Mediating the urban boundaries of Marabastad

towards sustainability through architectural regionalism

- Rinus Piek -

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towards sustainability through architectural regionalism

by

Rinus Piek

Submitted in fulfilment of part of the requirements for the degree

Master of Architecture (Professional)

in the

Faculty of Engineering, Built Environment and Information Technology

University of Pretoria

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Course Coordinator:

Prof. Arthur Barker

Study Leader:

Abré Crafford

DECLARATION

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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

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

Rinus Piek

-Research Field-

Heritage & Cultural landscapes,
Environmental Potential

- Client-

Tshwane Metropolitan Municipality
Department of National Heritage:
Ditsong Cultural Museum

- Programme-

Performed Arts and Market pre-
cinct as urban living room

- Site Location-

6th St / Marabastad Jazz Park
Asiatic Bazaar, Pretoria, 0183
S25.741199, E28.178254

RESEARCH & SITE INFORMATION

ABSTRACT

How can the architecture of an urban living room, in the form of a regenerative performed arts and market intervention, stimulate the sustainable development of urban communities in Pretoria?

This dissertation investigates the practice of regional architectural to express and develop a sustainable architectural identity within the dilapidated city landscapes of Pretoria. Revitalisation of the urban environment is enabled by creating opportunities for social and economic interaction within the public realm and supporting it with architectural design solutions aimed at mediating oppressive and restrictive boundaries .

ACKNOWLEDGEMENTS

a special thank you to:

My Lord and Saviour, who has blessed and sustained me throughout this journey with every good gift

My parents for supporting me in everything, especially during the hardest of times and, for always seeking ways to make this experience the best ever.

My brother, for the jokes and snacks, late night talks and reminders to always be a better version of myself.

My friends and family at church who's prayers, encouragement and fellowship have carried me through when my focus and hope would dwindle.

My truest of friends, Amé, David and Jaco

My studio group, Brittany, Cosette and Felli. Without your comradery this dream would not have seen the light.

My mentor, friend and inspiration, Abré.
Learning from you has been an absolute joy.

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1 INTRODUCTION

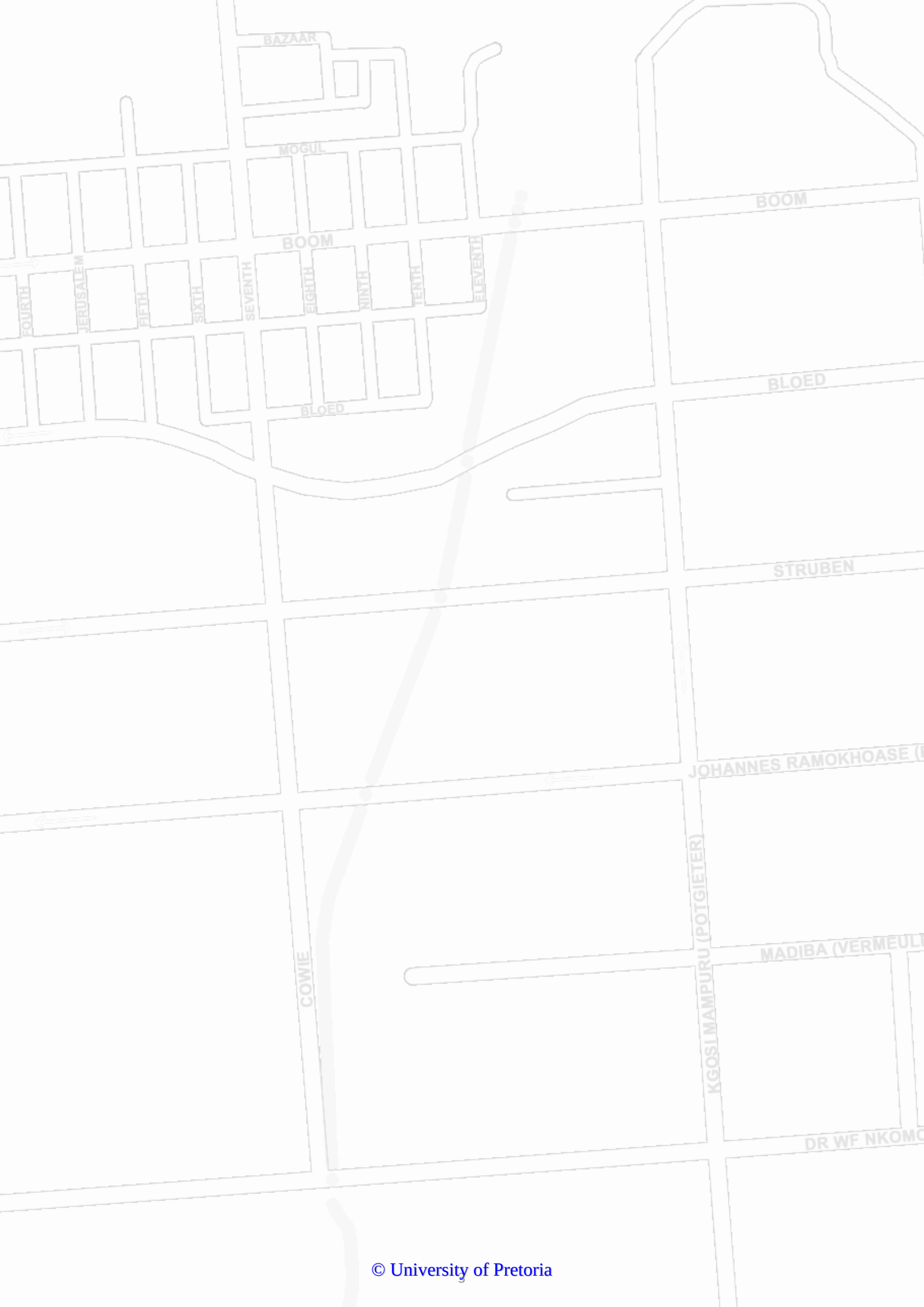
1.1 Background to study

South Africa is a nation rich in diverse cultural heritage, a subject which has in recent years contested former ideas of place making in both the public and private realms. Modernist tendencies came into question as these were used to establish a minority nationalist identity within the urban environments of the country, especially in the capital city, Pretoria. Former segregational conditions were also enforced through distant suburban environments with low population density and singular zoning, opposed to the administrative and business centres of the city. This caused a daily pendulum migration of the workforce between the different zones.

In post-apartheid years, the suburban areas were in many instances altered by the communities to enable a multiplicity of use and denser population, however other issues have manifested itself as the communities have changed over time. Through dealing with issues of safety and private ownership, harsh, impenetrable between private and public realms, segregating the ownership of space.

Further the enclosure of public facilities with impenetrable boundaries happening as a reaction to crime and safety issues within communities has negated the ownership of communal facilities to local governments which resulted in a sense of otherness in identity: it is within the community, but not of the community.

Another issue is that of sustainable development of communities, a notion that must be addressed within the spheres of the environment, economy and sociability to be holistic. The environmental sphere deals with the provision of natural and fabricated resources for sustaining the community and the impact on the natural environment. The economic sphere looks to aid in resolving unemployment and community quality of life which is also part of the social conditions of a community.



1.2 Normative Position: *(Research Article)*

Sustainability through Architectural Regionalism

Within the contemporary era of the 21st century, architecture has widely and sometimes loosely been informed by the notions of sustainability. Sustainability however refers to*" the process of living within the limits of available physical, natural and social resources in ways that allow the living systems in which humans are embedded to thrive in perpetuity" (Office of Sustainability, 2016).*

Regional architecture is critical about its relationship with its context and environment, the source and impact of materials on the environment and local economy, and the establishment of appropriate built urban interventions that will enhance social cohesion within communities.

This article attempts to address the following research question:
How does the development of contemporary regional architecture express and develop the identity of urban communities within South African cities by addressing the local issues of environmental, social, and economic sustainability?

What is regionalism?

The British architect, Kenneth Frampton, tabled Critical Regionalism (Frampton, 1983) describing it as a resistance to the International style of the modern movement which ignored the characteristics of the local context. It is however not portrayed as a contradiction to Modernism, but as an evolutionary product thereof, allowing for more universal ideas of place making and construction to respond appropriately to a unique regional context. Frampton further contributed the Ten Points of Critical Regionalism, which provides a pragmatic guideline for architectural design by engaging with the user's experience of created space. This is done by considering both the building and its landscape, through vernacular form, modern planning, and the expression of materiality.

The roots of Regionalism however can probably be found in the architecture of Frank Lloyd Wright known as an Organic architecture (Wright, 1939), which responds very specifically to site and context in scale, materiality, technology, and form. Various arguments, some similar or exclusive have been made regarding the definition of regional Architecture (Barker, 2015). Barker (2015) refers to these as pragmatic or direct, self-conscious, reactionary, and mediating regionalism.

Pragmatic regionalism responds to the physical qualities of the region such as climate, landform, availability of local building materials while self-conscious regionalism also considers the local culture of social and place making (building) practices. Reactionary regionalism can also be described as critical regionalism that is especially critical of and opposing to the International style. The last category, mediating regionalism, attempts to mediate between the ideals of Modernism, yet being informed by the regional environment as well as social and cultural practices and local materials, as is practiced by Architects such as Norman Eaton.

There is also the opposing viewpoint within the Architectural profession in South Africa that concerns itself with the viability of regionalism and the application thereof (Marschall, 1998). This viewpoint is that regional buildings still have a generic international style underlying its design with small additions that considers the regional climatic factors. It is also referred to as simply placing a traditional hat on top of standard Modern forms (Abel, 1986).

In South Africa, the regionalism discourse is found within that about social identity, which has been going for decades, however, re-awakened in South Africa with the establishment of the 'Rainbow-nation' after 1994 (Marschall, 1998). The question of "whose identity do we design for" seems to be the struggle of most South African architects. Working within the City of Tshwane, it is possible to refer to the elements defined by Roger Fisher to be typical of a 'Pretoria Regionalism' (Fisher, 1998). These are traditional forms, local clay bricks, pitched metal roofs, shading devices like eaves and verandas over outdoor spaces, shaded windows and consideration of site and context, all aiming to create a climatic responsive architecture.

Norman Eaton, being synonymous with Pretoria regionalism, approached the question of regionalism and identity by embracing the structural disciplines of Modernism, yet allowing for an indigenous identity that can be described as a South African identity (Pienaar, 2017). This was achieved by allowing the aesthetic of these buildings to be detailed with traditional African motifs and textures and with materials sourced from the site. "Eaton combined the new technologies of the Modern movement with an acknowledgement of the local climate, most notably manifested in the introduction of shading devices and pitched roofs, a utilisation of local craftsmanship, the use of locally available and traditional materials, and a sensitive response to site-specific topography" (Marschall, 1998).

Fig 1.1 Visualisation notes on regional materials (Author 2019)

Also, in a South African context, architect Karlien Thomashoff designed the award-winning House Brooke in Monaghan Farm, Lanseria within what can be described as a self-conscious mediating regional architecture (Barker, 2015). Specific reference is made to the physical context, while a more regional consideration is given regarding the economic and social environment as a prefabricated, modular design founded within the local standard building elements is used. Attention is also given to more global issues concerning environment-friendly design.

Sustainability and Architecture

Architecture is about the built environment and therefor terms like 'green building', ecological building and sustainable architecture have developed to express the profession's response to sustainability (Du Plesis, 2005). These terms place emphasis on the relationship between the built- and natural environments. "However, designing sustainably is also about creating spaces that are healthy, economically viable and sensitive to social needs" (Edwards, 2010).

The sustainable development of communities and their urban environments must therefore be addressed within the spheres of the environment, economy, and sociability to be holistic (Du Plesis, 2005). The environmental sphere deals with the provision of natural and fabricated resources for sustaining the community and the impact on the natural environment. The economic sphere looks to aid in addressing issues such as unemployment and community quality of life which is also part of the social conditions of a community.

Over the years the need to quantify sustainable design has increased, which led to the development of design/ building assessment tools to analyse the impact of buildings on the environment. By inputting variables about the design into these programmes, a performance rating can be issued for a specific development. Even though this provides some form of guideline towards developers, the absolute minimum is often implemented to receive a good rating.

In South Africa, the CSIR have developed the Sustainable Building Assessment Tool (SBAT) which aims to provide a holistic analysis of the building to include the economic and social impact with the environmental impact of the building. This is done by not only providing the designers and developers with a checklist for implementing sustainable design practices, but also by quantifying the quality of the individual considerations taken. The tool further visualises the outcome to make the areas in need of more consideration clear.

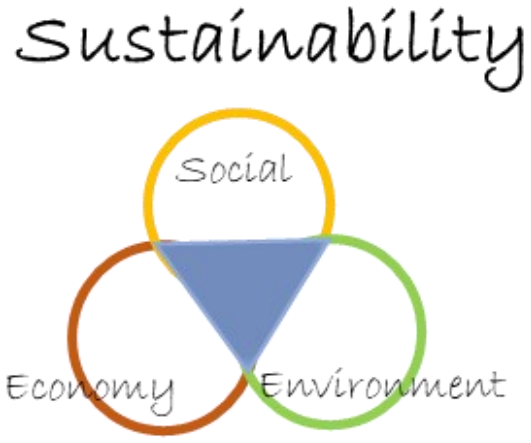


Fig 1.2 The spheres of sustainability (Author 2020)

Conclusion

What appears to be important in the physiology of sustainable design is the source and quality of materials, the energy and expense (economic and environmental) required to obtain the materials and the quality of life that is supported by the development. It is this aspect that has a correlation with architectural regionalism, as it too is concerned with using locally sourced materials in built forms that create not only liveable spaces, but spaces of quality in harmony with its context. It is therefor possible to expect that a regional approach to architectural design will result in the construction of more sustainable buildings.

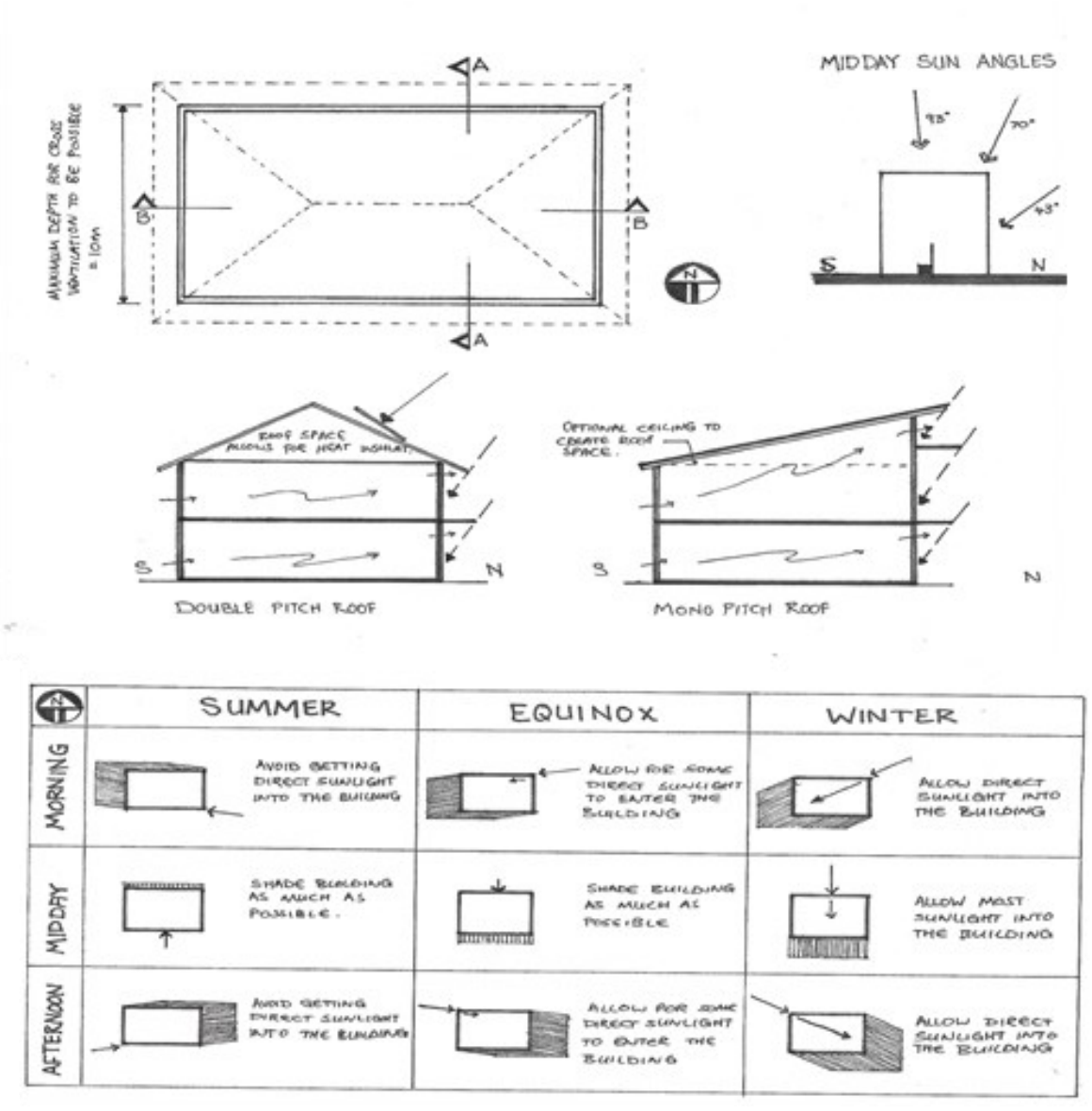


Fig 1.3 Visual notes on basic sustainable design consideration in Pretoria (Author 2016)

RESEARCH PARAMETERS

2

2.1 Issues & Research Questions

GLOBAL ISSUE

The enablement of urban communities to be environmentally responsible, economically sustainable, and socially interactive.

URBAN ISSUE

Decaying urban areas resulting in the marginalisation of communities.

ARCHITECTURAL ISSUE

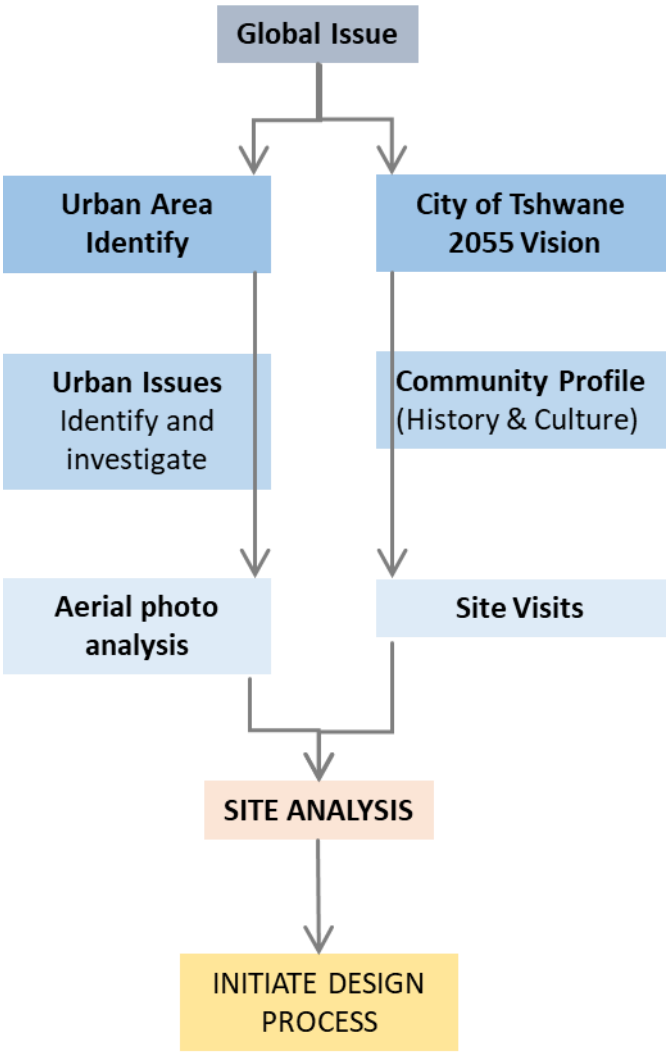
The design of built environments which enables neglected communities to develop sustainably.

RESEARCH QUESTIONS

How can the architecture of an urban living room, in the form of a regenerative performed arts and market intervention, stimulate the sustainable development of urban communities in Pretoria?

How can the development of contemporary regional architecture express and develop the identity of local communities within South African cities and address the local issues regarding environmental, social, and economic sustainability?

2.2 Research Methodology



Desktop study

Investigation of identified issues through articles, Peer reviewed and Opinion/ News based

Familiarisation with the City of Tshwane (COT) 2055 urban vision to gain insight into the proposed long term urban development framework of the local government.

Analysis of Aerial photographs of a 19-year period

Historical aerial photographs retrieved via Google Earth Pro.

These were used to identify locations and sites within the urban context that have been vacant or unused thus far, or that has been abandoned and remained unsettled. Urban development could also be traced over the almost two-decade period of available imagery giving insight into building densities in the area. The areas of gathering e.g. minibus taxis and informal parking could also be identified prior to the initial site visits.

Exploratory Site Visits

Multiple site visits have been undertaken to observe the activities in the urban area that gives insight into the use of streets, urban fabric, economic and leisure activities. For reasons of health and safety these were conducted from a passenger perspective in a motor vehicle.

Initial precedent/ Case study investigation

A web-based investigation into strategies used by communities internationally to counter urban decay and ensure urban resilience. These looked into examples such as Maboneng Precinct (JHB), Millenium Park (Chicago) and Cheonggye-river revitalisation (Seoul).

2.3 INITIAL DESIGN CONSIDERATIONS

Programme & Users

Extended public leisure spaces able to host markets and festivals with a Centre for the performed arts where locals (residents, students, commuters, etc.) can participate in the performed arts through performance or as the audience and through providing/ receiving training.

Other possible design requirements:

- 'Studios' for training (music, dance, choir, orchestra)
- Stage(s) and/or auditoria for performance
- Provisions for administration of facilities
- Provision of facilities to enable the accompanying economic possibilities such as food markets, restaurants, tuckshops etc.

2.4 TOUCHSTONE:

As a conceptual driver the author performs a piece by Christopher Norton named 'Clock Rock'. This piece was originally composed for a short performed boogie style dance or as a delightful piece of modern chamber music. For this performance the artist (author) takes the liberty to adapt the piece in a Jazz-like fashion, starting in a 'Blues'-style which then transitions into the boogie.

For the purposes of this dissertation, the performance serves as an conceptual vision of how the investigation is to address the issues concerning the design of the urban environment: investigative at fist, then exploring the ideas with excitement and reflection thereof, all leading to a final and distilled climax of the [key] note. It further enables a deeper 'zeitgeist'–like understanding into the community and context.

Link to access the audio recording of the 'Touchstone' performance from Google Drive:

https://drive.google.com/file/d/1Yhq67rWD_wEakUjaMG27zK_Yub9SA6Jj/view?usp=sharing

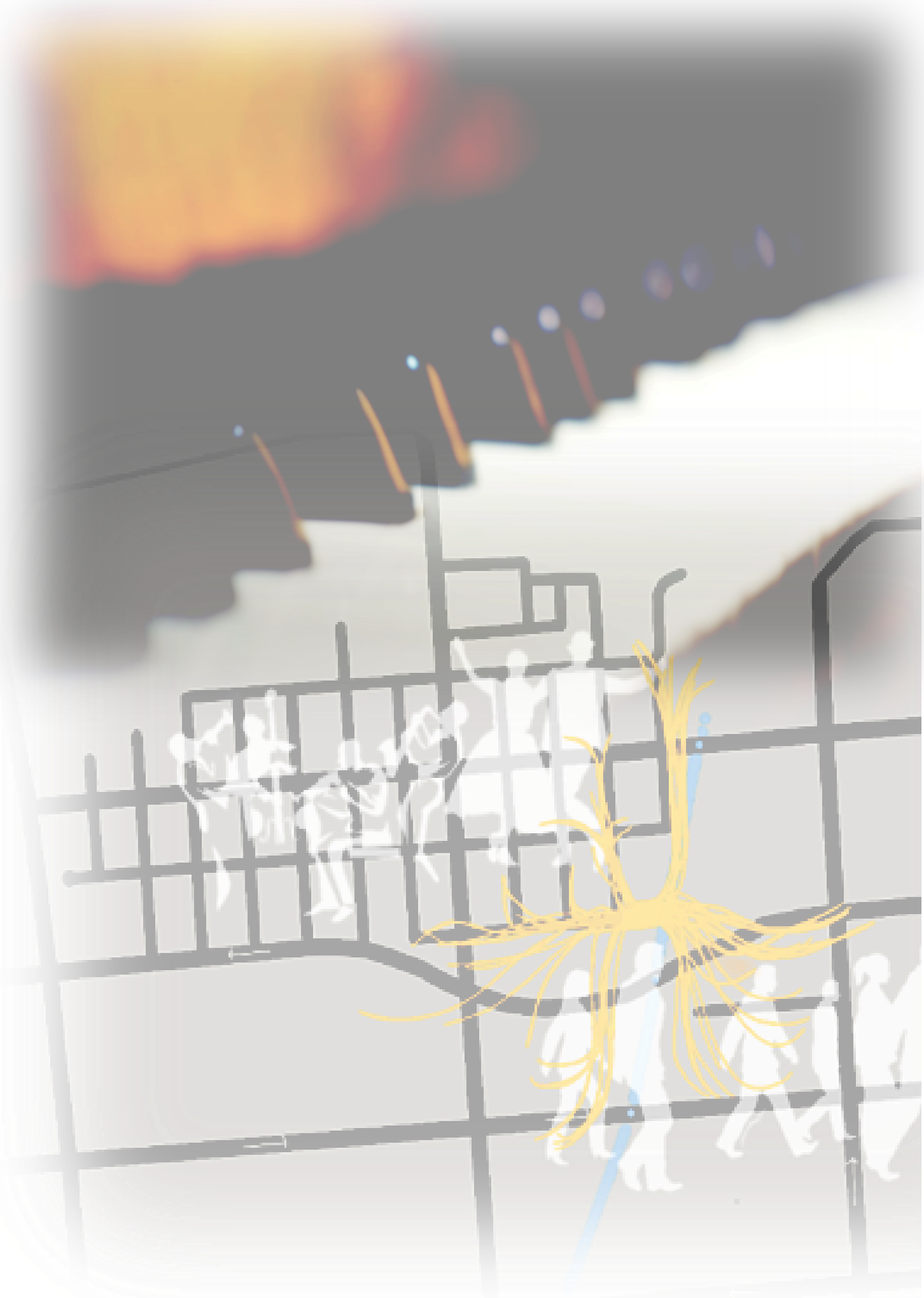


Fig 22 Visualisation of Touchstone conceptual driver (Author)

Site identification

3

3.1 City of Tshwane Vision 2055

In 2013 the Tshwane city council launched its vision for the city for 2055.

Herein several nodes have been identified within the city for urban investment and development.

The vision requires the sustainable development of communities within Tshwane, providing public access to the city's natural resources, public amenities, and recreation facilities along with affordable housing within the identified nodes for all income groups.

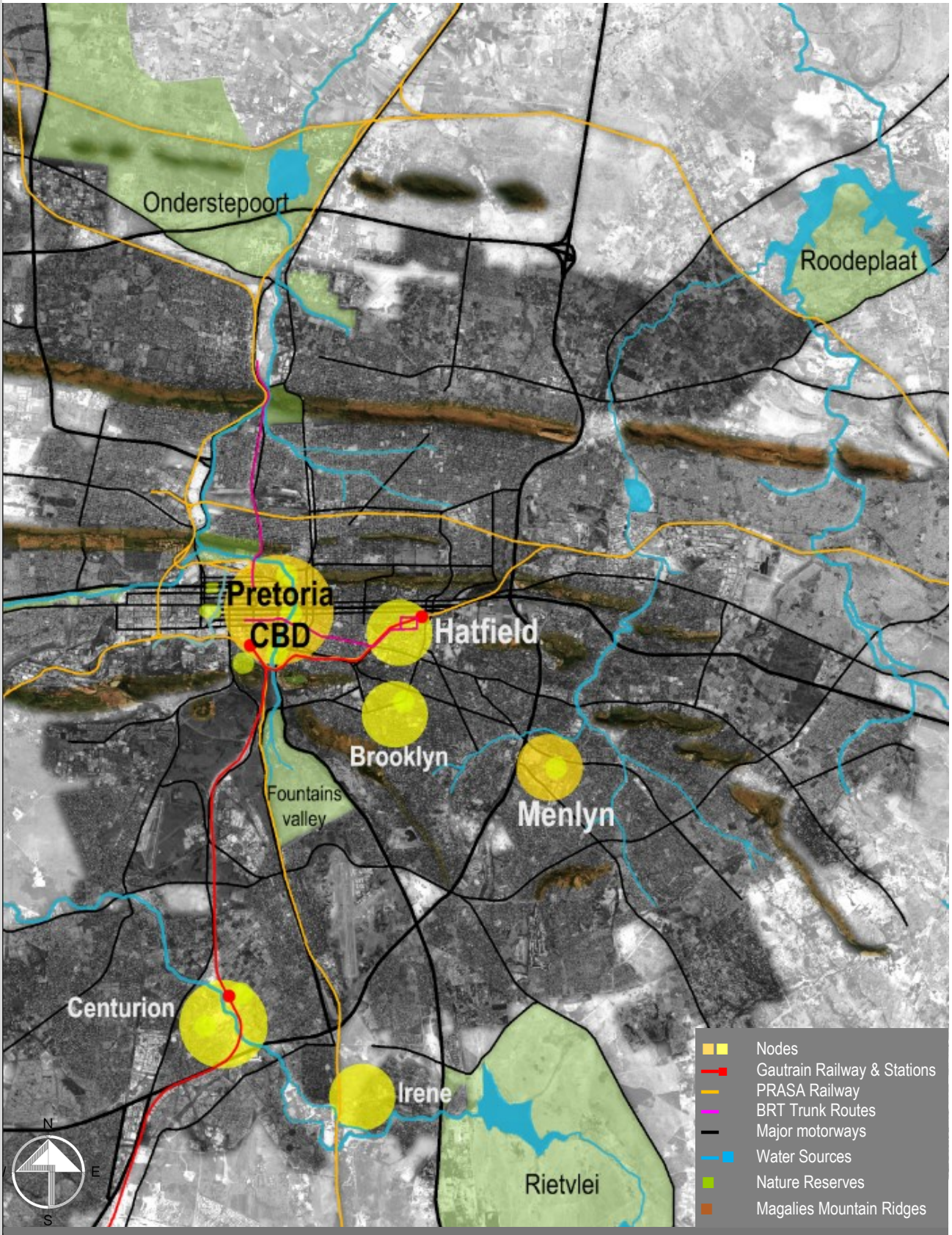


Fig 3.1 City of Tshwane: Nodes for development, water sources, major public transport routes (Author 2020)

Node: Pretoria CBD

The Pretora CBD is located around Church Square, the intersection of the Cardo (Paul Kruger St) and Decumanus (Helen Joseph St to the East & Dr WF Nkomo Dr to the West)

A series of one directional multilane streets provides vehicular circulation from East to West to the linear areas of the central Pretoria Valley (Pretoria West, CBD, Arcadia, Hatfield)

From the North, three major routes access the CBD: E'skia Mphahlele Dr to the West, Paul Kruger St to the Centre and Johan Heyns / Steve Biko to the East

The borders of the Pta CBD is defined by the natural elements of the area: North by the Ridge and Apies River, The Apies river to the East, to the south by the railway and the west by Steenhoven spruit, a canalised riverine flowing into the Apies river.

Fig 3.2 Artist interpretations of the 2055 vision for the City of Tshwane (Tshwane 2013)

Fig 3.3 Marabastad: Gateway to the Pretoria CBD (Author, Adapted from Google Earth Pro, 2020)

3.2 Urban Decay and the Pretoria CBD

Fig 3.4 Dilapidated Schubart Park
(Google Street View 2020)

What is Urban Decay?

The decay of buildings happens over time. Causes are the neglect of a structure because of lack of maintenance due to lack of financial abilities or lack of management, events that causes the abandonment of buildings and the vandalism of structures

Urban Decay in Pretoria

Towards the west of the CBD node urban decay is prevalent in the housing blocks of Schubart Park and Kruger Park

Fig 3.5 Abandoned Kruger Park
(Google Street View 2020)

Schubart Park:

Since 2000 the apartment blocks have been neglected by state managing departments which led to its informal takeover by syndicates, subletting units to the people of Pretoria. Over the next decade the neglect and inappropriate management of the buildings caused the buildings to become an issue towards the city. This caused the complete eviction of all its residents in 2008. Over the next decade the parking structure would be occupied by squatters, the towers stripped of all materials that could be salvaged for including rebar from the concrete frames. Now the buildings stand bare on the edge of the CBD.

Kruger Park:

A fire in the building caused the building to be declared structurally unstable, with all its occupants evicted. The building has been stripped of all materials that could be salvaged and is now a empty brick tower that marks the western entry to the CBD.

Marabastad:

Most of Marabastad's former residential fabric has been lost due to the forced relocation and marginalisation of the community. During the Apartheid era governmental urban schemes required that large areas of houses be demolished to construct urban highways along with several public service and maintenance facilities. The areas further away from the transportation nodes experienced urban decay due to a lack of financial ability or the promise of better investment elsewhere in the city.

Fig 3.6 Various structures throughout Marabastad showing signs of decay.
(Google Street View 2020)

3.3 Marabastad: Western Gateway to the Pretoria CBD

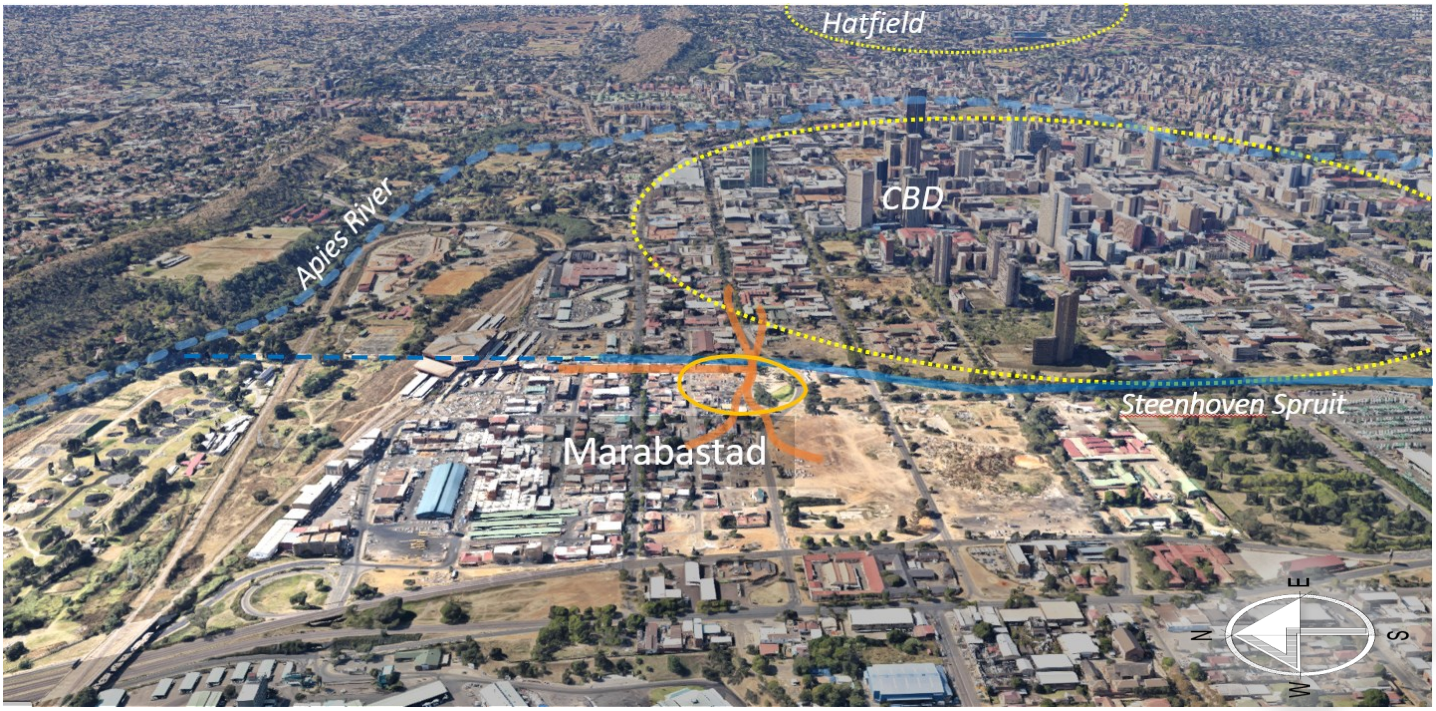


Fig 3.7 Marabastad: Gateway to the Pretoria CBD (Author 2020)

Marabastad is the area located east of E'skia Mphahlele drive to the west bank of the channelised Steenhoven Spruit and from the Heroe's Acre cemetery in the south to the ridge to the north. Before Apartheid, in the 1950's, Marabastad was a residential area occupied by African and Indian ethnic groups known then as locations.

Marabastad, serves as a gateway to the CBD, in that the means of transport to the city centre pass through and intersect here. The community is vibrant with a variety of peoples and cultures supported largely by trade and vending. The urban fabric however is heavily plagued by the scars of apartheid and neglect. Urban decay has caused serious dilapidation and abandonment of large areas. As part of the 2055 vision, some lower income housing developments have started to take place to the south of Marabastad and in 2009 the Marabastad Jazz Park was developed in an attempt to start urban revitalisation in Marabastad.

3.4 Urban Analysis

Exploratory Site Visits

Multiple site visits have been undertaken to observe the activities in the urban area that gives insight into the use of streets, urban fabric, economic and leisure activities. For reasons of health and safety these were conducted from a passenger perspective in a motor vehicle.

Aerial photographs analysis (19-year period)

Historical aerial photographs accessed with Google Earth Pro. The photographs were used to identify locations/ sites within the urban context that have been vacant/ unused thus far, or that has been abandoned and re-mained unsettled. Urban development could also be traced over the almost two-decade period of available imagery giving insight into building densities in the area. The areas of gathering e.g. minibus taxis and informal parking could also be identified prior to the initial site visits.

City of Tshwane GIS

The online database of the City of Tshwane was accessed to retrieve quantitative data regarding the area such as zoning, services, restrictions, contours and the 2018 RSDF which is a revision and mapping representation of the 2055 Vision for the City of Tshwane proposed in 2013

Fig 3.8 Mapping notes from site visits (Author 2020)

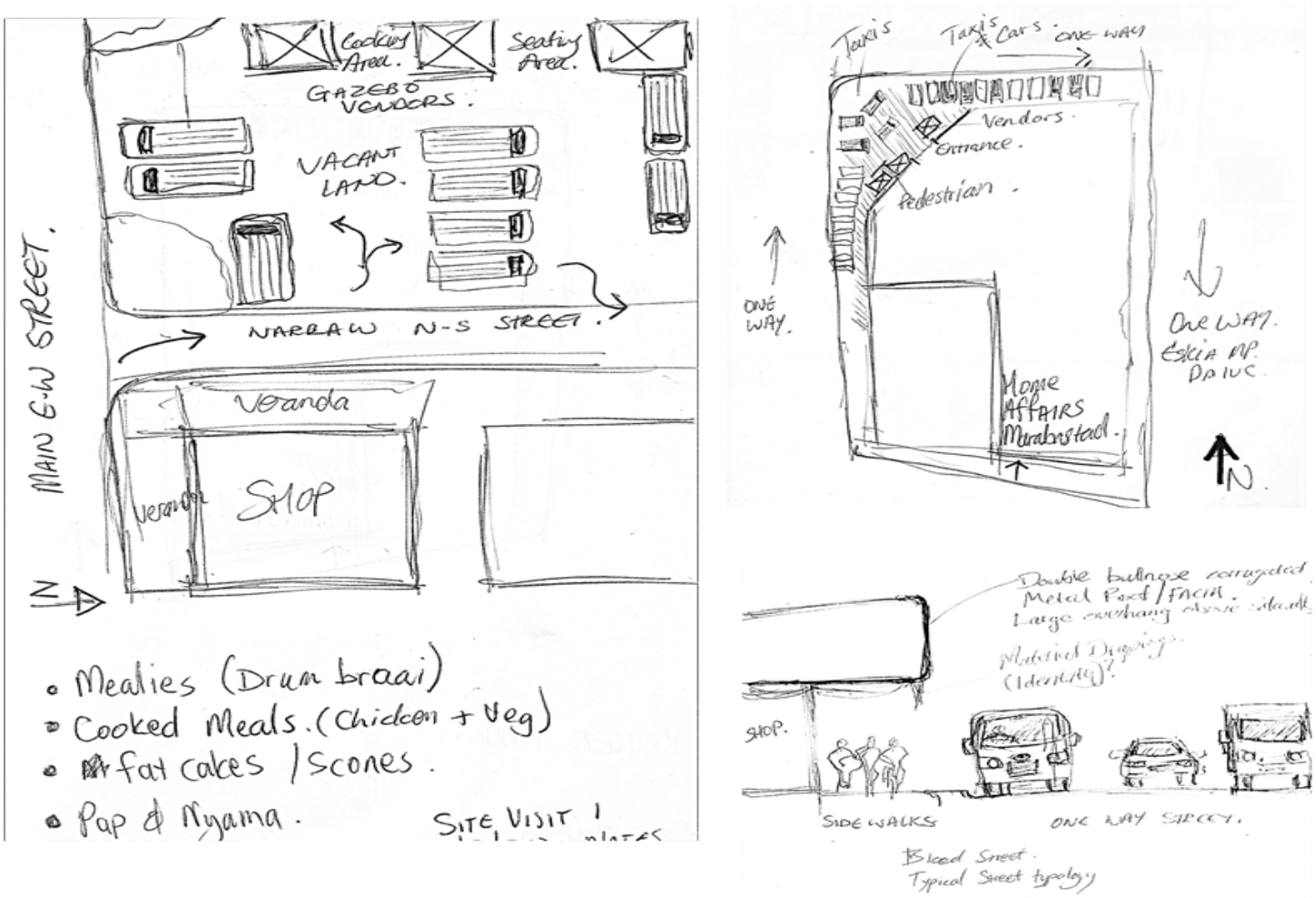


Fig 3.9 Site visit notes on use of public space (Author 2020)

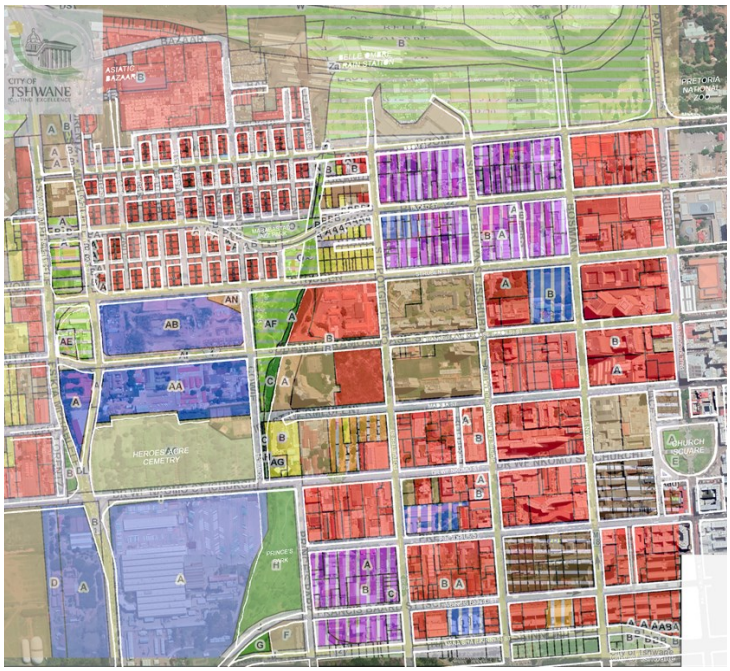


Fig 3.10 Existing zoning as per City of Tshwane GIS (Tshwane 2020)

- Business 1: Possible mix use
- Residential 1: Single house
- Government property
- Industrial

Fig 3.11 Regional Landmark Sites (Author 2020)

1. Pretoria Market
2. Asiatic Bazaar
3. Heroes' Acre Cemetry
4. Apies River
5. Belle Ombré Train Station
6. Steenhovenspruit
7. Pretoria National Zoo
8. Church Square

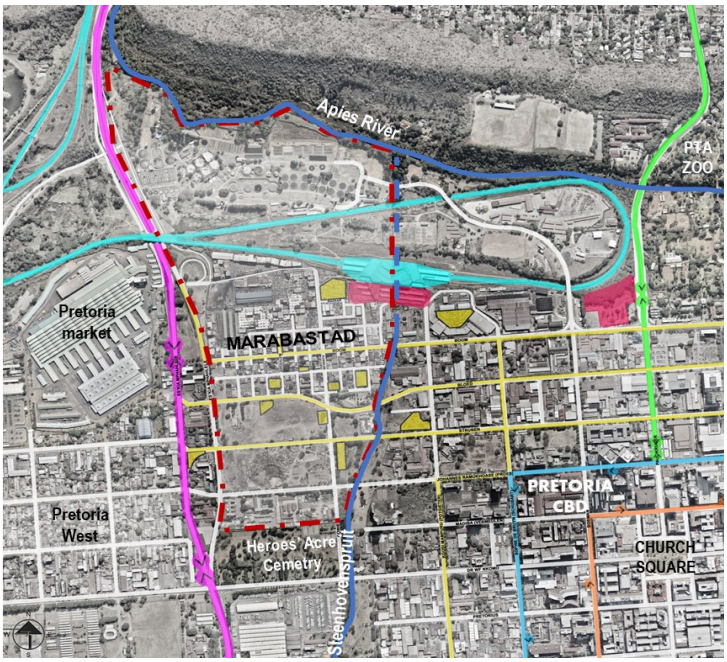


Fig 3.12 Transportation Networks (Author 2020)

- PRASA Railway and Belle Ombre Train Station
- Busterminals – Putco, Northern Star etc.
- Taxi rank (Informal)
- Taxi Routes

AREYENG BRT

- Existing Inner City Circuit (Clockwise)
- Existing Inner City Circuit (Anti-Clockwise)
- Existing Trunk route with dedicated BRT lanes
- Proposed future Trunk Route with dedicated BRT lanes

(Tshwane RSDF 2018)

Fig 3.13 Sites of Decay and Dilapidation (Author 2020)

- Delapidated sites – Schubart park, Kruger Park, Magistrates Court
- Sites showing decay, probably due to economic constraints

Fig 3.14 Open/ Undeveloped areas (Author 2020)

Most of the undeveloped areas are situated alongside or close to the Steenhoven spruit which forms a sort of spine.

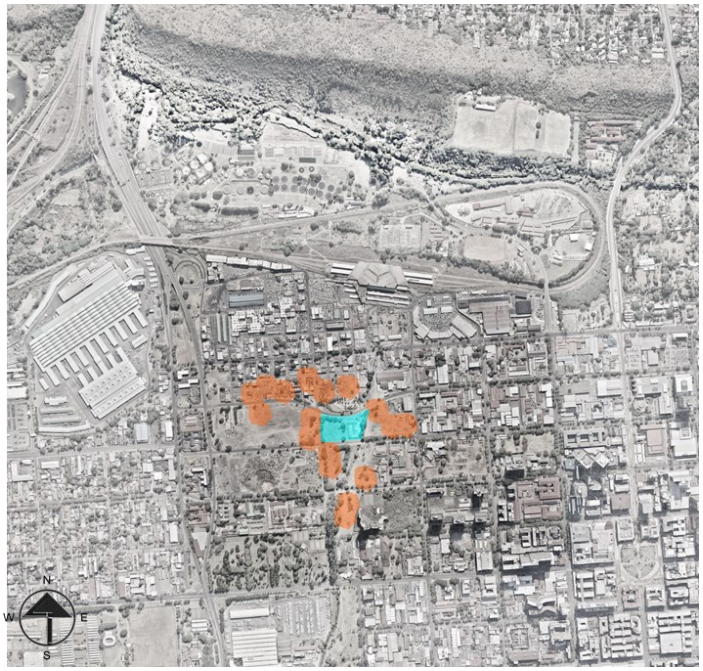


Fig 3.15 Undeveloped Land Occupied by Community: Non-permanent (Author 2020)

- Day traders and vendors / Taxi collectives / vehivcle sevices
- ZCC Marabastad (Religious gathering site with some structures)

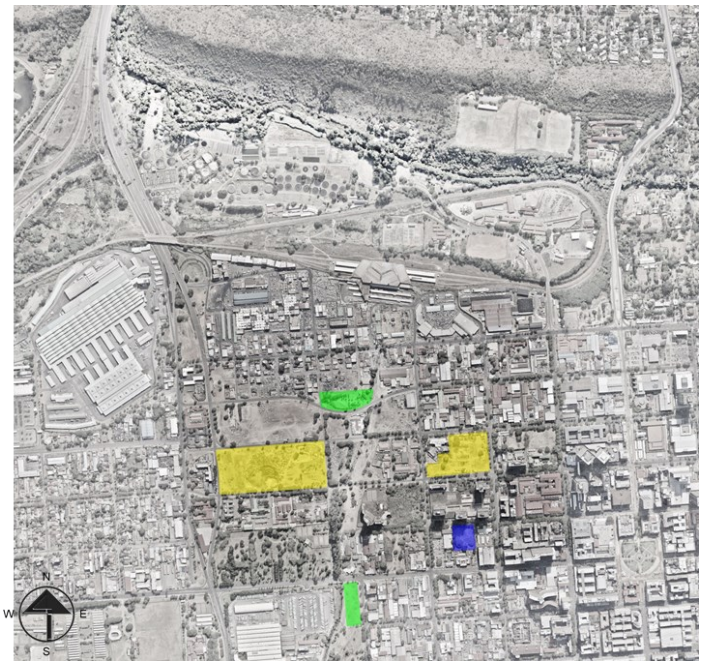


Fig 3.16 Sites of Government Investment and Development (Author 2020)

- Social housing initiatives through the development agency YEAST
- KARA Heritage School - Additions to Ditsong Museum Collective
- Marabastad Jazz Square (top) and Prince's Park restoration (bottom)

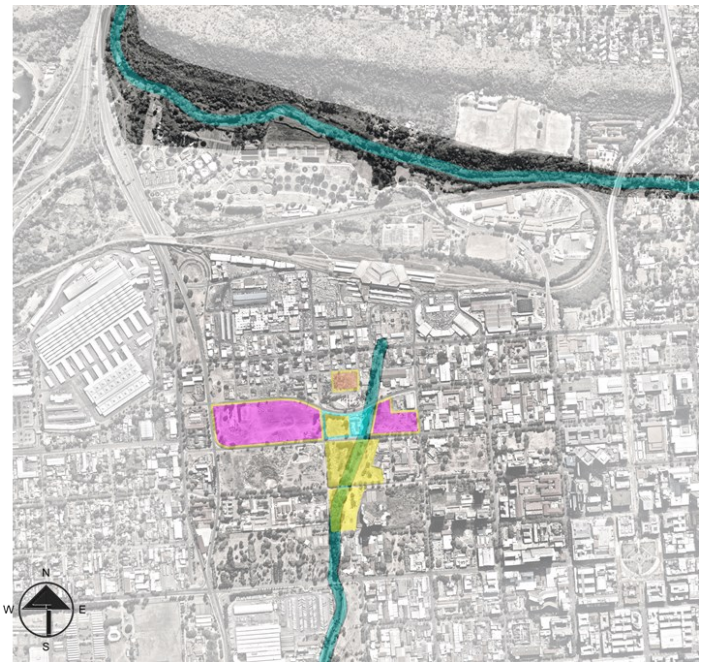


Fig 3.17 Areas available for Development of Urban Regeneration Scheme (Author 2020)

- Undeveloped land portions zoned for retail / mixed use
- Undeveloped land portions with undetermined or special zoning
- Steenhovenspruit and flood areas

Urban Analysis: **Initial Findings**

Accessibility

The area is very accessible to commuters and travellers due to the variety of public transport opportunities.

The area is rather flat with minimal slopes leading away from the CBD. This should allow for a large variety of urban developments to easily take place.

Sustainability

The proximity to the Pretoria Market and industrial zones provide in many of the basic needs of the community.

There is a great lack of residential opportunities in the area, however some developments are taking place to address this.

Natural systems are for the most part disregarded as streams are channelled and undeveloped land is unable to sustain a natural state with taxis and pedestrians frequently using it.

Fig 3.18 Visual summary of Urban Analysis (Author 2020)

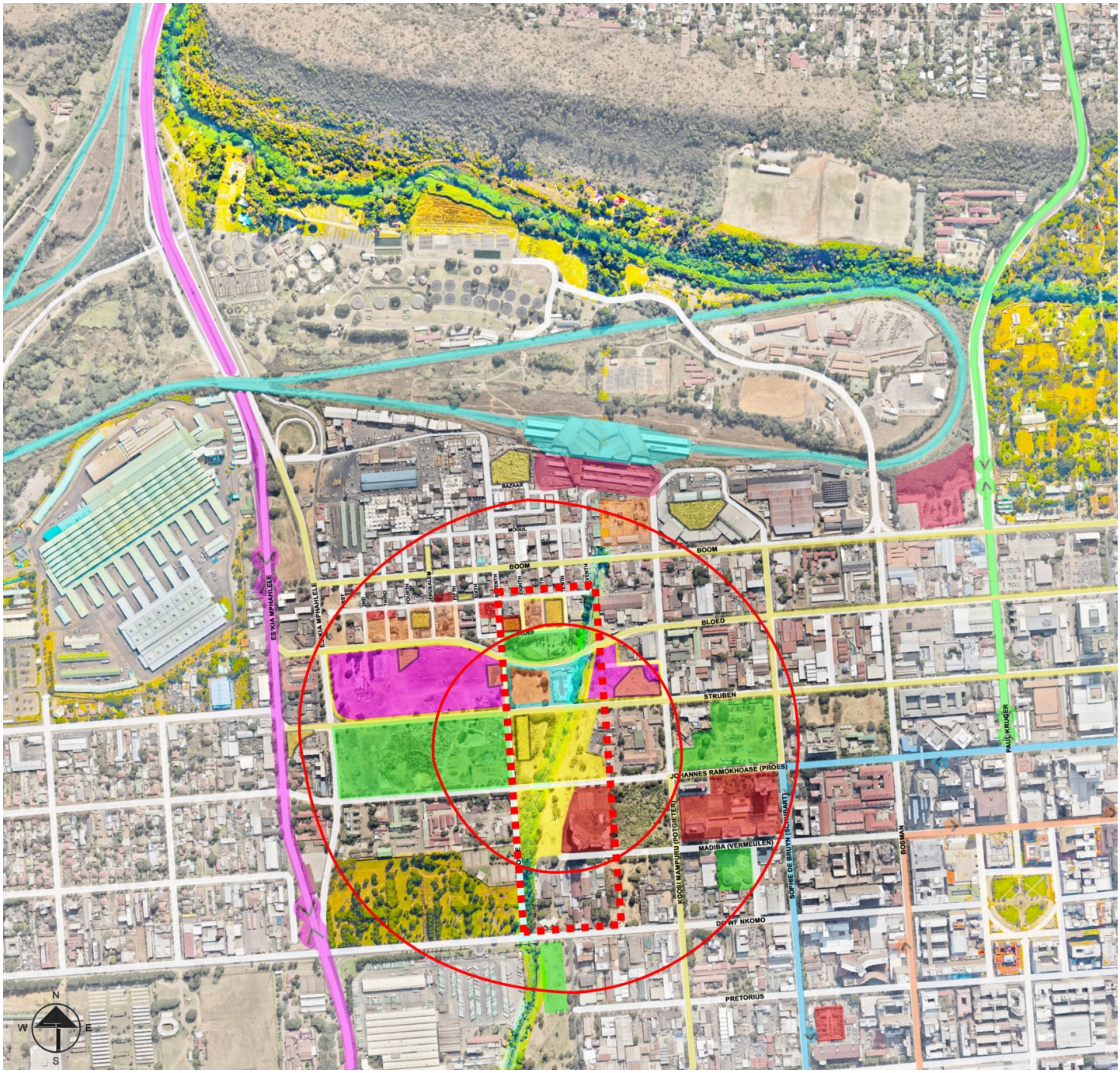


Fig 3.19 Compilation of mapping (Author 2020)

- PRASA Railway and Belle Ombre Train Station
- Busterminals – Putco, Northern Star etc.
- Taxi rank (Informal)
- Taxi Routes
- Existing Areyeng BRT Routes
- Proposed future Trunk Route with dedicated BRT lanes

Areas available for Development of Urban Regeneration Scheme

- Undeveloped land portions zoned for retail / mixed use
- Undeveloped land portions with undetermined or special zoning
- Steenhovenspruit and flood areas

3.5 Marabastad: A Brief History

Since 1934 with the implementation of the Slums Act, most of Marabastad's community was relocated to townships such as Attridgeville and Laudium (Friedman, 1994). The northern blocks of Marabastad were demolished to make space for the new municipal water treatment plant. The southern blocks were also demolished to accommodate storage yards for buses. Of the remaining central block, the Northern Blocks were further demolished to develop the Asiatic Bazaar (a market-like trading centre) and the Belle Ombre train station in the mid 1980's to establish railway links to the distant Townships of Soshanguve and Mamelodi.

3.6 Marabi-Culture

The Marabi culture (Cronje, 2013) that was prevalent in the Townships like Soweto and Sophiatown during Apartheid most probably had its origins in Marabastad as the naming suggests. This culture consisted of beer brewing and nightlife (after work hours). The nightlife provided entertainment in the form of performing music groups and dancing in Jazz Clubs.

The music itself was a form of resistance to the oppression of the time: Jazz and Blues that developed into Kwêla as it adopted the gumboot dance rhythms of the mining communities.

Fig 3.20 Photos of the Marabastad Exhibition (Author; 2016)

3.7 Pre-Apartheid Marabastad

Ditsong Cultural Museum Exhibition

This exhibition attempts to portray the vibrancy, aesthetic and historic character of parts of what was lost during the removal of Marabastad. Even though this piece of history is available for view in a museum gallery, it is well removed from the community.

There is opportunity here to incorporate this exhibition with an architectural intervention in Marabastad, and so continue the narrative of the community.

3.8 FINDINGS

Marabastad

A community with a troubled history of marginalisation, oppression, and a temporal existence.

Rich cultural heritage portrayed in religious sites, and musical history.

An urban space richly populated with entrepreneurs able to seize economic opportunities as soon as they arise.

A culture of adaptability, appropriation and variety that can be stimulated into sustainable development.

Urban Opportunities

Environmental elements such as undeveloped land and natural water sources that can be cultivated to sustain the local community

The revitalisation of urban communities often requires initial investment by government (top-down) to stimulate private investment.

Urban Framework Development

4

4.1 Precedent Study

MIllenium Park - Chicago (USA)

Fig 4.1 Millenium Park (Author 2020)
A collage to indicate the relationship of various programmes of the development within the city context

Formerly an open parking lot and railway yard, envisioned by the mayor at the time to be a site for relaxation and delight for the city and tourists.

Programmatic and development interventions include:

Pritzker Performance Centre which creates a formal space for the performed arts through theatre spaces and an open air stadium. Various urban sculptures allow interaction by the public and has become a tourist attraction. Surrounding the park is the Art Institute of Chicago, the School of the Art Institute of Chicago, Chicago Cultural Center and various museums.

This precedent provides an example of how the requirements for the Tshwane 2055 vision could be met through large scale urban interventions with multiple programs and spaces

Fig 4.2 Former Chicago CBD Parking Lot (Chicago 2020)
1997 – The open parking lot with the CBD in the background

Cheonggye River: Seoul (South Korea)

Fig 4.3 Former multi-level highway over the Cheonggye river (_____)

Fig 4.4 View of revitalised Cheonggye river (_____)
The banks of the river have a growing biodiversity.

Fig 4.5 New fountains (_____)
Water is pumped from lower areas to the top of the river to bring a source of additional delight to the city and to ensure the river always has water.

This stream was created by King Taejong in 1411 to supply water to the city centre. In the early 1900's its banks were developed into highways. The stream deteriorated to a state where it became an open sewer, and was paved over.

In 2004 the Mayor initiated the restoration of the stream. Programmatic and development interventions include:

- Restoration of the stream and its banks to a more naturalised state, allowing for a biodiverse urban habitat.
- Walkways along and across the stream giving a delightful alternative route to local pedestrian and tourists
- Space where recreational events can take place such as festivals, swimming and relaxation.

This precedent shows how the natural water sources of the city of Tshwane, such as the Apies river and Steenhoven spruit could be made accessible as spaces of public recreation.

Maboneng Precinct: JHB (South Africa)

Fig 4.6 Looking North along Albrecht street (_____)
One is welcomed by the proud name banner of the precinct and view of a wall dedicated to urban art. On the left is the Museum of African Design, also part of the district revitalisation strategy.

Fig 4.7 Urban aesthetic interventions (_____)
The welcoming sight as one approaches Maboneng from the West along Albertina Sisulu Rd.

A collective effort by private developers, artists and entrepreneurs to elevate part of the city centre as to give new life to a once decaying urban environment.

Programmatic and development interventions include:
Boutique shops, Gourmet markets, Street food and goods markets, Street art exhibitions, Upgrading of industrial buildings to become luxurious loft apartments and the repurposing of industrial buildings for studio, offices and retail space

This precedent shows how a series of small urban interventions within the collective community can contribute to the revitalisation of n urban area.

4.2 Proposed Urban Framework

Current Developments:

Mass housing developments to the south and south-east to accommodate lower income citizens. An estimated 1200 Apartments able to house 3000+ people is being developed by the City. This will provide a sense of permanence to Marabastad, increasing the social and economic capital of the area. The future residents of these developments will need spaces within the urban environment to facilitate their social, physical and psychological needs.

It is based on this more permanent capital that predictions and expectations of further urban development within the rest of Marabastad is based.

Fig 4.8 Proposed urban vision (Author 2020)

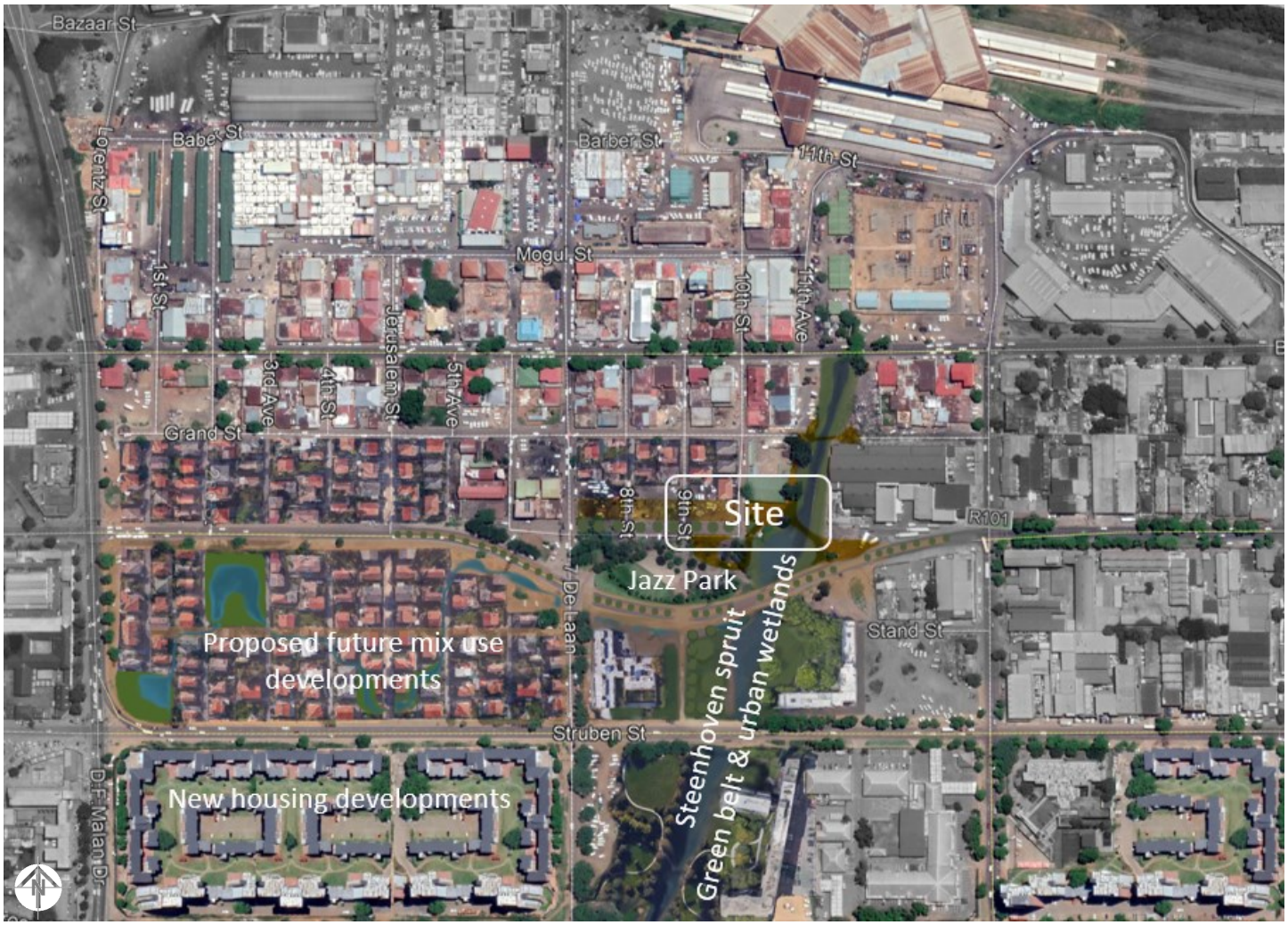


Fig 4.9 Proposed urban vision (Author 2020)

Proposed interventions are:

The provision of a recreational green belt along the Steenhoven spruit with urban wetlands to control flooding.

A central mix use zone to accommodate economic and residential growth that continues the fine grain urban scale found in Marabastad.

A stormwater managing system weaving through the mix use zone that provides a series of green pockets throughout the urban fabric.

Pedestrian priority zones that allow for accessible and safe transition between the existing and proposed areas.

The provision of urban living rooms in the form of market spaces that also accommodate spaces for events and performances within pockets in the urban fabric.

4.3 Block Vision and Site Analysis

Looking within the Marabastad Jazz Park precinct a variety of occupants are found. The dilapidated site to the North of the park is occupied by an informal market, vendors and is used as an informal parking area. Other notable programs include religious sites such as the Marieamman Temple to the West and the Zion Christian Church (or ZCC) to the South, as well as a social aid centre to the east.

The geometry of the Park is derived from the pedestrian movement patterns across the site with small scale event spaces in between.

The park was constructed in 2008 as an investment into the community to stimulate economic and social growth. Revitalisation theory states that the initial investment into a community must be rather substantial to stimulate private community investment. The park however with good intentions, fell short of this requirement.

The new urban vision shows the centrality of the site to the existing areas of Marabastad, the new mix use developments and the green belt corridor. Vehicular traffic along the curved Bloed street and Grand street to the North is slowed down by a pedestrian priority zone which allows safe and accessible transition into the new expansions of Marabastad to the south.

Fig 4.10 Current condition of the proposed urban area for the block vision (Author 2020)

Fig 4.11 Current condition of proposed the urban area for block vision within the proposed urban framework (Author 2020)

Design Development

5

5.1 Programme

5.2 Precedent:

Ndlovu Miracle Theatre

Elandsdoorn, Mpumalanga

Situated 2hrs NE from Pretoria, in Elandsdoring, is the Ndlovu Miracle theatre, the home of the Ndlovu youth choir who achieved 10th place on America's got Talent in 2019.

This theatre complex is a community upliftment initiative by the Ndlovu Care Group and consists of an amphi-theatre, training rooms, a small re-cording studio, a multifunctional hall and administration quarters for various community focused functions.

The cherry on the cake is the owner-ship taken of the theatre complex by the community which is expressed in this image on the theatre's side wall, showing the handprints of the commu-nity members who built it.

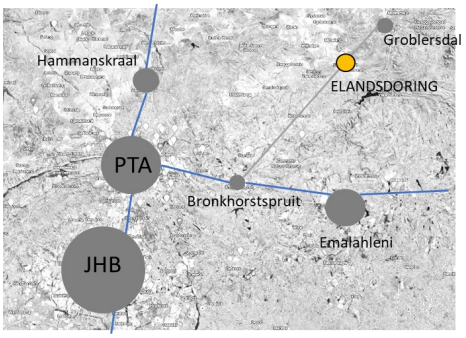


Fig 5.1 Macro-location (Author 2020)

Fig 5.2 Location in Elandsdoring (Author 2020)

Fig 5.3 Aerial view of complex (Google Earth: 2020)

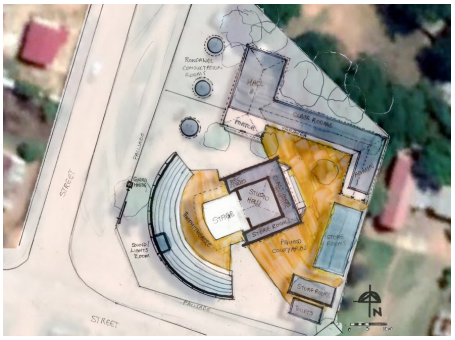


Fig 5.4 Zoning sketch of complex (Author: 2020)

Fig 5.5 Training rooms and courtyard (Author: 2017)

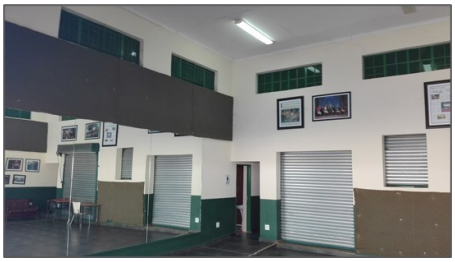


Fig 5.6 Main training studio / backstage (Author: 2017)

Fig 5.7 Amphitheatre (Author: 2017)

Fig 5.8 The Ndlovu Youth Choir on America's got Talent (_____)

Fig 5.9 Stage side wall (Author: 2017)

5.2 Design Informants: Articulation, Scale, Materiality

Architectural Expression in Marabastad

Fig 5.10 NE corner of Boom St and 6th St (Google Street View 2020)

Fig 5.11 SE corner Boom St and 8th St (Google Street View 2020)

Fig 5.12 NE corner of Boom St and 8th St (Google Street View 2020)

Fig 5.13 NE corner of Grand St and 7th Ave (Google Street View 2020)

Fig 5.14 New housing developments (Google Street View 2020)

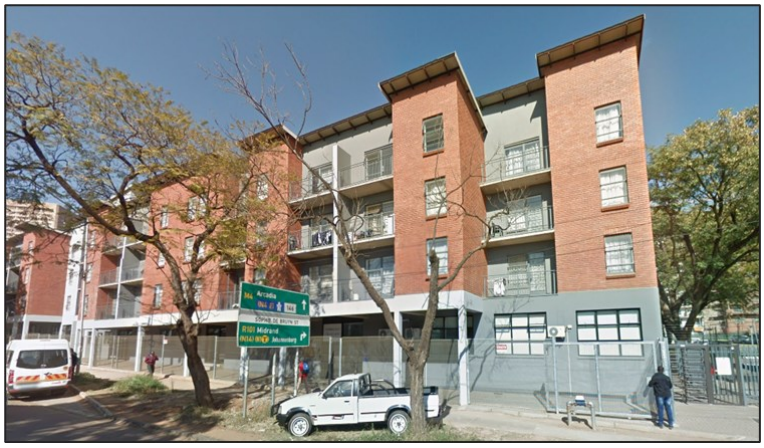


Fig 5.15 New housing developments (Google Street View 2020)

FINDINGS:

Partitioned façade articulation breaks the mass of blocks

Colourful natural and artificial materials

Mix use intent

Single storey	retail / residential
Double storey	mix use
Roof Gables	Stating presence
Columns	articulating entrances and covered walkways
Pitched roofs	(Mono & double) mostly steel, some tiles
Roof edges	Articulated as street edge.
Towers	landmark places of importance

Marabastad has a large variety of historical and culturally significant buildings. There is however an underlying design language that will inform the proposed intervention.

Most buildings have a more intimate scale on its street interface. Programmatic significant buildings are often articulated with roof gables or with a tower like appearance stating its presence. Entrances are also well articulated.

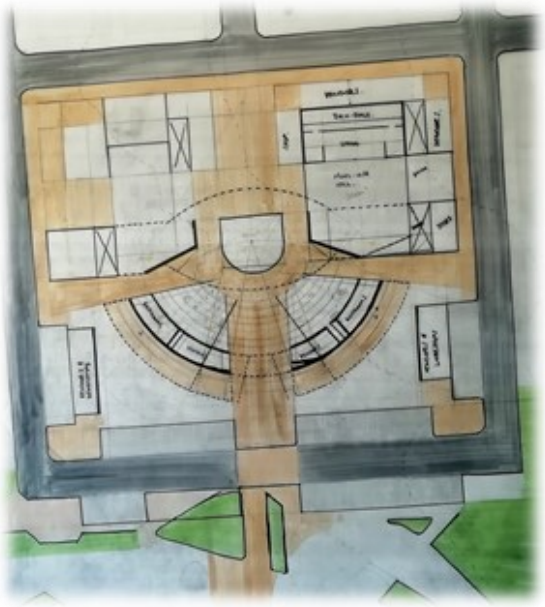
New housing developments are taking place in the area in accordance with the 2055 Vision for the City of Tshwane to provide affordable housing to low-income citizens. These new housing blocks are large in scale and mass yet have been articulated to suggest a continuous finer urban fabric. The use of local face bricks and vibrant paints adds warm and natural colours to buildings.

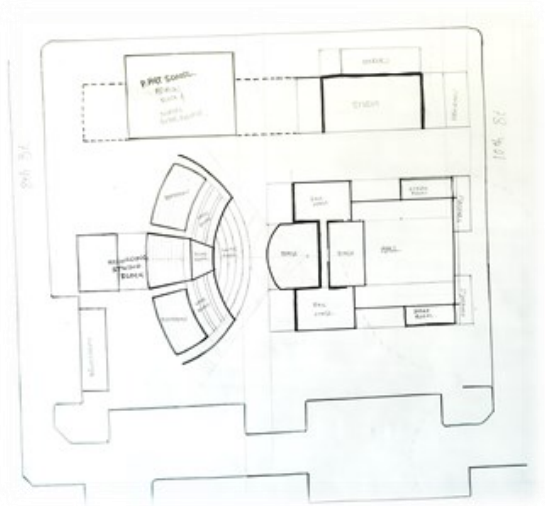
Fig 5.16 Religious sites (Google Street View 2020)

5.3 Early Design Development

The early design exploration investigated the possible architectural intervention as a landmark destination precinct that would anchor the edge of Marabastad as it transitions into the larger city blocks of the CBD. The design made use of axial influences to determine zoning of programmes and the accompanying spaces so to make this precinct part of the larger city landscape.

The design provides spaces for indoor and outdoor performance, performed arts training and support facilities to the free market typologies prevalent in Marabastad.





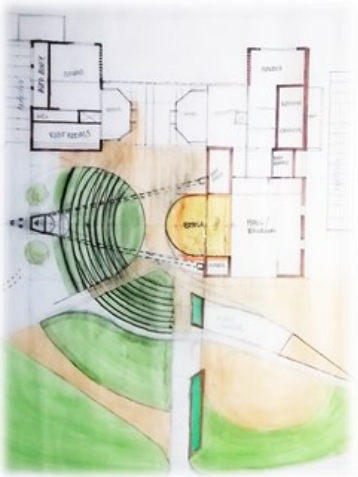


Fig 5.17 Early design sketches (Author 2020)

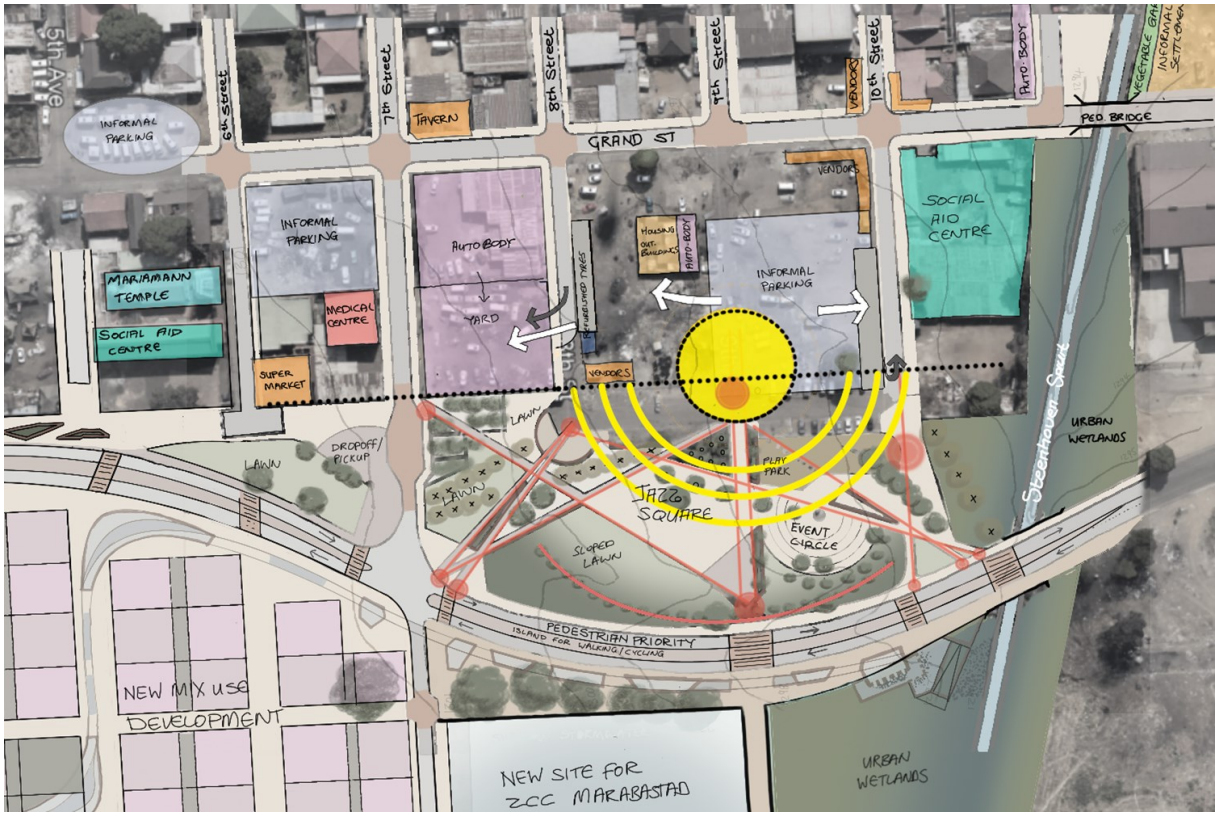


Fig 5.18 Introduction of new programme (Author 2020)

This image shows the insertion of an event-based program that radiates into the park. Vehicular traffic is diverted around the site and parking moved to the periphery.

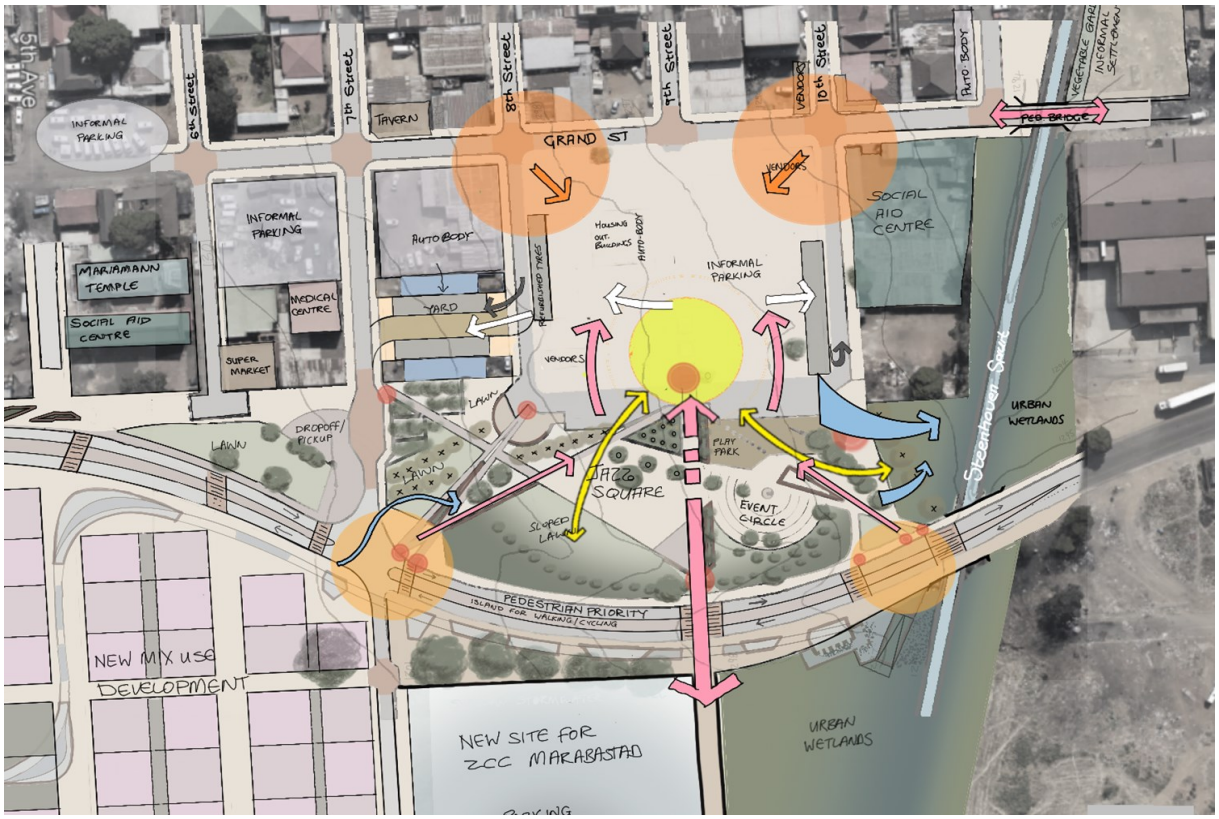


Fig 5.19 Spatial interaction (Author 2020)

Spatial interaction: The North South axis of the green belt promenade will be landmarked by the inserted event space. Street corners are expanded into plazas to draw vendors on the periphery into the site. The storm water filtration network is accessed to create interaction with this resource in the park. Storm water from the site is filtered on site with the excess being contributed to the green belt system.

5.4 Initial Architectural Intervention

Being a destination space at the end of the green belt promenade the design aims to provide a back-drop against which events can take place. The design also acts as a transition space between the fine grain of the existing and proposed new areas of Marabastad and the CBD.

The promenade ends off in a grass amphitheatre that steps down into the site, overlooking the stage and central block that becomes a new landmark in the city. The central block houses the facilities for the Performed arts such as the stage, studios, music chambers and multi-function hall. To the sides the form steps down to a street scale that provides public amenities and access to the Performed arts centre. Towards the north smaller blocks that are separate from the main building respond to the fine grain of Marabastad, creating courtyards and plazas within the urban landscape. These smaller blocks are programmed for retail and semi-formal markets to further develop the entrepreneurship present in Marabastad.

Finally, the precinct is woven together by a series of small urban wetlands and waterways, making this resource available to the community before it becomes part of the larger water management scheme of the city

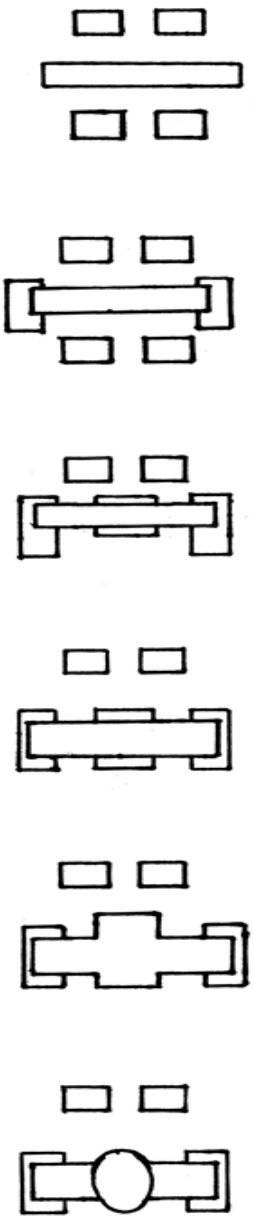


Fig 5.20 Early design: Diagrammatic massing development (Author 2020)

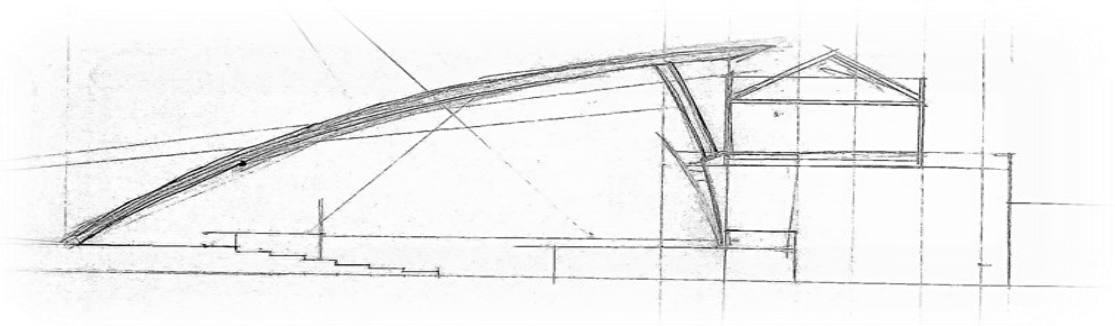


Fig 5.21 Early design: Diagrammatic section of proposed intervention (Author 2020)

Fig 5.22 Early design: Isometric drawing of proposed intervention (Author 2020)

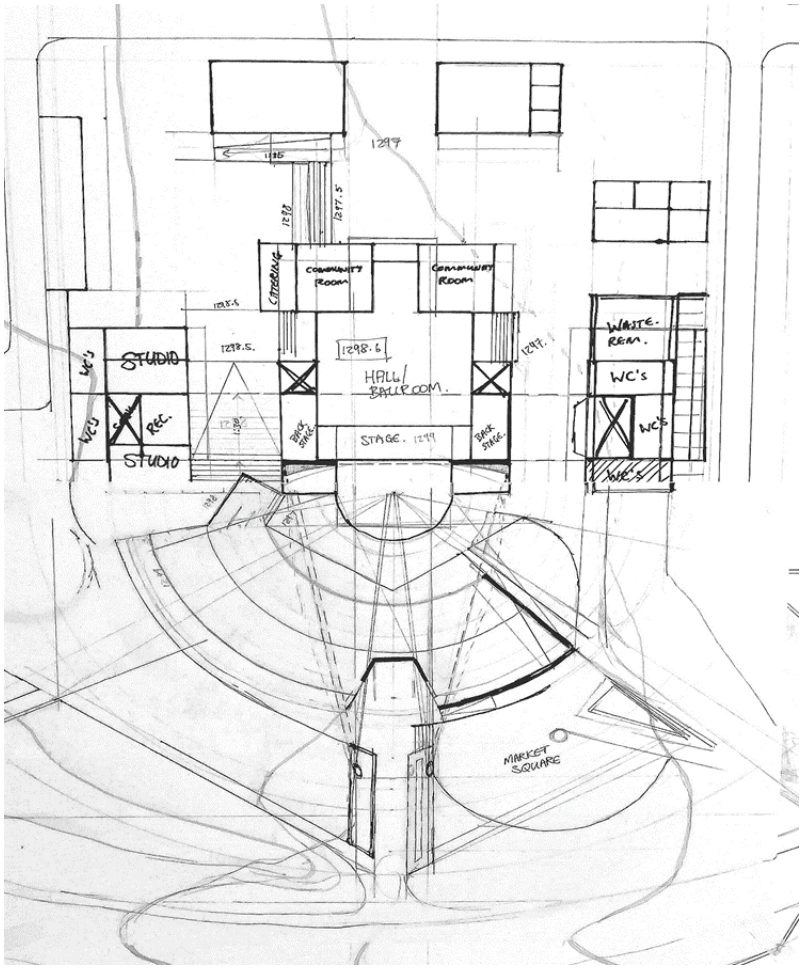


Fig 5.23 Early design: Plan diagram of proposed intervention (Author 2020)

Reflection

The intervention appears to be too large in scale compared to the fine grained fabric proposed for the development of Marabastad.

There might be stronger opportunities in working closer to the Steenhoven Spruit, making the water source part of the design.

A smaller, perhaps more fragmented design could present opportunities for stronger user orientated and context sensitive outcomes.

The Jazz park is already well occupied and it won't be necessary to make changes to it, but rather to compliment it with a continuation of the urban edge.

The intervention should attempt to mediate the strong urban boundaries presented by the roads and channelised river.

5.5 Design Informants: Users, Activities, Urban Heritage

The design will be informed by the activities on and around the site, being predominantly commuters and pedestrians moving through the area with informal markets lining these routes. These activities and entrepreneurial energy is what will be supported in the architectural intervention.

The urban energy is investigated by mapping the flow of pedestrians and street markets both in the existing condition and predicting such within the proposed urban framework.

The flow of pedestrians and the position of the natural environment is also investigated to determine where and how their interaction might be facilitated.

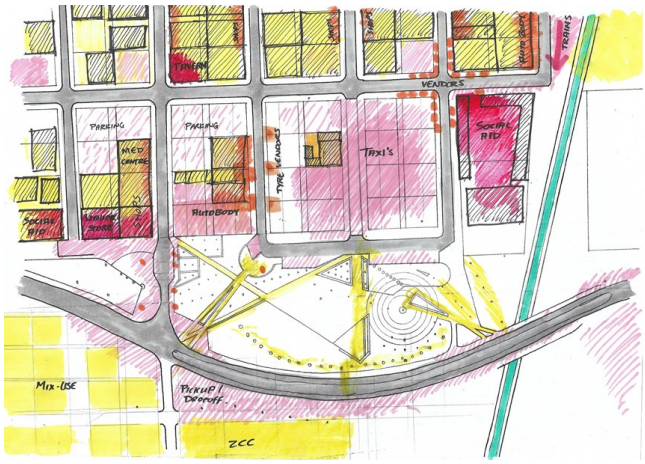


Fig 5.24 Energy Mapping of activities (Author 2020)

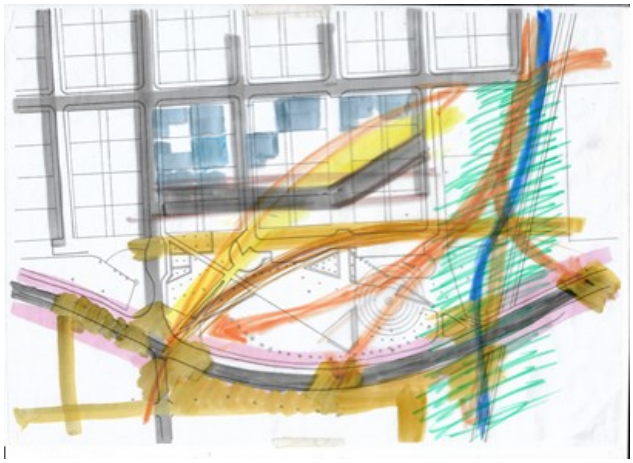


Fig 5.25 Movement mapping (Author 2020)

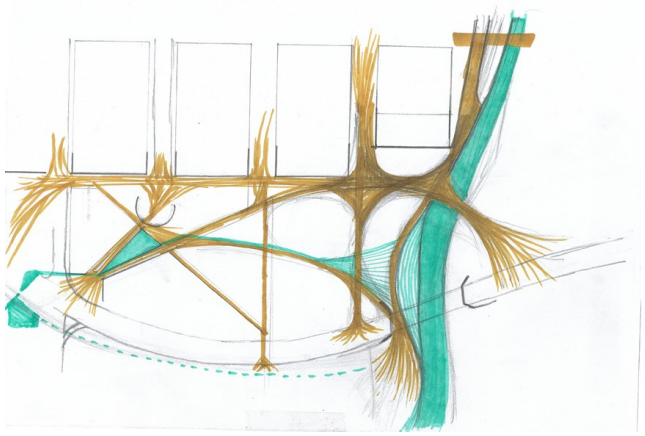


Fig 5.26 Flow of pedestrians & Water (Author 2020)

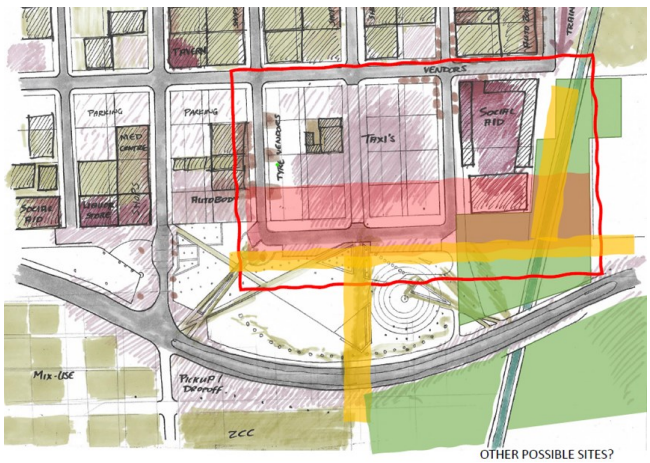


Fig 5.27 Proposed pedestrian promenades (Author 2020)

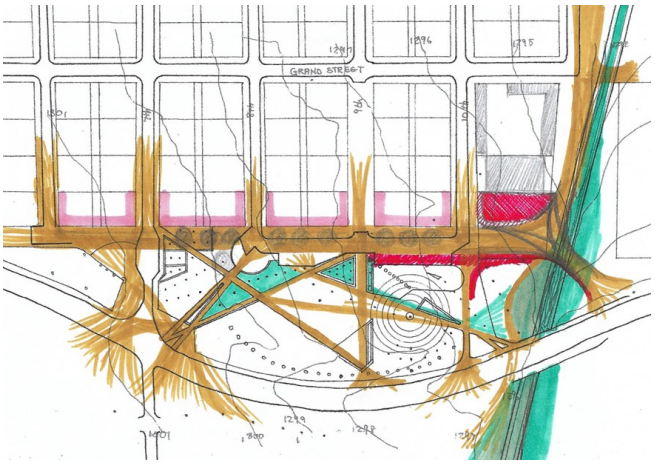


Fig 5.28 Proposed urban edge (Author 2020)

Fig 5.29 Spaces of gathering and movement (Author 2020)

Fig 5.30 Proposed pedestrian promenades (Author 2020)

Fig 5.31 Possible areas for architectural interventions (Author 2020)

Informants: Vendors

Vendors in Marabstad

Fig 5.32 Vendors in Marabastad (Google Street View 2020)

Vendors in Marabastad make use of temporary and permanent infrastructure to occupy the streets of Marabastad, selling goods of every kind

Diagrammatic street sections showing occupation

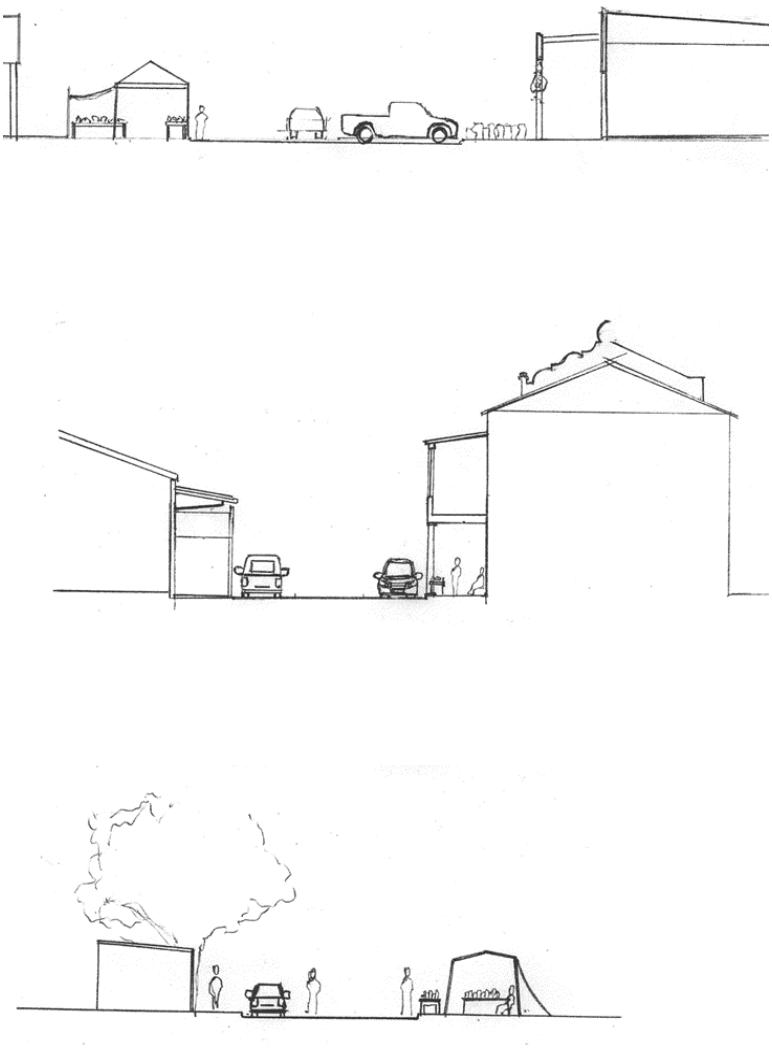


Fig 5.33 Diagrammatic street sections showing occupation (Author 2020)

Precedents for intervention

Formalised vendor stalls around the world

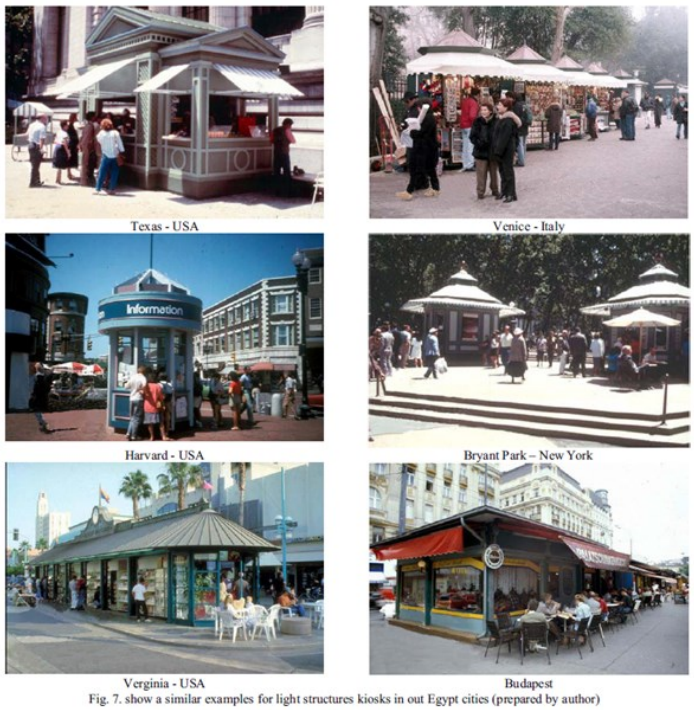


Fig. 7. show a similar examples for light structures kiosks in out Egypt cities (prepared by author)

Fig 5.34 Formalised street vendor stalls around the world *(El Fayoumi 2017)*

Watershed: CPT Waterfront

Mix use arket and corporate intervention

Fig 5.35 Watershed CPT Waterfront (_____)

Fig 5.36 Urban Heritage: Boom Street (Google Street View)

Bloed street is one of the few remaining streets to contain buildings that date back to pre-apartheid times and has therefor been declared a heritage site to retain the aesthetic of the era. This gives precedence for other areas in the city to celebrate its historical heritage and perhaps the collective heritage of the community.

5.6 Design Concept

[Background & Context] Marabastad, the North Western gateway to the CBD, is a vibrant community with a variety of peoples and cultures. The urban fabric consists of a fine grain mix-use (retail and residential) typology that is heavily plagued by the scars of apartheid and neglect.

The 2055 vision for the City of Tshwane requires the sustainable development of communities within Tshwane, providing public access to the city's natural resources, public amenities, and recreation facilities along with affordable housing within the identified nodes for all income groups. As part of this vision, some large-scale housing developments for lower income citizens have started to take place to the south of Marabastad, which provides the opportunities for investment into the development of the dilapidated areas. These developments however lack quality of the living spaces of higher income residential suburbs and rely heavily on the public realm to facilitate recreation and leisure.

[General Issue] The development of urban communities that are environmentally responsible, economically sustainable, and socially cohesive.

[Urban Issue] Marabastad is physically segregated from the neighbouring CBD by high speed multi-lane roads and rigid stormwater systems that was built for this purpose. With high density residential developments taking place in the area, the need for spaces that facilitate social and economic activities arises to ensure the sustainable development of the local community.

[Architectural Intent] The intention of the architectural solution is to mediate the boundaries between the expected redevelopment of Marabastad and the Pretoria CBD. Pedestrian routes are developed through the addition of infrastructure to facilitate new public leisure and recreation activities as well as the existing informal markets along these routes. The architecture should act as precedent for the expected developments, stimulating a contemporary architectural identity for Marabastad grounded in sustainability

Fig 5.37 Mediating the urban boundaries of Marabastad (Author: 2020)

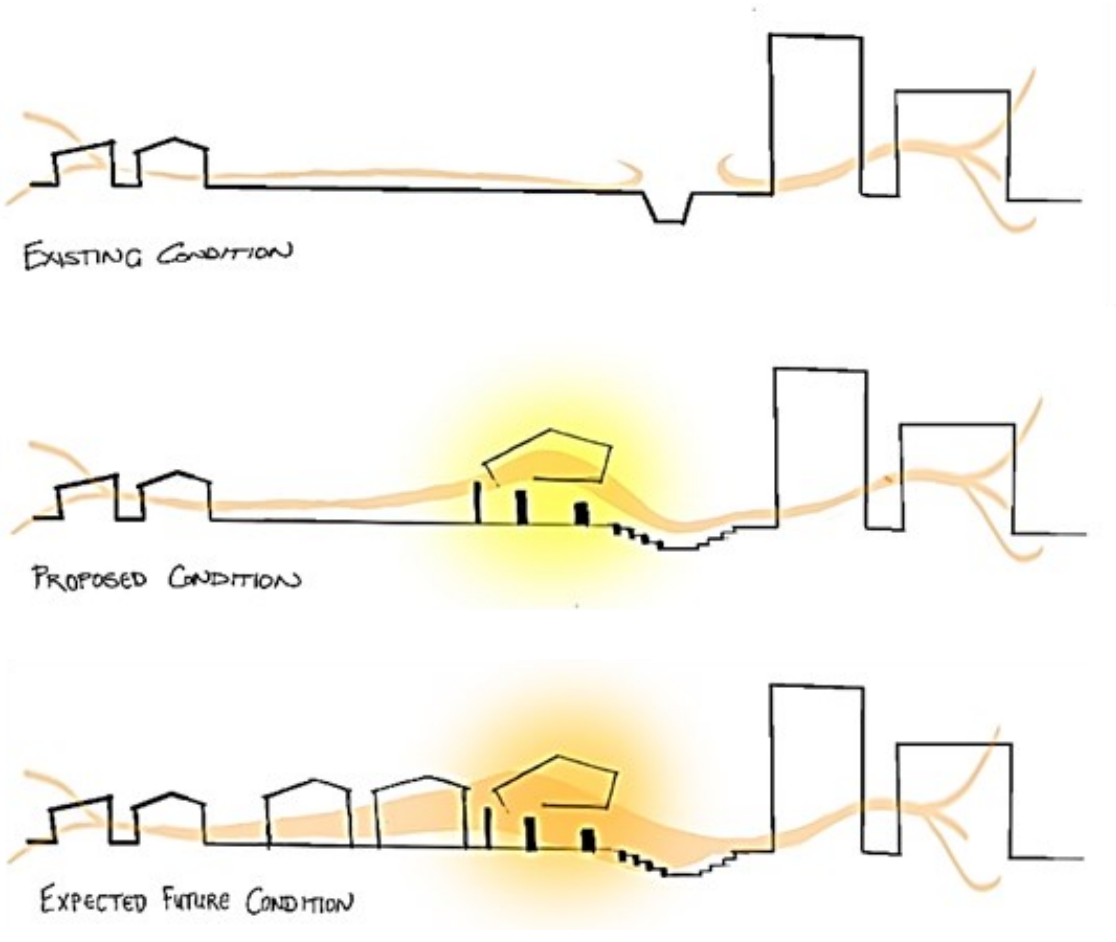


Fig 5.38 Conceptual design section (Author: 2020)

5.7 DESIGN ITERATIONS

The design is informed by the activities around the site, being predominantly commuters and pedestrians moving through the area with informal markets lining these routes. Two buildings forming the edge of the east west pedestrian promenade along the northern edge of the Marabastad Jazz park form the premise for the intervention. In both buildings the roof is explored as an element that can shelter public programmes and accommodate the private realm.

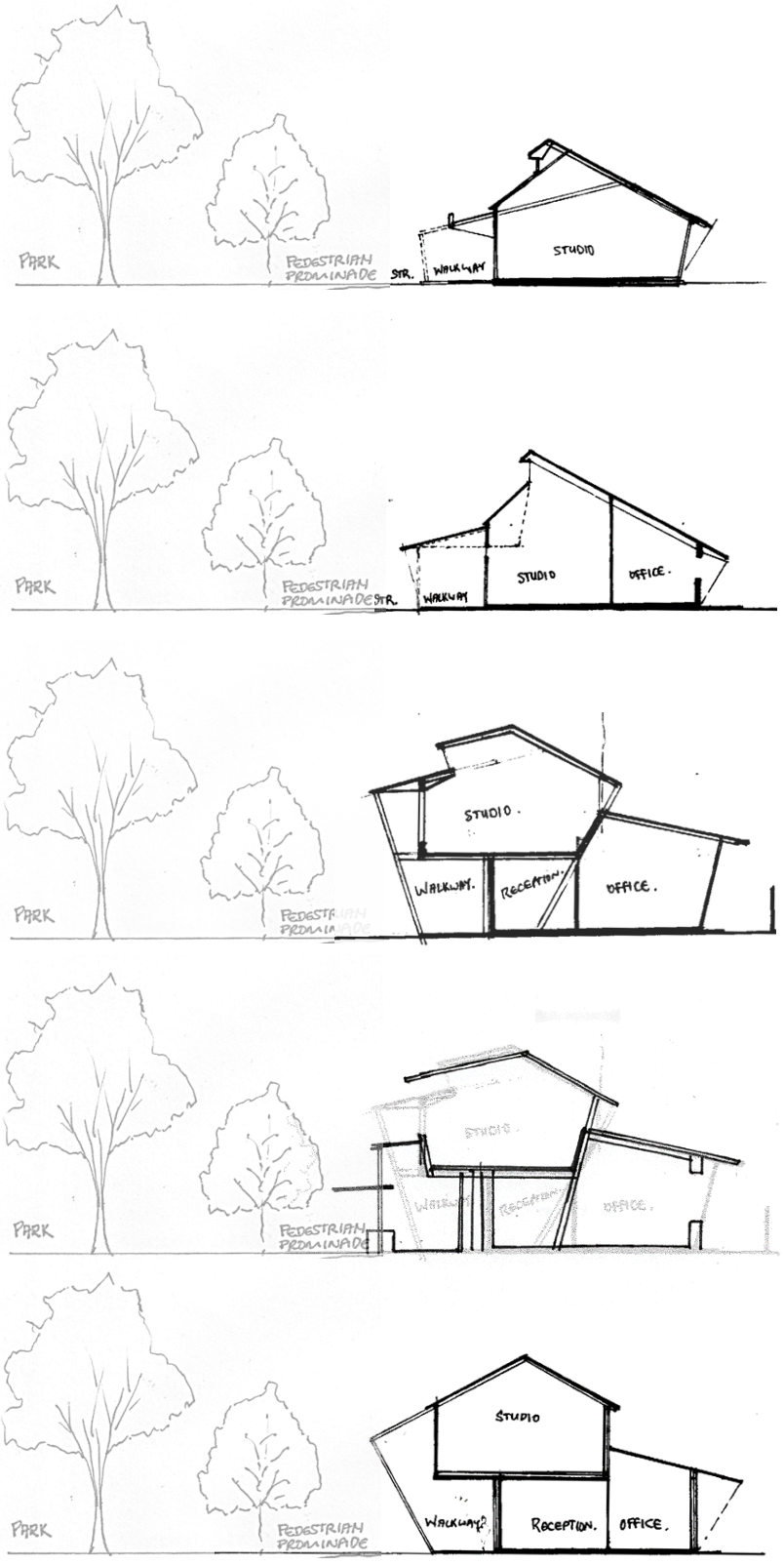


Fig 5.39 Section Development of Performed Arts Building (Author 2020)

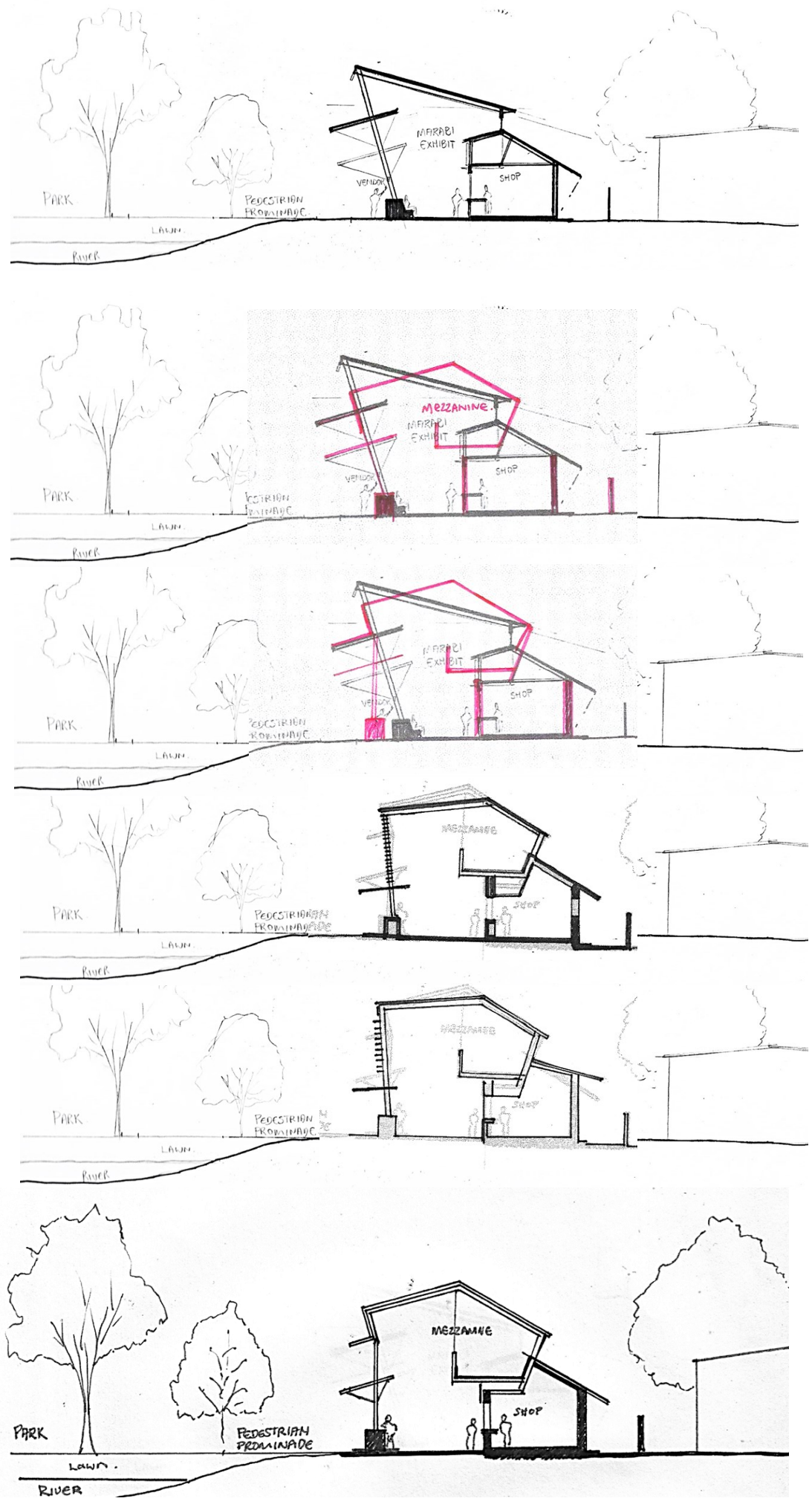


Fig 5.40 Section Development of Market building (Author 2020)

Design Iteration Stage 2

The design is informed by the activities around the site, being predominantly commuters and pedestrians moving through the area with informal markets lining these routes. Two buildings forms the linear edge of the east-west pedestrian promenade along the northern edge of the Marabastad Jazz park. In both buildings the roof is explored as an element that can shelter public programmes and accommodate the private realm.

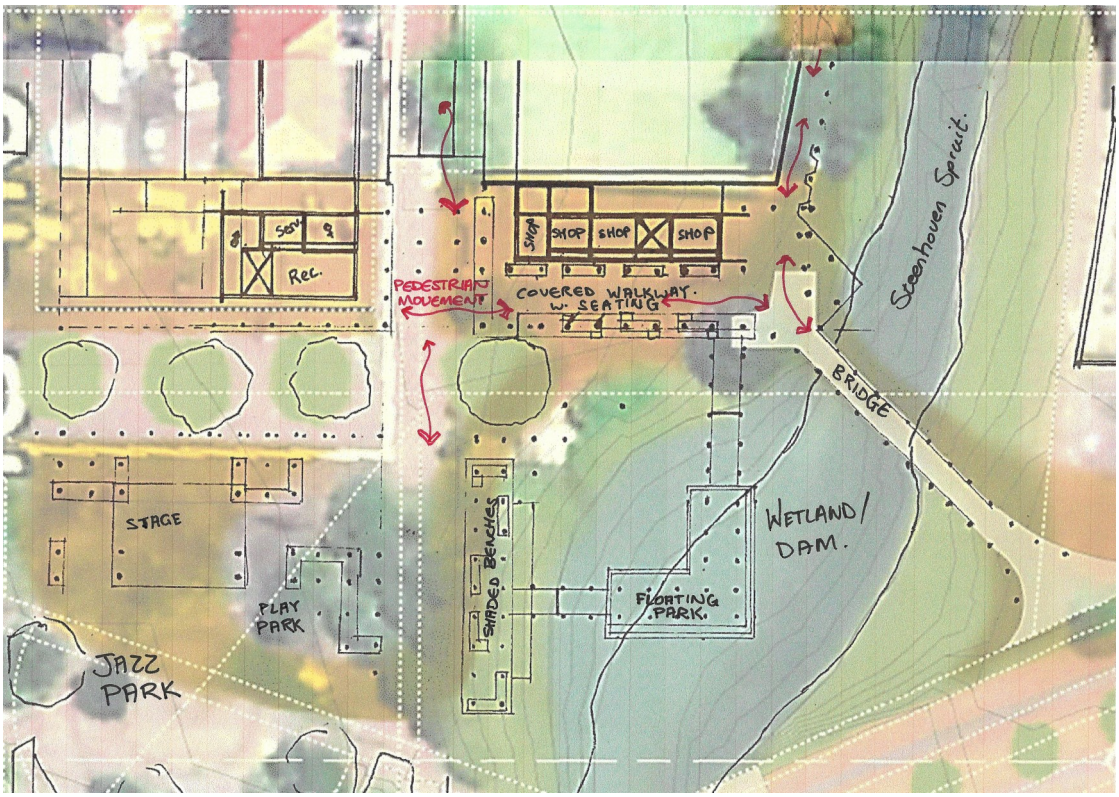


Fig 5.41 Ground Floor Plan (Author 2020)

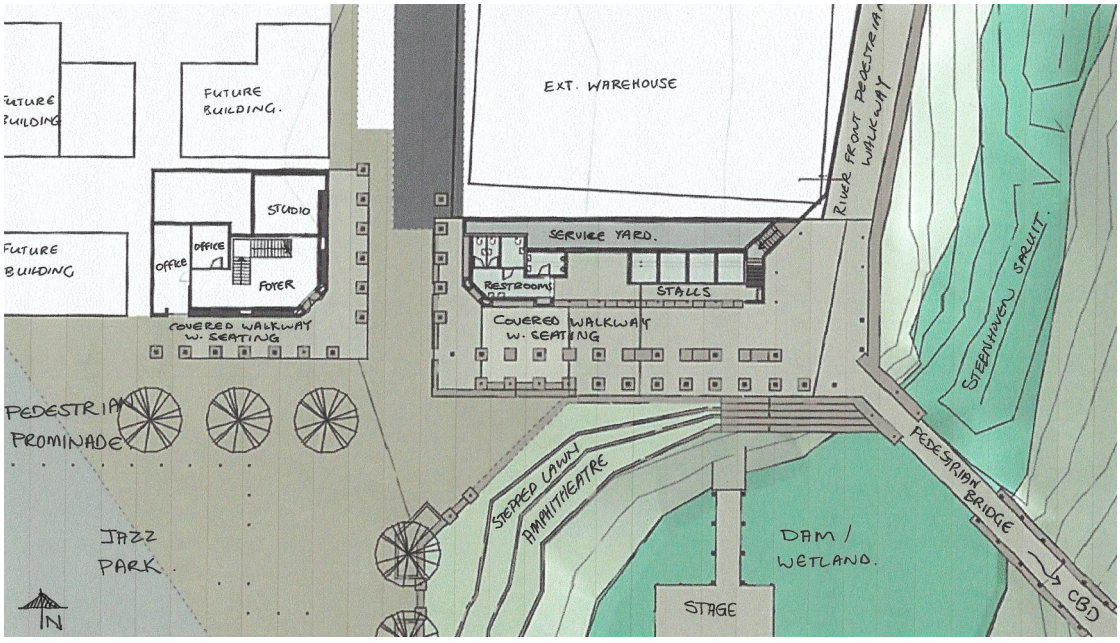


Fig 5.42 Ground Floor Plan (Author 2020)

The site around the Steenhoven spruit is manipulated to form a stepped lawn amphitheatre with a stage within a dammed portion of the river. In this way the water sources of the city are activated by making it safely accessible to the community. The market building (on the right in Fig 5.43) start to provide shaded lingering opportunities through raised column footings that doubles as seating overlooking the water and park.

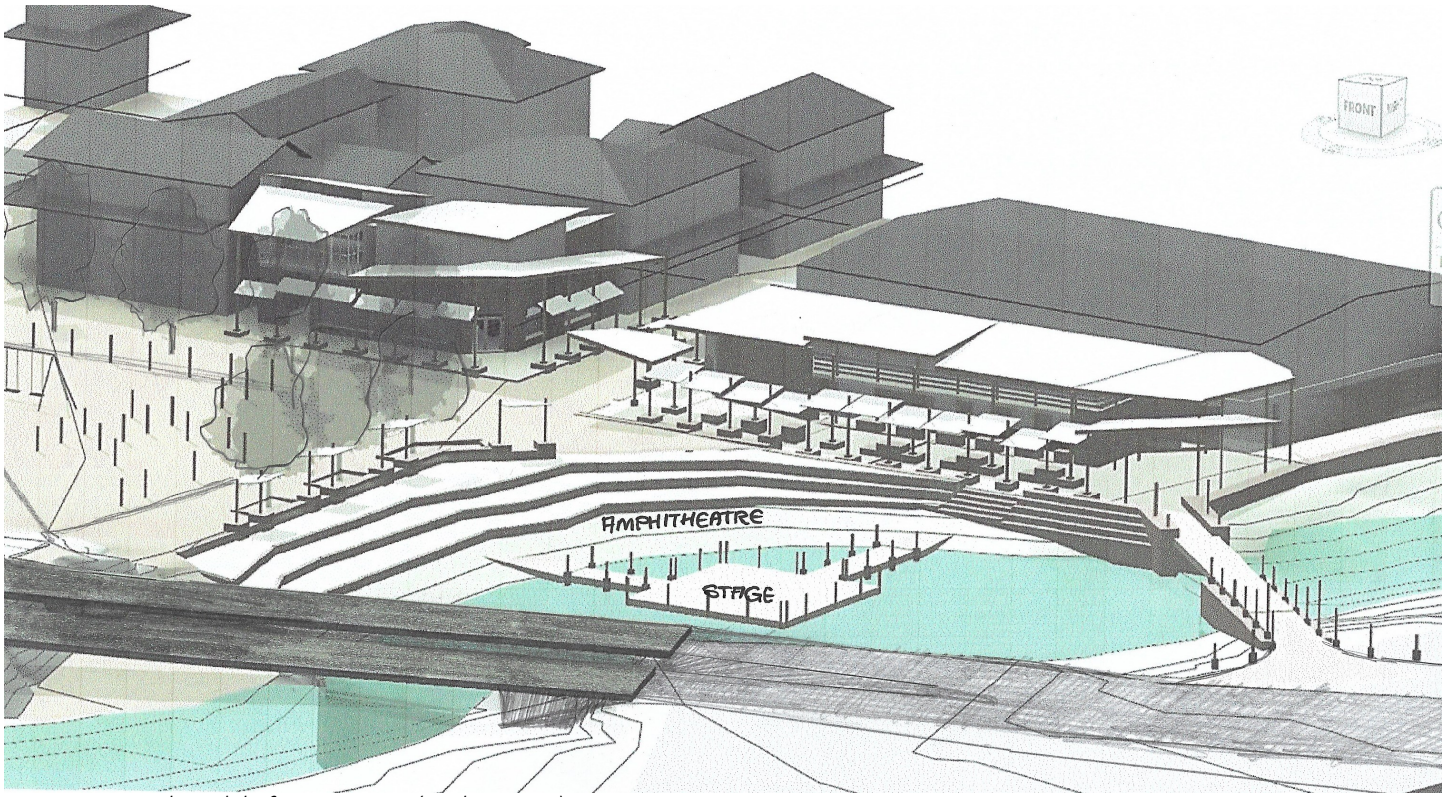


Fig 5.43 Digital Model of intervention (Author 2020)

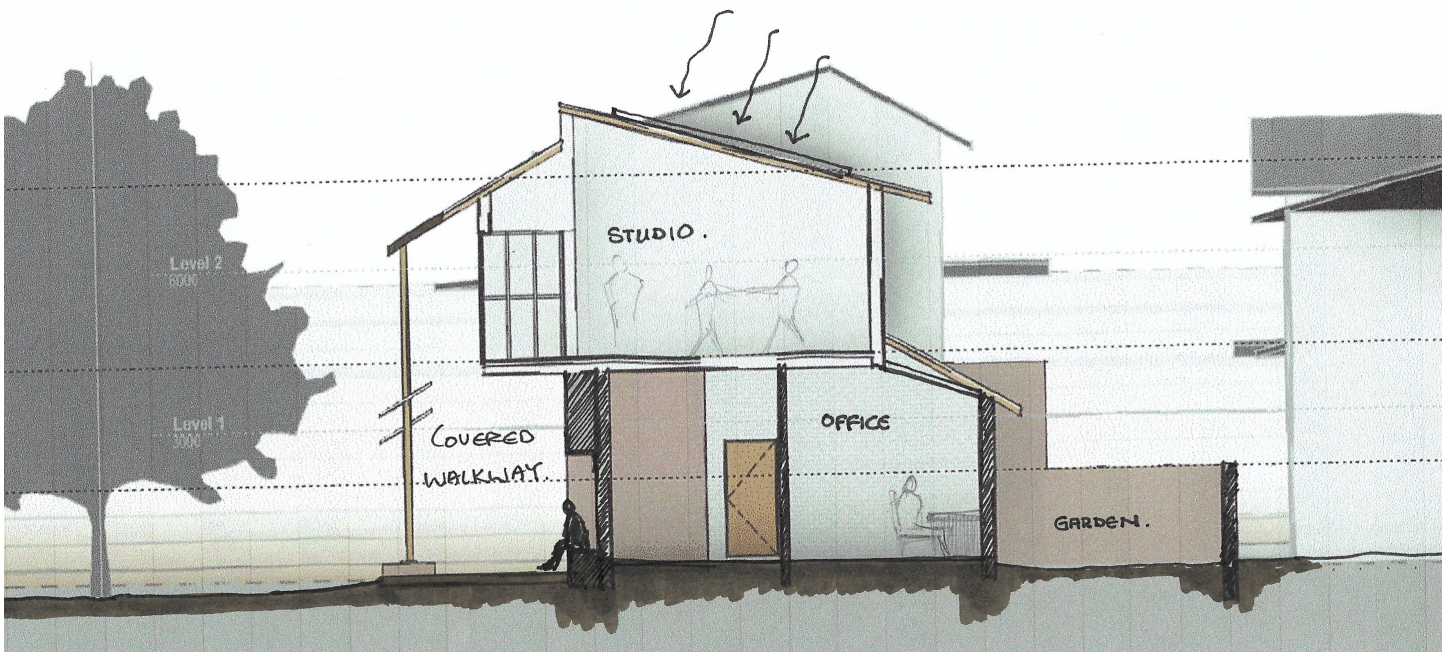


Fig 5.44 Section Development of Cultural Practices Building (Author 2020)

Design Iteration Stage 3

The adjacent buildings are re-envisioned to be pushed back, generating more depth on plan for the Market building. The Pedestrian routes around the building informs the plan, so that a court yard is created where various forms of lingering can take place with easy access to vendors and amenities.

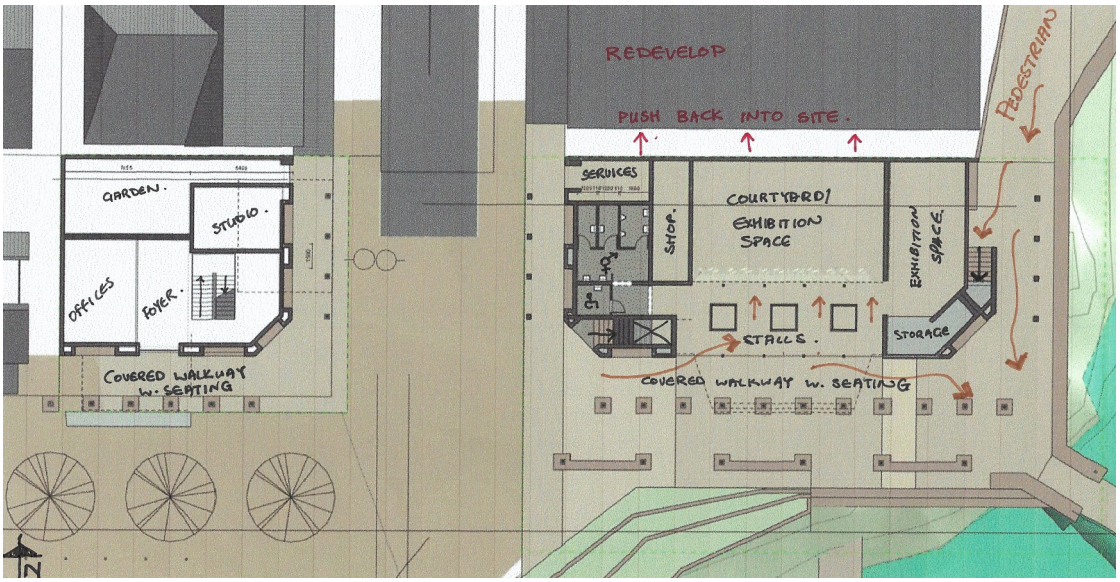


Fig 5.45 Ground Floor Plan (Author 2020)

The first floors of both buildings provides views from the interior spaces into the landscapes of the adjacent parks. The programmes on the upper levels are more intimate in nature, like studios for training and café seating away from the buzz of the pedestrian prominades.

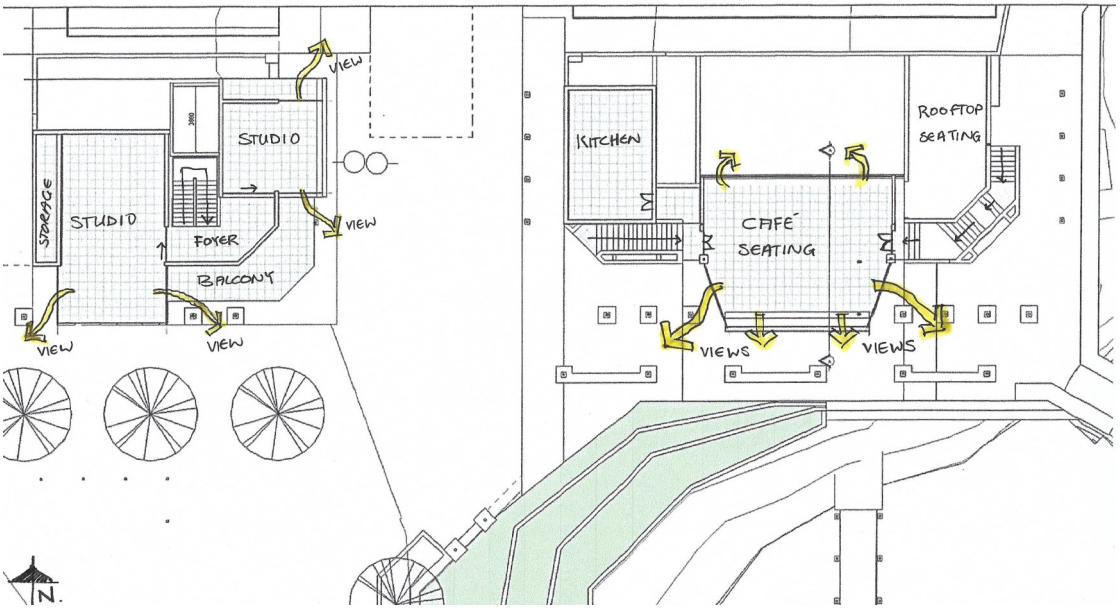


Fig 5.46 Ground Floor Plan (Author 2020)

The roofs are redeveloped and simplified to create simple articulated spaces in the private and public realms. This also provides a profile for adjacent future developments to respond to.

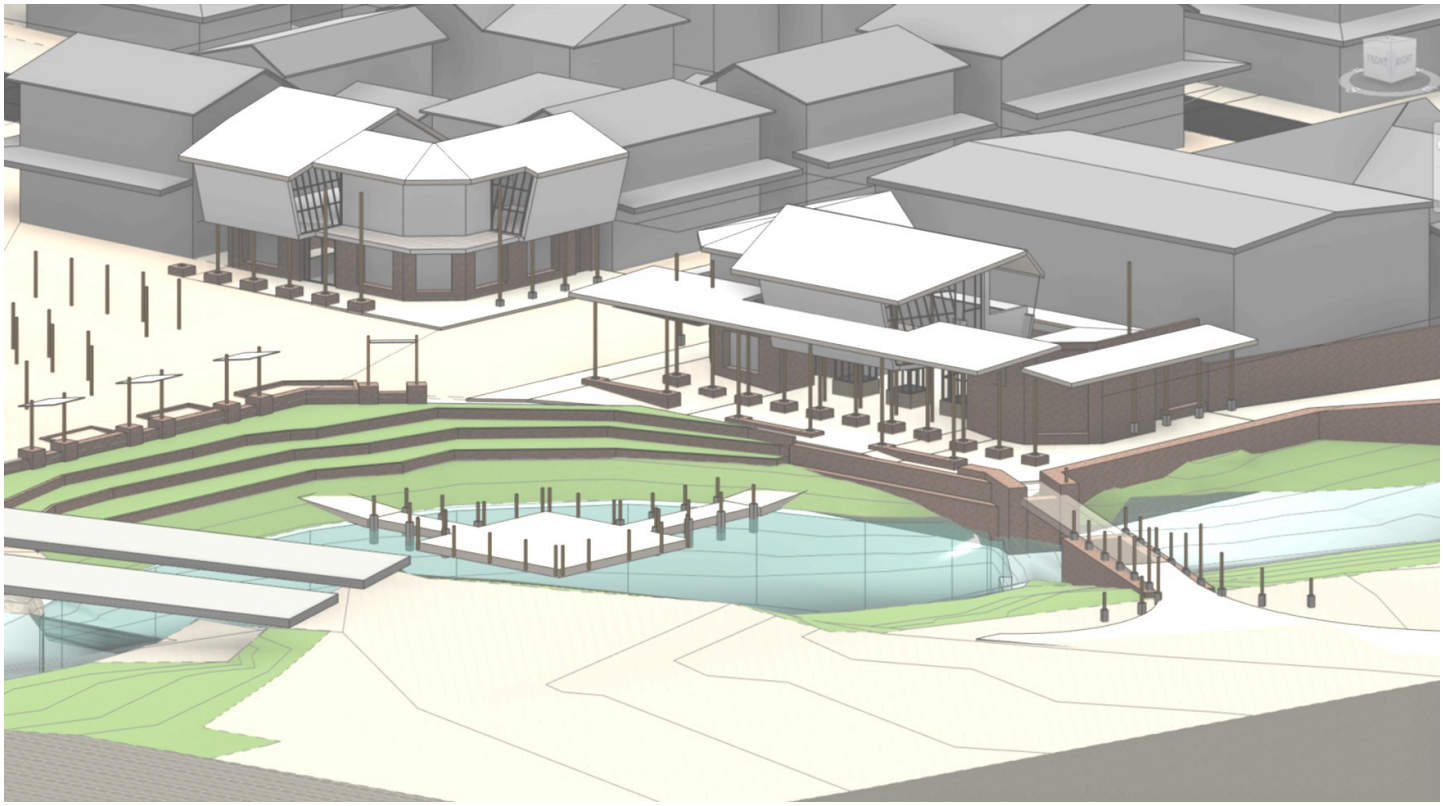


Fig 5.47 Digital Model of intervention (Author 2020)

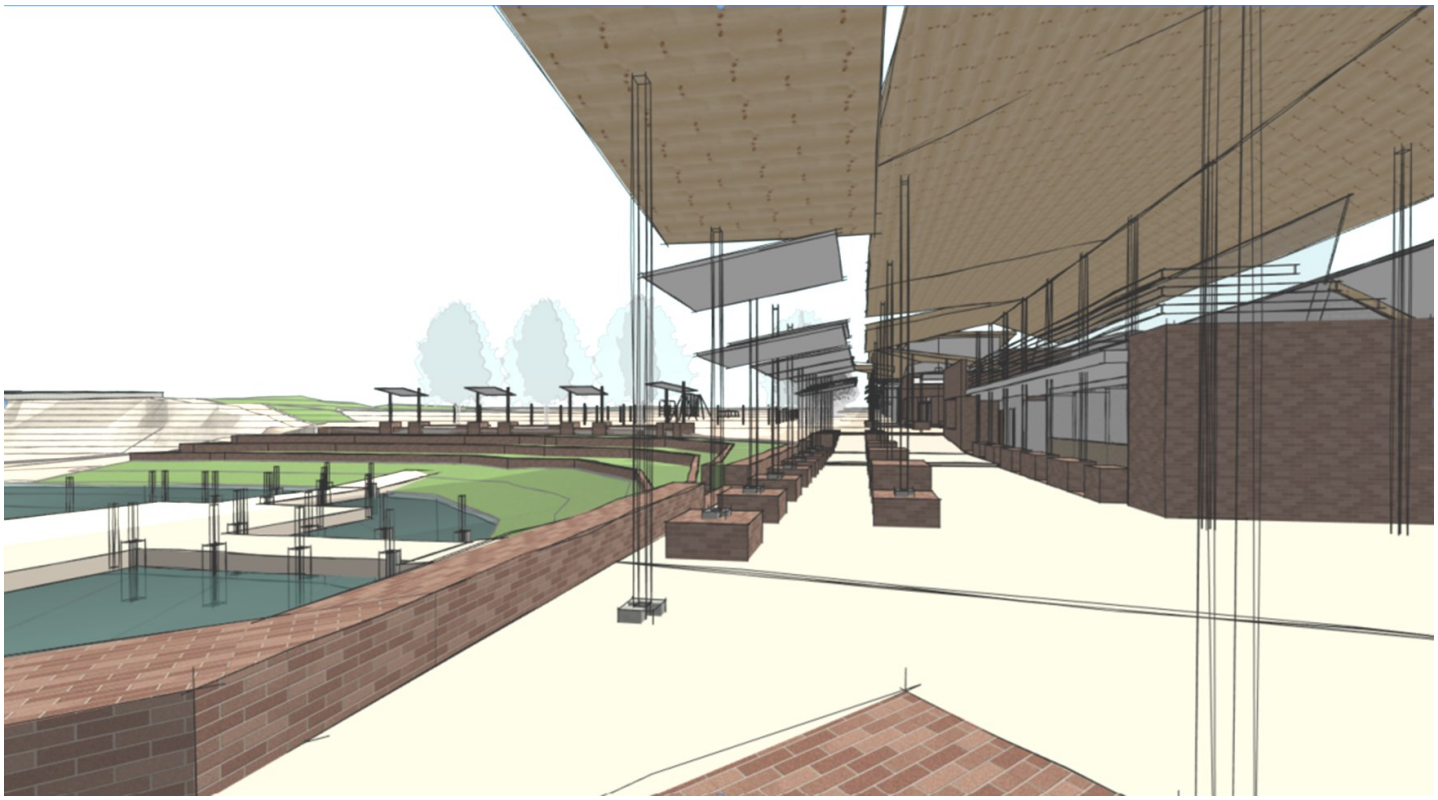


Fig 5.48 Pedestrian view along Market building's covered walkway (Author 2020)

Design Iteration Stage 4

The market building's ground floor recedes as one moves closer to the river, which creates opportunities for pedestrians to filter through the steel columns. Temporary markets can also now be assembled in this free plan with possible temporary infill structures being supported by the framed structure and free plan.

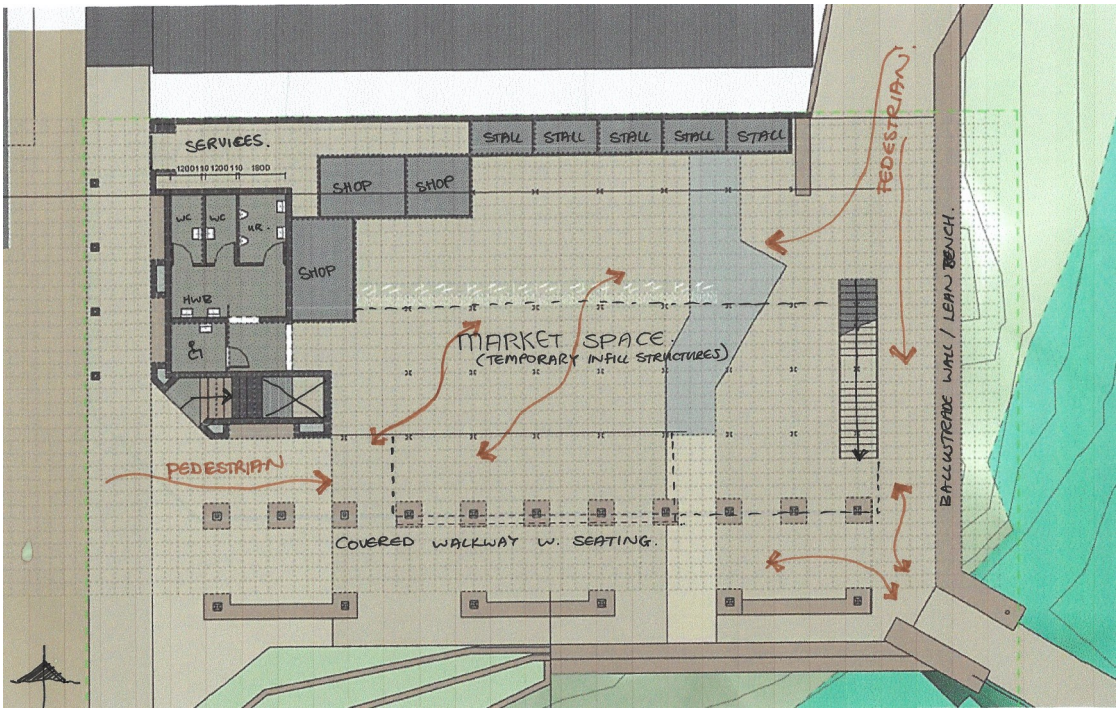


Fig 5.49 Ground Floor Plan of Market building (Author 2020)

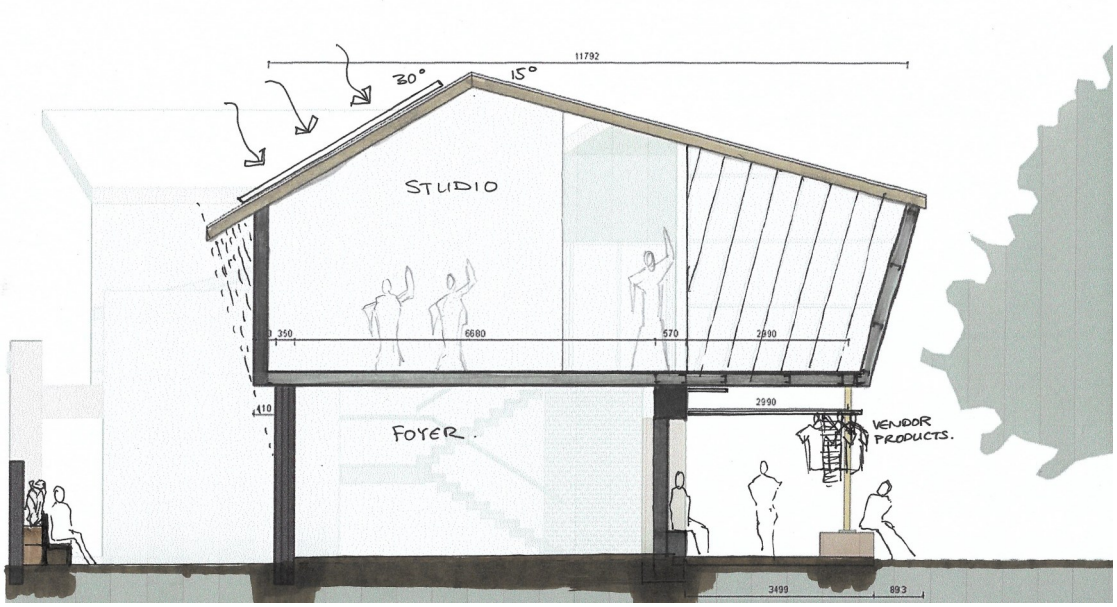


Fig 5.50 Section Development of Cultural Practices Building (Author 2020)

The roof slopes of the buildings provide opportunities for solar energy harvesting, while creating large interior volumes suitable for training in the performed arts. The steel construction of the first floor is able to form a frame with the walls and roof, creating a habitable truss. The supported overhang of the building provides shelter to pedestrian and vendors along the walkways

Courtyard like spaces start to form between the receding ground floor and the 'floating' first floor of the market building

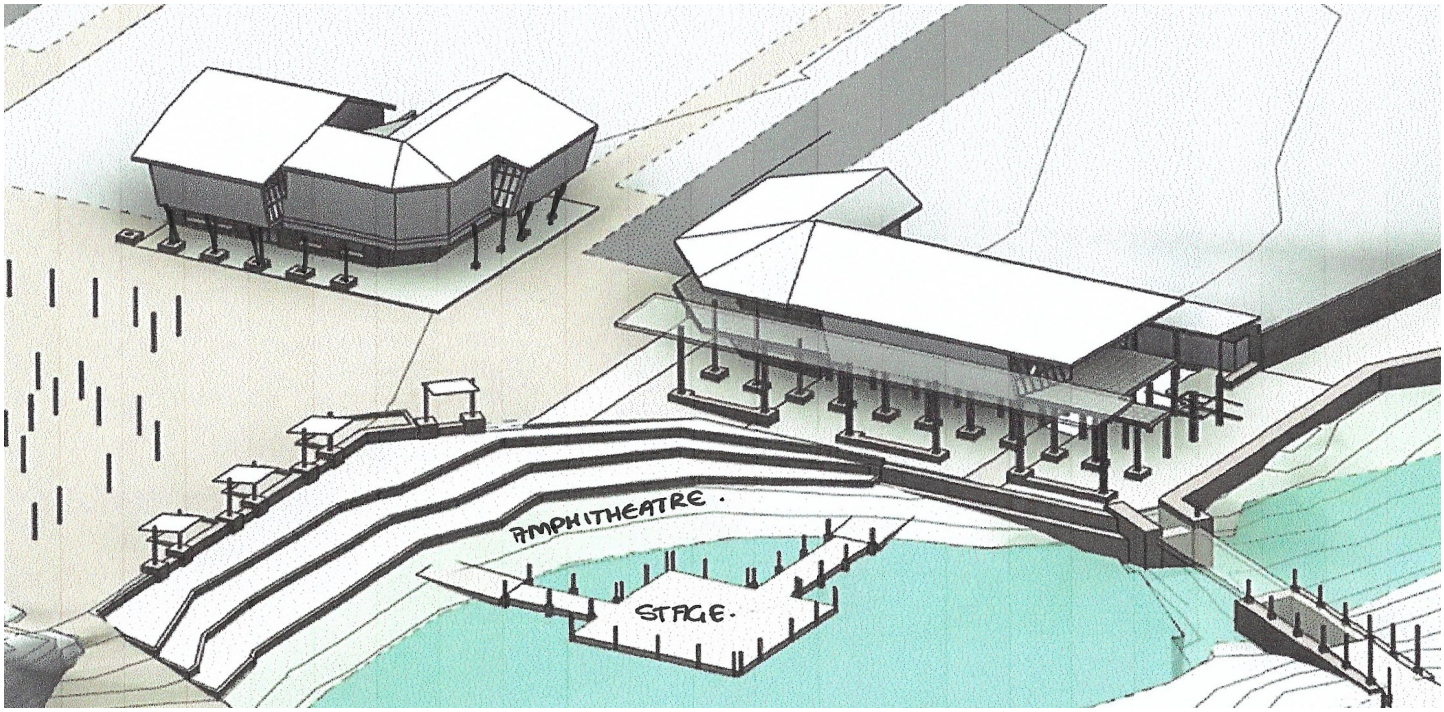


Fig 5.51 Digital Model of intervention (Author 2020)

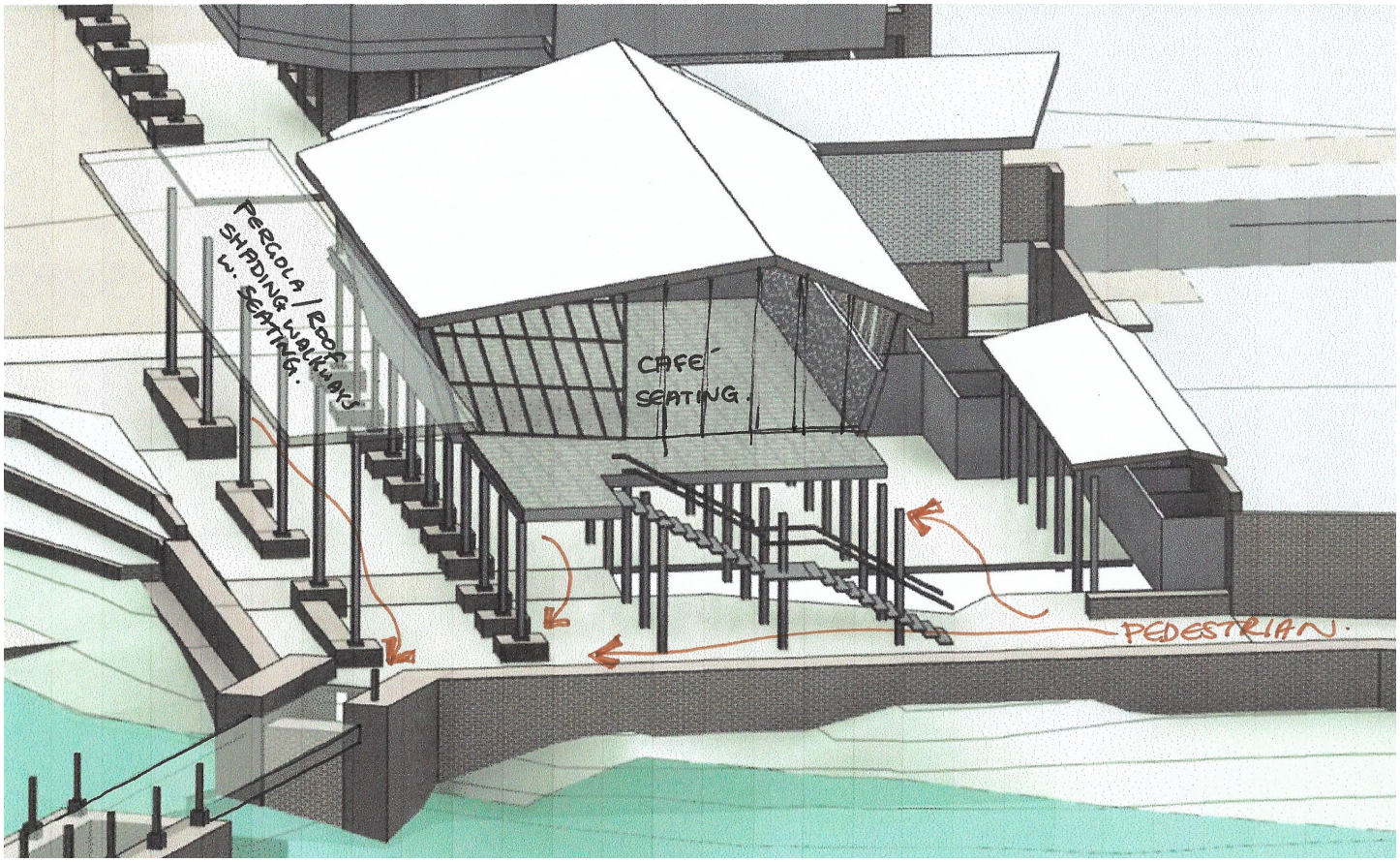


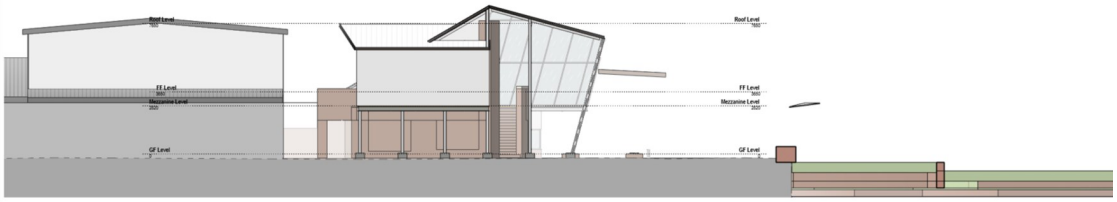
Fig 5.52 Digital Model of Market Building (Author 2020)

Final Design Iteration

The roofs are further simplified so that a cohesive aesthetic may be achieved.
The scale of the buildings provide a suitable scale to be followed by further development of the area.

Walls of brick, roofs of steel paved walkways continue the existing materiality of Marabastad and the way materials are use, however the design adds a contemporary layer to way these materials are assembled to form habitable spaces.

Street Elevation of Cultural Practices Building



Street Elevation of Market Building

South Elevation: From Park

Fig 5.53 Elevations of Intervention (Author 2020)

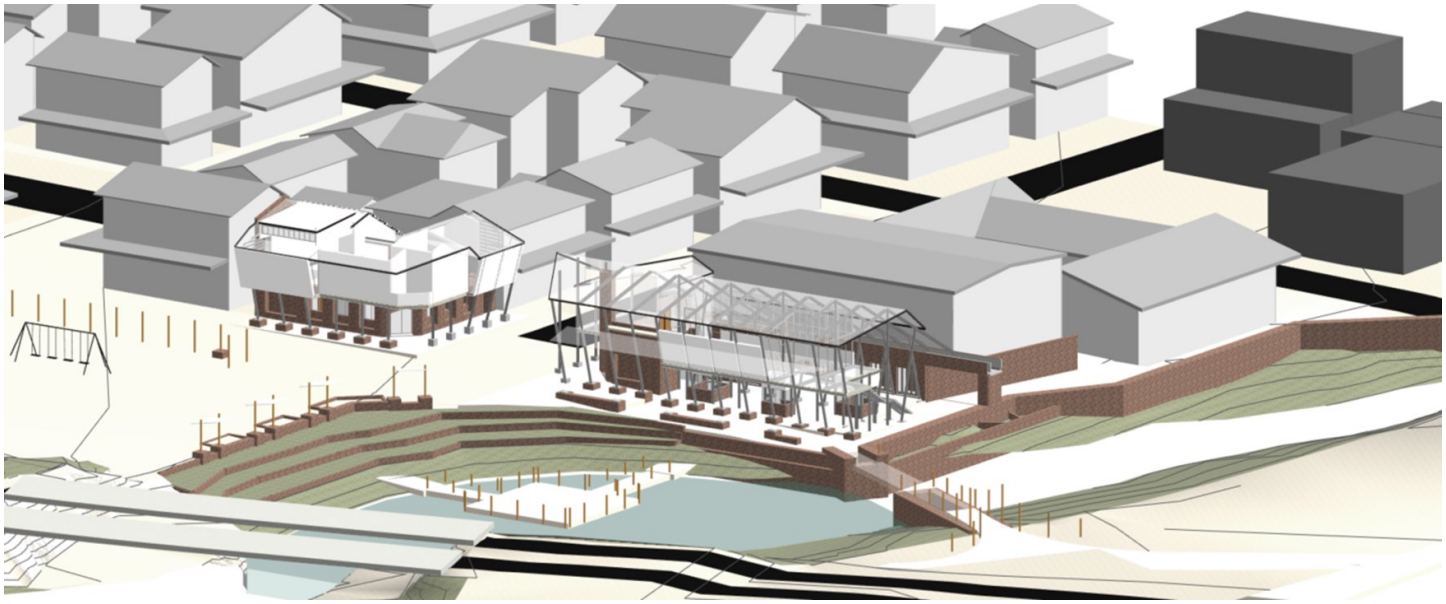


Fig 5.54 Digital Model of Intervention (Author 2020)

In the image above, it is important to note that none of adjacent buildings are existing, and is merely a massing proposal of how these sites could be developed

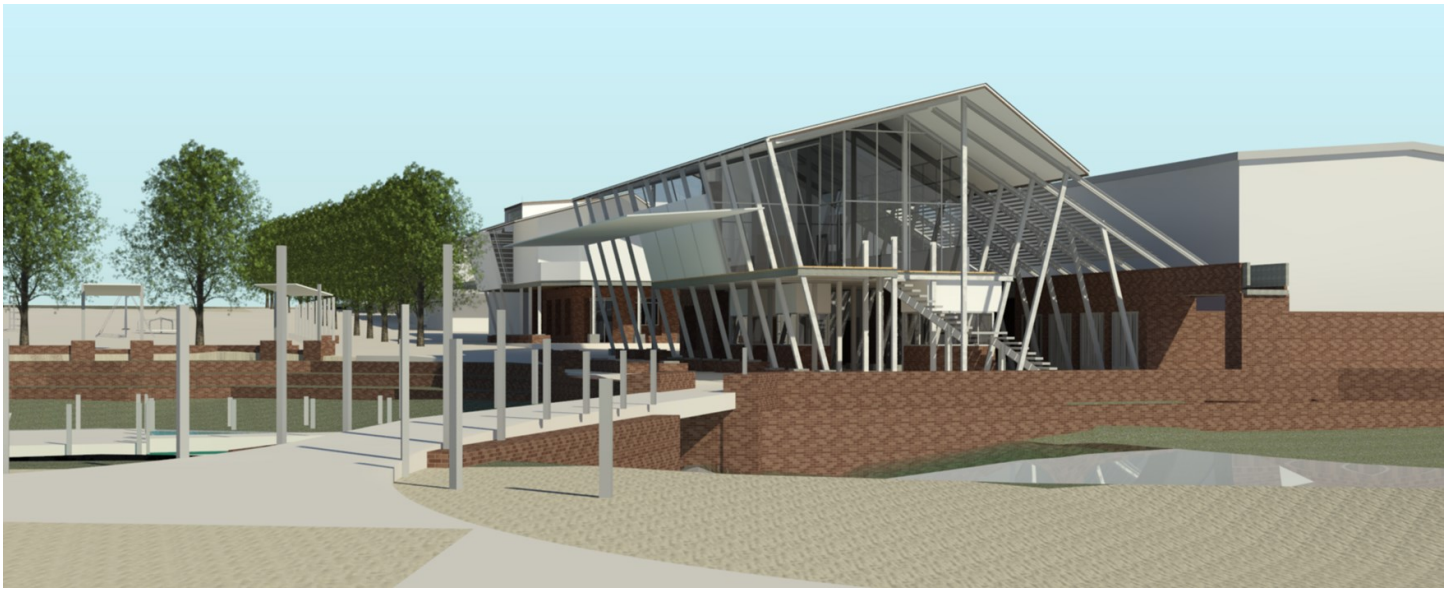
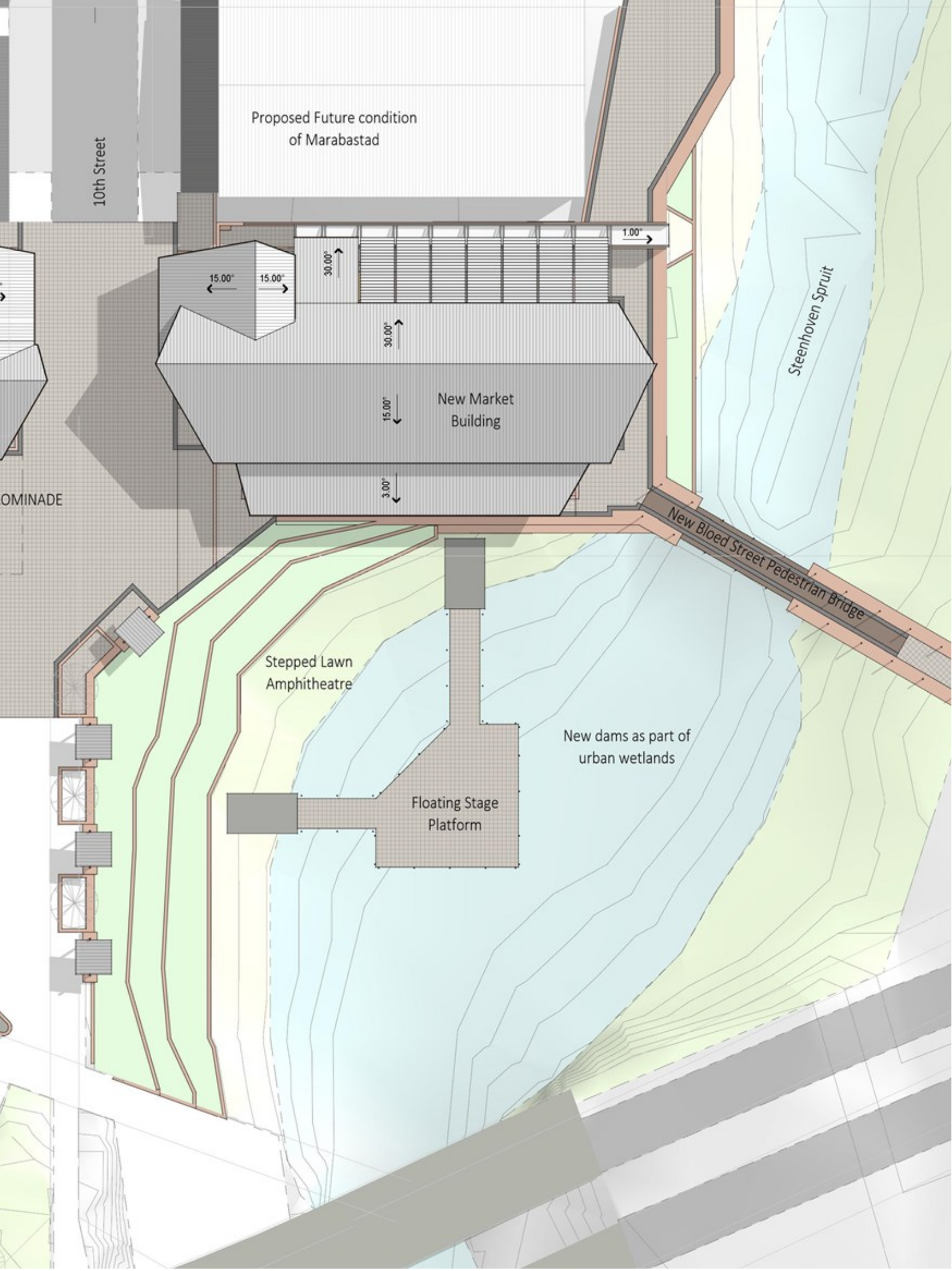


Fig 5.55 Pedestrian view: Approach from CBD (Author 2020)

Fig 5.56 Site/ Roof Plan of Intervention (Author 2020)



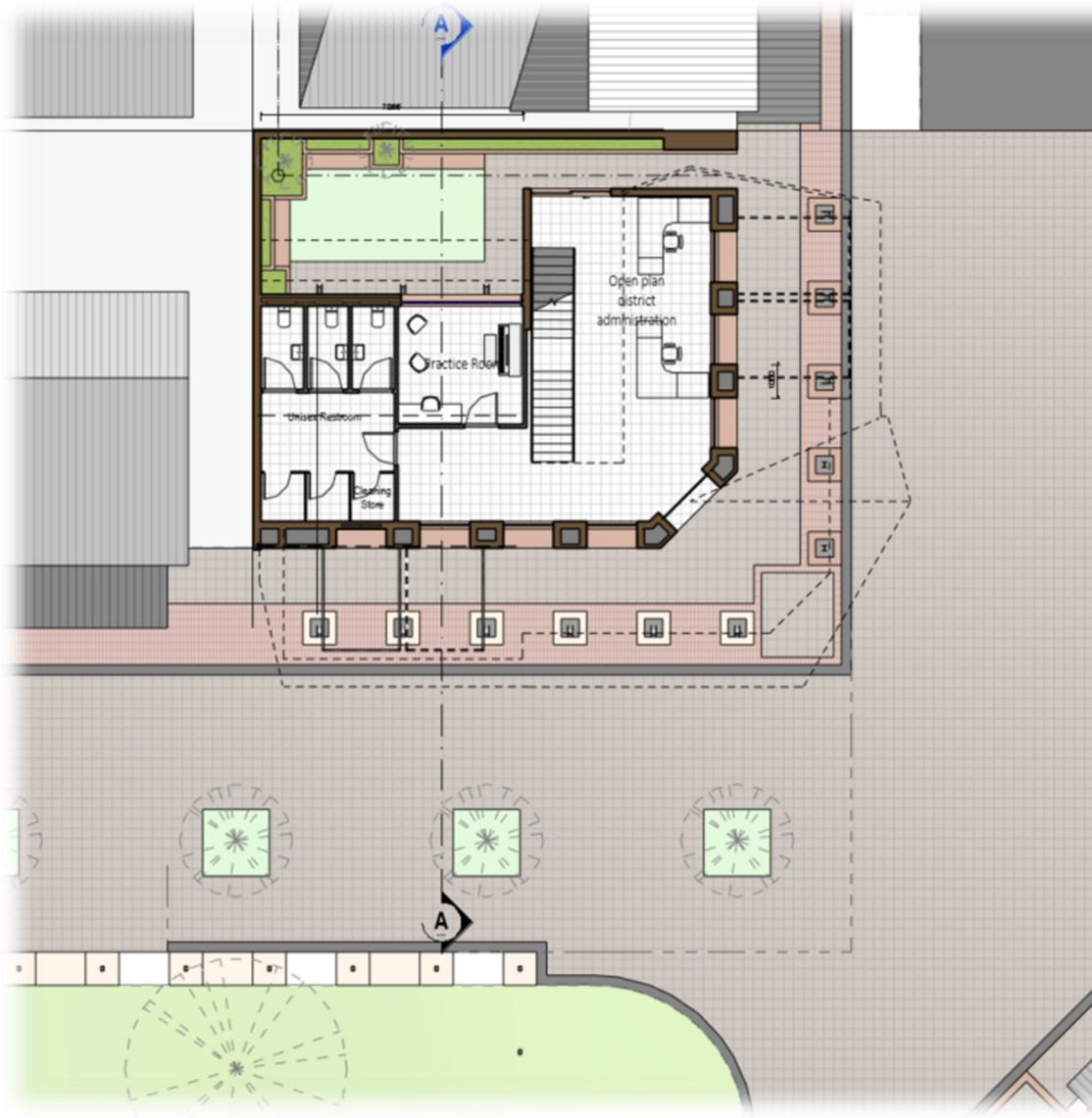


Fig 5.57 Ground Floor Plan (Author 2020)

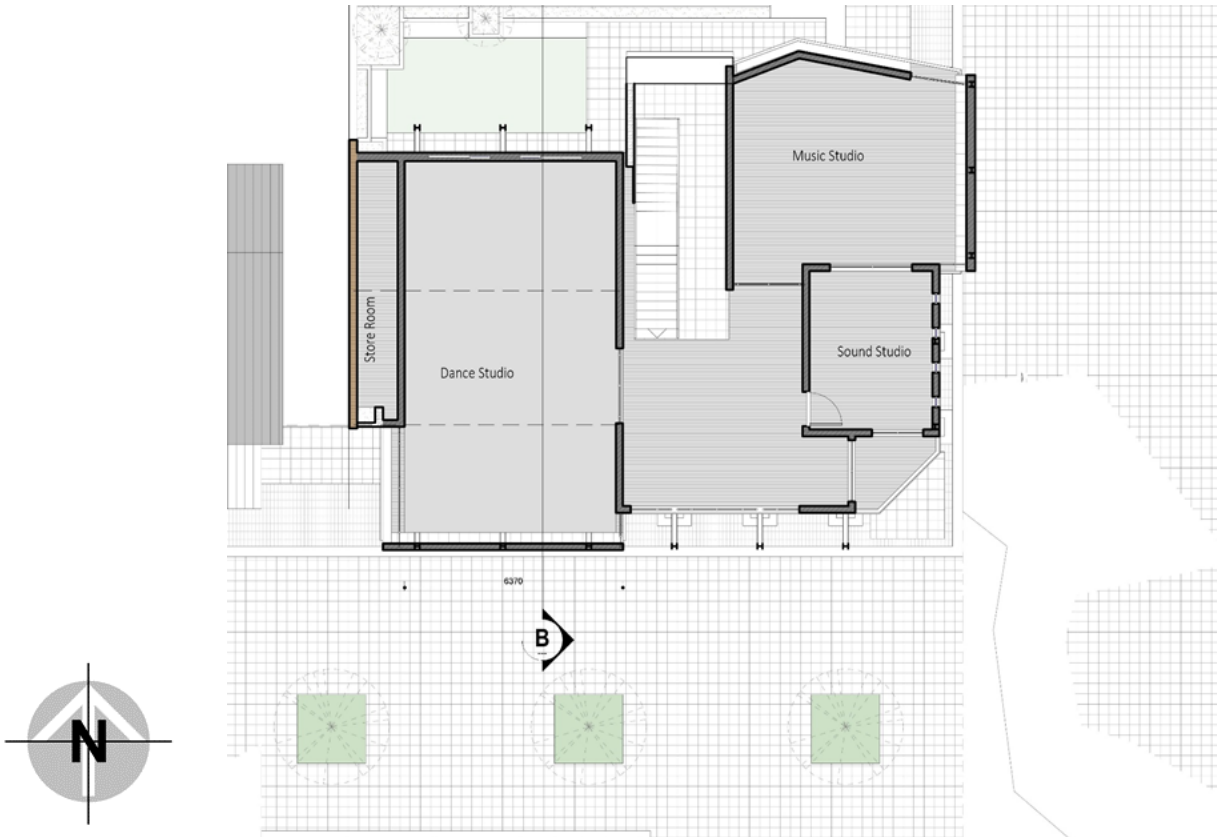
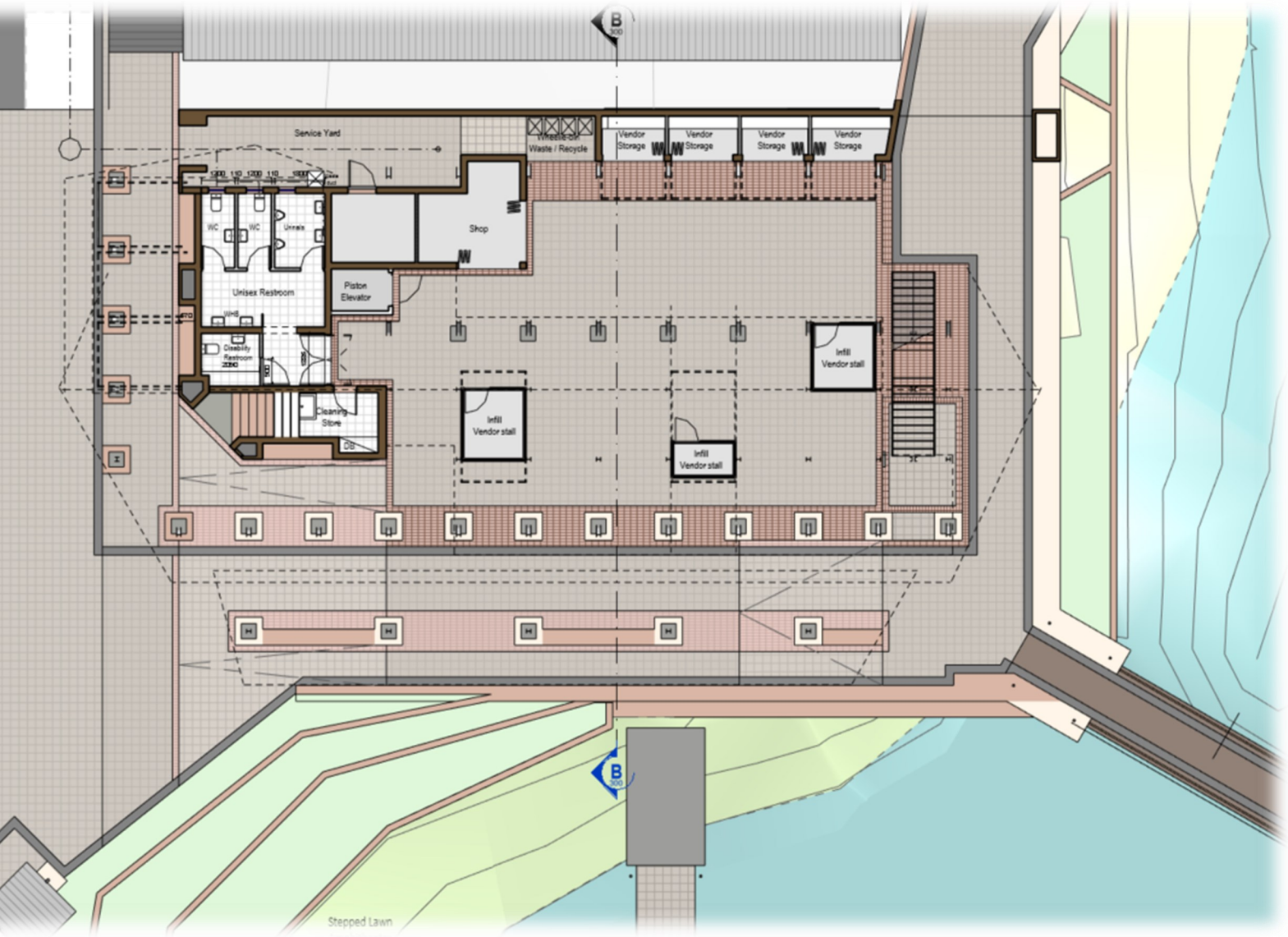
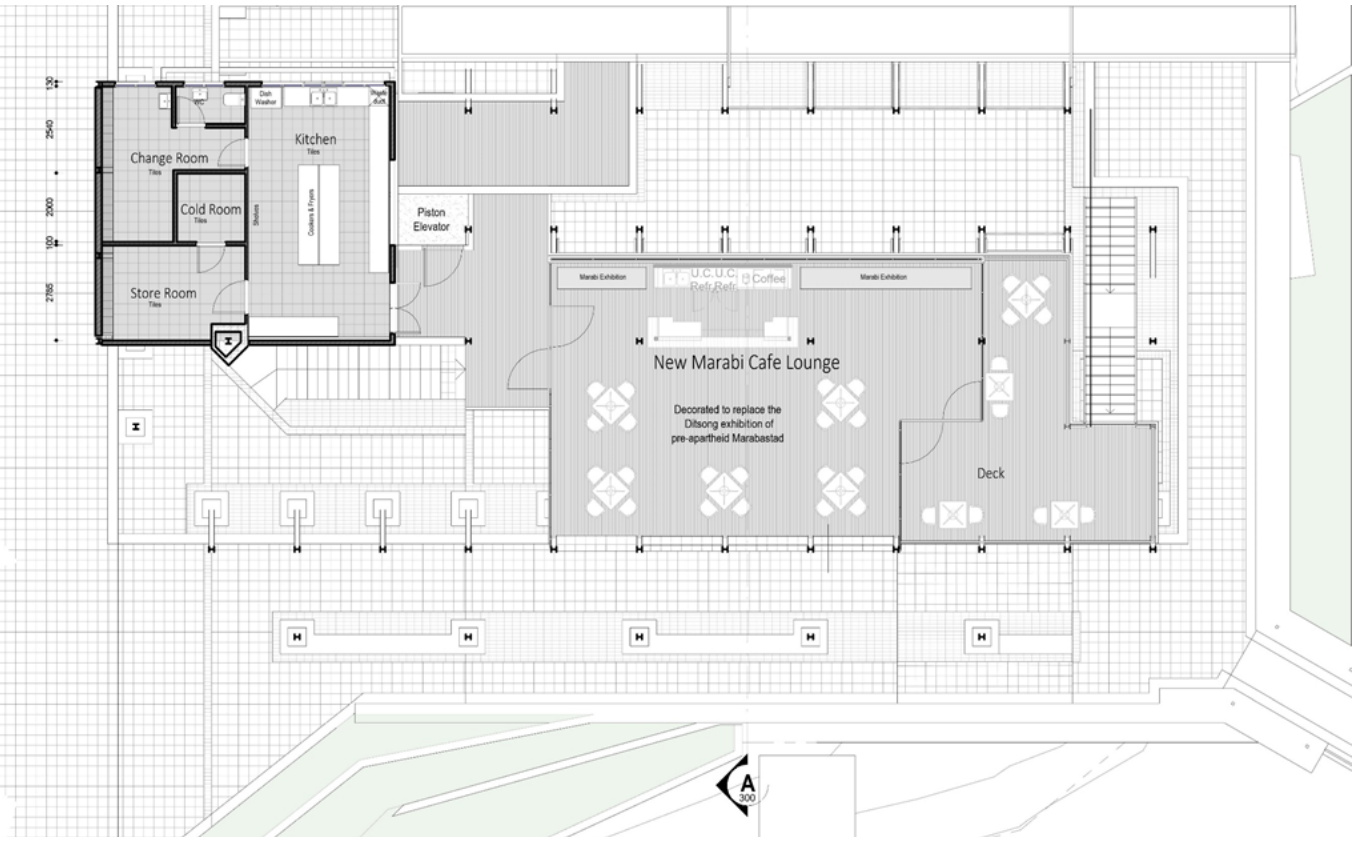


Fig 5.58 First Floor Plan (Author 2020)





The final design portrays a series of hierarchical public spaces sheltered by the private realm through the simple design of a habitable roof scape that can accommodate a variety of programmes and facilities. The horizontal planes of the ground floor public spaces are further articulated by thresholds that provide opportunities for lingering and trading.

The sensitivity of the intervention to its context can be seen in the elevations. The proposed intervention thus provides a suitable scale and relationship with its imagined immediate context for reference by further development of the area.

The intervention consists of two buildings. To the West a more private building that accommodates the administration quarters and cultural practice activities such as dance studios and music rooms. To the East the pedestrian routes are interrupted with a market space that accommodates vendors and public amenities on the ground floor with formal dining facilities overhead.

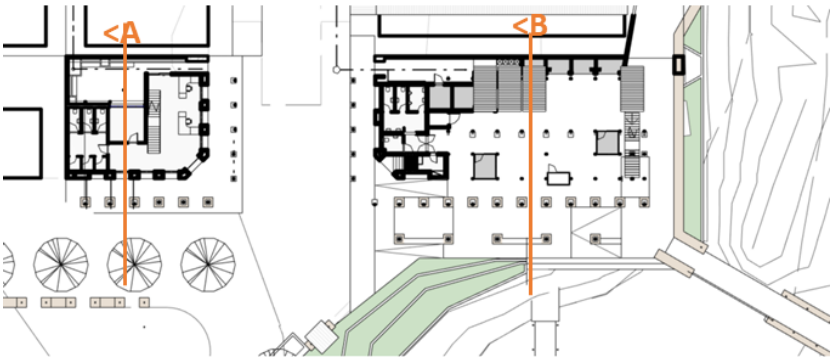
These buildings along with the existing park then encloses the urban performance space that is created by a stepped lawn amphitheatre towards the Steenhoven spruit.

The street elevations show how the buildings articulate the new urban edge of Marabastad, providing cover from the elements and opportunities for lingering on the exterior of the building.

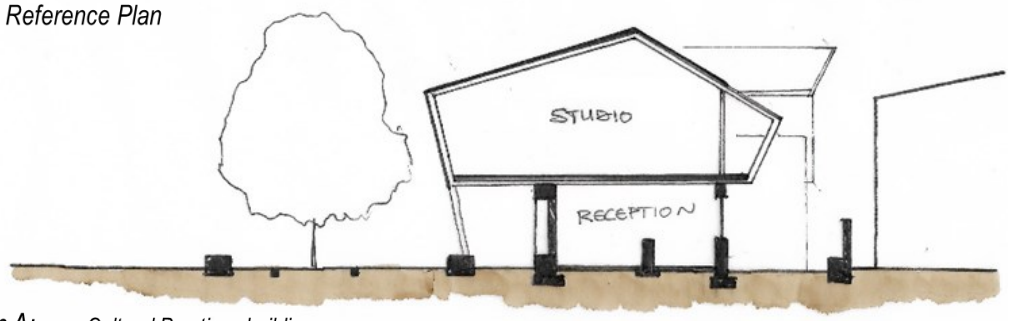
The ground floor plan shows how the western building articulates the street corner through a series of thresholds as one moves into the building. Note how the depth of the walls are used to provide seating along the covered walkways which can be used for lingering or by street vendors. Administration office space and changerooms for staff and participants are found on this level.

The market building articulates the street corner in the same way. The ground plane is articulated with different paving materials and patterns which allows for visual understanding of the various spaces. Note here how temporary infill structures are proposed within the framework of the building.

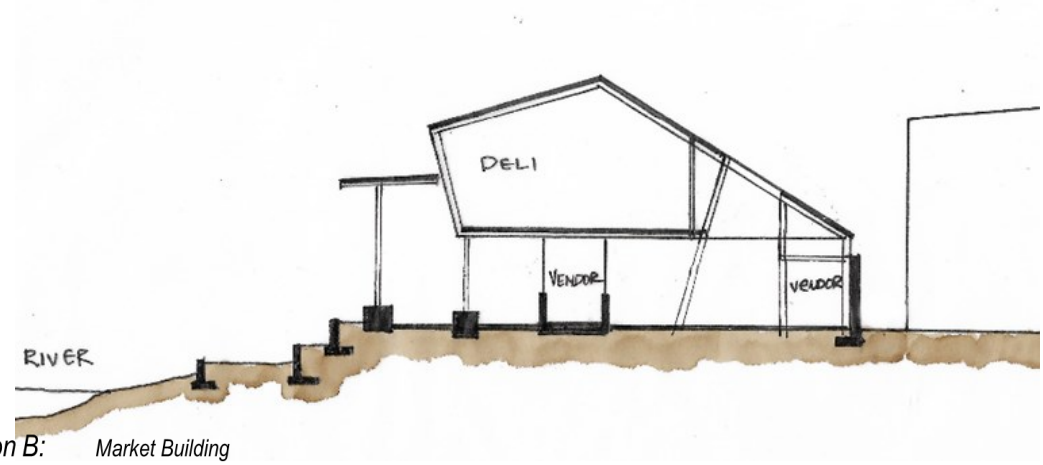
The first floor accommodates the more private programmes. The studios related to the performed arts are all housed in the Western building which allows for a quieter, more private location. The first floor of the Market building contains a space for a new Café and its accompanying kitchen facilities. Access to this floor is provided through two stairways orientated according to pedestrian flow on the ground as well as a piston elevator to enable disability access and the delivery of goods or the removal of waste from this level.



Section Reference Plan



Section A: Cultural Practices building



Section B: Market Building

Fig 5.59 Diagrammatic Design Sections (Author 2020)

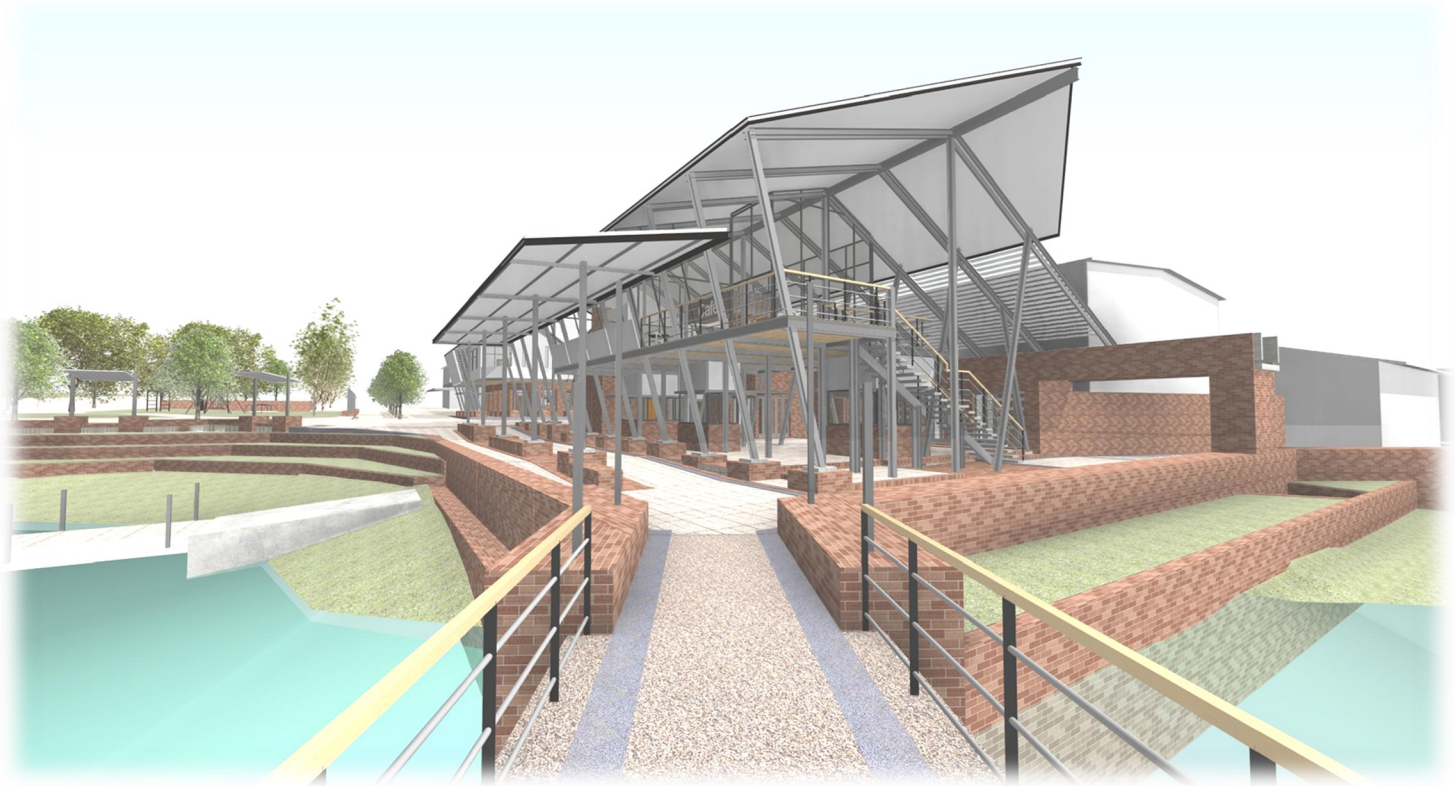


Fig 5.60 View approaching from CBD along new pedestrian bridge (Author 2020)

Fig 5.61 Perspective of Café area overlooking the park and amphitheatre (Author 2020)

Fig 5.62 Interior perspective of dance studio (Author 2020)

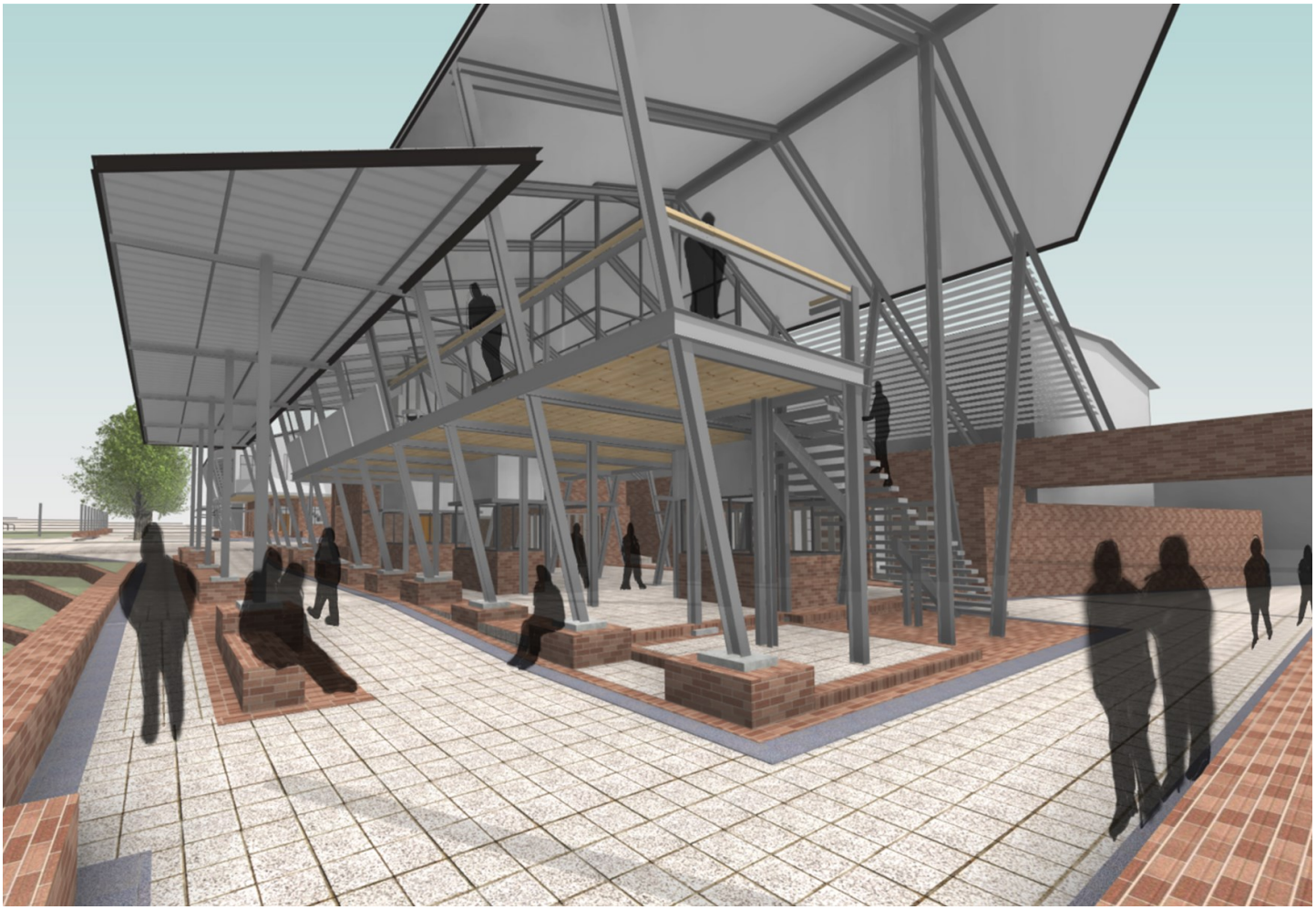
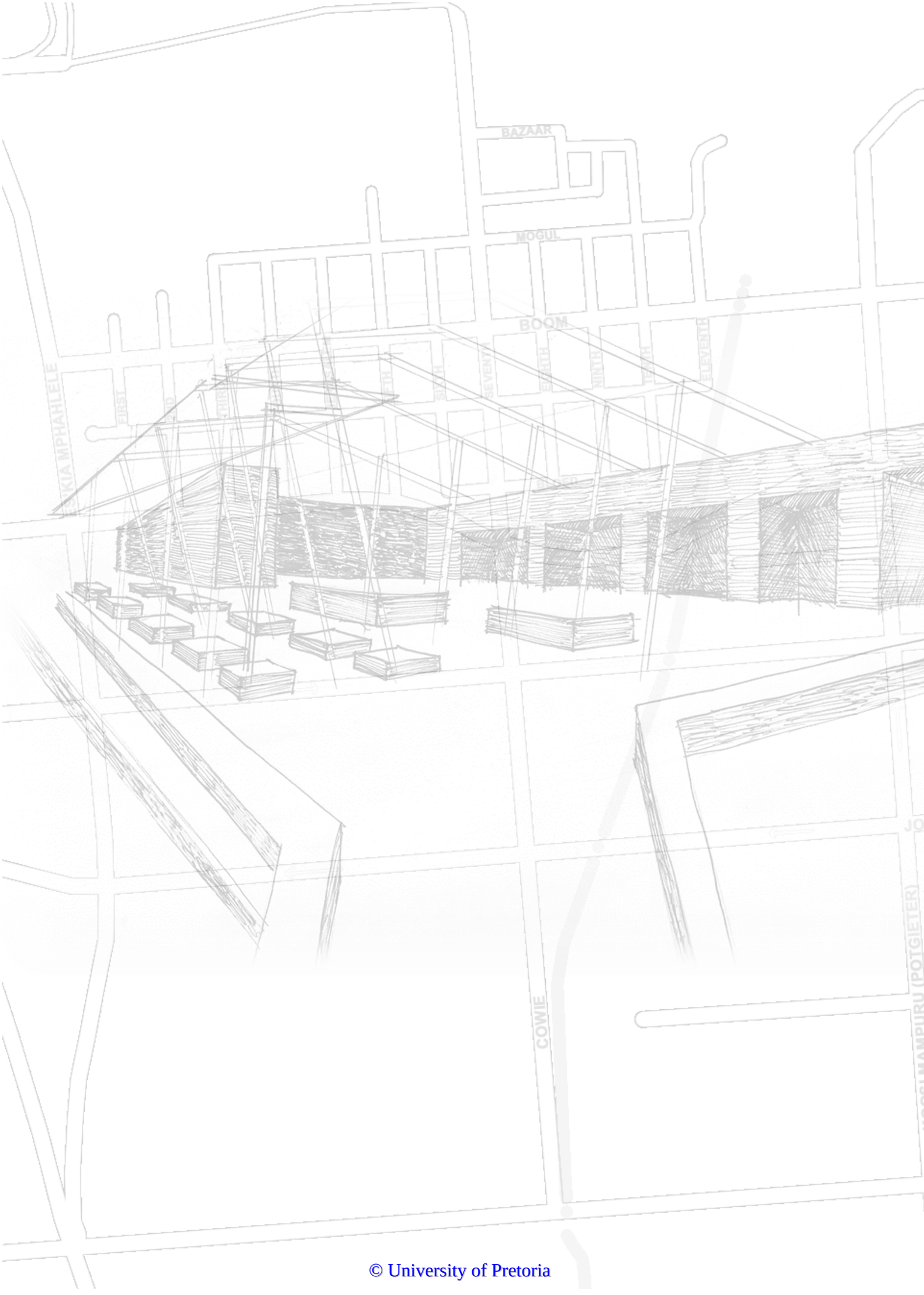


Fig 5.63 Perspective Market building from South East (Author 2020)

Fig 5.64 Street perspective of Cultural Practices building (Author 2020)



Technical Development

6

6.1 Technology Concept

The construction of the intervention is simple in nature. A series of brick walls articulate the horizontal thresholds while a habitable steel roof accommodates the more intimate programmes of the intervention and provides shelter to the public realm. Towards the urban edge the structure dissolves to become a steel structure elevated over a horizontal market plane, allowing for unhindered pedestrian access to and from Marabastad.

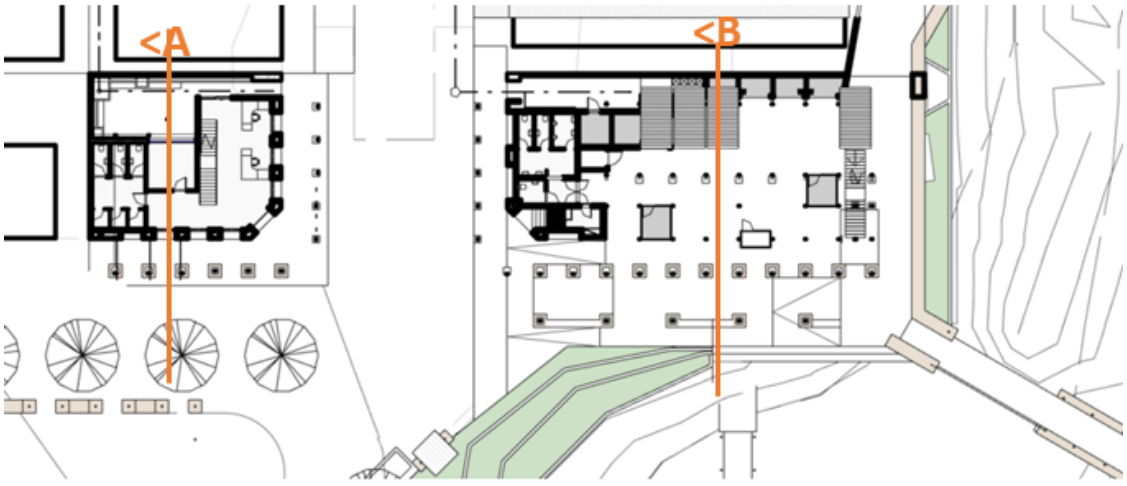


Fig 6.1 Section Reference Plan (Author 2020)

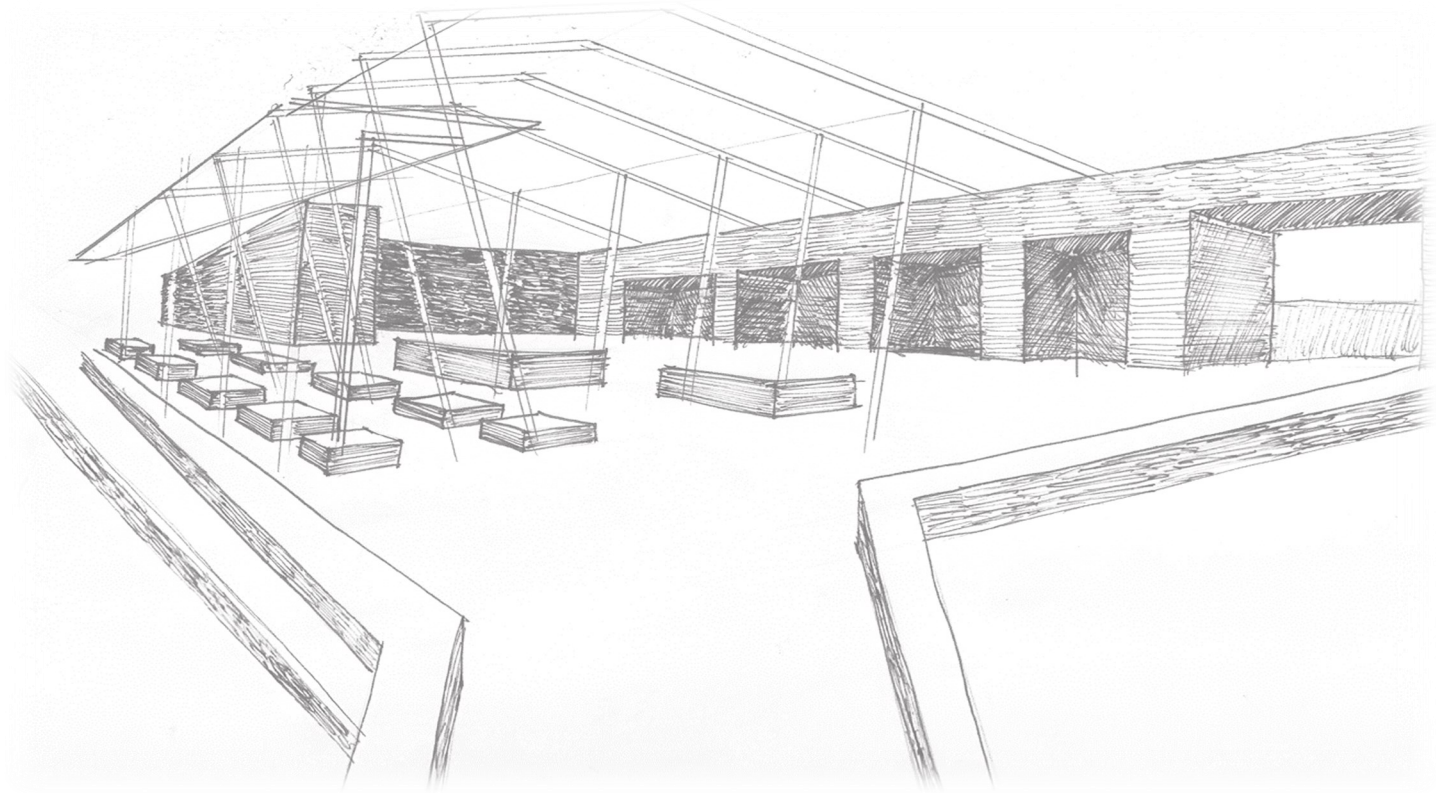
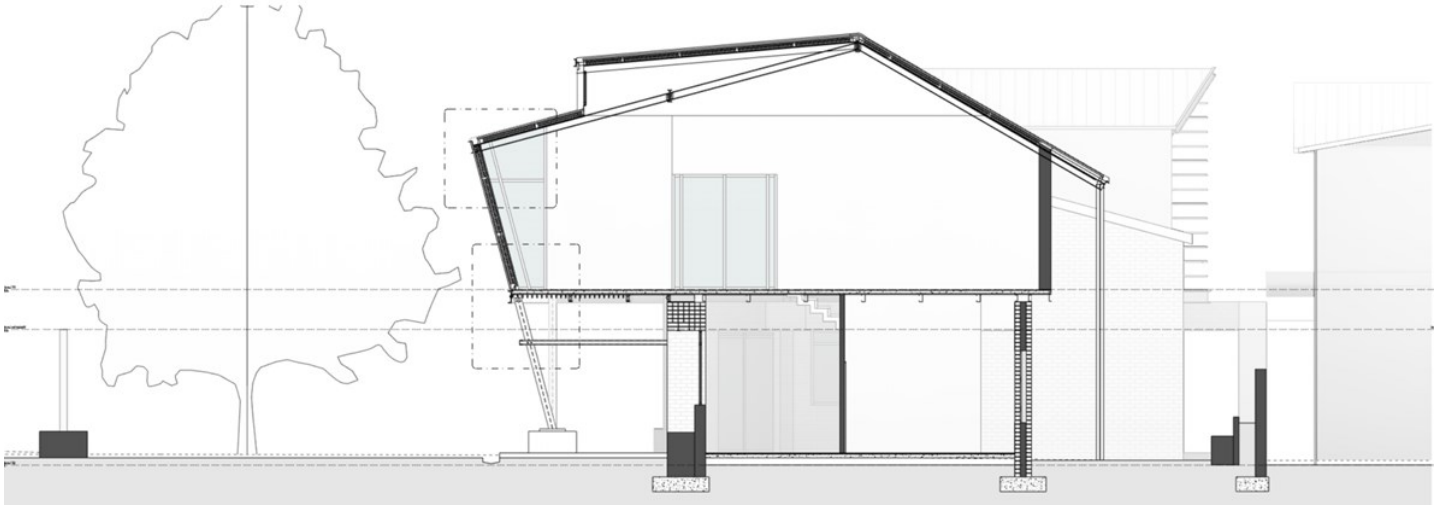
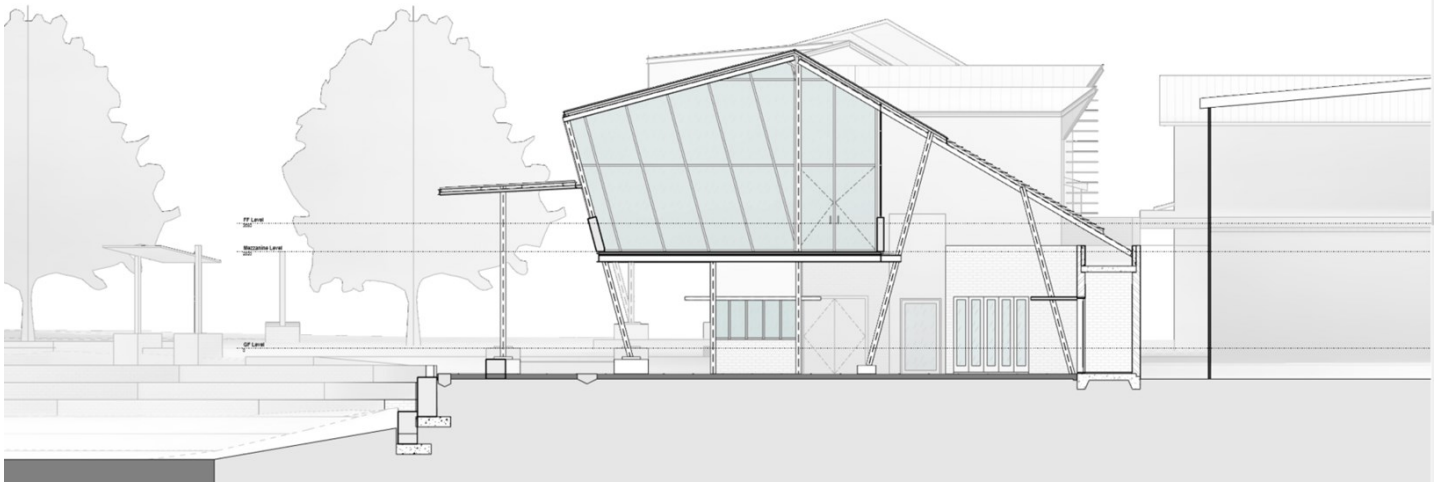


Fig 6.2 Technology Concept Sketch (Author 2020)



SECTION A: Cultural Practices Building



SECTION B: MARKET BUILDING

Fig 6.3 Base Sections for Technical Development (Author 2020)

6.2 Systems

The roof is investigated as an element to provide opportunities for alternative energy sources, managing rainwater and articulating the spaces along pedestrian movement routes.

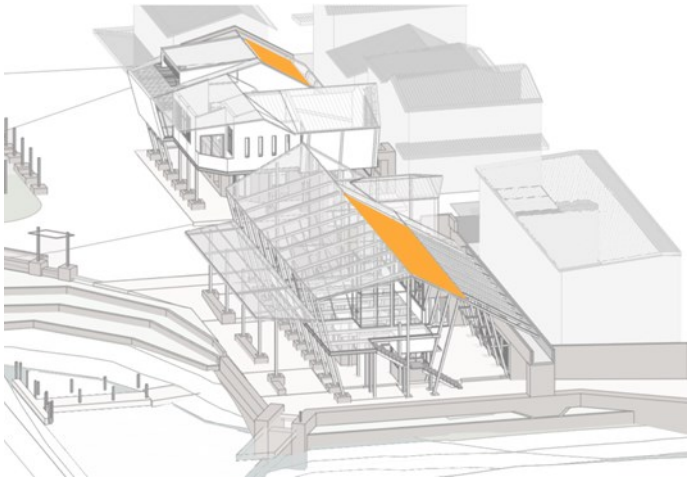


Fig 6.4 Solar Energy Harvesting on Roofs (Author 2020)

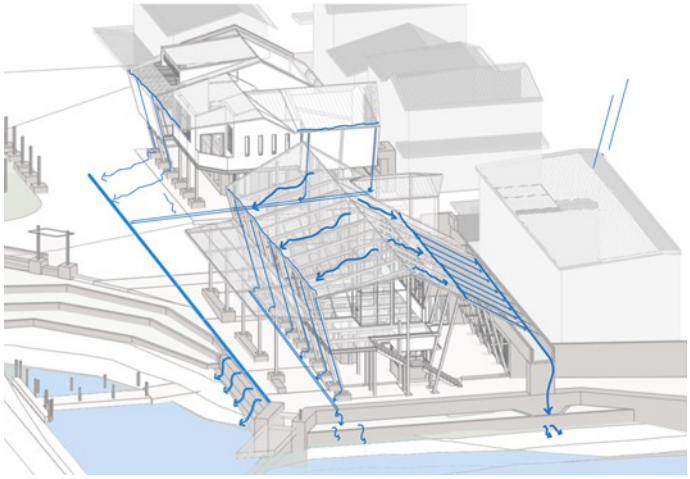


Fig 6.5 Rainwater management (Author 2020)

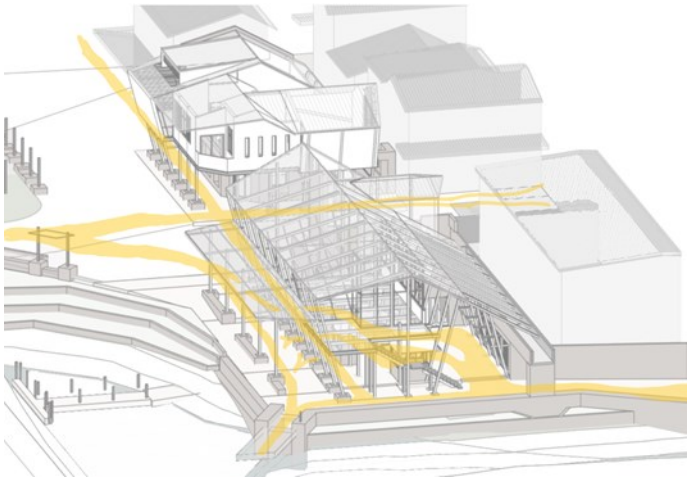


Fig 6.6 Pedestrian circulation (Author 2020)

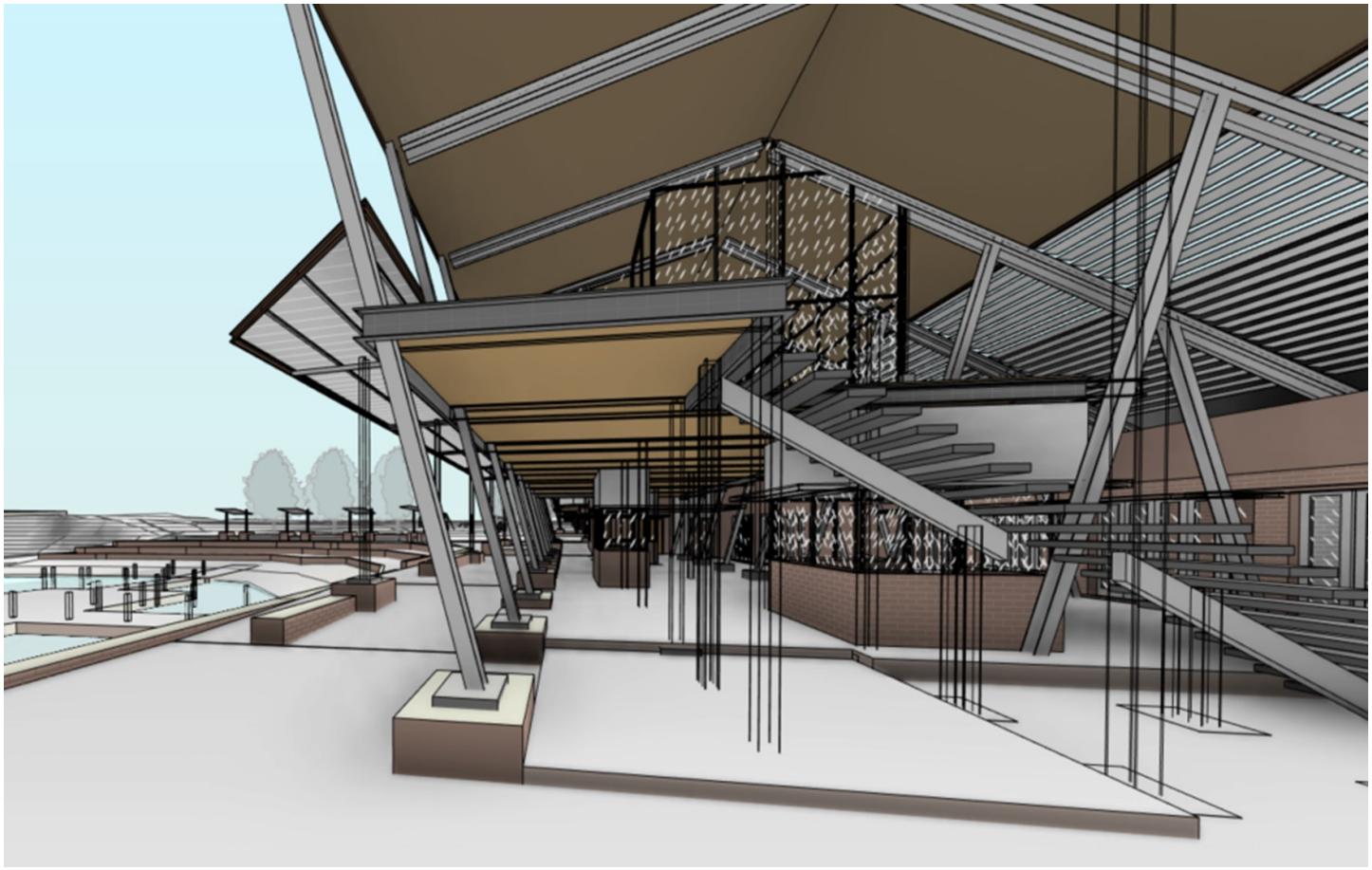


Fig 6.7 Pedestrian View: Materiality of intervention (Author 2020)

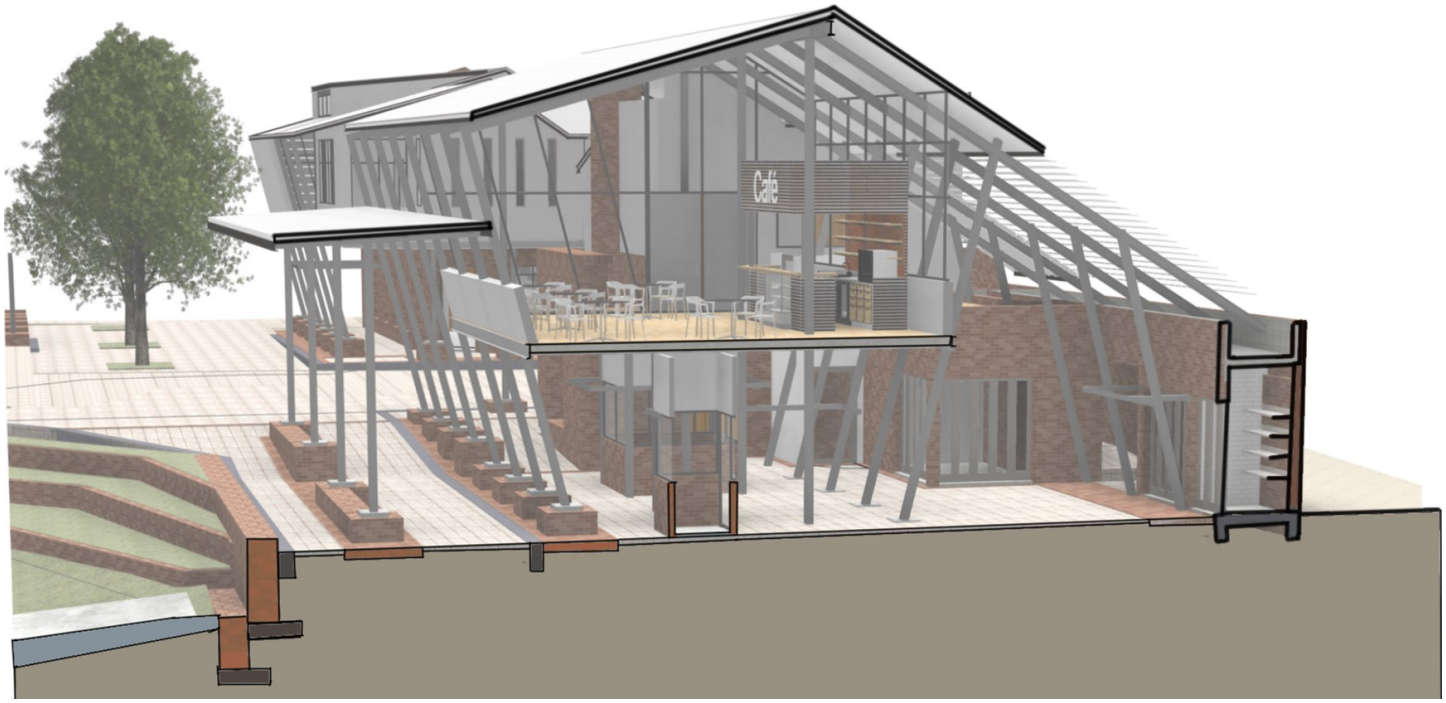


Fig 6.8 Section Perspective of Market building: Spatial relations and Materiality of intervention (Author 2020)

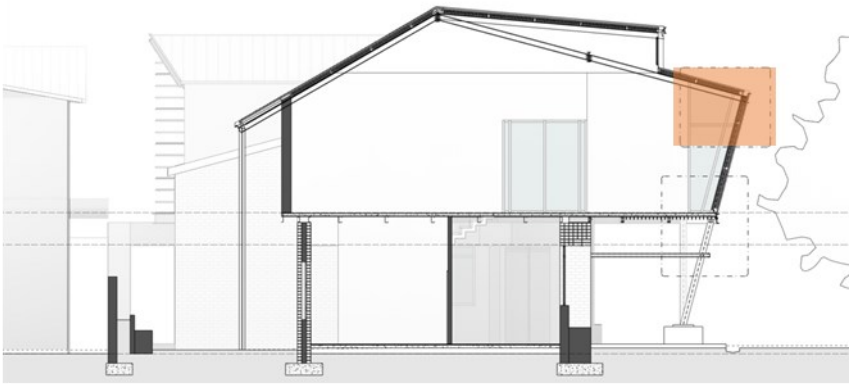


Fig 6.8 Detail Reference Section (Author 2020)

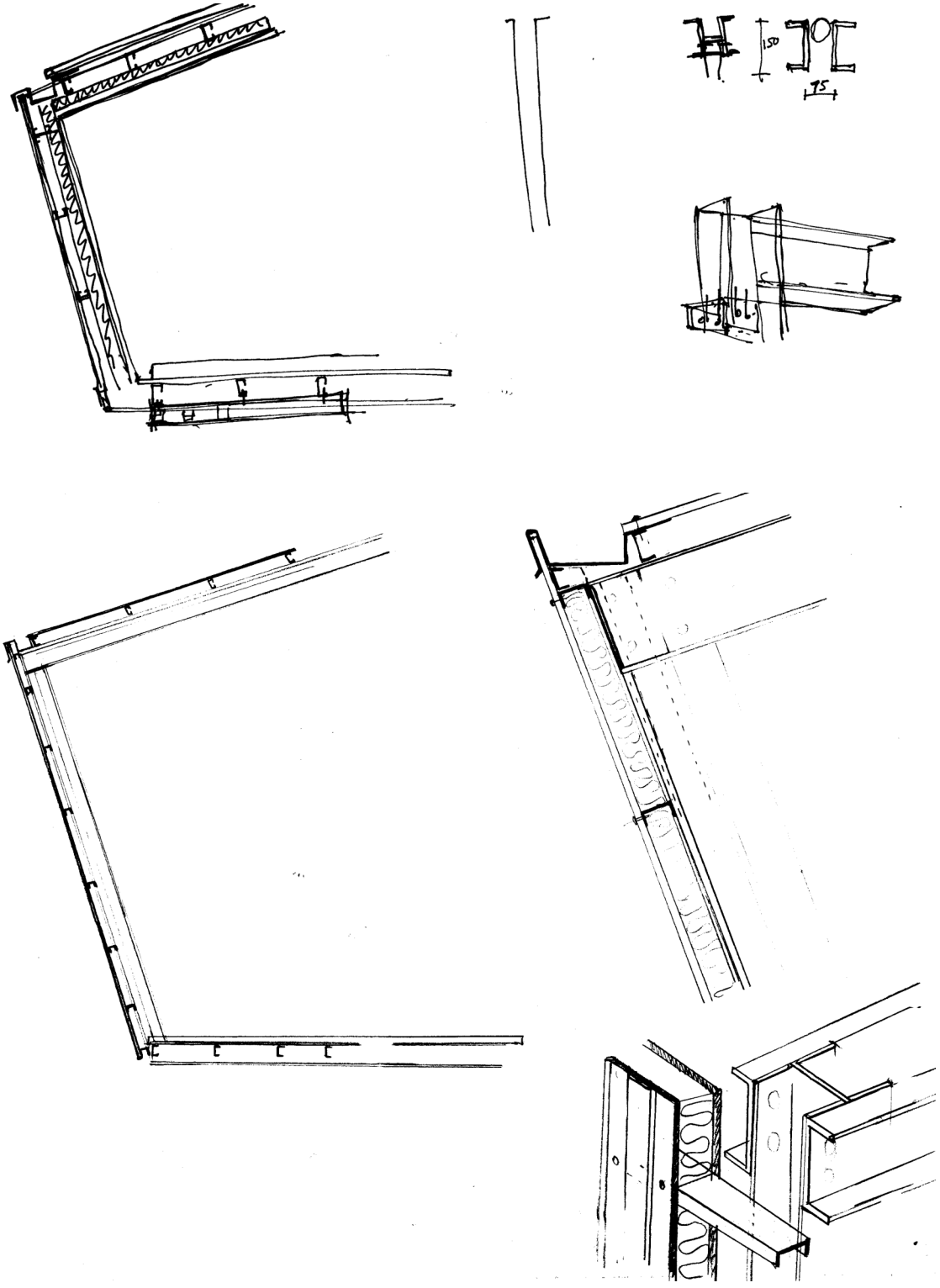


Fig 6.9 Journal extracts: Assembly of portal frame structure and roof detailing (Author 2020)

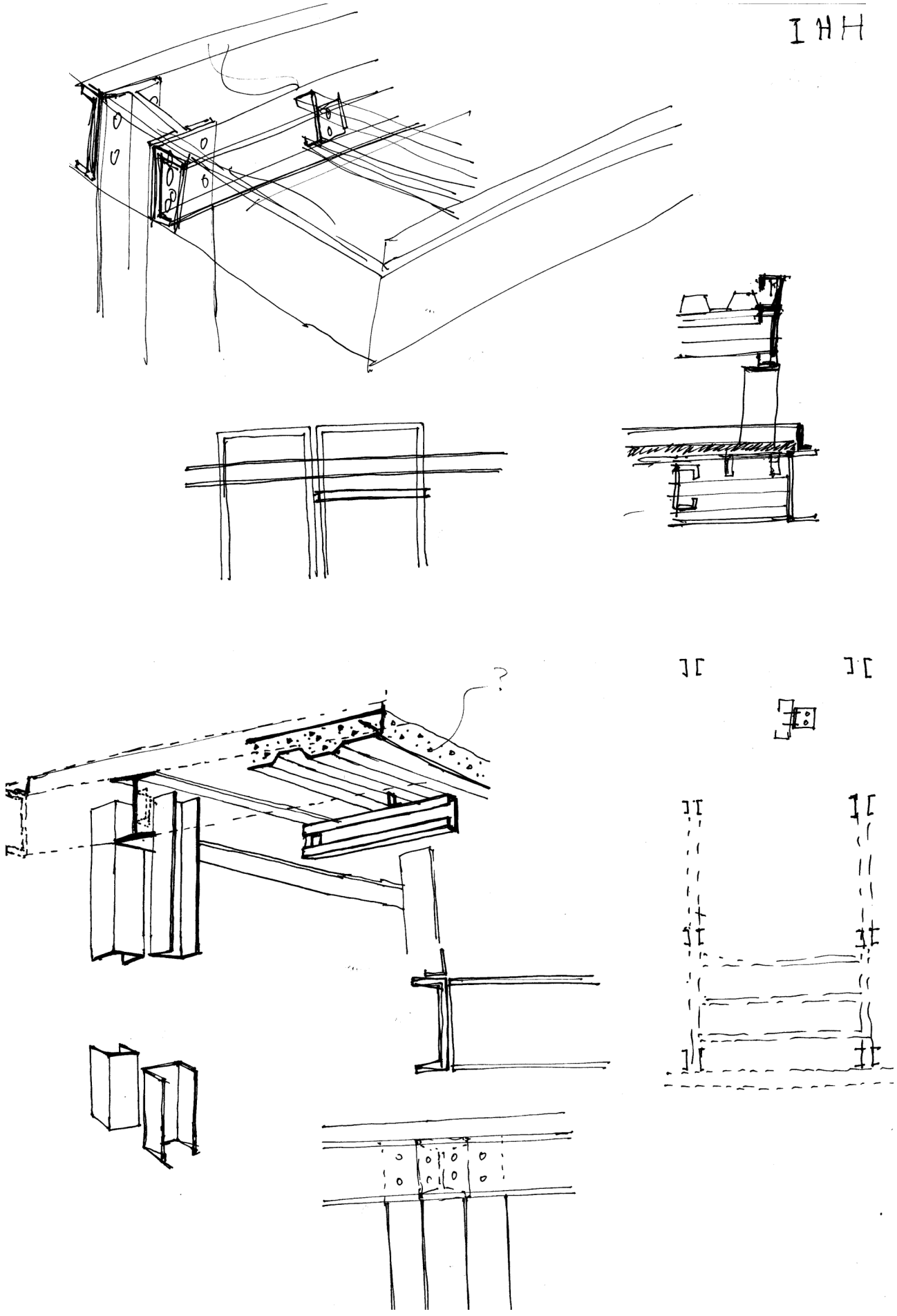


Fig 6.10 Journal extracts: Assembly and structure of first floor (Author 2020)

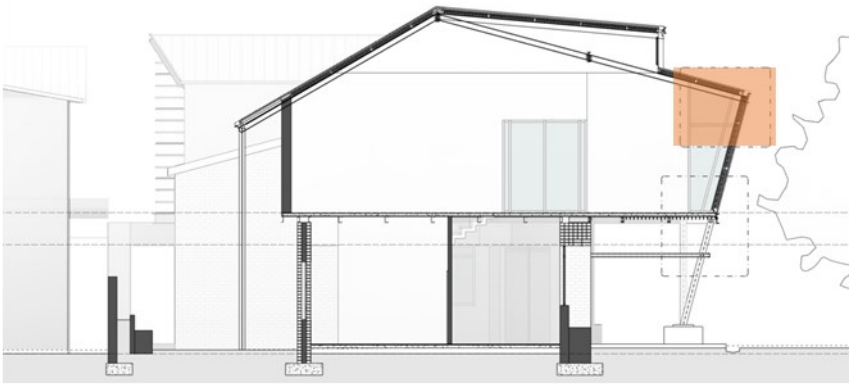


Fig 6.11 Detail Reference Section (Author 2020)

The detail development focused on the articulation of the roof. This was particularly done by making use of custom gutters made form flashing sheets to imitate the profiles of steel sections. The downpipes are inserted into the cavities provided by the H-Section columns which provides a downpipe at every 2.5m. The rafter elements are exposed to the interior, which allows for light fittings and décor attachments to be added with ease while exposing the tectonics of the construction to the user.

This detail shows how the structure of the steel first floor is assembled to be conscious of rainwater, being articulated similarly to the roof. The concrete floor is cast on permanent shutter boards which further allows for adaptability as aesthetic and acoustic materials can easily be connected to the underside of the floor. On top of the rigid concrete slab is a sprung timber floor which accommodates the activities of a dance studio.

To the street level, additional steel frames made from lipped channels, provide further opportunities for vendors to freely occupy the exterior of the building by hanging their products from these frames or fill them in with temporary structures.

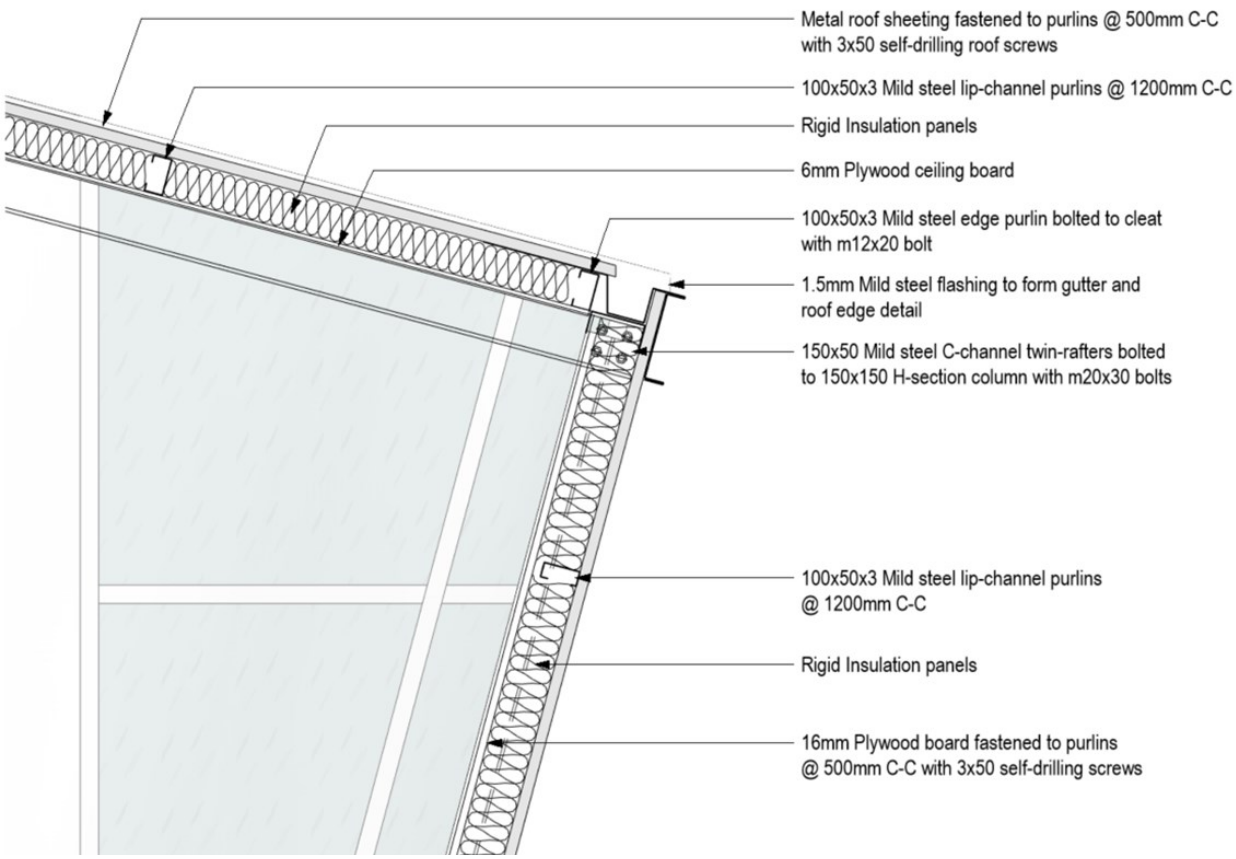


Fig 6.12 Detail 1: Roof to wall articulation (Author 2020)

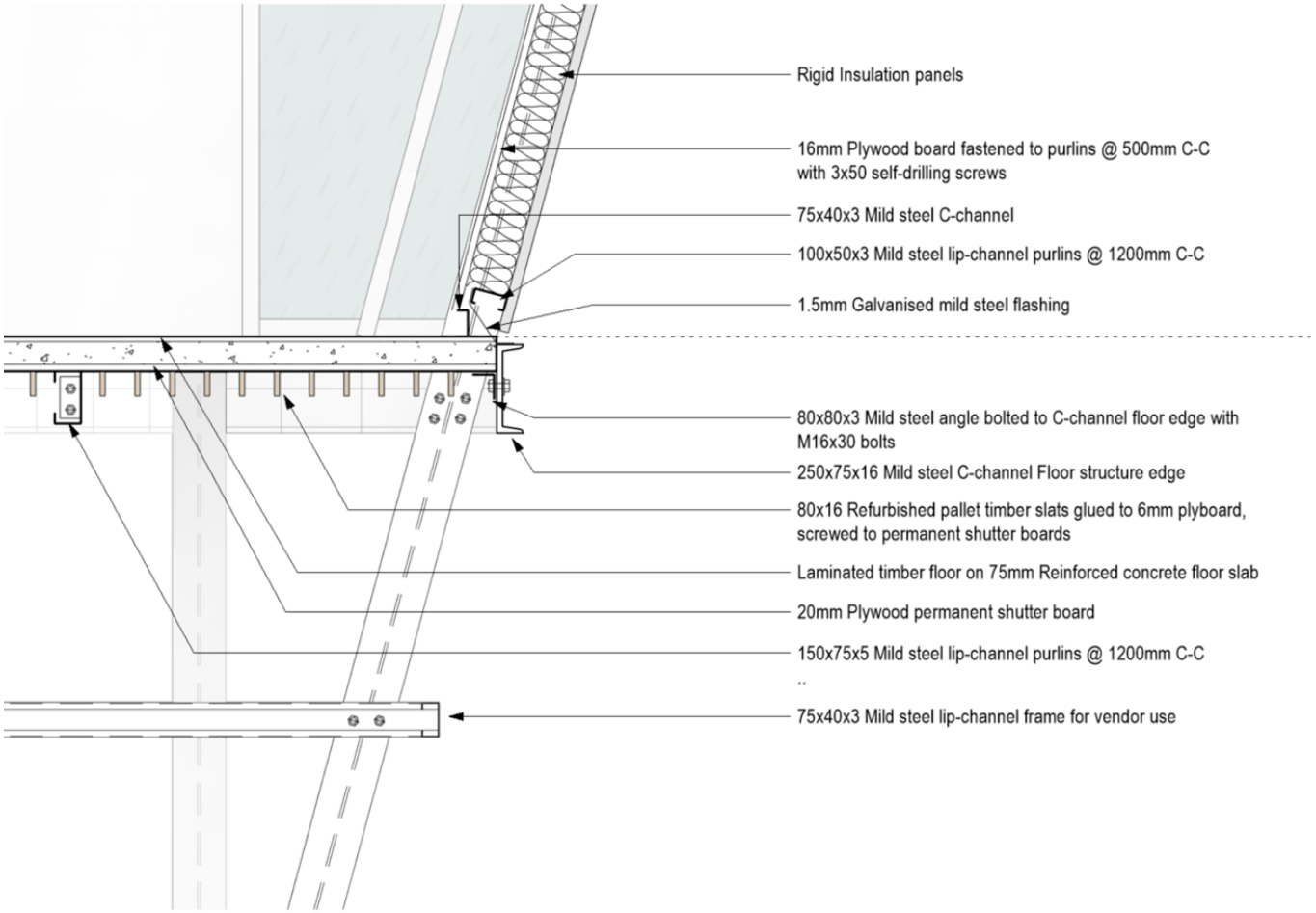


Fig 6.13 Detail 2: Floor to wall articulation (Author 2020)

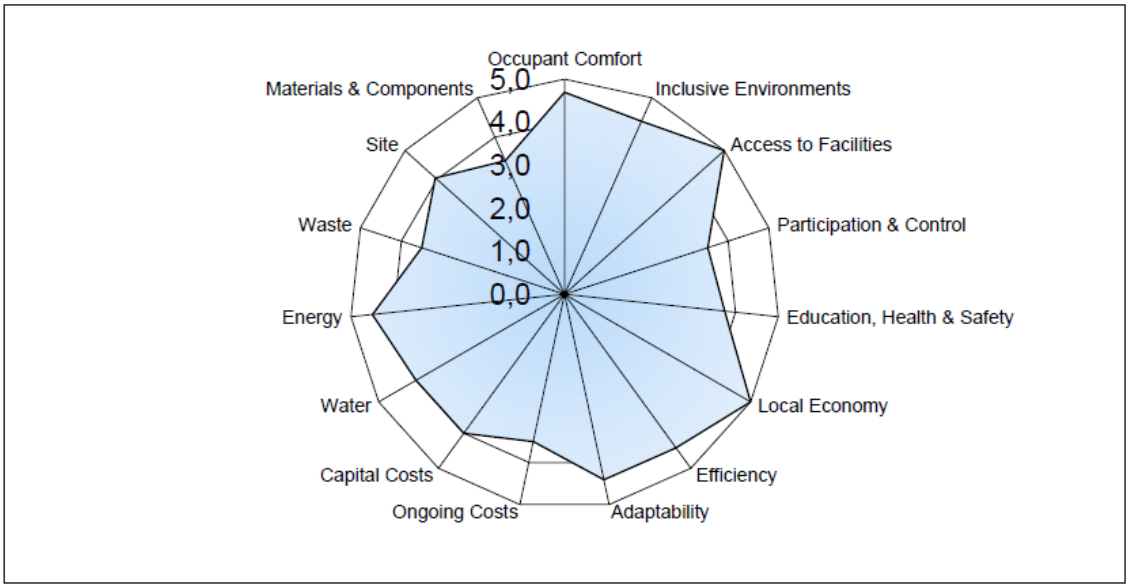
7 Conclusion

7.1 SBAT Assessment

Sustainable Building Analysis Tool

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1

PROJECT		ASSESSMENT	
Project title:	Mediating Urban Boundaries	Date:	08-Jan-20
Location:	Marabastad	Undertaken by:	Rinus Piek
Building type:	Civil: Market & Performed arts	Company / organisation:	University of Pretoria
Internal area (m2):		Telephone:	Fax:
Number of users:		Email:	



Social	4,3	Economic	4,3	Environmental	3,9
Overall	4,1	Classification			

Fig 7.1 SBAT summary (Author 2020)
Refer to Appendix A for more details

The above summary of the SBAT assessment shows a fairly high grading in all areas to be considered in the endeavour towards sustainable design solutions. The areas that could improve this outcome would be to re-use materials from previous buildings, recycle waste and sewer on site and make use of extensive community participatory processes in the design of the project

It is therefor possible to conclude, based on this outcome, that by proper application of regionalist architectural practices such as sensitivity so context, site, climate and the use of local materials, one is able to create sustainable urban environments.

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Building Performance - Social

	Criteria	Indicative performance measure	Measured	Points	Notes
SO 1	**Occupant Comfort**			4,7	
SO 1.1	Daylighting	% of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	100	1,0	
SO 1.2	Ventilation	% of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with unpolluted air source	70	0,7	
SO 1.3	Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation	100	1,0	
SO 1.5	Thermal comfort	Tempreture of occupied space does not exceed 28 or go below 19oC for less than 5 days per year (100%)	100	1,0	
SO 1.5	Views	% of occupied space that is 6m from an external window (not a skylight) with a view	100	1,0	
SO 2	**Inclusive Environments**			4,4	
SO 2.1	Public Transport	% of building (s) within 400m of disabled accessible public transport	100	1,0	
SO 2.2	Information	High contrast, clear print signage in appropriate locations (100%)	100	1,0	
SO 2.3	Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users	70	0,7	
SO 2.4	Toilets	% of space with fully accessible toilets within 50m along accessible path of travel	70	0,7	
SO 2.5	Fittings & Furniture	% of commonly used furniture/fittings & associated spaces fully accessible	100	1,0	
SO 3	**Access to Facilities**			5,0	
SO 3.1	Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	100	1,0	
SO 3.2	Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities	100	1,0	
SO 3.3	Retail	All users can walk (100%) / use public transport (50%) to get to food retail	100	1,0	
SO 3.4	Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post, telephone and internet)	100	1,0	
SO 3.5	Need	Building located in area of high poverty/need. (100%)	100	1,0	
SO 4	**Participation & Control**			3,5	
SO 4.1	Environmental control	% of occupied spaces able to control their thermal environment (adjacent to openable windows/thermal controls)	50	0,5	
SO 4.2	Location	% of users actively involved in the design process (workshops / meetings with models / large format drawings)	50	0,5	
SO 4.3	Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100	1,0	
SO 4.4	Sharing facilties	5% of facilities shared with other users / organisations on a weekly basis (100%)	100	1,0	
SO 4.5	User group	Active *representative* user group involved in the design and management of the building / local environment	50	0,5	
SO 5	**Education, Health & Safety**		0	3,8	
SO 5.1	Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied space (75%). Construction training on site (25%)	100	1,0	
SO 5.2	Safety	All well used routes in and around building well lit (25%), all routes in and around buildings (25%) visually supervised, secure perimeter and access control (50%), No crime (100%)	75	0,8	
SO 5.3	Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel)	0	0,0	
SO 5.4	Materials	All materials/components used have no negative effects on indoor air quality (100%)	100	1,0	
SO 5.5	Accidents	Method in place for recording all occupational accidents and diseases (during construction& operation) and addressing these	100	1,0	

Building Performance - Economic

	Criteria	Indicative performance measure	Measured	Points	Notes
EC 1	**Local economy**			5,0	
EC 1.1	Local contractors	% value of the building constructed by local (within 50km) small (employees<20) contractors	100	1,0	
EC 1.2	Local materials	% of materials (sand, bricks, blocks, roofing material) sourced from within 50km	100	1,0	
EC 1.3	Local components	% of components (windows, doors etc) made locally (in the country)	100	1,0	
EC 1.4	Local furniture/fittings	% of furniture and fittings made locally (in the country)	100	1,0	
EC 1.5	Maintenance	% of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	100	1,0	
EC 2	**Efficiency**			4,4	
EC 2.1	Capacity	% capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	75	0,8	
EC 2.2	Occupancy	% of time building is occupied and used (actual number of hours used / all potential hours building could be used*100)	66	0,7	
EC 2.3	Space per occupant	Space per user not more than 10% above national average for building type (100%)	100	1,0	
EC 2.4	Communication	Site/building has access to internet and telephone (100%), telephone only (50%)	100	1,0	
EC 2.5	Material & Components	Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	100	1,0	
EC 3	**Adaptability**			4,0	
EC 3.1	Vertical heights	% of spaces that have a floor to ceiling height of 3000mm	100	1,0	
EC 3.2	External space	Design facilitates flexible external space use (100%)	100	1,0	
EC 3.3	Internal partition	Non loadbearing internal partitions can be easily adapted (loose partioning (100%), studwall (50%), masonary (25%)	100	1,0	
EC 3.4	Modular planning	Building with modular stucture, envelope (fenestration) & services allowing easly internal adaptaptation (100%)	0	0,0	
EC 3.5	Furniture	Modular, limited variety furniture - can be easily configured for different uses (100%)	100	1,0	
EC 4	**Ongoing costs**			3,5	
EC 4.1	Induction	All new users receive induction training on building systems (50%), Detailed building user manual (50%)	0	0,0	
EC4.2	Consumption & waste	% of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%)	50	0,5	
EC 4.2	Metering	Easily monitored localised metering system for water (25%) and energy (75%)	100	1,0	
EC4.3	Maintenance & Cleaning	Building can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials	100	1,0	
SO 4.5	Procurement	% of value of all materials/equipment/ used in the building on a daily basis supplied by local (within the country) manufacturers	100	1,0	
EC 5	**Capital Costs**			4,0	
EC 5.1	Local need	Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%).	100	1,0	
EC5.2	Procurement	Open transparent tender process & packaging to ensure involvement of small local contractors/manufacturers (100%)	100	1,0	
EC 5.3	Building costs	Capital cost not more than fifteen % above national average building costs for the building type (100%)	100	1,0	
EC5.4	Sustainable technology	3% or more of capital costs allocated to new sustainable/indigenous technology (50%), Labour intensive construction used (50%)	100	1,0	
EC 5.5	Existing Buildings	Existing buildings reused (100%)	0	0,0	

Building Performance - Environmental					
	Criteria	**Indicative performance measure**	**Measured**	**Points**	**Notes**
EN 1	**Water**			4,0	
EN 1.1	Rainwater	% of water consumed sourced from rainwater harvested on site	50	0,5	
EN 1.2	Water use	% of equipment (taps, washing machines, urinals showerheads) that are water efficient	100	1,0	
EN 1.3	Runoff	% of carparking, paths, roads and roofs that have absorbant/permeable surfaces (grassed/thatched/looselaid paving/ absorbant materials)	100	1,0	
EN 1.4	Greywater	% of water from washing/relatively clean processes recycled and reused	50	0,5	
EN 1.5	Planting	% of planting (other than food gardens) on site with low / appropriate water requirements	100	1,0	
EN 2	**Energy**			4,5	
EN 2.1	Location	% of users who walk / use public transport to access the building	100	1,0	
EN 2.2	Ventilation	% of building ventilation requirements met through natural / passive ventilation	100	1,0	
EN 2.3	Heating & Cooling	% of occupied space which has passive environmental control (no or minimal energy consumption)	100	1,0	
EN 2.4	Appliances & fittings	% of appliances / lighting fixtures that are classed as highly energy efficient (ie energy star rating)	100	1,0	
EN 2.5	Renewable energy	% of building energy requirements met from renewable sources	50	0,5	
EN 3	**Waste**			3,5	
EN 3.1	Toxic waste	% of toxic waste (batteries, ink cartridges, flourescent lamps) recycled. Space & equipment provided, management process in place	100	1,0	
EN 3.2	Organic waste	% of organic waste recycled: space & equipment provided, management process in place (food 50%) (paper 50%)	100	1,0	
EN 3.3	Inorganic waste	% of inorganic waste recycled. Space & equipment provided, management process in place. Glass (50%) metal	100	1,0	
EN 3.4	Sewerage	% of sewerage recycled on site	0	0,0	
EN 3.5	Construction waste	% of damaged building materials / waste developed in construction recycled on site	50	0,5	
EN 4	**Site**			4,1	
EN 4.1	Brownfield site	% of proposed site already disturbed / brownfield (previously developed)	100	1,0	
EN 4.2	Neighbouring buildings	No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100	1,0	
EN 4.3	Vegetation	% of area of vegetated area in, on, or around buildings (include green roofs, internal planting) relative the floor area (100%)	30	0,3	
EN 4.4	Food gardens	Food gardens on site (75%) Affordable / free exercise / recreation amenities on site (25%)	75	0,8	
EN 4.5	Landscape inputs	% of landscape that does not require mechanical equipment (ie lawn cutting) and or artificial inputs such as weed killers and pesticides	100	1,0	
EN 5	**Materials & Components**			3,4	
EN 5.1	Embodied energy	Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)	100	1,0	
EN 5.2	Material sources	% of materials sourced within the country (50%) of which % is from renewable sources (50%)	60	0,6	
EN 5.3	Ozone depletion	No materials and components used requiring ozone depleting processes (100%)	50	0,5	
EN 5.4	Recyled / reuse	% of materials and components (by weight) reused / from recycled sources	30	0,3	
EN 5.5	Construction process	Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	100	1,0	

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Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

Reference number: EBIT/53/2020

Ms C Karusseit
Department: Architecture
University of Pretoria
Pretoria
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Dear Ms C Karusseit

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Conditional approval is granted.

This means that the research project entitled "Masters Professional Dissertation in Architecture, Landscape and Interior Architecture" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval
Approved based on the summaries provided.
Applications from each student (including application forms and all necessary supporting documents such as questionnaire/interview questions, permission letters, informed consent form, etc) will need to be checked internally by the course coordinator/ supervisor. A checklist will need to be signed off after the checking.
All of the above will need to be archived in the department and at the end of the course a flash disc / CD clearly marked with the course code and the the protocol number of this application will be required to be provided to EBIT REC administrator.
No data to be collected without first obtaining permission letters. The permission letter from the organisation(s) must be signed by an authorized person and the name of the organisation(s) cannot be disclosed without consent.

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

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

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

The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY