

*design
development*

The theoretical discussion concluded with the identification of three principle guidelines with the aim of guiding emergence within the city super-organism: The **creation of boundaries** in order to define space; the creation of possibilities for adaptation in order to **transform space into place**; and finally, **the continuity of experience** or the knowledge of orientation when moving through the boundaries.

The creation of boundaries takes place on different scales: defining the boundaries of the CBD of Tshwane; identifying the boundaries of the North-eastern district of the CBD; placing boundaries on the site informed by movement and activity patterns; Allocating open space hierarchy based on optimal movement and activity on the site; translating these theoretical boundaries into building skin, the quality of which is determined by the program of the building it forms part of.

The transformation of space into place occurs when residents or users adapts space according to need. The creation of a skeleton structure with the possibility of physical adaptation prior to use, is however, not conducive to the creation of complex, multi-faceted societies. With these so called open buildings, adaptation becomes limited by economy and/or scale and becomes exclusive. The intervention aims at adaptation as a reaction to something existing rather than the creation of something new. In order for this to succeed, a magnitude of different users is required, as with each user the possibility of adaptation increases. Therefore a multi-functional intervention will create the most opportunities for adaptation and the consequential transformation of space into place. For this reason the intervention accommodates a variety of old and new functions: restaurants and retail on the ground floor lining the outside of the block, existing and new commercial space on top of the restaurants, a multi-purpose community hall, day care centre and a residential block.

Emergence in the self-organizing city



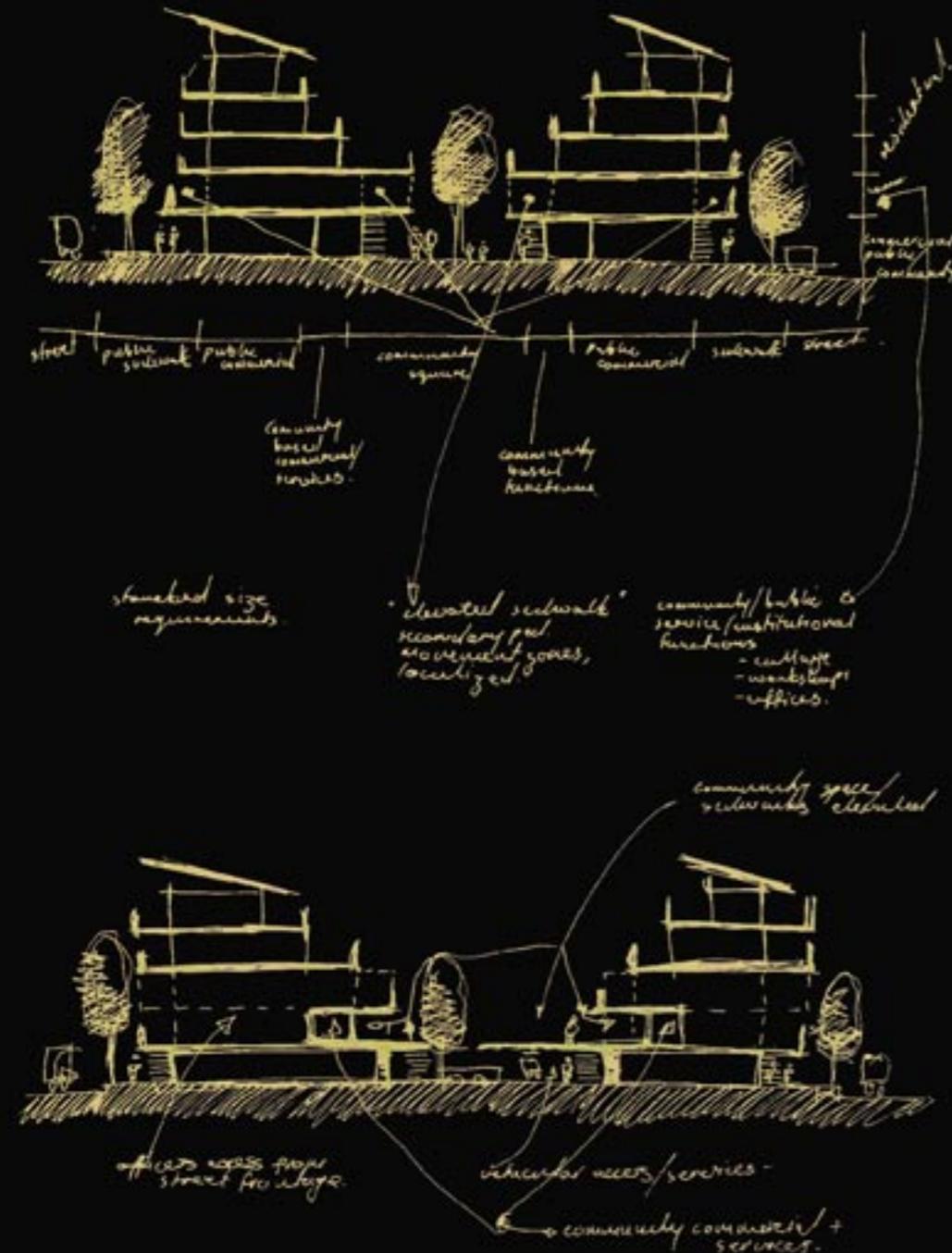
Page 56: Figure 051 (top):
Façade design sketch
by author

Figure 052 (bottom):
Façade design sketch
by author

Page 58: Figure 053: Fractional
pattern growth.
Concept sketch by
author

Page 60: Figure 054: City block
as neighbourhood

District development proposal



Previous frameworks concerning the regeneration of Tshwane ignored the north-eastern corner of the CBD. Visual axis across the city from the Union Buildings and Freedom Park, and the regeneration of the Apies River were set out as primary design focuses. Furthermore, the identification of districts according to usage and zoning, as some of these frameworks suggests, contributes to the regularity and monotonous nature of the CBD. Additionally, it contributes to the degeneration of the north-eastern corner, as it is totally ignored.

In contrast to the grouping of uses, the framework proposed will allow for multi-use development in all areas. The CBD is viewed as a single, un-zoned entity from which the city can emerge out of smaller activities.

Following the theoretical investigation, the first consideration regarding an intervention within a self-organizing system subject to emergence, is the identification or creation of boundaries. Considering the layout of the CBD, with Church Square as anchor, the logical identification of districts will be the four quadrants – these will each be roughly four city blocks by four city blocks big.

On a smaller scale, and informed by movement as a feedback system and the CBD's history of arcades and promenades, every city block is divided into four quadrants, creating pedestrian movement arcades through the blocks and establishing each quadrant as a manageable "neighbourhood". Public squares and open green areas are then placed where these pedestrian arcades intersect one another.

As illustrated by figure 054, each quadrant forms a city neighbourhood: On the ground floor around the edge of the block, public activity will take place (larger convenience stores, restaurants, markets etc.),

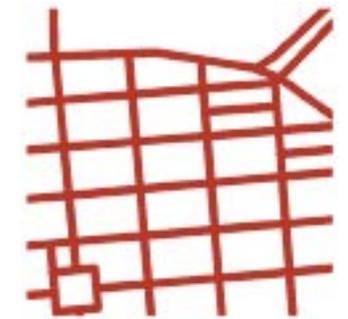


Figure 055



Figure 056



Figure 057

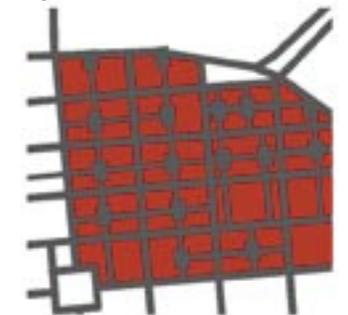
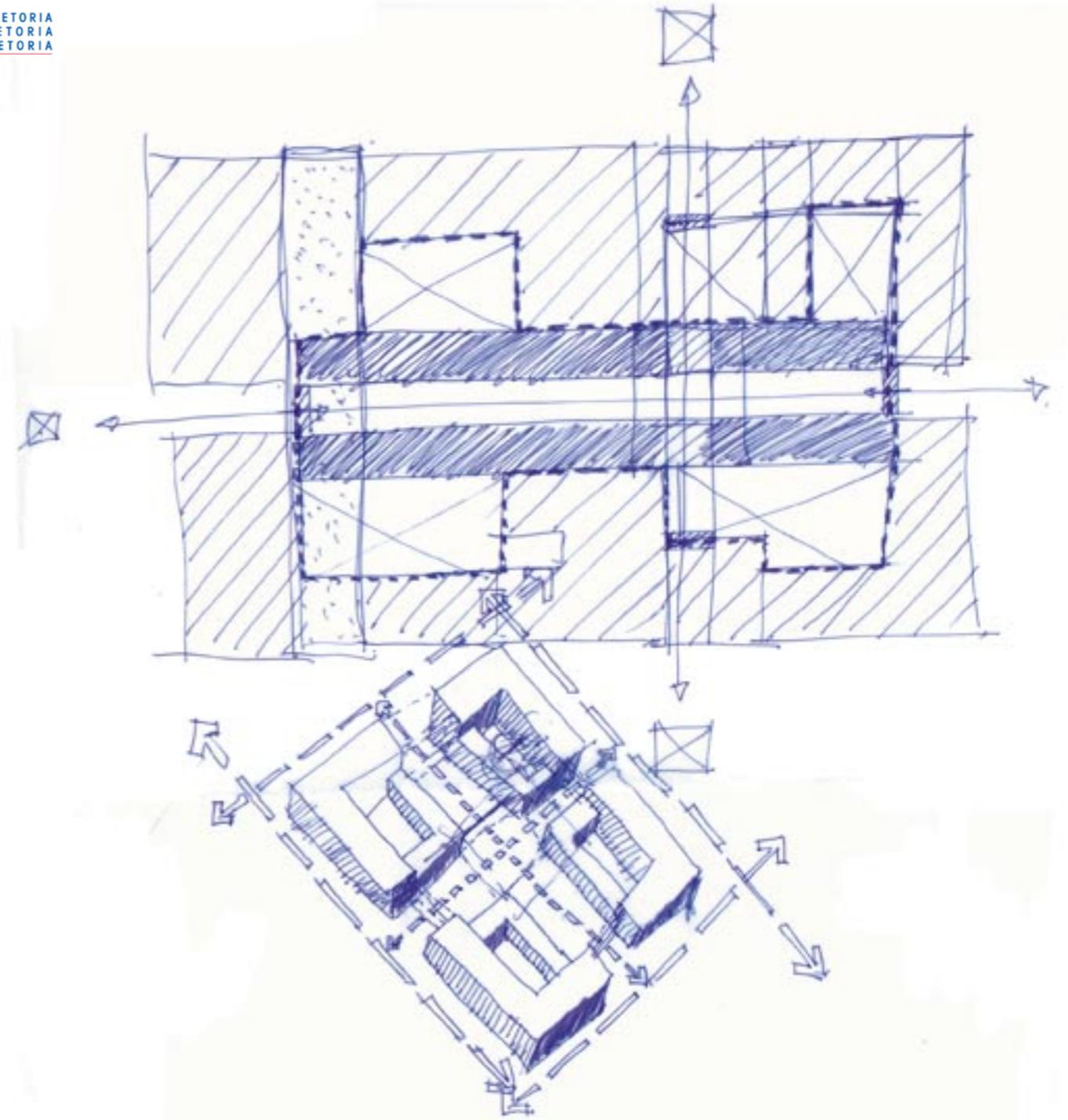
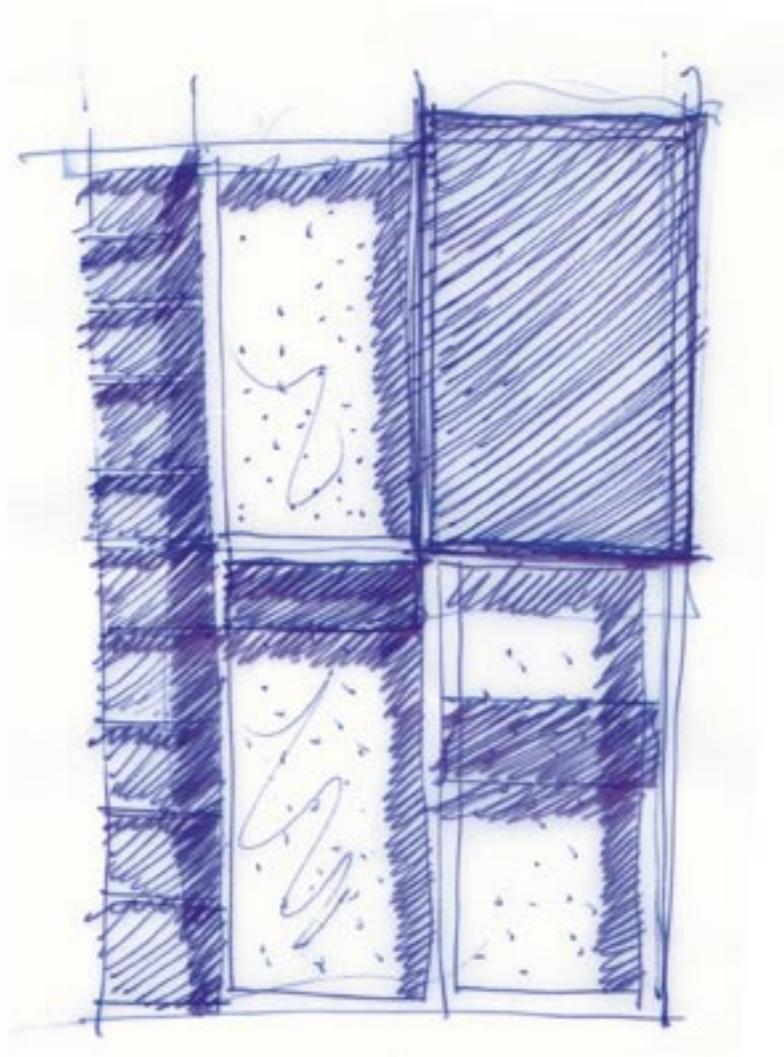


Figure 058



while the inner ground floor will house more community based retail (small trading stalls, internet cafés and laundries). The first and second floor will house commercial usages on different scales: corporate offices on the edge and community workshops looking inward. The floors on top will be residentially orientated and location within the block will determine type of housing.

Figure 059: North-eastern district logo

Page 63: Figure 060: City block as neighbourhood development sketches

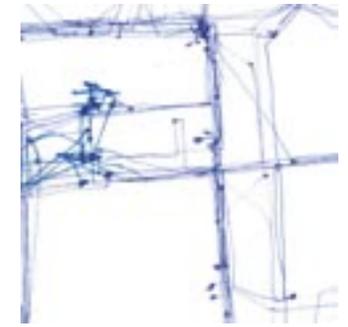


Site Development - movement and form

Primarily informed by the **continuity of experience** and the need to create **boundary** as main space definer, the initial site development included a mapping of horizontal pedestrian and vehicular movement around and on the site. Mapping pedestrian movement proved to be much more complex than mapping vehicular movement: in the urban environment every point can be the point of origin or destination of a pedestrian; pedestrian movement, as apposed to vehicular movement, does not follow a linear path on a bigger grid, movement is random and in any direction. Thus the attempt to map this seemingly chaotic process produces a variety of methods and maps. (figures 061 to 068)

From these movement diagrams boundaries were identified which could be graded in terms of permeability: the amount of pedestrian and vehicular movement through a boundary informed the openness of that boundary. This developed the hierarchy of open space. Depending on movement and accessibility, public open space and private open space could be identified and further links between these two could be drawn in.

Vertical movement within the site was placed depending on open space classification and prominence of the façade. The extrusion of space classification defined each façade as either public or private building skin, thus informing the placement of correlating interior space. From these diagrams developed the bulk of the development and it informed the placement of functions.



Page 64: Figure 062: Boundary identification

Figure 063: Model of vehicular movement on and around site

Figure 064: Model of pedestrian movement on and around site

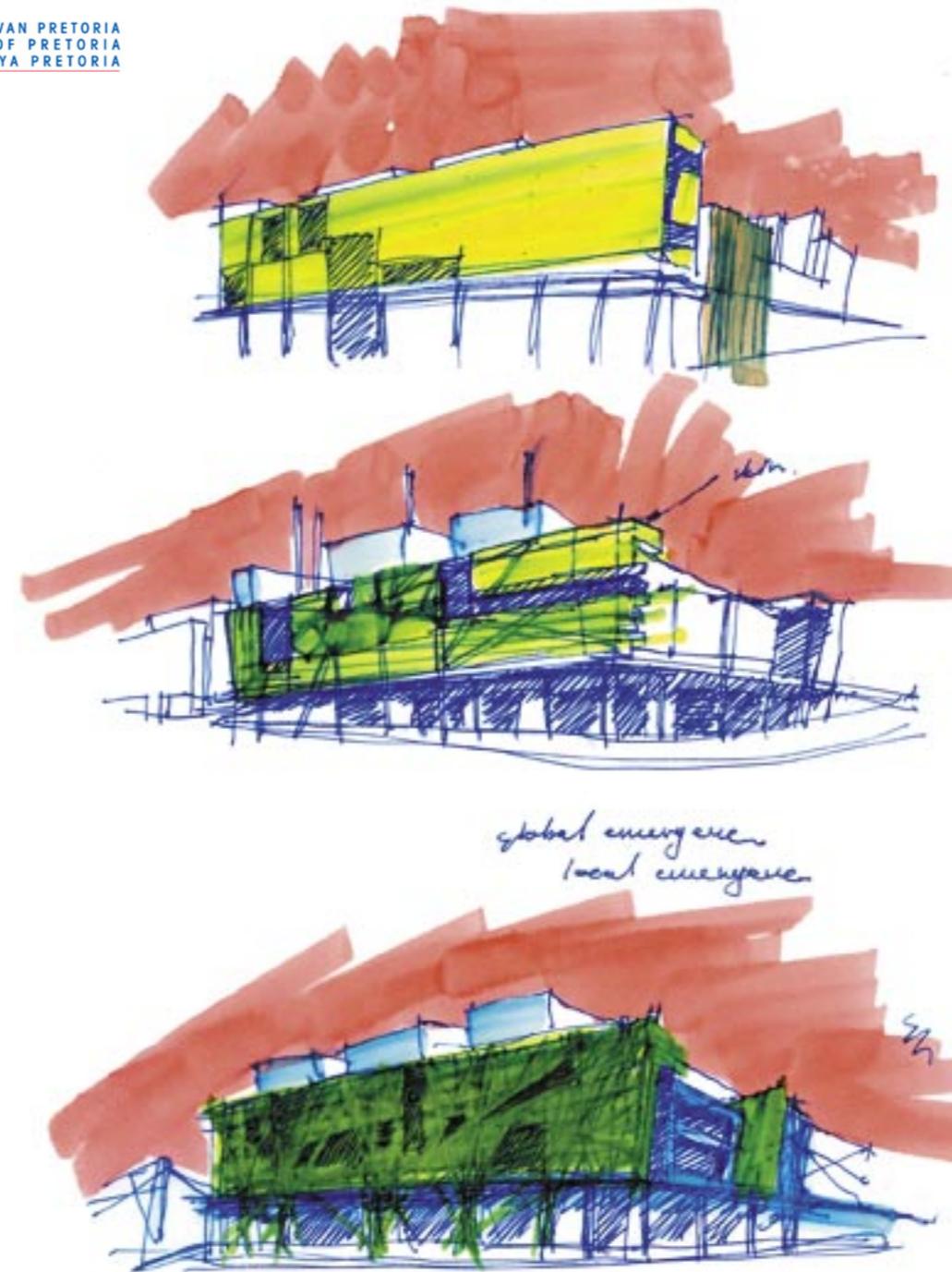
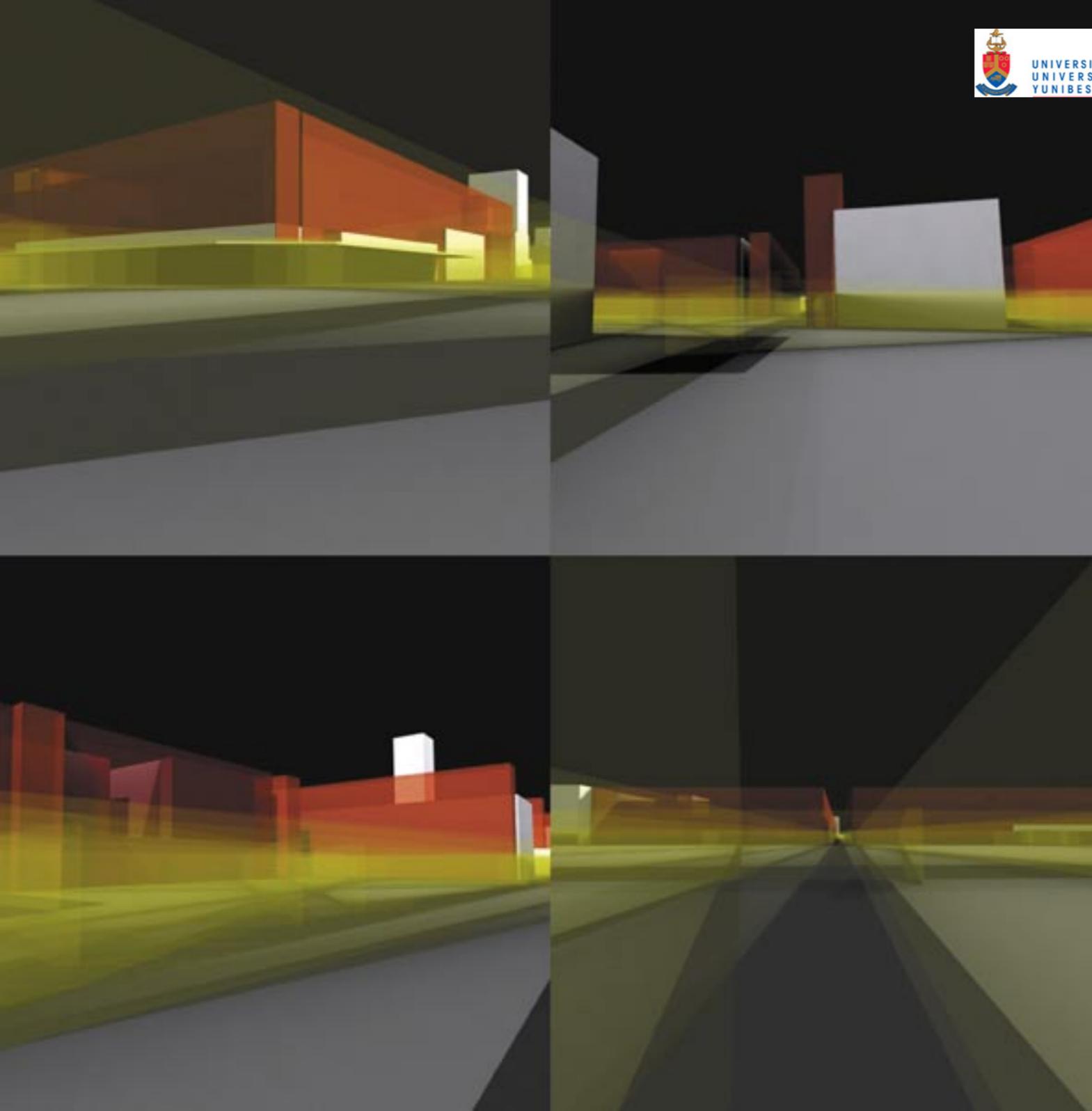
Figure 065: Model of pedestrian and vehicular movement translated into open space hierarchy

Figure 066: Model of vertical movement

Figure 067: Public skin vs. Private skin

Figure 068: Volume model derived from previous diagrams

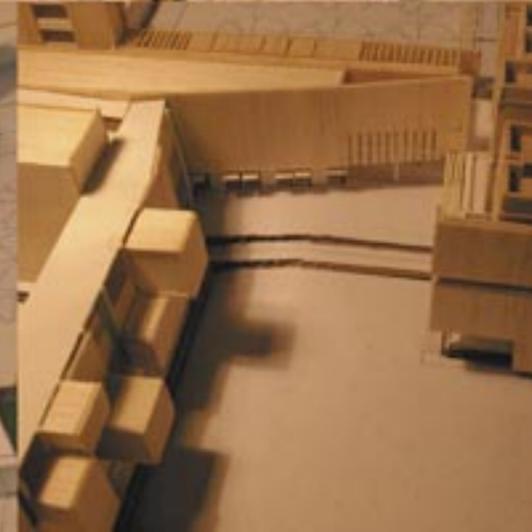
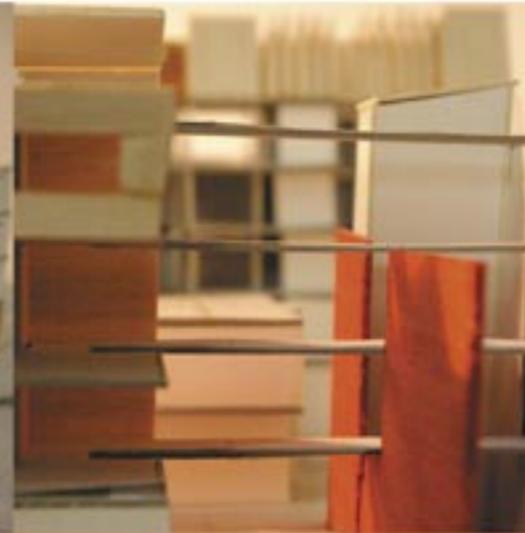
Figure 69 (above): Initial movement diagram





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080	081		082	083	084
085		086	087	088	089



Open space

Grading the open space as either public, semi-public, semi-private and private (figure 091 page 72) directly influenced the bulk of the development. A distinction was made between public and private building skin. This informed not only the design for the open space, but also directed the design as to the placement of public and private functions.

Public building skin must relate to the public movement outside while fully accommodating adaptation of use on the inside. The public building façade will be treaded by a skin of screens. These screens will be context specific and material and flexibility will be related to both the public and private activities around them.

The screen on the eastern façade will form an integral part of the developments identity, as it will be fully visible when entering the city from the North-east along Dr. Savage road. It will guide the vehicular movement into the city and frame the view of the University of South Africa (UNISA) to the south. The façade across the road consists of studio boxes, establishing a rhythm into the city.

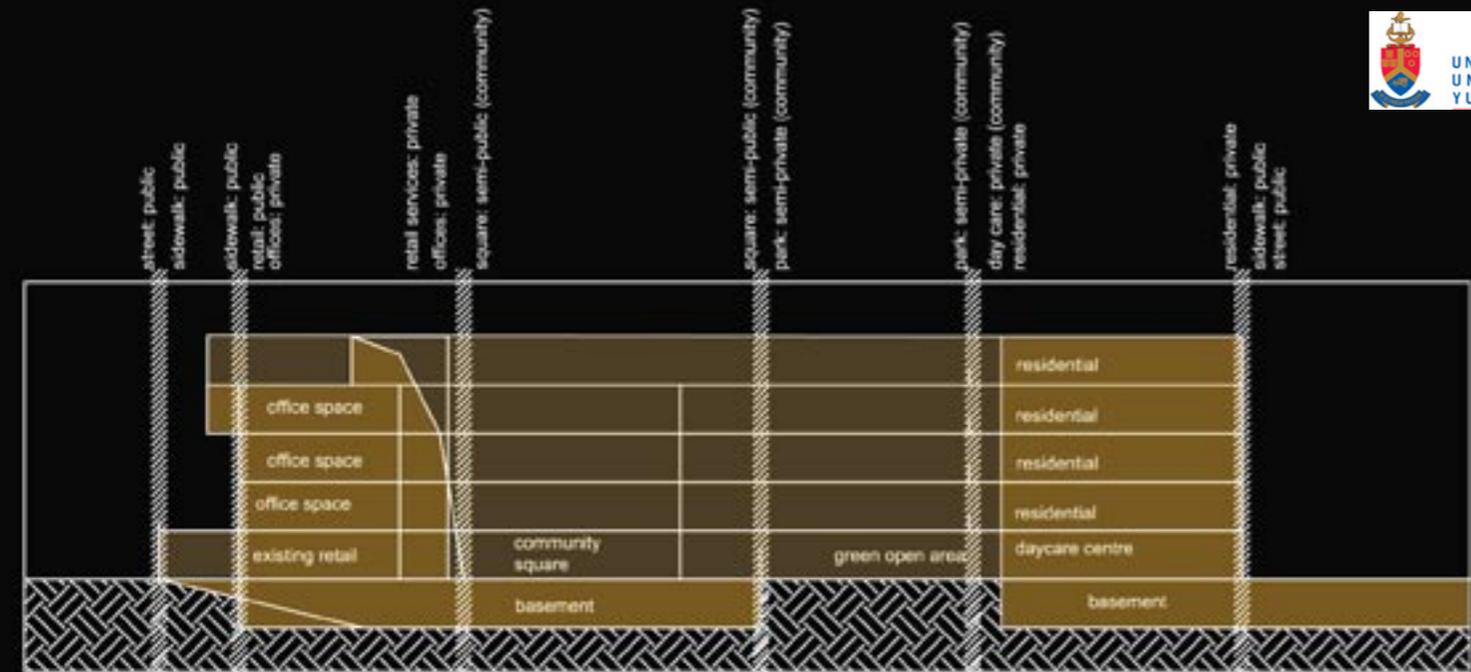
The Eastern façade screen's structure will vary according to it's location on the building: separated from the existing corner building and handled as a floating object above it while manifesting as the ramp which connects the elevated sidewalk with the street floor towards the south. (Figure 090 page 70)

Scale proportions between physical structure and open space is determined by orientation and sun angles (Figure 091 page 72)



Page 70: Figure 90: Concept sketch of Prinsloo Street façade

Page 72: Figure 91: Line diagrams showing boundary identification and open space size determination through the use of sun angles



barrier defined by overhang canopy and columns - existing to remain and intervention based on existing

barrier defined by building skin - ground floor to communicate with sidewalk

barrier defined by sloping screen - solid at ground floor to hide retail service area - fence or wall - visual connection through barrier important

barrier defined by change in fabric (bavement to grass) - physical barrier needed for security - fence or wall - visual connection through barrier important

barrier defined by building skin - ground floor to be an extension of the park into the daycare centre

barrier defined by building skin - this barrier is a potential problem as it forms the rear of the residential units - parking on ground floor perhaps be replaced with retail to create a more vibrant sidewalk

25m height limit

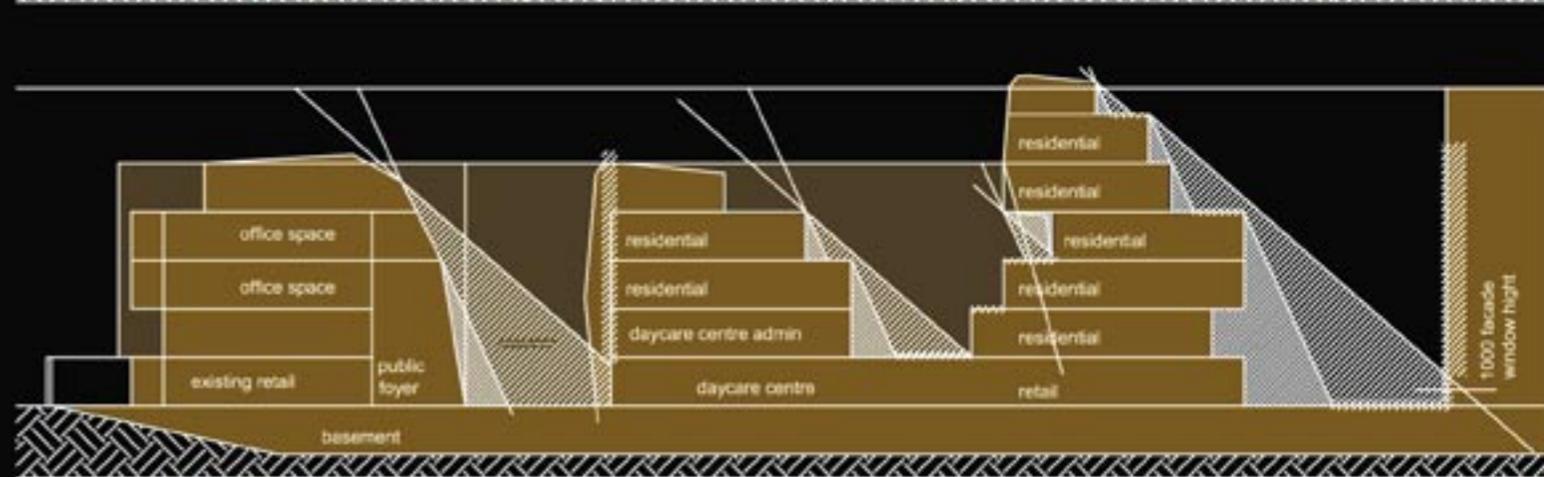
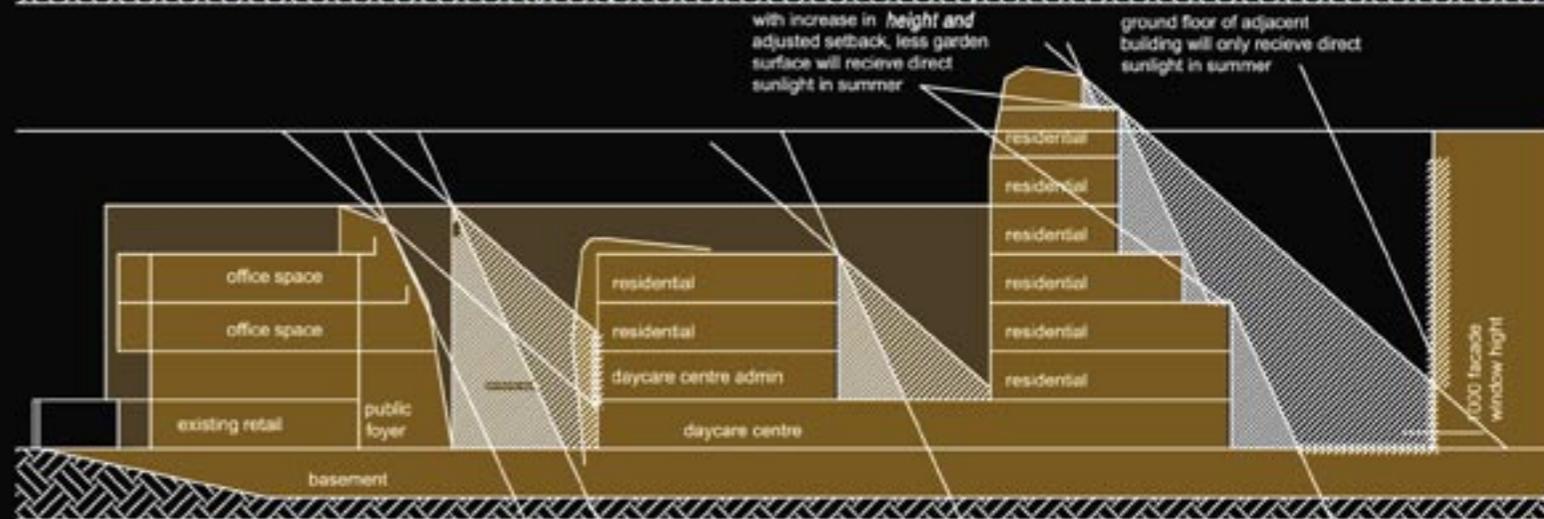
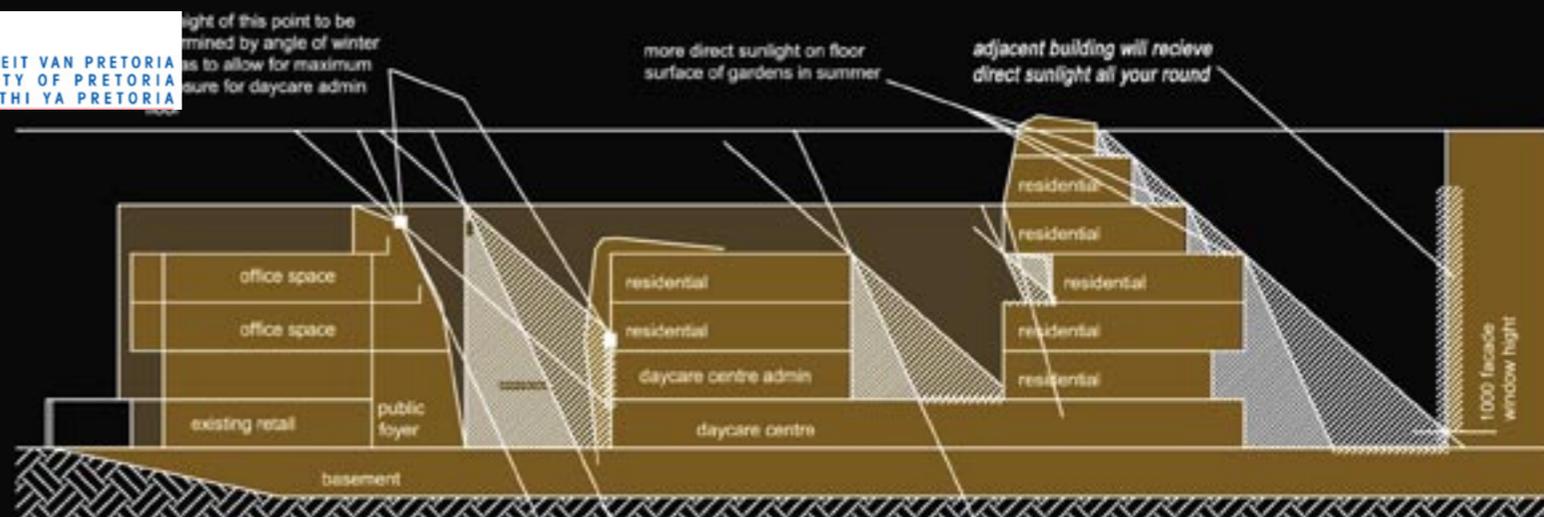
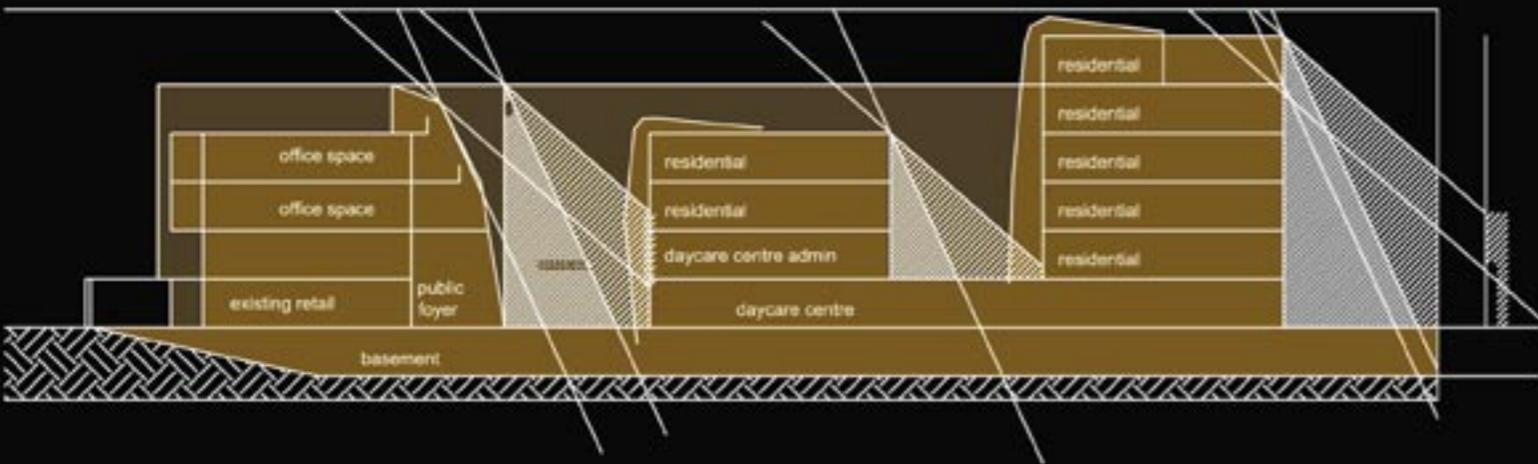




Figure 92

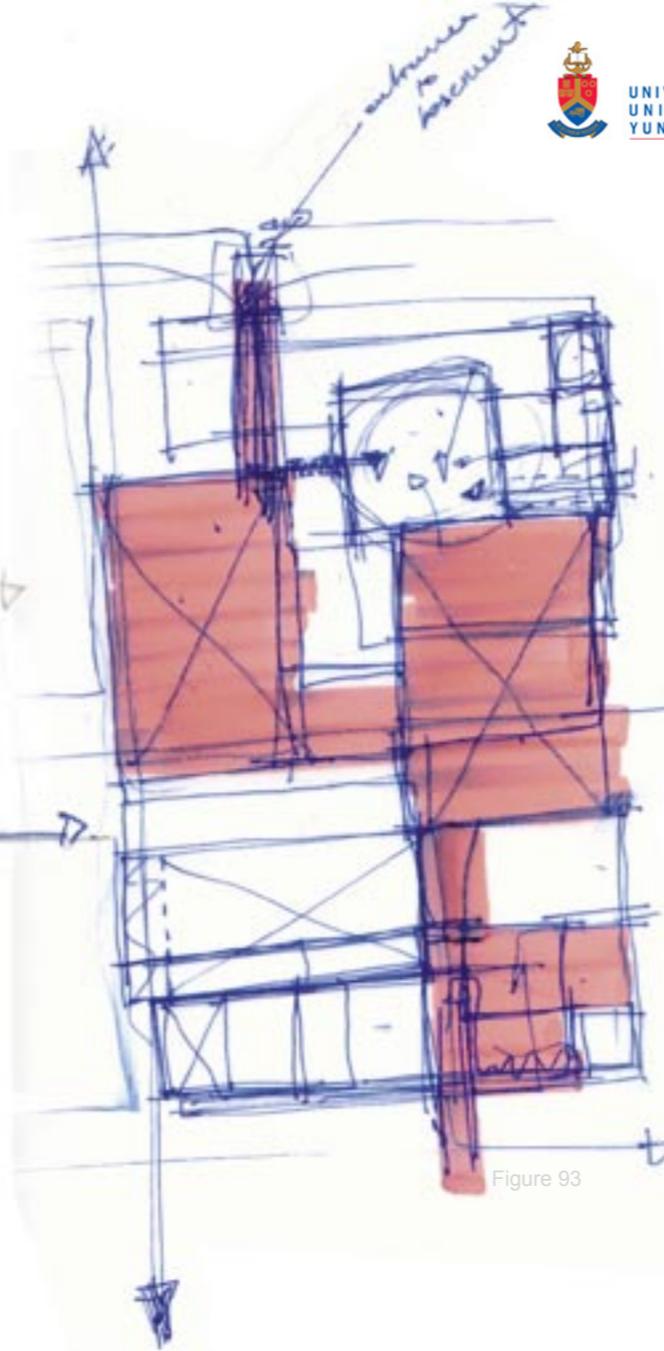


Figure 93

Using public space must allow movement through the boundaries which define the hierarchical quality of the space while maintaining continuity of experience. Thus the user must at all times know where he/she is within the public space system. The process of movement/activity mapping informs the main design decisions for the public space on and around the site.

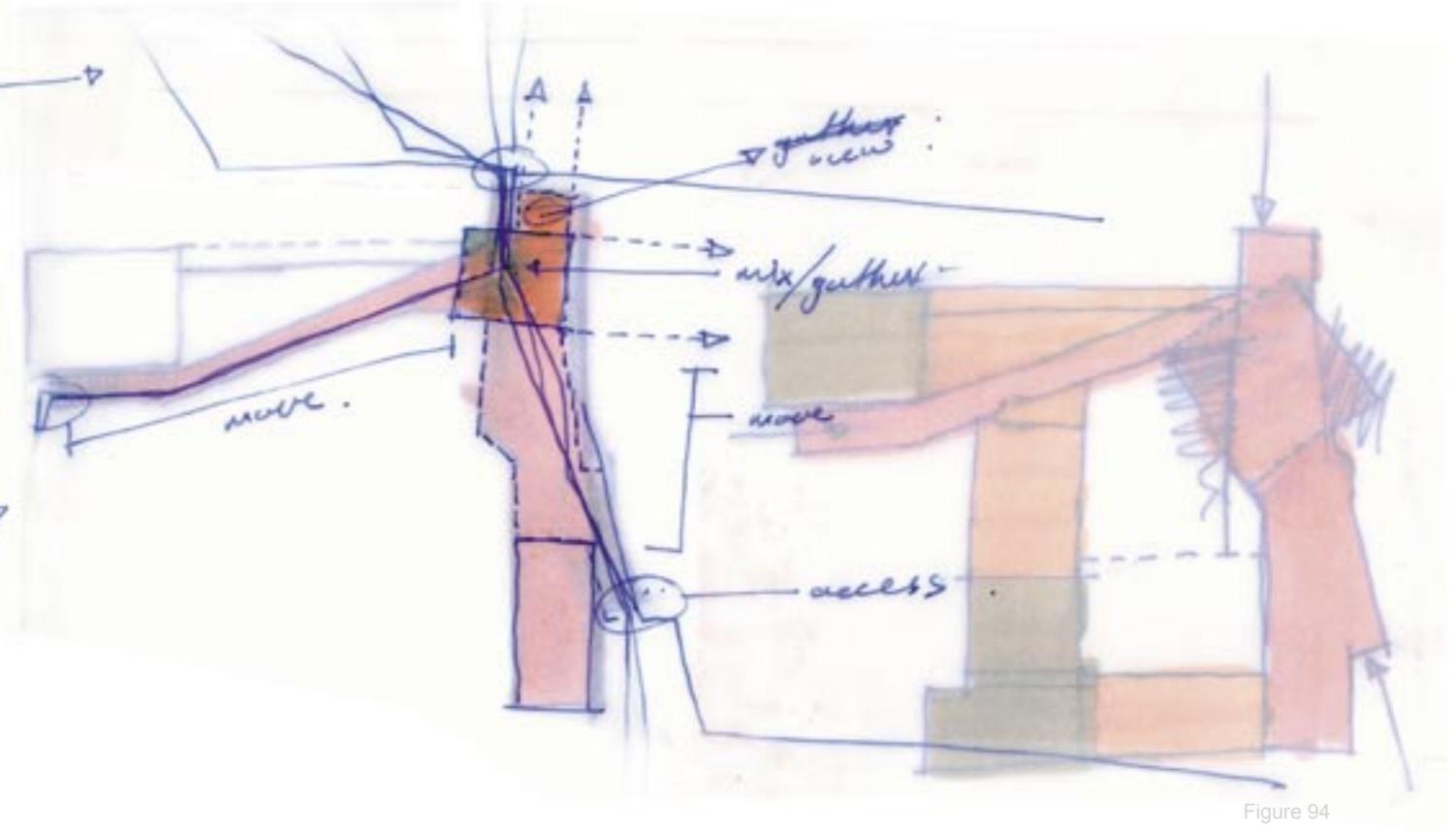


Figure 94



Figure 96

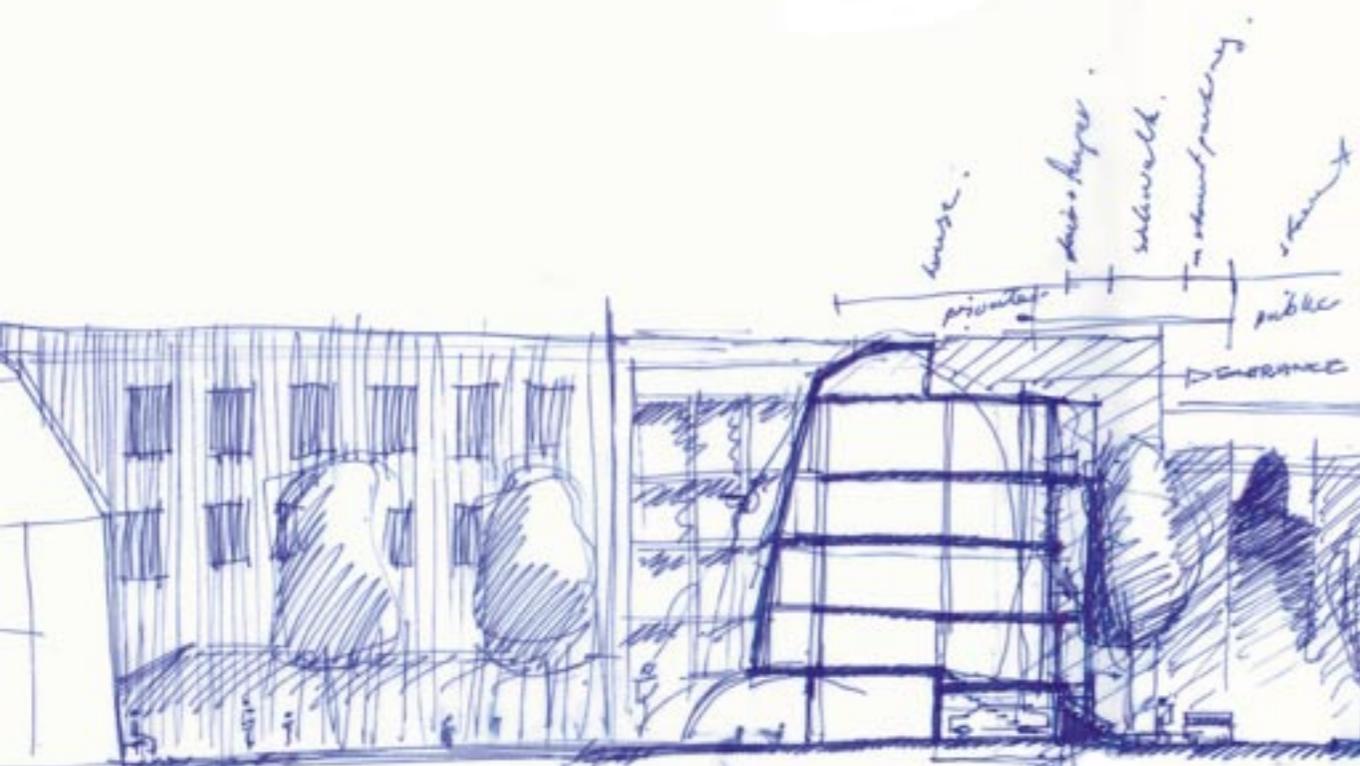


Figure 95

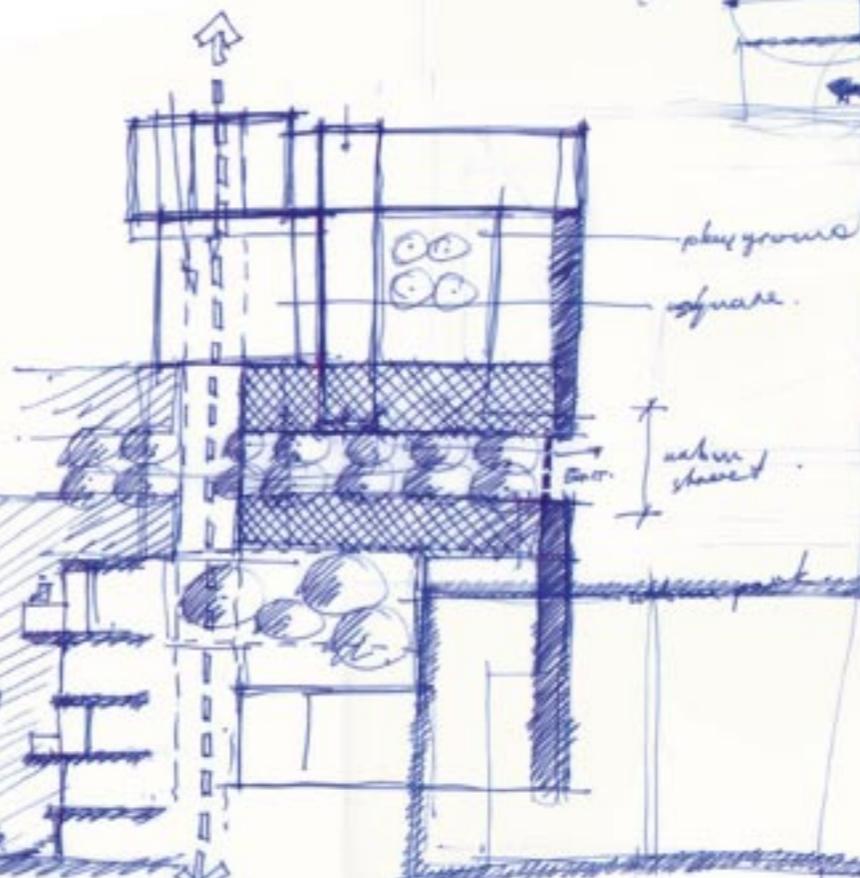


Figure 97

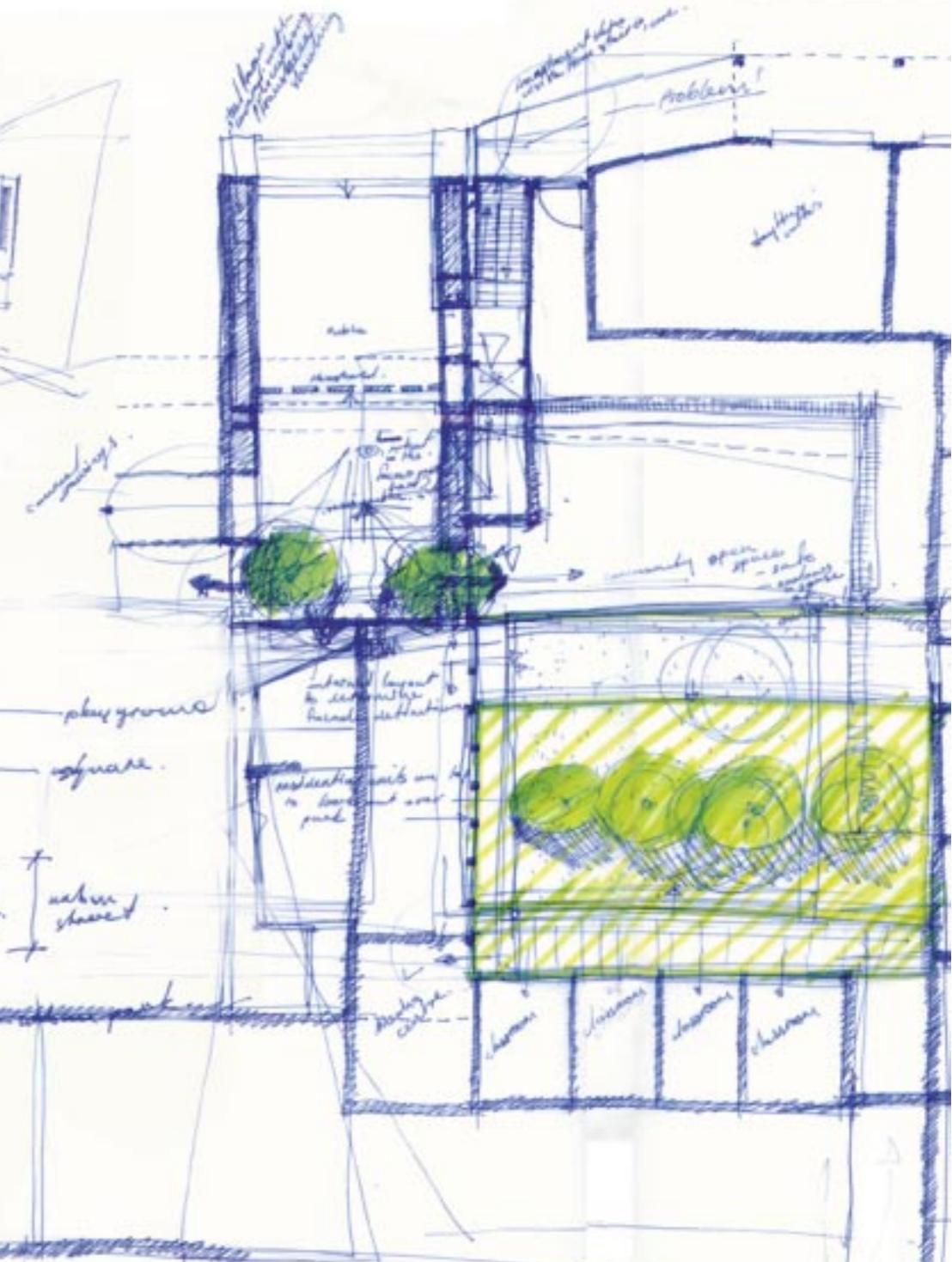
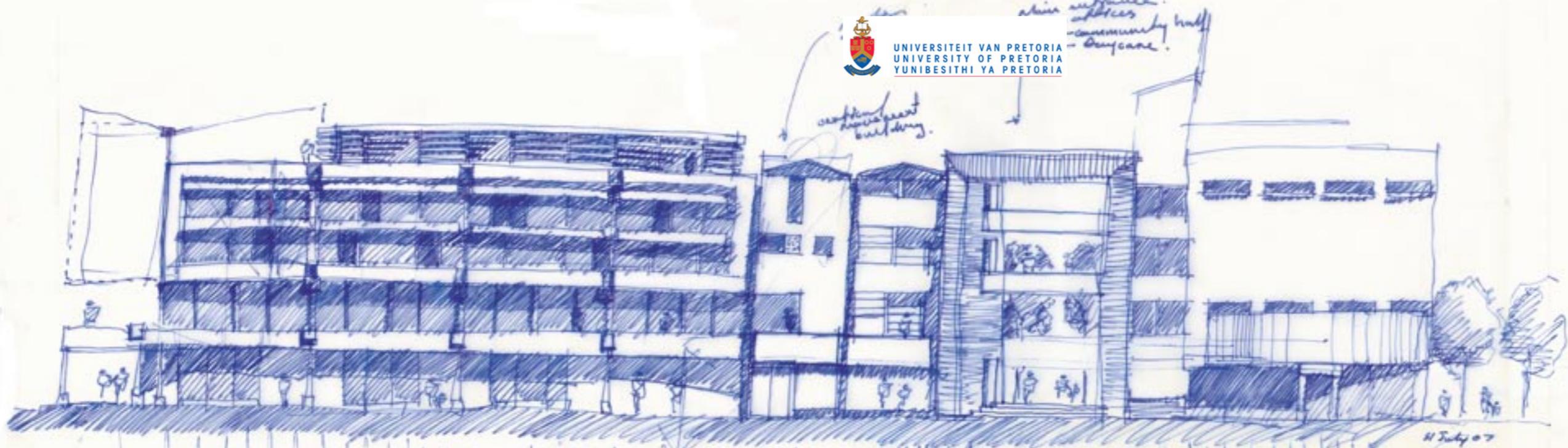


Figure 98



main entrance
- offices
- community hall
- daycare.

sculptural
monument
building.



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Figure 99

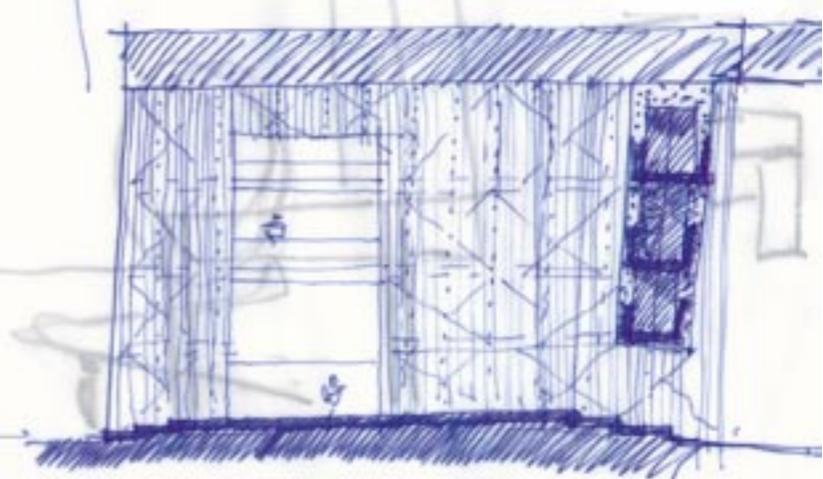
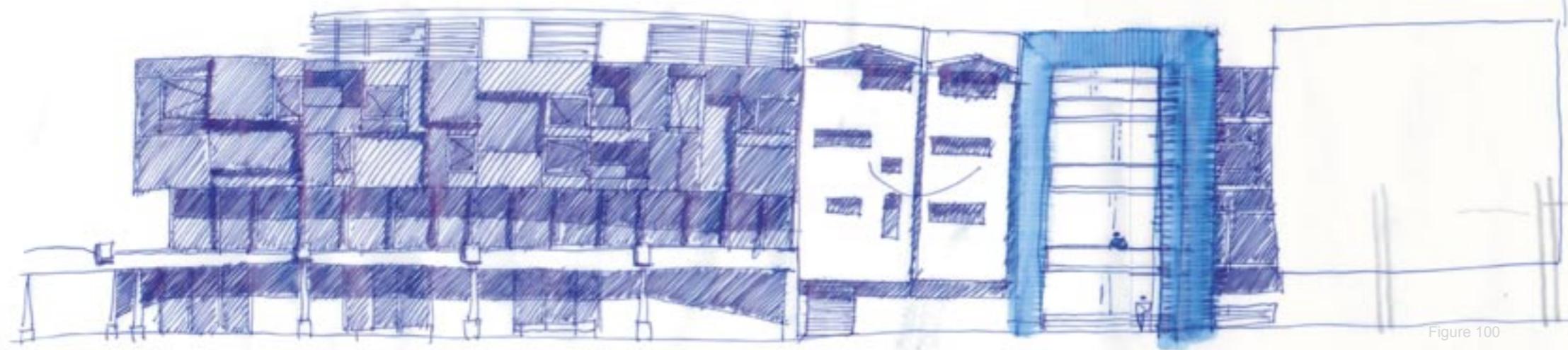


Figure 100

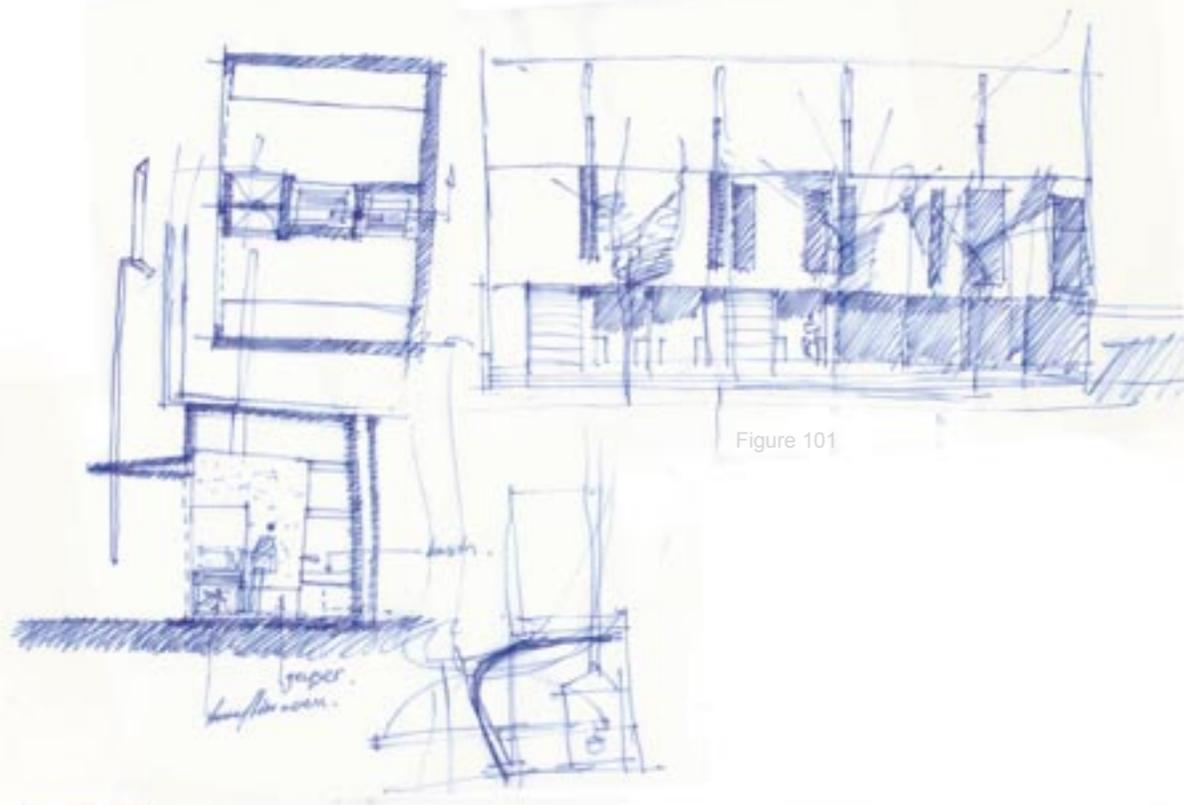


Figure 101

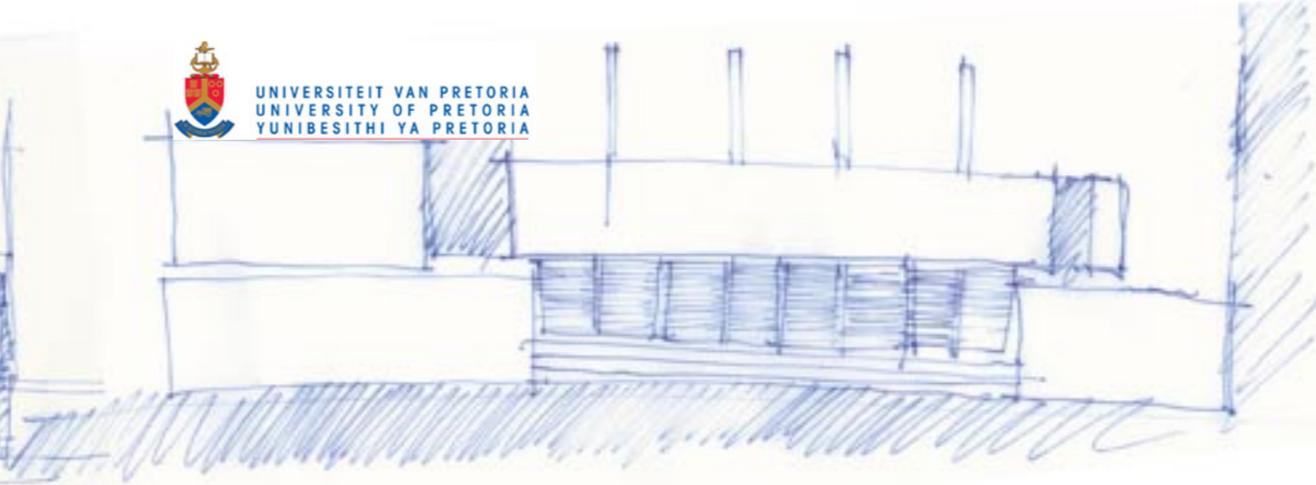


Figure 102

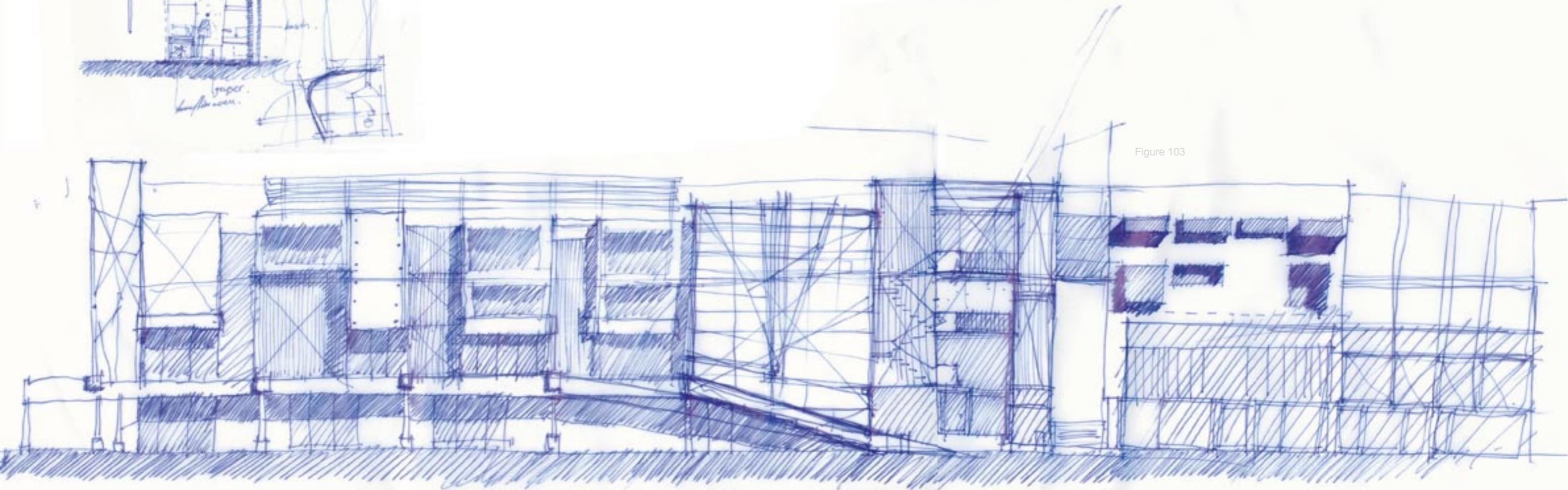
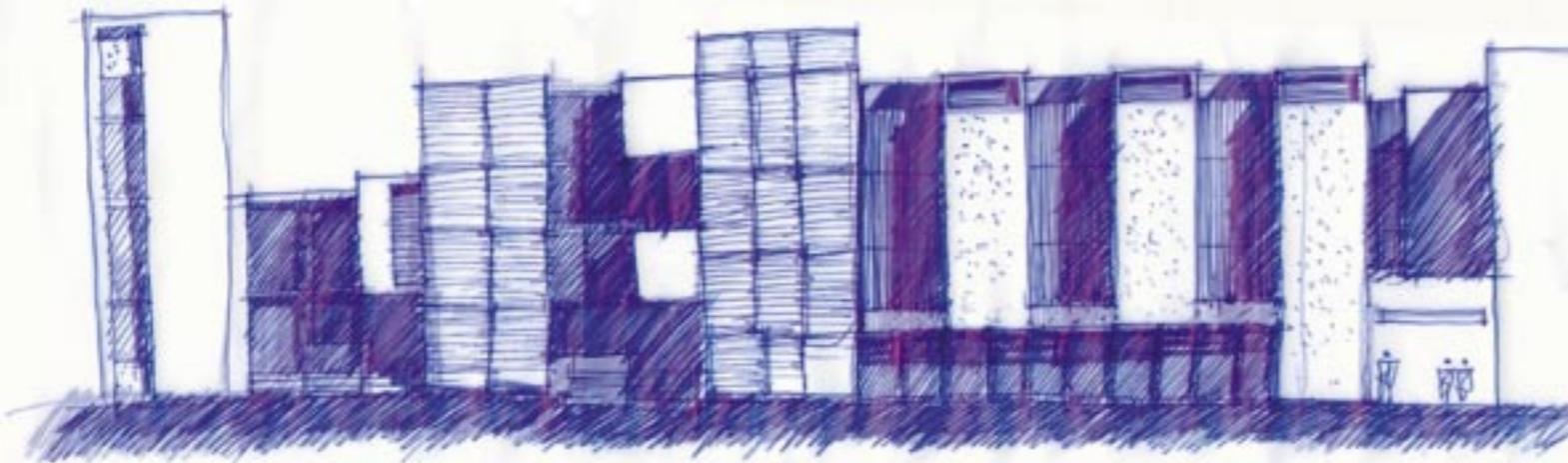
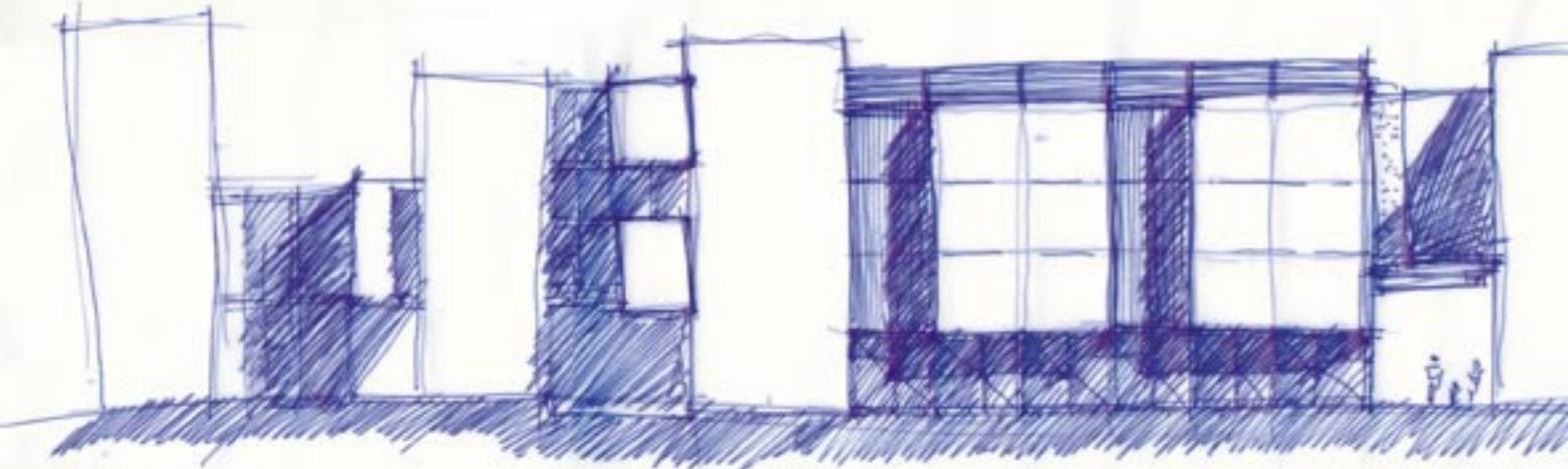
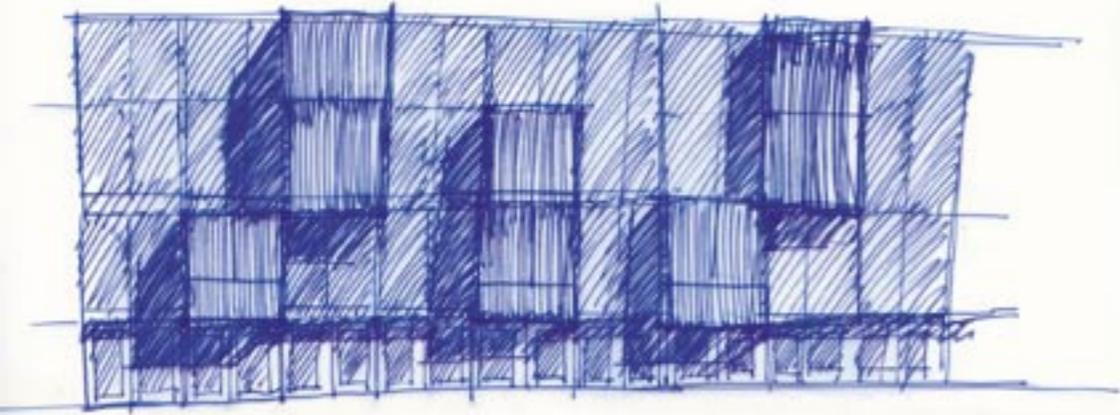


Figure 103

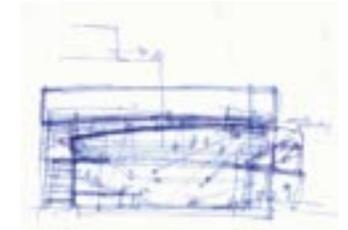


Multi-purpose Community Hall

The primary public space consists of a multi-purpose community hall (indoor sports hall and auditorium) which connects Bloed street with a public square. The placement of the square was derived from the district development proposal and the activity/movement mapping of pedestrians over the site. Variable permeability through the hall onto the square allows for adjustable privacy in the hall and on the square, creating the opportunity for various uses and adaptation.

The community hall acts as a civic building and should project an initial identity for the North-eastern district community: it is a hub of activity during the day and night. The public square south of the hall allows for the building to become an icon within the community while the northern façade identifies it as a city wide icon for the North-eastern district.

Offices for a local newspaper are located within the community hall. Printed media will contribute greatly to the community's identity and ensure daily activity in the complex even when performances and sport events are limited.

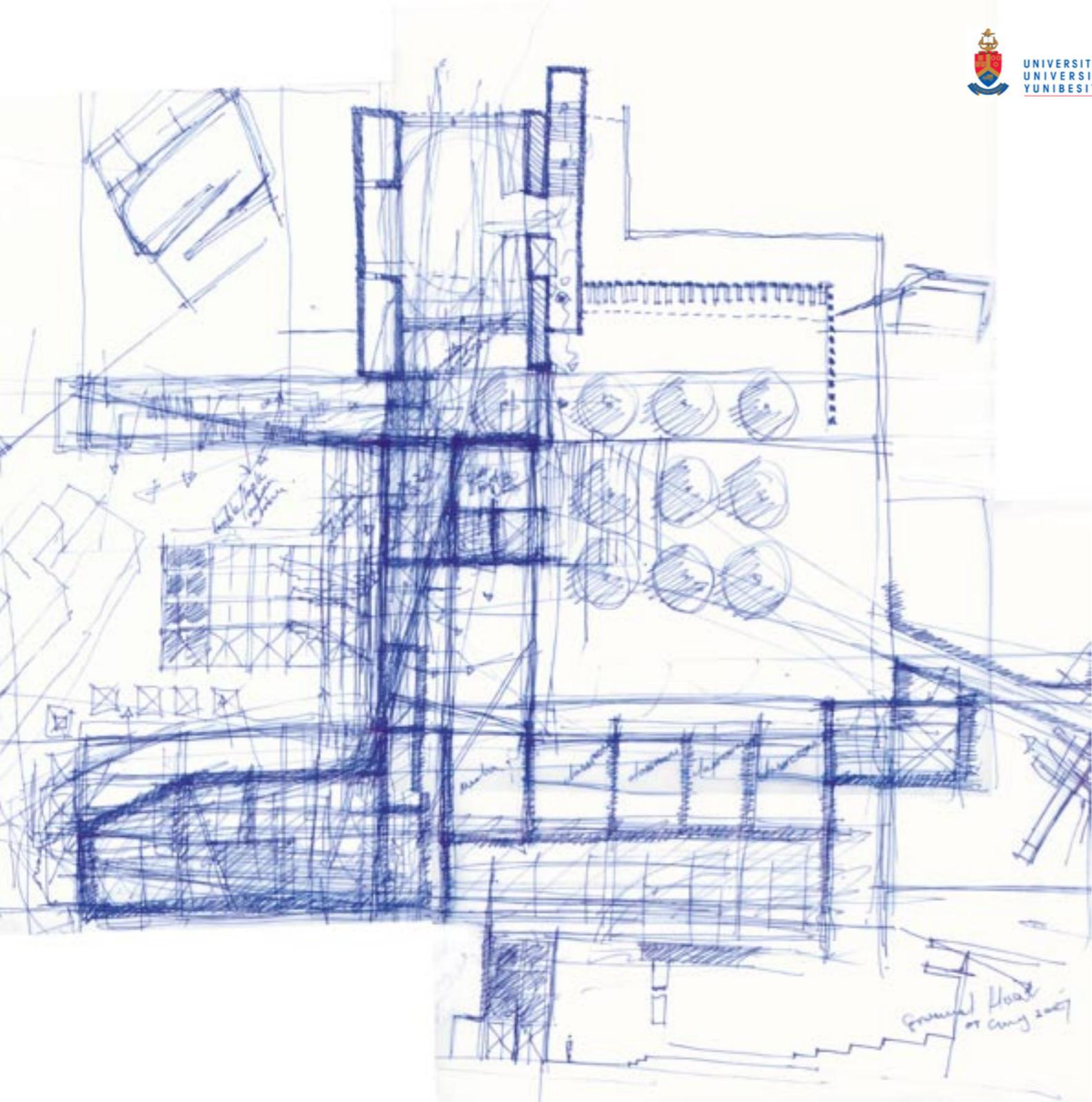


Page 82: Figure 104 (top):
Community hall
southern façade
concept sketch

Figure 105 (middle):
Community hall
northern façade
concept sketch

Figure 106: (bottom):
Community hall
northern façade
concept sketch

Figure 107 (this page): Initial
section through community hall



Day care Centre

The day care centre is situated within the middle of the block, allowing for enhanced security and limiting access. The playground forms the major planted area on the site, although a magnitude of surfaces will be used to create a fun and educational private open space.

Access to the day care centre is from the public foyer in Bloed Street. This foyer also houses the lobby for the offices and a security desk. The main entrance for the day care centre is visually connected to Bloed Street, allowing for a safe drop of zone: parents can stay in their vehicles and watch their children walk through the foyer directly into the day care centre.

The classrooms are situated on the southern side of the playground allowing for maximum natural light to enter. Natural light in the classrooms is also enhanced by the use of skylights.

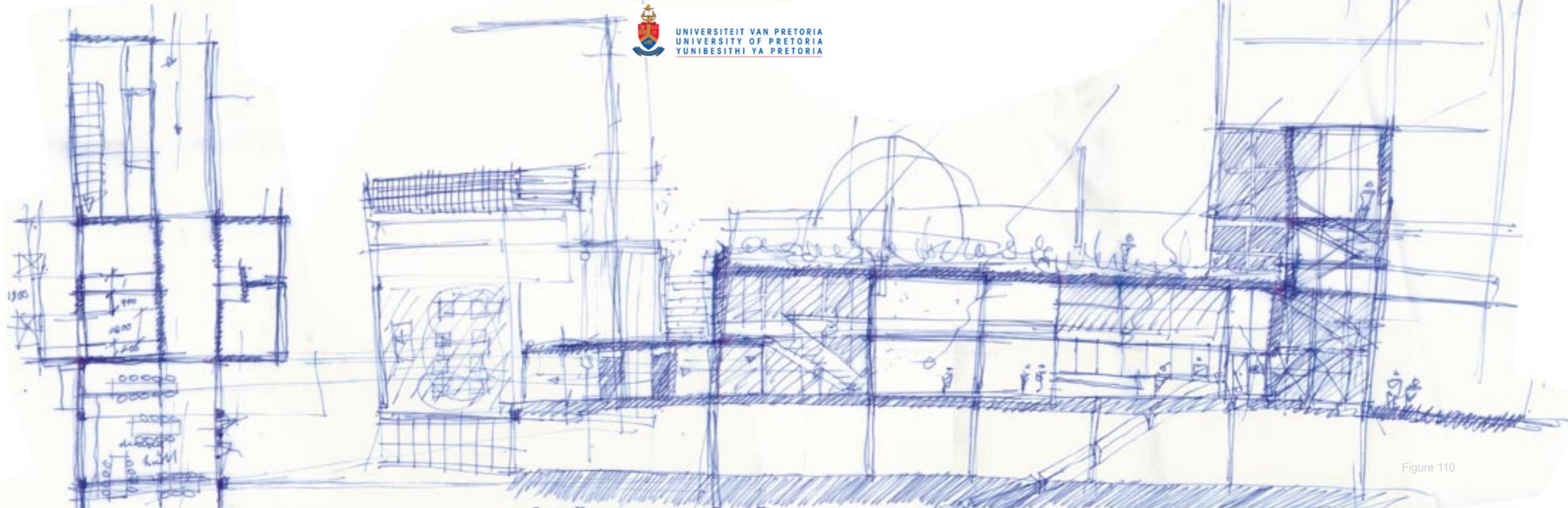


Figure 110

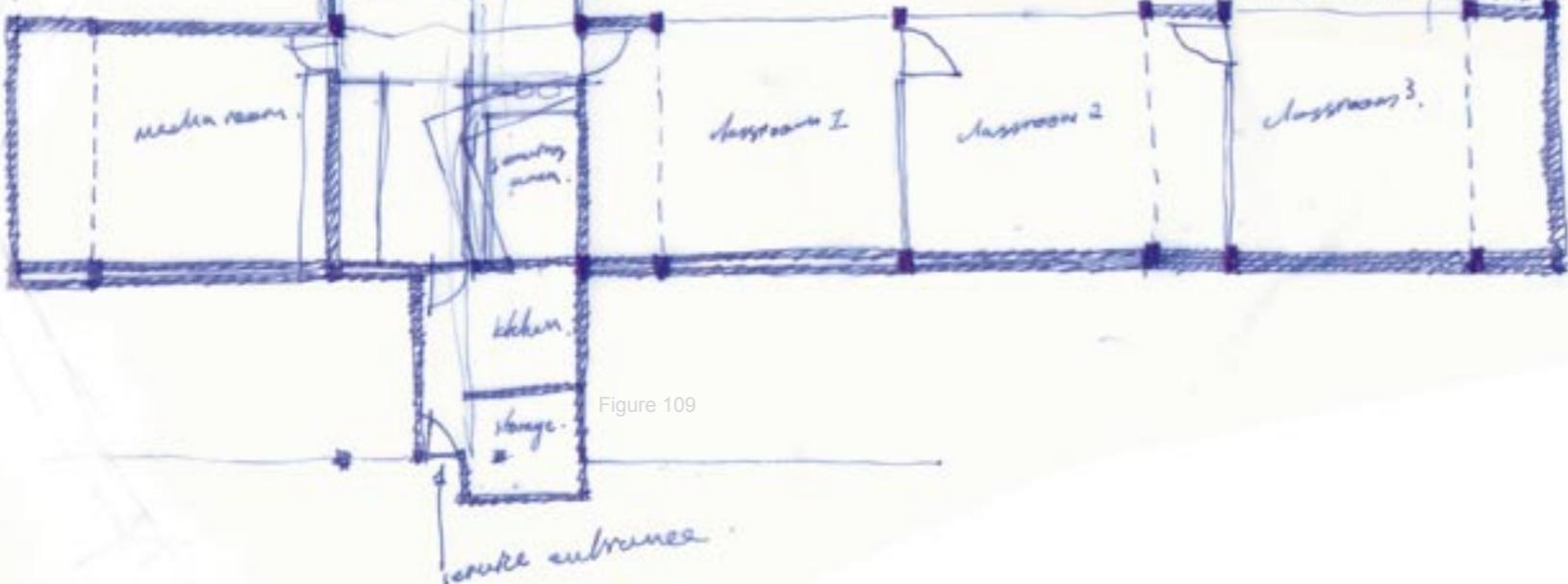


Figure 109

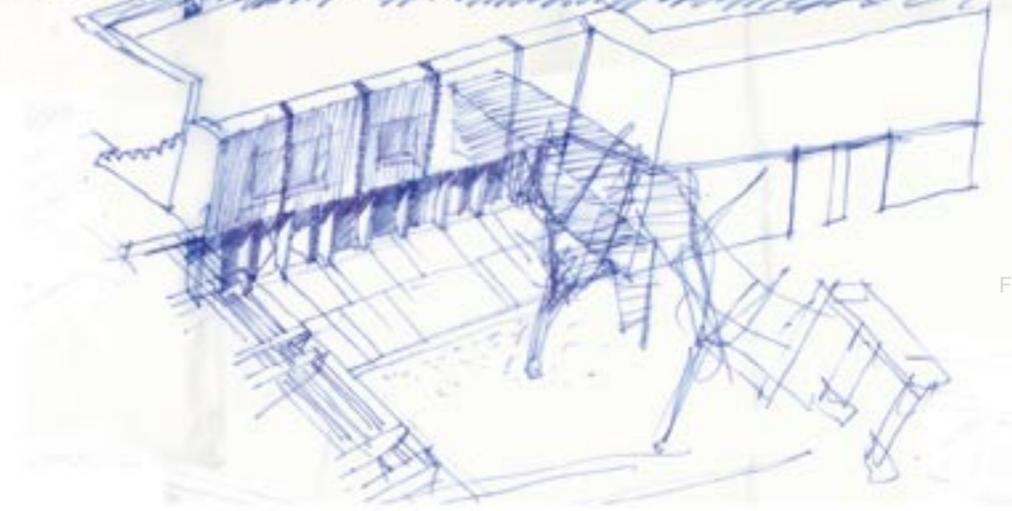


Figure 111



Residential development

Primarily informed by the theoretical context, the concept for each living unity is based on the movement through boundaries (Figure 116 and 117 page 89). After deriving an initial layout from these movement diagrams, the exploration of light penetration into the units became important. Thus, quality of light is the main informant of the spacial quality within each unit.

The residential block's form is derived from the sun angle diagrams (Figure 91 page 72), and the placement of individual units to allow maximum sun penetration. The block is placed on top of the day care centre classrooms and lock up garages, accessing from Brown Street. This allows for more privacy, as none of the units open directly onto the street, yet overlooks the green playground of the day care centre.

Considering the District Development Proposal of a city block as neighbourhood it is imperative that the residential units function more as houses than flats. Thus every four units have a separate entrance from street level, eliminating hallways at the back of the block. Furthermore, every unit has access to a private garden and a back door, creating a more livable environment.

Brown Street function as the backbone for this new neighbourhood (Figure 60 page 63) and has clear boundaries through which users enters and exits. This is to ensure a sense of ownership and enhance security. Figure 121 on page 90 explains the concept of the city street and the usage of open space around it. Also shown is a volume model for the housing block with garages and entry foyers accessing directly from Brown Street.



Figure 122 on page 92 indicates the main design program for each residential unit type. Separating services from the living and sleeping area allows for the creation of boxes as per the volume model (Figure 121 page 90). This also solves problems regarding sewage down pipes, storm water down pipes and fire escapes as these functions are all accommodated within open service courtyards.

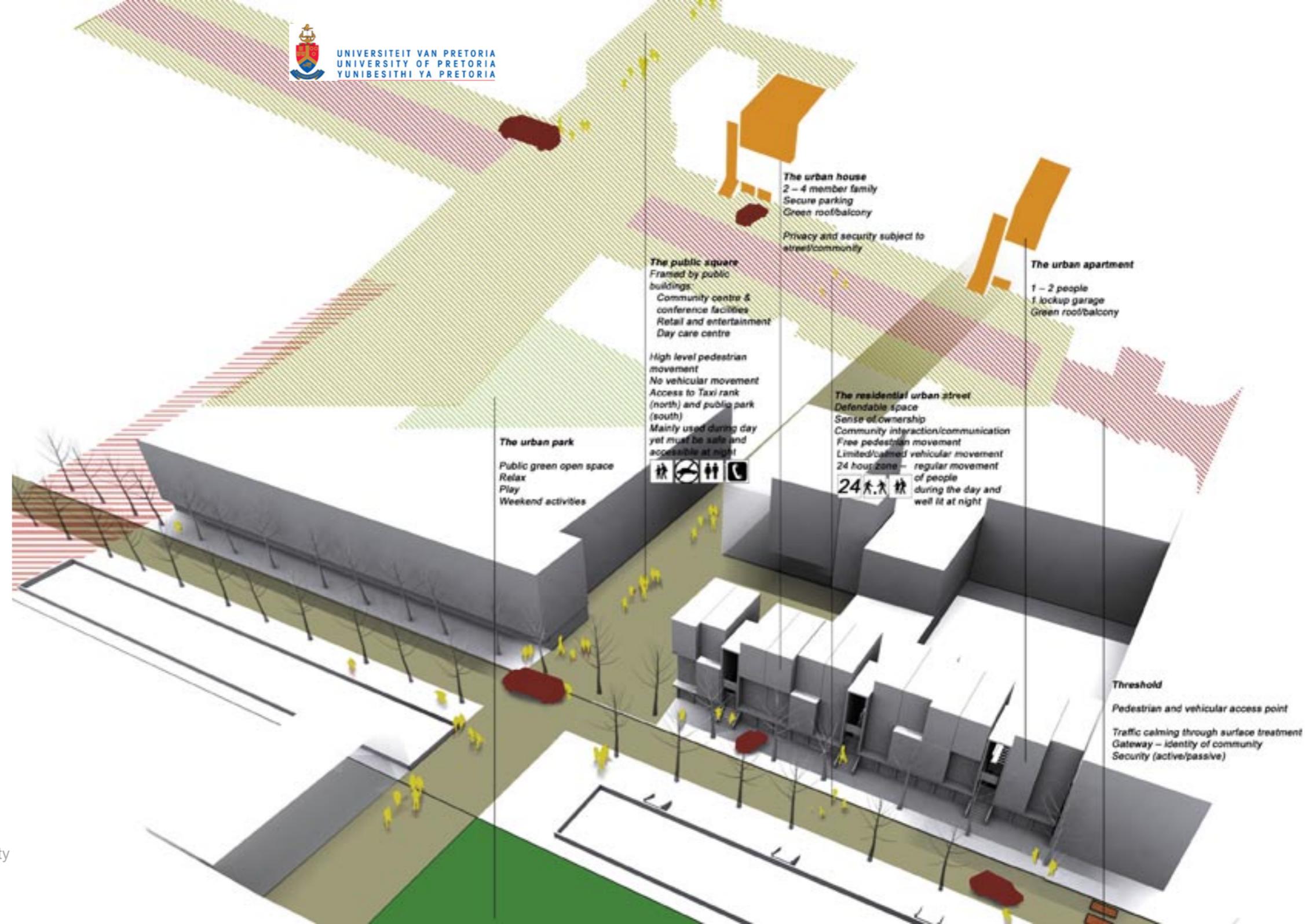
To ensure inclusiveness, the residential block consists of four different unit types: A two/three bedroom unit, a two bedroom unit, a one bedroom unit and units for disabled people or the elderly.

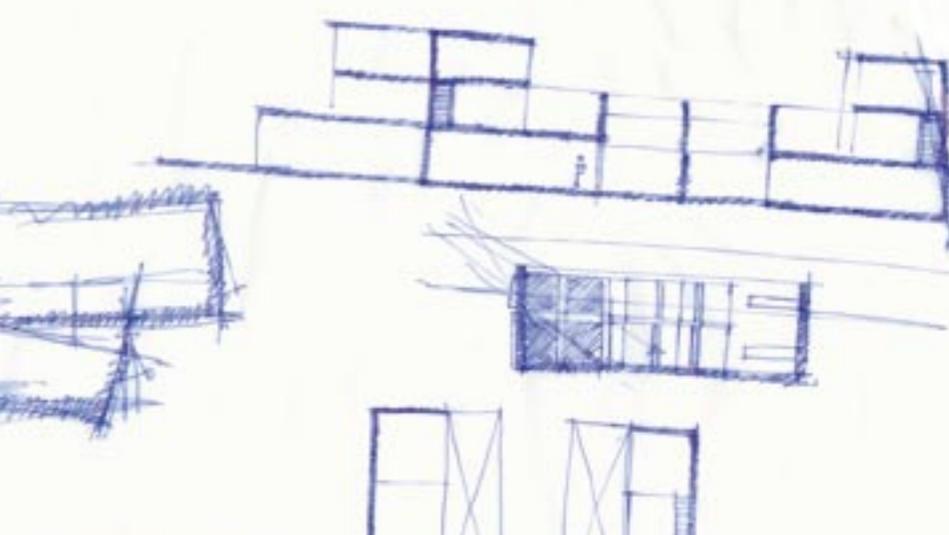
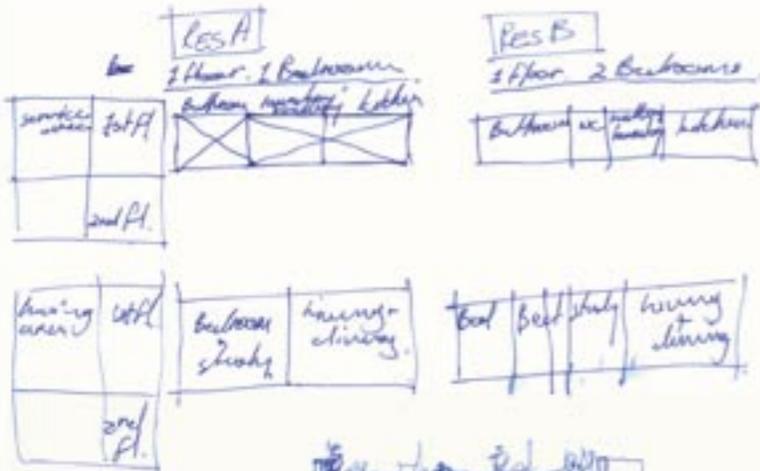
Page 88: Figure 112 to Figure 115: Initial models for housing development

Page 89: Figures 116 and 117: (top) Movement diagrams for housing development

Page 89: Figures 118 to 120: (bottom) Initial residential unit layouts derived from movement diagrams

Figure 121 (page 90): The city street as neighbourhood. Volume model of Brown Street with public and private open space identification (model by author)





study area on all three floors

Figure 122

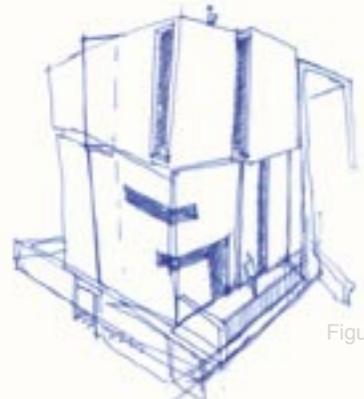


Figure 123

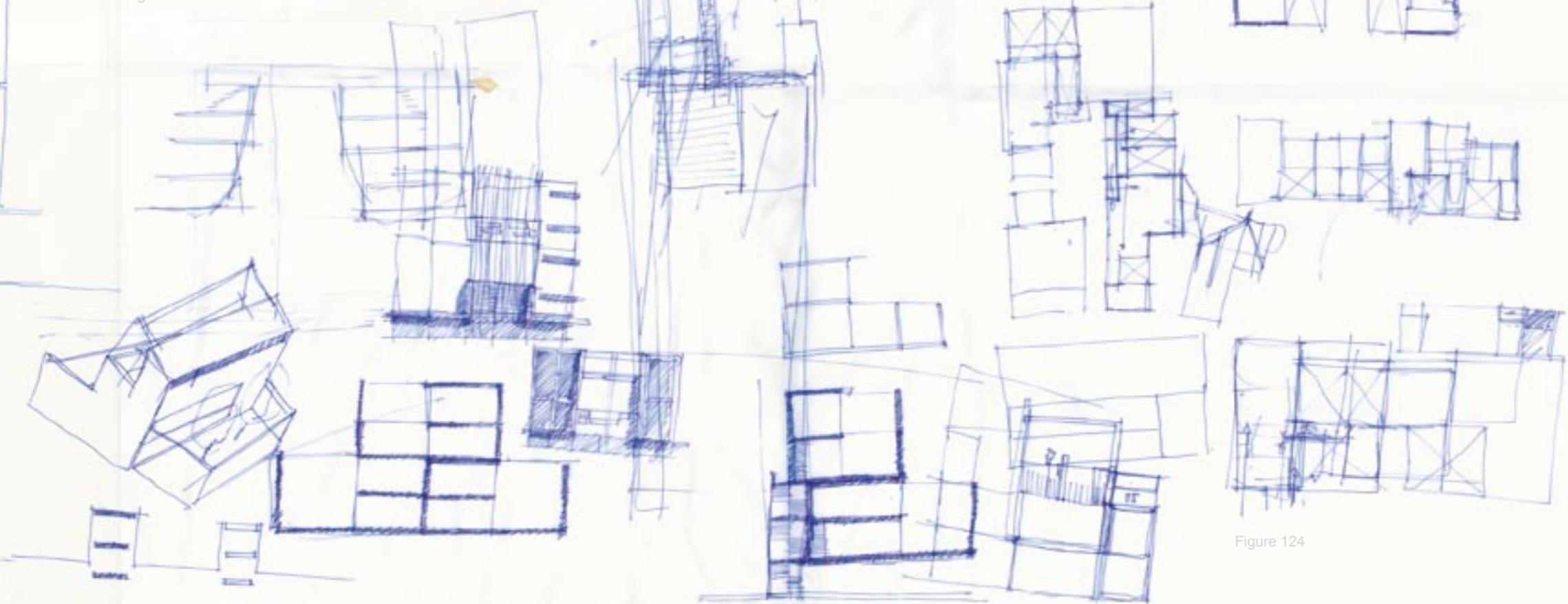
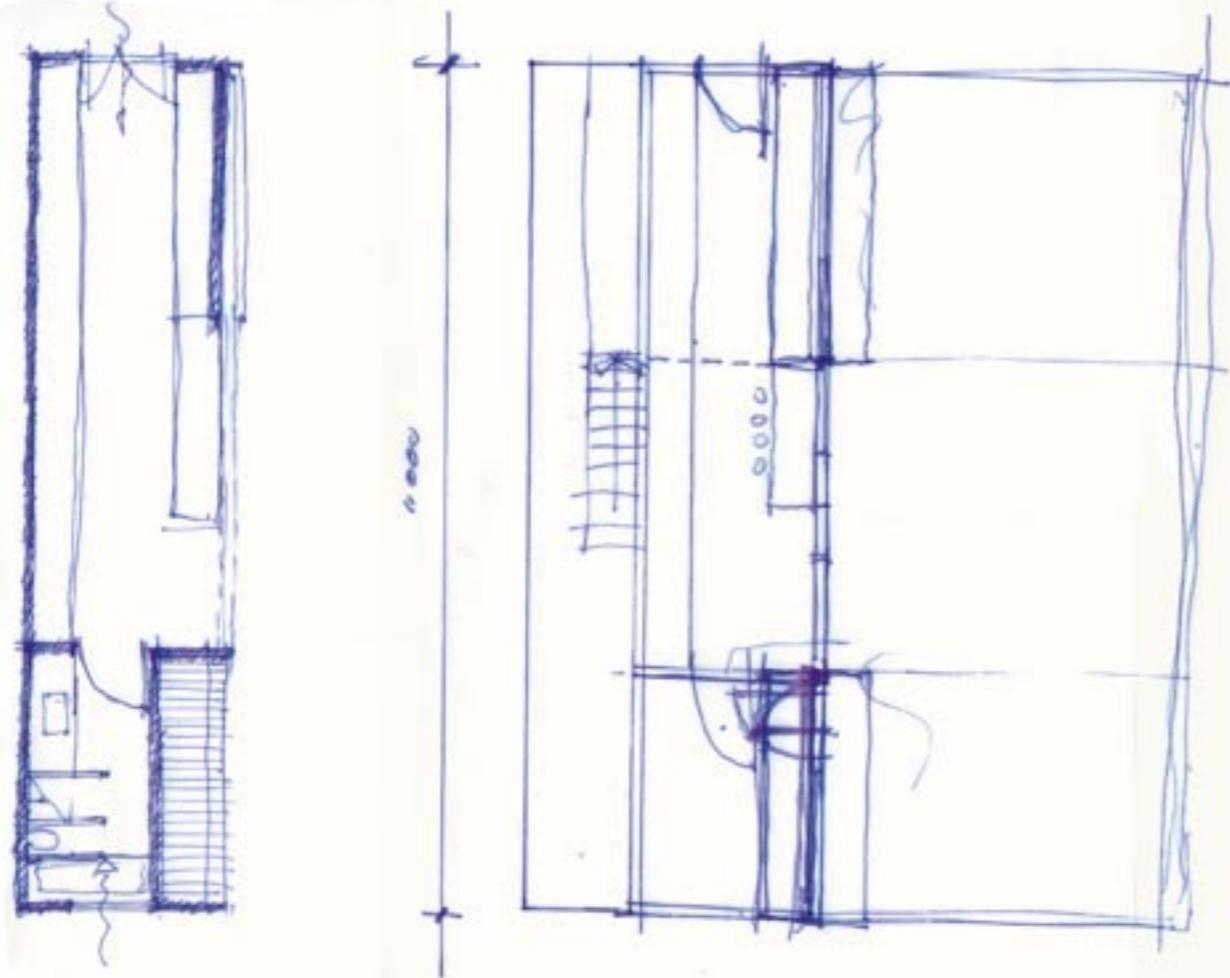


Figure 124



Rest service
core base plan

Figure 125

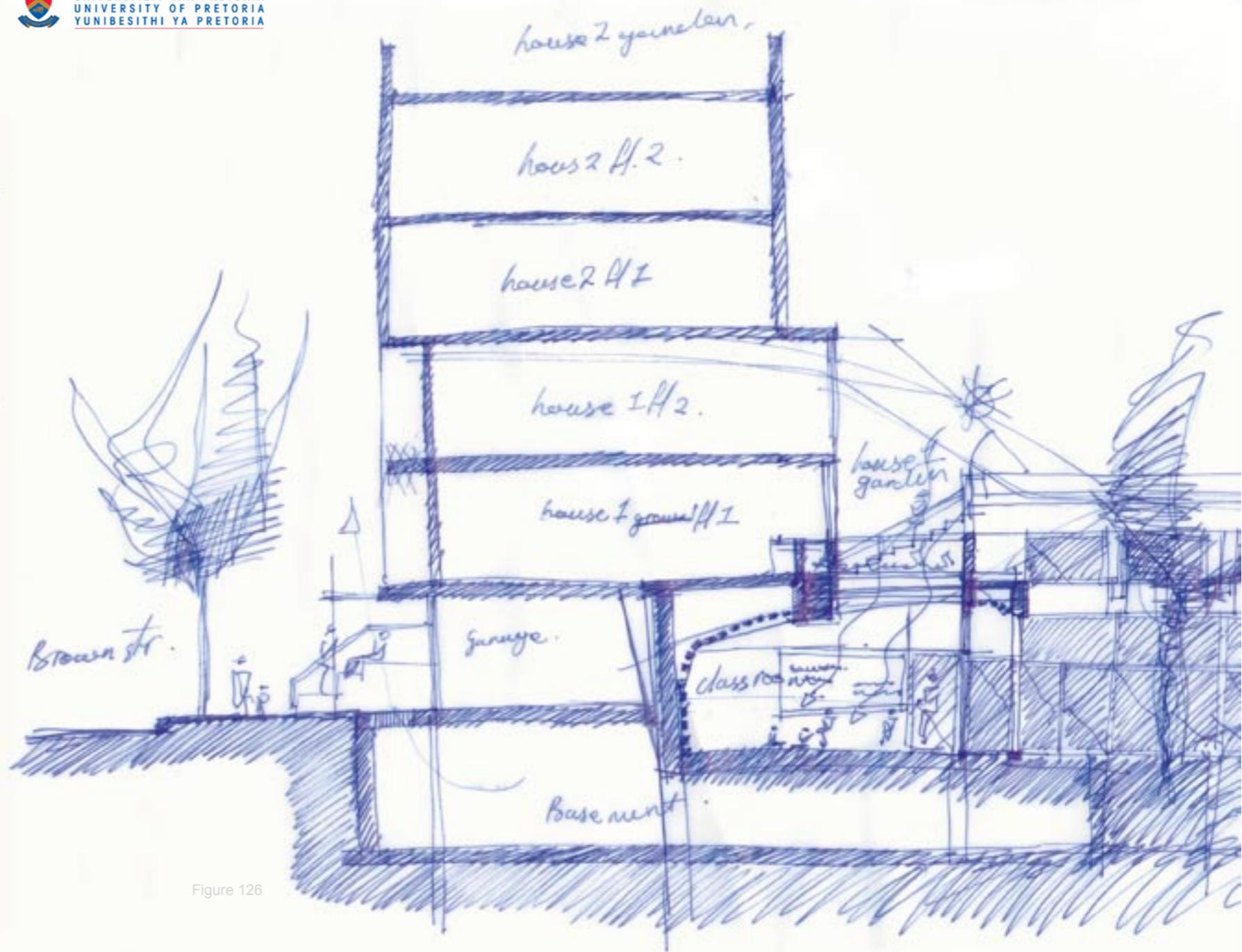


Figure 126