



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

KYLAH LOOTS

FOODSCAPE

Harvest, grow, share

'You prepare a table before me...'



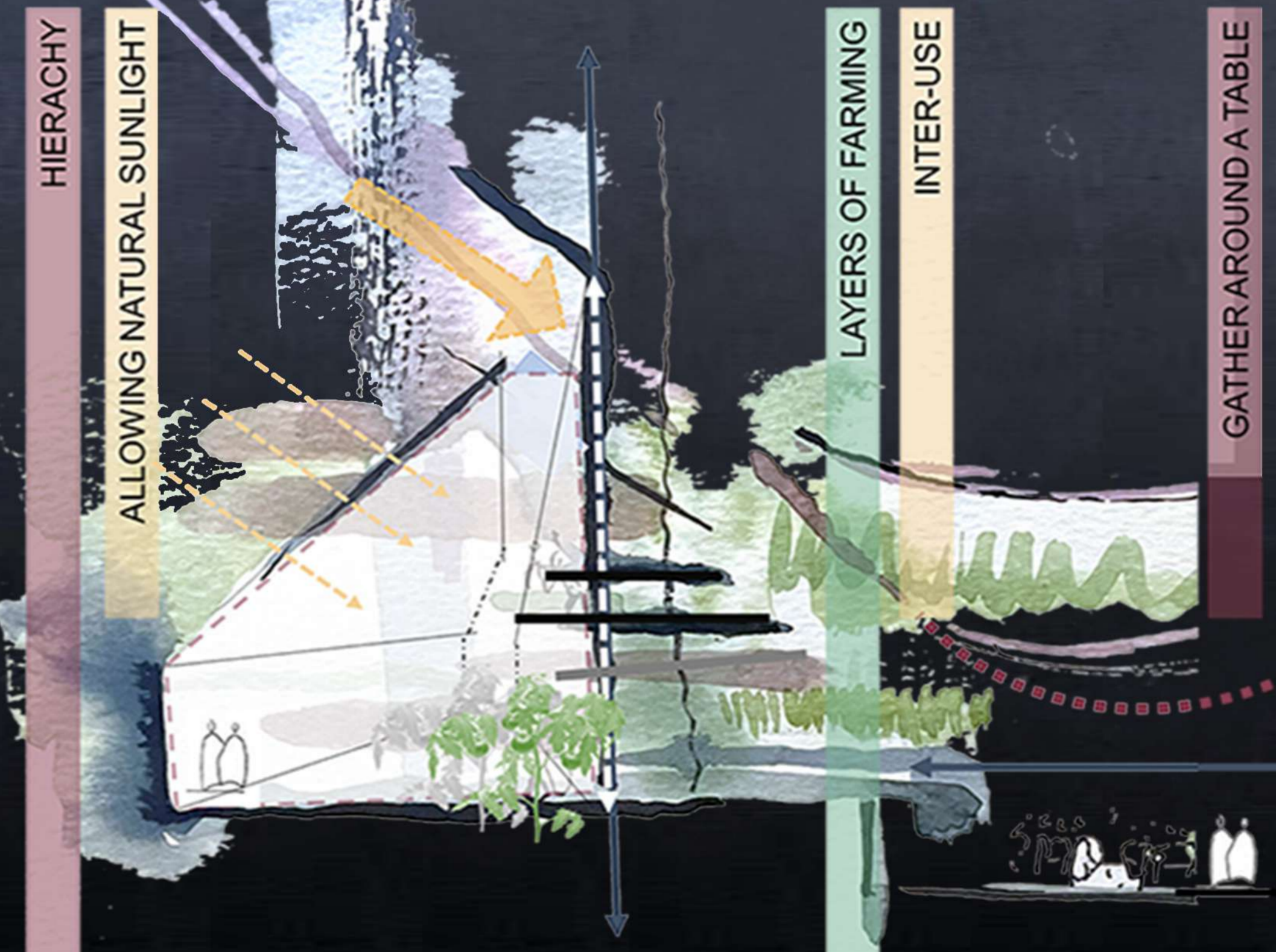
FOODSCAPE

Harvest, grow, share
 'You prepare a table before me...'



ARCHITECTURE

PROJECT PROPOSAL



OUR TIME IS RUNNING OUT

Cuisine (n)

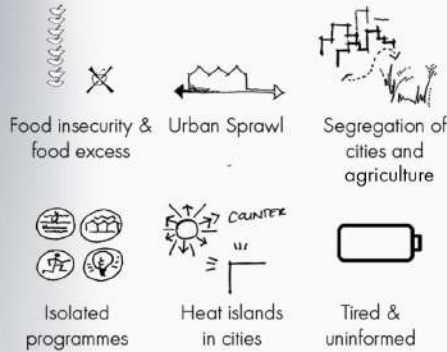
is the distinctive style of cooking associated with a particular culture or region, encompassing the ingredients, techniques, and traditions that create a unique culinary experience

Urban agriculture (n)

is the practice of cultivating and producing food within urban environments, utilizing various typologies and integrating agriculture intentionally into the built environment, contributing to food security, sustainability, and community development.

A table (n)

in the language of architecture, is a structure of togetherness and a stage where stories take their seats, flavor incepts culture, and where nutrition transforms into communion.



GLOBAL PROBLEMS

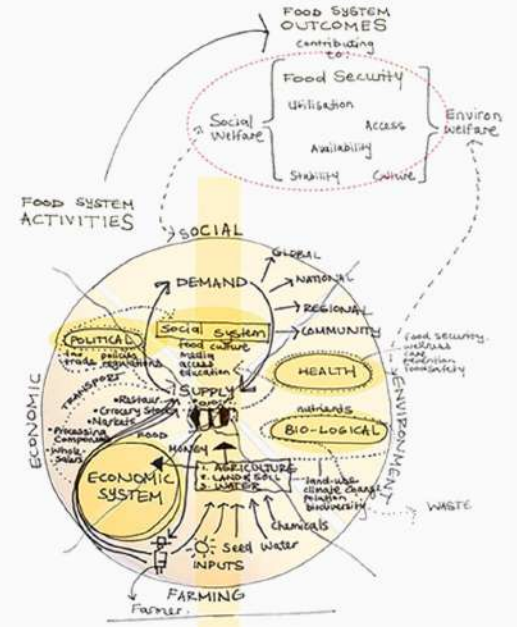
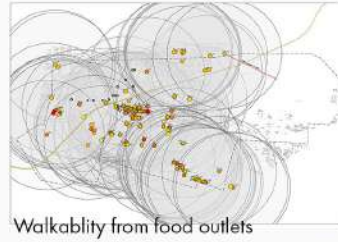
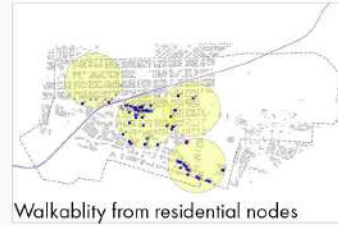
1. Disconnect between nature and building
2. Disconnect of Park Street
3. Lost Space
4. Little access to freshness

LOCAL PROBLEMS

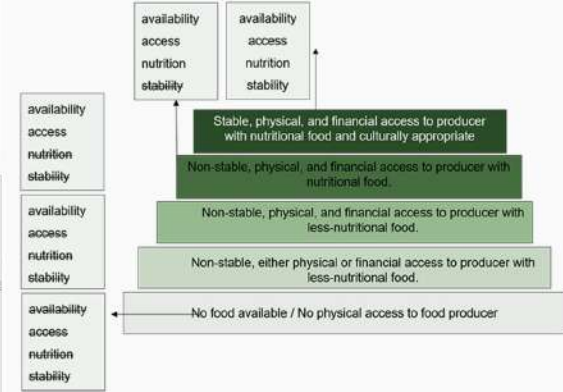
GENERAL QUESTION

How to increase food security in a city by introducing urban agriculture as a way to nullify food deserts caused by segregation of cities and agriculture?

RESEARCH PROJECT: FOOD SECURITY IN HATFIELD



FOOD SECURITY WITHIN FOOD SYSTEM



NUANCED FOOD SECURITY TAXONOMY

S

- 1. schools and educational institutions increase its impact, reach and development.
- 2. availability of water source.
- 3. proximity to student population - collaboration, partnership, and vibrant inputs.
- 4. active urban farm
- 5. the temperate climate of PTA
- 6. wide range of stakeholders and learning lab.

O

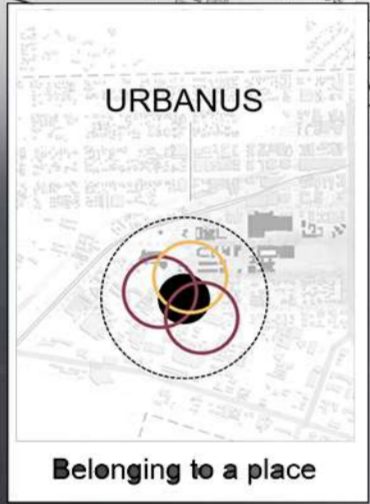
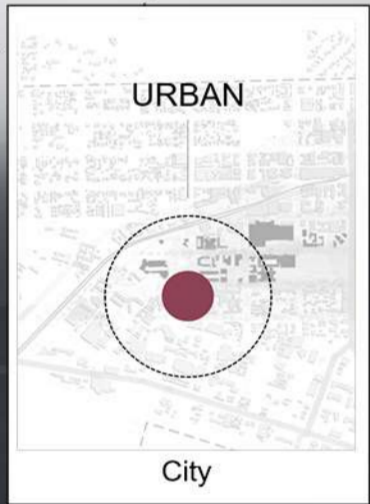
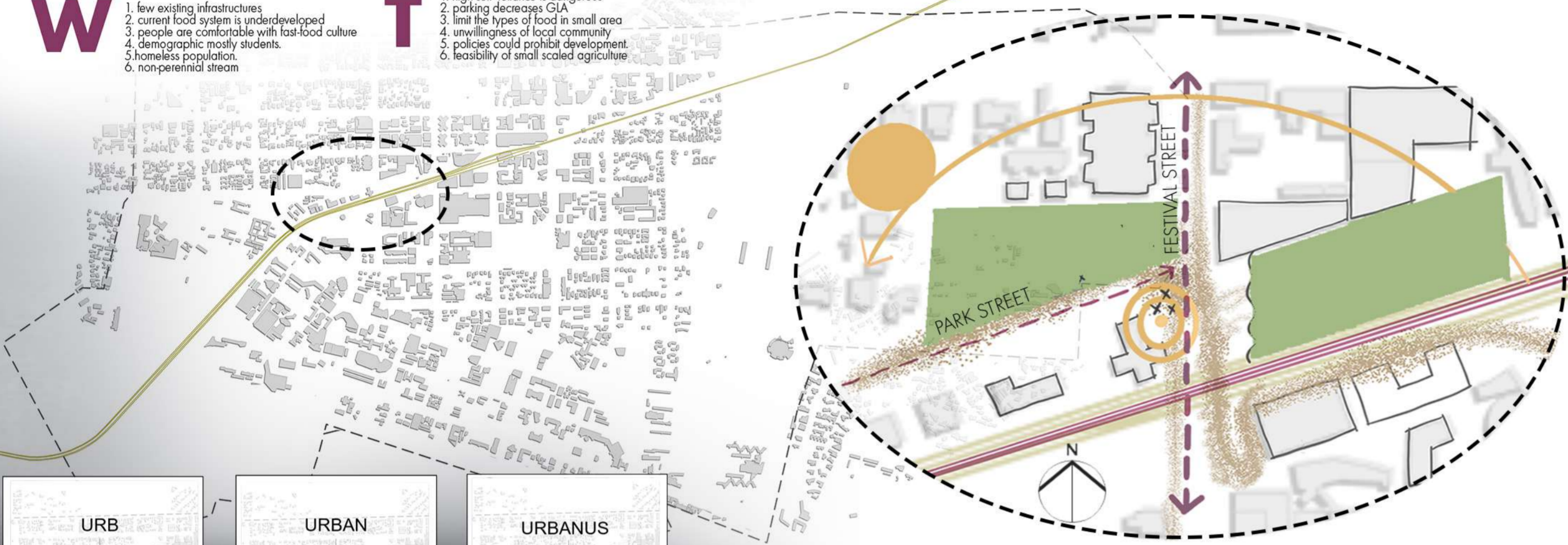
- 1. environmental food trends
- 2. investor interest because of its uniqueness.
- 3. foot traffic, increase interest and GLA
- 4. university - rapid development.
- 5. water harvesting
- 6. different jobs opportunities

W

- 1. few existing infrastructures
- 2. current food system is underdeveloped
- 3. people are comfortable with fast-food culture
- 4. demographic mostly students.
- 5. homeless population.
- 6. non-perennial stream

T

- 1. high self-reliance is dangerous
- 2. parking decreases GLA
- 3. limit the types of food in small area
- 4. unwillingness of local community
- 5. policies could prohibit development.
- 6. feasibility of small scaled agriculture



(WordSense, 2023)



1. shared street



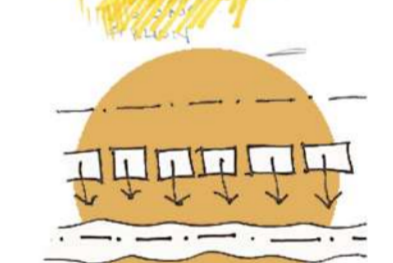
2. pre-manufacturing & timber



3. service as infrastructure



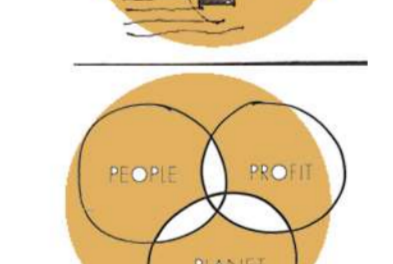
4. connection to earth & food as connector



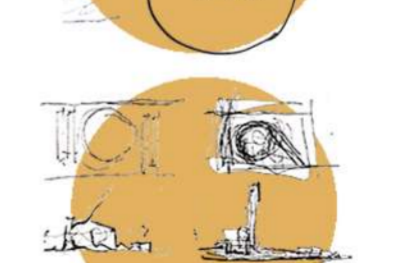
5. market on street front



6. open door of the farm



7. tripple bottom line & lost space & CPUs



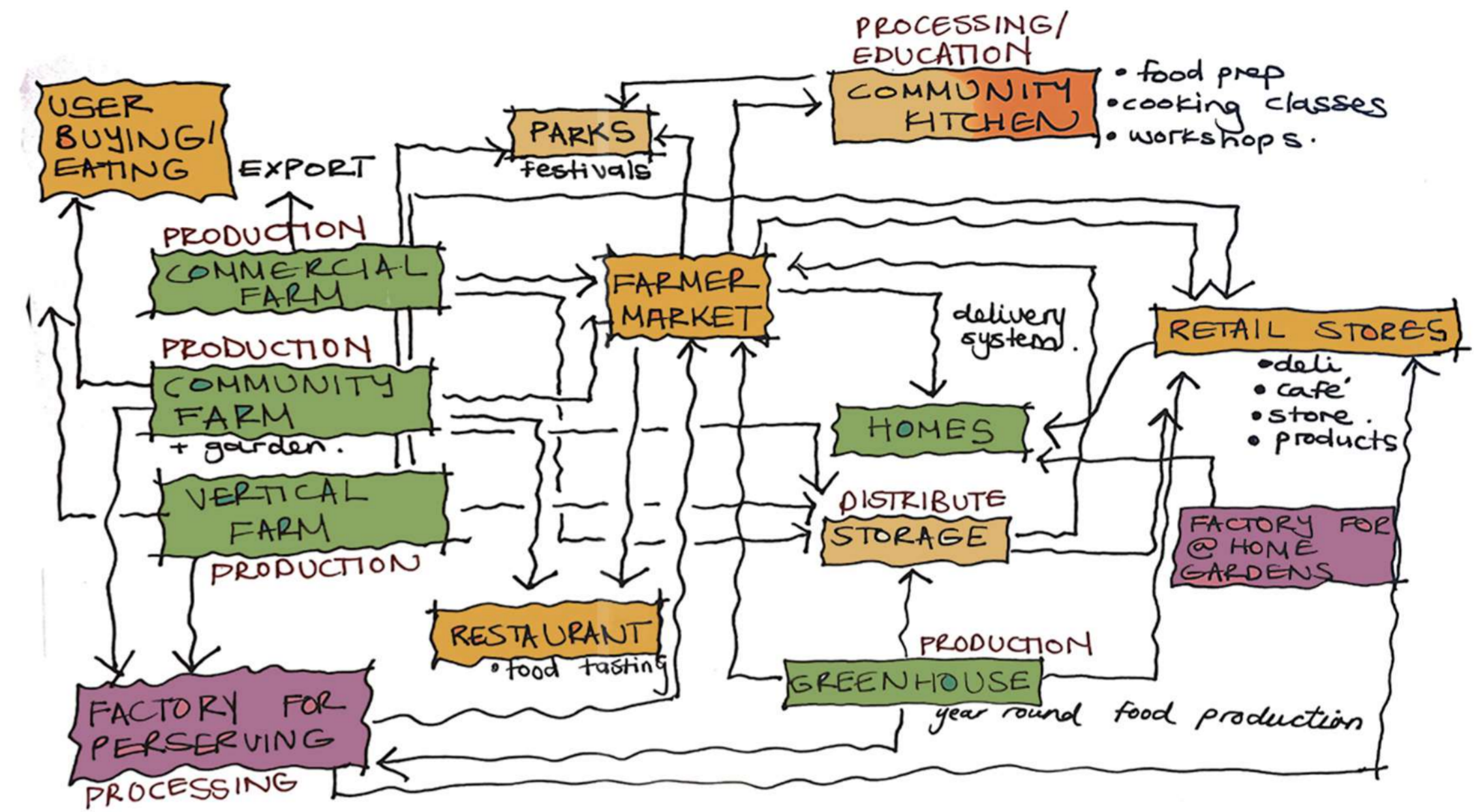
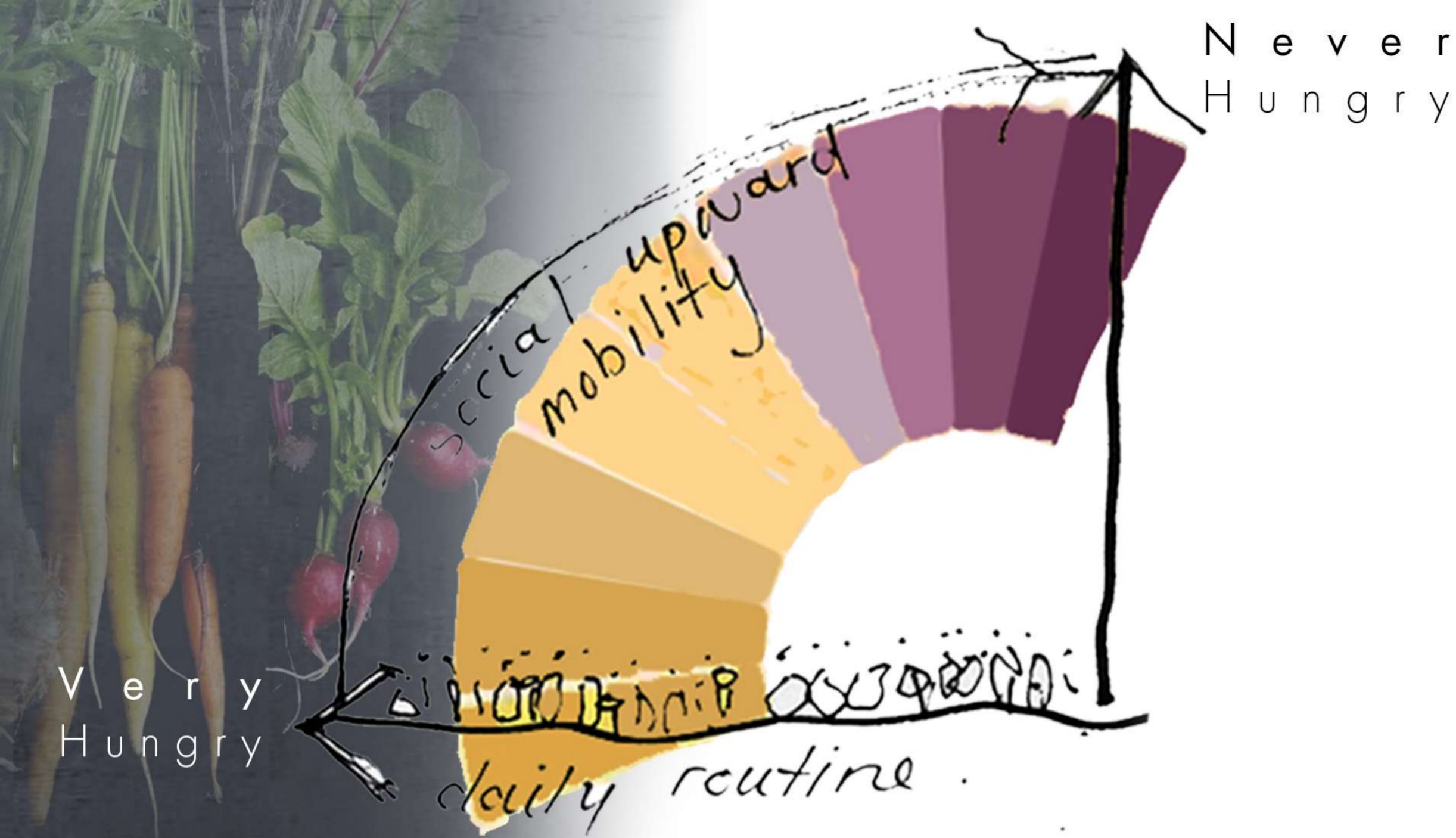
8. eating architecture



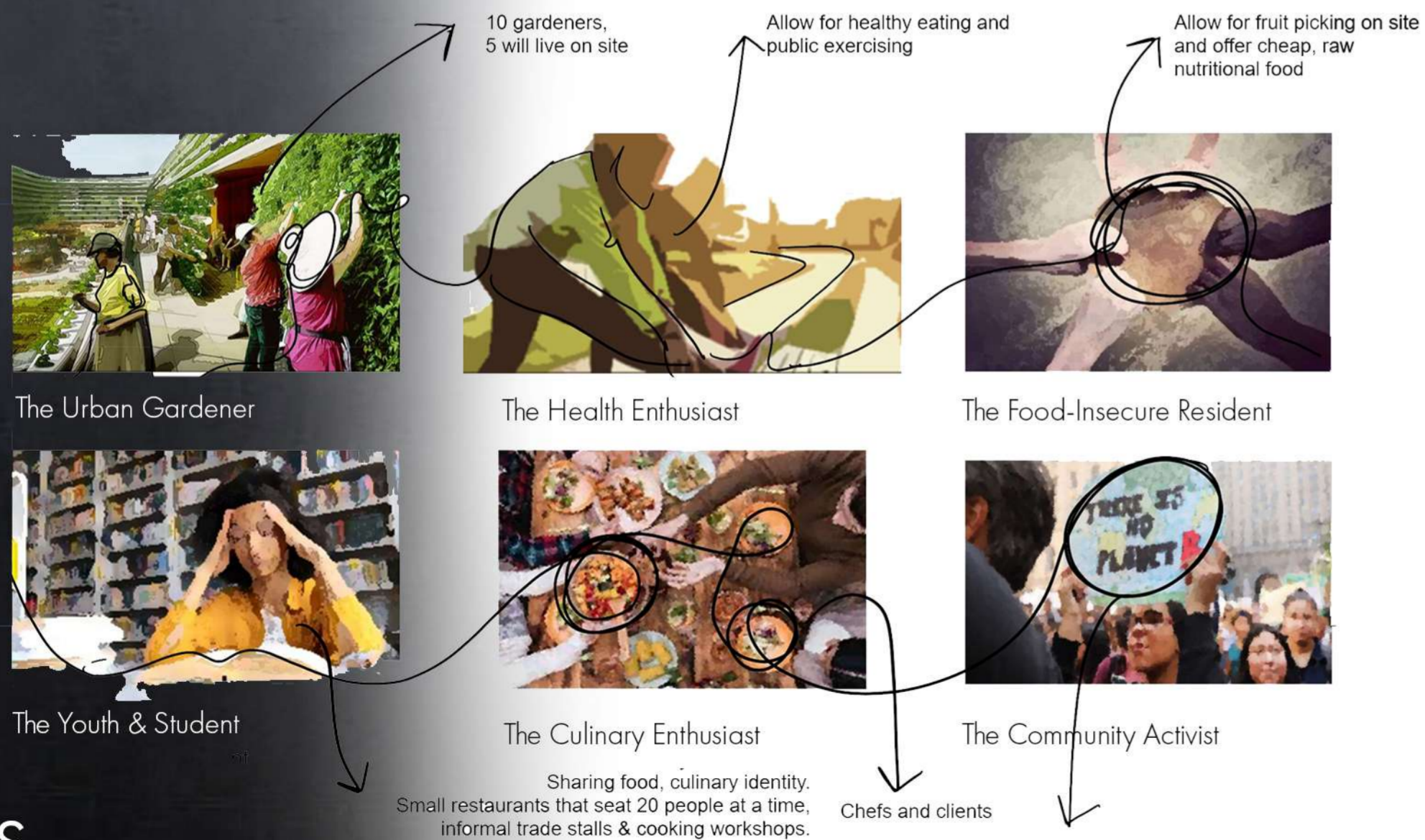
9. allowing city to continue

SPATIAL ANALYSIS OF SITE

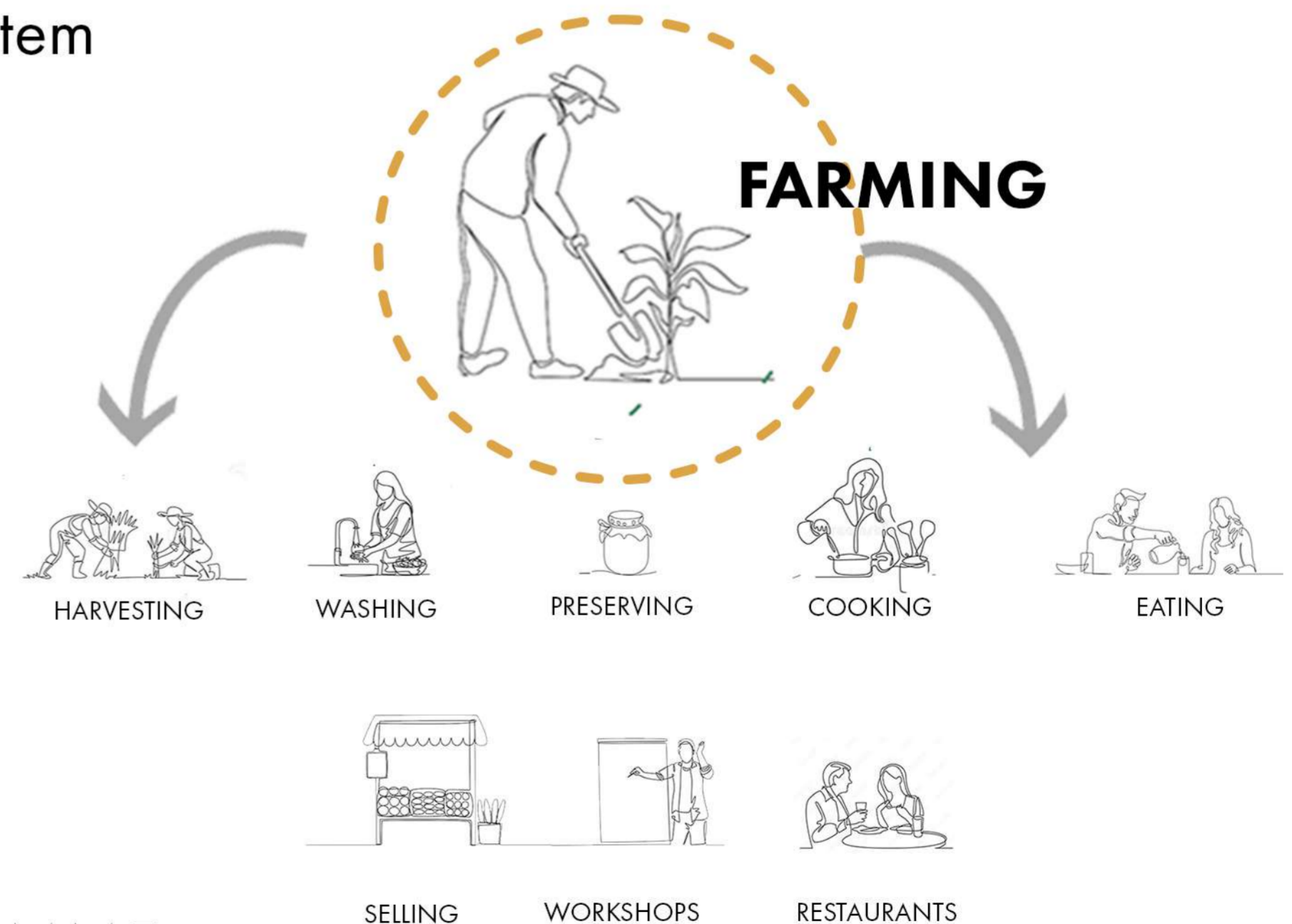
PRECEDENTS



Food System



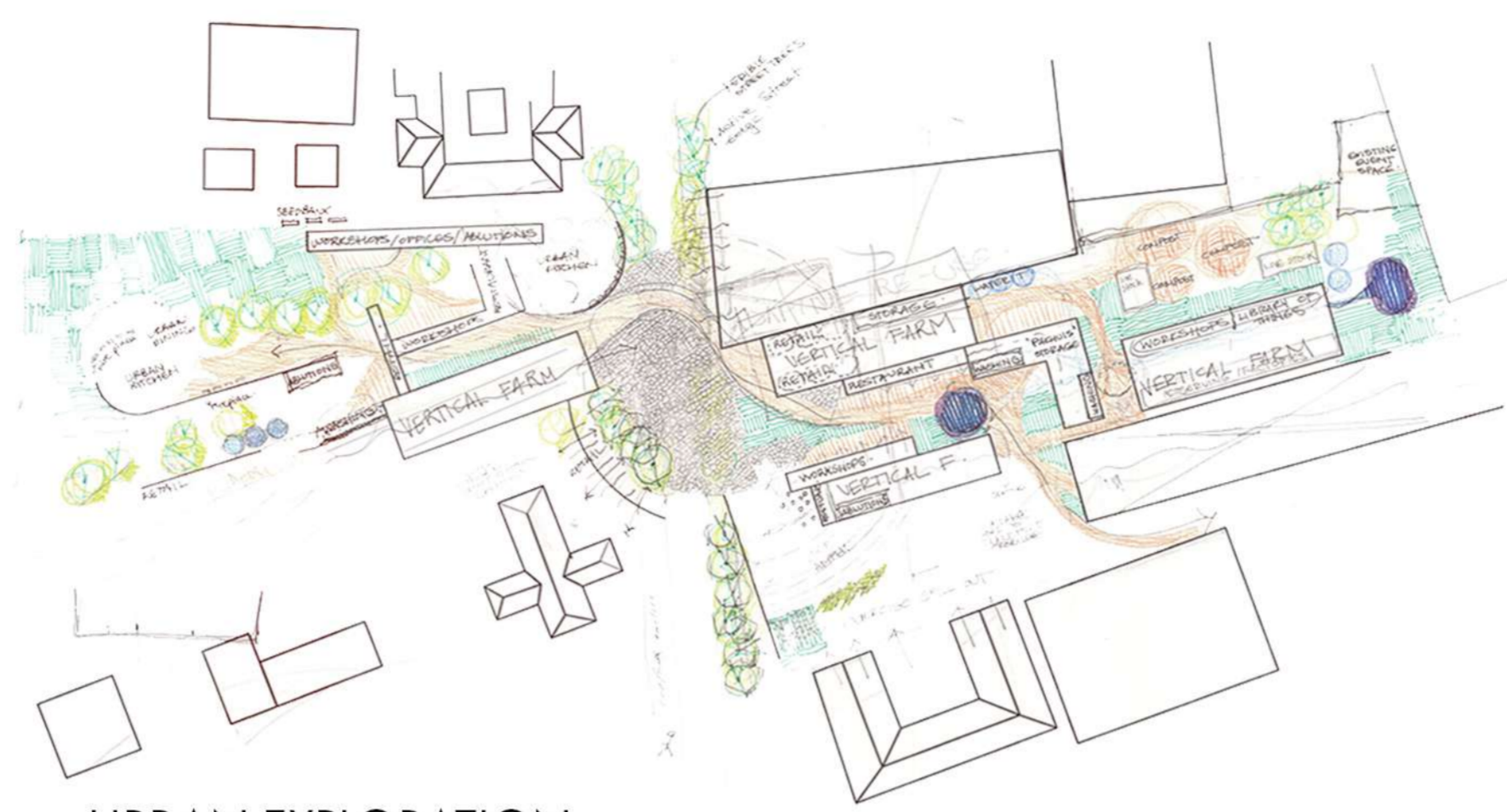
USERS



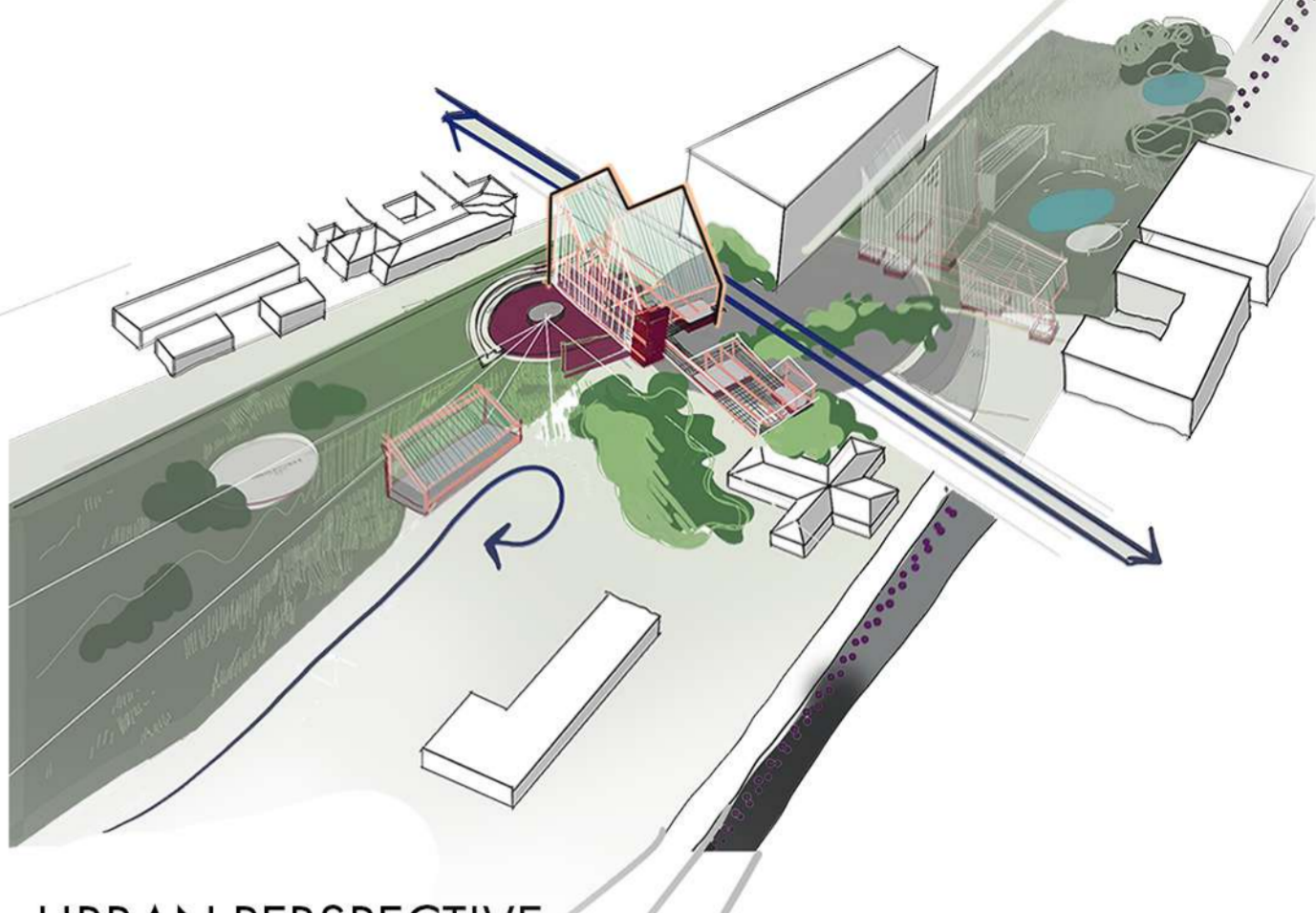
PROGRAMME



URBAN INTEGRATION



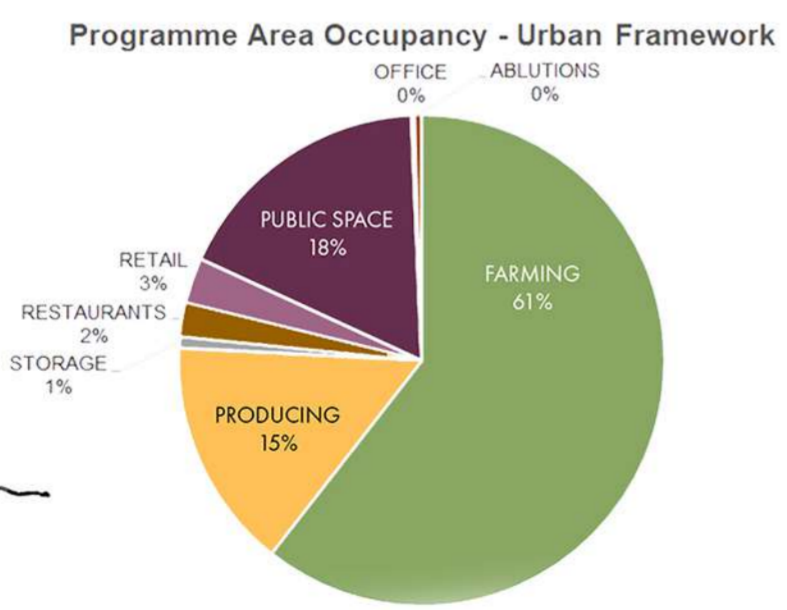
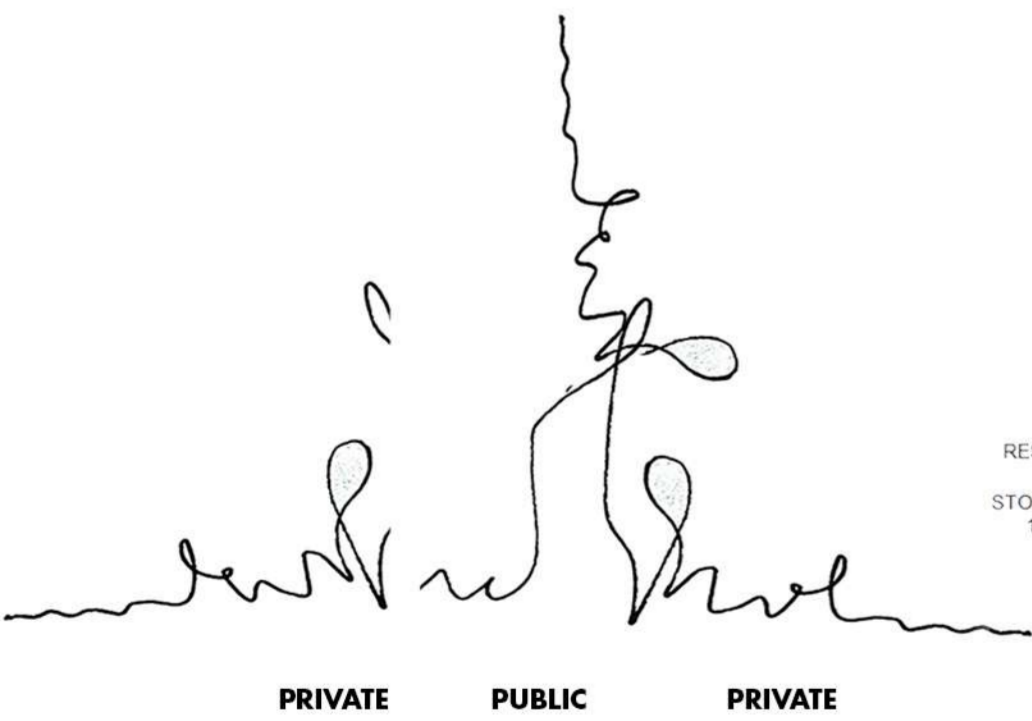
URBAN EXPLORATION



URBAN PERSPECTIVE

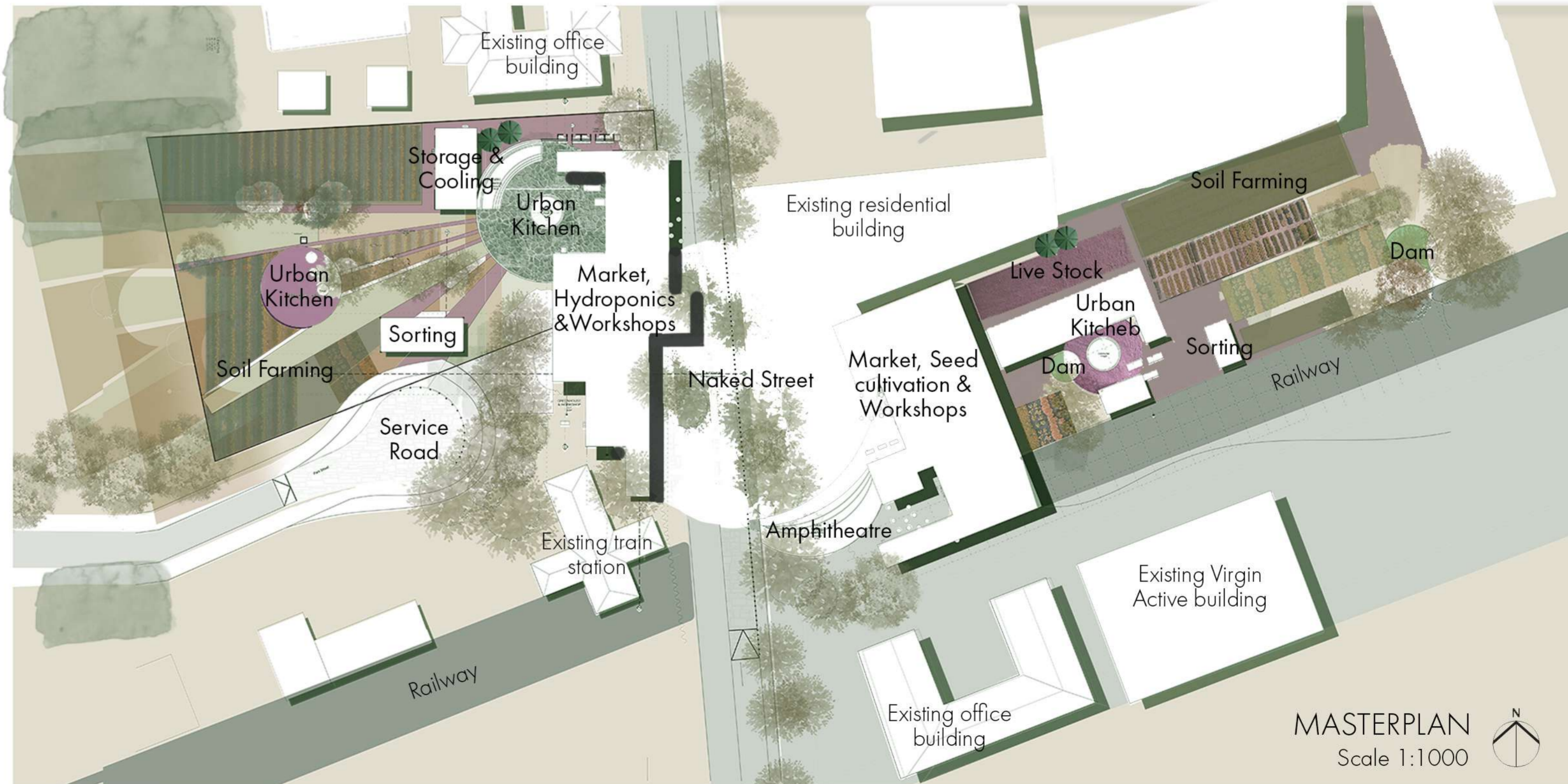
RESUSCITATE

the farm, intersection & lost space

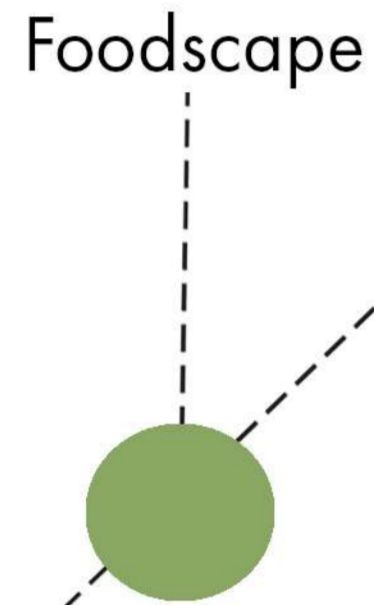


URBAN QUESTION
 How to activate the urban farm with the city, density responsibly, introduce a feasible urban agriculture network, allowing for social connection, and connect isolated programmes education, retail, and agriculture?

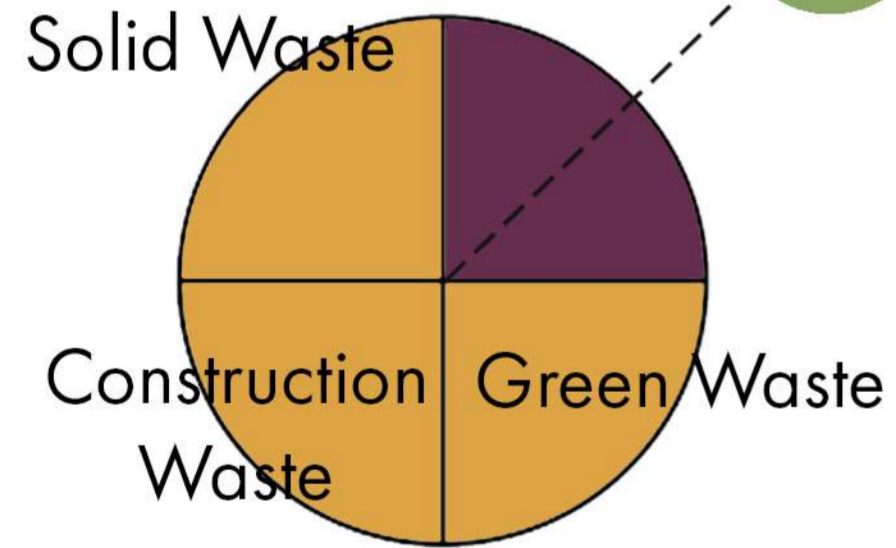
URBAN FRAMEWORK



Potatoe SA
 Lucas - Hatfield CID
 Dr Calayde Davey - University of Pretoria
 Lodie - City of Tshwane
 Waste Group
 Experimental Farm
 TUKSres
 STAKEHOLDERS

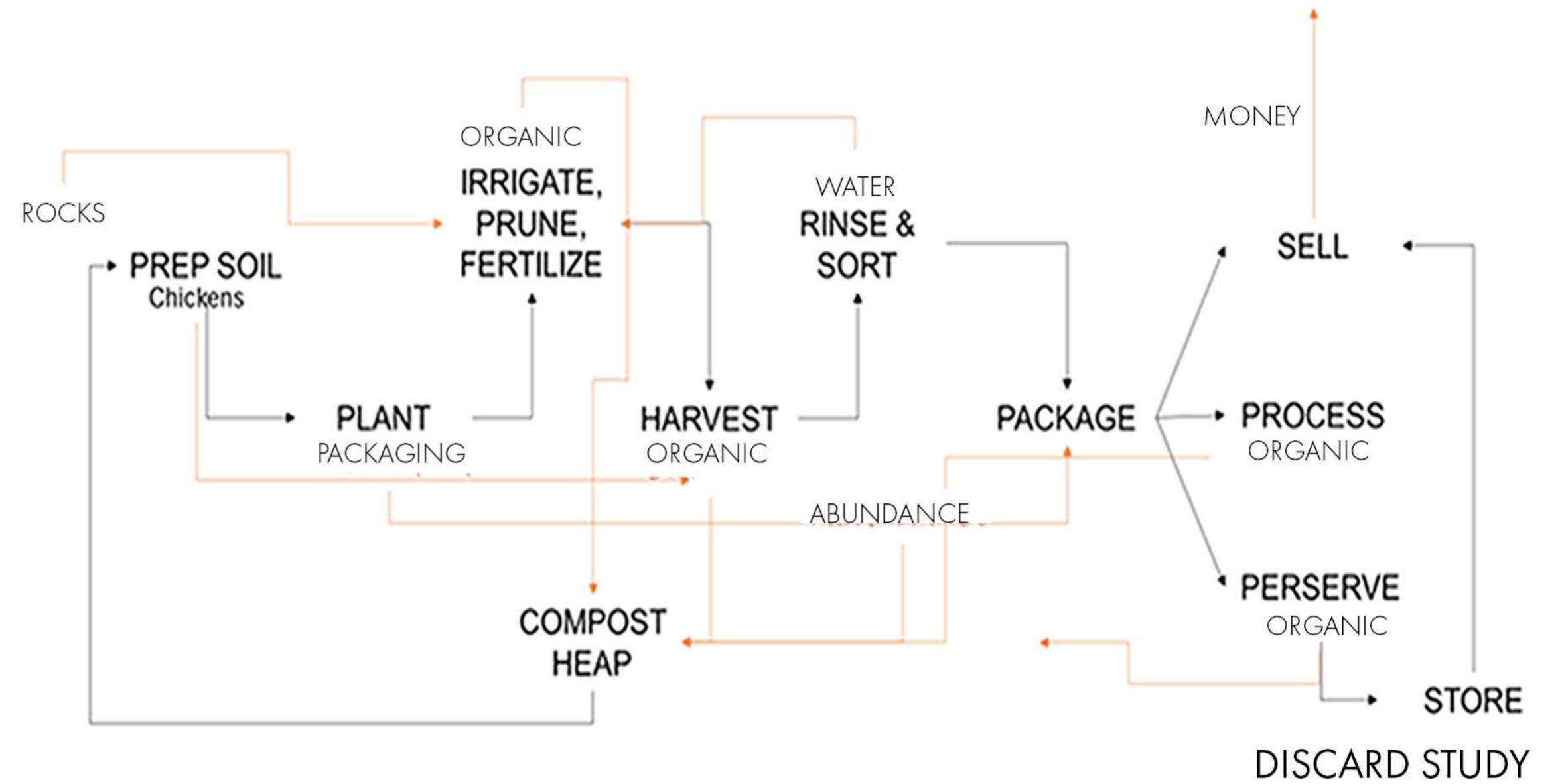


0 FOOD WASTE GOAL
 Target = 5 tons a day

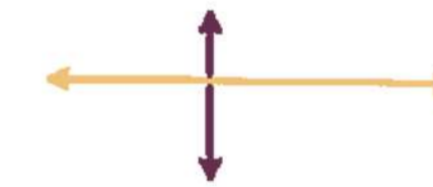


No waste in creation
 Food to people - "too good to go"
 Systemic brokenness

STANCE ON WASTE



Engaging contrasting communities, providing needs for both.



Allow knowledge integration, every programme a workshop



Connect to food, connect to people, connect to people through food



Feeding the hungry Hatfield



Student kitchens and brainfood



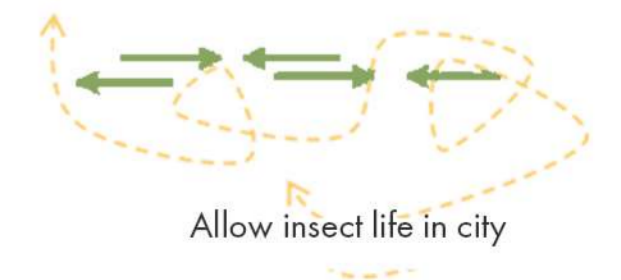
Student kitchens and brainfood



Selling @home gardens



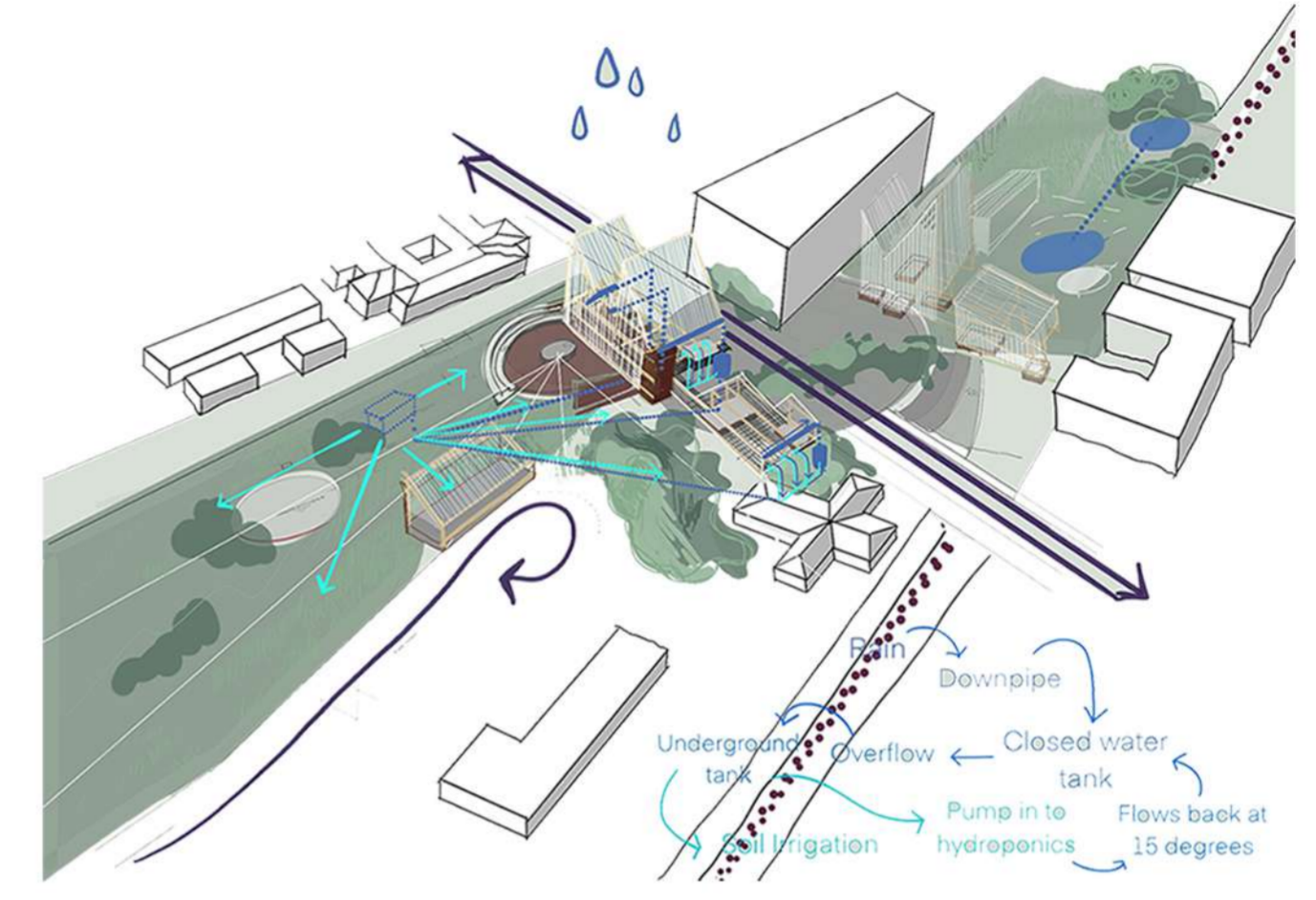
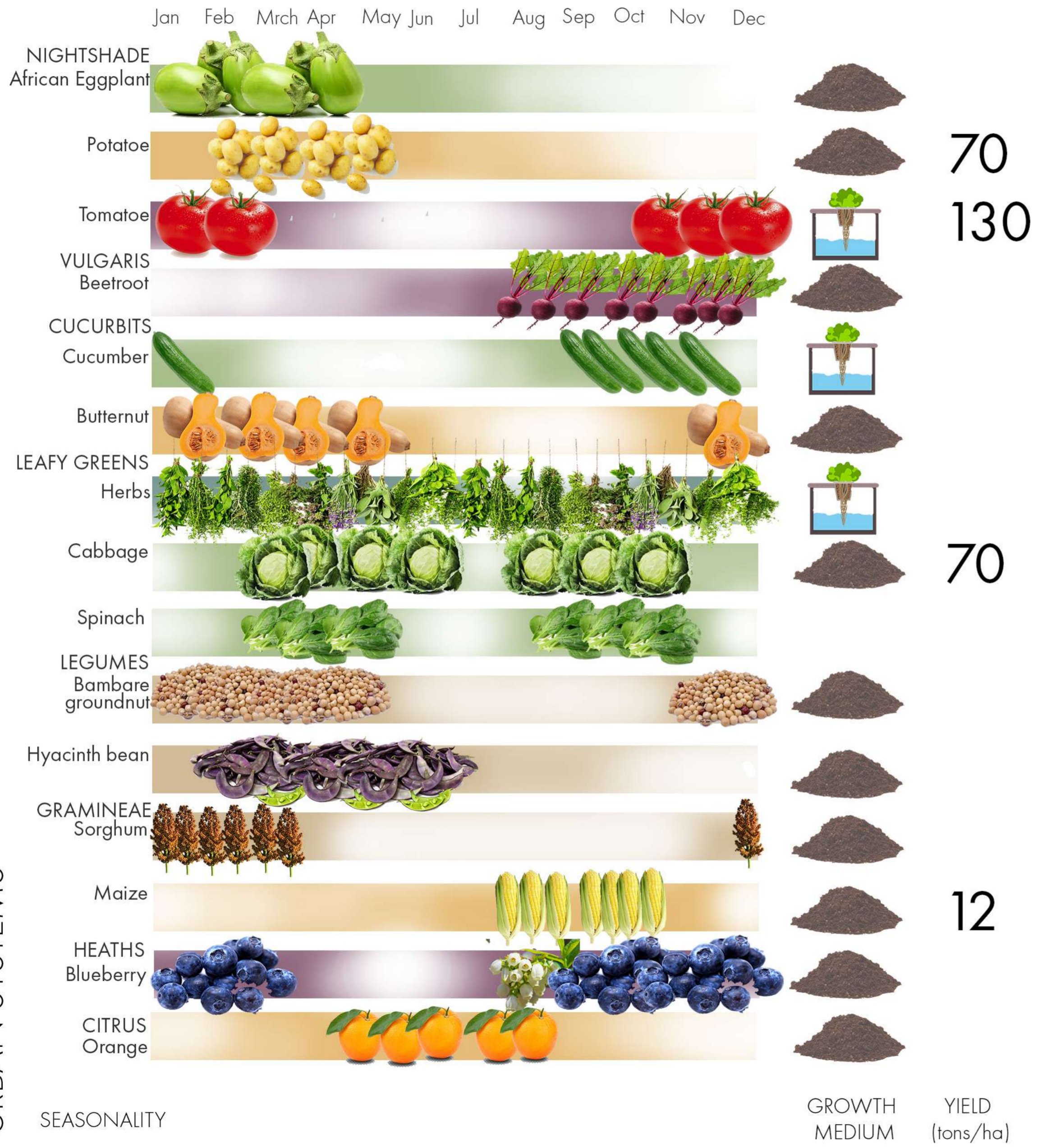
Access to freshness



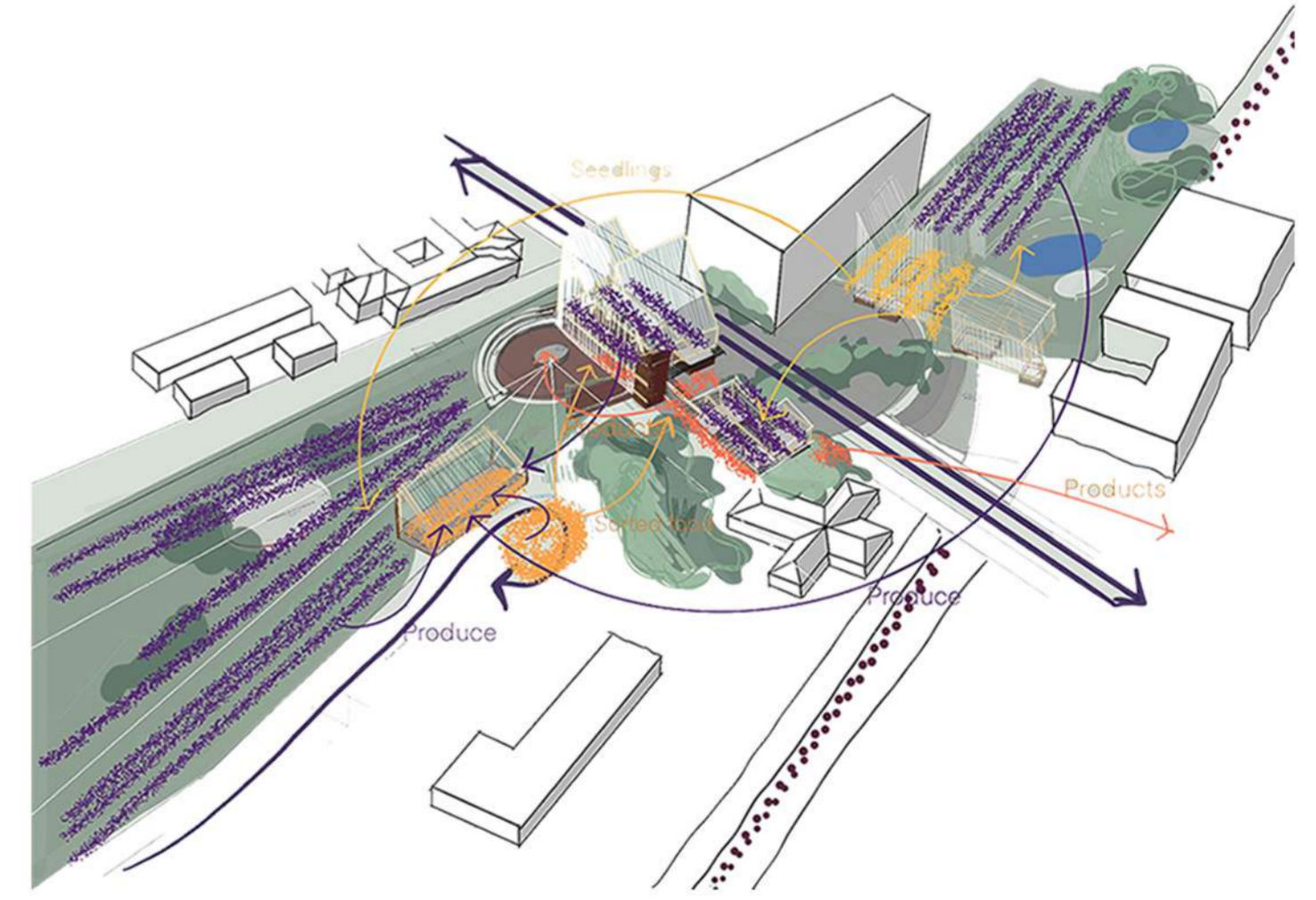
Allow insect life in city

ENABLING INFRASTRUCTURE

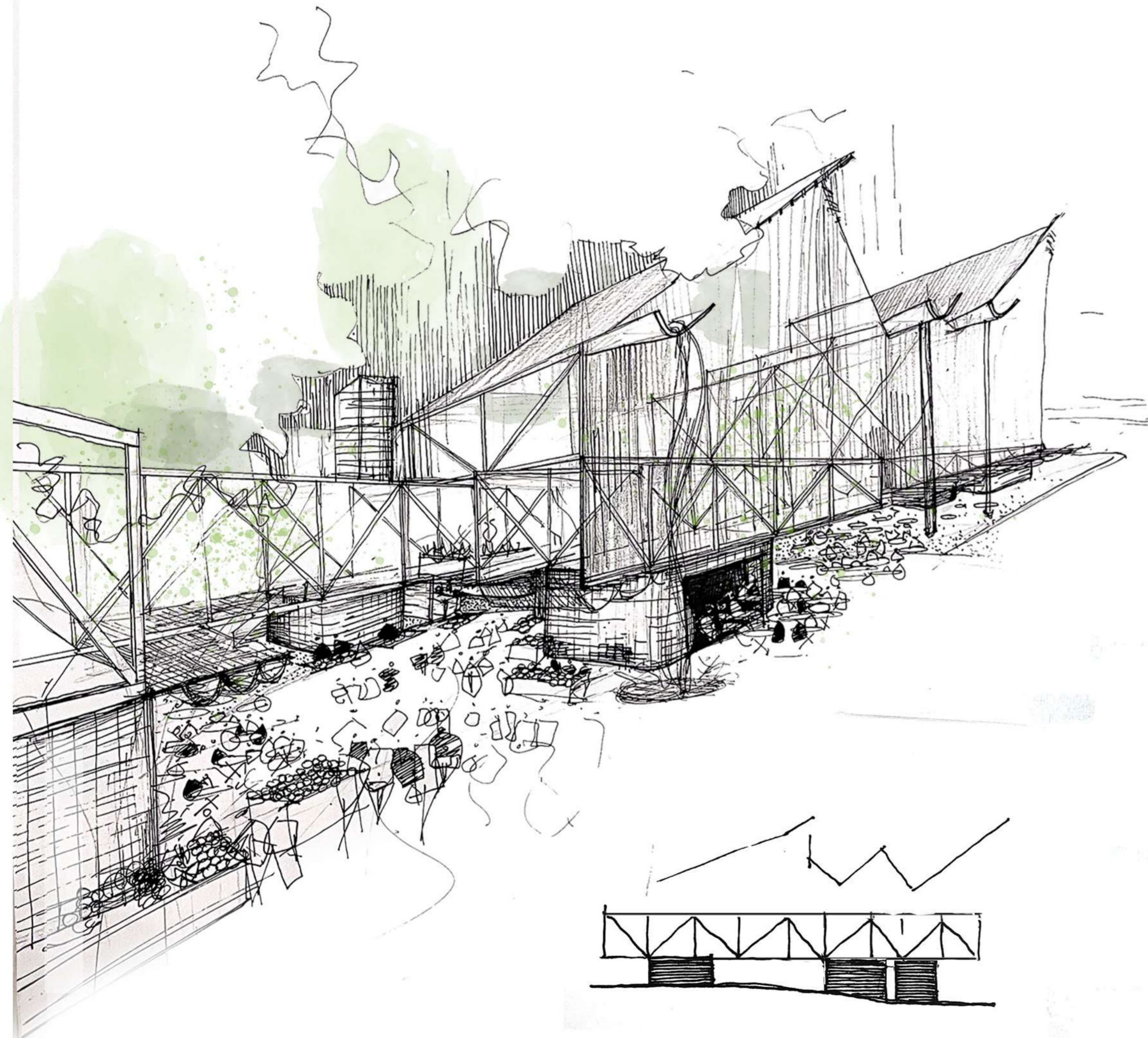
URBAN SYSTEMS



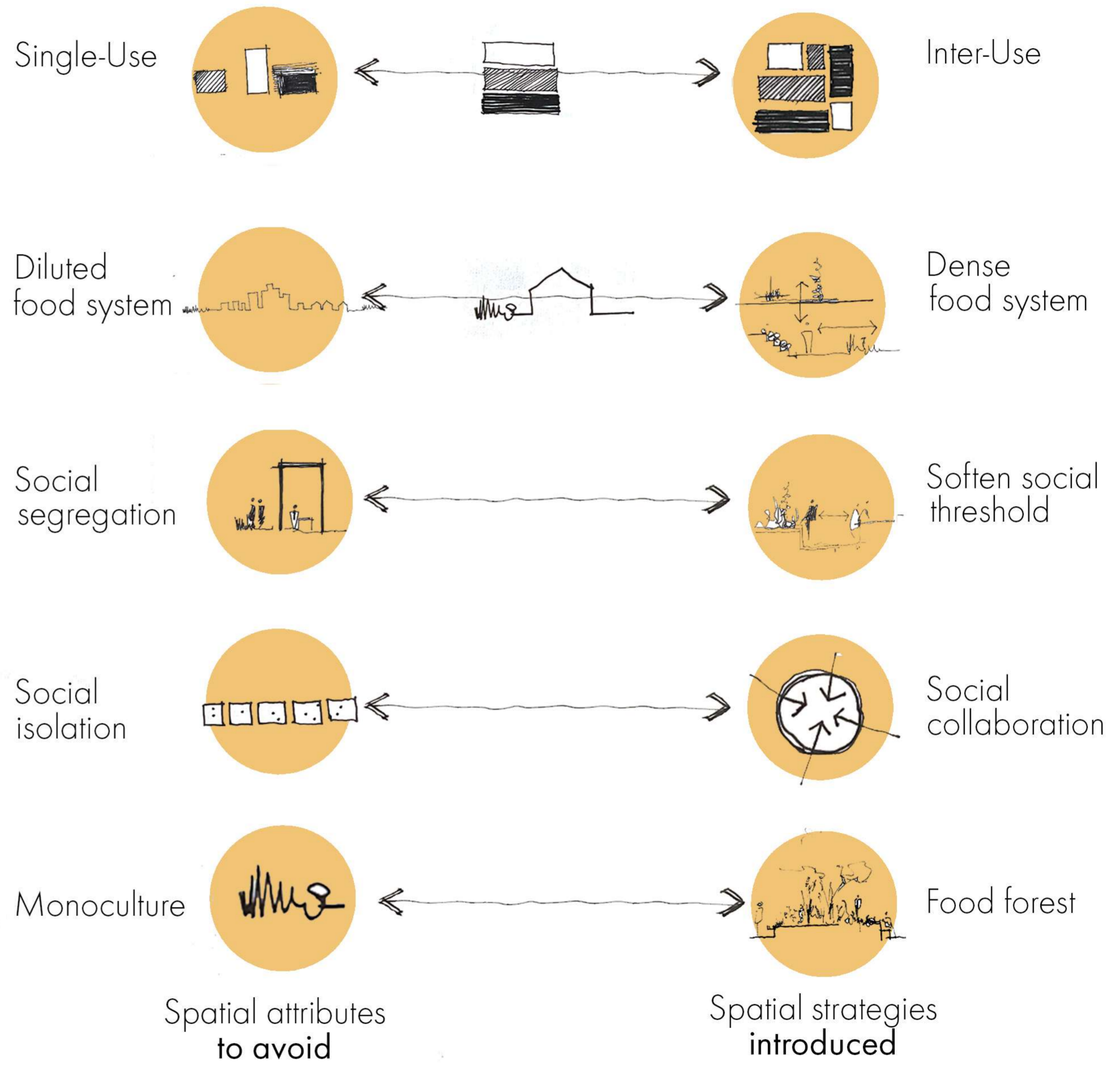
URBAN FRMAEWORK: WATER SYSTEM



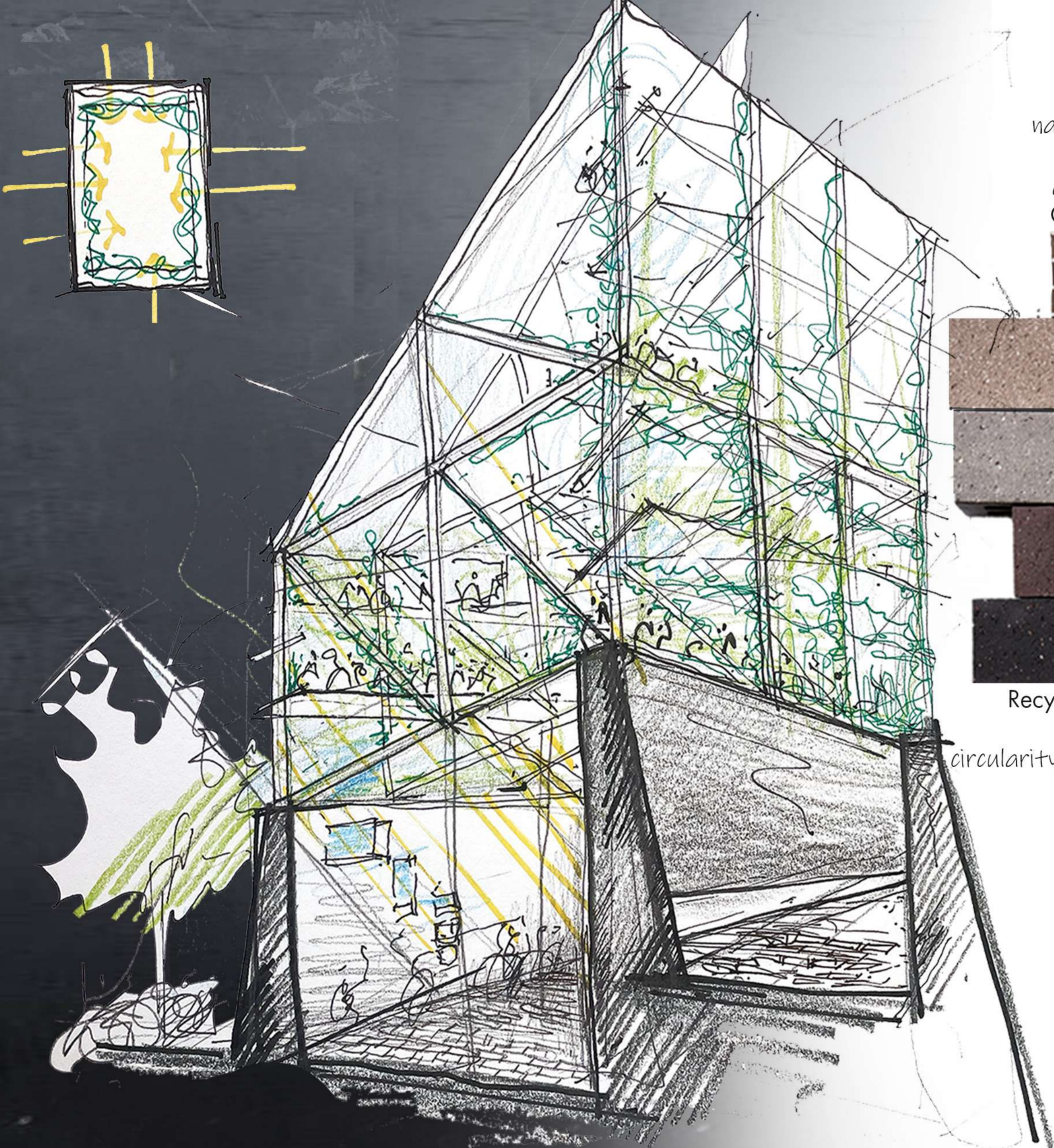
URBAN FRMAEWORK: PRODUCE SYSTEM



URBAN PRESENCE



SPATIAL STRATEGIES



Glulam &
Cross Laminated Timber
natural, humane, sustainable

grow from soil
Onyx Satin Facebrick



Recycled Brick
Pavement
circularity, texture



Danpalon
Polycarbonate
Sheeting (Danpal,
2023)
light, u-value

Produce as material
function



insects in the city

Bee
Bricks



Mentis Steel Grid
ventilation & visual
connection



shading &
flexibility
Agricultural Netting



MATERIALITY

EXPERIENCE EARTH THROUGH A **LIVING BUILDING**

ARCHITECTURAL VISION

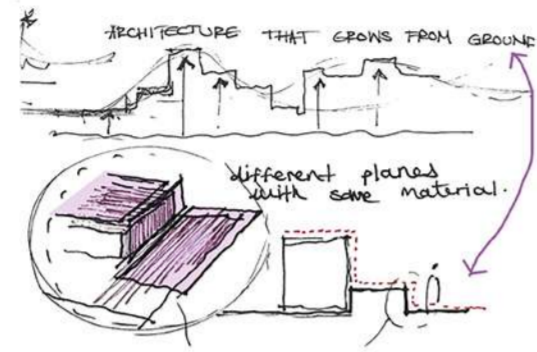
FOOD CULTURE

The concept of gathering individuals through the communal experience of food, thereby nurturing a sense of social belonging, was a foundational principle from the project's inception.



TERROIR

Much like the notion of "genius loci," the concept of "the taste of a place" has been substantiated as a pivotal factor influencing the design across multiple scales. The building will be true to Hatfield's identity and the agriculture showcases the specific climate. Furthermore, conceptually the building will 'grow from the ground.'



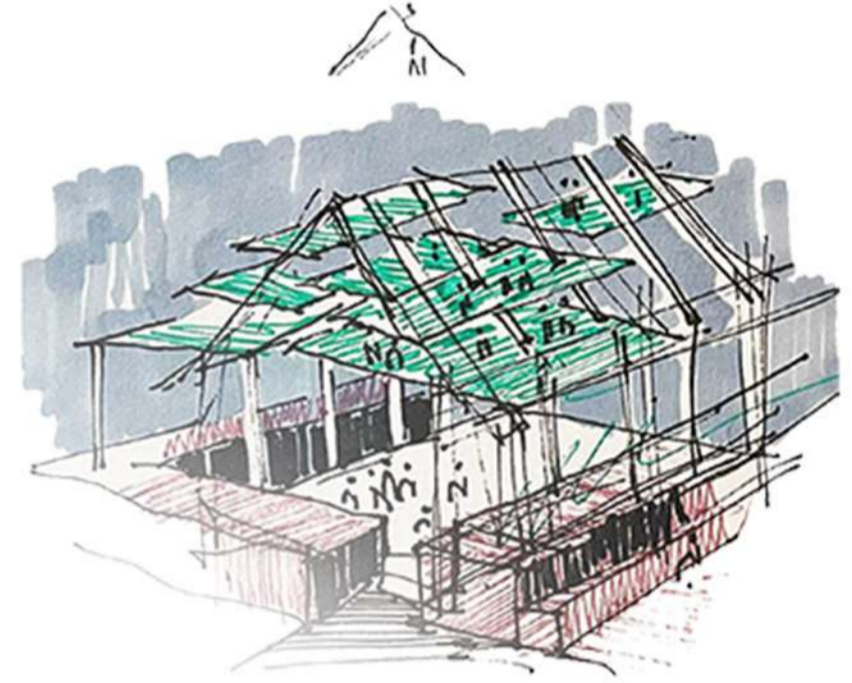
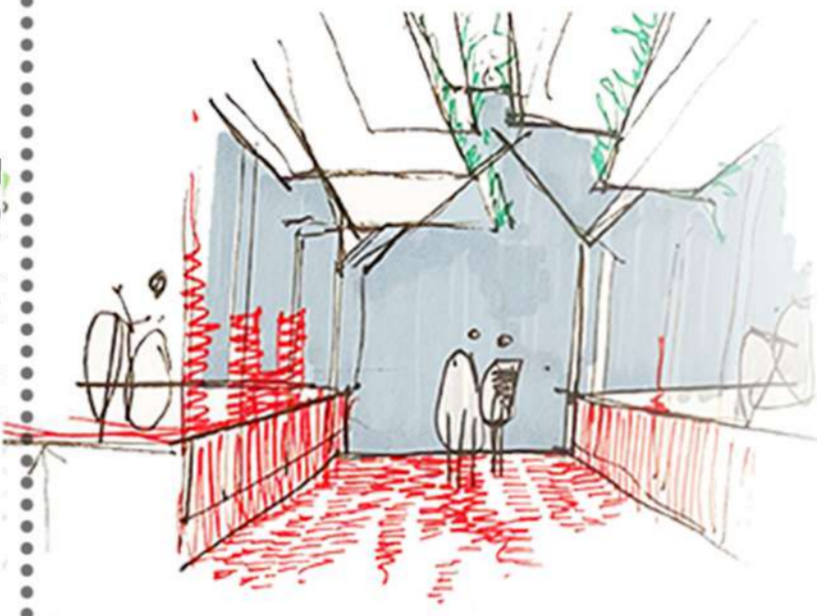
Terroir (n) French

1. the wine tasting in the way a wine grown and made in the region where it was grown and made should taste. "taste of a place"
Soil
Climate
Topography
2. characteristics of a product that are attributed to the geographical location where it was made.
3. architecture that has a fundamental relationship to earth and landscape

LANDSCAPE & BUILDING

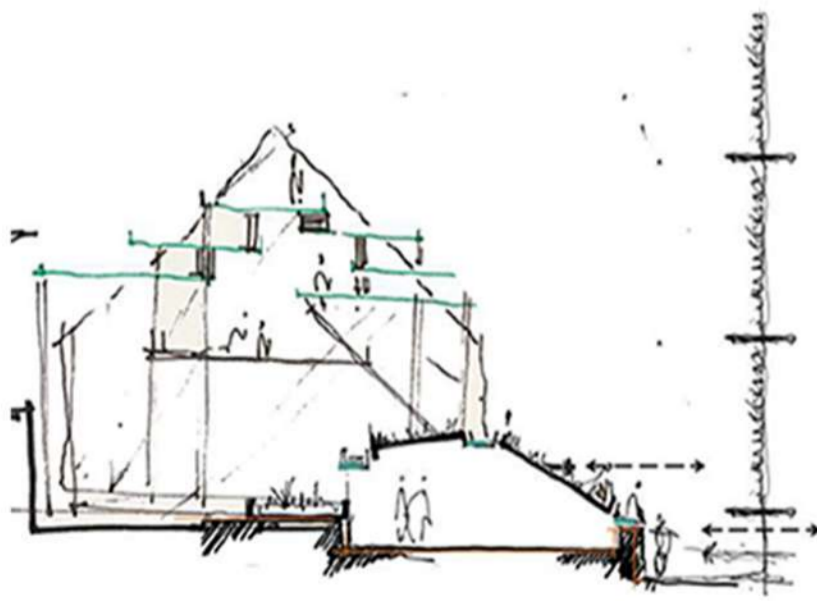


BUILDING BASE



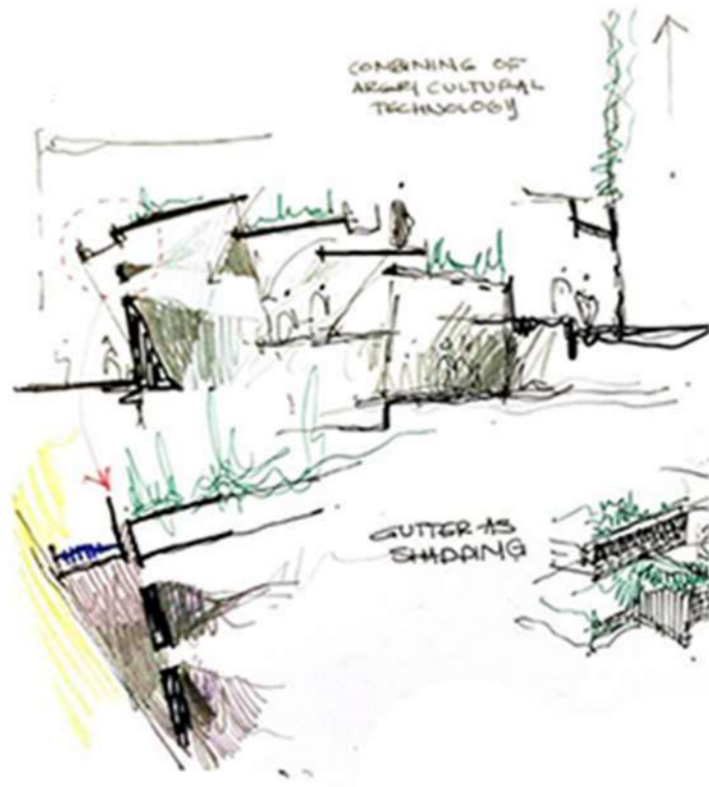
FARMING TYPOLOGY

To optimize yield and spatial quality of the farming programme within the precinct, various types of farming ws considered in section.



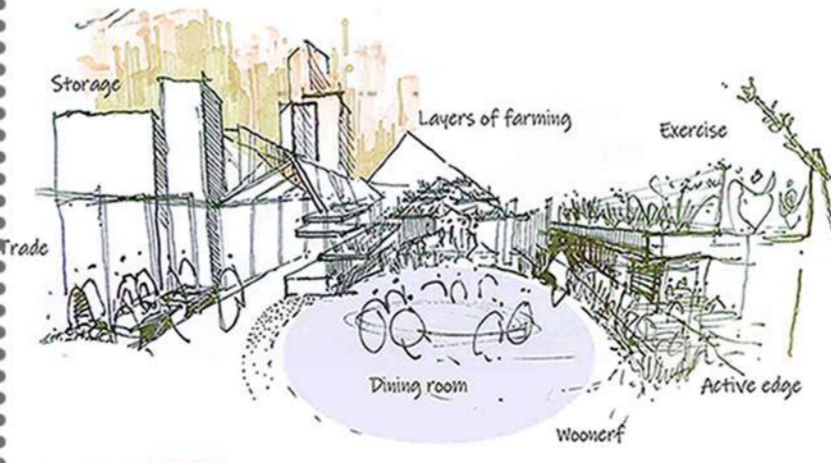
GUTTER

The diagrammatic sections also delved into the presence and integration of the gutter within the building's design.



URBAN VISION

This iteration served as the amalgamation of various design concepts, uniting the ideas of communal gathering, organic growth from the ground, diverse farming typologies, urban presence, and the interaction between the built environment and farming elements.



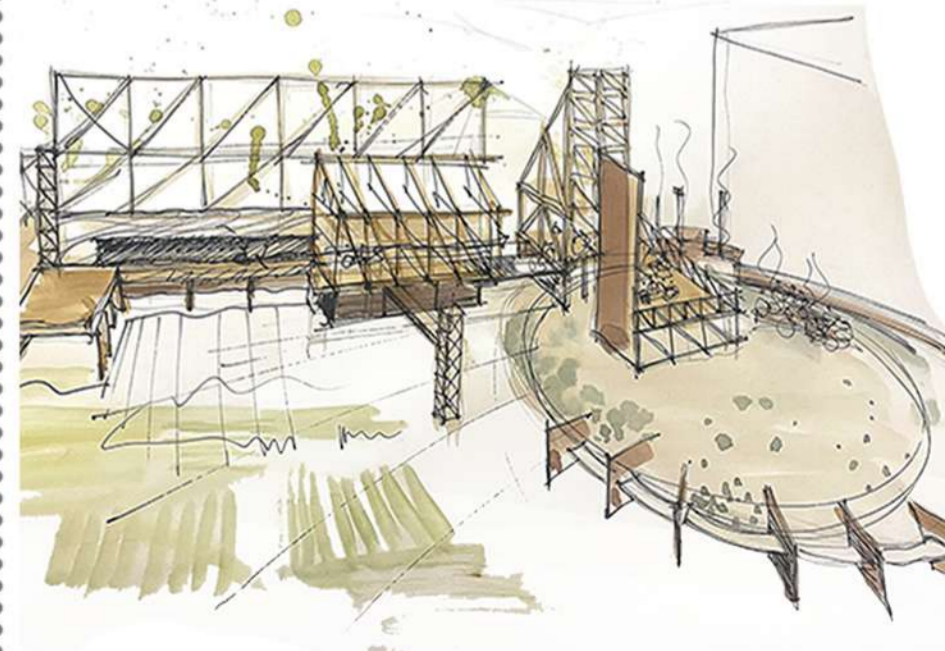
EXTERIOR PERSPECTIVE

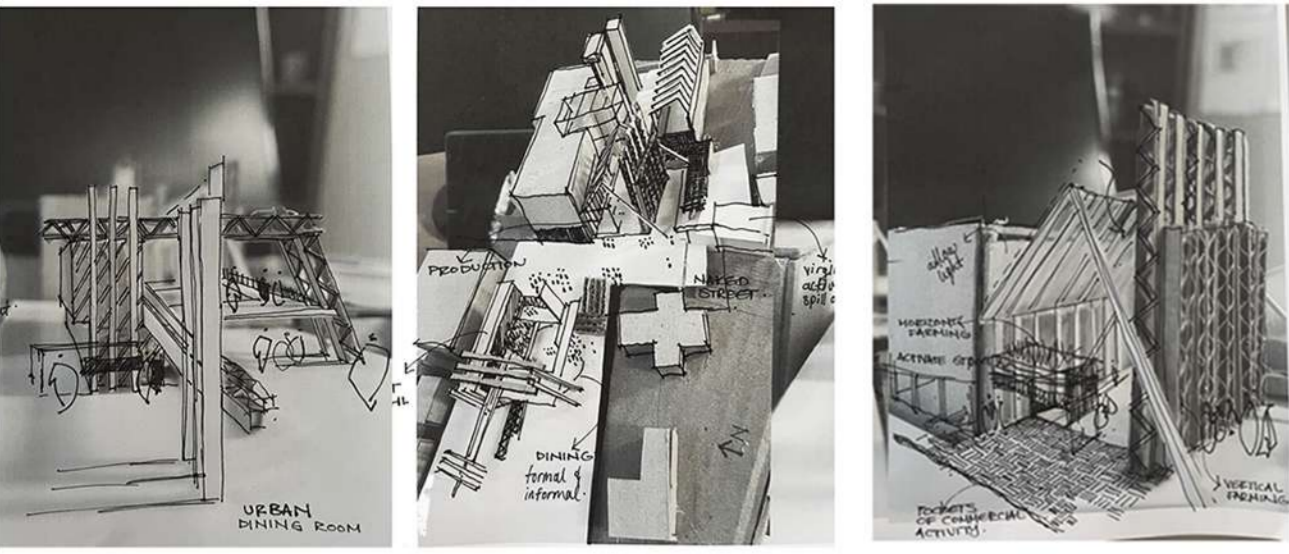
This perspective analysis was instrumental in examining the variation in materiality and assessing the integration of the buildings within their contextual surroundings. It proved to be a valuable iteration, revealing that the building lacked a meaningful interaction between the agricultural elements and the users on the ground floor.



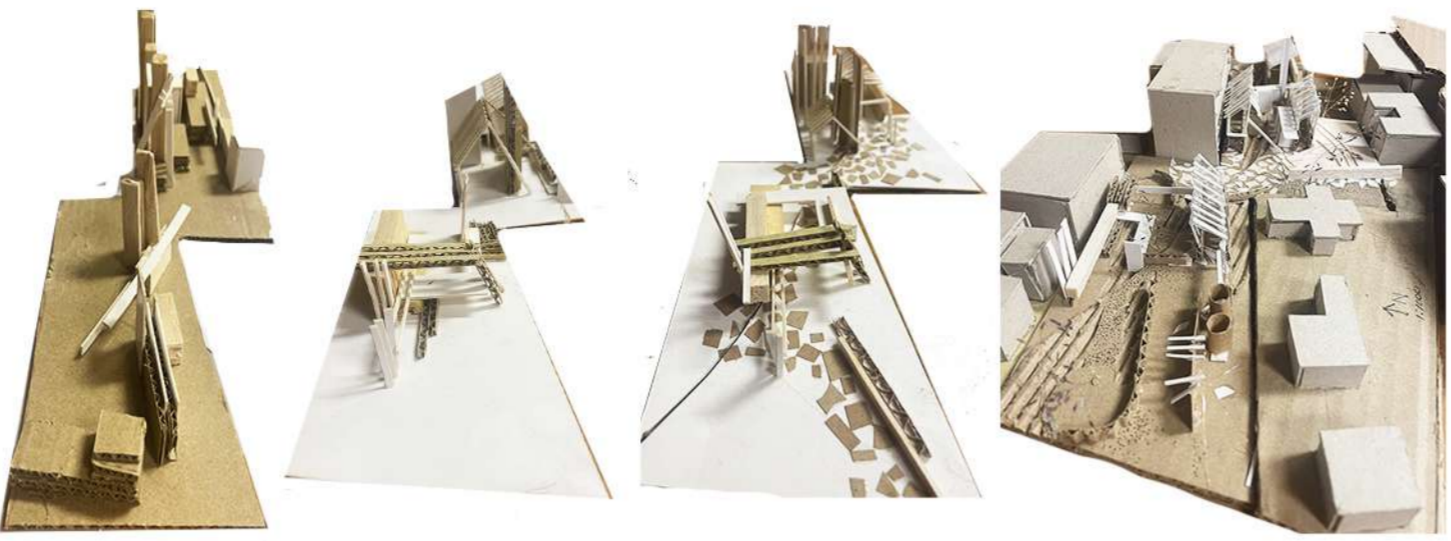
SPACES BETWEEN BUILDINGS

This iteration was a combination of all the previous explorations, lessons, and theoretical goals. The diagramme investigated the public space between buildings and the communal cooking / gathering space.

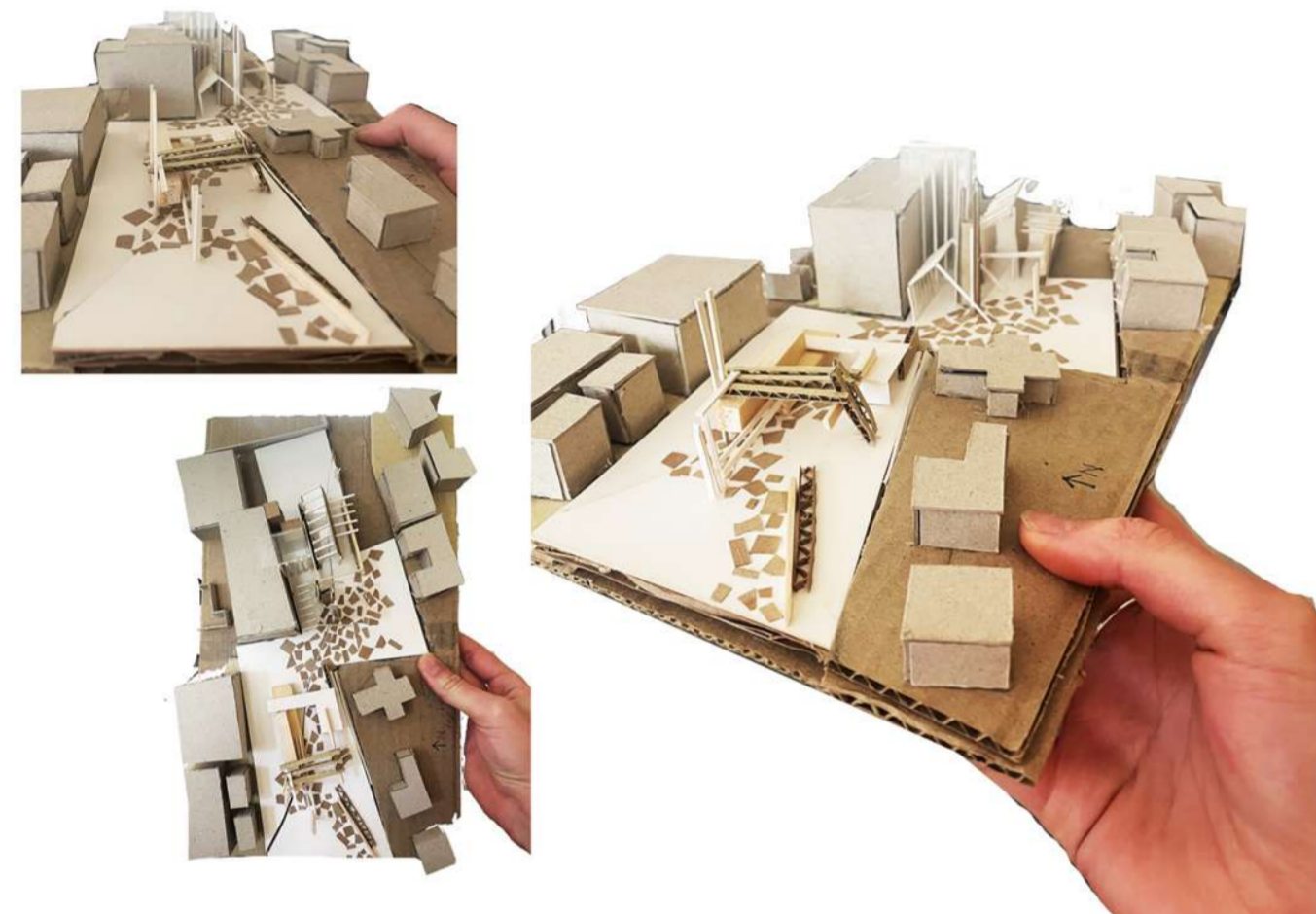




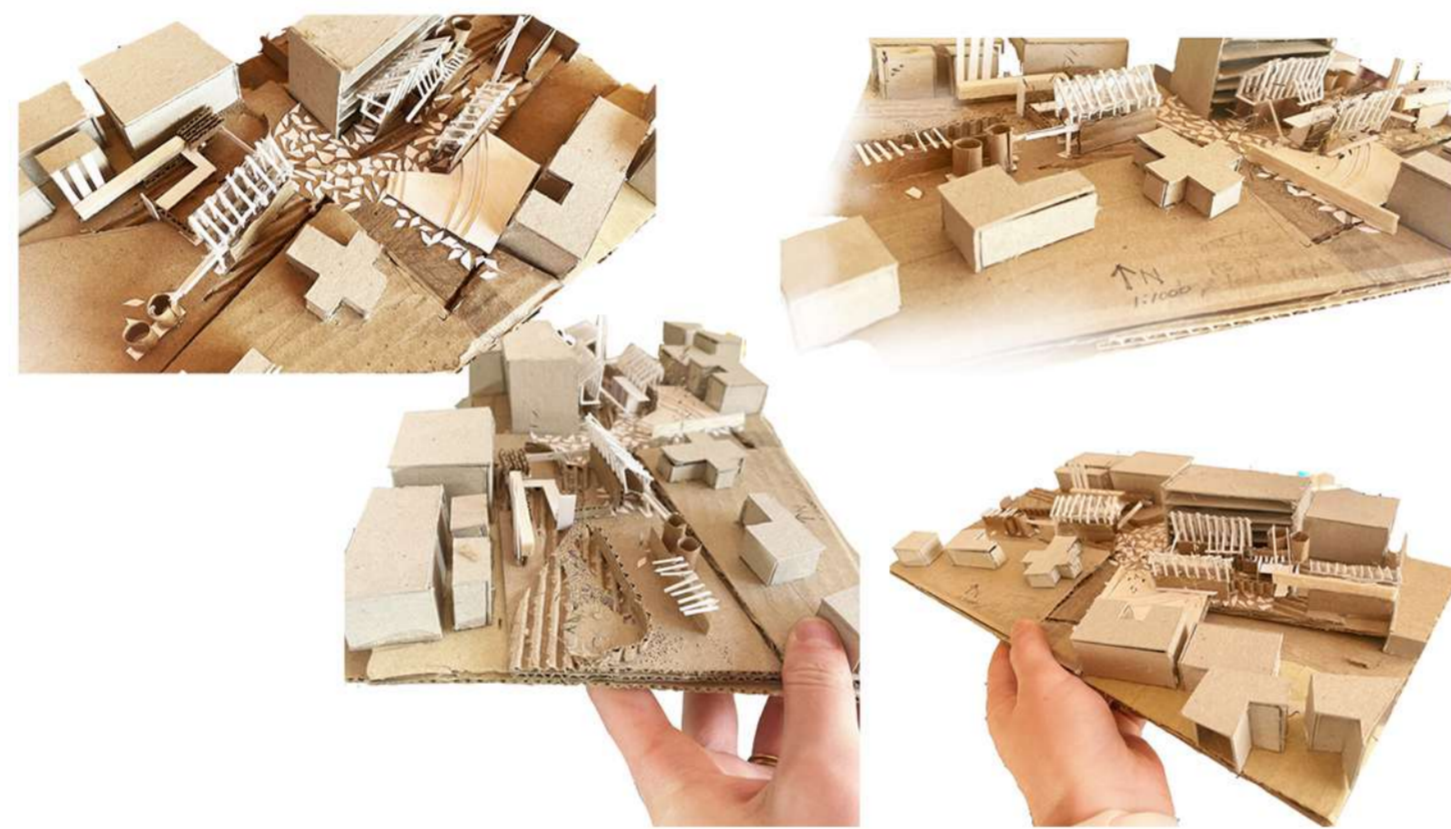
Drawings over maquette 2



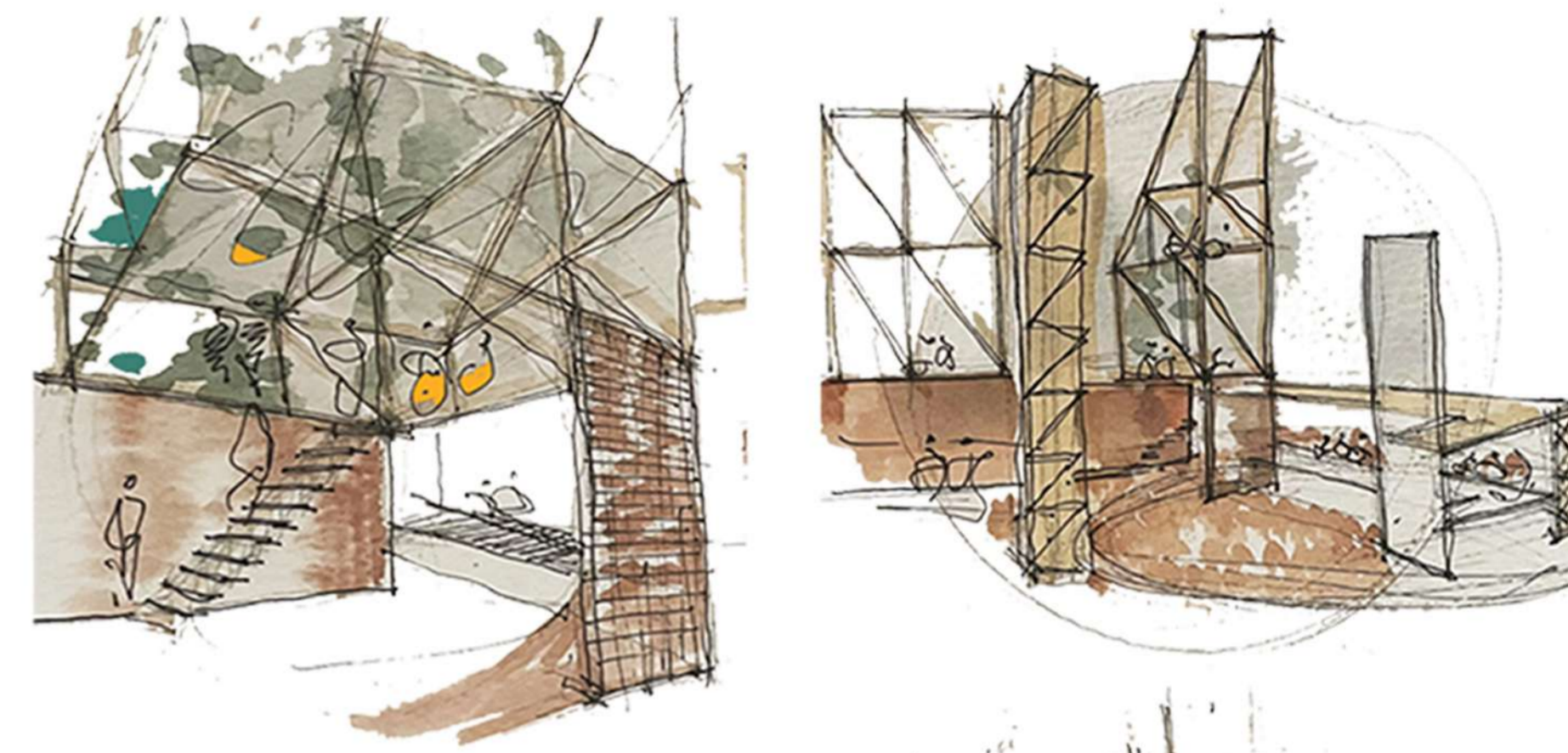
Maquette 1 Maquette 2 Maquette 3 Maquette 4



Maquette 3



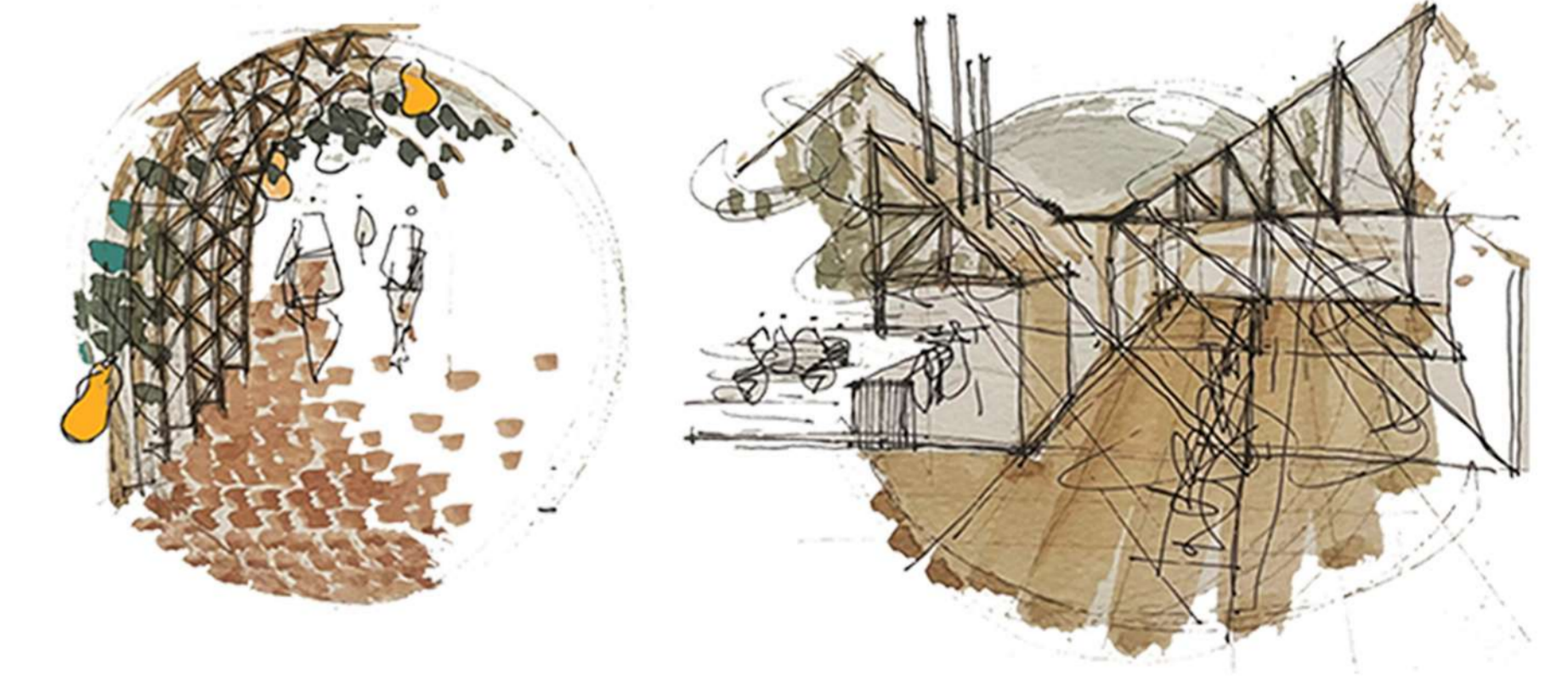
Maquette 4



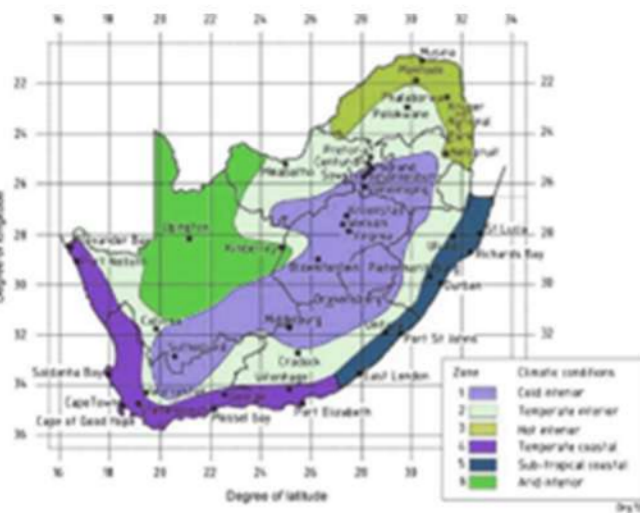
Amphitheatre & street
Maquette 5

Threshold

Shared street & active edge



ITERATIVE DESIGN: MAQUETTES
SPATIAL DEVELOPMENT



(Climatestravel, 2023)

CONTEXT

	LIGHT (lux)	HUMIDITY (%)	TEMPERATURE °C	1000 X YIELD PER HEC ²
AFRICAN EGGPLANT	20000	40-70	21-29	30-50
POTATOE	15000	80-90	15-21	50-100
TOMATOE	35000	40-70	21-29	100-200
BEETROOT	20 000	40-70	10 24C	30-50
CUCUMBER	50000	70-80	21-29	100-200
BUTTERNUT	25000	70-80	21-29	20-40
HERBS	20000	40-60	20-24	10 to 20
CABBAGE	15000	40-70	7 24	20-40
SPINACH	15000	40-70	2 24	10 to 20
BAMBARE GROUNDNUT	30000	40-70	21-32	10 to 30
HYACINTH BEAN	20000	40-70	21-29	20-40
SORGHUM	10000	40-70	24-29	10 to 30
MAIZE	30000	40-70	21-29	30-60
BLUEBERRY	30000	40-60	15-21	10 -
ORANGE	30000	40-60	21-32	10-
AVERAGE RANGE	15 000 - 50 000	40 - 80	21-26	10 000 - 100 000

BENCHMARKS & METRICS

DIVERSITY LUX LEVELS

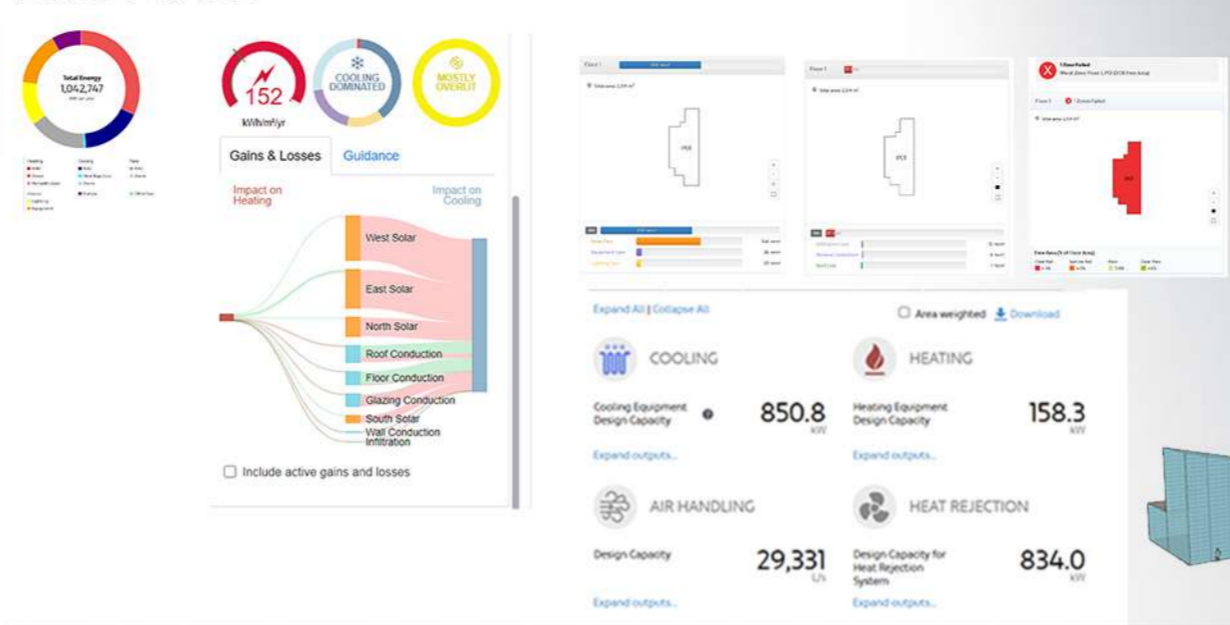


40% Titanium	40% White	40% Grey
• Lettuce	• Lettuce	• Lettuce
• Celery	• Celery	• Celery
• Spinach	• Spinach	• Spinach
• Cauliflower	• Cauliflower	• Cauliflower
• Broccoli	• Broccoli	• Broccoli
• Vegetable Seedlings	• Tomatoes	• Tomatoes
• Herbs	• Peppers	• Peppers
• Peppers	• Paprika	• Paprika
• Peppadaw	• Peppadaw	• Peppadaw
• Beans	• Beans	• Beans
• Baby marrow	• Baby Marrow	• Baby Marrow
• Citrus Seedlings	• Citrus Seedlings	• Citrus Seedlings
• Butternut	• Manggo	• Palms
• Bedding Plants	• Seedlings	• Cycads
• Lilies	• Macadamia	• Orchids
• Bulb	• Seedlings	• Bedding Plants
• Production	• Vegetable	• Lilies
• Tunnel	• Seedlings	• Vegetable
• Cladding	• Seedlings	• Indigenous
		• Seedlings

(PlusNet, 2023)

ITERATIVE DESIGN: PERFORMANCE SPATIAL DEVELOPMENT

BASE CASE 25 mm clear superlife polycarbonate sheeting



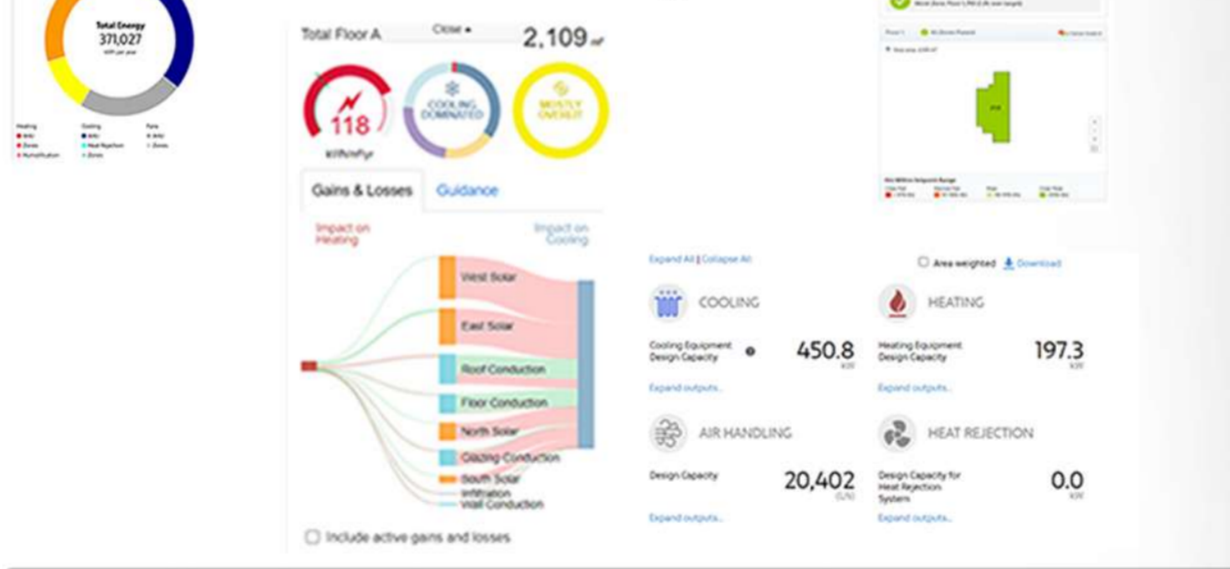
MATERIAL CHOICE

ITERATION 1 25 mm clear superlife polycarbonate sheeting agricultural netting under Northern slanted roofs



MATERIAL CHOICE

ITERATION 2 25 mm clear superlife polycarbonate sheeting agricultural netting under Northern slanted roofs 100 mm thick steel grid floor for increased airflow



MATERIAL CHOICE

ITERATION 3 25 mm clear superlife polycarbonate sheeting agricultural netting under Northern slanted roofs 100 mm thick steel grid floor for increased airflow Openings in Northern side of roof pitch

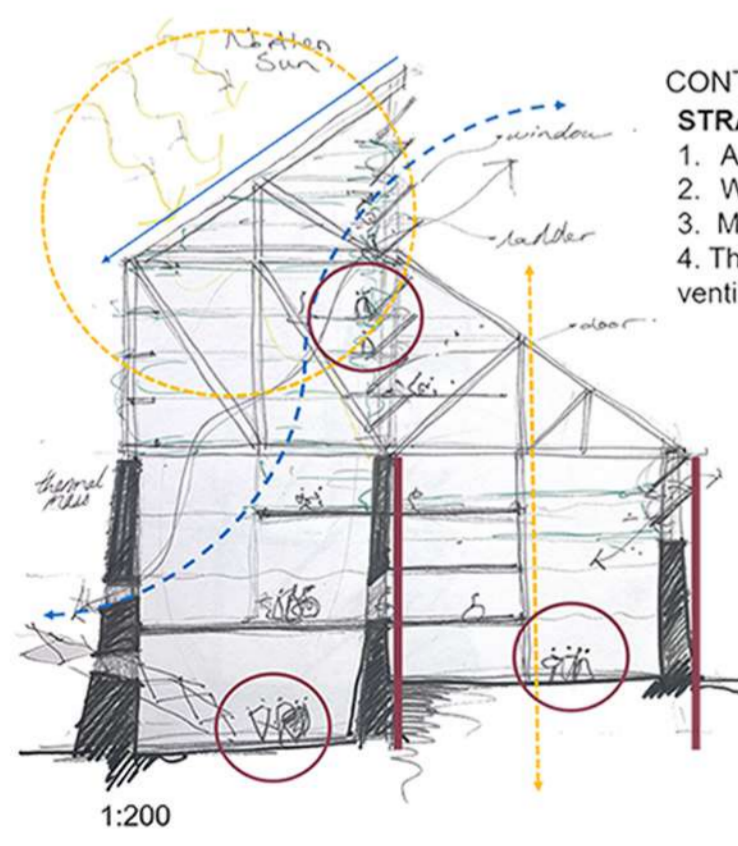
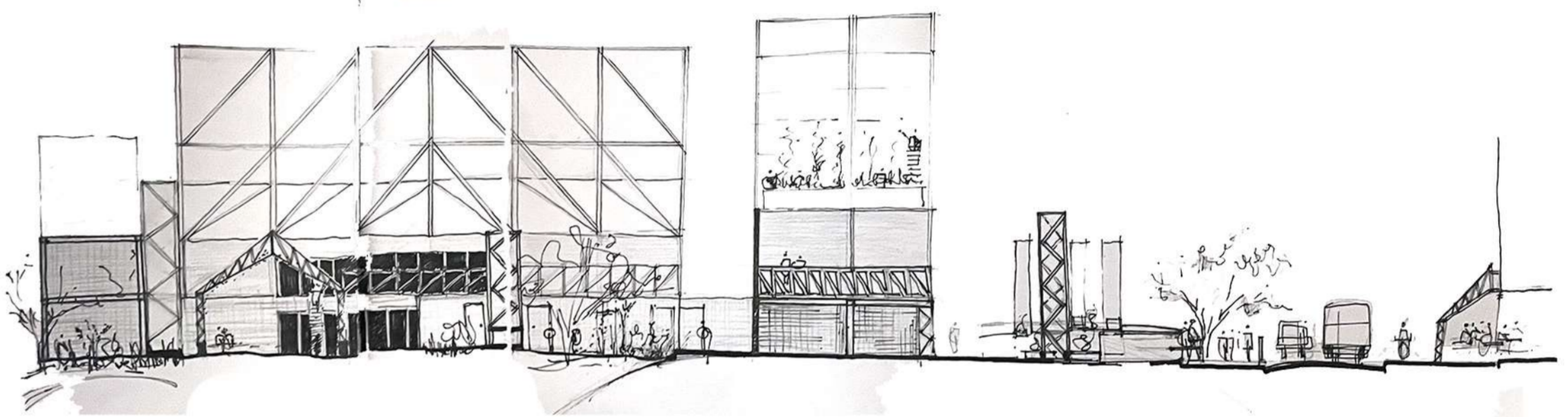
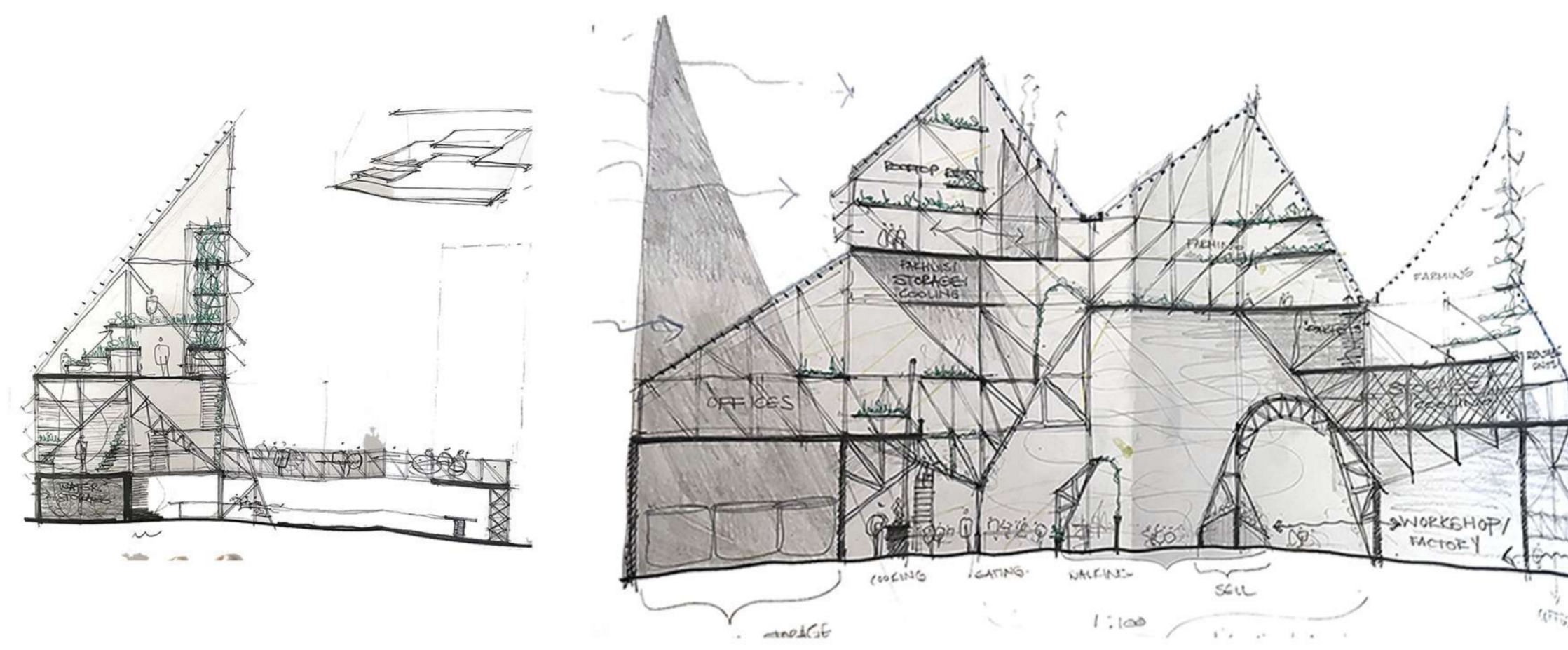
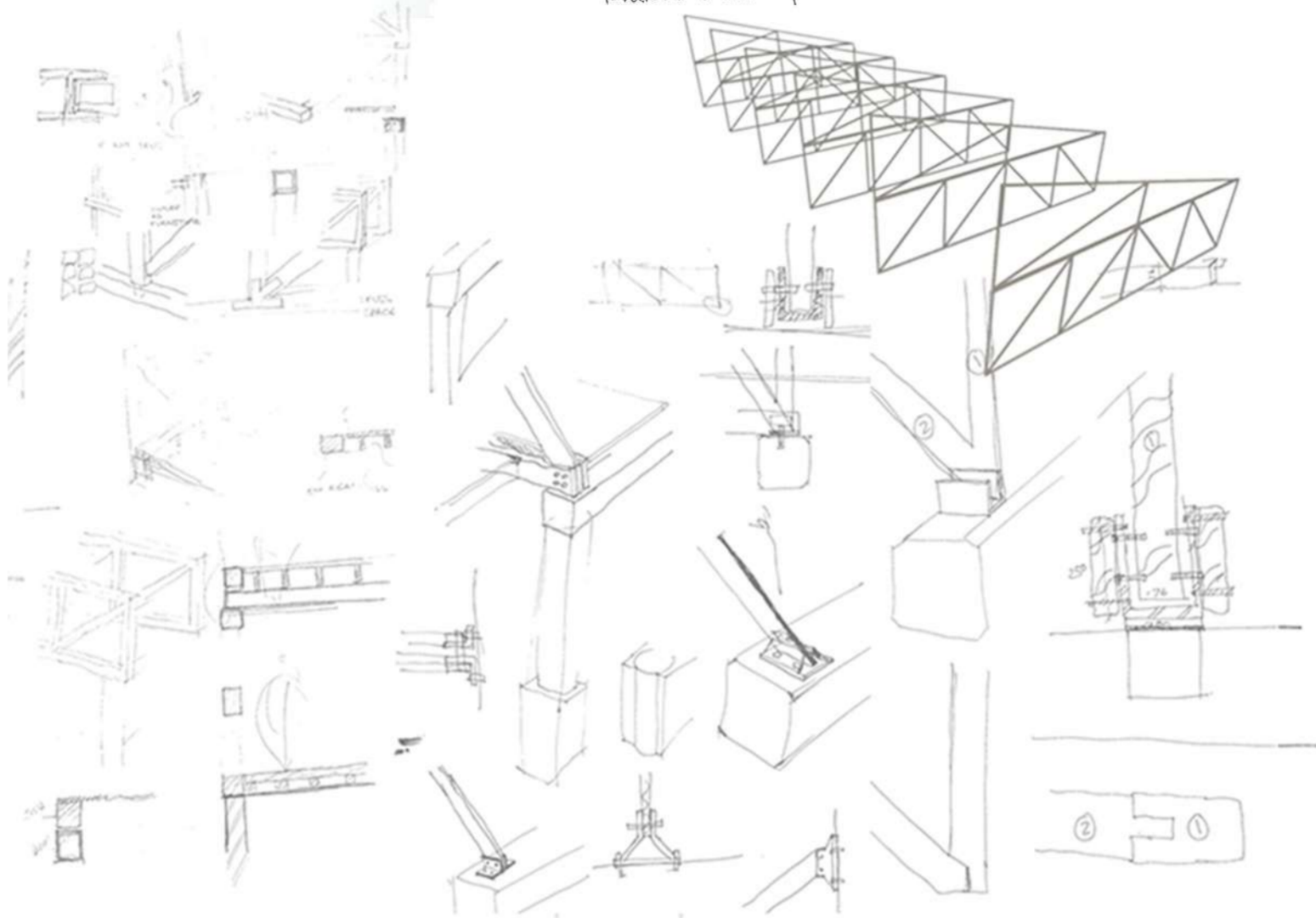
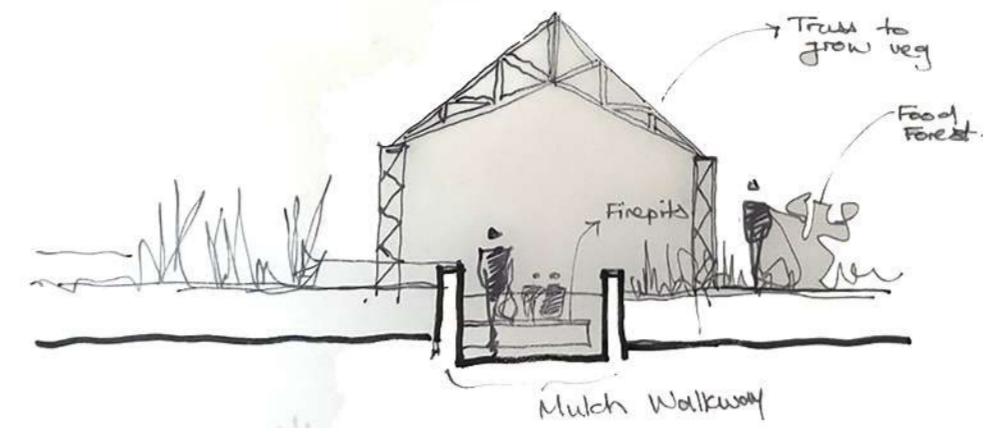


FORM CHOICE

FORM DICTATORS

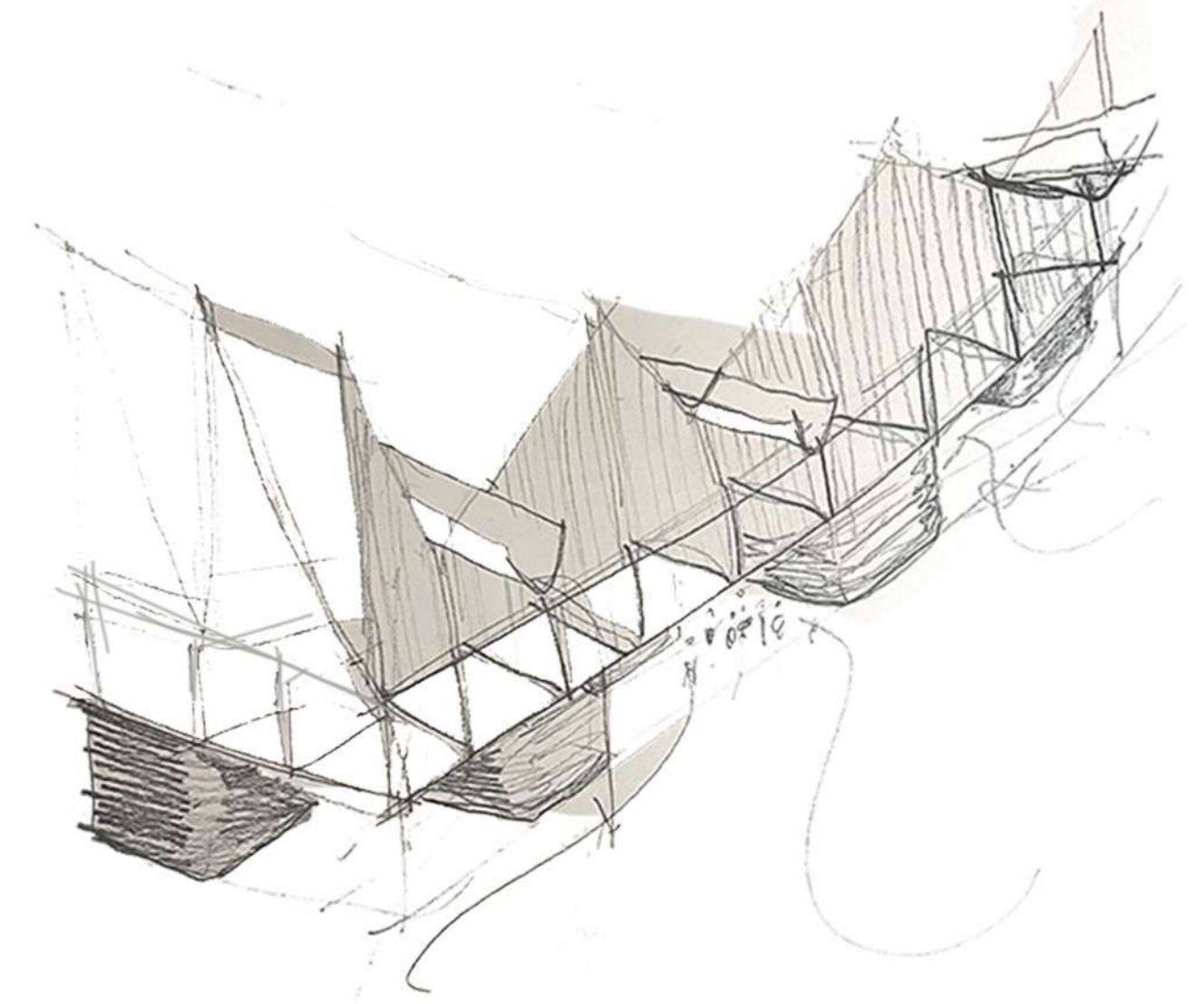
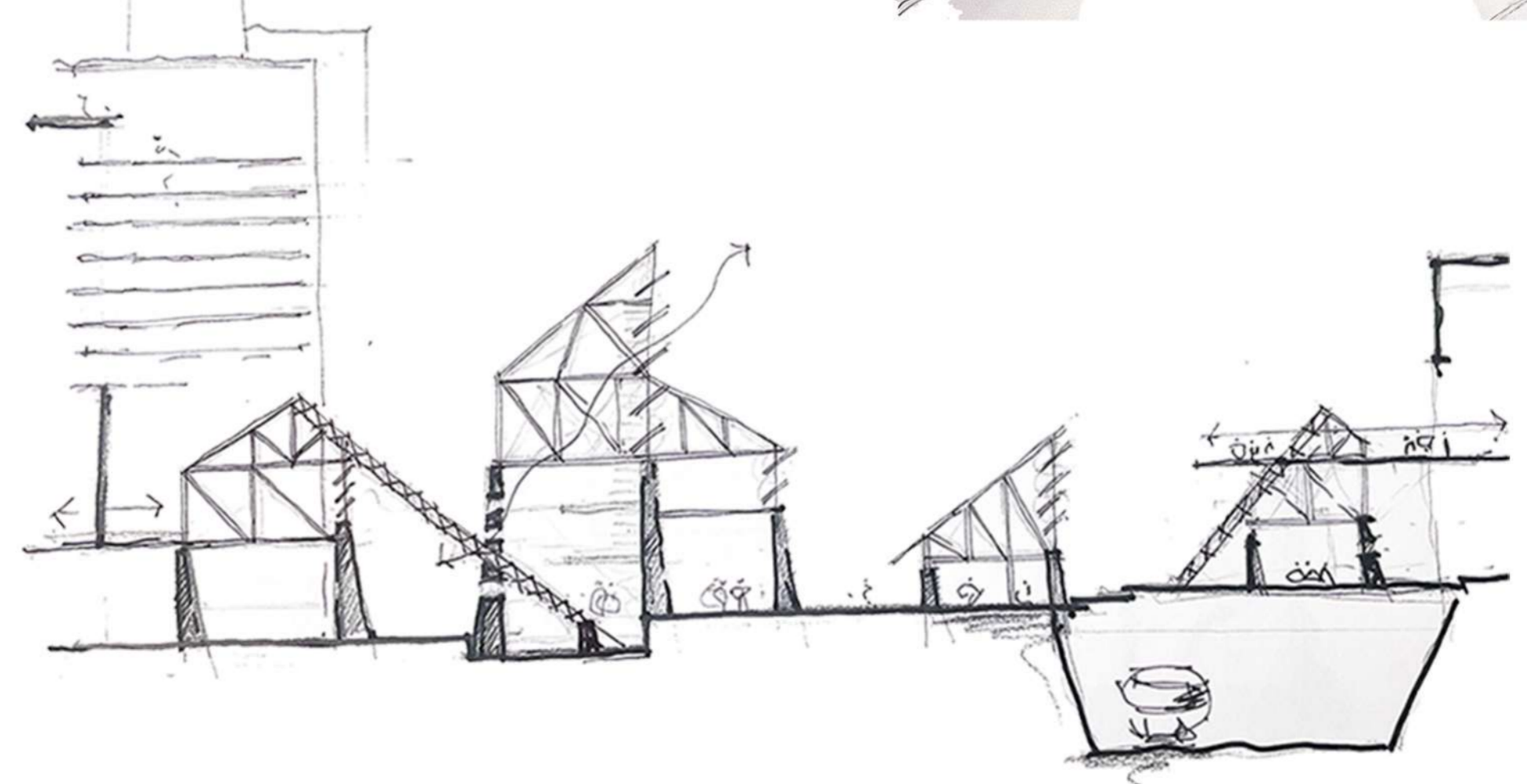
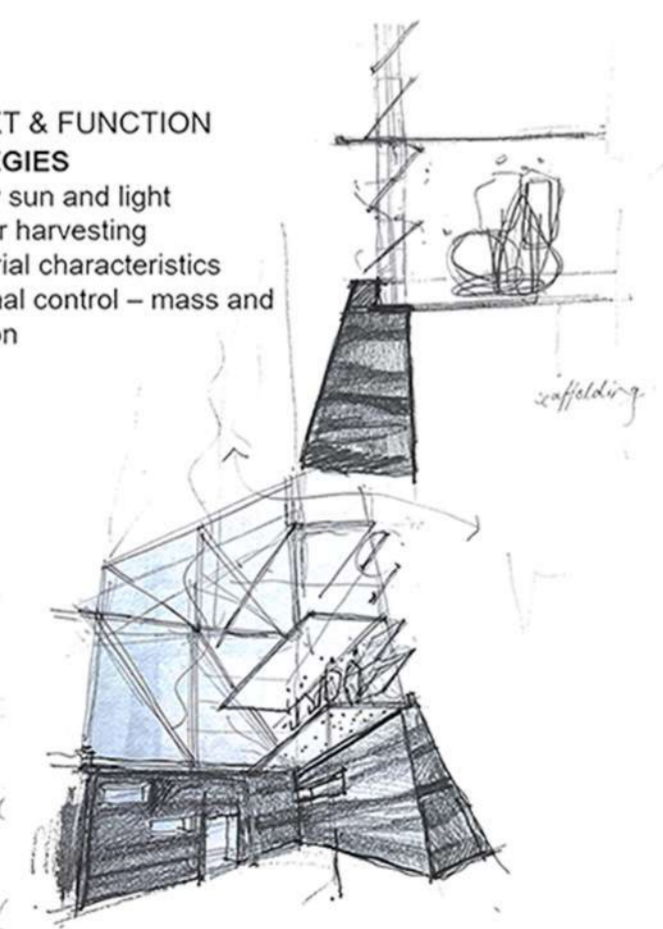
TECHNICAL & SPATIAL INFORMANTS

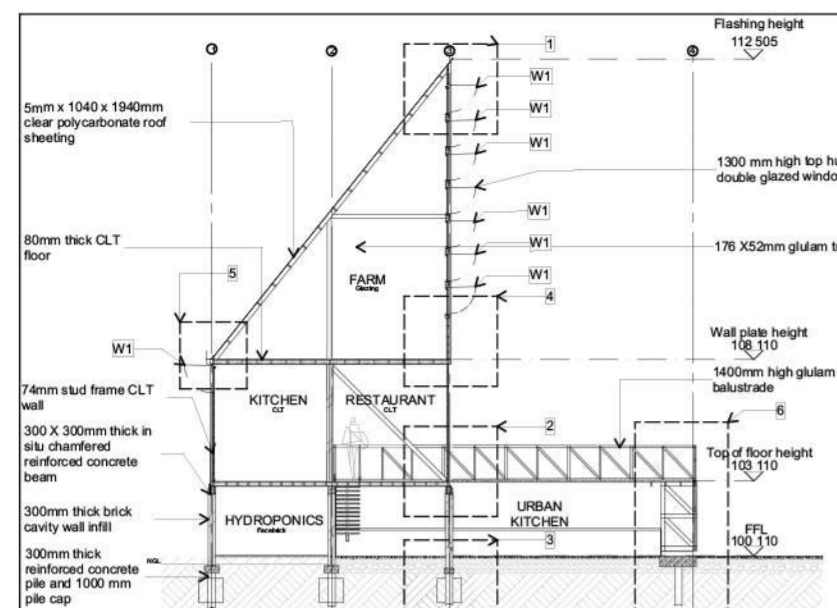
- ① Independent structures
- ② Connected structures
- ③ Push and pull of ground floor
- ④ Integration and dynamic structure
- ⑤ Base as columns, roofscape



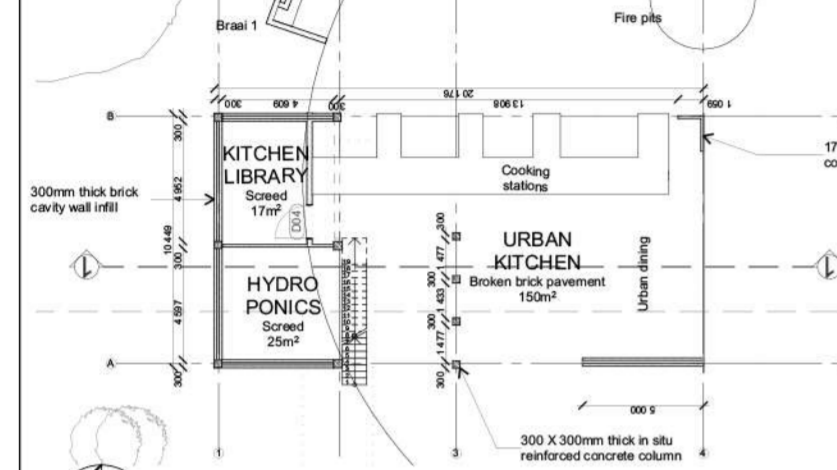
CONTEXT & FUNCTION STRATEGIES

1. Allow sun and light
2. Water harvesting
3. Material characteristics
4. Thermal control – mass and ventilation





Section 1
Scale 1:200 @ A1



Ground Floorplan
Scale 1:200 @ A1

AREA SCHEDULE

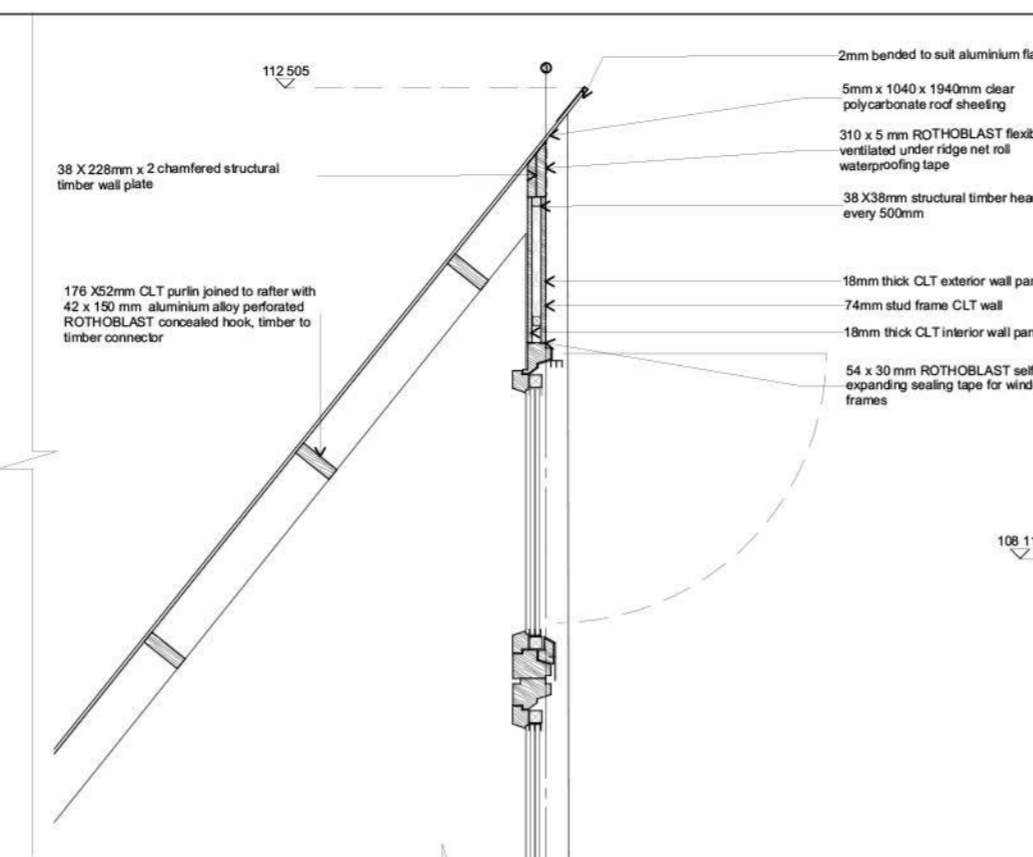
HYDROPONICS	25m ²
KITCHEN LIBRARY	17m ²
URBAN KITCHEN	150m ²

LENGTHS

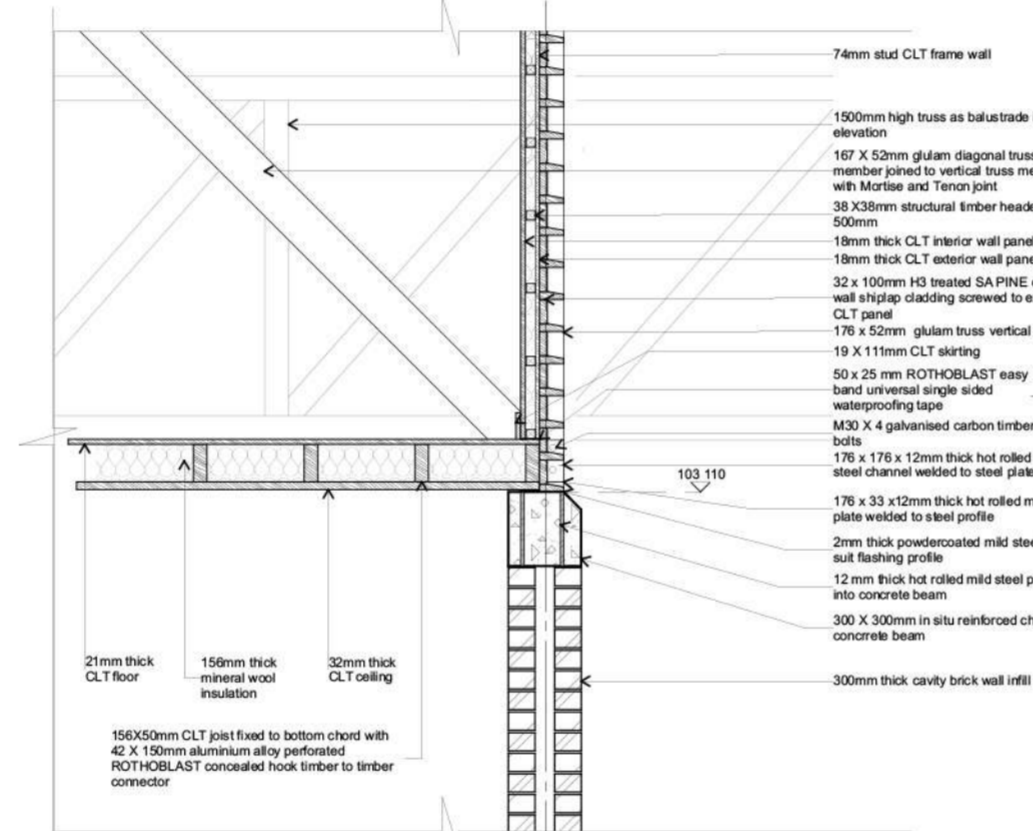
AB = 42.777
BC = 120.863
CD = 81.973
DA = 125.772



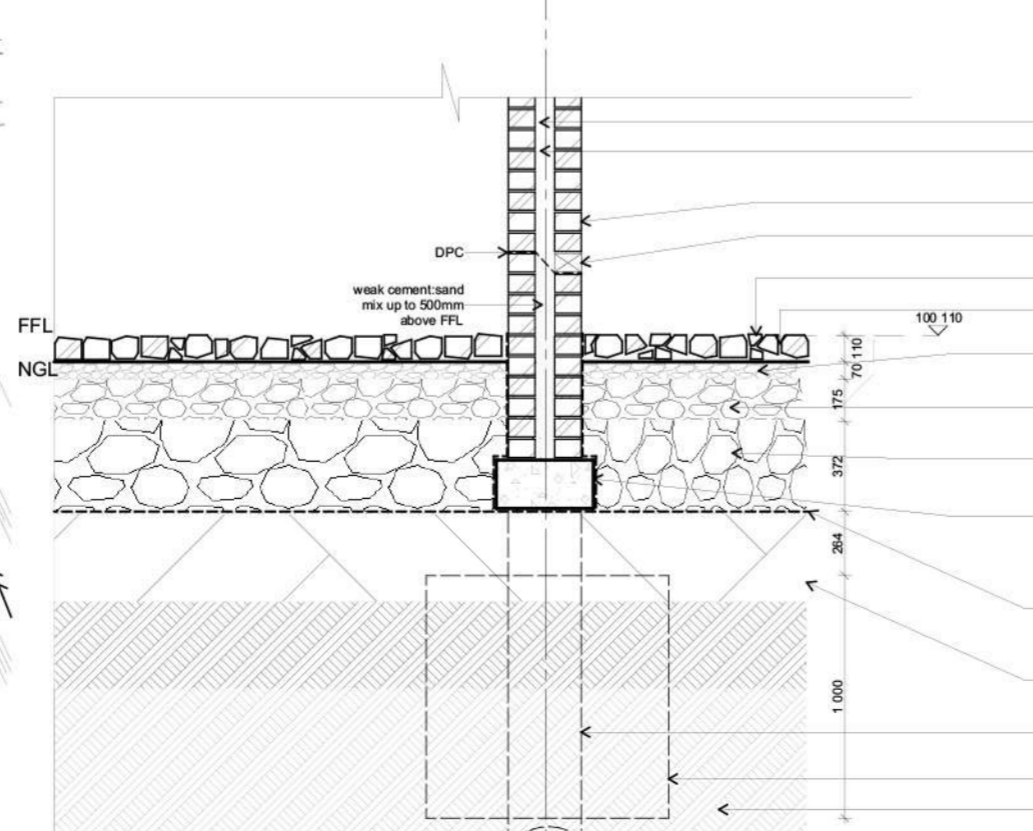
Site plan
Scale 1:200 @ A1



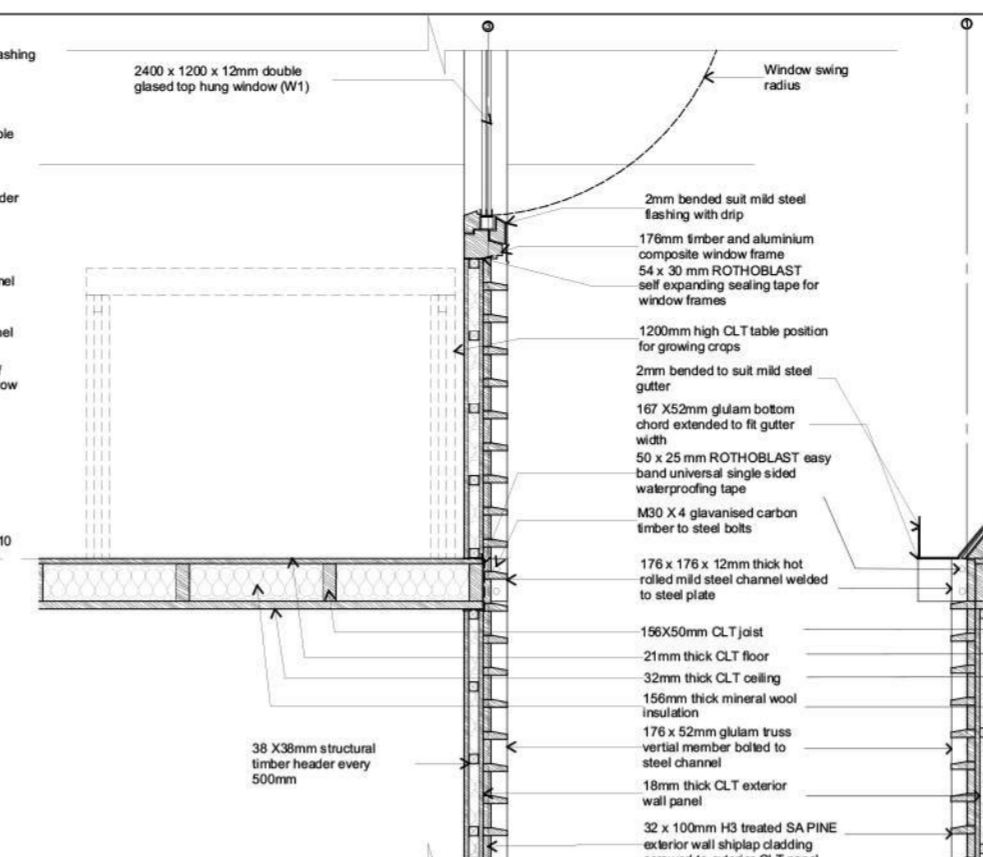
Detail 1
Scale 1:20 @ A1



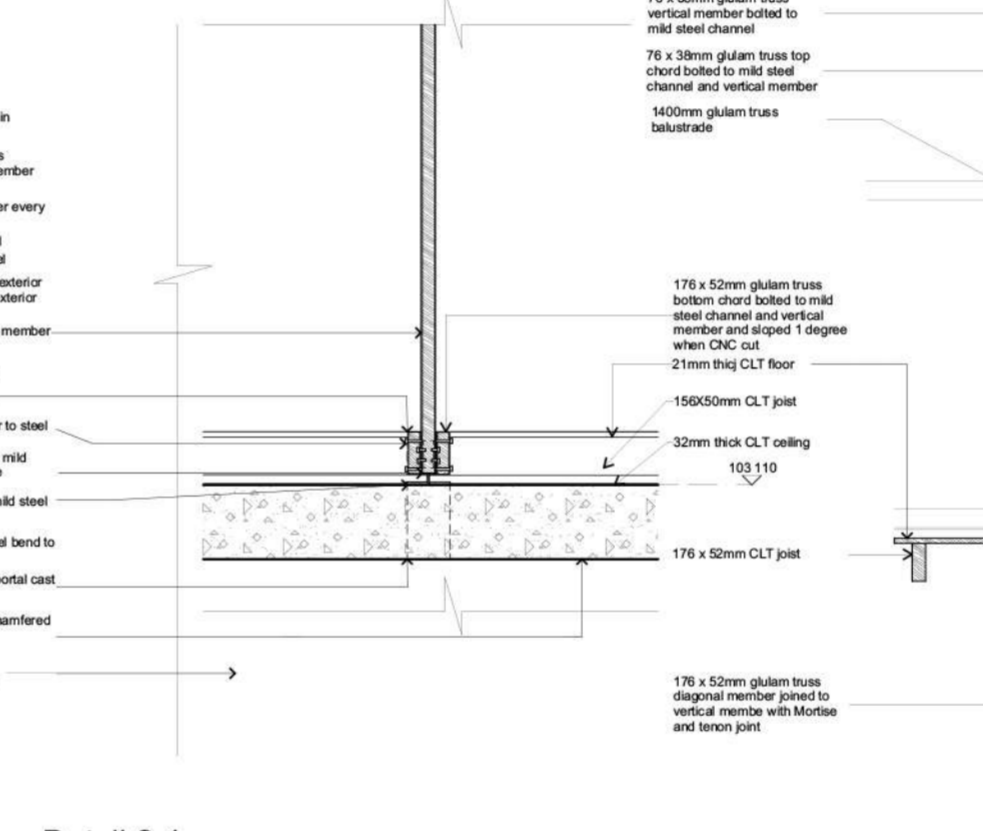
Detail 2
Scale 1:20 @ A1



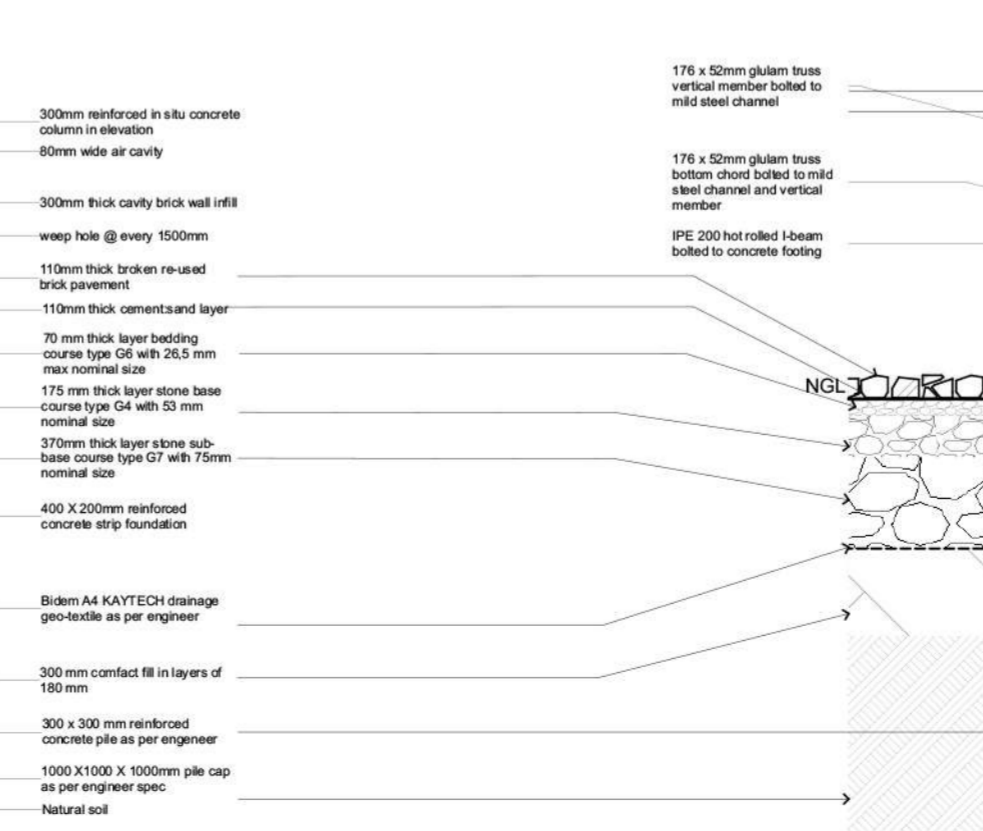
Detail 3



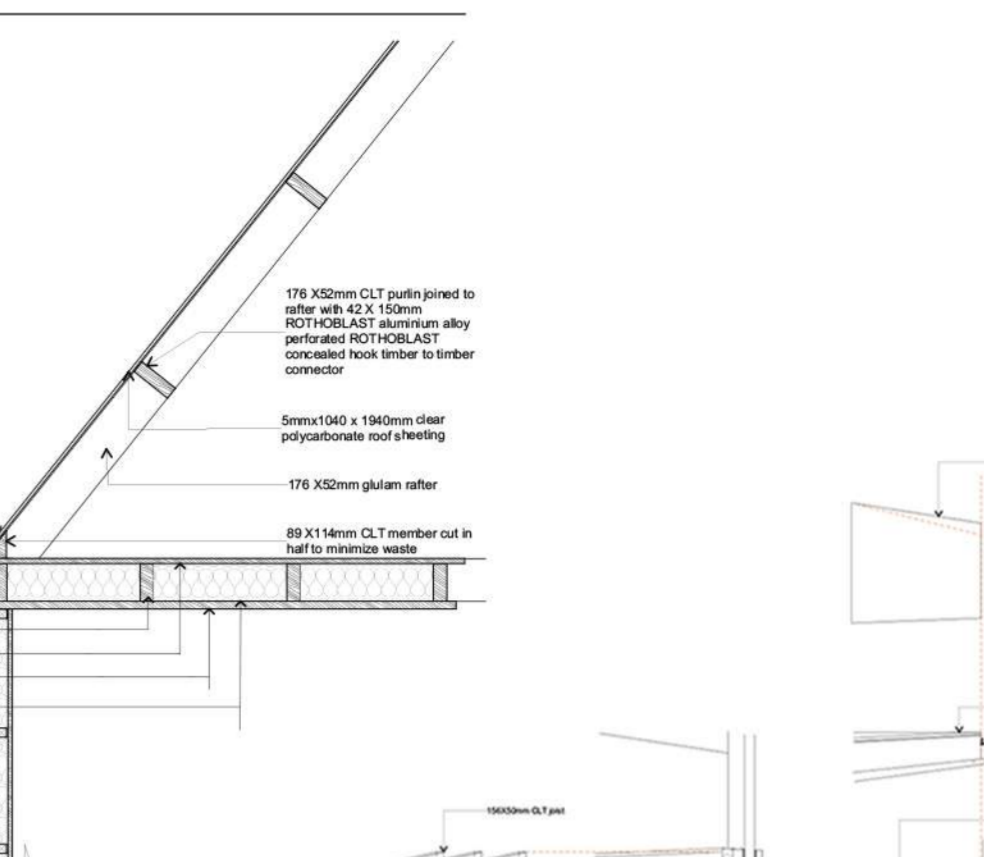
Detail 4
Scale 1:20 @ A1



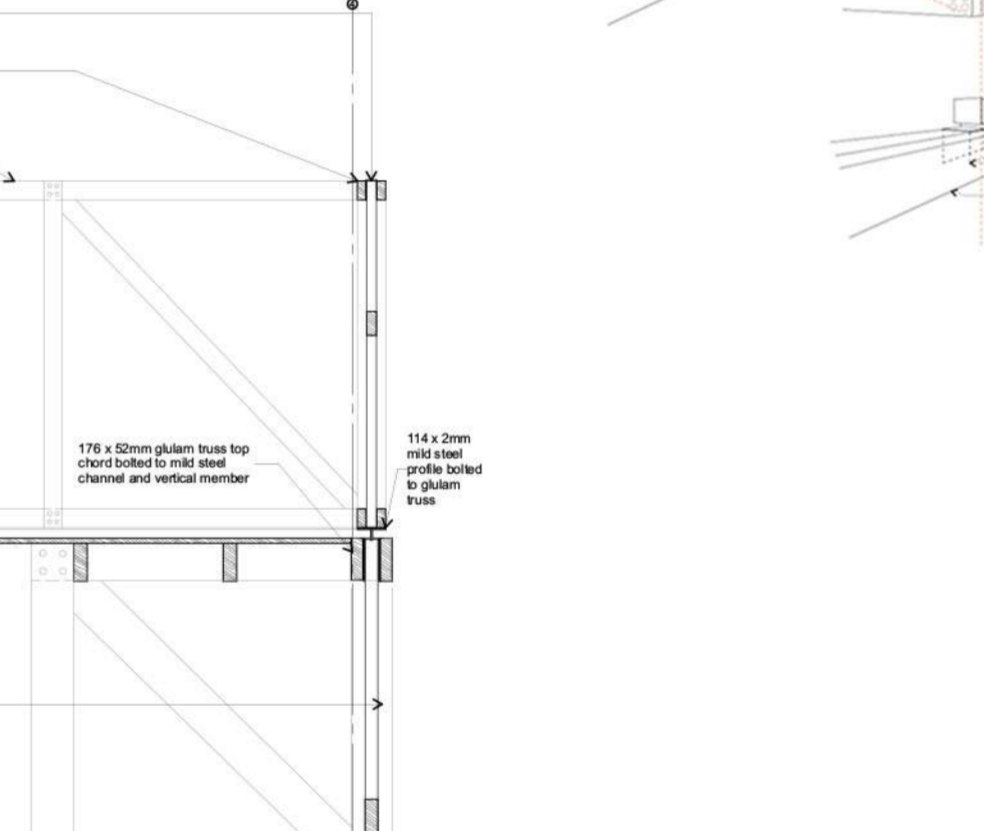
Detail 2.1
Scale 1:20 @ A1



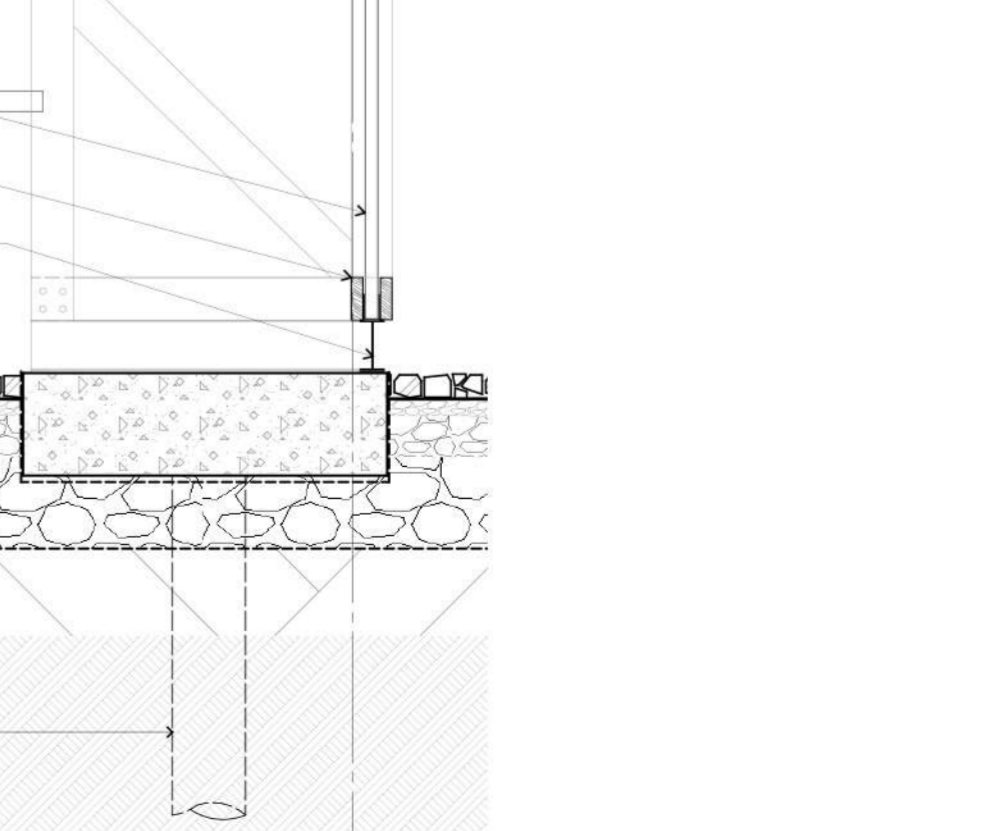
Detail 5



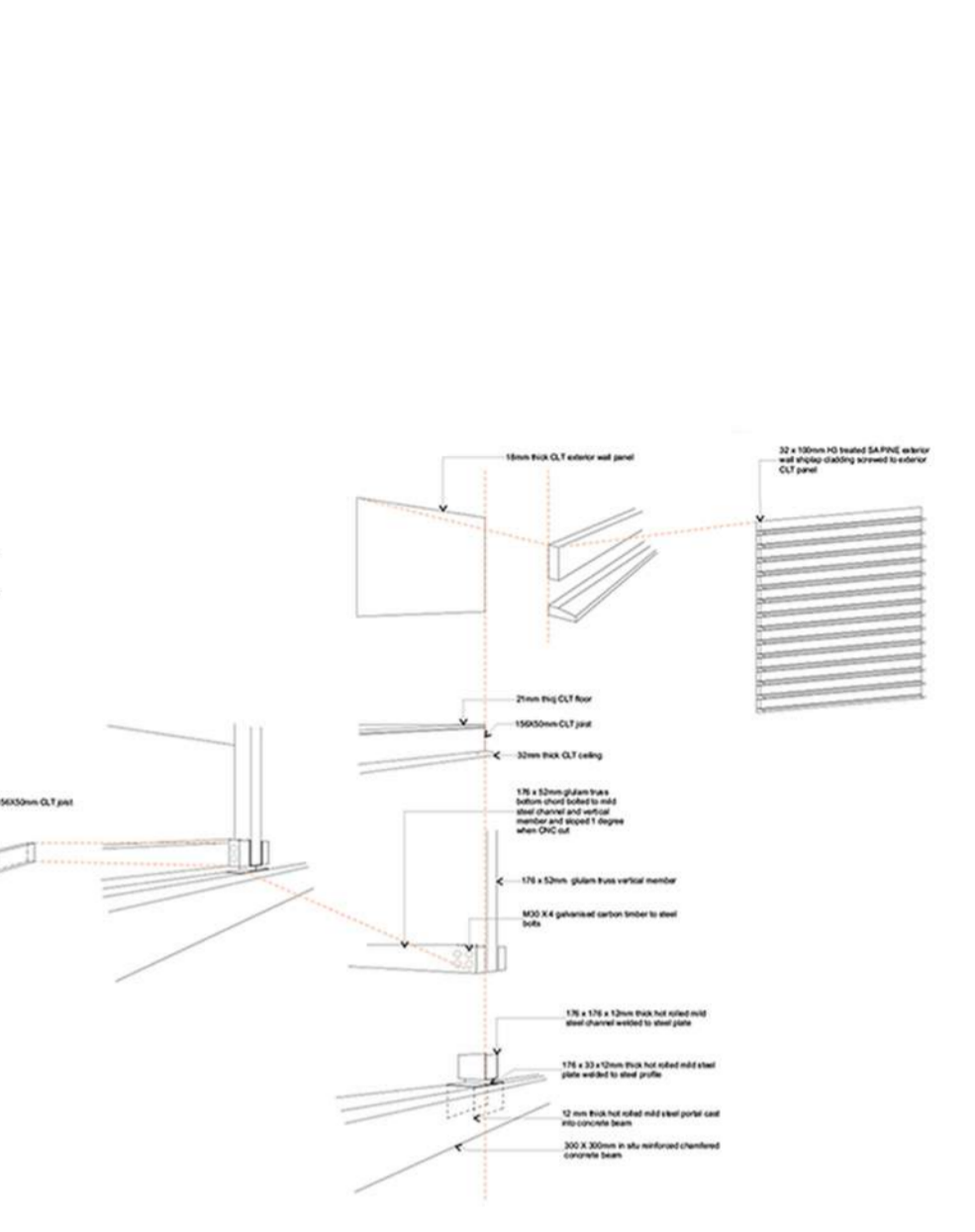
Detail 5
Scale 1:20 @ A1



Detail 6



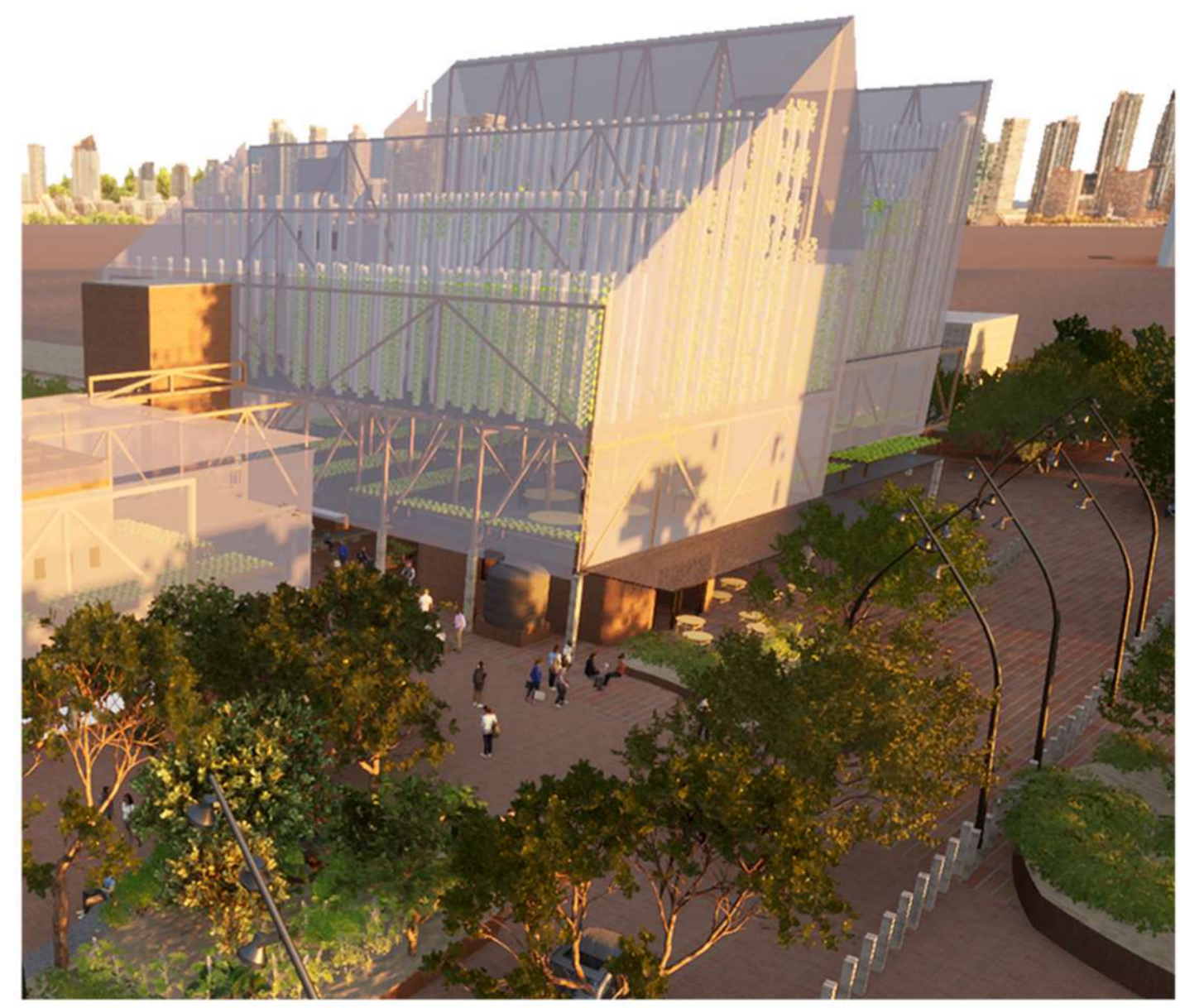
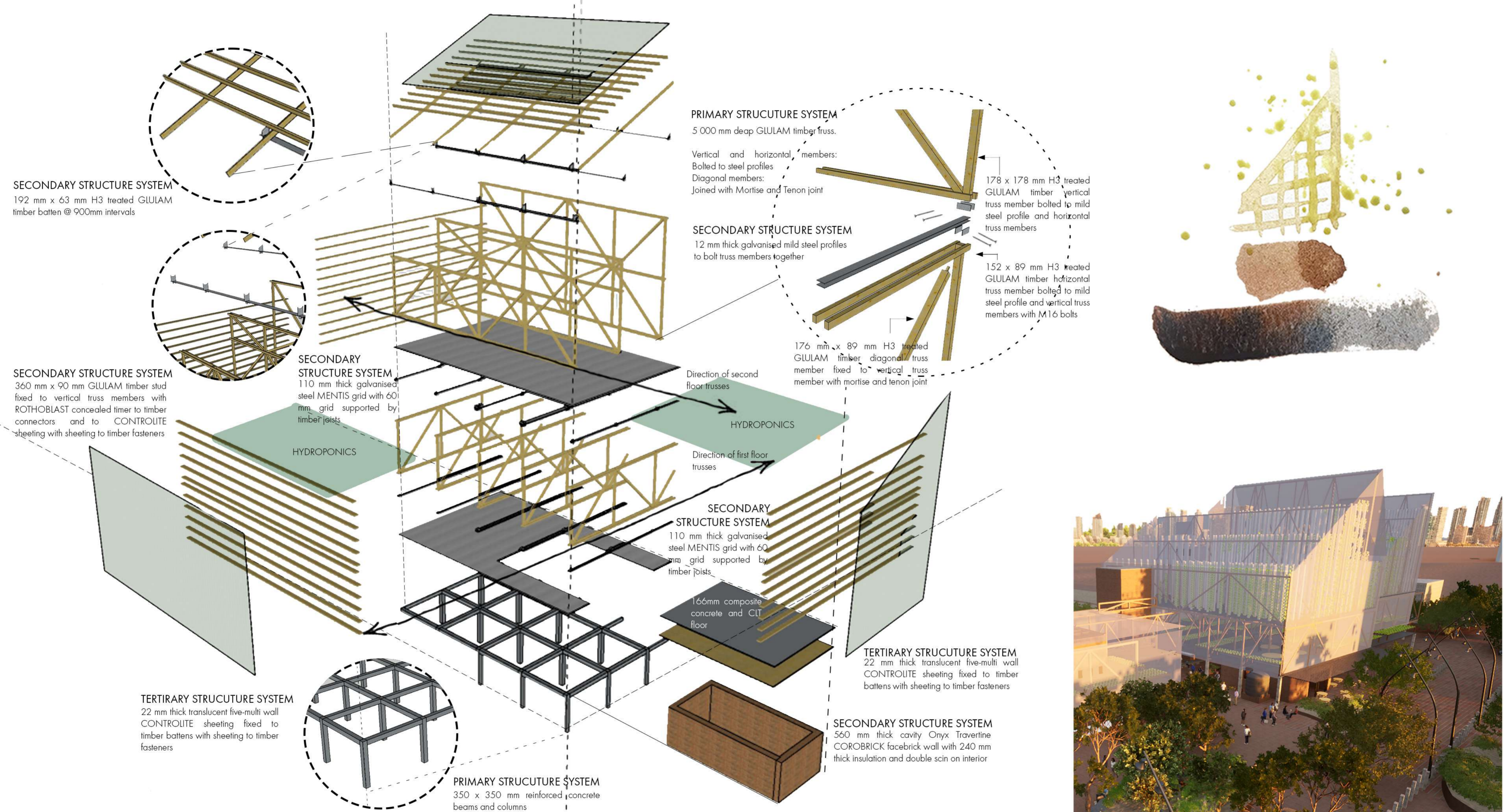
Detail 6



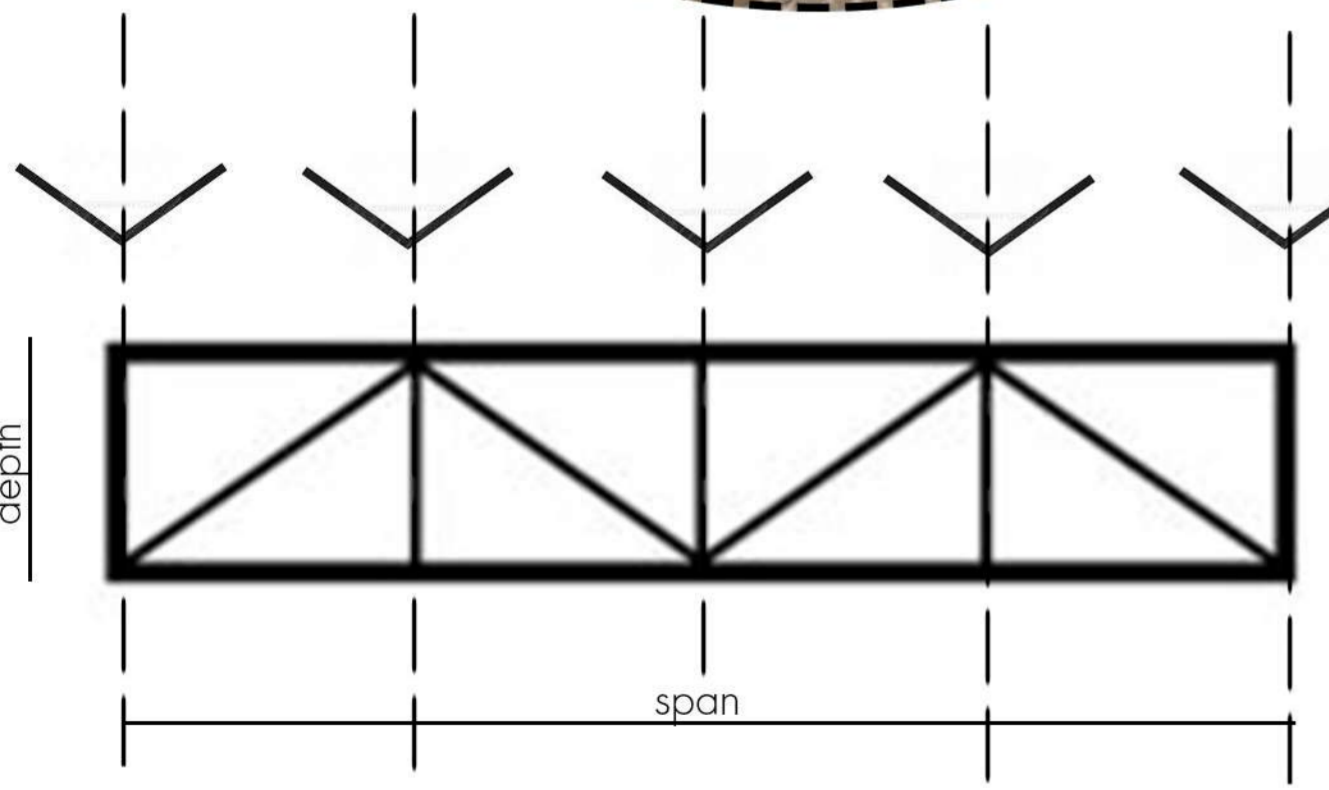
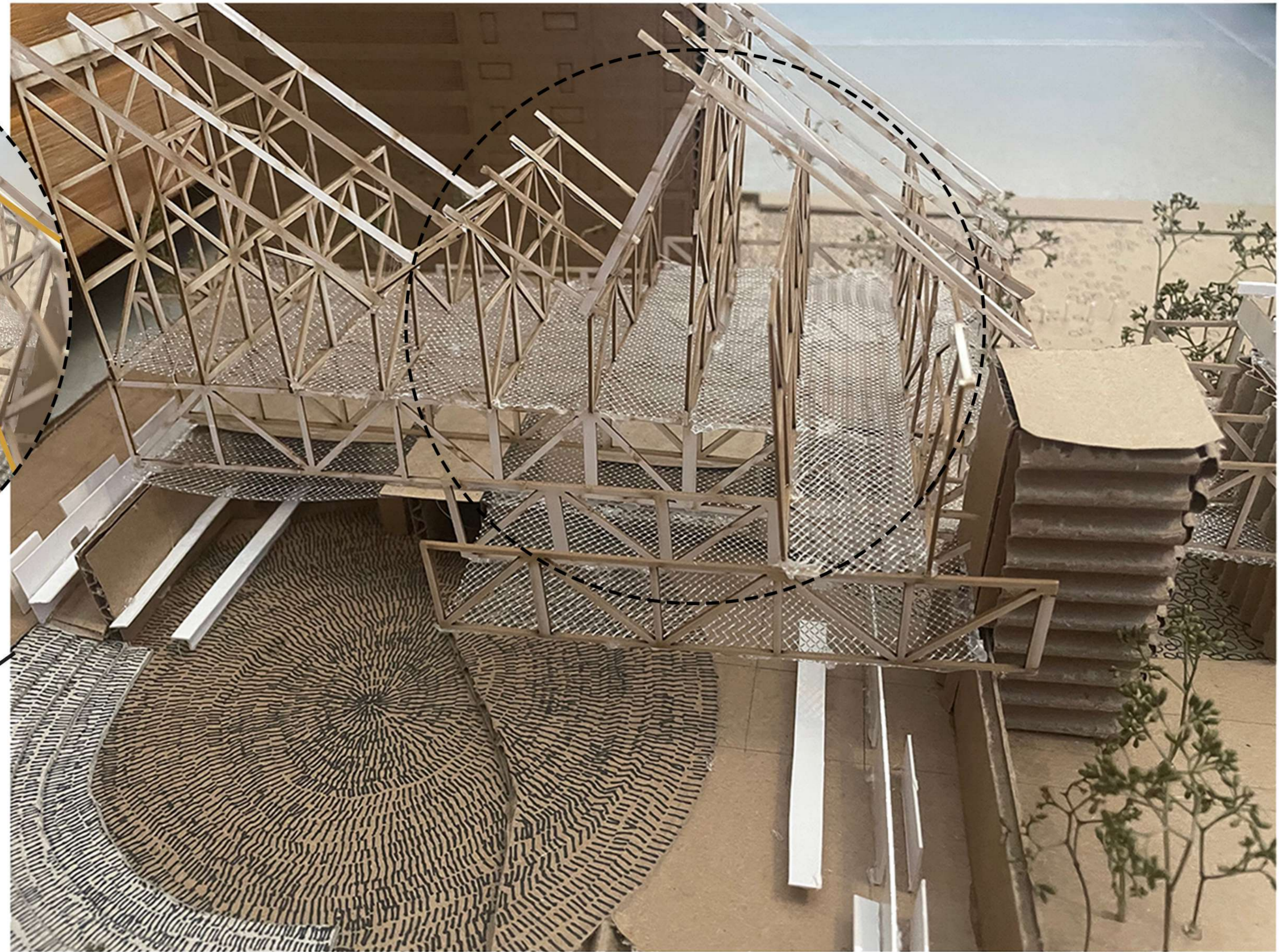
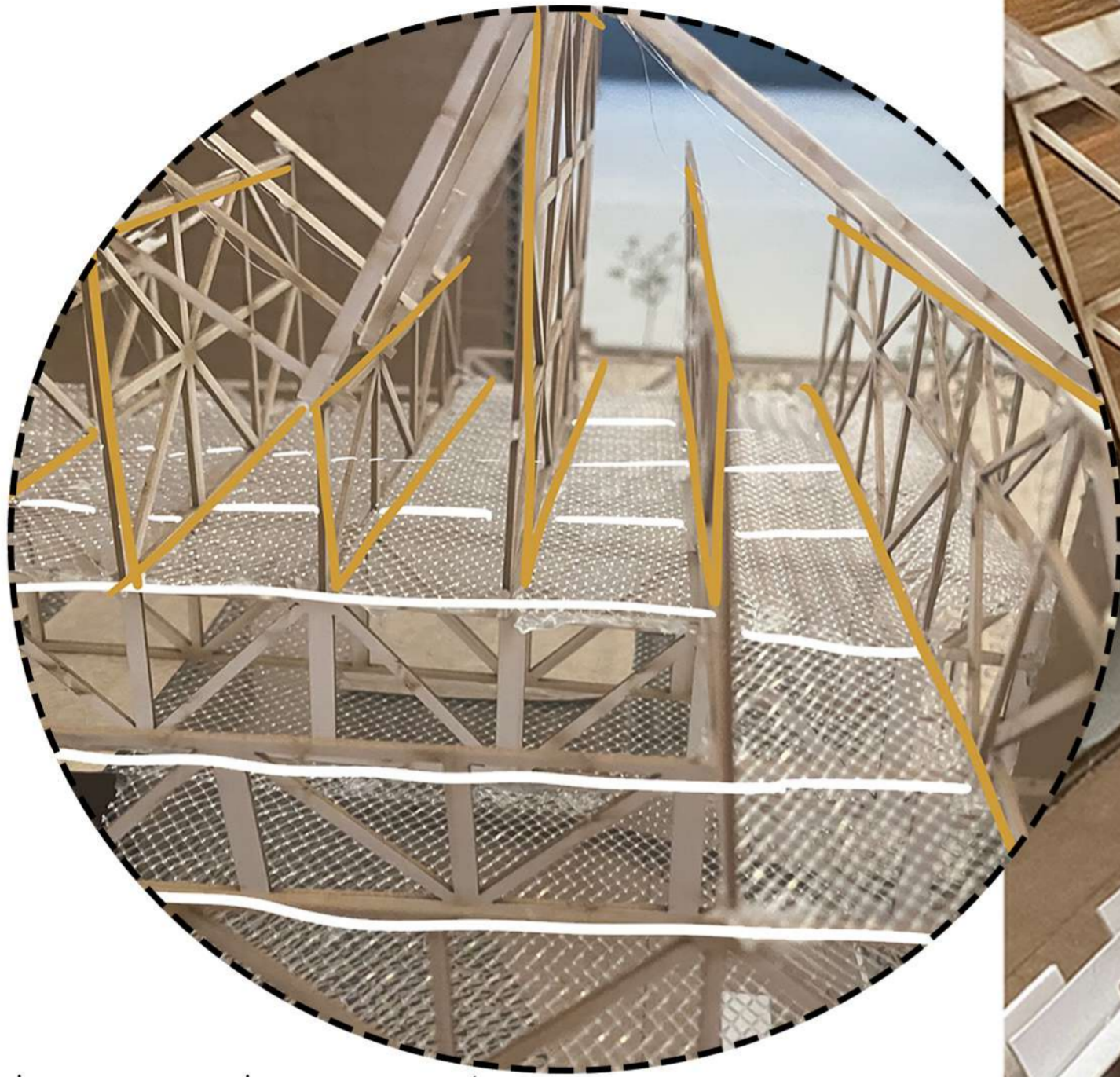
Detail 5
Scale 1:20 @ A1



Detail 6

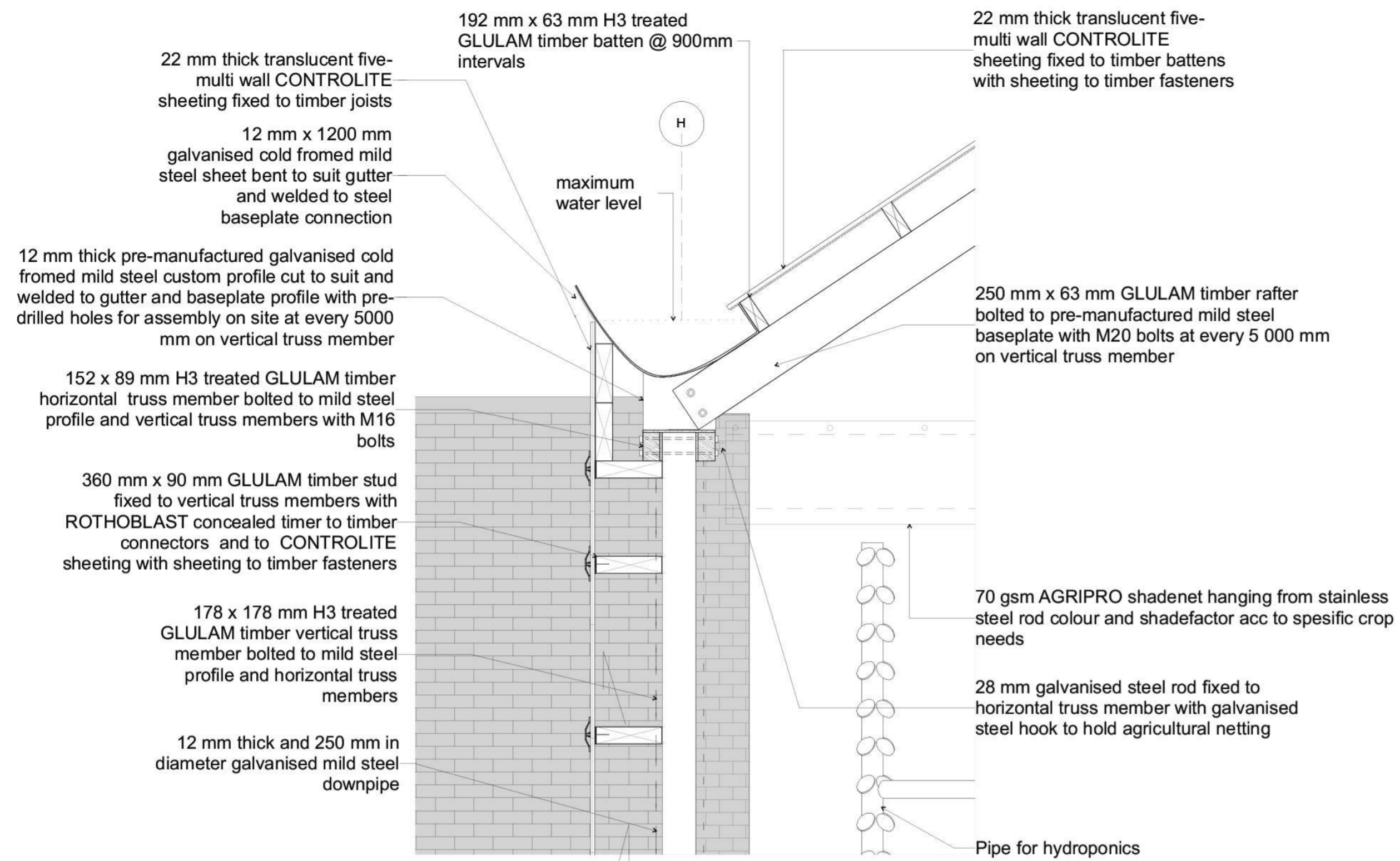


ASSEMBLY & AXONOMETRIC

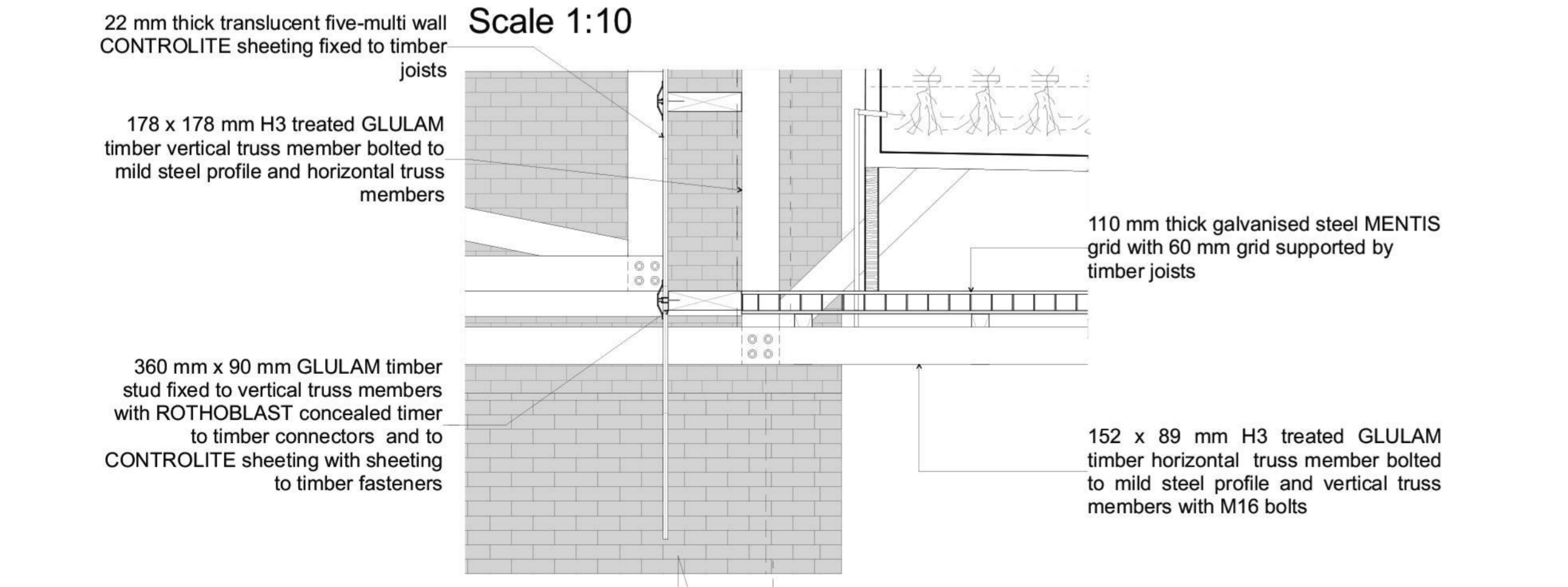


$DEPTH = SPAN / 20$

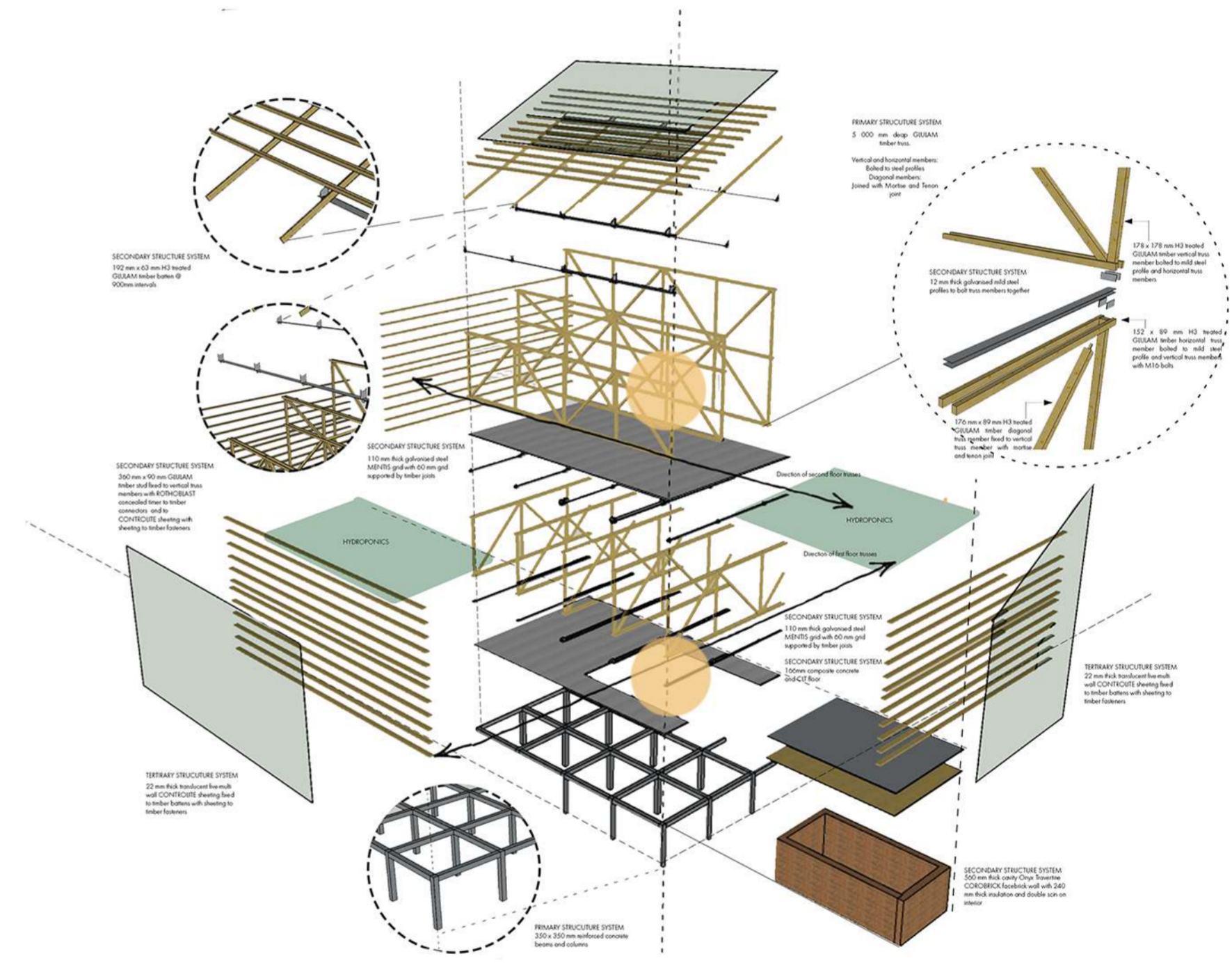
TRUSS ENGINEERING



DETAIL 1
Scale 1:10



DETAIL 2
Scale 1:10



22 mm thick translucent five-multi wall CONTROLITE sheeting fixed to timber battens with sheeting to timber fasteners

250 mm x 63 mm GLULAM timber rafter bolted to pre-manufactured mild steel baseplate with M20 bolts at every 5 000 mm on vertical truss member

192 mm x 63 mm H3 treated GLULAM timber batten @ 900mm intervals

5 mm thick mild steel flashing fixed to timber batten and rafter with 5 mm drip

12mm thick mild steel custom profile bolted to steel plate and truss with galvanised M16 bolts

152 x 89 mm H3 treated GLULAM timber horizontal truss member bolted to mild steel profile and vertical truss members with M16 bolts

152 x 152 mm H3 treated GLULAM timber vertical truss member bolted to mild steel profile and horizontal truss members

20 mm thick aluminium louvres fixed to vertical truss member for ventilation

5 mm thick mild steel flashing fixed to timber beam and vertical truss member

192 mm x 63 mm H3 treated GLULAM timber batten @ 900mm intervals

DETAIL 3
Scale 1:10

192 x 63 mm H3 treated GLULAM timber joists fixed to horizontal truss members ROTHBLAST concealed timber to timber fixture

28 mm galvanised steel rod fixed to horizontal truss member with galvanised steel hook to hold agricultural netting

178 x 178 mm H3 treated GLULAM timber vertical truss member bolted to mild steel profile and horizontal truss members

110 mm thick galvanised steel MENTIS grid with 60 mm grid supported by timber joists

12mm thick galvanised mild steel custom profile bolted to truss members with galvanised M16 bolts

70 gsm AGRIPRO shadenet hanging from stainless steel rod colour and shadefactor acc to spesific crop needs

166mm composite concrete and CLT floor

DETAIL 4
Scale 1:10

152 x 89 mm H3 treated GLULAM timber horizontal truss member bolted to mild steel profile and vertical truss members with M16 bolts

12mm thick mild steel custom profile cast into reinforced concrete beam

152 x 89 mm H3 treated GLULAM timber horizontal truss member bolted to mild steel profile and vertical truss members with M16 bolts

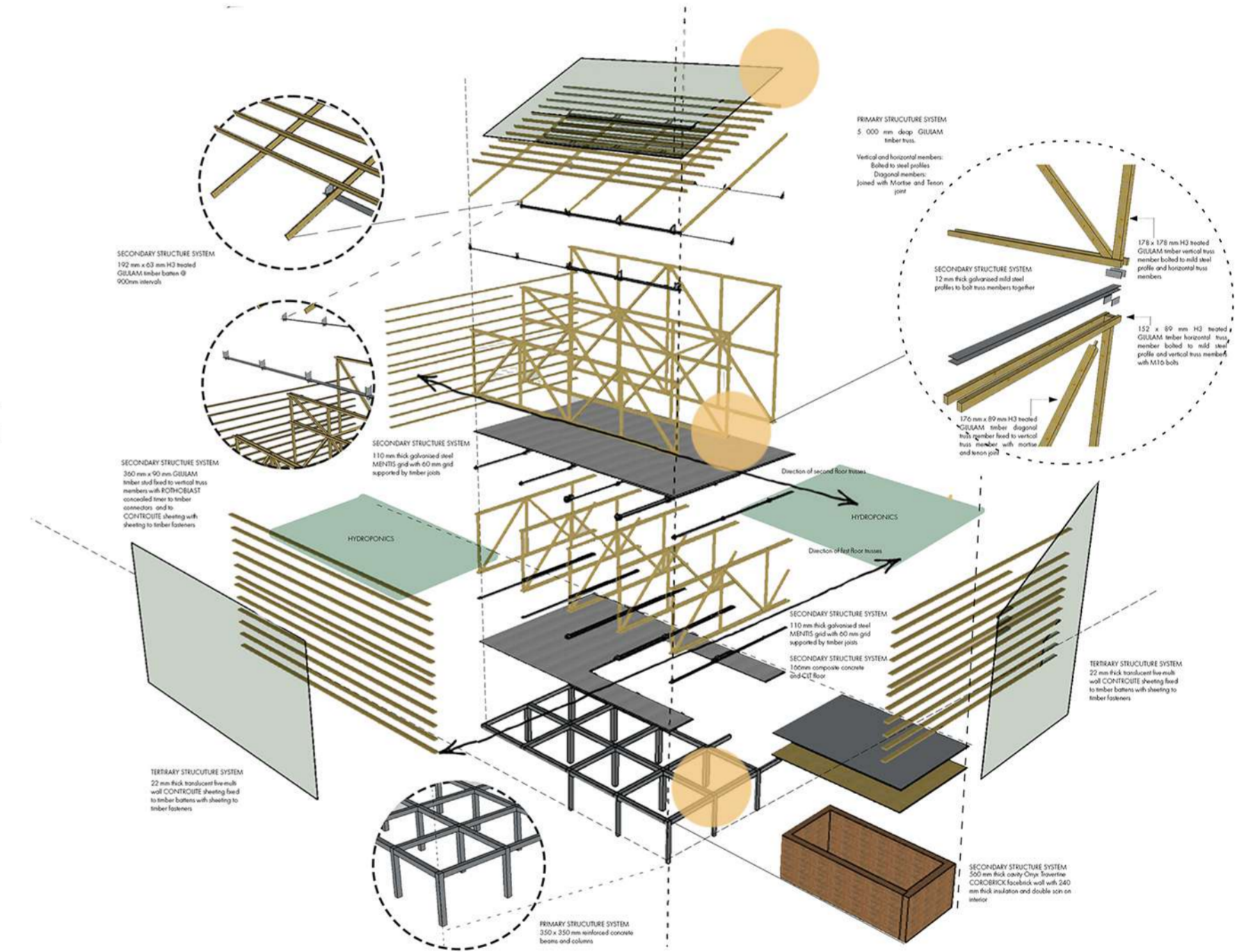
176 mm x 89 mm H3 treated GLULAM timber diagonal truss member fixed to vertical truss member with mortise and tenon joint

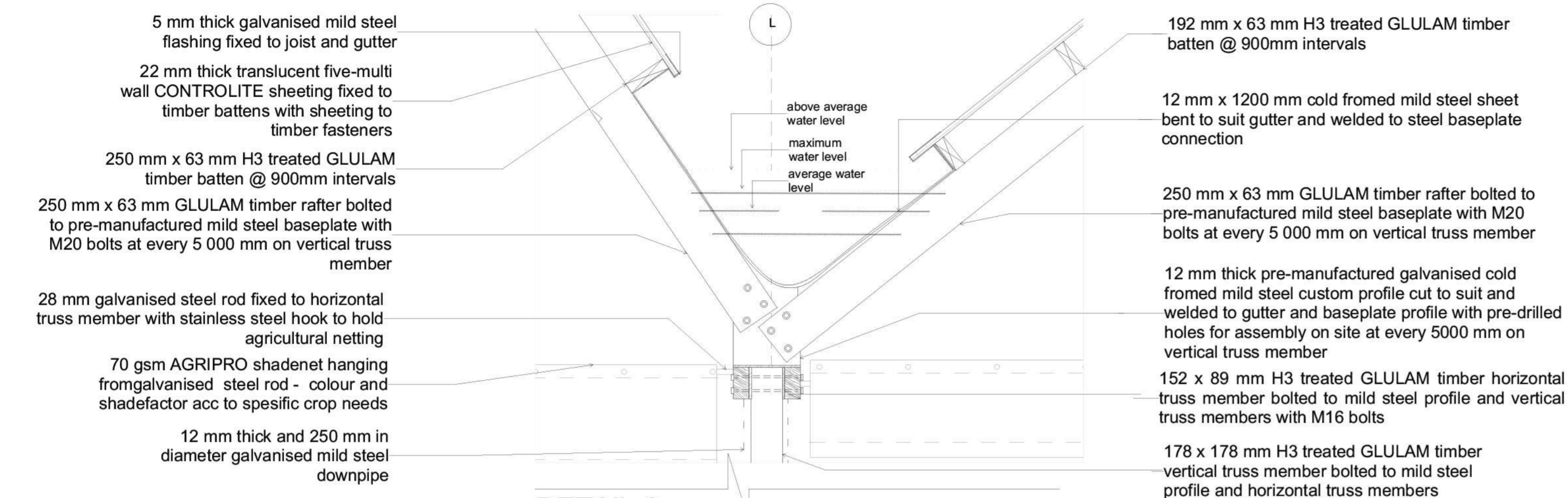
178 x 178 mm H3 treated GLULAM timber vertical truss member bolted to galvanised mild steel profile and horizontal truss members

12mm thick mild steel custom profile bolted to reinforced concrete beam and truss with M16 bolts

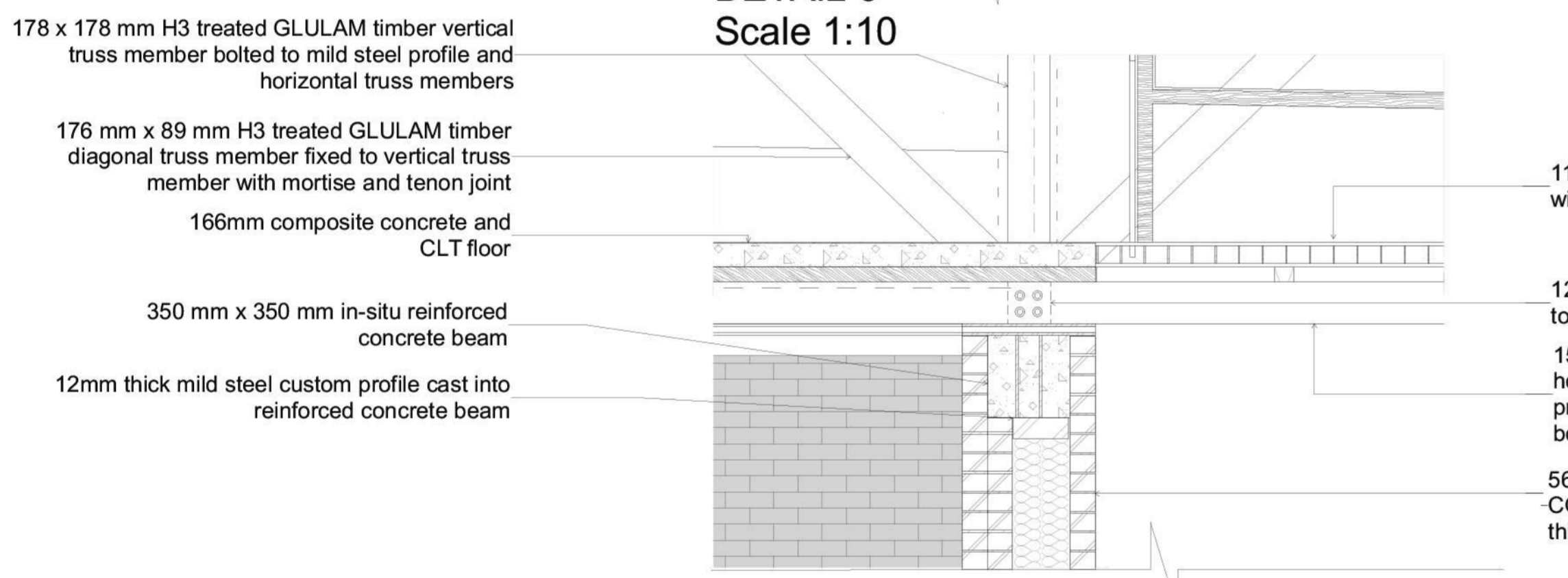
DETAIL 5
Scale 1:10

350 mm x 350 mm in-situ reinforced concrete beam

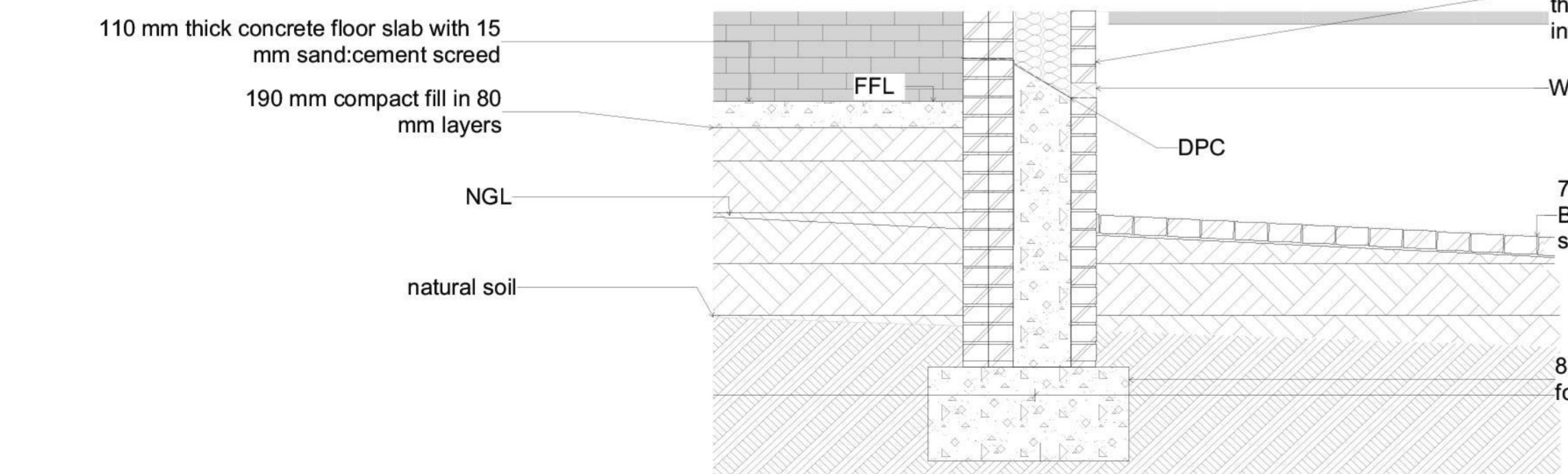




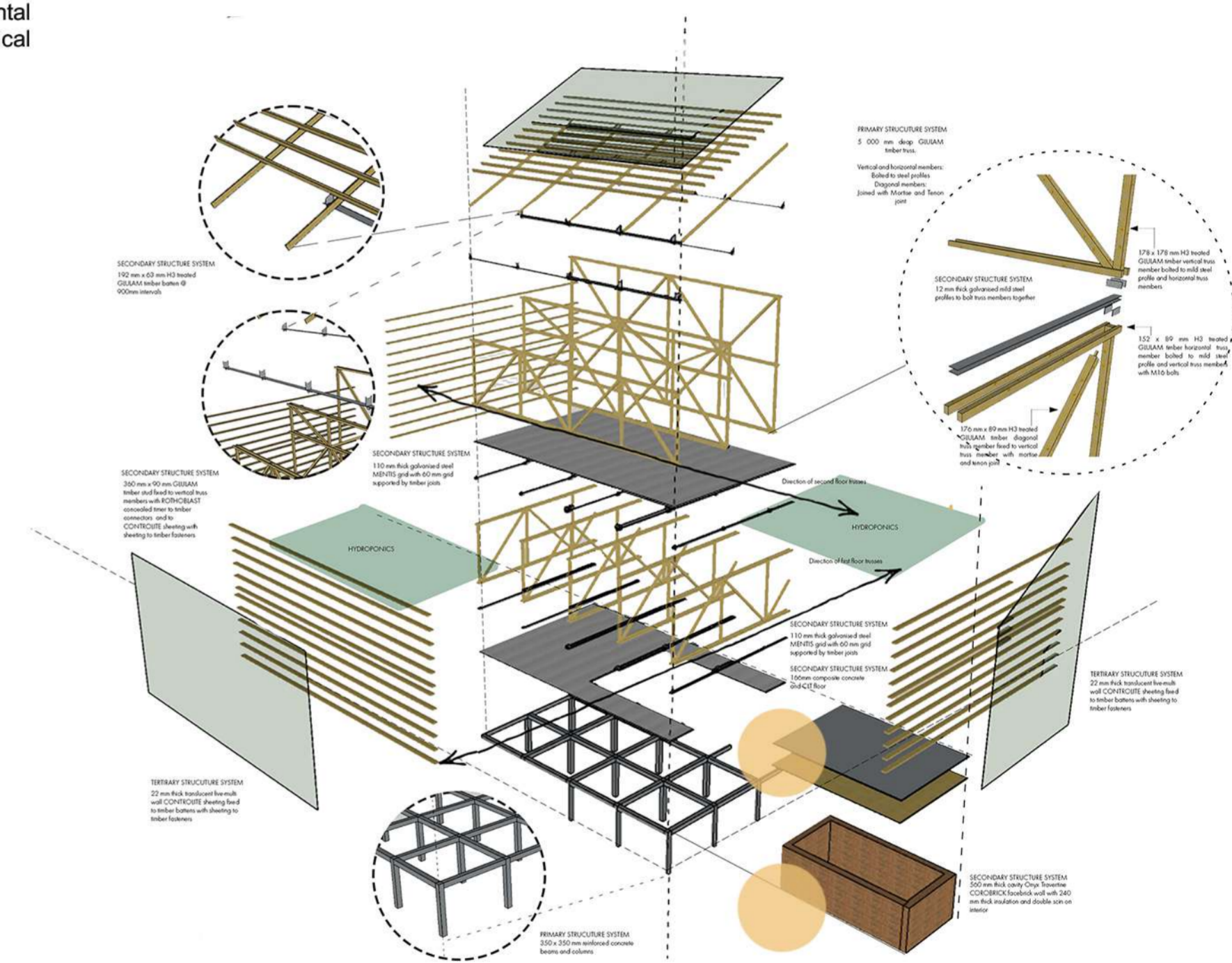
DETAIL 6
Scale 1:10

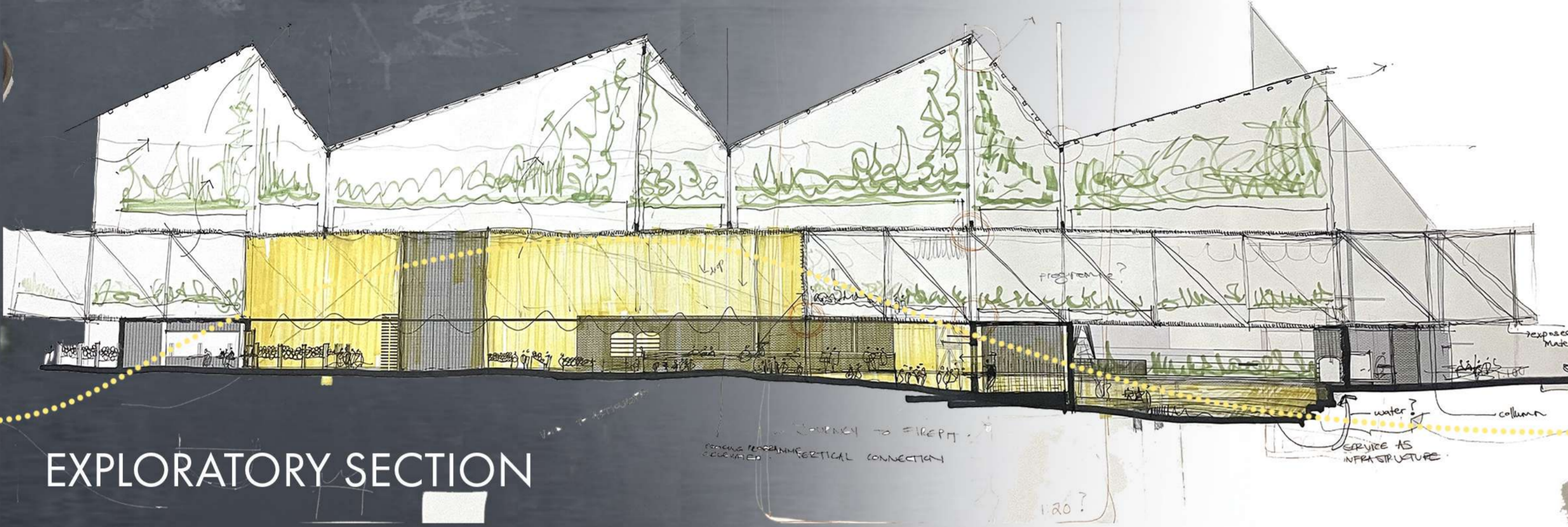


DETAIL 7
Scale 1:10



DETAIL 8
Scale 1:10

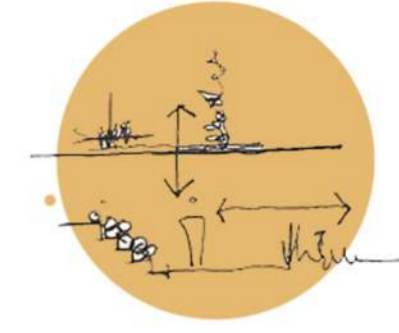




EXPLORATORY SECTION



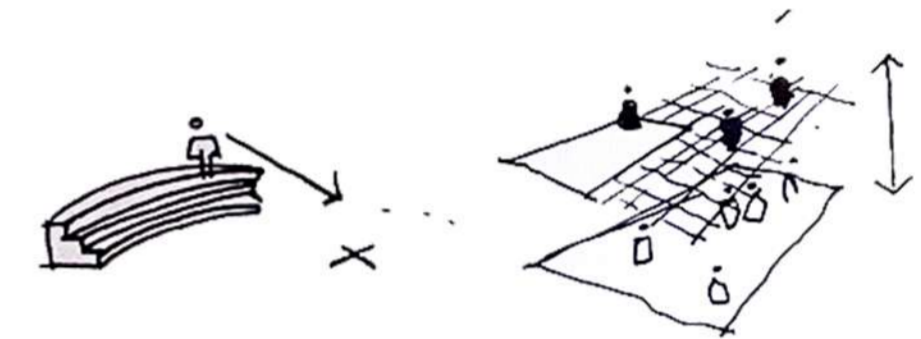
Inter-Use



Dense Food System



Soften social threshold

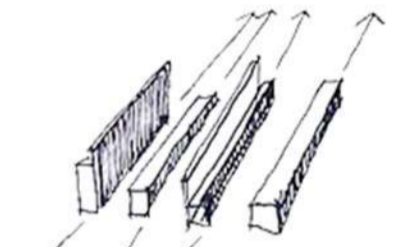


Amphitheatre and street as performance

See through floors for visual connection



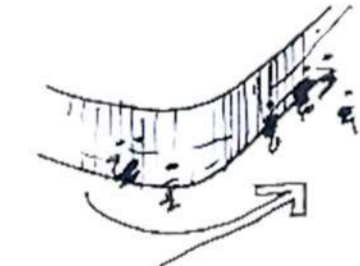
Gathering elements (table, fires, amphitretres)



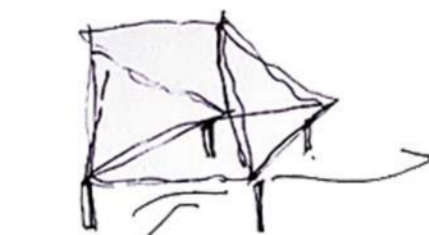
Layers of privacy - service as infrastructure



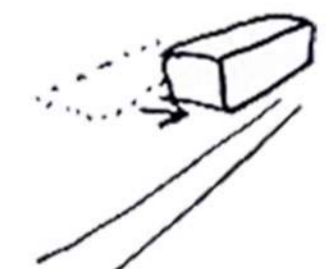
Vegetation for thermal comfort



Curved elements to encourage movement



Open groundfloor exposing programme to city



Strategic massing on street front

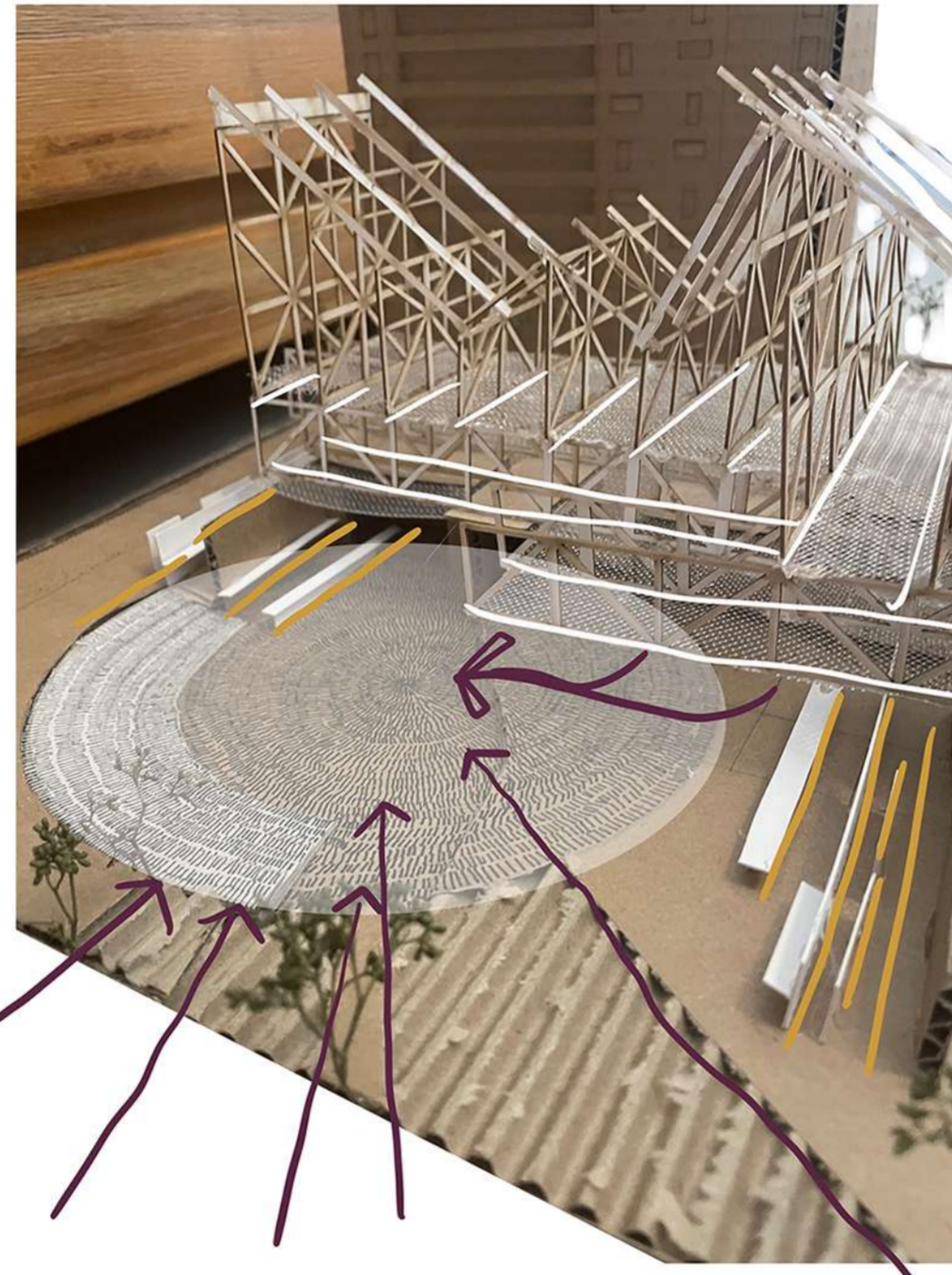


MAQUETTE 7
SCALE 1:500

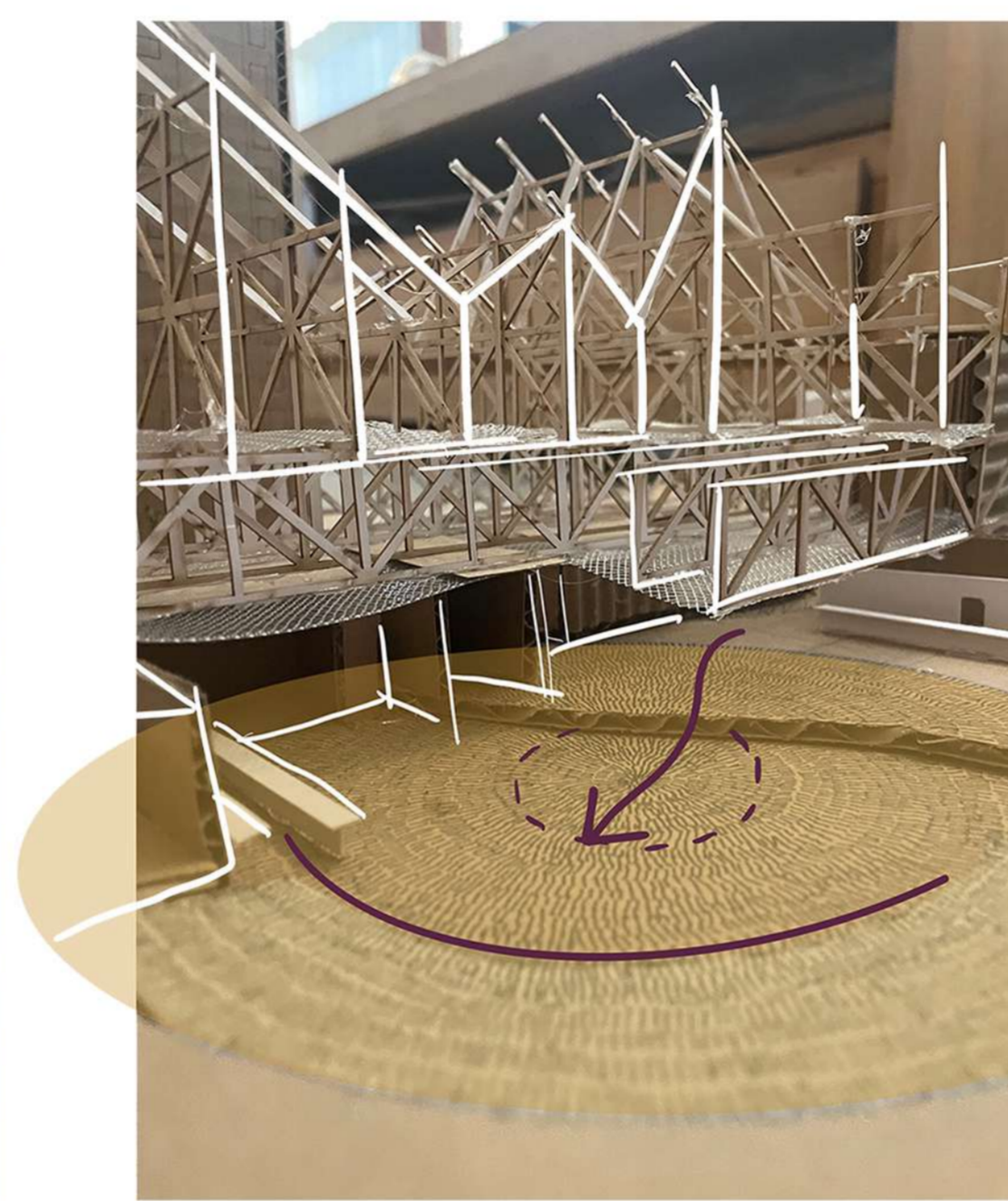
SPATIAL KIT OF PARTS



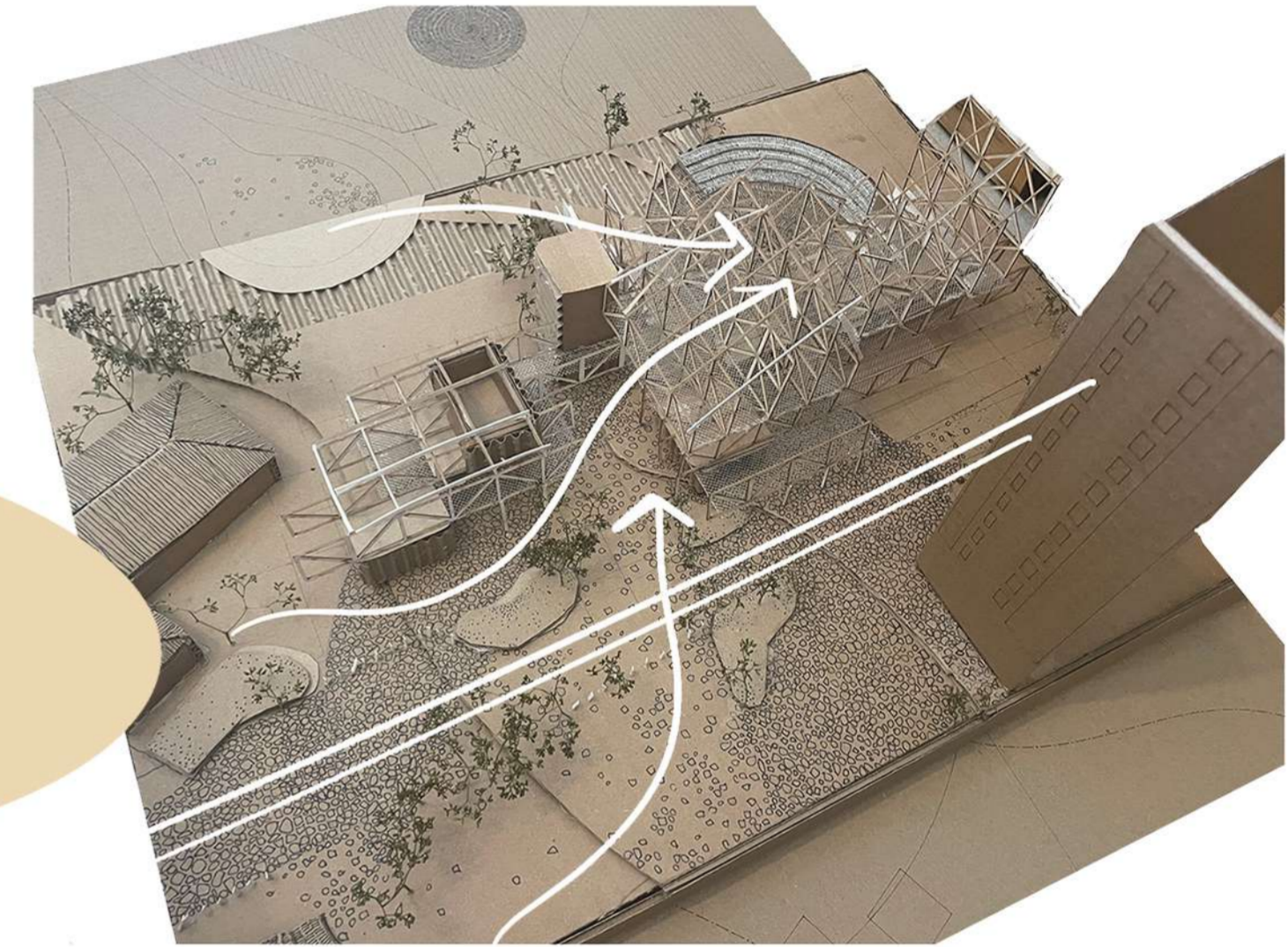
ARRIVAL NODE
SCALE MITIGATION



LAYERS OF PRIVACY
SERVICE AS INFRASTRUCTURE
RADIAL WALKWAYS
FOCAL FIRE
PRIVACY
GATHERING

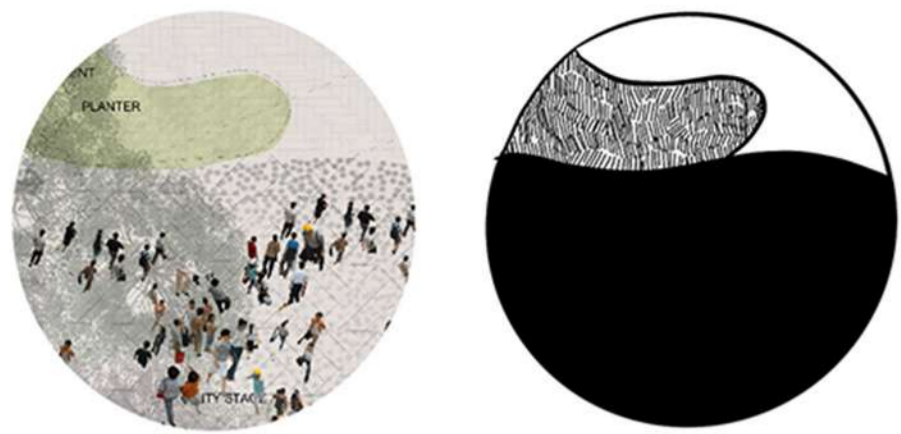


URBAN COOKING
BUILDING AS BACKDROP
INTERSECTING GEOMETRY

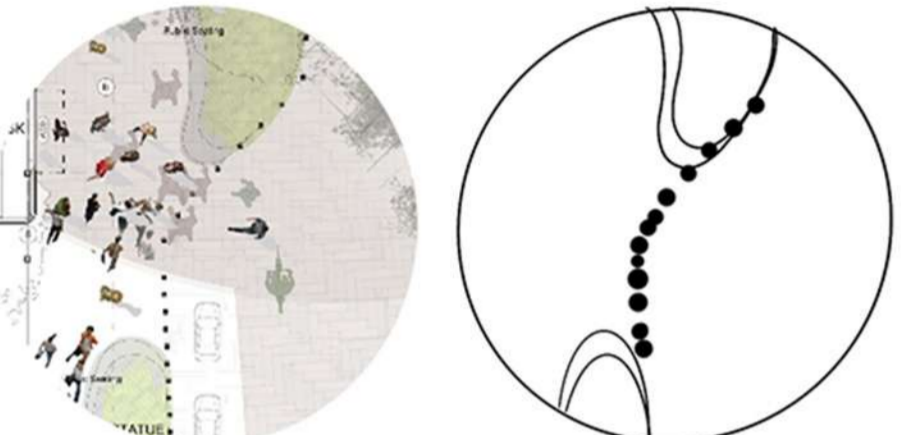


DENSITY TO STREET EDGE
MITIGATING SCALE
TEXTURED FLOOR
SHARED STREET

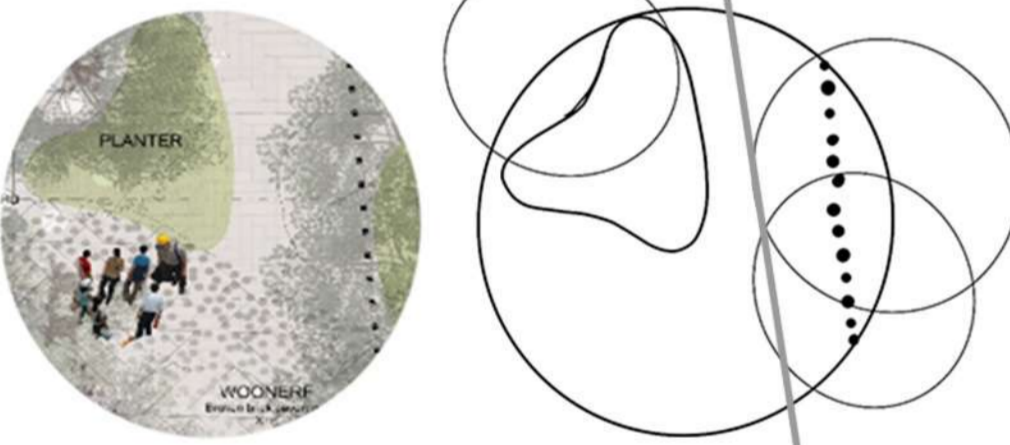
MAQUETTE 8
Scale 1:200



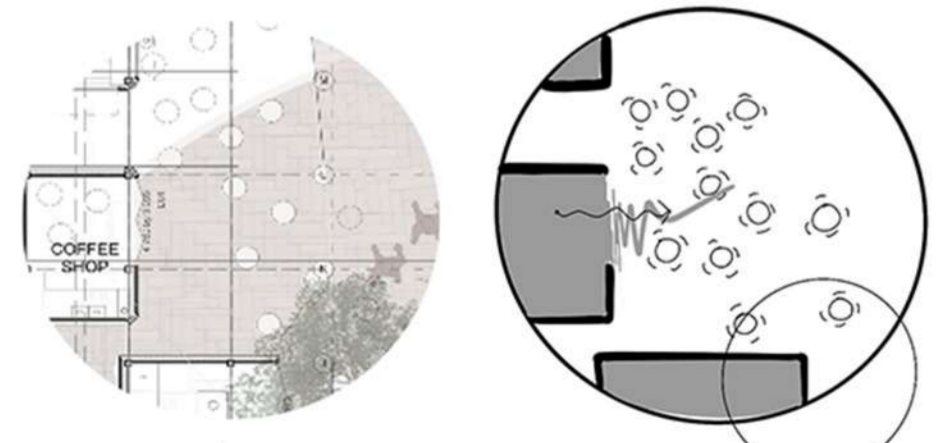
PRINCIPLE 1
Texture differences instead of level changes to dictate movement, slower speeds and user.



PRINCIPLE 2
Thresholds elements to guide pedestrian. Vehicles separated from pedestrian by street furniture.

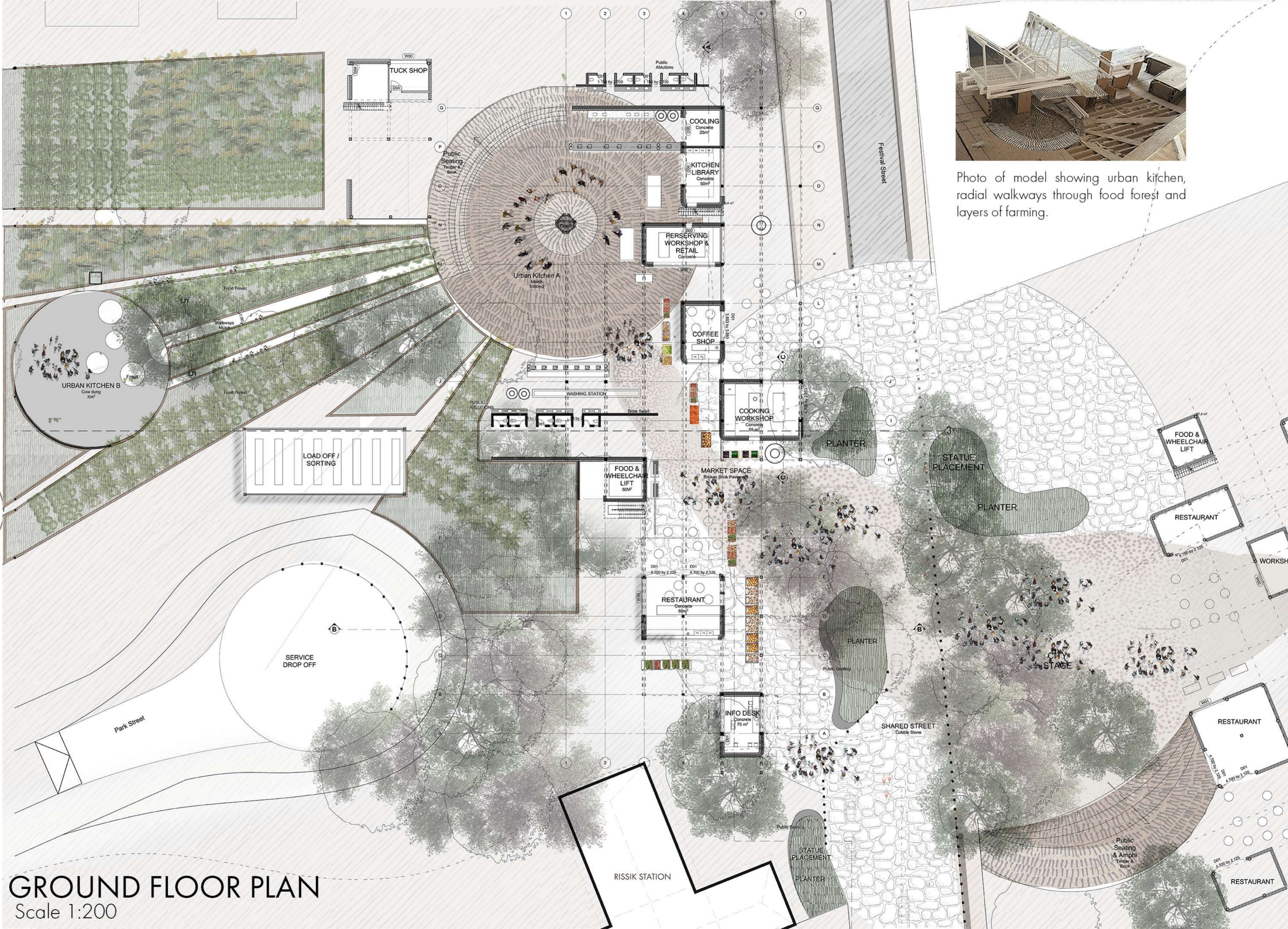


PRINCIPLE 3
Strategic street elements to narrow street to slow vehicles down. Bollards, planters, trees.

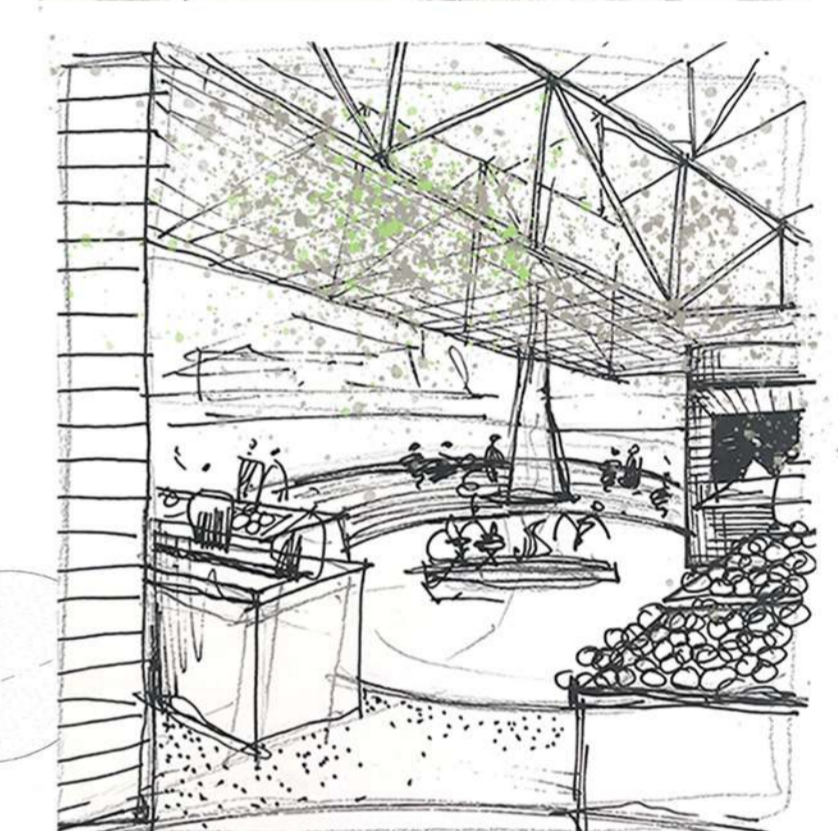
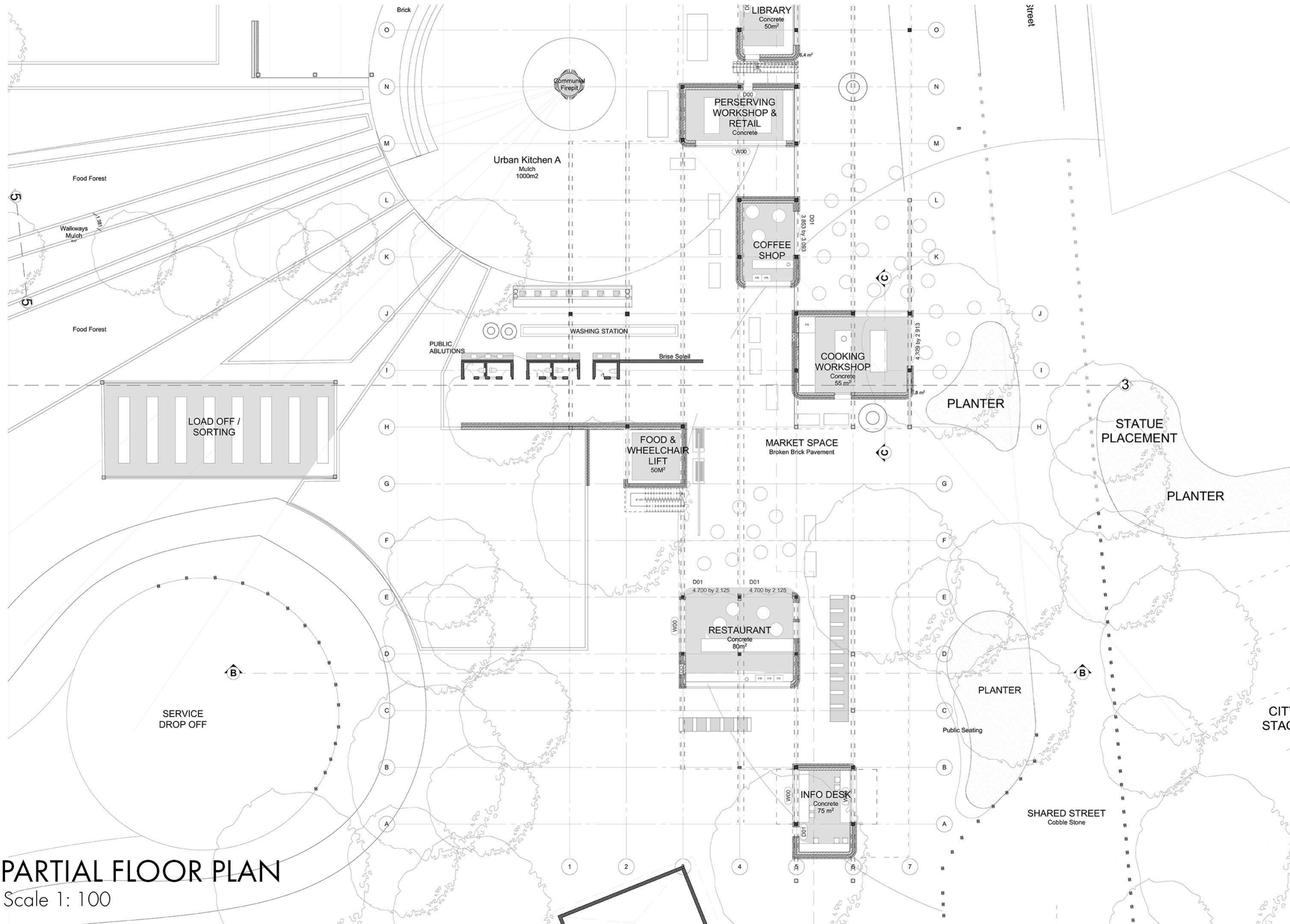


PRINCIPLE 4
Active commercial edge. Spill out space and passive surveillance. Pedestrian focused.

SHARED STREET DESIGN

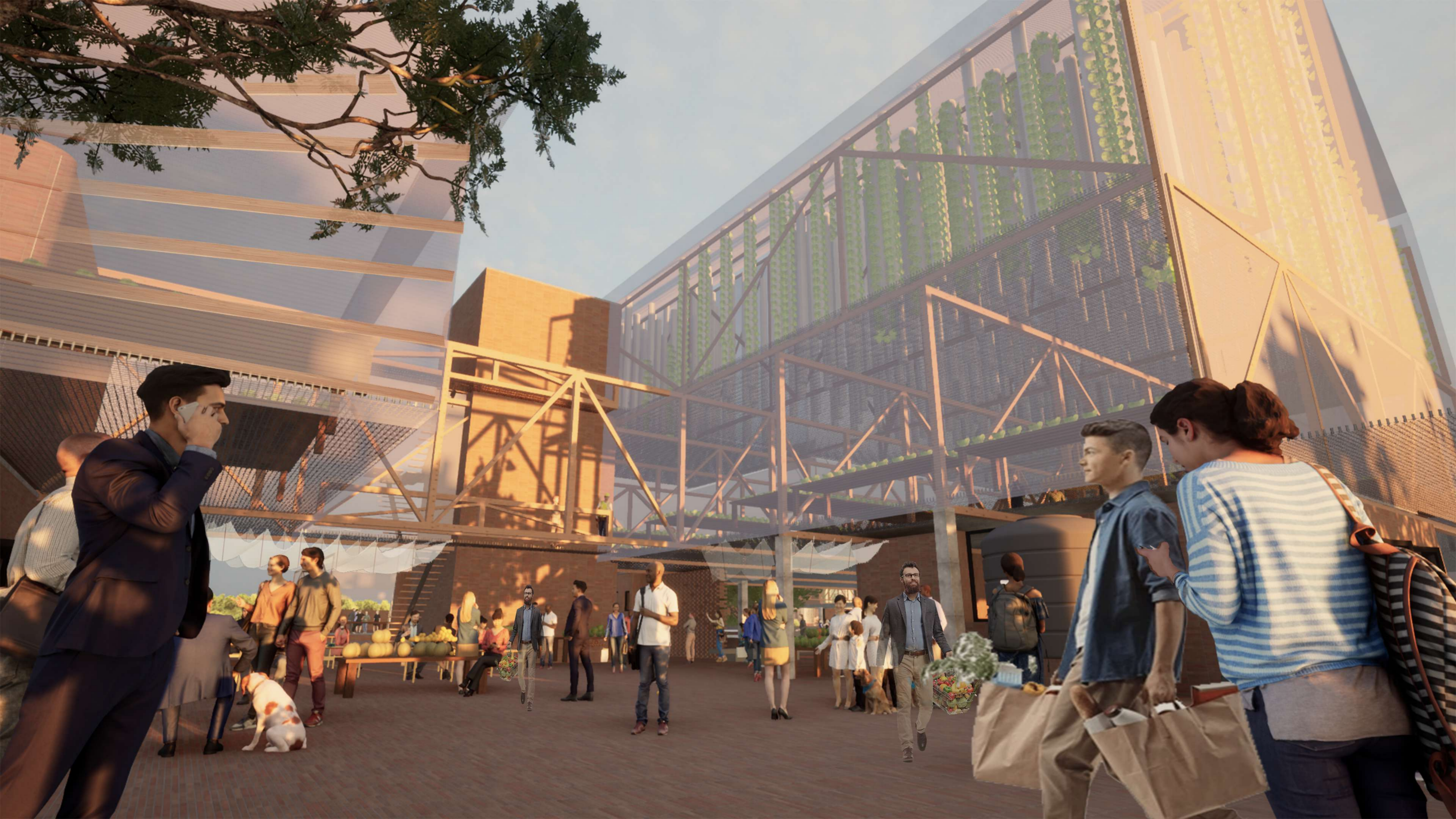


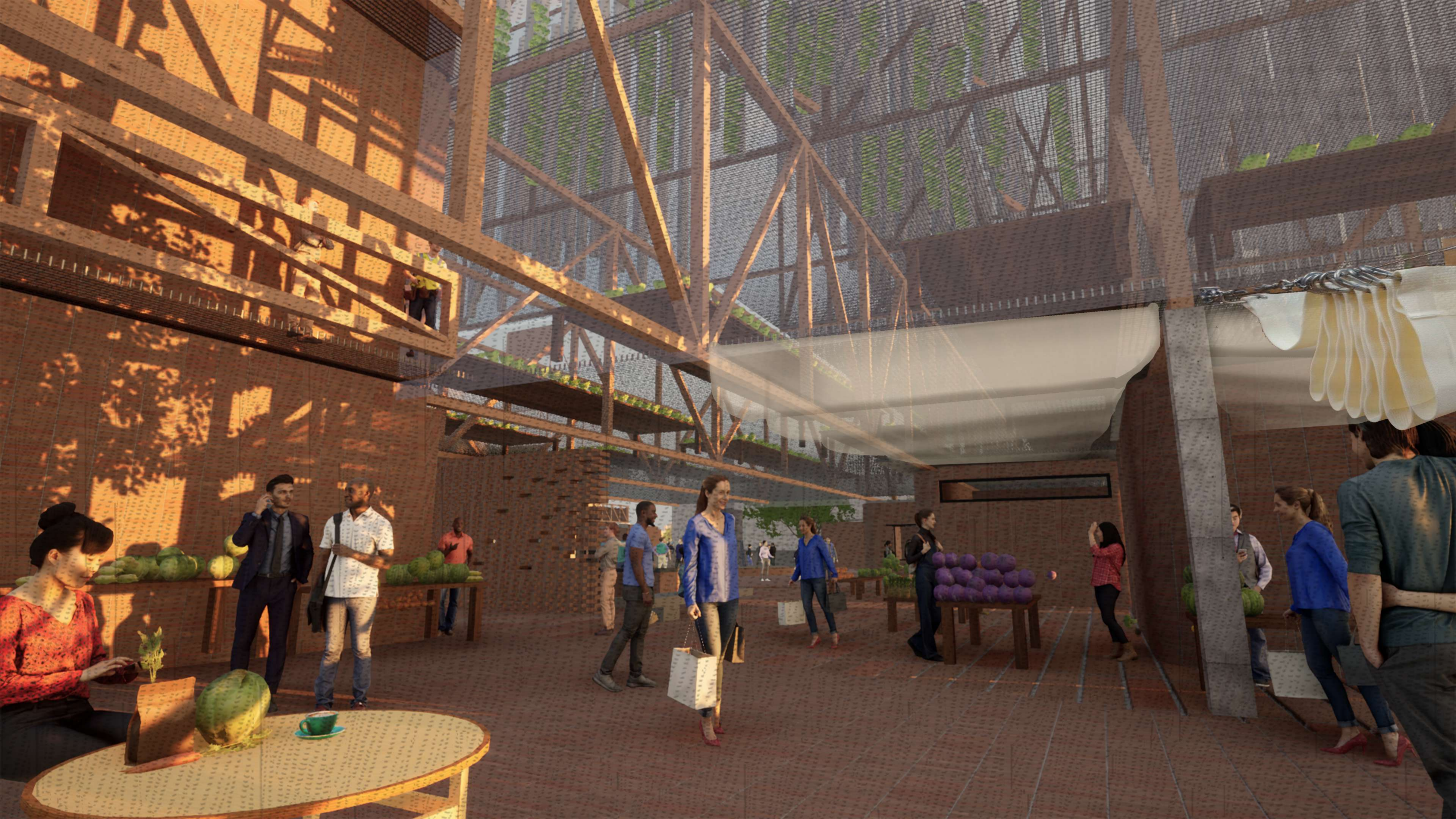
GROUND FLOOR PLAN
Scale 1:200



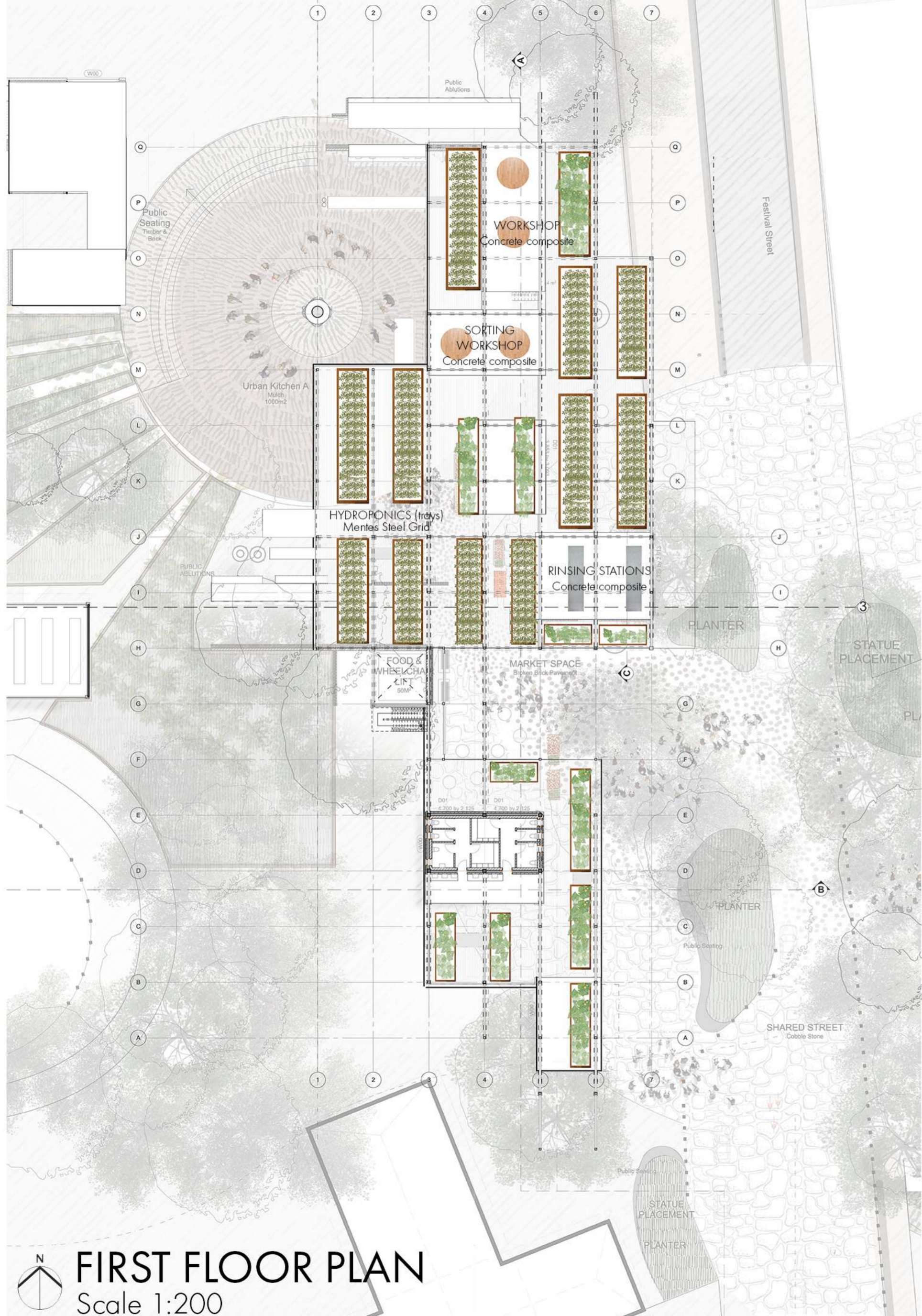
PARTIAL FLOOR PLAN
Scale 1: 100



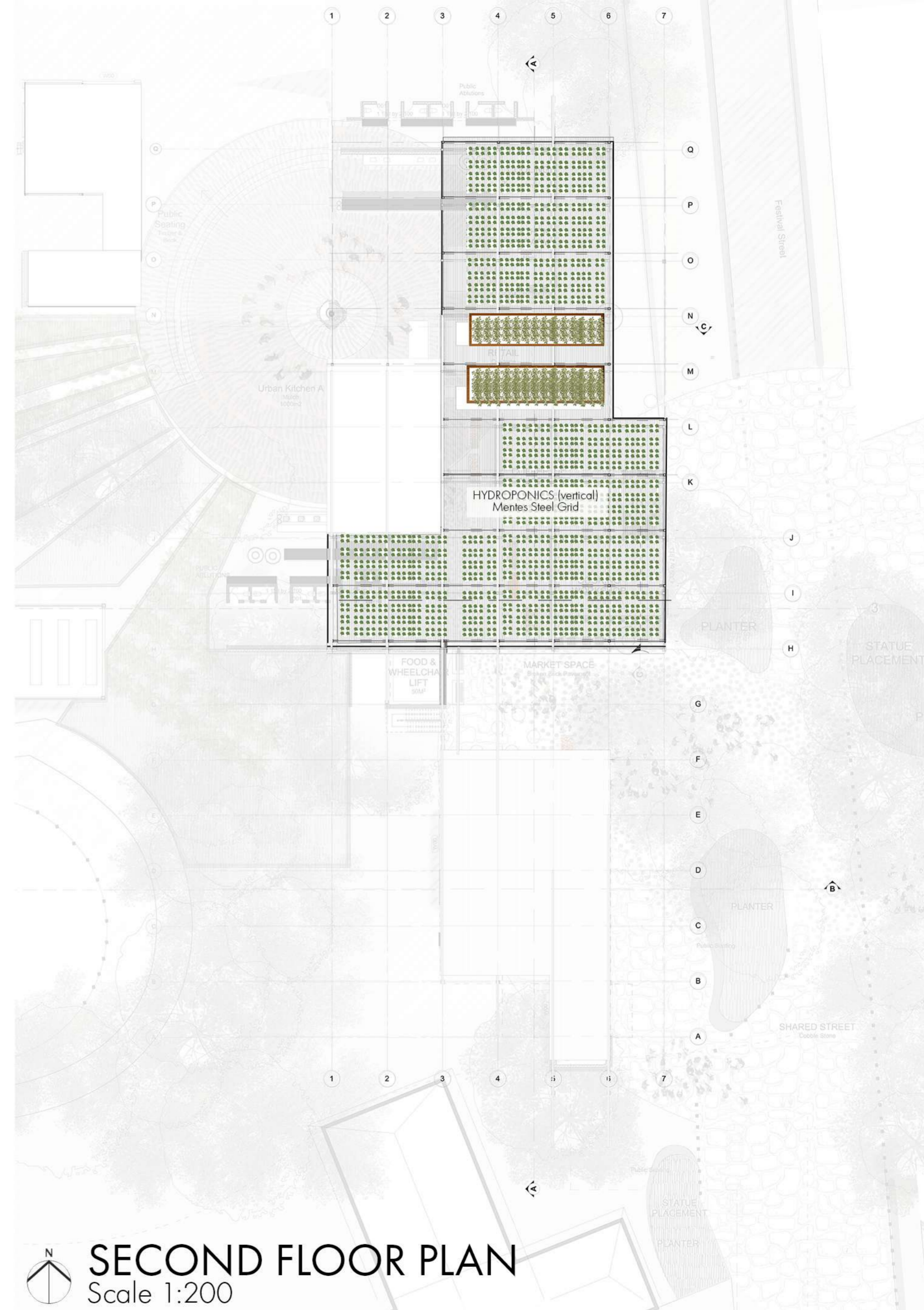








FIRST FLOOR PLAN
Scale 1:200

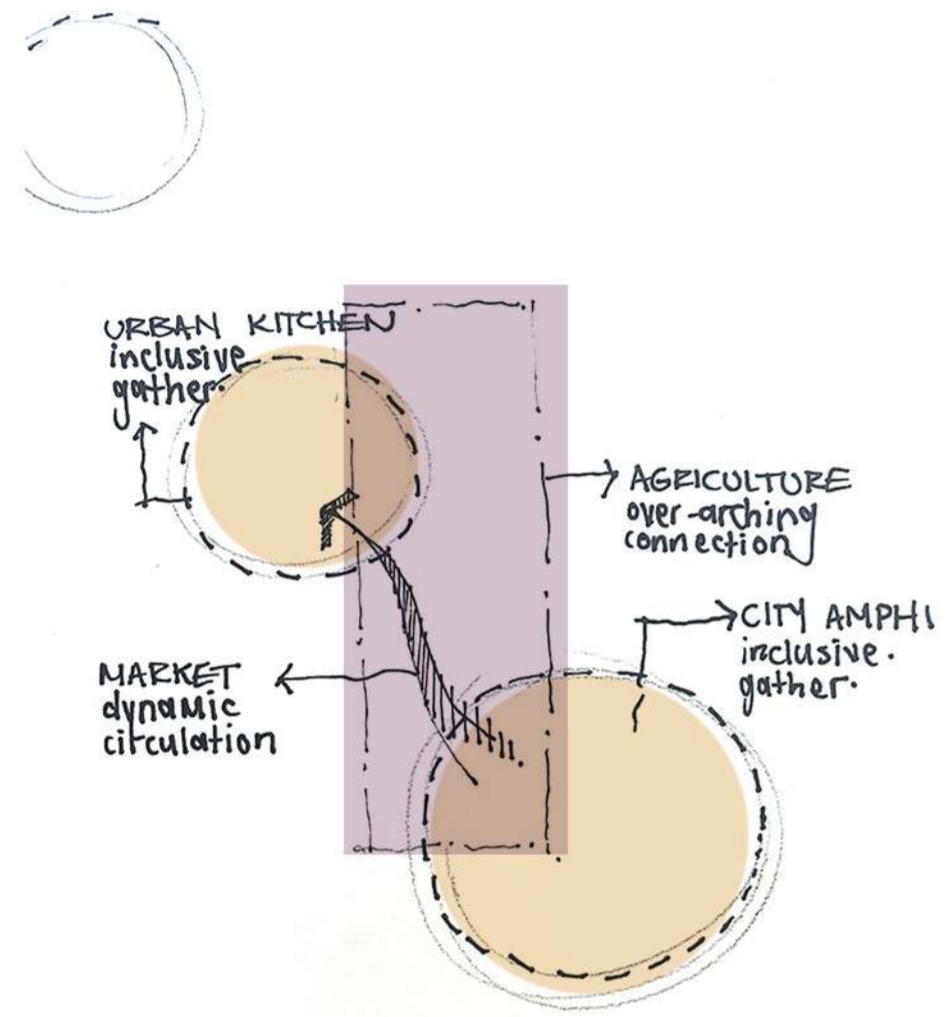


SECOND FLOOR PLAN
Scale 1:200

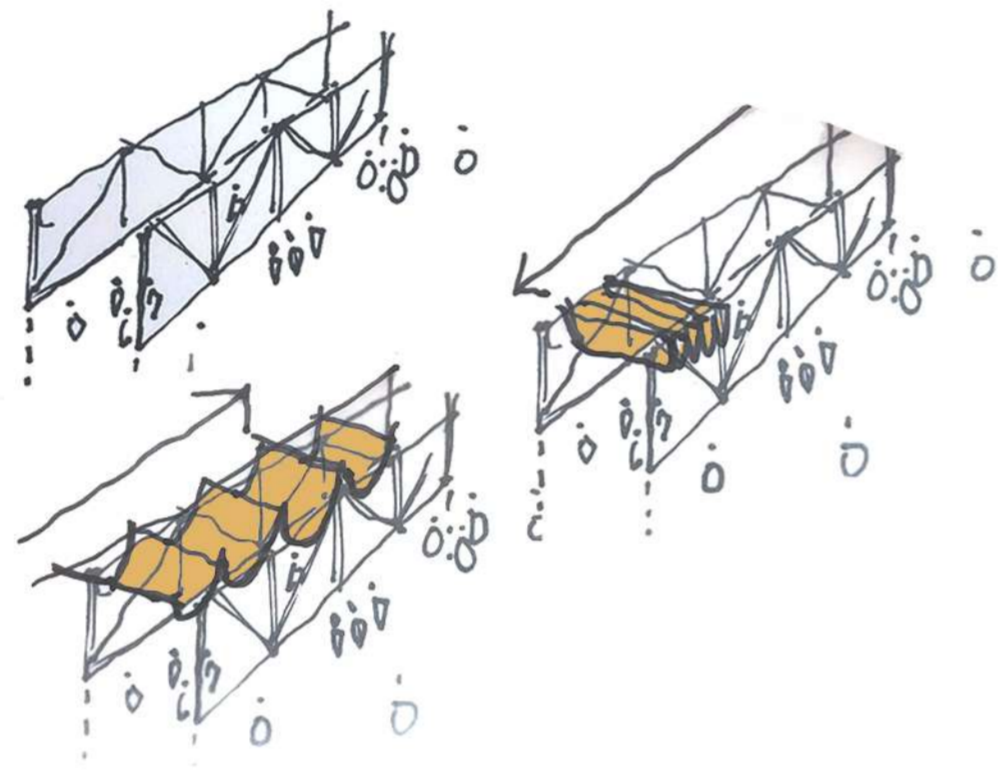




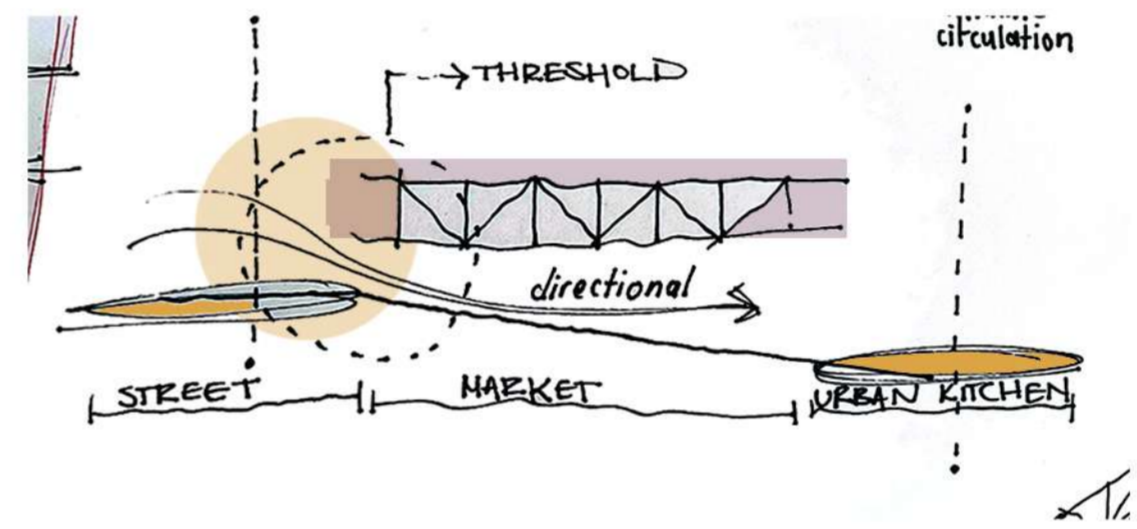
MAQUETTE 8
Scale 1:200



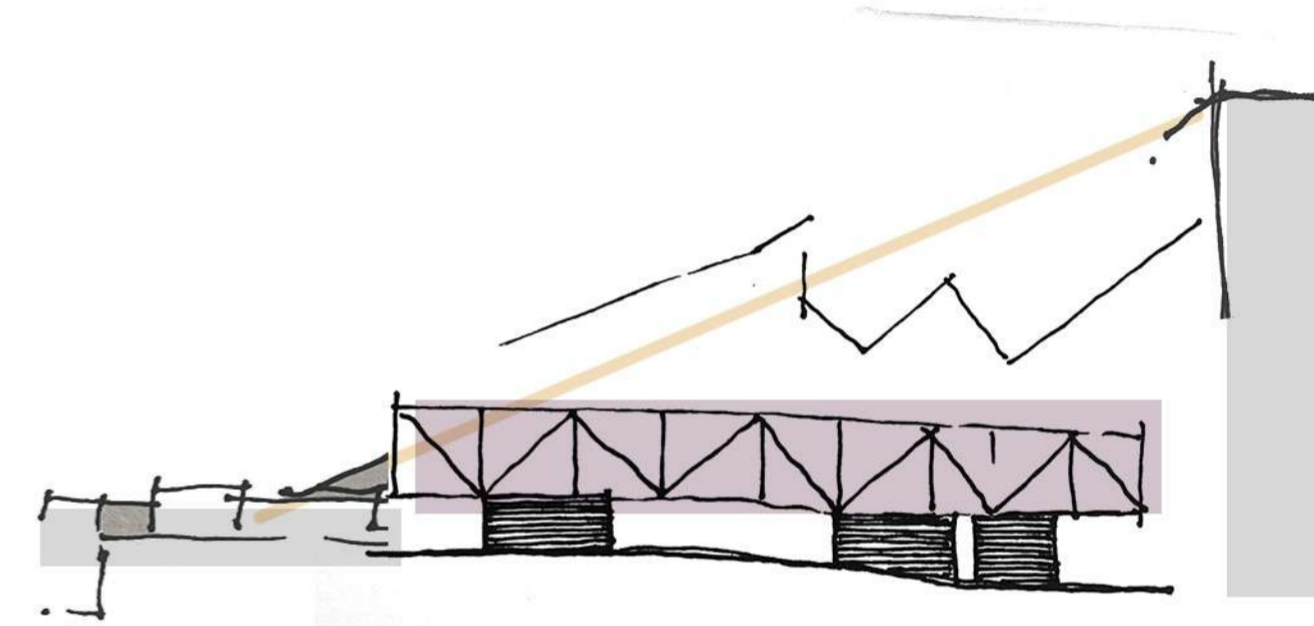
MOVEMENT



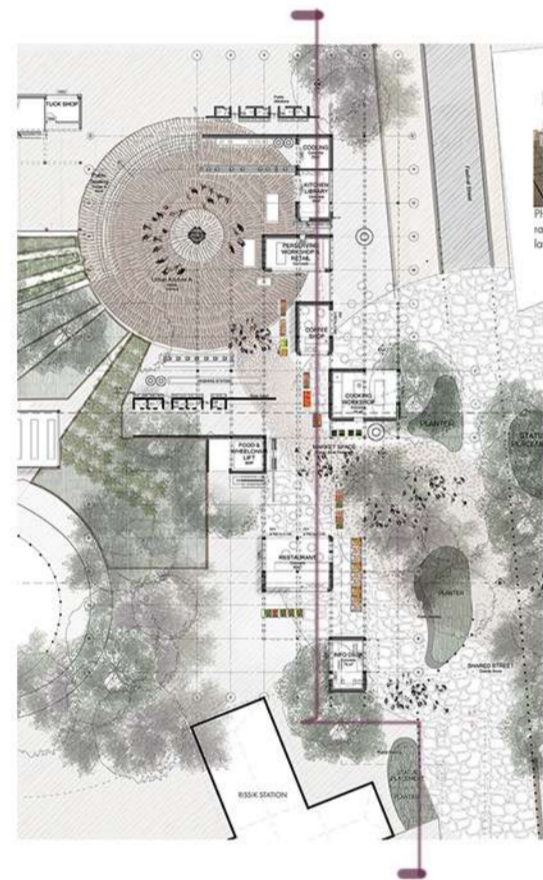
FLEXIBILITY & COMFORT



JOURNEY & THRESHOLD



SCALE & CONTEXT



ARRIVAL NODE
 Train station
 Waiting
 Transition from
 vehicle to pedestrian
 Low scaled



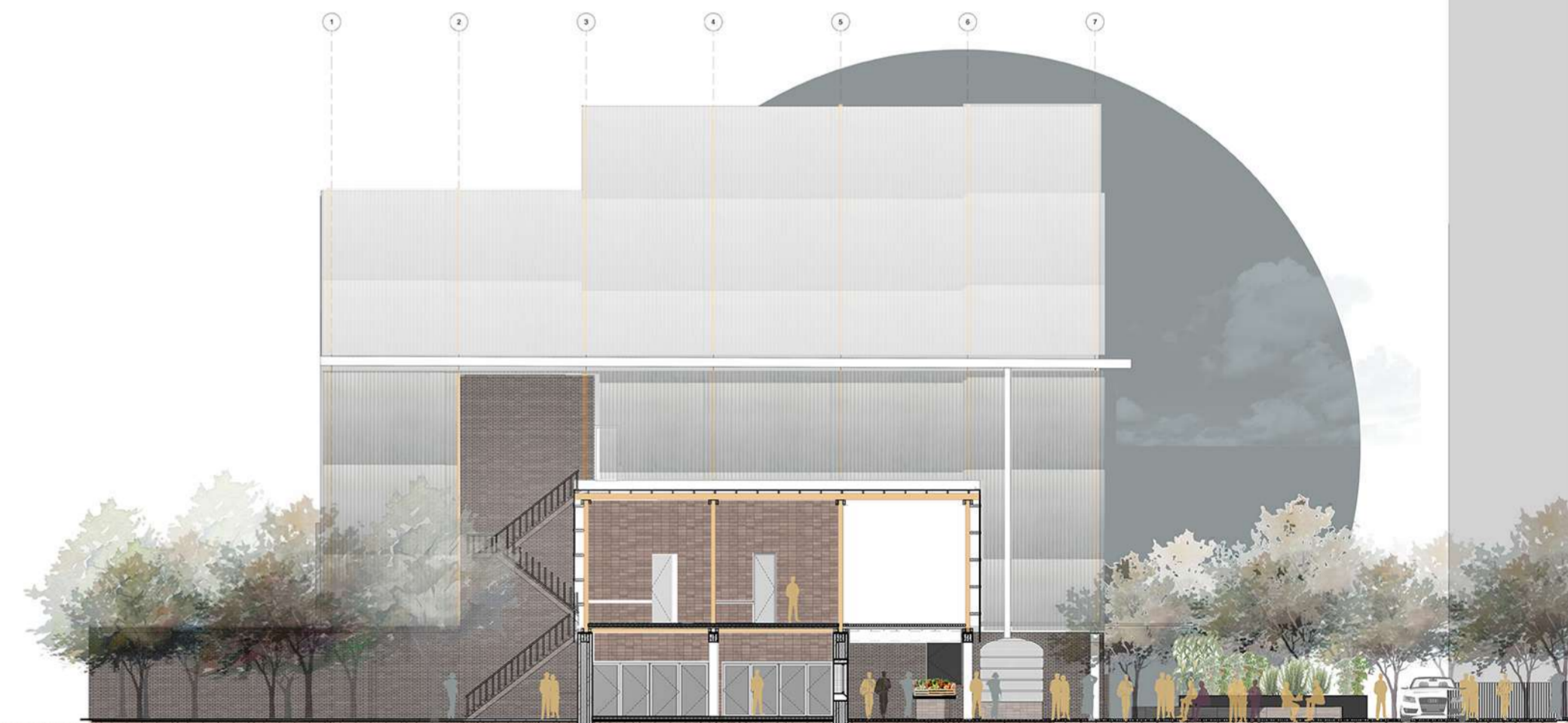
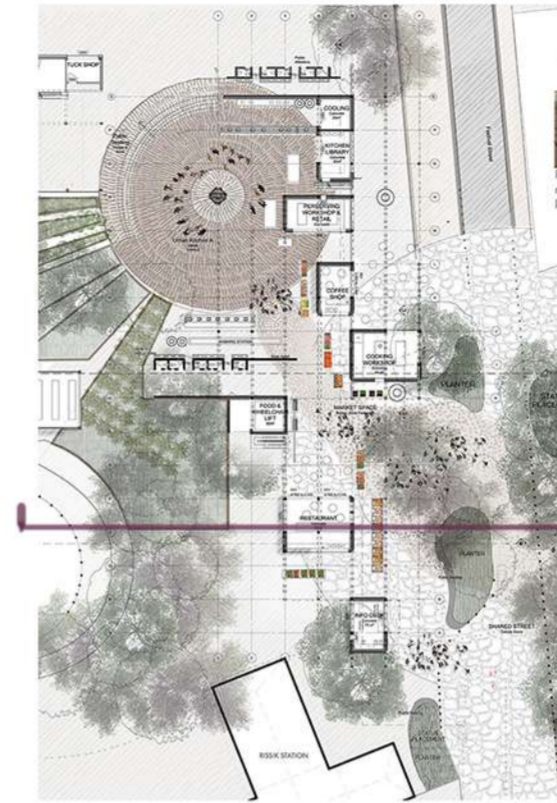
LONGITUDINAL SECTION A-A

Scale 1:100

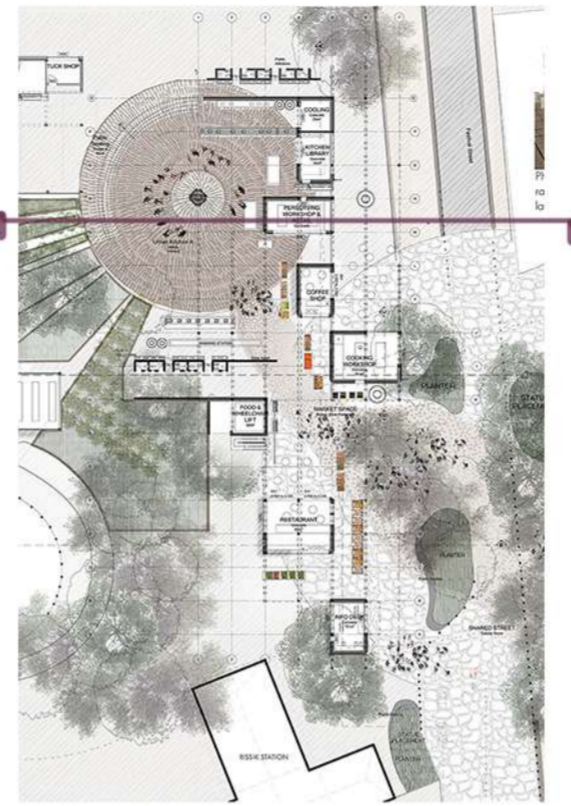
MARKET SPACE & THRESHOLD
 Allowing city into building
 Market space
 Most public

URBAN KITCHEN

Rissik Train Station



CROSS SECTION B-B
Scale 1: 100

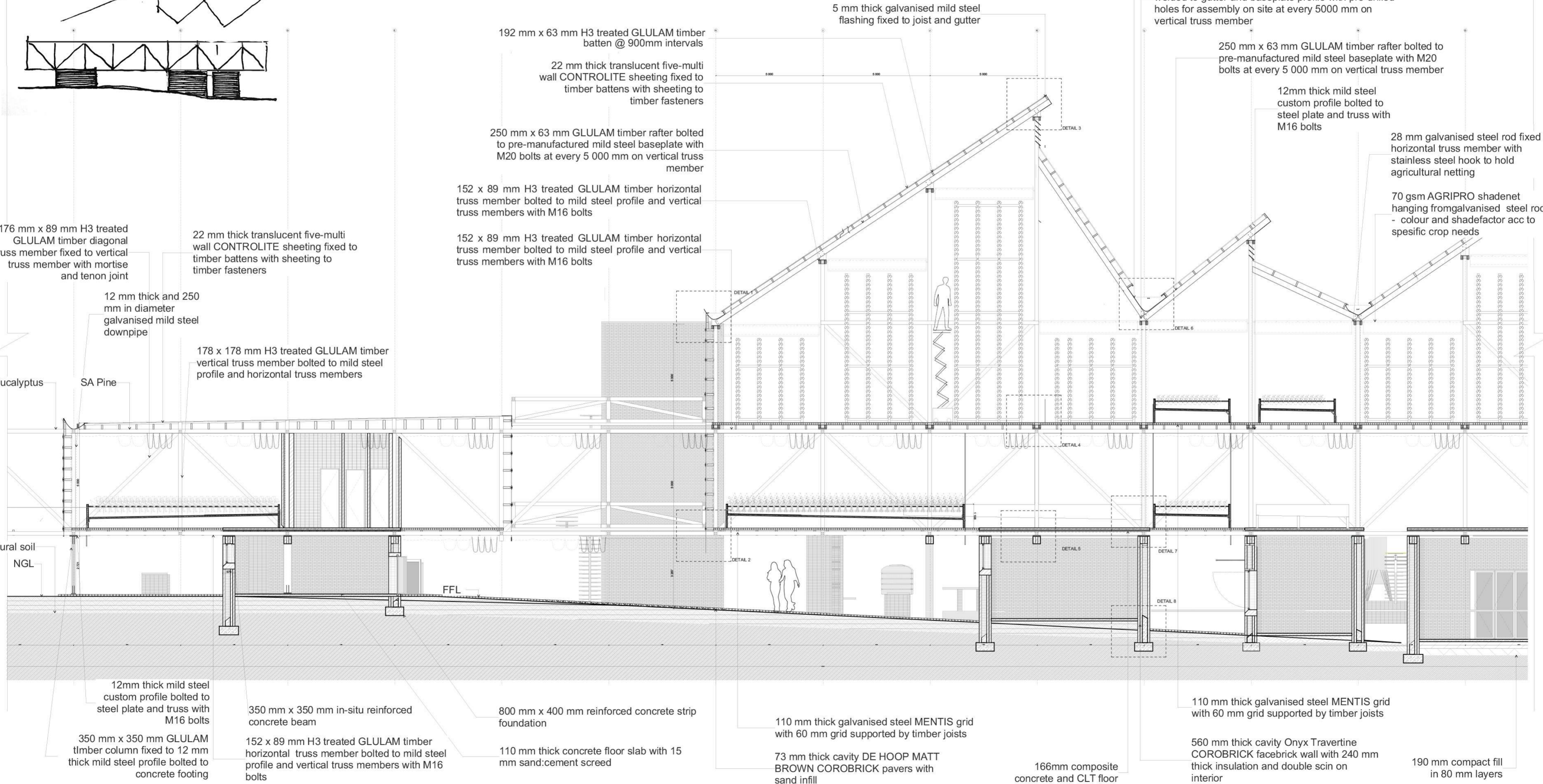
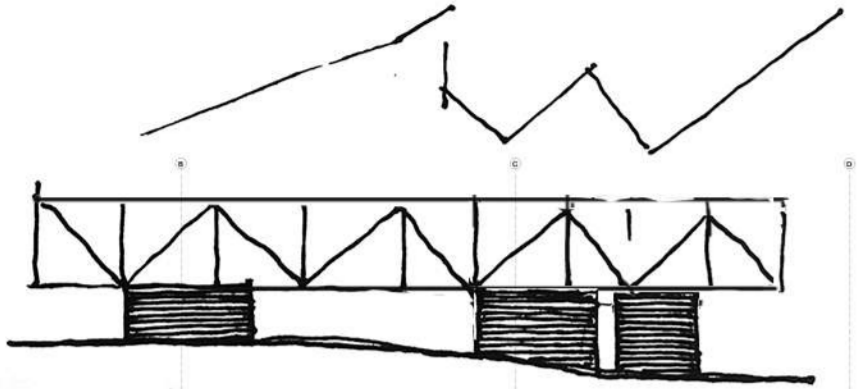


CROSS SECTION C-C

Scale 1: 100

PARTIAL SECTION A-A

Scale 1:50



12 mm x 1200 mm cold formed mild steel sheet bent to suit gutter and welded to steel baseplate connection
 12 mm thick pre-manufactured galvanised cold formed mild steel custom profile cut to suit and welded to gutter and baseplate profile with pre-drilled holes for assembly on site at every 5000 mm on vertical truss member

5 mm thick galvanised mild steel flashing fixed to joist and gutter

192 mm x 63 mm H3 treated GLULAM timber batten @ 900mm intervals

22 mm thick translucent five-multi wall CONTROLITE sheeting fixed to timber battens with sheeting to timber fasteners

250 mm x 63 mm GLULAM timber rafter bolted to pre-manufactured mild steel baseplate with M20 bolts at every 5 000 mm on vertical truss member

250 mm x 63 mm GLULAM timber rafter bolted to pre-manufactured mild steel baseplate with M20 bolts at every 5 000 mm on vertical truss member

12mm thick mild steel custom profile bolted to steel plate and truss with M16 bolts

28 mm galvanised steel rod fixed to horizontal truss member with stainless steel hook to hold agricultural netting

70 gsm AGRIPRO shadenet hanging from galvanised steel rod - colour and shadefactor acc to specific crop needs

22 mm thick translucent five-multi wall CONTROLITE sheeting fixed to timber battens with sheeting to timber fasteners

176 mm x 89 mm H3 treated GLULAM timber diagonal truss member fixed to vertical truss member with mortise and tenon joint

12 mm thick and 250 mm in diameter galvanised mild steel downpipe

178 x 178 mm H3 treated GLULAM timber vertical truss member bolted to mild steel profile and horizontal truss members

152 x 89 mm H3 treated GLULAM timber horizontal truss member bolted to mild steel profile and vertical truss members with M16 bolts

152 x 89 mm H3 treated GLULAM timber horizontal truss member bolted to mild steel profile and vertical truss members with M16 bolts

Eucalyptus SA Pine

natural soil NGL

FFL

12mm thick mild steel custom profile bolted to steel plate and truss with M16 bolts

350 mm x 350 mm in-situ reinforced concrete beam

800 mm x 400 mm reinforced concrete strip foundation

110 mm thick galvanised steel MENTIS grid with 60 mm grid supported by timber joists

110 mm thick galvanised steel MENTIS grid with 60 mm grid supported by timber joists

350 mm x 350 mm GLULAM timber column fixed to 12 mm thick mild steel profile bolted to concrete footing

152 x 89 mm H3 treated GLULAM timber horizontal truss member bolted to mild steel profile and vertical truss members with M16 bolts

110 mm thick concrete floor slab with 15 mm sand:cement screed

73 mm thick cavity DE HOOP MATT BROWN COROBRIK pavers with sand infill

166mm composite concrete and CLT floor

560 mm thick cavity Onyx Travertine COROBRIK facebrick wall with 240 mm thick insulation and double scin on interior

190 mm compact fill in 80 mm layers





