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Change the GOAL

Promoting sports & community engagement through the integration of FNB Stadium

Shreya Ramsarup 1847529



Change the GOAL

Promoting sports & community engagement through the integration of FNB Stadium

A research report submitted to the Faculty of Engineering and The Built Environment, University of The Witwatersrand in fulfillment of the requirements for the degree: Master of Architecture (Professional) at the University of the Witwatersrand.

Student Name: Shreya Ramsarup
Student Number: 1847529
School of Architecture & Planning University of the Witwatersrand Johannesburg, South Africa
Supervisor: Deborah Kirkman
Date: 15 February 2024

Declaration

I, Shreya Ramsarup (1847529) am a student registered for the course ARPL7003 in the year 2023. I hereby declare the following:

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Shreya Ramsarup
15 February 2024

Abstract

South Africa has invested many billions of rands to build and renovate stadiums. This investment has some advantages, such as fostering national pride and boosting political and economic agendas. However, the benefit to the ordinary citizen is exaggerated. This is evident at the FNB Stadium, while used for elite sport, majority of the Soweto community do not come to the stadium. To the local community it a symbol of something beyond their lived worlds.

Against this context my project explored how the FNB stadium can become a sport and cultural-led space that locates local people at the center of its use identity. I explored the design of the stadium precinct as a mixed-use space with a focus on sport and football development, allowing opportunities for more people to better connect and understand what the stadium has to offer. This re-imagining of FNB as a stadium fostering broader community aims helps to break the pattern of the stadium as an alienated icon within this historically disadvantaged community.

Acknowledgments

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List of Acronyms

BRT – Bus Rapid Transit

DSAC – Department of Sport, Arts and Culture

DSRSA – Department of Sports and Recreation of South Africa

FIFA – Fédération Internationale De Football Association / International Federation of Association Football

FNB – First National Bank

IDP – Integrated Development Plan

PSL – Premiere Soccer League

SAFA – South African Football Association

SRSA – Sports and Recreation South Africa

YDF – Youth Development through Football

Chapter
01

Introduction

To host the FIFA World Cup in 2010, South Africa spent around R17 billion to build and renovate stadiums. This large expenditure was met with high levels of criticism in a country where 49% of the population lives below the poverty line and approximately 32% of citizens are currently unemployment (StatsSA, 2023). Nevertheless, the government's justification for committing to this mega infrastructure investment was for the purpose of fast-tracking growth and development which included poverty alleviation, and job creation (Molloy, 2015). After the World Cup, FNB Stadium was meant to emerge as an important symbol of economic and social regeneration in Soweto as it symbolised new pride and hope for the community. However, ten years after the World Cup the city was left with a magnificent stadium that is largely unused, and ultimately doing little to benefit the surrounding community (Molloy, 2015). Current use patterns illustrate that the stadium is used for football, rugby, major concerts and church events (SMSA, 2018). However, the frequency of these events is limited to only a few a year, indicating that the community only interact with the stadium a handful of times a year.

There are currently no clear social or architectural public planning initiatives that illustrate how the current use patterns of the stadium can be improved. A further emerging gap in the current use and planning of the stadium revolves around how the community can be more engaged and benefit from stadium.

South Africa's investment into construction of world class sports stadiums has many advantages, such as forging urban and national identities, fostering national pride, and boosting political and economic agendas. However, I would hence argue stadia like FNB end up benefiting elite athletes and promote elite sport development and when examined closely the benefit to the ordinary citizen is exaggerated. Despite FNB Stadium's small-scale outreach programmes, its impact on ordinary Soweto citizens is overrated and largely the Soweto community don't come to the stadium. To the Soweto community FNB stadium remains a symbol of something beyond their lived worlds.

Against this context my project explores how the FNB stadium can become a culture-led space that locates local people at the center of its use identity. I explored the design of a new sport development and community centre. A mixed-use space with public and private spaces connecting to different age groupings, and demographics in the area. By re-imagining FNB as a stadium fostering broader community aims it breaks the pattern of FNB as an alienated icon within the historically disadvantaged community.

One method to implement is integrating the Soweto community through sports development. Despite football having socio-historical significance, the development of soccer in the country has seen little improvement. Former Bafana Bafana coach, Stuart Baxter, states that there have not been enough consistent and structured investments into the approach to youth development in the game (Reddy, 2020). The country has an overwhelming amount of natural talent that needs to be consistently nurtured and developed to see an improvement in game results. Drawing on this, my project focuses on soccer advancement using sports development theory within the focus of facilities which illuminates the role of architecture within the context of stadium design and use. In framing my approach, my project examines sports development, specifically through the advancement of youth and woman's soccer.

By re visioning the stadium precinct, we are preserving the embedded memories the community has attached to the stadium and connecting past and present.

Currently, FNB's sustainability practices are focused on construction and design decisions that were made during the stadium renovation. There are no evident proposals for sustainable economic and social development within the stadium. Therefore, the project approaches sustainability by looking holistically at the life cycle of the stadium and the new development as an opportunity to improve the stadiums economic and social sustainability.

In framing its approach to sustainability, the study will draw on ideas that are consistent with circular economy theory. Circular economic theory suggests minimising waste though the continuous use of resources. This provides a new lens to examine the multi-purposing of FNB Stadium to connect it more strongly to people and place.



Figure 1. 1: Author's Image of FNB Stadium

1.2 Focus of Enquiry:

This study is framed around the following core research question, how can stadiums be more integrated into locality and community?

This then frames the objective for this which is to revision the purpose of stadiums by moving beyond merely elite sport development, into focusing equally on community integration and development. The aim the study posits is for FNB stadium to become a culture-led space that locates local people at the center of its use identity.

The study will be a qualitative study. Data will be collected from multiple sources enable me to develop a comprehensive understanding of the nature and context of the study. Firstly, I used desktop review which included books, online resources, research papers, journals, theses were complimented by semi structured expert interviews conducted with participants identified through professional networks and online research. The experts were selected based on their contextual knowledge and understanding informed from research. The participants were contacted via email. The case studies used in the project include best practice examples from successful sustainable stadiums and high-performance centres around the world. An analysis of different fitness parks and public spaces were also looked at to gain a greater understanding of how communities use public spaces. The study drew on research theories and themes focused on stadium identity, community stadiums, circular theory, and sport development.

The full document analysis is done using contextual information on Soweto and FNB Stadium, relevant official reports, statistics, and case studies. Analysis of this data elicited themes, that framed the conclusion and the emerging insights which will be found in the form of a proposed building design.

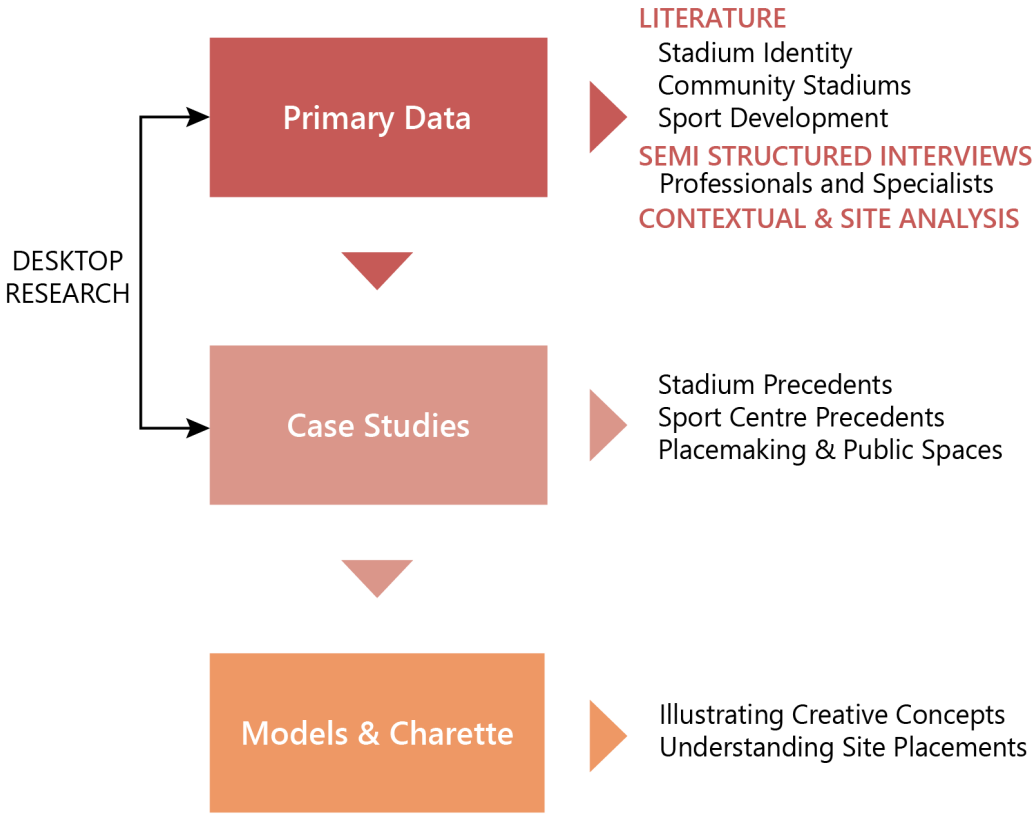


Figure 1. 2: Author's diagram illustrating overview of data collection methodology

Chapter
02

Stadium Identity & Adaption

2.1 The role of stadiums in society

The role of stadiums in society has been a contested subject as of lately. The sporting facility assists in forging urban and national identities, fosters national pride and boosts political and economic agendas. Melaniphy agrees in stating there is a positive impact on the economy resulting in a higher image of a city (Melaniphy, 2009). However, when examined closely the benefit to the ordinary citizen is exaggerated and Alegi argues that there is statistically “no significant positive correlation between sports facility construction and economic development” (Alegi, 2007) .

Through the years the increase in stadium investments came from the continuous development of the commodification of sport and larger media coverage (McTier, 2021). This saw rise in mass supporter attendance, prompting countries to fund larger, safer and more attractive stadiums in order to meet the growing demand.

In order to sustain these new large expenditures, all professional sport stadiums were forced to increase commercial streams to maximise revenue generation (McTier, 2021). Many stadiums resulted in incorporating corporate and conference suites, exhibition rooms, and the selling of stadium naming rights. Furthermore, the constant rising of ticket prices and the increasing need to attract wealthier attendees, results in stadiums becoming a place that limits many working-class supporters. McTier further examines that fans believe stadium officials are “favouring the commercial over the supporter” (McTier, 2021) and thus are receiving backlash when seeking support from the public. This can be seen as the spark that forced an organised effort into experimenting with the idea of community stadiums, which is further explored in chapter 3.

When examining FNB stadium it is undeniable that it is an iconic South African sporting venue that leads in terms of sporting events and boasts a mega event hosting strategy post 2010. However, despite its small-scale outreach programs, its impact on ordinary Soweto citizens is overrated and largely the Soweto community don’t come to the stadium. To the Soweto community it a symbol of something beyond their lived worlds. Therefore, it is a viable project to investigate how to better integrate these iconic structures with the community.

2.2 Stadiums as a collective memory and identity

The strong desire to protect and preserve the history and memory associated with historic existing sites has become a common topic in modern literature. It has been discussed that these sites act as “gateways to the past” (Dickinson, 1997) for many different cities and cultures. Barthel explains that the history associated within sites have been said to “anchor the collective memories” (Barthel, 1996) of our past with tangible evidence needed for future societal progress. Thus they are vital for the identity of a developing society.

Communities constitute their identity out of a collective memory, drawn from collective experiences (often shared) and visual and literary practices. This demonstrates that “before something becomes collective memory it must have been connected to people, places and occurrences”(McTier, 2021). Markers of this collective memory are often scattered across urban terrains and Skillings argues that stadiums are culturally significant objects that act to shape the identity of cities and reflect cultural attitudes (Skillings, 2017). His views are supported by Hell who argues that;

"Today the stadium is the meeting point of fans, it's where the ceremony including all its rituals happens. In periodic ceremonies the group consciousness gets reproduced and propagated to fans by singing the club hymns. The partition of the stadium in fan sectors strengthens the collective identity and the feeling of belonging together, in difference to the other group of fans." (Hell,2004 p 74)

Drawing from the above argument it is clear that stadiums provide a reference point for fans, are markers of memory in a community, they gather and connect people, to place and occurrences. Within South Africa it is often said that football is a religion, and stadiums offer an interesting expression of the terrain of urban collective memory production as it becomes a reference point for fans to gather, perform rituals and form political, cultural, and sporting connections to place.

In the context of my project, FNB Stadium was originally built in 1989. From its opening, the stadium has been etched into South Africa's political, sporting, and cultural history. The stadium was the site Nelson Mandela gave his first speech in the city after being released from prison. He stood on the west wing stands to deliver the speech to the thousands that had gathered. Through the reconstruction, architects retained parts of the original stadium's west wing due to its political and historical significance.

As earlier stated FNB Stadium has gone through the adaptive reuse due to aspects being integral to the collective memory and identity of the country parts of the stadium have remained. The current stadium has seen its own declaration of collective memory and identity in South African society. This is due to the successful 2010 FIFA World Cup, the multiple macro scale concerts, and church events that the venue held. Through these events the stadium perfectly justified Hells statement of a stadium being "the meeting point of the fans, it's where the ceremony including all its rituals happens" (Hell, 2004)

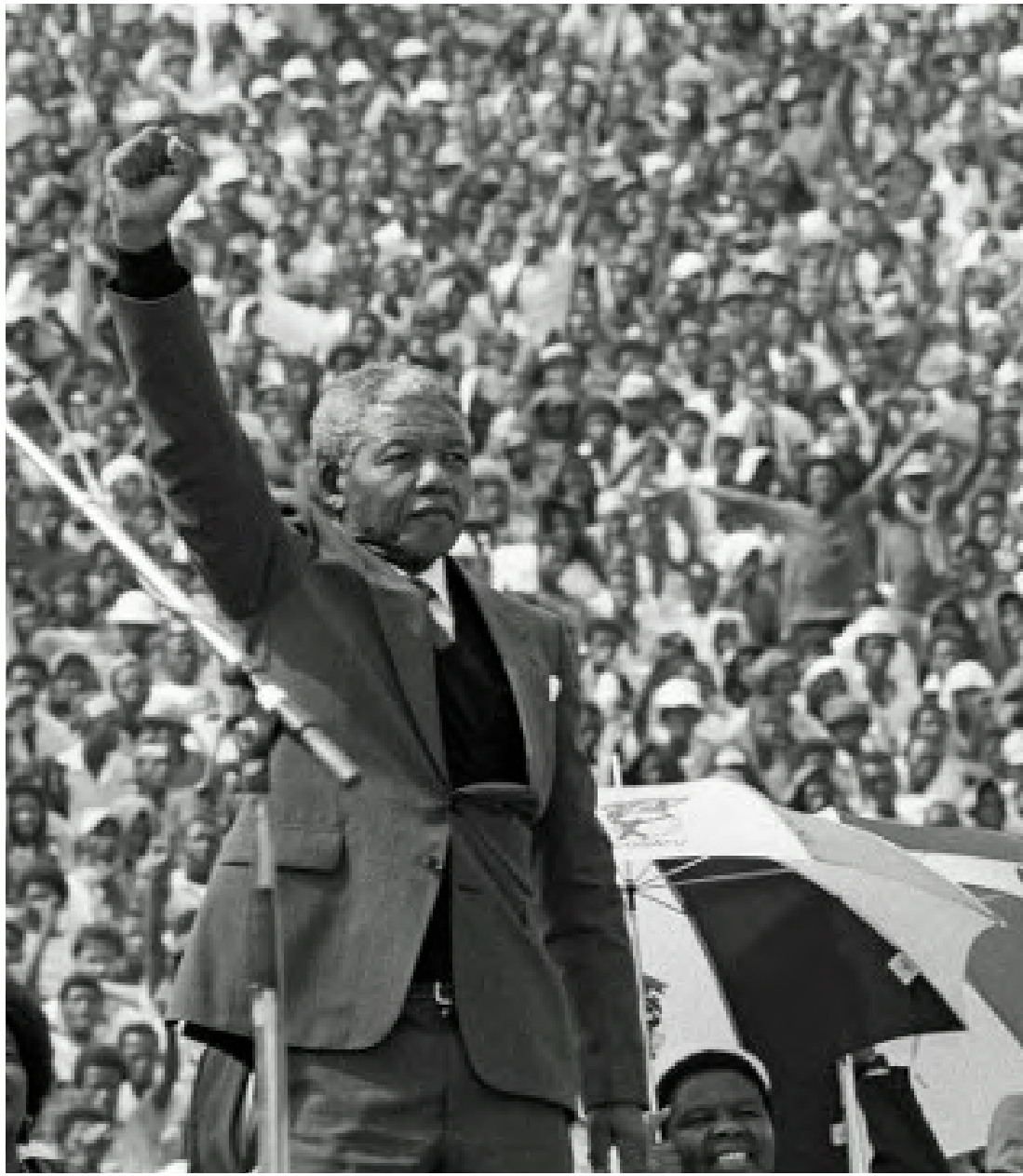


Figure 2. 1: Image of Mandela's first speech in Soweto (Alexander Caminada, 1990)

Chapter
03

Community Stadiums

In the preceding chapter it was mentioned that professional sports stadiums are no longer just mono-purpose sporting venues, instead they have become buildings that aim to be income generating spaces. Consequently, the idea of these stadiums has been widely classified as flagship developments that are known to attract a variety of economic investments from public and private entities (McTier, 2021). However, as McTier illustrates "the benefits especially for lower income communities are exaggerated" (McTier, 2021). Thus, the idea of community stadiums offers an interesting understanding of how professional sports stadiums can achieve both sporting and cultural goals while working in cooperation with community goals.

3.1 Understanding community stadiums

According to the City of New York Council community stadiums can be described as a professional sports stadium with the implementation of community aims, facilities, and services that reflect both the needs of the people and the club simultaneously (City of New York Council, 2010). McTier expands this definition by highlighting that:

> *"Community stadia are accessible, multi-functional buildings that work with their communities to offer a diverse range of non-match day facilities and services for their communities, alongside meeting the sporting and commercial demands that face all professional sports stadia." (McTier, 2021)*

Within strategic planning reports of the York and Cambridge community stadiums, the City of New York Council and PMP described these facilities as multi-functional buildings that include:

> *"Health provision, leisure provision, education facilities, general community provisions, sports facilities, as well as local retail and other businesses." (PMP, 2008)*



Figure 3. 1: Author's diagram illustrating the multi-functional uses of community stadiums

Sanders et al. (2014) suggests that the stadium is to be viewed "not only as a built, but also a social space, connected to specific social norms and practices" (Sanders et al, 2014). Previously described in chapter 2, the place major events are performed in become inscribed as markers of memory for the community. As such, football stadiums hold dual significance for both the club and the community and thus should take into consideration the community's needs and goals upon implementation. However, community integration does not happen easily. It is incredibly difficult to completely ignore the financial factor needed in order to support the required social aims. Furthermore, the PMP report regards accessibility as one of the key factors to consider. This is both in terms of geographic accessibility and the ability for the stadium to be "accessible to the communities it serves at all times, during the day and evening, on weekdays and weekends" (PMP, 2008). This is a difficult feat to accomplish and poses many difficulties, but it is important to understand in order to make a lasting positive contribution in the area.

By viewing the stadium as a destination, place attachment becomes a major factor in having consistent users. When a site is disconnected from the community, it becomes more of a pilgrimage for tourists and fans instead of a daily multi-functional space. Geographically more modern stadiums are removed from its community. Weng suggests this is due to minimising neighborhood disruptions, and businesses paying reduced land costs (Weng, 2022).

Weng perceives that by placing the stadium on the out skirts it could help in community centered regeneration (Weng, 2022). This can improve the public realm and perception of the area, as well as stimulate more developments in the area. Resulting in more people using the space permanently. Consequently, making the building of the stadium more viable. Which is the hope of my development project.

3.2 The 'quadruple bottom line'

McTier conceptualises the idea of the 'quadruple bottom line' as the vision of a community stadium. This outlines the potential of for professional sports stadiums that can expand to offer sporting, commercial, cultural, and community goals within the facility (McTier, 2021). It is important to note that many professional stadiums offer more diverse services that are open to the locals even though they are not labeled as 'community stadiums'. For instance, stadiums have meeting or conference rooms that can be rented out as well as concerts and festivals that can be held to engage with the local community. However, the difference lies in the importance of the stadiums community goals and whether it can successfully implement both the sporting, economic, cultural, and community aims simultaneously. This is a difficult challenge to balance all four categories successfully, specifically between the commercial and community goals. It is important and necessary to maximise revenue in order to sustain a stadium, though it can cause disagreements and distrust amongst the locals in need (McTier, 2021). Therefore, the implementation of stadiums could bring in more businesses to the area and greater opportunities can be created to support local businesses in order to create more jobs and a sustainable surrounding environment.

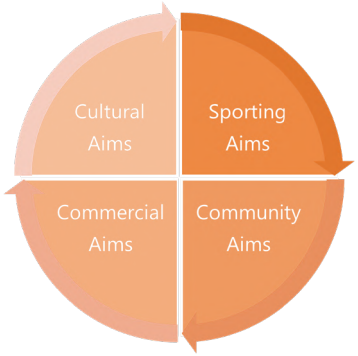


Figure 3. 2: Author's diagram illustrating the quadruple bottom line concept

3.3 Brighton & Hove Albion FC's Amex Community Stadium

The notion of community stadiums is a rather new concept. Interest in the topic is steadily increasing, however, there is still limited literature present at the time. McTier expresses that one of the only community stadiums referenced in literature today is the Brighton & Hove Albion FC's Amex Community Stadium (McTier, 2021). The facility officially opened in 2011 and is situated in Village Way, Brighton, in the United Kingdom, and immediately became a permanent home for the Brighton club. The team did not have a permanent home for their club until 2011.

Sanders et al. (2014) explains that the reason the club decided to opt for a community stadium rather than a conventional professional football stadium due to two reasons. Essentially, in sporting terms the new design of the stadium would enhance the relationship between the club and its fan base. Whilst with a community focus the new design provided a permanent space for the club's AITC outreach program and for the local disadvantaged people in the area. Some of the community initiatives include increased football participation which includes after school football clubs and holiday football schools in order to develop new football talent at a young age (Sottoriva, 2013). The club values mental and physical wellbeing and therefore offers multiple programmes encourages personal development and helps people make positive life choices (Sottoriva, 2013). As well as an employment development structure that supports adults to start or grow their careers and by using the training and skills programmes to help them begin a new career path (Sottoriva, 2013). Thus, through the multi-functional and mixed-use programmatic structure that addresses sporting, education, health, and culture within the community. Which ultimately "concretises the stadium as a place of the people – as well as being home to the football club itself" (Sanders et al, 2014)

In terms of whether community stadiums can survive on social goals in a juxtaposed economically driven world, Amex community Stadium successfully achieved to continuously deliver on their community initiatives over the years. This has brought a commendable amount of help and opportunities to the local community and provided the town with immense pride. However, it is undeniable that the stadium and its community programmes are largely privately financed by American Express. Therefore, the success of the programmes has a strong link to the amount of financial support received.



Figure 3. 3: Image of Amex Community Stadium (Istitene, 2017)

Chapter
04

Sport Development in South Africa

4.1 Context and background of sport in South Africa

At the end of the Rugby World Cup in 1995, Nelson Mandela said, “Sport has the power to change the world. Sport has the power to inspire. It has the power to unite people in a way that little else does. It speaks to youth in a language they understand. Sport can create hope where there was only despair” (Kluka, 2008). In a country like South Africa that has experienced division before, sport has become an outlet that inspires and brings people together no matter their background. Whether it is in a large commercialised stadium or on the unpaved streets in Soweto, there are people celebrating, laughing, crying and forging relationships, which is exactly what sport aims to do. As to be discussed later in the chapter the value of sport to a country is imperative as it helps with social cohesion, nation building, and plays a part in alleviating youth depression and deviance (Burnett, 2021).

The global patterns of inequality mimic a segregated and divided society. Whilst the current economic and social climate in South Africa is juxtaposed daily. This is a direct result of the system of Apartheid where people experienced severe racial segregation and inequality, which led to generations of South Africans being socially, politically and economically marginalised (Burnett, 2021). The current country Gini coefficient sits at 0.68 with over 13 million residents living in extreme poverty, resulting in an extremely unequal society. Furthermore, in 2022 StatsSA illustrates that over 32% of the South African population are unemployed and almost 56% of the youth are experiencing drastic rates of unemployment (StatsSA, 2023). This insight provides justification to why change is needed in the current context of the country.

To address the issue of history in a divided society, transformation opportunities in sport need to be created and sustained. In an extract from the Transformation Charter of 2011, former Minister of Sport Recreation Mr. Fikile Mbalula, emphasised the need of transformation in sport (Botha, 2018). Consequently, the SRSA successfully launched a sport development program that focuses on developing popular sports in rural areas, such as football, rugby, athletics, and cricket (Botha, 2018). However, due to the large number of people in need of new sporting programmes, the amount of available funding is not enough. Therefore, majority financial support is prescribed to known players instead of supporting new players in their efforts. Thus, leading to natural sporting talent being left nurtured.

4.2 The value of sport in society

By conducting a case for the value of sport, I in no way expect sport to become the main solution to the entrenched problems of the country. However, it may contribute to developing a more comprehensive approach to achieving and providing positive effects in many fields such as, health, education, social relations and transformation, economy, and nation building (Burnett, 2021). A greater illustration is represented in figure 4.1 below.

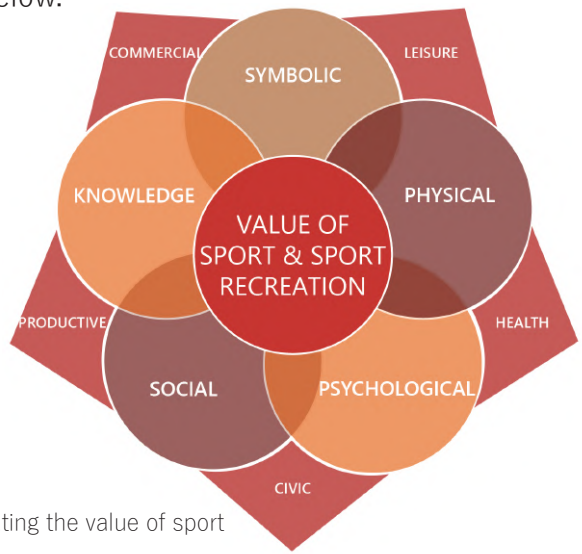


Figure 4.1: Author’s diagram illustrating the value of sport

(1) Social Cohesion & Community

The Zulu word 'Ubuntu' means to recognise the humanity of others (Cloete and Kotze, 2009). In a South African context, the word represents a sense of collective identity, respect, and passion that is often experienced in the field of sport, particularly in football. Furthermore, this is as the term expresses the idea of social bonding, comradery, inclusivity, and a sense of belonging which is often felt when participating in a sports team. This idea of sport as a social connector provides a strong community integration tactic whereby sport participation provides a sense of belonging through the understanding of trust. In a poetic and symbolic understanding Sanders et al. suggests:

> *"Community shares a close affinity with football: if football transcends its status as a sport, community transcends its status as a concept. Community is a concept that has summarily become universal, or so it seems." (Sanders et al, 2014)*

Many studies have been done around the world on how sport builds relationships and creates a sense of community. In a 2018 paper on sports development, English researchers concluded that by implementing traditional sports club activities allowed for the creation of communities within marginalised areas (Skinner, Zakus and Cowell, 2008). They also stated that the addition of school sports education and training helped children that were experiencing depression, as it allowed for the students to develop a sense of trust and solidarity among their peers (Skinner, Zakus and Cowell, 2008). The European commission recently conducted a report indicating levels of sport participation and its influence in different European countries. Malta showed an increase in youth participation from 2014 to 2017 (European Commission, 2018), resulting in a positive outlet for youth bonding and integration.

(2) Nation Building

In times of turmoil nation building aims to unify divided populations with the hope to collectively work towards social, economic, and political transformation in a country. This often is publicly visible during the hosting of grandeur sporting events. For example, in 1995 South Africa hosted and won the Rugby World Cup bringing immense national pride and a sense of healing to a recovering state after years of Apartheid. Hosting these large sporting events not only increases nationalism but also has huge political influence. For powerful, developed nations, hosting large events become a "social, cultural and symbolic capital" (Burnett, 2021) which creates new and extensive links of interaction between different communities and provides strong national power. However, for developing economies, such as South Africa, successfully hosting a large scale international event provides global recognition in that specific field, which in the long term may attract strong international support and investments.

In 2010, South Africa hosted the FIFA World Cup which catapulted the country into the international stage of major sporting nations (Cloete and Kotze, 2009). There was a strong influence of international Afro-pessimism before the World Cup, which was shortly proven incorrect during the duration of the tournament (Burnett, 2021). Throughout the tournament a constant increase in social and positive integration was emerging in the country which created a sense of community and national pride. This was not always the case, as the initial capital investment used for preparation of the World Cup was negatively met by the taxpaying population. However, it allowed the country to forge a national and international identity by displaying an inviting spirit of camaraderie that is pertinent when nation building. It can be stated that for the people of South Africa the World Cup provided a collective memory and a stronger national identity for us all.

(3) Addressing Social Deviance

Accurately measuring crime reduction sporting interventions is quite a challenge as there can always be other external factors involved. However, the Australian Institute of Criminology on sport, conducted a study reviewing 175 sport programmes around the world, where almost 80% of the programmes consisted of young people at risk of drug use or other criminal behavior (Makkai, 2004). Some of the concluding positive results from the report state that sport participation:

- Alleviates boredom, and depression by creating positive and enjoyable environments;
- Promotes a sense of fair, equal, and social relationships across different life fields;
- Forging strong bonds, positive support and more peer friendships;
- Creating and encouraging positive youth engagement by reducing anti-social behavior activities.

In a South African context, the YDF (Youth Development through Football) program was created to promote youth development through football. The program specifically targets disadvantaged girls and boys in Cape Town, and to provide innovative football and skills development that can help overcome discrimination, improve health, and provide a safe and secure space for the athletes (Burnett, 2021). Figure 4.2 illustrates how the YDF uses football as a tool to create sustainable change in the community. Consequently, reports illustrated continuous positive results of a 15% decrease in youth criminal activities, a 29.7% reduction in psychological violence and a more than 15% reduction in on-the-field violence (Burnett, 2021).

To review, it is evident through research that sport is a valuable asset for social cohesion, nation building and to lessen youth criminal deviances. However, the challenge becomes how to create and implement policies that monitor sport intervention practices so that it has a lasting effect on the community and youth of the country. It is thus evident that the national government sector has an important role to play in supplying and distributing resources needed, display strong leadership roles that forge future local and international partnerships that can help address the socio-political agenda through sport.

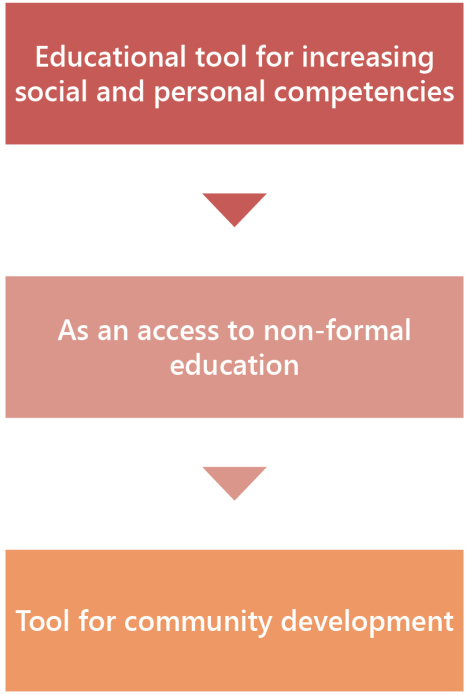


Figure 4. 2: Author's diagram illustrating YDF planned outcomes

4.3 Talent Identification and Development

After the 1995 'Bosman Ruling' was announced by the European Court of Human Rights, professional football clubs were stopped from denying a player's exit after contract termination (Williams and Reilly, 2000). Thus, it became important for clubs to retain their most talented players in an attempt to remain competitive, resulting in more clubs investing large amounts of money to identify and support potential and current elite players. Consequently, youth detection and identification in football has increased over the years, as starting at an early age will ensure they receive specific coaching that will accelerate their skills development process (Burnett, 2021). This allows clubs to focus on developing a smaller group of players into elite athletes.

Talent identification refers to "the process of recognizing current participants with potential to become elite players" (Williams and Reilly, 2000). Currently, to identify potential new players, football scouts use an assessment criteria that consists of: (Williams and Reilly, 2000)

- "TABS (Technique, Attitude, Balance, Speed),
- SUPS (Speed, Understanding, Personality, Skill) and
- TIPS (Talent, Intelligence, Personality, Speed)."

However, over the years there has been a shift in professional coaches and scouts moving from talent identification to talent development processes. Talent development refers to ensure that "players are provided with a suitable learning environment so that they have the opportunity to realize their potential." (Williams and Reilly, 2000). Although both concepts are supposed to be separate, it is evident that potential new athletes from marginalised communities are currently selected for teams based on their current talent at that particular moment in time (Botha, 2018). This illustrates why community sport development programmes need to be more inclusive and more readily available to disadvantaged communities, in an attempt to lessen the gap of privilege.

In South Africa, we witness an overwhelming amount of natural talent and yet the development of football in the country has seen little improvement. Former Bafana Bafana coach, Stuart Baxter, states that there has not been enough constant structured investments into youth development in the game (Reddy, 2020). Hence, talent is not consistently nurtured and developed to see an improvement in match results.

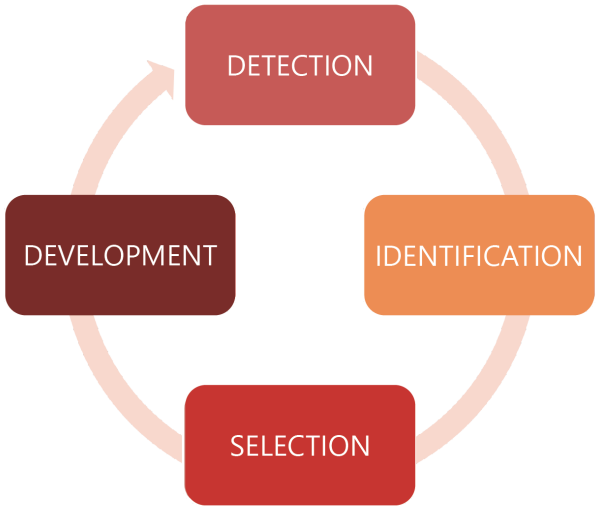


Figure 4. 3: Author's diagram illustrating sport scouting process for potential new players

4.4 Elevating women in football

The theory of gender equality suggests that men and women have the same and equal rights, access to opportunities, access to resources, obligations, and outcomes in every area of society. Hence, since 1994, the South African government prohibited gender inequality and put forth various initiatives to address all forms of gender discrimination, specifically against women (DSRSA, 2011). However, even if gender transformation has increased in sport and sport management structures, the status of inequality regarding women's participation and leadership in sport are still prevalent today.

A document published by the Department of Sport, Arts and Culture (DSAC) illustrated that there was a drastic yearly drop of 10% in female participation in multiple sports for the last few years (DSAC, 2022). The outlier being netball which saw almost 98% of female participation (DSAC, 2022). This is an unsurprising statistic when it is understood that most schools in the country offer very few sports. For example, when sport is offered it is often gender specific to include football for boys, netball for girls and sometimes athletics. In the book 'Playing with the Boys: Why Separate is not Equal in Sports' by McDonagh and Pappano suggest moving from the current gender-based, male female, system to a gender-neutral approach to sport (McDonagh & Pappano, 2009).

> *"We should not sort athletes by what sex they are, but rather by their skill, interest, and ability in relation to the particular sports they wish to play. The only qualifications for playing sports, therefore, should be those related to an individual's abilities to play, not attributes stereotypically assigned to the sex or race group to which the individual belongs." (McDonagh & Pappano, 2009)*

I do agree that true gender transformation and female domination in sport can only happen if skewed gender stereotypes decrease, if not stop entirely. However, it is undeniable that women and men are physiologically, genetically and hormonally different. Therefore, a gender-neutral approach to sport is ideal, it also comes with many logistical challenges that cannot be ignored.

In the context of football, it has been historically "constructed as a flagship male sport" (Pelak, 2010). It was not until the early 1970s when women collectively challenged these gender discriminatory roles in football were they allowed to participate in the game. However, gender discrimination in the sport is still widely prevalent today.

It is interesting to note that the South African National Womans team, Banyana Banyana has been ranked higher than Bafana Bafana (South African National Male Team) for the last 10 years in the FIFA world rankings. However, the women's team is still not widely recognised and appreciated. A player in the women's team receives less than 60% of a male players salary, as well as receives less coverage and advertisements, and cannot train in the same facilities as their male counterparts (Pelak, 2010). Yenor demonstrates the societal idea of "where strength, speed, and agility are the factors determining success, human beings watch men's sports" (Yenor, 2021). Due to socialisation standards on "what people know", sporting women are marginalised. Pelak further states that it is not due to a lack of talent or determination from female footballers in the country, it is however indicative of the lack of adequate financial support from investors and organisations like SAFA (Pelak, 2010).

Organisations are realising the importance of nurturing womens football and are implementing measures to decrease the gender gap in the sport. FIFA has administered the FIFA's Women's Football Strategy with the aim to grow female participation, enhance their commercial value, and building a better foundation for female leadership and growth (FIFA, 2022). Although this is a start, more can be done in terms of promoting and supporting female football talent.

An example could be South Africa hosting the next Women's FIFA World Cup in the same capacity as the country did for the men's tournament. Other investments can be made into developing and supporting girls' football in schools, the creation of female PSL teams with adequate training facilities and hiring more trained female staff in the DSRSA and SAFA offices.

Therefore, through the development of the this training facility in FNB Stadium, I hope to positively contribute to the growth and development of females in football. This design aims to support both female and male athletes through providing the same access to facilities and amenities in order for everyone, regardless of their gender, can grow in the sport.



Figure 4. 2: Banyana Banyana celebrating after winning the 2022 Women's Africa Cup of Nations (Mostafa, 2022)

Chapter
05

Case Studies

5.1 Nike Football Training Centre

Location: Soweto, South Africa
Date of Completion: 2010
Site Area: 47 740 m2
Building Area: 5 610 m2
Architect: c76 Architects
Club: Local Community Teams



Figure 5. 1: Context of Nike Football Training Centre (Google Earth, 2015)

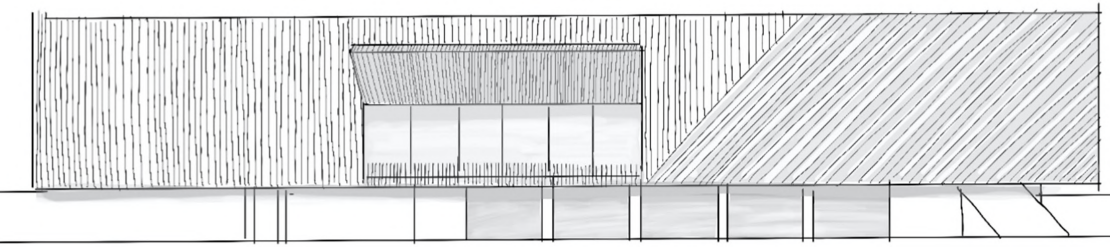


Figure 5. 2: Northern facade illustration showing timber detailing (Author's drawing)

The township of Soweto is situated on the outskirts of Johannesburg, South Africa. Due to the densely populated township, formal spaces designated for the game of football is limited. Therefore, most of the community play on informal, makeshift fields as an improvisation (Grønlund, 2021). Therefore the opening of the Nike Football Training Centre was widely welcomed and appreciated by the community.

Being the one of the first of its kind in Africa, the new advanced training facility consists of both full and half sized football fields, state of the art locker rooms and players' lounge, an educational facility to hold lectures, a training gym, medical facilities, a small scale restaurant used during events, and a rooftop viewing deck overlooking the Soweto township (Gleish, 2010). The educational facility is often used for lectures and skills development courses run by professional Nike athletes and coaches. This is where the new athletes can learn tactical and strategic aspects of the game from experts in the field.

The intent for the project was to create a lifelong home for football in South Africa that would hopefully continue after the 2010 FIFA World Cup (Gleish, 2010). Therefore it was important for the facility to connect strongly with its surroundings and communicate a proud and powerful sense of place within Soweto. Which can be seen in the deliberate influence of locality within the design and use of local materials within the interiors and exteriors of the facility. Furthermore, the centre has set up a 'Grass Roots Football and Life Skillz' program which is a youth centre that focuses on developing and helping adolescent children through the difficult early teenage years (Grassroots, 2023). The program uses the surrounding communities have for football to engage with the children and help them make healthy choices for their future. This is done through an adolescent-friendly health curriculum, supportive and friendly local mentors, and instilling a positive environment and culture.

Security and safety has been an issue in the area due to the worsening economic and social climate of the township (Grønlund, 2021). Therefore, personal safety was a priority in the design of the centre, with the hopes that the users could focus on training without having to worry about some of their daily problems. However, as stated previously the project still needed to engage with the surrounding community. The facility needed to become a visual connecting space where the youth of the community could visibly see the players on the field and want to join in. Thus, security became integrated into the design using Clear View fencing around the perimeter to allow for community views of the facility while still keeping the facility private and safe for the athletes using the facility (Gleish, 2010). This is illustrated in figure 5.2 below.

One of the main concepts when designing the centre was to create a clear and interlinked network of spaces that support and aid easy circulation between programmes. This is evident in the diagrammatic analysis in figure 5.3. The hope with this is that the facility should flow and have an element of transparency between functions, while still being able to effectively work as a secure and safe venue to learn and develop football.

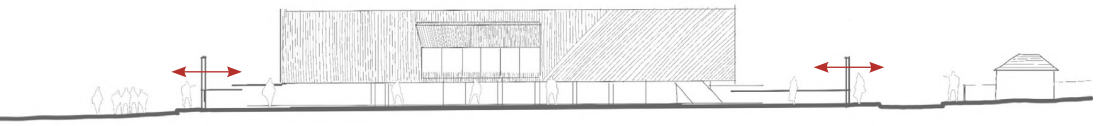


Figure 5. 3: Section showing centre's relationship to the community through claer view fencing (Author's drawing)

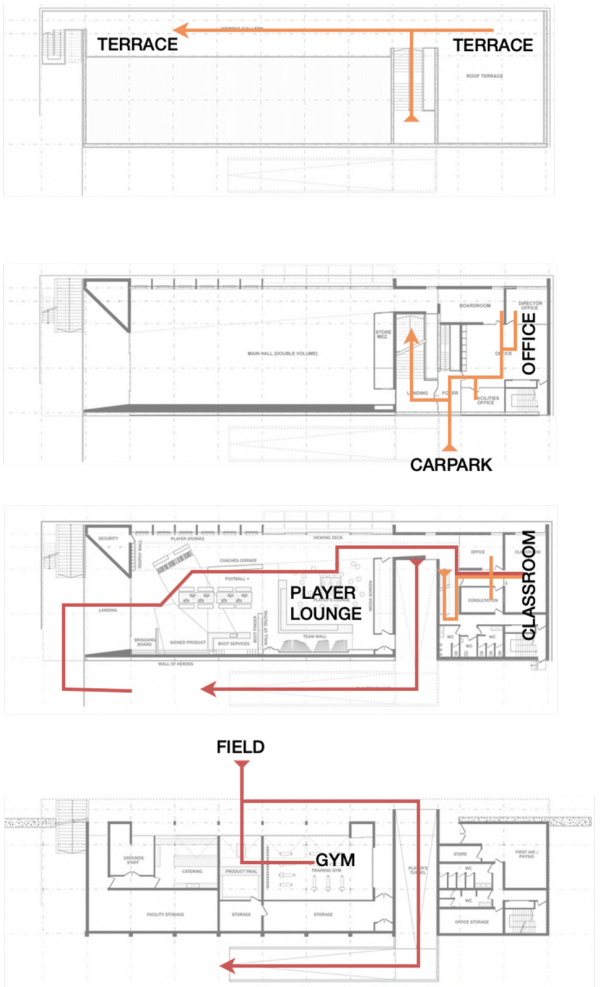


Figure 5. 4: Athlete and staff circulation through building (Author's drawing)

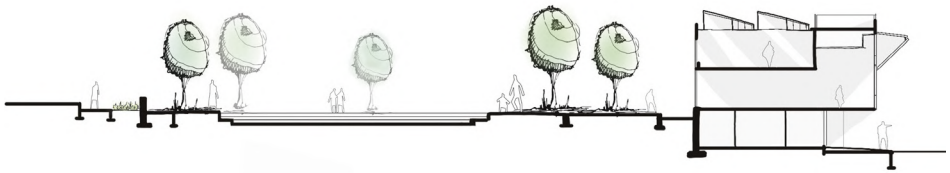


Figure 5. 5: Section illustrating the social space on the exterior of the building (Author's drawing)

Furthermore, the connection to the community was enhanced through the newly developed ‘social yard’ of the Nike football precinct. This includes a full size professional skate park, basketball courts, 5-a-side football fields, athletics oval and a cross country running track, which are all surrounding the centre. By implementing colourful, open thresholds and rejecting standardised high boundary walls, the community is both visibly and physically connected to the space. This is visually illustrated in figure 5.5 and 5.6. A large communal canopy is draped across the yard to provide shaded seating and gathering spaces once again connecting the community to the centre.

As stated previously, the design of the centre incorporated local materials such as, concrete, sandstone, timber and steel, which were used to connect the building to its site and context. The materials were used non-traditionally in an attempt to create dynamic shadows that enhance the beauty and simplicity within the interiors. This was done by overlapping and adjusting directions of the different materials in an attempt to create different shadows depending on the programmatic function of the space, this is evident in figure 5.4. The external placement of the panels were a deliberate attempt to create a vertical timber louvre system on the northern and western edges of the building. The use of the louvre screens minimises passive solar gain. This provides both a functionally, secure yet beautiful perimeter to the building which allows the user to comfortably view the field without having harsh natural light interfere. This is also evident in figure 5.8 where the large steel doors can open updating the day to allow for more natural light to enter the building and allow for a more open and natural feel throughout the building.

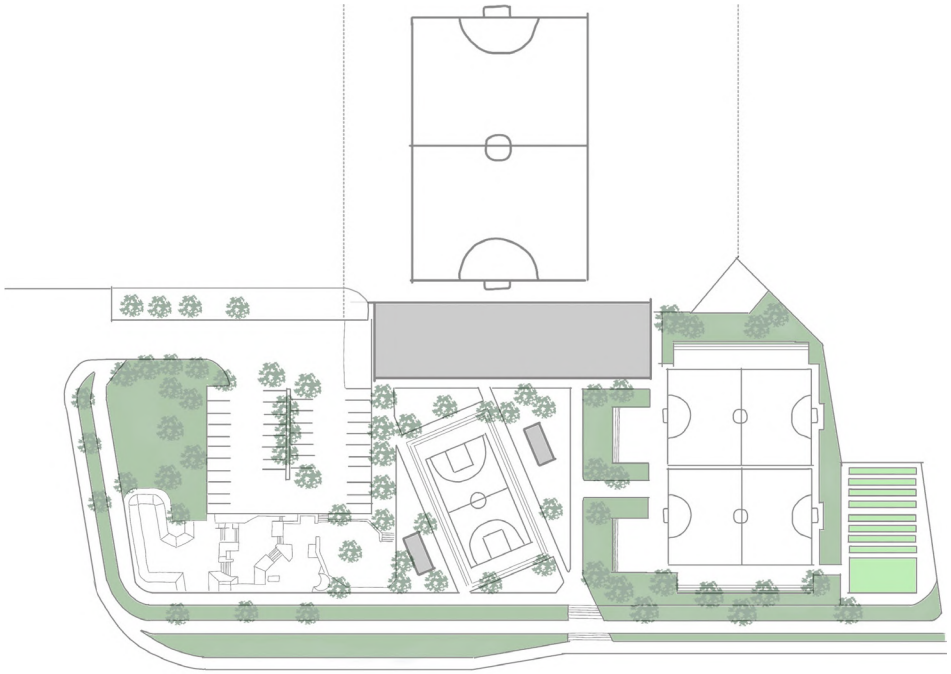


Figure 5. 6: Site plan of Nike ‘Social Yard’ (Author’s drawing)

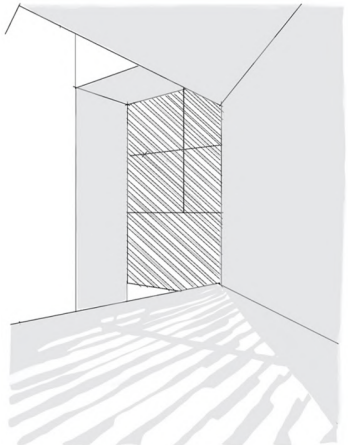


Figure 5. 7: Internal shadow depiction (Author’s drawing)

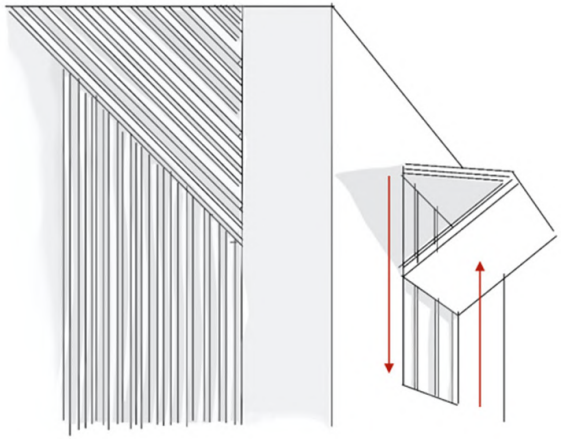


Figure 5. 8: Movement of external timber screening (Author’s drawing)

5.2 City Football Academy

Location: Manchester, United Kingdom
Date of Completion: 2014
Site Area: 300 310 m2
Building Area: 64 760 m2
Architect: Rafael Vinoly Architects
Sustainability Rating: LEED Gold
Club: Manchester City Football Club



Figure 5. 9: Aerial image illustrating the context change from 2011 to 2020 (Google Earth , 2023)

English football is one of the most competitive and most watched football competitions in the world (Reeves, 2012). Therefore, clubs and teams like Manchester City need to continuously be on the lookout for new rising talent. Thus, aim of the project was to produce a world class football facility with the hopes to recruit and train young athletic talent (Reeves, 2012). Through this development, the project would reuse and rejuvenate the overlooked and polluted site situated in industrial Manchester. The site is situated diagonally across from Ethihad Stadium, which proves the surrounding community is already passionate about the sport. The football campus can accommodate over 200 men, women and other young athletes where they can participate in extensive and competitive football training, injury rehabilitation and management, and other research and skills development training (InspireSport, 2023). Consequently, the goal of the facility is to create the next generation of elite Manchester City Club footballers. This raises the thought on my development facility, in which if am I specifically looking at developing footballers for Kaiser Chiefs as FNB stadium is their home ground, or is it an independent facility looking to develop local football for all teams.

Social and economic sustainability for the surrounding community was at the forefront when designing the new facility. Therefore, the project started as a way to rejuvenate the surrounding industrial area. The community previously called the site a ‘giant wasteland’ and a ‘pile of mud’ that was not giving any benefit to the community as well as ruining the overall look and environment of the area (Gaughan, 2022). The goals of the new development are to increase economic and social development by helping not only the people using the club but also the community outside the club, with an attempt to make the overall environment better. The positive social, economic and environmental goals achieved from the project is illustrated below in figure 5.10 (Gaughan, 2022).

The new sporting and entertainment facilities is a part of the development surrounding Manchester City Football Club's Etihad Stadium. The position of the new facilities takes full advantage of the existing stadium and its local surroundings through the pedestrian bridge and public plaza as the connecting phase between public and private facilities. This is illustrated through the diagrammatic analysis in figure 5.13. The stadium is completely separate from the training precinct in comparison to my project where I am implementing them to be more connected and interactive.

The City Football Academy precinct is broken up into separate buildings according to the associated core programs in an attempt to improve efficiency and security within the large site. The first building is the stadium and club headquarters which contains bathrooms, concession stands, full sized auditorium and meeting rooms, and stadium stands which all surround a full size football field used for competitive matches (InspireSport, 2023). The second building is the training facility which consists of a youth athlete training facility with a gym, locker rooms, medical area and lounge, as well as a separate elite athlete training facility with a gym, locker rooms, medical facilities and suites (InspireSport, 2023). Both the youth and elite facilities are surrounding and connected by the central 2 half sized training fields. Externally to these buildings there are also 12 half size football fields and 4 full size football fields which are used by all junior, senior, men's and women's teams. (InspireSport, 2023)

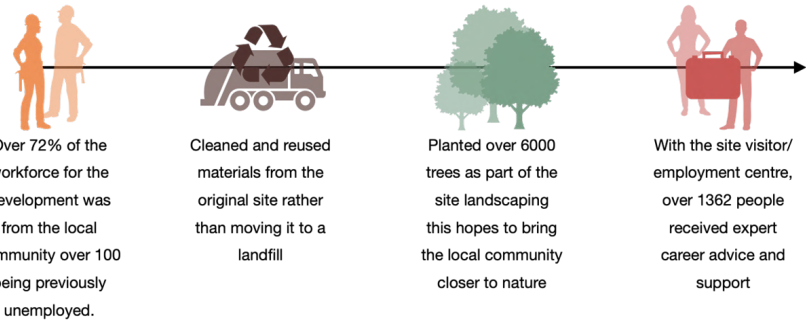


Figure 5. 10: Social, economic and environmental outcomes (Author's drawing)

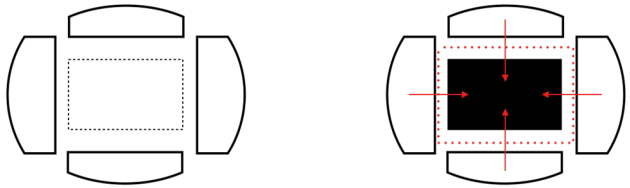


Figure 5. 11: Stadium and club headquarters connected by the field (Author's drawing)

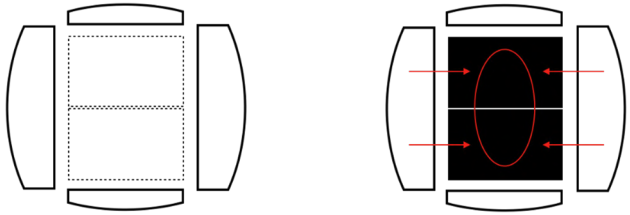


Figure 5. 12: Training facility fields are the connecting point (Author's drawing)

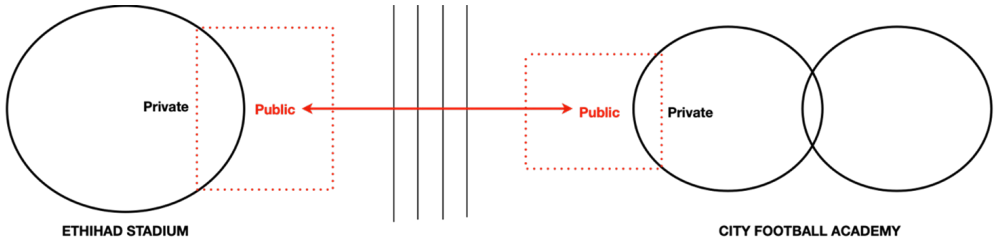


Figure 5. 13: Illustrating connection between Ethihad Stadium and the Training Precinct (Author's drawing)

5.3 Castelão Stadium

Location: Fortaleza, Brazil
Date of Completion: 2012
Site Area: 230 000 m2
Building Area: 155 000 m2
Architect: Vigliecca & Associados
Sustainability Rating: LEED Silver
Clubs: Fortaleza EC, Ceará SC, Ferroviário AC



Figure 5. 14: Aerial image showing the context development from 2003 and 2018 (Google Earth , 2014)

The original Castelão Stadium was designed and constructed in 1973 and became the fourth largest stadium in the country. However once Brazil was announced to host the FIFA World Cup in 2014, the stadium was set to be entirely redeveloped. The aim of the new stadium was to enhance and transform the current stadium into a multi-functional, efficient and, sustainable arena to be used for generations (Khashaba and Rehan, 2020). The focus of this case study is to understand the sustainability elements implemented within the stadium precinct and how it affected the workability and efficiency of the stadium. The stadium was one of the first World Cup stadiums to receive a LEED certification for sustainability. This was important to the country as, “certifying a stadium in a country crazy about football will showcase the value of sustainability to millions of Brazilians” (Crea, 2013).

The first sustainability feature to be discussed is the reduction of water consumption within the building. The stadium reduced consumption of drinkable water by 68% and further reduced the amount of drinkable water entering the municipal sewer by 71% (Khashaba and Rehan, 2020). This is due to multiple water saving techniques such as using low flow plumbing facilities in the bathrooms and locker rooms. The roof is also able to collect rainwater runoff and use it within the stadium bathrooms and irrigation systems.

Secondly, reducing energy consumption within the stadium is accomplished by adjusting all ventilation, lighting and air conditioning systems inside the building. Smart LED lighting systems that are accompanied by automatic light sensors have been used throughout the facility which together reduces the energy consumption by 25% (Khashaba and Rehan, 2020). Due to the open roofed stadium, natural light and ventilation is maximised allowing the spectators to watch the match in comfort. Over 90% of the internals are also provided with natural light. Once inside the building, the “new air conditioning system

is designed to consume minimal energy as well have an automatic shutdown reserve to save energy" (Khashaba and Rehan, 2020) within the stadium.

Furthermore, during the construction of the new stadium approximately 20% of the construction materials used were made with recycled elements of the original stadium and about 47% of materials were made locally (Khashaba and Rehan, 2020). Non-traditional, eco-friendly materials were also used when possible, such as, a higher percentage of fly ash was replaced by cement to reduce CO2 emissions. Furthermore, 36 000 tons of concrete accumulated during demolition of the original stadium was reused to pave the new car park (Khashaba and Rehan, 2020).

Lastly, the stadium provided a mechanism for enhancing the site and its local context. One of the aims from the renovation was to transform the Arena into a "place for urban events" (Crea, 2013). This was done through eliminating some of the large parking lots to open the site for the public by creating a plaza which can be seen in figure 5.15. Consequently, the stadium precinct has developed the context by providing better accessibility, by the implementation of four bus lanes, two metro lines, and a light rail line (Khashaba and Rehan, 2020). This also led to the development of multiple hotels and restaurants in the area, which increased the economic and social context of the city.

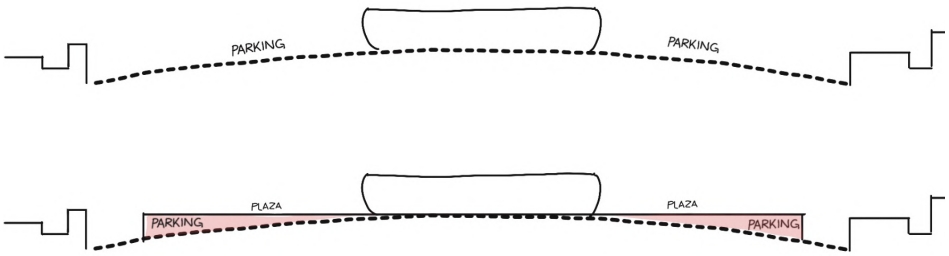


Figure 5. 15: Diagram of before and after the new reconstruction of the public plaza (Author's drawing)

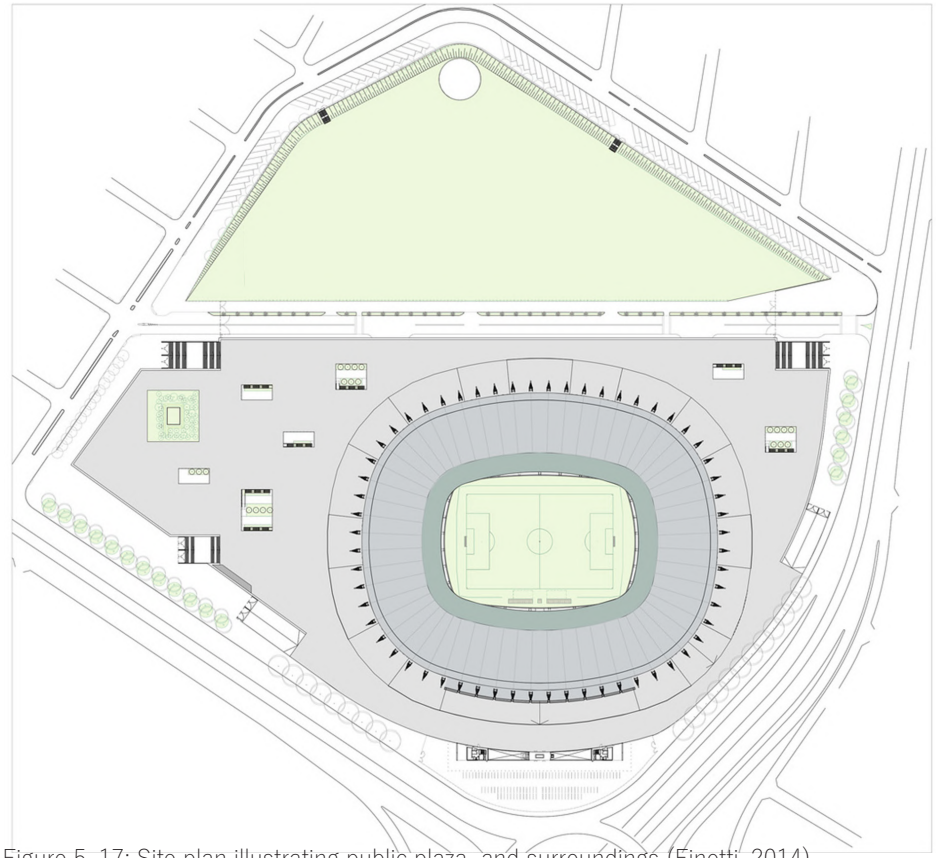


Figure 5. 17: Site plan illustrating public plaza and surroundings (Finotti, 2014)



Figure 5. 16: Aerial image illustrating public plaza (Finotti, 2014)

5.4 Loftus Park

Location: Pretoria, South Africa
Date of Completion: 2018
Site Area: 35 000 m2
Building Area: 22 000 m2
Sustainability Rating: Green Star Rated



Figure 5. 18: Aerial image showing the context of the Loftus Park Precinct (Google Earth, 2015)

Loftus Park is a new development situated adjacent north of the Loftus Versveld Stadium, which is one of the most well-known rugby stadiums in the country. The area surrounding the stadium is rich in sport, culture, and education. The University of Pretoria, the Union Buildings, Pretoria boys and girls high school as well as the Pretoria Art Museum are some of the recognised buildings in close proximity. Due to the diverse landscape, the Loftus Park development aimed to become a “people’s place” where people can enjoy a fun and relaxing environment within a largely commercial orientated establishment (Sefolo, 2018).

The inspiration for the project design came from commercial and retail precincts in London and Germany. These spaces were largely focused on public and pedestrian approaches with a simple and easy to understand flow and circulation pattern (Sefolo, 2018). Elements such as water features and a breakaway piazza were also inspired by European city designs. Whilst there are many European inspired elements the buildings hold a more modern contemporary feel using concrete and brick that are common within the surrounding area. Through the materiality choices combined with the scale and height of the buildings, the new development easily blends with the environment, the stadium and the neighboring residential area, both in scale and height.

The precinct consists of a large piazza that are surrounded by multiple restaurants, retail stores, a Virgin Active health club and gym, rentable office space, and additional parking that can be used for events at the Loftus Versveld Stadium. The precinct also contains a newly opened Protea Hotel, that has a large rooftop where users can experience panoramic views of the city.

In terms of sustainability the project received a green star rating due to the use of grey water harvesting systems, solar panel energy generation with back-up generators and a 48-hour emergency water supply stored within the facility.

The Loftus Park has both similarities and differences to my current project. The new precinct development aims to boost economic and social engagement within the area as well as form a greater connection with the stadium (Sefolo, 2018), which is the focus of my design. However, the Loftus Park development is largely commercial, and retail focused and relies heavily on a specific economic target market and not necessarily created to benefit the local community. My project, however, has a stronger fitness and sport core to better relate it to the uses of the stadium. It was interesting to understand how to successfully deal with pedestrian connectivity, firstly within the precinct itself and secondly connectivity from the precinct to the stadium. Further connectivity is achieved by the precinct being near the Tshwane Rapid Transport System and a Gautrain bus stop. Thus, allowing more people to interact and engage with the development.



Figure 5. 19: Aerial image showing Loftus Park precinct in relation to the stadium (Sefolo, 2018)



Figure 5. 20: Image showing Loftus Park retail entrance (Sefolo, 2018)

5.5 Understanding Public Space & Placemaking

As humans we are attracted to areas that provide us with a sense of place – a space that we can identify with and recognise. Over the years business and commercial entities have replaced this space with large single use structures that are naturally unfamiliar to our society. This forced an organised effort to "make places for people" (Courage, 2019).

> *"Placemaking means creating places and focuses on transforming public spaces to strengthen the connections between people and these places. Placemaking is a process centered on people and their needs, aspirations, desires, and visions, which relies strongly on community participation." (Loh et al., 2022)*

The re imagining of spaces has grown into a more community driven approach in order to reclaim the idea of public space. In this regard the Project for Public Space (PPS) organisation has developed guidelines and recommendations on creating a successful public space. In summary, a balance of sociability, accessibility, comfort, and activities, should provide for a well-used urban space (Loh et al., 2022).

Furthermore, the PPS introduced the concept of the 'Power of 10' to create a successful place. The theory suggests that it is no longer viable to have a single use space, rather many activities for people to choose from (PPS, 2009). This is based on the fact that "Places thrive when users have a range of reasons (10+) to be there. These might include a place to sit, playgrounds to enjoy, art to touch, music to hear, food to eat, history to experience, and people to meet." (PPS, 2009)

As part of the Inner-City Revitalisation Project executed during renovations for the 2010 FIFA World Cup, the Ellis Park precinct was revitalised into a more community driven space. The aim of the development was to function as an inner-city hub that connects the two stadiums with the northern BRT system and southern taxi rank creating a new 'Stadium Square' (Holmes, 2011). Landscape design was used as the connecting force, by including a three phased water feature design, shaded forest of trees, and a sculpture park.

The Square was implemented to bring life back into the streets; however, Gunter demonstrates that whilst the upgrade was aesthetically impressive, it has not strengthened the local environment for the residents or workers. The precinct still acts as "transient space for sports events, whereas between games and events the space reverts back to its marginalised urban existence." (Gunter, 2011) While the intention was there, the revitalisation project lacked activities that encouraged locals to use the space. The landscaping features provided the users with relaxing views and photo opportunities that is beneficial for a one-time visitor, not for a frequent local as there is nothing different for them to come back to.

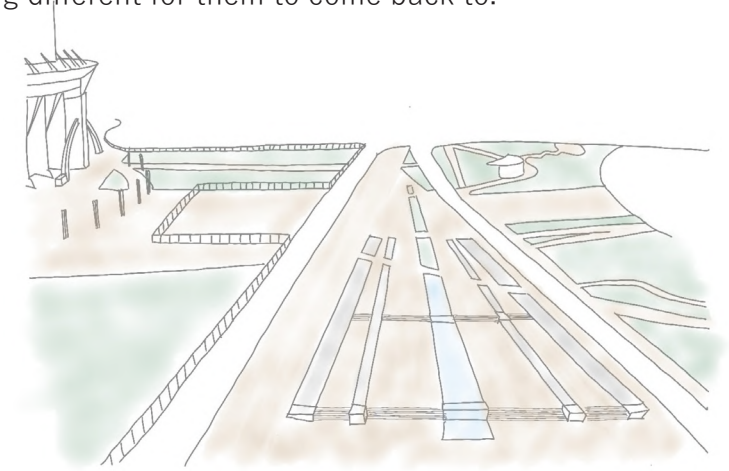


Figure 5. 21: Authors drawing showing Ellis Park landscaping redesign (Inspired by Image Holmes, 2011)

Contrary to Ellis Park, BIG Architects Superkilen is an 800m long urban space in the center of Nørrebro, Denmark. It has been described as an "urban version of a universal garden" and an exhibition of best urban practice ideas (Steiner, 2014). The strip is broken up into three coloured zones – the red square, the black square, and the green park:

- The red square allows for residents to engage with one another through physical activities, such as, fitness areas, Thai boxing, children's playground, and a multitude of seating spaces. During weekends the square serves as an urban marketplace attracting new visitors from other suburbs. The brightly coloured surfaces within the facility create an experience on its own that attract users into the area.
- The black square is a known to be an "urban living room" (Steiner, 2014) – inviting people to sit, relax, and engage with one another. Users are able to enjoy the surroundings amongst water features, cherry trees, and picnic and grill facilities. Contrary to the red square the subtle hints of colour within the black square provide a peaceful environment for people rejuvenate.
- The green park was implemented due to residents wanting more natural green landscapes in the area. The park consists of exaggerated curvy environment with soft hills and surfaces providing a safe space for families to sit, gather and play in.

The design concept was to create a story through urban design in the hopes of leaving a lasting impression on the community. The project contains all necessary elements that make up a traditional community park with bike trails, children's playgrounds, large seating areas, and a connection to transport. In reference to the PPS place making concept of the 'powers of 10', the Superkilen project has created a successful mixed-use public park precinct that contains a multitude of activities for people to use. However, over the years maintenance of the public space has become a big problem. The paint has faded and started chipping, whilst many trees have been dug up and filled with asphalt (Steiner, 2014). Therefore, more thought into materiality and durability needs to have been done.



Figure 5. 22: Image showing Superkilen in context (Baan, 2012)

5.6 Conclusion of Case Studies

To conclude, this research makes it clear that there is a growing trend to redesign the idea of stadiums around the world. Whether that is to make it more sustainable or to implement new developments around the stadium in an attempt to increase traction and cater to what the community and surrounding area needs. This can be seen in both Loftus Stadium and Etihad Stadium. One created a new mixed use development in order to attract more crowds, whilst the other created a world class football training centre. Both establishments were able to increase economic and social development by enhancing the overall environment of the area. This brought significant investment opportunities for the community as well as the adjacent stadiums.

What is interesting to note is that in all international stadium case studies there is no external boundary surrounding the stadium, allowing for greater public interaction with the stadium itself. Each stadium in question has removed their initial external barrier to create a public plaza or gathering space. This allows for stadium visitors to socialise and interact with the stadium without having to actually go inside. At Castelão Stadium it is common to see people taking photos outside with the façade in the background, adding to tourism of the site. However, there are still many internal security measures put in place, as well as large underground parking facilities to compensate for the removal of the original parking areas.

Placemaking and urban design principles made me realise how important connecting your site to its contextual surroundings is. Having a distant location for a site means you need to implement more than the required amount of diverse programme in order to cater for a wider range of people. It is also evident that when you have a distant location you need to not only think about your site, but also the environment and potential development in its context.

In regards to sport development facilities, we can see the difference between large scale international training facilities and small scale local facilities. Although they both work well in their own right, it is visible that one serves the community and the other focuses on producing elite players for a club. I was able to gain insightful information on the types of internal and external programming needed to create a successful sport facility. It was also beneficial in understanding sizing and placement, which helped develop an overall flow through my building design.

Chapter
06

Site Introduction

6.1 World Cup Stadiums

As previously stated, South Africa spent around R40 billion to build and renovate infrastructure needed to host the 2010 FIFA World Cup. In this section I explain further the location of the venues used for hosting, the 2010 FIFA World Cup matches see Figure 6.1. and the cost distribution of the renovation and construction of each stadium used as a World Cup venue, see Table 1.

With South Africa's extremely high unemployment rate, this type of large expenditure was highly criticized by the public. The government's argument for committing to this massive development project was to accelerate growth and development, resulting in a decrease in poverty and unemployment. However, following the World Cup, the country was left with sports stadiums that are generally left underutilized, and benefiting very few people.



Figure 6. 1: Location of World Cup Stadiums in South Africa (Author's drawing)

Stadiums	2003 Bid Estimate Original Budget (R)	2009 Final Estimate (R)	Upgrades vs New Builds
Moses Mabhida	53,750,000	3,100,000,000	Upgrade
Cape Town	14,375,000	4,500,000,000	Upgrade
Peter Mokaba	150,000,000	1,300,000,000	Existing to New
Mbombela	300,000,000	1,071,756,034	New Build
Nelson Mandela Bay	250,000,000	2,063,779,231	New Build
FNB Stadium	195,000,000	3,700,000,000	Existing to New
Ellis Park	34,375,000	254,000,000	Upgrade
Loftus Versfeld	15,000,000	1 15,000,000	Minor Upgrade
Royal Bafokeng	11,250,000	300,000,000	Upgrade
Free State	37,500,000	370,000,000	Upgrade
Total	**1575,000,000**	**16,774,535,265**	

Table 1: Details of construction budget estimates per stadium (Molloy and Chetty, 2015)

1. Cape Town Stadium (Green Point Stadium), Cape Town
2. Nelson Mandela Bay Stadium, Port Elizabeth
3. Moses Mabhida Stadium (Kings Park), Durban
4. Free State Stadium / Vodacom Park, Bloemfontein
5. Royal Bafokeng Sports Palace, Rustenburg
6. Mbombela Stadium, Nelspruit
7. Soccer City (FNB Stadium), Johannesburg
8. Ellis Park, Johannesburg
9. Loftus Stadium, Pretoria
10. Peter Mokaba Stadium, Polokwane

6.2 Site Selection

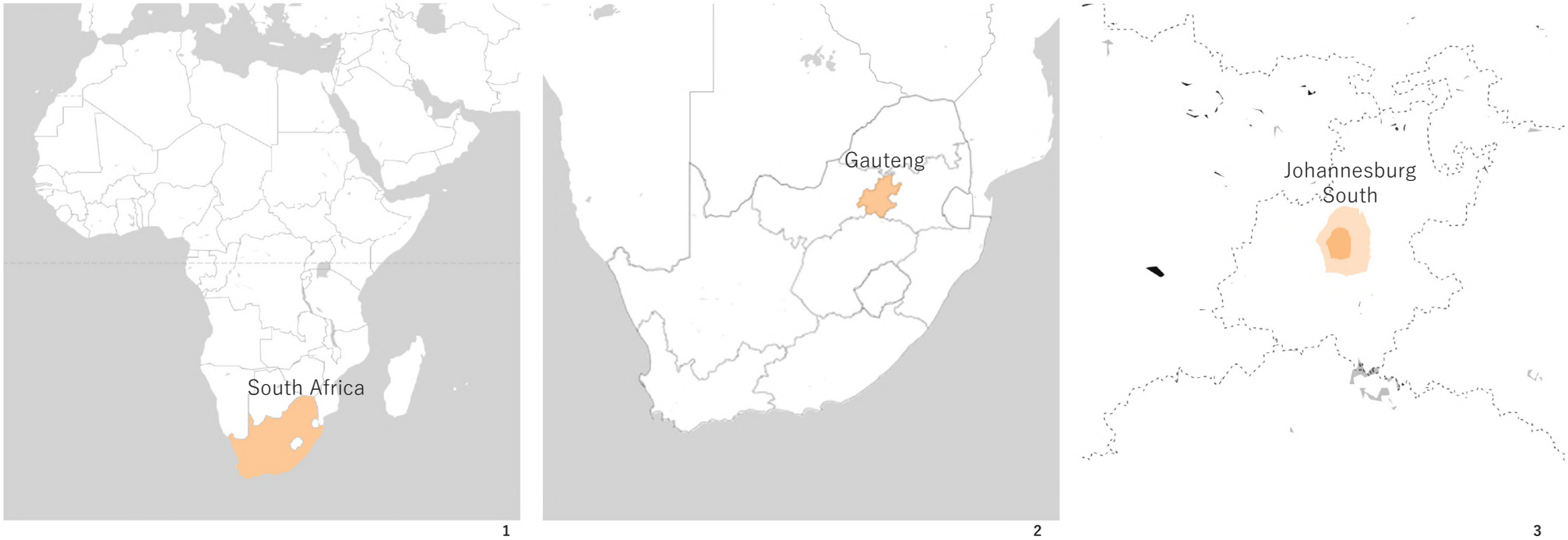


Figure 6. 2: (1) South Africa (2) Gauteng (3) Southern Johannesburg (Author's drawing)

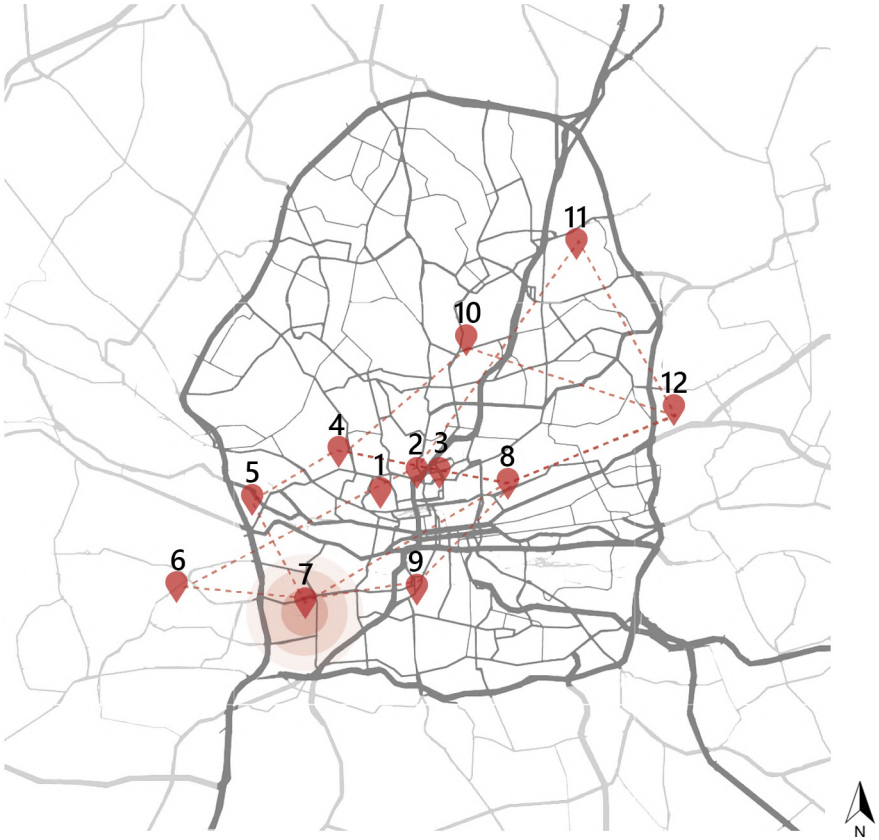


Figure 6. 3: Johannesburg stadiums (Author's drawing)

Johannesburg Stadiums

1. UJ Football Stadium
2. Bidvest Stadium
3. Wits rugby stadium
4. UJ Stadium
5. Bill Jardine Stadium
6. Orlando Stadium
7. FNB Stadium
8. Ellis Park
9. Rand Stadium
10. Wanderers Stadium
11. Alexandra stadium
12. J.P. Bezuidenhout Stadium



Figure 6. 4: Johannesburg sport centres (Author's drawing)

Johannesburg Sport Centres

1. Nike Football Training Centre
2. Soweto United Stars Soccer Academy
3. JISA Sports Grounds
4. Marks Park Sports Club
5. Wanderers Club
6. Advanced Sport Performance Centre
7. FNB Stadium
8. B-Active Group
9. Balderstone Sports Institute Football Campus
10. Bedfordview Cricket Development Academy
11. Orlando Pirates Football Club



Figure 6. 5: Stadium Uses (1) Football (2) Rugby (3) Athletics & Cricket (Author's drawing)

Johannesburg Stadiums

1. UJ Football Stadium
2. Bidvest Stadium
3. Wits rugby stadium
4. UJ Stadium
5. Bill Jardine Stadium
6. Orlando Stadium
7. FNB Stadium
8. Ellis Park
9. Rand Stadium
10. Wanderers Stadium
11. Alexandra stadium
12. J.P. Bezuidenhout Stadium

I propose to design a High-Performance Sport Centre or a Centre of Excellence for Football Development within a stadium in Johannesburg. Through this the chosen stadium can become a place that not only hosts world class events but also trains and develops the skills for world class athletes. The goal of the centre is to become a hub for young, aspirant athletes to develop their sport on a daily basis in the hopes to become elite sportsmen, as well as increasing interaction between the community, the stadium and the centre. Therefore choosing a site for this project requires a specific list of requirements that will lend to the project's success and optimal functioning.

The surrounding context of the site needs to be in close proximity of public transportation systems, such as bus or taxi stations, or have adequate space for the potential implementation of new public transportation stations. Furthermore, due to the development centre focusing on youth and women's football advancement, the centre would need to be close to neighboring communities. As well as have enough space in the surrounding stadium precinct to construct accommodation facilities for athletes that need to stay on the grounds. Through this, the hope of this new development is to further connect the stadium to the surrounding community. Thus, encouraging community participation through the involvement of sport.

It will be beneficial for the project if the stadium is already practicing as a well known football venue. This is to easily relate the new establishment within the stadium context. Furthermore, if the stadium is already well known, finding and securing players and communities to regularly use this facility will be easier and will benefit the validity of the development greatly. The site itself will need to be fairly large for the centre to contain all the relevant indoor and outdoor programmatic requirements. This includes both full size and half size football fields as training grounds.

With this in mind the proposed site for the project is FNB Stadium precinct, which is situated on Soccer City Ave, Nasrec, Johannesburg. As stated previously it was important to use a relatively well known stadium for the project as it will increase the chances of securing regular users, sponsors and investors. Ellis Park, Wanderers, and FNB Stadium are considered to be some of the most well-known stadiums in Johannesburg. Ellis Park and Wanderers Stadium are both continuously used by surrounding schools, sport clubs, and sports enthusiasts. This is due to their multi-use facilities and centralised locations.

However, in the context of FNB Stadium, besides the location of Nasrec Expo Centre to the south, the stadium is largely only surrounded by old mining dumps, industrial precincts and residential areas. Due to this, it does not get regularly used. The stadium precinct itself is approximately 280,000m2, in which the stadium occupies approximately 104,000m2 of the total site (Boogertman+Partners, 2014). Therefore, due to its extremely large size and non-centralised location FNB is considered to be one of the most underutilised stadiums in the world (Wergeland and Hognestad, 2021).

However, due to the large size of the stadium precinct it serves as the perfect site for the development. There is enough space for all internal and external programming, while still allowing the stadium to function as a large sporting venue when needed. It is important to note that the site for my project is not in the stadium itself, but rather alongside the stadium within the venue's precinct.



Figure 6. 6: Image showing the FNB Stadium Context (Provided by Hans Koorn)

6.3 Site Context & Urban Analysis

Gauteng comes from the Sotho word meaning “place of gold’ (Angelucci, 2019). This name was given due to Johannesburg’s origins as a gold mining city. The city recovers 98% of gold in South Africa, and accounts for approximately 45% of the world’s known gold assets (City of Johannesburg, 2018). Through this Johannesburg’s southern suburbs, including Nasrec, saw development that was closely linked to the evolution of the cities working class. The area was initially designated for skilled artisans who worked in the mines. Thus, becoming an area respectably for the working class. The gold mines in the area were closed in the early 1970’s, due to high production costs and physical constraints attributed to the need for deeper level mining (Angelucci, 2019). However, the remnants of the past are still seen today, specifically through zoning uses of the area.

Figure 6.7 shows the ‘Johannesburg mining belt’ illustrating the mining network of the past and with reference to figure 6.8 we can see how those mined areas influenced both the past residential and industrial zoning networks and placement within the city. From the City of Johannesburg’s District Development Model, it is understood that the Southern Region D, as shown in figure 6.7, is largely industrial and extremely populated. However, the region has the highest unemployment rate at 43% (City of Johannesburg, 2018). Neighboring Region G, FNB Stadium is situated in Region F which is said to house the once active and dynamic Central Business District for the city (City of Johannesburg, 2018). Through this analysis it is understood that the community neighboring FNB Stadium is in dire need of economic and social change to alleviate some of the day to day problems experienced. Furthermore, the lack of integration between the stadium and its surroundings is at the forefront once the context is understood.



Figure 6. 7: Aerial image showing the Johannesburg mining belt and spatial regions (Author’s drawing)

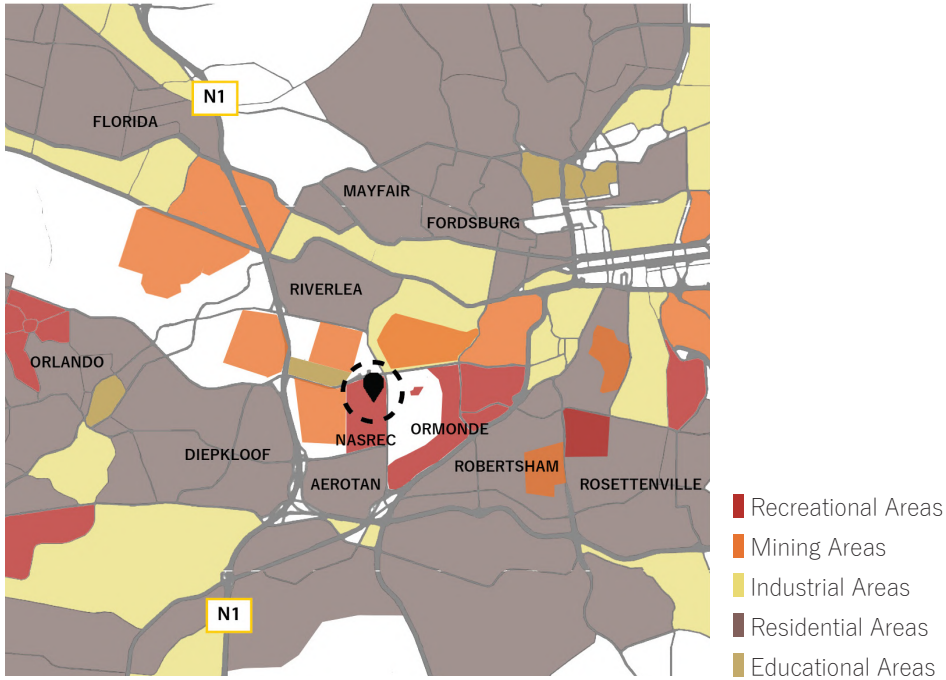


Figure 6. 8: Map indicating programmatic zoning surrounding FNB Stadium (Author’s drawing)

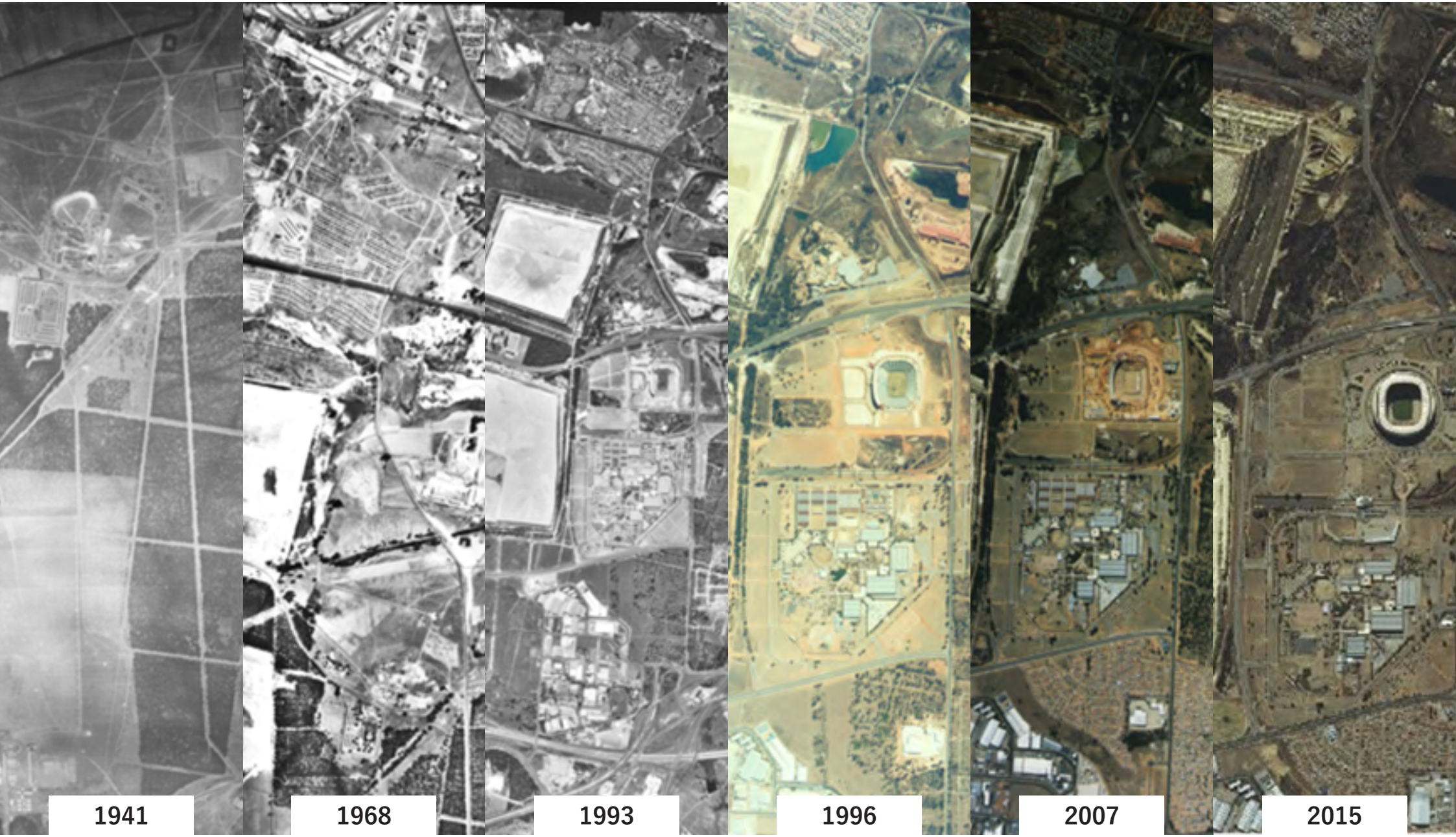


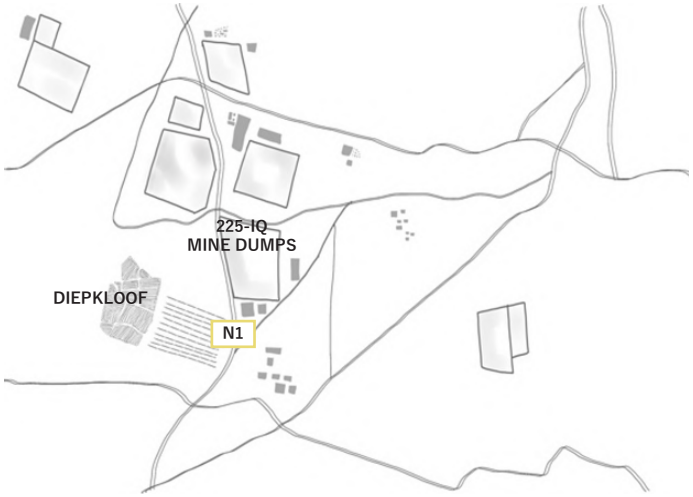
Figure 6. 9: Nasrec area over the years (Google Earth Pro, 2023)

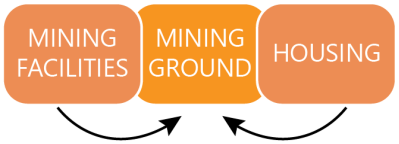


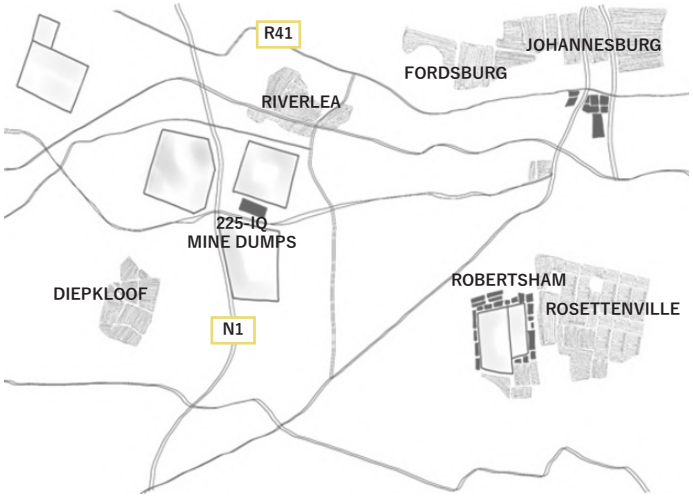
Figure 6.10: Nasrec Area 1941 (Google Earth Pro, 2023)



Figure 6. 11: Nasrec Area 1968 (Google Earth Pro, 2023)







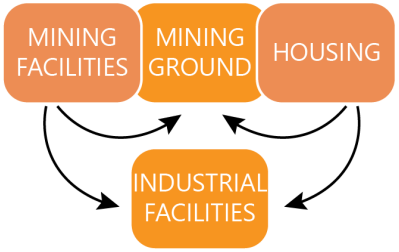
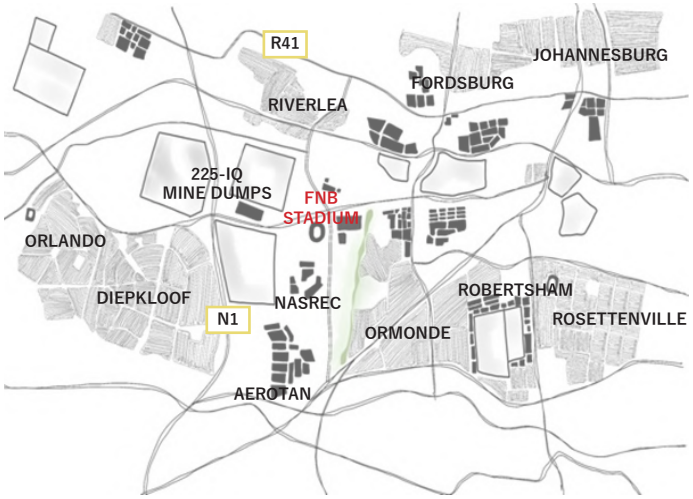
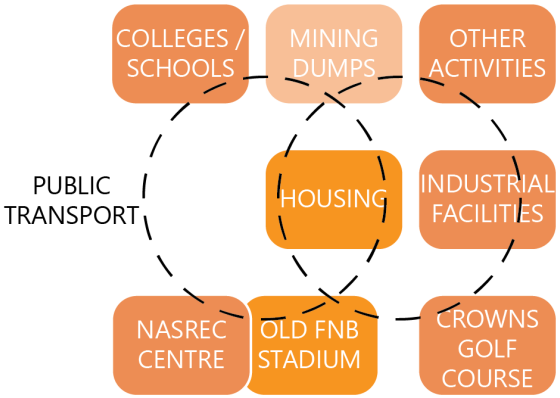




Figure 6. 12: Nasrec Area 1993 (Google Earth Pro, 2023)





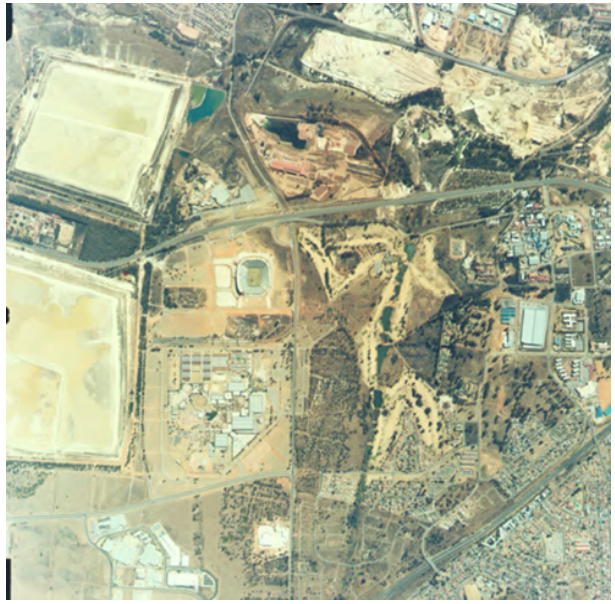
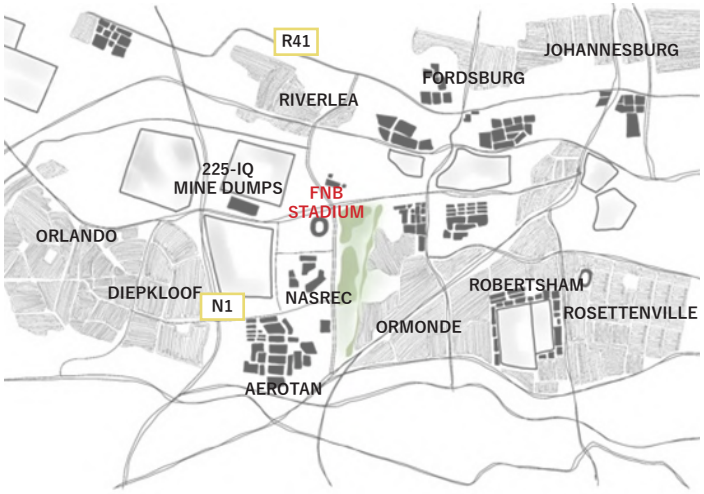


Figure 6. 13: Nasrec Area 1996 (Google Earth Pro, 2023)



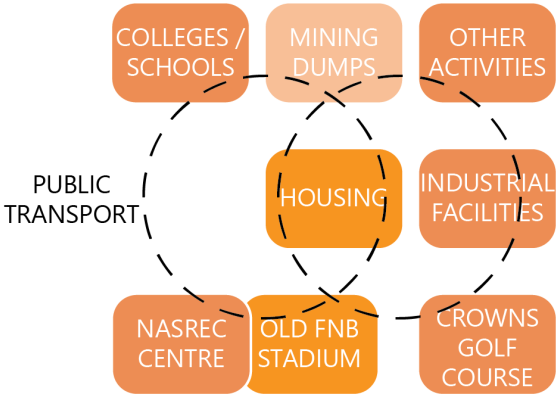




Figure 6.14: Nasrec Area 2007 (Google Earth Pro, 2023)

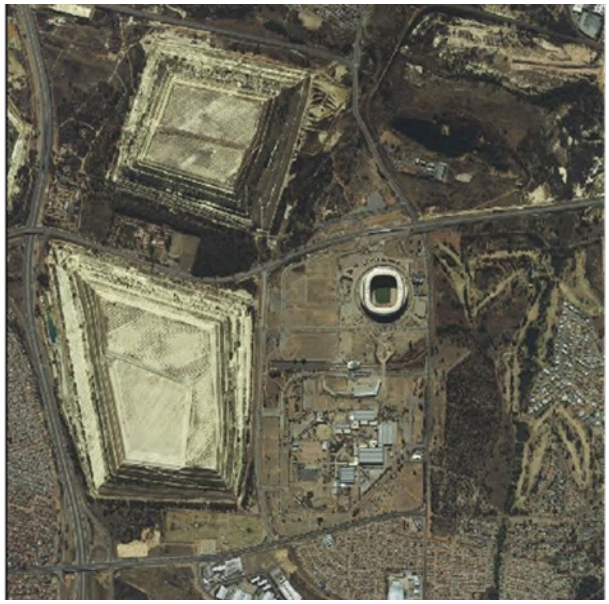
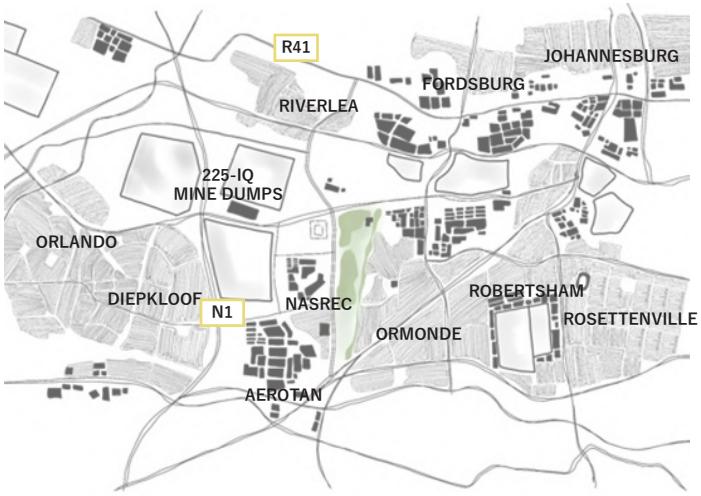
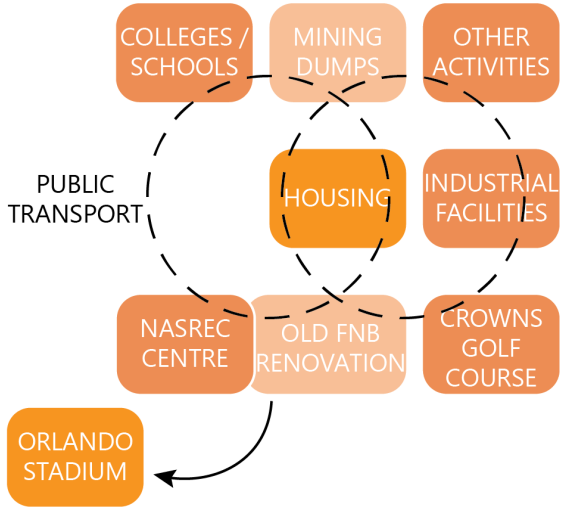
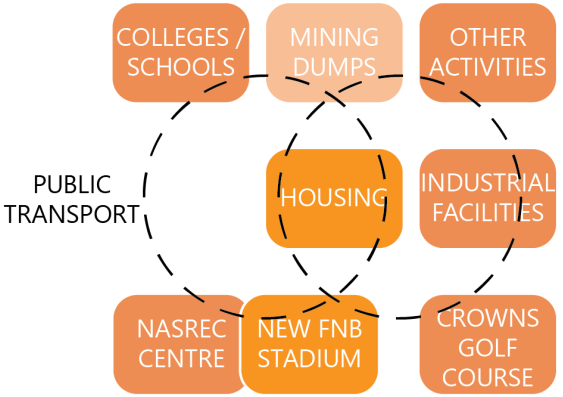


Figure 6. 15: Nasrec Area 2015 (Google Earth Pro, 2023)









According to the figure ground image below we understand in more detail the distinct isolation of the FNB stadium from its surroundings and in turn the community. Therefore, it is important to provide enticing features in order to bring people towards the stadium and constantly use its facilities. Furthermore, accessibility and transport provisions need to be carefully considered when implementing the design.

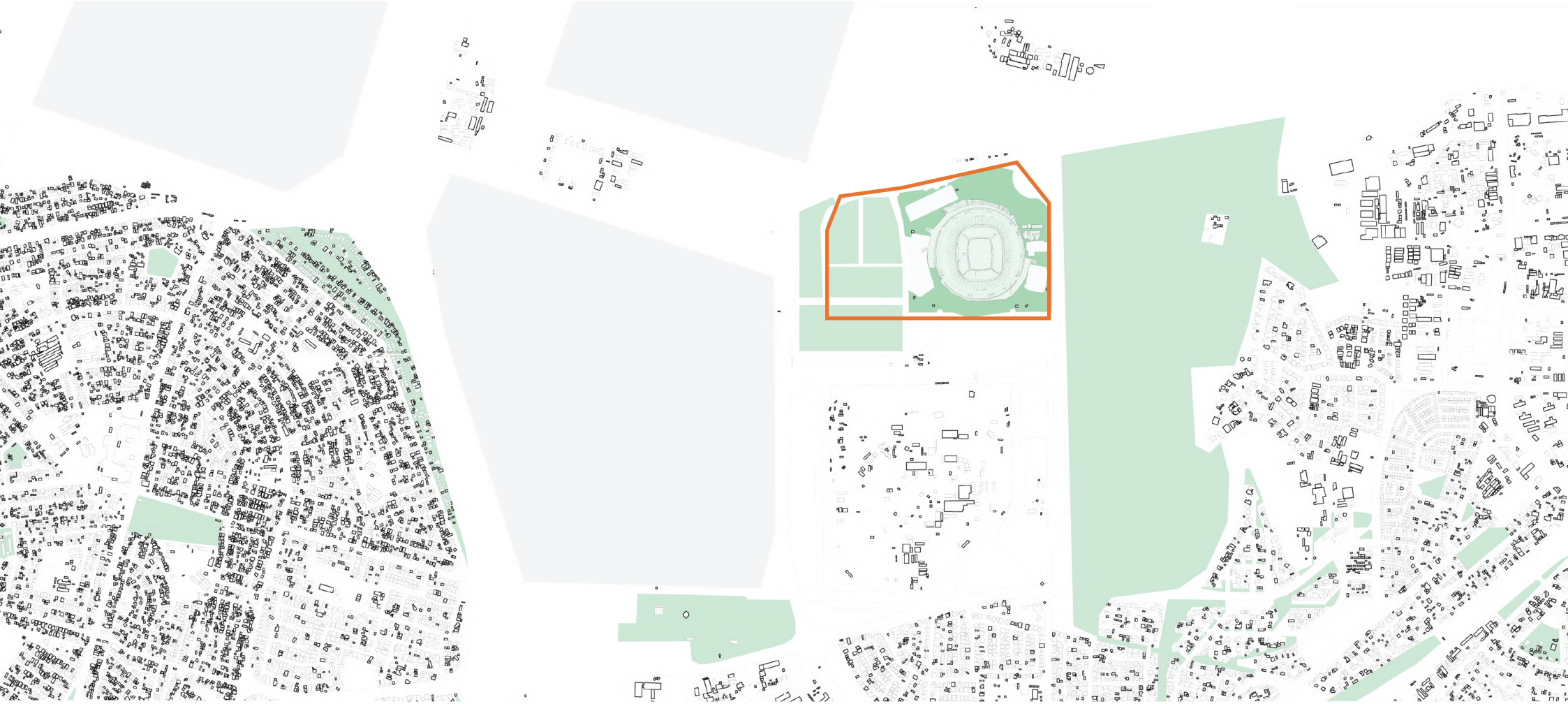


Figure 6. 16: Author's figure ground image of Nasrec and surrounding areas

The figure ground image above illustrated FNB Stadium's isolation from surrounding neighborhoods. A large part of that is the mine dumps bordering the stadium, acting as a blockade between the two entities. The CoJ have been working towards utilising the dormant mine dumps for years. "The mines are problematic and have traditionally divided the city between north and south. They will now be used as valuable resources for the city," stated Mayor Parks Tauin 2015. Currently, previously mined land is being rehabilitated and used for planting crops and bio-fuels (Cox, 2015).

Furthermore, according to the Johannesburg 2020/21 IDP, the city is still actively implementing measures to completely remove inoperative mine dumps to decrease health related risks caused by the mine sand (CoJ IDP, 2020). Hence, opportunities to connect the stadium with the community will increase drastically when mine dumps in the surrounding area are removed. This could include opportunities for more residential neighborhoods, educational facilities, and other recreational activities.



Figure 6. 17: Author's diagram illustrating mine dumps surrounding the stadium

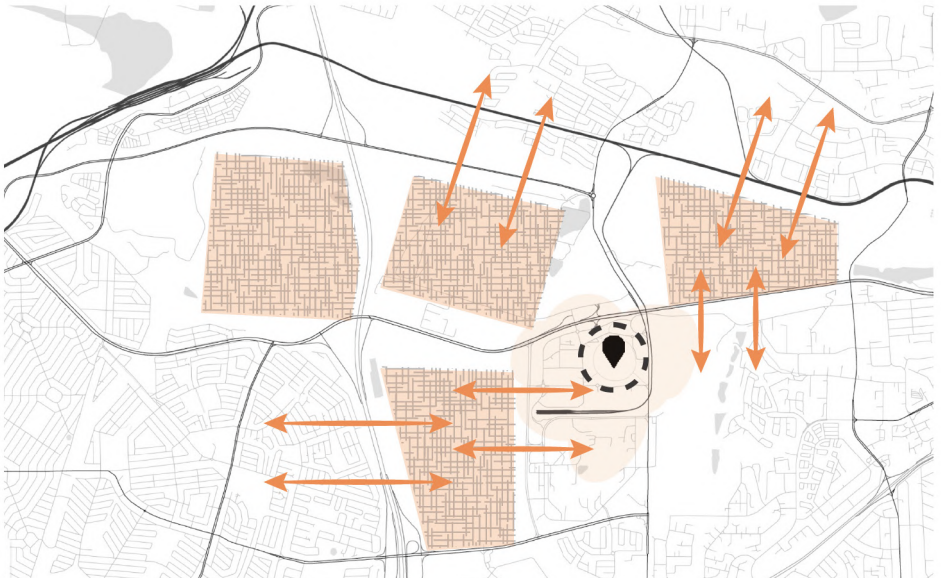


Figure 6. 18: Author's diagram illustrating community connection through mine dumps

As stated, FNB Stadium precinct is the proposed site for the thesis. It is surrounded by a few other stadiums that are less than 12km away. As seen in figure 6.19 FNB is close to two other community stadiums, which are The Rand Stadium and Orlando Stadium. Before and after the construction of the original FNB both community stadiums were used as training grounds for South African Football Clubs Kaiser Chiefs and Orlando Pirates respectively. However, after the renovation of FNB Stadium in 2010, they are both now used for community club training and occasionally for athlete practice for Chiefs and Pirate matches.

With the new development there is an opportunity to bring all training and development material and facilities into the one stadium precinct. This allows for a more controlled environment and a central point for both Johannesburg and South African football development. With this intention there are a lot of opportunities and problems that could be encountered. Figure 6.20 is a diagrammatic understanding of the external problems and opportunities that need to be considered. Provisions need to be made regarding servicing and public transportation as more people will be using the facility daily.

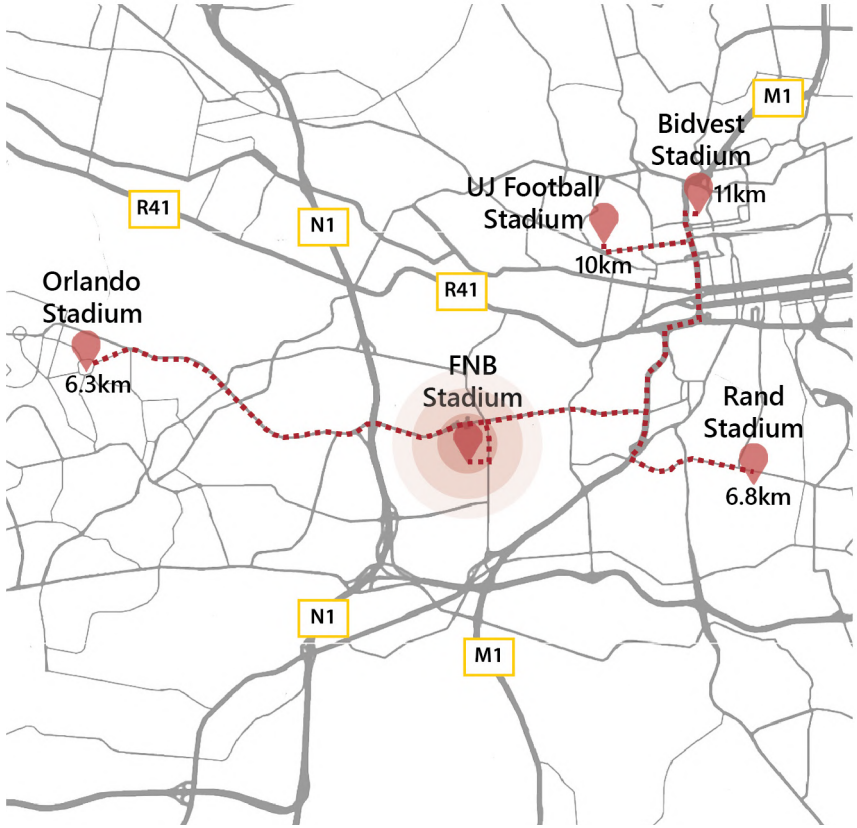


Figure 6. 19: FNB Stadium proximity to surrounding stadiums (Author's drawing)

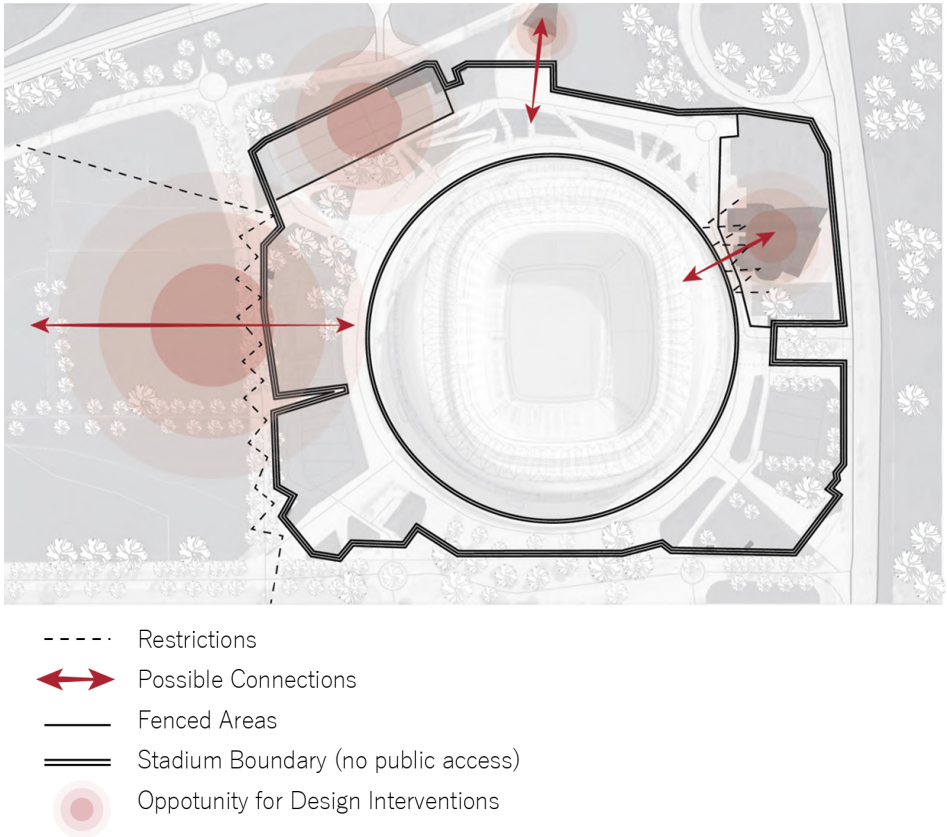


Figure 6. 20: Opportunities and problems encountered (Author's drawing)

To zoom in on the actual site for the development, it is evident that there is no visible obstructions as it is a large public site. There are only planted trees surrounding the perimeter of the site to be considered. Due to roads surrounding all four sides of the site, there are multiple points that can be used for site access and deliveries.

The site is currently used for overflow parking and a non formal external playing field. As it is an open public site anyone can use the space at any point of the day. Since it is already a public space it is important for the site to still remain largely public. Currently, there are not many people that use the space due to the lack of activity and little to no shade or seating areas. Therefore, implementing functional public space design ideas are essential to ensure that more people from the community use the space.

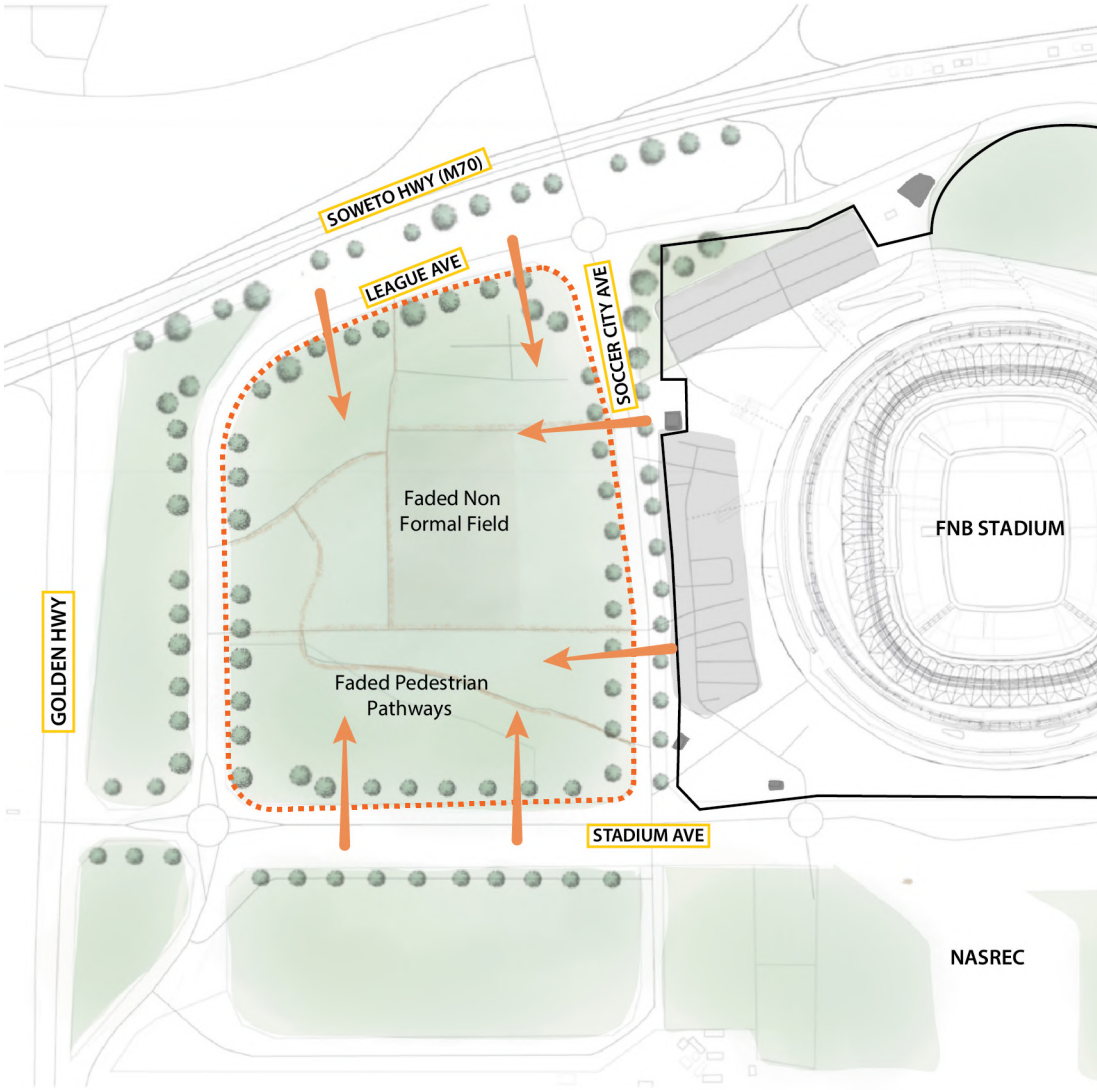


Figure 6. 21: Site plan of development site (Author's drawing)

6.3.1 Pedestrian Accessibility

When analyzing figure 6.22 and 6.23 together it is understood that besides the Rea Vaya bus station to the North and Nasrec Expo Centre to the South, the stadium is at least 1km away from other points of interest. This leaves little room for easy pedestrian accessibility onto the precinct. People from areas such as Diepkloof and Aerotan will almost always need to use public transport to get to the stadium. However, they will be able to walk to the stadium if they use quieter more suburban roads to avoid walking on the highways. Currently the immediate pedestrian accessible facilities include Nasrec Centre, Crown Mines Golf Course, and the Rea Vaya Station.

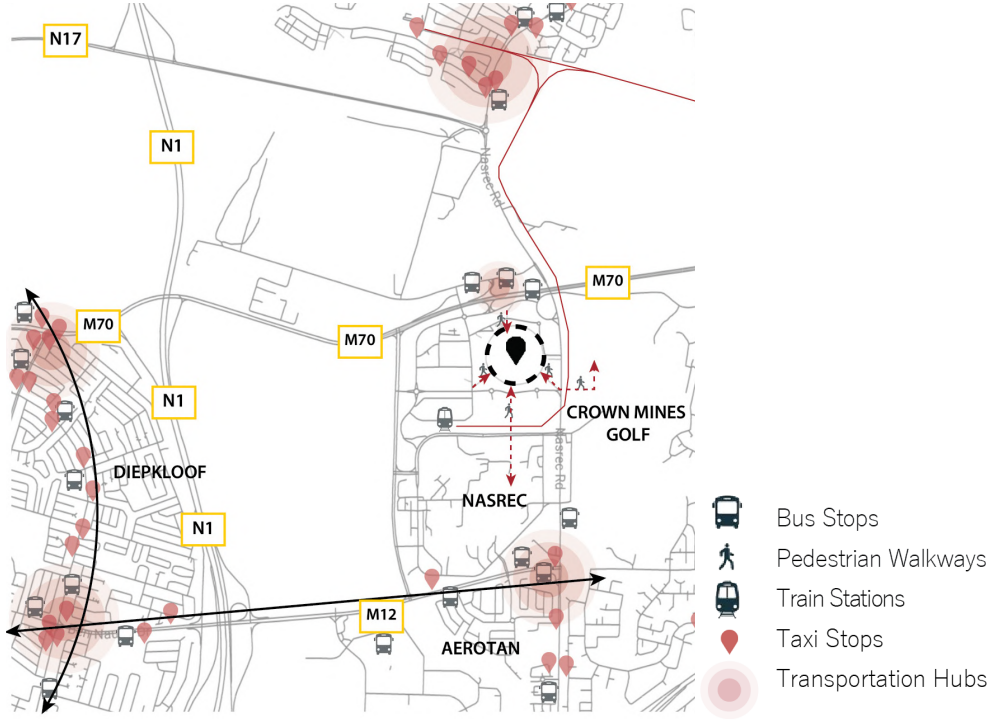


Figure 6. 22: Accessibility through transportation networks (Author's drawing)

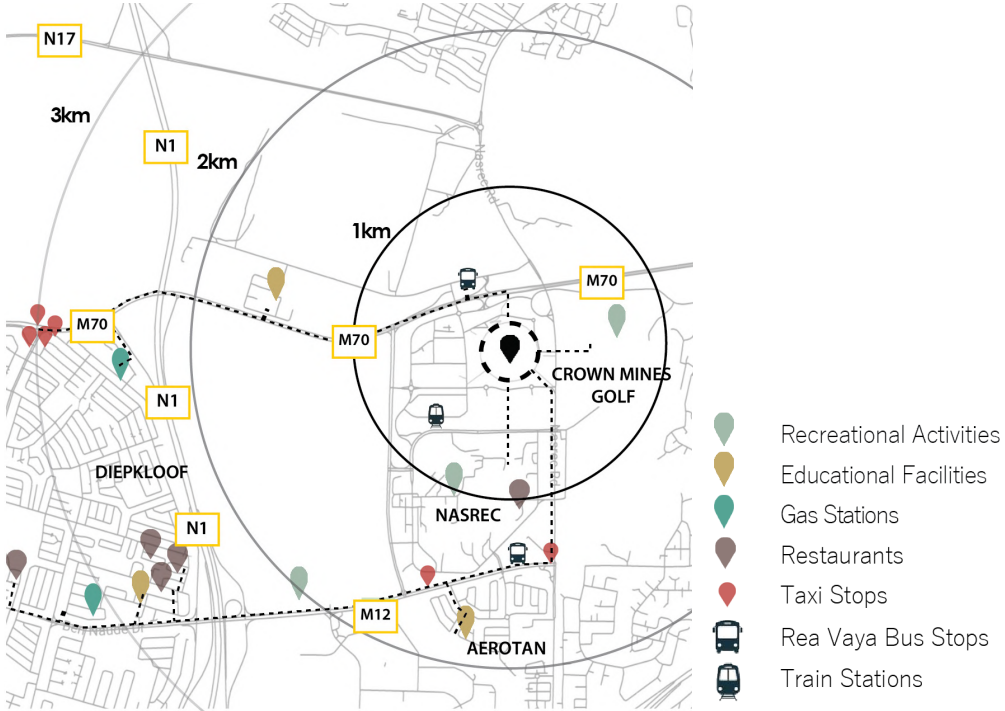


Figure 6. 23: Proximity to points of interest (Author's drawing)

6.3.2 Barriers to the Public

Currently the stadium precinct is completely blocked off from the public due to the multiple security measures implemented. Hence, there are many barriers that you would need to cross to enter the stadium itself, as well as once you are inside. Firstly, all car parks are fenced with security. Next, you would enter through the outer external boundary where bags and tickets would be searched when an event is held. If there is no event the gates stay closed, and any visitors would need to pass through the vehicular gate security. Before you enter the stadium, the last barrier is the inner external boundary which includes turnstiles and automatic ticket scanners. Once you are inside, all private facilities are staff key card accessible, the rest of the stadium is free flowing. As the stadium is an iconic site, security is a necessity. Areas such as SAFA House and player and VIP entrances need to stay enclosed from the public. However, some areas, such as parking lots and open spaces do not need to be enclosed all the time specifically on the northern edge of the site. It can rather be utilised for public use.

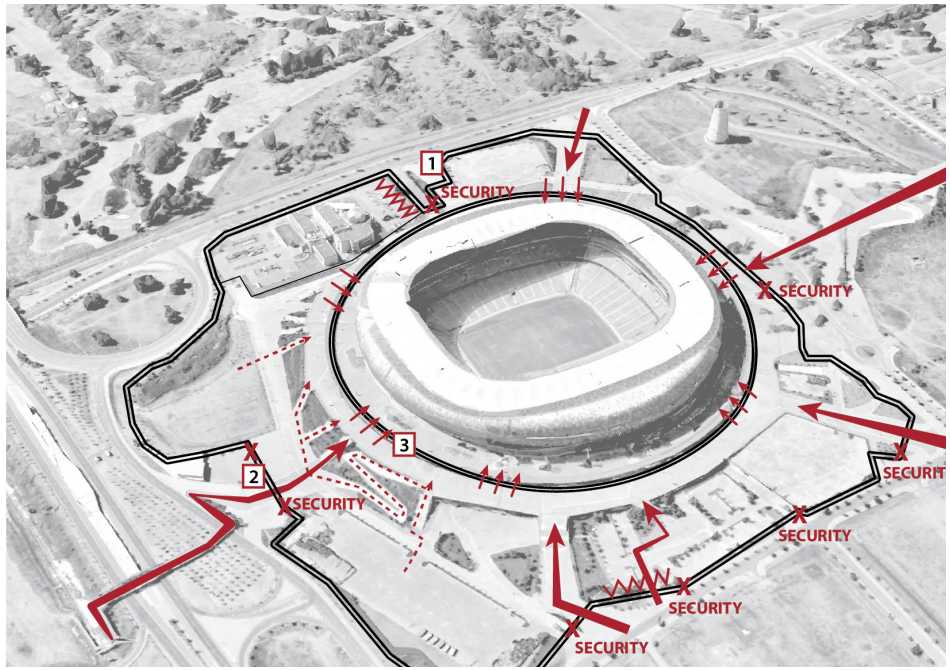


Figure 6. 25: Proximity to points of interest (Author's drawing)

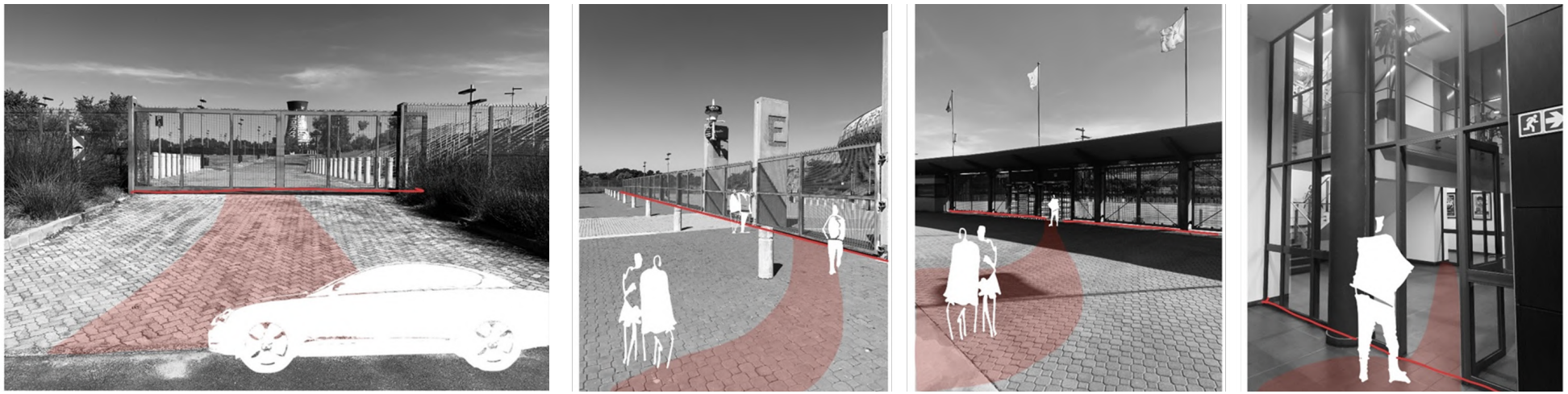


Figure 6. 24: (1) Car park boundary, (2) Outer external boundary, (3) Inner external boundary, (4) Private internal access (Author's Images)

6.3.3 Built Form and Public Space

Public Space:
The external of the stadium holds a large public threshold that allows for large gatherings. The space is entirely paved with brick to allow for quick and easy walking. There are minimal trees to provide shade for visitors which gives a rather harsh and industrial feel to the space. Public seating is also minimal as currently there are few daily visitors to the precinct. Upon further investigation this is to allow for easy movement of crowds when there are big events held. However, more planning could be done to allow the public to gather at the site more frequently.



Figure 6. 26: Public space surrounding stadium (Author's images)

Built Form:
As stated previously the context around the stadium consists primarily of industrial and residential buildings. Consequently, besides the stadium the surrounding buildings are limited to 1 or 2 storeys. This allows for the stadium to stand out in the current context and become a landmark in its own right.

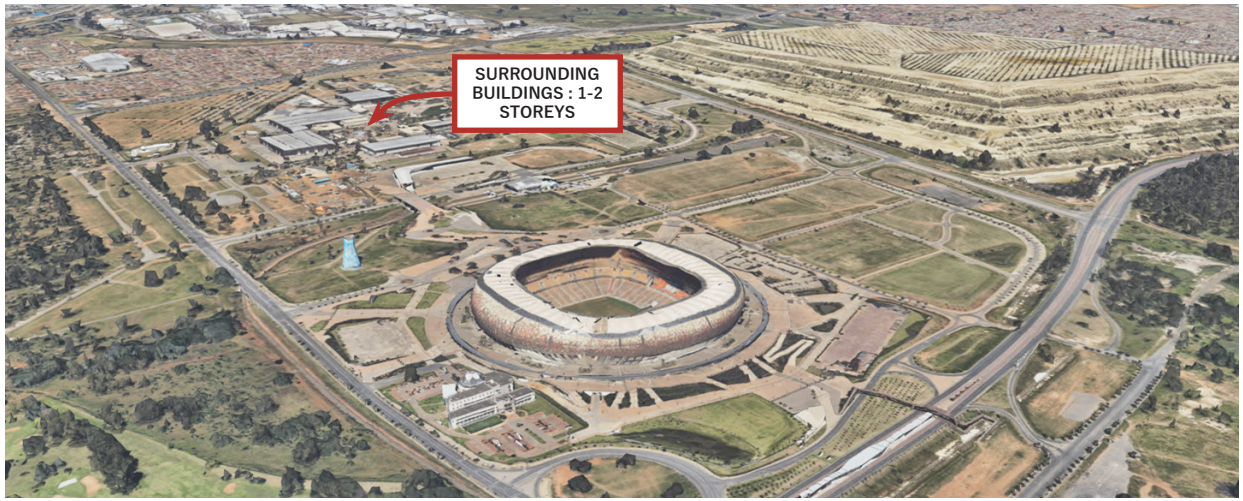


Figure 6. 27: Aerial view of surrounding context (Google Earth Pro, 2023)

6.3.4 Climate Analysis

The area of Nasrec, Johannesburg falls under the subtropical highland climate of South Africa. As seen in figure 6.28, there is high rainfall activity in months November to January, hence appropriate measures need to be put in place so that people can still comfortably use the facilities. (Meteoblue, 2023)

As stated previously, the site does not surround any other buildings besides the FNB Stadium. Thus, from figure 6.29 we can distinctly see that there are no external shading restrictions imposed onto the site. This does mean that the building needs to be well designed with ample sun shading devices to deal with the harsh sunlight that would enter the building. This is important as any building designed needs to be considered a sustainable building. This can only be met if the appropriate natural sun and ventilation techniques are enforced in conjunction with understanding adequate heat and solar radiation.

Figure 6.29 also illustrates strong wind that approaches from the north and north western edges of the site. This needs to be considered in order to achieve appropriate thermal comfortability within the building. Wind also needs to be considered in regards to external football games being played on the northern edge of the site. Constant direct, harsh wind conditions will interfere with game play. Hence, design measures need to be put in place to filter or block direct wind from the fields.

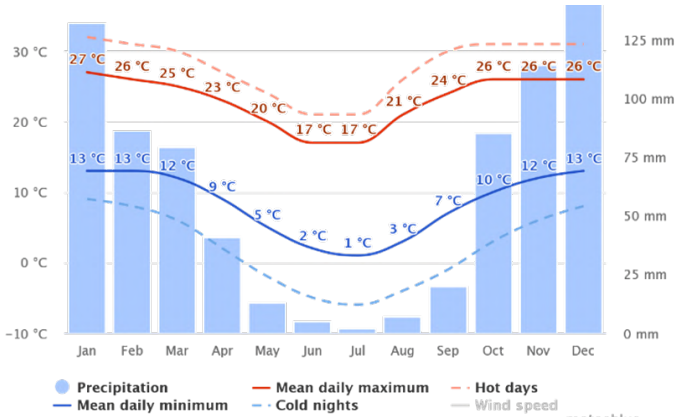


Figure 6. 28: Average rainfall and temperatures in Nasrec, Johannesburg (Meteoblue, 2023)

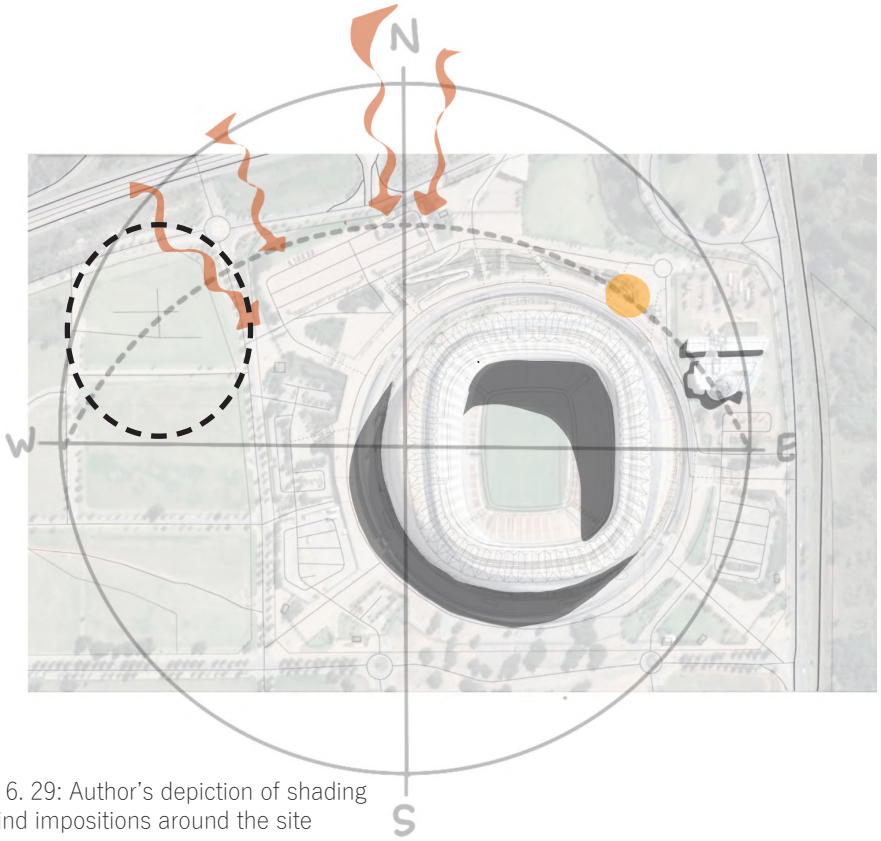


Figure 6. 29: Author's depiction of shading and wind impositions around the site

Chapter
07

Programme & Context

7.1 Design Brief

Based on the theory and context discussed in this research report, the proposed project is a facility that promotes community sports development and broader community engagement through the integration of the FNB Stadium. The intention is to ensure that the stadium becomes a place whose purpose is beyond only hosting sport events but also is a place that can develop local football, promote social cohesion and a space that local communities can identify with. The project's scope is to use this program to facilitate the development of youth and women football, as well as allow for the development of a space to treat injured players in other sporting fields.

The intervention will include four parts including, a football development centre, medical facilities rehabilitating injured players, centre for sporting career development, and accommodation for student's football training.

Due to the position and location of the development, the buildings should show strong communication and interaction with the local community and its surrounding context including FNB Stadium.



Figure 7. 1: Breakdown of design qualities intended to be addressed (Author's drawing)

As stated previously the intervention will include four parts including, a football development centre, medical facilities for injured players, centre for sporting career development, and accommodation for football training students. As seen in figure 7.3 the football development centre, training dormitory and the medical facilities need to be in close proximity to one another as the same users will be using all three spaces. Each section of development is catered to different users, but the main target user groups can be seen in figure 7.2. The football development centre is implemented as a new start for injured players that still want to have a career in sport. With the implementation of the centre, they can branch off into sport entertainment, sport journalism or managing and marketing. This allows them not to waste their sporting talent which they tried so hard to achieve for so many years.

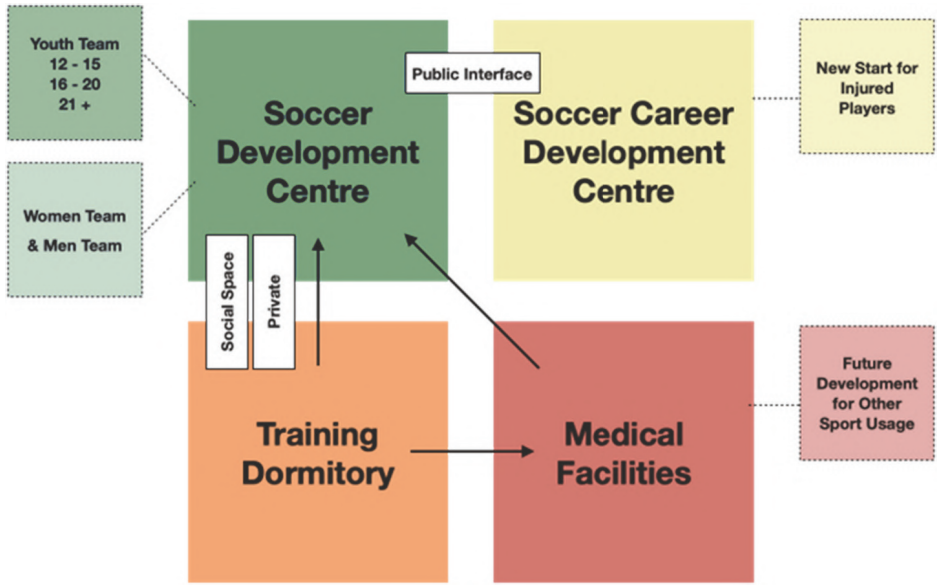


Figure 7. 3: Diagram illustrating the programmatic concept relationships (Author's drawing)

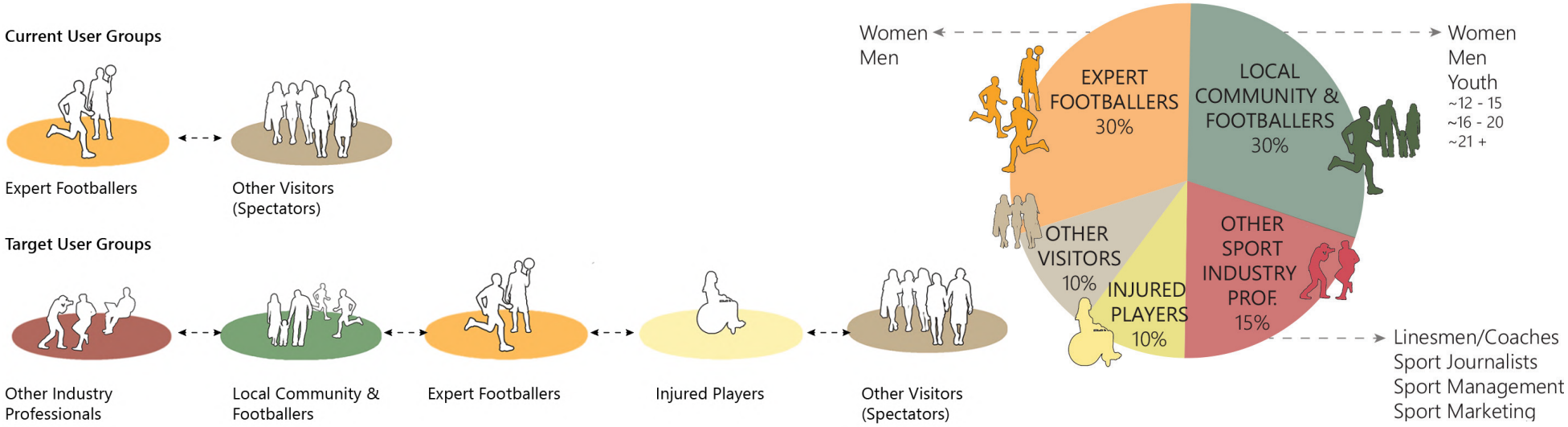


Figure 7. 2: Diagram illustrating the target user groups for the intervention (Author's drawing)

7.3 Programme in Context

The programming requires large spaces that can be adapted easily, in which the site has plentiful amounts of. Figure 7.4 shows how the site offers pools of space, which provides opportunity for multiple different points of activity that serve a particular function. The spaces are easily linked to each other creating movement and flexibility within the site and the surrounding areas. The programming of the sports development centre calls for large external space to allow for two full training football fields and two half training fields. The placement and arrangement of spaces can be seen in figure 7.5.
The visual connections experienced from different portions of the site can be seen in figure 7.11.

A further explanation of each part to the intervention will be explained individually in the next few pages. This provides further explanation to what programming is needed in each section and how they link to one another.

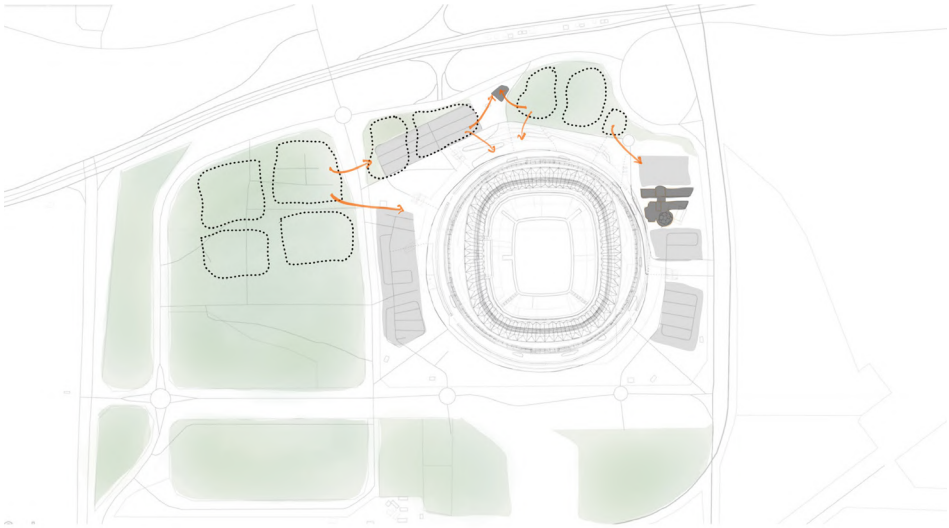


Figure 7. 4: Author's diagram illustrating the different pools of space around the site

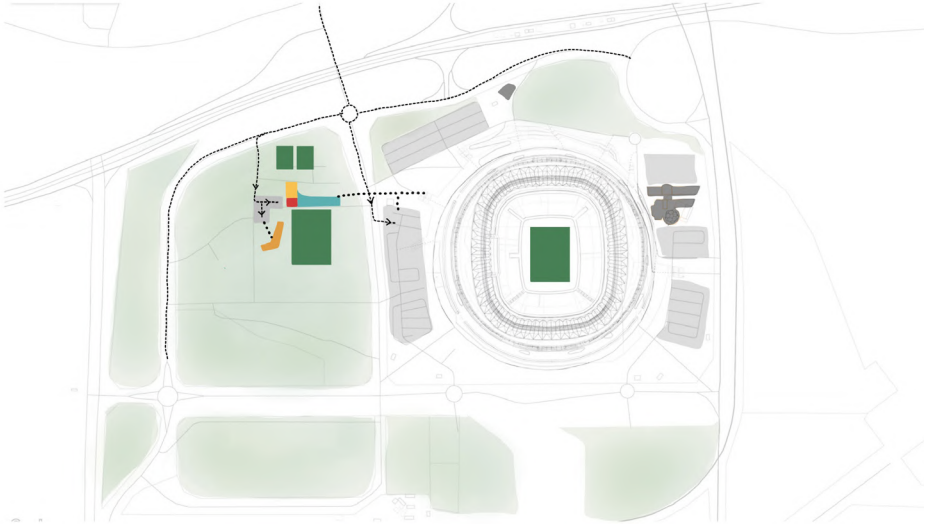


Figure 7. 5: Author's diagram illustrating building placement on the site

Sports Development Centre:
The centre needs to provide for both public and private usage. The gym, training areas, locker rooms and offices need to be private and have enough security. The restaurant and bar are a public space where people can come and watch local games. Therefore, being closely connected to the reception is important.

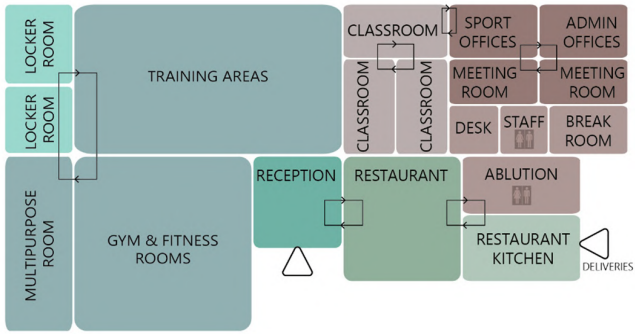


Figure 7. 6: Arrangement of rooms for the sports development centre (Author's drawing)

Medical Facilities:
A full-scale medical facility is implemented to deal with injured players at close proximity to the field. The courtyard is implemented for external treatment, relaxation, and recovery measures.

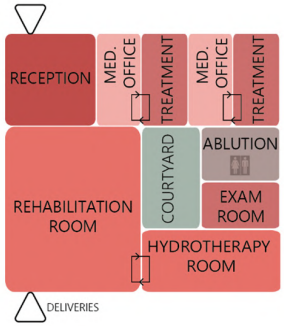


Figure 7. 7: Arrangement of rooms for the medical facilities (Author's drawing)

Athlete Dormitory:
A player's dormitory is needed for when players are required for overnight training, or for athletes that live far away from the training facility that cannot afford to travel every day. There will be both a male and female dormitory with common areas to interact in.

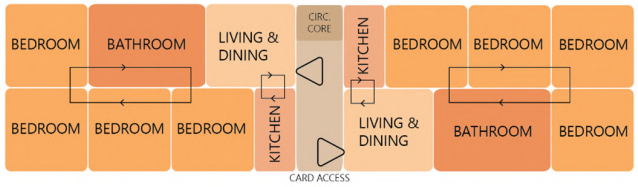


Figure 7. 8: Arrangement of rooms for the athlete dormitory (Author's drawing)

Sport Career Development Centre:
Should not be accessed by the public and should have an easy connection to both internal and external training facilities. This is due to users needing access to the field when matches are happening. As well as easy access when on-site research and analysis is needed.

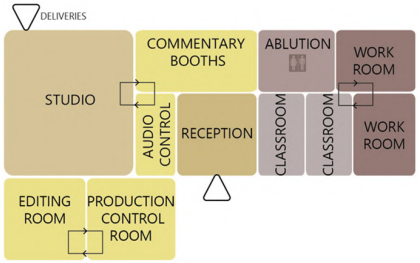


Figure 7. 9: Arrangement of rooms for the career development centre (Author's drawing)

FUTURE DEVELOPMENT:

The goal of the project is to bring more people into the stadium precinct. As it is a very large site, there is a multitude of possibilities for development that can be explored. Thus, future development on the site is possible and can be seen in the master-plan presented in figure 7.13.

Training & Educational School:

As a possibility, a new training and educational school on the premises will benefit both the community and the football training centre designed. Children attending the school will have first hand exposure to the training facility and the stadium, further increasing interest into the sport. This also encourages new parents and families to use the public facilities provided.

The school will be in close visual proximity to the other buildings on site, whilst still being closed off and private to allow for children to play comfortably and securely.

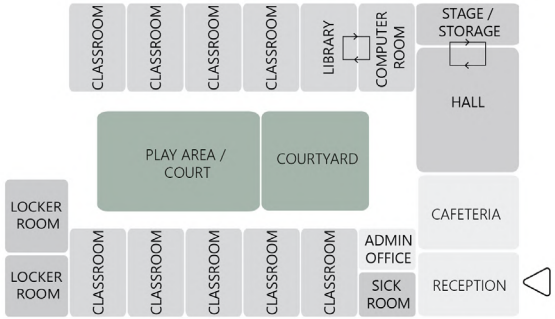


Figure 7. 10: Arrangement of rooms for a future school (Author's drawing)

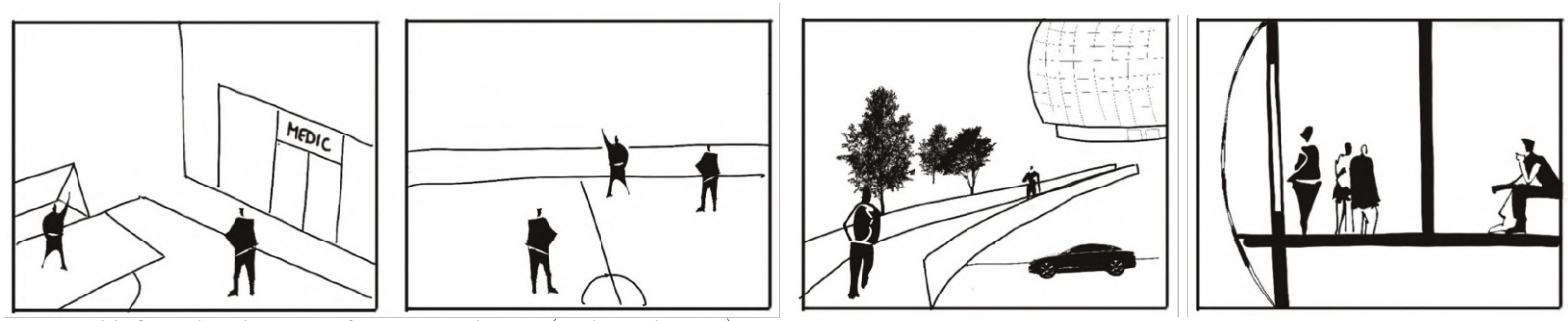


Figure 7. 11: Snapshot drawings of spaces on the site (Author's drawing)

Once I understood what programming is needed within each section of the intervention, it was important to understand a basic flow to the design. This was determined through users of the facility and the route they would take based on where they were going inside the building. There were four main categories to work with, which included: warm up, play, recovery, and research and analysis.

Athletes visiting the training centre will need to use both the warm up and play sections of the building. Thus, they need to be situated in close proximity to one another. Recovering athletes will use the medical centre independently of the training facilities. However, in case of emergencies the medical centre needs to be close to where training happens. Research and analysis facilities can be in a private part of the site as there should not be much interaction with the public.

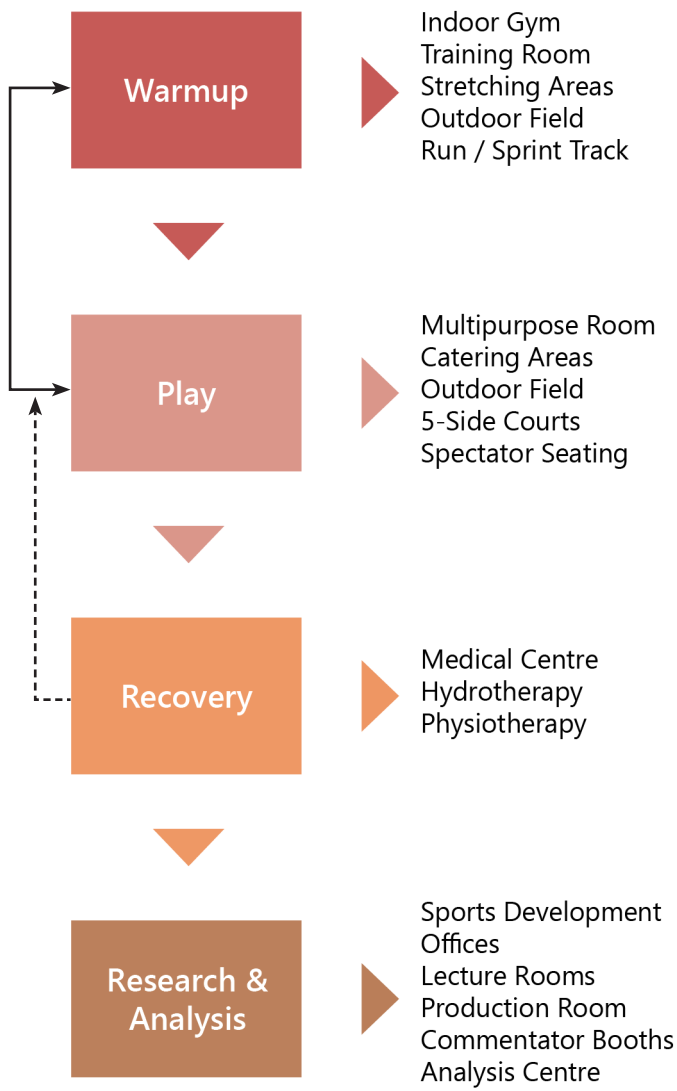


Figure 7. 12: Diagram Illustrating the flow within the building using programmes (Author's drawing)

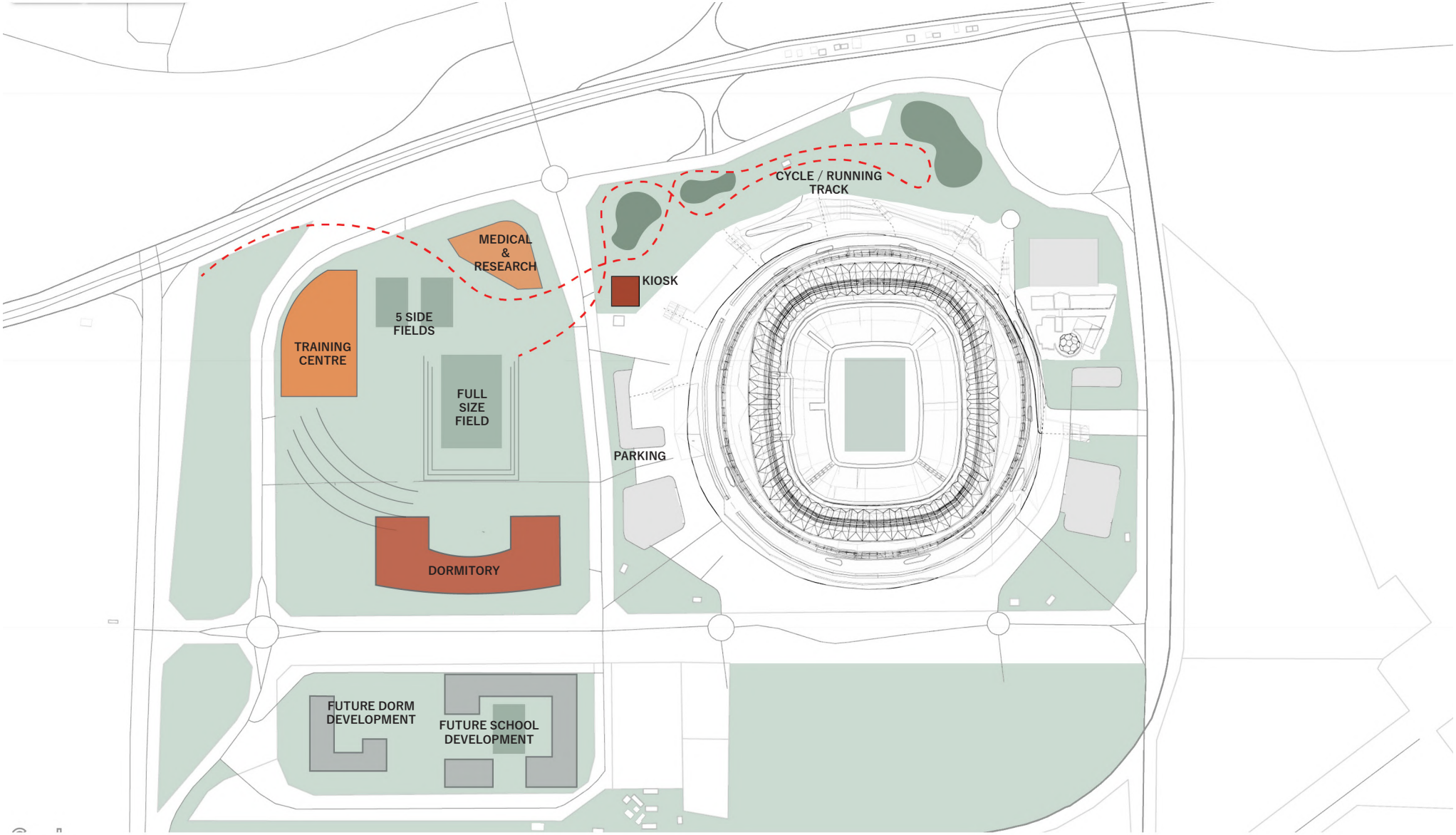


Figure 7. 13: Process master plan of the site (Author's drawing)

For professional sports facilities to achieve both sporting and cultural goals while working in cooperation with community goals – it needs to offer a diverse range of non-match day facilities and services for their communities, alongside meeting the sporting and commercial demands.

Hence the project is conceptualised to be a mixed use development, that attracts the community though a range of public outdoor and private indoor fitness facilities. Figure 7.14 illustrates the multitude of other activities people can partake in around the site, such as, futsal, outdoor gym, walking and cycling track, mini amphitheater, and a restaurant and sports bar. Indoor activities include, indoor football, meeting rooms, exhibition venue, gym, and medical facilities. The activities are mainly sport related to further engage with the ultimate goal of the new facility.

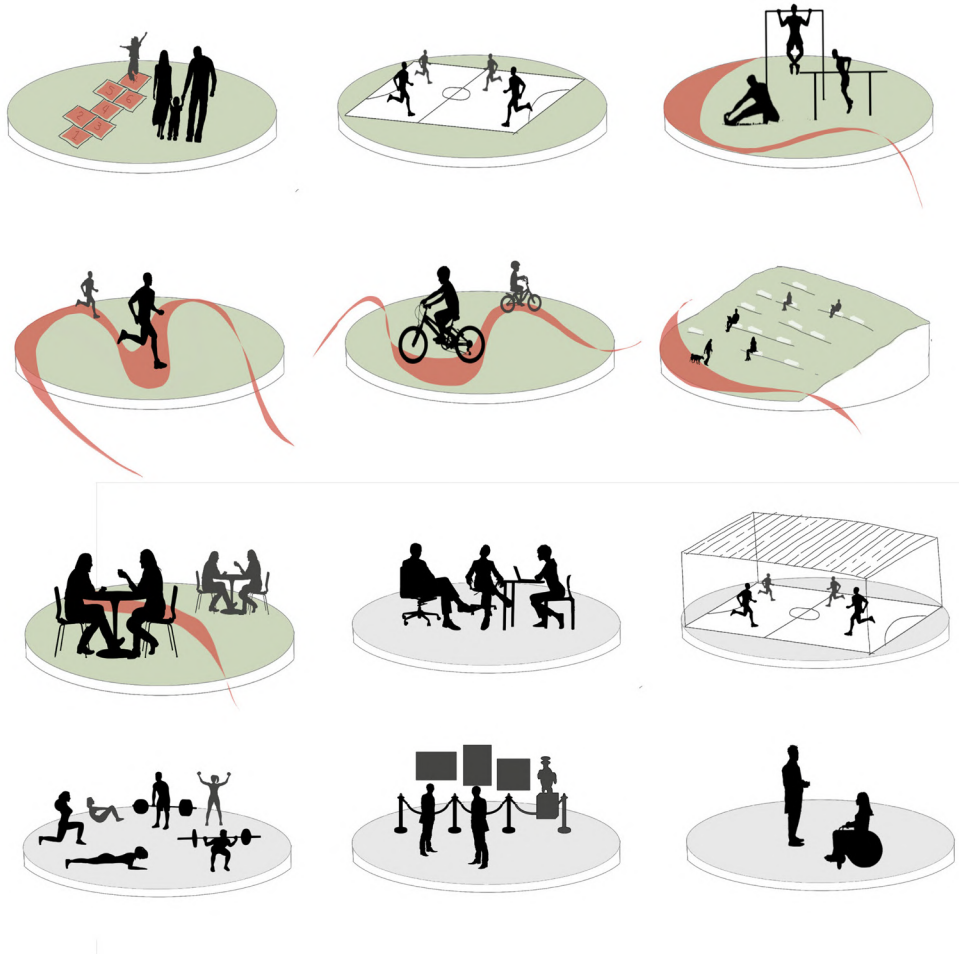


Figure 7. 14: Potential internal and external programmes (Author's drawing)

7.3 Area Schedule

Table 2: Area Schedule

Program	No. of Units	Area Per Unit (m^2)	Total Area (m^2)	Class Occupancy	No. of People	Operating Time
Soccer Development Centre						**8am - 5pm**
Reception	1	40	40	A1	40	
Administration Offices	3	10	30	G1	2	
Meeting Rooms	2	15	30	G1	2	
Sport Offices	2	15	30	G1	2	
Kitchennette & Lounge	1	25	25	A1	25	
Staff Ablutions	2	5	10	N/A		
Locker Rooms	2	40	80	N/A		
Fitness Rooms / Gym	1	150	150	A2	150	
Classrooms	3	60	180	A3	36	3 days/week
Multipurpose Room	1	150	150	A2	150	
Training Areas	2	300	600	A2	600	
Storage Rooms	3	10	30	J3	1	
Restaurant / Bar Kitchen	1	25	25	A1	25	2 days/week
Restaurant / Bar	1	75	75	A1	75	2 days/week
Sports Retail	1	40	40	A1	40	6 days/week
Repair Shop	1	20	20	A1	20	5 days/week
Restaurant / Bar Ablutions	2	20	40	N/A		2 days/week
			1555			
Medical Facilities						**8am - 5pm**
Reception	1	25	25	A1	25	
Medical Offices	2	15	30	G1	2	
Treatment Rooms	2	15	30	E4	4 per room	3 days/week
Examination Rooms	1	10	10	E4	4 per room	3 days/week
Rehabilitation Rooms	1	40	40	E4	4 per room	3 days/week
Hydrotherapy Rooms	1	20	20	E4	4 per room	2 days/week
Pump Room	1	15	15	J3	1	
Storage Rooms	2	10	20	J3	1	
Ablutions	2	10	20	N/A		
			210			

Sport Career Development Centre						**8am - 5pm**
Production Control Room	1	30	30	G1	2	
Post Production / Editing Room	1	30	30	G1	2	
Audio Control Room	1	25	25	G1	2	
Commenting Booths	2	20	40	G1	3	
Studio	1	70	70	G1	5	
Break Rooms	1	25	25	A1	25	
Reception	1	25	25	A1	25	
Ablutions	2	20	40	N/A		
Storage Rooms	2	20	40	J3	1	
Workrooms	2	50	100	A3	20	
Classrooms	2	55	110	A3	22	3 days/week
			535			
Accomodation / Dormitory						**24 hrs**
Bedrooms	30	20	600	H2	120	
Ablutions	15	15	225	H2	45	
Kitchen	15	15	225	H2	45	
Dining & Living	15	15	225	H2	45	
Common Areas	2	30	60	H2	12	
Games Room	1	20	20	H2	4	
Laundry Room	1	25	25	A1	25	
Refuse Area	1	30	30	N/A		
Storage Rooms	2	20	40	J3	1	
			1450			
General Services						**24 hrs**
Electrical Room	1	25	25	D4		
Control Room	1	20	20	D4		
Battery Storage Room	1	15	15	D4		
Server Room	1	15	15	D4		
Maintenance & Repair	1	25	25	N/A		
Security	3	15	45	G1	3	
Refuse Room	1	30	30	N/A		
Recycling Delivery / Pick Up Area	1	100	100	N/A		
			275			
		Total Project Area	**4025**			

7.4 Design Drivers

1. Functionality & Flexibility: should be taken into consideration to accommodate for a variety of sporting activities and training programs. This needs ample space for different training tasks and their associated equipment.

2. Accessibility: Not necessarily meaning public but the centre should be easily accessible to the community and other athletes in order to encourage participation. Thus, important considerations such as public transportation and parking should be taken into account.

3. Safety & Security: The safety and security of athletes, coaches, and visitors are of top priority. Therefore security guards and surveillance systems with ample external lighting is implemented.

4. Sustainability: As architects sustainability should always be a priority. Therefore energy-efficient lighting like solar, water harvesting measures, and the use of locally sourced materials, are used in the design and construction.

5. Community Integration: The design should encourage a sense of community by implementing spaces for social interaction, such as the restaurant.

6. Cultural Considerations & Sensitivity: This development is for the community and sport has such an impact on nation building. Therefore, elements of South African culture and heritage are incorporated in the design to help promote a sense of identity and pride.

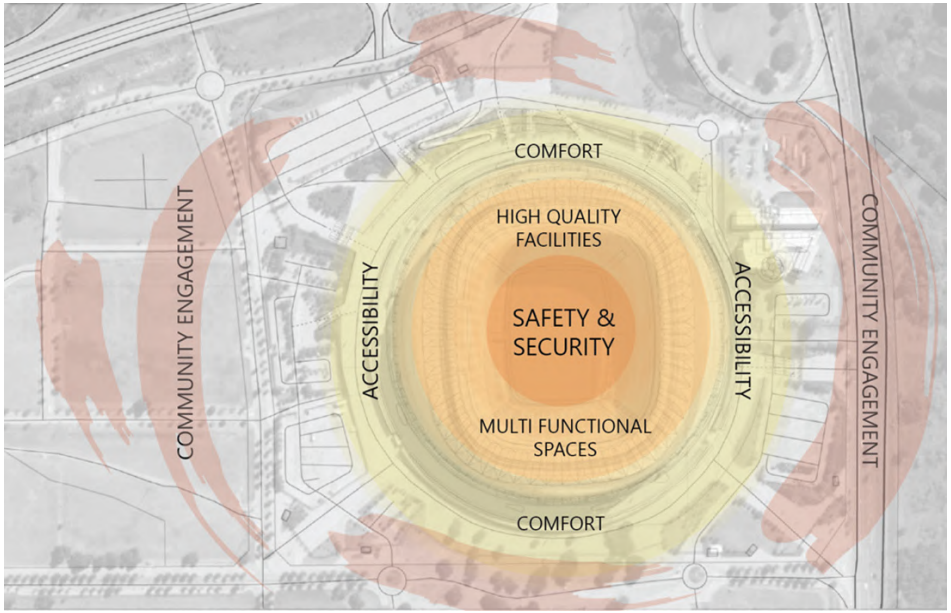


Figure 7. 15: Spatial understanding of the design needs (Author's drawing)

7.5 Design Limitations

When developing the design concept for integrating the stadium with the community, I thought about breaking parts of the stadium shell or adding on elements to the facade. During an interview with one of the lead consulting engineers on the project, he advised me to stay away from breaking or altering the façade and its structure due to multiple reasons.

Firstly, because of aesthetic reasoning, as the concept of the stadium is mostly enforced from the façade. Secondly, the external skin of the stadium has still tension members that support 4,5m inclined concrete columns. They are inclined from the vertical and that picks up the whole facade structure. Therefore it is one continuous ring, that is in ring tension. The engineer explained the system as an eggshell to a certain extent. So, if you puncture or break it will destroy the whole structure, including the columns in the stadium. He ended the interview saying that there are ways of overcoming it, but it would be best to work around what is already there.

In chapter 9 I illustrate how the design initially started from within the stadium walls and experimenting with breaking the shell apart for a more radical approach to the design. As stated this would not have structurally worked, so I played with the idea of designing on the outskirts with connecting bridges into the stadium. This was a less radical approach but no matter what the bridges were too insignificant in comparison to the large stadium. Thus, the scale and size of the stadium become another major limitation in my design approach.

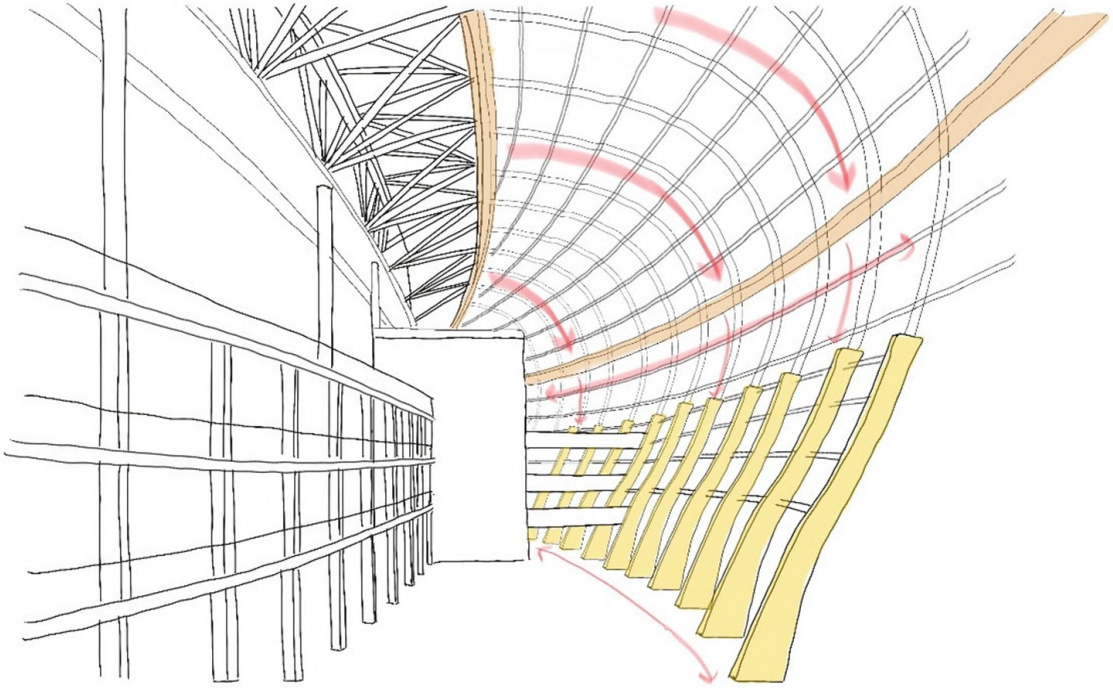


Figure 7. 16: Diagram illustrating the facade structure connection to the inclined concrete columns (Author's drawing)

Chapter
08

Sketch Charette & Materiality

For a successful design, the development process began with a sketch charette component of the project. This was to understand ways to explore theoretical ideas from our research into physical forms. From this a further investigation of concepts formed are explored further.

The charette has a focus on experimenting with light, textures and materials in order to understand limits and strengths when building forms based on the concept of connection.

8.1 Abstract collage of connection

The surrounding urban areas and large outdoor concourses have been designed in a way that enhances the natural landscape of the area. The facility thus emulates a true reflection of its place. However, the stadium currently represents itself as a floating mass alienated from the community. Thus, the abstract collage aims to illustrate the newfound connection between the FNB Stadium and the neighboring areas potentially brought on by the new development.

The burnt paper and polystyrene indicate the surrounding communities. Whists the red and yellow string indicate how FNB Stadium will become the connecting link.

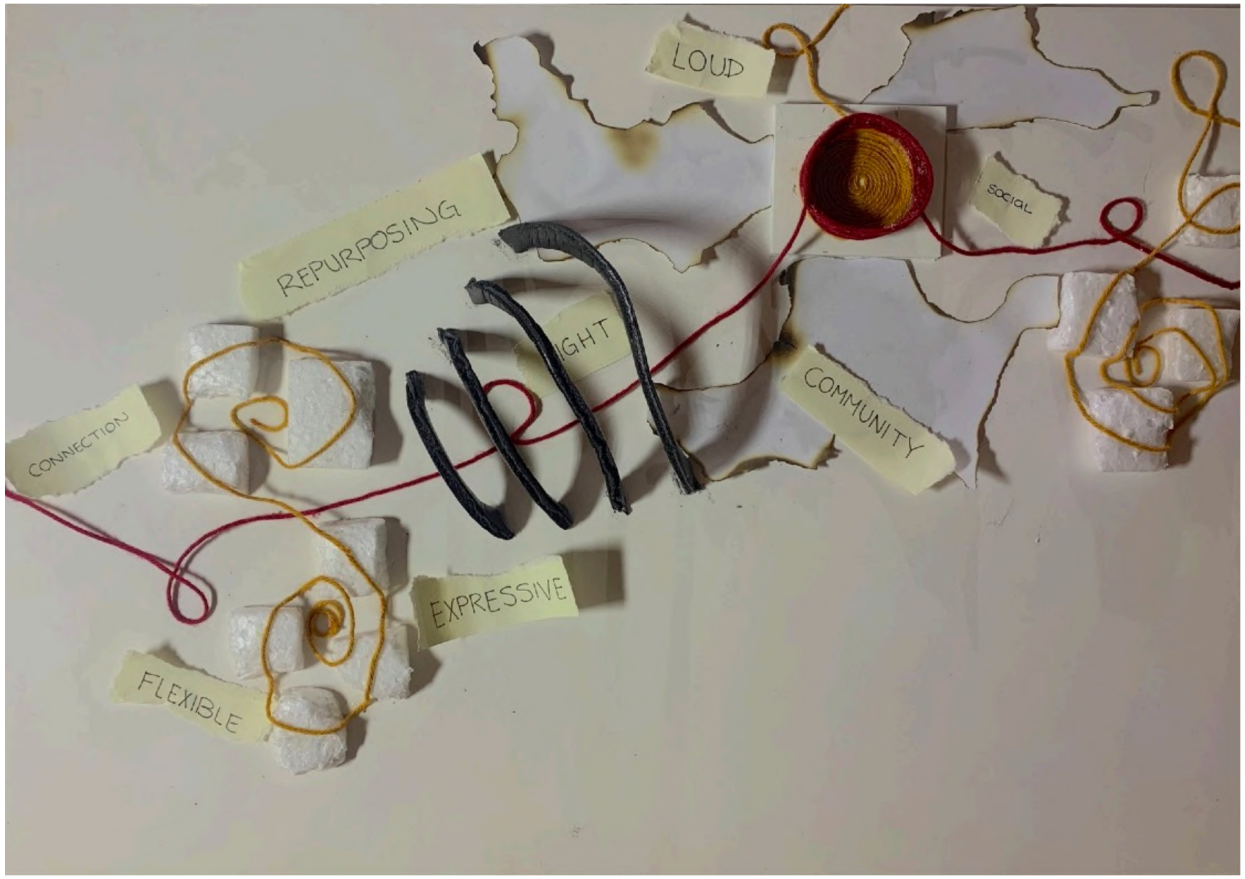


Figure 8.1: Author's abstract collage illustrating connectivity and connection

8.2 Material & light explorations

Explorations started through using and understanding different materials found around the house, such as pieces of plywood and plastic. The chosen method of exploration was using fire and burning, due to the representation of fire and earth in the cladding on FNB stadium. The aim is to understand how the material can be manipulated by fire or an external force.

The photos are edited to black and white to illustrate the light deferential more prominently. The lack of colour also allows the viewer to focus entirely on the experience light will give from the material. The results illustrated that more organic shaped materials allowed for a more dynamic photograph such as the calabash peel in figure 8.4.

From the images alongside, we can understand how reflective elements can play a strong role in aesthetics and functionality in architecture. They can add visual interest into a space as well as make it more comfortable and inviting which are elements to incorporate within the design of my building.

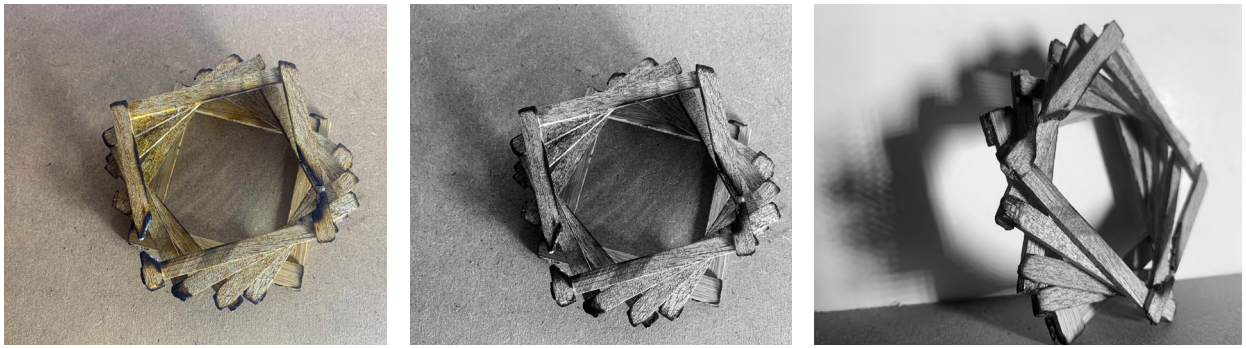


Figure 8.2: Author's light and material exploration of burnt plywood in geometric form



Figure 8.3: Author's light and material exploration of melted plastic



Figure 8.4: Author's light and material exploration of oven burnt calabash peel

Brick is a very familiar building material and links strongly to the surrounding context as most of the structures in the area are made of brick. I wanted to incorporate this material into my design and thus chose to explore how bricks can curve in different directions.

I looked at curving bricks horizontally and vertically. As well as looking at how to make a textured wall by slanting bricks outwards.

To curve in the horizontal direction was relatively simple and could be done. However, when attempting to curve in the vertical direction, I experienced many challenges due to the brick loads. Hence, if needed when designing more research needs to be done in order to ensure proper structural stability.



Figure 8.5: Brick exploration models

8.3 A connection to site

Using the concept of connection and re purposing as a basis, I wanted to explore a greater connection to the site during this charette. Hence, during one of the site visits I was able to collect some materials from inside the stadium as well as from the outside of the stadium. The pieces of brick and rock were acquired from the roadside or gardens alongside the stadium. Whilst the pieces of yellow screed were provided by management staff from broken pieces of the steps inside the stadium.

The process of exploration after acquisition of the materials, started from breaking the screed into smaller pieces so that it was easier to work with on the clay. This allowed me to then start the process of imprinting onto a flat piece of clay where each piece of screed was easily placed and held its place until removal, leaving a stark impression on the surface. However, the curved bowl shape required extra care when working with the pieces of screed as they would easily fall out of place. I found that breaking the shards even smaller allowed for easier application. Even though the flat piece of clay was easier to work with, both the flat and curved moulds saw interesting patterns once the shards were removed.

From figures 8.5 and 8.6 you can see the different textures on each side of the screed which allowed for variation when imprinting onto the clay. In both the flat and curved form the rougher side left a greater impression and was able to catch the light more clearly compared to the smoother side.

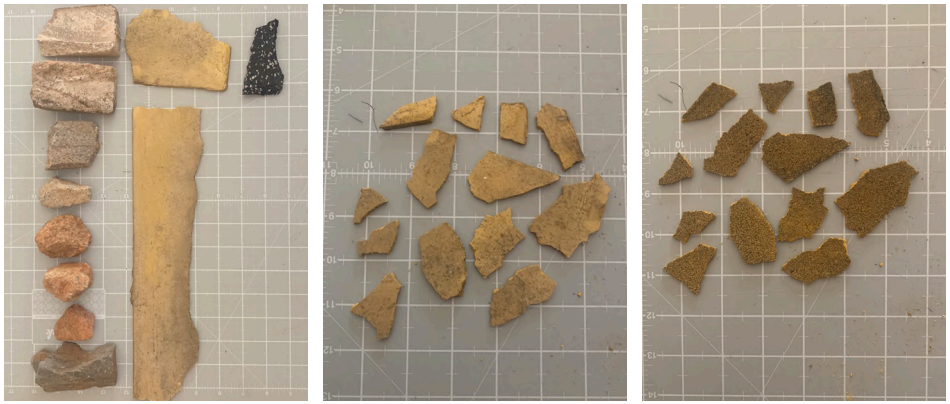


Figure 8.6: Images of materials found on site

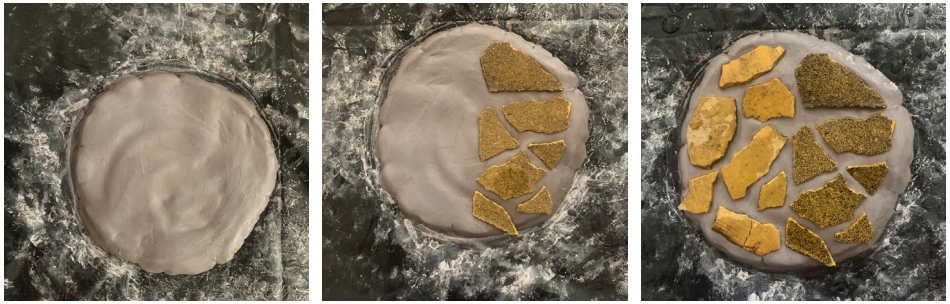


Figure 8.7: Process of imprinting fragmented screed into clay to create a new texture



Figure 8.8: Images illustrating imprints on both the flat and curved pieces of clay

8.4 Form exploration

As stated in previous chapters, FNB stadium is incredibly isolated from the surrounding community. From the 1:500 model illustrated in figure 8.8 we are able to better understand the scale and disconnection of the stadium from its context. The only building immediately surrounding the stadium is the SAFA building on the east and the NASREC Expo Centre about a kilometer to the south. Therefore, the main goal with the design is to bring more people from the community into the stadium precinct more frequently. Consequently, when investigating building forms, I wanted to explore designs that offer inclusivity and a strong visual public access.

I started exploring using just form and scale in mind as seen in Figure 8.10 in order to understand how people will feel on their approach to the building, once they are within the building and the interaction with the stadium. In figures 8.11 and 8.12 I further analysed the form and placement based on a programming understanding. Consequently, this gave me a better understanding of the scale and size of the building and how much space my intended programming would need.

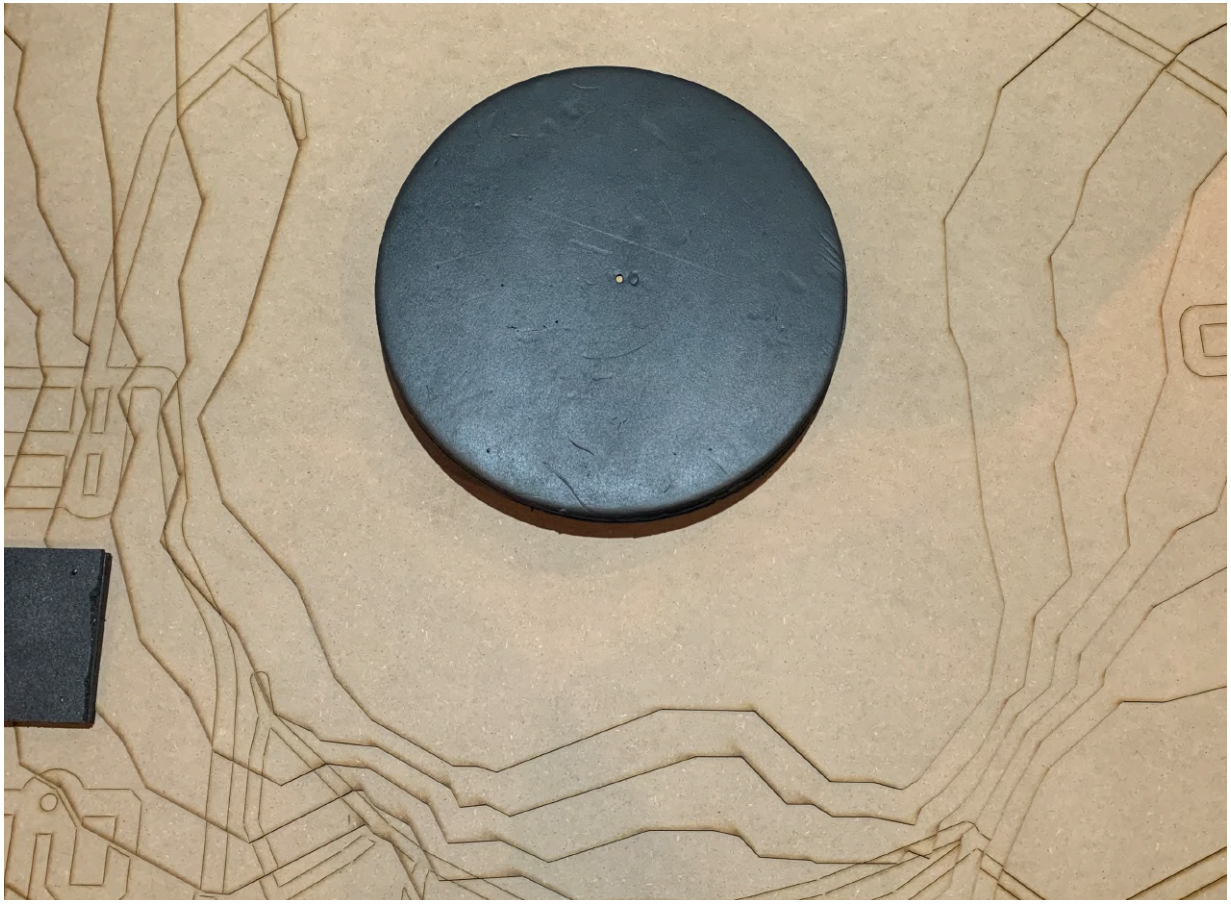


Figure 8.9: Site model at 1:500 scale

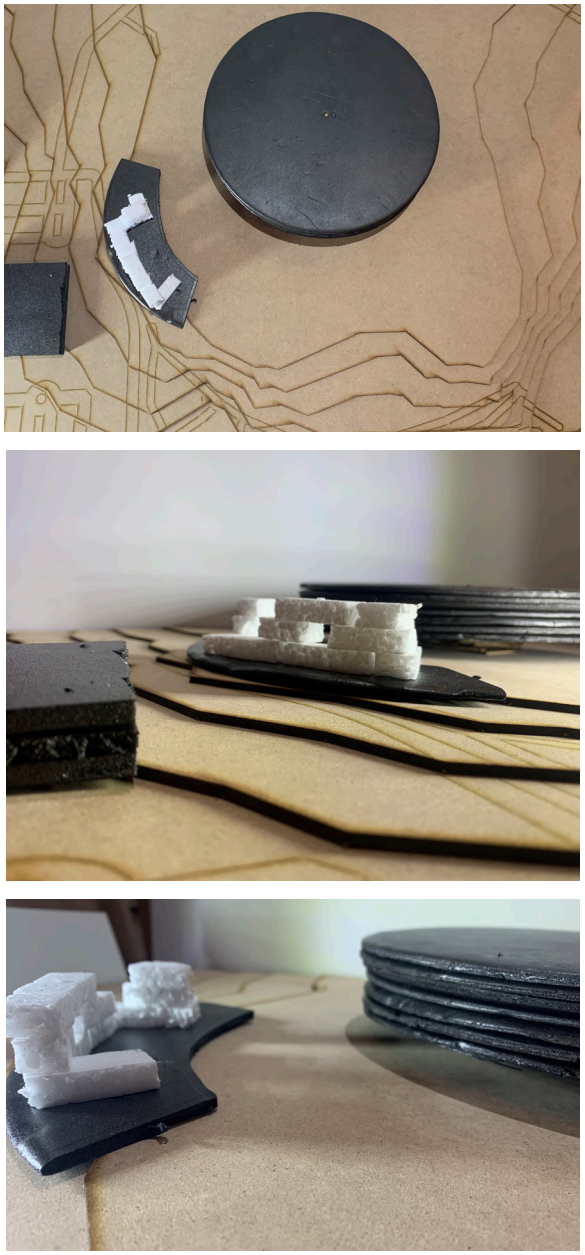


Figure 8.10: Massing exploration 1



Figure 8.11: Massing exploration 2

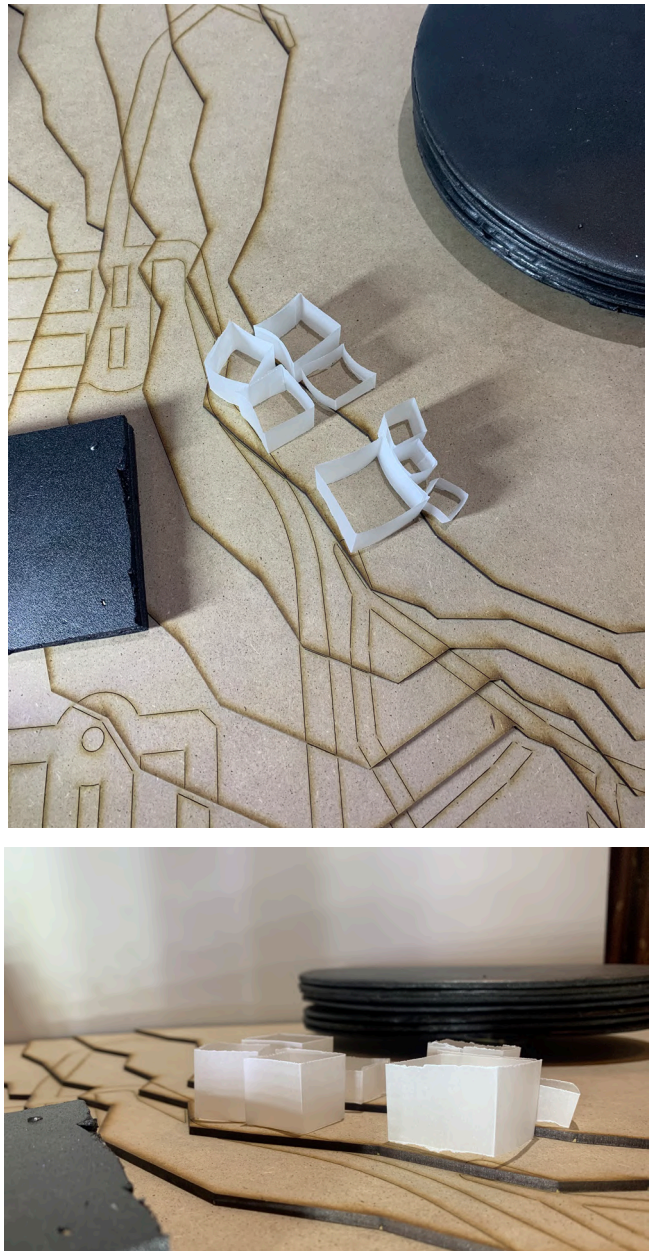


Figure 8.12: Massing exploration 3

Chapter
09

NOTE
This chapter reflects initial design explorations, showing how ideas have developed, and should not be interpreted as the final version of the design.

Design Development

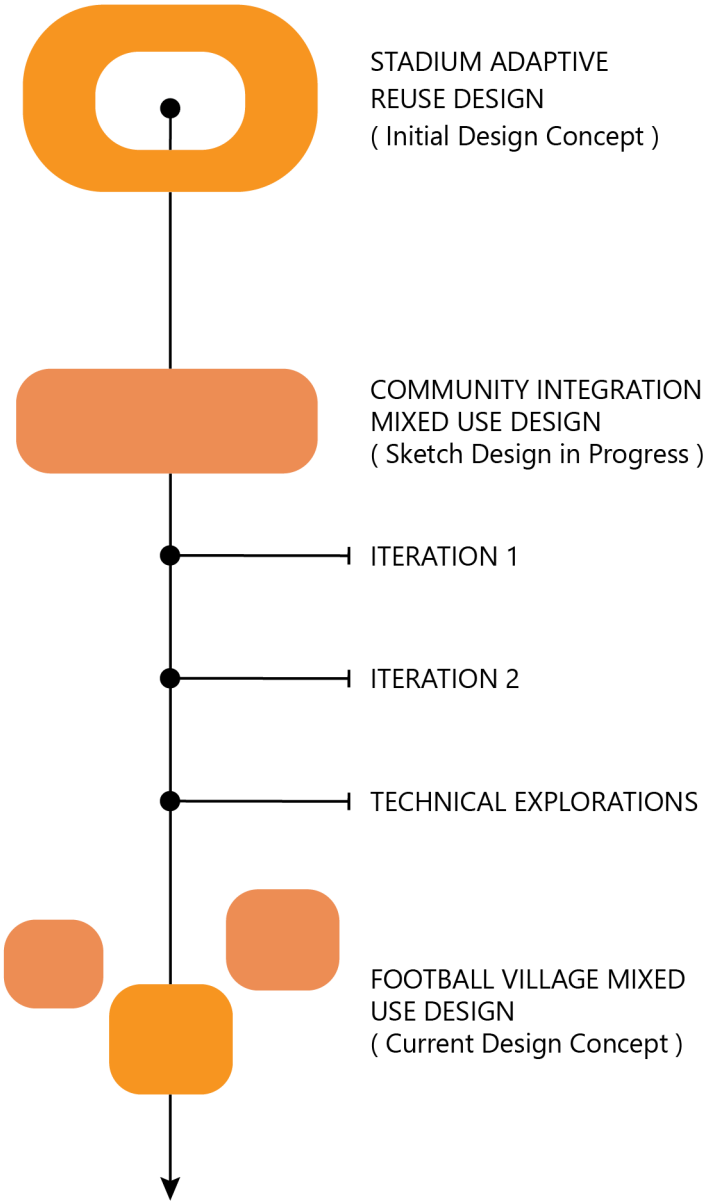


Figure 9.1: Author's diagram illustrating the timeline of design development for the duration of the project

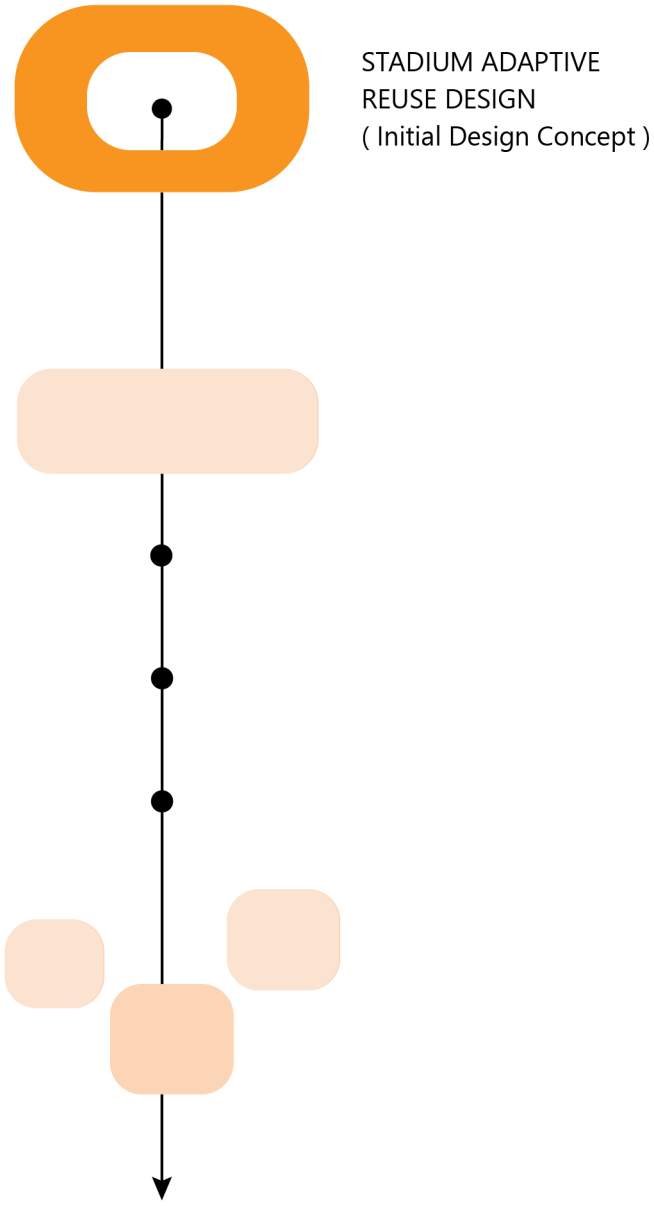


Figure 9.2: Author's diagram illustrating the first stage of design development

9.1 Initial Design Concept

My initial concept revolved around football advancement and promoting sports development through the adaptive reuse of FNB Stadium. The purpose of this is to ensure that the stadium becomes a place that cannot only successfully host sport events but also is a place that can develop football for the next generation.

I attempted to do this by building within the stadium walls itself. However, due to the large programmatic requirements I needed to build on both the external and internal of the stadium. Figure 9.3 illustrates a basic conceptual understanding of programmatic placement inside and outside the stadium. This concept presented several challenges in terms of structure (as discussed in chapter 7) and general design cohesion, as the two areas felt too disconnected from each other. I attempted to add bridges to connect the two sides, however the size and scale of the stadium made the bridges look out of place and irrelevant. Overall I struggled to make the stadium itself more accessible to the community by separating the programme.

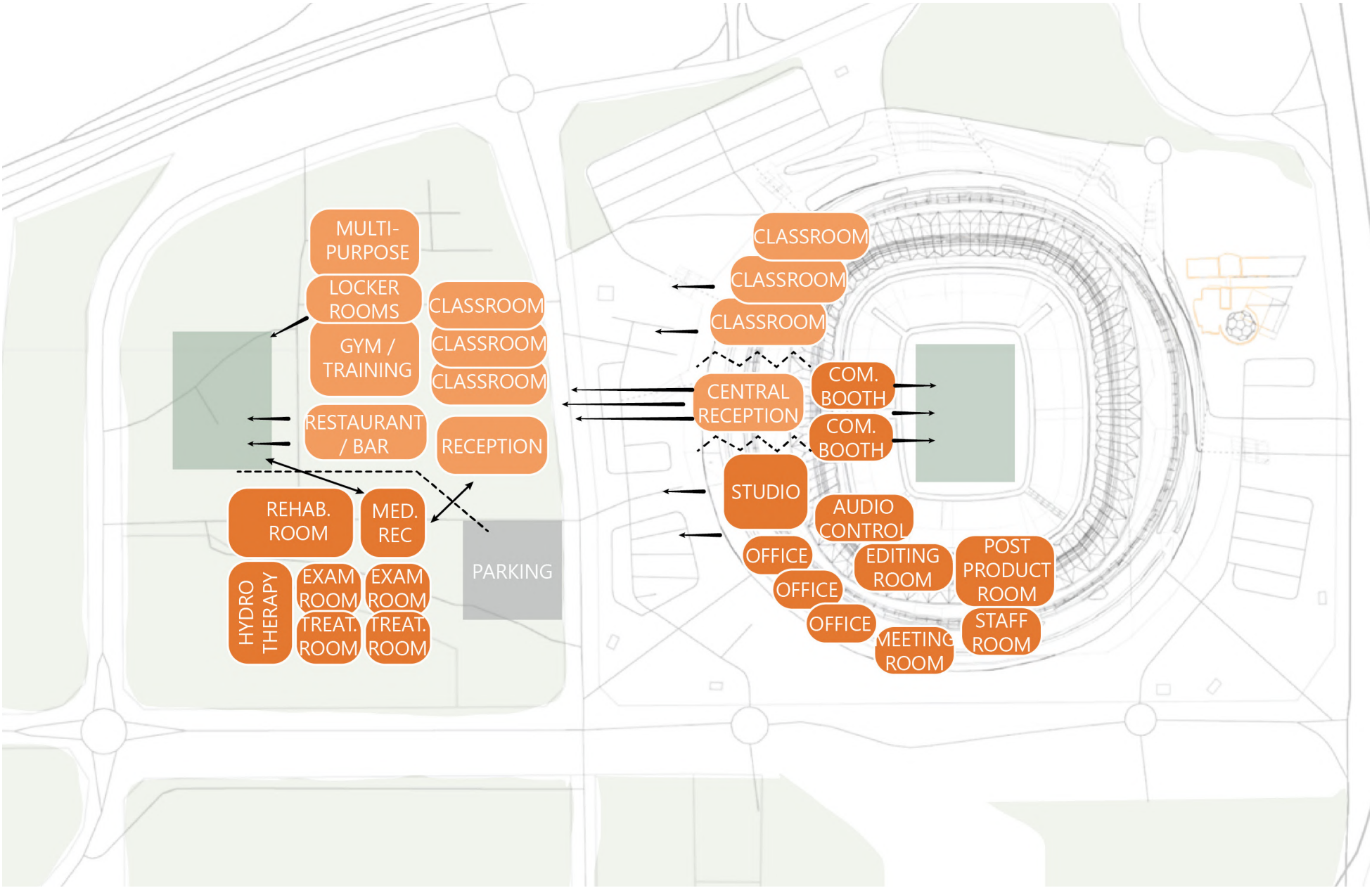


Figure 9.3: Author's bubble diagram illustrating programme layout inside and outside the stadium

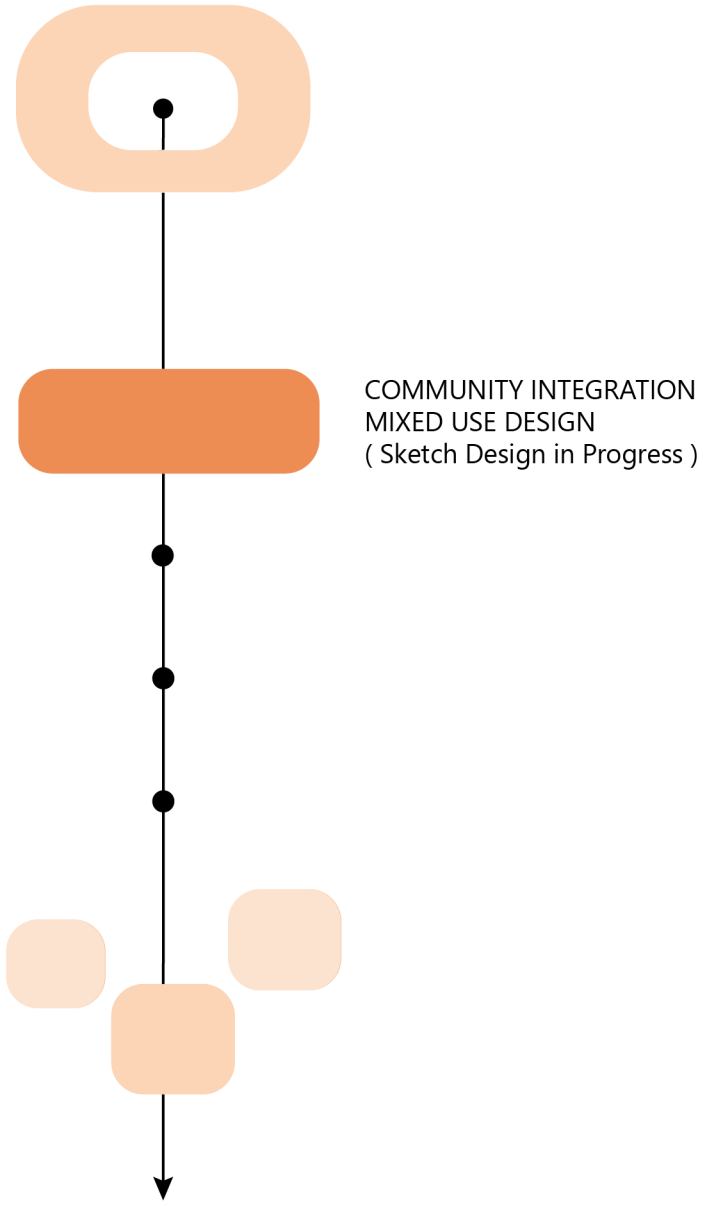


Figure 9.4: Author's diagram illustrating the second stage of design development

9.2 Community Integration Design Concept

By returning to the drawing board I was able to understand how the stadium is located within the context of Soweto and how isolated the precinct is from the community. Therefore, I refocused my concept to centralised bringing the community into the stadium precinct.

As explained in previous chapters stadiums like FNB end up benefiting elite athletes and promote elite sport development. However, when examined closely the benefit to the ordinary citizen is exaggerated and in this context, a large portion of the Soweto community do not return to the stadium. This is due to them not having anything to do in or around the venue.

Drawing from this context my project explores how the FNB Stadium can become a sport and culture led space that locates local people at the center of its use identity. I explored the design of the stadium as a mixed-use space with both public and private spaces to connect to different age groupings and demographics using sport as a grounding point.

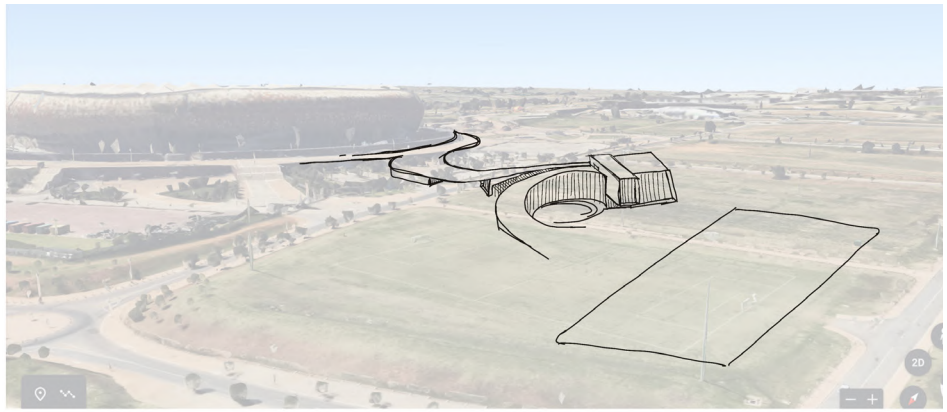


Figure 9.5: Author's form exploration 1

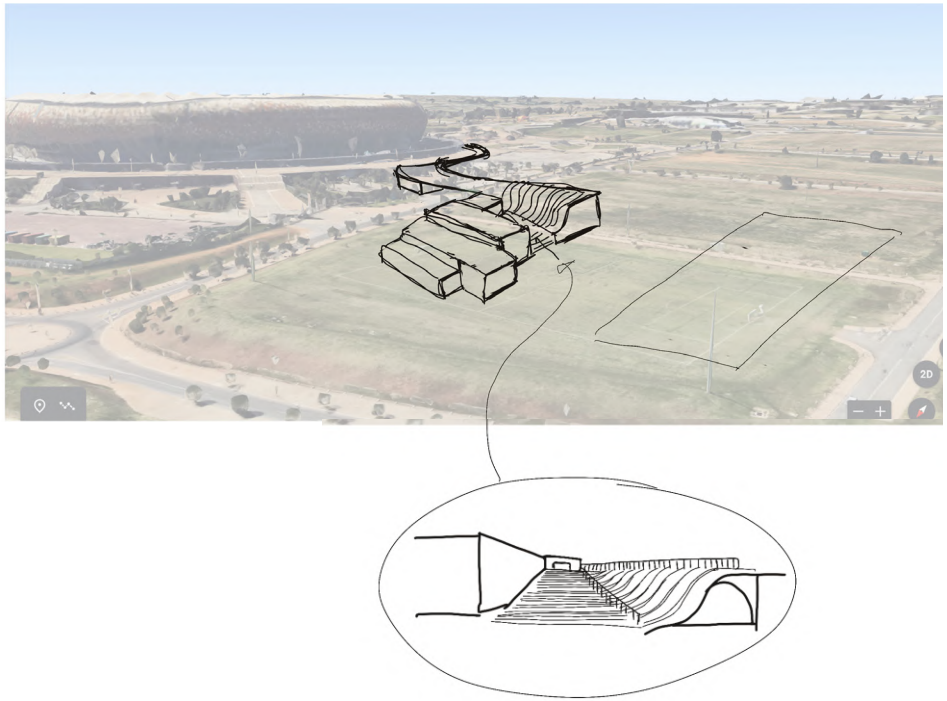


Figure 9.6: Author's form exploration 2

9.3 Experimenting with Form

Upon moving outside the bounds of the stadium walls, the site for development became extremely large. Bridges were used in an attempt to link the two buildings. However, this felt like more of an add on and less apart of the building design. I have lots of programmatic requirements, hence resolving a form to start with became a large challenge.

I started with curving parts to give a more inviting feel to the building, which can be seen in figure 9.5. However, I found it incredibly difficult to fit rooms like the training rooms and medical facilities into curved sections as these are very technical spaces that require specific regulations. Therefore, I explored other forms where I could involve curves in a different way such as in figure 9.6. As depicted in figure 9.7, the design worked well in plan in a technical sense, however, I did not feel like the stadium connected well with the building form in any way. Which led me to a more curved shape as seen in my sketch design iteration 1.

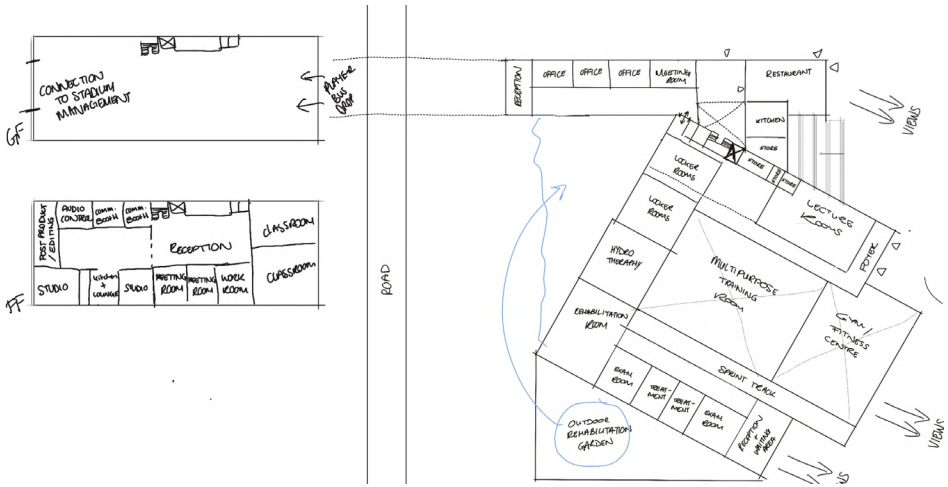


Figure 9.7: Author's form exploration 2 in plan

9.4 Sketch Design Iteration 1

In conceiving the design, I drew from the curved shape of FNB that aimed to create a sense of unity and inclusivity, and promote a sense of togetherness and community, emphasising the idea that sport has the power to connect people from diverse backgrounds. My design utilised curved forms to invoke breaking open the closed circle symbolised by the 'pot'. This enabled a fluidity and dynamism within the design.

I separated my programming into a public and private zone for security and circulation reasons. Within the public zone, I aimed to attract youth and families, through a children's bike park, four 5-a side public football fields, an outdoor exercise park, resting wifi pods for teens, restaurant, a retail and sports equipment repair store and a multipurpose venue that can be used by the community. I anticipate the public space will attract local people to the development, so children can grow up familiar with the FNB Stadium and community members will see the community uses for the development. In the private zone, I designed a football training center and dormitory for youth, officials and administrators interested in a football career. By re-imagining FNB as a stadium fostering broader community aims it breaks the pattern of FNB as an alienated icon within the historically disadvantaged community.

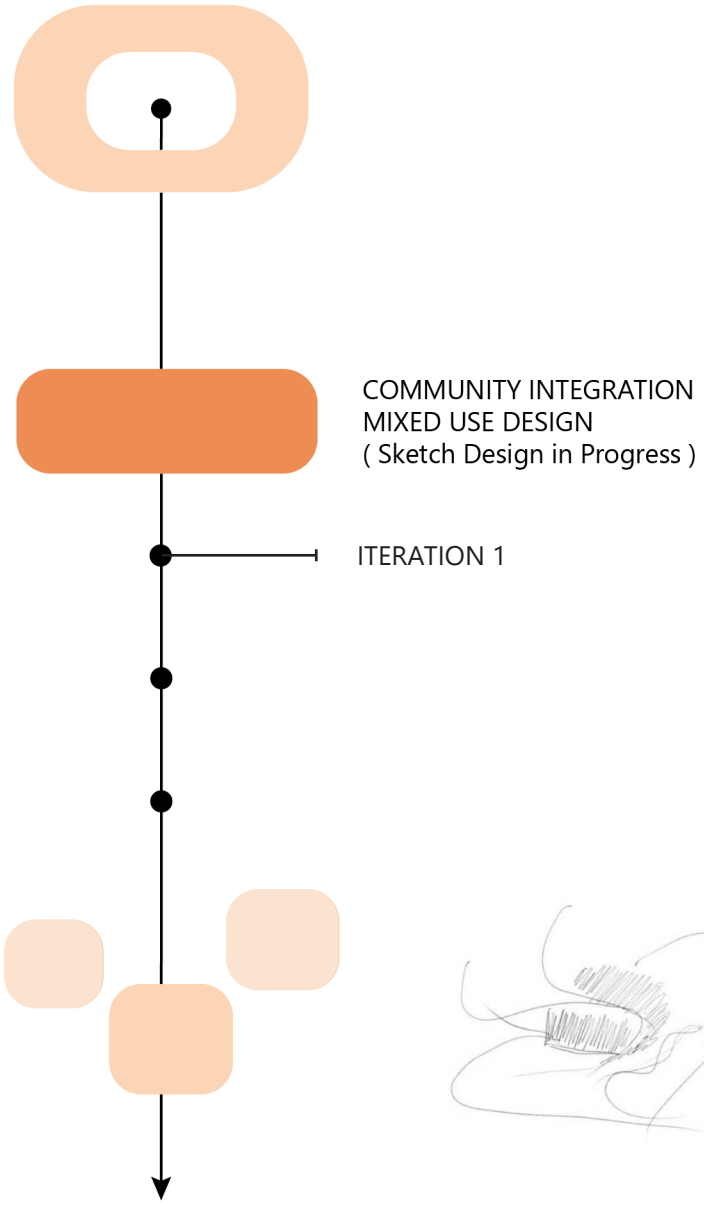


Figure 9.8: Author's diagram illustrating iteration 1 of design development



Figure 9.9: Author's sketches to understand different forms

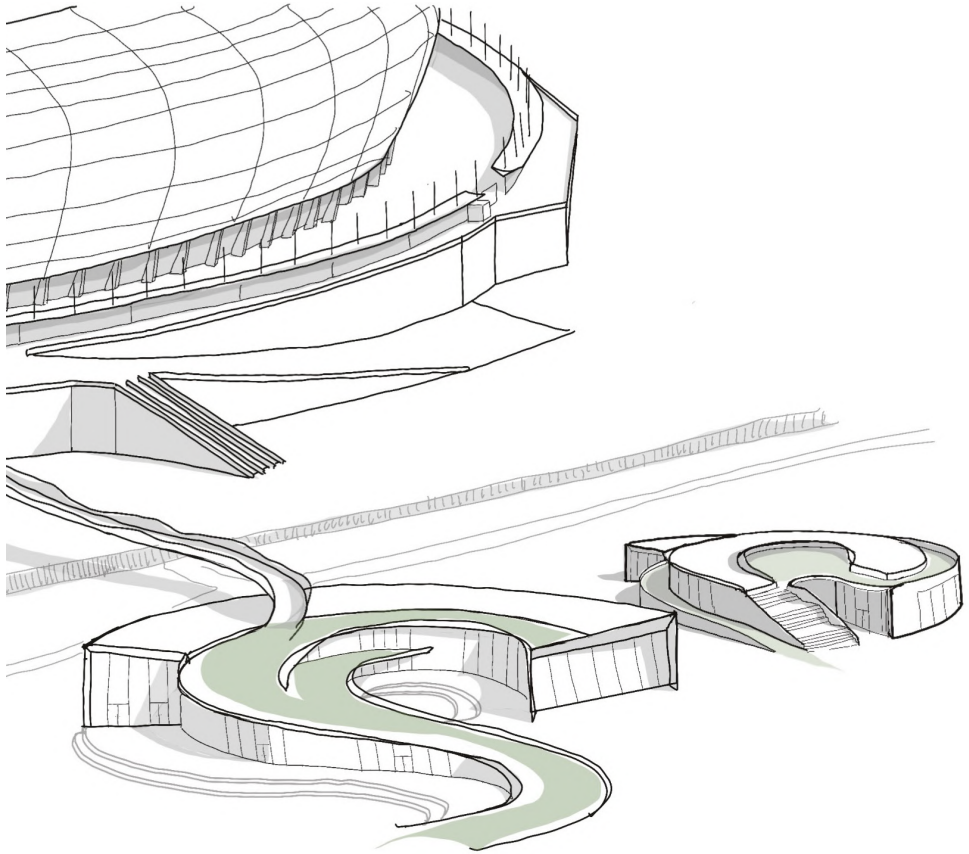


Figure 9.10: Author's drawing of revision 1 building mass

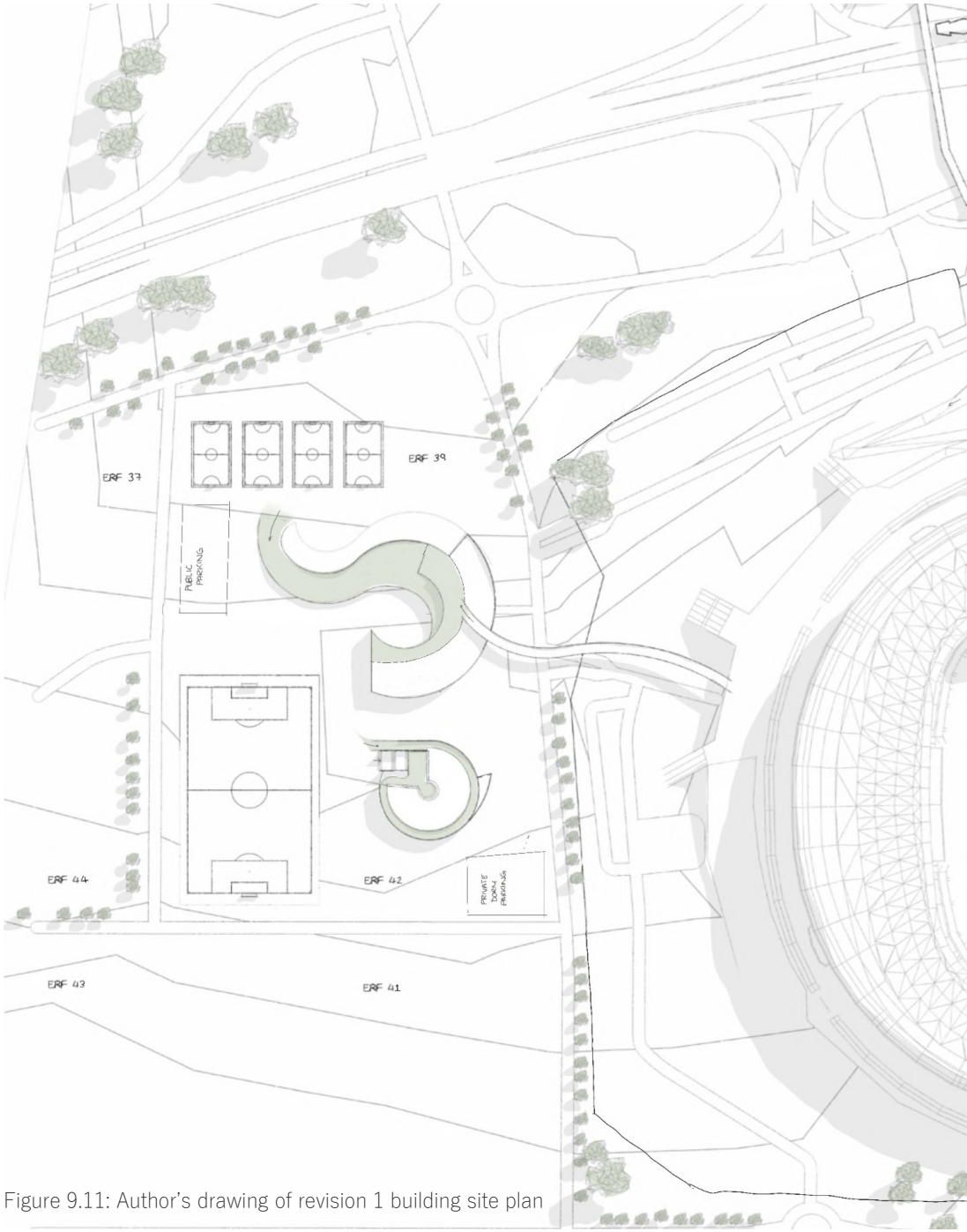


Figure 9.11: Author's drawing of revision 1 building site plan

Iteration 1 design posed several challenges specifically to do with the form. The whimsical form was difficult to work with in plan and resulted in forced planning that did not work well in context of the site. With circular forms, retrieving natural light and ventilation became a problem which did not work well in reference to the theory of sustainability. In terms of connection to the community and the stadium, the building opened up to the community. Whilst there was no relationship seen between the building and the stadium besides the connection bridge. Furthermore, I intended the ramps to be used as public gathering spaces. However, it was noticeable that it would be unusable due to them having no strong purpose or function.

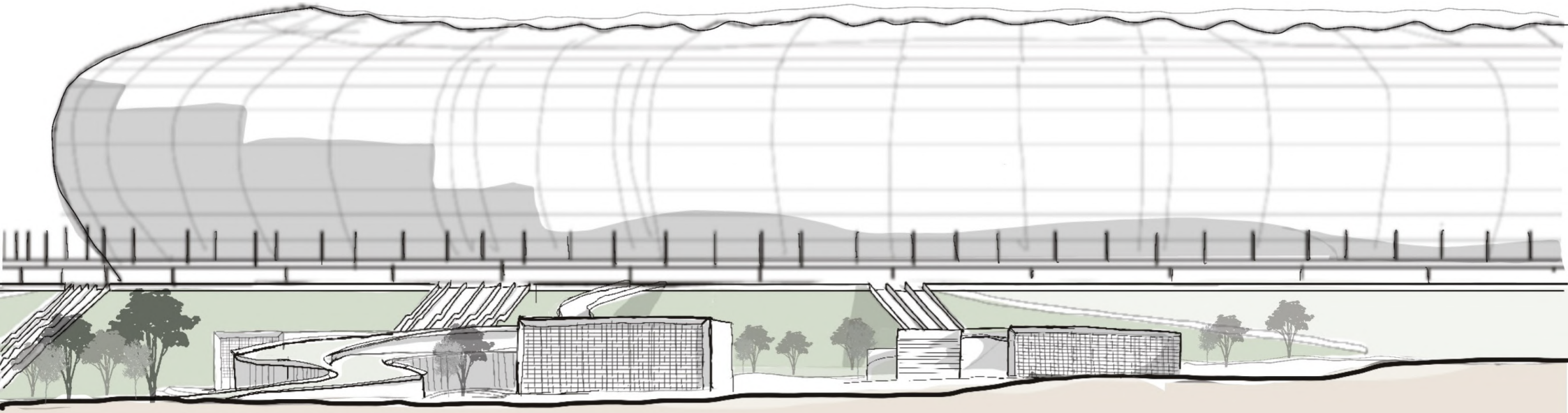


Figure 9.12: Author's drawing of revision 1 building elevation

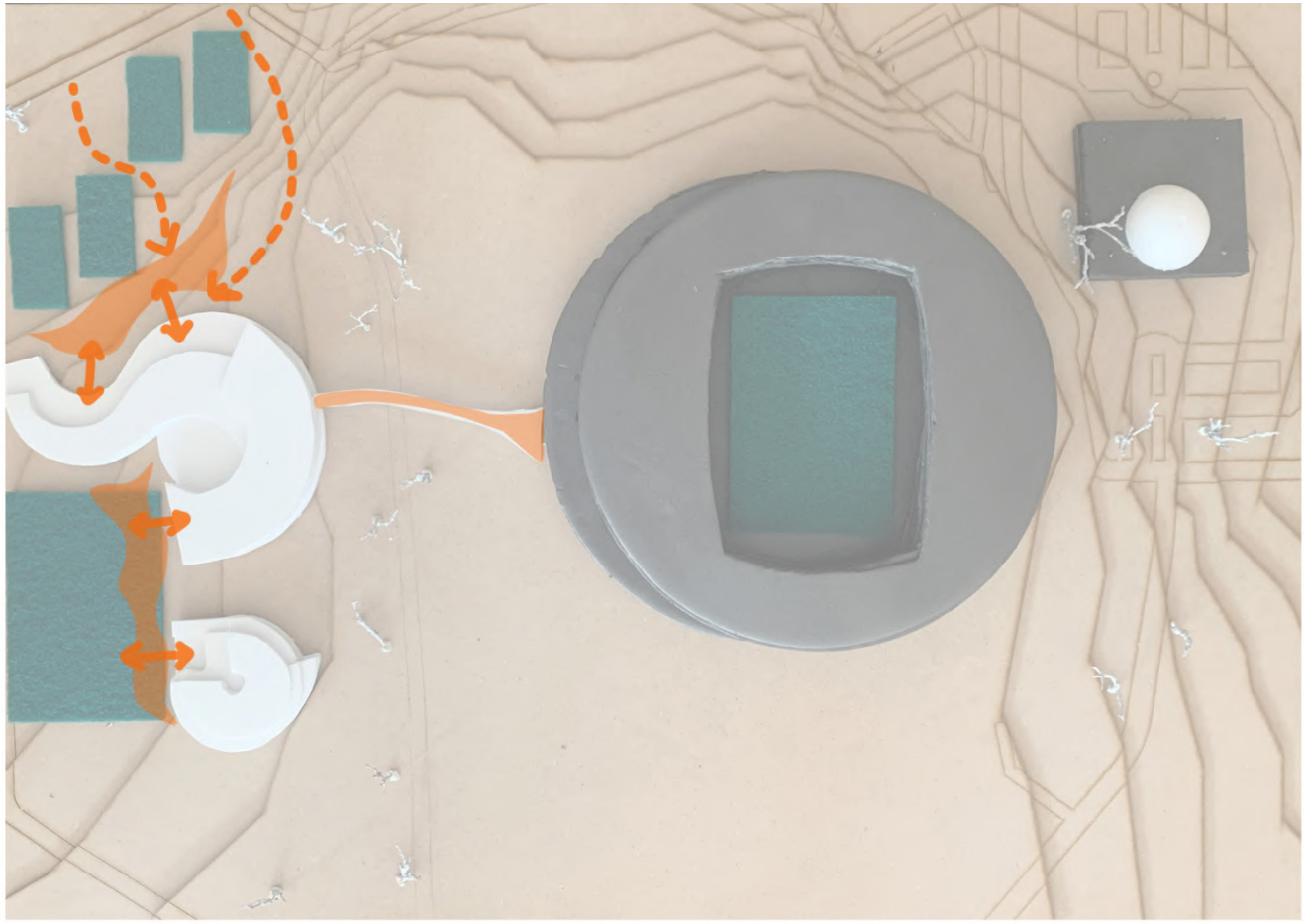


Figure 9.13: Model exploration of iteration 1

9.5 Sketch Design Iteration 2

For the second iteration I decided to simplify the form so that I could still create a poetic experience using curves, while still producing functional and efficient plans. Furthermore, sections were used to gain a better understanding of the slope of the site. This allowed me to be more creative in how to place the external public infrastructure, such as the full size football field, and its interaction with the building itself.

I also used urban design and landscaping in order to create more public sporting activities, such as a bike lane and walking trails. However, when looking at the site plan there were still logistical problems when connecting to the stadium and the community. The sections indicated that the existing parking was limiting interaction with the stadium. Furthermore, while I did push the external security fence back to allow for greater public space, there was still this barrier that could not be justified in the greater context of public connection with the stadium.

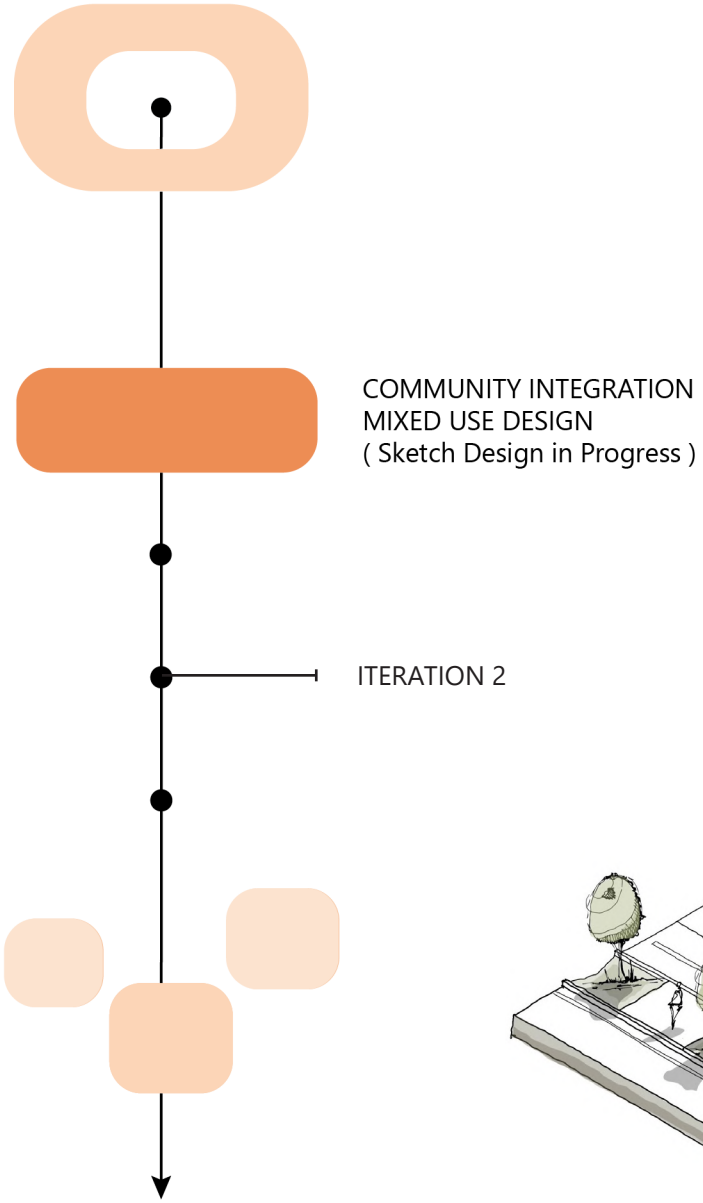


Figure 9.14: Author's diagram illustrating iteration 2 of design development

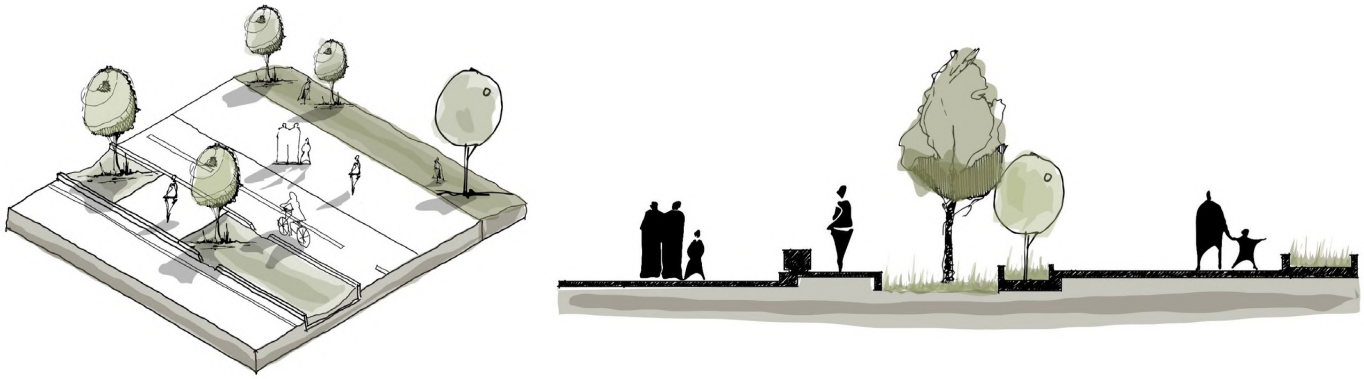


Figure 9.15: Author's drawing of urban design techniques to apply

As stated earlier the sections helped me better understand how to connect with the site. However, from the figure below it is understood that there is very limited connection with the stadium itself. This is due to the current existing parking lot sitting between the stadium and my site, which acts as a physical block for interaction with the facility. The next focus will be to analyse the site plan in more detail and logistically figure out, first, accessibility and transportation structures, and secondly, understand how to use urban design to connect with the community and the stadium.

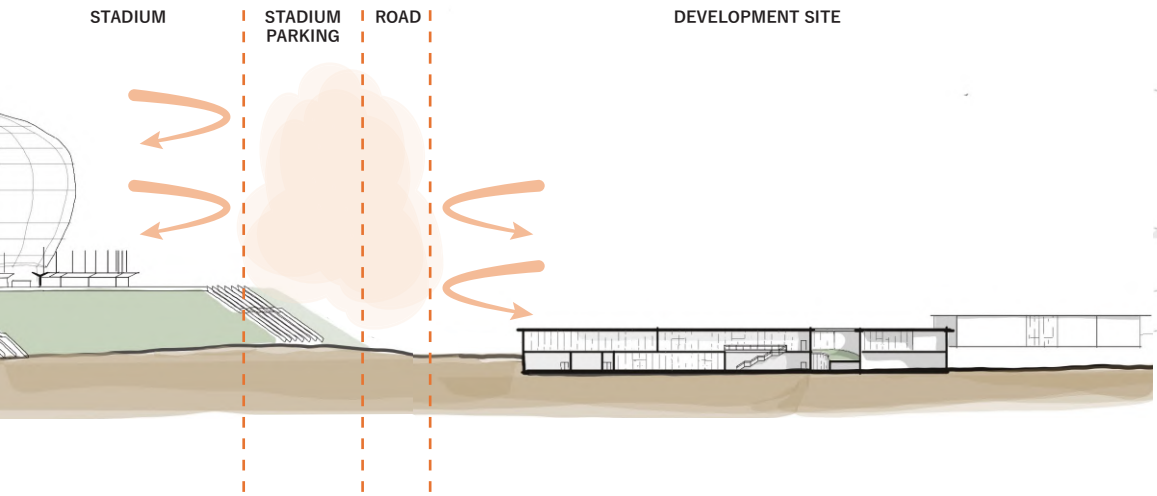


Figure 9.16: Author's drawing of iteration 2 building section

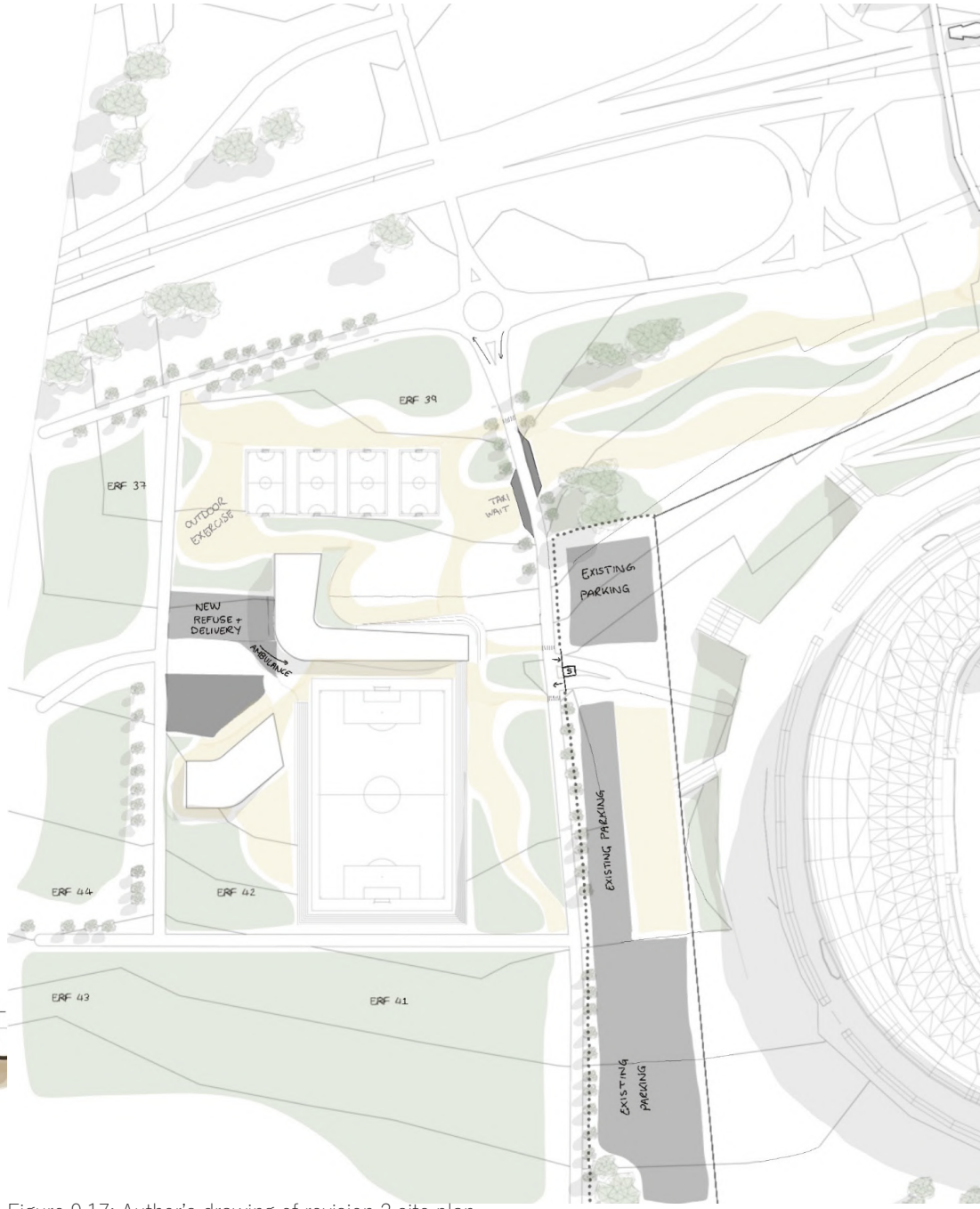


Figure 9.17: Author's drawing of revision 2 site plan

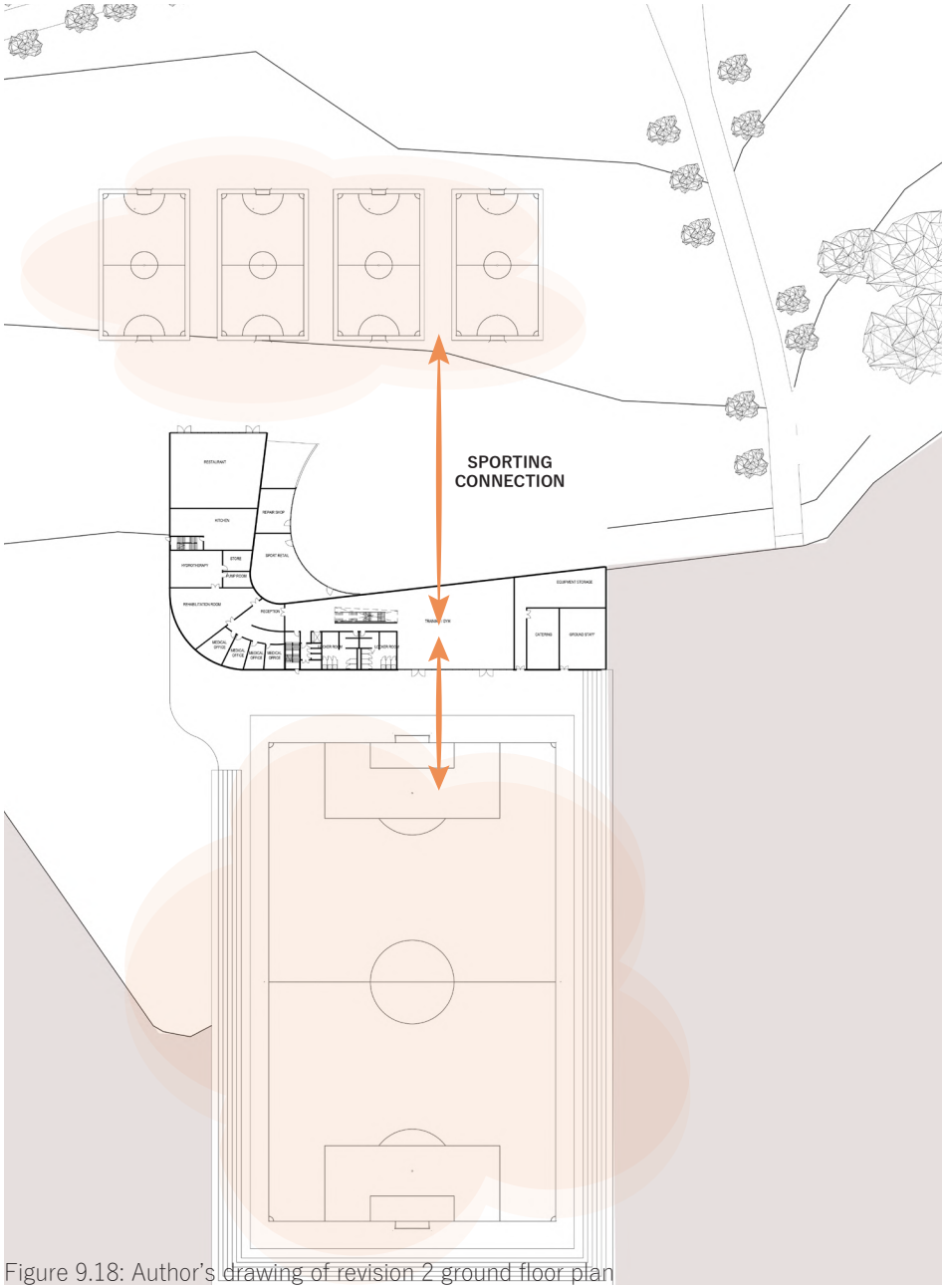


Figure 9.18: Author's drawing of revision 2 ground floor plan

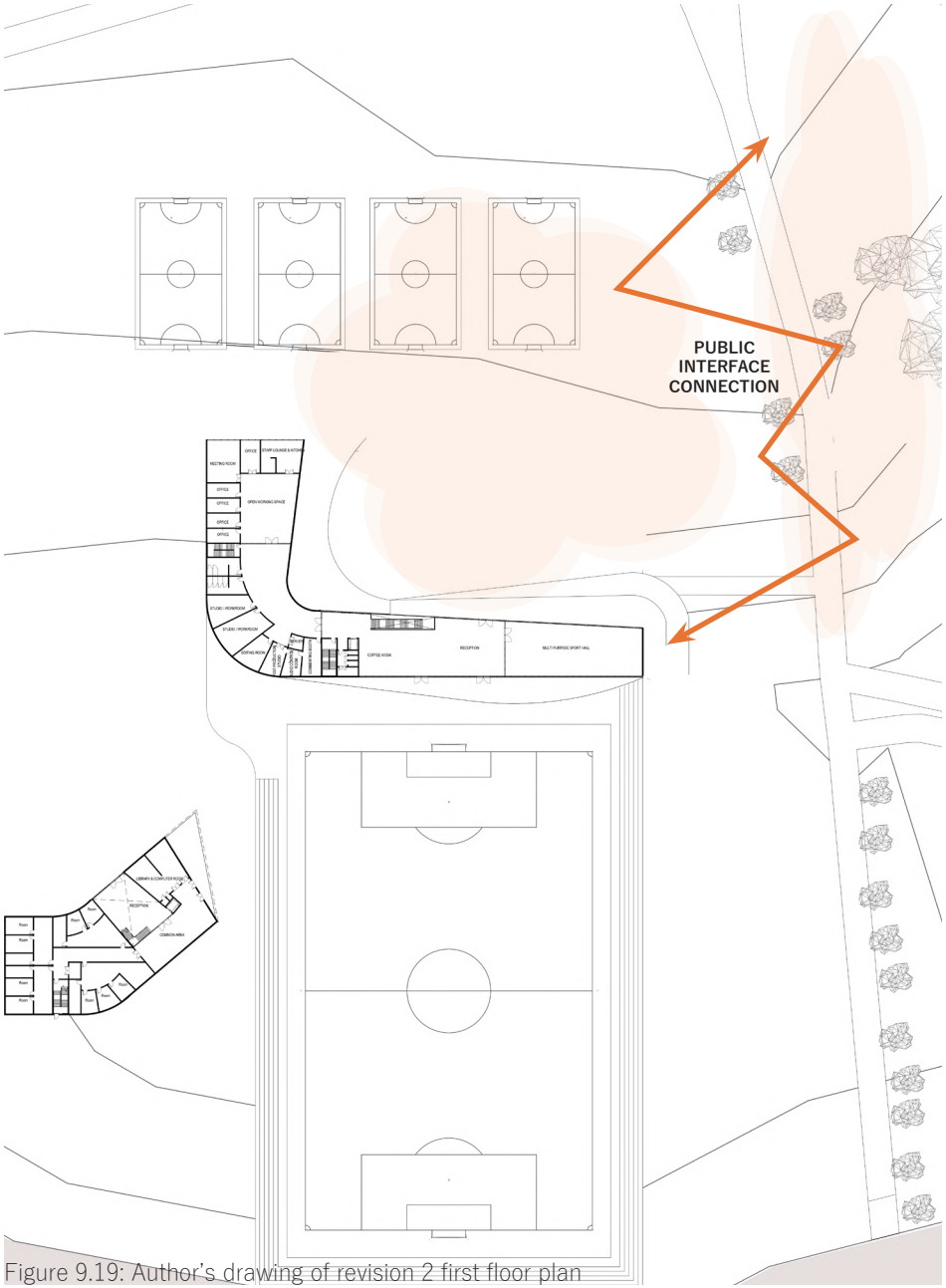


Figure 9.19: Author's drawing of revision 2 first floor plan

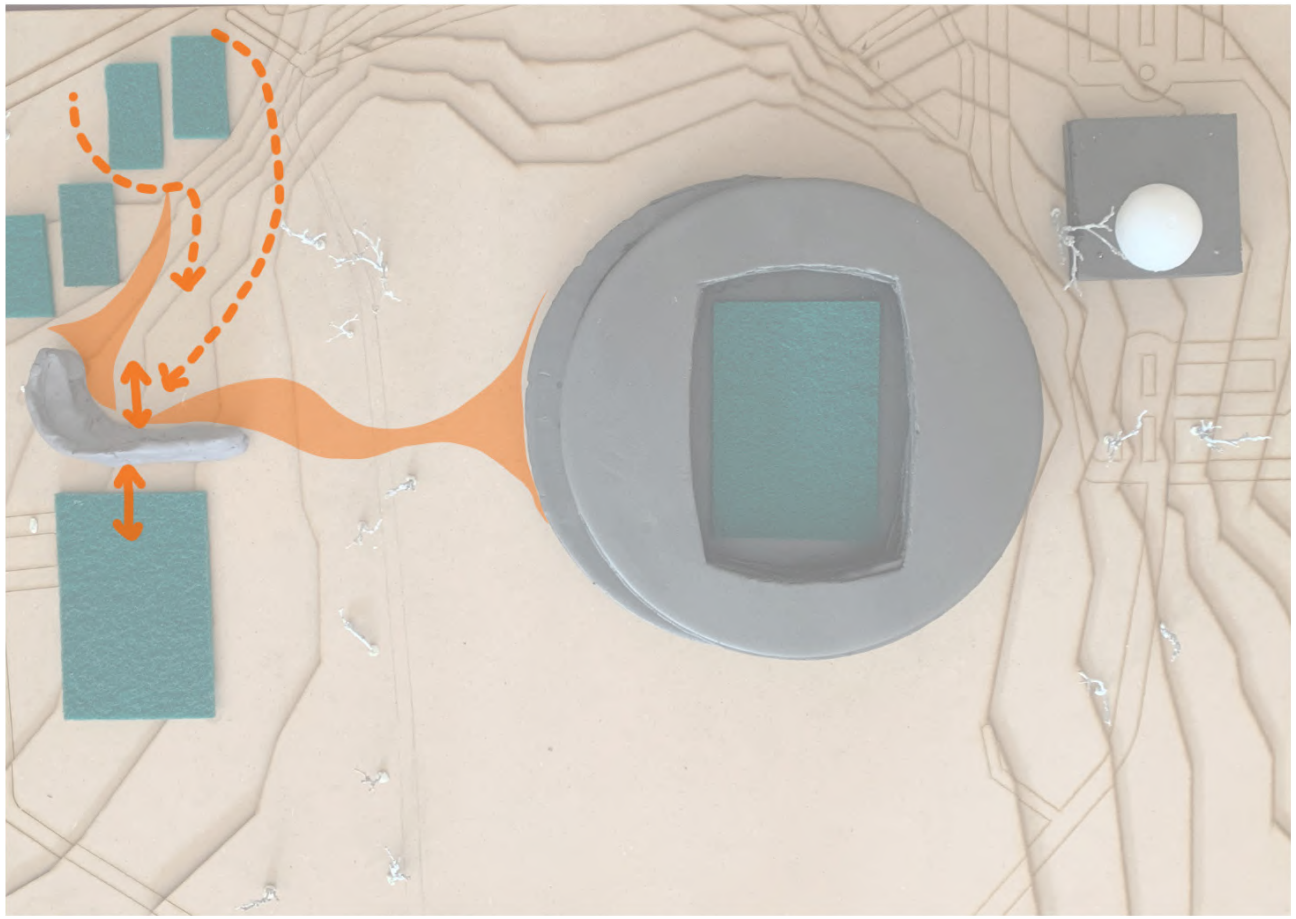


Figure 9.20: Model exploration of iteration 2

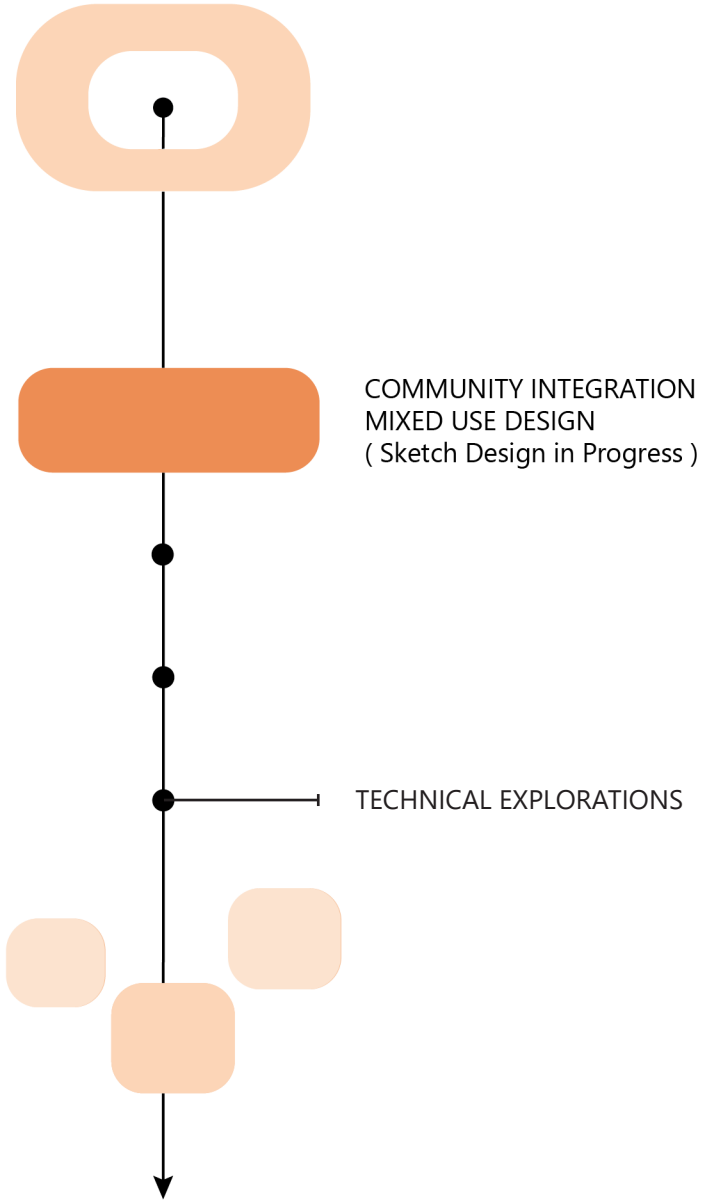


Figure 9.21: Author's diagram illustrating technical design development

9.6 Sketch Design Technical Explorations

When exploring the potential tectonics of my design I realised that there was two routes I could explore:
1. Use similar materials to FNB Stadium, but have a completely different shape.
2. Use completely different materials to FNB Stadium, but have a similar shape and look to the building.

I have decided to use the latter. Since the facade of the stadium is so iconic, I personally wanted to replicate the look and feel given in a new way. Therefore, I decided to use different colour bricks instead of the original fibre cement panels to replicate the pattern on the facade. In this regard I have the ability to enforce a connection to the stadium using materiality.

However, to create a curved wall that mimics the shape and feel of the stadium using brick, posed many challenges which will be explored below. It is important to note that the ideas explored below are not final and can change according to the final design presented.

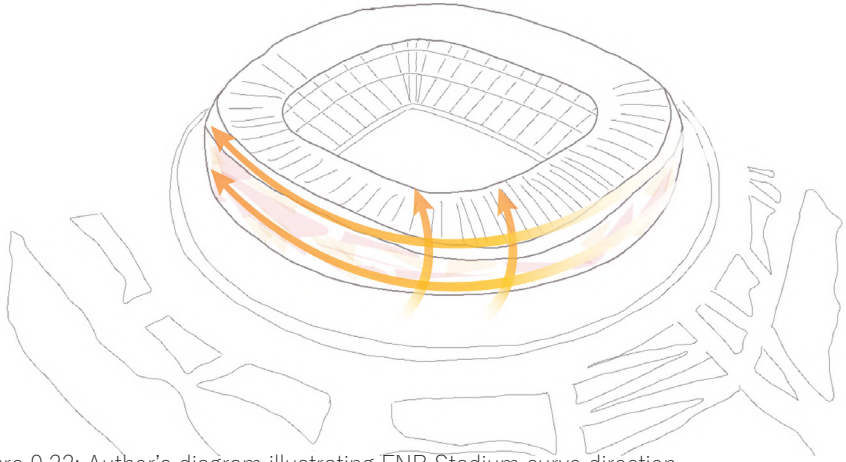


Figure 9.22: Author's diagram illustrating FNB Stadium curve direction

1. TEXTURED BRICK FACADE

In order to create a statement brick facade on the western and southern elevations, I decided to first explore simpler methods that I already understand. Hence, I played with the idea of a textured curved facade that would wrap around the back portion of the building. This worked well technically and would make a beautiful statement in plan and elevation. However, the design idea was to use the brick to create a feature that strongly linked to FNB Stadium, which does not come though in the design.

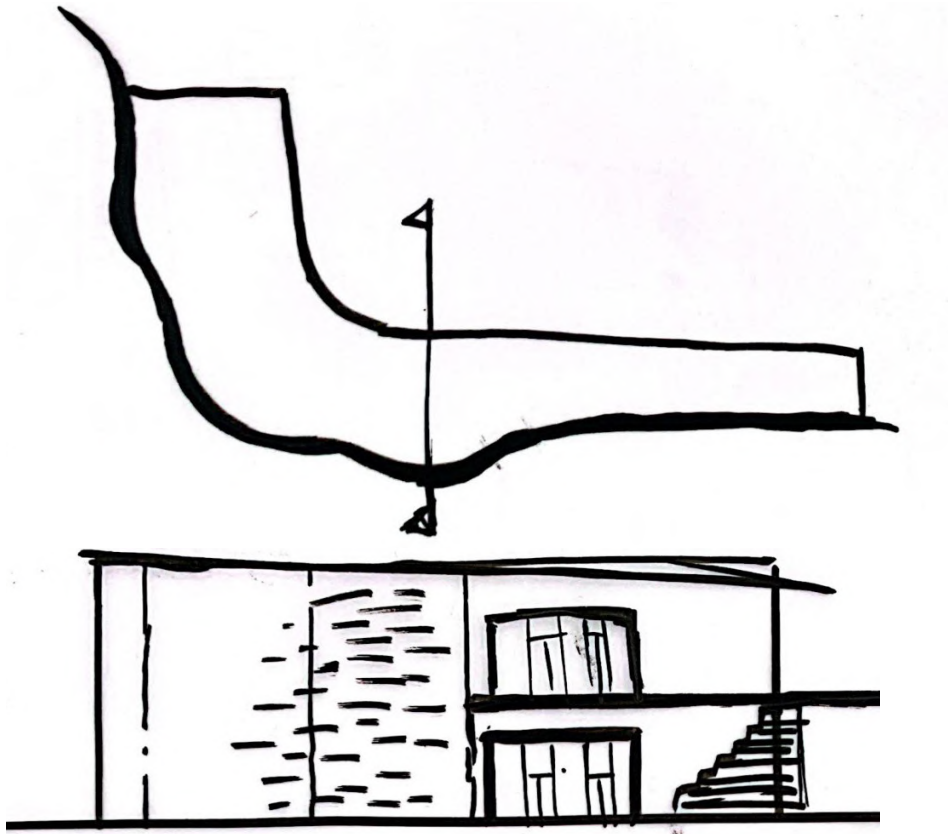


Figure 9.23: Author's drawing of plan and elevation of a curved brick facade



Figure 9.24: Image of textured brick facade (mashabanerose, 2022)

2. BRICK CORBELING

When exploring different ways to create the upwards curved brick facade, it was important to keep the look of a brick building so that people could recognise that change in material. By using a familiar material in an unnatural or unusual way makes a statement in its own right. This led me to investigate ways to use traditional brick corbeling on a curve which can be seen in the figures alongside.

Research indicated that I could attach the bricks onto a curved steel substructure using wall ties at a maximum of every 4 courses. However, this posed several challenges in terms of understanding the different loads being applied from different directions.



Figure 9.25: Image of wall sections showing tie arrangements (Inglis, 2020)

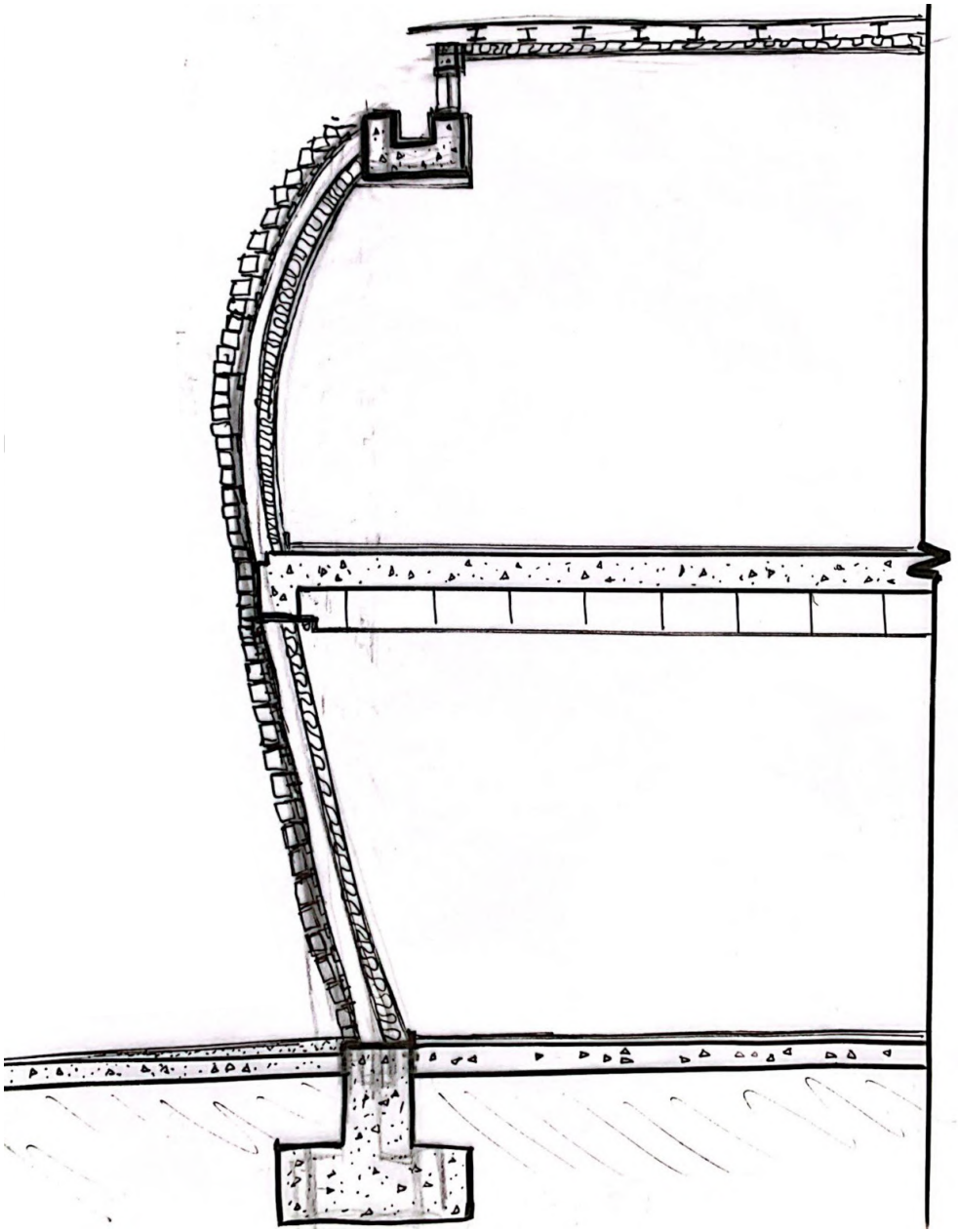


Figure 9.26: Author's drawing of perimeter section showing brick corbeling

3. BRICK & CONCRETE INFILL PANELS

In order to more efficiently create the stadium curve, I explored the idea of casting the brick into concrete infill panels which would then be attached onto a substructure. I first looked at using a concrete substructure to hold the panels, as indicated in the figures alongside. However, that would be extremely expensive to do and will drastically increase the weight of the wall. Hence, a steel column and beam substructure was chosen instead. This was a more effective way to create the upwards curve as it required a less complicated attachment process to the brick corbeling method.

However, this method requires in depth load calculations to be done to understand how heavy each panel would be and what extra structural measures need to be put in place to hold up each panel.

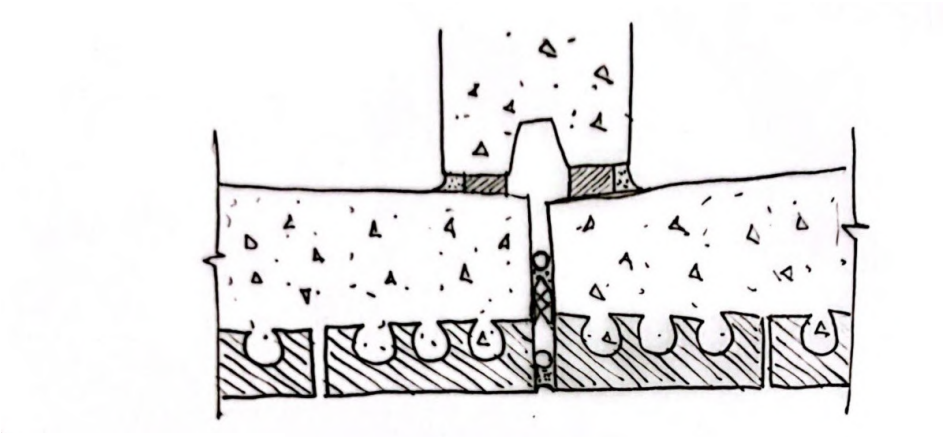


Figure 9.28: Author's plan drawing indicating how brick is casted into concrete panels

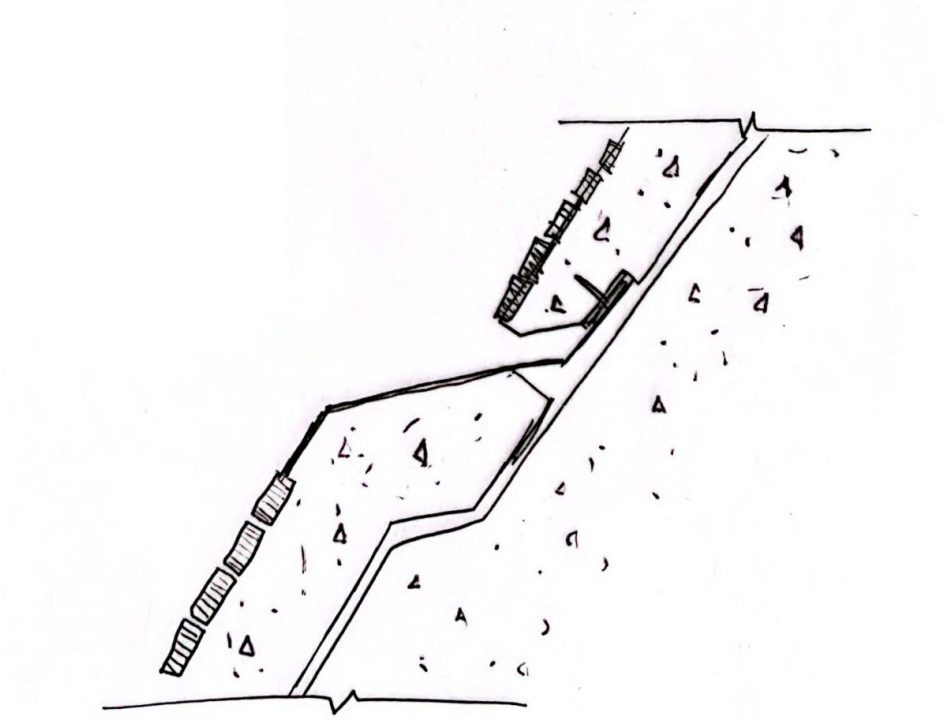


Figure 9.27: Author's section drawing indicating how brick is casted into concrete panels

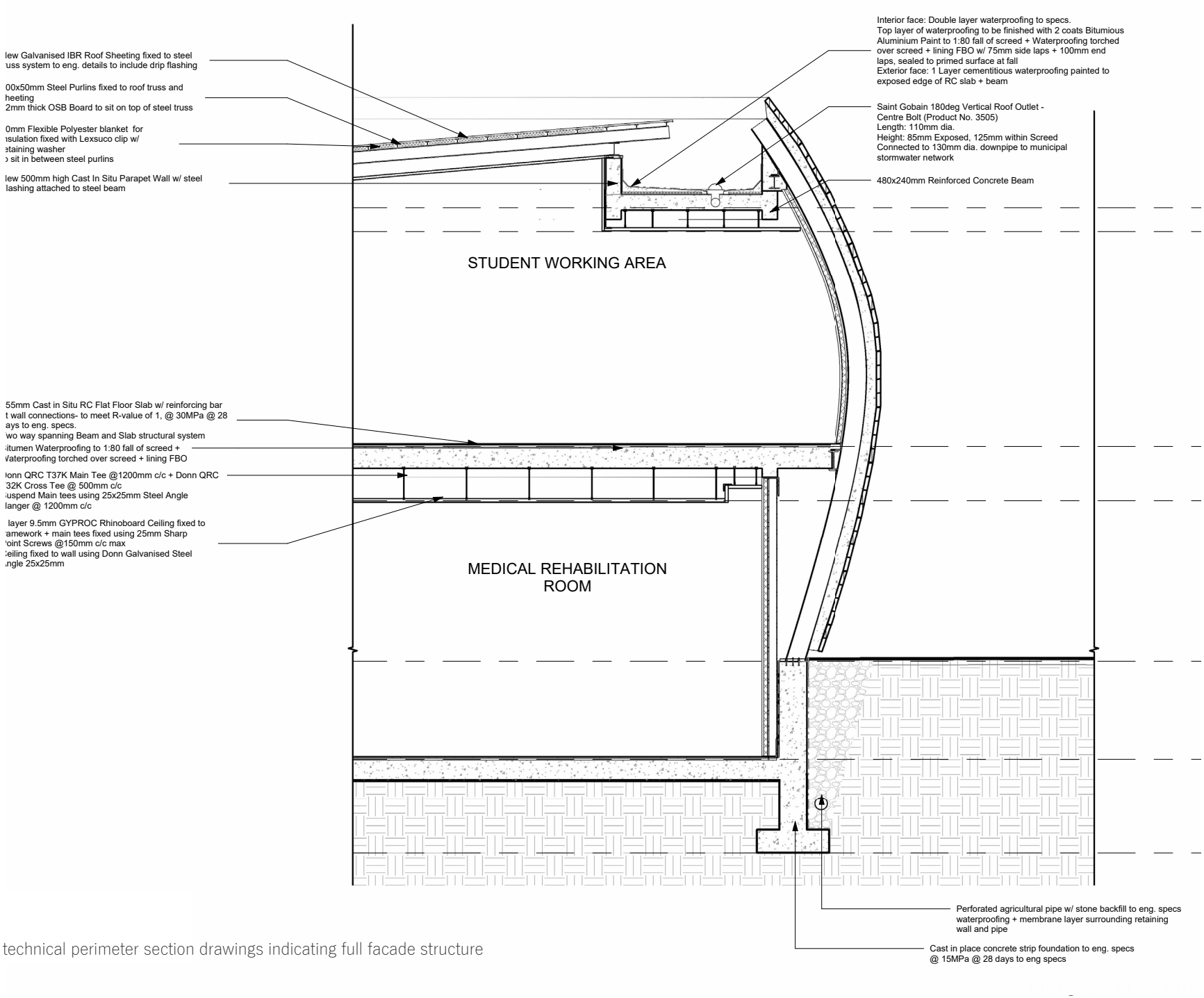


Figure 9.29: Author's technical perimeter section drawings indicating full facade structure

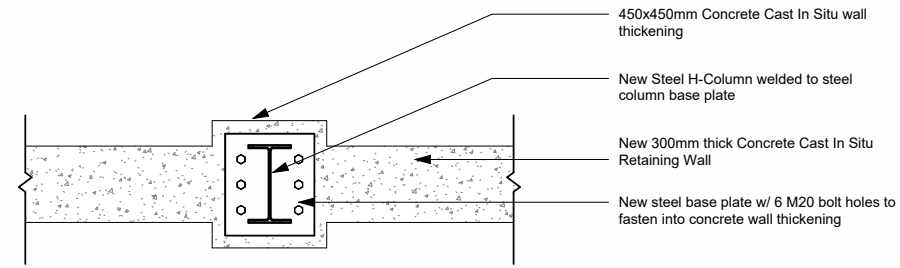


Figure 9.30: Author's technical plan detail of steel column connection

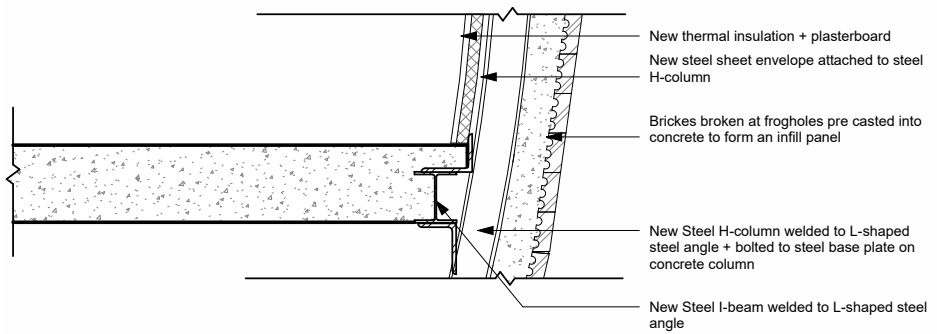


Figure 9.31: Author's technical sectional detail of steel column connection

4. ‘FLEXBRICK’ TENSILE SCREEN

As the design evolved, the need for a solid curved brick wall adapted into a lightweight curved brick screen. In this way light could permeate though the screen and there would be a better transition between interior and exterior spaces within the building. The screen design was inspired by the façade of FNB Stadium. I did not want to use the same material as the stadium however, I did want to embrace a similar shape and feel. Thus, the red brick is used with a more angular vertically curved wall, similar to that of figure 9.33. .

The ‘flexbrick’ system is a flexible construction system made up of small pieces that act as a skin to dress buildings. As seen in figure 9.32, the full system comprises of a tensile steel mesh structure in which ceramic pieces are inserted to the required design arrangement (Sarrablo, 2017). It is widely used for “facades, latticework, pergolas, curved and flat roofs or ceilings, and pavements” (Sarrablo, 2017).

The perforated screen provides adequate sun shading and improves thermal efficiency of the building. Furthermore, the system is incredibly sustainable as all the components come from recycled materials and due to the “dry bonding technique of the system, all components can be recycled again” (Sarrablo, 2017).

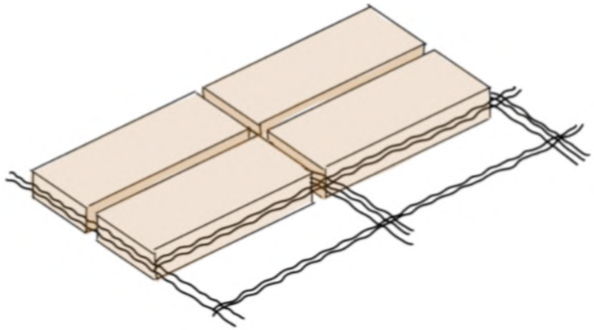


Figure 9.32: Author’s drawing of how the wire mesh attaches to the ceramic tile

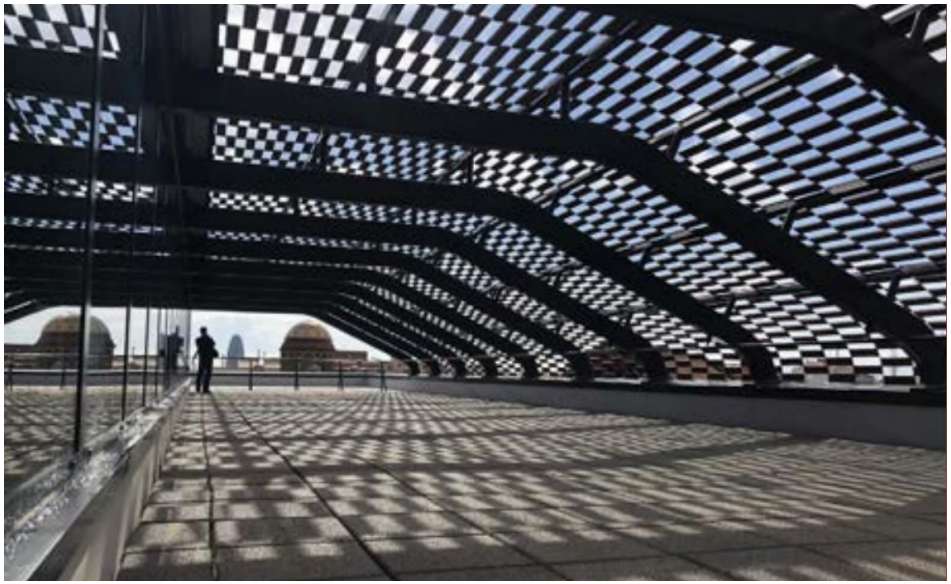


Figure 9.33: Image of Sant Pau Research Institute in Barcelona, Spain. (Sarrablo, 2017).



Figure 9.34: Image of Parking Saint Roch in Montpellier, France (Sarrablo, 2017).

I have used the Parking Saint Roch in Montpellier, France to explain the construction process of the system. The ‘Flexbrick’ design consists of a 3-step facade construction system (Sarrablo, 2017):
1. Designed Flexbrick Façade.
2. Weight Anchors System.
3. Wind Anchors System.

The weight anchor system is in place to resist movement and anchor the system in place. As this is a lightweight steel structure, the wind anchor system is included to minimise lateral movement (Sarrablo, 2017).

Each sheet of facade is 1-1.5m wide, making is easier to pull the textile with a crane. Each textile strip is first fixed to the weight anchors and then onto the wind anchors. This system requires a skilled labor force as it is a new technique, however, it is an extremely time efficient building procedure.



Figure 9.35: Detail image of Parking Saint Roch technical connection (Sarrablo, 2017).

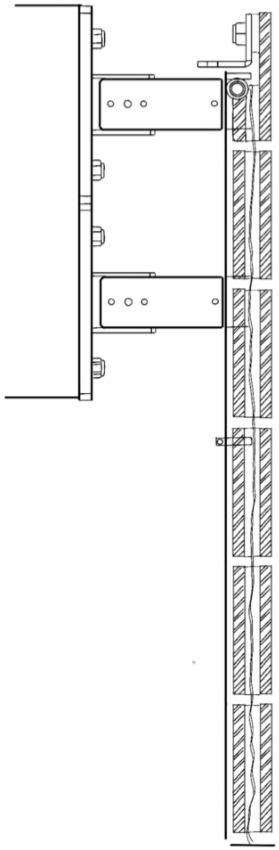


Figure 9.36: Example of a wind system anchor detail (Sarrablo, 2017).

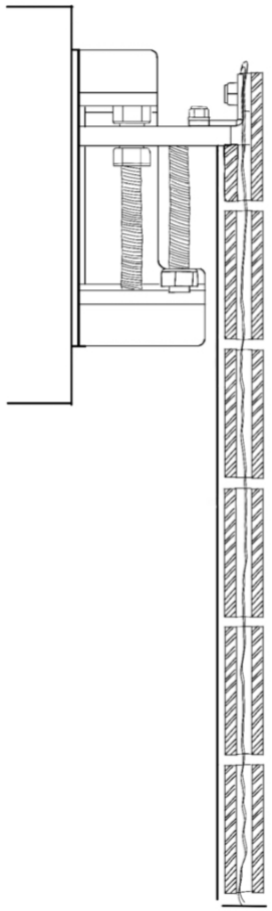


Figure 9.37: Example of a weight system anchor detail (Sarrablo, 2017).

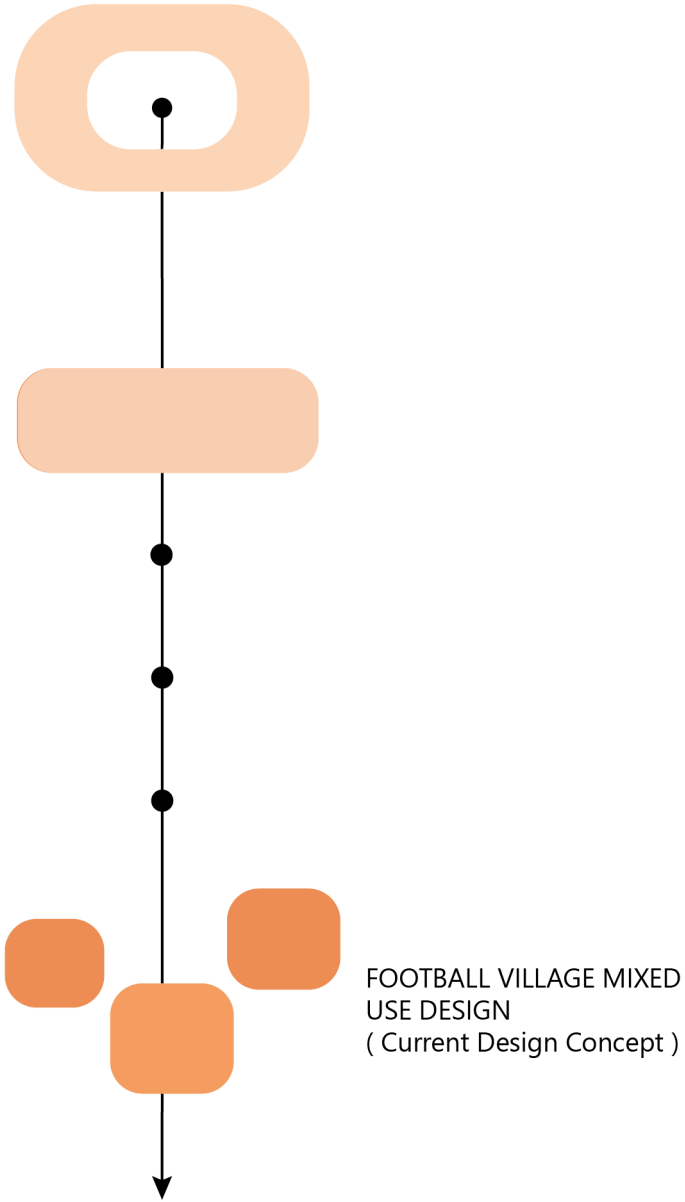


Figure 9.38: Author's diagram illustrating third stage of design development

9.7 Football Village Design Concept

As stated previously the aim for my project is to bring the community closer to the stadium precinct, with the joint goal of promoting sport development in the area. Whilst designing I quickly realised that the reason people do not gather in that area is because there is no activities or amenities around when there is nothing happening at the stadium.

Thus, I need to make sure that there is a good balance between private activities and public activities and gathering spaces. This was difficult to implement in one building as it lacks interaction spaces for the public to use. Hence, I decided to break apart the building into its specific programming needs. This includes the dormitory, the medical and research space, and the training centre.

To ensure that people will move and use the whole site, I wanted to establish a visual connection between all public gathering spaces and all buildings on the site.

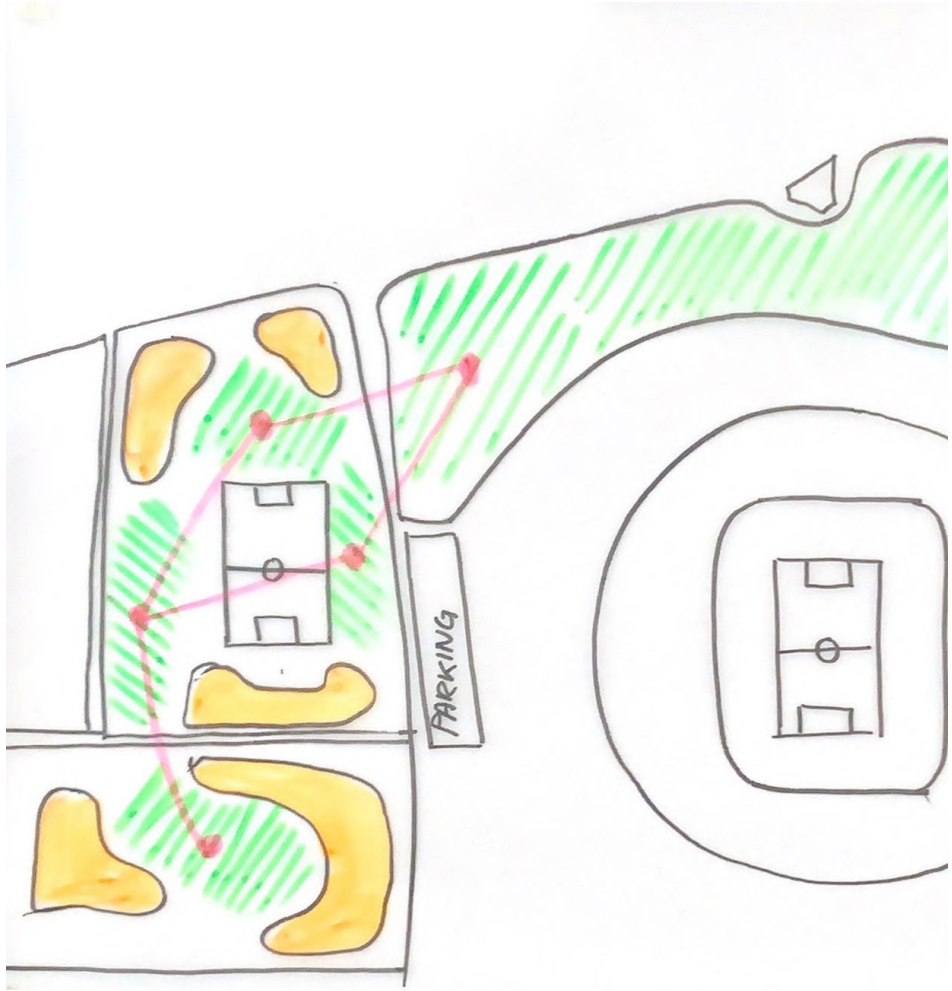


Figure 9.39: Author's diagram illustrating visual connections between public spaces

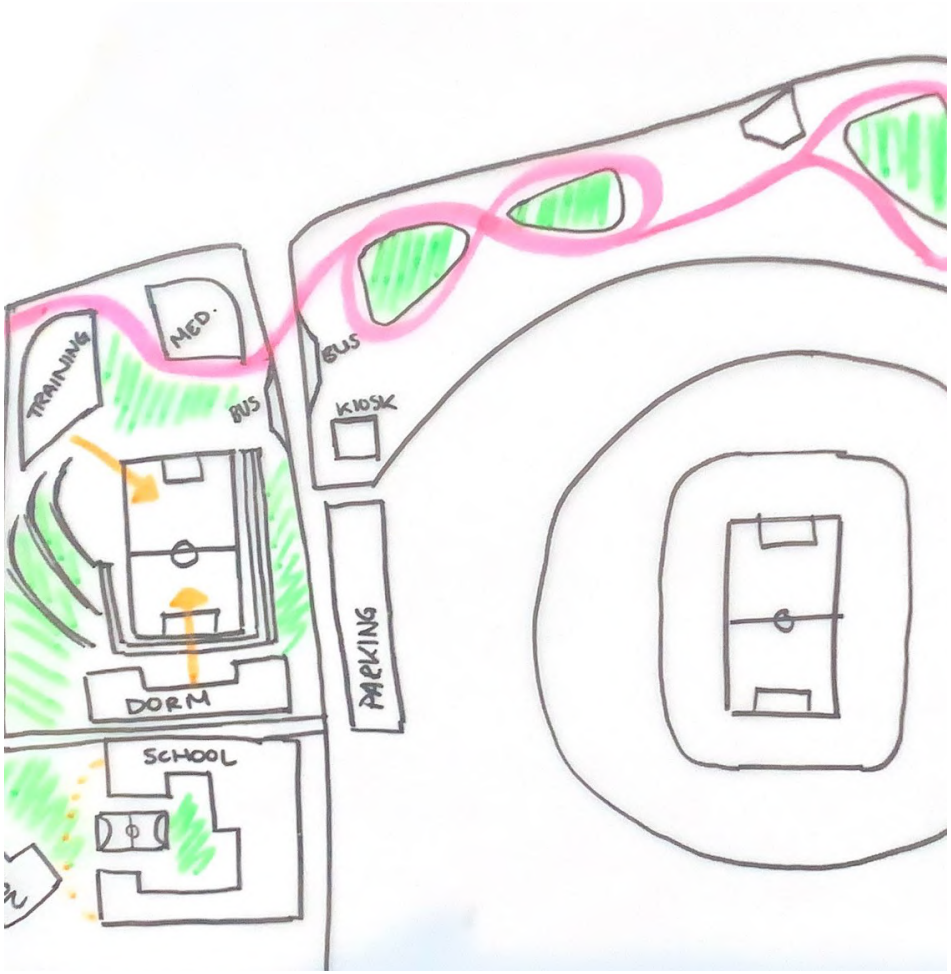


Figure 9.40: Author's diagram illustrating a draft master plan

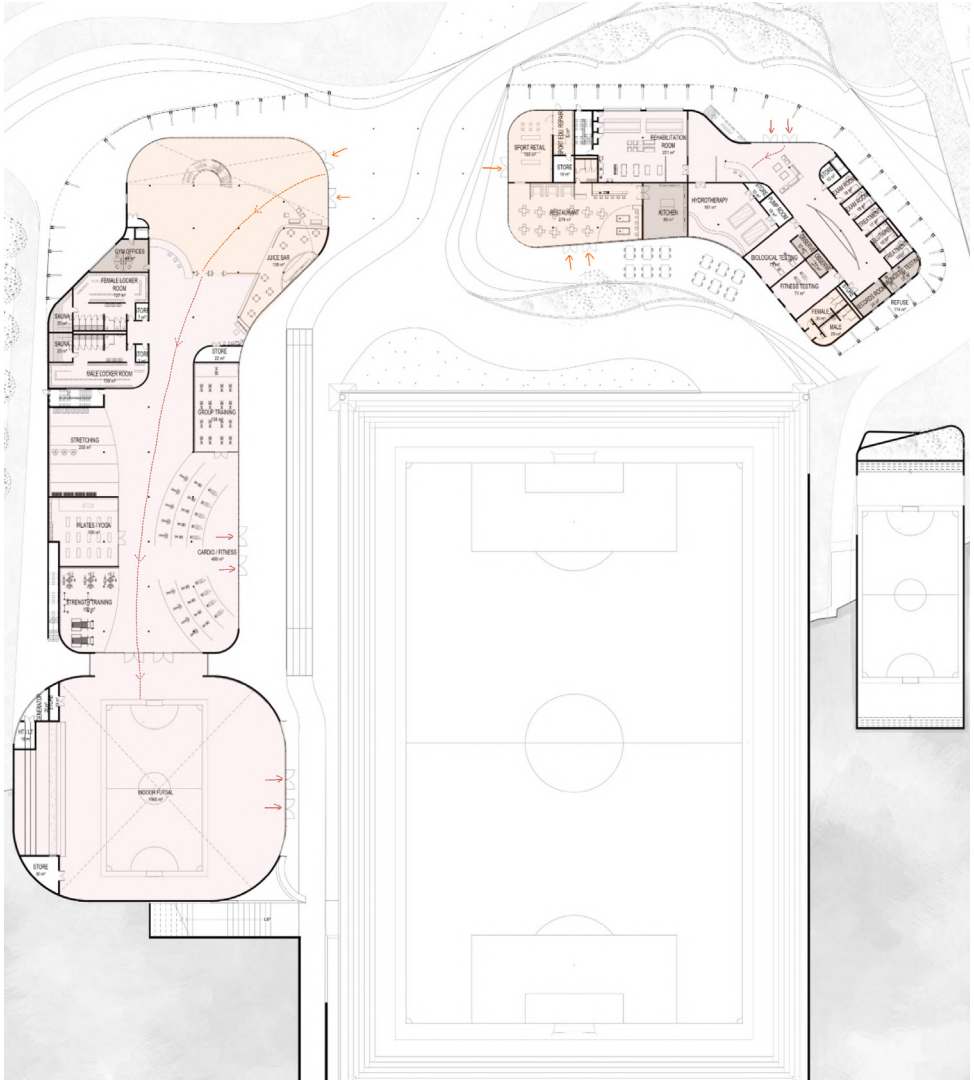


Figure 9.41: Author's diagram illustrating public vs private spaces on ground floor

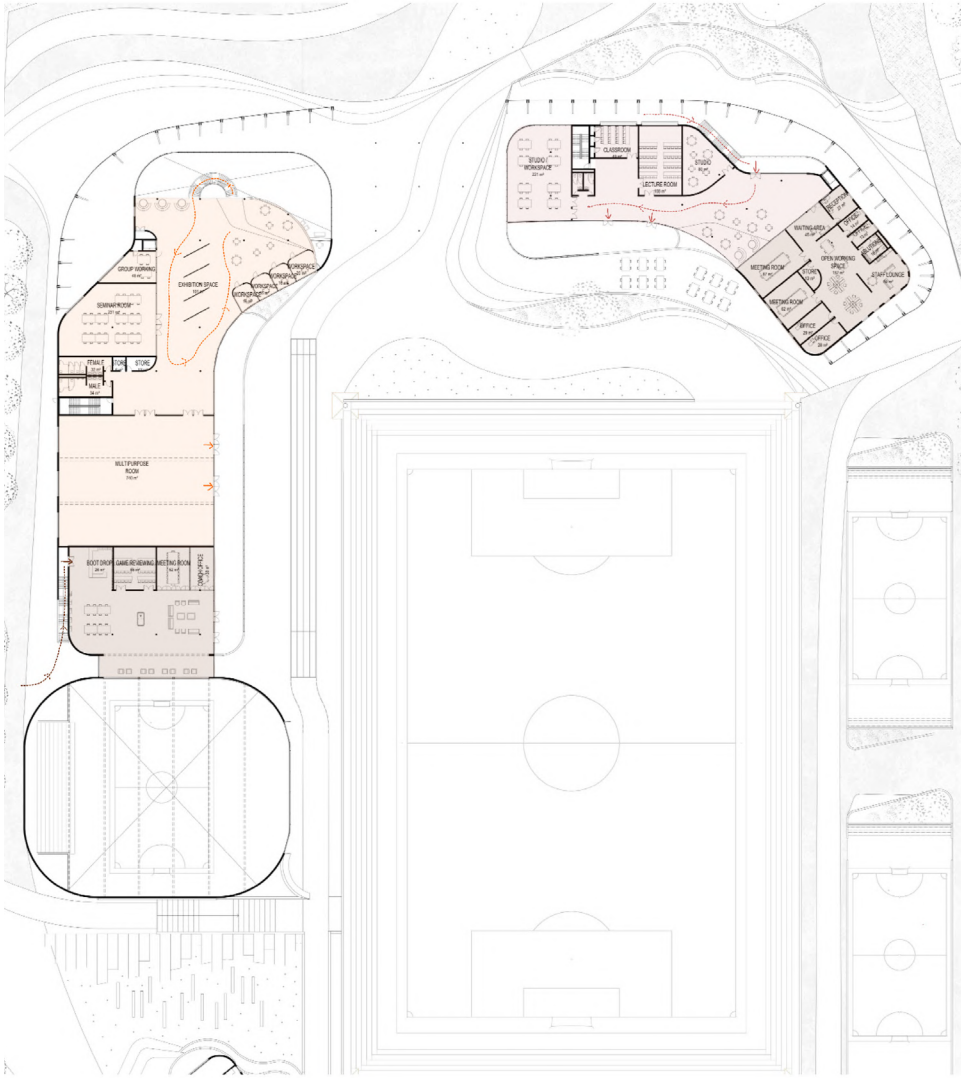


Figure 9.42: Author's diagram illustrating public vs private spaces on first floor

PUBLIC SEMI PRIVATE PRIVATE

Due to the sites enormous scale, contextual influence is extremely difficult. For the development to be a viable option, an investigation of how the site can evolve over time is necessary. With this the proposed training centre can become a starting piece of a larger strategy to encourage more people to use the area.

The focus of the training facility is skills advancement, future developments should be category related. This would include a potential new primary or high school with an adjacent dormitory.

As illustrated in chapter 6, the mine dumps on the eastern edge of the site are proposed to be municipally removed. Thus, future developments such as housing would be able a viable option.

Consequently, more people would be in closer proximity to the training facility and would likely increase sign ups.

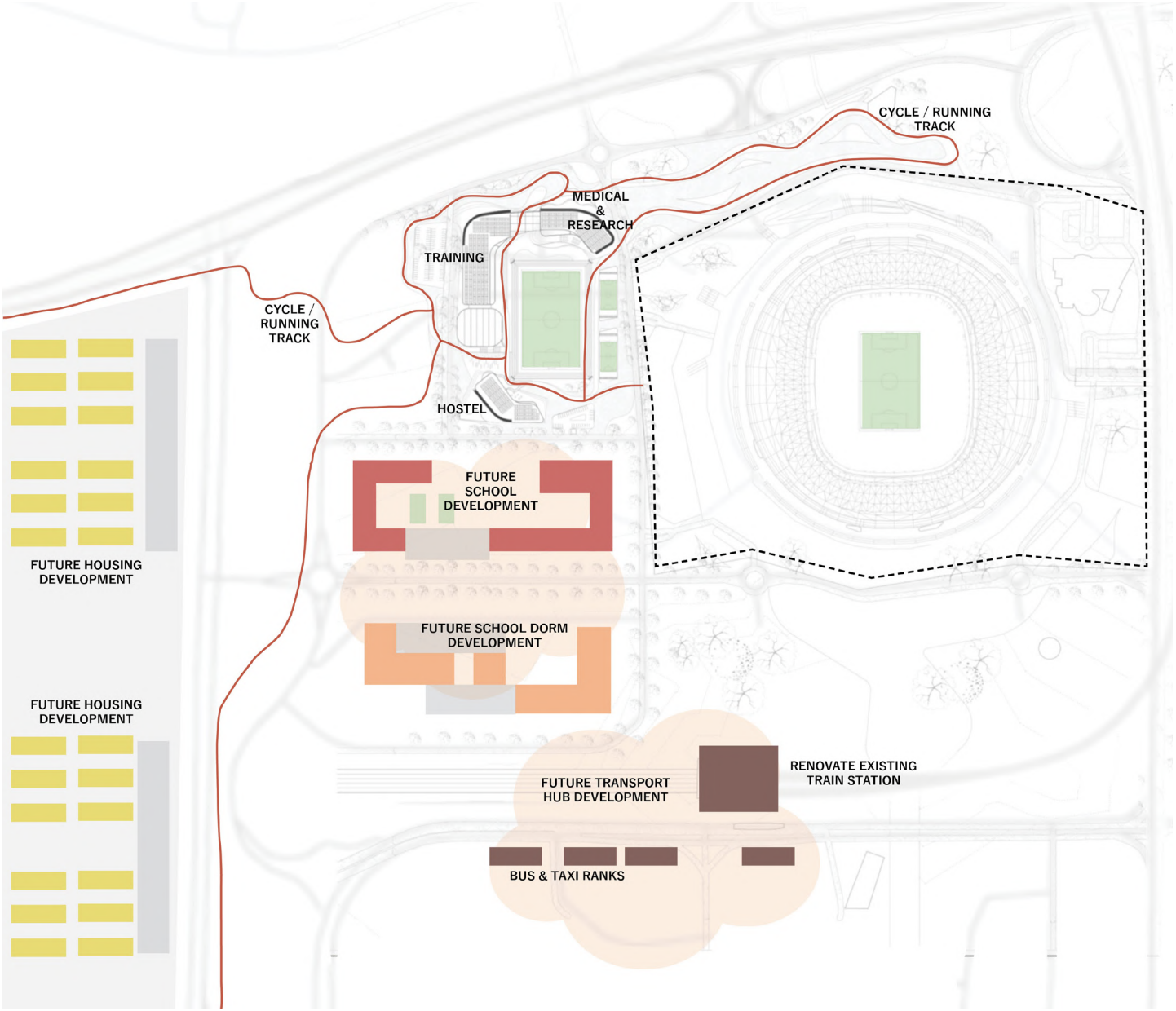


Figure 9.43: Author's master plan illustrating connection and interaction between spaces

Chapter
10

Viability Report

NOTE: The following Viability Report was produced and submitted as a class assessment. Date submitted: 02 June 2023

This document presents a conclusive study of the clients proposals viability, analysis and reporting of the limitations and synergies, producing a conclusive study for all stakeholders.

10.1 Executive Summary
THE CONCEPT & PROPOSAL

The proposed design consists of a High-Performance Sport Centre or a Centre of Excellence for Football Development in Johannesburg. Therefore the site for the project is the FNB Stadium Precinct. However, this new establishment is a pilot development situated at FNB Stadium, with the hopes to be implemented in other stadiums around the country. Through this the chosen stadium can become a place that not only hosts world class events but also trains and develops the skills for world class athletes. The goal of the centre is to become a hub for young, aspirant athletes to develop their sport on a daily basis in the hopes to become elite sportsmen. Therefore choosing a site for this project requires a specific list of requirements that will lend to the project's success and optimal functioning.

This is an owner operator driven project with the addition of a governmental partnership for other funding sources and sponsorships to assist with the necessary equipment and operational costs. The success of the development depends on the demand in the area. Therefore, the expansion of the intervention will include four parts including, a soccer development centre, medical facilities for injured players, centre for sporting career development, and accommodation for athletes in training.

10.2 The Client
OWNER

As stated this new establishment is a pilot development situated at FNB Stadium, with the hopes to be implemented in other stadiums around the country. Therefore, because the CoJ currently owns FNB Stadium property, they will also constitute as the owner of this new institution. Stadium Management South Africa (SMSA) manages the stadium on behalf of CoJ, thus they will also be in charge of operating this new establishment.

SMSA is one of South Africa's main stadium management groups. They currently manage four flagship stadiums in Johannesburg, including FNB Stadium. The stadiums are government-owned venues that are privately and independently managed by SMSA. Through this SMSA does not receive any management fee, subsidy or grant. Therefore, they independently fund the commercial business of these multi-purpose sports and entertainment venues, including the administering of any conferences and political rallies held. The SMSA is dedicated to finding new ventures for the local community and youth development, with the hope to provide opportunities and make a positive impact on the lives of surrounding communities.

FUNDING STRUCTURE

The strategic funding model for this development project is necessary. SMSA will exist as the primary client. They have already proven themselves as able to ensure sustainable financial management practices and are able to deal with any financial challenges that may arise in the future. The client will be required to self fund a percentage of the projects initial investment. Through this is shows that the owner is invested and belies in the project themselves. As the land is already owned by the CoJ, the client would not be required to take out a bond to purchase the property.

Funding agencies will be needed to supply the rest of the capital cost of the project. Agencies would consist of cooperations that support and would benefit from sport development, community upliftment and youth development. Therefore the remainder of the initial investment comprises of large grants through a partnership with the Department of Sports and Recreation (DSRSA) and South African Football Association (SAFA). Both SAFA and the DSRSA are committed to providing structures that can take football to all levels of the South African community, which makes them preferable funding models.

Sponsorships and donations will be required to cover operational costs and the purchasing of equipment. Funds are provided by these organisations in exchange for exposure and branding opportunities. Netcare will be approached to cover the building and operational cost of the medical facility inside the precinct. The Netcare brand is committed to growing investments in people and infrastructure. Around the country the company has supported the building and maintenance of facilities and equipment to ensure the best clinical outcome.

Brands such as MTN, Nedbank, and Carling will be approached to sponsor training equipment and other operational materials. Each of these brands have a long history with assisting with the development of football in the country. They also sponsor specific football tournaments such as the MTN8 PSL, the Nedbank Cup, and the Carling Currie Cup. Therefore, the incentive of supporting and training more athletes for these tournaments is important. Figure 10.1 illustrates the breakdown of funding structures for the development.

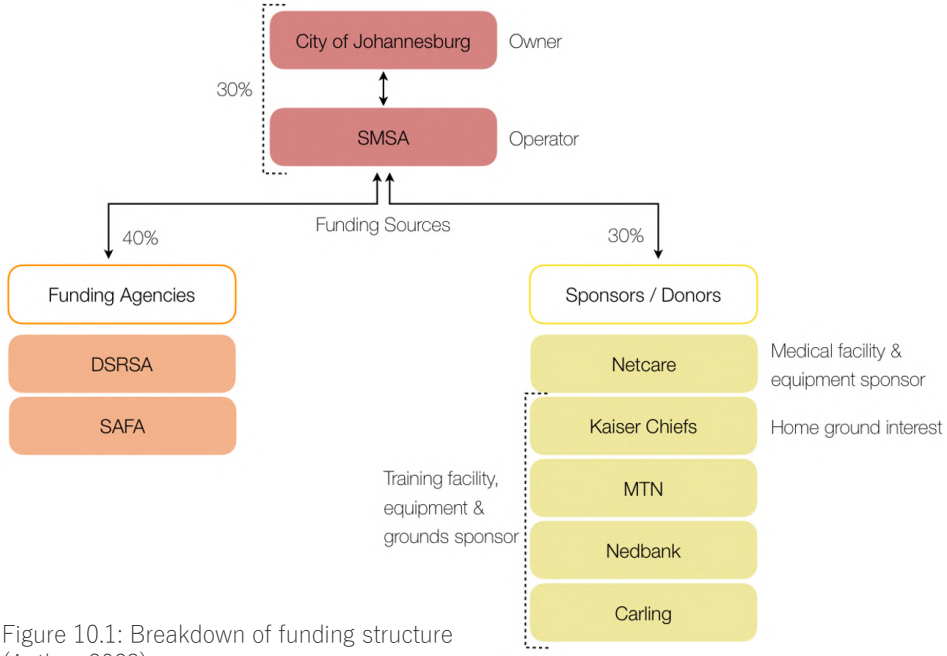


Figure 10.1: Breakdown of funding structure (Author, 2023)

Contributors	Contribution %	Contribution Amount
SMSA / CoJ	30%	R26 405 783
DSRSA	20%	R17 603 855
SAFA	20%	R17 603 855
Netcare	7%	R6 161 349
Kaiser Chiefs	9%	R7 921 735
MTN	7%	R6 161 349
Nedbank / Carling	7%	R6 161 349
	100%	**R88 019 275**

Table 3: Contributor distribution (Author, 2023)

10.3 The Project

PROJECT BRIEF

As mentioned, the proposed design consists of a High-Performance Sport Centre or a Centre of Excellence for Football Development in Johannesburg. The project's scope is to use this program to facilitate the development of youth and women soccer, as well as allow for the development of injured players in other sporting fields of entertainment. The country has an overwhelming amount of natural talent that needs to be consistently nurtured and developed to see an improvement in game results. The intervention will include four parts including, a soccer development centre, medical facilities for injured players, centre for sporting career development, and accommodation for student's football training. Due to the position and location of the development, the buildings should show strong communication and interaction with the local community and its surrounding context including FNB Stadium.

There is enough space on the proposed site for all internal and external programming, while still allowing the stadium to function as a large sporting venue.

SITE SELECTION

As stated previously in choosing a site for this project, a specific list of requirements will need to be met to lend to the project's success and optimal functioning. With this in mind the proposed site for the project is FNB Stadium, which is situated on Soccer City Ave, Nasrec, Johannesburg. It was important to use a relatively well known stadium for the project as it will increase the chances of securing regular users, sponsors, and partners. However, the current surrounding context of FNB Stadium consists largely of old mining dumps, industrial precincts and residential areas, with the exception of Nasrec Expo Centre to the south. In terms of transportation access, there is the Rea Vaya bus station to the north and other bus and taxi stations to the south which can be utilised. This leaves little room for easy pedestrian accessibility onto the precinct as people from neighboring communities such as Diepkloof and Aerotan will almost always need to use public transport to get to the stadium. However, they will be able to walk to the stadium if they use quieter more suburban roads to avoid walking on adjacent highways. Due to this, the facility does not regularly get used, but provides an abundance of opportunity to create engagement.

The stadium precinct itself is approximately 280,000m2, in which the stadium occupies approximately 104,000m2 of the total site. Therefore, due to the large size of the stadium precinct it serves as the perfect site for the development to take place. Within the context there are other sports development centres in the area however the proximity to FNB Stadium and the multitude of facilities allow the centre to remain competitive.

Site Information	
Site Area	280,000 m2
Stadium Area	104,000 m2
Zoning	Institutional
Height Zone	B - 5 Storeys
Coverage	70%
F.A.R	2,4

Table 4: Site information table (Author, 2023)

Zoning:

There are other buildings on site such as SAFA Headquarters and the Stadium Management Headquarters. However, none of the buildings on site are older than 60 years and therefore are not heritage buildings. Consequently, no heritage documentation or approval is needed for them to be altered. Currently there are multiple erven making up my full site which need to be consolidated and rezoned to Institutional. Thus, a cadastral survey needs to be completed. After a consolidation application is approved by council, a registered land surveyor is needed

to survey the land and submit the draft to the SG office for approval. After the approval of the consolidated SG diagram, the relevant “conveyancing attorneys will assist the property owner to register the title to the Subject Consolidated Property by means of a Certificate of Consolidated Title” (townplanner.co.za, n.d). The time for the process of consolidation can take several months to a year, depending on how complex the project is. However it is still more efficient to consolidate erven if I aim to build on them.

Materiality:
The site of FNB Stadium, Nasrec, Johannesburg is in a central location that allows for easy transportation of construction materials and construction machinery. This therefore does not have a negative effect on the cost of the project. As I am repurposing the existing stadium the shell of the building and most of the interiors are already built. Therefore amount of materials and materiality costs are minimal. The availability of construction materials in South Africa is generally good and accessible within the urban context, as many local manufacturers are within the surrounding areas that are able to produce high-quality materials. The current facade the stadium consists of fibreC cladding that was made and constructed by an Austrian company called Rieder Smart Elements. This material would need to be imported which will increase the cost drastically. Therefore an alternative local material would be used as cladding for new external buildings in an attempt to reduce costs.

Skills:
The availability of skills in Johannesburg can vary depending on the region and the skills required. In general, the built environment sector in South Africa is well-established and there is a wide range of skilled professionals available. A program for skills development within the site area for local labour training can be implemented through government systems that are already in place. This improves economic and social growth within the area. In a cost point of view this can be cheaper depending on how much extra training is needed. Specialised skills are needed in construction when developing the facade structure, the roof construction and other structural elements, this therefore increases cost as these specialised people and equipment would need to be brought in externally.

TARGET MARKET
Each section of development is catered to different users, but the main target user groups can be seen in figure 4. The success of the new sports development centre depends on the demand. The target users include national and provincial players, amateur community athletes, and injured players. This is in demand as there are more than 5 local football clubs and 2 national football clubs within a 5km radius that would highly benefit from the facilities. The soccer development centre is implemented as a new start for injured players that still want to have a career in sport. With the implementation of the centre, they can branch off into sport entertainment, sport journalism or managing and marketing. Through this athletic and non-athletic career opportunities are created which help reduce unemployment and increase economic opportunity in the area. The South African sports industry is growing rapidly, with more interest and investment in both youth and elite athlete sports development. This presents opportunities for new sporting infrastructure that provide services and programs to meet the growing demand.

10.4 Implementation

CONTRACTUAL METHODOLOGIES

Due to the scope of the anticipated development, many different professionals will be needed. Therefore, the best industry practice is to use uniform building contracts throughout the work stages to ensure an efficient construction process. These contracts are essential for ensuring operational efficiency of the project through assuring peaceful dispute resolution. The architect's role as the principle agent is to guarantee that all contractors sign a respectable contract with the client to mitigate any unplanned disputes. Thus, the architect becomes the mediator of all contractual personnel, and the use of these contracts simplifies this role.

Contracts that are important in protecting all parties include:

- The South African Institute of Architects Client-Architect Agreement (SAIA) legally protects the client-architect relationship in a Standard Service.
- The Professional Consultants Services Agreement (PROCSA) and Matrix ensures a previously defined process between all consultants and the client.
- Joint Building Contracts Committee (JBCC) offer various relevant contracts (Principal Building Agreement/ Nominated/Selected Subcontract Agreement (NSSA)) signed by all constituents in the project's scope.

Currently the site is formally registered by the Surveyor Generals office in 1991 and again in 2000. The available drawings are signed and approved by Professional Land Surveyor and Professional Surveyor General which can be seen in appendix under figure 7 and 8. However, once the erven are consolidated a new SG diagram would need to be approved by the Surveyor Generals office.

CONSTRUCTION METHODOLOGIES

Due to the complexity of this project, consultants, and managers with a high level of expertise as well as sufficient experience are required. All documentation needs to be completed and distributed to the correct consultants before construction commences. A building contract is needed between the client and the main contractor outlining the fees, scope, and construction timeline. The construction process will need to be well managed and coordinated to avoid any major setbacks. It is important to consider the impact on the surrounding community, including the traffic, noise and disruption during construction, and potential economic disruptions as the stadium will not be able to function completely. However, the benefits after the renovation include consistent use of the facilities.

FNB Stadium is a very well-known and established site, therefore proper site preparation and setup needs to be implemented. This involves proper clearing and storing of any debris, machinery or materials. As well as, correctly establishing temporary staff and worker facilities, and safely setting up temporary barriers to keep workers and visitors safe.

As stated previously, FNB Stadium is in a relatively central location that allows for easy transportation of construction materials and construction machinery. For new buildings external to the stadium, local materials will be used in construction, such as brick, concrete and steel. Stone and rock will be excavated from the site to be used for cladding, reducing the need to import. The availability of construction materials in South Africa is generally good and accessible within the urban context, as many local manufacturers are within the surrounding areas that are able to produce high-quality materials.

A fee is needed when getting building plans approved to ensure the building complies with SANS10400 and SABS. It is also important to ensure procedures are met regarding occupational health and safety, electrical compliance, drainage, plumbing, and fire safety compliance. These will all require additional associated fees.

PROFESSIONAL TEAM

A professional team is needed with a wide range of different skills and expertise. The professionals are brought on at different times during the project. Due to the need of consolidation of Erven 39 and 40 a range of professionals are needed before design and construction can commence on the project. This includes a town planner for ERF consolidation by the completion of a cadastral survey. A land surveyor is needed to do the land survey and drafting of the new SG diagrams. Through this process a conveyancing attorney is tasked with registering the new title to the subject consolidated property.

The large scale of the project requires a project manger who will coordinate and manage the design and construction teams. Strong supervision is required during the design and construction process to ensure that everything is completed on time, within budget, and to high quality standards. To manage the financials of the building construction, a quantity surveyor will be brought on board. The QS will protect the client's financial interests during the project process, by implementing strict supervision of the budget vs the development.

A sports facility consultant will be able to provide expertise in the design and planning of specific sports facilities, and ensures that the centre meets the needs of athletes and coaches. Mechanical and electrical engineers are needed for analysing and assessing the current systems and what needs to be adjusted for the renovation, as well as implementing the new systems needed.

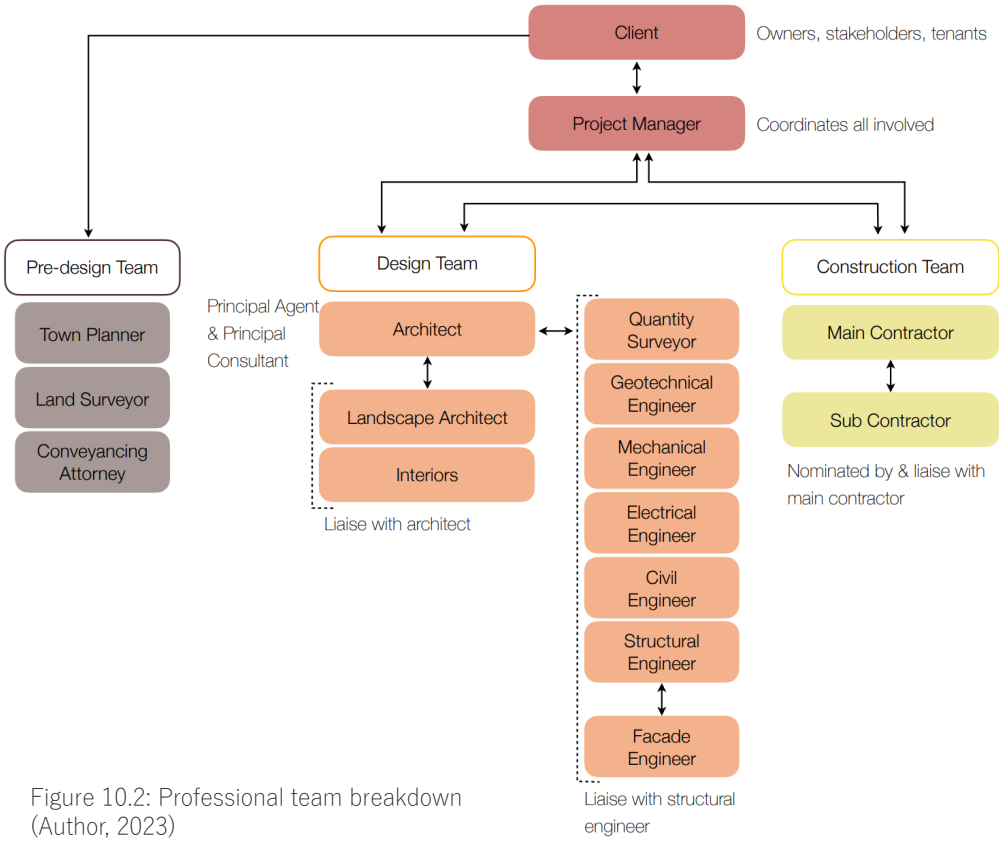


Figure 10.2: Professional team breakdown (Author, 2023)

10.5 Financial Viability

BUILDING COSTS

The estimated building cost calculated does not include the land cost or land development cost or professional fees (Table 5). This is estimated to be R79 128 500,00. This estimation is based on the programmatic requirements of the building. It is calculated on price per square meter according to AECOM costing handbook (AECOM, 2022). The overall development cost which includes the professional teams fees is calculated to be R88 019 275,00 (Table 6). These development costs will be covered by the client-owner, government grants and sponsorships as mentioned previously.

Building Programme	No. of Units	Area Per Unit (m2)	Total Area (m2)	Rate/m2	Total Cost
Reception	3	30	90	R17 000	R1 530 000
Offices	6	15	90	R11 500	R1 035 000
Meeting Rooms	3	20	60	R12 000	R720 000
Learning Spaces	7	50	350	R7 000	R2 450 000
Studios	5	40	200	R20 000	R4 000 000
Gym / Indoor Training	2	150	300	R23 000	R6 900 000
Hospital / Medical Facility	1	195	195	R31 300	R6 103 500
Simple Apartment Block	2	400	800	R9 000	R7 200 000
Football Training PSL	1	300	300	R39 000	R11 700 000
External Training	2	300	600	R60 000	R36 000 000
Service Staff	2	40	80	R11 500	R920 000
Plant Room	1	75	75	R7 600	R570 000
				Total excl. VAT	**R79 128 500**
				VAT	R11 869 275
				Total incl. VAT	R90 997 775

Table 5: Building cost table (Author, 2023)

Building Cost	Professional Fees	Total
R79 128 500	R8 890 775	**R88 019 275**

Table 6: Development cost table - excl. land development cost (Author, 2023)

OPERATIONAL COSTS

The operational consists consist of utility fees such as water, rates and taxes as well as staff salaries (Table 7). However, electricity will be generated on site through the use of solar panels, and rainwater will be harvested from the stadium roof to be used within bathrooms and for irrigation. This will then reduce utility costs. Maintenance is the highest cost associated.

INCOME

The centre can generate revenue through various means which include membership fees, training fees, sponsorships, events, partnerships and donations. The official breakdown can be illustrated in Table 8. With the growing interest in sports in South Africa, there is significant potential for revenue generation based on the market demand. Rentals within the building is the prime income generator. The training facility is primarily funded by the volunteers and interns they train year

Expenditure	Yearly Rate (R)
Rates & Taxes	R300 000
Maintenance	R2 000 000
Training Staff Salaries	R1 500 000
Support Staff Salaries	R420 000
Security Personnel	R420 000
Utilities	R450 000
Equipment & Supplies	R500 000
Other	R300 000
Total	**R5 890 000**

Table 7: Operational cost table (Author, 2023)

Revenue	Yearly (R)
Tours	R500 000
Restaurant / Bar	R600 000
Multipurpose Venu	R400 000
Office Rentals	R600 000
Lecture Rentals	R500 000
Accomodation	R1 500 000
Sport Tenants	R800 000
Medical Aid	R800 000
Events	R600 000
Total	**R6 300 000**

Table 8: Income generated table (Author, 2023)

round in sport career development centre. Educational experiences for school learners and other sports teams include tours of the facility and stadium. The income generated from the restaurant / bar rental as well as from renting out the exhibition, conference or multi-purpose spaces which can be used by locals and other communities. The amount of income generated is more than the expected operational costs and with the added assistance of sponsors and donors the project is considered viable.

PROFESSIONAL FEES

According to the SACAP - Board Notice 307 of 2022 the professional fees were calculated on the project cost based method falling under cost bracket 8 (Table 9). The distribution of fees according to the different work stages is presented in the appendix (Table 10). The work being done is considered to be High Complexity, according to table 3 in the SACAP - Board Notice 307 of 2022. The architect will be appointed for being the architectural professional and the principal agent and thus required for stages 1 - 6. This role involves designing, producing construction drawings and overseeing the construction process as well as administering and managing the work of other consultants.

Fees	Value of Works	On Balance Over	Percentage	Total Fee
Primary Fee (Cost Bracket 8)				R4 625 769
Secondary Fee	R79 128 500	R40 000 001	10,9	R4 265 006
Professional Fee				**R8 890 775**

Table 9: Professional cost based fee table (Author, 2023)

Work Stages	Fee %	Fee Portion	Cumulative %	Cumulative Fee
1	2%	R177 816	2%	R177 816
2	15%	R1 333 616	17%	R1 511 432
3	20%	R1 778 155	37%	R3 289 587
4a	10%	R889 078	47%	R4 178 664
4b	20%	R1 778 155	67%	R5 956 819
5	30%	R2 667 233	97%	R8 624 052
6	3%	R266 723	100%	R8 890 775

Table 10: Distribution of professional fees table (Author, 2023)

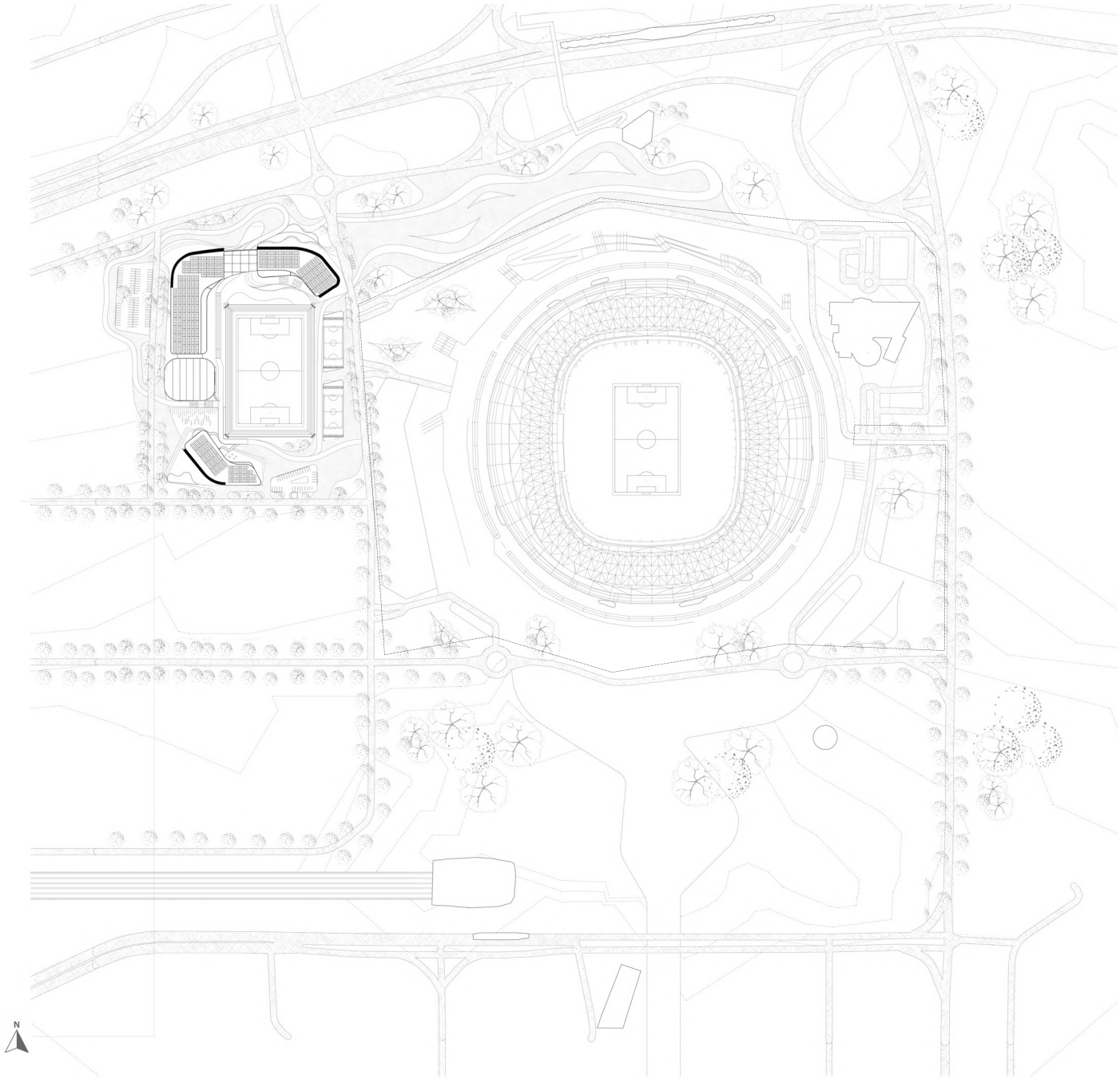
10.6 Conclusion

Currently the South African sports industry is growing rapidly, with more interest and investment in both youth and elite athlete sports development. This presents opportunities for new sporting infrastructure and sports development centres that provide services and programs to meet the growing demand. According to the report presented the new development is able to cover capital and operational costs, while also generating a considerable income to allow the centre to make a small profit. With the help of sponsorships and partnerships assisting with advertising, the centre can thrive in its context. Therefore, the client's proposal is realistic, reasonable and viable in the current context of South Africa. The building is planned to receive adequate funding for the design, construction and operational process to ensure long term success and economic viability.

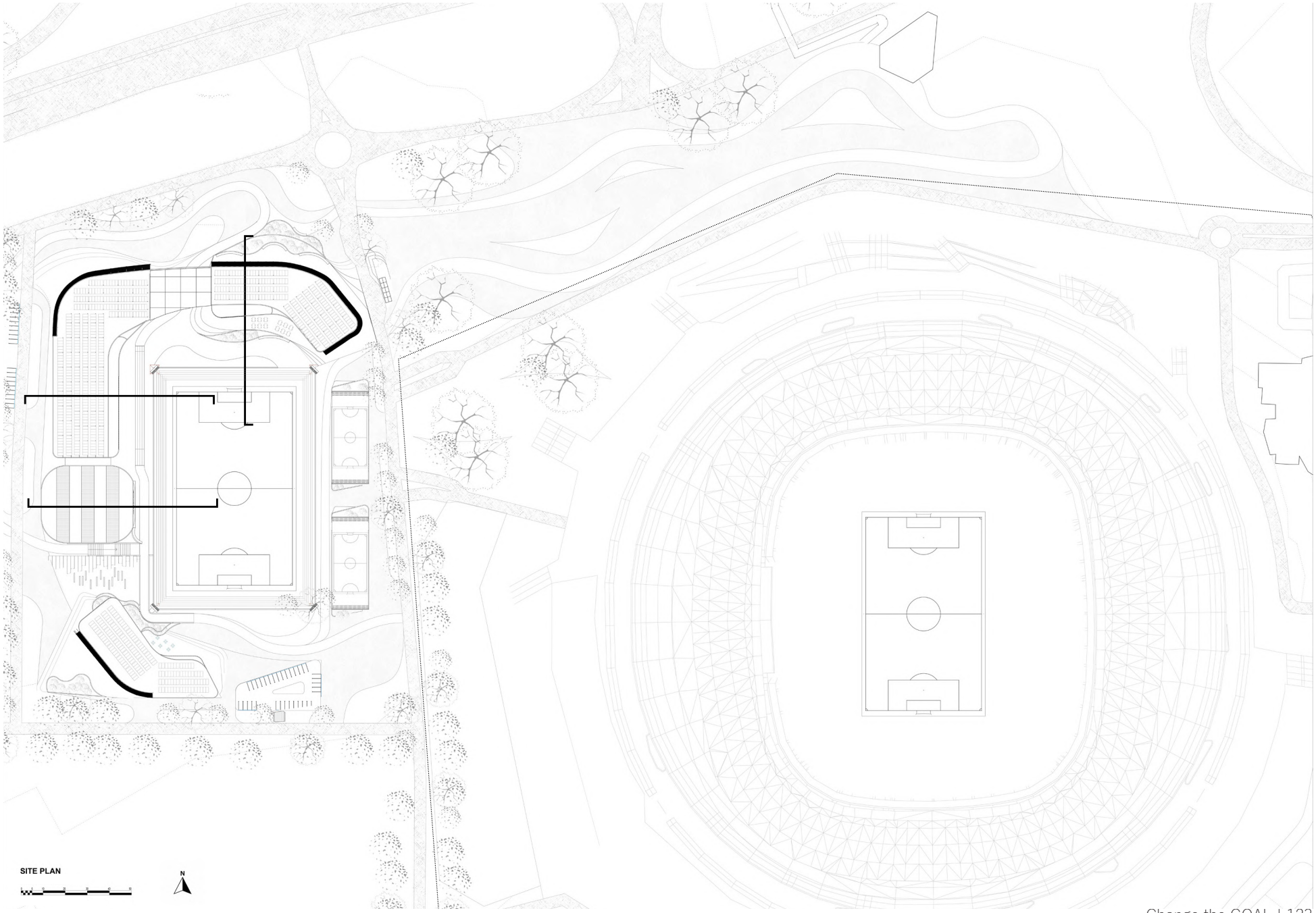
Chapter
11

Final Drawings

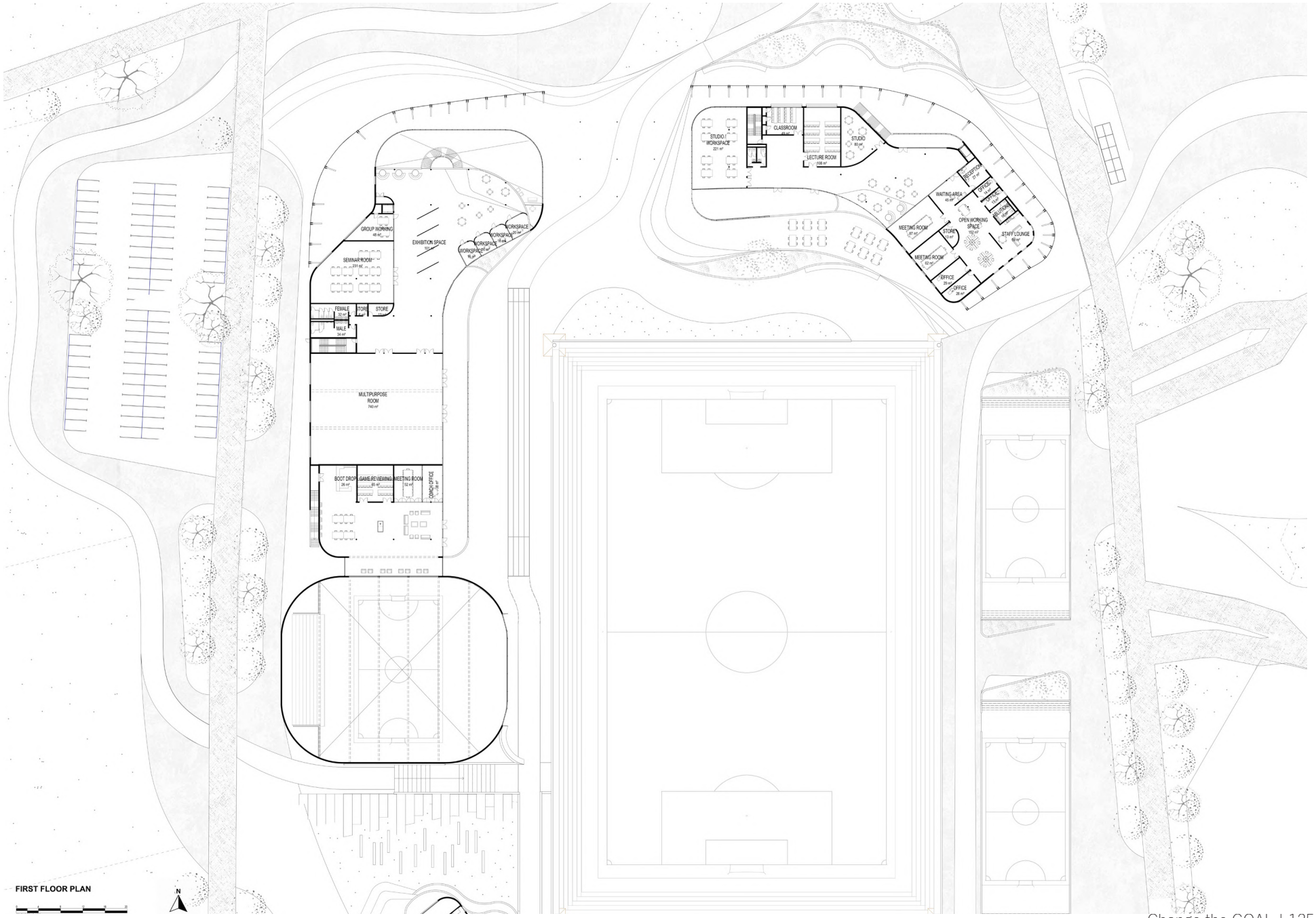




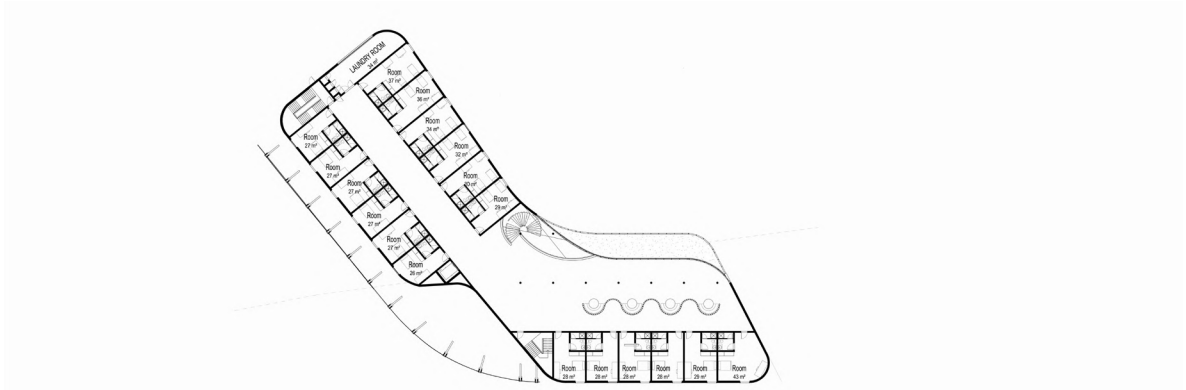
CONTEXT PLAN


SITE PLAN
N


SPORT RETAIL
105 m²
SPORT EQU. REPAIR
31 m²
STORE
18 m²
REHABILITATION ROOM
231 m²
RESTAURANT
279 m²
KITCHEN
63 m²
HYDROTHERAPY
161 m²
SAUNA
SHOWER
PUMP ROOM
BIOLOGICAL TESTING
FITNESS TESTING
71 m²
DRESSING ROOM
SHOWER
WC
MASSAGE ROOM
REFUSE
FEMALE
MALE
GYM OFFICES
FEMALE LOCKER ROOM
MALE LOCKER ROOM
STORE
JUICE BAR
GROUP TRAINING
STRETCHING
PILATES / YOGA
CARDIO / FITNESS
STRENGTH TRAINING
INDOOR FUTSAL
GENERATOR
HT1
LIFT
UP
GROUND FLOOR PLAN
N

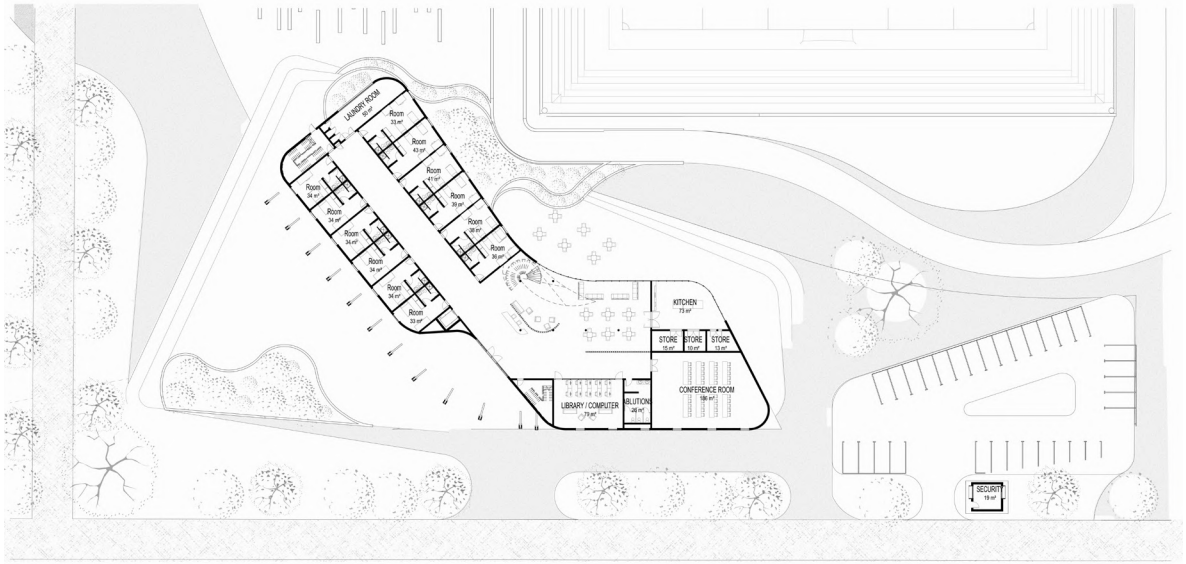


FIRST FLOOR PLAN



HOSTEL FIRST FLOOR

N

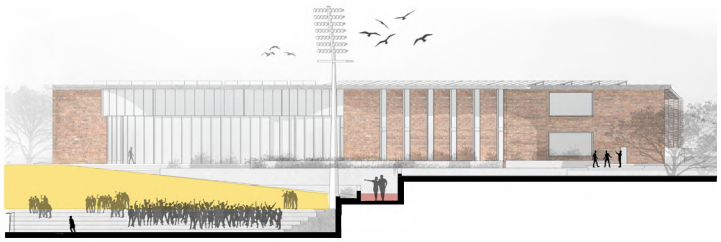


HOSTEL GROUND FLOOR

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HOSTEL SOUTH ELEVATION



HOSTEL NORTH ELEVATION



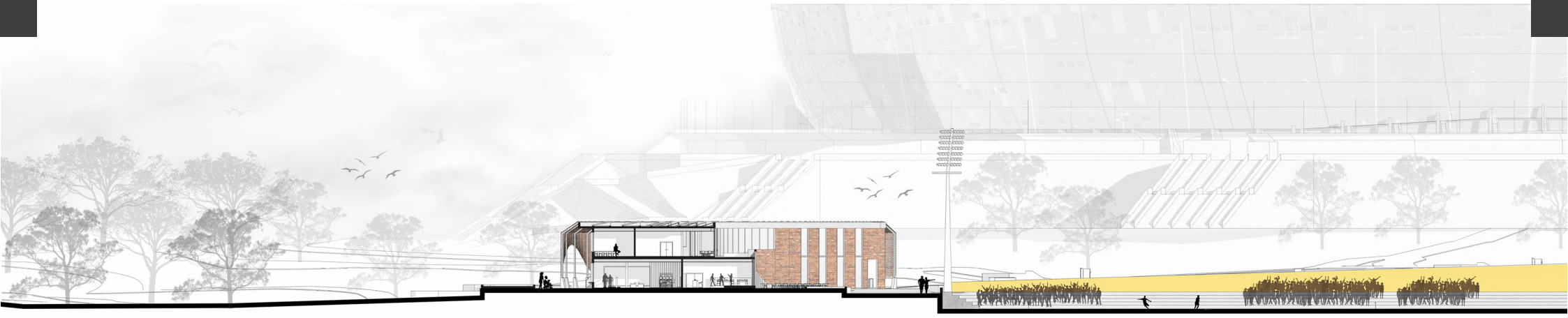
TRAINING CENTRE NORTH ELEVATION



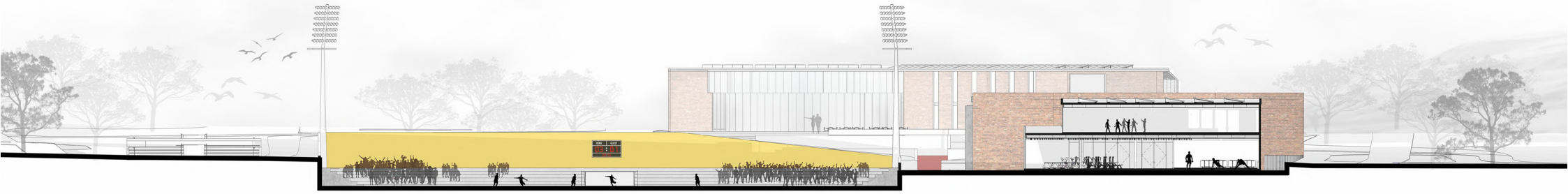
TRAINING CENTRE SOUTH ELEVATION



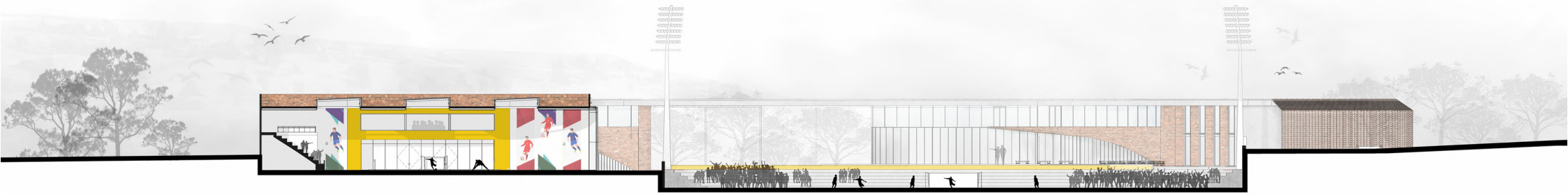
TRAINING CENTRE EAST ELEVATION



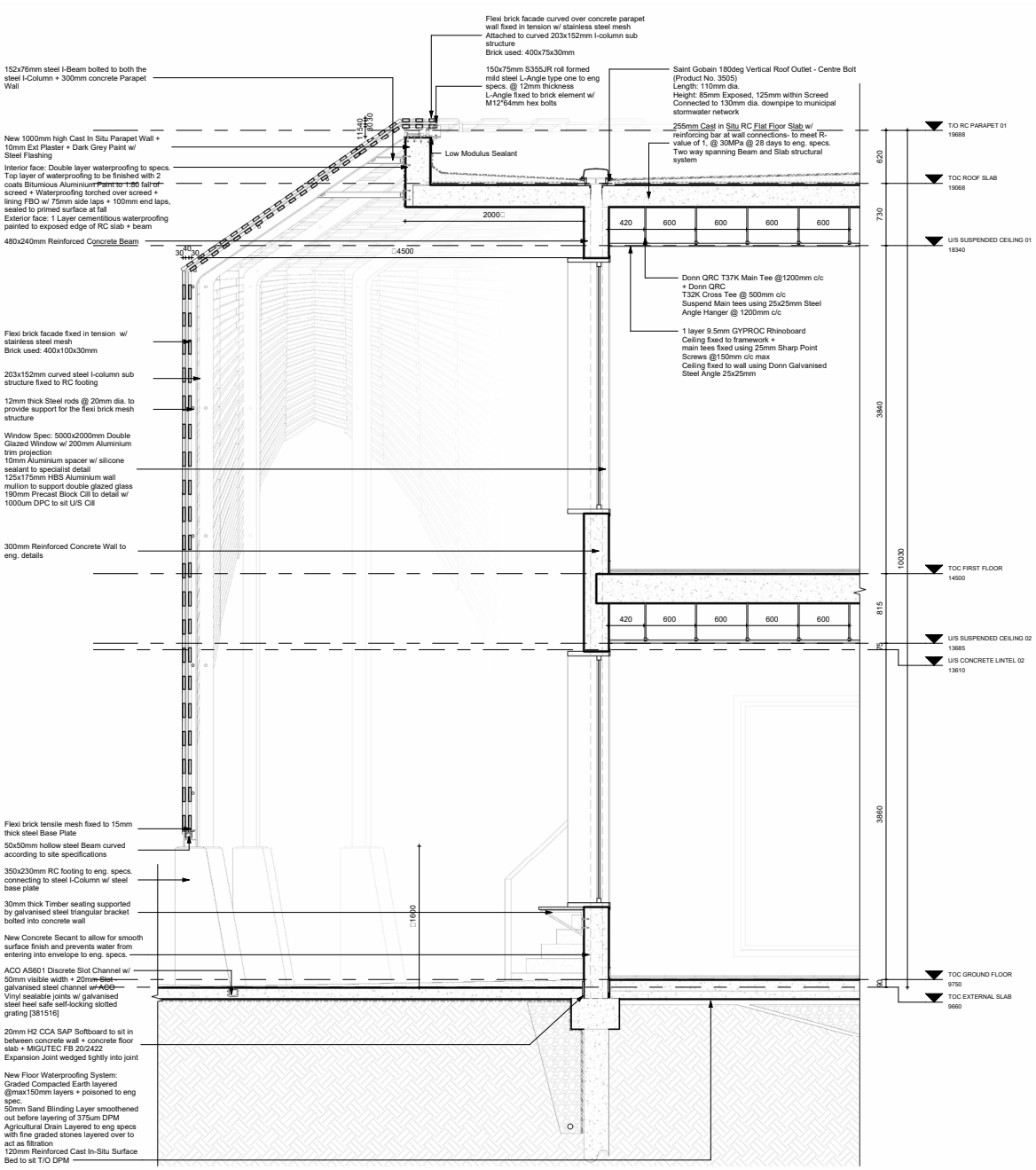
MEDICAL CENTRE SECTION



TRAINING CENTRE SECTION

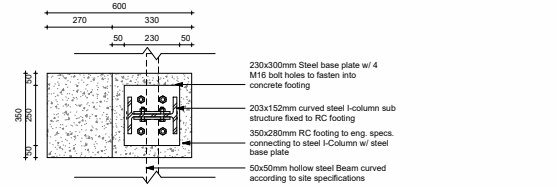


INDOOR FUTSAL COURT SECTION



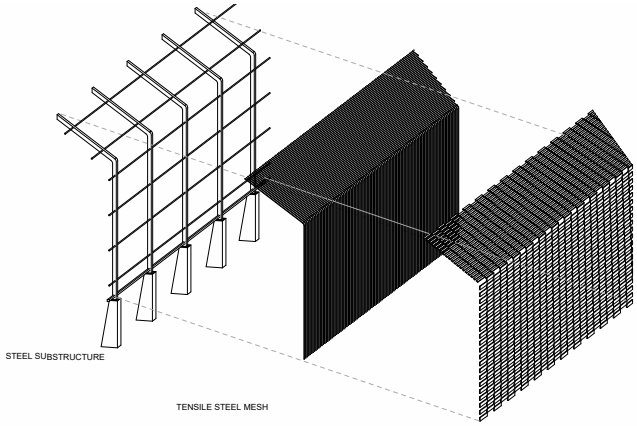
SCREENING PERIMETER SECTION

GRAPHIC SCALE 1:25



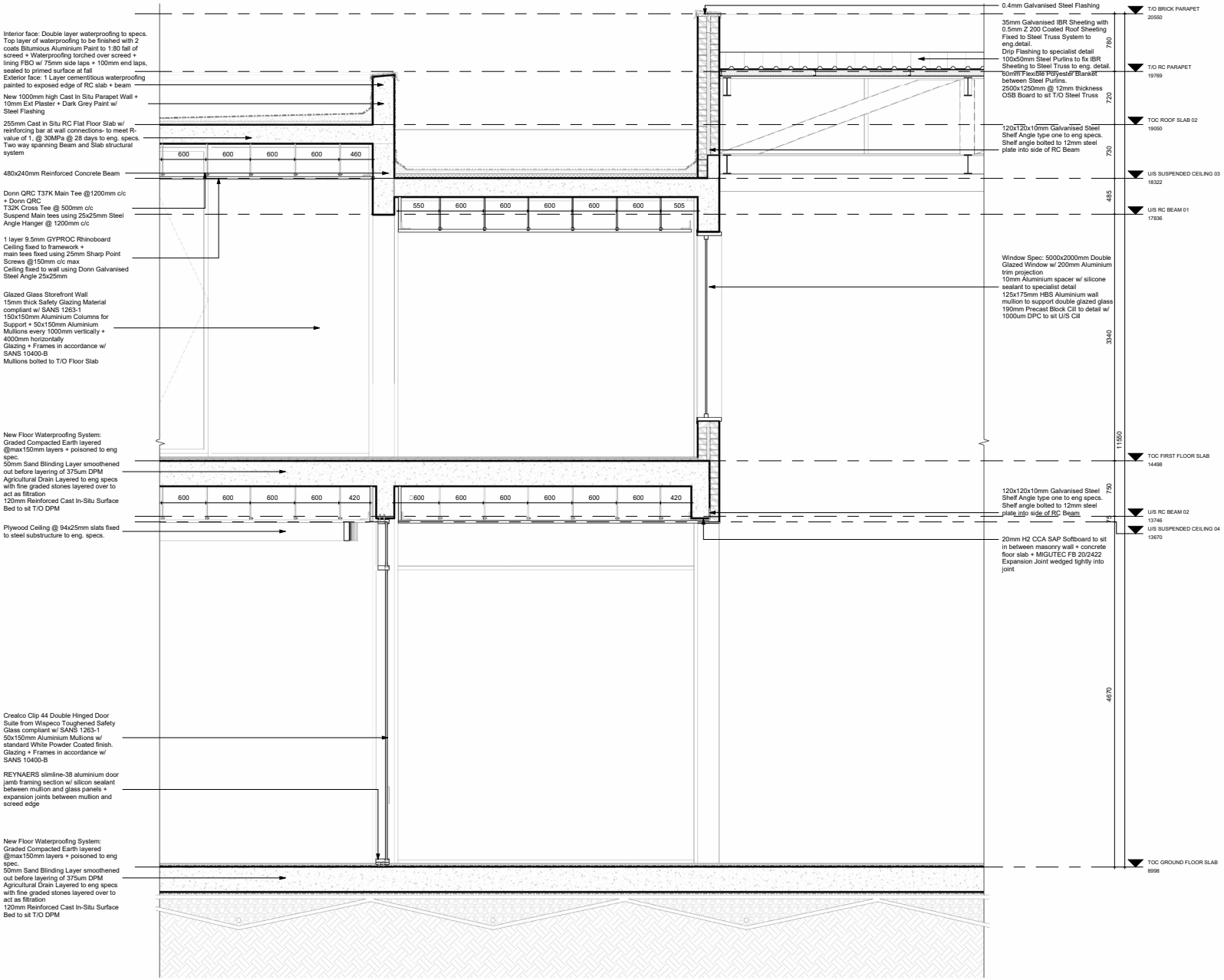
COLUMN CONNECTION PLAN

GRAPHIC SCALE 1:10

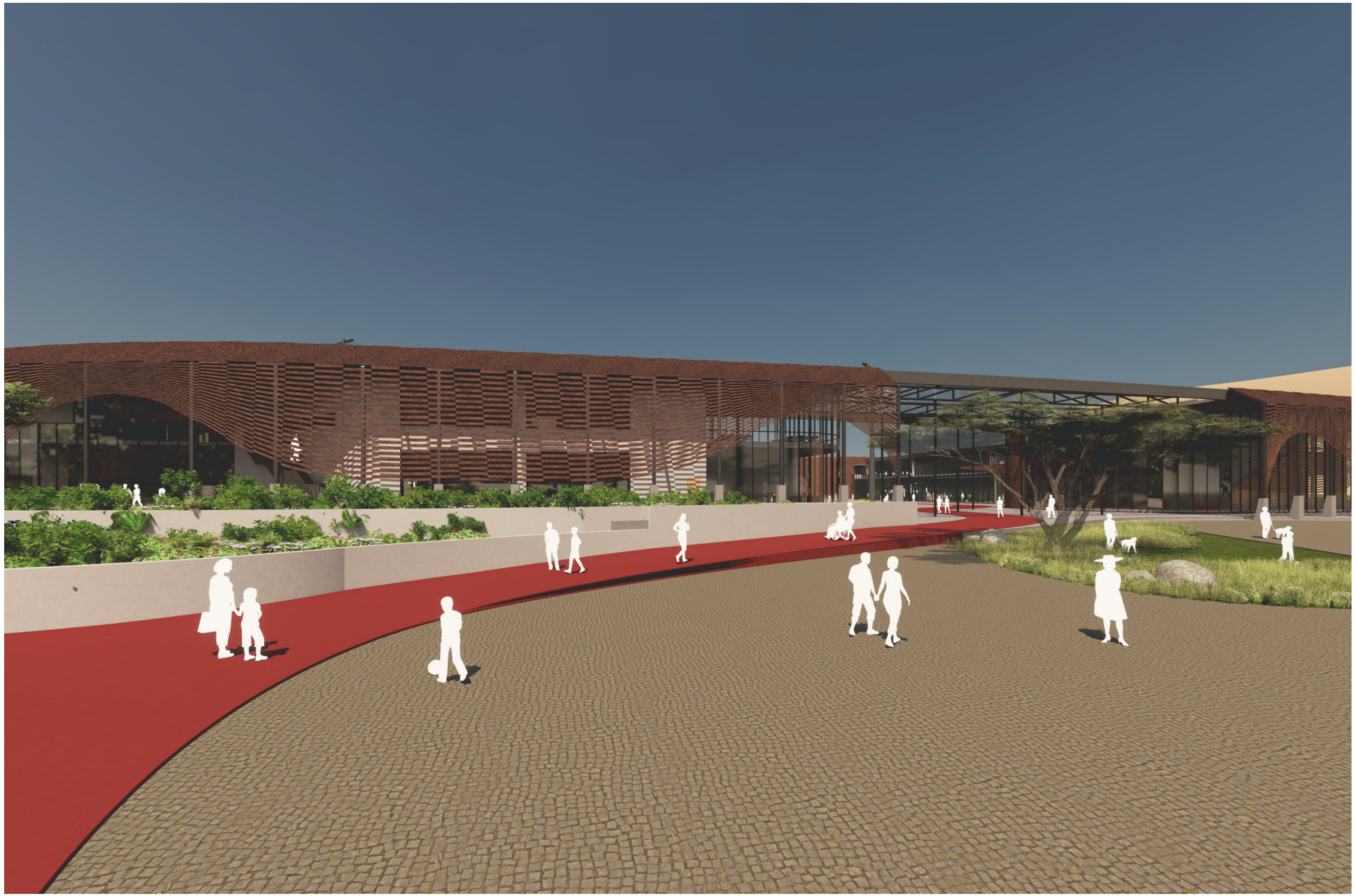


SCREEN AXONOMETRIC EXPLORATION

GRAPHIC SCALE 1:100



ALTERNATING ROOF HEIGHT PERIMETER SECTION






CAL CENTRE







Chapter
12

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Chapter
13

Relevant Documents

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | SCHOOL of ARCHITECTURE PLANNING

24 May 2023

Faculty of Engineering and the Built Environment:

Ethics clearance letter:

Dear Shreya Ramsarup

Student number (1847529), this letter confirms that your ethics application has been cleared. Your clearance/protocol number: SOAP016/04/2023

Yours sincerely

Lerato Nkosi

School of Architecture and Planning, Faculty of Engineering and the Built Environment, John Moffat Building, Wits, 2050, South Africa
Tel: +27 11 717- 7692| Email: lerato.nkosi@wits.ac.za | **www.wits.ac.za**