

THE PROBLEMS

"The City of Joburg is responsible for 20.9 million tons of CO₂ emissions annually"

"South Africa is the 12th largest emitter of CO₂ globally"

"South Africa sees a loss of 10.3 million tons of food each year"



THE SOLUTION

"Reduce energy embodied in contemporary food production"

"Promote agricultural practices to prevent climate change"

"Implement UA schemes that make use of resource-efficient methods"

"Produce food where one wants to eat it & consume food where it has just grown"



THE APPROACH

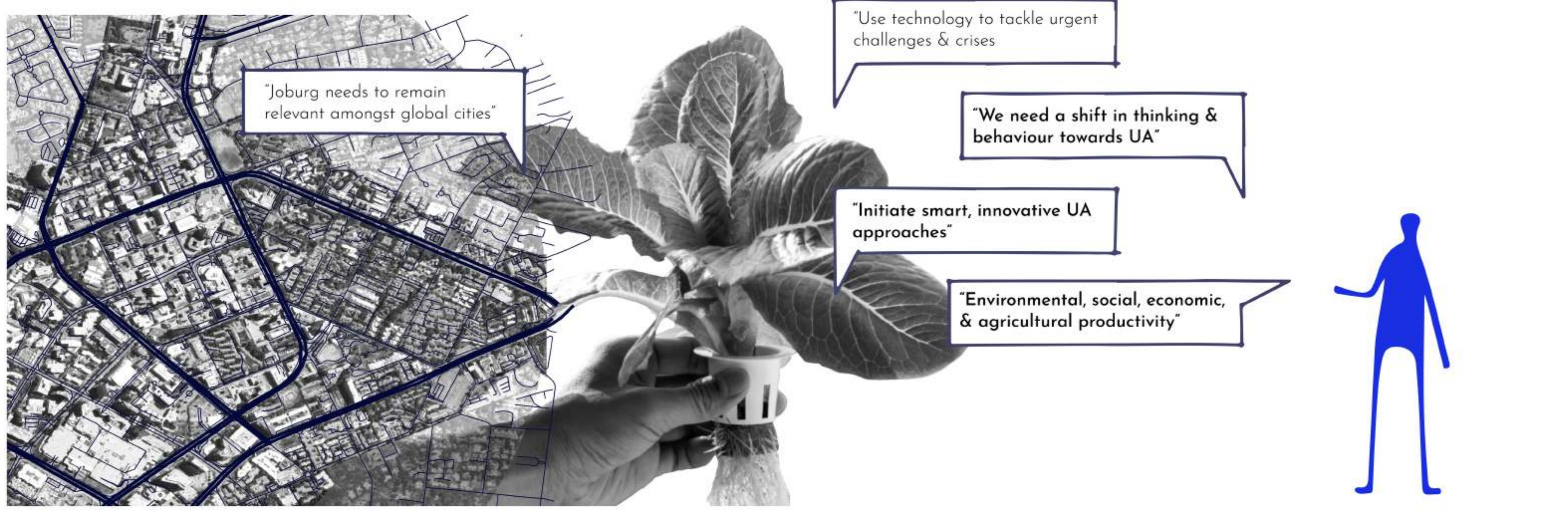
"Joburg needs to remain relevant amongst global cities"

"Use technology to tackle urgent challenges & crises"

"We need a shift in thinking & behaviour towards UA"

"Initiate smart, innovative UA approaches"

"Environmental, social, economic, & agricultural productivity"



THE OBJECTIVES

What Landscape Architectural interventions should be implemented to support a **PRODUCTIVE, RESILIENT, & CIRCULAR URBAN ENVIRONMENT** in Sandton Central?

How can **COMMUNITY ENGAGEMENT** in this productive, resilient, and circular urban environment **BE ENHANCED** through Landscape Architecture and Urban Agriculture?

How can **CIRCULARITY AND RESILIENCE** be achieved by cultivating edible plants in Sandton Central?



01.
LOCAL VEGETABLE PRODUCTION



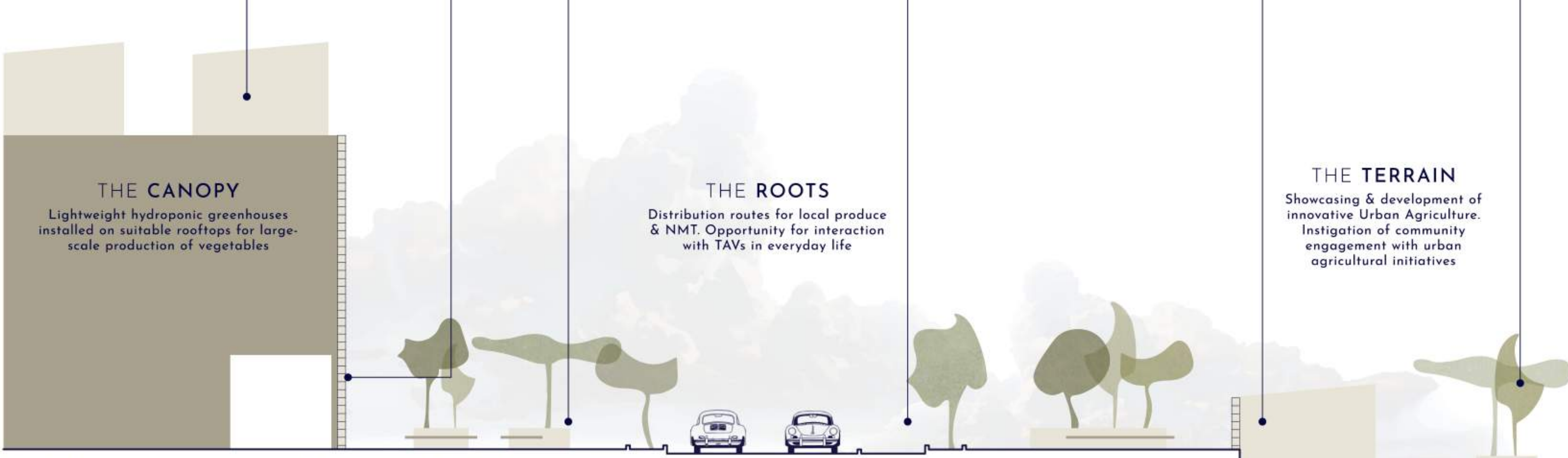
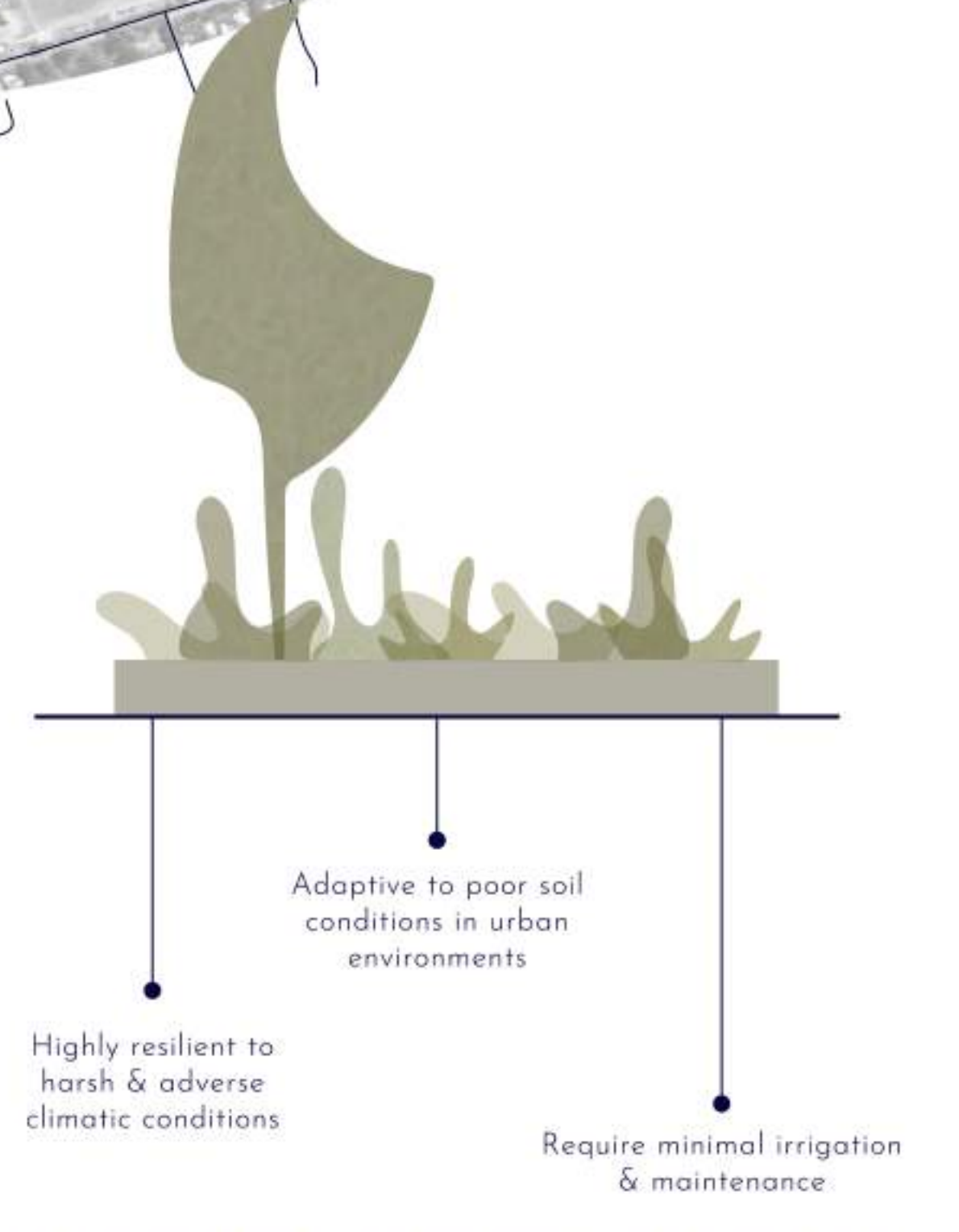
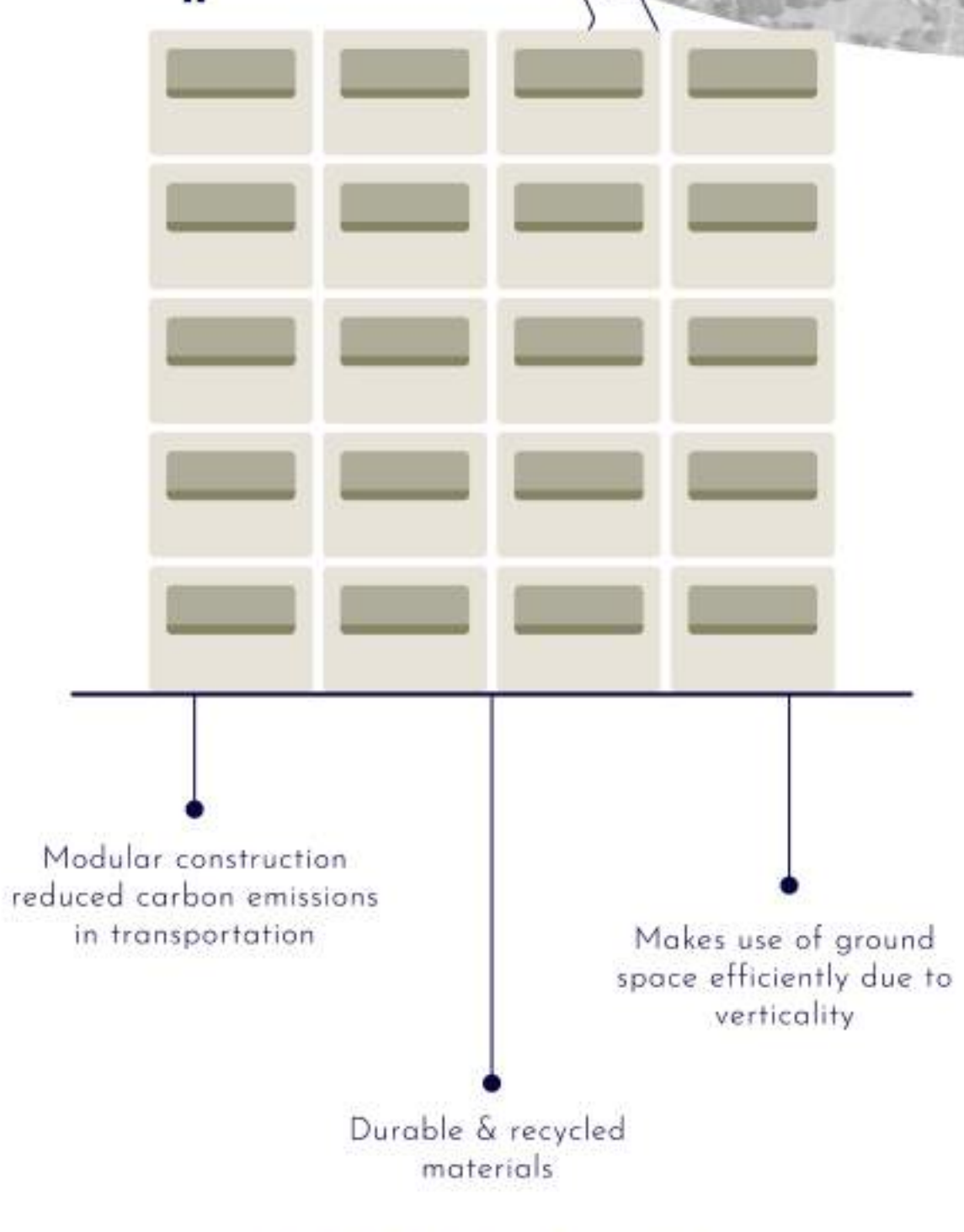
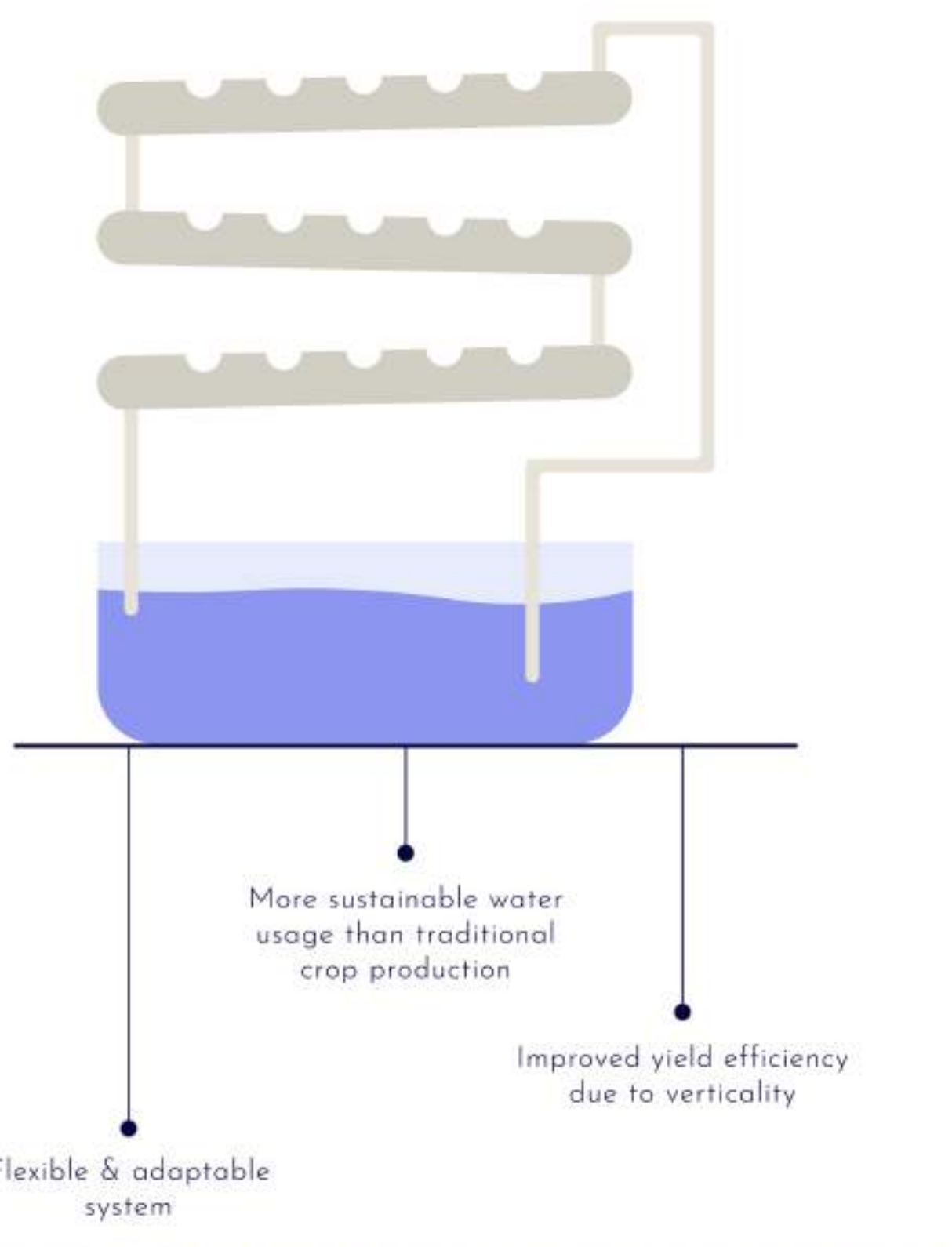
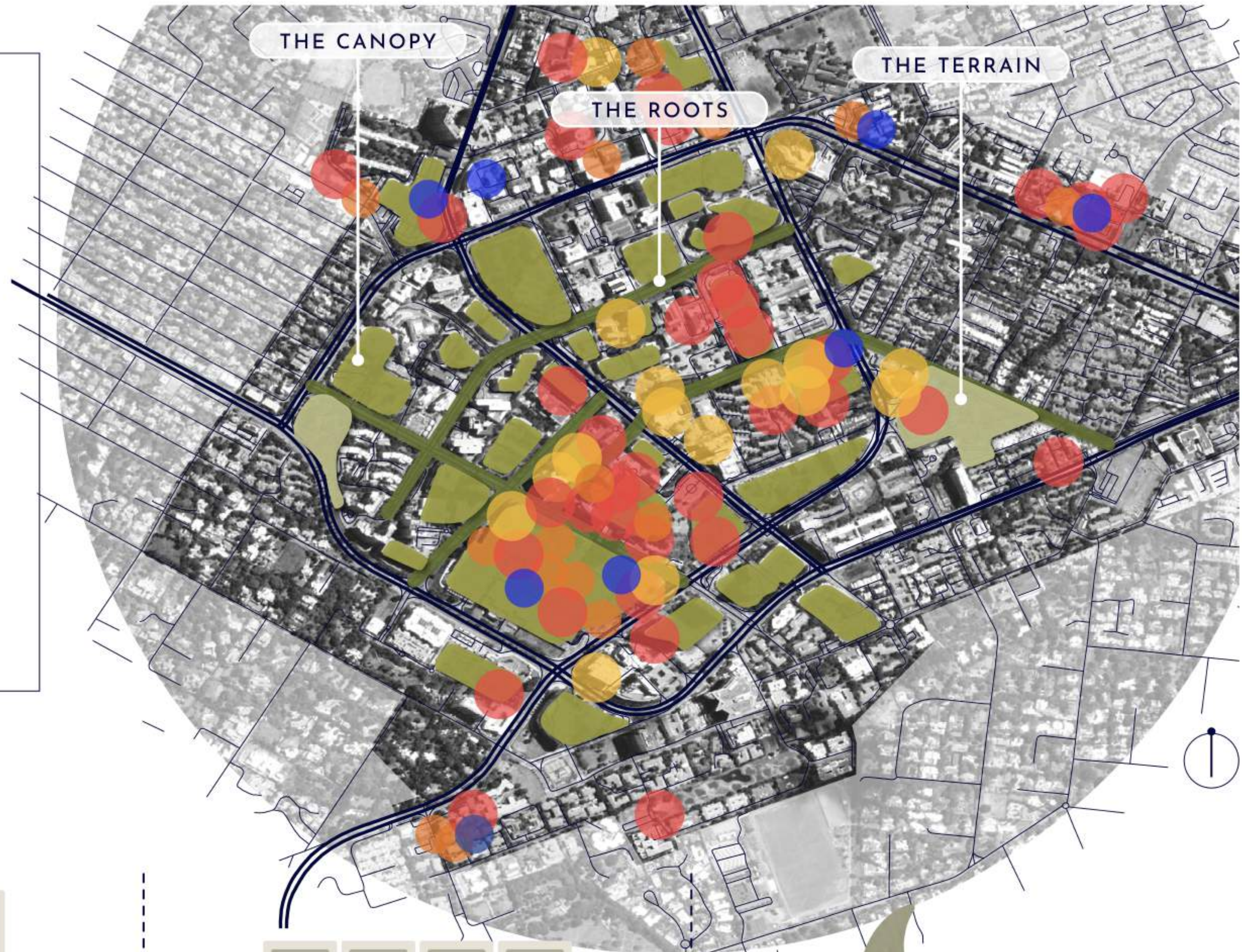
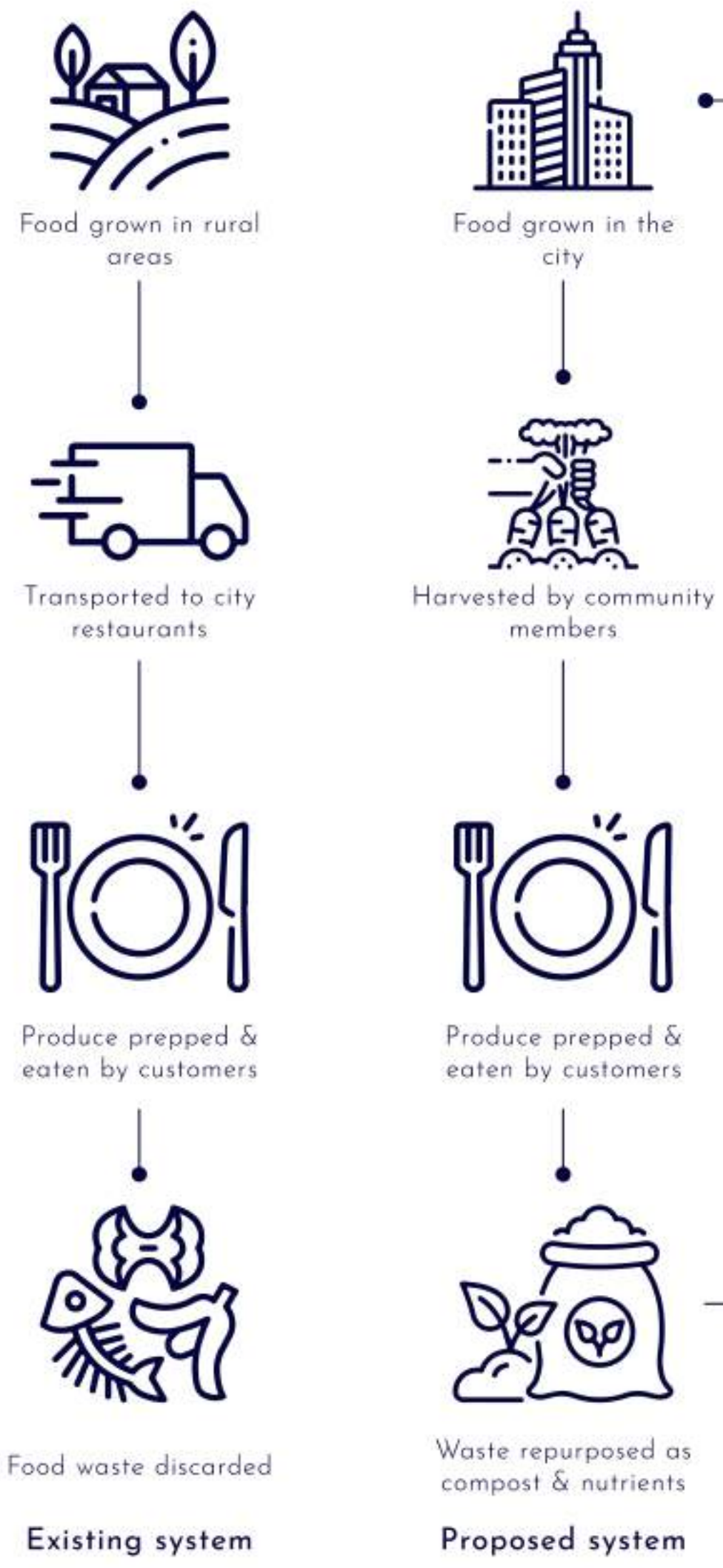
02.
COMMUNITY ENGAGEMENT IN UA



03.
ECOSYSTEM SUPPORT & REGULATION

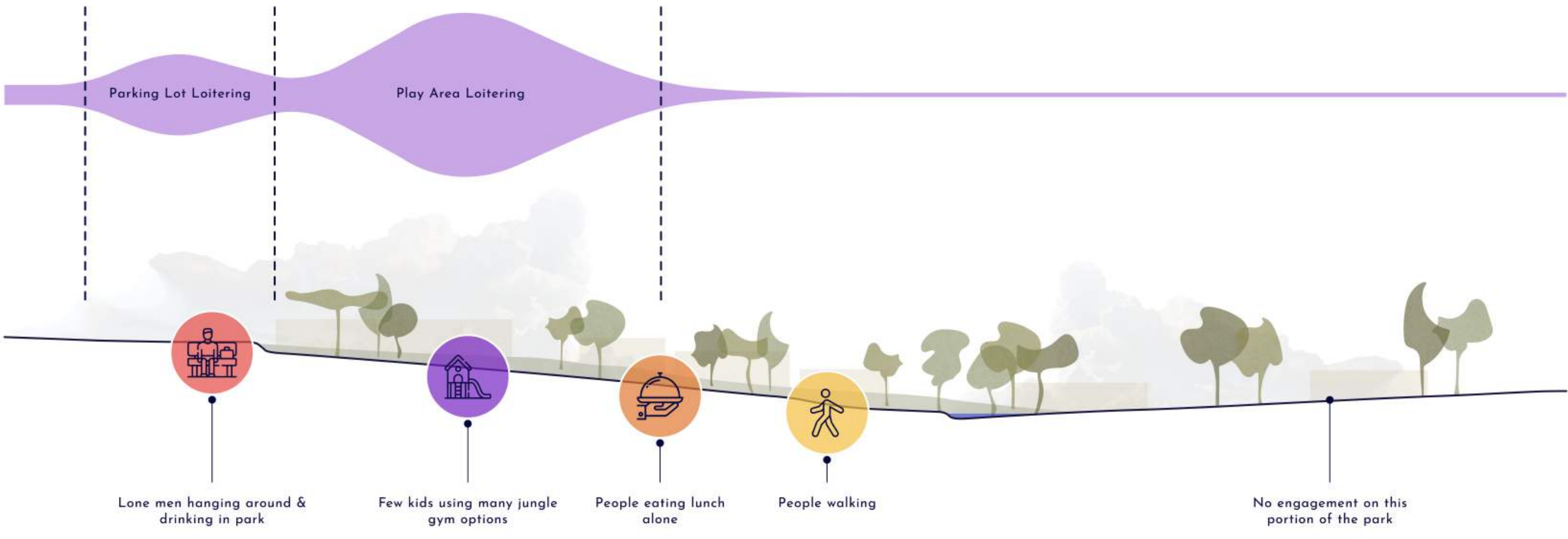


04.
SUSTAINABLE RESOURCE MANAGEMENT



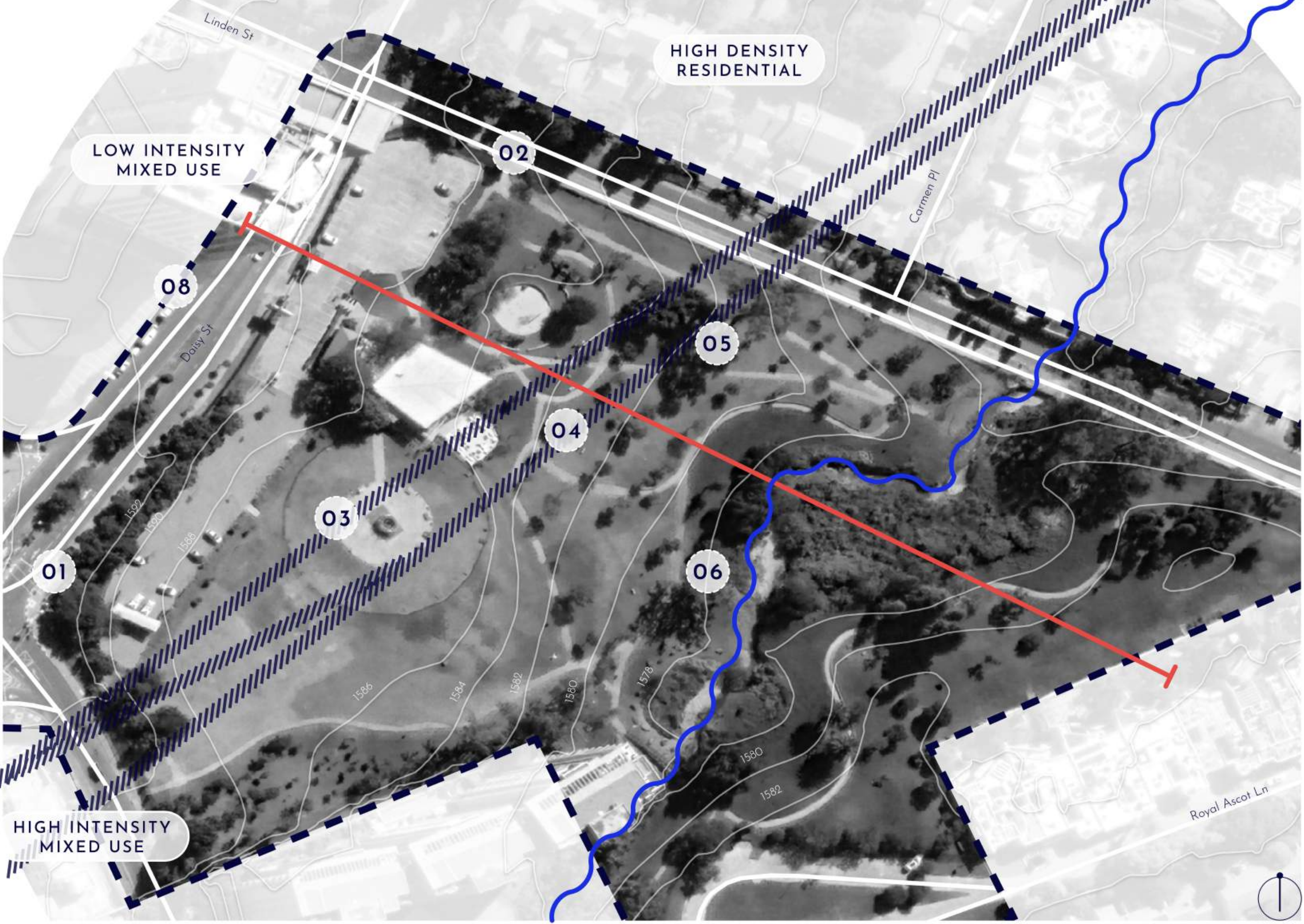
High-level section showing arrangement of interventions & spatial implications

HIGH-RISE HARVESTS



Lack of Activity & Community Engagement

MUSHROOM FARM PARK





Masterplan Conceptual Render



01 Northern Entrance



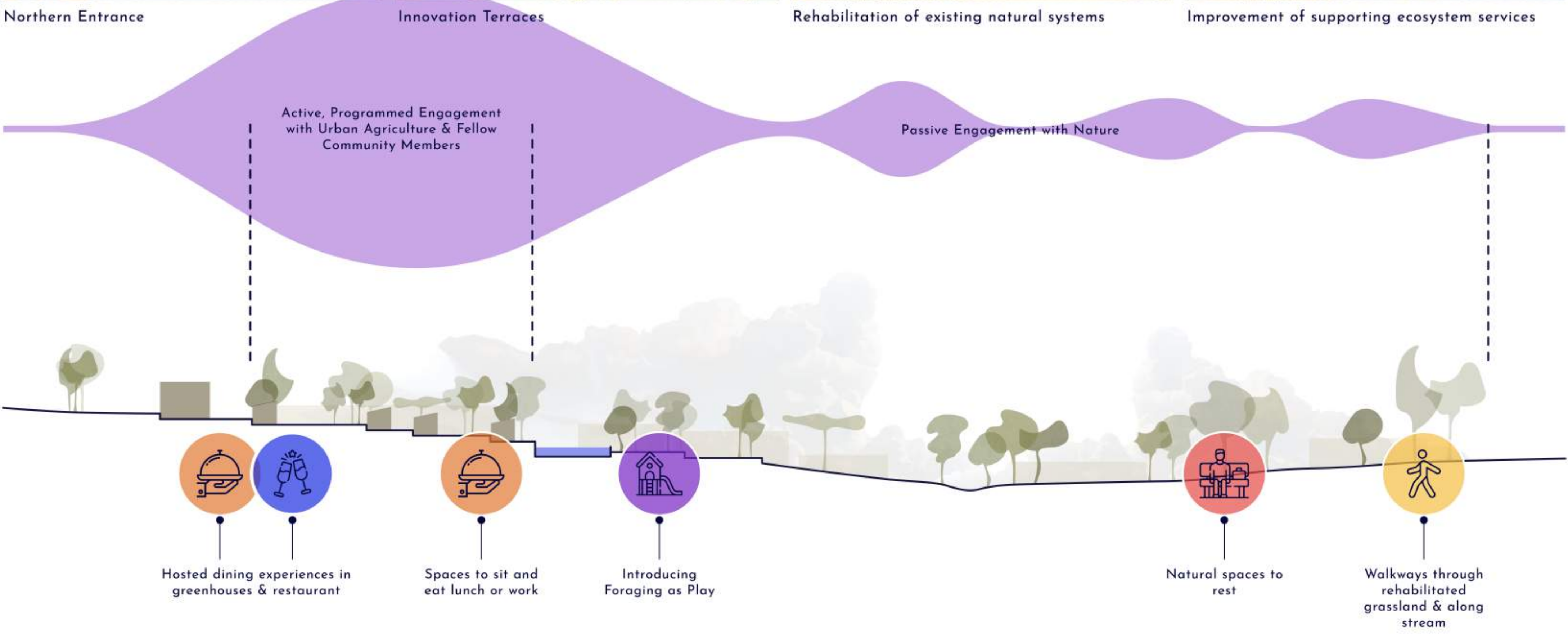
02 Innovation Terraces



03 Rehabilitation of existing natural systems

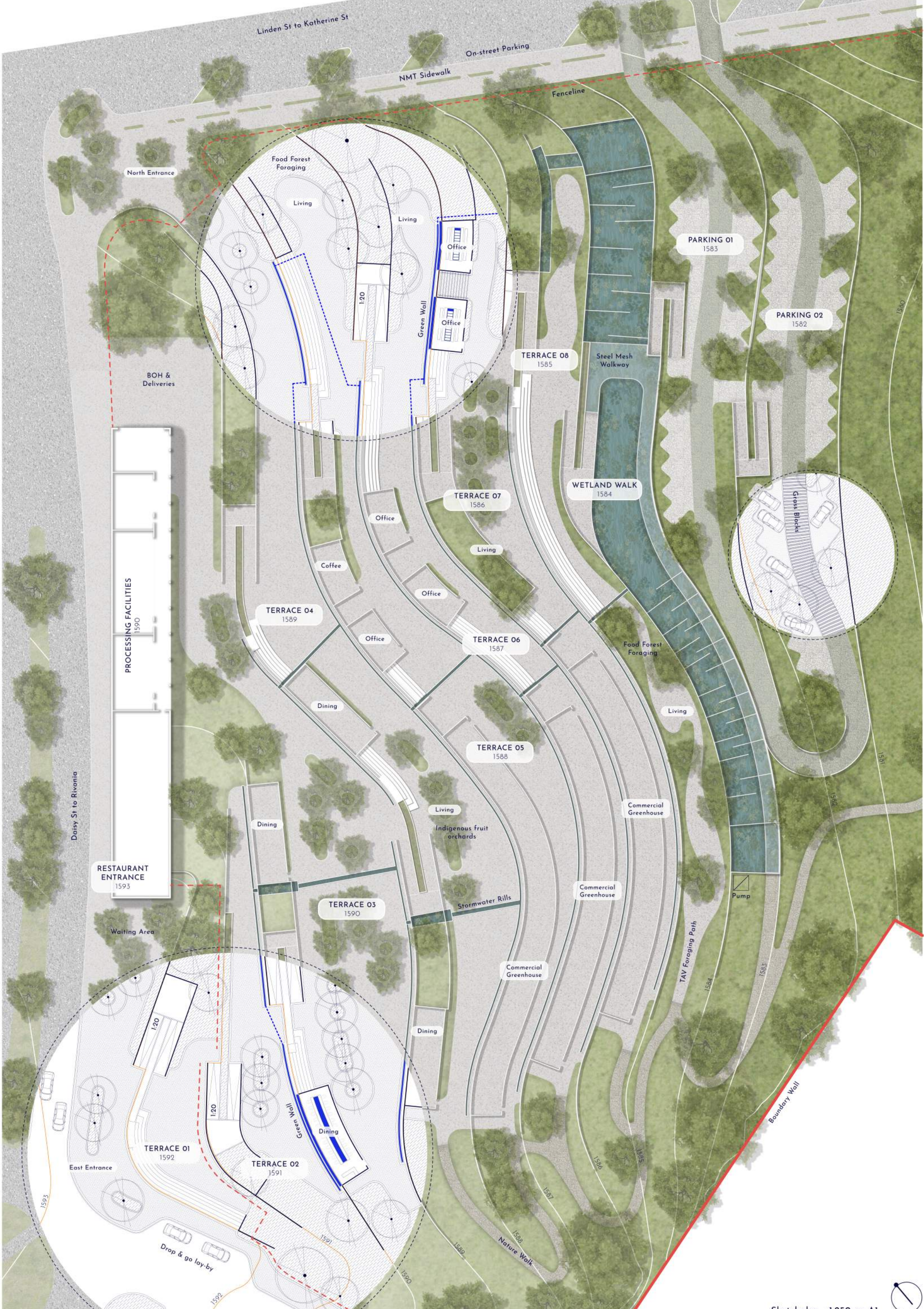


04 Improvement of supporting ecosystem services



Increasing Community Engagement & Involvement

TERRAIN INNOVATION PARK



Linden St to Katherine St

On-street Parking

NMT Sidewalk

Fenceline

North Entrance

Food Forest Foraging

Living

Living

Office

Office

Green Wall

1:20

PARKING 01
1583

PARKING 02
1582

TERRACE 08
1585

Steel Mesh Walkway

BOH & Deliveries

WETLAND WALK
1584

PROCESSING FACILITIES
1590

TERRACE 07
1586

Office

Living

Coffee

Office

TERRACE 04
1589

Office

TERRACE 06
1587

Food Forest Foraging

Living

Dining

TERRACE 05
1588

Living

Commercial Greenhouse

RESTAURANT ENTRANCE
1593

Dining

Indigenous fruit orchards

TERRACE 03
1590

Stormwater Rills

Commercial Greenhouse

Waiting Area

Dining

Dining

Commercial Greenhouse

Pump

TERRACE 01
1592

TERRACE 02
1591

Dining

TAY Foraging Path
1584

Boundary Wall

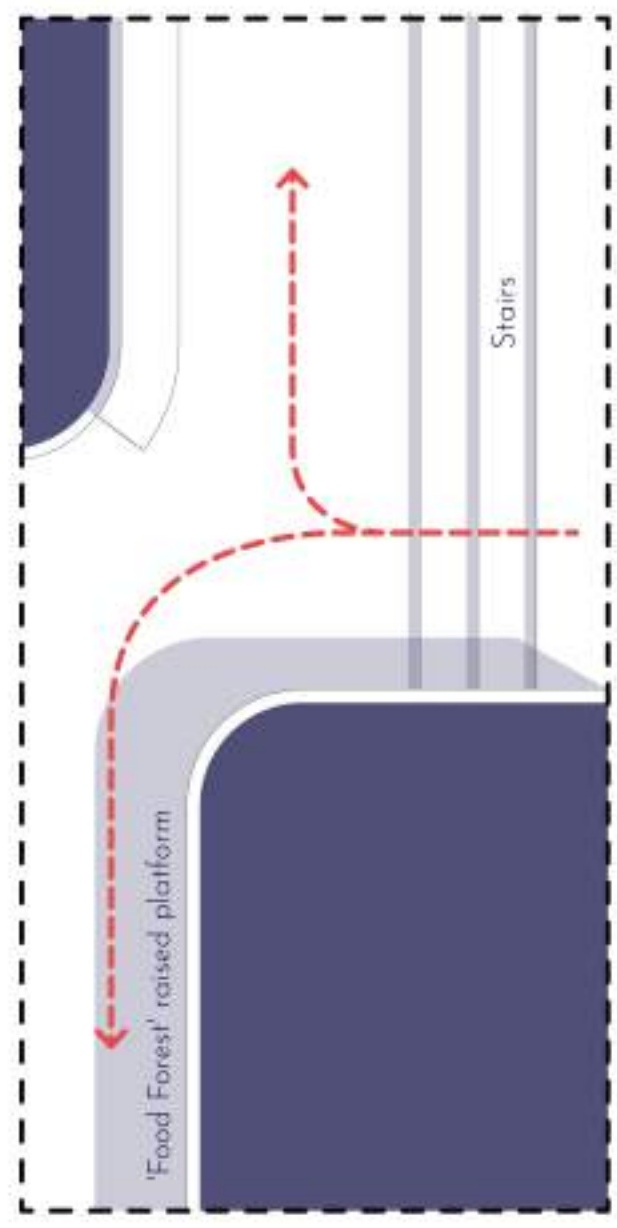
Daisy St to Rivonia

East Entrance

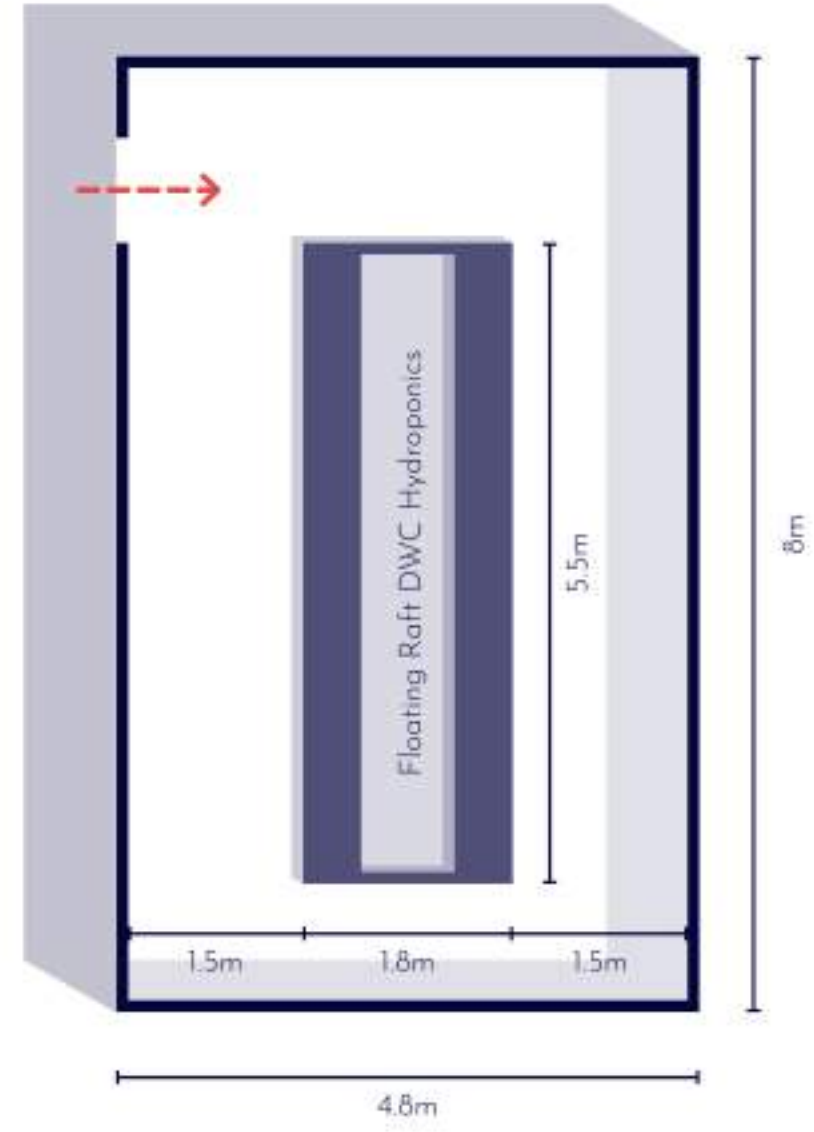
Drop & go lay-by

Nature Walk
1588

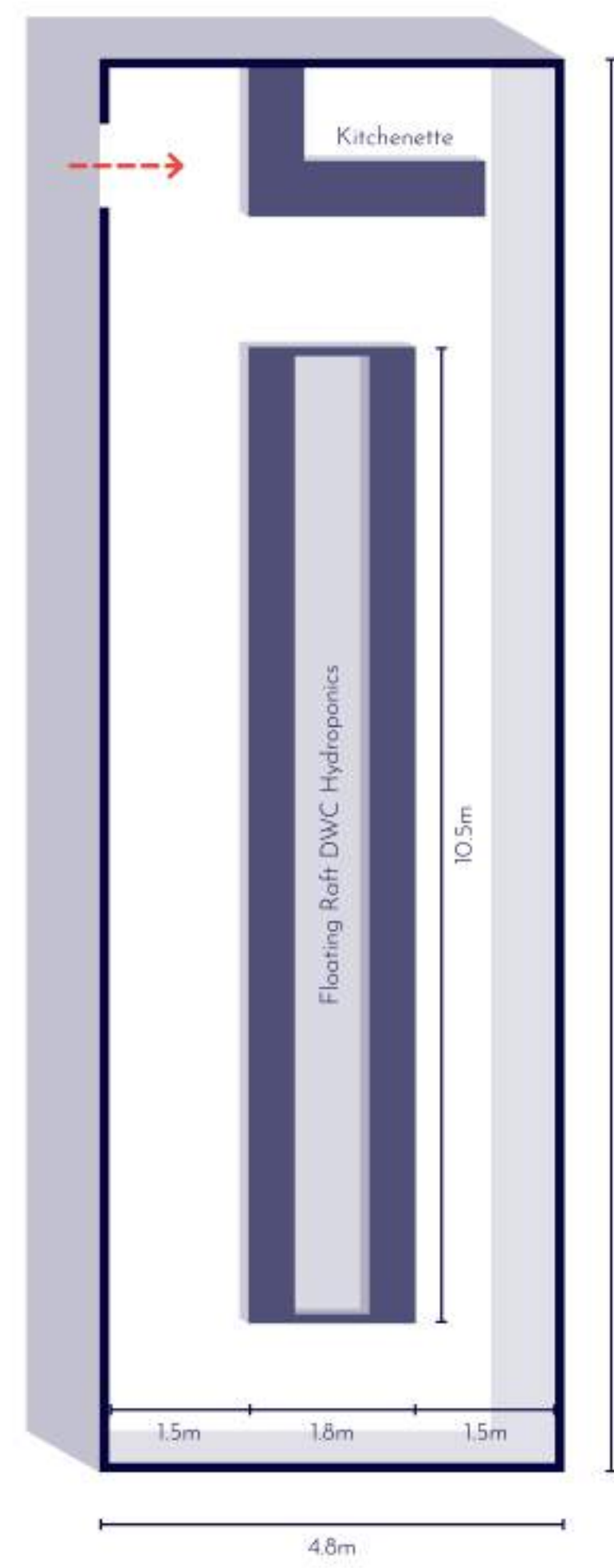




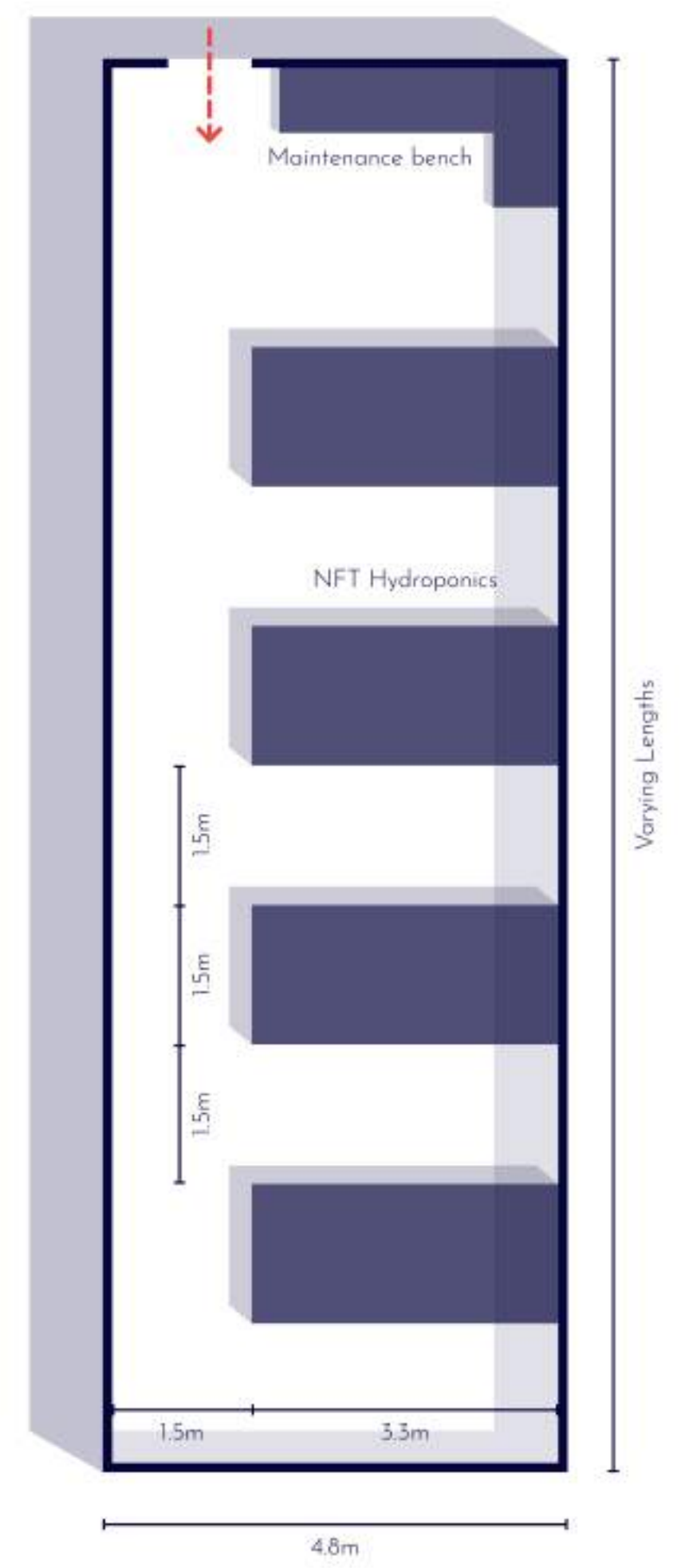
AGRICULTURE AS LIVING ROOM



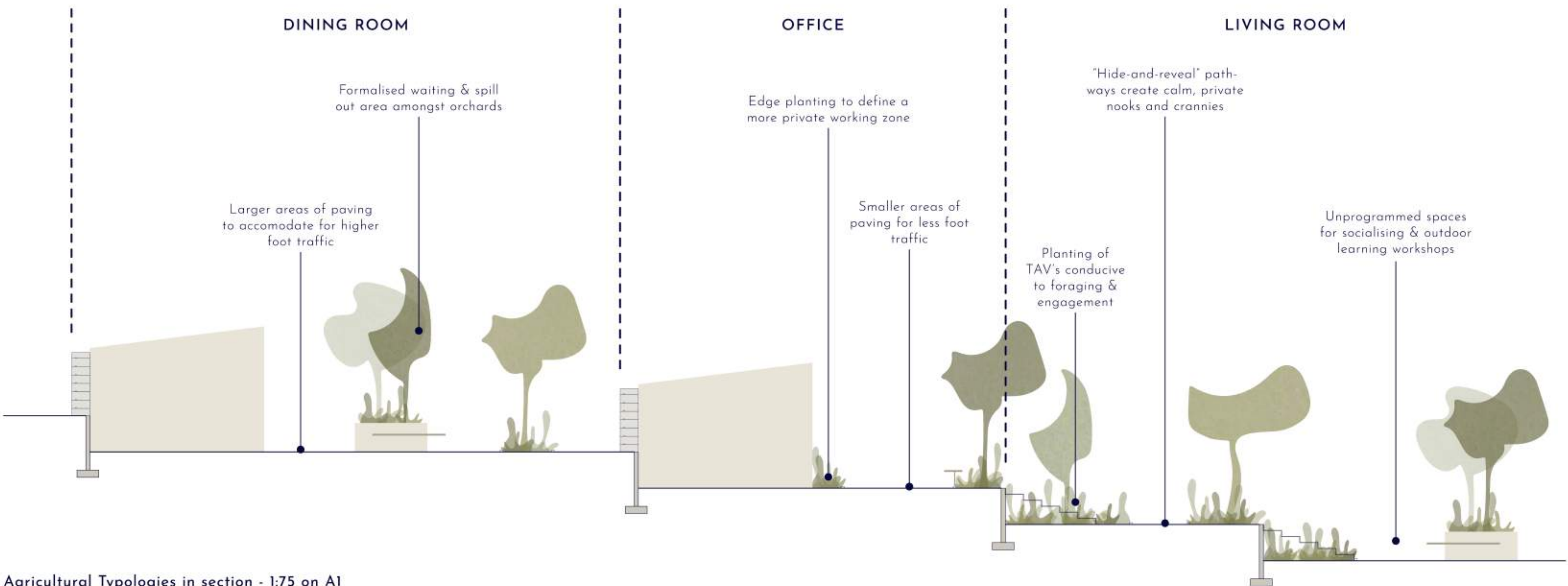
AGRICULTURE AS OFFICE



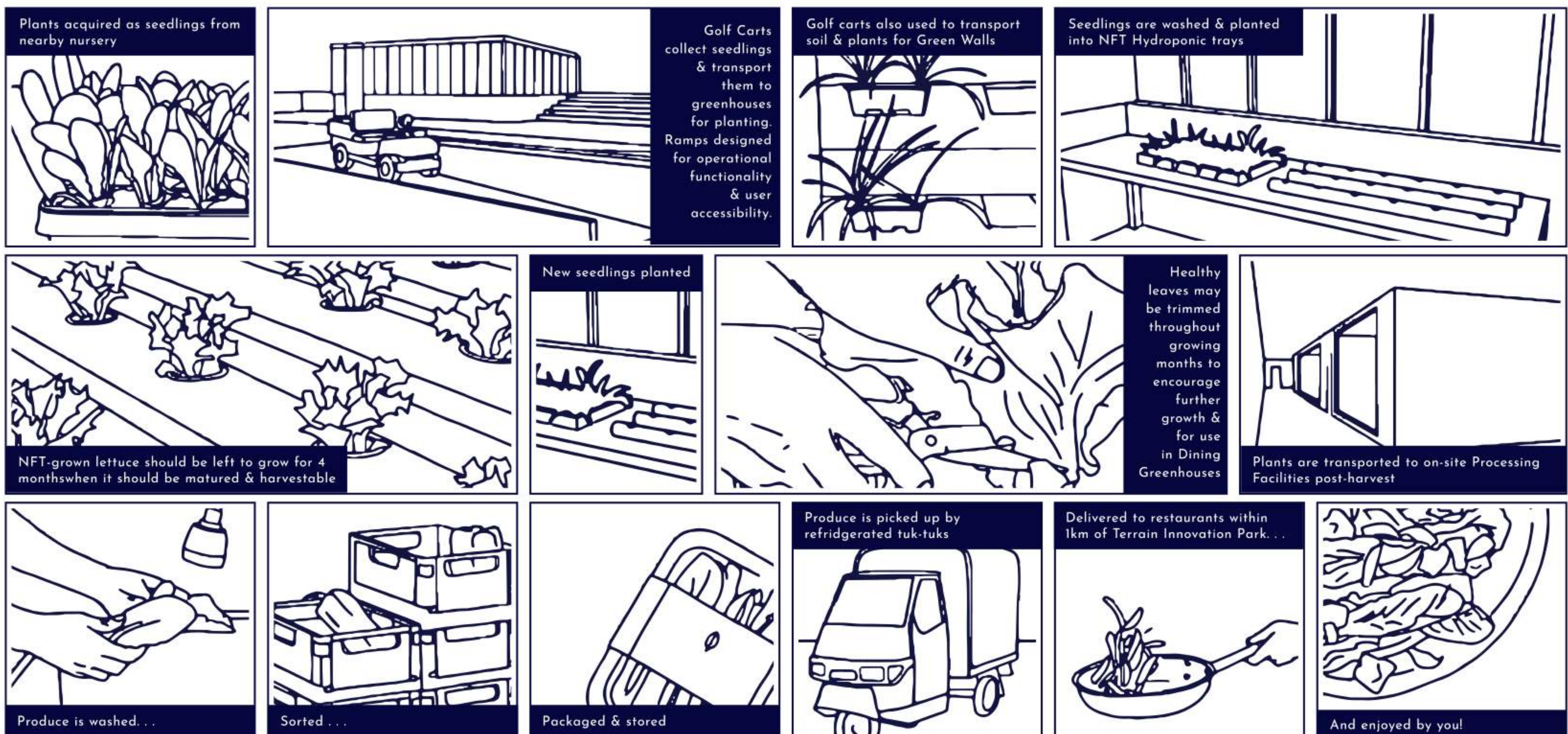
AGRICULTURE AS DINING ROOM



COMMERCIAL PRODUCE



Agricultural Typologies in section - 1:75 on A1



Operational system

AGRICULTURE AS . . .



Amaranthus palmeri



Artemesia afra



Carissa macrocarpa



Cleome gynandra



Eriocephalus africanus



Hypoestes aristida



Lycium ferocissimum



Mesembryanthemum crystallinum



Portulacaria afra



Salvia africana



Solanum retroflexum



Trachyandra ciliata



Trachyandra falcata



Tulbaghia violacea



Vigna unguiculata



Colocasia esculenta



Gunnera perpensa



Oryza glaberrima



Dovyalis caffra



Harpephyllum caffrum



Mimusops zeyheri



Searsia glauca



Syzygium cordatum



Basil



Bok choy



Broccoli Rabe



Chives



Coriander



Kale



Lettuce

PLANTING STRATEGY

Traditional African Vegetables

Indigenous edible wetland species

Indigenous fruit trees

Hydroponic crops



Spinach



Strawberries



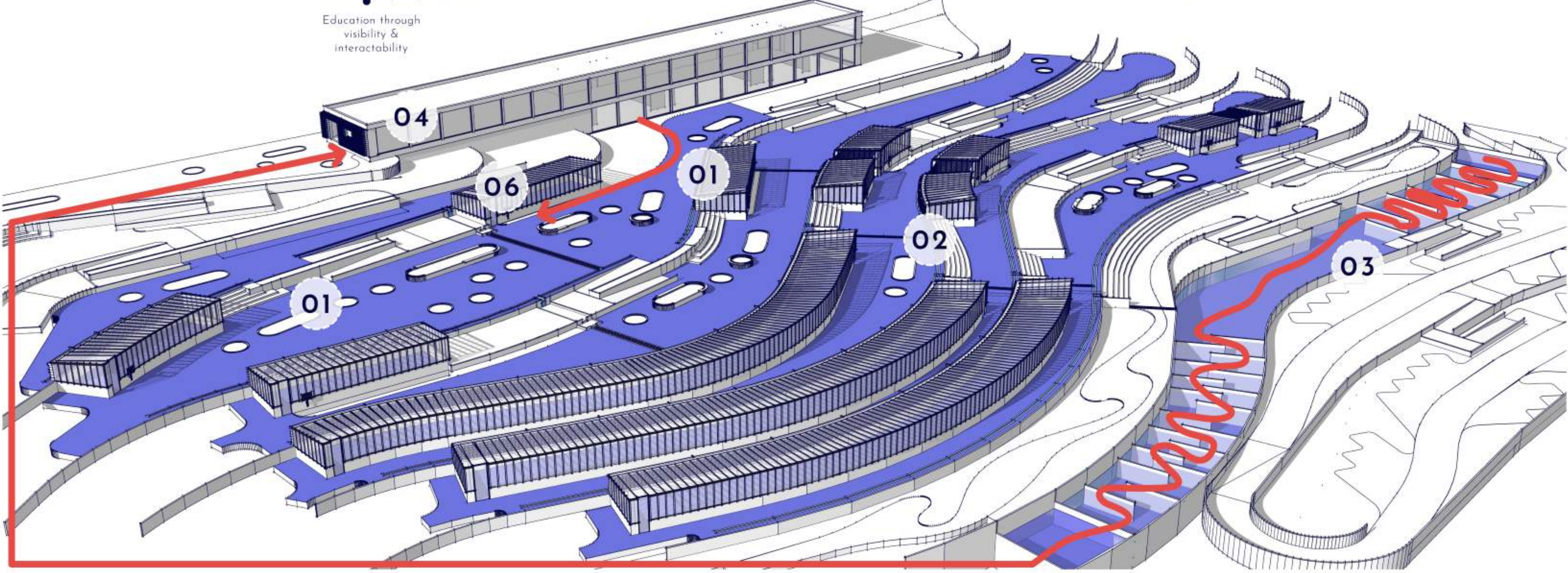
Swiss Chard



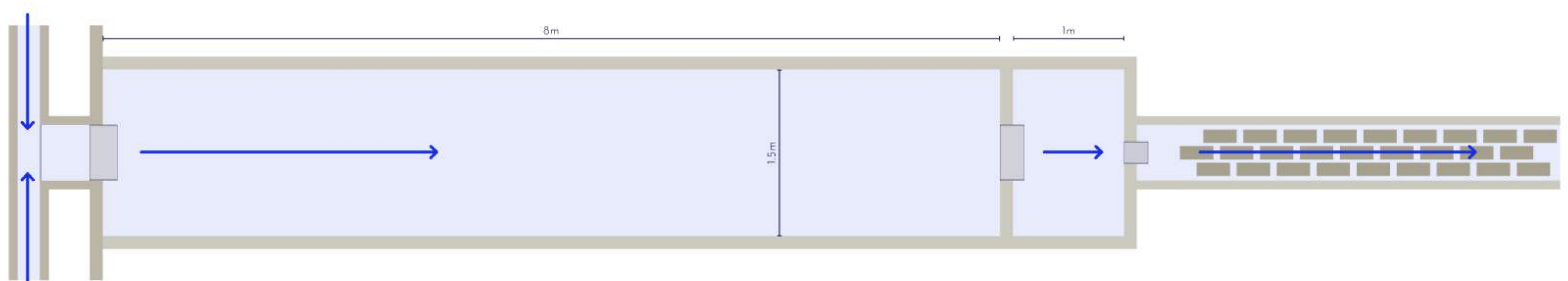
Watercress

- 01** Rainwater is collected from paved surfaces (7468m²) and greenhouse roofs (1296m²)
- 02** Water moved through rills & eco ponds towards the constructed wetland
- 03** Constructed wetland acts as method of temporary storage & plays educational role
- 04** Water is pumped to the Processing Facilities treatment room
- 05** Water undergoes UV disinfection, distillation, & reverse osmosis filtration to be cleaned for drinking & crop production
- 06** Treated water is gravity fed down terraces for irrigation of crops. In winter months water is stored for a maximum of 2 weeks in basement tanks

Experiential quality for visitors
Education through visibility & interactivity



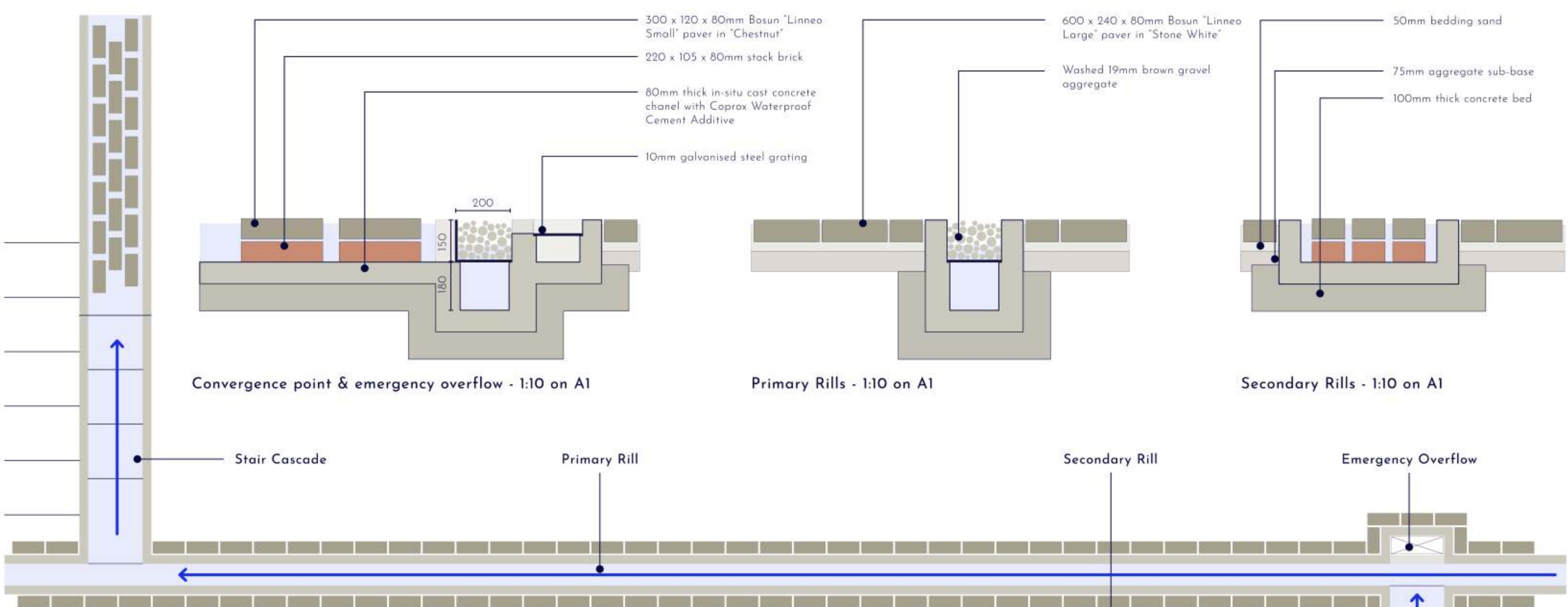
Site Water System: Rain harvesting, Treatment, Irrigation, & Education



Eco Pond Plan View - 1:25 on A1

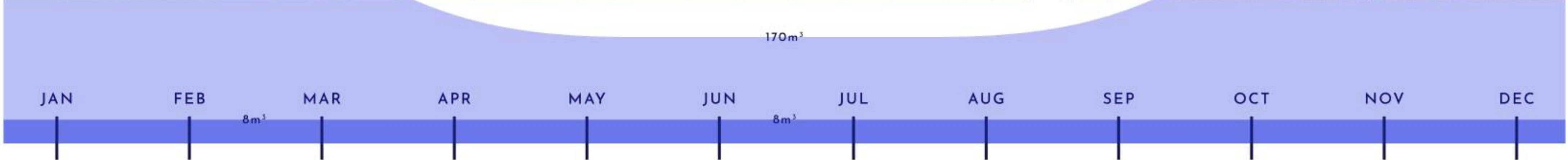


Eco Pond Section - 1:25 on A1

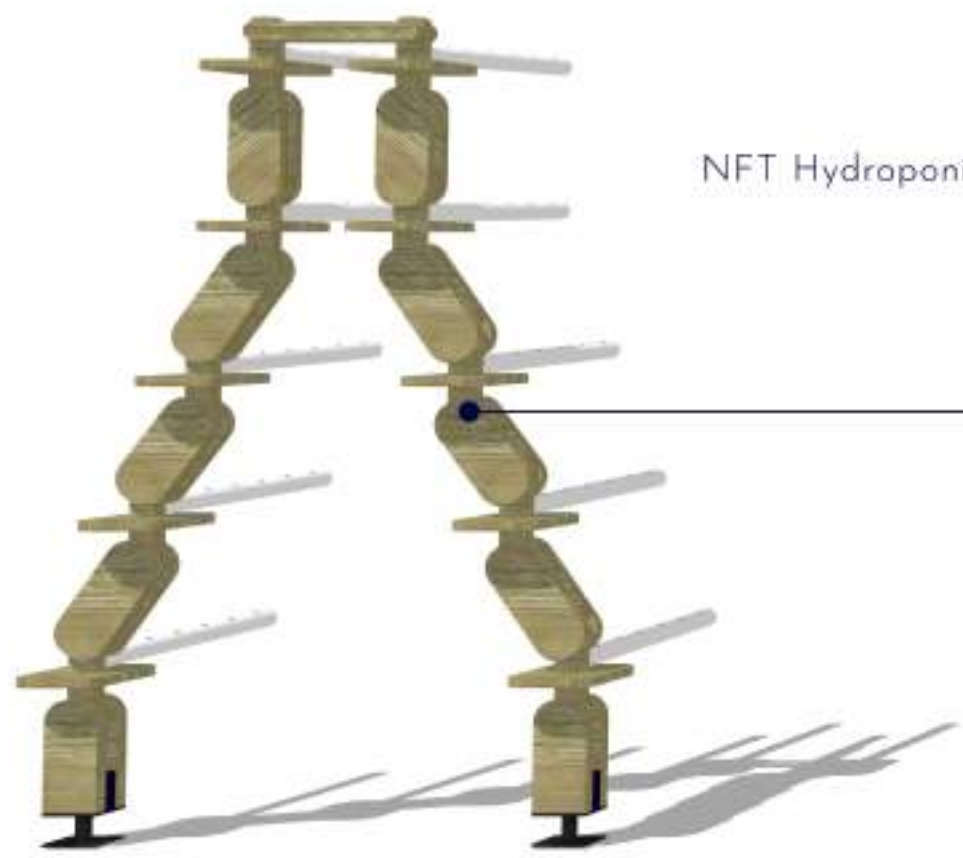


Rill System Plan View - 1:25 on A1

WATER SYSTEM



Water demand for 1300m² of Hydroponics in comparison with 1300m² of traditional farming methods



NFT Hydroponics Support Structure

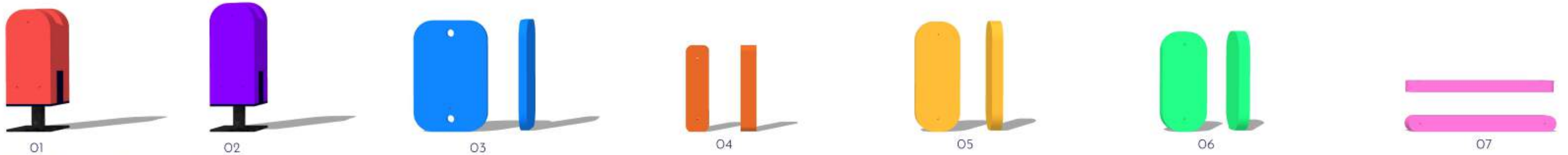


Adaptable furniture

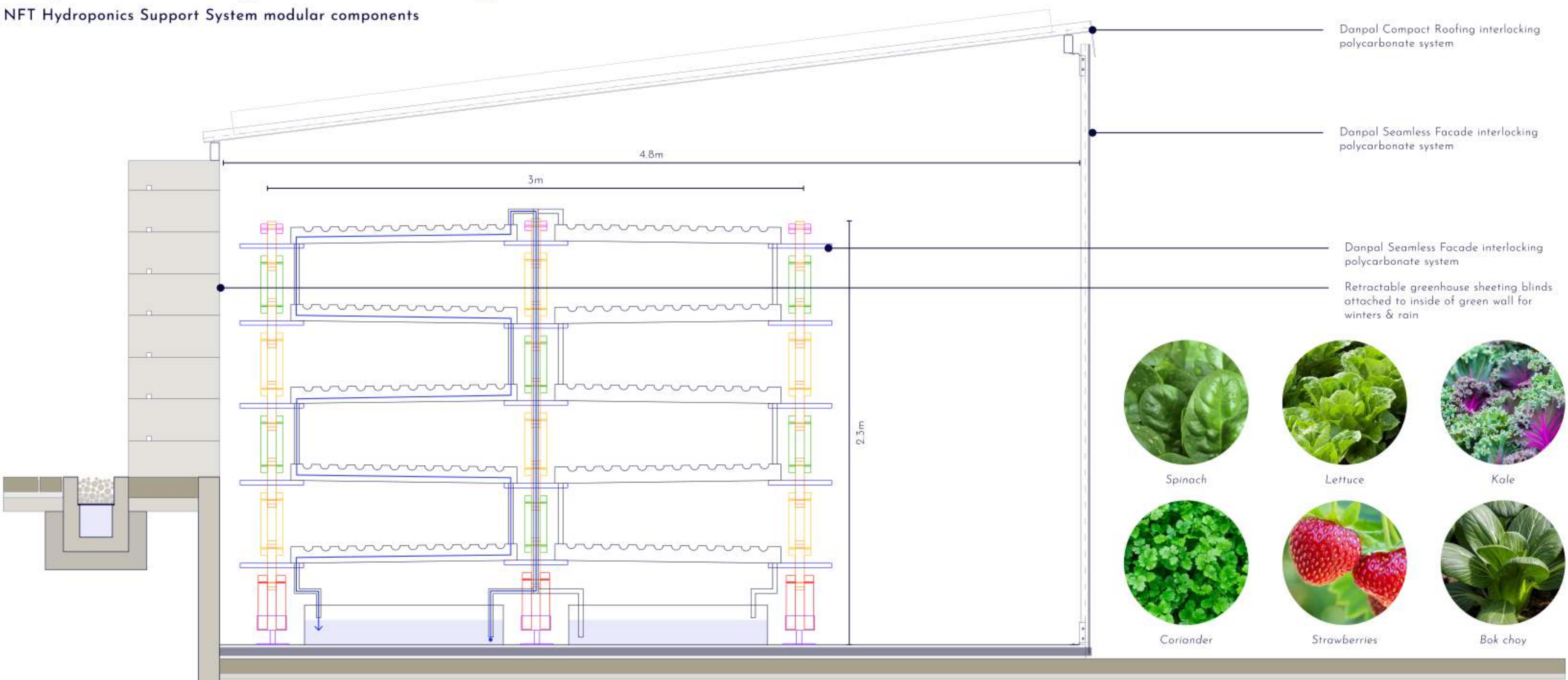


Adaptable planter boxes & screen

Circularity through modularity & adaptability

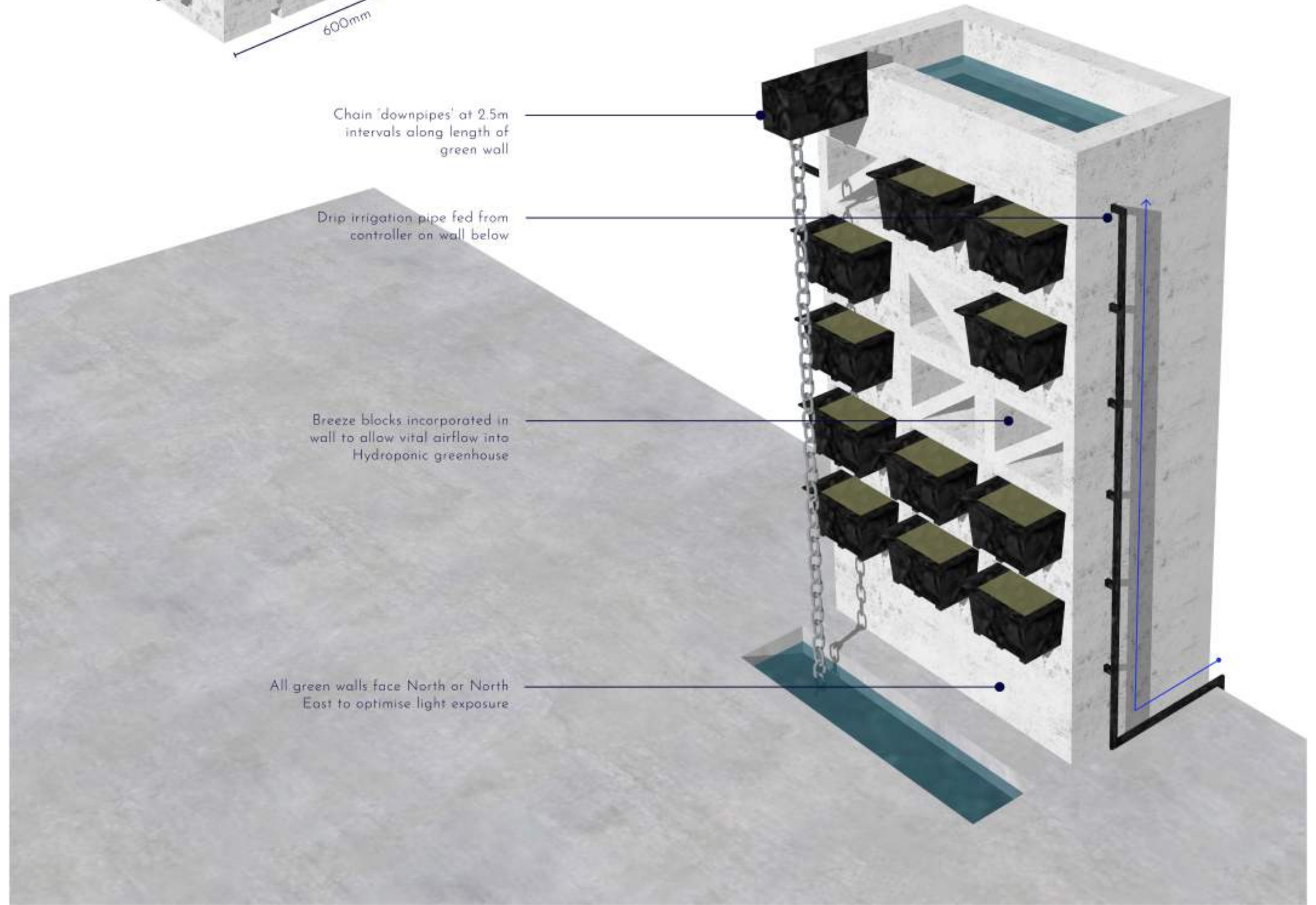
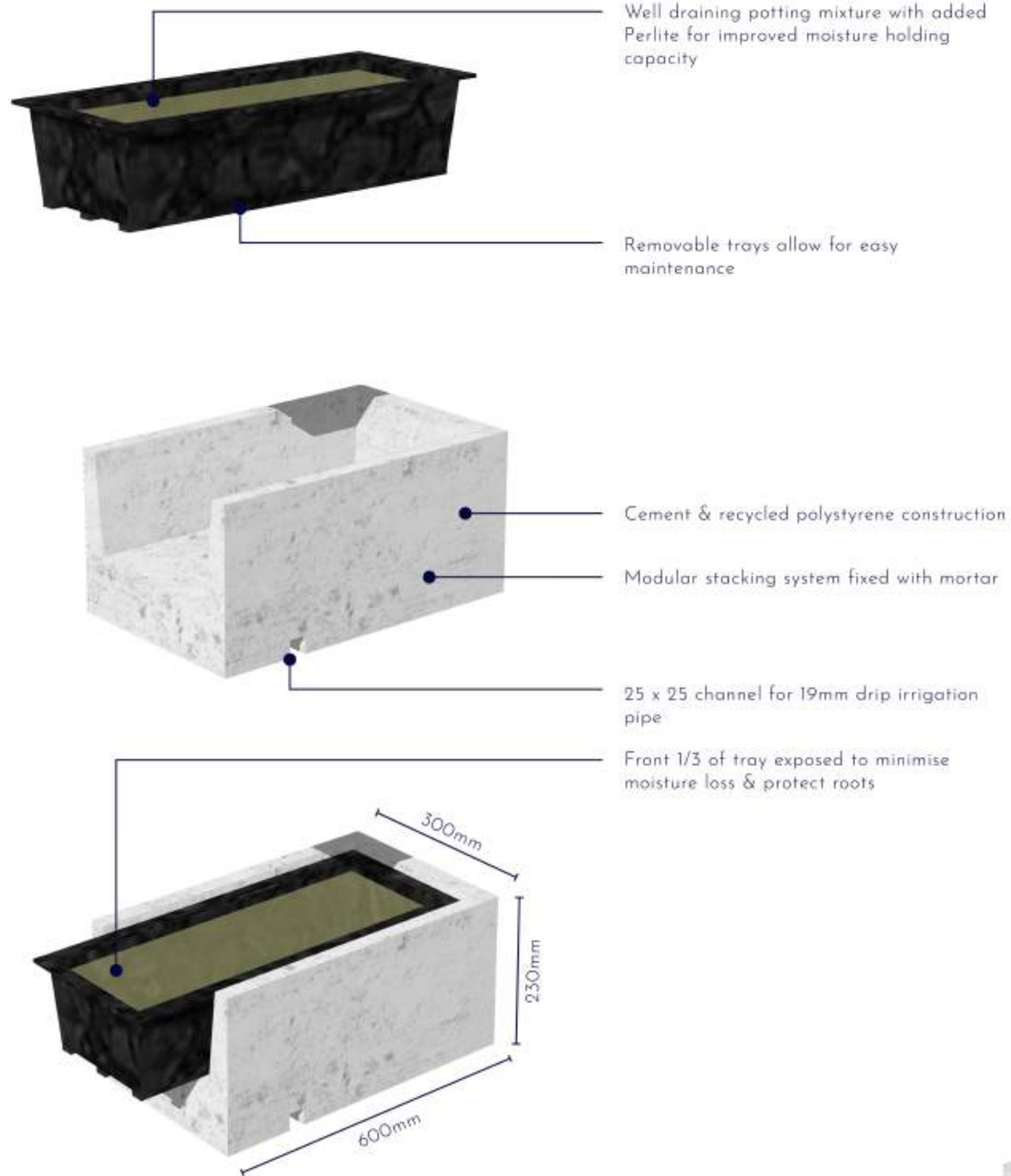


NFT Hydroponics Support System modular components



Greenhouse Section - 1:15 on A1

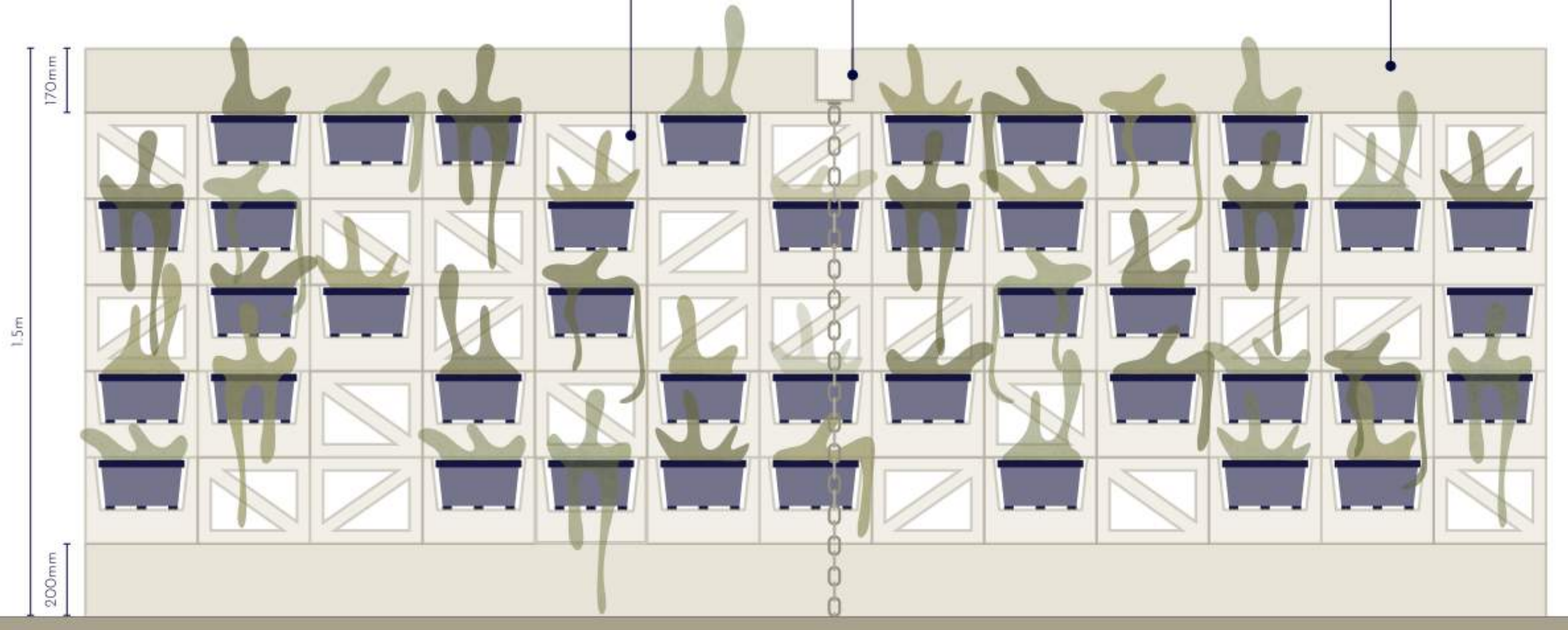
NUTRIENT FILM TECHNIQUE HYDROPONICS



600 x 150mm deep concrete channel to collect rainwater from greenhouse roofs

100 x 140 x 250mm galvanised steel channel fixed to galvanised steel chain

230 x 300 x 600mm x 35mm thick custom precast concrete breeze blocks



Eco Green Wall Elevation - 1:10 on A1

ECO GREEN WALL