

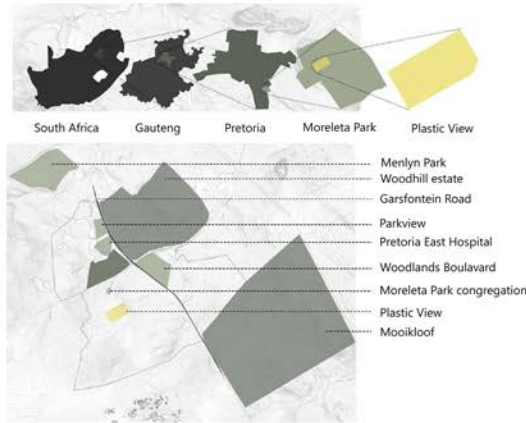


Figure 9.0: Final Presentation, Photograph, Author (2016)



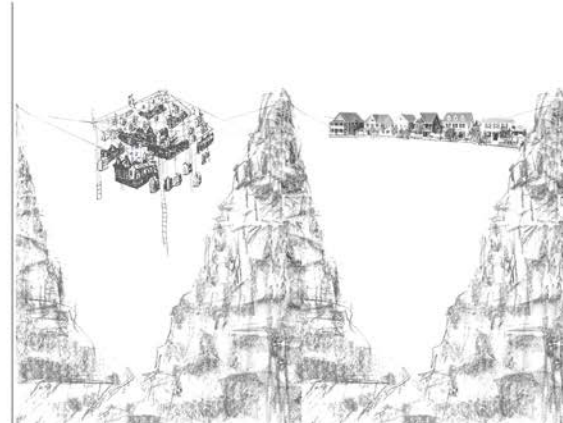
9 Final Presentation

Site location



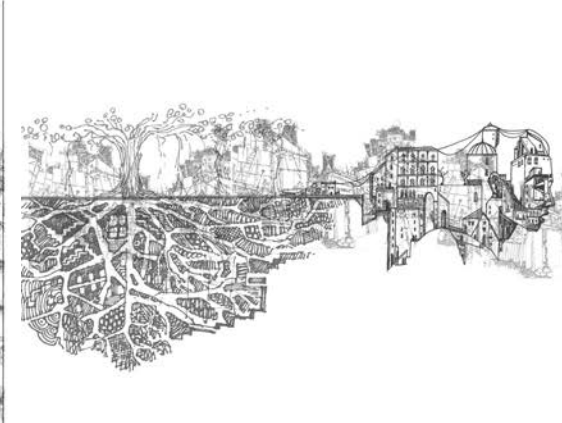
Site location in relation to Moreleta Park

Issues



Entities in isolation

Urban Intentions



Integration of entities

Common Ground

Finding commonality in an integrative communal educational environment



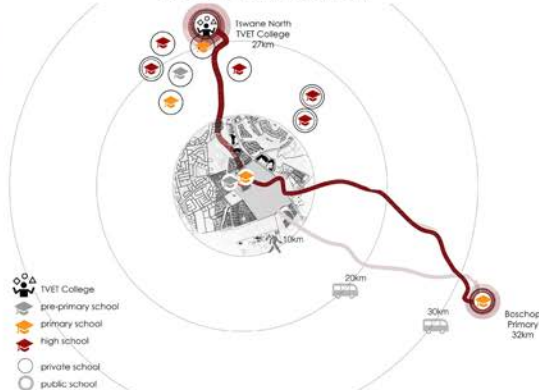
Site location in relation to urban framework and surrounding fabric



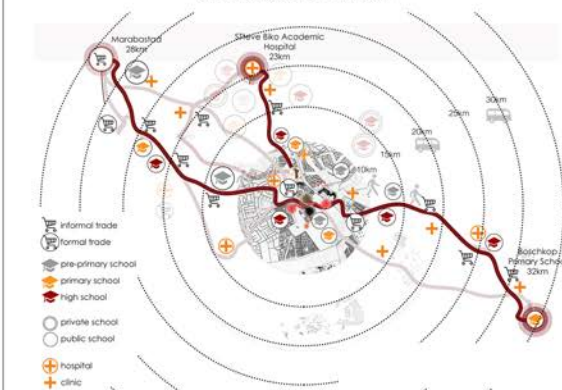
Site of contestation



Site of conciliation

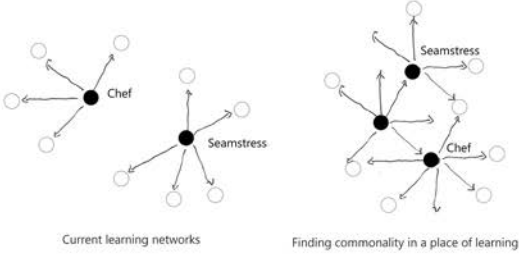


Lack of access to basic amenities

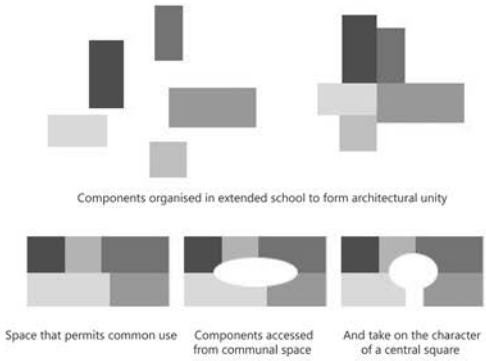


Access to basic amenities

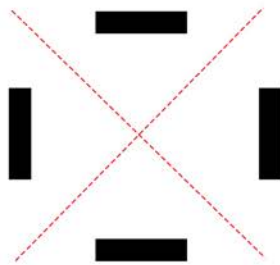
Project Intentions



Strengthen currently active learning networks

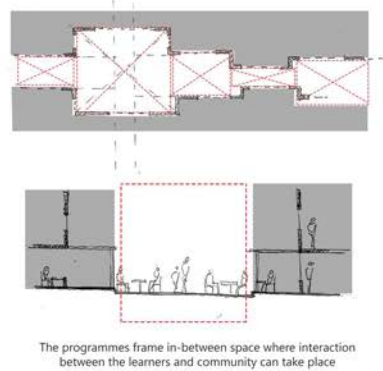


Community school integrated within environment

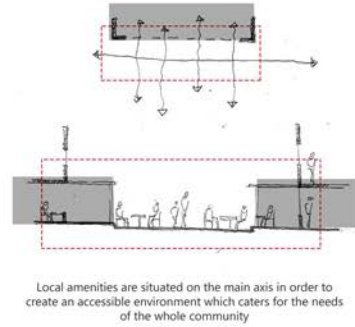


Extroverted educational approach

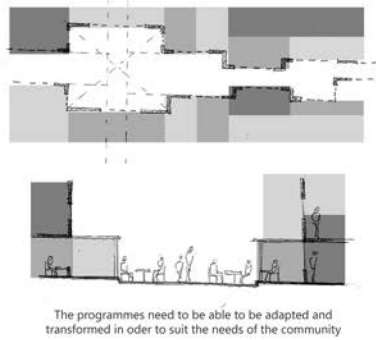
Programmatic Intentions



Spaces of interaction

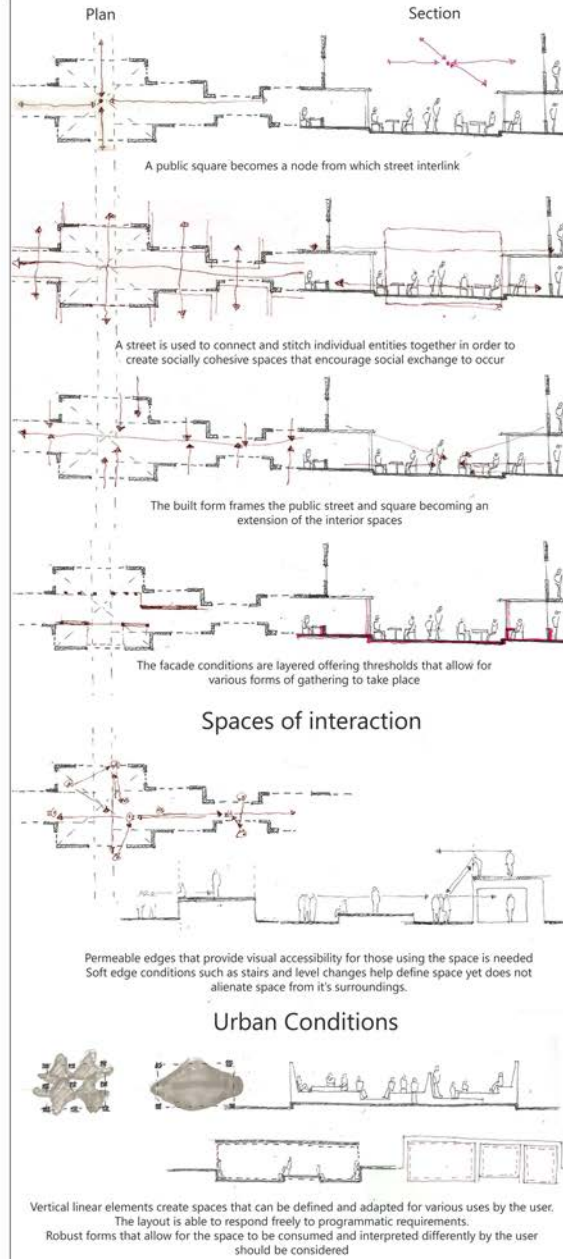


Urban Conditions



Multifunctionality

Architectural Intentions



Contextual informants

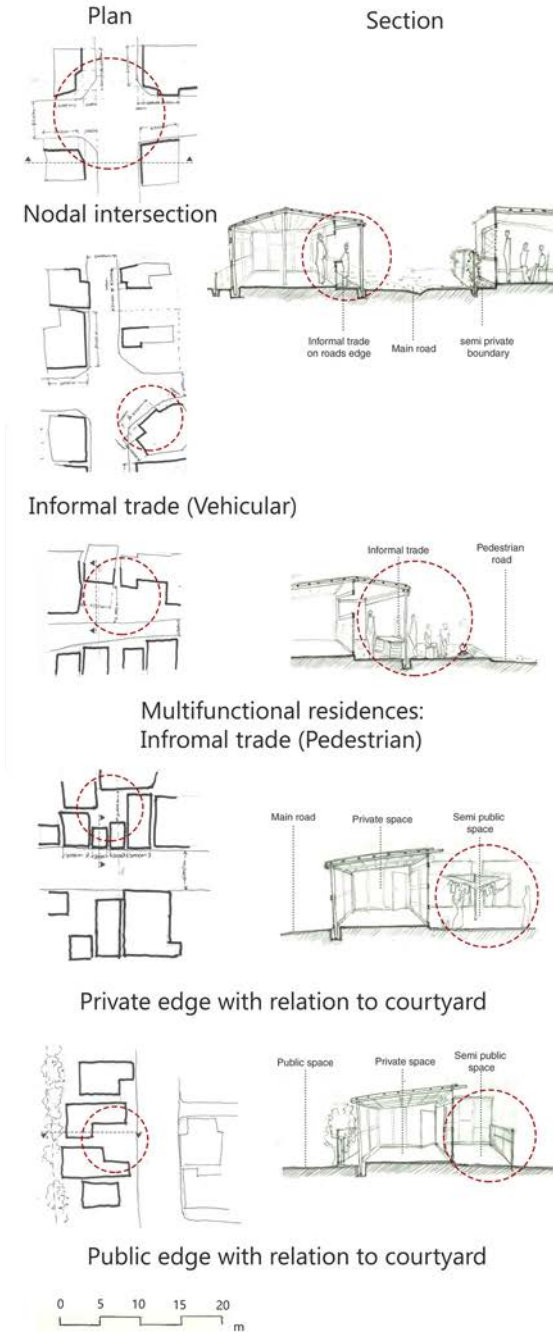
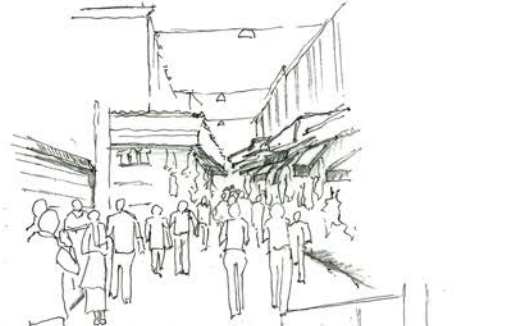


Figure 9.2: Final Presentation page 2, Author (2016)

Theoretical support and conceptual development



The street as a socially cohesive element



A square expresses a sense of collectivity



The street as a socially interactive element



Learning environment seen as a micro city



Street in Alaska, Mamelodi

Street in Plastic View, Moreleta Park

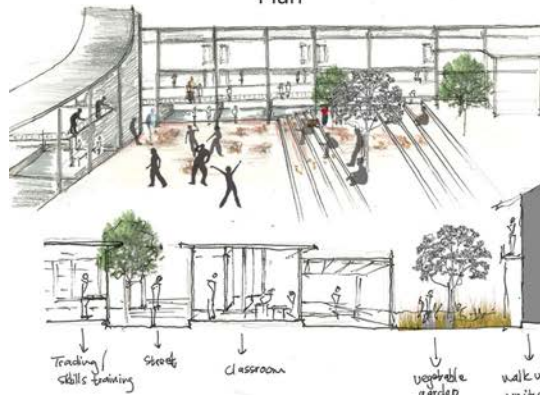
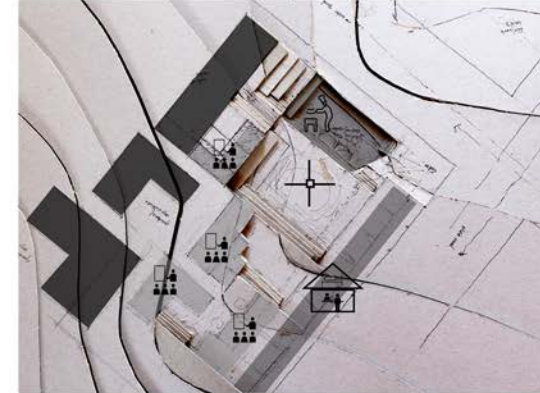
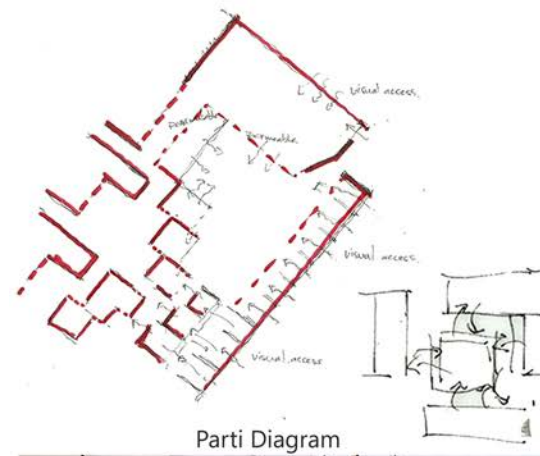
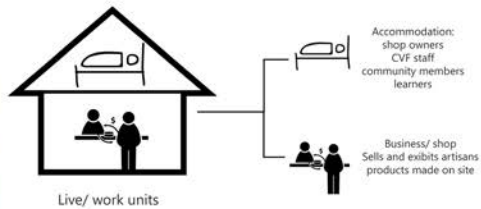
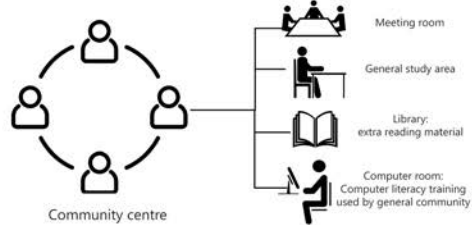
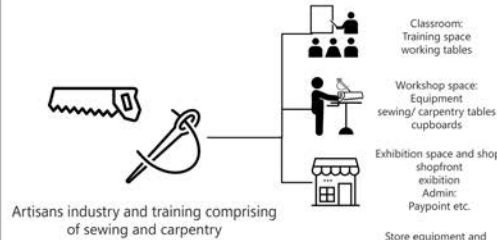
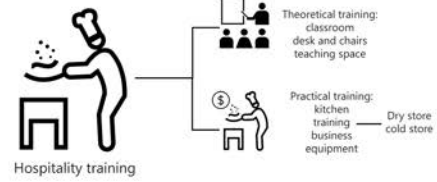
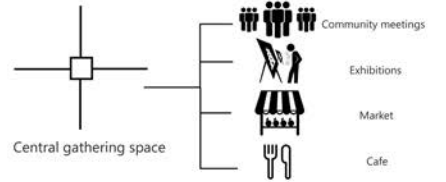
Learning street

Educational facilities should consist of both streets and squares forming a small city which encourages the greatest amount of social contact between people. (Hertzberger 2008:123)

Programmatic approach



First design proposal

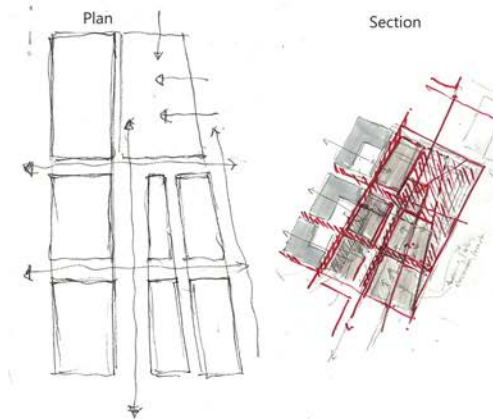


Perspectives and section

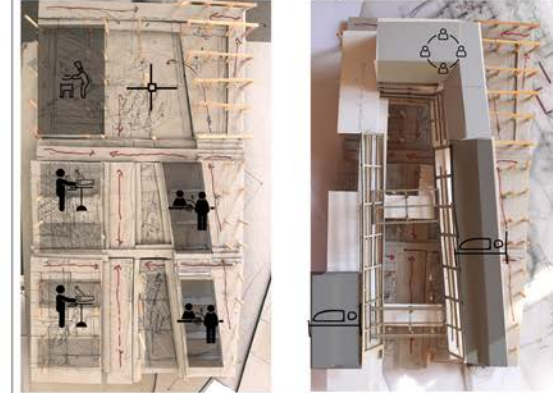
The first design proposal was an intuitive reaction to initial theory by Hertzberger (2008). It responds to the notion that public meeting spaces can act as a catalyst in order to find common ground between the users of the building and the surrounding community.

The model begins to explore how the in-between space can be framed by walls and columns, level differences and thresholds thus spatially exploring how a building frames negative space. The model also investigates how the edge conditions can be activated in order to draw people onto the site.

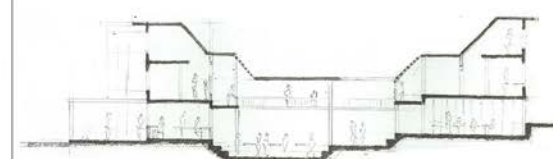
Design Iteration 1



Parti Diagram



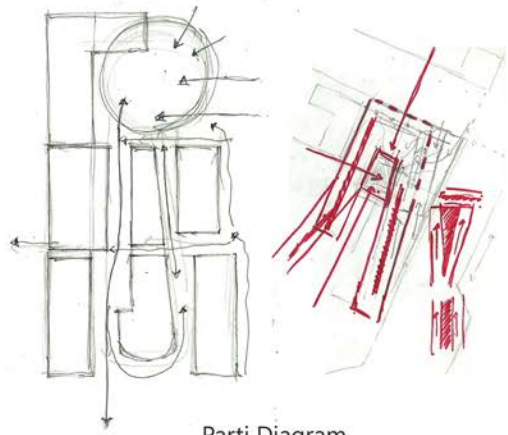
Plan



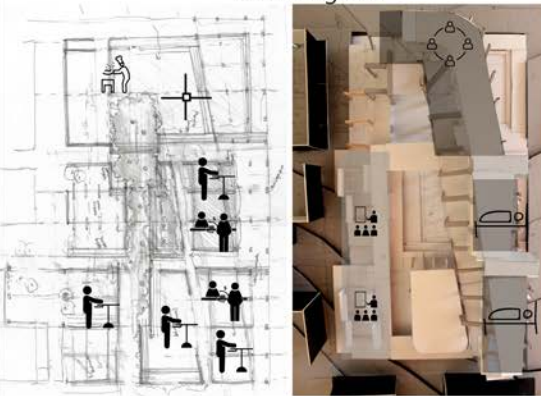
Section and model

A rudimentary approach to this iteration was taken as the architectural intent was still being explored and discovered. This proposal explores how the roof can become a defining element. The roof is interpreted as an element which moulds and defines spaces where interaction can take place between people which relates back to theory on an extended school approach (Hertzberger's 2008).

Design Iteration 2



Parti Diagram



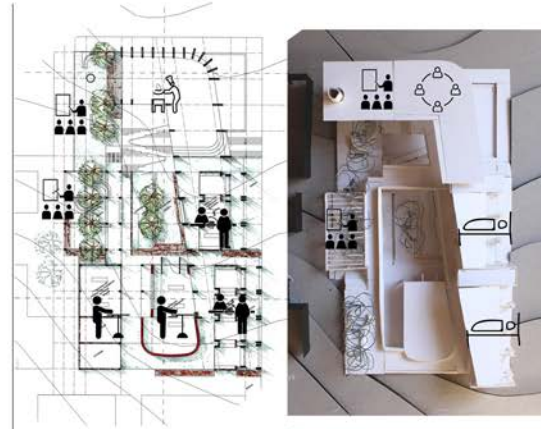
Plan



Sketches and model



Design Iteration 3



Plan



Accommodation units



Theoretical training



Roof and furnace



South East Elevations

Model Development



Accommodation units



Theoretical training



Roof and furnace



South East Elevations

Figure 9.3: Final Presentation page 3, Author (2016)

Figure 9.4: Final Presentation page 4, Author (2016)

In support of considering the facade of the building as a defining element, a relation is drawn to Lefebvre's (1987) theory on the production of space. Lefebvre (1987) suggests that people shape space naturally, socially and simply by how they use it every day. It is then intended that the architectural form explored defines space and programme well not limiting the extent to which the structure can be inhabited, changed and appropriated by the users. Lefebvre's (1987) theory of how space can be perceived supports the notion of the facility as a microcosm of society where people are able to socially interact with one another in society.

Programmatic Reflection

Main road

Main road

In-between space

Workshop **Workshop** **Workshop/business**

The programmes frame in-between space where interaction between the learners and community can take place

Spaces of interaction

Main road

Main road

Live/work units **Main road** **Informal trade**

Local amenities are situated on the main axis in order to create an accessible environment which caters for the needs of the whole community

Urban conditions

Main road

Main road

The programmes need to be able to be adapted and transformed in order to suit the needs of the community

Multifunctionality

Architectural Reflection

Plan **Section**

Main road

A public square becomes a node from which streets interlink

Main road

Learning street **Learning street**

A street is used to connect and stitch individual entities together in order to create socially cohesive spaces that encourage social exchange to occur

Main road

The built forms frame the public street and square becoming an extension of the interior spaces

Main road

The facade conditions are layered offering thresholds that allow for various forms of gathering to take place

Spaces of interaction

Main road

Permeable edges that provide visual accessibility for those using the space is needed. Soft edge conditions such as stairs and level changes help define space yet does not alienate space from its surroundings.

Urban conditions

Main road

Vertical linear elements create spaces than can be defined and adapted for various uses by the user. The layout is able to respond freely to programmatic requirements.

Multifunctionality



Structural intent

Public and communal condition

Social and academic activities take place

Horizontal hierarchy: pause and social exchange

Residential and business condition

Social and academic activities take place

Vertical hierarchy: Movement and accessibility

Structural intent

Exposed frame and infill

Hidden frame and infill

Contextual informants

Urban framework materiality

Structural Composition

Horizontal and vertical structural components:

- Vertical structural concrete column sizes: 300x2000mm, 300x1000mm and 300x300mm. With an off shutter concrete finish.
- Horizontal 255mm reinforced concrete floor slabs are cast in place. The slab is either power floated or a 25mm screed is put on top of concrete surface with flooring material as a finish.
- Concrete roof (Resource centre)
- 255mm reinforced cast in place concrete roof with 80mm "lambda board" insulation layer, followed by screed to fall min 25mm, a "Torch on" waterproofing layer on top of screed, the entire waterproofed area to have a crushed stone overlay.
- 500mm Reinforced cast in place concrete up stand beam on inner concrete roof edge, with precast concrete coping over concrete up stand.
- Light weight roof structure (Accommodation)
- "Klip-lok" 406 profile roof sheeting @ min 2 degree pitch with global coat finish.
- 150x75x20x3.0 Cold formed lipped channel purlins that offer support for the roof sheeting, 80mm structural "lambda board" insulation to be installed over the purlin.
- 305x165 Galvanized mild steel parallel flange section with tapered ends used to support purlin and roof sheeting.

Primary Components

Brick in fill:

- Non load bearing 230mm brick walls to acts as infill structure.
- Face brick Roan travertine red brick, stretcher bond, racked joint finish.

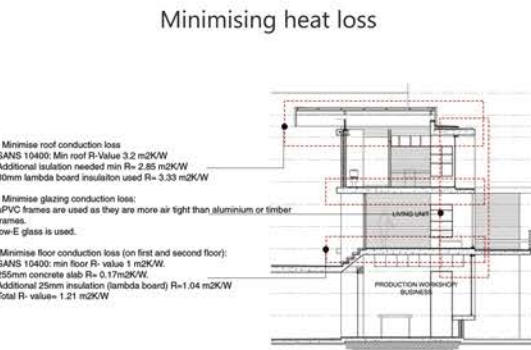
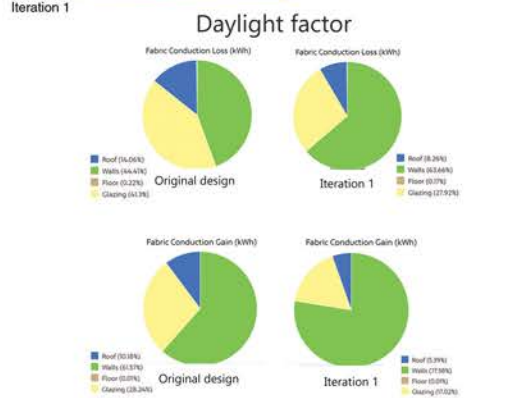
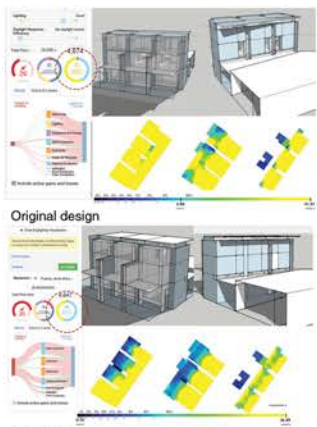
Secondary components

- Precast concrete seating with intermediate concrete support
- Brick on edge stair nosing
- Intensive green roofs are used that act as roof insulation as well as help dampen sound produced in the workshops.

Tertiary components

Figure 9.5: Final Presentation page 5, Author (2016)
 Figure 9.6: Final Presentation page 6, Author (2016)

Sefaira



Section of accommodation

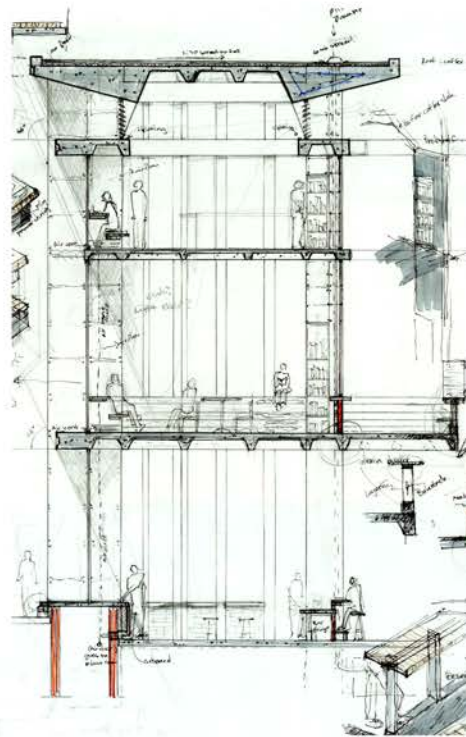
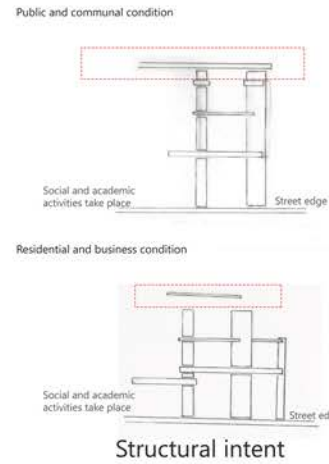
Sefaira, which is a performance based analysis, was used to pick up problem areas in the design. Sefaira is used to measure interior daylight factors, the energy usage and whether or not it is a cool or heat dominated space. The accommodation units which face an undesired South East and North West angle were analysed further.

Structural Iteration 1



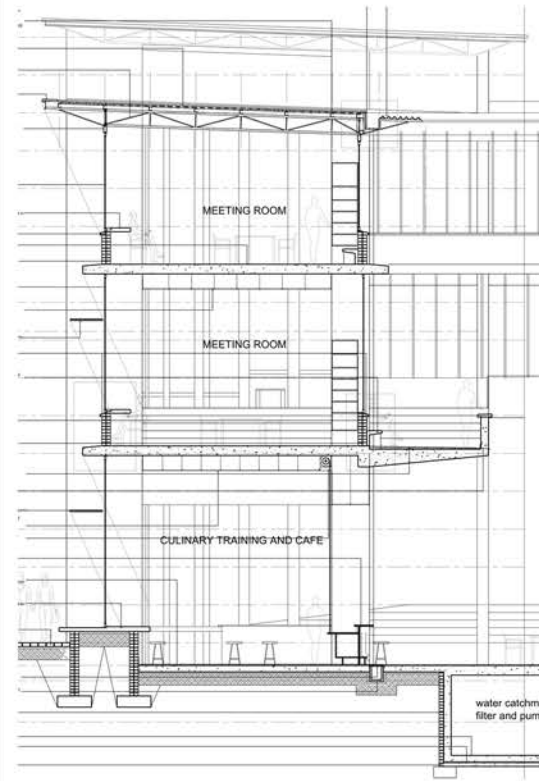
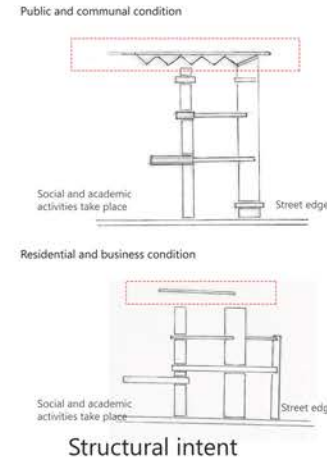
Structural Iteration 2

Structural Iteration 3



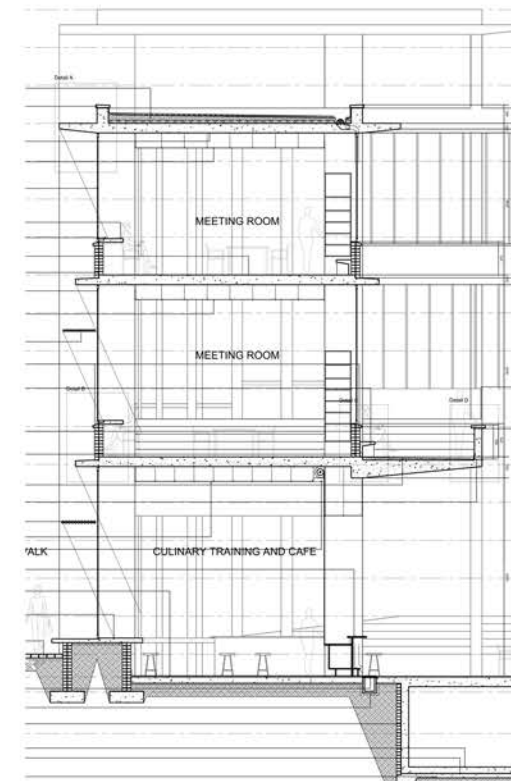
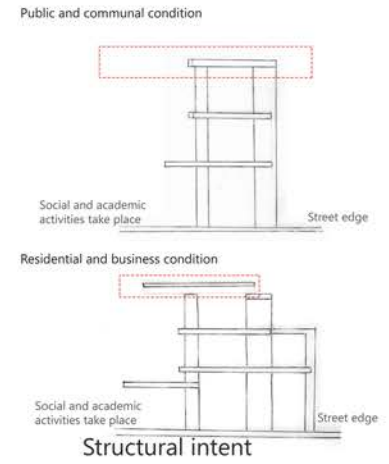
Coffer slabs were used throughout the design in order to express the design and structural intent, which was to frame and define space through the structure. The idea was that the coffer slab could be manipulated to shape space.

The critique received highlighted that the concrete coffer roof slab made the spaces feel unnecessarily heavy and that a light weight roof structure should be considered.



A Circular Hollow Section (CHS) light weight roof structure and space frame structure were considered in this iteration. The light weight steel structure allowed more freedom with regards to the design of the roof.

The CHS light weight roof truss proved to be problematic at junctions where the internal structure needed to be closed from external conditions as thermal bridging would occur. It was proving difficult to fix components, like lipped channel purlins to the CHS frame structure.



The architectural language of the CFV explores the idea of repetition and order throughout the facade, this repetition of elements signifies social cohesion. Therefore a roof that acts as a unifying element is not needed as the ordered facade condition does this already. The roof becomes an extension of and ends off the facade of the building by expressing the individual components that make up the whole. The concrete roof in the future, can also become a floor slab to a new level if more space is required.

Systems Calculations

Rainwater harvesting capacity: Roof: 745 m² x 90% = 670.5 m²
 Paving: 961 m² x 80% = 770 m² lawn: 772 m² x 10% = 77.2 m²
 Total catchment area: 1513 m²
 Annual rainfall: 573mm x 1513 m² = 870 000 L

Grey water:
 150L + 280L + 400 = 830 L per day
 Toilets require 450 L of the grey water per day.

Water consumption:

Water consumption device	Water consumption (L)	No. of uses per day	Water consumption (L)
Flush toilet	9	50	450
Hand basins	3	50	150
Shower	40	7	280
Washing/ cleaning	20	20	400
Consumption per day			1280
Consumption per month			38 400

Rain water harvesting tanks:
 Required capacity: No. of month low/no rainfall: 5 x 38 400 = 192 000 L
 (2): Tank size = 8m x 8m x 2m
 (3): Tank size = 4m x 4m x 3m

Water

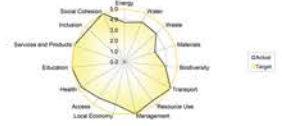
Total electricity demand a day: 253 kwh
 Manure: 500 (amount of people use ablations per day) x 0.7 = 0.35 m³
 Urine: 500 x 1 = 0.5 m³
 Kitchen: 0.404 m³

Total waste produced daily: 1,254 m³ per day
 Kitchen: 0.5 x 0.404 = 20.2 m³
 Manure: 350 x 0.078 = 27 m³

Total gas produced daily: 47.5 m³
 If 1m³ of gas gives you 9 kwh:
 Total energy produced per day: 47.5 x 9 = 427.5 kwh
 Thermal energy 60% = 258 kwh
 Mechanical energy 40% = 172 kwh

Grid electricity needed: 253-172= 81 kwh per day
 Tank size (7 x 7 x 2m)
 Because waste is wet 1:1 ratio, volume of daily waste: 2,508 x 40 = 100 m³

Energy



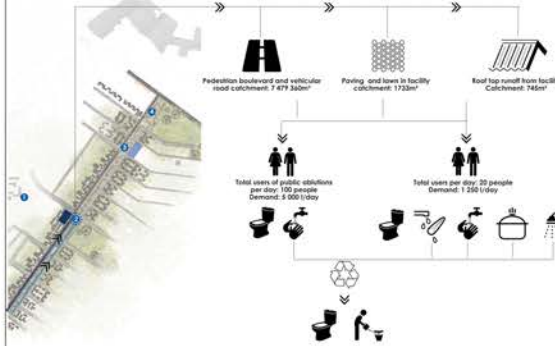
SBAT Environmental, Social and Economic Performance	Score
Environmental	3.1
Economic	4.2
Social	4.2
SBAT Rating	2.2

SBAT rating

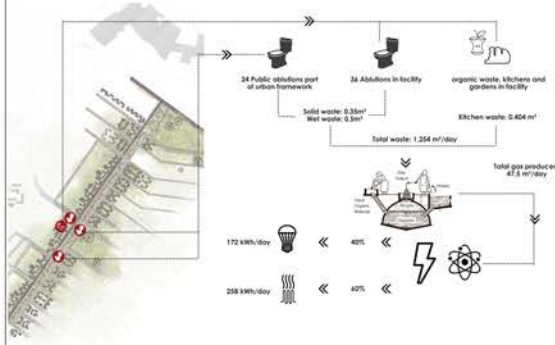
Programme	M2	Building classification	Sans 10400	Users according to SANS	Male wc	Female wc
Apartment	210	Z7	1 person/20m ²	21	3 wc 3 on 1 w/c	2 wc 1 w/c
Public space	200	A3	1 person/10m ²	100	3 wc 3 on 1 w/c	7 wc 4 w/c
Admin	20			2	2wc 1w/c	2wc 1 w/c
Kitchen	150			78	1 wc 3 on 1 w/c	2 wc 1 w/c
Restaurant	200		No. of fixed seats	38		
Library	337	C3	1 person/20m ²	60	2wc 3 on 1 w/c	5 wc 3 w/c
Place of worship	450	A3	1 person/20m ²	60	2wc 3 on 1 w/c	5 wc 3 w/c
Residential accommodation	420	H3	2 person per bedroom		3 wc 3w/c	
Storage		B				

Accommodation schedule

Urban framework strategy



Water



Energy



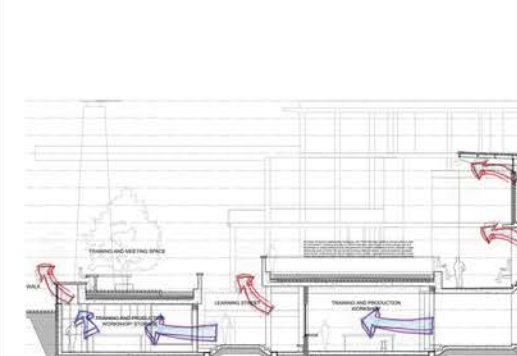
On site strategy



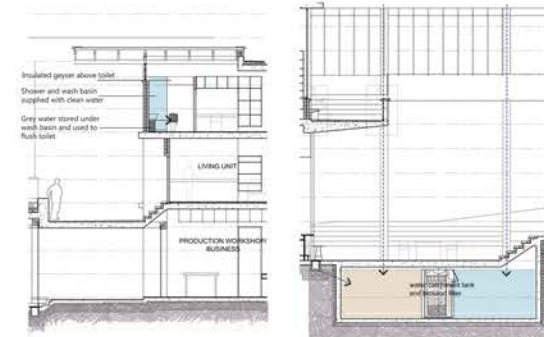
Water



Energy

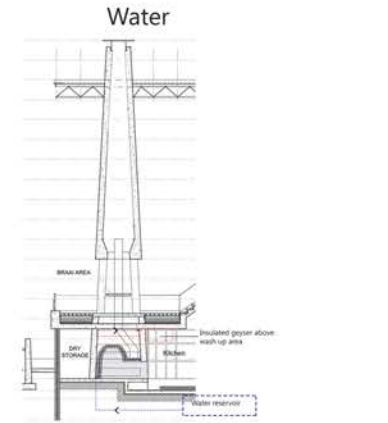


Application



Grey water strategy

Water catchment tank



Heating water by means of the furnace

Windward side (NE) creating negative pressure



Natural Ventilation

Stack Ventilation

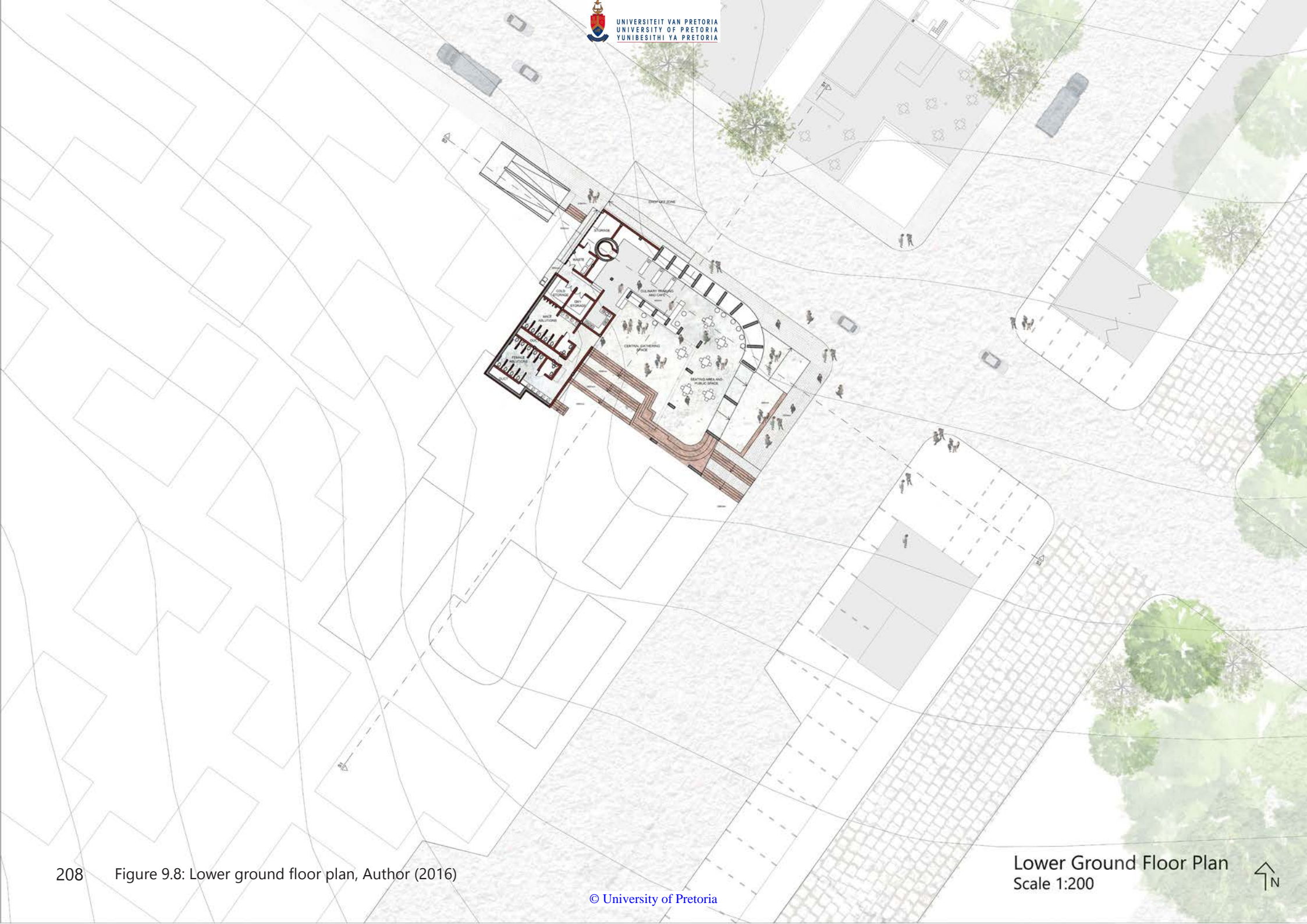




Figure 9.9: Ground floor plan, Author (2016) Scale 1:200 209





Figure 9.11: Second floor plan, Author (2016)





South East Elevation
Scale 1:200



North East Elevation
Scale 1:200



North West Elevation
Scale 1:200



214 Figure 9.13: Section 1, Author (2016)



Section 1
Scale 1:50



216 Figure 9.14: Section 2, Author (2016)



Section 2
Scale 1:50



218 Figure 9.15: Section 3, Author (2016)



Small text block in the upper left corner, likely a note or disclaimer.

FFL 1 494 000

FFL 1 490 000

FFL 1 486 200

FFL 1 485 200

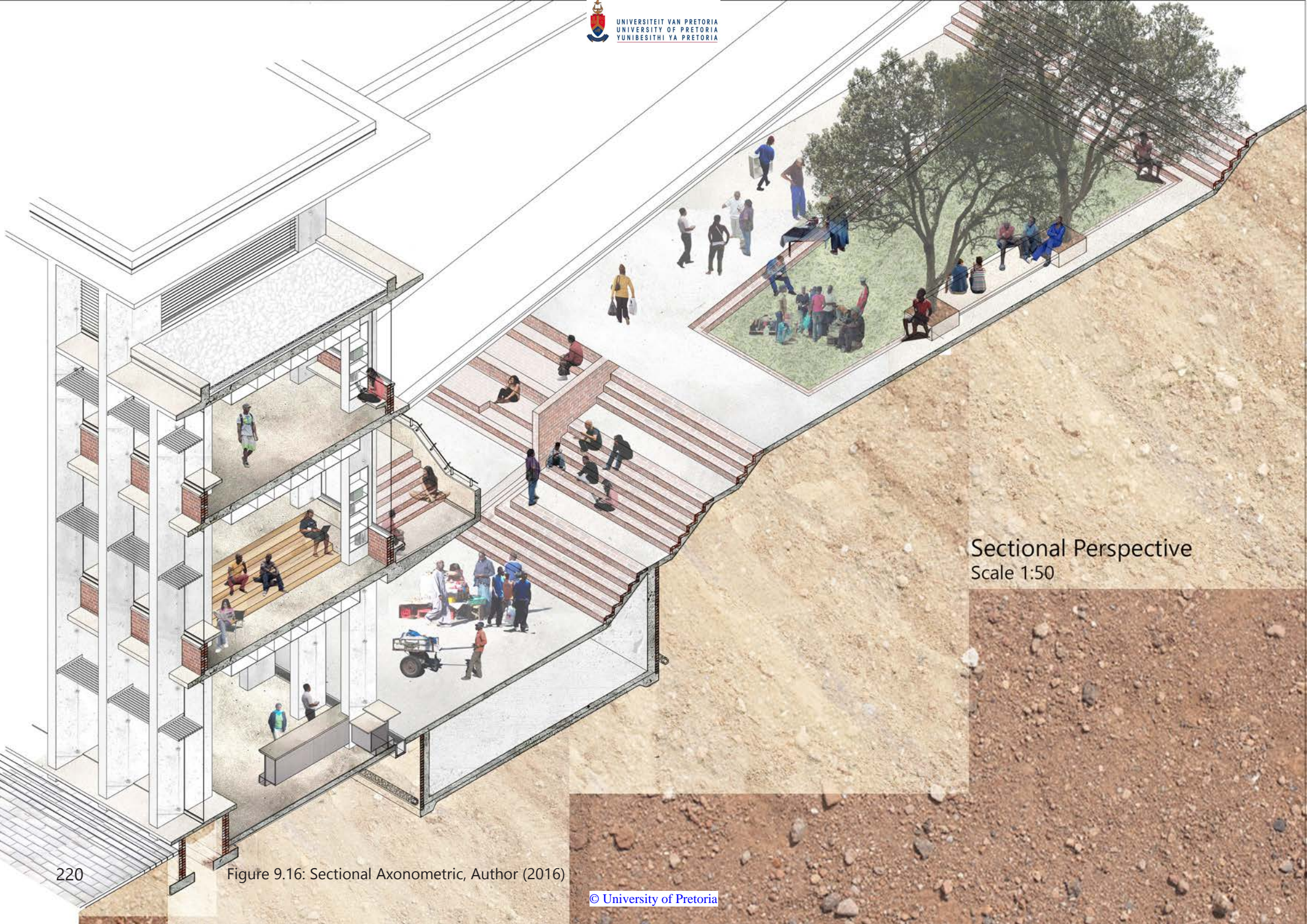
FFL 1 483 400

SIDEWALK

MAIN VEHICULAR ROAD

RAMP

Section 3
Scale 1:50



Sectional Perspective
Scale 1:50

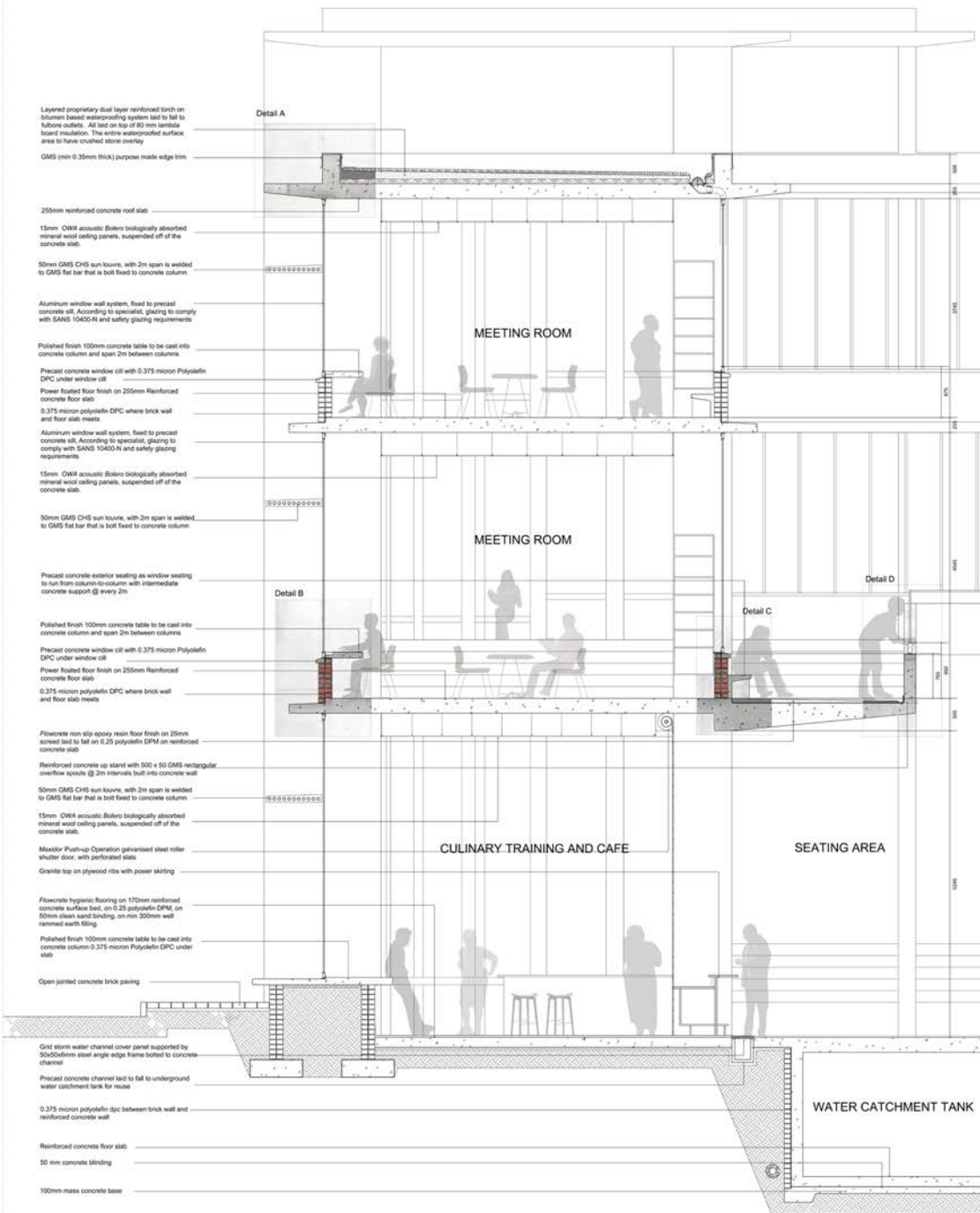
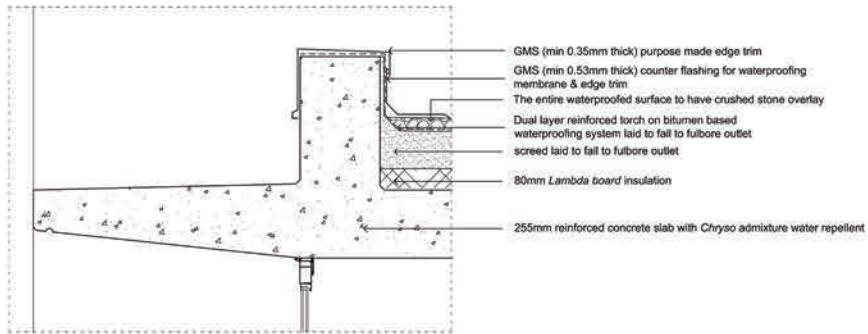
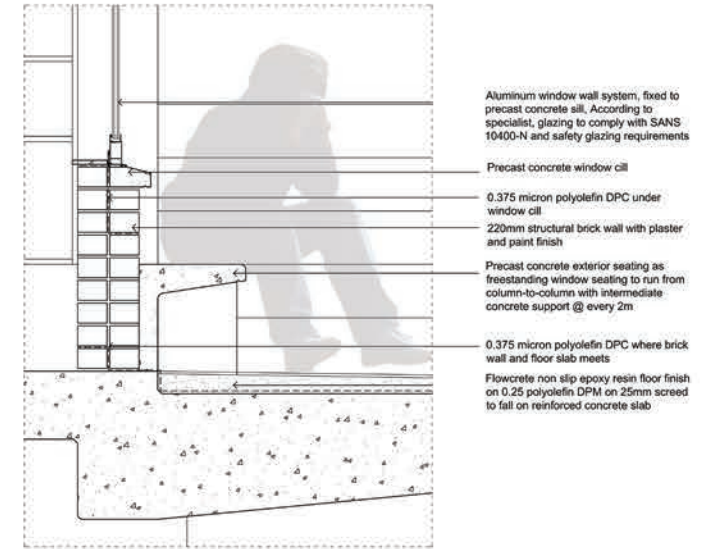


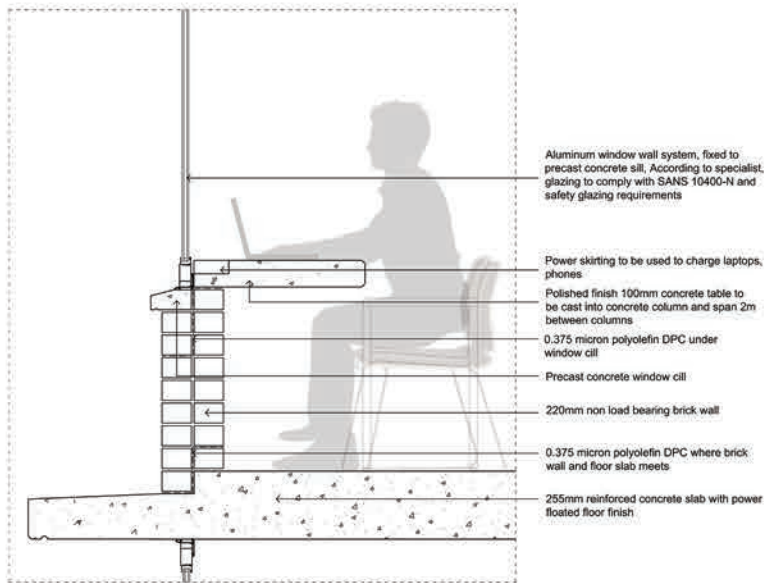
Figure 9.17: 1:20 Section, Author (2016) 221



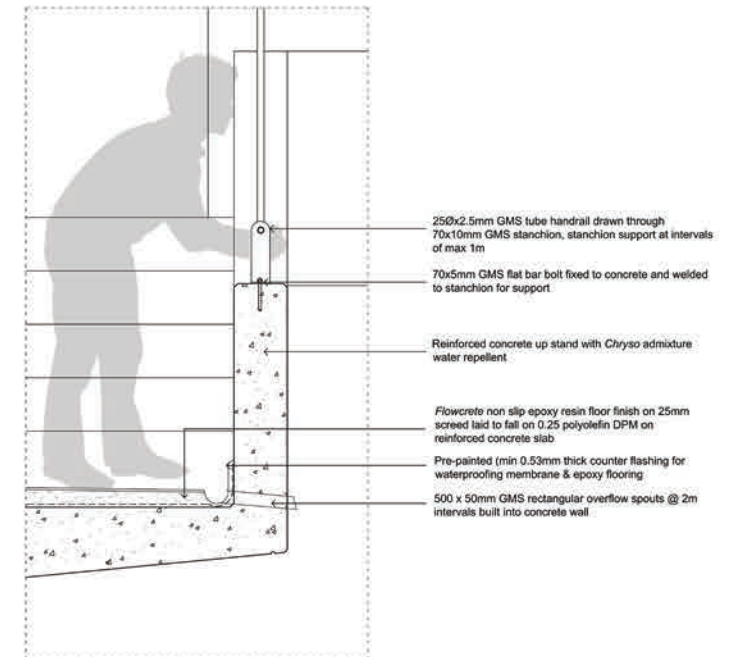
1:10 Detail A
Concrete roof and upstand detail



1:10 Detail C
Detail of public seating



1:10 Detail B
Desk and wall connection

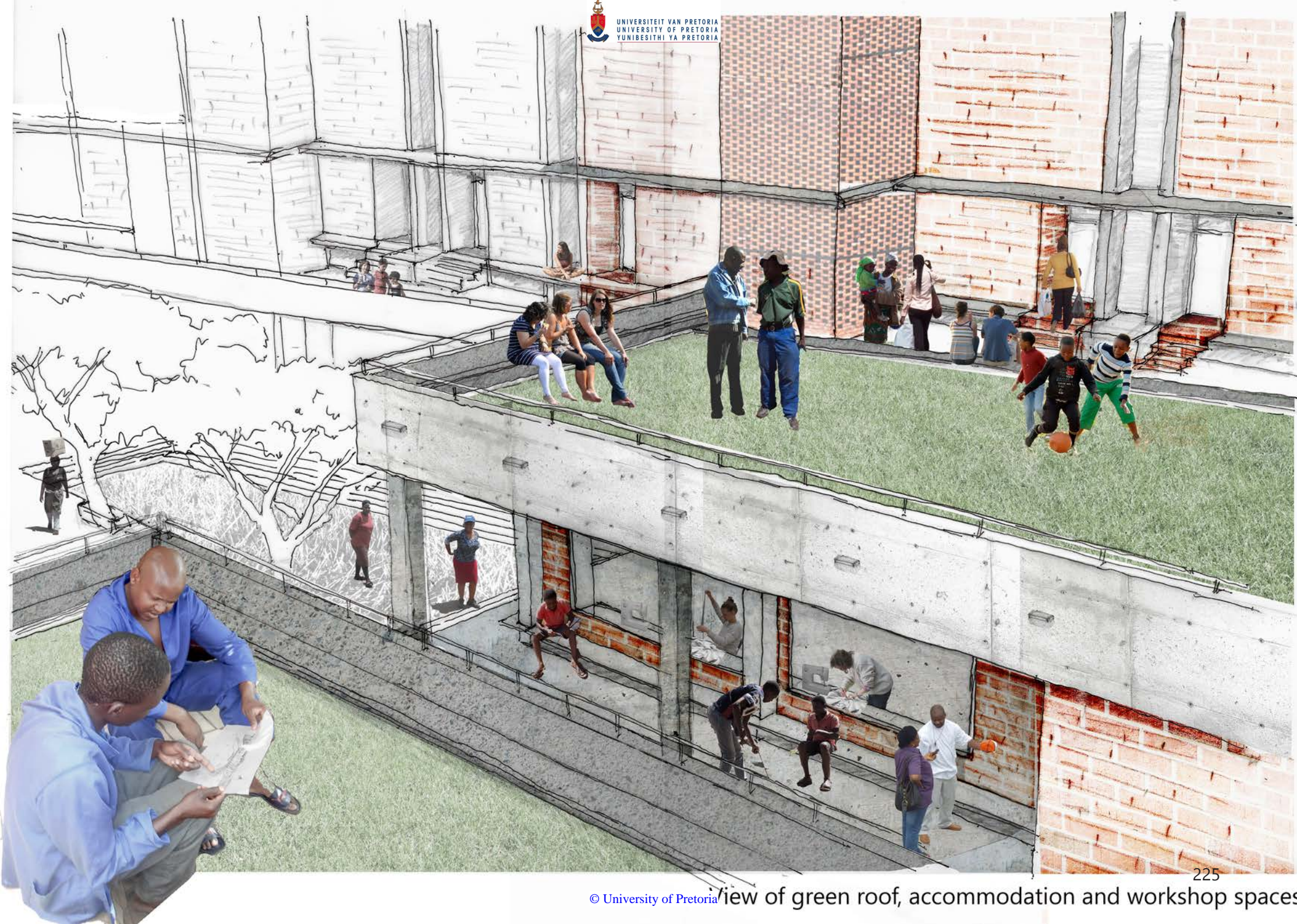


1:10 Detail D
Parapet balustrade and walkway gutter

Details



View of the CVF from the main road







View of kitchen training/cooking and cafe area





Resource centre/ meeting space



230 Figure 9.25: Final model, Photograph, Author (2016)

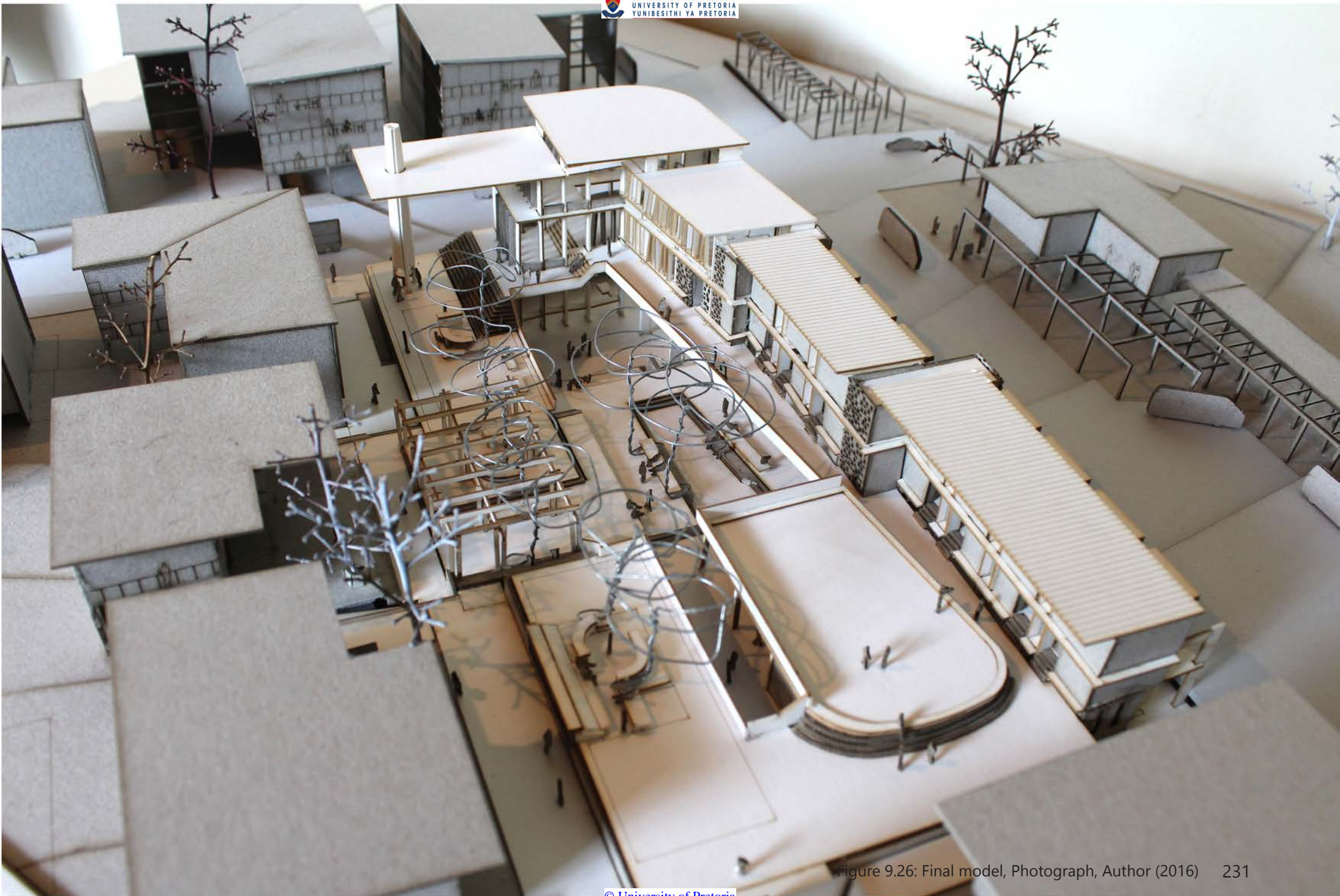
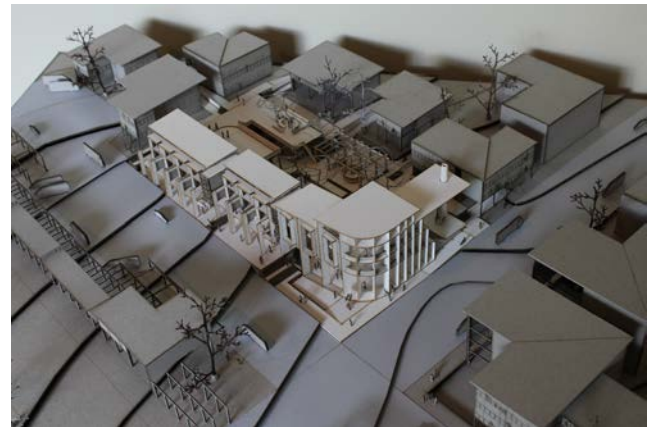
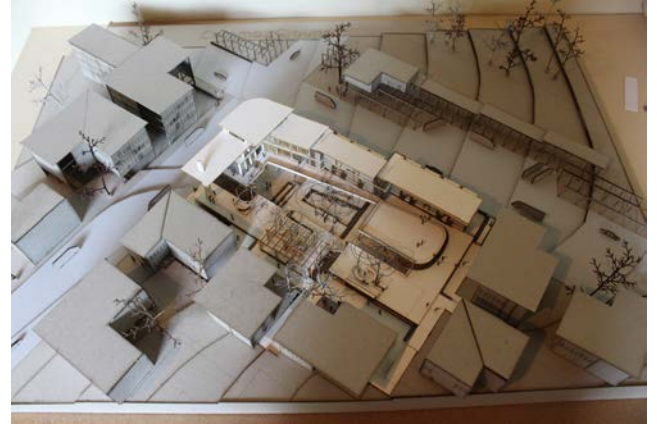
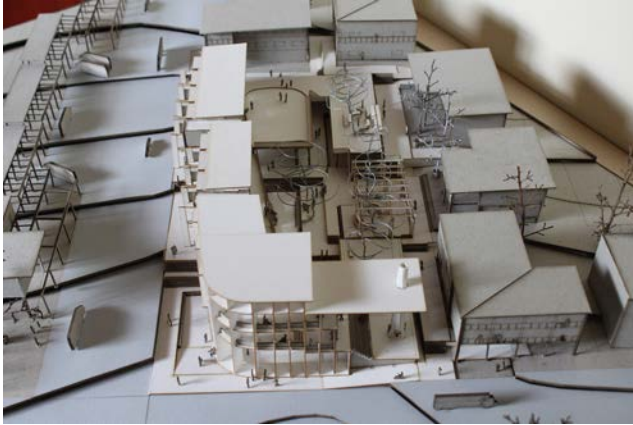


Figure 9.26: Final model, Photograph, Author (2016) 231



232 Figure 9.27: Final model, Photograph, Author (2016)



Figure 9.28: Final presentation, Author (2016) 233

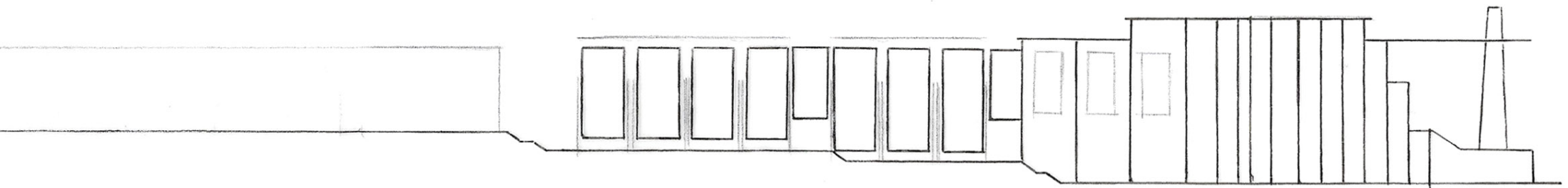


Finding commonality in an integrative communal educational environment

Conclusion

The dissertation concludes that an educational environment can be integrated within a public, mixed-use environment that encourages interaction and engagement to occur between learners and community. By creating an interactive and integrative learning environment, social cohesion and commonality between one another is proposed.

It is essential that citizenship education becomes a key component of the educational curriculum. The dissertation suggests an approach to how this policy can be implemented spatially, this is done by spatially and programmatically addressing and considering three main principles which include: spaces of interaction, the urban condition and multifunctionality. These principles would allow for the facility to merge with and form part of the community, while not limiting education to a formal learning environment but encouraging active community engagement.



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