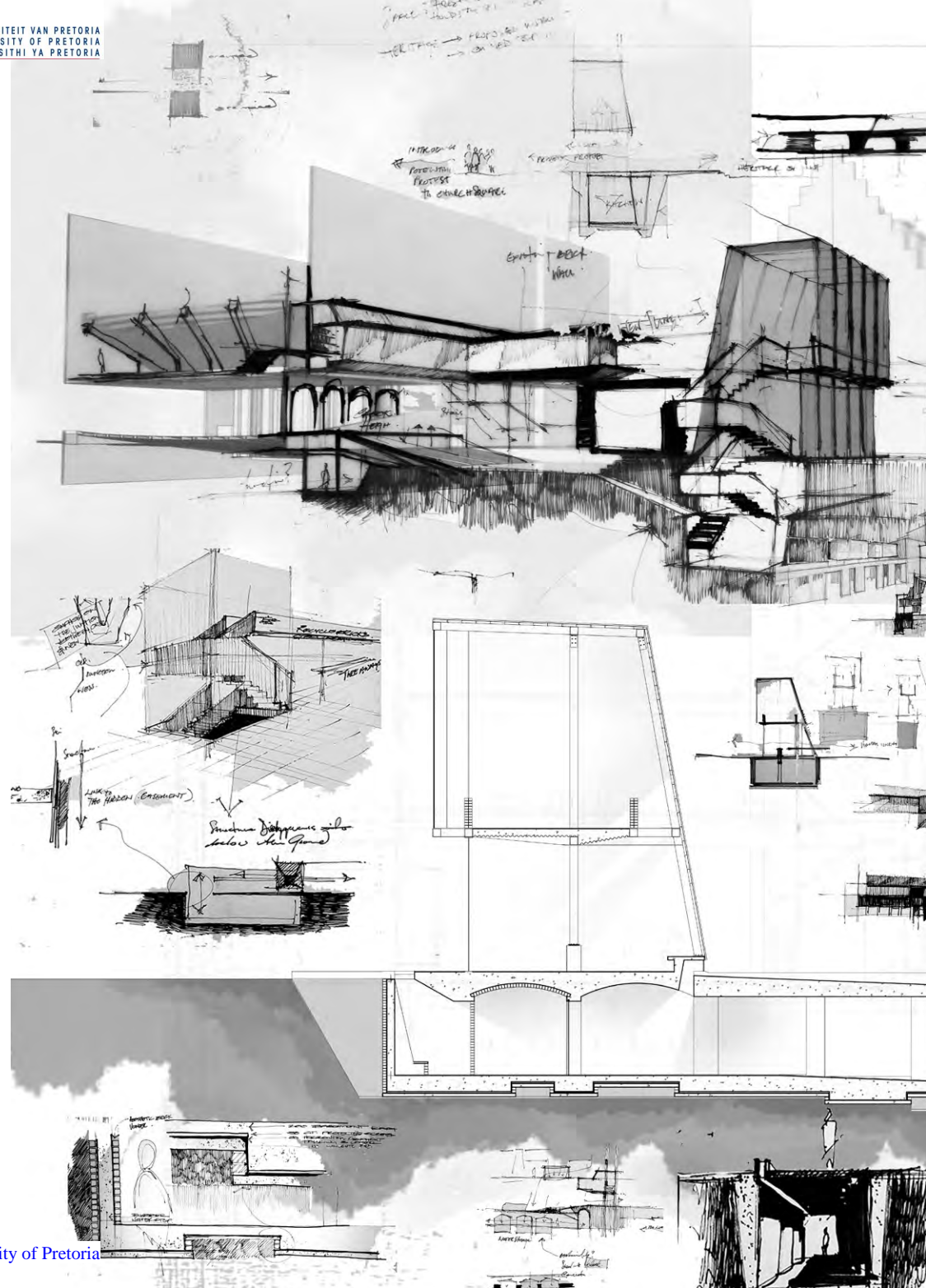
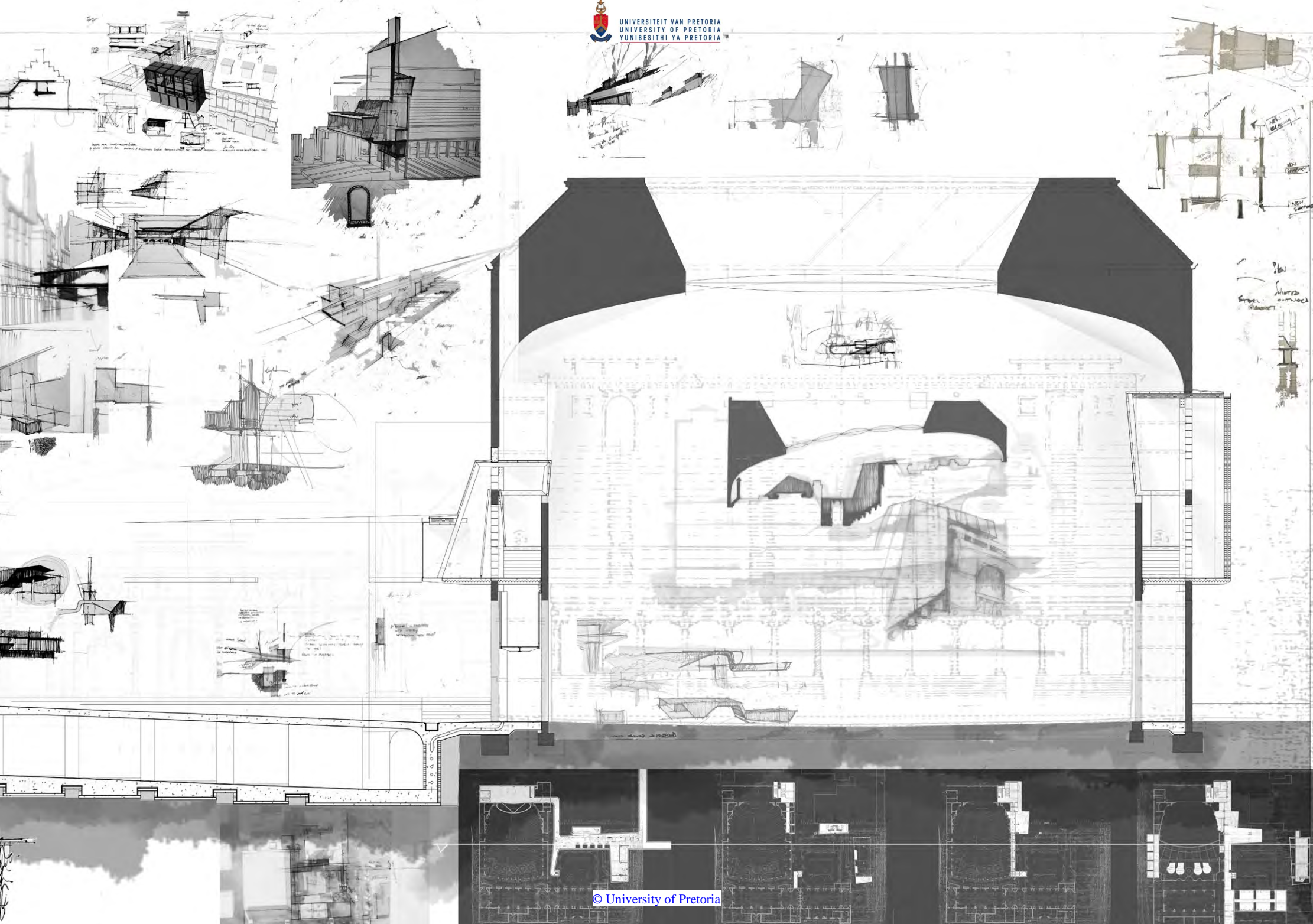


# TECHNE





The technical concept is derived from the ideas for adaptation put forward by Robert (1989: 6). These ideas aside from dealing with the memory of a place, suggest the spatial implication of the new architecture and relation to the old. The seven ideas as already mentioned deal with:

The "building within"

The "building over"

The "building around"

The "building alongside"

"Recycling materials or vestiges"

"Adapting to a new function"

"Building in the style of"

(Robert 1989: 6)

The new layer is added to the palimpsest of that constitutes the Capitol Theatre to define the way in which the structure, materiality and services relate to the previous layers. The new layer subscribes to Robert's (1989: 6) ideas and in conjunction with the prior and new functions of spaces and their conceptual position in the scheme defines the technical approach taken in the new layer and its relation to the existing. Its relation to the existing but also the

future layer that will be added in the years to come cannot only define the technical approach to the new layer. Being a less tangible concept due to not being able to account for possible future additions and change of program that the spaces will have to undergo in order to maintain a positive contribution to the city fabric.

Structural approach

Depending on the tectonic concept at the various points of the new layer the approach to the structure varies on the scale of being subservient to the existing structure to the where the structure of the new is separated from the existing structure. The separation extends to the point that the new layer at this specific point forms a new architecture. This new architecture is still derived from the response to the memory of the built and unbuilt, however, the structure employed is separate to that of the existing.

Materiality

For the most part, the existing materials will be retained on site and celebrated as part of the memory and heritage of the site. Each aspect of the materiality



of the existing can be viewed as traces (reference Anderson) with the insertion of the new layer of architecture is old traces removed and reconstituted a new manner that helps to define and direct the negotiation between the old and the new. The aim with the new material to provide sufficient contrast to the old that affords the use of the space an understanding and an appreciation for the old and the impact of the new architecture on the experience of space.

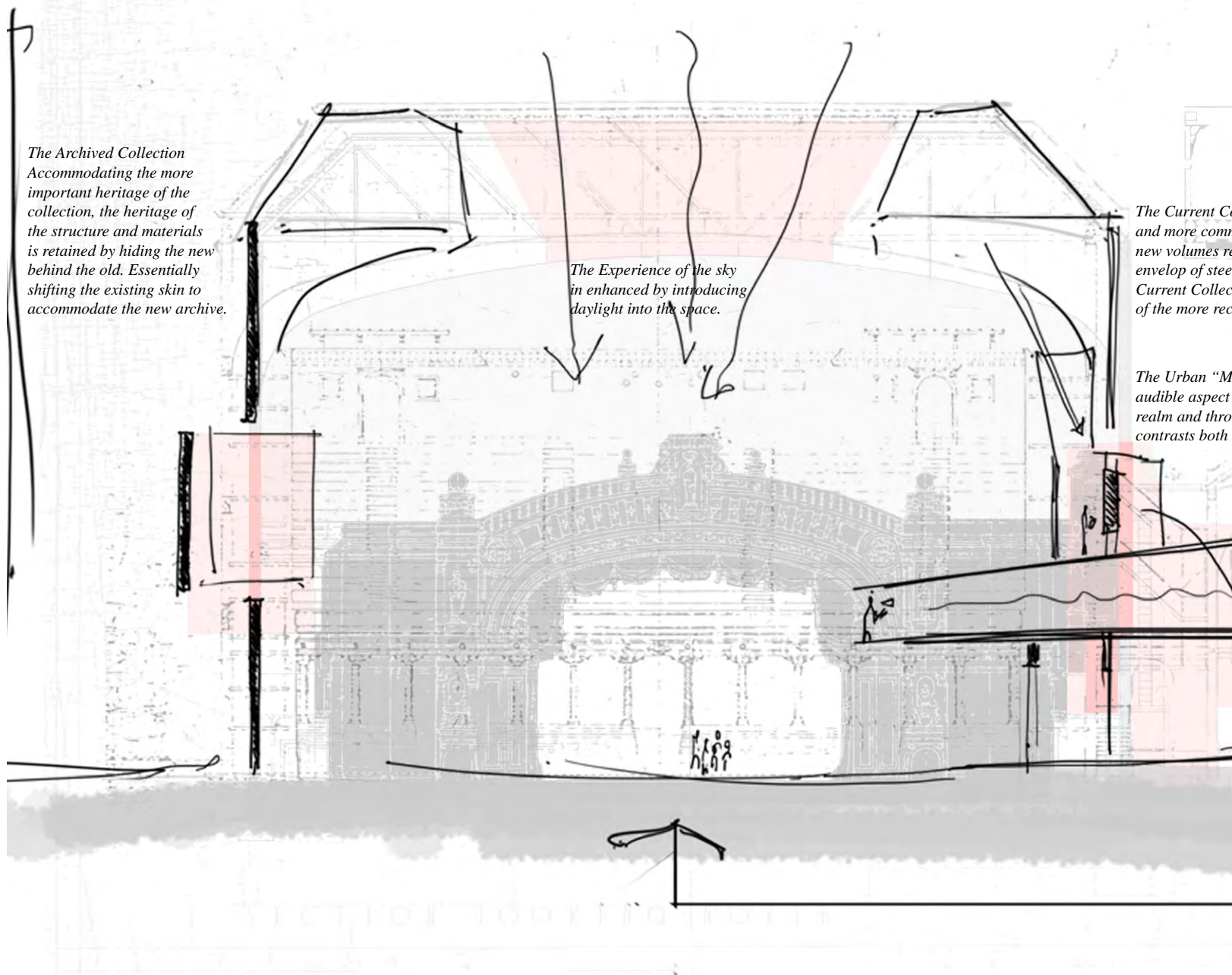
#### Services

The existing Theatre has services that are going to be retained and where necessary upgraded to ensure that the existing building meets the SANS 10400 requirements as best as possible. These services include the existing ventilation system, fire escapes and control systems, and ablution facilities. Alterations to the existing structure and services are to improve the performance of both the existing and the aid the performance of the new architecture. The new layer of architecture in terms of services is in most cases separated from the existing and this is where the primary

focus on services will lie.

**Fig. 200:** *(Previous Page) Technical exploration poster (Author, September 2016).*

**Fig. 201:** *(Next page) Tectonic concept drawing (Author, 2016).*



*The Archived Collection  
Accommodating the more  
important heritage of the  
collection, the heritage of  
the structure and materials  
is retained by hiding the new  
behind the old. Essentially  
shifting the existing skin to  
accommodate the new archive.*

*The Experience of the sky  
is enhanced by introducing  
daylight into the space.*

*The Current Collection  
and more contemporary  
new volumes require a  
envelop of steel  
Current Collection  
of the more recent*

*The Urban "Microclimate"  
audible aspect  
realm and through  
contrasts both*

M-ZIH  
SCALE

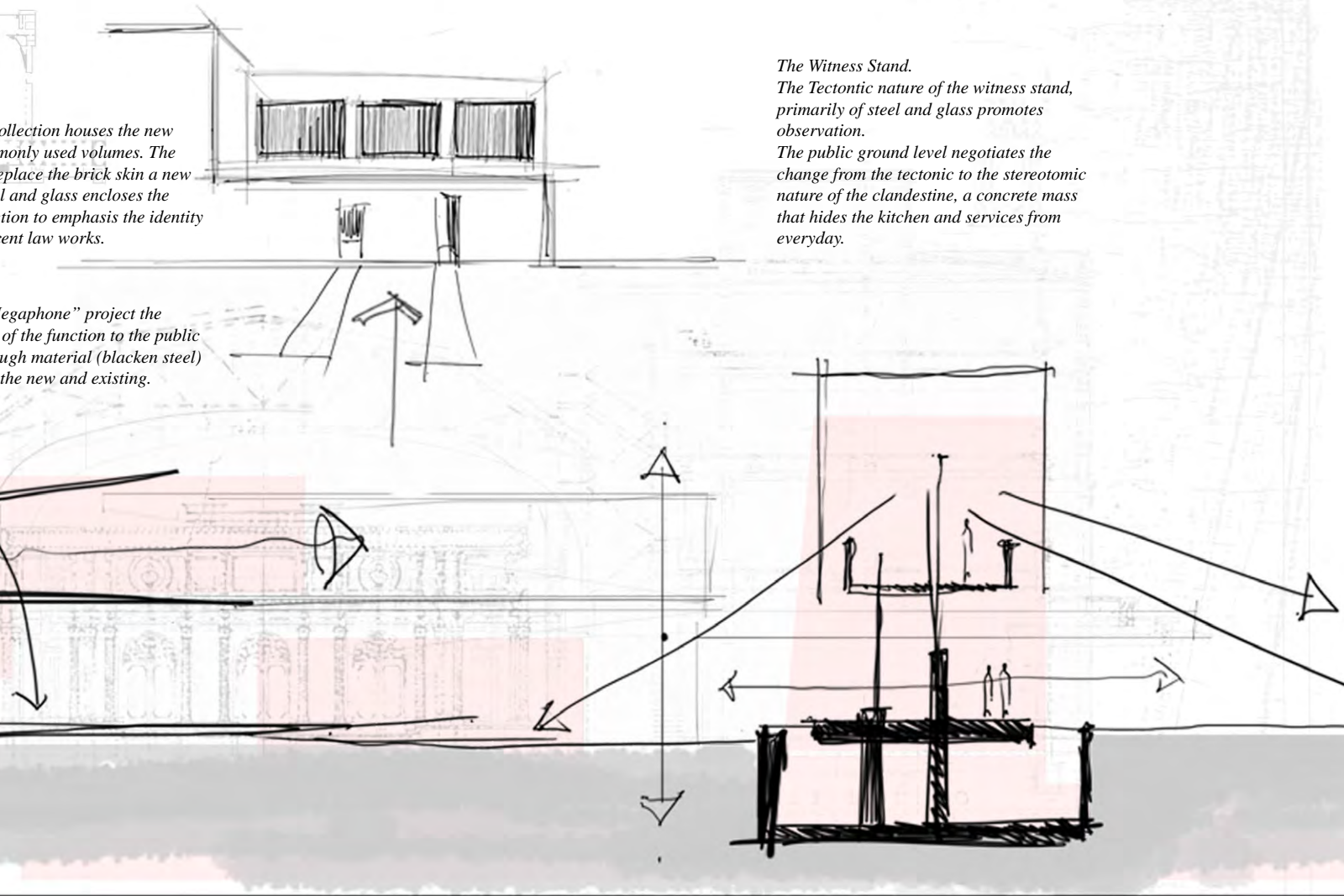
collection houses the new  
commonly used volumes. The  
replace the brick skin a new  
and glass encloses the  
to emphasis the identity  
rent law works.

"megaphone" project the  
of the function to the public  
rough material (blacken steel)  
the new and existing.

*The Witness Stand.*

*The Tectonic nature of the witness stand,  
primarily of steel and glass promotes  
observation.*

*The public ground level negotiates the  
change from the tectonic to the stereotomic  
nature of the clandestine, a concrete mass  
that hides the kitchen and services from  
everyday.*



## **Technification of the Constitutional Level**

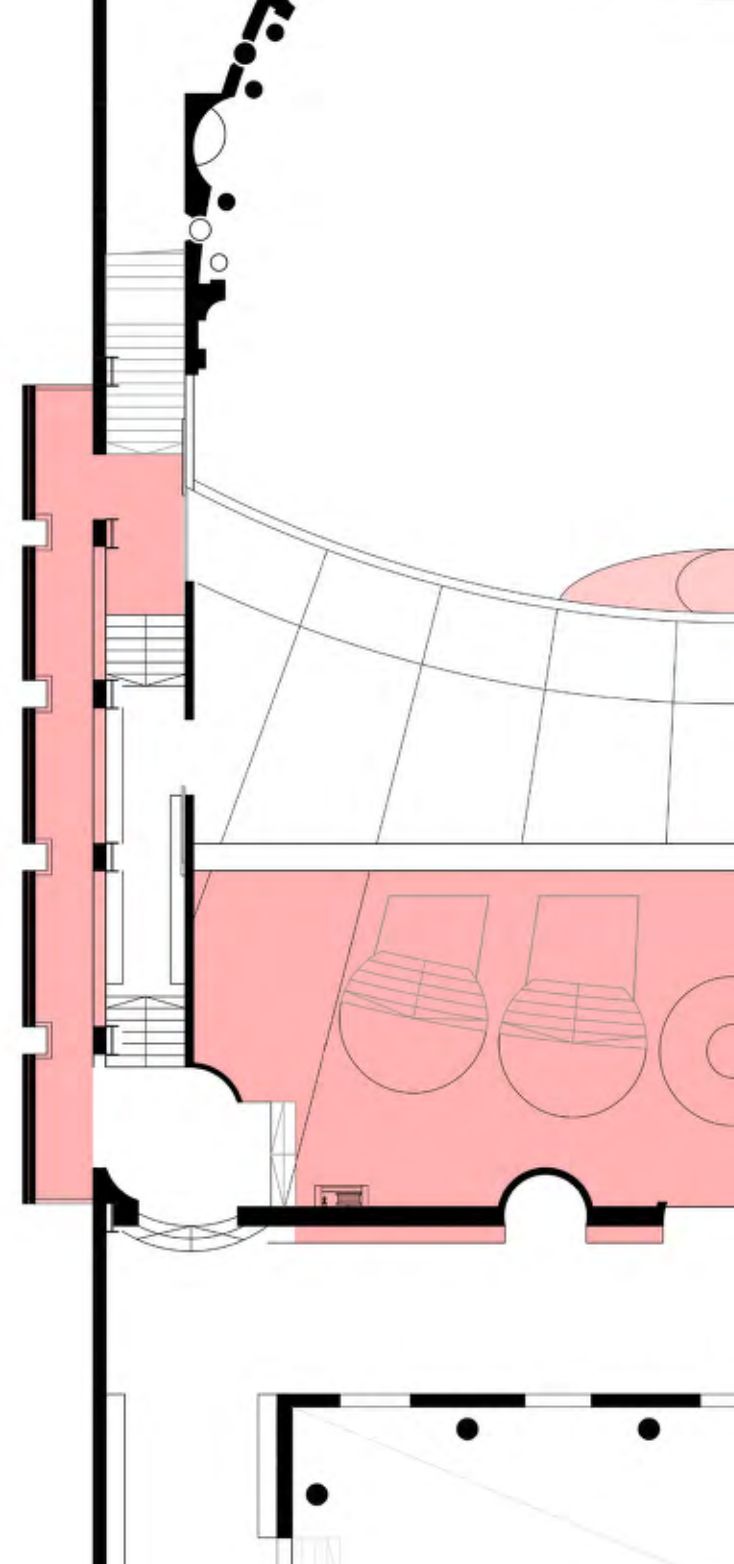
### **The Archived Collection**

The new structure that supports the shifted heritage brickwork and the archived collection has to effectively remain hidden behind the heritage. In order to achieve this the heritage brickwork is removed from the concrete and beam external theatre skin and placed in a steel frame. The frame is made up of hot rolled steel angles in order to maintain a low profile when viewed in elevation. The angles then wrap around to what is the back of the brickwork to where they are then attached to the new steel structure that projects through the newly made openings in the external skin of the theatre. The floor of the new structure is a permanent shutter concrete floor that is suspended between the beams and columns of the existing structure of the theatre skin. The new structure is supported in the same way as the Current Collection Space.

The idea of hiding structure suggests the materiality be focused on the recycling

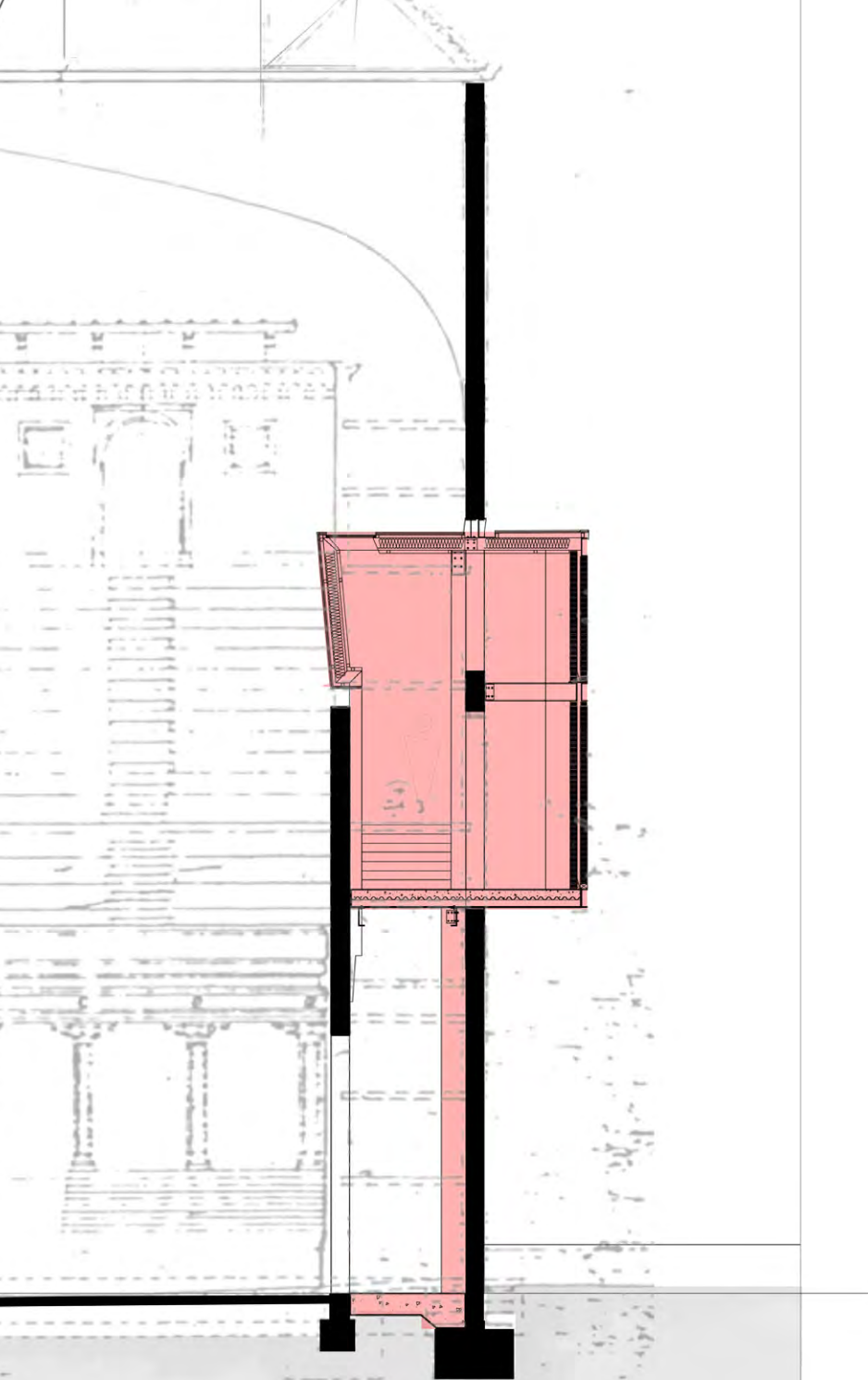
of heritage materials however where this focus cannot be achieved the steel and glass of the new structure as well as the roof and gutter details have to be discreetly articulated so as not to divert the focus from the heritage fabric. This discretion applies mainly to the external condition. Internally where the new structure cannot be hidden behind the heritage fabric, it is treated as external roofing condition with black standing seam metal roofs to emphasise the idea of the extension of the roofscapes.

The internal environmental conditions of the internal space need to be well regulated to ensure the preservation of the volumes being housed in this collection. In order to maintain this environment, this volume's climatic conditions are to be aided by the upgraded HVAC system that will service the auditorium space and the rest of the theatre. Direct sunlight to be avoided in this area as much as possible and thus the inclusion of skylights into the internal roof that allows the ambient light from the auditorium space to filter into the archived collection space.



**Fig. 202:** *The Archived Collection plan*  
(Author, September 2016).





**Fig. 203:** *The Archived Collection section looking south (Author, September 2016).*

**Fig. 204:** *(Above) Foundation detail (Author, 2016).*

**Fig. 205:** *(Right) The Current Collection, section looking south (Author, 2016).*

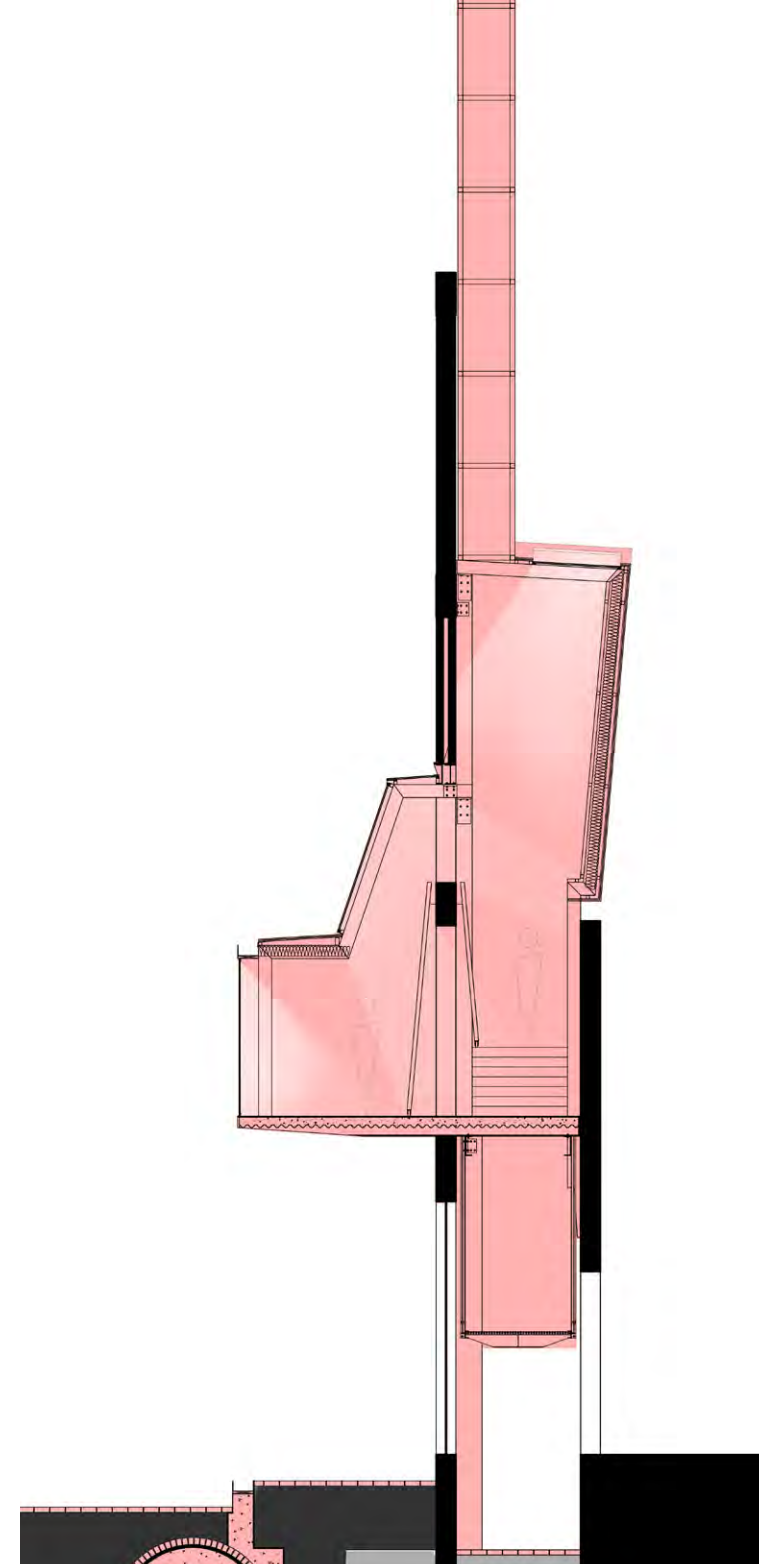
### The Current Collection

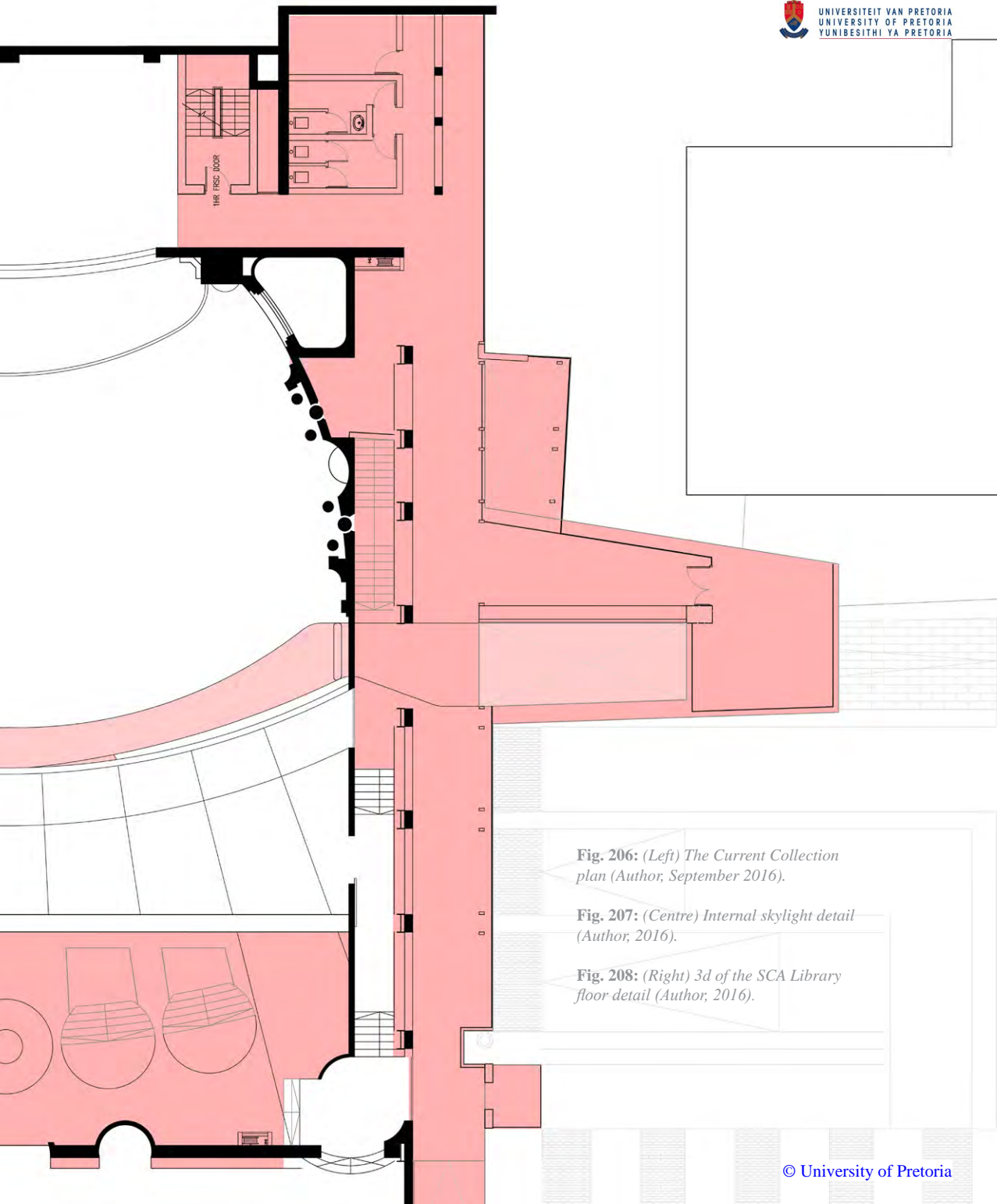
The internal condition of the architecture for the current collection mirrors that of the archived collection space. The external portion of the architecture for the current collection that replaces the heritage fabric of the theatre skin brings contrast between the old and the new. The simplicity of the form and the structure of the new layer of architecture reduce the visual noise so as not to distract from the relationship between the new and existing.

The structure itself is made up largely of repeating hot-rolled steel rectangular hollow section frames that are supported by a steel beam and also tied to the existing at various points depending on the position of the portal frame in relation to the existing. The beam that supports these frames is connected to columns that are positioned immediately behind the existing columns of the external

skin of the theatre. The column is supported by a raft foundation that is poured on top of the existing foundations of the auditorium.

The majority of the floors consist of permanent shuttered concrete floors except for the projection that accommodates the urban megaphone and balcony. This is an in situ cast concrete floor that is supported by three concrete beams resting on four columns, three cast against the existing columns of the external skin and the other column that is situated next to the public ablutions for the courtyard space. The spaces are enclosed by ceramic fit patterned glazing that treats and controls solar ingress without the need for shading devices that begin to add to the visual clutter of the new architecture.

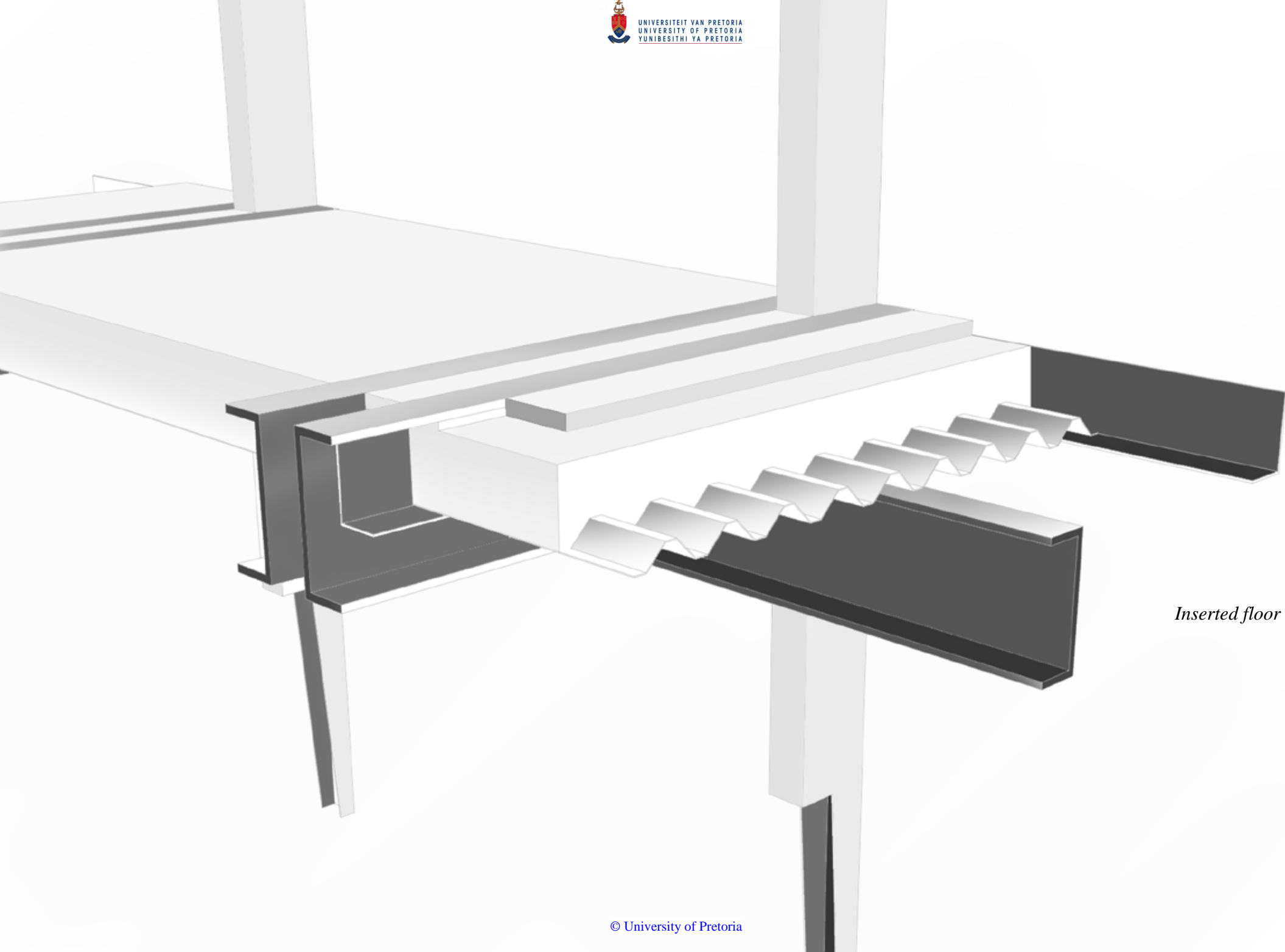




**Fig. 206:** (Left) *The Current Collection plan (Author, September 2016).*

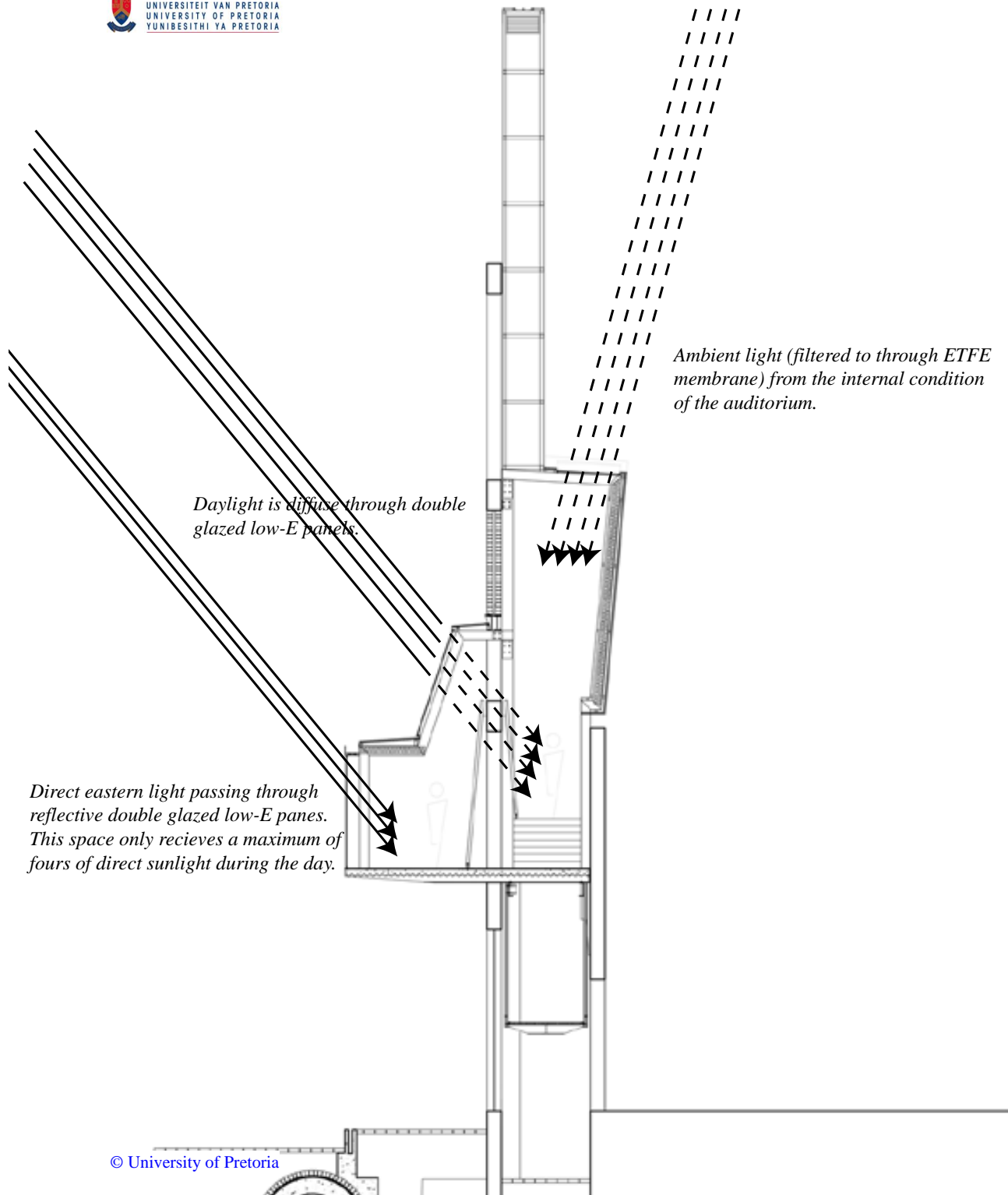
**Fig. 207:** (Centre) *Internal skylight detail (Author, 2016).*

**Fig. 208:** (Right) *3d of the SCA Library floor detail (Author, 2016).*



*Inserted floor detail*

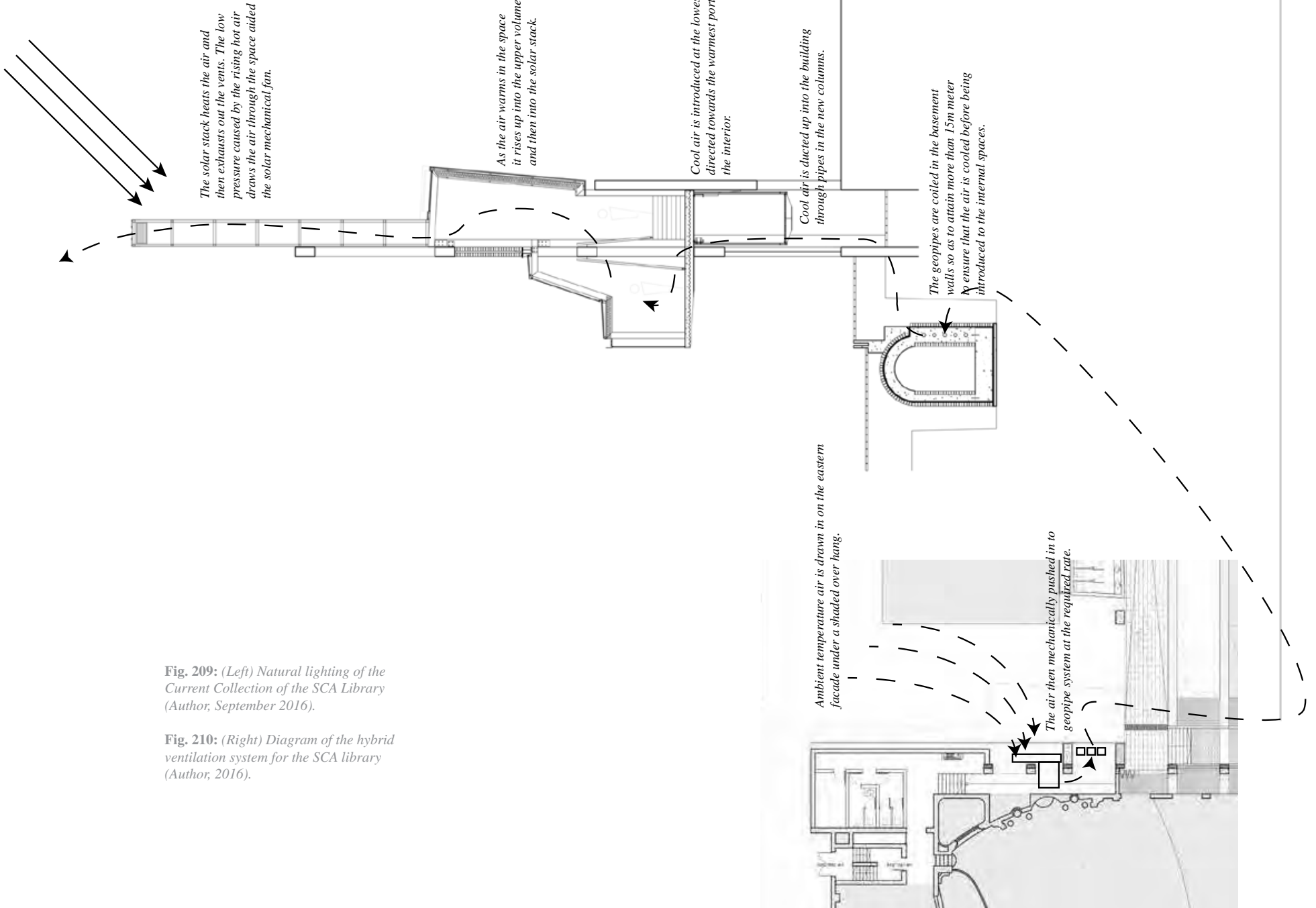




*Daylight is diffuse through double glazed low-E panels.*

*Direct eastern light passing through reflective double glazed low-E panes. This space only receives a maximum of four of direct sunlight during the day.*

*Ambient light (filtered to through ETFE membrane) from the internal condition of the auditorium.*



**Fig. 209:** (Left) Natural lighting of the Current Collection of the SCA Library (Author, September 2016).

**Fig. 210:** (Right) Diagram of the hybrid ventilation system for the SCA library (Author, 2016).

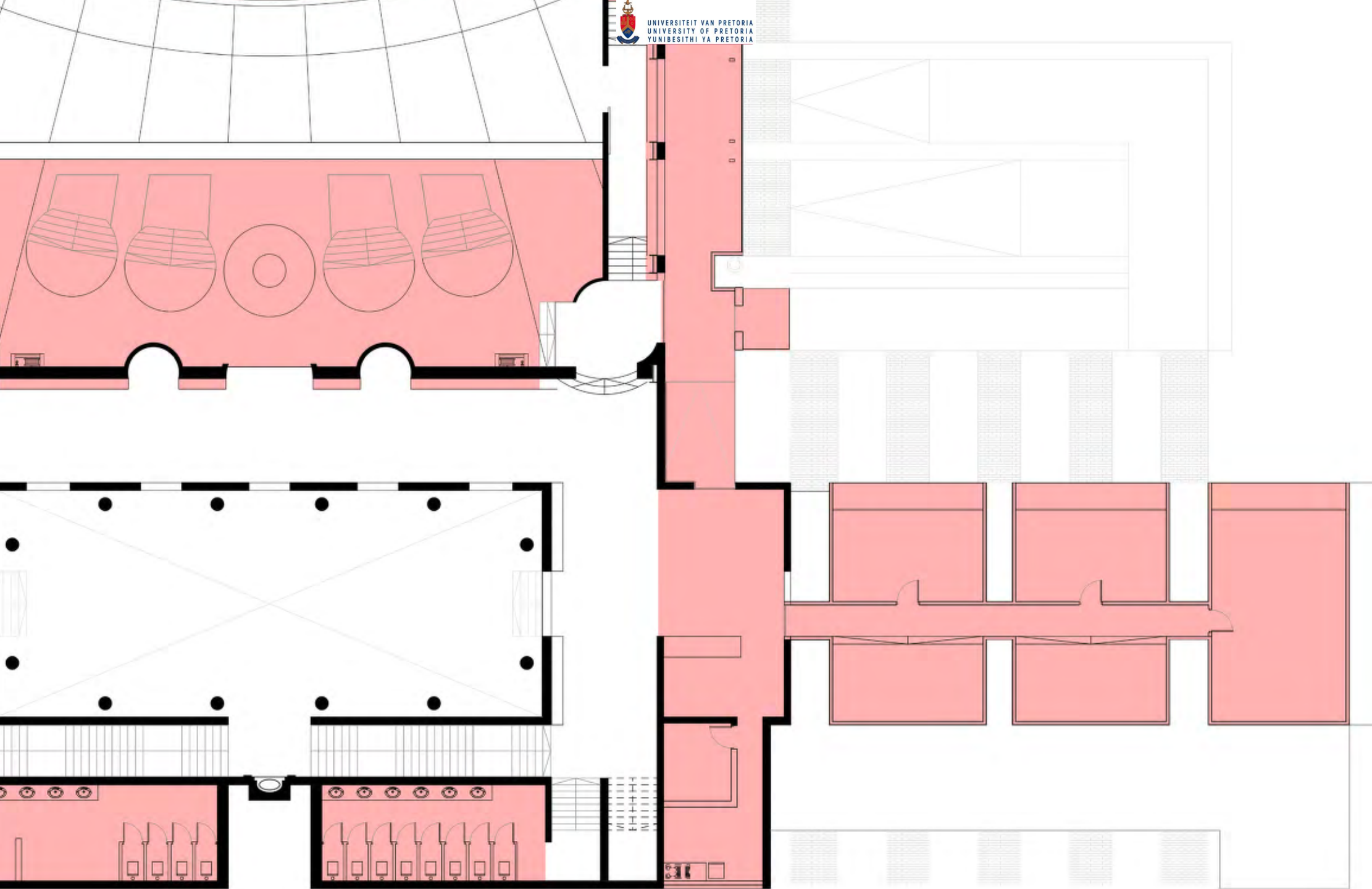
### **The Council for the Advancement of the South African Constitution (CASAC) Office.**

The offices are situated above the streetscape formed by the heritage fabric. To support the structure in a manner that emphasises the colonnade of the “imagined” streetscape below. The columns are aligned to the existing columns extending above them to the bottom of the offices. The foundations of the new column are constructed in a similar manner to those of the archived and the collection spaces.

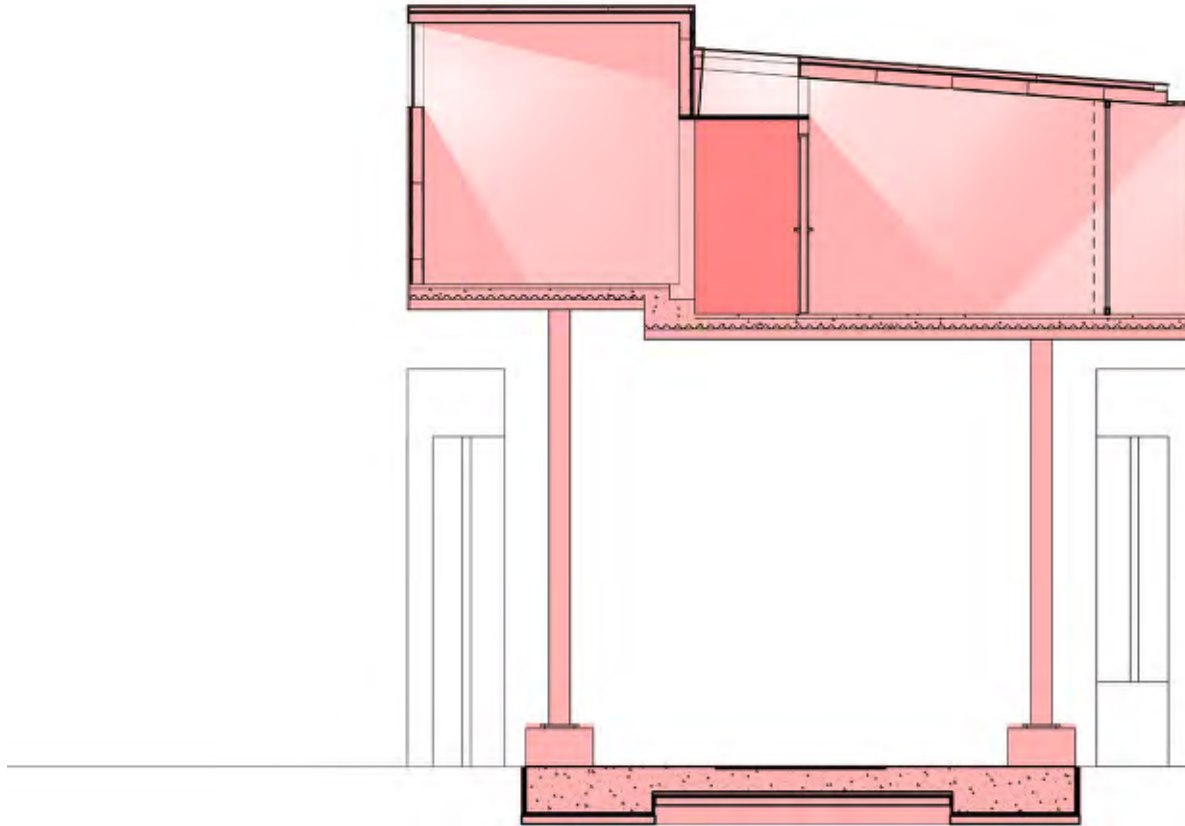
Spanning the columns is steel beams the support the permanent shuttered concrete floor above which the space is enclosed by lightweight steel stud construction. Like the internal ‘external’ roof condition of the archived and current collection spaces, the external condition of the CASAC offices is treated in the same fashion apart from the glazed portions of the facade. The glazing makes use of a variation between ceramic fit patterned glazing and clear glazing depending on the position of the glazed portion in question.

Climate control of the current collection operates on a hybrid system whereby relatively cool air is drawn in on the eastern facade of the theatre aided by a solar fan. The air is then pushed into eco pipes coiled within the concrete that constitute the basement structure. Once the air has passed through a sufficient length of pipe, approximately 15m, the air is then piped up through the new columns and introduced to the current collection space at low-level. As air heats up it rises into the raised volumes of the internal roof condition where it is drawn up the solar stack, accelerating with the increase of the temperature of the stack. The heated air is expelled through the vents at the top of the stack. The hybrid systems employed, as the performance of the stacks may not be so effective as to draw the air through the ecotypes to achieve the required airflow of the internal spaces.

**Fig. 211:** (Right) Plan of the CASAC Offices and connection to the promenade (Author, 2016).

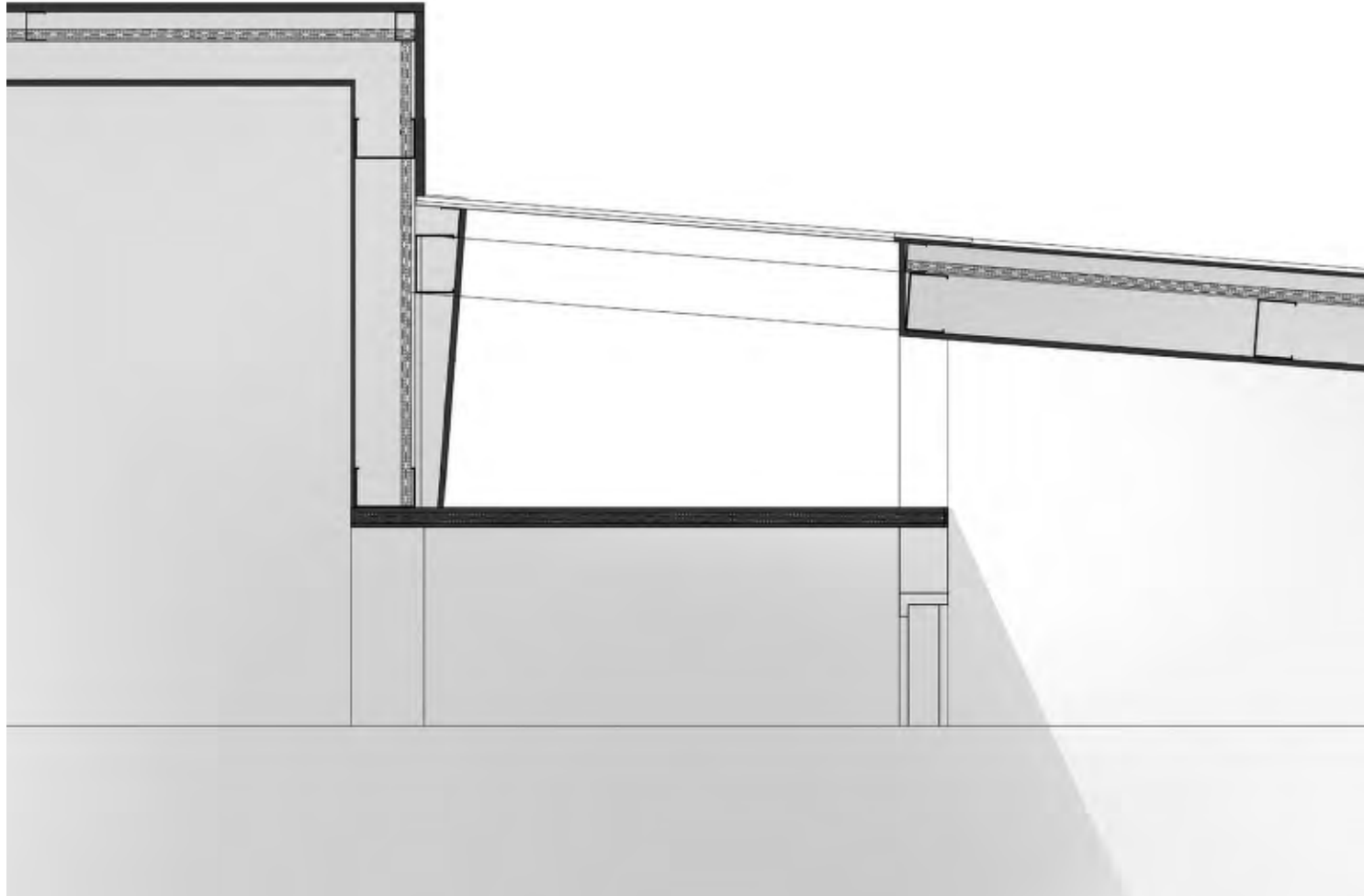






**Fig. 212:** (Left) Section of the CASAC Offices above the streetscape (Author, 2016).

**Fig. 213:** (Right) The light shelf detail (Author, 2016).



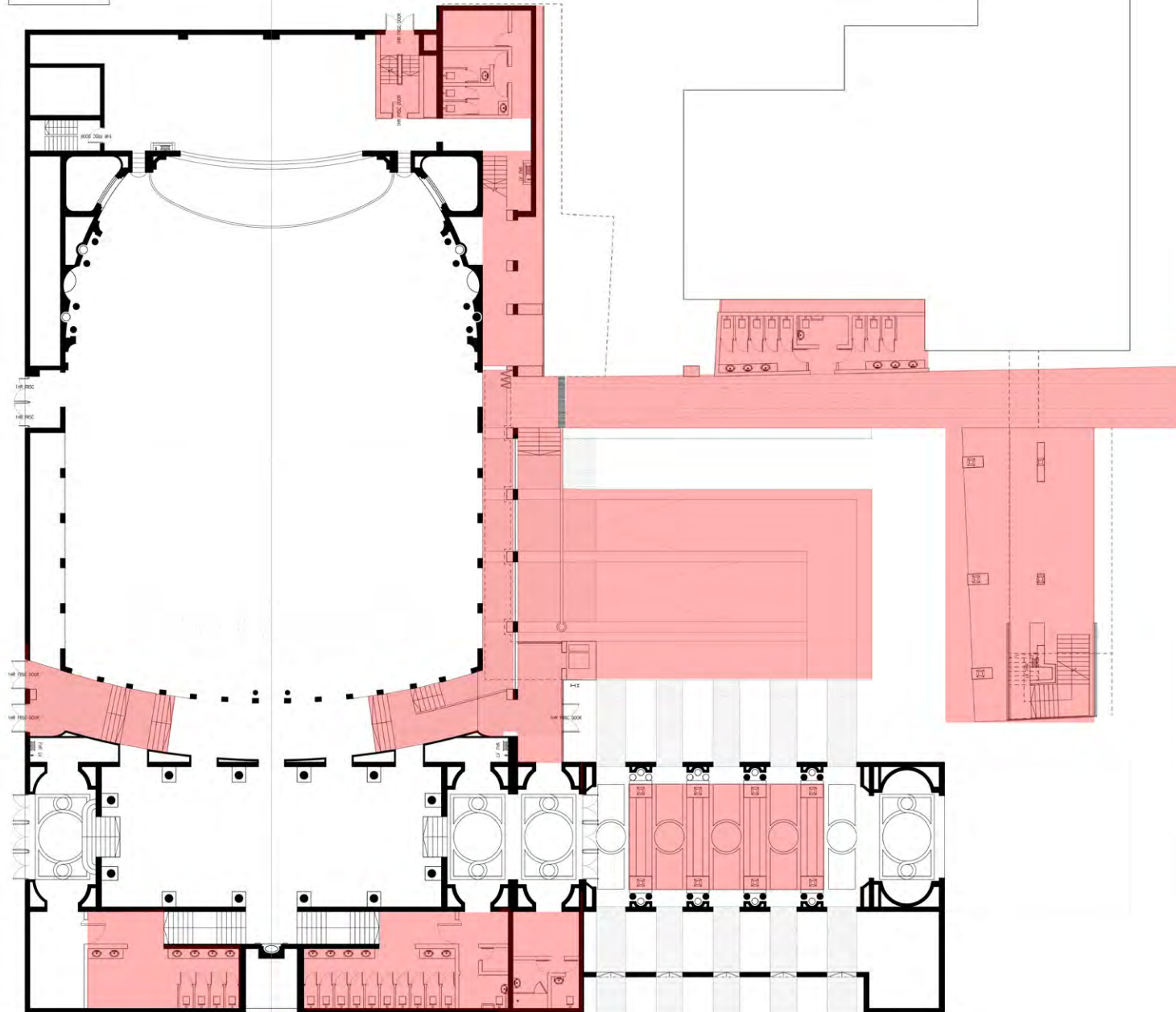
## **Public Level. The Auditorium**

The auditorium as part of the remaining unchanged except for the addition of an ETFE membrane in a cutaway portion of the ceiling. The role of the membrane is to allow daylight into the auditorium space, however, to exert greater control over the internal lighting condition a multi-membrane ETFE cushion system is to be used. Each of these membranes have been printed with the specific pattern and by controlling the position of one membrane to another within the ETFE system the intensity of the daylight entering into the interior can be controlled. This allows for the varied use of the space especially in instances where specific light quality is needed. Being able to control the lighting of the auditorium space reduces the energy load required by functions taking place in the building.

The existing HVAC system of the Capitol Theatre is to be upgraded in order to meet the current requirements auditorium spaces. The ablutions are also upgraded so as to meet the requirements for

the building to accommodate 670 people and an additional 430 people if the ablutions in the courtyard are considered. The addition of two fire exits in conjunction with the existing fire exit allow for both ground floor of the auditorium and a balcony to be safely evacuated in case of emergency.

**Fig. 214:** *Ground floor plan of the public level (Author, 2016).*





### The Witness Stand.

The basement structure forms part of the clandestine realm of the scheme and structurally the constructed from concrete. The mass is pushed up into the public level on the ground floor to meet and support the structure of the space above. The ground level is conceptually the space of negotiation between the stereotomic structure of the clandestine realm and the tectonic structure of the observation platform. The physical negotiation between these two structures is dealt with at a human scale in such a way that the point of negotiation can be adapted to the requirements of the space. As well as providing for the ground level above the projection of the basement mass into the public realm allow for the inclusion of skylight for the spaces below.

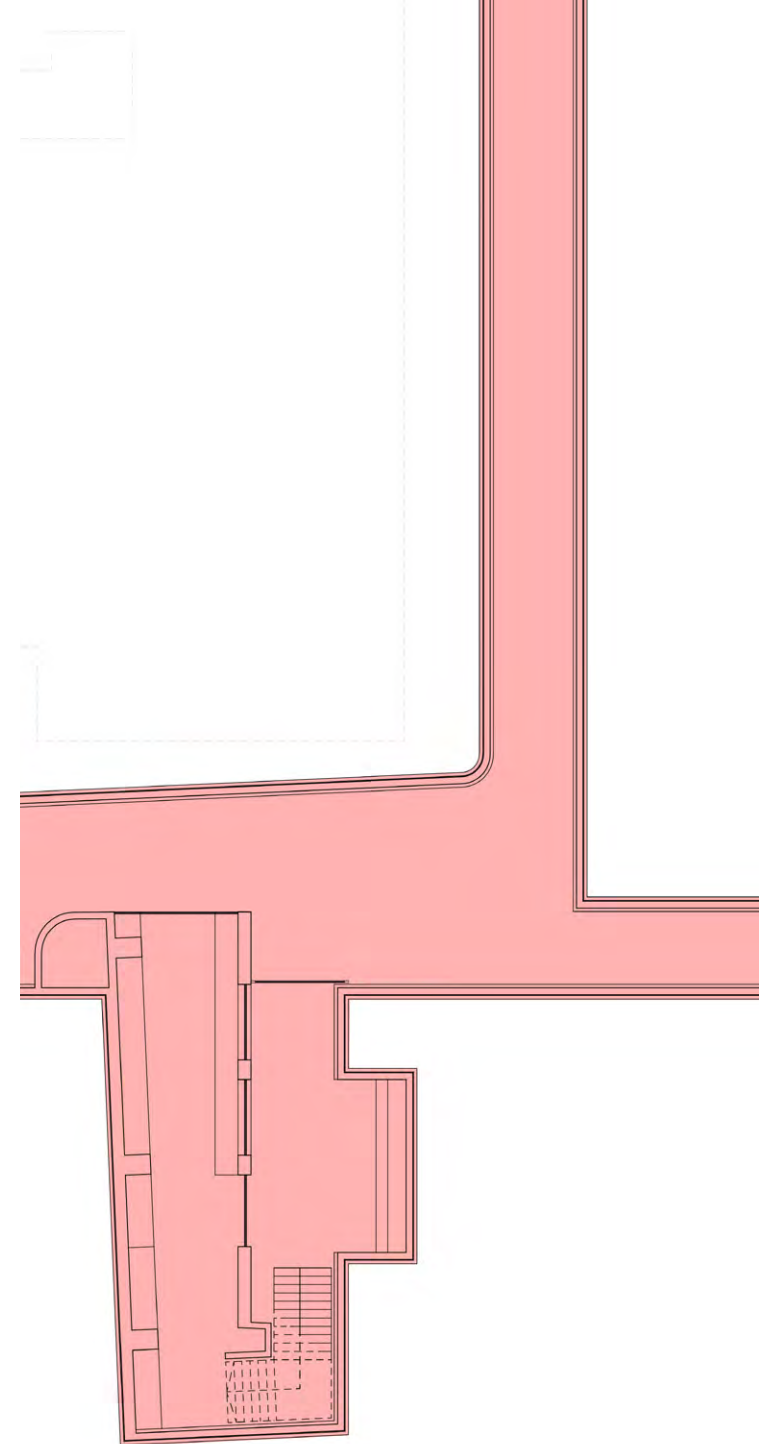
The ground floor is essentially an open space that can be sealed when required and is platform consists of elements, the physical platform the enclosing envelope. The platform is accessed from the southern staircase that forms the link between the kitchen below

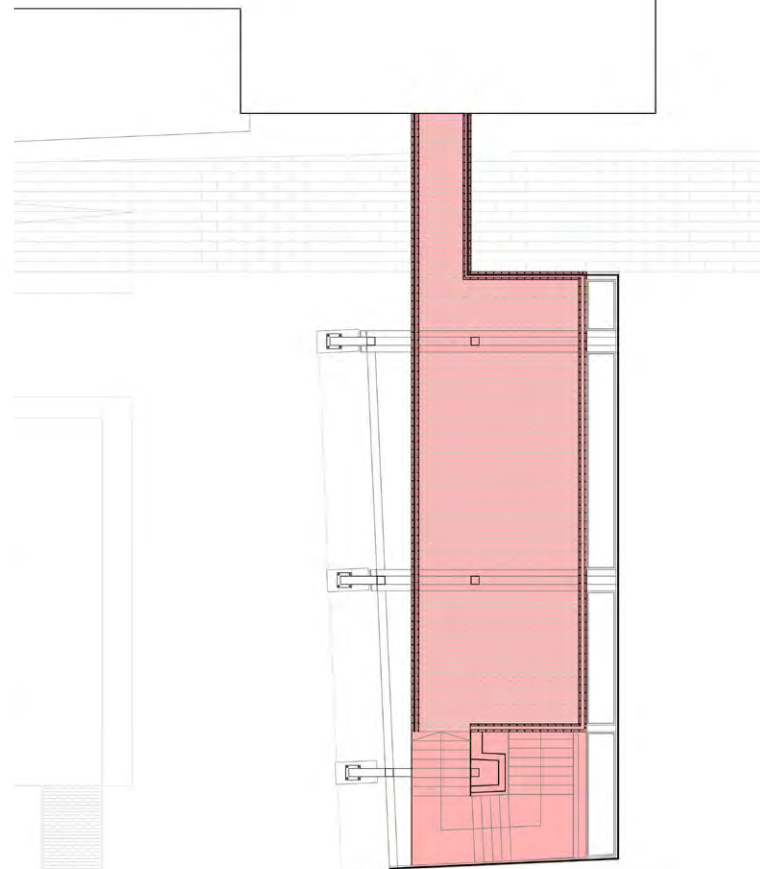
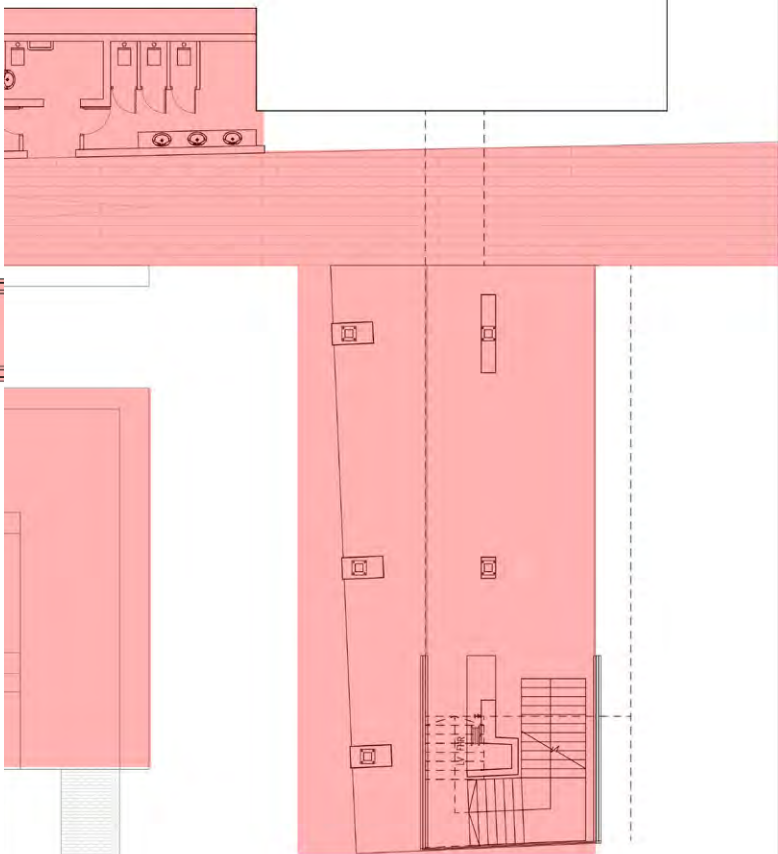
and the platform above. The northern edge of the platform punctures the old Netherlands bank and this is a physical connection with the heritage directs the materiality of the platform to respond to this heritage and is expressed through the combination of recycled Kirkness bricks in conjunction with contemporary clay bricks. The platform is enveloped by steel and glass skin and supporting structure of some of the language to that of the CASAC office and the architecture of the current collection

**Fig. 215:** (Left) Kitchen Plan at Basement, Clandestine level (Author, 2016).

**Fig. 216:** (Centre) Ground floor reception and waiting area, Public level (Author, 2016).

**Fig. 217:** (Right) Upper level Plan, the witness level (Author, 2016).



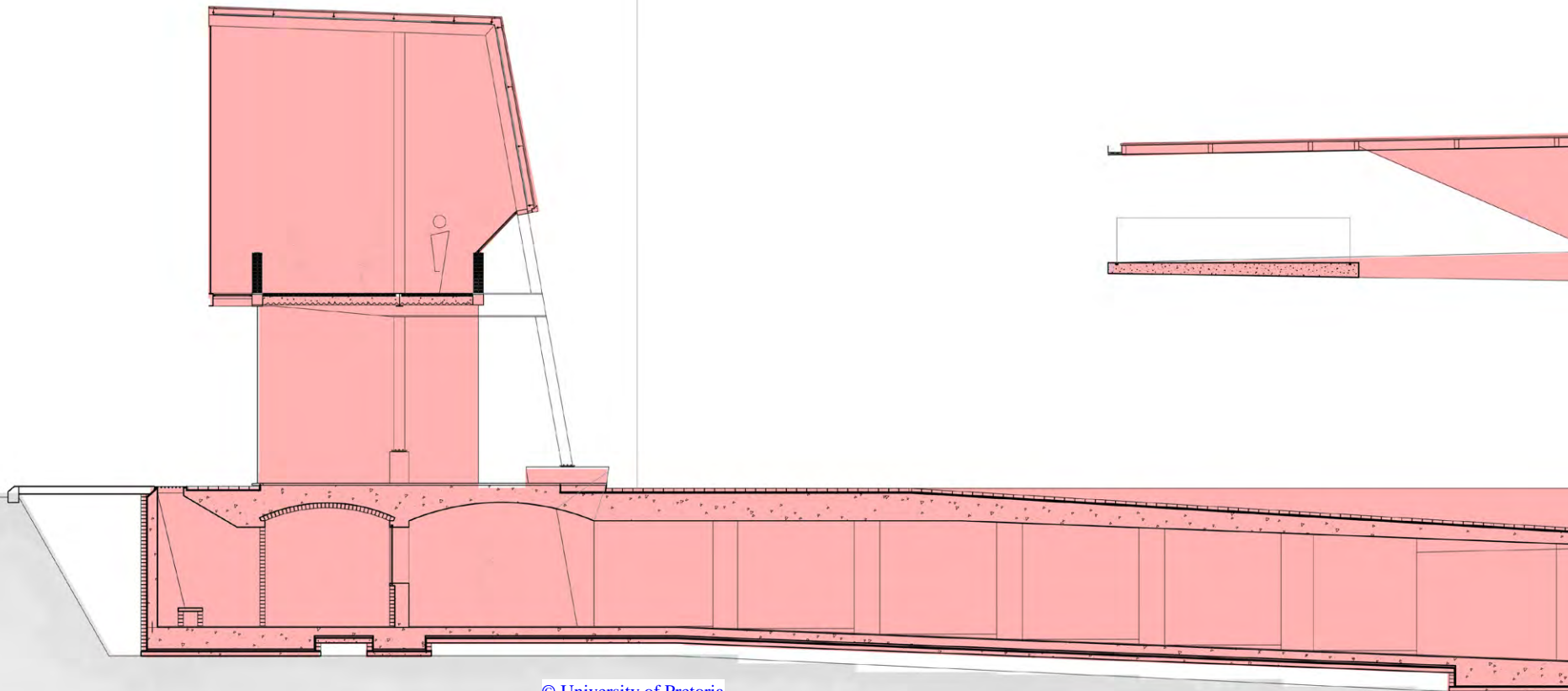




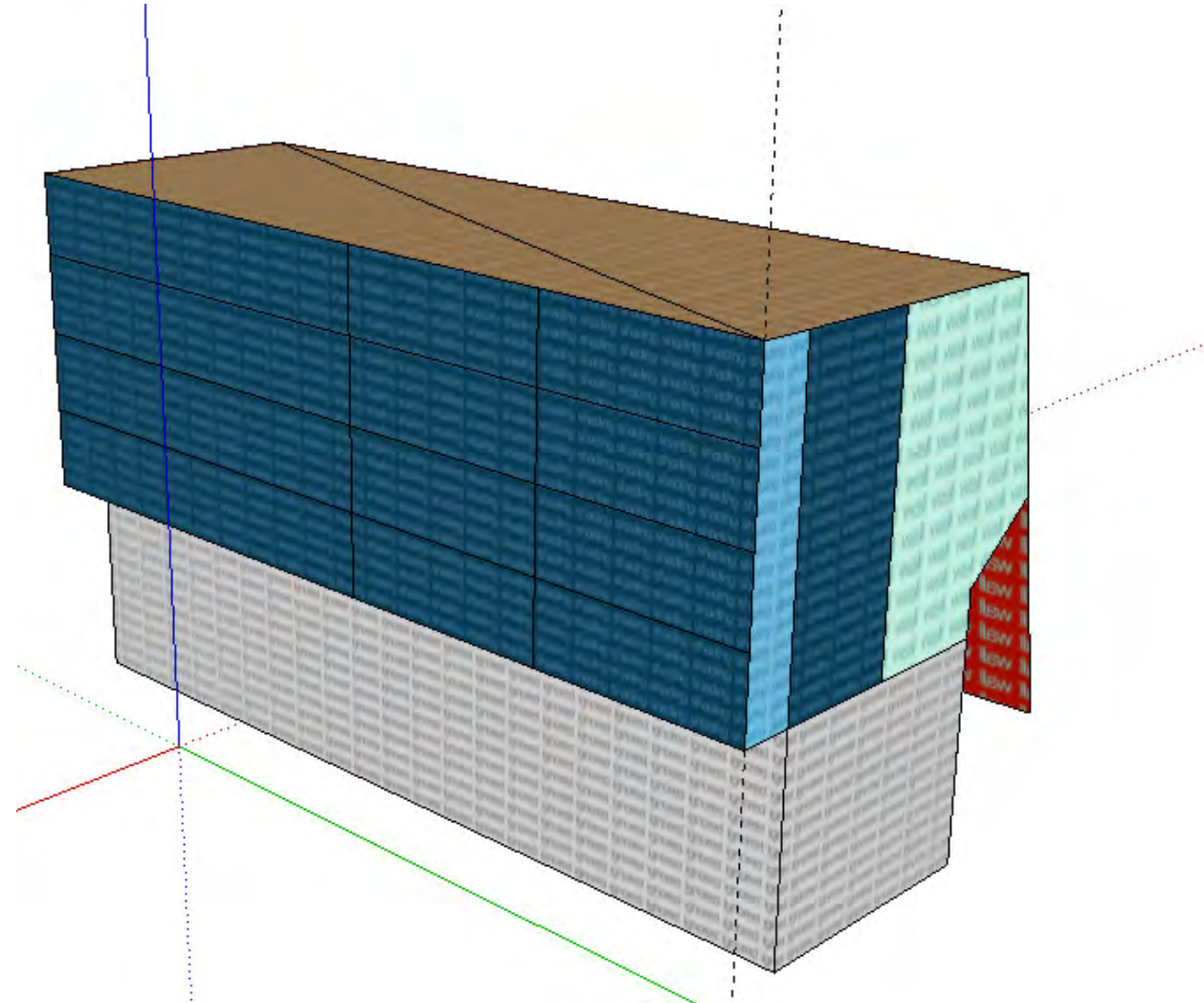
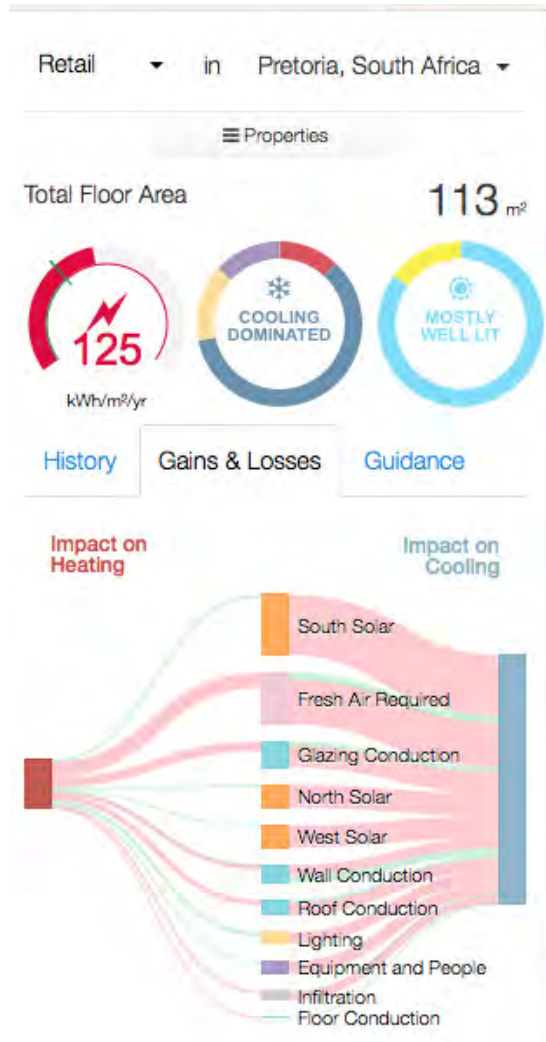
**Fig. 218:** (Left) Section perspective through the vertical circulation of the witness stand (Author, 2016).

**Fig. 219:** (Right) Section looking south (Author, 2016).

SCALE 1/8"=1'









### **Sefaira Iterations on the Witness Stand:**

Due the transparent nature of architecture that makes up the Witness Stand that promotes views out into the public space, the control of solar ingress, internal light levels and heat gain are major issues in this space. The well insulated roof covers the western façade but the rest have to be as transparent as possible. The combinations of louvres proved only effective at a size that would cause obstruction the outward views. The most appropriate solution would be a transparent screen that covers most of the façade. The most effective positioning of the screen is right against the glazing. The screen implemented is pattern ceramic frits that printed on the glazing panel. A number of iterations were run to establish the coverage required and it was found that consistent would be the efficient layout. With the use of low-E double glazing, and marginally increased thermal mass of the floor as well as effective ventilation strategies a relatively sustainable space is ascertained.

**Fig. 220:** *Final Sefaira Iteration (11)*  
(Author, 2016)

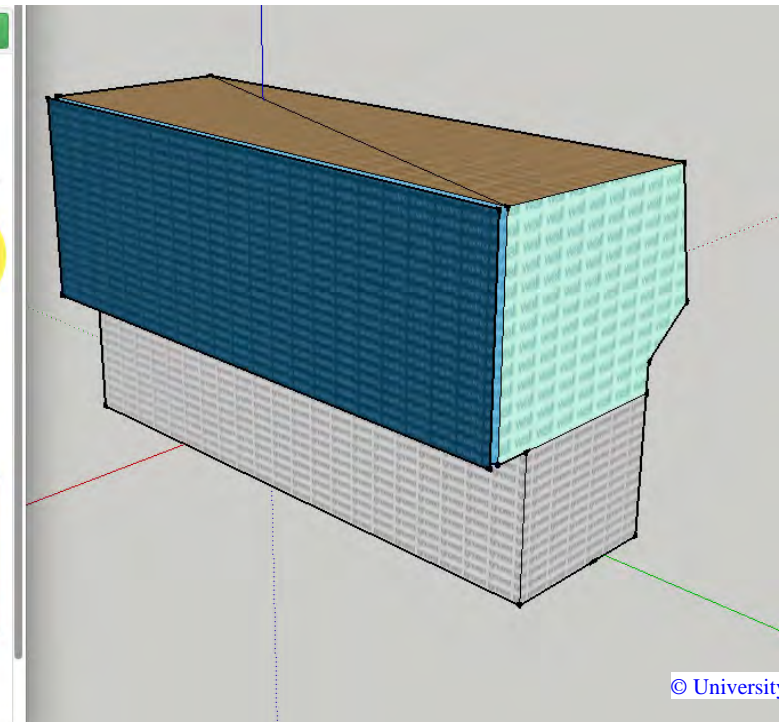
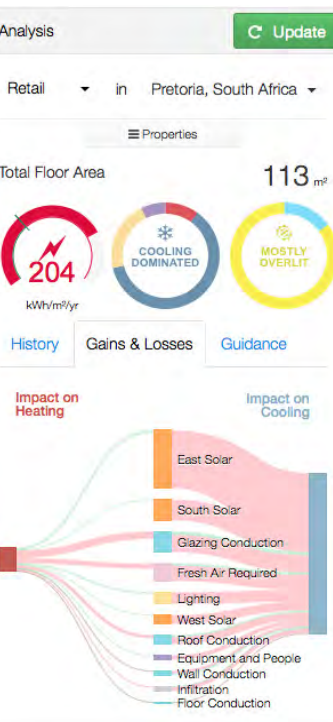
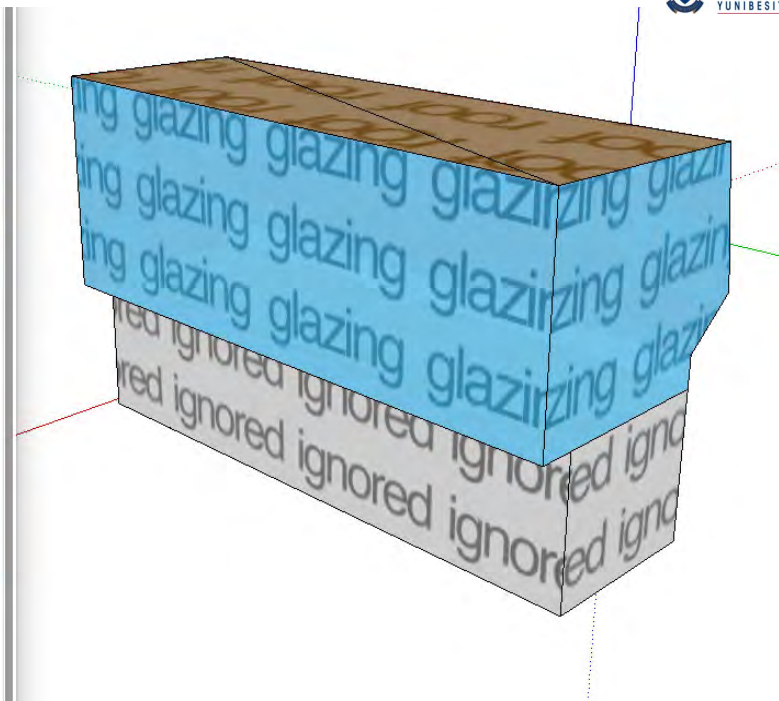
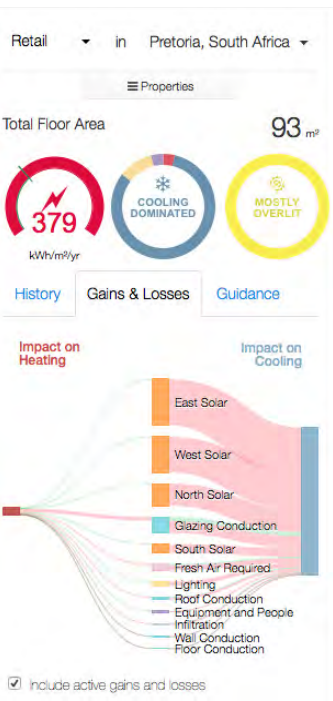


Fig. 221: (Top) Sefaira Iteration 1 (Author, 2016).

Fig. 222: (Left) Sefaira Iteration 3 (Author, 2016).

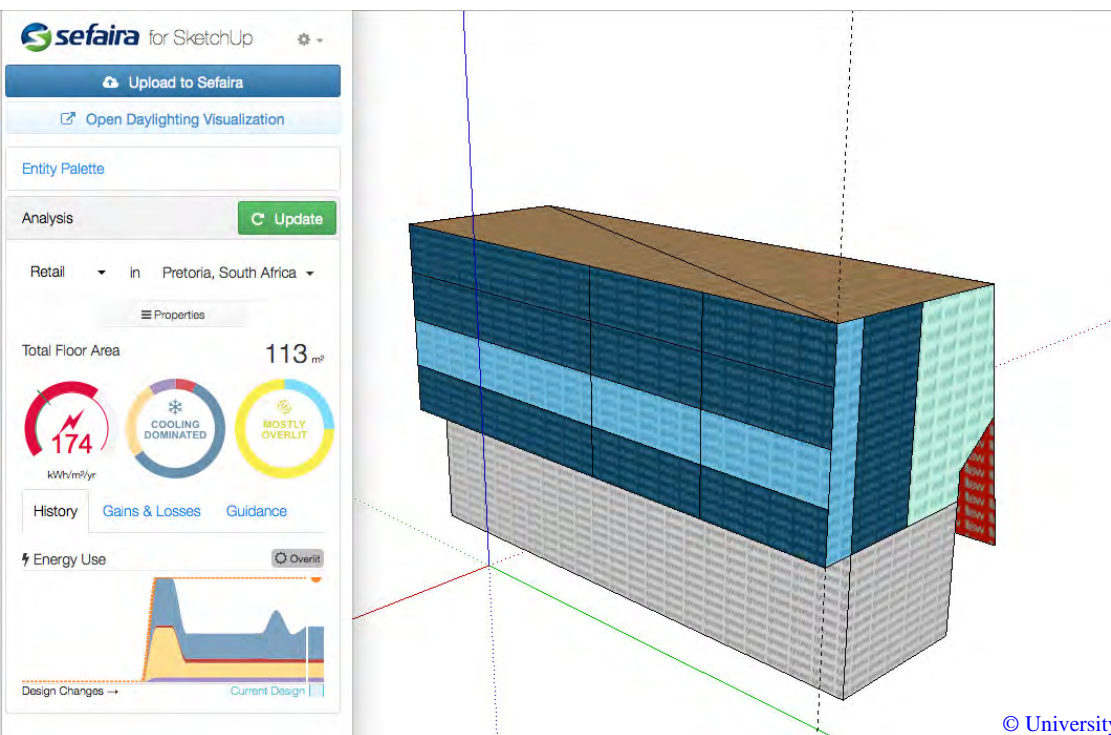
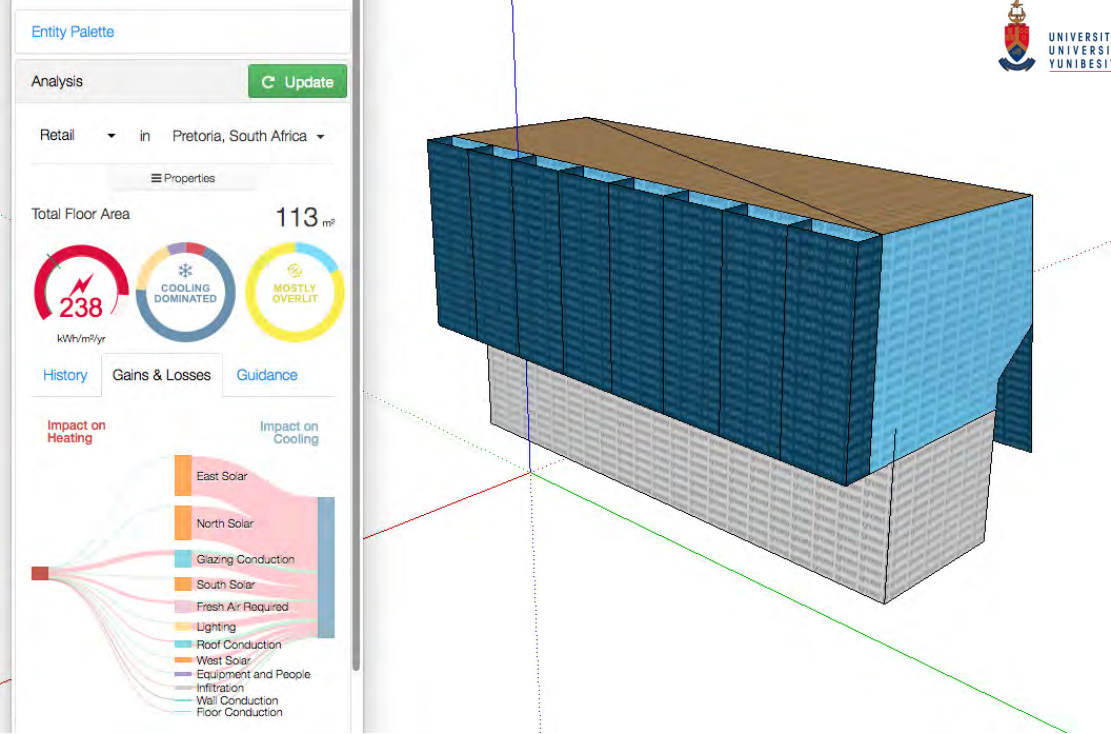
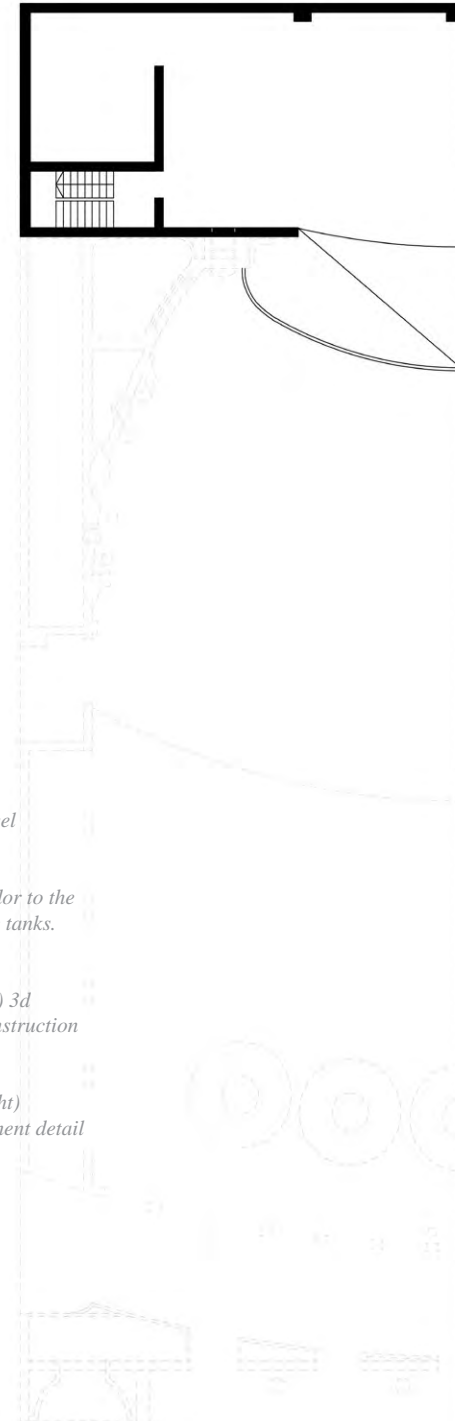


Fig. 223: (Top) Sefaira Iteration 6 (Author, 2016).

Fig. 224: (Left) Sefaira Iteration 8 (Author, 2016).

## The Clandestine

The basement construction consists of a clay brick skin that protects the bituminous layer of waterproofing that surrounds the concrete basement and, in some sections of the tunnel. When required by the internal space a brick veneer is applied for aesthetic reasons. The space relies on artificial light for the minimum illumination levels required however the highlighting of specific features is done with daylight through skylights opening onto the courtyard. The spaces ventilated through several of the eco pipes that are directed into the basement relying solely on the mechanical aspect of the hybrid system to ventilate the basement space. Rainwater storage tanks including the various filters and booster pump to then redistribute the water to the building are also located in the basement. The water tanks form part of the supporting structure as well as provide some spatial articulation of the basement walls.

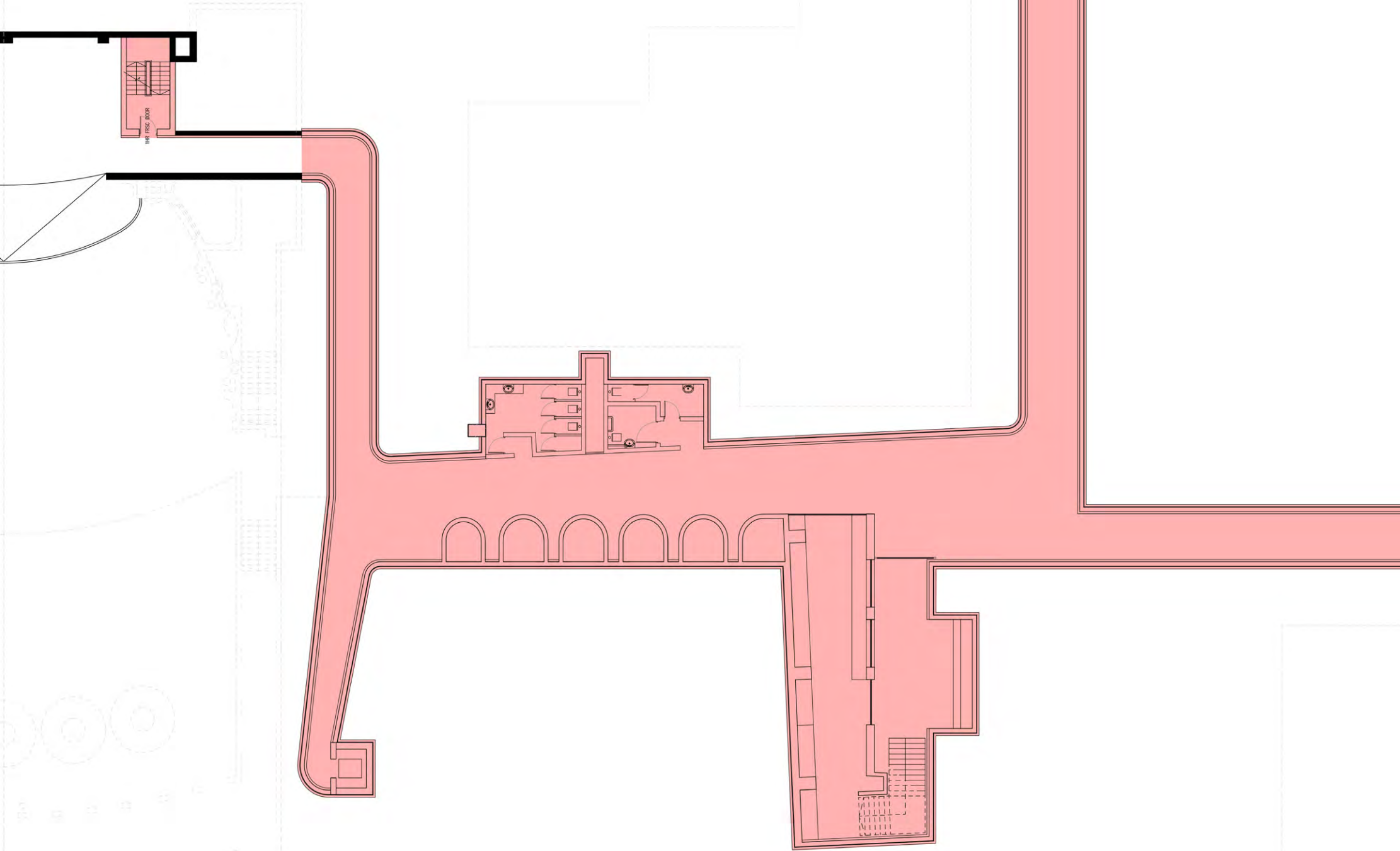


**Fig. 225:** Plan of Clandestine level  
(Author, 2016)

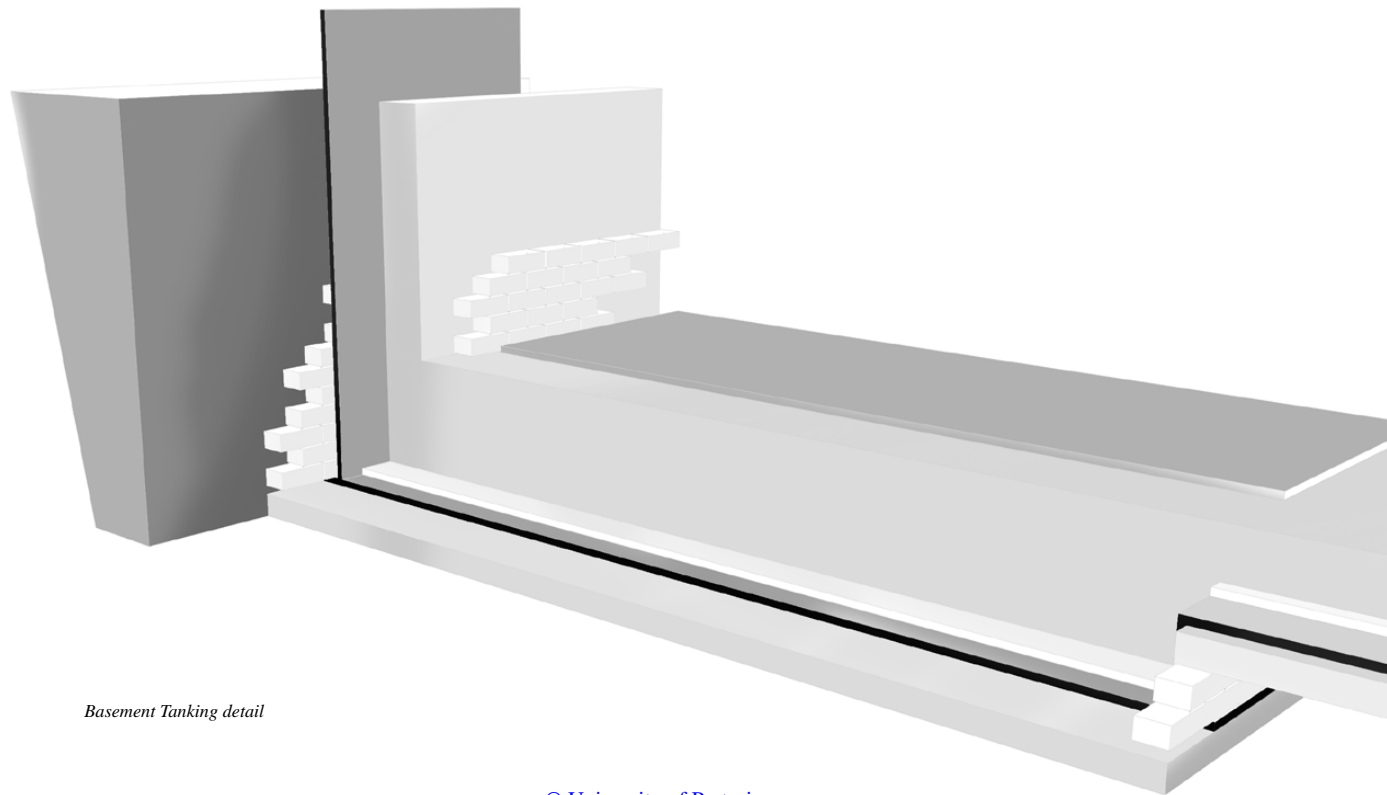
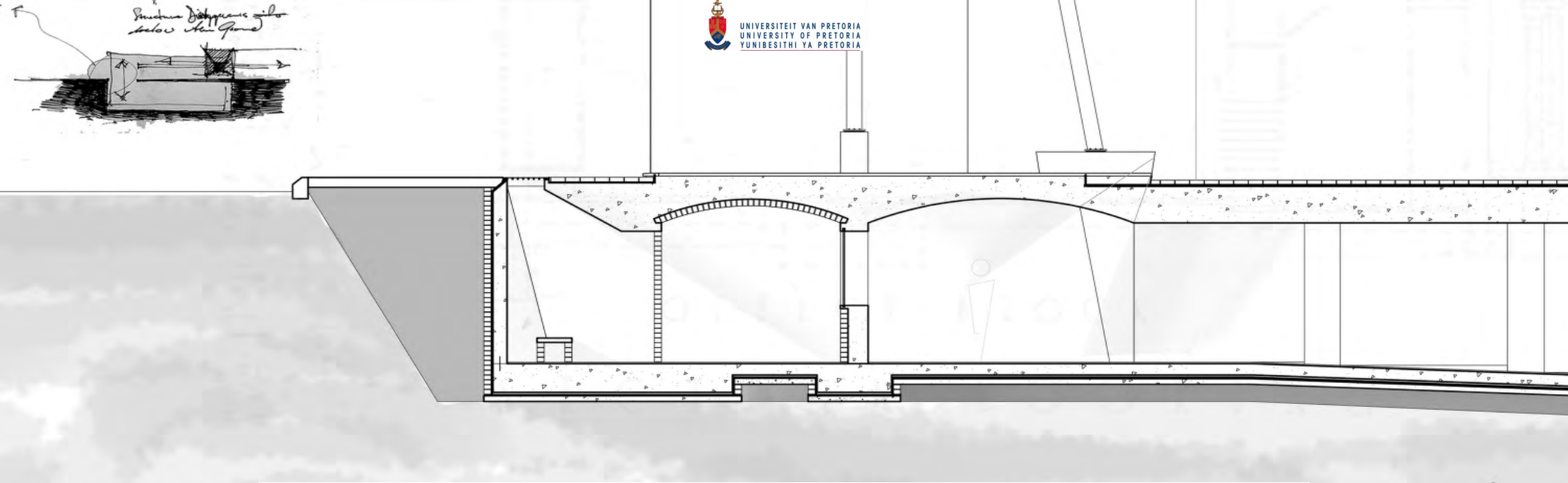
**Fig. 226:** (Next page, top) Corridor to the stage area past the water storage tanks.  
(Author, 2016).

**Fig. 227:** (Next page, bottom left) 3d detail of the tanked basement construction  
(Author, 2016).

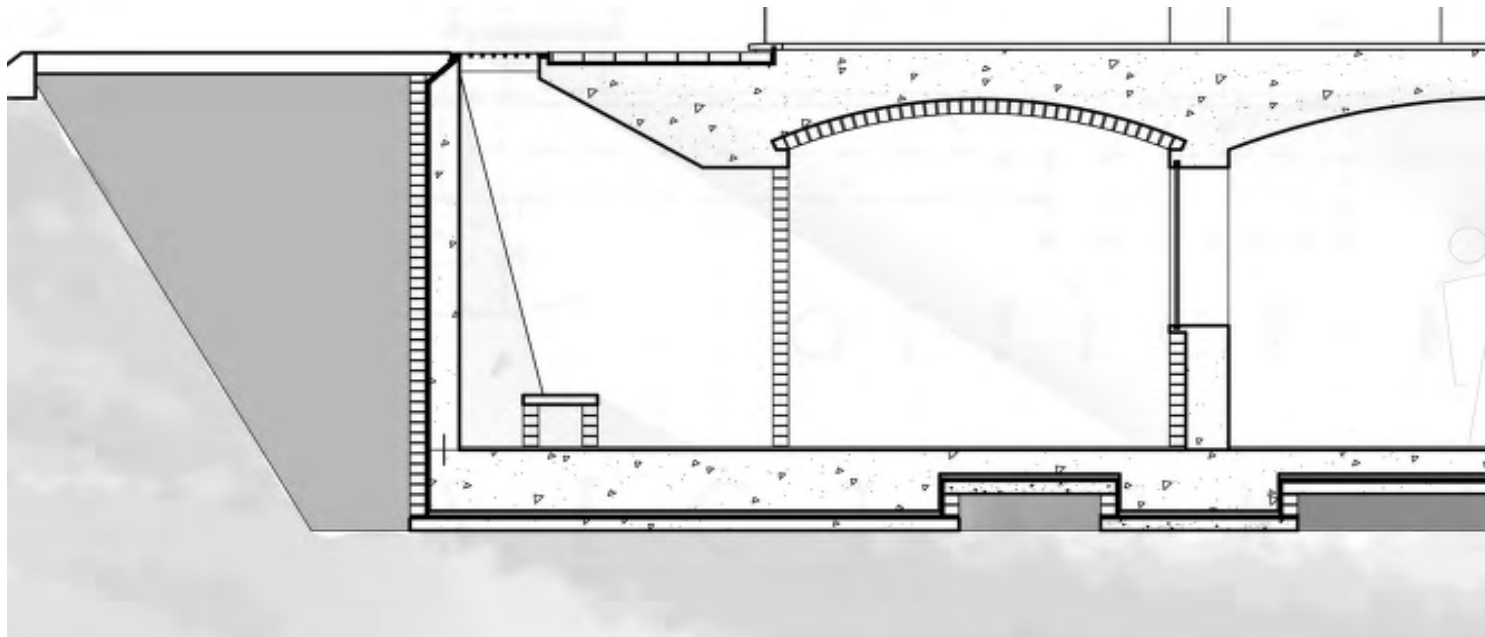
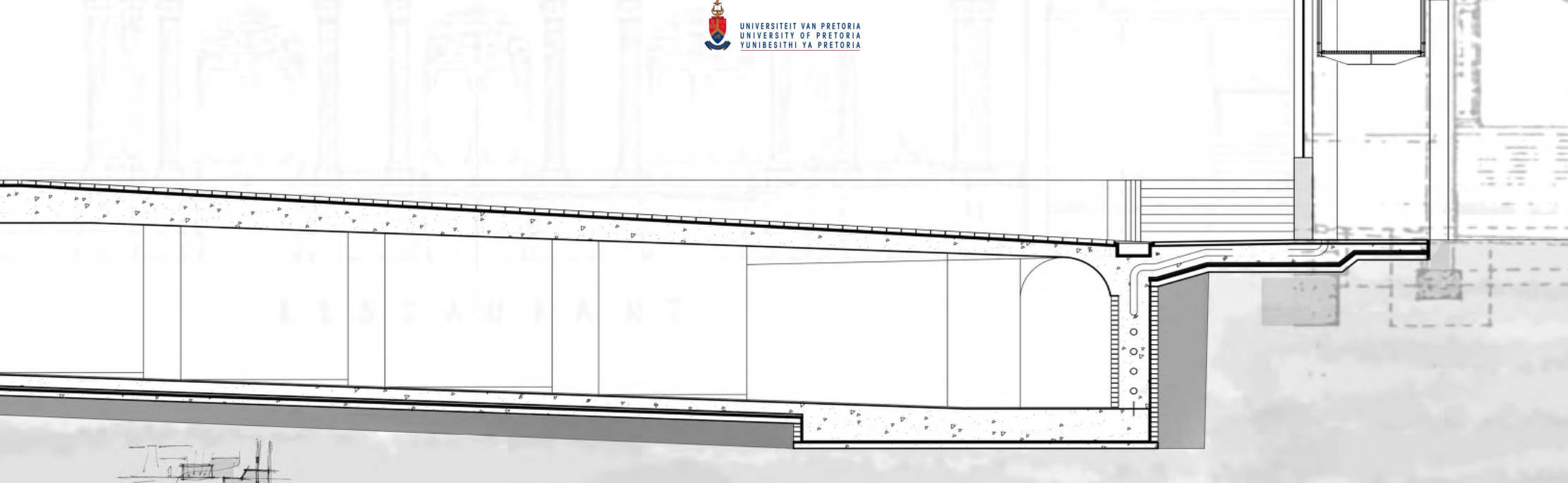
**Fig. 228:** (Next page, Bottom right) Pavement light and tanked basement detail  
(Author, 2016).







*Basement Tanking detail*



# S E R V I C E S

The services of the existing are to be upgraded to bring them up to what is required. This pertains to the existing HVAC systems, fire suppression and escapes. The ablutions of the existing, by current standards, is only fit to accommodate 170 people. The layout of the existing w/c's was redesigned to be able to handle 720 people but when including the abluion facilities in the courtyard the precinct is able to accommodate a crowd of up to 1000 people.

In order to maintain the intern environment require for the library collections a hybrid HVAC system is to be implemented. Cool air is drawn from the shaded eastern façade the pumped into ecopipes that are coiled in the basement walls in the basement walls to achieved the annual average temperature before being piped into collection spaces. The air as it warms in ventilated by means of a solar stack that protrudes beyond the existing roof of the

Capitol Theatre. Air to the Witness stand and its kitchen as well as basement operates on the same principal.

Rainwater is harvested off the roofs of the Capitol Theatre as well as off the additional buildings. The water is the filtered and stored in concrete tanks in the basement where it is then pumped smaller tanks located above the ablutions as required. The water is also utilises for the garden.

- Retained Primary Heritage*
- Secondary Heritage*
- Demolished Fabric*
- New Architectural Layer*

**Fig. 229:** (Right) Placement of new services (Author, 2016).



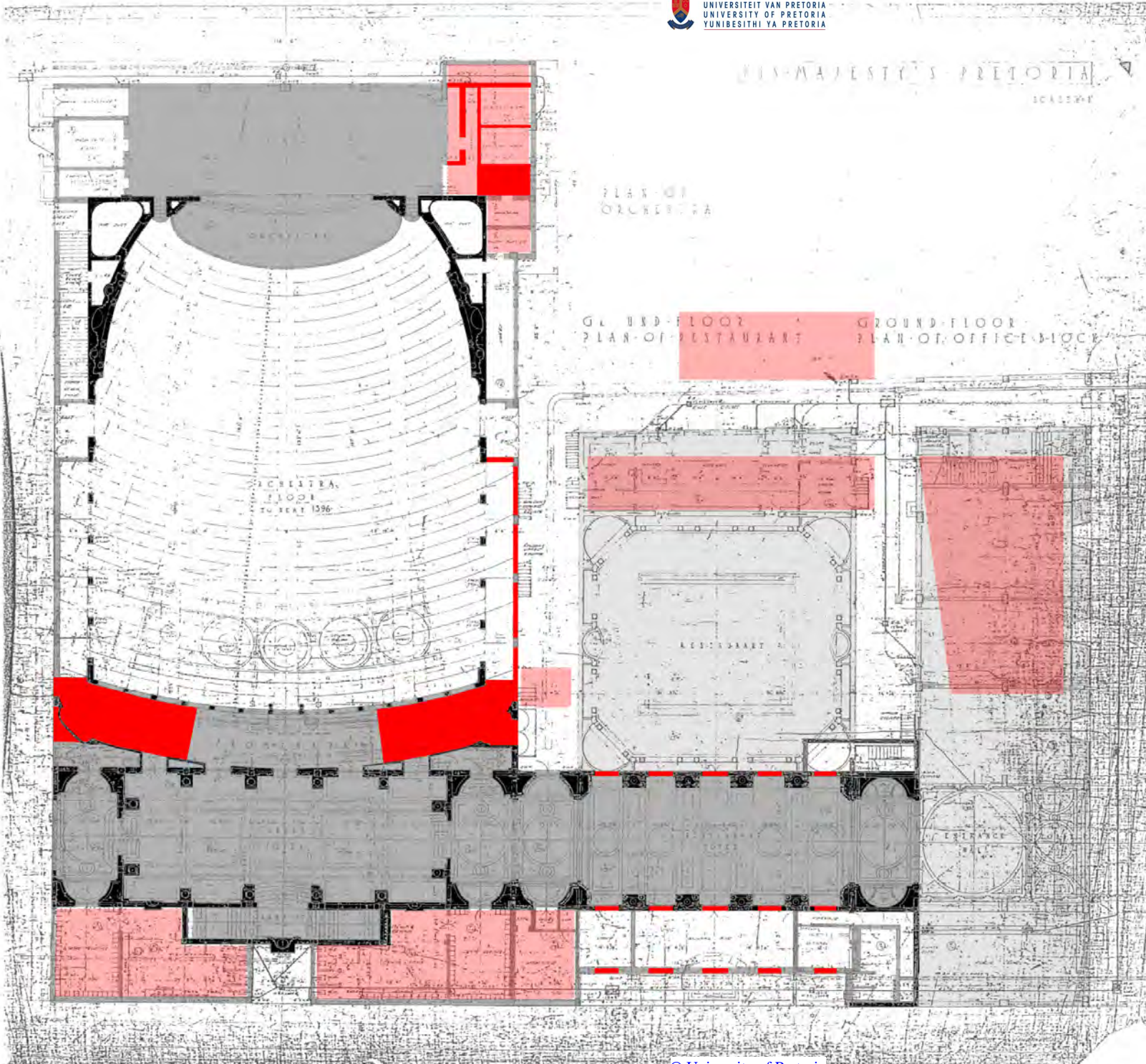
HIS MAJESTY'S PRETORIA

SCALE 1:500

PLAN OF  
ORCHESTRA

GROUND-FLOOR  
PLAN OF RESTAURANT

GROUND-FLOOR  
PLAN OF OFFICE-BLOCK





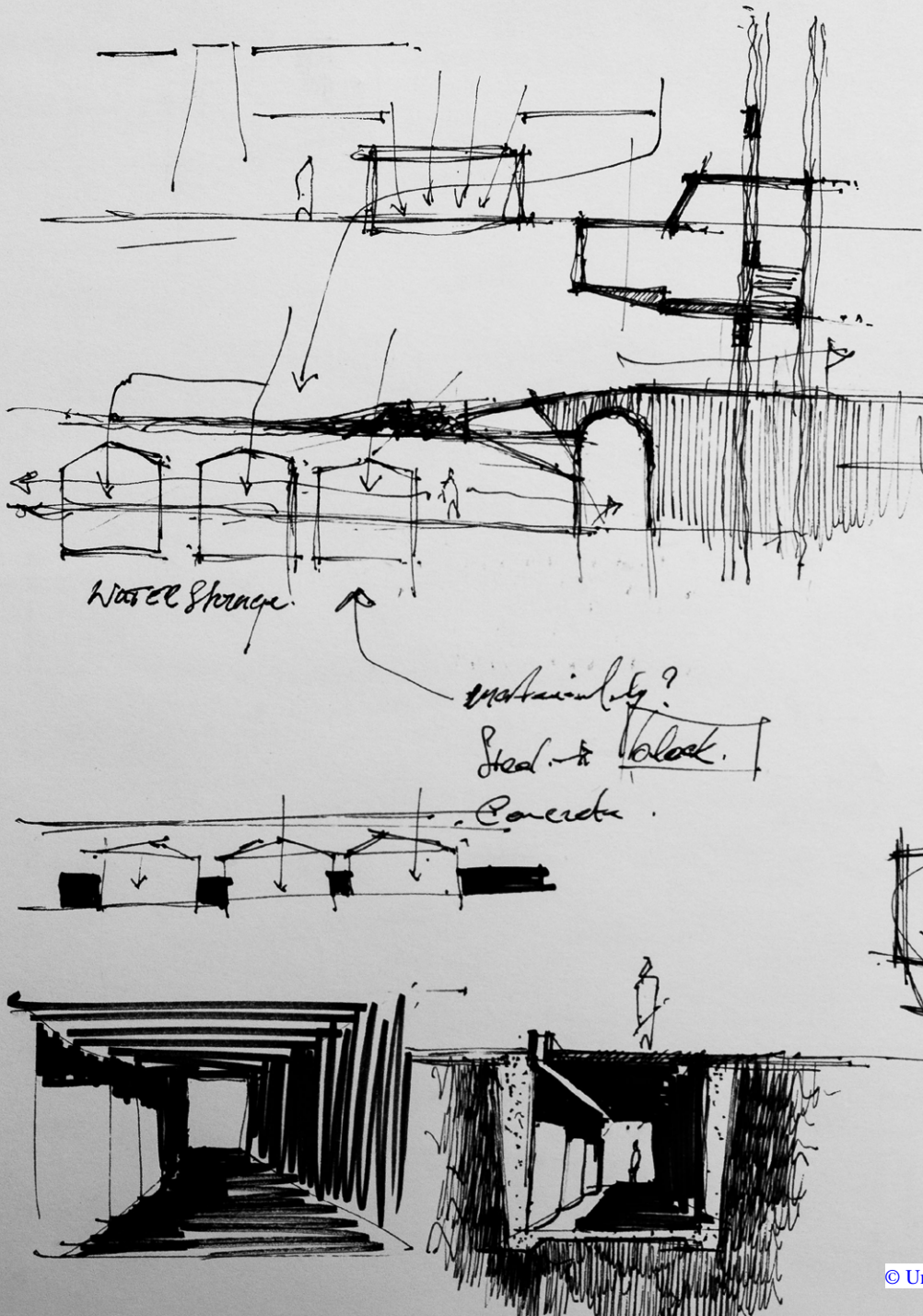


Fig. 230: (Left) Water Storage (Author, 2016)

Fig. 231: (Right) SBAT Report (Author, 2016)



# SUSTAINABLE BUILDING ASSESSMENT TOOL RESIDENTIAL

1.04

Achieved  
**4.0**

## SB SBAT REPORT

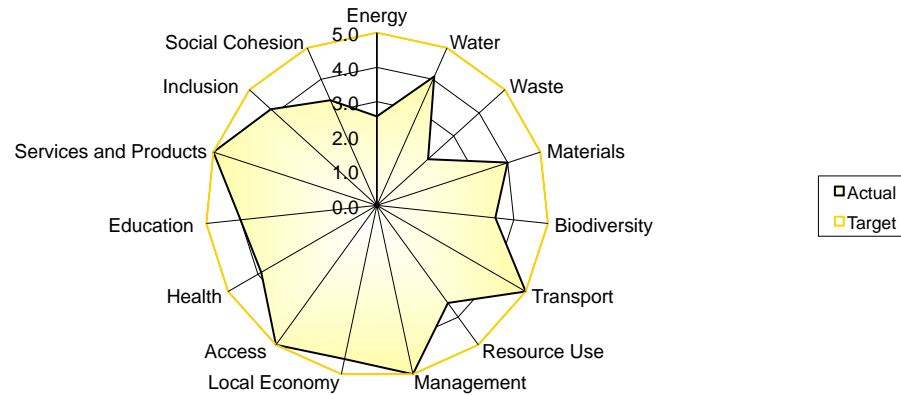
### SB1 Project

0

### SB2 Address

0

### SB3 SBAT Graph



### SB4 Environmental, Social and Economic Performance

	Score
Environmental	3.2
Economic	4.6
Social	4.1
SBAT Rating	4.0

### SB5 EF and HDI Factors

	Score
EF Factor	3.6
HDI Factor	4.2

### SB6 Targets

	Percentage
Environmental	65
Economic	92
Social	82

### SB7 Self Assessment: Information supplied and confirmed by

Name \_\_\_\_\_ Date \_\_\_\_\_  
Signature \_\_\_\_\_

### SB8 Validation: Documentation validated by

Name \_\_\_\_\_ Date \_\_\_\_\_  
Signature \_\_\_\_\_

### SB9 Validation Report Version

IVR