

Sport and Recreational Centre

REGENERATING BEREA PARK

[Design in pursuit of rekindling appropriation]

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Submitted in partial fulfilment of the requirements for the degree of
Masters of Architecture, MProf(Arch),
Department of Architecture
Faculty of Engineering, Built Environment and Information Technology
University of Pretoria, South Africa

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Programme:	Sport and recreational centre
Site description:	Berea Park Clubhouses, Berea Park neighbourhood, Tshwane
Site location:	Erf R/2375
Address:	600 Lillian Ngoyi Street
GPS Coordinates:	25° 75' 80.49" S , 28° 19' 39.31" E
Research field:	Heritage
Clients:	Department of Sport and Recreation South Africa Tertiary institution (Unisa or University of Pretoria) Individuals from the Berea Park neighbourhood
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Premise:	Design in pursuit of rekindling appropriation

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Hierdie verhandeling poog om aktuele probleme/behoeftes in Pretoria te identifiseer en aan te spreek.

Die Bereaparkterrein kan tans as 'n spreekwoordelike vrot appel beskou word. Die negatiewe opset van Bereapark is besig om die beeld, sosiale samestelling en sekuriteit van die hele buurt te affekteer.

Die verwaarlosing en vandalisme van Bereapark kan gedeeltelik toegeskryf word aan die gebrek aan verantwoordelikheid vir die terrein. Om dit aan te spreek, is dit nodig om met 'n gepaste, assosieerbare argitekturele intervensie vorendag te kom. Die "Behoort-aan-teorie/samehorigheidsteorie" word ondersoek as 'n basis om toe-eiening van Bereapark te inspireer. Die teorie is gebaseer op die konsep dat argitektuur deur die aktiwiteite wat in die ruimte geskied geïnspireer word. Dit is gedeeltelik waar, omdat 'n spesifieke identiteit aan 'n ruimte toegeken word op grond van die aktiwiteite wat daarin plaasvind.

Identiteit is veral belangrik in hierdie geval, waar die terrein so 'n ryk erfenis het as 'n belangrike sport- en ontspanning gebied in die geskiedenis van Pretoria. Beide die tasbare en ontasbare erfenis wat geassosieer word met Bereapark, moet dien as inspirasie vir die nuwe intervensies.

Die voorneme is om Bereapark deur klein, gepaste intervensies te regeneer (herskep). Dit sal uitgevoer word deur aktiwiteit- en ritueel- gedrewe argitektoniese intervensies in die huidige Bereaparkkonteks te plaas. Plasing van nuwe intervensies sal geïnspireer word deur die tasbare en ontasbare erfenis van die terrein. Die ontwerp word verder beïnvloed deur die feit dat sport steeds op die terrein beoefen word, self in die haglike toestand waarin Bereapark tans is. Dit dui ook duidelik daarop dat daar 'n tekort is aan publieke sportfasiliteite in die sentrale area van Pretoria.

Sensitiewe interaksie tussen die nuwe en ou argitektuur is van die uiterste belang. Oud en nuut sal teen mekaar afgespeel word om die verskille tussen die twee te vier. Die uitleg van die huidige geboue sal gekontrasteer word deur middel van streng horisontale sones. Hierdie sones bestaan uit liggewig-staal dose wat òf in die swaar, soliede buite-wand van die bestaande gebou inpas, òf uitprojekteer in die rigting van die sportvelde.

Die ideaal is dat die argitektoniese intervensie die vermoë sal hê om die verhouding tussen die argitektuur en die verbruikers te versterk.

This dissertation aims to address actual needs/issues identified within Pretoria.

The Berea Park precinct has become a proverbial rotten apple. The negative connotations linked to this site are tainting the image of the area. It is also having a negative effect on the safety and social grain of the neighbourhood.

The neglect and vandalism that Berea Park has suffered can in part be contributed to a lack of ownership accountability. To address this, an appropriate, relatable architectural intervention is required. The theory of "Belonging" is explored as an approach to inspire the appropriation of Berea Park. The theory is based on the premise that architecture is informed by the activities that occur within the spaces. This is partially because the activities associated with a space contribute to the identity we attach to this specific space.

Identity becomes particularly important when working with a site with such a rich heritage, a site that has featured extensively in the development of Pretoria's sport and recreational scene. Both the tangible and intangible heritage of the site should play an imperative role in informing the new design.

The intention is to regenerate Berea Park by means of small scale interventions. This is done by inserting activity and ritual driven architecture into the existing fabric of Berea Park. The tangible and intangible heritage of Berea Park act as guiding grids that inform the arrangement of these interventions. Design is further informed by the fact that sport is still actively being practised at this damaged, dilapidated site. This clearly reflects the need for publicly accessible sports facilities within Pretoria.

Sensitive interaction between the new and the existing architecture is required. To achieve this a contrast between old and new is created to ensure that both are celebrated and clearly distinguishable. The current structural grid and planning are offset by a strict set of zones that run horizontally across the site. These zones become lightweight steel boxes that either fit into the existing, stereotomic building envelope or extend out towards the sport fields.

Ideally the architectural intervention will strengthen the relationship between architecture and users.

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Chapter 13: General conclusion References



Background

Great changes have been experienced in the context of South Africa and specifically Pretoria over the past decade or two. The end of apartheid can be seen as one of the major turning points in our history. (Amoteng & Heaton 2007) With this came a change in social structures as well as a shifting of demographics (South Africa National Planning Commission 2011) One of its symptoms is that certain areas of Pretoria have suffered degeneration and neglect.

Berea Park was identified as one of these neighbourhoods. (Figure 1) Central to this area is the old Berea Park sport facilities. The condition of this site is having a negative effect on the Berea Park area. Currently several squatters have taken residence in the damaged structures of the old clubhouses. Berea Park is also renowned for the amount of drug dealers and users that make use of the structures for questionable activities. (Batt 2013: 1)

Both the tangible and intangible memory of the once sophisticated sports club has been severely tainted in the past few decades. (Figure 8) The effect is that Berea Park has become a proverbial rotten apple.

The negative tenor of this site is having a negative effect on its neighbourhood. It is tainting the image of the area, while also having a negative influence on the safety of the neighbourhood

Problems



Figure 2: Degeneration (Author 2013)

Degeneration - General issue

Berea Park has become a proverbial rotten apple. (Figure 2) The negative connotations linked to this site are in turn having a negative effect on its neighbourhood. It is tainting the image of the area, while negatively effecting the safety and social grain of the neighbourhood. (Figure 8)

Intentions



Figure 5: Regeneration (Author 2013)

Regeneration

The focus will be on regeneration of both the site and the neighbourhood. Ideally smaller interventions should be implemented, with the hope that they will have far reaching consequences. (Figure 5) The focus would also be placed on the relationship between people and place, as well as on architecture and nature. Thirdly the narrative of the site will be explored and accentuated.

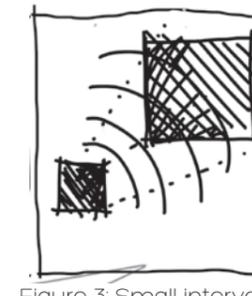


Figure 3: Small interventions for big change (Author 2013)

Neglect and ruination

A lack of accountability of Berea Park has contributed to the site's neglect and vandalism. The interventions at Berea Park need to fit into the context. (Figure 3) It must also take the users and community into consideration.



Figure 6: Belonging (Author 2013)

Belonging

To ensure appropriation of the site and the facilities, it will be important to instill a sense of belonging in the users. (Figure 6) The theory of belonging is based on the premise that architecture is informed by the activities that occur within the spaces. This is partially because the activities associated with a space, contribute to the identity we attach to this specific space. The identity associated and perceived within these spaces will be of the utmost importance.

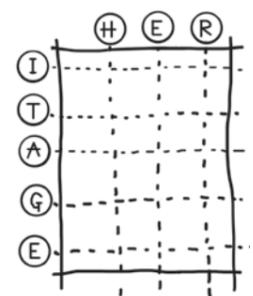


Figure 4: Heritage as guideline (Author 2013)

Heritage

The past should not be ignored. This site has featured extensively in the development of Pretoria's sport and recreational scene. Both the tangible and intangible heritage of the site should play a vital role in informing the new design. (Figure 4)

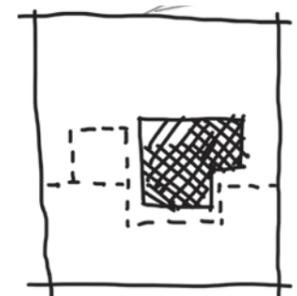


Figure 7: New fitting into the old (Author 2013)

Heritage

The new interventions should be sensitive to the tangible and intangible heritage of the site. (Figure 7) The past of Berea Park should be celebrated in the new designs. Both the tangible and intangible heritage of the Berea Park sport facility should aid in informing possible placement and extent of new interventions.

Figure 1: Aerial photo of Pretoria CBD (Author 2013)

Research question

The following research questions arise from the background and problem statement.

- R** How can some of the principles of regeneration be applied to improve the conditions of the Berea Park site and by extension the neighbourhood?
- RB** Can small scale interventions lead to big changes in the urban context of Pretoria?
- B** How can architecture be utilised to foster appropriation in the users and community?
- H** How can contemporary interventions fit into the heritage context to reactivate and reanimate Berea Park?

Hypothesis

Berea Park is in desperate need for regeneration. A sensitive and appropriate approach will be taken to utilise and preserve the rich heritage of Berea Park. In the current state of ruination a lot of the existing structure will be removed before inserting new small scale interventions into the existing fabric. New interventions will be done in strips light weight. The theory of Belonging will be explored as a means to foster appropriation of Berea Park through design. As part of the regeneration of the site, sustainable systems to limit the ecological footprint of the new design will be explored.

General intentions

The aim of this thesis is to address an actual need or issue identified in the urban context of Pretoria; an area that calls for regeneration; focusing on memory and heritage that act as guidelines for future activities and structures. The aim will also be to generate smaller, relatable architectural interventions, to strengthen the relationship between architecture and users.

Theoretical intentions

The theoretical discourse will be informed by the three intentions that were clearly identified. The three theoretical approaches that will therefore be investigated, will be: Regeneration, Heritage and Belonging.

Design intention

The design challenge includes formulating a programme appropriate approach. The challenge also includes designing an intervention that sensitively fits into the existing architectural-, site- and neighbourhood context.

Delineation and limitations

- The official drawings that exist of Berea Park does not reflect current conditions.
- Existing drawings supplemented by findings and descriptions from a HIA report and an engineer's report of Berea Park, as well as visual inspection, have been used to compile up-to-date drawings.
- These drawings are educated assumptions based on research and analysis by the author. They should not be accepted as completely accurate.
- For the purpose of this thesis, however, these drawings were accepted as accurate depictions of the existing structures to enable proposals of new interventions.

Research methodology

In-depth research on the heritage and current site conditions of Berea Park will be undertaken. Varied sources including: books, journals, letters and articles will be referenced to ensure a comprehensive understanding of the context. This research, along with the relevant precedent will inform design decisions. Architectural interventions will be explored and developed by means of sketches and models. Hand-drawn and computer generated images as well as models built by hand or generated by means of computer will be utilised as design tools.

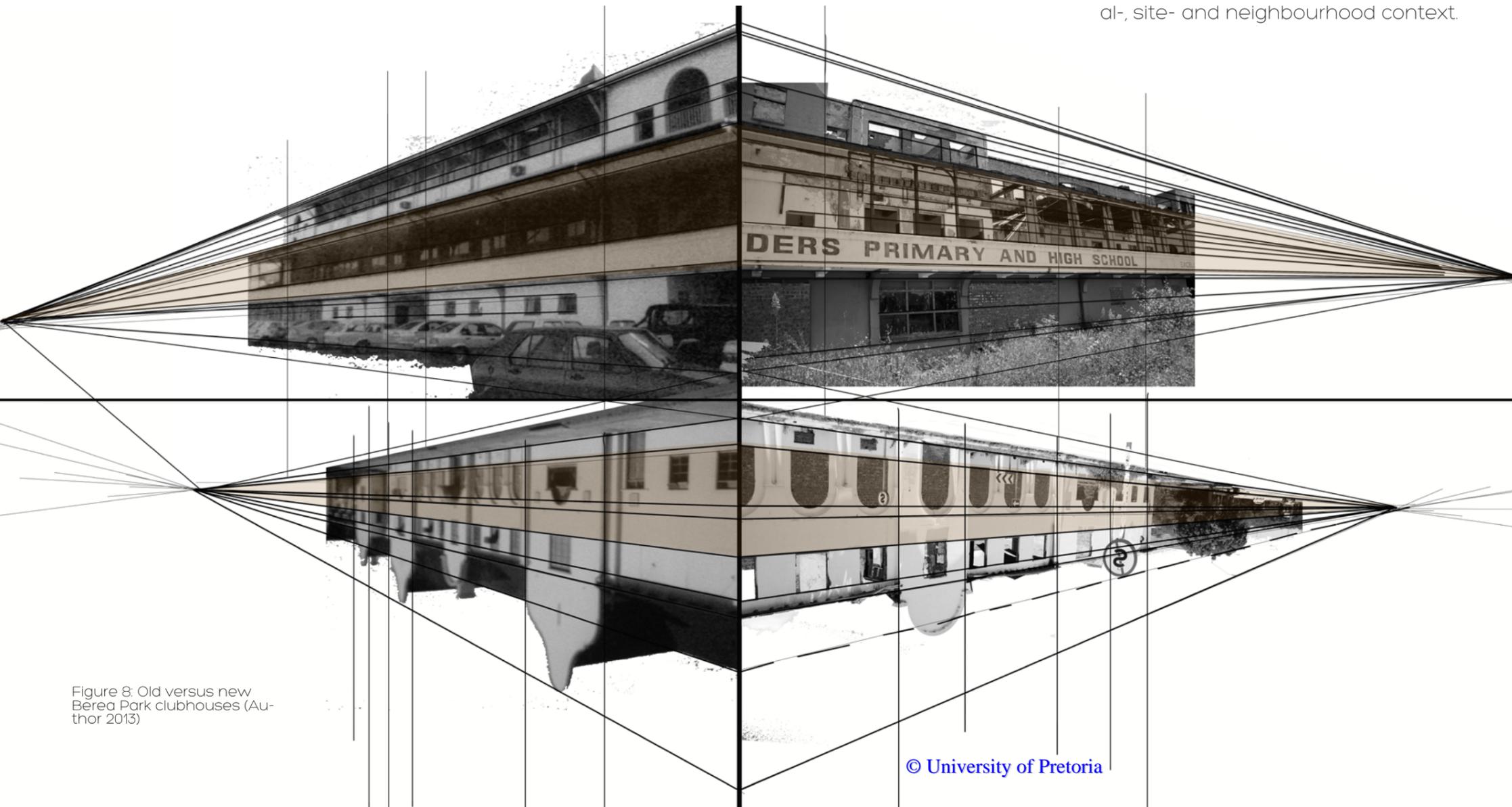


Figure 8: Old versus new Berea Park clubhouses (Author 2013)

Chapter overviews

Discussion of the contents of the various chapters includes the four parts of the thesis as follows:

Part 1: Approaches	Part 2: Research and analysis	Part 3: Design	Part 4: Result
<p>The “lenses” through which the research and context will be investigated. These three approaches will also shape the bases for informed decision making throughout this thesis.</p> <p>Chapter 1: Regeneration</p>	<p>The research and analysis that were done to inform design decisions.</p> <p>Chapter 4: Heritage research</p>	<p>Concept, design and technical development.</p> <p>Chapter 8: Design theory</p>	<p>Final designs and conclusion.</p> <p>Chapter 12: Presentation and final design</p>
<p>The principles or approaches from the movement of regeneration that become applicable to this context and the design discourse are identified.</p> <p>Chapter 2: Belonging</p>	<p>Research done on the historical development and narratives linked to Berea Park. Special attention is given to the historical buildings located within the precinct.</p> <p>Chapter 5: Context and site</p>	<p>The theory informing the design.</p> <p>Chapter 9: Concept</p>	<p>The first part of the chapter consists of the visual summary and presentation of the information composed in chapters 1 to 11. Plan, section, elevation, detail drawings and models that follow are the result of the design development and technical development in chapters 10 and 11.</p> <p>Chapter 13: General conclusion</p>
<p>Belonging as the theoretical intention of this thesis is described and explored, as well as its application to the specific context.</p> <p>Chapter 3: Heritage</p>	<p>Analysis of the urban context, site and existing structures is done at various scales. Numerous methods are used to gather and analyse the data. This data is used to formulate a framework proposal.</p> <p>Chapter 6: Precedents</p>	<p>The concept that will be informing the design is discussed and graphically explored.</p> <p>Chapter 10: Design development</p>	<p>Summary of the findings and conclusion of the thesis.</p>
<p>The charters, approaches and principles that will be considered when working within the heritage context of Berea Park will be identified.</p>	<p>Precedent studies of a few applicable projects were undertaken to inform the design. The proposals currently being put forward for Berea Park are also considered.</p> <p>Chapter 7: Programme and client</p>	<p>The early phases of the design development are explained. Both models and sketches were used in the design process.</p> <p>Chapter 11: Technical development</p>	
	<p>The programme and its requirements are researched, along with possible clients of interested parties.</p>	<p>Technical drawings and investigations of the design are presented.</p>	

Part 1

[approach]



The principles or approaches from the movement of Regeneration that become applicable to this context and the design discourse are identified.

"If a window in a building is broken and is left unrepaired, all the rest of the windows will soon be broken." (Broken window theory by Wilson and Kelling 1982)

The fact that Berea Park was deserted and left to decay not only had a negative effect on the image of the site, but also on the way in which the area is perceived. This in turn contributed to the demise of the Berea Park neighbourhood.

Regenerate:

"to improve a place or system, especially by making it more active or successful"
(Cambridge University Press 2013)

yond the sustainable focus of Ecological or "Green" design.

Regenerative architecture looks at the association between different aspects that influence architecture and design. Some of these aspects include: the relationship between nature and the built environment, people and place, humans and the natural environments and the social and cultural realms. Engagement becomes the focus of regeneration instead of the final product. "This process of engagement has significant environmental, economic, social and cultural benefits related to community building and participation." (Sarutu 2012)

Regenerative architecture goes far be-



Newspaper headlines: Alarm as gangs target cars in Pretoria CBD (Hoskem, 2012) Customers shot in supermarket robbery (SAPA, 2013) Hawkers, cops clash in Pretoria CBD (du Preez & Kahimbaara, 2012) High time to tackle crime and grime in Pretoria's Berea (Pretoria News, 2010) Smash-and-grab alert (Hoskem 2011) Metro-rail apologises for stampede at station (SAPA, 2012) Pretoria one of SA's most dangerous (Hoskem, 2008) Pretoria plan to bar taxis and traders from some streets in CBD (Hlahla, 2012) School killing after pencil row (Ngoepe, 2012)

Figure 9: Social issues in Berea Park area (Author 2013)

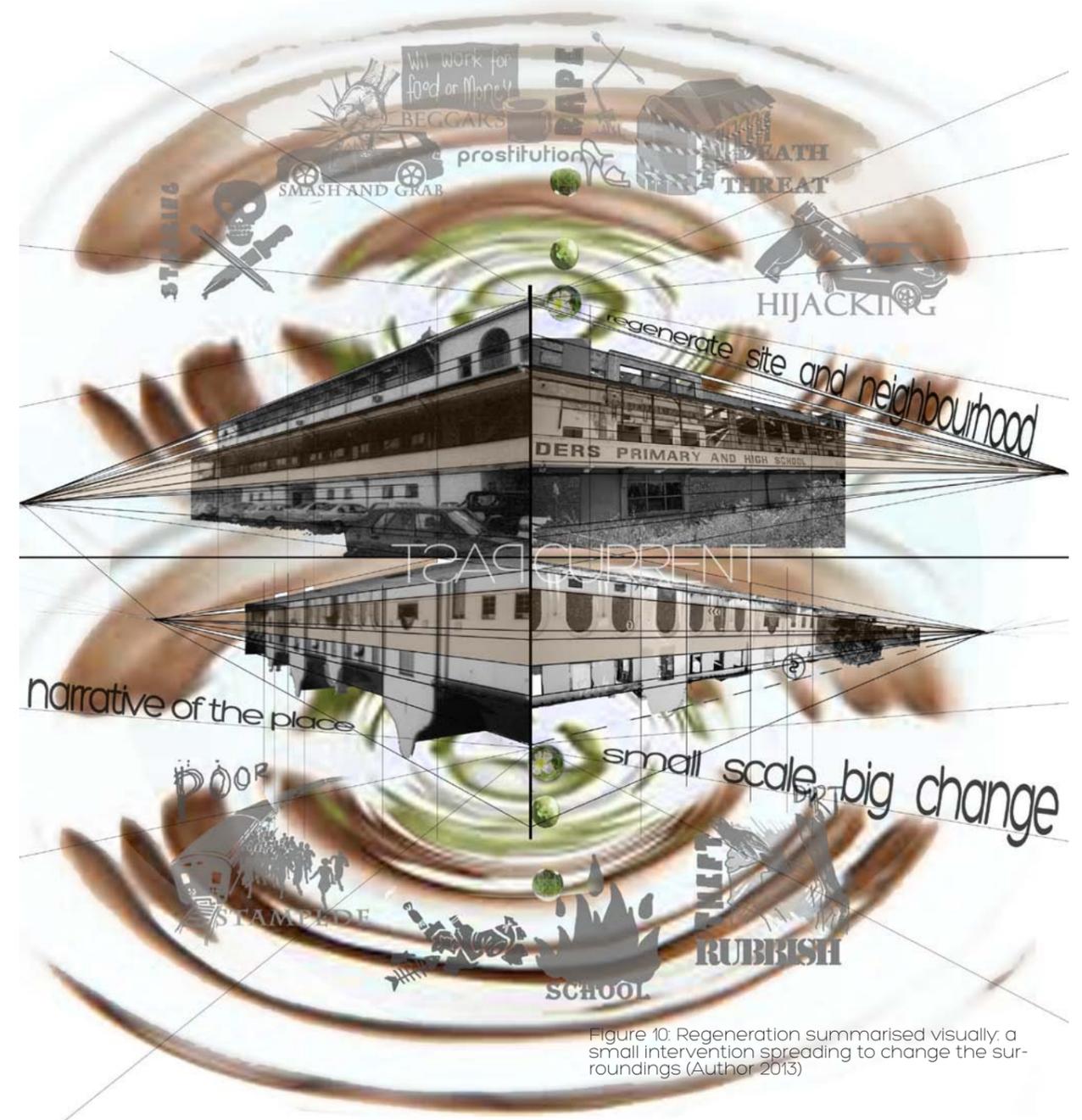


Figure 10: Regeneration summarised visually: a small intervention spreading to change the surroundings (Author 2013)

Regeneration is about looking at the story or narrative of the site and context (Figure 10). The relation we feel to a place is strengthened by the narrative and feeling part of the story. The story of a site includes both the tangible and intangible heritage, as well as the current events. The story of a place can "create collective identity, meaning, and purpose to bridging divides and fostering collaboration." (Mang & Reed 2012)

Another important aspect of Regenerative architecture is the concept of "Urban acupuncture", as advocated by Curitiba Mayor, Jaime Lerner. (Fox 2008) This is based on the premise that certain small interven-

tions could have rippling effects that lead to great changes. These changes could potentially spread beyond the boundaries of the intervention and site itself. (Mang & Reed 2012)

Conclusion

It is clear that Berea Park is in desperate need of regeneration, especially in light of the social strains Berea Park and the area have suffered. (Figure 9) Ideally the design will be enriched by the tangible and intangible heritage of the site. The intervention itself will aim to act as urban acupuncture, contributing to positive change to the greater Berea Park neighbourhood and Pretoria.

Belonging as the theoretical intention of this thesis is described and explored; as well as its application to the specific context.



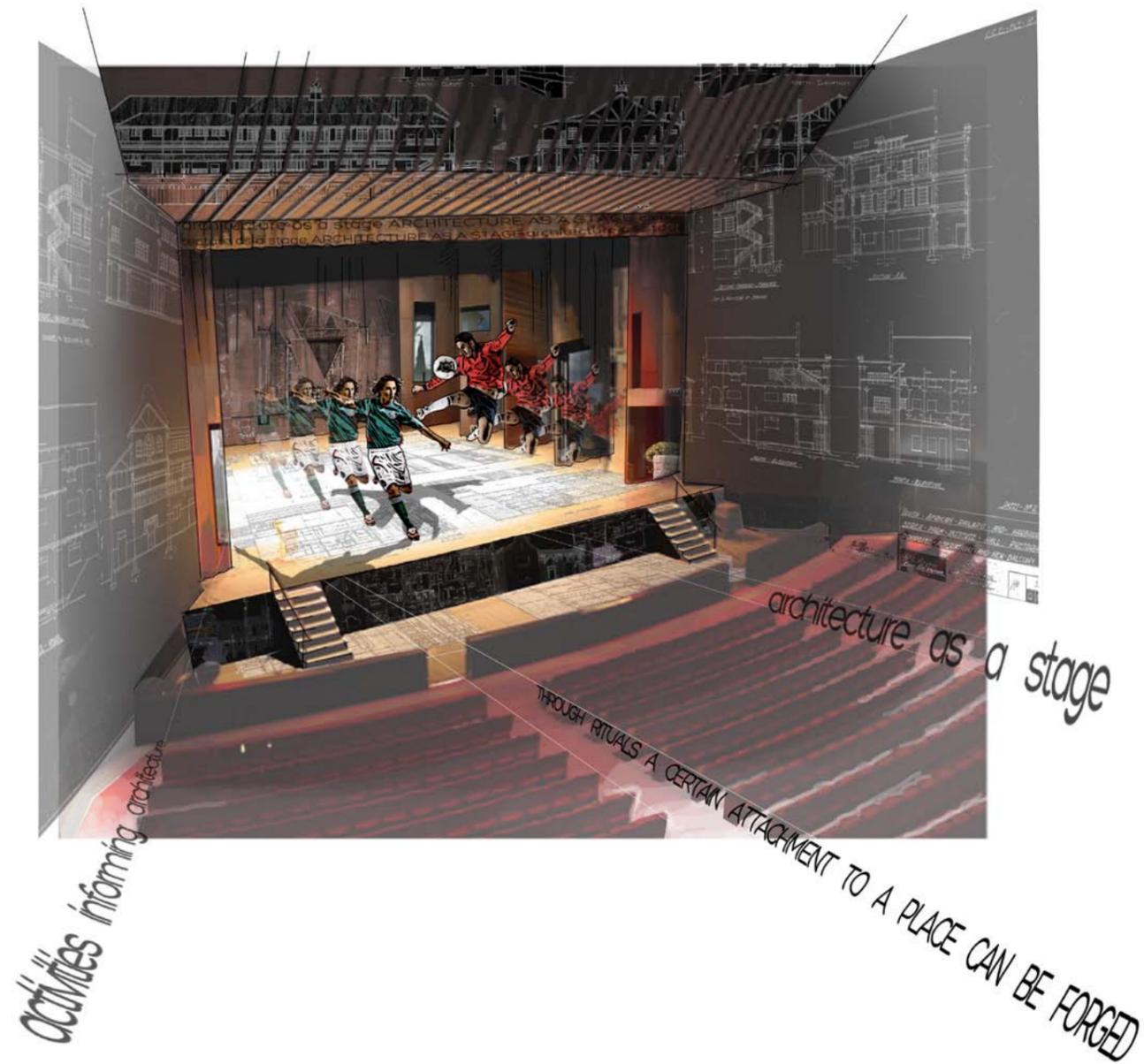


Figure 11: Graphic depicting belonging (Author 2013)

Belonging

Context:

Berea Park has suffered great neglect over the past decade. This can mainly be contributed to lack of ownership of the place that led to the neglect and damage suffered by the facilities located at Berea Park.

By creating a sense of belonging, architecture and design might be able to promote the taking of ownership by users.

Belonging is about forging an attachment to a certain space. It is about how you identify with a specific space.

To see how one can identify with a certain place, one first has to look at identity.

According to Judith Butler, identity is shaped by performances and not the other way around. (Leach 1999: 77) She looks at performativity, or simply put: behaviour and actions, as the basis that informs identity. Identity is not an internal or physical attribute, but is rather based on the aspects of one's behaviour or the way in which one perceives or expresses something. One's identity is born from gestures or enactments of specific activities.

Sport has become an integral part of South African culture and cultural identity. Sport has the ability to unite us as South Africans (Huges 2013). An example of this would be how we as South Africans stood together and took pride in hosting the Soccer World Cup in 2010. (Lenazo 2010)

Through performances a certain attachment to a place can be forged. Performativity is not based on a single performance, but rather consists of accumulative iteration of certain activities. If an action is repeated it has the potential to become a ritual. Butler grounds identity and performance in a space, by stating that objects cannot exist if they stand alone, they have to be in conversation with other objects as well as its surroundings (architectural setting).

If identity is performed, the space in which the "performance" takes place can be seen as the stage. Architecture becomes the backdrop for the activities that occur in front of or within the structures. Through these activities or rituals the architecture is imbued with meaning. Dormant or unused architecture only has cultural value once it is in use. According to Neil Leach (1999: 76) an object with cultural significance constantly awaits the opportunity for its old value to be utilized in determining its new value in the new market condition. This echoes with heritage movements that question the "museumification" of buildings. (MoMa 2010)

After a certain number of performances the stage or architectural setting can no longer be viewed as neutral. This is also true for Berea Park, where the rich history of activities and layers of memories cannot be ignored when the new context or programme is conceived.

A place becomes infused with associations by those who partook or witnessed the activities that occurred in the space. An example of this would be the great number of people that has memories of events or activities that occurred in the northern club hall. "Memories of associated activities haunt physical spaces like ghosts." (Leach 1999: 79)

The meaning of a place and by extent, a sense of belonging, depend on the memories associated with the space being kept alive.

Rituals or actions that are enacted within a space have the power to rekindle past memories associated with this space.

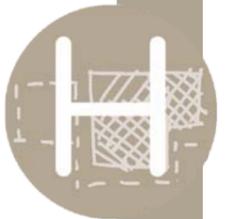
Conclusion:

Belonging is based on the premise that association of a place is formed through the layering of memories and rituals associated with a place. Architecture acts as a stage for these memories or rituals, becoming infused with their meaning. Activities or rituals therefore inform architecture, while architecture shapes or directs these activities or rituals. (Figure 11)

Through the exposure to both current and past activities a sense of identification with a space is triggered. This in turn leads to a sense of belonging.



The charters, approaches and principles that will be considered when working within the heritage context of Berea Park will be identified.



Approach to Heritage

Abandoned buildings are loaded with memory and inscribed with events that helped to shape our city. (Figure 12, Figure 13) The spaces bear witness to decades of activities that shaped the South African sport scene. To be able to realise the potential of the site, it is important that the new programme does not take away from the heritage associated with the site. This can only be done by acknowledging the existing to form an understanding what the new can become.

No general set of rules can be applied to all heritage interventions. Each intervention's specific heritage and physical context plays a vital role when formulating an appropriate approach. There are numerous guidelines that have been accepted by the International Council of Monuments and Sites (ICOMOS) and that are prescribed by the National Heritage Resources Act (1999) that can be referenced as guidelines when working in a heritage context.

The following charters are relevant in the Berea Park context: the National Heritage Resources Act (1999), Venice, Burra and UNESCO Charters. Below are some of the most relevant guidelines from each charter that can be applied in this case:

The Venice Charter 1964

- Article 3. Heritage sites are conserved and/or restored, ensuring that they have the potential to serve as historical evidence.
- Article 5. Heritage sites can only be preserved by ensuring their utilization as socially useful sites. Adaption of the site is only allowed if it serves to ensure its usability.
- Article 9. Utmost respect of the original must be prevalent during the restoration process. Restoration serves to preserve and celebrate the heritage and visual importance of a building. In cases where restoration could be seen as a questionable approach, it is important that additions must be distinct from the existing fabric.

- Article 13. Additions must not detract from elements of architectural importance, or relevant heritage spaces. Where additions are done, it must balance with the site's setting and the composition of the existing buildings. (ICOMOS 1965)

Burra Charter:

According to the Burra Charter places of cultural importance have the ability to enhance the connection people feel to their community and the history of the community. Places of cultural importance, act as physical records of a community's identity and the past events that shaped the community. It is important to preserve these unique places of cultural significance for current and future generations.

"The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it usable, but otherwise change it as little as possible so that its cultural significance is retained."

(Burra Charter 1991:1)

The United Nations Educational, Scientific and Cultural Organization's (UNESCO) Worlds Heritage Paper 9, 2003

- Culture and heritage can serve the stimulus for development.
- The heritage policies put in place, must serve to benefit the community
- It is important that the community is involved in the recovery and protection of the site's narrative/memory.
- Improving a single site, especially public spaces, can have a positive impact on the ambiance and spirit of an entire neighbourhood.

(UNESCO 2003)



Figure 12: Detail of western facade of Berea Park (Author 2013)



National Heritage Resources Act 1999

Amongst other, the following objects or places could be considered to have heritage value:

- It the place played an important role in the community's or South Africa's history.
- The place embodies a certain level of skill or craft from an architectural movement in South Africa that is important to be retained
- A community has a strong association with a specific place, because of its cultural, religious, or social significance.

From the Heritage Resources Act of 1999 it is important to note that:

- 5a) Heritage resources have value as documents of the origins of South African society. Yet it is important to note that these resources are finite, therefore we must take special care to guarantee their survival.
- 5c) These heritage resources have the ability to promote "reconciliation, understanding and respect", resulting in unifying South African identity.
- 5d) It is also important to guard against abusing these resources for denominational purposes or political gain (NHRA 1999)

From the National Heritage Resources Act (1999) the new intervention should tap into the unifying ability of Berea Park's heritage. Retaining this heritage is of the upmost importance.

This is in stark contrast to the current proposal for Berea Park, where there is no interaction between the existing structure and the proposed offices for the Department of Public Works. This goes against numerous of the statements from the above mentioned charters.

Building governmental offices on a current public space, is also in breach of principle 5d of the National Heritage Resource Act (1999).

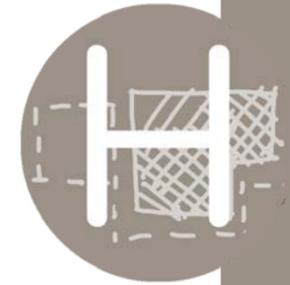
Conclusion

It is important to realise and utilise the opportunities that arise when working in a heritage context. The above mentioned charters are used as mere guidelines. They should not be viewed as rules or regulations, but rather as possible approaches that one should be aware of. It is clear that it is important to fully understand and consider the history of Berea Park when formulating future interventions. Part of understanding the site will include capturing the story and past narratives of this site.

Figure 13: Detail of eastern facade of Berea Park (Author 2013)

Part 2

[research and analysis]



Research on the historical development and narratives linked to Berea Park. Special attention is given to the historical buildings located within the precinct.

Introduction

One of the main aspects discussed in the charters (chapter 3) is understanding the place based on the physical, and intangible history of the place. This chapter will focus on, collecting all of the relevant information to be able to make informed design decisions.

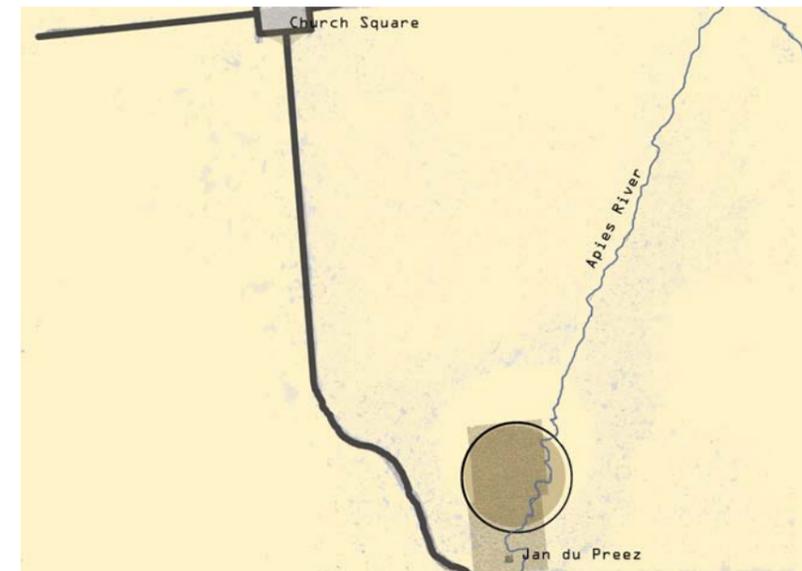


Figure 14: Impression of 1848 map of Pretoria (Author 2013) based on graphics by Corten & van Dun (2009)

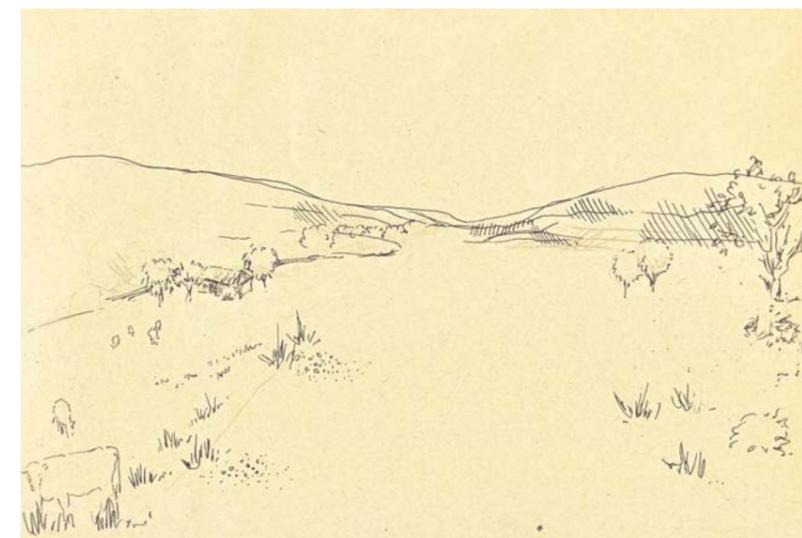


Figure 15: 1848 interpretation of Berea Park (Author 2013), after descriptions by Swanepoel (2008)



Figure 16: 1848 icons depicting activity on the farm: fruit, grain and cattle farming (Author 2013)

In 1848 the farm, later known as Du Preezhoek, was started on a section of what is now known as central Pretoria. (Figure 15) The parcel of land was procured from the original Elandskloof farm. (Punt 1951) The farm is ideally located next to the Apies River and the road running into Pretoria from the south. (Figure 14)

The piece of land was originally used by Jan Du Preez for farming with cattle and fruit trees. (Du Preez 2003) (Figure 16)

1848
DU PREEZHOEK

1855
PRETORIA STARTED

1888
PTA BEREA RUGBY

1889
SPORT FACILITIES

1892
PRETORIA RAILWAY

1897
SPORTS CLUB

1903
SARBUY PROPERTY

1907
S. CLUBHOUSE

1926
N. CLUBHOUSE

1950
DEVELOPMENT

1996
FOUNDERS SCHOOL

2010
FIRE

1848
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1907
S. CLUBHOUSE

1926
N. CLUBHOUSE

1950
DEVELOPMENT

1996
FOUNDERS SCHOOL

2010
FIRE

Figure 17: Impression of 1889 map of Pretoria (Author 2013) based on graphics by Corten & van Dun (2009)

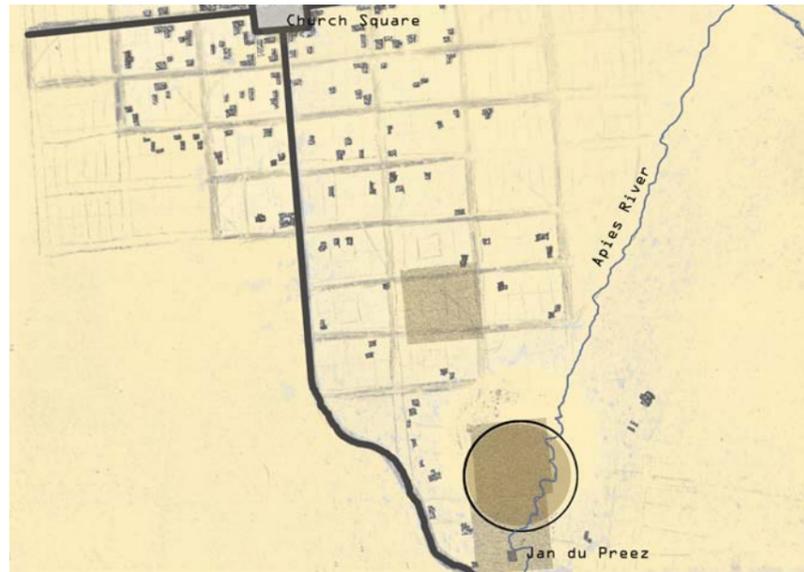


Figure 18: 1889 interpretation of Berea Park (Author 2013), after descriptions by Swanepoel (2009)



Figure 19: 1889 icons depicting activity at site: sports, farming, church and mill (Author 2013)



In 1855 Pretoria was officially declared a town. Pretoria had grown significantly by the late 1880s. (Figure 17) At this time town planning and layouts were also being proposed.

Before the 1890s, there was a mill located at the south eastern corner of du Preezhoek. (Figure 18) The mill ran on the channelled water from the Apies River. (Swanepoel 2009) Du Preezhoek still functioned as an active farm during this time, yet it also housed other functions such as a church and sport fields. (Figure 19)

After cricket and football were moved from Church Square to prevent stray balls from breaking the windows of the buildings around the square (Stigting Simon van der Stel 1957), many of the sport related activities relocated to du Preezhoek. Sport related events were frequently housed at the northern part of du Preezhoek, for example the "Volksspelen". Numerous sport activities, formed part of these events, including athletics, duck hunting, swimming in the Apies, etc. (Swanepoel 2005)

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1903
SAR BUY PROPERTY

1907
S. CLUBHOUSE

1926
N. CLUBHOUSE

1950
DEVELOPMENT

1996
FOUNDERS SCHOOL

2010
FIRE

Figure 20: Impression of 1897 map of Pretoria (Author 2013) based on graphics by Corten & van Dun (2009)

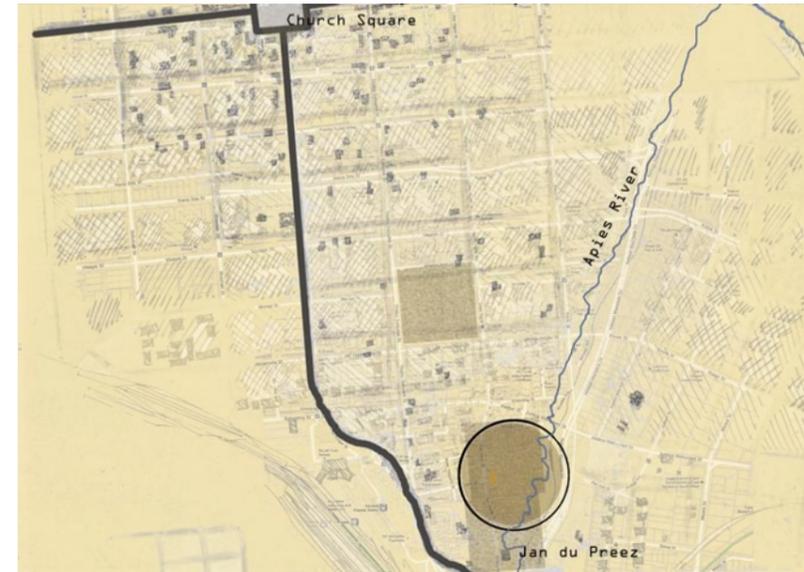


Figure 21: 1897 interpretation of Berea Park, as sporting facility (Author 2013), after descriptions by Swanepoel (2009)

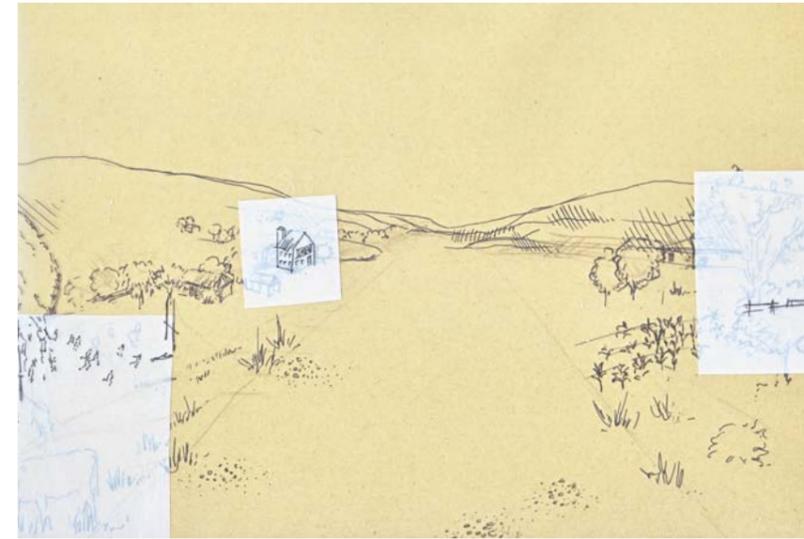


Figure 22: 1897 icons depicting activities at site: sports, soda factory and farming. (Author 2013)



In 1892 the Pretoria railway line was laid.

The location of the Pretoria station caused an increase of development surrounding Berea Park. (Figure 20) In 1897 the Berea Sports Club that included various sports, was founded by the Bourke Trust Company. (Jansen 2001)

During this year the facilities were used to house an event held to showcase the first automobile in South Africa. (Swanepoel 2005) In celebration of this event there were bicycle races and a race between the automobile and a horse cart, held around the athletics track of Berea Park. (Figure 22) At this stage the mill had also been converted to a soda factory. (Figure 21) (Swanepoel 2009)

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1897
SPORTS CLUB

1903
SAR BUY PROPERTY

1907
S. CLUBHOUSE

1926
N. CLUBHOUSE

1950
DEVELOPMENT

1996
FOUNDERS SCHOOL

2010
FIRE

Figure 35: Impression of 1996 map of Pretoria (Author 2013) based on graphics by Corten & van Dun (2009) and DigitalGlobe (2013)



Figure 36: 1996 interpretation of Berea Park with both clubhouses and extensions (Author 2013), after view by DigitalGlobal (2013)

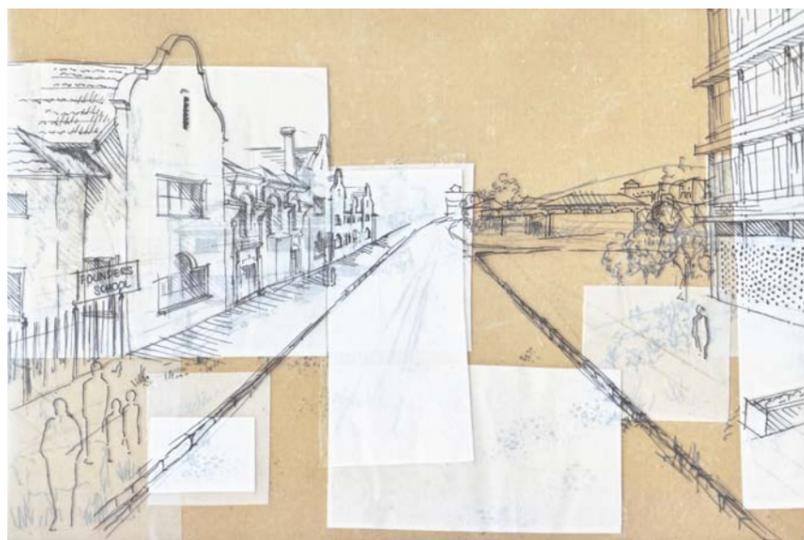


Figure 37: 1996 activities at site: Founders School and sport facilities (Author 2013)



In 1995 the road link between Nelson Mandela and Lilian Ngoyi was built, cutting across two of the tennis courts and separating the remaining courts from the rest of the facility. (Figure 35) The dressing rooms and part of the pavilion that were to be removed to make way for the road, were relocated to a different part of Berea Park. (Jonker 1995)

In 1996 the Founders High and Primary School moved into the Berea Club buildings. At this time the buildings had already suffered some level of neglect. (Figure 36, Figure 37) (School 2008) The buildings were also used by the Seventh Day Adventist Church. (Figure 37)

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PTA BEREÀ RUGBY

1889
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SAR BUY PROPERTY

1907
S. CLUBHOUSE

1926
N. CLUBHOUSE

1950
DEVELOPMENT

1996
FOUNDERS SCHOOL

2010
FIRE

Figure 38: Impression of 2010 map of Pretoria (Author 2013) based on graphics by Corten & van Dun (2009) and DigitalGlobe (2013)



Figure 39: 1950 Berea Park: currently (Author 2013)



Figure 40: 2010 Activities at site: ruins and sport (Author 2013)



In 2010 the Founders School relocated to an office building in Tulleken Street. (Figure 38) The major reason for their relocation was the state of neglect the clubhouse buildings were in. (Figure 39) (Batt 2013) Shortly after they abandoned the facilities, the squatters that moved into the buildings managed to burn down part of the southern clubhouse. (Figure 38, Figure 39, Figure 40) (Batt 2013)

Southern clubhouse

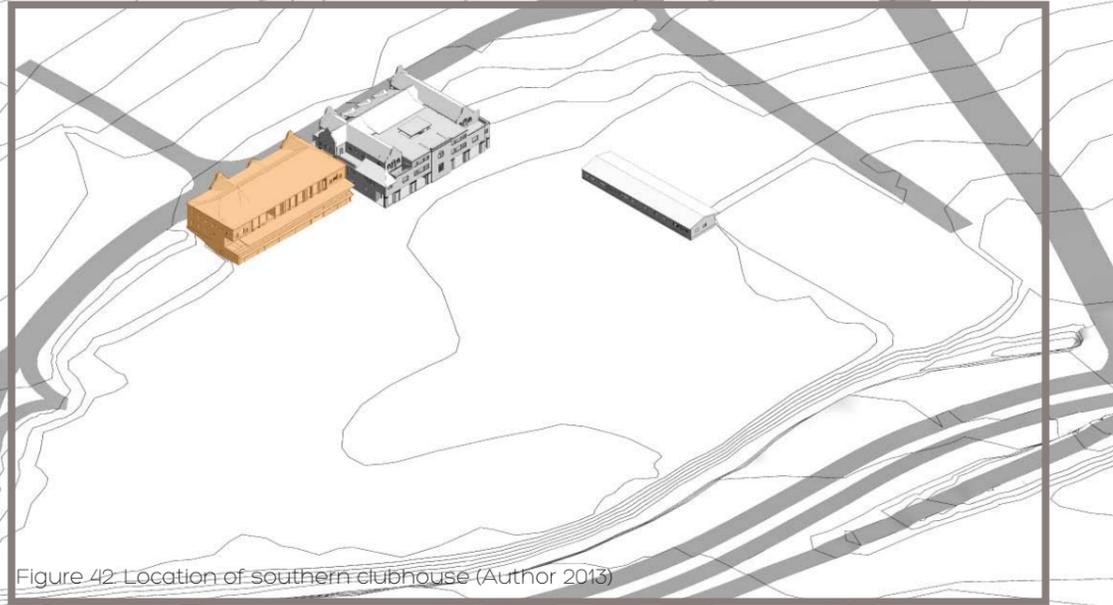


Figure 42 Location of southern clubhouse (Author 2013)

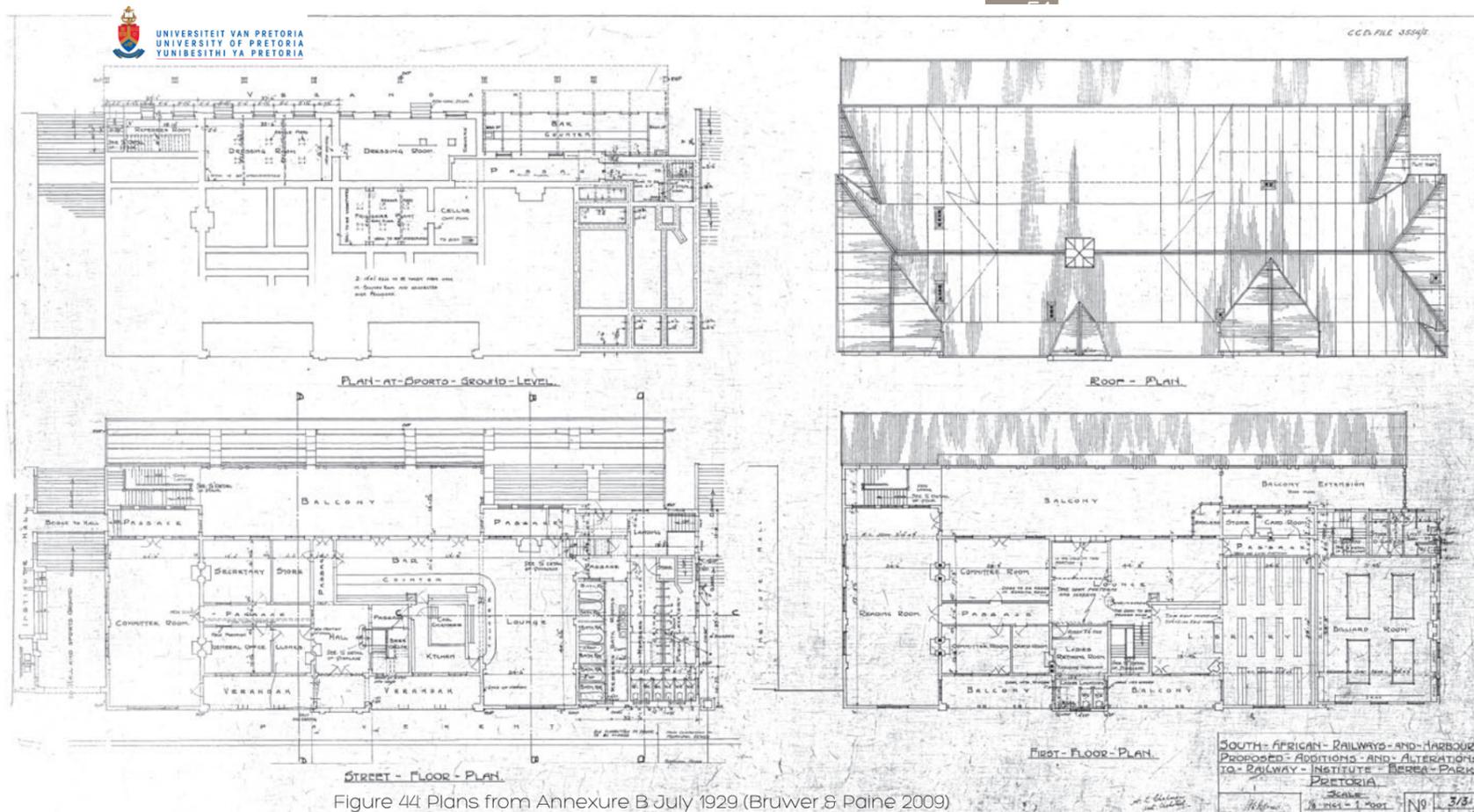


Figure 44 Plans from Annexure B July 1929 (Bruwer & Paine 2009)

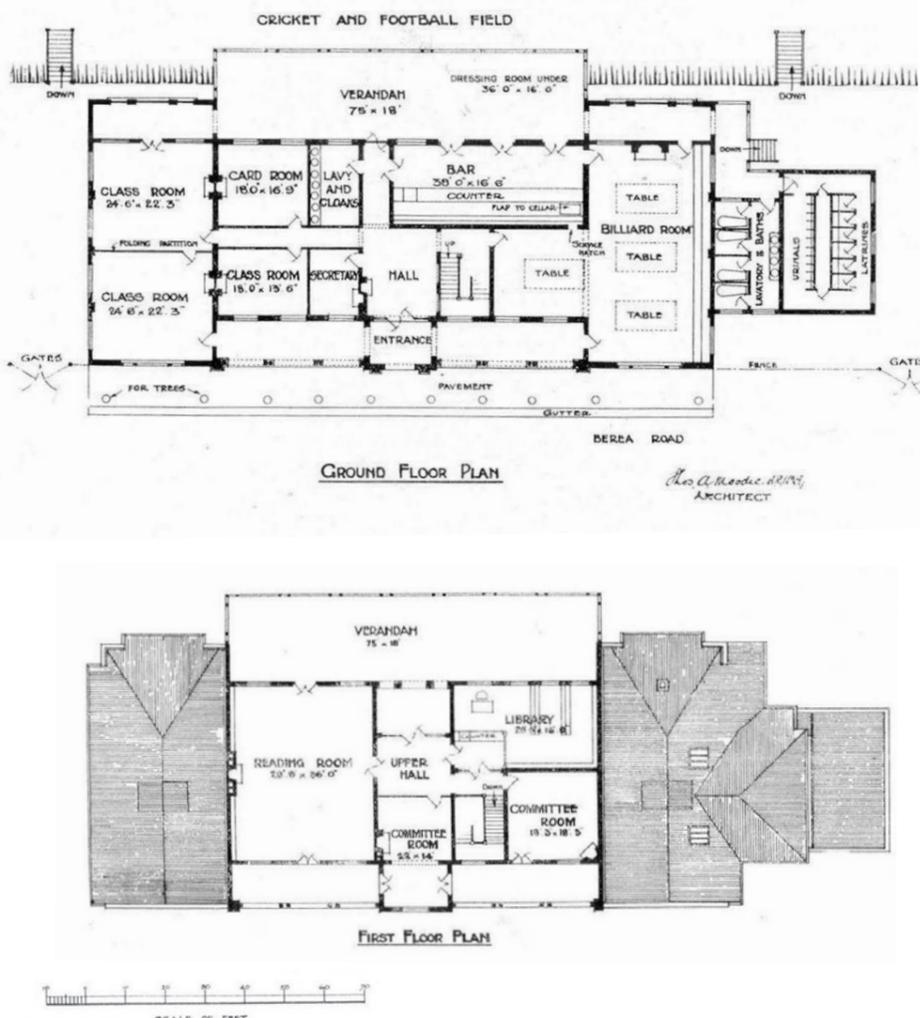


Figure 41 First and ground floor plan from the South African Railway Magazine, 1907 (Bruwer & Paine 2009)

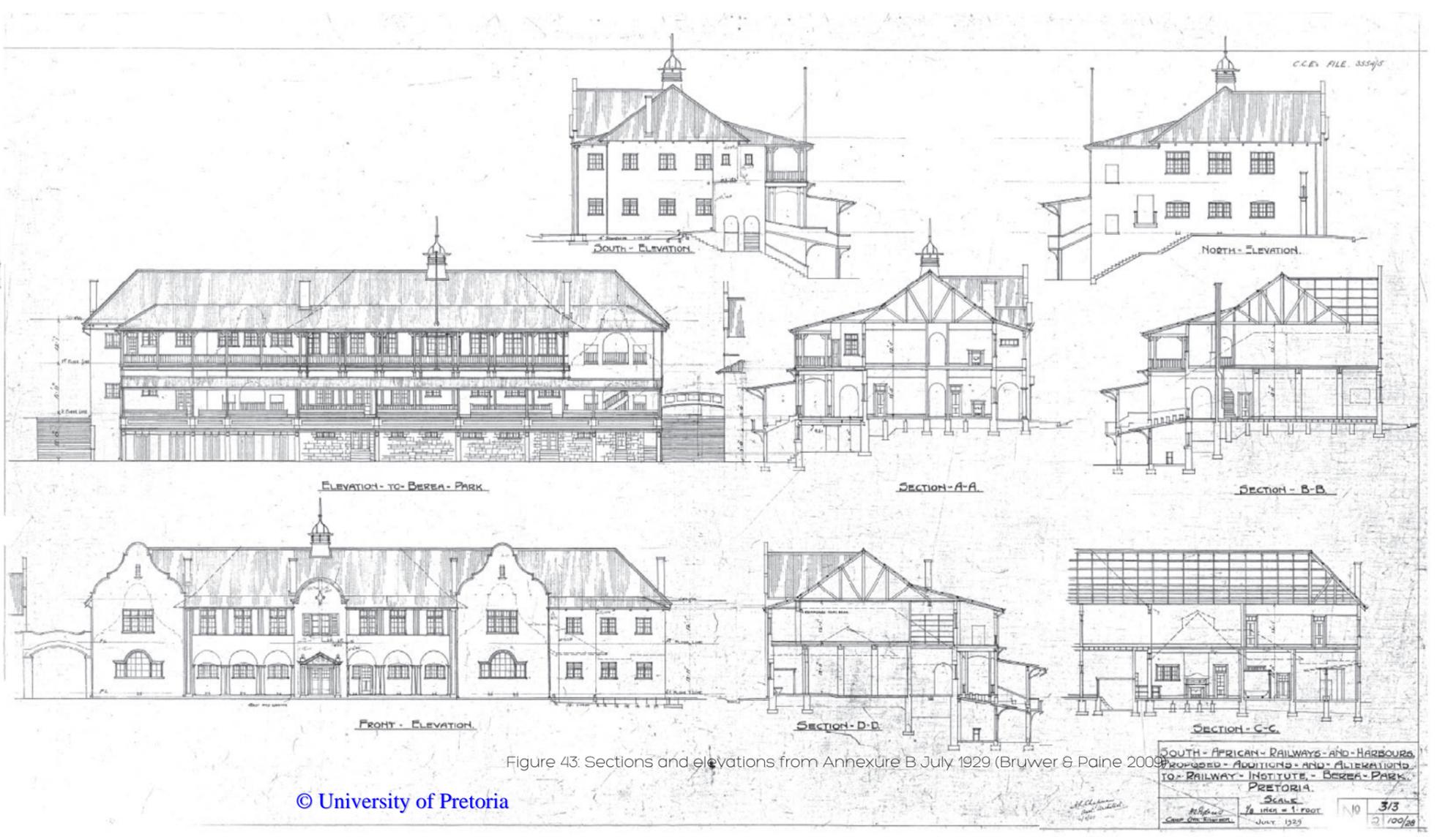


Figure 43 Sections and elevations from Annexure B July 1929 (Bruwer & Paine 2009)

ALTERNATIVE NAMES:	Pretoria Railway Institute SAR & H Berea Park Institute Berea Park southern clubhouse
PROTECTION STATUS:	It is older than 60 years and is therefore protected by the National Heritage Resources Act, 1999
DATE OF COMPLETION:	June 1907
ARCHITECT:	Thomas, A Moodie
BUILDING TYPE:	Sports and recreational clubhouse
BUILDING STYLE:	Cape Dutch Revival Style



Figure 45: Fire damaged southern clubhouse (Author 2013)

Description of Architectural elements

The southern clubhouse is a painted and plastered masonry structure with gables on the western facade. (Figure 45, Figure 46) It was originally a single storey structure facing west, with open verandas on either side of the main entrance (Figure 41). The Gables were later rebuilt when an additional level was added. The arches on the western facade, between the precast profiled columns have been filled in. (Figure 44, Figure 43)

Utilising the east-western slope a three storey structure on the eastern side was created, facing the sports fields. Projecting

verandas run along the eastern facade of the building, creating pavilion spaces. Profiled timber supports, that were later replaced with steel ones, support the profile steel roof over the veranda spaces. Other notable elements in the building include the stone plinth on the eastern facade as well as the use of two-coloured roof tiles.

In the interior there were quite a few notable furnaces, a variety of floor finishes as well as profiled cornices surrounding the ceiling. (Le Roux 1992: 155-156) (Jansen 2001)

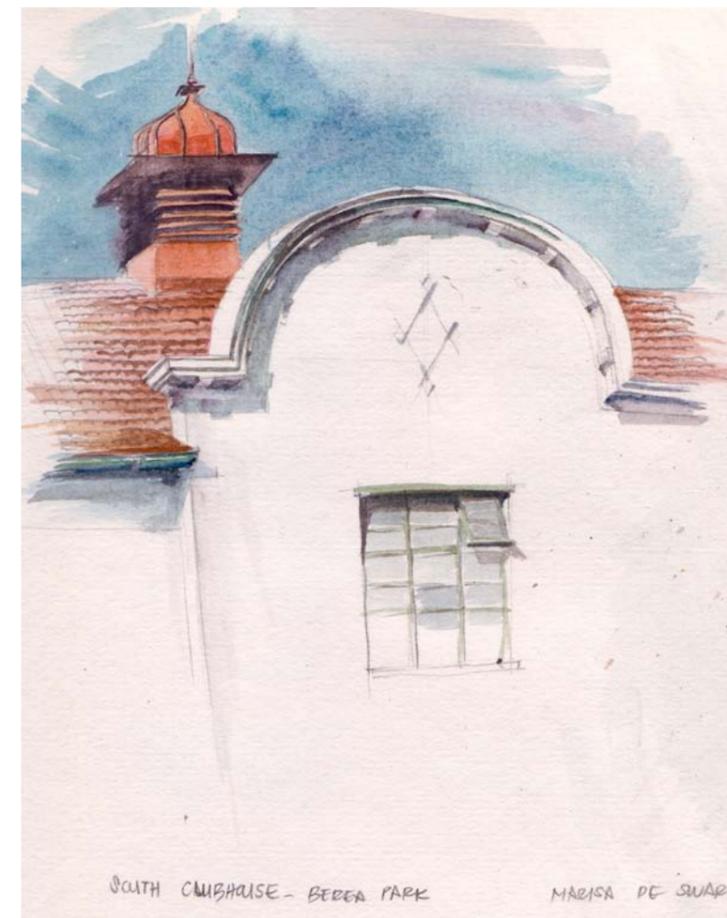


Figure 46: Central gable of southern clubhouse (Author 2013)

Statement of significance

The main entrance of the building is placed on axis with Clara Street, that acts as a symbolic link to the Pretoria Railway Institute. The importance of the link was accentuated by the balconies (that were later enclosed) facing onto Lillian Ngoyi Street. These verandas echo the verandas of the railway houses. Examples still exist in Lillian Ngoyi Street and Tulleken Street. The purpose of the verandas was to create a dialogue with the public domain.

The original southern clubhouse, finished in 1907, consisted of a ground and first floor veranda that looked out onto the football and cricket fields. Numerous facilities, including a bar, billiard room, library, reading room and classrooms were also housed in the structure.

In 1926 a second storey was added to the building, and the seating of the ground floor veranda was extended.

During the 1930s the southern clubhouse was further extended, by adding a double storey to the south. (Bruwer & Paine 2009)

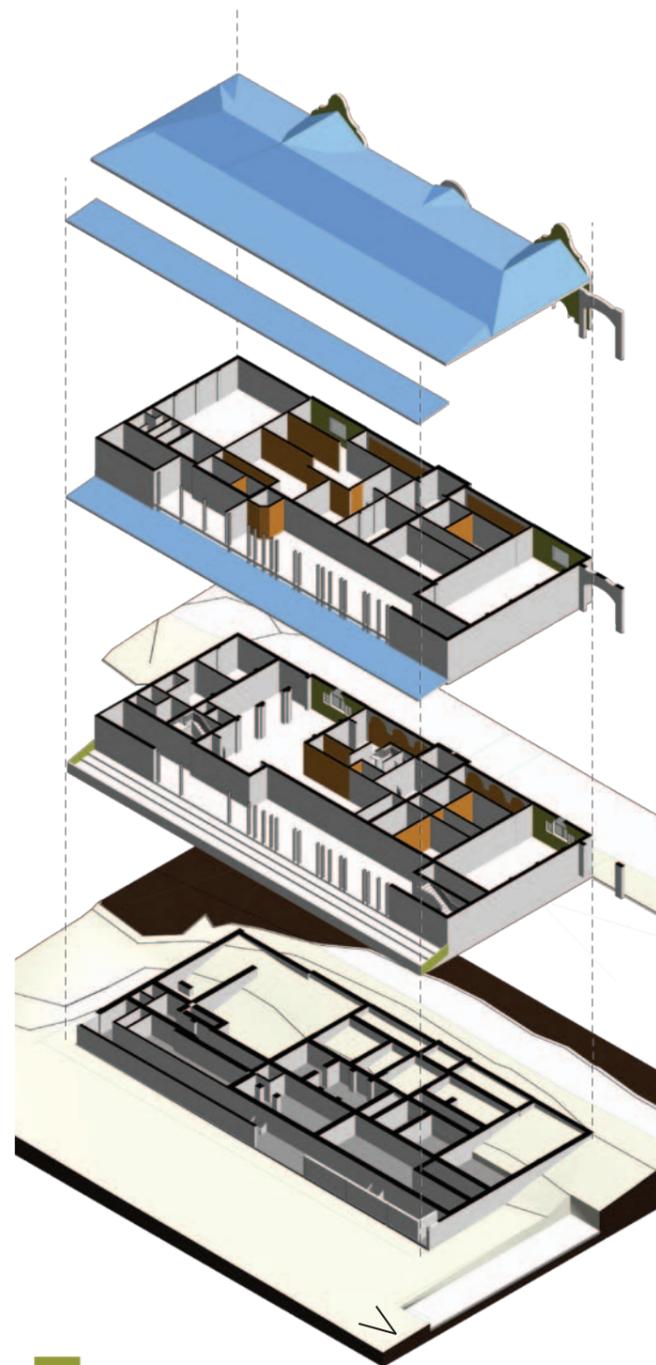
The importance of the southern clubhouse within the historical landscape of Pretoria is in part contributed to the building's association with the architect Thomas Moodie, as well as to the structure's relation to the Pretoria Railway Institute and its history. The historical use of the clubhouse also contributes to its cultural and historical value.

Some elements of the core buildings are still in existence. These elements have great historical value. There are also some of the later additions, such as the grandstands, that now contribute to the cultural significance of Berea Park. (Figure 47)

The placement of the southern clubhouse, along with its visual links to its surroundings, including the northern clubhouse, the Apies River and the sports fields, are extremely important. (Bruwer & Paine 2009)

GRAPHIC REPRESENTATION OF STRUCTURAL ASSESSMENT BY ENGINEER

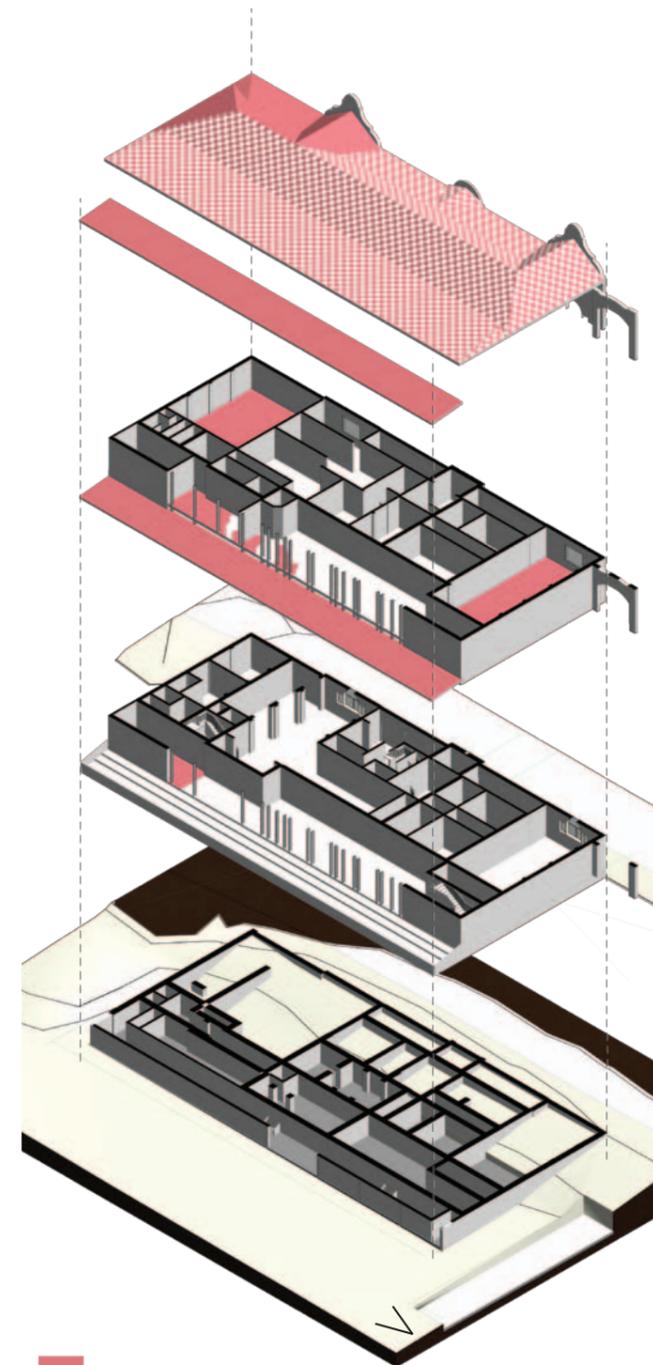
Analysis done by Carl von Geysso Pr Eng, October 2009



- IMPORTANT HERITAGE ELEMENTS
- UNIMPORTANT / CAN BE REMOVED
- REQUIRE RESTORATION

GRAPHIC REPRESENTATION OF HERITAGE IMPACT ASSESSMENT

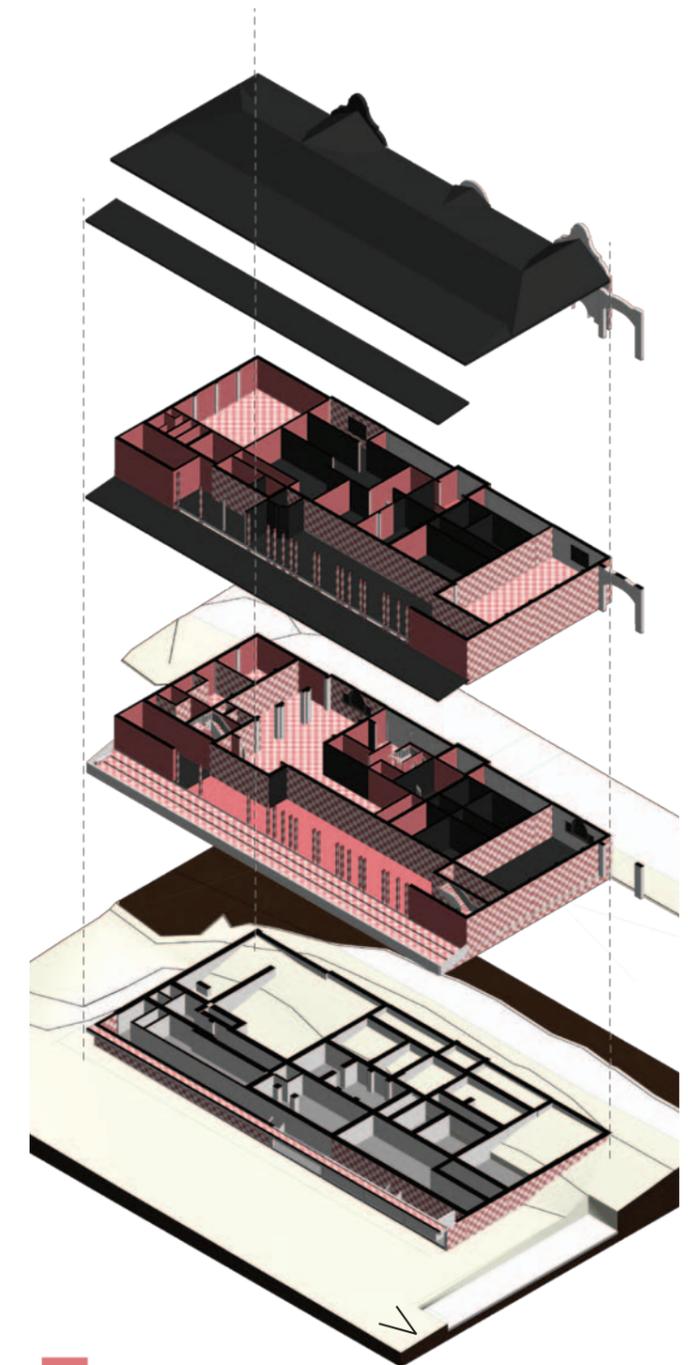
Analysis executed by Dr. Johann J. Bruwer & Henry Paine, November 2009



- SEVERELY DAMAGED
- NEEDS ATTENTION

GRAPHIC REPRESENTATION OF VISUAL ASSESSMENT

Analysis executed by Marisa de Swardt, February 2013



- SEVERELY DAMAGED
- NEEDS ATTENTION
- DAMAGED BEYOND REPAIR (GONE)

Figure 47: Graphic representation of heritage importance, and lost or damaged elements of the southern clubhouse (Author 2013)

Northern clubhouse

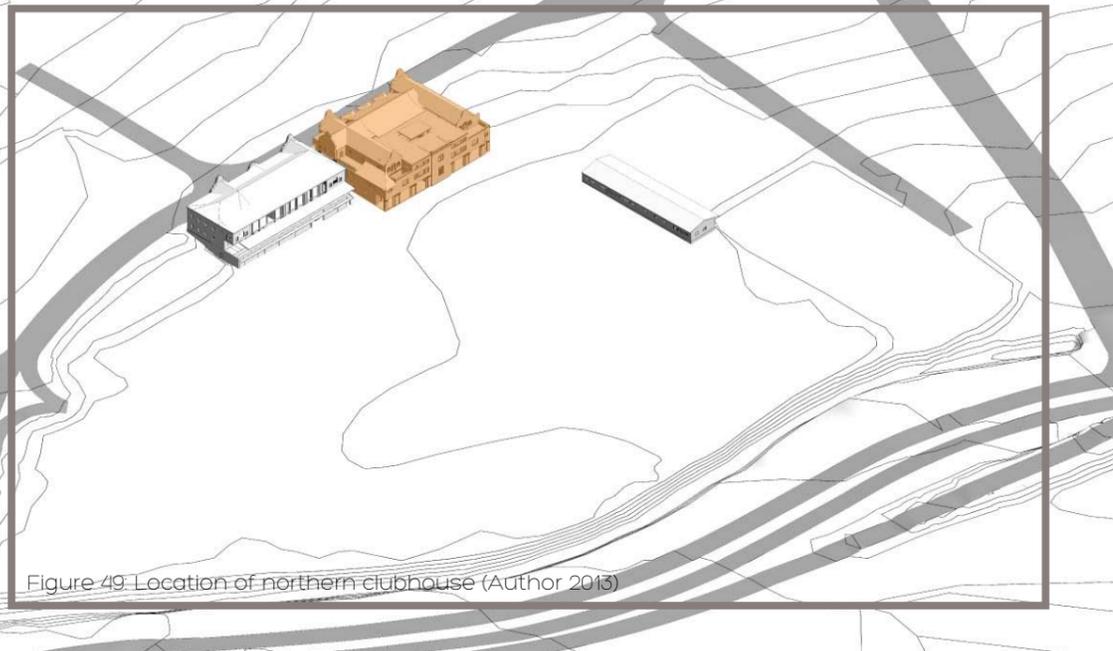


Figure 49: Location of northern clubhouse (Author 2013)



Figure 50: Sections and elevations, Annexure A, 1932 (Bruwer & Paine 2009)

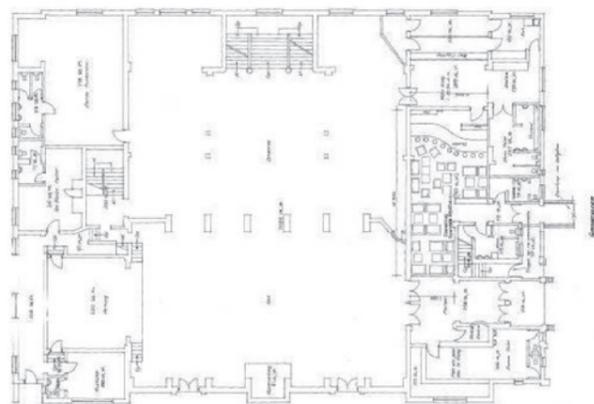
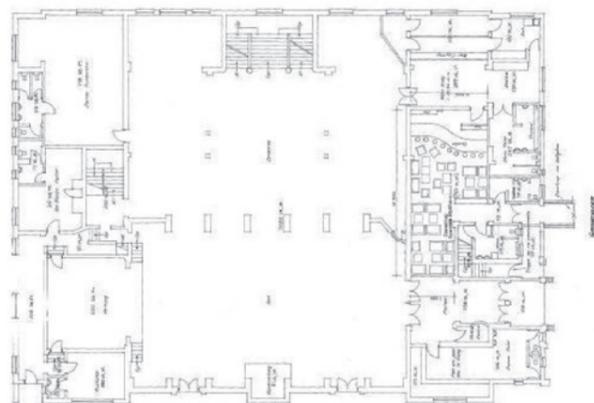


Figure 48: Plans, Annexure C, 1971 (Bruwer & Paine 2009)

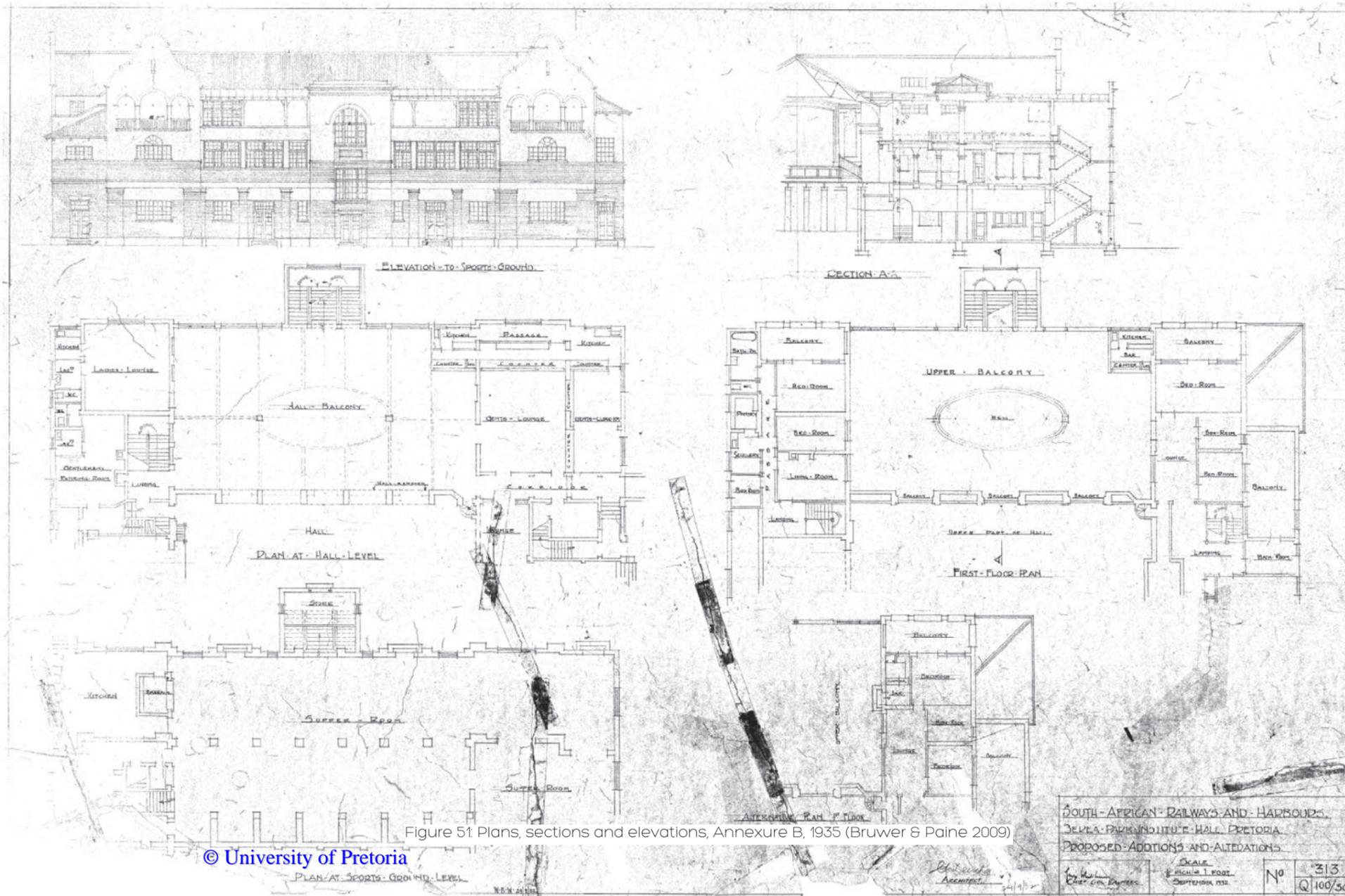


Figure 51: Plans, sections and elevations, Annexure B, 1935 (Bruwer & Paine 2009)

ALTERNATIVE NAMES:	Berea Park Club Hall SAR & H Berea Park Institute Hall
PROTECTION STATUS:	It is older than 60 years and is therefore protected by the National Heritage Resources Act, 1999
DATE OF COMPLETION:	1925
ARCHITECTS:	Unknown
BUILDING TYPE:	Sports and recreational clubhouse
BUILDING STYLE:	Cape Dutch Revival Style / Art Deco influences

Description of Architectural elements

The northern club hall is a u-shaped building on a red face brick plinth, later painted white. It is two storeys high on the western side and three storeys high on the eastern side. (Figure 50, Figure 51) Although it is a later addition to Berea Park than the southern clubhouse, the architecture was clearly sensitive to the existing architecture. The western entrances were prominently celebrated by built-up, profiled masonry pilasters and frames. (Figure 54)

The internal space has a flat roof and high ceiling. This was used as a dance hall, and therefore had a suspended timber floor, that "floated" on steel springs. The interior was highly decorated, with timber panels

and profiled cornices. (Figure 50, Figure 53) The entrance foyer that is accessed from the lane between the club hall and the clubhouse was decoratively treated. It has black and cream acoustical floor tiles, and a coloured, terrazzo covered portico along the walls. (Figure 52)

The celebration of movement within the building by the staircase and overhanging balcony contributes to the stately atmosphere of the interior. The play of light from the atrium further adds to the ambience. (Figure 53) The bathrooms had remarkable imported ceramic fittings from different eras that have since been lost. (Le Roux 1992: 155-156) (Jansen 2001)



Figure 54: Entrance to northern club hall (Author 2013)

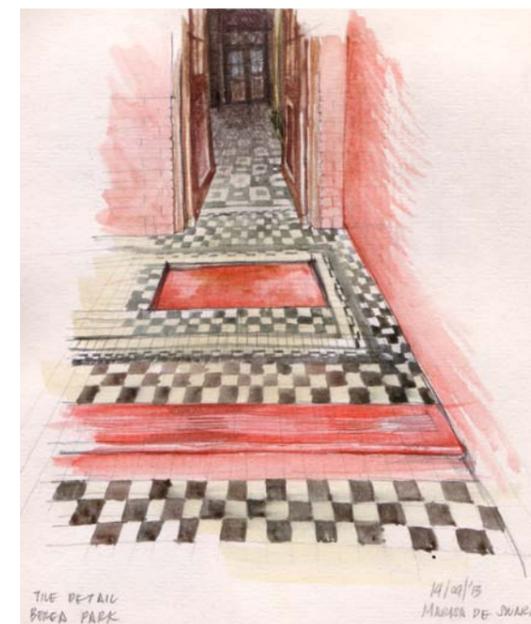


Figure 52: Entrance foyer of the northern club hall (Author 2013)



Figure 53: Atrium and staircase of the northern club hall (Author 2013)

Statement of significance

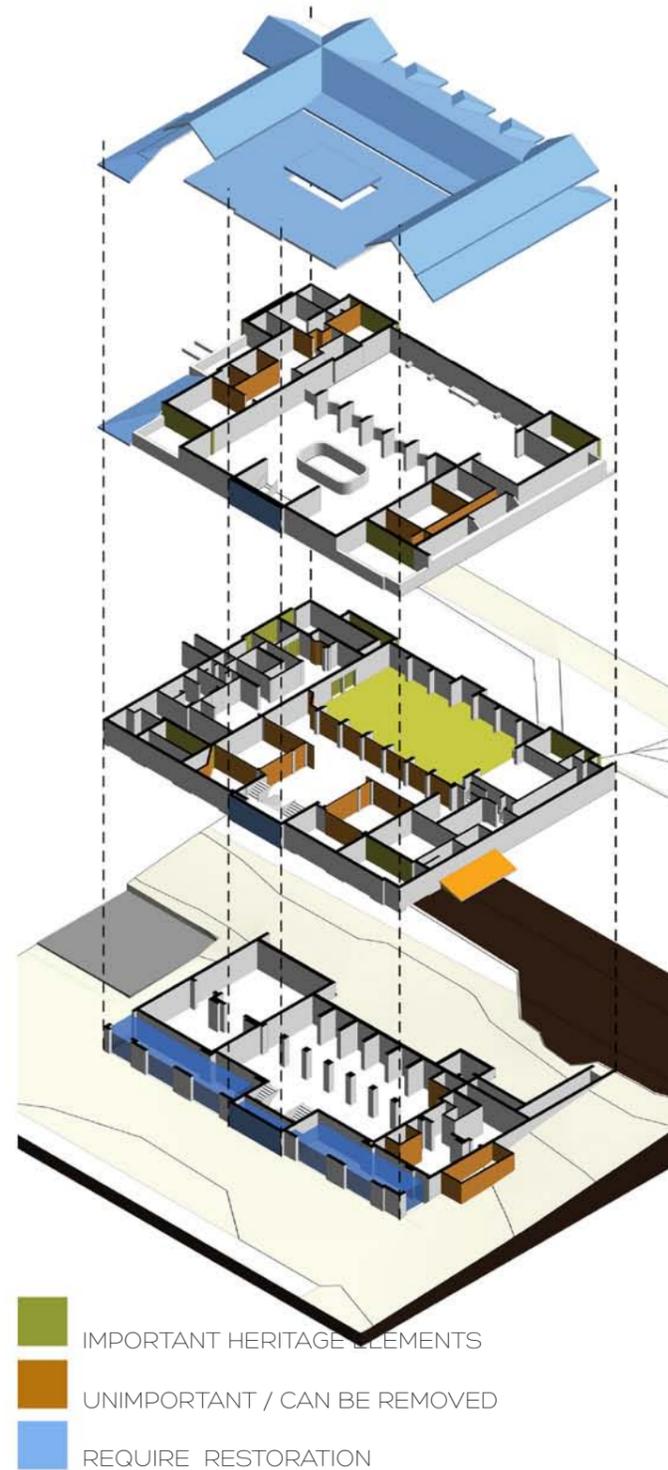
The northern clubhouse was completed by the Pretoria Railway Institute in 1926. The building was designed around the Main Hall that formed an integral part of the building's design and function. In the original design of the northern clubhouse the facade facing the fields consisted of a ground floor balcony for spectators. Yet this spectator balcony was sacrificed when the central stairwell and two small balconies were added to the eastern gables.

The sport and recreational function of the northern clubhouse, forms part of its historical and cultural significance. This significance is strengthened by its visual links to the site as well as the link to the neighbouring southern clubhouse. The northern clubhouse, as well as the few buildings still located north of the structure are remnants of the Cape Dutch revival style that was popular during the period in which Berea Park flourished. (Bruwer & Paine 2009)

The Cape Dutch gables as well as the proportioning of the doors and windows form an intricate part of the design. Some of the later additions were done insensitively, and does therefore not contribute to the heritage and cultural significance of the building. These elements could be removed or sacrificed to enhance the integrity of the building. The later additions include: the northern mono-pitch addition, partitioning and false ceilings, in most cases these elements have suffered extensive damage. (Figure 55)

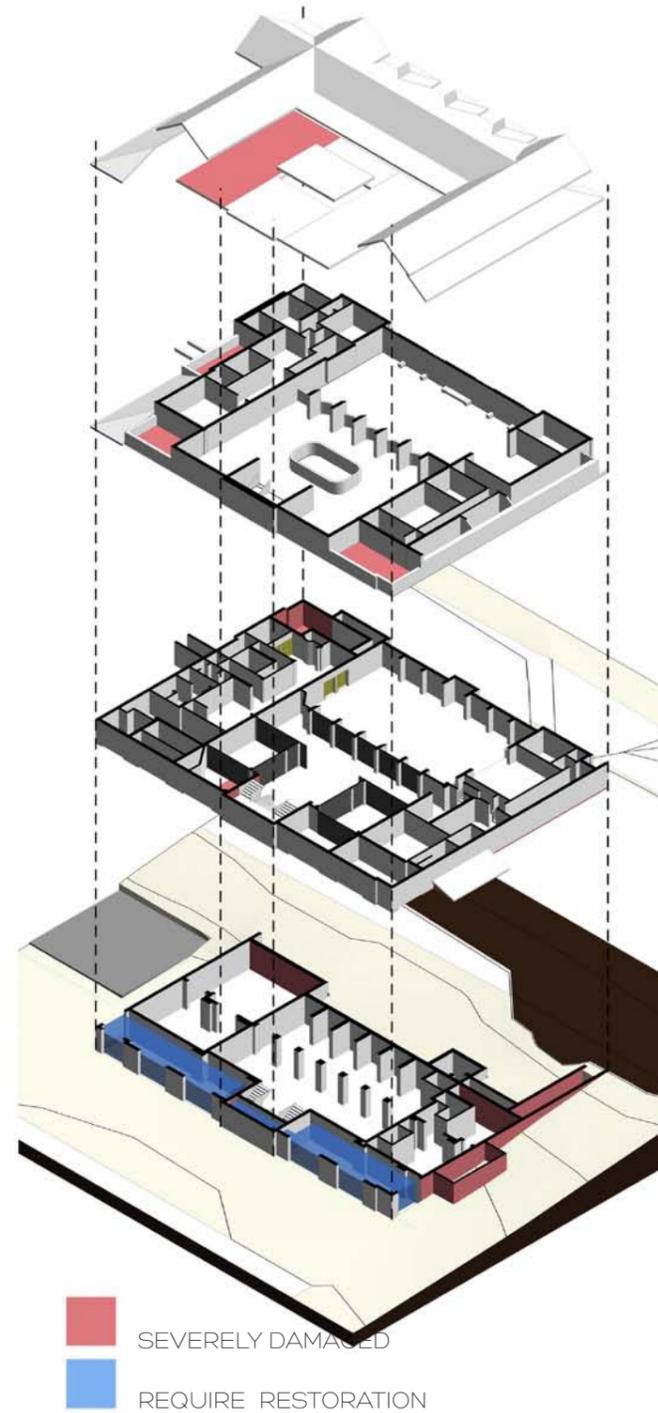
GRAPHIC REPRESENTATION OF STRUCTURAL ASSESSMENT BY ENGINEER

Analysis done by Carl von Geysso Pr Eng, October 2009



GRAPHIC REPRESENTATION OF HERITAGE IMPACT ASSESSMENT

Analysis executed by Dr. Johann J. Bruwer & Henry Paine, November 2009



GRAPHIC REPRESENTATION OF VISUAL ASSESSMENT

Analysis executed by Marisa de Swardt, February 2013

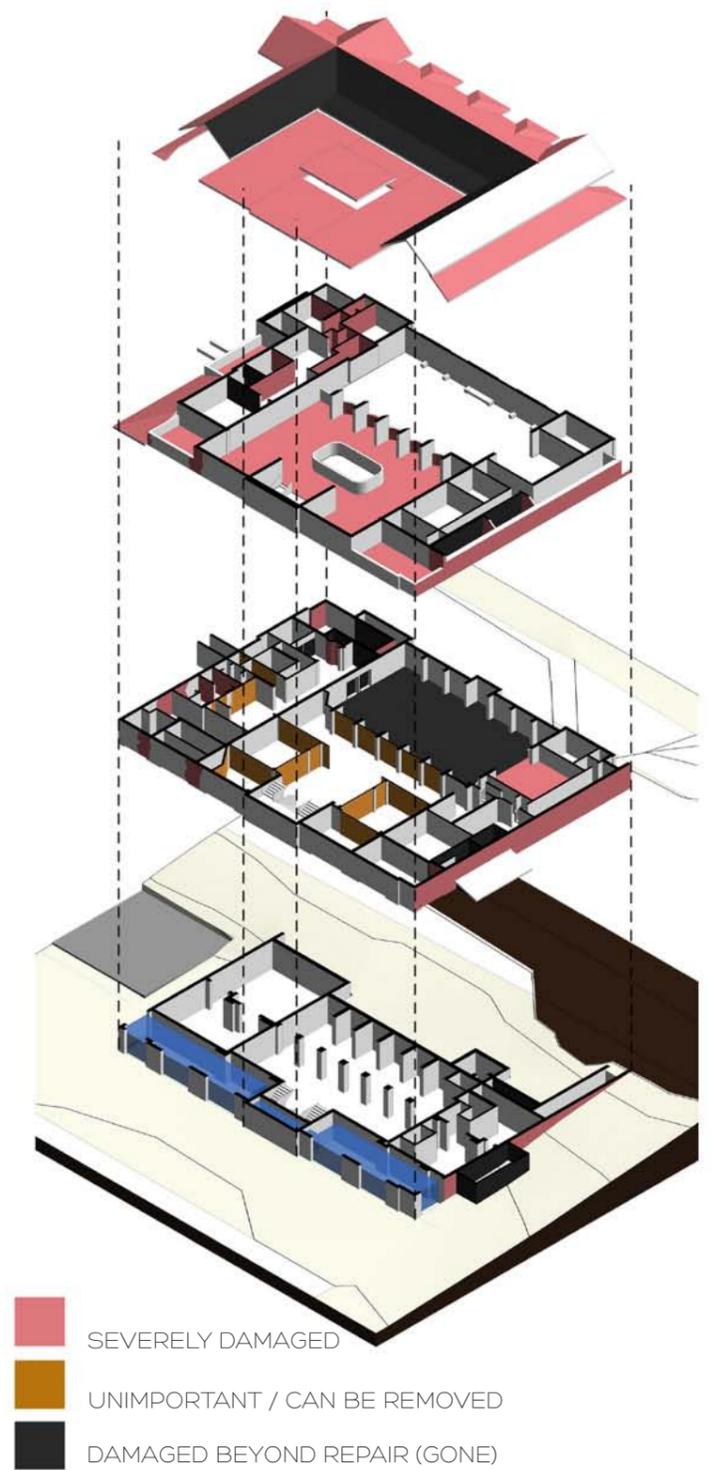


Figure 55: Graphic representation of heritage importance and lost or damaged elements of the northern clubhouse (Author 2013)

Bowling clubhouse

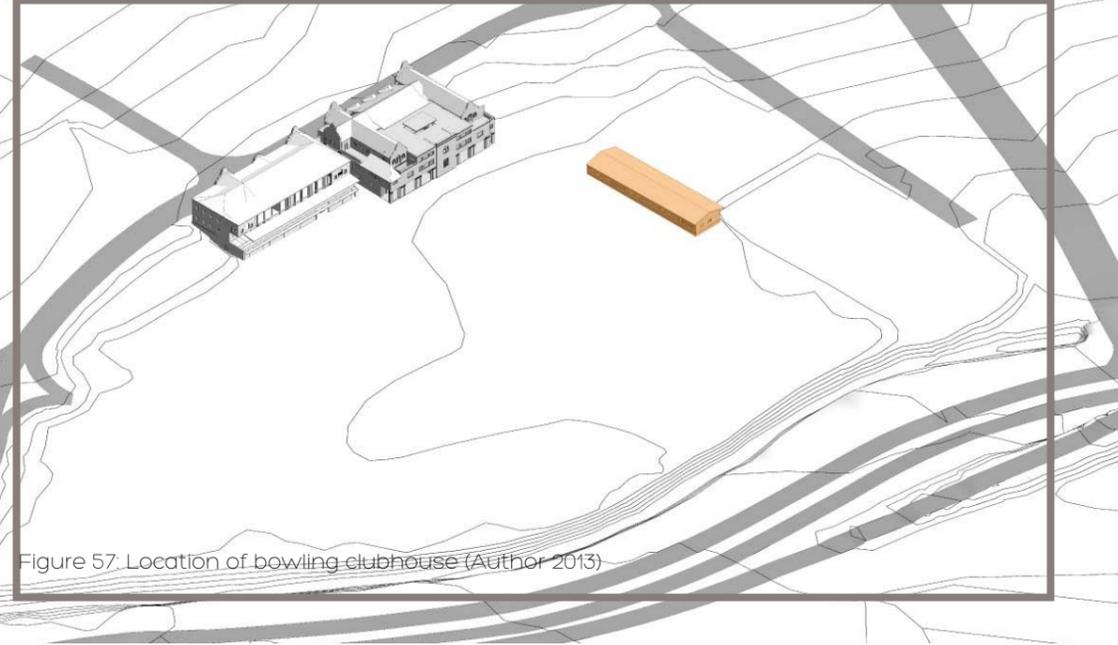


Figure 57. Location of bowling clubhouse (Author 2013)

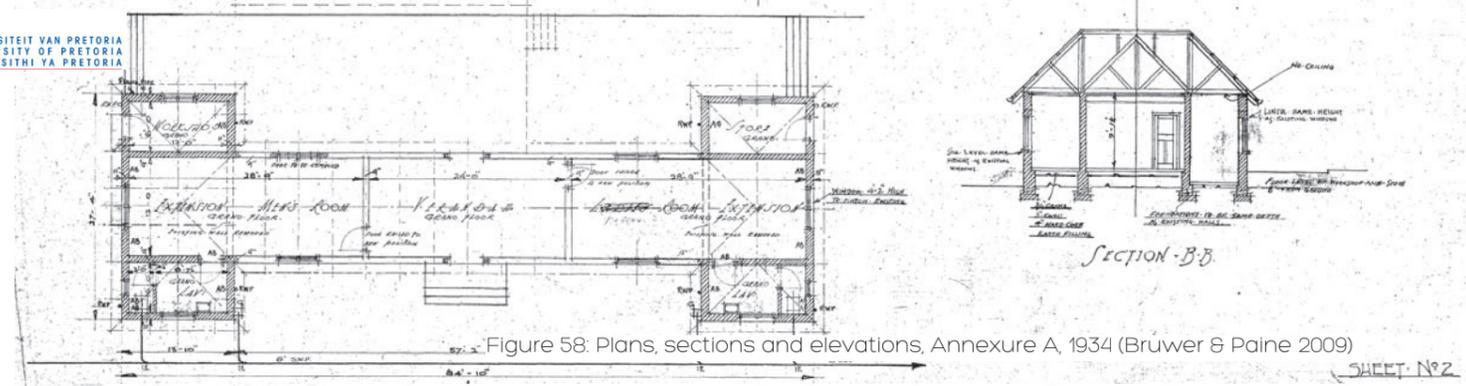


Figure 58. Plans, sections and elevations, Annexure A, 1934 (Bruwer & Paine 2009)

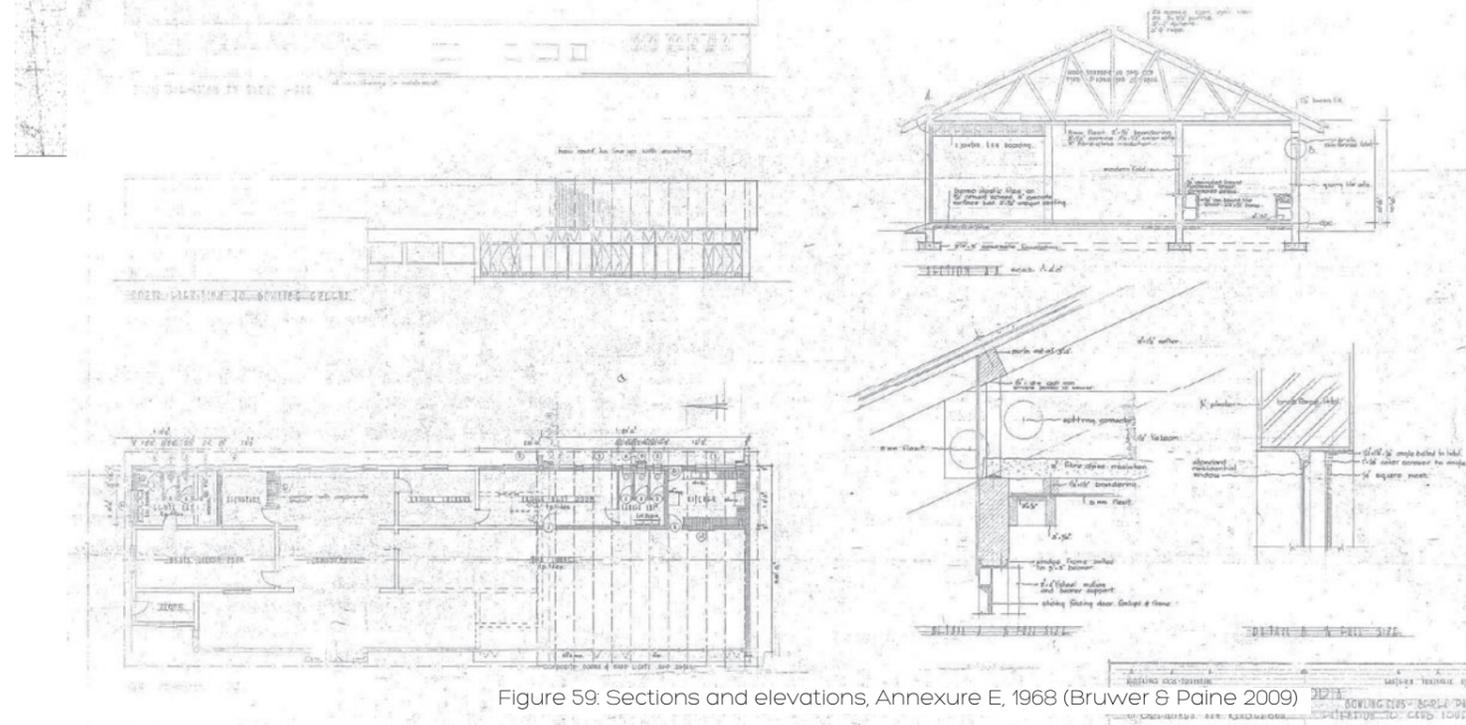


Figure 59. Sections and elevations, Annexure E, 1968 (Bruwer & Paine 2009)

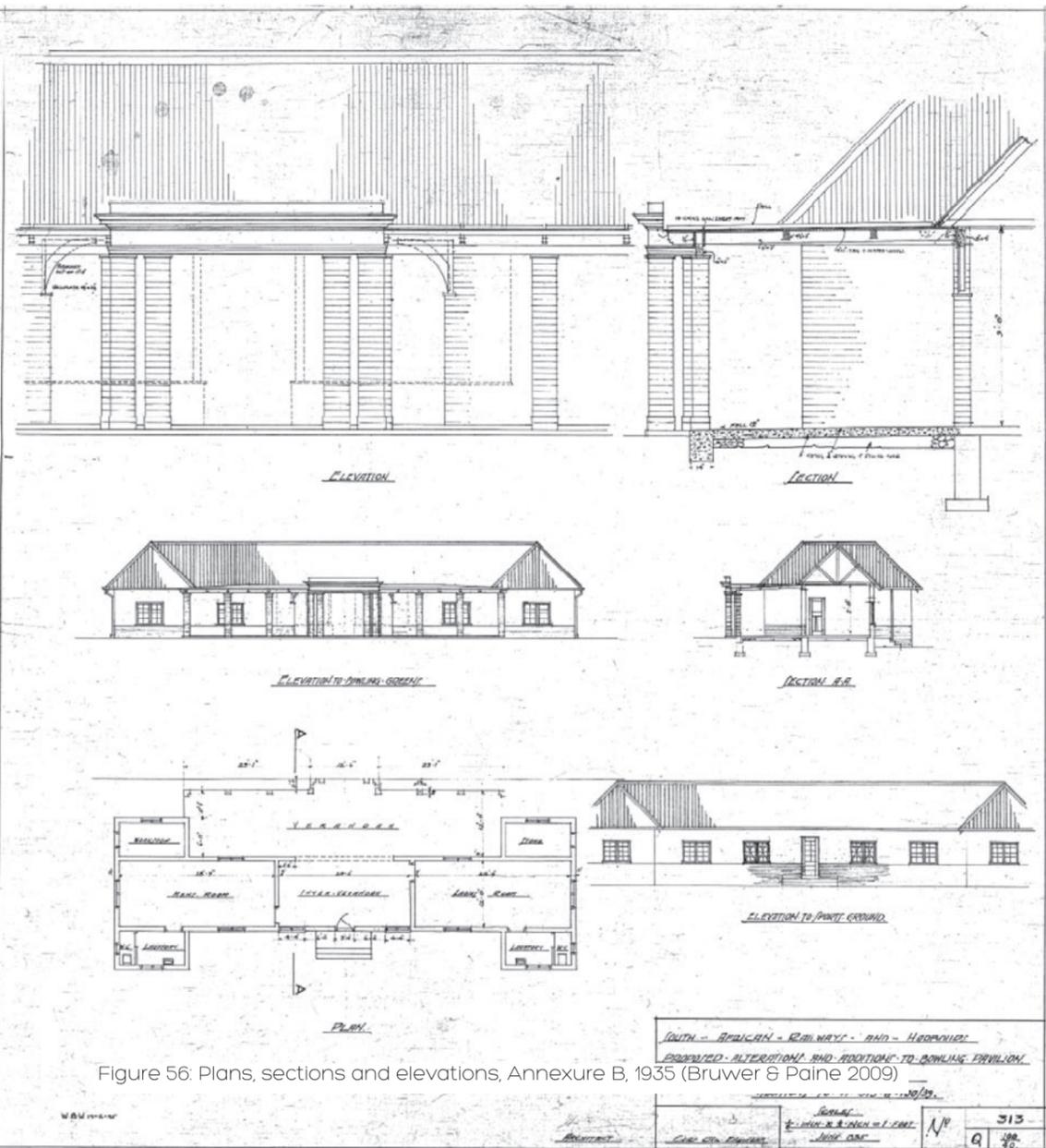


Figure 56. Plans, sections and elevations, Annexure B, 1935 (Bruwer & Paine 2009)

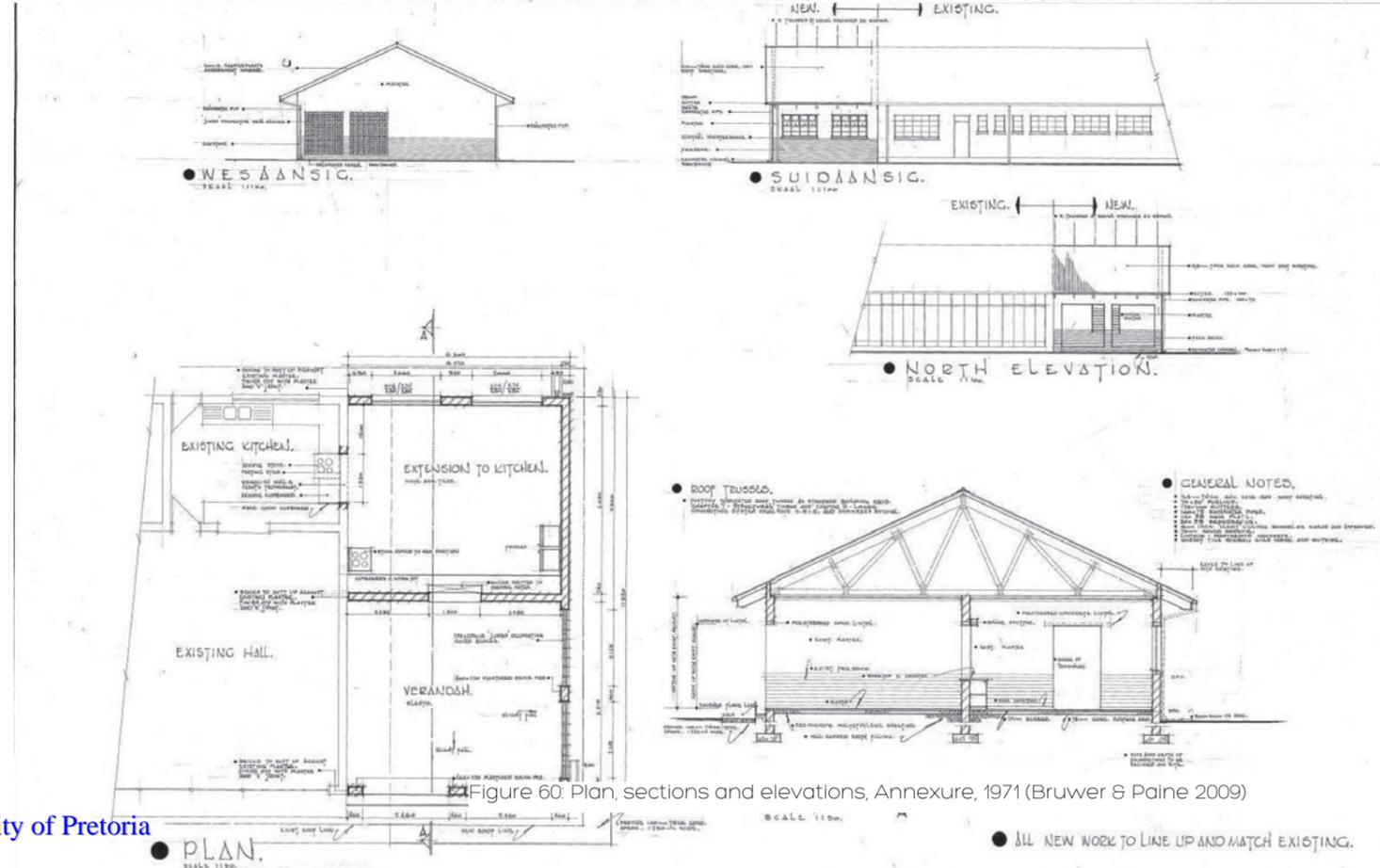


Figure 60. Plan, sections and elevations, Annexure, 1971 (Bruwer & Paine 2009)

ALTERNATIVE NAMES:	Bowling Pavilion Bowling Green Pavilion
PROTECTION STATUS:	It is older than 60 years and is therefore protected by the National Heritage Resources Act, 1999
DATE OF COMPLETION:	1920s
ARCHITECTS:	Unknown
BUILDING TYPE:	Clubhouse
BUILDING STYLE:	Utilitarian and typical clubhouse with some Art Deco overtones

Description of Architectural elements

There are aerial photographs from as early as 1937, showing the bowling greens already laid out as they are currently. The bowling clubhouse was built perpendicular to the axis of the walkway, running between the bowling greens. Originally the bowling clubhouse comprised of a modest single storey masonry structure with a double pitch roof. (Figure 58, Figure 59)

Two dressing rooms and a small verandah made up the original functions of the building. During the numerous additions that were implemented over the years, the dressing rooms and verandah were extended and enlarged. Some of the latter additions and extensions included an office, kitchen and tea lounge. (Figure 56, Figure 58, Figure 59, Figure 60)

Statement of significance

The integrity of the original clubhouse has been sacrificed through the numerous extensions and additions. Little is left of the original building therefore, according to the Heritage Impact Assessment done by Dr Johann J. Bruwer & Henry Paine in 2009 (Bruwer & Paine 2009: 75-77), the clubhouse has less historical or cultural value than the bowling greens.

The importance of the bowling club is centred around its relation and visual link to the northern and southern buildings and the remaining railway houses, and how together they tell the tale of the historical and cultural heritage of Berea Park.



Figure 61: Entrance to bowling clubhouse (Author 2013)

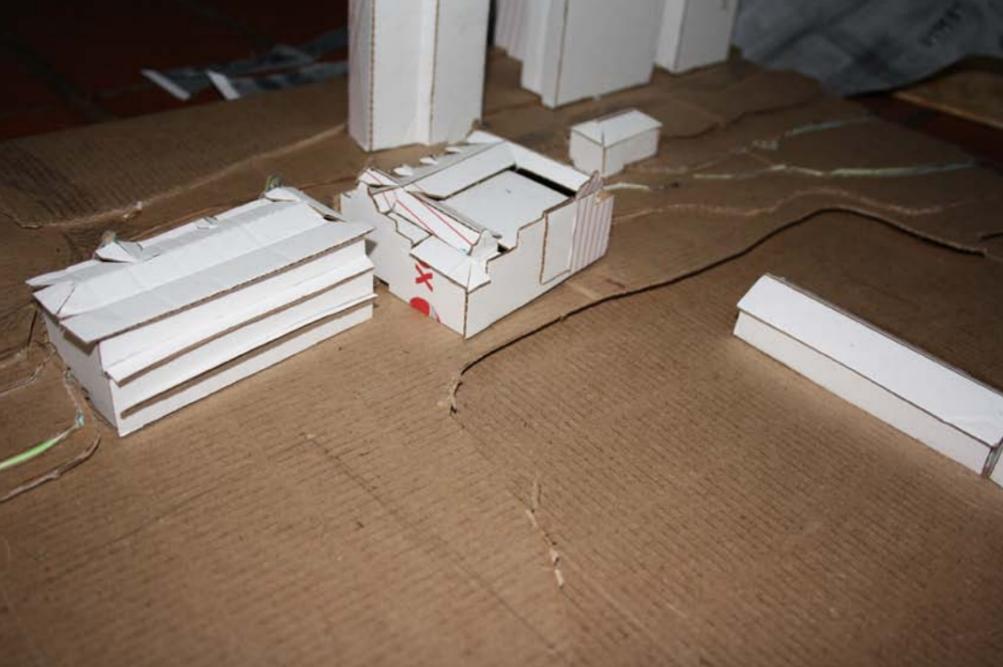


Figure 62: Model of Berea Park buildings (Author 2013)

Figure 63: Model of Berea Park buildings with mapping of damaged/lost elements (Author 2013)

Figure 64: Model of Berea Park buildings with damaged and lost elements removed (Author 2013)

Models: summary of damage suffered

Physical model mapping damaged and removed elements (Figure 62, Figure 63, Figure 64) based on HIA done by Bruwer and Paine and structural analysis by engineer Carl von Geysso, as well as visual analysis done by author. (Figure 47, Figure 55)

Conclusion

It is clear from the data collected in this chapter that the history of Berea Park renders it an important heritage building. (Figure 65) Berea Park is relevant in both the context of Pretoria and the sport development of South Africa. It is also clear that the site has suffered extensive damage due to neglect and misuse. A suitable heritage approach to deal with the removal of damaged or lost elements will have to be decided upon (Figure 64), as well as an approach to restoring the remaining fabric. It is also important to acknowledge the past programmes and events associated with Berea Park when formulating future interventions and programmes.

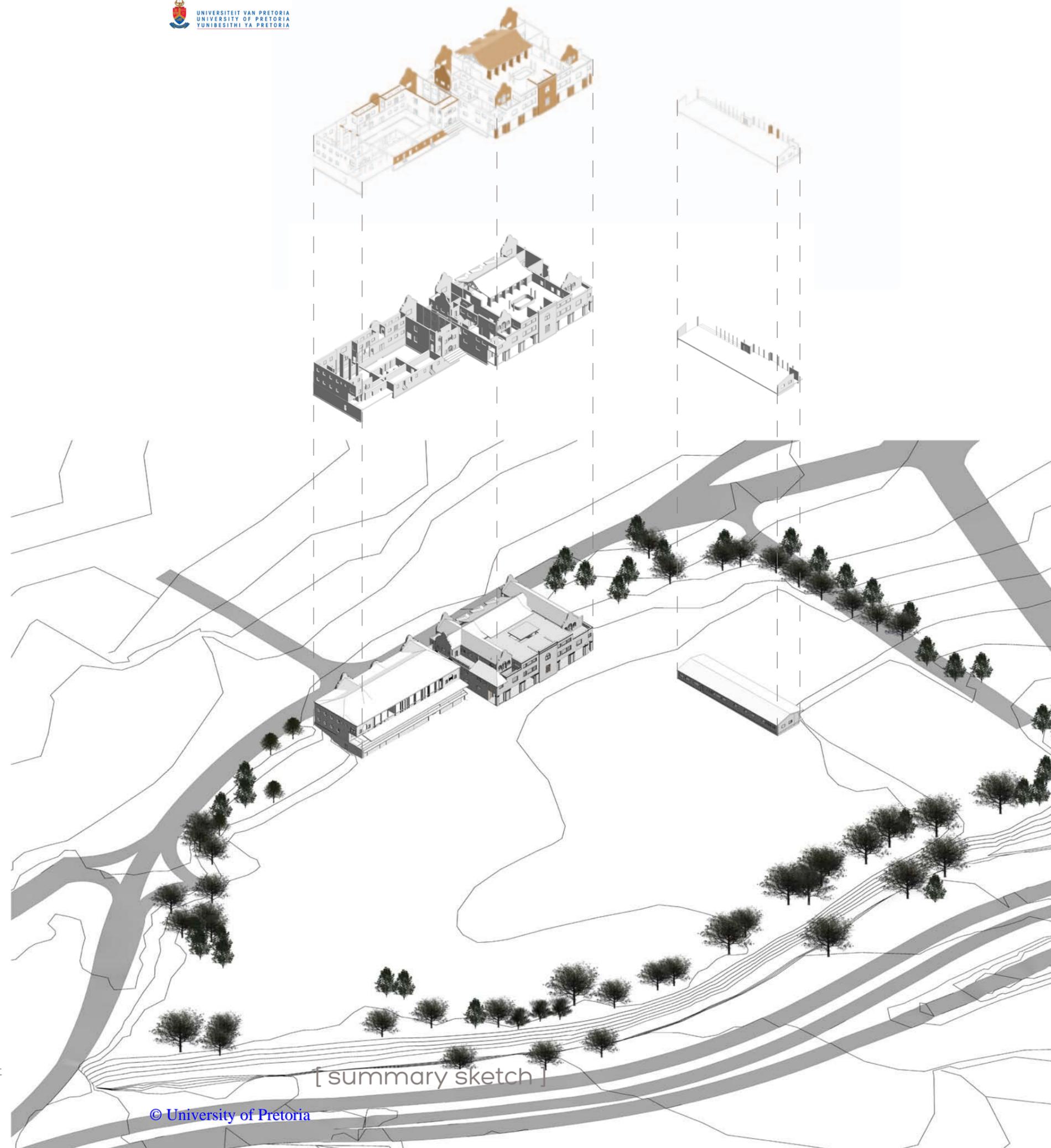


Figure 65: Old structures: state before extensive damage, cleaned up structure, important elements (Author 2013)

Analysis of the urban context, site and existing structures is done at various scales. Numerous methods are used to gather and analyse the data.

Figure 66: Site location map
 (Author 2013)



Berea Park sport and recreational facilities

600 Lillian Ngoyi Street

-25.758049, 28.193931

Site Analysis

Berea Park, the neighbourhood, is located at the south-eastern corner of Central Pretoria. Central to this area is the Berea Park sports grounds, that are as old as the neighbourhood itself.

Berea Park is one of the first sites you are confronted with when entering Pretoria from the fountains circle. The site itself does not fully conform to either of the two urban grids (meeting at Nelson Mandela Street) that it interacts with. It is also clear that the Apies River, railway and train station played a central role in the development and layout of this area. (Figure 66)

Figure 67: Site map (Author
 2013)



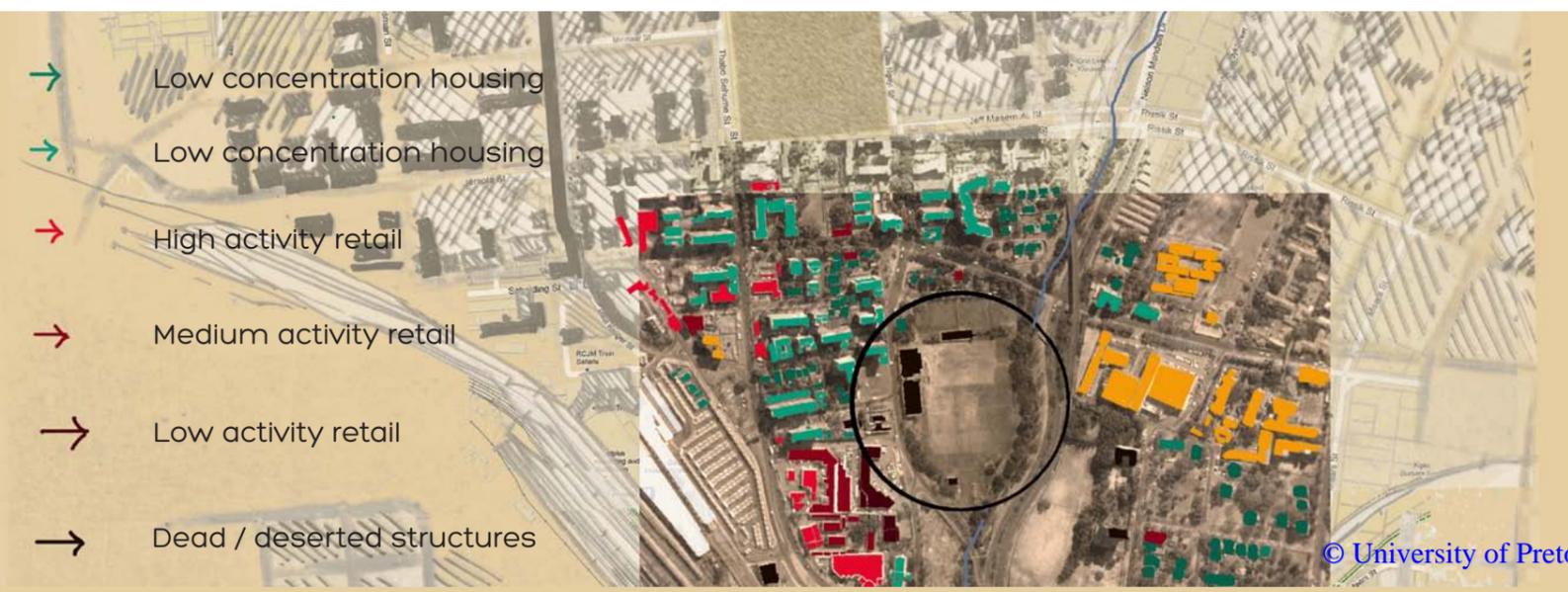


Figure 68: Mapping of sports facilities and recreational parks (Author 2013)

Urban green spaces

There are quite a few green spaces located in Central Pretoria. Most of the recreational spaces were developed around important governmental buildings and sites, while the older major sports facilities are located in close proximity to the Apies River. The remaining sports grounds are all affiliated with urban schools and are therefore not accessible to the public, due to security reasons. (Figure 68)

Figure 69: Mapping of building functions surrounding Berea Park (Author 2013)



Building functions surrounding Berea Park

There are numerous building functions surrounding Berea Park. The residential aspect is mostly made up of smaller houses that were built by the South African Railways for their employees. Some of these smaller residences have been replaced by apartment blocks, especially along the north-western corner of Berea Park. There are also a few old age homes located north of the park. On the south-eastern edge there has been substantial commercial development. The commercial buildings facing Lilian Ngoyi are almost

completely inactive, being used for small offices or storage spaces. The retail along Thabo Sehume Street, facing the Gautrain and train station is faring considerably better. There is also the educational element, with two schools and Unisa that are within close proximity of Berea Park. (Figure 69)



Figure 70: Skyline of buildings on the west (Author 2013)



Figure 71: Abandoned apartment block to the east (Author 2013)



Figure 72: Apartment block across the street at Lillian Ngoyi Street (Author 2013)

Photographic analysis

A photographic analysis of the urban context was done.

These are a photos of a few of the buildings located across from the site. There are quite a few multi-storey apartments located near the site, especially to the north and the west. (Figure 70, Figure 72) The majority of these structures are over 40 years old and could certainly use some maintenance. There are also a few abandoned apartment structures located east of Berea Park. (Figure 71)

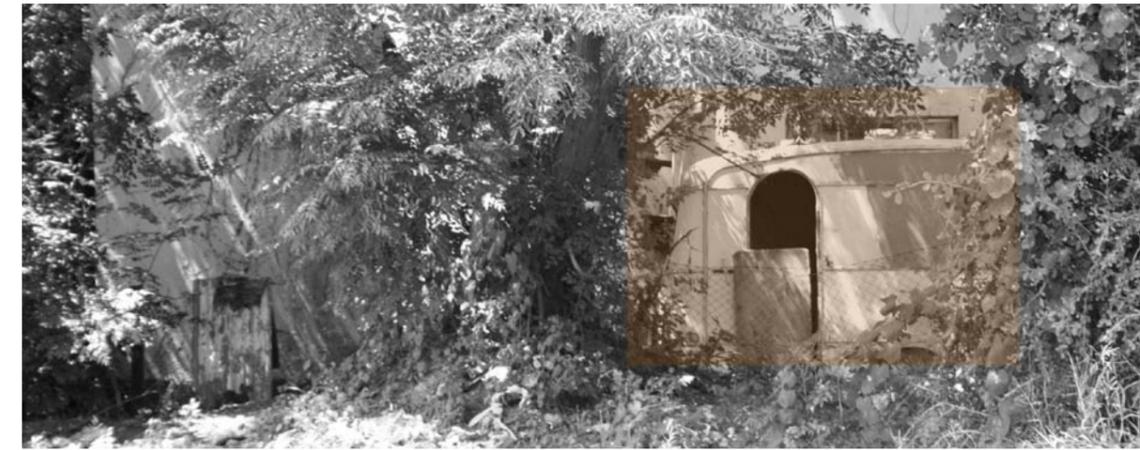


Figure 73: Caravan at house north of Berea Park sports facilities (Author 2013)



Figure 74: Underutilised retail spaces, currently used for storage (Author 2013)



Figure 75: Abandoned garage, currently used for shaded parking (Author 2013)

There are still some of the old houses left, built by the Railways for their employees. These are scattered between the apartment blocks in the Berea Park neighbourhood. Some of these houses have become quite dilapidated (Figure 73). The construction of the Gautrain Station, has caused economic growth in the area. This in turn has led to the renovation of some of these houses.

To the south-west of the Berea Park sports facility, Fountains Motown, a retail centre, was built between Lillian Ngoyi Street and Thabu Sehume Street. The shops along Lillian Ngoyi have been generally unsuccessful, with the majority of retail spaces being used as offices or for storage (Figure 74). Some of the spaces stand completely empty and deserted. Even the garage located on the site has failed. (Figure 75)

Surrounding Berea Park, quite a few informal trades have emerged. This includes foodstalls on the pavements along Scheiding Street (Figure 76) and small businesses located in some of the houses in the area. (Figure 80, Figure 81)

Rhodes Avenue, a street that has been closed off, located on the northern edge of Berea Park, is being utilised as a taxi stop during the day. (Figure 79, Figure 78) This in turn has created job opportunities for the residents living in this street, for example backyard mechanics and food sales. (Figure 82)

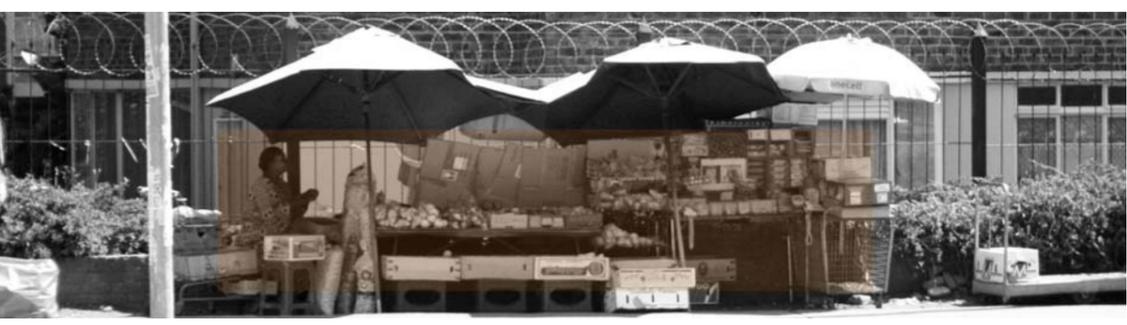


Figure 76: Food stalls along Scheiding Street (Author 2013)



Figure 77: Workers on Scheiding Street (Author 2013)



Figure 79: View of taxi stop in Rhodes Avenue (Author 2013)



Figure 78: Taxi stop in Rhodes Avenue (Author 2013)



Figure 80: Hairdresser in Scheiding Street (Author 2013)



Figure 81: Shopping cart used by car wash in Lilian Ngoyi Street (Author 2013)



Figure 82: Car wash and car repair at a home in Rhodes Avenue (Author 2013)

Interviews

Interviews were conducted with various people on and around the Berea Park sports precinct. The interviews took place on three different days in March 2013.



Figure 83: J. Mokoni the taxi driver (Author 2013)

John Mokoni

John Mokoni is a taxi driver that stops in Rhodes Avenue for up to seven hours a day.

Q: What is your perception of the area, and in particular the Berea Park site?

A: I am very worried about the high number of kids who get involved with naope (heroin). Kids as young as eight to fifteen years old start using drugs

The area is very unsafe. I feel something drastic should be done about this.

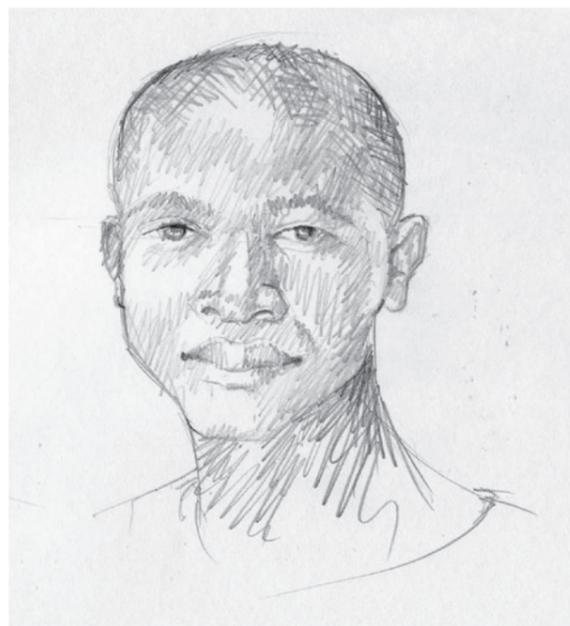


Figure 84: Petri the taxi driver (Author 2013)

Petri

Petri is a taxi driver that uses the side street as a stopover point during the day.

Q: What is your perception of the area, and in particular the Berea Park site?

A: I am worried about the state of the buildings at the old school. The damaged, burnt building attracts a lot of squatters. This increases the drug and crime rate in the area.

Q: What would you like to see happen to the site?

A: It would be nice if there was cricket fields on the site, where we could play during the day.



Figure 85: Mnaka, a sport spectator (Author 2013)

Mnaka

Mnaka is a member of the Community Patrol Youth-initiative. They have a sport-against crime initiative.

Q: How often are these fields used for soccer games?

A: There are a lot of sport games being played on these fields. Various community colleges as well as schools located in the city make use of the soccer field.

Q: Where are you from?

A: I live in Sunnyside, yet this is the closest field that we are allowed to play on.



Figure 86: Vincent the security guard (Author 2013)

Vincent

Vincent is a security guard that was appointed to watch over the Berea Park site.

Q: What were you appointed to do?

A: We are two security guards that watch over the site. We try and avoid further vandalism and we ensure that people are using the site

Q: Who uses the site?

A: Unisa students play soccer here, as well as a lot of people living in the city or in Sunnyside.



Figure 87: Anonymous (Author 2013)

Anonymous

He was a young man (visibly intoxicated) who approached us while we were visiting the site, unwilling to divulge any personal information. He warned us that:

You must be careful with that (pointing at the camera). There are a lot of people around here desperate for some money, and that (the camera) will go for quite a few rands. You must watch out: there is a drug dealer on that corner (pointing at the corner of Willow and Lillian Ngoyi Streets), and a drug dealer on that corner (pointing at the corner of Lillian Ngoyi and Walker Streets); and everyone in between are drug users.

[These were his words, and should not necessarily be taken to be true]



Figure 88: Current condition panoramic view of Berea Park structures and sports fields (Author 2013)

Apies river
- The bank of the river is overgrown and dirty
- The mighty Apies channelled to prevent flooding
- Swimming tournaments were held in the river

Dressing rooms
- The dressing rooms were moved from the southern part of the site, to make space for the section of road linking Lilian Ngoyi and Nelson Mandela

Unisa

M-Net Commentator Pavilion
- A pavilion built by M-Net that was used to broadcast sport, specifically soccer.

Historic bleachers

Sports field
- The field has been used for rugby, soccer, hockey etc.
- Currently in a poor overgrown condition

Secondary entrance

South Clubhouse
- Viewing deck
- Club house
- Student housing
- Offices
- etc

Fire damage
- Damage to structure
- Burnt/missing roofs
- Burnt window frames

Fire damage
- Damage to structure
- Burnt/missing roofs
- Burnt window frames

Bridge connecting northern and southern clubhouses
- Formal main entrance

Northern Clubhouse
- Dance hall, bar, library, music room
- Conference centre
- Offices
- Club house
- School

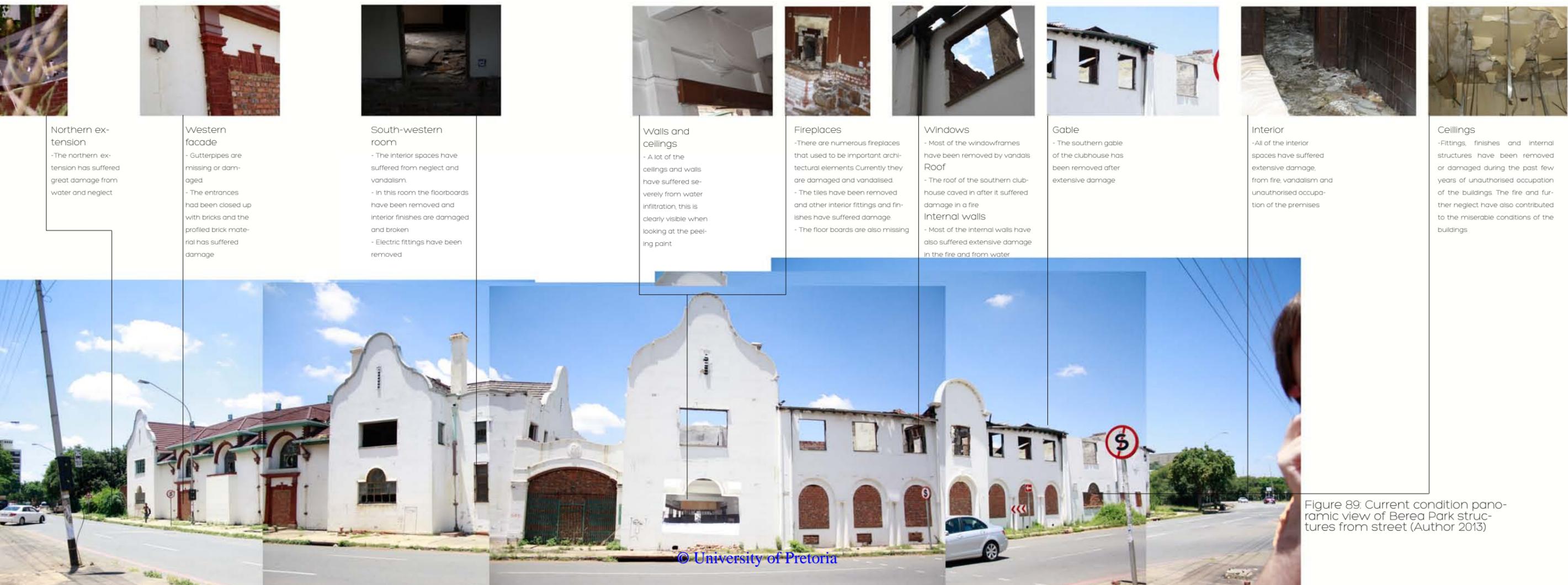
Damage from neglect
- Missing roof cover and damaged structure

Main entrance

Damage from neglect
- Window frames had been broken out
- Lack of shading and seating

Damage from neglect
- Damaged and missing roof cover and structure

Soccer field
- Soccer, rugby, hockey etc.
- Suffered fire damage when clubhouse burnt down
- Poor condition sports field



Northern extension
- The northern extension has suffered great damage from water and neglect

Western facade
- Gutters are missing or damaged
- The entrances had been closed up with bricks and the profiled brick material has suffered damage

South-western room
- The interior spaces have suffered from neglect and vandalism
- In this room the floorboards have been removed and interior finishes are damaged and broken
- Electric fittings have been removed

Walls and ceilings
- A lot of the ceilings and walls have suffered severely from water infiltration, this is clearly visible when looking at the peeling paint

Fireplaces
- There are numerous fireplaces that used to be important architectural elements. Currently they are damaged and vandalised.
- The tiles have been removed and other interior fittings and finishes have suffered damage
- The floor boards are also missing

Windows
- Most of the window frames have been removed by vandals
- The roof of the southern clubhouse caved in after it suffered damage in a fire
- Most of the internal walls have also suffered extensive damage in the fire and from water

Gable
- The southern gable of the clubhouse has been removed after extensive damage

Interior
- All of the interior spaces have suffered extensive damage, from fire, vandalism and unauthorised occupation of the premises

Ceilings
- Fittings, finishes and internal structures have been removed or damaged during the past few years of unauthorised occupation of the buildings. The fire and further neglect have also contributed to the miserable conditions of the buildings

Figure 89: Current condition panoramic view of Berea Park structures from street (Author 2013)

Analysis of site and surroundings



Typography of site

Berea Park is located in a natural basin, with the Apies River running along its eastern perimeter. A steep slope forms the western boundary, while the central area of the site is relatively flat. (Figure 90)

Figure 90: Model of site contours (Author 2013)

Energy levels

Energy is mapped according to activity levels and frequency. The current energy on and around Berea Park was mapped. There is energy focused near the soccer field where matches are still frequently played. Most of the other energy is located on the major vehicle routes, especially Nelson Mandela Drive. The rest of the energy comes mostly from the north or north-west, from central Pretoria. (Figure 92)

Figure 92: Energy map of site (Author 2013)



Context of site

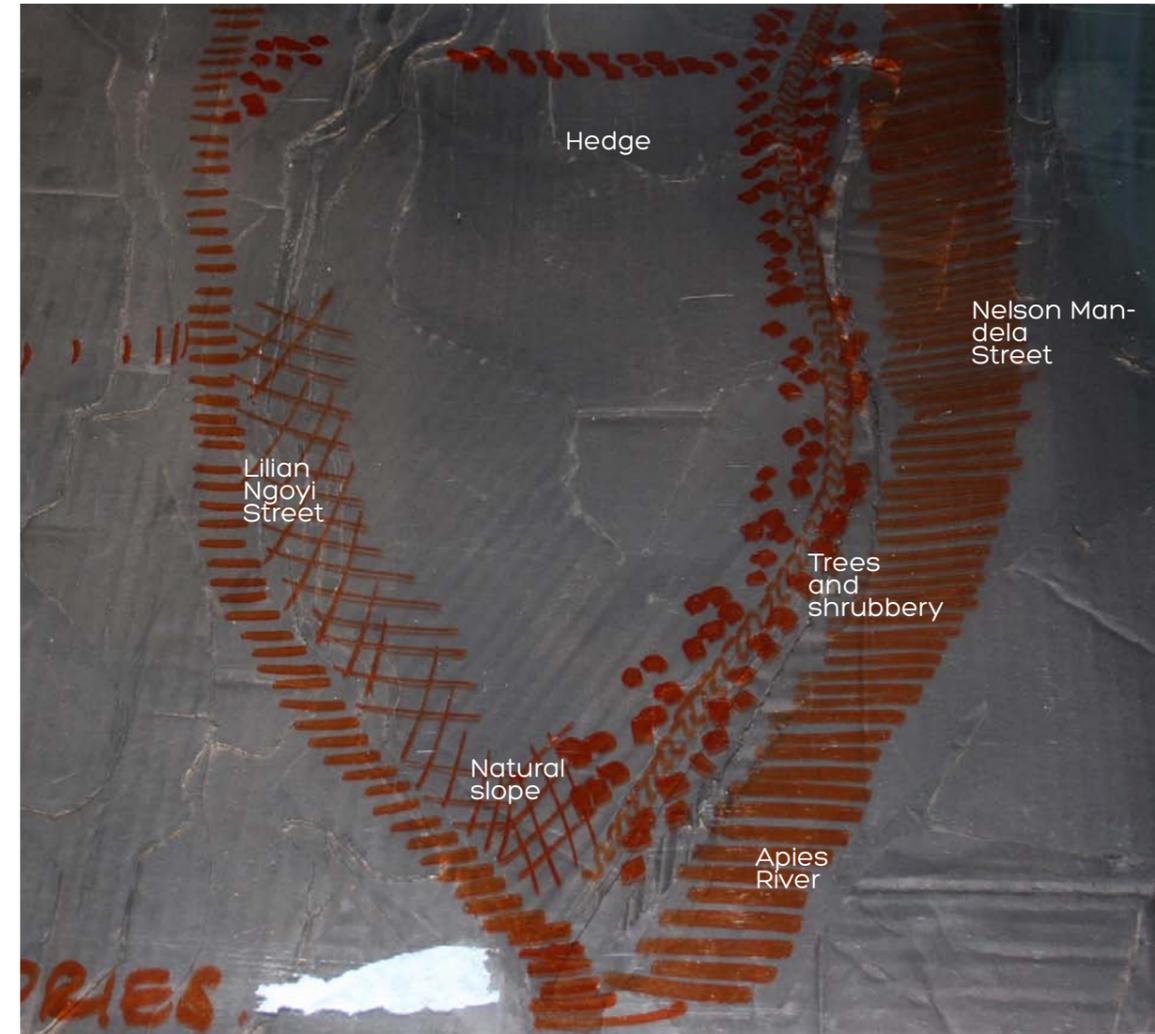
Berea Park is located in the Berea Park neighbourhood, with high rise residential areas along the north-west and north. There are also some of the smaller residential units left along the northern edge. (Figure 91)

Figure 91: Model of site contours, buildings and roads (Author 2013)

Site edges or boundaries

Different natural and civic boundaries enclose Berea Park. Nelson Mandela Drive acts as a major boundary. The other surrounding streets, including Lillian Ngoyi Street, and Clara Street act as secondary boundaries. Natural boundaries include the slope along the western edge, the Apies River along the eastern edge, as well as the shrubbery and trees that grow along the river banks. These boundaries affect easy access to the site. (Figure 93)

Figure 93: Mapping of boundaries around Berea Park (Author 2013)



Linkages onto site

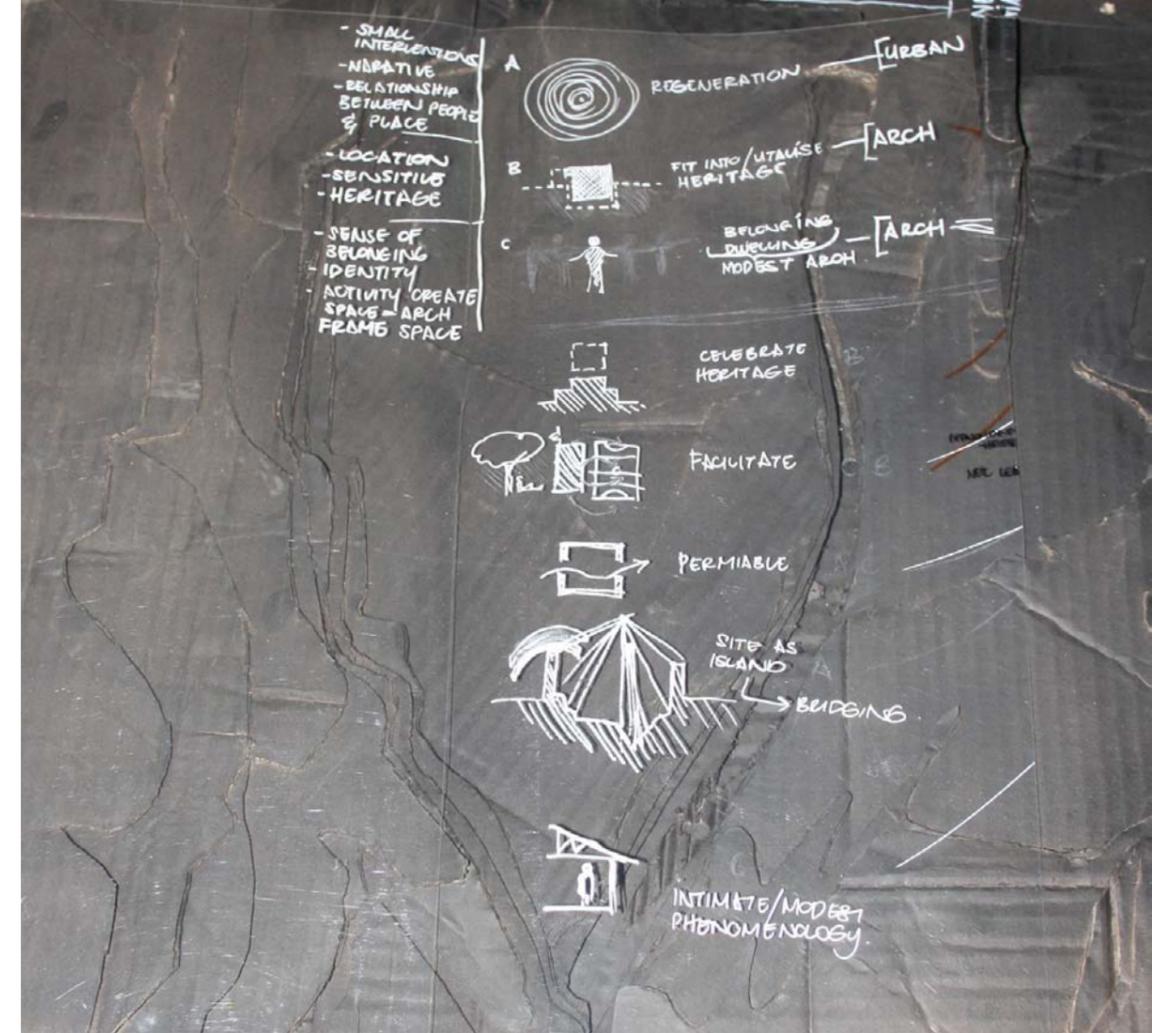
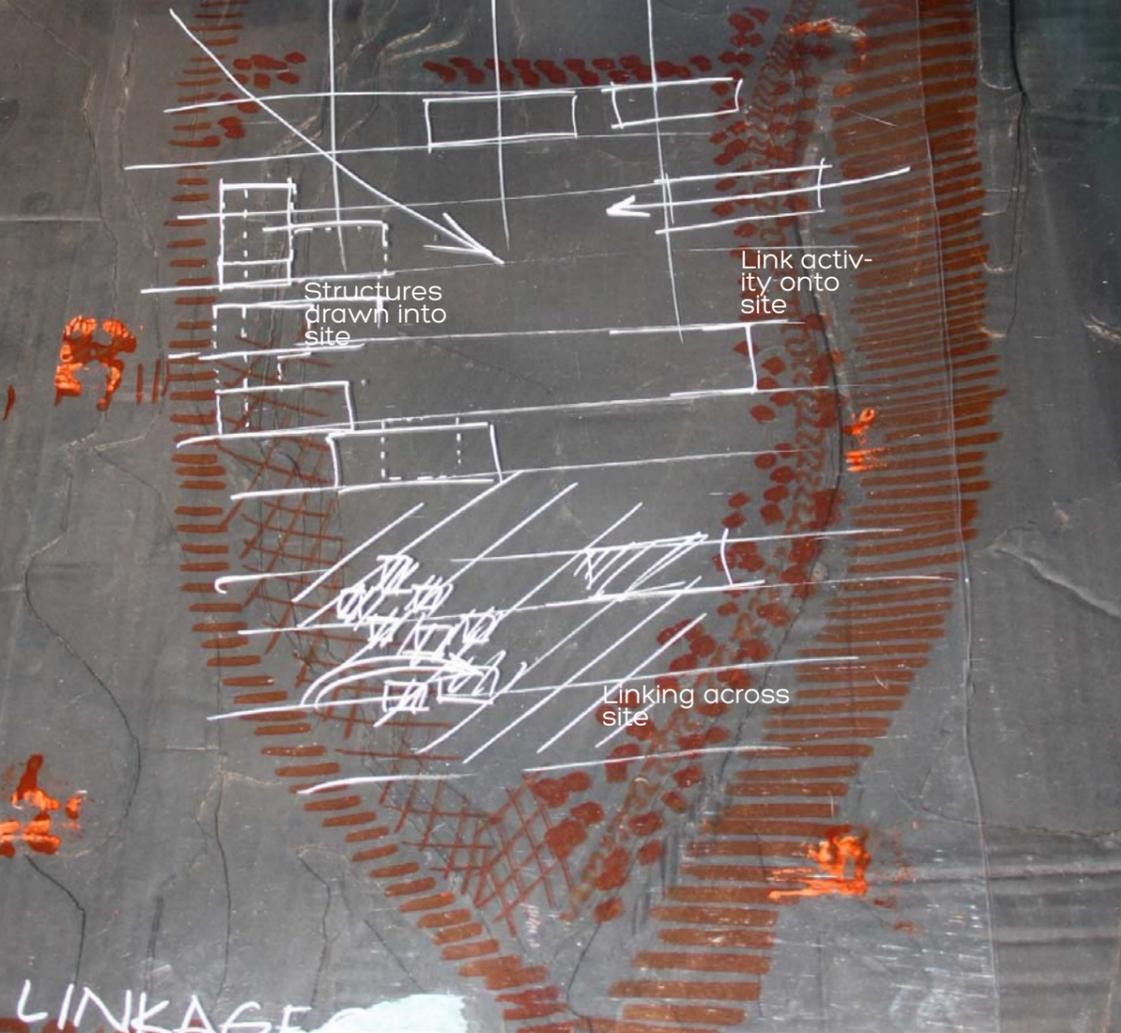
These are proposals for linkages to weaken some of the boundaries surrounding Berea Park. One of the proposed linkages, is to create structures that draw activity from the street into the site along the western edge (where current structures are located). Other links include accentuating the entrance in the north-western corner of the site, which is in line with energy sources surrounding Berea Park. Further smaller links are proposed along the east, crossing Apies River. (Figure 94)

Figure 94: Proposed approach to boundaries (Author 2013)

Intentions

Possible intentions based on the above mentioned site analysis are depicted here in diagrams. (Figure 97)

Figure 97: Issues, approaches and intentions (Author 2013)



Areas with potential

White indicates opportunities for architectural interventions, while orange marks areas with potential for natural development. Architectural interventions are focused around the current architectural fabric on the site. Building sites coincide with structures or remnants of structures. Along the south western edge, architectural interventions, such as housing units are proposed. (Figure 95)

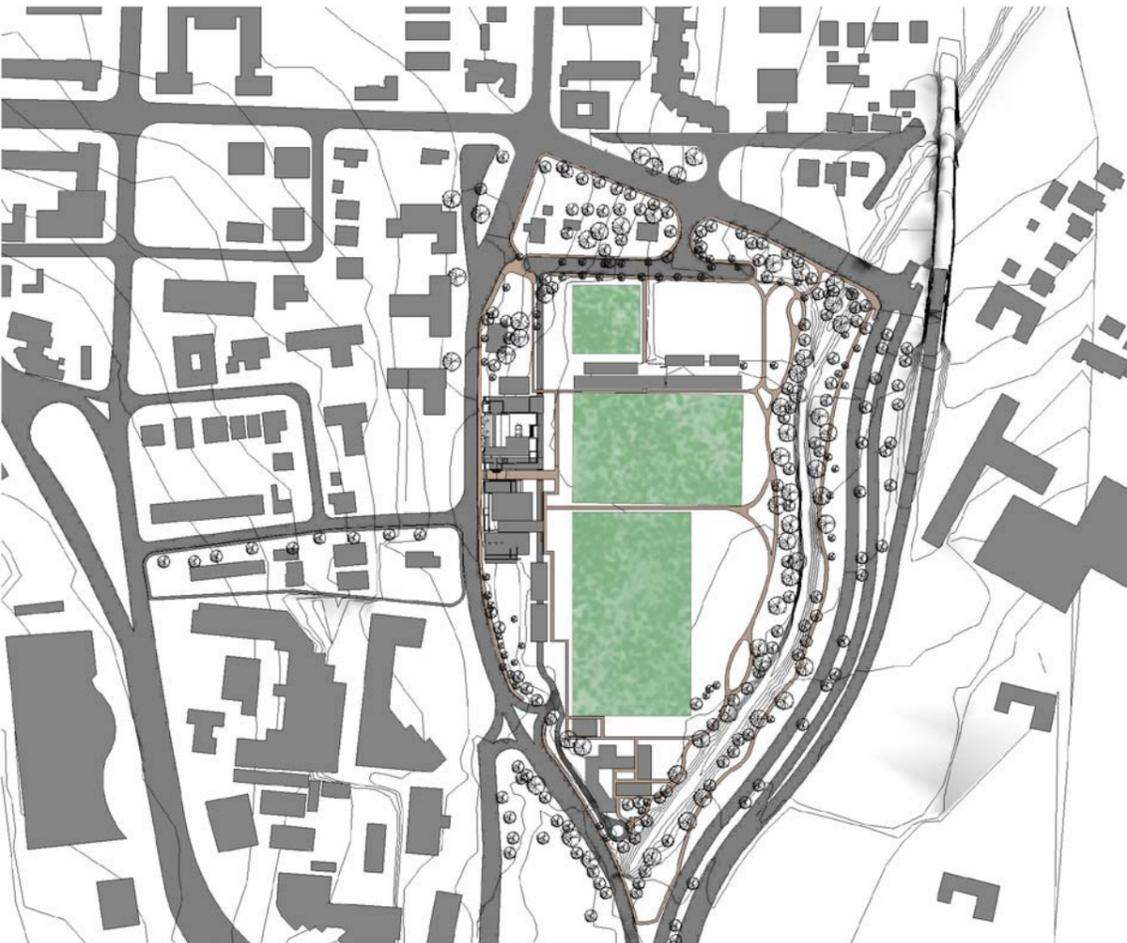
Figure 95: Mapping of opportunities created by site (Author 2013)

Past programming of Berea Park

Past programmes associated with Berea Park are depicted in iconographies. The placement of these graphical representations, roughly indicate the location of these programmes. (Figure 96)

Figure 96: Mapping of historic locations of sporting and recreational activities on Berea Park (Author 2013)





Green space layout: formal sports fields
Sports fields including bowling greens, soccer fields and rugby fields are laid along the central area of the site. The location of these fields (and greens) are informed by current or past sports fields/greens. (Figure 100)

Figure 100: Proposed formal green spaces: sport fields (Author 2013)



Proposed location of sport facilities
Sports facilities are proposed in areas where there are already existing architectural interventions. These areas spread along the western edge of the site (incorporating the northern and the southern clubhouses) and east-west across the site between the bowling and soccer fields (including the bowling clubhouse). (Figure 102)

Figure 102: Proposed sport structures (Author 2013)



Green space layout: landscaping
Designed and natural landscape areas are proposed along the Apies River and the western edge of the site. These areas will form part of the recreational spaces of Berea Park. As part of the designed landscape area, outdoor gym areas and jungle gyms are proposed as part of the Apies River boardwalk. (Figure 101, Figure 109)

Figure 101: Proposed landscaping areas (Author 2013)

Proposed location of housing units
Future development of Berea Park include building housing units on the southern corner of the site. These units will serve to house sponsored developing athletes, coaches and caretakers of Berea Park. Ideally students studying sports management and psychology courses at the University, housed in these units, actively participate in the sport development. (Figure 103, Figure 108)

Figure 103: Proposed housing structures (Author 2013)





New walkways
Walkways serve to link the structures and entrances with the proposed structures. The walkway that interacts with the clubhouses run at street level, linking with the main entrances located between the clubhouses and those at the north-western corner of the site. Organic walkways meander along the eastern edge of the site, interacting with both the designed and natural landscaping elements. Development of the servitude that runs through the Fountains Motown retail centre is proposed to serve as a linking walkway between the site and the Gautrain station. (Figure 104, Figure 109)

Figure 104: Proposed informal green spaces: new walkways (Author 2013)



New walkways that can accommodate vehicles
Wider walkways are introduced at field level. These walkways are able to accommodate vehicles. Ambulances can move through the site to treat injured athletes. The north-south route also allow easy access for delivery and service vehicles, while the route along the south-western edge, allows access to the housing units. Access to these routes are gained through existing vehicle gates. (Figure 105, Figure 108)

Figure 105: Proposed new vehicle access (Author 2013)



Off site access
Accessing the site is made possible by the existing taxi rank, parking lots, Gautrain and Bosman stations. The northern parking lot is mainly being used for driving lessons, while the southern parking lot stands almost completely deserted during the day. A taxi rank is proposed in Bosman Street, that currently serves as a taxi stop during the day. The site is ideally located for access from the stations located a mere block away. (Figure 106)

Figure 106: Proposed off site access areas: taxi rank, parking and Gautrain/Bosman station (Author 2013)



Access to site
Access to the site, for both vehicles and pedestrians is proposed. The entrances marked "a" serve as the main entrances. The entrances marked "b" will serve as the secondary entrances, that can be closed when controlled access to the site is required. For security reasons, the possibility will exist to close off any of the entrances when needed.

Figure 107: Proposed access to site: pedestrian and vehicle (Author 2013)



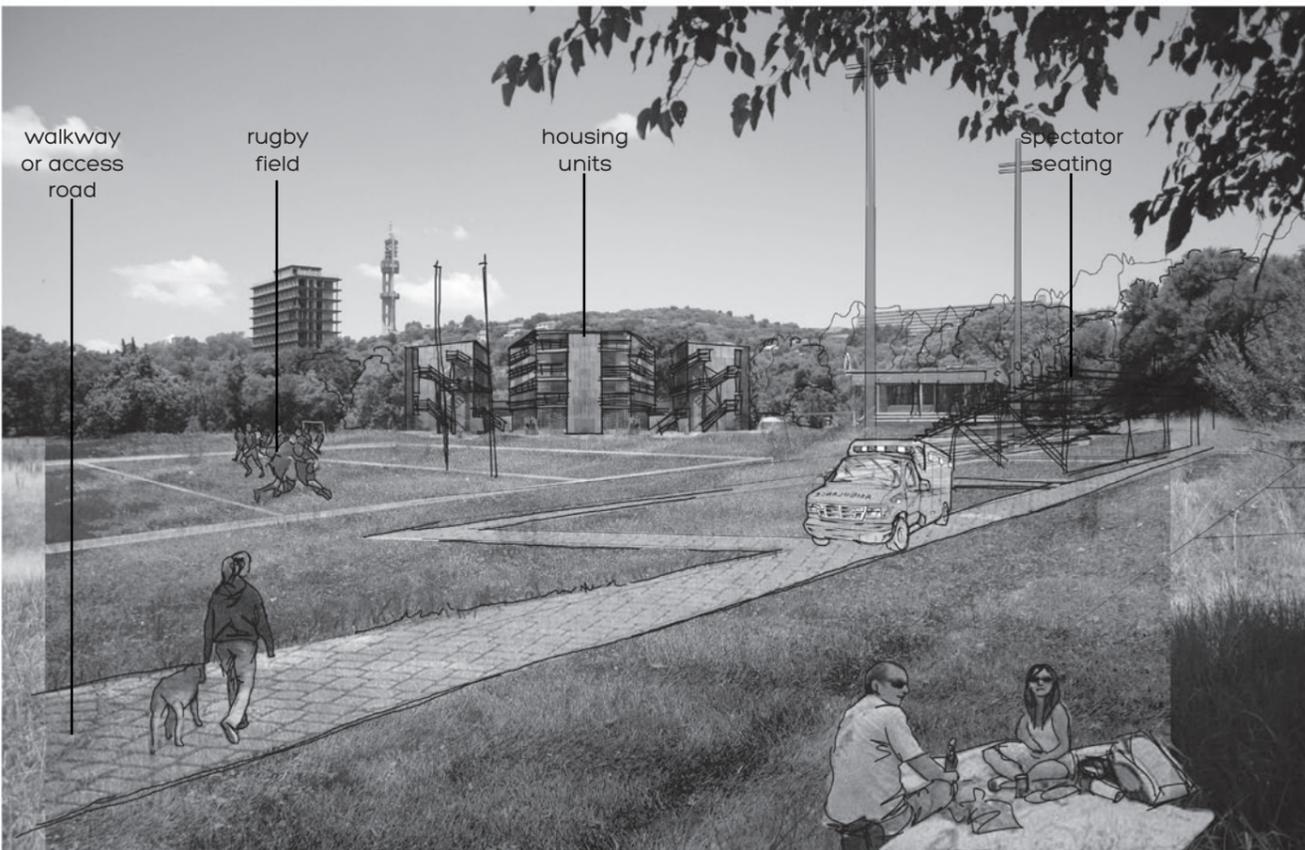


Figure 108: Proposed housing units (Author 2013)

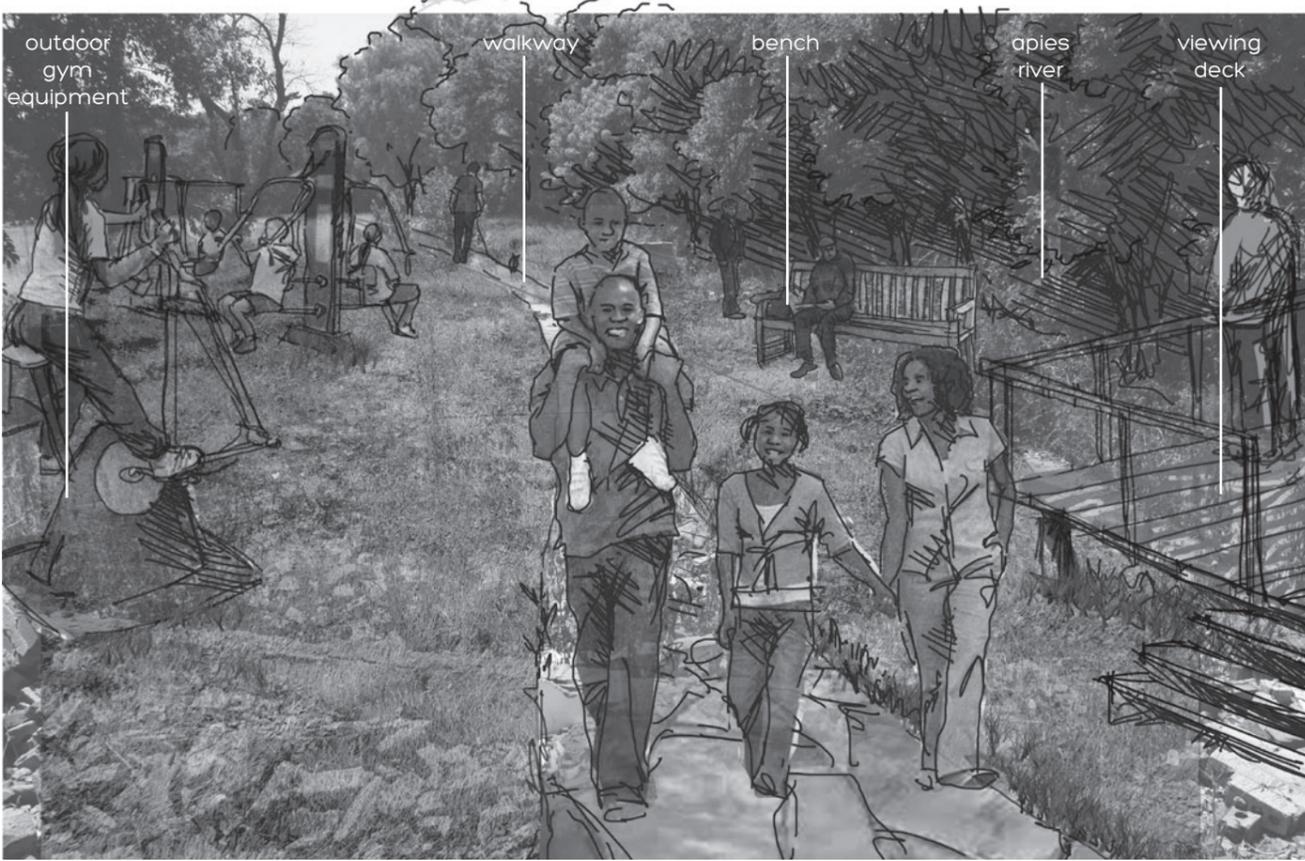


Figure 109: Proposed walkway along the Apies River (Author 2013)

Framework conclusion

This thesis will not attempt to fully resolve all of the above mentioned proposals. The proposals that will form part of the future development, include:

- the housing developments,
- a fully functional taxi rank,
- enhanced walkways between the site and the stations
- resolution of secondary entrances; and
- walkways and landscape design and development along the Apies River.

The main aspects that will be addressed in this thesis are the resolution of the sports facilities and walkways directly associated with these buildings.

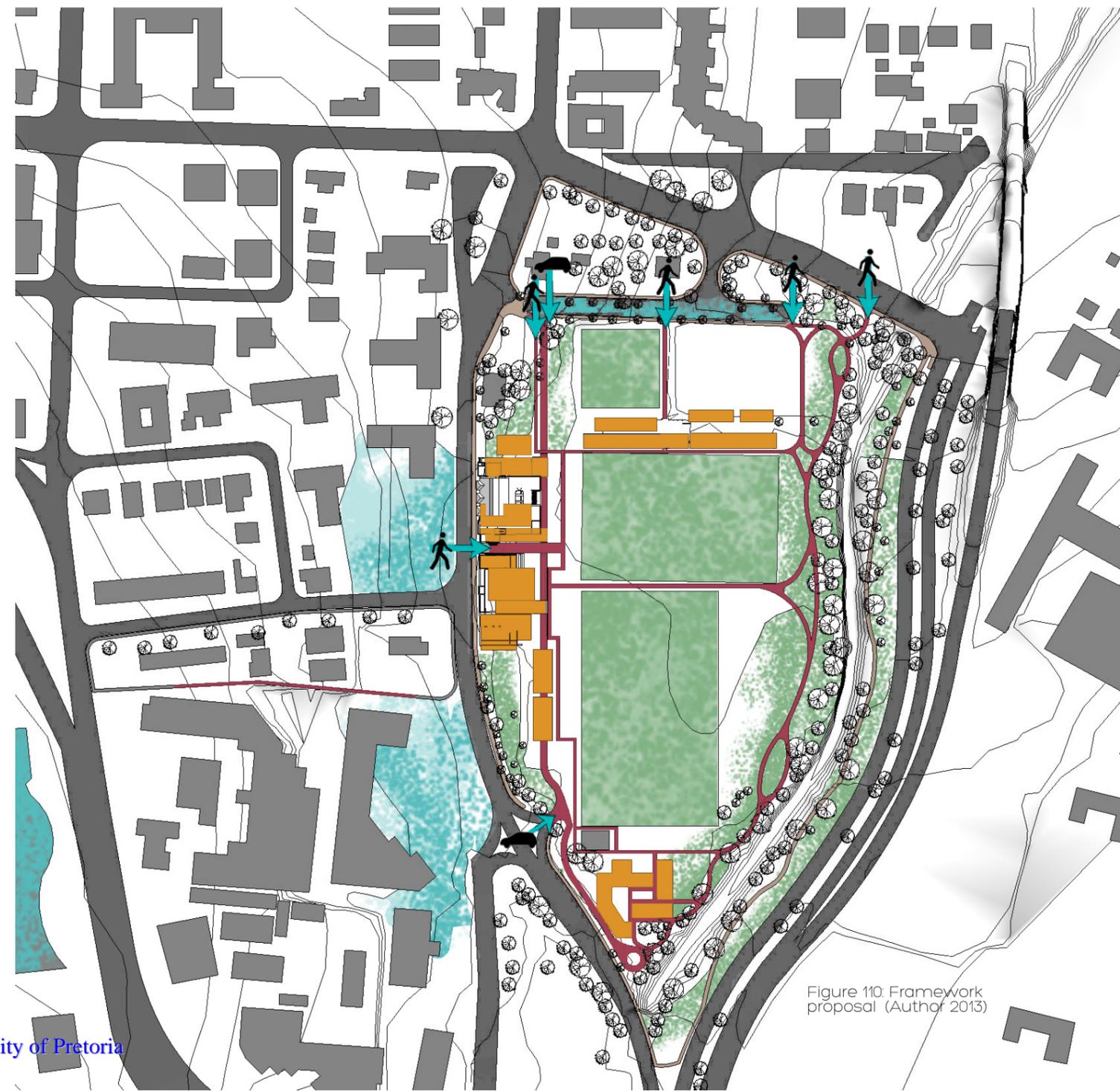


Figure 110: Framework proposal (Author 2013)

Precedent studies of a few applicable projects were undertaken to inform the design. The proposals currently being put forward for Berea Park are also considered.

-  Belonging
-  Heritage
-  Regeneration
-  Program



Figure 111: Elevations and section (R McGiven & R Sa 2010)

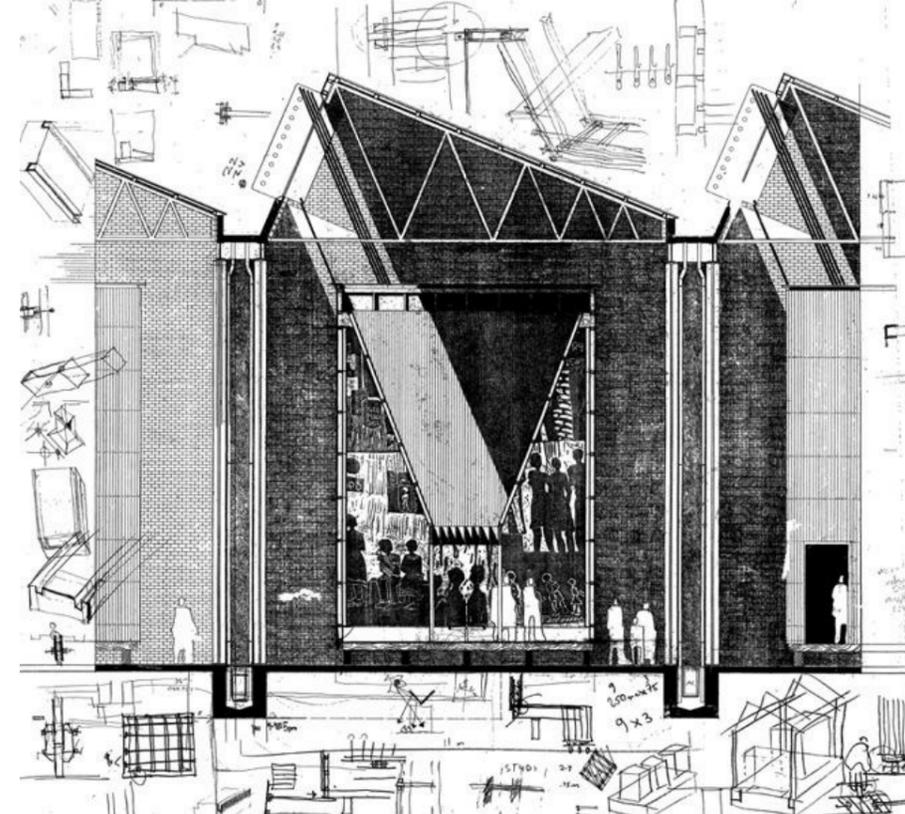


Figure 112: Memory Box working section (J Noero 1998)

Red Location Museum of Struggle, Port Elizabeth, South Africa, 1998-2005 by Noero Wolff Architects.

H This museum forms part of an urban redevelopment project located in the Red Location Township. Red Location township is one of the oldest townships in South Africa and featured in the anti-apartheid movement from as early as 1948. The museum not only commemorates the heritage importance of the site, but serves to capture the experience embodied in this site of resistance that served as the background to various protests and anti-apartheid movements. (MoMA 2010)

P The concept of the building was based on challenging the notion of a museum. The museum becomes a central element in the urban development, introduction of infrastructure and the cultural development proposed for the Red Location Township. Through the development of public amenities, that includes communal areas, housing, a library and archive spaces, previously absent in the township, Wolff aims to reverse the isolation associated with the site.

R The Red Location museum forms part of an urban vision that aims to reverse the "segregation that has so long characterized the site." (MoMA, 2010) Ideally the township could become the centre for new urban development. Through small interventions they hope to achieve big changes. (Figure 114)

B Noero Wolff Architects were faced with the challenge to ensure that the institution would be accepted by the community of Red Location who usually struggles to accept outsiders. Community involvement and weekly community-based committee meetings were held to ensure that the project truly adhered to the communities' needs. Community members were hired and trained to partake in the construction of the museum.

Utilising natural lighting within the building also played a major role in the design. Not only does the roof design reference the typical saw tooth profile associated with the commercial setting, (Figure 111) it is also utilised for optimal interior lighting. (Figure 113)

Visitors become participants in the rituals enacted within the building. Different narratives of history and their links are explored in the "memory boxes" or exhibition spaces. (Figure 112) (Red Location Museum 2006)

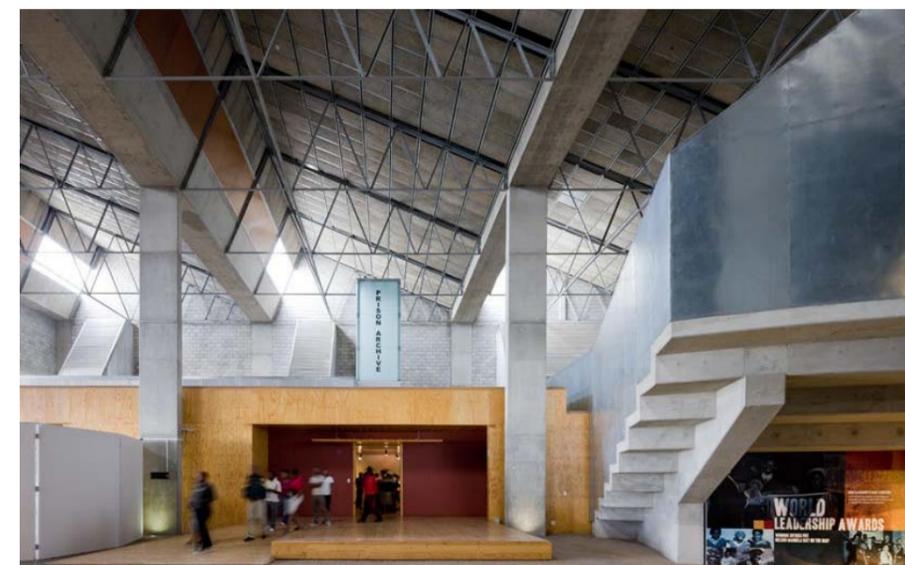


Figure 113: Museum interior with auditorium at right (I Baan 1998)



Figure 114: Museum exterior (I Baan 1998)

Drill Hall, Johannesburg, South Africa, 2004 by Michael Hart Architects Urban Designers

The Drill Hall was originally built by the British to serve as barracks that supplied the soldiers during the Anglo Boer war. (Figure 115) The structure was later used for recreational purposes such as a dance venue. But during the 1930s to 1970s, the hall functioned as a court for preliminary treason hearings. As many as 156 accused, including Nelson Mandela and Walter Sisulu appeared before a judge in these facilities. (Johannesburg Development agency 2004)

Over the years the building has sadly suffered from numerous damaging incidents. In 1968 a gas cylinder exploded within the building and in 2002 ten homeless people lost their lives when the Drill Hall partially burnt down. (Figure 116, Figure 117, Figure 118)



Figure 115: How the Drill hall looked originally (Unknown)



Figure 116: A 100-year-old place of pain (JDA 2004)



Figure 117: A building that has survived two world wars (JDA 2004)



Figure 118: Damage caused by fire (Unknown)

R The Johannesburg Development Agency appointed Michael Hart Architects and Urban Designers to restore the building. Intensive research was done to ensure that an acceptable approach was taken and to set up a conservation plan for the Drill Hall. Part of the intention of the new intervention was to make the building more accessible to the public. (Wilkinson 2012)

B By opening the building to the community, the architects created a platform for interaction between the building and its users. The aim of this was to create the opportunity for the community to form an association or link to this heritage building. This was not necessarily as successful as envisioned, due to shortcomings in the management of the building. The buck does not stop with the architects. Once the project is executed, it becomes the responsibility of the users and management to ensure the successful implementation of the vision for the site.

P The architects proposed that the Drill Hall should house various community orientated, nonprofit organisations. The building housed child-care facilities, programmes for skills training while also serving as a platform for emerging artists from the community. Sadly most of these tenants and users have since vacated the premises. (SAPA 2013)

H Extensions to the existing structure were done in steel and glazing to allow for optimal light and to ensure that the new structure acted as a standalone structure that could aid in supporting the damaged remains of the existing building. (Figure 119, Figure 120) (Wilkinson 2012)

The structure now leads to public square where the columns were placed along the footprint of the demolished building. (Figure 121)

Figure 119: North-eastern facade (Wilkinson 2012)



Figure 121: Eastern facade looking towards inside courtyard. (Wilkinson 2012)



Figure 120: Vacant interior (Wilkinson 2012)



Rehabilitation Of The Old Butter Factory, Calheta, Madeira Island, Portugal, 2010 by M.S.B Architects

B The old butter factory looks like the surrounding single family houses. (Figure 122) The architects tried to preserve the visual association with the surrounding houses, by preserving the characteristic image of the neighbourhood with minimal, simply constructed houses.

H The old buildings are all in bad shape. The new intervention would aid in strengthening the existing structure while adding to the available space in the interior. (Figure 125) The roof needs repairing, while the interior will be refitted. (Dezeen magazine 2010)

The gap created between old and new is animated by the light that is allowed to penetrate from the upper level to the ground floor. (Figure 125) The new floor seems to be suspended, with the structure clearly exposed to contrast with the old. (Dezeen magazine 2010)

P The new programme is inserted into the old. (Figure 123) The current use of the building does not allow for the interior of the factory to be retained because of totally different requirements. The aim is to "disentangle these two moments". (Dezeen magazine 2010) This is achieved by physically pulling the new rooms away from the old exterior walls at first floor level. (Figure 124)

R In the case of the next door building, the old bakery was beyond rehabilitation, and was therefore replaced by a completely new structure. (Figure 122)

Figure 122: Exterior facade (MSB Architects 2010)



Figure 124: Drawing (MSB Architects 2010)

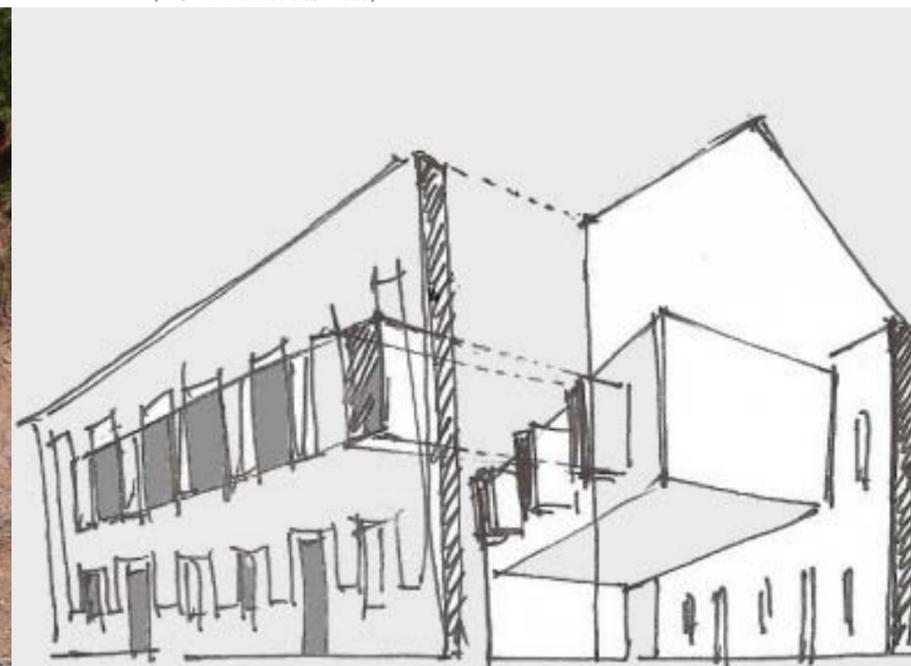


Figure 123: Models (MSB Architects 2010)

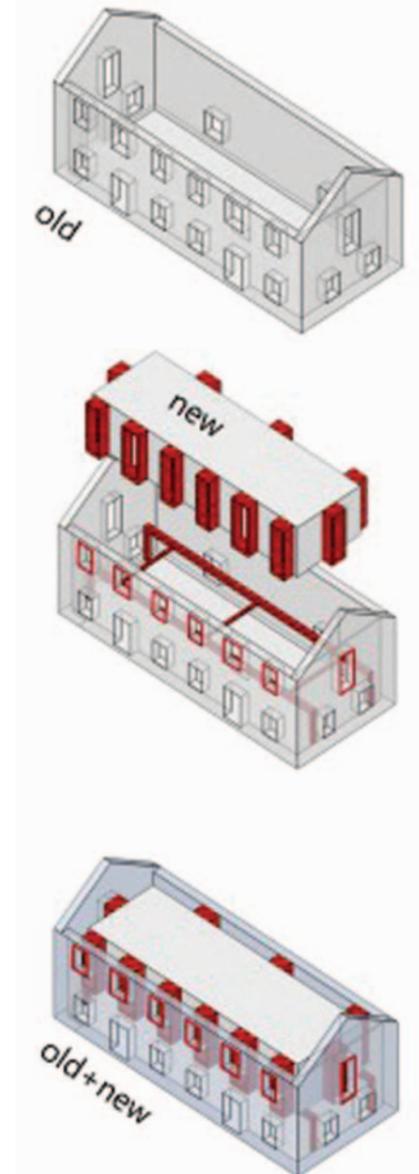


Figure 125: Interior (MSB Architects 2010)



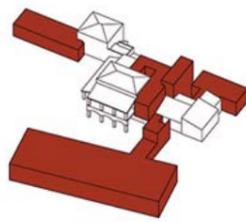


Figure 126: Diagram of extension (Hevia 2013)

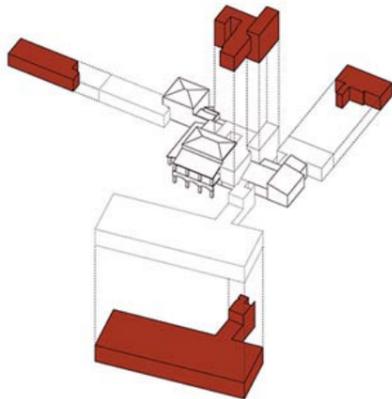


Figure 127: Extruded diagram of extension (Hevia 2013)

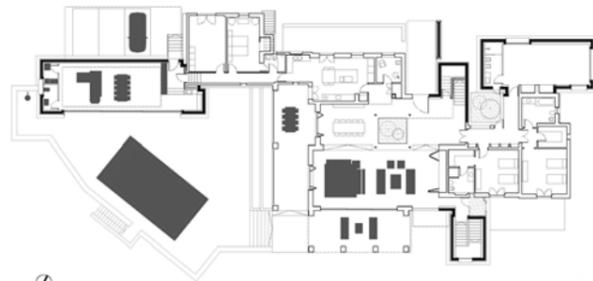


Figure 128: Ground floor plan (GRASS 2013)



Figure 129: First floor plan (GRASS 2013)

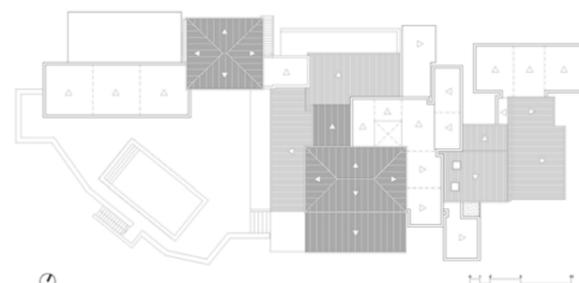


Figure 130: Roof plan (GRASS 2013)

KUBIK EXTENSION, Palma de Mallorca, Spain, 2013 by Guill- ermo Reynés con Ál- varo Perez from GRAS Arquitectos

P GRAS Architects were given a project to extend a traditional detached house, Mallorca. The client required the addition of numerous spaces and facilities to the existing building. (Figure 128, Figure 129, Figure 130) The new facilities include an indoor pool, spa and game room.

B The larger new spaces, including the swimming pool area, utilise natural day lighting by orientating the spaces so that they face south. (Figure 134)

R Spaces are specifically designed according to the needs of the client. Internal spaces are designed to ensure a cosy and comfortable, well lit environment for the users. The subterranean rooms are clad in wood for a warm finish to these cold concrete spaces. (Figure 134)

Figure 131: Extended: series of contrasting Corten steel boxes (José Hevia 2013)



H The existing building with white painted walls, timber carpentry and Arab tile roofs was kept unchanged. (Figure 131) (Dezeen 2013)

The new boxes, made from corten steel, slots into gaps created by the existing structure, or latches onto the exterior walls. The new boxes "surround and embrace" (Archdaily 2013) the old structure and frames new spaces surrounding the building. (Figure 132)

The heritage approach that was taken was to create a clear contrast between the old and the new, (Figure 126, Figure 127) extreme contrast is achieved by inserting numerous new volumes. This was executed in a contemporary aesthetic to maximize the contrast. (Figure 133) The style, material usage and colours of the old and new buildings are just some of the contrasting elements.

Figure 132: Framing outside view (Hevia 2013)



Figure 133: Boxed Corten extensions (Hevia 2013)



Figure 134: Interior space: pool and spa (Hevia 2013)





Figure 138: Gleneagles Community Centre (Dow 2011)



Figure 135: Gleneagles Community Centre second floor views (Dow 2011)

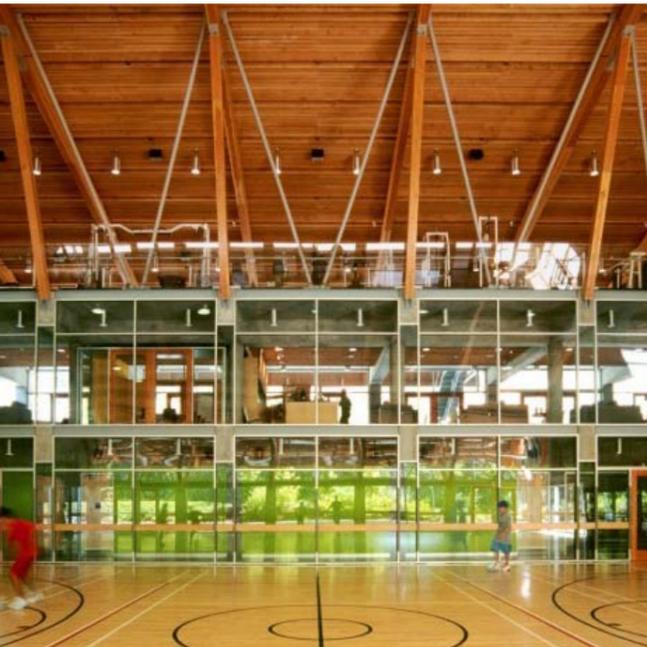


Figure 136: Sport arena (Dow 2011)

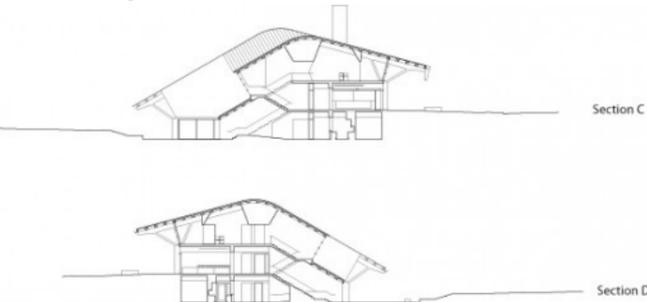


Figure 137: Sections (Dow 2011)

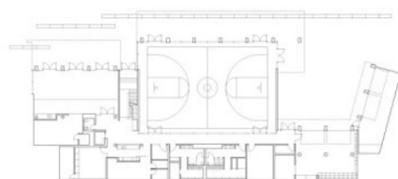


Figure 139: Lower floor plan (Dow 2011)

Gleneagles Community Centre, West Vancouver, British Columbia, Canada, 2011 by Patkau Architects

H The Gleneagles Community Centre is located in close vicinity to existing sports facilities, including a public golf course. The community centre interacts and services these sport facilities. (Figure 139)

P Similar to the Berea Park site, this building also utilises the existing slope for varying levels. (Figure 27) The level that faces the street is populated with recreational spaces, such as "living rooms", coffee shops and child day care facilities. The bottom level interacts with the outdoor sports facilities, while the upper level houses a gym. (Archdaily 2011)

Multi volume spaces link various levels visually and ensure cross programme interaction. (Figure 25)

B The building inserts itself into the community's everyday lives through the programming of the facility, especially on the street level. (Figure 26) The building is also designed to interact not only with pedestrians on street level, but also with athletes on the bottom/field level. Open views from the building to surrounding programmes enrich its involvement with the community and existing sport facilities. (Archdaily 2011)

R The programme of the building was organised into three levels, to minimize the footprint of the building. The weight of the in situ cast concrete structure and heavy roof serves as a climate control mechanism. Additional thermal energy is provided by water-to-water heat pumps that run through the ground and into the walls. The building is protected from winter rains and summer sun by the roof overhangs. (Figure 28)

The site conditions are similar to that of Berea Park and therefore serves as a good precedent. It is also important to consider the way in which this facility speaks to its pedestrian and athlete users and passers-by. For regeneration, the way in which the structure was designed to ensure optimal interior climate, serves as a good example of a sustainable sport and recreational facility.



Figure 140: Proposed Government Office Development, Pretoria (Boogertman + Partners 2013)

Current proposal for Berea Park

The current planning for Berea Park includes a Government Office Development. (Boogertman + Partners 2013) Boogertman and Partners has submitted a proposal for numerous multi-storey office blocks and parking garages that cover the site. (Figure 140)

Their proposal shy away from interacting with the existing structures on the site; except for the bowling clubhouse and other smaller structures that they plan to demolish.

This development is part of numerous new proposed government buildings that are proposed as new office spaces located at the perimeter or outside of Central Pretoria. Some of the other offices are being proposed for north of Marabastad.

The problem with this is the fact that instead of fixing and renovating existing government structures so that they

can be utilized to their full potential, the government chooses to build new structures further from the central business district of Pretoria. The fact that the new interventions do little to acknowledge the important role Berea Park has played in the history of Pretoria and South African sport, can be seen as questionable. Furthermore this proposal intends removing much needed publicly accessible sport and recreational space within Pretoria, instead of restoring and utilizing it.

Current heritage approach for Berea Park

The heritage proposal was set forward by Henry Paine and Partners. (Figure 141) This proposal entails restoring as much as possible of the old fabric of the building, while removing some of the internal walls to enable re-use of the structure. (Paine + Partners 2010) This proposal is no longer viable, since the structures have suffered extensive damage, since the report was originally drafted in 2009.



Figure 141: Berea Park complex re-use (Henry Paine + Partners 2010)

The programme and its requirements are researched, along with possible clients of interested parties.

7

Part 2 Research and analysis - Programme and client



Mission statement by the Department of Sport and Recreation of South Africa

“To maximize access, development and excellence at all levels of participation in sport and recreation in order to improve social cohesion, nation building and the quality of life of all South Africans”

In the past Berea Park was animated by the numerous activities on the site, in the buildings and on the fields.

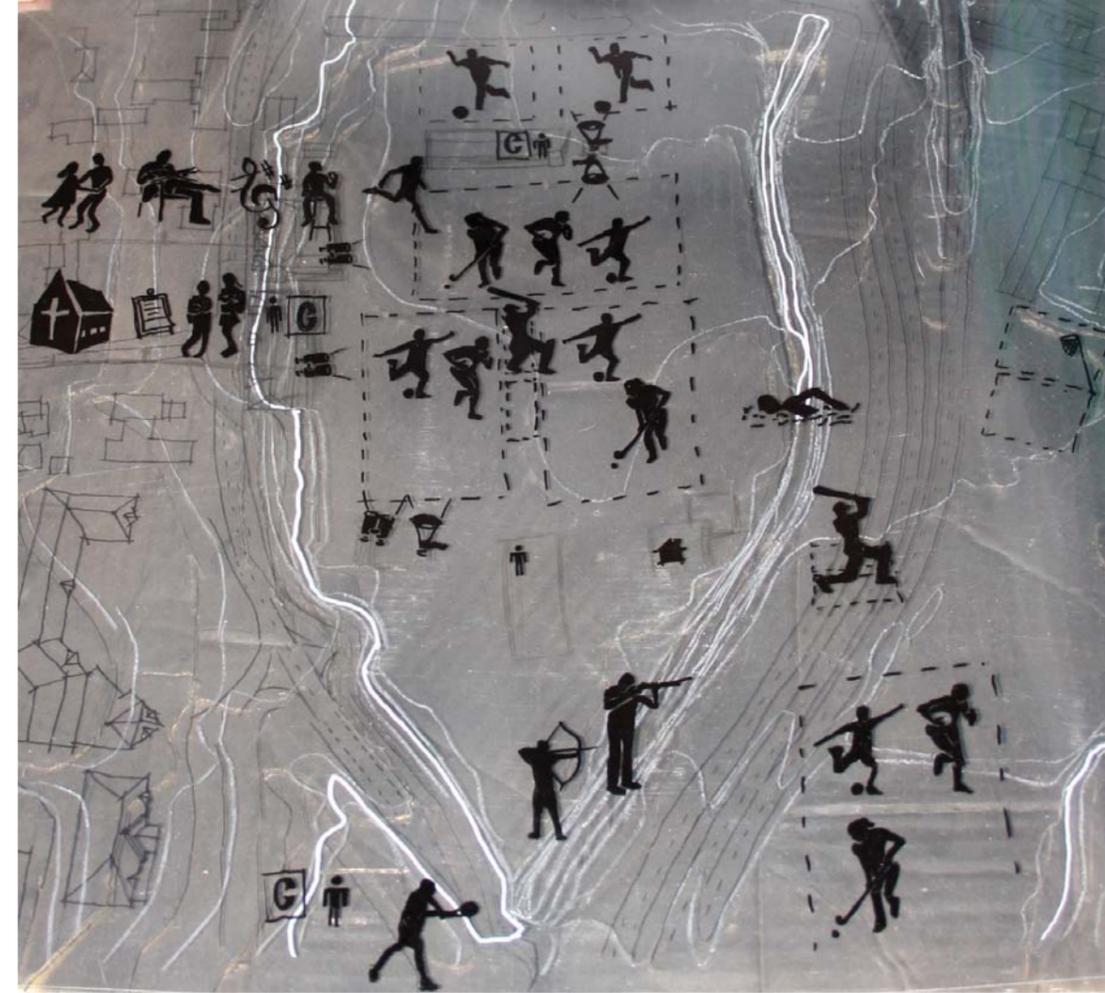


Figure 142: Past programmes at Berea Park (Author 2013)

Currently the main programme associated with Berea Park is the soccer that is still practised on the dilapidated soccer field. Even though two security guards survey the site, all of the buildings are currently occupied by squatters. Along the northern edge of the site taxi drivers park their vehicles during the day.



Figure 143: Current programmes at Berea Park (Author 2013)

Rituals sport participants and spectators

Mapping of routes and rituals in the Berea Park context. (Figure 144) With the purpose of linking the activities associated with the different aspects and sport programmes proposed for the facility, (Figure 145, Figure 146) with possible locations on the site.

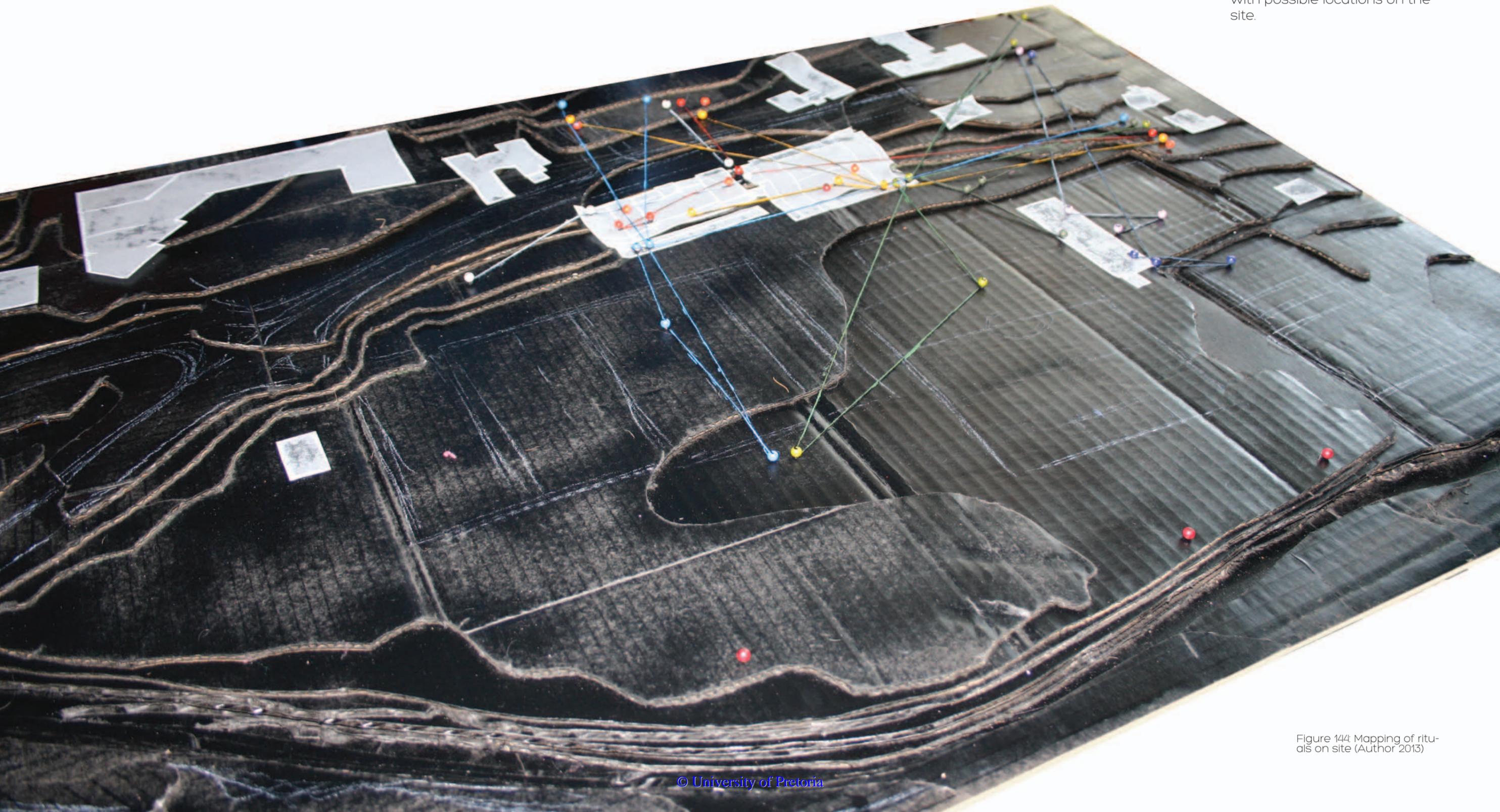


Figure 144: Mapping of rituals on site (Author 2013)

Rituals

Sport participants and spectators

Different rituals associated with the proposed programmes or activities to be located on Berea Park are depicted in comic strips. (Figure 145, Figure 146)

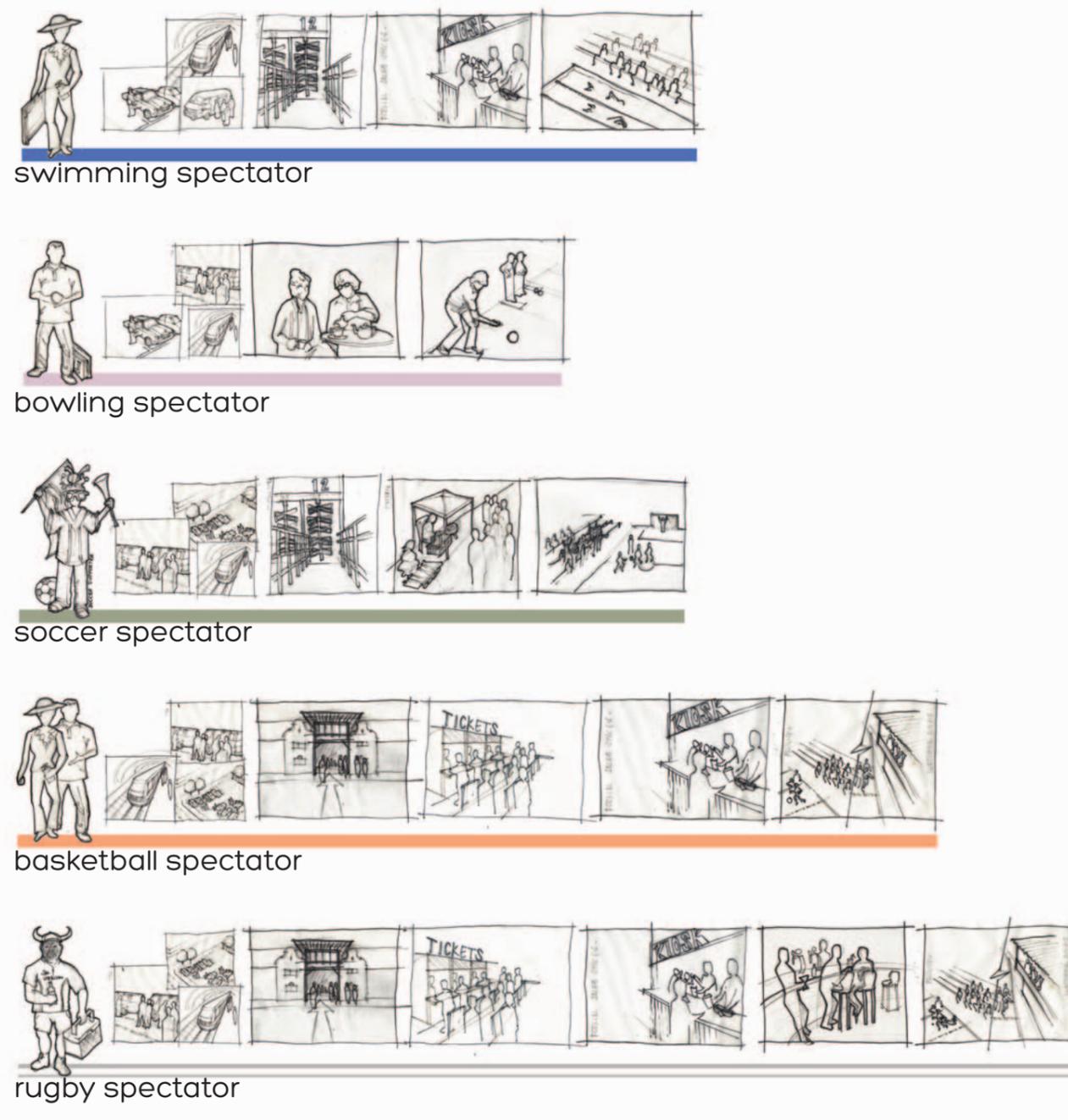


Figure 145: Graphic depiction of spectator rituals (Author 2013)

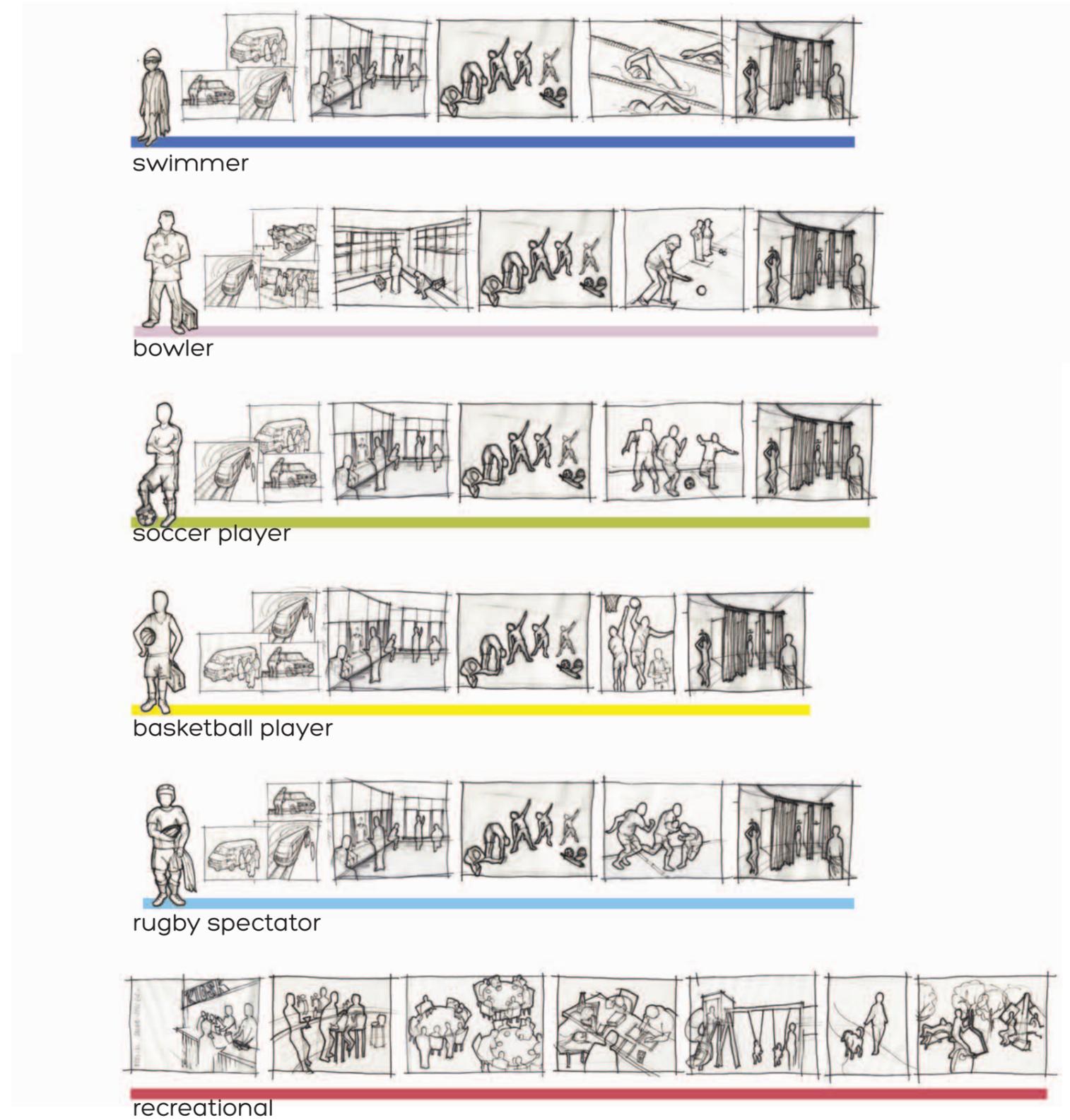
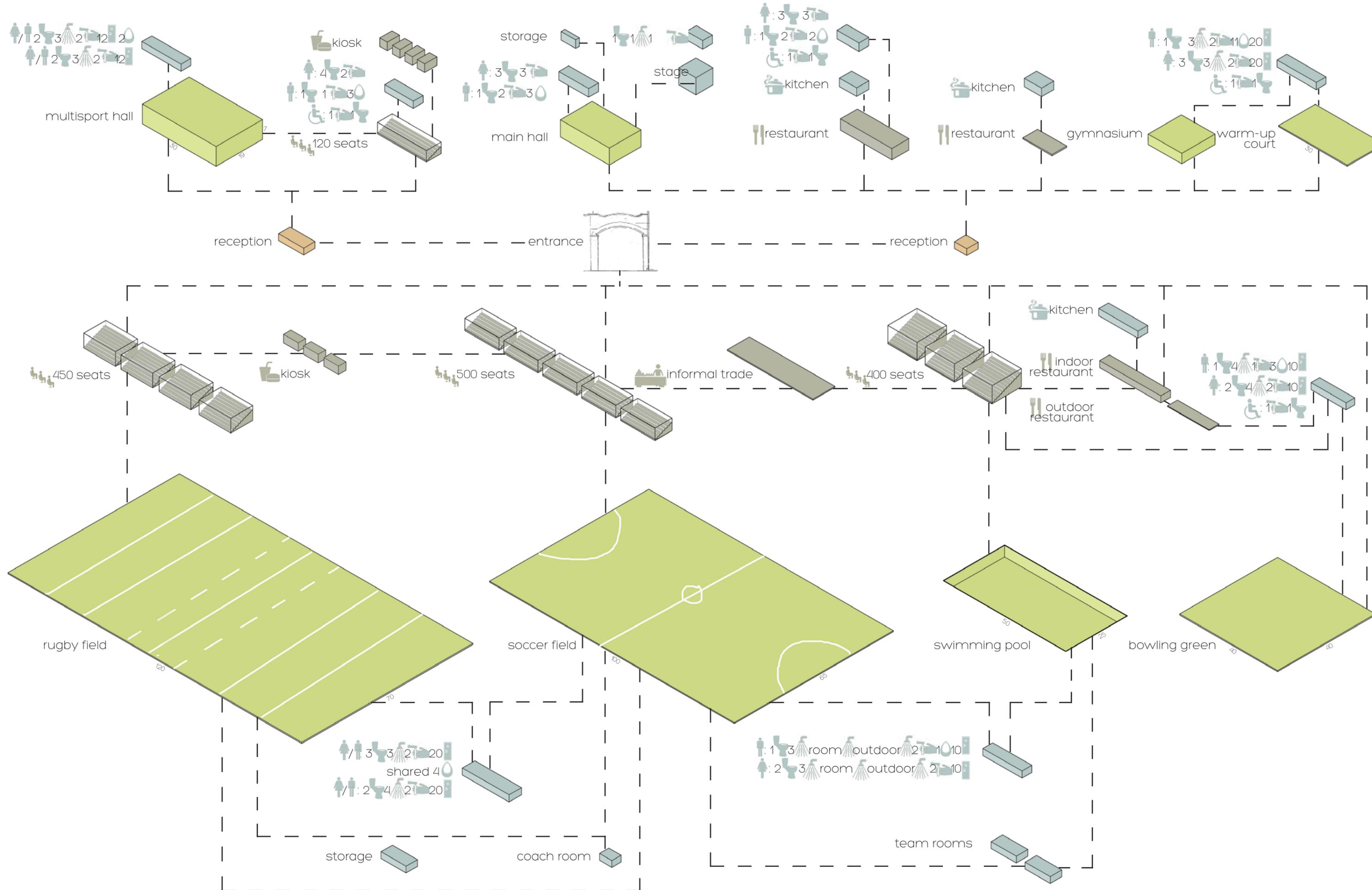


Figure 146: Graphic depiction of athlete rituals (Author 2013)

		Swimming 	Bowling 	Soccer 		Multi sport hall or Basketball 	Rugby 	Gym	Recreation
Activity	Sizing	Length: 50m Width: 25m Depth: min 1.35; olympic games: min 2m, ideal 3m	Length: 43m Width: 43m	Length: 100 - 110m Width: 64 - 73m		Length: 44m or 27m Width: 22m or 15m Height: 7m	Length: 111-112m Width: 68m	± 40m ² floor area	
	Lighting	1500 lux	n/a			300 -500 lux			
	Ventilation	n/a	n/a	n/a			n/a		
	Other	25-28 °C water temp							
Services	WC	♂ 2 WC ♀ 1 WC & 2 Urinal	♂ 2 WC ♀ 1 WC & 2 Urinal	♂ 3 WC ♀ 1 WC & 3 Urinal		♂ 2 WC ♀ 1 WC & 2 Urinal	♂ 3 WC ♀ 2WC & 3 Urinal		
	Basin	♂ 2 basin ♀ 2 basin	♂ 2 basin ♀ 2 basin	♂ 3 basin ♀ 3 basin		♂ 2 basin ♀ 2 basin	♂ 3 basin ♀ 3 basin		
	Shower	♂ 5 shower ♀ 5 shower	♂ 2 shower ♀ 2 shower	♂ 5 shower ♀ 5 shower		♂ 3 shower ♀ 3 shower	♂ 5 shower ♀ 5 shower		
	Dressing Room	♂ 30 lockers ♀ 30 lockers enter through showers	♂ DR; 10 lockers ♀ DR; 10 lockers 20 general lockers	dressing room 1; 15 lockers dressing room 2; 15 lockers		dressing room 1; 15 lockers dressing room 2; 15 lockers	dressing room 1; 15 lockers dressing room 2; 15 lockers		
	First aid	yes	yes (basic kit needed)						
	Staff	Cleaner room	Admin room (possible shared with swimming pool)						
	Cleaning	Chemical storage, filtration areas/pump rooms	Gardening and interior cleaning equipment						
	Equipment		Storage room for renting out equipment						
	Other	Team rooms							
Spectator	Seats	Space for 300 spectators Size: 15m ² - 30m ²	Terraces and tea patio	Space for 1000 spectators Size: 50m ² - 100m ²		Space for 500 spectators Size: 25m ² - 50m ²	Space for 1000 spectators Size: 50m ² - 100m ²	n/a	
	WCs	♂ 2 WC ♀ 1 WC & 1 Urinal	Share with players or soccer spectators	♂ 4 WC ♀ 2 WC & 2 Urinal		♂ 2 WC ♀ 1 WC & 1 Urinal	♂ 4 WC ♀ 2 WC & 2 Urinal		
	Other	Kiosk with bar: 8 - 12m ² Kiosk storage: 10 - 12m ²	Coffee shop: 8-12m ² CS prep area: 6m ²	Self service counter = 20m		Self service counter = 10m	Kiosk with bar: 8 - 12m ² Kiosk storage: 10 - 12m ²		Restaurant: 150 - 270m ² area Guests: 100 - 150m ² area Kitchen: 50 - 120m ² area
Access	Sizing								
	Inclusive	Non slip surfaces are important	access for old people						

Table 1. Service requirements and specifications (Author 2013) based on (John & Heard 1981: vol. 1-4)

Berea Park user and programme requirements:



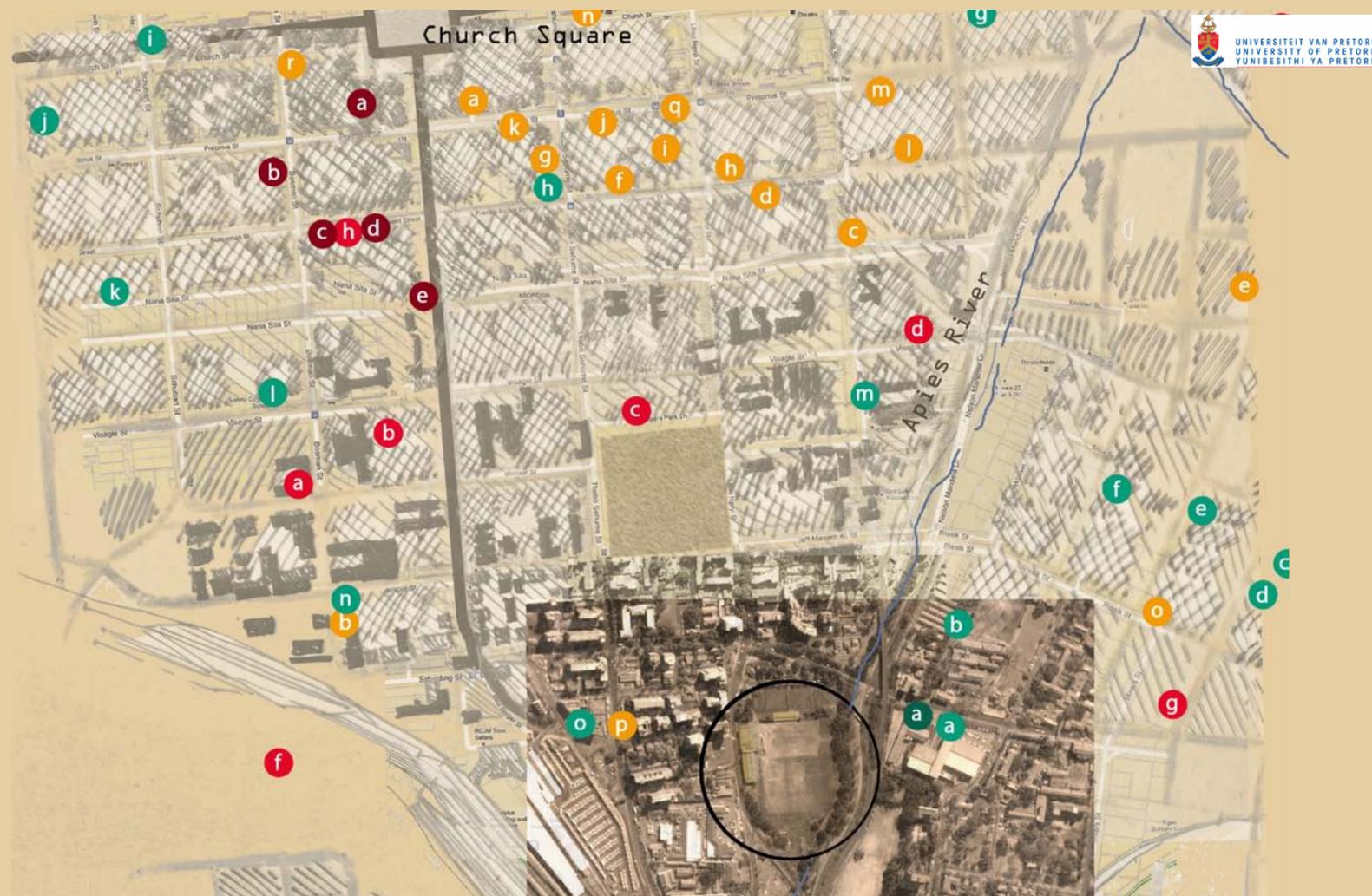


Figure 147: Mapping of possible interested parties/users (Author 2013)

Possible interested parties and users

Currently there are at least three Community Colleges that actively make use of the soccer field. There are also a few urban schools, for example the Founders Primary and High School that, due to lack of space, utilise these facilities for sporting events. Furthermore there are also a few NGOs and community initiatives, for example the community patrol that run programmes to keep children out of trouble by involving them in sports. Unisa also actively uses the sport grounds for training.(Figure 148, Table 2)

Possible interested parties

Colleges

- a. College SA
- b. Kings and Queens College
- c. Bantori College Pretoria Cc
- d. Menlyn Technical College
- e. Academy of learning IT
- f. Sediba Thuto College of FET
- g. Festicol FET College
- h. Vine College: Information Centre
- i. New Dawn College
- j. Academy of Business and Computer Studies
- k. Brooklyn City College
- l. Ochrim School of Music
- m. Greenwood College
- n. Kings and Queens College
- o. College Centre
- p. College Campus
- q. Lodging Industries Specialist Hotel School
- r. School Of Stock Market

Schools

- a. Unisa Sentrum Vir Kleinkinderopvoeding
- b. Primary School East-End
- c. Kiddie Care Crèche/Pre-Primary School
- d. Sunnyside Primary School
- e. Sun Sparrows Nursery School
- f. Primary School Presda
- g. Greenwood College
- h. Yop City Pre-School
- i. Tekkies Crèche/Nursery School
- j. Jacaranda Nursery School
- k. Citicol Secondary School
- l. Loreto Convent School
- m. Hamilton Primary School
- n. Ed-U-College Secondary School
- o. Founders Community School, Pretoria

NGOs

- a. E Hubs Africa
- b. Theatre for offenders and Something Magic theatre org
- c. Mahube HIV/AIDS Project
- d. IDASA Southern African Migration Programme
- e. Juin Youth Empowerment
- f. POPUP
- g. His Blessing day care
- h. Pretoria Day Mothers Association

University

- a. Unisa Sentrum vir Kleinkinderopvoeding

Government: / institutions

- a. Rolling In
- b. Ambassadors in Sport
- c. Gauteng Dept of Sport - Recreation - Arts and Culture - Directorate Library and Information Services
- e. Correctional Services Recreational Club

Table 2: Possible interested parties (Author 2013)

Possible clients

The heritage proposal set forward by Henry Paine and Partners, entailed restoring as much as possible of the old fabric of the building, while removing some of the internal walls to enable re-use of the structure. (Bruwer and Paine 2009) This proposal is no longer viable, given that the structures has suffered extensive damage, since the report was originally drafted in 2009. .

One of the major challenges Berea Park face is a lack of ownership and accountability. The structures and site have suffered unnecessary damage and neglect, ultimately resulting in the abandonment of the buildings by the last legal users, the School. Once abandoned the building was gutted by fire and squatters. Only a skeleton of the past buildings remains.

All of this could have been avoided with regular maintenance. This should not only have been the responsibility of the users, but also the owners of the structures.

To prevent the same issues from arising again in future, the proposal is to ensure that the maintenance and continued existence of Berea Park is not the sole responsibility of a single entity.

The proposal is that through shared ownership, more users will have access to the site. This will also allow for more sources of funding and support of the facilities at Berea Park.

The proposed interested parties are:

- The government.



The Department of Sport and Recreation South Africa funds numerous sport related institutions and facilities. Their vision is to create "An Active and Winning Nation" and to provide every South African with the opportunity to participate in sport. (SRSA 2013)

Berea Park is already owned by the Department of Public Works, therefore the government is one of the interested parties.

- A tertiary institution



The proposal is to get either Unisa, Tshwane University of Technology or the University of Pretoria involved in the project

All of these institutions have programmes where they provide sports training for people and especially children from different communities. (TuksSport 2011) Berea Park provides the opportunity to connect to various neighbourhoods, including Sunnyside, Central Pretoria, Muckleneuk and Salvokop. This provides students studying sport related programmes with the opportunity to facilitate training. It also produces a pool of potential sports men and women that they can cultivate as future athletes for the university.

- Individuals from the neighbourhood



Providing individuals from the community with the opportunity to buy shares in Berea Park will help to promote belonging and taking ownership in the community. The idea of community ownership has only recently started taking root in South Africa. Examples of this can be seen implemented in the mining and mineral industries of South Africa. (Kruger 2007)

Providing the opportunity to buy shares in the retail facilities, for example by the restaurants and shops located in the vicinity, also creates the ideal opportunity for people living in the neighbourhood to benefit from the development of the Berea Park precinct.

Part 3

[design]

The theory informing the design is discussed.

Working with old

Berea Park is dilapidated and damaged. To render Berea Park into a usable state extensive interventions will be necessary.

When alteration to an existing building is undertaken, if sensitively done, it will start off with some level of restoration and conservation. As part of the practice of alteration, a stance must be taken with regard to restoration and conservation.

According to John Ruskin's *Seven Lamps of Architecture*, he describes reconstruction during restoration as a type of devastation, replacing the object or element with a falsified version of the original. (Scott 2008)



Figure 149: Damaged beyond repair: the 19th-century fresco of Christ in Borja, Spain, after an amateur decided to repaint it (AFP 2012)

"Restoration patently has a great potential for harm and destruction if governed only by good intentions." (Scott 2008)

No architecture can really be restored to its original form without copying and reconstructing lost elements. Restoration will therefore be kept to the minimal. To prevent further damage, as often is the case, even at well intended restorations. (Figure 149) Only architectural elements that are still in reasonable condition, and have some architectural or heritage importance will merit restoration. Any part of the building that has suffered extensive damage, especially later editions or changes will be removed to make space for the new interventions. (Figure 150)

A list of eight intended rules to dictate an approach to heritage has been formulated based on the Burra Charter and theory by Fred Scott from *On Alter Architecture* (2008).

To be able to adapt an existing building, a holistic and full understanding of the building is required. Here both the tangible and intangible heritage have to be documented and interpreted (see chapter 4) to be able to make informed decisions about the relevance of certain parts of the building. Once the building

is fully understood, the damaged and rotten parts can be removed. It is important to note that the stripping back procedure is about more than just removing elements that are no longer structurally viable. According to Fred Scott (2008) stripping back involves ensuring that harmony will be achieved once the new intervention is resolved. Parts should not only be removed based on the original findings, but also to ensure that "things fit together" (Scott 2008)

Once the damaged parts have been stripped back, the processes of making good and enabling new interventions are undertaken. The old fabric is repaired to an acceptable state where required. To enable the new intervention, further parts that prevent the new from being implemented would be removed. Before removing elements to "enable" the new interventions, careful considerations must be given to the importance of these elements and their contribution to the building as a heritage resource. (Figure 150)
 Only once the above mentioned processes have been completed, can the new intervention be implemented.

Design informants

Contrary to the modern movements attempt of using architecture to modify the users' activities, Fred Scott (2008) claims that Le Corbusier's statement that a house is a machine for living, has generally been taken as a metaphor for how the users are to live within these spaces. Yet Scott claims that this control over the users' actions has greatly alluded the modern movement architects. Contrary to this attempt of control through architecture, the theory of Belonging aims at approaching architecture from a contrasting stance Belonging takes its cue from activities and rituals as the major drivers behind architecture. (Leach 1999) Only through these activities and/or rituals that enliven these spaces does the architecture gain meaning and importance.

The approach at Berea Park will be to utilise the requirements and opportunities that arise from each of the major activities (soccer field, rugby field, bowling court, swimming pool, multi-sport hall, gym and the main multifunctional hall) that are proposed for the site as design informants. These requirements will for example include the facilities, bathrooms and dressing rooms, required to service the activity spaces. Possible opportunities would be to include retail and restaurant spaces as additional services provided for the users.

1. ORIGINAL FORM
Before it desperately required attention.
2. INTANGIBLE HERITAGE
Document people associated with Berea Park, as well as past programmes and events.
3. TANGIBLE HERITAGE
Look at HIA report to determine which elements are seen to have architectural or heritage relevance. Also determine which are irrelevant elements architectural or from a heritage view point, that can be removed to enable re-use.
4. DAMAGED OR LOST ELEMENTS
Identify damaged or lost elements.
5. STRIPPING BACK / REMOVE
Remove all elements that are damaged beyond repair, or that are damaged and will not constitute a loss if removed.
6. MAKING GOOD / RESTORE
Restore remaining elements, especially those that are in danger of future loss if not attended to. (Do not reconstruct elements that have been lost)
7. ENABLE
Remove areas of the old building, where needed to enable the new intervention. New structures must enable new interventions, while also providing structural support for existing structures.
8. INSERT NEW INTO OLD
Insert the new intervention into the existing structures. Ensure that the new is clearly visible and distinguishable from the old.

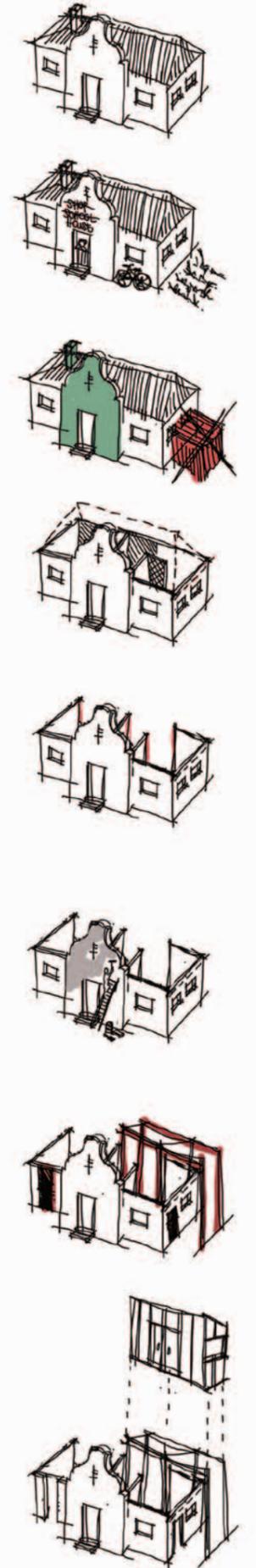


Figure 150: Eight intended rules to dictate an approach to heritage, based on the Burra Charter and *On Altering Architecture* by Fred Scott (Author 2013)

The concept that will be informing the design is discussed and graphically explored.



Figure 151: Concept development phase 1: activity informing architecture (Author April 2013)

Concept development

Phase 1: April

The concept entails using the existing activities at Berea Park. A hypothetical example would be the soccer being played at Berea Park that act as an informant. This activity in turn leads to certain needs and architectural interventions arising, for example shaded spectator seating and dressing rooms. Once these amenities have been put in place, they create the opportunity for other activities, for example a rugby field, to be implemented, and so forth. (Figure 151)

The activities inform the architecture. The development of Berea Park happens in phases as new opportunities and needs arise.

Phase 2: April

This phase is based on linking the site to its surroundings. Routes link access points onto the site and into buildings. Strips of activity are inserted into the existing fabric of the structure. Some of these strips are tugged into the existing structure, while others protrude over the remnants of the existing buildings. (Figure 152, Figure 153)



Figure 152: Street view of concept development model (Author April 2013)



Figure 153: Field view of concept development model (Author April 2013)

Phase 3: May

The routes start at the main entrance points. The field level mainly houses facilities for athletes. The routes run around the main activity areas, before continuing upon its original course. The strips of roof cover defines the various spaces located within the buildings. (Figure 154)



Figure 154: Concept development phase 3: activity informing architecture, route as binding element (Author May 2013)

Phase 4: May

The route running at field level provides easy access to buildings and sports fields for athletes utilizing Berea Park facilities. The route has sufficient width and height to allow emergency vehicles to pass through the site and gain access to sports fields. The route at street level, meanders around the eastern facades of the existing structures, while also linking across the site from east to west. This route is focused on providing easy access for spectators to seating areas and facilities. The new structure accentuates the interior spaces from the exterior. (Figure 155)

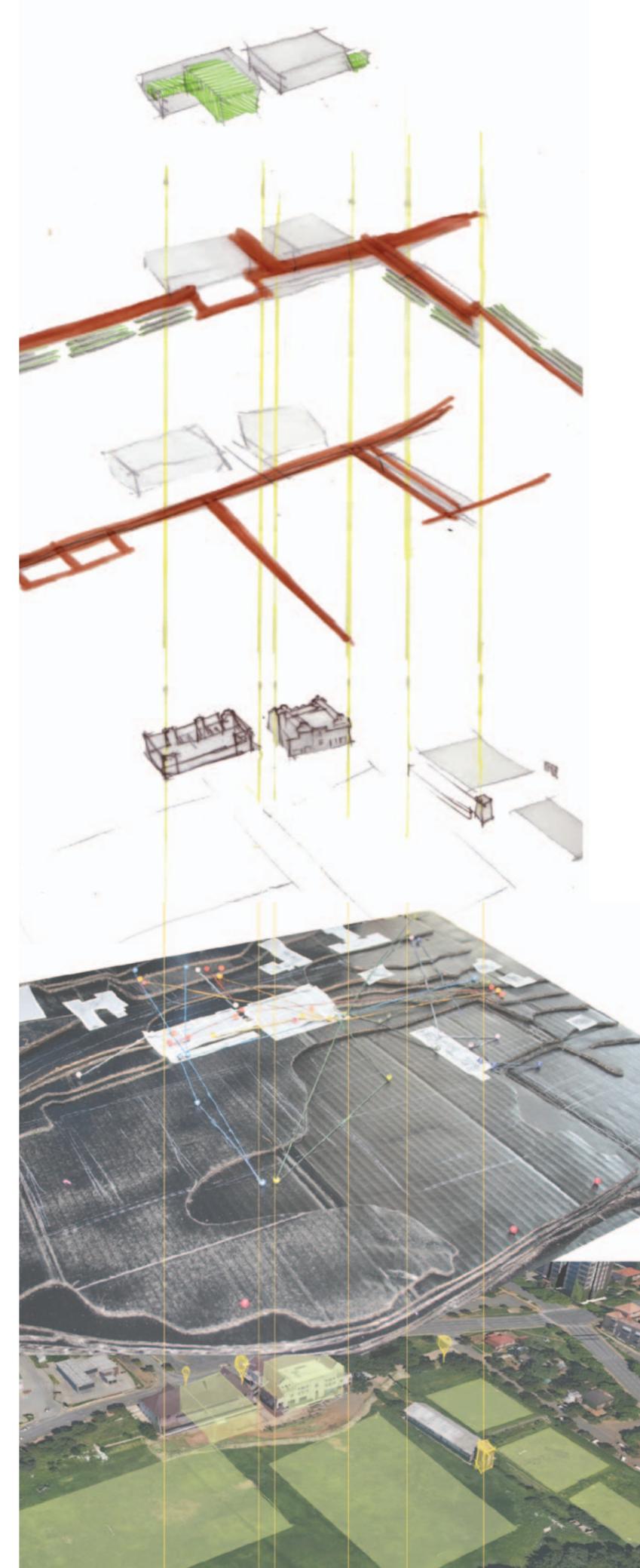


Figure 155: Concept development phase 4: activity informing architecture, route as binding element (Author June 2013)

Concept

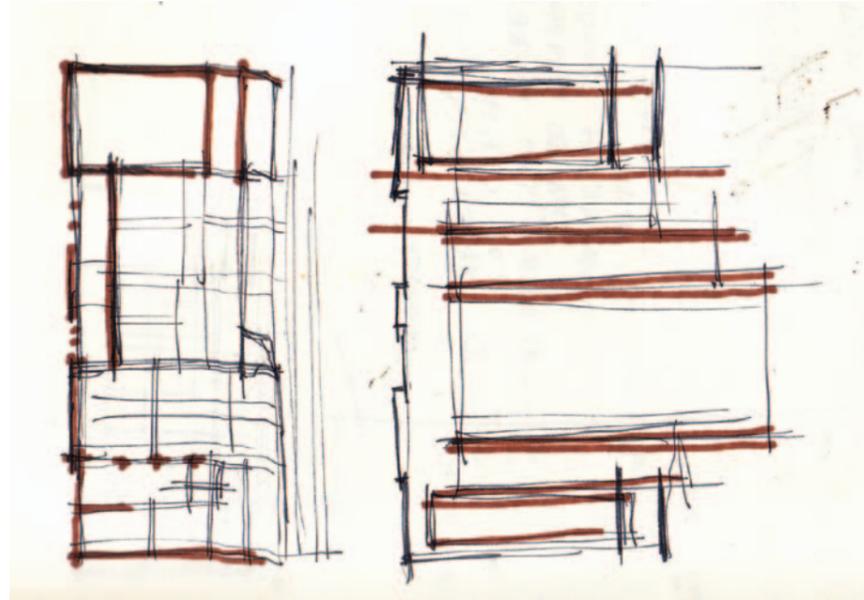


Figure 156: Concept parti of old grid versus new grid (Author 2013)

Concept parti

The parti of the old building, shows the complexity of the grid and layout of the existing structures, as well as the disorganised nature of the programming of the old structures. To contrast the existing, the new intervention is organised into horizontal strips. These strips act as programmed zones. (Figure 156)

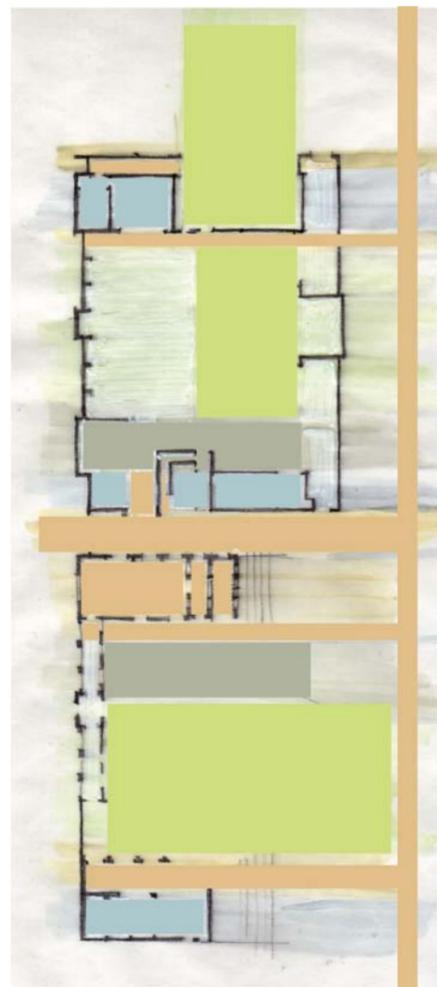


Figure 157: Concept of new organised into zones (Author 2013)

Concept

The parts of the existing structures that will be kept include the facades, especially the western facades that are currently the ones that are more intact. Interior walls that help to define the original u-shaped plans (where possible) will also be retained. Some of the vertical circulation zones that are in relatively good condition, will also be retained. (Figure 157, Figure 158)

The various east-west orientated zones, will be inserted into the existing fabric. (Figure 158, Figure 159) These zones include:

- activity zones made up of the major halls and sport courts;
- the spectator zones, that include seating and dining areas (restaurants and kiosks)
- service zones, in which most of the wet services, such as rest rooms and kitchens, will be located
- lastly circulation zones that act as links will be placed throughout the buildings.

Routes running north-south will run across the site at both field and street levels. (Figure 157, Figure 158, Figure 159)

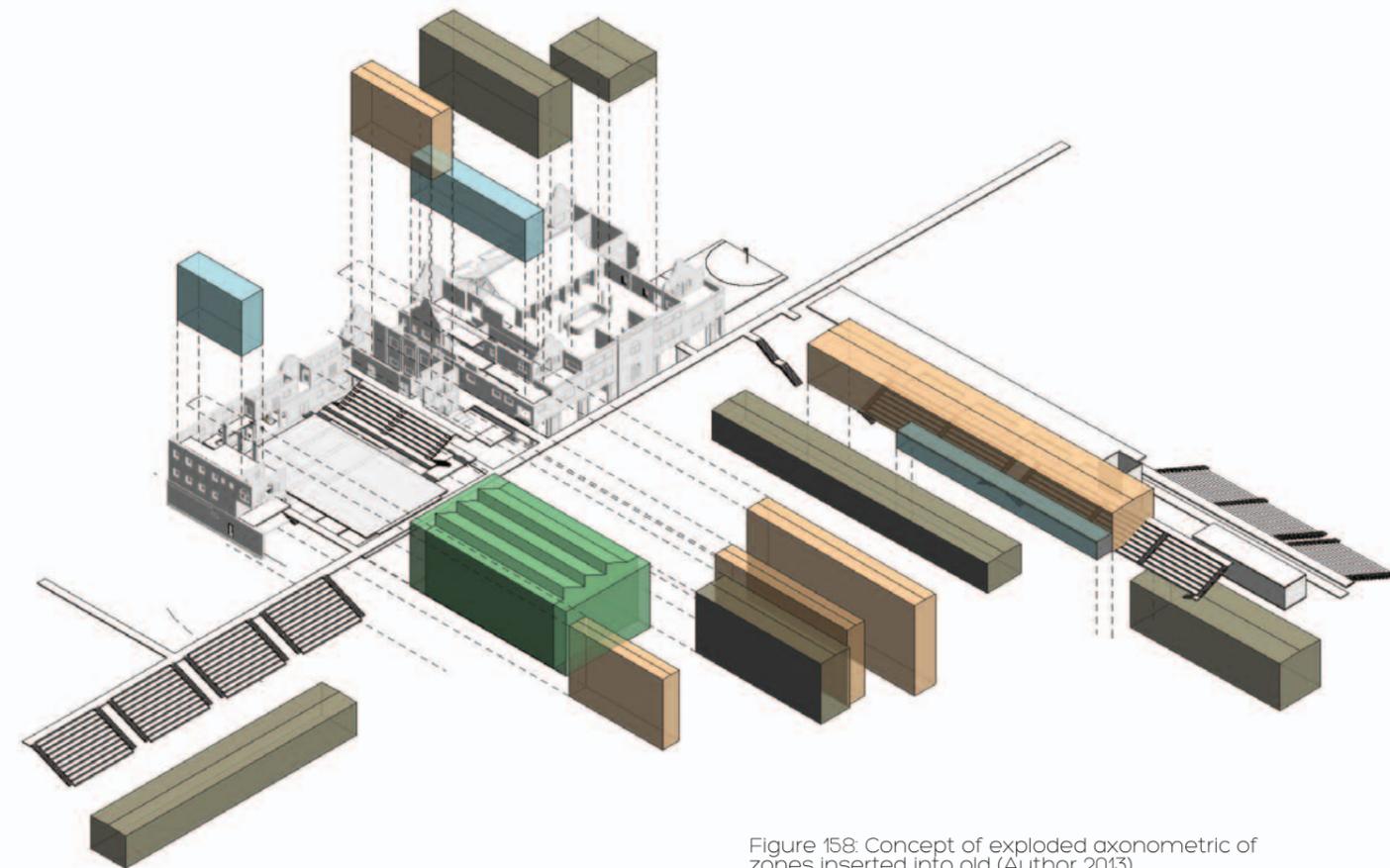


Figure 158: Concept of exploded axonometric of zones inserted into old (Author 2013)

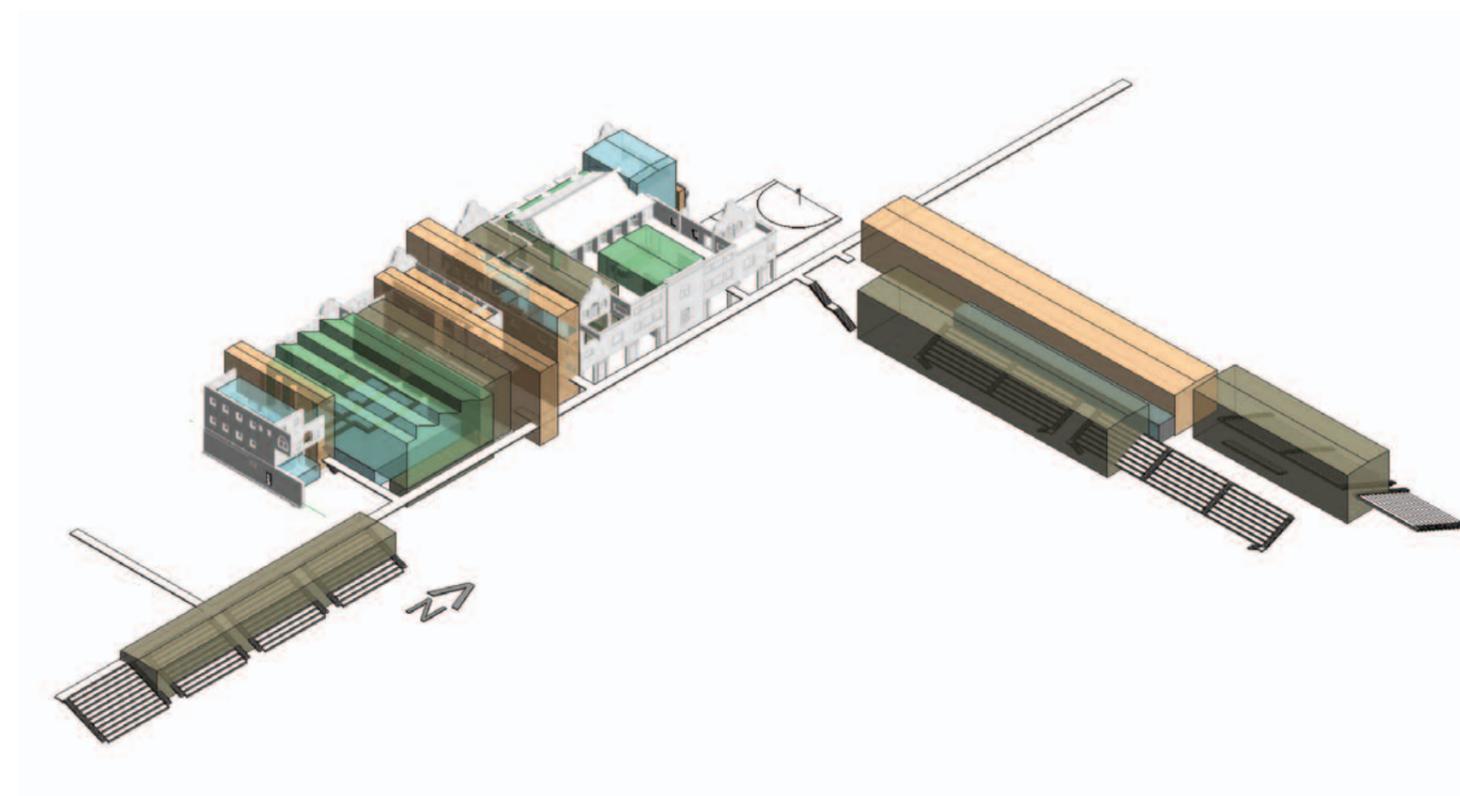


Figure 159: Concept of axonometric of zones inserted into old (Author 2013)

The early phases of the design development are explained. Both models and sketches were used in the design process.

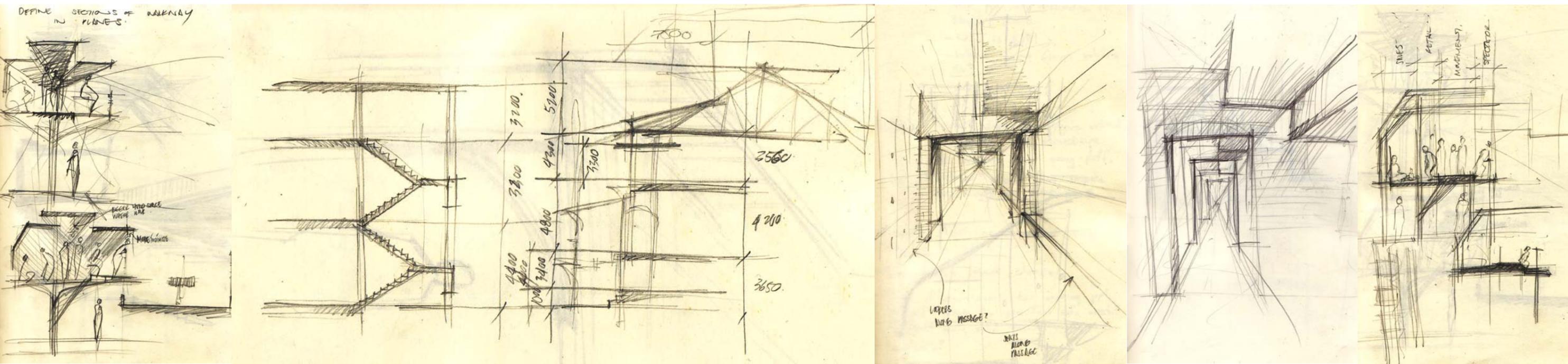


Figure 160: Journal sketches (Author 2013)

The design development process was informed by the theoretical approach discussed in chapter 8 and the concept as discussed in chapter 9.

Design theory (see chapter 8)

Berea Park is in need of regeneration. The theoretical approach discussed in chapter 8 prescribes to undertaking extensive research and analysis of the site's current condition, tangible heritage and intangible heritage before making any design decisions. (Chapters 4 - 6) This research helps to form an understanding of the original building, its current condition as well as the activities and programmes associated with the site. This research also helps to identify the elements from the building that has suffered damage or loss. Based on this, the building can then be stripped back and restored to create the opportunity for new interventions to be implemented.

As part of the theoretical premise, the ability of architecture to foster a sense of belonging in its users will be explored. The theory of belonging also looks at utilising activities and memories linked to the site as design informants.

Concept (see chapter 9)

The concept that will be informing the design proposed to keep the existing fabric that defines the original u-shaped plans of the buildings. New zones, each dedicated to a specific function, will be inserted into the existing building. These zones are: activity zones (green), spectator zones (grey), service zones (blue) and circulation zones (orange).

Design methodology

The design has been developed by means of sketches and models throughout the duration of the year. Sketches include rough sketches (Figure 162), perspectives, sections and plans. Images were also generated by computer, using programmes such as Autodesk Revit 2013, and SketchUp as design tools. Part of the development involved altering the design based on inputs from criticisms, discussions with peers and lecturers.

Site generators

The structures at Berea Park were originally designed as exclusive sports and recreational clubhouses and facilities. A decorative Cape Dutch style with Art Deco elements were implemented. Decorative elements included the entrances framed by profiled masonry pilasters, profiled cornices and richly ornamental and decorative steel ceilings. It was a high end club designed for the workers of the South African Railways that lived in the vicinity. The programmes were based on upper-middle class sports and recreational activities, including a billiard room, bar, dance hall and library.

The context surrounding Berea Park has changed, especially since 1994. The site is no longer affiliated with the South African Railways.

The new programme proposed is inspired by past programmes. At the same time it tries to take the needs of its current surroundings, neighbourhood and community into account.

Various informants will help in the development of the design. The informants will include:

- The existing natural and built fabric remaining on the site
- The natural slope and typography of the site
- The context of Berea Park
- Allowing and facilitating access to the site
- The major programmatic spaces (sports fields and courts)
- The specific requirements of the activity spaces or sport courts.
- Each activity that is implemented, leads to the need for certain service spaces to arise, for example a basketball court will lead to the need for a certain number of spectator and athlete amenities (showers, WCs etc.)



Figure 161: North-eastern view of strips inserted into existing fabric (Author April 2013)

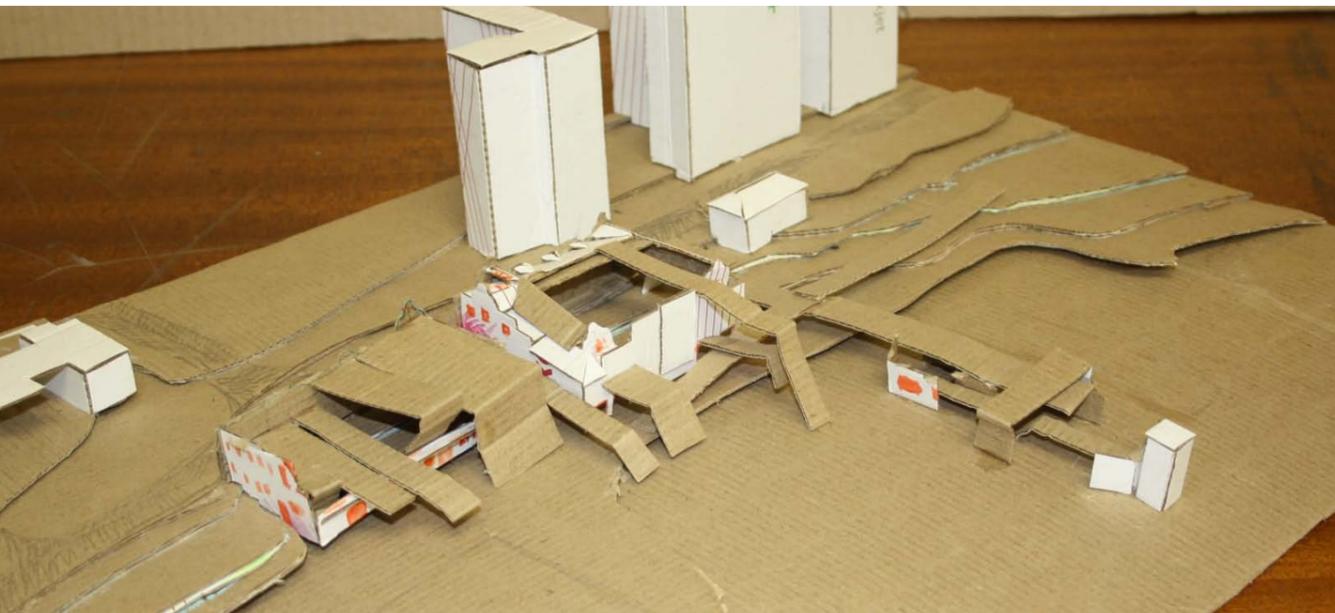


Figure 162: South-eastern view of strips inserted into existing fabric (Author April 2013)



Figure 163: Site analysis: linking across site (Author April 2013)

Phase 1: April

The design was developed from the idea to insert strips that stretch across the site into the existing fabric. (see chapter 9, concept phase 1) (Figure 163) The new strips are either placed inside the building shell, or extend beyond, pulling activity towards the centre of the site or the sports fields. (Figure 162, Figure 162) There are route strips that link the buildings and entrances at street- or ground floor level. These routes were identified as important linking elements. Walkways act as links between buildings on the site. This also creates interaction with the sports fields and entrances.

Phase 2: April

Taking into account the importance of the routes (see chapter 9: concept phases 2 and 3), route 'zones' and viewing points were mapped. (Figure 164) Three types of route zones were identified, namely: zones focused on circulation (movement), zones dedicated to access, for example stairs and ramps (access), and zones that serve as vantage points (spectator). The route interacts with the existing fabric (Figure 165) as well as with the surrounding sports fields and facilities. The routes step between field and street level. The routes focus in areas around existing fabric, providing access to the existing built up zones.



Figure 164: Aerial view of route model: types of routes and important views from them (Author April 2013)

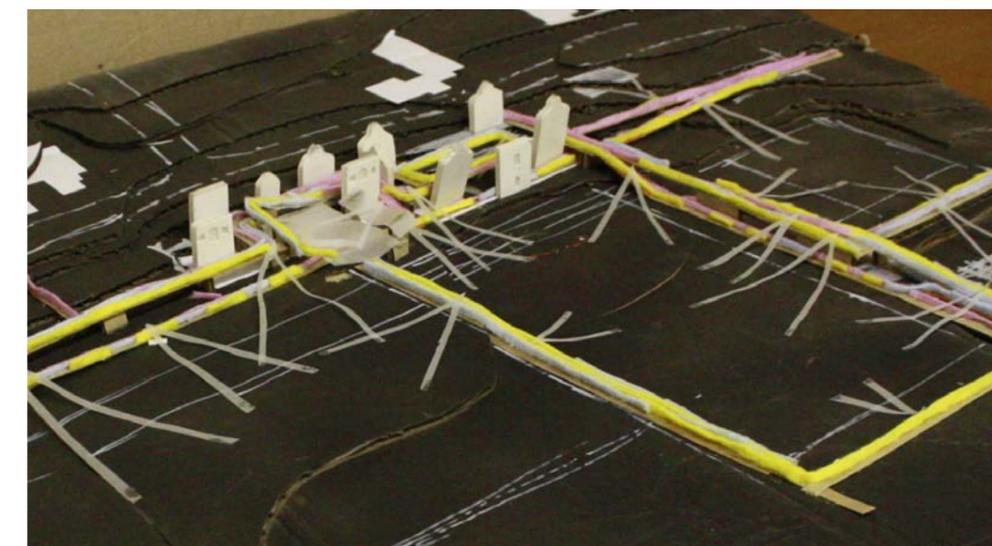


Figure 165: South-eastern view of route model: types of routes and important views from them (Author April 2013)

Phase 3: May

A warm up, open air court is inserted into the northern building, while a formal sports court is created in the southern building. (Figure 166, Figure 168) The majority of services and dressing rooms are located on the field level. Parallel routes run on street and field level along the eastern edge of the structures. (Figure 168, Figure 166) The street level route serves as an access route for spectators and secondary users of the facility. This route meanders through the old structure, along sport related areas. (Figure 166) On street level a wider access route for athletes connects entrances, buildings and fields. (Figure 166) The route framing the fields was explored in Design model 1 (Figure 169, Figure 167, Figure 168). The detailing of the routes were based on detailing of the existing structures. (Figure 170, Figure 172) Different roof covers, especially over the bowling hall was explored during this stage of design. The concern was to stay with the concept, while defining the space as a unity. (Figure 167, Figure 171)

Figure 166: Design development of street level plan (Author May 2013)

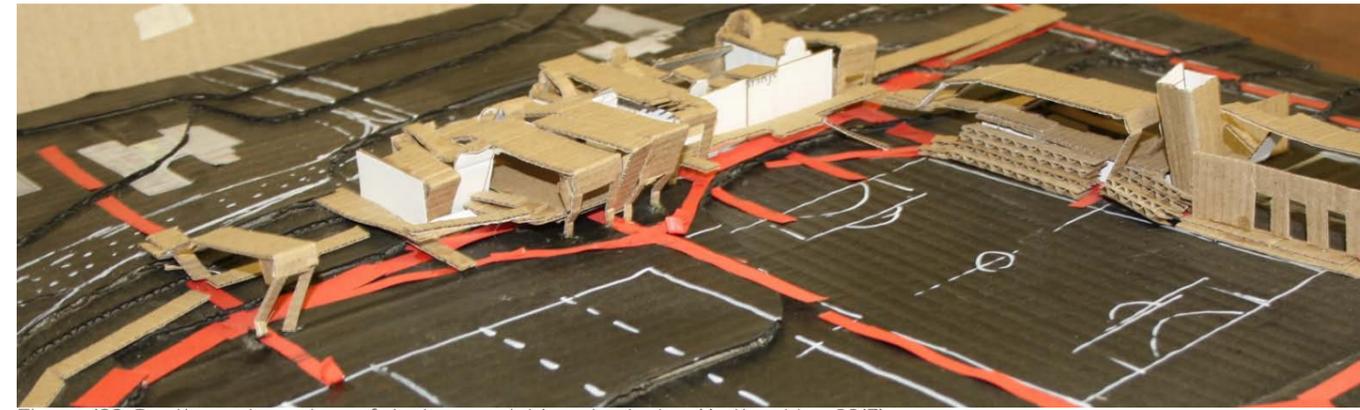


Figure 169: South-eastern view of design model 1 route design (Author May 2013)

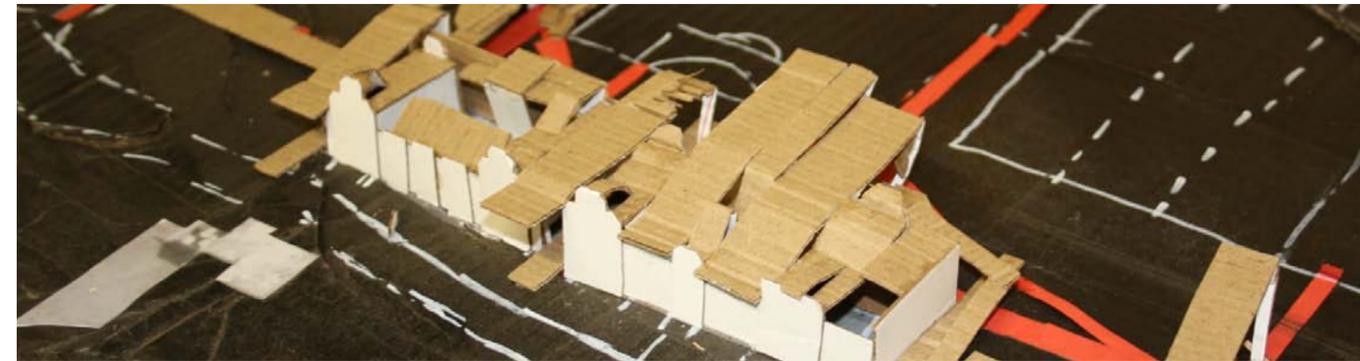


Figure 167: South-western view of design model 1 route design (Author May 2013)

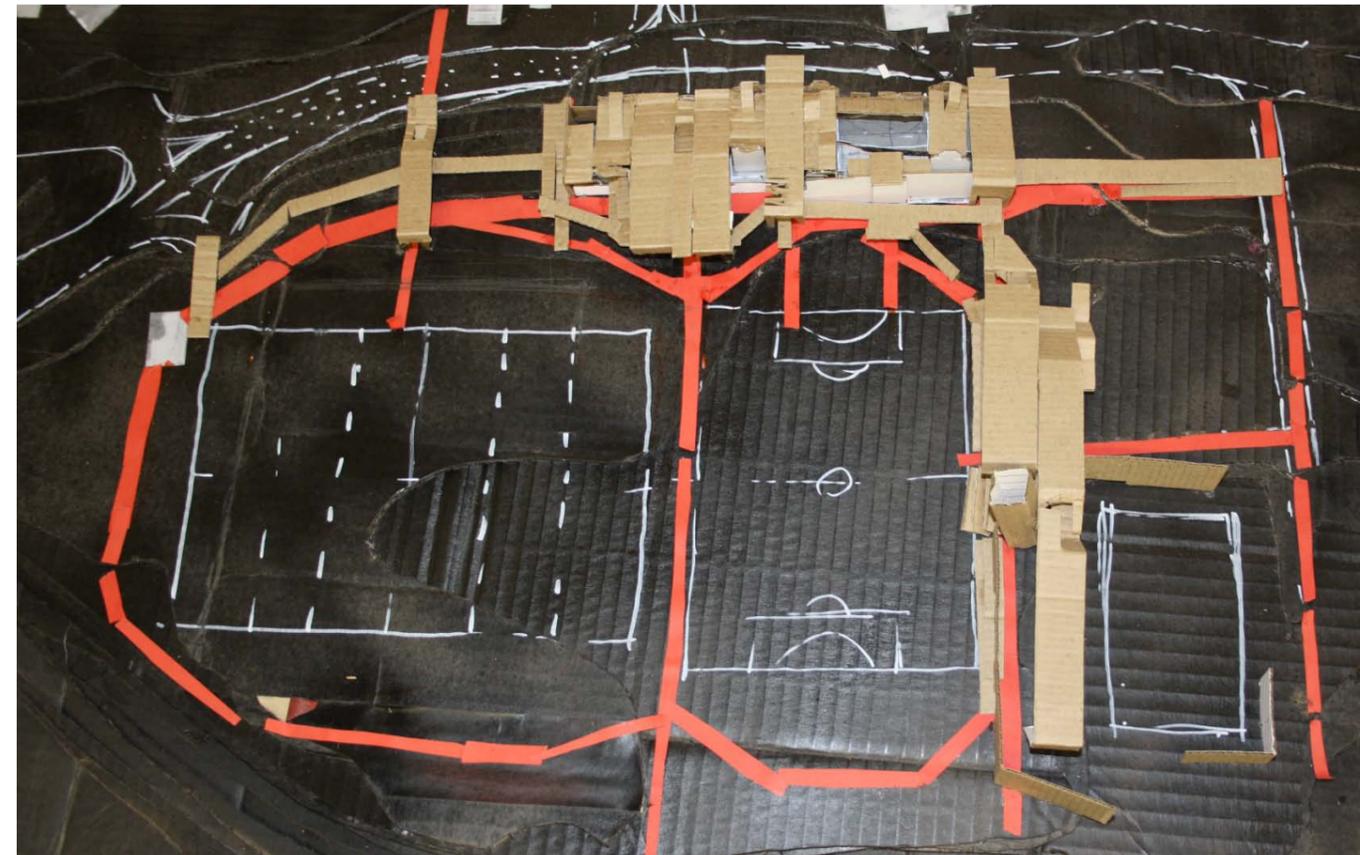


Figure 168: Aerial view of design model 1 route design (Author May 2013)

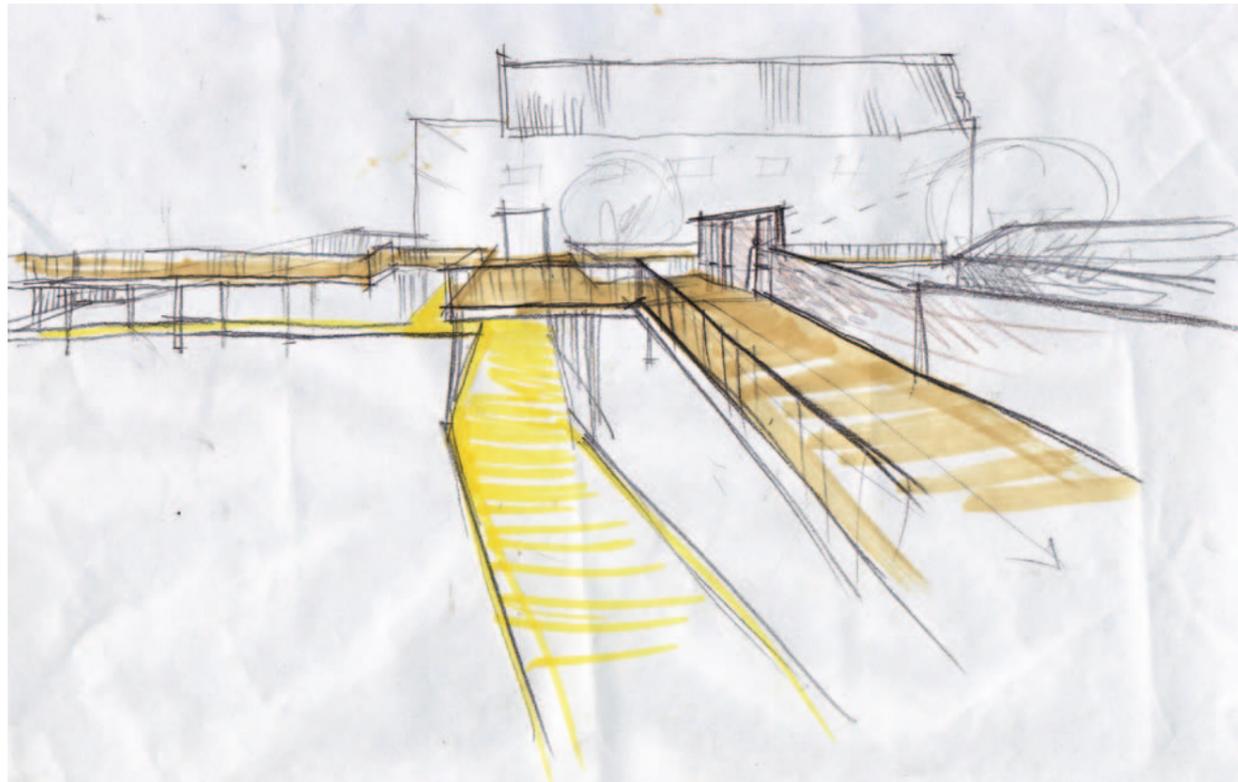


Figure 170: Design development: perspective of route at street level (Author May 2013)

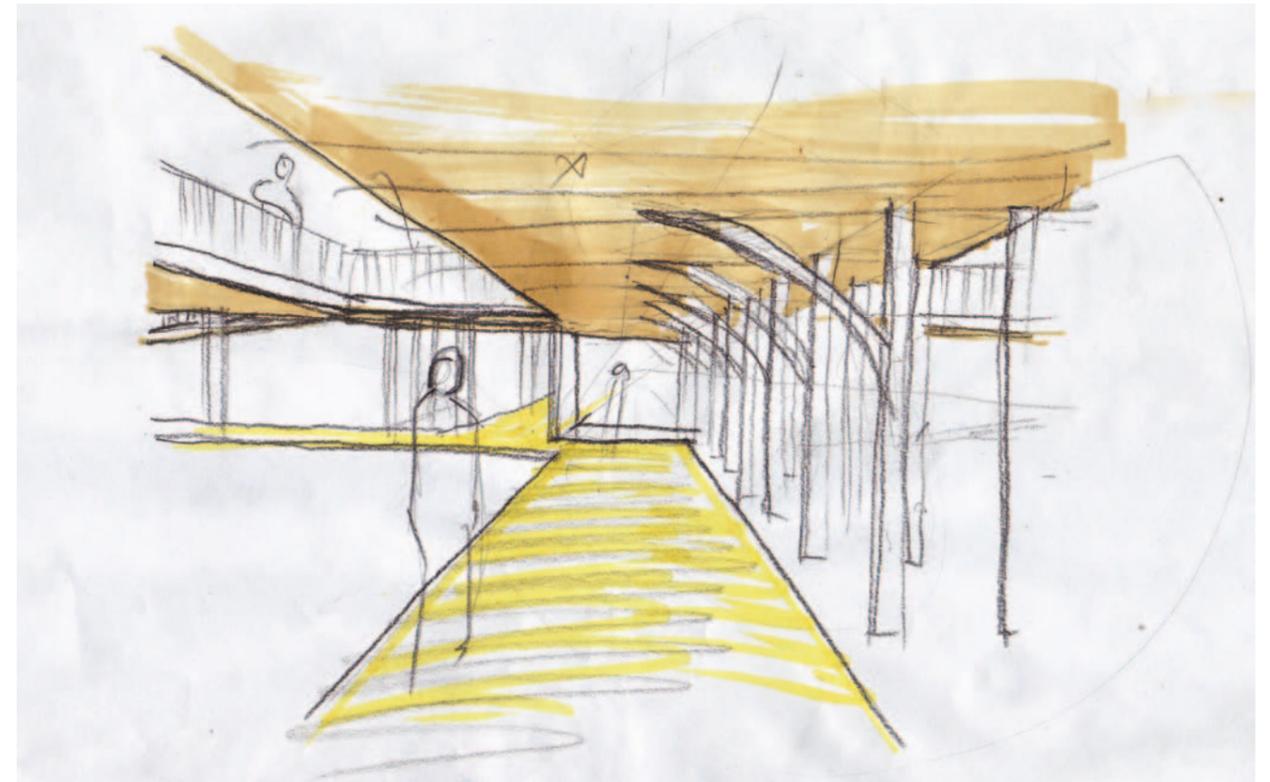


Figure 172: Design development: perspective of route at street level (Author May 2013)

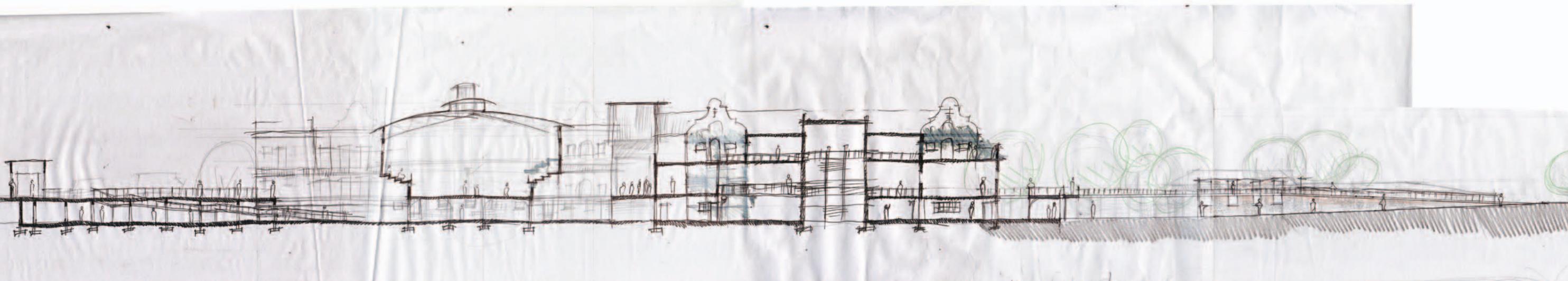


Figure 171: Design development: section (Author May 2013)

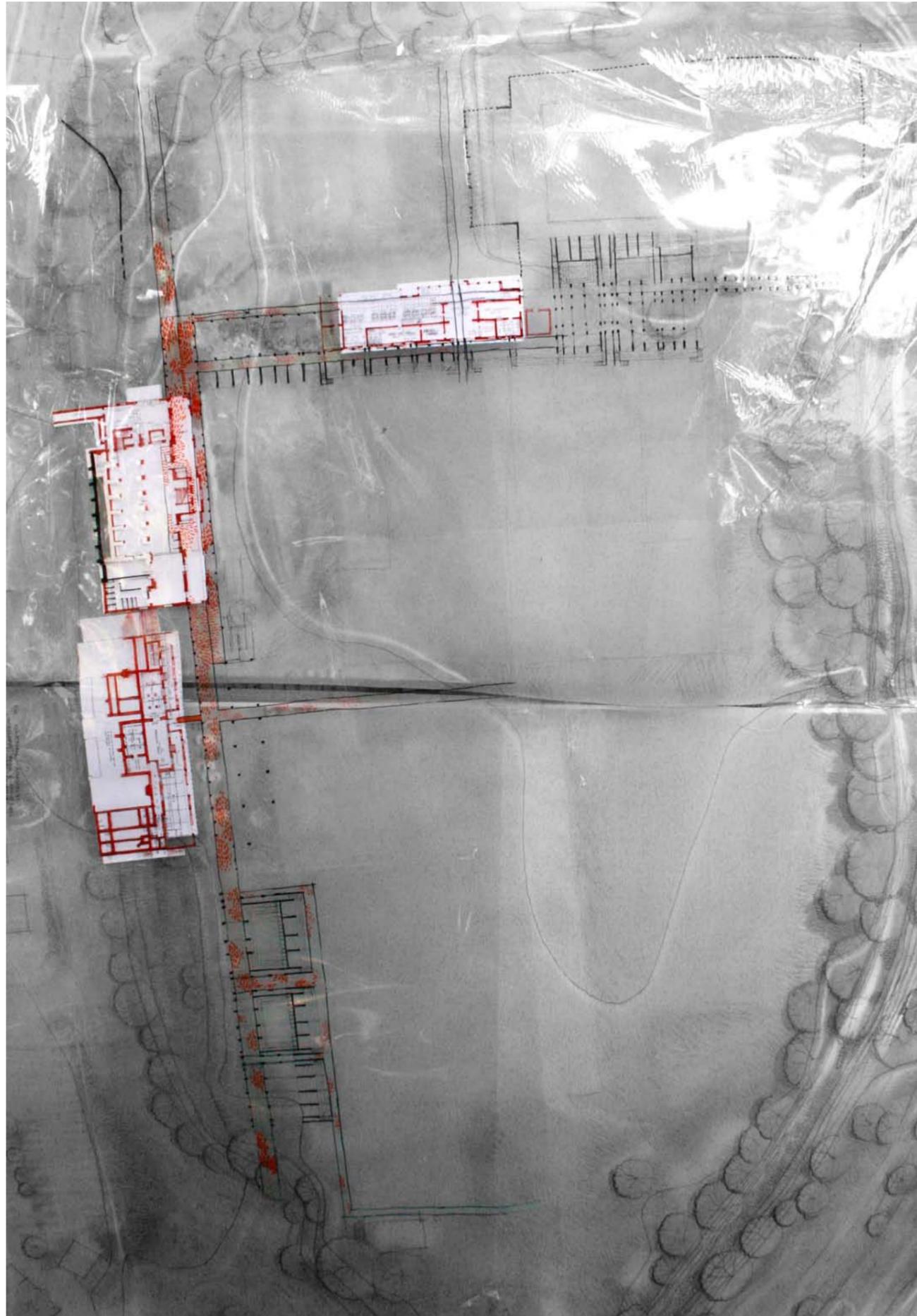


Figure 173: Design development: field level plan (Author June 2013)

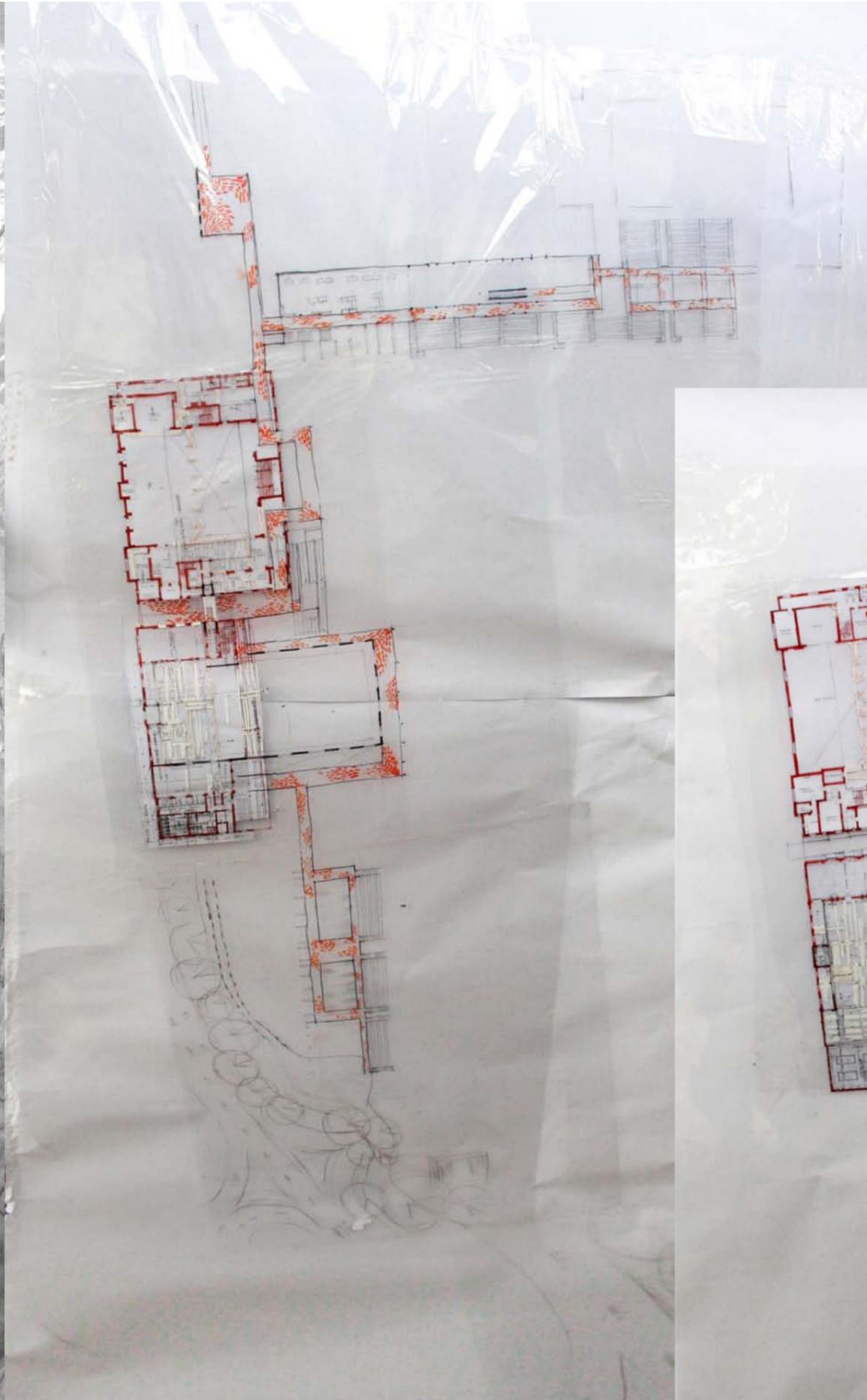


Figure 174: Design development: street level plan (Author June 2013)

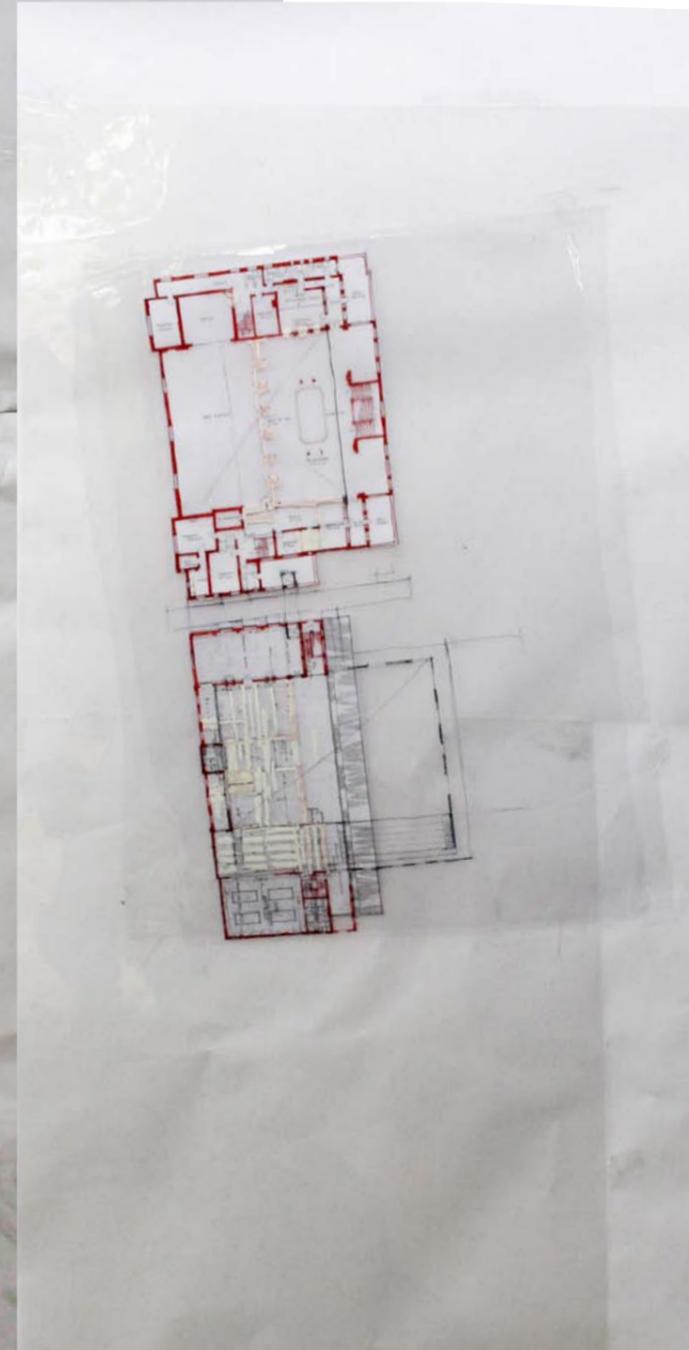


Figure 175: Design development: first level plan (Author June 2013)

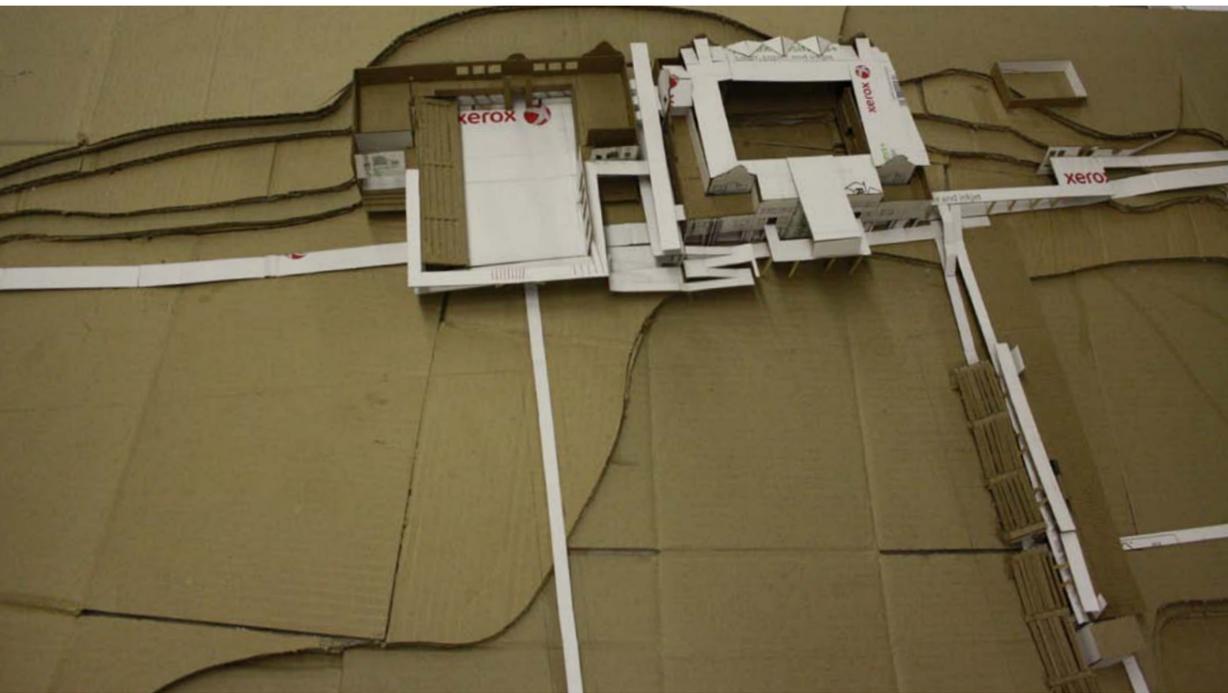


Figure 176: Aerial view of design model 2: design development (Author June 2013)



Figure 177: South-eastern view of design model 2: design development (Author June 2013)

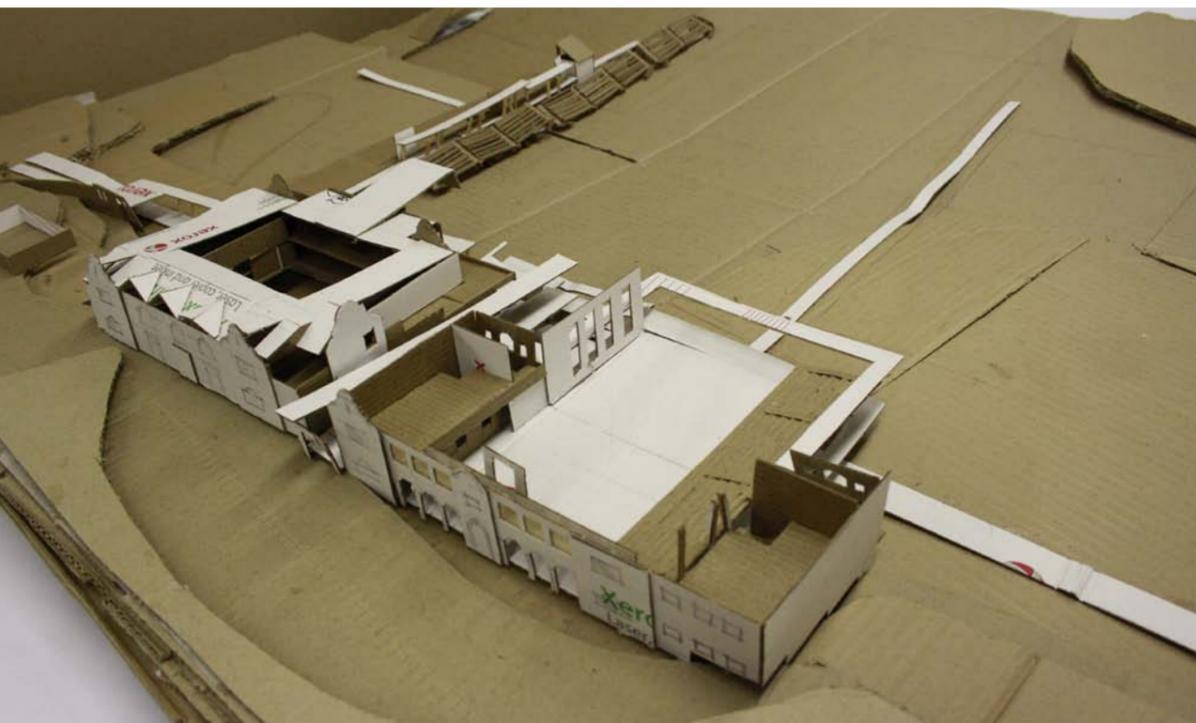


Figure 178: South-western view of design model 2: design development (Author June 2013)

Phase 4: June

A more in-depth exploration of the potential of the existing structure was done. (see chapter 4: p. 55, 61) Where possible existing structures were retained. (Figure 173, Figure 174, Figure 175) Mainly missing or damaged walls were removed in the design, with the exception of the northern building where the central, eastern area was gutted to fit the warm-up court.

The routes were simplified. On the field level, the route became a wider, straight walkway. (Figure 173) On street level, the route steps in and out of the northern building, creating a passage on the eastern edge, while it steps along the edge of the southern structure. (Figure 174, Figure 176, Figure 177, Figure 169) A major entrance is created between the two buildings, with a ramp on the east that acts as a focus point. (Figure 176)

Technical aspects started serving as design indicators. (see chapter 11: p. 184) These indicators include lighting for roof designs, natural slopes for routes and requirements, such as ambulance to reach injured athletes.

Criticism on this stage of the design included the over scaled, mono-pitch roof over the basketball hall. The extensive interventions in the more intact northern hall were also questioned, especially the intervention to the hall along the central western edge. The route, especially on street level, was criticized for its complexity, and lack of simple legibility. (Figure 177)

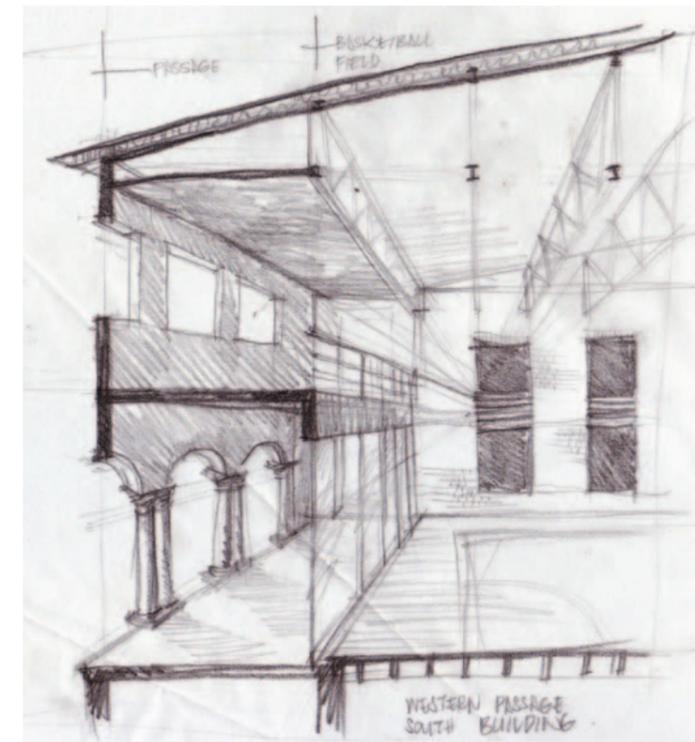


Figure 179: Sectional perspective of western passage: design development (Author May 2013)

Phase 5: July

After the critique received in June it became clear that more attention had to be paid to interpreting and implementing the concept. The final concept as discussed in chapter 9 (see chapter 9: p. 134) entails inserting clearly programmed zones into the existing buildings of Berea Park. The design was still too cluttered and unfocused and approach to dealing with heritage had to be clarified.

To contrast the complexity of the interior layout of the structures, simply pro-

grammed zones would dictate the layout and programming of the new interventions. (Figure 180) These zones run east-west, contrasting the north-south orientation of the existing structures. These zones were inserted into the existing structures, they either fit inside the building's shell or protrude from it. (Figure 180) These zones dictate the programme layout. (Figure 181) The zones' edges are stepped, both on plan and in section according to each zone's spatial and programmatic requirements. (Figure 180, Figure 183)



Figure 180: Diagram of zones in plan (Author July 2013)

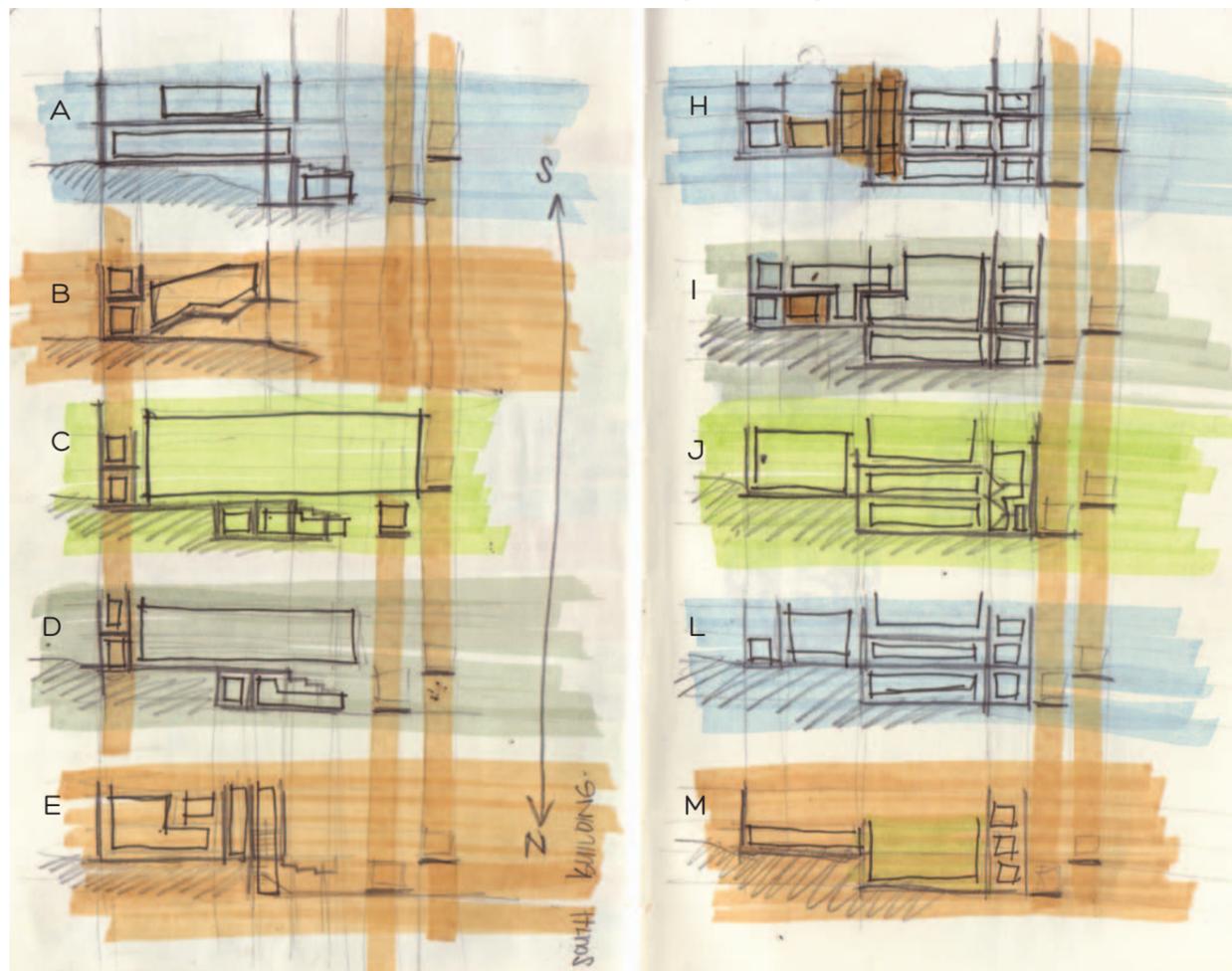


Figure 181: Diagram of zones in east-west sections (Author July 2013)



Figure 183: Diagram of zones in north-south sections (Author July 2013)

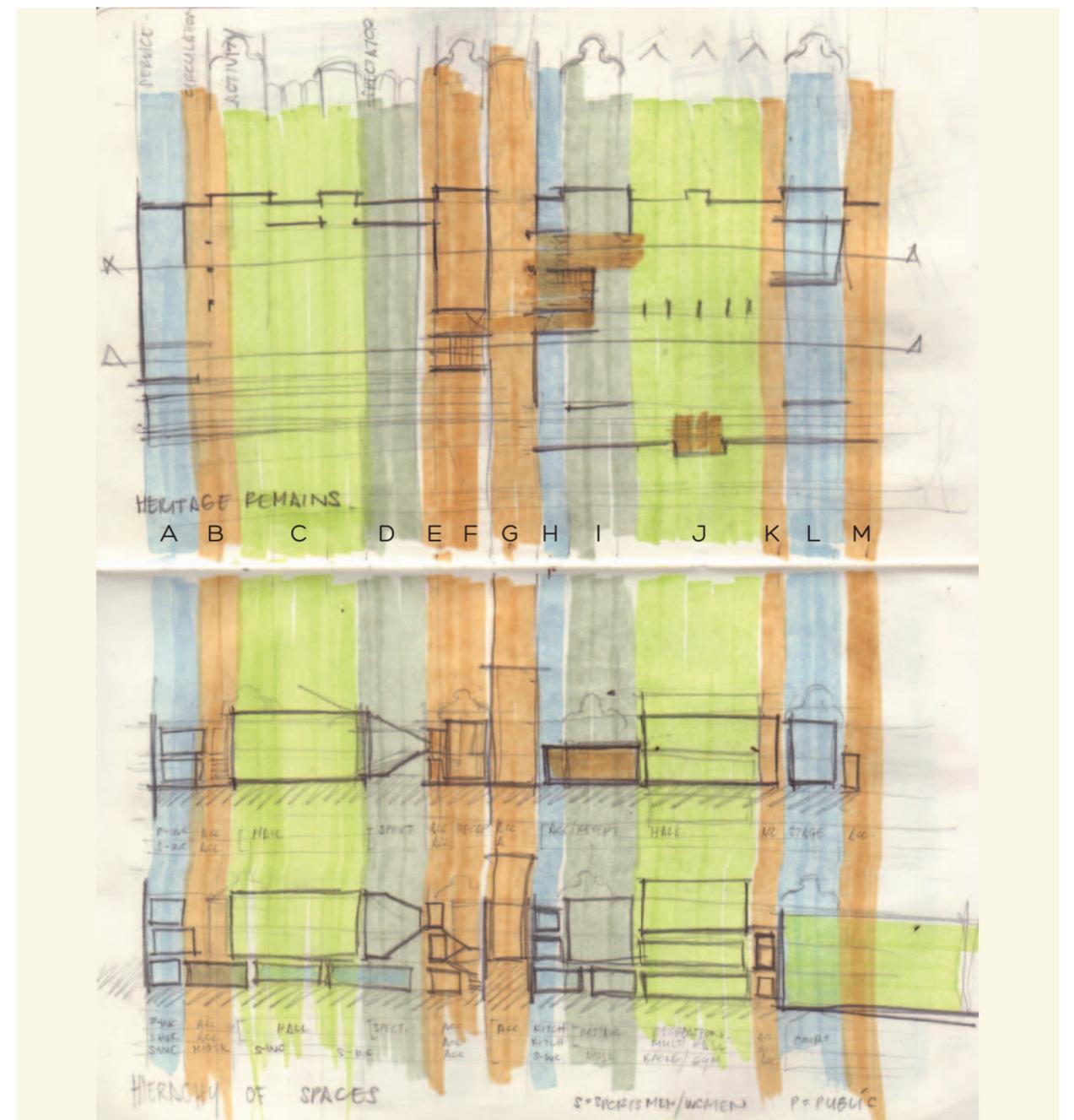


Figure 182: Diagram of zones on plan and north-south sections (Author July 2013)



Figure 184: Diagram of zones (Author August 2013)

In dealing with the heritage, the aim was to retain the essence of some of the spaces. These include the hall located in the northern clubhouse, the main staircase on the eastern edge of the northern clubhouse and the passage along the western edge of the southern clubhouse. (Figure 184)

The retained heritage fabric captures the

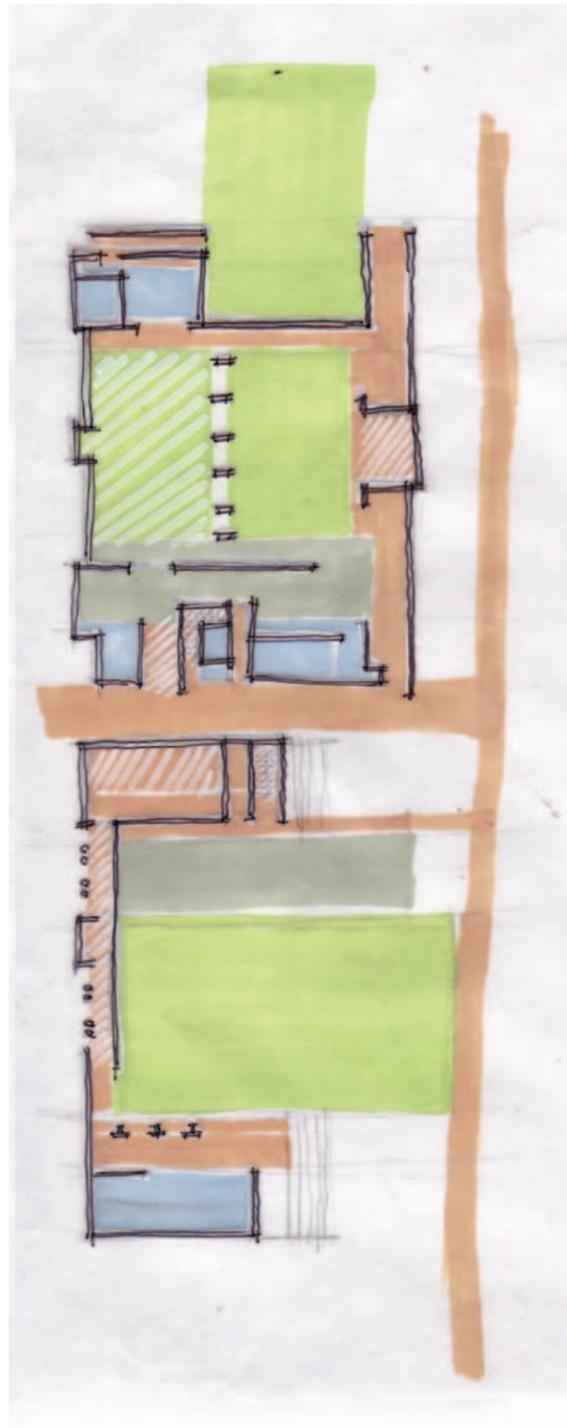


Figure 185: Diagram of zones and old fabric (Author August 2013)

essence of the typical Cape Dutch original u-shaped plan of the two clubhouses. Each wing of the plan ends with gables. (Figure 184)

The interventions are lightweight steel portal frame boxes clad in steel standing seam sheets. The cladding wraps along the roof and ceiling as well as the internal and external walls, varied by glazing pan-

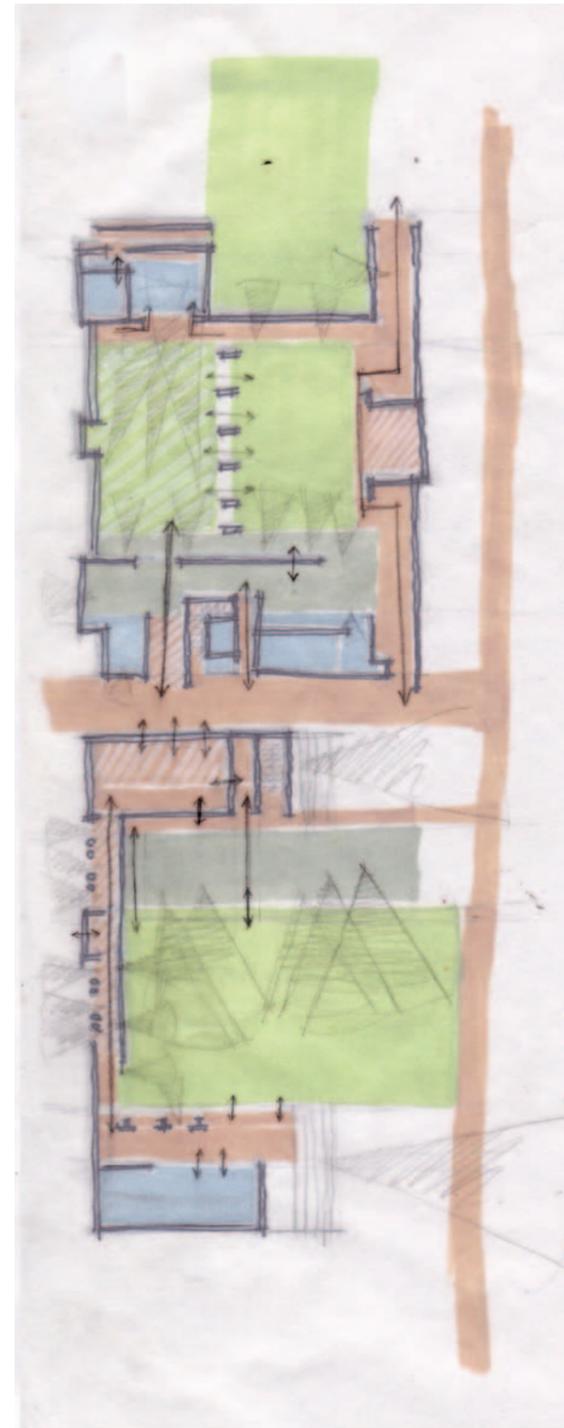


Figure 186: Diagram of linkages between zones and important views (Author August 2013)

els. Steel construction allows for minimal interior structures to separate adjacent zones. This in turn allows for undeterred visual links. (Figure 186)

Adjacent zones are placed small distances apart. Separation is achieved with physical gaps, represented in both the floor and ceiling treatment. (Figure 187)

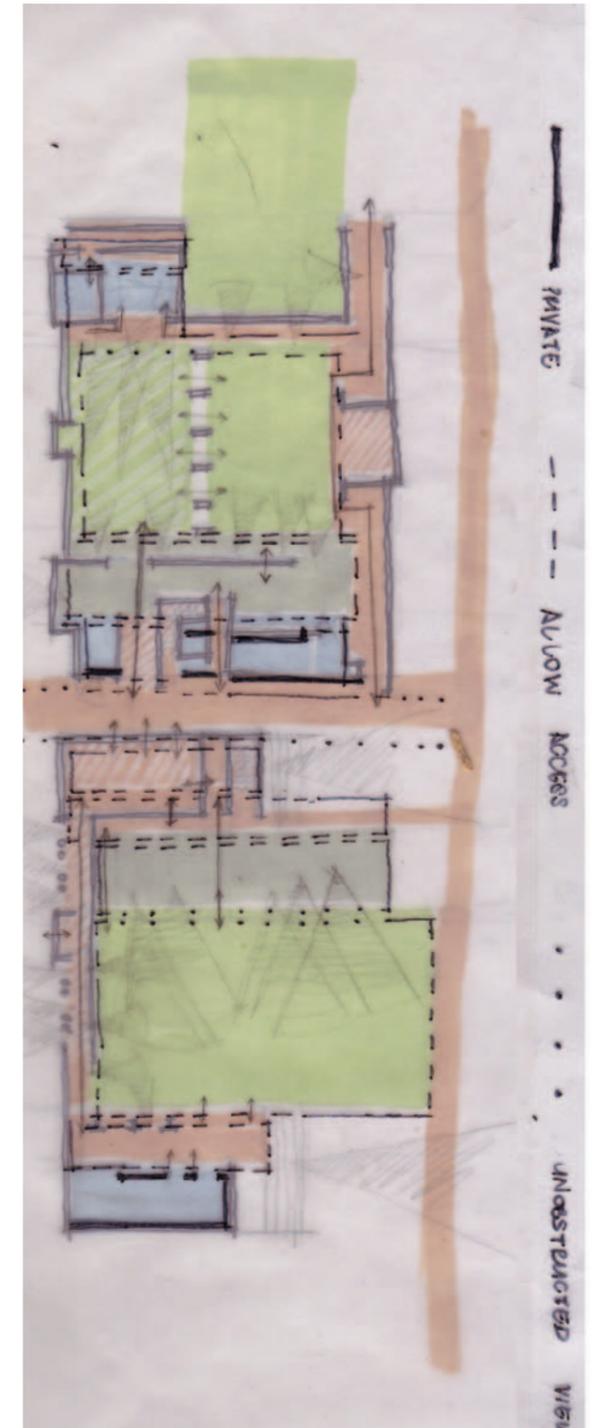


Figure 187: Diagram of zone edge design (Author August 2013)

Phase 6: August

The sizing and spatial qualities of each of the zones were further developed, as well as the materiality thereof. (see chapter 11: p. 168) (Figure 188, Figure 189, Figure 190)

Certain spatial qualities and attributes were appointed to certain zones. (see chapter 11: p. 171) (Figure 193)

- The activity zones have floor and roof designs and finishes according to the specific activity's requirements. (Figure 190, Figure 191)
- The service zones, located in close proximity to the activity zones, are allocated to amenities such as dressing rooms and WCs, as well as kitchens. These zones are built from solid stereotomic materials, for easy installation of plumbing fixtures without additional structures. (Figure 189, Figure 190, Figure 192) Material and structures that are easy to waterproof and to clean are used in these amenities.
- The third type of zones is spectator orientated zones, with spectator seating, retail and restaurant spaces. (Figure 188, Figure 189, Figure 192)
- The fourth and last type of zone is allocated to circulation. It serves to link the numerous zones, as well as the exterior walkways. These zones also contain the reception and entrance areas. These zones have high ceilings to allow space for skylight, for penetration of natural lighting. (Figure 188 - Figure 193)

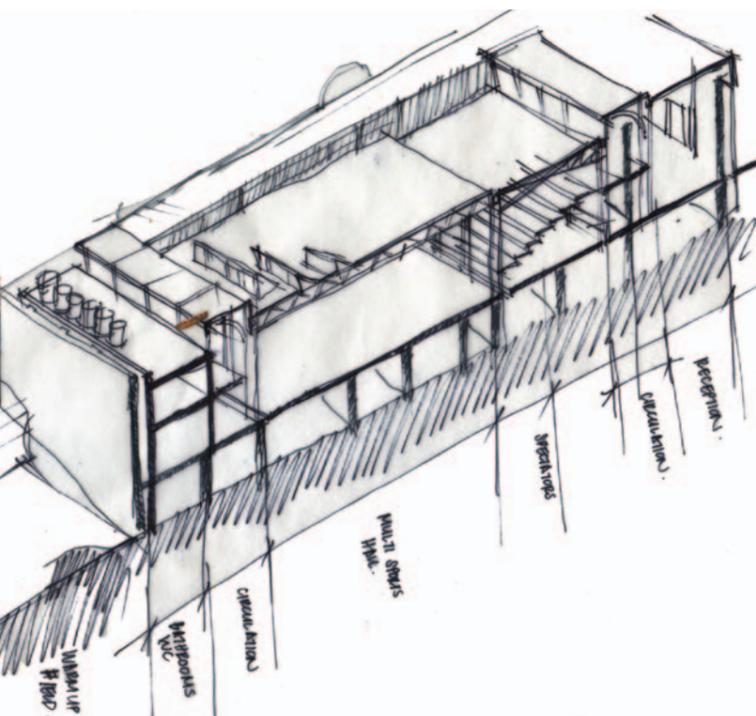


Figure 188: 3D section of southern building: design development (Author August 2013)

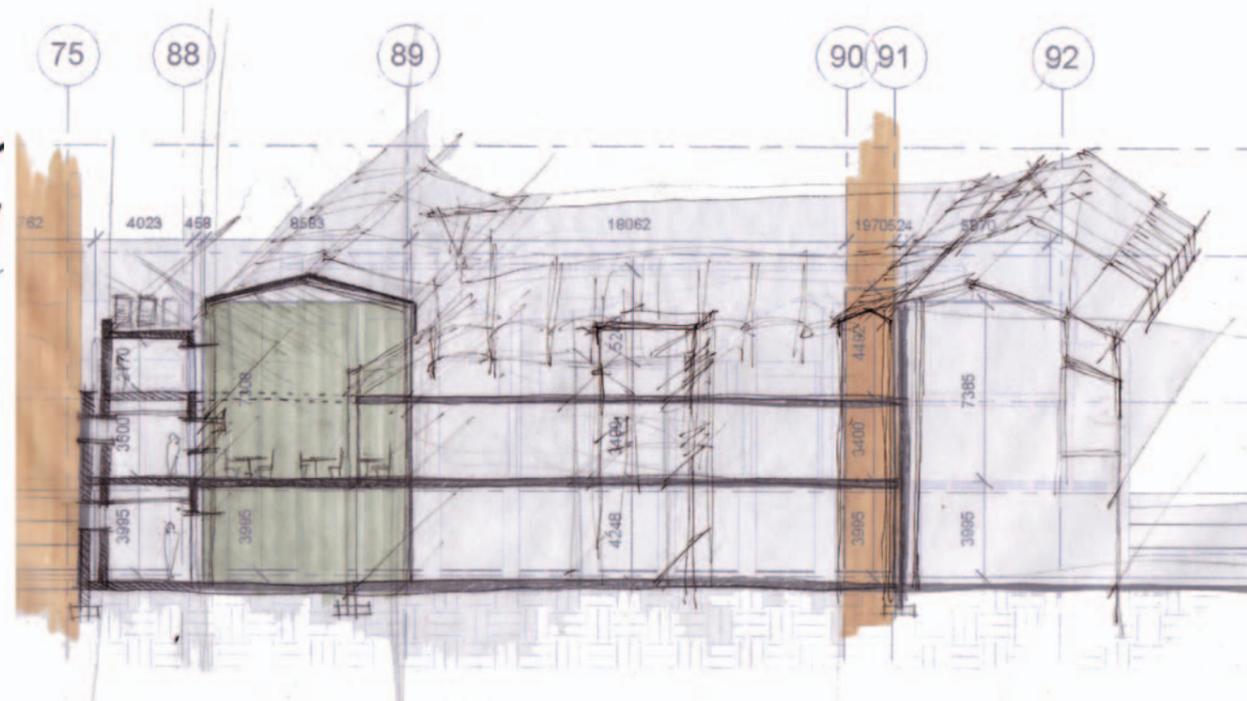


Figure 189: Section of southern clubhouse: design development (Author August 2013)

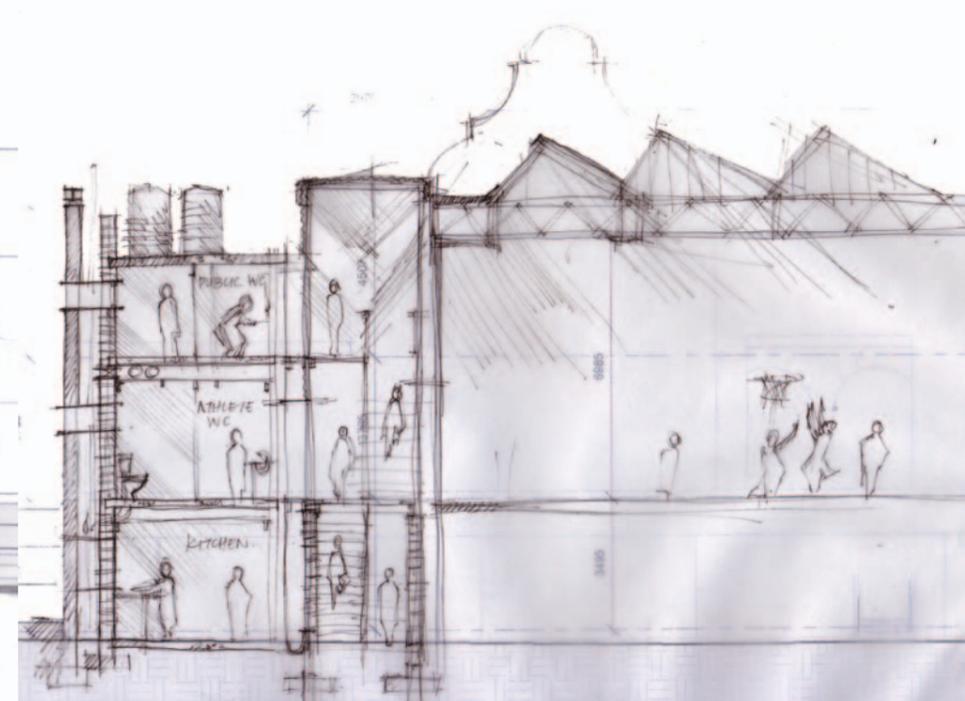


Figure 190: 3D section of the northern clubhouse: design development (Author August 2013)

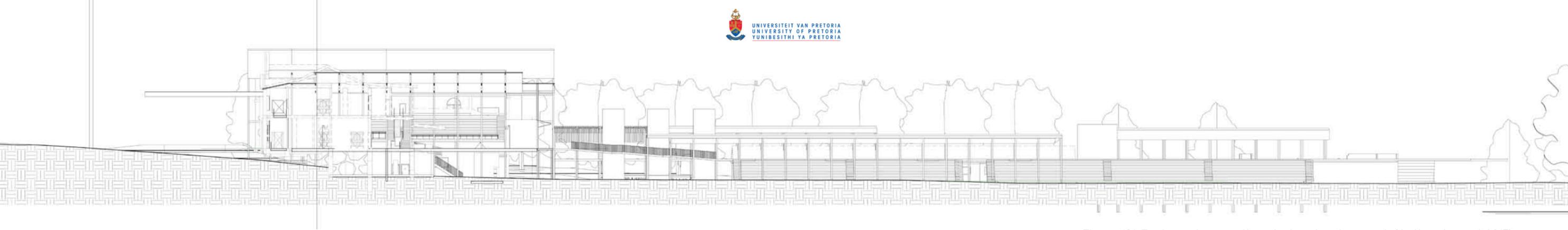


Figure 191: East-western section: design development (Author August 2013)

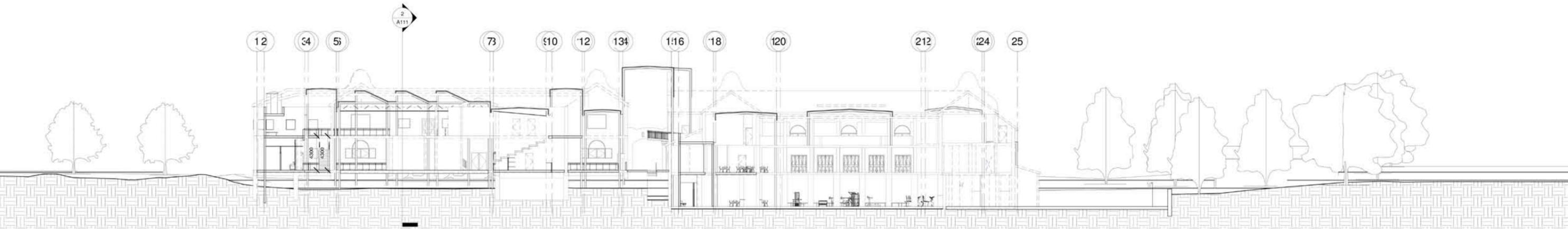


Figure 192: North-southern section: design development (Author August 2013)

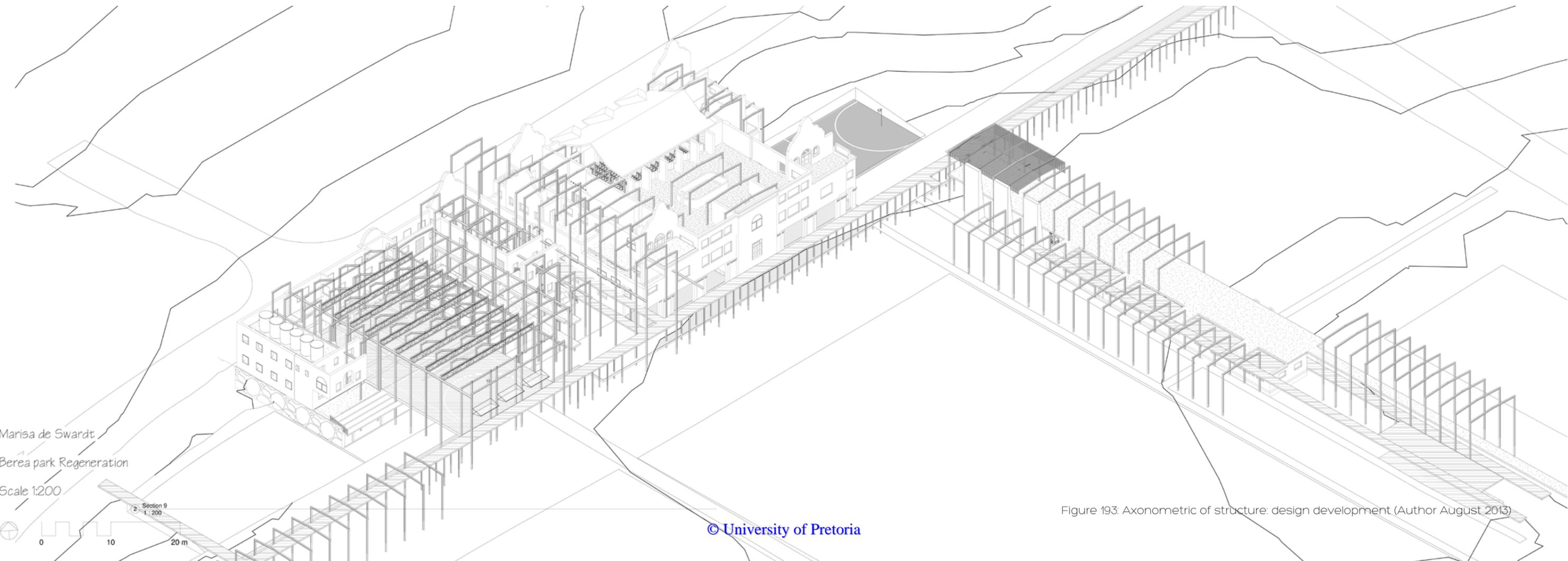


Figure 193: Axonometric of structure: design development (Author August 2013)

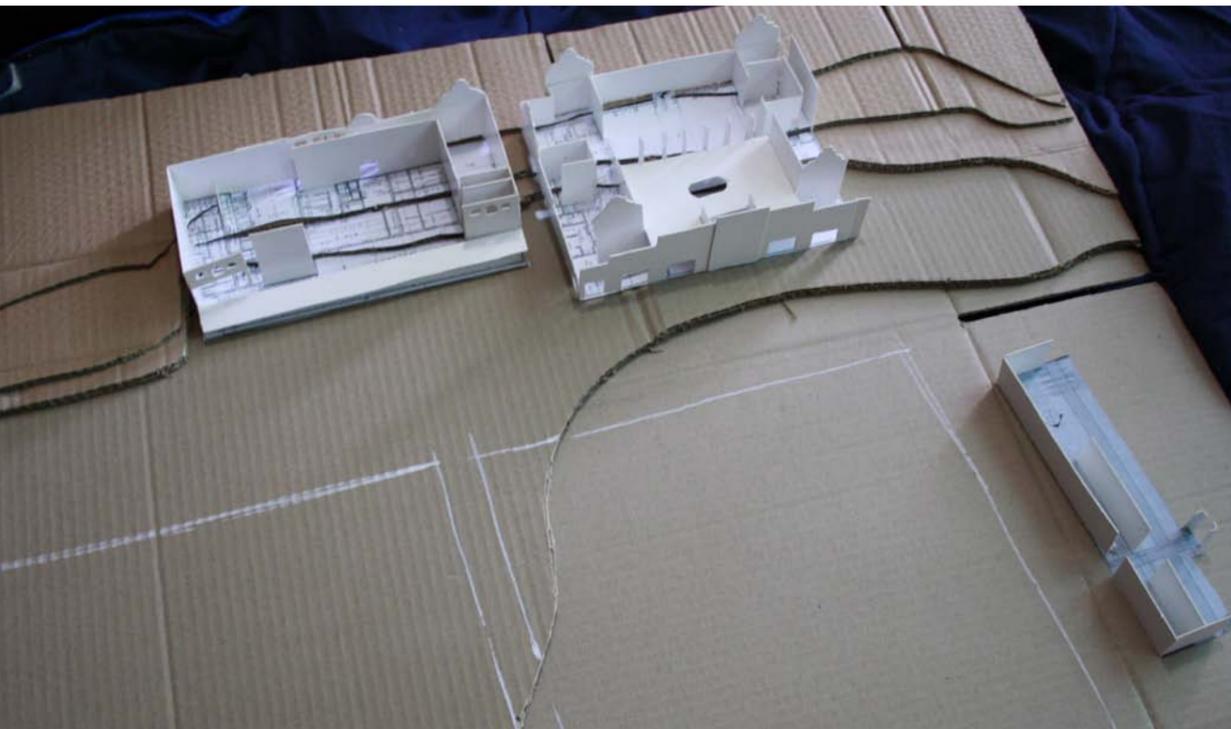


Figure 194: Aerial view of design model 3 (stripped) (Author August 2013)



Figure 195: South-eastern view of design model 3 (stripped) (Author August 2013)



Figure 196: North-western view of design model 3 (stripped) (Author August 2013)

Part 6: August [continued]

The existing structure is cleaned up, retaining as much as possible of the identified important heritage spaces as discussed in phase 5. Damaged elements, including walls and roofs are removed, as well as unnecessary interior walls and fabric. (Figure 194, Figure 195, Figure 196) The new zones are then inserted into the existing structure, acting as supports for the remaining existing fabric. (Figure 199, Figure 198, Figure 197) The new interventions house the new programmes, while plugging into existing building elements, such as the hall space, staircases, etc.

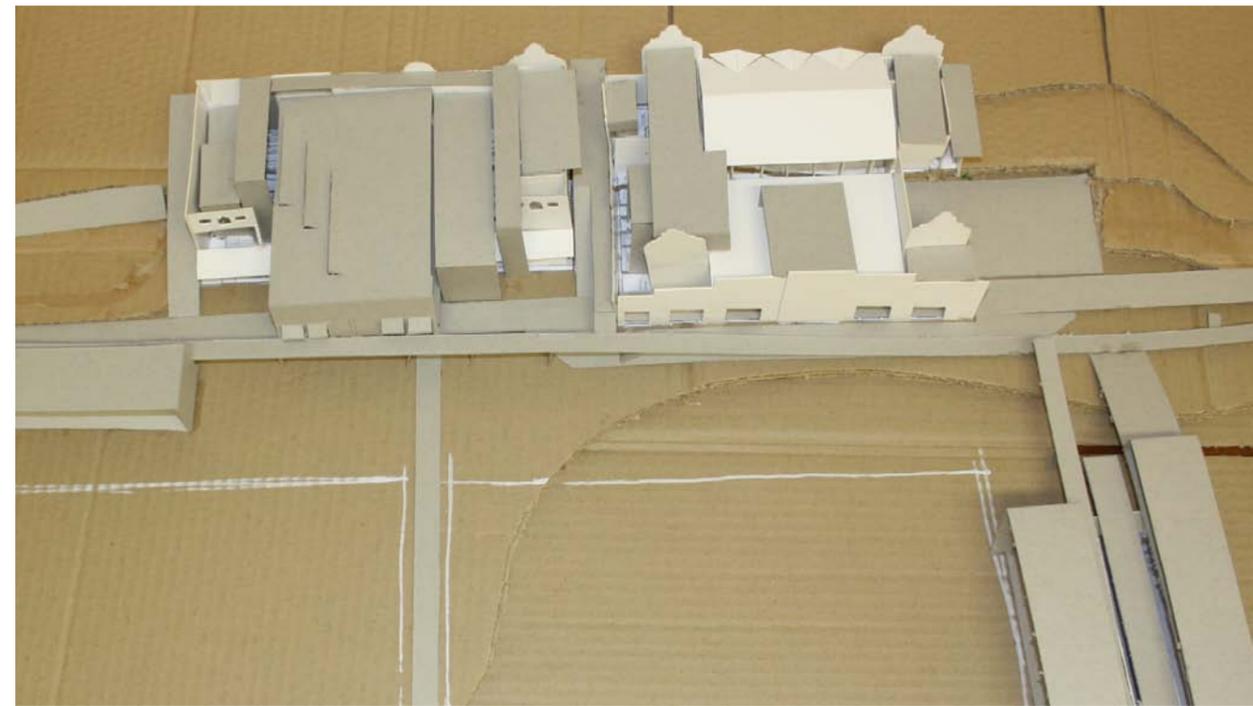


Figure 199: Aerial view of design model 3 (with new intervention) (Author August 2013)



Figure 198: South-eastern view of design model 3 (with new intervention) (Author August 2013)



Figure 197: South-western view of design model 3 (with new intervention) (Author August 2013)

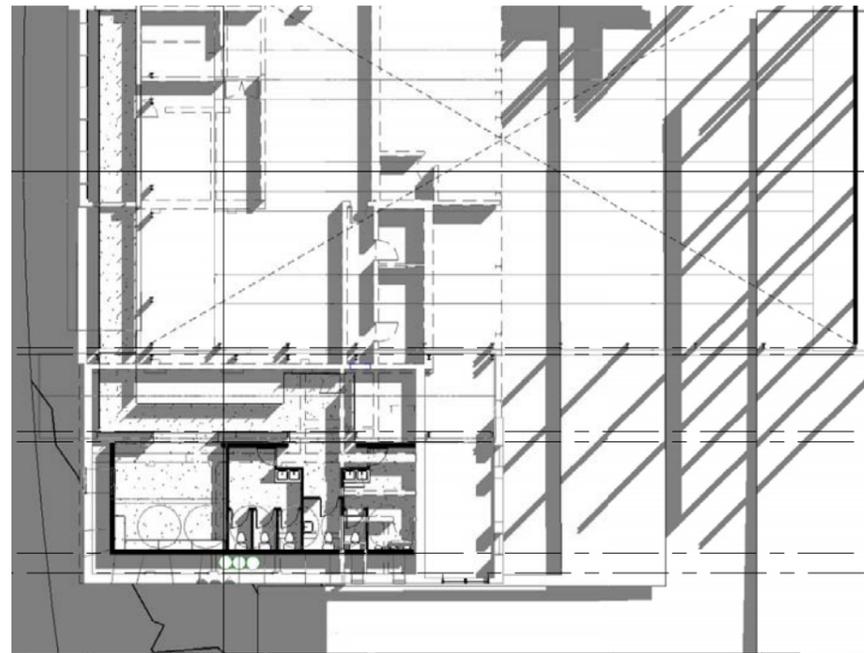


Figure 200: Part of street level plan with too many shadows (Author June 2013)

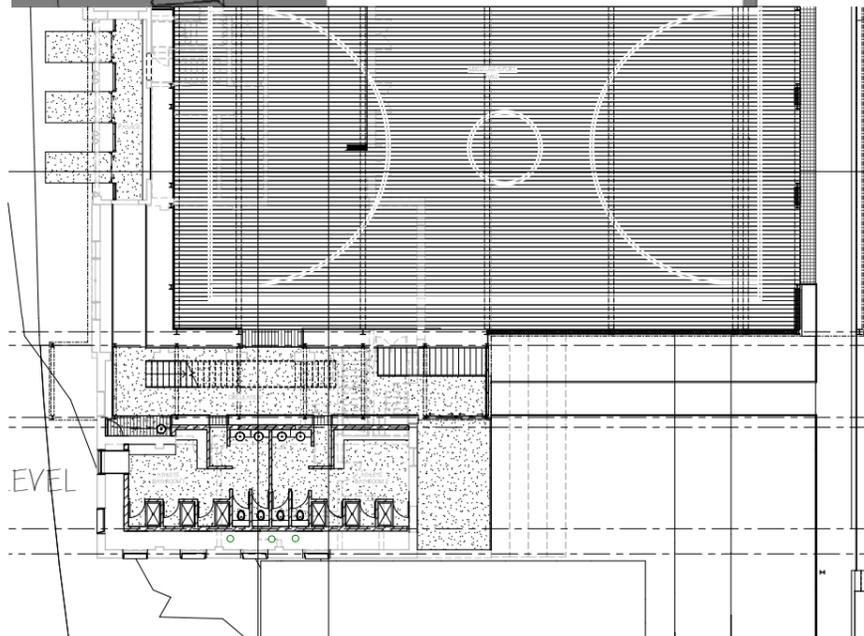


Figure 201: Part of street level plan where the existing is illegible (Author August 2013)

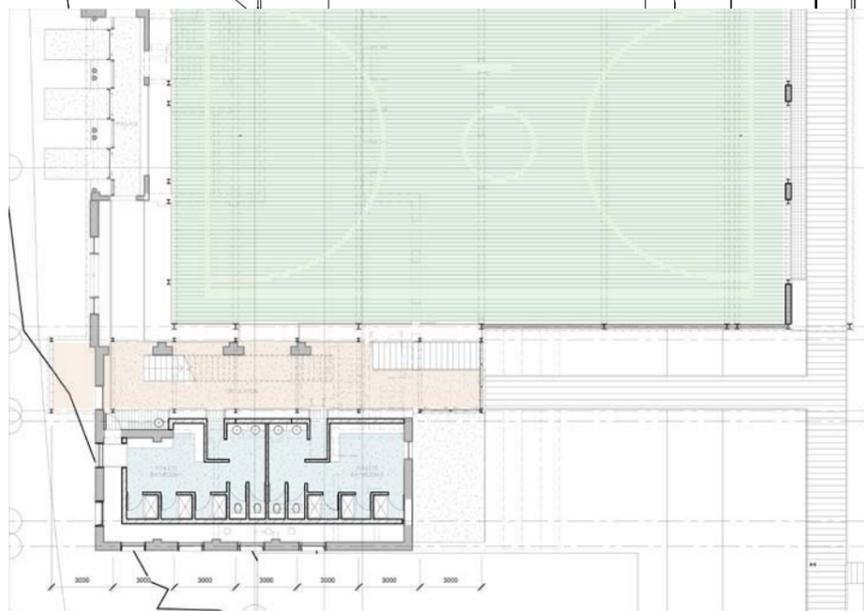


Figure 202: Part of street level plan with coloured zones (Author September 2013)

Presenting design as part of development

Part of the development included the exploration of the representation of the design, to ensure that the drawings are legible and clear. (Figure 200, Figure 201, Figure 202) This becomes especially important on account of the many layers of drawings, for example the existing structures, demolished structures, new interventions and overhead structures. All of it must be clearly legible and discernible.

The final design, that resulted from the development in this chapter and the technical development chapter (chapter 11) is presented in part 4 (see chapters 12 and 13)

Technical drawings and investigations of the design are presented.

Structural system

A) Existing structure

The current dilapidated state of the existing buildings makes it unsafe to excessively rely on the existing walls and floors for structural support. (Figure 204, Figure 205, Figure 206) Current walls will lose further structural stability once damaged walls and floors, currently bracing the damaged structure are removed. (Figure 203: existing fabric, Figure 207)

The gaps

The existing structure and the new interventions are physically separated by gaps. The spaces between two adjoining portal frames or steel boxes, are also articulated as gaps. On the base plane, charred timber board is used in areas where access is required between two zones or between old and new. In other cases, physical gaps are left between floor finishes where possible. The overhead plane becomes a gutter for the two adjoining zones/steel boxes. In some cases light is used to further accentuate the separation between old and new.

B & C) Primary structure

The primary structure will consist of steel portal frames. The spaces that require larger spans, for example the activity spaces and spectator spaces, consist of portal frames made from 254 x 254 x 89 hot-rolled steel parallel flange H-profile beams. The narrower spaces, for example the circulation spaces are framed by 152 x 152 x 30 hot-rolled steel parallel flange H-profile beams. A saw tooth truss spans across the sport hall inserted into the southern building. The construction of the service spaces is done in 220 bag plastered masonry walls and concrete slab floors. Similar structures are used to frame the pavilions and walkways running across the site. (Figure 203: primary structural support, Figure 208, Figure 204, Figure 205, Figure 206)

D) Secondary structure

The secondary structure consists of purlins, for roof cladding and girts for wall cladding. Where the portal frames are spaced at 6m centres, the secondary structure comprises of 150 x 65 x 20 x 2.0 cold formed steel lipped channel purlins and girts. In cases where the portal

frames are spaced at 3m centres, the secondary structures are made up of 75 x 50 x 20 x 2.0 cold formed steel lipped channel purlins and girts. I-beams and channels support metal decks installed for composite deck floor structures. (Figure 203: secondary support)

E) Skins

The structures are clad in "Brownbuilt" standing seam profiled steel sheets. The standing seam cladding is used to cover the roofs, ceilings and walls, creating homogeneous steel boxes. Glazing is used for certain wall panels, focused around circulation spaces. (Figure 203: skins, Figure 208)

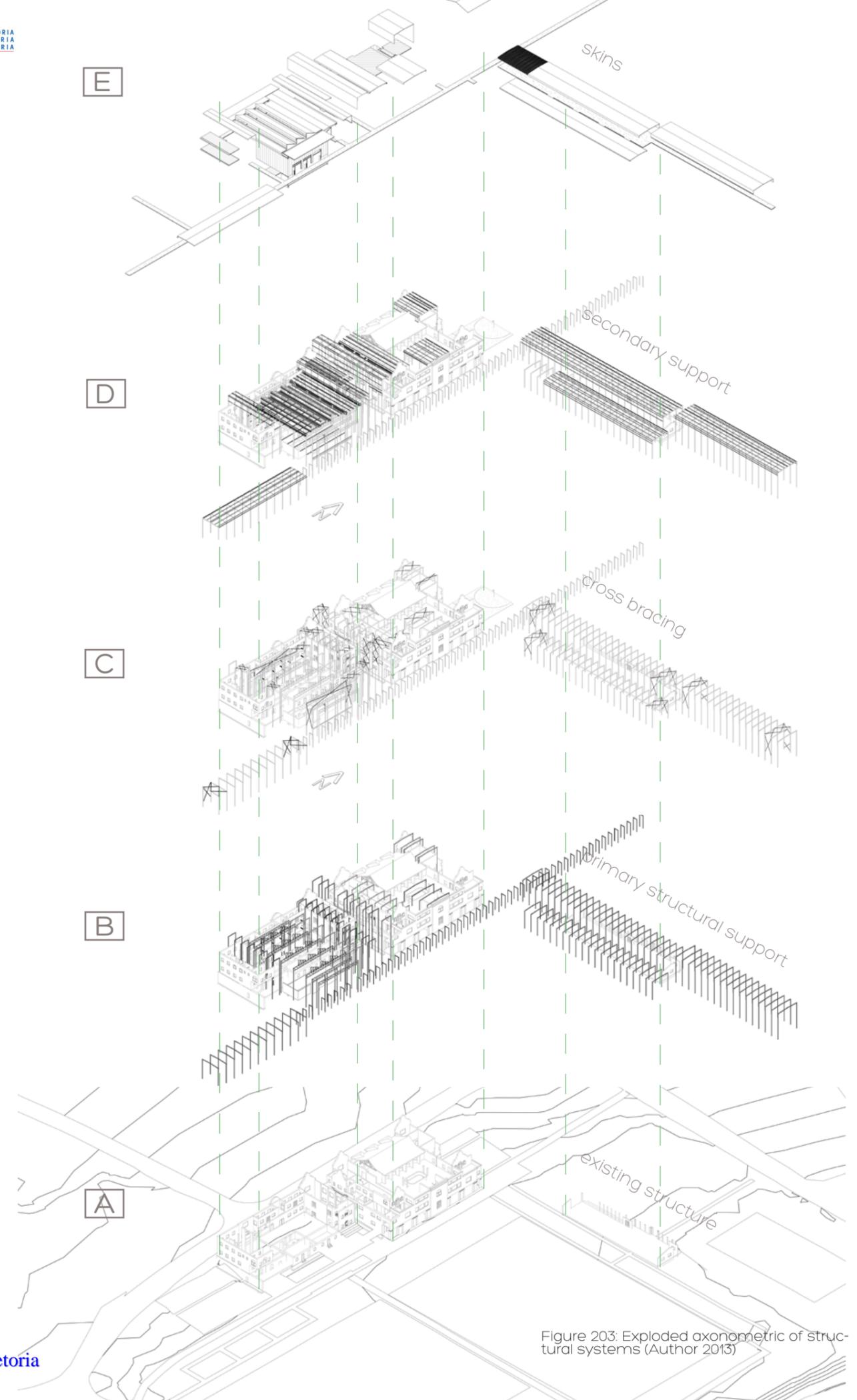


Figure 203: Exploded axonometric of structural systems (Author 2013)

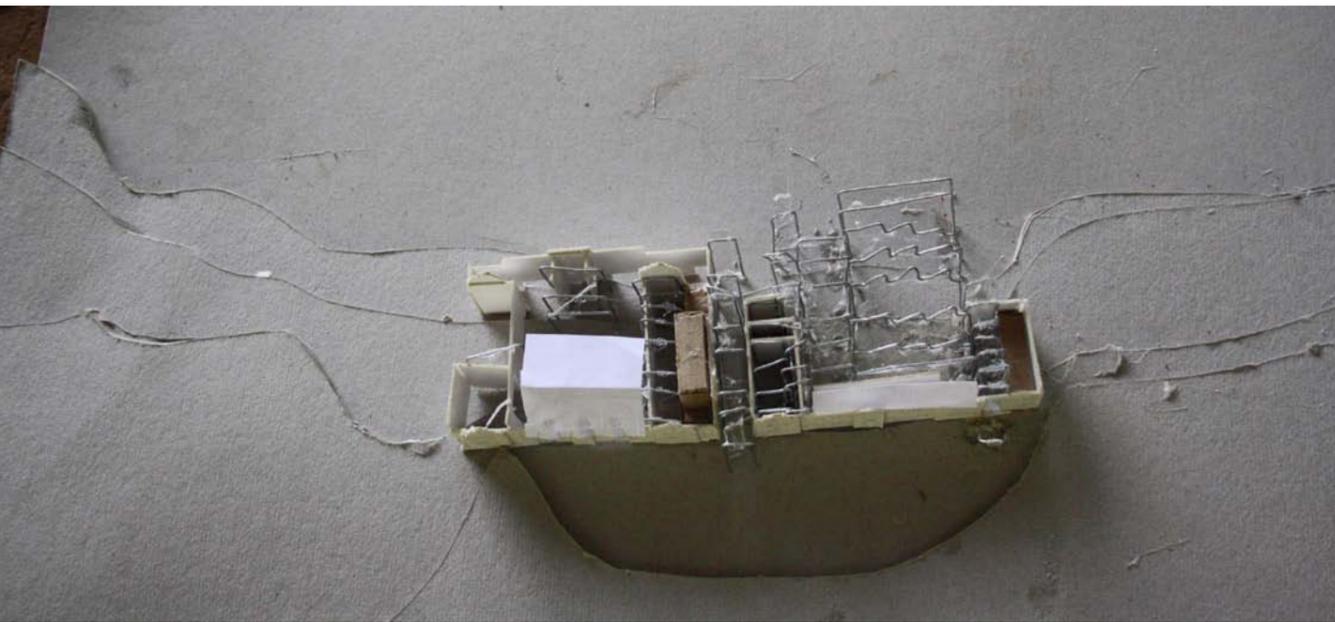


Figure 204: Aerial view of structural model (Author 2013)

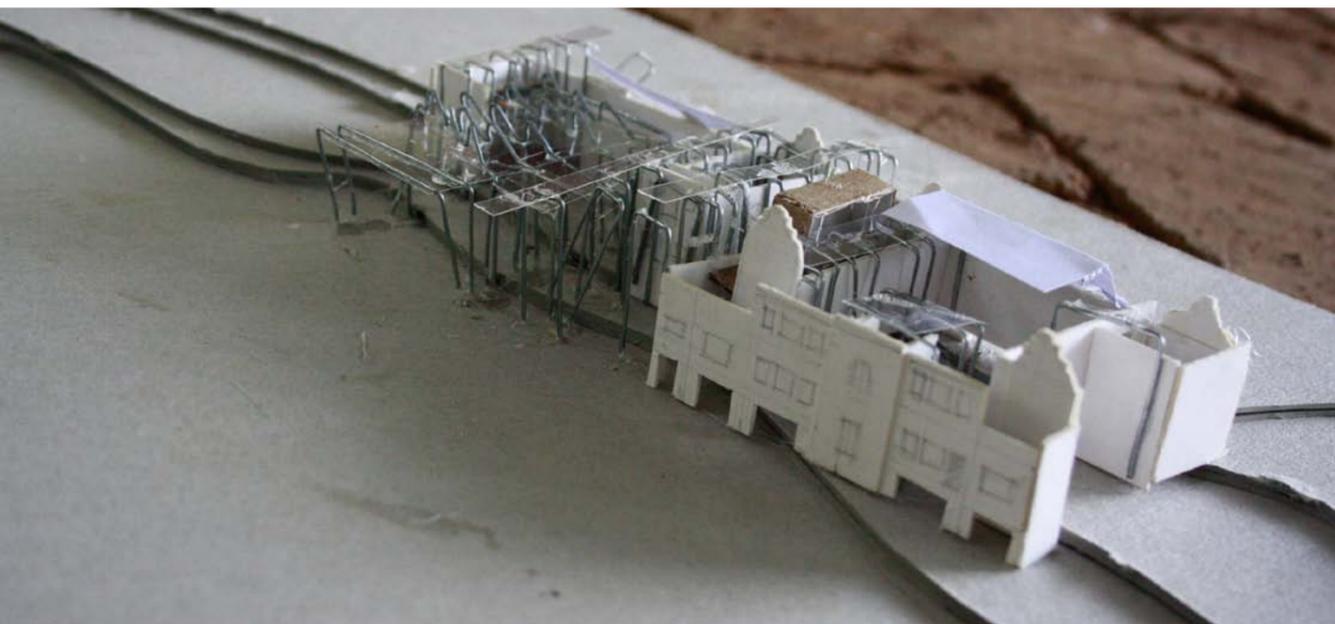


Figure 205: North-eastern view of structural model (Author 2013)

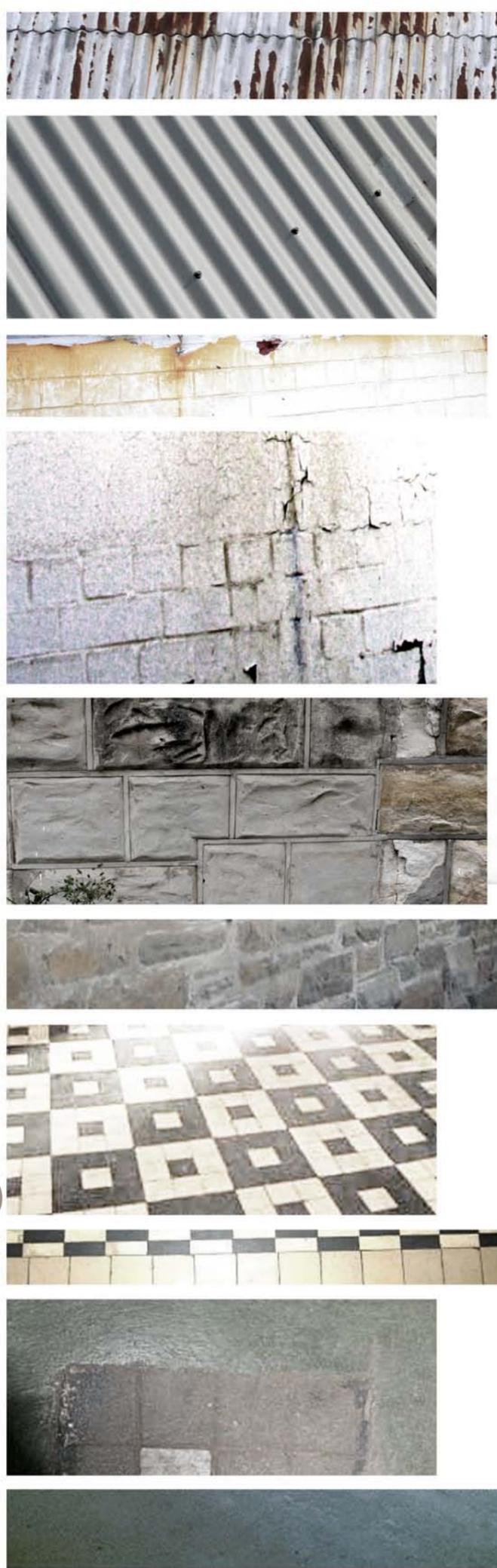


Figure 206: North-western view of structural model (Author 2013)

Material approach

To set off the new interventions against the existing fabric of Berea Park, a contrast in materiality is used. Looking at Gottfried Semper's theoretical premise proposed in *Die vier Elemente der Baukunst* (1851) (Four Elements of Architecture), a play between stereotomic and tectonic is explored. (Frampton 1995) Stereotomic is defined as mass and volume created by "repetitiously piling up heavy weight elements". Where tectonic, according to Semper, is embodied in the "frame" of the building. The frame becomes a "light weight enclosing membrane" made up of linear lightweight components. (Frampton 1995) The poetics of this interplay becomes evident in the material resolution and detailing of structures and joints.

The existing aesthetic of Berea Park embodies a strong reference to Cape Dutch revival. Cape Dutch is known for its stereotomic thick masonry wall and heavy stone plinths. (Figure 203: existing fabric) The walls and plinths by and large constitute the residual elements at Berea Park. To contrast this, light weight, tectonic steel boxes will be inserted into the heritage fabric. (Figure 203: Primary structural support, skins, Figure 209)



Roof

The old corrugated steel sheets had been corroded. The proposal is to reinstall corrugated roof sheets where the existing roof is kept.

Walls type A

Originally the masonry walls were plastered and painted white above a certain height. The lower section was left as untreated red face bricks. These face bricks have also been painted white over the years.

Walls type B

The walls of the southern building on ground level were built from stone. It resembles a stone plinth. Most of the stone has suffered some corrosion. This can contribute to the rustic, worn feel of the structure. These walls must be celebrated where possible.

Floor type A

The foyer is covered in black and cream acoustical tiles. Most of them are still intact. This area's floor finish can therefore be retained.

Floor type B

The floors in the central eastern area of the northern building are relatively intact. The concrete floor slabs have green terrazzo screed finishes with green and white inlaid tiles. The tiles have worn down quite a lot resulting in loss of colour.



Roof, ceiling, walls

Existing roof corrugated steel iron roof sheets were used on the existing structures. "Brownbuilt" cold rolled standing seam sheets are proposed as cladding. These sheets reference the existing sheets, while also contrasting the profile of the old sheets. These sheets are treated with "Chromodeck" coating. "Chromodeck" comes in various colours, creating the opportunity for varied colour finishes.

Structure

Steel H-profiled and lipped channels make up the primary and secondary structure. Portal frames from either 254 x 254 x 89 or 152 x 152 x 30 hot-rolled steel parallel flange H-profile beams form the skeleton and 50 x 65 x 20 x 20 or 75 x 50 x 20 x 20 cold formed steel lipped channel purlins and girt form connectors for the cladding. The structure and its grid will be clearly pronounced at the circulation and activity spaces. In the case of spectator spaces, these structures will be less pronounced, creating a more formal clean finish to these spaces.

Floor type A

Charred timber floor boards are used in the spaces between two zones/boxes. The charred timber references the fact that the buildings had suffered extensive damage, including fire damage.

Floor type B

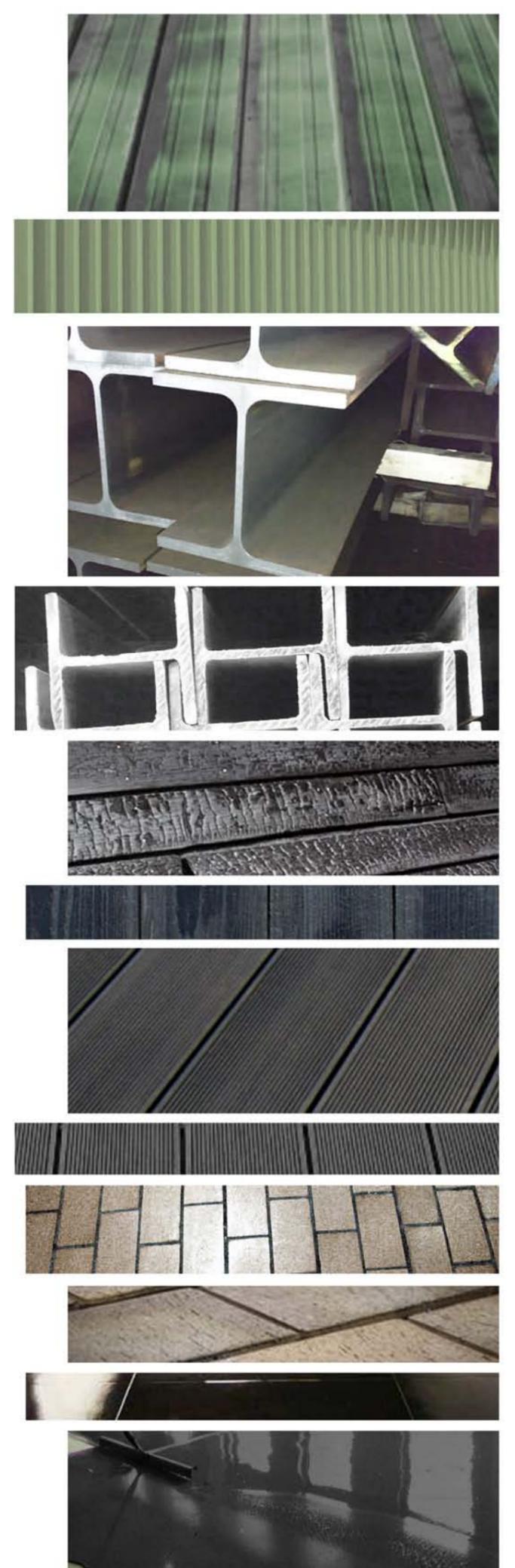
Exterior walkways are covered in environmentally friendly composite decks "4EverDecks". Composite decks require minimal maintenance, and have the ability to withstand the elements. One of the major causes of Berea Park's current dilapidated state is a lack of maintenance.

Floor type C

Service spaces and bathrooms will be finished with treated masonry floor tiles. This ensures that service spaces become semi-homogenous masonry boxes, reflecting the treatment of the steel boxes.

Floor type D

Self-levelling epoxy floor screed will be used on the composite decks in circulation and spectator areas. It is a low maintenance finish that can carry a lot of traffic.



existing material

new material

zone materiality

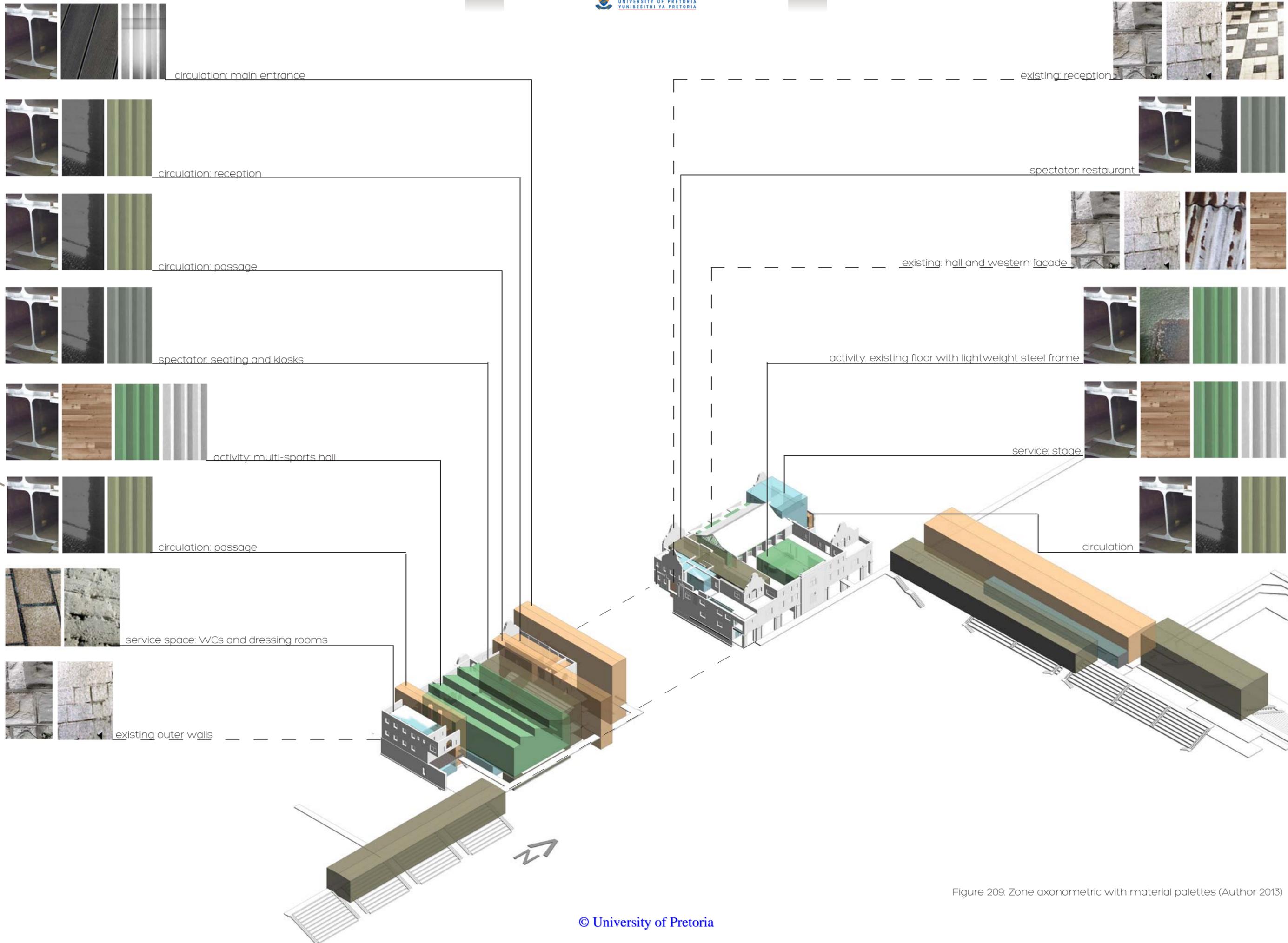


Figure 209: Zone axonometric with material palettes (Author 2013)



Figure 210: Fire hose reel (Trisafe solutions 2013)

Fire protection

The fire protection of Berea Park is based on the SABS requirements for type A1 (Entertainment and public assembly building), type A2 (Theatrical and indoor sport building) and type A5 (Outdoor sport building) (SANS 10400-T 2011: table 6).

According to the SANS 10400-T (2011) 2.31.3 this type of building, requires a "manually activated visual and audible alarm system that is designed, installed and maintained by competent persons in accordance with SANS 10139".

The building has more than two storeys, and should therefore be equipped with hose reels. (Figure 210) A hose reel is required on every storey, for every 500m² of floor. These fire hydrants must comply with SABS 1128.

The fire hose requirements of the buildings on Berea Park are as follows:

	Field	Street	First
Northern clubhouse	1	2	1
Southern clubhouse	1	2	1
Bowling clubhouse	1		

Figure 213: Number of fire hoses needed (Author 2013)

A portable fire extinguishers is required for every 200m² of building area:

	Field	Street	First
Northern clubhouse	3	6	3
Southern clubhouse	2	5	3
Bowling clubhouse	3		

Figure 214: Number of portable fire extinguishers needed (Author 2013)

There is the possibility of installing an automatic sprinkler system, even though this is not required for this type and size of building.

The steel structures will be treated with intumescent paint for fire protection. (Figure 211, Figure 212) Either zinc phosphate paint that complies with SABS 1319, or red lead paint that complies with SABS 312 will be used to treat the steel elements that form part of the new interventions. For fire protection, the steel has to be primed with two layers of either red lead paint or zinc phosphate paint, before a layer of alkyd based paint can be applied to the steel as finish. (SANS 10400-T 2011)



Figure 211: Intumescent paint system (Tadbir Banda Aryan 2012)



Figure 212: Burnt intumescent paint (Starkem 2011)

Acoustical treatment

Acoustical treatment is required in the multi-sport hall and the main hall in the northern building. In both these cases, the proposal is to install suspended ceiling panels (ceiling baffles).

The multi-sport hall consists of a steel framed box that is wrapped in steel brown built panels that cover the ceiling, roof and walls. By installing these suspended ceiling panels in the multi-sport hall, the aesthetics of the steel box is retained. In the case of the main hall, these panels make it possible to retain the existing pressed steel ceiling while improving the acoustics of this space.

The baffles have a sound absorbing glass fibre core and fabric finish. The proposal is to install baffles with a white finish to enhance its light reflective ability. (Figure 215)

The ceiling baffles are installed by hanging them from ceiling cables that span between the roof trusses. (Figure 216) (Acoustical world 2009)

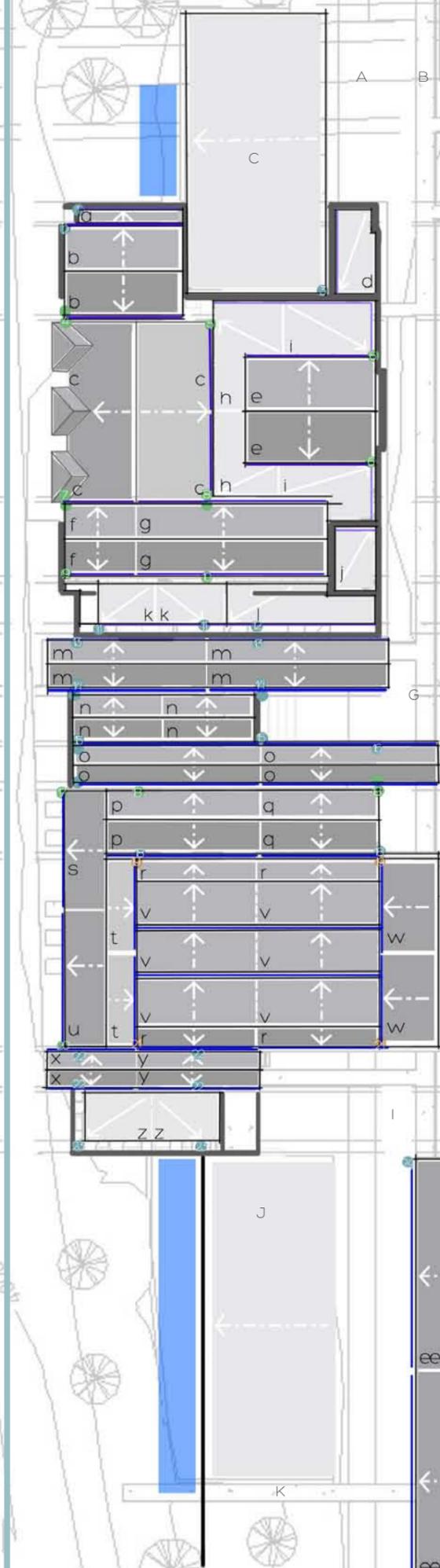


Figure 216: Installation of acoustic baffles (Acoustical world 2009)



Figure 215: Acoustic baffles (Rockfon 2012)

Gutters and downpipes



Water catchment

The large expanses of sports fields require year-round irrigation. (Table 8) As much as possible rain water will be captured from hard- and soft surfaces on the site (Figure 217, Table 9, Figure 218). Here after follows calculations of catchment areas, (Figure 217) the amount of water that can be captured (Table 11), and how much thereof can be utilised for irrigation. (Table 12, Table 13, Table 14, Table 15)

Gutter and downpipe sizing

Roof areas and direction of fall are determined to inform gutter and downpipe sizing. (Figure 5, Graph 1, Table 3, Table 4)

- Roof area (Figure 217: a-ee)
- Direction of fall (Figure 217: arrows)
- Gutters (Table 3, Figure 217: Purple, blue and green coloured lines)
- Downpipes (Table 4, Figure 217: Coloured dots numbers 1-27 indicate location)

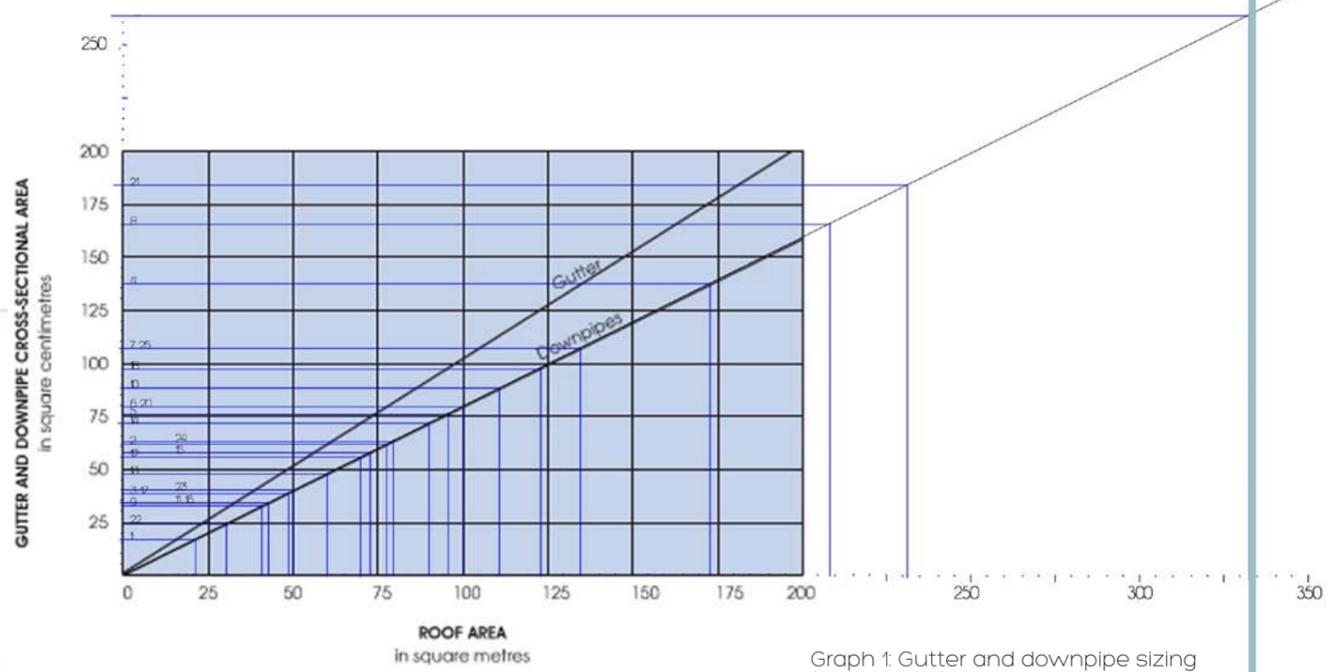
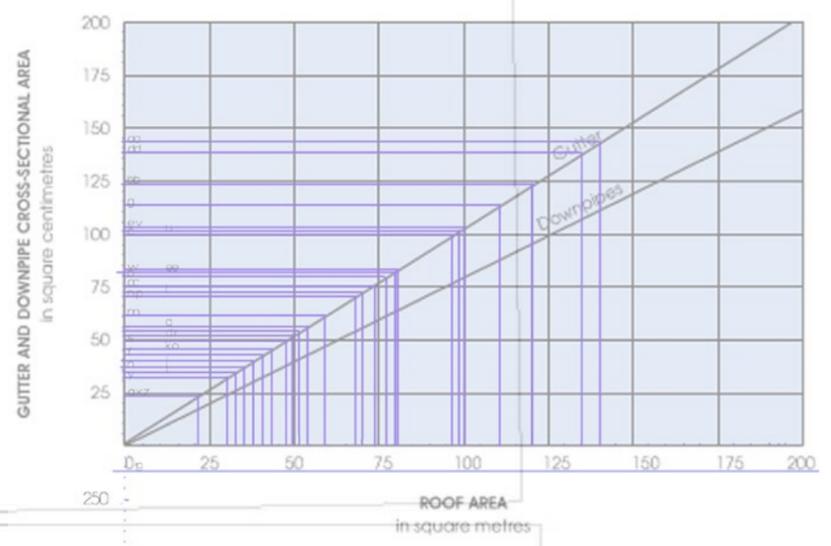
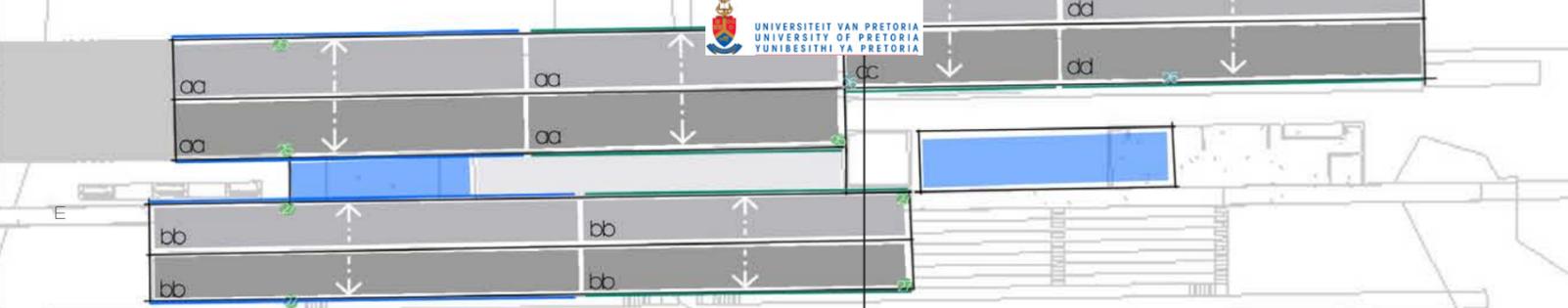


Figure 217: Rainwater runoff and capture areas (Author 2012)

Graph 1: Gutter and downpipe sizing (Author 2012)

Gutter sizes

	Roof size + 43% for heavy rainfall roof area (m ²) (cm ²)	Gutter size according to graph (cm ²)	Gutter sizes doubled for internal gutters	Gutter size rounded (cm ²)	roof area shared for shared gutters	shared gutters (cm ²)
a	10 x 1,5 = 15	21.45	24	70		
b	12 x 4,5 = 54	77.22	80	160	195	
c	9 x 7,5 = 67,5	96.525	100	200	195	
d	8,7 x 4 = 34,8	49.764	51	70		
e	5,3 x 13,2 = 70	100.1	103	145		
f	7 x 4 = 28	40.04	42.5	85	145	
g	19,5 x 4 = 78	111.54	113	226	225	
h	3,2 x 5 + 8 x 4 = 48	68.64	70	140	145	
i	8 x 3,5 + 4 x 2 = 36	51.48	53	106	145	
j	4 x 6,5 = 26	37.18	40	80	145	
k	7,5 x 4 = 30	42.9	45	70		
l	14,8 x 2,8 + 10 x 0,7 = 48,44	69.2692	72	70		
m	18 x 2,3 = 41,4	59.202	60	120	145	m n 192 / 195
n	9,6 x 2,2 = 21,12	30.2016	36	72	70	n o 162 / 195
o	15 x 2 = 30	42.9	45	90	145	o p 200 / 225
p	15 x 3,2 = 48	68.64	70	140	145	q r v 415 / 450
q	12 x 3,2 = 38,4	54.912	55	110	145	
r	2,4 x 15 = 35	50.05	51	102	145	y r 164 / 195
s	4 x 8,5 = 34	48.62	49	70		
t	9,5 x 2,4 = 22,8	32.604	34	68	145	w v 372 / 450
u	4 x 17,3 = 69,2	98.956	101	145		v v w 578 / 600
v	4,7 x 15 = 70,5	100.815	103	206	225	
w	5,9 x 9,6 = 56,64	80.9952	83	166	195	w t 234 / 225
x	9 x 1,7 = 15,3	21.879	24	48	70	
y	12,4 x 1,7 = 21,08	30.1444	31	62	70	
z	7 x 5 = 35	50.05	24	70		
aa	27 x 5 = 135		144	145		
bb	30 x 4 = 120		124	145		
cc	16,5 x 4,5 = 74,25		75	145		
dd	30 x 4,5 = 135		137.5	145		
ee	4 x 20 = 80		82	145		

Table 3: Gutter sizing (Author 2013)

Some of the roof areas share gutters, in which cases sufficiently sized gutters are required. The majority of gutters are not located along the perimeter of the building (Figure 5). It is therefore important to ensure that the gutters are large enough to handle large quantities of water during peak rain periods. (Table 1) This was also the approach when designing and sizing the downpipes. (Table 2) The roof areas alone do not really make a substantial contribution to the amount of irrigation required. Therefore runoff from other areas, such as pavements (Table 6) and fields (Table 7, Figure 218) are also captured.

Downpipe sizes

	Roof area feeding down pipe	Total roof area (cm ²)	Roof size with added 43% for heavy rainfall (cm ²)	Down-pipe size according to graph (cm ²)	Rounded down-pipe sizing	Sizes (designed for symetry)
1	a	15	21.45	16	52	
2	b	54	77.22	62	78	
3	d	34.8	49.764	38	52	
4	b c	121.5	173.745	137	180	
5	c	67.5	96.525	76	78	
6	e	70	100.1	80	180	
7	c f	95.5	136.565	107	180	
8	c g	145.5	208.065	165	180	
9	f	28	40.04	32	52	
10	g	78	111.54	88	180	
11	k	30	42.9	34	52	
12	l	48.44	69.2692	55	78	
13	m	41.4	59.202	48	52	
14	m n	62.52	89.4036	71	78	
15	n o	51.12	73.1016	57	78	
16	o	30	42.9	34	52	
17	s	34	48.62	37	52	
18	o p	86.4	123.552	98	180	
19	r v v w	232.64	332.6752	263	269	
20	u	69.2	98.956	80	180	
21	v r w	162.14	231.8602	184	269	
22	y	21.08	30.1444	25	52	
23	z	35	50.05	40	52	
24	ee	80		63	78	
25	aa	135		106	180	
26	cc	74.25		61	78	
27	bb	120		98	180	

Table 4: Downpipe sizing (Author 2013)

Designed gutter sizes

nominal size	50x150	50x250	100x50	100x75	100x 50	100x200	100x250
area (cm ²)	25000	65000	5000	7500	32500	50000	72500
cross sectional area (cm ²)	158.1	255	52	78	180.3	223.6	269.3

Table 5: Designed gutter sizes (Author 2013)

Calculating pavement areas

Area on diagram	Calculating combined areas	Total
A	$(3 \times 53) + (7.7 \times 18) + (3 \times 44) =$	430 m ²
B	$(2 \times 116) + (3.7 \times 15) =$	238 m ²
C	$15 \times 28 =$	420 m ²
North-west pavement area total =		1088 m ²
D	$(67 \times 43) + (4.5 \times 11) - (50 \times 25) =$	1681 m ²
E	$(12.5 \times 14) + (46 \times 15) =$	87 m ²
F	$120 \times 15 =$	180 m ²
North-eastern pavement area total =		1948 m ²
G	$(2 \times 120) - (2 \times 23) =$	194 m ²
H	$120 \times 3 =$	360 m ²
I	$(2.75 \times 130) - (2.75 \times 30) =$	275 m ²
J	$13 \times 33 =$	429 m ²
K	$27 \times 15 =$	41 m ²
L	$(1.2 \times 70) + (10 \times 2) =$	104 m ²
Southern pavement area total =		1403 m ²

Table 6: Pavement areas (Author 2013)

Calculating field areas

Rugby	$75 \times 120 =$	9000 m ²
Bowling	$40 \times 40 =$	1600 m ²
Other	$100 \times 70 =$	7000 m ²

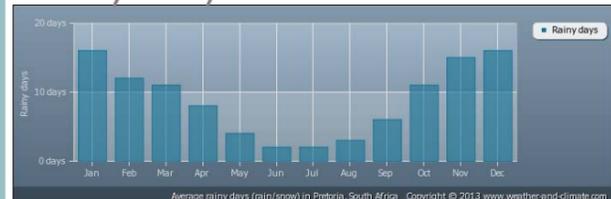
Table 7: Field areas (Author 2013)

Irrigation demand for sports fields

Irr. Depth / month (m)	Irr. demand for rugby field (m ³)		Irr. demand for soccer field (m ³)		Irr. demand for bowling green (m ³)		Irr. demand for add. areas (m ³)		Total Irr. demand (m ³)
	(75m x 120m) x Irr. Depth/month	(100m x 65m) x Irr. Depth/month	(40m x 40m) x Irr. Depth/month	(100m x 75m) x Irr. Depth/month	(40m x 40m) x Irr. Depth/month	(100m x 75m) x Irr. Depth/month	(100m x 75m) x Irr. Depth/month	(100m x 75m) x Irr. Depth/month	
Jan	0.16	1440	1040	256	1200	3936			
Feb	0.16	1440	1040	256	1200	3936			
Mar	0.16	1440	1040	256	1200	3936			
Apr	0.16	1440	1040	256	1200	3936			
May	0.16	1440	1040	256	1200	3936			
Jun	0.16	1440	1040	256	1200	3936			
Jul	0.16	1440	1040	256	1200	3936			
Aug	0.16	1440	1040	256	1200	3936			
Sep	0.16	1440	1040	256	1200	3936			
Oct	0.16	1440	1040	256	1200	3936			
Nov	0.16	1440	1040	256	1200	3936			
Dec	0.16	1440	1040	256	1200	3936			

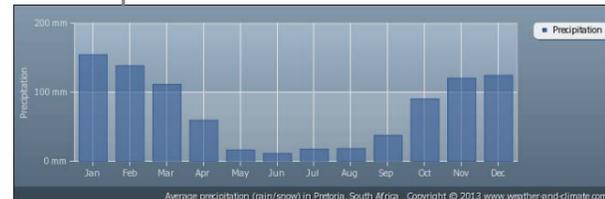
Table 8: Irrigation demand (Author 2013)

Rainy days



Graph 2: Rainy days (Author 2013)

Precipitation



Graph 3: Precipitation (Author 2013)

Calculating total areas feeding tanks

	Tank A (North - west)	Tank B (North-east)	Tank C (South)	Tank D (Fields)
Roof area feeding into tank	$a + (b \times 2) + (c \times 4) + d + (e \times 2) + (f \times 2) + ((g \times 2) + (h \times 2) + (i \times 2) + j + (k \times 2) + l = 1082.24m^2$	$(aa \times 4) + (bb \times 4) + (cc \times 2) + (dd \times 2) = 1438.5m^2$	$(m \times 4) + (n \times 4) + (o \times 4) + (p \times 2) + (q \times 2) + (r \times 4) + s + (t \times 2) + u + (v \times 6) + (w \times 2) + (x \times 2) + (y \times 2) + (z \times 2) + (ee \times 4) = 1830.72m^2$	
Pavement area feeding into tank	$A + B + C = 1088m^2$	$D + E + F = 1948m^2$	$G + H + I + J + K + L = 1403m^2$	
Field areas				Soccer + Rugby = 15500 m ²

Table 9: Area feeding into tanks (Author 2013)

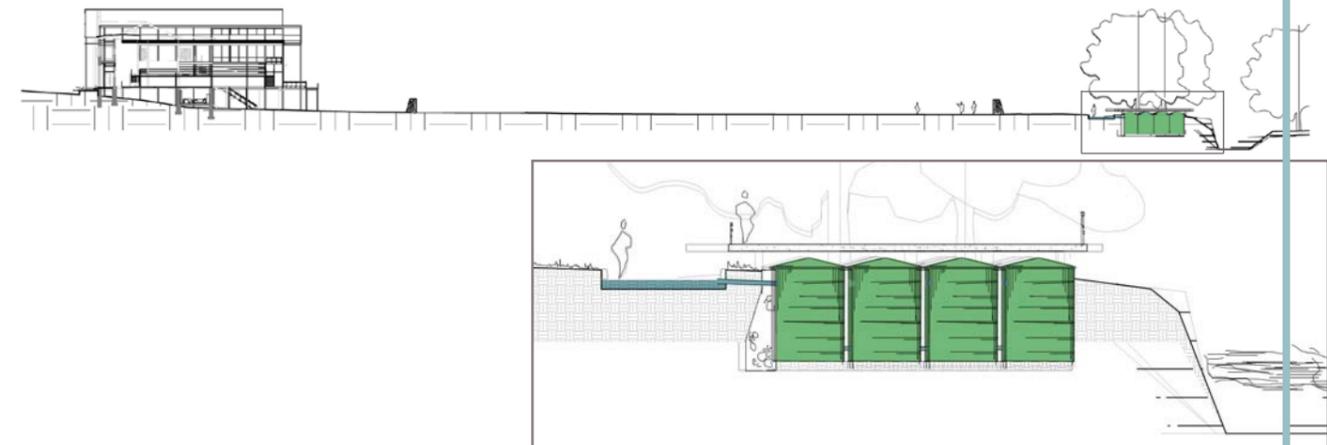


Figure 218: Runoff from fields and storage tanks (Author 2013)

Potential grey-water yield

Sport	Num. games /month	Num. of uses /game	Total showers /month	Water use / shower (l)	Faucet Water use / Faucet (l)	Total water use (l)	Total water use -15% loss (KI)	Tank, total contributions (KI)
Soccer	32	25	800	35	2	29600	25.16	
Gym	25	80	2000	40	2	84000	71.4	96.6
Bowling	15	15	225	40	3	9675	8.22375	
Swimming	25	30	750	35	3	28500	24.225	32.4
Basketball / other indoor	30	35	1050	35	2	38850	33.0225	
Rugby	20	35	700	35	2	25900	22.015	55
Total			3775			151775	129009	184

Table 10: Potential grey-water yield (Author 2013)

The potential amount of grey-water that can be captured from the showers and faucets was also calculated. (Table 10) According to the calculations, the total amount of grey-water contributes less than 5% of the required irrigation. (Table 10) Taking into consideration the cost and effort involved in getting grey-water to a usable state, the limited amount that can be captured, does not make it a viable option.

Formulas

Yield (m³) = P x A x C

P (m) = Precipitation

A (m²) = Area of precipitation

C = Runoff coefficient (Roof C = 0,9); (Pavement C = 0,8); (Soft surface C = 0,35)

Calculating total yield

MONTH	AVG. MONTHLY PERCIPITATION	TANK A (NORTH - WEST)	TANK B (NORTH - EAST)	TANK C (SOUTH)	TANK D (FIELDS)	Total monthly Yield (m ³)
		Yield(m ³) = P x A x C	Yield(m ³) = P x A x C	Yield(m ³) = P x A x C	Yield(m ³) = P x A x C	
Jan	0.136	0.136 x ((1082.24x0.9) + (1088x0.8)) = 251	0.136 x ((1438.5 x0.9) + (1948x0.8)) = 387	0.136 x ((1830.7 x0.9) + (1403x0.8)) = 377	0.136 x (15500 x 0.35) = 738	1752.1
Feb	0.075	0.075 x ((1082.24x0.9) + (1088x0.8)) = 138	0.075 x ((1438.5 x0.9) + (1948x0.8)) = 213	0.075 x ((1830.7 x0.9) + (1403x0.8)) = 208	0.075 x (15500 x 0.35) = 407	966.3
Mar	0.082	0.082 x ((1082.24x0.9) + (1088x0.8)) = 151	0.082 x ((1438.5x0.9) + (1948x0.8)) = 233	0.082 x ((1830.7x0.9) + (1403x0.8)) = 227	0.082 x (15500 x 0.35) = 445	1056.4
Apr	0.051	0.051 x ((1082.24x0.9) + (1088x0.8)) = 94	0.051 x ((1438.5 x0.9) + (1948x0.8)) = 145	0.051 x ((1830.7 x0.9) + (1403x0.8)) = 141	0.051 x (15500 x 0.35) = 277	657.1
May	0.013	0.013 x ((1082.24x0.9) + (1088x0.8)) = 24	0.013 x ((1438.5 x0.9) + (1948x0.8)) = 37	0.013 x ((1830.7x0.9) + (1403x0.8)) = 36	0.013 x (15500 x 0.35) = 70.5	167.5
Jun	0.007	0.007 x ((1082.24x0.9) + (1088x0.8)) = 13	0.007 x ((1438.5x0.9) + (1948x0.8)) = 20	0.007 x ((1830.7x0.9) + (1403x0.8)) = 19.4	0.007 x (15500 x 0.35) = 38	90.2
Jul	0.003	0.003 x ((1082.24x0.9) + (1088x0.8)) = 5.5	0.003 x ((1438.5x0.9) + (1948x0.8)) = 8.5	0.003 x ((1830.7x0.9) + (1403x0.8)) = 8.3	0.003 x (15500 x 0.35) = 16.3	38.6
Aug	0.006	0.006 x ((1082.24x0.9) + (1088x0.8)) = 11	0.006 x ((1438.5x0.9) + (1948x0.8)) = 17	0.006 x ((1830.7x0.9) + (1403x0.8)) = 16.6	0.006 x (15500 x 0.35) = 32.6	77.4
Sep	0.022	0.022 x ((1082.24x0.9) + (1088x0.8)) = 41	0.022 x ((1438.5x0.9) + (1948x0.8)) = 63	0.022 x ((1830.7x0.9) + (1403x0.8)) = 60.9	0.022 x (15500 x 0.35) = 119	283.5
Oct	0.071	0.071 x ((1082.24x0.9) + (1088x0.8)) = 131	0.071 x ((1438.5x0.9) + (1948x0.8)) = 202	0.071 x ((1830.7x0.9) + (1403x0.8)) = 197	0.071 x (15500 x 0.35) = 385	914.8
Nov	0.098	0.098 x ((1082.24x0.9) + (1088x0.8)) = 181	0.098 x ((1438.5x0.9) + (1948x0.8)) = 279	0.098 x ((1830.7x0.9) + (1403x0.8)) = 272	0.098 x (15500 x 0.35) = 532	1262.7
Dec	0.11	0.11 x ((1082.24x0.9) + (1088x0.8)) = 203	0.11 x ((1438.5x0.9) + (1948x0.8)) = 313	0.11 x ((1830.7x0.9) + (1403x0.8)) = 305	0.11 x (15500 x 0.35) = 597	1417.2
ANNUAL AVE.	0.674	1243	1917	1867	3656	8683.45

Table 11: Total yield (Author 2013)

Water budget

	Irr. Depth / month (m)	Tank A (Nort-west)				
		Monthly Yield (m ³)	Soccer irr. need	Water out of the tank (10%)	Left	Remain (m ³)
Jan	0.16	250.8	1040	103	25.8	173.6
Feb	0.16	138.3	1040	103	173.6	208.9
Mar	0.16	151.2	1040	103	208.9	257.1
Apr	0.16	94.1	1040	103	257.1	248.2
May	0.16	24	1040	103	248.2	169.2
Jun	0.16	12.9	1040	103	169.2	79.1
Jul	0.16	5.5	1040	103	79.1	-18.4
Aug	0.16	11.1	1040	103	-18.4	-110.3
Sep	0.16	40.6	1040	103	-110.3	-172.7
Oct	0.16	131	1040	103	-172.7	-144.7
Nov	0.16	180.8	1040	103	-144.7	-66.9
Dec	0.16	202.9	1040	103	-66.9	33
Annual totals		1243.2	12480			
Monthly avg.		103.6	1040			

$$103.6/1040 = 9.96\%$$

10% of the water needed for irrigating the soccer field can be collected in tank A

The minimum size of the tank is 257 m³ (March)

To accommodate the greater rain events, the minimum tank size is multiplied by a safety factor of between 2 and 4

The tank size will therefore be: 514 m³

Table 12: Water budget: tank A (Author 2013)

	Irr. Depth / month (m)	Tank B (North-east)				
		Monthly Yield (m ³)	Bowling irr. need	Water out of the tank (62%)	Left	Remain (m ³)
Jan	0.16	386.8	256	158.7	39.675	173.6
Feb	0.16	213.3	256	158.7	173.6	228.2
Mar	0.16	233.2	256	158.7	228.2	302.7
Apr	0.16	145	256	158.7	302.7	289
May	0.16	37	256	158.7	289	167.3
Jun	0.16	19.9	256	158.7	167.3	28.5
Jul	0.16	8.5	256	158.7	28.5	-121.7
Aug	0.16	17.1	256	158.7	-121.7	-263.3
Sep	0.16	62.6	256	158.7	-263.3	-359.4
Oct	0.16	201.9	256	158.7	-359.4	-316.2
Nov	0.16	278.7	256	158.7	-316.2	-196.2
Dec	0.16	312.8	256	158.7	-196.2	-42.1
Annual totals		1916.8	3072			
Monthly avg.		159.7	256			

$$159.7/256 = 62.38\%$$

62% of the water needed to irrigate the bowling green can be collected in tank B

The minimum size of the tank is 303 m³ (March)

To accommodate the greater rain events, the minimum tank size is multiplied by a safety factor of between 2 and 4

The tank size will therefore be: 605 m³

Table 13: Water budget: tank B (Author 2013)

Tank C (South)						
Irr. Depth / month (m)	Monthly Yield (m ³)	Rugby irr. need	Water out of the tank (9.2%)	Left	Remain (m ³)	
Jan	0.16	376.7	1440	132.5	33.1	277.3
Feb	0.16	207.8	1440	132.5	277.3	352.6
Mar	0.16	227.1	1440	132.5	352.6	447.2
Apr	0.16	141.3	1440	132.5	447.2	456
May	0.16	36	1440	132.5	456	359.5
Jun	0.16	19.4	1440	132.5	359.5	246.4
Jul	0.16	8.3	1440	132.5	246.4	122.2
Aug	0.16	16.6	1440	132.5	122.2	6.3
Sep	0.16	60.9	1440	132.5	6.3	-65.3
Oct	0.16	196.7	1440	132.5	-65.3	-11
Nov	0.16	271.5	1440	132.5	-11	137.9
Dec	0.16	304.7	1440	132.5	137.9	310.1
Annual totals	1867	17280				
Monthly avg.	155.6	1440				

$155.6/1440 = 10.80\%$

11% of the water needed for irrigating the rugby field can be collected in tank C

The minimum size of the tank is 447 m³ (March)

To accommodate the greater rain events, the minimum tank size is multiplied by a safety factor of between 2 and 4

The tank size will therefore be: 894 m³

Table 14: Water budget: tank C (Author 2013)

Tank D (Fields)						
Irr. Depth / month (m)	Monthly Yield (m ³)	Soccer irr. need	Water out of the tank (29%)	Left	Remain (m ³)	
Jan	0.16	737.8	1040	301.6	75.4	511.6
Feb	0.16	406.875	1040	301.6	511.6	616.875
Mar	0.16	444.85	1040	301.6	616.875	760.125
Apr	0.16	276.675	1040	301.6	760.125	735.2
May	0.16	70.525	1040	301.6	735.2	504.125
Jun	0.16	37.975	1040	301.6	504.125	240.5
Jul	0.16	16.275	1040	301.6	240.5	-44.825
Aug	0.16	32.55	1040	301.6	-44.825	-313.875
Sep	0.16	119.35	1040	301.6	-313.875	-496.125
Oct	0.16	385.175	1040	301.6	-496.125	-412.55
Nov	0.16	531.65	1040	301.6	-412.55	-182.5
Dec	0.16	596.75	1040	301.6	-182.5	112.65
Annual totals	3656.45	12480				
Monthly avg.	304.7	1040				

$304.7/1040 = 29.29\%$

29% of the water needed for irrigating the soccer field can be collected in tank D

The minimum size of the tank is 760 m³ (March)

To accommodate the greater rain events, the minimum tank size is multiplied by a safety factor of between 2 and 4

The tank size will therefore be: 1520 m³

Table 15: Water budget: tank D (Author 2013)

Total yield

The total yield captured from roof areas, pavements and fields was calculated. According to these calculations: 39% of the required water for irrigation of the soccer field can be captured (Table 10, Table 13); 62% of the water needed to irrigate the bowling fields can be captured (Table 13); and 11% of the water needed to irrigate the rugby fields can be captured (Table 14). It is therefore clear that additional water from the grid will have to be used to meet irrigation demands.

Location of gutters and downpipes and storage tanks

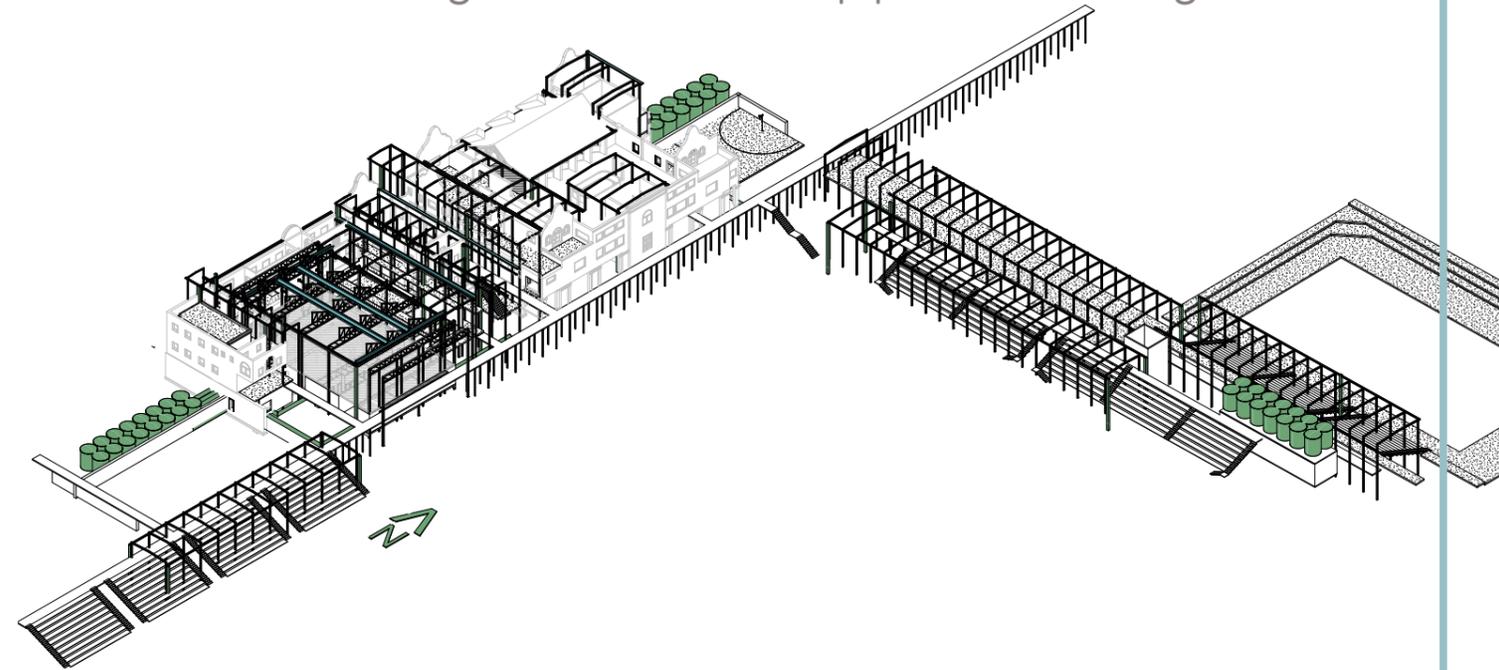


Figure 219: Axonometric: gutters, downpipes and storage tanks (Author 2013)

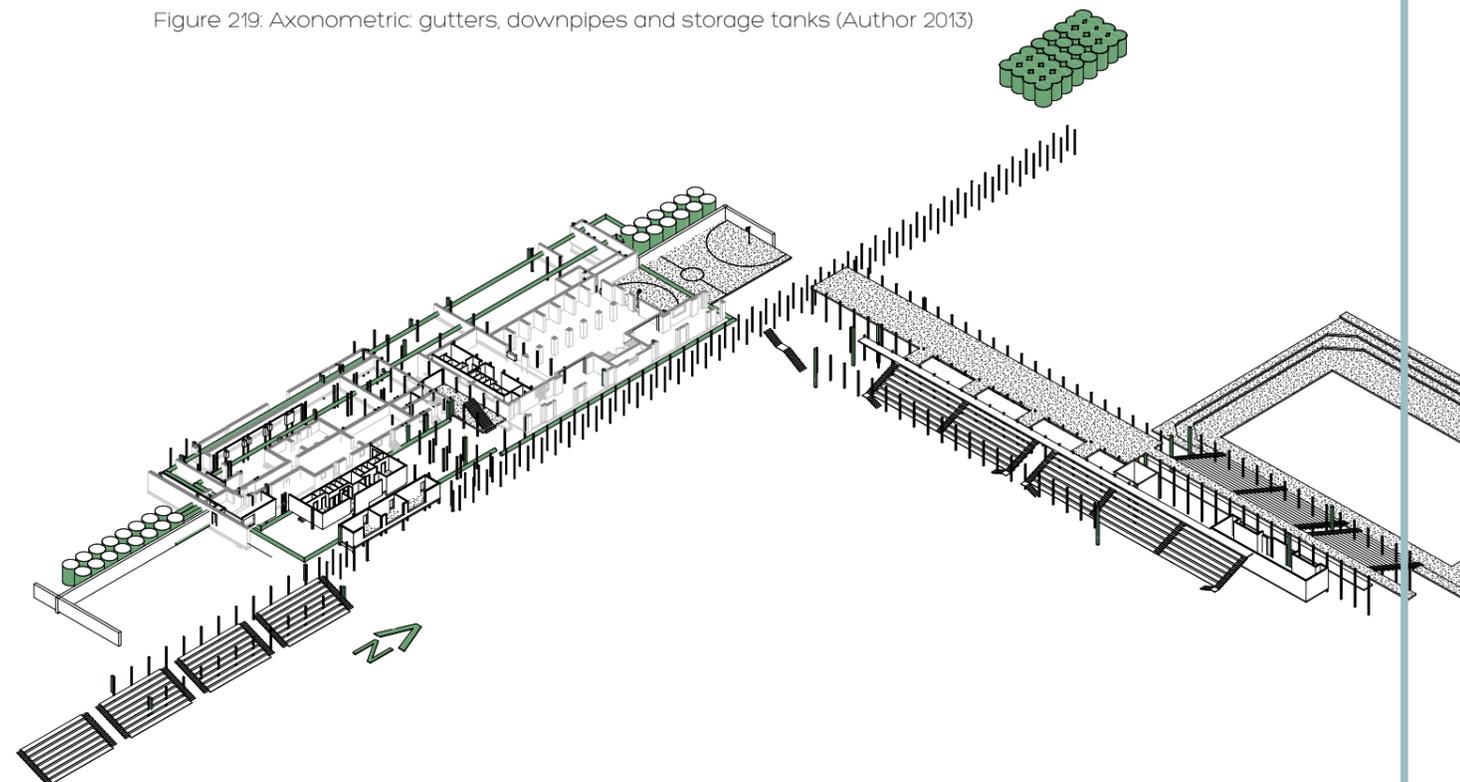


Figure 220: Axonometric: pipes connecting downpipes to storage tanks (Author 2013)

Solar ingress and glare



Figure 230: Roof profile A (Author 2013)

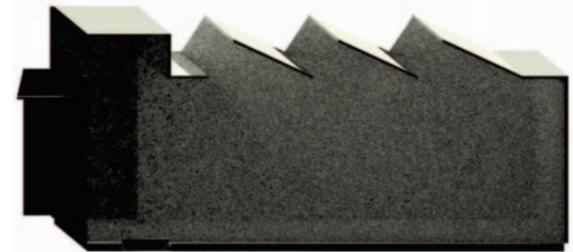


Figure 225: Roof profile A: Winter (Author 2013)

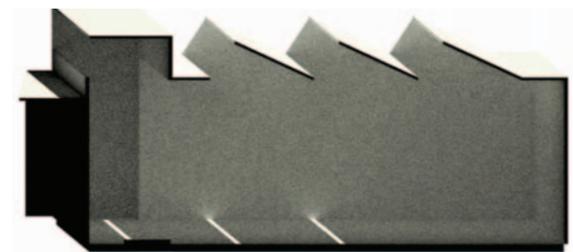


Figure 226: Roof profile A: Spring (Author 2013)

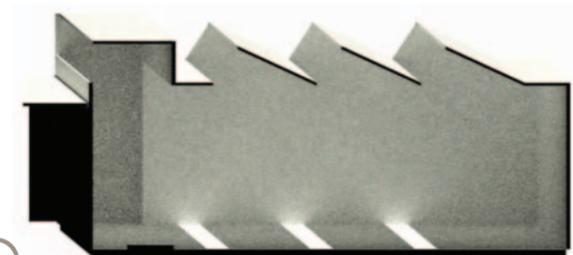


Figure 227: Roof profile A: Summer (Author 2013)

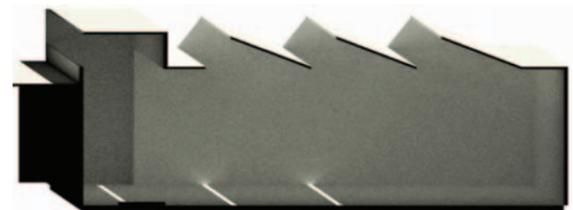


Figure 228: Roof profile A: Fall (Author 2013)



Figure 229: Roof profile B (Author 2013)

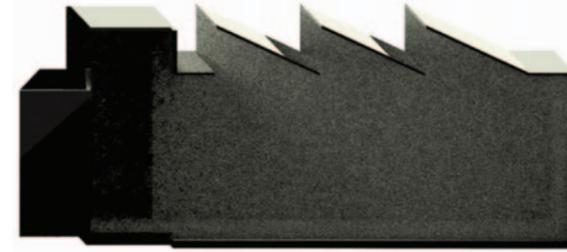


Figure 221: Roof profile B: Winter (Author 2013)



Figure 222: Roof profile B: Spring (Author 2013)

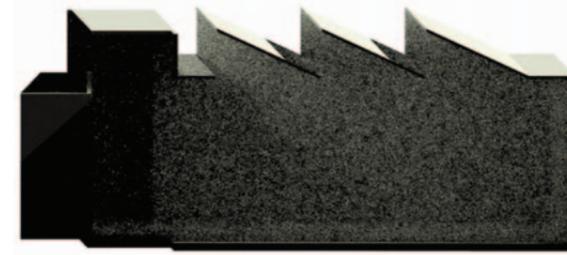


Figure 223: Roof profile B: Summer (Author 2013)

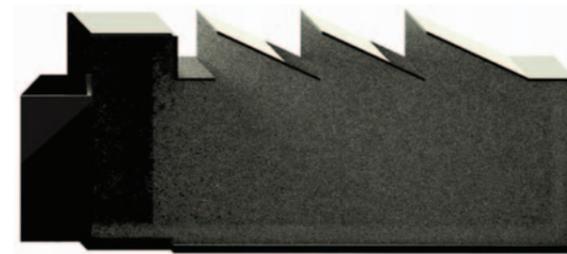


Figure 224: Roof profile B: Fall (Author 2013)

The skylights face south to try and ensure constant lighting conditions. The profile of roof A (Figure 230) allows some direct solar ingress during summer, spring and fall. (Figure 223, Figure 224, Figure 225) This results in glare and streaks of sun falling on the court leading to uneven lighting conditions. Roof profile B (Figure 229) is therefore a better option, with even lighting conditions throughout the year. (Figure 218,)

Illuminance

Daylight Analysis
Daylight Factor
 Value Range: 0 - 100 %
 (c) ECOTECH v5

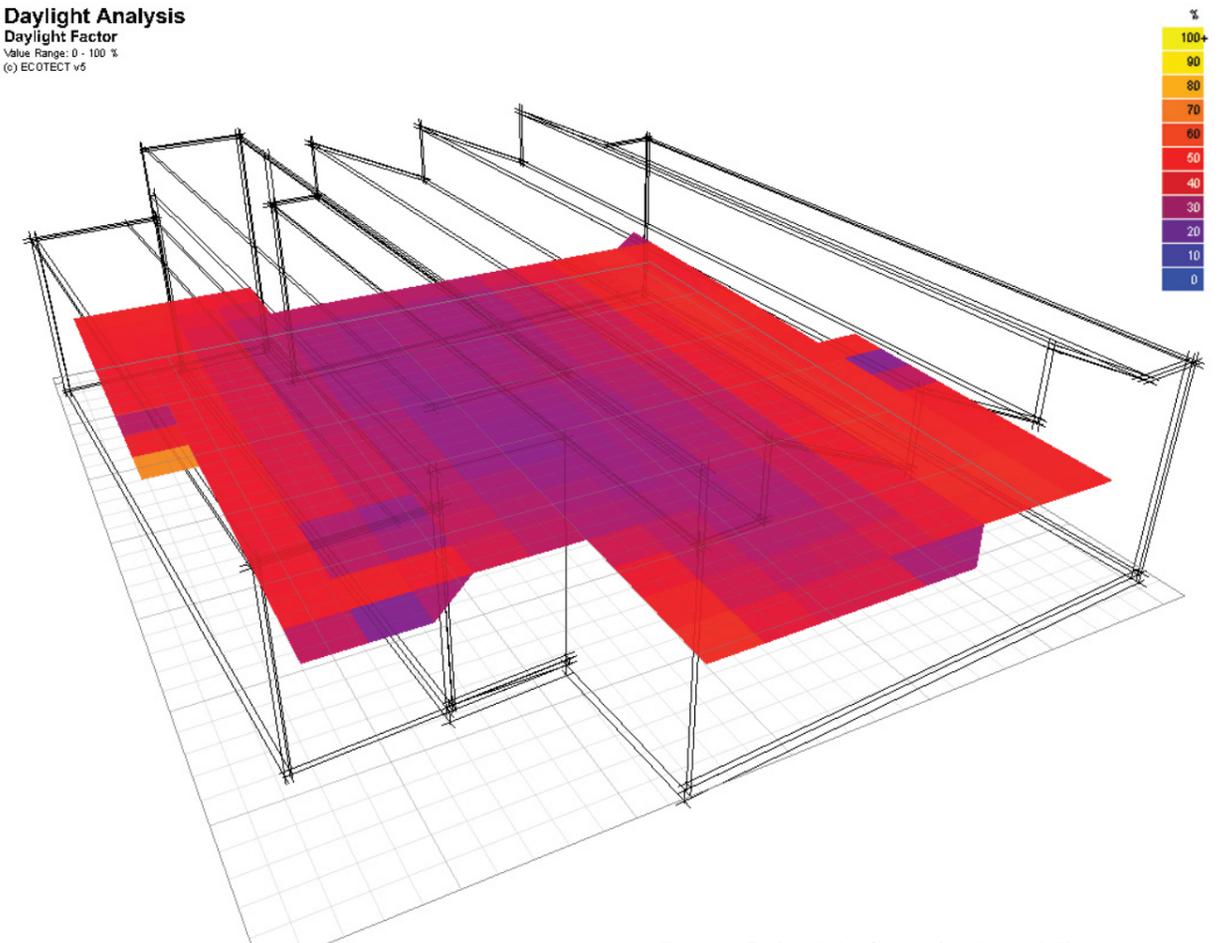


Figure 231: Daylight factor (Author 2013)

Site location: Pretoria, South Africa
 Latitude: 25° 7' South
 Design sky illuminance: Approximately 10500 lux
 Required lux levels in sports hall: min 300 lux
 Daylight factor = 30 - 50% (Figure 231)

$$\begin{aligned} \text{Internal illuminance} &= (\text{Daylight factor} \times \text{External illuminance}) / 100\% \\ \text{Internal illuminance} &= (30\% \times 10500) / 100\% \\ &= 3150 \text{ lux} \\ \text{Internal illuminance} &= (50\% \times 10500) / 100\% \\ &= 5350 \text{ lux} \end{aligned}$$

$$\text{Internal illuminance} = 3150 \text{ lux to } 5350 \text{ lux}$$

There will therefore be sufficient daylight to illuminate the spaces without the use of additional electrical lights during the day.

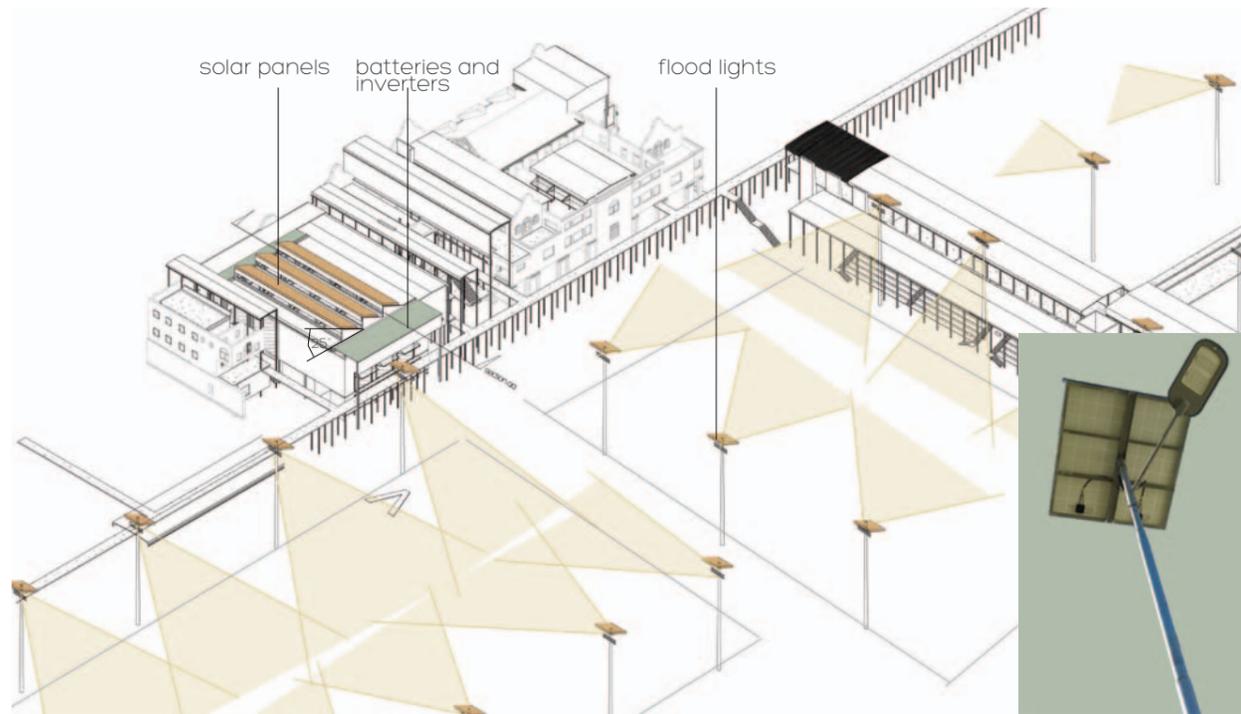


Figure 232: Location of solar panels (Author 2013)

Figure 233: Flood lights by Philips (Alfreds 2013)

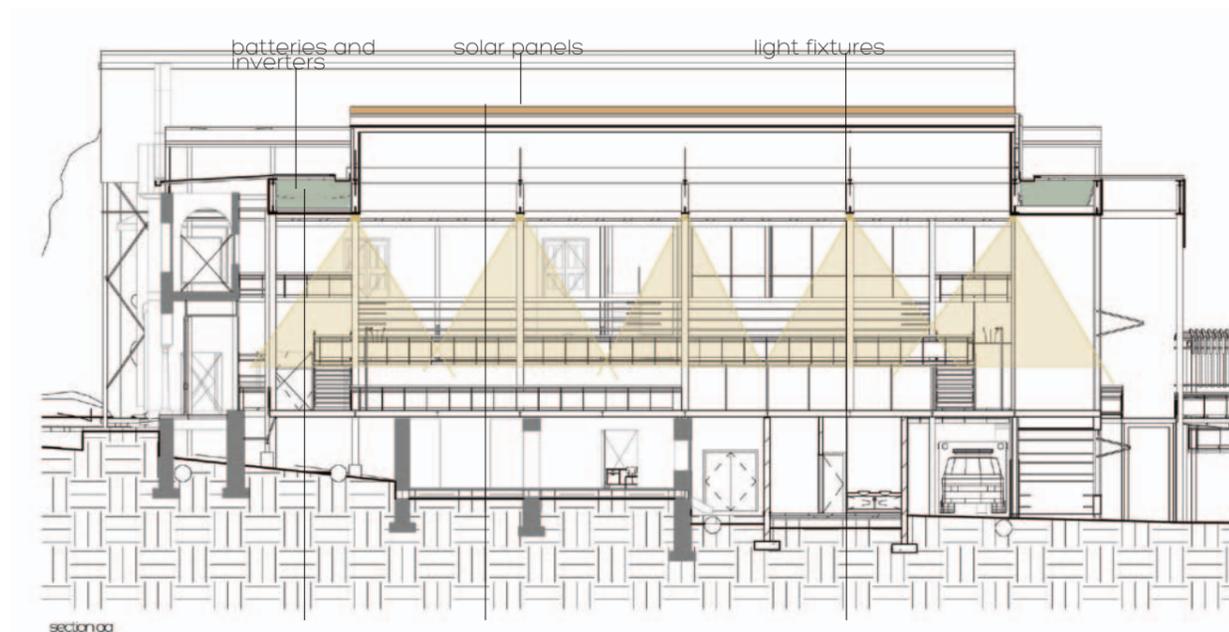


Figure 234: Solar panels, batteries and inverters (Author 2013)

Solar panels will be installed on the saw-tooth roof. (Figure 232, Figure 234) The roof has an ideal roof profile, with an angle of 25° from the horizon, facing north. (Figure 232) These are ideal average conditions for solar panels in South Africa. Battery packs, inverters etc. are located in the ceiling bulkheads along the eastern and western edges of the multi-sports hall. (Figure 234) Exterior lighting will be done by flood lights with incorporated solar panels and battery packs, designed by Philips. (Figure 233) These flood lights are already being widely implemented at rural sports fields in the Cape region. (Alfreds 2013)

Locally available products were assumed for the purposes of these calculations.

Solar panels

The zones dedicated to solar panels (Figure 232, Figure 235) can house up to hundred and eighty 200W panels. These panels can produce up to 36000W of power a day.

If 20% of this is detracted for inefficiencies, a total of 28800W will be produced.

$$28800W \times 5.6Hrs = 161280W.H$$

An average of 161280W.H will be available for daily consumption at Berea Park.



Tensol Solar Panel 200w

ELECTRICAL CHARACTERISTICS

Minimum Power 195
 Voltage at max.power 26.7
 Current at max.power 7.5
 Open circuit voltage 32.9
 Short circuit current 8.0
 Maximum power 205

GENERAL INFORMATION

Solar module watts 200w
 Solar cell type mono-crystalline
 Weight 18kg
 Dimensions 1510mm X 995mm X 50mm

Figure 235: Solar panel (Tensol 2012)

Batteries

200W panels produce 7.5Amps, therefore $180 \times 7.5A = 1350A \times 5.6 Hrs = 7560Ah$

130Ah batteries should not be discharged to less than 50%, therefore:

$$130Ah/50\% = 65Ah$$

$$7560Ah/65A = 116 \text{ batteries}$$

Hundred and sixteen 105A batteries are required. (Figure 234, Figure 236)

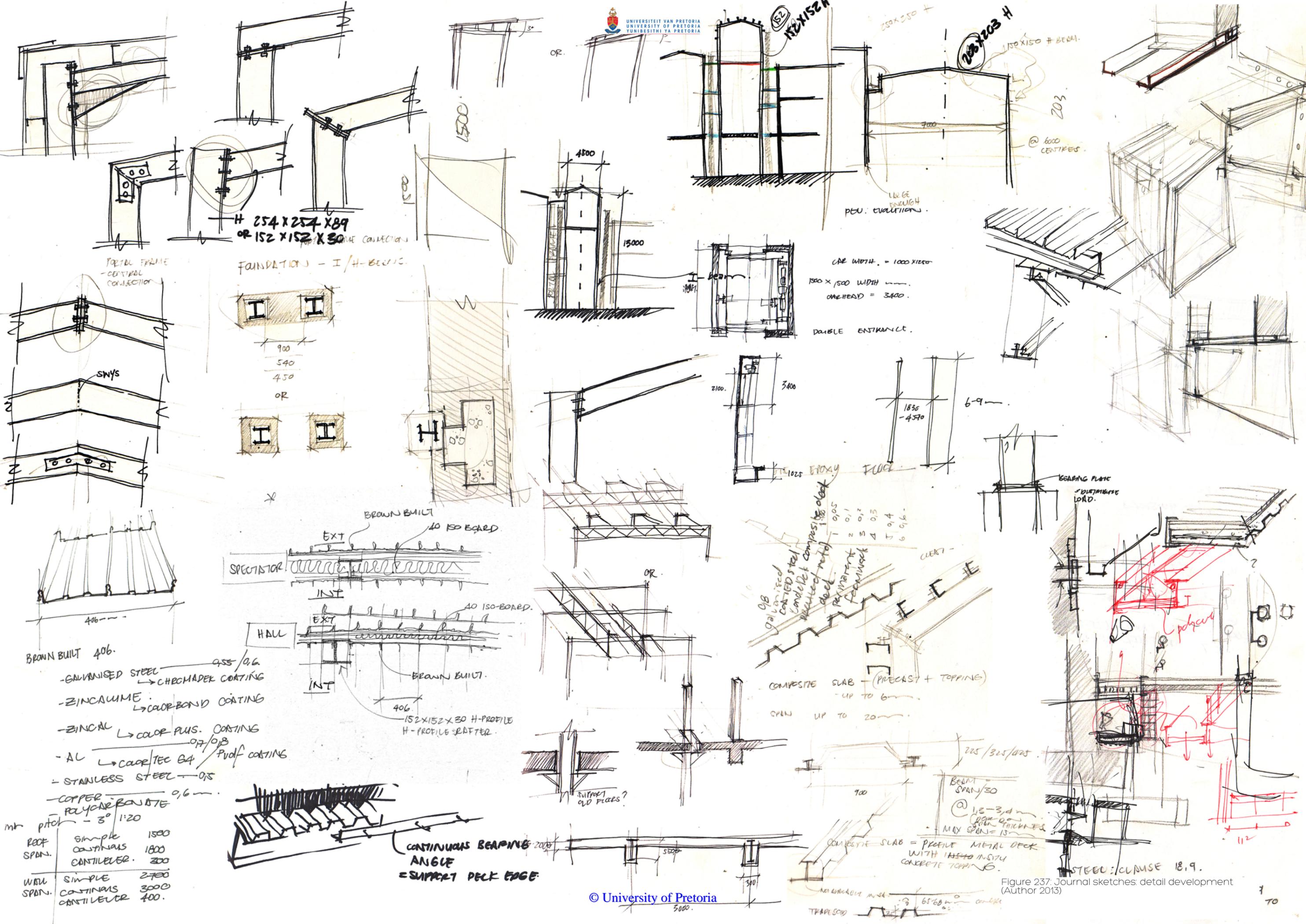


12 Volt US Solar Batteries

SPECIFICATIONS:

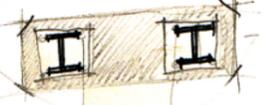
Amp Hours (20hr rate) : 130
 Minutes @ 75 Amps : 49
 Minutes @ 25 Amps : 225
 Dimensions : (L) 330mm X (W) 171mm X (H) 248mm

Figure 236: Battery (Tensol 2012)

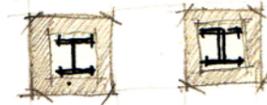


H 254 X 254 X 89
OR 152 X 152 X 30

FOUNDATION - I/H-BEAMS

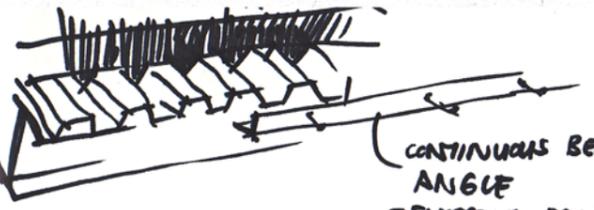


900
540
450
OR



HALL

EXT BROWN BUILT 40 ISO-BEARD
INT SPECTATOR
EXT BROWN BUILT 40 ISO-BEARD
INT BROWN BUILT
406
152 X 152 X 30 H-PROFILE
H-PROFILE Rafter



CONTINUOUS BEARING ANGLE
= SUPPORT DECK EDGE

CAR WIDTH = 1000 X 1250
1500 X 1500 WIDTH
ONE HEAD = 3400
DOUBLE ENTRANCE

COMPOSITE SLAB (PRECAST + TOPPING)
UP TO 6m
SPAN UP TO 20m

- GALVANISED STEEL → CHEMICAL COATING
- ZINCAUME → CORROSION COATING
- ZINCAL → COLOR PLUS COATING
- AL → COLOR TEC 84 / PVD COATING
- STAINLESS STEEL → 0,5
- COPPER → 0,6
- POLYCARBONATE

ROOF SPAN	Simple	1500
	CONTINUOUS	1800
	CANTILEVER	200
WIDTH SPAN	Simple	2700
	CONTINUOUS	3000
	CANTILEVER	400

Figure 237. Journal sketches: detail development (Author 2013)

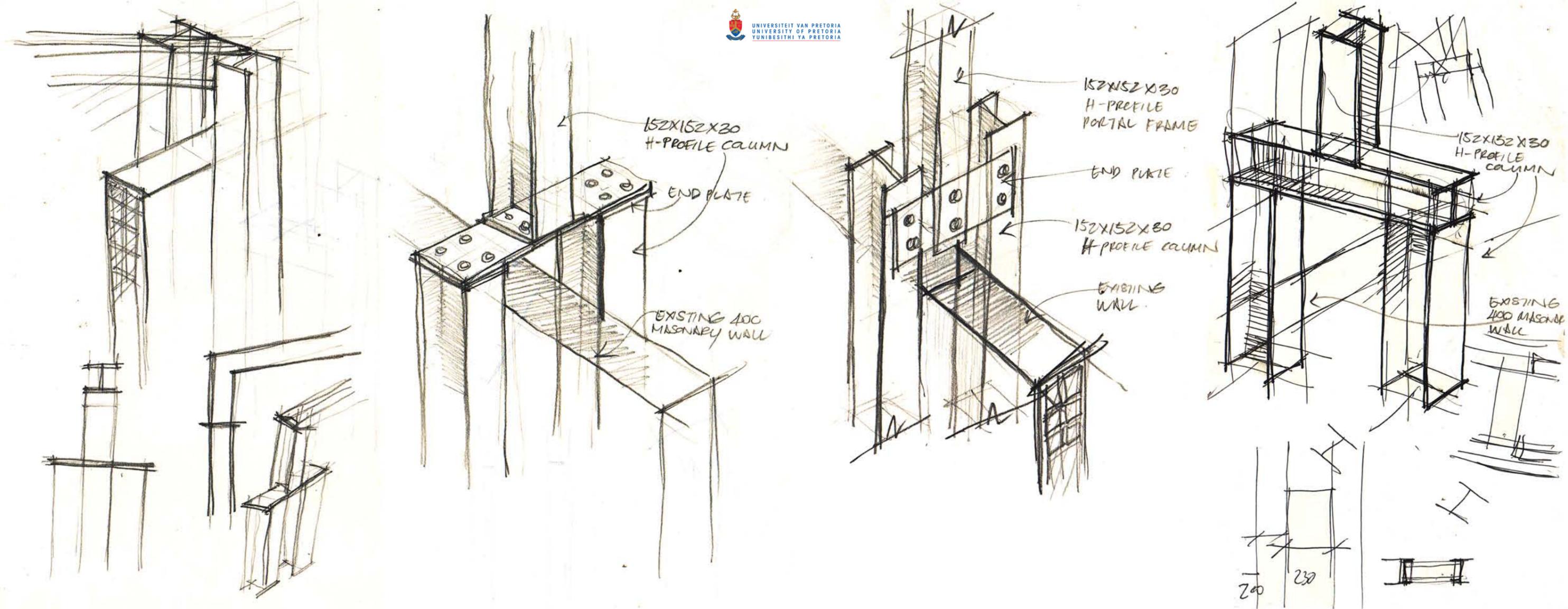


Figure 238: Journal sketches: detail development of stepped portal frame (Author 2013)

Detail development

Exploration and development of details were done through rough journal sketches. (Figure 237, Figure 238)

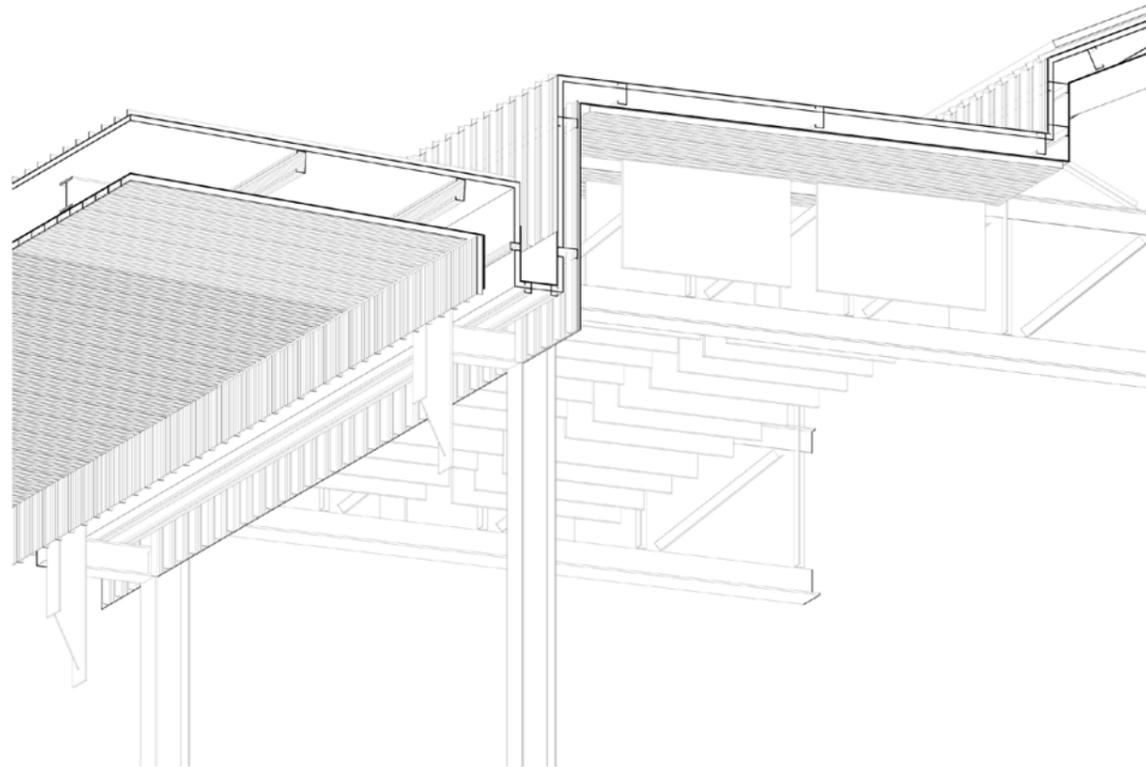


Figure 239: Revit sketches: detail development of suspended portal frames (Author 2013)

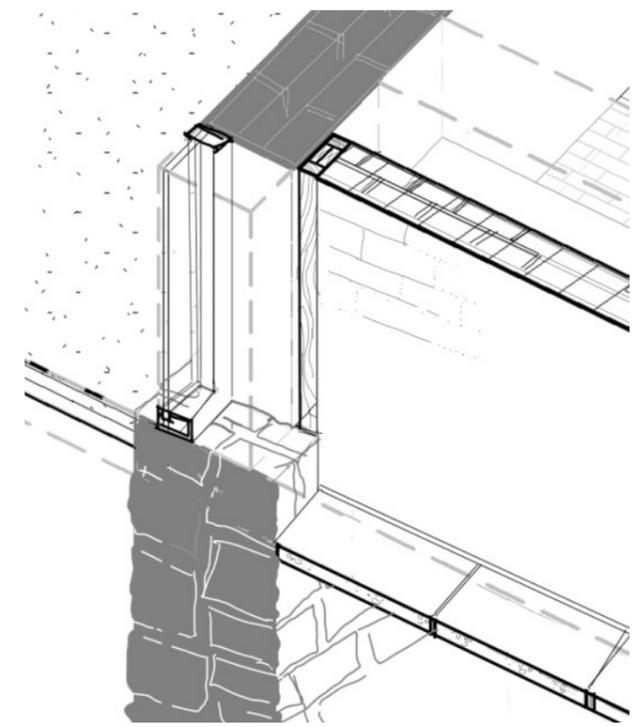


Figure 240: Revit sketches: detail that shows charred timber separation between old masonry and new masonry walls at bathrooms (Author 2013)

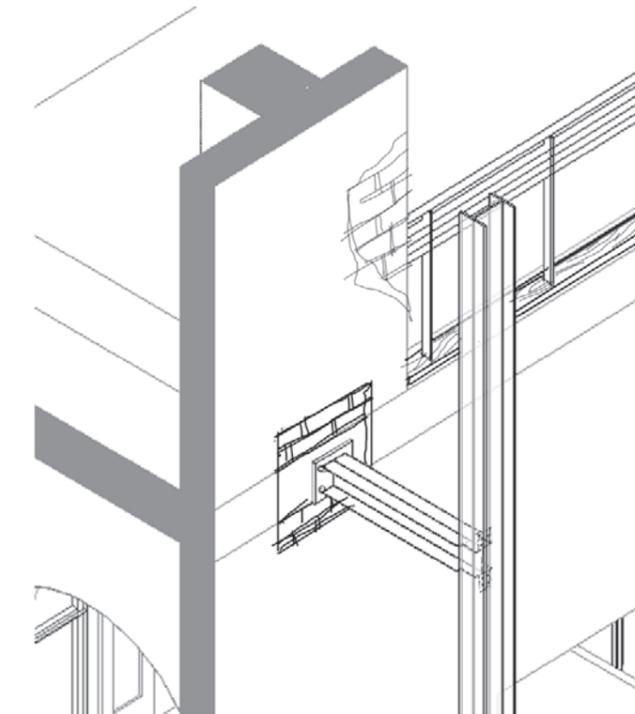


Figure 241: Revit sketches: detail that shows the structural support between old and new (Author 2013)

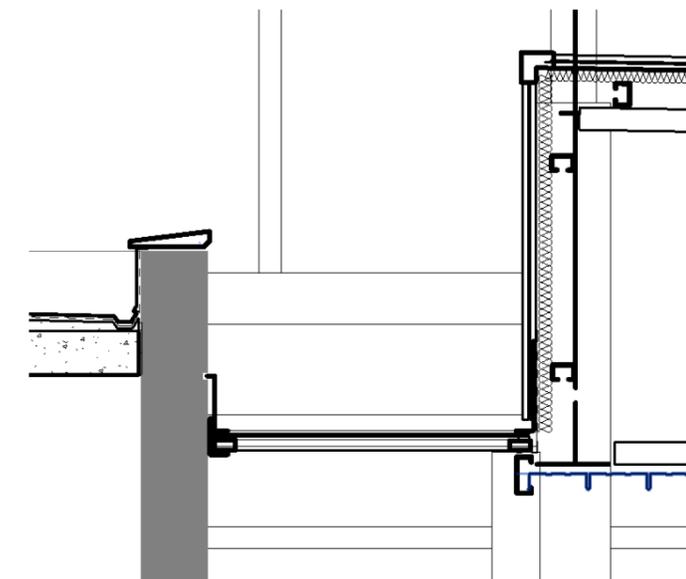


Figure 242: Revit sketches: detail that shows concrete roof and glazed roof interacting with the existing structure, as well as the coping for the existing structure. (Author 2013)

Detail development

Exploration and development of details were done through rough Revit sketches. (Figure 239 - Figure 242)

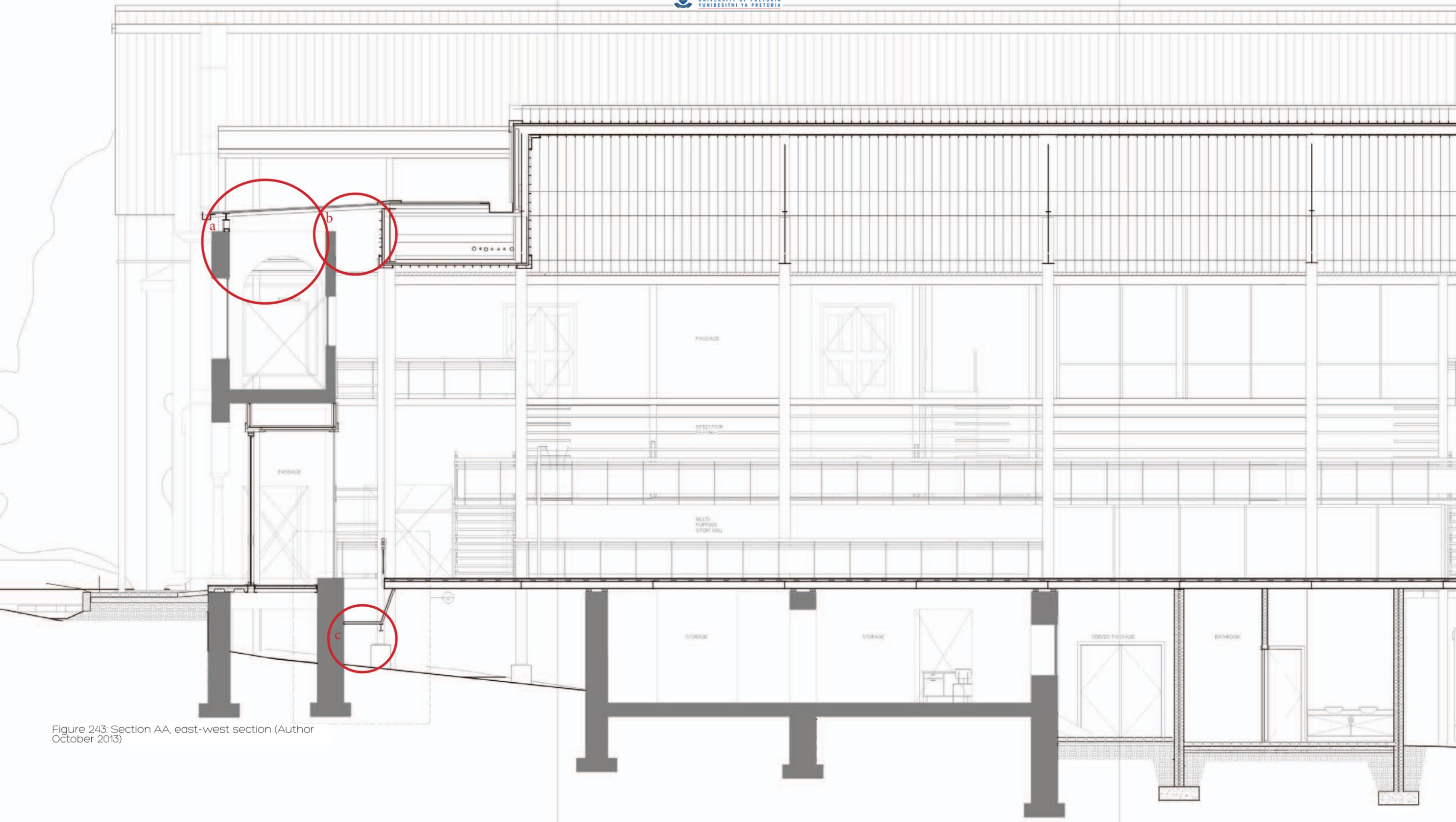


Figure 243: Section AA, east-west section (Author October 2013)

Technical development: October

In the final technical critique session, some issues with the design resolution were raised. These issues are discussed in: "October: one in twenty section" on page 193, "October: detail 1" on page 194, "October: detail 2" on page 195, "October: detail 3" on page 196 and "October: plan development" on page 197.

October: one in twenty section

(Figure 243)

In the one in twenty section it became apparent that further attention had to be paid to harnessing the potential of the gap between old and new (b), as discussed in "The gaps" on page 164. The roof over the existing passage and the junction between the passage and the hall was weak in its resolution, basically mirroring the profile of the old roof that was lost in the fire (a). The detailing of the gap between the floor of the hall and the floor of the passage needed to be simplified (c). (Figure 274)

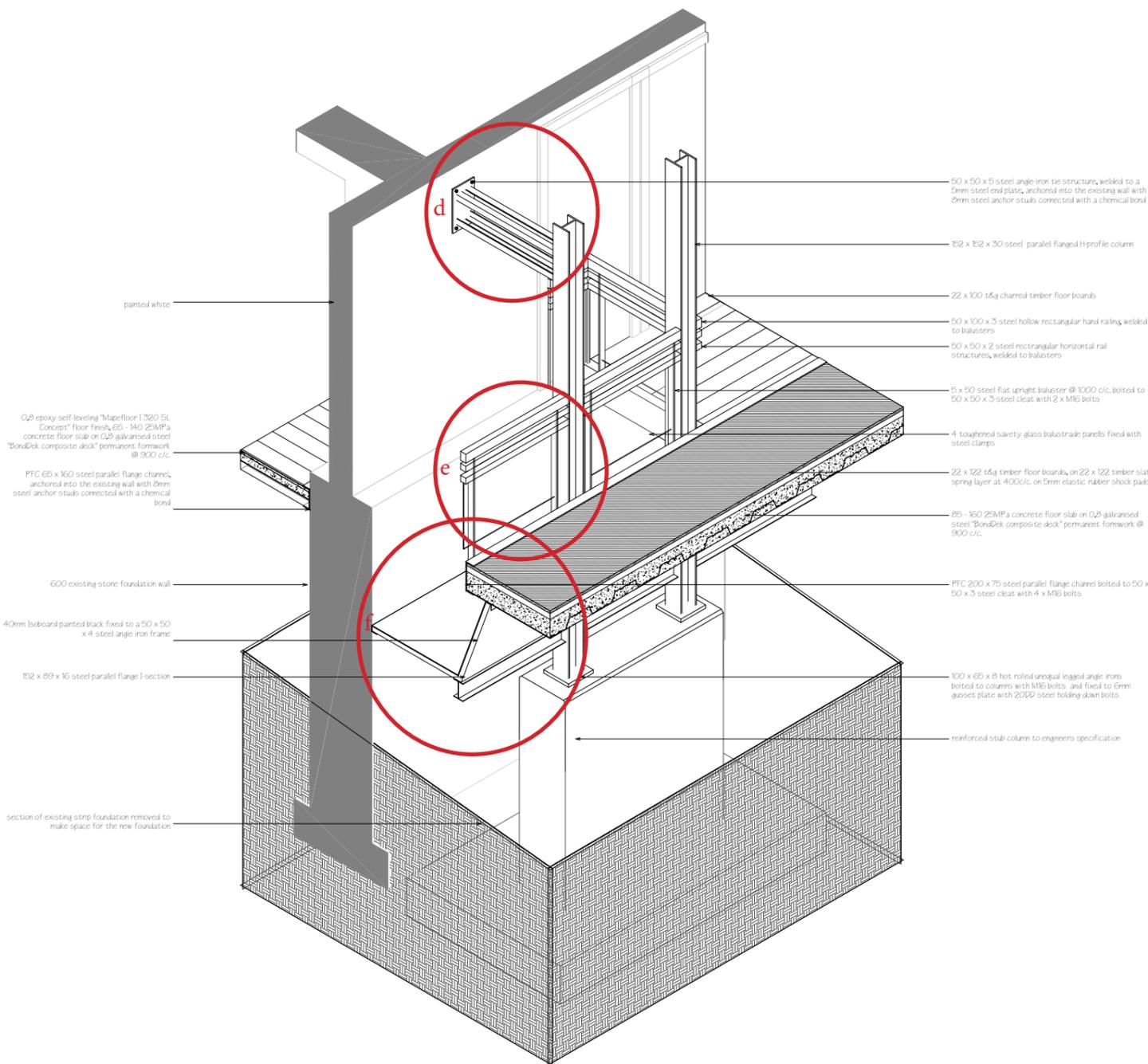


Figure 244: Detail 1: foundation and floor detail of basketball floor and old passage (Author October 2013)

October: detail 1
(Figure 244)

A more subtle resolution of the supports that extend from the new structure to hold up the old walls was required (d). (see Figure 283) The balustrade, that primarily serves as a safety precaution, needed a more delicate approach (e), while the detailing of the gap between the old and new needed to be simplified (f) as discussed in "October: one in twenty section" on page 195.

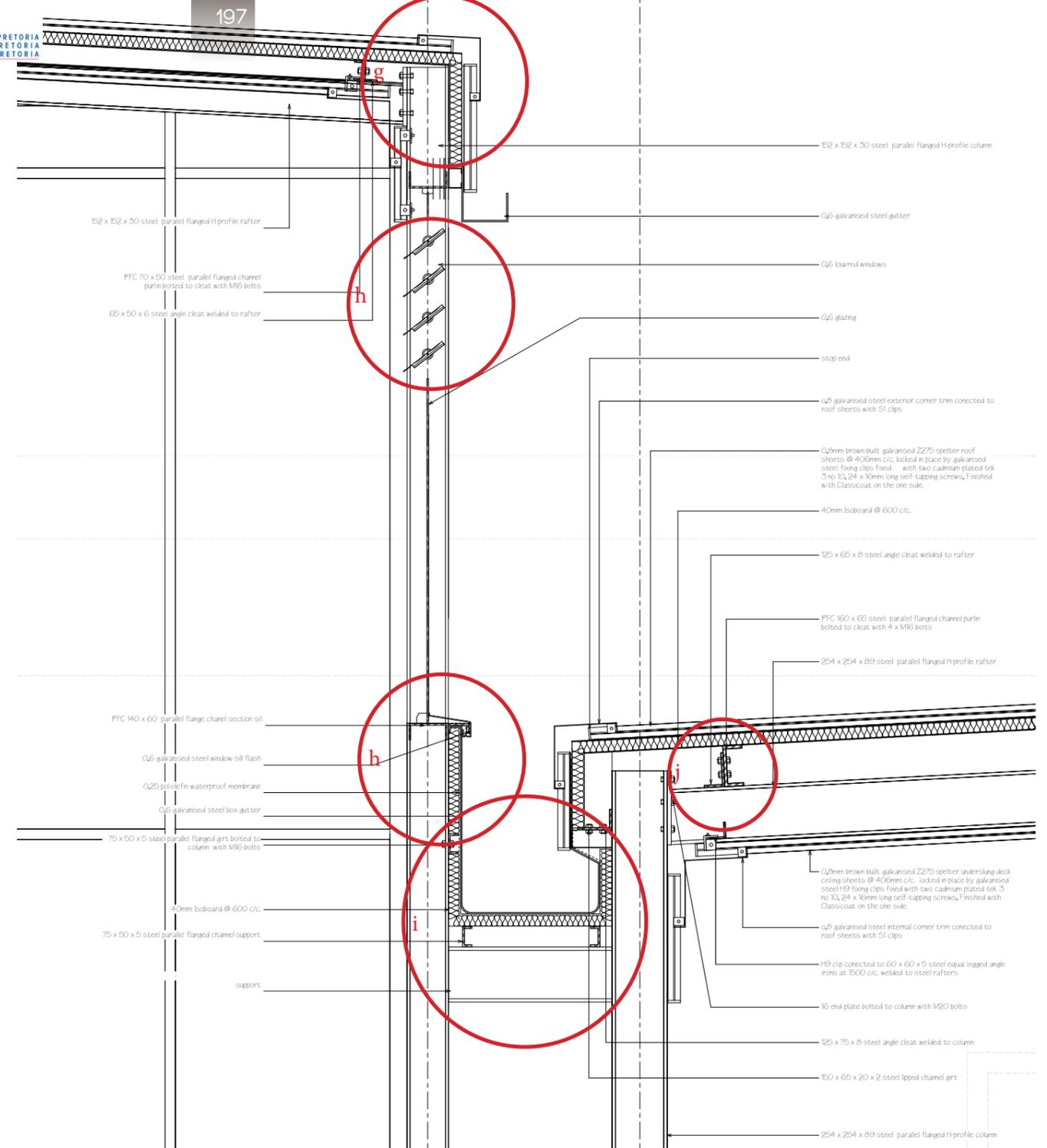


Figure 245: Detail 2: roof, ceiling and gutter details (Author October 2013)

October: detail 2
(Figure 245)

Some mistakes were noted in the annotations, while other apparent mistakes in the detail resolution were also identified. The roof corner detail would result in leakages, which led to the exploration of utilising bent sheets with rib caps corners (g). The complexity of the shape of the gutter was brought into question (i), as well as the windowsill resolution (h). It also became apparent that certain basic mistakes were made, including the depiction of cleats in section and using parallel flange channels for purlins and girts instead of lipped steel channels (j). (see Figure 284)

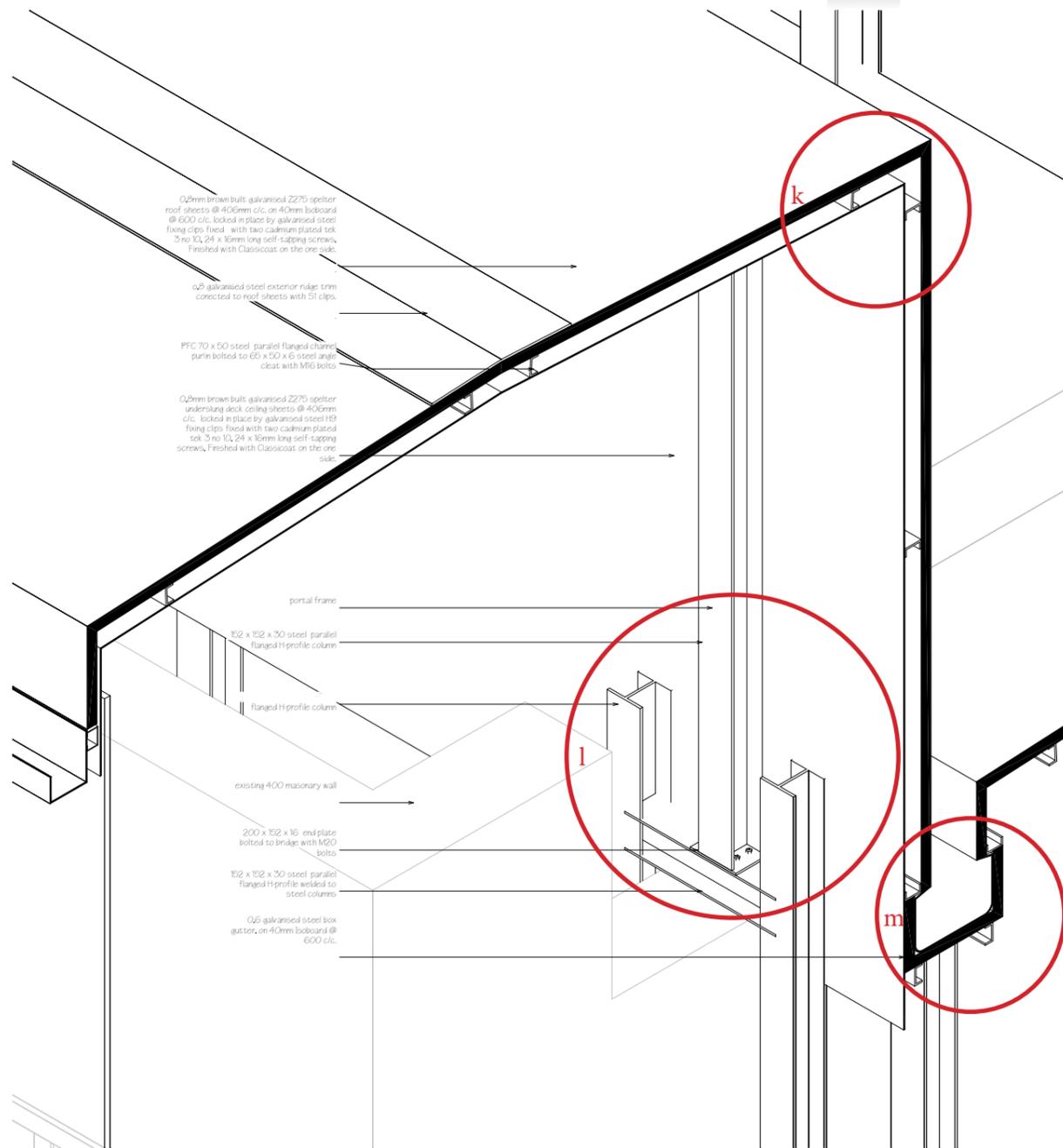
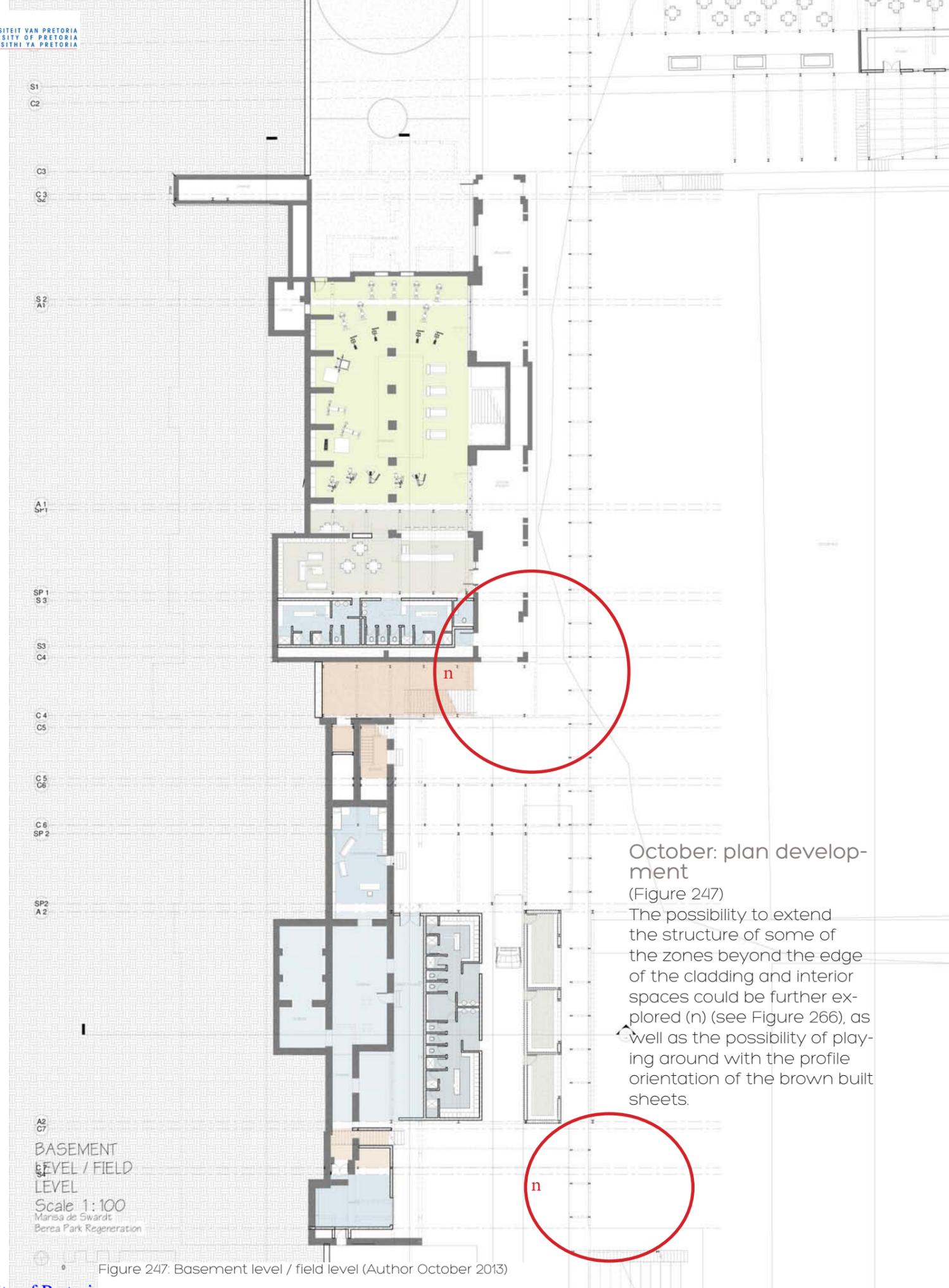


Figure 246: Detail 3: portal frame interaction with existing wall (Author October 2013)

October: detail 3

(Figure 246)

A more subtle resolution of the stepped portal frame was required (l). (see Figure 285) While some attention had to be paid to the gutter (m), purlin and girt detail (k) as discussed in "October: detail 2" on page 197.



BASEMENT
LEVEL / FIELD
LEVEL
Scale 1:100
Marisa de Swardt
Berea Park Regeneration

Figure 247: Basement level / field level (Author October 2013)

October: plan develop- ment

(Figure 247)

The possibility to extend the structure of some of the zones beyond the edge of the cladding and interior spaces could be further explored (n) (see Figure 266), as well as the possibility of playing around with the profile orientation of the brown built sheets.

Part 4

[result]

The first part of the chapter consists of the visual summary and presentation of the information composed in chapters 1 to 11. The plan, section, elevation, detail drawings and models that follow are the result of the design development and technical development in chapters 10 and 11.

Final presentation and design drawings, which include plans, sections, elevations perspectives and details are presented.



Northern extension
The main entrance has suffered from water and neglect.

Western facade
The main entrance has suffered from water and neglect.

South-western room
The main entrance has suffered from water and neglect.

Entrance
The main entrance has suffered from water and neglect.

Walls and ceilings
A lot of the ceiling and walls have suffered from water and neglect.

Fireplaces
There are numerous fireplaces that have been removed or damaged.

Windows
Most of the window frames have been removed or damaged.

Roof
The roof of the southern clubhouse is in a state of disrepair.

Internal walls
Most of the internal walls have been damaged or removed.

Cable
The southern gable has been removed or damaged.

Interior
All of the interior spaces have suffered from water and neglect.

Ceilings
The ceilings have been removed or damaged.



Apies River
The bank of the river is overgrown with grass.

Dressing rooms
The dressing rooms were moved from the southern part of the site.

Uniba
The main entrance has suffered from water and neglect.

M-Net Commentator Pavilion
The pavilion was used to broadcast sports commentary.

Historic bleachers
The bleachers were used for sports events.

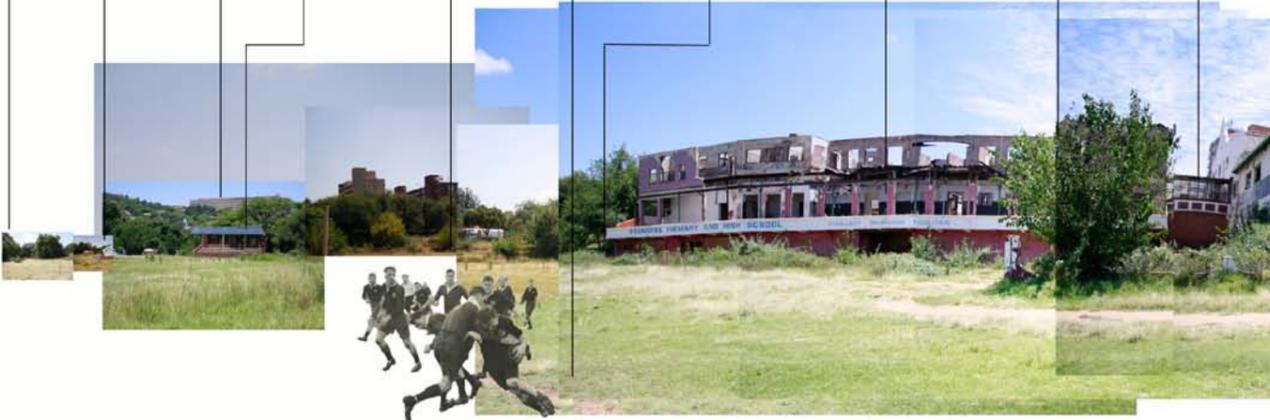
Sports field
The field has been used for sports events.

Secondary entrance
The main entrance has suffered from water and neglect.

Southern clubhouse
The clubhouse has suffered from water and neglect.

Fire damage
The building has suffered from fire damage.

Bridge connecting northern and southern club houses
The bridge has suffered from water and neglect.



Northern clubhouse
The clubhouse has suffered from water and neglect.

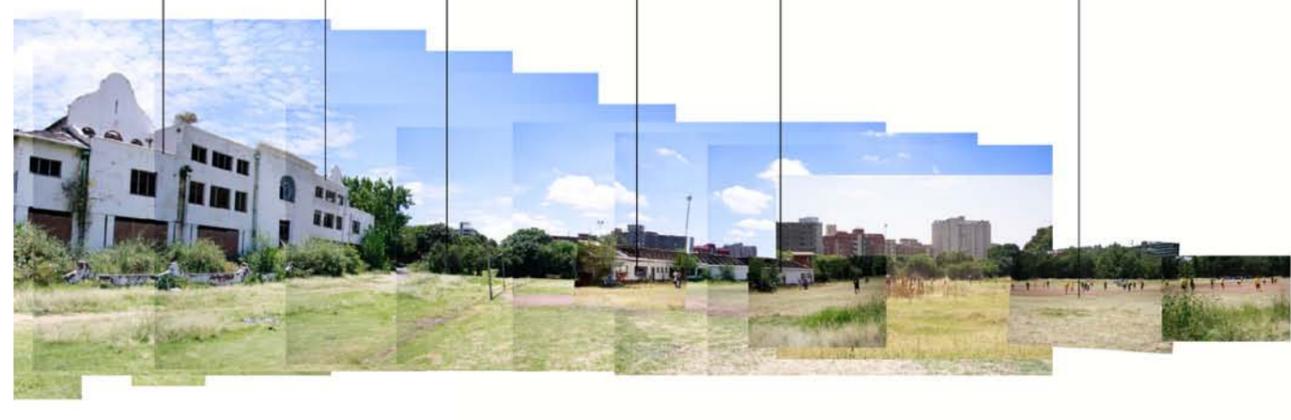
Damage from neglect
The building has suffered from neglect.

Main entrance
The main entrance has suffered from water and neglect.

Damage from neglect
The building has suffered from neglect.

Damage from neglect
The building has suffered from neglect.

Soccer field
The soccer field has suffered from neglect.



Sport and Recreational centre
Moriah M. Phiso

REGENERATING BEREA PARK

[DESIGN IN PURSUIT OF REKINDLING APPROPRIATION]

Figure 248: Presentation page 1: panoramic of Berea Park's current condition (Author November 2013)
(See chapter 5)

Figure 249: Presentation page 2: panoramic of Berea Park's current condition (Author November 2013)
(See chapter 5)



Figure 250: Presentation page 3: theories (Author November 2013)
(See chapters 1-3)



Figure 251: Presentation page 4: site location (Author November 2013)
(See chapter 5)



Figure 252: Presentation page 5: heritage (Author November 2013)
(See chapter 4)

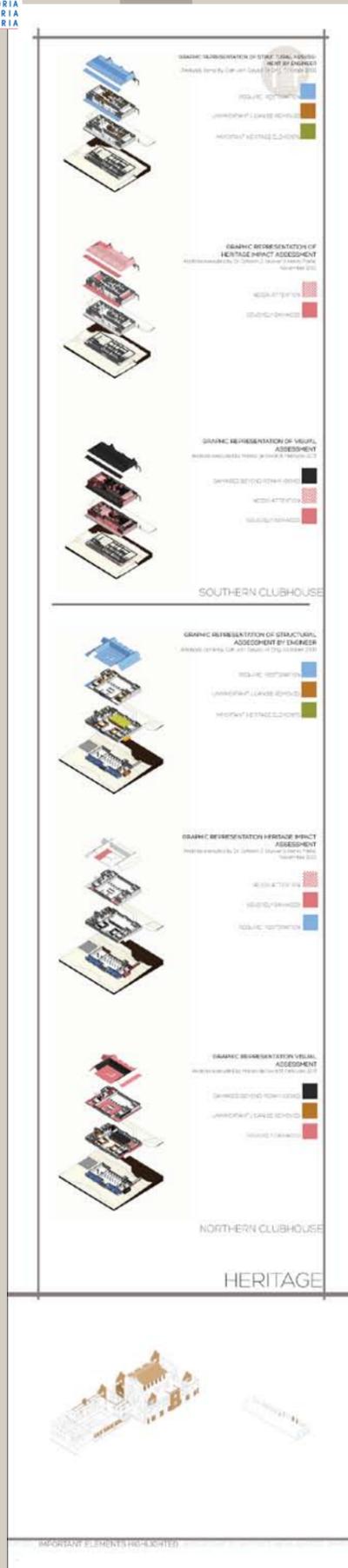


Figure 253: Presentation page 6: heritage analysis (Author November 2013)
(See chapter 4)

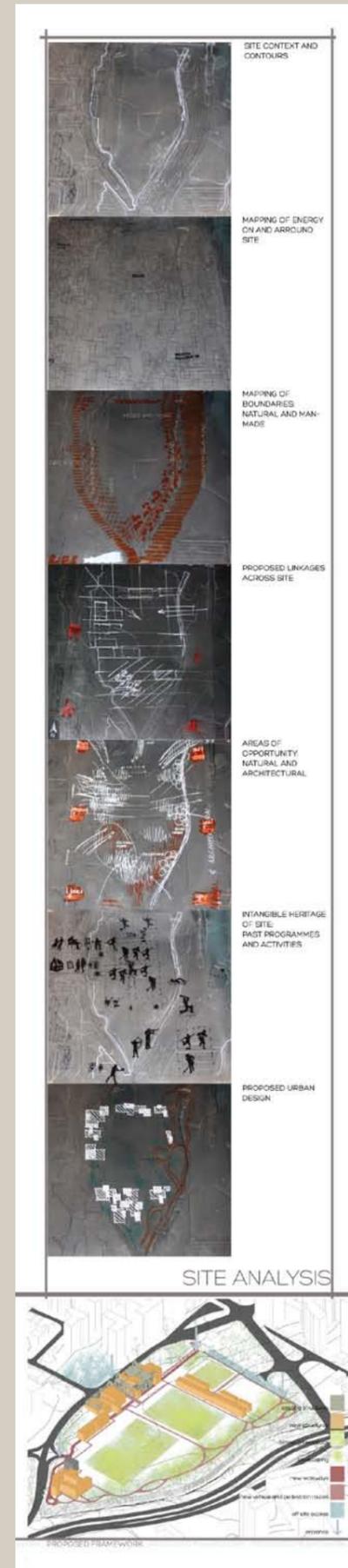


Figure 254: Presentation page 7: site analysis (Author November 2013)
(See chapter 5)

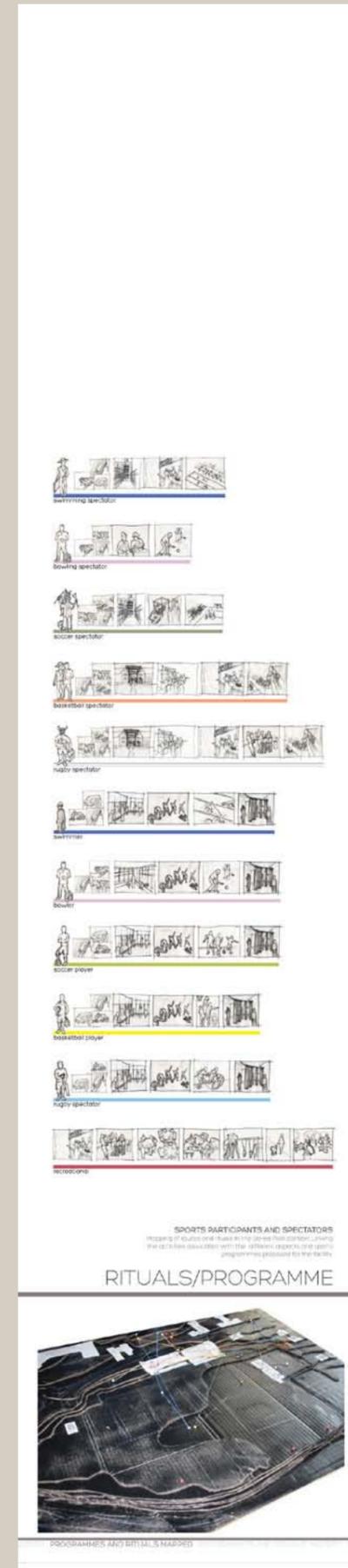


Figure 255: Presentation page 8: programme (Author November 2013)
(See chapter 7)

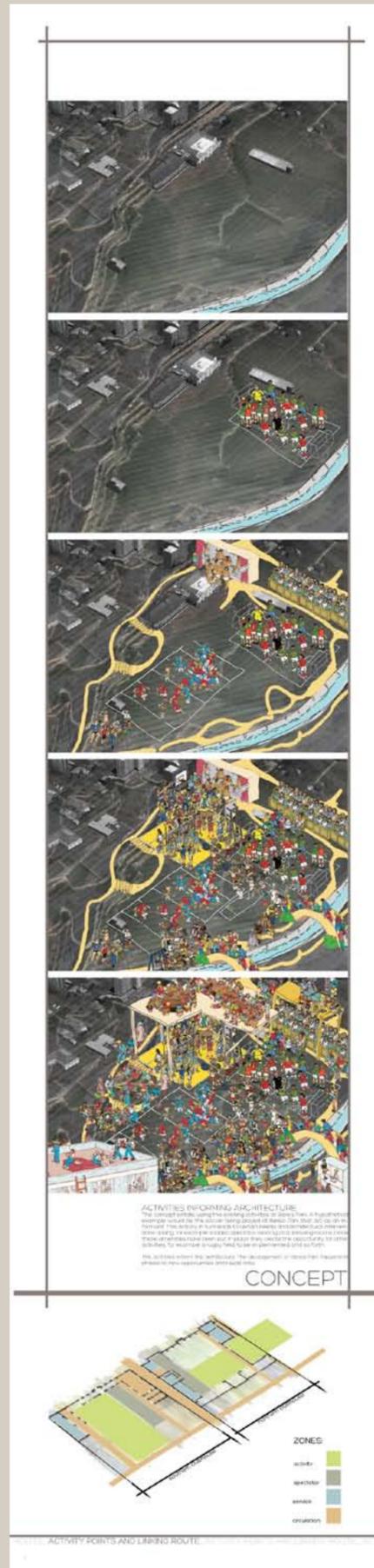


Figure 256: Presentation page 9: concept (Author November 2013)

(See chapter 9)

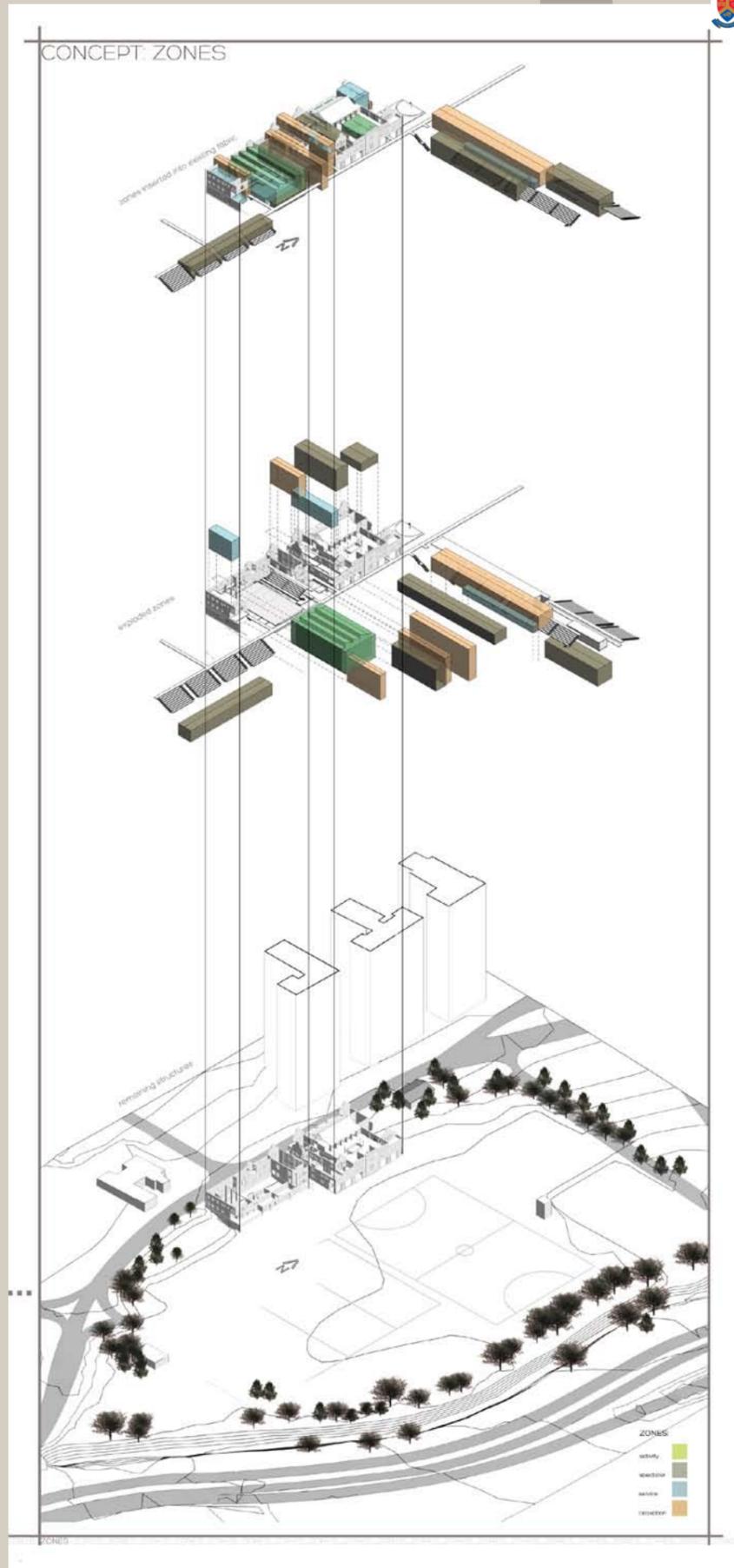


Figure 257: Presentation page 10: zones (Author November 2013)

(See chapter 9)



Figure 258: Presentation page 11: design development (Author November 2013)

(See chapter 10)

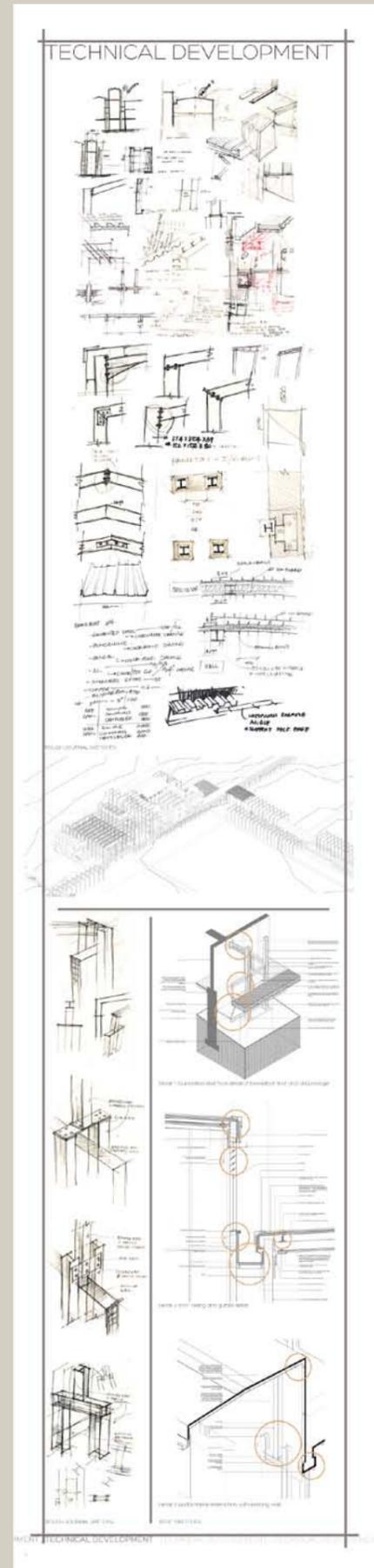


Figure 259: Presentation page 12: technical development (Author November 2013)

(See chapter 11)

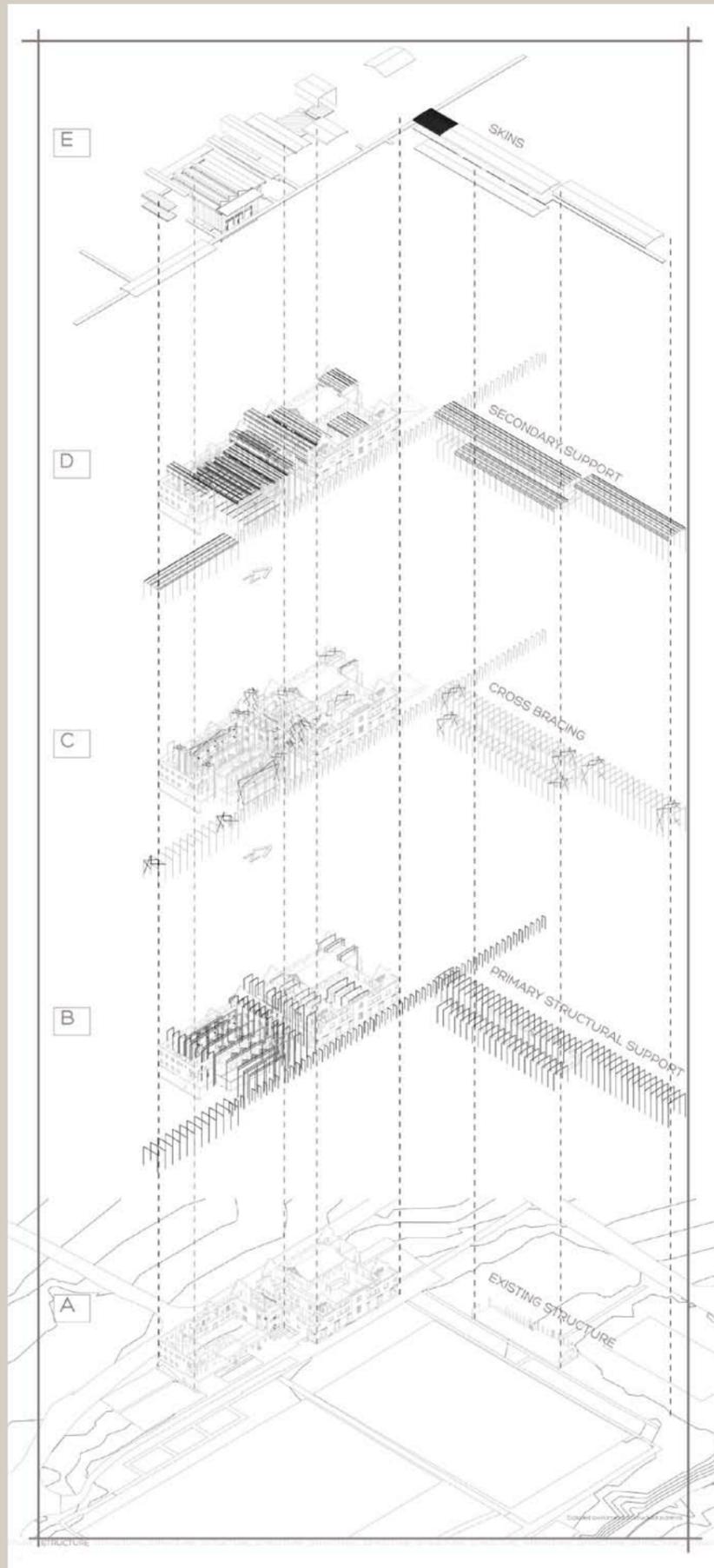


Figure 260: Presentation page 13: structure (Author November 2013)

(See chapter 11)



Figure 261 Presentation page 14: materiality (Author November 2013)

(See chapter 11)

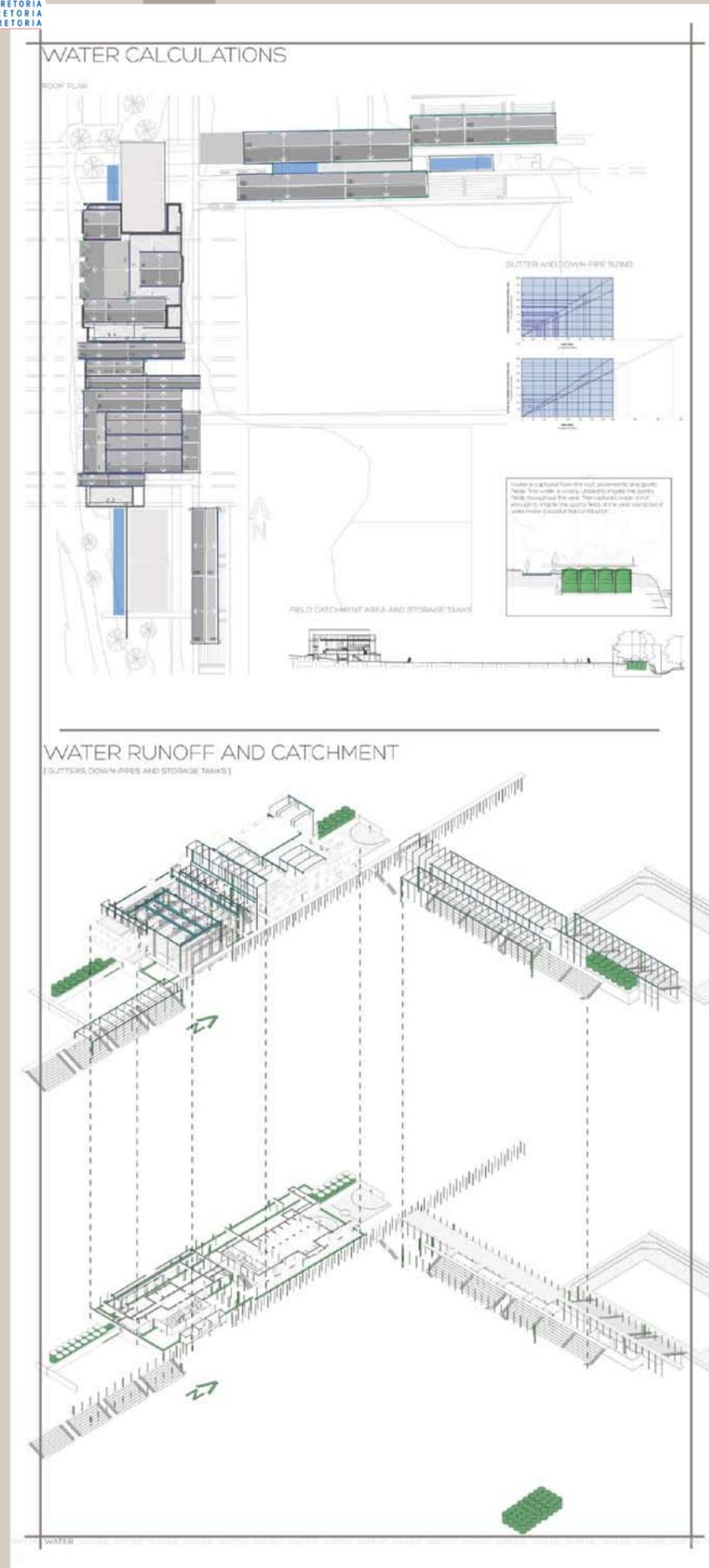


Figure 262: Presentation page 15: water (Author November 2013)

(See chapter 11)

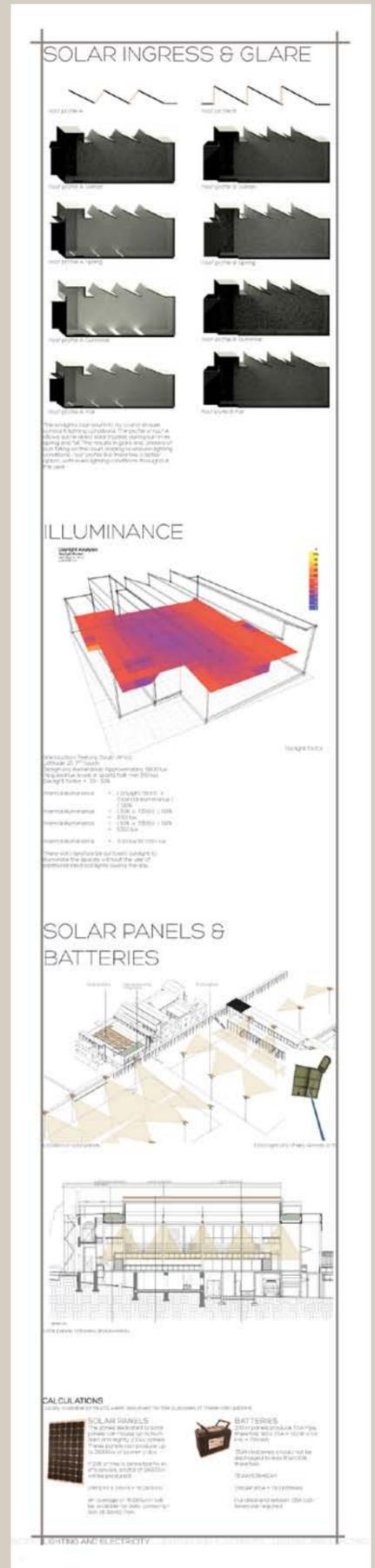


Figure 263: Presentation page 16: lighting and electricity (Author November 2013)

(See chapter 11)



Figure 264: Presentation page 17: perspective of entrance (Author November 2013)

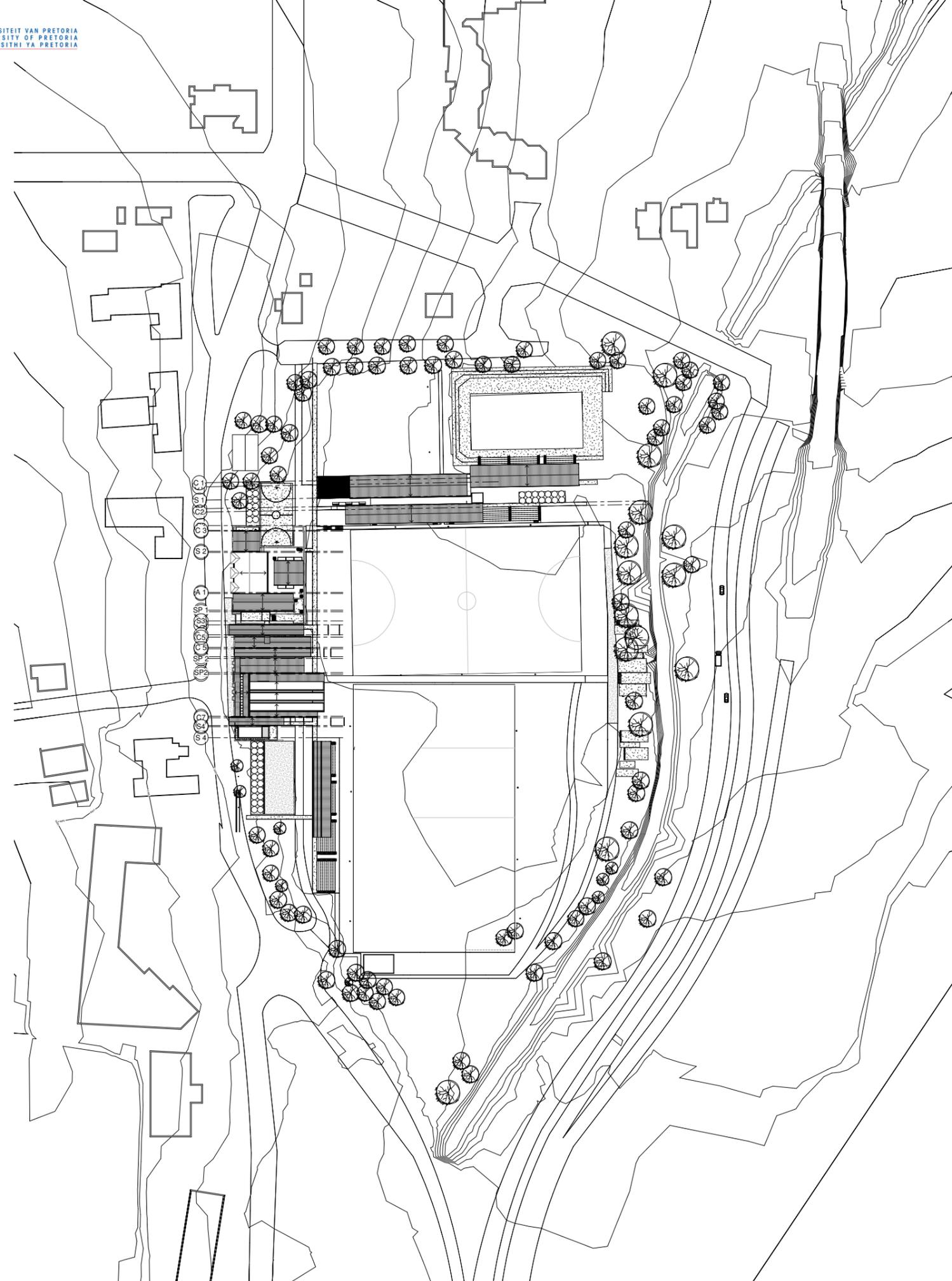


Figure 265: Presentation page 18: roof plan (Author November 2013)

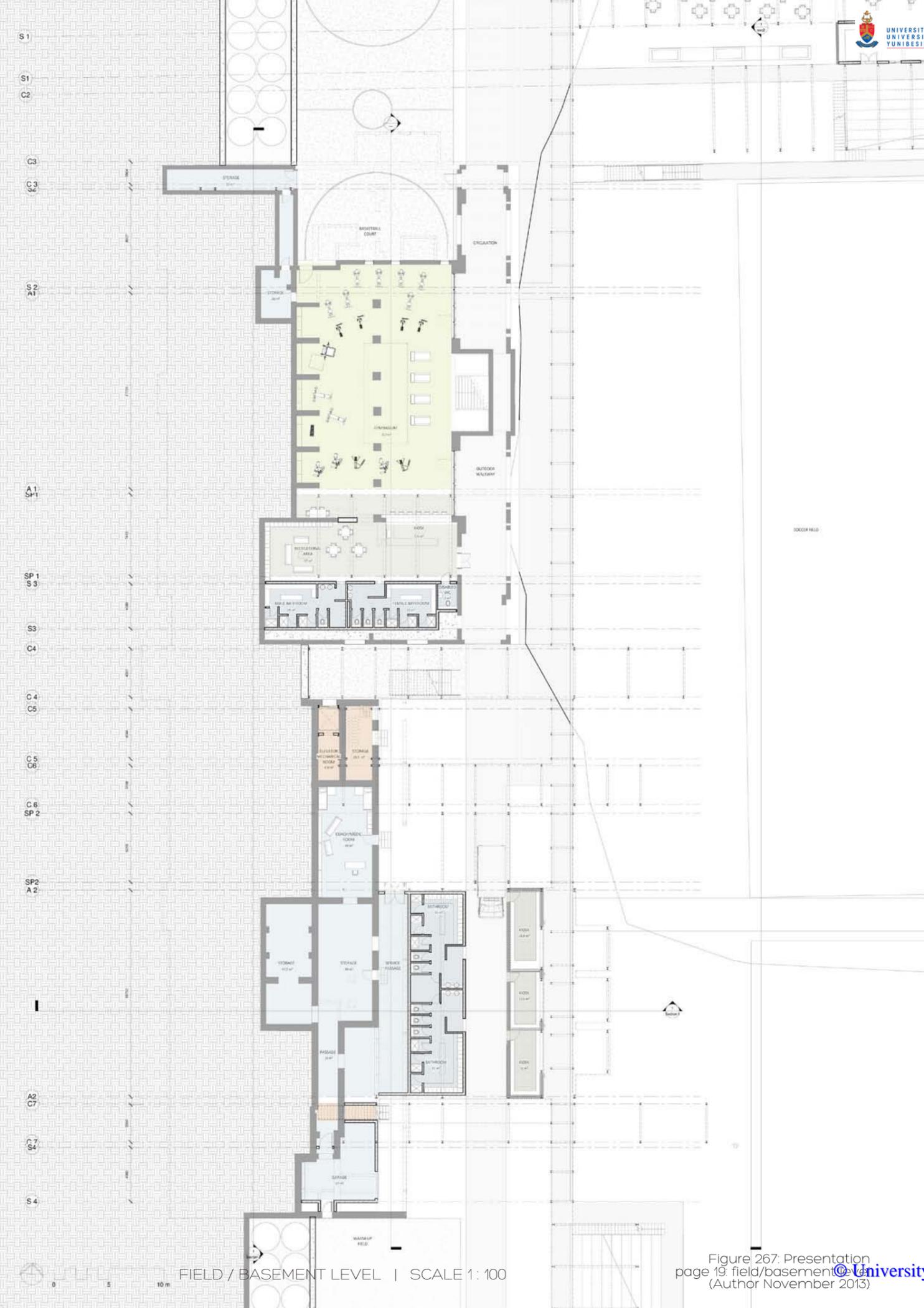


Figure 267: Presentation page 19: field/basement level diagram (Author November 2013)

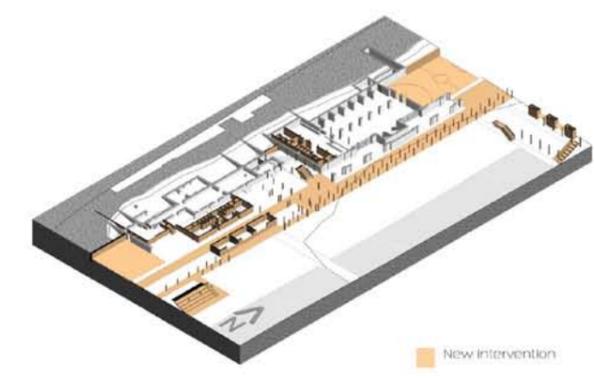
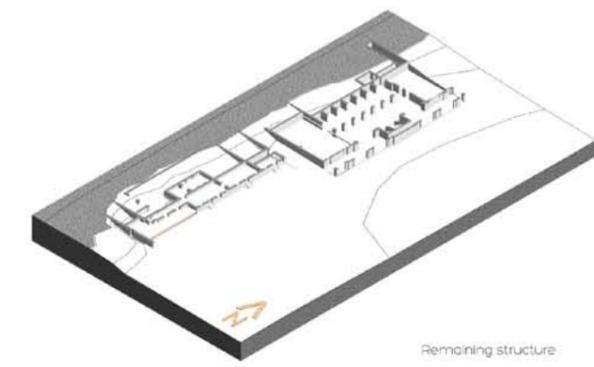
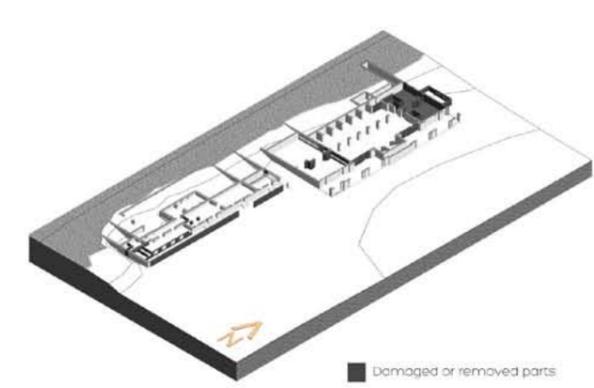
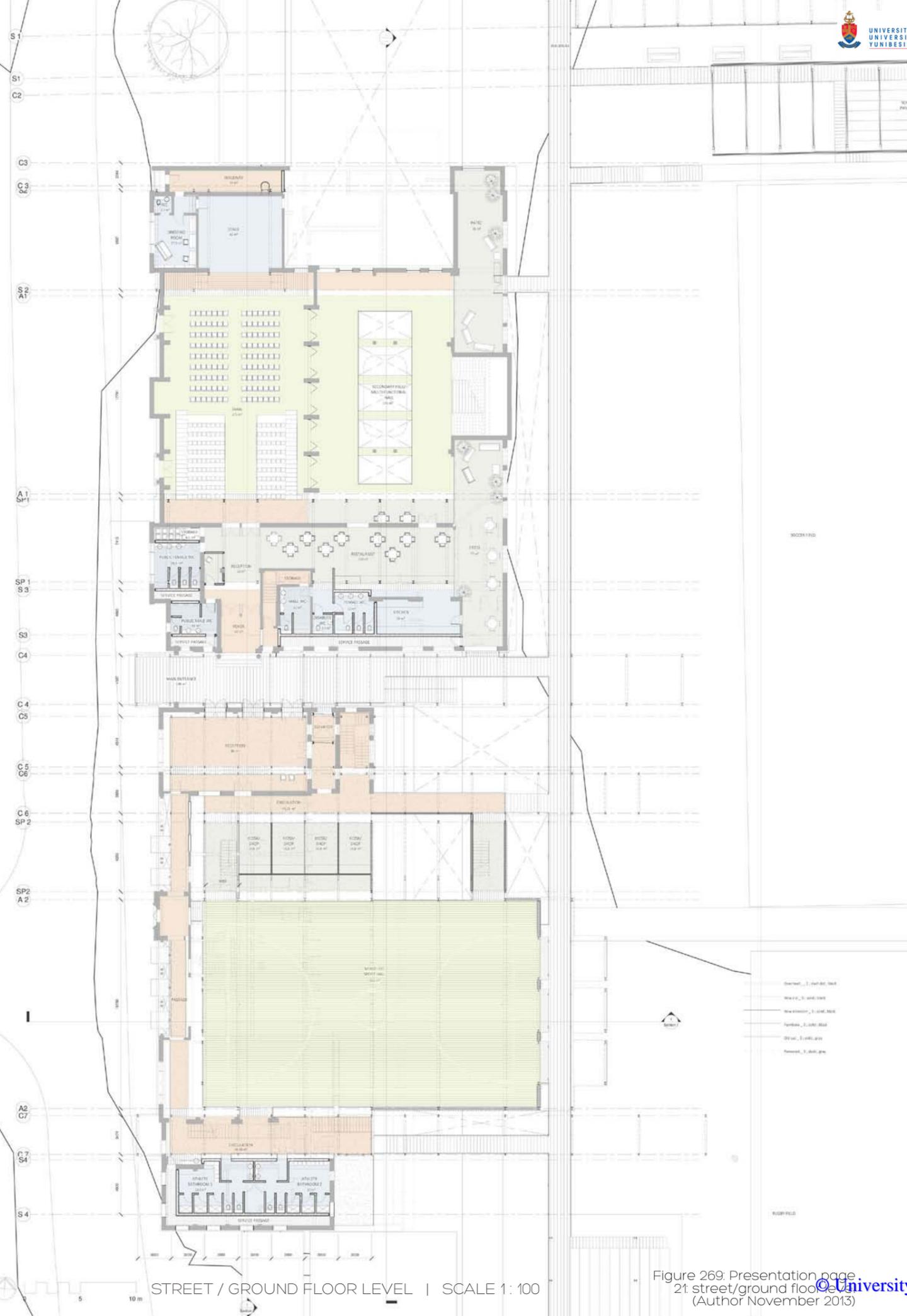


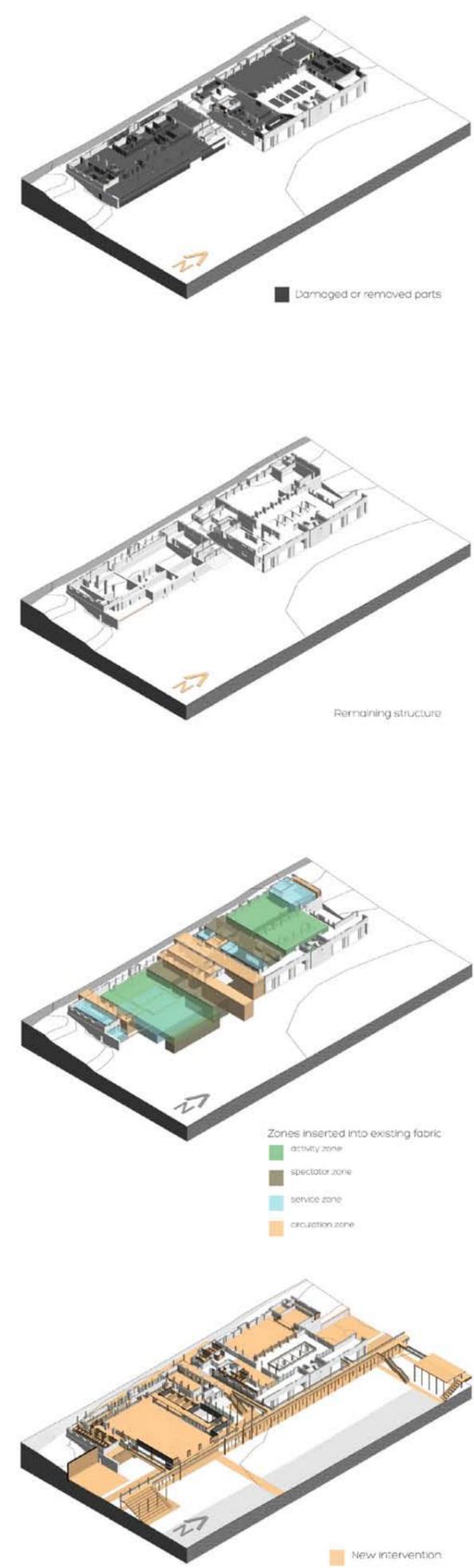
Figure 268: Presentation page 20: field/basement level diagram (Author November 2013)

FIELD / BASEMENT LEVEL DIAGRAMS



STREET / GROUND FLOOR LEVEL | SCALE 1: 100

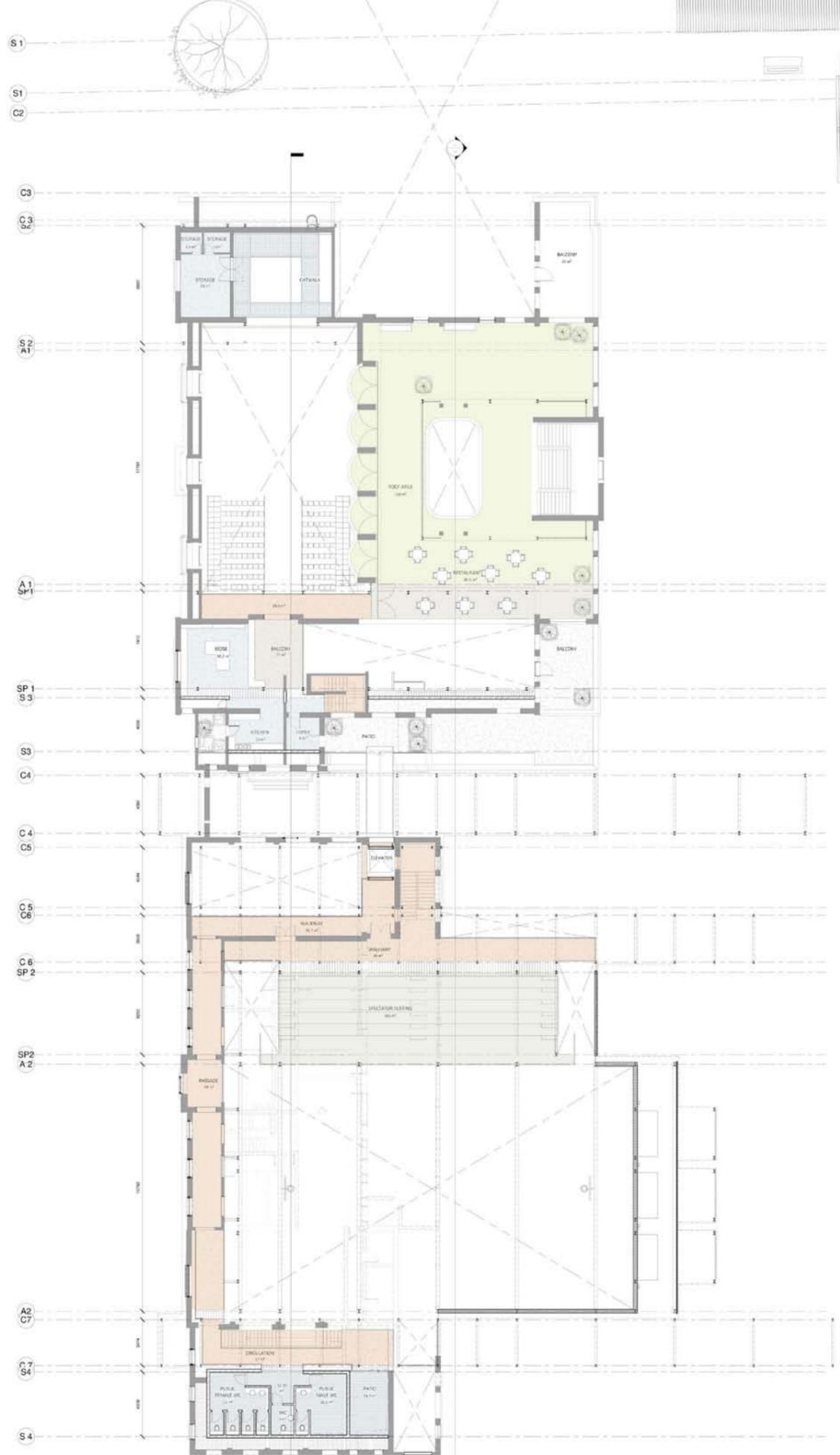
Figure 269: Presentation page 21 street/ground floor level diagram (Author November 2013)



STREET / GROUND FLOOR LEVEL DIAGRAMS

Figure 270: Presentation page 22: street/ground floor level diagram (Author November 2013)

New intervention



FIRST FLOOR LEVEL | SCALE 1: 100

Figure 272: Presentation page 23 first floor level diagram (Author November 2013)

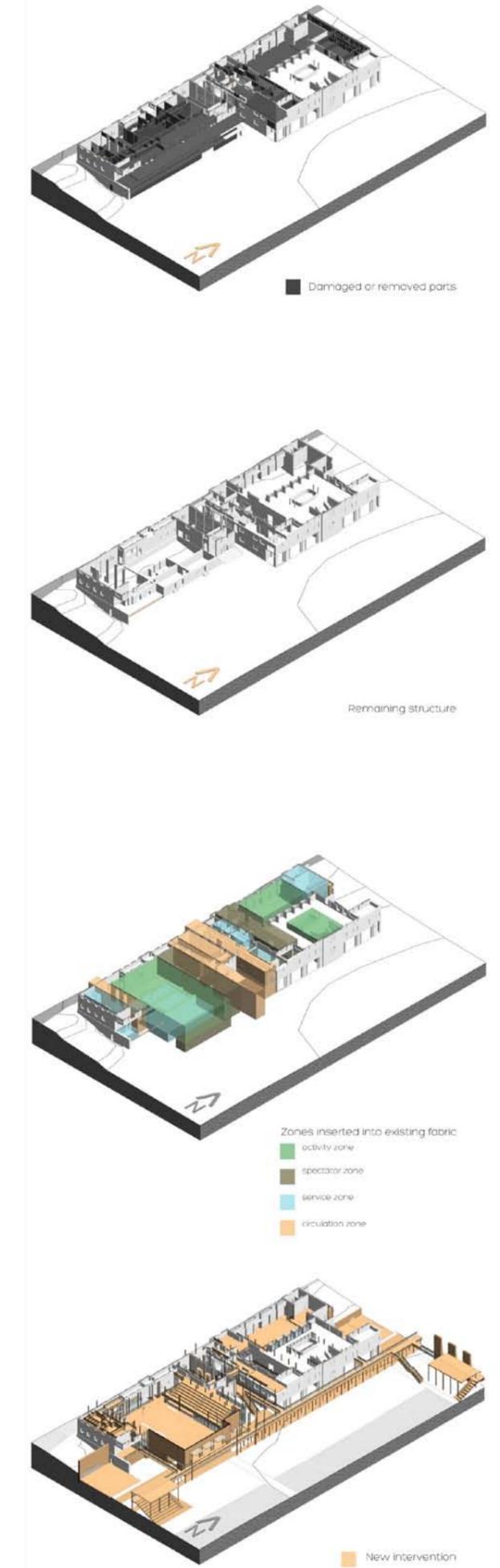
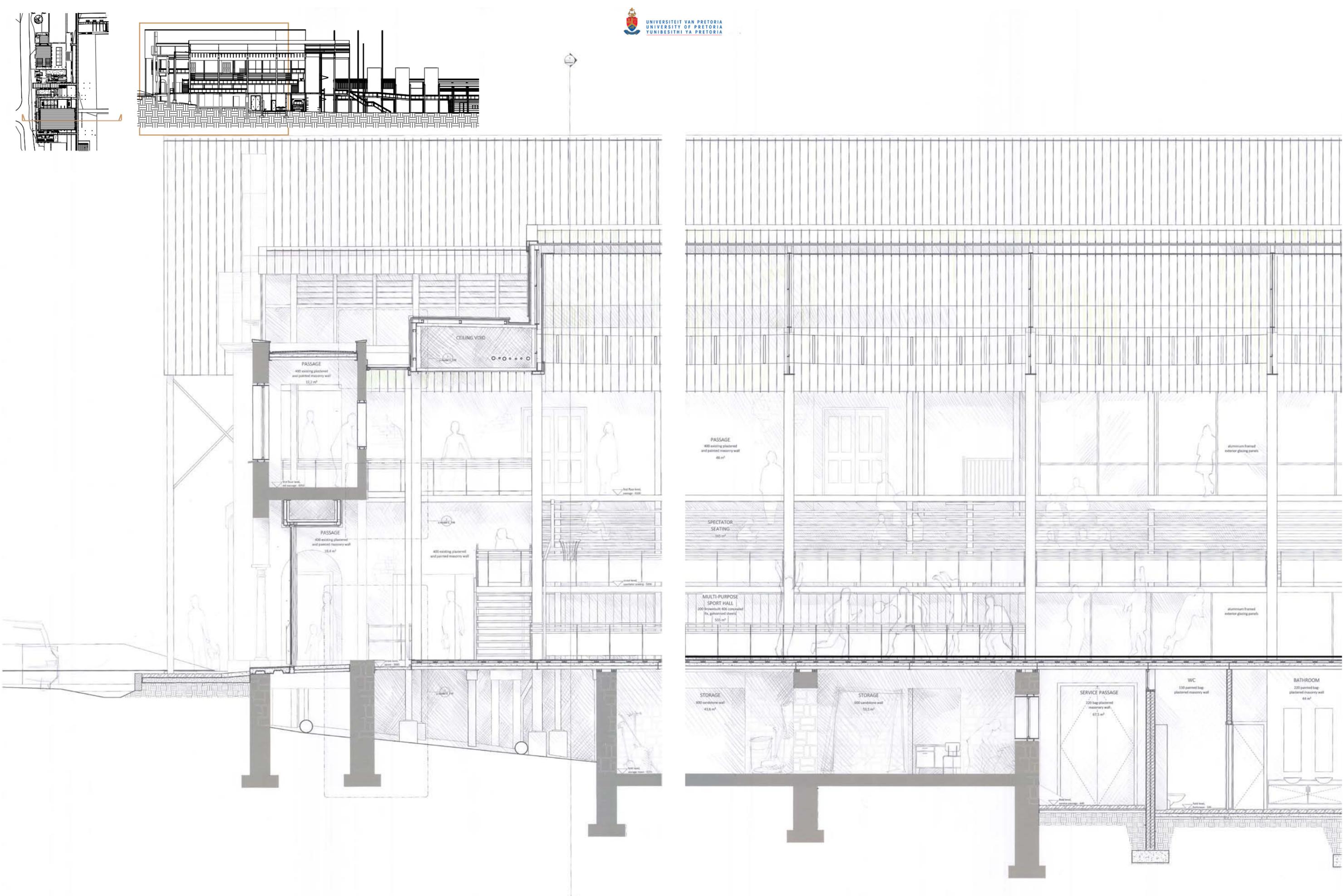


Figure 273: Presentation page 24 first floor level diagram (Author November 2013)

FIRST FLOOR LEVEL DIAGRAMS



SECTION A : EAST-WEST SECTION THROUGH SPORT HALL | SCALE 1:20

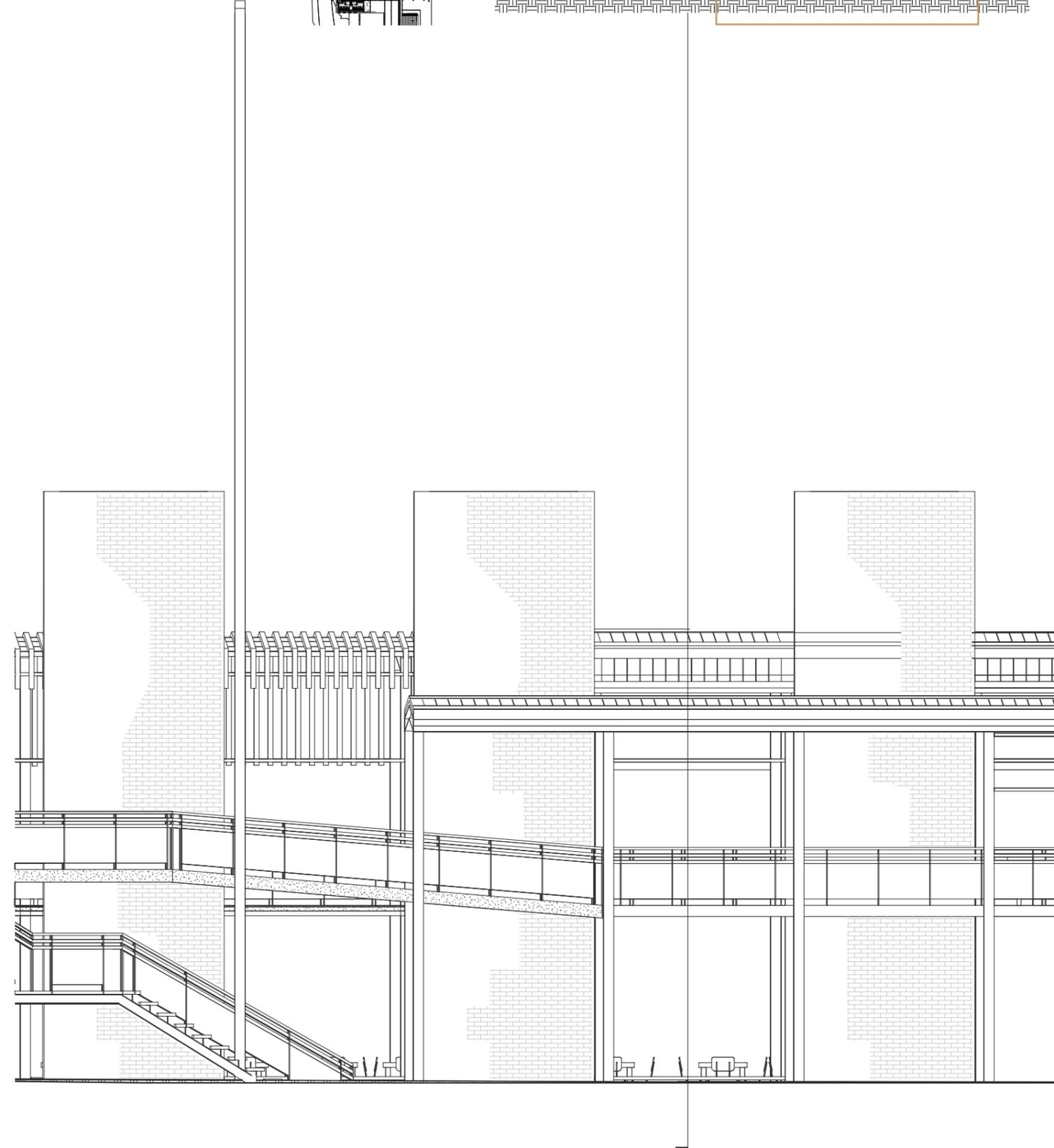
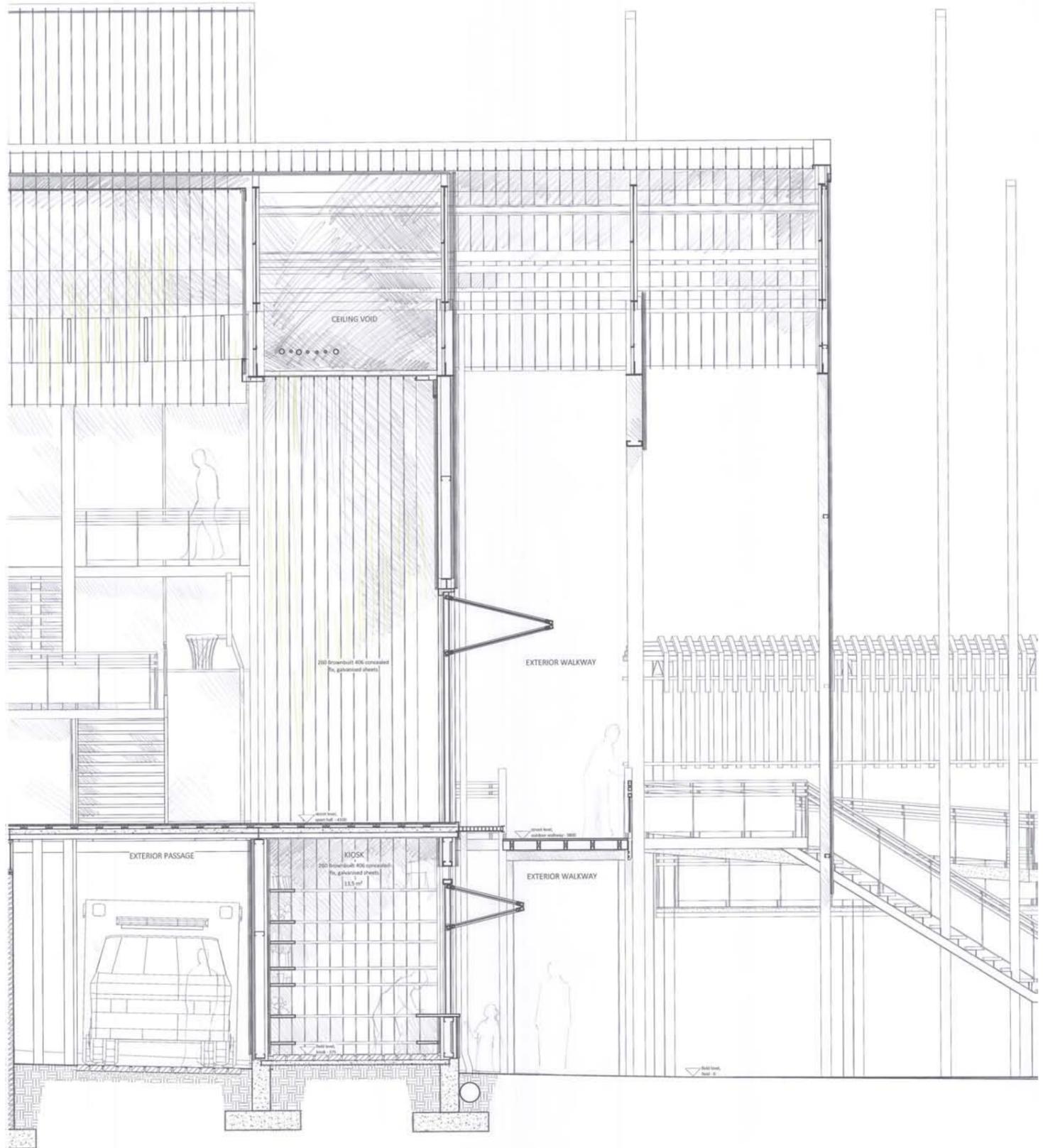
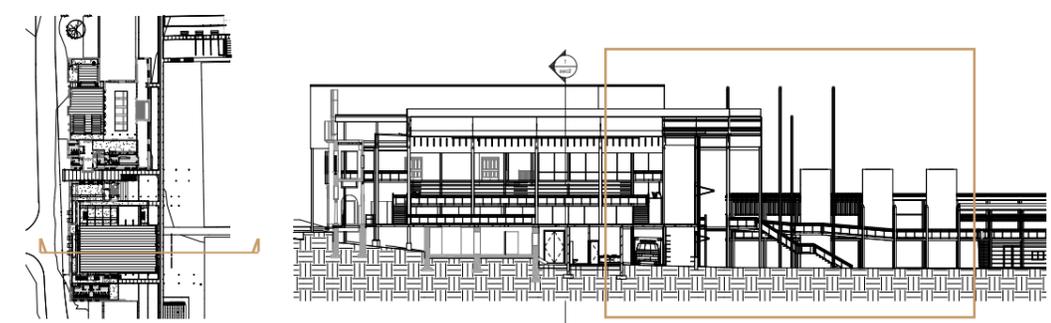
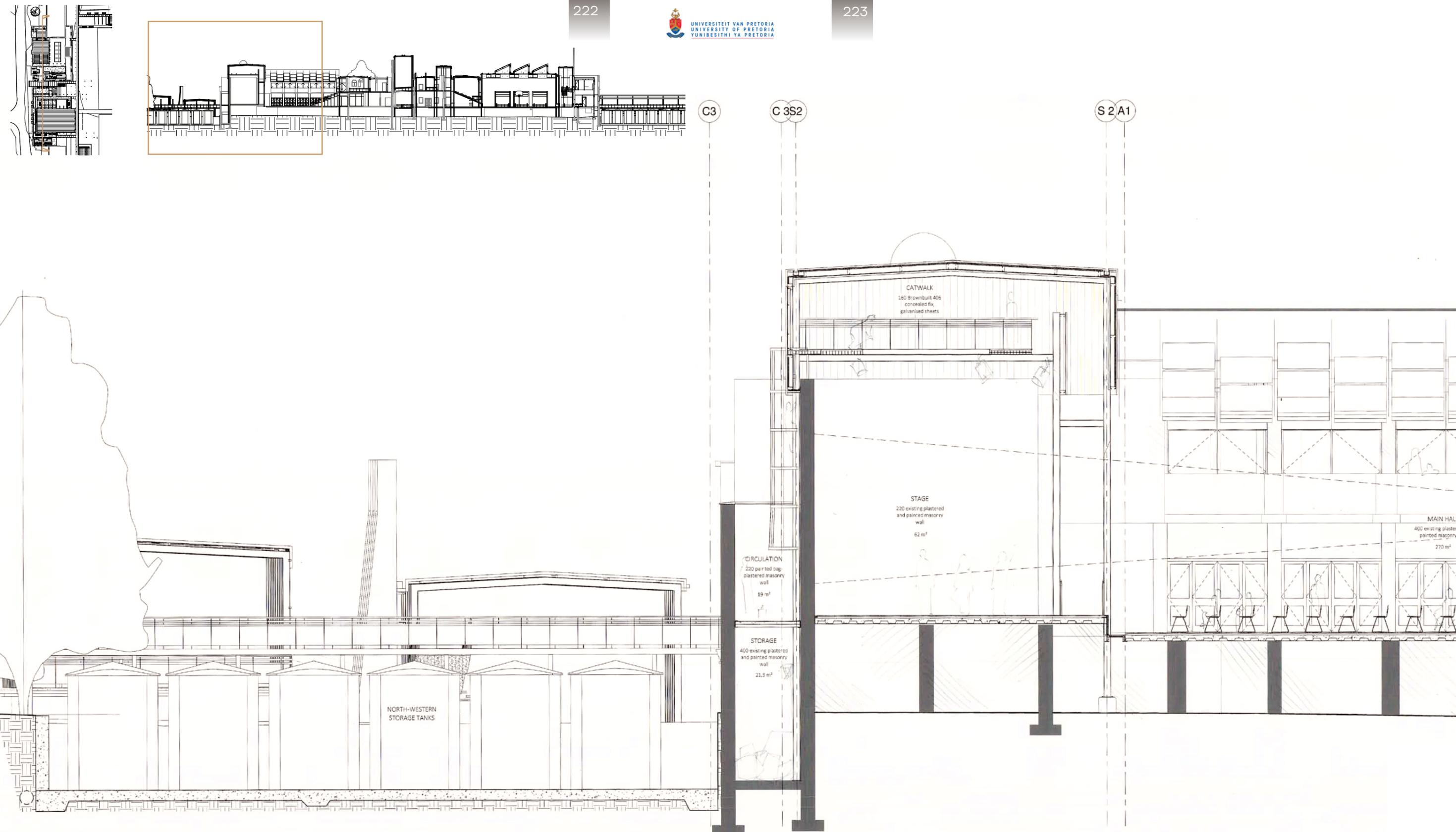


Figure 275: Presentation page 25: Section AA - east-west section through multi-sport hall (Author November 2013)



SECTION B : NORTH-SOUTH SECTION THROUGH CLUBHOUSES | SCALE 1:100

Figure 276: Presentation page 27: Section CC - north-south section through bowling clubhouse (Author November 2013) © University of Pretoria

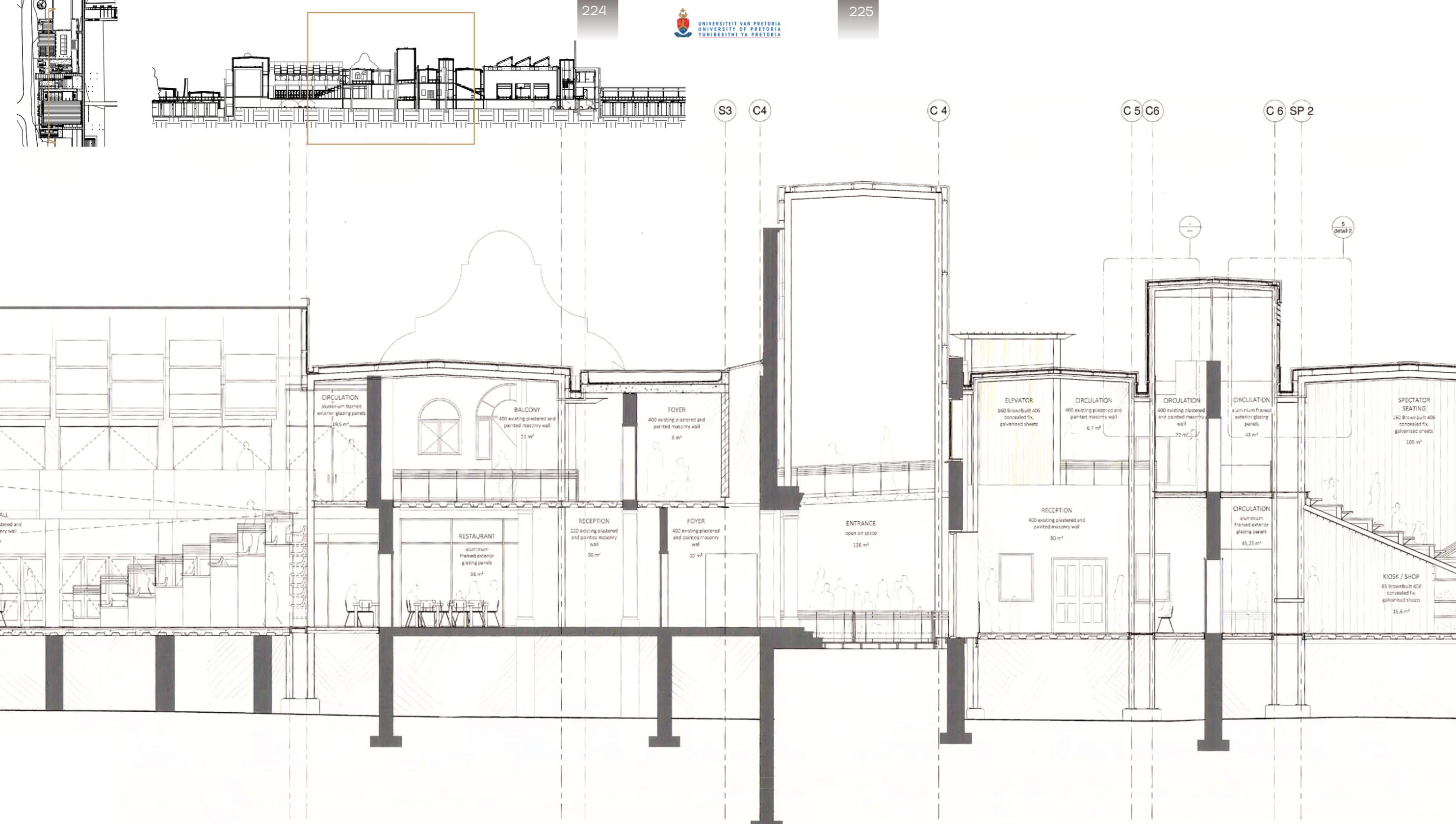


Figure 277: Presentation page 27: Section CC - north-south section through bowling clubhouse (Author November 2013) © University of Pretoria

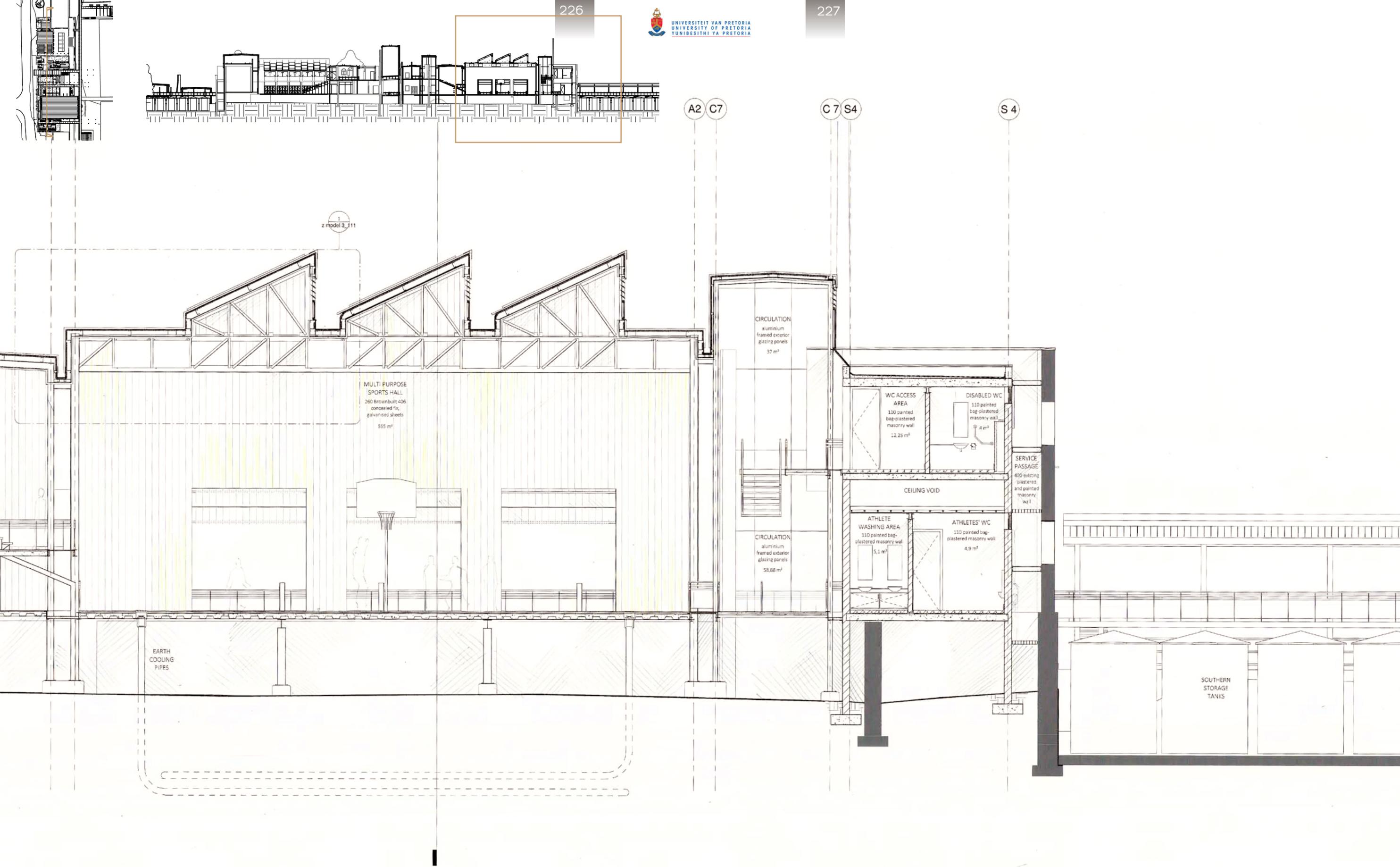
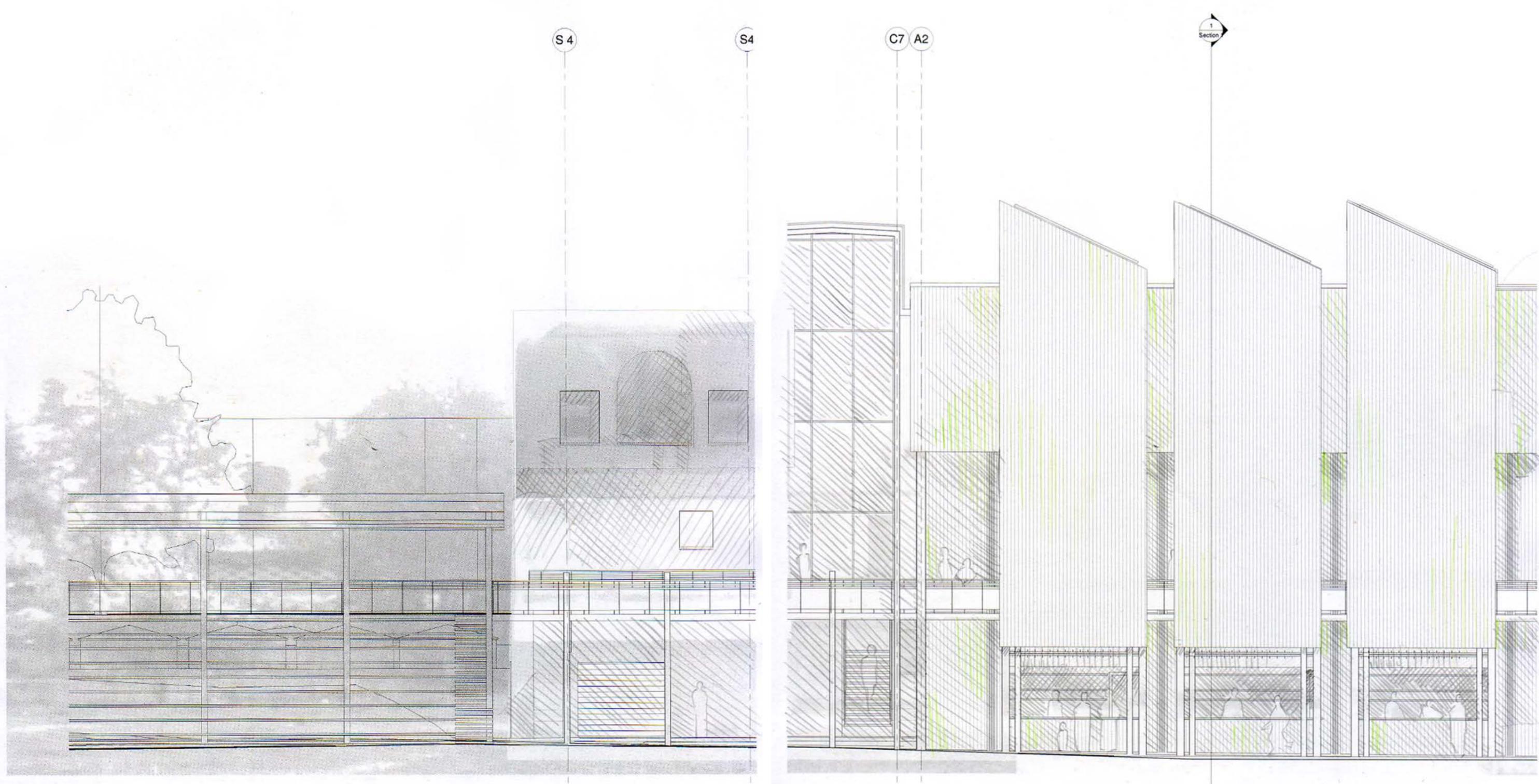


Figure 278: Presentation page 27: Section CC - north-south section through bowling clubhouse (Author November 2013) © University of Pretoria



SECTION C : NORTH-SOUTH SECTION THROUGH BOWLING CLUBHOUSE

Figure 279: Presentation page 26: Section BB - north-south section through clubhouses (Author November 2013)

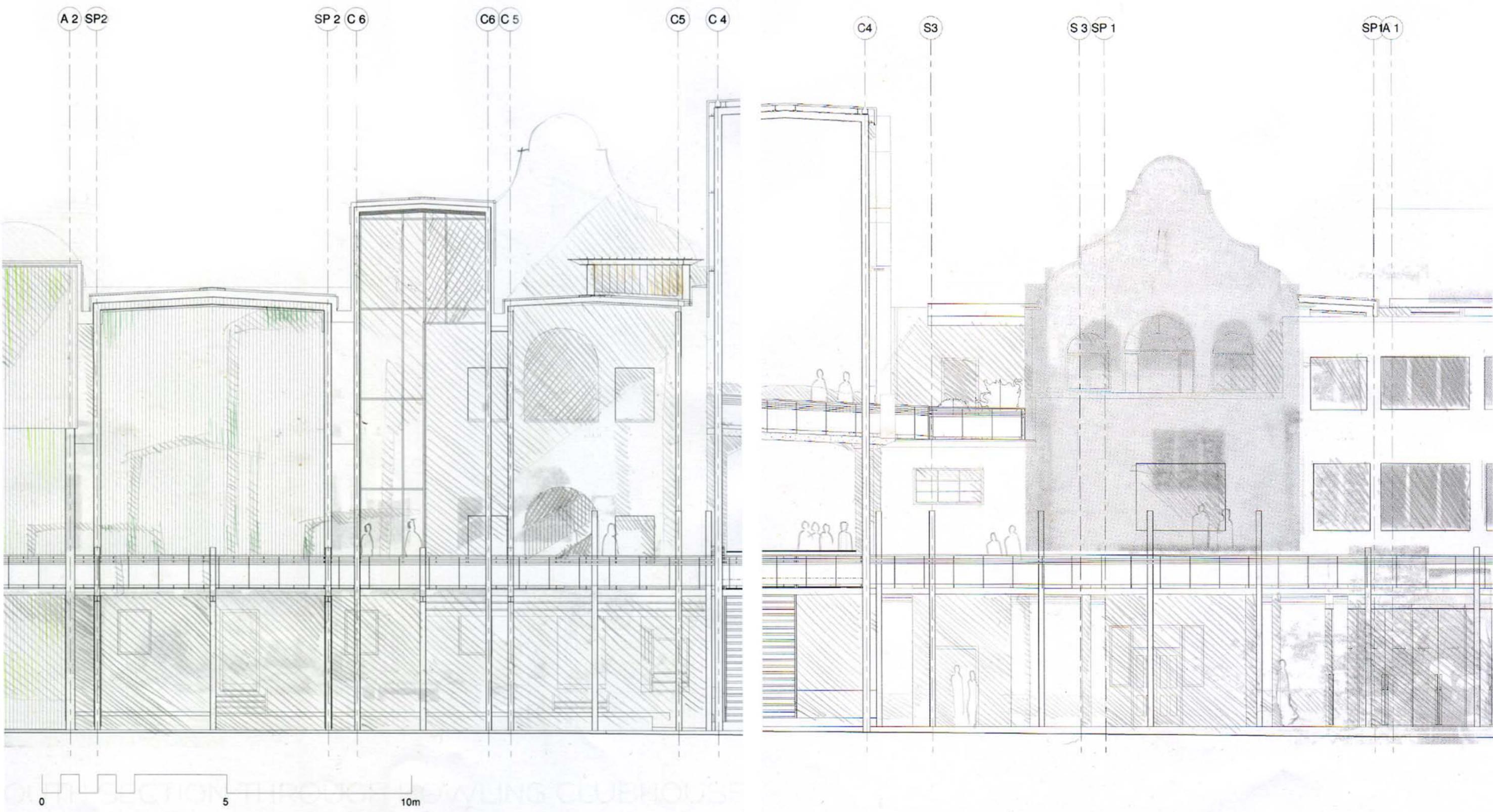
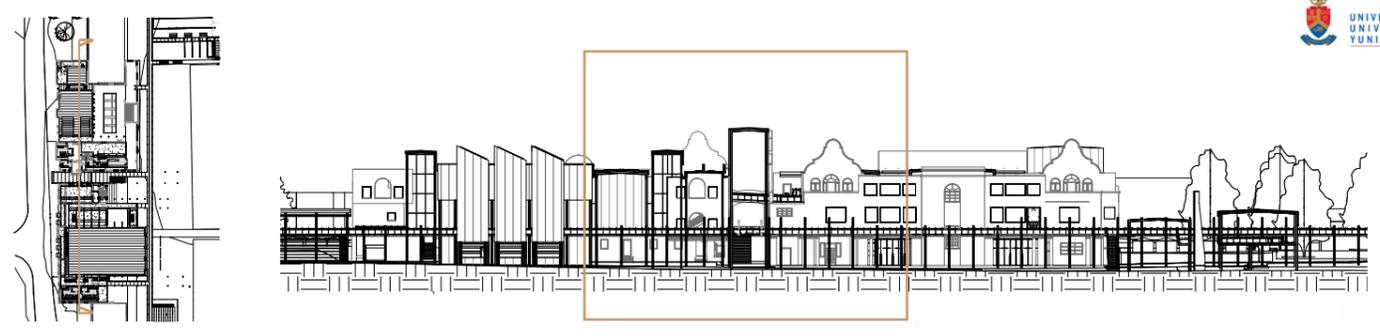


Figure 280: Presentation page 26: Section BB - north-south section through clubhouses (Author November 2013)

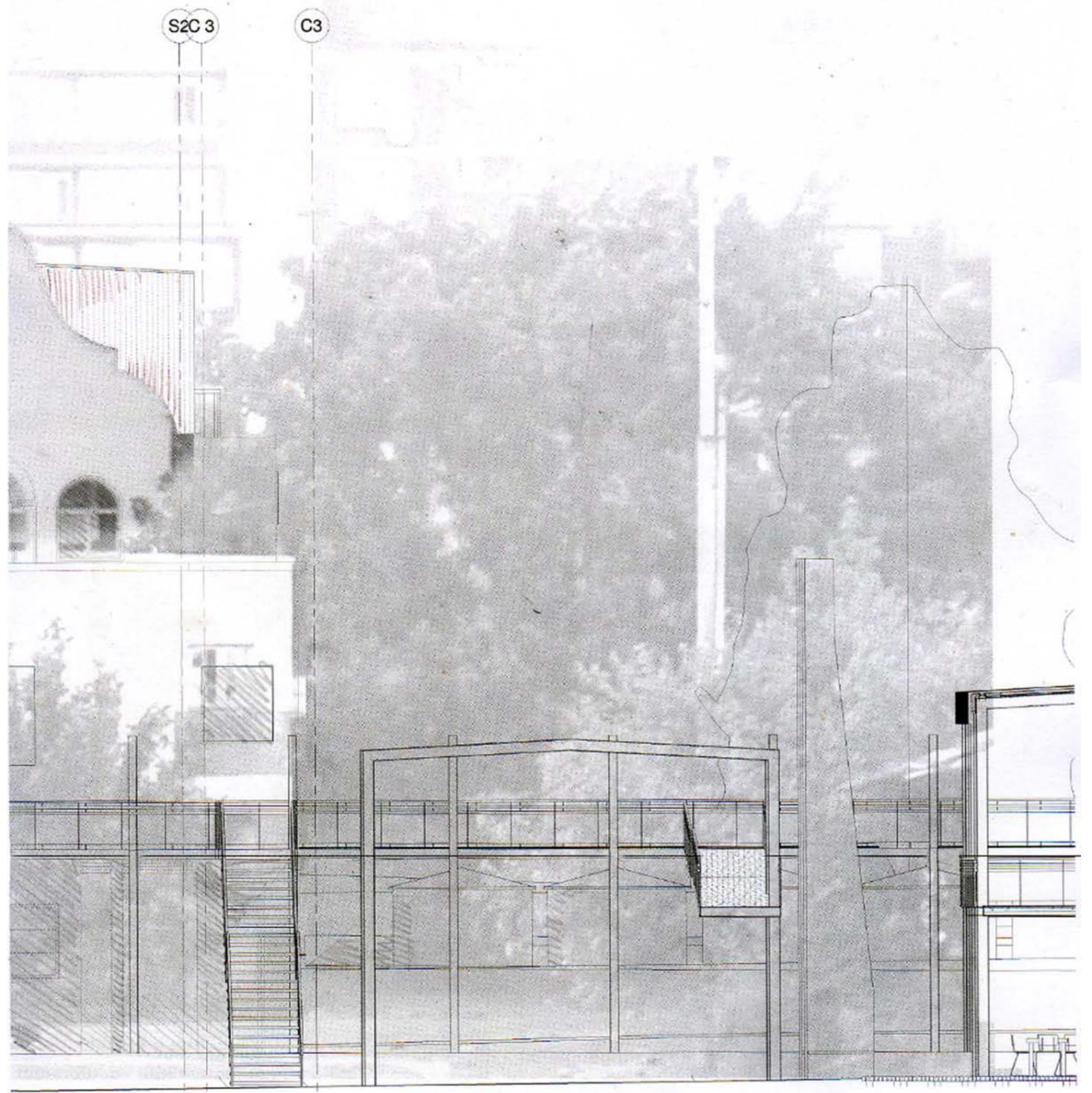
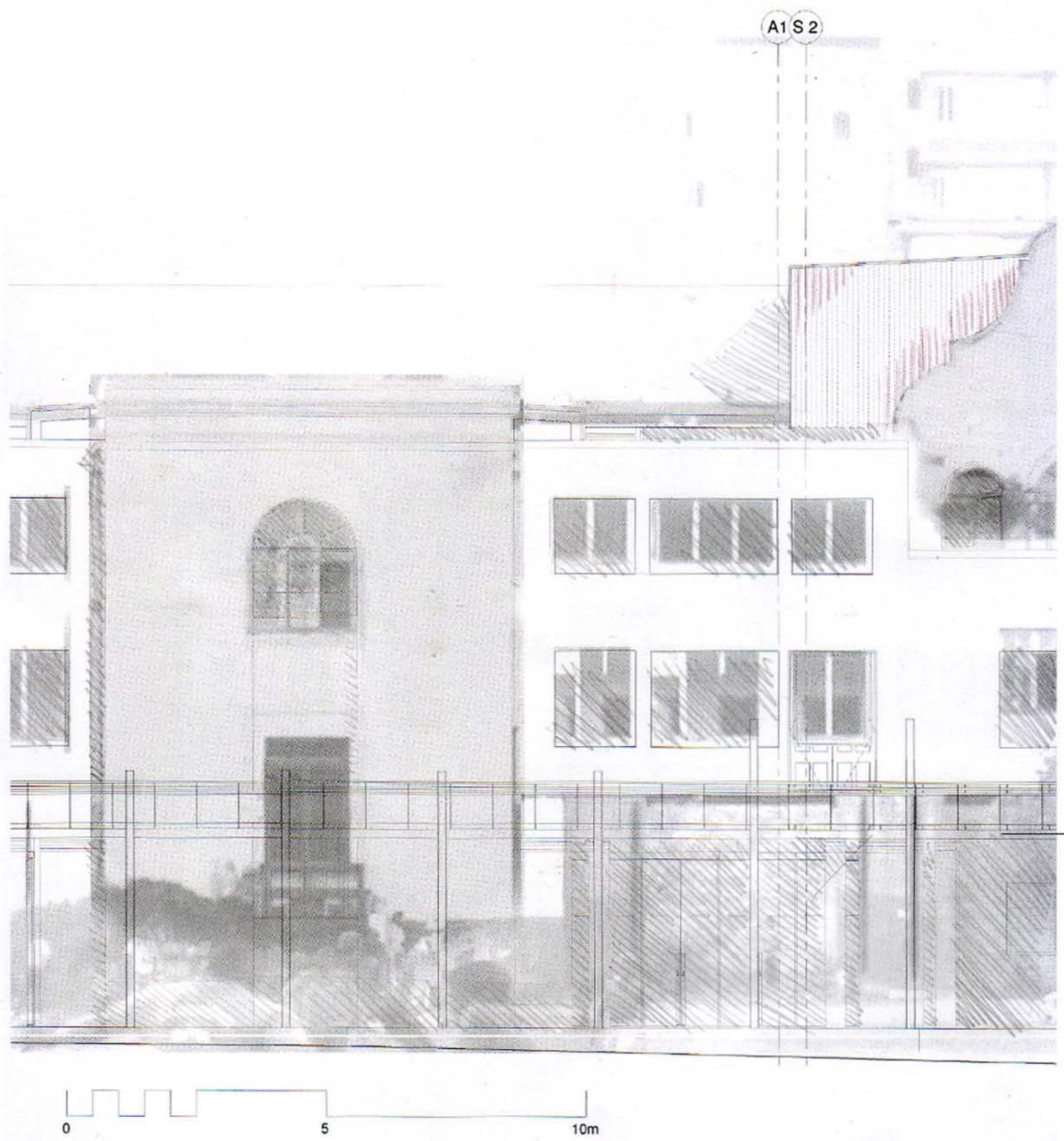
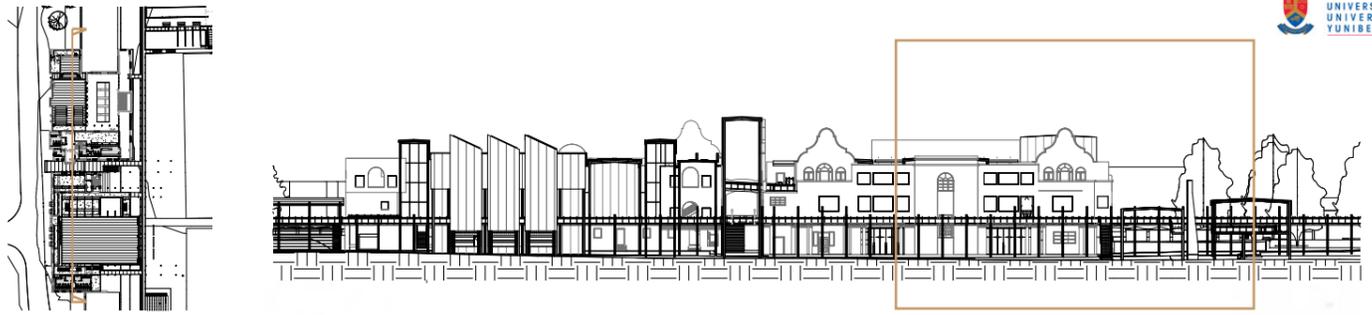
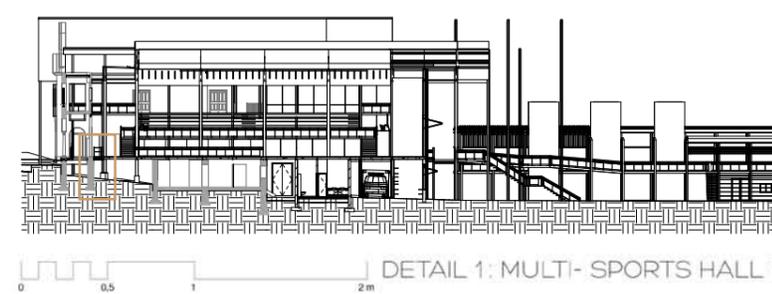
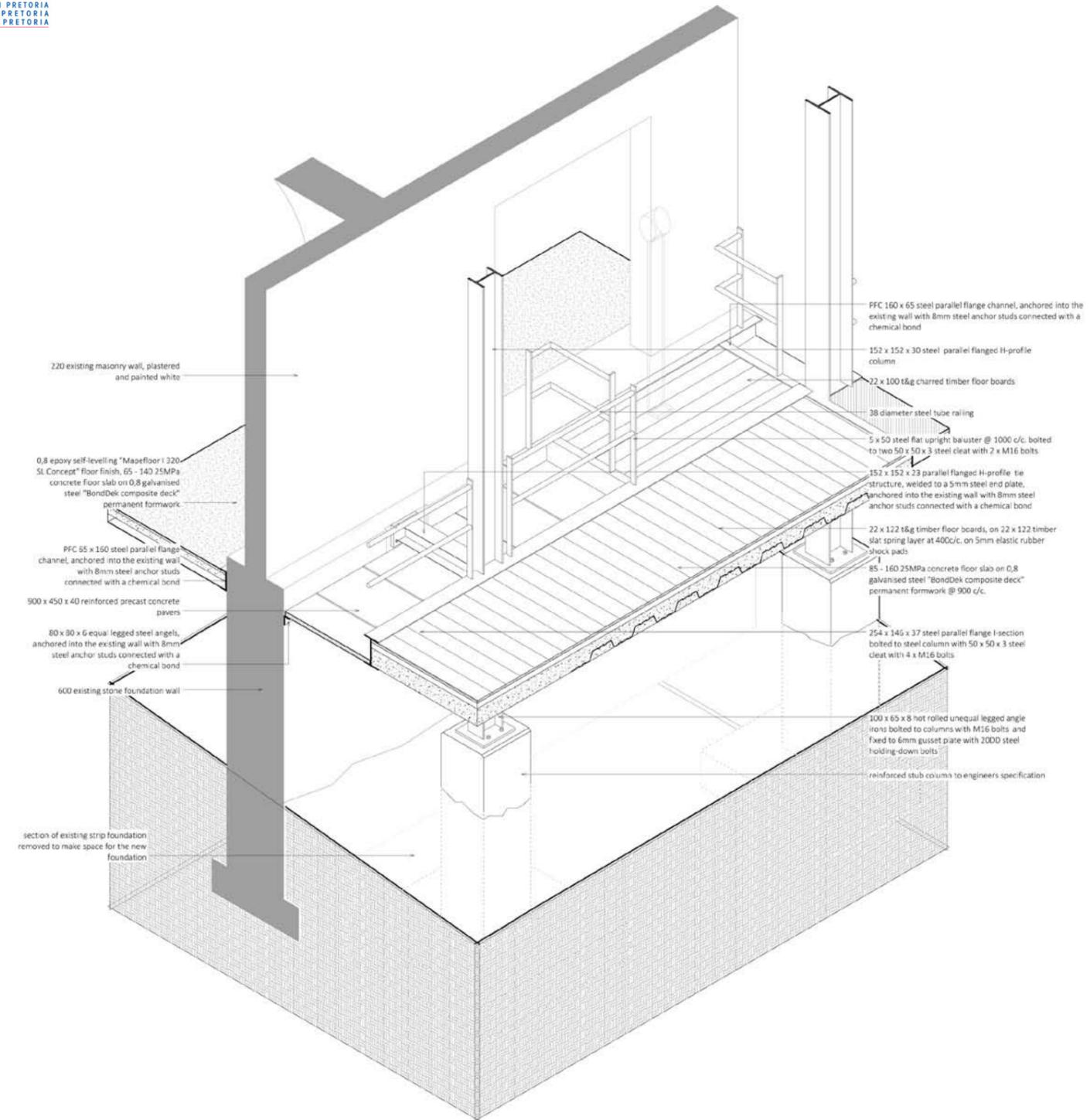
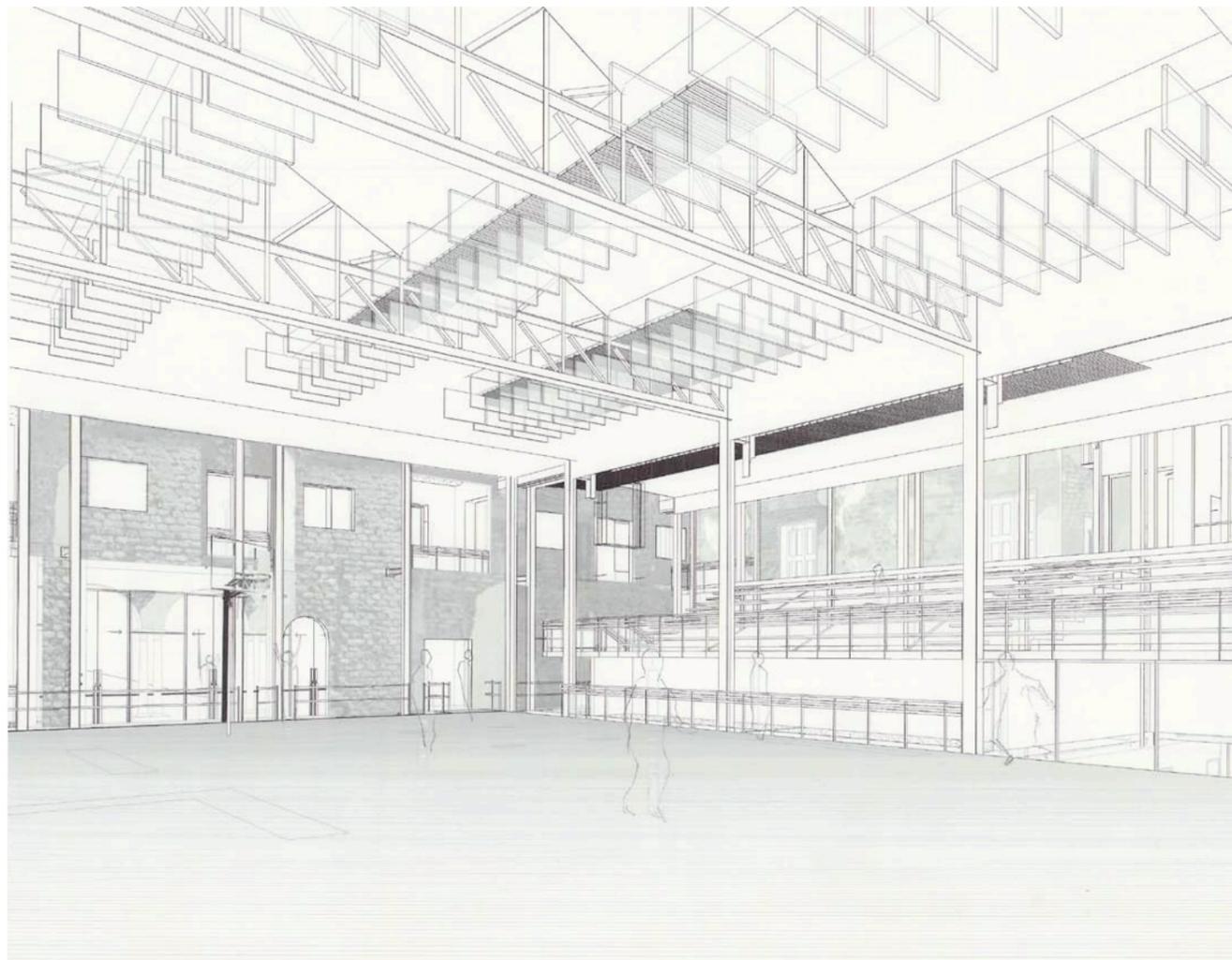
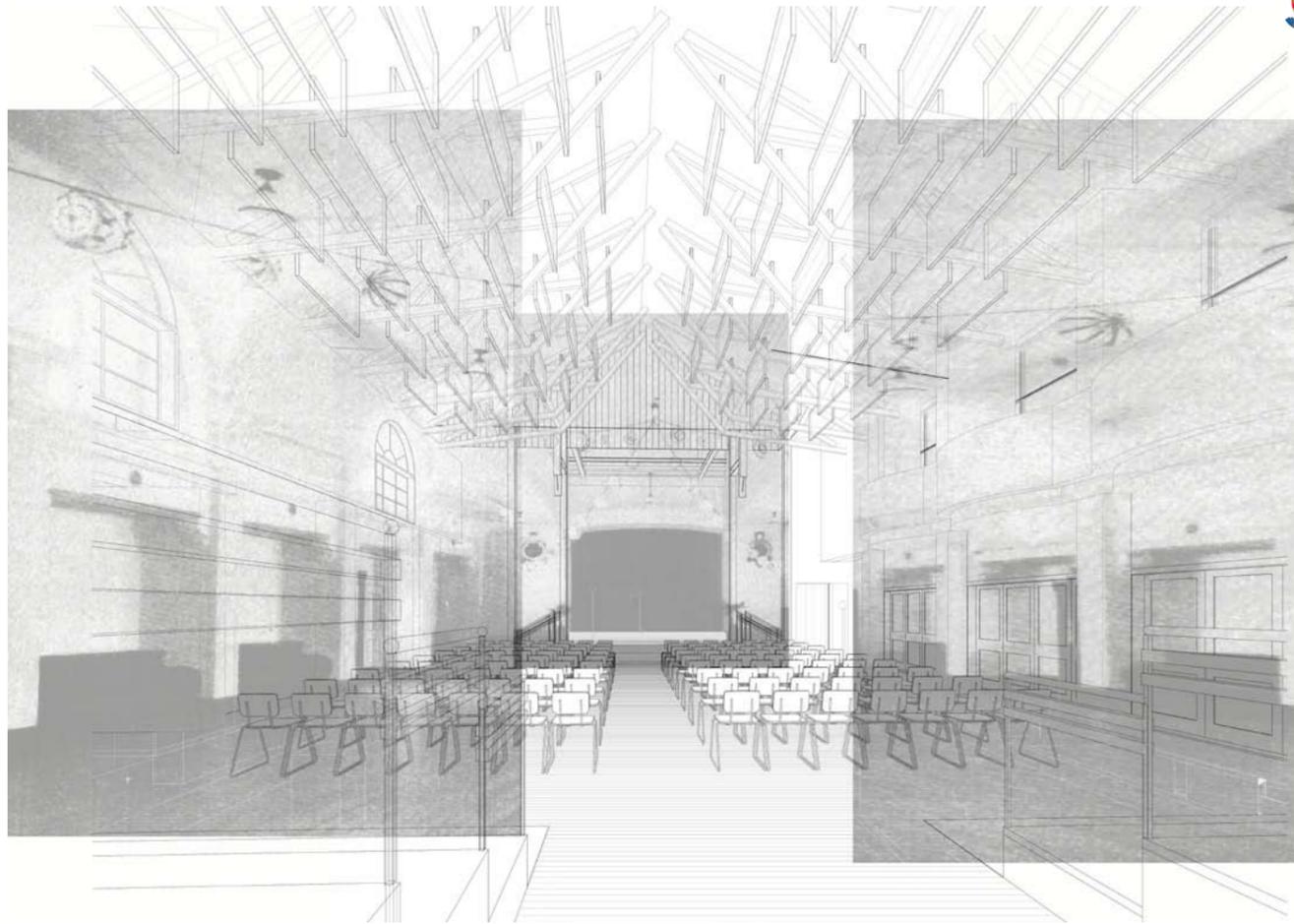


Figure 281 Presentation page 26: Section BB - north-south section through clubhouses (Author November 2013)



DETAIL 1: MULTI- SPORTS HALL FLOOR AND FOUNDATION DETAIL | SCALE 1: 10

The new floor is a composite floor. The existing structure is supported by a strip in floor level that is supported below supported composite floor and steel beams serve as bracing that supports the walls. The old walls are kept as far as possible especially in the walls where there are gaps between old and new primary using form steel contact with the walls in the brick work where it is deemed necessary by specialist, the plaster will be removed and replaced where it is deemed necessary to repair minor parts where care should be taken to ensure that the old bricks are not damaged.



"Shou sugi ban" also known as charred timber, is a traditional Japanese method of preserving timber was used as floor boards for the spaces where the gaps between the old and new structures were bridged. "Shou sugi ban" or charred timber is created by burning the timber for a few minutes, below it is soaked with cold water and drained with a hose. The method is to burn the timber for a few minutes, below it is soaked with cold water and drained with a hose. The planks are then washed and dried before being treated with oil.

Figure 282. Presentation page 28; perspectives: recreational hall and multi-sports hall (Author November 2013)

© University of Pretoria 283. Presentation page 29; detail 1: basketball hall, and existing passage (Author November 2013)

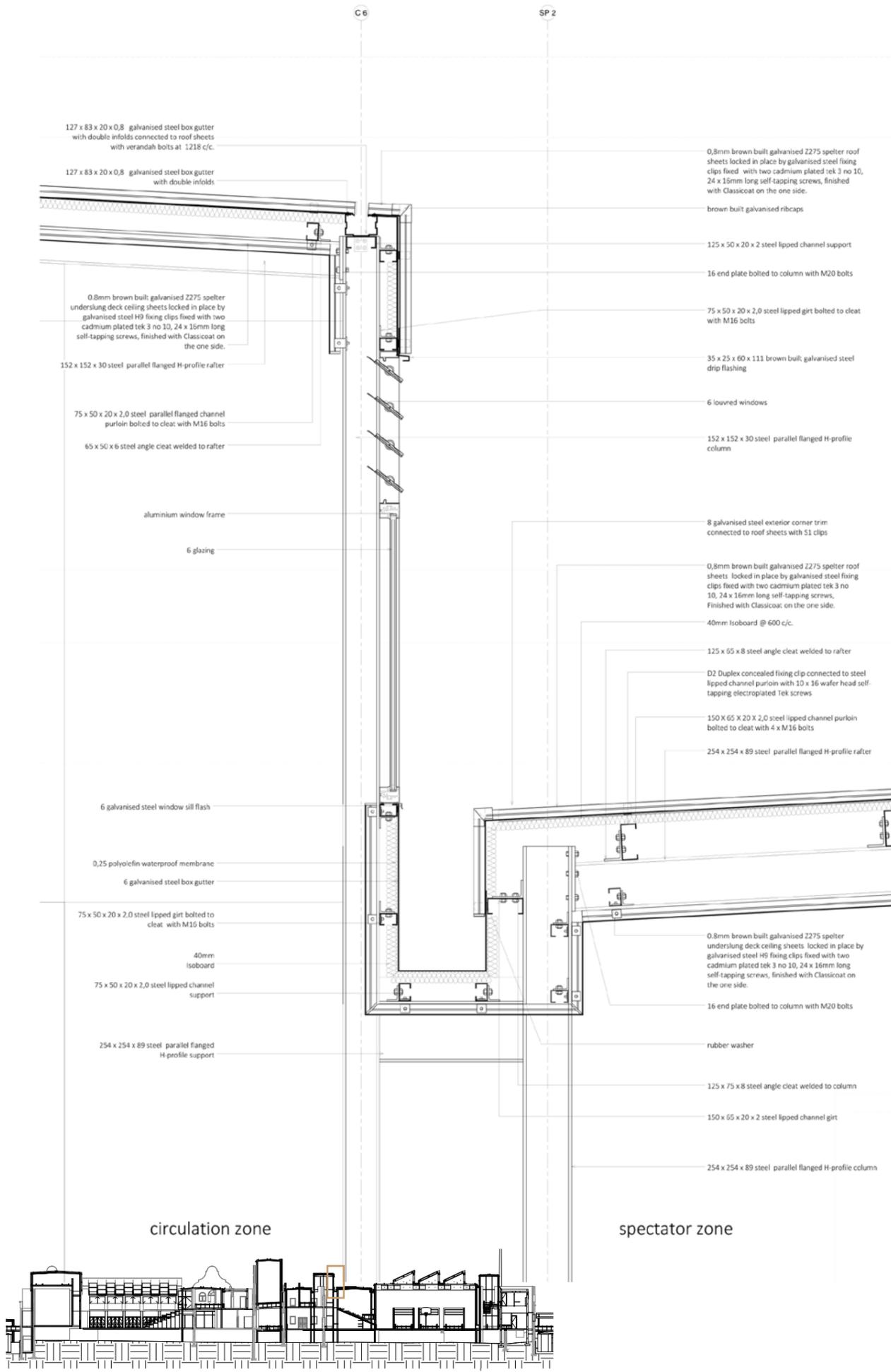


Figure 284: Presentation page 30: detail 2: roof- and skylight detail (Author November 2013)

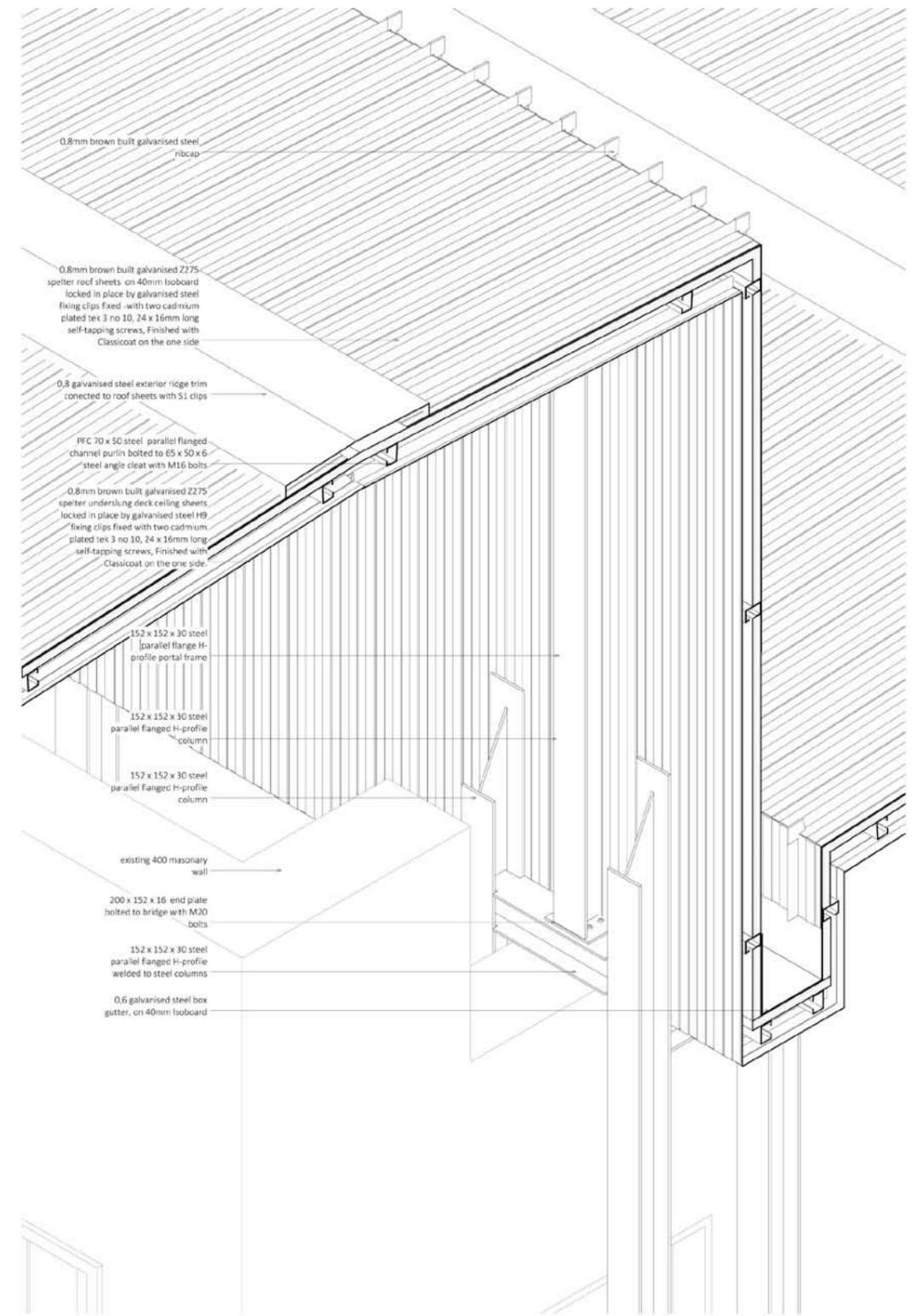


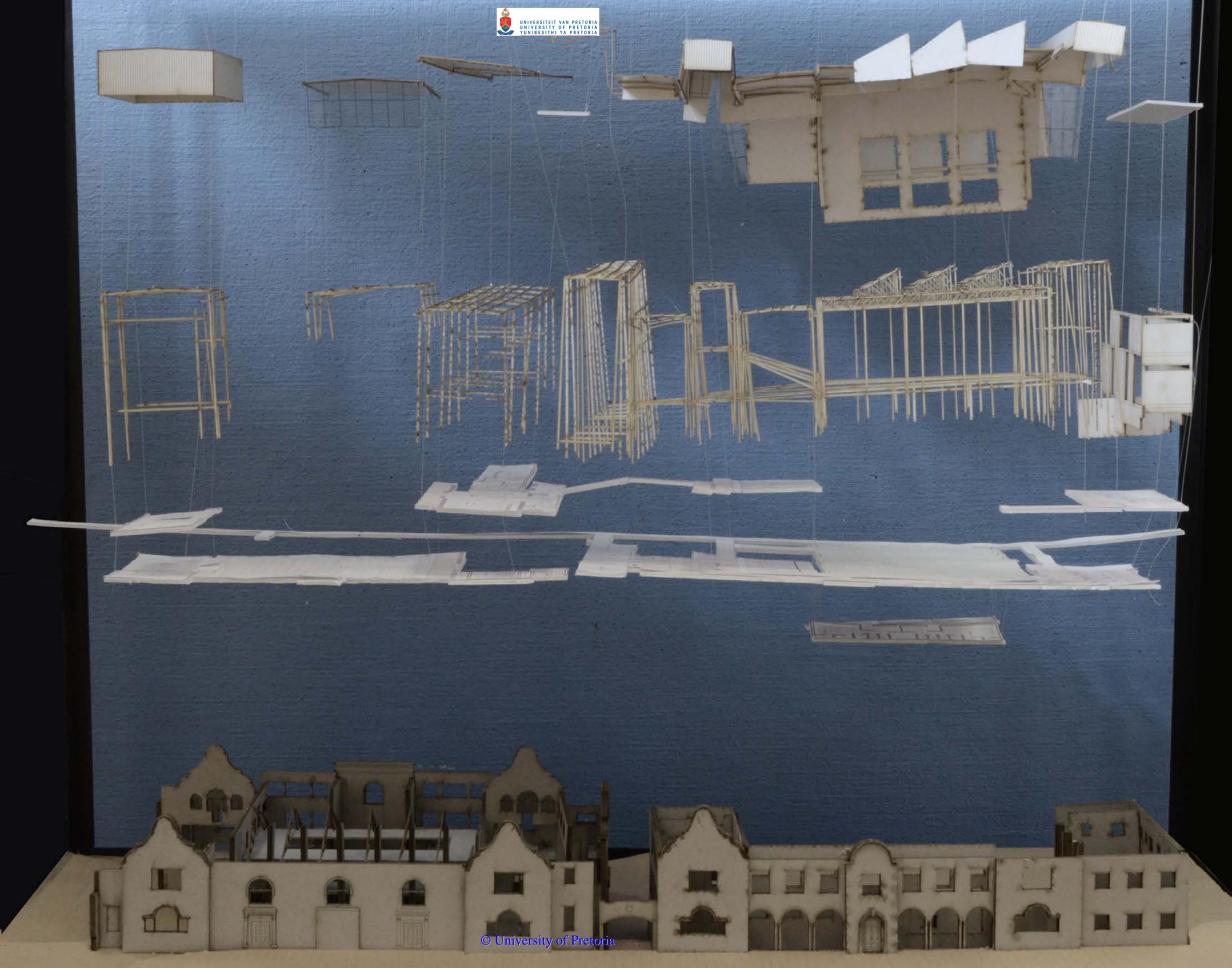
Figure 285: Presentation page 32: detail 2: stepped portal frame (Author November 2013)

The portal frame is stepped where the structural grid intersects. The portal frame is stepped to avoid undue damage to the existing structure. These steps from also serve as support for the existing walls. Historic fabric should be prioritised and retained where possible. This will where one kept as they are as far as possible, especially in the cases where there is limited direct contact between water and the old structure. In other cases, where it is deemed necessary to separate, the plaster will be removed and replaced. Where it is deemed necessary to replace mortar joints, special care should be taken to ensure that the clay bricks are not damaged.



Figure 286: Model 1: suspended and exploded model - western elevation (Author November 2013)

SUSPENDEED EXPLODED MODEL | SCALE 1:100



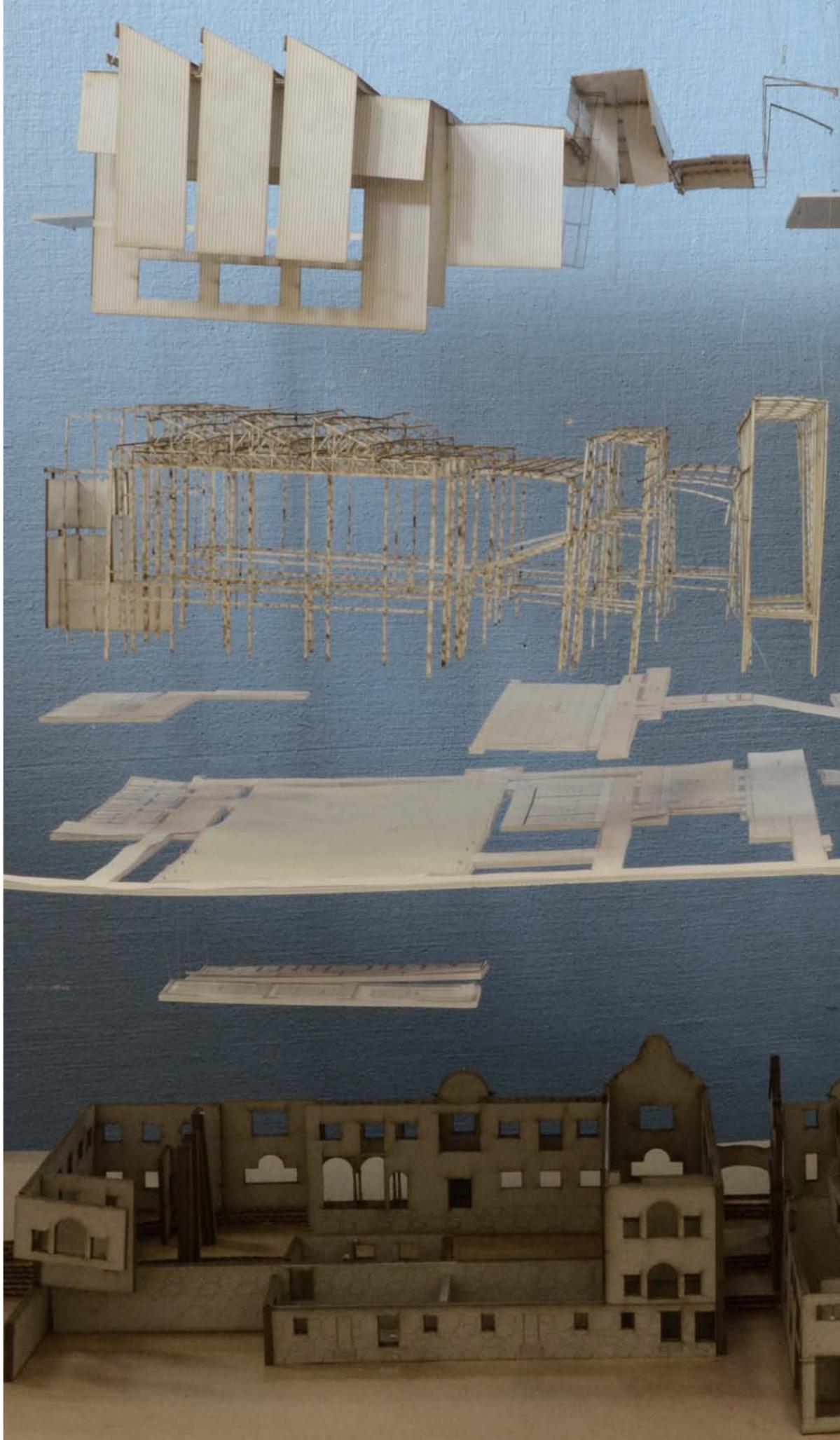


Figure 287: Model 1: suspended and exploded model - southern building - eastern elevation (Author November 2013)



Figure 288: Model 1: suspended and exploded model - western elevation - new skins (Author November 2013)

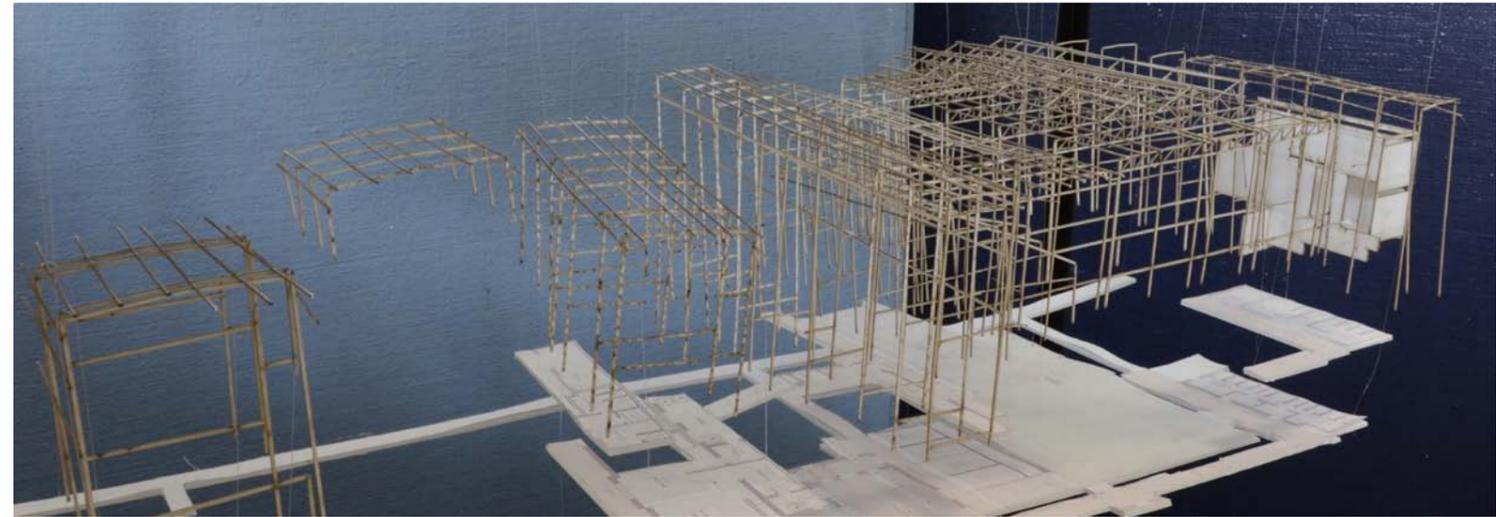


Figure 289: Model 1: suspended and exploded model - western elevation - new structure (Author November 2013)



Figure 290: Model 1: suspended and exploded model - western elevation - new floors (Author November 2013)



Figure 291: Model 1: suspended and exploded model - western elevation - existing structure (Author November 2013)



Figure 293: Model 2: detail model: central bay of western facade (Author November 2013)



Figure 294: Model 2: detail model: old passage, separation between old and new, new multi-sports hall (Author November 2013)

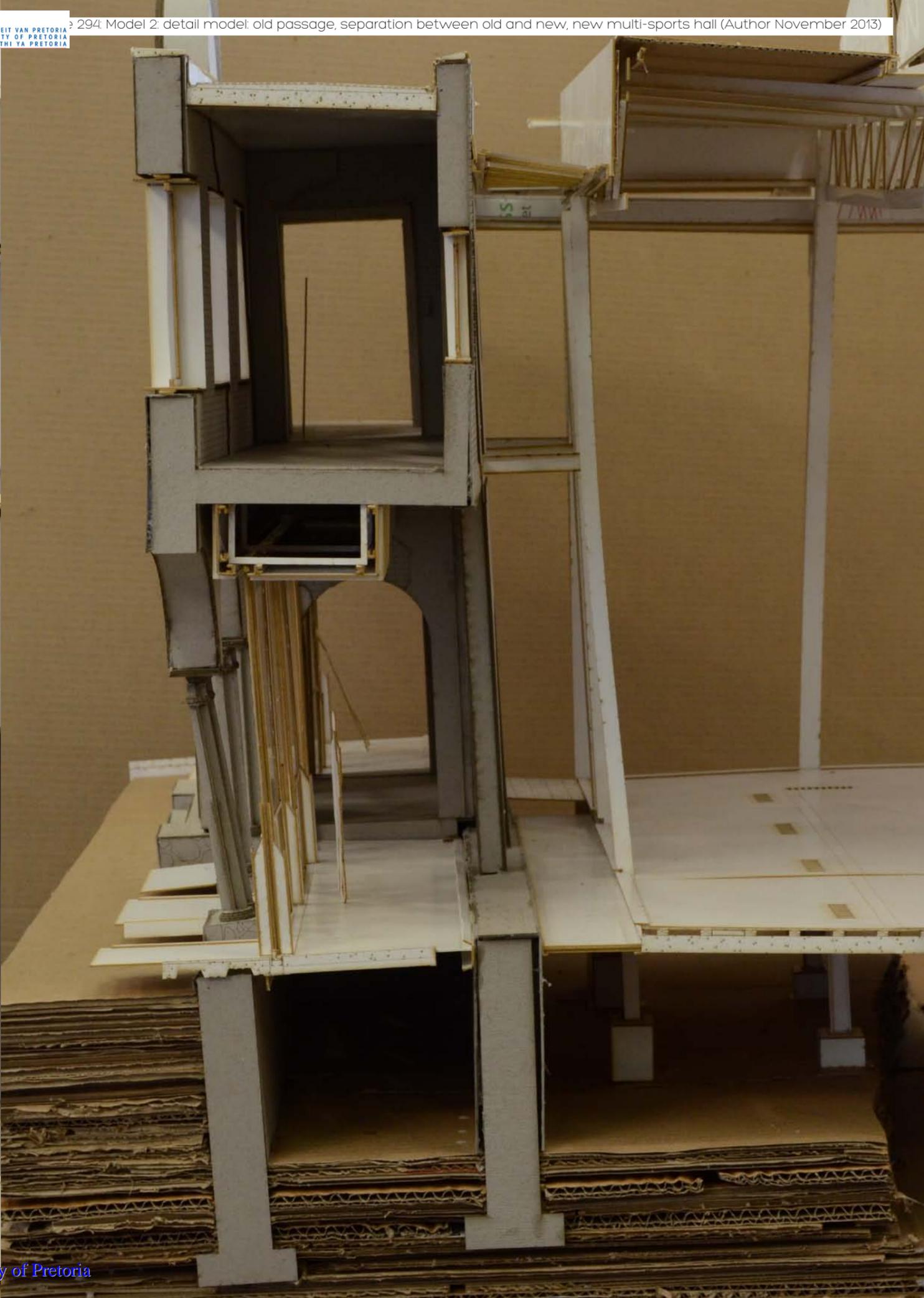






Figure 296: Model 2: new doors inserted into existing arches - wester facade (Author November 2013)

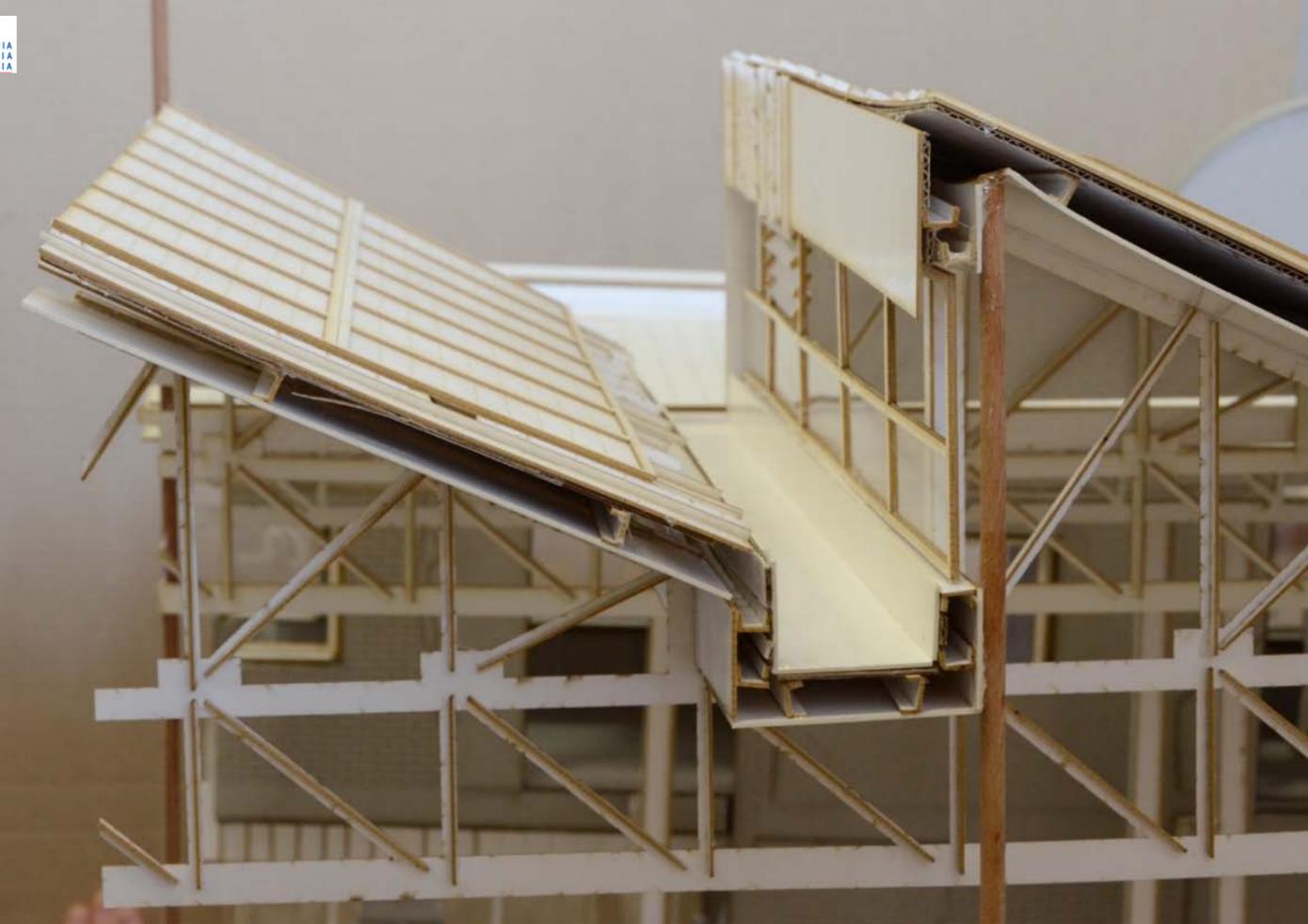


Figure 300: Model 2: sawtooth truss, box gutter and skylight detail (Author November 2013)

Figure 297: Model 2: floor details: new multi-sports hall, connecting charred timber walkway, separation articulated with recessed concrete tiles and existing western passage floors (Author November 2013)

Figure 298: Model 2: structural support detail, new structure supporting existing masonry walls (Author November 2013)

Figure 299: Model 2: suspended portal frame details: portals between activity zone and spectator zone (Author November 2013)



Summary of
the findings and
conclusion of the
thesis.

This thesis set out to propose an intervention for Berea Park that could lead to the regeneration of both the site and the neighbourhood. The aim was to look at the theory of Belonging to inform design decisions and most importantly to formulate an appropriate approach to dealing with the rich heritage inherent in the existing fabric of Berea Park.

The thesis aimed to instil a sense of belonging by creating small scale interventions. The designed spatial and programmatic layout was based on activities and rituals, as well as on the needs and opportunities generated by those activities. These activities and rituals included activities currently associated with the site, as well as the new programmes or activities proposed as part of the regeneration of Berea Park.

Part of the regeneration involved introducing passive systems whereby natural lighting and ventilation were utilised. To limit the amount of municipal water used for irrigation, rain water was captured. These systems, accompanied by the material choices aimed to prevent further degeneration of Berea Park and from it returning to the current state of neglect and dilapidation.

It was important to set clear guidelines when dealing with such a rich and important heritage context. The approach in this case was to remove any damaged material, especially if the absence of these elements would not detract from the heritage value of the site. Where possible retaining the original u-plan outline of the clubhouses, as well as some important elements (the remaining gables, intact staircases and the hall) was deemed essential. The new lightweight steel boxes contrast in a positive manner with the heavy masonry, concrete and stone construction of the existing structures. Gaps separate the new from the old structures. Simple supports extend from the new structure to support the damaged walls of the existing buildings.

In accordance with the heritage approach large sections of the damaged elements of the buildings were removed to make way for the new interventions and programming. Yet through retaining as much as possible of the relevant architectural elements, the character and memories of the old structures still resonate throughout Berea Park. Existing and new are clearly distinguishable through the contrast of heavy and light structure and materials. The scale of the new and the old works in harmony, neither overpowering the other.

Implementation of additional regenerative and sustainable systems, could further minimise the ecological footprint of Berea Park. Attempts have been made to instil a sense of belonging at Berea Park, yet the architect's influence only extends so far. A sense of belonging can only be fostered through sustained user interaction and proper maintenance and management of the site.

Part 5

[back]

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