jacaranda treehouse

ARCH2300| Landscape Link
45359688 | Sophia Fu

site conditions

UQ St Lucia 1:5000

- Water
  - Brisbane River
  - UQ Lakes
- Green Space
  - Landscape Park Lands
  - Sporting Fields
- Site
  - Areas of Acces for site
- Built Form
- Series of courtyards & plazas
- Access Ways
  - Car
  - Bus
  - Pedestrian

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site conditions

looking for patterns on campus

UQ St Lucia 1:2500

Sunpath

1. *winter solsticte*
2. *equinox*
3. *summer solstice*

Area that require shading

wind paths
local breezes

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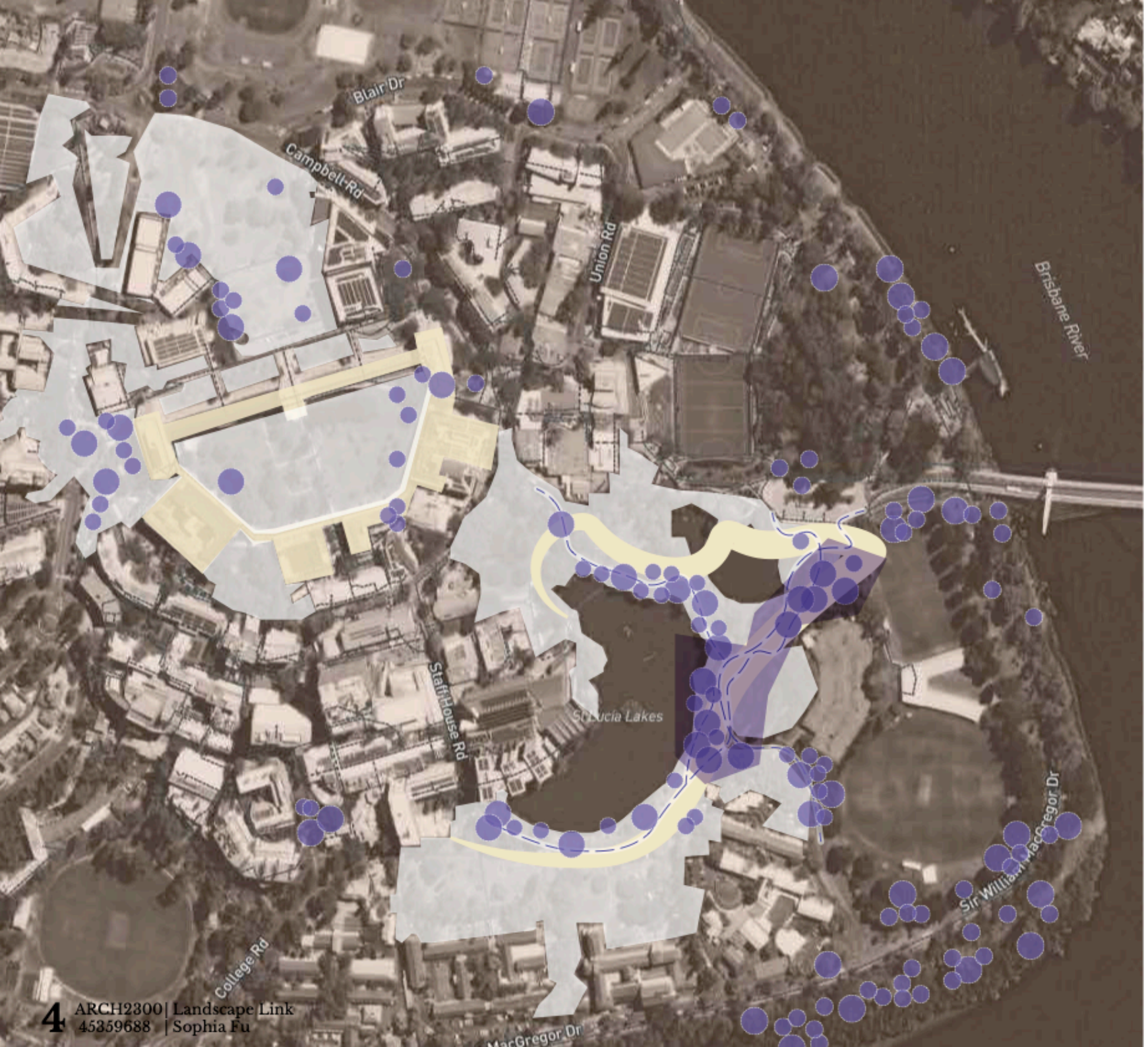

site conditions

looking for patterns on campus

UQ St Lucia 1:2500

Jacaranda trees

Zoned Green Space
Natural Landscape

BLOOM FESITIVAL
Area/Venue

Jacaranda Lane

UQ Built Heritage
Great Court - Colonnade
Sandstone Facade &
Stone Sculptures

Public Areas for the locals
Users Mostly by
non staff/students

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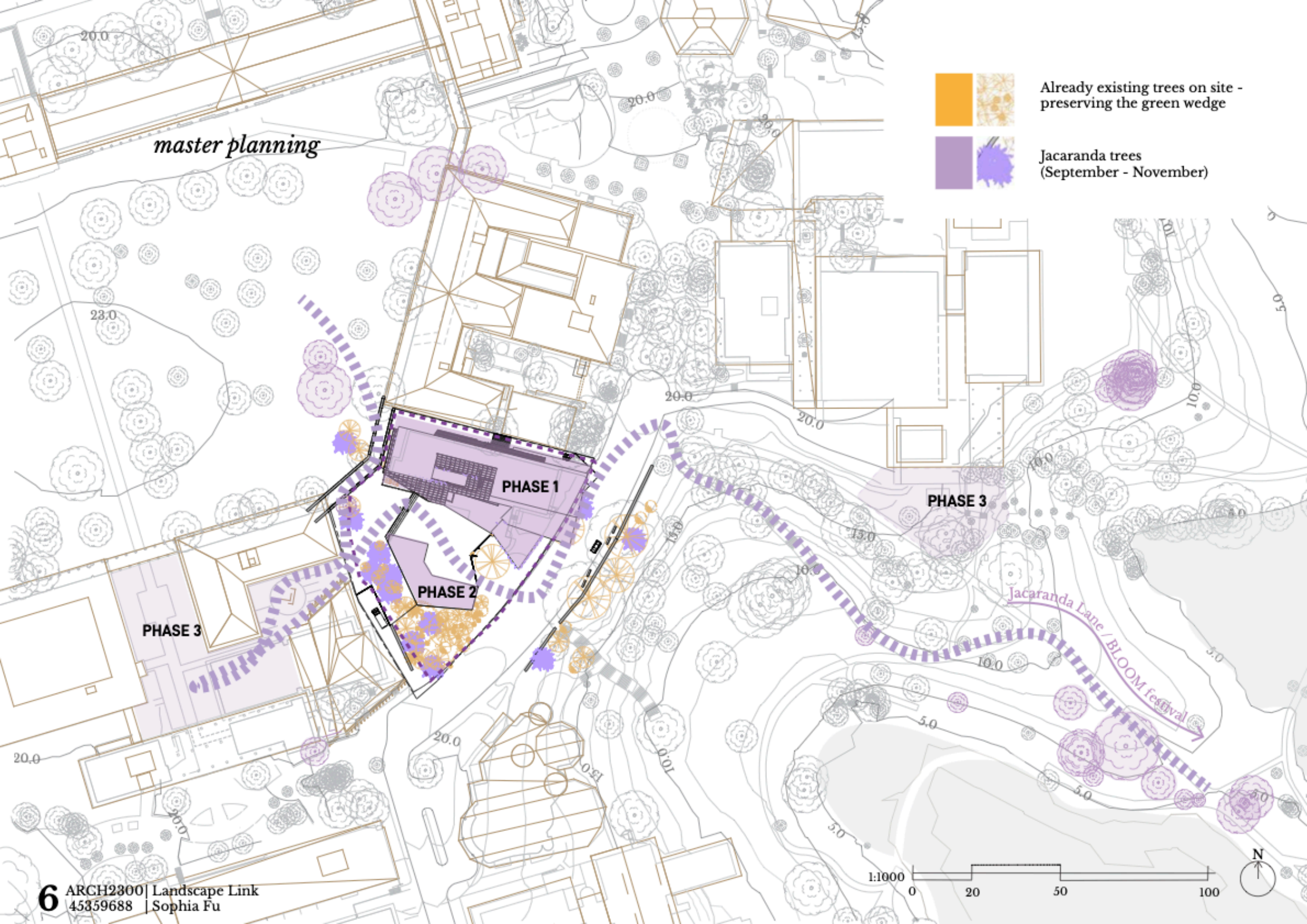
site conditions

looking for patterns on campus



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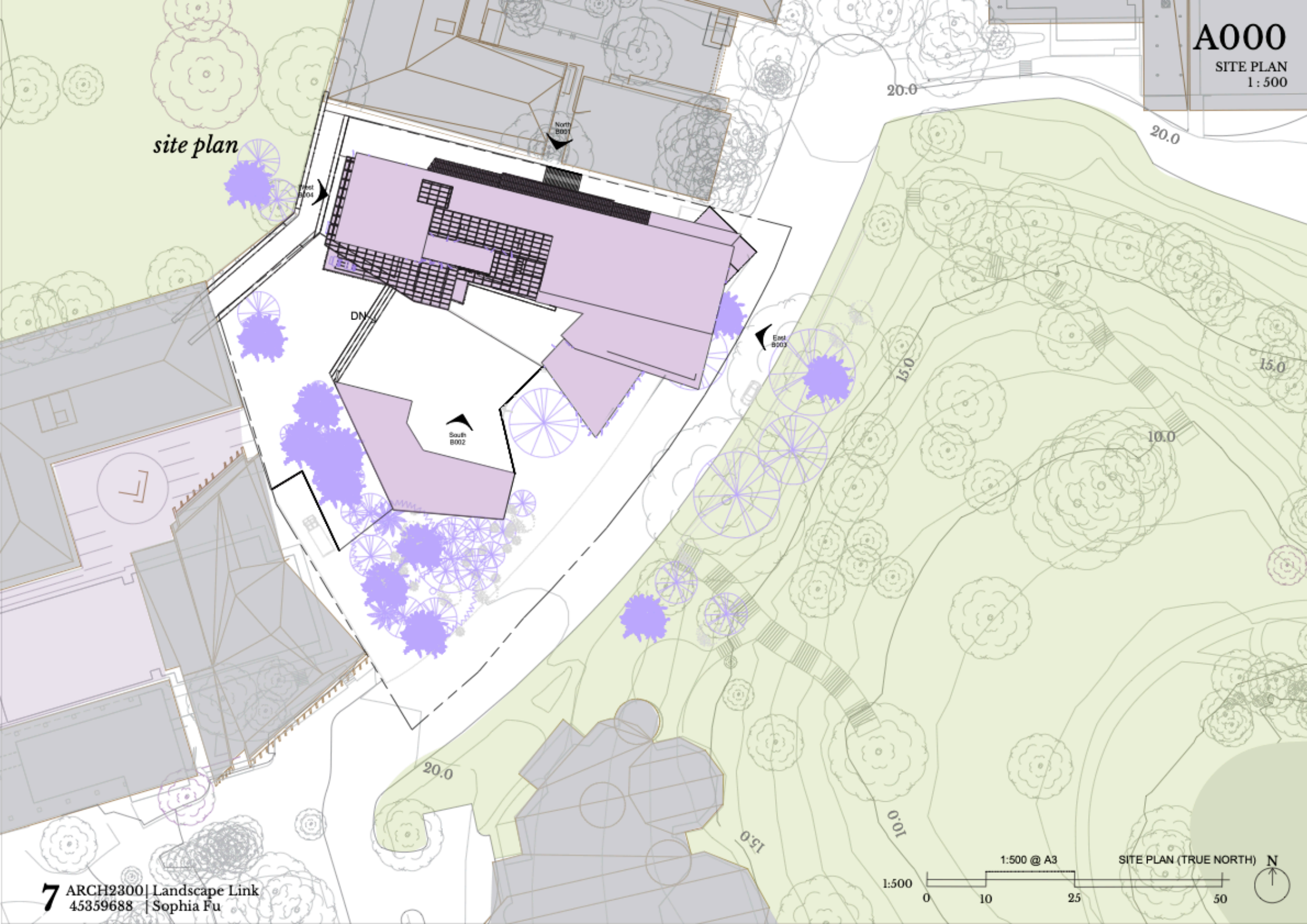

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A001

STAFF HOUSE RD PLAN
1 : 250

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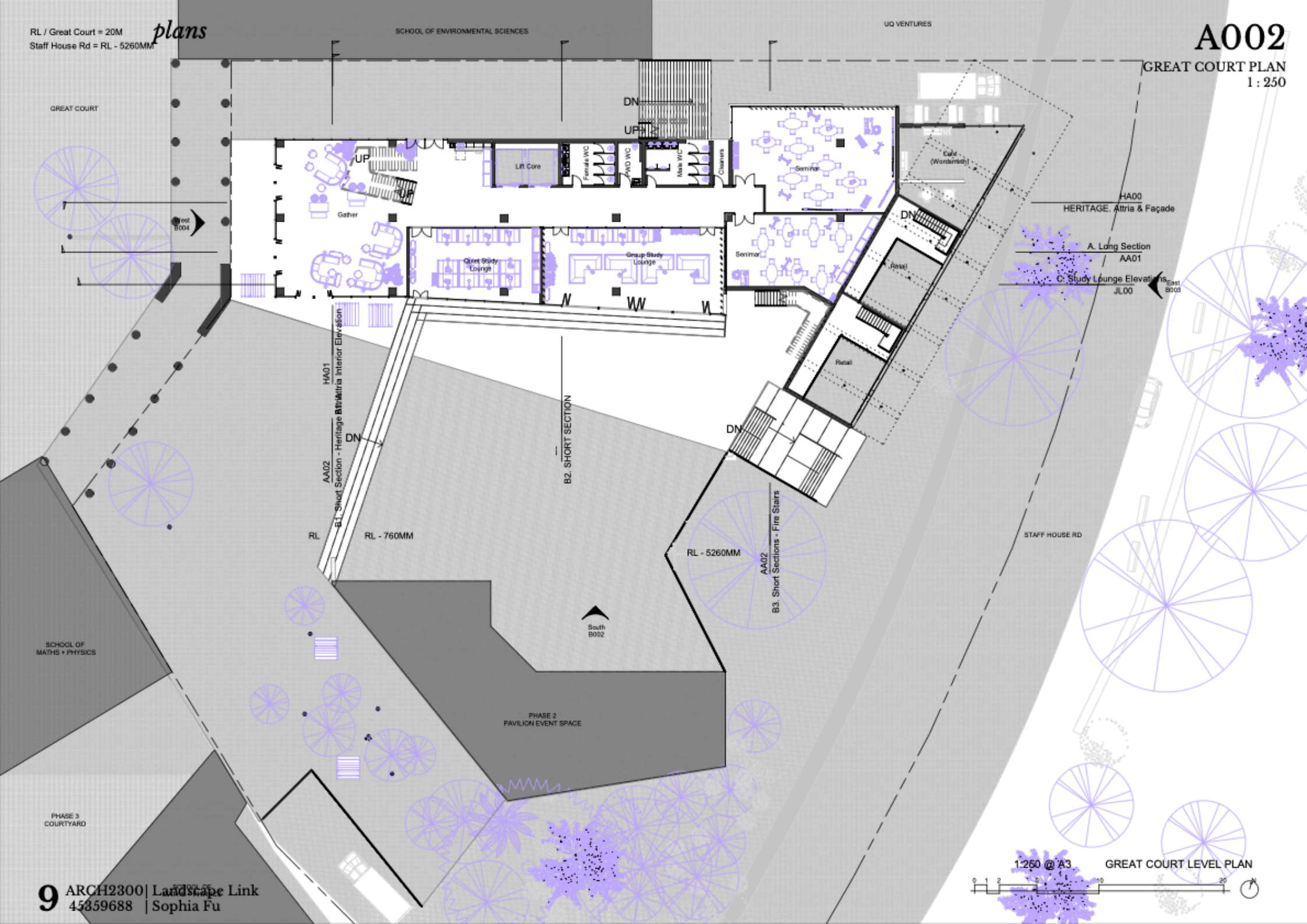
RL / Great Court = 20M
Staff House Rd = RL - 5260MM

plans

A002

GREAT COURT PLAN
1 : 250

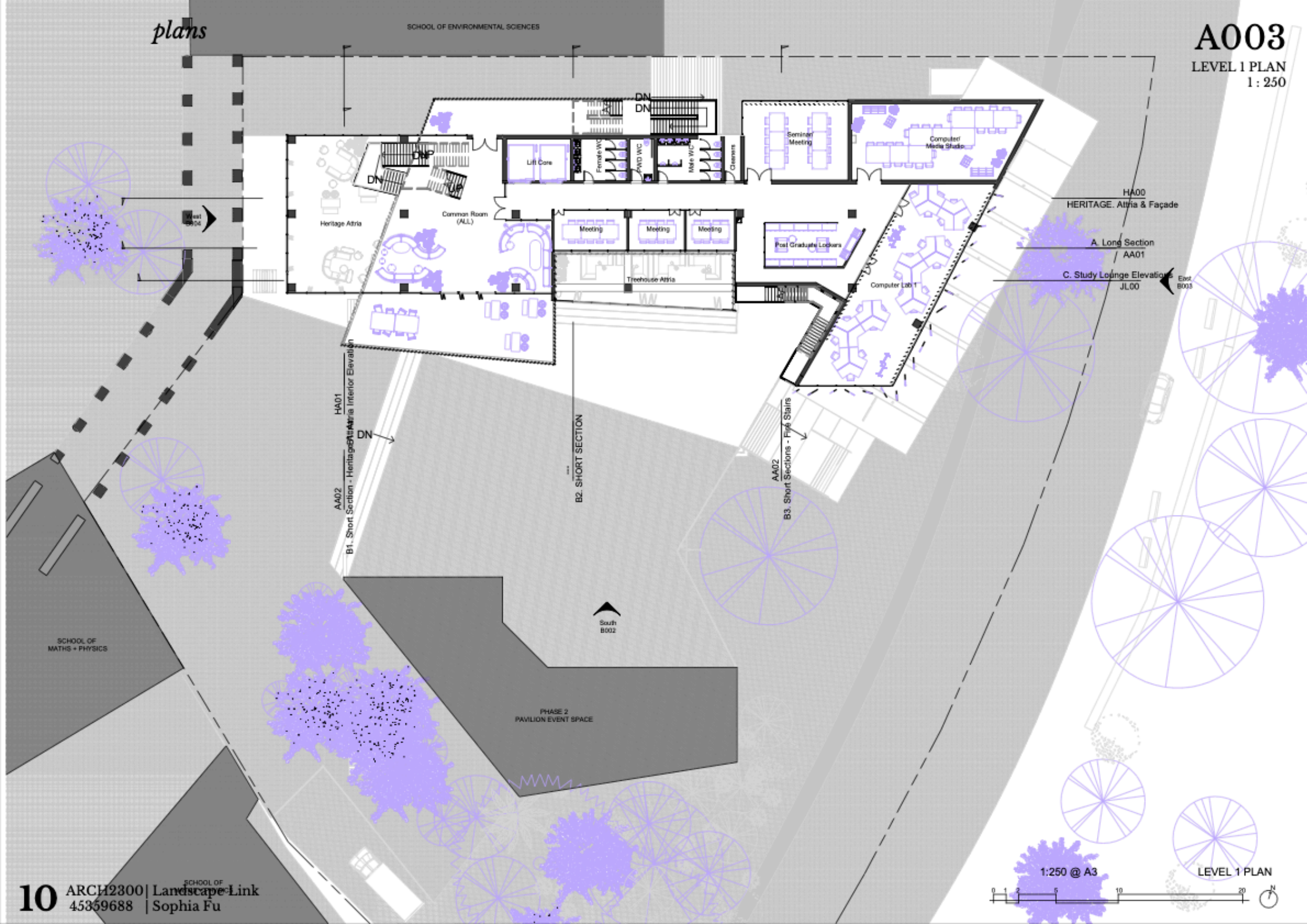


1:250 @ A3 GREAT COURT LEVEL PLAN

ARCH2300| Landscape Link
45359688 | Sophia Fu

A003

LEVEL 1 PLAN
1 : 250



ARCH2300| Landscape Link
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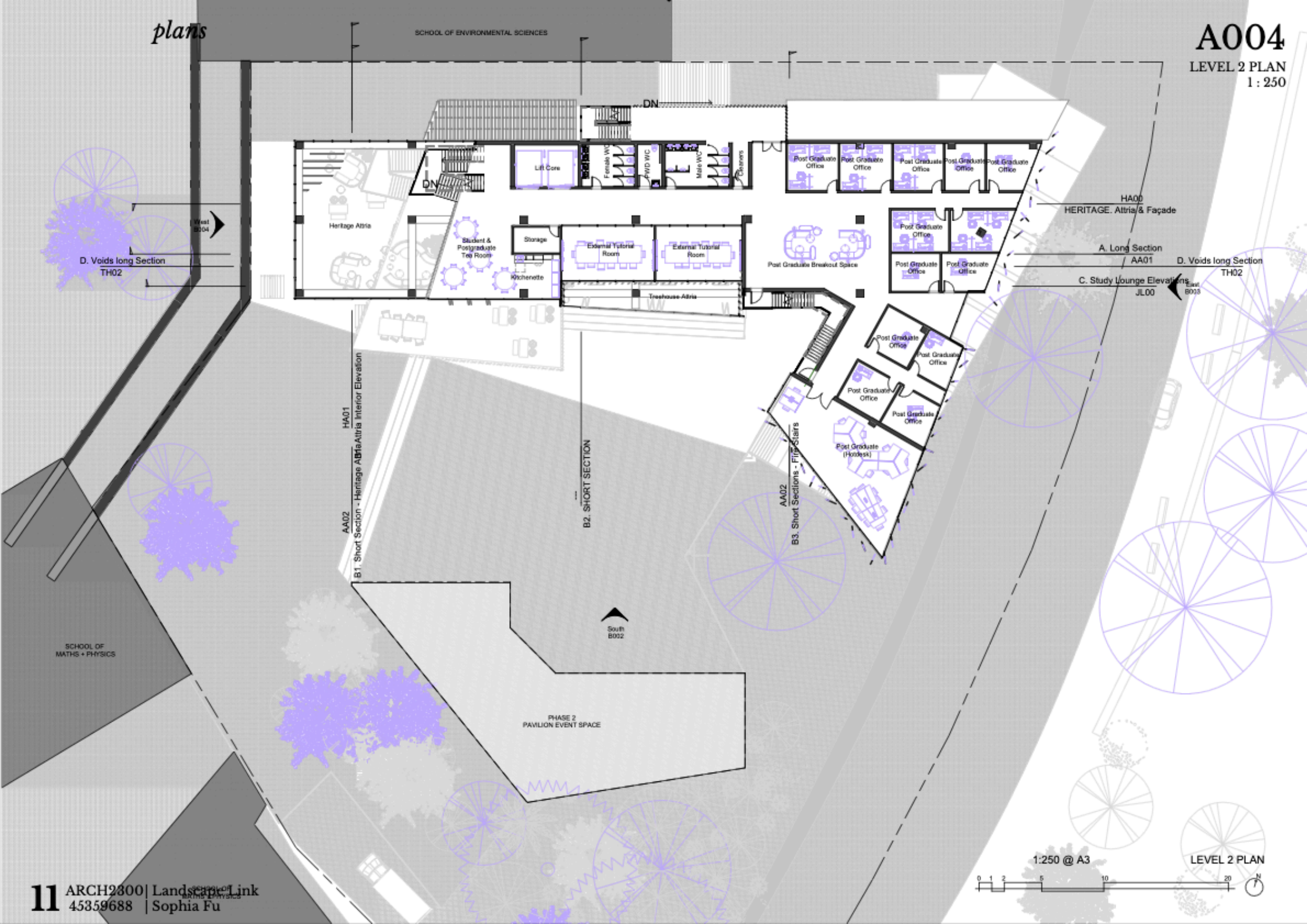
A004

LEVEL 2 PLAN
1 : 250



1:250 @ A3

LEVEL 2 PLAN

A005

LEVEL 3 PLAN
1 : 250

1:250 @ A3

LEVEL 3 PLAN

A006

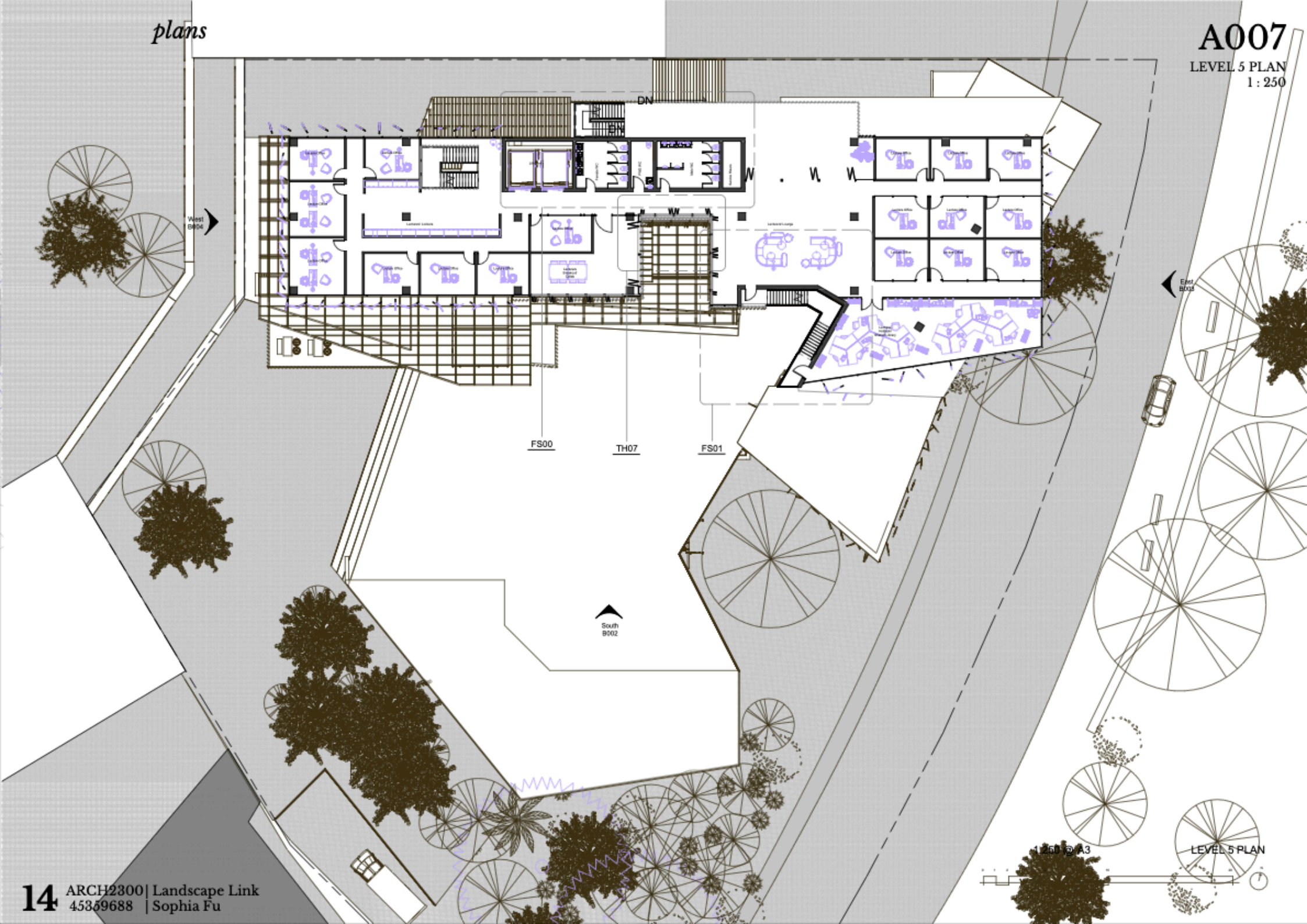
LEVEL 4 PLAN
1 : 250

1:250 @ A3

LEVEL 4 PLAN

A007

LEVEL 5 PLAN
1 : 250



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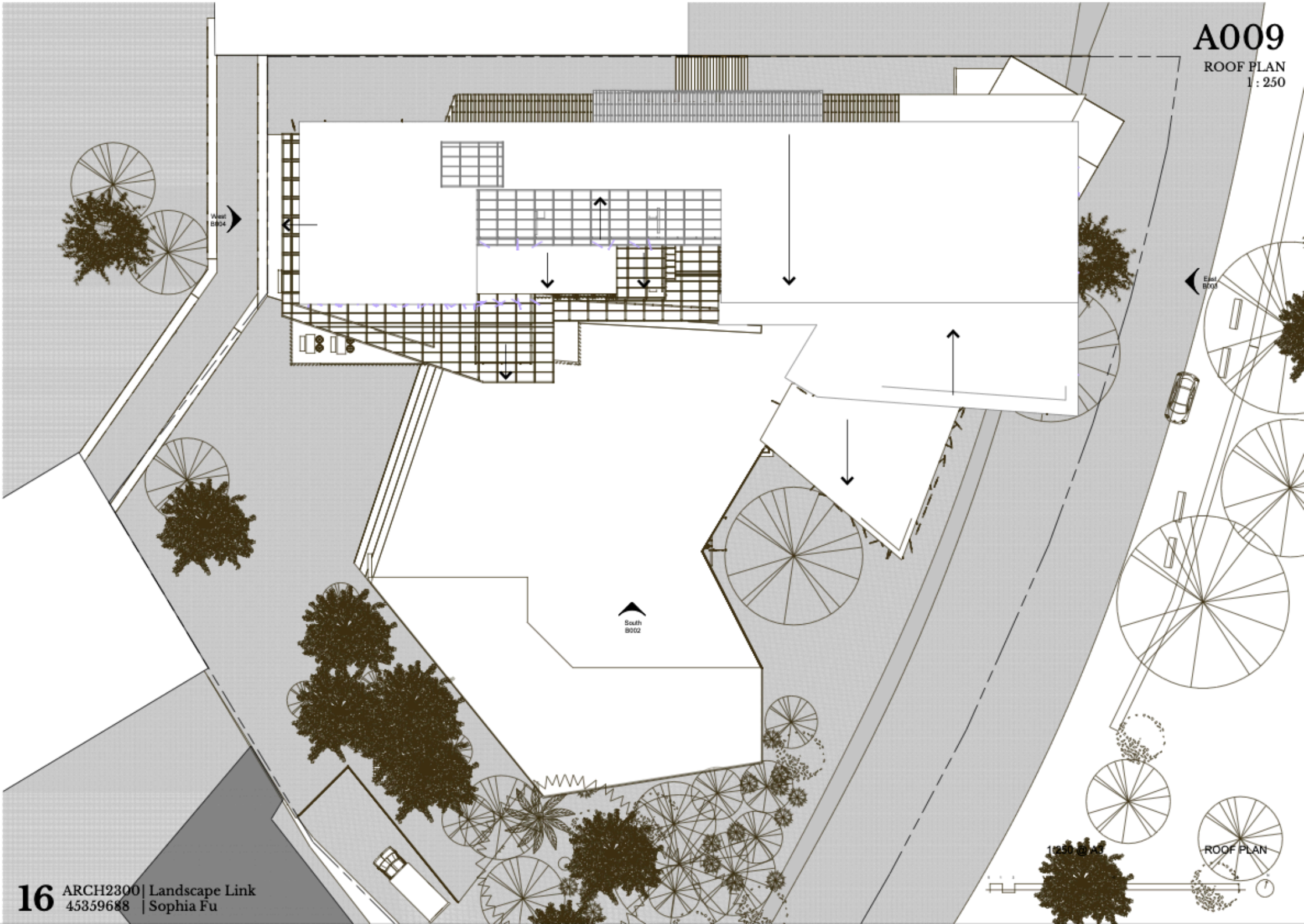
A008

LEVEL 6 PLAN
1 : 250

1:250 @ A3

LEVEL 6 PLAN



A009

ROOF PLAN
1 : 250

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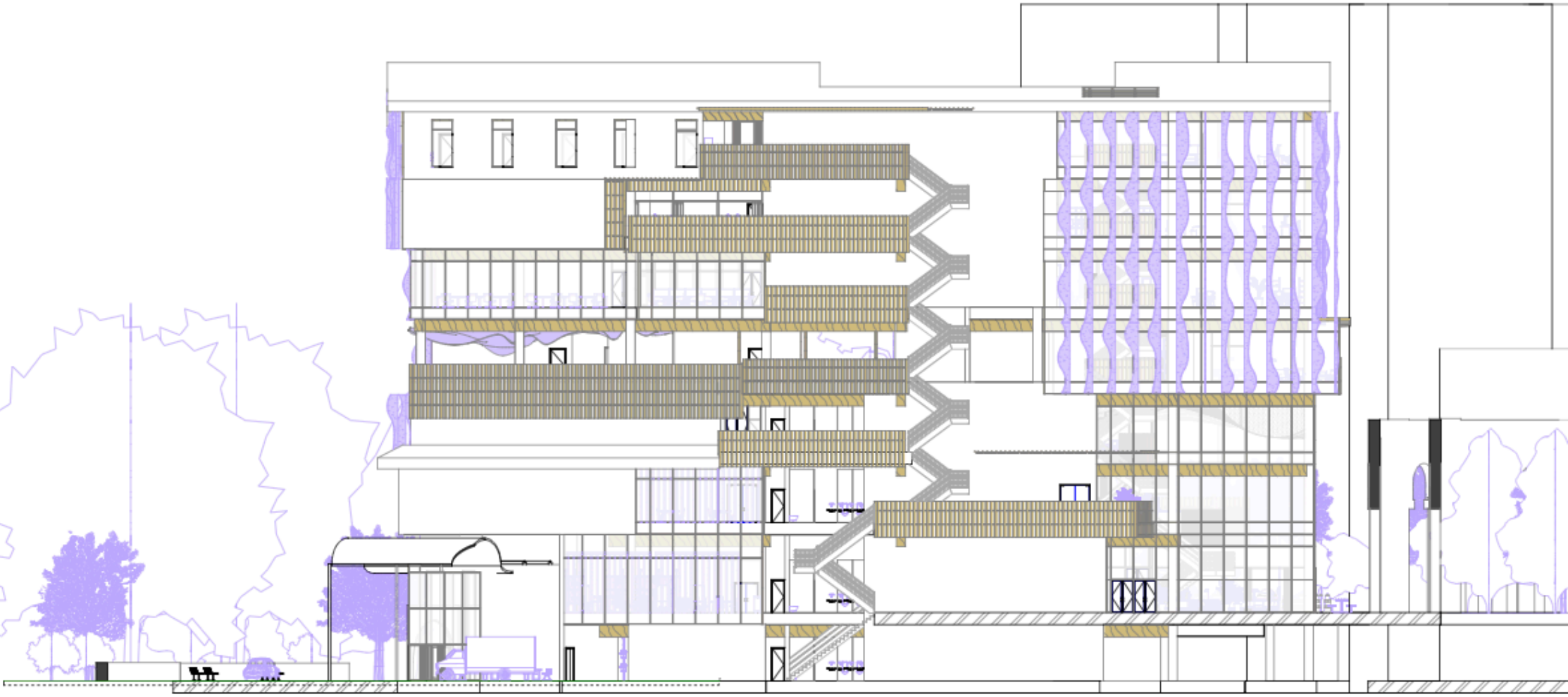
B001

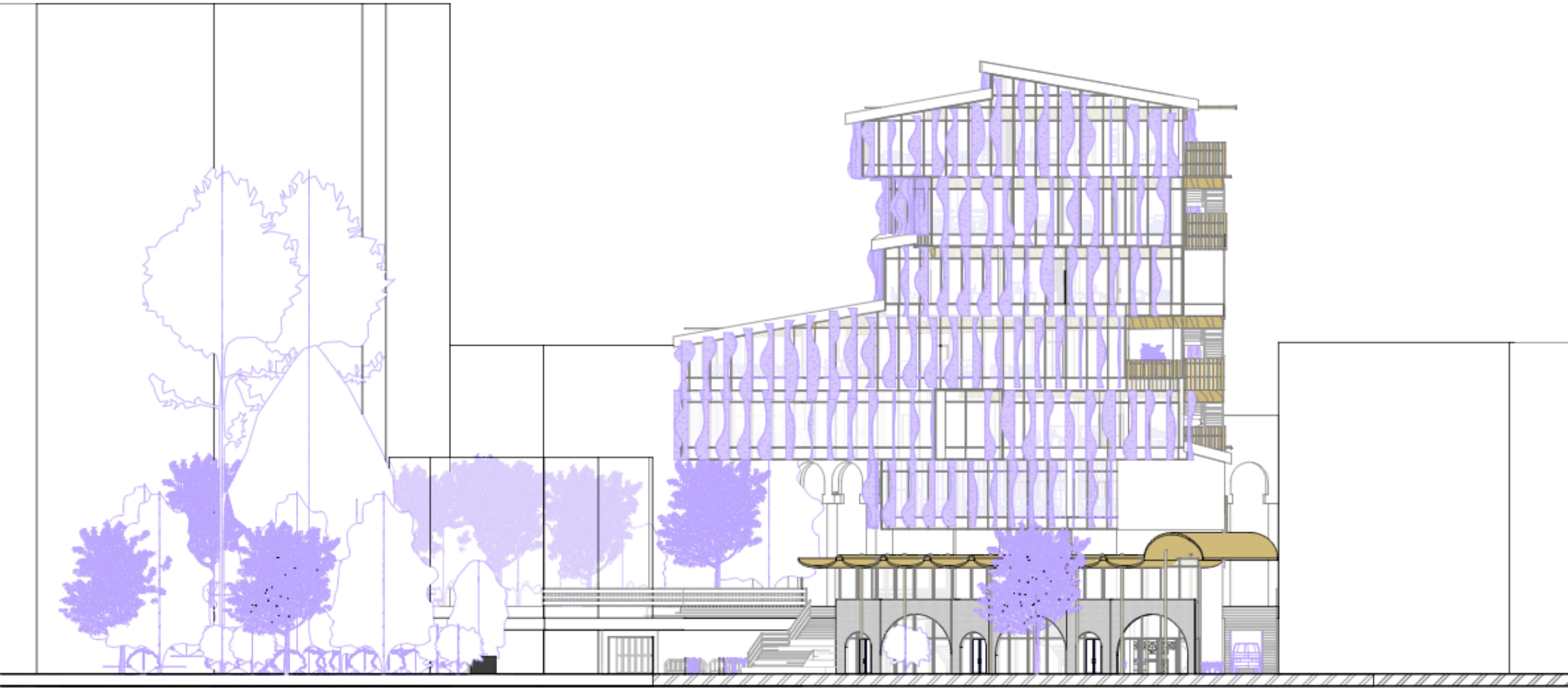
North Elevation
1 : 250



1:250 @ A3 NORTH ELEVATION

B003

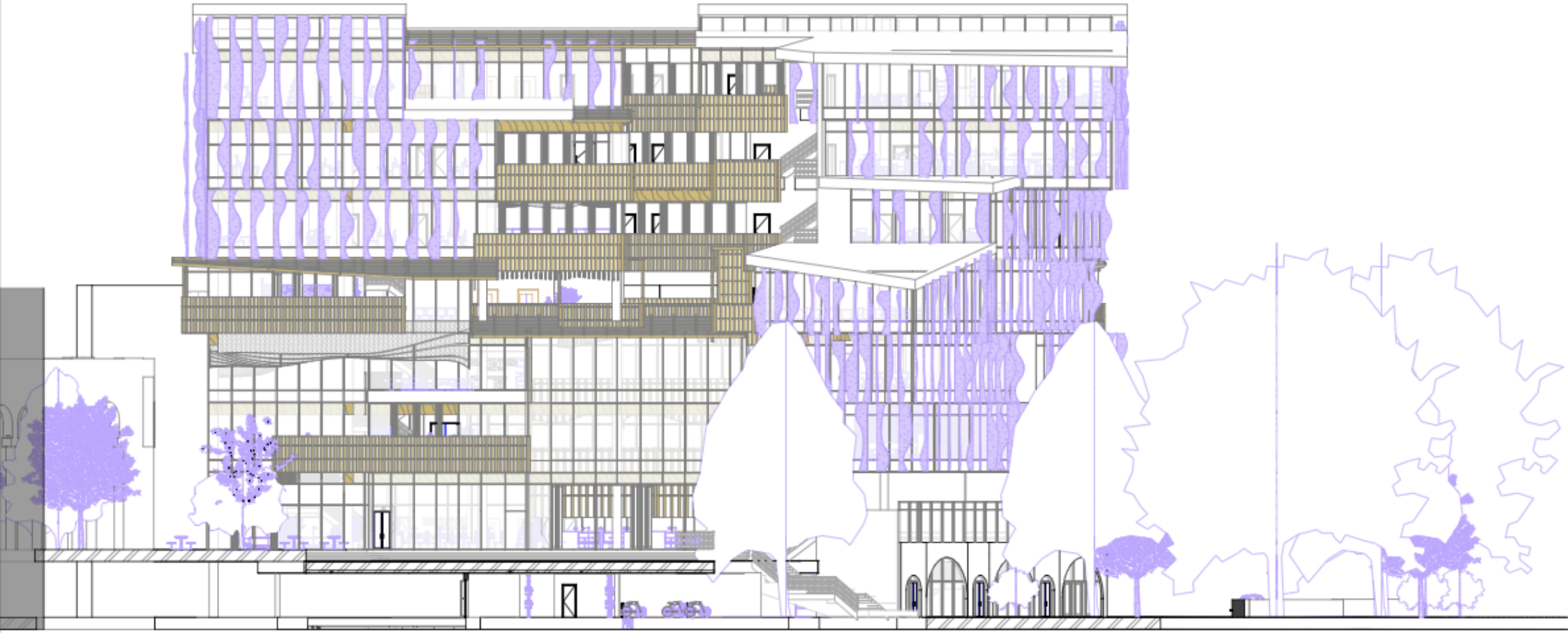
East Elevation
1 : 250



1:250 @ A3 EAST ELEVATION

B002

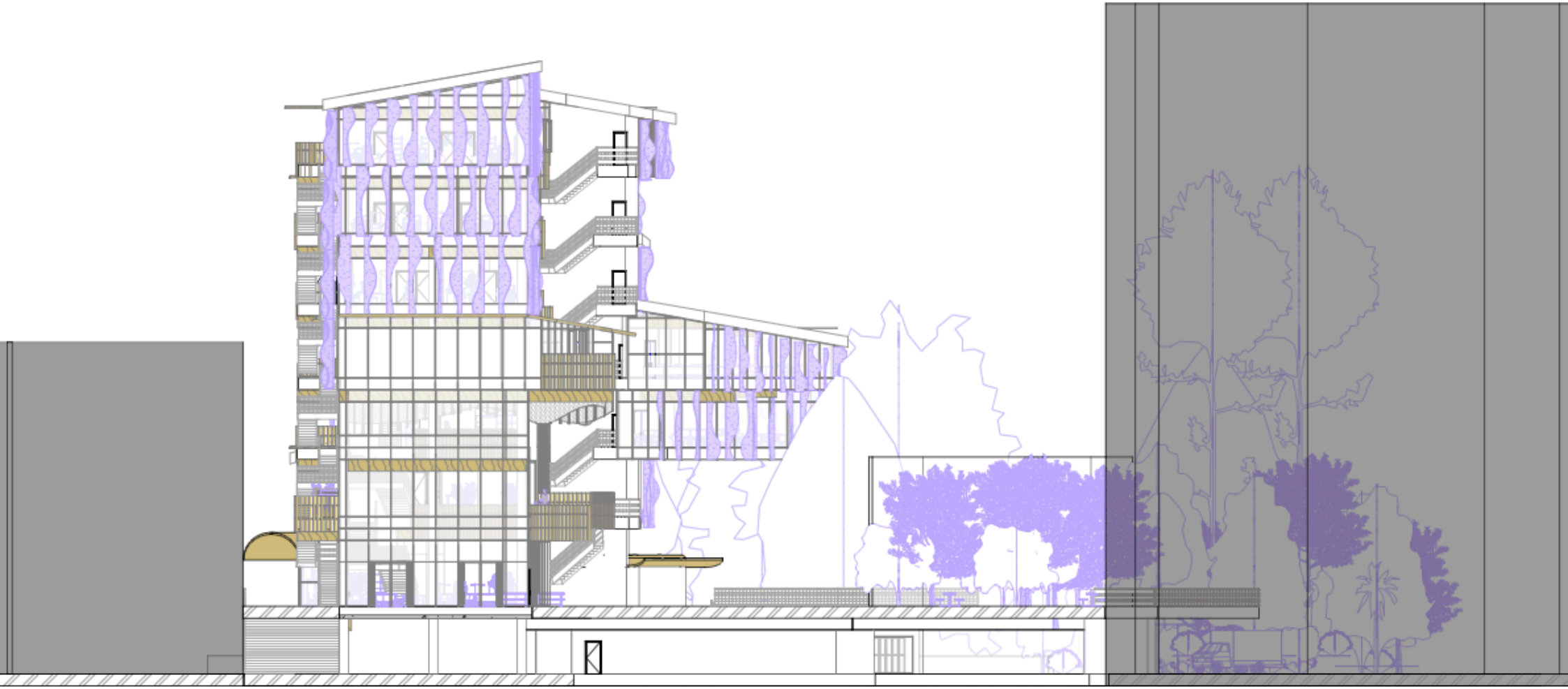
South Elevation
1 : 250



1:250 @ A3 SOUTH ELEVATION

B004

West Elevation
1 : 250



1:250 @ A3 NORTH ELEVATION

CP02

LEVEL 2 CEILING PLAN

1 : 200

1 Level 2

1 : 200

N

ARCH2300 | Landscape Link
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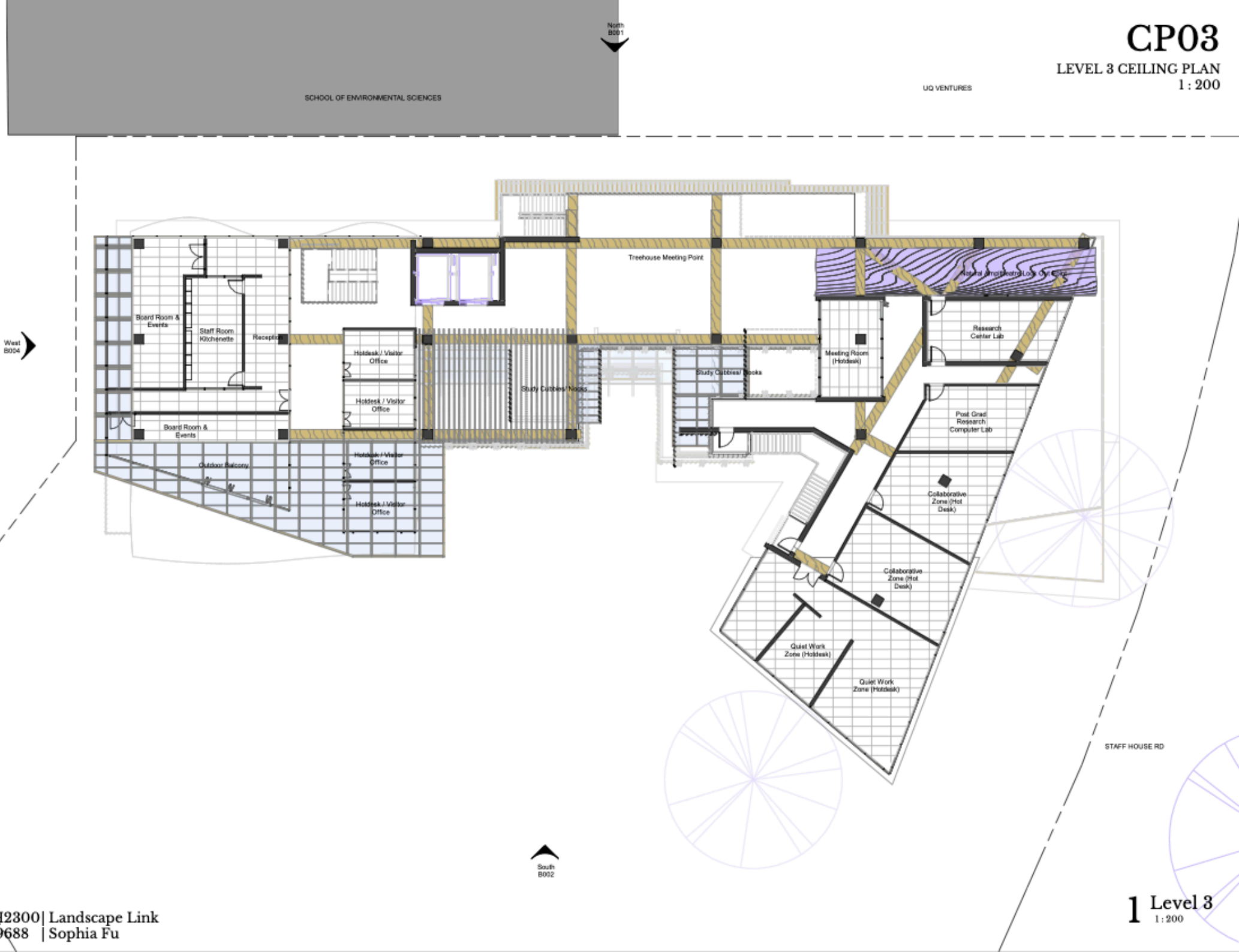
CP03

LEVEL 3 CEILING PLAN
1 : 200



1 Level 3
1 : 200

ARCH2300| Landscape Link
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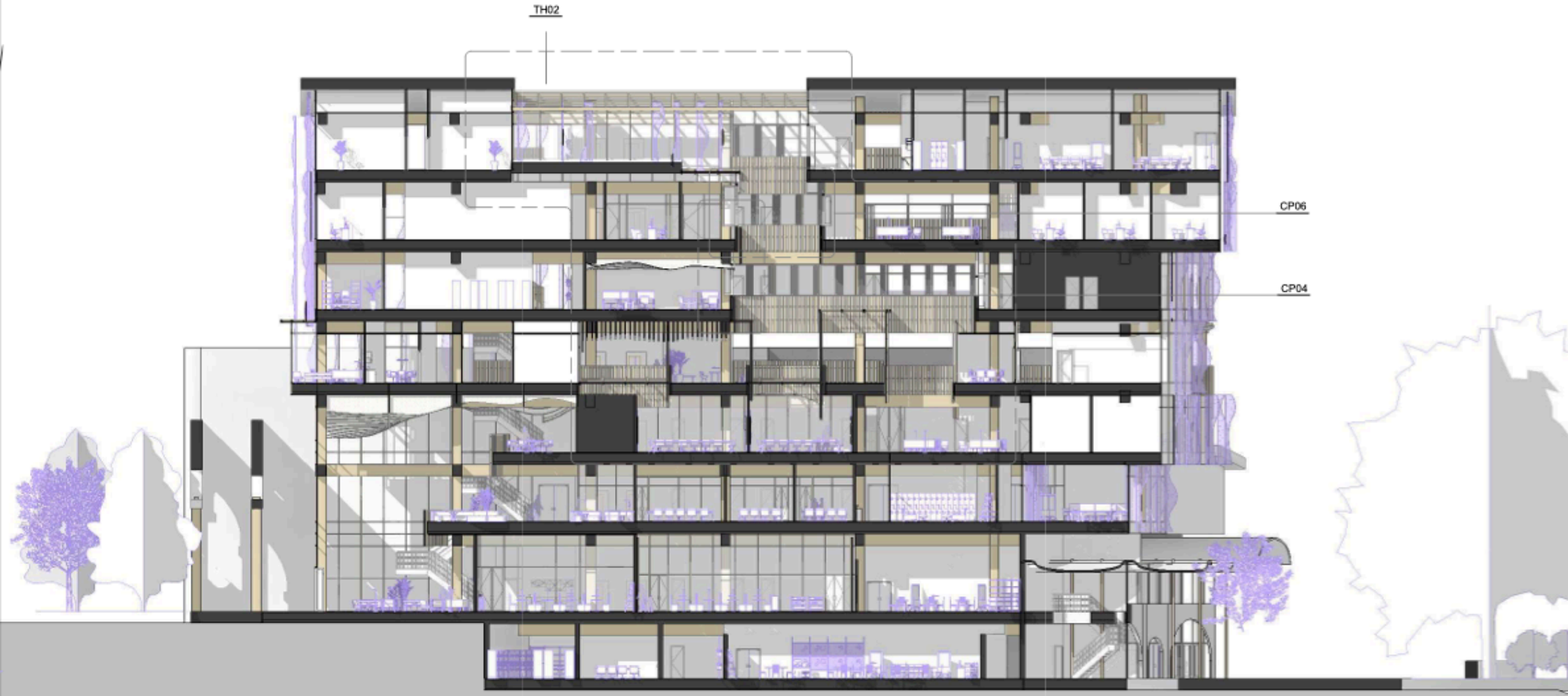
AA01

Long Section
1 : 250



1:250 @ A3

LONG SECTION
HEART OF THE BLDG

AA02

Short Section Stages of Change
1 : 250

1 B1. Short Section - Heritage Attria
1 : 250

1:250 @ A3 SHORT SECTION
HERITAGE ATTRIA

2 B2. Short Section - Jacaranda Treehouse
1 : 250

1:250 @ A3 SHORT SECTION
STANDARD LEVELS

AA03

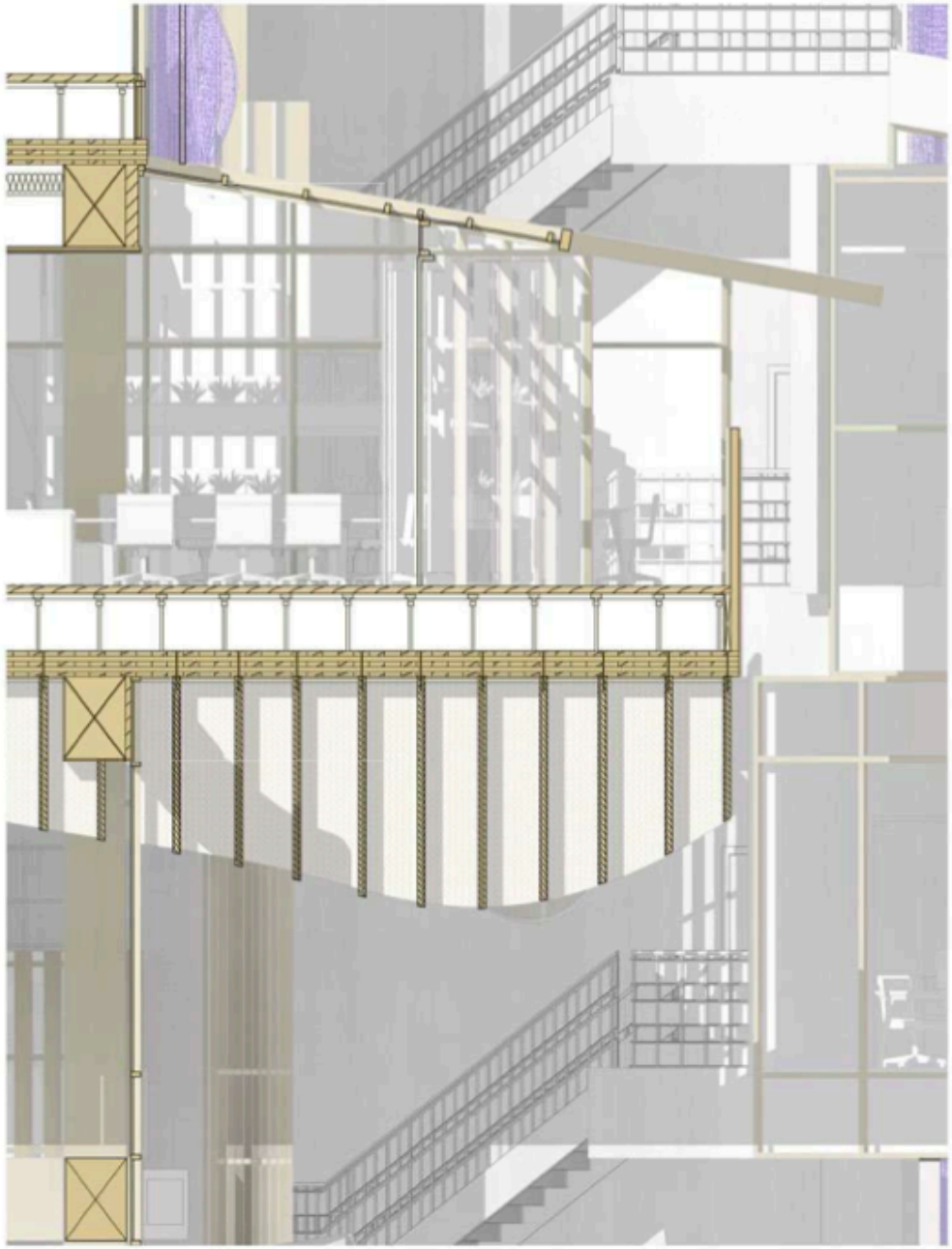
Short Section
As indicated

1 B3. Short Sections - Fire Stairs
1 : 250

2 Floating Terrace Callout Detail
1 : 50

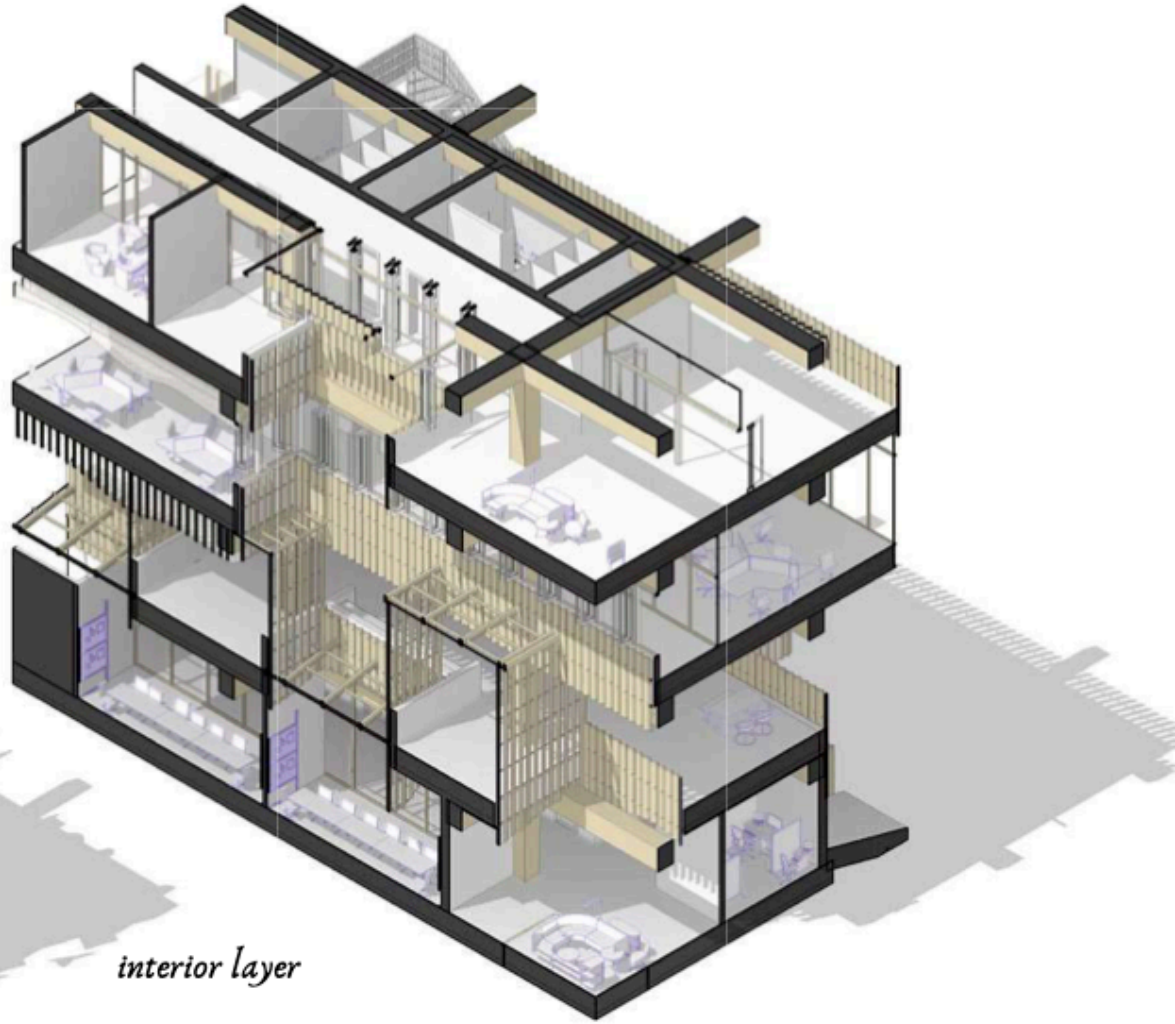
JL04
Glazed Roof
1 : 50

1 B1. Attria Elevation - Broadroom Roof Callout
1:50



2 C. Jacaranda Lounge - Level 2 External Tutorial Rooms
1:50

Material layering to create open spaces and enclosed cubbies
sectional cut axonometric



external layer

- operable edge
- varying shades for light qualities
- void pockets located in the south away for harsh sun, enjoyable
-open & closed modes for different weather conditions environment all year

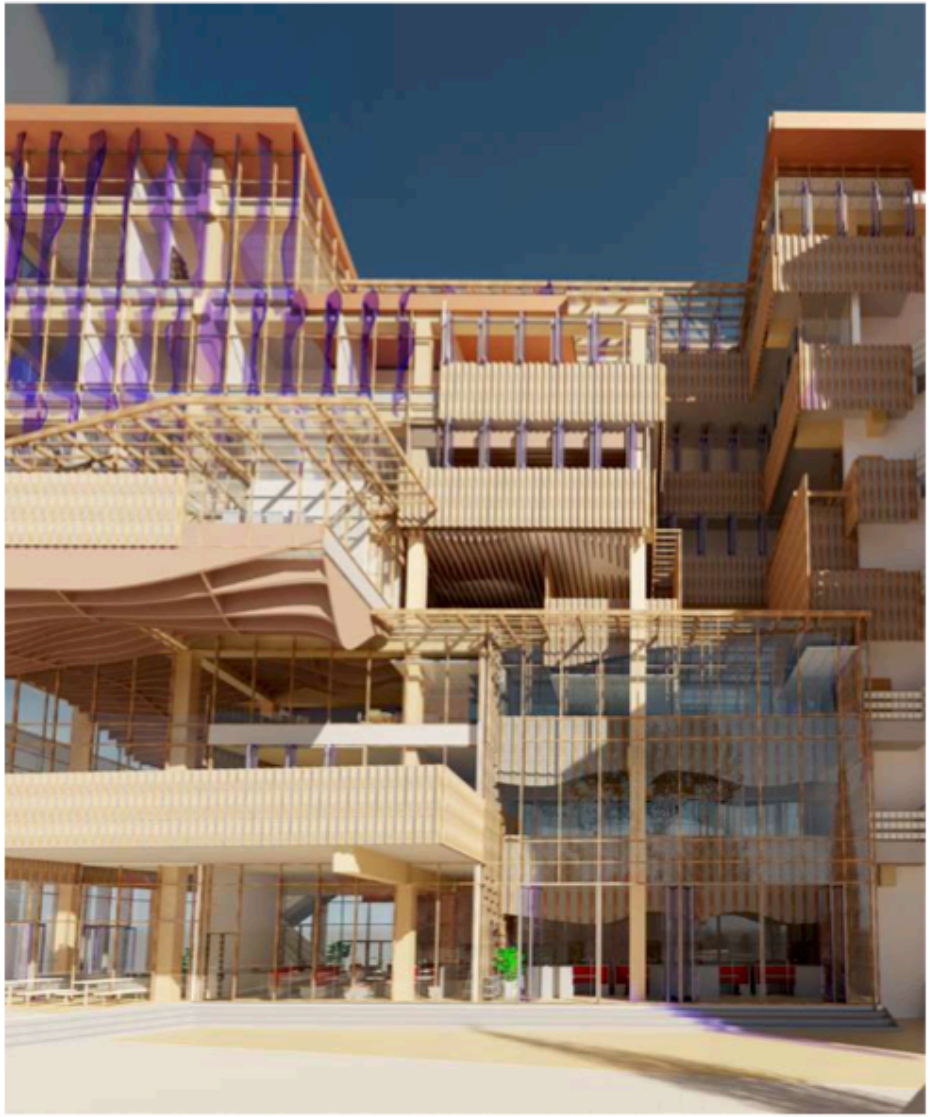
interior layer

- shifting floor plates
- creating a visual void for users to orient themselves,
- location for user groups to see each ether and connect
- cubby break spaces invite users to explore.
- thin, open floor plan, good ventilation

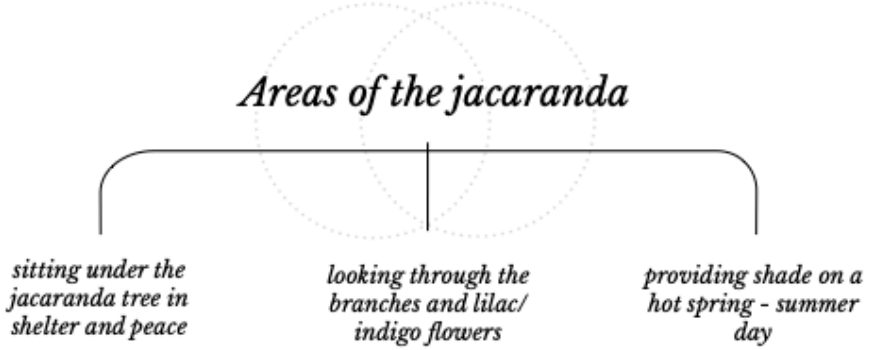
Jacaranda Treehouse design in UQ *context*

Landscaping - preserving existing trees on site & additional jacaranda trees to extend the Jacaranda lane

Perspective views of building from the plaza



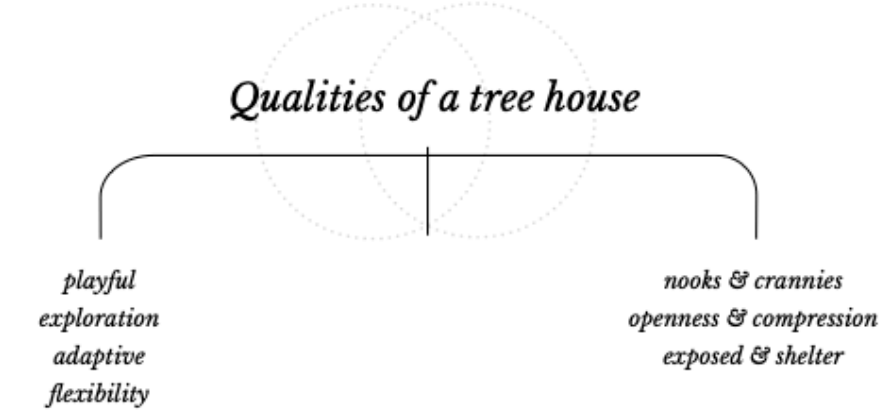
jacaranda & tree house



Definition of jacaranda (noun):

1. tropical bignoniaceous tree having fern-like leaves and pale purple flowers and widely cultivated in temperate areas of Australia

2. the fragrant ornamental wood of any of these trees



Definition of tree house (noun):

a structure (such as a playhouse) built among the branches of a tree

under the jacaranda

1. Light

- 1.1 Layered materials filtered light, dappled shade
- 1.2 shelter
- 1.3 delicate, open, breathability

2. Form

- 2.1 Thin & Brittle
- 2.2 Floating spaces
- 2.3 organic, smooth transtions

3. Natural Heritage

- 3.1 connects to jacaranda lane
- 3.2 celebrates jacarandas seasonal changes
- 3.2 perservation of pathways relation with trees

4. Built Environment

- 4.1 nooks & cranny hide and seek
- 4.2 playful spaces
- 4.3 encouraging exploration

university

queensland

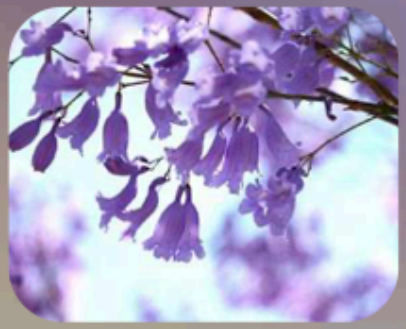
Great Court Department Entrance Precedent

built environment

UQ Sandstone Colour Palette

heritage

Jacaranda



natural landscape garden campus

the UQ identity

Material palette / Architecture Concerns

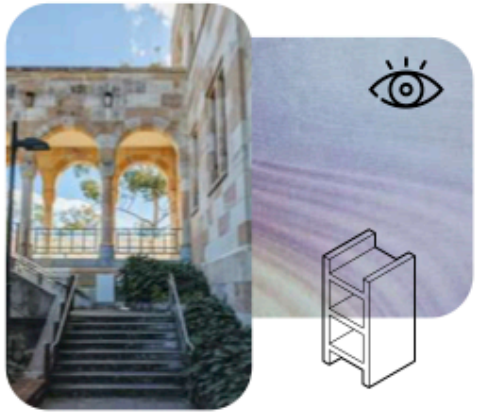
built environment — *heritage* — *natural gardens parklands*

abstracting ingredients & pattern that already existing @ UQ St Lucia

timber ceiling & batten
from all public and share areas

secondary fully operable edge, introducing natural light
reduction of on mechanical air conditioning
high-quality & fresh ventilation
increase airflow & hygiene benefit

located in shaded comfortable areas away from heat & sun



contrast

dedicated HERITAGE ATRIA
increasing awareness & appreciation of UQ St Lucia's built heritage & sandstone finish

3 storey curtain wall exposed and facing the neighboring School of Environmental Sciences

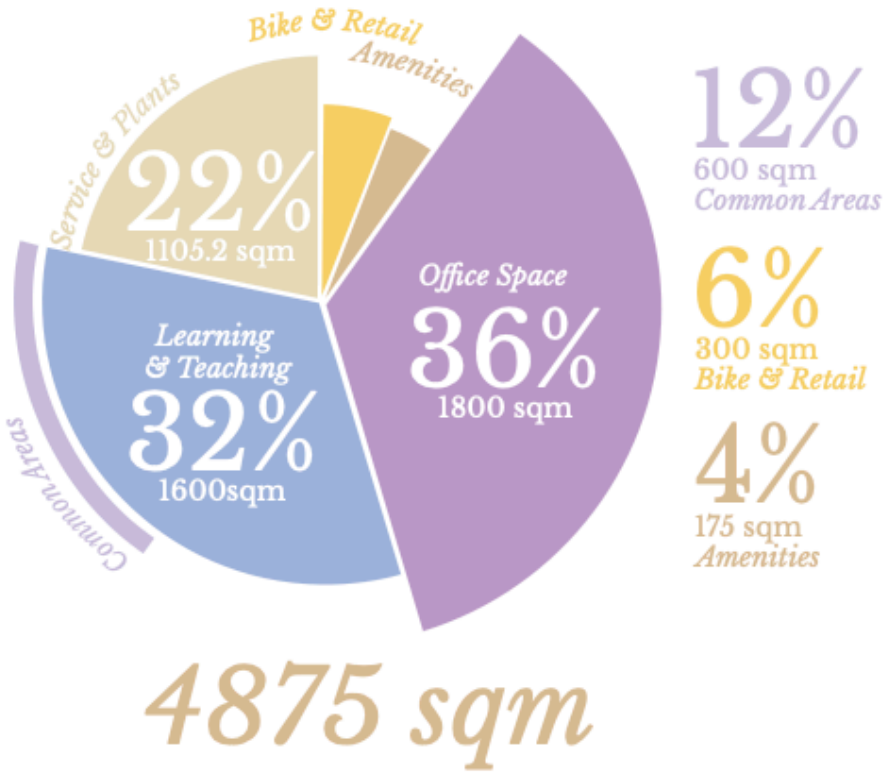
masterplanning plaza & orientation of the building further enhance the grand entry to the Great Court with the landing ground level

Polycarbonate Shading system the bathes spaces in purple hue. The purple shadow will show during certain times of the day when the facade is providing shade.

Seasonal Jacaranda Phenomenon (September - November) UQ is synonymous purple for Brisbane locals. Time of academic intensity of Students & iconic for Brisbane locals

Purple hue: in sandstone, UQ branding colour

Jacaranda high contrast, filtered light/ shading
Purple carpet of the flowers flows from the tree.



12%
600 sqm
Common Areas

6%
300 sqm
Bike & Retail

4%
175 sqm
Amenities

4875 sqm

scheduled areas

Office Spaces			1800	36%
	Postgraduate	450		
	Academic Research	450		
	Academic Teaching	450		
	Academic Admin/ Managers	200		
	Operational Admin Staff	250		
Learning & Teaching		850	1600	32%
	Common Areas	600		
	Additional Accommodation	150		
Bike & Retail			300	6%
Amenities			175	4%
Serviecs & Plants			1100	22%
Total			**4975**	

Public — *Private*

Landscape Outdoor	Bike & Retail	Amenities	Teaching & Learning	Postgraduate Student Meeting Research	Academic Office	Office Admin	Utilites

programed areas - aspirations

breakdown of user groups

Include planned outdoor and landscape (preserve for public)

Decrease ratio of the office space

Increase ration of student and learning space (use additional accommodation space for this).

Stronger priority for teaching & meeting, postgraduate and flexible space

Design spaces that can be multi-purpose to preserve landscape and decrease height of the buildings.

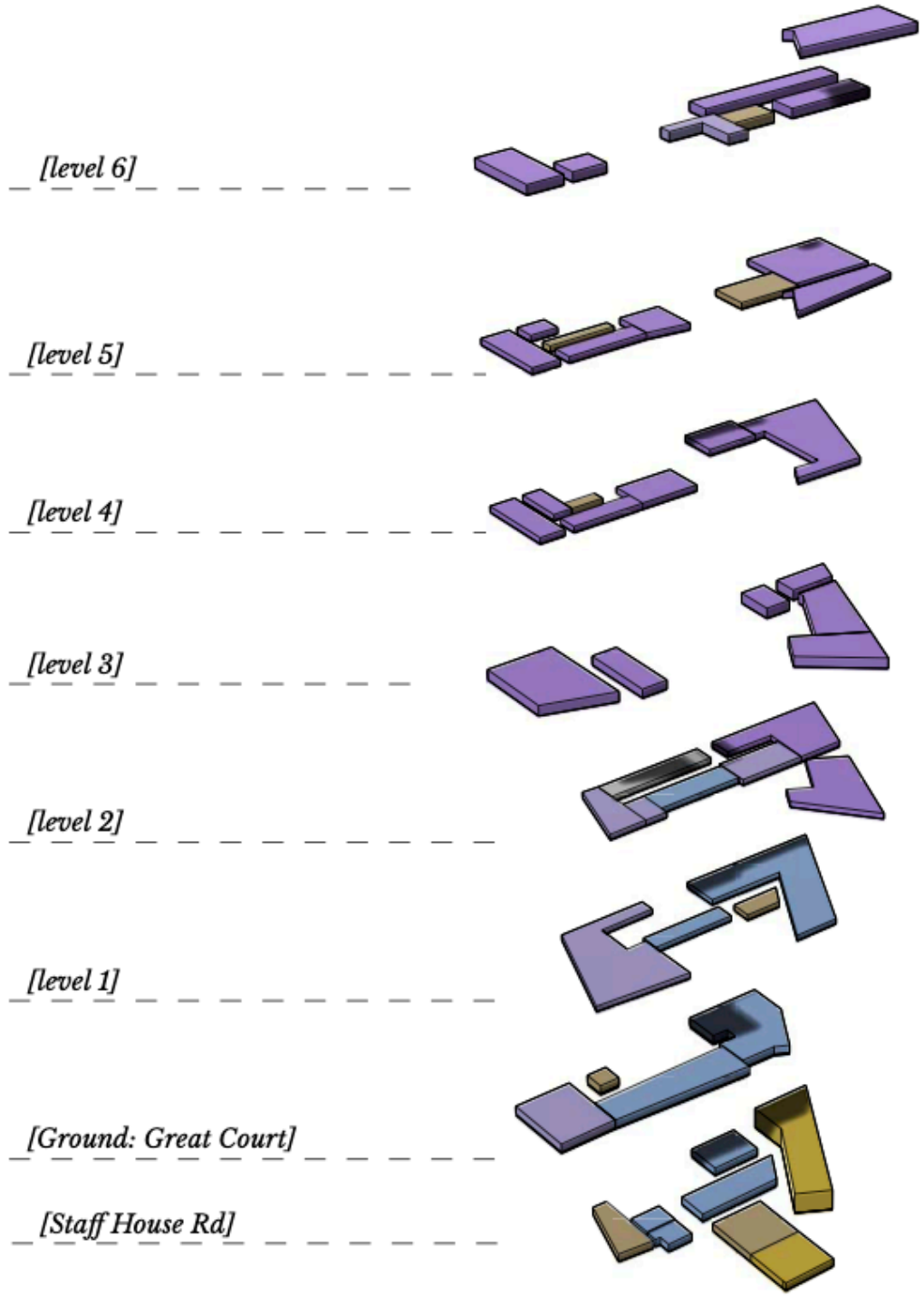
approach to workspaces

"30% formal office are unoccupied due to part-time or remote work"
-Wilson Architects research on Educational Offices

proposal:
30% of individual office will be convert to hot-desk open offices and meeting rooms

this encourages collaborating and users to go between levels 2-6 to work/ study. - interactions amongst the school

- decentralizing academic hierarchy



zoning strategies / education philosophies / objectives

post graduate offices

[level 2]

schedule
total - 450sqm
30% - 162sqm
60% - 324sqm

proposed: student
13 individual offices
breakout spaces
external tutor rooms
Hot desk open office
lockers

[level 3]

operable/ exposed to outdoors
open bridge connecting

- hotdesk shared/ individual offices
- board room& events
- open terrance to the great court

- no core/ void in building form

Shared Common Spaces - Optimising The Schedule

hotdesk quiet and collab (louder) zones - seperator for user preferences

computer room doubles up as media studio

lockers and libraries minimise belongs occupying unssed spaces

lockers & libraries minimise belongings occupying unsed spaces

rooms are equiped will shared resource to flexibe space usage

Hotdesk spot - intergrated technology to show which spaces are vacant or digitally book (e.g. like the SLQ EDGE system)

academic admin/mangers

[level 4]

receptions
social spaces
views of great court
boardroom & events

operational admim staff

[level 6]

wating lounge
kichenette
lockers
views of UQ lakes

academic research staff

[level 4]

schedule
total - 450sqm
30% - 150sqm
60% - 300sqm

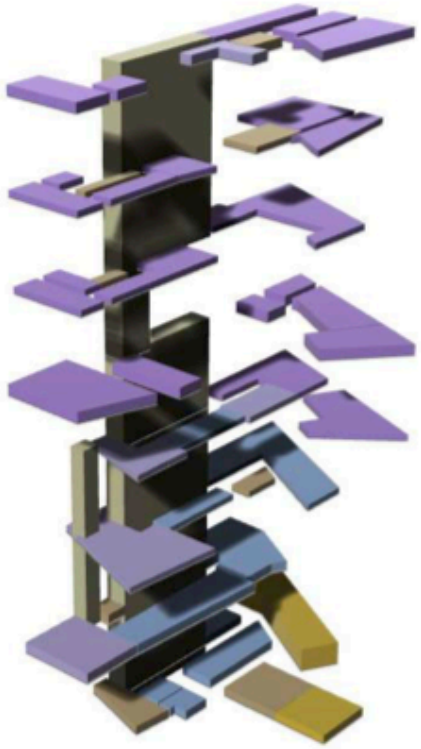
proposed: research staff
10 individual offices
2x Hot desk open offices
collaborative open office
shared library
lockers

academic teaching

[level 5]

schedule
total - 450sqm
30% - 150sqm
60% - 300sqm

proposed: lecture & tutors
17 individual offices
breakout spaces
meeting rooms
Hot desk open office
lockers



Office Space [Quiet Zones]

The Quieter individual office located on the higher level to provide unnecessary distraction

On each level there is opportunities for:
- *individual offices*
- *team collaborative offices*
- *open plan offices*

Learning & Teaching

Located on the low floor for ease of access

Ground floor Staff House Rd entrances to minimize circulation bottle-neck

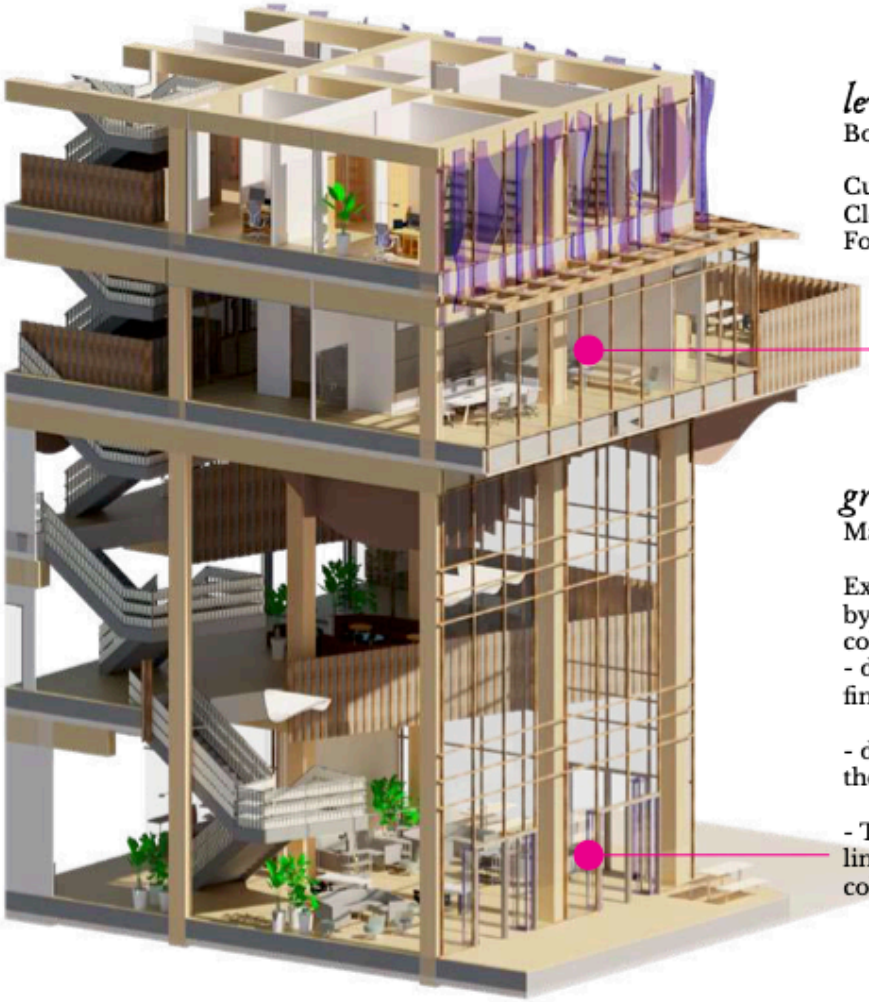
Increase entrances for airflow

Separated between levels to encourage mixed user interaction & over crowding

Common Areas

Ground Floor to Level 6 all have an OPEN MODE for operable airflow

Minimizes seal hallways and circulation



level 3
Board room & Events Room

Curtain wall exposed
Clear view of Great Court & Forgan Smith

ground level
Main Entry Heritage Attria

Exposed Curtain wall shaded by adjacent building & colonnade
- direct view of Sandstone finishing

- direct view of the arches of the Great Court

- The structural column lineup to match the colonnade columns

Isometric of Heritage Atria facing the Great Court

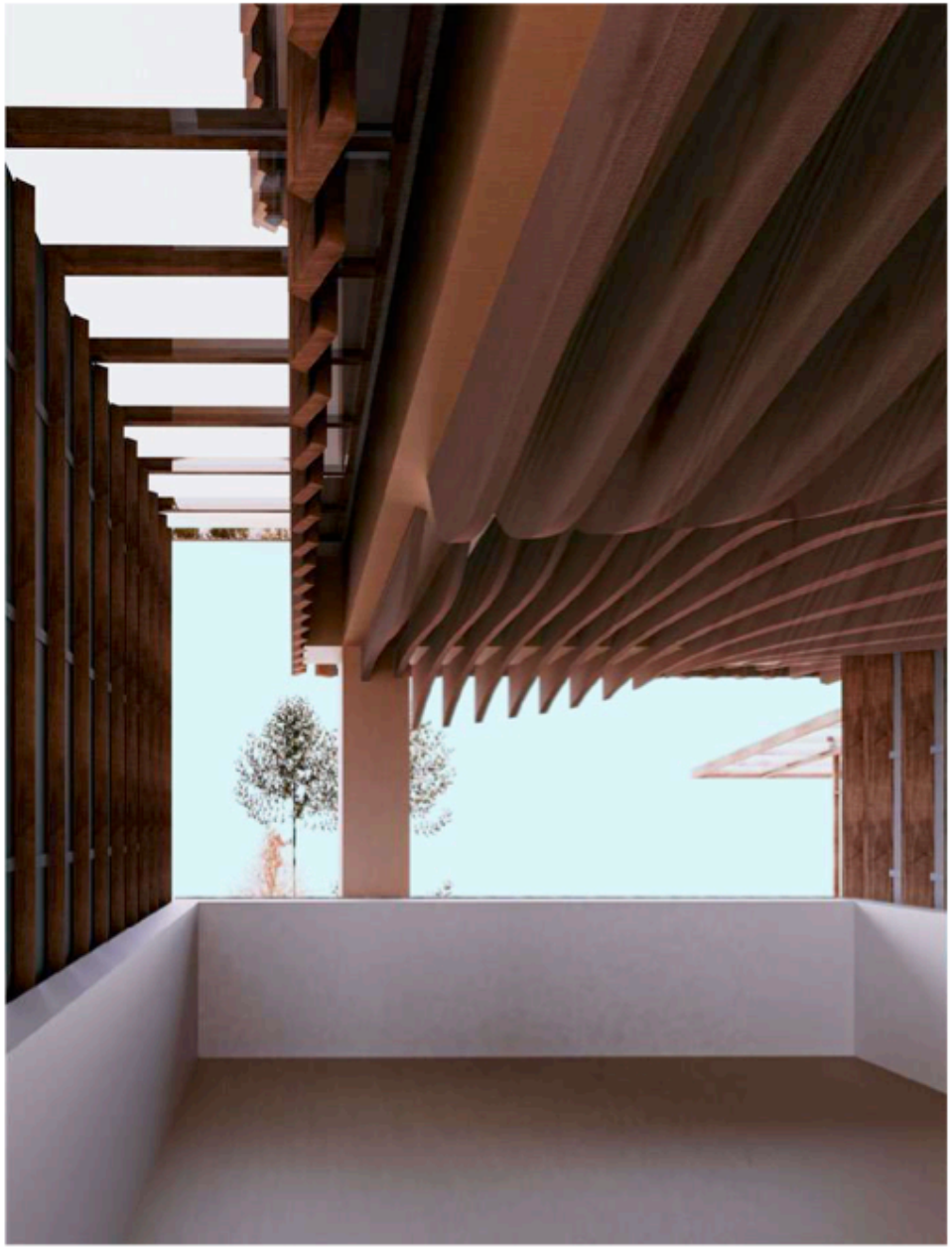
Perspective of Main Entry from the Great Court

-ceiling fixtures intend to mimic the feeling of sitting under the jacaranda tree
-high contrast of materials between lightweight timber & sandstone of adjacent buildings

Perspective of level 3 Student Tea Room

Special Area 1. 'sitting under the jacaranda'

level 2 Perspective of Heritage Atria Ceiling



Ceiling Perspective Study Nook on level 3

Natural Lighting Strategy

- Glazed roofs are all falling south away from the sun path with additional floor plate from the floors above to proved a built in shading system.

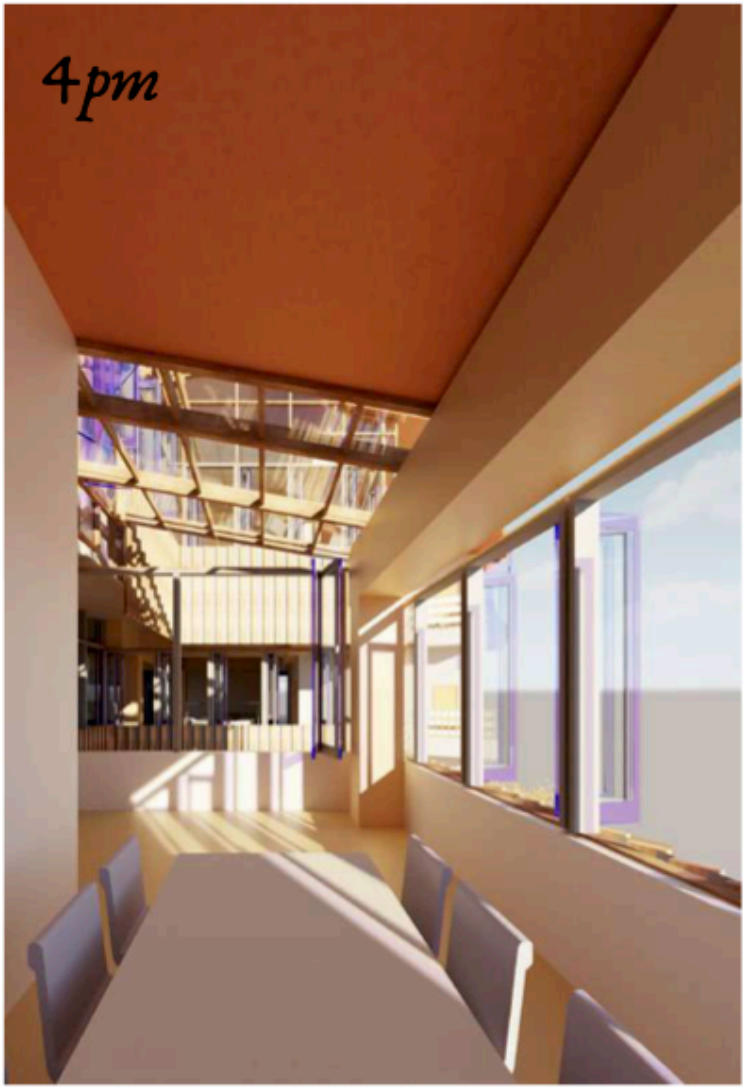
- Dual glazed insulated unit, each glass panel has Low-emissivity (low-e) cloating to resist UV light entering the rooms.

- these rooms are all in shaded defused lighting during most active working hours of the day (9am-3pm)

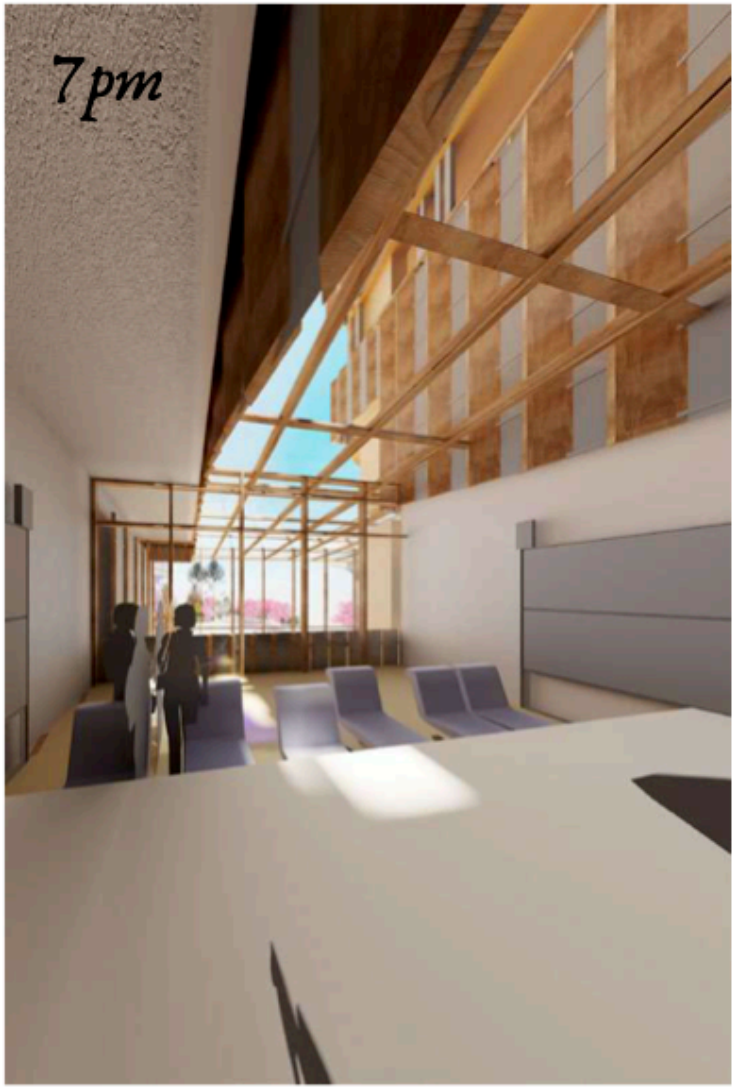
- experimenting with enclosure & exposure of rooms

Tree house: playful between the inside and outside

2. *floating amongst the leaves*

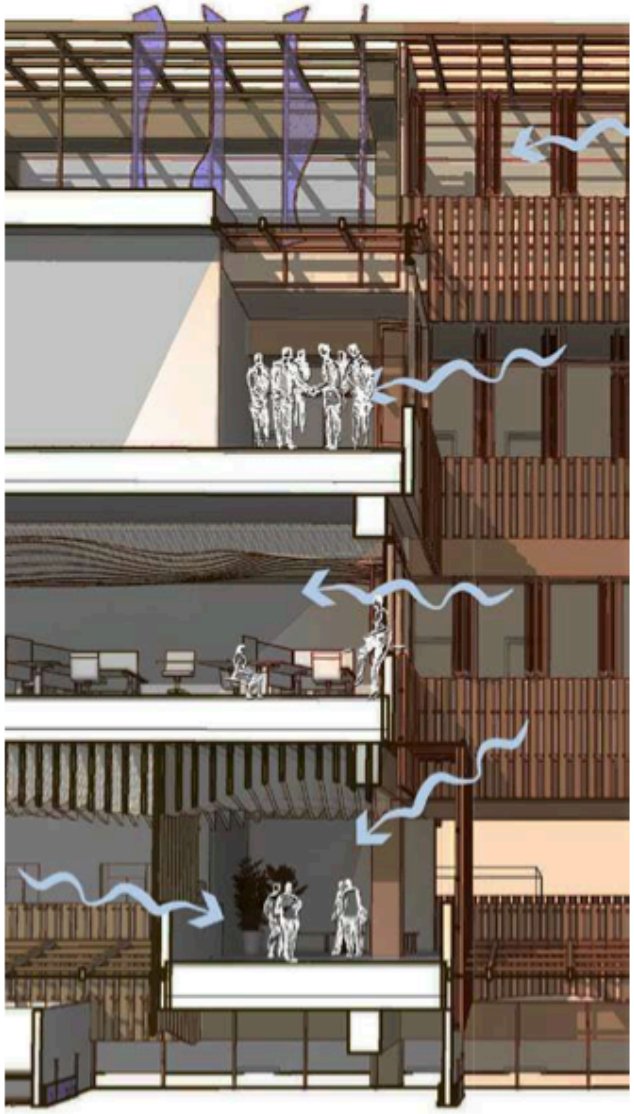


level 5 lectures Breakout Meeting Collab Space



level 2 External *tutorial rooms*

Operability & Ventilation



the southern edge remains shaded and opens up to introduce natural ventilation

comfortable breezes of the Brisbane Climate

Operable Bi-fold windows match the same vertical language of the facade

All rooms next to the operable edge are shared rooms for meetings/hot desk booking. There are the Common spaces for each floor therefore every user group can benefit the experience of 'looking through the tree house'

By locating these room in the shaded southern edge the rooms receive defused light and the cooler breezes.

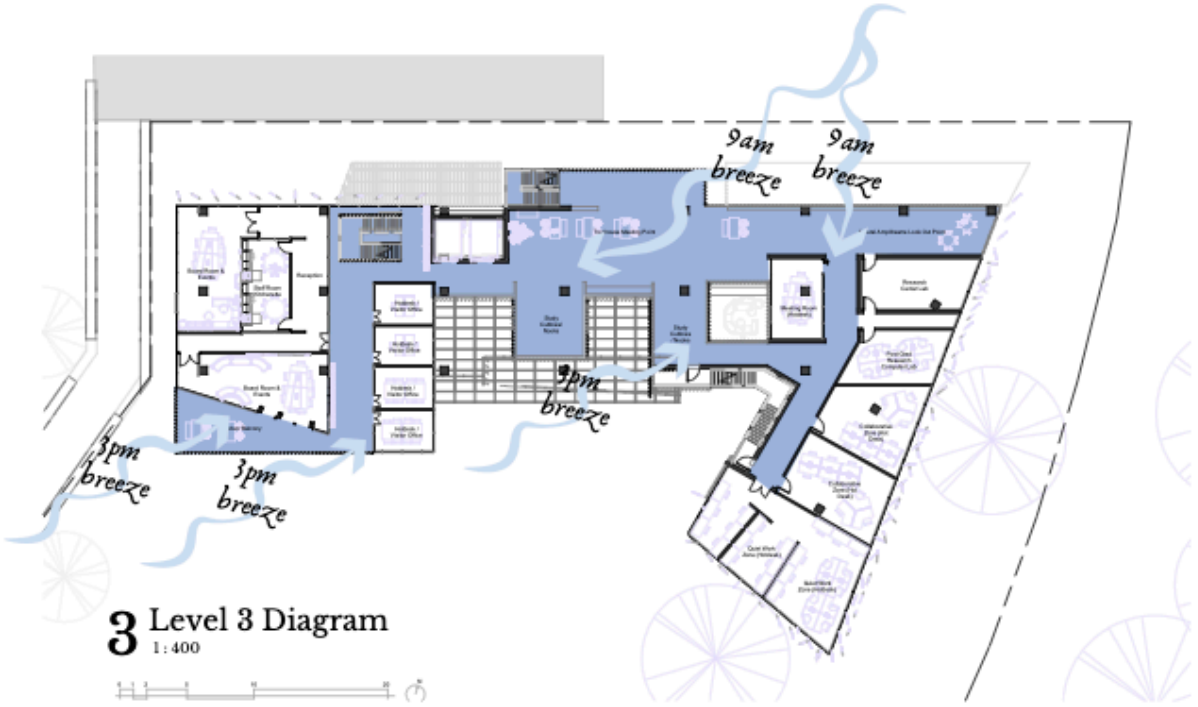
The floor plate is also very thin to further encourage cross ventilation.

Glazing Specification

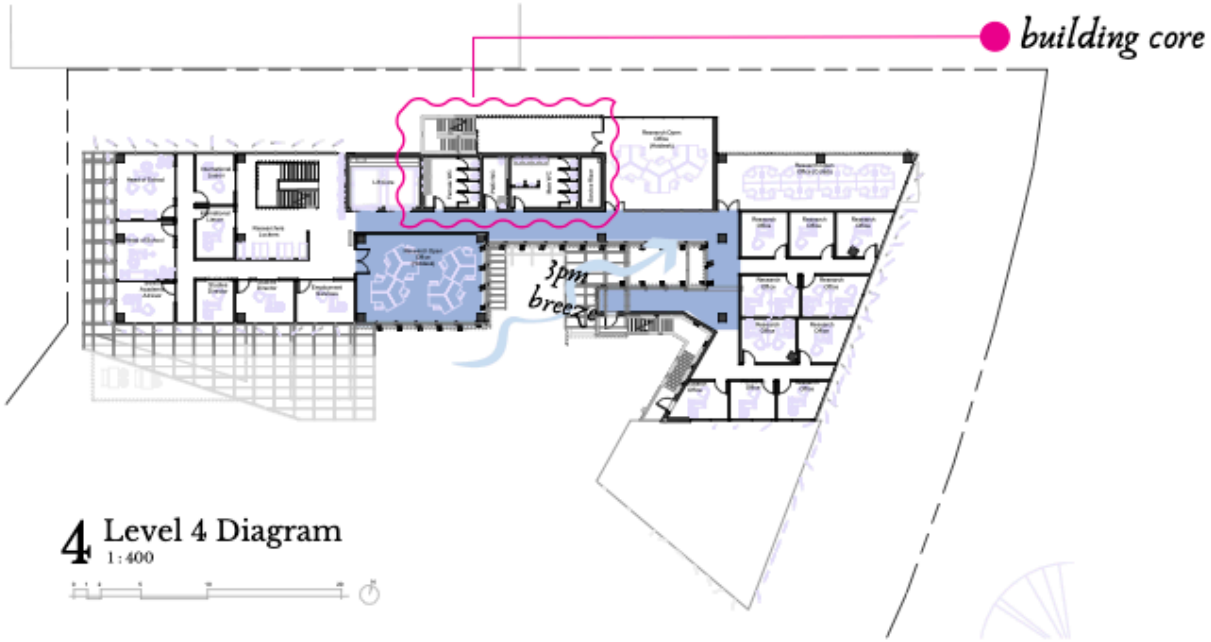
A window wall design wall selected as it is easier to clean and more suitable for the site in the Brisbane. The glazing specified in the G-James facade 651 - 500 series.
The glass panel sheet is 1500 wide.

-Heat Strengthen, laminate glass with PVB inter Layer for external glazing.
-Insulated Glass Unit dual glazed system
-6mm Super green / 12mm Air Gap / 6mm Low-e on Clear #3
-low-e coating prevents heat retention and coming through the window , reflect light and glare away

The glass will be tinted green and have laminated heat treated coating on top.
Uw insulation value = 2.70
Window Solar Heat gain Co-effecient = 0.36
Visible Transmittance = 0.50



3 Level 3 Diagram
1 : 400



4 Level 4 Diagram
1 : 400

Playful Shifting Floor Plates

- the core is located in the center northern edge of the building.

level 3 - besides the elevator there is a break in the core, as open level
floor plan of the tree house

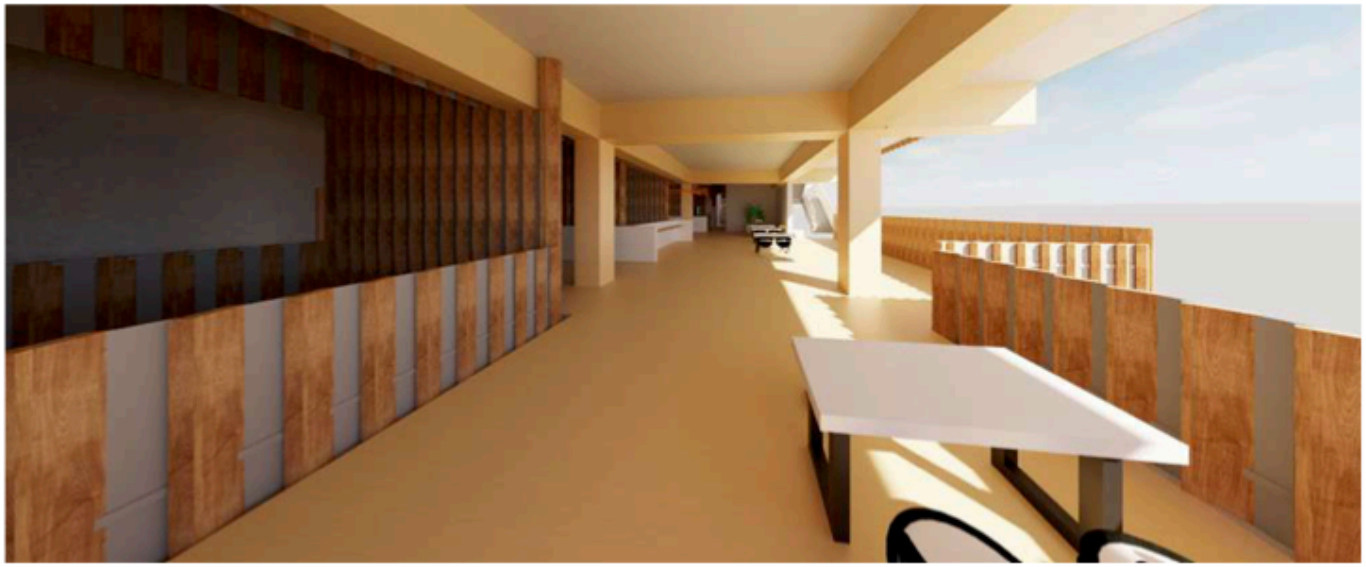
shown in blue is the circulation area which is completely operable & open to the outdoors.

Playful changing floor plates allows users of each level to have their own 'identity' and spaces.

The open operable edge creates a secondary 'outdoors' spatial experience, forming a fluid landscape within each level

The ceiling heights are all 800mm taller in these spaces with exposed CLT structure

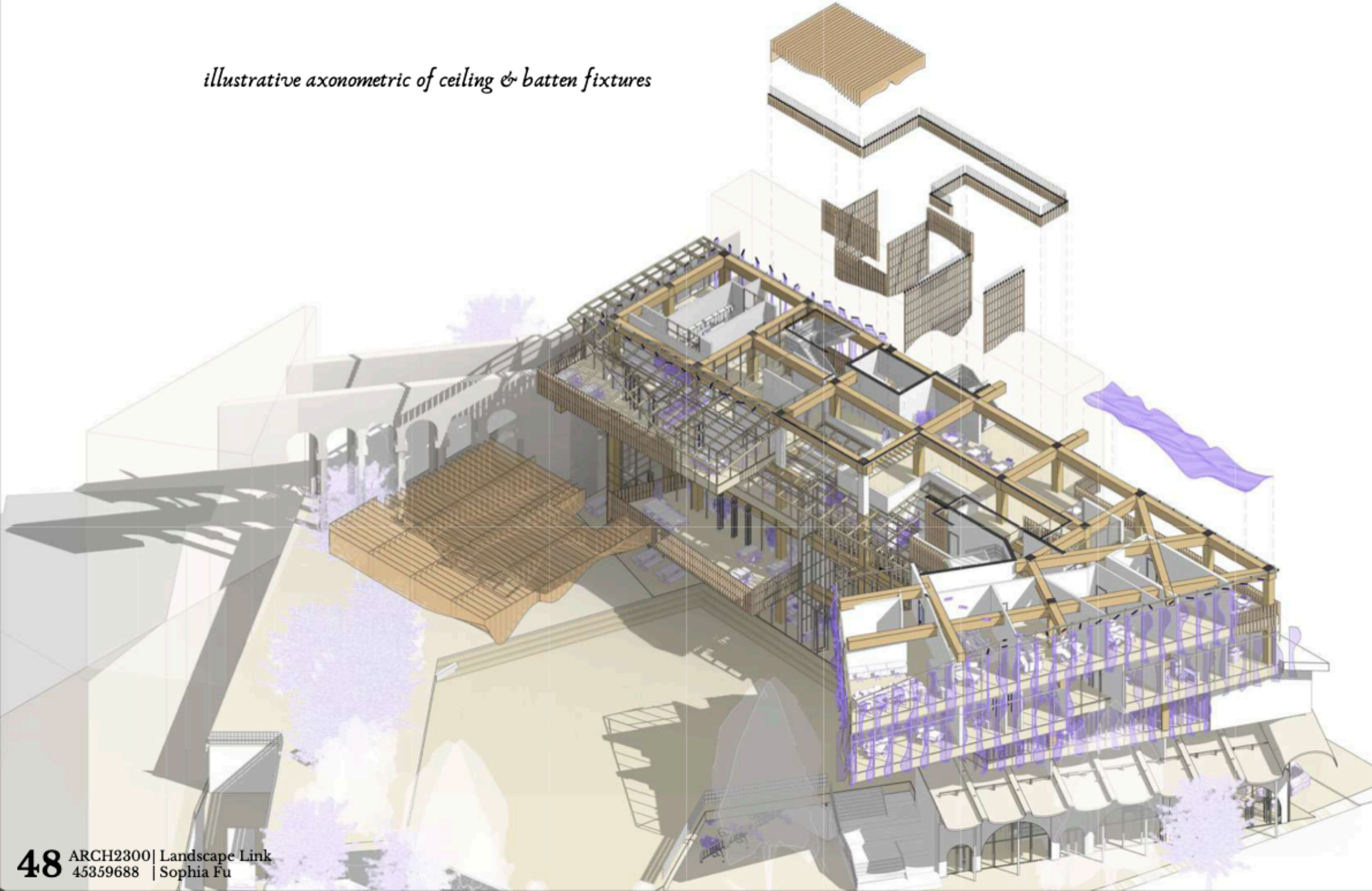
level 3 perspective of interior terrain

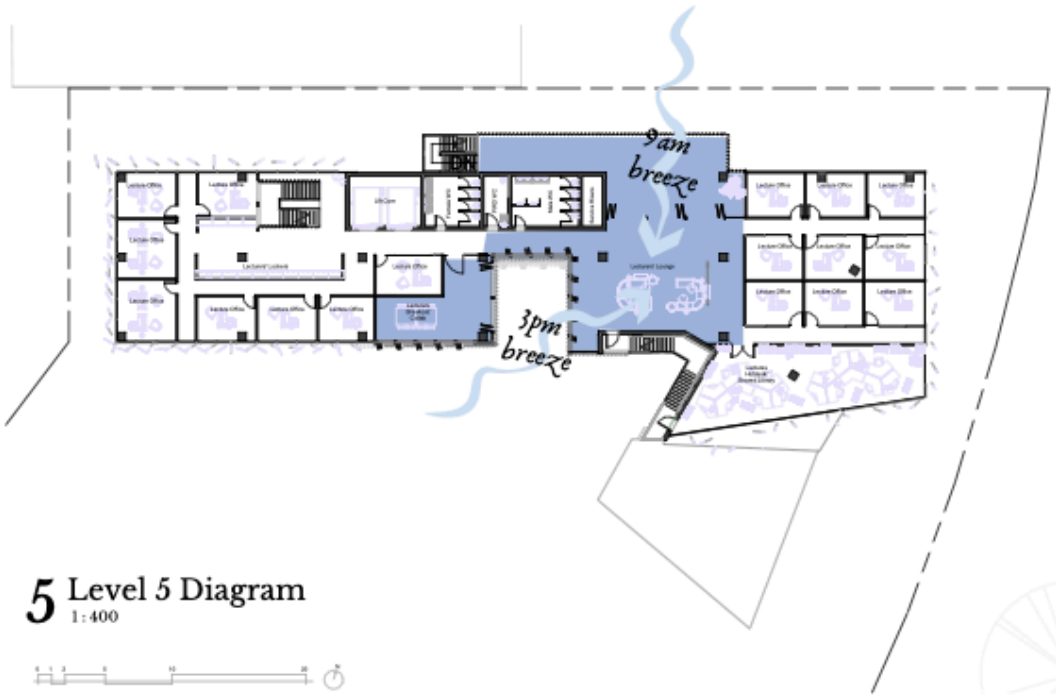


level 3 perspective of interior terrain

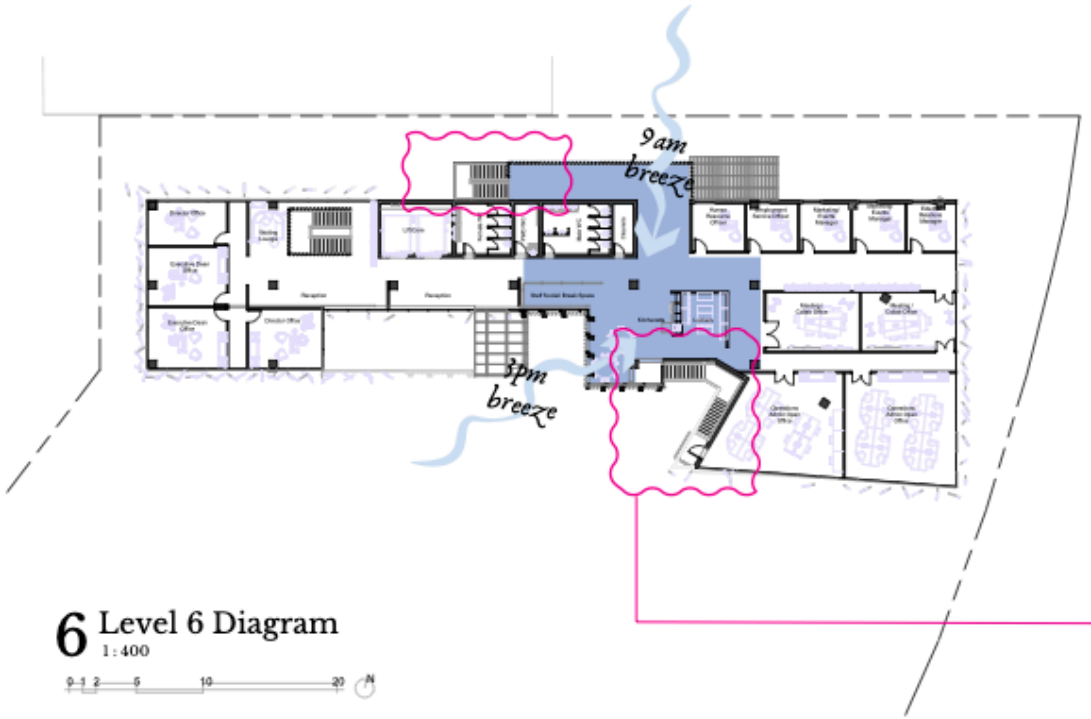
level 3 perspective of interior terrain

illustrative axonometric of ceiling & batten fixtures





5 Level 5 Diagram
1 : 400



6 Level 6 Diagram
1 : 400

Sustainability

Shallow floor plates to further encourage cross ventilation and bring lots of defused natural lighting.

Passive Ventilation & HVAC - mechanical air conditioning is only required during extreme weather. The building is otherwise well naturally ventilated and meticulously shaded by the facade system.

Passive Lighting - The facade system feature 3 different shading conditions for the appropriate rooms and the oriented to the Brisbane sun. Due to shallow floor plate all room have plenty of natural lighting to minimize excessive indoor lighting

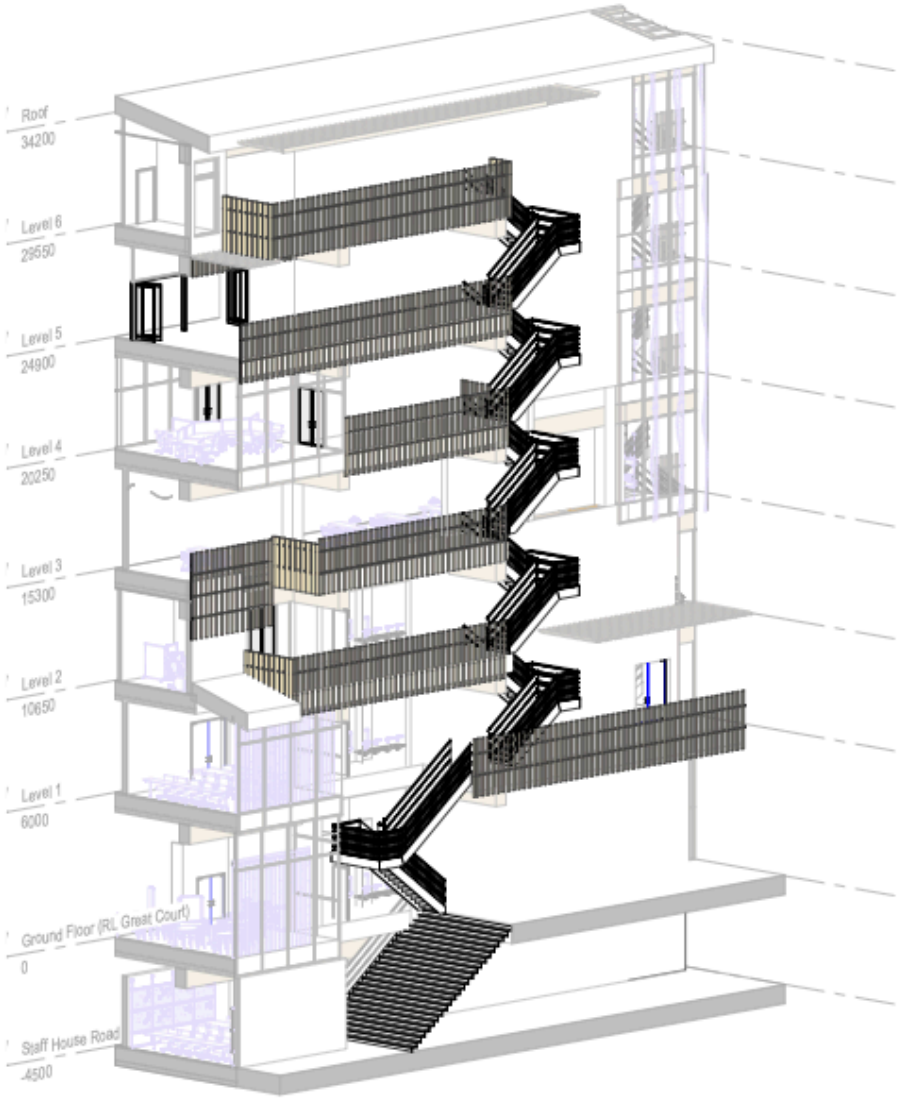
These feature combined all together allows the building to run smoothly and use zero power at it most operable situation. The building also has HVAC and light fixtures to suit users preferences. However, the reduction on relying on Light,Ventilation and temperate consumption will hugely effect and mitigate excessive energy use and carbon emissions

Materials - embodied energy

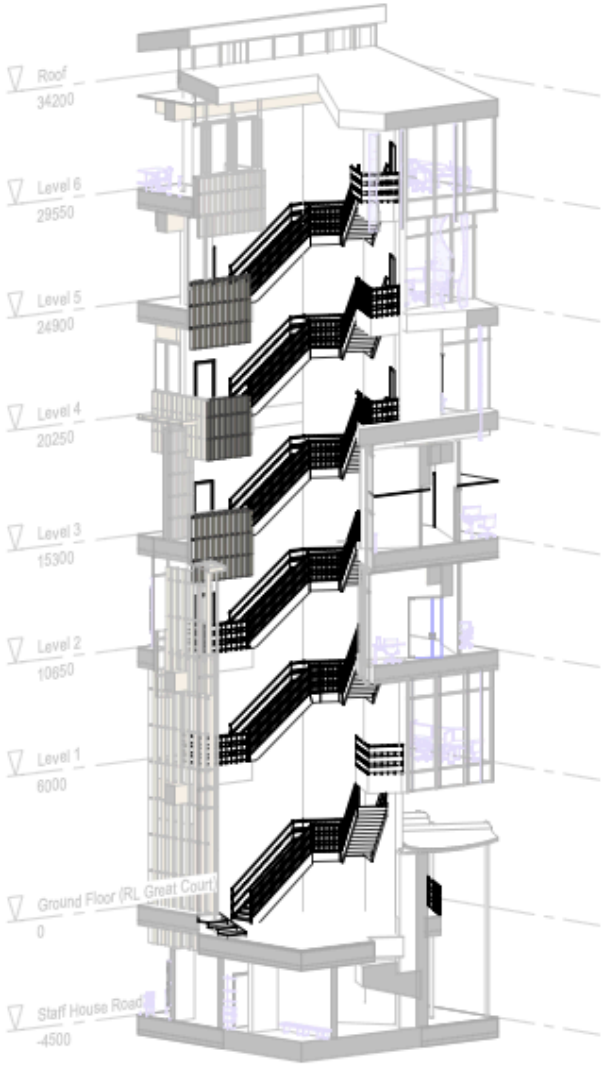
The use of the a CLT instead of concrete benefits the environment more. As a material, concrete consumes less carbon, but it is not renewable and has an unsustainable life cycle. The disposal of used concrete is much more difficult and costly (cradle-grave) as well as the initial material for creating concrete is a finite resource. The entire process consumes and stored carbon but does not have any value adding factors to the environment.

Whereas, CLT consumes more carbon but is a renewable material and the replanted trees can offset the greenhouse gases consumed making the energy consumed
neutral in the long term. The trees can not only offset the initial carbon-dioxide consumed but continue to produce oxygen. The material itself it also recyclable and reuse for many other proposes besides construction (cradle to cradle opportunities). Thus, making a CLT structural system a far more sustainable material to use as it more a better material life cycle.

fire stairs



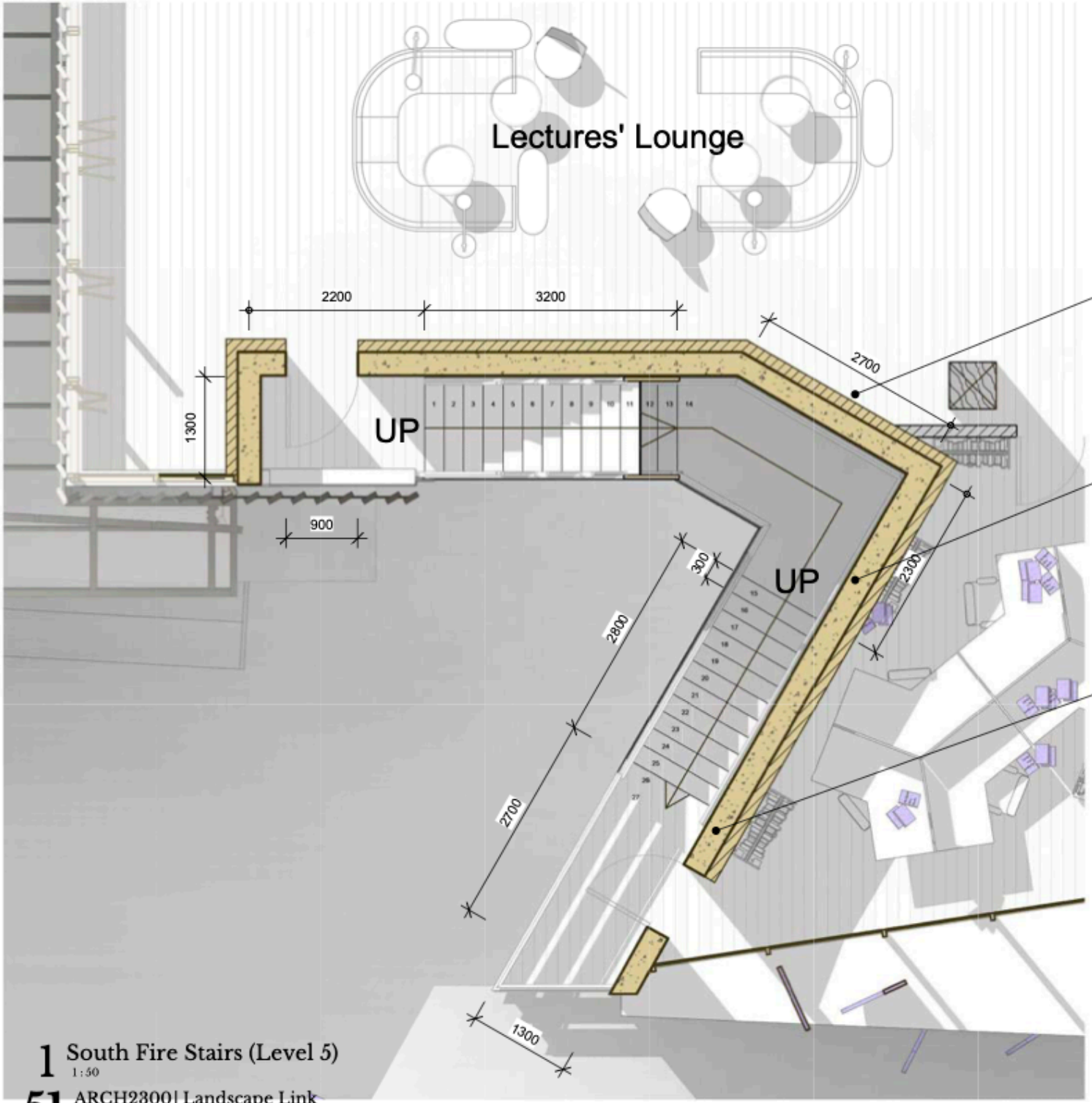
1 North Fire Stairs



2 South Fire Stairs

FS01

Fire Stairs Design
1 : 50



50mm 3-ply CLT wall

Concrete Masonry Block
(190 mm)

Bradford Fireseal rockwool insulation
(80 mm)

USG Boral Firestop plasterboard
(16mm)

In-situ concrete wall (300 mm)

1 South Fire Stairs (Level 5)
1 : 50

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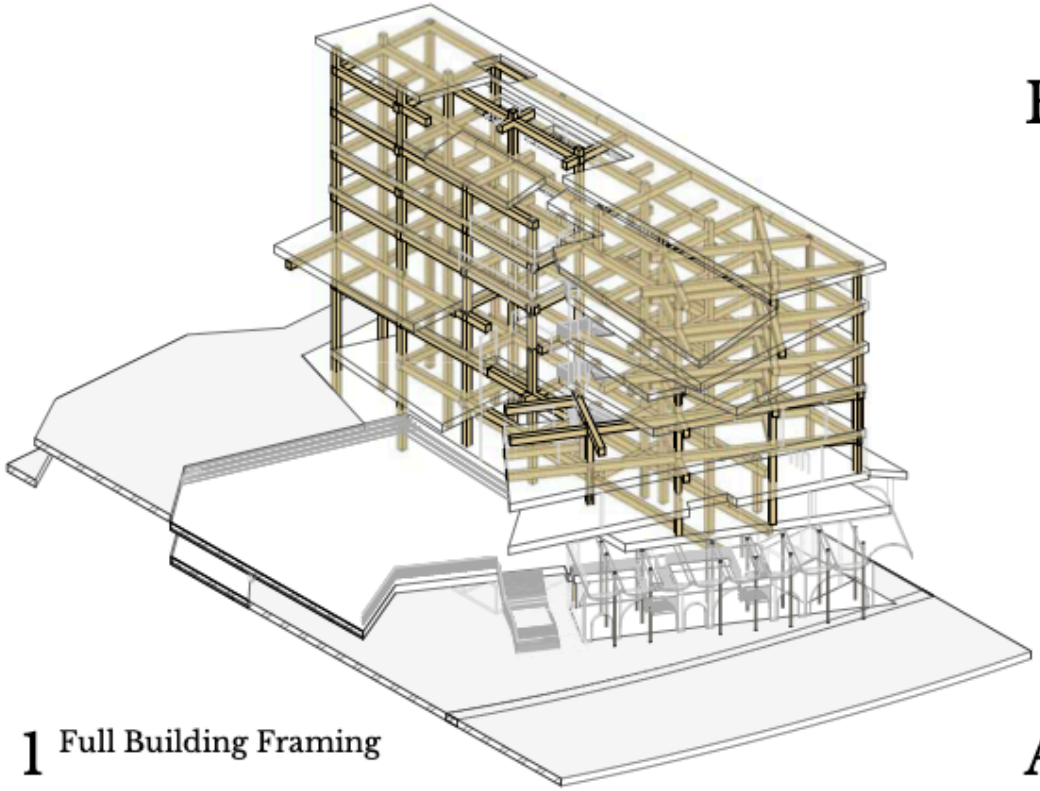
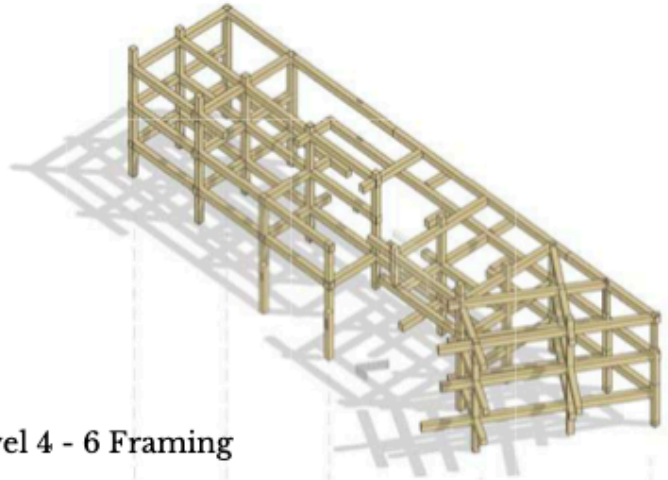
Structural Grid

Each floor plan is complete different but maintains the same structural grid, 6meter x 9 meters for efficiency. There are also 2 sets of beams which runs diagonally as the building form follows the edge of the site.

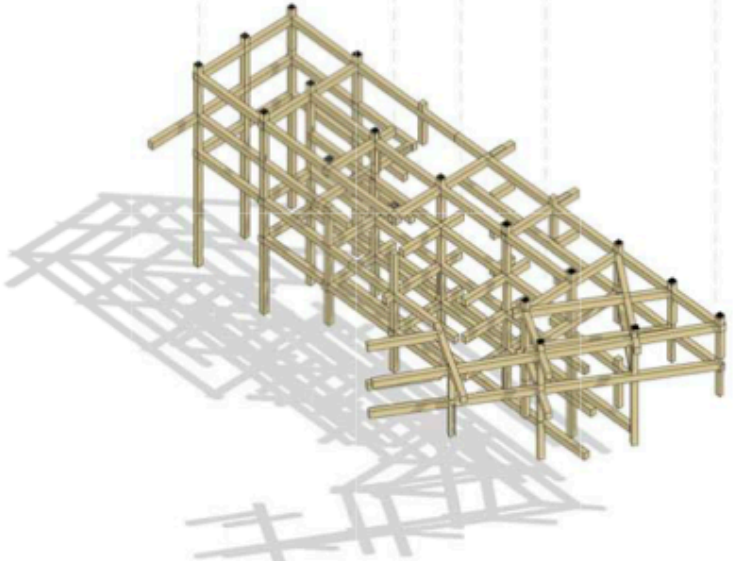
The structure grid is taken be the dimensions of the great courts colonnade ratios and proportions. The following 2 pages show how the grid is in use in 2 very different floor layouts.



1 Full Building Framing



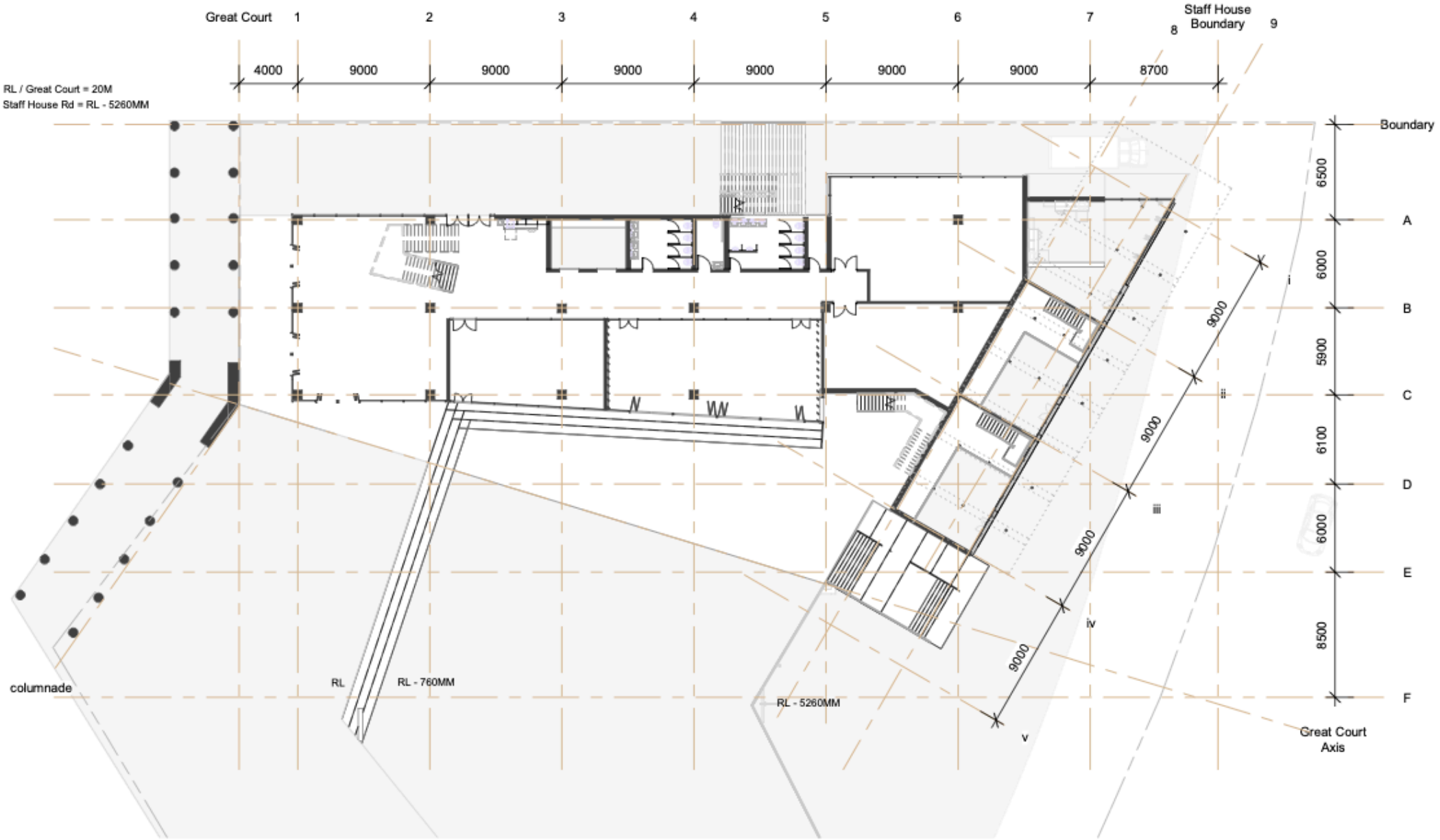
B Level 4 - 6 Framing



A Ground to level 3 Framing

1 Ground Floor Strutural Grid
1 : 250

D001
Structure Grid
1 : 250



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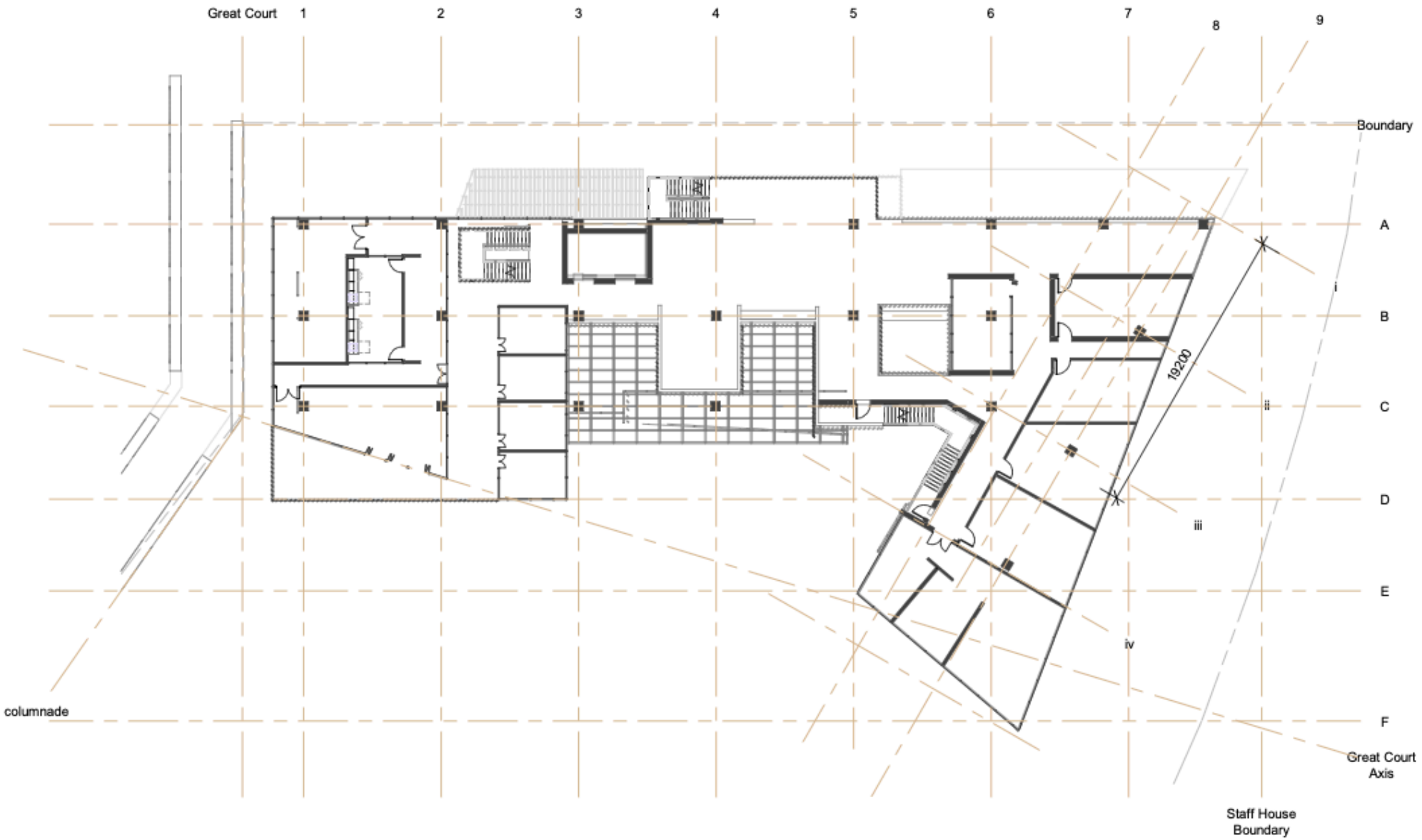
D002

Level 3 Structural Grid
1 : 250

1 Level 3 Diagram
1 : 250



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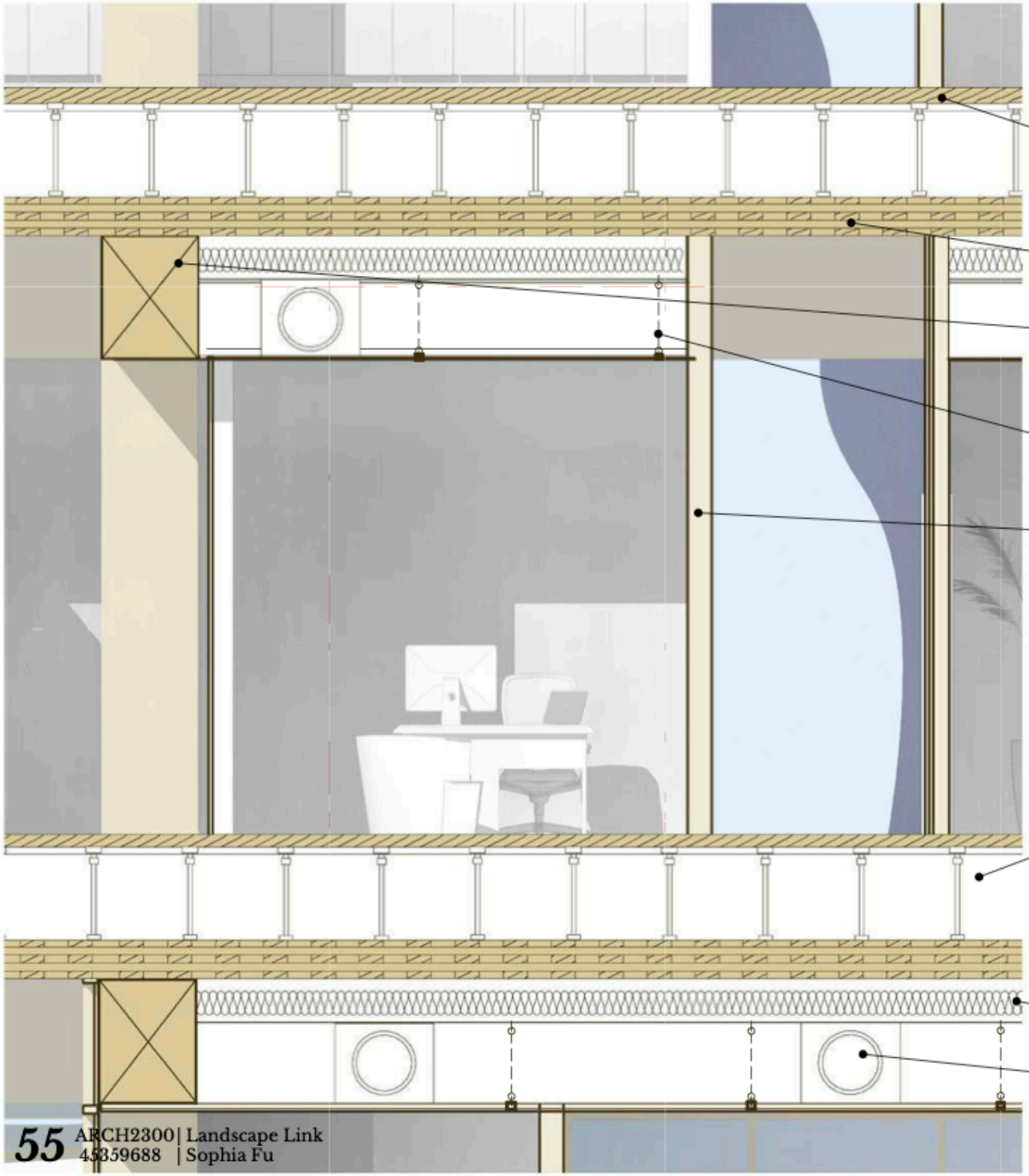
1 Building Services Callout
1 : 25

FS05
Services & HVAC
1 : 25



Timber Floor Board Finish

250MM CLT Slab Flooring
5 ply x 50mm panels

600 x 800mm
Glulam Beam

600 x 800mm
Glulam Column

metal ceiling panel hanging tie

150mm CLT wall
(Crosslam F1601)
3 ply x 50mm

600mm Access
Floor Pedestal, As
Per Asp Access Floors

space for water, electrical and
other services

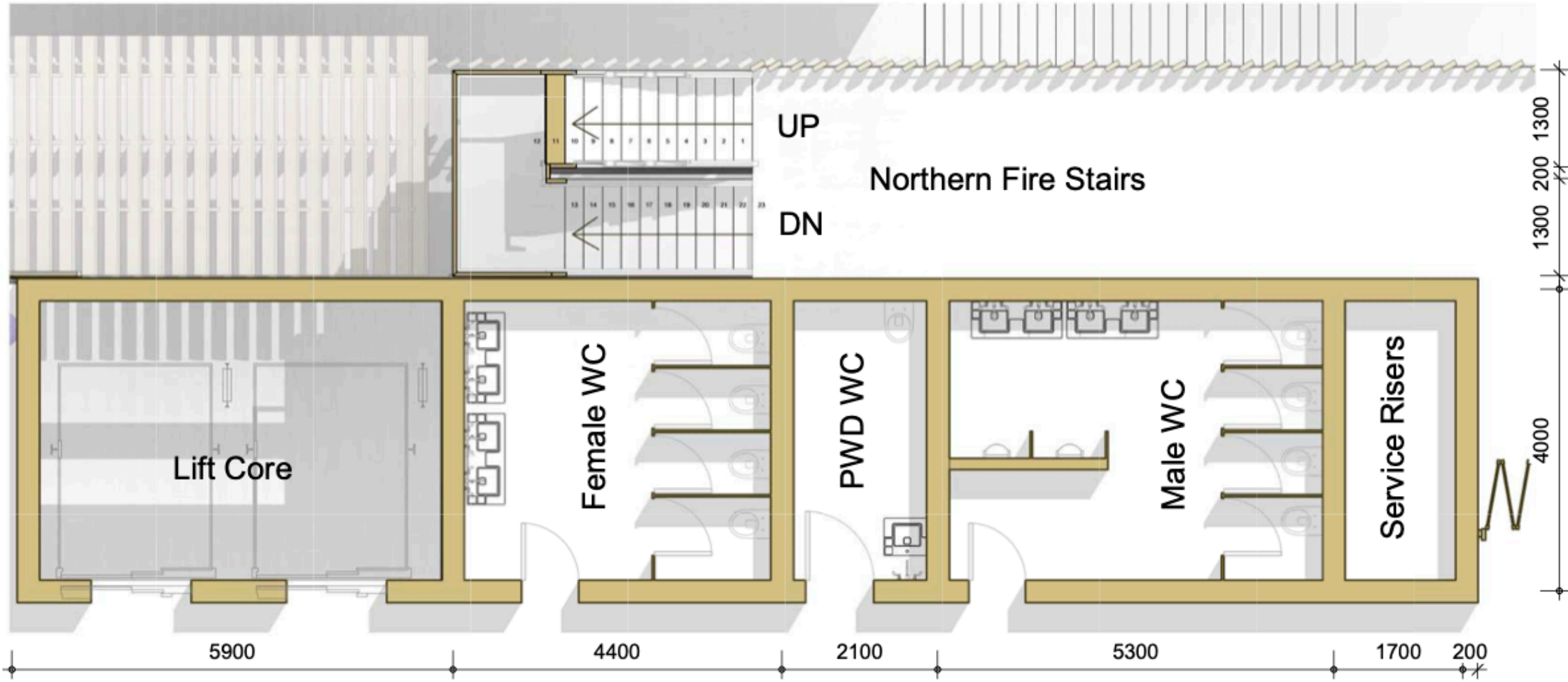
Insulation

HVAC

1 Service Core & North Fire Stairs
1 : 50

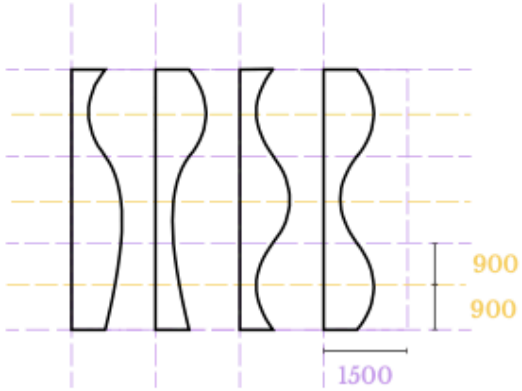
FS00

Service Core Design & North Fire Stairs
1 : 50



Facade System

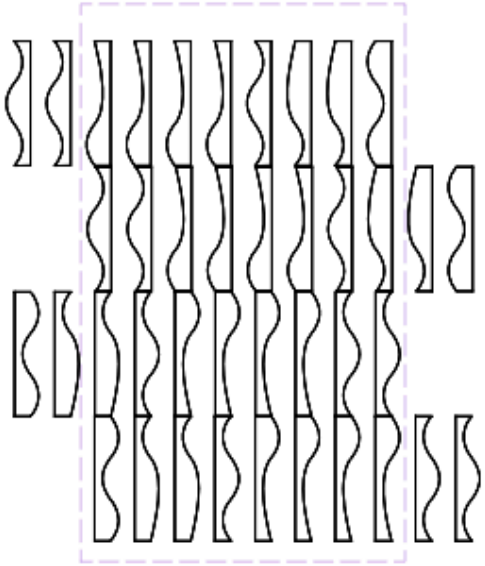
4 original shapes



curtain wall
mullion grid

1500mm (width)
offsett from floor to floor
900mm (height)

Moving like Cartesian Geometry



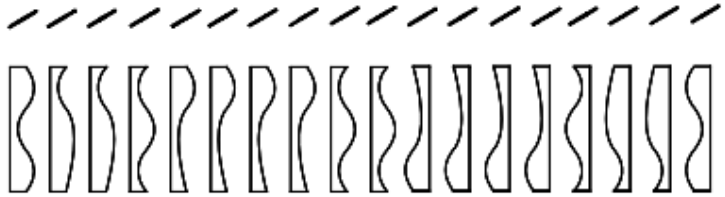
shifted to the left

flipped 180

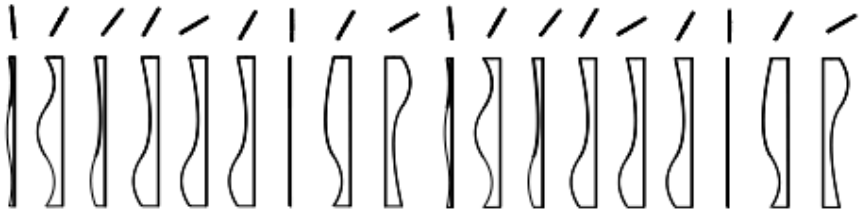
shifted to the left

original

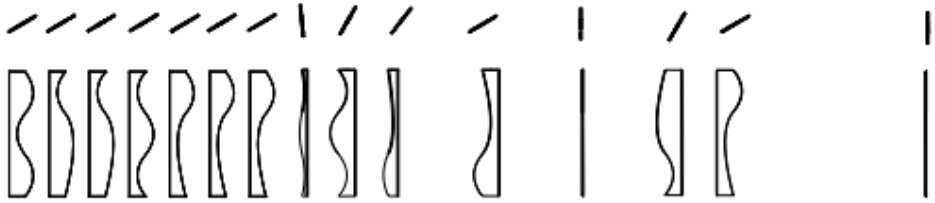
Closed/Shaded/Compression (type 1)



Permeable/Frosted - Looking through the tree (type 2)

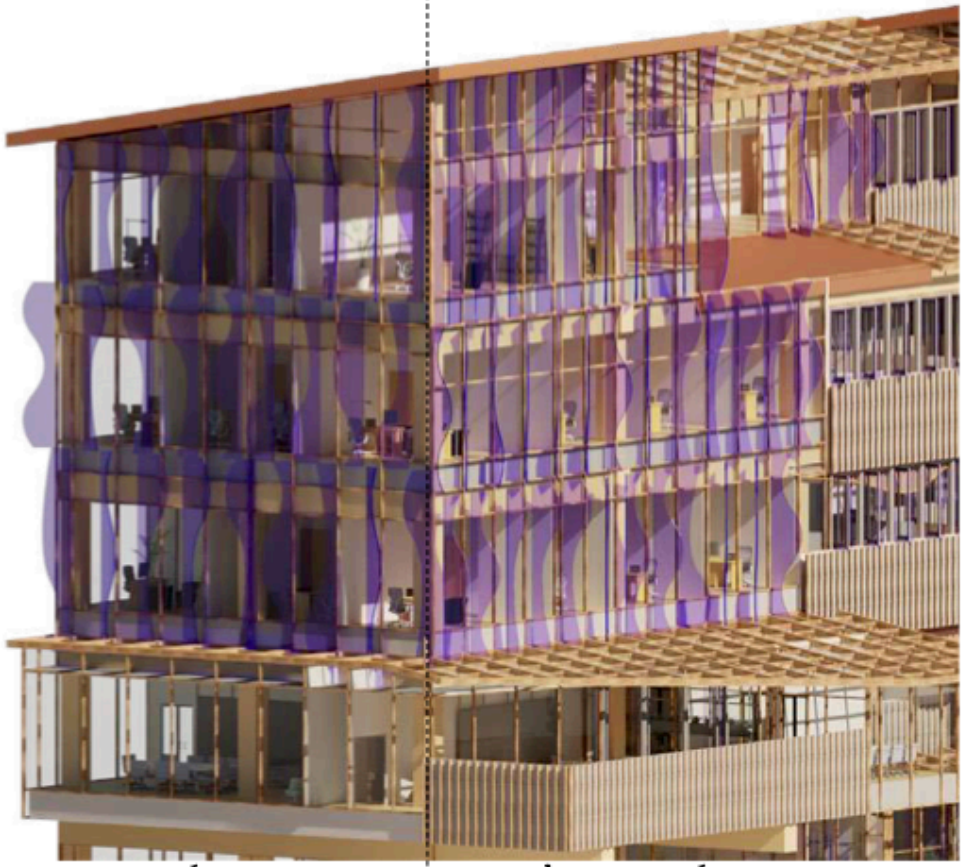


Open/Clear/Colour - exposed expandsion (type 3)



example of facade transition through the stages

Shading



Western Facade (type 2)

Southern Facade (type 2 & 3)

Eastern Facade (type 1)

Facade system has 3 phase which mimics 3 stages of the Jacaranda flower/ Pod:

1. Bloom,
2. Fall Of The Flower/Seed
3. Exposed Bare Branches