AN ENGAGING SPORTS FACILITY

T.Hattingh

2019

1. PREFACE

Project Summary, Abstract & Contents

Fig.1: The Caledonian Stadium (Author: 2019)

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PURPOSE:
Submitted in fulfilment of part of the requirements for the degree
Master of Architecture (Professional)
in the
Faculty of Engineering, Built Environment and
Information Technology
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DECLARATION:
In accordance with Regulation 4(c) of the General
Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any
other tertiary institution.

I further state that no part of my thesis has been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

…….
Thomas Hattingh
12137571

1.1 PROJECT SUMMARY

PROGRAMMES:
Public Engaging Activity & Recreation Precinct
Multipurpose Sports Centre
Public & Sports Gym
Sports Athlete Accommodation

ADDRESS:
The Caledonian Stadium
469 Pretorius St, Arcadia, Pretoria, 0007

GPS COORDINATES:
25°44'51.85" S
28°12'05.43" E

RESEARCH FIELD:
Human Settlements and Urbanism
&
Heritage and Cultural Landscapes

CLIENTS:
Caledonian Stadium
City of Tshwane Sports and Recreation
University of Pretoria HPC (High-Performance Centre)

KEYWORDS:
Caledonian Stadium
Multipurpose Sports Centre
Regeneration
Engaging Architecture

GENERAL APPROACH:
To assess the current sports system/facilities set in place in South Africa and Pretoria, and propose a new system that can be established to achieve a bottom-up approach for equal opportunities to the public and up and coming athletes.

URBAN APPROACH:
To create active, engaging and regenerative spaces in the Pretoria CBD to allow for flexible public space to promote urban activity and engagement.

ARCHITECTURAL APPROACH:
To create an active/engaging architecture that can directly connect with the program, context and urban environment, to promote an engaging lifestyle and create an architecture that provides more than just a mono-functional envelope, but rather an adaptable architecture the user can engage with.

1.2 ABSTRACT

The initial departure for this dissertation has grown from a personal interest regarding sports and the effect it can have on an individual as well as the interactions that occur as a knock-on effect with regards to athletes and spectators. In our still-evolving democracy in South Africa where sports has managed to bring the nation together, there is still an imbalance of opportunity and facilities available to all. With the push towards professionalism in sport, facilities have developed into high-performance centres. Those typologies have generally become internally focussed facilities, ignoring the larger picture of a holistic sports development system for a better future. They have also become isolated from their context and inaccessible from the public. Sports and recreation spaces throughout the city should allow for various levels of engagement from the public to athletes at all times throughout the day.

The Caledonian Sports grounds have a rich heritage of sports, recreation and development in not only Pretoria but also in the country. Allowing the opportunity to give a new purpose to the site and propose a new “step-up” facility and system that can enable sports and recreational development for the future.

The intention for this dissertation is to challenge current mono-functional sports facility typologies and create a public sports facility that engages all users and creates multi-functional spaces that are supported by an architectural structure to maximise the impact the design has on the user and the site.

1.3 EXPRESSION OF THANKS

- Firstly I would like to thank my family for their continued support throughout the years. To my father, Tom Hattingh, for being my role model, best friend and someone who could always relate to what this year has entailed. Thank you for your guidance, endless support and learning opportunities.

- To my mother, Ciska Hattingh, your infinite love and support through the good and tough times.

- To my sister, Tania Hattingh, thank you for being there as a friend and your endless support reminding me that it is almost done.

- To my study leader, Arthur Barker, thank you for believing in me when no one else did. The guidance and belief you installed in me will never be forgotten and will be taken into the rest of my life.

- To Hace Ventura for being there in the end helping when you could, thank you for all the Thursday nights and helping to push through to the end.

- Last but not least, I would like to thank my dear girlfriend, Coreen Crafford, for the endless support throughout the year. Thank you for pushing through the tough times and always being there for me through thick and thin.

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1.4 TERMINOLOGY

HIGH PERFORMANCE CENTRE -

Is a facility that provides sports services and facilities at the highest level to help athletes perform at the highest possible level.

ENGAGE -

To participate or become involved in. In the dissertation it looks to engage with users and program.

STEP-UP FACILITY -

The proposed program for the dissertation that slots itself between public schools and High Performance Centres.

REGENERATION -

The notion of regenerating something and it improving into the future, the dissertation looks at the idea of creating a “place” again and letting it regenerate into something better over time.

SOCIAL CAPITAL -

The networks of relationships among people who live and work in a particular society, enabling that society to function effectively.

SPORTS AND RECREATION -

Recreation refers to all those activities that people choose to do to refresh their bodies and minds and make their leisure time more interesting and enjoyable. Examples of recreation activities are walking, swimming, meditation, reading, playing games and dancing.

Sport refers to any type of organized physical activity, e.g. soccer, rugby, football, basketball and athletics.

MULTIPURPOSE SPORTS CENTRE -

Is a facility that provides spaces that allow various sports to take place at once or in different circumstances.

HOLISTIC -

A holistic approach means thinking about the big picture. In a medical setting, holistic refers to addressing the whole person, including their physical, mental, and emotional health, while taking social factors into consideration.

Fig.2: The Caledonian Stadium (Author: 2019)

1. INTRODUCTION

Background, Introduction, Problem Statement & Dissertation Questions

The chapter looks to build a foundation on which the dissertation can respond. This is done through an understanding of the issues and intentions this dissertation deals with. A brief historical understanding of South African sports is reviewed to understand the reasons for the present issues. This understanding helps highlight the informants and states research questions and methods. The conclusion states the delimitations, assumptions and the contribution this dissertation seeks to architecture.

1.1 BACKGROUND OF SPORTS IN SOUTH AFRICA

The development of sports and recreation has been directly influenced through politics throughout South Africa's history. From pre to post-apartheid, unequal opportunities have been given to different races at different times through our South Africa's history.

Labuschagne (2016:86) notes that the timespan from 1894 - 1992 can be broken down into three periods which demonstrate particular effects on sports. The different levels of power and political engagement were on different scales, such as provincial, clubs and elected individuals.

The first period 1894-1960 is seen as the birth of South African segregation, which had a moderate level of governmental influence regarding the regulation of segregation of races in sports. Recreation was held between different sports clubs, the National Union, black clubs and black athletes (Labuschagne 2016:87). Segregation between different races was managed through an informal manner, by merely not allowing different races to compete with each other, different races were allowed to be apart of "white" events. The turning point for South African sports was at the 1960 Olympic games where an all-white team was sent to participate in the event. This is a the statement from Senator Jan de Klerk, "South African custom is that within the boundaries of the Republic, whites and non-whites exercise their sport separately and this must be adhered to" (Labuschagne 2016:89). After that, the sports boycott against South Africa began by banning South Africa for the next few decades from participating in international sports competitions (Booth:1998). The ban of South Africa from international sports was a tool to attempt to the apartheid policies.

The second period 1960-1976 was the segregated nation (Labuschagne 2016:92), where the government became more directly involved with regulating sports throughout the country. There were laws set in place to enforce formal segregation between different races, with the forceful removal of communities to different areas, there were little to no facilities available for the communities that were not white. During this era, the development of sport in those areas seems to stagnate and caused some people to emigrate to be able to compete. It was a sad time for South African sports due to the years of not being able to compete internationally, resulting in sporting opportunities lost by generations.

The third period 1977-1992 showed a time where there was a slow change in the regulation of sports

Fig.3: Apartheid Stands Segregation (Salbe: 2014)

Fig.4: Soccer game in the townships (Alegi: n.d)

Fig.5: The South African Sports boycott (Sugier: 2019)

in South Africa. Sports throughout the country were not controlled by government, national or provincial unions, but rather softened to allowed greater access to facilities and opportunities for athletes throughout the country. As shown during the 1980s, the government removed all discrimination based on race to achieve a more rational and opened approach to sports and recreation. As seen by new policies set in place, "The Department of Sport will assist the local authorities to provide sports facilities for all population groups according to their needs" (Labuschagne 2016:99). During this time, the development of black athletes improved dramatically due to having access to facilities and events. By the end of 1992, the international ban was lifted on all sports.

It is clear that apartheid policies managed to divide the nation into those that have and have not. The opportunities and access to facilities have left the majority of the country in a deprived state that will take years to correct. During those periods (1894 - 1992) it also ruined the international image seen of South Africa as a sporting nation, an opportunity to be exploited by Nelson Mandela after 1994.

Fig.6: The Springbok rugby tour boycott (Sports and Apartheid: 2019)

1.2 SPORTS CAN CHANGE A NATION

"Sport has the power to change the world. It has the power to inspire. It has the power to unite people in a way that little else does. It speaks to the youth in a language they understand. Sport can create hope where once there was only despair. It is more powerful than government in breaking down racial barriers" Nelson Mandela (Busbee:2013).

After South Africa overcame apartheid, Nelson Mandela was elected the first black president. He had the vision to target the 1995 Rugby World Cup as a tool to unite the nation. Through TV coverage, it was the first time South Africa could show the rest of the world, that it could be a "rainbow nation" (Chappell: 2005). The Rugby World Cup soon became an example as to how such events could bring a nation together, shortly after South Africa won the 1996 Africa Cup of Nations for the first time, all South African people were united behind one team.

Winning such an event, can bring a nation together, while hosting international events brings added benefits to the country. While hosting the Rugby World Cup most of the stadiums and infrastructure were in place. With the world's biggest sporting event, the 2010 Soccer World Cup had benefits of bringing the nation together, but also all the new infrastructure built to upgrade areas around the country. There was an economic boost by creating jobs for the poor and foreign money coming into the country through tourism (Prinsloo:2010). The Soccer World Cup successfully hosted by South Africa and was praised for how it was run, and how the country came together to host the event.

Fig.7: Nelson Mandela and Francois Pienaar holding the rugby world cup trophy (eNCA: 2019)

1.3 CURRENT STATE OF SPORTS IN SOUTH AFRICA - POST-APARTHEID

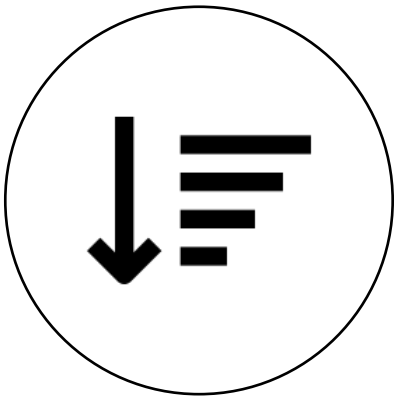
In 1994, when South Africa won its first multi-racial democratic election, it was at the peak of an economic recession. There were over 7 million unemployed people, causing many to migrate into cities in search of jobs. This was because of the vast majority of wealth that lay in the hands of the white population. At the time the average annual income for white people was R34 400 compared to R3 600 for the black population (Chappell: 2005). Due to most of the wealth being controlled by the white population, it was evident that the people who had money had access to excellent recreational and sports facilities, while the rest of the population only had access to poorly resourced sports facilities. It was identified by Mr S.V. Tshwete (Minister of Sport and Recreation) in 1996 that a "vision for sport" throughout the country was needed. The goal was to allow all people in the country equal access to competitive or recreational sports opportunities at school or community levels (South African Government: 2011). The goal was to provide sports infrastructure, equipment, attire, development and talent identification in areas that did not have those opportunities before.

The significant change in sports development started to create tension between all South Africans in 1999 when the "quota" system was implemented. It is a system that requires a certain percentage of a team to be non-white white athletes (Sport24: 2019). It was first implemented on a provincial level then later introduced to national teams. The idea for the "quota" system is allowing equal opportunity for those that were previously disadvantaged through apartheid and also to diversify the teams to create larger exposure throughout the country. Through this system, racial tensions have unfortunately increased as people have been excluded from a team based on their race, while those that have been included into the teams may doubt as to if they deserve to be there based on merit and not their race (Chappell: 2005).

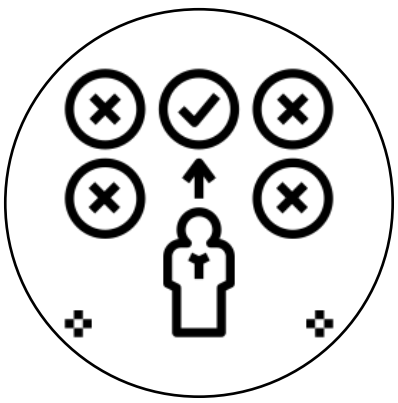
The current Springbok rugby captain, Siya Kolisi, has a different view as to how access to sports should be addressed throughout the country. He does not agree with the "quota" system, he believes it does not solve anything; he looks to a more holistic bottom-up approach to create a better future for South African Sports. He says "If you want to talk about transformation, you have got to start there (at a grassroots level), but in South Africa, it's tough because we want results and transformation. The talent is there, it's just about nurturing it. Personally, I wouldn't want to be picked because of my skin colour, that surely wouldn't be good for the team and the guys around you would know" (Sport24: 2019).

What we do know is that facilities have improved and systems are in place from post-apartheid, but is it the best way of moving forward? What needs to happen is to create a system/facility in which people can get equal opportunities on a public level. Not only allow development to occur where there is private money, but the public also has a right to development to be able to excel in what they think is possible.

Racial Tension



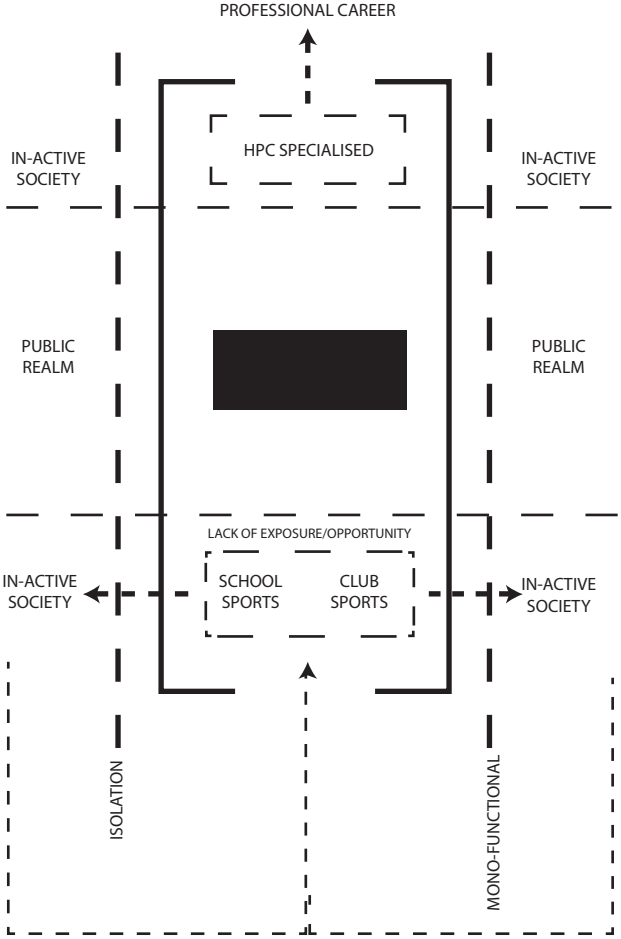
Top - Down Approach



Selection Processes

Fig.8: Infographics of current issues

The current dislocated system



The proposed integrated system

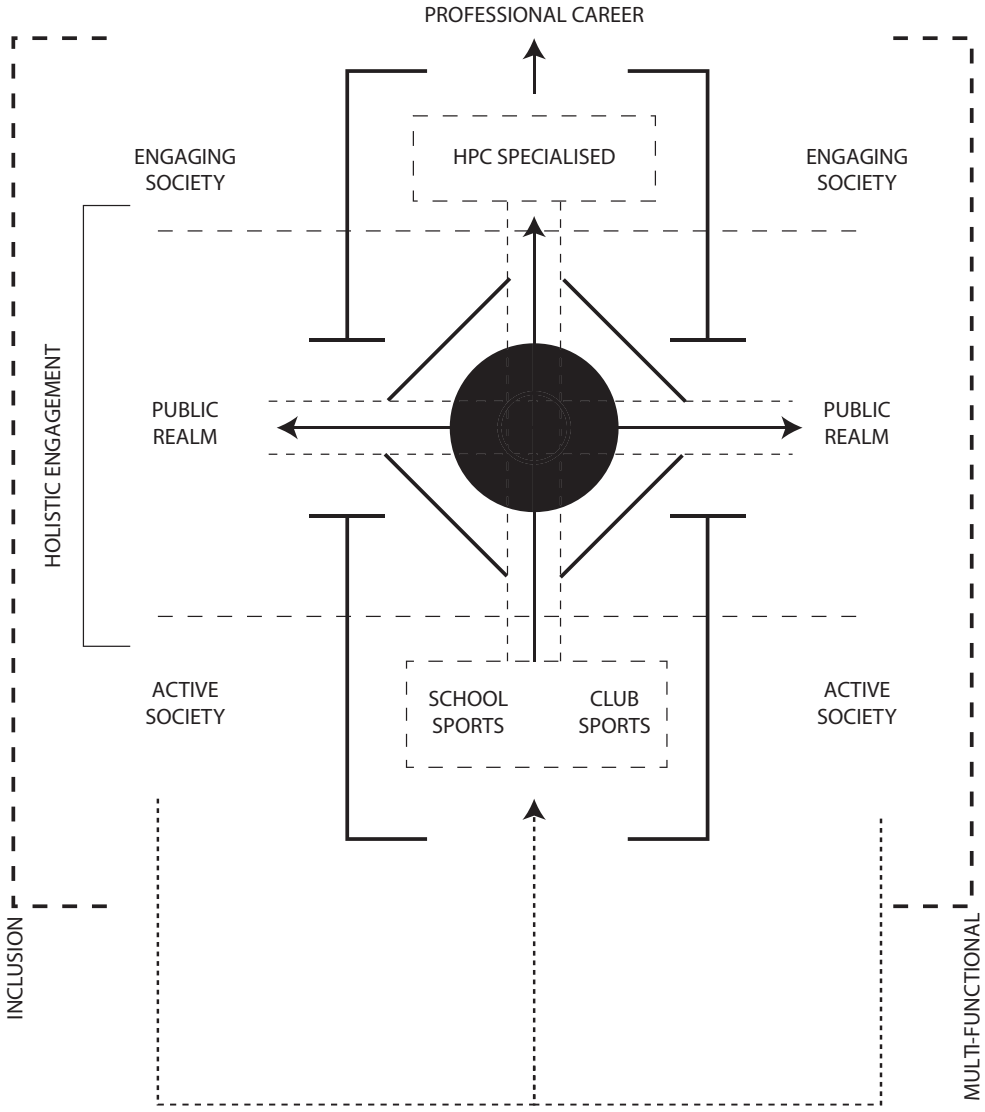


Fig.9: Current broken system (Author: 2019)
Fig.10: Proposed integrated system (Author: 2019)

1.4 PROBLEM STATEMENT

1.4.1 GENERAL ISSUE

Presently there is an imbalance of sporting facilities providing for physical activity and physical growth from the surrounding communities outside Pretoria with limited access to sports grounds, while those are run down and within the city, there are no public facilities (Booth, 1998). Due to the imbalance between opportunities available to different races in the country, the Quota system was implemented to even the playing field (South African Government, 2011). However, there is an argument against it; it is the short term solution to allow athletes to compete at various levels (Thought Leader, 2017) although the situation needs to be addressed at the root, enabling equal opportunities and sufficient facilities for people to excel to their full potential (Booth, 1998).

1.4.2 URBAN ISSUE

"The city is more than just a place to live. It is also a place for experience and activity, a place in which we spend much of our time. The healthy city provides a setting for our working day and our spare time" (Rasmus, 2009).

This is how space within a city is viewed in Denmark. Similarly the South African government's National Sport and Recreation Plan has a vision for a healthy nation through the participation of active recreation, providing active public spaces and opportunities at all schools throughout the nation (South African Government, 2011). However, areas have been allocated into communities on the outskirts of the cities, creating unhealthy static environments with no public spaces for active recreation (Booth, 1998).

1.4.3 ARCHITECTURAL ISSUE

Current Sports facilities are mono-functional that they do not allow for multi-functional space; arising from specific sports that require special requirements. Such typologies do not allow for external engagement due to the focus on the specific requirements, thus excluding public interaction. However, architecture should be more than just a shell; it should be able to create an interface for engagement on a physical, psychological and social level.

1.5 RESEARCH/DISSERTATION QUESTIONS

The following research questions are relevant to the dissertation:

- What step-up system can be implemented to create equal sporting and recreational opportunities for the public?
- How can urban spaces be used within Pretoria to host sporting and recreational activities?
- How can architecture break the public boundaries between sports facilities and the public?
- How can sports facilities be adaptable and multi-functional to accommodate various sports and activities?
- How can a program regenerate a site and create/ foster a place within its context?
- How can architecture establish a new relationship between the public and athletes?
- How can architecture propose the transformation from old sporting systems into a new exposed and engaging sports program?
- How can architecture create an interaction between the structure and the program which it facilitates?

Fig.11: The seating around the Caledonian stadium (Author: 2019)

1.6 DISSERTATION INTENTION

1.6.1 GENERAL INTENTION

The dissertation compromises of 3 sections. The general intention is to challenge the current sports systems, facilities and opportunities set in place. Then build up from the bottom providing a facility, program and space in which active engagement can freely and supportively be accessible in an area that currently does not allow for it.

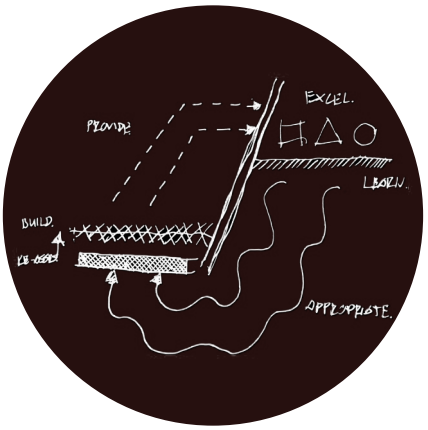


Fig.12: Diagram of the general intention (Author: 2019)

1.6.2 URBAN INTENTION

The urban intention is to align the site vision with the Tshwane 2055 city vision to create access to quality sports facilities for all people within the city, to enable a healthier society (City of Tshwane: 2011). This is to give an active purpose to the main routes around the site being Pretorius Street, Francis Baard Street and Nelson Mandela drive while engaging with the Apies River that needs to be regenerated. The revitalisation and regeneration of the site and its surrounding context, the urban vision should bring active/social engagement to the area.

Fig.13: Diagram of the urban engagement intention (Author: 2019)

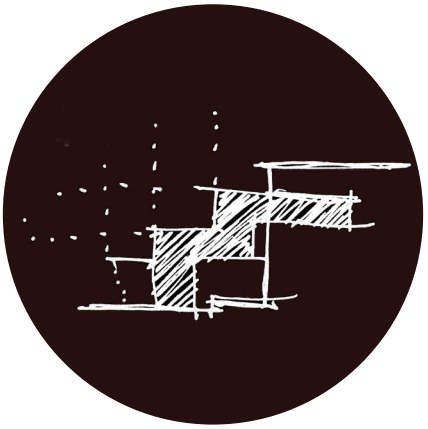


Fig.14: Diagram of the architectural intention (Author: 2019)

1.6.3 ARCHITECTURAL INTENTION

The architectural intention is that the new facilities should regenerate the site/context through the use of an engaging programme, while the building structure/ envelope also respects the rich existing heritage that is both programmatic and formal. Through the engagement of active users, the current site can lend itself structurally to becoming part of the program to build an active engaging architecture.

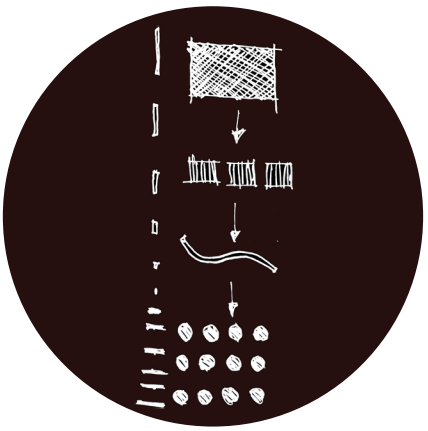


Fig.15: Diagram of the programmatic intention (Author: 2019)

1.7 RESEARCH METHODOLOGY

The dissertation is an analysis of the area surrounding sports and the effect it can have within its context, this creates more emphasis that the study has to be more quantitative than qualitative. This is to understand the physical sporting issues and opportunities presented throughout the dissertation. Thus the dissertation study tends to be a quantitative practical study, and it approached through the following methodology (Hofstee 2006:120).

HISTORICAL STUDIES:

Grasping an understanding of the broader and more focussed issues at hand was done by literature studies from past articles and journals to understand the historic reasons for the current situation that we are confronted with. This is done by understanding the historical overview and assessing how it translates into the present-day condition.

CASE STUDIES/PRECEDENTS:

Precedents will be analysed in different sections relating to the dissertation; this will provide an insight into how various problems have been addressed in similar conditions that this dissertation deals with.

CONTEXT ANALYSIS/MAPPING:

Mapping will be conducted by desktop studies and physical visits on a larger scale of Pretoria to find areas that lack sports and recreational facilities. Through highlighted patterns/areas, a focused area will be chosen for the urban intervention. This will be informed by analysing the infrastructure, connection and relationships to other facilities, current site conditions (ecological, physical and heritage), vehicle and pedestrian movement patterns and climatic conditions. Historical photographs of the site are to be gathered throughout the years of development in Pretoria's history. This will be done by going through Pretoria archives collecting photos, news articles and information regarding the development of the site throughout the years. This will be used to inform design responses along the edges of the precinct and programmatic solutions/possibilities. The broader framework will give informants on the site an analysis to understand the conditions such as the climate, boundaries, contours and water etc.

ETHNOGRAPHIC RESEARCH/PARTICIPANT OBSERVATION:

Through personal observation on-site, it will allow a realistic understanding of the site and context in which it is placed. This allows analysing data and aspects that cannot be quantified by merely data collection. It was done by a personal understanding of the context by personal observation and secondary sources; thus, interviews were avoided due to ethical clearance issues.

THEORY DEVELOPMENT:

This will be addressed in each area from urban through to programmatic understanding and other views of different situations that can be applied to the dissertation. This will be used to give design informants on various aspects and areas of the design.

PROGRAMMATIC UNDERSTANDING:

Through understanding the context and what the building needs to accommodate programmatically, There will need to be an understanding of the physical requirements needed for different sports/activities that need to be accommodated for. These will be sourced from national and international regulations to acquire the correct spaces for the program.

ITERATIONS:

The design process will follow an iterative method to develop the architectural intervention against different circumstances that the design could be faced with. This will push the design to the most appropriate response.

1.8 DELIMITATIONS AND ASSUMPTIONS

Due to the fact that the Caledonian sports grounds are still in use by the community and that there is a current proposal of redeveloping the grounds in the Tshwane 2055 Vision (do be discussed in context chapter), to align with this dissertation, the Caledonian sports grounds will fall into the urban vision (see context chapter) of the dissertation. The dissertation does not propose a generic model that could be applied in the South African context, but instead assesses the current system and proposes an architectural solution to the current needs on the site. The dissertation does not look to solve the issue of professional sports, but rather be a stepping-stone to what can lend itself to a better future to work off. The dissertation does not look to solving the economic viability of public sports facilities, but rather propose a solution that can bring equal opportunity within its context to achieve a better sporting/active future. In no way is the author an expert on sports, physical or psychological development and processes, the purpose was to gain an understanding of the different programs to achieve an architectural response. It is assumed that the site vision will be successful throughout the development of Pretoria on which the bases of the dissertation is built.

1.9 CONTRIBUTION

The architectural contribution involves proposing a new sports and recreational typology within a public precinct. As previously mentioned, the current sports systems/paths have mainly only been accessible to those that have had proper education/facilities or for those who have money due to the private "top" sports facilities. The proposed new typology looks to a "step-up" facility that will allow access to the public; this will give people a solid foundation to build on. The dissertation looks to create a public engagement facility that can be used for sports, wellbeing and recreation.

The dissertation aims to investigate the urban, programmatic and engagement levels at which architecture can lend itself to, through the use of adaptable and multi-functional programs that can create a new sports typology in a South African context.

Fig.16: The Caledonian Stadium braai ruins (Author: 2019)

Fig.17: The Caledonian Stadium soccer field (Author: 2019)

2. CONTEXT

Locality, Heritage, Site Analysis & Urban Block Vision

This chapter is an analysis of the current condition within the Pretoria context and highlights the issues and intentions of the dissertation mentioned in the previous chapter. It seeks to align the intervention with the Tshwane 2055 vision to create a more active and engaging urban environment for sports and recreation. After that, it is focussing and analysing the site that will fit into the broader urban vision and a more specific site urban vision.

2.1 INTRODUCTION

Through investigation and understanding of the issues at hand, it is evident that there is currently a gap between public sports facilities and high-performance centres which is available to the public. The next step is to find an appropriate site within Pretoria for a new sports facility/system that can create a “step-up” sports facility for the public. This will be done by mapping the current sporting conditions within Pretoria, then understanding how they fit into the Tshwanes 2055 vision for the city.

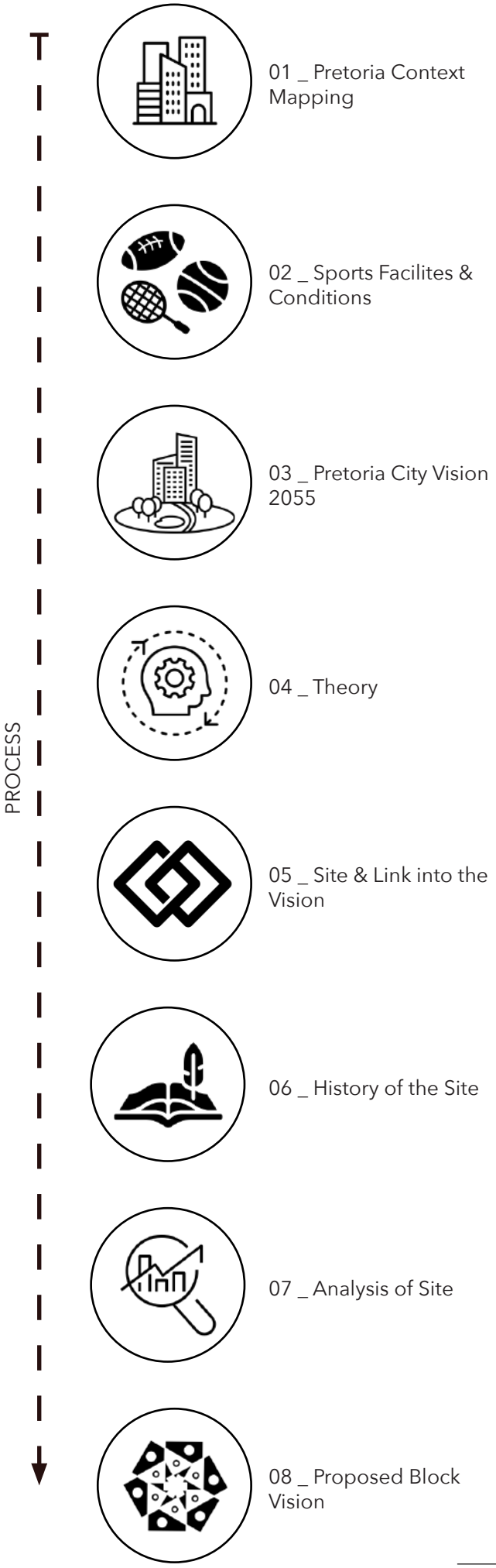


Fig.18: Infographic of site selection process (Author: 2019)

2.2 THE CURRENT SPORTING/ACTIVE CONDITION IN TSHWANE

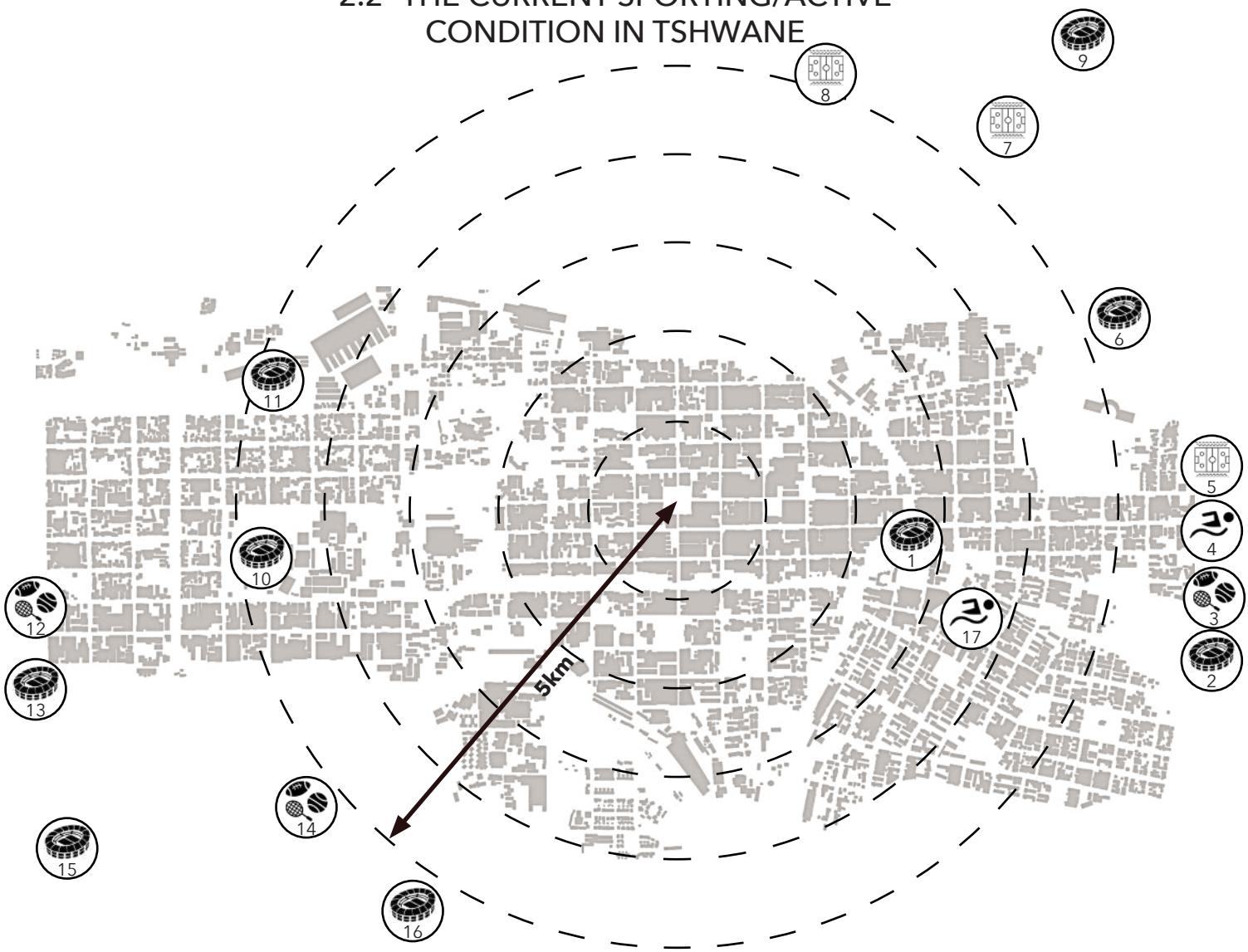


Fig.19: Map of Pretoria's sports facilities (Author: 2019)

SPORTS FACILITIES IN PRETORIA
DISTANCE FROM CHURCH SQUARE:

1 - Caledonian Stadium (2,4km)
2 - Loftus Versfeld Stadium (4,1km)
3 - TuksSports Campus (7,6km)
4 - Hillcrest Swimming Pool (6,6km)
5 - Hellenic Soccer Grounds (6km)
6 - Crafford Stadium (5km)
7 - Rangers FC Sports Grounds (5,8km)
8 - Pretoria North Sports Ground (11.9km)
9 - Eersterust Soccer Stadium (14,9km)
10 - Pilditch Stadium (3,5km)
11 - TUT Stadium (5,8km)
12 - Mbolekwa Sports Complex (13,4km)
13 - Lucas Masterpieces Moripe Stadium (13,1km)
14 - Defence Sports Grounds (8,2km)
15 - Laudium Stadium (13,1km)
16 - Supersport Park (14,8km)
17 - Sunnyside Swimming Pool (2,7km)

AVERAGE DISTANCE TO A SPORTS FACILITY - 8,2KM

1 **-** Sports Stadium

1 **-** Sports ground without stadium

1 **-** Multipurpose sports ground

1 **-** Swimming pool

Fig.20: Map of green and recreational spaces in Pretoria (Author: 2019)

Green and Receational Spaces in the City:

- PUBLIC GREEN SPACE
- PUBLIC (FENCED OFF) GREEN SPACE
- PRIVATE (SCHOOLS PREDOMINANTLY) GREEN SPACE
- PUBLIC WATERWAYS (APIES AND WALKERSPRUIT)
- PRIMARY SCHOOL
- SECONDARY SCHOOL

Gyms in the area:

1 - Zone Fitness
2 - Virgin Active Tramshed
3 - Virgin Active
4 - Virgin Active Sunnypark
5 - Planet Fitness JustGym
6 - Zone Fitness
7 - BodyLab Gym

Memberships can range from R300 to R850 per month

In conclusion, it is clear that within Pretoria's CBD, there is a lack of sports and recreational facilities. This is due to facilities located on the outskirts of the city, while those facilities are also restricted they do not allow public participation in those facilities. The other aspect is that public and private school grounds that could be used are fenced off for the safety of the children and there are management issues. The city needs a public space/facility to allow for development in sports and physical recreation.

2.3 TSHWANE'S 2055 REGENERATIVE VISION

South Africa's apartheid past, had an effect on the growth/ segregation on the cities we see today. Which has to led to the current insolation of the Pretoria CBD. The Tshwane 2055 vision incorporates new principles to create a resilient city that starts to regenerate itself.

"In 2055, the City of Tshwane is liveable, resilient and inclusive whose citizens enjoy a high quality of life, have access to social, economic and enhanced political freedoms and where citizens are partners in the development of the African Capital City of excellence" (City of Tshwane: 2015).

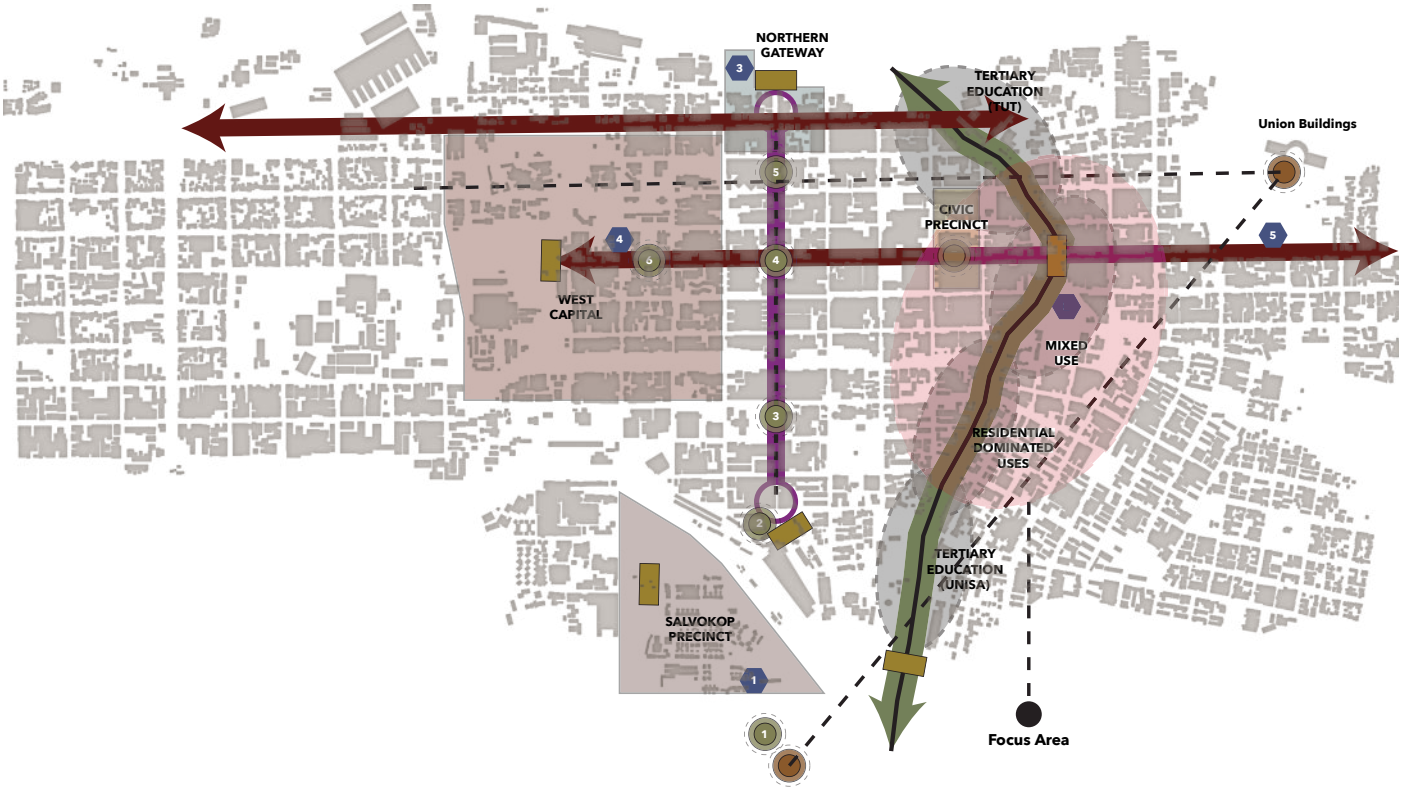
Fig.21: Map of points of Tshwane's 2055 vision points of interest (Author: 2019)

The Tshwane 2055 Urban Vision:

Within the area of Tshwane's CBD, there is a historical and current identity that aligns itself to distinct areas of character. The areas that have been highlighted are the Government Boulevard, Ceremonial Boulevard, Nelson Mandela Green Corridor, Gateways into the city, Landmarks, Gateway Parks, Public Squares, Precincts, Visual Axises to essential points in the city and sports and recreation (City of Tshwane: 2015).

The Nelson Mandela Green Corridor:

The Nelson Mandela Green Corridor places focus on the issue of a lack of green open space within the city; it aims to address this by creating a "green" connection through the city by allowing recreational spaces along the Apies River (City of Tshwane: 2015). The Nelson Mandela Green Corridor will connect the southeastern CBD to the northeastern edges. This will include UNISA, Residential area (Trevenna), mixed-use (Caledonian Sports Grounds) and TUT.



Gateways into the CBD

Landmarks

Visual Connections

Government Boulevard (Paul Kruger)

Nelson Mandela Green Corridor

Ceremonial Boulevard (Stanza Bopape)

Public Squares:

1 - Freedom Park Square
2 - Station Square
3 - Museum Square
4 - Church Square
5 - Synagogue Square
6 - Lilian Ngoyi Civic Square
7 - Kruger House Square

Gateway Parks:

1 - Salvokop
2 - Caledonian Landmark Park
3 - Northern Gateway Park
4 - Western Gateway Park
5 - Union Buildings Park

Fig.22: Map of Tshwane's 2055 vision (Author: 2019)

2.4 REGENERATIVE THEORY

Current green space throughout Pretoria are isolated from their context; this is because they are poorly managed, unsafe and mono-functional spaces. The proposition that arises is how these areas can be adapted to develop into sustainable spaces throughout the city and contribute to future development on the Caledonain Stadium, that creates a ripple effect through the city. The Regenerative theory can contribute to such a manner.

Dictionary definition of regeneration:
- To re-create, reconstitute, or makeover, especially in a better form or condition.
- To grow after loss or damage.

Mang and Reed (2012: 36) propose that in the built environment "regeneration thinking redefines the built environment - from the old, building-centric definition amongst buildings, infrastructure and natural systems, as well as the culture, economy and politics of communities. It redefines what sustainability means and requires - within the context of a dynamic, interdependent, evolving world". This philosophy suggests that all systems are integrated. Specific urban issues cannot be solved on their own, but should rather be understood as a part of a larger system that develops and grows over time to not only regenerate itself but also its surroundings.

Regeneration could be seen as a more scientific methodology revolving around the idea of sustainability in nature, but Mang and Reed (2012: 29) place great importance on the value of understanding the "story of place". The reason for this is that for a system to be implemented and to be successful, there needs to be community engagement. The community take ownership of the development into the future. People having an identity in a certain space, it is proven that by having a more profound connection fosters change and regeneration (Mang & Reed 2012: 29).

Mang and Reed (2012: 31 propose a framework to regenerative design and development that consists of three phases; firstly understanding and conceptualising the appropriate relationship to a place. Secondly designing for harmony and thirdly co-evolution. These aspects are crucial to the future holistic development of a project.

Understanding the right relationship of a certain place recognises that each community has its own unique identity in history that sets it up for a specific future. It is essential to understand the broader influences that can impact the project. This can present various issues or potentials for the site. This will also create an environment that embraces the community involving them in the project and its future development (Mang & Reed 2012: 32). Designing harmony for a certain place, strives to understand the larger patterns in its context, it also aligns the project to harmonise it with those intentions. Allowing the project to align itself with the larger plan creates a more effective infrastructure that communities can regenerate its natural and physical context with (Mang & Reed 2012: 33). Lastly, co-evolution does not allow a project to be completed when the building is finished, but instead focusses on the initial idea to set the foundation and allowing a further regeneration. This should be achieved by the

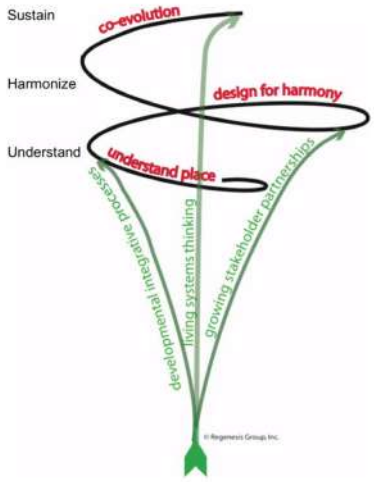


Fig.23: Regenerative design framework diagram (Many & Reed 2012: 31)

people that use and are affected by the project, and they should manage and regenerate the project in its context (Mang & Reed 2012: 34).
This framework looks to be introduced into the dissertation on an urban/block vision scale:

Understanding Right Relationship of Place: Understanding what the site means within its context as well as the place it once was and currently creates for those that are influenced by it.

Designing for Harmony: Aligning the site with the larger visions and plans of the city in order to play a role in the development of Pretoria and the larger sports and recreational development in the country.

Co-evolution: Getting the community to engage with the project to regenerate the site, Pretoria and themselves to a healthier sports and recreational future.

2.5 LINKING INTO THE VISION

A current design proposal part of the Tshwane 2055 Vision by Newtown Landscape Architect's focusses on the redevelopment of the Caledonian Sports Grounds into a new Inner City Park. The Commons proposes the demolition of the existing stadium/ sports grounds to incorporate a public park, children's play parks, a skate park and picnic/market area. The main reason for this proposal is due to the current state of the Caledonian Sports Grounds, which is miss managed and deemed to be an unsafe space in the city (City of Tshwane: 2015). The communities have rejected the proposal as they will lose the only sporting ground they have access to within the city (Mudzuli, 2015).

Fig.25: Site Plan of The Commons (Newla: 2019)

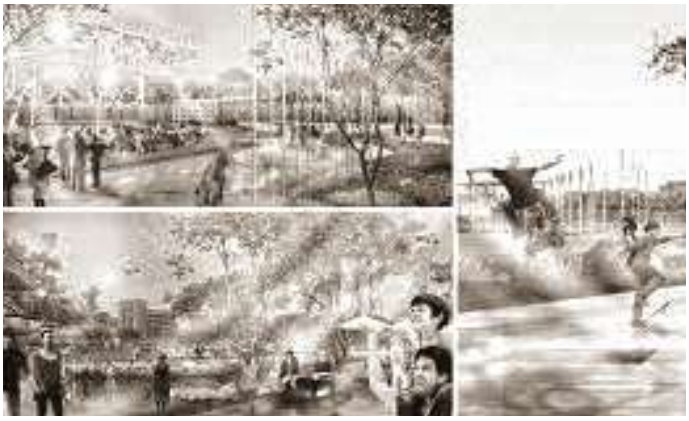


Fig.24: Perspectives of activities at The Commons (Newla: 2019)

Fig.26: Site perspective of The Commons (Newla: 2019)

The dissertation proposes a "step-up" facility for sports development that can accommodate the idea of green space on the Nelson Mandela Green Corridor while allowing for sports and recreation on the site. It will just need to be appropriated for the site within its context. The Tshwane 2055 vision contains the following principles to enable the possibility to regenerate itself within the city CBD. However, these principles need to be manipulated to create the possibility for a more sensitive intervention (see fig 28).

Fig.27: Site perspective of The Commons (Newla: 2019)

Fig.28: News article from Rekord (Mahlangu: 2015)


PRETORIA CENTRAL REKORD FRIDAY MAY 20, 2016

Residents want Caledonian stadium revamped

Thato Mahlangu

Pretorians have accused the metro of neglecting the historical Caledonian sports ground in Arcadia.

They claimed the 111-year-old sports ground, which includes a football field, could be used to keep the youth away from drugs and crime.

Damilane Nzamo (18), who lives in Arcadia, said this week the sports ground gates were locked whenever youngsters wanted to practise.

"It is a nightmare to access the facility as it is always locked. If we manage to gain entry, we are chased away by security," said Nzamo.

"We (the youth) have to resort to smoking nyaope because the only stadium close by is falling apart and there are no other forms of recreation in the city centre," said Sylvester Nyaka.

A local mother, Maria Sekwambane, said she could not put her son's life in danger by allowing him to use the facility.

"I don't allow my son to practise football because I fear the building might fall on him as they need to use the changing room after a match," said Sekwambane.

In November 2014, Tshwane approved plans to rejuvenate the football grounds into an inner-city park similar to Central Park in New York.

Residents have been resisting the idea of the state-of-the-art park on the terrain of the historic sports facility.

"I don't know why the metro doesn't just scrap the park idea and rather revamp the sports ground. How will a park harness talent?" asked Sekwambane.

When he visited the sports ground on Monday, DA mayoral candidate for Tshwane Solly Msimanga accused the Tshwane metro of bullying those who used the sports ground.

"The club (Arcadia Shepard's football club) recently received a letter to vacate the facility and if the metro's bullying tactics are successful, the club will not have a home or the benefit of using the facility."

He said legal authorities needed to intervene.

Msimanga said Caledonian stadium was a heritage site and could not just be demolished when people felt like it.

No comment was received from Tshwane metro by the time of going to print.

One of the teams that have played at the historic Caledonian sports ground

Photo: arcadiashepherdsfc.blogspot.com

Fig.29: News article from Rekord showing residents want the stadium to stay and be uplifted (Mahlangu: 2016)

Tshwane 2055 Vision Remaking Spatial Form Principles

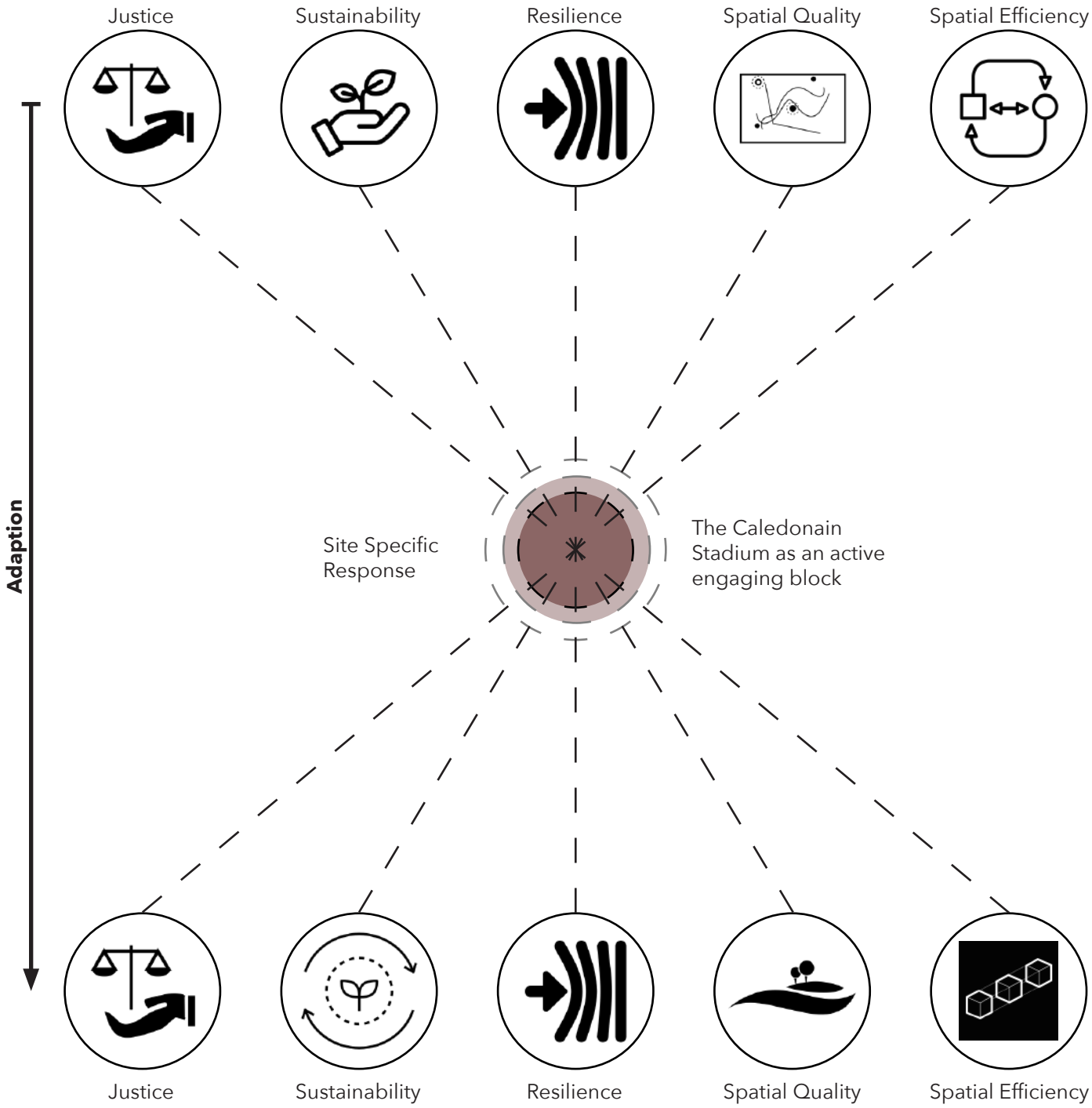


Fig.30: Tshwane 2055 vision remaking spatial form principles adaption (Newla: 2019)

2.6 SITE LOCATION

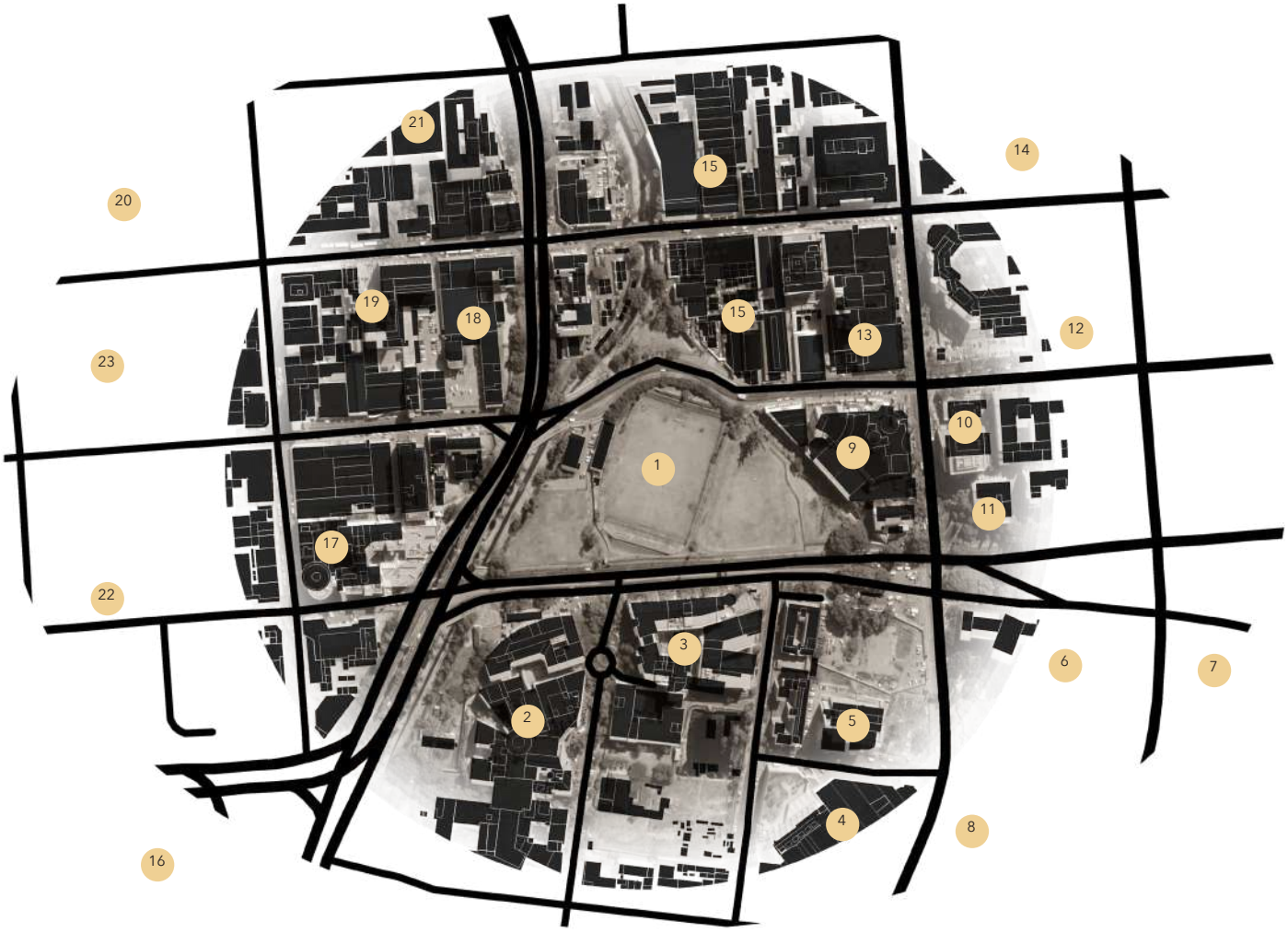
The chosen site for the dissertation is the Caledonian Sports Grounds that is located on the eastern edge of the Pretoria CBD, between Pretorius Street on its northern boundary and Francis Baard Street on the southern boundary. The Apies River encloses the stadium to the west and the Walkerspruit on the east. Nelson Mandela Drive is on the other side of the Apiesrivier that connects the stadium on a north/south axis while Pretorius Street and Francis Baard Street on the east/west axis within Pretoria.

Fig.31: Pretoria Locality Map (Author: 2019)

1 - Caledonian Stadium
2 - Union Buildings
3 - Arcadia
4 - Pretorius St.
5 - Pretoria CBD
6 - Francis Baard St.
7 - Nana Sita St.
8 - Burgers Park
9 - Nelson Mandela Dr.
10 - Sunnyside
11 - Trevenna
12 - Steve Biko Rd.
13 - Pretoria Art Museum

Fig.32: Caledonain Stadium site map (Author: 2019)

Caledonian Stadium Site Locality Map



1 - Caledonian Stadium
2 - Department of Trade & Industry
3 - Department of Mineral Resources
4 - Sunnypark Shopping Centre
5 - Department of Tourism
6 - Maupa-Naga Police Station
7 - Mediclinic Heart Hospital
8 - Sunnyside Post Office
9 - Sterland Mall
10 - SASSA Head Office
11 - National Agricultural Marketing Council
12 - SAPS Offices
13 - Department of Arts & Culture
14 - Suncardia Shopping Centre
15 - Car Dealerships
16 - Pinnacle Music Academy
17 - Mediclinic Medforum
18 - Pretoria Institute of Learning
19 - SAPS
20 - SA Reserve Bank
21 - TUT
22 - Louis Pasteur Private Hospital
23 - 012 Central

Fig.33: Caledonain Stadium site map (Author: 2019)

2.7 HISTORY OF THE CALEDONIAN SPORTS GROUNDS

Fig.34: Cartoon on the opening of the Caledonian Sports Grounds by Mr. H. Crawford, August 31, 1898 (Crawford: 1898) retrieved from Sammy Marks Library

Fig.35: Caledonian Sports Grounds pre 1910 (Union Building has not started construction) (anon.: n.d) retrieved from Sammy Marks Library

Fig.36: The Highland Games (Scottish dance) as part of the Centenary celebrations, 1910's (Anon.: n.d) retrieved from Sammy Marks Library

The Caledonian Sports Grounds has been a sporting and recreational precinct in the CBD for over a hundred years. It included the central swimming pool (now demolished) and the Caledonian Sports Grounds that comprised of a sports field and recreational park. Although the last 60 years it has been used predominantly for soccer before it was used for rugby, cricket, athletics, bowls, netball, hockey, greyhound racing and celebrations (Vlok 1955: 236). Formerly the property was owned by Sir John Wessels and Mr Esselen in 1894, but in 1916 the property was bought by the Pretoria Municipality for 8,500 Pounds, this was in the interest of the public for public sports and recreational grounds (Vlok 1955: 237).

In the 1950s, the Caledonian Sports grounds was further developed into a soccer stadium that was the home ground for Arcadia Shepherds (Vlok 1955: 240). They played a pivotal role in the development of professional sports in South Africa's history. The club was first formed in 1903 by a group of thirty youngsters that saw British soldiers playing a game called soccer. Sport in South Africa became professional in the 1960s, where Arcadia Shepherds was the first soccer club to become professional (Bolsmann 2010: 30). Due to their popularity of being one of the few professional soccer clubs in the country, they had over two thousand "non-european" fans. These fans were allowed to watch games at the Caledonian Stadium for free. This was possible through a fenced-off area for the spectators. It came to an end in 1965 when the government banned "non-European" supporters from professional sports events unless they had permission from the Department of Community Development. Soon after that, Arcadia Shepherds lost a vast majority of their supporters (Bolsmann 2010: 36).

In the 1970s, Arcadia Shepherds became one of the wealthiest clubs in the country. Due to their successful year in 1973. They became the first team to win all three soccer tournaments in this year (Coca-Cola Shield, The Castle Cup and the Embassy Cup) (Bolsmann 2010: 44). Soon after Arcadia Shepherds decided to take professional sports to the next level, they believed that the best team should be on the field regardless of their race. In February 1977 Vincent Julius became the first "non-European" player to play in a "whites only" sports league, this was the first step to moving towards an equal sports nation (Bolsmann & Alegi 2010:5). Through this hype Arcadia Shepherds gained a massive "non-European" fan boost, fans climbed the surrounding stadium trees to watch the soccer games. In response to this, the government cut all the trees down. This resulted that on July 1, 1977, Arcadia Shepherds were banned from the Caledonian Stadium for nine years,

forcing them to move to stadiums in Attridgeville and Mamelodi. The relationship between Caledonian Stadium and Arcadia Shepherds would fall apart due to the lack of management and "homelessness" (Bolsmann & Alegi 2010:13). In 1990, Arcadia Shepherds were forced to sell the club to Dynamos as well as their key players like Mark Fish (Bolsmann & Alegi 2010:15).

In 1998, the ban on the Caledonian Stadium was lifted and the first game was played by Supersport United and Hellenic (Bolsmann & Alegi 2010:17). This expresses the impact the Caledonian Stadium has had not only in Pretoria but throughout the country. The heritage of sports development and taking new steps to a better sporting future is deeply rooted in the narrative of the Caledonian Stadium.

Fig.37: Aerial view of Arcadia from Schoeman Street in a Northern direction towards the Union Buildings (1930s) (Anon.: n.d) retrieved from Sammy Marks Library

Fig.39: Rugby match between North-Transvaal and a British team on the Caledonian grounds (13 July 1938) (Anon.: 1938) retrieved from Sammy Marks Library

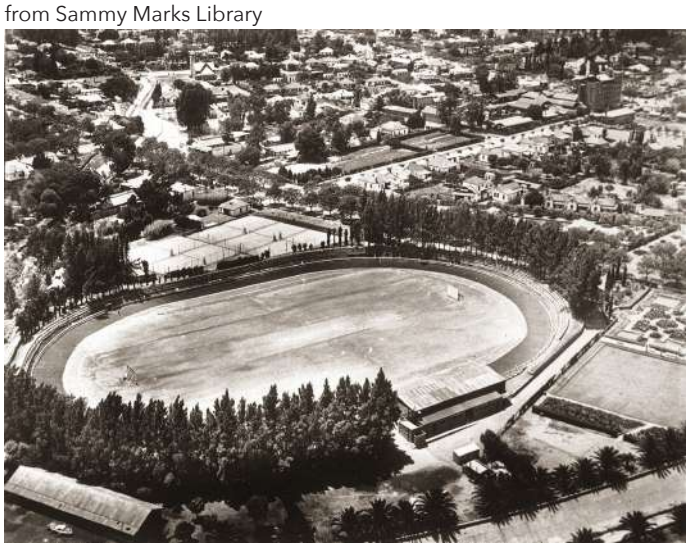


Fig.38: Aerial view of the Caledonian Sports Grounds and its surroundings (1930s) (Anon.: n.d) retrieved from Sammy Marks Library

Fig.40: South African Amateur Athletics Championships at the Caledonian Grounds (11 April 1955) (Anon.: 1955) retrieved from Sammy Marks Library

Fig.41: Rugby match between North-Transvaal and a British team on the Caledonian grounds (13 July 1938) (Anon.: 1938) retrieved from Sammy Marks Library

2.8 SITE ANALYSIS

2.8.1 Heritage

1

Stone Wall

Value and interventon: Leave as is, frames the field and Pretorius St.

Age: 80 years or more.

Condition: The wall is still in very good condition

2

Caledonian Clubhouse

Value and interventon: Demolish, it is broken down and not used.

Age: 50 - 60 years

Condition: Very bad, windows are broken and creates a bad space.

3

Apies River

Value and interventon: Manages storm water in CBD. Leave as is.

Age: 100 years and more.

Condition: The channel is polluted

Walkerspruit

Value and interventon: Was a recreational stream, deals with storm water. Leave to frame the site.

Age: 80 years or more.

Condition: The spruit is polluted and not maintained.

4

Caledonain Stadium

Value and interventon: Leave as is, frames the field and still used.

Age: 50 - 60 years.

Condition: The condition is not too bad, just needs maintenance.

5

Emanuel Church

Value and interventon: One of the few heritage buildings around the site.

Age: 60 - 80 years or more.

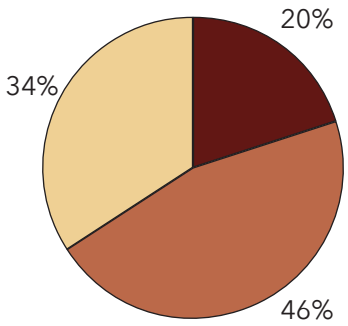
Condition: The form is still in good condition but needs maintenance

6

Fig.42: Images of heritage aspects around the site (Author: 2019)

Fig.43: Aerial image of the site (Maps: 2019)

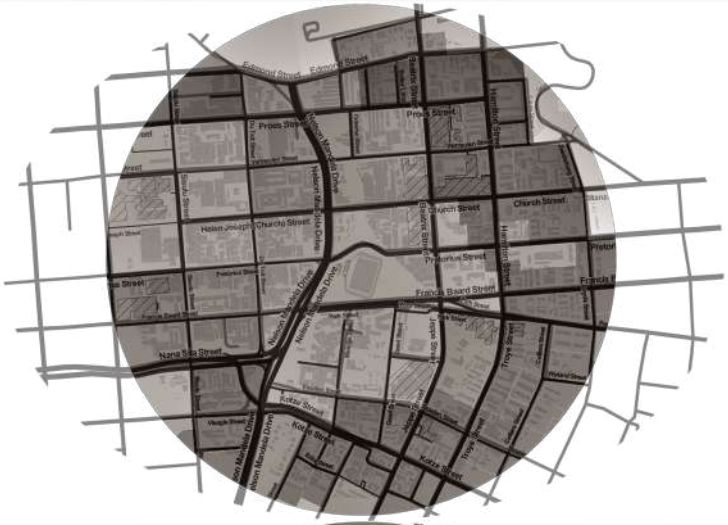
2.8.2 Demographic Composition



Average ages in area around the Caledonian Stadium: (Mapable: 2017)

- Percentage of 0 - 20 years
- Percentage of 20 - 30 years
- Percentage of 30 - 85+ years

Fig.44: Pie graphy of average ages (Author: 2019)



Average households per hec. in area around the Caledonian Stadium: (Mapable: 2017)

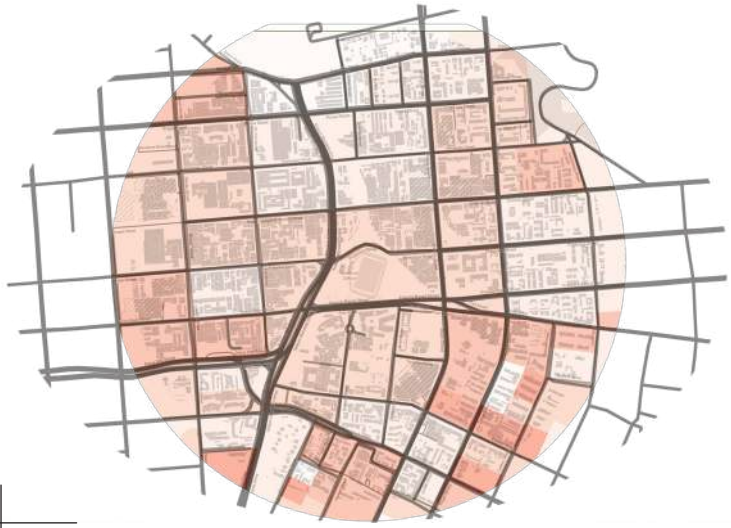
- 25 - 50 Households
- 15 - 25 Households
- 10 - 15 Households
- 0 - 10 Households

Fig.45: Plan of average households (Author: 2019)

Average percentage with cars in area around the Caledonian Stadium: (Mapable: 2017)

- 40 - 50 percent
- 30 - 40 percent
- 20 - 30 percent
- 10 - 20 percent

Fig.46: Plan of average percentage of cars (Author: 2019)



Average percentage of unemployment in area around the Caledonian Stadium: (Mapable: 2017)

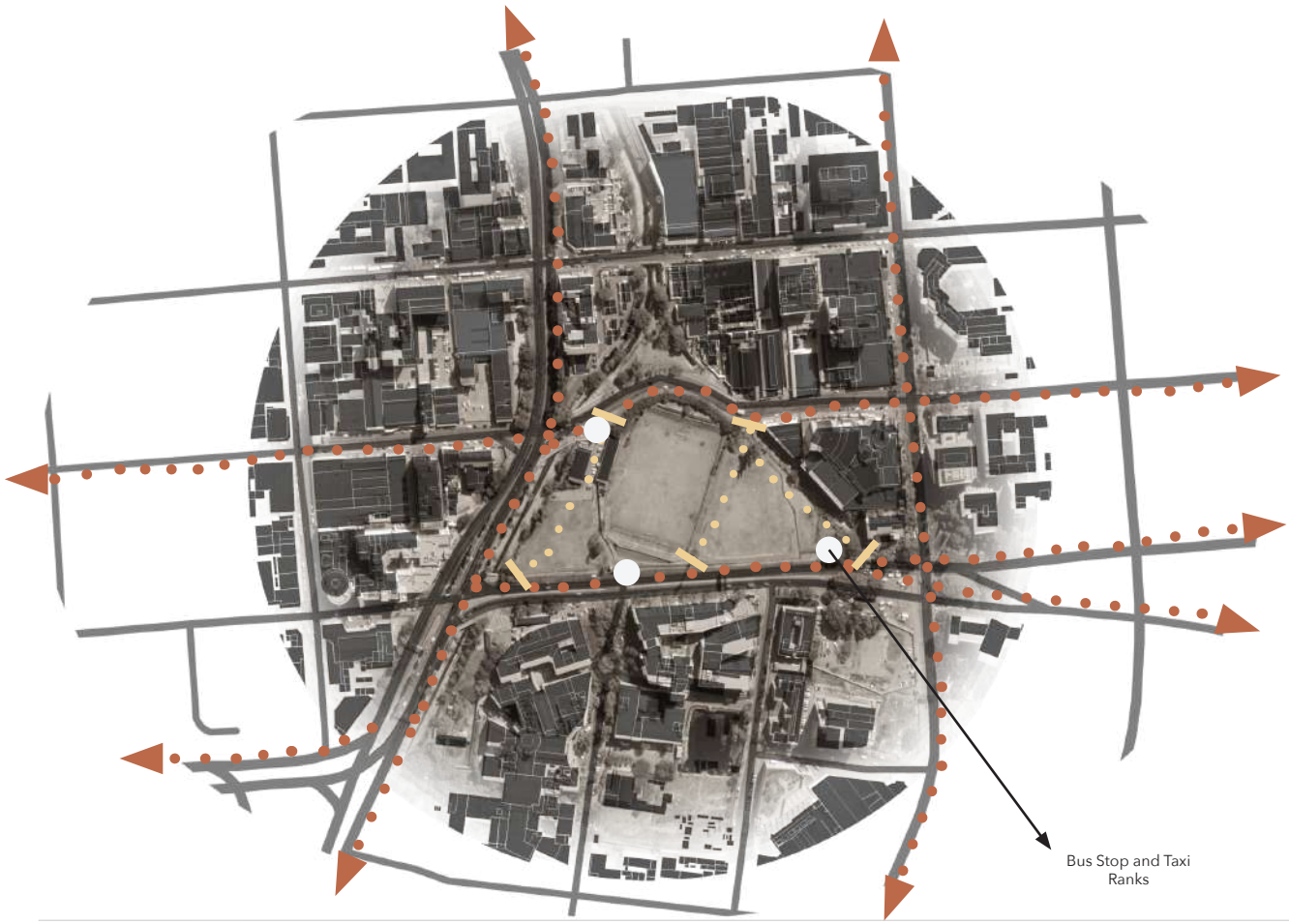
- 40 - 50 percent
- 30 - 40 percent
- 20 - 30 percent
- 10 - 20 percent

Fig.47: Plan of average percentage of unemployment (Author: 2019)

2.8.3 Infrastructure

Fig.48: Map of infrastructure around the site (Author: 2019)

2.8.4 Site Movement and Access and Use



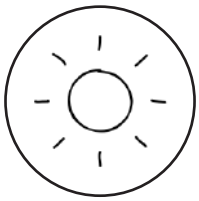
Main pedestrian route to work and home

Pedestrain shortcuts through the site and accessible areas

Fig.49: Map of movement around and through the site (Author: 2019)

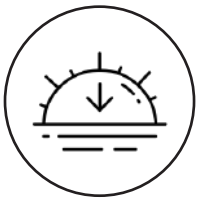
Morning: 6am - 10am:

In the early hours of the morning it is used as a means of a shortcut through the site by the public on the way to work. Later on it is used by students that are inbetween classes.



Afternoon: 10am - 2pm:

Most of the time is it used by students between classes. There might be a few homeless people that use it for the shade in the heat of the day.



Late Afternoon: 2pm - 6pm:

On Mondays, Wednesdays and Fridays it is used by the soccer club to practice and play games. The public use the site as a shortcut on their way home.

Night: 6pm - 10pm:

On some evenings it will be used for soccer games. Otherwise it is used by homeless people to sleep and other people that use it for social gatherings.

2.8.5 Water: Flood Lines and Condition

100 Year Floodline (Mapable: 2019)**:**

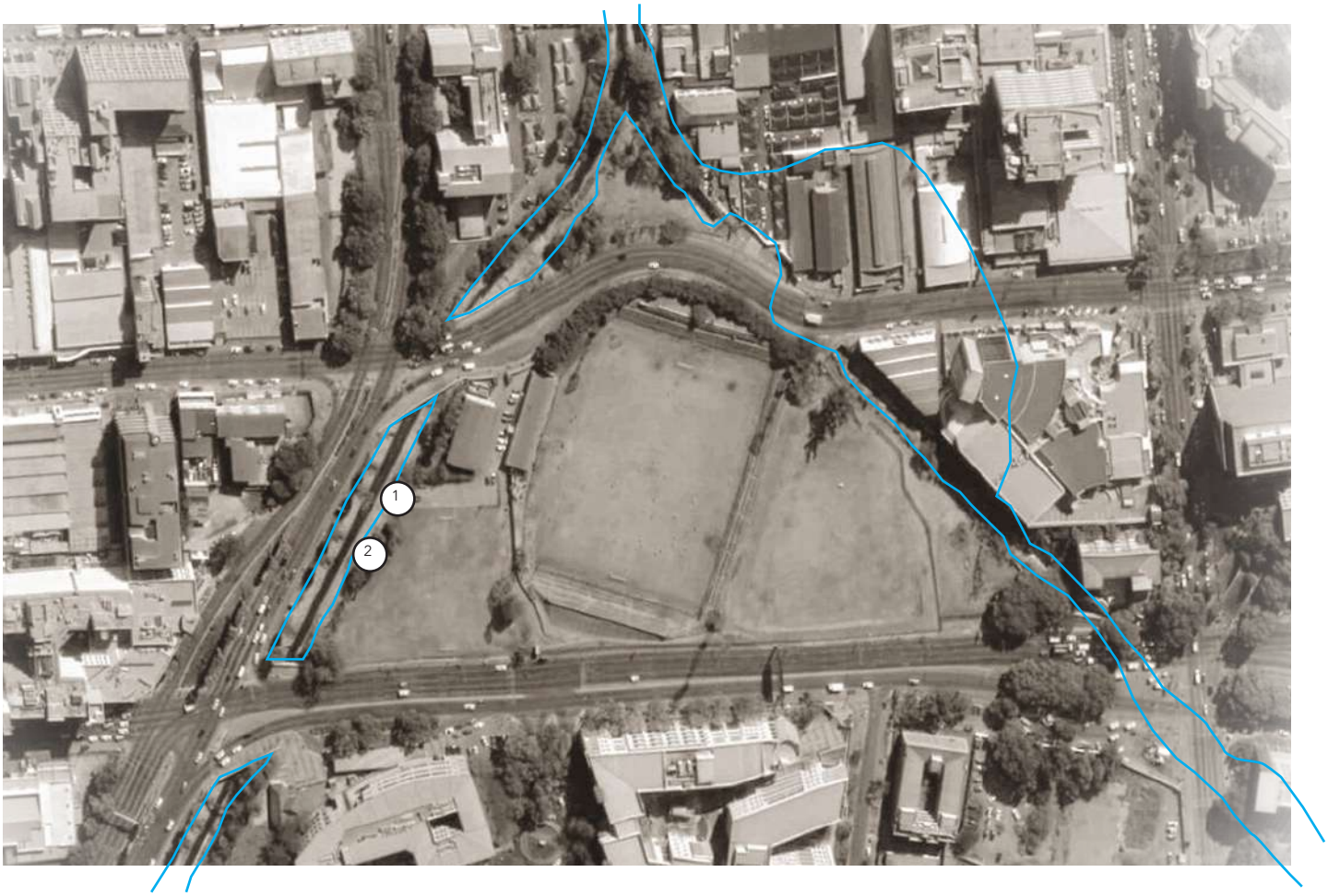


Fig.50: Map of 100 year floodline (Mapable: 2019)

Fig.51: Photo of the Apies river condition (Author: 2019)

Fig.52: Photo of the Apies river condition (Author: 2019)

2.8.6Ecology

Refer to Figure 50 for location:

Fig.53: Photo of over grown grass and stands (Author: 2019)

Fig.54: Photo of the grass and movement areas (Author: 2019)

Fig.55: Photo of the trees on the site (Author: 2019)

Fig.56: Photo of park area that is used for parking (Author: 2019)

Fig.57: Photo of the over grown edges on site (Author: 2019)

Fig.58: Photo of the trees by Pretorius St. (Author: 2019)

2.8.7Site Climate

Average Temperature (Accuweather:2019)

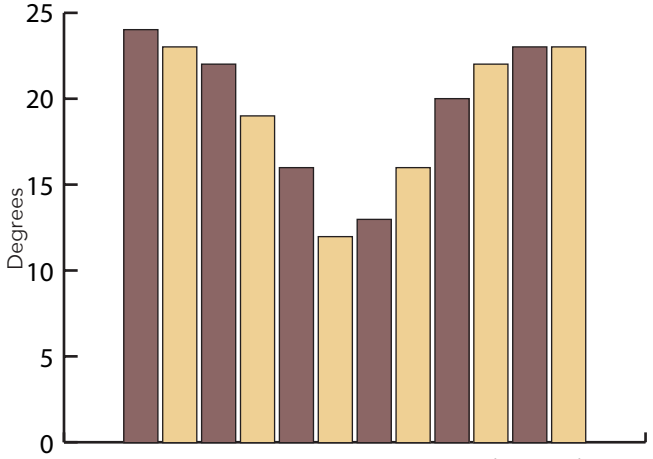


Fig.60: Average temperature chart (Author: 2019)

24	23	22	19	16	12	13	16	20	22	23	23
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Average High/Low Temperature (Accuweather:2019)

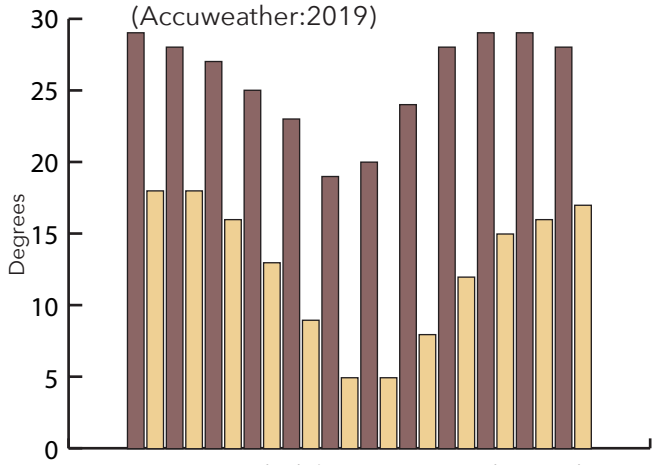


Fig.61: Average high/low temperature chart (Author: 2019)

29	28	27	25	23	19	20	24	28	29	29	28
18	18	16	13	9	5	5	8	12	15	16	17
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Average Rainfall (Accuweather:2019)

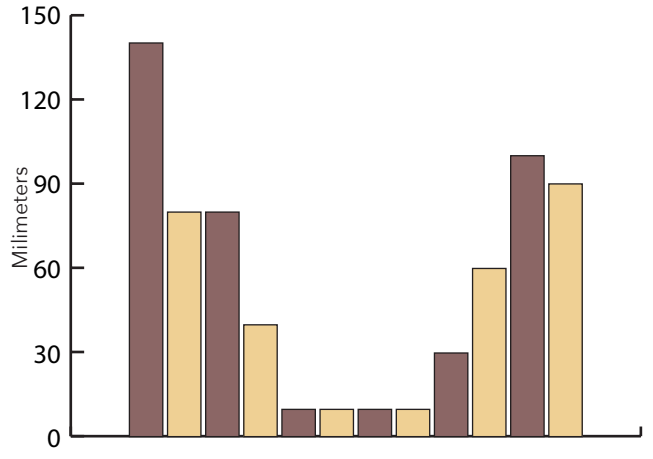


Fig.63: Average rainfall chart (Author: 2019)

140	80	80	40	10	10	10	10	30	60	100	90
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Average Daily Sunshine (Accuweather:2019)

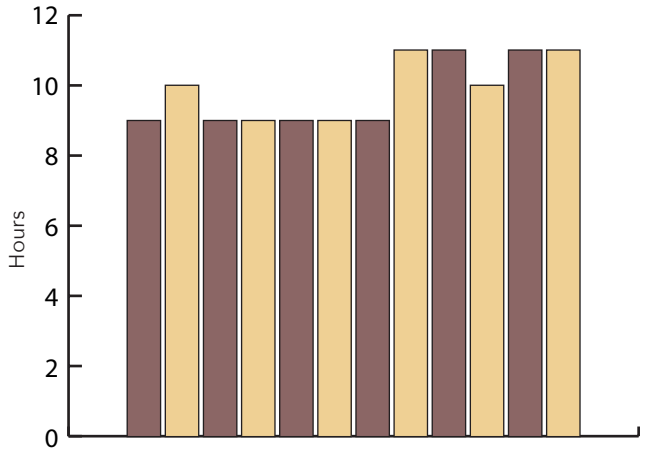


Fig.62: Average daily sunshine chart (Author: 2019)

9	10	9	9	9	9	9	11	11	10	11	11
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Average Wind (Accuweather:2019)

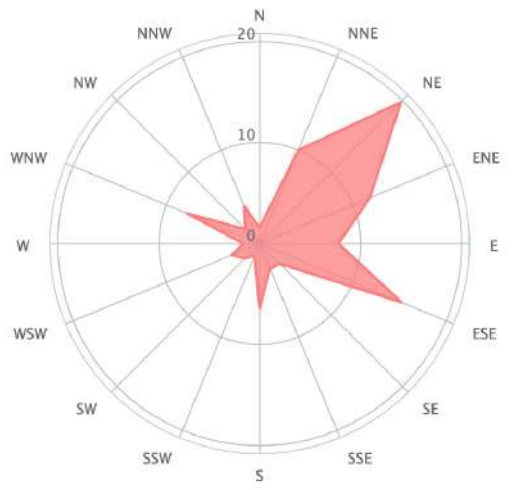


Fig.59: Wind rose chart (Accuweather: 2019)

2.8.8Site Conditions

Fig.64: Photo of entrance from Pretorius St. (Author: 2019)

Fig.65: Photo of the team changing rooms and tunnel running onto the field (Author: 2019)

Fig.66: Photo of the southern stands with lack of maintenance (Author: 2019)

Fig.67: Photo of the old public changing rooms (Author: 2019)

Fig.68: Photo of the tunnel running onto the field (Author: 2019)

Fig.69: Photo of student on the grandstand taking drugs (Author: 2019)

2.9 ACTIVATING UNUSED SPACE WITHIN THE CITY

As mentioned earlier, the Tshwane 2055 Regenerative vision is to create liveable, resilient and inclusive spaces to create a high quality of life social spaces (City of Tshwane: 2015). This enforces the principles of the dissertation to create an accessible public space for sports and recreation in the city. It is vital to understand that successful public spaces have good urban edge designs to draw the public into space in a safe way, to allow an escape from reality in a busy city. The proposed vision has only focussed on the more busy and built-up corridors that have shown how the public edges will be addressed; the Nelson Mandela Green Corridor has only proposed infrastructural possibilities such as ponding areas of the Apies River and making it a public attraction and sidewalk to get to different areas. There will still be spaces that are wasted and utilised to their full potential. Public edges need to provide more than merely walkways, shade and views; they should engage the public in various ways.

Rasmus (2009) recognises that a city should be more than just a place to work and sleep in, but rather a healthy environment and a space to breakaway from for recreational purposes. The increase in densities throughout the world, spaces that enable traditional organised sports have declined due to less space that is available. The reaction is a new typology of "urban" sports being adapted into urban spaces. Rasmus (2009) proposes that wasted and mono-functional spaces can be designed to allow for informal physical sports to take place. This, in result, will cause healthier urban environments that increase social interactions within communities.

By defining common areas that can be used for physical activity within the city begins to regenerate the possibilities in wasted spaces. Those areas can be identified throughout Pretoria and specifically the urban precinct of the Caledonian Sports Grounds.

The Park

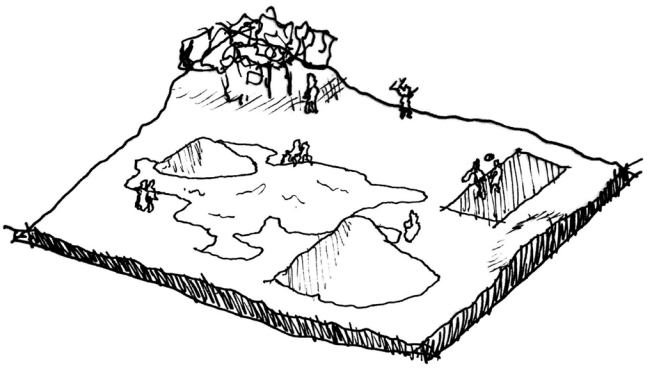


Fig.70: Sketch of park possibilities(Author: 2019)

Connections

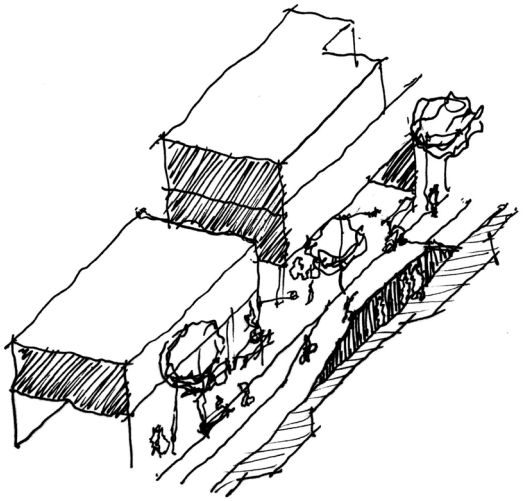


Fig.71: Sketch of connection possibilities (Author: 2019)

Residential Areas

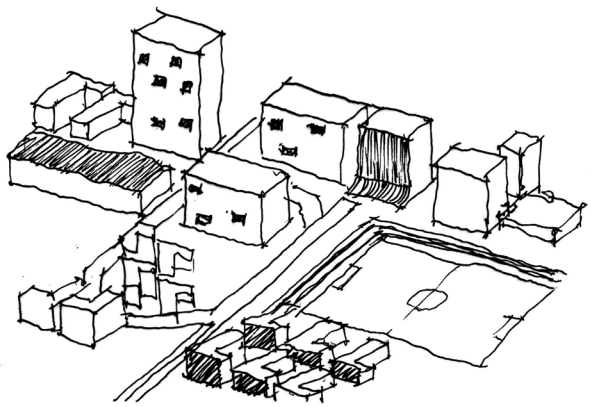


Fig.72: Sketch of residential area possibilities (Author: 2019)

Activities 5 min away

Multiple Use

Flexible Form

Cohesive Functions

Direct Connection

Density

Water Areas

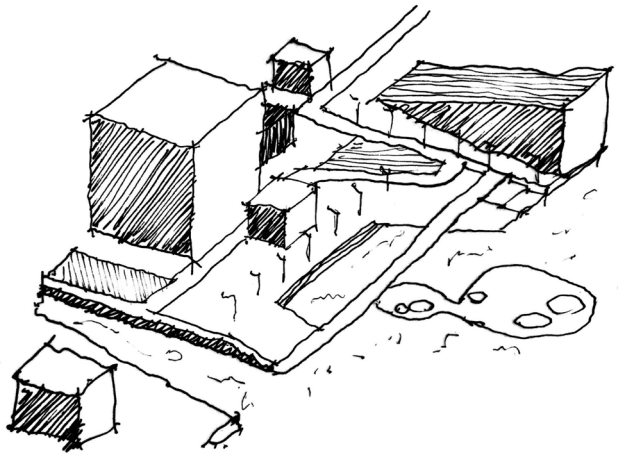


Fig.74: Sketch of water area possibilities (Author: 2019)

Easy of access

Varied Approach

Wide Connections

Mobile Units

Recycling

Mixed Functions

Urban Edges

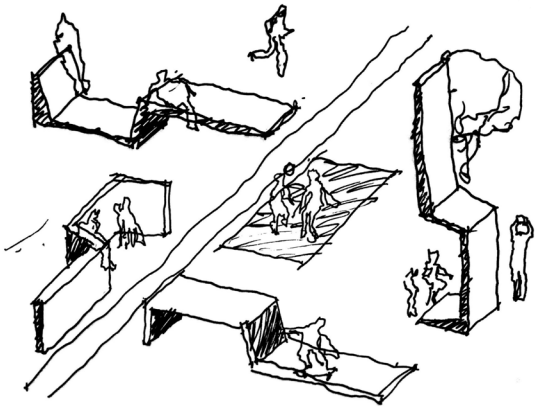


Fig.73: Sketch of urban edge possibilities (Author: 2019)

Easy of Access

Varied Approach

Wide Connections

Mobile Units

Recycling

Mixed Functions

Roof and Surface

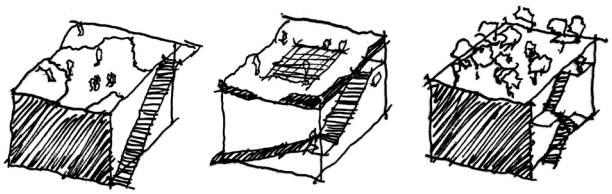


Fig.75: Sketch of roof and surface possibilities (Author: 2019)

Ease of Access

Mixed Functions

Adapt Courts to Context

Utilise the Roof Surface

Utilise Facades

Social Meeting Place

Zones of Urban Engagement

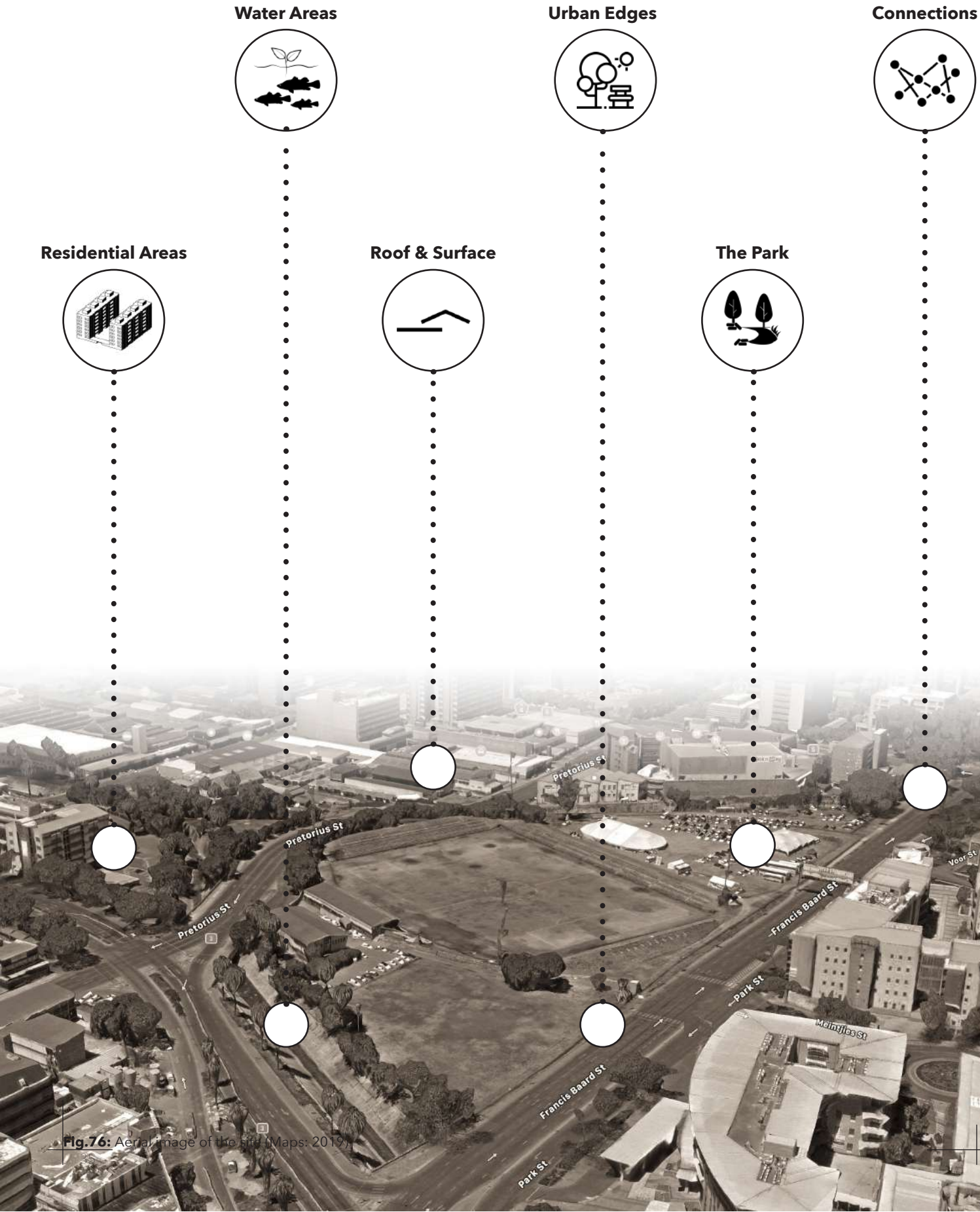


Fig.76: Aerial image of the site (Maps: 2019)

Fig.77: The Caledonian Stadium soccer field (Author: 2019)

3. PROGRAM

Informants, Engaging Users & Activities

This chapter looks at understanding the gaps and programmatic possibilities presented. It is done by firstly comprehending the broader contextual needs and frameworks intended for the site and understanding the users engagement with the facility and their needs. A program accommodation list is proposed, understanding the spatial requirements needed for those activities and lastly stating how the program will be implemented into the intervention.

3.1 GENERAL INFORMANTS

In the previous chapters is it clear that Pretoria lacks public facilities and green spaces that cater for sports and recreation. The lack of public facilities/green spaces create an environment that does not allow for physical development that can translate into equal sporting/ physical opportunities throughout the country. A new "step-up" system is proposed to give a space/facility that places itself between public schools/public sports facilities and High-Performance Centre (such as TUKS HPC). This will be a new sports and recreation typology in a South African context since it needs to not only focus on specific sports, but rather engage the public edge that moves into more focussed sports facilities.

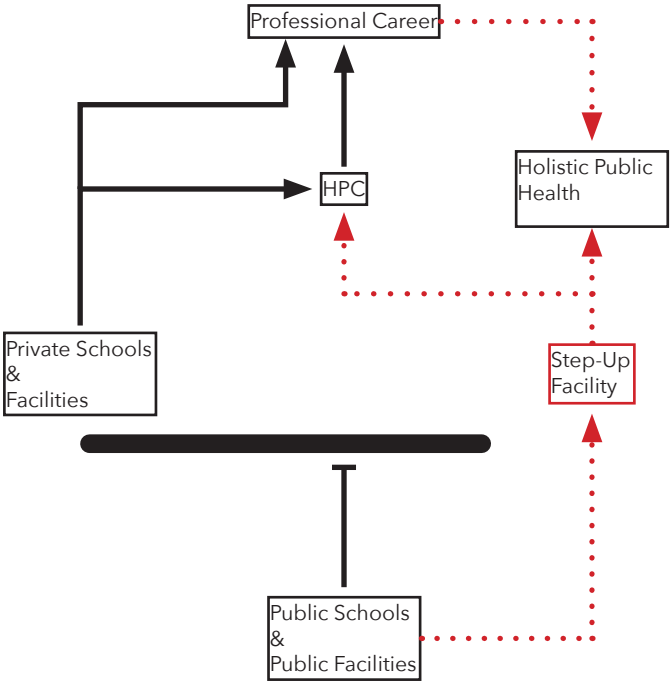


Fig.78: Diagram showing the existing issue and what the program intention is (Author: 2019)

3.2 URBAN INFORMANTS/PROGRAM

The existing condition of the Caledonian Sports Grounds can be broken down into three sections, the stadium grandstands and field in the centre of the site, the park that is bordered by the Walkerspruit on the eastern side and lastly the old sports courts and clubhouse that is bordered by the Apies River on the western side of the site. The existing condition provides a good foundation in order to create a complete sport and recreational precinct in the Pretoria CBD. It is proposed that the site vision responds to a scale of natural/mental recreation to an entirely focussed sports/ physical recreation and training.

3.2.1 The Park

To align the project to the Tshwane 2055 vision, it is proposed that the whole site will be developed into a recreational park. The eastern side of the site will remain a park to create more natural green space in Pretoria. A stage will be built; that can accommodate events such as music performances, gatherings, group fitness and yoga classes. The park can be used as a meeting point for running and cycling groupd that take place throughout the city. Public changing rooms will be built under the existing stands to minimise the visual impact on the natural landscape. The park will also serve as a pedestrian link through the site for the general public on their way to work and back.

3.2.2 The Caledonian Stadium

The existing stadium and field will remain the same as it is seen as an essential part of the heritage of what the sports grounds once stood for. The seating around the field and the main grandstand frames the field and the road (Pretorius Street) has been morphed around the old stone wall and trees. The grandstand roof design slopes down and narrows off the field view, thus making it not ideal; the roof will be demolished, but the red brick wall and grandstand seating will be preserved. The stadium can still be used for club sports and practices available to the public.

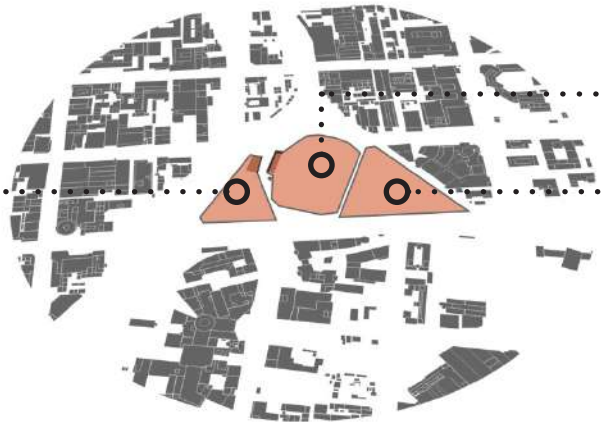
3.2.3 The Public Sports Centre

The existing clubhouse is currently unused and derelict; it is currently isolated and creates dangerous hiding places. Thus for a safe public area, the building will be demolished to create space for the new public sports centre that will draw in pedestrians from the sidewalk. This will expose the public to sports and recreation throughout the day and get the public involved in the facility. The existing brick from the clubhouse can be reused throughout the public gathering areas on the site on the floor plane (such as seating), to give reference to how the clubhouse once was a social space and now incorporated into the new urban social spaces.

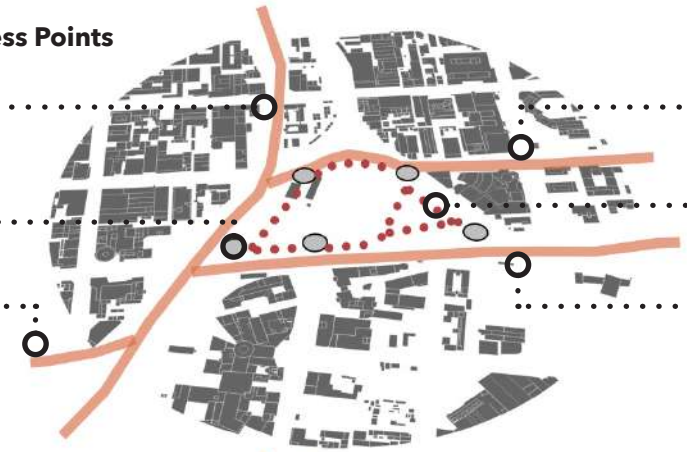
Due to the context, most of the people that will use the spaces will use public transport or walk; this is due to their average income and the central position the site is situated in the city. The easy accessibility allows for not proposing much parking, but instead use the spaces to maximise green space throughout the site. Drop-off areas will be included for the public, and the existing bus stop can be used for athletes arriving for games and be closer to the stadium and accommodation.

Urban Block Vision

Site Block Proposal



Movement Routes and Access Points



Urban Edge Principles

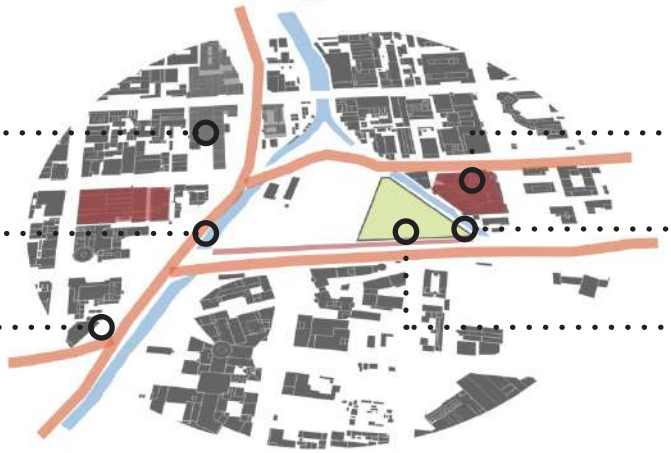


Fig.79: Urban block vision and principles (Author: 2019)

3.3 THE USER AS AN INFORMANTS/ PROGRAM

South Africa is a very diverse sporting nation being involved in almost all of the sports in the world. The proposal for the sports facility is not facilitating all sports played throughout the country, but instead focussing on the core sports (rugby, soccer, netball, basketball and cricket). These sports will be supported by physical development required for each sports. Due to the physical development being open-ended, it can be used as a foundation for sports development and the space can be appropriated for different activities.

With understanding the idea of a new "step-up" sports centre that can be used by all people. A hierarchy of different levels of engagement in ways that people might tend to use the sports centre must be developed. At one end of the scale, it can vary from the general public that might only want to walk through, relax and engage, through to athletes that are there for the sole purpose of physical and mental engagement striving towards a professional career.

To create an environment that does not divide people with different intentions, the program must strive to create a threshold of barriers but still allow visual and social engagement around sports and recreation. The complexity of integrating various programs also creates different events and occasions that can occur at different times. There will need to be different levels of safety and security (red line) possibilities to allow people to move freely and be restricted at different times or events. These different users and levels of engagement are broken down to understand how different users have different needs in sports and recreation.

Fig.80: Photo of the existing soccer field (Author: 2019)

Proposed Program

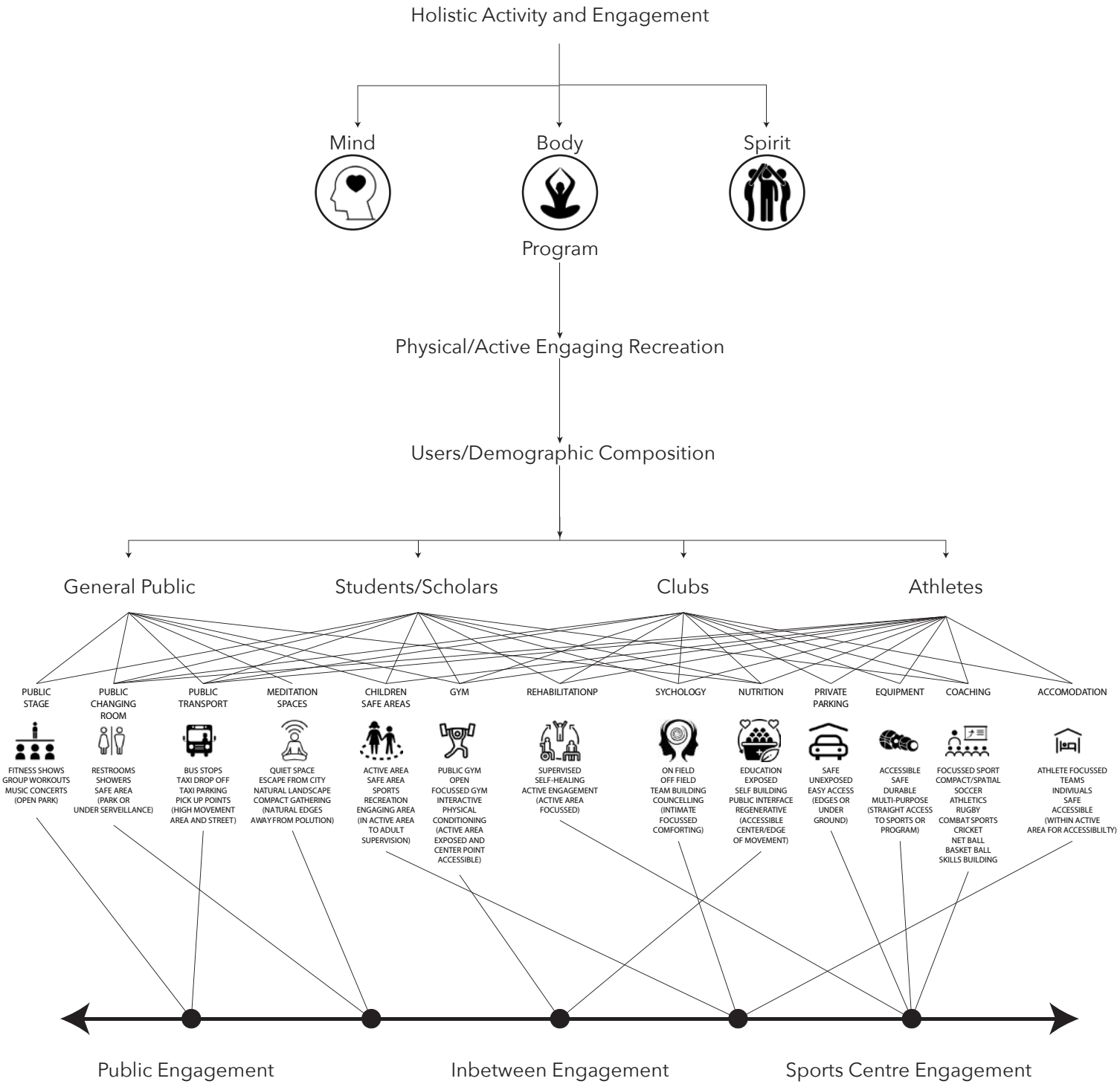


Fig.81: Infographic of proposed program (Author: 2019)

3.3.1 General Public

The general public will be broken down into three groups of people, these are the users that will vary the most in how they will engage with this sports facility.

Firstly user that is physically involved; they would want to use the facility for physical development either before or after work. These spaces would be public or semi-public for exercise classes. It translates into a social interaction between different people that will use the facility. Users with children will have a safe space where their children can play while they workout.

Secondly, the user that is socially involved; they will use the space for informal sports and recreation throughout the day. They might only use the space for social purposes like relaxing, getting something to eat, informal sports and training.

Lastly, the user that will use the space for the atmosphere, social interaction and relaxation. They might use the space by walking by and going to relax in the park or getting something to eat while they watch various sports and activities. They are seen as a spectator rather than engaging in the different activities.

Fig.82: Infographics of general public program (Author: 2019)

Fig.83: Infographics of student/scholar program (Author: 2019)

3.3.2 Scholars/Students

Various schools and universities are situated around the Caledonian Sports Grounds, the students use the stadium to meet up and do drugs between classes. The public schools in the area do not have suitable facilities or coaches for student-athletes. This provides the possibility to use the sports facility as a place to book personal coaching sessions for teams and individuals. Students can also use the facility for informal sports and physical development. The sports facility can be used as a safe space for physical development and social gatherings throughout the day and night.

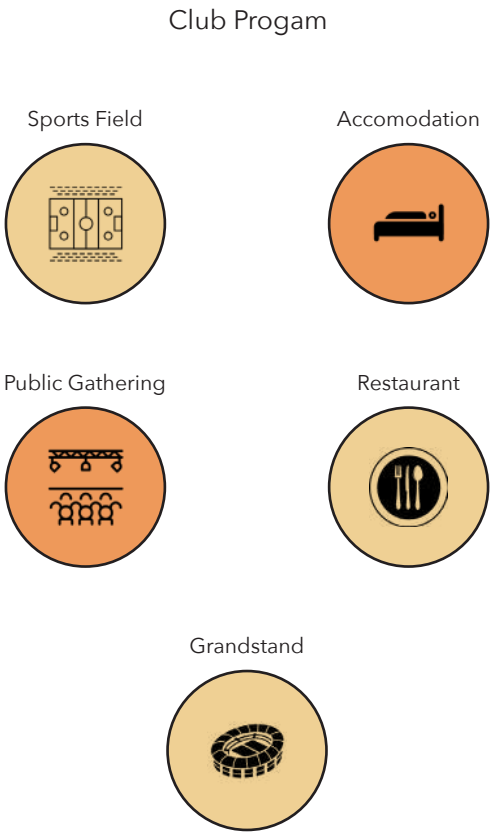


Fig.84: Infographics of club program (Author: 2019)

3.3.3Clubs

The Caledonian Sports Grounds is home to Arcadia Shepherds soccer club that uses the current facilities throughout the week for practices and games. The new facility can accommodate this tradition and social core of the grounds. The facility caters for basic practices and games between different clubs while accomodating clubs that are travelling from afar and they can stay at the facility for the game.

3.3.4Athletes

For more focussed athletes, there is a need for a facility that allows for sports and skills development. Sport and physical training specific areas can be developed for such athletes. While some athletes or teams might not live in the surrounding area, accommodation will be essential to allow athletes to stay at the facility for short periods of time depending on what they need to use the facility for. An essential aspect to a professional career in sport is the mental development. Sports psychologists and rehabilitation specific areas are for sports injuries that can bridge the gap for athletes to step-up to the next level.

Fig.85: Infographics of athlete program (Author: 2019)

3.4 ACCOMODATION LIST

3.4.1 Accomodation

SPACE:	REQUIREMENTS:
Bedrooms with bathroom	23 (min) - 30 people
Reception	Desk for 1 person
Restroom	1 x Female, 1 x Male (disabled accessible)
Staff entrance and changing rooms	1 x Female, 1 x male, Unisex restroom
Managers office	1 x Desk, file storage and safe
Laundry	Commercial washing/drying and storage

3.4.2 Restaurant

SPACE:	REQUIREMENTS:
Seating inside and outside	35 - 50 people
Kitchen	3 - 5 chefs
Wash-up area	Sinks and storage
Reception and take-away	1 person
Manager's office	1 x Desk and file storage
Coldroom	5 meters squared
Dry store	5 meters squared
Restrooms	1 x Female, 1 x Male (disabled accessible)
Refuse area	Outside for ventilation

3.4.3 Gym

SPACE:	REQUIREMENTS:
Reception	1 - 2 People and file storage
Cleaning/storage	5 meters squared
Mens changing room	2 x W/C, 4 x urinal, 3 x showers, changing area and 4 x basins
Female changing room	5 x W/C, 3 x showers, changing area and 4 x basins
Disabled restroom	1 x W/C
Cardio area	Treadmills, spinning bikes, etc.
Upper body area	Dumbells and free weights
Lower body area	Machines and standing free weights
Warm-up and stretching area	Open space with mats
Fitness Studio	10 - 15 People, storage for equipment
Spinning studio	10 - 15 People
Outdoor HIIT training	10 - 15 People

3.4.4Multipurpose Sports Facility

SPACE:	REQUIREMENTS:
Reception	2 x people
File storage	5 meters squared
Boardroom	8 x people
Admin office	2 x people, file storage and printing
Restroom	1 x W/C
Kitchenette	Sink and counter
Sports psychology	1 x room, storage, couch, desk and tv/monitor
Biokineticist/Physio	3 x rooms, storage, bed, and desk
Coaching lounge	Couches, storage
Mens changing room	2 x W/C, 4 x urinal, 3 x showers, changing area and 4 x basins
Female changing room	5 x W/C, 3 x showers, changing area and 4 x basins
Grandstand	100 - 200 people
Indoor sports field	Indoor soccer, basketball, netball, cricket, etc.
Storage	2 x 25 meters squared

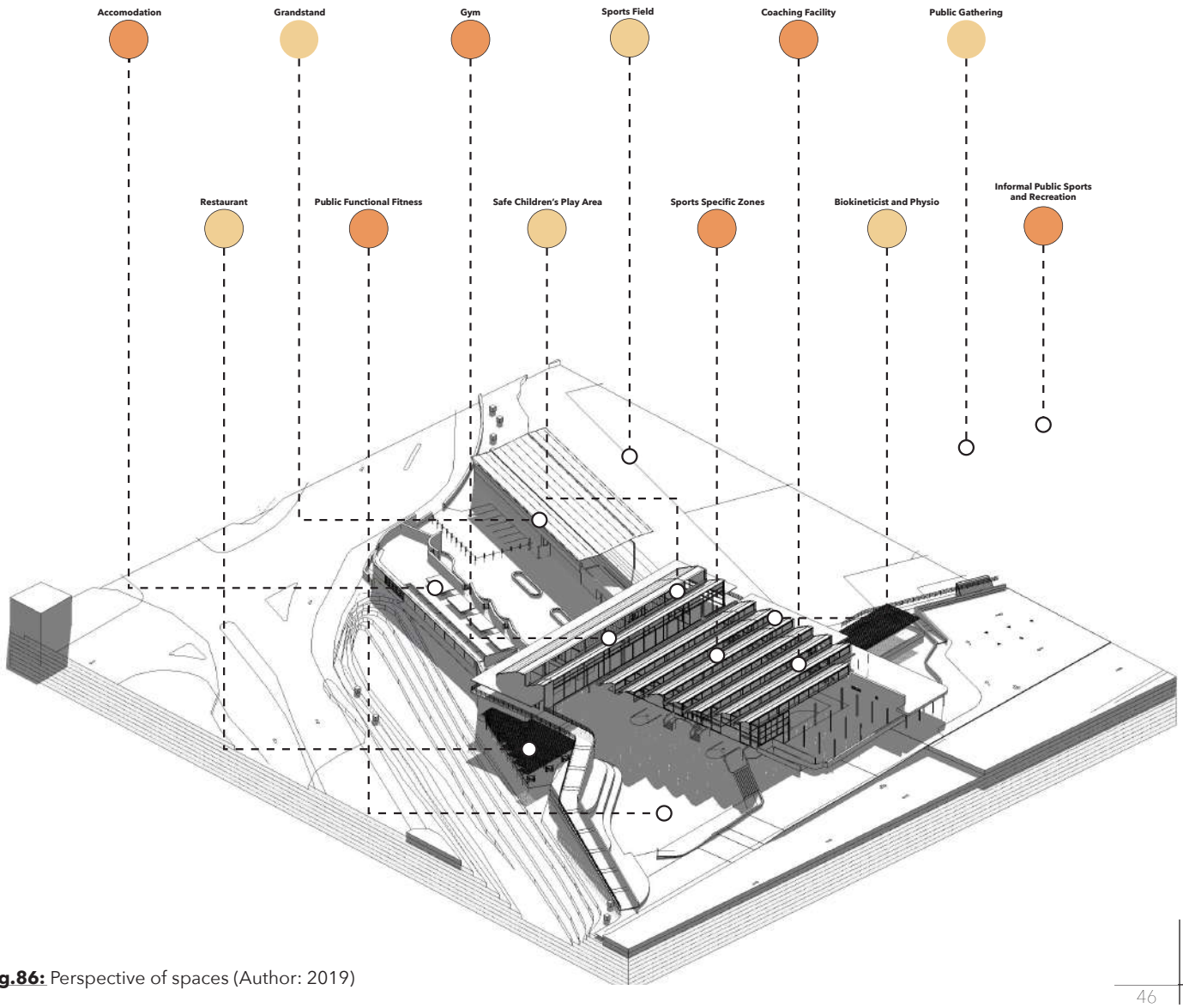


Fig.86: Perspective of spaces (Author: 2019)

3.5 PHYSICAL INFORMANTS

3.5.1 Gym Equipment

Treadmill

Average dimensions (Garage Gym Tools: 2019):

2030mm (L) x 940mm (W) x 1650mm (H)

Power point will be needed and due to the extercise a view of some sort would be preferred.

Spinning Bike

Average dimensions (Garage Gym Tools: 2019):

1150mm (L) x 580mm (W) x 1550mm (H)

Can be battery powered. A view would be nessesary if alone, or all bikes should face towards the instructor.

Free Weights/Bench

Average dimensions (Garage Gym Tools: 2019):

990mm (L) x 610mm (W) x 480mm (H)

Area should have mirrors and free weights close by. Benches can be loose to arrange as needed. It is important to have sufficient space to allow maximum movement

Leg Machines

Average dimensions (Garage Gym Tools: 2019):

1750mm (L) x 1500mm (W) x 1500mm (H)

In some areas such as squatting racks it is important to have mirrors. There needs to be weight racks close by to use on the machines.

Yoga Space/Stretching

Average dimensions (Garage Gym Tools: 2019):

1800mm (L) x 610mm (W)

The mat size does not indicate the space required, space around the mat will also be used. Such spaces require mirrors and need to be separated from the loud gym.

Basic free Standing Machines

Average dimensions (Garage Gym Tools: 2019):

990mm (L) x 1300mm (W) x 1900mm (H)

It is not crucial to have machines near mirrors. These machines can be flexible in the space they require and dont need weights.

Note that these are average sizes of machines and spaces. This is to get a better understanding on the average sizes of spaces required, there is an understanding that machines and exercises can vary.

3.6 Multipurpose Indoor Sports Field

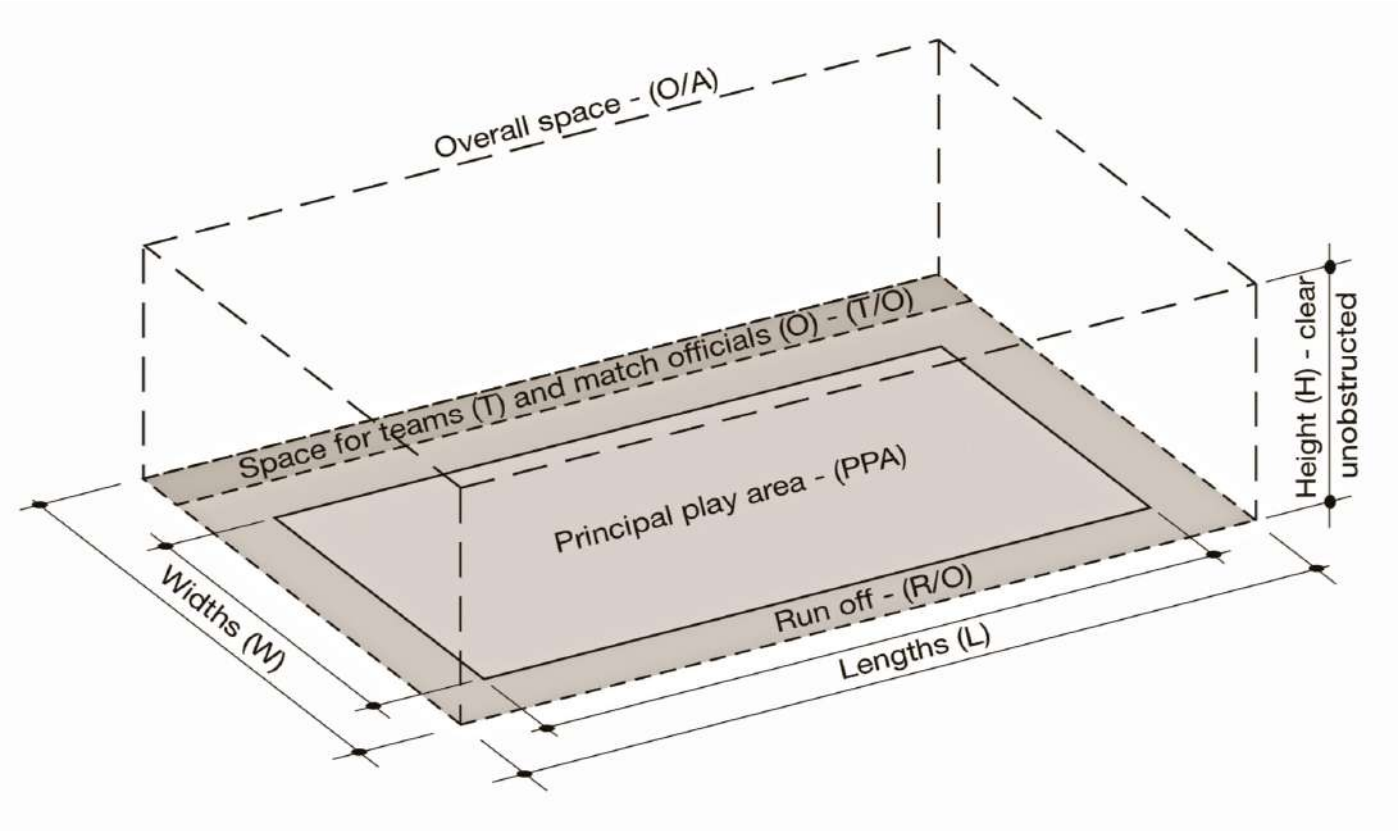


Fig.87: Indoor court spatial requirements (Sport England: 2015)

Indoor Cricket Nets and Pitch

Dimensions (Sport England: 2015):

Lengths: 28m min - 30m max
Width: 10,5m min - 12m max
Height: 4m min - 4.5m

Run off - N/A

The space can be broken up, but might have to take into account of bowlers run-ups. Light netting is preferred to not damage the ball.

Indoor Soccer (5 v 5)

Dimensions (Sport England: 2015):

Lengths: 25m min - 35m max
Width: 15,5m min - 25m max
Height: 4,5m min - 6,5m ideal.

Run off - 2,5m preferred

If the space does not have a boundary then it requires a run off area.

Basketball

Dimensions (Sport England: 2015):

Lengths: 28,7m min - 32m max
Width: 15,2m
Height: 4,9m min but 6,5m is ideal.

Run off - 2m preferred

There needs to be no obstruction to the space, and does not require netting around, the space can be open.

Netball

Dimensions (Sport England: 2015):

Lengths: 30m
Width: 15m
Height: 4,5m min but 6,5m is ideal.

Run off - 2m preferred

The space requires a run off area

3.7 THEORETICAL INFORMANTS

3.7.1 Multifunctional Design

The program is a multifunctional sports facility which functions as a complex designed for various programs, systems and activities that take place. The issues that begin to arise is spatially allowing different functions to occur while not limiting to interferance but facilitating flexible connections.

Today, cities have dispersed in complex ways leaving limited or awkward spaces over for development that need to cater for alot of programs. This has led to an increase in developments in the city being driven by multifunctional functional buildings to cater for an increasing number of people in the city (Gerigk 2012: 1). The issue with this is that developers are focussed on the cost, return, and functionality of the building, not necessarily the social impacts the building has on its context.

Gerigk (2017: 2-3) acknowledges these challenges can be resolved with a multifunctional building. He believes the structure of the building comprises of the functional program and technological systems; the rest is planning and open space to fit in different functions into various spaces. Gerigk (2017: 2) proposes that multifunction buildings should have multifunctional dimensions including social, economic and environmental aspects. These should all be present in a successful multifunctional building to foster sustainable spaces for those using them.

Due to multifunctional buildings having different needs and requirements that must be in some way linked to each other, the one commonality is a social and urban space. The environment in and around the building can be the catalyst for connecting the different functions (Gerigk 2012: 1). This space could not only contribute to the success of the building but also its context.

This design approach could be used through understanding the different requirements for a multifunctional sports centre, and the way to connect the different programs is by connecting the building to its urban and social condition.

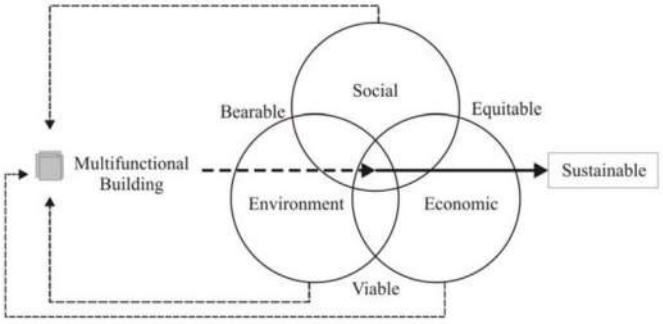


Fig.88: Influences and goal of a multifunctional building (Gerigk 2012: 2)

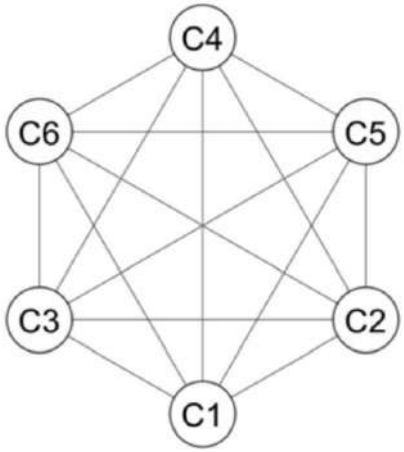


Fig.89: Diagram of integrated systems and functions in a multifunctional building (Gerigk 2012: 3)

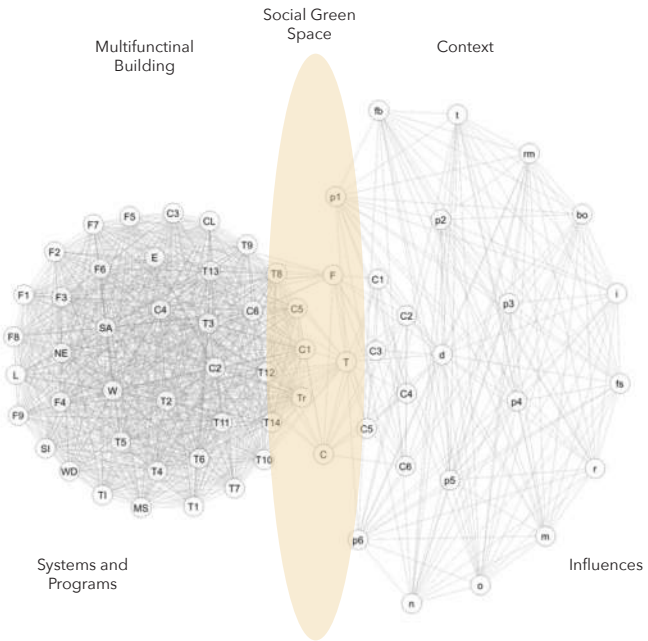


Fig.90: Proposed multifunctional building including all aspects (Gerigk 2012: 2)

3.8 A Holistic Sports Impact

This dissertation strives towards the notion that sports and recreation can socially and physically uplift individuals and communities. The idea is that this is done by accessible public spaces that enable social and physical interaction. The following statements look to understand the possible outcomes that sports and recreation can provide in a bottom-up approach to assessment of sports and recreation. Davies, Gilbertson, Tayleur, Taylor and Wells (2015: 18) state that there is a significant impact that sports and recreation can have on individuals that further impact the surrounding communities. Health benefits, crime benefits, education benefits and social capital benefits as some of these impacts are crucial in creating the foundation for a better community and athlete development.

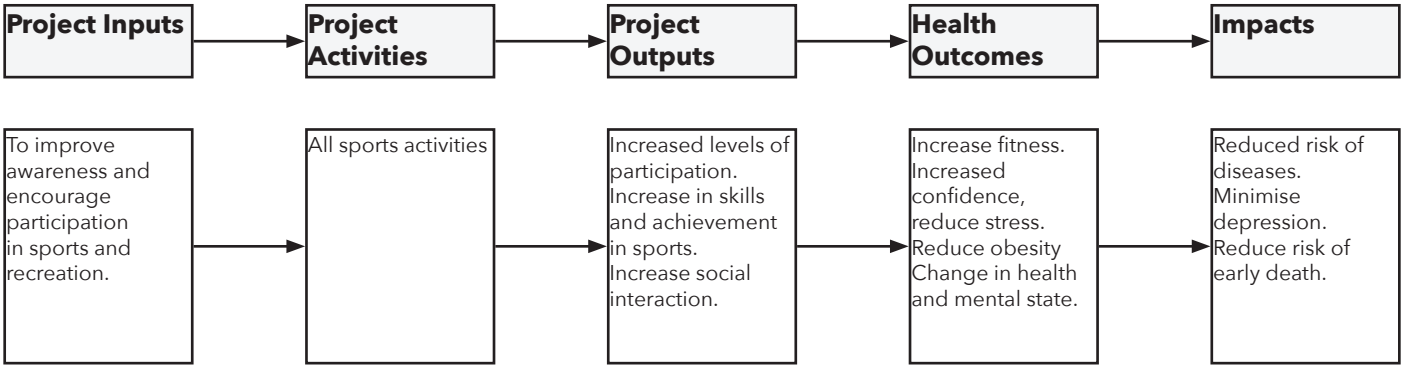


Fig.91: Sports health and wellbeing outcome (Davies et al: 2015)

Sport, Health and Wellbeing:

Davies et al. (2015: 24) state that there is a strong correlation between the positive relationship between sports and recreation and the health of an individual. Exercise can promote physical development that translates into the prevention of various chronic ailments such as cardiovascular disease, diabetes, premature deaths, etc. Although there is little evidence as to what exercise can have the best impact to minimise such diseases, this is due to the open-ended aspect of all the different sports and activities an individual can partake in. The variation is complex by different levels of intensity, duration and the frequency that it can occur; this can all play an impact on the physical outcome (Davies et al. 2015: 26).

Mental wellbeing and its benefits from sports can be a blurred outcome, sports might not be able to prevent mental illness, but it is shown that it can still help the individual. This is illustrated by how sports and recreation can help in terms of therapeutic healing, and it can distract the individual and minimise the effects thereof – thus resulting in a lower risk of depression and suicide. Participation in sports, can contribute to mental wellbeing through social interactions with other people (Davies et al. 2015: 35). Sports can also contribute to mental harm through sports injuries and bullying by other people in a sporting environment.

Sport and Crime:

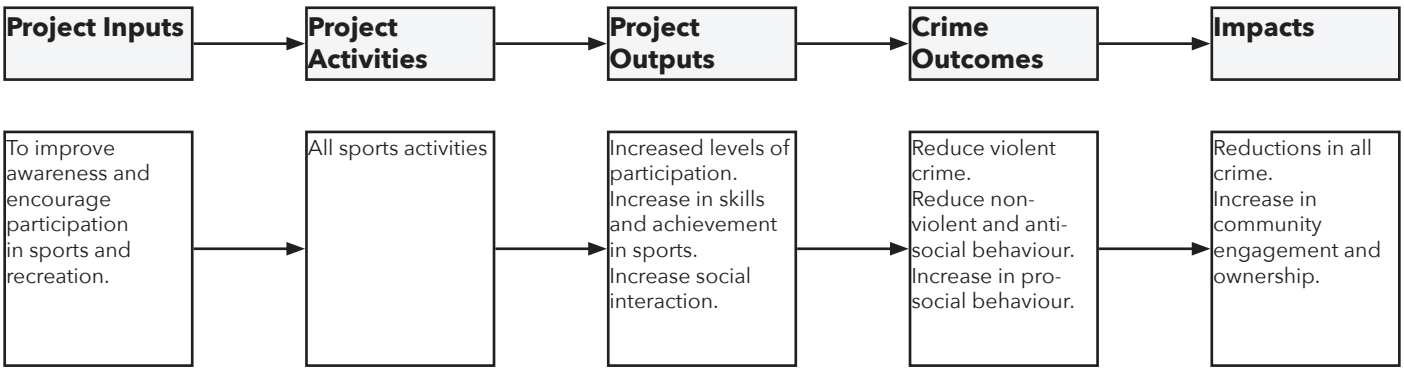


Fig.92: Sports and crime outcome (Davies et al: 2015)

Sports and recreation being introduced into stagnant, unhealthy environments, is shown that it can reduce crime in an area (Davies et al. 2015: 18). This is mostly due to the youth not having recreational spaces and causing unhealthy gatherings and unsafe spaces. Introducing sports participation in an area, can encourage pro-social behaviour and minimises crime and anti-social behaviour, particularly for younger adults (Davies et al. 2015: 44). Promoting a healthy and active lifestyle, begins to minimise criminal behaviour, drug use, alcohol abuse and violence; this is achieved by the social interaction and leadership of individuals that set an example for others in the community. Sports can create unhealthy environments if not managed correctly, for example boxing, can create isolation from other individuals through fear (Davies et al. 2015: 46).

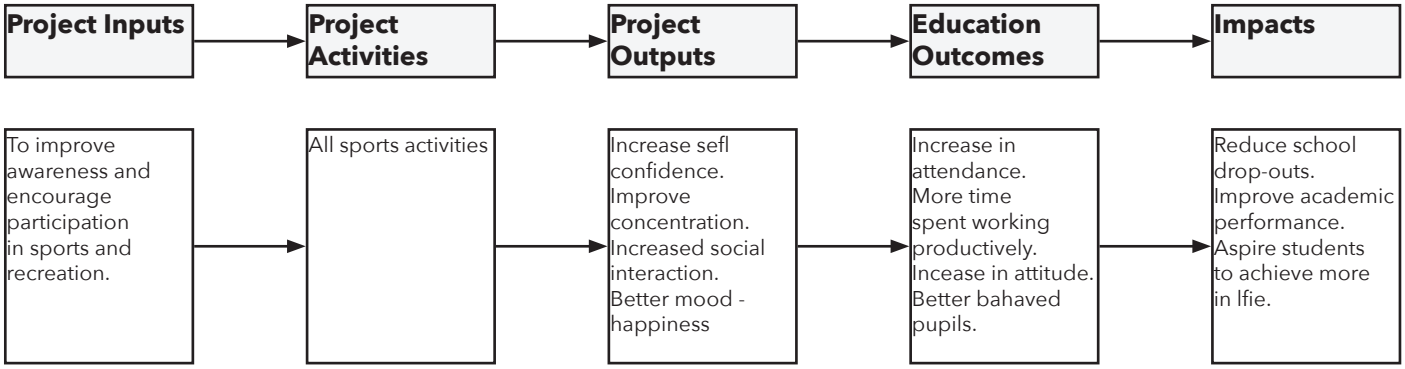


Fig.93: Sports and education outcome (Davies et al: 2015)

Sport and Education:

There is a relationship between sports and recreation and the effect thereof is shown in education and development. Through achievement and development in a physical environment, can boost a persons confidence, this can translate into perceptions of competence and complete tasks (Davies et al. 2015: 55). The social interaction can create new environments for students to interact through interests and sporting abilities, this can create friendships in places that are not available in an academic environment (Davies et al. 2015: 56). Sports and recreation can distract the individual's brain from focussing on a different task that can help with relieving stress, when introduced back into an academic environment, there is an increase in concentration.

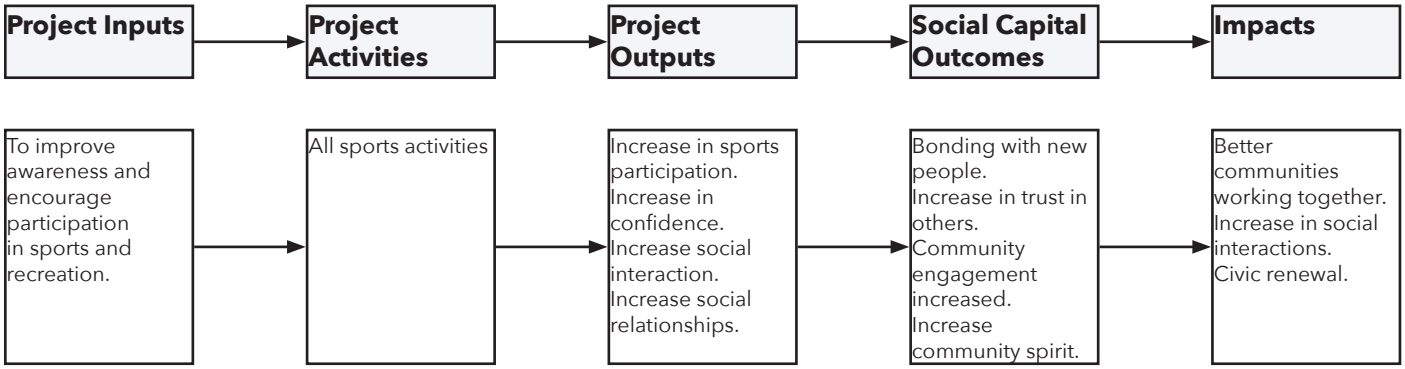


Fig.94: Sports and education outcome (Davies et al: 2015)

Sport and Social Capital:

Davies et al. (2015: 50) states that " sports and recreation leads to the contribution of social capital by encouraging social interaction and the development of social relationships and networks". This is achieved by generating social interaction causing a sense of belonging amongst different individuals. Bringing different people together from varying backgrounds creates the opportunity of understanding each other and it changes attitudes and belief systems, thus overcoming social barriers (Davies et al. 2015: 51). The benefit of this is that it creates an environment that encourages community participation, ownership and volunteering to take place. The community becomes pro-active together and becomes self-sufficient in their context (Davies et al. 2015: 52).

The previously mentioned benefits show the importance of sports and recreation in order to live a holistic life. The boundaries are not merely the sports facility itself, but instead influence the community as a whole through physical, mental and social wellbeing. This foundation is proven to be crucial for athletes and individuals to perform at their highest level, whether it is in school, work, society and sports (Davies et al. 2015: 65). This provides the framework for a holistic "step-up" facility to contribute to the development of the site, system, community and individual.

3.8.1 Summary of Sports and recreational impact on Social Outcomes

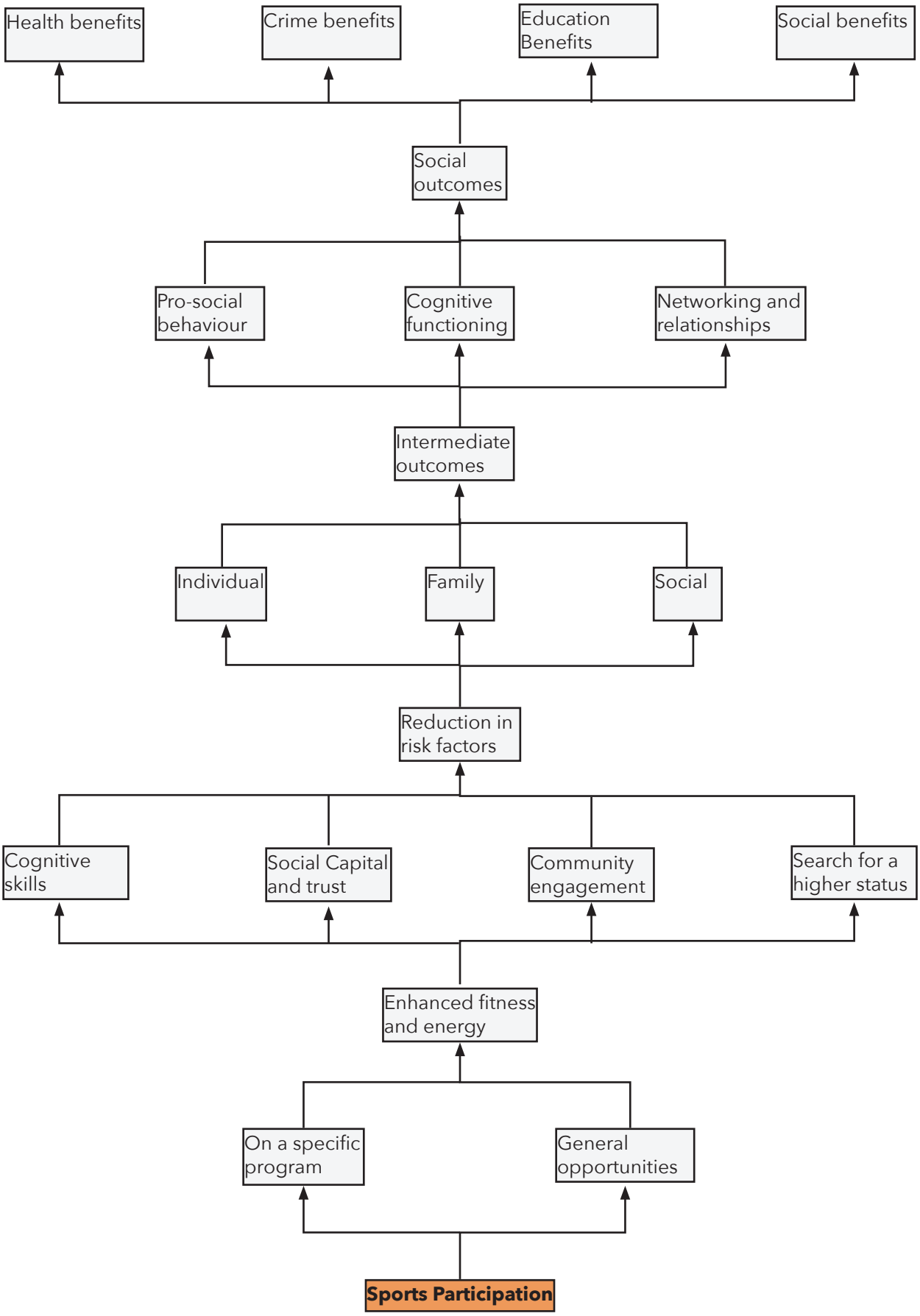


Fig.95: Summry of social outcomes from sports (Davies et al: 2015)

3.9 STAKEHOLDERS

Stakeholders and Clients:

MUNICIPALITY:

- Tshwane Sports and Recreation

INTERMEDIARY:

- University of Pretoria (High Performance Centre)

MANAGEMENT:

- The Caledonian Sports Grounds

USERS:

- General Public
- Arcadia Shepherds/Clubs
- Students and Scholars
- Athletes

Fig.96: The existing car park and old netball court (Author: 2019)

Fig.97: The Caledonian [illegible] soccer field (Author: 2019)

4. PRECEDENTS

Contextual, Formal & Programmatic

This chapter consists of four influences on the design: urban, contextual, programmatic and formal. The urban looks to influence the space around the building. The contextual looks to understand the response within a South African context. The programmatic looks at how such facilities spatially work together and lastly the formal looks at how the design can influence the inside and outside.

4.9.1 URBAN PRECEDENT

Gasværksgrunden (THE GAS WORKS SITE)

LOCATION: Fredericia, Denmark

DATE: 2007

ARCHITECT: Birk Nielsen Landscape Architects and Planners

The gasworks site in Fredericia is a sport and recreational playground square that is the largest in Denmark it allows for various possible activities for children and adults (Rasmus 2009:50). What once was an unutilised space is now an activity hub within the community. Space is raised from the streets that allow for the manipulation of different levels to highlight different activities (recreation, sports and play) the can take place in different areas. The surface is smooth concrete to allow an even surface for all activities with the use of different colours and materials it highlights routes and activities for cycling, scooters and roller skating throughout the square (Rasmus 2009:50).

Artificial materials (grass, rubber and asphalt) are used in the sunken spaces to allow more specific activities such as the blue multi-purpose court and ice rink is used for basketball, hockey, rollerblading and in the winter it is converted into an ice rink (Visitlillebaelt: 2017). During the winter months, it can be used for curling, ice hockey and ice skating. The green synthetic field is used for urban and action soccer throughout the year, and the red amphitheatre is used for gatherings and performances (Rasmus 2009:51).

Different areas cater for different age groups such as a playground for children, pavilions for exercise and workouts and a table tennis area for recreational purposes.

What makes this precedent appropriate is the way this urban intervention has regenerated the site and the community by allowing social and physical interaction and engagement. This is successful by the vast programmatic possibilities that the site offers throughout the year for different people with from different age groups.

Fig.98: Aerial image of the site intervention (Visitlillebaelt: 2017)

Fig.99: The multipurpose ice rink in the winter (Visitlillebaelt: 2017)

Fig.100: The action soccer pitch (Rasmus 2019:50)

Fig.101: Different levels and material on the site (Rasmus 2019:50)

Fig.102: The clubhouse with the new artificial pitch (RUFproject: 2010)

Fig.103: Soccer match being played (RUFproject: 2010)

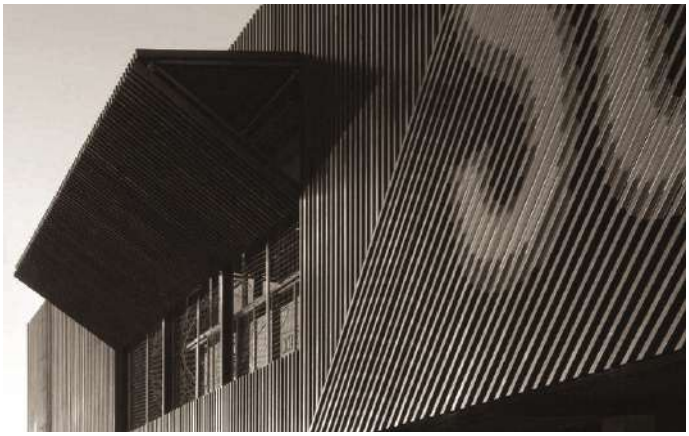


Fig.104: The facade timber shading for heat gain (RUFproject: 2010)

Fig.105: View from the roof of the context around the facility (RUFproject: 2010)

4.1 CONTEXTUAL PRECEDENT

Nike football training centre

LOCATION: Soweto, South Africa

DATE: 2010

ARCHITECT: RUFproject

The Nike Football Training Centre is situated in the centre of Soweto; one of the largest townships in South Africa. It hosts over 1200 teams and 20 000 players each year (Archer: 2010). Due to South Africa hosting the 2010 Soccer World Cup, Nike had the idea of building a facility that will provide a soccer home and training centre that will succedd even after the 2010 World Cup.

The contextual design was to understand the needs of the surrounding community somewhat. It was the need for education, the public school facilities and education system do not provide a foundation for life-skills and general health knowledge in an environment like Soweto. An education centre for HIV/AIDS and the Grass Roots of Soccer & Life Skillz program was introduced so the scholars and athletes so that they can be educated about the dangers of living in an area like Soweto (Archer: 2010). This is important because it reaches out further than just sports, but more towards holistic health wellbeing and understanding of life.

The facility also provides two artificial full-size pitches, two action soccer pitches, a clubhouse that has a training gym, physiotherapy, first aid facility and changing rooms. The urban concept was to visually link programs to allow social interaction, awareness and safety in its context (RUFproject: 2010).

The negative part to this design is the public edge; the whole site is fenced off from surrounding houses. Understandably, there is a safety issue in a context like this, but the urban program could have been provided along the edges to allow access and movement throughout the day.

Fig.106: The Sports Science Intitute building (Sports Science Institute of South Africa: 2019)

Fig.107: The multipurpose gym with running track (Sports Science Institute of South Africa: 2019)

Fig.108: The multipurpose gym with swimming pool below (Sports Science Institute of South Africa: 2019)

Fig.109: One of the high performace testing labs (Sports Science Institute of South Africa: 2019)

4.2 PROGRAMMATIC PRECEDENT

SPORTS SCIENCE INSTITUTE OF SOUTH AFRICA

LOCATION: Cape Town, South Africa

DATE: 2010

ARCHITECT: RUFproject

The Sports Science Institute of South Africa is a High-Performance Centre that will cater to the top athletes in the country. As a precedent, it might not seem that it is appropriate for this dissertation due to the fact that it only caters for the top percentile of athletes in the country. What makes this program valuable is the holistic approach and the benefits it provides for different people.

Firstly the sports performance centre's approach is scientifically incorporated and analyse individuals physical and mental state in order to maximise their performance. It provides state of the art facilities for athletes. This is incorporated with the rehabilitation centre that helps individuals with injuries and minimising the recovery time. Lastly, the wellness area consists of a gym used by athletes to improve their physical condition and to improve their performance to compete to the best of their ability. (Sports Science Institute of South Africa: 2019).

The research that this facility provides is crucial in the development of sport. The Science and Research Department look to included sports professionals to perform tests on the athletes for research and data that could be used for further development in the program. It provides the foundation for where students can enrol to complete online short courses and full-time qualifications to pursue a career in sports development (Sports Science Institute of South Africa: 2019).

All these different programs that is mentioned creates a regenerative loop to a better understanding and development of sports for the future. The facility is open to the public, so it caters for different ages and people. Due to the facility being a private institution, it comes with a membership fee. The centre might not be open to the public, but the complete program it feeds into itself and is vital to the development of sports in South Africa.

4.3 FORMAL/PROGRAMMATIC/ TECHNICAL PRECEDENT

São Luís Sports & Arts Gymnasium

LOCATION: São Paulo, Brazil

DATE: 2015

ARCHITECT: Urdi Arquitetura

The São Luís Sports & Arts Gymnasium aligned itself to the educational sports and recreational 12 year plan to increase the accessibility and supply of sports facilities and activities, to adapt to better educational principles and environments (Urdi Arquitetura: 2016). The brief was to create a facility that will improve the urban sports and recreational environment while not interrupting the current daily activities of the school, thus creating a mediation space between education and the urban environment.

The design creates a compact sports and recreational environment that encourages social interaction; this is done by turning the sporting areas (courts, bleachers, connection spaces and living rooms) to face and integrate into the visual and physical connection to the surrounding city. It creates a public sporting precinct that is open to the public for social and physical interaction.

The building has various environmental systems that are incorporated into the design. Climate control is achieved through the design of the facades that are positioned to allow permanent openings to circulate fresh air through the courts, while the glass facade controls the solar gain. Controlling the northern openings allows managing the wind movement throughout the windy months of the year. Natural lighting in the gym is filtered through shading devices on the facade and different glass treatments in different areas receiving varying levels of direct sunlight. The rainwater is collected and stored in tanks, and the 60 000 litres is reused throughout the building (Urdi Arquitetura: 2016).

The design offers a great response to its broader context and vision of the city while respecting the current environmental conditions to minimise its environmental impact. This creates a comfortable social space that is directly influenced by its context and user needs.

Fig.110: The multipurpose court with natural lighting and ventilation (Urdi Arquitetura: 2016)

Fig.111: The ourdoor multipurpose fields and courts using wasted space of the building (Urdi Arquitetura: 2016)

Fig.112: Children playing on the roof action soccer pitch (Urdi Arquitetura: 2016)

Fig.113: Natural ventilation allowed through shading devices (Urdi Arquitetura: 2016)

4.4 FORMAL PRECEDENT

UNIVERSITY OF CAPE TOWN SPORTS CENTRE

LOCATION: Cape Town, South Africa

DATE: 1995

ARCHITECT: Roelof Uytenbogaardt

The University of Cape Town Sports Centre is situated in a unique site on the edge of the rugby field and is constrained by roads on either side that tapers towards the centre of the site. This is similar to the Caledonian site and how its edges create physical constraints for the building. The designer used this as an opportunity to use the different size spaces to create different sized indoor courts.

With this being situated on the link between the upper and lower campus areas, the building accommodated this circulation and created an end to the rugby fields. Roelof Uytenbogaardt was significantly influenced by the modernist movement, which creates the perfect response for an indoor sports centre. This allowed an open plan that has a modern characteristic (Bell: 2012).

An open plan gives the opportunity for the structure of the roof to allow natural light onto the courts, this is the most successful aspect of the design. The building might be contested by its bold forms, but the space it creates on the courts is ideal for an indoor sports centre. This aspect is to be taken into significant consideration for the design.

Fig.114: The facade facing the rugby field (Bell: 2012)

Fig.115: Natural lighing allowed through the roof structure (Bell: 2012)

Fig.116: Public spaced above the courts with natural lighting (Bell: 2012)

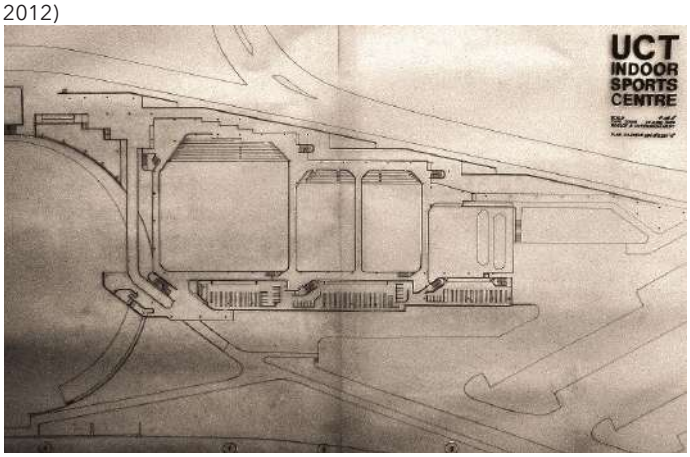


Fig.117: The grounf floor plan of the sports centre (Bell: 2012)

Fig.118: The Caledonian Stadium soccer field (Author: 2019)

5. CONCEPTS & DESIGN DEVELOPMENT

Intentions & Design Development

This chapter looks at demonstrating the design development that took place through an iterative process. Firstly, by highlighting the primary design considerations mentioned in the previous chapters and translating them into main design intentions. Secondly, showing the design developed from the larger urban scale through to the final design, that is explained by a series of diagrams.

5.1 DESIGN ITERATIONS

5.1.1 ITERATION _ 01

Considering the existing site conditions and constraints, the first conceptual design iterations looked at the current boundaries and areas on the site and what they had to offer. These were also conceptualised as to what the intention for the design and program could offer on the current site. The following ideas and informants influenced the first iteration:

- Pedestrian movement along the edges, being mostly the southern edge along Francis Baard street.
- How to break and blur the boundaries of the field to incorporate the public into the sports field
- Spaces that were exposed and more private.
- The use of the site to propose a block vision for the site as a whole.
- Programmatic ideas of a sports facility could be used in multiple ways by athletes and the public.

The first design iteration expressed the importance of connection between spaces and how linking various spaces could create more activity on all sides. The accessibility of the site played a big role in the space allocation that allowed for higher levels of engagement and other spaces that could be more controlled.

CONCEPTUAL DRAWING EXPLORATION

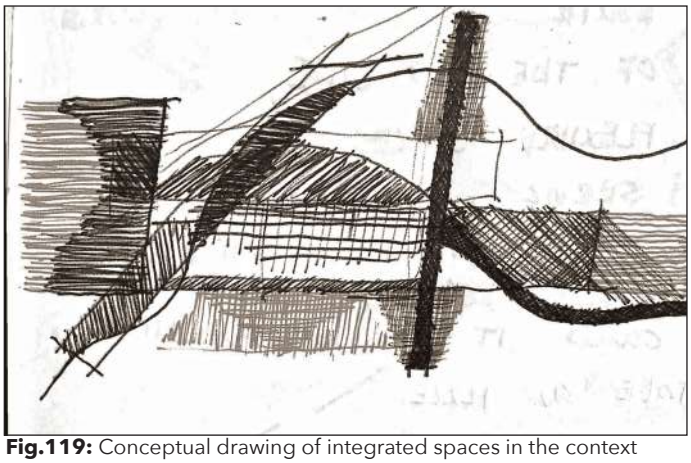


Fig.119: Conceptual drawing of integrated spaces in the context (Author: 2019)

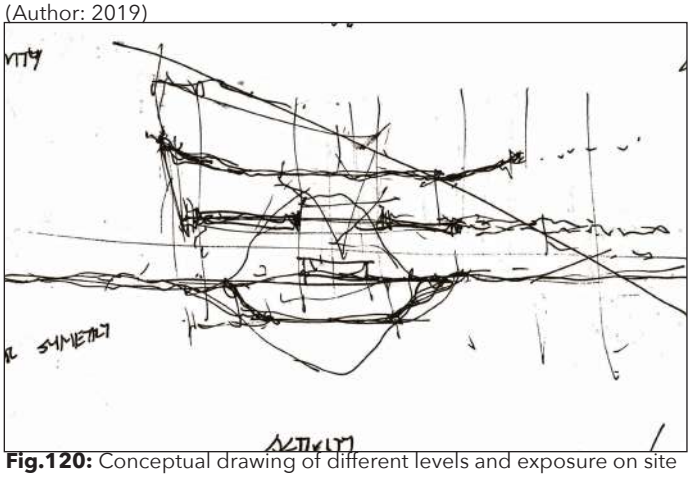


Fig.120: Conceptual drawing of different levels and exposure on site (Author: 2019)

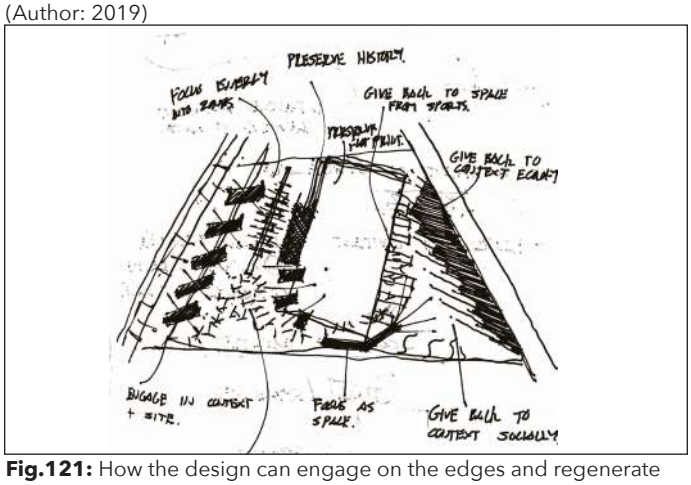


Fig.121: How the design can engage on the edges and regenerate the site (Author: 2019)

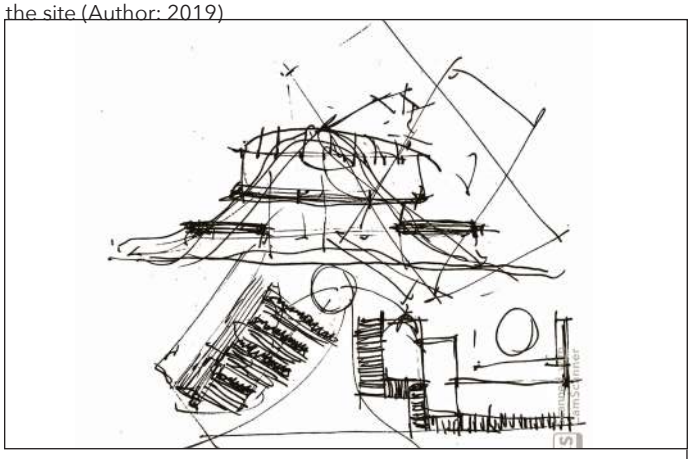


Fig.122: How the edges can inform space in the site (Author: 2019)

EXPLORATION OF SPACE AROUND THE SITE

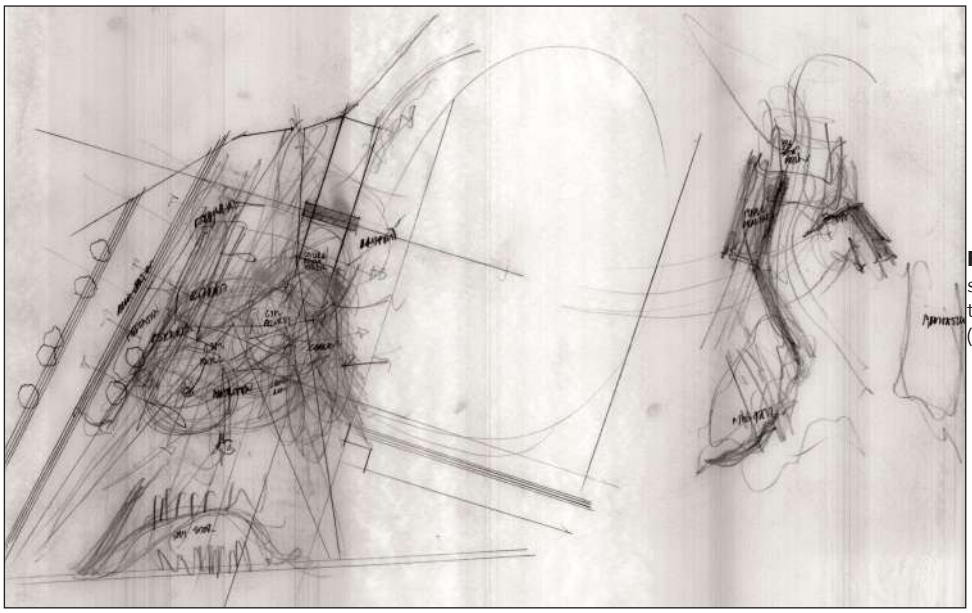


Fig.123: Exploring space and movement through the site (Author: 2019)

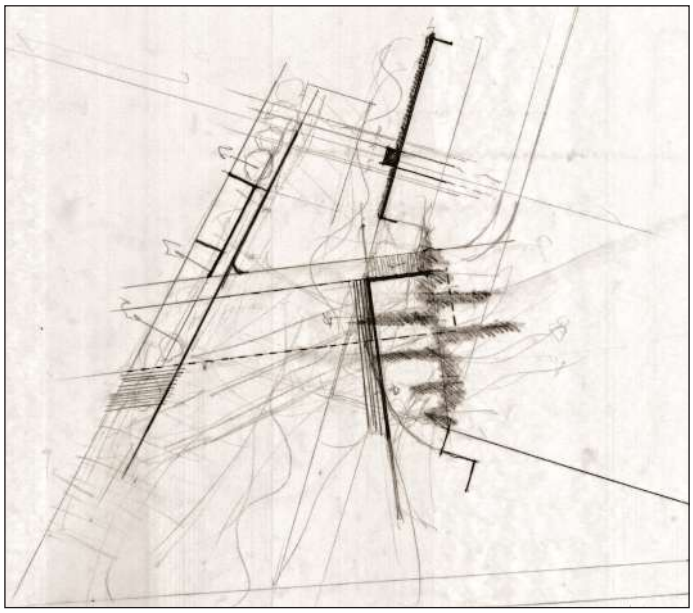


Fig.124: Exploring how the existing field and begin to merge to public space (Author: 2019)

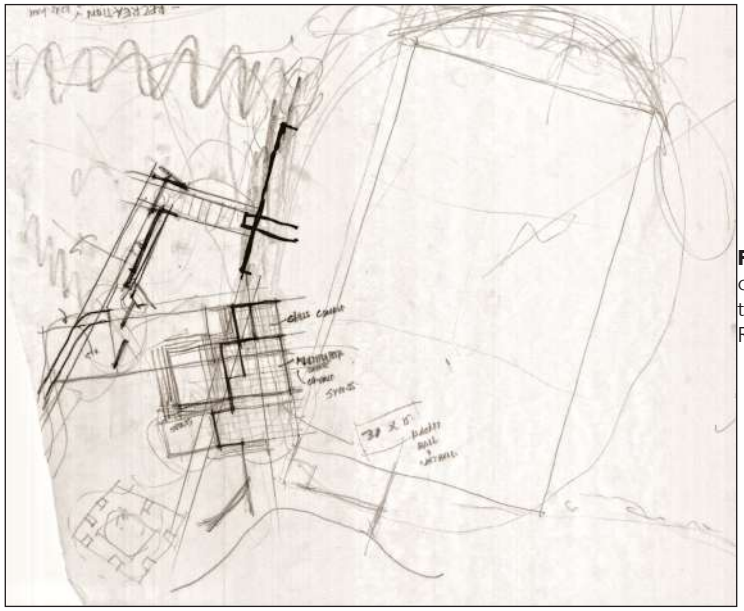


Fig.125: Space being defined by framing the field and Apies River (Author: 2019)

FORMAL MODEL EXPLORATION

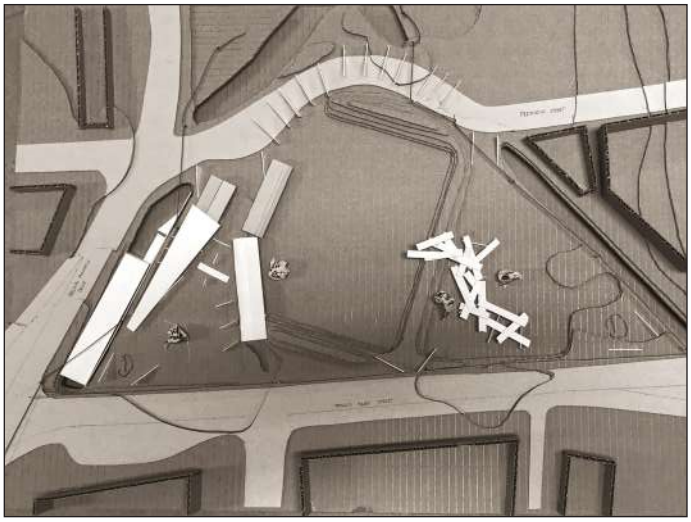


Fig.126: Model of urban intervention on the site (Author: 2019)

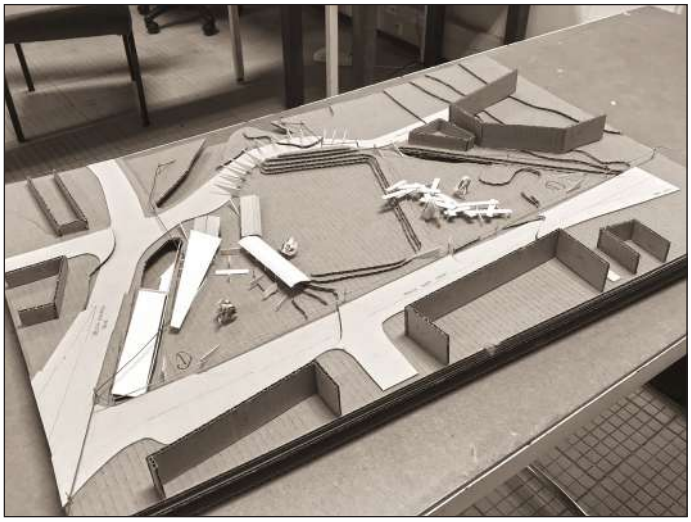


Fig.127: Model of movement moving through the site (Author: 2019)

Fig.128: Model of building opening up to the Apies River (Author: 2019)

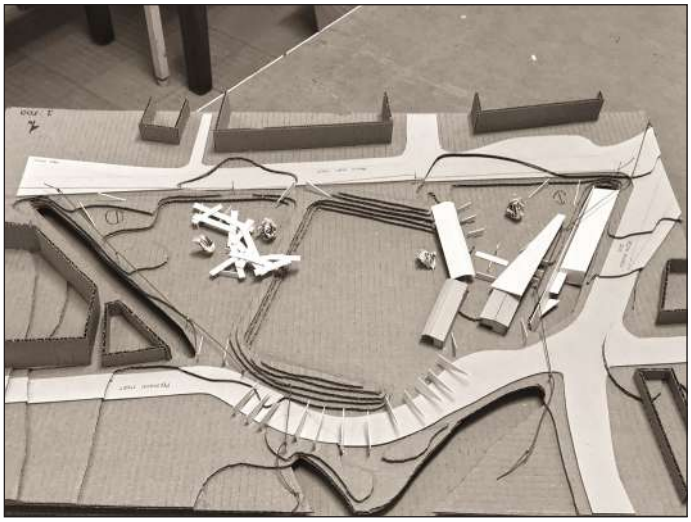


Fig.129: Model of gateway on Pretorius St. (Author: 2019)

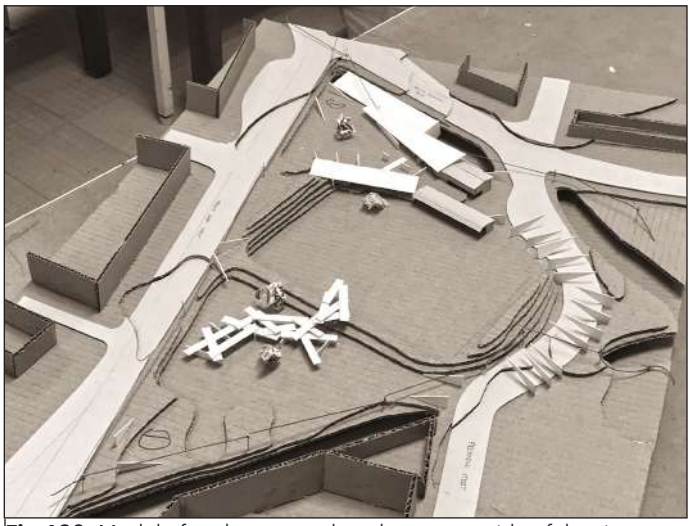


Fig.130: Model of park proposed on the eastern side of the site (Author: 2019)

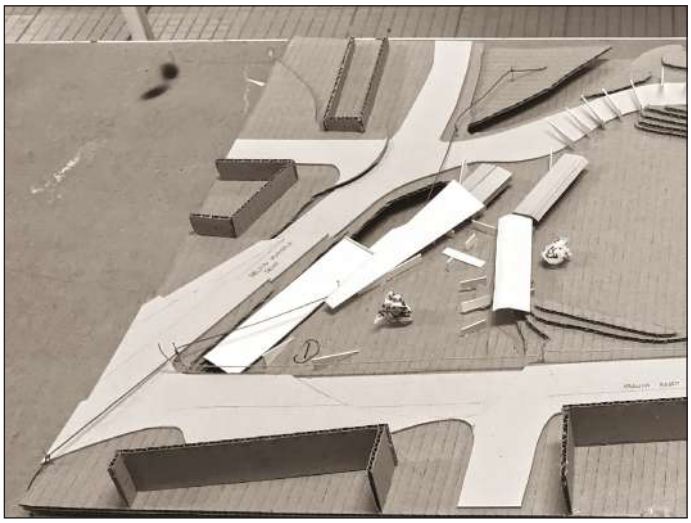


Fig.131: Model of the proposed multifunctional sports facility (Author: 2019)

5.1.2ITERATION _ 02

Considering the linking of spaces together, left space that was unused throughout the site. This gave the idea for the next iteration to space out different programs that could be connected through public space. The following ideas were explored:

- Moving the multipurpose sports centre to the southern edge of the soccer field to allow it to flow onto the field.
- Creating a public and pedestrian edge for the user that is passing by.
- Opening the public area to allow for more informal physical activity thus allowing more seating around the soccer field for games.
- An architectural language explored by beginning to manipulate floor planes and roof pitches to create a more dynamic program in the spaces.

Through these explorations it created a larger public urban space, Breaking the building up into smaller sections started to saturate the public space from movement and activity. The public edge became non-existent and didn't draw the public into the public space. Moving the multipurpose sports centre away from the gym and opening it up to the field actually excluded it from the public, which is one of the main design intentions. It also created safety issues and a need for more admin offices due to the fact that it is so far apart from each other.

DESIGN DRAWING EXPLORATION

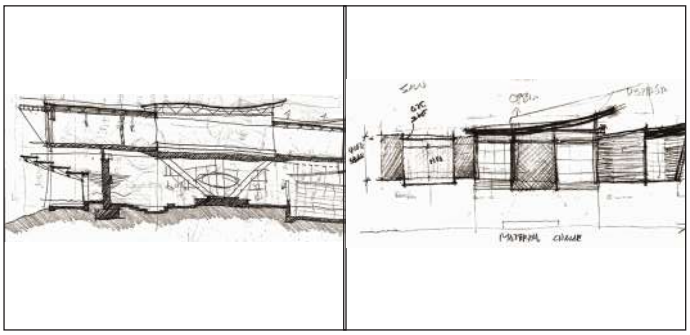


Fig.132: Gym section and elelvation exploration (Author: 2019)

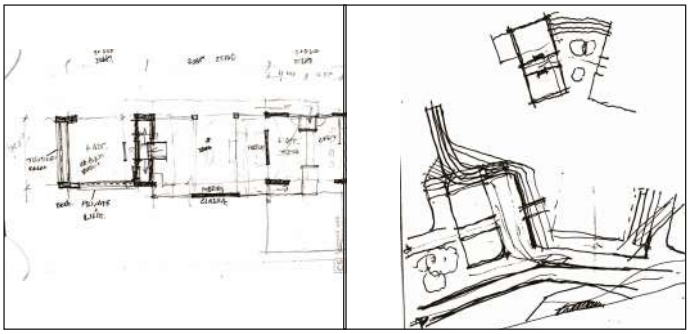


Fig.133: Gym and multipurpose sports centre plan exploration (Author: 2019)

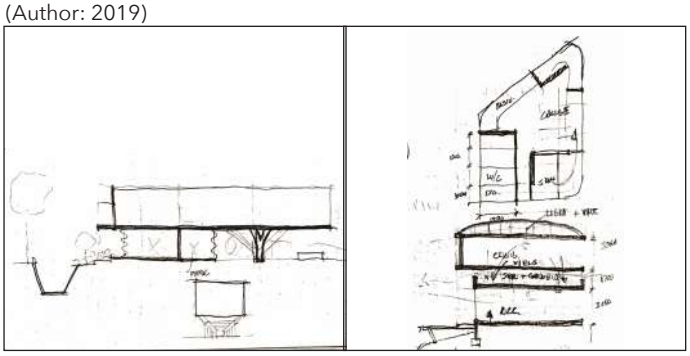


Fig.134: Gym in context and roof exploration (Author: 2019)

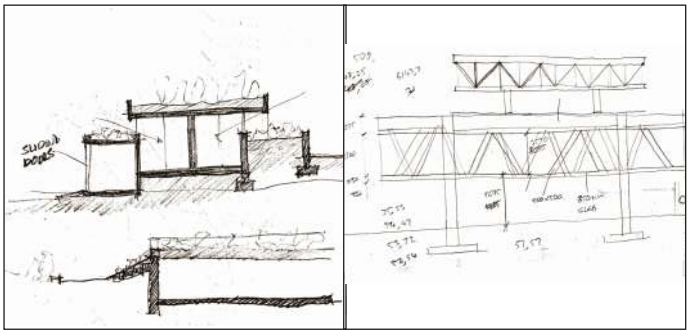


Fig.135: Narutal roof to allow light and ventilation and gym facade (Author: 2019)

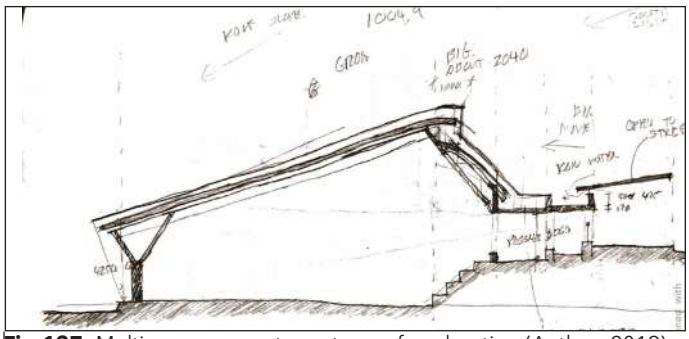


Fig.137: Multipurpose sports centre roof exploration (Author: 2019)

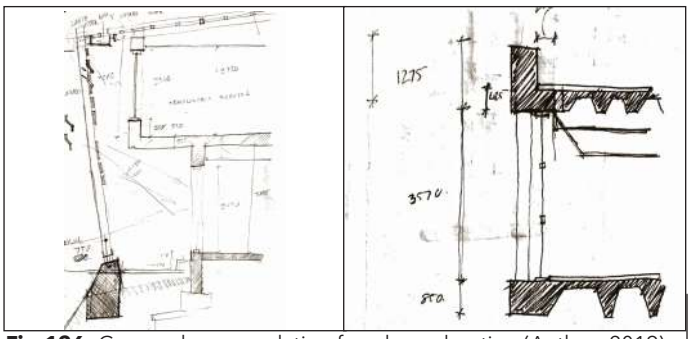


Fig.136: Gym and accomodation facade exploration (Author: 2019)

ITERATION 2 PLAN EXPLORATION

Fig.138: Ground floor and outside plan development (Author: 2019)

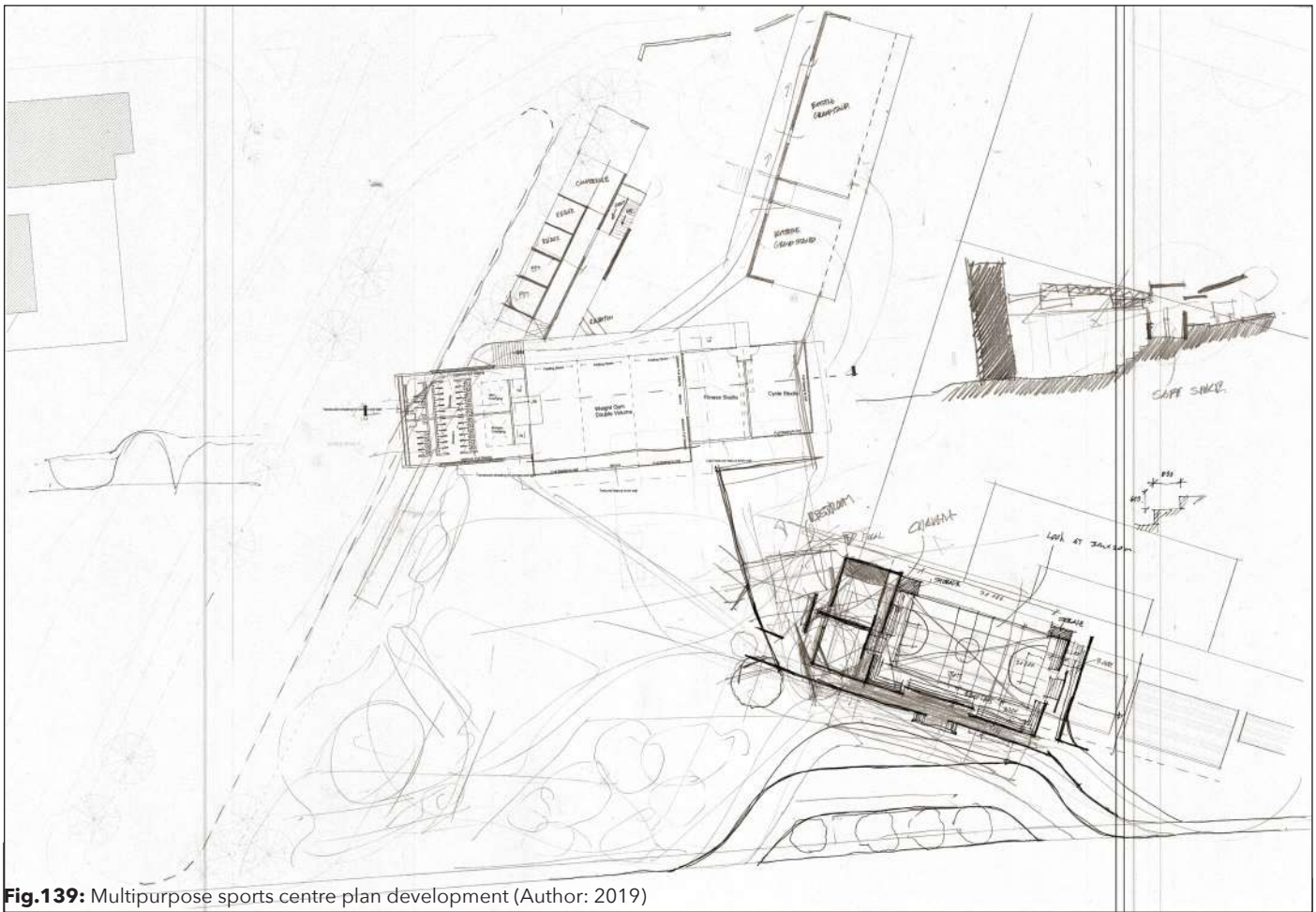


Fig.139: Multipurpose sports centre plan development (Author: 2019)

ITERATION 2 PLAN

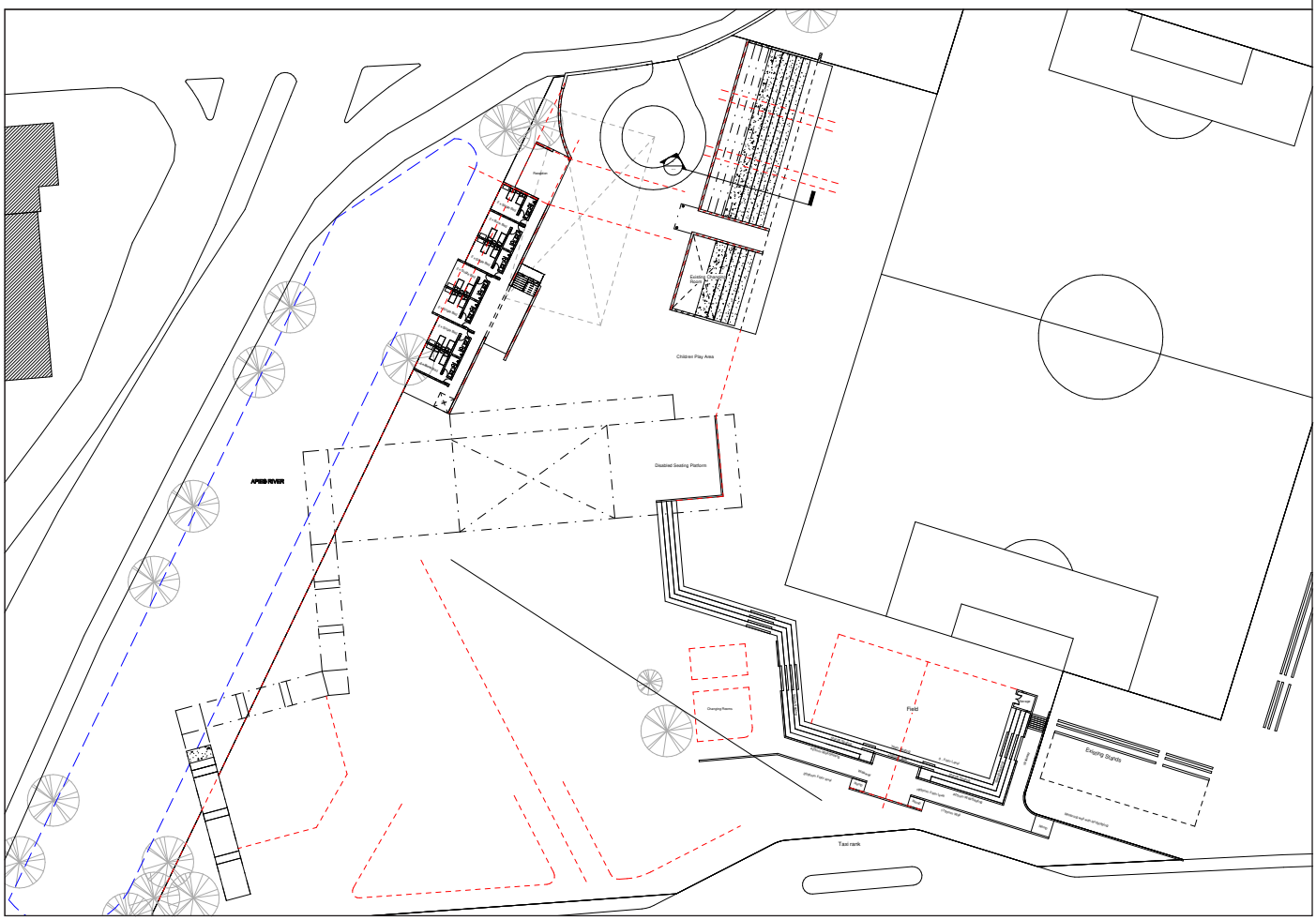


Fig.140: Iteration 2 ground floor plan (Author: 2019)

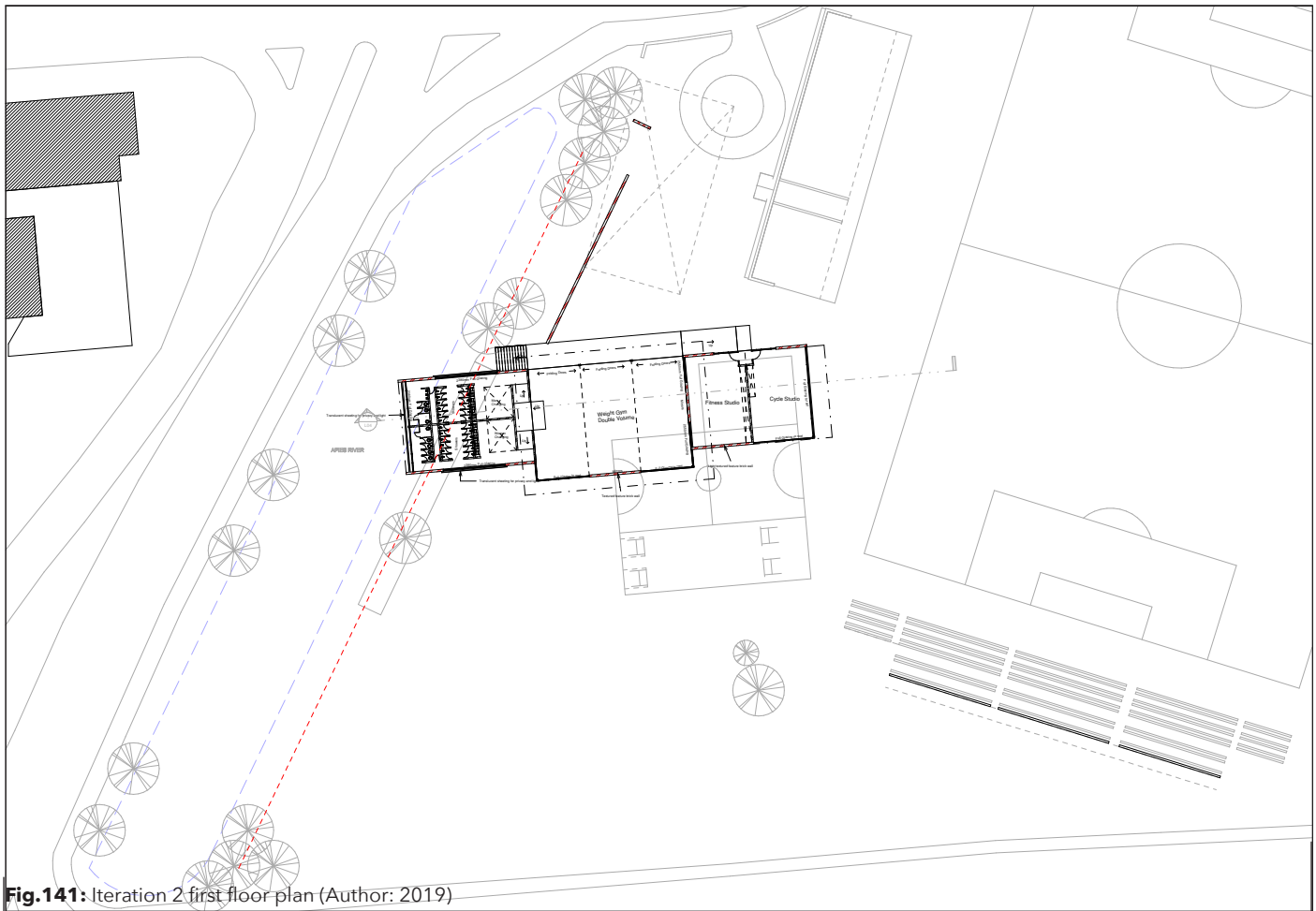


Fig.141: Iteration 2 first floor plan (Author: 2019)

ITERATION 2 PLAN EXPLORATION

Fig.142: Ground floor and outside plan development (Author: 2019)

Fig.143: Ground floor plan development (Author: 2019)

ITERATION 2 PLAN EXPLORATION AND FORM

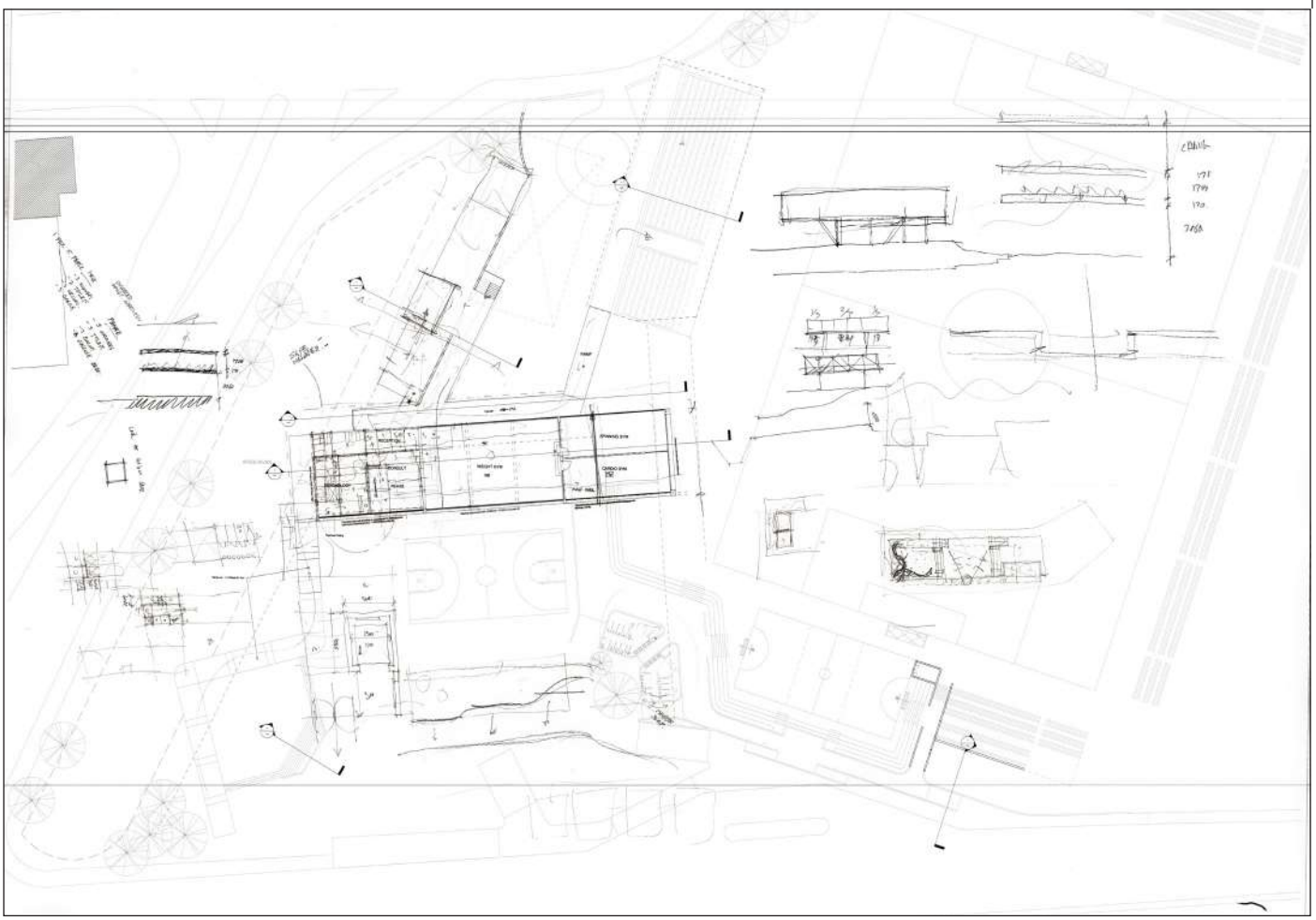


Fig.144: First floor and plan development (Author: 2019)

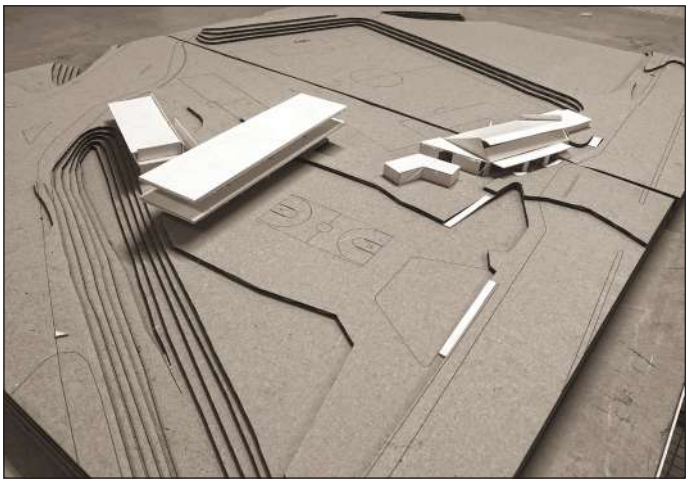


Fig.145: Form development on site model (Author: 2019)

ITERATION 2 FINAL PLANS

Fig.146: Iteration 2 site plan (Author: 2019)

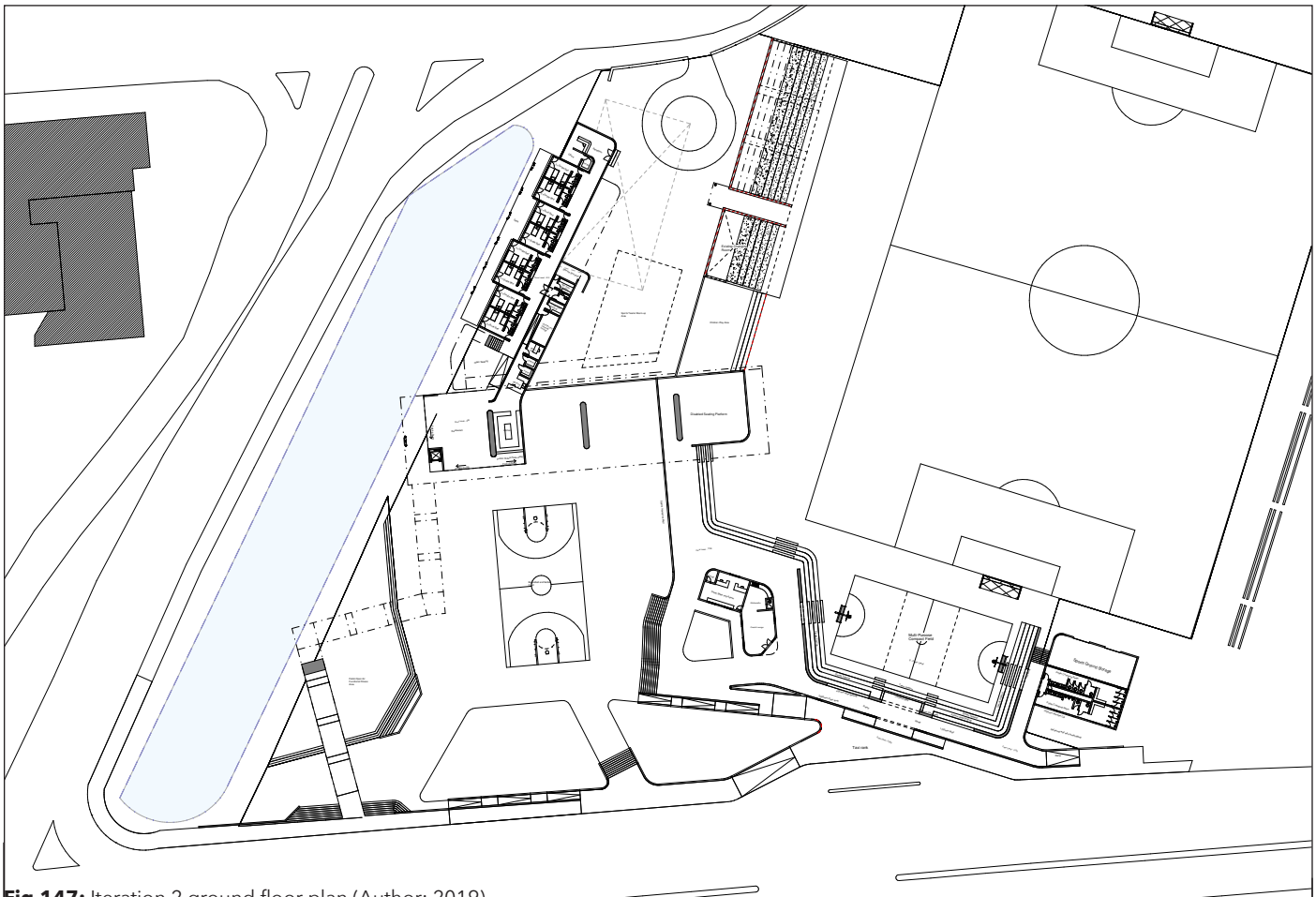


Fig.147: Iteration 2 ground floor plan (Author: 2019)

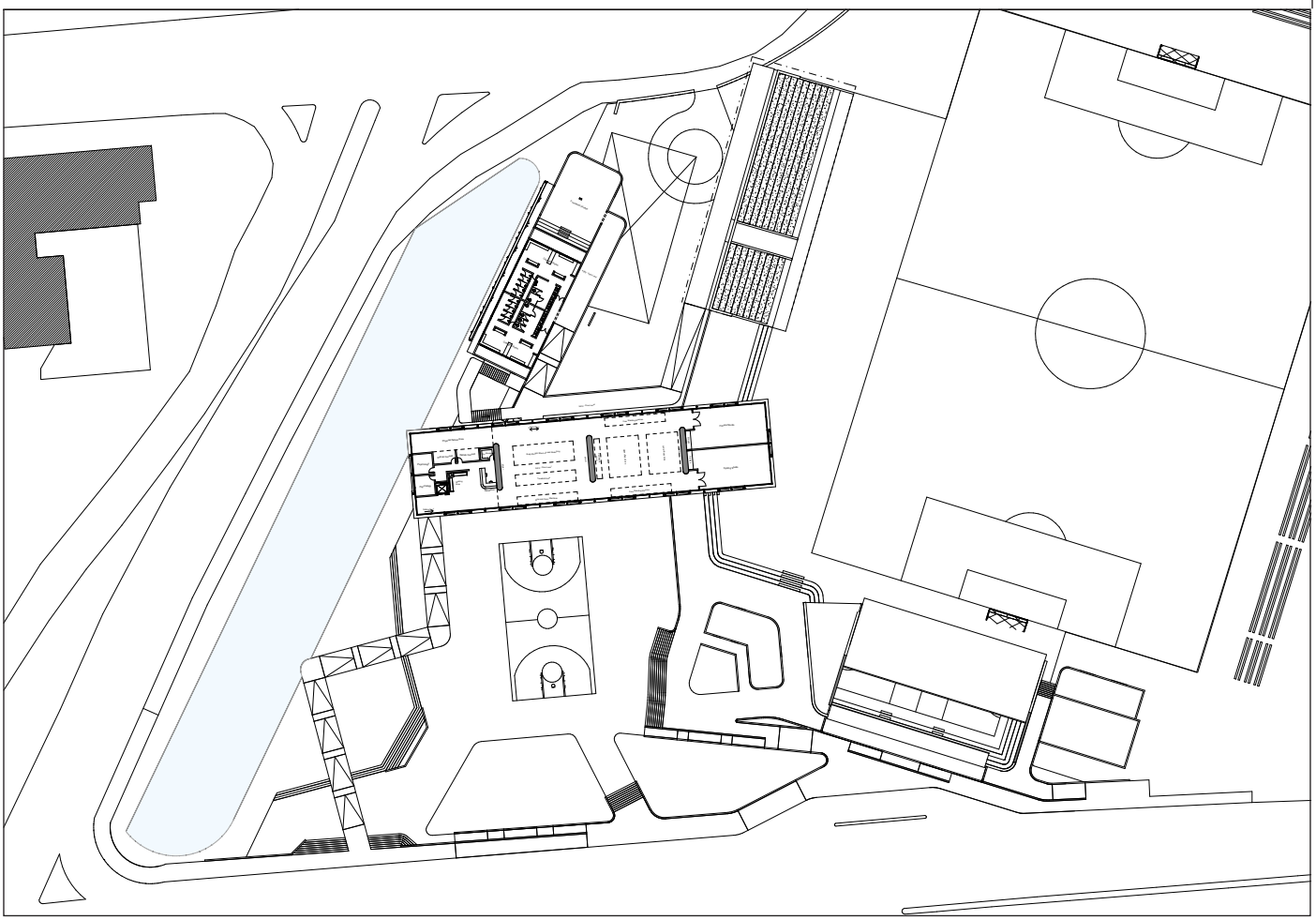


Fig.148: Iteration 2 first floor (Author: 2019)

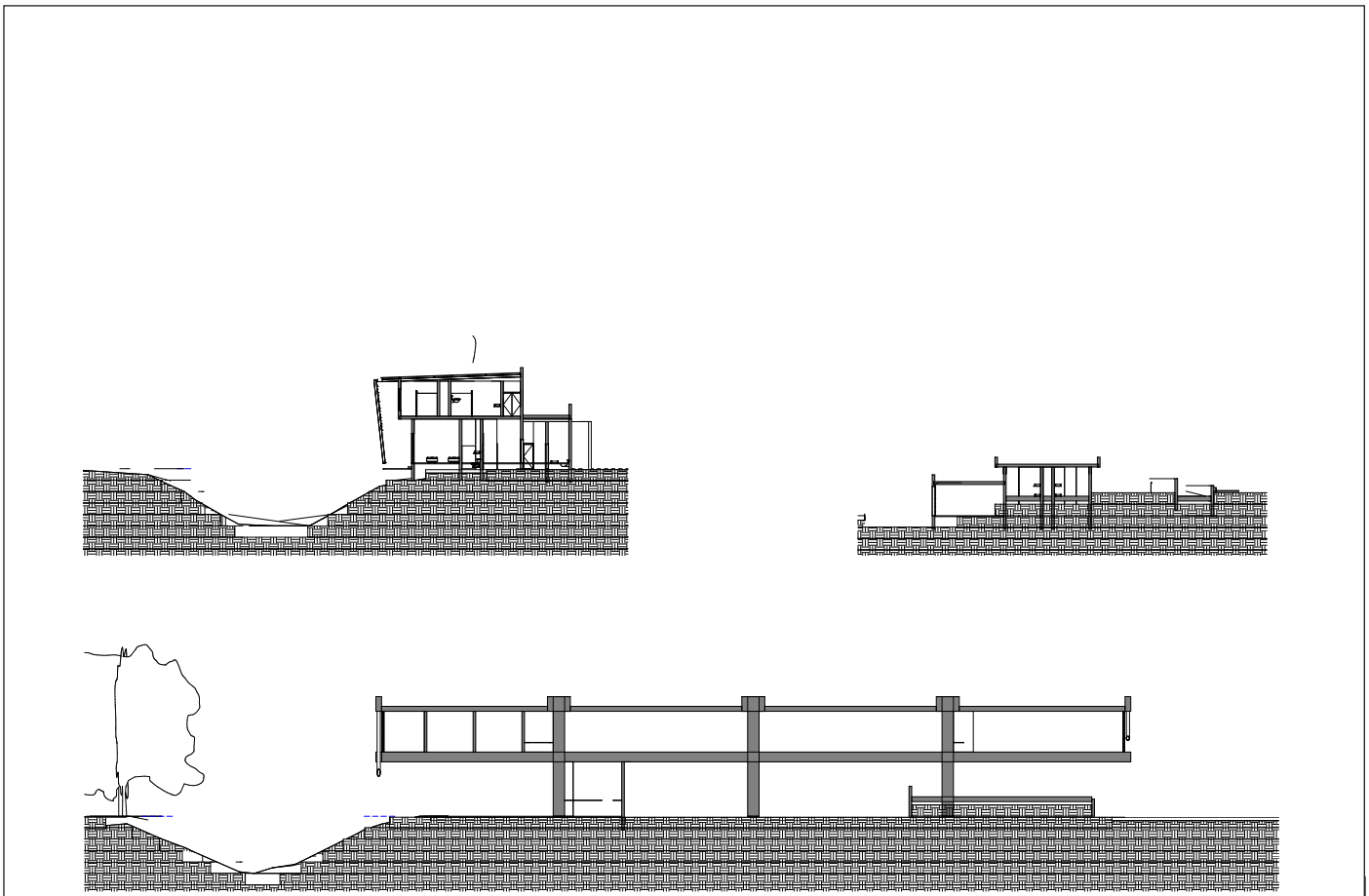


Fig.149: Iteration 2 sections (Author: 2019)

ITERATION 2 PERSPECTIVES

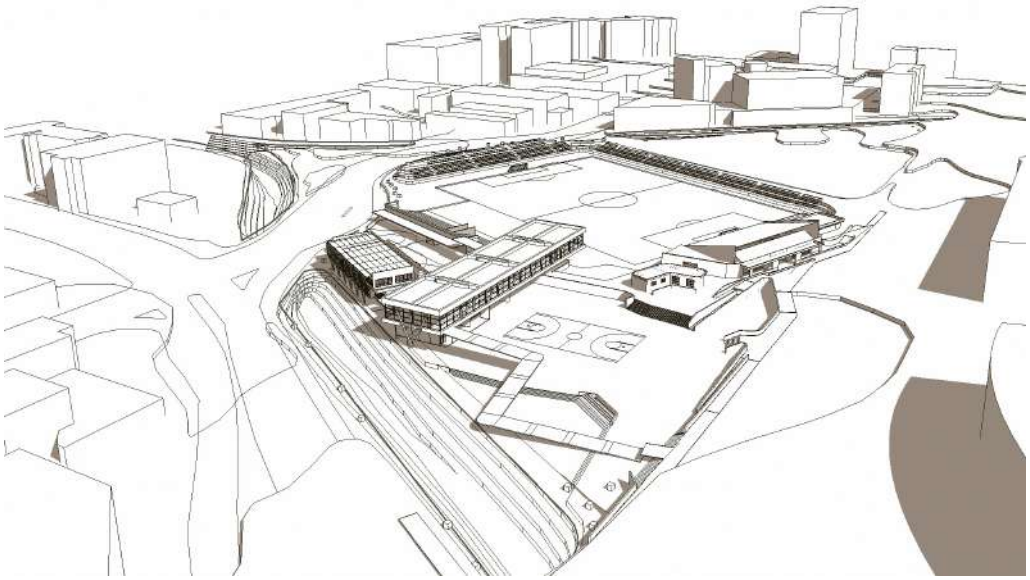


Fig.150: Iteration 2 site perspective (Author: 2019)

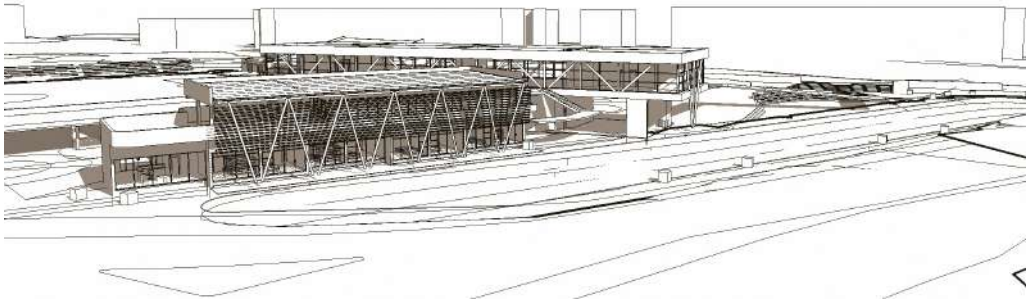


Fig.151: Iteration 2 accomodation and gym perspective (Author: 2019)

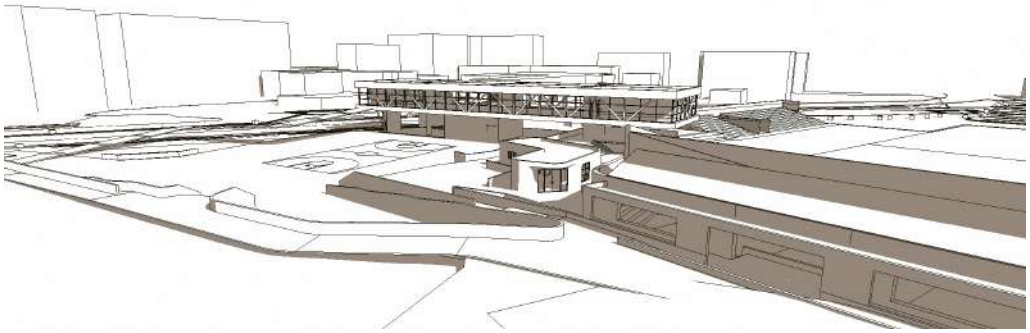


Fig.152: Iteration 2 multipurpose sports centre and gym perspective (Author: 2019)

5.1.3ITERATION _ 03

The idea that the facility should be connected to allow for the capability and use of all the facilities and interaction with the public spaces the following ideas were explored:

- The multipurpose sports centre to be moved back towards the gym.
- The focus on safety and accessibility was assessed under different times and events throughout the day.
- Include public parking and public transport zones.
- Designing the roof structures to be more focussed on accommodating specific sports and activities.
- Opening the restaurant up to the public area and creating more spaces that allows for exposure and seclusion.
- Increase accommodation through compact rooms that allow for more athletes to sleep and create an entrance that is appropriate on the northern edge of Pretorius street.

The multipurpose sports centre was moved back towards the gym, but turned around to open up into the public space. This created a more transparent facility while it started to close up the public circulation through the site. The new entrance into the facility is a focus and starting point for people to the site. They can move through the building to the different activities available. The parking area created the opportunity to move the sidewalk into the site, thus exposing the public to the various programs and activities. The accommodation wall was moved to be parallel to the existing stadium respecting the existing orientation, while it also created a more uniform public route through the site.

DESIGN DRAWING EXPLORATION

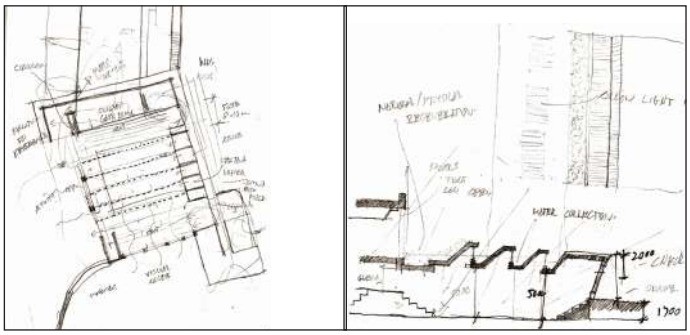


Fig.153: Multipurpose sports centre layout and roof design to allow natural light into the space (Author: 2019)

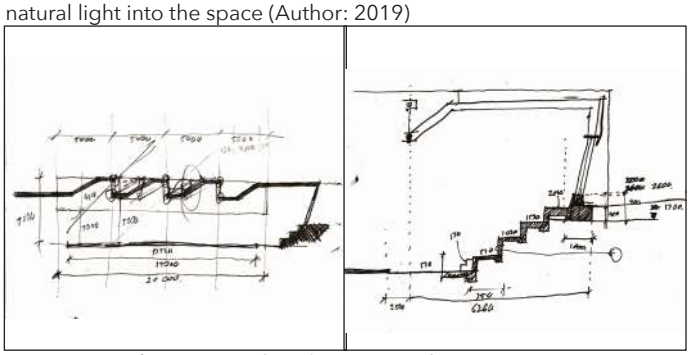


Fig.154: Roof spacing and exploration (Author: 2019)

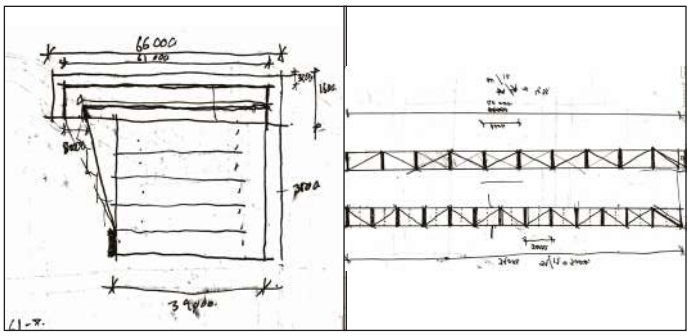


Fig.155: Connecting the roof structure to the grid spacing of the gym (Author: 2019)

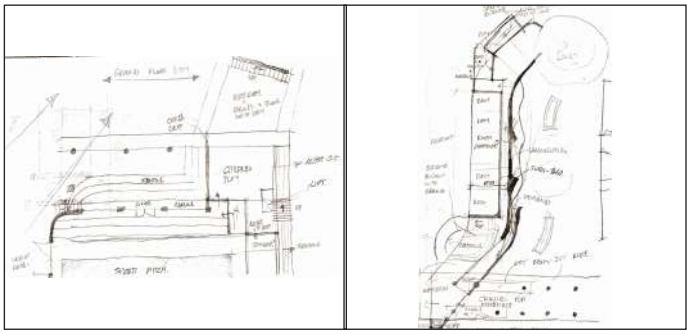


Fig.156: Plan exploration of the space under the gym and accommodation and public circulation (Author: 2019)

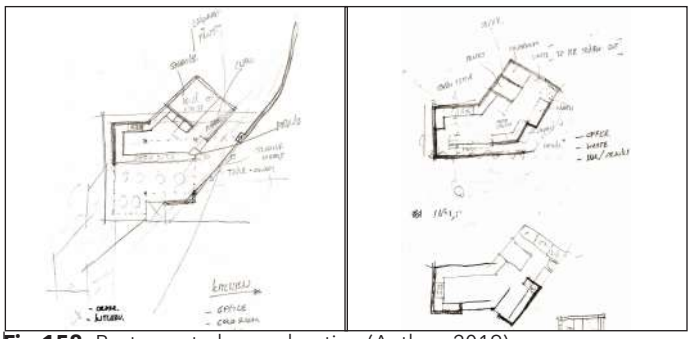


Fig.158: Restaurant plan exploration (Author: 2019)

Fig.157: Plan development of entrance and accommodation (Author: 2019)

ITERATION 3 PLAN EXPLORATION

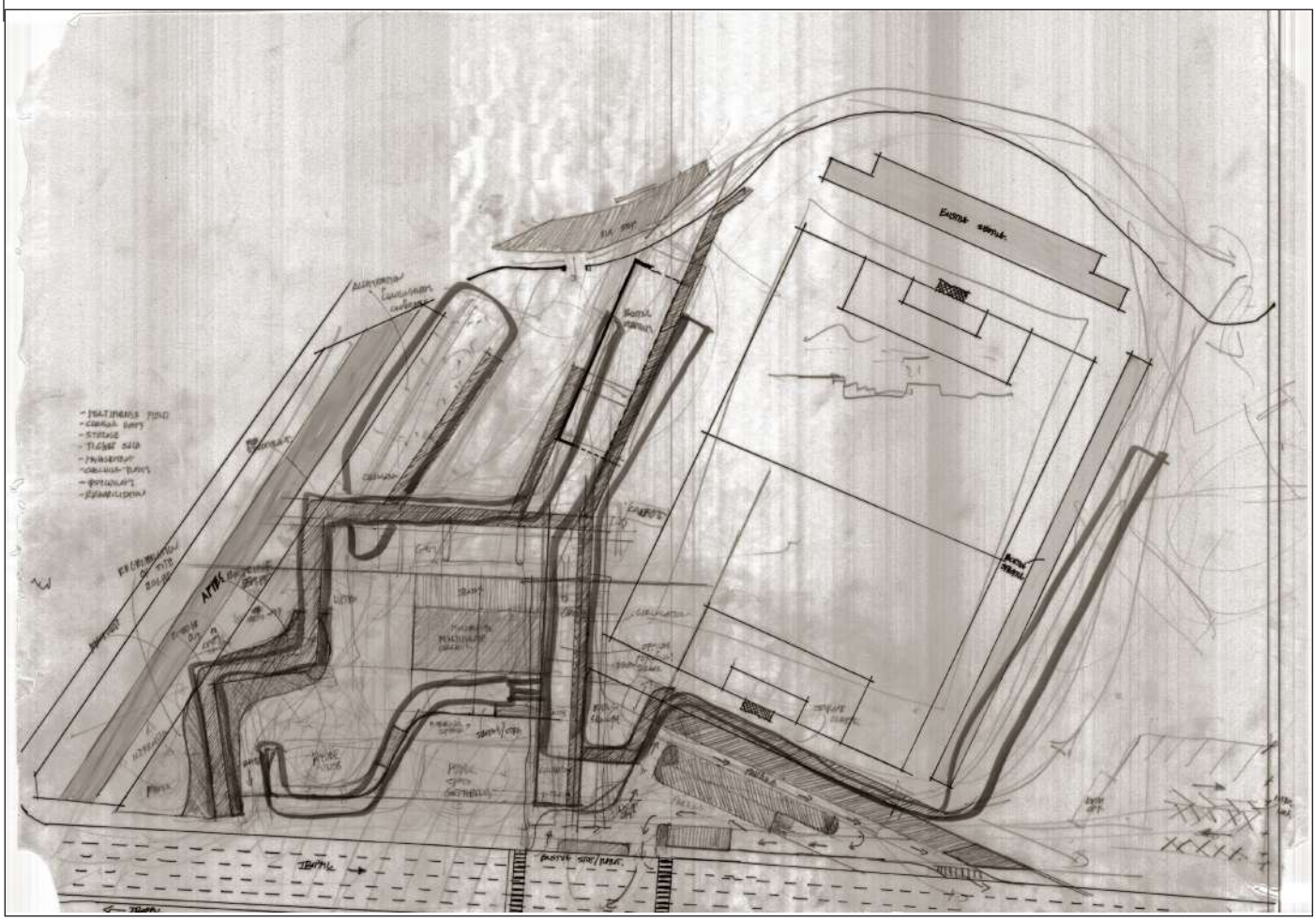


Fig.159: Iteration 3 site framing, circulation and connection exploration (Author: 2019)

Fig.160: Multipurpose sports centre moved away from the southern edge of the field below the gym (Author: 2019)

ITERATION 3 PLAN EXPLORATION

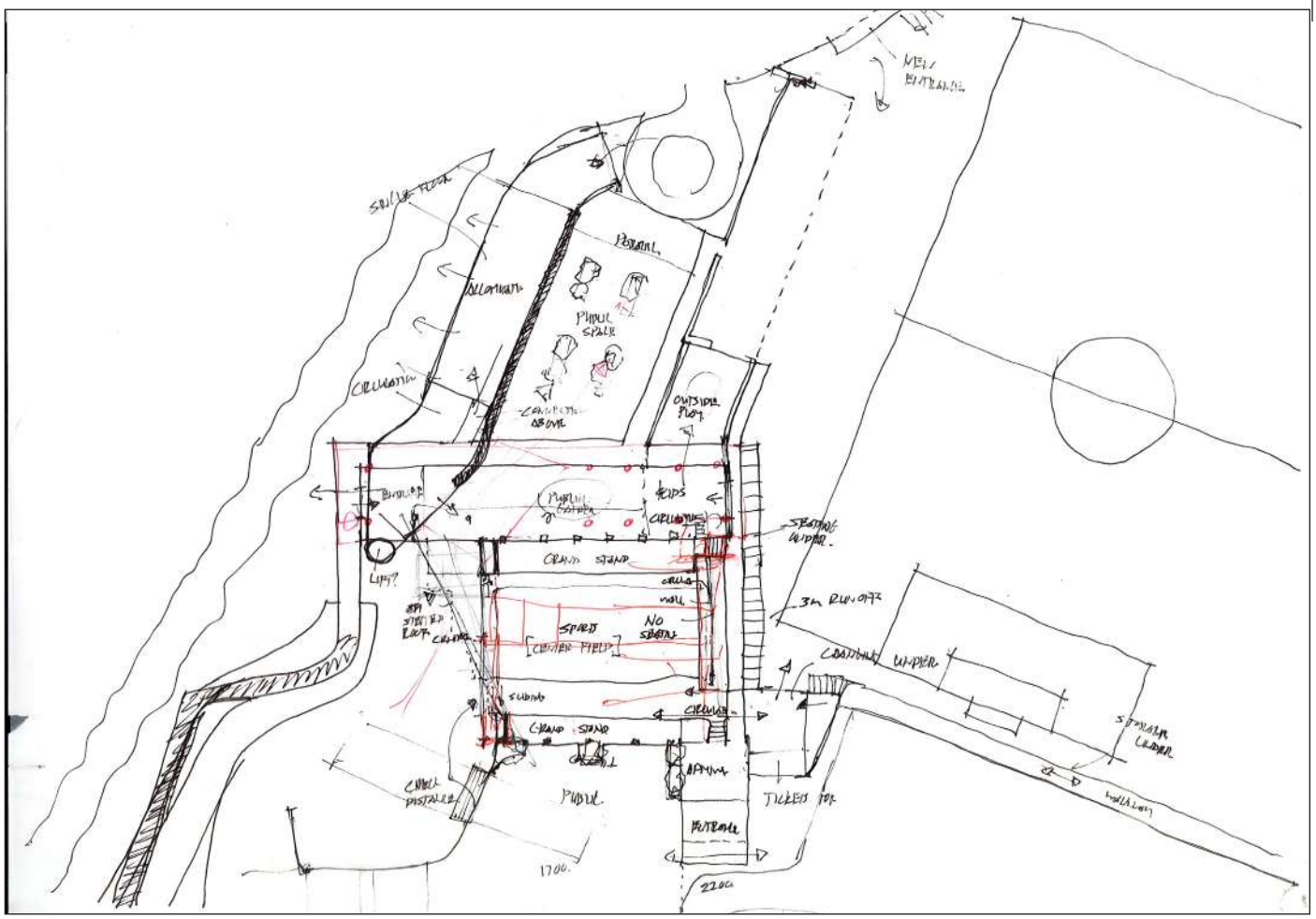


Fig.161: Iteration 3 plan development (Author: 2019)

Fig.162: Iteration 3 plan development (Author: 2019)

ITERATION 3 MODEL EXPLORATION

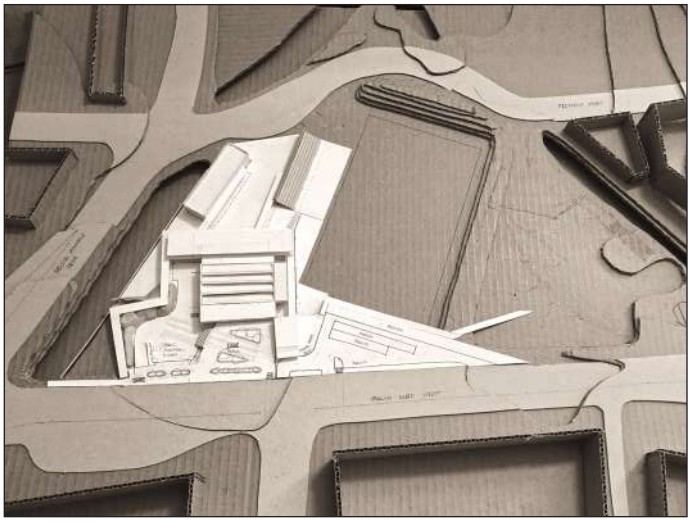


Fig.163: Site view of iteration 3 site model (Author: 2019)

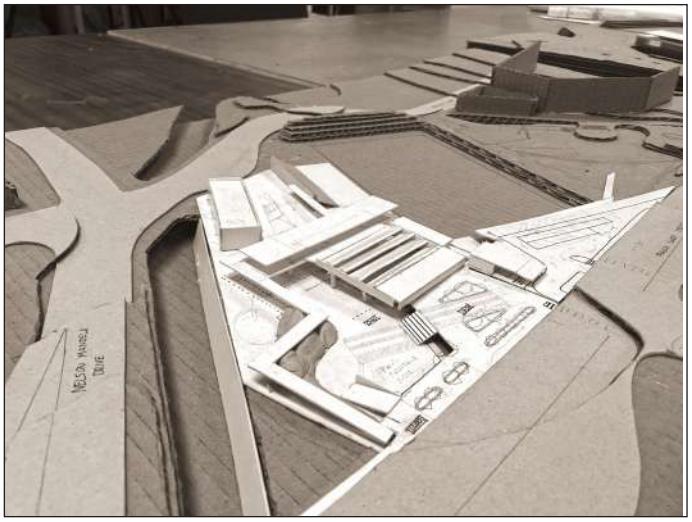


Fig.166: Public space and ramp to gym (Author: 2019)

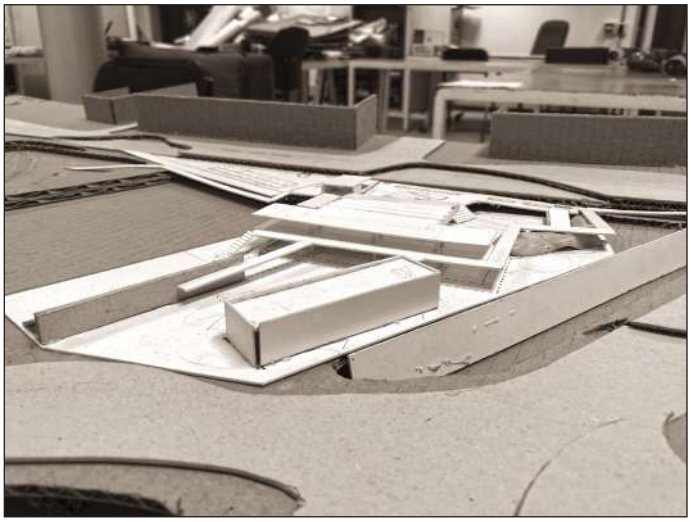


Fig.164: Accommodation with view over the Apies river (Author: 2019)

Fig.167: Entrance and proposed public parking (Author: 2019)

Fig.165: Interaction with the existing field (Author: 2019)

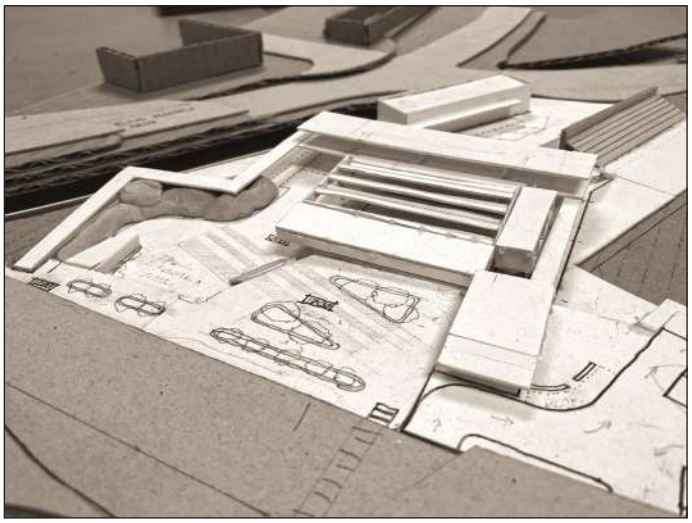


Fig.168: Public circulation and natural light let into the sports centre (Author: 2019)

ITERATION 3 DESIGN

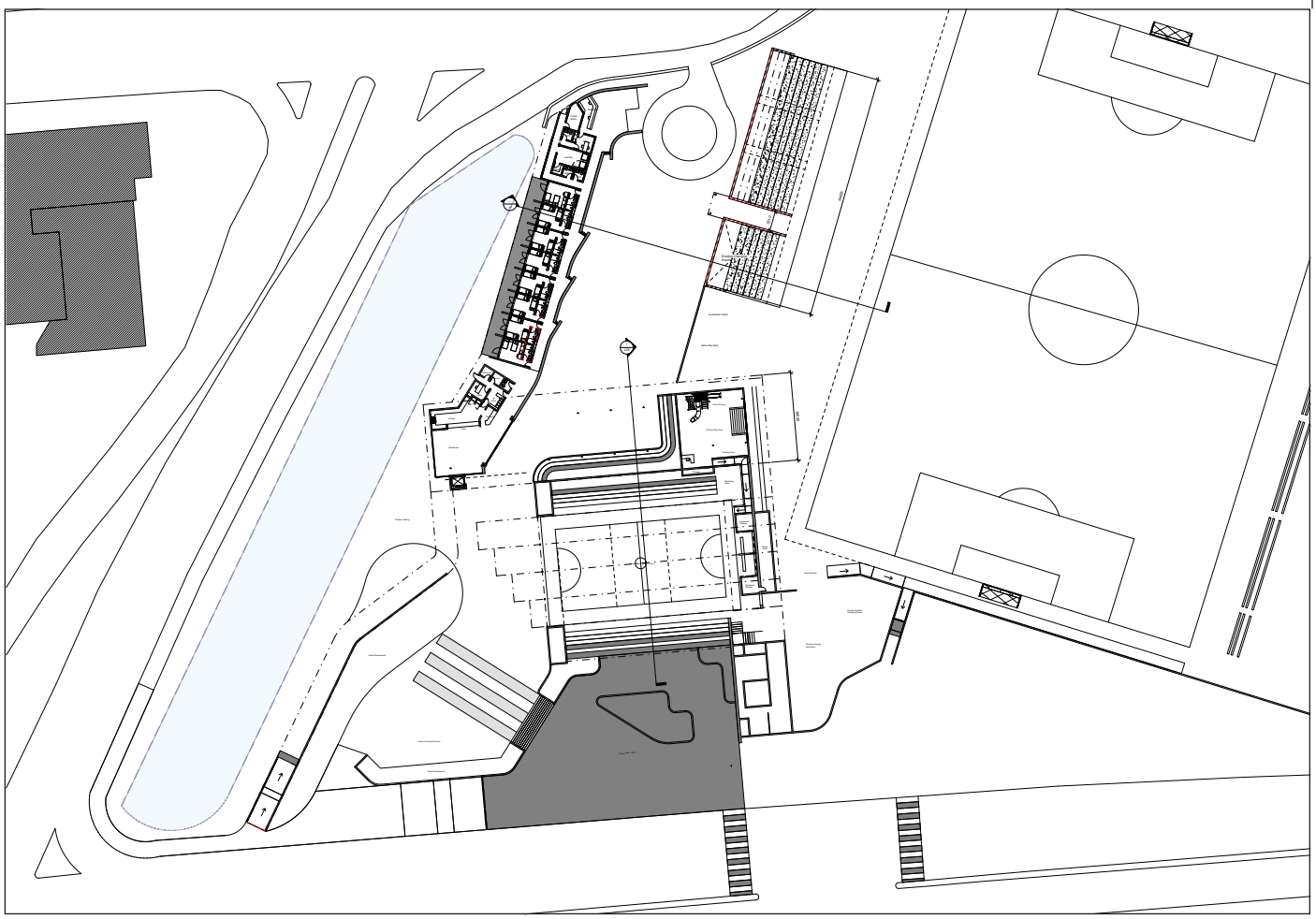


Fig.169: Ground floor plan (Author: 2019)

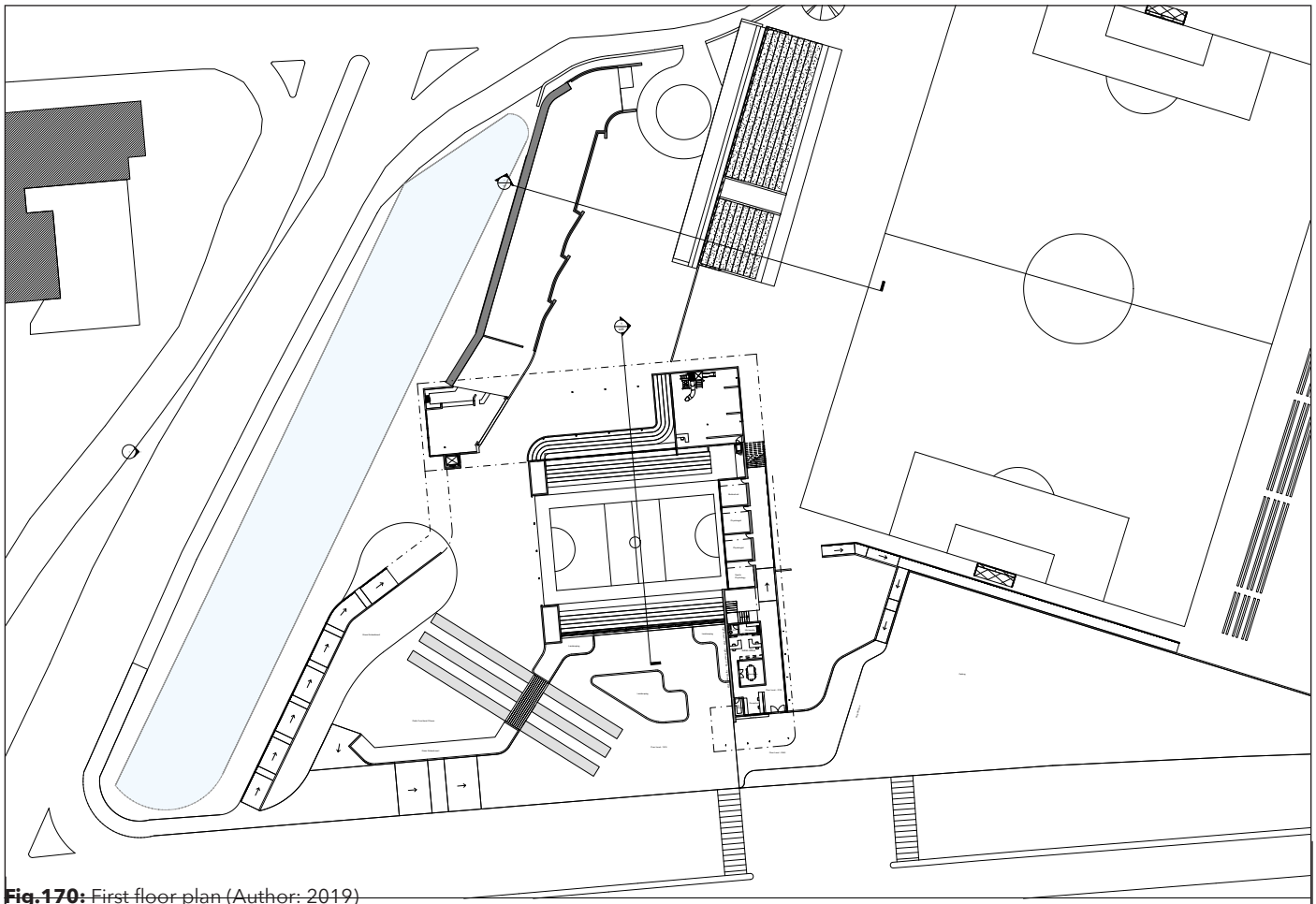


Fig.170: First floor plan (Author: 2019)

ITERATION 3 DESIGN

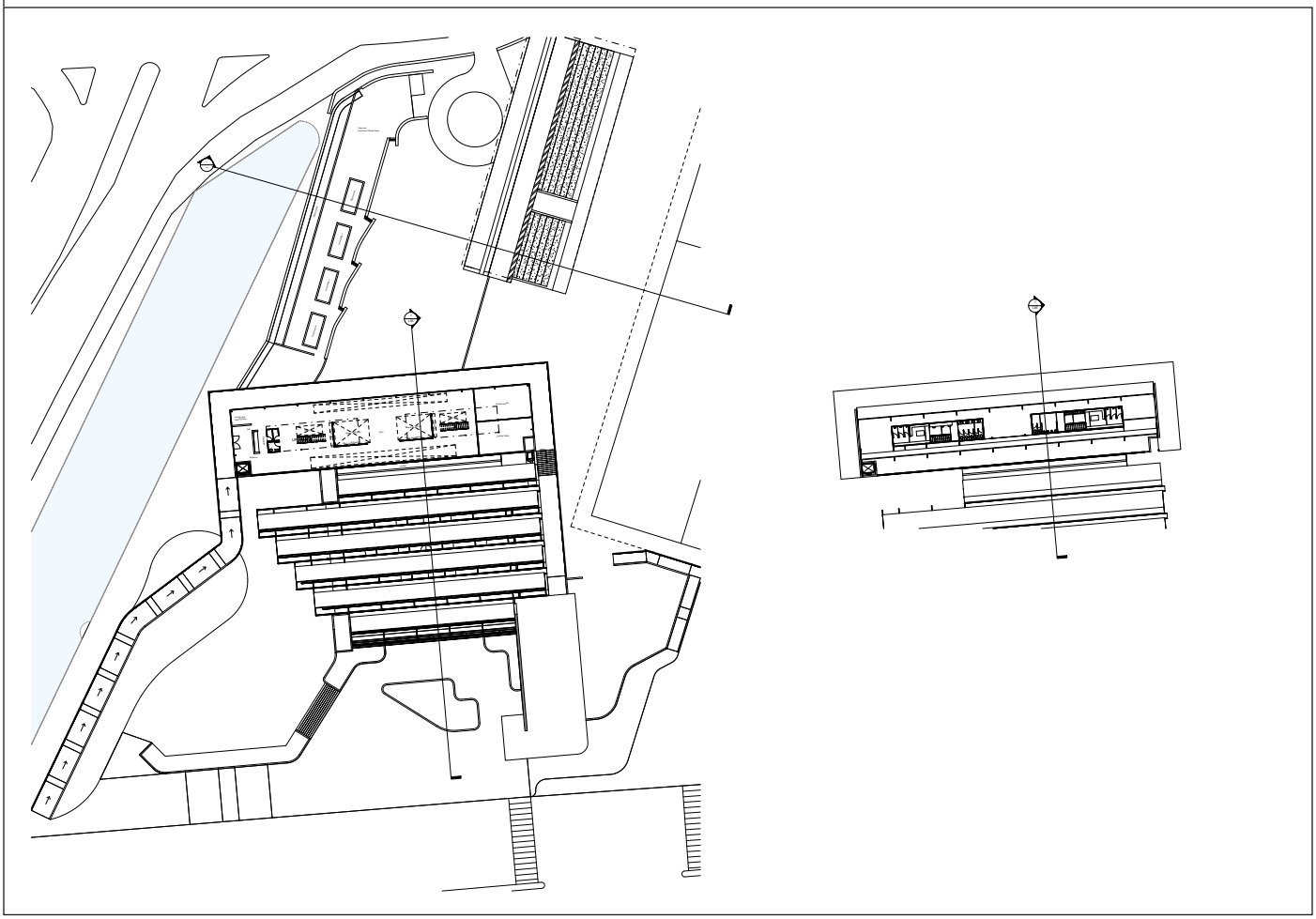


Fig.171: Second floor and gym changing room plan (Author: 2019)

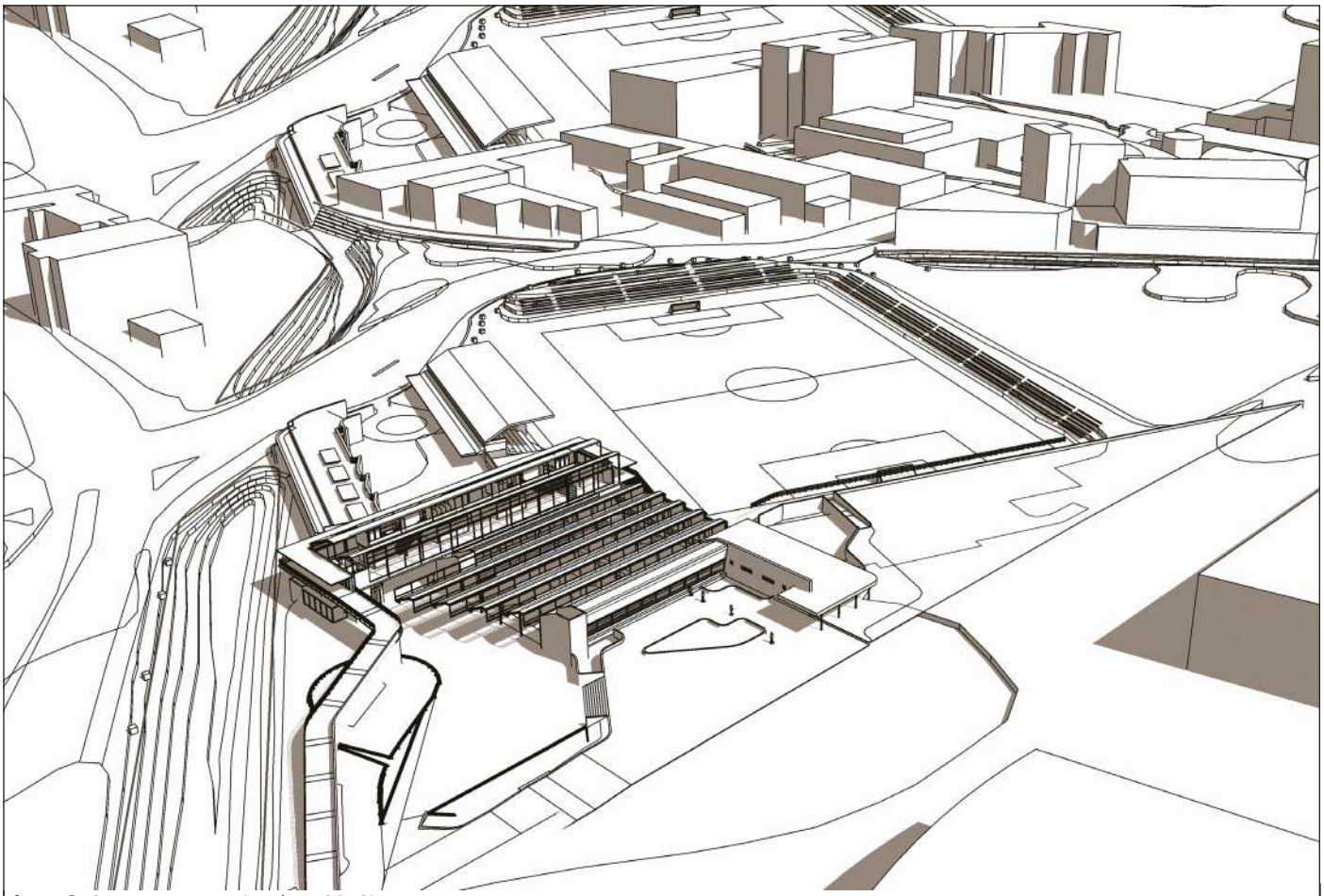


Fig.172: Site perspective (Author: 2019)

ITERATION 3 MODEL EXPLORATION

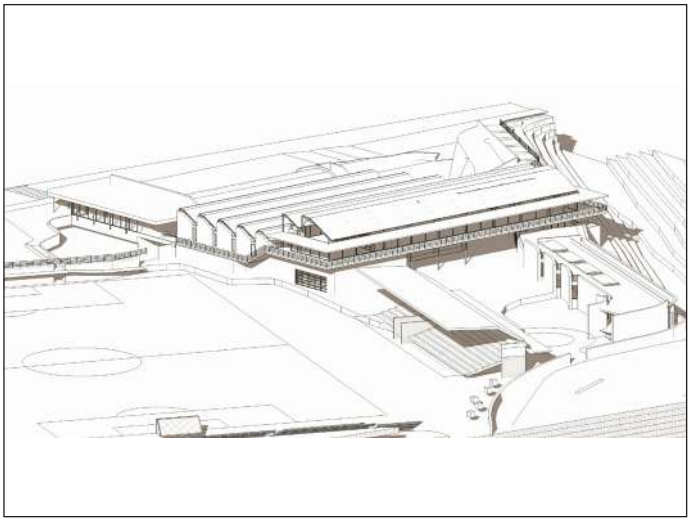


Fig.173: Site perspective looking onto the field (Author: 2019)

Fig.176: Perspective with multipurpose roof structure to let in natural light (Author: 2019)

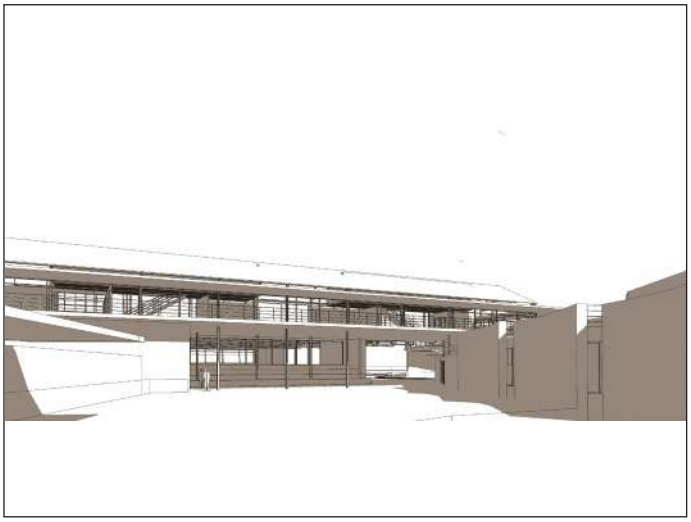


Fig.174: Accommodation and gym public circulation (Author: 2019)

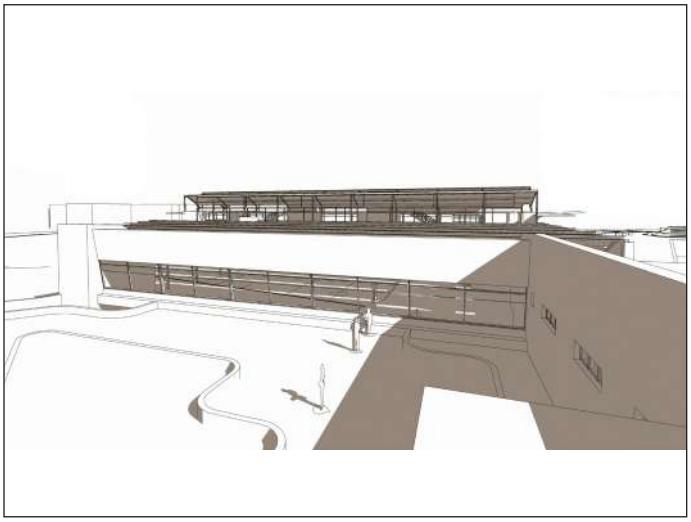


Fig.177: Multipurpose sports centre and gym (Author: 2019)

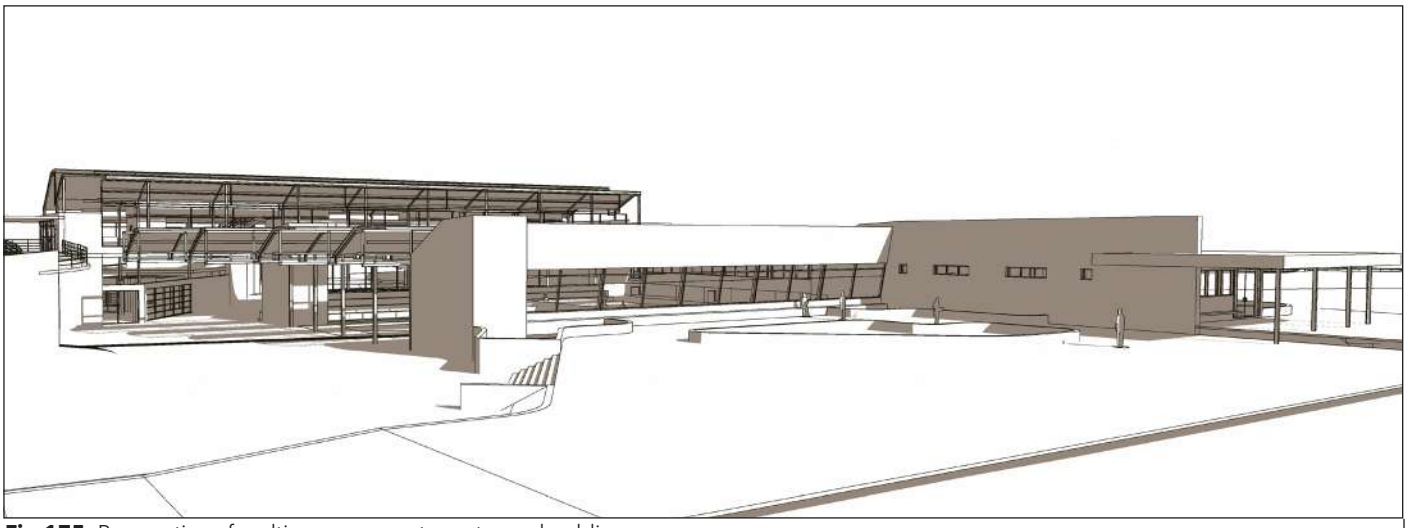


Fig.175: Perspective of multipurpose sports centre and public interaction area (Author: 2019)

ITERATION 3 DESIGN

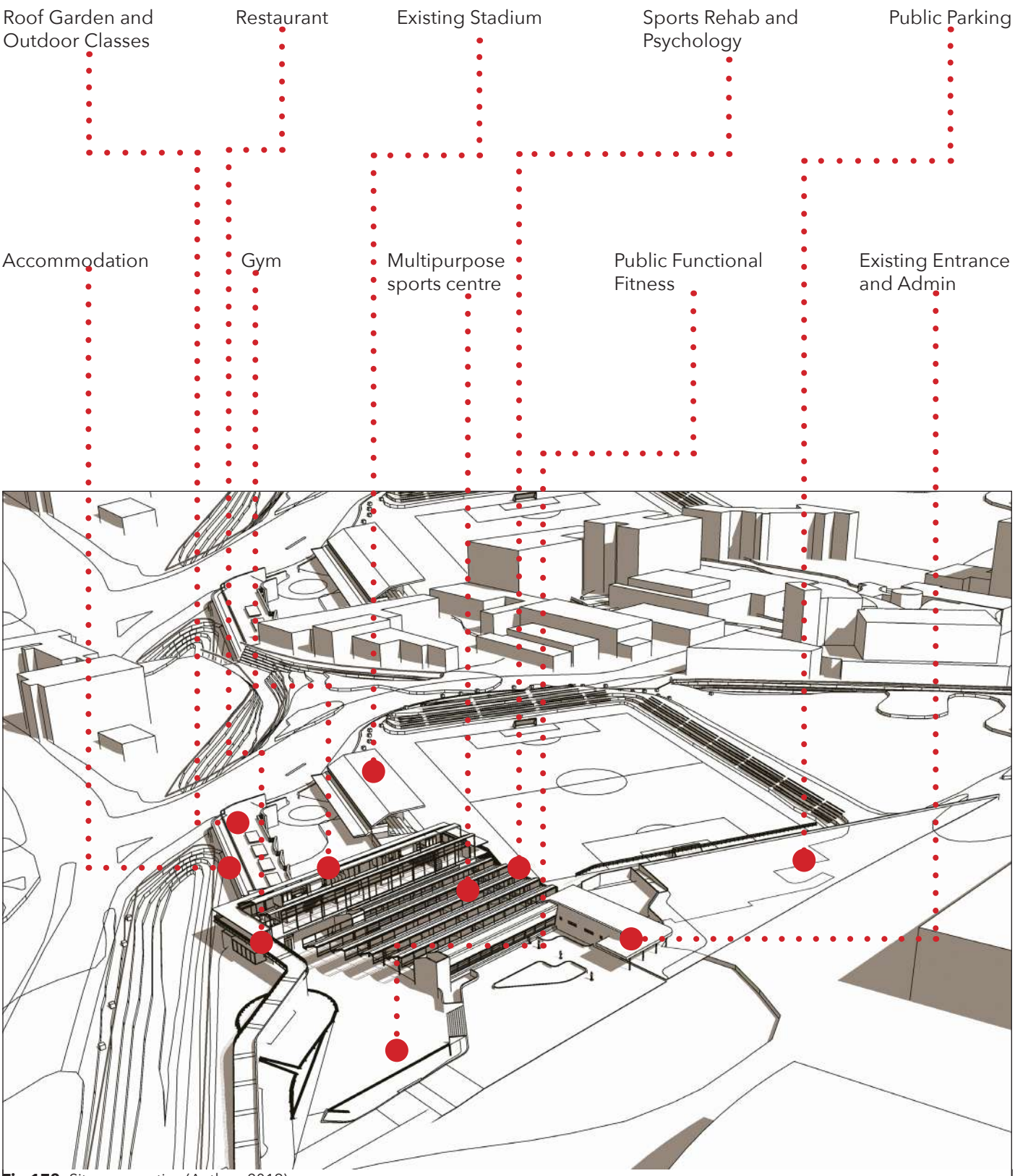


Fig.178: Site perspective (Author: 2019)

5.1.4ITERATION _ 04

Considering the result of slightly closing off the public movement through the site the following ideas were explored:

- Rotating the multipurpose sports centre to open up to Francis Baard street. It opens the site more and controls the space better with the possibility of balls rolling out of the space.
- Look at how the structure could be more effective in a multipurpose area for the building.
- Creating different levels moving the public into the site that creates viewing areas and engagement zones.
- Increaseing the multipurpose sports roof height to allow more space.

This iteration is currently being explored and what has been noted so far is that there is a comfortable public space was created by rotating the gym and it created new opportunities to where the structure of the building can accommodated other public sporting activities. The design starts to show how a public sports centre can be used to accommodate different people.

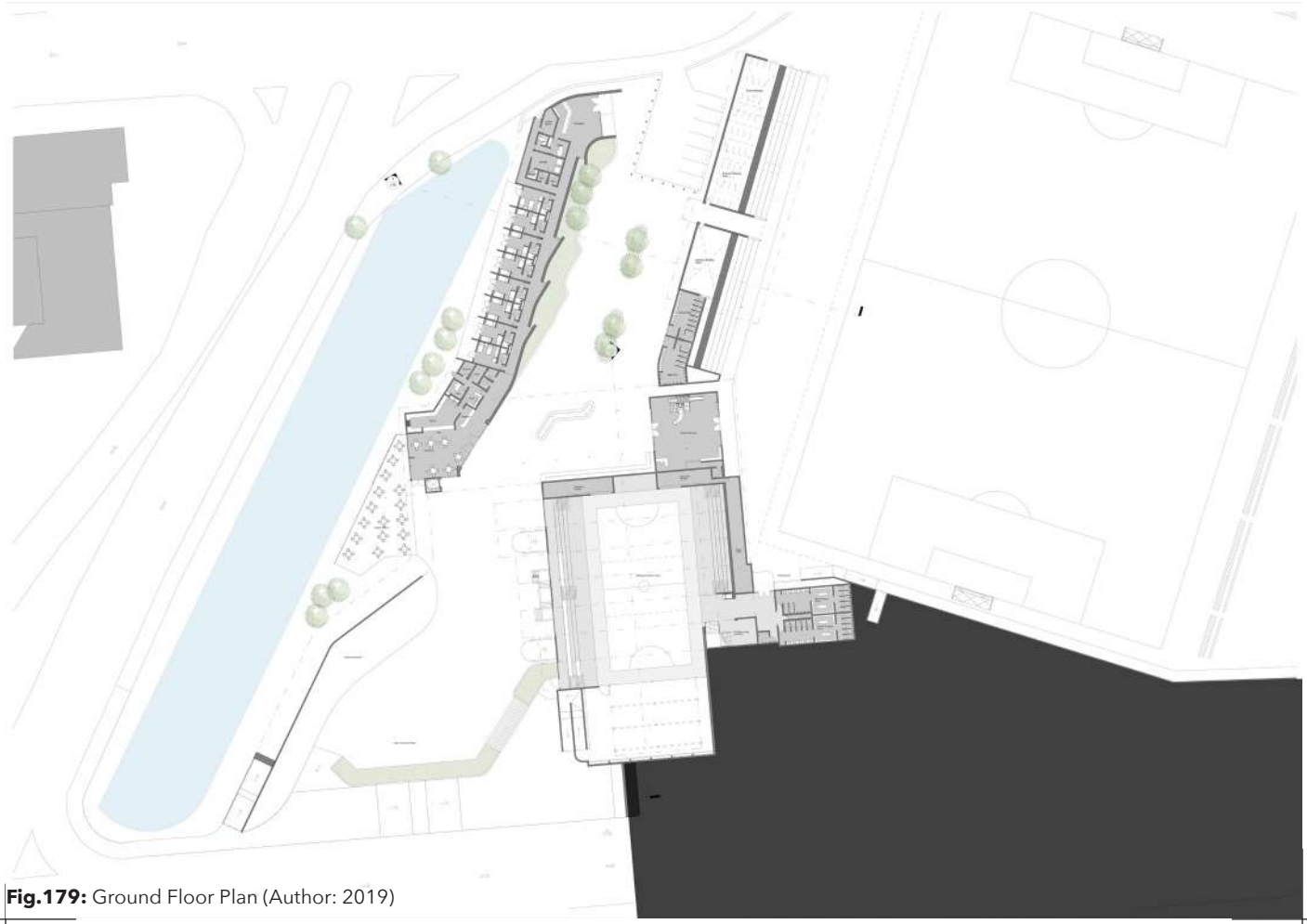


Fig.179: Ground Floor Plan (Author: 2019)

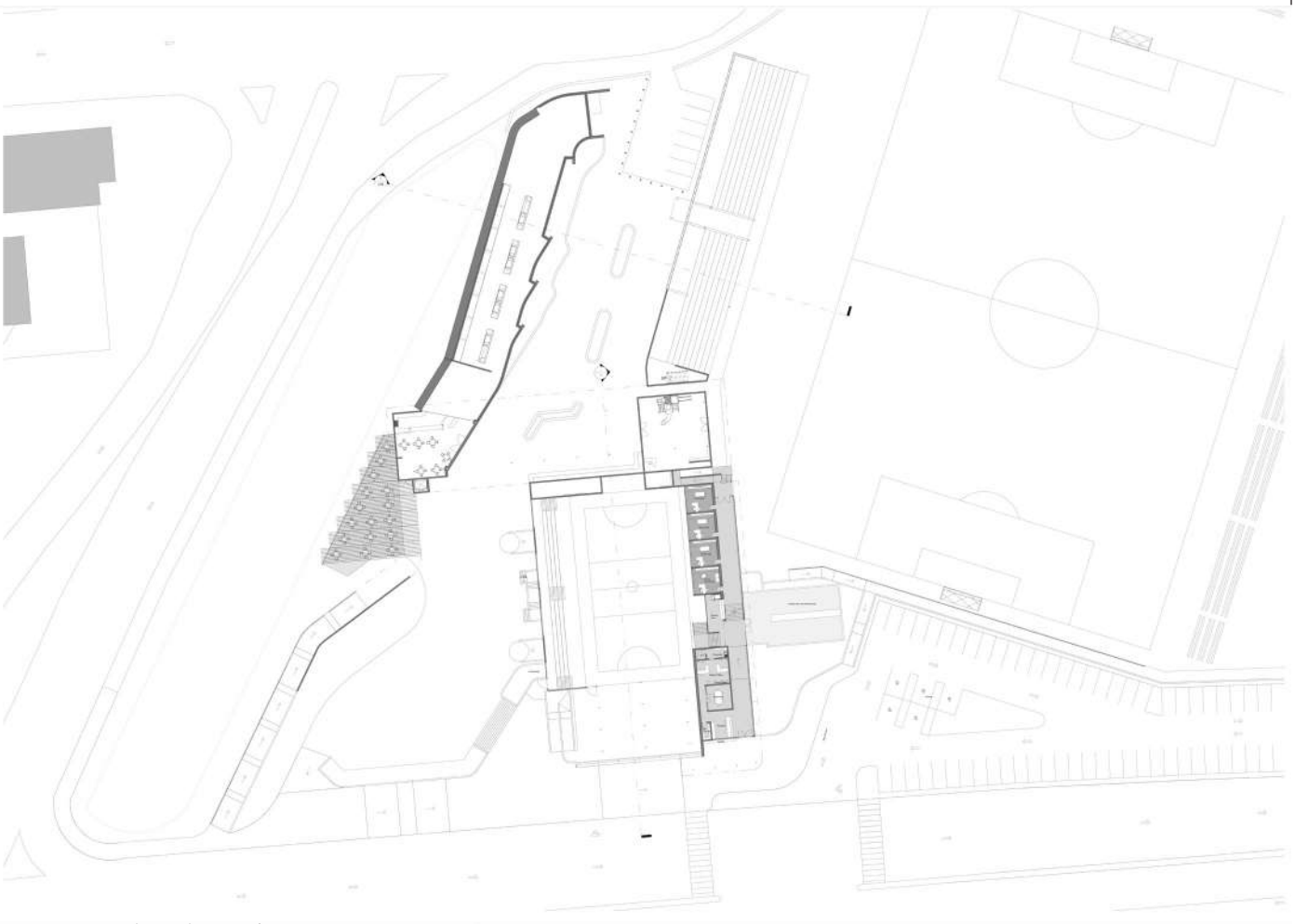


Fig.180: First Floor Plan (Author: 2019)

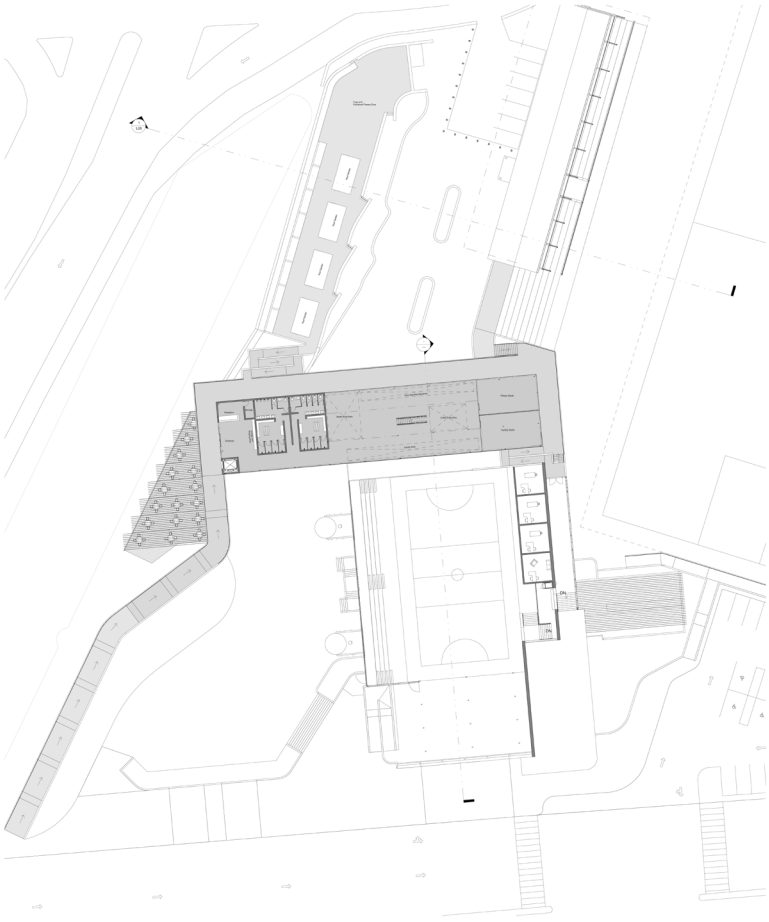


Fig.181: Second Floor Plan (Author: 2019)

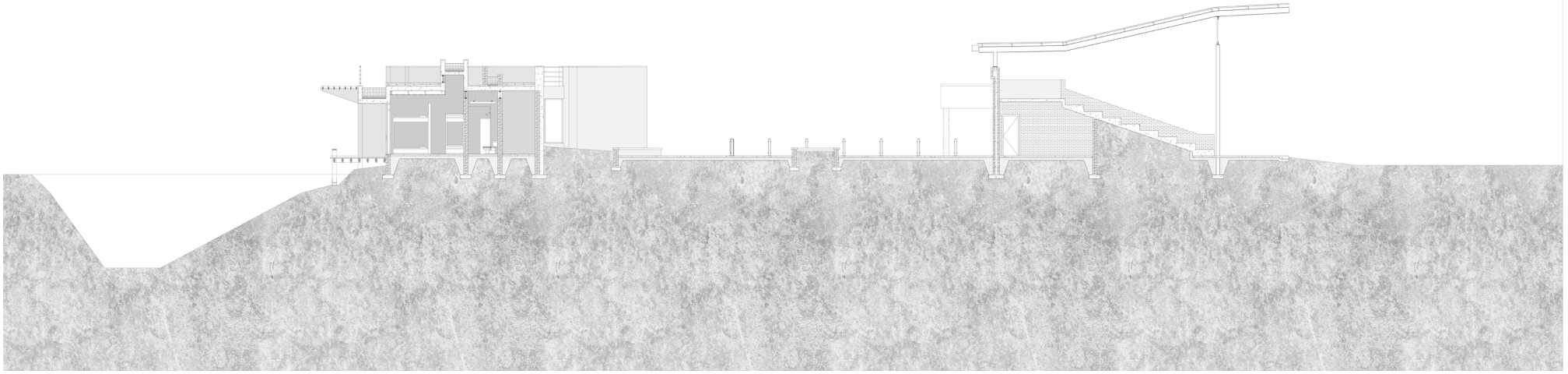


Fig.182: Accommodation Section (Author: 2019)

Fig.183: Multipurpose Sports Centre Section (Author: 2019)

ITERATION 3 MODEL EXPLORATION

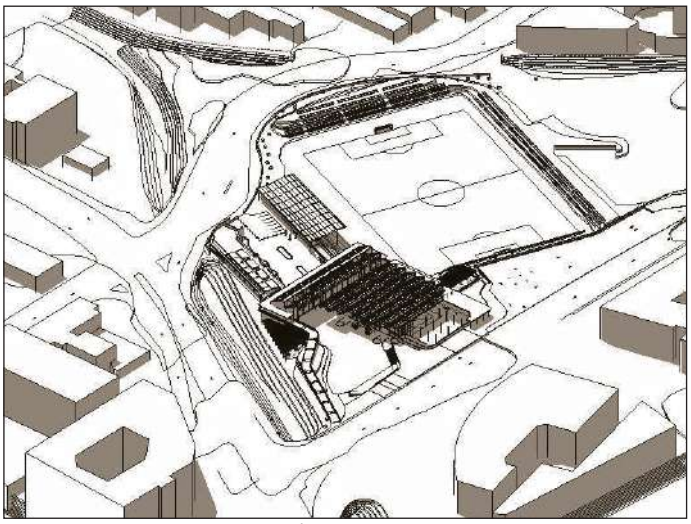


Fig.184: Site perspective (Author: 2019)

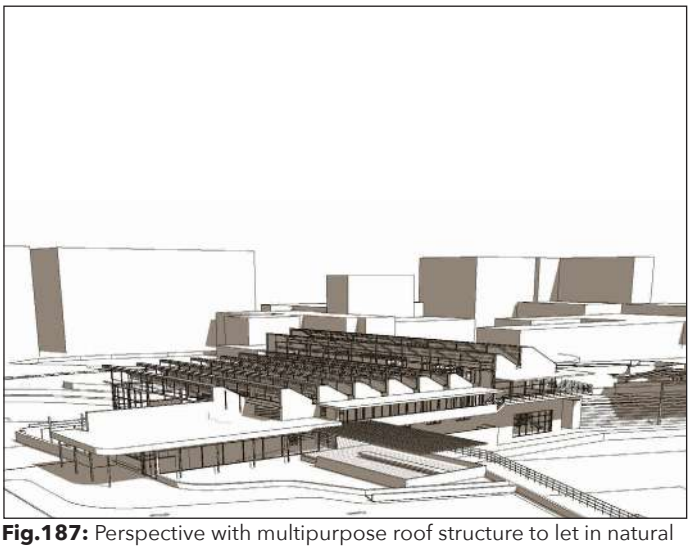


Fig.187: Perspective with multipurpose roof structure to let in natural light (Author: 2019)

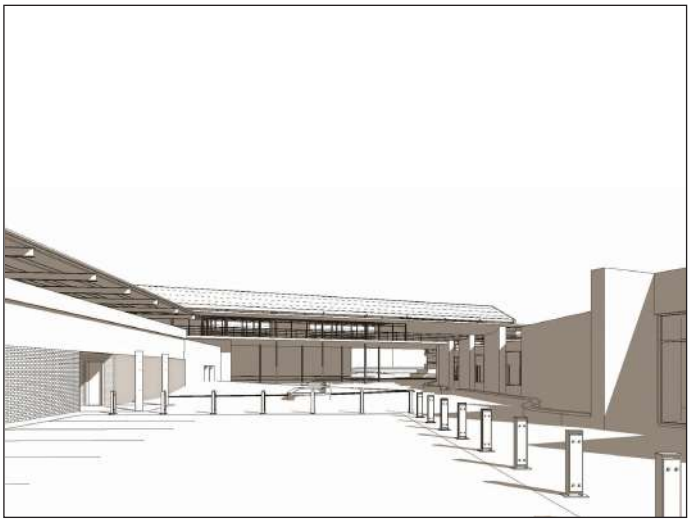


Fig.185: Accommodation and gym public circulation (Author: 2019)

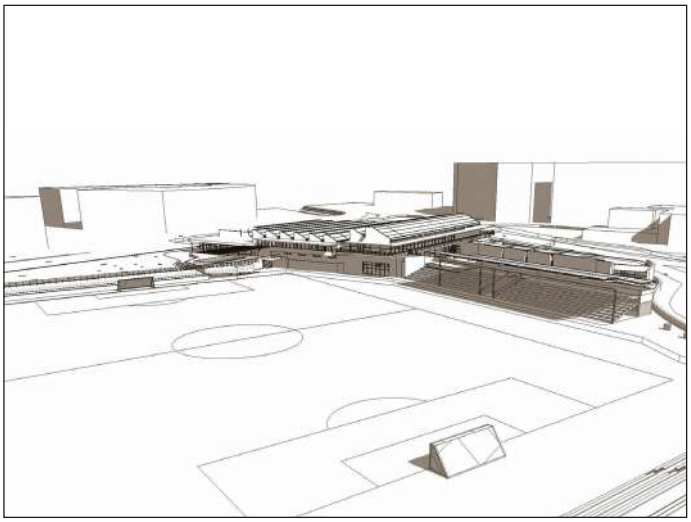


Fig.188: Multipurpose sports centre, gym, existing grandstand and sports field (Author: 2019)

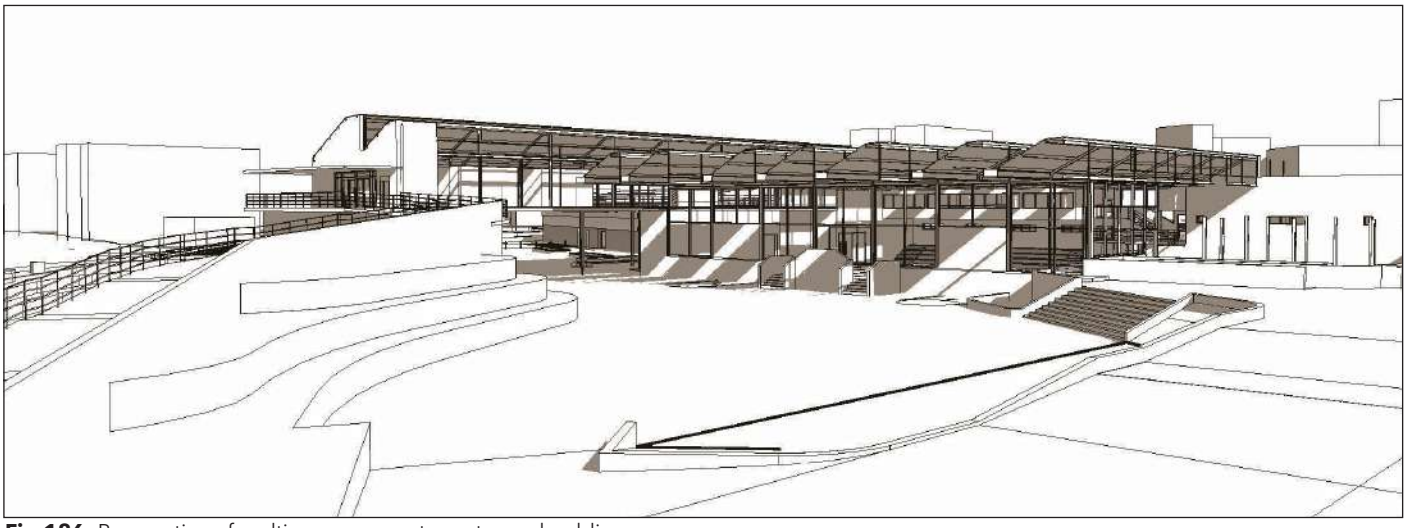


Fig.186: Perspective of multipurpose sports centre and public interaction area (Author: 2019)

Fig.189: The Caledonian Stadium soccer field (Author, 2019)

6. TECHNIFICATION

Structure, Materiality & Systems

This chapter explore's the technification of the design. Firstly, the technical approach is introduced, and how that is implemented into the different levels of structure of the design and how that can translate into the materiality. Lastly, the environmental impact of the design is assessed has and how systems and strategies can minimise the impact.

6.1 TECHNICAL APPROACH

The technical approach is directly influenced by the two most important aspects of the design. That being the contextual and the programmatic use. These are expressed by the material contextual response, the purpose and role of the material programmatically and how that then translates back to the relationship between the design, program and user.

Due to the Caledonian Stadium's heritage includes that the building looks to mediate new sports facilities by responding to the existing fabric by means of material use and form. The programmatic use requires a durable and flexible open ground floor plane, the roof structure is there to enhance not only the indoor condition, but also uses a multipurpose structure that offers its structure to improve the buildings efficiency and impact on its context.

The building's public accessibility requires the edges of the building to open up to the public during the day. It welcomes users around and into the space. The structure is exposed on the exterior to lighten the edges, while inside it looks to focus more on the use of the space. The structure of the building seeks to become multifunctional and it supports the building. The structure can engage the user and the program and it is adaptable to use.

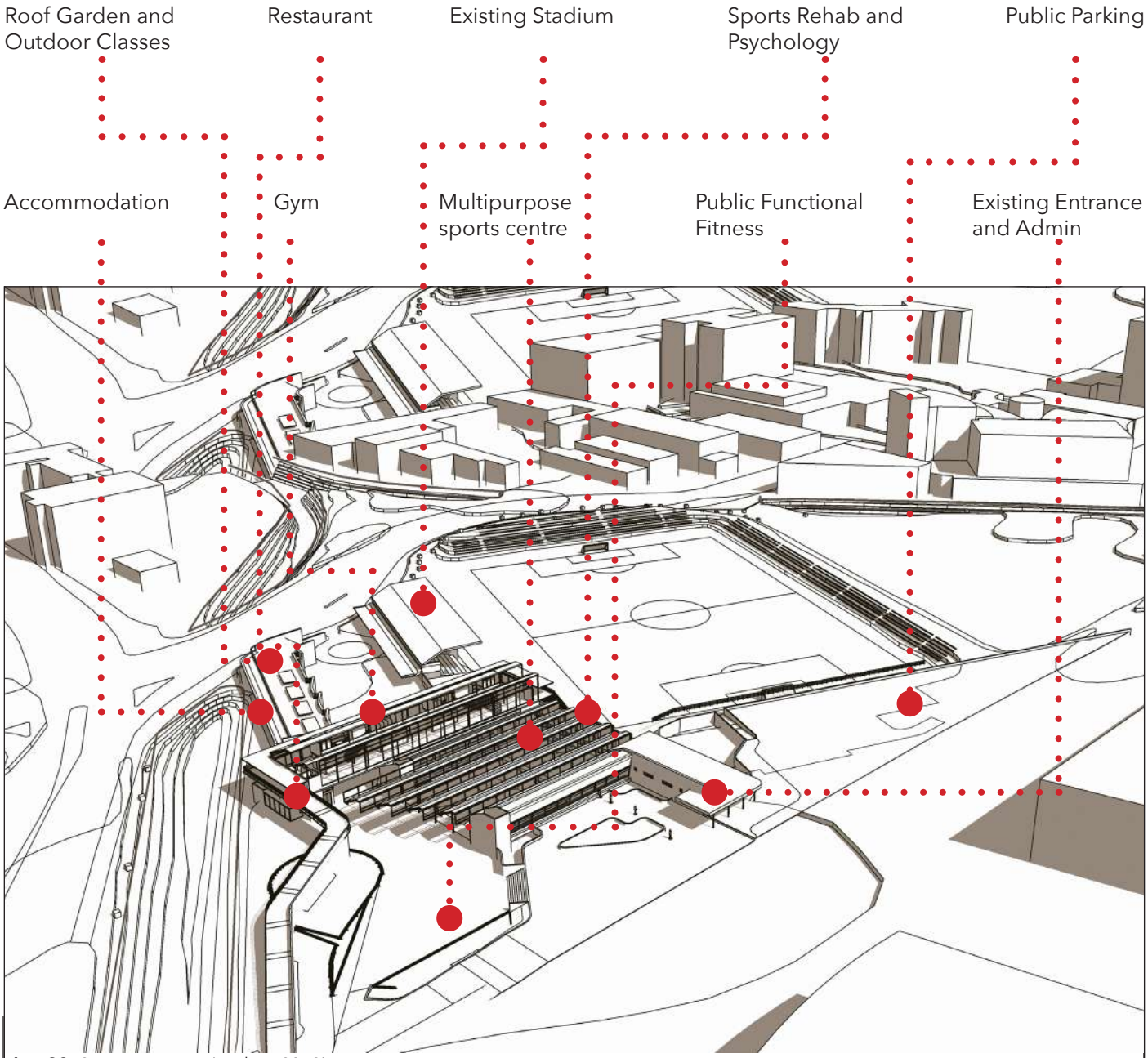
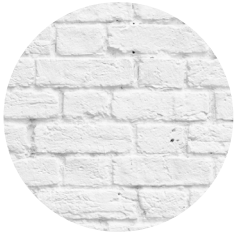


Fig.190: Site perspective (Author: 2019)

6.2 ACCOMMODATION TECHNICAL RESPONSE

6.2.1 MATERIALITY

Exterior Walls



Interior Walls

Interior Floors

Exterior Floors

The material used for the accommodation has been influenced from its context, referring to the concrete Apies River channel. It is used to respect the existing condition and use the stereotomic mass to direct views and create privacy throughout the accommodation. The public circulation route is used for direct movement.

EXTERNAL WALLS:
230mm reinforced tinted concrete with a textured shutter board board off-shutter finish.

INTERNAL WALLS:
230mm clay stock bricks, joints struck flush and finished with blockbrush applied cement slurry bag-wash finish and painted white - acrylic PVA.

FLOORS:
Circulaton passage - Polished grinded concrete (stage 5 grinding for matt non-slip finish) finished with water-based Pro Seal 896 matt sealer.

14mm strand woven Bamboo timber Flooring - click mechanism floating floor on 4mm foam underlay (as per Bamboo Warehouse).

Recycled bamboo composite timber decking (Bamboo Warehouse) secured by secret-fix to SA Pine sub-structure; all H3 CCA treated. Sub-structure fixed between masonry walls and/or salina gumpole posts. All sub-structure elements are secured with 10mm Handibar treaded rod.

ROOF COVERING:
255mm reinforced concrete slab, with lightweight Pratley Pearl insulation screed laid with falls to Fulbore rainwater outlets. Concrete roof waterproofed with 4mm Derbigum torch-on waterproofing membrane, complete with 100mm high 45 degree chamfer fillets at perimeter parapet skirtings.

Recycled bamboo composite timber decking (Bamboo Warehouse) on purpose
made SA Pine subframe loose laid over screeded roof with rubber pads to protect waterproofing.

170mm reinforced concrete slab herb planters finished with 100mm expanded polystyrene, 50mm screed with 75mm fillets on ends. One layer of 4mm Berbigum torch-on waterproofing membrane torch on with 75mm side laps and 100mm end laps, with falls to Fulbore. Water proofing protected by Kaytech cuspated sheet

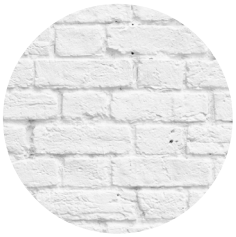
and a woven synthetic sheet. Finished with non-woven continuous needle punched polyester geotextile with 150mm minimum side laps.

INTERNAL PARTITION WALLS:
115mm clay stock bricks, joints struck flush and finished with blockbrush applied cement slurry bag-wash finish and painted white - acrylic PVA.

Double glazed aluminium windows and sliding doors (Low-E glazing for thermal protection due to west orientation) powder coated dark charcoal. All glazing as per SANS 10400 part N.

CEILING:
12,5mm Rhinoboard suspended ceilings, fixed to Donn T37K Main Tees and Donn T32K Cross Tees grid suspended from concrete roof slab, with 50mm taped joints in preparation for Rhinolite skim coat. Sand to smooth and even appearance and finish with primer and 2 coats acrylic PVA, colour – White.


Roof Covering


Partition walls


Glazing


Ceilings

6.3 GYM TECHNICAL RESPONSE

6.3.1 MATERIALITY

The material use and response of the gym is influenced by the purpose of the gym being a link between the accommodation and multipurpose sports centre. It seeks to be a light bridge that allows movement within and below the space. It needs to be open to allow natural light into the space and show movement from the outside and allow views from the inside.

Exterior Walls & Internal Walls

Interior Floors

Roof Covering

Glazing and Aluminium

Ceilings

EXTERNAL WALLS:
230mm clay stock bricks with 13mm smooth cement mortar plaster (1:4) and acrylic PVA finish.

INTERNAL WALLS:
230mm clay stock bricks with 13mm smooth cement mortar plaster (1:4) and acrylic PVA finish.

FLOORS:
255mm reinforced concrete floor slab (to structural engineer).

Circulation passage - Polish grinded concrete (stage 5 grinding for matt non-slip finish) finished with water-based Pro Seal 896 matt sealer.

10mm Sportec rubber floor glued to smooth screed with PU adhesive (minimise sound and cushion impact from weights).

ROOF COVERING:
Brownbuilt roof sheeting, Chromadek colour dark dolphin, fixed to 150 x 75 x 20mm steel lipped channel at 1500mm centres. 135mm Starlite insulation laid inbetween purlins.

INTERNAL PARTITION WALLS:
115mm clay stock bricks with 13mm smooth cement mortar plaster (1:4) and acrylic PVA finish.

Glazed aluminium shopfront windows and doors, powder coated dark charcoal. All glazing as per SANS 10400 part N.

CEILING:
Gyptone acoustic suspended ceilings, colour - white, fixed to Donn T38V Main Tees and Donn T37V Cross Tees grid suspended from roof structure. Painted white with acrylic PVA.

6.4 MULTIPURPOSE SPORTS CENTRE TECHNICAL RESPONSE

6.4.1 MATERIALITY

The material used a had big influence on how the multipurpose sports centre would be used. Highly durable materials were used to and maximise the natural light that is reflected into the space. Referring back to the context, the use of patterned concrete relates to the existing stadium masonry and incorporates the demolished club house masonry into the seating of the stands to create a new sense of ownership in the space.

EXTERNAL WALLS:
460mm reinforced tinted concrete with a textured shutter board board off-shutter finish.

INTERNAL WALLS:
230mm clay stock bricks, joints struck flush and finished with blockbrush applied cement slurry bag-wash finish and painted white - acrylic PVA.

230mm recycled brick (from clubhouse demolition, with recessed joints.

FLOORS:
Circulation passage - Polish grinded concrete (stage 5 grinding for matt non-slip finish) finished with water-based Pro Seal 896 matt sealer.

Synthetic turf pitch glued to smooth screed on 170mm reinforced concrete slab (to structural engineer).

14mm strand woven Bamboo timber Flooring - click mechanism floating floor on 4mm foam underlay (as per Bamboo Warehouse).

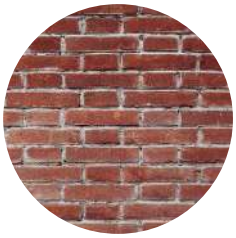
ROOF COVERING:
Brownbuilt roof sheeting, Chromadek colour dark dolphin, fixed to 150 x 75 x 20mm steel lipped channel at 1500mm centres. 135mm Starlite insulation laid inbetween purlins.

INTERNAL PARTITION WALLS:
230mm clay stock bricks, joints struck flush and finished with blockbrush applied cement slurry bag-wash finish and painted white - acrylic PVA.

Glazed aluminium shopfront windows and doors powder coated dark charcoal. All glazing as per SANS 10400 part N.

CEILING:
Gyptone acoustic suspended ceilings, colour - white, fixed to Donn T38V Main Tees and Donn T37V Cross Tees grid suspended from roof structure.

Exterior Walls



Internal Walls

Interior Floors

Ceilings

Roof Covering

Glazing and Aluminium

6.4.2STRUCTURE

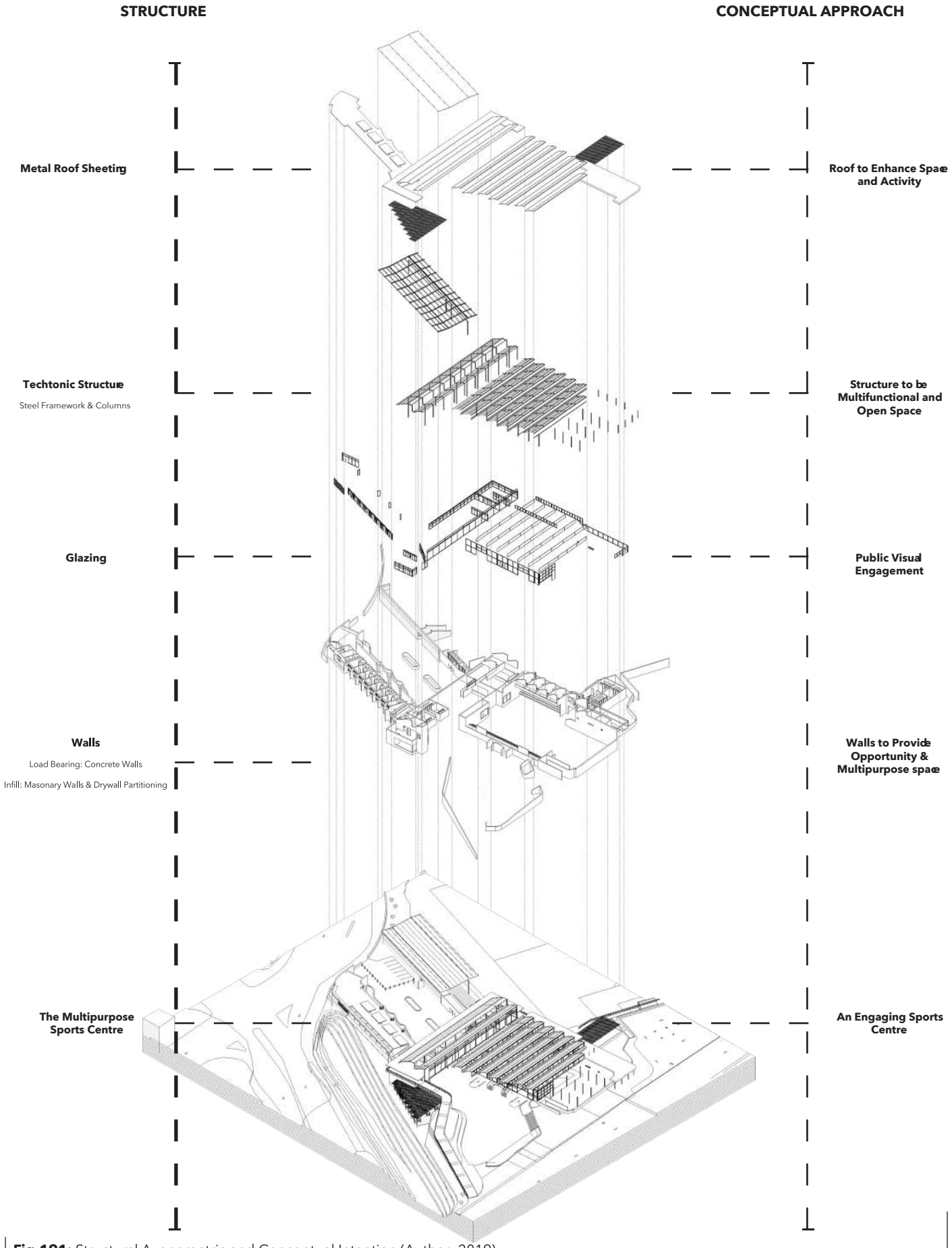


Fig.191: Structural Axonometric and Conceptual Intention (Author: 2019)

6.5 SERVICES, SYSTEMS AND ENVIRONMENTAL

6.5.1 LIGHTING

It is crucial to have the right lighting conditions in an indoor sports facility, by allowing enough natural light into the space you can minimise the amount of electricity used to create the right lighting conditions.

Minimum Lighting requirements for each sport (Sport England: 2012):

- Indoor cricket: 750 lux
- Basketball: 500 lux
- Netball: 750 lux
- Indoor Soccer: 300 lux
- Gym/fitness centre: 200 - 300 lux
- Outdoor Sports: 150 - 300 lux

The multipurpose indoor sports facility has enough space for various sports. Cricket requires the highest amount of 750 lux throughout the space. The roof structures open south and it allows for indirect light onto the indoor field.

Lighting is to be tested through Sefaira and glazing manipulated to achieve the correct lighting conditions in the multipurpose sports centre.

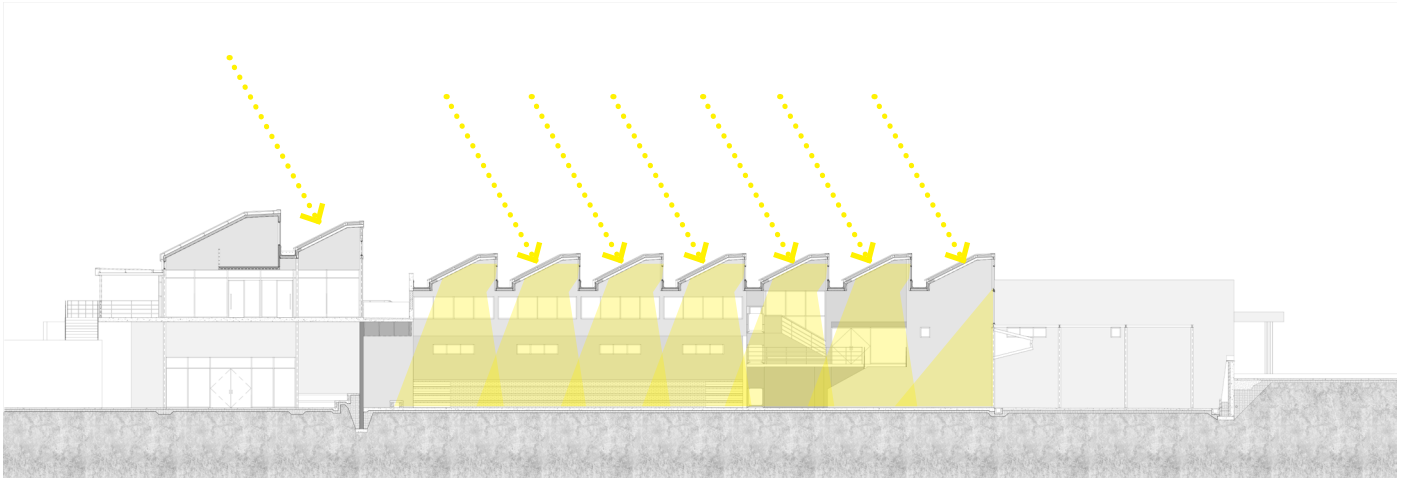
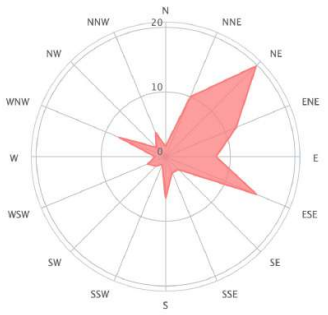


Fig.192: Natural Lighting into Multipurpose Sports Centre (Author: 2019)

6.5.2VENTILATION

The gym and multipurpose indoor sports facility will accommodate highly concentrated numbers of users at specific times due to sporting occasions and gaming times. These spaces will need to be ventilated to allow for comfort while performing physical activities.



6.5.3Multipurpose Indoor Sports Centre and Gym

Duding the course of the day the multipurpose indoor sports centre will be open to encourage public access. This will also allow for natural ventilation. Cool air will naturally flow from the southern opening, and warm air will be extracted out the top of the roof structure. Due to safety concerns, the building will be closed at night; this will require another ventilation solution. Passive geothermal cooling will not be sufficient in such a large space because large amounts of air need to move through it. A geothermal HVAC system is proposed to minimise the energy used by using the constant earth temperature to cool the air down. Less energy is used to cool it down to the correct temperature.

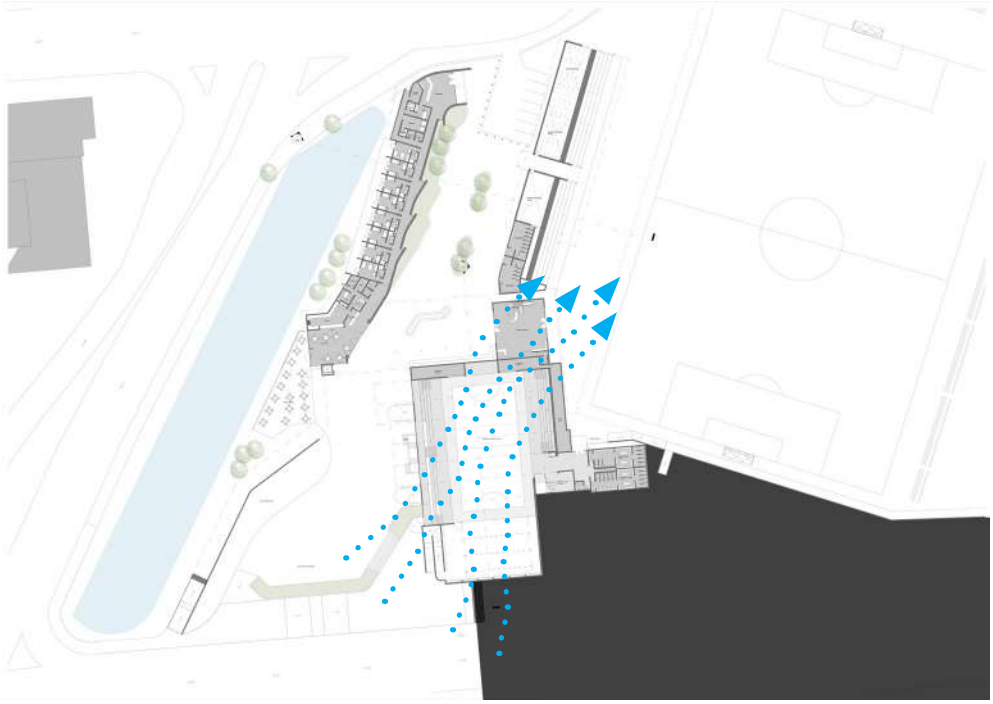


Fig.194: Plan showing air movement through plan (Author: 2019)

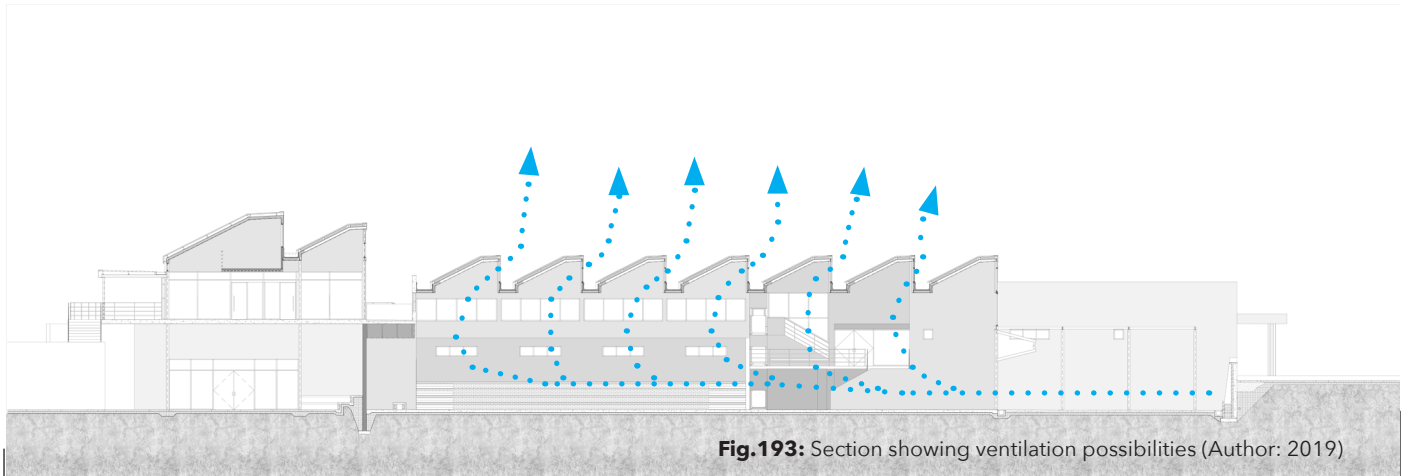


Fig.193: Section showing ventilation possibilities (Author: 2019)

6.5.4 WATER

With the sports field being used throughout the year, the water usage will be high. To minimise the use of water and keep the sports grounds in good condition, rainwater and greywater is going to be harvested for irrigation and domestic use (toilet flushing only). The rainwater is going to be collected from the roofs and paving and stored in tanks. The water will pass through a first flush system to get rid of any debris and then it will be stored in tanks on the eastern side of the sports centre.

AREA CALCULATIONS

Catchment	Area, A (m²)	Runoff Coefficient,	
		C	C (weighted)
Roof	2546	0,85	0,85
Paving	0	0,8	0,00
TOTAL	2546		0,85

RAINWATER YIELD CALCULATION

Month	Ave. rainfall, P (m)	Yield (m³) (Yield = PxAxC)
January	0,14	302,97
February	0,08	173,13
March	0,08	173,13
April	0,04	86,56
May	0,01	21,64
June	0,01	21,64
July	0,01	21,64
August	0,01	21,64
September	0,03	64,92
October	0,06	129,85
November	0,1	216,41
December	0,09	194,77
ANNUAL AVE.	0,674	1428,31

TOTAL DEMAND

Month	Total demand (m³/month)
January	67,6
February	64,0
March	67,6
April	66,4
May	67,6
June	66,4
July	67,6
August	67,6
September	66,4
October	67,6
November	66,4
December	67,6
ANNUAL TOTAL	802,4

IRRIGATION DEMAND

Month	Planting area (m²)	Irr. depth / week (m)	Irr. depth / month (m)	Irrigation demand (m³/month)
January	7592	0,001	0,004	30,368
February	7592	0,001	0,004	30,368
March	7592	0,001	0,004	30,368
April	7592	0,001	0,004	30,368
May	7592	0,001	0,004	30,368
June	7592	0,001	0,004	30,368
July	7592	0,001	0,004	30,368
August	7592	0,001	0,004	30,368
September	7592	0,001	0,004	30,368
October	7592	0,001	0,004	30,368
November	7592	0,001	0,004	30,368
December	7592	0,001	0,004	30,368
			ANNUAL TOTAL	364,416

ALT DEMAND

Month	Entity (Persons ?)	Entity demand / day (l)	Alt demand (m³/month)
January	75	16	37,2
February	75	16	33,6
March	75	16	37,2
April	75	16	36
May	75	16	37,2
June	75	16	36
July	75	16	37,2
August	75	16	37,2
September	75	16	36
October	75	16	37,2
November	75	16	36
December	75	16	37,2
		ANNUAL TOTAL	438

WATER BUDGET (ACCUMALATIVE)

Month	Yield (m³)	Demand (m³)	Monthly balance	Vol. water in tank (m³)
January	303,0	67,6	235,4	512,6
February	173,1	64,0	109,2	621,8
March	173,1	67,6	105,6	727,4
April	86,6	66,4	20,2	747,6
May	21,6	67,6	-45,9	701,6
June	21,6	66,4	-44,7	656,9
July	21,6	67,6	-45,9	611,0
August	21,6	67,6	-45,9	565,1
September	64,9	66,4	-1,4	563,6
October	129,8	67,6	62,3	0,0
November	216,4	66,4	150,0	150,0
December	194,8	67,6	127,2	277,2
ANNUAL AVE.	1 428,3	802,4		

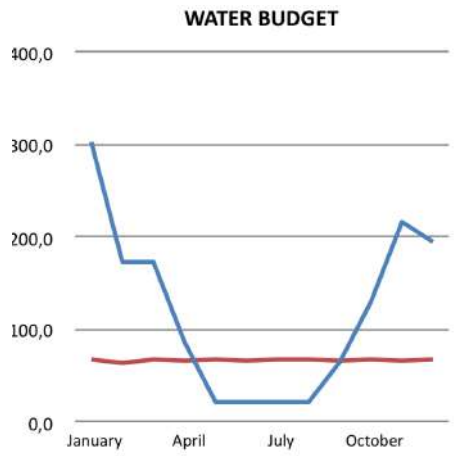


Fig.195: Water calculations (Author: 2019)

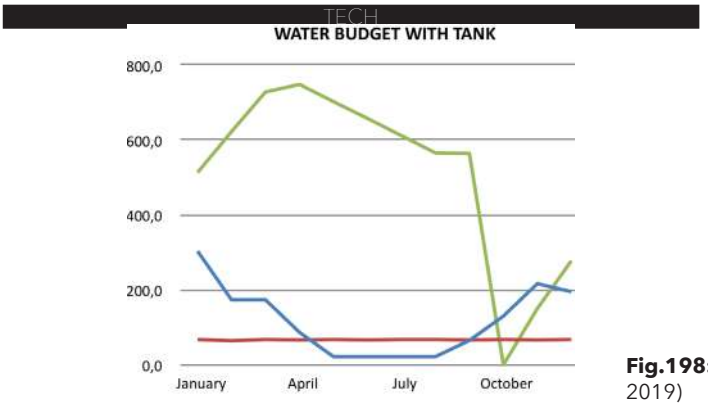
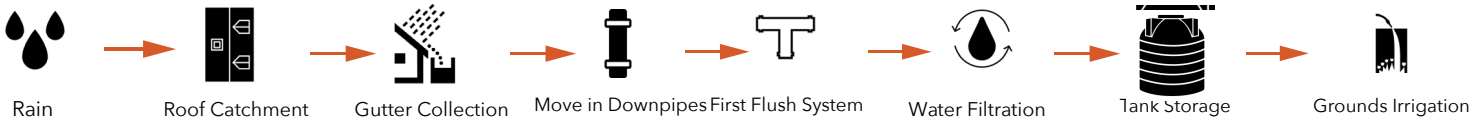


Fig.198: Process and supply (Author: 2019)



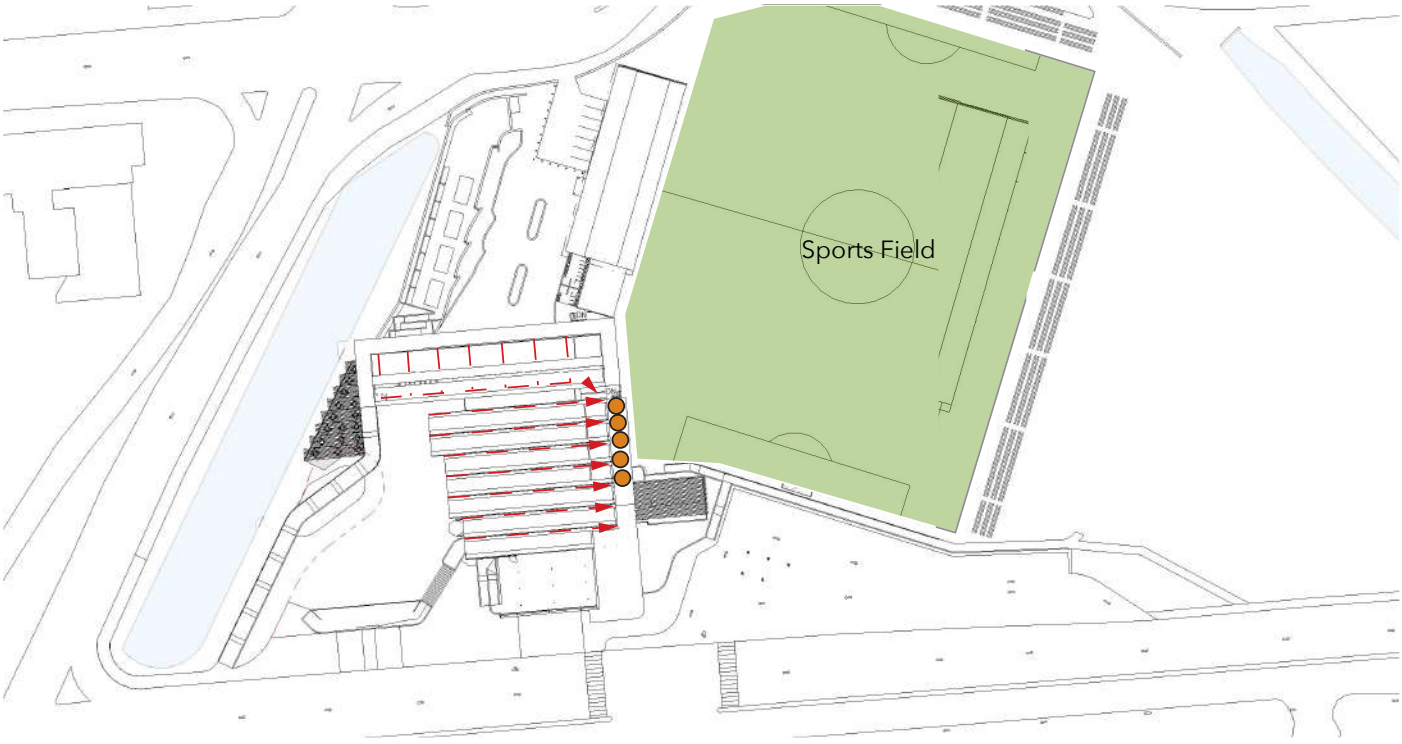


Fig.197: Water movement (Author: 2019)

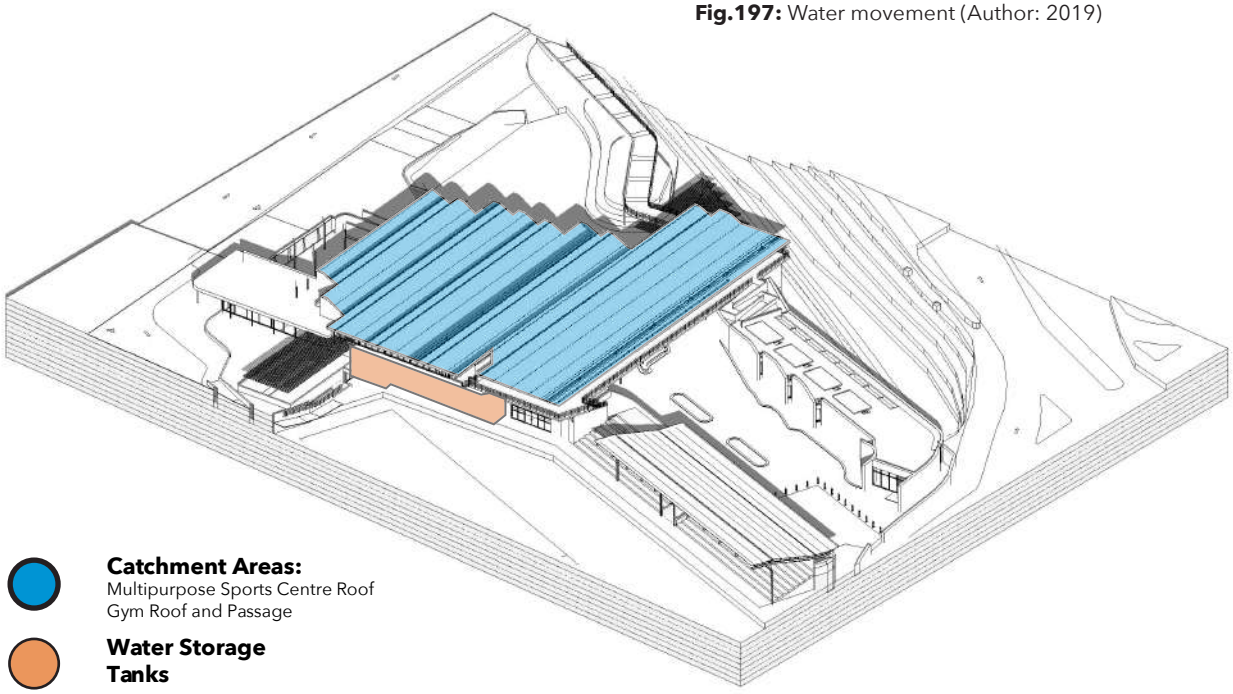


Fig.196: Catchment areas (Author: 2019)

6.5.5SOLAR

With the site being open to the public throughout the night, floodlights will be used around the building to allow for sports, physical activities and safety. It will use a lot of electricity. The roof slope above the multipurpose indoor sports facility allows for the correct angle for solar panels to be placed on. These panels can store the power throughout the day, then use it to light the grounds in the evening.

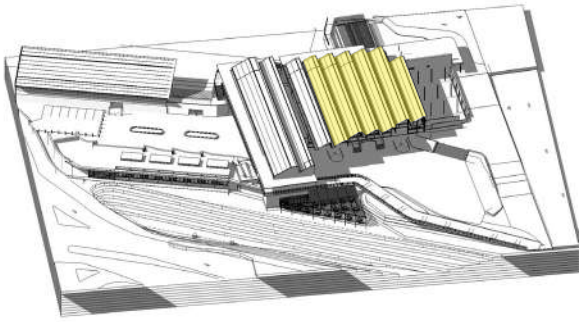


Fig.199: Summer Solstice (Author: 2019)

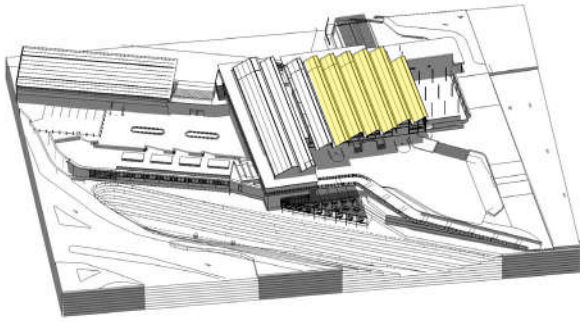


Fig.200: Winter Solstice (Author: 2019)

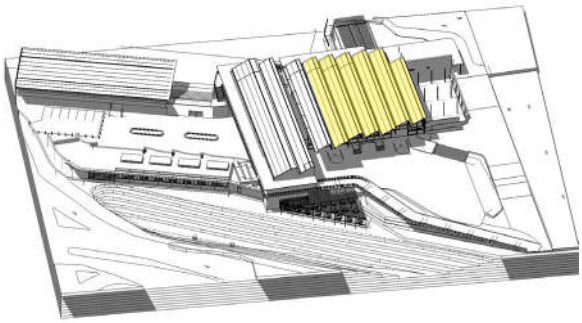


Fig.201: Spring Equinox (Author: 2019)

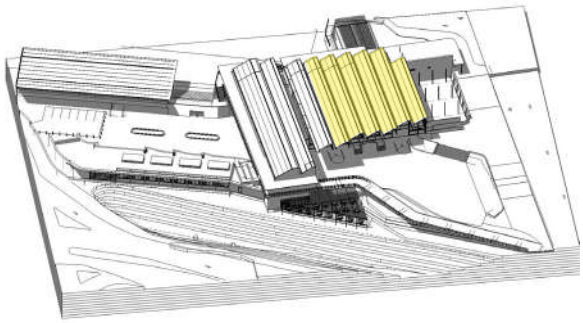
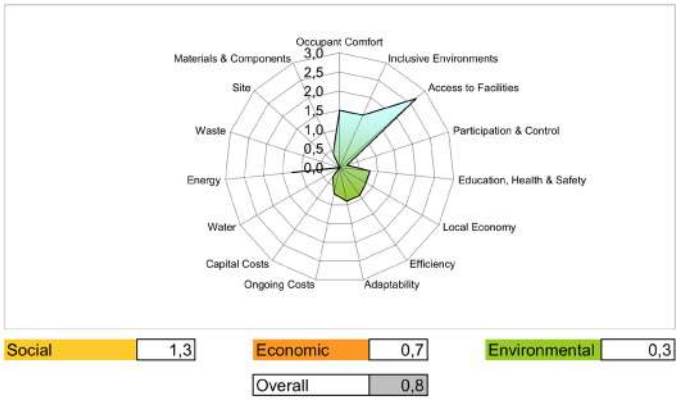


Fig.202: Fall Equinox (Author: 2019)

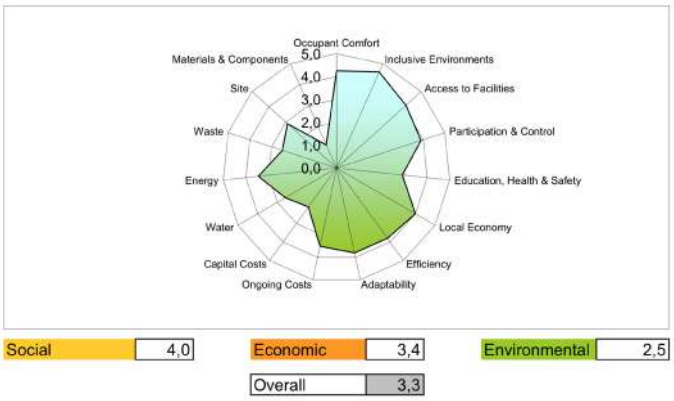
6.5.6 SBAT RATING

Before Intervention



Social	1,3	Economic	0,7	Environmental	0,3
		Overall	0,8		

After Intervention



Social	4,0	Economic	3,4	Environmental	2,5
		Overall	3,3		

Fig.203: SBAT outcome graphs (Author: 2019)

6.6 SECTION AND DETAIL EXPLORATION

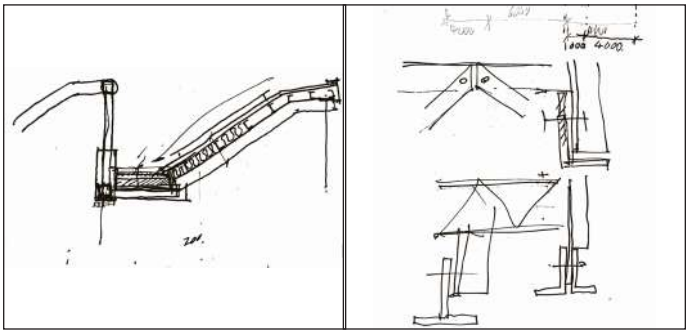


Fig.204: Multipurpose sports centre gutter detailing and connections (Author: 2019)

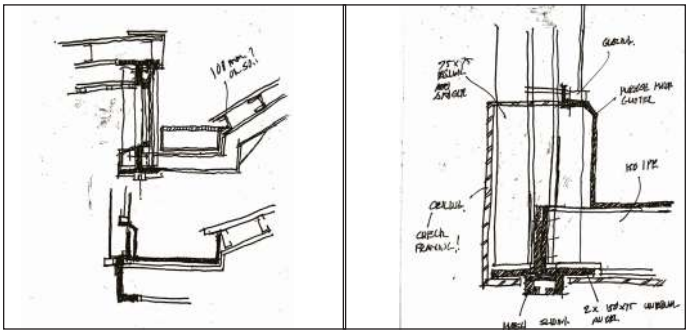


Fig.209: Multipurpose sports centre gutter and ceiling detailing (Author: 2019)

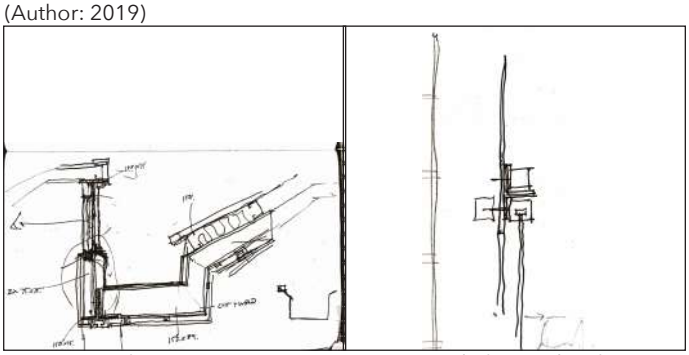


Fig.205: Multipurpose sports centre gutter and glazing detailing (Author: 2019)

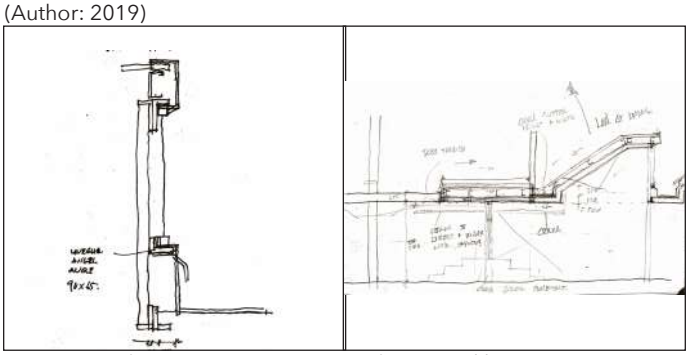


Fig.210: Multipurpose sports centre glazing and beam connection detailing (Author: 2019)

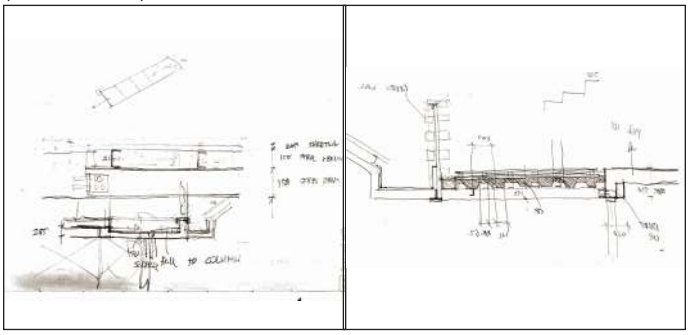


Fig.206: Gym decking and composite flooring detailing (Author: 2019)

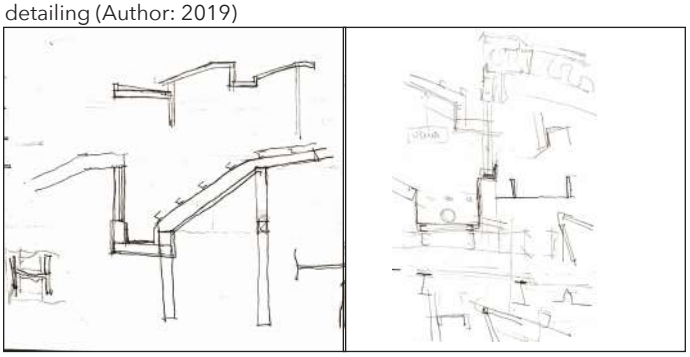


Fig.211: Gym roof structure, gutter and flashing detailing (Author: 2019)

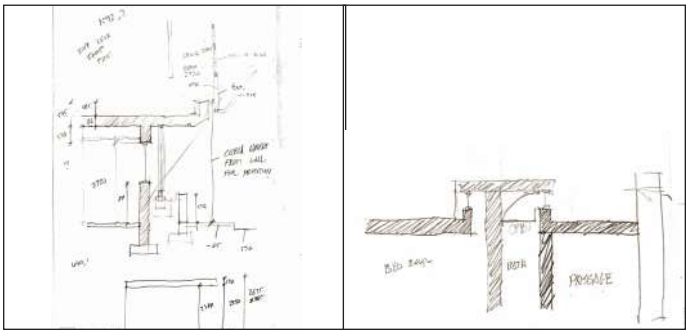


Fig.207: Entrance facade detailing and accommodation light detailing (Author: 2019)

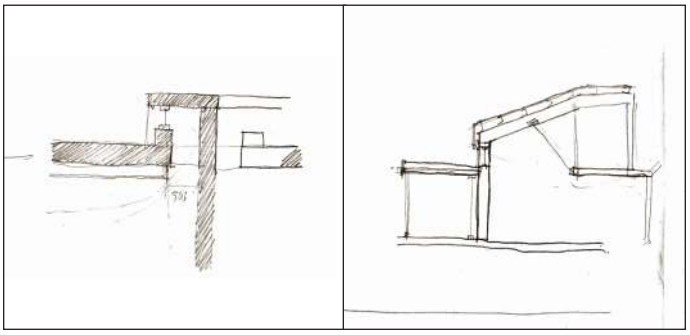


Fig.212: Accommodation light and gym mezzenine structure (Author: 2019)

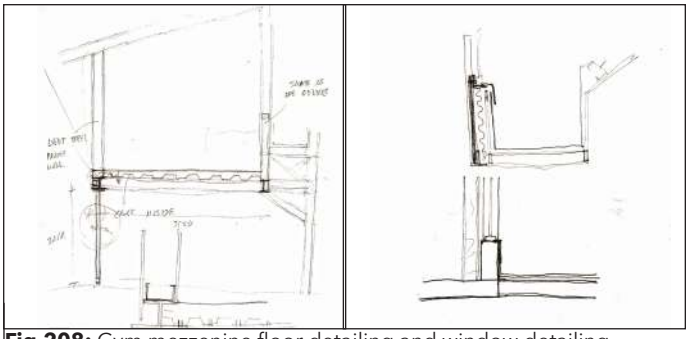


Fig.208: Gym mezzenine floor detailing and window detailing (Author: 2019)

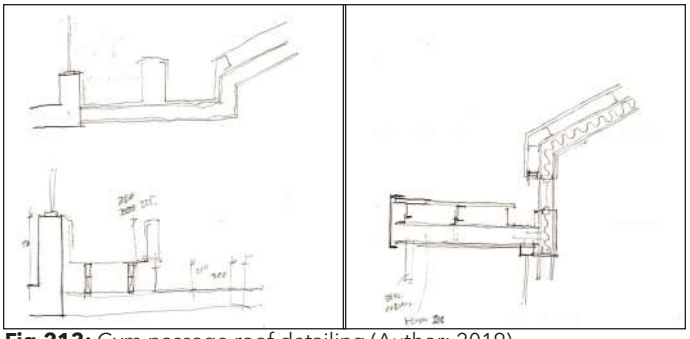


Fig.213: Gym passage roof detailing (Author: 2019)

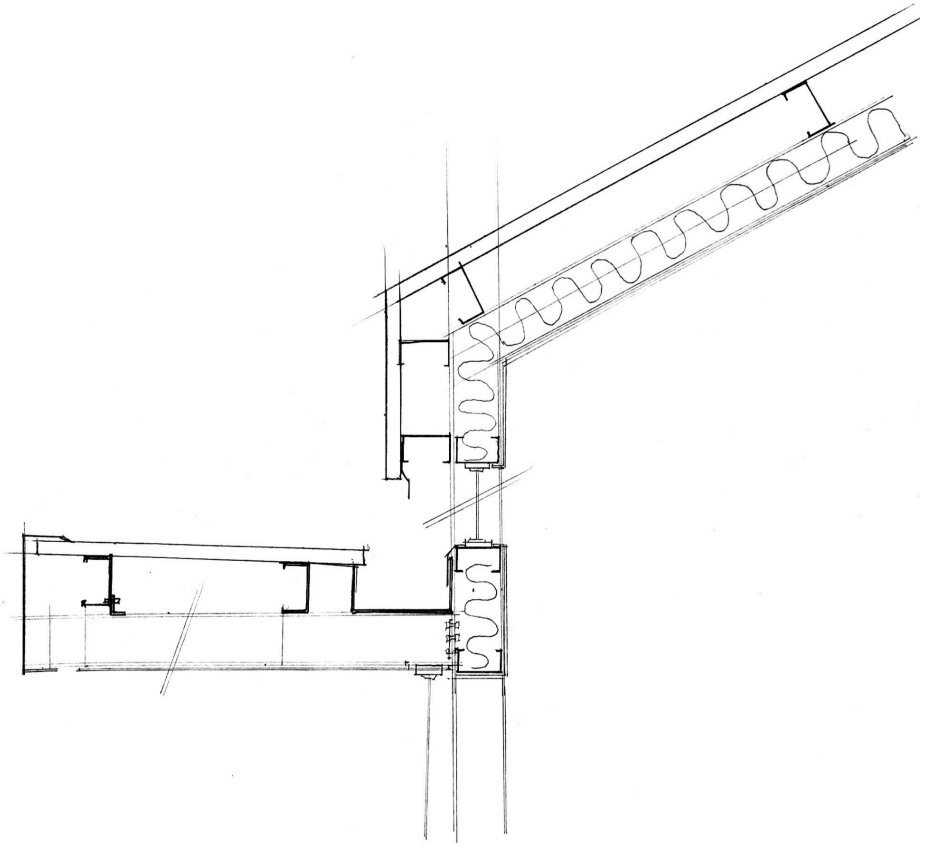


Fig.214: Gym passage detail (Author: 2019)

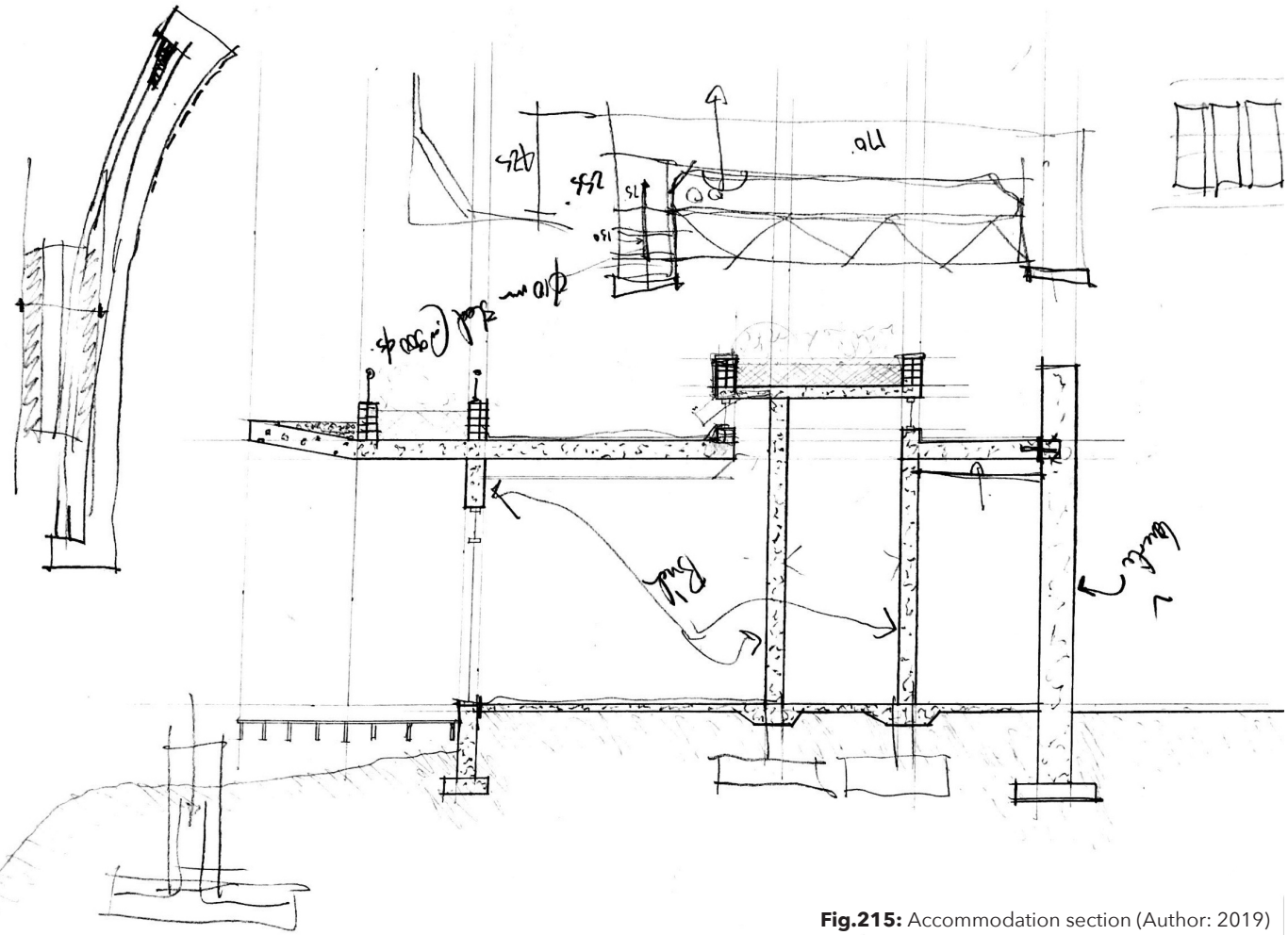
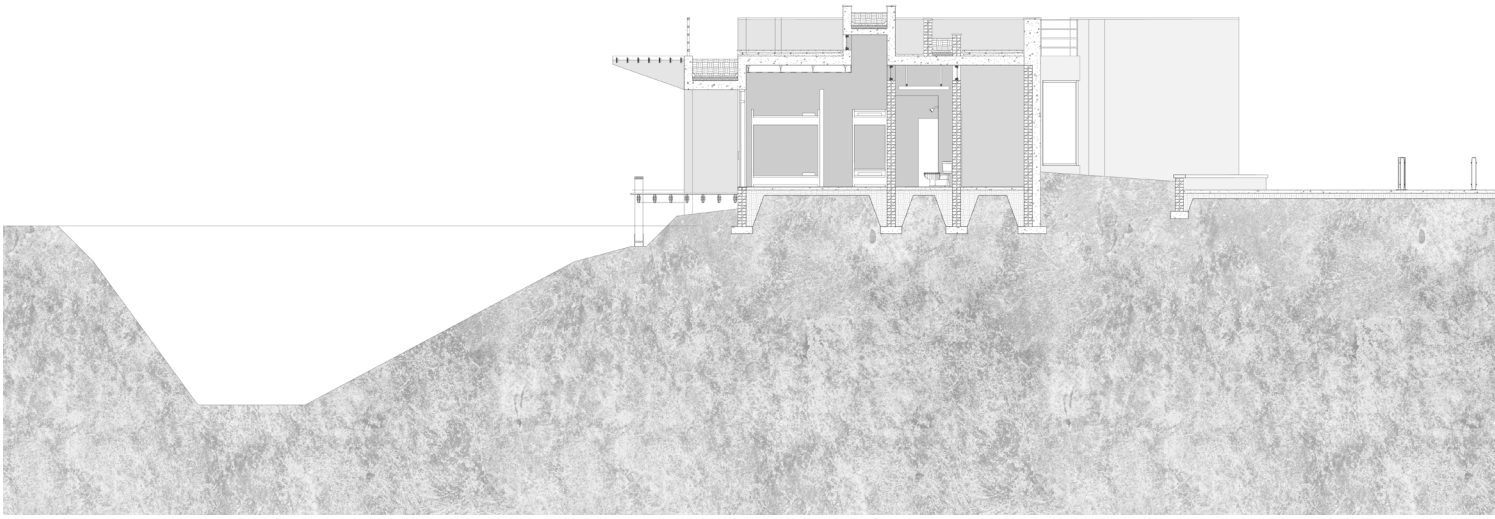


Fig.215: Accommodation section (Author: 2019)



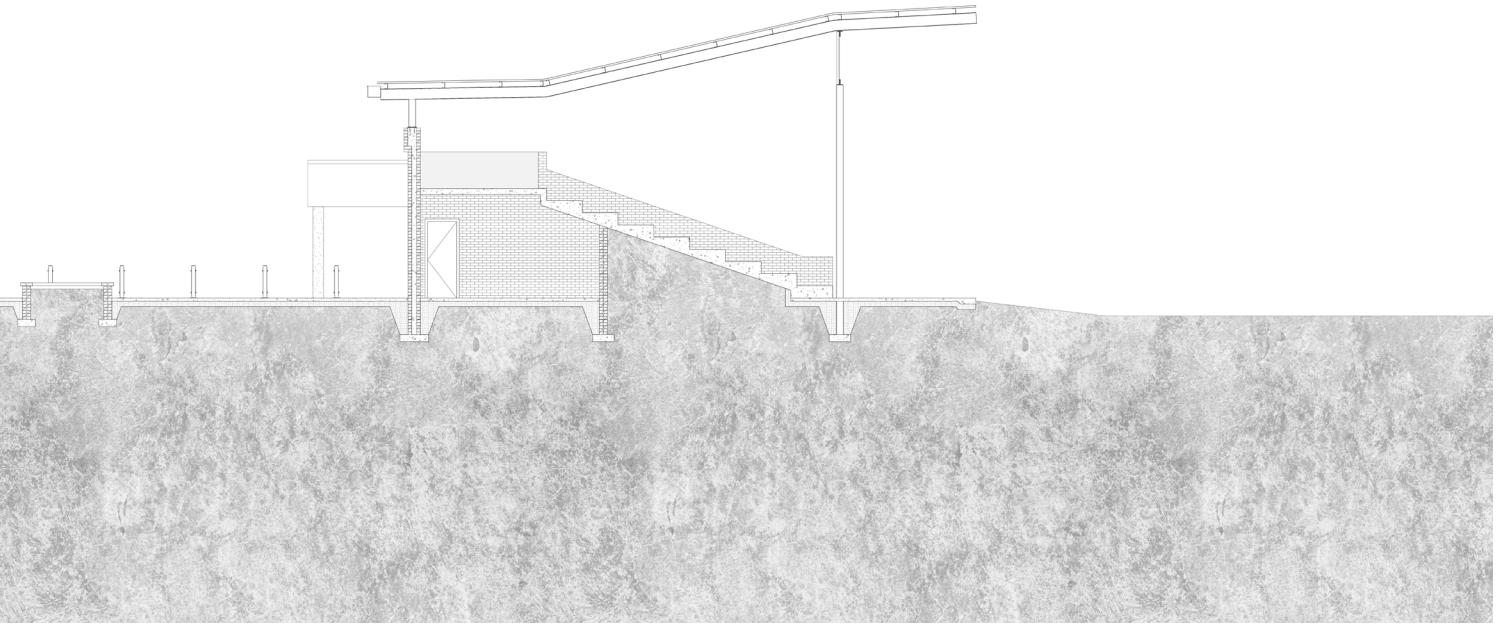


Fig.217: Accommodation and Grandstand section (Author: 2019)

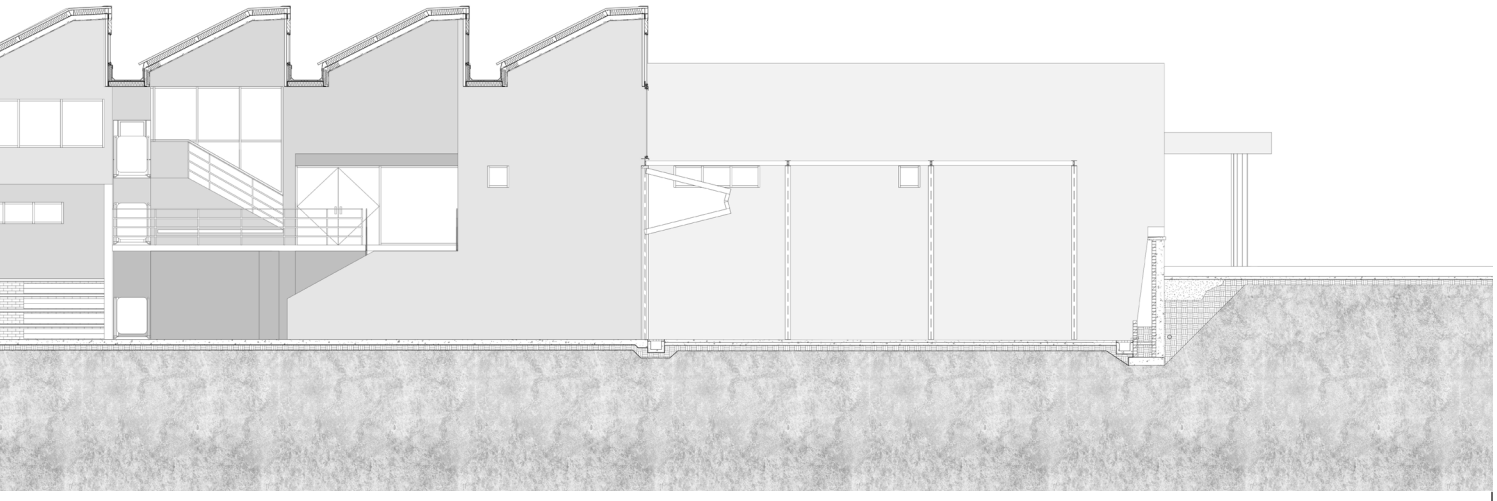


Fig.216: Multipurpose sports centre section (Author: 2019)

7. CONCLUSION

The intention of this dissertation investigates current sports system and facilities in South Africa to determine if they are providing the necessary spaces in which to develop a better sports and recreational future. This was expressed in the research questions challenging the current system of urban spaces throughout Pretoria, sports typologies and how the public is able to interact with such sports and recreational facilities. A new typology was developed to deal with the boundaries set in place in a urban public environment.

The dissertation was framed by understanding the larger system, urban, programmatic and architectural issues. It also proposes intentions to overcome those issues. The program and site was considered by the main informants of the design, thus a comprehensive understanding of the context and what could be implemented programmatically gave the design direction to cater for different people to use and benefit from the sports and recreational facility.

The facility and program that was proposed is relevant due to the sports issues, opportunities and boundaries the public are faced with. This is because it creates a link in a broken sports system in order to give equal opportunity to a healthier, physical, social interactive and sporting public. Such facilities could be introduced and funded by the government and high-performance centres to relieve the current strain on public spaces and available sports facilities. The new architectural typology looks to a new facility that is not only mono-functional for specific occasions, but rather a facility and structure that is mono-functional for various programs at different times throughout the day. While the structure looks to improve its context, it creates a place in the city for the public to use for a holistic future.

In conclusion this dissertation strives to an architecture that doesn't only facilitate a space, but rather an engaging architectural structure that creates a place to engage with, with regards to site, program, user and the holistic future for development.

Fig 2.13: The Regional Stadium Seating (Author)

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9. APPENDICES

9.1 GENERAL ETHICS CLEARANCE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

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Dear All

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Approval is granted for the application with reference number that appears above.

1. This means that the research project entitled "*Masters professional dissertation in architecture, landscape architecture and interior architecture*" has been approved as submitted. It is important to note what approval implies. This is expanded on in the points that follow.

2. This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Research Ethics Committee.

3. If action is taken beyond the approved application, approval is withdrawn automatically.

4. According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

5. The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof JJ Hanekom
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

9.2 ACADEMIC ARTICLE

Thomas Hattingh

Engaging Architectural Activity

A proposal for a new sports and recreational system and an engaging architecture to develop the current sports condition.

In our still-evolving democracy in South Africa where sport has managed to bring the nation together, there is still an imbalance of opportunity and facilities available to all. Through the push towards professionalism in sport, facilities have developed into high-performance centres. Those typologies have generally become internally focussed facilities, ignoring the larger picture of a holistic sports development system for a better future. They have also become isolated from their context and inaccessible from the public. Sports and recreation spaces throughout the city should allow for various levels of engagement from public to athletes at all times throughout the day.

The Caledonian Sports grounds have a rich heritage of sports, recreation and development in not only Pretoria but also the country. Allowing the opportunity to give a new purpose for the site and propose a new “step-up” facility/system that can enable sports and recreational development for the future.

The intention for this article is to challenge current mono-functional sports facility typologies and create a public sports facility that engages all users and creates multi-functional spaces that are supported by an architectural structure to maximise the impact the design has on the user and the site.

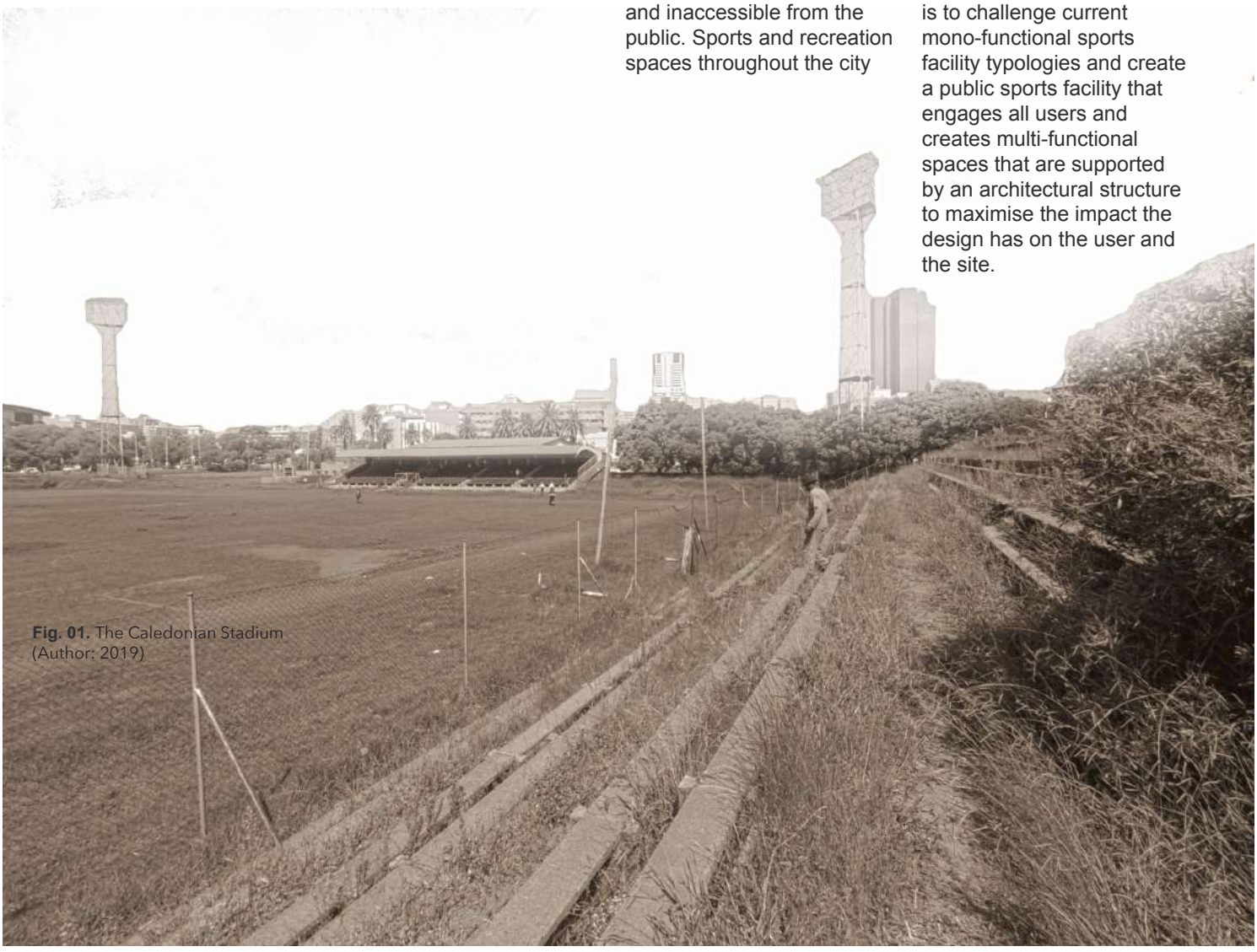


Fig. 01. The Caledonian Stadium (Author: 2019)

BACKGROUND OF SPORTS IN SOUTH AFRICA

The development of sports and recreation has been directly influenced through politics throughout South Africa's history. This includes pre-apartheid through to post-apartheid, with unequal opportunities been given to different races at different times through our South Africa's history.

Labuschagne (2016:86) notes that the timespan from 1894 - 1992 can be broken down into three periods which demonstrate particular effects on sports. It is because of the different levels of power/political engagement there were on different scales, such as provincial, clubs and elected individuals.

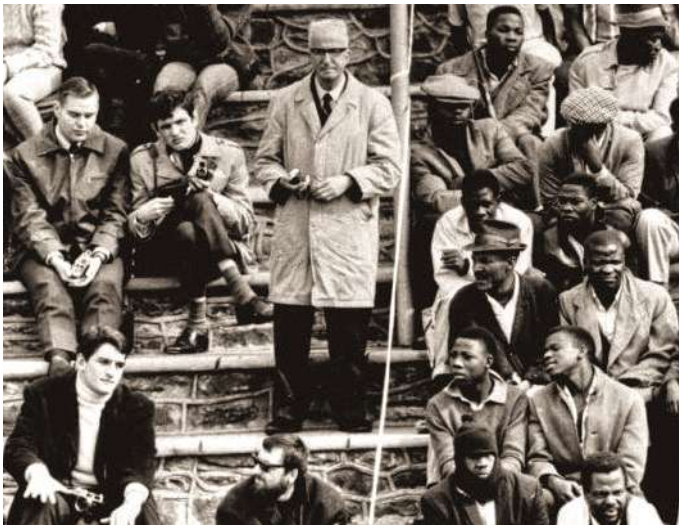
The first period 1894-1960 is seen as the birth of South African segregation, which had a moderate level of governmental influence regarding the regulation of segregation of races in sports. This was due to the power of sports and recreation was held between sports clubs, the national union and black clubs/ athletes (Labuschagne 2016:87). Segregation between different races was managed through an informal manner, by merely not allowing different races to compete with each other, but different races were allowed to be apart of "white" events. The turning point for South African sports was at the 1960 Olympic games where an all-white team was sent to participate in the event. This was from the statement from Senator Jan de Klerk, "South African custom is that within the boundaries of the Republic, whites and non-whites exercise their sport separately and this must be adhered to" (Labuschagne 2016:89). After that, the sports boycott against South Africa began by banning South Africa for the next few decades from participating in international sports competitions (Booth:1998). The ban of South Africa from international sports was a tool to attempt to the apartheid policies.

The second period 1960-1976 was the segregated nation (Labuschagne 2016:92), where the government became more directly involved with regulating sports throughout the country. There were laws set in place to enforce formal segregation between different races, through the forceful removal of communities to different areas there were little to no facilities available for the communities that were not white. During this era, the development of the sport in those areas seems to stagnate and causing some to emigrate overseas to be able to compete. It was a sad time for South African sports due to the years of not being able to compete internationally, resulting in sporting opportunities thus lost by generations.

The third period 1977-1992 showed a time where there was a slow change in the regulation of sports in South Africa. Sports throughout the country were not controlled by government national and provincial unions but rather softened to allowed greater access to facilities and opportunities for athletes throughout the country. As shown during the 1980s, the government removed all discrimination based on race to achieve a more rational and opened approach to sports and recreation. As seen by new policies set in place, "the Department of Sport will assist the local authorities to provide sports facilities for all population groups according to their needs" (Labuschagne 2016:99). During this time, the development of black athletes improved dramatically due to having access to facilities and events. By the end of 1992, the international ban was lifted on all sports.

It is clear that apartheid policies managed to divide the nation into those that have and have not. The opportunities and access to facilities have left the majority of the country in a deprived state that will take years to correct. During those periods (1894 - 1992) it also ruined the international image seen of South Africa as a sporting nation, an opportunity to be exploited by Nelson Mandela after 1994.

Fig. 02. Below Left; The South African Sports boycott (Sugier: 2019)
Fig. 03. Below Right; Apartheid Stands Segregation (Salbe: 2014)



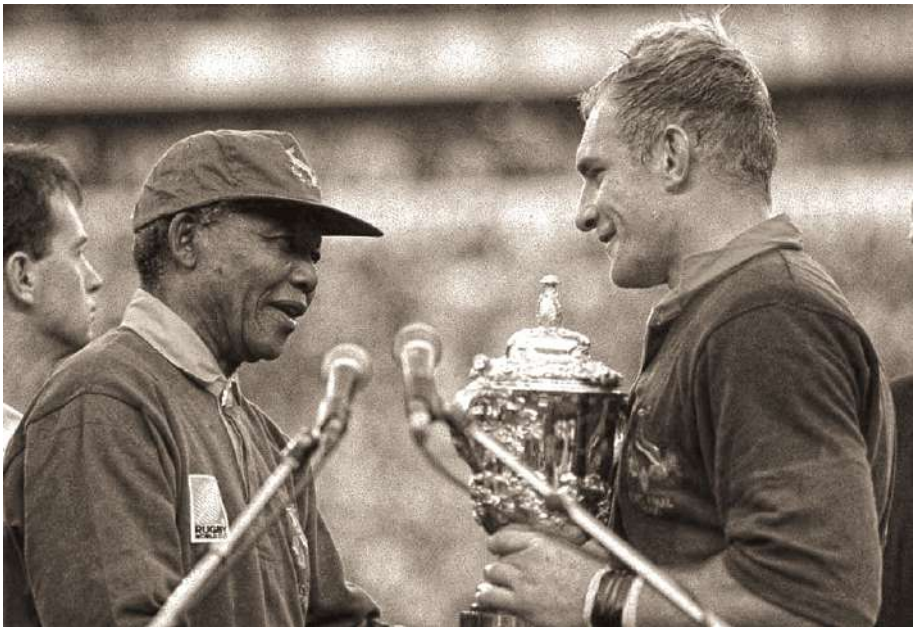


Fig. 04. Left; Nelson Mandela and Francois Pienaar holding the rugby world cup trophy (eNCA: 2019)
Fig. 05. Opposite Top Right; Current broken system (Author: 2019)
Fig. 06. Opposite Bottom Right; Proposed integrated system (Author: 2019)

SPORTS CAN CHANGE A NATION

"Sport has the power to change the world. It has the power to inspire. It has the power to unite people in a way that little else does. It speaks to the youth in a language they understand. Sport can create hope where once there was only despair. It is more powerful than government in breaking down racial barriers" Nelson Mandela (Busbee:2013).

After South Africa overcame apartheid, Nelson Mandela was elected the first black president. He had the vision to target the 1995 Rugby World Cup as a tool to unite the nation. Through TV coverage, it was the first time South Africa could show the rest of the world, that it could be the "rainbow nation" (Chappell: 2005). The Rugby World Cup soon became an example as to how such events could bring a nation together, shortly after South Africa won the 1996 Africa Cup of Nations for the first and last time, but for that brief period, all South African people were united behind one team.

With winning such an event, it can bring a nation together while hosting international events bring added benefits to the country. With hosting the Rugby World Cup most of the stadiums and infrastructure were in place, but with the worlds biggest sporting event the 2010 Soccer World Cup had other benefits of firstly bringing the nation together, but also all the new infrastructure built to upgrade areas around the country. There was an economic boost by creating jobs for the poor and foreign money coming into the country through tourism (Prinsloo:2010). The Soccer World Cup was a success for the country for how it was run, and how the country came together to host the event.

CURRENT STATE OF SPORTS IN SOUTH AFRICA - POST-APARTHEID

In 1994, when South Africa won its first multi-racial democratic election, it was at the peak of an economic recession. There were over 7 million unemployed people, causing many to migrate into cities in search of jobs. This was because of the vast majority of wealth lay in the hands of the white population, at the time the average annual income for white people was R34 400 compared to R3 600 for the black population (Chappell: 2005). Due to most of the wealth being controlled by the white population, it was evident that those who had money had access to excellent recreational and sports facilities, while the rest of the population only had access to poorly resourced sports facilities. It was then identified by Mr S.V. Tshwete (Minister of Sport and Recreation) in 1996 that a "vision for sport" throughout the country was needed. The goal was to allow all people in the country equal access to competitive or recreational sports opportunities at school or community levels (South African Government: 2011). The goal was to provide sports infrastructure, equipment, attire, development, talent identification in areas that did not have those opportunities before.

The significant change in sports development that started to create tension between all South Africans was in 1999 when the "quota" system was implemented. It is a system that requires a certain percentage of a team not to be white athletes (Sport24: 2019). It was first implemented at provincial level then later introduced into national teams. The ideas for the "quota" system is allowing equal opportunity to those to compete that were previously disadvantaged through apartheid and also to diversify the teams to create larger exposure throughout the country. Through this system, racial tensions have unfortunately increased as people have been excluded from a team based on their race, while those that have been included into the teams may doubt as to if they deserve to be there based on merit and not their race (Chappell: 2005).

The current Springbok rugby captain Siya Kolisi has a different view as to how access to sports should be addressed throughout the country. He does not agree with the "quota" system because he believes it does not solve anything; he looks to a more holistic bottom-up approach to create a better future for South African Sports. He said "If you want to talk about transformation, you have got to start there (at a grassroots level), but in South Africa, it's tough because we want results and transformation. The talent is there, it's just about nurturing it. Personally, I wouldn't want to be picked because of my skin colour because that surely wouldn't be good for the team and the guys around you would know" (Sport24: 2019).

What we do know is that facilities have improved and systems are set in place

from post-apartheid but are they the best ways of moving forward? What needs to happen is to create a system/ facility in which people can get equal opportunities on a public level. Not only allow development to occur where there is private money, but the public also has a right to development to be maybe able to excel to what they think is possible.

SYSTEM ISSUE & INTENTION

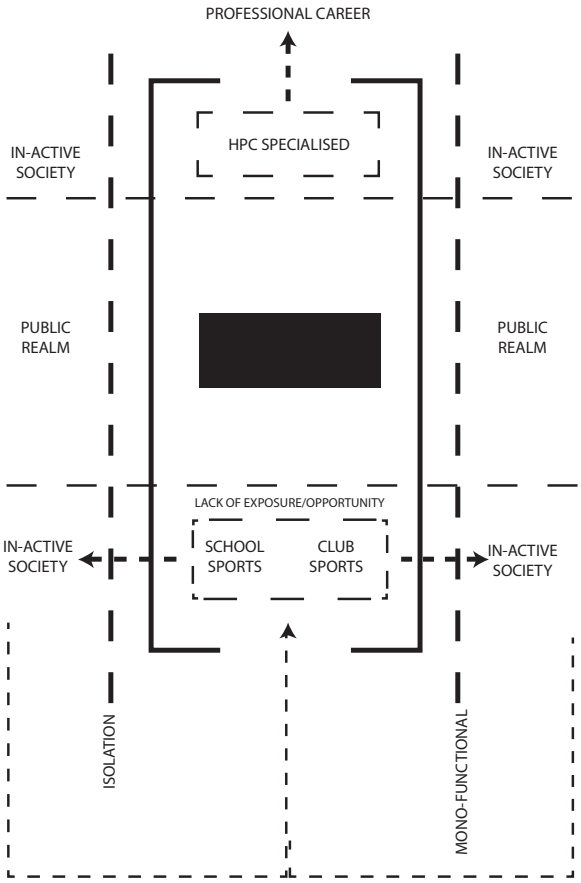
Presently there is an imbalance of sporting facilities providing for physical activity and physical growth from the surrounding communities outside Pretoria with limited access to sports grounds, while those are run down and within the city, there are no public facilities (Booth, 1998). Due to the imbalance between opportunities available to different races in the country, the Quota system was implemented to even the playing field (South African Government, 2011). However, there is an argument against it; it is the short term solution to allow athletes to compete at various levels (Thought Leader, 2017) although the situation needs to be addressed at the root of the cause, enabling equal opportunities and sufficient facilities for people to excel to their full potential (Booth, 1998).

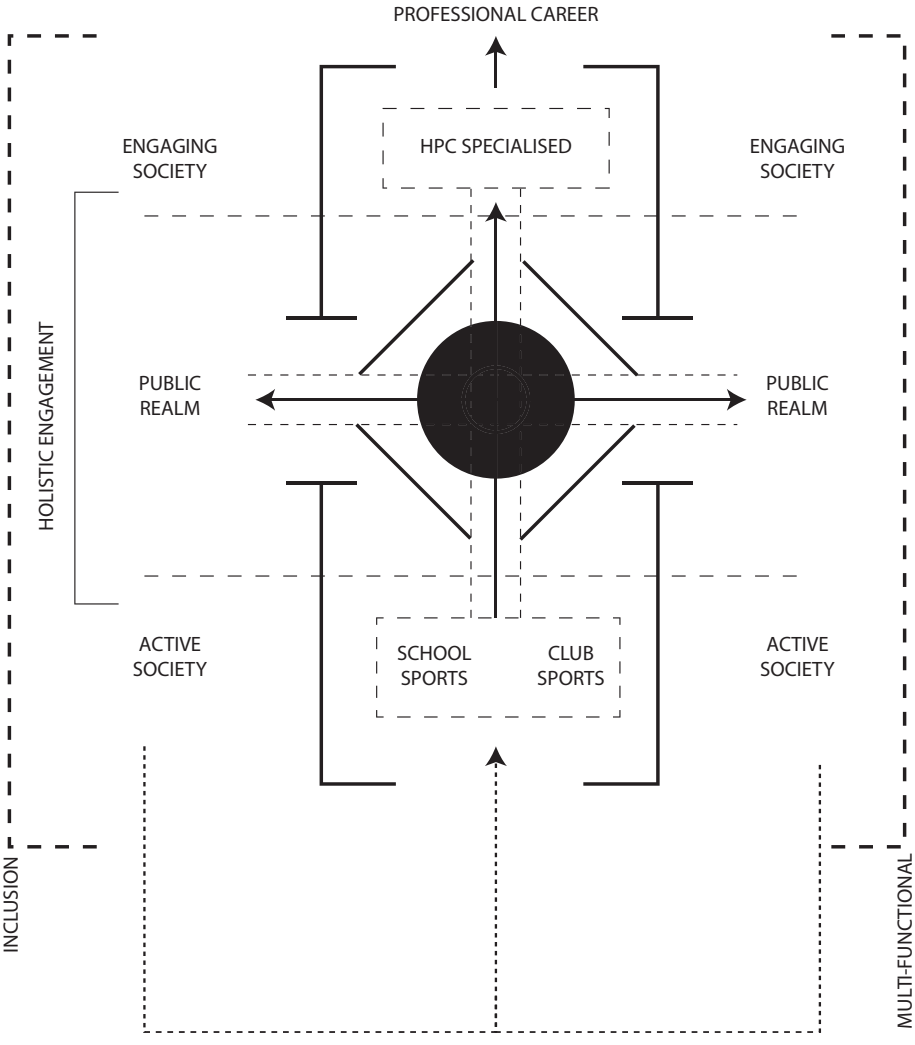
The general intention is to challenge the current sports systems, facilities and opportunities set in place. Then build up from the bottom providing a facility, program and space in which active engagement can freely and supportively be accessible in an area that currently does not allow for it.

IN-ACTIVE ISSUE

“The city is more than just a place to live. It is also a place for experience and activity, a place in which we spend much of our time. The healthy city provides a setting for our working day and our spare time” (Rasmus, 2009).

This is how space within a city is viewed in Denmark, while similarly the South African government’s National Sport and Recreation Plan has a vision for a healthy nation through the participation of active recreation,





providing active public spaces and opportunities at all schools throughout the nation (South African Government, 2011). However, areas have been allocated into communities on the outskirts of the cities, creating unhealthy static environments with no public spaces for active recreation (Booth, 1998).

Through the investigation of understanding the issues at hand, it is evident that there is currently a gap between public sports facilities and high-performance centres available to the public.

In conclusion, it is clear that within Pretoria's CBD, there is a lack of sports and recreational facilities. This is due to facilities located on the outskirts of the city, while those are also restricted to not allow public participation on those facilities. The other aspect is that public and private school grounds that could be used are fenced off for the safety of the children and management issues. The city needs a public space/facility to allow for development in sports and physical recreation.

ENGAGING INTENTION

The urban intention is to align the site vision with the Tshwane 2055 city vision to create access to quality sports facilities for all people within the city, to enable a healthier society (City of Tshwane: 2011). This is to give an active purpose to the main routes around the site being Pretorius Street, Francis Baard Street and Nelson Mandela drive while engaging with the Apies River that needs to be regenerated. The revitalisation and regeneration of the site and its surrounding context, the urban vision should bring active/social engagement to the area.

TSHWANE'S 2055 REGENERATIVE VISION

South Africa's apartheid past, had an effect on the growth/ segregation on the cities we see today. Which has to led to the current insolation of the Pretoria CBD. The Tshwane 2055 vision incorporates new principles to create a resilient city that starts to regenerate itself.

"In 2055, the City of Tshwane is liveable, resilient and inclusive whose citizens enjoy a high quality of life, have access to social, economic and enhanced political freedoms and where citizens are partners in the development of the African Capital City of excellence" (City of Tshwane: 2015).

Within the area of Tshwane's CBD, there is a historical and current identity that aligns itself to distinct areas of character. The areas that have been highlighted are the Government Boulevard, Ceremonial Boulevard, Nelson Mandela Green Corridor, Gateways into the city, Landmarks, Gateway Parks, Public Squares, Precincts, Visual Axises to essential points in the city and sports and recreation (City of Tshwane: 2015).

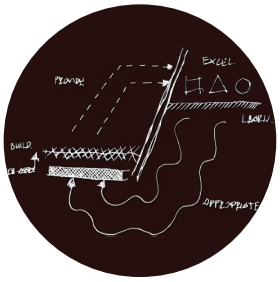
The Nelson Mandela Green Corridor places focus on the issue of a lack of green open space within the city; it aims to address this by creating a "green" connection through the city by allowing recreational spaces along the Apies River (City of Tshwane: 2015). The Nelson Mandela Green Corridor will connect the southeastern CBD to the northeastern edges. This will include UNISA, Residential area (Trevenna), mixed-use (Caledonian Sports Grounds) and TUT.

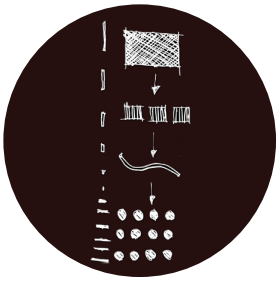
REGENERATIVE THEORY

The current green spaces throughout Pretoria are isolated from their context; this is from poorly managed, unsafe mono-functional spaces. The proposition that arises is how can these areas be adapted to not only develop into sustainable spaces throughout the city but rather contribute to future development on the site, that creates a ripple effect through the city? Regenerative theory looks to contribute in such a manner.

Dictionary definition:

- To re-create, reconstitute, or makeover, especially in a better form or condition.
- To grow after loss or damage.





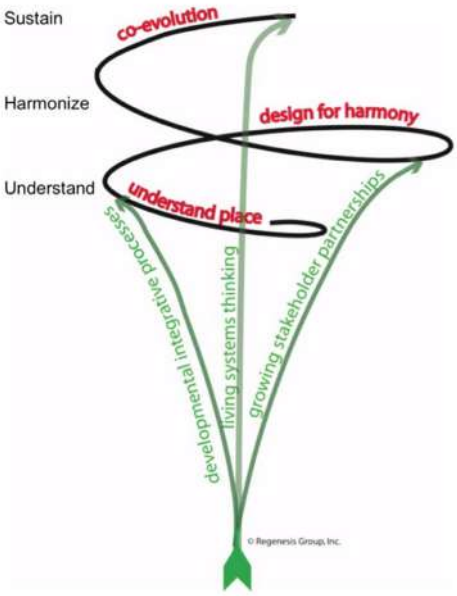


Fig. 07. Left; Regenerative design framework diagram (Many & Reed 2012: 31)
Fig. 08. Opposite Bottom; Project Intentions (Author: 2019)

Mang and Reed (2012: 36) propose that in the built environment "regeneration thinking redefines the built environment - from the old, building-centric definition and amongst buildings, infrastructure and natural systems, as well as the culture, economy and politics of communities. It redefines what sustainability means and requires - within the context of a dynamic, interdependent, evolving world". This proposes the thinking that all systems are integrated, an issue cannot be solved on its own, but rather understood as a part within the system to not only solve it but initiate a solution that develops and grows to regenerate itself and its surroundings.

Regeneration could be seen as a more scientific methodology revolving around the idea of sustainability in nature, but Mang and Reed (2012: 29) place great importance on the value of understanding the "story of place". The reason for this is that for a system to be implemented and to be successful, there needs to be community engagement. It allows the community to take ownership of the development into the future. With people having an identity in a space, it is proven that through having a more profound connection fosters change and regeneration (Mang & Reed 2012: 29).

Regenesis propose a framework to regenerative design and development that consists of three phases; those being understanding/conceptualising right relationship to place, designing for harmony and co-evolution (Mang & Reed 2012: 31). These aspects are crucial to the future holistic development of a project.

Through understanding the right relationship to place recognises that each community has its own unique identity from its history that sets it up for a certain future. It is essential to understand the broader influences that can impact the project because this can present various issues or potentials for the site. This will also create an environment that embraces the community involving them in the project and its future development (Mang & Reed 2012: 32). Designing for harmony with place strives to understand the larger patterns in its context, to align the project to harmonise it with those intentions. Allowing the project to align itself with the larger plan creates a more effective infrastructure and communities that regenerate its natural and physical context (Mang & Reed 2012: 33). Lastly, co-evolution does not allow a project to be completed when the building is finished merely but instead focusses on the initial idea to set the foundation allowing a further regeneration. This should be achieved by the people that use and are affected by the project, and they should manage and regenerate the project in its context (Mang & Reed 2012: 34).

This framework looks to be introduced on an urban/block vision scale:

Understanding Right Relationship of Place: Understanding what the site means within its context and the place it once was and currently creates for those that are influenced by it.

Designing for Harmony: Aligning the site with the larger visions/plans of the city in order to play a role in the development of Pretoria and with the larger sports and recreational development in the country.

Co-evolution: Getting the community to engage with the project to regenerate the site, Pretoria and themselves to a healthier sports and recreational future.

ACTIVATING UNUSED SPACE WITHIN THE CITY

As mentioned previously, the Tshwane 2055 Regenerative vision is to create liveable, resilient and inclusive spaces to create a high quality of life social spaces (City of Tshwane: 2015). This enforces the principles of the argument to create an accessible public space for sports and recreation in the city. It is vital to understand that successful public spaces have good urban edge designs to draw the public into space in a safe way, to allow an escape from reality in a busy city. The proposed vision has only focussed on the more busy and built-up corridors that have shown how the public edges will be addressed; the Nelson Mandela Green Corridor has only proposed infrastructural possibilities such as ponding areas of the Apies River and making it a public attraction and sidewalk to get to different areas. There will still be spaces that are wasted and utilised to their full potential. Public edges need to provide more than merely walkways, shade and views; they should engage the public in various ways.

Rasmus (2009) recognises that a city should be more than a place for work and sleep, but rather a healthy environment to live a holistic life, a space in which to break way for recreational purposes. Through the increase in densities we see in cities throughout the world, spaces that enable traditional organised sports have declined due to less space being available. The reaction is a new typology of "urban" sports being adapted into urban spaces. Rasmus (2009) proposes that wasted and mono-functional spaces can be designed to allow for informal physical sports to take place. This, in result, will cause healthier urban environments that increase social interactions within communities.

By defining common areas that can be used for physical activity within the city begins to regenerate the possibilities in wasted spaces. Those areas can be identified throughout Pretoria and specifically the urban precinct of the Caledonian Sports Grounds:

- The Park
- Connections
- Residential Areas
- Water Areas
- Urban Edges
- Roof and Surface

Fig. 09. Below Left; Site condition (Author, 2019)
Fig. 10. Right; Site condition (Author, 2019)
Fig. 11. Opposite page top; The caledonian grounds pre 1910 (Author, 2019)
Fig. 12. Opposite page bottom; SA Athletics (Author:2019)

ARCHITECTURAL ISSUE

Current Sports facilities are mono-functional that they do not allow for multi-functional space; arising from specific sports that require special requirements. Such typologies do not allow for external engagement due to the focus on the specific requirements, thus excluding public interaction. However, architecture should be more than just a shell; it should be able to create an interface for engagement on all levels from physical, psychological and social thus creating a place for people.

ARCHITCTURAL INTENTION

The architectural intention is that the new facilities regenerate the site/context through the use of an engaging programme, while the building structure/ envelope also respects the rich existing heritage that is both programmatic and formal. Through the engagement of active users, the current site can lend itself structurally to becoming part of the program to build an active engaging architecture.

Multifunctional Design

The building proposes a multifunctional sports facility which can become a complex design due to the various programs, systems and activities that take place. The issues that begin to arise is spatially allowing for different functions to occur while not allowing them to interfere with each other, but rather begin to complement each other.

Today, cities have dispersed in complex ways leaving little or awkward spaces over for development that need to cater lots of programs. This has led to an increase in developments in the city being driven by multifunctional functional buildings to cater for an increasing number of people in the city (Gerigk 2012: 1). The issue with this is that developers are focussed on the cost, return, and functionality of the building, not necessarily the social impacts the building has on its context.

Gerigk (2017: 2-3) acknowledges these challenges with a multifunctional building and believes the structure of the building comprises of the functional program and technological systems; the rest is planning and open space to fit in different functions into various spaces. Gerigk (2017: 2) proposes that multifunction buildings should have multifunctional dimensions including social, economic and environmental aspects. These should all be present in a successful multifunctional building for sustainable spaces for those using it.

Due to multifunctional buildings having different needs and requirements and need to be in some way linked to each other, the one commonality is a social and urban space. The environment in and around the building can be the catalyst for connecting

the different functions (Gerigk 2012: 1). This space could not only contribute to the success of the building but also its context.

This design approach could be used through understanding the different requirements for a multifunctional sports centre, and the way to connect the different programs is by connecting the building to its urban and social condition.

SITE LOCATION

The chosen site for is the Caledonian Sports Grounds that is located on the eastern edge of the Pretoria CBD, between Pretorius Street on its northern boundary and Francis Baard Street on the southern boundary. The Apies River encloses the stadium to the west and the Walkerspruit on the east. Nelson Mandela Drive is on the other side of the Apiesrivier that connects the stadium on a north/south axis while Pretorius Street and Francis Baard Street on the east/west axis within Pretoria.

HISTORY OF THE CALEDONIAN SPORTS GROUNDS

The Caledonian Sports Grounds has been a sporting and recreational precinct in the CBD for over 100 years. It included the central swimming pool (now demolished) and the Caledonian Sports Grounds that comprised of a sports field and recreational park. Although the last 60 years it has been used predominantly for soccer before it was used for rugby, cricket, athletics, bowls, netball, hockey, greyhound racing and celebrations (Vlok 1955: 236). Formerly the property was owned by Sir John Wessels and Mr Esselen in 1894, but in 1916 the property was bought by the Pretoria Municipality for 8,500 Pounds, this was in the interest of the public for public sports and recreational grounds (Vlok 1955: 237).

In the 1950s, the Caledonian Sports grounds was further developed into a soccer stadium that was the home ground for Arcadia Shepherds (Vlok 1955: 240). They played a pivotal role in the development of professional sports in South Africa's history. The club

was first formed in 1903 by a group of 30 youngsters that saw British soldiers playing a game called soccer. Sport in South Africa became professional in the 1960s, where Arcadia Shepherds was the first soccer club to become professional (Bolsmann 2010: 30). Due to their popularity of being one of the few professional soccer clubs in the country, they had over 2000 “non-European” fans, where these fans were allowed to watch games at the Caledonian Stadium for free. This was possible through a fenced-off area for the spectators. This all came to an end in 1965 when the government banned “non-European” supporters from professional sports events unless they had permission from the Department of Community Development. Soon after that, Arcadia Shepherds lost a vast majority of their supporters (Bolsmann 2010: 36).

Fig. 13. Below Left; Rugby Game (Author, 2019)
Fig. 14. Right; Site photo (Author, 2019)

In the 1970s, Arcadia Shepherds became one of the wealthiest clubs in the country. Due to the successful years such as 1973, Arcadia Shepherds became the first team to win all three soccer tournaments in the same year (Coca-Cola Shield, The Castle Cup and the Embassy Cup) (Bolsmann 2010: 44). Soon after Arcadia Shepherds decided to take professional sports to the next level, they believed that the best team should be on the field regardless of their race. In February 1977 Vincent Julius became the first “non-European” player to play in a “whites only” sports league, this was the first step to moving towards an equal sports nation (Bolsmann & Alegi 2010:5). Through this hype Arcadia Shepherds gained a massive “non-European” fan boost, fans climbed the surrounding stadium trees to watch the soccer games. In response to this, the government cut all the trees down. This resulted on July 1, 1977, Arcadia Shepherds being banned from the Caledonian Stadium for nine years, forcing them to move to stadiums in Attridgeville and Mamelodi.

The relationship between Caledonian Stadium and Arcadia Shepherds would fall apart after that due to the lack of management and “homelessness” (Bolsmann & Alegi 2010:13). Eventually, in 1990, Arcadia Shepherds were forced to sell the club to Dynamos and their key players such as Mark Fish (Bolsmann & Alegi 2010:15).

Only in 1998, the ban on the Caledonian Stadium was lifted and the first game being played by Supersport United and Hellenic (Bolsmann & Alegi 2010:17). This expresses the impact the Caledonian Stadium has had not only in Pretoria but throughout the country. The heritage of sports development and taking new steps to a better sporting future is deeply rooted in the narrative of the Caledonian Stadium.

Fig. 05. Left; Image name or title (Author, 2017)
Fig. 06. Opposite Top Right; Image name or title (Author, 2017)
Fig. 07. Opposite Bottom Right; Image name or title (Author, 2017)

THE PROGRAM
GENERAL INFORMANTS

The lack of public facilities/green spaces create an environment that does not allow for physical development that can translate into equal sporting/physical opportunities throughout the country. A new “step-up” system is proposed to give a space/facility that places itself between public schools/public sports facilities and High-Performance Centre (such as TUKS HPC). This will be a new sports and recreation typology in a South African context since it needs to not only focus on specific sports, but rather engage on the public edge that moves through into more focussed sports facilities.

THE USER AS AN INFORMANTS/ PROGRAM

South Africa is a very diverse sporting nation with being involved in almost all sports in the world. The proposal for the sports facility is not facilitating all sports played throughout the country, but instead focuses on the core sports (rugby, soccer, netball, basketball and cricket) after that those sports will be supported by the physical development needed for those sports. Due to the physical development being open-ended, it can be used as a foundation for all sports development and the spaces that can be appropriated for different uses.

Through understanding the idea of a new “step-up” sports centre that can be used by all people. A hierarchy of different levels of engagement in ways that people might tend to use the sports centre must be developed. At one end of the scale, it can vary from the general public that might only want to walk through, relax and engage from the outside, through to athletes that are there for the sole purpose of physical and mental engagement striving towards a professional career.

To create an environment that does not divide people with different intentions, the program must strive to create threshold barriers but still allow visual and social engagement around sports and recreation. The complexity of integrating various programs also creates different events and occasions that can occur at different times. There will need to be different levels of safety and security (red line) possibilities to allow people to move freely and be restricted at different times or events. These different users/levels of engagement are broken down to understand how different users have different needs in a sports and recreational precinct.

A Holistic Sports Impact

This article strives towards the notion that sports and recreation can socially and physically uplift individuals and communities. The idea is that this is done by accessible public spaces that enable social and physical interaction.

The following looks to understand the possible outcomes that sports and recreation can provide a bottom-up assessment of sports and recreation. Davies, Gilbertson, Tayleur, Taylor and Wells (2015: 18) state that there is a significant impact that sports and recreation can have on individuals that further impact the surrounding community, it is broken down into the health benefits, crime benefits, education benefits and social capital benefits. These benefits are crucial in creating the foundation for a better community and athlete development.

Sport, Health and Wellbeing:

Davies et al. (2015: 24) state that there is a strong correlation between the positive relationship between sports and recreation and the health of an individual. This is due to that exercise can promote physical development that translates into the prevention of various chronic diseases such as cardiovascular disease, diabetes, premature deaths, etc. Although there is little evidence as to what exercise can have the best impact to minimise such diseases, this is due to the open-ended aspect of all the different sports and activities an individual can partake in. The variation is complex by different levels of intensity, duration and the frequency that it can occur; this can all play an impact of the physical outcome (Davies et al. 2015: 26).

Mental wellbeing and the benefits thereof from sports can be a blurred outcome, sports might not be able to prevent mental illness, but it is shown that it can still help the individual. This is shown by how sports and recreation can help in terms of therapeutic healing, and it can distract the individual and minimise the effects thereof — thus resulting in a lower risk of depression and suicide. Through participation sports, it can contribute to mental wellbeing from social interactions with

other people (Davies et al. 2015: 35). Sports can also contribute to mental harm through sports injuries and bullying by other people in a sporting environment.

Sport and Crime:

Through sports and recreation being introduced into stagnant, unhealthy environments, it is shown that it can reduce crime in an area (Davies et al. 2015: 18). This is mostly due to the youth not having recreational spaces and causing unhealthy gatherings and unsafe spaces. By introducing sports participation in an area, it encourages pro-social behaviour and minimises crime and anti-social behaviour, particularly for younger adults (Davies et al. 2015: 44). By promoting a healthy and active lifestyle, it begins to minimise criminal behaviour, drug use, alcohol abuse and violence; this is achieved by the social interaction and leadership by individuals that set an example for others in the community. There can also be sports that can create unhealthy environments if not managed correctly, such as boxing, can create isolation from other individuals through fear (Davies et al. 2015: 46).

Sport and Education:

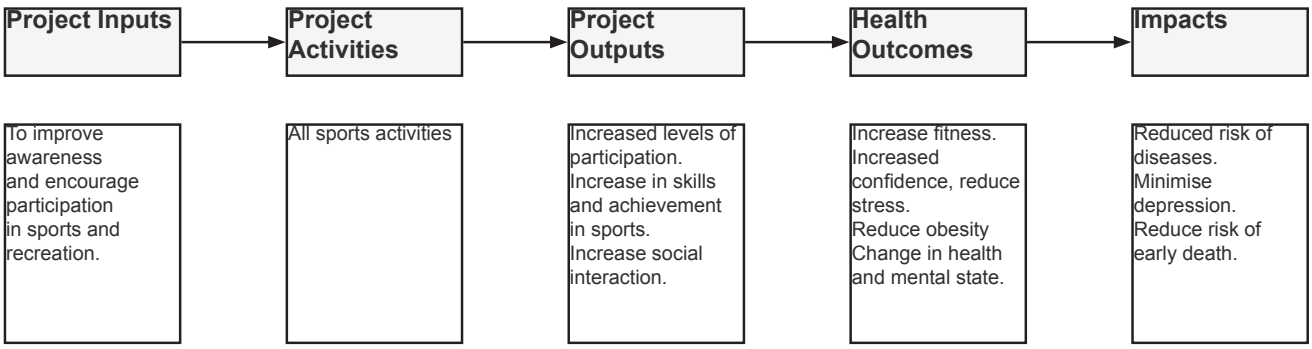
There is a relationship between sports and recreation and the effect thereof in education and development. Through achievement and development in a physical aspect, can boost a persons confidence, this can translate into perceptions of competence to complete tasks (Davies et al. 2015: 55). The social interaction can create new environments for students to interact through interests and sporting abilities, this can create friendships in places that are not available in an academic environment (Davies et al. 2015: 56). Sports and recreation can distract the individual's brain from focussing on a different task that can help with relieving stress, and then when introduced back into an academic environment, there is an increase in concentration.

Sport and Social Capital:

Davies et al. (2015: 50) states that "through sports and recreation leads to the contribution of social capital by encouraging social interaction and the development of social relationships and networks". This is achieved by generating social interaction causing a sense of belonging amongst different individuals. By bringing different people together from varying backgrounds creates the opportunity of understanding each other and changes attitudes and belief systems, thus overcoming social barriers (Davies et al. 2015: 51). The benefit of this is that it creates an environment that encourages community participation, ownership and volunteering to take place. The community becomes pro-active together and becomes self-sufficient in their context (Davies et al. 2015: 52).

These benefits previously mentioned show the importance of sports and recreation in order to live a holistic life. The boundaries are not merely the sports facility itself, but instead influence the community as a whole through physical, mental and social wellbeing. This foundation is proven to be crucial for athletes and individuals to perform at their highest level, whether it is in school, work, society and sports (Davies et al. 2015: 65). This provides the framework for a holistic "step-up" facility to contribute to the development of the site, system, community and individual.

Fig. 15. Diagram of project health outcomes (Author:2019)



URBAN PRECEDENT

Gasværksgrunden (THE GAS WORKS SITE)

LOCATION: Fredericia, Denmark

DATE: 2007

ARCHITECT: Birk Nielsen Landscape Architects and Planners

The gasworks site in Fredericia is a sport and recreational playground square that is the largest in Denmark that allows for various possibilities of activity for children to adults (Rasmus 2009:50). What once was an unutilised space is now an activity hub within the community. Space is raised from the streets that allow for the manipulation of different levels to highlight different activities (recreation, sports and play) the can take place in different areas. The surface is smooth concrete to allow an even surface for all activities but through the use of different colours and materials highlights routes/ activities for cycling, scooters and roller skating throughout the square (Rasmus 2009:50).

Artificial materials (grass, rubber and asphalt) are used in the sunken spaces to allow more specific activities such as the blue multi-purpose court/ice rink is used for basketball, hockey, rollerblading and in the winter is converted into an ice rink (Visitlillebaelt: 2017). During the winter months, it can be used for curling, ice hockey and ice skating. The green synthetic field is used for urban/action soccer throughout the year, and the red amphitheatre is used for gatherings and performances (Rasmus 2009:51).

Different areas cater for different age groups such as a playground for children, pavilions for exercise/ workouts and table tennis area for recreation.

What makes this precedent appropriate is how this urban intervention has regenerated the site and community by allowing social and physical interaction/engagement. This is successful by the vast programmatic possibilities that the site offers throughout the year to different people with different ages.

CONTEXTUAL PRECEDENT

Nike football training centre

LOCATION: Soweto, South Africa

DATE: 2010

ARCHITECT: RUFproject

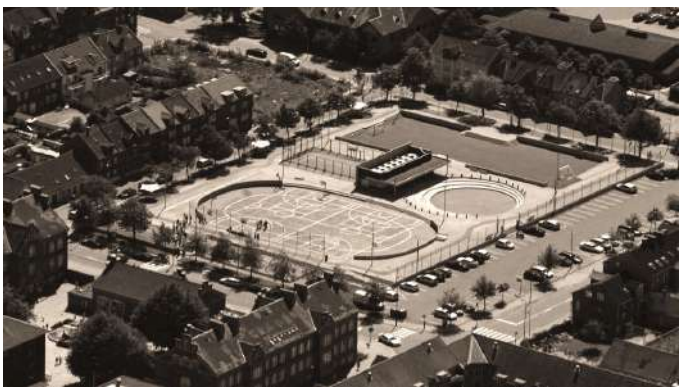
The Nike Football Training Centre is situated in the centre of Soweto; one of the largest townships in South Africa. It hosts over 1200 teams and 20 000 players each year (Archer: 2010). Due to South Africa hosting the 2010 Soccer World Cup, Nike has the idea of building a facility that will provide a soccer home and facility that will last past the 2010 World Cup.

The contextual design response was to understand the needs of the surrounding community somewhat. That was the need for education, for throughout the area the public school facilities and education system do not provide a foundation for life-skills and general health knowledge in an environment such as Soweto. An education centre for HIV/AIDS and the Grass Roots of Soccer & Life Skillz program was introduced so the scholars and athletes can be educated about the dangers of living in an area such as Soweto (Archer: 2010). This is important because it reaches out further than just sports, but more towards holistic health wellbeing understand in life.

The facility also provides two artificial full-size pitches, two action soccer pitches, a clubhouse that had a training gym, physiotherapy and first aid facility and changing rooms. The urban concept was to visually link programs to allow social interaction, awareness and safety in its context (RUFproject: 2010).

The negative part to the design is the public edge; the whole site is fenced off from the context and surrounding houses. Understandably, there is a safety issue in such a context, but the urban program could maybe have been provided along the

Fig. 16. Below Left; Aerial image of the site intervention (Visitlillebaelt: 2017)
Fig. 17. Below Right; The clubhouse with the new artificial pitch (RUFproject: 2010)



edges to allow access and movement throughout the day.

FORMAL/ PROGRAMMATIC/ TECHNICAL PRECEDENT

São Luís Sports & Arts GymnasiuM

LOCATION: São Paulo, Brazil

DATE: 2015

ARCHITECT: Urdi Arquitetura

The São Luís Sports & Arts Gymnasium aligned itself to the educational sports and recreational 12 year plan to increase the accessibility and supply of sports facilities and activities, in order to adapt to better educational principles and environments (Urdi Arquitetura: 2016). The brief was to create a facility that will improve the urban sports and recreational environment while not interrupting the current daily activities of the school, thus creating a mediation space between education and the urban environment.

The design creates a compact sports and recreational environment that encourages social interaction; this is done by turning the sporting areas (courts, bleachers, connection spaces and living rooms) to face and integrate into the visual and physical connection to the surrounding city. It creates a public sporting precinct that is open to the public for social and physical interaction.

The building has various environmental systems that are incorporated into the design. Climate control is achieved through the design of the facades that are positioned to allow permanent openings to circulate fresh air through the courts, while the glass facade controls the solar gain. Controlling the northern openings allows managing the wind movement throughout the windy months of the year. Natural lighting into the gym is filtered through the shading devices on the facade and different glass treatments in different areas receiving varying levels of direct sunlight. The rainwater is collected and stored in tanks, and the 60 000 litres is reused throughout the building (Urdi Arquitetura: 2016).

The design offers a great response to its broader context and vision of the city while respecting the current environmental conditions to minimise its environmental impact. All this together creates a comfortable social space that directly influenced by its context and user needs.

CONTRIBUTION

The architectural contribution involves proposing a new sports and recreational typology within a public precinct. As previously mentioned, the current sports systems/paths have mainly only been accessible to those that have had proper education/facilities or for those who have money due to the private “top” sports facilities. The proposed new typology looks to a “step-up” facility that will allow access to the public; this will give those a solid foundation on which to build on. The dissertation looks to create a public engagement facility that can be used for sports, wellbeing and recreation.

The article aims to investigate the urban, programmatic and engagement levels at which architecture can lend itself to through adaptable and multi-functional programs that can create a new sports typology in a South African context.

CONCLUSION

The intention of this article was to investigate current sports system and facilities in South Africa to determine if they are providing the necessary spaces in which to develop to a better sports and recreational future. This was expressed in the research questions challenging the current system, urban spaces throughout Pretoria, sports typologies and how the public is able to interact with such sports and recreational facilities. A new typology was developed to deal with the boundaries set in place in a urban public environment.

Fig. 18. Below Left; The ourdoor multipurpose fields and courts using wasted space of the building (Urdi Arquitetura: 2016)
Fig. 19. Right; The multipurpose court with natural lighting and ventilation (Urdi Arquitetura: 2016)

The article was framed by understanding the larger system, urban, programmatic and architectural issues and proposing intentions to overcome those issues. The program and site was considered to be the main informants of the design, thus a comprehensive understanding of the context and what could be implemented programmatically gave the design direction to catering for all different people to use and benefit for the sports and recreational facility.

The facility and program that was proposed is relevant due to the sports issues, opportunities and boundaries the public are faced with currently. This is because it creates a link in a broken sports system in order to give equal opportunity to a healthier, physical, social interactive and sporting further to the public. Such facilities could be introduced and funded by the government and high-performance centres to relive the current strain on public spaces demands and available sports facilities. The new architectural typology looks to a new facility that in not only mono-functional for specific occasions, but rather a facility and structure that is mono-functional for various programs at different times throughout the day. While the structure looks to improve its context creating a place in the city for the public to use to a holistic future.

In conclusion this article strives to an architecture that doesn't only facilitate a space, but rather an engaging architecture that creates a place to engage with the site, program, user and a holistic future development.

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9.3 FINAL PRESENTATION

Fig.219: Cover Page (Author: 2019)

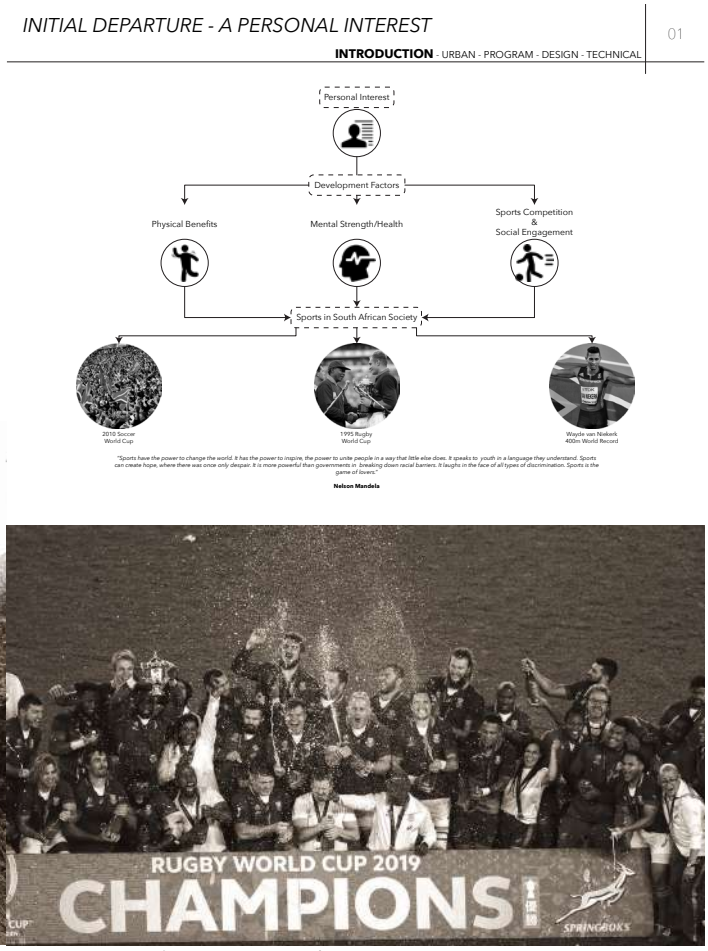


Fig.220: Initial Departure (Author: 2019)

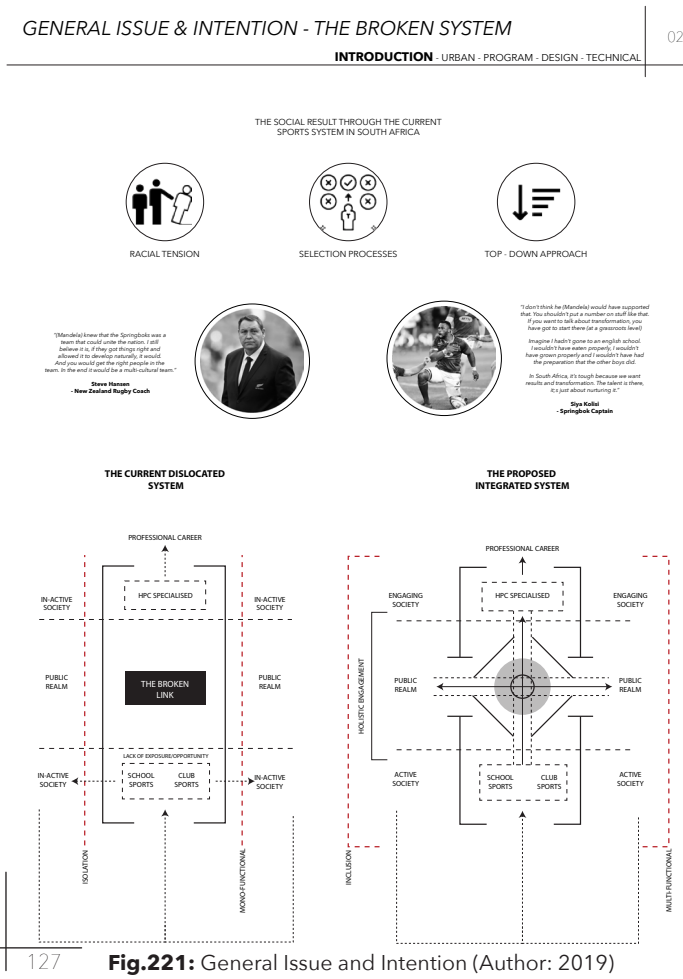


Fig.221: General Issue and Intention (Author: 2019)

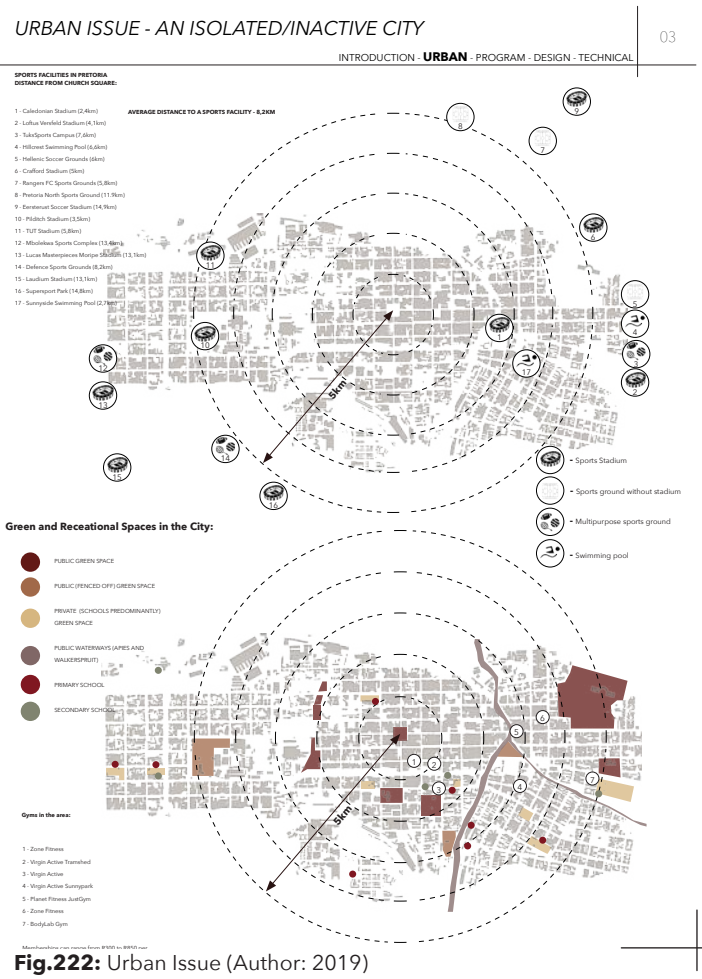


Fig.222: Urban Issue (Author: 2019)

TSHWANE 2055 VISION

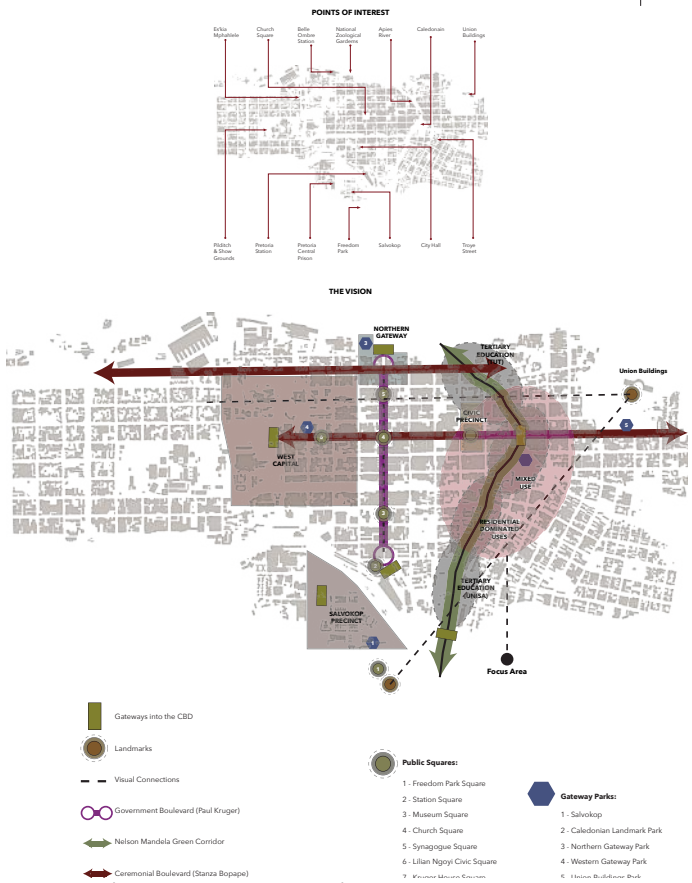
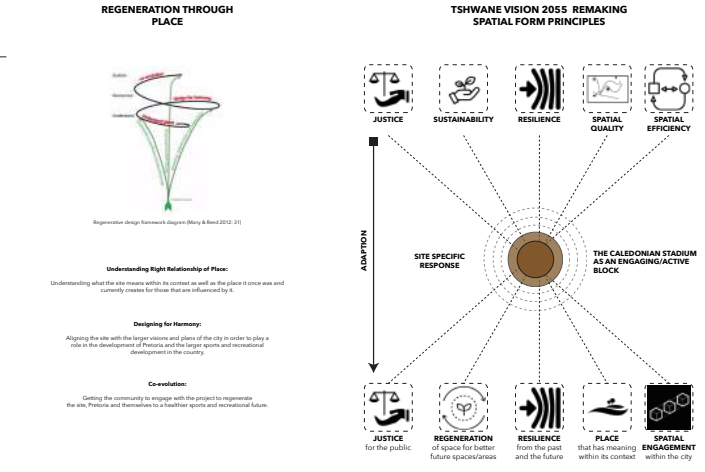


Fig.223: Tshwane 2055 Vision (Author: 2019)



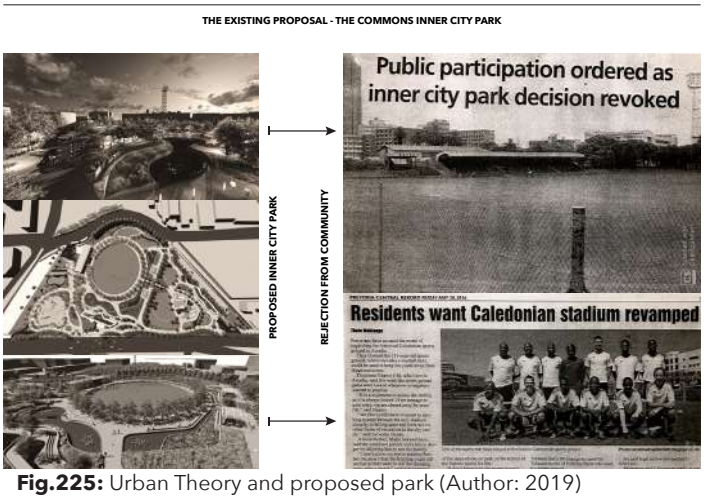


Fig.225: Urban Theory and proposed park (Author: 2019)

SITE LOCATION - THE CALEDONIAN SPORTS GROUNDS

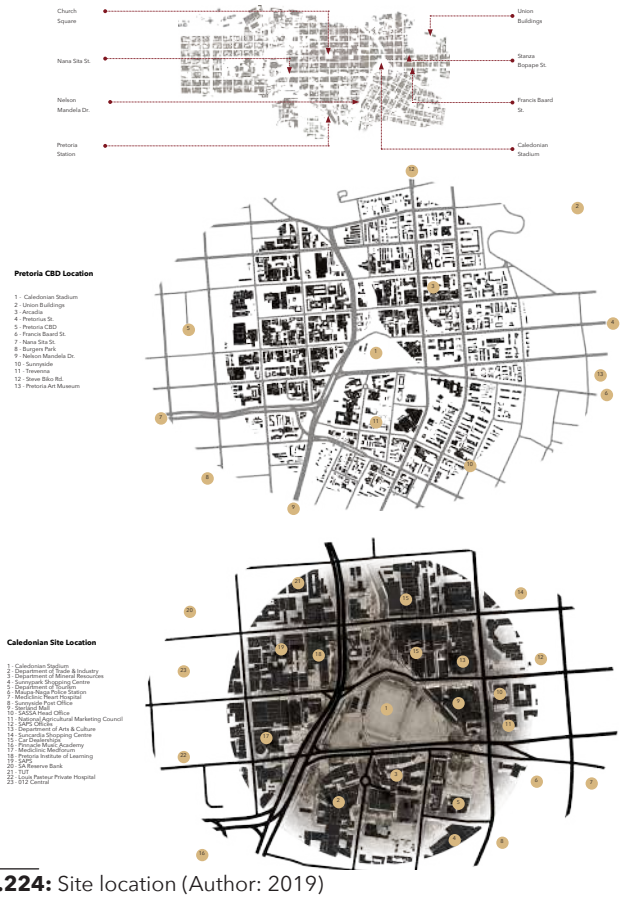


Fig.224: Site location (Author: 2019)

HISTORY OF THE CALEDONIAN SPORTS GROUNDS

Fig.226: Site history (Author: 2019)

Fig.227: Current site conditions (Author: 2019)

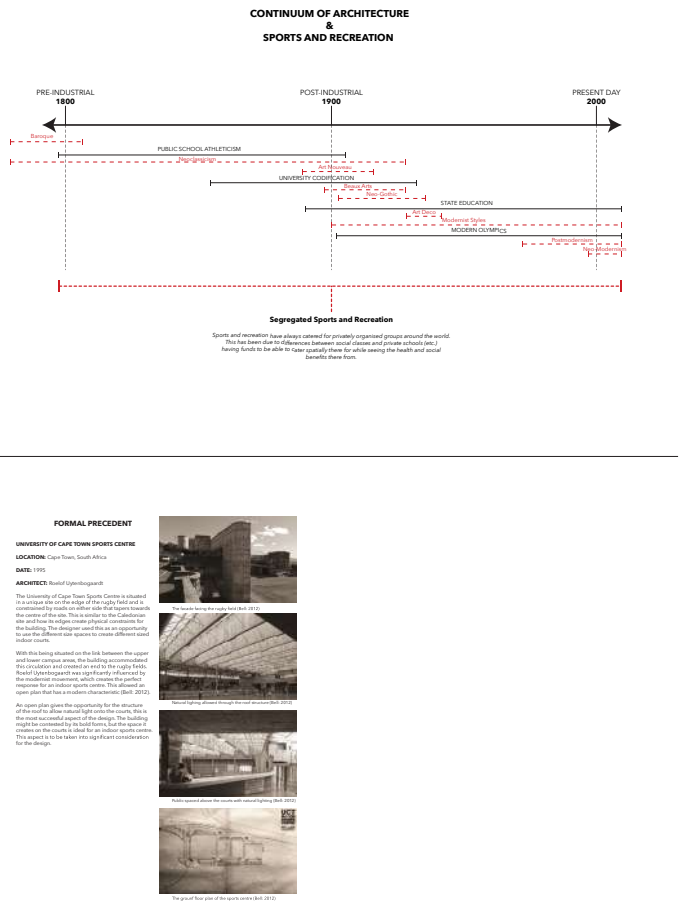


Fig.229: Continuum of thinking and precedents (Author: 2019)

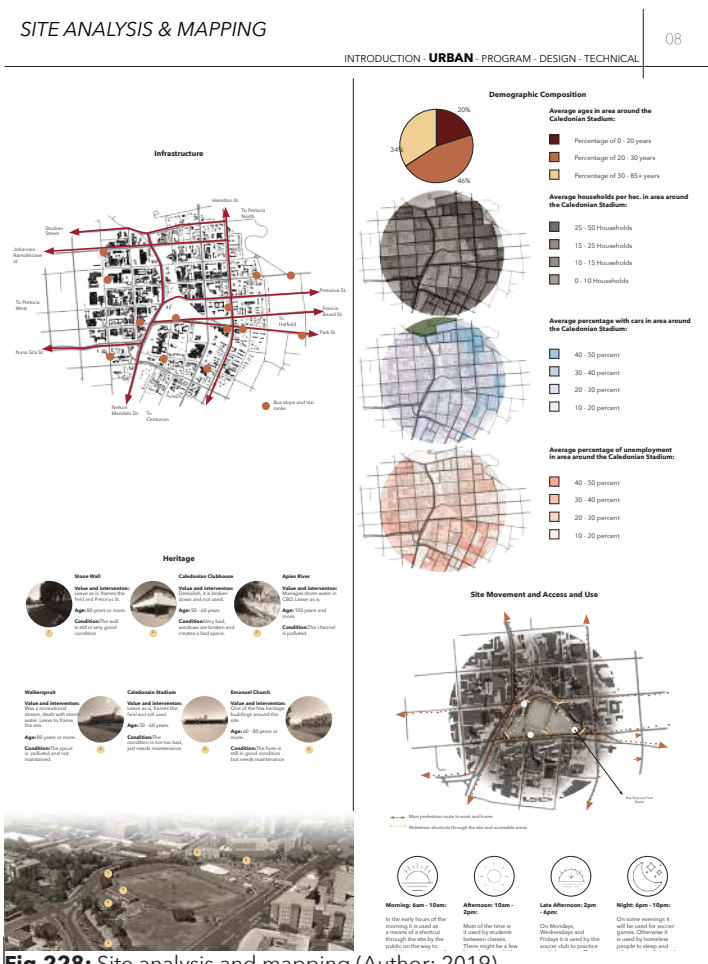


Fig.228: Site analysis and mapping (Author: 2019)

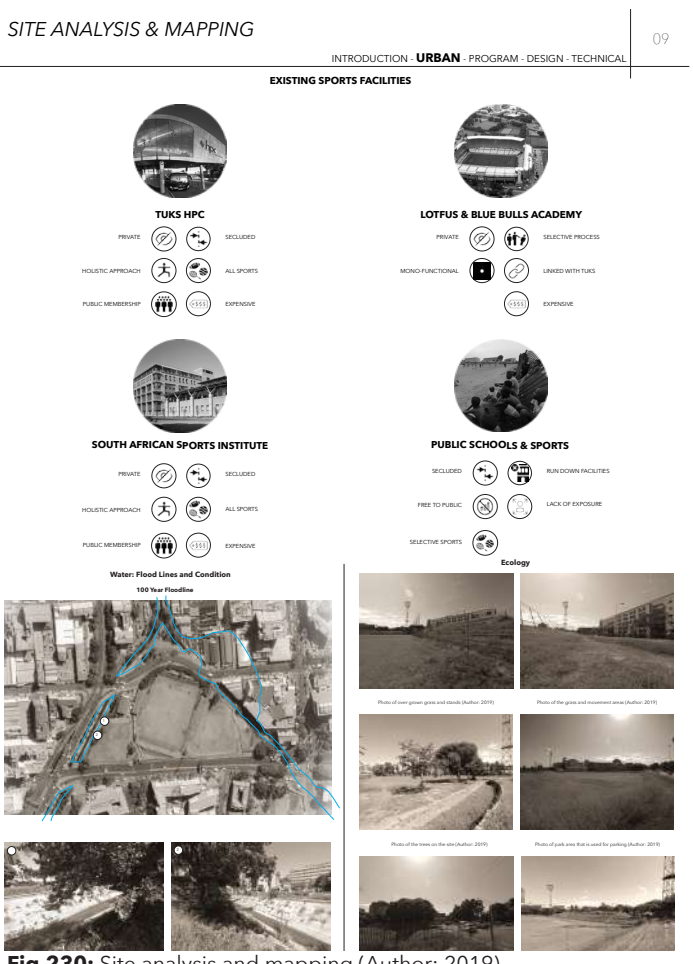


Fig.230: Site analysis and mapping (Author: 2019)

BLOCK VISION - ACTIVE URBAN NODE PRINCIPLES

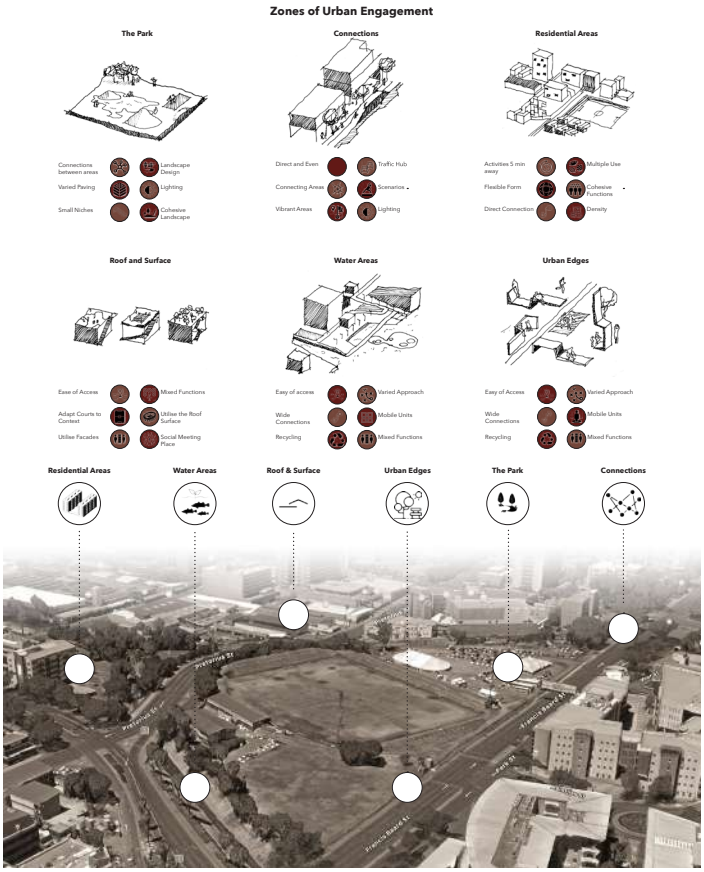


Fig.231: Block vision principles (Author: 2019)

URBAN BLOCK VISION

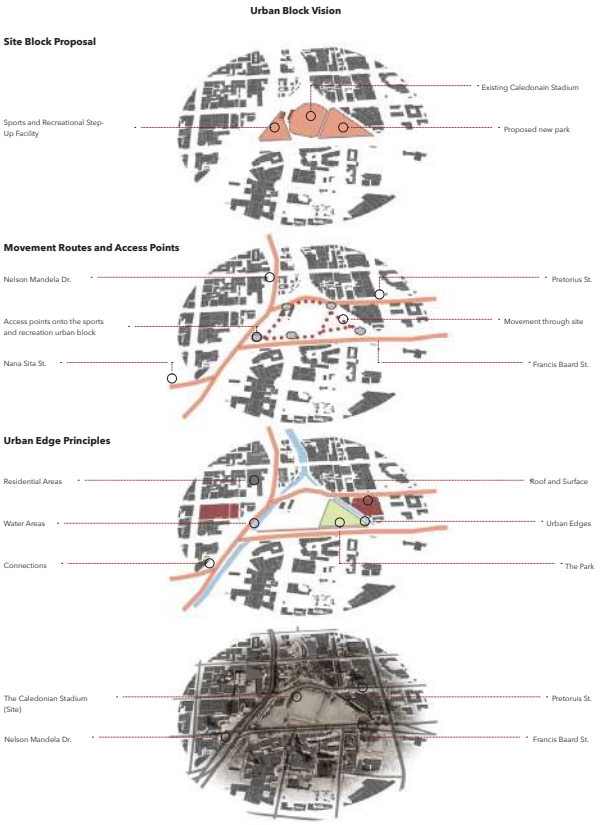


Fig.233: Urban block vision (Author: 2019)

PROGRAM INTENTION & INCLUSION

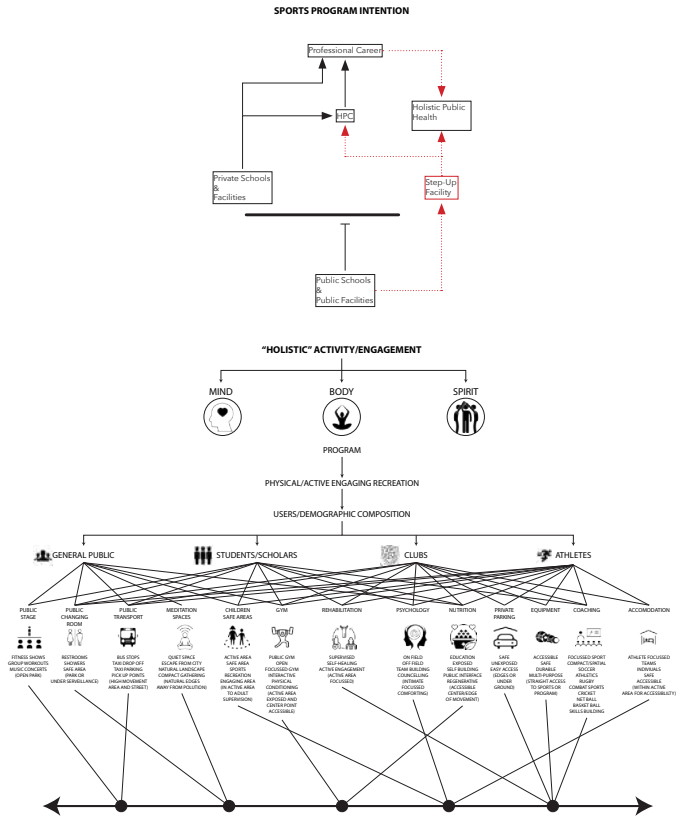


Fig.232: Programmatic intention (Author: 2019)

ACCOMMODATION LIST

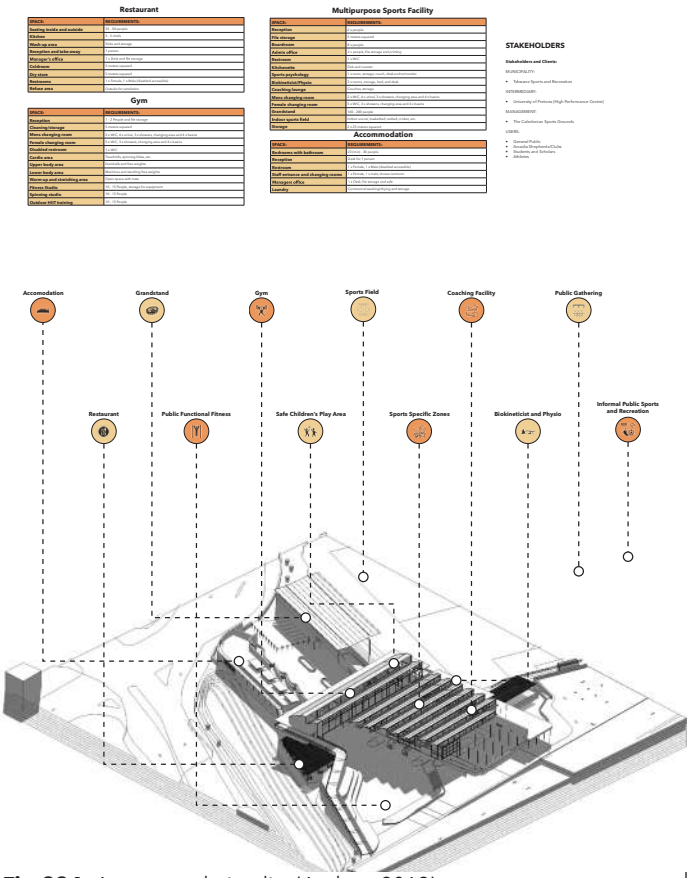


Fig.234: Accommodation list (Author: 2019)

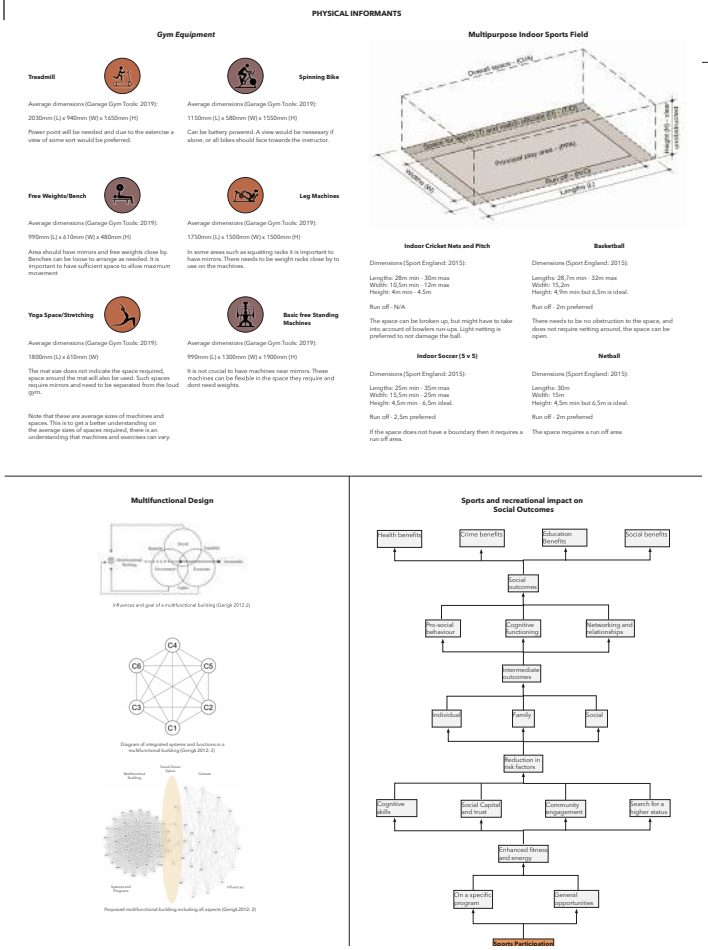


Fig.235: Physical constraints and theory (Author: 2019)

Fig.237: Precedents (Author: 2019)

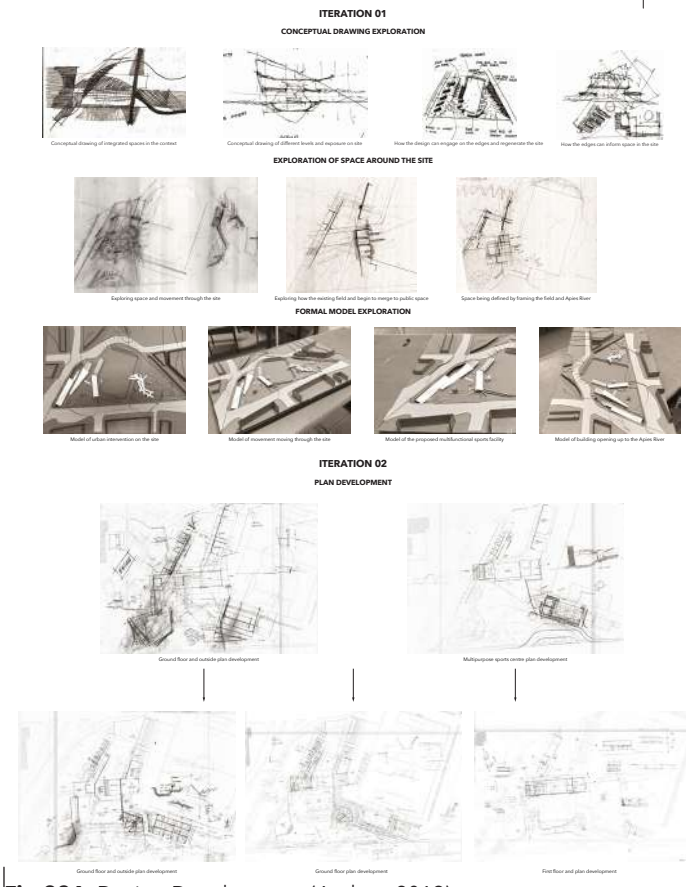


Fig.236: Design Development (Author: 2019)

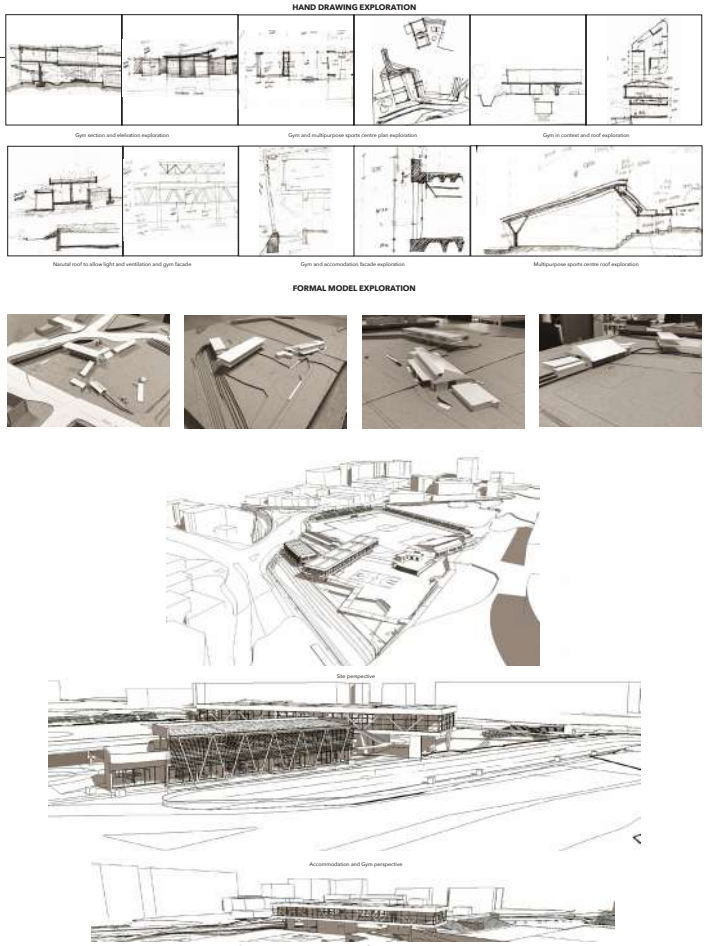


Fig.238: Design Development (Author: 2019)

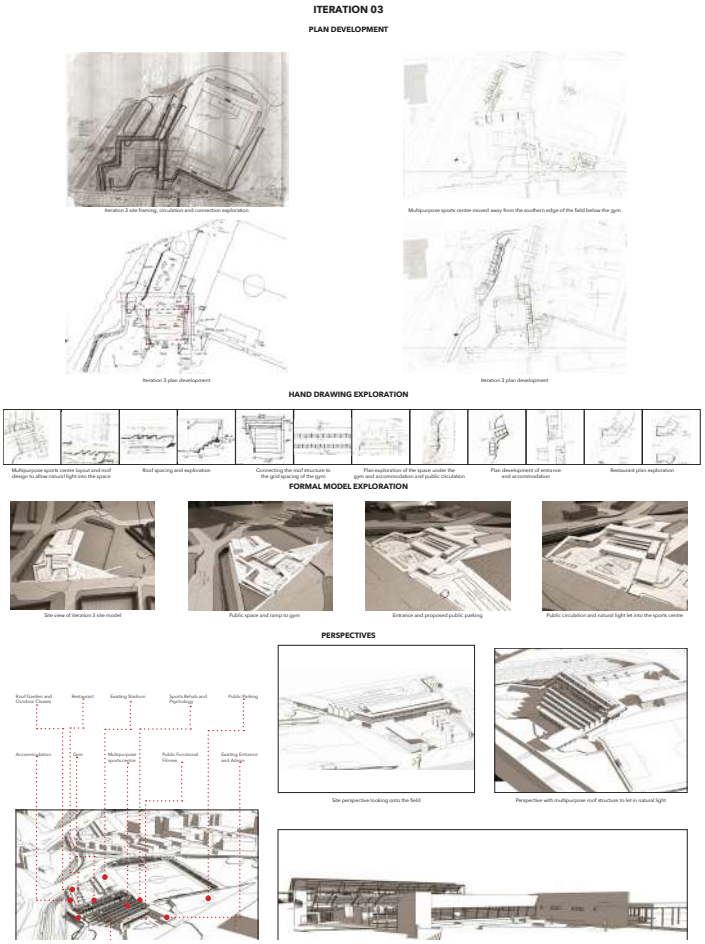


Fig.239: Design development (Author: 2019)

GROUND FLOOR PLAN - 1:200

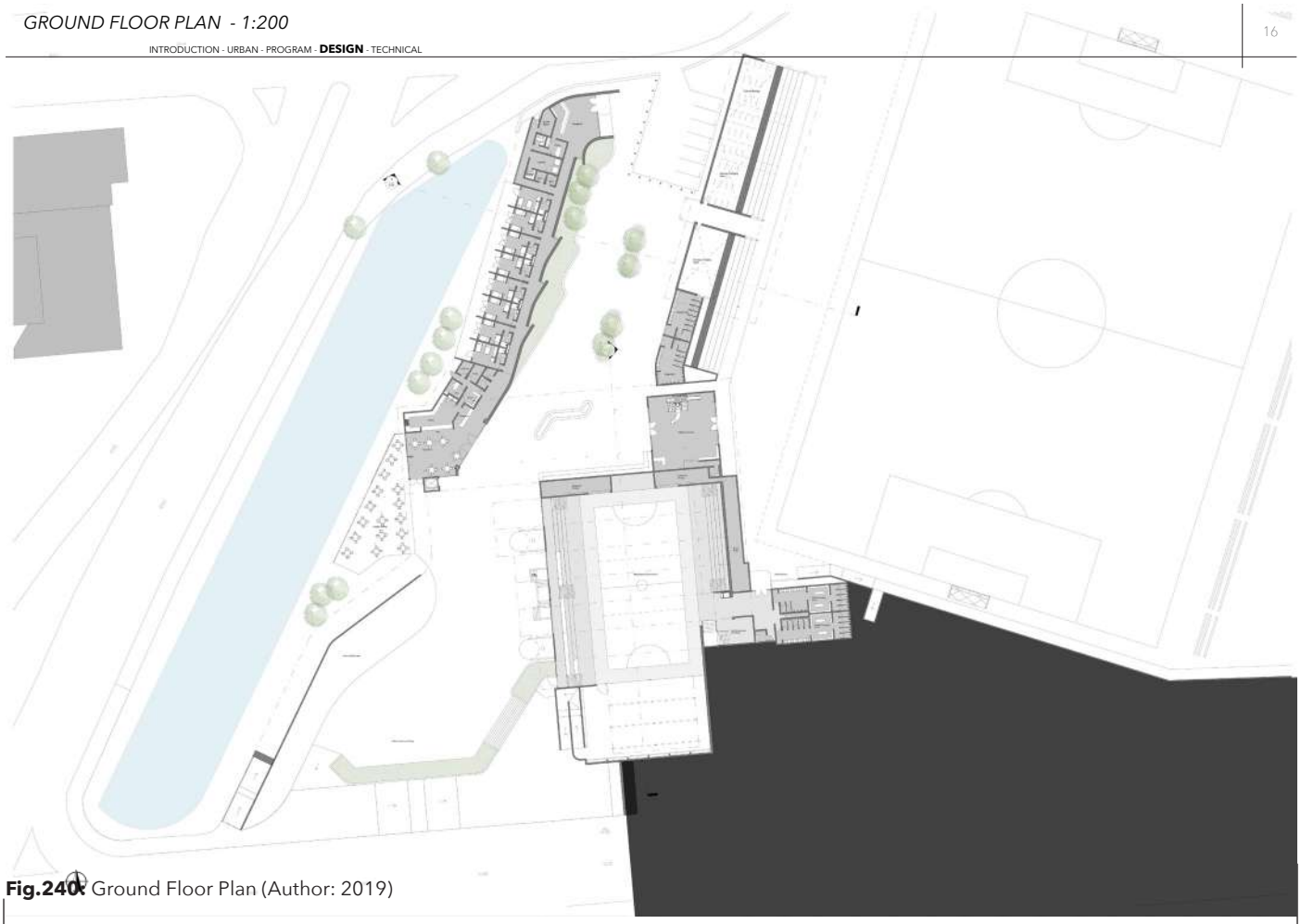


Fig.240: Ground Floor Plan (Author: 2019)

FIRST FLOOR PLAN - 1:200

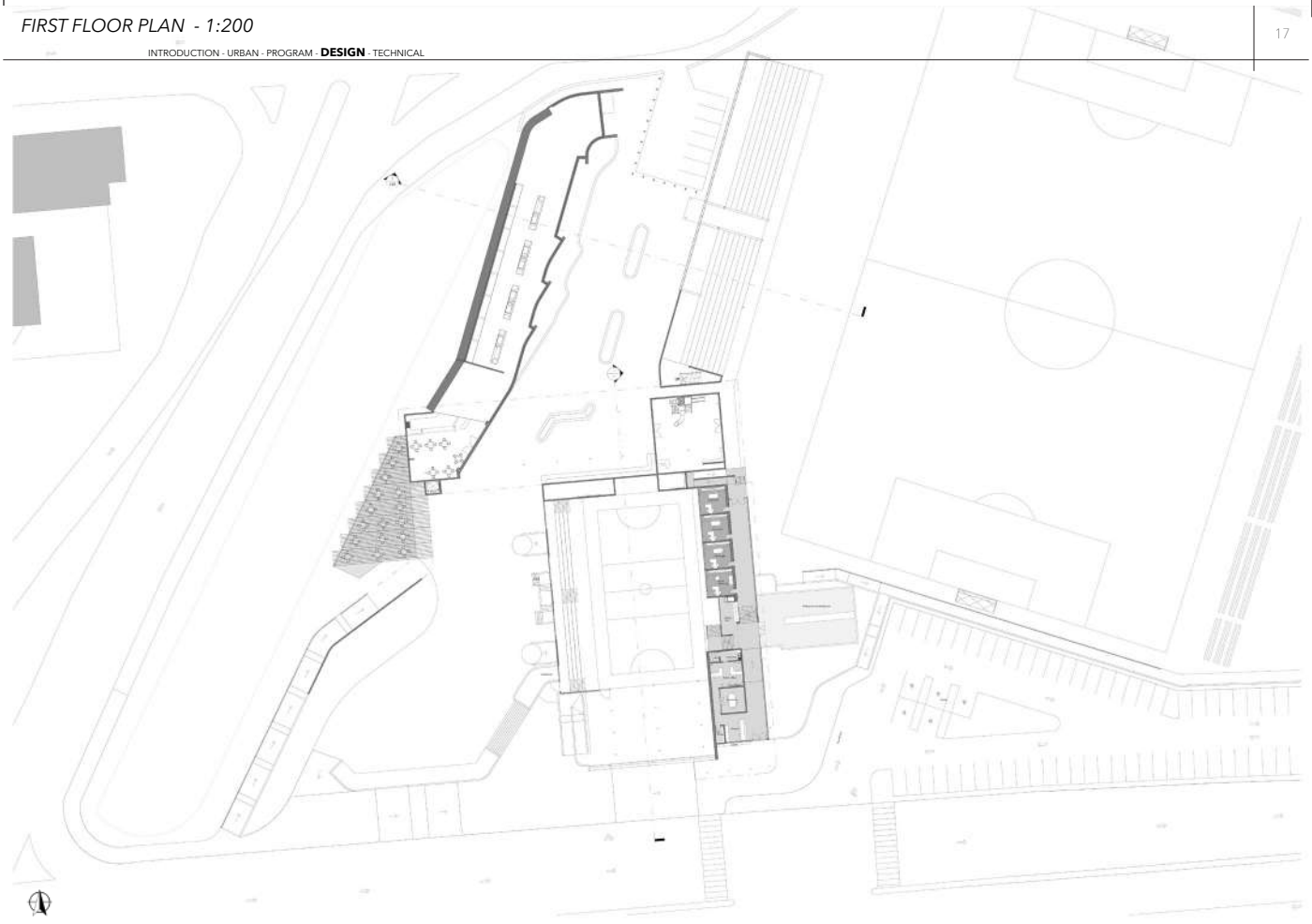


Fig.241: First Floor Plan (Author: 2019)

SECOND FLOOR PLAN - 1:200

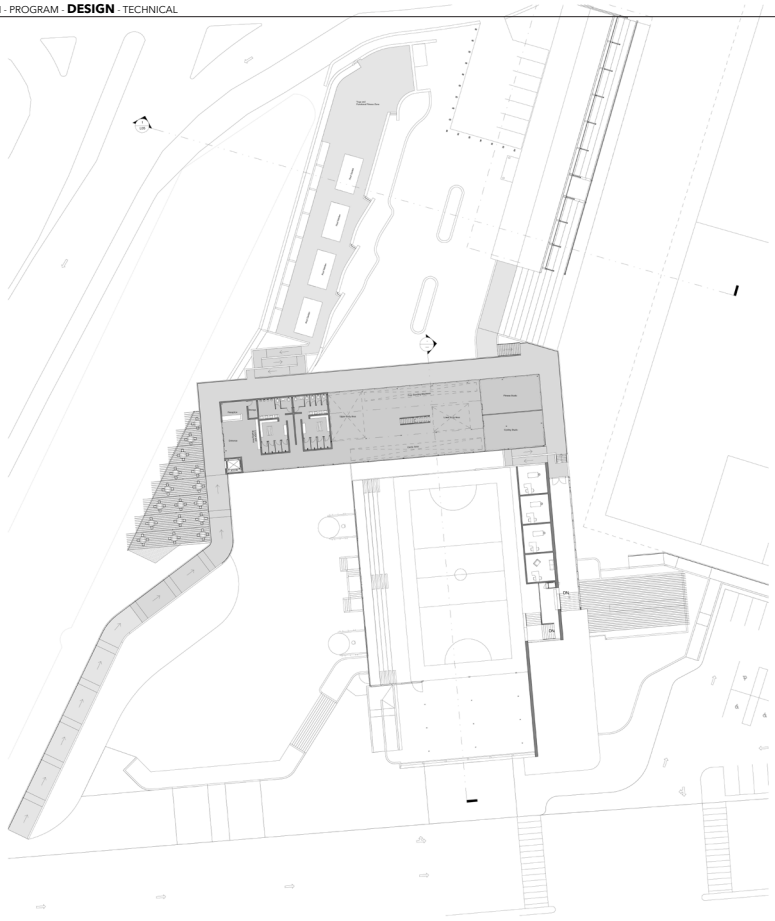


Fig.242: Second Floor Plan (Author: 2019)

19

MULTIPURPOSE SPORTS CENTRE SECTION - 1:50

INTRODUCTION - URBAN - PROGRAM - **DESIGN** - TECHNICAL

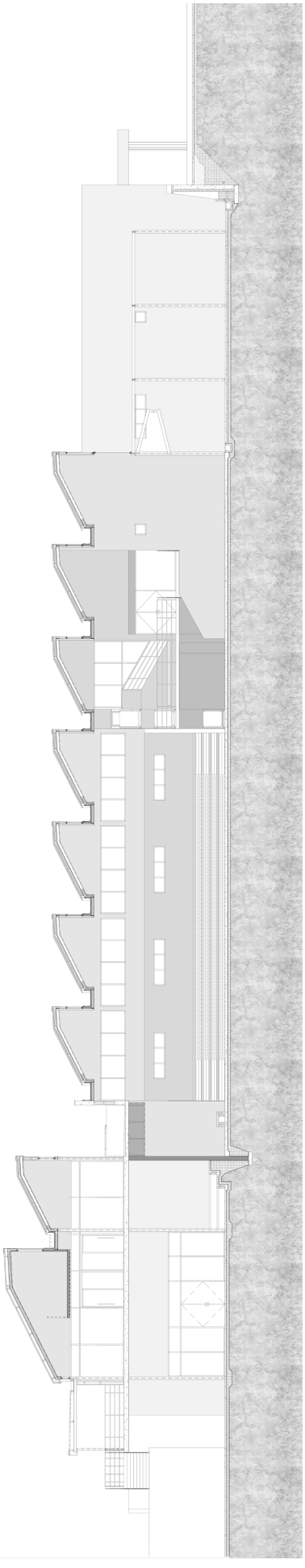


Fig.243: Multipurpose sports centre section (Author: 2019)

20

ACCOMMODATION SECTION - 1:50

INTRODUCTION - URBAN - PROGRAM - **DESIGN** - TECHNICAL

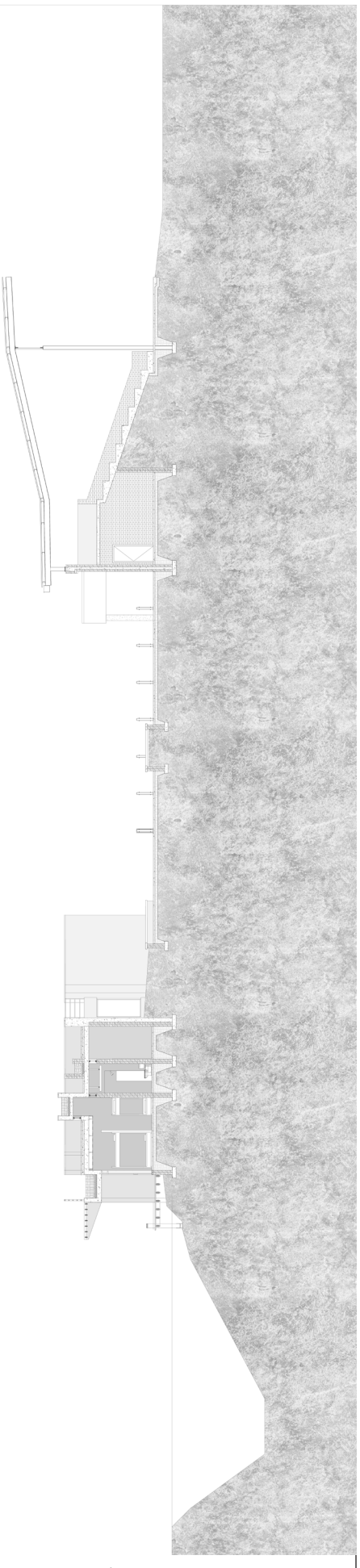


Fig.244: Accommodation section (Author: 2019)

MATERIALS

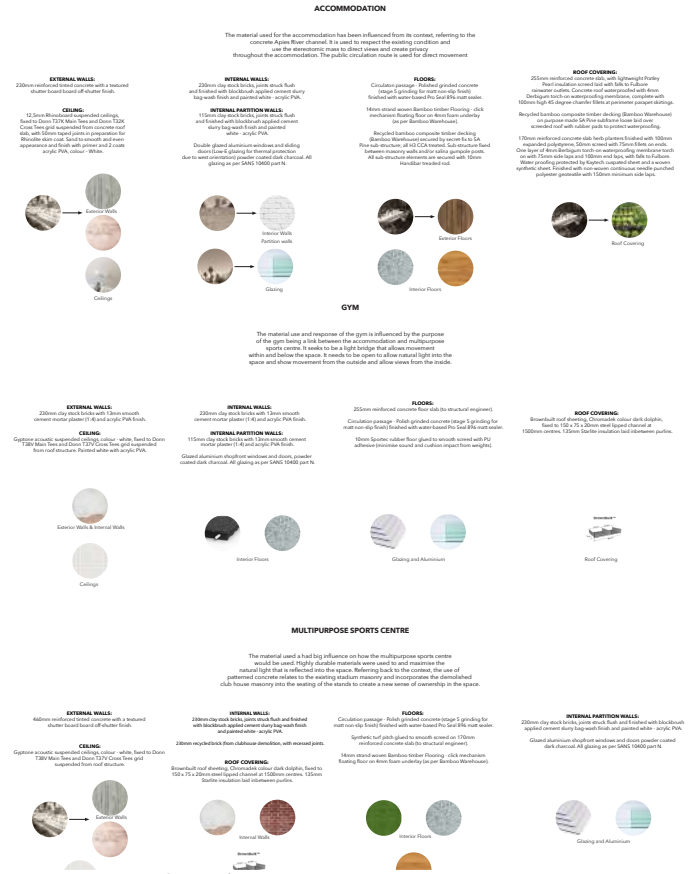


Fig.245: Materials (Author: 2019)

STRUCTURE

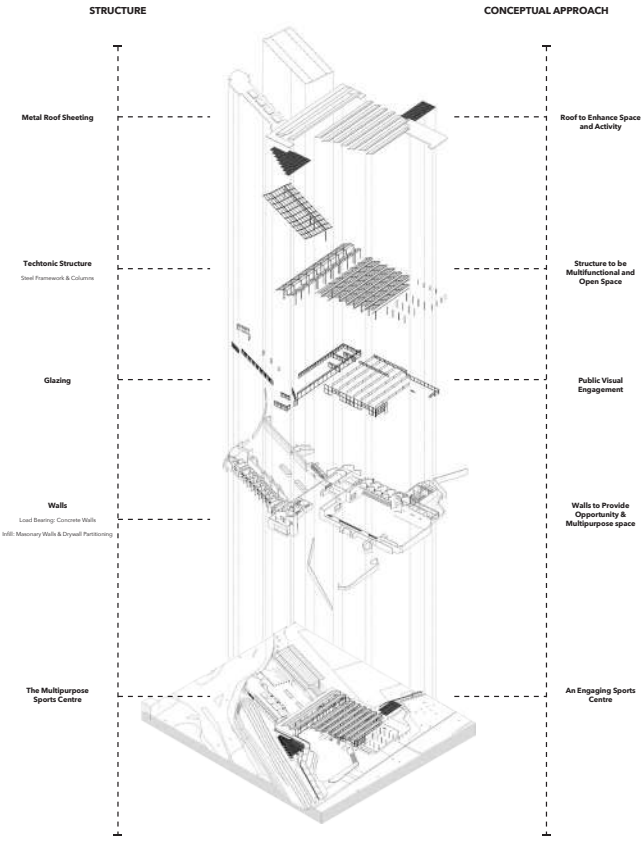


Fig.247: Structural Concept (Author: 2019)

RAINWATER COLLECTION & USE

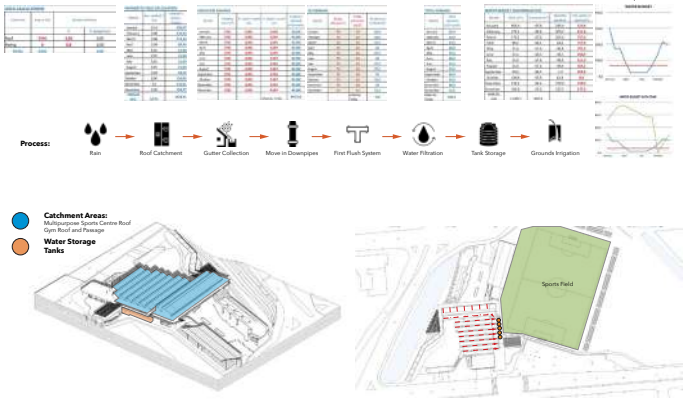


Fig.246: Rainwater Collection (Author: 2019)

9.4 FINAL MODEL

Fig.248: Sports centre and restaurant from road (Author: 2019)

Fig.249: Accommodation and Existing Stadium (Author: 2019)

Fig.250: Ramp up to gym and public area (Author: 2019)

Fig.251: Accommodation looking out to apies with roof gardens (Author: 2019)

Fig.252: Design with existing soccer field (Author: 2019)