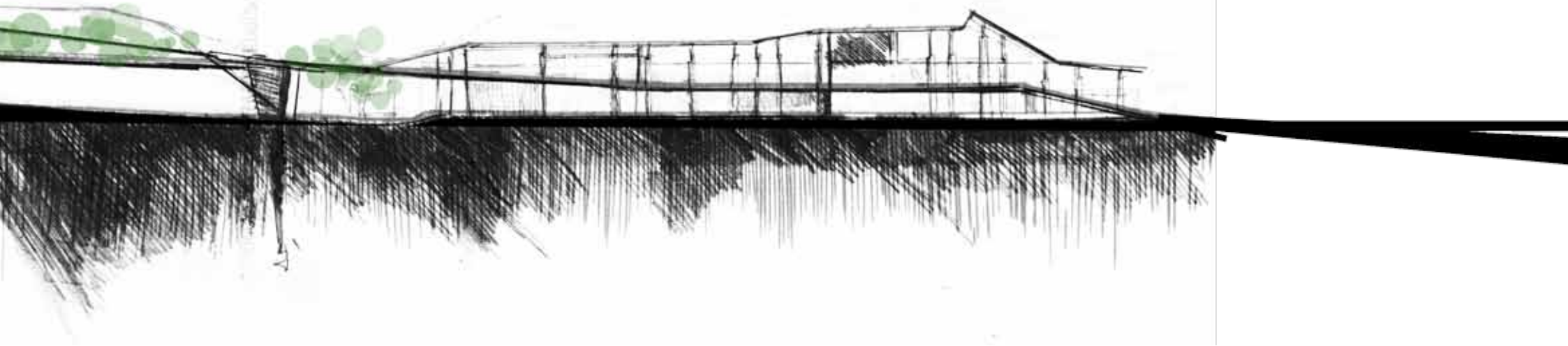
9

DESIGN SOLUTION

"Ecological design is a design of place, the place of the users, the climate, the topography and the local culture"

[Guy 2002:228]



9.1 The user + site + intervention

The architectural intervention responds to an urban framework that proposes the sustainable redevelopement of Salvokop and Transport precinct. **The design acts as a linking structure that bridges the gap, between the isolated Salvokop precinct and the city.** This will allow for a safe user friendly bridge used by the local inhabitants promoting sustainable movement practices such as walking and cycling.

Along this sky bridge a series of commercial and civic functions are proposed integrated with a vegetated park. This will ensure that the "bridge structure" becomes a multi functional urban space that encourages its use and promotes passive surveillance [Jacobs 1961:195].

The intervention responds to the cultural historical context by **reimagining the Station Square as a linking functional landscape.**

The Pretoria Main Station is addresses by **integrating and reorganizing the varies movement systems on the site** -allowing for easy interchanges between these systems. This will promote the use of public transport and enable the first time users and tourists to easily navigate between these transport systems.

The design accommodates a series of different retail spaces within the station and along the bridge that will facilitate a wide range of retailers – the shop sizes range from larger retail spaces to smaller kiosk and stalls to retail space for vendors. This will promote social and economic sustainability with in the precinct.

The carbon footprint and embodied energy of the intervention is minimised by using sustainable principles to lower its energy consumption and carbon emissions.

The embodied energy of the structure is minimised by optimising material use through innovative structural systems. Materials were chosen that emit the least amount of carbon dioxide during its manufacturing process.

The building footprint was generated from the movement patterns on site, thus harnessing the economic potential generated by the commuters moving through it.

The functions were identified as a series of skins/edges that respond to speed and its accessibility. Complimentary functions are placed next to each other, with other functions acting as thresholds between them, refer to section 6.1.2.

" Urban mobility infrastructure maximises positive social interactions and minimizes land and energy use"

[Jennings and Newman 2008:239].

A central arcade [deep edge] acts as a link between the BRT platforms on the western edge and the retail and commercial function on the eastern edge.

The western edge is a close edge with controlled access while commuters are allowed to filter through the eastern edge onto the station square.

The intervention slips in between the original station building and newer extension as an effort to link the BRT, Metro Rail and Gautrain transport systems.

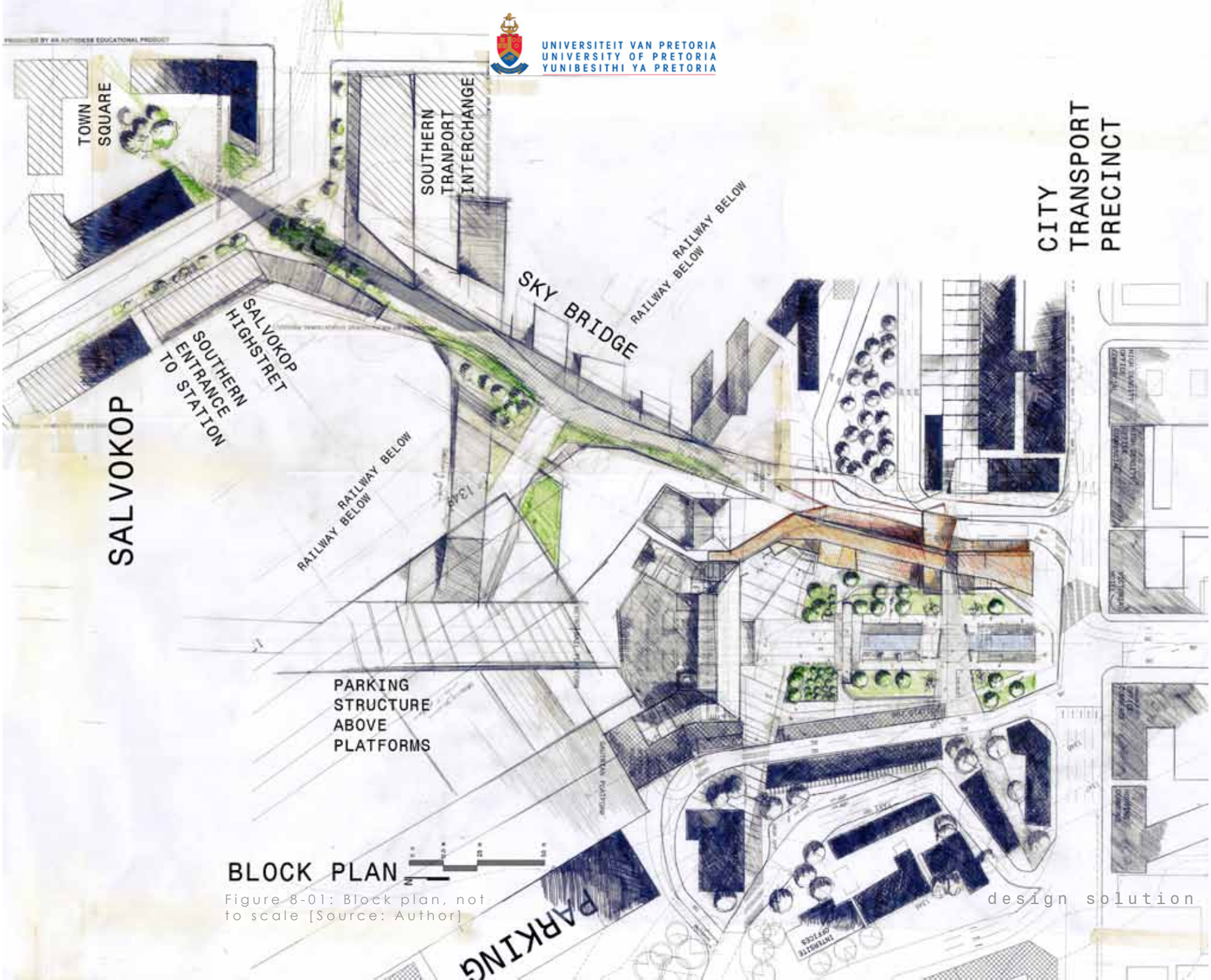


Figure 8-01: Block plan, not to scale [Source: Author]

9.2 Placement of the intervention

The intervention was placed on the western edge of the Station Square in order:

a) To ensure a direct connection to the Salvokop precinct and footbridge
b) Keep the sight lines of the Pretoria Main Station clear to ensure that the the clock tower and porte cochere of the Station are visible while moving up with Paul Kruger street.
c) The design integrates the landscape with the new intervention, placing functions on the Station Square to ensure the usage of the square.
d) Most existing buildings will be retained to minimise the carbon footprint and embodied energy the urban design and new terminal building.
e) The intervention links up with the station building to ensure that the transport systems are integrated to allow easy transfers.

Figure 8-02: Fitting building into context [Source: Author]

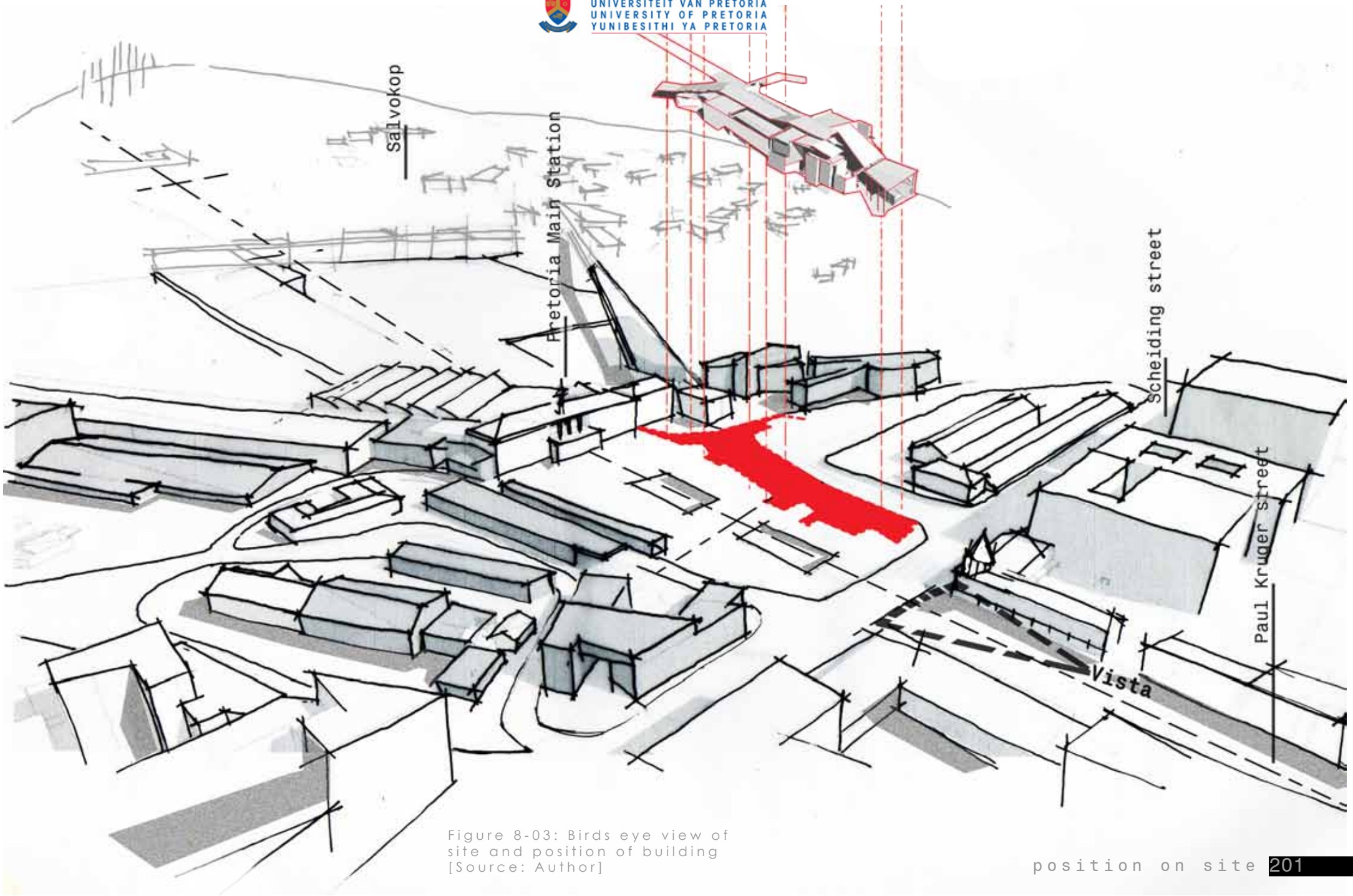


Figure 8-03: Birds eye view of site and position of building [Source: Author]

9.3 Design of the Station Square

The Station Square is reinterpreted as an important urban layer in the transport precinct of Pretoria. **The block layout ensures pedestrian access to the station using the square as a linking layer for the whole site**.

The Station Square is divided into three zones:

a) The Threshold

The paved space in front of the Main Station building acts as an approach that provides a threshold between the building and the landscape. The Station floor finish extends into the landscape providing a new link that enforces the main axis of the building and square. Two bosques are placed on the edge of this space to frame the space in a neo–classical manner.

The new BRT Terminal links with the formal space with a second entrance lining up with the edge of the formal space - creating vista into the new building from the Main Station entrance

b)The Reimagined Memorial.

The existing World War I & II memorial is reinterpreted and moved to open up the central axis and allow commuters to move through the memorial. This is integrated with a new memorial that commemorates heroes of the city of Tswhane. These engraved tiles are fixed in the patterned floor material of the walkway.

c)The Statue Plinth/Meeting Point

The Statue plinth is reinterpreted as new meeting point on the Station Square. Benches and seating are places around the space to allow for commuters to linger and vendors to sell their wares. From the new meeting point the user has the best view of the station building.

The sunken gardens are redesigned as reflective ponds. This will enforce the linear Neo-Classical quality of the Station Square. Extending the formal nature of the Pretoria Main Station into the landscape affirming the importance of the building on the site.

The existing stone walls will be kept while new seating and lingering spaces will be placed next to the ponds.

The main entrance of the BRT terminal is positioned perpendicularly to the meeting point and steps into the landscape in the same manner as the Pretoria Main Station's porte cochere. The new meeting points lines up and links with the entrance .

The eastern edge of the BRT Terminal building opens to the square providing functional spaces on the edge of the square where commuters can linger.

Figure 8-04: Proposed bridge design accommodating all users [Source: Author]

Figure 8-05: Site plan, not to scale [Source: Author]

9.4 Ground floor

The main concourse acts as a central arcade with the BRT platform on the western edge and retail functions on the eastern edge. The retail spaces on ground floor are designed to be adaptable to accommodate future changes

As one moves through the main concourse one is aware of the changes/movement outside the intervention through as series of transparent glass screens/skins. This enforces the experience of change and movement.

The station entrances are integrated with the landscape adapting to the vistas created by the new movement layer on the Station Square. These entrances are articulated as stereotomic structures, while the main entrance responds perpendicularly to the new "meeting point" within the landscape, mimicking the porte cochere of the Main Station building.

main circulation
brt platform
brt control
retail
kiosk
office
servicing
ablution

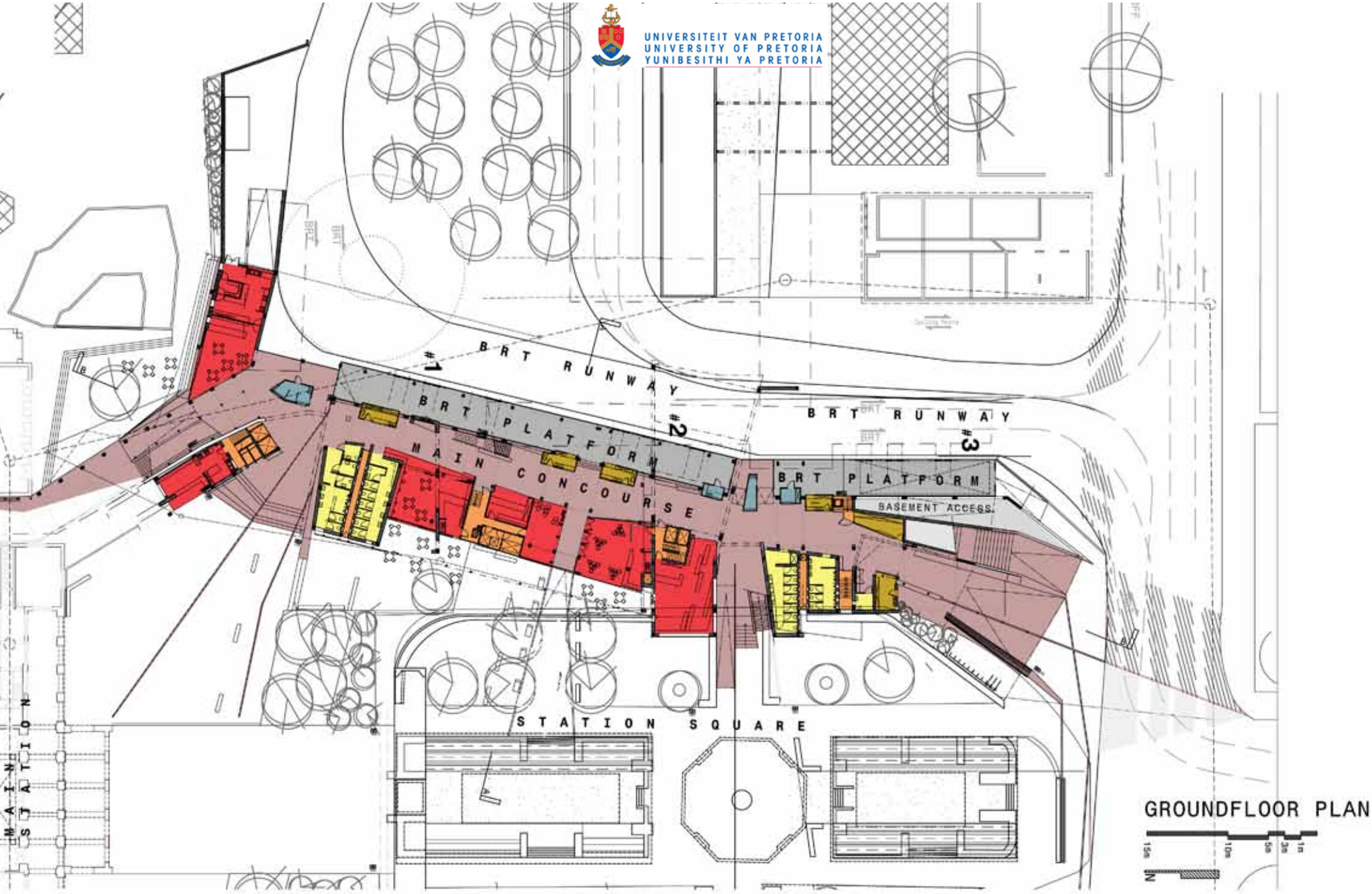
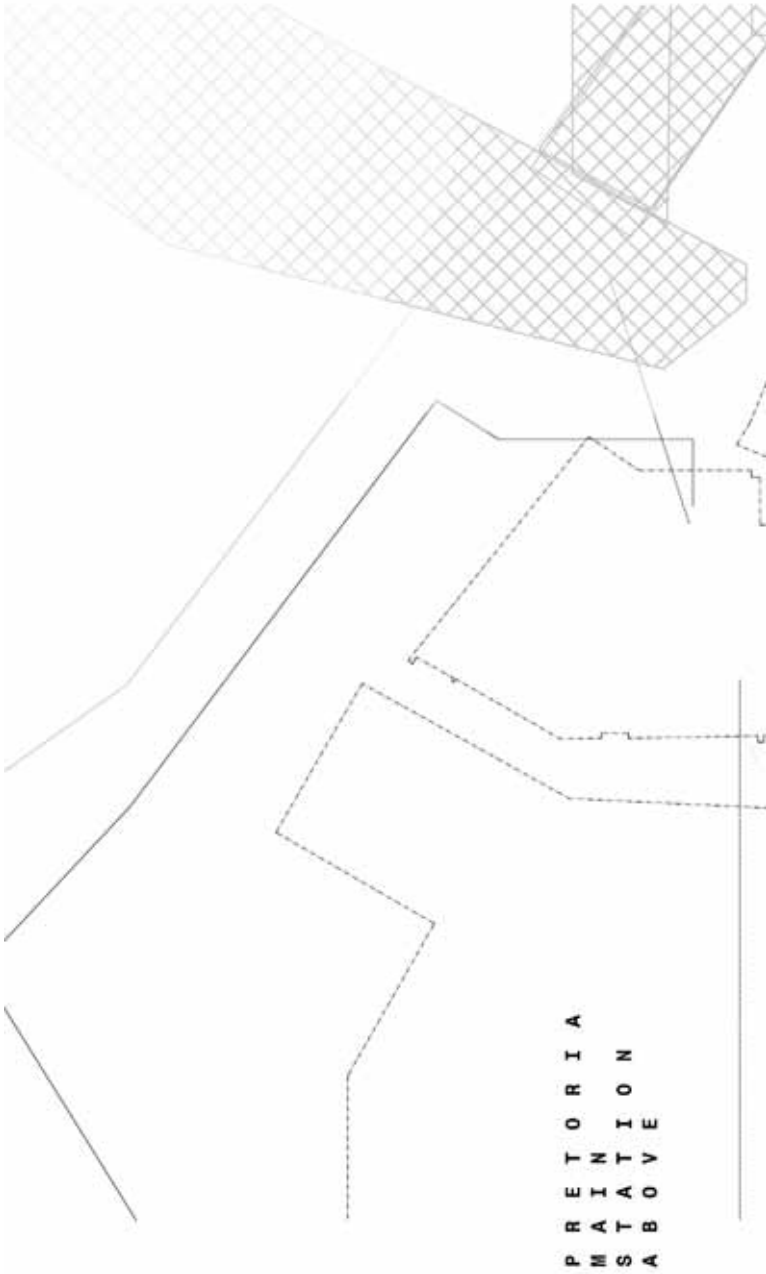


Figure 8-06: Ground floor plan, not to scale [Source: Author]

9.5 Semi-basememt

A semi-basement is constructed under the BRT platform to ensure access for services to the retail spaces as well as providing underground storage Cycling parking and shower facilities are constructed under the arcade, promoting the use of bicycles as transport medium.

main circulation
brt platform
brt control
retail
kiosk
office
servicing
ablution



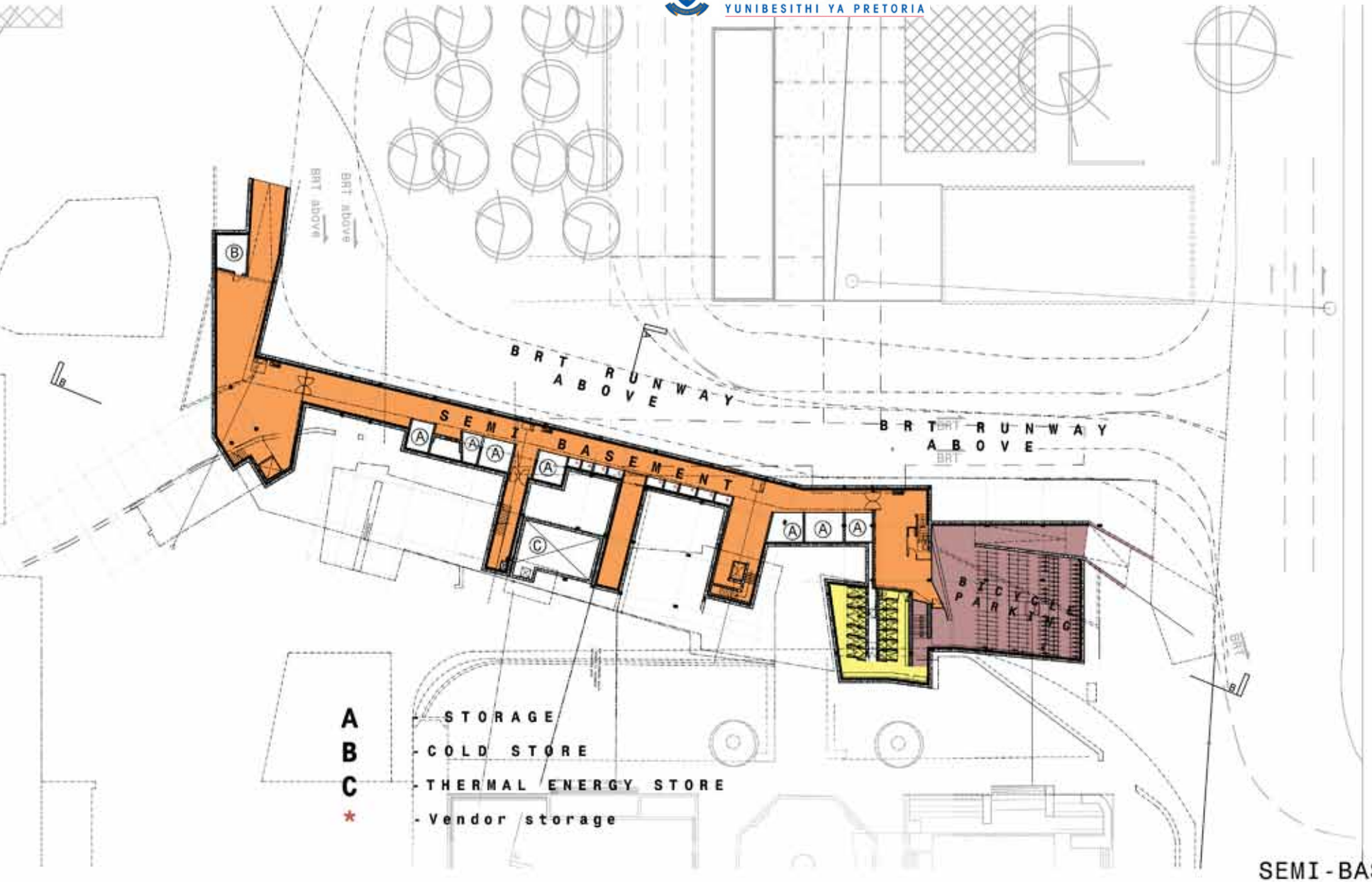


Figure 8-07: Semi basement plan, not to scale [Source: Author]

9.6 First floor

This level connects directly with Salvokop and becomes a combination between a bridge structure and a roof for the BRT station below.

A series of small shops and spaces for vendors are placed along this bridge to provide passive surveillance and harness the economic potential generated by the station and movement of people.

At the northern termination of the bridge a roof covers the walkway, merging the public bridge with the station building. Security offices and a police deck are place at one of the entrances to the station.

Office functions were identified as private den-like spaces in the conceptual investigation [refer to section 6.2.1.]To ensure privacy the office functions [Hotdesking, rentable boardroom and Management offices] are placed on the first floor to with a series of thresholds between these spaces and the the public realm.

main circulation
brt platform
brt control
retail
kiosk
office
servicing
ablution

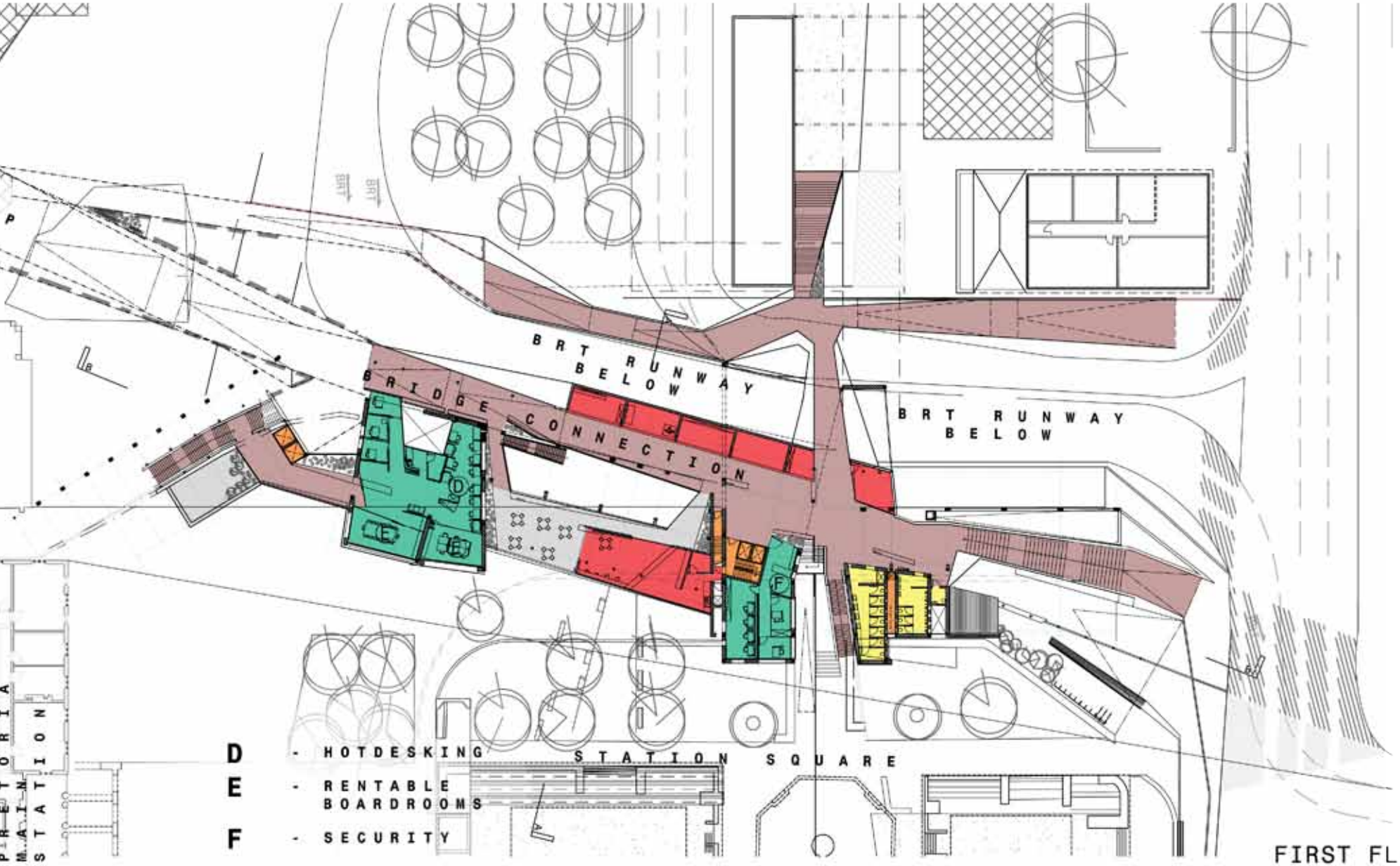


Figure 8-08: First floor plan, not to scale [Source: Author]

9.7 Second floor

The BRT control office is positioned within the stereotomic core. This signifies the importance of the function within the BRT systems as well as a ensuring more private and secure space.

It is accessed with a separate staircase that acts as a threshold for the private space. One of the lifts also directly link the office with the basement and other floors.

The office layout is designed around the manipulation of objects in space to control and guide movement through the space. These objects are articulated as a series of skins that wrap around the space.

The office consists out of two open plan office spaces where the different BRT lines [future lines 1-6] is monitored. A seperate superviser's office and boardroom allows for privacy for its users. While a series lounges and balconies allow for enough leisure spaces for the office workers.

The kitchen and boardroom are positioned close to each other ensuring that the boardroom can also be used for staff lunches.

main circulation
brt platform
brt control
retail
kiosk
office
servicing
ablution

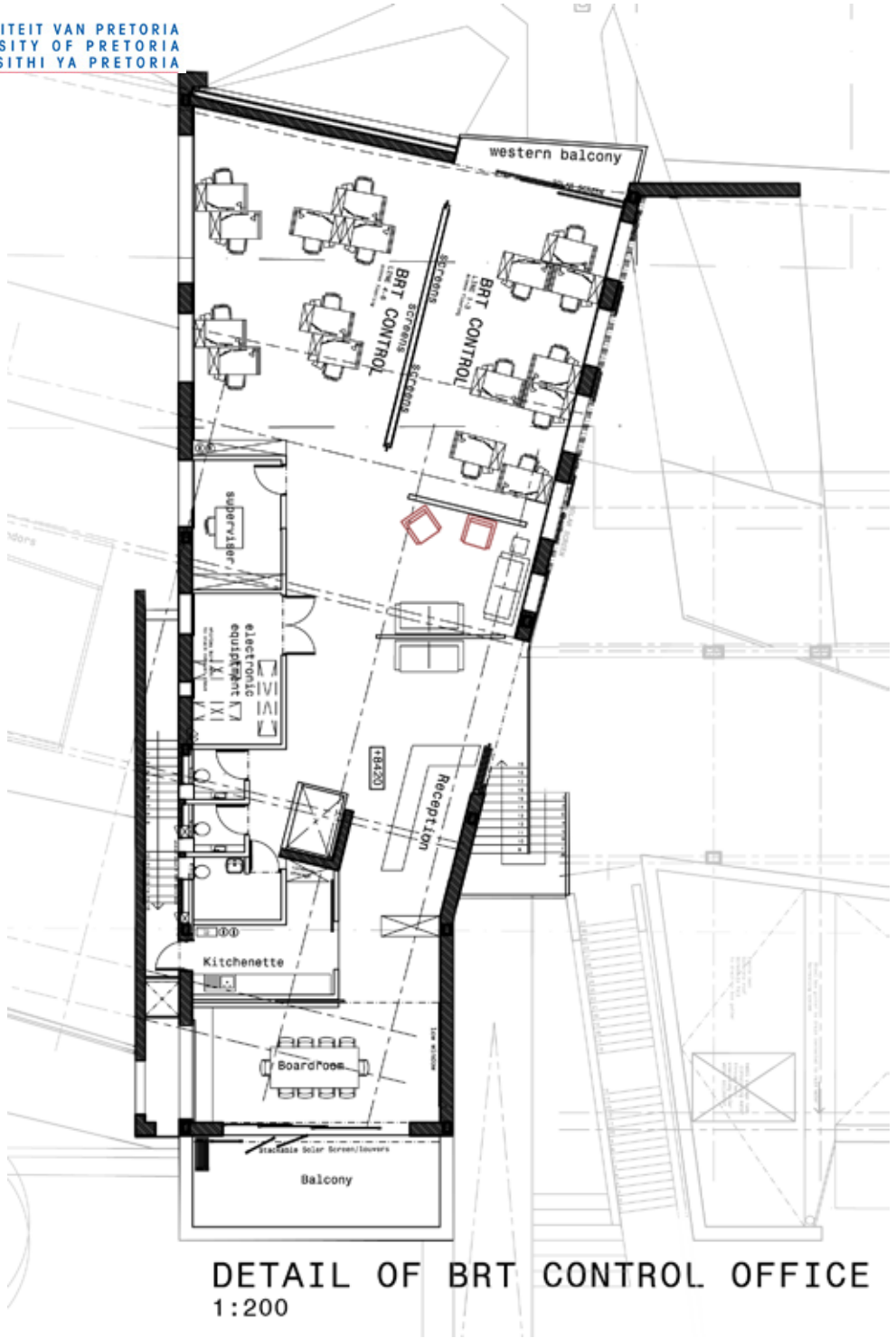
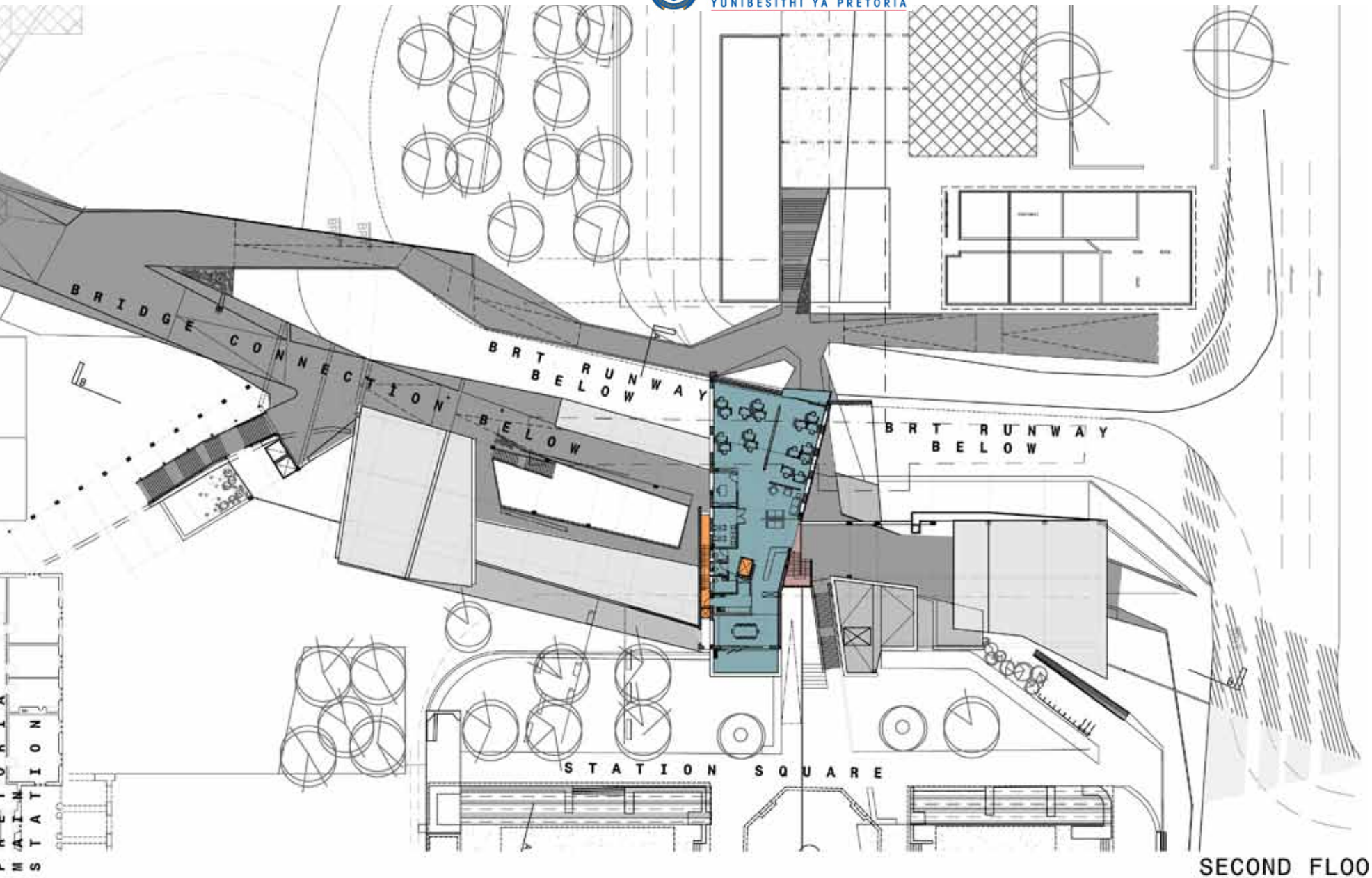


Figure 8-09: Detail plan of BRT control office [Source: Author]



SECOND FLOOR + BRIDGE

Figure 8-10: Second floor and bridge plan, not to scale [Source: Author]

9.2 Western skin/edge

The western edge of the intervention is design as a controlled edge that will only allow commuters access to the BRT busses. It is enclosed with a series of glass screens that houses the BRT platforms.

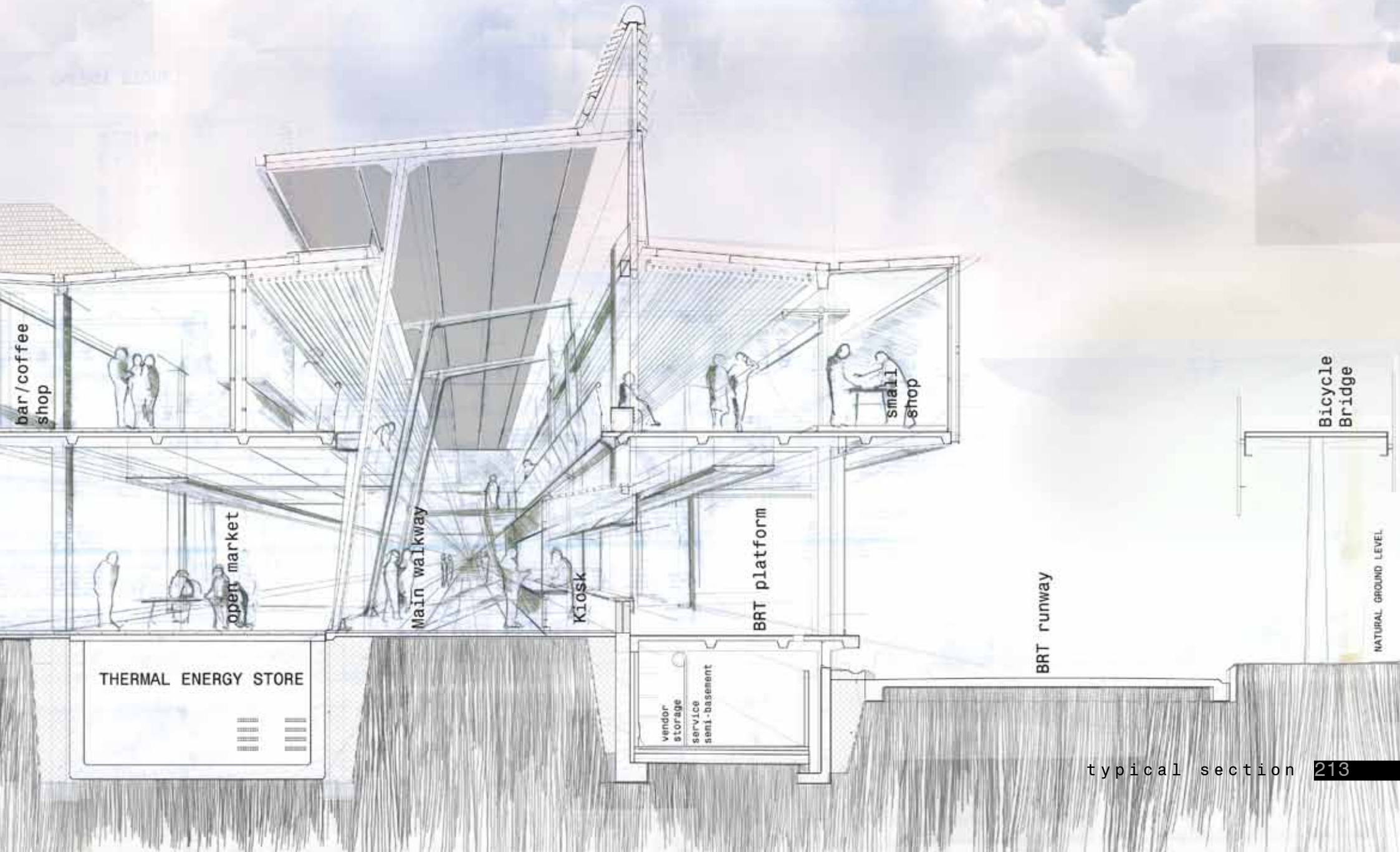
Theses spaces are visually connected to the commuters in the main concourse and the space beyond, to ensure public safety and allow the commuters to see when busses are approaching.

Kiosks are placed within this transparent skin edge that service both the commuters on the BRT platform and the commuters moving through the arcade.

Existing buildings, new trees and bicycle bridge to the west of the station serve as external skins to the station to provide solar screening.

Small stores will also provide glare control to the central concourse to ensure a comfortable internal space.

Figure 8-11: Section AA, not to scale [Source: Author]


bar/coffee shop
open market
Main walkway
Kiosk
BRT platform
small shop
Bicycle Bridge
BRT runway
NATURAL GROUND LEVEL
THERMAL ENERGY STORE
vendor storage
service semi-basement

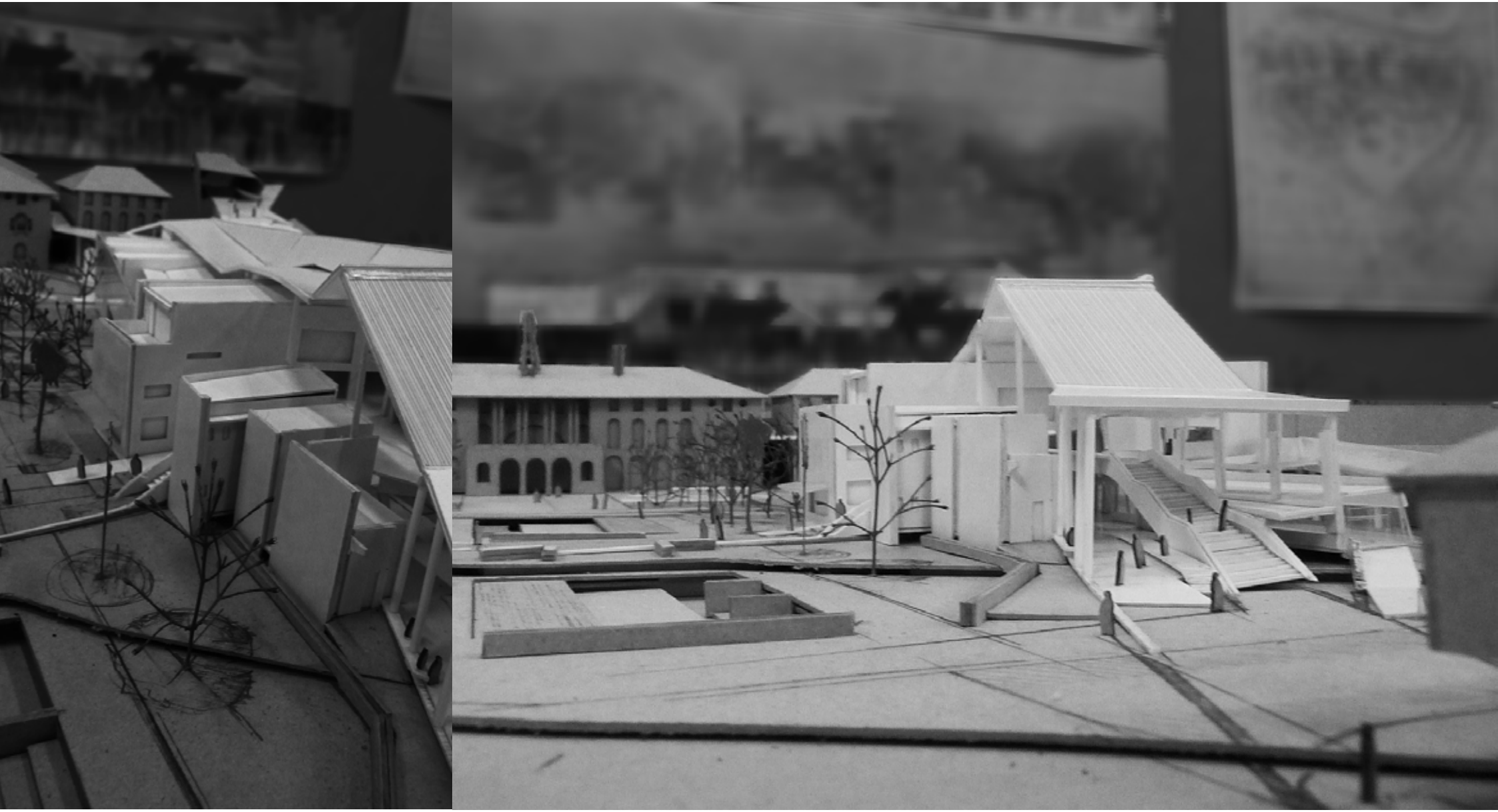


Figure 8-12: Building framing Station Square [Source: Author]

Figure 8-13: View of entrance [Source: Author]

9.8. Scheiding street entrance

The intervention opens up to Scheiding street and functions as an entrance to the bridge and the station building. The tiled floor finish of the arcade is continued as a new layer onto the sidewalk to **overlap, merge and extend the threshold between the building and the city.** As the commuter enters the building the use of a ramp up to the station level provides a slow transition between the two spaces. The staircase to the Salvokop bridge rises like a monolithic skin from the sidewalk linking Salvokop with the city.

The main roof is articulated as an inviting open structure that draws the commuter into the building. By lifting the roof above the functional spaces the intervention retains its quality as an open hollow structure.

The roof lines up with the Old Tavern next door in an effort to unify street edge and building heights.

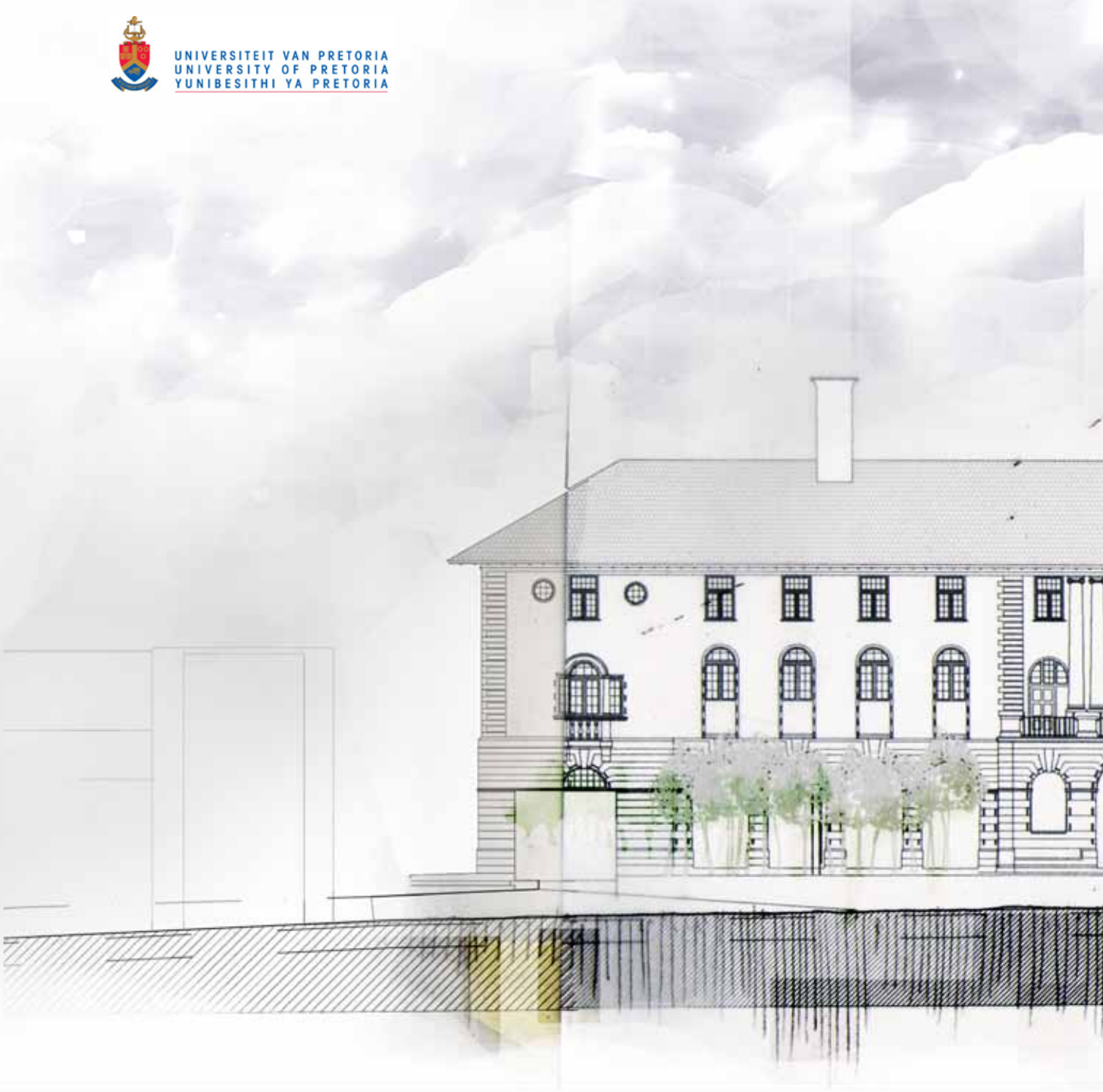
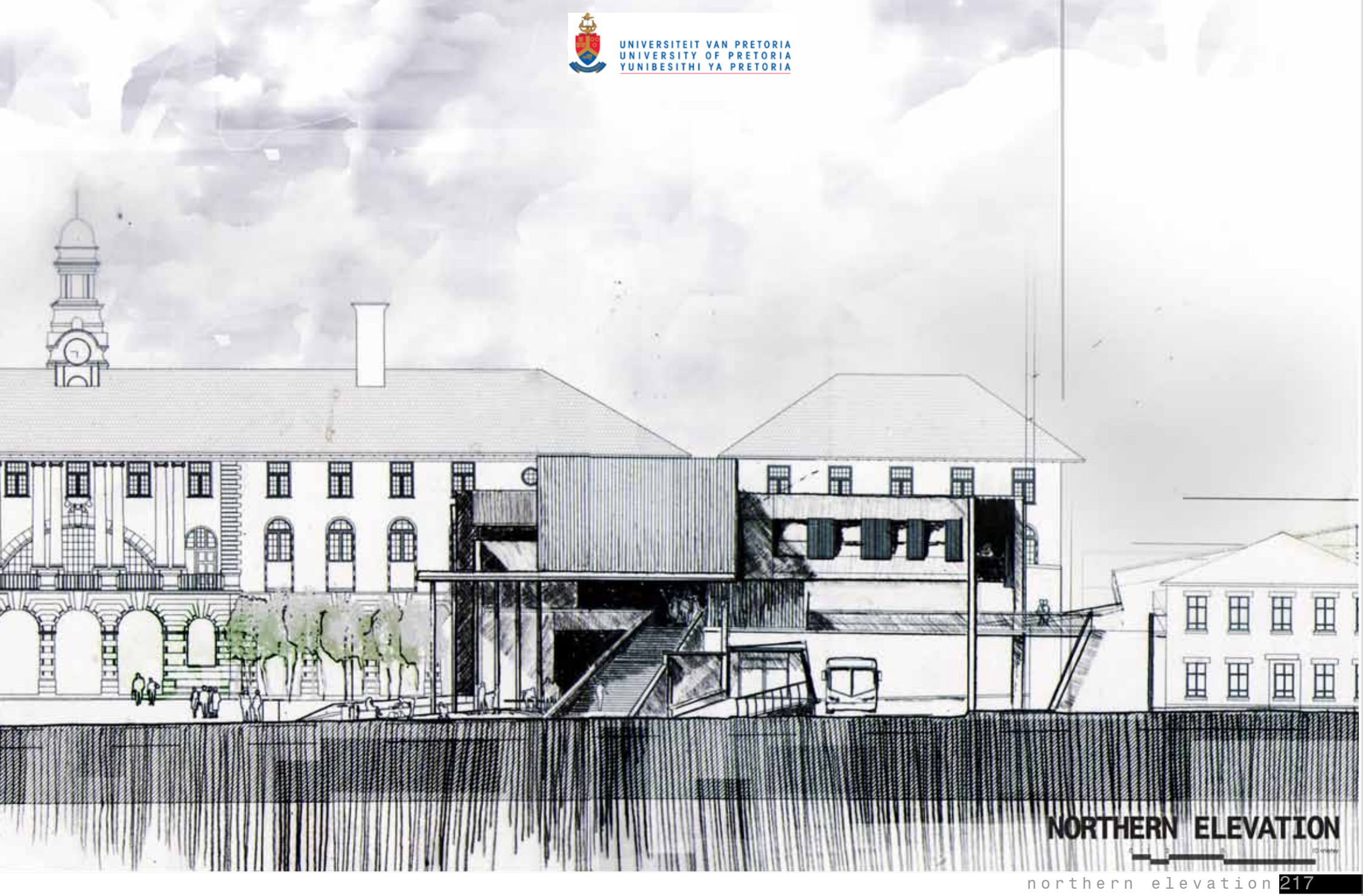
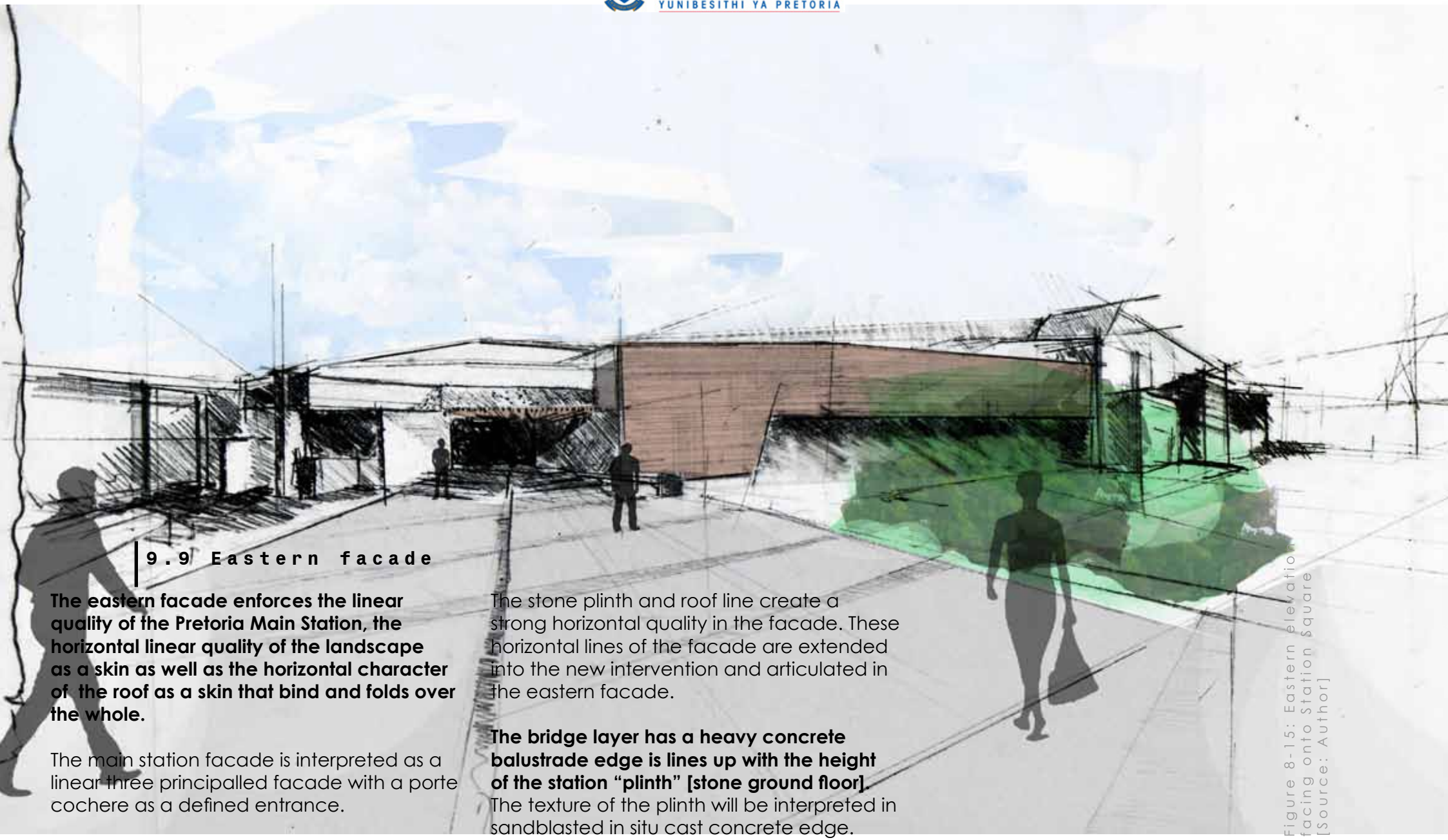


Figure 8-14: Northern elevation, not to scale [Source: Author]



NORTHERN ELEVATION



9.9 Eastern facade

The eastern facade enforces the linear quality of the Pretoria Main Station, the horizontal linear quality of the landscape as a skin as well as the horizontal character of the roof as a skin that bind and folds over the whole.

The main station facade is interpreted as a linear three principalled facade with a porte cochere as a defined entrance.

The stone plinth and roof line create a strong horizontal quality in the facade. These horizontal lines of the facade are extended into the new intervention and articulated in the eastern facade.

The bridge layer has a heavy concrete balustrade edge is lines up with the height of the station "plinth" [stone ground floor]. The texture of the plinth will be interpreted in sandblasted in situ cast concrete edge.

Figure 8-15: Eastern elevation facing onto Station Square [Source: Author]

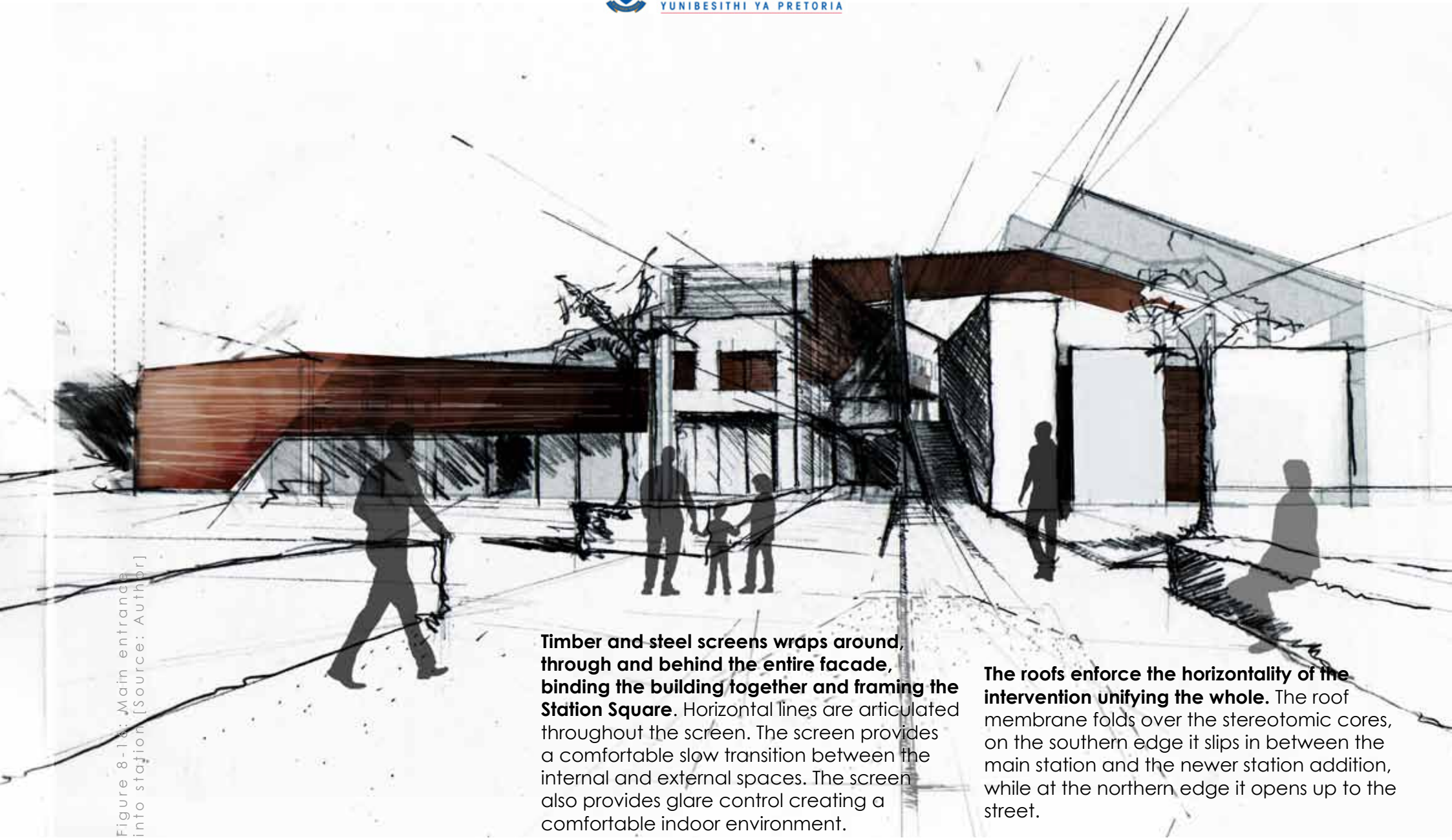


Figure 8-16: Main entrance into station [Source: Author]

Timber and steel screens wraps around, through and behind the entire facade, binding the building together and framing the Station Square. Horizontal lines are articulated throughout the screen. The screen provides a comfortable slow transition between the internal and external spaces. The screen also provides glare control creating a comfortable indoor environment.

The roofs enforce the horizontality of the intervention unifying the whole. The roof membrane folds over the stereotomic cores, on the southern edge it slips in between the main station and the newer station addition, while at the northern edge it opens up to the street.

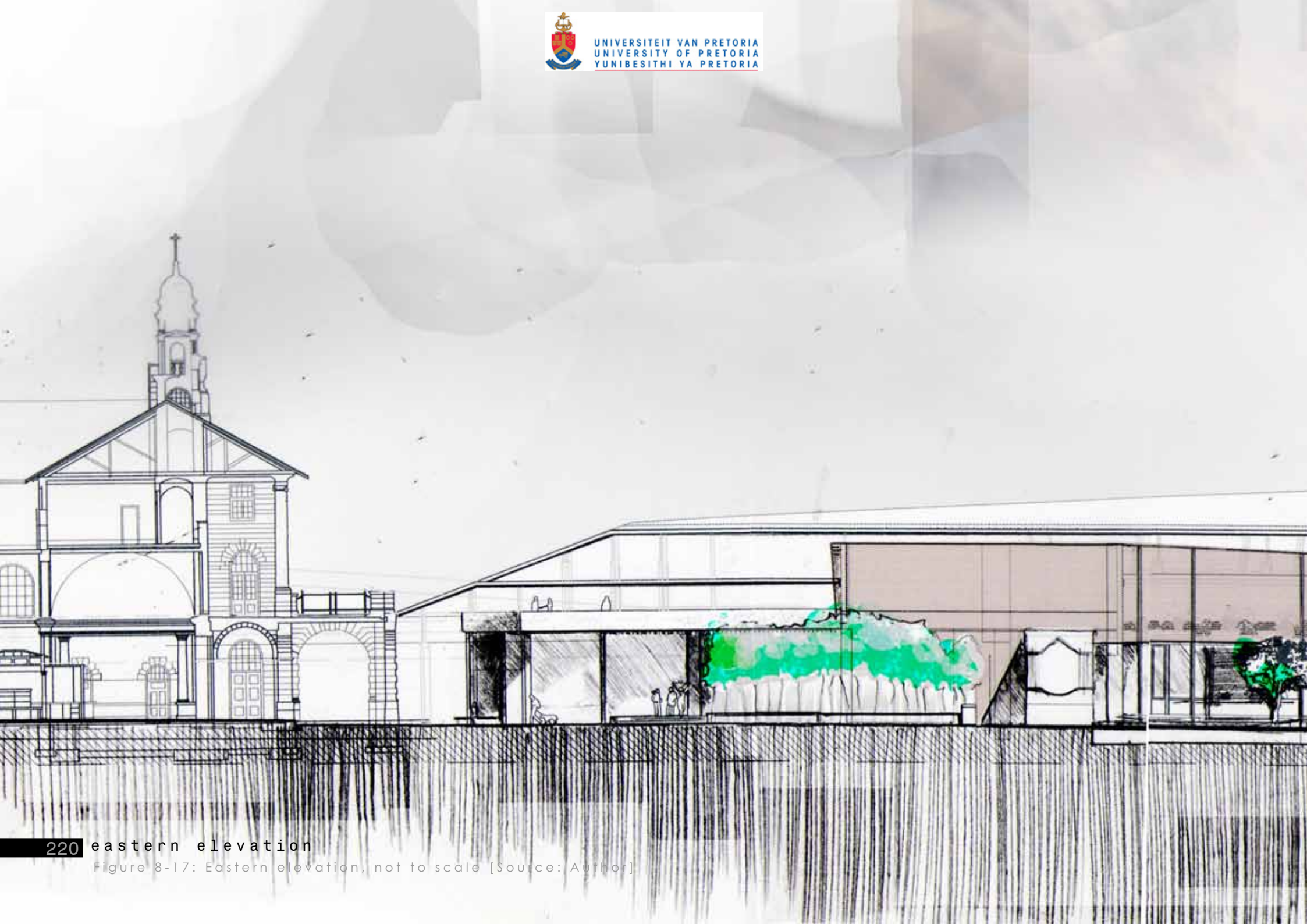


Figure 8-17: Eastern elevation, not to scale [Source: Author]

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EASTERN ELEVATION

Figure 8-18: Section BB, not to scale [Source: Author]