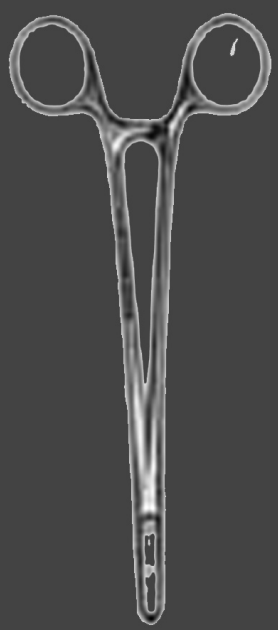
Post-Surgery Rehabilitation

Inconclusion

The dissertation endeavoured to merge two medical practices in order to remedy the ailments of current healthcare design.

The patient has been wheeled into the recovery ward and is coming to.

Was the surgery a success?



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[07] Reflections on the design and conclusions

This dissertation analysed the major shortfalls of the typical clinic design and aimed to challenge both how clinics were made and how they are inserted into informal contexts.
The research question posed set out to investigate if the overlaps and areas of antagonism between western and traditional healthcare models could result in a design that achieved all of the project intentions.

The result is a project which mediates between the salutogenic approaches of the traditional healers, and the pathogenic principles of western healthcare, to create an intervention that is both reflective of and responsive to place, that respects patient dignity in the creation of pubic waiting spaces, that mitigates the risk of air-borne disease transmission and able to adapt according to future changes in the context.

It was hypothesised that the participatory methodology would result in the intervention being accepted by and influential in the community. It would be impossible to find the hypothesis true or false, without building the intervention.
However, reflection on the influence of the collaboration process reveals the positives and difficulties of this design methodology. The initial meetings and informal interview were helpful in gauging and understanding of needs and wants within the community and their expectations of and desires for the ideal clinic. However, when moving the discussions into a more architectural focus, the collaboration process was not very helpful in a formalistic sense. However, the dissertation attributes this to the size of the group and the lack of vested interest in the project, rather than the method itself.
The transect walks and observations of building techniques and materiality proved most influential in the outcome of this particular project.

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In a session in the Public Health Group parallell panel, at the UIA congress in Durban, 2014; the question was posed;

> *Why is healthcare architecture within rural and informal contexts challenged more? Why do we continue to build Eurocentric clinics, with few exception, on a continent with vastly different disease burdens and climatic conditions.*

The question was answered with another question:

> *Why is the car still designed with four wheels place in each corner? Because that is what works. And when we build a car with three wheels, it tips over. The European healthcare models work, are efficient and cure people.*

The Australian gentleman who answered the question, clearly had very little idea of how sick these clinics were making people in South Africa.

The dissertation found that the spatial models observed in the traditional healer practices offered design guidelines to how a pathogenic western model could be manipulated and redesigned, in order to create a healthy environment, focused on fostering health, rather than curing disease.
Proving that there are *otherways* of making architecture, even healthcare architecture. And that way is found through community collaboration.

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[07] Images from the final exam

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Design Exam: Mokena Mokeka

Design Exam: Mokena Mokeka

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Technical Exam: Neil Crafford

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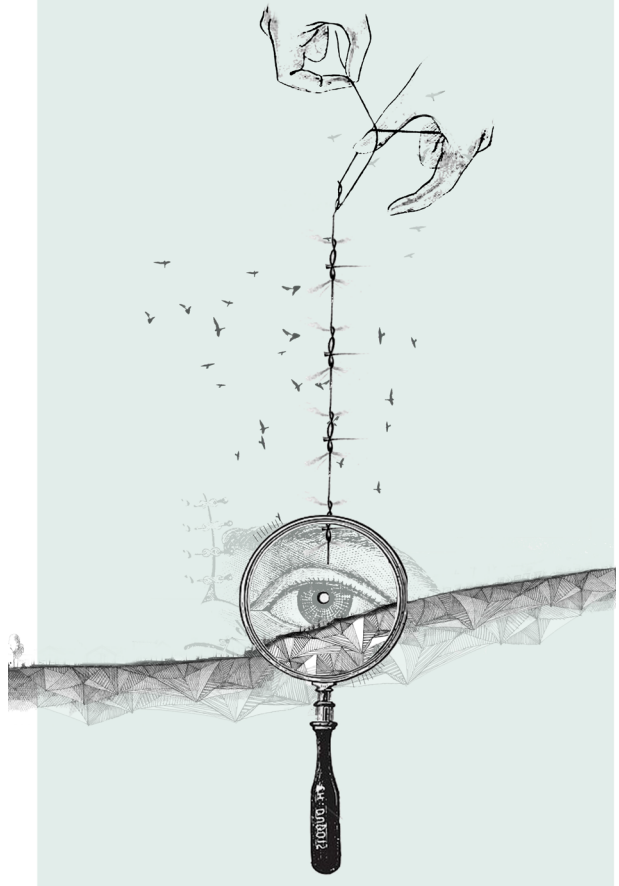
THE WAITING ROOM

SUTURE & SANTÉ
A PLACEMAKING PROCEDURE

"Don't let people fool you into thinking
healthcare architecture is boring.
We need more architects doing it better."

- PROF BAKKER

With gratitude and admiration, to the man who introduced me to,
and encouraged my pursuit of healthcare design.



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SUTURE & SANTÉ

A PLACEMAKING PROCEDURE

FOR: (Full name, address, & phone number)

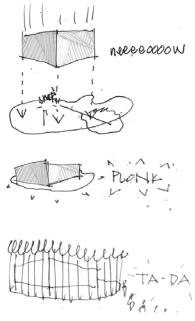
Std. Clinic Architecture, South Africa

NOTE: 5 different clinics across the country were studied to ascertain a "standard". Similar symptoms occurred

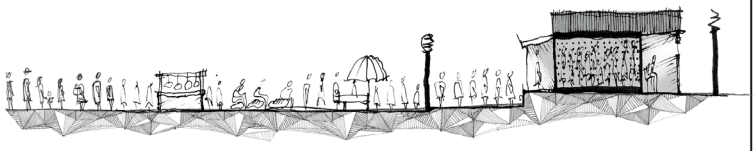
FULL MEDICAL EXAMINATION

SYMPTOMS:

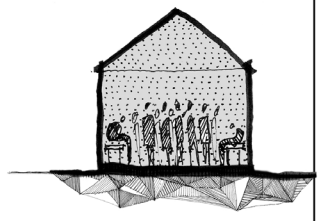
TUMORS, GROWTHS, & RASHES
REPEATED INSERTION & EXCLUSION
FROM THE PUBLIC REALM



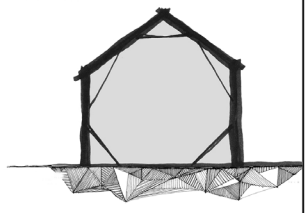
TIGHT CHEST & CONGESTION
POOR PROGRAMMING & PATIENT FLOW



COUGHING & SPLUTTERING
POOR VENTILATION



INABILITY TO TOUCH TOES
UNADAPTABLE BUILDINGS



PRESCRIPTION:

In order to achieve a complete state of health within South Africa, it can be argued that a completely new type of healthcare facility is needed, one which addresses all three states of well-being; physical, mental and social.

The intention of the dissertation is thus to challenge the current practice of clinic design and insertion, in order to create a social place of health and healing, not just a facility to treat the physical symptoms of patients.

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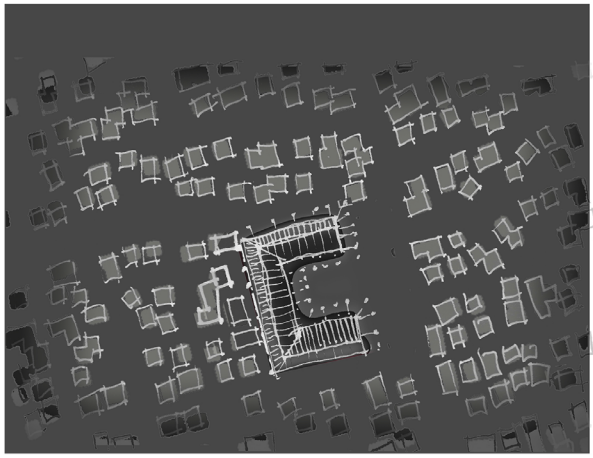
TUMORS & GROWTHS
EXCLUSION FROM THE PUBLIC REALM

On an urban scale, these type clinics – which are public service buildings – do not contribute to the public realm into which they are inserted.
Before the clinic is opened, patients are made to wait on the pavement outside, with no public furniture or ablution facilities.

STITCHES

Defines a public space and is integrated into its context and community

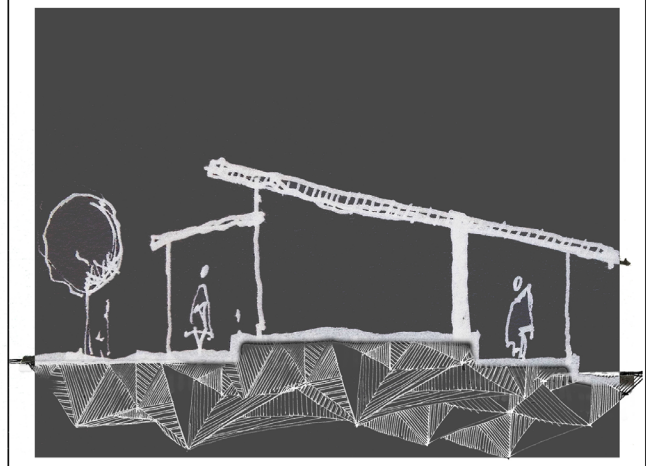


TIGHT CHEST & CONGESTION
POOR PROGRAMMING & PATIENT FLOW

"cold, depressing, dehumanising, dirty, smelly, frightening, impersonal, confusing, dull shabby, windowless, grim, stressful…" (IUSS 2014).

THORACENTESIS

Considers and designs for **user comfort** and positive patient experiences



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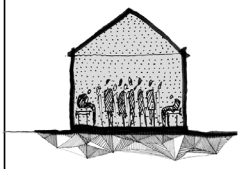
SYMPTOMS & SURGERY

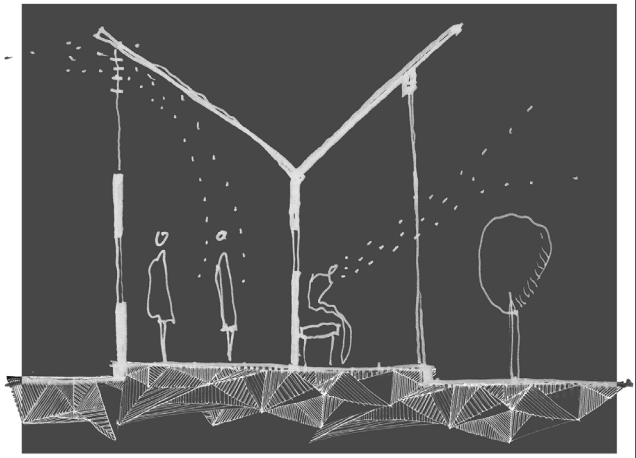
COUGHING & SPLUTTERING
POOR VENTILATION



Tuberculosis (TB) a highly contagious airborne disease. The spreading and mutating of TB, and other infectious airborne diseases, in the internalised, poorly ventilated waiting areas and consultation rooms, is identified as design shortfall of the standard clinic and an architectural design problem.

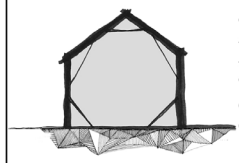
RESPIRATOR

Mitigates both inter-patient and patient-practitioner contraction of airborne diseases through ventilation design



SYMPTOMS & SURGERY

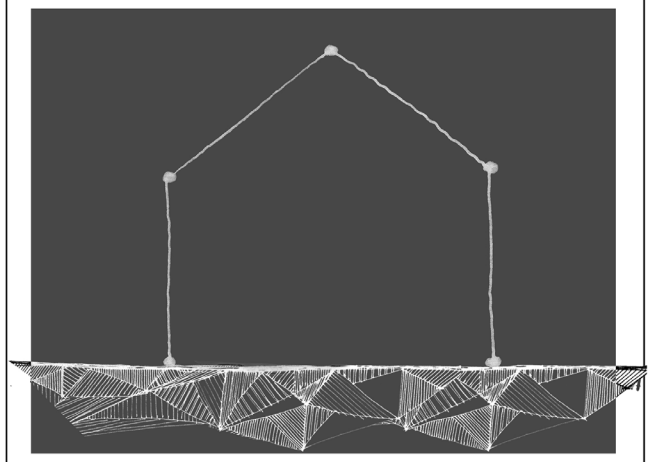
INABILITY TO TOUCH TOES
UNADAPTABLE BUILDINGS



The design of the standard clinic, is largely inflexible, in terms of how the space functions, how the air flows, where people gather or where they move.
The inability of these designs to be adapted to the changing demands of the shifting burden of disease is a design shortfall.

PHYSIOTHERAPY

Is easily **adaptable and flexible** in both program and structure, to allow for future expansion



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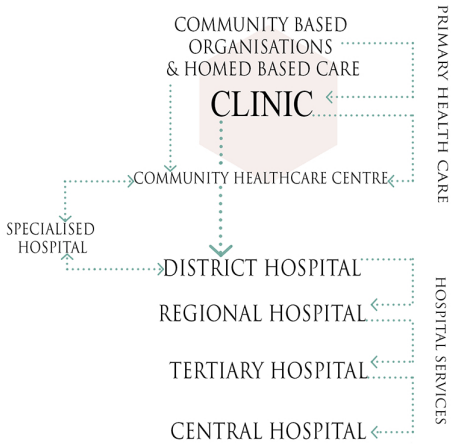
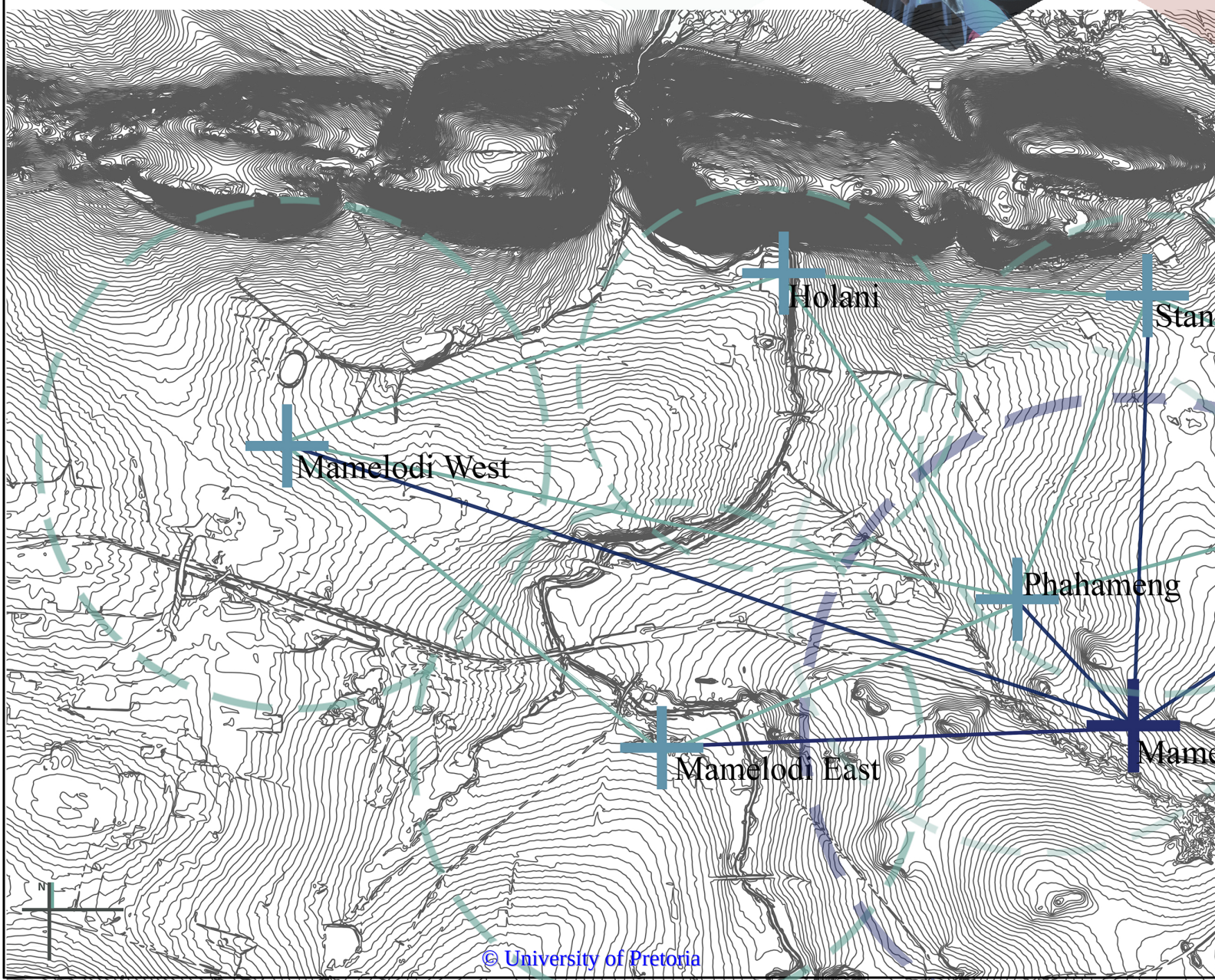
Potential Patient for Surgery

Selecting a Context





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za Bopape

Stanza Bopape ii
1 hour walk

elodi District Hospital

Patient
(site)

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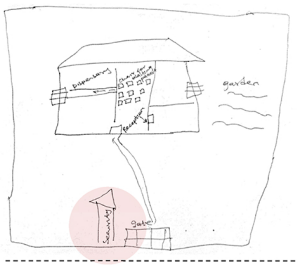
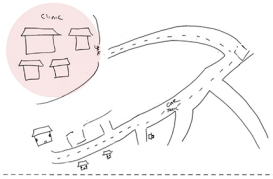
Full Patient Examination - Checking for Vitals

Mapping Health - Interviews & Community Participation

I have to travel long distances to the nearest clinic and wait for long periods of time. Sometimes I go home without seeing the doctor.



Clinic isolated within context



5km to nearest clinic

Community Drawings

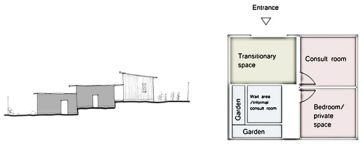
In order to see my traditional healer I first need to consult a nurse at the clinic.

Formal healthcare system Accommodates traditional healer

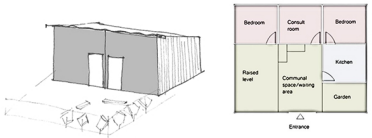
Potential for densification and water management

Community Drawings

I refer patients to the clinic before I consult them. There is a great opportunity to combine Western & Traditional medicine.



Outside space utilized as part of traditional healing practice



Formal interior consultation space with communal exterior courtyard

Traditional Healers

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Locality Map: Traditional Healers

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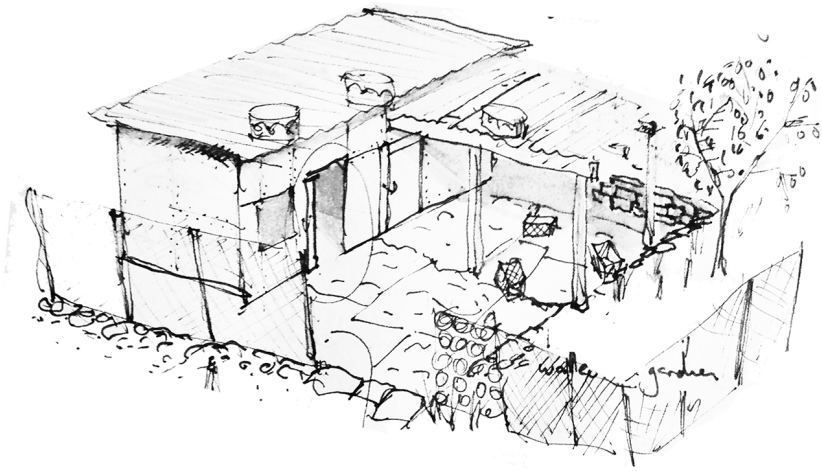
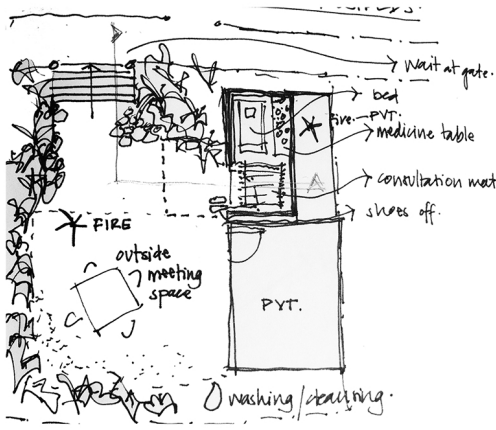
DIAGRAMATIC EXPLORATION OF TRADITIONAL HEALING SPATIALITY

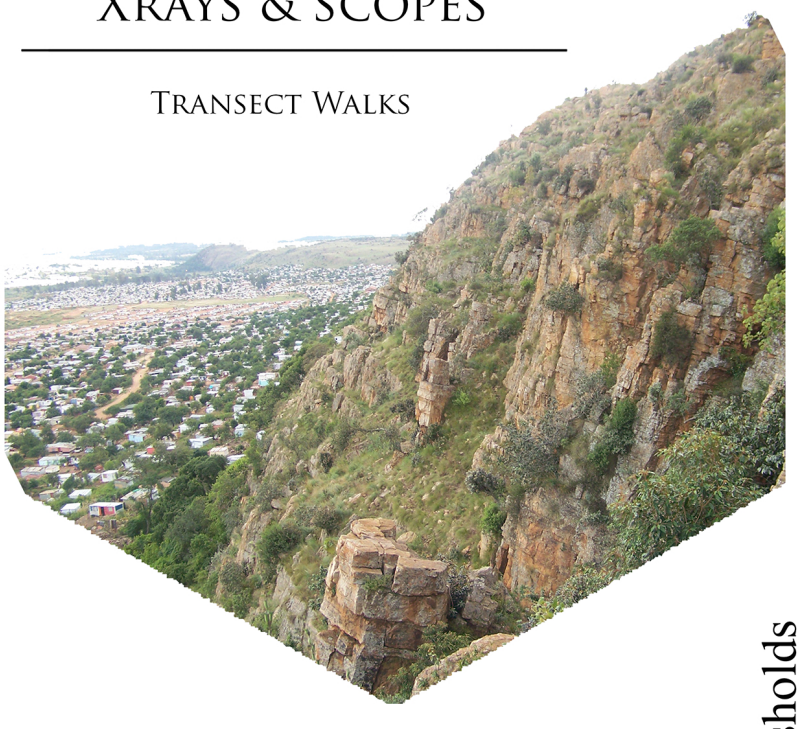


William's Practice



XRAYS & SCOPES

TRANSECT WALKS



Stone Plinths

Thresholds

SITE:

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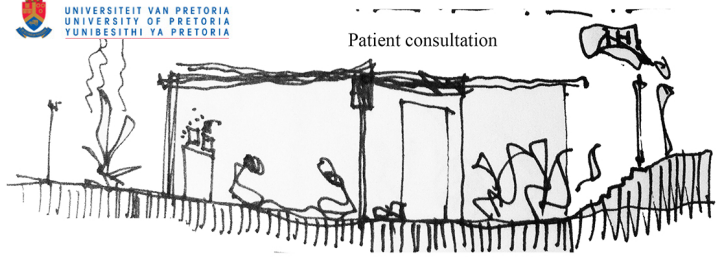
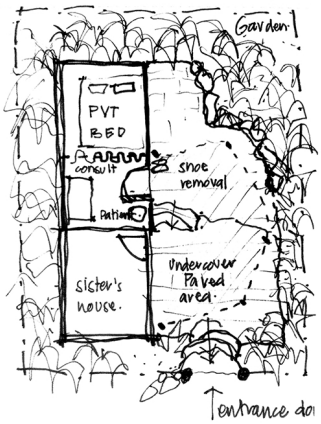
Patient consultation

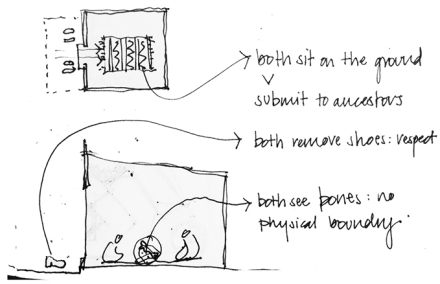


Ma Gogo's Practice



Trevor's Practice & Shop

Practitioner - patient relation



Plinths as Thresholds

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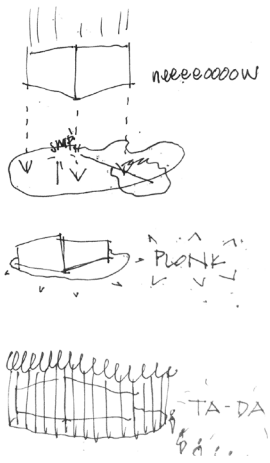
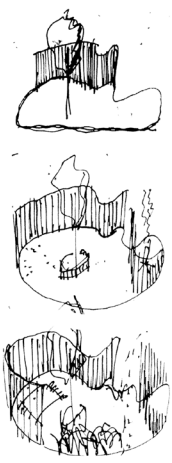
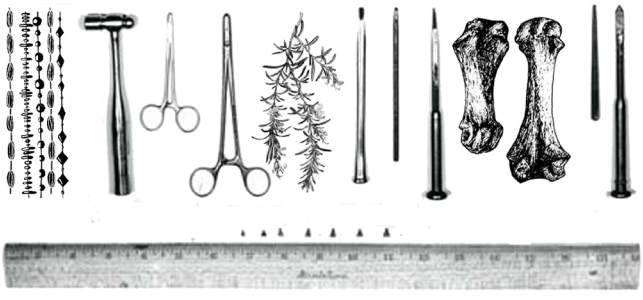
THE PLACEMAKER
A HYBRID CLINIC

The assumption that the insertion of a western clinic into the informal context of Alaska would be perceived as an imposition and therefore rejected, as it emanates from elsewhere, gives rise to the hypothesis.

It is hypothesised that an intervention generated through both the **programmatic and spatial reconciliation** of the two healthcare models and the mediation between **top-down insertion and bottom-up innovation,** will be accepted by the community. The insight into contextual nuances that participatory methodology affords, will result in a design that is **reflective of and responsive** to the context; patient centric and fosters healing.
Through the acknowledgment of the given – the traditional practitioners – and spatial agency given to the community; it is surmised that the intervention will not only take root, but will be a **catalyst for change** within the settlement.

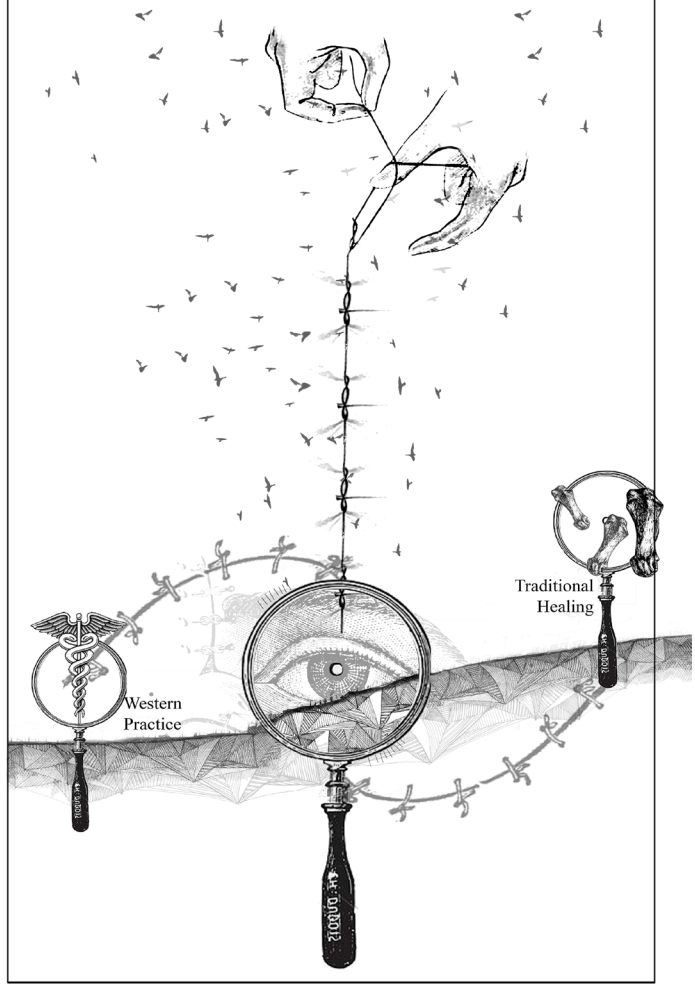






PROGNOSIS

Through investigating the overlaps and areas of antagonism in scope between **western and traditional medical** models and engaging in a **collaborative design approach**; the dissertation sets out to investigate how the architectural, spatial and detail expression of these similarities and disparities, can result in a new healthcare facility model?
One which is **integrated into place, patient-centric, and adaptable** , in order to constantly foster physical, social and mental well-being, despite any fluctuations in the context or changes in disease which may occur.



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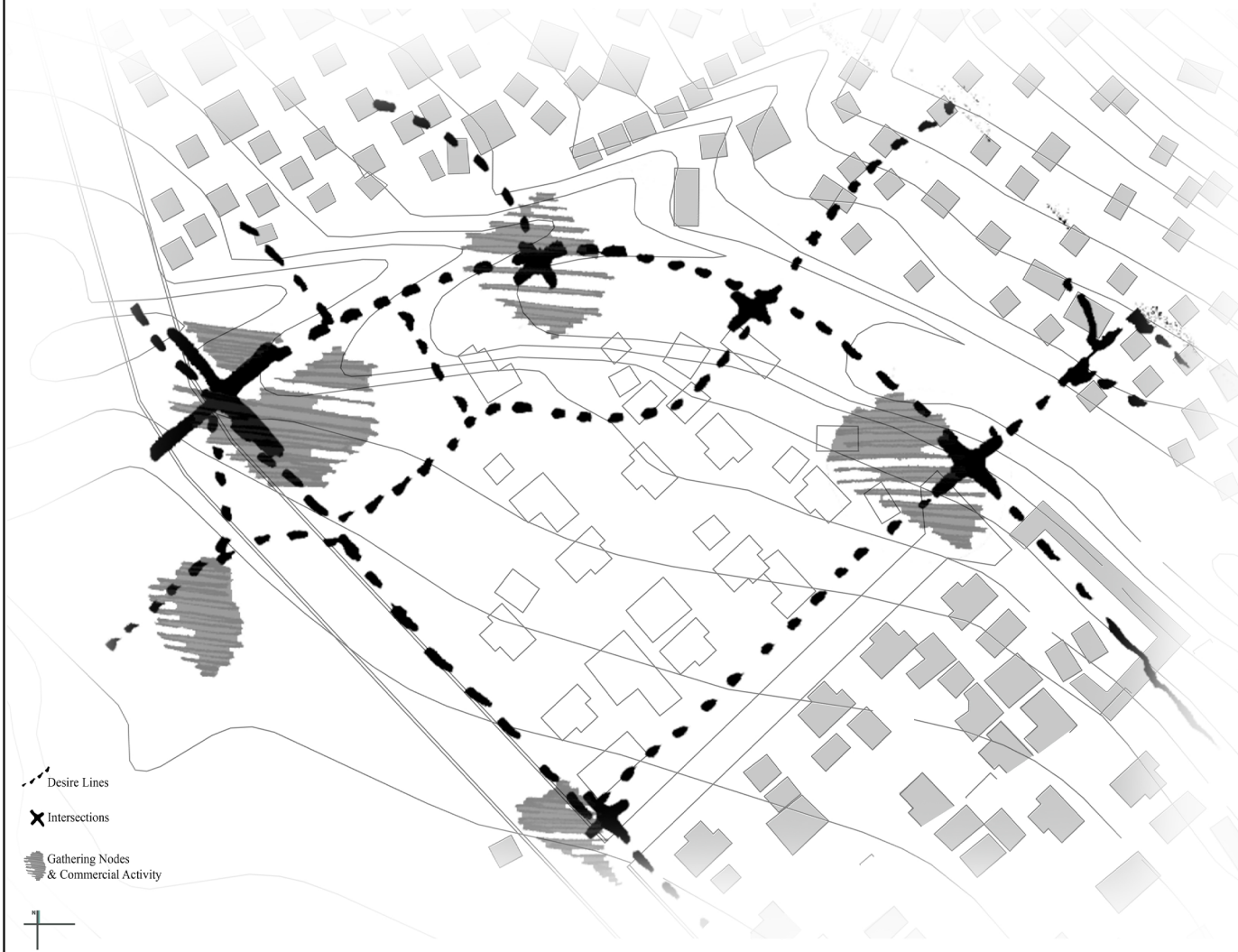
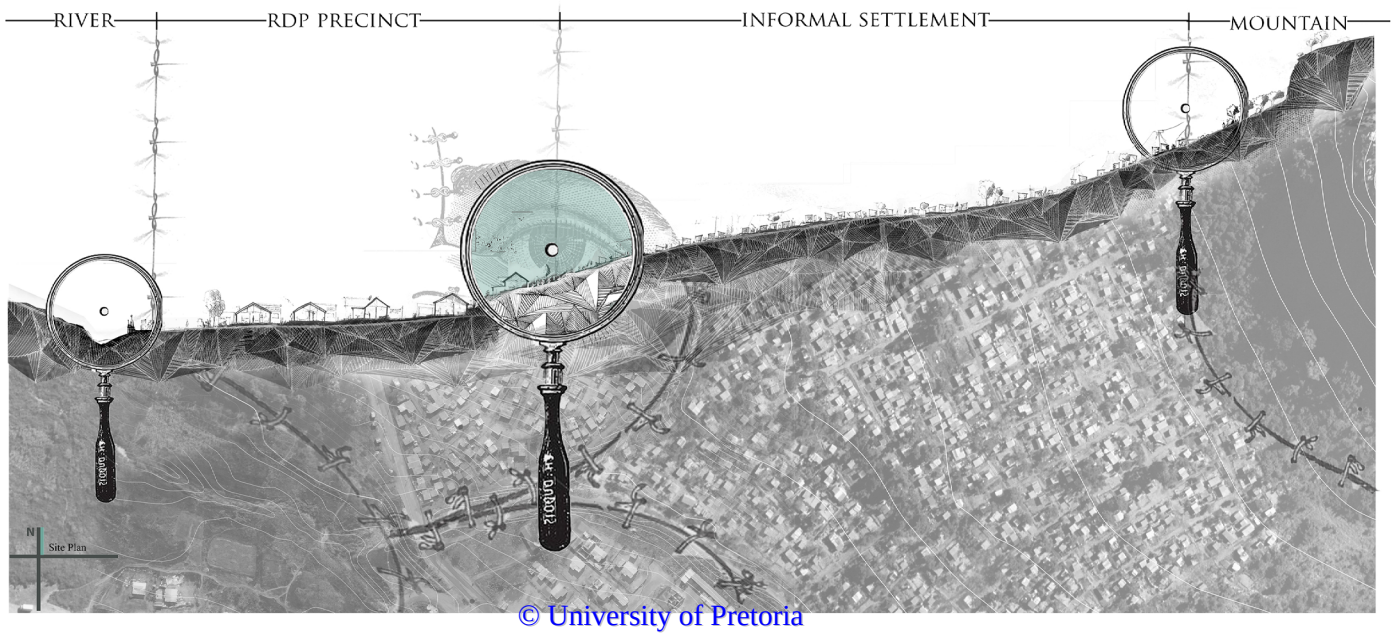
Infected Organs

Selecting an Appropriate Site

Three potential sites were identified for a healthcare intervention. The site was decided upon for it's **accessibility, size and evidence of existing public gathering nodes.**





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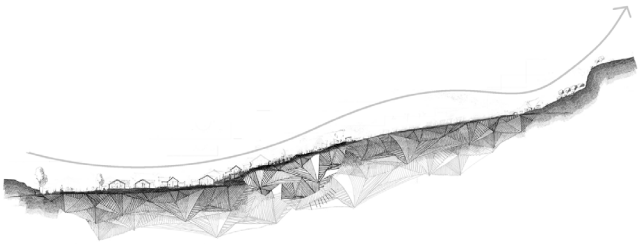
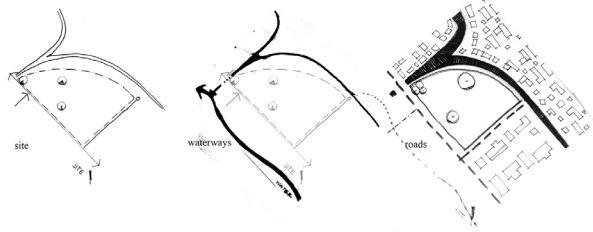
Site Informants

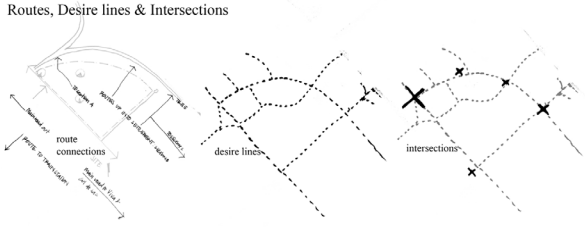


The Gradient & Consequential Air Flow

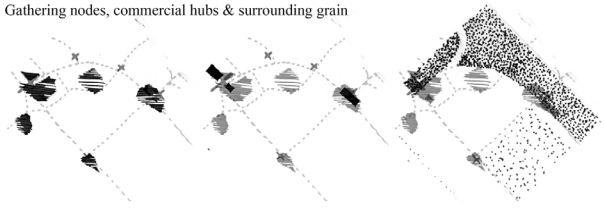
Physical Boundaries



Routes, Desire lines & Intersections



Gathering nodes, commercial hubs & surrounding grain

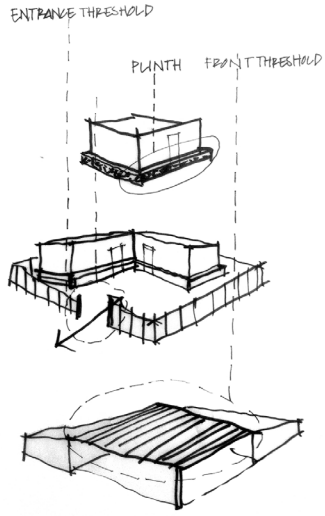


Urban Design Framework and its consequence on scale

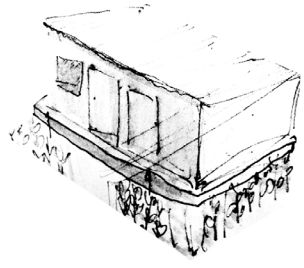
Current Scale

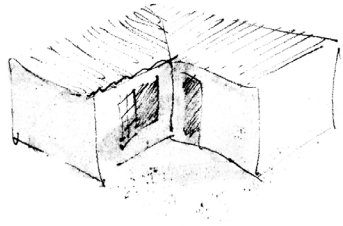
Proposed Scale

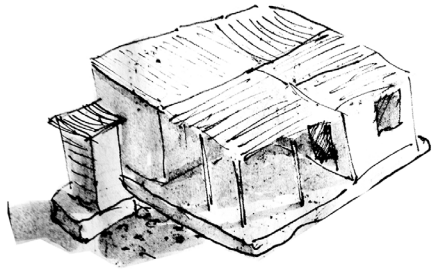
Shack Evolution



The recognisable shack morphology and distinctive spatial layouts illustrates a clear use and understanding of public and private space within the settlement. The layering and softening of thresholds in the transition between public and private provides a clear alternative to the current healthcare convention.







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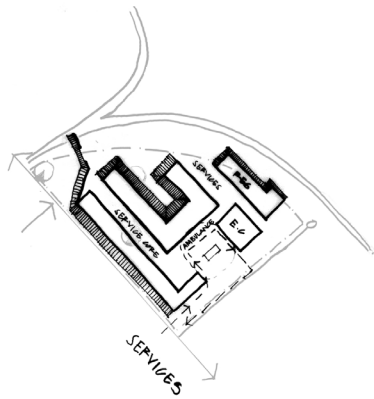
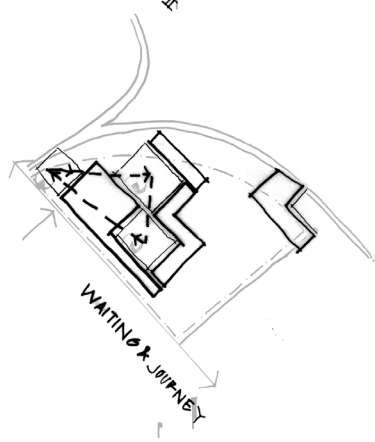
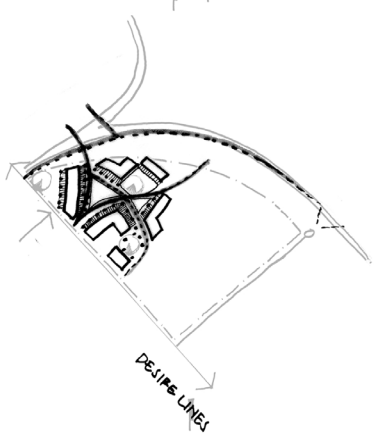
Shack Morphology

Conceptual Scenarios







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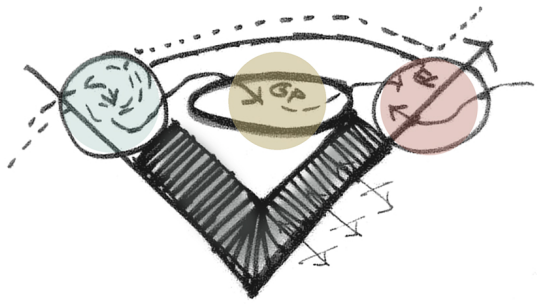
Site Plan Development

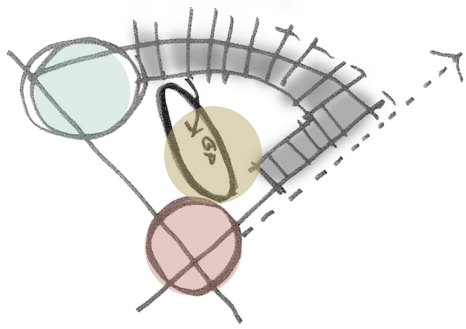
Emergency Centre

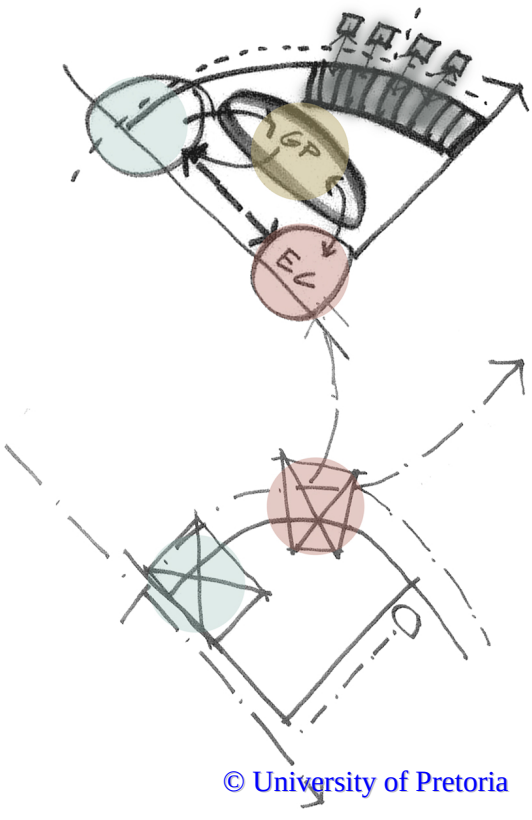
Public Square

Clinic

Residential







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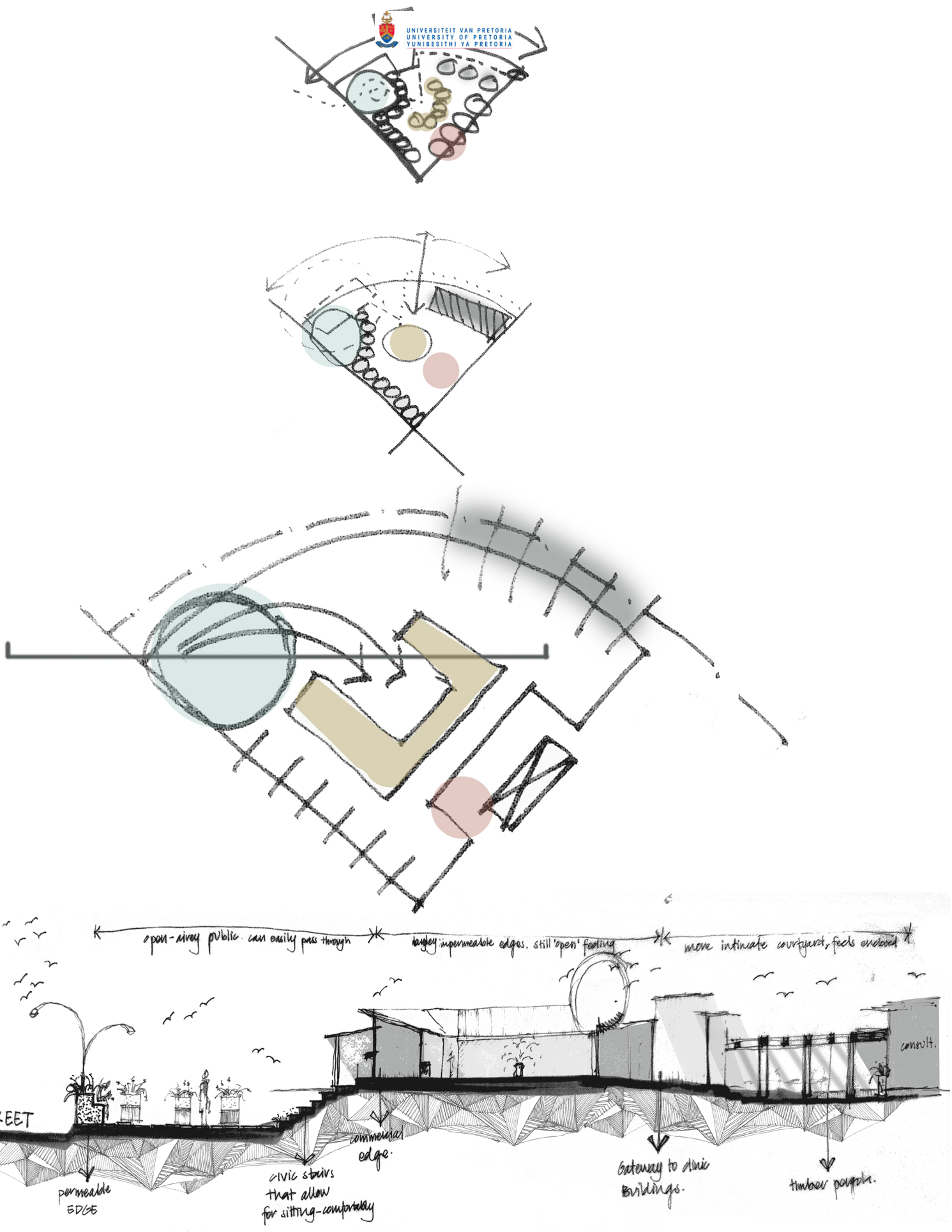

Site Section exploring the thresholds and spatiality between Public and Private

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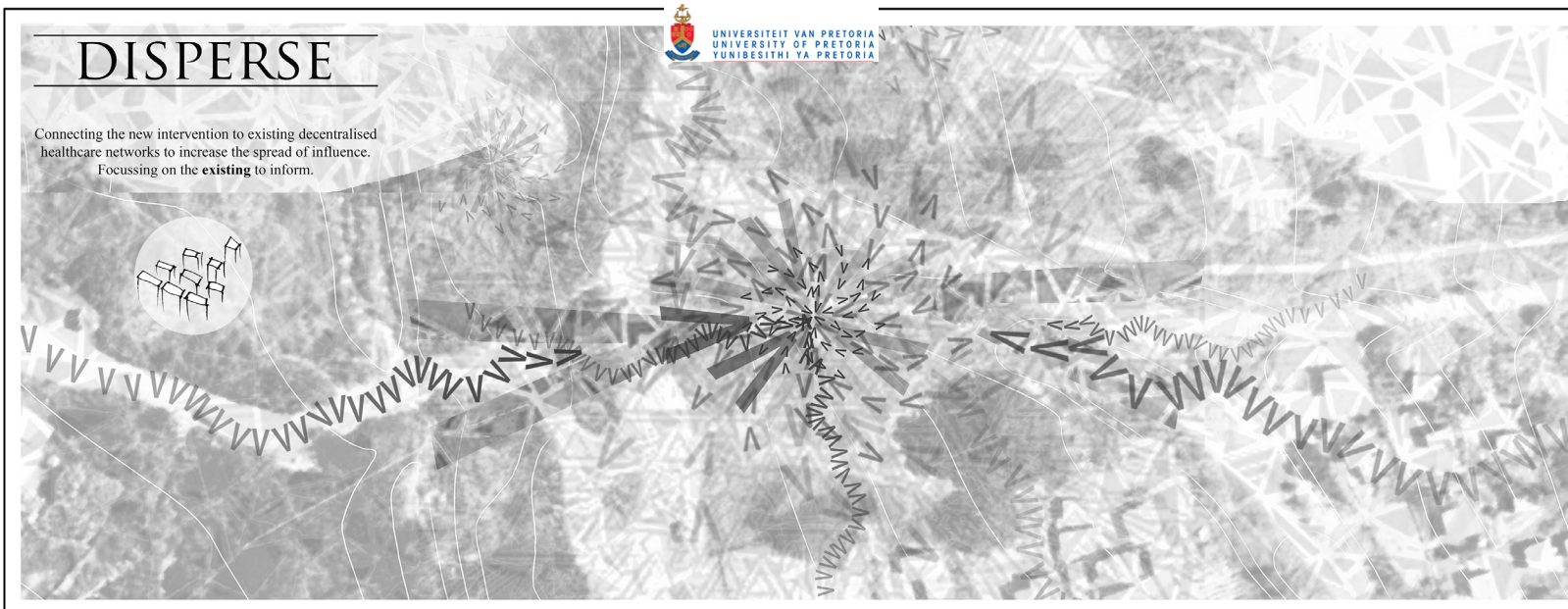
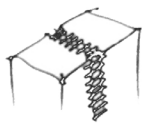
DISPERSE

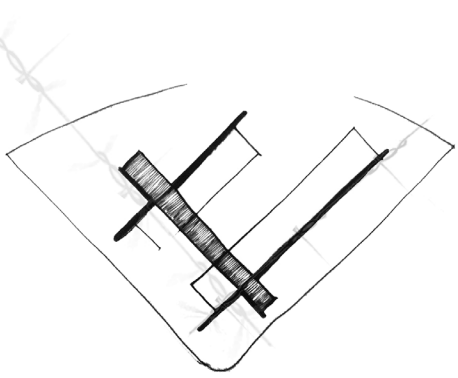
Connecting the new intervention to existing decentralised healthcare networks to increase the spread of influence. Focussing on the **existing** to inform.

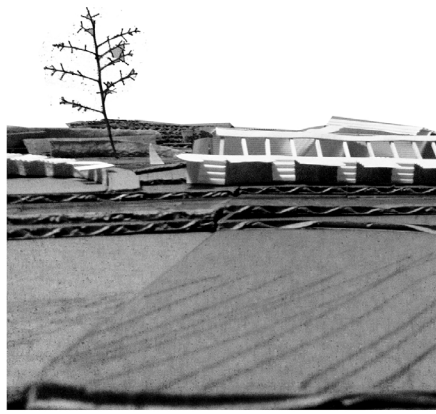


STITCH

Including traditional practitioners within the design intervention, while still remaining separate from the western practitioners.

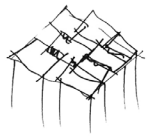


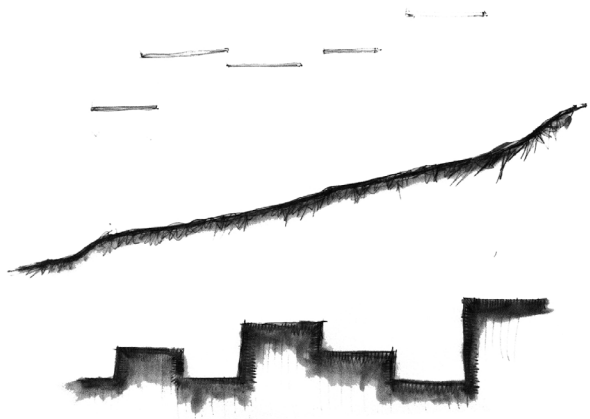


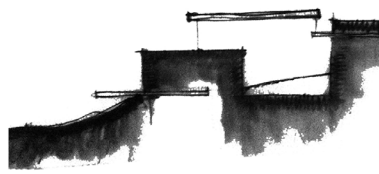


MERGE

The **complete reconciliation** of the two practices. Whereby the insertion of a **top down institution** is informed by the **bottom up intuition** of local practitioners.







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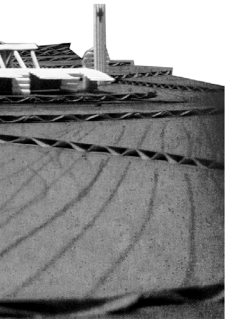

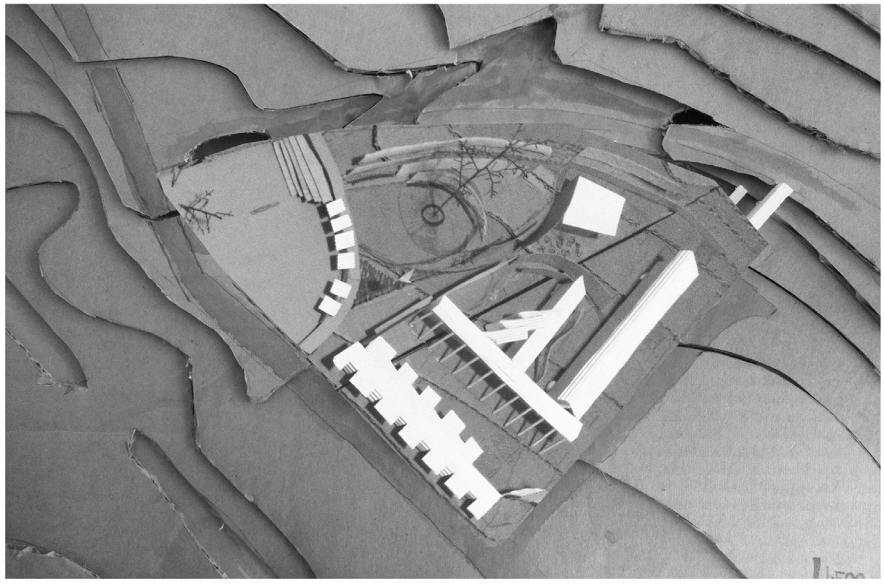

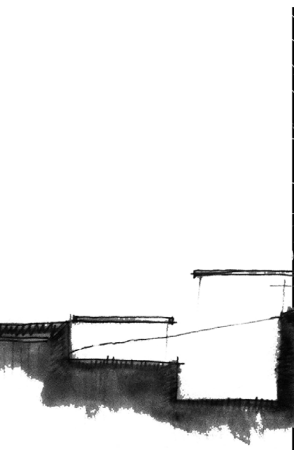

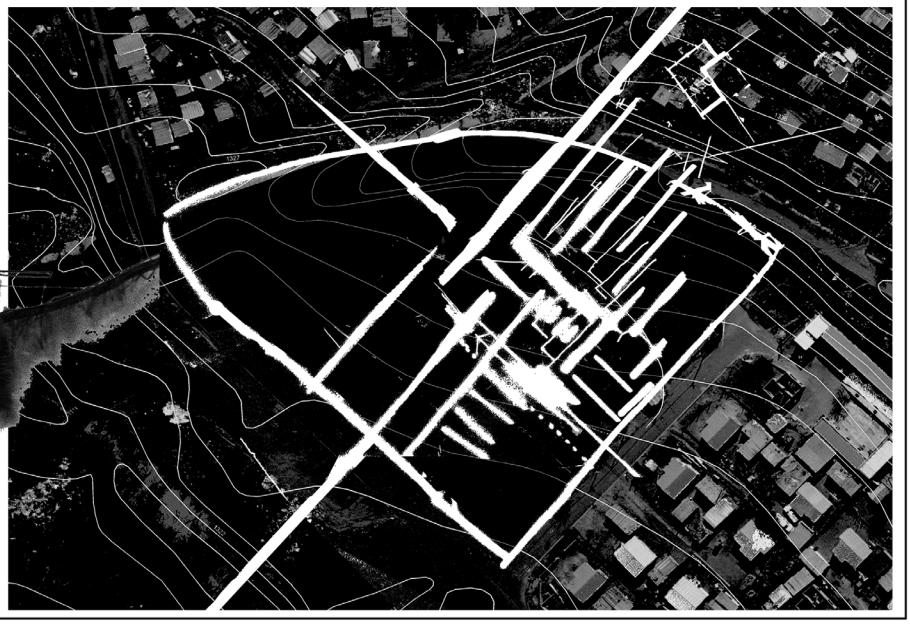

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Public Square Perspective

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GROUND FLOOR PLAN

1 : 100

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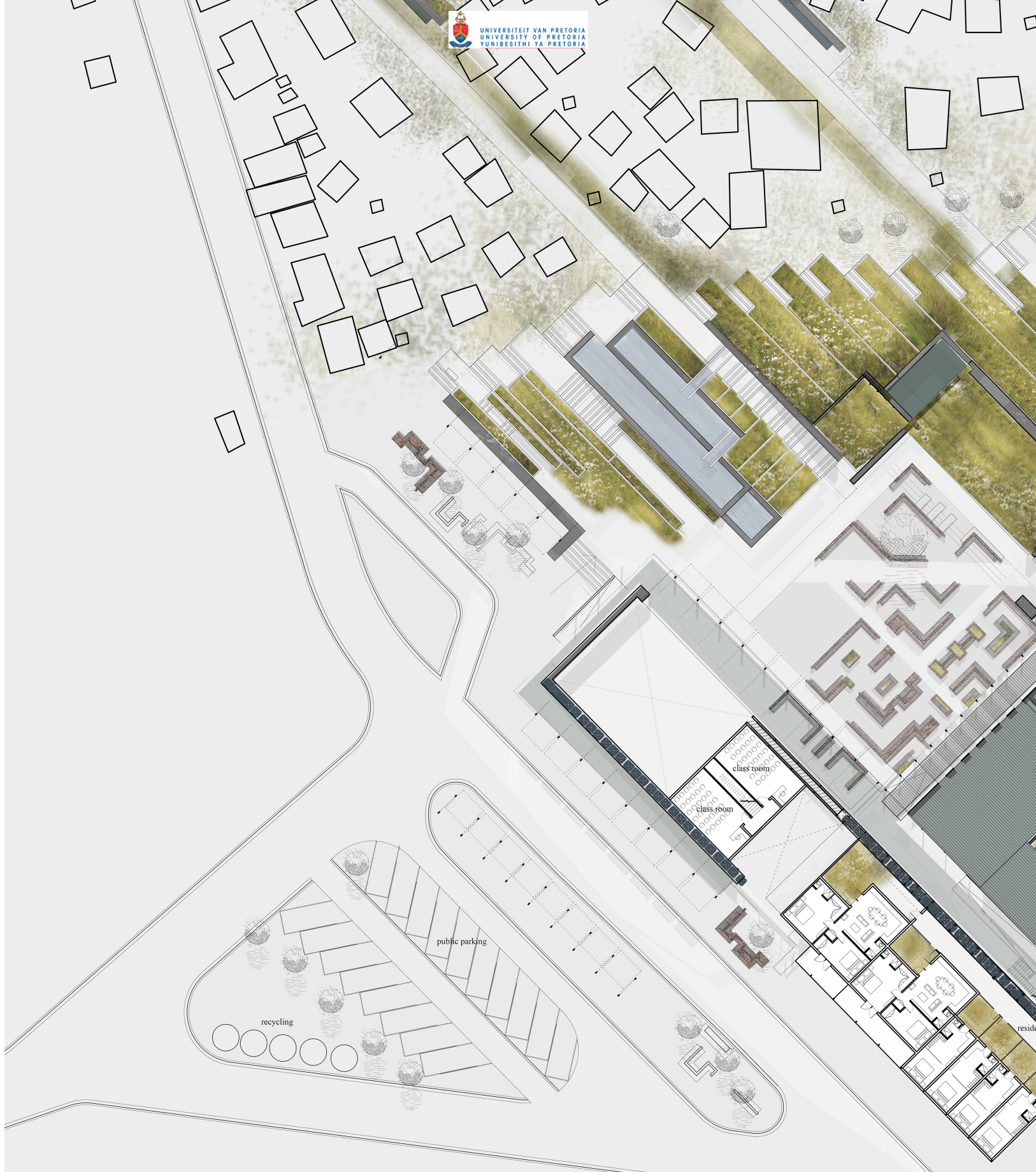

First Floor & Roof Plans

1: 200

N

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1:20 Sectional Perspective

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SOLAR ASSISTED STACK NOTES

IBCs - Intermediate Bulk Containers. Standard water storage tanks. Modular, removeable and replacable.

12 mm low E glass on galvanised stainless steel frame, bolted to primary steel structure.
Glass box junctions to be sealed with neoprene seal.
Steel frame structure supporting solar panels and evacuated tubes. Purposefully over-designed to support the addition of a second floor.

ROOF NOTES

Brownbuilt roof sheeting on 50 x 75 galvanised mild steel cold rolled C-channels, at 1200 centres, on 80 x 100 galvanised mild steel C-channel beams.

0.8mm Brownbuilt profile roof sheeting (laid by an approved Global Roofinf Solutions contractor), conceal fixing to purlins using manufacturer's fasteners (D1 starting clip, D2 Duplex clip & S3 finishing clip).
Fasteners fixed to purlins with no. 10 x 16 mm long wafer head, self-tapping electroplated Tek screws with a minimum coating thickness of 8 microns into 4.3 mm pre-drilled holes using a small amount of graphite grease.

50 mm ISOboard insulation, fixed to underside of galvanised steel purlins, primed and painted as ceiling.

Continuous folded galvanised steel concealed channel gutter. See 1:5 Detail B.

WALL NOTES - Imison Walling System

Powder coated standard aluminim window to specialist detail.

2400 x 1200 Imison wall panel with 100mm core insulation and Brownbuilt wall sheeting exterior wall cladding assembled in factory.

80 x 100 galvanised mild steel bottom C channel fixed to concrete floor slab with chemical anchors.

TIMBER SCREEN NOTES

50 X 150 SA Pine timber columns P.A.R, at 2400 centres, bolted to galvanised mild steel plates, CCA treated and sealed.
38 x 38 reclaimed timber latte/ battens, at 400 centres, fixed to timber colums with countersuct screws, CCA treated and sealed.

BENCH NOTES

50 x 75 SA Pine timber battens bolted to galvanised mild steel frame, CCA treated and sealed.

Custom sized mild steel brackets bolted to concrete supports, primed, painted and sealed for exterior use.

FLOOR NOTES

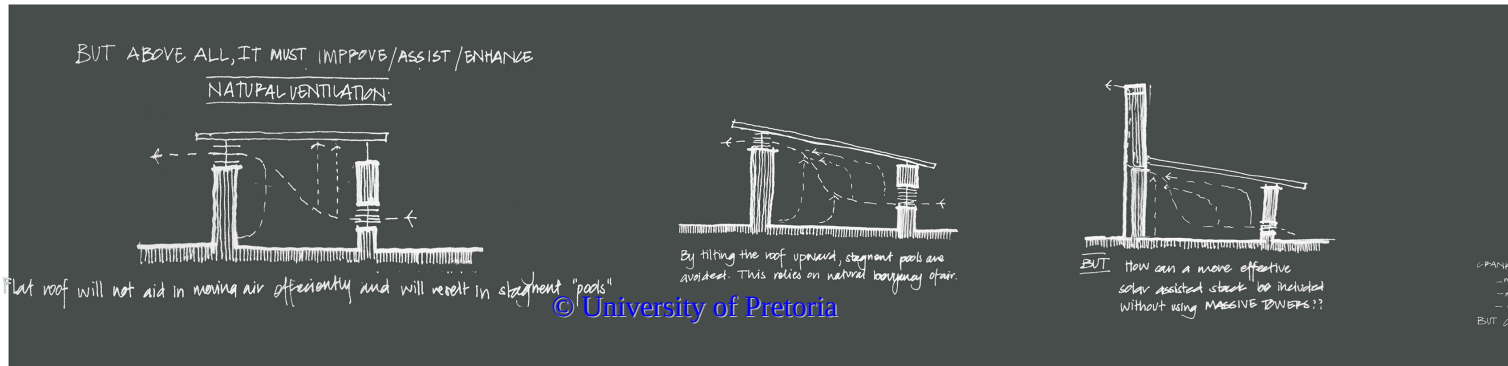
2mm Belgotex Antibacterial Vinyl flooring (Neptune), glued to 30mm no-fines screed.

200 mm reinforced concrete floor slab and raft foundations to engineer's specification.
Recycled aggregate to be used in concrete.

50 mm screed to min 1:100 fall finished with Cobra floor polish (as per local practice).

DPM.

50mm fine sand binding layer (to prevent DPM being punctured).
Compacted fill.



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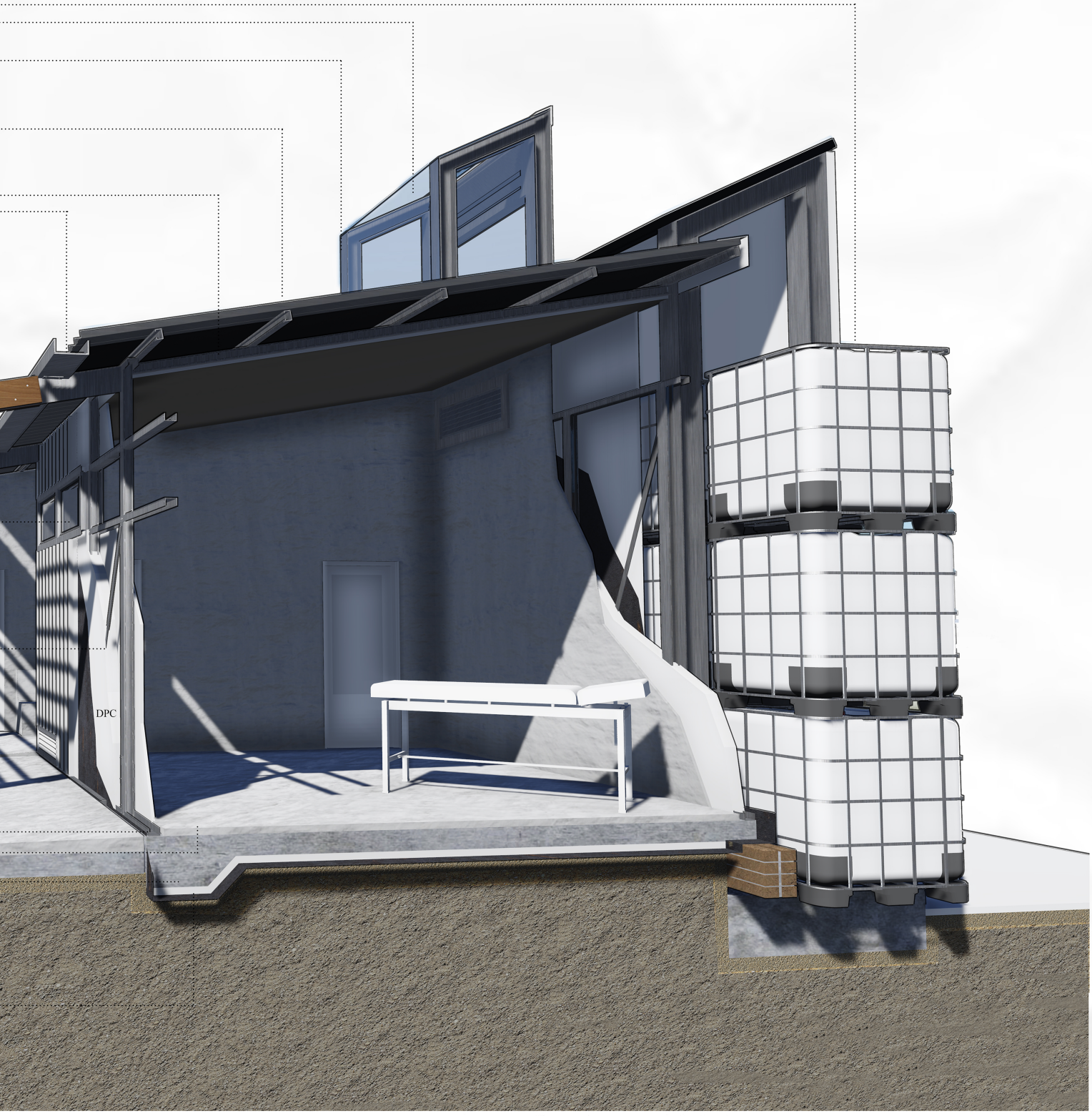
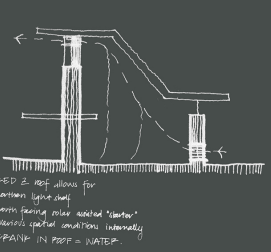
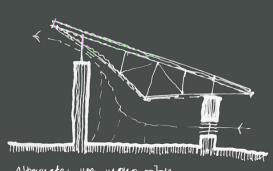
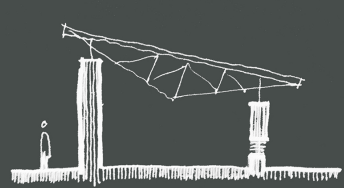




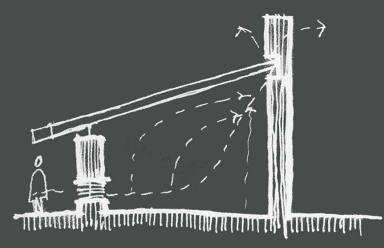
ED 2: ROOF allows for
northern lighting shaft
ern facing roller shutter "counter"
ntrolled spatial conditions internally
RAIN IN ROOF = WATER.



Alternate: use mono-pitch
and create spatial conditions
with through ceiling manipulations.



BUT... human scale??



Better scale at court yard end.

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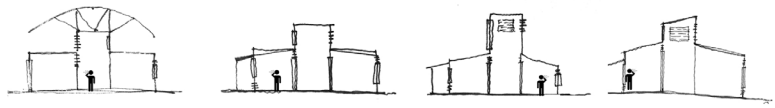
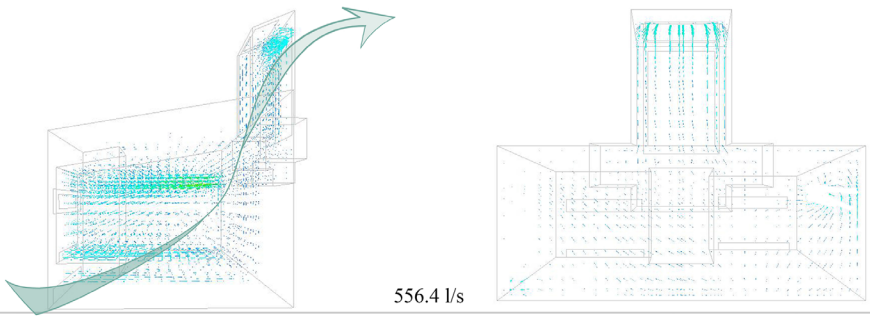
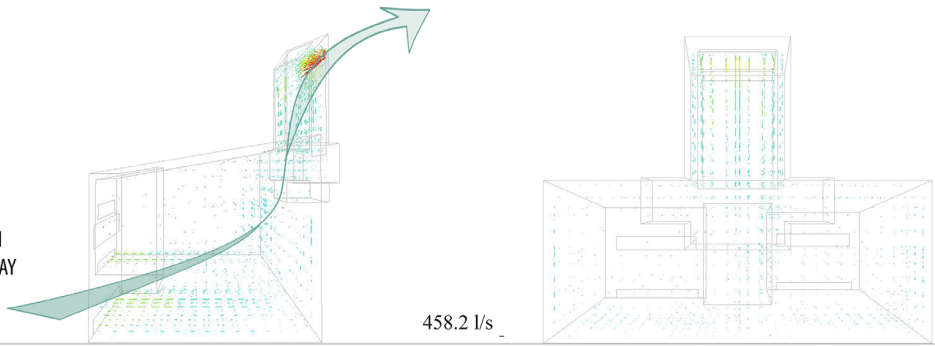
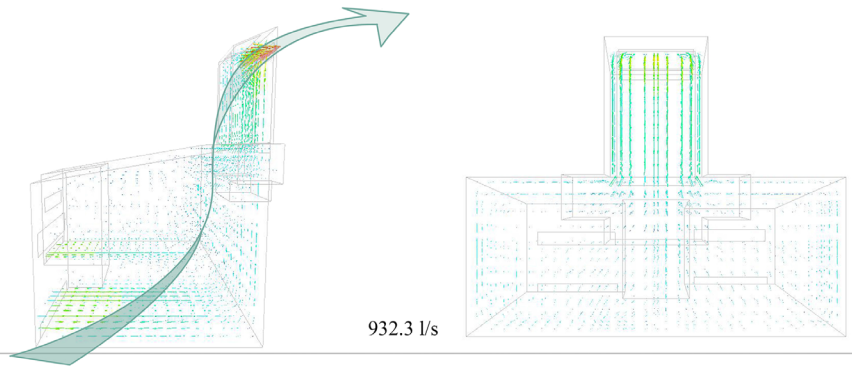
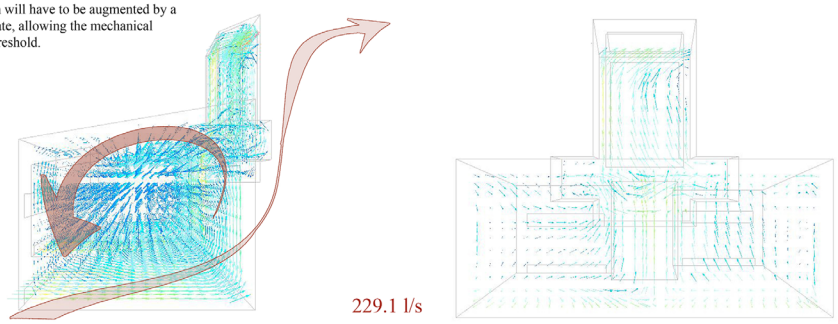
CFD Modelling

The WHO recommended air flow rate for congregate settings and consultation spaces is a range of a minimum 80 l/s/person to an ideal rate of **160 l/s/person.** It is assumed that there will be a nurse and patient in each room - so **four** people.
320 l/s - 640 l/s is required per simulation.

The simulation for each date was run at the same time;
10AM for accurate comparative results.



Honours Iteration Process

Simulation Date	Air Flow Diagrams	Flow Rate
21 JANUARY WINDLESS DAY		556.4 l/s
2 MARCH HOTTEST DAY		458.2 l/s
15 APRIL WINDIEST DAY		932.3 l/s
2 JUNE COLDEST DAY		229.1 l/s

While he stack still works, it fails to achieve the required ventilation rates and air recirculates within the room. This outcome is unacceptable, proving that the ventilation system will have to be augmented by a mechanical system. Sensors at the vent outlet would monitor the flow rate, allowing the mechanical extractor fans to switch on, should the flow rate drop below a certain threshold.

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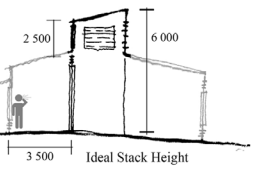
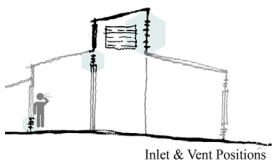
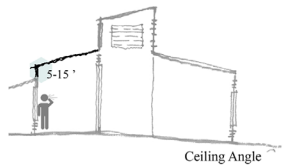
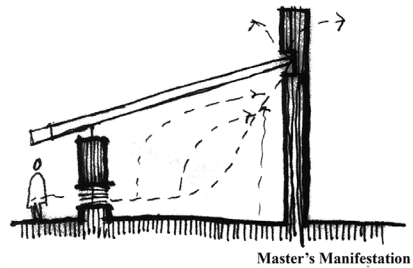


Ideal Stack Height

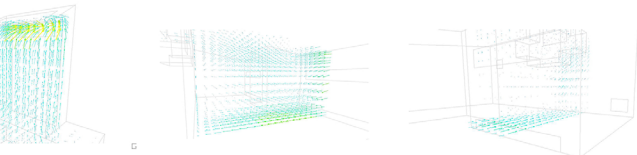
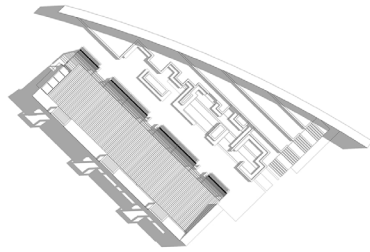
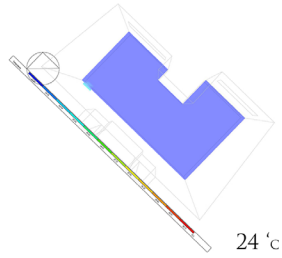

Inlet & Vent Positions



Ceiling Angle


Master's Manifestation

UTLET | LARGE CONSULTATION | SMALL CONSULTATION | SHADOW STUDY | TEMPERATURE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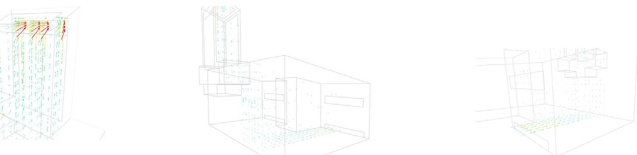
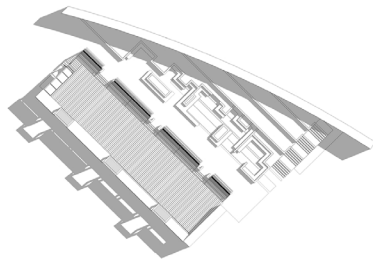
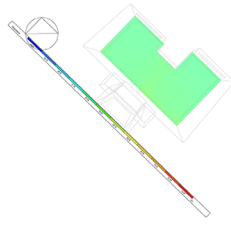
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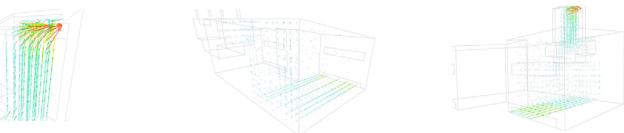
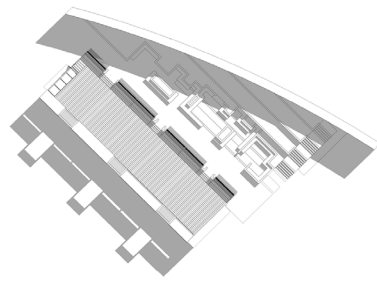
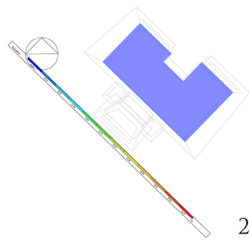
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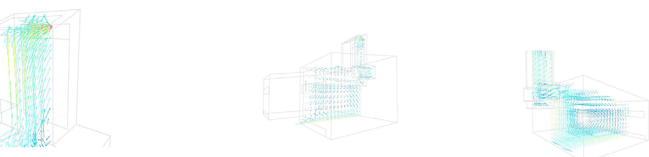
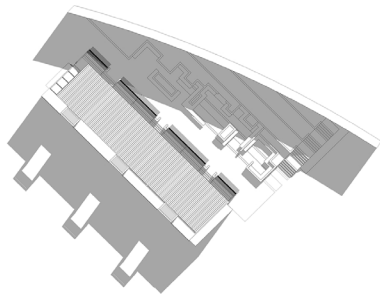
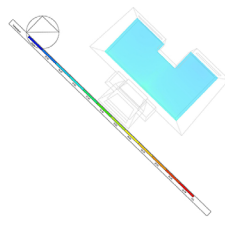
17 'C

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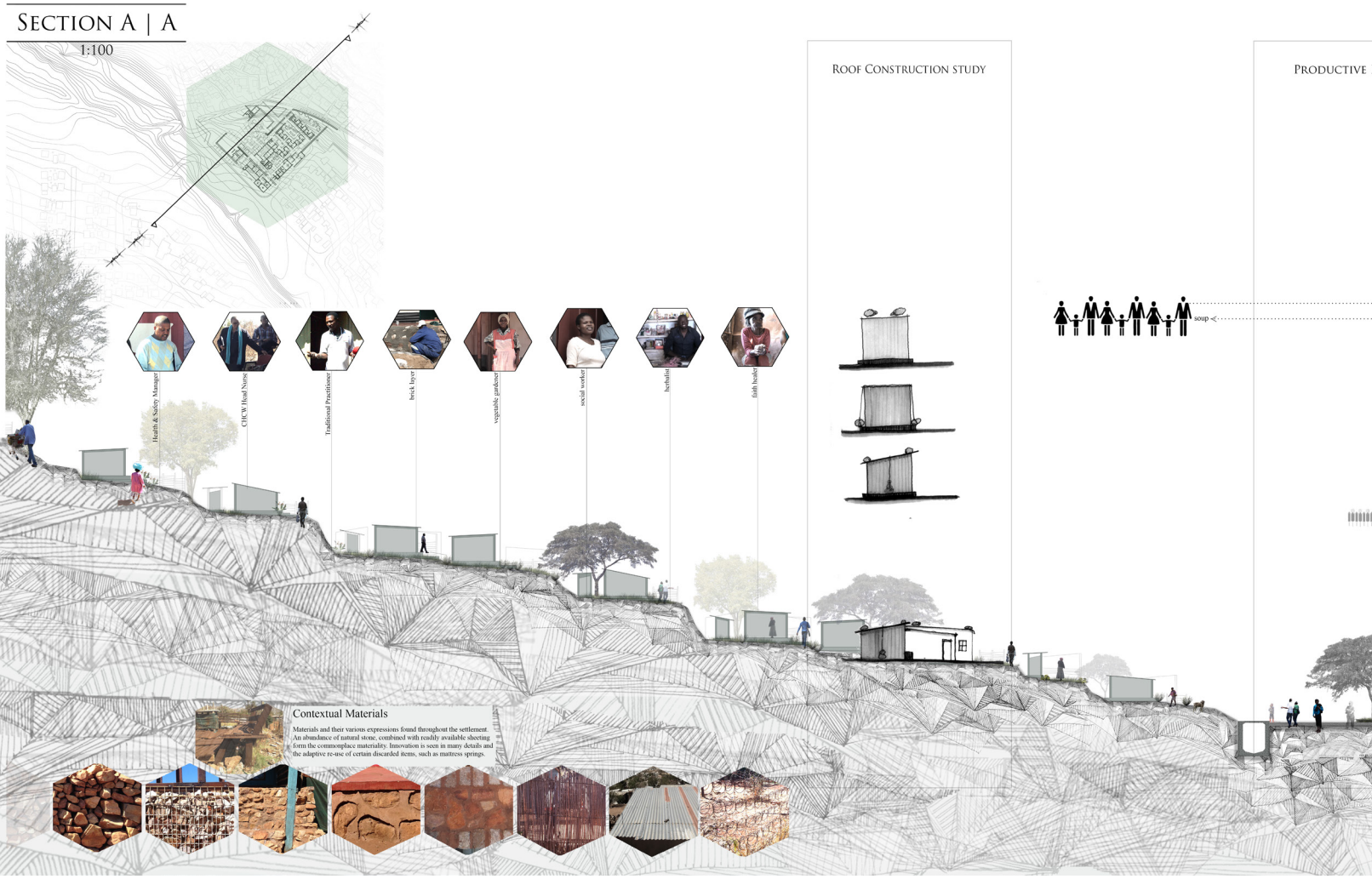

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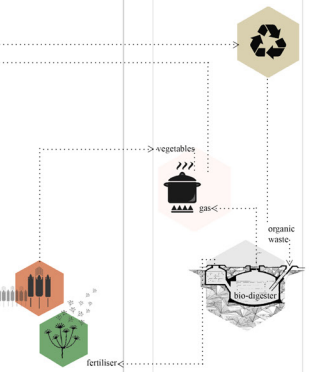
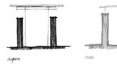
LANDSCAPE

SOUP KITCHEN

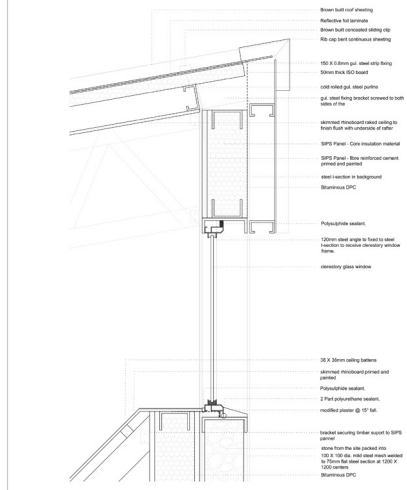


MAIN PUBLIC SQUARE

COMMUNITY HALL

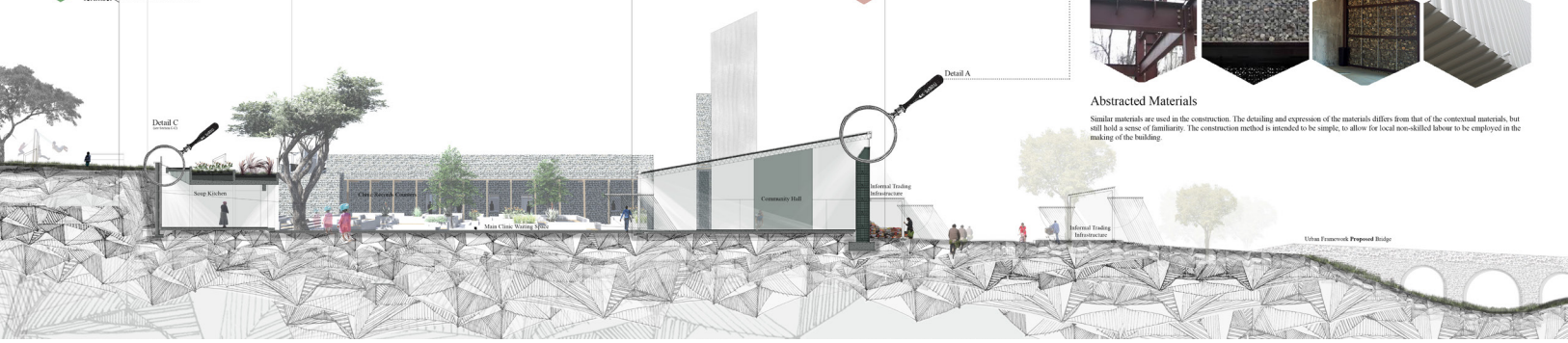


DETAIL A: ROOF APEX JUNCTION
1: 5



Abstracted Materials

Similar materials are used in the construction. The detailing and expression of the materials differs from that of the contextual materials, but still hold a sense of familiarity. The construction method is intended to be simple, to allow for local non-skilled labour to be employed in the making of the building.



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SECTION C | C

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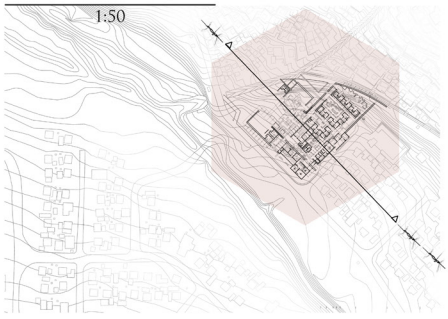
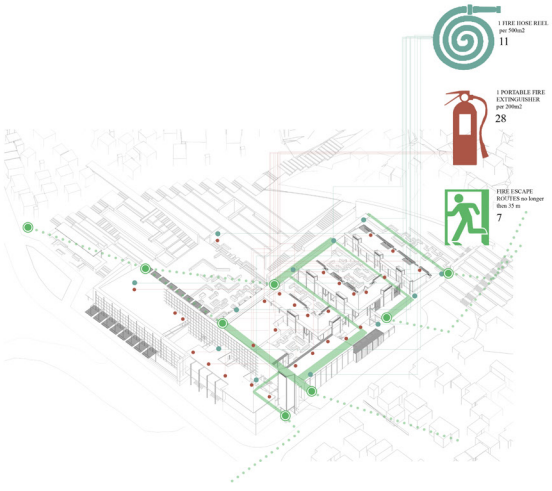
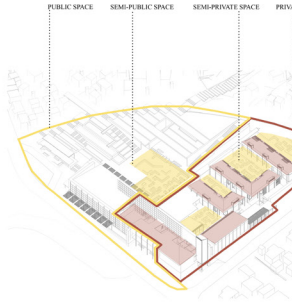


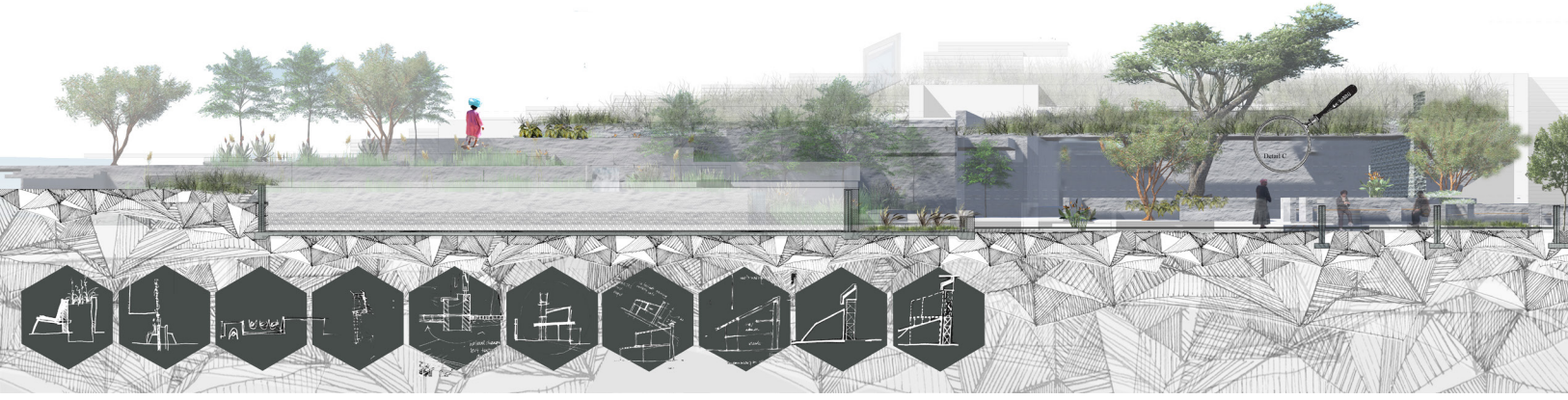
Junction detail

FIRE PROTECTION PLAN



PUBLIC TO PRIVATE SPATIALTHRESHO





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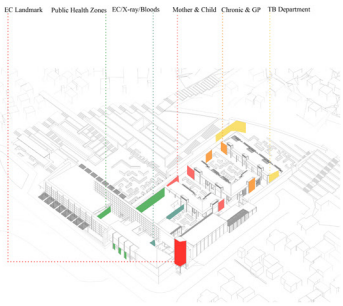
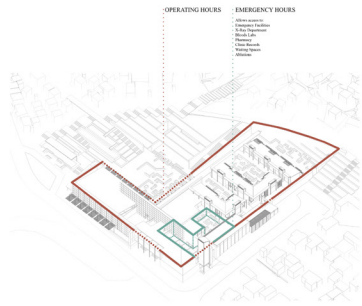
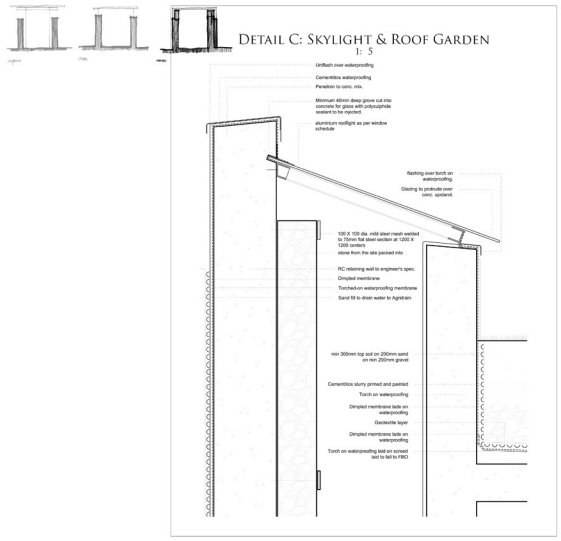
ATE SPACE

WAYFINDING PLAN



SITE BOUNDARIES





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ADAPTABILITY

"The **continuous cycle of spatial production**, and to all the people and processes that go into it."

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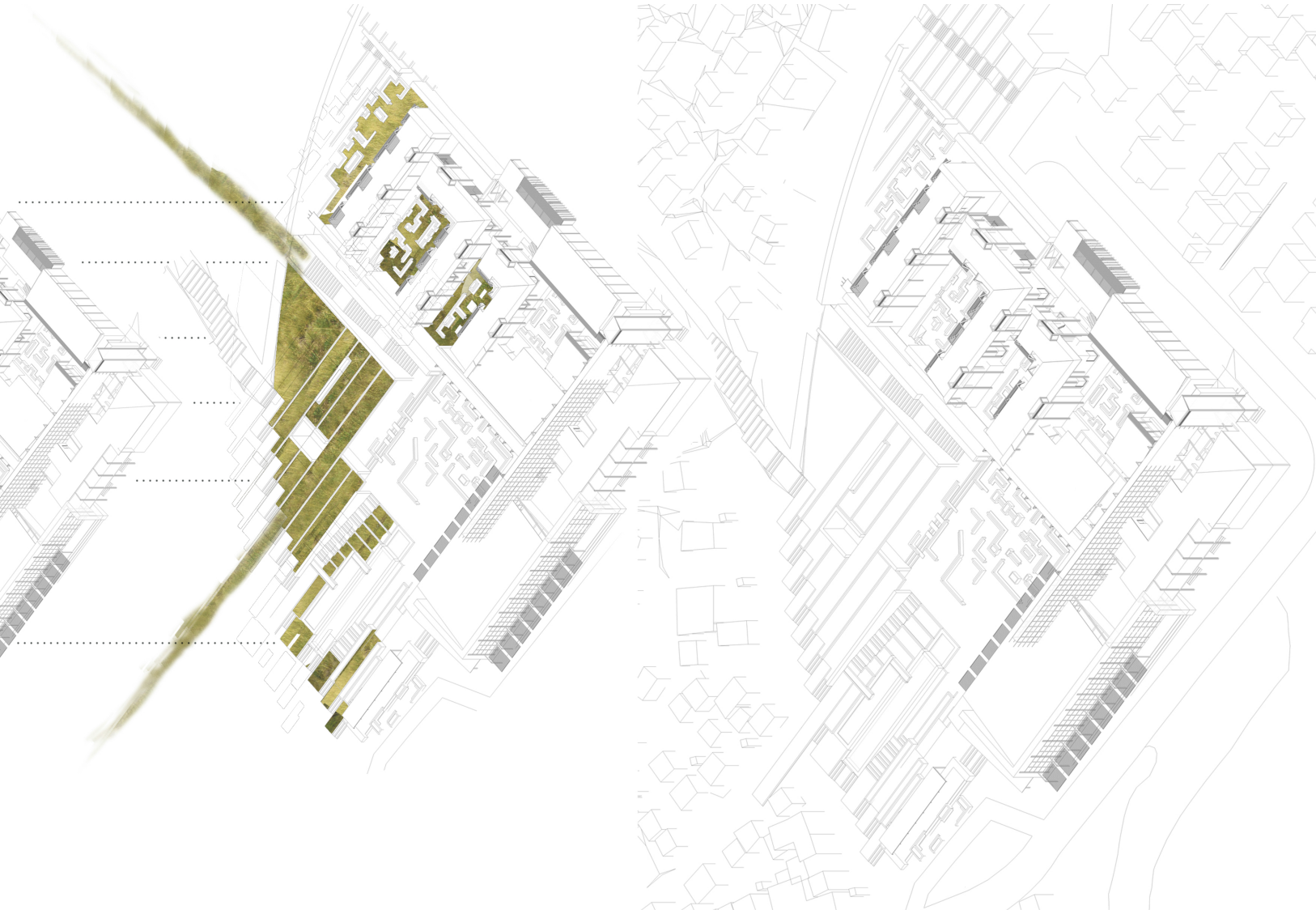

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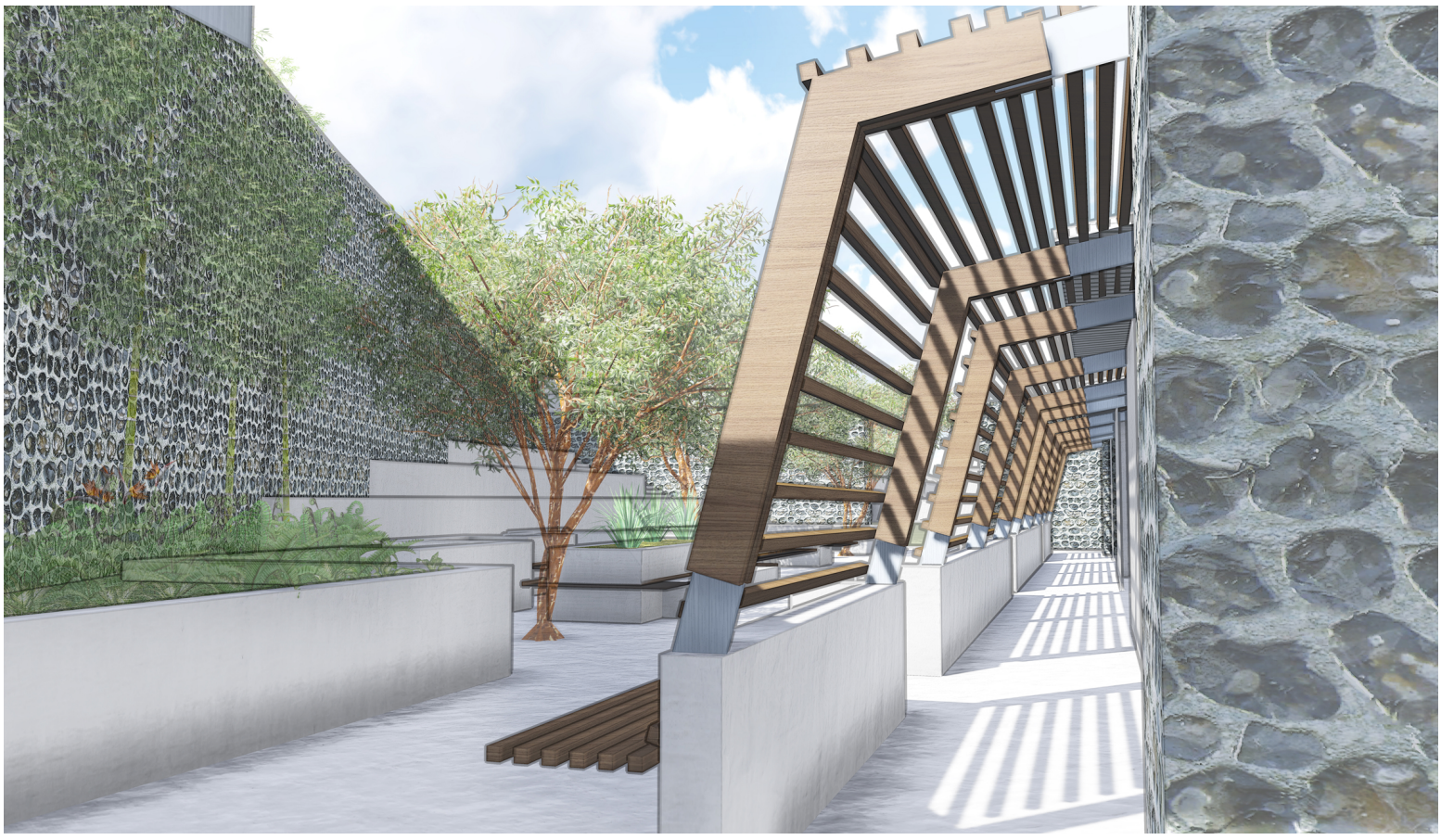

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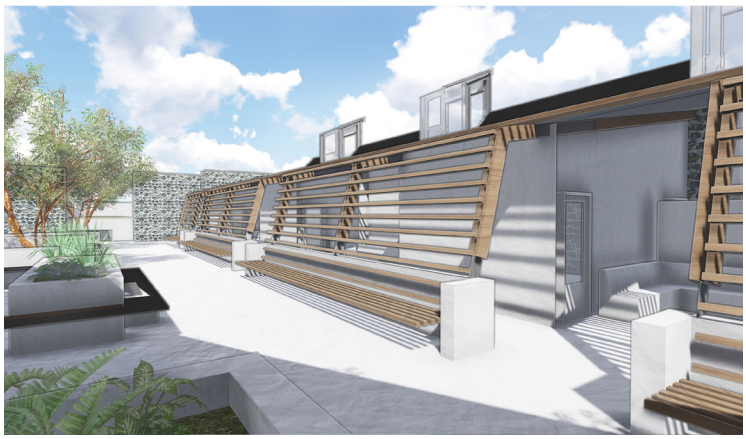

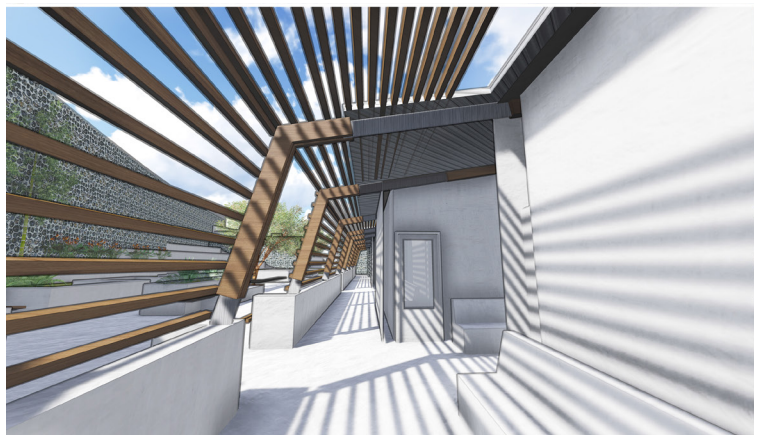

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Design Exam: Model Images

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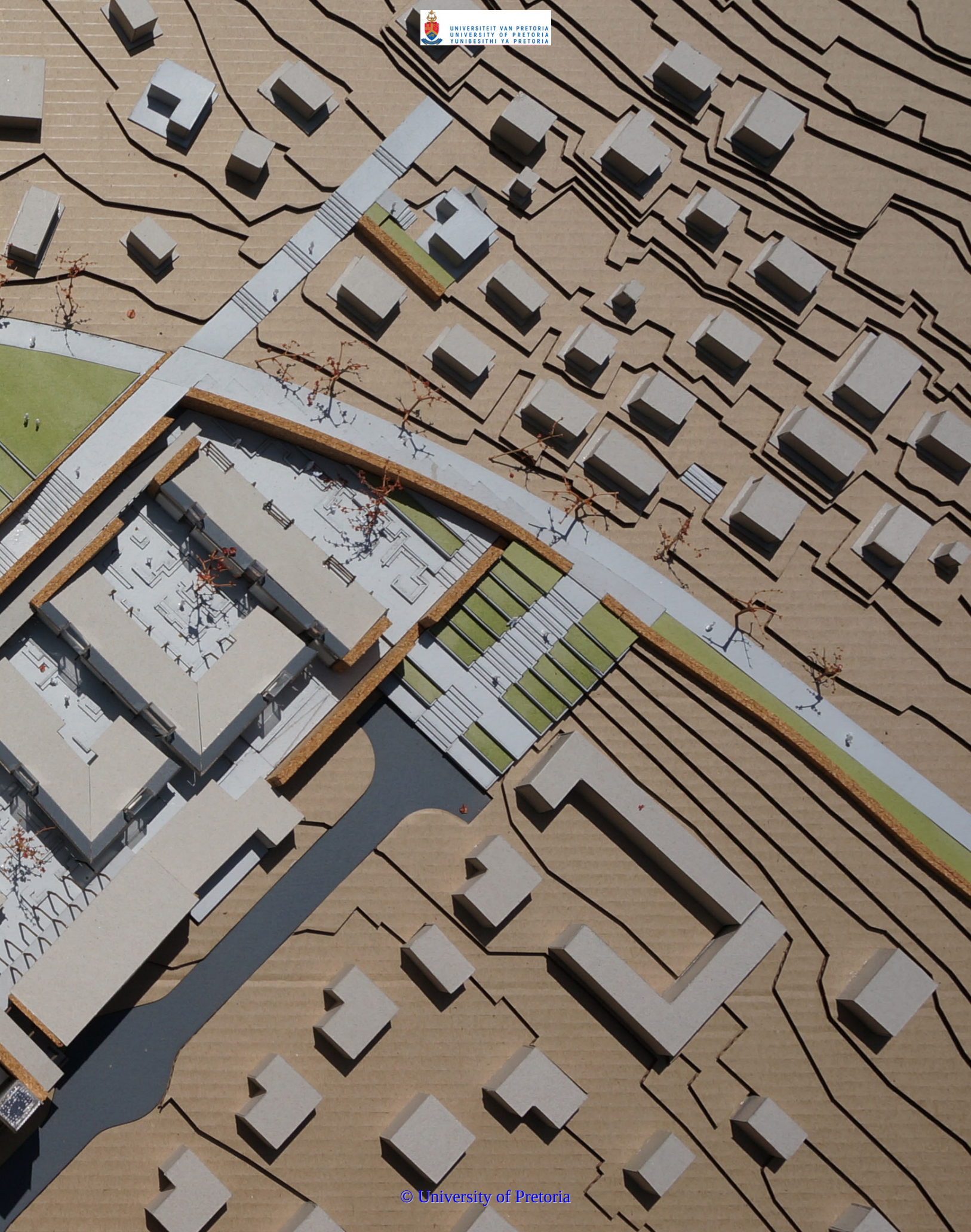

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Perspective from Southern corner

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Perspective from Western corner

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Perspective illustrating the northern landscaping

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Perspective illustrating the main waiting area and public square

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Perspective illustrating the main waiting area

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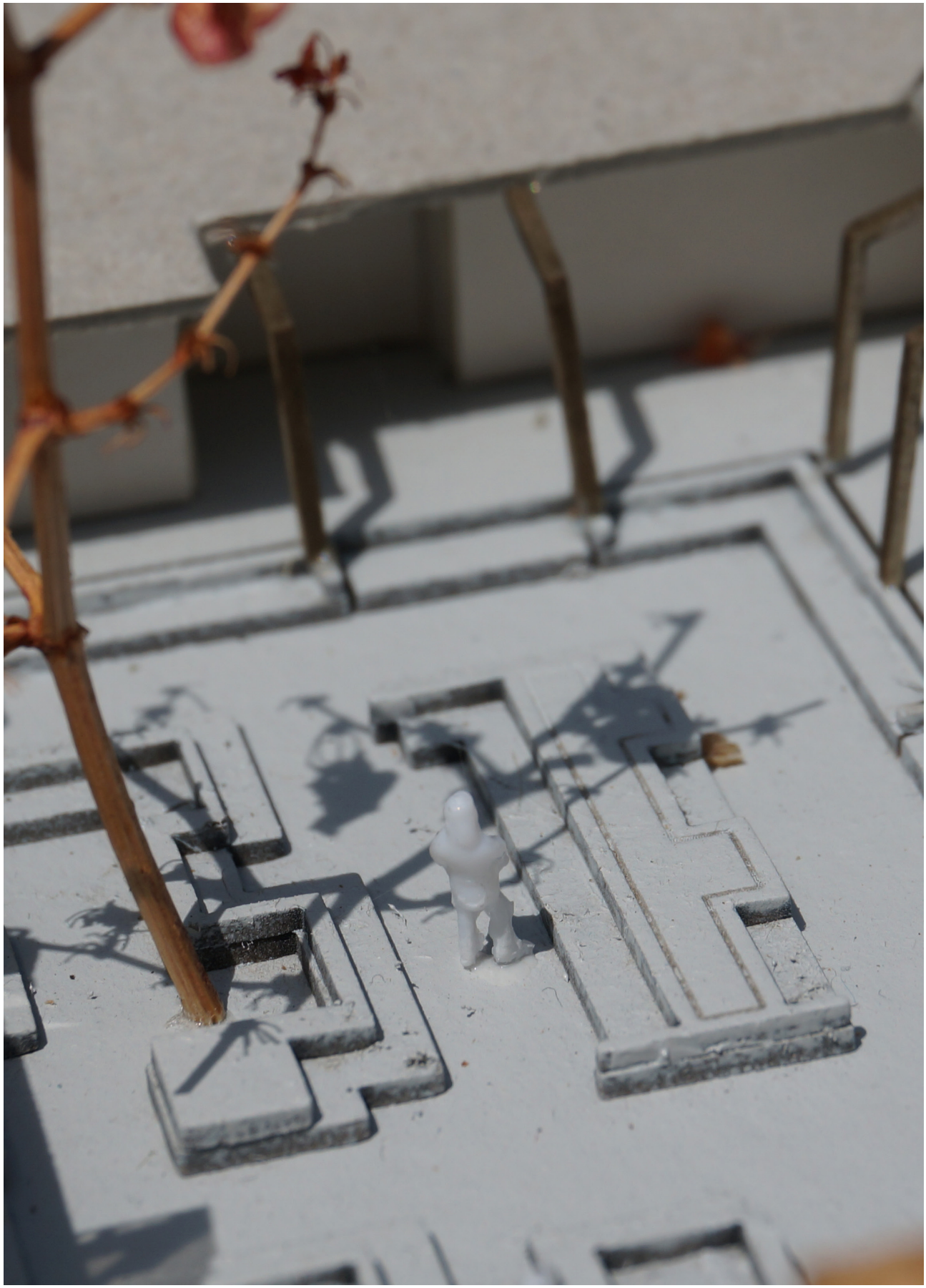

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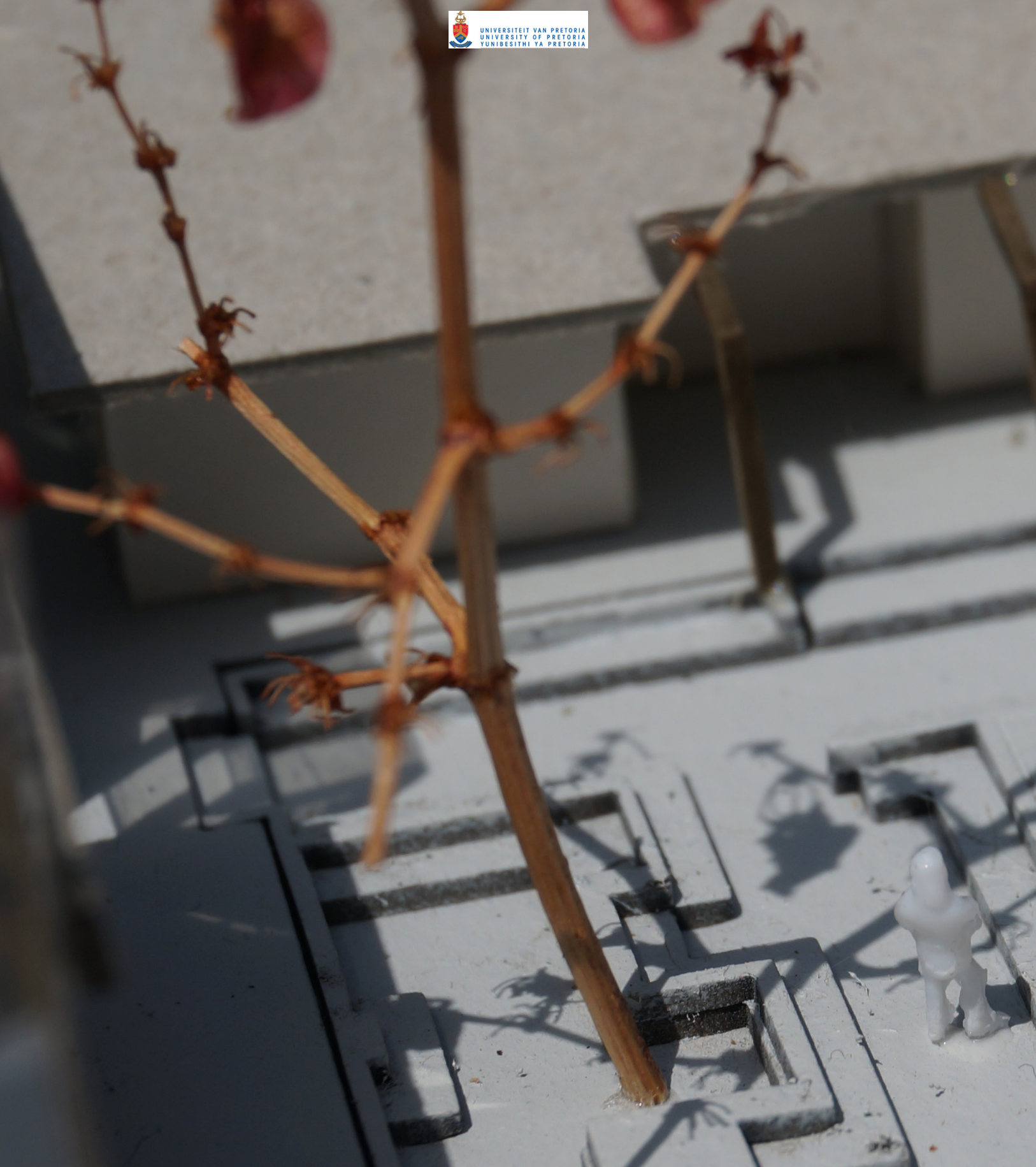

Perspective illustrating a medical department waiting area

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The Final Exam

Thank you to all the external examiners for your appreciation of my work, for my loving and supportive family for the applause and to all in attendance; your presence in my exam was much appreciated!

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