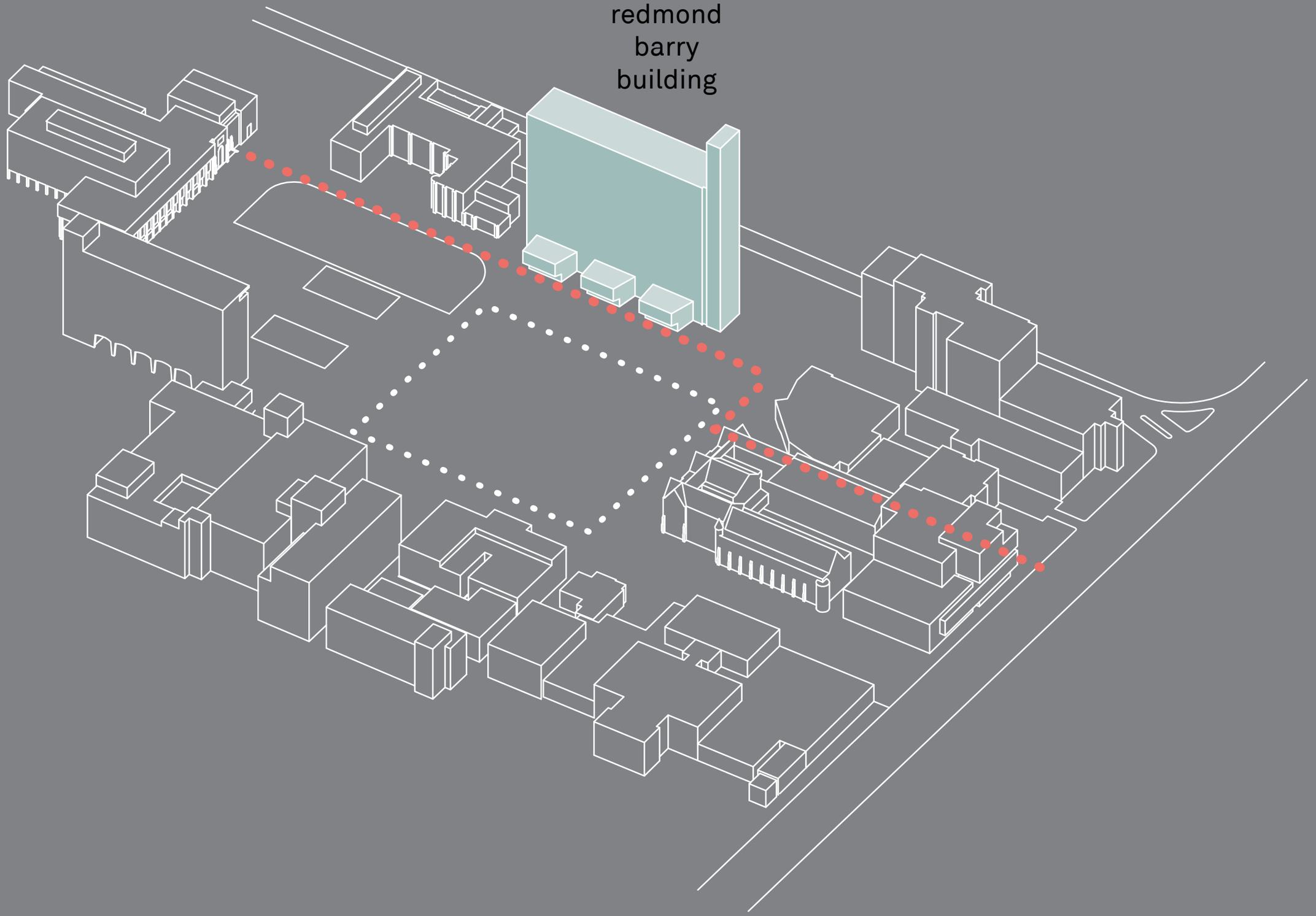
raymond
priestley
building

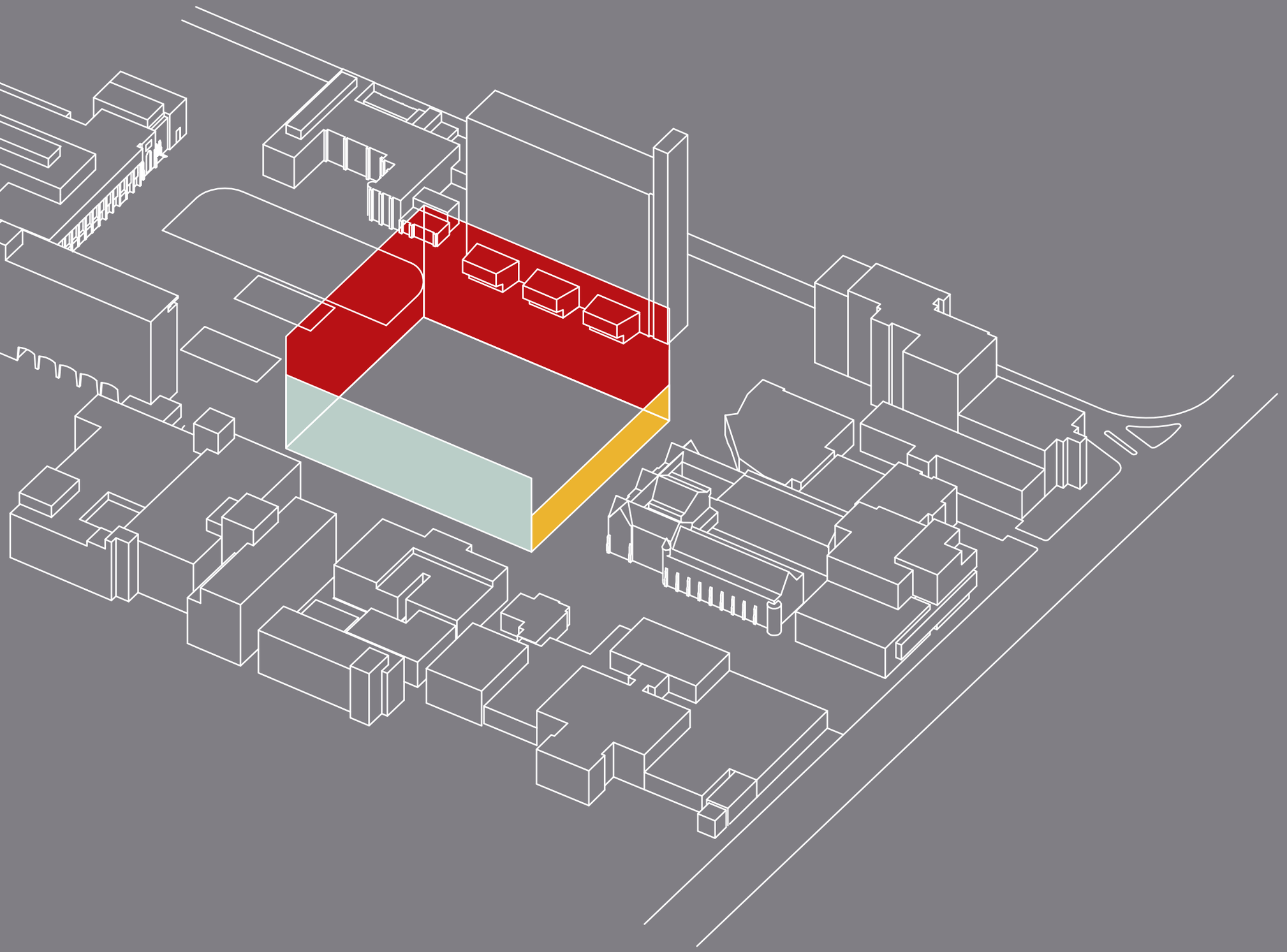
union lawn


old geology
richard berry
building
masson road
ian potter
museum

masson road


spencer road
elisabeth
murdoch
building
spencer road


redmond
barry
building
little lane



surrounding heights

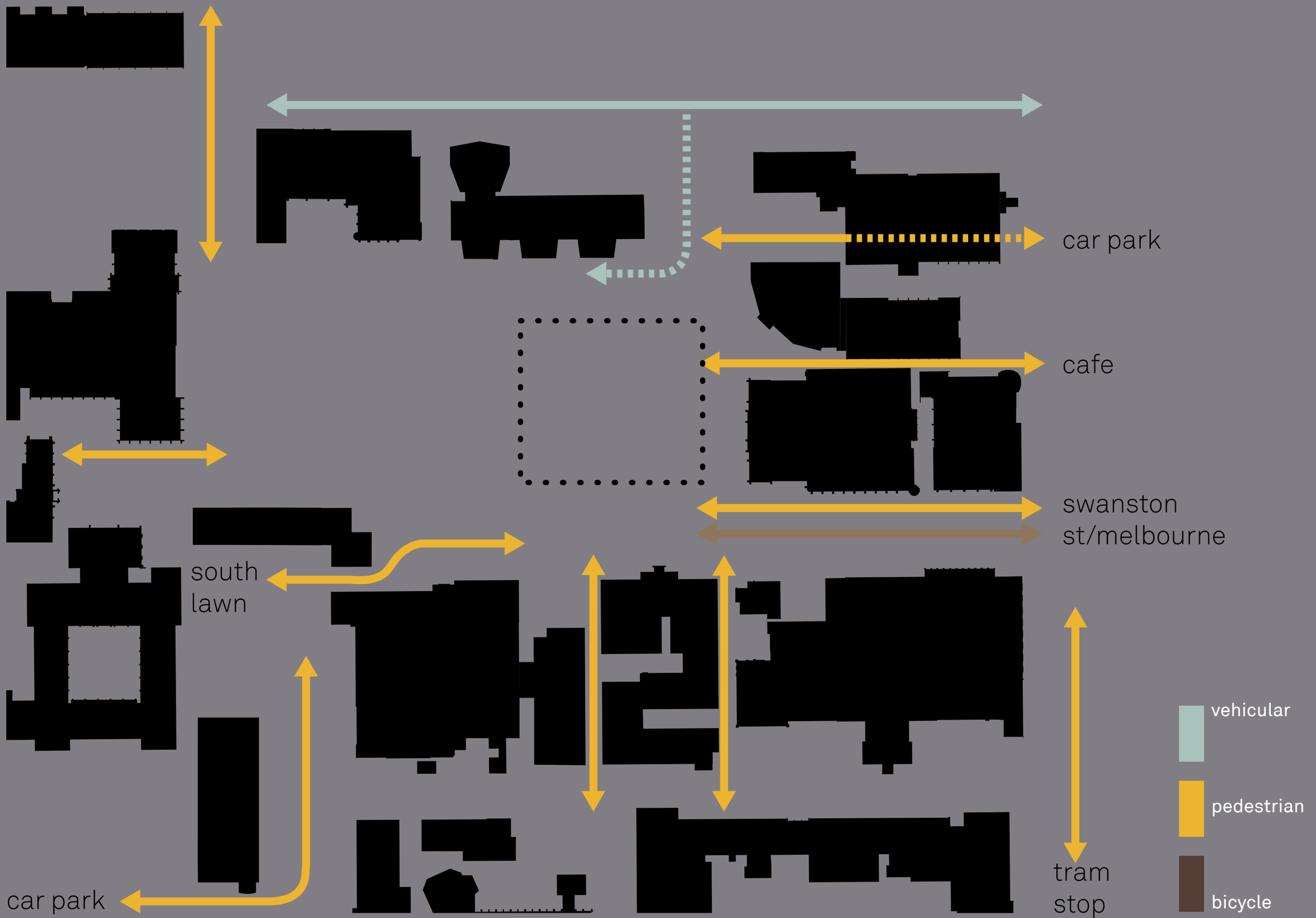
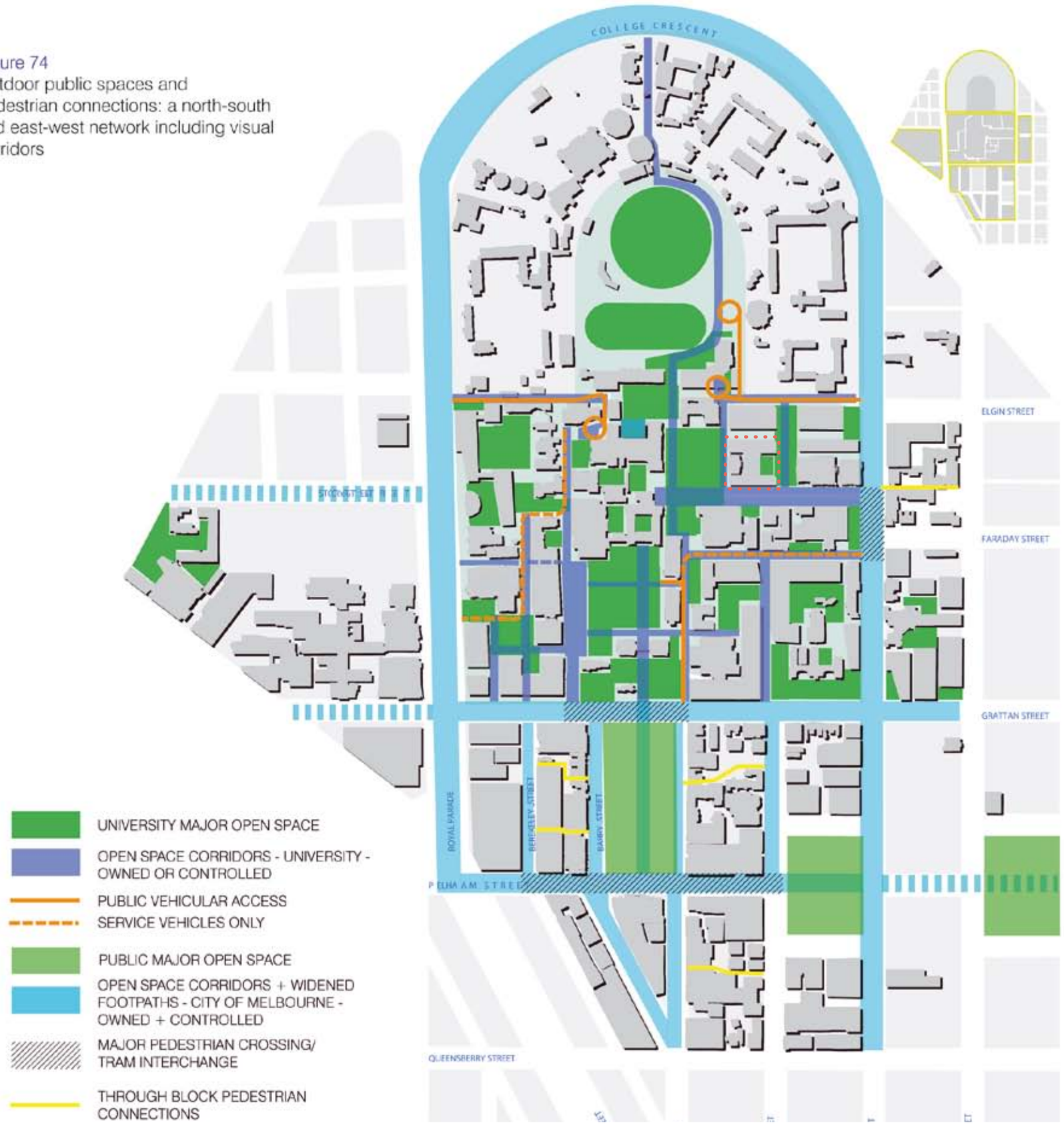
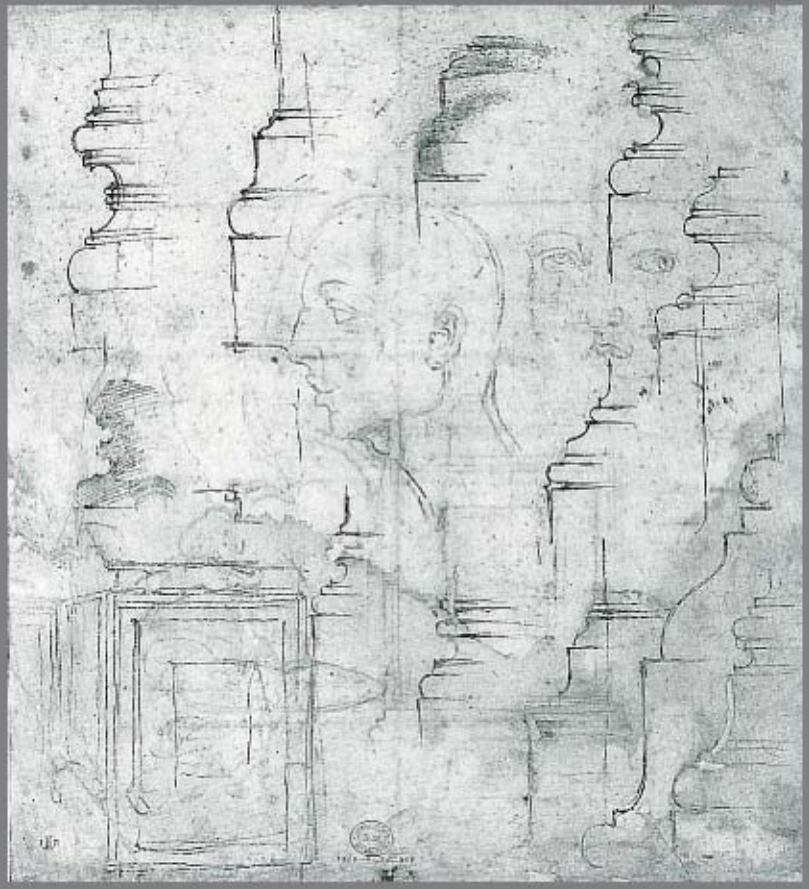

car park
cafe
swanston
st/melbourne
south
lawn
car park
tram
stop
vehicular
pedestrian
bicycle

Figure 74
Outdoor public spaces and pedestrian connections: a north-south and east-west network including visual corridors



built pedagogy



michelangelo, studies for the laurentian library

LE FABBRICHE E I DISEGNI

DI

ANDREA PALLADIO

RACCOLTI ED ILLUSTRATI

DA OTTAVIO BERTOTTI SCAMOZZI

OPERA DIVISA IN QUATTRO TOMI CON TAVOLE IN RAME

RAPPRESENTANTI

LE PIANTE, I PROSPETTI, E GLI SPACCATI.

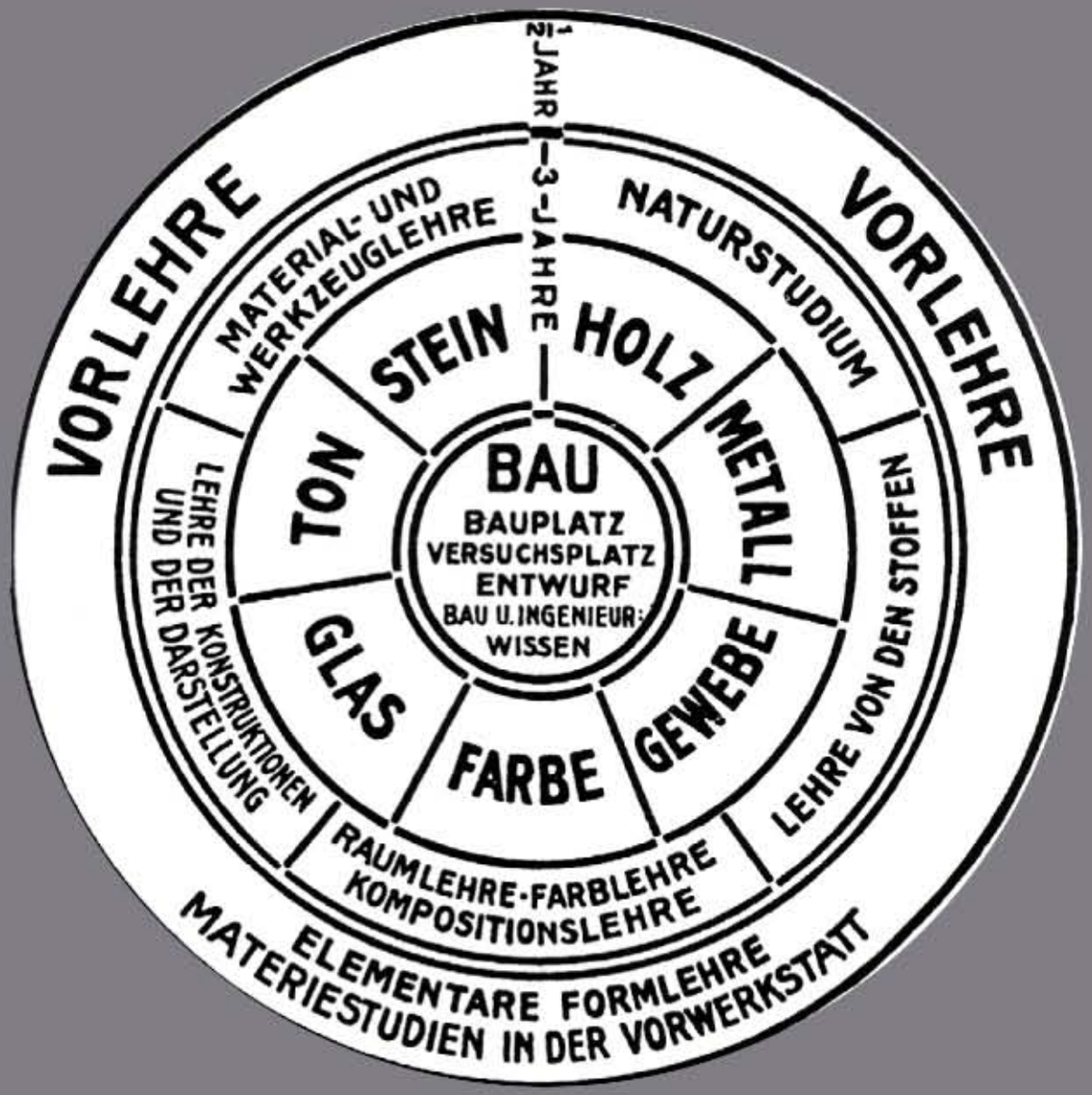
TOMO PRIMO.

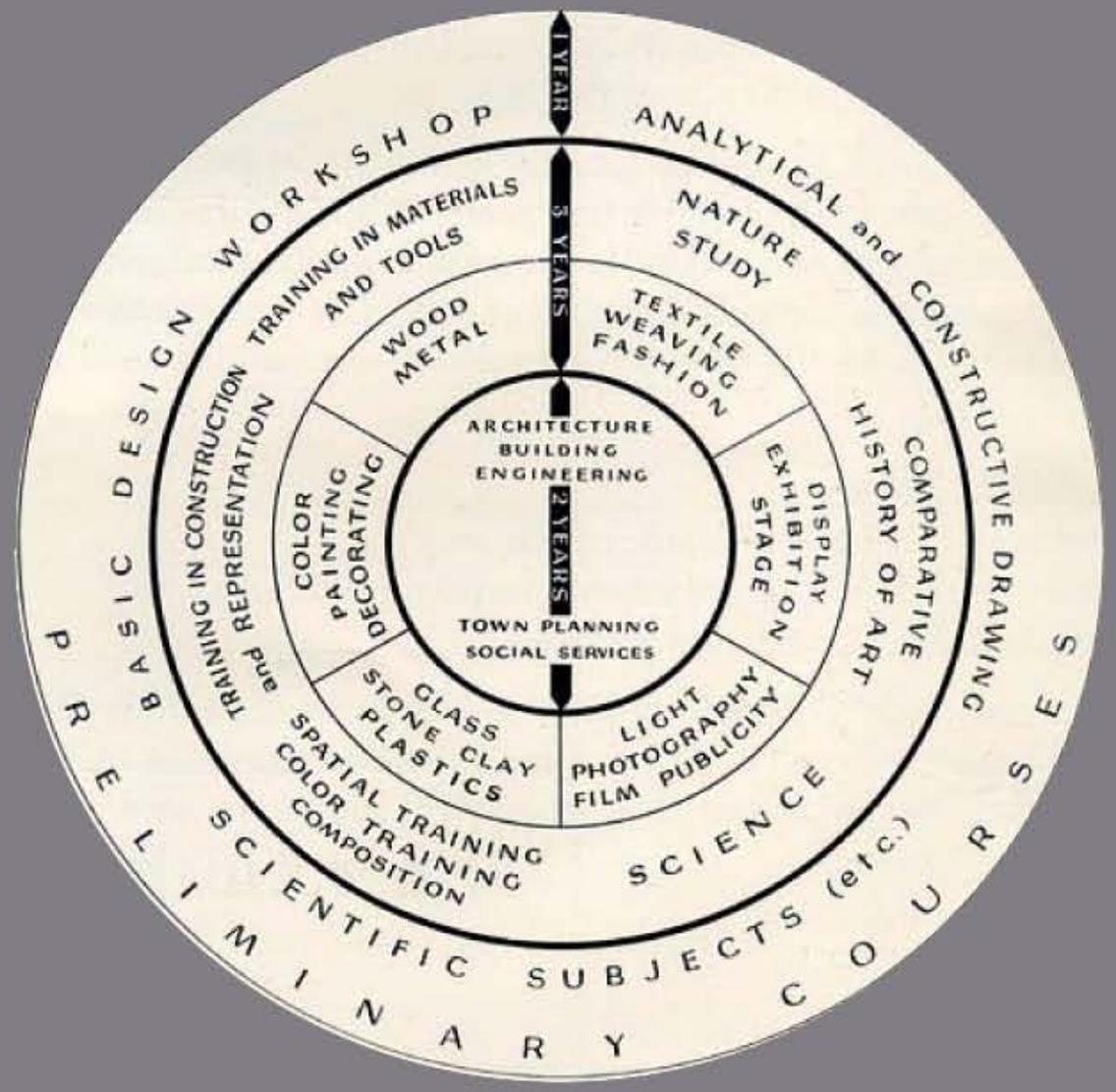
IN VICENZA 1796.

PER GIOVANNI ROSSI

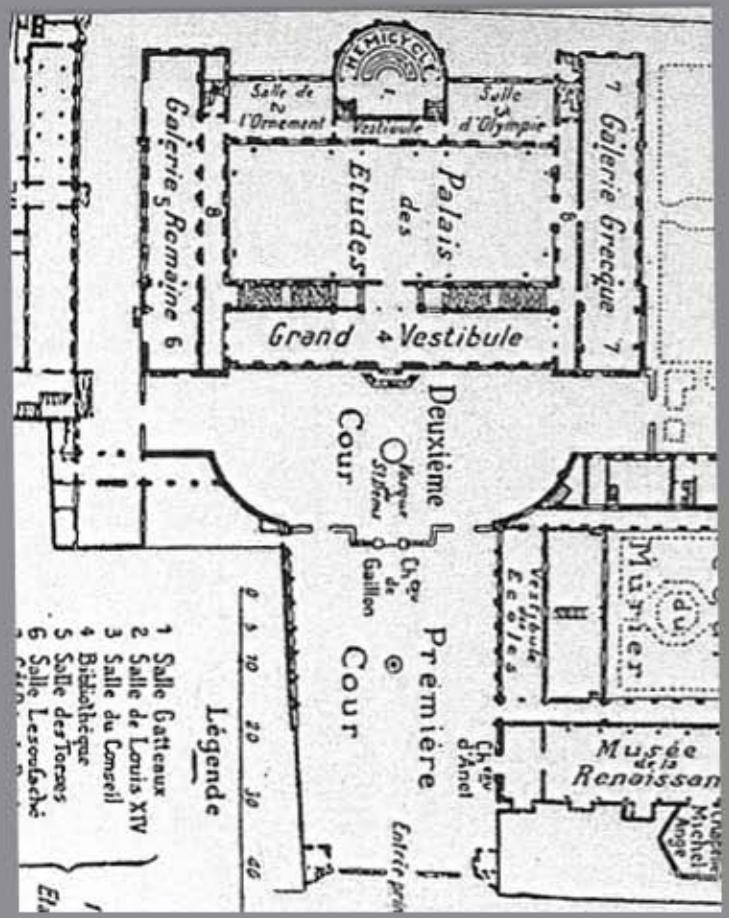
Con licenza de' Superiori.

scamozzi, title page of the collection of the designs of andrea palladio

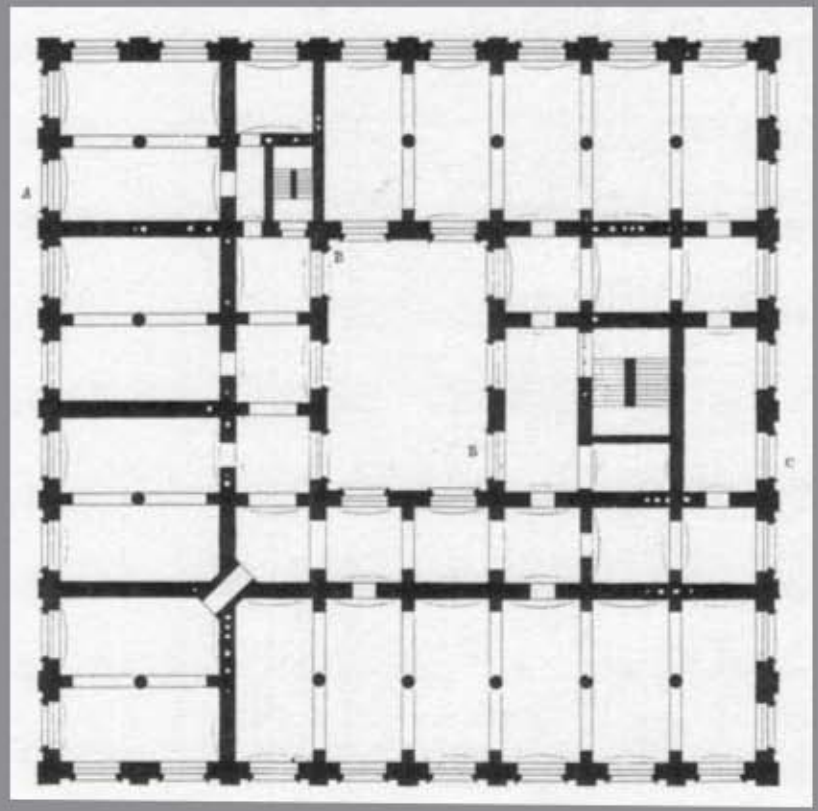




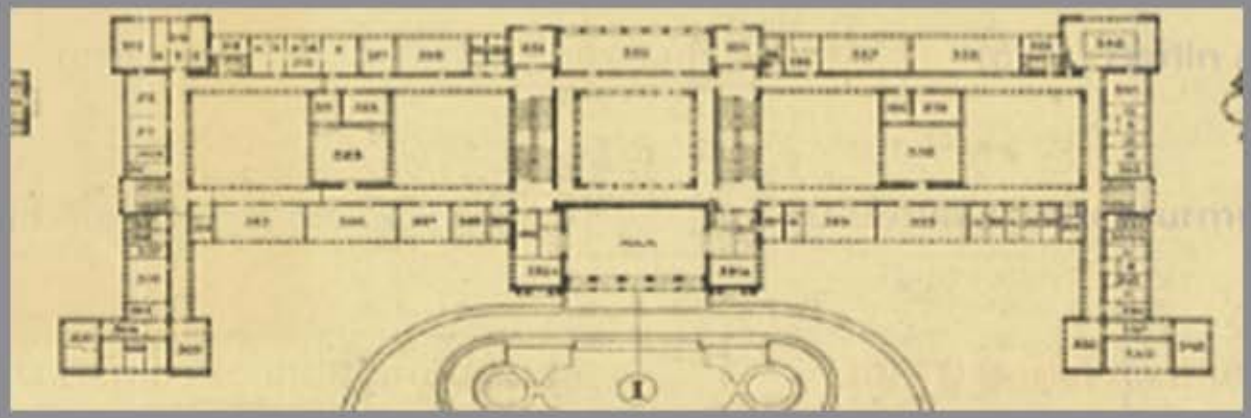
bauhaus curriculum



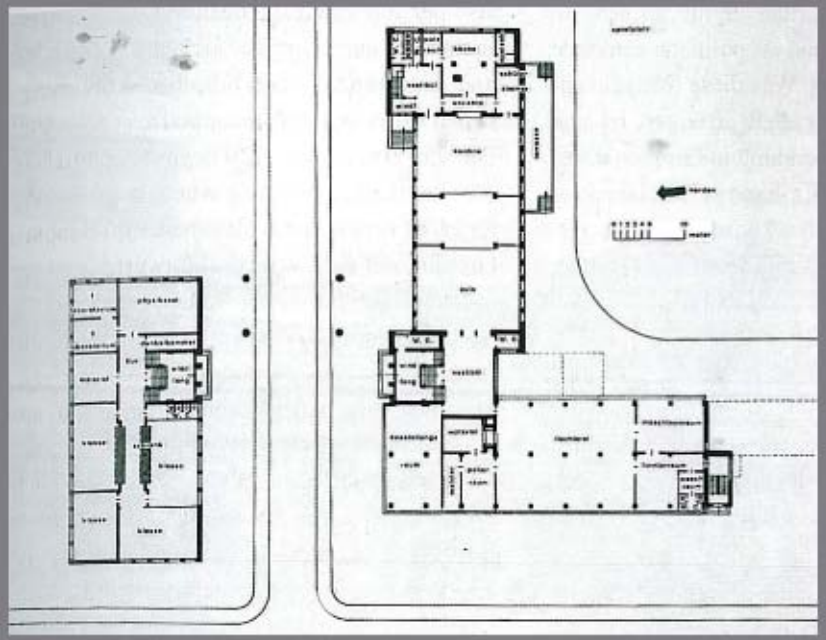
ecole des beaux arts, paris, 1844

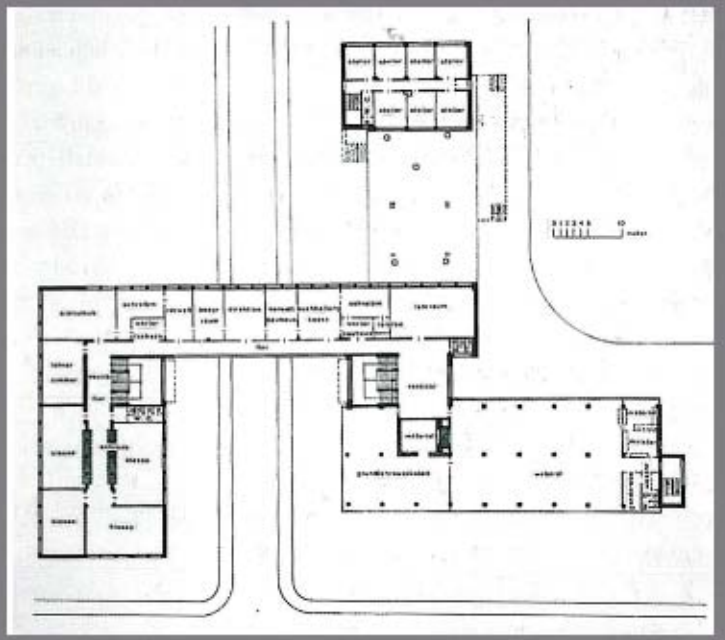


bauakademie, berlin, 1832

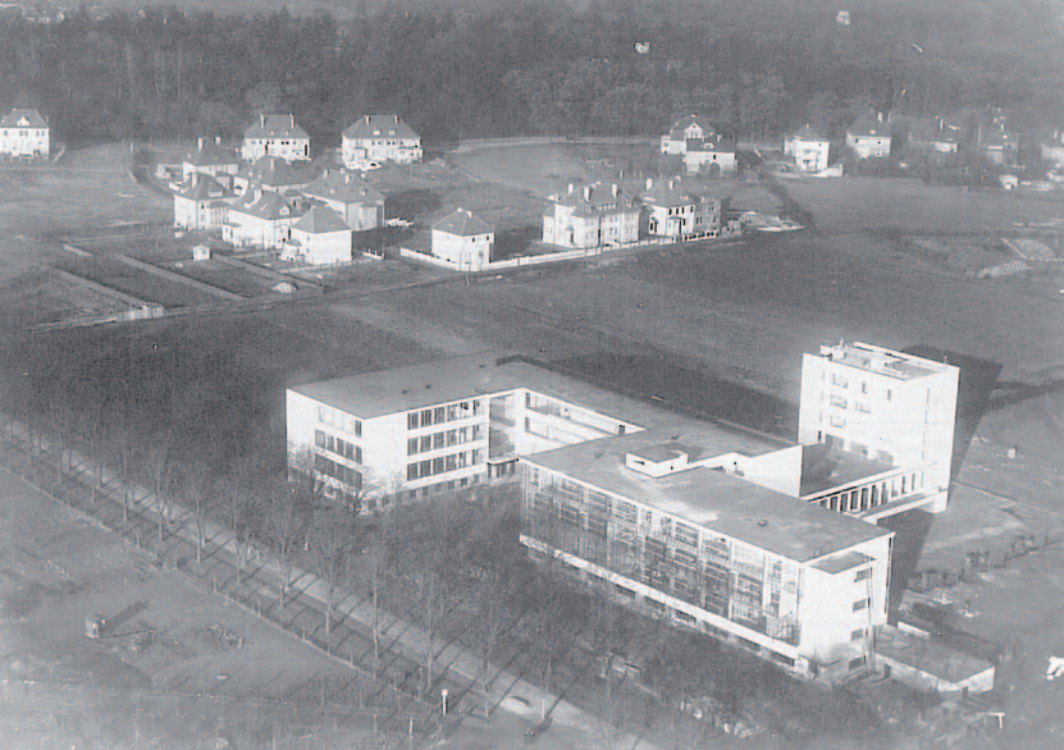


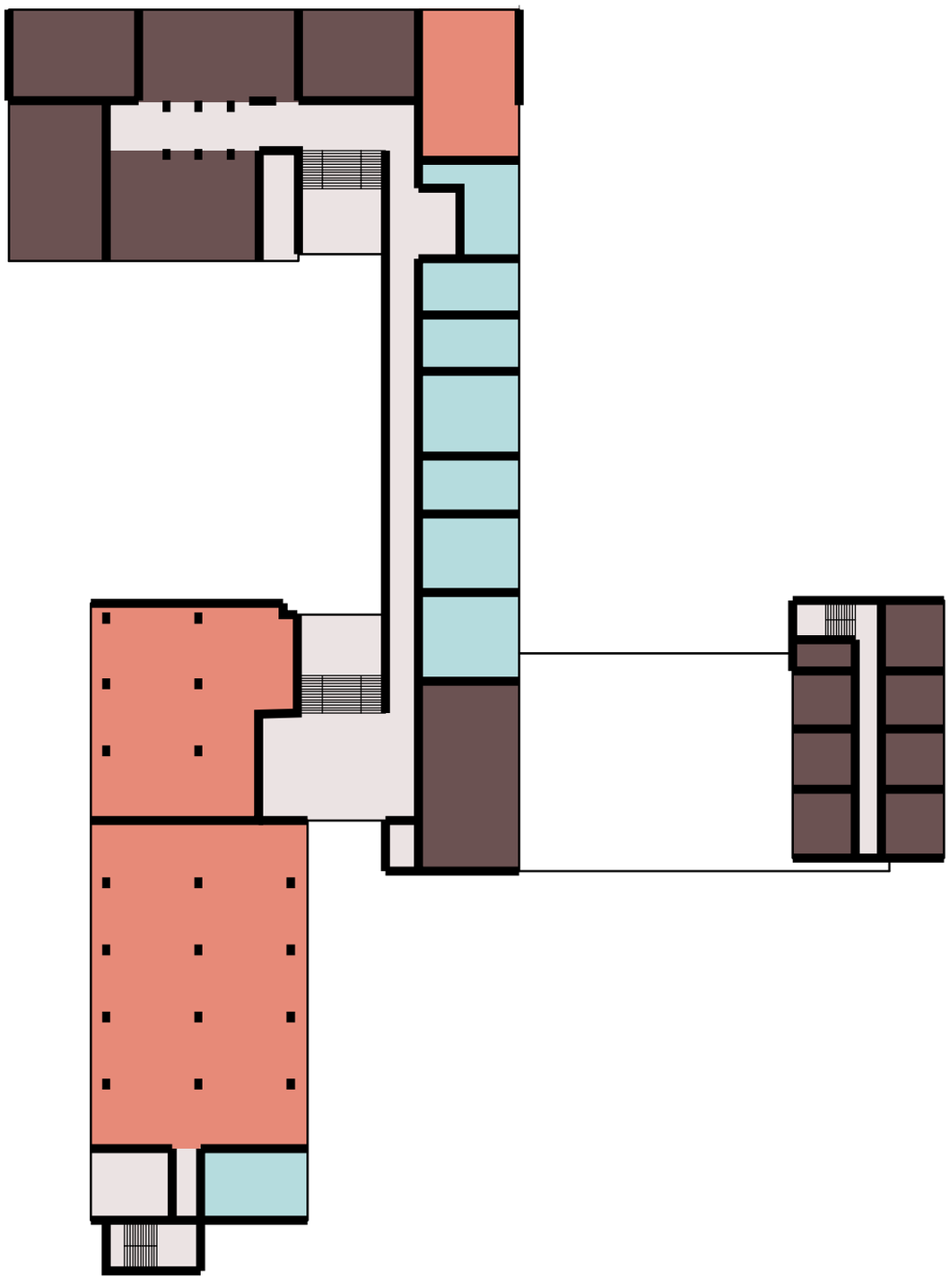
technical university, berlin, 1912





bauhaus , dessau, 1926, plans





teaching

resources

offices

public

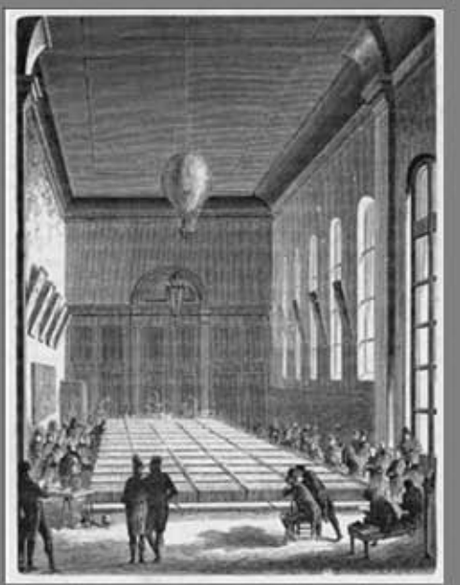
others

circulation

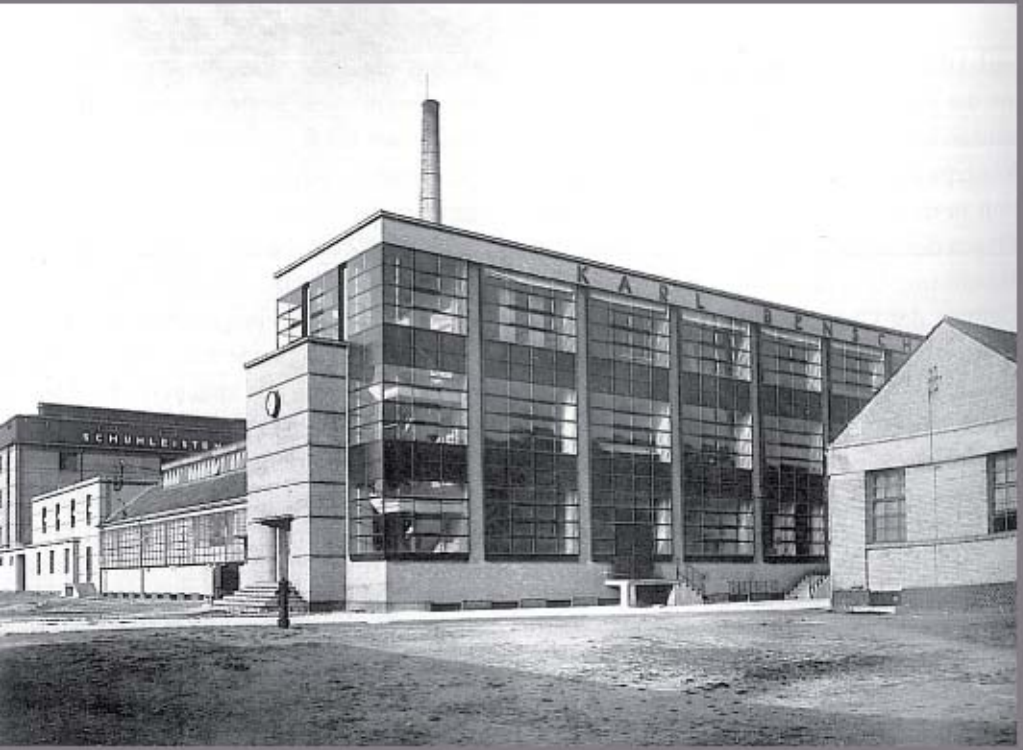
Bauhaus

ecole des beaux arts, paris

bauakademie, berlin



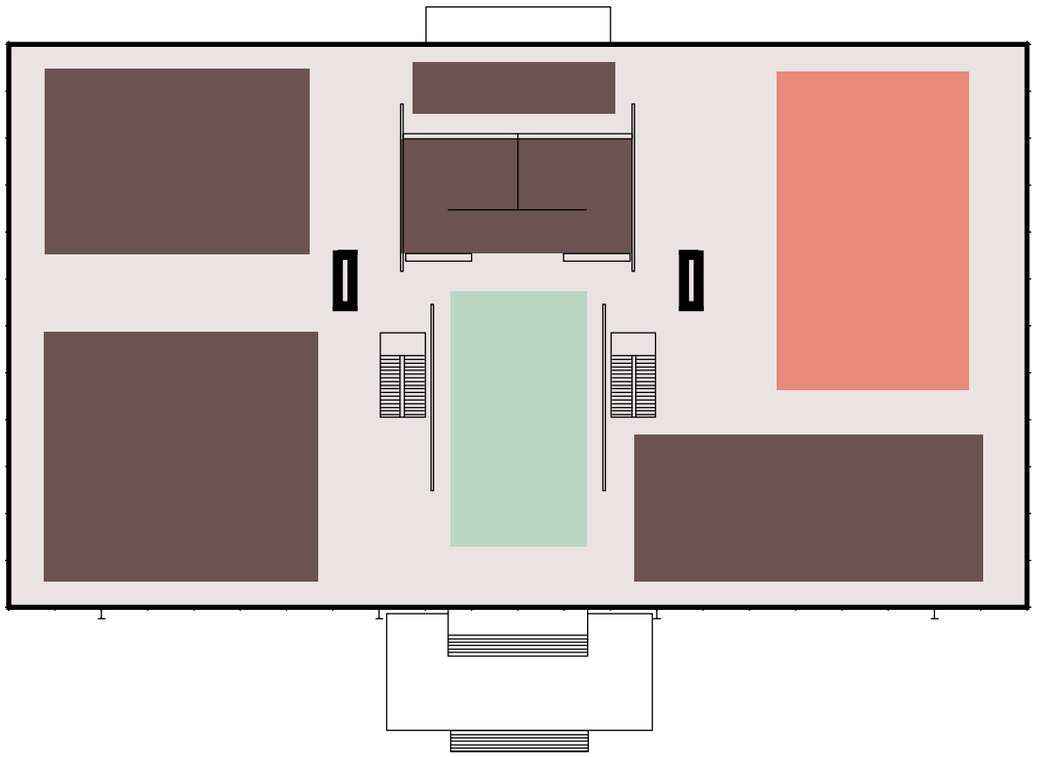
ecole polytechnique, paris

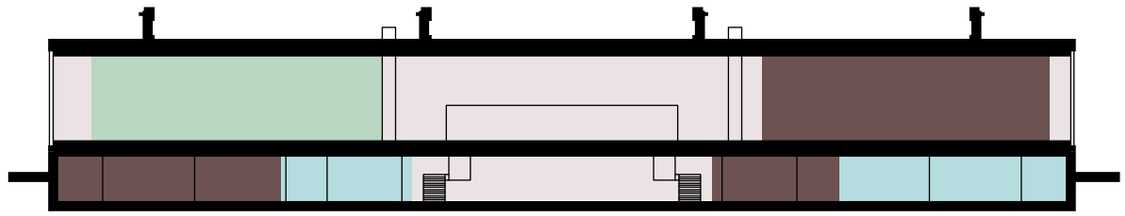


walter gropius, fagus factory, 1911

bauhaus, 1925

Section





Upper Plan

Lower Plan

teaching

resources

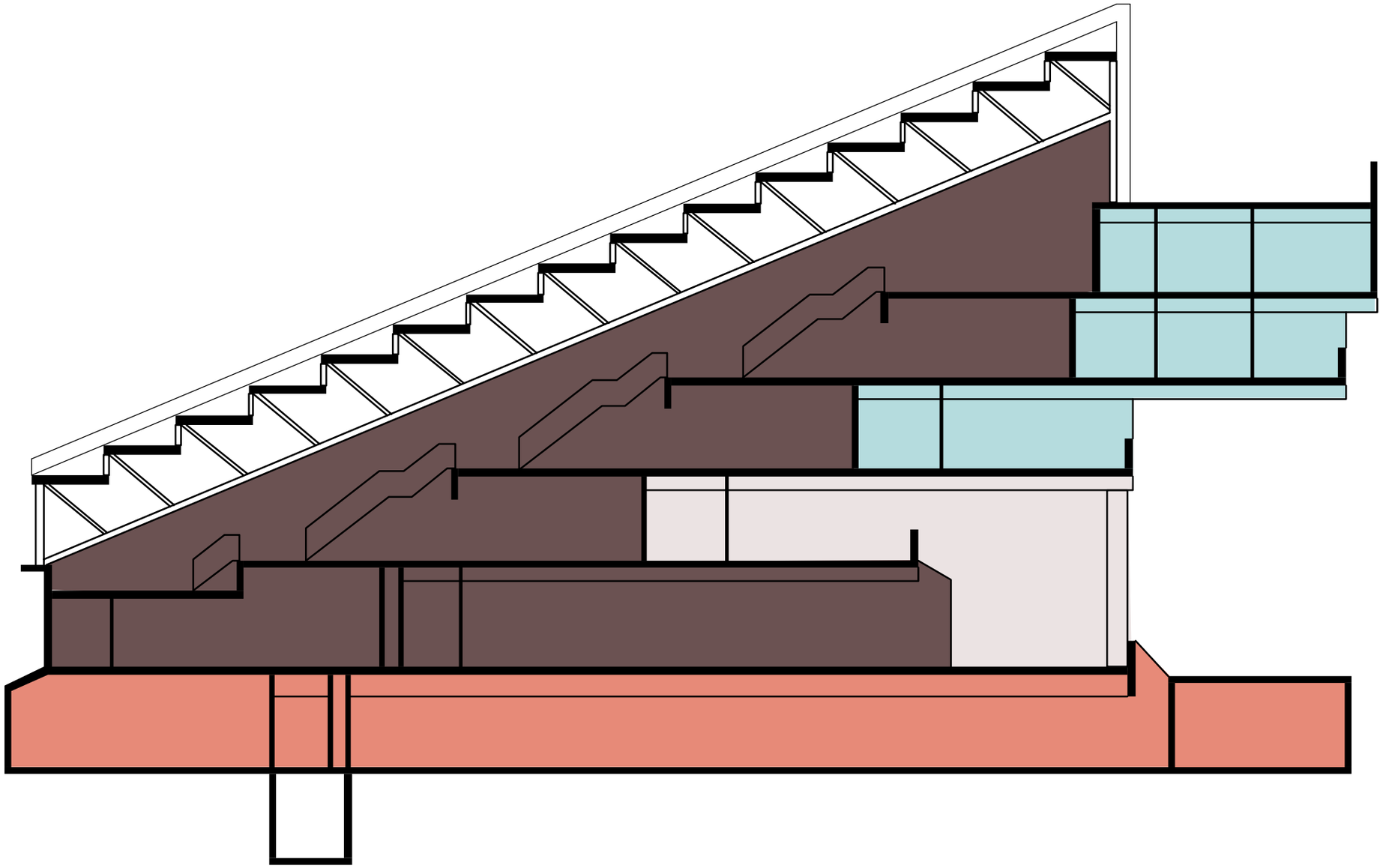
offices

public

others

circulation

Crown hall



teaching

resources

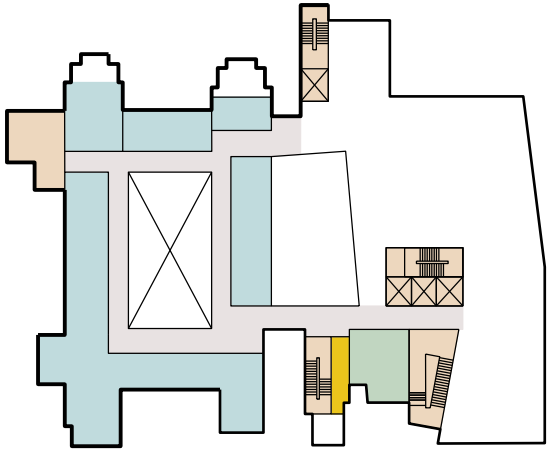
offices

public

others

circulation

Gund hall section



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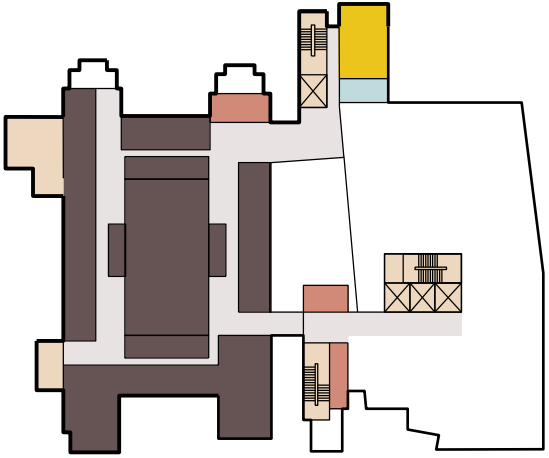

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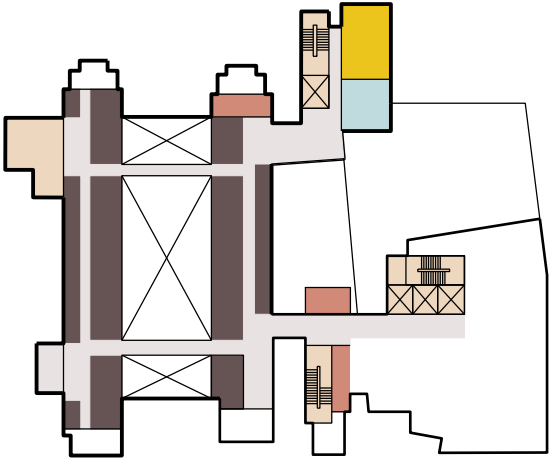

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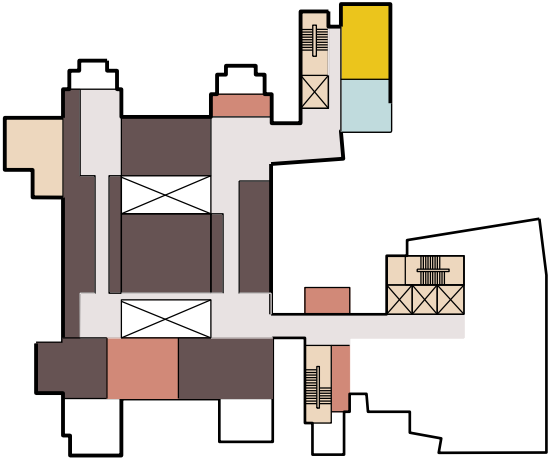

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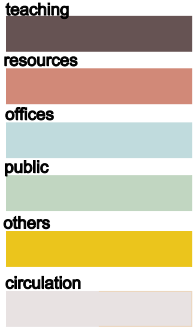
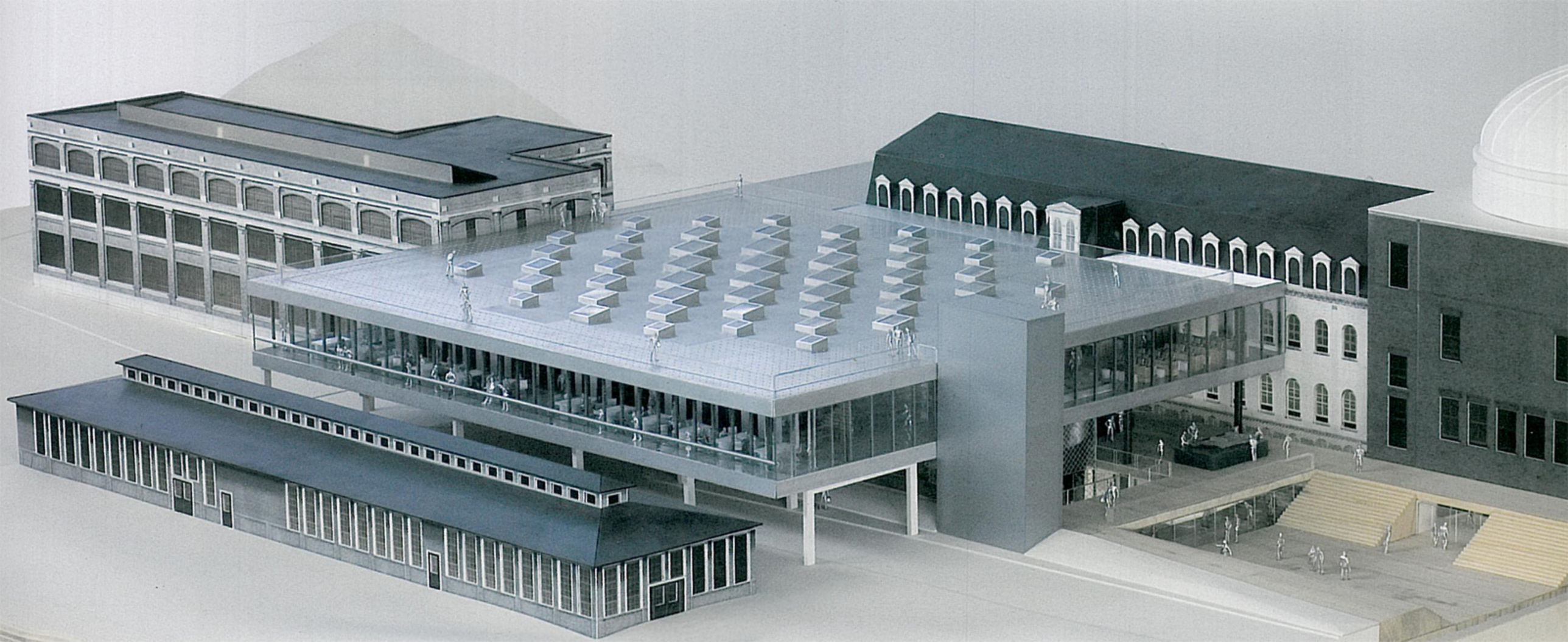
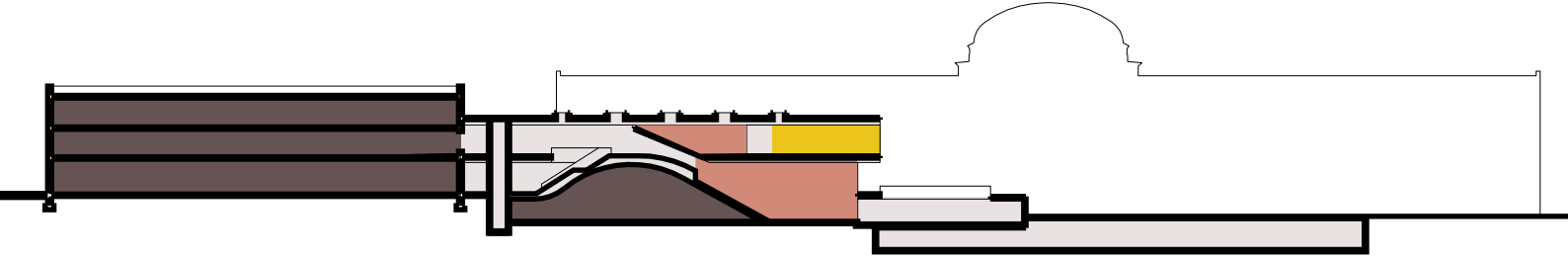
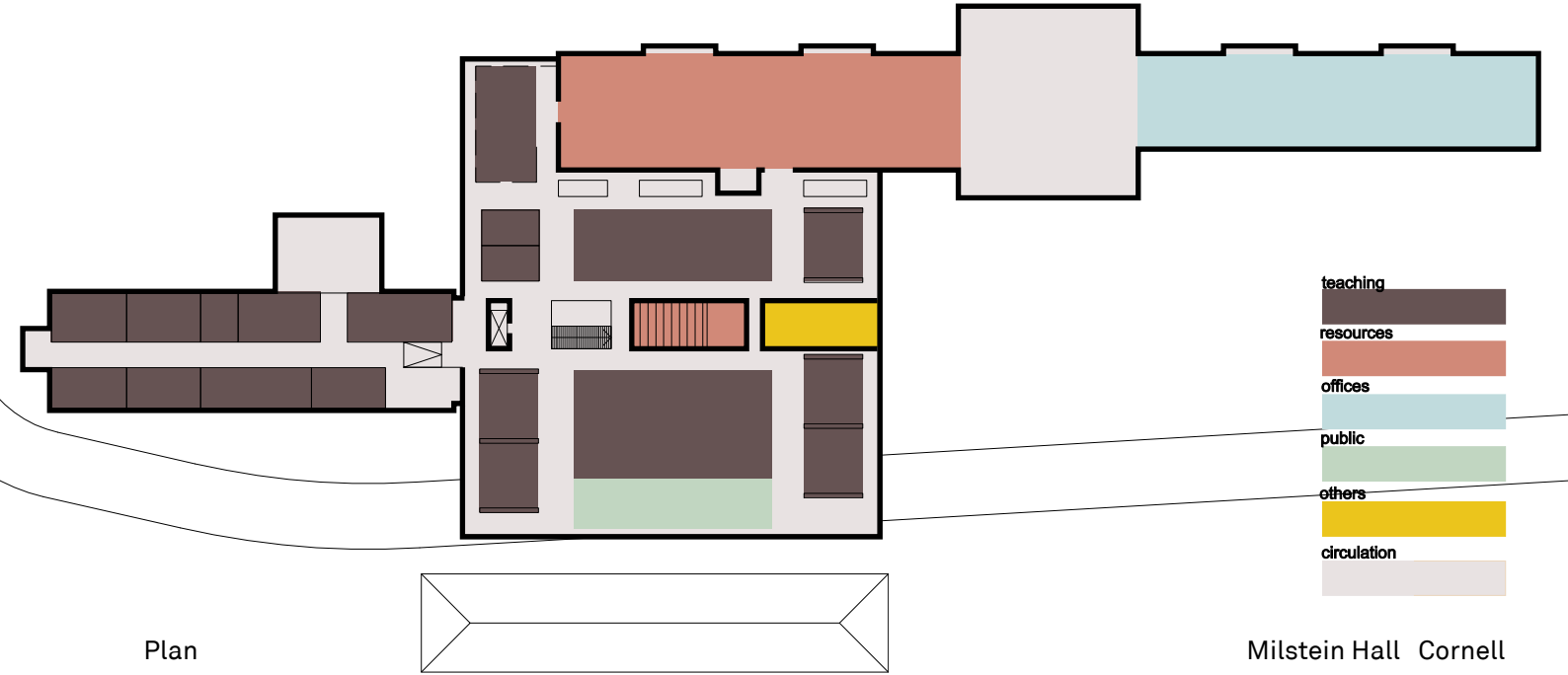






Section

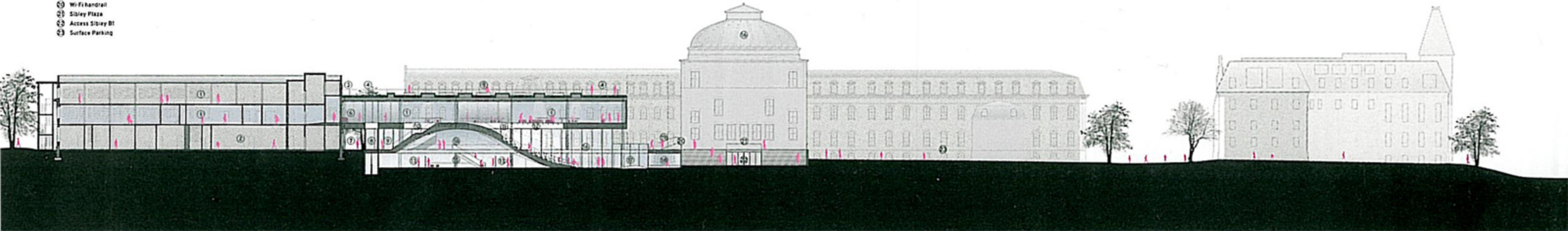


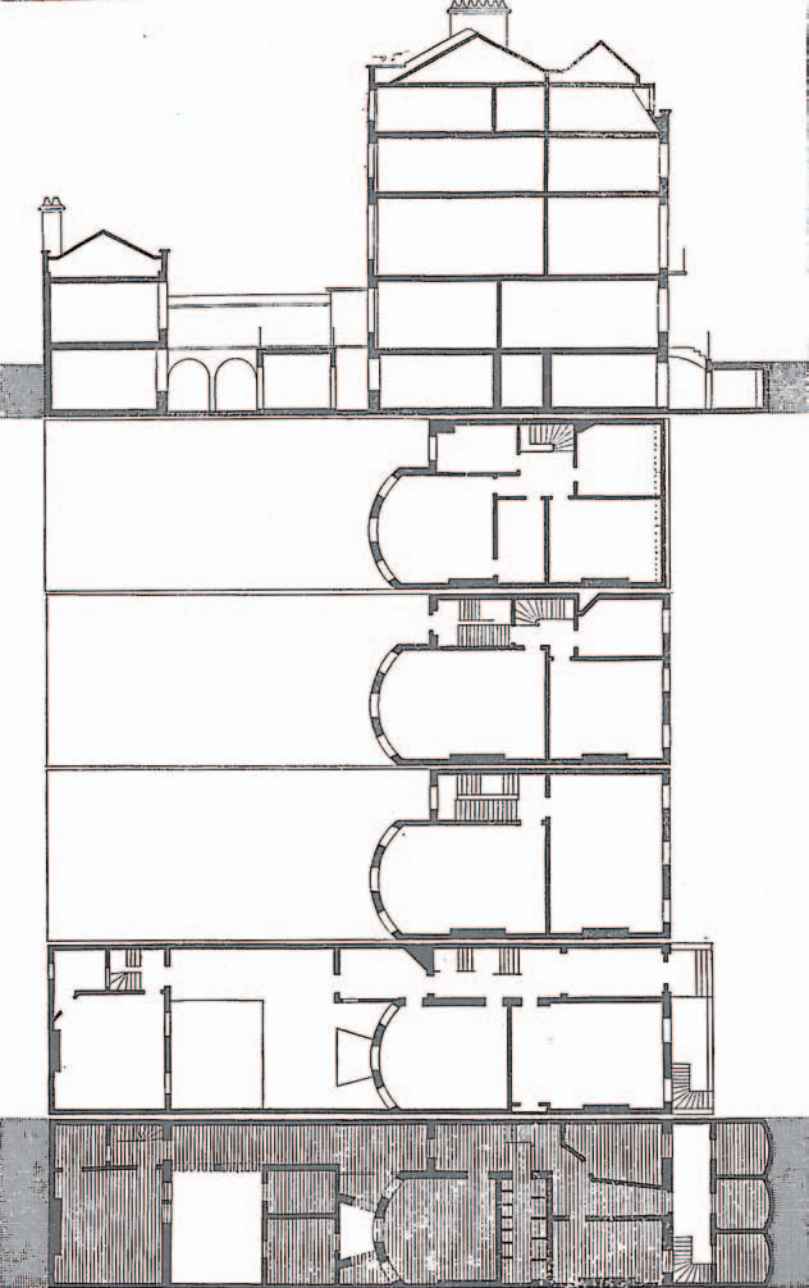
Plan

Milstein Hall Cornell

Section AA

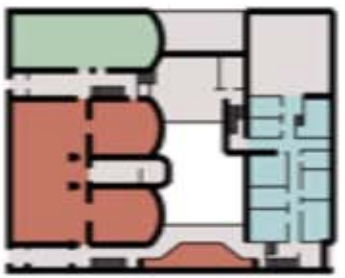
1. Studios
2. Workshop
3. Access Rand F3
4. Occupiable Roof deck area
5. Secured Green roof area
6. Access Rand F2
7. Access Rand F1
8. Moving Platform
9. Entrance Foyer
10. Access Milstein F2
11. Access Auditorium
12. Floor Window
13. Crit Area
14. Access Milstein B1 / Auditorium
15. Bar / Coffee
16. Auditorium
17. Patio
18. Entry Lobby / Exhibition Loop
19. Access Sibley F1
20. Wi-Fi handrail
21. Sibley Plaza
22. Access Sibley B1
23. Surface Parking



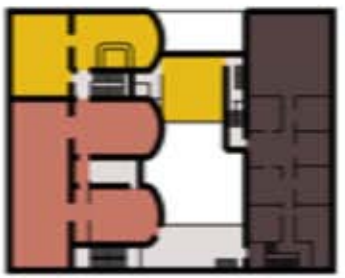


Architectural Association London

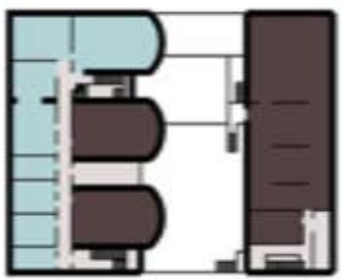
B



G



1



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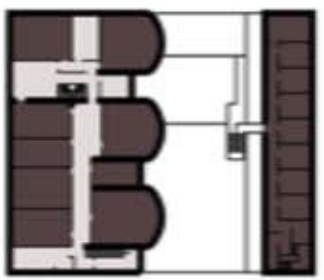
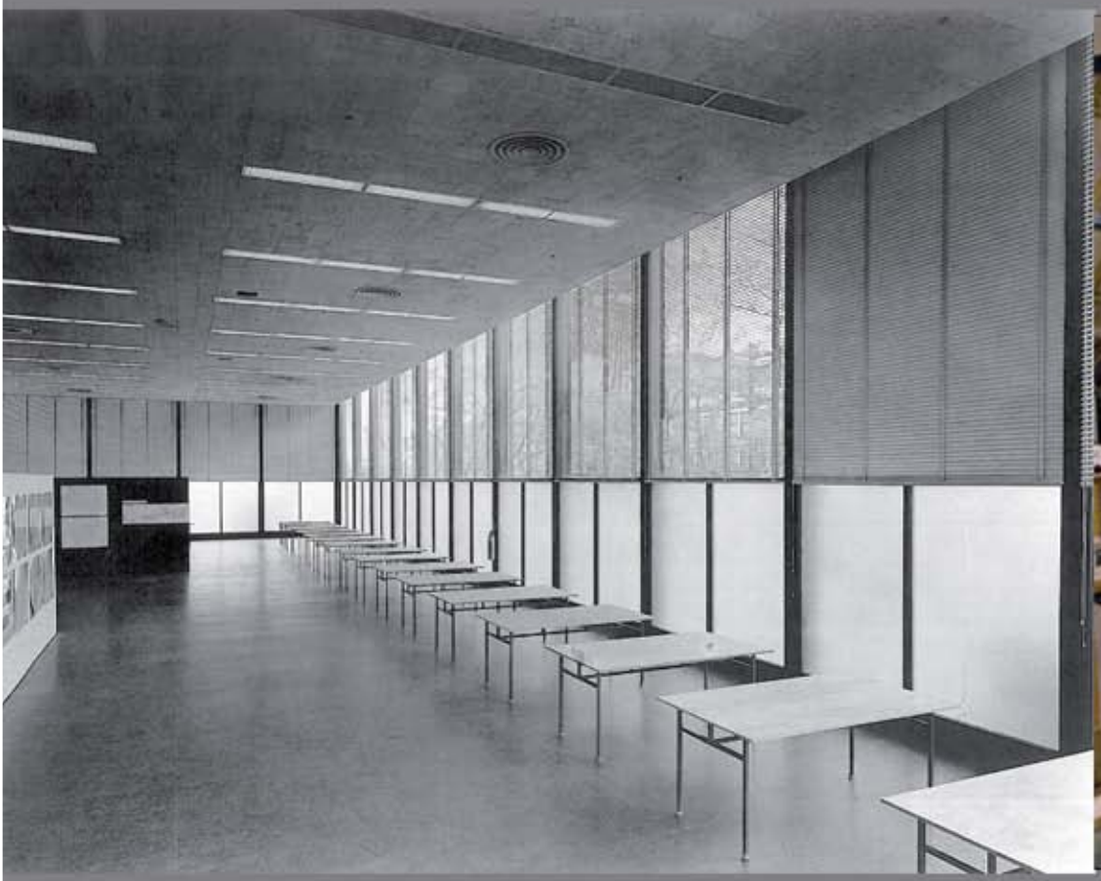


3

the Bar Architectural Association London

Architectural Association, London

academic environment

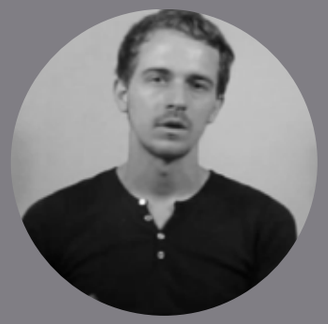


flexibility

“The building has to be able to adapt to changing curricula; it should be possible to do everything from model making, to computer simulation, from film work to prototyping, from concentrated study to group performance.”

market place

The university is a bit like a market place, where you can choose your future profession. I would like to see more of the different courses that are on offer; there may be something I didn't even know about. So of course this has to be a building for Architecture most of all, but it would be nice if it would open itself to the other departments and would also invite them in.



cantina

It definitly needs a good cafe and a bar; the food should be better than the usual junk food. The cantina is also the best place for formal and informal meetings.

home

We spend so much time in the Faculty building, it becomes like a second home; it would be nice to have a few niches where you can make a private phone call or just chill out; of course there has to be food and drink somewhere.

robustness

The best architecture school is a hose-down shed.

privacy

You also have to be able to shut yourself off, in order to concentrat on your work; all open plan spaces can be quite disturbing.

learning from peers

The studio is the most important place of learning; not just because you learn by doing but also you learn so much from the other students.

i want to open a window

In our studio the air conditioning never works; its either too cold or too hot; in some places it is really drafty and if you don't wear a hat your constantly ill. I sometimes just long to open a window.

natural light

I hate to be in electric light all day; I really want some natural light; that's particularly important when you stare into your computerscreen all day long.

green space

The Melbourne campus has a lot of trees and a very green feel to it. The new building mustn't disturb that. Actually it would be nice to have more of it. Also it would relly be nice to work in the open; we have a mild climate for most of the year.

efficiency

I don't want to waste my time running from one location to another; the building should combine all facilities. It also has to be well equipped with Internet access, and a sufficient amount of power points for all our equipment.

sustainability

I think a new building should be an example of sustainability. We are talking so much about ecological architecture, I think it would be really useful to have a 1:1 sample where one can see how things work (or how they don't work). There should be some information on energy consumption and carbon emission.


Lund University
University of Sheffield
Silesian University of Technology
London Metropolitan University
Royal Danish Academy of Fine Arts
University of Liverpool
University of Toronto
University of Bath
Tfh Berlin
Harvard University
Technical University of Berlin
University of Brighton
Yale
University of Texas
Columbia University
Pratt Institute
Princeton University
University of New South Wales
Monash University
RMITUniversity
Deakin University

“...the best architecture school is probably a hose down vertical shed...”

Professor Shane Murray Monash University

Foundation Professor and Head of Department of Architecture

sustainability

and by using the global atmosphere as a dumping ground for carbon dioxide and other greenhouse gases (Figure 3). In an overexploited world, ecological debtor nations are particularly at risk from local and global overshoot, and from the associated decline in ecosystem services, the life support system on which humanity depends.

If we continue with business as usual, by the early 2030s we will need two planets to keep up with humanity's demand for goods and services. But there are many effective ways to change course. While technological developments will continue to play an important role in addressing the sustainability challenge, much of what needs to be done is already known, and solutions are available today. As an example, this report uses a "wedge" approach to illustrate how moving to clean energy generation and efficiency based on current technologies could allow us to meet the projected 2050 demand for energy services with major reductions in associated carbon emissions.

Technology transfer and support for local innovation can help emerging economies maximize their well-being while leapfrogging resource-intensive phases of industrialization. Cities, which now house more than half the human population, can be designed to support desirable lifestyles while simultaneously minimizing demand on both local and global ecosystems. Empowerment of women, education and access to voluntary family planning can slow or even reverse population growth.

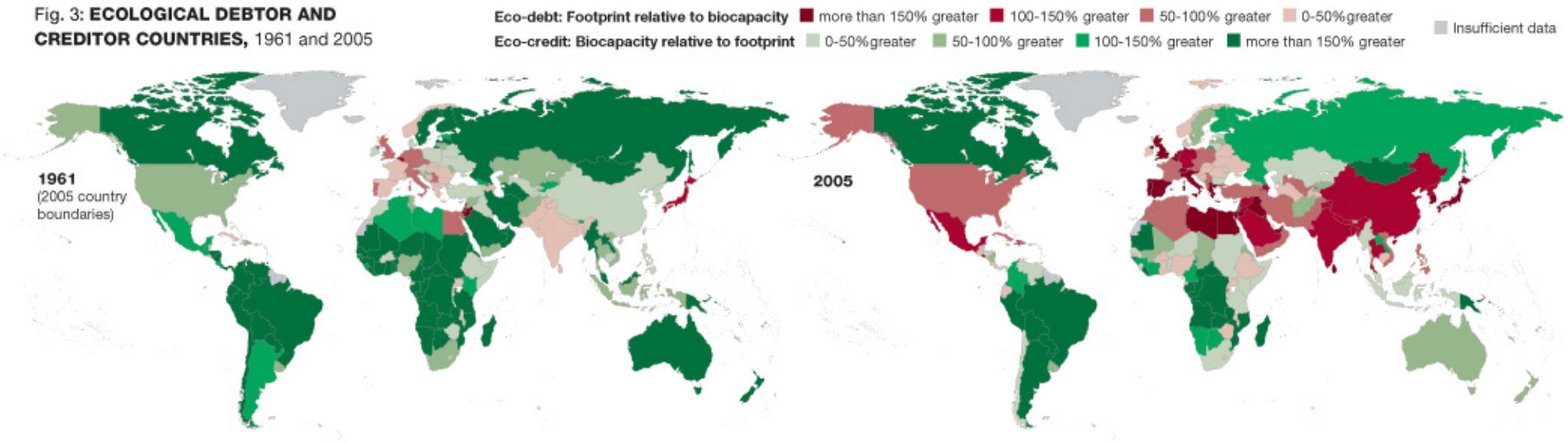
The Ecological Footprint – representing human demand on nature – and the Living Planet Index – measuring nature's overall health – serve as clear and robust guideposts to what needs to be done. If humanity has the will, it has the way to live within the means of the planet, while securing human well-being and the ecosystems on which this depends.

Figure 1: Living Planet Index. The global index shows that vertebrate species populations declined by nearly 30 per cent during the period 1970 to 2005.

Figure 2: Humanity's Ecological Footprint. Human demand on the biosphere more than doubled during the period 1961 to 2005.

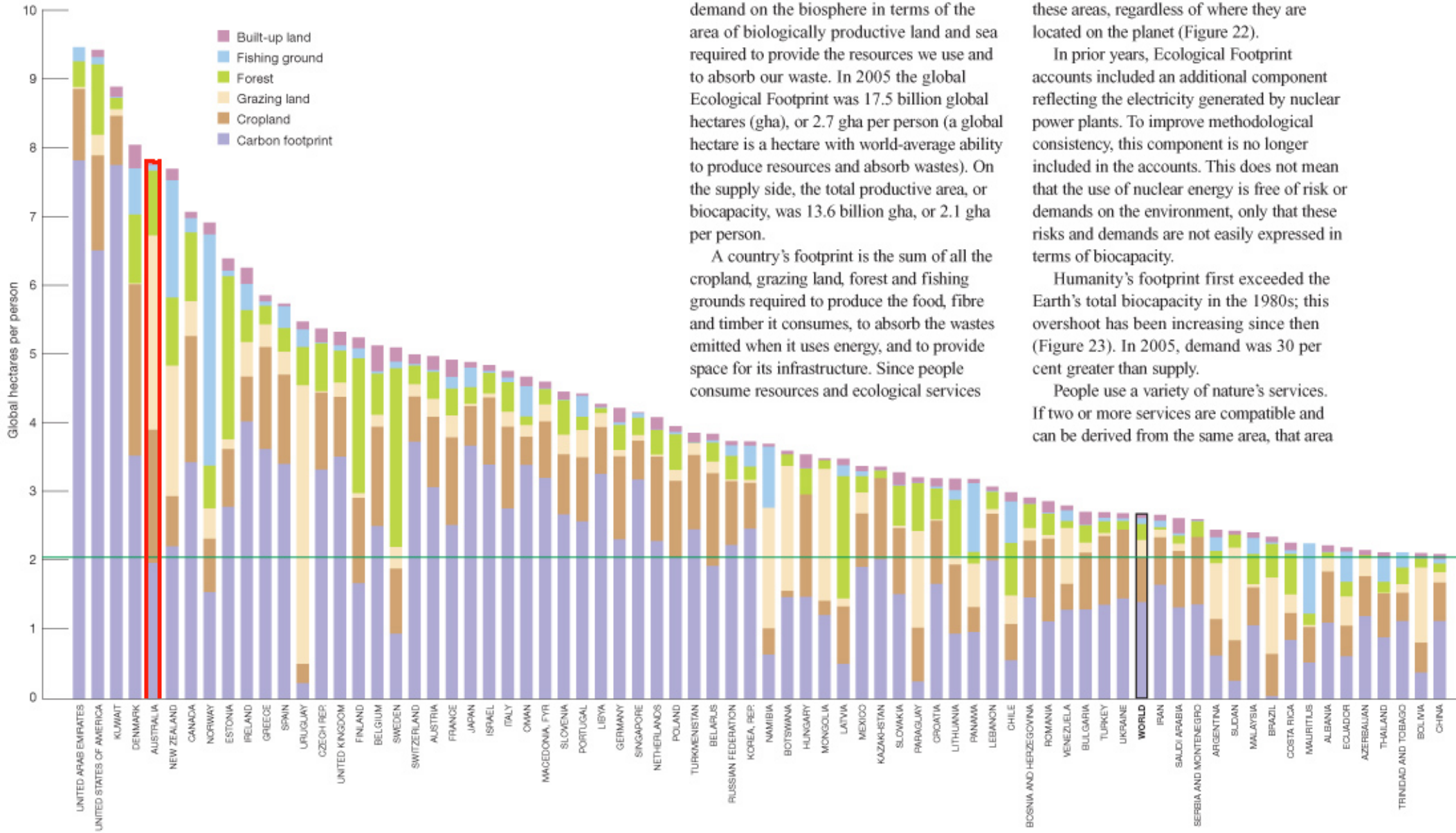
Figure 3: Ecological debtor and creditor countries. Debtor countries have an Ecological Footprint greater than their own biocapacity; creditor countries have an Ecological Footprint smaller than their own biocapacity.

Fig. 3: **ECOLOGICAL DEBTOR AND CREDITOR COUNTRIES,** 1961 and 2005



ECOLOGICAL FOOTPRINT OF NATIONS

Fig. 22: **ECOLOGICAL FOOTPRINT PER PERSON, BY COUNTRY,** 2005



The Ecological Footprint measures humanity's demand on the biosphere in terms of the area of biologically productive land and sea required to provide the resources we use and to absorb our waste. In 2005 the global Ecological Footprint was 17.5 billion global hectares (gha), or 2.7 gha per person (a global hectare is a hectare with world-average ability to produce resources and absorb wastes). On the supply side, the total productive area, or biocapacity, was 13.6 billion gha, or 2.1 gha per person.

A country's footprint is the sum of all the cropland, grazing land, forest and fishing grounds required to produce the food, fibre and timber it consumes, to absorb the wastes emitted when it uses energy, and to provide space for its infrastructure. Since people consume resources and ecological services from all over the world, their footprint sums these areas, regardless of where they are located on the planet (Figure 22).

In prior years, Ecological Footprint accounts included an additional component reflecting the electricity generated by nuclear power plants. To improve methodological consistency, this component is no longer included in the accounts. This does not mean that the use of nuclear energy is free of risk or demands on the environment, only that these risks and demands are not easily expressed in terms of biocapacity.

Humanity's footprint first exceeded the Earth's total biocapacity in the 1980s; this overshoot has been increasing since then (Figure 23). In 2005, demand was 30 per cent greater than supply.

People use a variety of nature's services. If two or more services are compatible and can be derived from the same area, that area

“…we have more to lose than any other developed nation if the world fails to reduce the carbon pollution that causes climate change”.

“The Australian Government has a substantial commitment to reduce our carbon pollution by 60 per cent of 2000 levels by 2050.”

“By 2020, we have committed to reduce Australia's carbon pollution by up to 15 per cent ….”

“Market based economic reforms like the Carbon Pollution Reduction Scheme are a critical part of global leadership on climate change”

CARBON POLLUTION REDUCTION SCHEME: AUSTRALIA'S LOW POLLUTION FUTURE

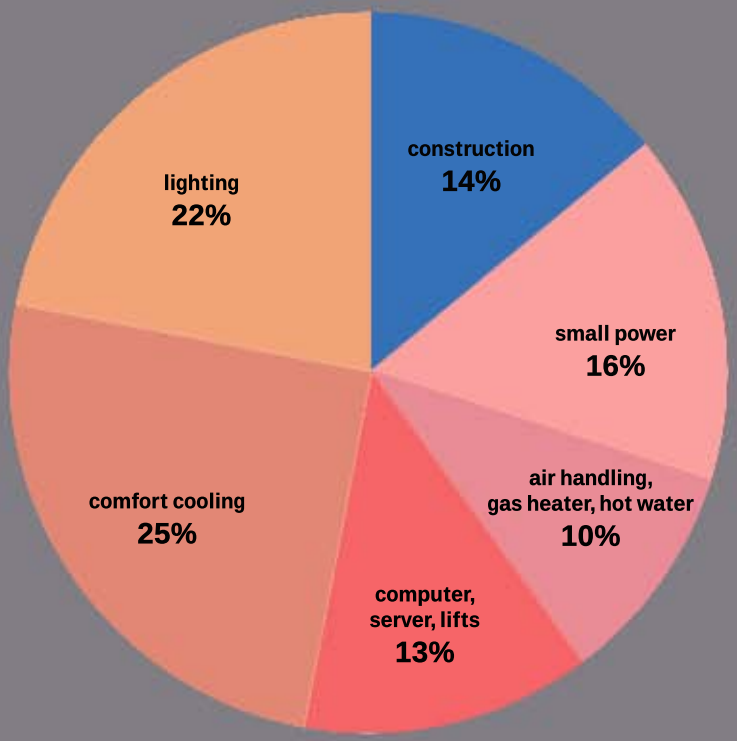
White Paper by the Government of Australia
15 December 2008

The University of Melbourne Council has adopted targets for 2008-2010 and 2030 to reduce carbon emissions on its campuses. A program has been developed to achieve major reductions in our carbon footprint by 2030 to decrease the environmental impact of our operations.

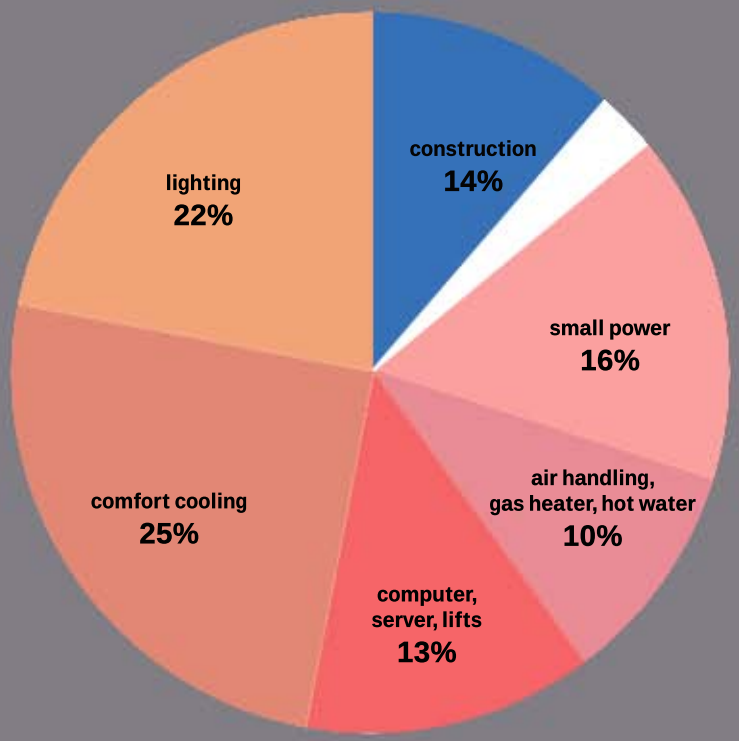
Measures to reduce carbon footprint

	2008	2009	2010	2030
Reduction in Energy Use	10%	15%	20%	>20%
Certified Green Energy	10%	15%	20%	>20%
Abatement Measures (carbon offsets)	5%	10%	10%	
Total Impact	25%	40%	50%	100%

„ACHIEVING A SUSTAINABLE CAMPUS“, University of Melbourne

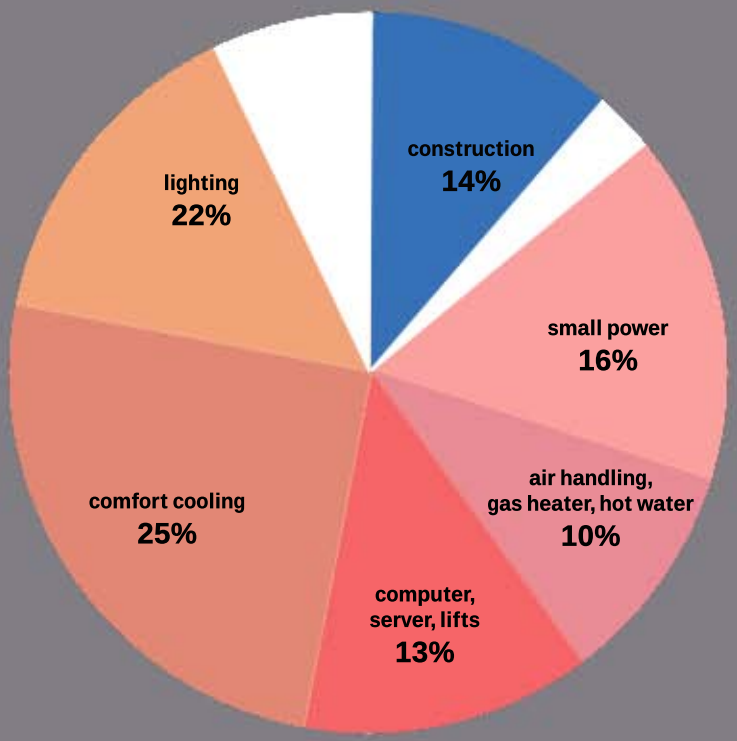


carbon chart for a generic office building over 60 year life cycle



carbon chart for a generic office building
over 60 year life cycle

Construction
material selection on overall performance: 20% reduction



carbon chart for a generic office building
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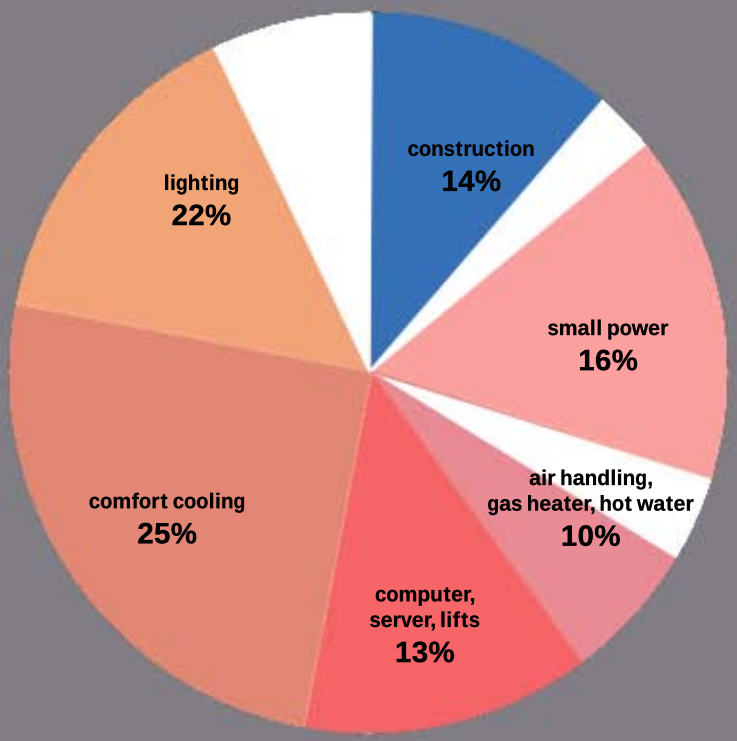
Construction
material selection on overall performance: 20% reduction

Lighting
maximise daylight (narrow plan), use movement activation for light control: 30% reduction



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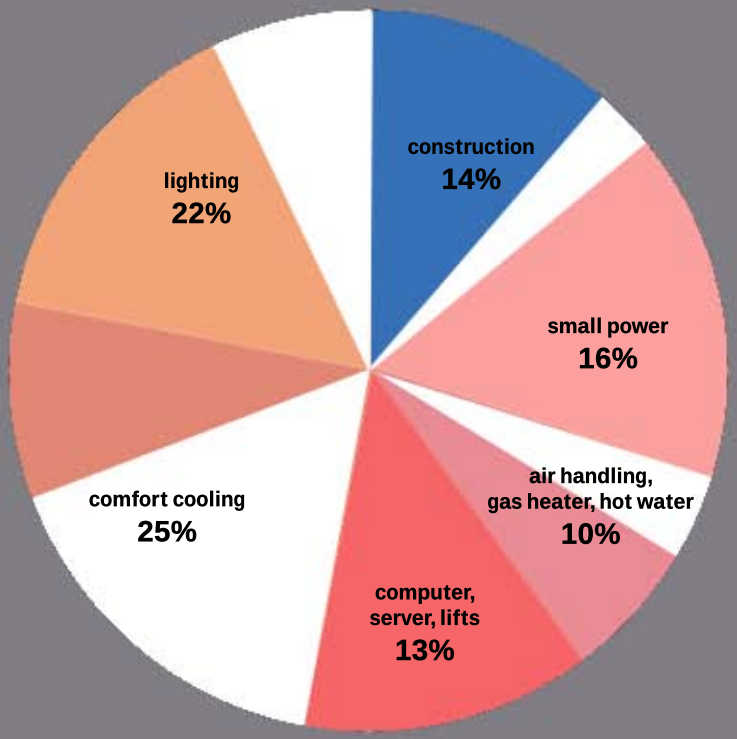
Ventilation
reduce mechanical ventilation to absolute minimum, use natural cross ventilation, use heat recovery in winter, use well insulated facades: 30% reduction



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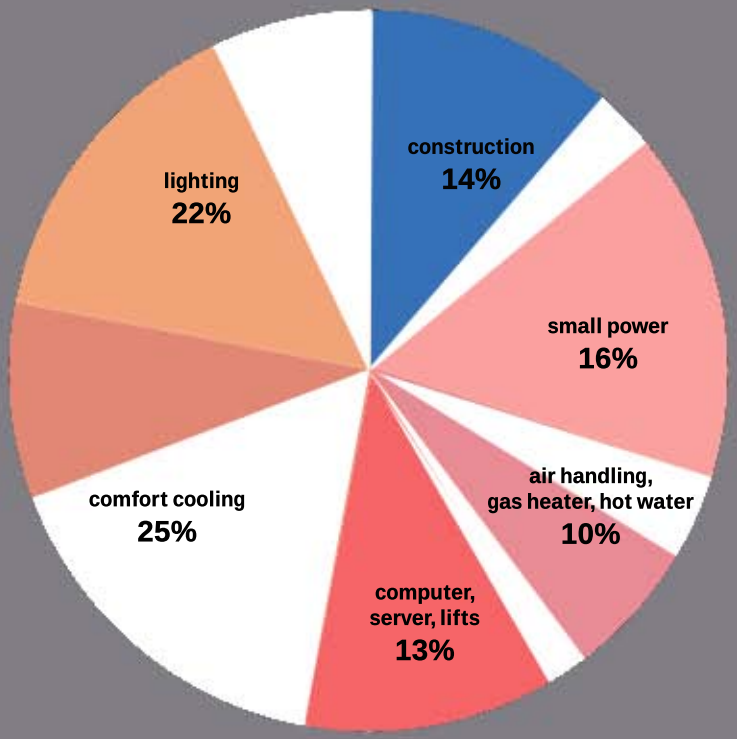
Ventilation
reduce mechanical ventilation to absolute minimum, use natural cross ventilation, use heat recovery in winter, use well insulated facades: 30% reduction

Cooling
reduce cooling to absolute minimum, employ efficient sunshading, use night cooling: 70% reduction



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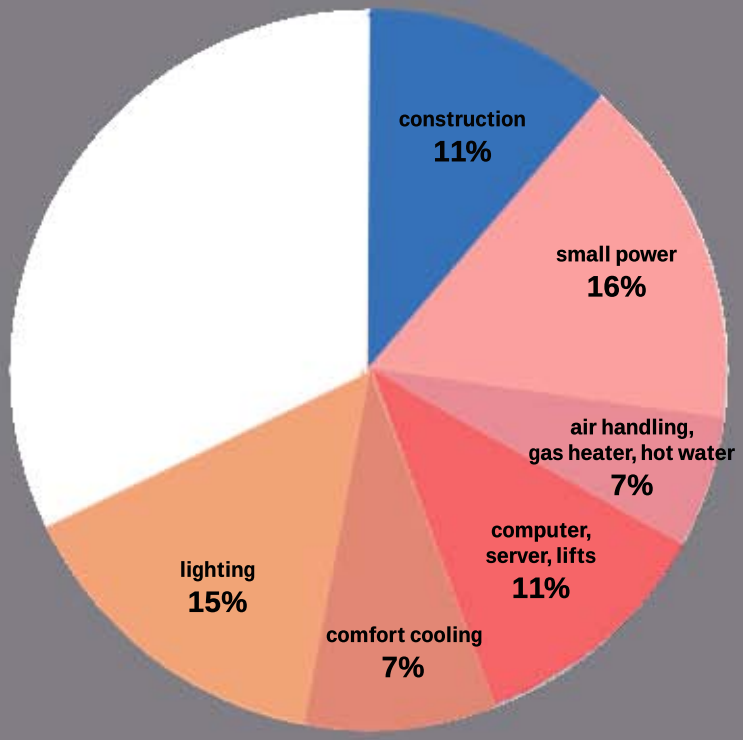
Cooling
reduce cooling to absolute minimum, employ efficient sunshading, use night cooling: 70% reduction

Computers, servers
use energy saving equipment: reduction 15%



best practice office building

Construction
material selection on overall performance: 20% reduction

Lighting
maximise daylight (narrow plan), use movement activation for light control: 30% reduction

Ventilation
reduce mechanical ventilation to absolute minimum, use natural cross ventilation, use heat recovery in winter, use well insulated facades: 30% reduction

Cooling
reduce cooling to absolute minimum, employ efficient sunshading, use night cooling: 70% reduction

Computers, servers
use energy saving equipment: reduction 15%

Overall reduction: 33%

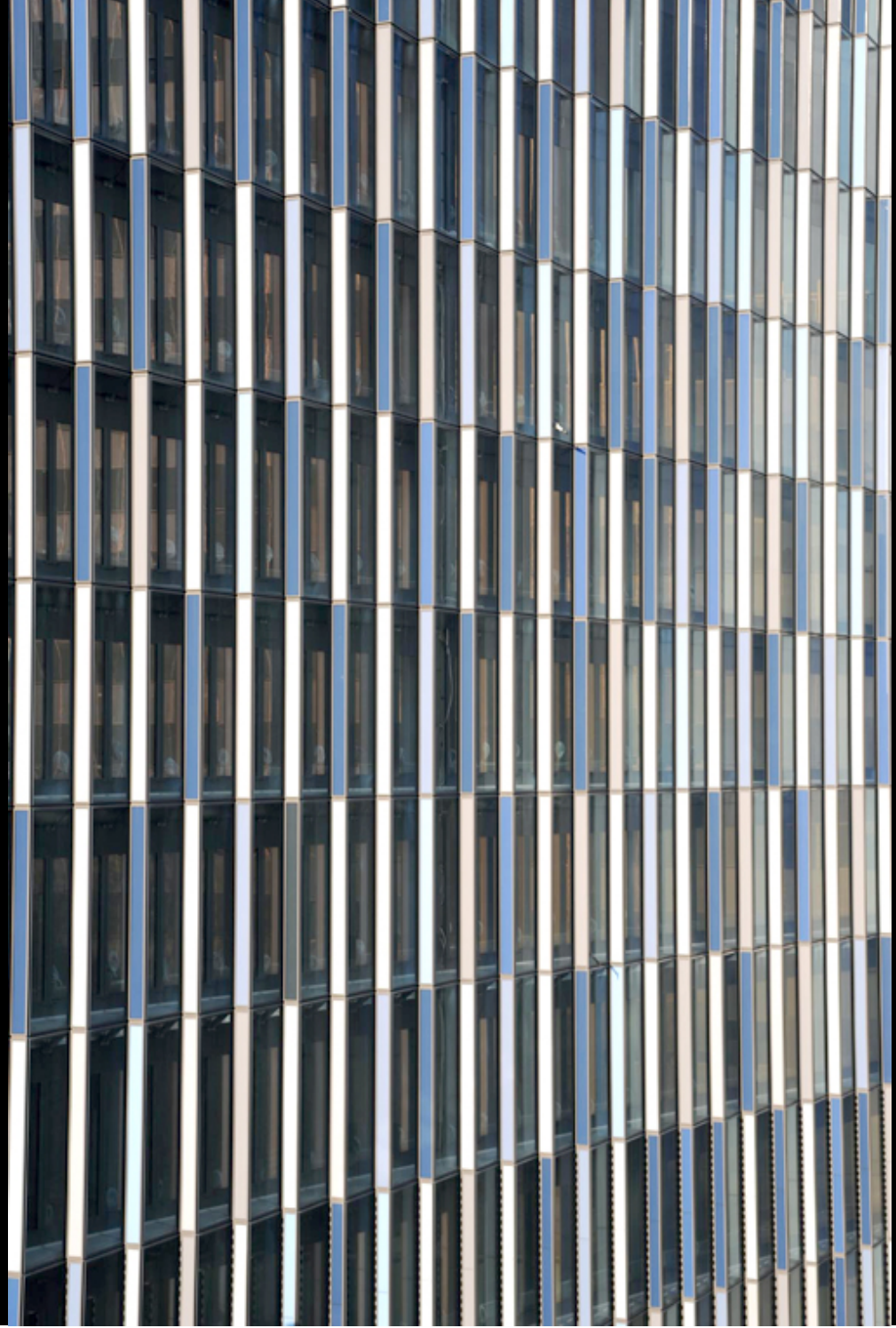
TOWARDS A CARBON NEUTRAL CAMPUS

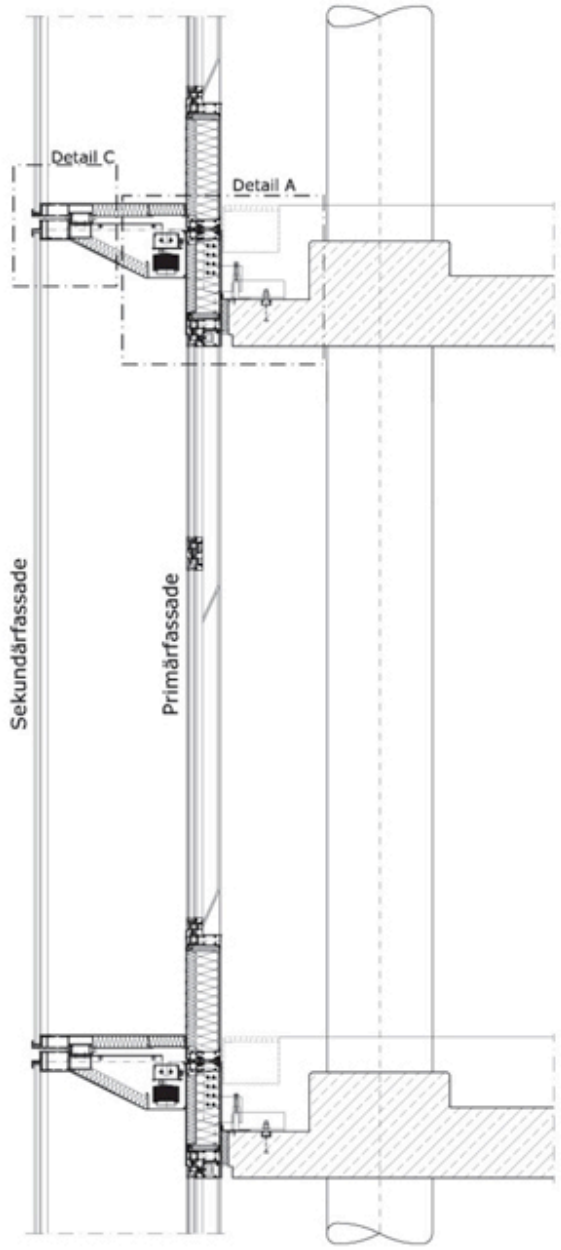
Energy consumption and hence carbon emission could be reduced by 1/3 through intelligent design.

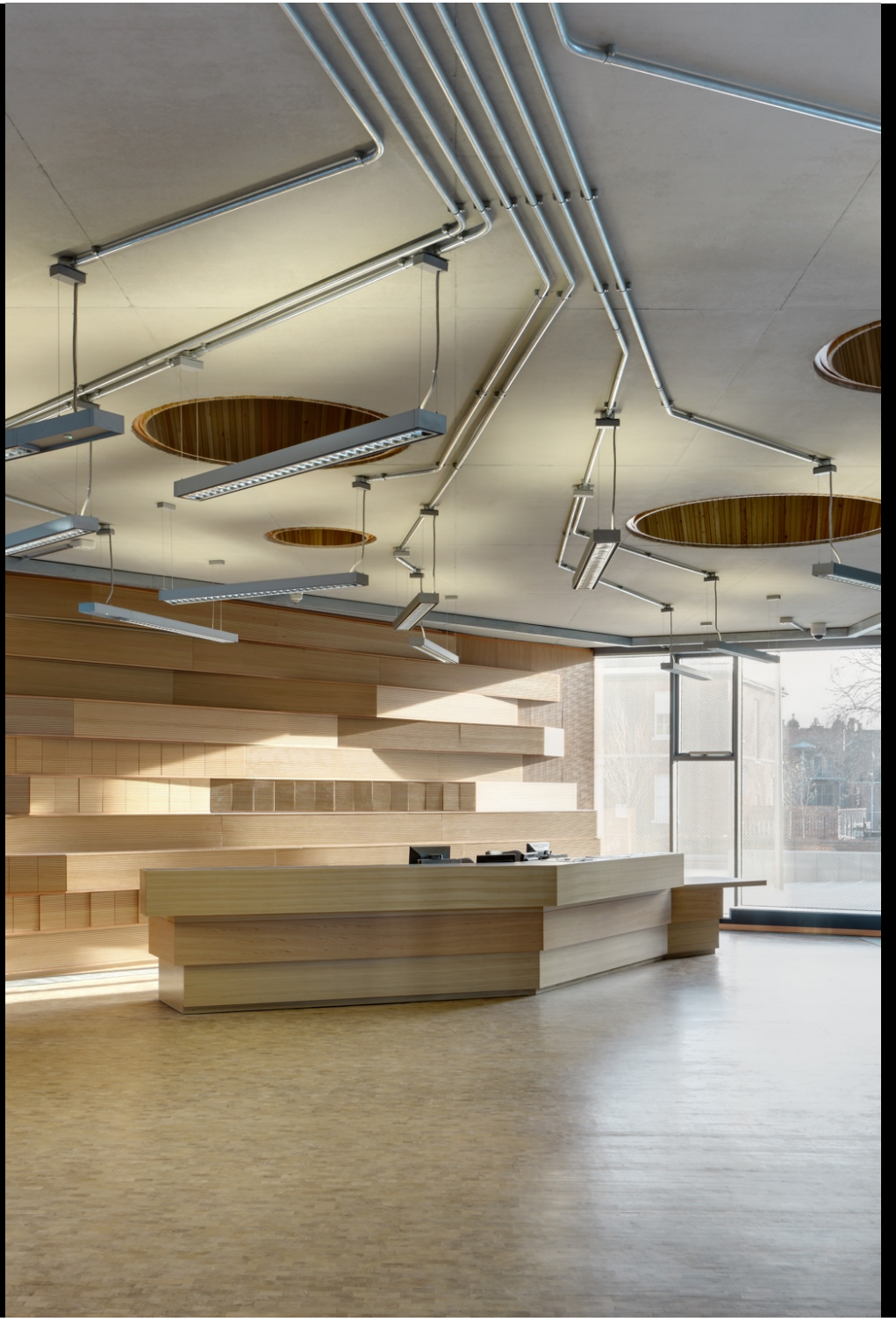
Further carbon reduction can be achieved through the use of renewable energy such as biomass, solar and geothermal energy. These can be employed building by building, but campus-wide strategies would be more efficient.

A combined heat and power plant accompanied with absorption chillers, for example, could provide carbon neutral electricity, heating and cooling.

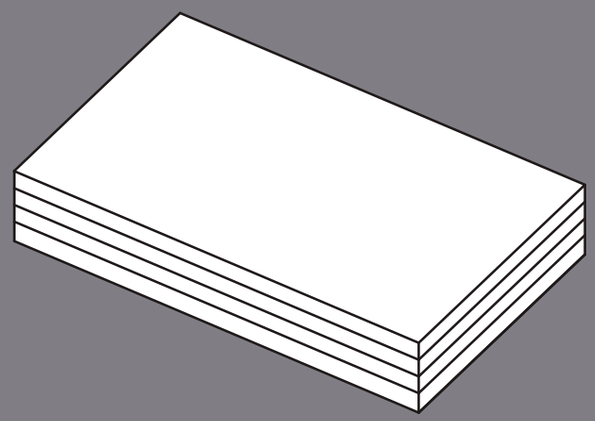
Such strategies can be investigated by our team.

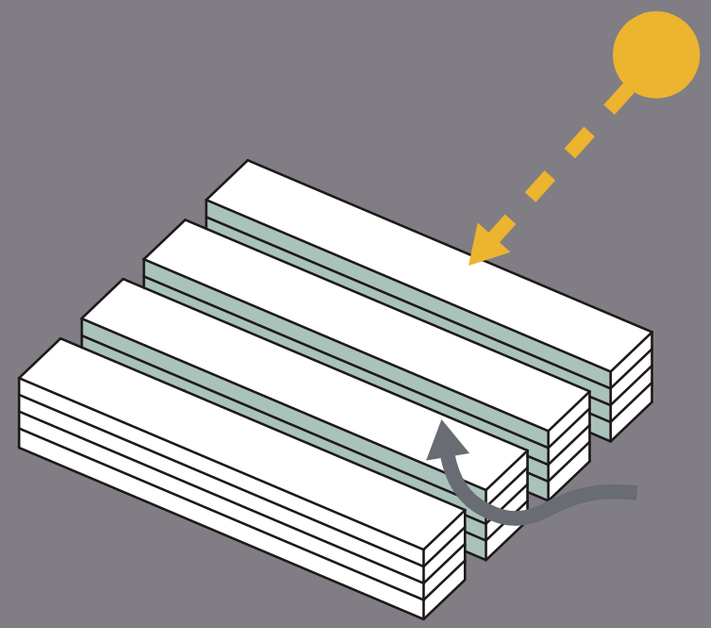


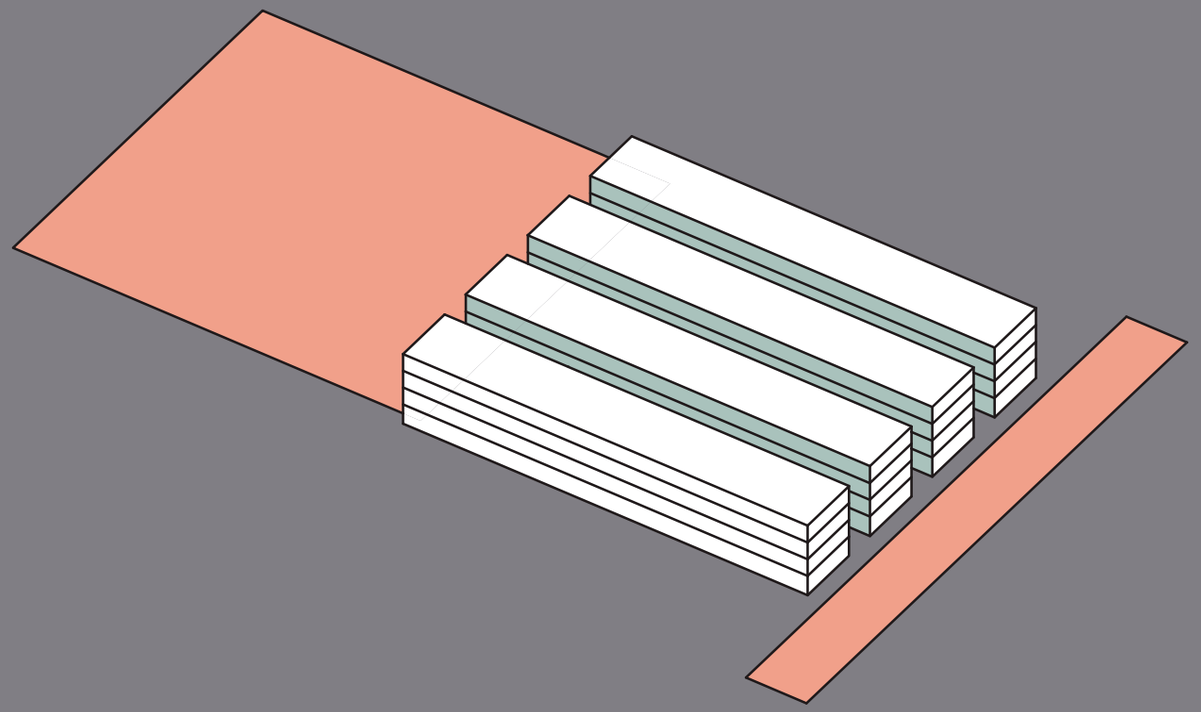

Detail C
Detail A
Sekundärfassade
Primärfassade

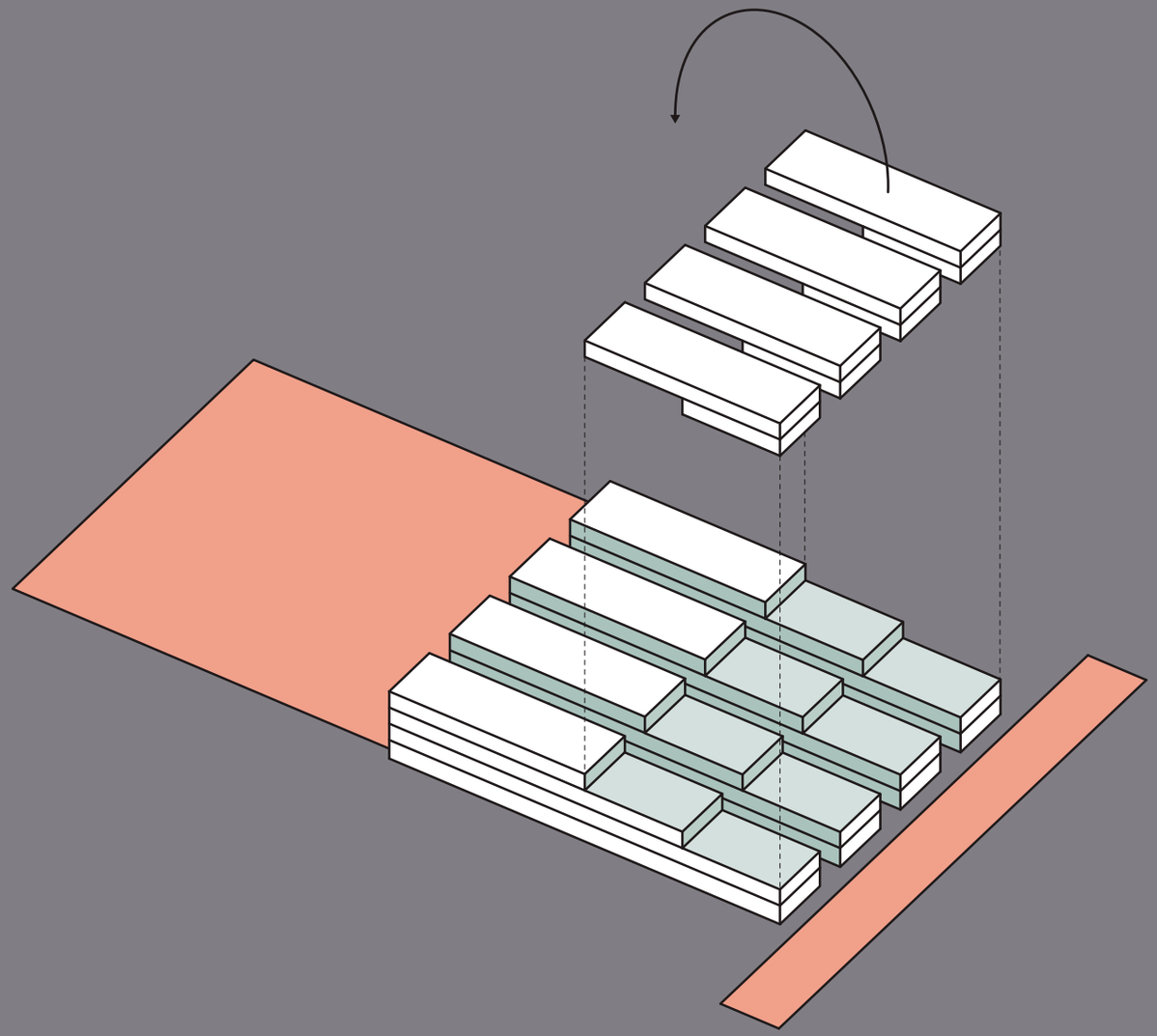


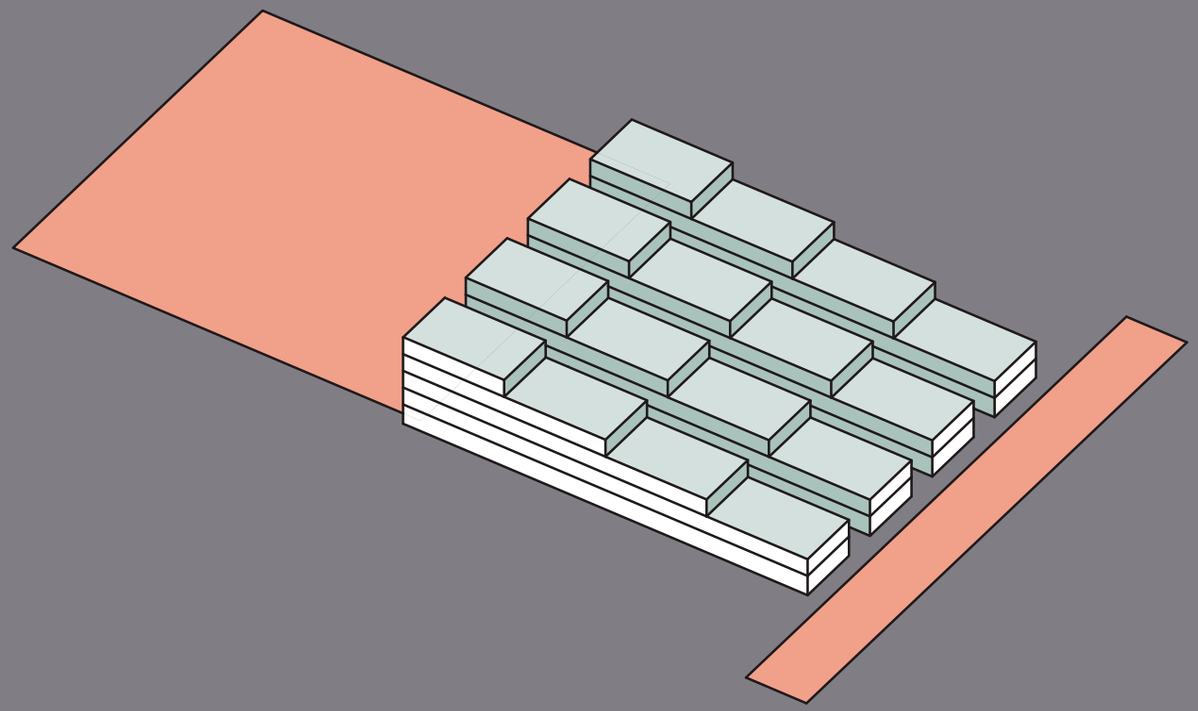
synthesis: the proposal

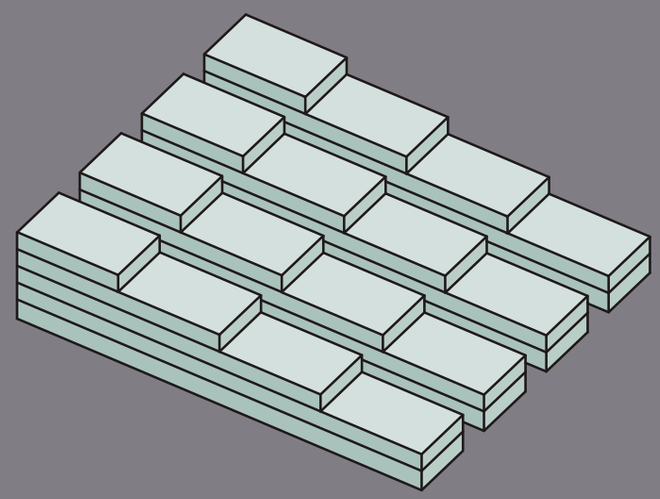


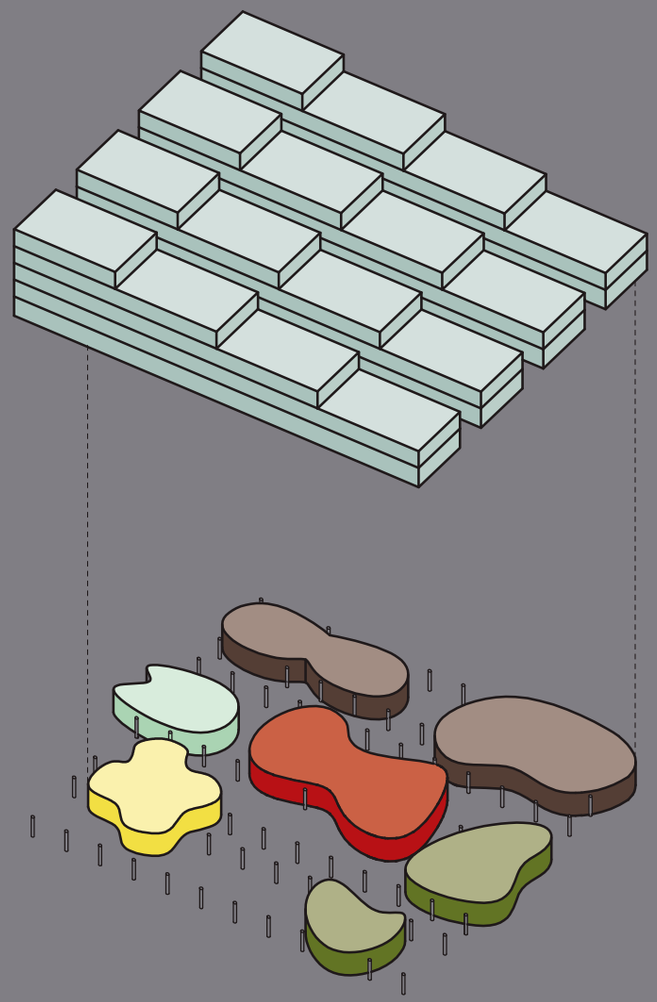


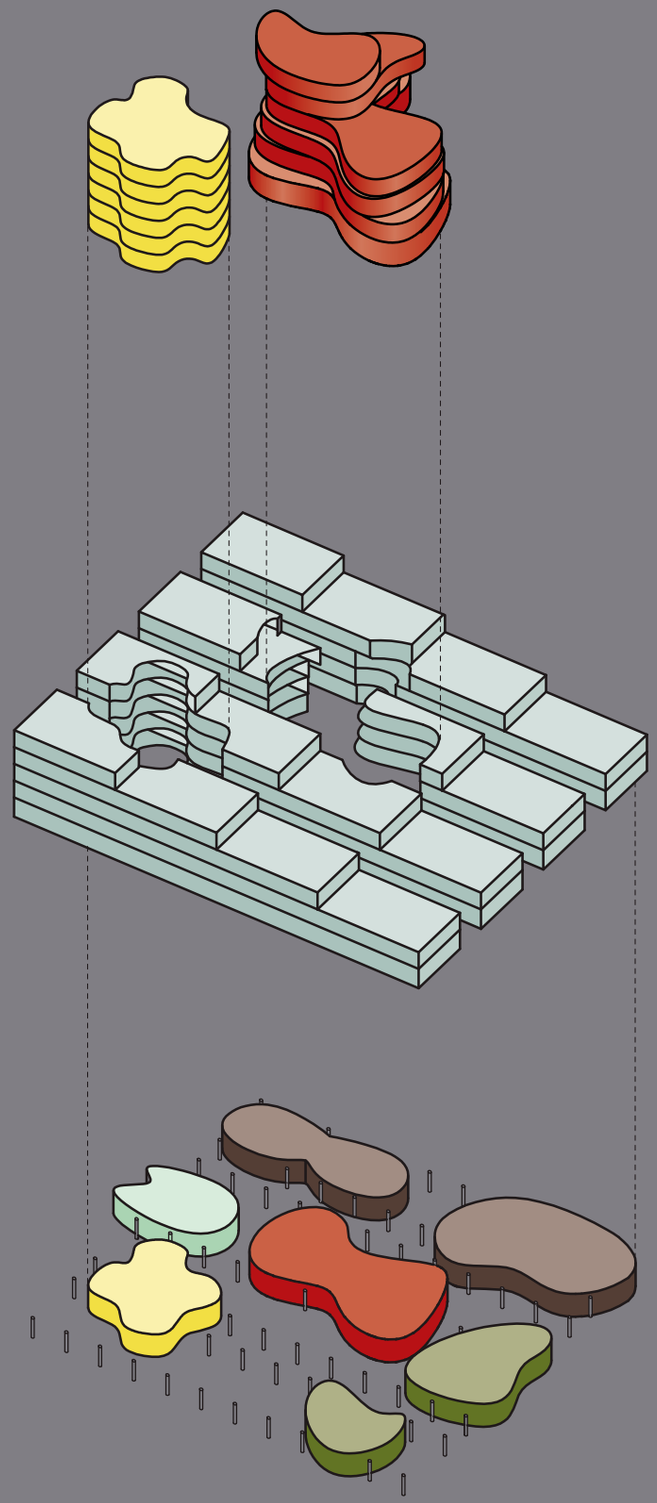


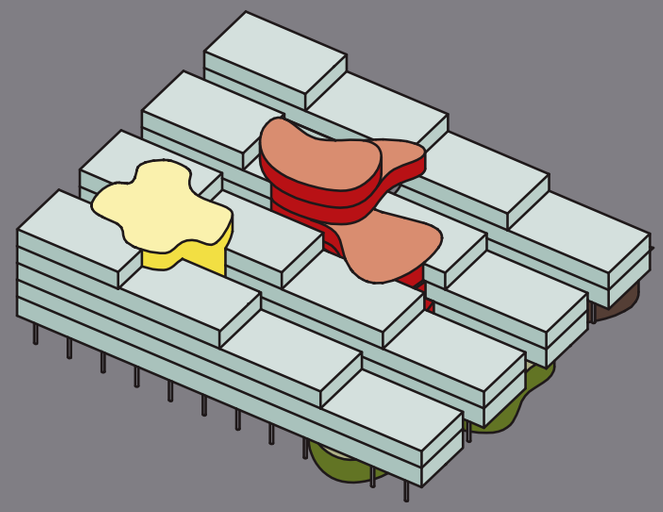


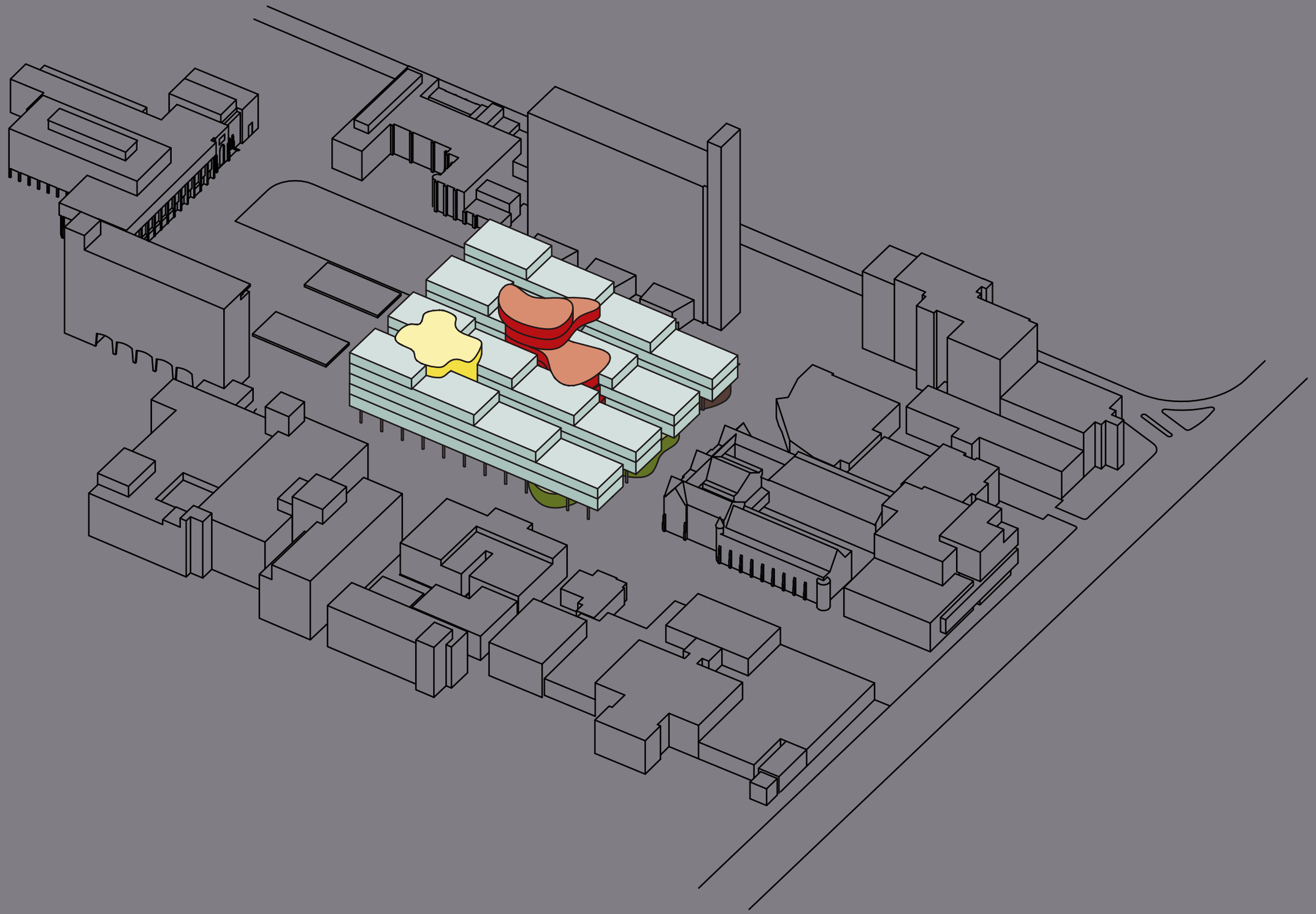


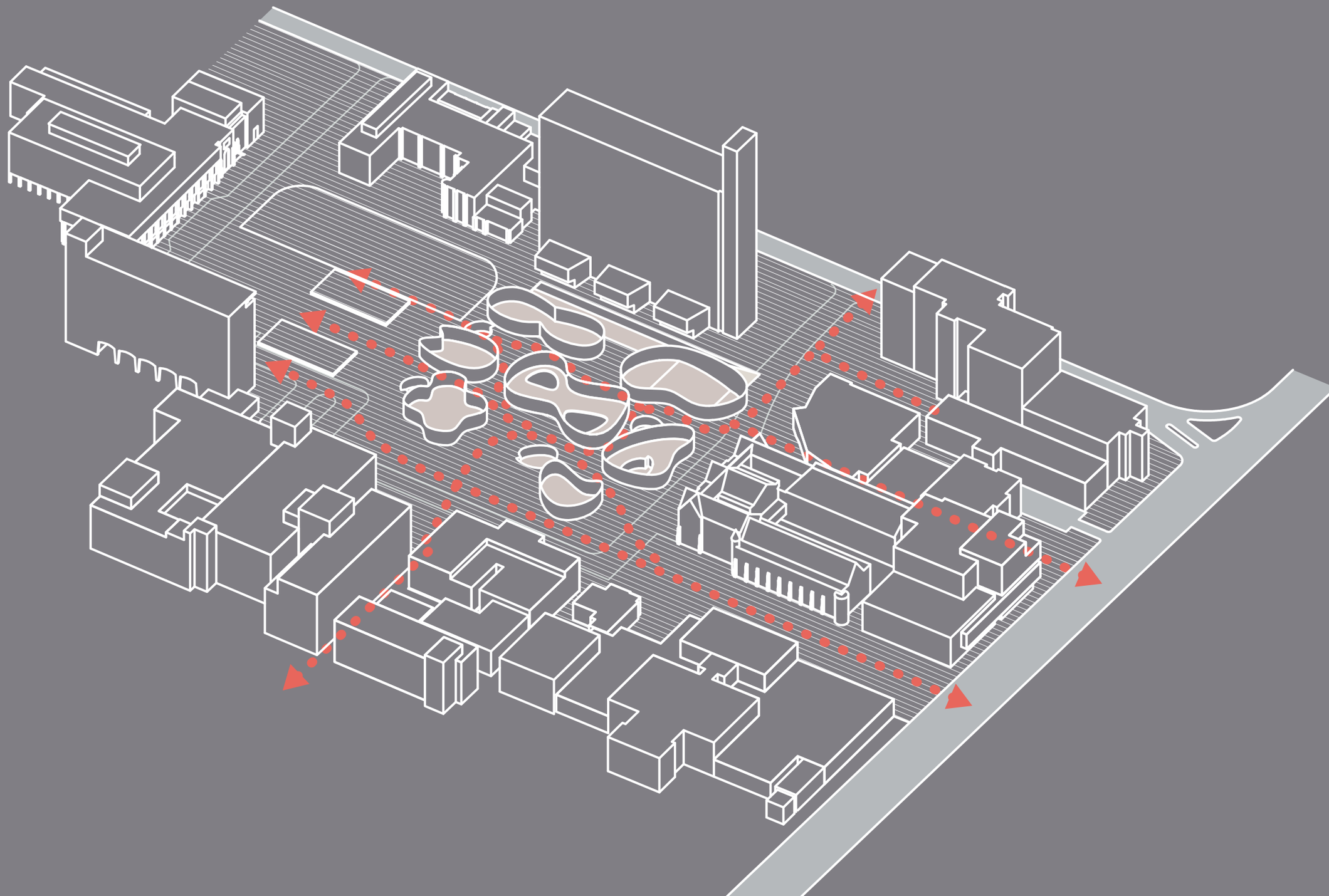


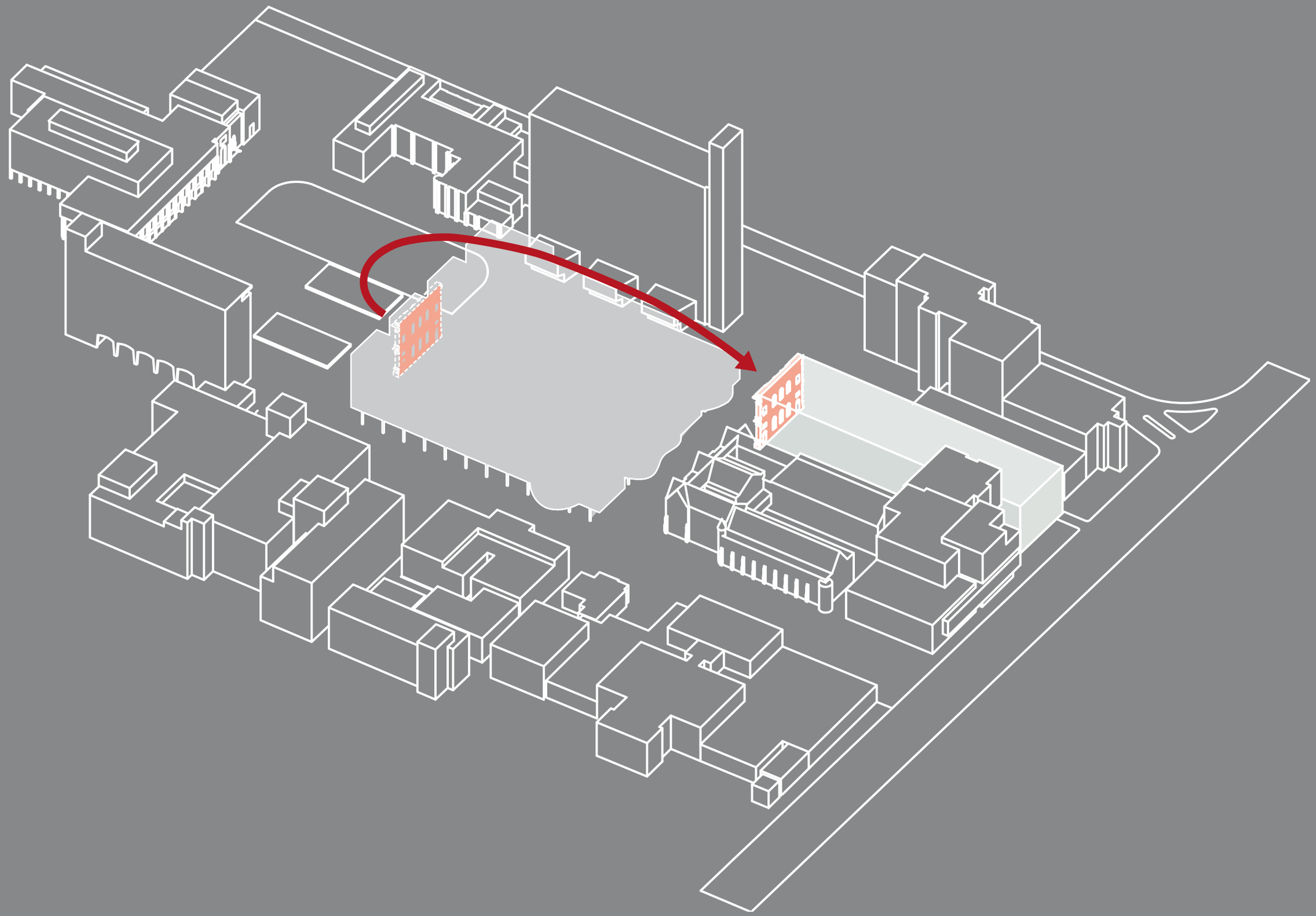


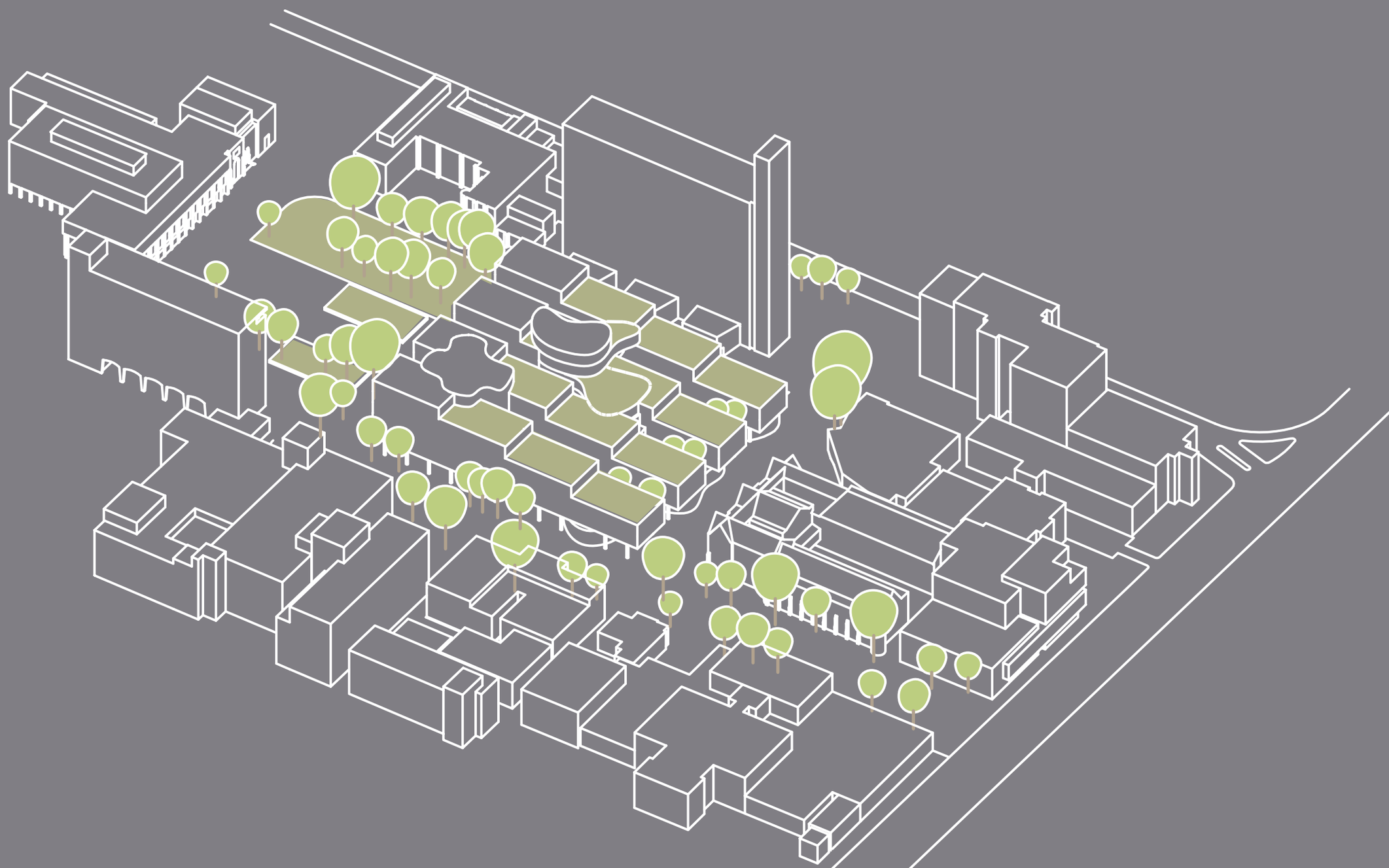








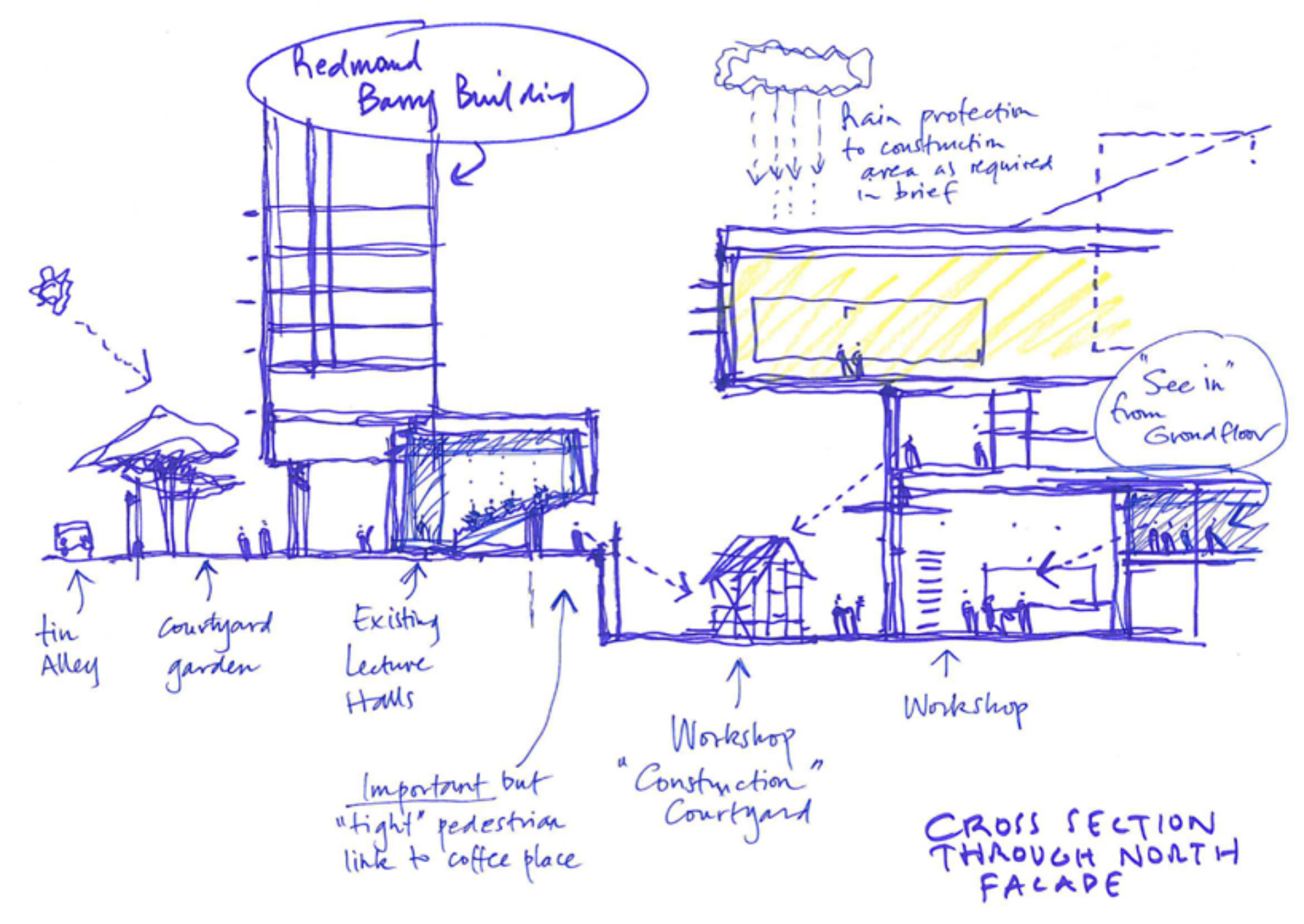


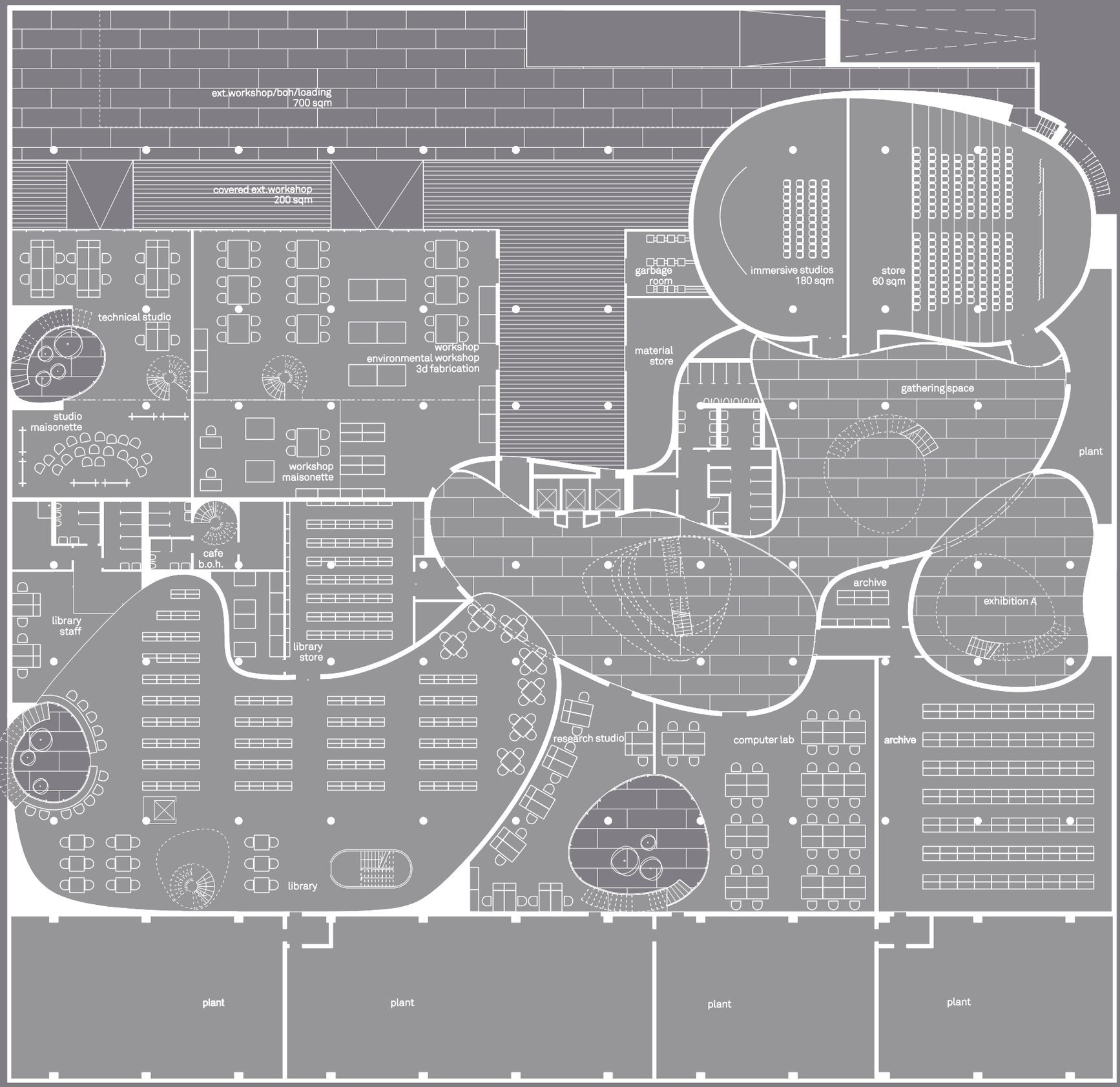



MELBOURNE SCHOOL OF DESIGN
MSD Thesis exhibi

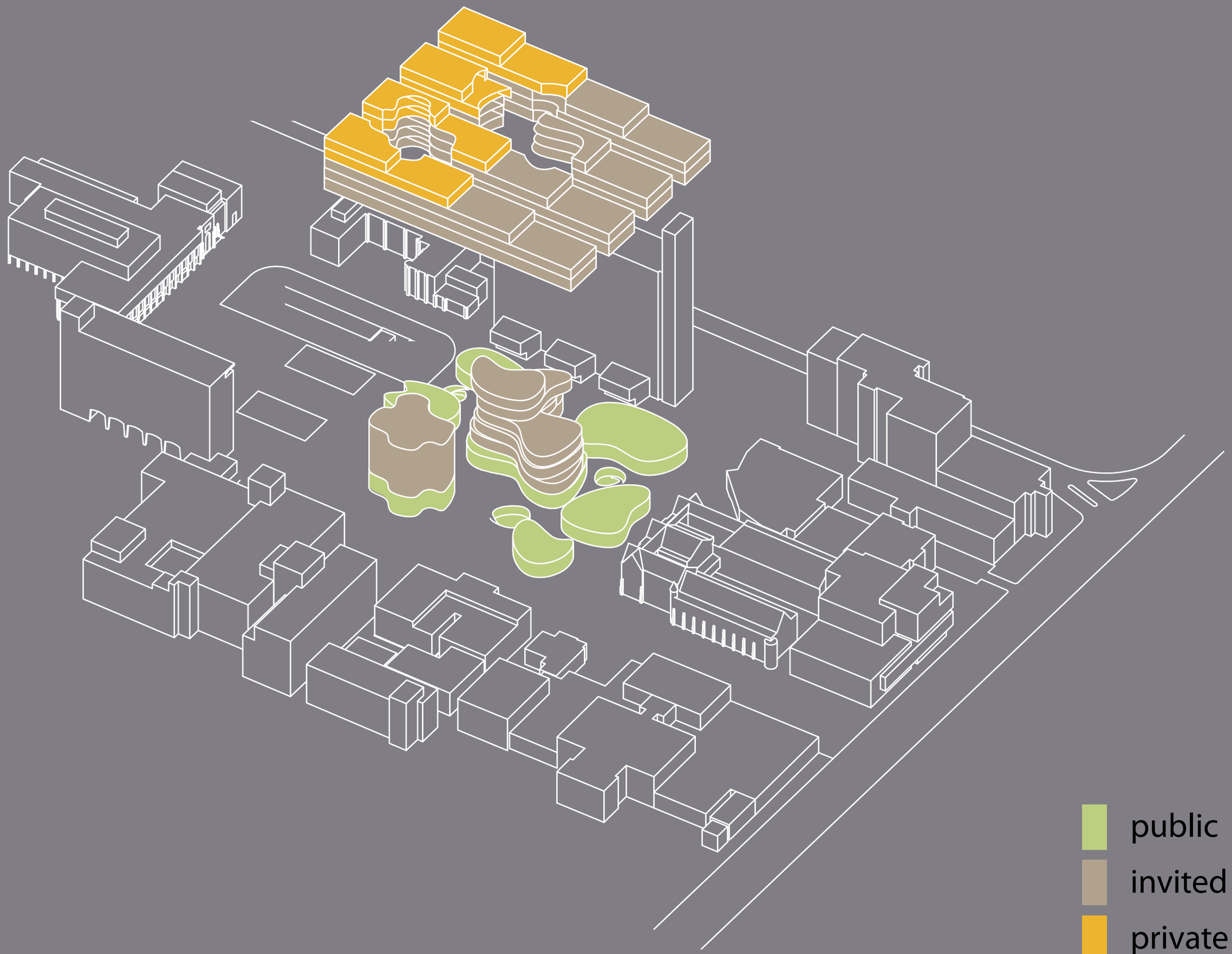

CAFE

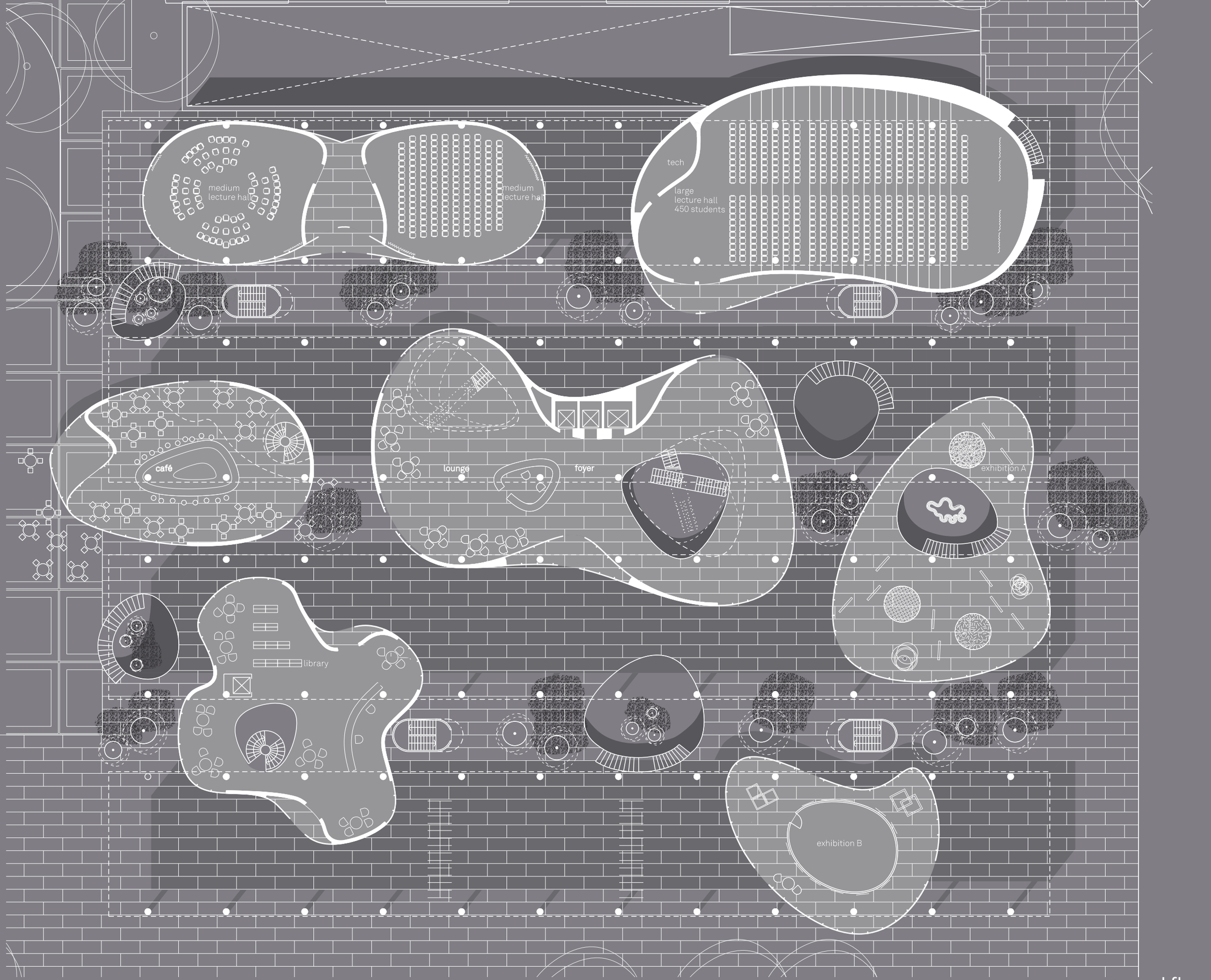

MSD thesis exhibition


Redmond Barry Building
Rain protection to construction area as required in brief
"See in" from Ground floor
tin Alley
Courtyard garden
Existing Lecture Halls
Important but "tight" pedestrian link to coffee place
Workshop "Construction" Courtyard
Workshop
CROSS SECTION THROUGH NORTH FACADE


ext.workshop/boh/loading
700 sqm
covered ext.workshop
200 sqm
technical studio
workshop
environmental workshop
3d fabrication
studio
maisonette
workshop
maisonette
cafe
b.o.h.
library
staff
library
store
library
garbage
room
material
store
immersive studios
180 sqm
store
60 sqm
gathering space
plant
archive
exhibition A
research studio
computer lab
archive
plant
plant
plant
plant

lower floor

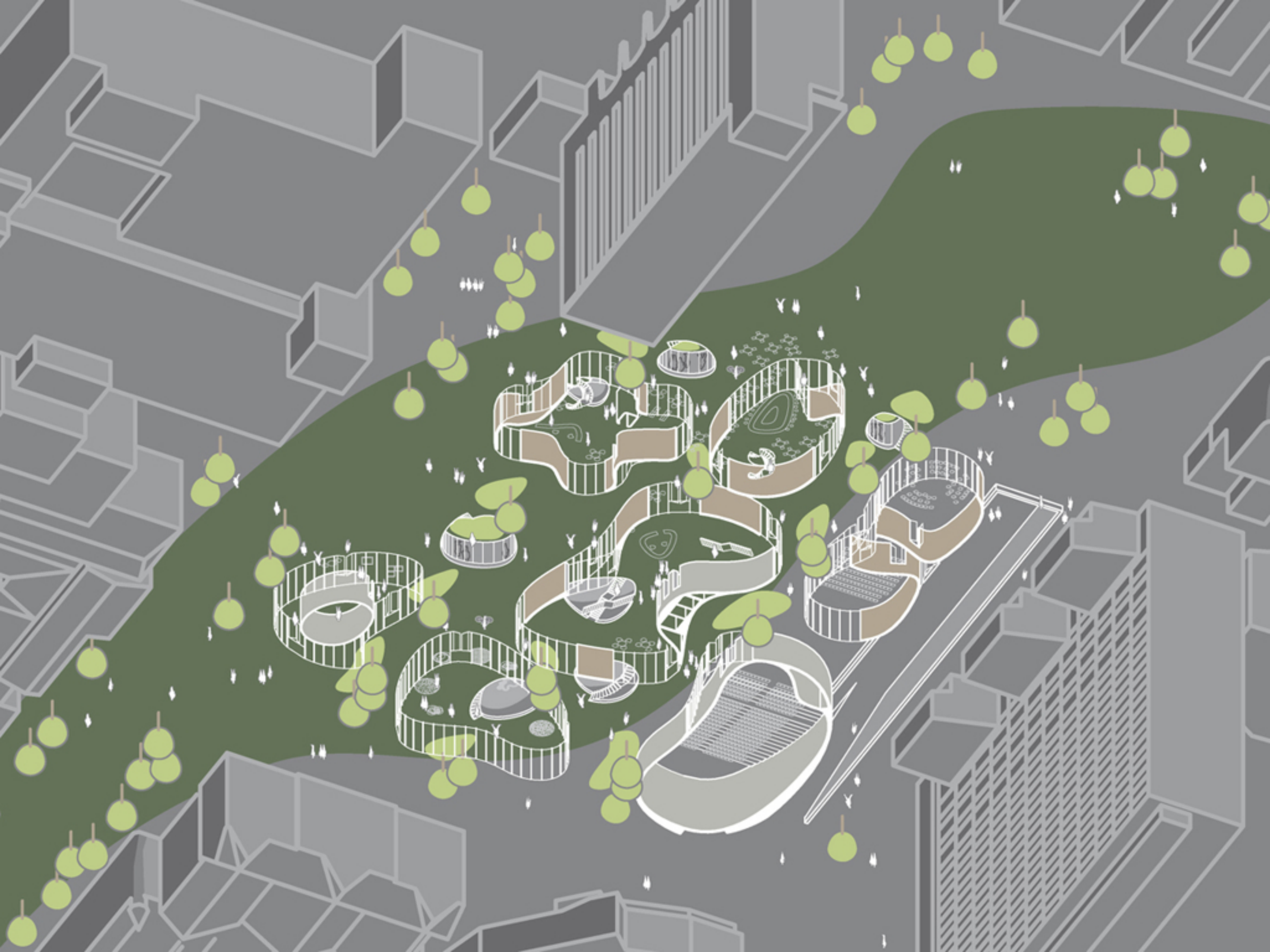

public
invited
private

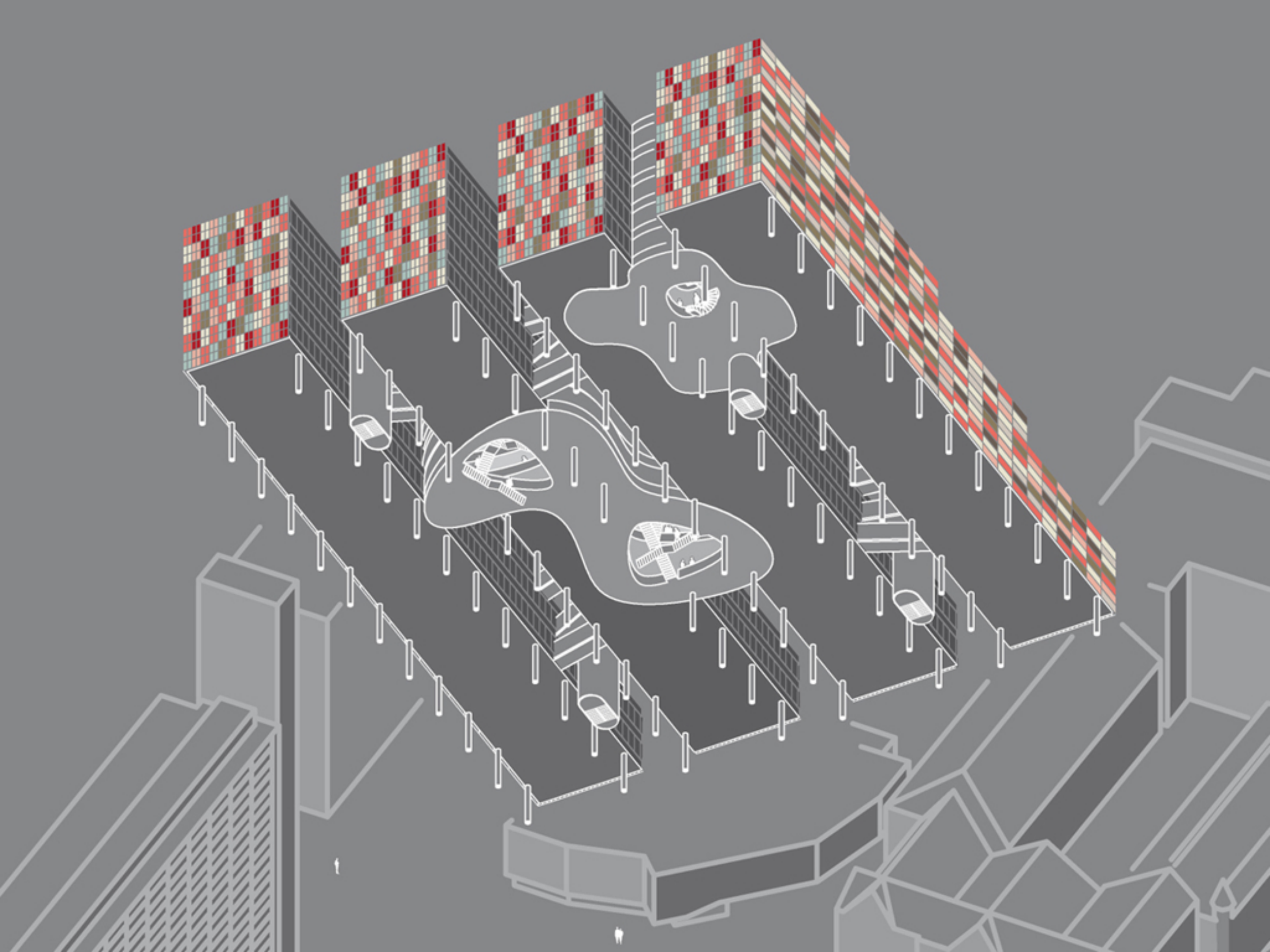


ground floor

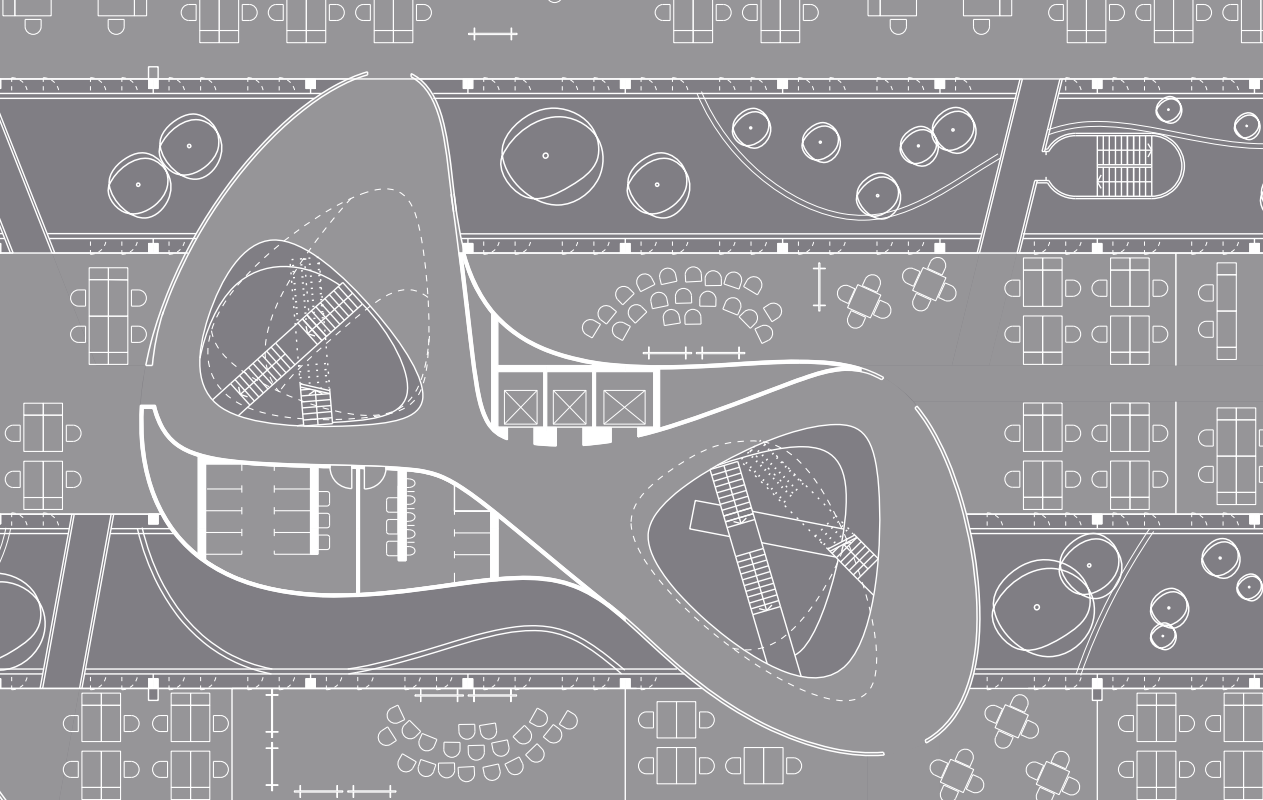

SIGN
MSD thesis exhibtion
MSD thesis ex

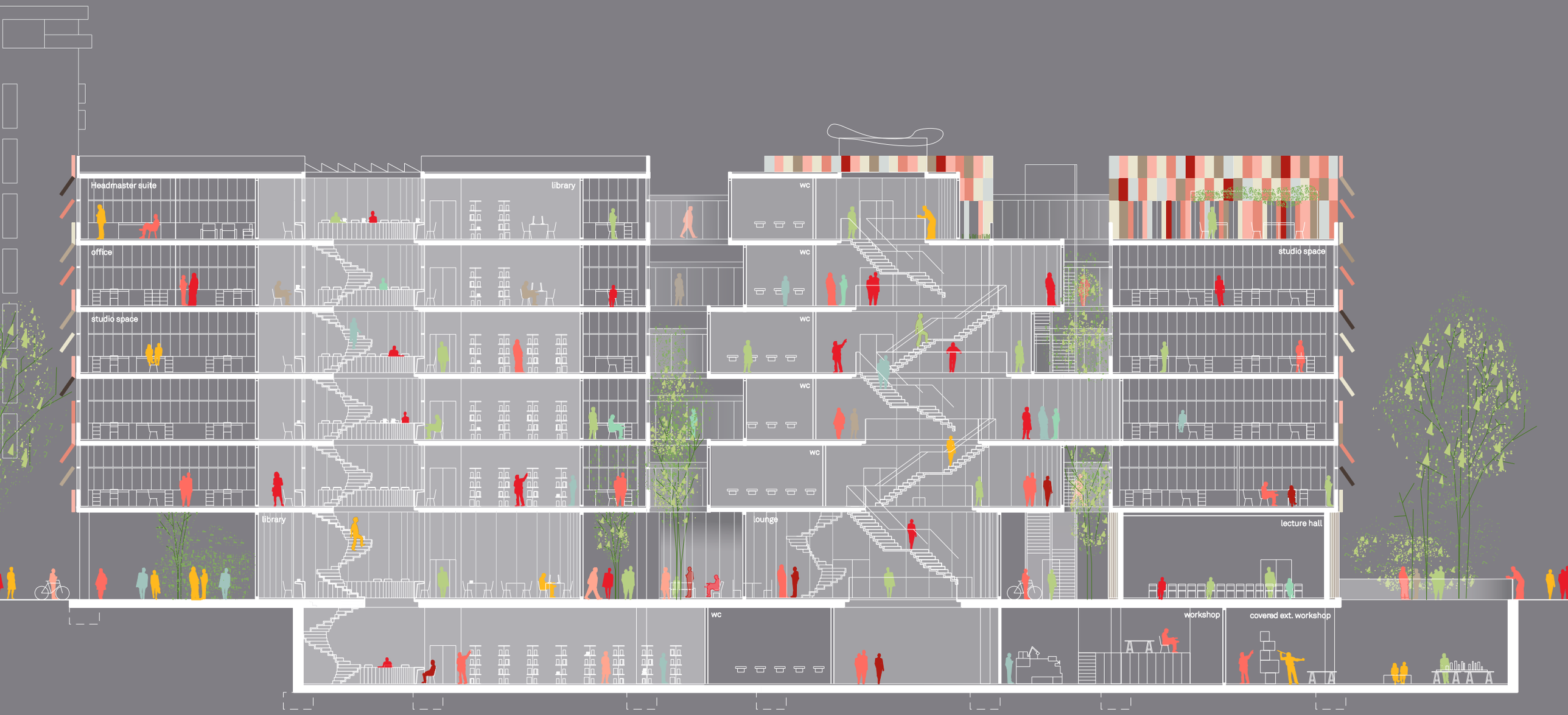

CAFE



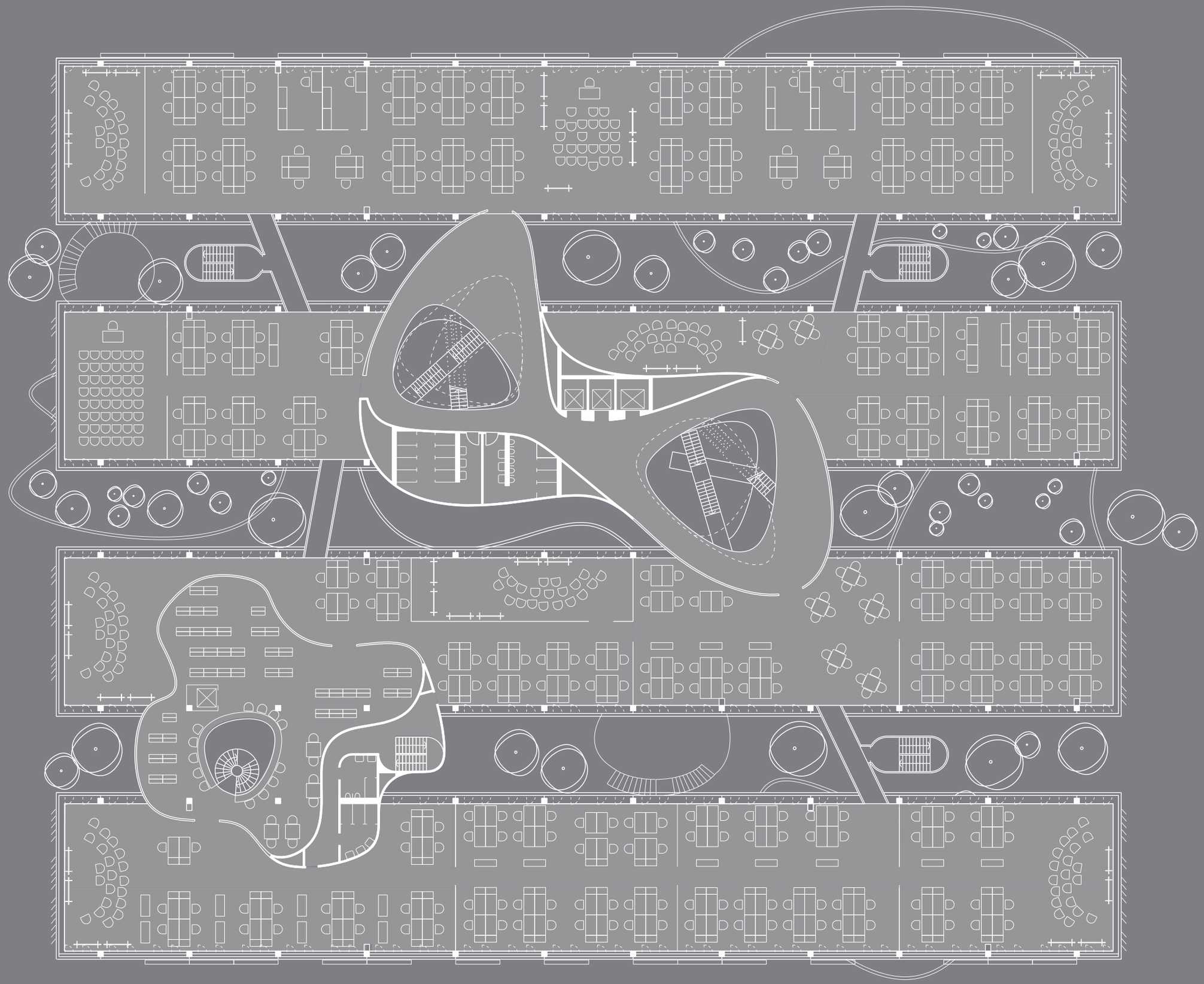



LIBRARY
CAFÈ
LECTURE HALL

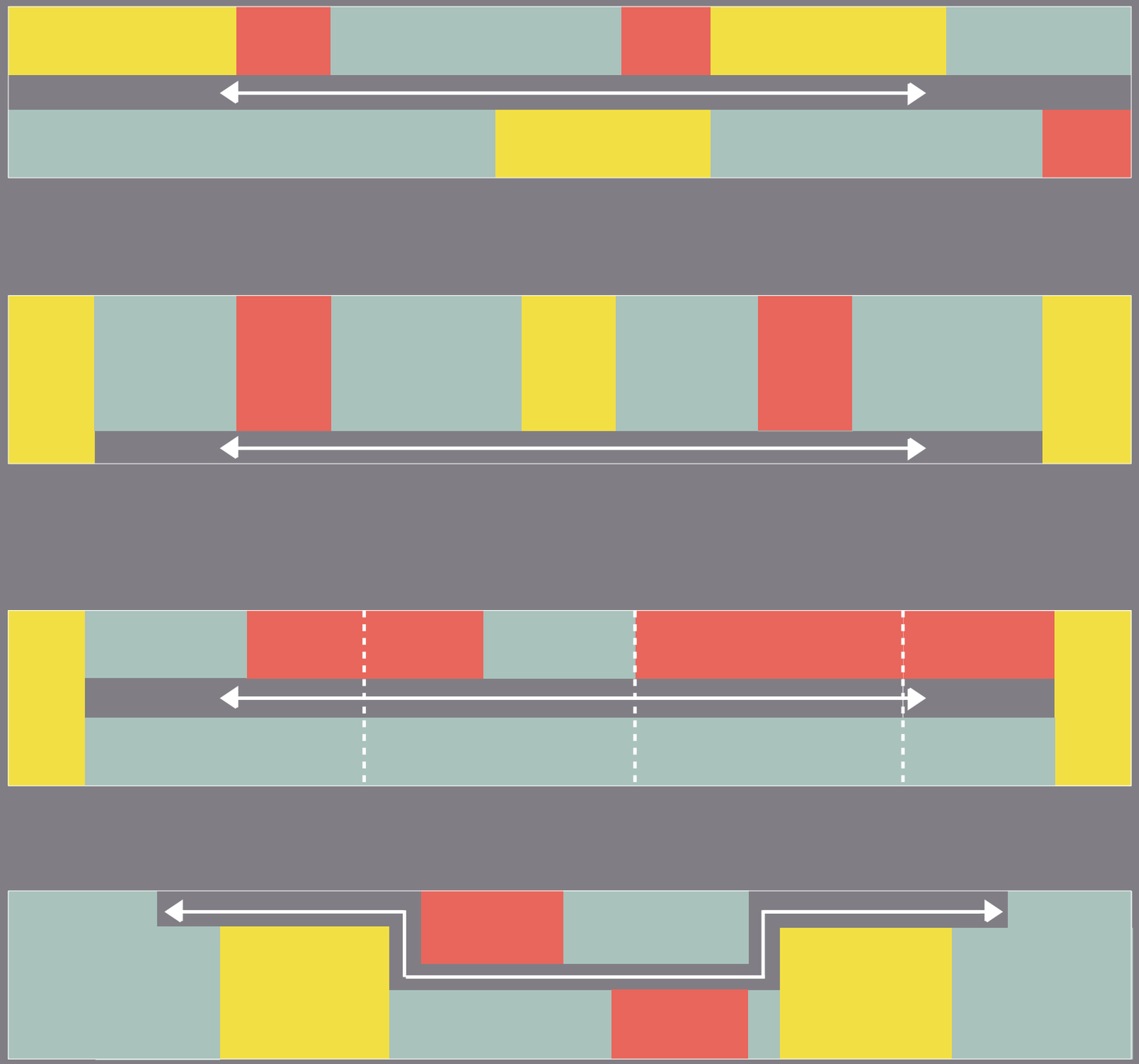


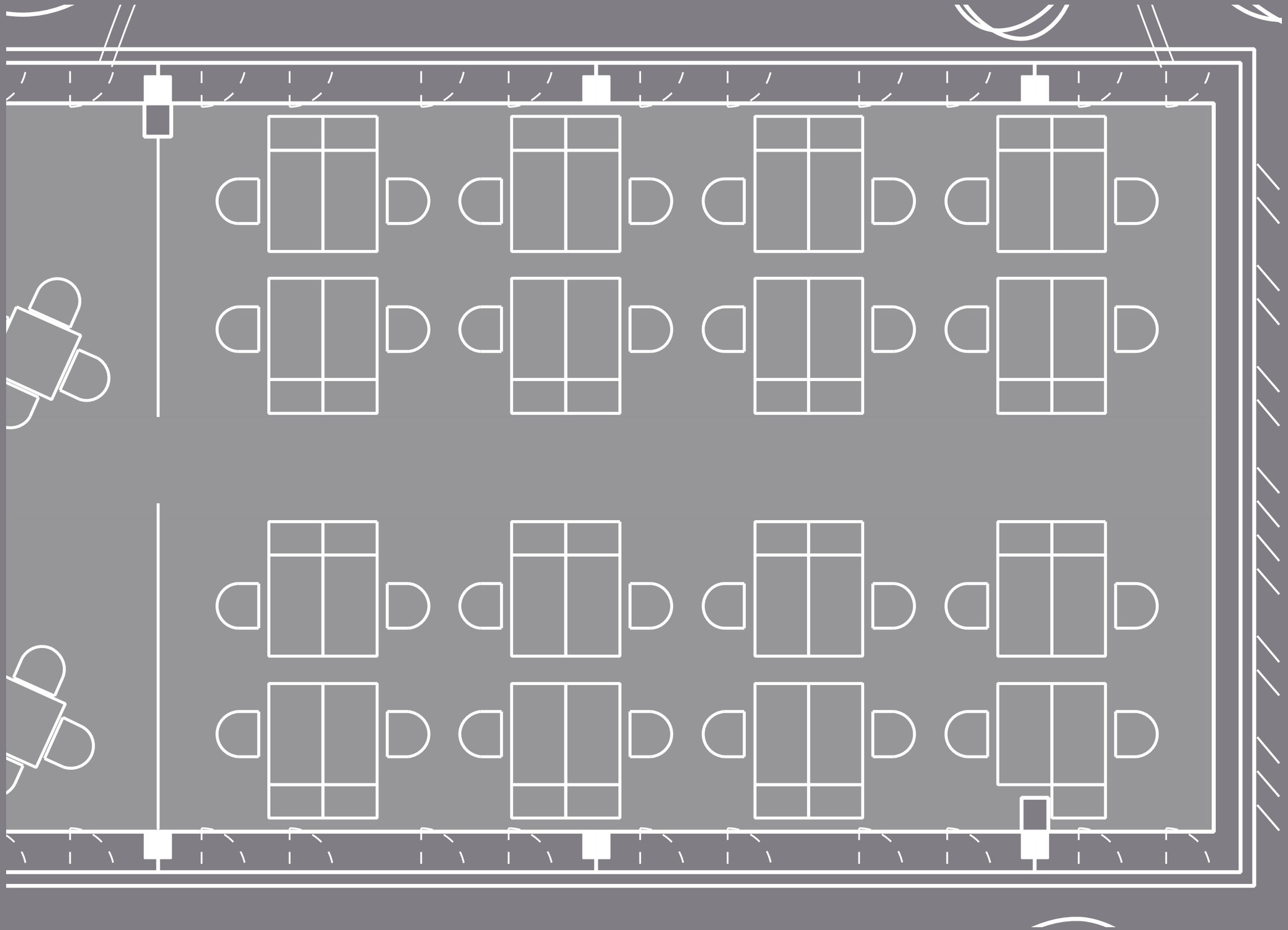

Headmaster suite
library
wc
office
wc
studio space
studio space
wc
wc
wc
library
lounge
lecture hall
wc
workshop
covered ext. workshop

courtyard

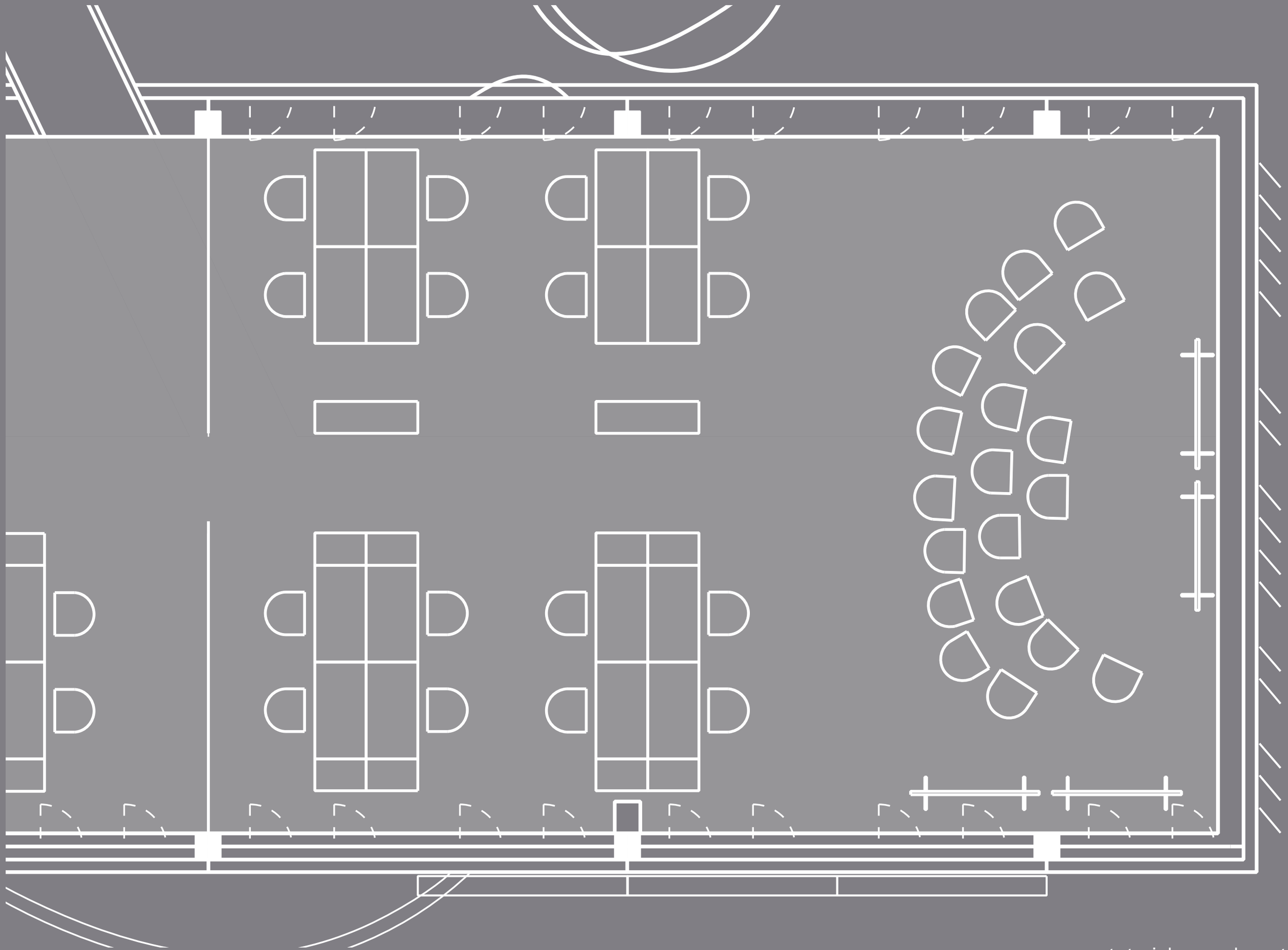


first floor

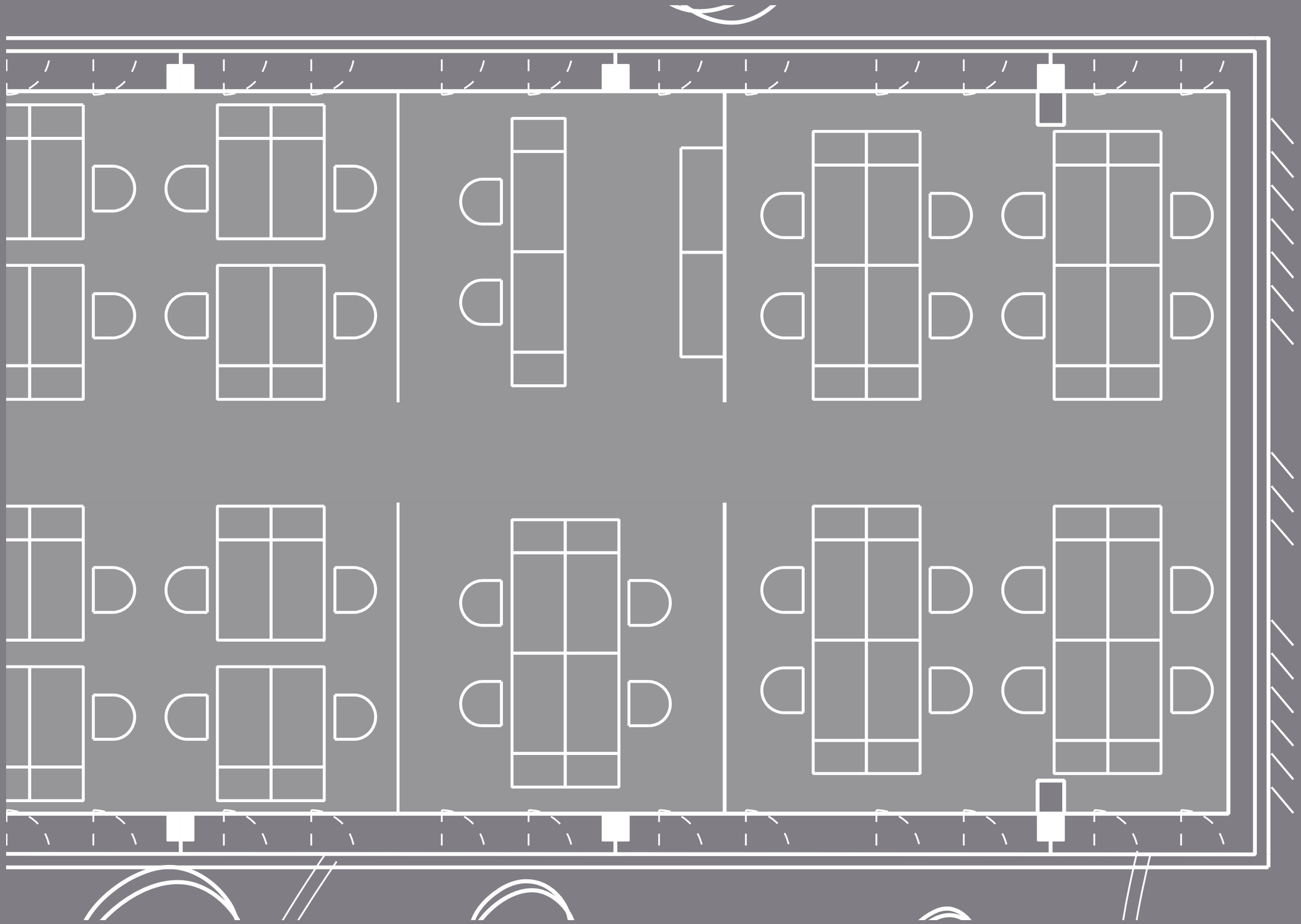

studio space
tutorial room
offices



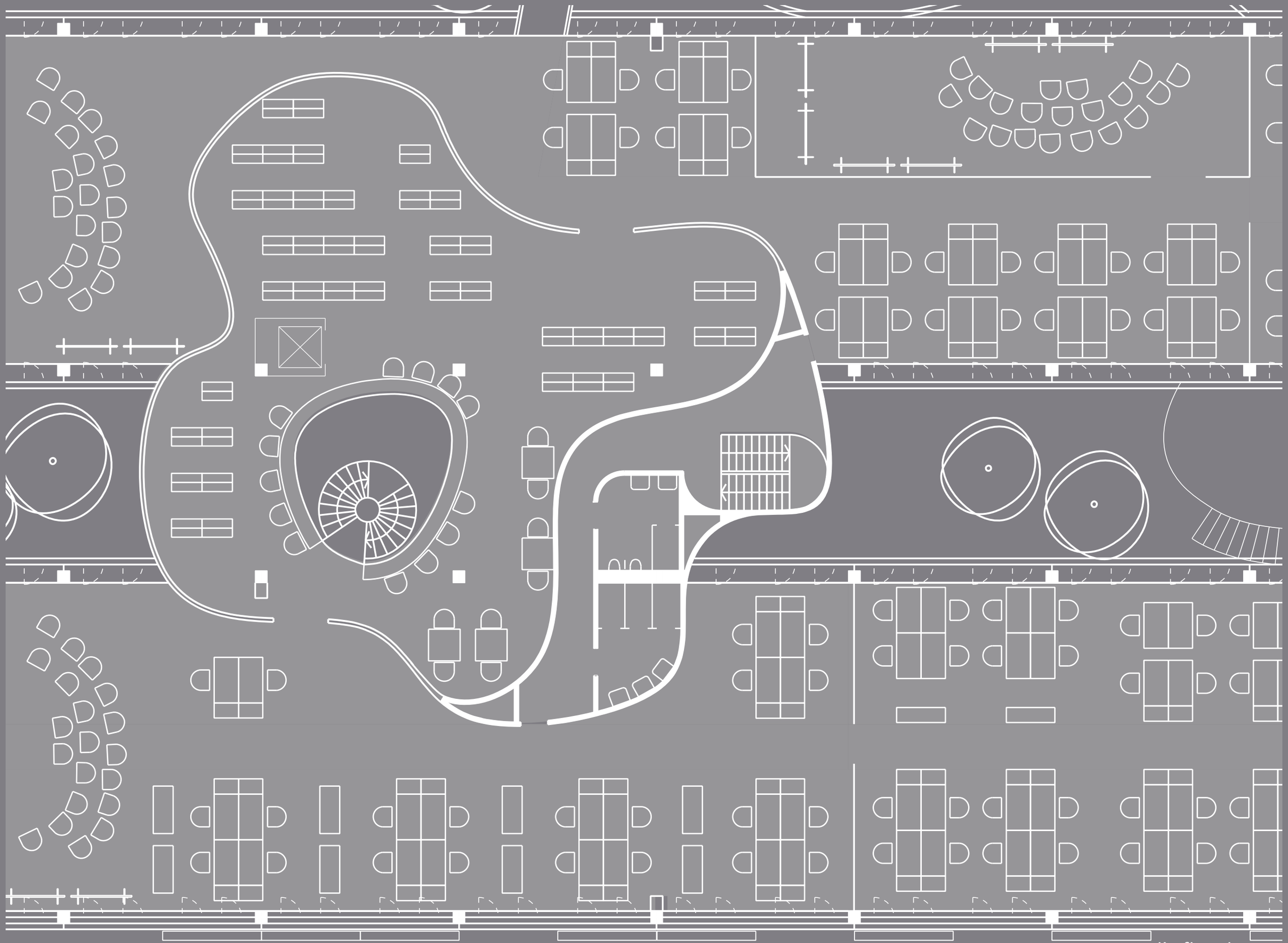
studio floor layout



tutorial space layout

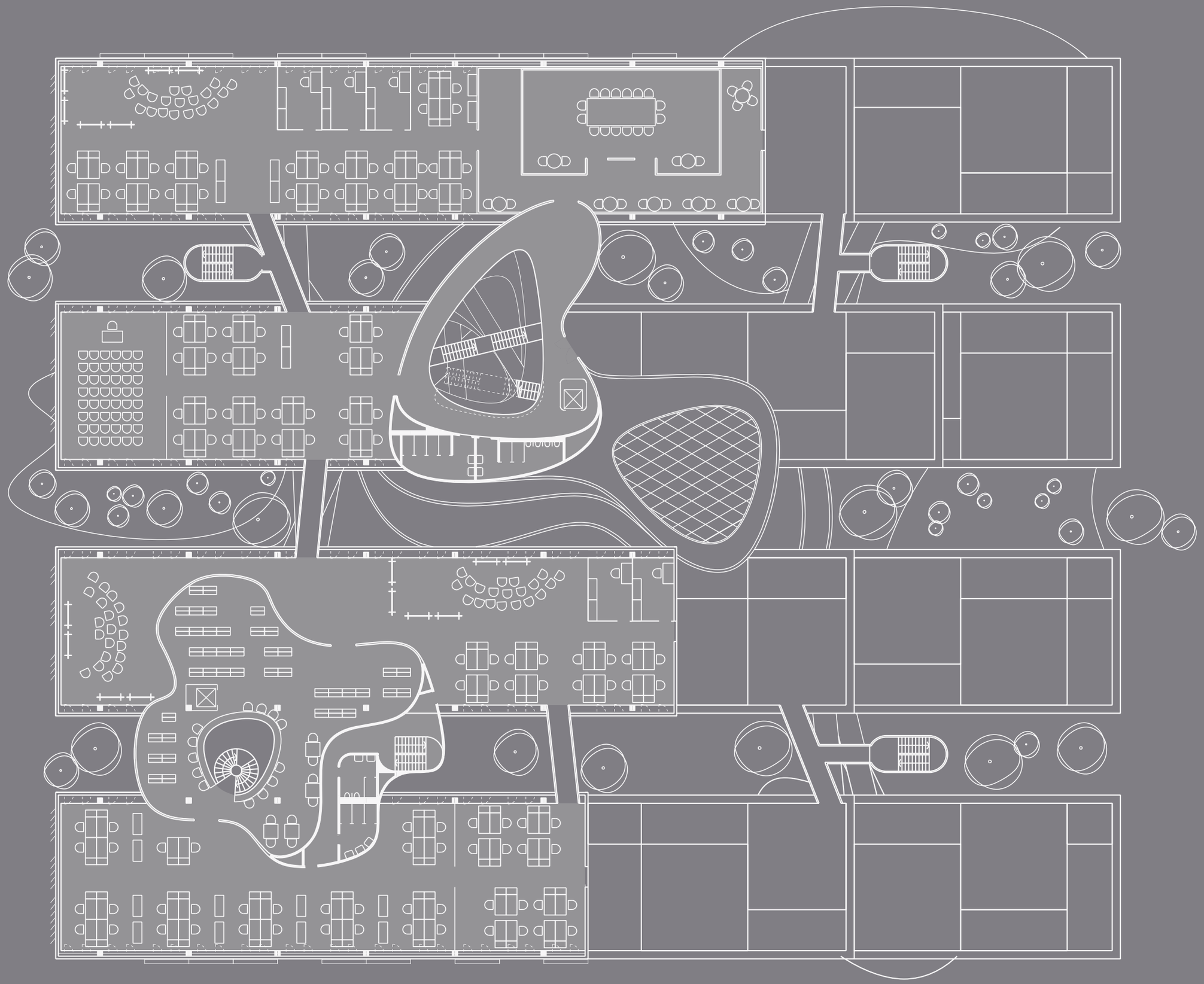


enclosed studio layout

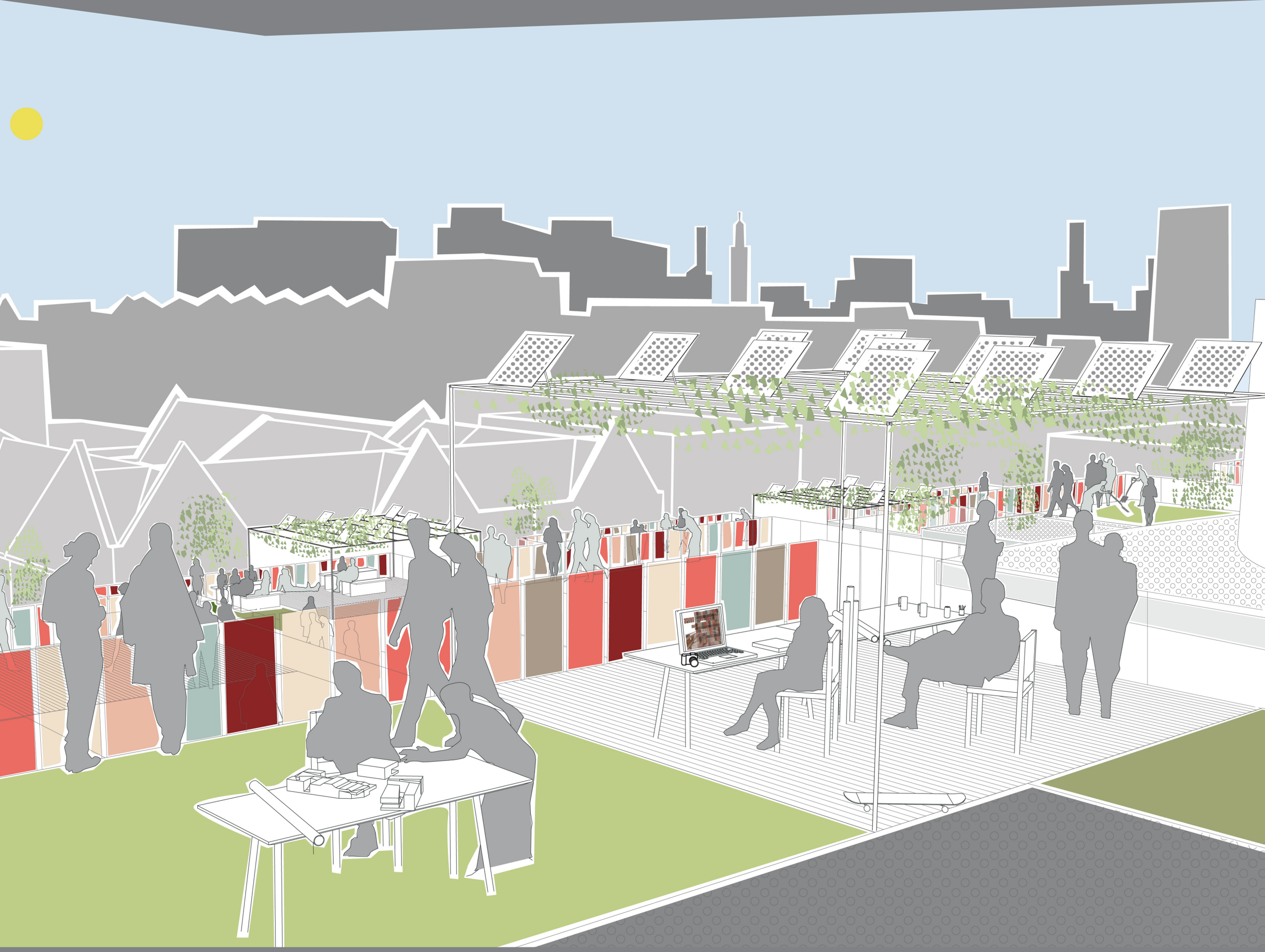


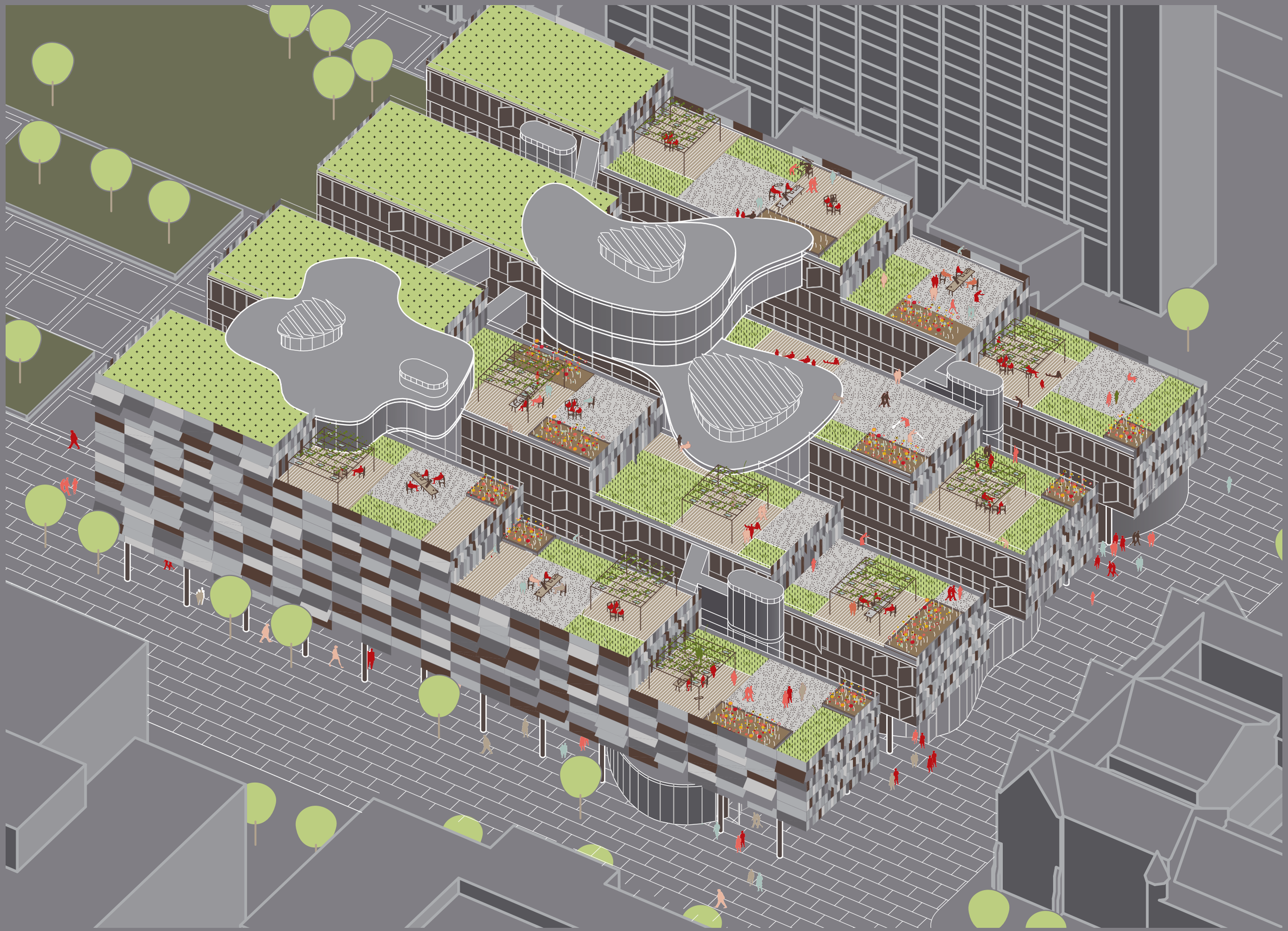
studio floor layout

library

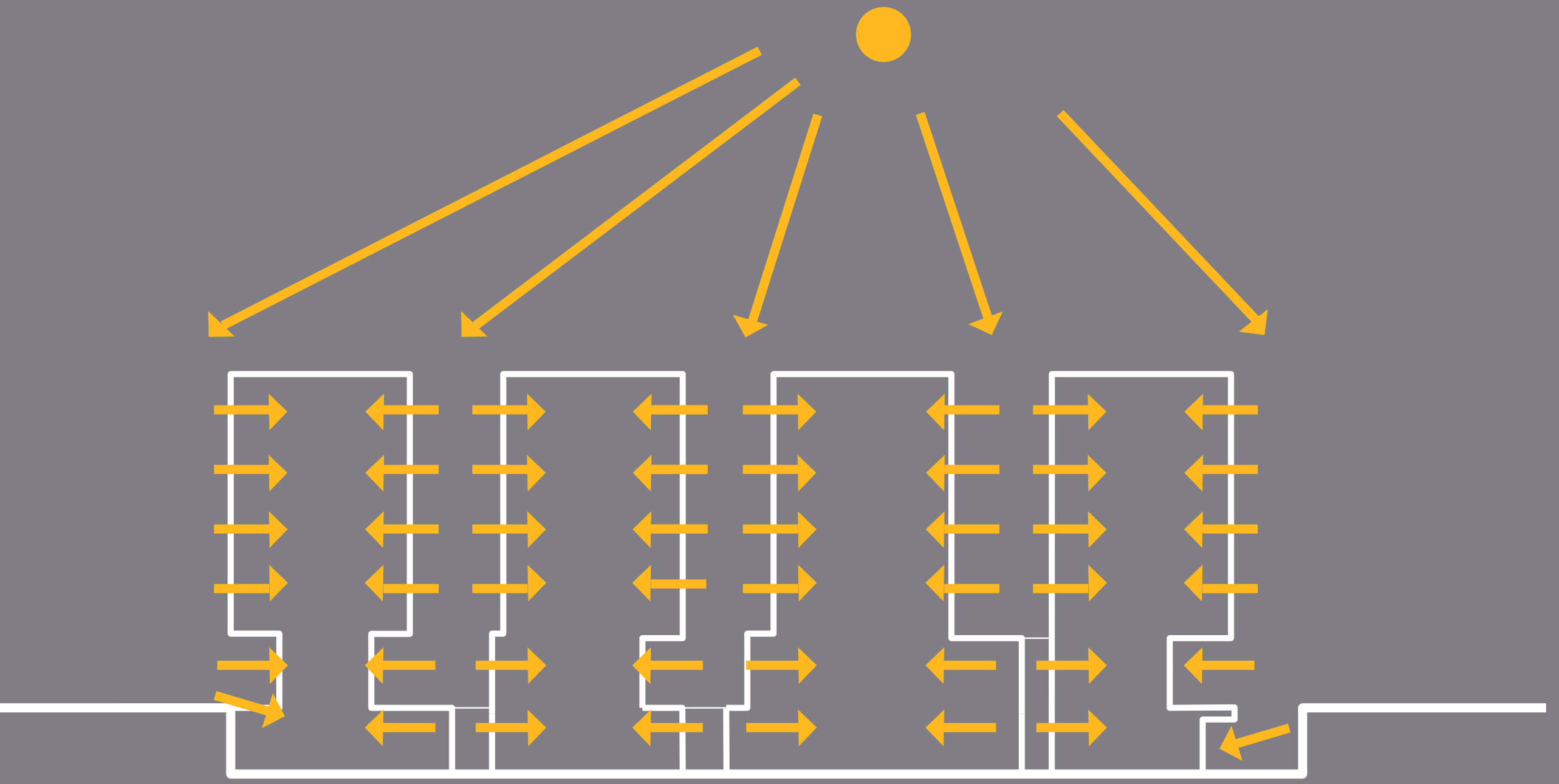


fourth floor

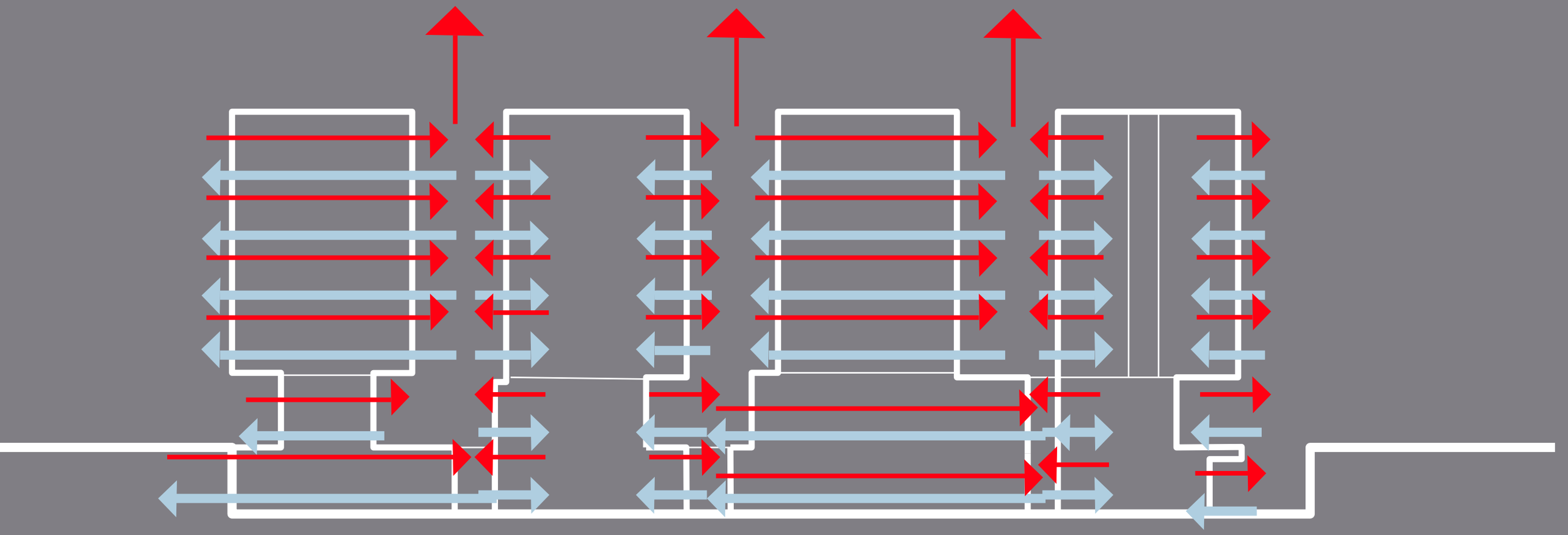




isometry



daylight



natural ventilation

thin floor plate to maximise natural light and ventilation

air discharge at roof to enable stack effect

light colours to reflect light into atrium and court yar ds

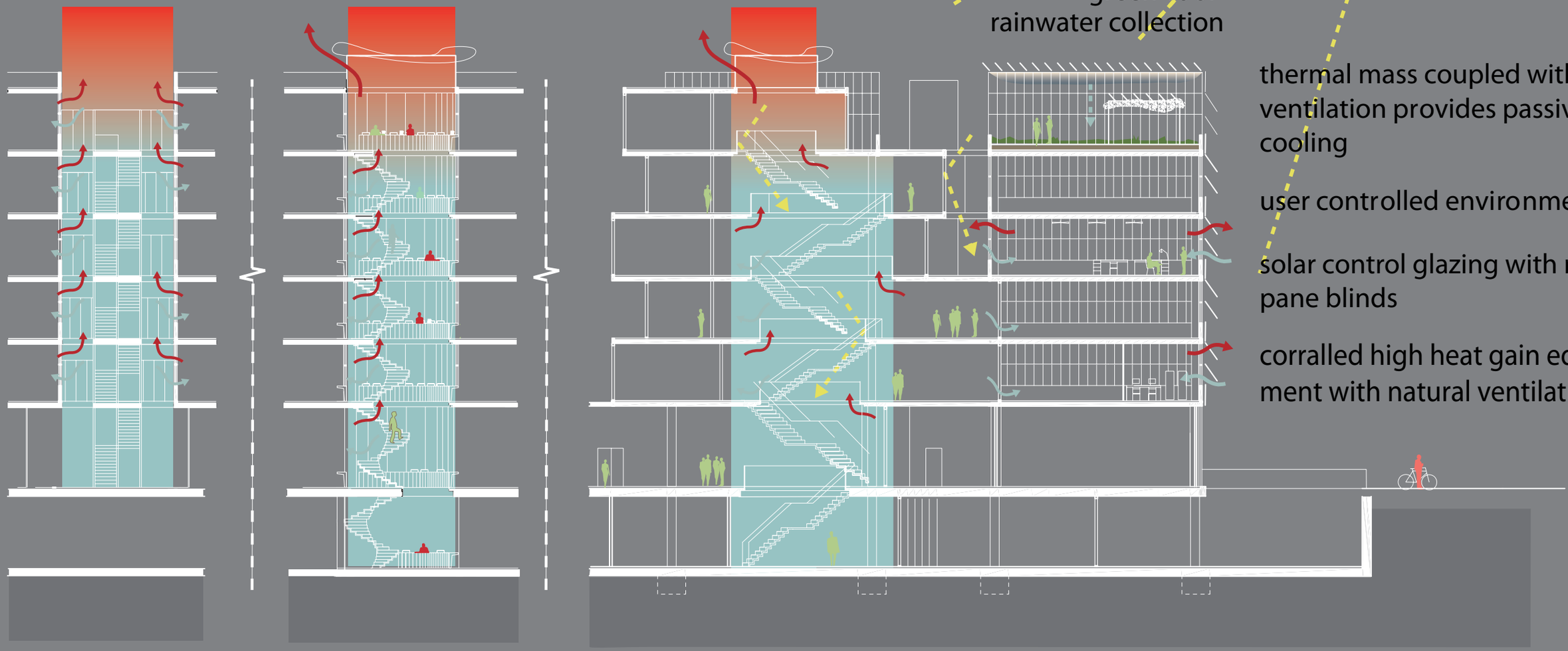
PV panels
green roof
rainwater collection

thermal mass coupled with night ventilation provides passive cooling

user controlled environment

solar control glazing with mid pane blinds

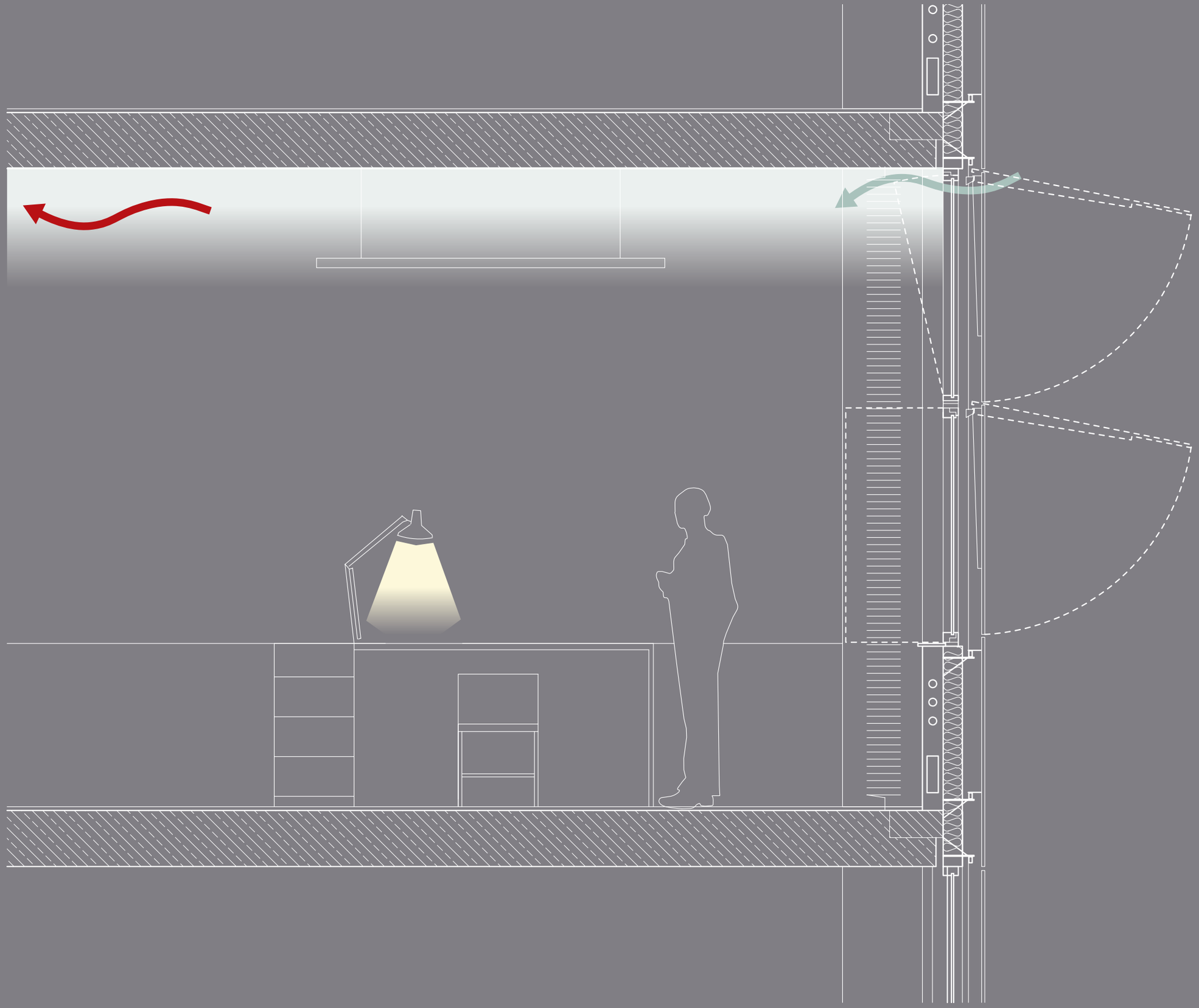
corralled high heat gain equip-ment with natural ventilation



fire escape

hub

green roofs and courtyard gardens

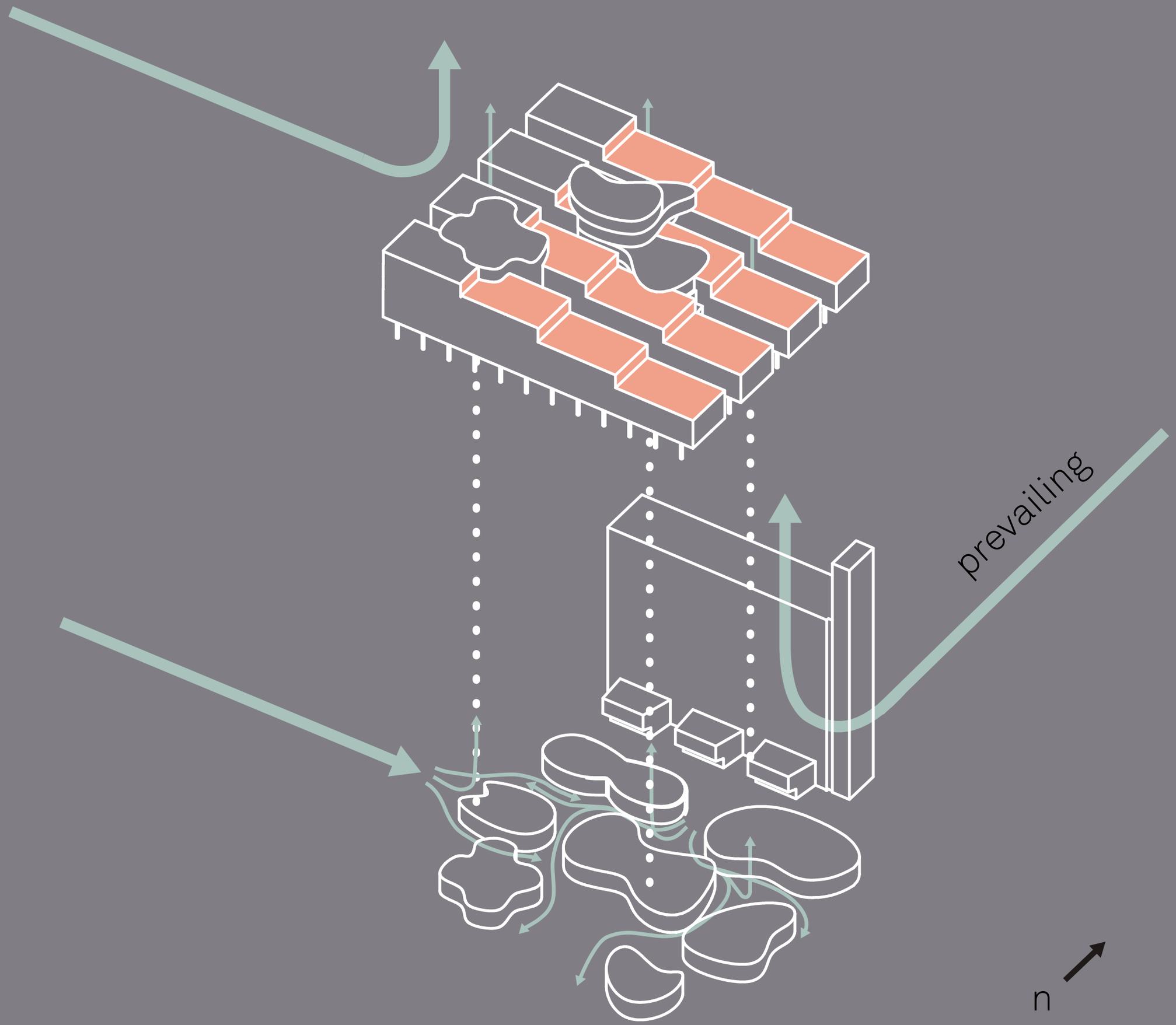


night-time ventilation
+ thermal mass =
passive cooling

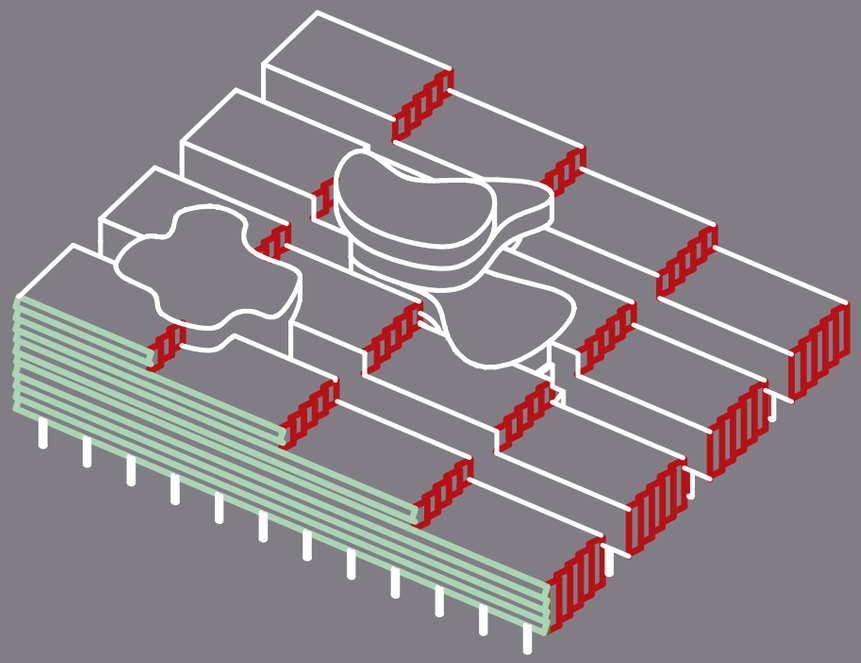
operable windows
and blinds for office or
studio

perimeter trunking
hvac/elec equip located
in parapet to allow for
exposed thermal slab
and flexibility of use

facade detail

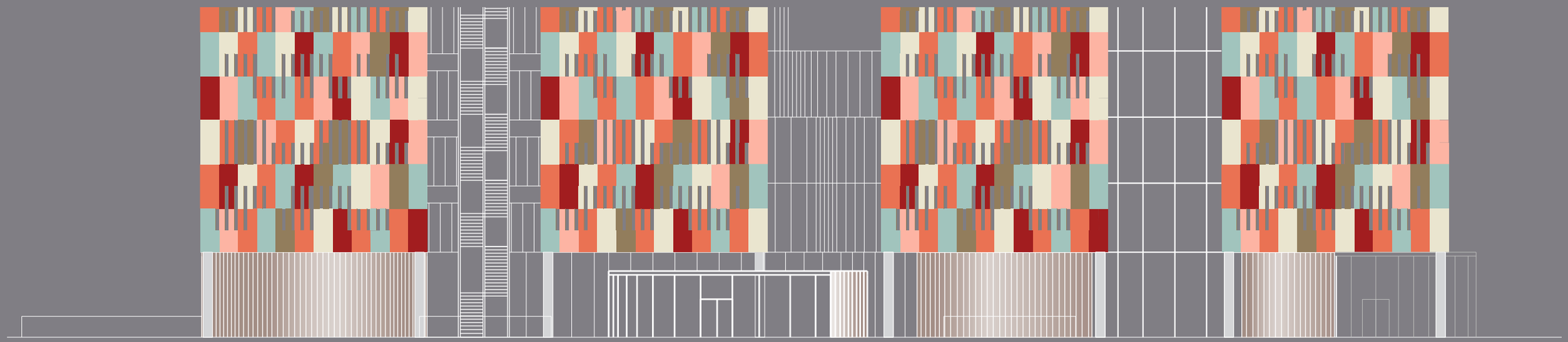


prevailing wind

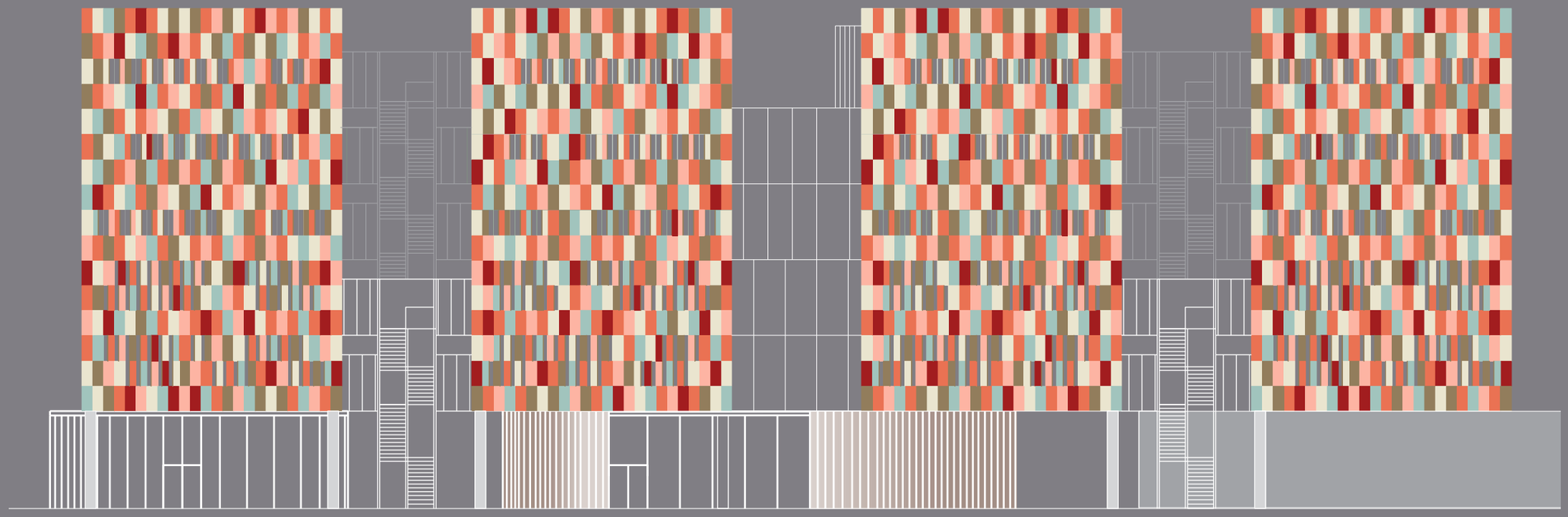


n

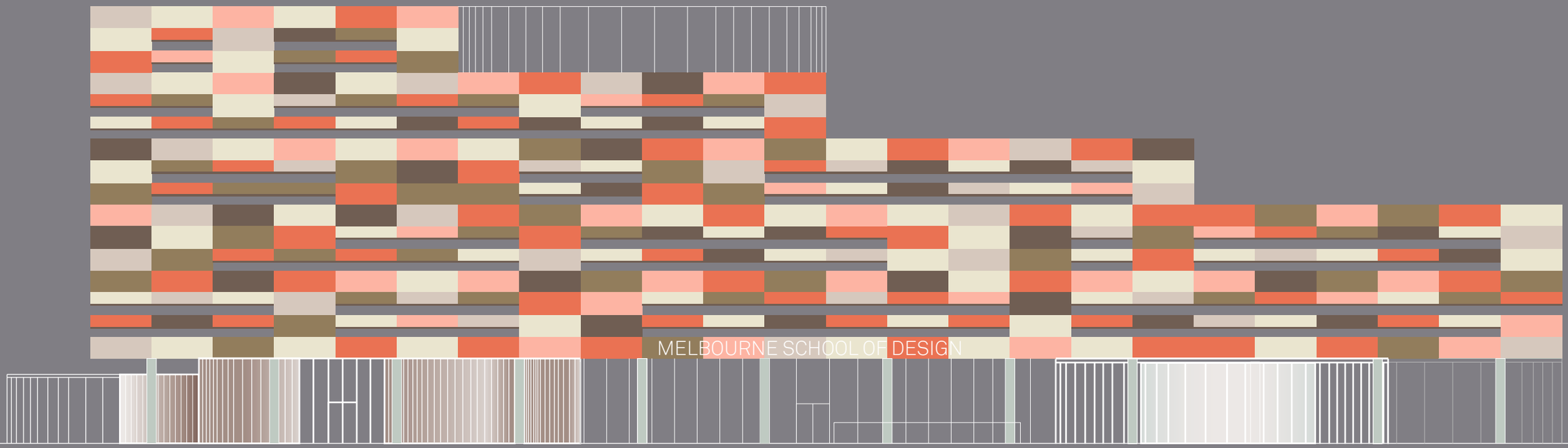
louvre directions



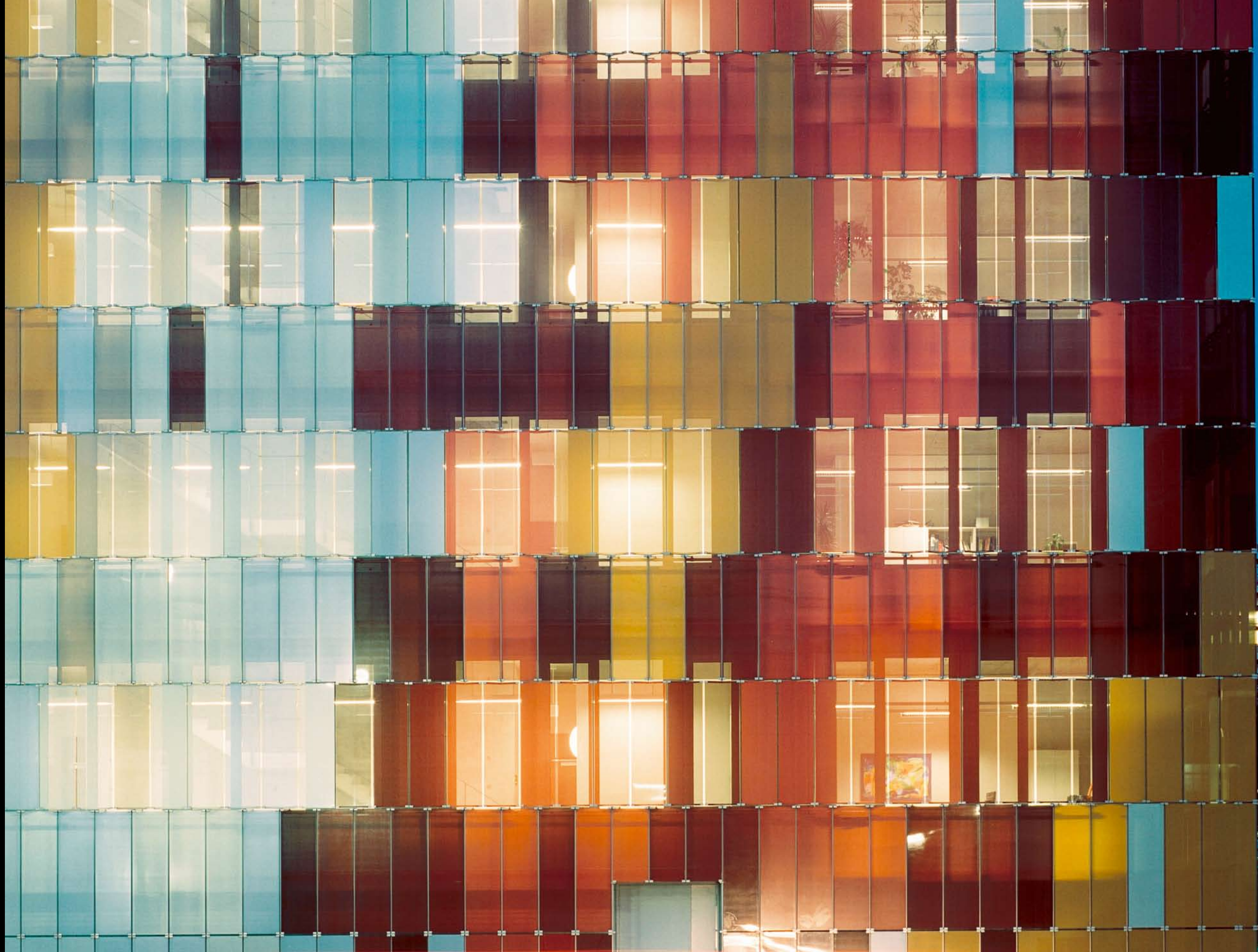
elevation east

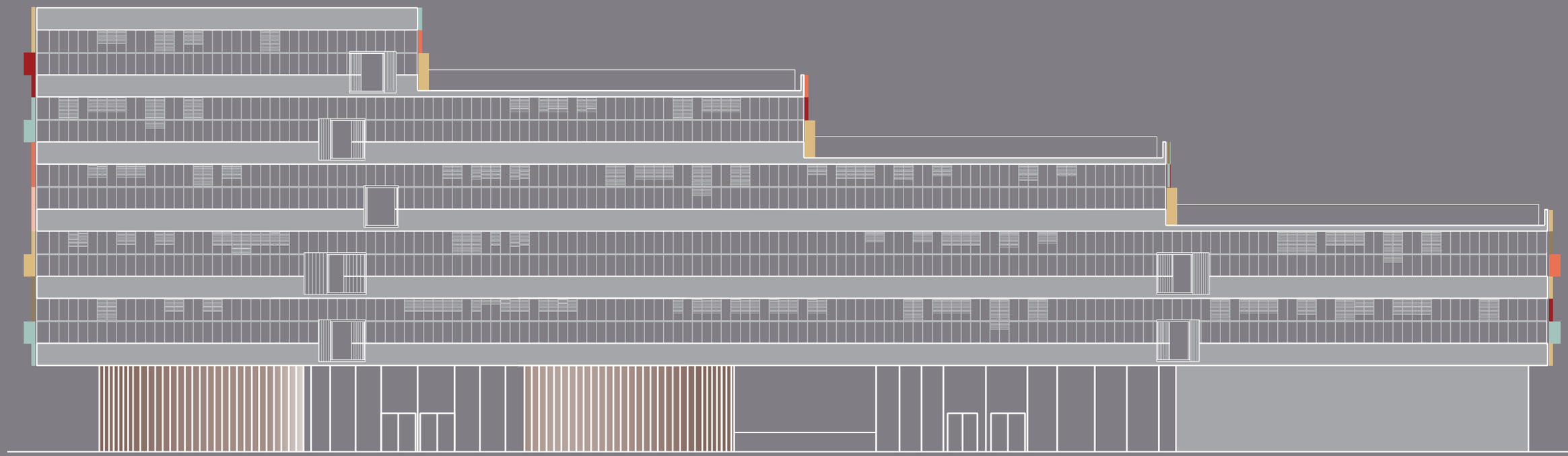


elevation west

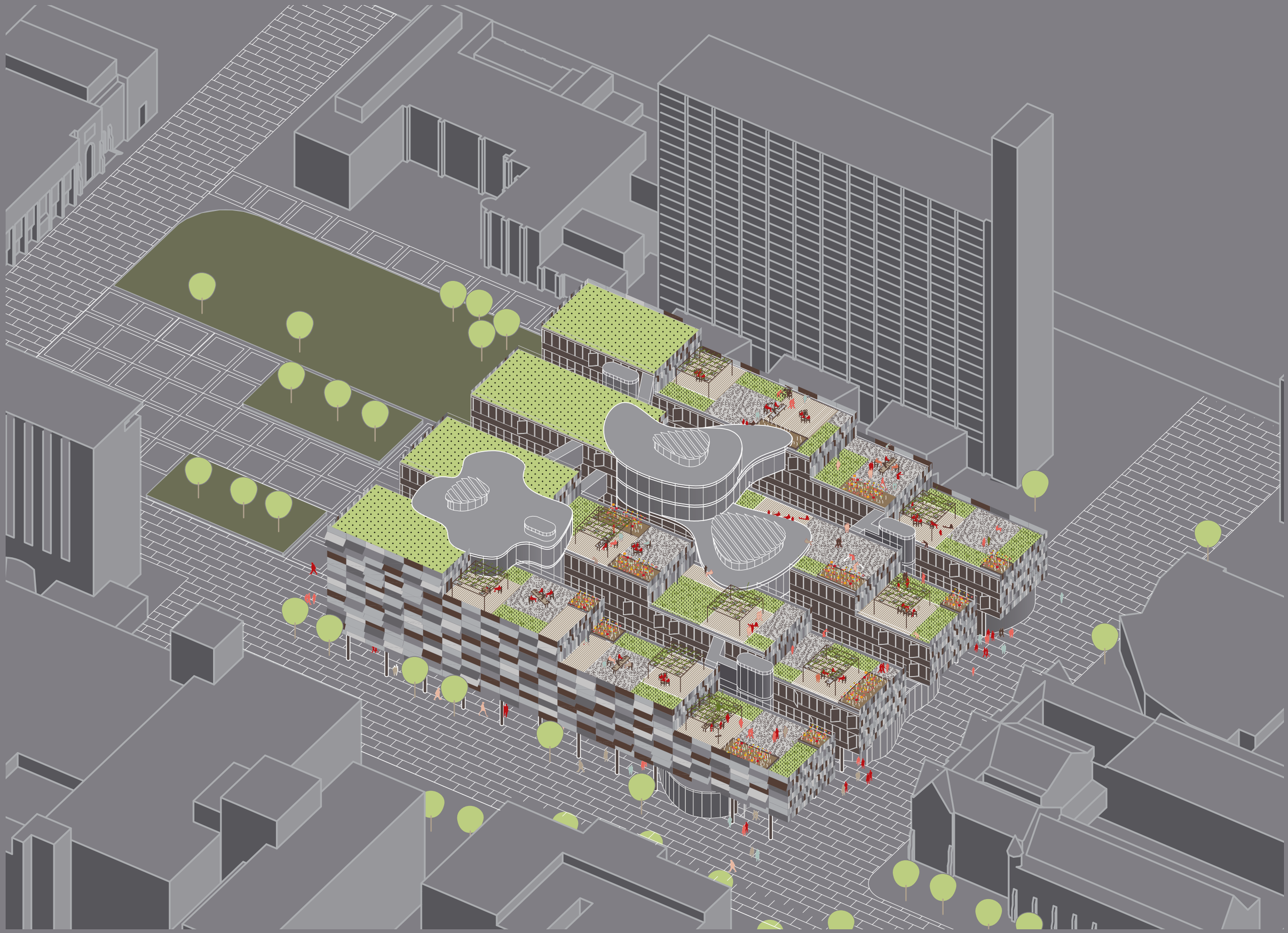


elevation south





elevation courtyards



isometry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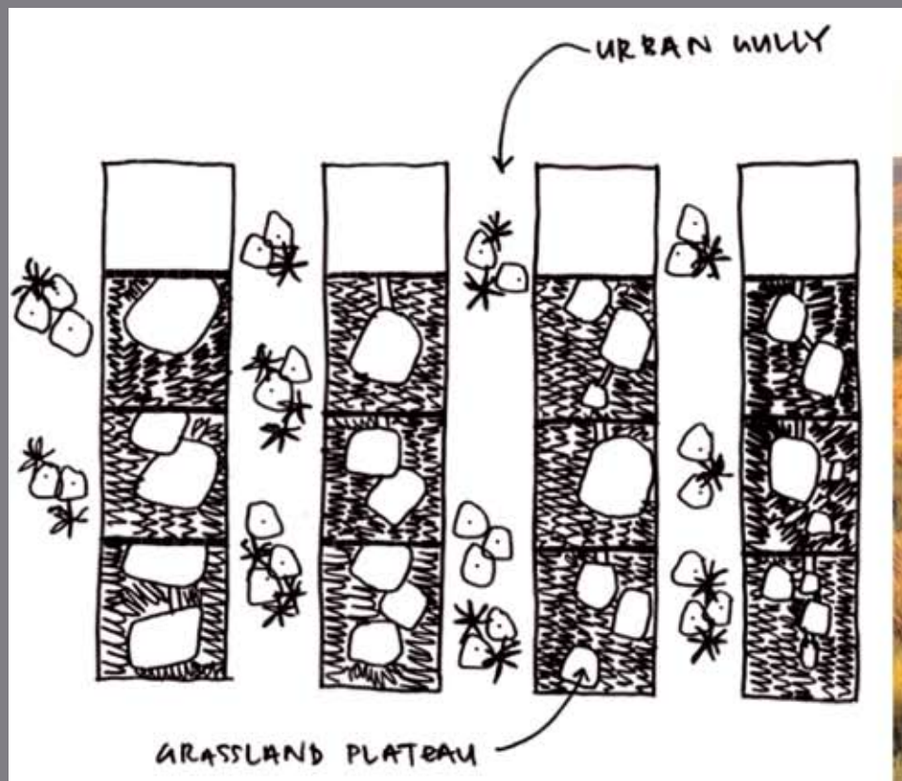
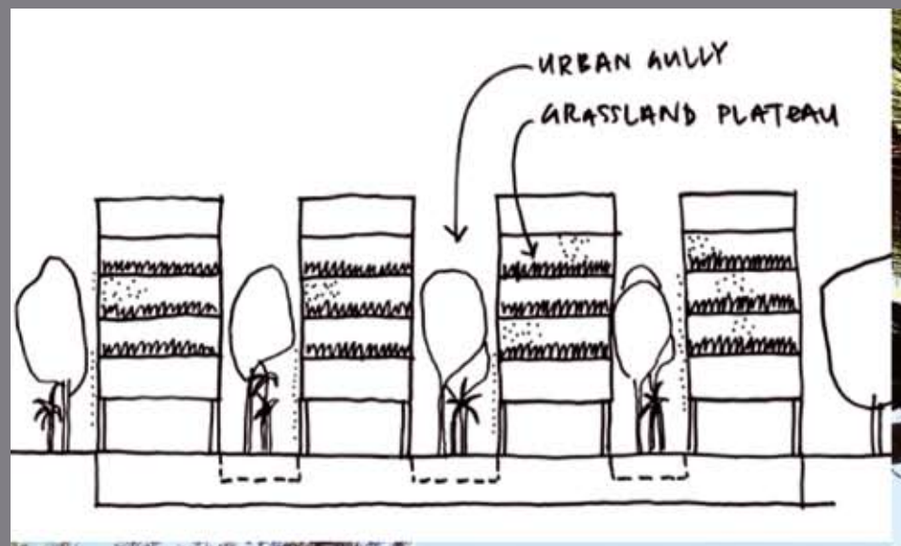
sauerbruch hutton
NH architecture
arup london
rush / wright associates



grassland plateau



urban gully