

# TECHNICAL INVESTIGATION

## 6.1 INTRODUCTION

This chapter focuses on detailing of systems, materials and structural and component connections that manifest in the design. Of importance is how the new intervention integrates into the host building, creating an interface within which the AGC can be comfortably interacted.

The three interventions to be detailed relate to the tripartite oppression that the AGC experiences, namely; race, gender and power, which deal with aesthetics, representation and empowerment. How each addresses the respective oppression will be discussed in detail in the rest of the chapter



## 6.2 APPROACH

The technical resolution and detailing must be contextually appropriate, taking into consideration material, colour and connection choices. The approach is a result of analysing the spatial qualities of informally designed spaces (figure 6.1). These findings are to be applied in the design investigation.

## 6.3 MATERIAL AND COLOUR STRATEGY

The material and colour strategy is influenced by elements found in the context.

### 6.3.1 Colour strategy

The colour strategy for the centre draws inspiration from hair salon signage that is commonly found in an African hair salon setting. The colours are rich with earthy undertones.

### 6.3.2 Material strategy

The chosen materials are decided upon by a criteria that is listed as follows;

#### 6.3.2.1 Functionality

A material needs to first be functional before it can be aesthetically pleasing, this is noted in the imagery of informal housing whereby food packaging is used as wall paper to keep the cold and wind out. The end result is a visually striking place but functionality is key.

#### 6.3.2.2 Sustainability

This is to be done by incorporating modularity in the design so that materials are easily replaceable without having to demolish a whole structure to fix a part.

#### 6.3.2.3 Lighting

The demolition of walls within the African girl child centre will encourage a greater dispersion of daylight and artificial lighting this is to further be heightened by the application of materials with colour rendering that will permit the reflection and distribution of light.

# DESIGN INFORMANTS

SPATIAL QUALITIES OF INFORMALLY DESIGNED SPACES



Figure 6.1: Spatial qualities of informally design spaces (Author 2015)



Figure 6.2: Hair salon signage (Museum of uncut funk 2012)

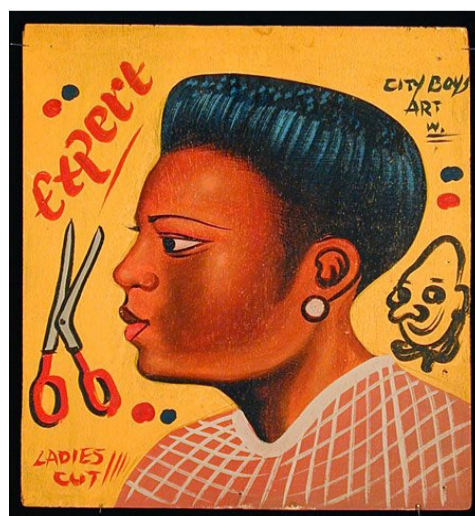


Figure 6.3: Hair salon advert (Museum of uncut funk 2012)

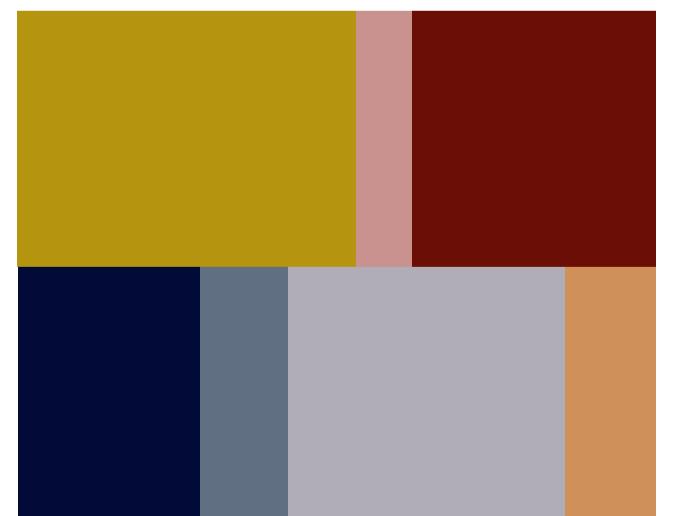


Figure 6.4: Bonang colour palette (Author 2015)

## 6.4 FAÇADE INTERVENTION

The façade is symmetrical in its design and the intervention adds a break in the symmetry, announcing the new use proudly. The deviation from the existing symmetry relates to what occurs on the floor plan level.

The façade intervention underwent a re-iterative process discussed in Chapter 5 (5.7.1). The final form of the foyer being resolved led to the next iterations which required refining the design and detailing the form as shown in figure 6.1

The intervention was originally intended to be an extension of the reception area downstairs and contain a multifunctional space upstairs. The multifunctional space remains upstairs (figure 6.3) but the programme has changed to a foyer space downstairs (figure 6.2), a transitional space that connects the exterior to the interior, orientates the user with orientation information boards, and allows for conversations to take place.

### 6.4.1 Thermal comfort

Thermal comfort is concerned with the comfort zone range within which the human body can adjust to the environment; this range is considered to be between 16 and 32°C in terms of temperature. The ideal temperature is 21-22°C.

The design of buildings that consider the comfort of the user results in an environment that encourages “...productivity, health and mental and physical energy” (Holm 1996: 6). The thermal comfort of the foyer building is of concern as it is a North-Easterly facing building. This orientation may cause thermal comfort concerns in the warmer months. Solar control devices should be considered to reduce solar gain. Holm (1996: 11) states that it is recommended that summer sun be screened between solstices and winter sun be allowed to penetrate. This is a factor that is considered in the design.

### 6.4.2 Visual comfort

The majority of lighting in the foyer and multifunctional mezzanine will be natural daylight so as to refrain from increasing the energy consumption of the building. Daylighting is implemented in a diffused manner by means of translucent materials and shading screens. Artificial lighting will complement the daylighting method and will be an advantage on overcast days.

Reflective indoor colours will be used as a means of further enhancing the daylight penetrating the foyer.

### 6.4.3 Ventilation

Passive ventilation is considered a means of achieving thermal comfort in the new structure. The Pretoria climate zone experiences both dry and rainy seasons, strong solar radiation and moderate humidity levels. Wind direction in summer is east-north-easterly to east-south-easterly while in winter it is south-westerly, minimum north-east. The summer wind is ideal for the north easterly and south easterly facing façade intervention.

### 6.4.4 Designing for comfort and climatic consideration

EcoTect was used to assess the amount of daylighting coming into the foyer and to ascertain how visual comfort could be reached by the application of a shading device.

A model was built with no shading device and tested (shown in figure 6.4 number 1) and a second model was built with a shading device and tested under the same climatic conditions (shown in figure 6.4 number 2). The screen which acts as a shading device reduces the lighting levels from 1700 lux - 4100 lux to between 500 lux - 2100 lux. This reduction in lux levels results in better visual comfort within the foyer.

Following visual comfort, the issue of thermal comfort and ventilation needed to be addressed. The building was originally intended to have solid glass glazing but this, as a design decision, would raise the temperature of the foyer and permit minimal ventilation into the space. Louvre windows were proposed as a solution, allowing for passive ventilation to occur in the space, therefore, a better suited thermal comfort for the space.

Of importance in the foyer design is the shading device that will permit ample daylight but also allow for cross ventilation to occur. The Biomedical Research Centre in Pamplona, Spain was investigated as a case study on how such a shading device could be designed.

Architects: Vaíllo & Irigaray & Galar

Location: Pamplona, Spain

Architects: Vaíllo & Irigaray & Galar - Antonio Vaíllo i Daniel, Juan L. Irigaray Huarte

Client: Navarre Health Service

Cost: 18,000,000 €

Area: 12150.0 sqm

Project Year: 2011

The shading device is constructed from 3mm-thick perforated aluminium panels that shield the façade of the building from the sun. The screens are fixed at a distance from the glazing allowing maintenance of the screen and the glass façade.

The perforations in the aluminium panels permit filtered daylight into the building whilst also allowing for the user to have a visual connection with the exterior, thereby inhibiting a complete block of the view.



Figure 6.5: Shading device at the Biomedical Research Centre in Pamplona, Spain (Cutillas 2012)

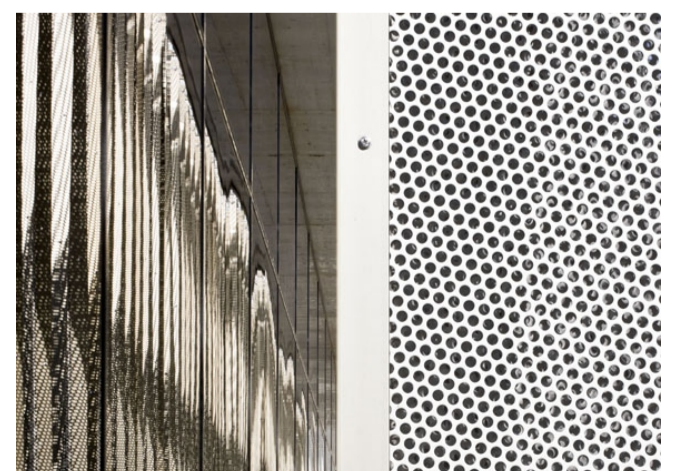


Figure 6.6 Close up of screen material (Pegenaute Studio 2012)

### 6.4.5 Bonangfoyerscreen design

The screen takes inspiration from that of the Biomedical Research Centre in Pamplona, Spain in that it has slits within the pattern that permit light and air to pass through for better visual and thermal comfort. The slits in the screen draw inspiration from black hair braiding patterns whilst also being staggered to allow for maintenance. The screen is attached to a CorTen weathering steel tube that is in turn fixed to the foyer building framework. The 250mm long fixing tube allows for the screen to be fixed at a distance permitting for the louvre windows to be opened and for maintenance work to be carried out.

CorTen steel is a material that is treated to weather over time and have an oxidised look to it. As the girls change and grow so does the façade structure. The material is a reference to the rusted zinc sheeting that is commonly found in the construction of informal structures. The structure that the foyer space is comprised of is lightweight steel, beams and columns which are glazed with openable louvre windows.

The exploded axonometric drawing (figure 6.9) of the foyer expounds on the various components that make up the foyer.

The connection between the new foyer building and the existing building is by means of a steel plate that is bolted into the new steel columns and the existing brick wall. The foyer structure is self-supported by its foundations yet the connection between the two results in a better integration of the two. This speaks of the manner in which African feminism is not about emasculating the male gender but about working, occasionally, with the male gender to dismantle patriarchy, and with the white race to undo destruction done by white supremacy.

The flooring, walls and ceiling materials within the foyer space are chosen to better enhance the amount of daylight entering the space. The vinyl flooring is prevalent in informal housing interiors; this material has been introduced into the foyer and extends into circulation routes within Bonang. The vinyl flooring, within an informal housing interior, is generally worn out from the wear and tear of daily use as it may not be of the best quality but is the most affordable. Bonang takes this commonly used material and applies it in the space in a better quality; therefore, the girls are able to identify this aesthetic, connect with the space and not feel alienated at or within Bonang.

# FOYER

## SCREEN: CONCEPTUAL APPROACH

The designed screen draws inspiration from the repeat pattern that is prevalent in African hair braiding. The screens can be arranged to form various patterns on the facade intervention. The screens are to be laser cut from CorTen steel which is treated to weather over time.

The treatment of the steel is in reference to weathered zinc materials that are found in informal settlements but here the aesthetic is celebrated and not a point of shame.



Figure 6.7: Braid pattern (Author 2015)



Figure 6.8: Braid styles (Lym 2015)

## Daylight Analysis

Daylighting Levels  
Value Range: 500 - 4500 lux  
© ECOTECT v6

Ecotect was utilised in testing the effect of a screen on the lighting levels in the foyer.

The screen which acts as a shading device reduces the lighting levels from 1700lux - 4100lux to between 500 lux - 2100 lux

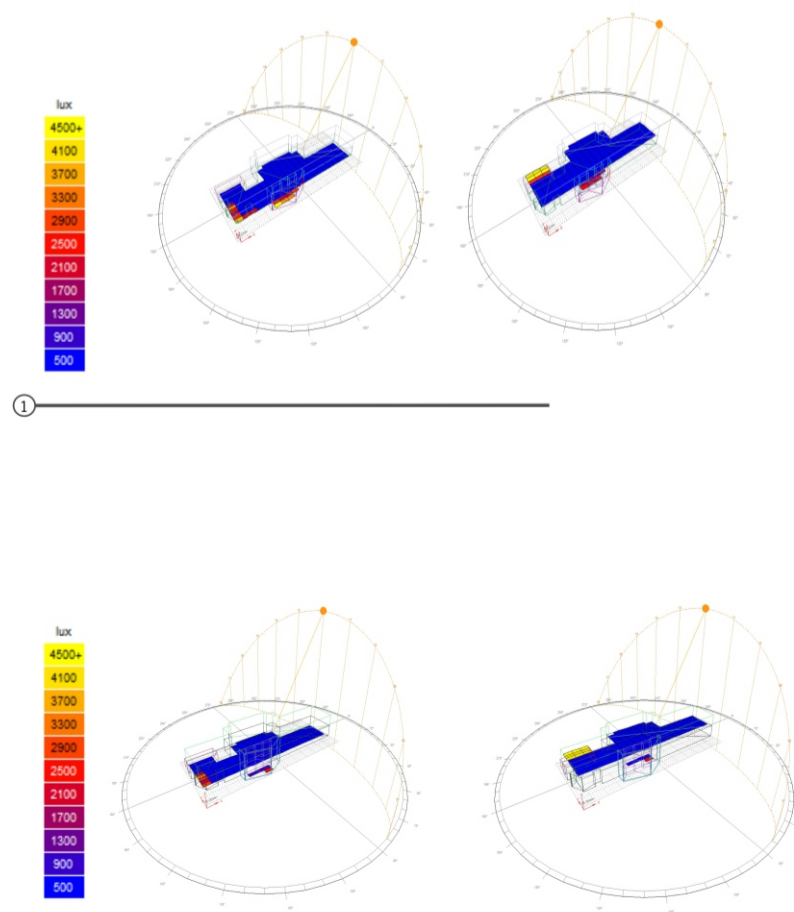
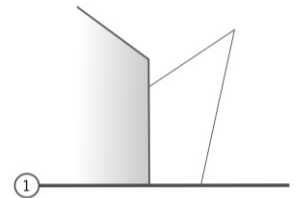


Figure 6.5: Ecotect analysis (Author 2015)

## REITERATION: FOYER

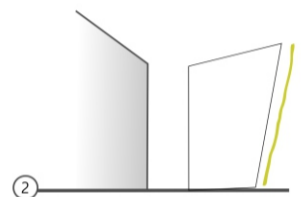
The foyer is a space that externally stands proud and announces the new programme for the host building.

It is programmed to be a transitional space that connects the exterior to the interior, orientates the user and allows for conversations to take place.



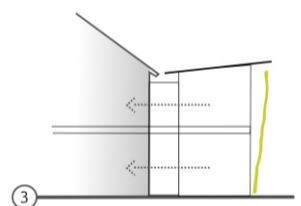
### INITIAL DESIGN

Glass facade only  
Issues:  
overheating of foyer space



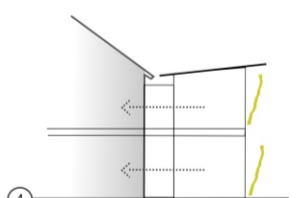
### RE-ITERATION 1

Glass facade with screen  
Move structure away from host building  
Issues:  
Roof drainage  
Connection between host building and new intervention



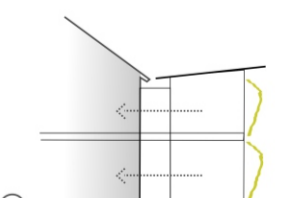
### RE-ITERATION 2

Glass facade with screen  
Move structure away from host building  
Connect new intervention with host building with a ramp  
Issues:  
Roof drainage  
Fixing of screen to facade  
Modularity of screen



### RE-ITERATION 3

Move structure away from host building  
Screen to be modular and split on 2 levels  
Issues:  
Sun angles and its effect on screen

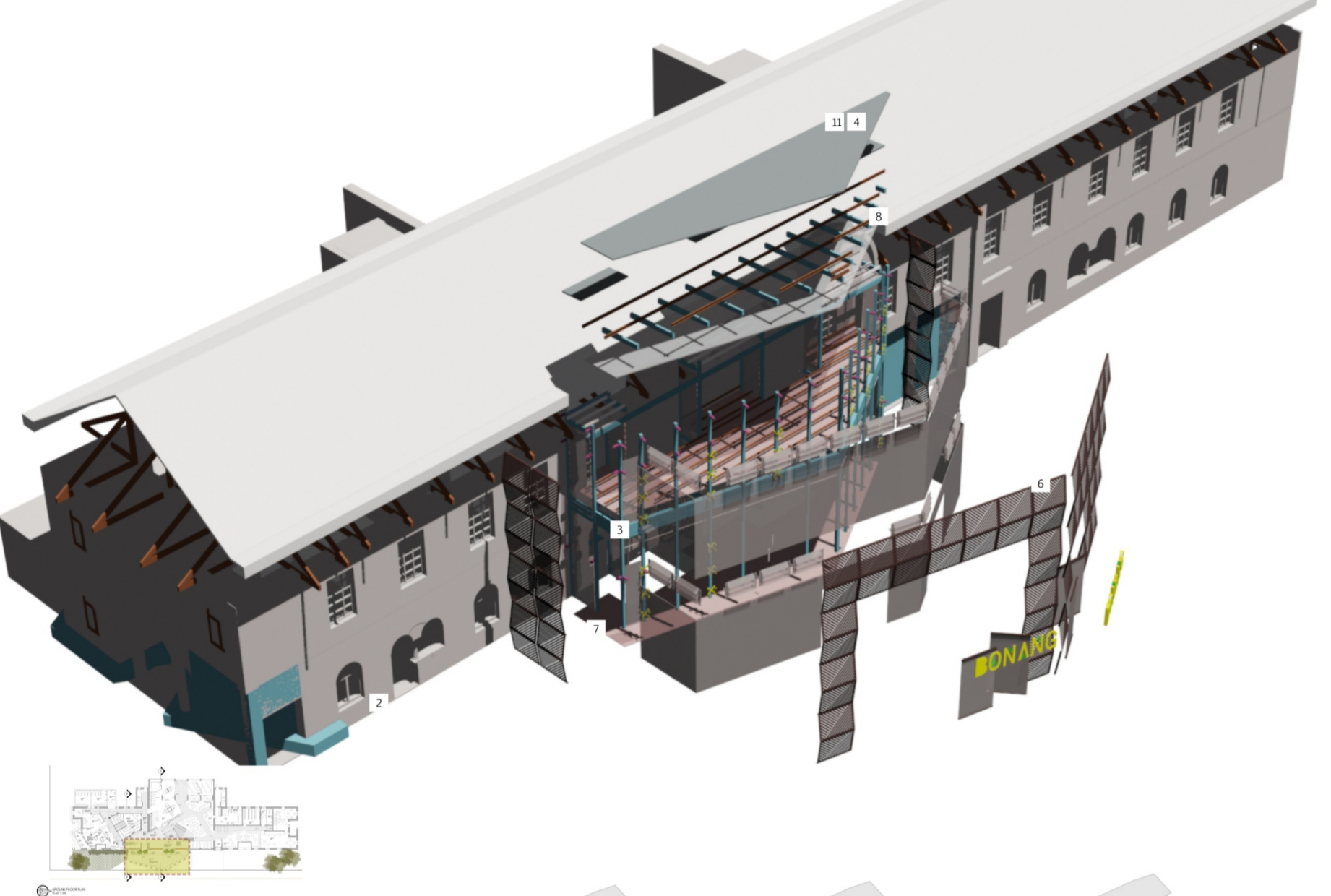


### RE-ITERATION 4

Glass facade with screen  
Connect new intervention with host building with a ramp  
Screen to be modular and split on 2 levels  
Redesign screen to suit sun angles in Pretoria

Figure 6.9: Facade intervention re-iteration (Author 2015)

**FOYER**  
The 3 entrances that puncture into and connect to the building are a representation of the tripartite oppression of race, gender and power that the AGC experiences, and of how these three issues become a bridge between the traditional white supremacist, and patriarchal society (the present) and African feminism (the future).



WEAVING INTO THE HERITAGE

The connection between the existing building and the new structure is inspired by the forms of alteration that occur with African hair. The new structural framework has its own foundations and therefore stands independently of the existing building. The new and old are connected at intervals by a corner steel plate which is fixed to the cold rolled CHROMADEX® structural steel column and existing facade wall using 10mm x 50mm expansion bolts. This connection method permits for the new structure to be removed and the structure and aesthetics of the old building to be minimally changed.

The designed screen is designed to be modular so as to allow for sections of the screen to be removed and repaired, allowing the structure to not become redundant in function.

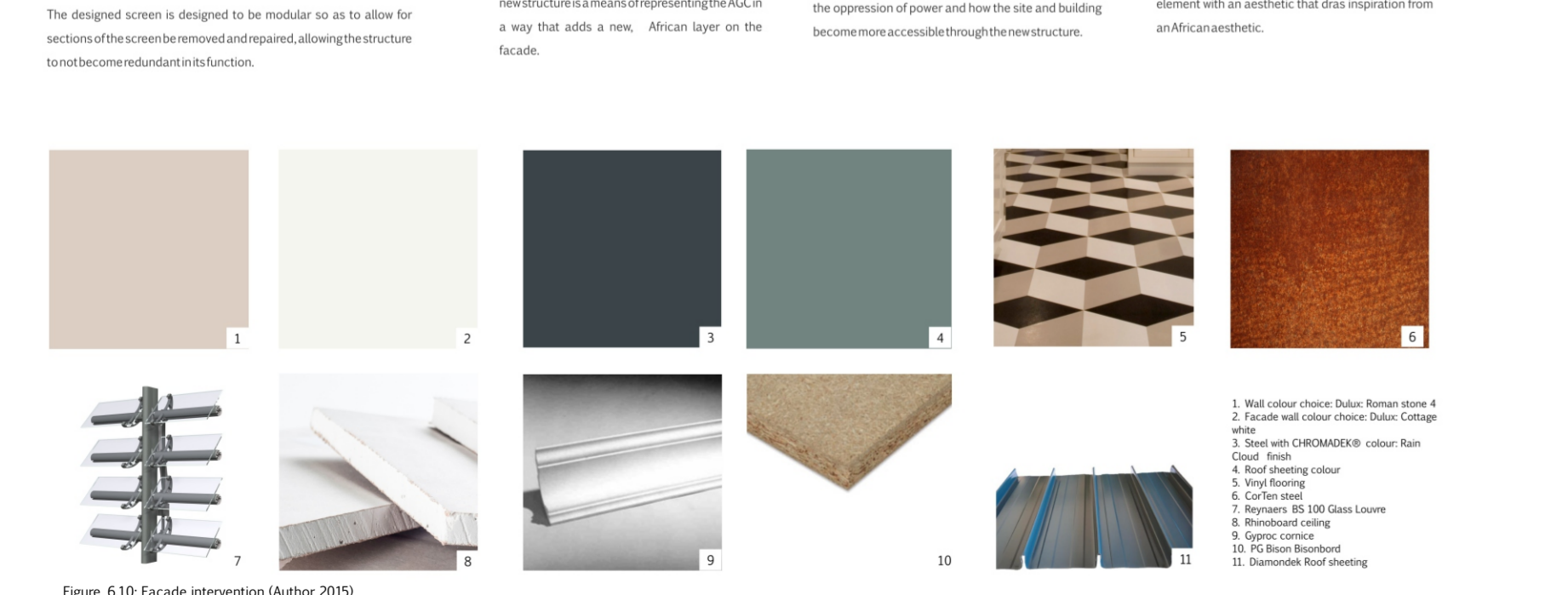
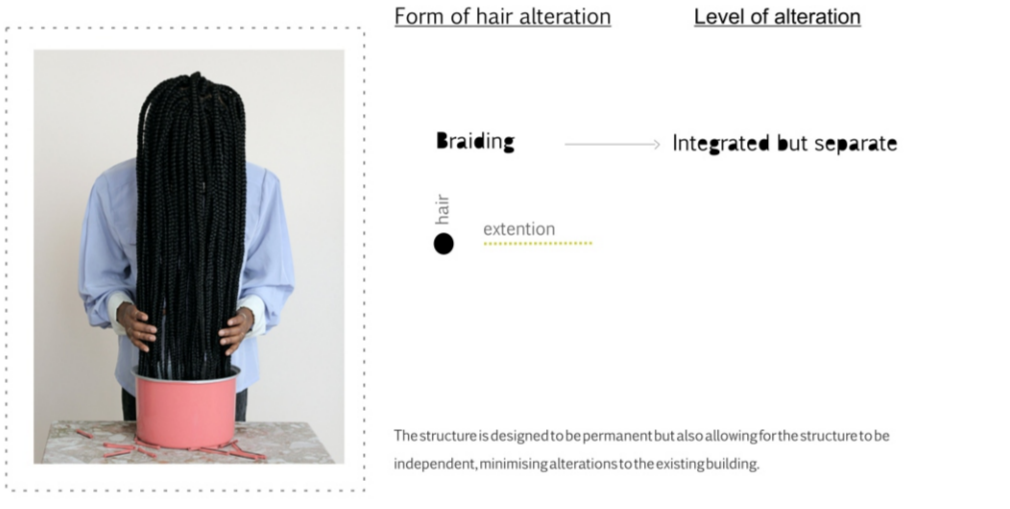
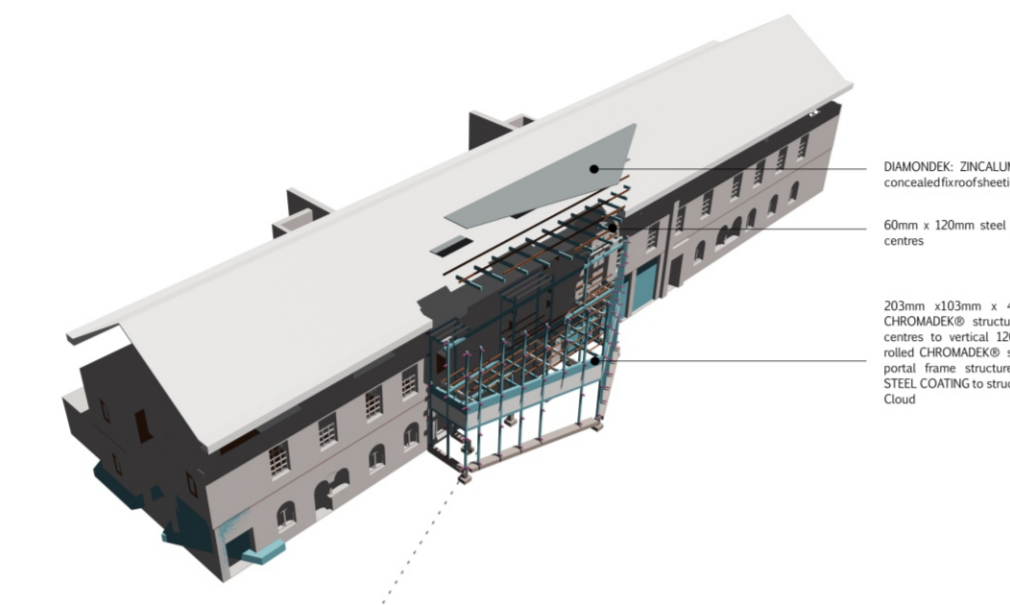
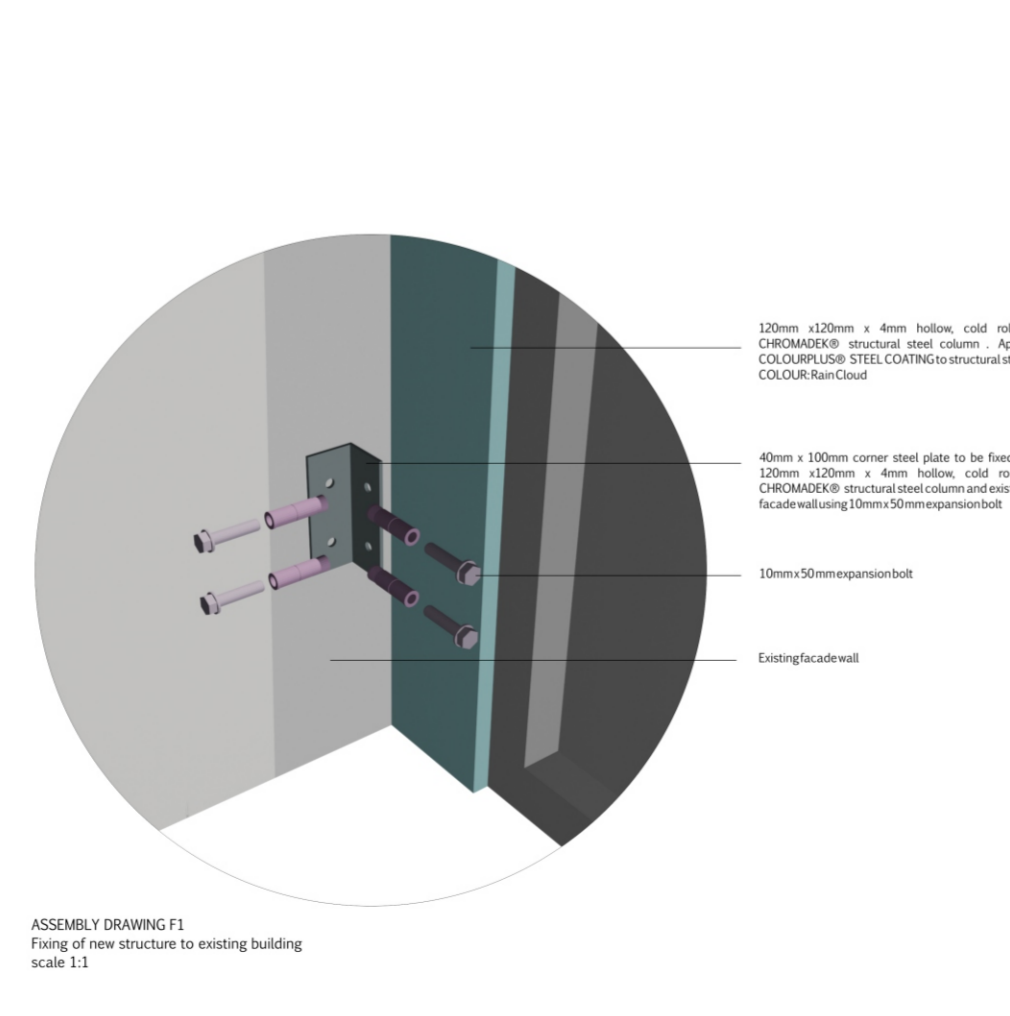


Figure 6.10 Facade intervention (Author 2015)

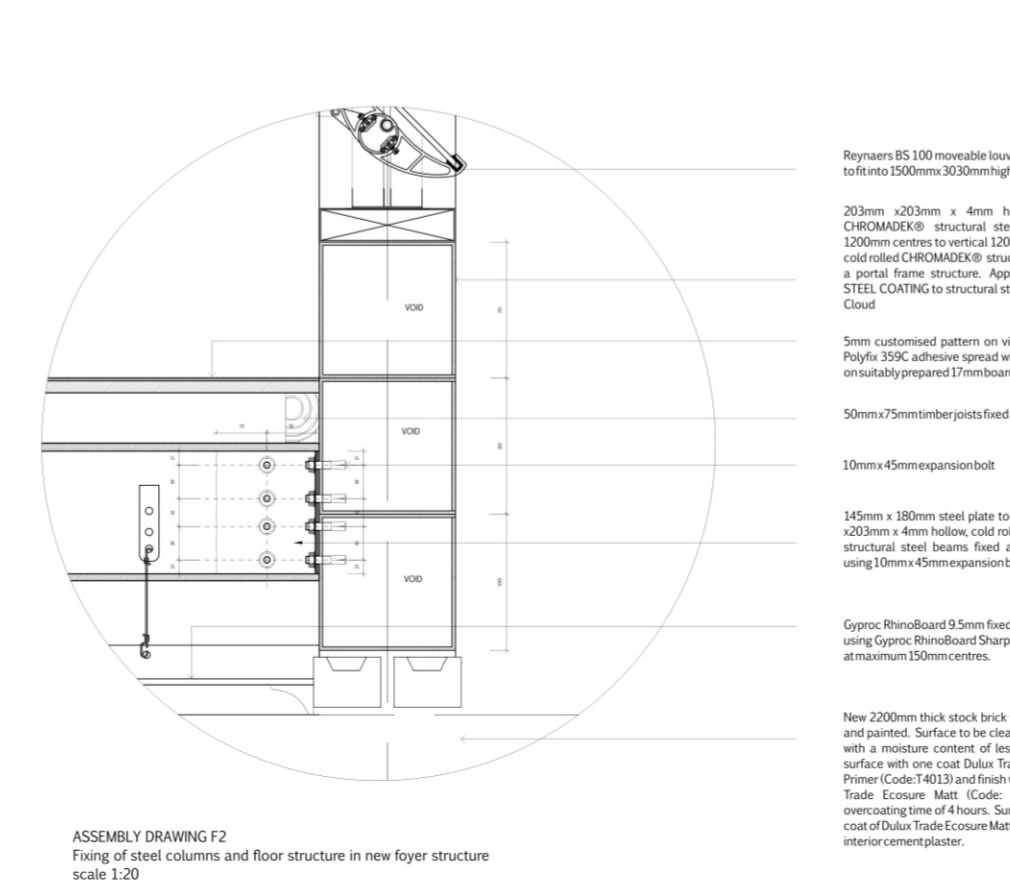
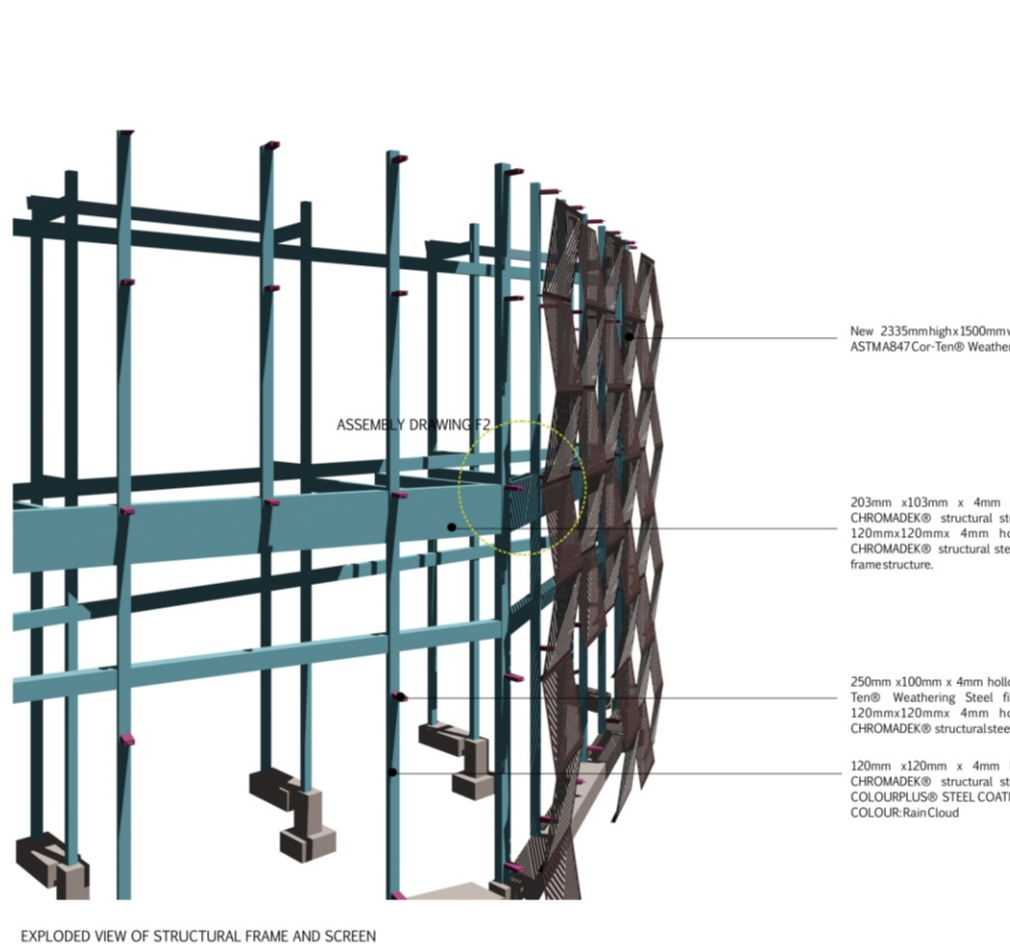
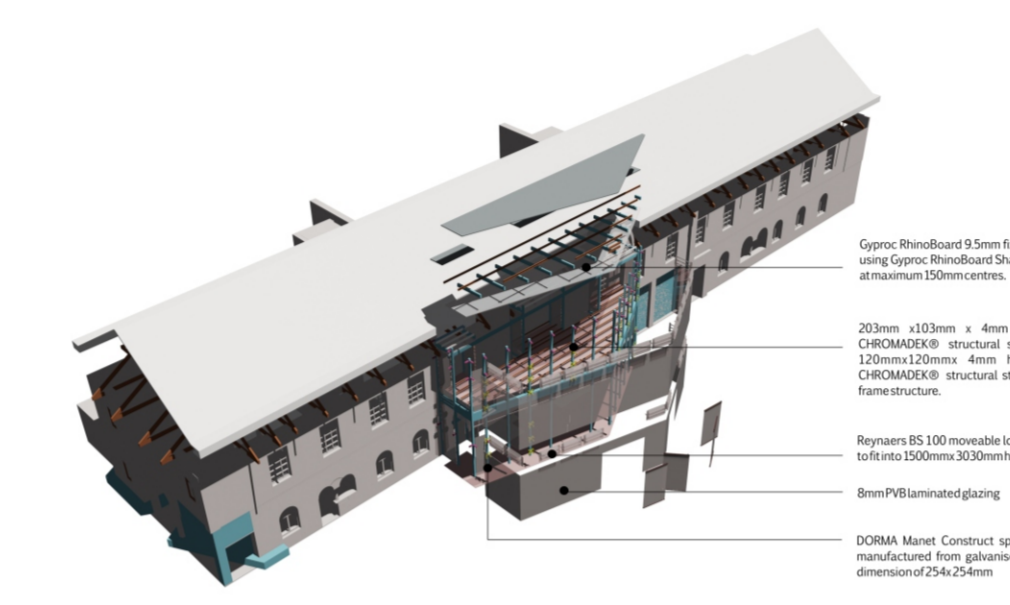
**1. FRAMEWORK**



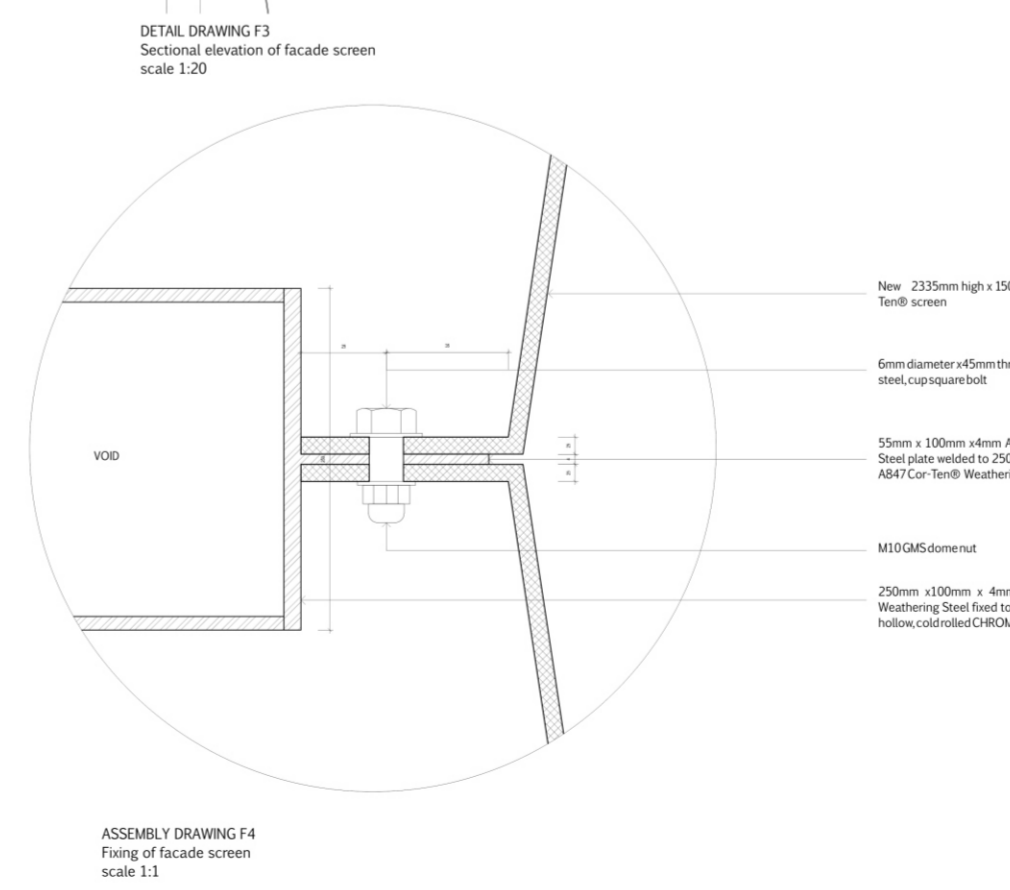
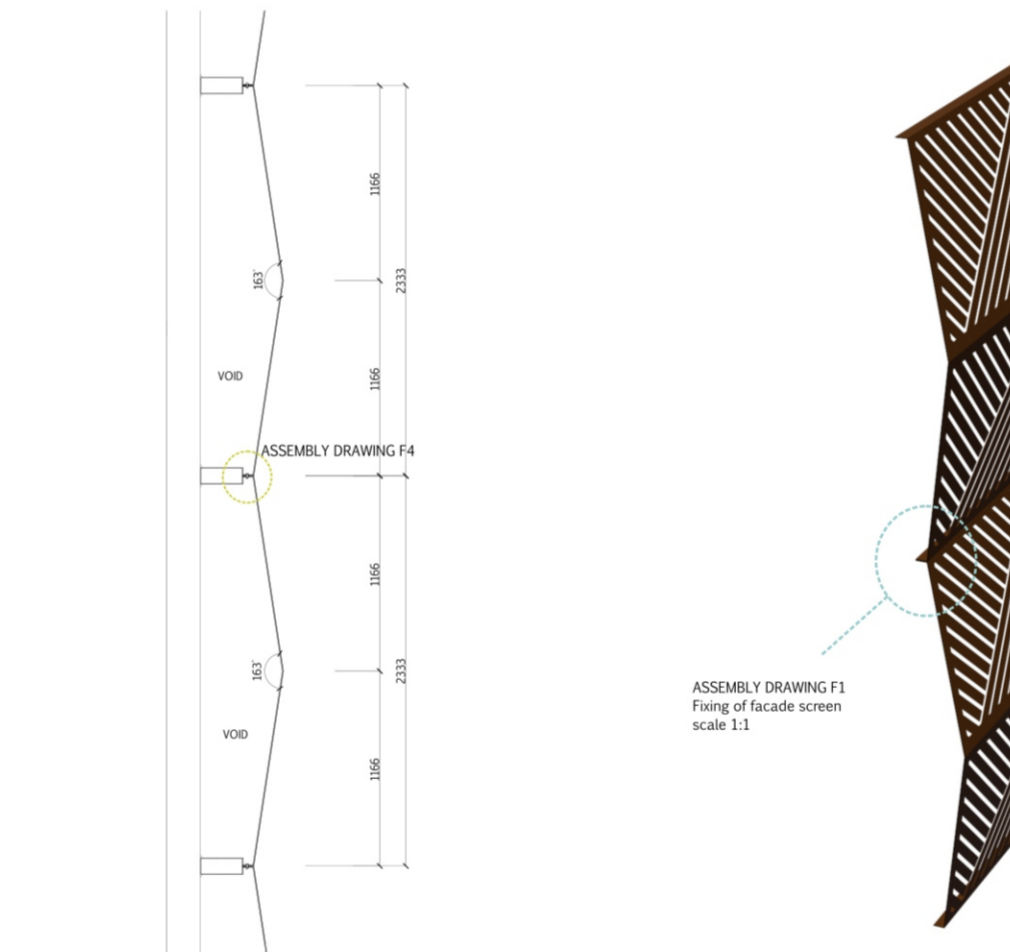
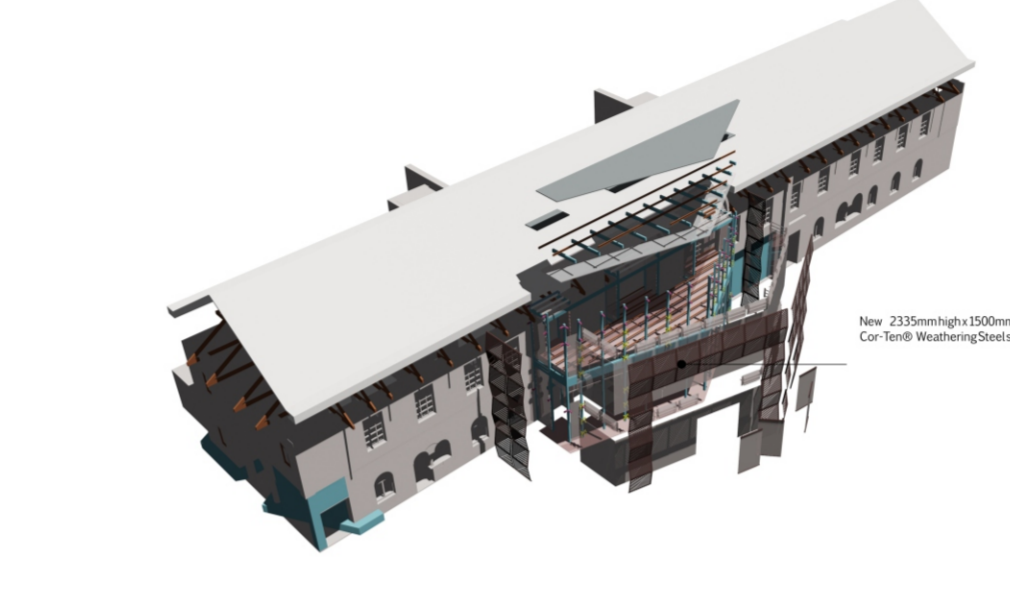
The structure is designed to be permanent but allowing for the structure to be independent, minimising alteration to the existing building.



**2. CLADDING AND STRUCTURAL SOUNDNESS**



**3. SCREEN**



BOSMAN STREET ELEVATION (n.t.s.)



MINAAR STREET ELEVATION (n.t.s.)



Figure 6.11 Facade intervention (Author 2015)



6.5 AUDITORIUM INTERVENTION

The auditorium is a speaking venue for the AGC and for the community. The space is inspired by the Feminist Stokvel, discussed in Chapter 2 (2.3). Talks that engage and empower the African girl child are to take place in this space.

The auditorium is constructed with a lightweight steel framework that is clad in recycled timber (assembly drawing A2) which will be retained from the demolishing that will happen in the building. The main concern for the space was how to keep the surrounding sound out and the sound generated inside in. Depicted in the exploded axonometric of the auditorium (figure 6.11) is AlphaPerf metal acoustic panels that will aid in the absorption of sound generated in the auditorium. The perforations in the panels allow for minimal dust to settle on the panels.

Sound absorption is further enhanced by designing for a slit (assembly drawing A3) in the auditorium seating that will permit generated sound into the void under the seating. The void in the seating contains Foamrite acoustic foam that will absorb the sound. In terms of simultaneously keeping the generated sound in and surrounding noise out, two methods were employed. Firstly, the acoustic glazing was used to permit a visual connection with its surrounding, and secondly, the steel columns that support the glazing are clad in Soniksfoam sound reduction panels with an aluminium sub-frame onto which CorTen weathering steels are cladded.

AUDITORIUM

SPEAKING AUDITORIUM

The auditorium is representative of the trees and spaces under which traditionally conversations, deliberations and decisions were made in a rural setting.

The auditorium is to host debates, information sessions and workshops, such as those by the Feminist Stokvel, (figure 6.9) that empower the African girl child.

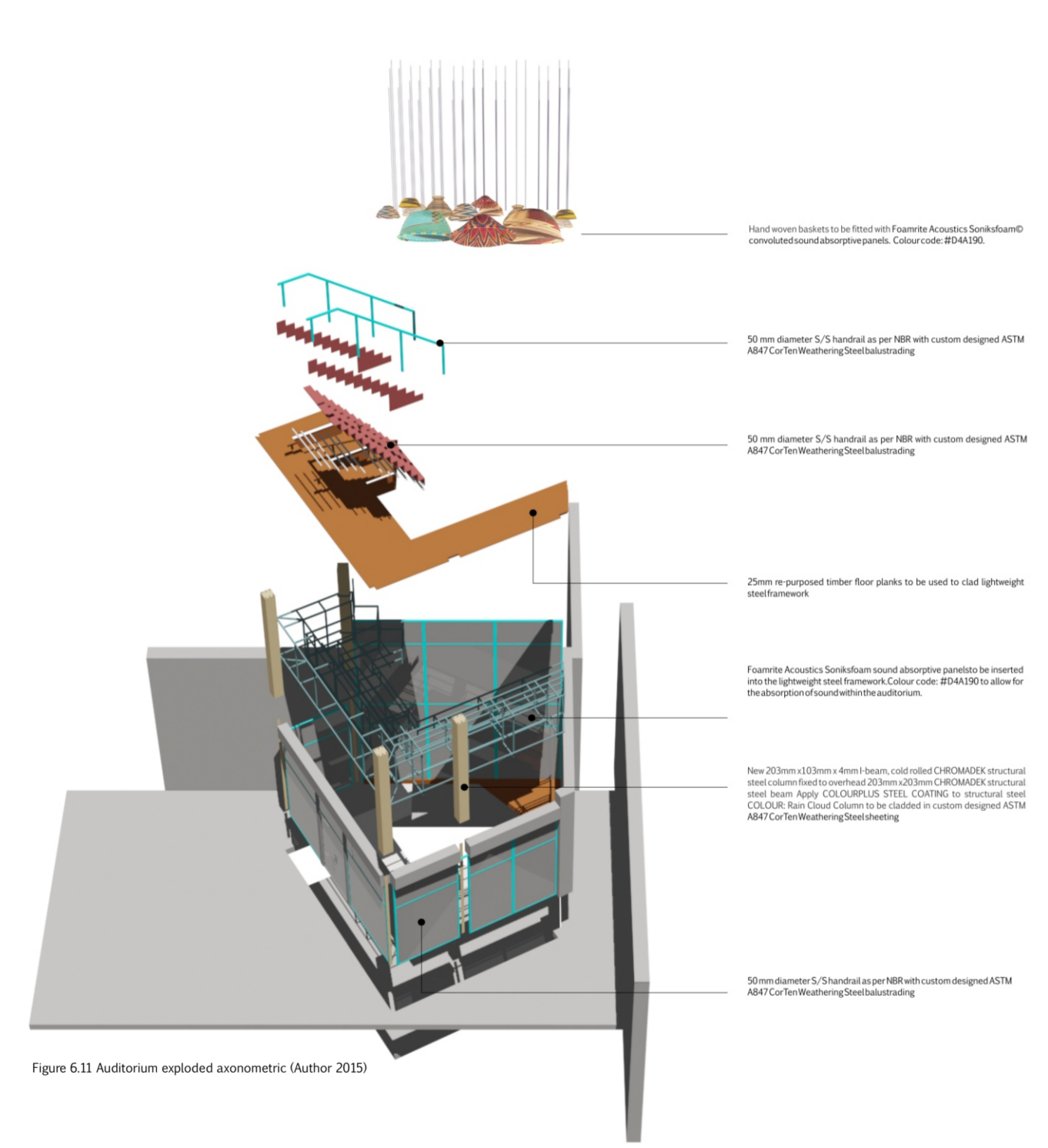


Figure 6.11 Auditorium exploded axonometric (Author 2015)



Figure 6.12: Pictures taken at Feminist Stokvel events in 2015 (Author 2015)

1. FRAMEWORK

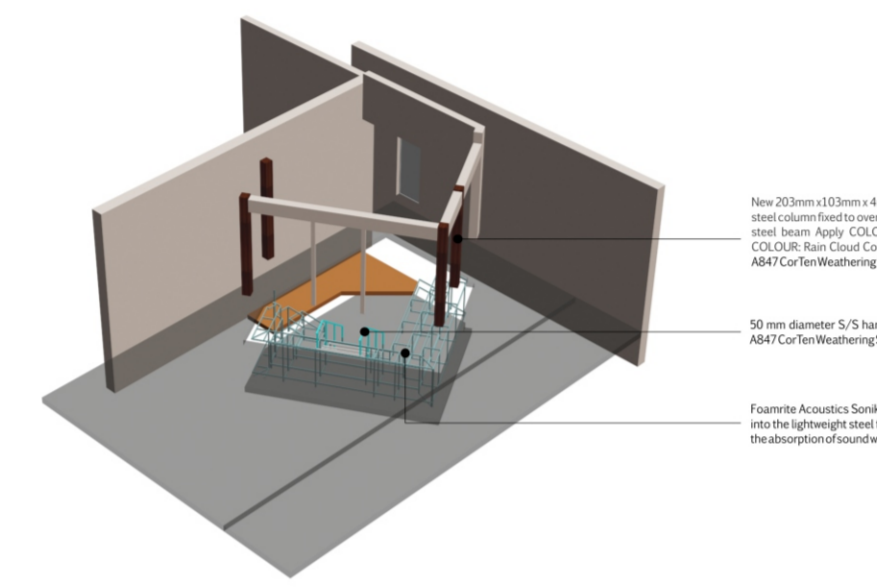


Figure 6.13: Auditorium intervention details (Author 2015)

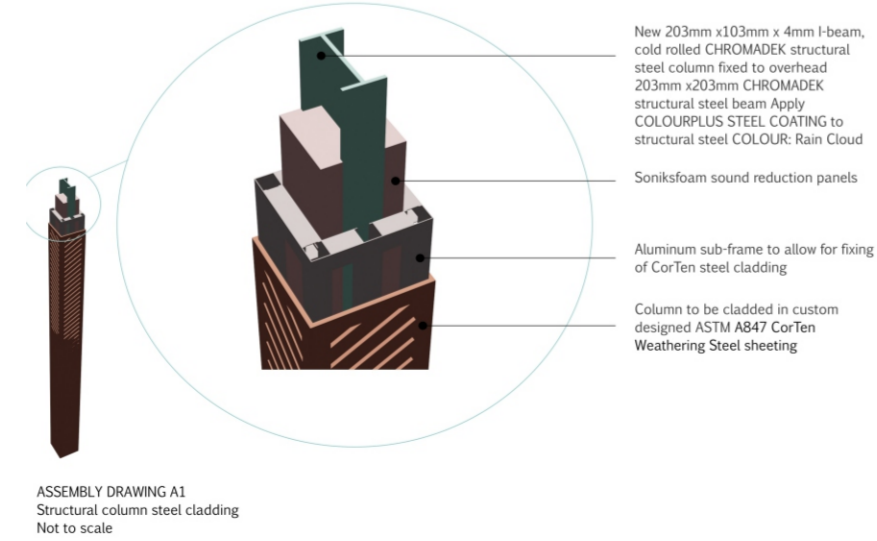
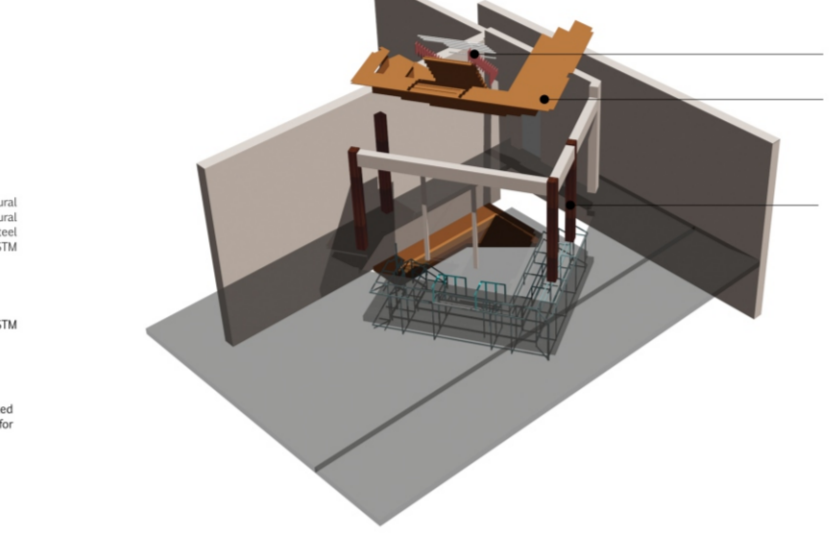


Figure 6.13: Auditorium intervention details (Author 2015)

2. CLADDING AND STRUCTURAL SOUNDNESS



DESIGNING FOR ACOUSTIC CONSIDERATIONS

The speaking auditorium requires that noise be kept out whilst any sound generated in the auditorium is to be kept in. The ACC is encouraged to use the space to voice her opinions or learn without outside interference.

For the auditorium to be acoustically viable the following considerations had to be taken

Auditorium Design Criteria (Elliott 2015: 1)

1) The background noise level must be low enough so as not to interfere with the perception of the desired sound.

2) The desired sound must be sufficiently loud.

3) The sound within the auditorium should be distributed with considerable uniformity (this statement implies the avoidance of focusing, echoes, and areas of deficient sound level when compared with other positions in the room).

4) The reverberation time should be well suited to the intended use of the space.

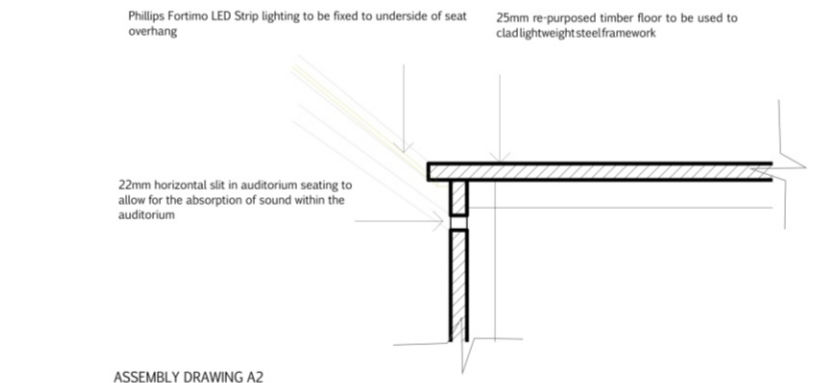
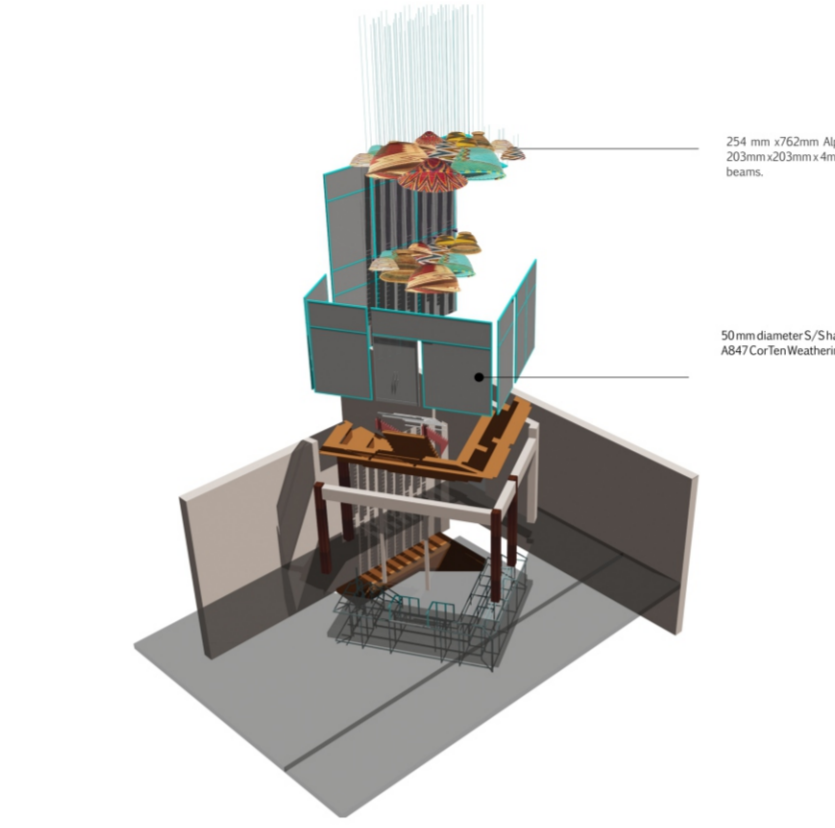
Table 6.1 Relationship between Distance and received Speech Level: shows that the distance within the auditorium will not hamper the quality of received speech.

The reverberation time in the auditorium ranges between 0.96-1.21 seconds, (c.f. Table 6.2); this is effective for the given speech to decay and not cause an echo in the space. The typical reverberation times for school auditoria range from 1.2 to 1.5 seconds (Elliott 2015: 2). The frequencies used to calculate the reverberation times are those that would typically be produced from a feminine or masculine speaker within the auditorium. The reverberation times calculated are done so on values that depict the room as unoccupied by space users.

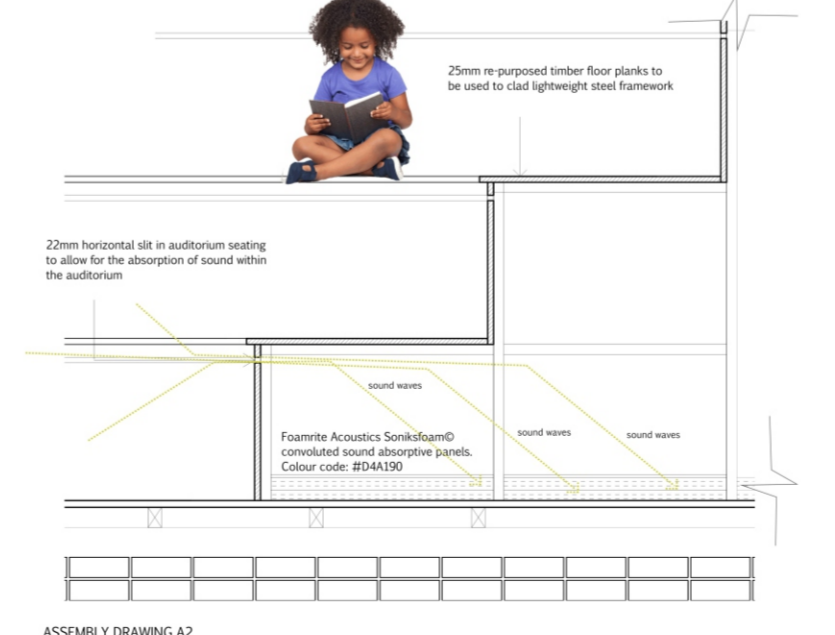


Figure 6.14: Material samples for cladding and acoustic panels (Author 2015)

3. SEALING



ASSEMBLY DRAWING A2 LED strip lighting placement scale 1:10



ASSEMBLY DRAWING A3 Slit in auditorium seating scale 1:10

Relationship between Distance and received Speech Level:

Regular talking	0.25m	0.5m	1m	1.5m	2m	3m
	70-76dB	65-71dB	58-64dB	55-61dB	52-58dB	50-56dB

Table 6.1 Relationship between distance and received speech level (AW Info. 2015)

Reverberation times

Phase	Location	Room volume (m <sup>3</sup> )	Frequency (Hz)	Effective surface area			Reverberation time (seconds)
				Walls	Floor	Ceiling	
New intervention	Auditorium	314.79	250	5.63	16.71	32.62	0.96
	Auditorium	314.79	500	3.38	11.14	27.96	1.21
	Auditorium	314.79	1000	3.38	11.14	32.62	1.08
	Auditorium	314.79	2000	2.25	8.36	32.62	1.19

Table 6.2 Reverberation times (Author 2015)

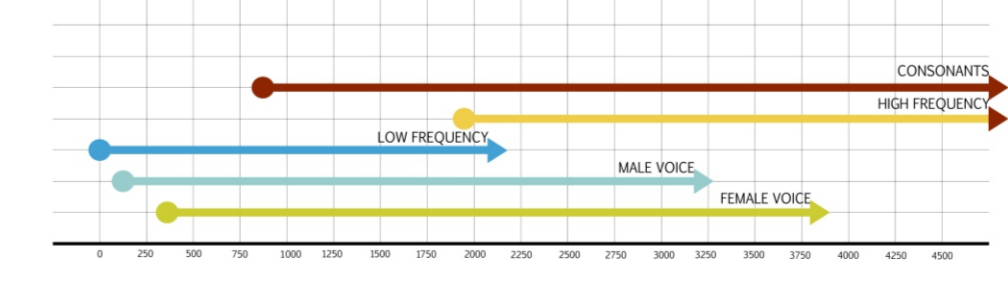


Table 6.3 Voice frequencies (AW Info. 2015)







6.6 CIRCULATION INTERVENTION

The new vertical circulation, staircase and elevator, are centrally placed and a celebration of the empowerment of the AGC. The layout of the floor plans is designed for grouping of spaces thus situating public spaces together whilst the more private and quieter spaces are situated in proximity. This grouping results in the two levels not having a hierarchical narrative such as the one the African girl child may experience in her home environment. Instead, spaces such as the administration offices and crafting spaces are both situated on one floor, granting her fluid movement between the two domains. The AGC can be seen actively circulating the two floors, in a centre that celebrates the African girl child.

The staircase which wraps around and is supported structurally by the elevator is made up of a steel hollow core framework as annotated in figure 6.12. The balustrading is designed to be CorTen steel with the black hair braiding patterns as inspiration for the cut-out pattern. A 50mm stainless steel handrail is placed at a 900mm height. The riser is constructed from repurposed timber that will be retained during the demolishing stage.

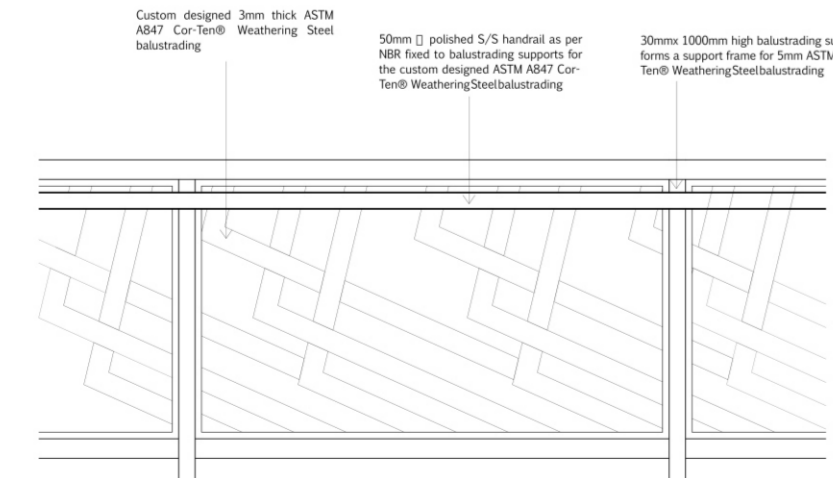
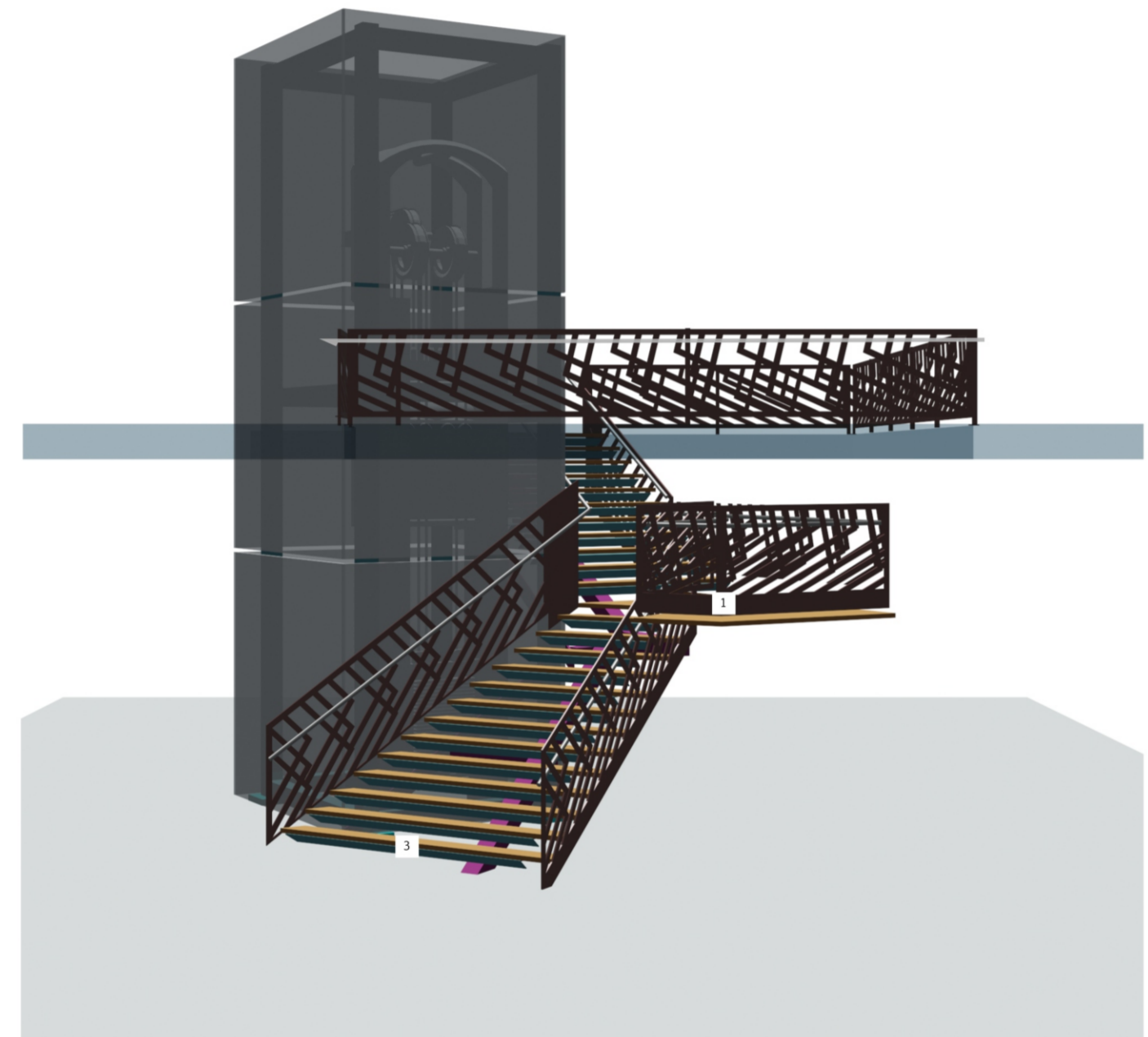
The elevator consists of a steel hollow core framework onto which the staircase structure is fixed, the framework is clad in 12mm laminated, and strengthened glass.

The staircase is designed according to the requirements of SANS 10400-M depicted in figure 6.12.

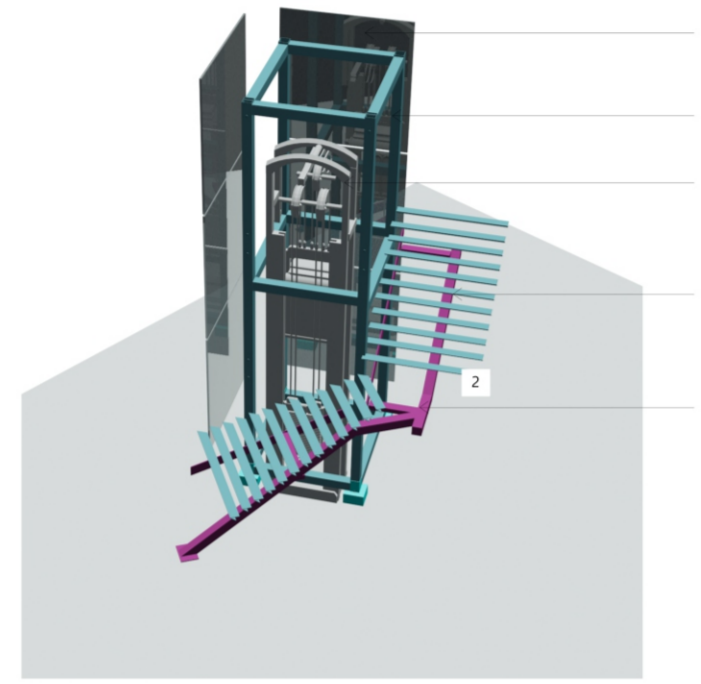
# STAIRCASE

STAIRCASE AND LIFT

The staircase introduced in the design encourages the free and visible movement from one level to another. The design of the staircase is bold and incorporates a handrail that is inspired by the fractal pattern that is visible in African hair braiding patterns (depicted in the figure below).

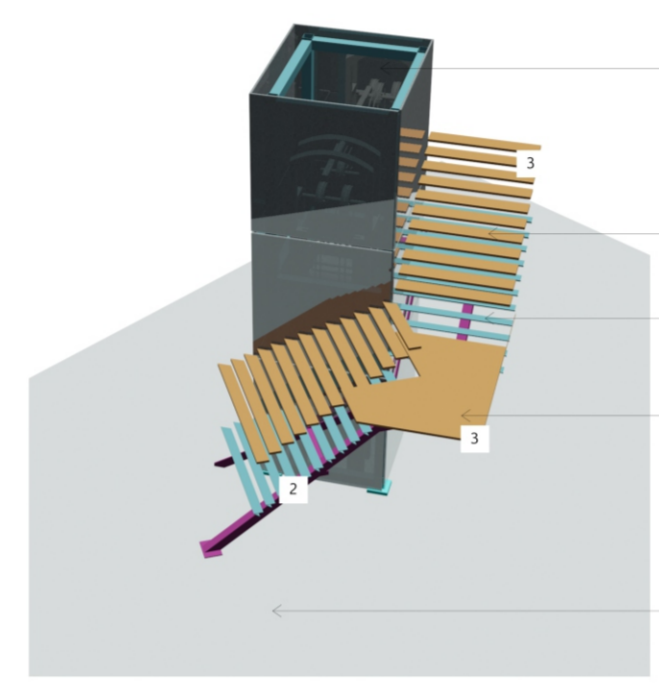


1. FRAMEWORK



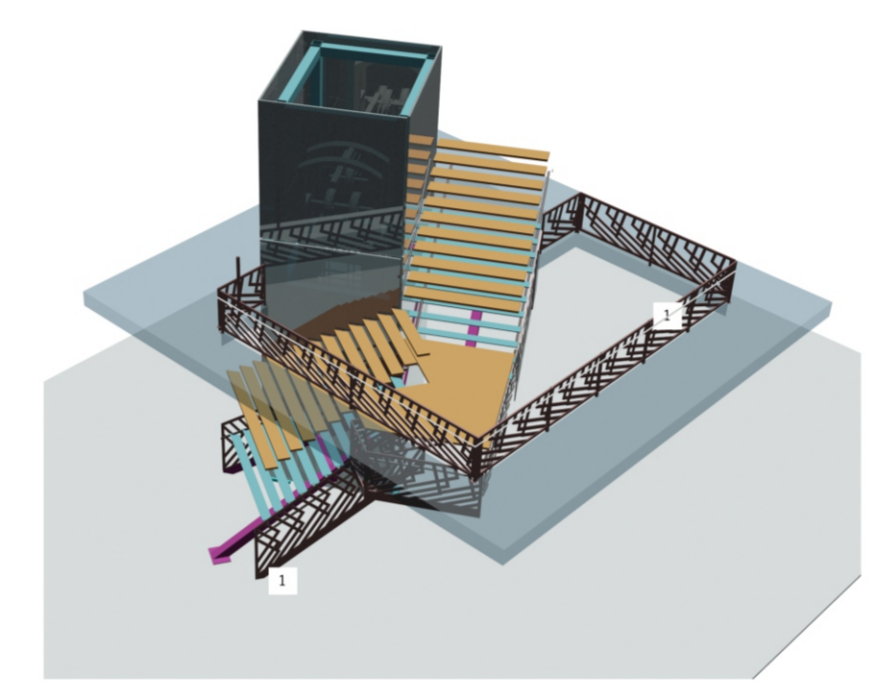
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel framework. Steel COLOUR: Rain Cloud
- 4mm thick, cold rolled CHROMADEX® structural steel stair stringer fixed to the supporting 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel elevator framework.
- 270mm x 302mm Dia, Gen 2 RaGen machine roomless elevator.
- Cold rolled CHROMADEX® steel spreader welded to Landing 1 mid steel plate and 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer COLOUR: Rain Cloud
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to ground floor using M24x100 mm hexagon expansion bolt. Steel COLOUR: Rain Cloud

2. CLADDING AND STRUCTURAL SOUNDNESS



- 270mm x 302mm Dia, Gen 2 RaGen machine roomless elevator.
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- Cold rolled CHROMADEX® steel spreader welded to Landing 1 mid steel plate and 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer COLOUR: Rain Cloud
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to ground floor using 20x200mm cold rolled CHROMADEX® steel spreader COLOUR: Rain Cloud using M24x100 mm hexagon expansion bolt. Steel COLOUR: Rain Cloud

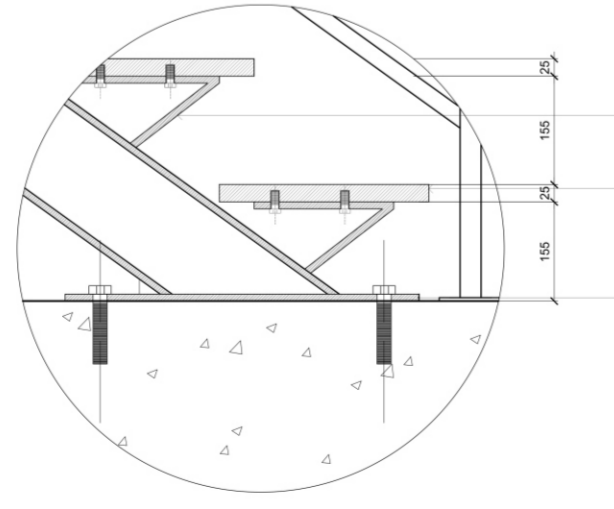
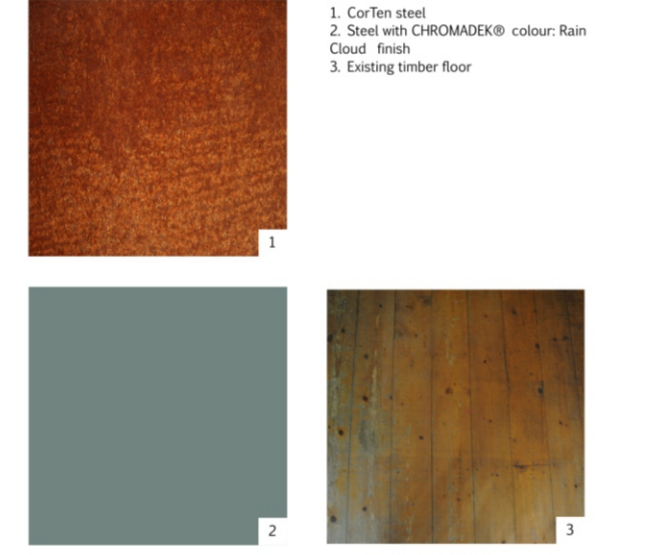
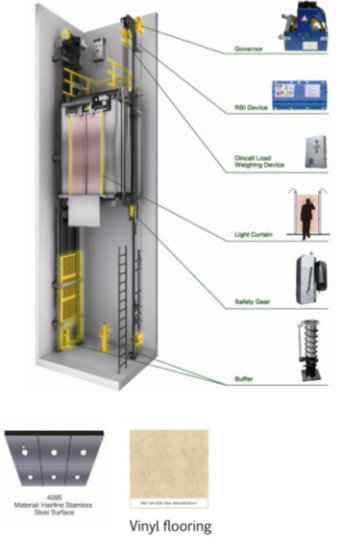
3. RAILING



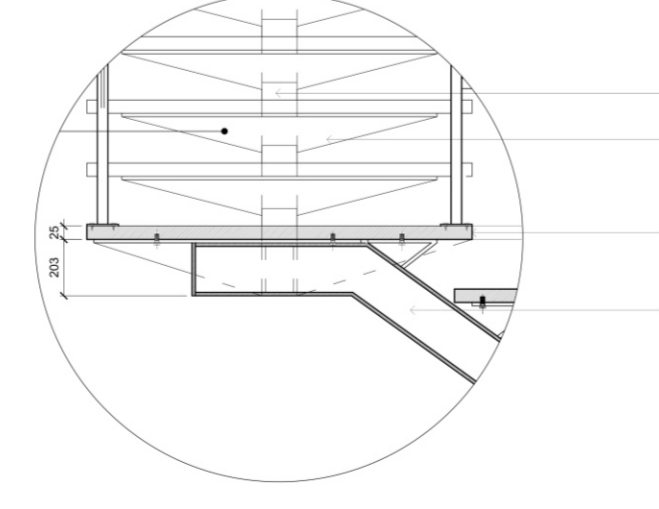
- 270mm x 302mm Dia, Gen 2 RaGen machine roomless elevator.
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- Cold rolled CHROMADEX® steel spreader welded to Landing 1 mid steel plate and 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer COLOUR: Rain Cloud
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to ground floor using 20x200mm cold rolled CHROMADEX® steel spreader COLOUR: Rain Cloud using M24x100 mm hexagon expansion bolt. Steel COLOUR: Rain Cloud

NOTE: Stairways SANS 10400-M

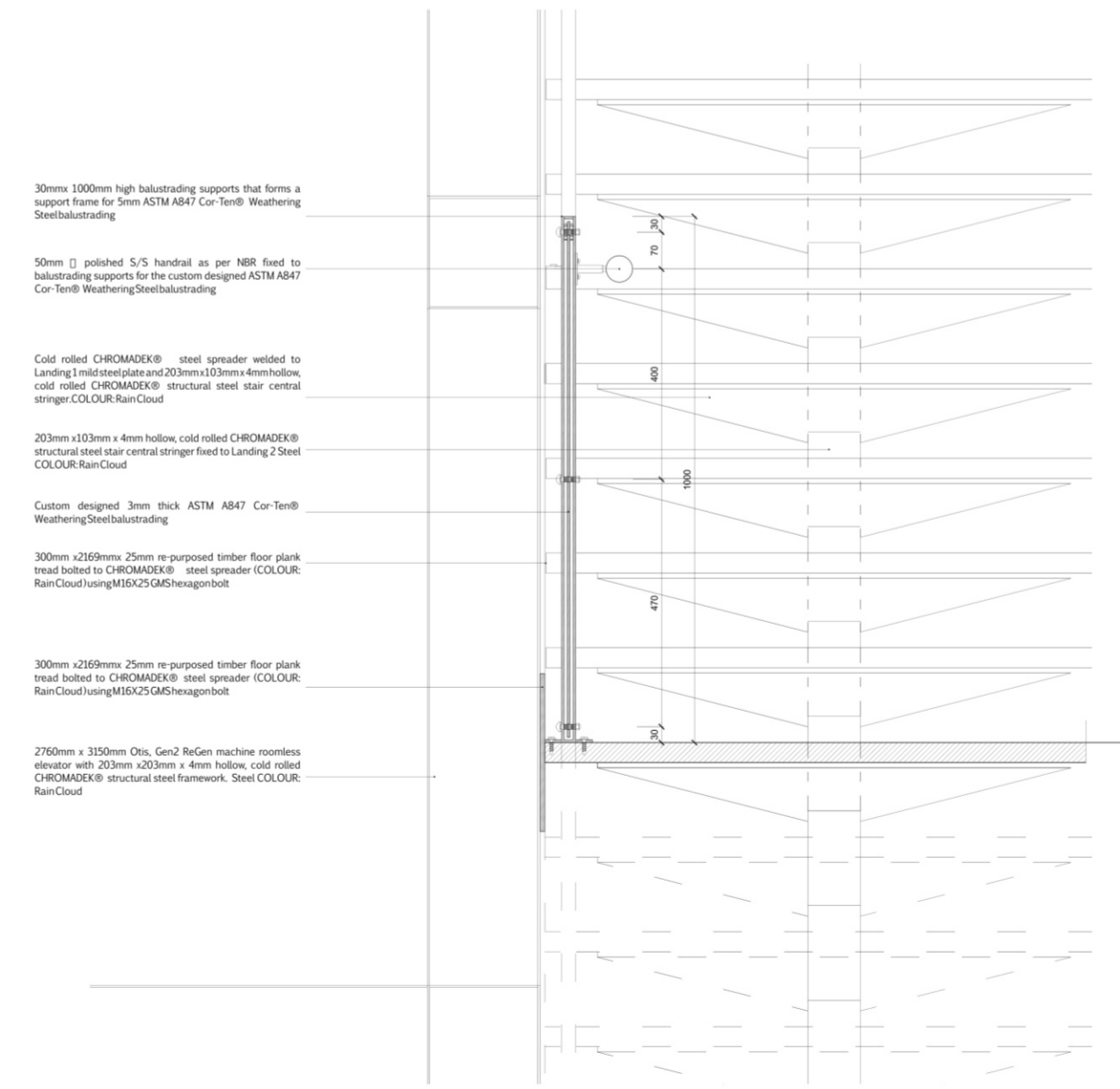
- There must be sufficient headroom above any stairway: at least 2.1 m measured vertically from the pitch line of the staircase
- Stairs need to be wide enough for safe use, usually not less than 750 mm
- The going (depth of the tread) and width of treads must be at least 200 mm
- Treads of stairways that do not have solid treads must overlap the nosing tread by at least 20 mm
- Landing serving two flights in a straight run needs to be at least 900 mm long and at least as wide as the flight of stairs
- There should be a vertical rise that is greater than 3 m between landings
- Single step risers should be more than 200 mm
- The handrail to any flight of stairs provided in shall be:
  - a) at least one side of the flight where the width of the flight is less than 1.1 m, and on both sides where the width exceeds 1.1 m
  - b) securely fixed to such wall, screen, railing or balustrade at a height of not less than 900 mm and not more than 1 m measured vertically from the pitch line to the upper surface of the handrail, and
  - c) of such a design and so fixed that there shall be no obstructions on, above or near to it which might obstruct the movement of a hand moving along it.



- Cold rolled CHROMADEX® steel spreader welded to Landing 1 mid steel plate and 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer COLOUR: Rain Cloud
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to ground floor using 20x200mm cold rolled CHROMADEX® steel spreader COLOUR: Rain Cloud using M24x100 mm hexagon expansion bolt. Steel COLOUR: Rain Cloud



- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to Landing 2 steel COLOUR: Rain Cloud
- Cold rolled CHROMADEX® steel spreader welded to Landing 1 mid steel plate and 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer COLOUR: Rain Cloud
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to ground floor using 20x200mm cold rolled CHROMADEX® steel spreader COLOUR: Rain Cloud using M24x100 mm hexagon expansion bolt. Steel COLOUR: Rain Cloud



- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- 50mm (Ø) polished S/S handrail as per NBR fixed to balustrading supports for the custom designed ASTM A847 Cor-Ten® Weathering Steel balustrading
- Cold rolled CHROMADEX® steel spreader welded to Landing 1 mid steel plate and 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer COLOUR: Rain Cloud
- 203mm x 203mm x 4mm hollow, cold rolled CHROMADEX® structural steel stair central stringer fixed to Landing 2 steel COLOUR: Rain Cloud
- Custom designed 3mm thick ASTM A847 Cor-Ten® Weathering Steel balustrading
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt
- 300mm x 280mm x 25mm re-purposed timber floor plank fixed to CHROMADEX® steel spreader COLOUR: Rain Cloud using M8x125 GM Hexagon bolt

ASSEMBLY DRAWING S4: Fixing of handrail and stair supports scale 1:10



Figure 6.14 Staircase intervention detailing (Author 2015)



## 6.7 FLOORDETAILING

A detail of concern is retaining and integrating the memory of the old with the new. In the case of demolished walls in the interior, the memory will be remembered by inserting a CorTen steel plate in the void of the wall demolition as indicated in figure 6.13.

This detailing is to be applied to any surface in the building where a wall is removed, signifying respect to the old, and that it is possible to retain the history of the building in a manner that allows the new use of the building to function better within the space

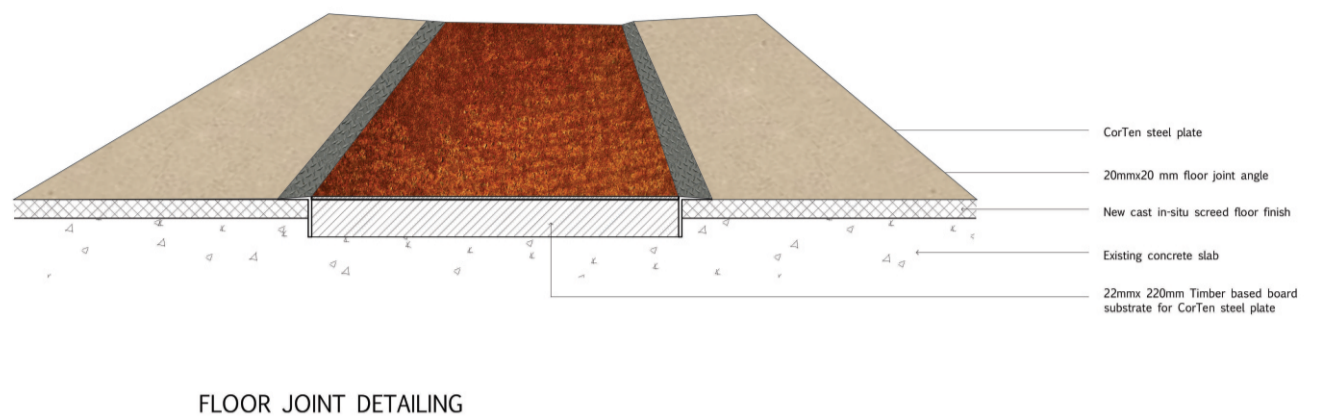


Figure 6.15 Floor joint detailing, not to scale (Author 2015)

## 6.8 COURTYARD TOWER INTERVENTION

The training tower that can be found in the inner courtyard is a part of the heritage of the site and therefore the treatment and redesign of it is to take this into consideration.

The design considerations for the tower are depicted diagrammatically in figure 6.16. The first consideration for complete demolition proved to be contradictory to the heritage strategy outlined in Chapter 2 (2.2.2) therefore partial demolition was considered to reduce the phallic nature of the tower and so lowering the height of the structure to that of the surrounding courtyard buildings. Diagram number three depicts the chosen approach to the tower intervention, this being more inline with the heritage strategy. The tower will incorporate a performance stage on the ground floor which will require demolition work. The rest of the tower will be designed to be a folly. Drawing inspiration from Rapunzel re-imagined as an African character (see figures 6.17 and 6.18). The folly will consist of staircases that lead to the top floor and back down. The girls are given freedom to make use of the different spaces, on each level, as they wish. The staircase is to be seen through as in figure 6.20 whilst allowing for patterned cladding to be applied to it as shown in conceptual rendering figure 6.19 and figure 6.21

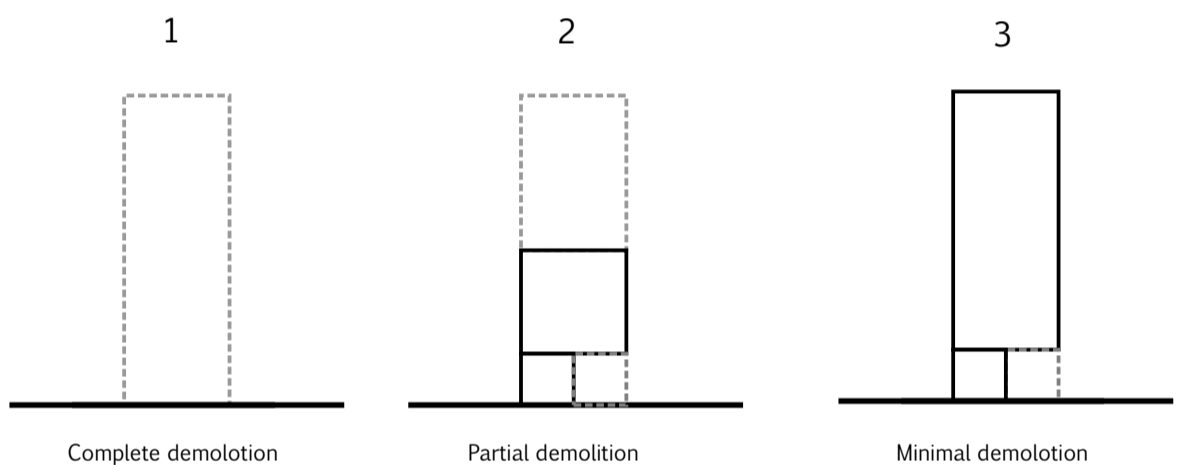


Figure 6.16 Training tower design consideration (Author 2015)



Figure 6.17: Afro Rapunzel comic strip (Author 2015)

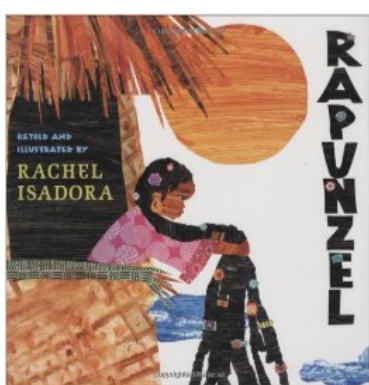


Figure 6.18: Dreadlocked Rapunzel book cover (Author 2015)



Figure 6.19: Conceptual rendering of Training tower design (Author 2015)



Figure 6.20: Steel staircase (Author 2015)

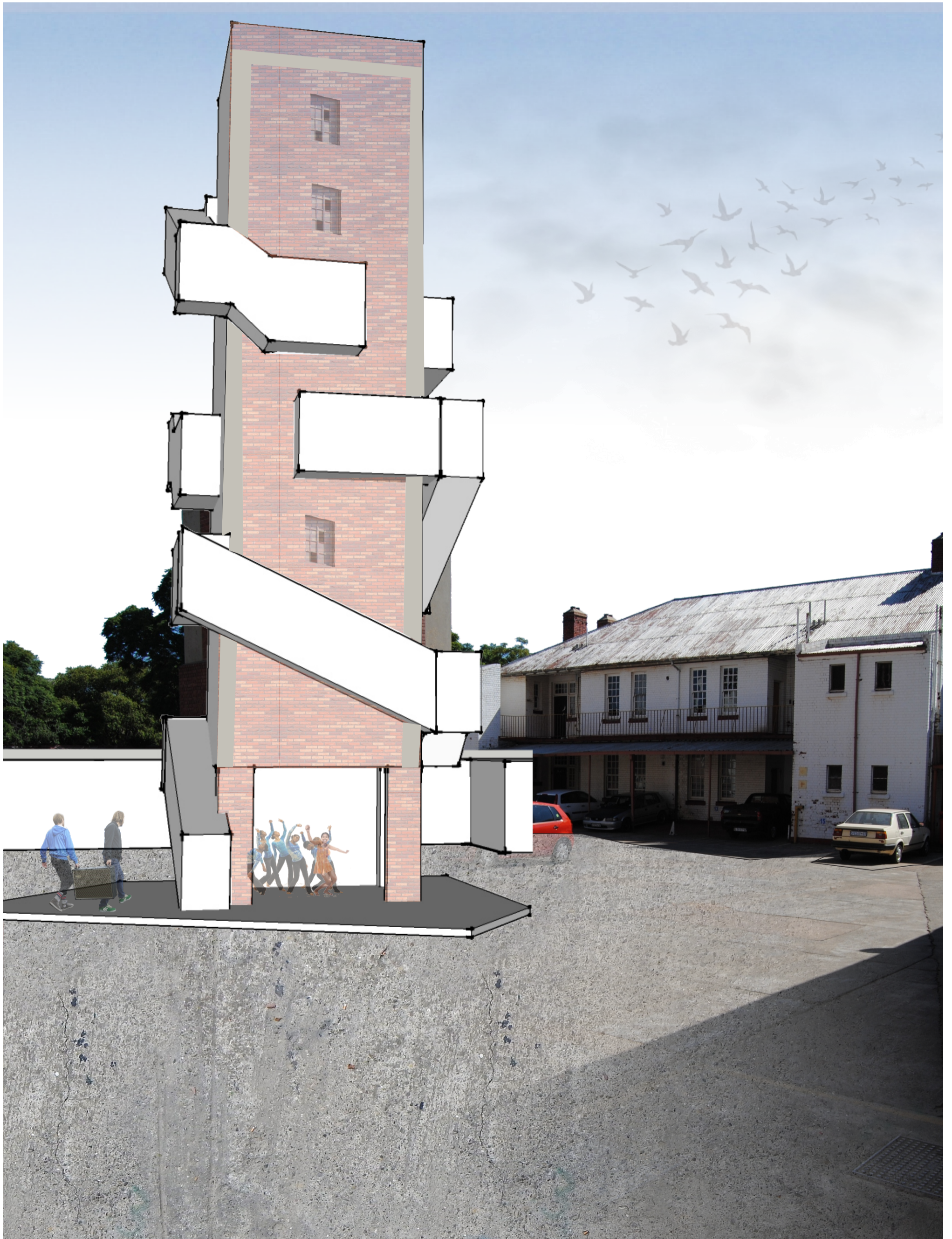


Figure 6.21: Conceptual rendering of Training tower design (Author 2015)

## 6.9 CONCLUSION

The technical development chapter sought to find ways of adding value and meaning to the design by the application of the conceptual approach to the technical resolution of the interventions and connecting the old and the new to create an integrated interface. The chosen interventions which act as transitional spaces and products were addressed in their connection details, material choices and design problem resolution.





# 7 . C O N C L U S I O N

## 7.1 Findings

The African girl child full of potential but surrounded with few opportunities to see her potential come to fruition. Bonang is such a space in which a young black girl can have an interface that connects her with relevant assistive organisations, her community and her culture. The existing host building stands impermeable and inaccessible by the public and especially the African girl child. The degenerate state of the building with its outdated, cellular layout required an intervention that would go in contrast to this.

The proposed interventions, public in nature, allowed for the building to be rendered usable by the community in a manner that works to the building's and contextual setting's advantage. The friction between the new and old, what is Afro-centric and what is western was dealt with by finding common ground between the two that could aid in the development of a design that. Informal design qualities, and interventionist approaches that are inspired by African culture aid in adding a contextually appropriate layer to the technical resolution of the building. The building therefore becomes a place in which the AGC can feel comfortable to engage in her own empowerment. She no longer needs to feel alienated in a traditionally patriarchal society.

## 7.2 Contribution

The study is relevant in the Interior design field as it has delved into how alteration could be designed to be contextually appropriate and empowering within an African feminist setting. The African feminist finds herself with a society that expects her to fulfil traditional and cultural roles, of which some may hinder her empowerment. The investigation looks into a program that breaks the barrier of inaccessibility of skills to the African Girl Child within the city and designing interventions that translate the pivotal issues into a spatial setting.

The design investigated what is currently occurring contextually and then sought to incorporate and strengthen these activities. This manner of investigation is of importance especially with regards to an African Aesthetic of which no formal guideline exists within the Interior Design field. The design of the center was one based on intuition and conscious design, incorporating elements, informants and cultural findings with which the African girl child could identify.

## 7.3 Recommendations

The following recommendations are listed for further investigation:

### 7.3.1 Phased approach

The initial intervention in the design of the Centre for the African girl child is part of a phased approach which consists of an Arts and Culture program which could then be phased on to include programs that incorporate Technology, Engineering and Mathematics. Each program will have specific spatial requirements that will need to be designed.

### 7.3.2 African Aesthetic from an African feminist stance

The investigation of the African Aesthetic is in its initial stage and requires further development in identifying guidelines and informants that can be used in the designing of spaces that speak to the African context that the intervention is found.

### 7.3.3 Precedent studies

The precedent studies that were reviewed are a satisfactory start but requires for a deeper and more thorough investigation into precedents that relate to the African aesthetic.

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# 9. APPENDIX- A: PRESENTATION DRAWINGS



# BONANG

A CENTRE FOR THE AFRICAN GIRL CHILD  
by Esther Shaidi

Full dissertation title: BONANG: A centre for the African Girl Child in The Old Pretoria Fire Station : an investigation into the role of Interior design as an agent in the empowerment of the African Girl Child.

Research Field: Heritage and Cultural Landscapes  
Study leader: Catherine Karusseit (Ms)  
Studio Master: Raymund Konigk (Dr)



# INTRODUCTION

“We are the ones we have been waiting for”

(Walker 2006)

## BACKGROUND

The African girl child (2):

- repressed by **male dominance**
- controlled by **traditional perceptions** of a woman
- abused by the time-honour **customs** of her community
- the African girl child referred to in this study refers to a girl **between the ages of 12-17**.
- has a **inferior status**

## REAL WORLD PROBLEM

A result of the discrimination :

- Lack of **access to girl-friendly, safe and supportive spaces** aid in her self-empowerment and self-actualisation.
- School and home environments are not necessarily affirming, therefore a third space is needed whereby she can be acknowledged and empowered.

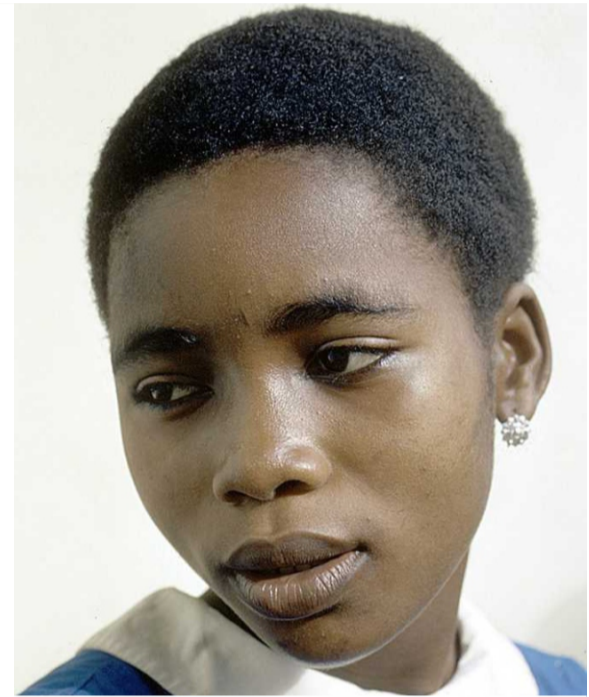


Figure 1. Students at a Protestant secondary school in Mbandaka, Congo (Elisofon 1972)

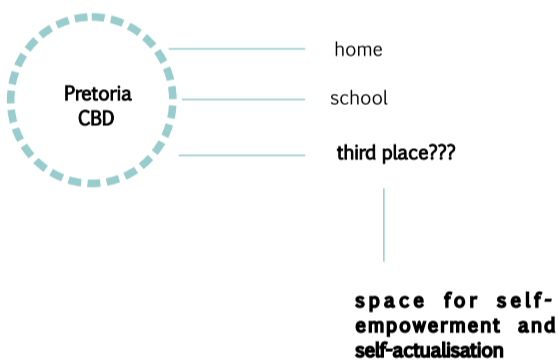


Figure 2. Possible affirmative spaces in the Pretoria CBD (Author 2015)

## PROBLEM STATEMENT

The African woman and African girl child experience a dichotomy of oppression, firstly within a previously white supremacist society and secondly within their own family with regards to traditional gender roles and patriarchy.

To summarise **three main issues** have been identified:

- The **lack of opportunities** for the African girl child in Pretoria's CBD due to a patriarchal society and its limitations;
- The **absence of physical spaces that cater to the African girl child** in Pretoria's CBD;
- The **repercussions of a previously white supremacist society** that lacks an aesthetic with which the African girl child can identify.

PREVIOUSLY WHITE SUPREMACIST SOCIETY, TRADITIONAL GENDER ROLES AND PATRIARCHY



Figure 3. Dichotomy of oppression for the African girl child (Author 2015)

## RESEARCH QUESTIONS

- 1 What theory exists that supports the African girl child and her three areas oppression namely; race, gender and power? **AFRICAN FEMINISM**
- 2 Is there any identifiable historical significance in the host building and its context that may be used to empower the African girl child? **HISTORICAL SIGNIFICANCE**
- 3 What precedents can be investigated to aid the intervention in the host building? **PRECEDENTS**
- 4 Can a design aesthetic be generated that speaks of the African girl child and serves to empower her? **DESIGN AESTHETIC**



**Name:** Old Pretoria Fire Station  
**Location:** 449 Bosman Street and corner of Minnaar Street, Pretoria CBD, Erven 913 + 914  
**Built:** 1912 : Subject to Section 34 of the NHRA (25 of 1999) because the building is older than 60 years.  
**Previous uses:** Fire Brigade, Ambulance Centre  
**Current uses:** Tourist information, Offices, Housing  
**Current owner:** City Of Tshwane  
**Current occupant:** Museum Park, Tshwane Leadership Foundation



# CONTEXT ANALYSIS

## MACRO CONTEXT

The chosen site is located within the context of the City of Tshwane Inner City Development and Regeneration Strategy. This strategy seeks to "...celebrate the national capital and reposition the inner city as a vibrant cultural and government centre" (CultMatrix, 2009: 8).

The strategy identified a number of interventions:

- Announcing the destination: Design of gateways into the Inner City, e.g. at Paul Kruger Street Station;
- Cultural Circle: Town Hall Station near Museum Park;
- Capital Precinct;
- Mandela Development Corridor and Apies River Precinct;
- Tshwane Crossing;
- Zone of Urban Regeneration: Marabastad;
- Movement: BRT and other modes; and,
- Exceptional Public Environment: Improvement of public spaces.

The selected site is situated within the **Cultural Circle intervention**, which is concerned with the "...identification of all existing cultural landmarks and facilities and the enhancement thereof, as well as the development of new, contemporary cultural landmarks" (City of Tshwane 2005). The proposed design delves into the representation of the African Girl Child and African feminism which form part of cultural issues within both the South African and African context. This strategy will aid in identifying cultural activities within the micro and macro context.

The strategy entails less formal cultural zones such as markets, street performances and small businesses (City of Tshwane 2005).



Figure 3.1 : Visagie and Minaar Street as access routes to the formal historical and cultural spine (Author 2015)

## MACRO SITE ANALYSIS

The macro site analysis seeks to investigate what is happening within the greater context that applies to the design investigation.

## HISTORICAL CONTEXT

Pretoria was founded in 1855 and named after General Andries Pretorius, and in 1890 Sunnyside was incorporated as a part of Pretoria and subsequently what is now known as Pretoria West (South African History Online 2015). In 1856 the first church was established on what is presently Church Square. Formerly named Market square, the area is the central point from which Pretoria grew the city's social and commercial core. **Notable buildings** that were established before the Old Pretoria Fire station include Loreto Convent (1878) and Ditsong National Museum of Natural History (1892). In 1912, the **Old Pretoria Fire Station was built**, after which African Window / National Museum of Cultural History (1921) and City Hall with Pretorius Square (1931) were built.

A second layer of historical context, shown in figure 3.10, has been investigated from the point of view of African feminism focusing on specific moments in relation to women in South Africa.



Figure 3.2 : Cultural Circle intervention (City of Tshwane 2005, edited by author 2015)



Figure 3.7: Charlotte Maseke (Parliament of the republic of South Africa 2015).



Figure 3.8: FEDSAW protest, Pretoria 1956 (Women's History Network Blog 2010).



Figure 3.9: Members of FEDSAW present petitions protesting the pass laws at Union Buildings in Pretoria on the 9th of August 1956 (Women's History Network Blog 2010).

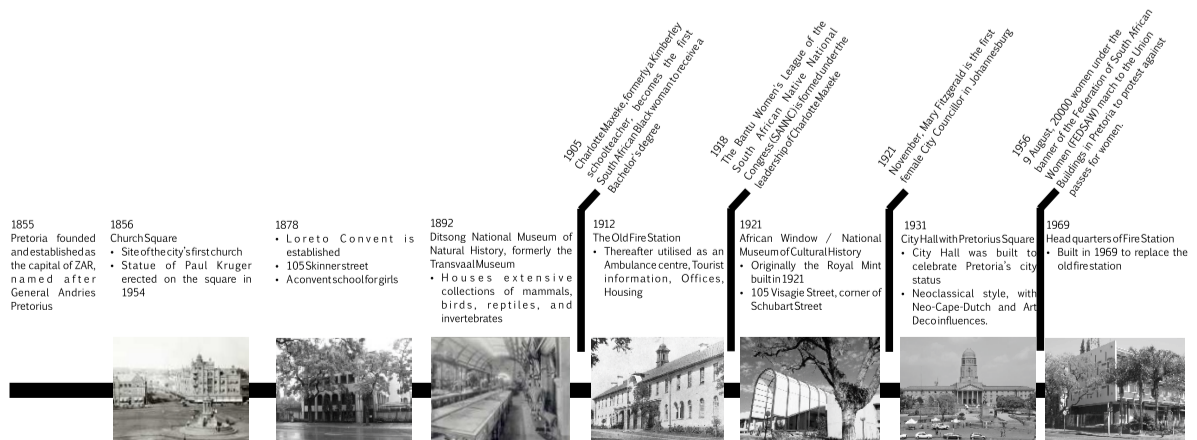


Figure 3.10: Time line of contextual buildings and women's history in South Africa (Author 2015)

## TRANSPORT

The Old Pretoria Fire Station, found on the corner of Bosman and Minaar Streets (figure 3.2), is located along major transport routes indicated in figure 3.3. There are a number of Gautrain bus stops found on Bosman street which run parallel to Paul Kruger Street, whilst Minaar street was upgraded by closing off the west end resulting in less vehicle movement on the street. Visagie and Minaar act as access routes to the formal historical and cultural spine located between them.

Pedestrian movement along Paul Kruger Street depicts it as a primary route due to its connection with the Pretoria Station, while Bosman Street acts as secondary route, feeding out or into the primary route. The accessibility and ample provision of public transport will aid in the movement of the African girl child to and from the site.

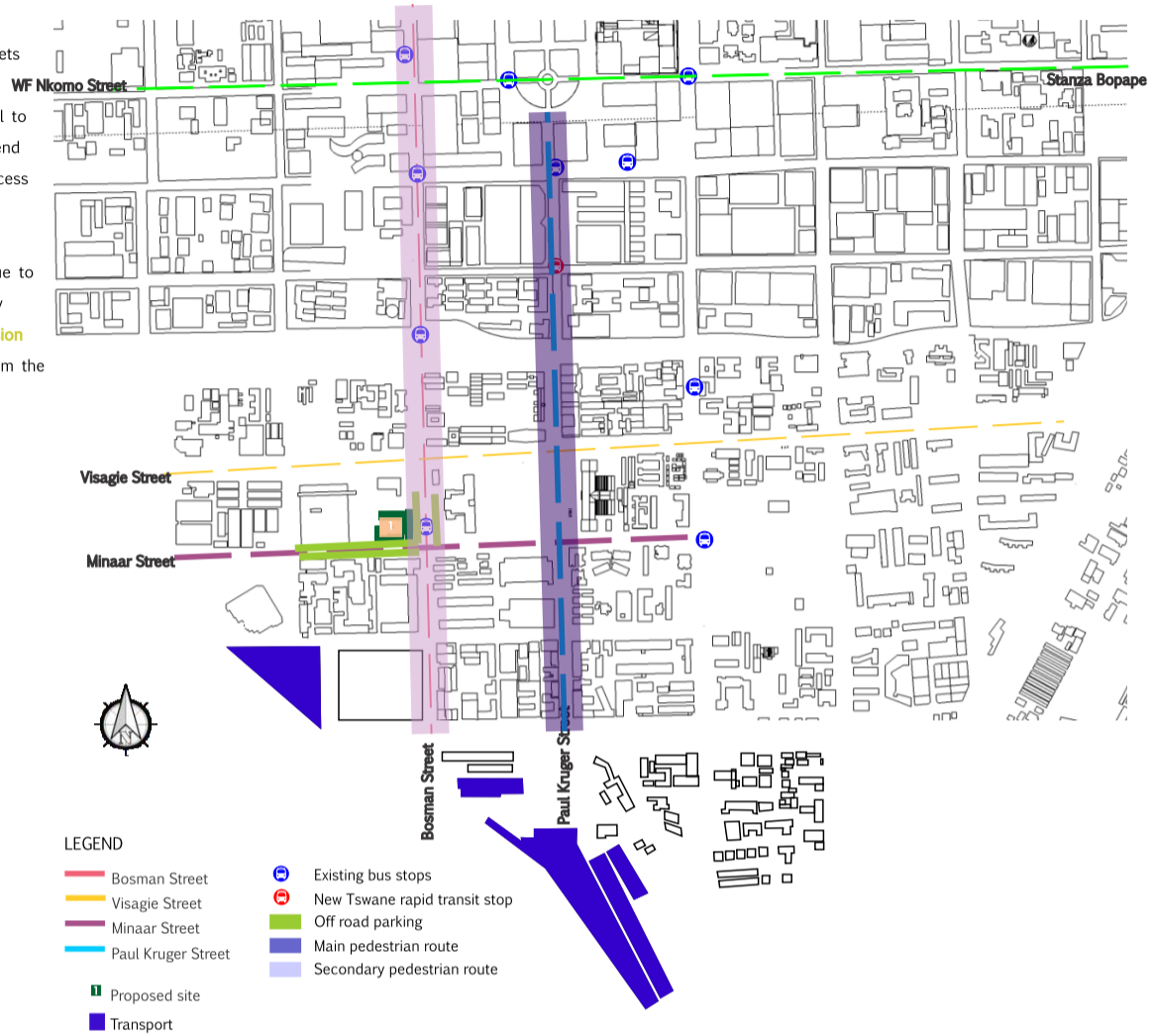


Figure 3.3: Transport mapping within close proximity to the proposed site (Author 2015)

## EDUCATIONAL FACILITIES

Educational facilities within the greater context reveal that the current target age group for the African Girl Child Centre are educationally catered for within the city centre and she will therefore be looking for study or recreational facilities after school.

The facilities indicated in figure 3.5 are in close proximity and cater for the formal education of students in the city centre while the African Girl Child Centre will provide the informal education and empowerment of the African girl child.

CITICOL SECONDARY SCHOOL  
85 Nana Sita Street, Pretoria

TSHWANE SOUTH COLLEGE  
85 Schoeman Street  
Pretoria

LORETO CONVENT SCHOOL  
135 Nana Sita Street, Pretoria

TSHWANE UNIVERSITY OF  
TECHNOLOGY  
Metro-Skinner Campus  
159 Nana Sita Street  
Pretoria

KINGS & QUEENS COLLEGE  
211, 2nd Floor, Willie Theron  
Building  
Corner Bosman & Jeff  
Masemola Street  
Pretoria

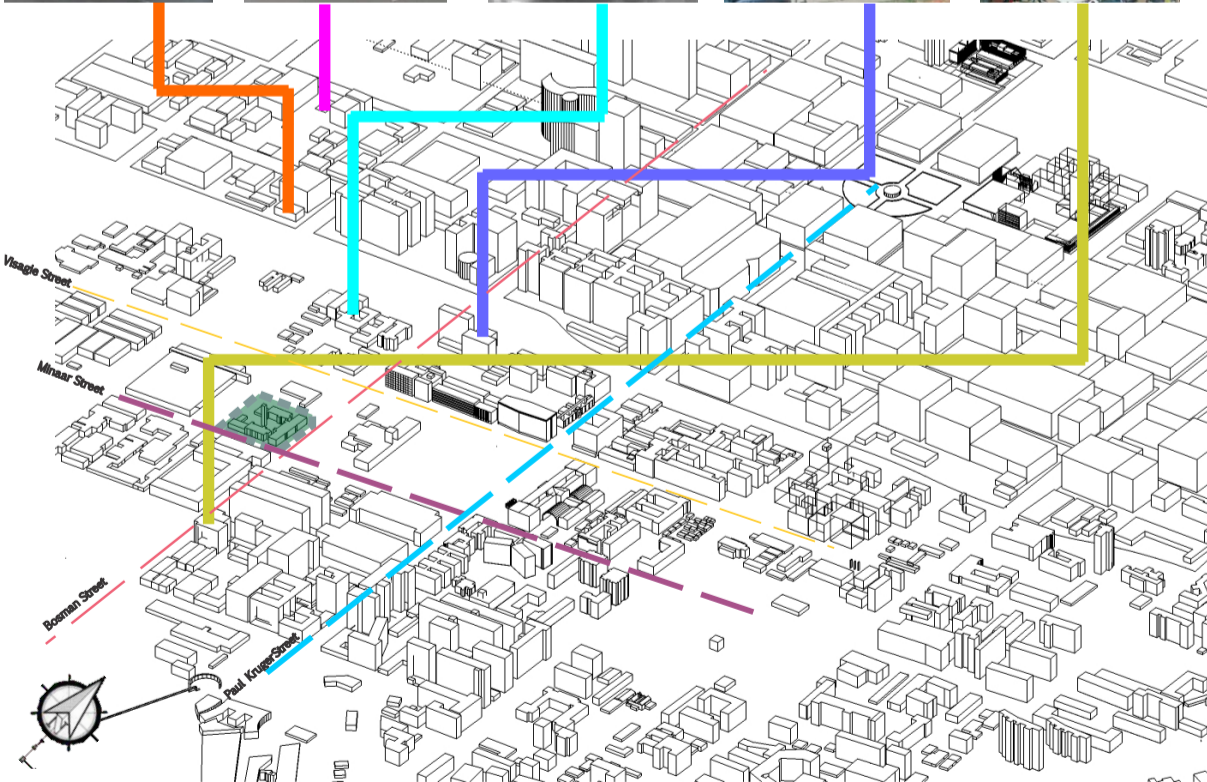


Figure 3.5: Mapped educational facilities (Author 2015)



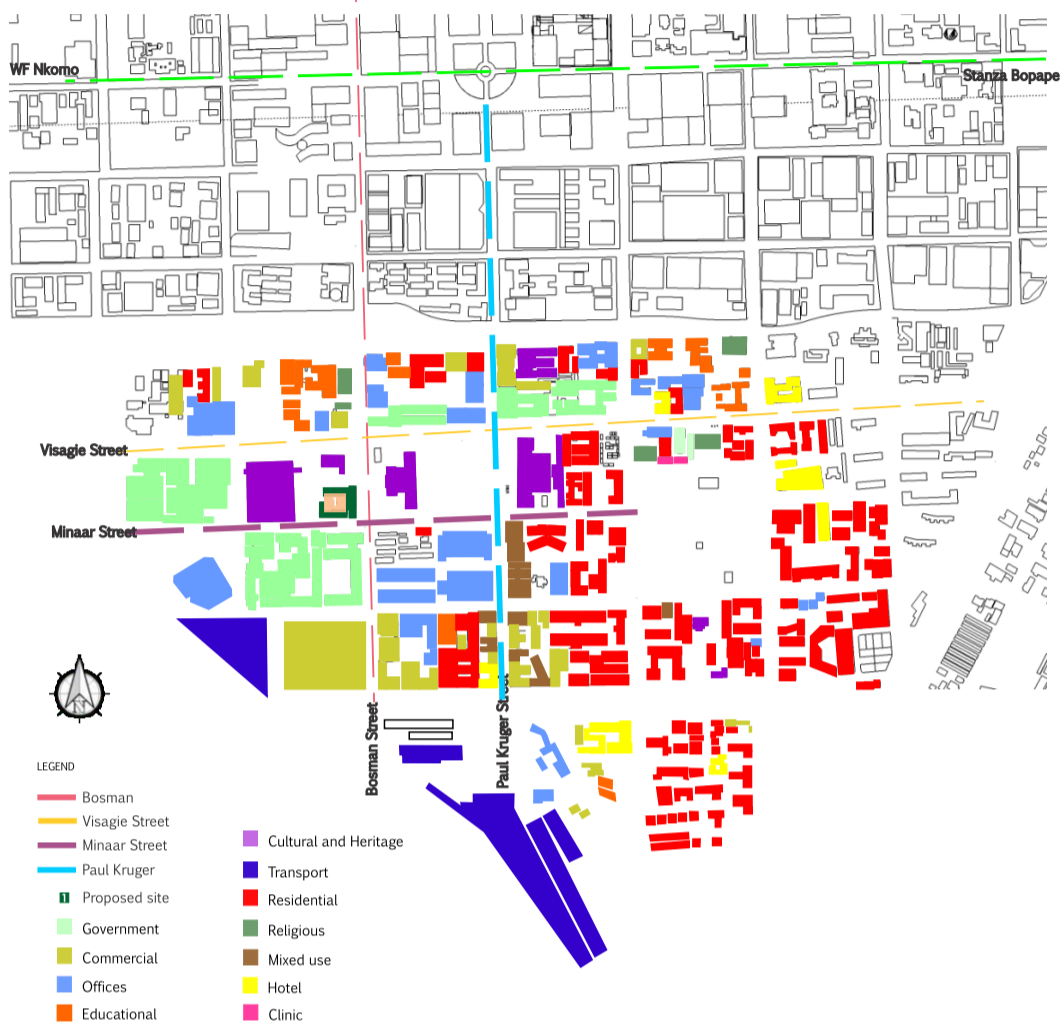


Figure 3.4: Use zones in the greater context (Author 2015)

### USE ZONES

The use zone mapping reveals that the proposed building is surrounded by a variety of uses: to the west of the building there are industrial and governmental uses, to the north is mixed-use facilities, educational facilities and offices. To the south there are commercially zoned buildings and transport, and east of the site has majority residential use from where the centre's African girl child will come.

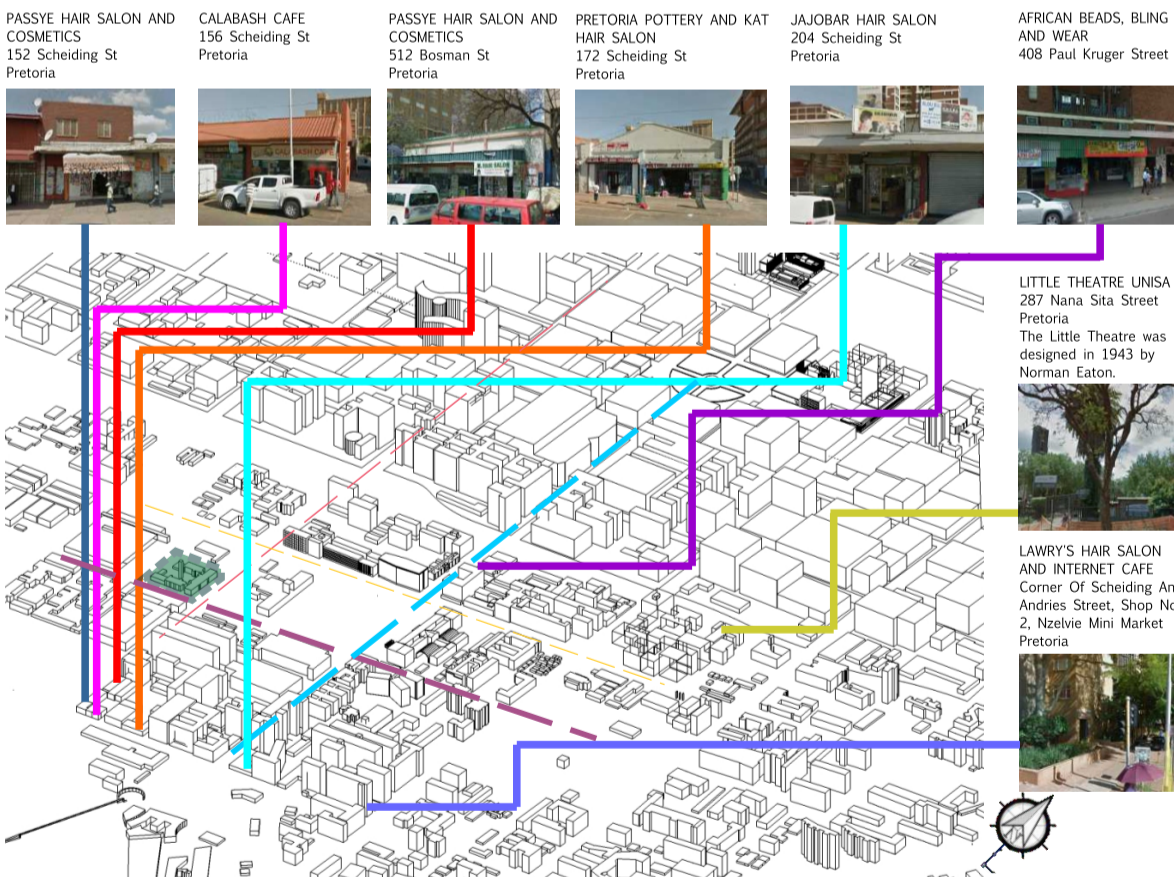


Figure 3.6: Existing informal cultural activities (Author 2015)

### EXISTING INFORMAL CULTURAL ACTIVITIES

The informal activities found within the context (figure 3.6) are a means for the community within the CBD to express and consume what is of cultural importance to the community.

Functions such as cafes and restaurants, hair salons, tailoring, pottery and herbal doctors can be found. These existing activities will provide guidance in the choice of programme that is relevant to the context, thus tying in with the Cult Circle strategy that the City of Tshwane seeks to implement. These existing informal cultural activities will act as inspiration for the programme of the centre.

## SITE ANALYSIS

The Old Pretoria Fire Station is located on the south end of Bosman street with one way, four lane, high traffic road, and on the west end of Minaar street which is quieter in comparison with its two lane, two way road as shown in figures 3.12 and 3.13 respectively. Both streets offer a means for greater public interface between the building and the street users.

The building was designed by Cowin & Powers Architects, built in 1912 is thought to be of early South African Edwardian style and was to be utilised as a fire station, which later relocated to the building opposite it.

The proposed building defines the corner of Minaar and Bosman Street. The U-shaped building, depicted in figure 3.14, has an inner courtyard which is completely isolated from view when one stands looking in from the street.

The chosen building for the first phase intervention is located on Bosman Street in order to make the most of the high foot traffic that occurs on this street. This building is currently occupied by the Museum Park Administrators, Tshwane Leadership Foundation and Housing. This phased intervention is a reminder of the original phased intervention in which the buildings on the site were built. The initial building is the eastern building on Bosman Street, followed by the building on Minaar Street, and lastly, the northern building.

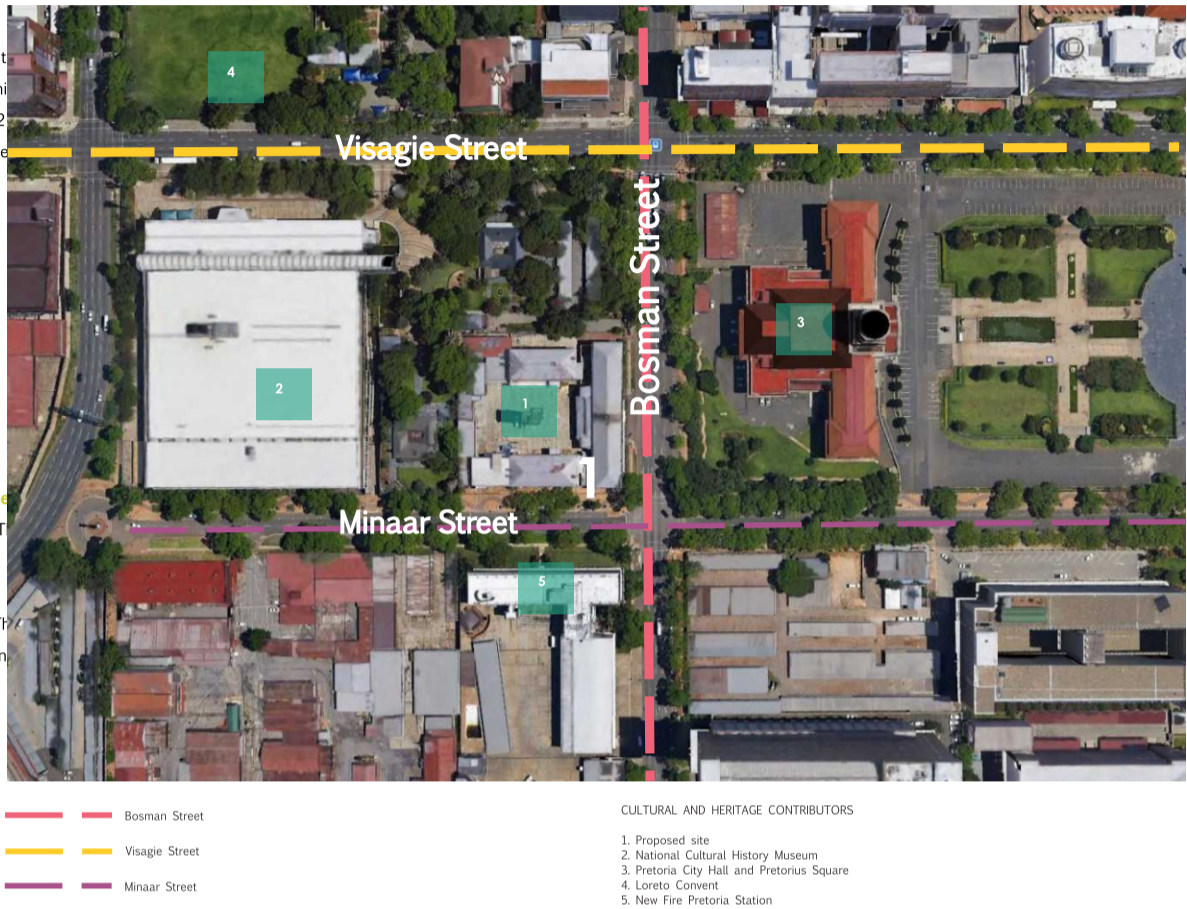
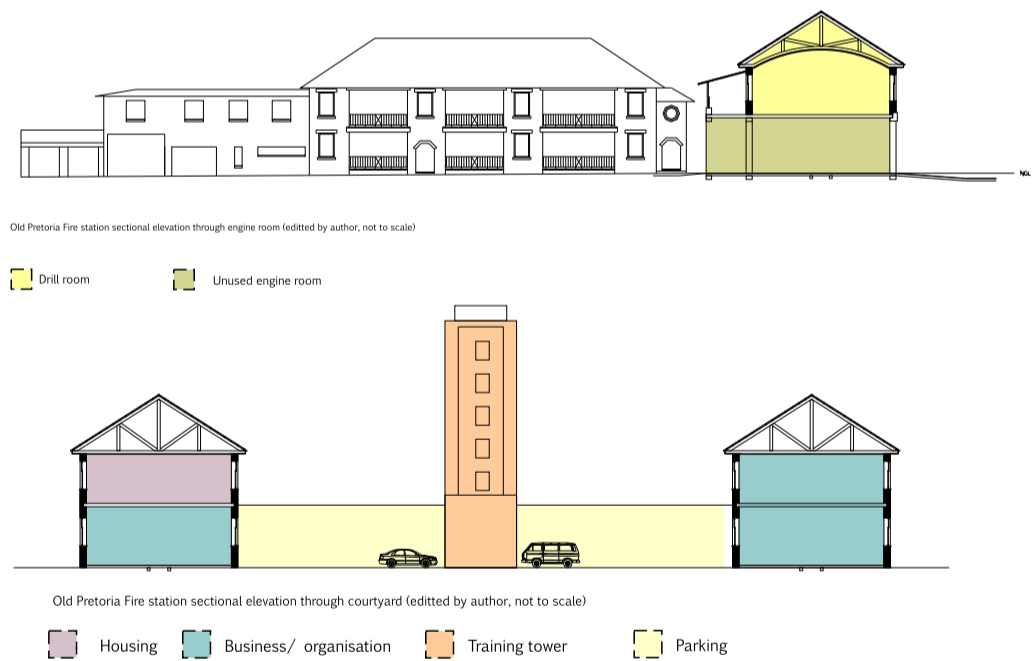


Figure 3.11: Site conditions around the OPFS (Google Earth 2015, edited by author)



Figure 3.14: Old Pretoria Fire station floor plan and sections (edited by author, not to scale)



## SITE FINDINGS

- Mixed use shown in figure 3.15
- Brick training tower, six storeys high
- Main entrance to the site defined by a tower on the roof was intended to be on the eastern side of the building, located on Nosman street.
- White plaster finished building which was designed to be asymmetrical
- Original clay tile roof was replaced with corrugated iron sheeting
- Whilst the wooden vehicle entrance doors were replaced with rolling steel doors
- Building consists of a ground and first level.
- Wooden framed windows and doors are still in place, original fire places intact
- Timber flooring and ceiling still in use
- Rectangular plan which consists of load bearing brick walls
- Concrete beams and columns can be found in the fire truck parking garage
- The interior spatial quality of the OPFS reveals that the fire truck garage does not receive natural light due to the roller steel doors located on both walls.
- With the floor to ceiling height being 4480mm and the first floor is at 3770mm
- Basement level was discovered in the office indicated in figure 3.17 as "e"

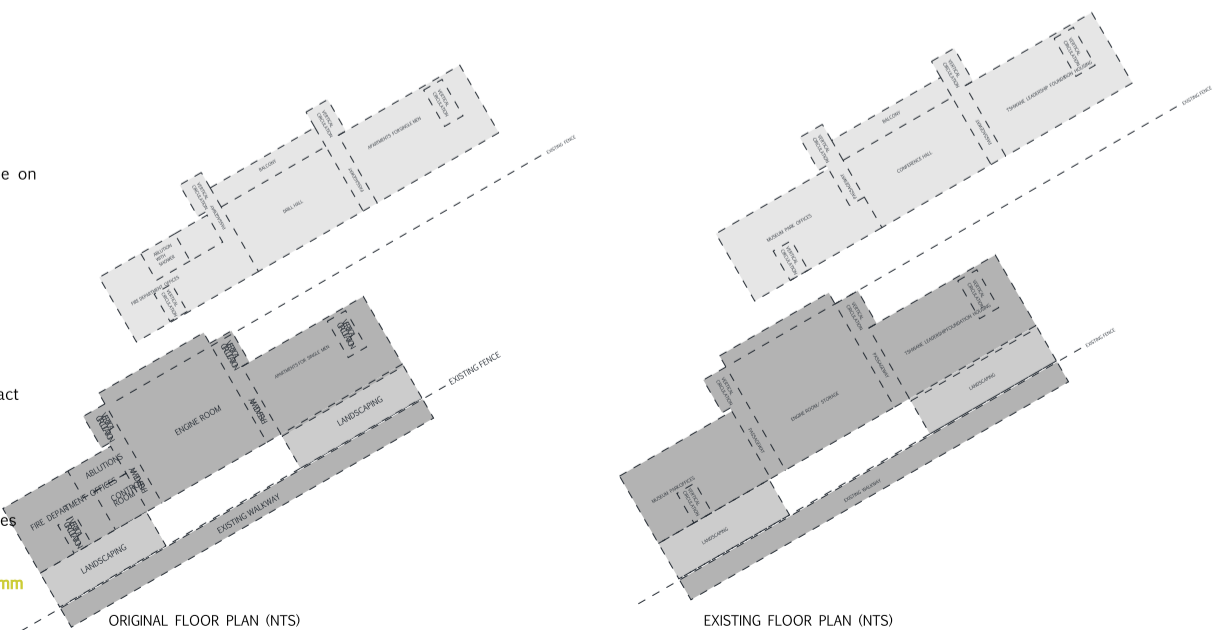


Figure 3.15: Original and existing uses within the proposed building for intervention (Author 2015)

## BUILDING STRUCTURE ANALYSIS

### Use viability

The building in question is **currently in use, habitable, and structurally sound** this is not to say that the building is fulfilling its purpose in a manner that is enriching to the user.

The current programme in the number of buildings on site is varied and not unified. There is no common purpose or goal.

In projects such as this which requires adaptive reuse the designer is to question what is existing and look ahead and design for the future betterment of the building. The assessment of the building with regards to the theory in question, practicality of use and available spatial qualities reveals that the building would be able to accommodate the proposed use in a manner that create a restorative space for the African girl child.

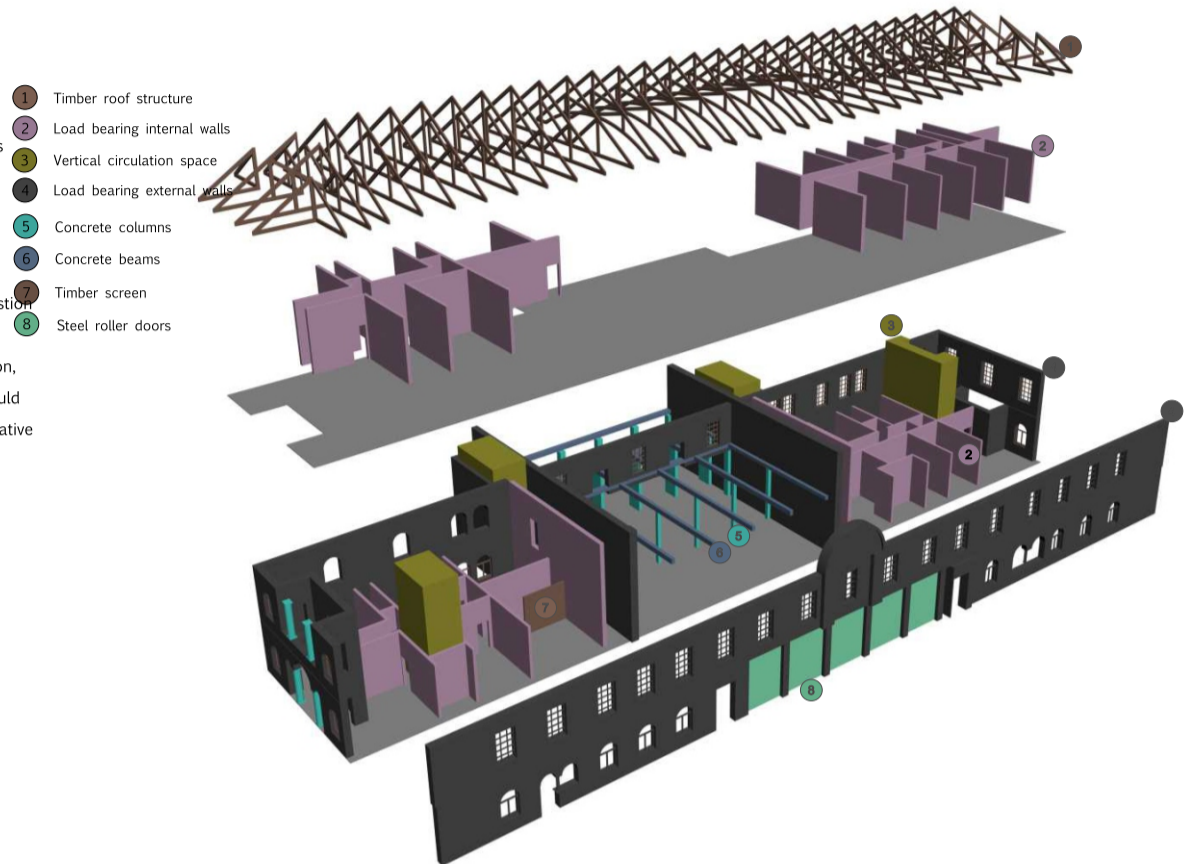
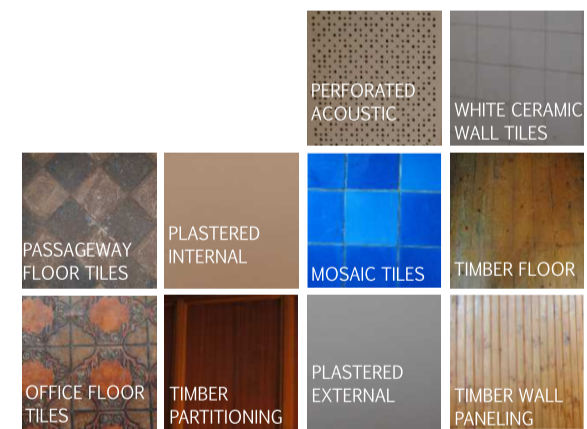


Figure 3.16: Building analysis (Author 2015)

## SURFACE TEXTURE ANALYSIS

The existing surface materials within the building are of a durable nature. Existing finishes range from timber and timber based boards, stone such as slate ceramic tiles to metal gates and glass glazing.



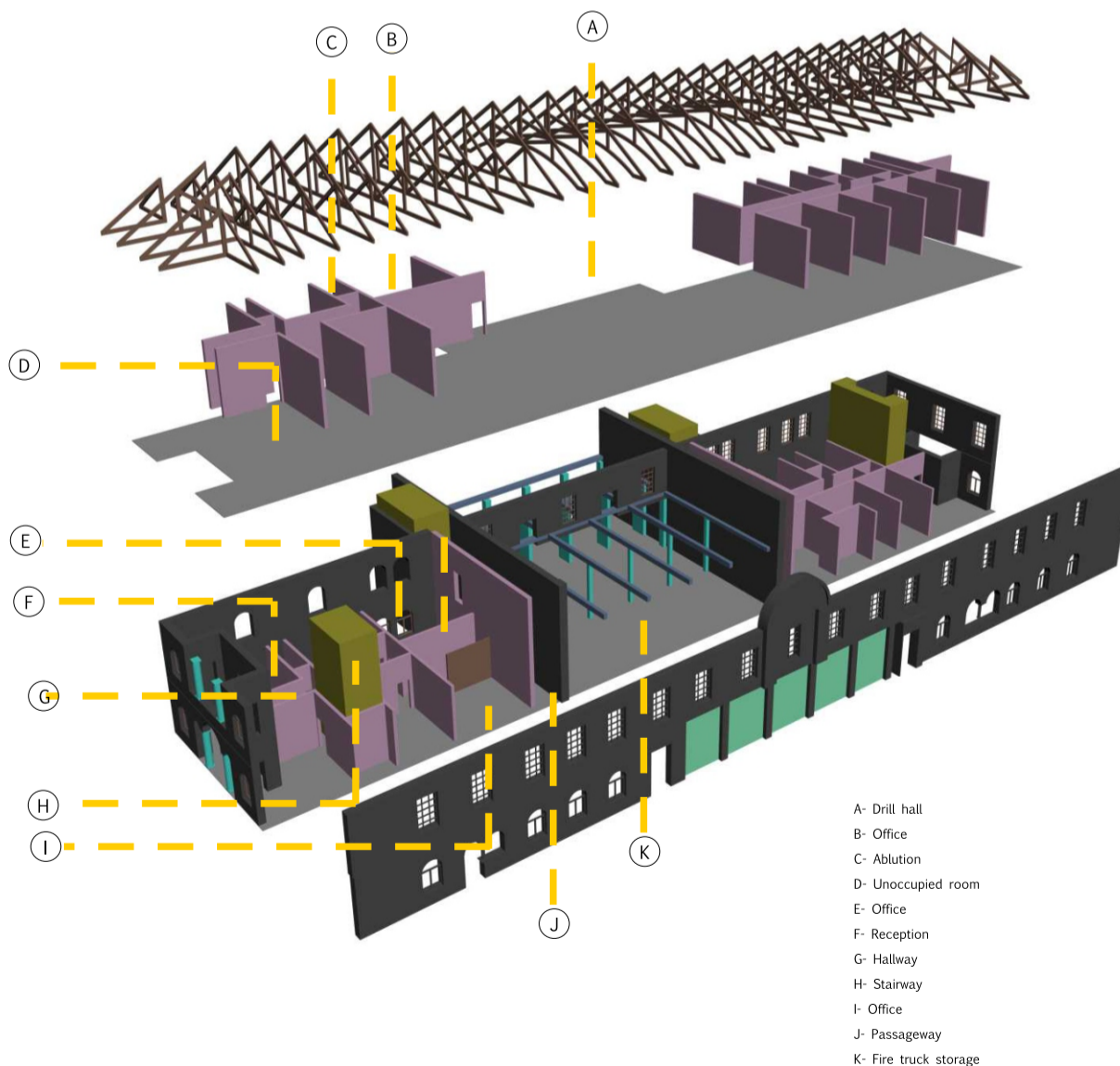
## SPATIAL ANALYSIS

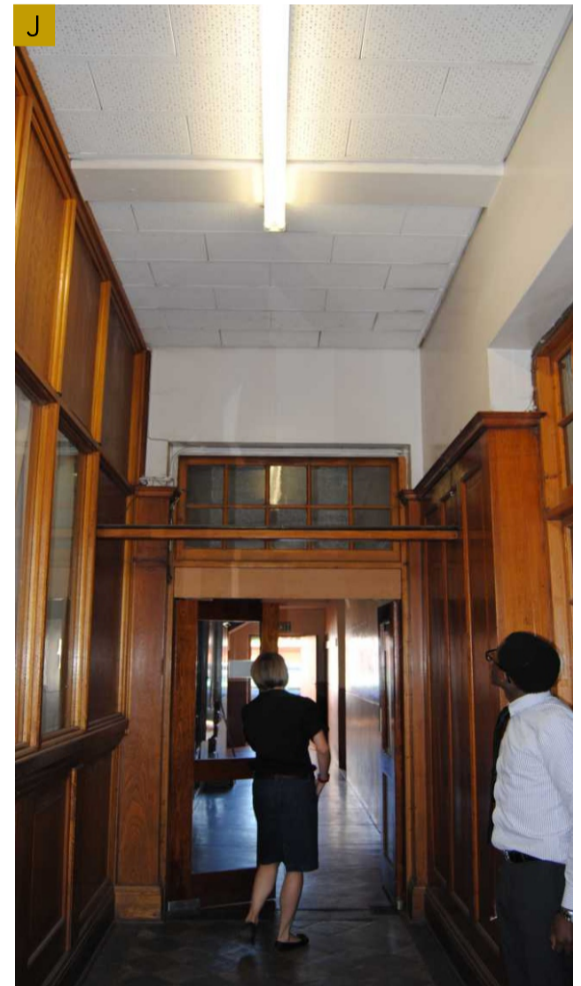
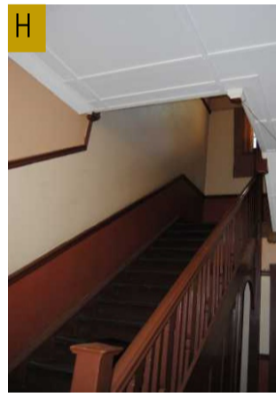
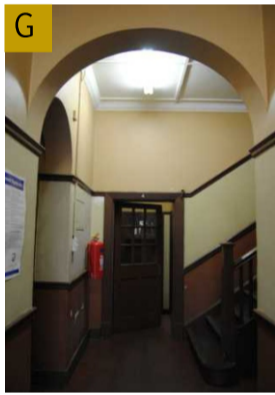
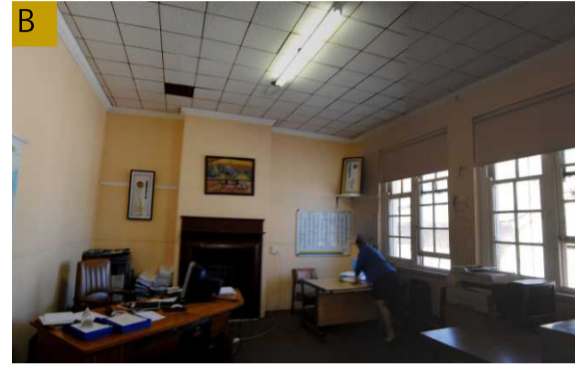
The current floor plan is not being utilised to its full potential. There are offices, function rooms, training rooms and accommodation within the PHASE 1 building.

The sectional elevations reveal that a multi use programme is a viable option in building. The ground floor, floor to ceiling height is 4480mm and the first floor 3770mm. Kincaid (2002:36) states that for uses D2 AND B1, of which the building would fall under that the slab height can be between 2300-2750mm and 2750-3650mm respectively. The building therefore meets this guideline.

The interior spatial quality is lacking in adequate electrical and day lighting as the internal load-bearing walls do not permit ample light into the cellular office space and accommodation spaces, furthermore this results in passageways being dark and cold transition spaces.

The original fire truck parking is currently being used as storage space, the steel roller doors do not permit daylight into the space, making it a dimly lit space even with electrical lighting. The numerous columns and high ceiling display potential for a striking spatial intervention.







### STATEMENT OF SIGNIFICANCE

The Old Pretoria Fire station as previously stated was built in 1912 by Cowin & Powers Architects, making it older than 60 years old and therefore is subject to Section 34 of the NHRA (25 of 1999) (Le Roux & Botes 1993:39).

Not much remains as a reminder of the fire station except for the training tower that to this day still stands proud and sturdy in the inner courtyard. Another architectural element that is a reminder of its previous use is the fire engine truck entrance gates on Bosman Street. The internal courtyard character of the building is to be retained.

Internally there three steel moulded fire places (figure 3.18 inside offices that need to be considered as part of the original character of the building due to their workmanship as well as timber framed windows, timber flooring and ceiling. The original timber doors leading into the fire truck entrance and parking area have been replaced by steel roller doors. The initial clay tile roof has been replaced with corrugated iron sheeting. The existing façade is symmetrical in nature, with two niches in the façade that allow people into and out of the building. Elements such as the building corner keystone, Art Nouveau influences in fire places, bare floor boards indicate that the building is of an Early Edwardian style. These identified elements are to be retained where needed or removed and reused elsewhere with the memory of them retained where necessary.



Figure 3.18 : Steel moulded fireplaces (Author 2015)

### HERITAGE STRATEGY

The heritage strategy for the intervention in the Old Pretoria Fire Station, depicted in figure 3.19, is one of integration, retaining the memory of its past whilst incorporating the new use and future into the building and site. New work is to be incorporated in a manner that is complimentary, and where demolition has been carried out the preservation of its foot print within the building and site is to be expressed with newly integrated elements.

This integration of the past, present and future aims to render the OPFS, its history, physical and metaphysical, accessible to African girl child. By exposing the building in this manner the African girl child should be able to identify with and feel empowered by it.

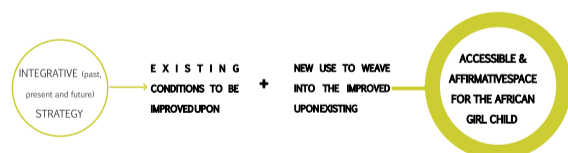


Figure 3.19: Heritage strategy diagram (Author 2015)

A detail of concern is retaining and integrating the memory of the old with the new. In the case of demolished walls in the interior, the memory will be remembered by inserting a CorTen steel plate in the void of the wall demolition as indicated in figure 6.13.

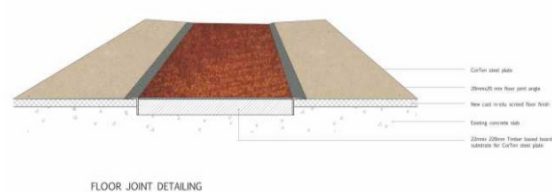


Figure 6.13: Floor joint detailing, not to scale (Author 2015)

# » THEORETICAL APPROACH »

## LOCAL HERITAGE LEGISLATION: NATIONAL HERITAGE RESOURCES ACT

The National Heritage Resources Act (NHRA) is legislation utilised by the South African government as a means of managing national heritage resources. The NHRA facilitates healing and material and symbolic restitution and it promotes new and previously neglected research into our rich oral traditions and customs (South Africa, 1999: 2).

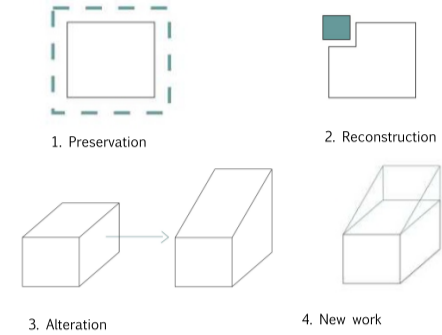
The building in question, **Old Pretoria Fire Station, which has been identified for intervention, has to date not been graded**, it has no qualities so exceptional nor special that have been identified by the NHRA (South Africa, 1999: 20). The **and building was constructed in 1912 therefore it is subject to Section 34 of the NHRA (25 of 1999) because the building is older than 60 years** but no further information on the heritage status of the building is available.

## HERITAGE LEGISLATION:

This process of alteration is not a linear projection of activities but may require one to be involved in various steps at the same time. The process of alteration includes various activities one of which being conservation which Australia ICOMOS (2013:6) states **conservation** may, according to circumstance, include the processes of:

- retention or
  - reintroduction of a use;
  - retention of associations
- meanings; maintenance, preservation, restoration, reconstruction, adaptation and interpretation;** and will commonly include a combination of more than one of these.

This approach ties in to the NHRA viewpoint that heritage should not only benefit the present but also future generations. The change to be incorporated should be appropriate in relation to the cultural significance of the building.



Diagrammatic depiction of the Burra charter conservation processes ( Author 2015)

## AFRICAN GENDER STUDIES

Why the African Girl Child?

The African girl child is perceived to be at a disadvantage in a society that is pro patriarchy, a society that deems her of lesser value than her male counterpart (Iversen & Nyamakanga 2012: 10). Her standing in society is one of uncertainty and insecurity. Various NGO's and initiatives have been formed to aid and empower the African girl child. The empowering of the African girl child can occur

on many levels which aid in her finding resources that could help in her intellectual progress. Initiatives such as the Girl Education Movement (GEM) train girls in training in peer education and life skills (International Institute for Capacity Building in Africa 2005:3).



**1. The African man**  
The African man is considered a patriarch of the family or community (Awodele 2008)



**2. The African woman**  
The African woman is considered to be subservient and under the care of the African man (Awodele 2008).



**3. The African boy child**  
The African boy child has benefited from a patriarchal society that gives more value to the boy child and so allowing for him to benefit more from such a society (Okello 2011).



**4. The African girl child**  
The African girl child is considered to be at a loss within the African culture and society. SA History (2014) states that the African girl child is disproportionately affected by cultural and economic issues.

## AFRICAN FEMINISM

African feminists are now disproving these connotations as they are diverse in colour, in how they present themselves and in what they fight for. They are not seeking equality as a means of proving stronger than their male counterparts but rather to showcase their strengths as individuals and as a collective.

Lebohang Masango and Chimamanda Ngozi Adichie are two examples of contemporary African feminists. Lebohang Masango is feminist writer and poet. She bares her tattoos proudly, dresses how she feels comfortable and is not afraid to speak her mind (Black Bold Voice 2014).

Chimamanda Ngozi Adichie is an award winning novelist whose family called her a man for speaking her mind (Wagner 2015). Her books are an outlet for her creative genius and feminist standings, with strong female voices taking the lead in her books such as "Kambili in Purple Hibiscus, Olanna in Half of a Yellow Sun, Ifemelu in Americanah" (Wagner 2015).

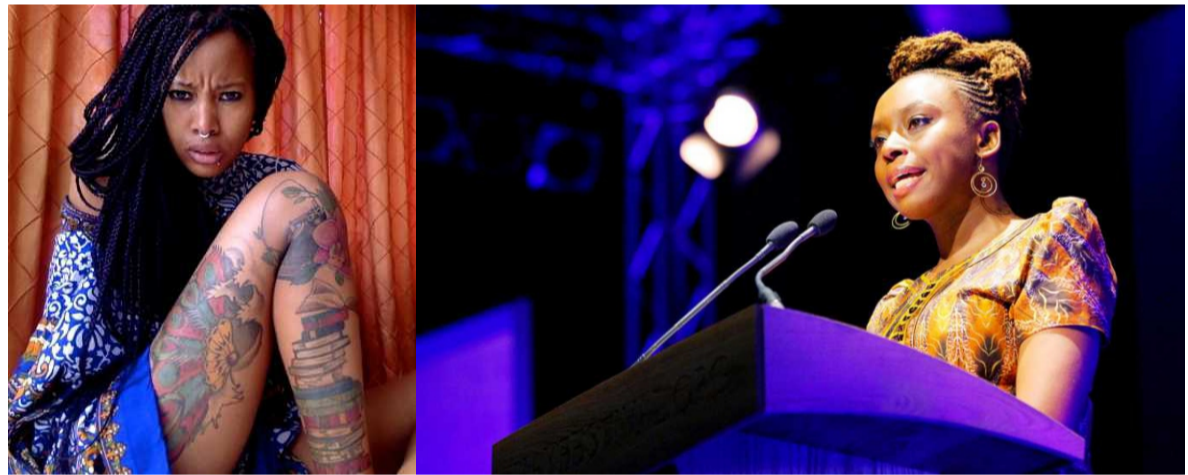


Figure 2.2: Lebohang Masango and Chimamanda Ngozi Adichie (Masango 2015& Wagner 2015)

## FEMINIST STOKVEL

The Feminist Stokvel is a collective of women who have come together to table and discuss openly about social issues facing the black, South African woman. The collective comprises of Pontsho Philane, Millisuthando Bongela, Danielle Bowler, Lebo Mashile, Panashe Chigumadzi, Lebohang 'Nova' Masango, Wisaal Anderson and Kavuli-Nyali Binyase (not pictured), as depicted in the image below.

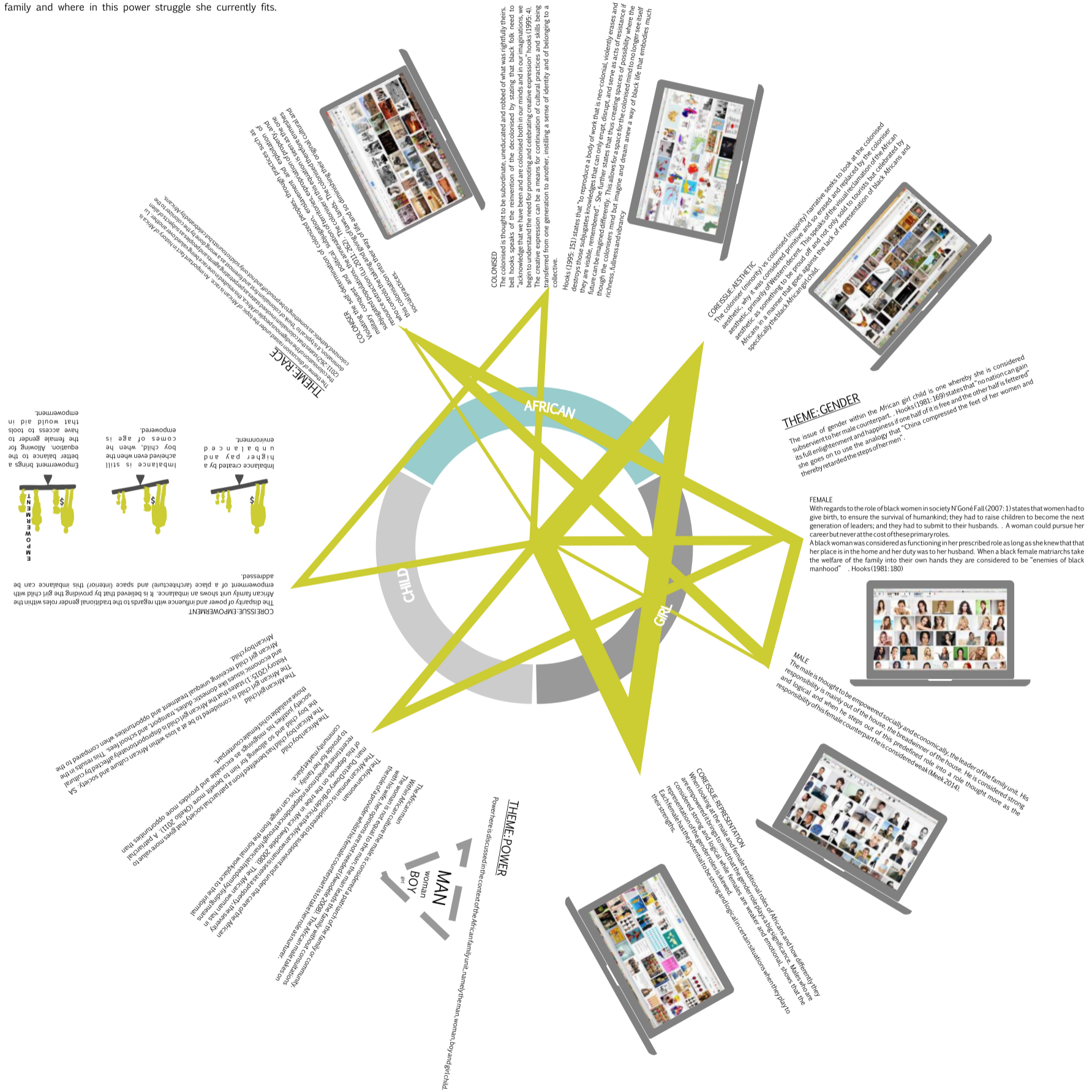
Figure 2.3: The Feminist Stokvel collective (Chigumadzi 2015)



## AFRICAN REPRESENTATION

The representation of the African girl child within the space she occupies is of importance. Weisman (1992: 9) states that both the world out there and the world inside ourselves depend upon and conform to our socially learned perceptions and values. **By representing the African girl child and the African aesthetic a sense of African pride is instilled in her.**

The **representation of the African girl child** will be discussed under three themes, namely **face, gender roles and the concept of power**, within the African family and where in this power struggle she currently fits.



# PROGRAMME



## USER GROUP

African girls between the ages of 13 to 17.



Figure 5.2: Students at a Protestant secondary school in Mbandaka, Congo (Elisofon 1972)

Figure 5.3: CLIENT BODY (Author 2015)

The client body is to consist of:

1. Department of Women, Children & People with Disabilities (Nelson Mandela Children's Fund 2013)
2. Breakthrough (IPRWEB 2014)
3. South African Girl Child Alliance
4. Girl Education Movement (Girl Education Movement Uganda 2011)
5. Children's Movement South Africa
6. Businesses that would empower the African girl child
7. Girls not brides (Care 2014)
8. Tshwane Leadership Foundation (Tshwane Leadership Foundation 2015)
9. Cell C Girl Child initiative (Cell C 2015)
10. Zazi (Zazi 2015)



## PROGRAMME FOR BONANG: CENTRE FOR THE AFRICAN GIRL CHILD

The programme for the African girl child is to be mixed use, relating to the contextual location whilst providing innovative means of providing empowerment through interior design. The African Girl Child is to be empowered in sectors such as Business, Science and Technology and the Creative arts. These sectors will fit into the play, work, learn grouping of spaces.

*Half a mind is a terrible thing to waste*

STEAM encourages a well rounded approach to education.

STEAM not STEM (2015) states that STEM is based on skills generally using the left half of the brain and thus is logic driven. Much research and data shows that activities like Arts, which uses the right side of the brain supports and fosters creativity, which is essential to innovation.

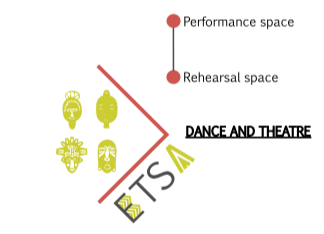
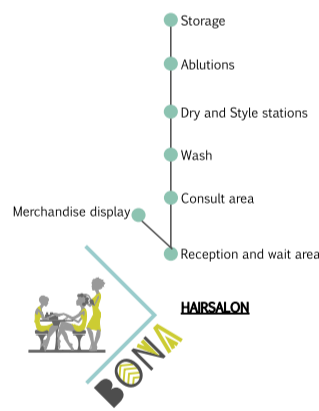
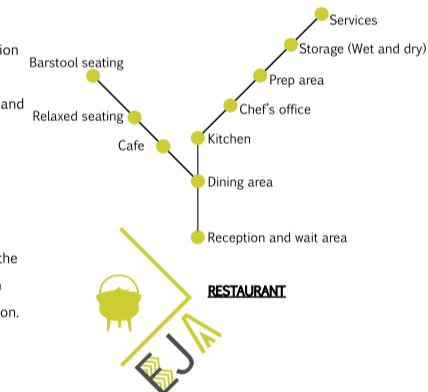
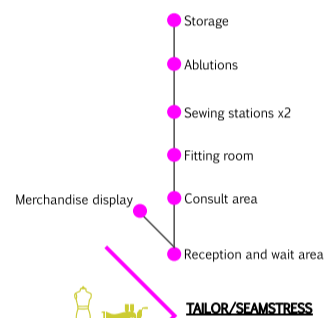
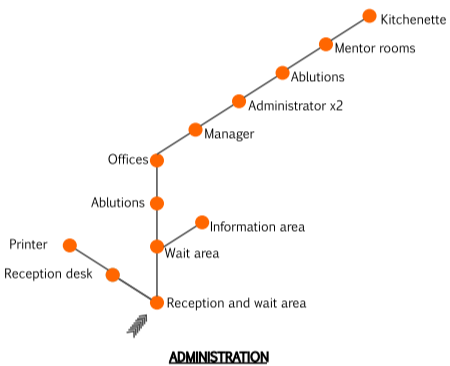
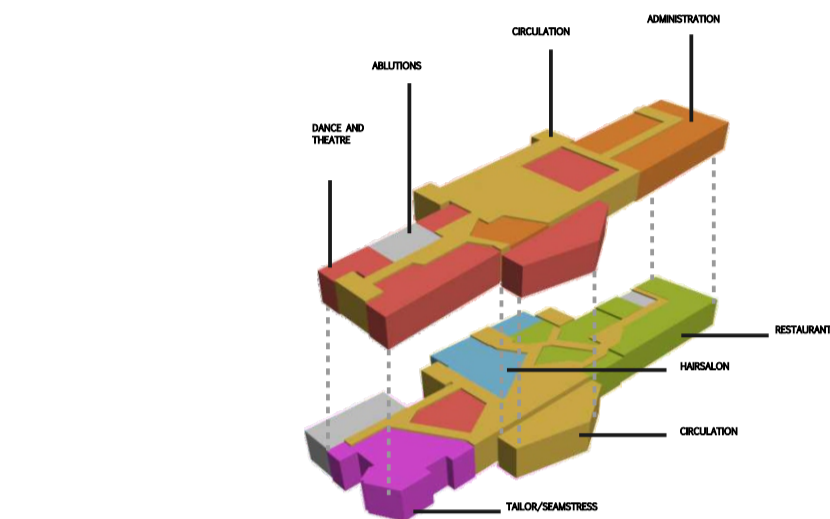
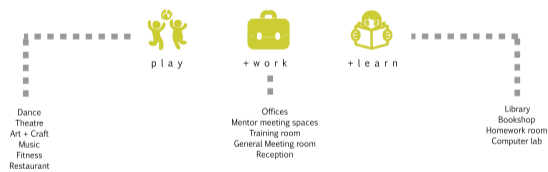


Figure 5.8: Programme distribution at Bonang ( Author 2015)



### PHASE 1: Arts and Cultural

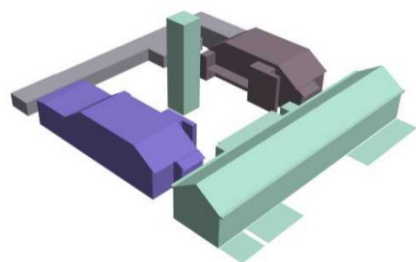
The intervention is to activate the building and build awareness to the general public, concerned organisations and specifically the African girl child about the centre. The chosen building for PHASE 1 was chosen due to its positioning on a more public road and a more frontal and direct entrance to the building.

### PHASE 2: Science and Technology

This will build on to PHASE 1 and so broadening the range of interests for the African girl child. The phase will incorporate knowledge transfer spaces such as laboratories and house offices for professionals to work from so the girl child can be exposed to the career and trained in a hands on manner.

### PHASE 3: Engineering and Mathematics

The third phase will be of a more educational nature, offering a "clinic" for subjects that pertain to the Engineering and Mathematics field, allowing the girl to be a step ahead.



- PHASED INTERVENTION
- PHASE 1
  - PHASE 2
  - PHASE 3
  - STORAGE AND CARE TAKER

Figure 5.4: Phased intervention (Author 2015)

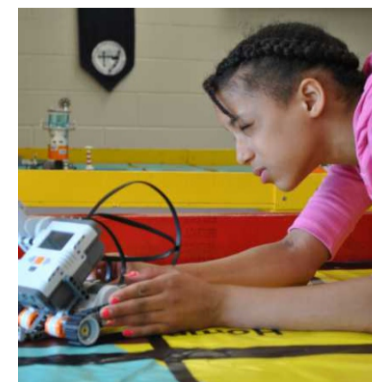
Figure 5.5: African girls dancing ( Bare Threads 2012)



Figure 5.6: Young girl child in lab ( Fablabtigitullo 2015)



Figure 5.7: Young girl child learning robotics ( Fablabtigitullo 2015)





# DESIGN INFORMANTS



## SPATIAL QUALITIES OF INFORMALLY DESIGNED SPACES



### ARMATURE

Reconstruction of broken elements by means of propping, this is to maintain spatial relationship that would be under gravitational threat (Scott 2008: 118)



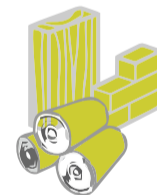
### EXPOSED FIXTURES

Fixing points and jointing of elements are left exposed or unfinished mostly due to financial reasons.



### DECORATION

Decoration is subjective and is dependant on what is readily available and affordable.



### COLLAGE OF MATERIALS

Available materials are used in the construction and decoration of space.



### MULTI-FUNCTIONAL SPACES

The multi-functionality of space is due to space constraints



# PRECEDENT STUDIES

## SPATIAL LAYOUT AND HERITAGE INTERVENTION

The precedents discussed focus on how an intervention in a heritage building can be used to announce new use in the existing building, spatially and on the floor plan.

### MUSEUM OF CONTEMPORARY ART OF ROME (MACRO)

Architects: Studio Odile Decq  
Location: Piazza Orazio Giustiniani, 4, 00153 Rome, Italy  
Area: 12000.0 sqm  
Year: 2007

The Museum of Contemporary Art of Rome (MACRO) designed by Studio Odile Decq sought to change the introverted site into a more open site. The integration of Contemporary Art Gallery in an ancient mixed industrial building proved to be challenging but resulted in an intervention that is striking.

**FACADE:** A prominent corner of the façade, shown in figure 4.1, has been removed and replaced with contemporary materials that stand in contrast to the host building, permitting light into the building and connecting space users within the host building with the context.

**CIRCULATION:** The circulation path, depicted in figure 4.2, is linear as the host building would have dictated but instead is dynamic, offering various viewpoints along the route.

**SPATIAL ORGANISATION:** The spatial organisation is not limited to the static orthogonal planes dictated by the original layout of the building but rather pulls away from a formal, static plan and section to form angled horizontal and vertical planes.



Figure 4.1: Façade of Museum of Contemporary Art of Rome (Filetici 2014)

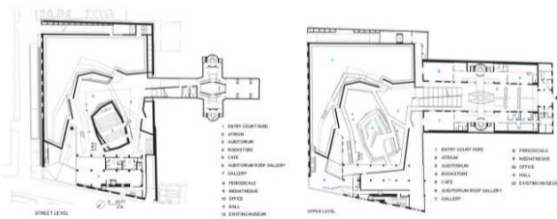


Figure 4.2: Circulation within the museum (Filetici 2014)



Figure 4.3: Spatial organisation within the museum (Filetici 2014)

## Analysis

The orthogonal nature of the building was rejected and a diagonal line was used to form new spaces as depicted in the image above. Thus a parti analysis (figure 4.4) reveals that the stable horizontal line is changed to an unstable line, resulting in the static nature of the space becoming dynamic.



Figure 4.4: Analysis of floor plan arrangement and spatial organisation within the museum (Author 2015)

## FORTRESS OF FORTEZZA

Architects: Markus Scherer with Walter Dieltl  
Location: Franzensfeste, Italy  
Area: Unknown  
Year: 2009

This was a military fortress built in 1838, used as gunpowder depot in the 19th century, and in 1918, Franzensfeste came under Italian rule and was used by the army until 2003. This former fortress has become a place for meetings and cultural exchange.

**FACADE:** Elements such as the retained existing brickwork (figure 4.5) keep the memory of the past in a matter that is literal whilst the new addition attempts to complete the form of the building with missing parts.

**CIRCULATION:** Of particular interest is the existing tunnel (figure 4.6) which was extended to 22 meters, to connect the lower- to the middle fortress. A lift and black concrete stairway was added with a golden handrail.

The extension of the tunnel is of importance because it extends the memory of the history of the building. The architects used the opportunity to maximise the fortress' spatial potential.

**SPATIAL ORGANISATION:** The use of the horizontal organisation of space could have produced a predictable design but the architects sought to move away from this and rather use the vertical geometry that existed to some degree. This shift from existing geometry provides an intriguing spatial product.

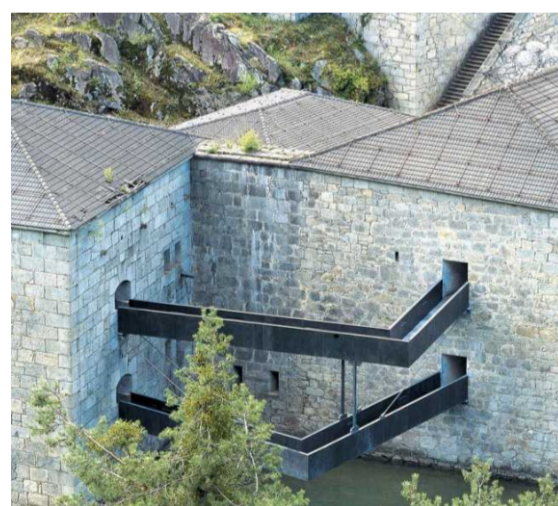


Figure 4.5: Façade interventions at the military fortress (Chemollo 2011)

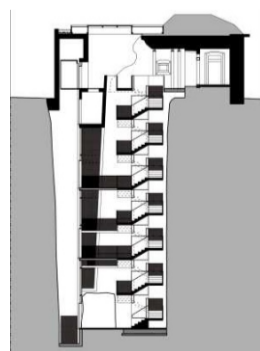


Figure 4.6: Section through the extended tunnel (Chemollo 2011)

## MORITZBURG MUSEUM EXTENSION

Architect: Nieto Sobejano Arquitectos, S.L.P.  
Location: Halle, Saale, Germany  
Year: 2008  
Area: Unknown

The castle of Moritzburg in the city of Halle is an example of Gothic military architecture, from the end of the 15th Century in Germany.

**FACADE:** The facade intervention loudly announces a new entrance (figure 4.7). The superimposed new intervention peaks out of the with an angular pitched roof that stands as a memory of the host building. The new materials stand in contrast to the ruin, highlighting that which is old and the new.

**CIRCULATION:** The existing buildings were kept as intact as possible whilst the intervention was inserted within the host, retaining its ruined state as far as was possible.

**SPATIAL ORGANISATION:** Due to the removal of the existing roof, the floor was completely rid of its walls, to allow for a more open plan as shown in figure 4.8

In summary, the interventions discussed in this section highlight the need to activate heritage buildings in a manner that need not continue the original intention but rather introduce the new intervention in a manner that is contrary: complimentary to the site, thereby reactivating the building not only in programme but form and space. The extension and reinterpretation of existing or past elements serve to enrich the design intervention.



Figure 4.7: Façade the castle of Moritzburg (Halbe 2011)

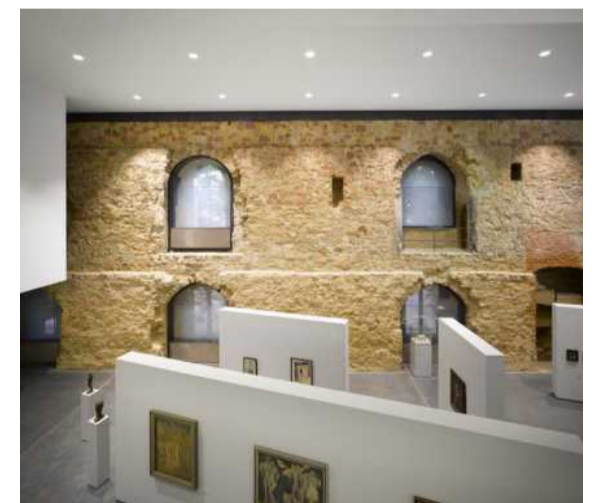


Figure 4.8: Interior, open plan view in the castle of Moritzburg (Halbe 2011)



## PROGRAMME

The following precedent has been investigated due to its successful nature as a community centre within the South African context.

### UBUNTU CENTRE

Architect: Field Architecture

Location: 5 Qe Qe Street, Zwide, 6200, Port Elizabeth, South Africa

Area: 1951 m<sup>2</sup>

Year: 2011

Programme: Mixed use: community centre and commercial spaces

The Ubuntu Centre is located in Zwide in Port Elizabeth and is an example of how architecture and education can be used to empower a community. The centre contains facilities for paediatric HIV testing and treatment, counselling, education, and community empowerment”.

The multiple functions that the building contains (figure 4.9) address the needs found in the community. This was done by **looking within the community to provide an answer or alternatives to social ills**, educational dilemmas and the need for creative expression and enjoyment.

The **variation in programme** allows for the centre to cater for young and old within the community at different times of the day. This **ingenious use of programme to prompt different users at different times** can aid in accommodating more functions with less but more flexible space. It also ensures a continual use of the centre. The multi-purpose hall, depicted in figure 4.11, is an example of this continuous use.



Figure 4.9: Floor plan of the Ubuntu Centre (Field 2011:1)



Figure 4.10: Section through the building showing use of double volume (Field 2011:3)

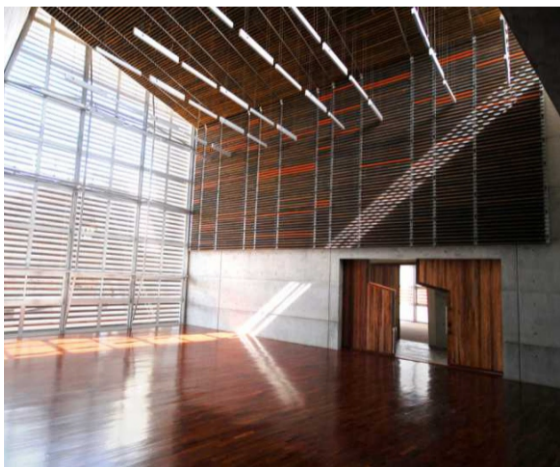


Figure 4.11: Multi-purpose hall (Riordan 2011)

## AESTHETIC and CONCEPTUAL FRAMEWORK

The following precedents were chosen in an endeavour to identify an aesthetic that the design intervention would need in order to successfully represent the African girl child through interior design.

The two precedents represent the formal and informal interiors that can be found within the South African context. The formal interior is primarily constructed by skilled labour applying sophisticated mass produced materials, while the informal interior is created by unskilled individuals applying found and/or recycled materials.

### CONSTITUTIONAL COURT OF SOUTH AFRICA

The Constitutional Court (2015: 1) brief was “...to create a building rooted in the South African landscape, physically and culturally, without overemphasising the symbols of any section of the South African population, or making a pastiche of them all”.

The principal materials used: timber; concrete; glass; steel and, black slate “...infuse the court with an African feel” Constitutional Court (2015:2). The materials are relevant within the South African context as space users can identify with their everyday use.

#### THE FORMALISED AESTHETIC: THE MACHINED ARCHITECTURAL ELEMENTS

The Constitutional Court can be considered to be a space that has been machined, meaning that the majority of the building was built commercially and using various machinery.

#### COLOUR

Colour is also incorporated by allowing the **inherent colour of architectural elements and furniture material**. The use of colour is not overwhelming; rather, it complements the spaces, and results in a unified look of the Foyer space (figure 4.13).

#### TEXTURE

Textures used in the spaces, range from the very **smooth and polished to rough and coarse** as seen in figure 4.14.. Texture on surfaces and in the incorporated art and crafts all work harmoniously together.

### SHACK CHIC

Shack chic is a photographic documentary of the dignity to be found in the dusty streets of South Africa’s shack-lands, and is described as “...an exhibition of **cultural creativity in real life contexts**” (Fraser 2002: 15).

#### THE INFORMAL AESTHETIC: HAND-CRAFTED FOUND OR RECYCLED MATERIALS

Shack chic serves to celebrate making the best of what is affordable and available. The interiors and built structures showcased in Shack Chic depict handmade elements more as a necessity rather than a luxury. The built structures are built according to what the creators could afford or find resulting in materials being recycled.

For example, a method of wall papering the interior of a shack to keep the cold out, as depicted in figure 4.16 is labeling paper from household and food items receiving a new use, the results of which are an intriguing pattern and colours within a given space; a collage of materials.

#### COLOUR

Colour is used **varying tone, usually bold and contrasting** seen in figure 4.15. The **colour usage is unconventional** as it may not be premeditated, such as in formally design spaces, but a result of a collage of found materials and readily available elements.

#### TEXTURE

The texture that can be seen is from **multimedia collage of materials** such as Lucky Star make-shift wallpaper, vinyl floor carpets to painted timber pallet walls (figure 4.17).

In summary, the formalised African aesthetic is primarily deliberate in that there is a concept, a specific colour palette, and predetermined materials. The spaces are realised through the use of machinery and commercialised elements. In contrast, informal spaces with an African aesthetic are unplanned in that what is available and affordable is used. There is no concept in the makeup of a space, rather there are layers of materials and textures which are organically layered and completed, which result in each space being unique in its aesthetic.



Figure 4.12: Crafted element within the Constitutional court (Mushahary 2012)

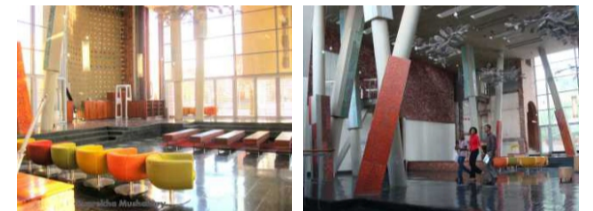


Figure 4.13: Use of colour in the Constitutional court (Mushahary 2012)



Figure 4.15: Re-use of packaging wrappers as wall paper (Fraser 2002)



Figure 4.16: The use of colour in the interior (Fraser 2002)



Figure 4.17: The use of texture in the interior (Fraser 2002)