KARLA VELDSMAN

GRAAFF-REINET

The Retrofit and Regeneration of the local vernacular

Figure 1.1
View of Graaff-Reinet from Valley of Desolation, (Author 2019)

PROJECT SUMMARY

Study leader
Jan Hugo

Course coordinator
Arthur Barker

Document edited by
Desre Stead

Submitted in fulfillment of part of the requirements for the degree Master in Architecture (Professional). Department of Architecture, Faculty of Engineering, Built Environment and Information Technology.

2019

Market square, Graaff-Reinet , Eastern Cape.

GPS coordinates
32°14'58.80"S 24°32'16.12"E

Address
Market Square Street, Western edge.

Site description
The Market square and the surrounding ribbon buildings on the western edge of the square.

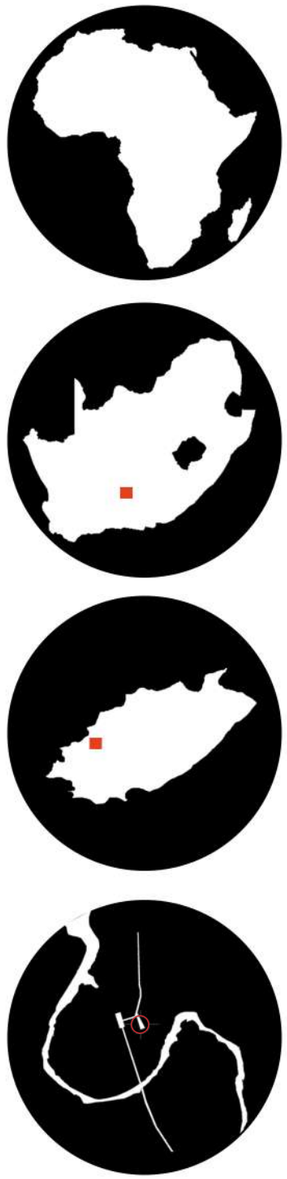
Programme
Slow food revolution food production center, culinary school, agriculture production center.

Research field
Heritage and Cultural Landscapes & Environmental potential.

Client
Local community, local agriculture, Transport.

Theoretical premise
Regenerative design and Historical Premise.

Architectural approach
Retrofit and regeneration of Vernacular.



Graaff-Reinet graphic legend of Street names

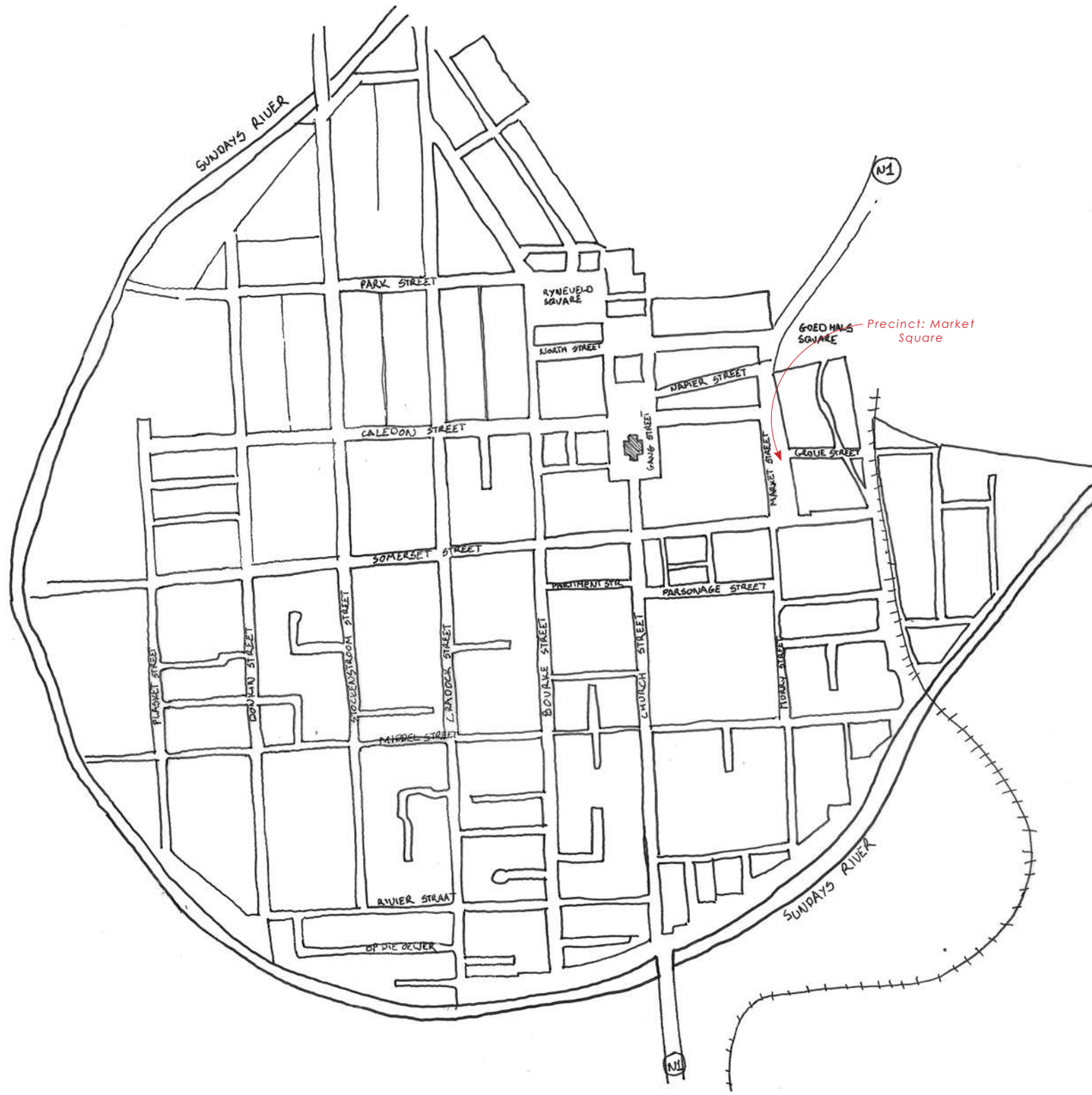


Figure 1.2
Drawn map indicating street names of the town itself, (Author 2019)

Figure 1.3
Pedestrian walkway in front the facades on site,(Author 2019)

Declaration

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution. I further state that no part of my thesis has already been, or is currently being, submitted for any such degree, diploma or other qualification.

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

Karla Veldsman

To my twin sister,

We knew when we walked in this department together that it would be one challenging, yet exciting journey .

Thank you for the endless conversations at night, constant motivation pushing me to high limits and being the biggest critic of all my projects 24/7.

Ma Susan, Pa Wolfie, Team Velle and all my Nieces (Leone, Ariaan, Tanja and Alexa)- for all the love, support, constant model building and being the utmost joy in my life.Thank you!

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Greg and the Karoo Cats for climbing the mountains of Graaff-Reinet, introducing me to locals and listening to all my stories.

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To all the Graaff-Reinetters who shared books, photos, stories and just took the time to tell me your story, I will forever be grateful, thank you!

Sincere thanks to the following people within Boukunde who have greatly contributed to my studies: Karlien, Abre, Johan, Arthur, Anika and Carin .
Thank you!

ABSTRACT

Historic Towns, such as Graaff-Reinet, have a long history. The genius loci of the architecture within the town fosters a critical reflection of the past. The preservation and conservation of architecturally significant towns within South Africa plays an increasingly assertive role in the unbalanced urban growth and the future development of these towns.

Because of the dynamic nature of our cities, current urban development is a mounting threat to the survival and preservation of the historical towns' unique urban environment, cultural landscape, place, architecture and the community who currently inhabit these towns (Corten et al., 2014: 21; McLachlan, 2010: 58).

This dissertation investigates architecture's role as regenerator within the management of vulnerable heritage sites in sensitive urban heritage environments. Regenerative design is used to interpret place and serve as the mediator between urban conservation and sustainable strategies, in order to explore the potential of sustainable heritage within place. The regenerative design practices explore the relationship between sustainable community development, vulnerable heritage management and environmental potential. In doing so, the exploration hopes to achieve a concentrated development framework that assists with the improvement of vulnerable heritage management within the context.

Market square in the town of Graaff-Reinet, is the investigated case study with the architectural intention of developing a framework for further application and investigation.

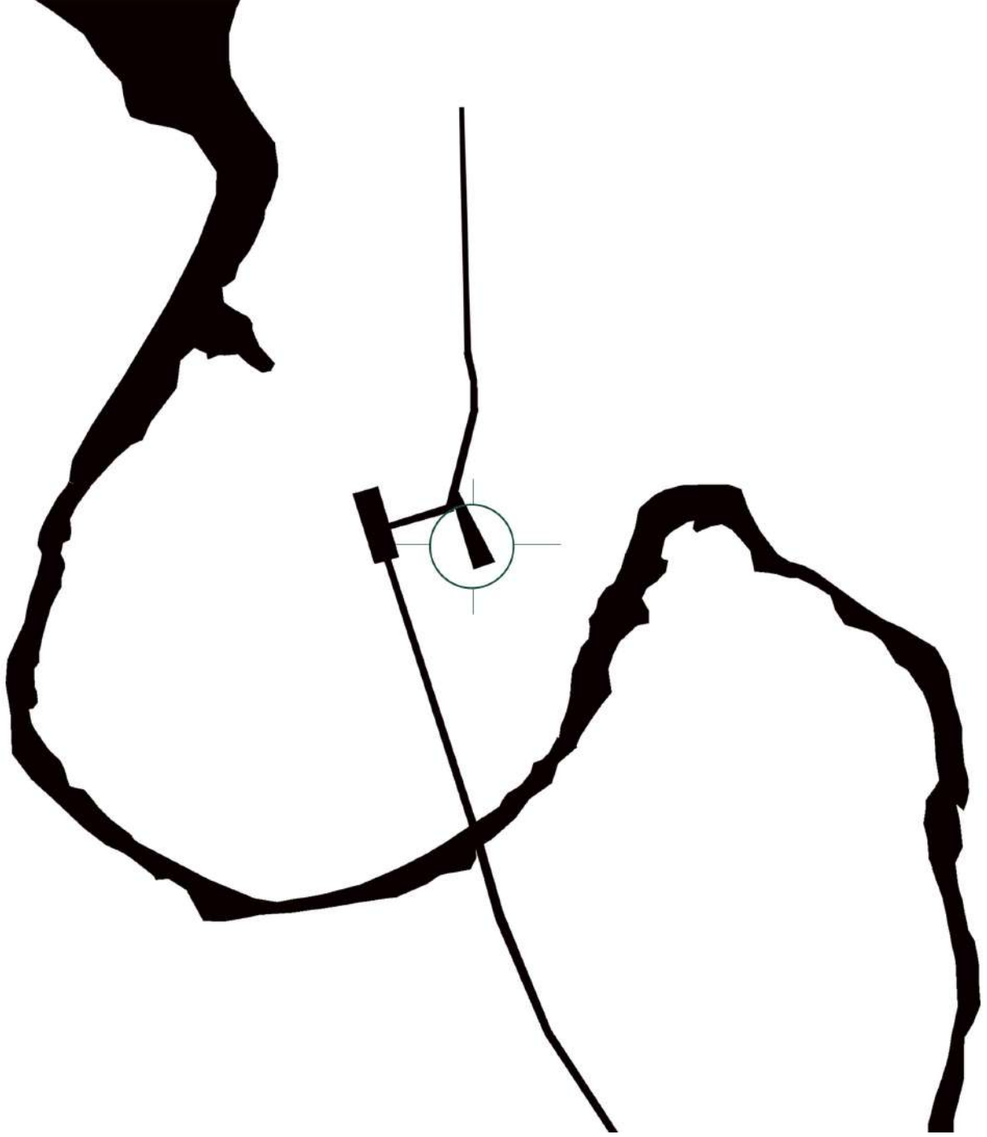


TABLE OF CONTENTS

CHAPTER 01 INTRODUCTION

Figure 1.4
Photo of the town, taken from magazine hill, north of the town, (Author 2019)

"Spandau's Peak that sunsets burn
And the dove-clouds dally on,
Fashioned like a haughty stern
Of a Spanish galleon
Rock-browed Spandau gazes down
On a chess-board featured town,
Where in clean-cut squares are seen
Houses white and green"

Lawrence Green

Spandau kop

Graaff-Reinet's great landmark is Spandau Kop, Spandau Kop is a steep cone rising about a thousand feet above the town on the south-western boundary.

Market Square

Figure 1.5
Photo of the town,showing Spandau kop, taken from lokasie kop, west of the town, (Author 2019)

1.1 INTRODUCING GRAAFF-REINET

1.1.1 LOCALITY

Graaff-Reinet, a Karoo town within the heart of the Eastern Cape, urban fabrics documents the development of a community in the unique environment of the Karoo (Japha, 1990: 21).

Green (1955) describes the town setting within the harsh landscape as ringed by mountains and surrounded by a great loop of the Sundays River. "When you look down on Graaff-Reinet from the high heights of the Valley of Desolation, the town is a rich green oval with the harsh surroundings of the Camdeboo district" (Green, 1955: 84).

Due to this description, early travellers referred to Graaff-Reinet as the "gem of the dessert" or, "gem of the Karoo" (Green,1955 :84).

The town has retained most of its original 19th century Townscape, reflecting an architectural hybrid of the bringing together and interchange of imported colonial practices, being both European and English (van Eeden, 2015: 6; Minnaar, 1987: 5; Japha, 1990: 21).

The architecture reflects unique streetscapes with buildings of different styles, originating from different periods. Each building spills out onto the street with decorated stoeps or verandas, where one can casually escape the heat of the Karoo, whilst enjoying the social activity of the street.

The traditional architecture owed much of its resilience to the fact that it was well situated, lending itself to construction with crude materials and unskilled labour using relatively primitive building methods.

Figure 1.6
Aerial image of the town within the landscape, (Edited by Author 2019)

1.1.2 THE SETTING

The picturesque setting of Graaff-Reinet's architectural vernacular and the decorated facades make one feel as if one has stepped back a few centuries in time.

"Walking down the streets, wide enough to turn an ox-wagon, takes one back through Graaff-Reinet's History. Most of the buildings have wooden shutters to block out the intense summer sun, while still letting in sufficient daylight. In winter, the shutters help insulate against the cold. Walls were constructed with handmade bricks or locally cut stone and covered with a mud plaster" (Green, 1955: 84).

The characteristically lime white-washed walls was used for waterproofing mud bricks and the woodwork was painted "heritage green" . This combination of green and white is what gives the town its charming characteristic Karoo look.

Figure 1.7
Panoramic image of Parsonage Street, (Author 2019)

1.2 ISSUES

General Issues

The sustainability of urban heritage conservation in the context of South Africa is problematic because of both the dynamic nature of our largest cities and the struggling relationships between the survival of towns and urbanisation (McLachlan, 2010: 2).

Urban heritage conservation of cities, towns and cultural landscapes in South Africa, is further inhibited by the related problems of urban form, ownership, political will, difficulties in implementation and a problematic socio-economic context (McLachlan, 2010: 2).

The nature of rapidly expanding population places great pressure on the development and restructuring of neighbourhoods within the town. The urban pressures in towns, namely the physical, political, social and economic pressures, differ from developed cities. The general problem arises when managing these pressures, as urban fabrics are of heritage value, but the heritage management of these urban fabrics are inconsistent (McLachlan, 2010: 3; Harrison, 2013: 2-9; Petruccioli, 2016: 2).

Graaff-Reinet, like many other towns in South-Africa, often rely on tourism to survive; this results in the museumification of the town. Museumification is not a sustainable solution for the survival of local economies, social activities, urban development and expanding socio-economic infrastructures. The urban proposal suggests an exploration of a sustainable solution, to promote local economic development, allowing infrastructure to expand and articulate within the town. The proposal addresses the socio-economic infrastructure to support the rapid urbanisation within the town, providing a structure that local communities can rely on.

Urban Issues

The management implementation strategies within historic towns such as Graaff-Reinet, implements strategies to conserve the urban heritage within the town. The effect these conservation approaches have on the town is that not all buildings are respected, restored or approached within the same framework. Some of these implementations tend to monumentalise the urban landscape, turning the context into a landscape of museums (McLachlan, 2010:2).

The lived condition of this historical urban landscape carries the consequence of protecting many buildings within the environment that are in the process of piling up of disparate and conflicting pasts. The piling up leads to a 'crisis' that does not allow the community to contribute to place, for place is perceived to be untouched (Harrison, 2013:580).

This crisis accumulates the amount of alienation taking place within the landscape due to the lack of control over buildings, sites, places, cultural landscapes and environments that are not considered to be of significant value and/or museum and/or national monument (Foruzanmehr and Veillinga, 2011: 275). Since not all buildings within the context are of national significance, some buildings, which the author identifies as vulnerable heritage, are often neglected and erased without proper consideration for the underlying significant contribution to the architecture of the context.

The significance of heritage is constantly questioned by authenticity and what the prescribed protected, be it architecture, attributes to buildings, sites, places, cultural landscapes and environments. The authenticity of architecturally significant heritage buildings is determined by key attributes of the function and use of place, materials and resources that influence evolution, and form and design that developed into current existence.

The Urban Issue investigates the progressive heritage management of Graaff-Reinet and the actual implementation of the administration of urban heritage conservation within vulnerable heritage sites (Harrison, 2013: 3).

The Market Square, being subjected to drastic change, is investigated as a vulnerable heritage site, assessing the value of the remains of historical urban fabrics. The square consists of historical narrative that has always been the centre for trade within Graaff-Reinet. Market square holds the potential to mitigate socio-economic development, due to its history, function and the contribution the square could make to the larger context.

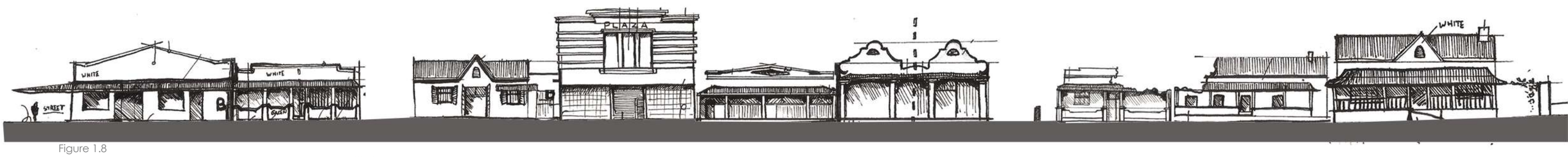


Figure 1.8
Drawing of the existing buildings on the precinct, (Author 2019)

Architectural Issues

Historical buildings eventually become inadequate for use because of society's needs that are constantly changing. As a result, many historical buildings throughout the Market Square's existence have re-peatedly mutated into something completely different, altering the shape. The appearance, additions and alterations of buildings do not take into account the heritage management strategies, local vernacular and the densification of current urban conditions.

The local context reveals dialectical instances as well as elements that are embedded within local cultural traditions and techniques (Foruzanmehr and Veillinga, 2011: 275). The product of the lived condition, vulnerable heritage, should not only refer to processes of preservation and conservation, but also reinterpret the decisions to delist or cease to conserve particular forms of heritage once their significance to contemporary and future societies can no longer be demonstrated (Maneti, 2006: 80). Vulnerable architecture is subject to a situation where vernacular building traditions are in constant decline, through modern counterparts replacing traditional vernacular technologies. Vernacular traditions are seen to be in a state of decline and are frequently looked down upon, abandoned, neglected or actively demolished.

Architecture within market square is confronted with a contradiction about how to preserve it and at the same time change it, so that it can remain preserved. Historic buildings, which no longer serve their original functions, can be renovated for a new use. The Architectural Issue deals with the regeneration and retrofit of local vernacular, to improve the performance of architectural buildings, to respond to the local climate and to renovate the historic fabric so as to retain relevance within the community.

Figure 1.9
Photo showing the empty old Plaza bioscope used by tradesman, (Author 2019)

1.3 RESEARCH PROBLEM AND QUESTION

RESEARCH PROBLEM

It is argued in this dissertation that within historic urban landscapes, heritage fabric is dependent on the socio-economic function. Thus, the evolution of place within vulnerable heritage sites should inherit a regenerative approach that allows historic urban fabrics to evolve, but still contribute to place and historic conservation strategies.

Market Square's urban fabrics form part of the significant cultural landscape of historic urban environments in Graaff-Reinet. Because market square does not live up to the expectation of providing socio-economic opportunities, the community does not value the square and the surrounding buildings. The management of vulnerable heritage, which influences the decisions, made about the precinct by the current users, do not consider the historic fabrics, cultural landscape and the continuity of vernacular traditions. Tension then develops between the management of the precinct and the value the community contributes to place are resulted into the build-up of vulnerable heritage within the precinct.

RESEARCH QUESTION

-General Question

How can vernacular typologies be adapted to synergize both environmental and historic conservation strategies to ensure their socio, economic and environmental sustainability?

-Contextual Question

A) How can historical conservation strategies be used to retrofit and adapt vernacular typologies in Graaff-Reinet?

B) How can environmental strategies be used to retrofit and adapt vernacular typologies in Graaff-Reinet?

C) What does socio- economic and environmental sustainability mean within the context of Graaff-Reinet?

D) How can regenerative design practices be used to adapt and inform the current and future vernacular within the context?

Figure 1.10
Typical Saturday morning within the square, (Author 2019)

1.4 INTENTIONS

RESEARCH INTENTIONS

This dissertation seeks to investigate regenerative design as agent between theory of place and people. Regenerative design uncovers the 'placeness', the relevance of heritage management of place and the narrative that influences the evolution of the identified cultural landscape. Regenerative design thinking is underpinned by the current relevance of heritage management structures and the use of place in conjunction with the existing condition of the vulnerable heritage site. The architectural response is guided by promoting the use of place within a heritage environment as well as regenerative design theories that could guide the evolution of place within historically significant environments.

Setting the perspective

The natural characteristics of a historically significant environment carries conditions that restrict users from changing the urban fabrics, adapting to their own 'placeness' or evolving according to the needs of the local community. The focus site, Market Square, is not included within the conservation core of Graaff-Reinet's conservation area plan. Within the development of Graaff-Reinet, Market Square has played an assertive role between the local economy of agriculture within the town and the economy of farms on the outskirts of the town. With the square struggling to keep up with the constantly changing economy, the use of the square over time and the architectural edge has changed as well. These changes impact on the significant architectural contribution of market square to the rest of the town and has also had an impact on the community, as the square is one of the only public spaces for the community to engage.

Urban Intention

This dissertation's Urban Development Plan focuses on developing a sustainable approach to preserve the remaining historically architectural buildings in the square, by evaluating the current use of the square and assessing whether the current architecture contributes to the cultural significance of the square. The urban development is informed by promoting local socio-economic growth within the community. Currently the focus of economic development in Graaff-Reinet is based on tourism.

The Urban Development Plan proposes that the Market Square serves as a catalytic node between the local community, existing agriculture and internal socio-economic drivers within the community. This intervention will serve as a graft within the existing urban fabrics and existing economies within Market Square and will promote 'placeness' along with the regeneration of the Square as an economic capital.

Market Square: Graaff-Reinet lacks an open urban public space where the local community can interact socially, trade and express their cultural values. The Urban Development Plan proposes that the square's current use be re-evaluated and retrofitted to regenerate the past meaning of square to be a place of social interaction.

The architecture of Market Square: The urban development plan identified alienation and degeneration of market square. The current architecture does not provide opportunity for change, and current adaptations are not done in a holistic way to respect local vernacular, sustainability and architectural significance. The proposal suggests that even though in the past the Market Square had been a subject of architectural change, the existing buildings are preserved in a manner that promotes the use of place and celebrates the architecturally significant elements.

Architectural Intention

In order to address the issue of vulnerable heritage, a regenerative design approach is implemented. The precinct located on the western edge of Market Square was explored through integrating the existing fabrics as a compex of buildings with the new intervention. The architectural intention is the conservation and preservation of the architectural landscape and introduction of 'placeness' to the historically sensitive context. The current architectural model and heritage management structure is not flexible and cannot be adjusted to adapt to the evolution of place. Through regenerative design, 'placeness' is explored with reference to the local community, and socio-economic development, while maintaining significant architectural elements and staying true to the context.

1.5 RESEARCH METHODOLOGY

To arrive at a more holistic understanding of the use, significance and sustainability of the current vernacular. The research methodology is based on conducting a qualitative analysis of literature review to the main concepts discussed in this chapter such as: heritage, heritage management, vulnerable heritage, vulnerable heritage management and sustainability within vulnerable heritage sites (Salman 2018: 1). Regenerative design principles are used to investigate, evaluate and respond to the identified vulnerable heritage site.

The first objective was achieved through rigorous review of relevant literature related to heritage, heritage resource management and the use of heritage. Understanding the shortcomings of use, contribution, sustainability and evolution of the current conservation and preservation strategies within our architectural heritage management structures. Exploring whether the principles of the revised Burra Charter (Australia ICOMOS 2013) provided clarity on the use of place.

The second objective was accomplished by a small-scale assessment of local vernacular on the western edge of market square. The analysis consisted of a field survey and historic background evaluation of individual building's variation and stylistic components, determining the significance of place and contribution to the larger environment. The assessment of local vernacular helped to establish the significant elements of the individual buildings and to conduct a thorough investigation of value, age, significance, aesthetic committee remarks , description of building, historical value, potential and special remarks . This assessment showed whether or not these buildings.

The third objective explored the evolution of place. The identified buildings were assessed by analysing them as a whole. At first, the analysis compared the spatial condition created by the different facades adjoining one another. The second part was to analyse the material and use through grouping and categorising the facades, stoeps, roofs and walls into high, medium and low significance. The gathered information was represented in a 3D model for further design investigation. The model shows that the facades contain the highest value of significance.

Observations of the site were carried out through a range of fieldwork periods. Due to time constraints, fieldwork periods were restricted to site visits conducted in January, April and July. Elements on site, use, maintenance, activities, spatial conditions and significant elements were documented in the form of drawings, photographs and notes.

Figure 1.11
Photo of a typical karoo house on site, (Author 2019)

1.6 LIMITATIONS AND ASSUMPTIONS

Limitations and assumptions

Although the whole Market square will be considered as one entity, the dissertation will focus on the western edge of Market Square.

Although Market square has not been declared as a National Heritage site, the Architecture within Market square are under subjection of current conservation strategies .

The design Typology is spesific to the location and context of Graaff-Reinet.

CHAPTER 02 THEORY

Figure 2.1
Photo of the town, taken from Lokasie kop, west of the town, (Author 2019)

2.1 THEORETICAL FRAMEWORK

THEORETICAL OUTLINE

In this section heritage, heritage management, vernacular and regenerative theories are explored in order to develop a strategy to advocate conservation and preservation of architecture as well as the cultural identity of the landscape within market square.

With regard to historical urban environments, the first challenge is to distinguish between the different interpretations of architectural heritage. The process of heritage management tends to isolate heritage fabrics from the living environment and the people using these environments. Alienation takes place within the landscape, creating a discontinuity of the cultural architectural language.

This section is divided into two parts: part 1: macro theory (theoretical strategy) and part 2: micro theory (an architectural response to the current vernacular contextual conditions).

Part 1 investigates macro theory that formulates an analogy around the architectural discipline as synthesis of the management of heritage, and investigates relating strategies that assist with formulating a new strategy to regenerate the architectural, urban and socio-economic condition of market square.

Part 2 examines the architectural response as micro theory to formulate this study's position within the architectural continuum. Part 2 provides a brief overview of vernacular theory, identifies Gawie Fagans architectural discourse towards a new vernacular and positions this argument within the evolution of vernacular as the strategy to preserve market square's architectural significance.

ILLUSTRATION OF THEORETICAL OUTLINE

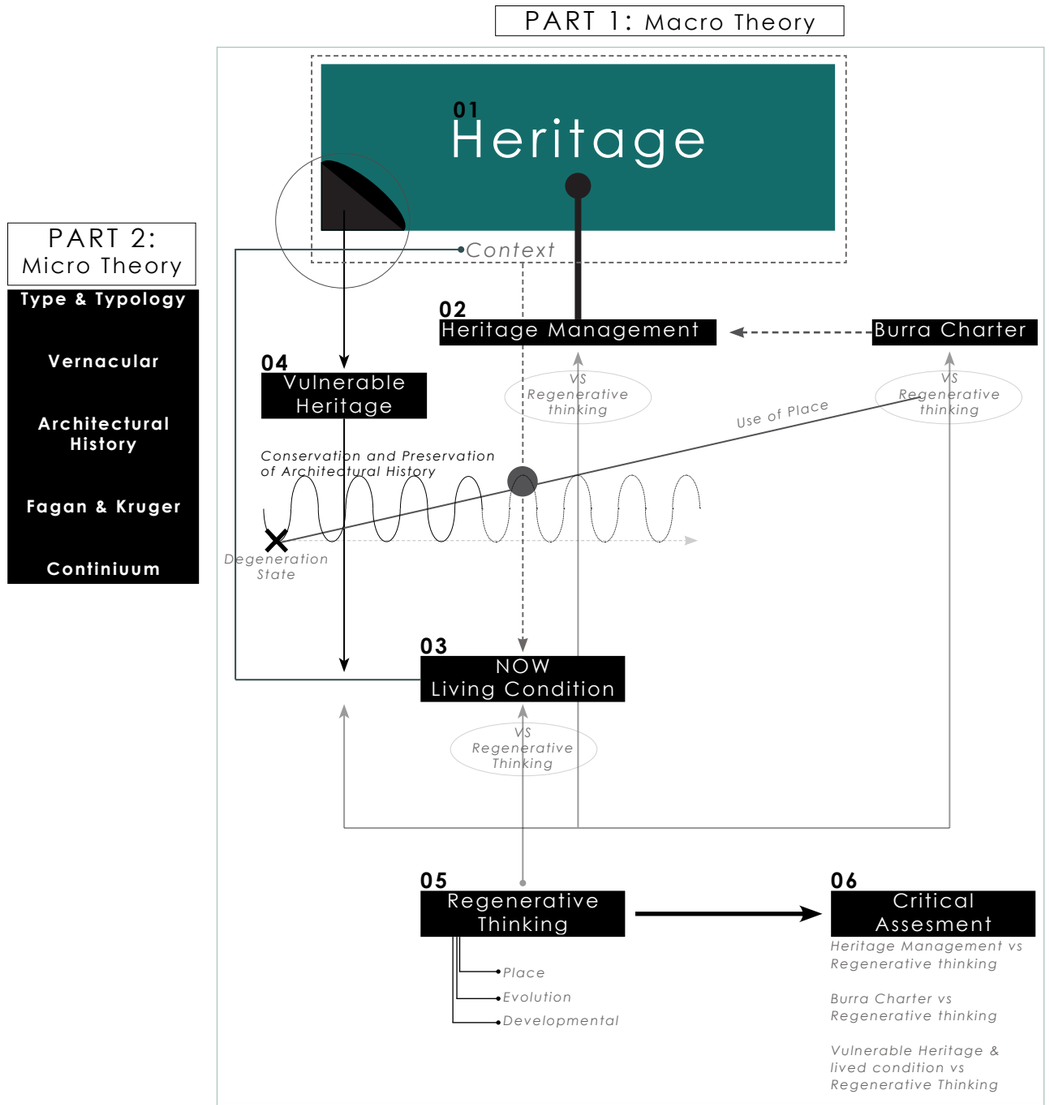


Figure 2.2
Illustration of the Theoretical outline exploring the network and train of thought, (Author 2019)

2.2 PART 1: MACRO THEORY

Refer to the theoretical outline diagram (Figure 2.2)
Macro theory consists of a network of parts that are all dependent on one another. The diagram identifies key points within heritage management of the lived condition, which provides a strategy to regenerate vulnerable heritage within market square.

2.2.1 Heritage

Heritage within architectural term is the conservation and preservation of pre-dated relics and histories of a past regime. Within the architectural discourse, the general term 'heritage' advocates the cotton wool effect that creates the so-called 'black and white' world. This world assumes that everything tangible and intangible within the urban landscape must be preserved and protected (McCarthy, 2012: 624; Townsend, 2017: 11).

Bakker (2007: 14) describes South African histories as rich, complex and unique. Terdiman (1993) describes the notion of history as modernity's way to deal with our 'memory crisis', while Kammen (1995) postulates that the heritage movement has developed an obsessed sense of nostalgia with the preservation of heritage – the 'ultimate act' of not forgetting the past (Huysenn, 2003 cited in Harrison, 2012: 581).

Heritage management aims to respect and protect significant building proportions, spatial typologies, traces of demolished buildings, reconstruction of destroyed buildings, relocation of heritage buildings and adaptive re-use. Heritage conservation and preservation reflect more specific heritage values of the built heritage of the identified specific communities and pasts (McCarthy, 2012: 624.).

South Africa's heritage and the management and protection of histories of the current society has not reached a coherent vision on the conservation and preservation of different heritage categories and places since South Africa's democracy in 1994 (Bakker, 2007:14). As a result, there are multi-layered contexts, such as a historical town's urban fabrics, which are determined by the community's values and use of the identified focused space.

2.2.2. Heritage Management

Heritage management is not applicable for all buildings, sites, places, cultural landscapes and environments within historical environments. Heritage management is determined on various factors namely: the significant contribution to cultural landscape and the value place contribute to the community.

Heritage management is synonymous with notions of care that includes the practice of protecting heritage and the process of conservation (Harrison, 2012: 582). Literature on Heritage management resources do not supply rigorous guidelines that situate or accommodate the regeneration and retrofit of place within heritage management, especially with regard to vulnerable heritage sites.

McCarthy (2012: 624) describes the process of heritage management which includes heritage legislation, policies, advocacy, identification, assessment, risk assessment, public awareness, technical skills, research into conservation, consolidation methods and sustainable tourism that are measured in years or sometimes over decades.

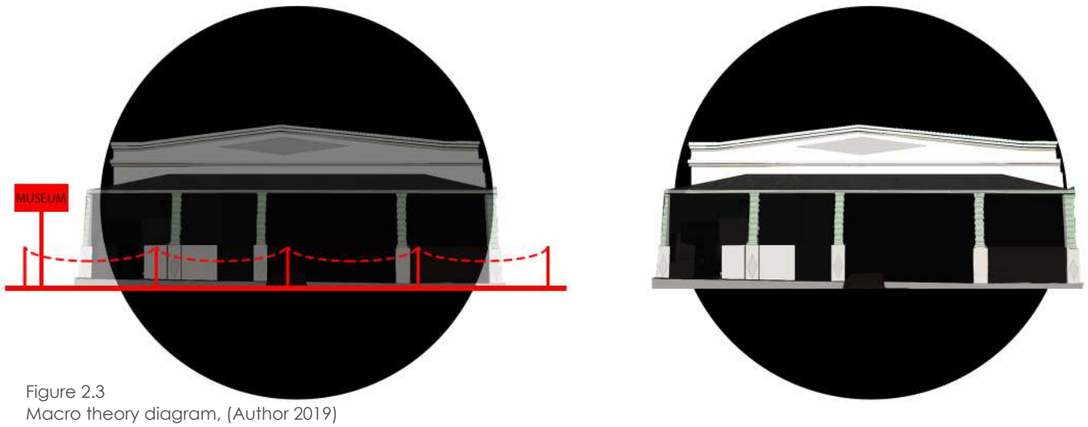


Figure 2.3
Macro theory diagram, (Author 2019)

2.2.3. Living Condition within historical urban landscapes

The lived condition carries the consequence of protecting many buildings in the environment that are in the process of piling up of disparate and conflicting pasts (Harrison, 2013: 580). The piling up leads to a crisis that accumulates the amount of alienation taking place within the landscape due to the lack of control over buildings, sites, places, cultural landscapes and environments that are not considered to be of significant value and/or a museum and/or a national monument (Foruzanmehr and Veillinga, 2011: 275). These buildings that are subjected to change are perceived in this study's investigation as vulnerable heritage.

The solution to the crisis is to pay more attention to the management of vulnerable heritage sites. Whereas, heritage site interpretations and presentations follow a formalistic approach embedded in heritage legislation, buildings that are considered to be vulnerable heritage precincts have not contained their original form and thus there is the danger of to the buildings' loss of identity and prosperity in relation to the context (Harrison, 2013: 580).

2.2.4. Vulnerable heritage

Vulnerable heritage is subject to a situation where vernacular building traditions are in a constant decline, through modern counterparts replacing vernacular technologies. Vernacular traditions are seen to be in a state of decline and are frequently looked down upon, abandoned, neglected or actively demolished.

The pressure develops when determining the act of reusing, regenerating and retrofitting buildings that become functionally redundant. The process mainly involves the negotiation of history and maintaining economic use within place (Salaman, 2018: 7). The challenge is to find synergy between the community's identity and the lifestyle adopted by the people in the community. The identified architecture within the historical environment, and vernacular architecture in particular, is the product of people's vibrant manifestation of how identity and sustainability are related. The study determines the sustainability between the surrounding natural environment, identity, vernacular and the available resources in the community.

Currently there are no existing legal instruments or formal policy for the conservation and sustainable management of vulnerable heritage or intangible cultural heritage in South Africa. This means by its nature that vulnerable heritage is a fragile heritage resource often vulnerable and susceptible to disintegration that if not adequately managed consistent with the heritage cultural value, essence and conservation needs. Local knowledge can also be used to re-interpret heritage resources that are still subject to dominant colonial interpretations. Traditional knowledge could teach us how to interact with our natural environment and to 'relearn' ways of healing the degenerated urban environment that are consistent with the contextual vernacular interpretations (Maneti, 2006: 80).

2.2.5. Regenerative Design

Regenerative design theories are implemented to establish a co-evolutionary relationship between nature and community's need retrofit and regenerate 'place'. Regenerative design transforms and renews a system that no longer has a relevant function, as vulnerable heritage sites' regenerative design allows for place to be evaluated to determine the missing component to develop place for evolution (Du Plessis, 2013: 37).

Regenerative theory is categorised according to three theories namely place, evolution of place and developmental process. The three theories are set out to create an integrated framework that evolves the definition of sustainability through the conceptual understanding of living within place (Mang and Haggard, 2016: 29; Atkinson & Ingle, 2010: 11).

The following criteria was developed to retrofit and regenerate market square as a vulnerable heritage site. Place should be adapted to owner's needs within the physical constraints of urban heritage fabrics. Any changes in market square should retain cultural significance and at the same time be guided by the cultural significance of the place .

Theory 1: Determining Place

Determining place is the process tailored to express natural and cultural systems uniquely by creating strategies to achieve sustainability (Mang and Haggard, 2016: 29). Norberg-Schulz (1963) states that place carries the identity of the community who function within it. Place is defined by determining the basic value of architecture and the contribution architecture contributes to cultural significance of the urban landscape.

Theory 2: Determining the Evolution of Place

Enabling evolution engages with the understanding of how a place works, how the user constructs place architecturally and how place is used by the community that occupies the space. To determine the evolution of place, an architectural investigation is conducted (refer to chapter 4*) to determine the significance of place. The statement of significance engages with regenerating co-design within the existing infrastructure and urban fabrics, exploring new function within the diverse heritage and urban layers (Mang and Haggard, 2016: 35).

Theory 3: Developmental Process

The developmental process explores opportunities of retrofitting the physical structure to benefit from the surrounding natural and social communities (Mang and Haggard, 2016: 35; Atkinson & Ingle, 2010: 11). The developmental process is determined by the analysis built up from regenerative design principles of place and evolution.

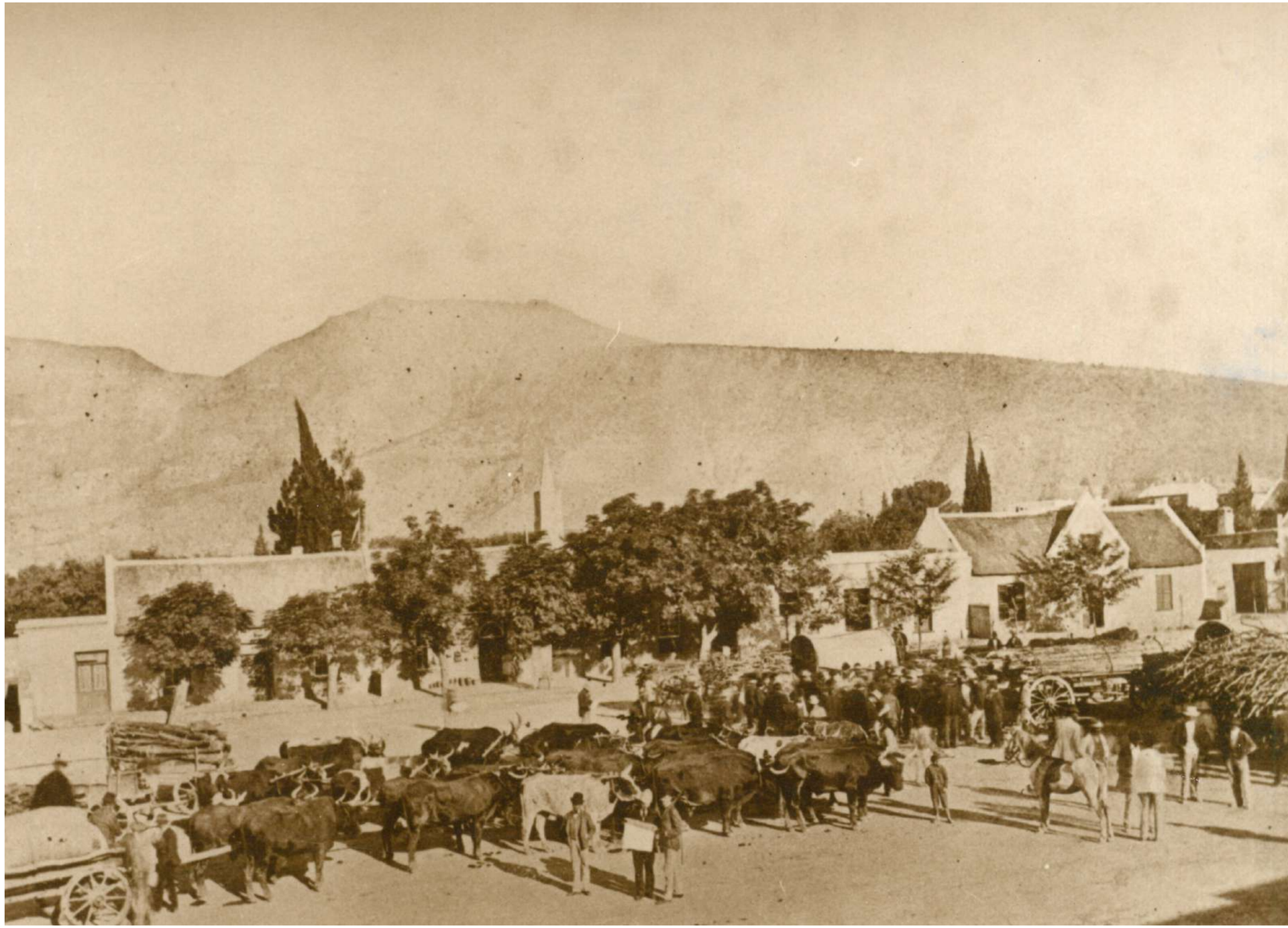
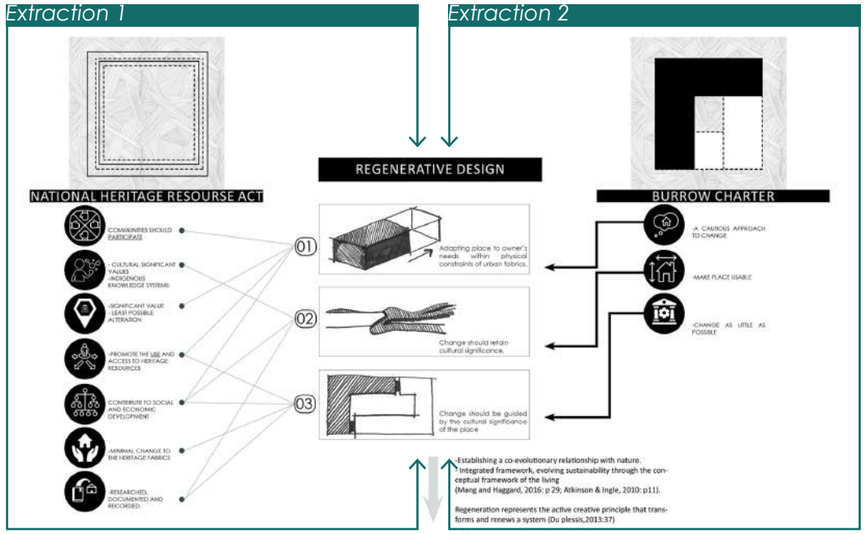


Figure 2.4
Old photograph of site, Western boundary of market square, (Graaff-Reinet Museum Digital Photographic Archive, E S Whitlock Collection,W_066.)



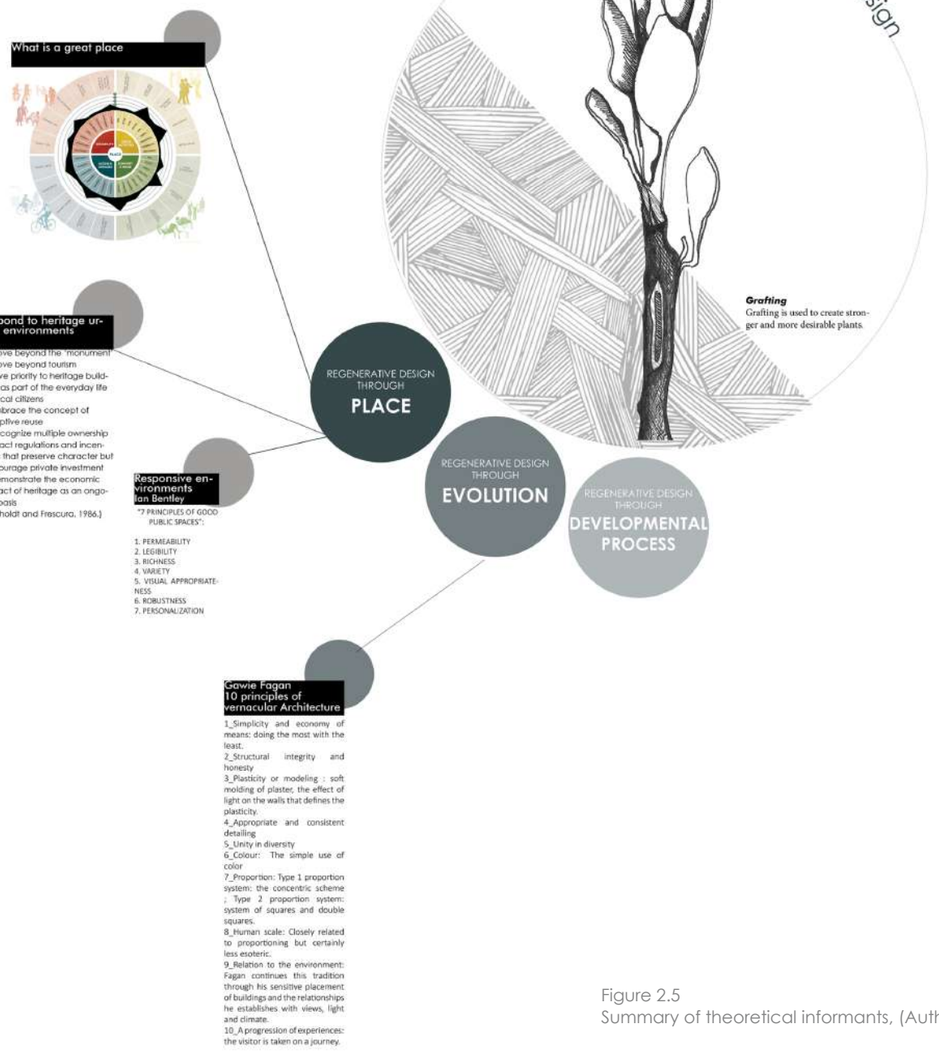


Figure 2.5
Summary of theoretical informants, (Author 2019)

2.2.6. Critical assessment

Heritage Management Strategies

By considering the range of different heritage charters and heritage resource acts that specifically informs the architectural context of Graaff-Reinet . It is critical to evaluate the experimental possibilities of these prescribed documents, in light of the research problems addressed earlier. The national Heritage Resource Act (NHRA, 1999) and the Burra charter (Australia ICOMOS 2013) are considered of great importance within the design process.

The Act does not accommodate the alteration and regeneration of place, thus the Burra Charter (Australia ICOMOS 2013) was consulted to determine whether the Charter allows for place-making. The Burra Charter (Australia ICOMOS 2013) suggests that place should adapt to owner's needs within physical constraints of urban fabrics, change should be guided by and should retain the cultural significance of the place. Even though place can be identified as vulnerable heritage, vulnerable heritage sites in historical communities contain elements of significance that contribute to the larger environment.

A. National Heritage Resource Act

With regard to South African national heritage legislation and regulations, the South African Heritage Resource Agency (SAHRA) was established under the National Heritage Resources Act (NHRA, 1999) for the preservation and protection of our cultural heritage resources. The Act is thus of great importance to the context of Graaff-Reinet, as well as market square. Considering conservation core of Graaff-Reinet, Market Square is excluded . Although the square is of significant value, the surrounding buildings need protection against alienation.

Summary of Principles :
-Communities should participate within heritage management
- Cultural significant values
-Indigenous knowledge systems
- Least possible alteration
-Promote the use and access to heritage resources
-Contribute to social and economic development
-Minimal change to the heritage fabrics
-Researched, documented and recorded.

Heritage Management (National Heritage Resource Act) vs Regenerative thinking

Although the NHRA promotes that heritage and indigenous knowledge systems are protected, it is used for social and economic development (such as tourism). The Act for most cases in Graaff-Reinet protects a wide range of buildings spread throughout the town; thus two of the buildings in market square fall under the protection of the Act.

Regenerative thinking explores the restrictions in the Act, and it seeks opportunities to provide guidelines to regenerate and retrofit place. The principles emphasise that the significant value should be retained through minimal change of the historical materials.

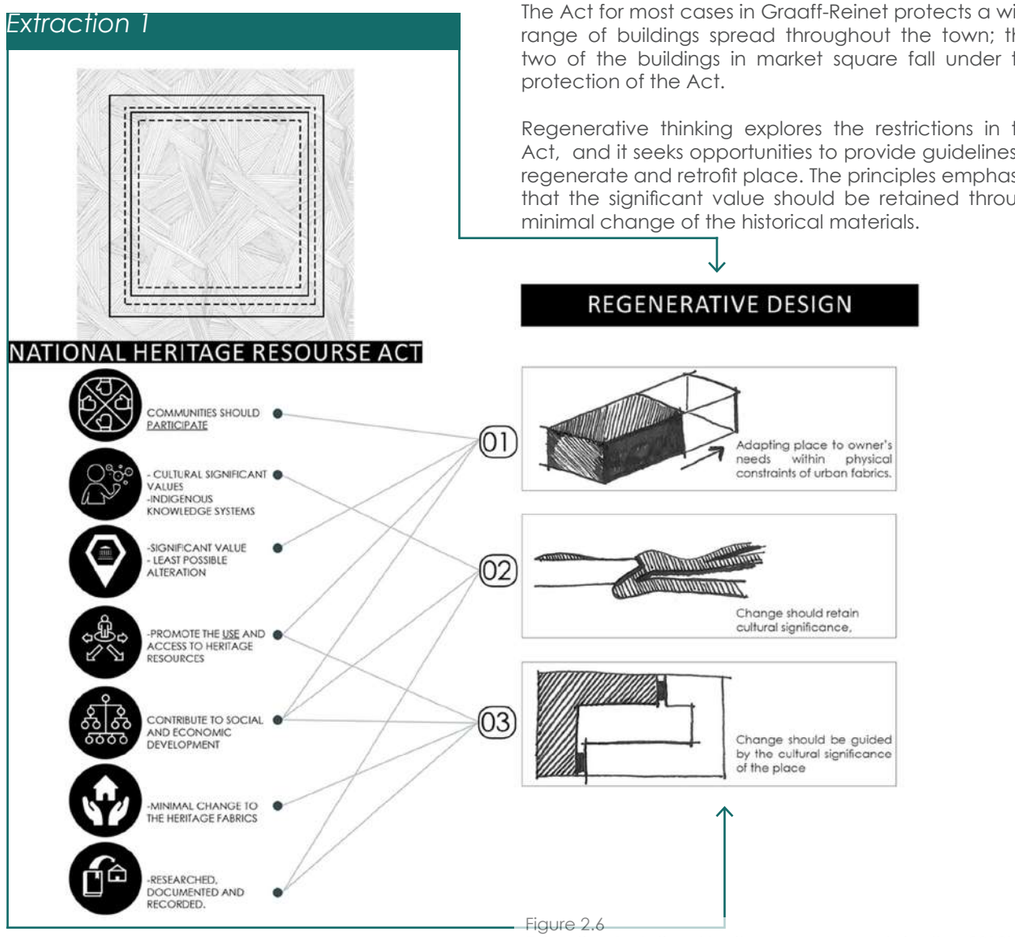


Figure 2.6
Extraction 1, National heritage resource Act, (Author 2019)

B. Burra Charter

A rigorous investigation was undertaken of the different charters available and the Burra Charter was identified as a comparison with the National Heritage Resource Act. The Charter outlines the significance of place and how change to place should be handled.

Summary of Principles :
-A cautious approach to change
-Make place usable
-Change as little as possible
-Change guided through the significance of place
-Removed afterwards

Burra Charter vs Regenerative thinking

The Burra Charter is a national Charter for the conservation of cultural sites in Australia. The Charter defines standards for using cultural significance to manage and conserve cultural sites. The Charter provides sanction for change, but on the condition that the changes can be removed and/or the site restored to its original state.
Regenerative thinking explores the Burra Charter through allowing significance to determine the value of place and the evolution of place. The Charter is also applied in developing a sustainable strategy for the development of current vernacular.

C. Vulnerable heritage & Lived Condition

The lived condition highlights the aspects of the vulnerable heritage site, market square. The value of place is determined by the users using place, allowing change to be adapted when use expires.

Summary of Principles
-Adapting place to owner's needs within physical constraints of urban fabrics.
-Change should retain cultural significance,
-Change should be guided by the cultural significance of the place

Vulnerable Heritage & Lived Condition vs Regenerative Thinking

The architectural response to the investigated lived condition and vulnerable heritage suggests 'grafting' onto the existing by building on to the current significance of the architecture.

Regenerative thinking explores the current condition of the context and the amount of change allowed within the context. Exploring vernacular and existing technologies available in the local context to assist in guiding regeneration of place.

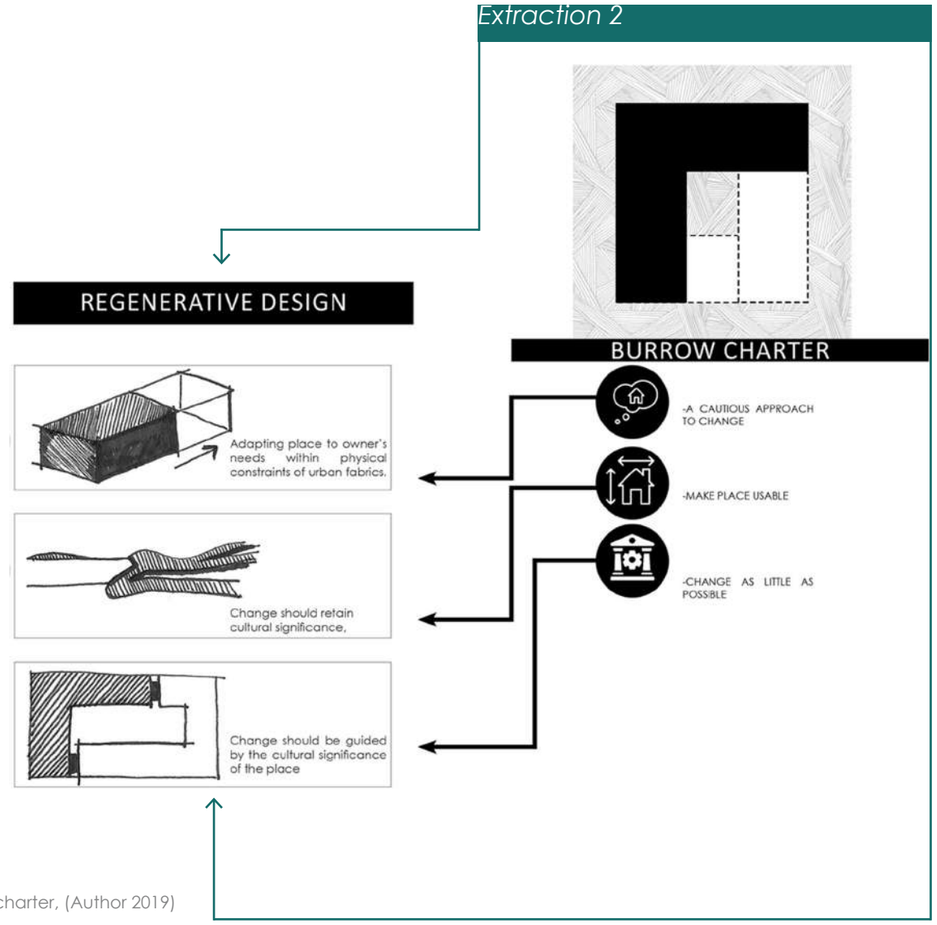


Figure 2.7
Extraction 2, Burra charter, (Author 2019)

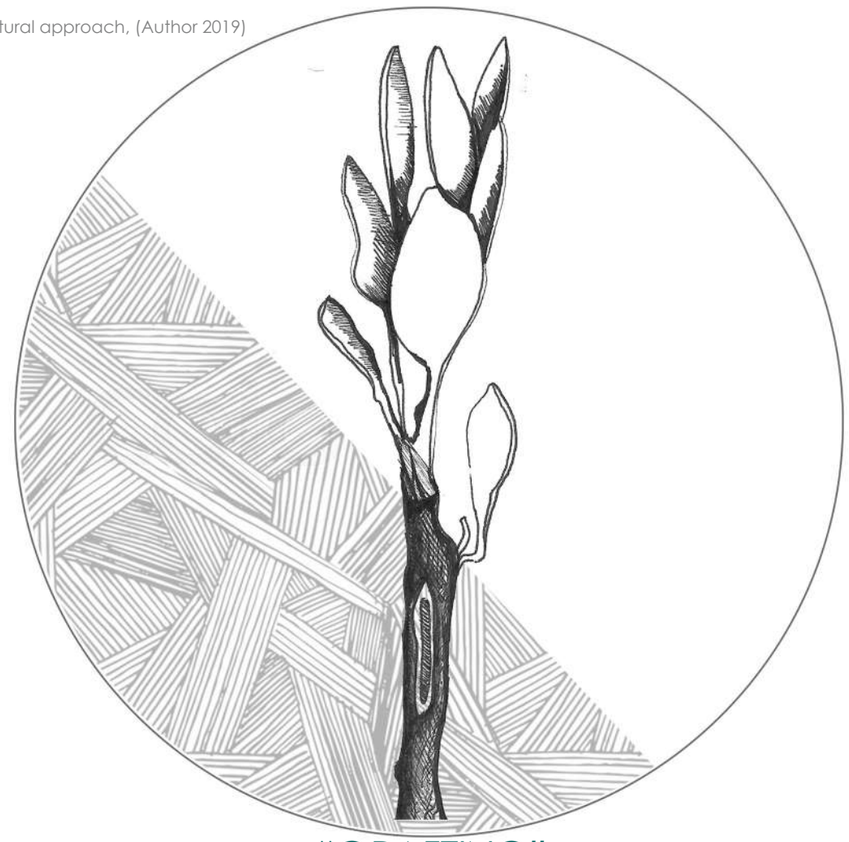


Figure 2.8
Grafting_ Architectural approach, (Author 2019)

"GRAFTING"

2.2.7. Architectural premise

The study explores the process of 'grafting' as a research premise to take position in the conservation and preservation of historical urban fabrics.

According to the Britannica, within horticulture 'grafting' is used for a variety of purposes, such as : to repair, to produce, to strengthen, to retain, to adapt, to produce and to propagate. Grafting is the act of placing a portion of one plant on a stem , of another in such a way that the two parts join by means of tissue regeneration.

The combination of the two parts provides a new improved compatibility and improved characteristics. The union of the 'grafting' is determined by the initial characteristics that need to be improved, the new function, the method used and then the final product.

The act of 'grafting' will be explored by applying the principles to the identified vulnerable heritage site. The principles are set out to explore the theoretical premise of the dissertation.

2.3 PART 2: MICRO THEORY

OUTLINE

This section positions this research response within an architectural continuum that contextualises, locates the influences of vernacular and outlines basic principles to influence the evolution of vernacular within the context. Within the investigated context, vernacular is determined on three aspects: firstly, the local response to place; secondly, influence of the functionalist and modern architecture; and thirdly, precedent of local interpretations of vernacular.

The micro theoretical discourse presents the issues within representational aesthetic categories that derive from the level of the vernacular image, production and the object.

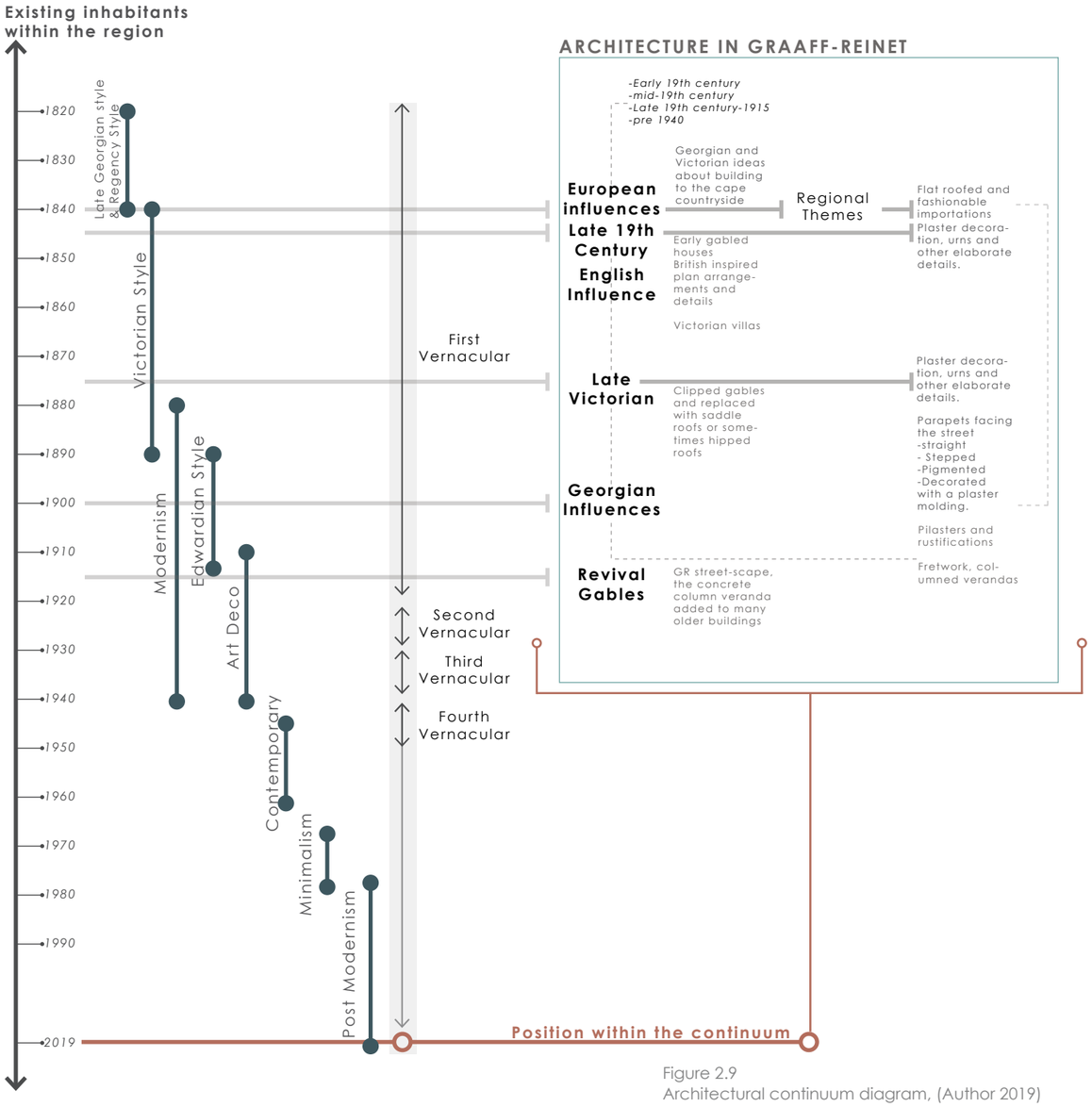


Figure 2.9
Architectural continuum diagram, (Author 2019)

2.3.1. Defining Terminology of Type, Typology and Vernacular architecture:

The connection of type, typology and vernacular architecture to the context of the Karoo, is an authentic expression of the collective memory of the historical urban landscape (Petruccioli, 2016: 5). The aim is to provide a brief overview of type, typology and vernacular and to discuss vernacular architecture practitioners' contributions and their architectural responses and principles.

Type is the identifiable and similar features of a collective group of buildings from the same period and context. "Typology, not to be confused with type, is the science that studies the types, their mutual relations and their evolution in time" (Petruccioli, 2016: 5). The Typological process allows us to understand the evolution and development from one type to the next.

Vernacular architecture is identified as an established, collective characteristic of traditions. Vernacular architecture consists of typological variants of the leading type a-priori and can be studied through typological science (Petruccioli, 2016: 3).

2.3.2. Modernism Influence on the Vernacular:

The modern movement inspired a great variety of architectural responses that followed the era. In the 1950s, architectural responses were synthesised through combining the spatial qualities of Cape vernacular and the architectural approaches of the modern movement. This response followed by architects such as Pius Pahl (1909-2003), Revel Fox (1924-2004) and Gabriel Fagan (1925-) (Barker, 2012: 36). These architects developed the process to adopt to place specifically and to suit new functional requirements.

Rudofsky's (1964) vernacular studies motivated for a return to basics that responds to the authenticity of architecture. Looking back at the modern movement, their original intentions reflects those of vernacular of being authentic and true to the nature of existence (Barker, 2016: 2).

2.3.3. Cape Vernacular:

Cape vernacular, is an inherited tradition described by Biermann (1955) as intricate elaborations of renaissance revival, baroque and rococo, a continent away from their origins. This noble architecture has endured for over three hundred years, echoed amongst the imported oak trees and mountain peaks settling independent authority (Barker, 2012: 37).

Exploring the placeness of Karoo vernacular, the local response to place implies a rethinking of what is customarily done with vernacular. Reflecting on the origins of vernacular in the Karoo, Fagan (2008: 78) suggests that our priceless heritage, the flat-roofed building ('Brakdak'), as one of the first forms of vernacular will retain validity as unpretentious, rural architecture that is mostly forgotten and remains in old photographs.

The architectural continuum places intertwines with the origin of vernacular, the true essence of place and the vernacular context that defines place. Through the application of regenerative theories, the physical control would be to regenerate place to not merely a building, but a place for community and evolution within vernacular contribution.

2.3.4. The Evolution of the Cape Vernacular Interpretation
The Cape vernacular tradition has undergone four important shifts highlighted by architect and historian Doreen Greig (1971: 17) and Barker (2014). These shifts influence interpretations of vernacular within South Africa and evolution within the architectural continuum of this dissertation.

The First vernacular
Imported Dutch/German

Short Description
European, colonial and Eastern traditions Influence by the Khoi-Khoi, through the adaptation of the reeded roofs.

Architectural elements
-Freestanding single-story building
-One room in depth.
-Parapet gables frame the high thatched roof
-Dark tone of roofs forming a strong contrast to the whitewashed walls.

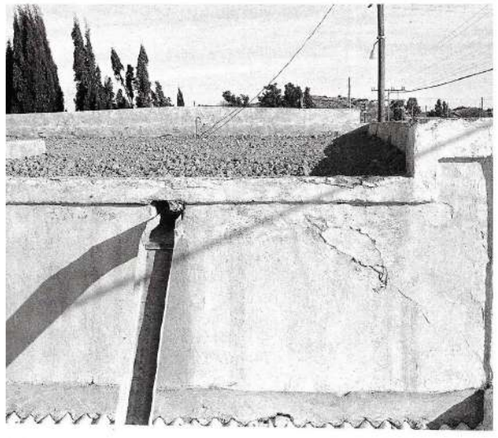


Figure 2.10
Brakdak, (Fagan 2019: 156)

The Second vernacular
Georgian influence(1920)

Short Description
British characteristics introduced through narrow passageways and decorative classical internal and external details from pattern books (Japha et al, 1997: 2157 and Greig, 1971:18).

Architectural elements
-Verandas were introduced and shutters extended the colonial tradition climatically.

Figure 2.11
Photograph of the old residence on site, showing gable end and stoep, (Author 2019)

The Third vernacular
Arts and Crafts(1930s and 1940s)

Short Description
The Dutch 'Queen Anne Style' (referred to as Cape Dutch revival) were introduced by adopting and transforming vernacular elements and adding others to achieve a Free Style vernacular.

Here a short-lived burst of classical Modern Movement architecture shifted towards a more place-specific architecture.

Architectural elements
Arts and Crafts Replicative approach balanced with an interpretative approach to planning that fused the traditional centralised organisations.

Figure 2.12
Old photograph enlarged of a residence on site, (Graaff-Reinet Museum Digital Photographic Archive, Minaar Collection,26 Market Square 11.75.)

The Fourth vernacular
Interpretation(1950s and 1960s)

Short Description
The architecture built on and extended the formal and technological legacy of the first three vernaculars.

A consistency of approach to climate was developed through window wall proportions and technology. Simple white box forms were generated through the reinterpretation of local vernacular form, often with fireplaces as focal elements either externally or internally placed.

Houses designed by Pius Pahl, Revel Fox and Gawie Fagan.

Architectural elements
New way of making buildings that layered functional determinism on an established formal tradition.

Consistency in planning through functionalist organization for efficient use of space, all influenced by Modern Movement tendencies and the attenuated plan of the vernacular long house.

Shift in formal influence that recognised principles and formal attributes of the vernacular while contextualizing Modern Movement attitudes to space making, technology and climatic response.

Figure 2.13
Window detail of die ES, Fagan, (Author 2016)

2.3.5. Gawie Fagan and the Fourth Interpretation of Vernacular

Fagan's work inspired by the modern movement canon which was regional in nature and was later inspired by Brazilian modern trends. Although the local and international architects were oceans apart, their search for an authentic architecture found much inspiration in the Mediterranean vernacular.

Fagan's development of a new Cape vernacular typology illustrates the understanding of his own vernacular interpretation which created a sound basis of his architecture. The new vernacular mediates between formal significance, functional requirements and context.

Fagan uses the chimney as focus point in all his designs. The chimney becomes the functional role that connects the past with the present, creates the warmth of place and the social gathering around the chimney with the intention for this space becoming the focal space in the design.

Fagan's intimate knowledge of the Cape vernacular has allowed him to understand its development and refinement over time. His development of a set of "lessons from the vernacular" (Barker 2012: 167-232) is analogous with Le Corbusier's search for form in the Mediterranean vernacular. He developed a set of ten principles entitled 'Learning from the Vernacular' (Fagan, 1996). These principles express three overriding qualities of vernacular architecture: respect for place, technology as craft and the use of symbol .

2.3.6. Conclusion and the way forward

The work of Fagan, modern movement and vernacular interpretations will form the basis for this study; the new vernacular principles will be implemented and explored through the design process. The knowledge gained from the macro and micro theories is explored through the assessment of a variety of precedents, allowing the architectural response to inherit qualities of vernacular interpretations and graft onto the existing context.

As illustrated in Figure 2.14 , Fagan's 10 principles of vernacular are explored in the architectural and technical design responses. The architectural response investigates human scale, progression of experience through integrating simplicity and economy of means through material selection, regeneration of the existing architecture and retrofit of Market Square. The technical response investigates structural integrity, unity in diversity through basing decisions to the relation of the environment. The new vernacular investigates the integration of the existing context and the new intervention through using 'the Stoep' as an architectural device that articulates thresholds between the two.

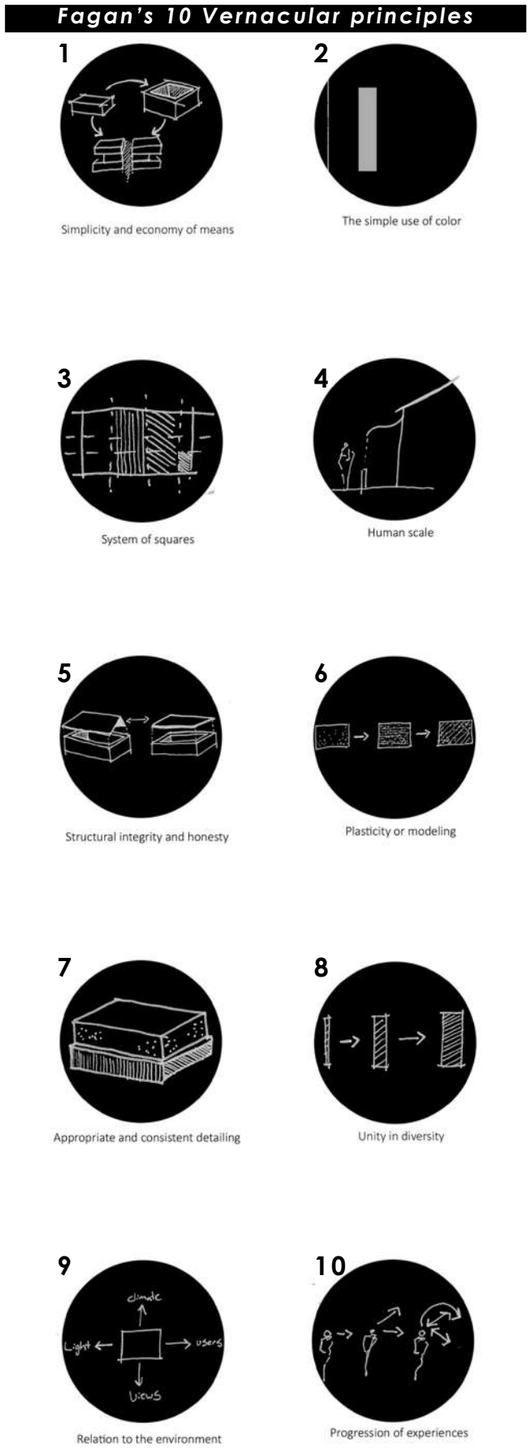


Figure 2.14
Summary of Fagan's 10 principles of architecture, (Author 2019)

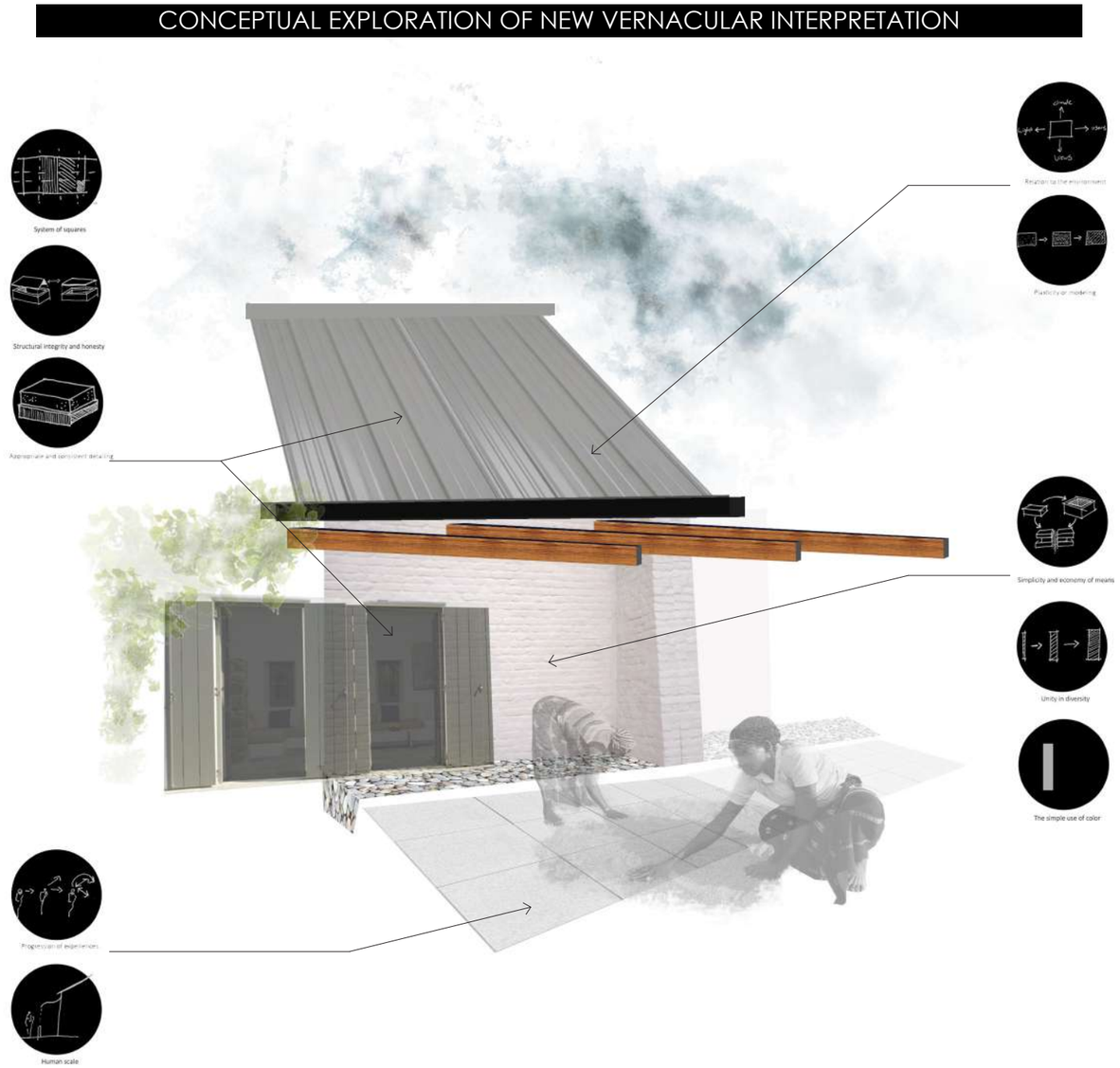


Figure 2.15
Conceptual exploration of the projects new interpreted vernacular, (Author 2019)

2.4 THEORETICAL PRECEDENTS

Theoretical Precedent study:

_Market Hall

Location: Malmö, Sweden
Architects: Wingårdh Arkitektkontor AB (2016)

Figure 2.16
Elevation of Market hall, (Pihl 2019)

Figure 2.17 & 2.18
Exterior of Market hall, (Pihl 2019)

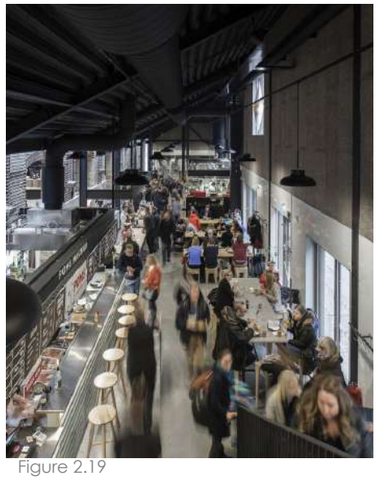
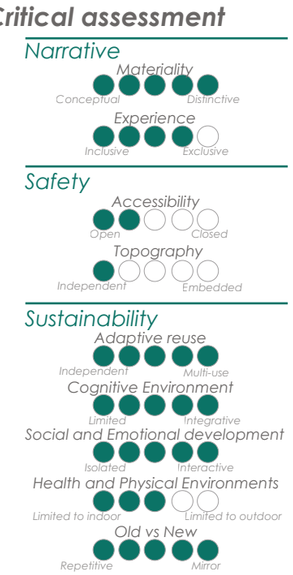


Figure 2.19
Interior of Market hall, (Pihl 2019)

Figure 2.20
Roof overhang of the new extension, (Pihl 2019)

Critical assessment



Design intentions

Market hall accommodates twenty vendors and restaurateurs. The space is an artisanal food center that sells and produce local food.

Market hall is the regeneration of an building's skin that has been subject to degeneration.

The architectural form was informed by mirroring the existing silhouette of the existing building. The new is distinguishable through contrast of material,shape and form.

Theoretical Precedent study:

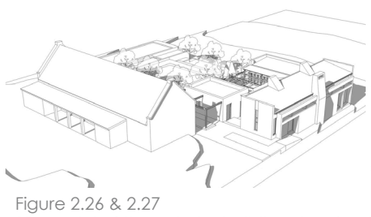
_African relish

Location: Prince Albert, Western Cape
Architects: Team Architects (2009)

Figure 2.21
Elevation of African relish, (Team Architects 2009)

Figure 2.22 & 2.23
Elevation of African relish (Team Architects 2009)

Figure 2.24 & 2.25
Interior (Team Architects 2009)



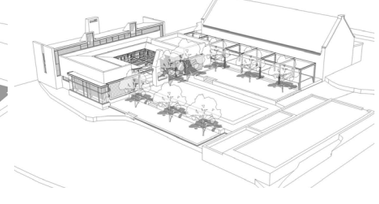
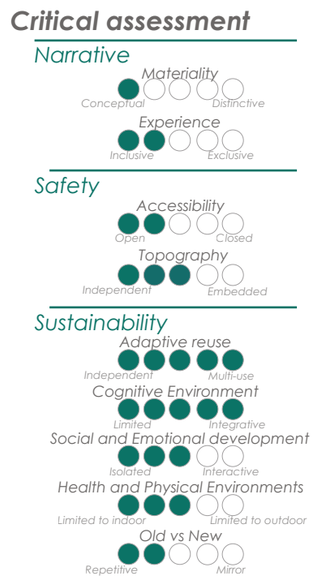


Figure 2.26 & 2.27
3D model of the exterior building showing the langhuis and the new addition, (Team Architects 2009)

Critical assessment



Design intentions

The site is an extent to an existing 153 year old 'Langhuis'.

The position of the new building allows to distinguish between new and old, allowing the old to remain independent, maintaining the hierarchical importance of the Langhuis (Team Architects, 2009).

The new and old connects formally and informally by way of the open courtyard-spaces and walkways in between.

The new addition contributes to the vernacular landscape by using simelar materials and building technologies.

Theoretical Precedent study:

_Brixton studio home

Location: Johannesburg
Architects: 26'10 Architects

Figure 2.28
Exterior elevation of Brixton studio home, (2610south Architects 2019)

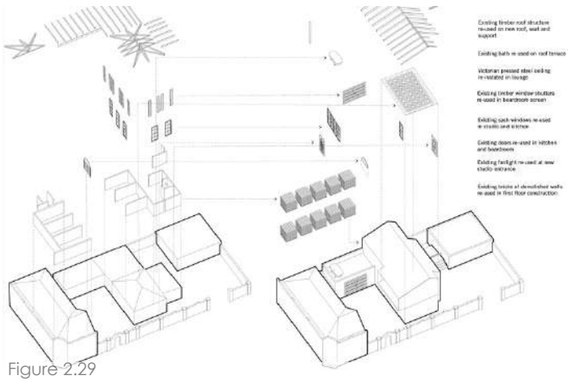


Figure 2.29
Adaptive reuse diagram, (2610south Architects 2019)

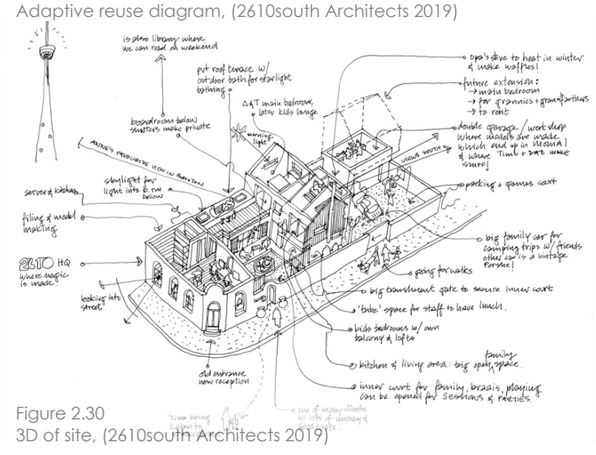


Figure 2.30
3D of site, (2610south Architects 2019)

Critical assessment

Narrative

Materiality: Conceptual – Distinctive
Experience: Inclusive – Exclusive

Safety

Accessibility: Open – Closed
Topography: Independent – Embedded

Sustainability

Adaptive reuse: Independent – Multi-use
Cognitive Environment: Limited – Integrative
Social and Emotional development: Isolated – Interactive
Health and Physical Environments: Limited to indoor – Limited to outdoor
Old vs New: Repetitive – Mirror

Design intentions

Brixton studio home consist of buildings that has been subjected to changed over the past 100 years.

The architectural response was retain existing structures on site by harvesting , re-using and reconfiguring existing materials and elements (2610south Architects, 2019).

The new enters an dialogue with its own historical narrative, that respects the old narrative with the new. This project is considerate in with how it responds directly to the contextual informants.

Spatial Precedent study:

_Bristol Old Vic Theatre

Location: Bristol, United Kingdom
Architects: Haworth Tompkins(2018)

Figure 2.31
Elevation of the Theatre, (Howarth 2019)

Figure 2.32
After: the new addition (Howarth 2019)

Figure 2.33
Before (Howarth 2019)

Figure 2.34
Interior of the foyer, (Howarth 2019)

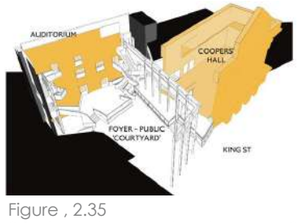


Figure , 2.35
3D of new intervention, (Howarth 2019)

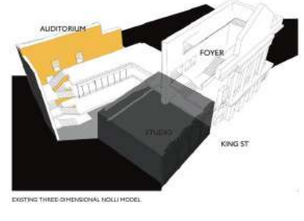


Figure , 2.36
3D before the new intervention, (Howarth 2019)

Critical assessment

Narrative

Materiality: Conceptual – Distinctive
Experience: Inclusive – Exclusive

Safety

Accessibility: Open – Closed
Topography: Independent – Embedded

Sustainability

Adaptive reuse: Independent – Multi-use
Cognitive Environment: Limited – Integrative
Social and Emotional development: Isolated – Interactive
Health and Physical Environments: Limited to indoor – Limited to outdoor
Old vs New: Repetitive – Mirror

Design intentions

The new foyer of the old vic Theatre integrates the theatre to spill out in a public courtyard .

The architectural response is a reflection of the old facade that through the contrasting materials is much more visible from the street. The facade is a rhythm of previous facade and contributes to the adjacent building's dialect.

Openings within the existing interior is punctured and highlighted by the use of modern materials.

CHAPTER 03 Context

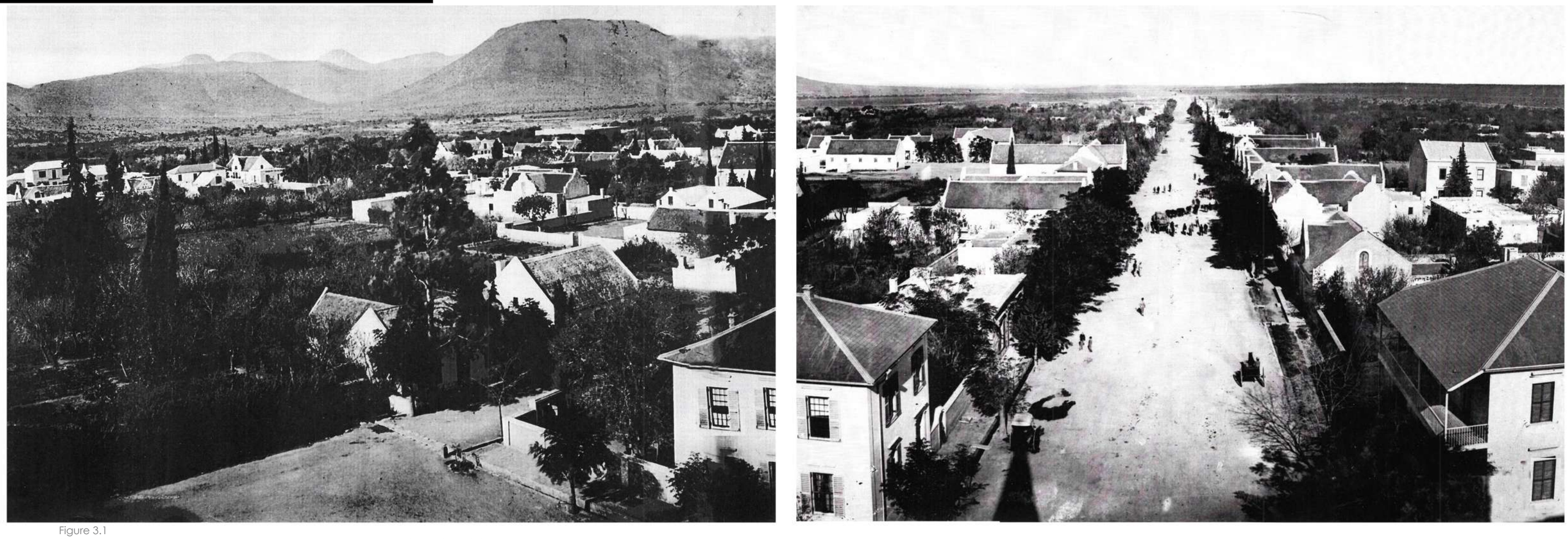


Figure 3.1
Old photograph taken from the church tower looking south- west, 1866, (Roe, G.R museum)

3.1 THE DEVELOPMENT OF GRAAFF-REINET

BACKGROUND

In the Cape Colony's eastward expansion of the Dutch East India Company (VOC), Graaff-Reinet developed as an administrative centre for the district's trekboers (Dutch-speaking farmers) in 1786 (Minnaar, 1987: 5). At the start of the colonisation of Graaff-Reinet's community, the Dutch-speaking farmers were in continuous struggles with the indigenous people who lived in the same district, and competed for the same resources (Henning,1975: 1).

Graaff-Reinet is the fourth oldest town within South-Africa and is named after the first governor who established the village and defended the district of the Cape, Cornelius Jacob van de Graaff, and his wife, Cornelia Reynet. The location of the town was carefully chosen to sit within the horseshoe bend of the Sundays River and surrounded by mountains on three sides. This location allowed for a constant water supply in the Karoo landscape.

THE ESTABLISHMENT

The first establishment of the settlement was through the construction of the drostdy. Drostdy's were established within towns between the 17th and 19th century as magisterial and administrative cores where the Cape could behold its jurisdiction over expanding settlements (Dictionary Unit for South African English, 2019). With the establishment only a few houses built from mud and reeds, arranged in such a way to form a street. In 1792, the first church was built and then in 1800 was replaced by a second church on the same site on Church Street (Japha,1990: 7).

In 1804, the expansion of the town led to Governor De Mist authorising the construction of a new drostdy. Louis Michel Thibault, one of the first trained architects and engineer within the cape, designed the new permanent drostdy to accommodate local practices and to adapt to his own neoclassical taste and training (Japha, 1990: 8). The drostdy was completed in 1811 and the parsonage on the other end of the street (Parsonage Street) was under construction.

By 1806, 48 houses were in existence. The houses were built out of mud brick and were low buildings with flat roofs. The façade walls were decorated with parapets and moulded cornices.

In 1812, Governor Andries Stockenstroom established the town grid. The grid was then divided into erven; each house was situated in front of the street with a morgen of land behind the house to cultivate and grow produce (Japha,1990: 9). Water was channelled to the erven via a water furrow system; this system is still visible in the streets of Graaff-Reinet (Green, 1993: 85). The town's population mainly earned their living from cultivating the land and selling their produce to locals and travellers passing through the town.

The grid layout of Graaff-Reinet had similar characteristics to Stellenbosch and Pretoria (Japha,1990: 8). The characteristics of the architecture of Graaff-Reinet resulted in buildings with terminated vistas to the streets; these vistas were emphasised by rows of trees which shaded the walkway in front of houses.

1786
Establishment of Graaff-reinet as administrative center.

Figure 3.2
Map of Graaff-Reinet drawn by Thompson, (Kemp 1993)

1792
First church was built

The church was strategically placed at the end of the main street. The street was closed by the drostdy and the parsonage (now called the Reinet House). The marketplace, which was referred to as market square, developed as a plain where trade could take place between the agricultural farmers and people of the town. Market square, with all its noise, wagons and oxen, was situated away from public buildings.

By 1822, Graaff-Reinet had grown to approximately 200 houses, most of which were brick buildings rather than mud hovels (Japha, 1990: 9). One of the first maps drawn by Thompson in 1823 *(refer to Figure 3.2)*, shows dense residential development along Church Street and Parsonage Street, where many T-shaped houses can be identified with their agricultural allotments behind them. The map also shows that Cradock Street, Market Square and Napier Street were densely developed.

STAGNATION PERIOD

There was a stagnation period in the town after the Great Trek in 1835, and most of the residents left the town. By 1840, the wool industry allowed for commercial expansion of the town creating a strong connection between Port Elizabeth and the inland (Henning, 1975: 39).

By 1848, Graaff-Reinet had grown to a population of approximately 2000 and the value of land greatly increased. The development had spread along to Donkin, Plaskett, Caledon and North Street where the town started to acquire more specialised commercial institutions such as banks (Japha, 1990: 8).

In 1866, major civic buildings such as a government school, a jail and civil commissioner residence were constructed.

1804-1811
Establishment of the Drostdy

Figure 3.3
Photograph taken from Magazine hill, looking south, (Whitlock 2003 cited in Westby Nunn 2008: 96)

1812
Town grid

Figure 3.4
Map of Graaff-reinet in 1830, (Edited by author Japha 1989: 12)

POPULATION EXPANSION

Between 1845 and 1880 the town's population expanded considerably. Development in the town reflected the distinctions of class and a geographic division occurred – whereas the residents on the western side of the town made their living through cultivating vineyards and livestock, those on the eastern side of the town were professional tradesman.

This period of rapid commercial expansion of the town, also led to an increase in African population (Japha, 1990: 9). As a result, the town's population was growing faster than the capacity could handle, and people illegally squatted on the town's commonage; some people rented rooms that were located at the back of the large erven.

By 1855, a small location for Africans developed at the foot of Magazine Hill which is located on the northern part of the town. Up until 1866, the location was regarded as temporary, and the municipality continued to restrict its size. However, this policy was later abandoned, and rapid expansion of the location occurred in the 1880s. In addition, so-called Coloured people occupied a number of erven in the west end of the town (Japha,1990: 9).

Figure 3.5 & 3.6
Panorama of Graaff-Reinet looking east, Then and Now, (Senekal n.d)

Figure 3.7
View of Graaff-Reinet from the valley of Desolation, (minaar n.d.)

ECONOMIC BOOM

In 1877, the town had extensive development that occurred in market square and the cross streets leading west from market square, namely in Caledon and Somerset streets. The development also resulted in agricultural erven being subdivided for development (Japha,1990: 10).

An economic boom followed the Great Depression, with the discovery of diamonds in Kimberly (Japha,1990: 10). The discovery of diamonds increased the strategic importance of Graaff-Reinet as a central point between the routes of the coast and the diamond fields. A railway link was established in 1879 between Graaff-Reinet and Port Elizabeth. The town then had to deal with a fatal economic blow when the major railway links from the coast to the interior were extended to bypass the town, leaving the rail link as a dead end line (Henning, 1975: 39). The town recovered and remained as an important local trading and cultural centre for local farmers of the region.

A photograph (Refer to figure 3.6 & 3.7) shows that the agricultural erven continued to be subdivided. The service streets, Stockenstroom and Bourke, became as densely developed as streets which had developed earlier; similar development occurred on the cross streets such as Caledon and Somerset Street.

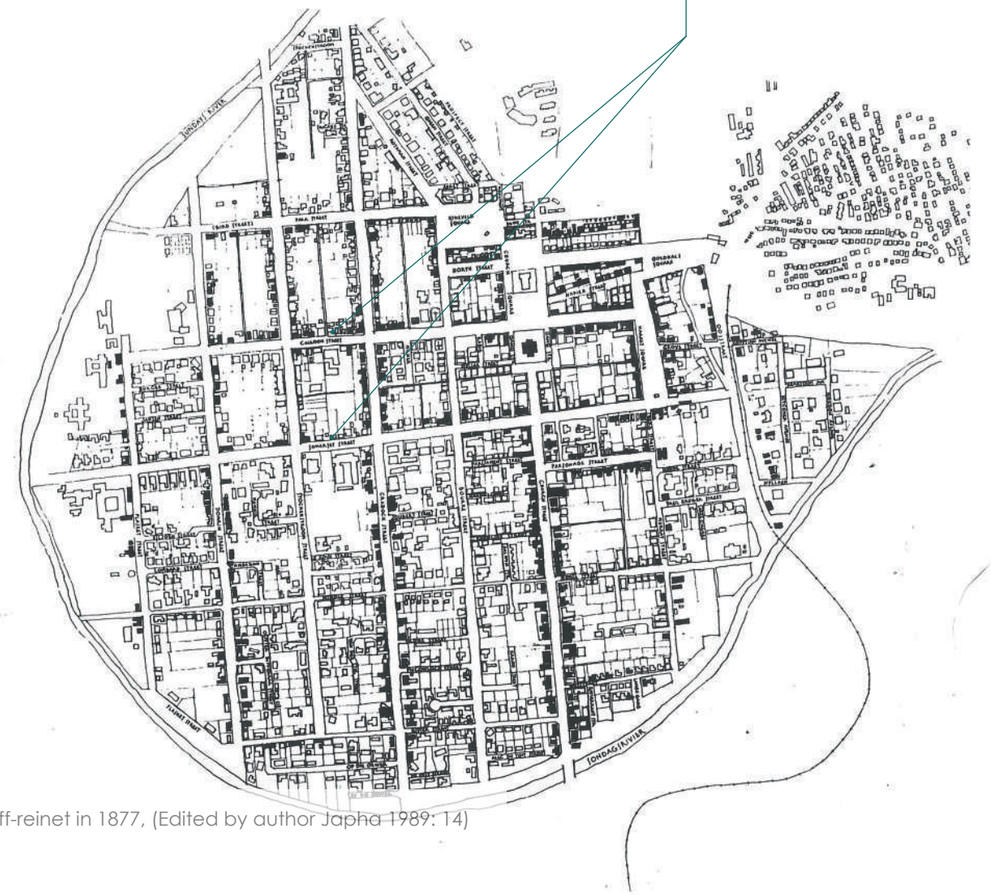


Figure 3.8
Map of Graaff-reinet in 1877, (Edited by author Japha 1989: 14)

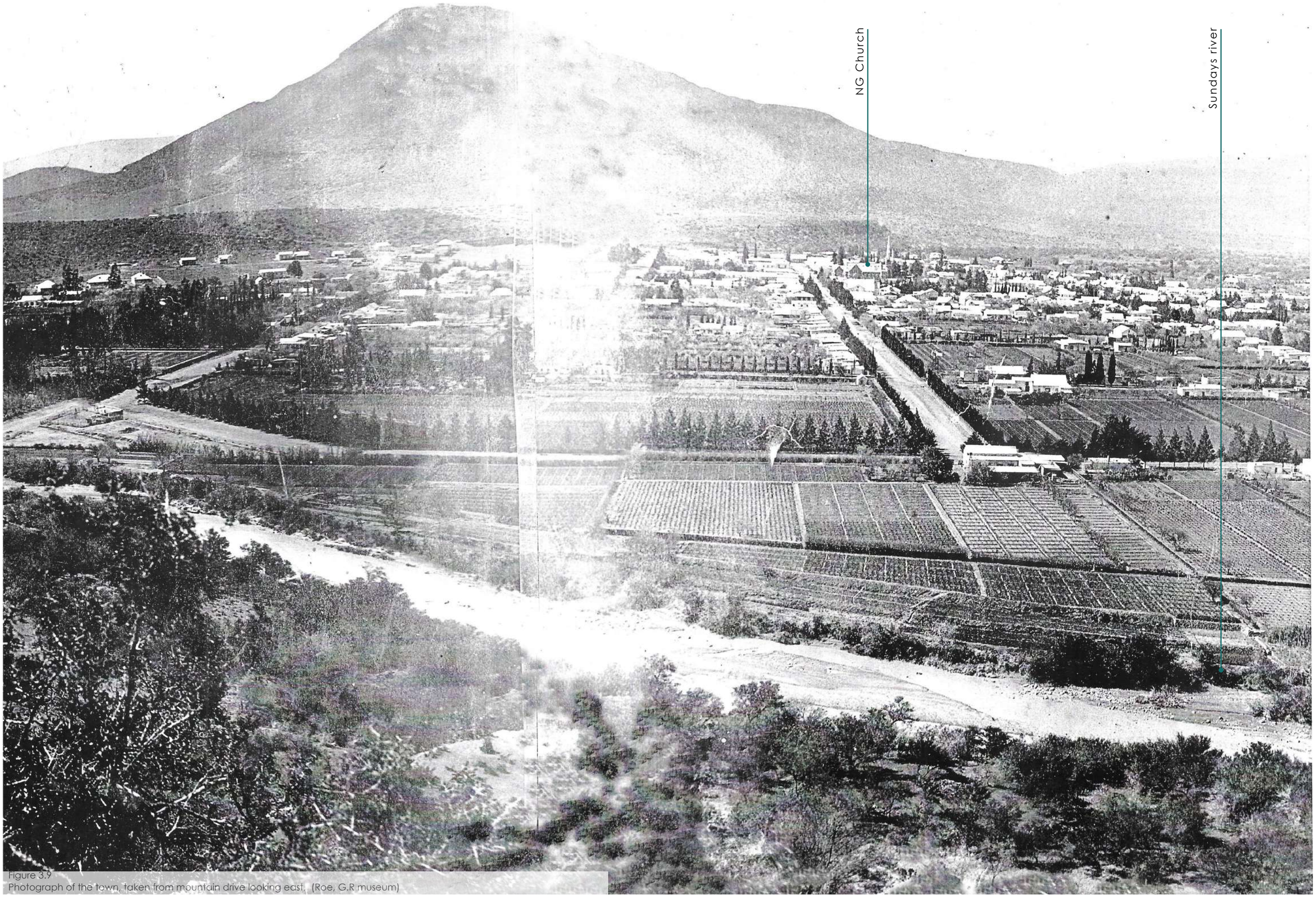


Figure 3.9
Photograph of the town, taken from mountain drive looking east. (Roe, G.R museum)

Figure 3.10
Photograph of the town, taken from mountain drive looking east ,July 2019, (Author 2019)

DEVELOPMENT UP TO NOW

An aerial photograph of the town, taken in 1945, shows that the urban fabric which developed during the nineteenth century remained intact. Agricultural activity still
occurred in the large urban blocks.

Only recently, they were finally displaced by purely residential buildings. Other changes that occurred then were the construction of the town hall, and an extensive development of the township, Umazisakhe.

An aerial photograph of the town, taken in 1980, shows that many changes in the urban fabric of Graaff-Reinet have occurred in the recent past (Japha,1990: 10). Perhaps the most significant is the extensive development of suburbs such as Spandauville, Kroonvale, Asherville and Santaville outside the horseshoe to the south. Within the horseshoe itself the pattern of dense development along the streets with cultivated land behind, has largely disappeared.

In the western part of town, where market Square is located, the urban blocks have been subdivided and suburban houses have been erected. Between Agricultural activity has been replaced by schools and sport Fields (refer to figure 3.9 & 3.10). The character of Church Street as well as Caledon Street has changed significantly. Both have been subjected to road widening, resulting in the loss of avenues of trees, and much of the nineteenth century urban fabric. In the western part of the town, old buildings has been replaced by large scale commercial development and filling stations.

Figure 3.11
Aerial photograph 1945, (Edited by author Japha 1989: 16)

Figure 3.12
Google Aerial image of Graaff-Reinet today, (Edited by author 2019)

2.2 KEY ATTRIBUTES

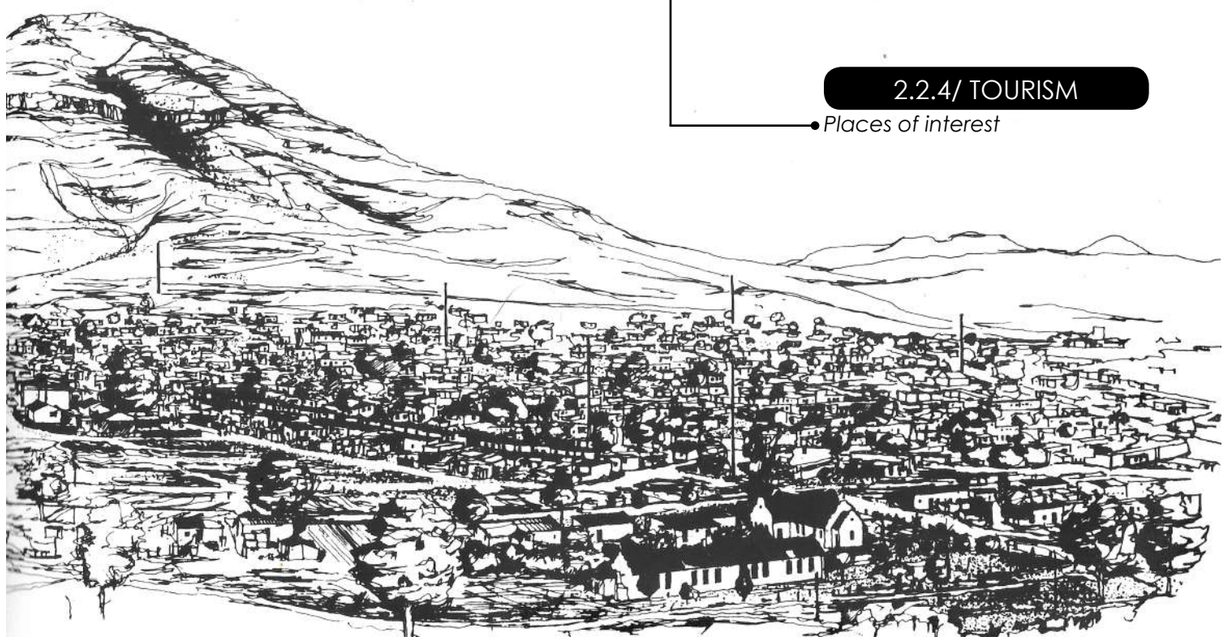
OUTLINE

Graaff-Reinet historical development are driven by people, places, architecture and tourism.

Within this section a brief over view is provided through discussing each key attributes.

- 2.2.1/ PLACES
  - *Post Apartheids town*
  - *uMasizakhe*
- 2.2.2/ PEOPLE
  - *Robert Sobukwe*
  - *Anton Rupert*
- 2.2.3/ ARCHITECTURE
  - *The development of architecture*
  - *Gable Houses*
  - *Flat roofed Houses("brakdak")*
  - *Victorian Houses*
- 2.2.4/ TOURISM
  - *Places of interest*

Figure 3.13
Sketch of Umasizakhe, (Edited by author: Japa 2019)



2.2.1 PLACES

Post-Apartheid's Town:

Graaff- Reinet's tangible and intangible characters reflect a critical build-up of racially divided urban and social conditions. Graaff-Reinet's urban form emerged from the inter-related segregation of communities, politics, and economics. When the Dutch-speaking farmers first arrived at Graaff-Reinet in 1786, indigenous people were already present (Westby-Nunn, 2008:18). In 1857 there was an influx of 3 000 starving Xhosa people who came to Graaff-Reinet from further north. These three communities lived in shared spaces until the Group Areas Act (GAA: 1950) was announced in 1957 which forced the indigenous inhabitants and Dutch- and Xhosa- speaking people to live apart.

To determine whether or not Apartheid had an impact on the town, and between the two major community groups in Graaff-Reinet, it is important to take into account the long history of the development of the town. In particular, it is important to consider the relationships between the groups within specific contexts, using time periods as reference points (Dercksen,1981:14).

Although the various versions of the Act were repealed in 1991 (28 years ago), the town still carries signs of the remnants of Apartheid. The earlier patterns created by the separation of inhabitants remain as part of the demographic layout of the town.

The manifestation of urban heritage is the bringing together of scattered histories and painful pasts. Rethinking the built environment is a crucial part of retro-fitting and regenerating the divided conditions created by past regimes.

Figure 3.14
Photo inside Plaza bioscope that shows polarisation, (Photo contributed by Linde nel)

uMASIZAKHE

uMasizakhe is a township on the edge of Graaff-Reinet, home to the town's Sotho and Xhosa speaking communities.

uMasizakhe means, in Xhosa,'we build it ourselves'. The township is located on the hillside to the North-East of Graaff-Reinet, on a mountain range called Lokasiekop and was developed from 1857 onwards (Westby-Nunn, 2008: 47).

The development was the result of a critical shortage of accommodation for former slaves and the influx of African people notably a South-Sotho tribe whichfled the interior from the upheavals of the Difaqane (a period of widespread chaos and warfare among indigenous ethnic communities in southern Africa during the period between 1815 and about 1840), and destitute Xhosas forced into labour in the Cape Colony.

uMasizakhe is also well-known as the birthplace of Robert Sobukwe, who was an inspirational political figure who, through his legacy, still inspires the young people of Graaff-Reinet. The Sobukwe foundation is currently developing a facility that promotes science and technology amongst aspiring youth.

In 2008, the Camdeboo Municipality commissioned a conservation study which is a joint undertaking of the School of Architecture at the Nelson Mandela Metropolitan University and Moffat Whitlock Architects. uMasizakhe was included in the study, as the first historic African location environment and will be the subject of a comprehensive conservation survey commissioned and supported by the Camdeboo municipality. This is particularly important as the architecture of uMasizakhe reflects the same architectural colonial practices as those of the town itself.

uMasizakhe plays a crucial role in the development of the proposed market square precinct in Graaf Reinet. The proposed intervention connects the missing link between the heritage core and heritage sites within uMasizakhe.

Figure 3.15
Photo down the street of The Royal block, (Author 2018)

2.2.2 PEOPLE

ROBERT SOBUKWE

Sobukwe was born in uMasizakhe, Graaff-Reinet on 5 December 1924 to Xhosa parents (Sahistory.org.za, 2019).He is described as a gentle, humble and deeply religious man. His brilliant intellect made him one of the main sources of inspiration for the Black Consciousness movement which emerged in the early 1960s and was led by Steve Biko, a founder of the Movement, during the 1970s.

Sobukwe founded the Pan African Congress whose members included leading South African figures such as Professor Barney Pityana and Dr Mamphela Ramphele were members of the Movement and of the Pan African Congress. Sobukwe was arrested on 21 March 1960 in the Sharpeville protests and shooting and spent nine years imprisoned on Robben Island.

Sobukwe's legacy is still continued in Graaff-Reinet and experienced by young people through the Robert Sobukwe museum & learning centre . The Centre serves as a flagship for the youth of Graaff-Reinet, creating opportunities and teaching young entrepreneurs about technology and technological equipment.

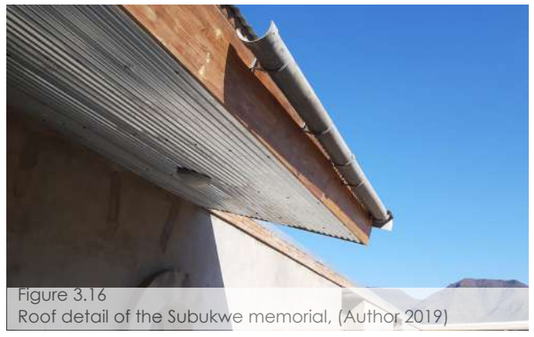


Figure 3.16
Roof detail of the Subukwe memorial, (Author 2019)

Figure 3.17
Unfinished Subukwe memorial located on Lokasie kop, (Author 2019)

ANTON EDWARD RUPERT

Rupert was born on 4 October 1916 in Graaff-Reinet and passed away in 2006 (South African History Online, 2019). He played a pivotal role in the development of South Africa's business, industrial, commercial and heritage sectors.

Since 1964 foundations established by Rembrandt group have used a part of the Group's profits for the promotion of education, art, music and the preservation of historical buildings (Karoo-southafrica.com, 2019).

Many of the restoration projects in Graaff-Reinet have benefitted from Rupert's passion for the preservation and restoration of historical buildings, which was combined with an abiding affection that he had for the place of his birth (Sahistory.org.za, 2019).

Figure 3.18
Old residence in market Square, (Author 2018)

The Graaff-Reinet character

"He said it was in the Karoo soil. All the fruit tasted better; everything had more flavor than the western province fruit. The crystal grapes of Graaff-Reinet , the hanepoot and Barbarossa were the finest in the land. They made konfyt there, green fig and water melon and whole peach, such as no other town in South Africa could produce. Hedges yielded the most delicious quinces and pomegranates. In the old days, streets were lined with oranges and lemon trees, and superb oranges still grew in the gardens"(Green,1955:85)

Figure 3.19
Old residence in market Square, Northern elevation, (Author 2018)

2.2.3 THE DEVELOPMENT OF ARCHITECTURE

BROAD OVERVIEW

The buildings of Graaff-Reinet document the bringing together of imported European and English colonial practices (Japha,1990: 18). The Architectural history also reflects locally developed ideas, materials and techniques, which were adapted to the prevailing conditions of the Karoo. The development of the architecture within Graaff-Reinet can broadly be divided into two phases.

Phase 1: Craft architecture (European influences)
European influences (such as Dutch) were built by local artisans and sometimes by erf-owners themselves. These buildings were modelled on traditional building types that evolved at the Cape over the years and were sometimes embellished with particular regional features and details. However, after about 1840 new types were introduced, which reflected the spread of national and even international Georgian and Victorian ideas to the Cape countryside.

Phase 2: Regional themes
Traditional local house types, such as flat-roofed houses (brakdak) continued to be built alongside fashionable importations from elsewhere (as described within phase 1: craft architecture), often borrowing the design of elements such as doors and windows.

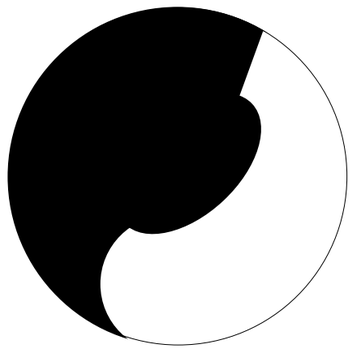
The resilience of the traditional architecture was well suited to its frontier environment, lending itself to construction with crude materials and unskilled labour using relatively primitive building methods.

The stylistic appearance of the overall architecture consists of different types of buildings from different periods, each with characteristic forms and details such as windows and plaster mouldings.

The Architecture

The Architecture can be described in 3 categories that are still present within the town namely: gable houses, flat roofed houses and late-Victorian villas.

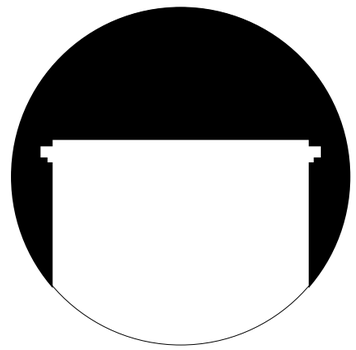
Figure 3.20
Diagrams, (Author 2019)



Gable Houses
Earlier houses of this type are so-called Cape Dutch in style. The expansion of the village in the second decade of the 19th century possibly brought about the development of more permanent and elaborate houses. These houses were one room deep, usually with H- or T- shaped plans, with a voorhuis and an agterhuis on the central axis, and other rooms to the sides. Early gabled houses had a distinctive range of details, which distinguished them from those built later in the 19th century (A guide to Graaff-Reinet, Aberdeen and Nieu Bethesda: n.d.).

These houses originally had thatched roofs with large decorative gables, yellowwood or Oregon pine beams and plank ceilings. The wood was preserved by coating it in aloe juice, which resulted in a gloss finish similar to that of modern-day varnish. Some of the older floors were made of peach pips, which were placed on top of the mud floor, then beaten down until smooth and covered with aloe juice.

Due to the fire risk, these houses were later converted by introducing "clipped" gable roofs. An interesting feature of Graaff-Reinet architectural history is that a variant of the gabled house continued to be built even in the late 19th century. From the outside they appear to be earlier gabled houses which have been "clipped," however they can be identified by their thin walls (A guide to Graaff-Reinet, Aberdeen and Nieu Bethesda: n.d.). These houses have corrugated iron saddle roofs or sometimes hipped roofs, and typical late Victorian interior details, two-pane sash windows, decorative gable trim, and fretwork verandas.



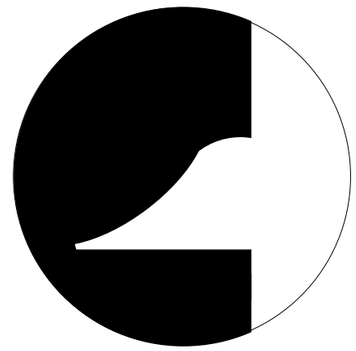
Flat-Roofed (BRAKDAK)
The most common type of Karoo house, and the one most typical of the Graaff-Reinet townscape, is the single-story flat-roofed house (brakdak in Afrikaans). Although this type originated in Cape Town, it has come to be associated with the Karoo, and was well suited to the materials available in the area.

The parapets facing the street were generally simple, usually straight but occasionally stepped or in some cases, pediment, and decorated with a plaster moulding. Houses of this type continued to be built throughout the 19th century, and the details changed to span the stylistic variations, which occurred during the period (A guide to Graaff-Reinet, Aberdeen and Nieu Bethesda: n.d.)..

Characteristics of the earlier houses were the thick, heavily plastered whitewashed walls, but later were Georgian influenced and refinements such as justifications and pilasters were initiated.

Roofs were initially brakdakke, consisting of puddled clay supported on reeds laid on the roof beams, but this construction is difficult to waterproof and most examples have now disappeared. After corrugated iron became available, it was widely used as a substitute.

The earliest style is ideal for the hot climatic conditions of the Karoo. Roofs were constructed with a thick layer of dry mud, which provided superb insulation, above a ceiling of short wooden beams. It was the high salt content (brak) in this mud that gave this type of architecture its name – brakdak (Fagan: 2008).



Victorian
The decorative influences of the Victorian era or even the earlier 1800's can be seen in buildings with steep, pitched roofs. Some even have small towers, turrets and chimney pots to accommodate their attractive Victorian fireplaces. Many buildings from this era also featured pressed ceilings and large sash or bay windows; some are fitted with stained glass (A guide to Graaff-Reinet, Aberdeen and Nieu Bethesda: n.d.). A few other distinct characteristics include porches or stoeps, roofs curved into shapes that resemble billowing canvases, and indirectly carved wood or iron work decorations, commonly referred to as broekie lace.

Ornamentation in these buildings took the form of rusticated plaster, quoins and mouldings around openings, and decorative fretwork trims to roof edges. The veranda, however, was the feature where ornamental effect was usually concentrated and the fretwork that is so common in other building types in Graaff-Reinet which can be found in villas.

2.2.4 TOURISM

TOURISM AND THE FUTURE

In Graaff-Reinet, where foreign tourism is an important part of the local economy, there is a listing of buildings, but the listing only includes the colonial core of the town. Since 1970, Graaff-Reinet's local economy has capitalised on tourism, turning the historic urban landscape into a 'museum town' (Ingle and Atkinson, 2010: p10). Currently Graaff-Reinet boasts 220 listed national monuments, which is more than any other town in South Africa. Figure 4.2 on the right shows the key monuments and historic places in relation to the site.

Tourism consists of places of significance (e.g. valley of desolation), architectural monuments (e.g. Reinett House) and cultural landscapes full of varieties of architecture from past colonial influences and practices.

As far as tourism is concerned, the number of monuments within the town is not the only attraction. Because plaqued houses are scattered all over the town, the community also contributes to the significant cultural landscape by restoring and preserving the landscape.

The urban framework does not solely rely on tourism as the main driver and is not a long-term sustainable solution economically and socially. Due to the underpinning nature of conservation and preservation of historic fabrics, when buildings no longer have a function in the community, the buildings are disregarded and become neglected.

The urban development framework investigates holistic strategies to regenerate and retrofit the square to serve the community's needs and local economic development. The framework focuses on creating a place for the local community to express its own, economic growth and social needs.

Key:

01 Van Rynevelt dam
02 Magazine Hill- Powder magazine
03 The Town hall
04 The War memorial
05 The New NG church
06 Dewdney House
07 Graaff-Reinet Pharmacy
08 Methodist Church complex
09 Dutch Reformed 'Groote Kerk'
10 Urquart House Museum
11 Reinet House museum
12 The Residency house museum
13 Parsonage Street houses
14 St.James Church
15 The Old Library Museum
16 Hester Rupert Art Museum
17 The Drostdy Hotel
18 Stretch's Court
19 'Independent colony' Monument
20 John Rupert little theatre
21 The Old Gaol
22 Pierneef Art gallery
23 Anglo-Boer War memorial
24 Cradock Street row houses
25 Krugersdorp Monument
26 Jewish Peddlers Monument
27 SA police academy
28 To Giant Flag
29 The Royal Block

Figure 3.21
Places of interest (Edited by Author 2019)

CHAPTER 04 Precinct_ Market Square

Figure 4.1
Old photographs taken of market square, (Graaff-Reinet Museum Digital Photographic Archive, E S Whitlock Collection,W_030.)

Figure 4.2
Old photographs taken of market square, (Graaff-Reinet Museum Digital Photographic Archive, E S Whitlock Collection,W_036.)

4.1 SITE SELECTION

Mapping was undertaken to determine the urban conditions and focus area for this dissertation. The key attributes to the mapping was to investigate places of interest, pedestrian activity, economic nodes and to identify the focus node. These following informants led to the identification of the site.

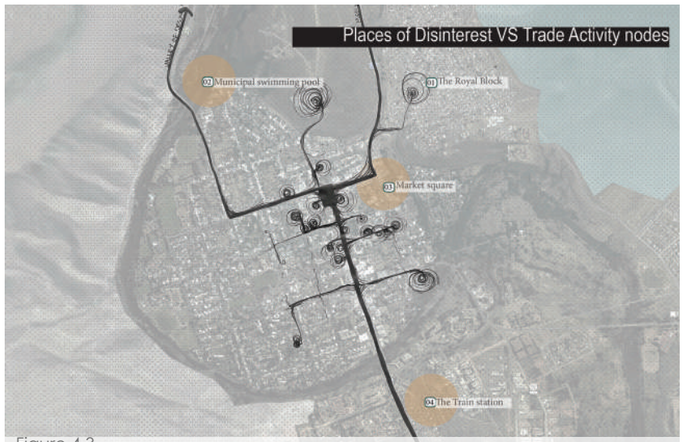


Figure 4.3
Places of interest vs trade activity (Author 2019)

Mapping exercise 1 (Figure 4.3) investigates the trading nodes within the town.

Findings:
High trading activity is found in the main street.
Three sites of disinterest are identified that are outside the current trade nodes. These sites were once the main activity nodes of the town:
02: Municipal swimming pool
03: Market Square
04: The train station

Currently these sites are not used at all.

Figure 4.4
Places of interest vs activity nodes vs pedestrian movement (Author 2019)

Mapping exercise 2 (Figure 4.4) investigates places of disinterest vs trade activity vs pedestrian movement.

Findings:
Even though these sites are identified as places of disinterest, these sites also lack pedestrian movement.

The identified node Market Square is in proximity of the trade nodes and pedestrian movement. The identified node allows for the opportunity to investigate the role of the square within the local community, economy and social development of Graaff-Reinet.

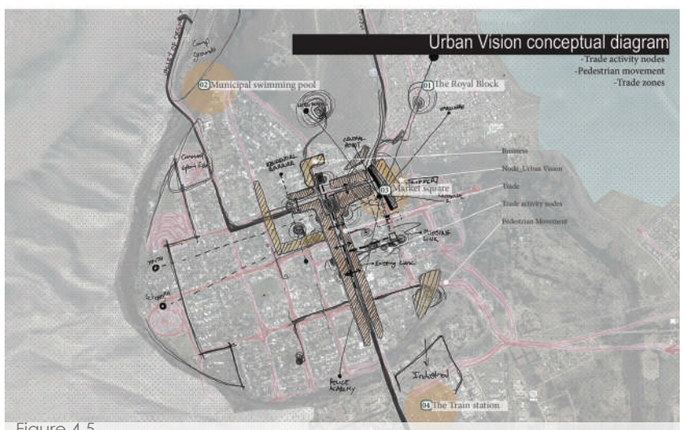


Figure 4.5
Macro Urban Vision conceptual diagram (Author 2019)

Mapping exercise 3 (Figure 4.5) proposes a conceptual diagram of Market Square as a central node drawing from the existing trade, pedestrian and activity nodes.

Findings:
The diagram shows that through a regenerative strategy Market Square can be rejuvenated to serve as a socio-economic node for the community. The urban development framework investigates the square to serve as a buffer and connect existing industries that promotes community development.

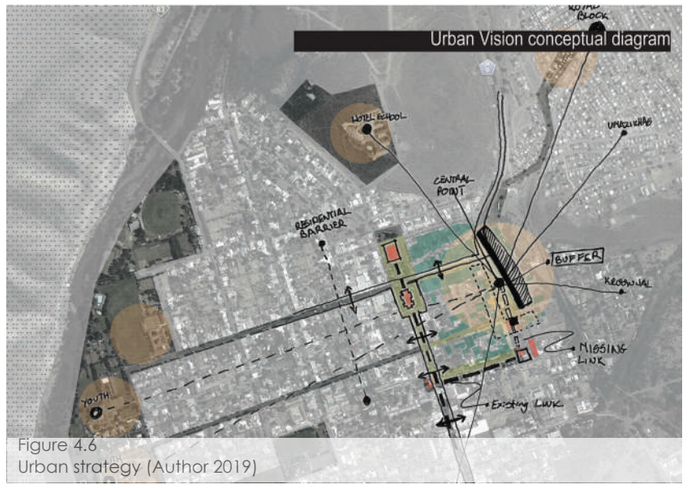


Figure 4.6
Urban strategy (Author 2019)

Mapping exercise 4 (Figure 4.6) proposes a conceptual diagram of Market Square.

Findings:
The diagram shows that Market Square has the potential to connect to current industries within Graaff-reinet. The proposal suggests to establish the missing link between the tourism core of Parsonage street and the local community of uMazishake, Kroonvaal and Asherville.

URBAN STRATEGY CONCEPT

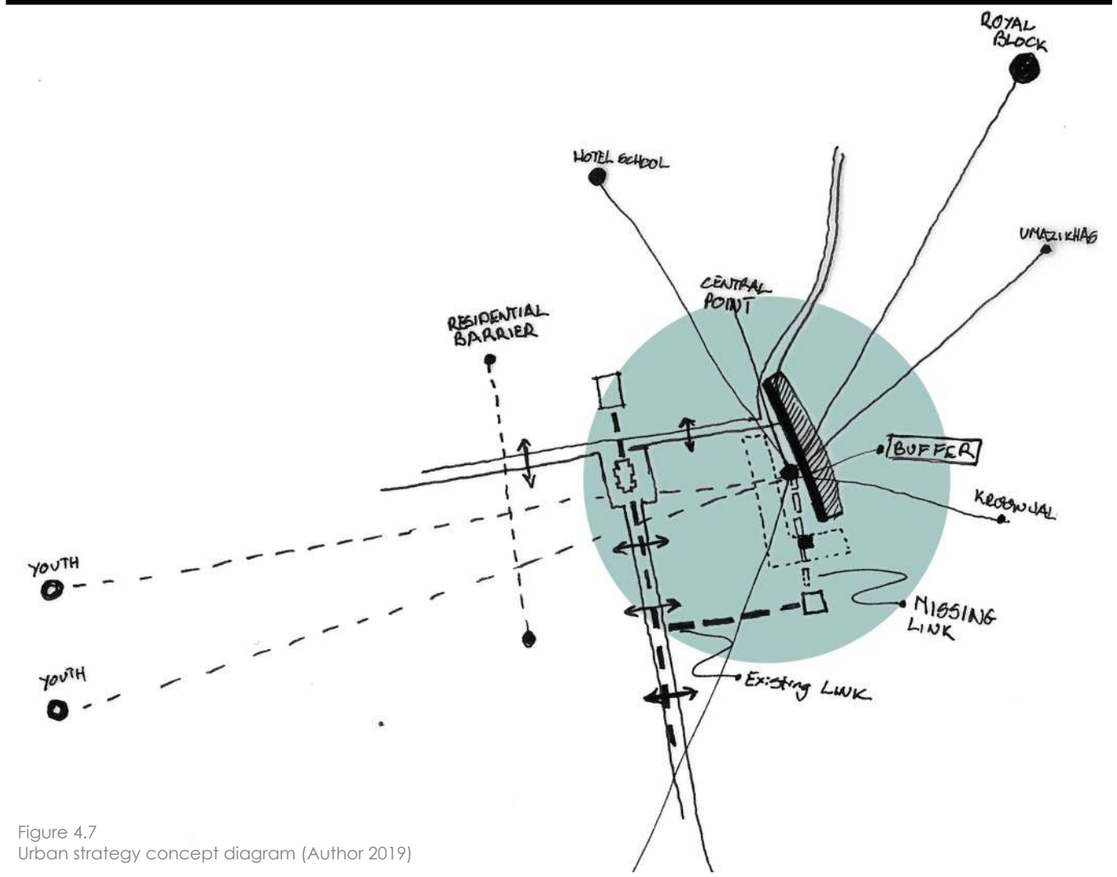


Figure 4.7
Urban strategy concept diagram (Author 2019)

4.2 THE NARRATIVE OF MARKET SQUARE

Market Square shows a long fruitful history and portrays the development of 'trade' in the context. Over the past decades Market Square has retained the square, but the architecture surrounding the square has been changed and adapted as the Use of Place changed.

The Following explains Market Square in the past, present and future. The future portrays the vision generated within the urban development framework .

THE PAST

Since the origin of Graaff-Reinet, Market Square was strategically placed away from churches and schools. Market square consisted of a large plain where ox-wagons could turn and wait until all their produce was sold. It was surrounded by only a few residential buildings. The Urquhart house as seen in the old photographs in figure 4.6 still exists today.

The Square:
The Square was the main platform where trade took place between agriculture and the local community.

Architecture:
The Urquhart house, the old Major's house was strategically placed at the end of the street to show the importance of the building and the Major who owns it.

THE PRESENT

The current condition of Market Square has changed significantly, due to the use, economy and social needs of the community that changed over the years. The Square is currently surrounded by a variety of buildings that have changed from residential to business.

The Square
The Square still retains its use of transportation and passage. The square is a transportation node, with a few trees in the centre to sit underneath. Market Square, being one of the only public urban spaces, does not comply with sufficient socio-economic infrastructure that supports local economics.

The Architecture:
The western edge of Market Square consists of a variety of buildings that portray different styles from different periods. These buildings are not all in their original form-some have been altered and are in a current state of degeneration.

Figure 4.8
Timeline collage of photographs of market square, exploring the evolution of the site, (Author 2019)

4.3 EXISTING CONDITION

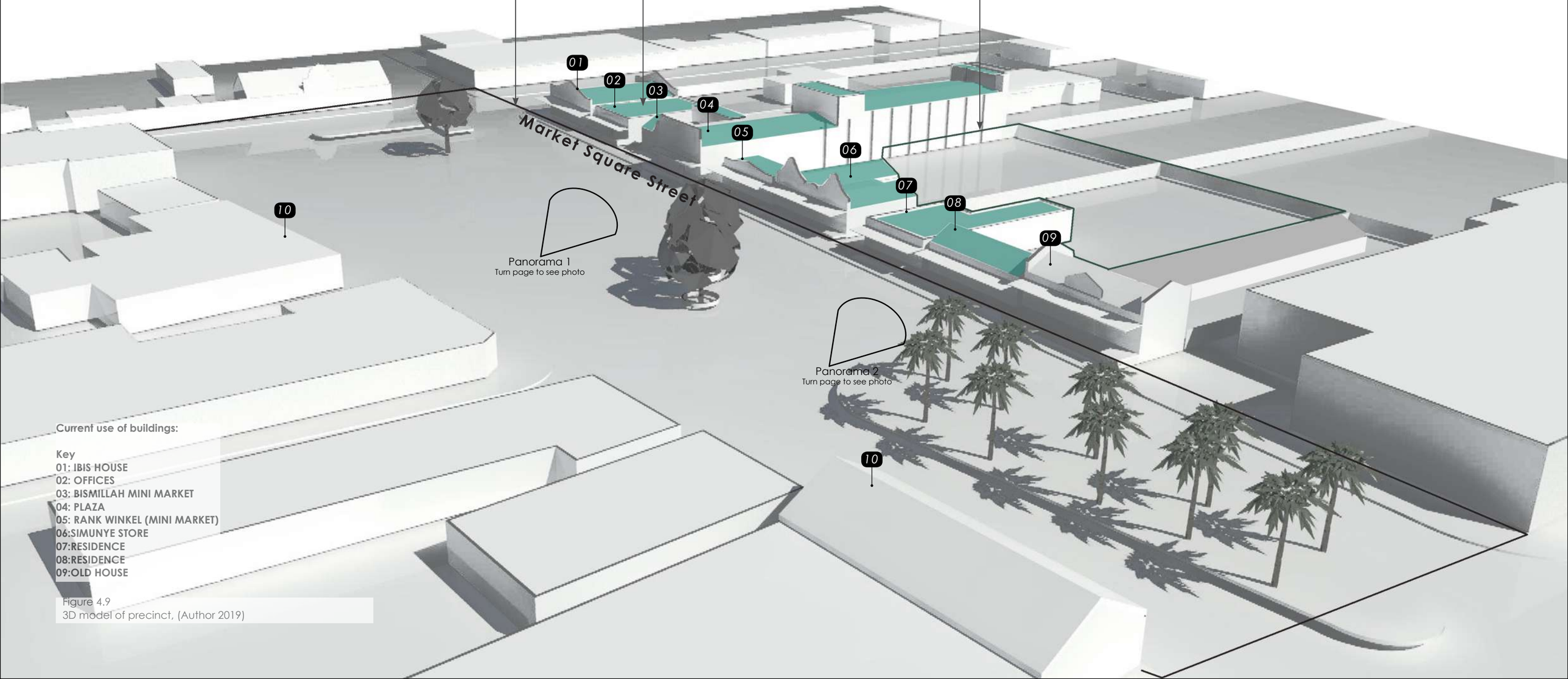
The precinct's urban fabrics existing condition explores Market Square in these three categories:

A: The Square
B: Existing fabrics
C: Site boundary

A
The Square

B
Existing fabrics

C
Site boundary



Current use of buildings:

Key
01: IBIS HOUSE
02: OFFICES
03: BISMILLAH MINI MARKET
04: PLAZA
05: RANK WINKEL (MINI MARKET)
06:SIMUNYE STORE
07:RESIDENCE
08:RESIDENCE
09:OLD HOUSE

Figure 4.9
3D model of precinct, (Author 2019)

PANORAMA 1

Figure 4.10
Panorama 1, (Author 2019)

PANORAMA 2

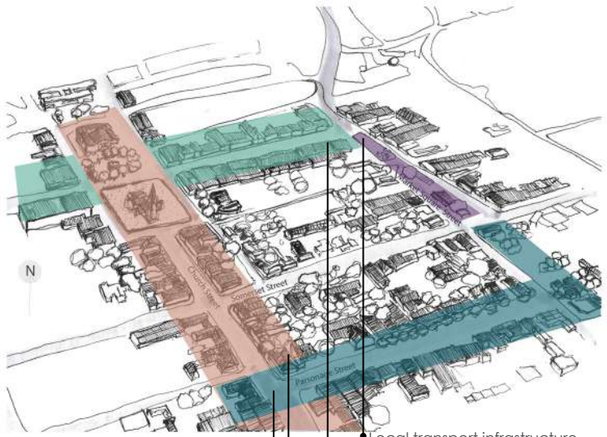
Figure 4.11
Panorama 2, (Author 2019)

4.4 SWOT ANALYSIS

A SWOT analysis is applied to the site and the adjacent context to investigate the strengths, weaknesses, opportunities and threats. The analysis assists in identifying the opportunities that are threatened due to the prevailing conditions.

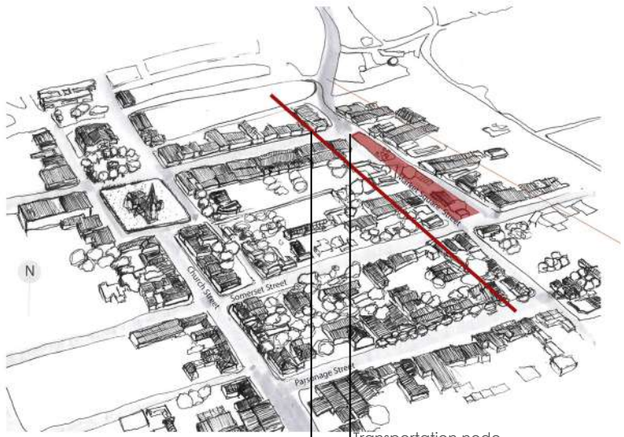
STRENGTHS

The contributing factors to Market Square: Economy, Tourism, Trade, Community and transport.



WEAKNESSES

Weaknesses include restrictions and negative implications that impact the site.



OPPORTUNITIES

The contributing factors to the site.

THREATS

The altered buildings and significant structures that are currently under threat.

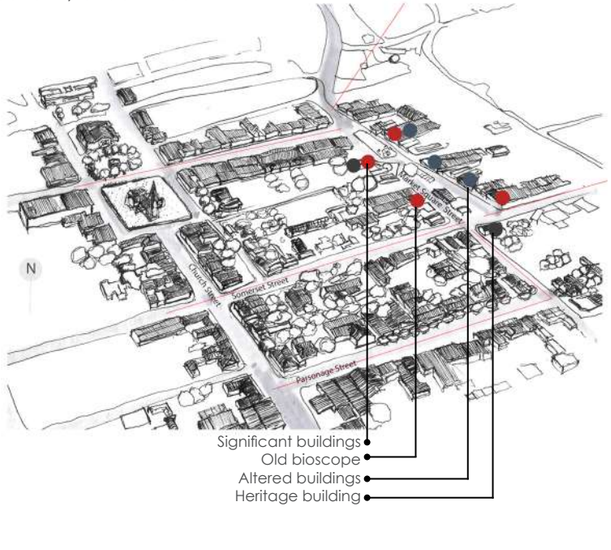


Figure 4.12
SWOT analysis of Market square and surroundings, (Author 2019)

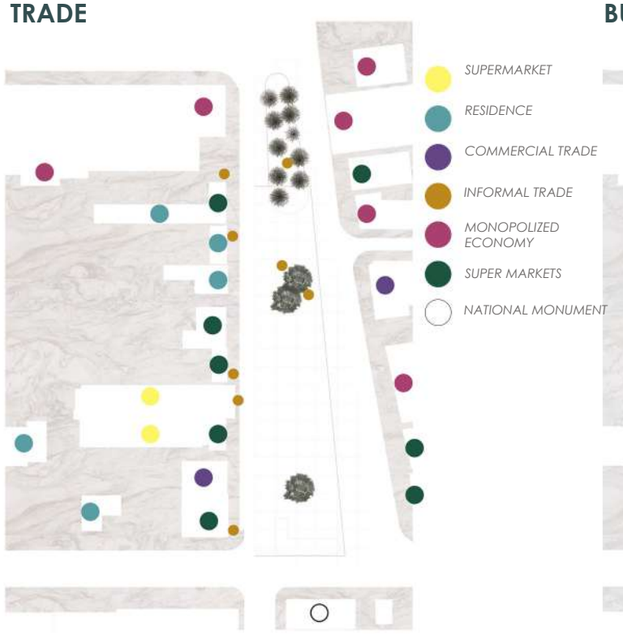
4.5 ASSESSING THE SITE

Focus is drawn to the site itself, mapping out Landscape features, building classification, trade and Alienation taking Place on market Square

LANDSCAPE FEATURES AND SITE GEOMETRY

BUILDING CLASSIFICATION

TRADE



BUILDING ALIENATION

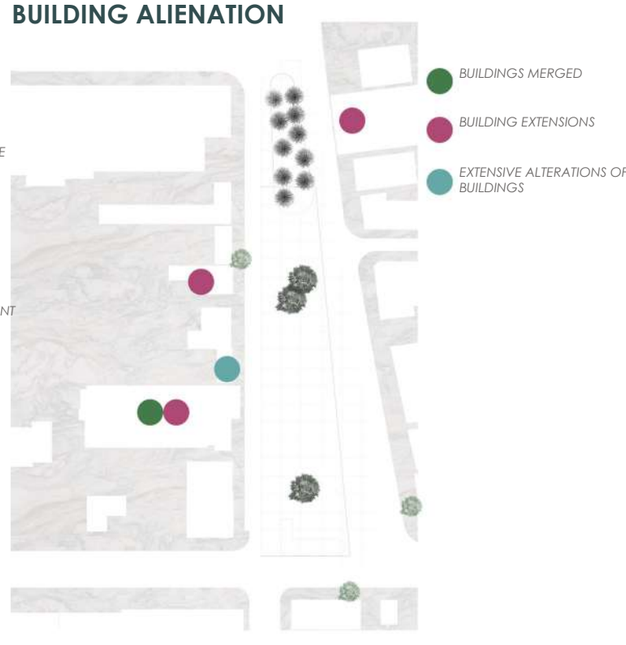
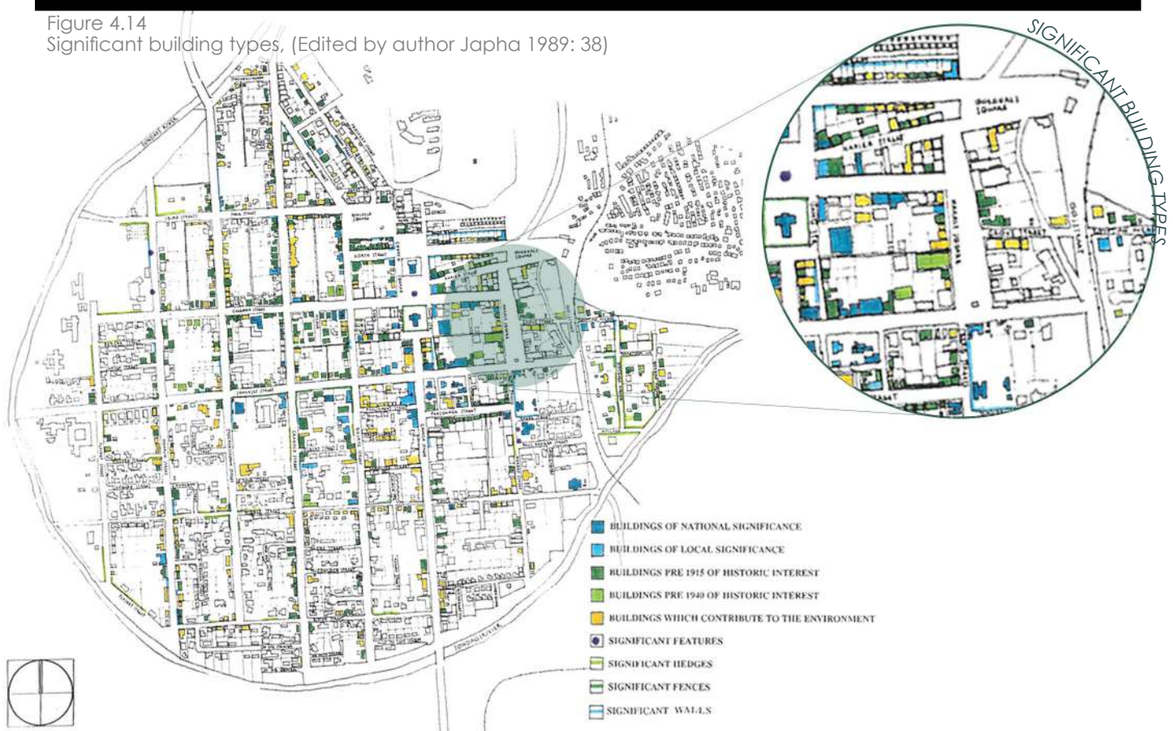


Figure 4.13
Site assessment diagrams, (Author 2019)

4.6 RELATION OF MARKET SQUARE TO GRAAFF-REINET

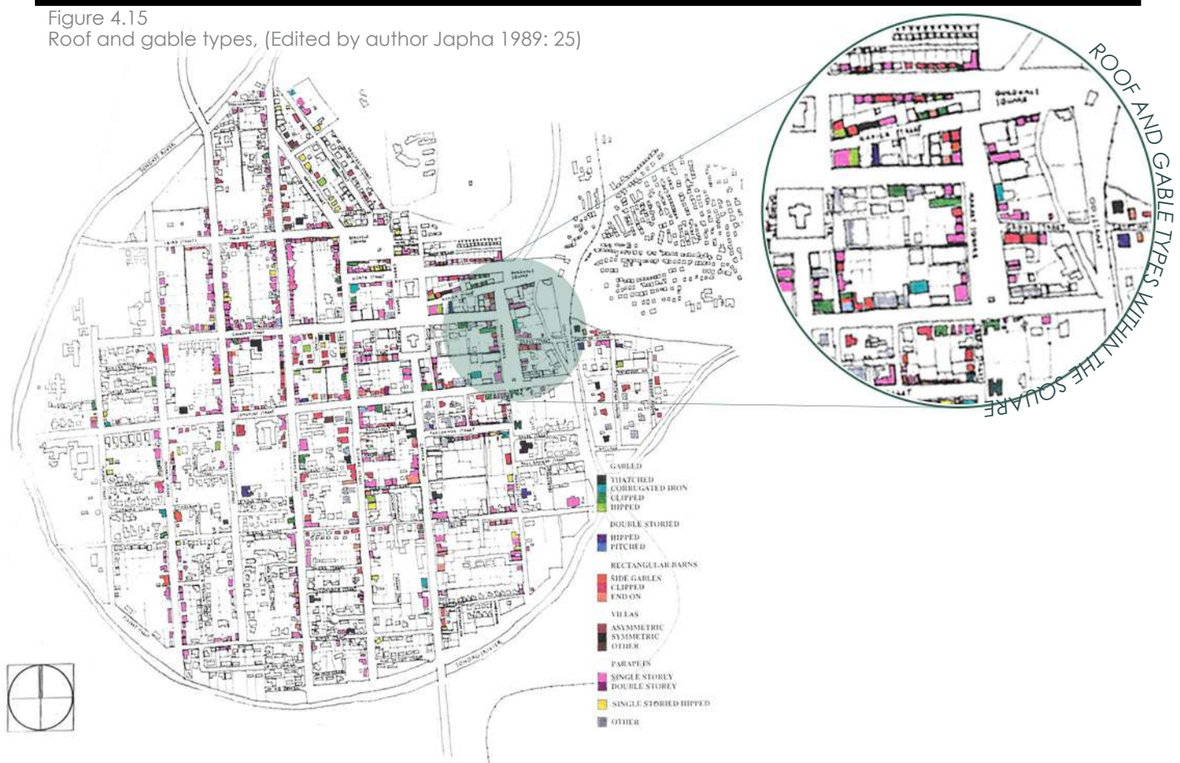
SIGNIFICANT BUILDING TYPES

Figure 4.14
Significant building types, (Edited by author Japha 1989: 38)



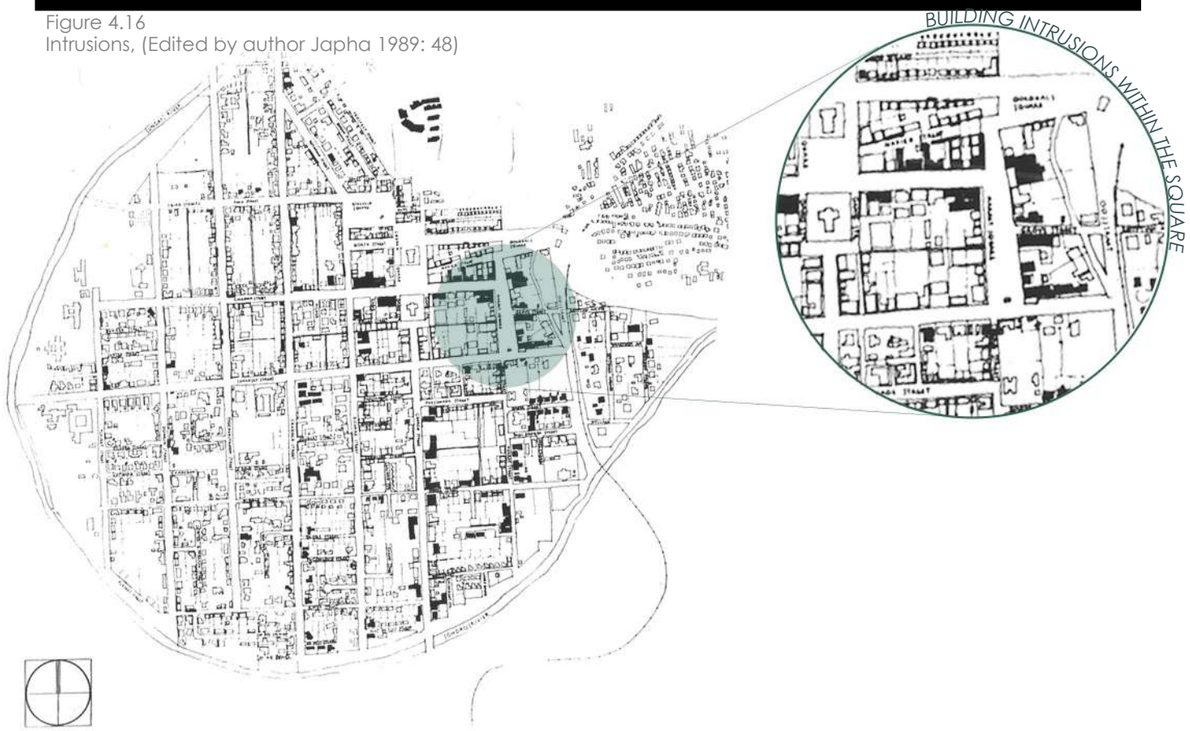
ROOF AND GABLE TYPES

Figure 4.15
Roof and gable types, (Edited by author Japha 1989: 25)



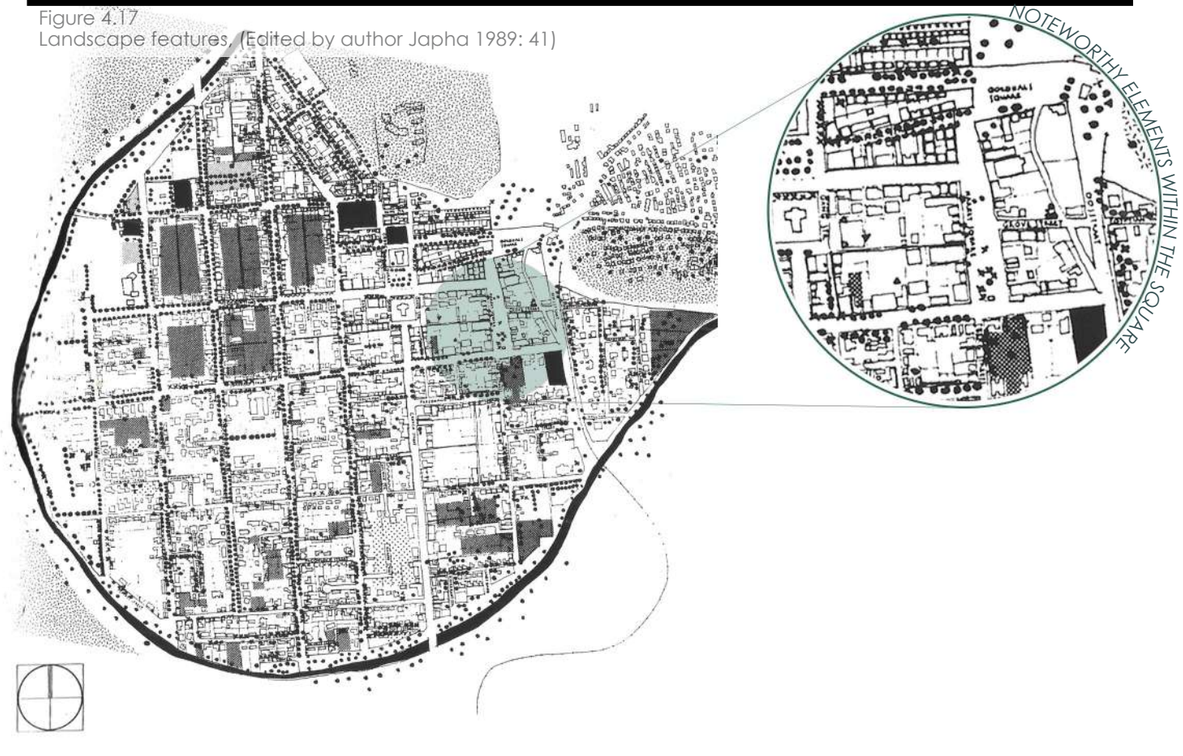
INTRUSIONS

Figure 4.16
Intrusions, (Edited by author Japha 1989: 48)



NOTEWORTHY ELEMENTS

Figure 4.17
Landscape features, (Edited by author Japha 1989: 41)



4.7 URBAN STRATEGY

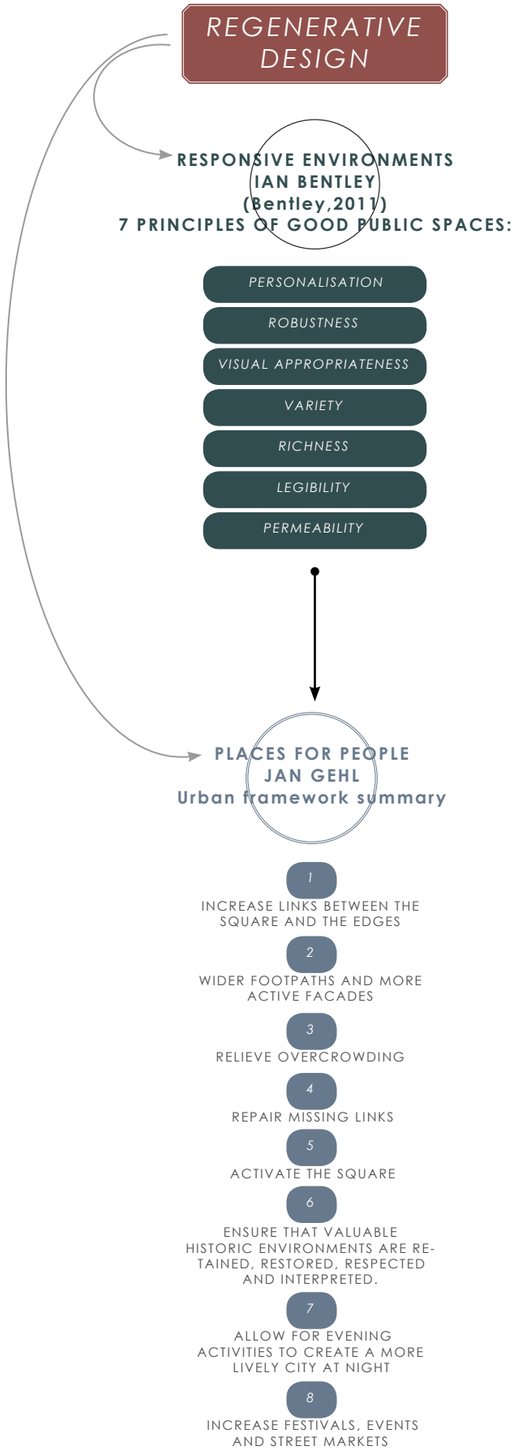


Figure 4.18
Summary of regenerative design principles, (Author 2019)

Figure 4.19
Block vision, (Author 2019)

CHAPTER 05 STATEMENT OF SIGNIFICANCE

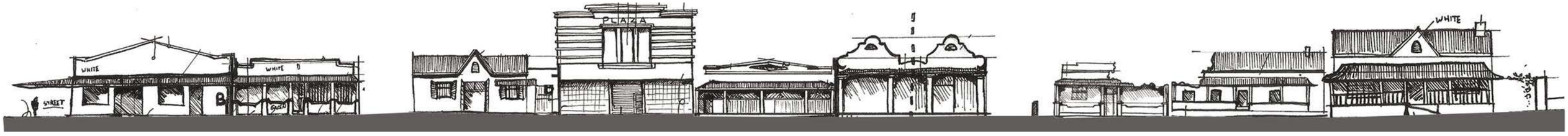


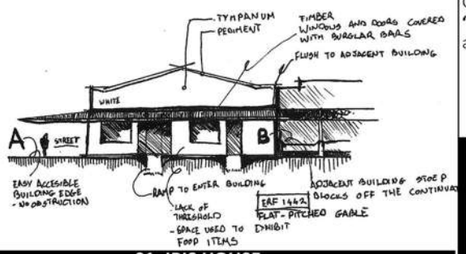
Figure 5.1
Drawing of precinct buildings elevation, (Author 2019)

5.1 ASSESSING THE VALUE OF PLACE

5.1.1 HERITAGE ASSESSMENT

Figure 5.2
Heritage assessment summary, (Author 2019)

Buildings on site



01_IBIS HOUSE

ERF 1444
Type: Flat Pitched Gable roof
'Steep': Covered and no low wall

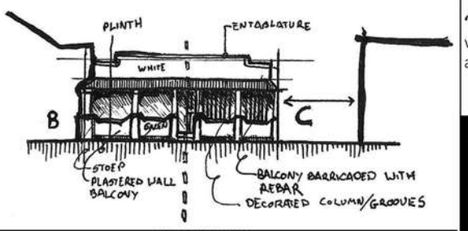
Structural condition: Very Good / Good / Average ■ / Poor / Very Poor

Value:
Significant Value

Age:
None

Building of Significance:
No

Aesthetic committee	Decryption of building
Remarks: Parapet plaster falling off, whilst the frontage is white it needs painting, illegal burglar guards over windows, illegal roof supported by iron beams.	Late 19th Century white flat pitched gable building. The building is situated on the corner of Market Street and Somerset Street. The roof over the veranda extends over the whole corner. The porch roof trusses shows timber craftsmanship and detailing, but it is in a degenerating state.



02_OFFICES

ERF 1447
Type: Single story flat parapet house

'Steep': Covered with low wall all around.

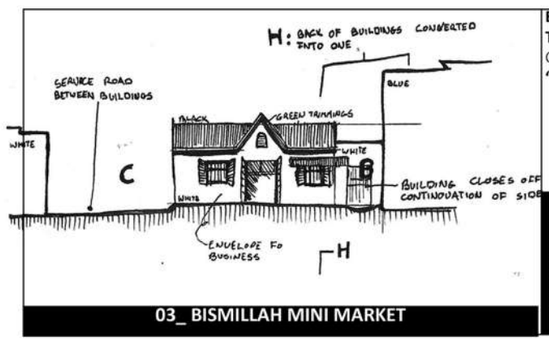
Structural condition: Very Good ■ / Good / Average / Poor / Very Poor

Value:
Significant Value
Technology value

Age:
Building that contributes to the environment
None

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Illegal burglar bars across veranda; plaster falling off walls; frontage needs to be panted; gutters and downpipes in a poor state.	The white, single story ,flat parapet house, extends with a covered stoep into the square, barricaded with a low wall.



03_ BISMILLAH MINI MARKET

ERF 4233
Type: Straight Gable
'Steep': none

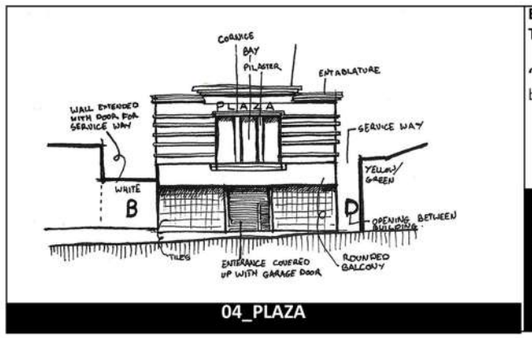
Structural condition: Very Good / Good / Average ■ / Poor / Very Poor

Value:
Heritage value
Significant Value

Age:
Building of national significance

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Frontage needs replastering, shutters needs to be repaired and window frames need replacing, illegal roof over front of shop; paint does not comply. Timber on pitched gable needs repairing. Flag stones in front of building needs replacing- pedestrian hazard.	The straight Gable ,white pitch, roof building carries an identity of national significance. The building sits between a parapet and an art deco building.



04_PLAZA

ERF 4233
Type: Art Deco

'Steep': Floating balcony

Structural condition: Very Good / Good / Average ■ / Poor / Very Poor

Value:
Heritage value
Significant Value

Age:
Building pre 1940 of Historic interest

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Frontage tiles needs to be cleaned(old poster pasted over them), parapet and overhang need painting; plaster falling off walls and iron roll up door unsightly.	The significant art deco building promotes the Identity of an typical Bioscope. The building, known as the Plaza has been built the 1950s. The building has contained its original facade, although the entrance is covered up with a steel door.

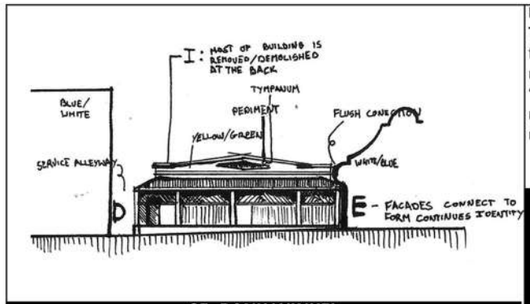
Background / Information

Historical Value	Potential	Special Remarks	Photograph on site
Low-Building has not contained its original form, as seen in photographs. The roof covering the walkway is of significant value.	Use; as is, some regeneration and retrofit is needed to contribute a functional value to the building.	-Group value medium -Contributes to variety	

Historical Value	Potential	Special Remarks	Photograph on site
Medium;	Use building as is; building contributes to the urban environment. The stoep can be extended, so can the building at the back.	-Group value medium -Contributes to the environment	

Historical Value	Potential	Special Remarks	Photograph on site
High; The building has contained its original value, the building has been considered in the previous alterations. The building still sits isolated in the context.	Building is in a good condition, the decorative elements and window shutters should be replaced.	-Group value high -Contributes to national significance	

Historical Value	Potential	Special Remarks	Photograph on site
Medium; The building has contained its original facade, the whole building has lost its originality. The building was upgraded in 1980, resulting in plastering, extensions, demolitions and alterations.	The building can be restored programmatically ,most of the cinema building was demolished to make way for the supermarket.	-Group value high -Unique building style within the larger context	



05_RANK WINKEL

ERF 1450
Type: Single story flat pitched gable roof
'Stoep': Asymmetrical columns with roof covering

Structural condition: Very Good | Good | Average | Poor | Very Poor

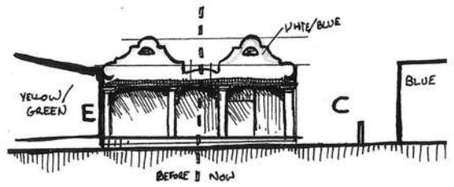
Value:
Significant Value

Age:
Building which contributes to the environment

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Illegal burglar bars on front of building, illegal door for sub-division; front door has been replaces; windows boarded up; paint does not conform; plaster needs re-pairing on gable and front stoep needs resurfacing.	The building is a yellow and green, single-story flat pitched gable roof. The building style contributes to the environment.

Historical Value	Potential	Special Remarks	Photograph on site
Low; Building has not contained its original form.	The building has the potential to be incorporated with the adjacent building, the old Plaza. Most of the original building was demolished, luckily the facade of the building is still intact.	-Group value low -The building style contributes to the environment , the building has been altered and most of the building has been removed.	



06_ SIMUNYE CASH STORE

ERF 1451
Type: Double concave gable villa

'Stoep': Columns do not contribute to significance

Structural condition: Very Good | Good | Average | Poor | Very Poor

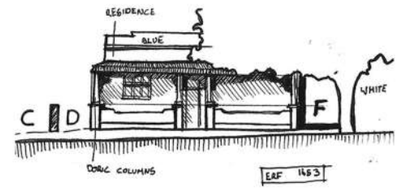
Value:
Significant Value

Age:
Building which contribute to the environment

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Illegal subdivide for shops, illegal burglar bars in front of veranda and doors; parapet and gable plaster falling off; windows boarded up, colours does not comply. There are fat aluminum garage doors.	The double concave gable villa.

Historical Value	Potential	Special Remarks	Photograph on site
Medium; The building has not been maintained and restored. Some elements as the columns should be reconsidered, for they don't fit into the context. The rebar on the stoep disrupts the facades aesthetic.	The villa brings an unique front to the diverse adjacent facades . The building interior consists of a open plan and has the potential to extend backwards into the open site.	-Group value medium -Contributes to the environment	



07_RESIDENCE

ERF 1444
Type:
Single story parapets
'Stoep': Covered veranda

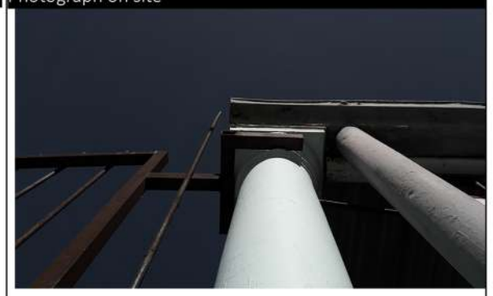
Structural condition: Very Good | Good | Average | Poor | Very Poor

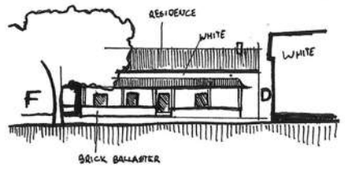
Value:
Heritage value
Technology value
Significant Value

Age:
Building which contribute to the environment

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Illegal burglar bars, stoep roof needs repairs and painting, plaster falling off walls, colour does not comply, back wall belonging to Simunye Cash store at back of property needs plastering and gutters needs to be replaced.	**Single story parapets** Building which contribute to the environment

Historical Value	Potential	Special Remarks	Photograph on site
High; The building appears as in its original form, well looked after. Some of the external decorative elements should be considered and restored.	This building represents a typical Karoo type, brakdak house. The form allows for new additions and density.	-Group value high -Contributes to the environment	



08_RESIDENCE

ERF 1454
Type: Clipped rectangular barns (Early Victorian)

'Stoep': Covered veranda

Structural condition: Very Good | Good | Average | Poor | Very Poor

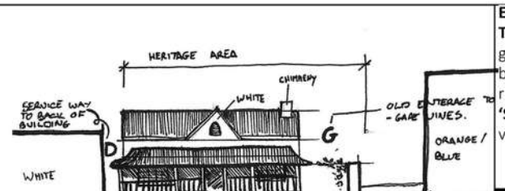
Value:
Heritage value
Functional value
Technology value
Significant Value

Age:
Building of pre 1915 Historic interest

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Illegal brick wall in front, illegal burglar bars, roof needs repairing, paint peeling and color does not comply, illegal subdivision of veranda	Clipped rectangular barns (Early Victorian) Building of pre 1915 Historic interest

Historical Value	Potential	Special Remarks	
High; The building is in its original form. Some of the external decorative elements should be considered and restored.	Use as is, some regeneration and retrofit is needed to contribute a functional value to the building.	-Group value medium -Contributes to historic environment significance	



09_OLD HOUSE

ERF 1444
Type: Clipped gabled rectangular barns (Early Victorian)
'Stoep': Covered veranda

Structural condition: Very Good | Good | Average | Poor | Very Poor

Value:
Heritage value
Functional value
Technology value
Significant Value

Age:
Building of national significance

Building of Significance:
Yes

Aesthetic committee	Decryption of building
Remarks: Illegal burglar guards, plaster falling off walls; windows frames and shutters broken and falling apart; roof rusted and needs repairing; down pipes and gutters falling apart; access door in lane of left side of house bricked up, chimney plaster falling off	Clipped gabled rectangular barns (Early Victorian) **Building of national significance**

Historical Value	Potential	Special Remarks	Photograph on site
High; The building appears in its original form, the building is degenerated and some of the plaster is falling off. Building is built from mud bricks, the pediment corners are wearing and some replacements should be considered. Some of the external decorative elements should be considered and restored.	Use as is, some regeneration and retrofit is needed to contribute a functional value to the building.	-Group value medium -Contributes to historic environment significance	

ANALYZING ARCHITECTURAL LAYERS

Layer 1:
Investigating the site's architectural layers through categorising the layers into high, medium and low value. The analysis showed that the layer with the highest value is the facades to the street and the lowest is the back of the buildings which has been subjected to multiple changes.

Layer 2 and 3:
Diagram that highlights the layers with the highest value. These diagrams does not suggest the disregard of the other layers, only to reevaluate the medium and low value layers.

DEFINING THE SPATIAL CONDITION

Diagrams on the right:

The spatial condition explores the relationship between adjoining facades and stoeps. The diagrams define the condition and edge analysis of each building.

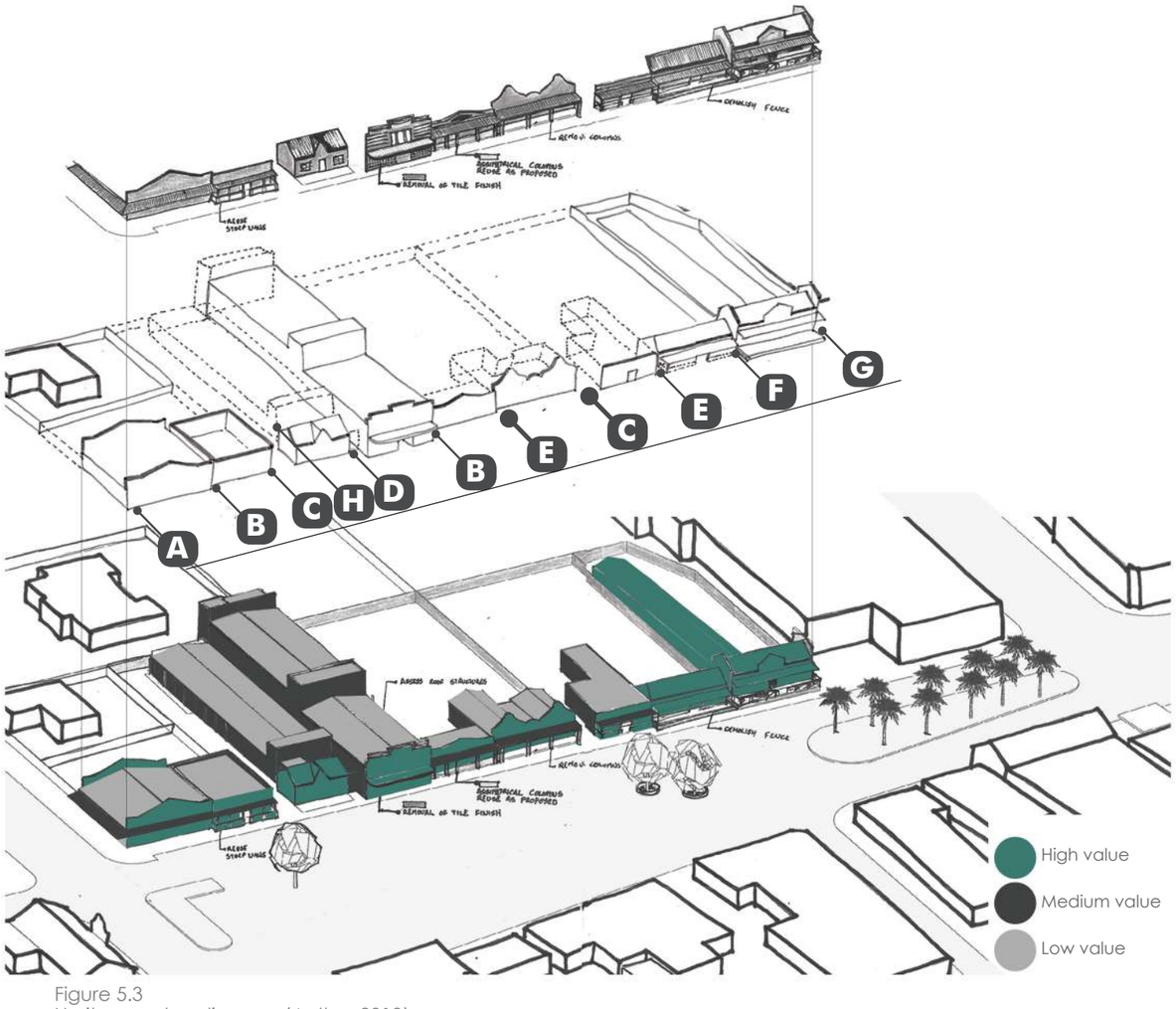


Figure 5.3
Heritage value diagram (Author 2019)

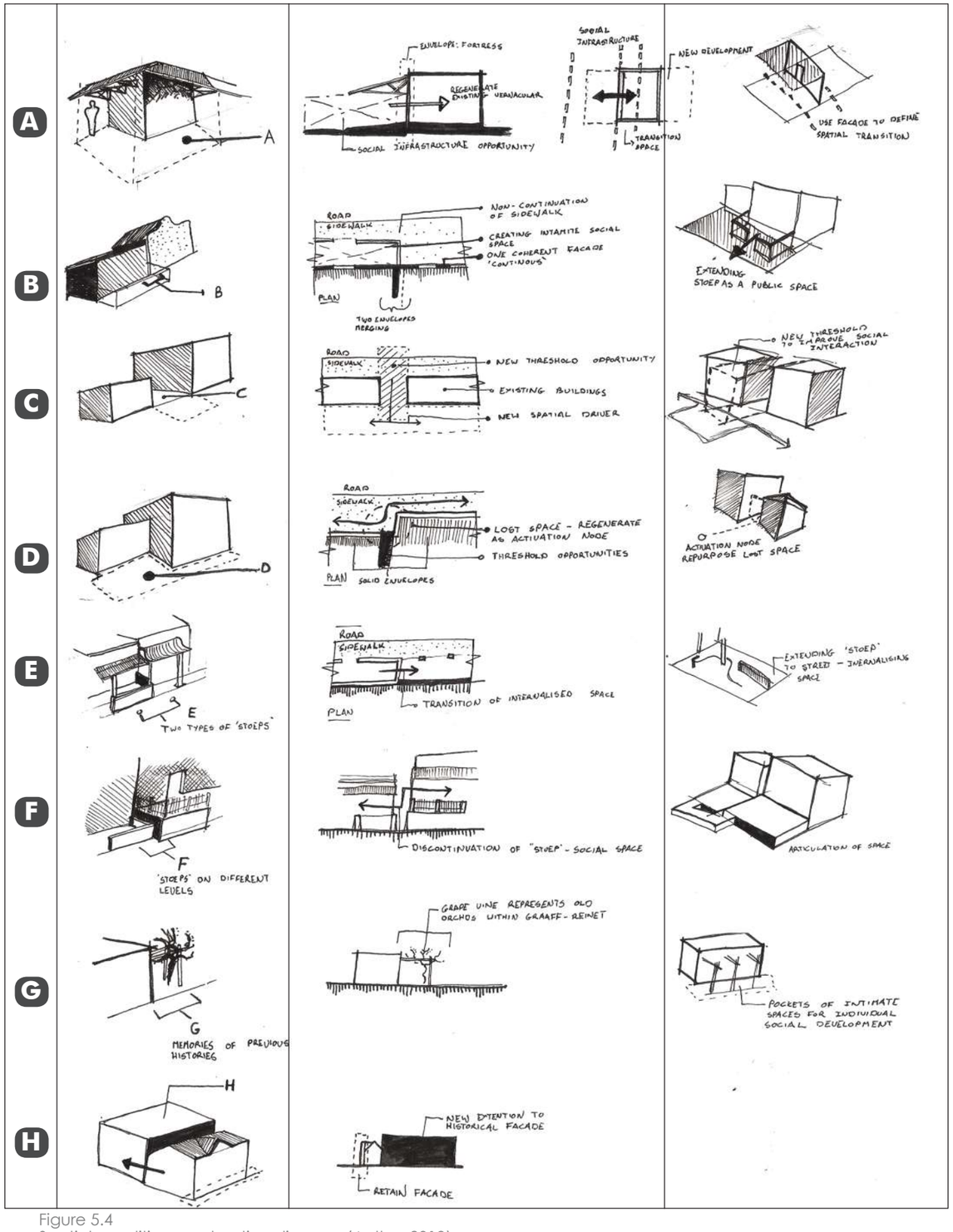
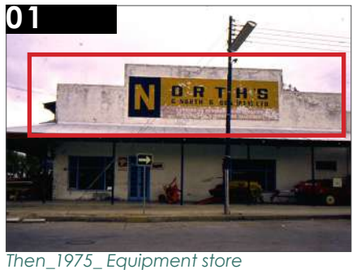


Figure 5.4
Spatial conditions exploration diagram (Author 2019)

5.1.4 CHANGE OF THE LAST 50 YEAS

Figure 5.5
Collection of photographs: Then photographs, (Minnaar, G.R Museum) &
Now photographs, (Author 2019)

Demolished

01


Then_1975_ Equipment store

Now_ Mini market and small Retail

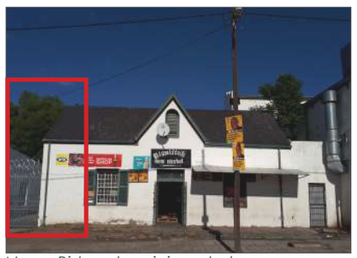
02

Then_1975_ Residence


Now_ Offices

03

Then_1975_ Residence


Now_ Bishmala mini market

04


Then_1975_ Plaza bioscope

Now_ Vacant

05

Then_1975_ Residence


Now_ Mini market

06

Then_1975_ Residence


Now_ Mini market and Retail

07

Then_1975_ Residence


Now_ Tyre repair and residence

08

Then_1975_ Dentist


Now_ Retail

09

Then_1975_ Doctor


Now_ Mini market and residence

10

Then_1975_ Office


Now_ Retail

11


Then_1975_ Gas station


Now_ Retail

5.2 PLAZA_THE OLD BIOSCOPE

Figure 5.6
Elevation of the precinct indicating the Plaza(Author 2019)

NARRATIVE

The Plaza in Market Square was not the first bioscope in Graaff-Reinet.

Background:
The first bioscope, Gems Bioscope (does not exist anymore) was the only driver of social activity in the town. During the era of bioscopes, Gems Bioscope was the highlight of the town, and farmers came from far to watch the one movie that aired on the weekend. After the movie everyone headed out to the Town Hall to watch a second movie. Boertjie Oelofse managed the movies that shown at the Town Hall.

The narrative behind the Plaza Bioscope told by locals within Graaff-Reinet. Is the story of Archibald Luckhoff, known as Archie. He was a farmer who lived on the outskirts of the Town and every weekend he came to Graaff-reinet to watch the two movies at Gems Bioscope and at Town Hall. He was a big fan of his movies and got irritated because he could not hear the movie over the noise of the people. Archie then decided that he wanted his own cinema that would shows more movies and had sufficient space for all the people.

The Plaza was built in the 1930s and when ownership changed, it closed down to be used as a wholesalers. At first food was sold from pallets that were placed on the floor in the bioscope. Approximately in 1980s a franchise, Boxers bought over the Plaza from the wholesalers and converted the building and the adjacent building into a large supermarket. Most of the interior was removed and the only surviving elements of today are the facade and the gallery covered by suspended ceilings.

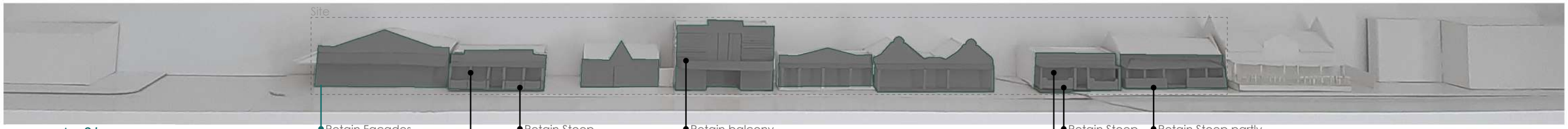
Figure 5.7
Photo of front facade, (Minnaar, G.R Museum)

Figure 5.8
Photo of front facade, (Author 2019)

Figure 5.9 - 5.11
Interior photographs of Plaza, (Author 2019)

5.3 HERITAGE DESIGNATION

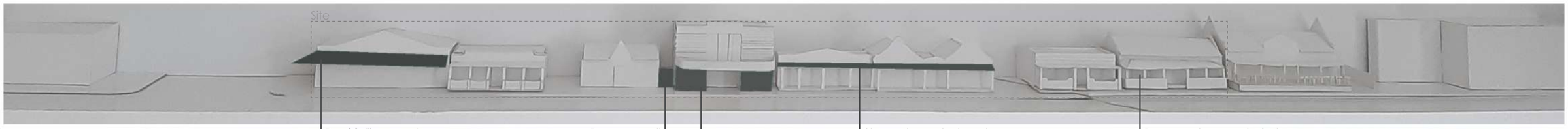
WHAT SHOULD ...



A_Stay

Architectural elements that contribute to the significant landscape that should be retained.

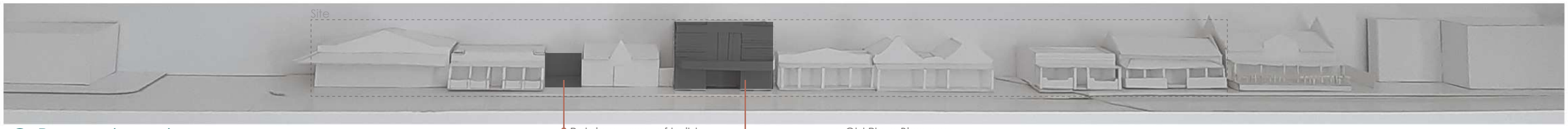
- Retain Facades
- Keep windows on facade
- Retain Stoep
- Retain balcony
- Retain Stoep
- Keep windows on facade
- Retain Stoep partly



B_Removed

Elements that does not contribute to the significant cultural landscape.

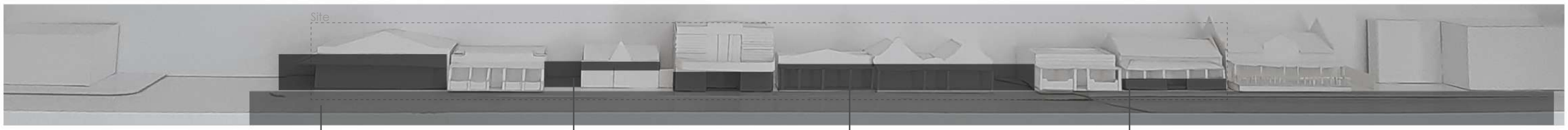
- Roof falling apart
  Consider partly remove or retrofitting stoep roof
- Remove wall
  Remove tiles on wall
- Stoep elements do not contribute to the local aesthetics, consider removing or replacing with new elements
- Remove doors and windows and replace with more context considerate windows



C_Remembered

Elements that have been removed that should be celebrated

- Retain memory of building that has been partly removed
- Old Plaza Bioscope
  Retain memory and reinstate function of the Bioscope as social catalyst within the square



C_Changed

Adding element to the landscape that retrofits the existing, connecting to the new scheme.

- New stoep that joins all the buildings as one unit.
- Retrofit new stoep to fit within the context
- Retrofit new stoep to fit in the context
- Plaster stoep wall

Figure 5.12
Exploration diagrams (Author 2019)

CHAPTER 06 PROGRAM

Figure 6.1
This photo was taken inside the cash & carry on site. The store is located in an old house presumably built in the 1800s. The image highlights the old fireplace and animal trophy above the fireplace. These elements are considered to be a part of the building. (Author 2019)

6.1 SLOW FOOD REVOLUTION AS REGENERATOR

Existing infrastructures
Even though Graaff-Reinet's economy is largely determined by external monopolized economies, the town itself has key drivers within the agriculture and economical development. The proposed urban framework uses Market Square as a catalytic node to draw from the existing industries and integrating with the local economic development. The proposed program integrates with the square, providing a social interactive space for communities to engage and creating a place for existing narrative to fluctuate.

Slowing things down
The evolution of Market Square
The proposed program retrofits Market Square by integrating the slow food movement within the current identified industries.

Slow food is the revolution of forgotten flavours in our own food networks. The movement focuses on the taste education of food, interaction between food producers and consumers, as well as the incorporation of local food variants (Volpe, 2012).

The movement has three objectives producing food that is good, clean and fair.

Good is the competence of applying production methods that are true to flavor and in no way alter naturalness.

Clean is the holistic approach to sustainable farming, allowing every stage in the production chain to be true to the consumer and the user.

Fair focuses on the social justice of the creation and labour that are respectful of man and his rights to of balanced global local economies.

Identifying the User
Market Square is currently one of the only existing urban public square. It is used by various users, although the square does not supply sufficient social infrastructures for the community to use the square to its maximum extent. Regenerative design theory is used to investigate the significance of place, narrative and key rituals to the user who uses the desired space.

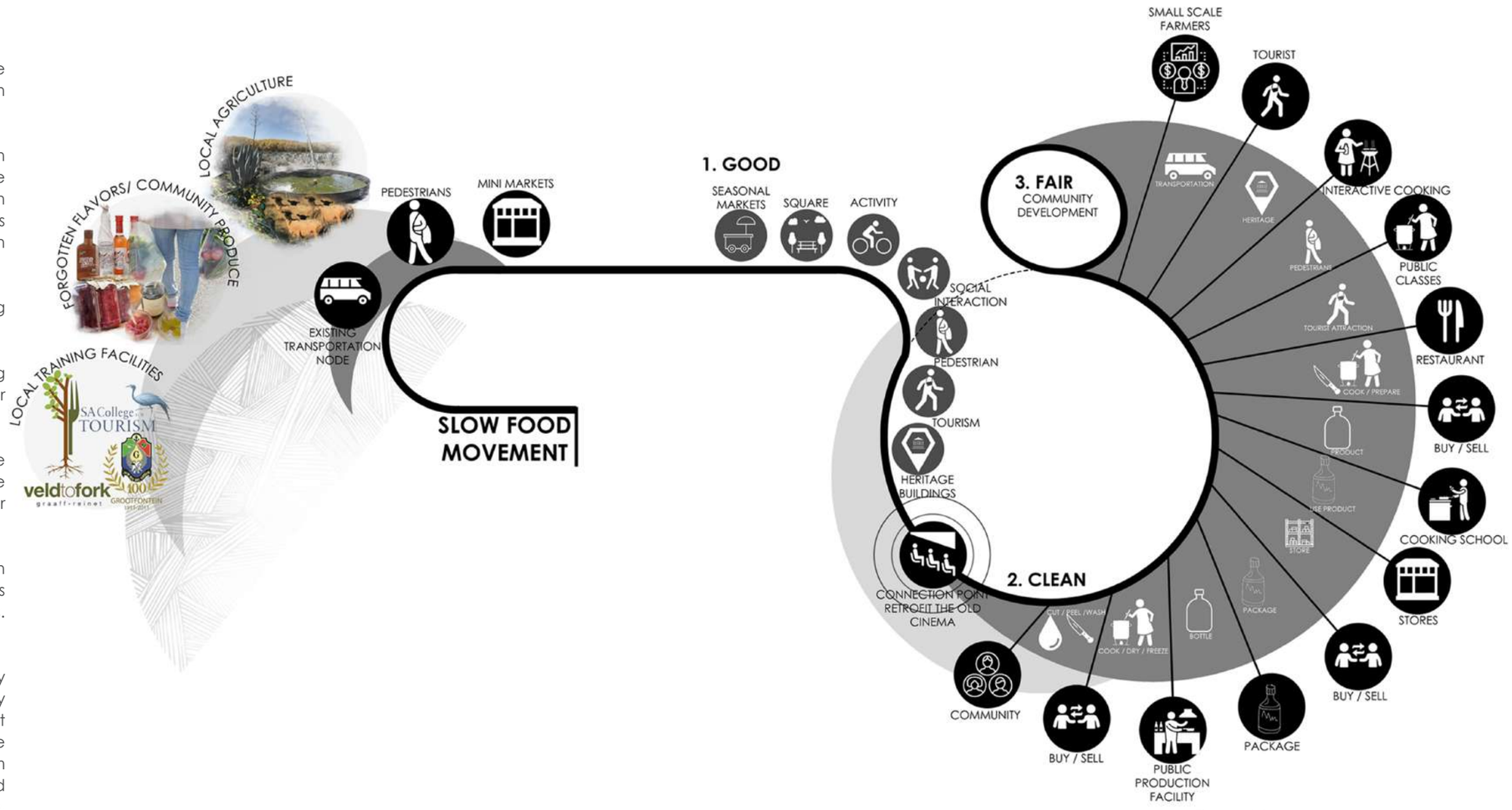


Figure 6.2
Diagrammatic outline of programme, (Author 2019)

6.2 PROGRAMMATIC INFORMANTS

LOCAL AGRICULTURE

Within Graaff-Reinet's history, agriculture has always played a crucial role in the development of the town. Agriculture is used as an informant to contribute to the reestablishment of local economy and community development.

Ostriches

Farming ostriches became widespread in 1864 after a massive drought period in the region. The tough birds do not require large grazing fields. When ostrich feathers boomed between 1865 and1870 and 1900 and 1914 the sale of ostrich feathers were selling more than the their weight in gold. Ostrich farming no longer generates such wealth, however farming continues for their leather, meat, feather and eggs.

Nguni Cattle

Ancestors of the Nguni, the Sanga cattle date back to the 1750s . Nowdays many farmers are moving from farming sheep to the drought-hardy, disease resistant Nguni. In spite of being bred for their meat, these beautiful animals are sought after for their decorative hide.

Angora Goats

Sultan of Turkey sent neutered rams and one female to South-Africa. The Rams were infertile as he wanted to protect his powerful mohair empire. However the ewe was pregnant. On 2 February 1857 the first Angora auction in the country took place in Graaff-Reinet. Today Karoo region produces the most mohair in the world.

Merino sheep

As early as 1789 records show Merino sheep being imported from the Netherlands which began the lucrative wool industry. The Mosenthal Brothers established that Merino sheep could survive the harsh Karoo climate. Over 350 rams and ewes were imported from the best of European stock. Today Merino wool and mutton remain the largest produce of this area.

LOCAL DEVELOPMENT INFRASTRUCTURES

Graaff-Renet's local economy thus far has survived on external monopolised economies. The socio-economic sector has little local economic development and integration. Statistics shows that 40% of Graaff-Reinet is jobless. The proposed programme focuses on local integration of existing economic development infrastructures, to regenerate an economic drive in the community.

SA College For Tourism

Dr Anton Rupert opened the training facility, the SA College for Tourism in 2001. The college is located within Graaff-Reinet and focuses on equipping individuals with hospitality skills to develop communities in the tourism sector.

The college aims to grant opportunities to learners from rural areas to break the poverty cycle (Peace Parks Foundation, 2019) . Most attendees are from areas where Peace Parks Foundation works, with the intention that they return home to these areas and cater well for visitors to these transfrontier conservation areas.

Karoo Fish farming

The Department of Rural Development and Agrarian Reform developed a strategy by introducing fish farms around Graaff-reinet to feed the economic development of local economy (HeraldLIVE, 2019).

The purpose of the fish farm tunnels is to provide a basic training facility that trains local community members to create and manage their own small fish farms and to sell their produce. The strategy aims to develop local income and community upliftment schemes.

SLOW FOOD REVOLUTION

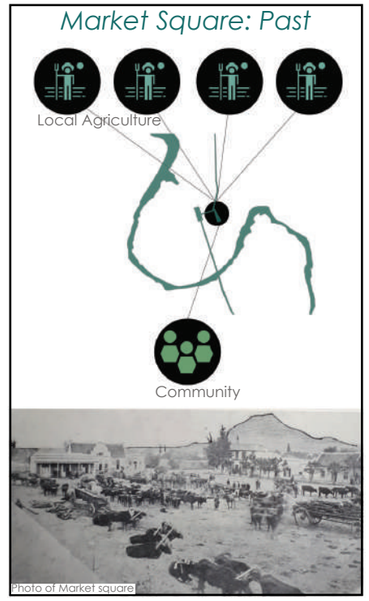
Exploring forgotten flavours: from veld to fork

The slow food revolution explores regenerative thinking by evolving Market Square as socio-economic sector in the local community.

The concept of slow food originated in the early 1980s by Carlo Petrini and a group of his friends from the small town of Bra in Italy (Louw,2014:2).

The movement goes against monopolised economies that consist of linear industrial mainstream of food production (Volpe, 2012: 29). The food revolution focuses on the user's experience, interaction with the making of food and the social activity of exchanging good food.

Regenerative thinking focusses on local community's craft, engagement and sensory experience. The movement incorporates the idea of consumption and production to resolve the current discontinuation within Market Square. The proposed programme of a slow food production facility places emphasis on the appreciation of good, healthy food and the skills involved during its production. Through the implementation of the slow food revolution the movement protects forgotten flavours in local customs and education of a broader public about food in the community.



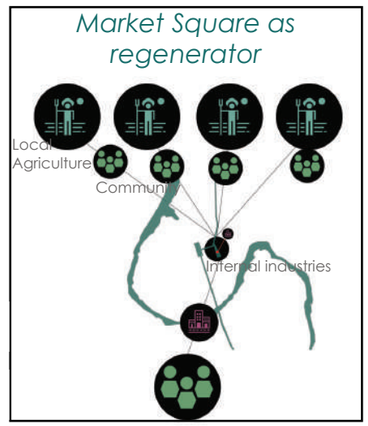


Figure 6.3
Diagrams of users (Author 2019)

Figure 6.4
Summary showing the evolution of Market Square (Author 2019)

6.3 IDENTIFYING THE USER

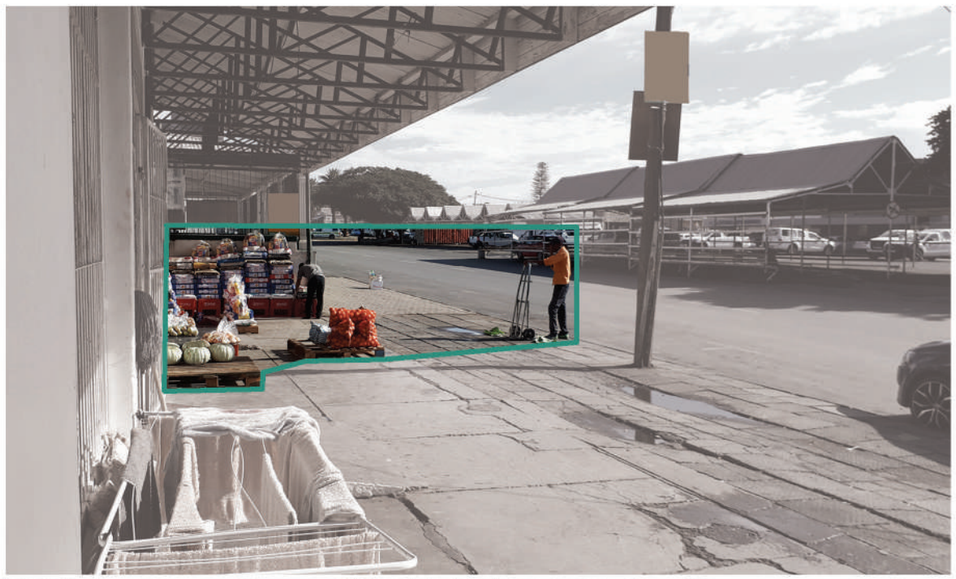


Figure 6.5
Compilation of images on site, exploring the narrative of Market Square (Author 2019)

The slow food movement production facility focuses on harvesting the site's existing energies. There is currently a lack of socio-economic infrastructure within the precinct, the site houses energies that needs to be preserved with the new programmatic intervention.

On weekends the Square comes alive; people braai within the square; gather under the large trees, play loud music and children run around within the square.

Through regenerative design principles, sociability in the square is explored to reestablish lost social connections such as the old Plaza Bioscope and local trade.

6.4 THE LINK BETWEEN FOOD AND ARCHITECTURE

_Place 1
SOCIAL CATALYSTS

Figure 6.6
Programmatic exploration of the social catalyst(Author 2019)

The construction of the social catalyst explores the regeneration of existing social opportunities such as the old bioscope and market square, through merging new social functions within the program, space and activity(Mang and Haggard, 2016: 29).

The new social function explores the re-emergence of social activities through integrating the square and courtyards to house seasonal activities and adapt to functional needs.

_Place 2
COMMUNITY PRODUCTION FACILITIES

Figure 6.7
Programmatic exploration of the community production facilities(Author 2019)

The community production facility explores place within the production and consumption of seasonal, local and traditional produce (Louw, 2014:156).

The Slow Food movement explores the users senses through the 'Ark of Taste' , motivating the community to commit to producing local endangered products (Louw, 2014:156). The sensory experience connected to the production of these products, allows restaurants, shops, households and tourists to support these individuals who produce the products, promote local produce in the region and create economic opportunities for small scale produce.

_Place 3
COOKING SCHOOL

Figure 6.8
Programmatic exploration of the cooking school(Author 2019)

The cooking school integrates within the existing and proposed program to ensure the multi-use of space. The cooking school draws from existing energies such as the food production center, local produce and economical development to ensure a sustainable closed loop structure.

_Place 4
ECONOMIC OPPORTUNITIES

Figure 6.9
Programmatic exploration of the economical opportunities(Author 2019)

The slow food movement promotes the idea of community coming together and that food is a shared experience within the community (Louw, 2014:156).

The program explores a variety of socio-economic opportunities that promotes trade within the local community. The economical integration of trade and social activity as explored within the urban framework (Gehl, 2005: 56) promotes day and night activity, social network of trade and outdoor public space for seasonal markets.

6.5 PROGRAMME REQUIREMENTS

Users
- Community
- Staff
- Students
- Craftsman
- Tourist
- Unemployed

_Place 1

A_ TheSquare/ outdoor facilities

Facility	Users	Use	Function and space	Area (m/2)	Requirements
1.Amphitheater		24/7	Tiered outdoor seating Stage platform Outdoor space needs to adapt for performances and equipment	350 40	Adaptable performance space; Economic interaction; Water harvesting; Social engagement; Accessibility; Safety; Permeable surfaces
2.Square		24/7	Multi-use outdoor seasonal space	250	Water harvesting; Social engagement; Accessibility; Safety; Economic interaction
3. Communal trade space		07h00-17h00	Adaptable informal trade		Accessibility; Social engagement

_Place 2

B_ Slow food production facility

Facility	Users	Use	Function and space	Area (m/2)	Requirements
1.Community food production facilities - Store -Kitchen facilities		8h00-17h00	Adaptable space that provides basic facilities for food production	120	Daylight and natural ventilation; Economic interaction; Water harvesting; Social engagement; Accessibility; Safety; Permeable surfaces; Artisanal/ market space
2. Workshop space -Craft studios -Store facilities		8h00-17h00	Multi-use workshop space that can be used for variety of activities and craft	280	Daylight and natural ventilation; Economic interaction; Accessibility; Social engagement; Permeable surfaces; Artisanal/ market space
3. Agriculture production facility -Loading bay -Sorting facility -Cut, wash and peel -Freeze, cool and storage		07h00-17h00	Adaptable facility for the various activities for processing food, storage, receiving and dispatching of food.	250	Daylight and natural ventilation; Economic interaction; Permeable surfaces; Social engagement; Safety; Artisanal/ market space
4. Staff facility -Change rooms -Showers -Kitchen		07h00-17h00	Staff amenities for storing personal belongings, wash facilitates and break room	90	Daylight and natural ventilation; Permeable surfaces; Social engagement
4. Ablutions		24/7	As per SANS 10400		

_Place 3

C_ Cooking School

Facility	Users	Use	Function and space	Area (m/2)	Requirements
1.Admin block		8h00-16h00	Admin facility for cooking school	90	Economic interaction; Social engagement; Accessibility
2.Back of house		8h00-16h00	Private staff facilities	30	Accessibility
3. Food prep area		07h00-17h00	Food storage, food prep and storage of ingredients External working / eating area	140 80	Accessibility; Social engagement; Daylight and natural ventilation
4.Cooking facility		07h00-17h00	Multiple use cooking space that can be used for variety of activities and interactive space Waste disposal, storage,cooking and washing	80 - 120	Daylight and natural ventilation; Economic interaction; Water harvesting; Social engagement; Accessibility; Heat extraction; Permeable surfaces; Artisanal/ market space

_Place 4

D_ Small trade workshop facilities

Facility	Users	Use	Function and space	Area (m/2)	Requirements
1.Rentable space -Office -Curio shop -Shop		24 / 7	Adaptable space where products that are made within the workshops can be sold to community and tourists.	225	Daylight and natural ventilation; Economic interaction; Water harvesting; Social engagement; Accessibility; Artisanal/ market space; Permeable surfaces
2. Workshop space -Craft studios -Store facilities		8h00-17h00	Multi-use workshop space that can be used for variety of activities and craft	80 - 120	Daylight and natural ventilation; Economic interaction; Permeable surfaces; Social engagement; Artisanal/ market space
3. Equipment storage		07h00-17h00	Adaptable facility for the various activities for processing food, storage, receiving and dispatching of food.	250	Daylight and natural ventilation; Accessibility; Social engagement
4. Plaza - bioscope -Adaptable cinema space		07h00-22h00	Multi-use performance space that can be changed for use and used by cooking school and workshops of external programs	600	Accessibility; Artisanal/ market space

Figure 6.10
Programmatic requirements(Author 2019) (Program requirements influenced by Porter (2019))

CHAPTER **07**

CONCEPTUAL & DESIGN DEVELOPMENT

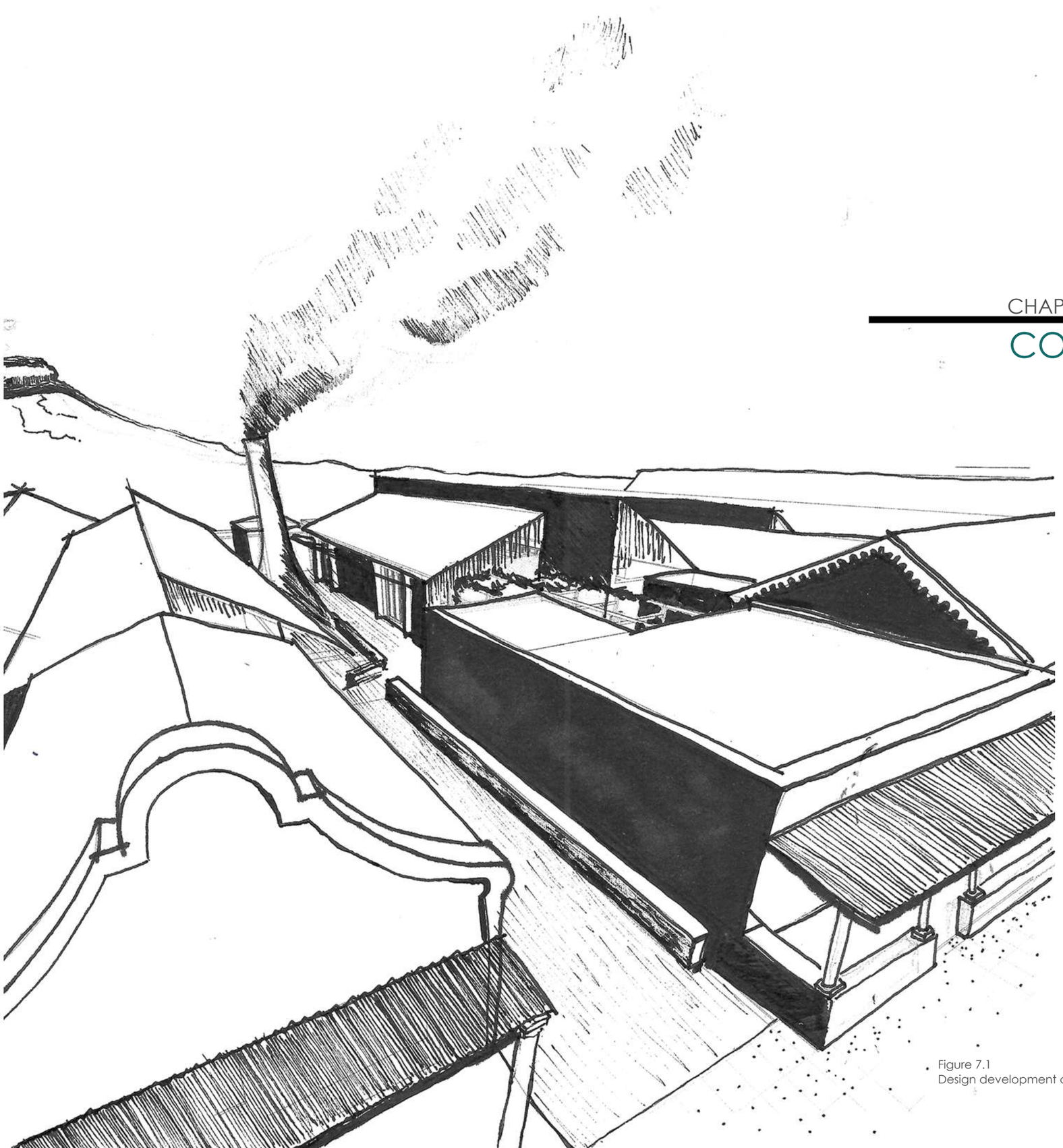


Figure 7.1
Design development crit cover page, (Author 2019)

7.1 ARCHITECTURAL DEVICE

Introduction

This section summarises the development of an architectural response set out in chapter 2 (Theory). The architectural response explores the current vernacular model to create and interpret a new model of spatial design for an architectural response in Graaff-Reinet. This model suggest that the Stoep serves as the connecting architectural device between elements & identified layers, as explored within the existing spatial typology.

The design of the proposed architecture responds to informants related to the consideration of significant urban fabrics within the environment, as well as the site. The Architectural device creates a condition in which the street condition of the vernacular is repeated within the new. The stoep mediates between creating space and the use of place in Graaff-Reinet. The spatial typology of the existing stoep is formulated and restructured to create an appropriate architectural response. The stoep interprets the identifiable social characteristics of the existing stoep, such as sociability, view point, interactive space and concentrated space.

The conceptual intention of the stoep explores the transition between the physical characteristics of the existing stoep and spatial conditions of the proposed new stoep. The new stoep explores the articulation of place, use and function through exploring the interpretation of *portico's in Bologna*.

Thus the following explorations and findings set out in this chapter will explore and inform the design development of the design and the response to the context.

7.1.1 EXISTING SPATIAL TYPOLOGY

↓

7.1.2 NEW SPATIAL TYPOLOGY

↓

7.1.3 ARCHITECTURAL DEVICE

↓

7.1.4 CASE STUDY

↓

7.1.5 SOCIAL CHARACTERISTICS OF THE STOEP

↓

7.1.6 ARCHITECTURAL CHARACTERISTICS OF THE STOEP

↓

7.1.7 CONCEPTUAL INTENTIONS

7.1.1 EXISTING SPATIAL TYPOLOGY

The buildings within the precinct consists of different stylistic appearances. To establish a connection between these buildings an existing typology spatial model was formulated .

The existing spatial typology model found that even though these buildings are all variants from Karoo flat roofed and Victorian dwellings, the buildings have spatial coherencies and appearances.

The existing spatial typology consists of a 5 layered model:
01: Street edge
02: Primary space
03:Living room
04:Concentrated spaces
05: Spill out backyard space

KEY:

01 : Street edge

Characteristics:
The street edge is a continuous open public space characterised by primary space ('stoep / veranda') that spills out to the street. These spaces contain large trees and water-furrows that contribute to the historical identity.

02 : Primary space: The stoep

Characteristics:
The stoep is an element that has been added onto the buildings over a period of time. The stoep carries various identities, forms and types. The stoep is the interaction point between the street edge and the living room.

03 : Living room

Characteristics:
The living room is a concealed space behind the facade and primary space. The living room is the first space of interaction when you enter the desired space.

04 : Concentrated space

Characteristics:
Concentrated spaces are private from the living room, concealed spaces. This space is characterised for multi-use.

05 : Spill out backyard space

Characteristics:
The backyard space has a significant historical meaning, wherein it is used for cultivation and production. This space intends to be reintroduced as part of the slow movement revolution.

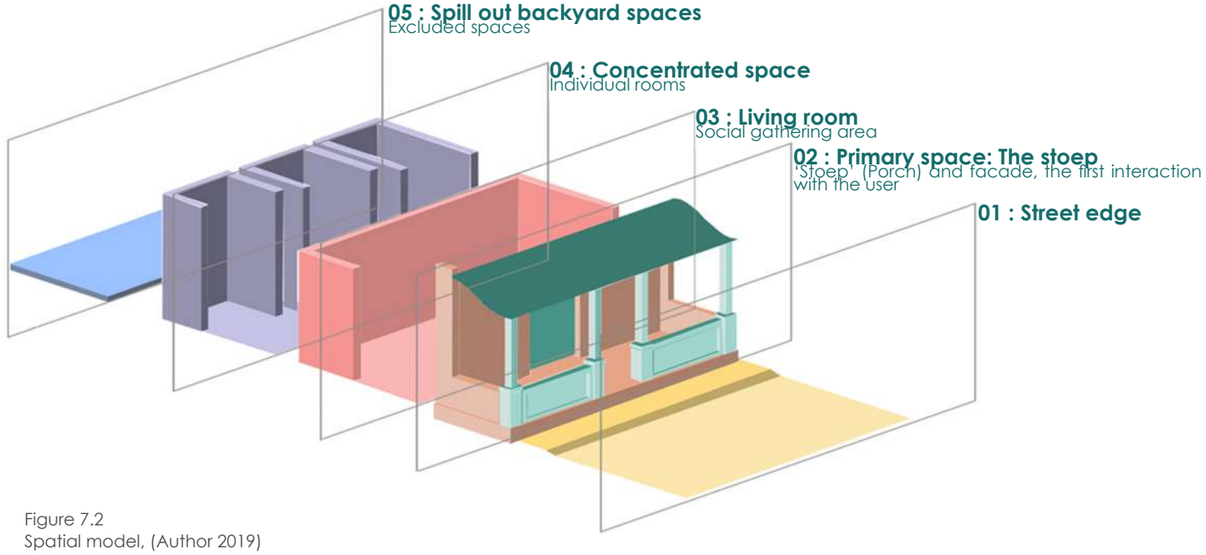


Figure 7.2
Spatial model, (Author 2019)

7.1.2 NEW SPATIAL TYPOLOGY

The new spatial typology restructures the existing spatial typology to become a more integrated model. The spatial model explores the mirroring of spaces, which allows these spaces to promote place and use.

The new spatial typology consists of:

02: Primary space
04:Concentrated spaces
02: Primary space
01:Street edge
04:Concentrated spaces
03: Living room

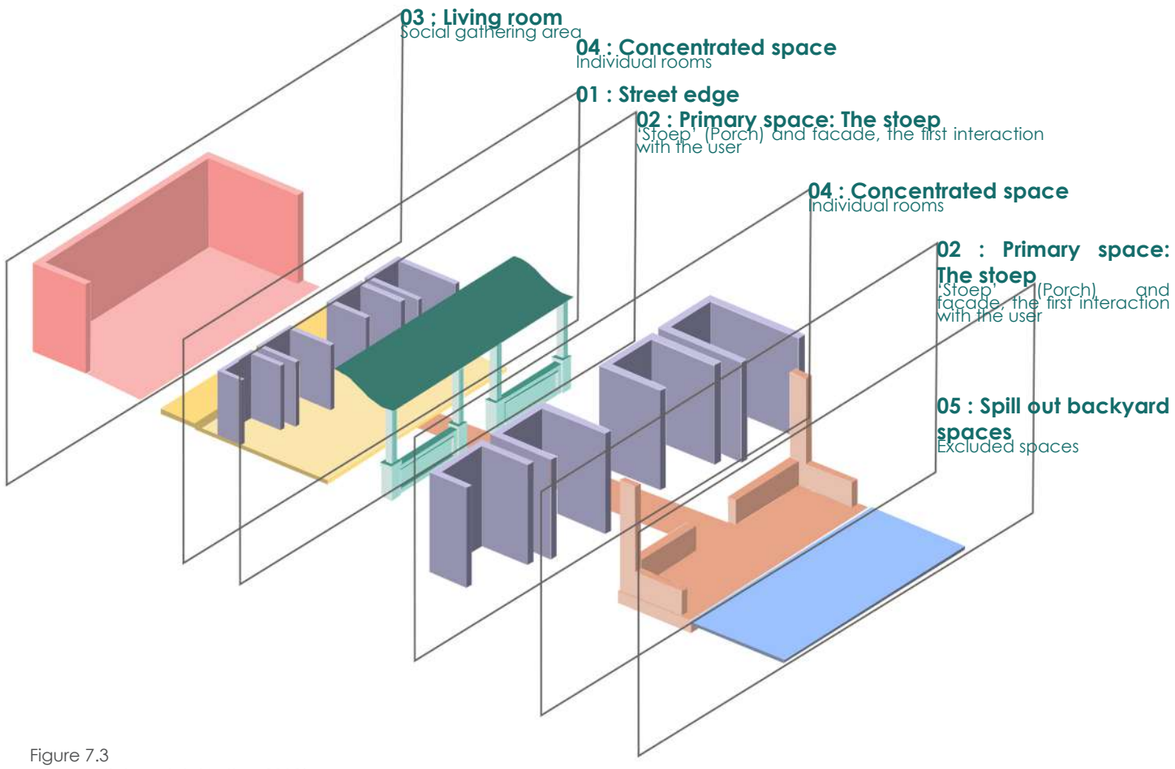
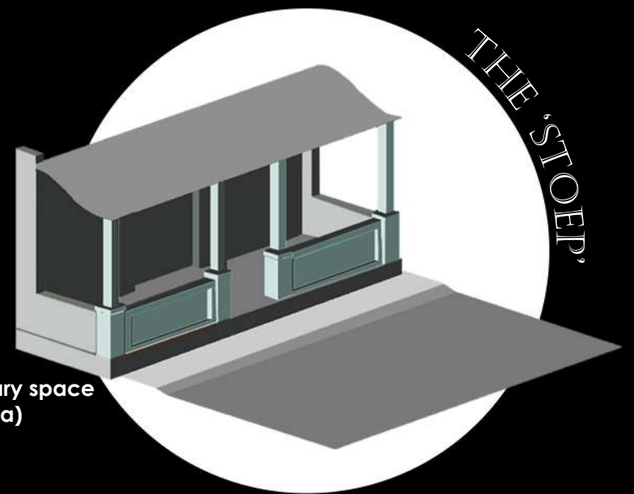


Figure 7.3
New spatial model, (Author 2019)

7.1.3 ARCHITECTURAL DEVICE



It folds,

bends,lies,
isolates,
cover and change again

with no effort to obstruct,
draw the user,
distinguish,
characterise,
decorate

Makes you look again to admire the detail,
find comfort from the sun of the summer,
Look upon the passing pedestrians

makes you wonder...
What if the stoep transforms to connect, protect, define the spatial condition.

Figure 7.4
Description of stoep adapted from Vertical Studio Group 2019, (Edited by Author 2019)

7.1.4. CASE STUDY - BOLOGNA

A case study were concluded to formulate an understanding of the use of a portico in its specific context. As illustrated in figure 7.5 porticoes consist of multiple characteristics that houses different function and activity. The portico by day is used as a social catalyst and by night, it becomes a designated space where homeless can reside. Porticoes share similar characteristics as the stoep, principles of the implementation of porticoes throughout the existing and new context is investigated and further applied within this dissertation.

Bologna, situated within northern Italy, first settled around 1000 BCE. Bologna's urban form was underpinned by its topography and laid out on a grid still visible in the deep-rooted morphological structure of the historic nucleus (Watson and Bentley, 2007:127)

Bologna as a cityscape is significant for the well-preserved historical characteristics and typologies that today, are still visible within the urban landscape. As opposed to the conservation and preservation, the attitude towards Bologna' s historic centre, its people, and its inherited patterns of built form(Watson and Bentley, 2007:136).

To preserve the identity of Bologna, a systematic analysis was undergone to determine the place restructuring programme that contributes to the evolution of the city. The characteristics of place identity of bologna's streetscapes are applied to the whole connect to create a uniform identity and architectural language. (Watson and Bentley, 2007:127).

Through using the morphological and typological of the historic built form the eleventh century's significant typological introduction, the portico was used as an architectural device to combine the disconnection of the landscape and restore the historical core.

PORTICOES

Porticoes have the characteristics of social marginalization. A portico is a porch, leading to the entrance of a building, or extended as a colonnade. Throughout the urban landscape porticoes in Bologna stretch to 75 kilometers, they were built as private structures, supporting rooms above the public passageways.

Similar to the Stoep (Veranda), the portico is rooted within the traditional and city building practices that support the intimate relationship between culture, shelter and the individual (Watson and Bentley, 2007:141).

THE PORTICO TYPOLOGY

-Situated on the ground floors where small trade took place.
-During the day: craftwork was permitted on condition that space was left for pedestrians.
-During the night: Hawkers were allowed to sleep on the porticos, on condition that they left the next morning.

THE EVOLUTION OF THE PORTICO TYPOLOGY

As to the crowded centers of Indian cities. Architect Charles Correa investigates the adaptability of pavements within India's city centers.

Porticoes are used as social marginal device that controls the safety and permeability of streets. The porticoes during the day are for pedestrians traveling far distances and by night, the taps that are placed at a regular distance, is turned on and the platforms are washed by municipal sweepers. The porticoes then provide safe and clean platforms for people to sleep out of the way of pedestrians.

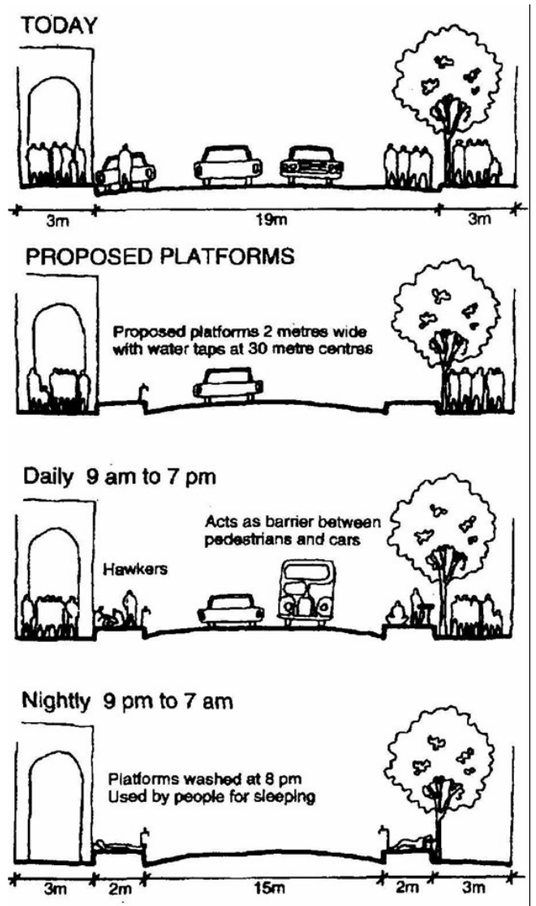


Figure 7.5
The evolution of the portico, (Correa 2019)

Figure 7.6
Example of a typical portico, (Cullen 2019)

THE STOEP - GRAAFF-REINET

Figure 7.7
Example of a stoep,Cradock Street,Graaff-Reinet, (Cullen 2019)

7.1.5 EXPLORING THE SOCIAL CHARACTERISTICS OF THE STOEP

EXAMPLES OF THE STOEP







Figure 7.8
Images of the context, (Author, 2019)

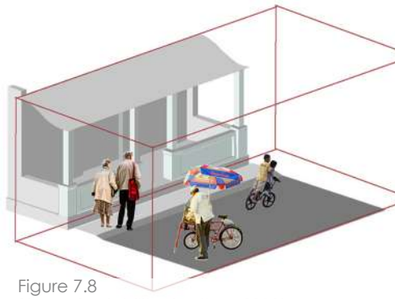


Figure 7.10
Stoep: View point, (Author, 2019)

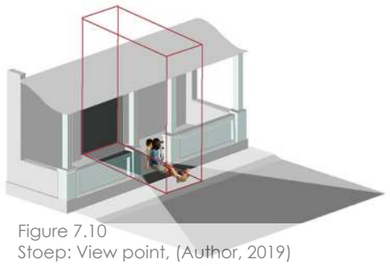


Figure 7.11
Stoep: Interaction, (Author, 2019)

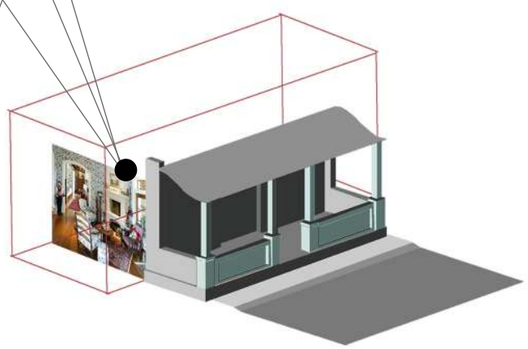


Figure 7.12
Stoep: Concentrated space, (Author, 2019)

SOCIABILITY

Spatial opportunity:

Place

The Stoep serves as a barrier that pushes social interaction into a concentrated public space. This space allows users to use the space freely and adapt to cultural activities.

Evolution

Through regenerative thinking the space allows for adaptability and creates opportunities for users to engage with the space.

VIEW POINT

Spatial opportunity:

Place

The Stoep isolates the user from the street, creating a secondary space that serves as a lookout point.

Evolution

Through regenerative thinking the space draws the user through axis that engages the user with production, process and trade.

INTERACTION

Spatial opportunity:

Place

The Stoep creates social nodes within the street that activates socio-economic activity.

Evolution

Through regenerative thinking the space interacts with user and activity.

CONCENTRATED SPACE

Spatial opportunity:

Place

The Stoep separates space from the street. Creating concentrated activities

Evolution

Through regenerative thinking the space interacts with user and activity.

7.1.6 EXPLORING THE ARCHITECTURAL CHARACTERISTICS OF THE STOEP

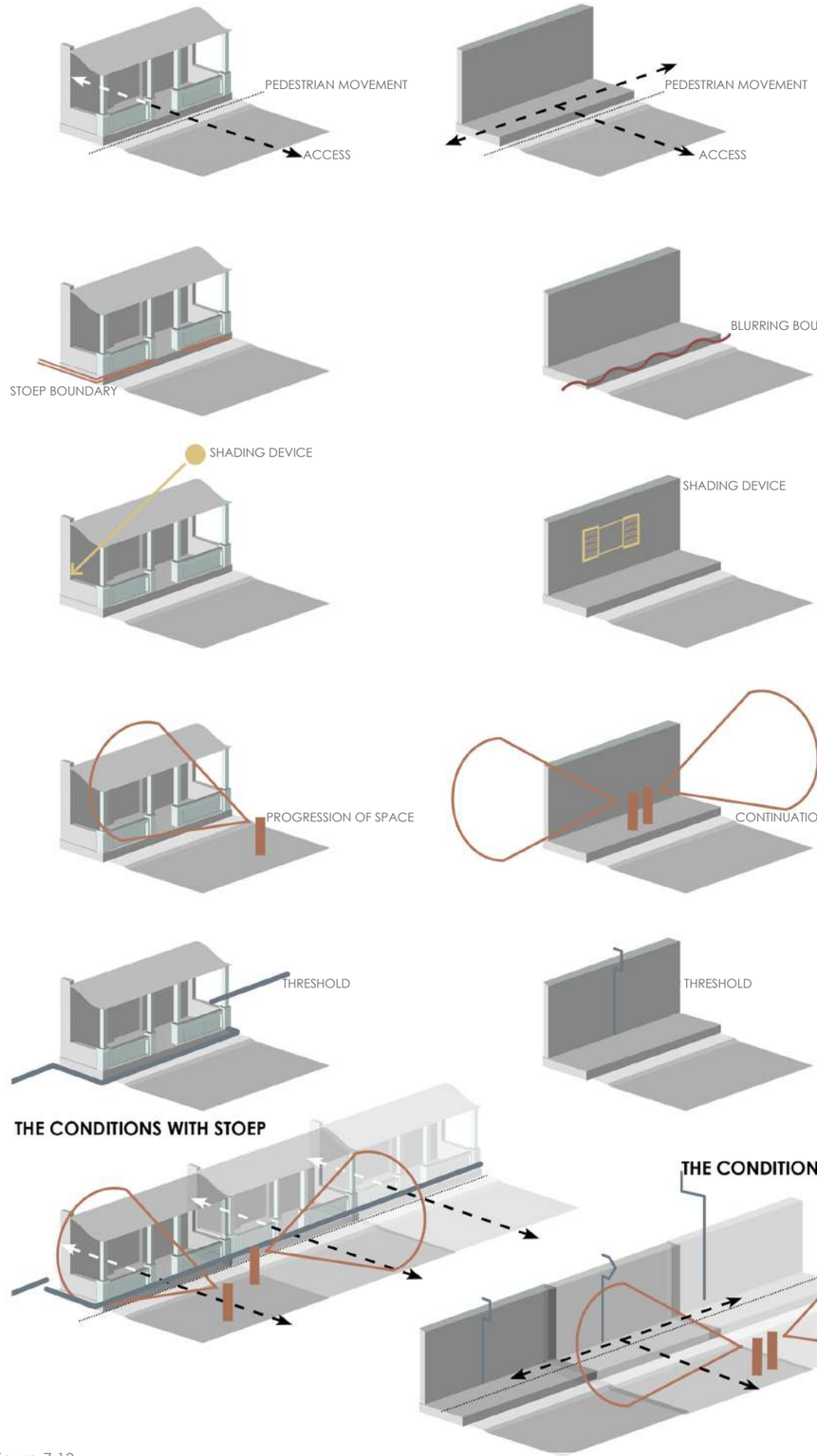
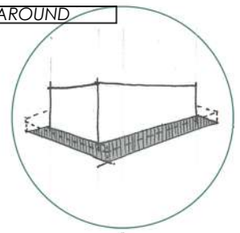


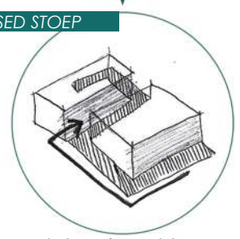
Figure 7.13
Explanatory diagrams of Physical characteristics of the Stoep, (Author, 2019)

7.1.7 SUMMARY OF CONCEPTUAL INTENTIONS

WRAP AROUND



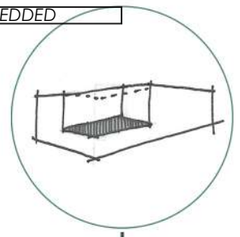
PROPOSED STOEP



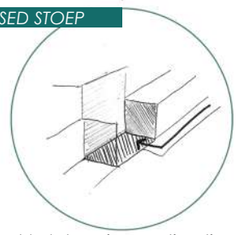
The wrap around stoep is used to connect the building complexes through a linking walkway.

Building characteristics:
Attached element to the building facade, to shade from northern and western sun. The proposed stoep should block out sun but still allow light in.

EMBEDDED



PROPOSED STOEP

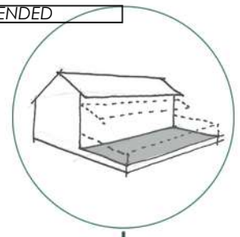


The embedded stoep is a continuation of space, programme and activity. The embedded stoep is connected to a central node of activity, which is ideal for the Karoo summers, and allows activity to take place beneath a shaded outdoor space.

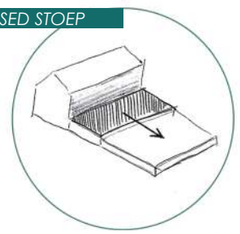
Building characteristics:
Grafted onto the building through the extension of roof structure.

Figure 7.14
Diagrams exploring the evolution of the stoep, (Author, 2019)

EXTENDED



PROPOSED STOEP

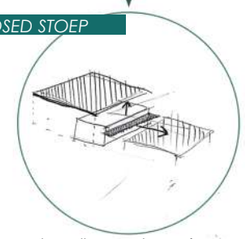


The extended stoep is a new stoep which is added on existing stoeps facing the square. The stoep becomes the pedestrian street that houses activity and regenerates the existing building's entrances.

Building characteristics:
Walkway that is partly covered with a pergola and grape vines to regenerate the memory of the agriculture history of Graaff-Reinet .

COVERED WALKWAY

PROPOSED STOEP



The covered walkway stoep is a new layer introduced within the existing facades and stoeps. This stoep highlights the new entrances within the proposed.

Building characteristics:
Shaded walkway to protect user from the summer sun.

WRAP AROUND

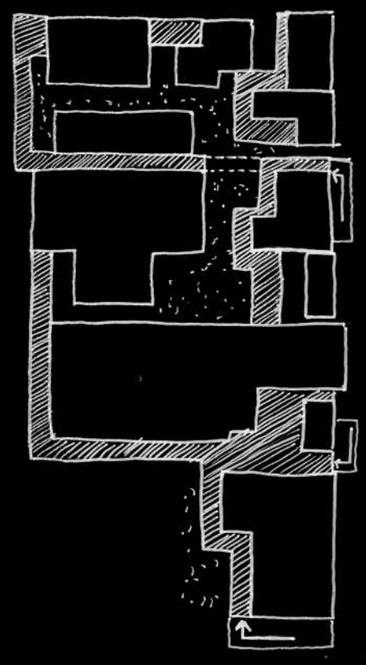


Figure 7.14
Plan diagram of the wrap around stoep, (Author, 2019)

EMBEDDED

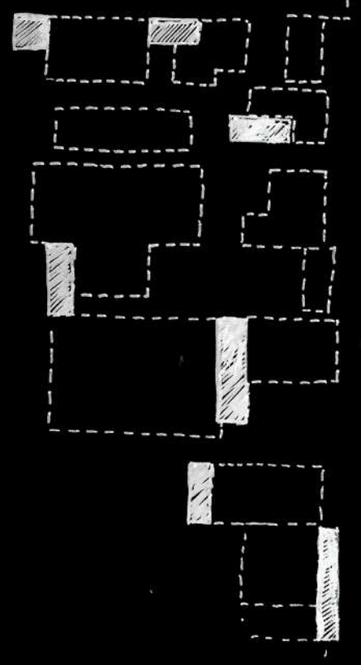


Figure 7.15
Plan diagram of the embedded stoep, (Author, 2019)

EXTENDED

Figure 7.16
Plan diagram of the extended stoep, (Author 2019)

COVERED WALKWAY

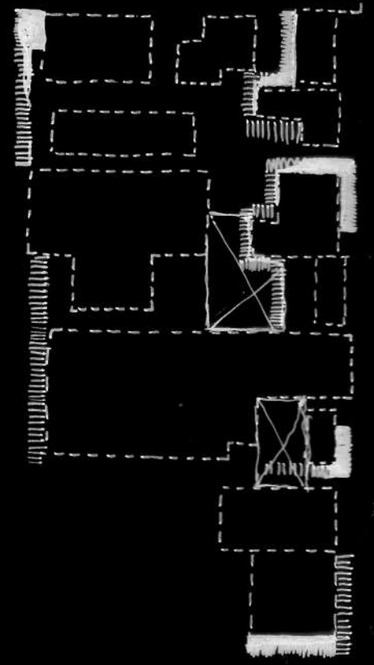
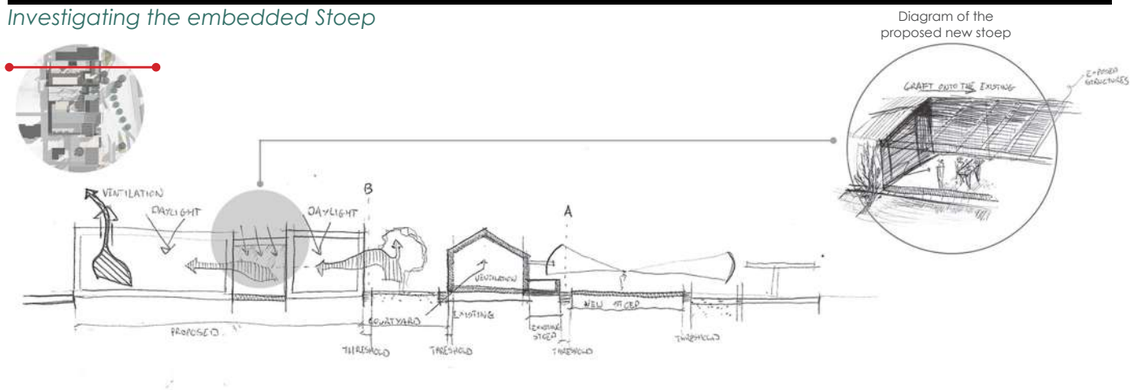


Figure 7.17
Plan diagram of the covered walkway stoep, (Author, 2019)

7.2 SPATIAL CONDITIONS

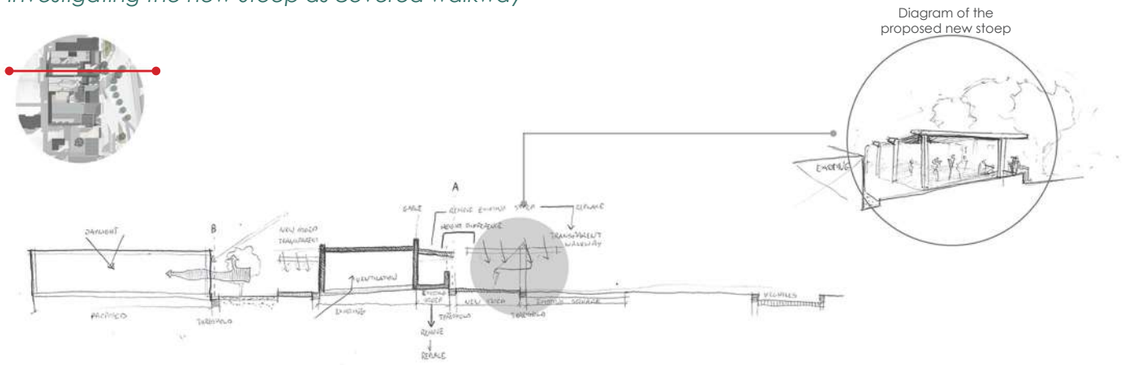
SPATIAL CONDITION 1

Investigating the embedded Stoep



SPATIAL CONDITION 2

Investigating the new Stoep as covered walkway



SPATIAL CONDITION 3

Investigating the Stoep as second layer

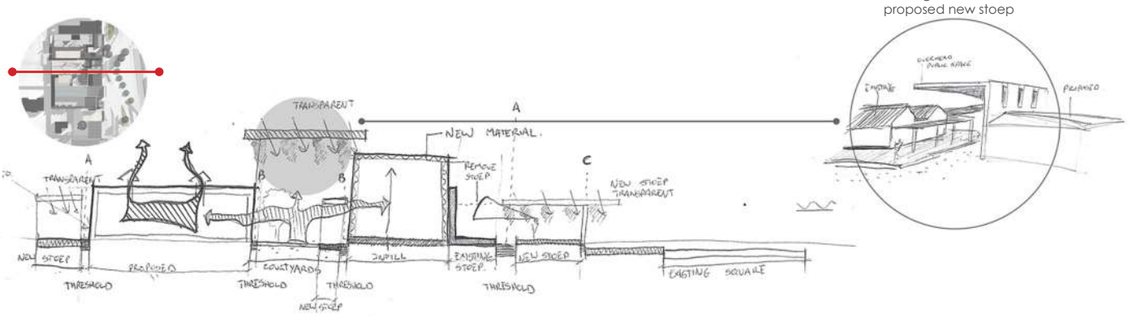
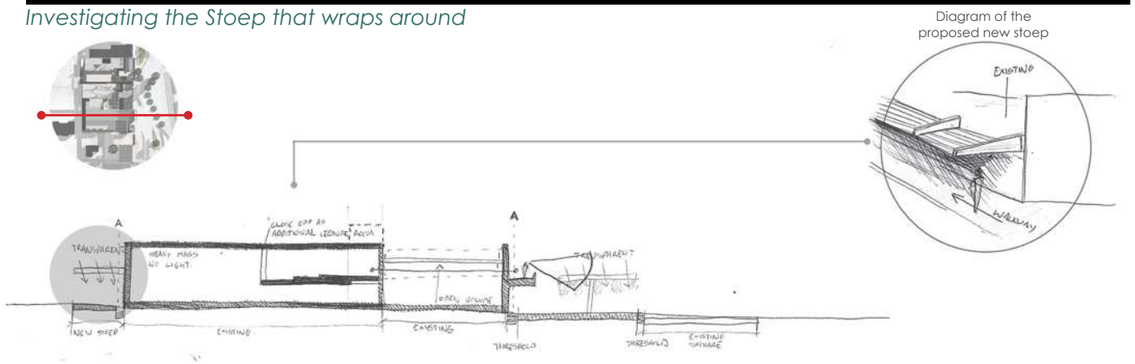


Figure 7.19; 7.20 & 7.21 (Top to Bottom)
Diagrams exploring the spatial conditions, (Author, 2019)

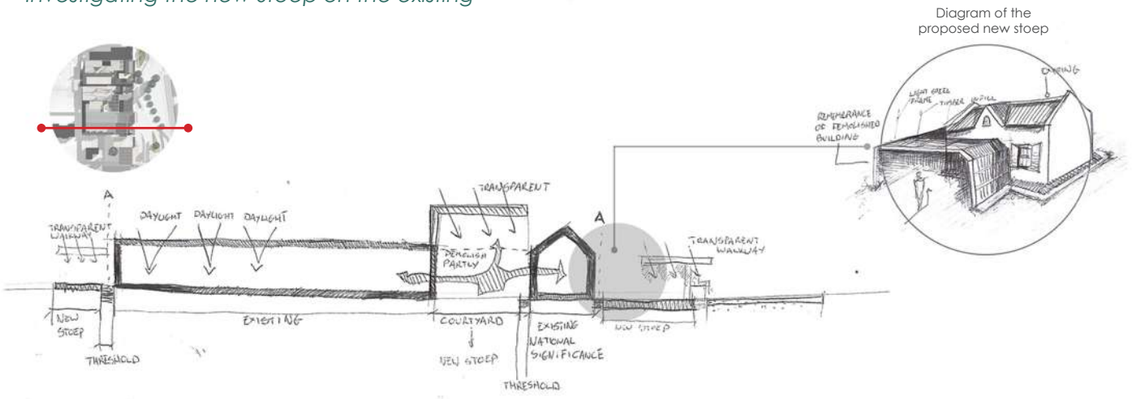
SPATIAL CONDITION 4

Investigating the Stoep that wraps around



SPATIAL CONDITION 5

Investigating the new Stoep on the existing



SPATIAL CONDITION 6

Investigating the extended Stoep

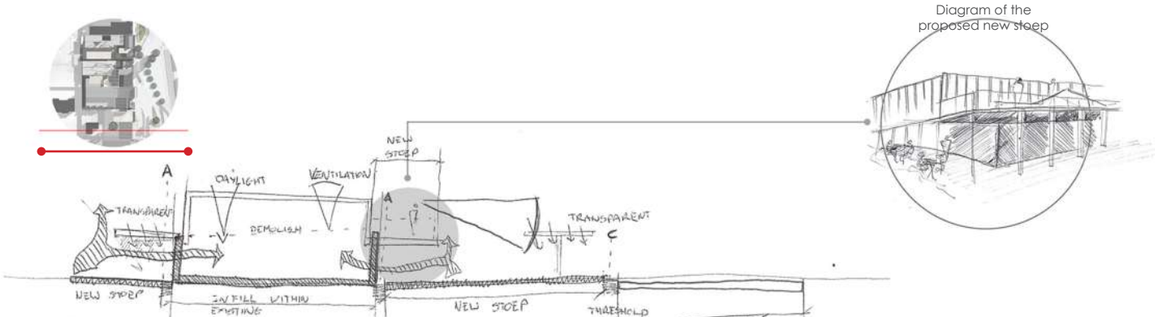
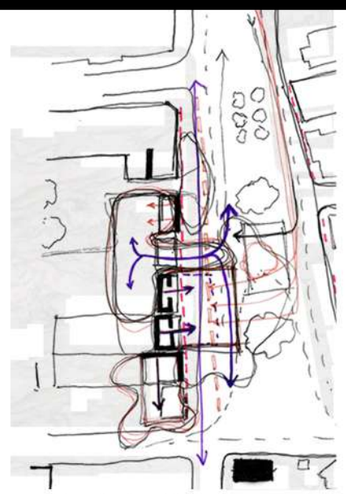


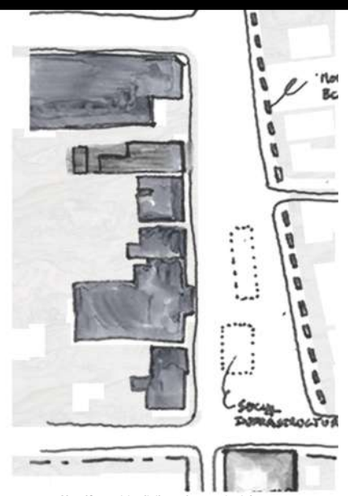
Figure 7.22; 7.23 & 7.24 (Top to Bottom)
Diagrams exploring the spatial conditions, (Author, 2019)

7.3 DESIGN EXPLORATION

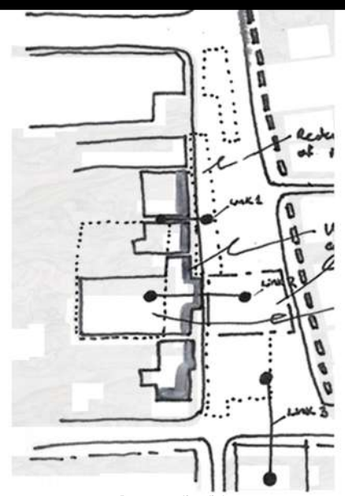
Figure 7.25
Compilation of Design development diagrams, (Author, 2019)



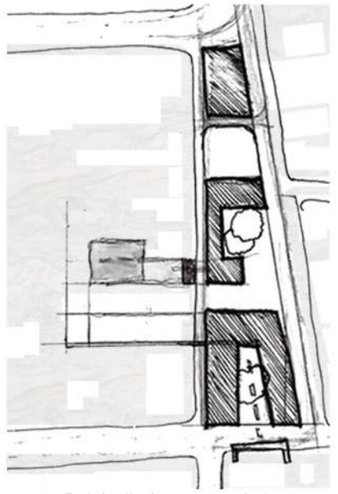
Integrating the existing and the square



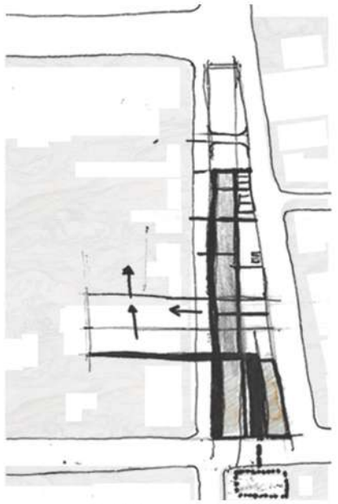
Significant buildings in Market Square



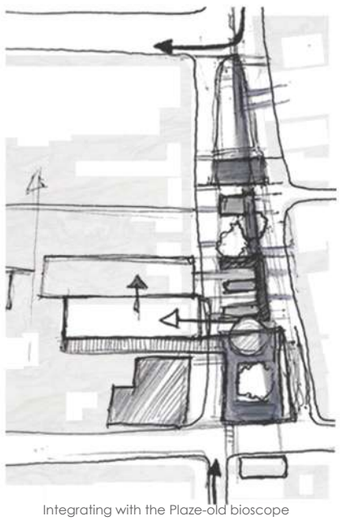
Regenerating links



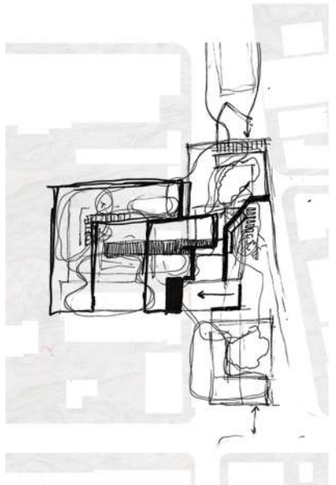
Exploring the Square as precinct



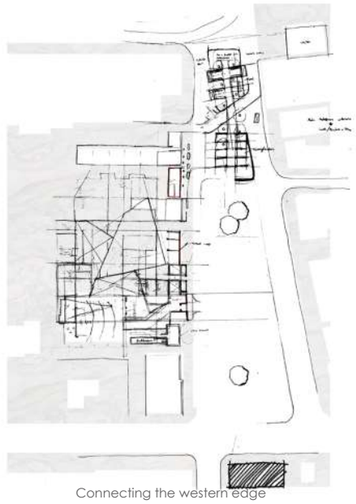
Establishing social edges



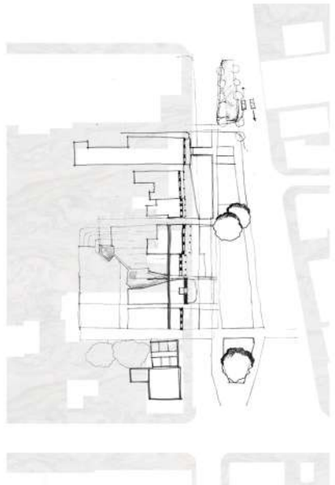
Integrating with the Plaze-old bioscope



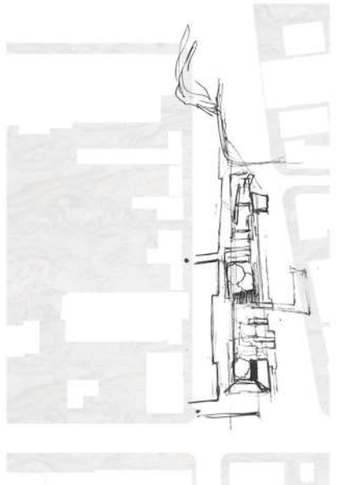
Drawing intervention into the existing



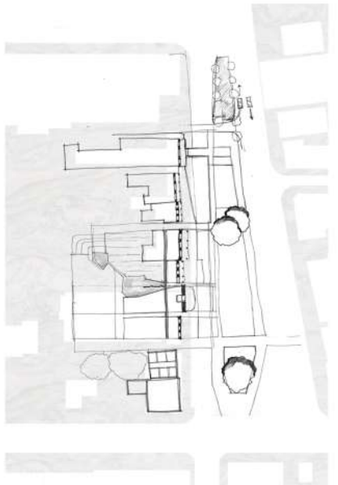
Connecting the western edge



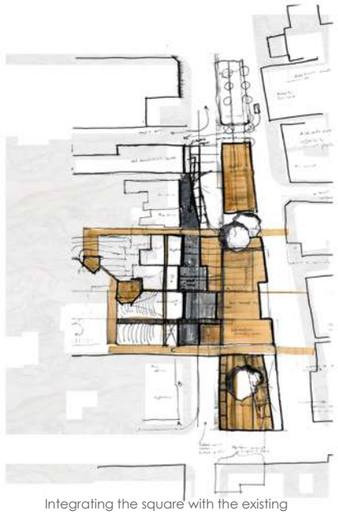
Exploring access points



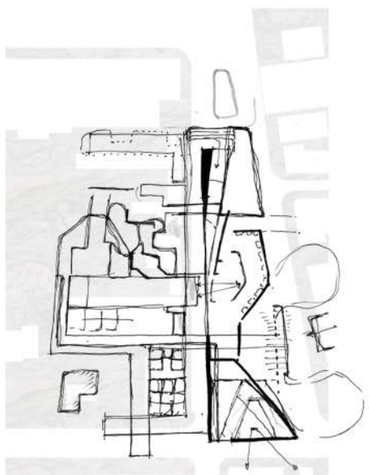
Exploring links in the Square



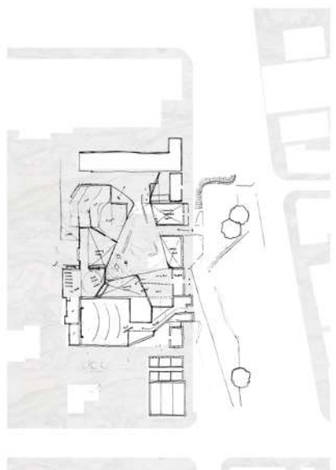
Defining new access points



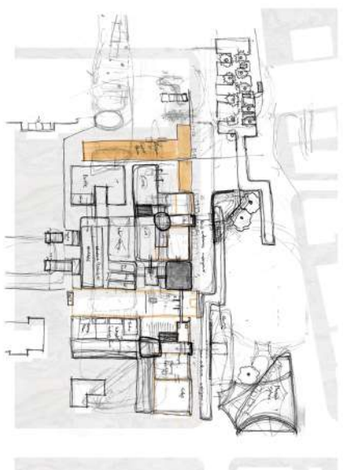
Integrating the square with the existing



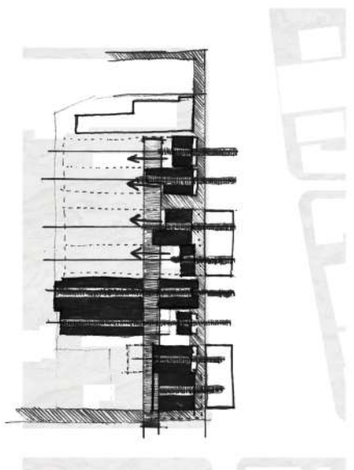
Connecting the existing and proposed



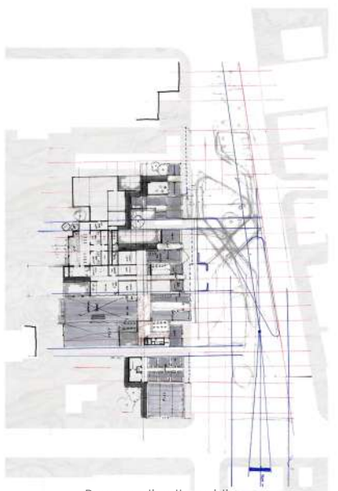
Exploring the extension of the plaza



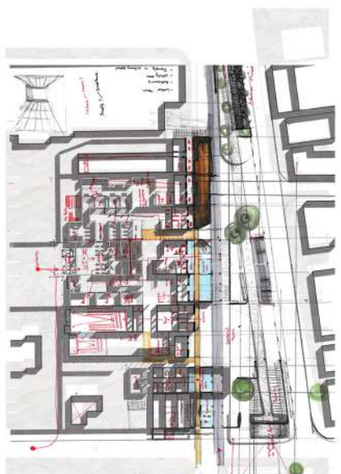
Grafting onto the existing buildings



Re-establishing existing access points through new spatial model



Regenerating the existing



Creating nodes in the existing through adding infrastructure

ITERATION 1

Investigating the square as central node

Establishing the main links of the square

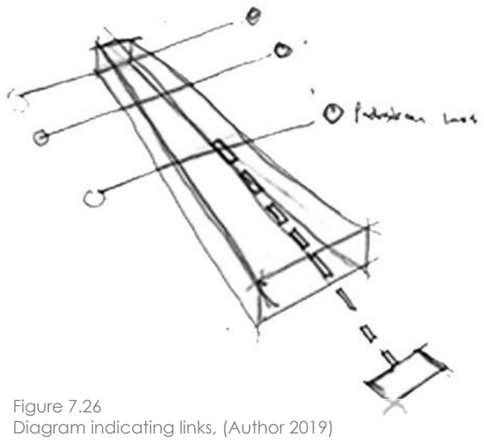


Figure 7.26
Diagram indicating links, (Author 2019)

Dividing the square into massing

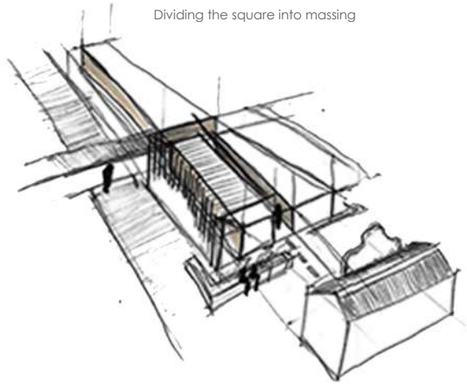


Figure 7.27
Massing, (Author 2019)

Creating edges within the massing

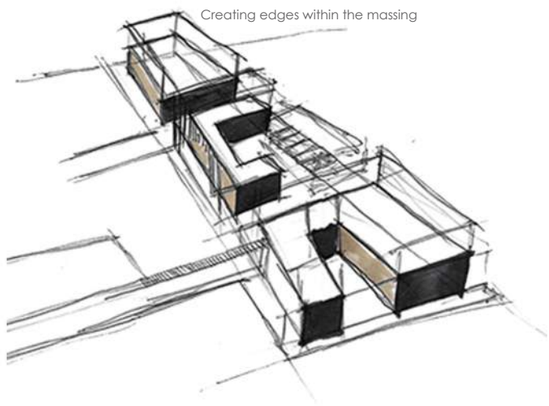


Figure 7.28
Creating edges, (Author 2019)

Exploring layering

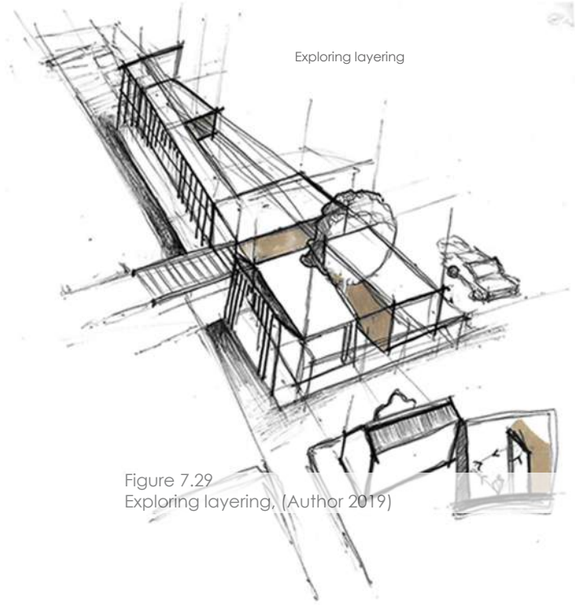


Figure 7.29
Exploring layering, (Author 2019)

Iteration 1 explored the internal plain of Market Square as precinct. It also explored the relationship between the square and the western edge, weaving between the existing fabrics. Iteration 1 explored the socio economic development of the site, where the square is central and draws from the existing energies on site.

Critique:
Iteration 1 did not respond to the regenerative thinking and took away the significance of the square with its surrounded buildings. Market Square is one of the very few public spaces within Graaff-Reinet, iteration 1 took away the flexibility of the square and the historical narrative of the square which has retained as an public square since the town originated.

Figure 7.31
Explanatory maquette 1, (Author 2019)

Figure 7.32
Explanatory maquette 2, (Author 2019)

Figure 7.33
Explanatory maquette 3, (Author 2019)

ITERATION 2

Retrofitting the square

Iteration 2 explored creating a catalytic incursion point within the square, exploring adding onto selective parts of the western edge. It also retrofits the relationship between the western edge and the square.

Critique:
As to iteration 1, Iteration 2 creates a stronger relationship with the western edge and square. The proposed architecture was not in line with the design intentions.

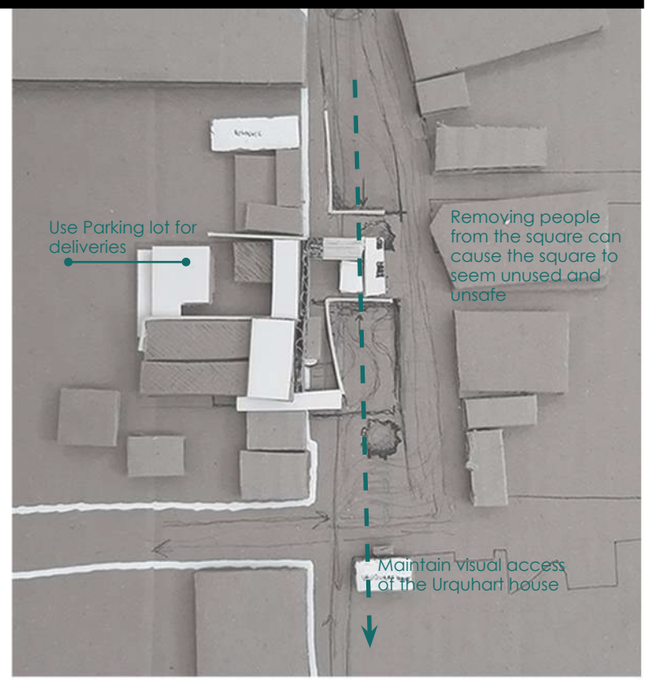


Figure 7.34
Design development maquette 1 , (Author 2019)

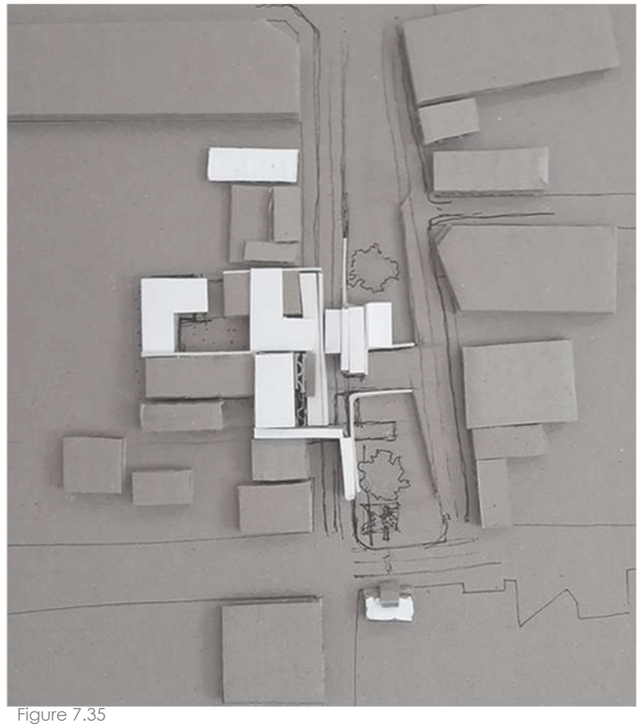


Figure 7.35
Design development maquette 2 , (Author 2019)

ITERATION 3

Densification of the western edge

Iteration 3 explored the densification of the western edge, the edge creates direct links with the square and cuts through the existing.

Critique:
Iteration 3 lacked a connection between the new and the old, the massing did not relate to the context and re-generative design thinking, evolution of place.

Figure 7.36
Design development maquette 3 , (Author 2019)

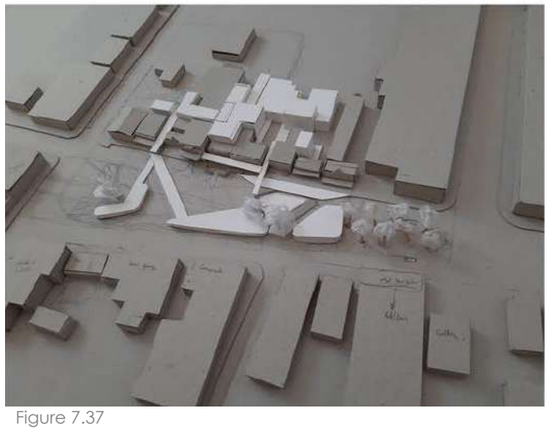


Figure 7.37
Design development maquette 3 , (Author 2019)

ITERATION 4

Grafting onto the existing

Iteration 4 focused on grafting onto the existing, creating a spatial relationship to place. The square creates a drawing point to the Urquhart house on the southern edge.

Within this iteration the new spatial model was applied, this process explored grafting the architectural device, the stoep to the existing and new context.

Figure 7.38
Design development maquette 4 , (Author 2019)

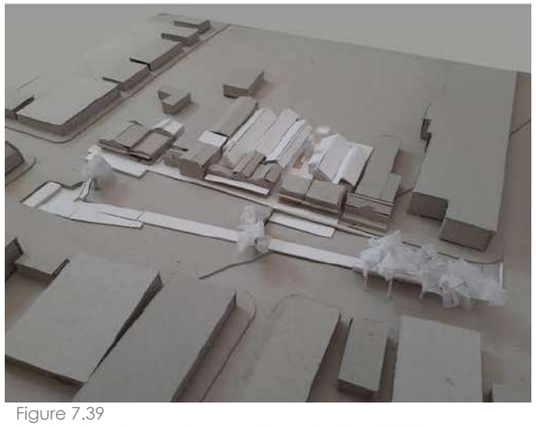


Figure 7.39
Design development maquette 4 , (Author 2019)

The Spatial response explored the integration of socio economic programmatic facilities that integrates with one another. The architectural device intends to create a distinction between the new and old, creating spatial connections between the square and the new proposed architecture.

Critique:
The spatial relationship does not translate the identified architectural device, the stoep. The stoep represents a multi-functional space that adapts and accommodates, currently the stoep connection is not strong. The plan was too crowded and did not create intricate courtyards and spatial diversity.

The articulation of the stoep should be used to distinguish between programmatic function and the stoep should be used to shade openings for natural ventilation.

Figure 7.40
Spatial relationships of iteration 4 , (Author 2019)

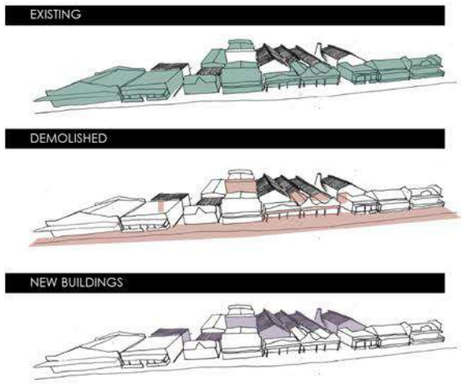


Figure 7.41
Diagram showing existing, demolished and new, (Author 2019)

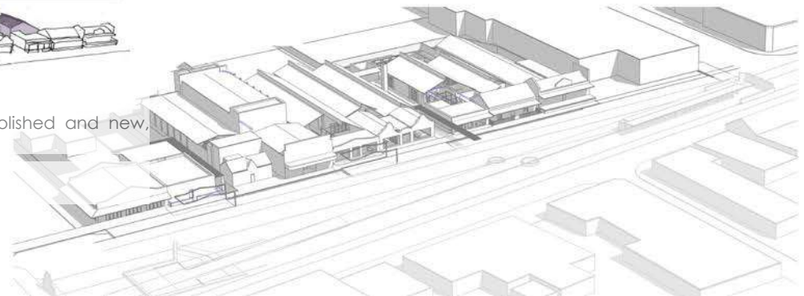


Figure 7.42
3D of iteration 4, (Author 2019)

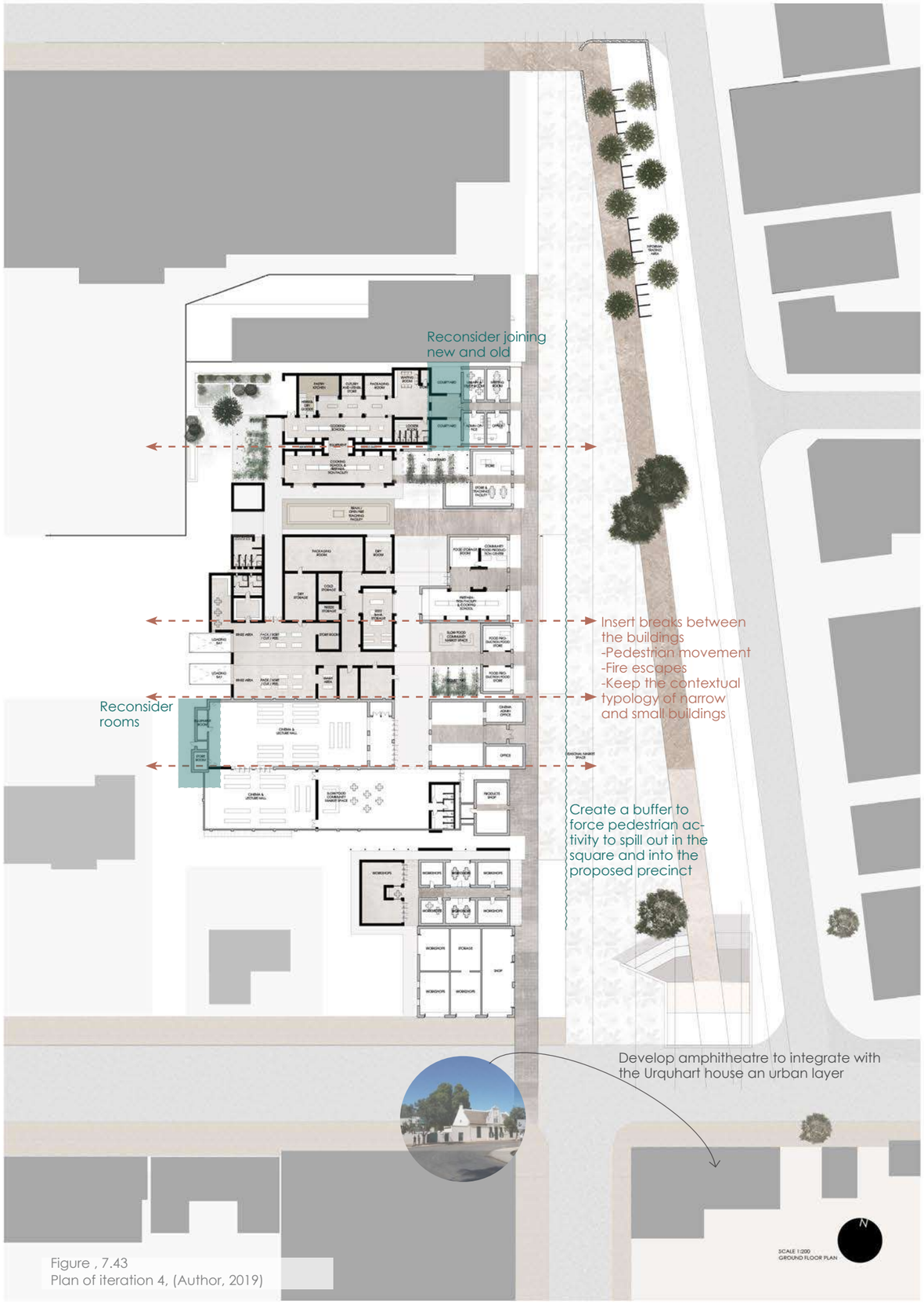


Figure , 7.43
Plan of iteration 4, (Author, 2019)

ITERATION 5

Brainstorming the relationship between existing vernacular and new vernacular

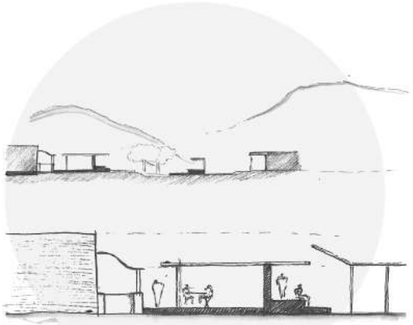


Figure 7.43
Conceptual explorations of the stoep, (Author 2019)

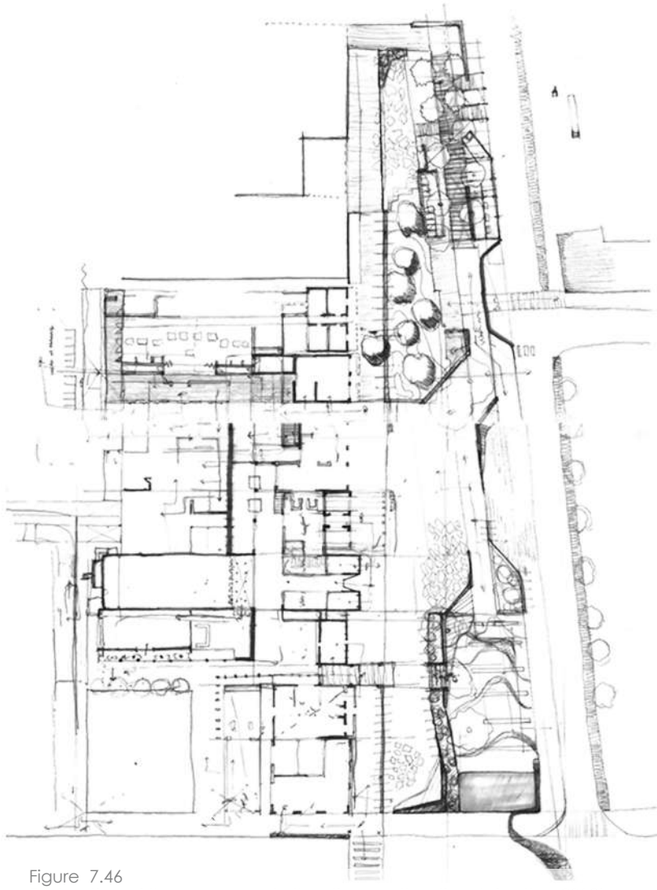


Figure 7.46
Exploration of the square and alterations on iteration 4, (Author 2019)

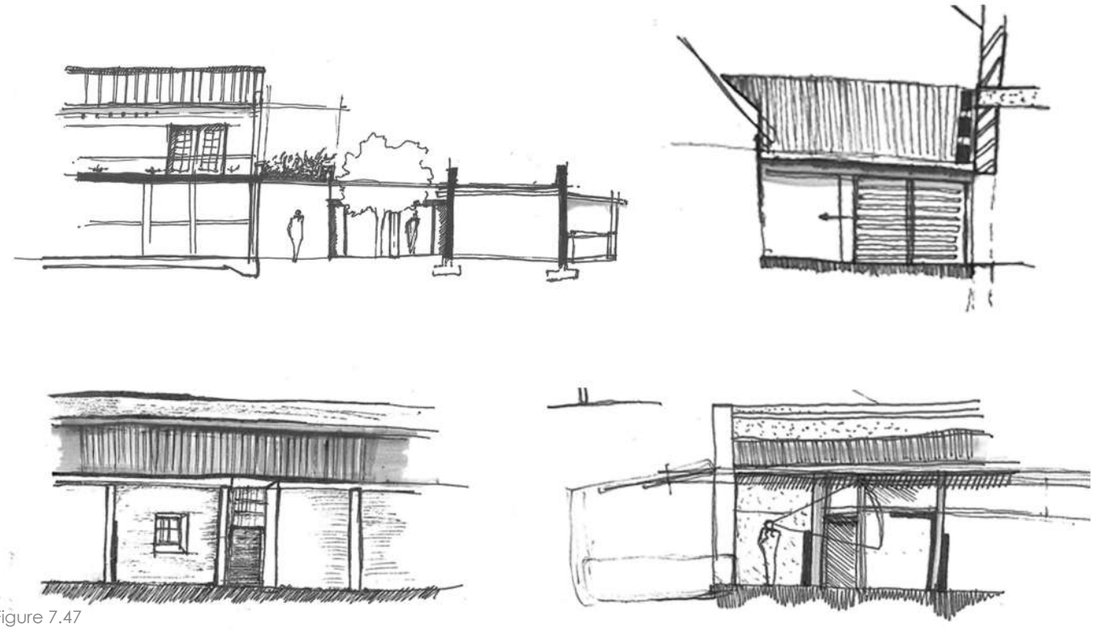


Figure 7.47
Exploration vernacular principles: scale, structural integrity and unity in diversity, (Author 2019)

Iteration 5 revisits the contextual findings and informants through identifying key characteristics to establish the relationship of the old with the new.

Fagan's 10 principles of architecture are explored through proportion of the new, human scale and the integrity of the structure to the existing (Barker 2012: 167-232).

This iteration establishes the response of the roof to the context, allowing the iterations that follow to investigate the honesty and appropriate detailing of the roof.

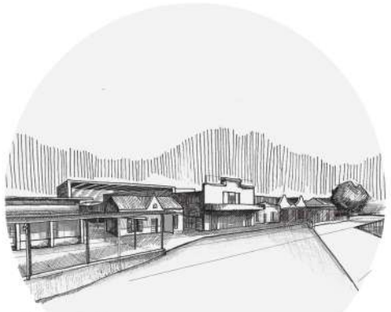


Figure 7.44
Exploring the Stoep and the existing, (Author 2019)

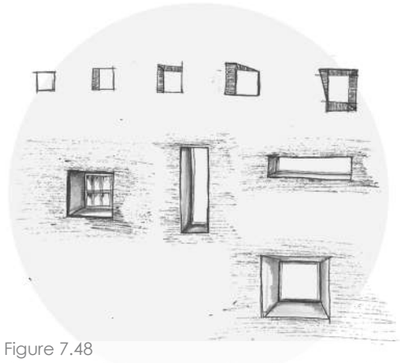


Figure 7.48
Diagrams of window openings, (Author 2019)

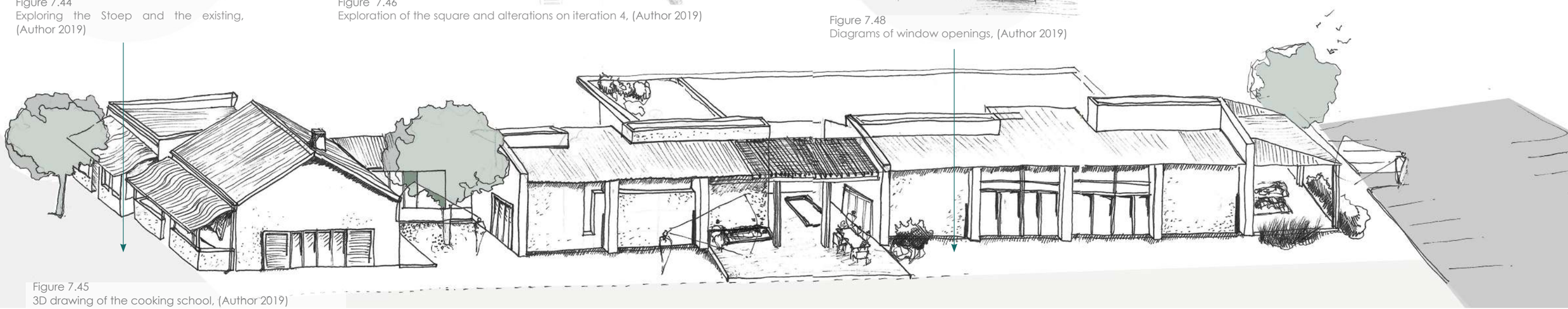


Figure 7.45
3D drawing of the cooking school, (Author 2019)

ITERATION 6

Final

Iteration 6 explores the architectural rhythm of urban fabrics through differentiating the existing and the new. Keeping the existing facades to the street, allowing the new layers to reveal from behind the existing facades. Iteration 6 explores the articulation of the stoep through using the stoep as an architectural device to connect the existing and new, creating for socio-economic opportunities to occur.

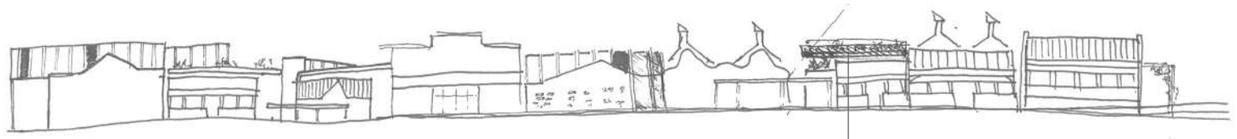


Figure 7.50
Exploration of old and new facades , (Author 2019)

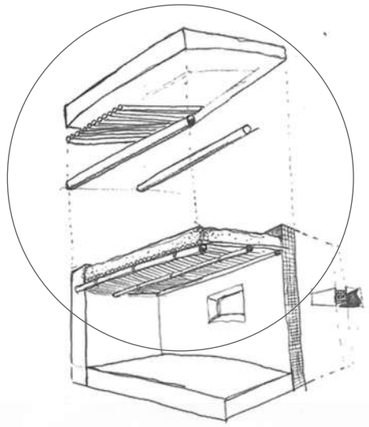


Figure 7.51
Exploration diagrams of the anatomy of an old traditional Brakdak roof, (Author, 2019)

Figure , 7.49
Elevation of existing and new facades, (Author 2019)

SITE PLAN (NOT TO SCALE , ORIGINAL DRAWING AT 1:500)
Figure , 7.52
Site plan, (Author 2019)

GROUND FLOOR PLAN (NOT TO SCALE , ORIGINAL DRAWING AT 1:200)
Figure , 7.53
Ground floor plan, (Author, 2019)

ITERATION 7

Detailing

Further exploring Iteration 6 , Iteration 7 investigates retrofitting the new interpretation of vernacular through incorporating sustainable strategies to improve the function and performance of the buildings ventilation. The design explores the contextual 'given', by adapting the roof through implementing the concept of grafting. The roof is treated as an ventilation device that investigates ventilation principles (set out in chapter 8). The ventilation device is explored as a solar stack that accelirates air to be drawn from the room, as to the climatic condition the design explores the Boyle ventilation principles,thermal mass, cross ventilation and evaporative cooling to ensure comfortable temperature within the building.

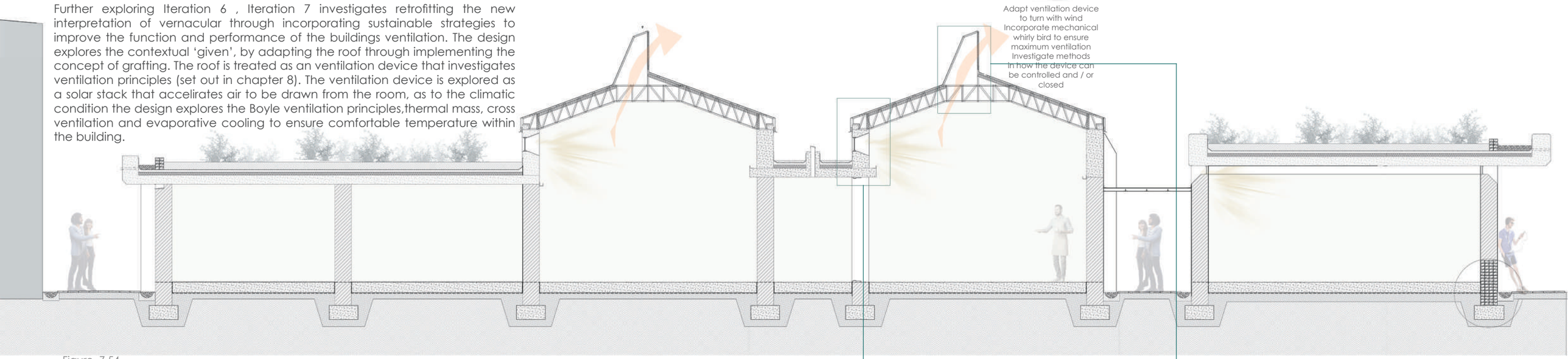
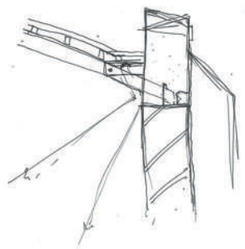


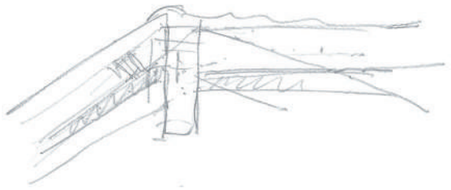
Figure 7.54
Exploration of section, (Author, 2019)

Detail exploration

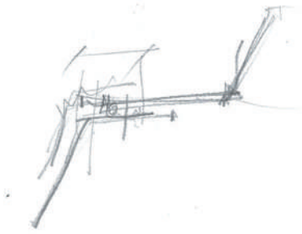
Roof and wall detail



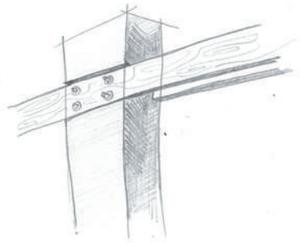
Truss detail



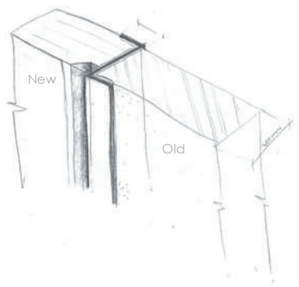
Roof flashing detail



Stoep column detail



Joining old and new detail



Bolted timber connection detail

Figure , 7.55
Details, (Author, 2019)

Roof and wall joining detail

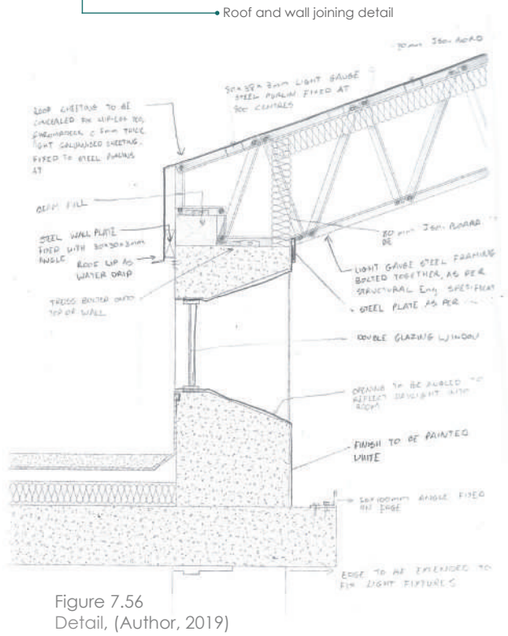


Figure 7.56
Detail, (Author, 2019)

Roof ventilator detail

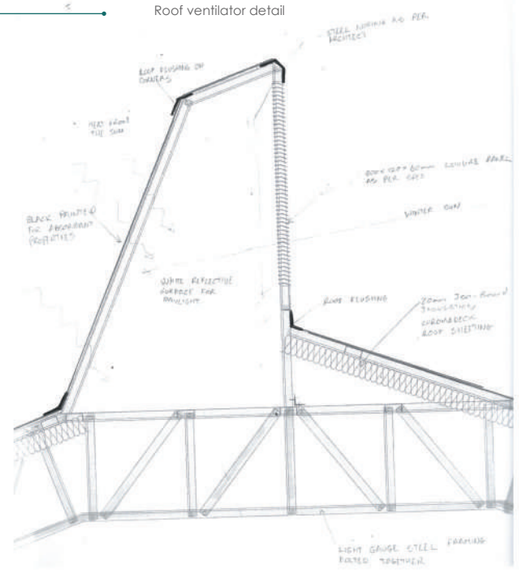
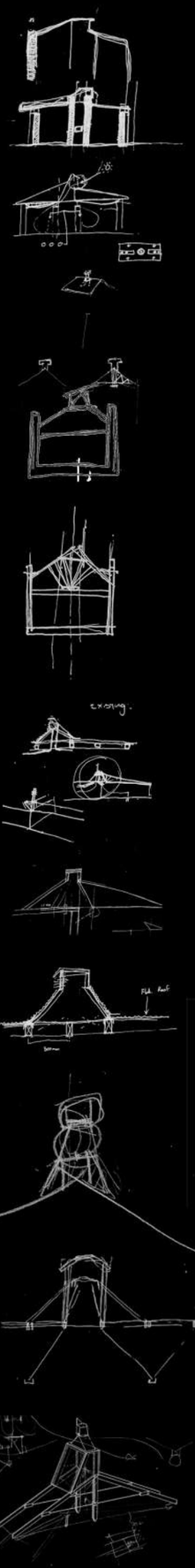


Figure 7.57
Detail 2, (Author, 2019)



ITERATION 8

Exploring the trusses

Brainstorming the roof and truss connections

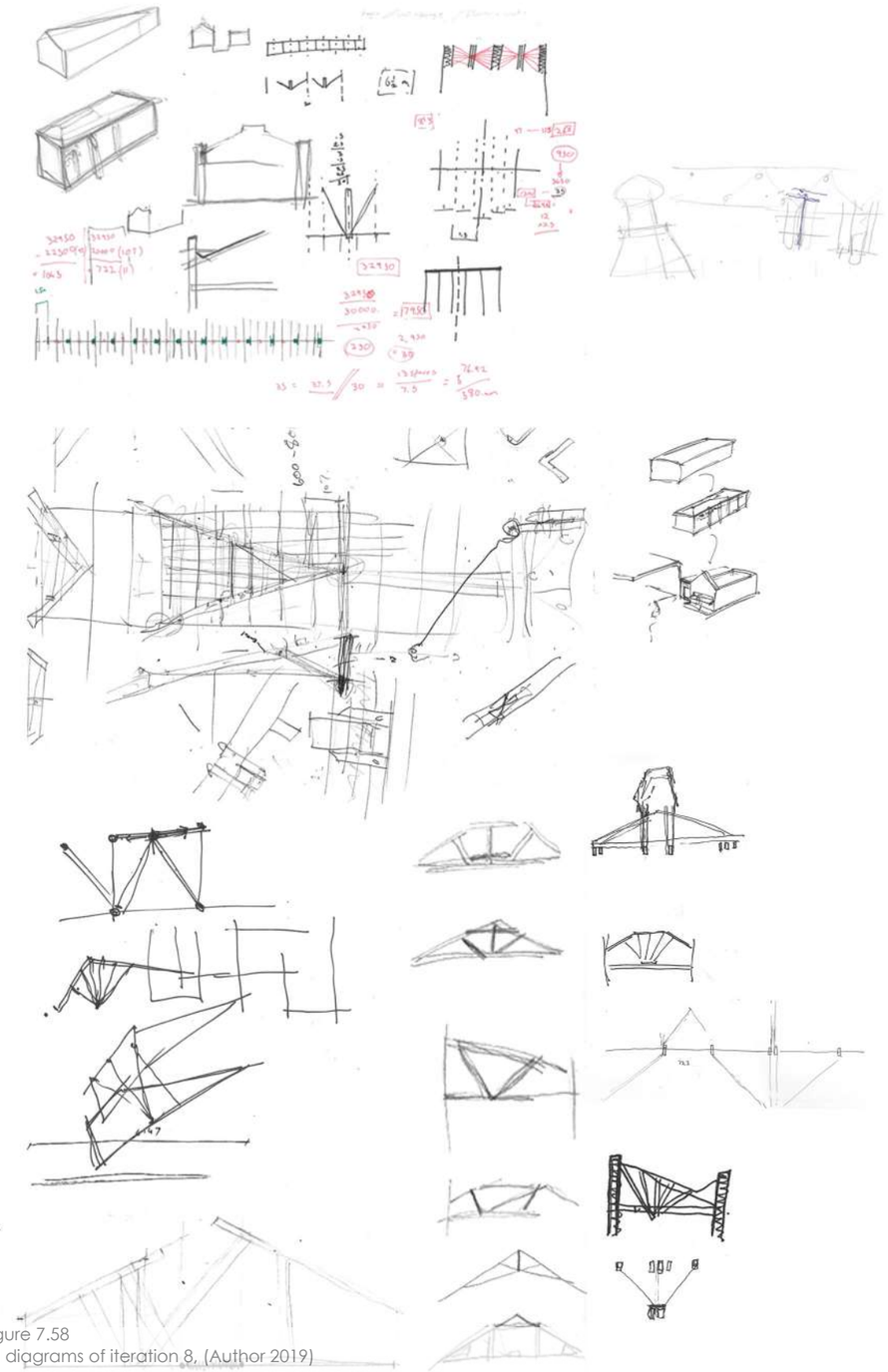
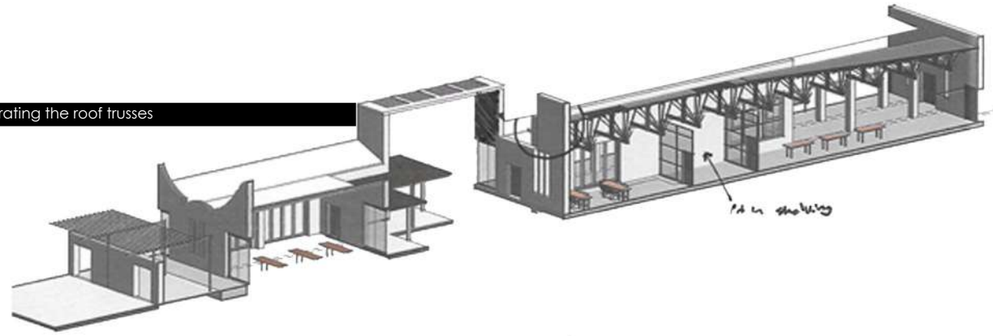
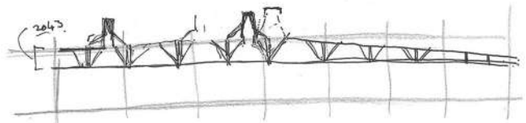


Figure 7.58
All diagrams of iteration 8, (Author 2019)

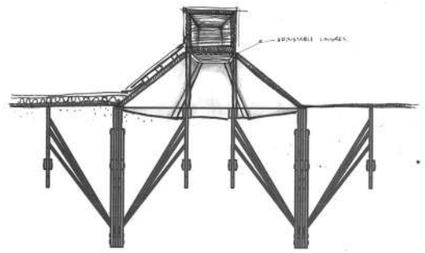
Iterating the roof trusses



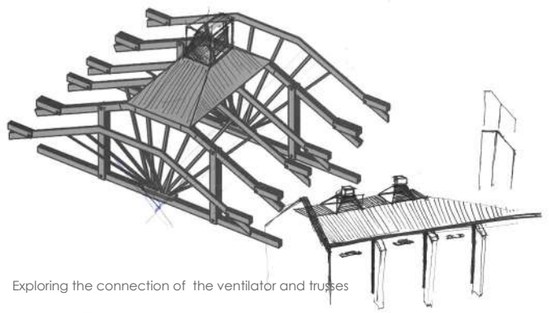
Exploration 1:



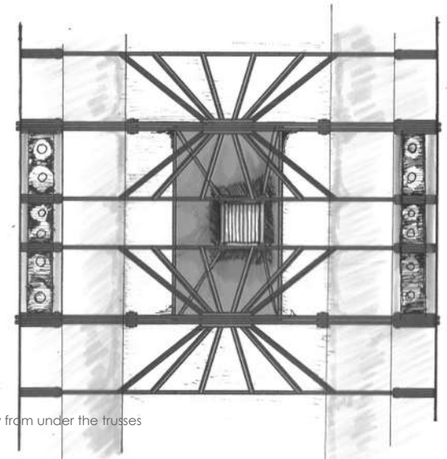
Section



3D representation of ventilator

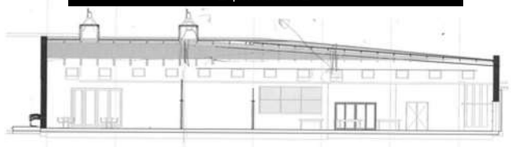


Exploring the connection of the ventilator and trusses

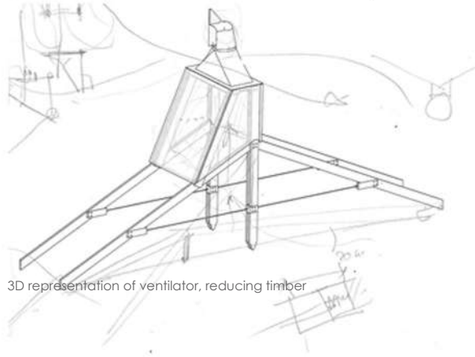


View from under the trusses

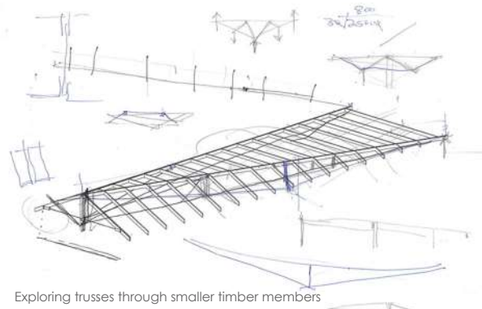
Exploration 2:



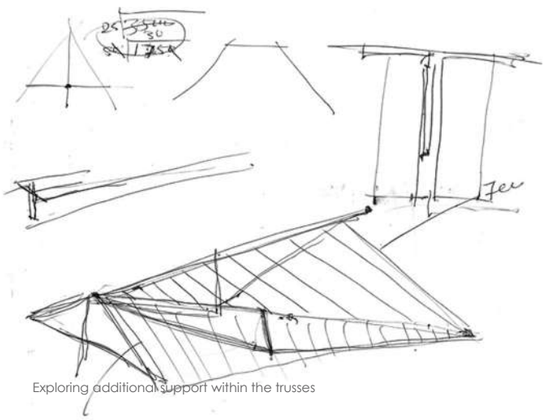
Section



3D representation of ventilator, reducing timber



Exploring trusses through smaller timber members



Exploring additional support within the trusses

CHAPTER **08** TECHNICAL INVESTIGATION

Figure 8.1
Photograph of the existing context, (Author 2019)

8.1 TECHNICAL CONCEPT

Introduction

The technical construction of the building explores grafting the sites existing narrative through implementing existing and new vernacular principles within the proposed design.

The conceptual framework extends the existing contextual building strategies through exploring the existing context and using similar technologies to ***graft*** the new

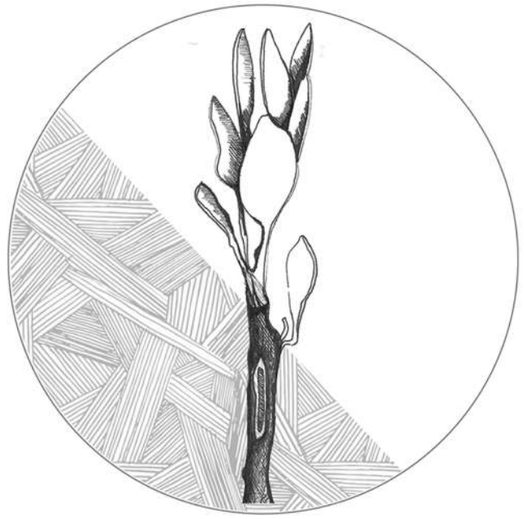


Figure 8.2
Grafting ,(Author 2019)

8.1.1 THE PROCESS OF GRAFTING

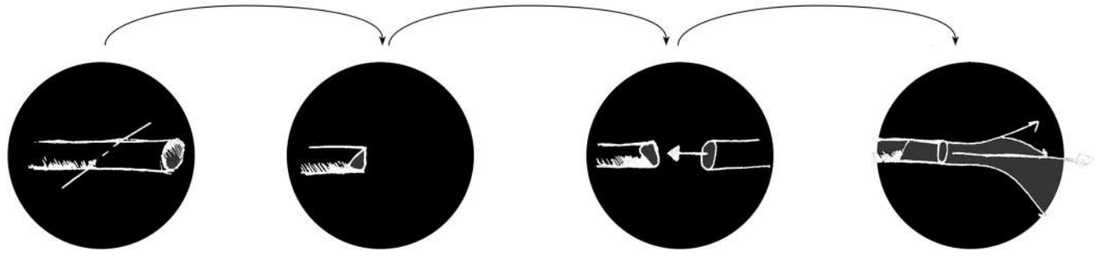


Figure 8.3
The process of grafting, (Author 2019)

8.2
Initial characteristics

This section explores the initial characteristics of Graaff-Reinet through exploring the sustainability of a project within the climatic conditions, socio-economic development , project implementation and how the proposed project can implement a project startup to benefit the town economically.

8.3
Methods

The methods explore the existing materiality to determine which materials will be used to graft onto the existing buildings.

8.4
New function

This section identifies the roof as focus point within the design. The roof is explored as a ventilation device that assists in regulating the interior temperature of the proposed buildings.

8.5
Final product

The final product consists of applying the initial characteristics, methods and new function to respond to the final technical design.

8.1.2 TECHNICAL CONCEPTS

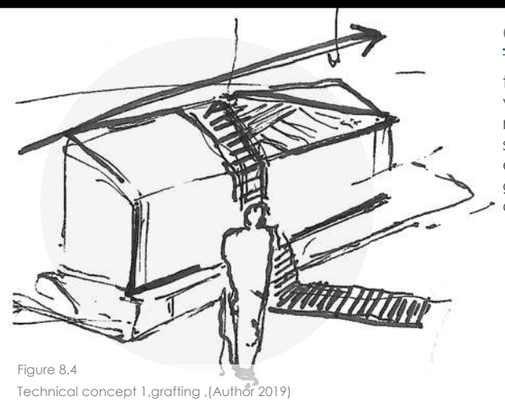


Figure 8.4
Technical concept 1,grafting ,(Author 2019)

GRAFTING

The concept of grafting explores the continuation of the existing vernacular context through materiality, technology and structure. The new structures will explore technology through the grafting of materials, thresholds and articulation of the stoep.

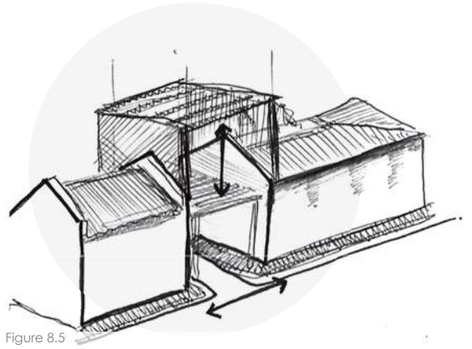


Figure 8.5
Technical concept 2, relationship between stoep,existing and new ,(Author 2019)

RELATIONSHIP BETWEEN STOEP, EXISTING AND NEW

The stoep is used as an architectural device to connect the existing and new building complexes through a combination of lightweight structures and stereotomic structures. The stoep articulates space between the existing stereotomic buildings through creating shaded courtyards and walkways.

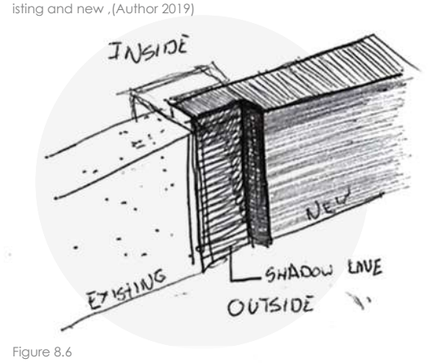


Figure 8.6
Technical concept 3, Defining new and old ,(Author 2019)

DEFINING NEW AND OLD

Grafting is explored through distinguishing existing and new walls through detailing. Existing walls are extended into the new wall and the joint is distinguished by a custom shadow line detail.

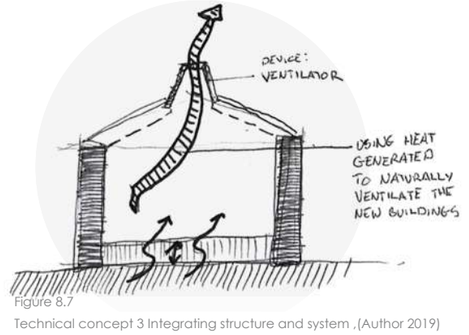


Figure 8.7
Technical concept 3 Integrating structure and system ,(Author 2019)

INTEGRATING STRUCTURE AND SYSTEM

The concept of integration explores the structure through alternative technologies that keeps the buildings comfortable within hot summers and cool winters. The concept of grafting explores the use of the existing stereotomic structure for thermal mass properties and manipulates the roof to assist in ventilating the building.

8.2 INITIAL CHARACTERISTICS

EXPLORING SUSTAINABILITY WITHIN GRAAFF-REINET

8.2.1. SITE CLIMATIC CONDITIONS

Graaff-Reinet centered within the heart of the Karoo experiences two climatic conditions namely semi-arid and desert climate. Between the long hot summers and moderate winters, the average annual rainfall averages around 315 mm. The highest average temperature in Graaff-Reinet is 29°C in January and the lowest is 16°C in June (Besttravelmonths.com, 2019).

WIND ROSE

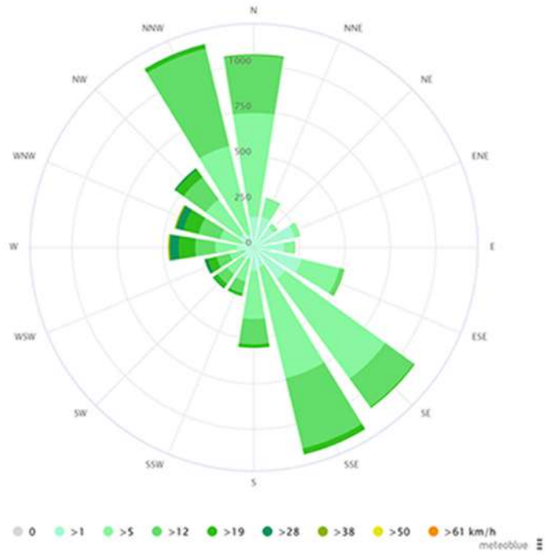


Figure 8.8
Wind rose, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019)

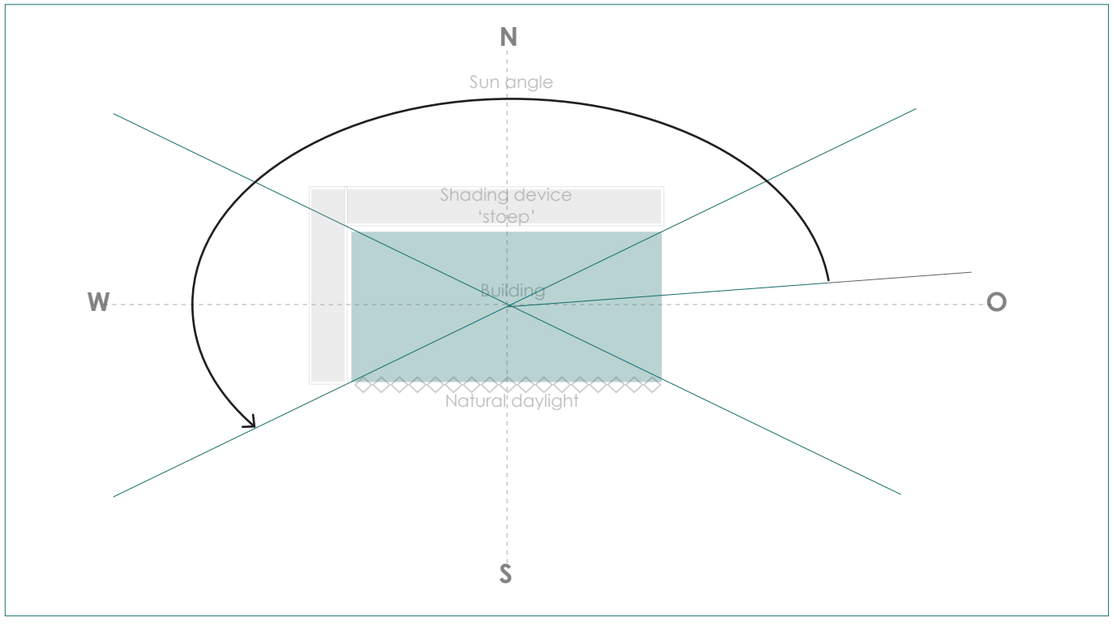


Figure 8.9
Climatic diagram,plan view, (Author 2019)

AVERAGE TEMPERATURE AND PRESEPATION

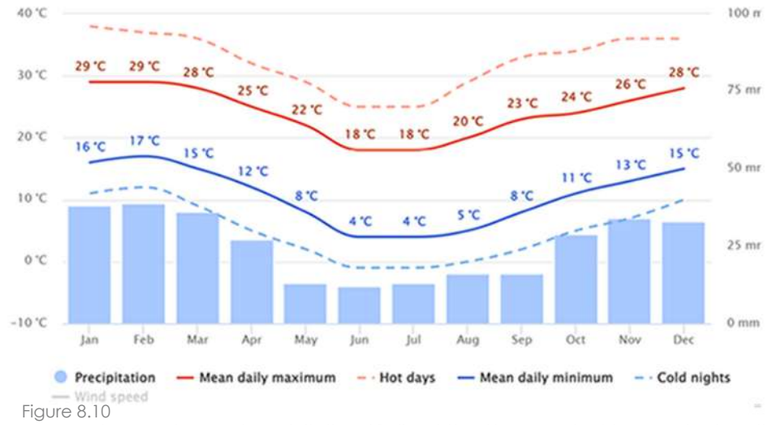


Figure 8.10
Average temperature and precipitation, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019)

PRECIPITATION AMOUNTS

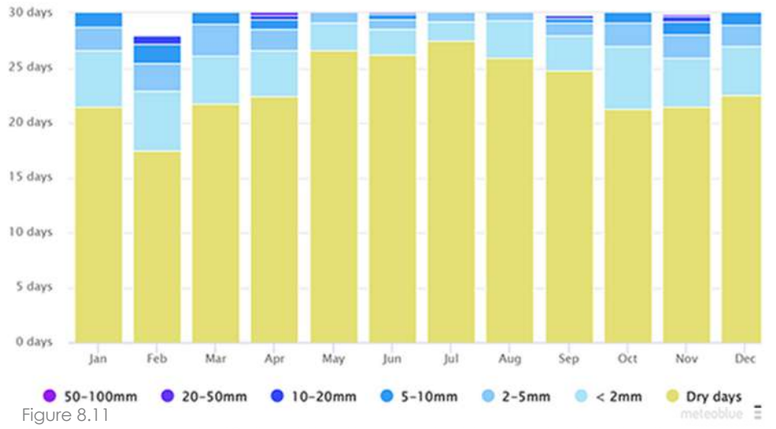


Figure 8.11
Precipitation amounts, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019)

MAXIMUM TEMPERATURES

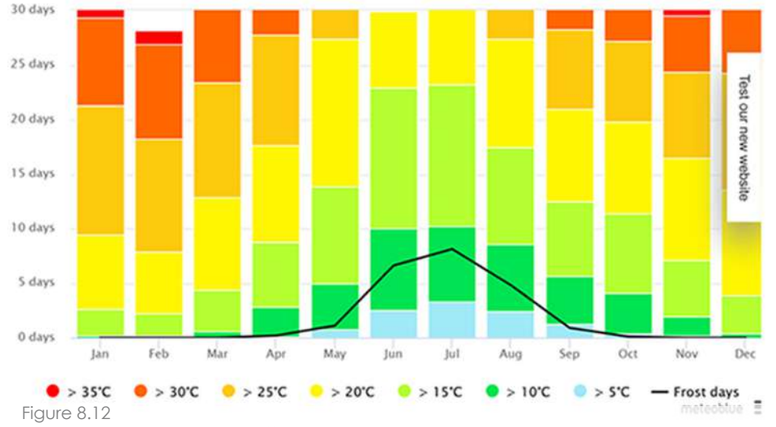


Figure 8.12
Maximum temperatures, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019)

8.2.2. SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT TOOL)

The SBAT Tool assists in evaluating social, economic and environmental impacts before and after intervention. The tool takes in a range of conditions that influences the local economy through adaptability, access and efficiency.

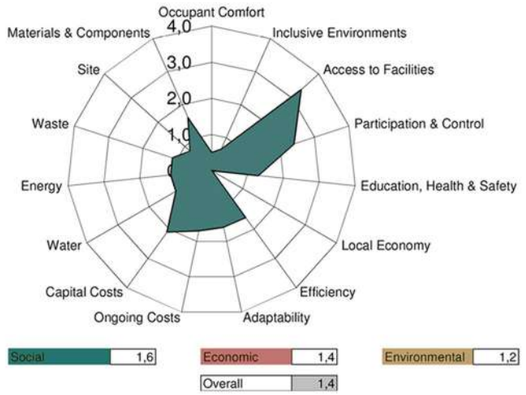


Figure 8.13
SBAT analysis of the space pre-intervention, (Author 2019)

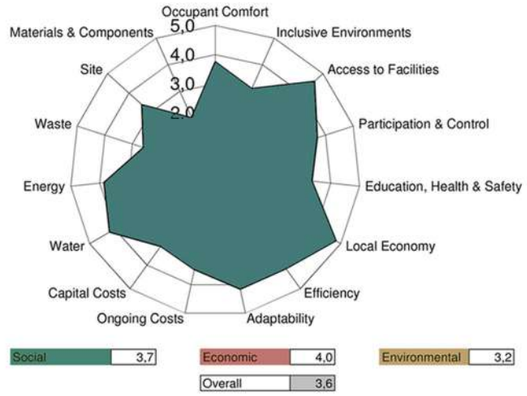


Figure 8.14
SBAT analysis of the space pre-intervention, (Author 2019)

8.2.3. SOCIAL SUSTAINABILITY WITHIN THE SQUARE

Social sustainability explores Ian Bentley's *7 principles of good public spaces* to retrofit and regenerate the square. The regenerative design aims to improve on the socio-economic qualities highlighted within the SBAT Tool before intervention.

The socio-economic sustainability of Market square includes the improvement of the social and economic infrastructure to accommodate local trade within the square. The materiality of the urban fabrics explores the personalisation, variety, legibility and robustness of the square.

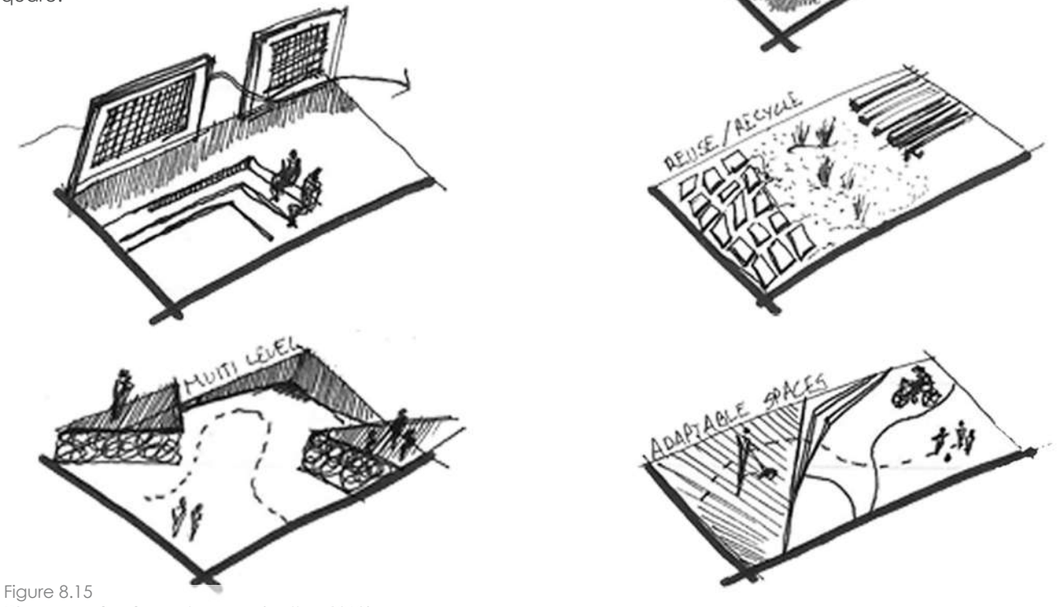
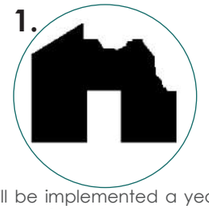


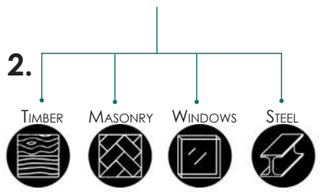
Figure 8.15
Diagrams of surface changes, (Author 2019)

8.2.4. PROJECT STARTUP

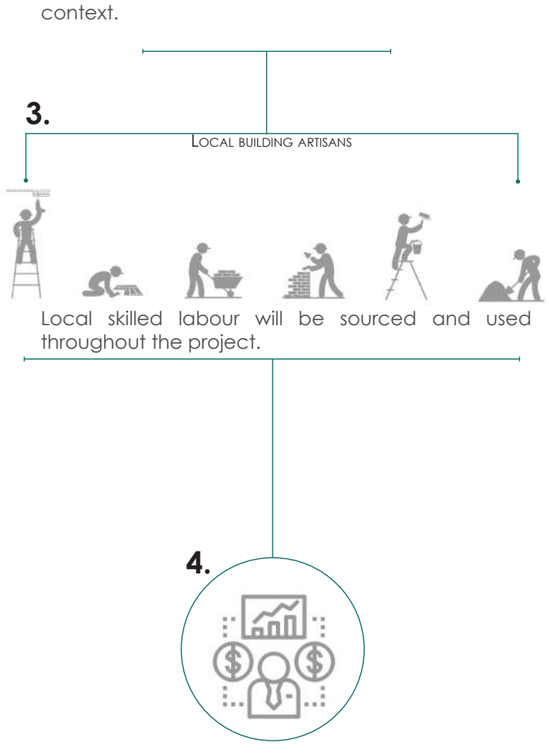
A project startup strategy is suggested to ensure the project is feasible socio-economically before, during and after project implementation.



The strategy will be implemented a year before; through identifying a group of key stakeholders to source materials locally, identify craftsmanship in the community and collect reusable building material within Graaff-Reinet.



Materials sourced will consist of reclaimed building materials from the local context and surrounding context.



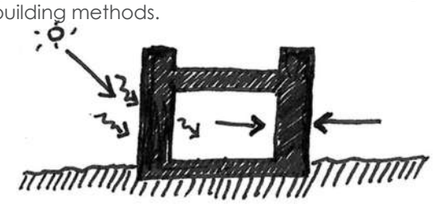
Local skilled labour will be sourced and used throughout the project.

The project startup will ensure that the community and the project are feasible both economically and socially within the context.

Figure 8.16
Illustration of the project startup, (Author 2019)

8.2.5. CONTEXTUAL GIVEN

The contextual given informs the technical investigation to determine principles that should be implemented within the technical resolution of the design. These principles are determined from contextual investigation and building methods.

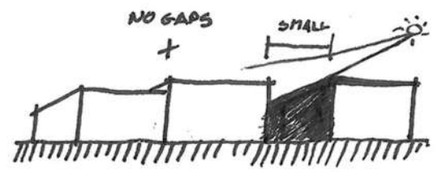


Thick walls

Thermal mass

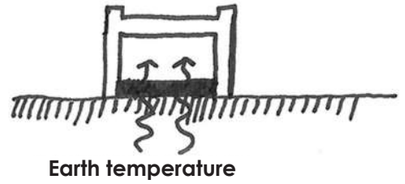
Small windows

Prevent sun from penetrating



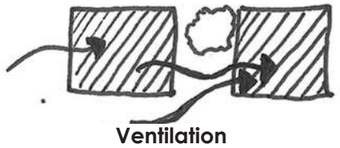
Join houses or small gaps between houses

Protect walls from sun to shade one another



Earth temperature

Build ground floor on earth's surface to take advantage of the cool ground temperature



Ventilation

Small courtyards

Figure 8.17
Illustration of the contextual given, (Author 2019)

8.2.6. EXISTING MATERIALITY

8.2.7. NEW MATERIALITY

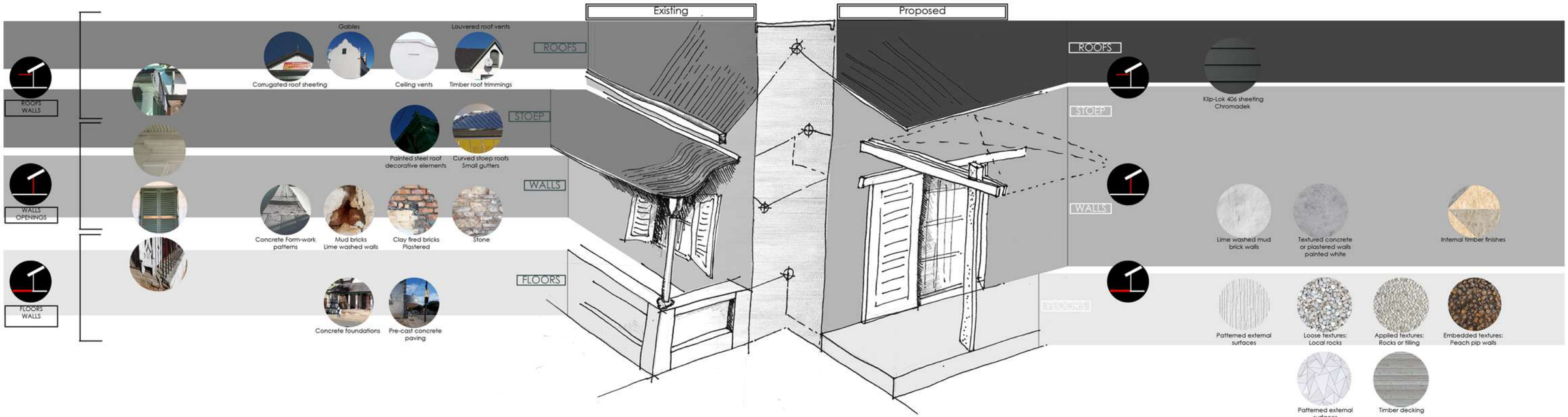


Figure 8.18
Material pallet, (Author 2019)

Floors

Existing site Condition of the square:
The surface of the square is either covered with tar or paving. The existing trees on the square has not been maintained and the area around the tree stump is uneven and cracked.

Stoeps:
The stoeps are weathered and some of the surfaces are in a derelict state.

Existing building floors:
Most of the buildings floor surface is tiled and in a good condition.

Walls

Existing context walls:
The existing walls are in a derelict state and painted in colors that are not aesthetically significant to the larger context.

Stoeps:
Stoep boundaries that are in brick should be plastered and painted white. Columns that consist of brickwork should be removed and replaced.

Roofs

Stoeps:
Within the site there are roofs that do not comply to the aesthetic of the existing stoep (curved roofs). These roof structures should be removed.

Existing building roofs:
The existing s profile roofs do not all have gutters and have not been maintained. These roofs need to be repaired and painted.

Floors

New site condition of the square:
The existing surfaces are replaced with more permeable surfaces that consist of stone, precast concrete blocks and brick pavers with different textures.

Stoeps:
New stoeps that are replacing the pedestrian walkway consist of treated and enameled polished screed.

Walls

Stoeps:
The new stoep walls consist of a lightweight timber framework and rammed earth walls to introduce a new layer within the context.

New walls:
New walls consist of local mud brick treated with lime-wash.

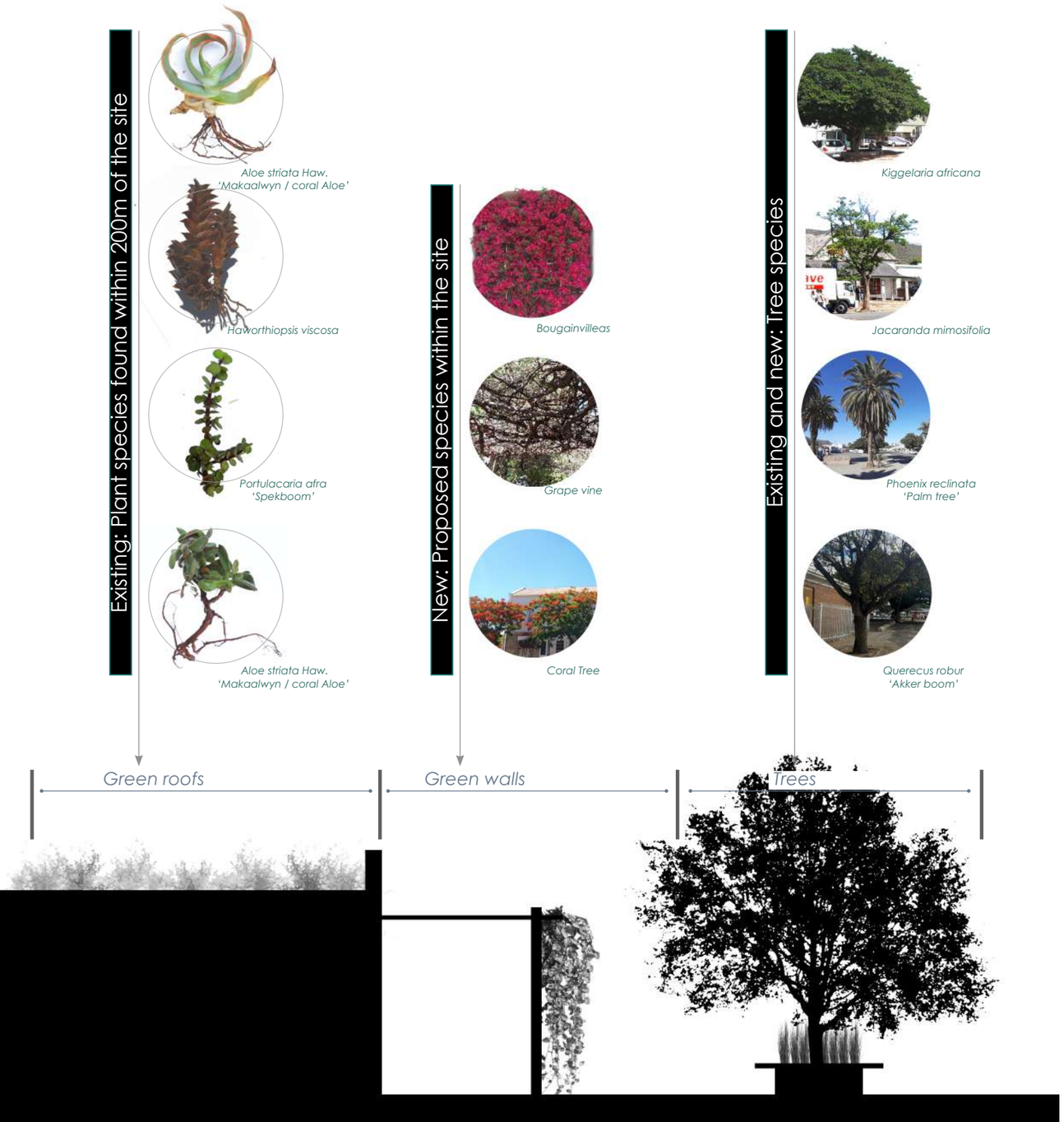
Roofs

Stoeps:
The new stoep roofs vary from lightweight pergola structure to a heavy stereotomic concrete structure. The pergola structure serves as a frame for vine plants to grow on.

New roofs:
The new roofs consist of Klip-lok Chromadeck sheeting.

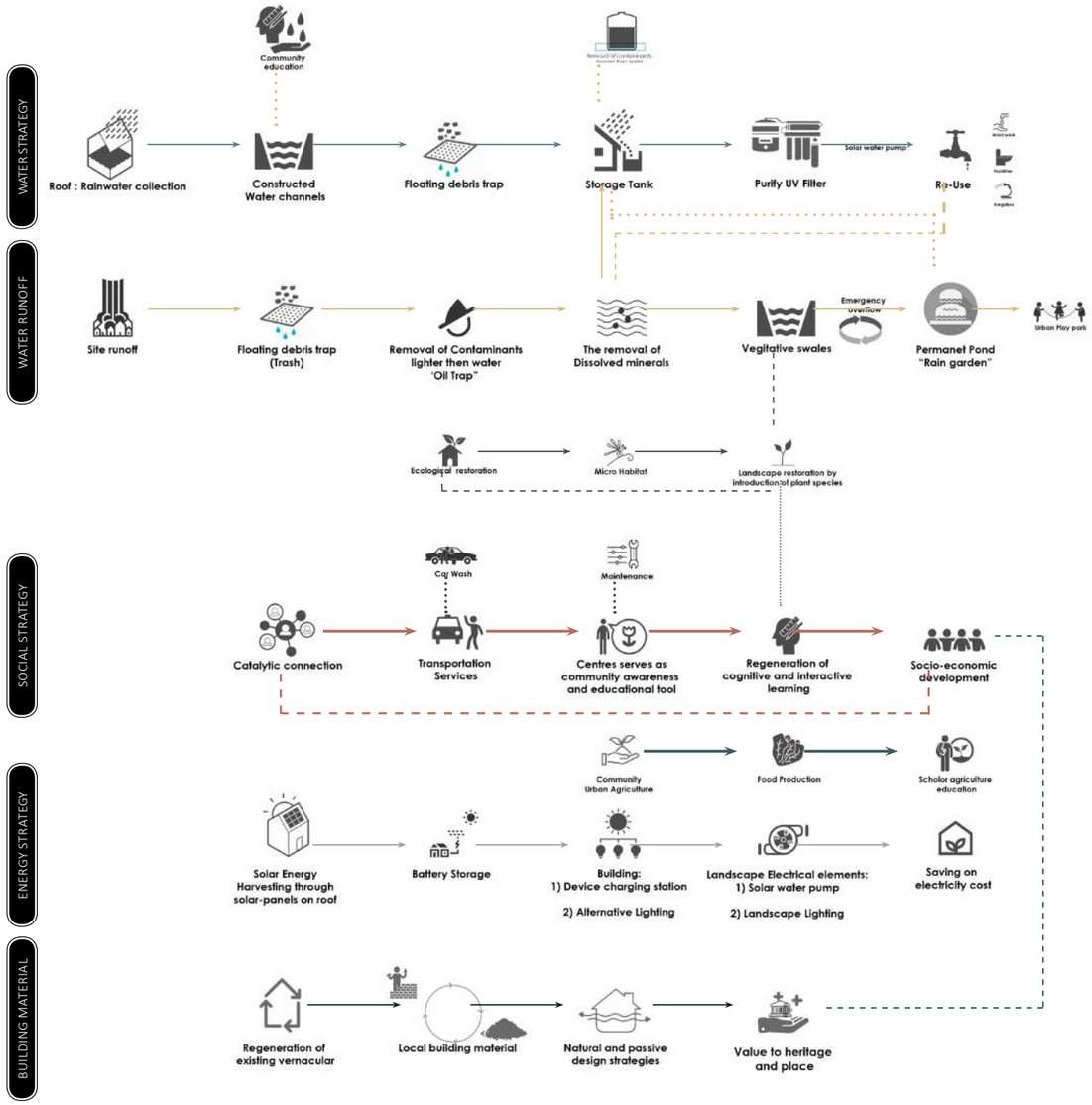
8.2.8. RESTORING ECOLOGY IN MARKET SQUARE AND THE PRECINCT

Figure 8.19
Planting pallet of existing plants within the context, (Author 2019)



8.2.9. WATER STRATEGY

Figure 8.20
Illustration of water strategy, icons adapted from the noun project, (Author 2019)



8.3 METHODS

8.3.1. EXPLORING THE EXISTING

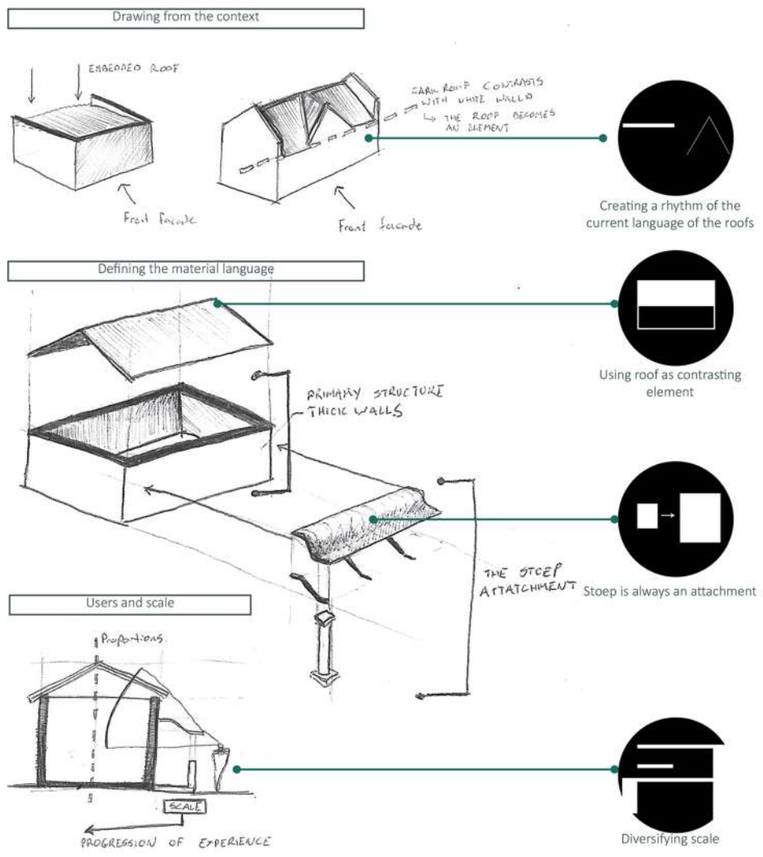
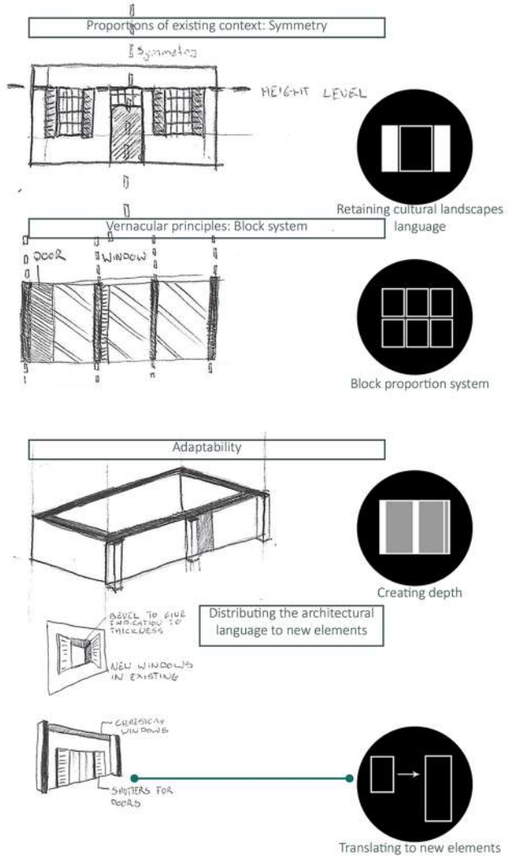


Figure 8.21
Photographs and Illustration of exploring the existing , (Author 2019)

8.3.2. EXPLORING THE NEW



Exploring the new within the existing allows for an understanding of the existing. As explored within Chapter 2: Theory, the architectural design response, referred to as vernacular are set out as design boundaries within climatic conditions, a sustainable design start up project, contextual given , materiality , landscaping, improved social boundaries and drawing informants from the context.

8.3.3. LEARNING FROM THE CONTEXT

CASTED CONCRETE BEAMS AND CANTILEVER BALCONY

COLUMN AND TRUSS DETAIL

FRETWORK DETAILS

COLUMN AND BURGLAR BAR DETAIL

ROOF STRUCTURE

BUTTRESSES

Figure 8.22
Photographs illustrating lessons from the context , (Author 2019)

8.4 NEW FUNCTION

8.4.1. NATURAL VENTILATION SYSTEM PRINCIPLES

Accelerants to activate a ventilation system:

The chimney/stack or venturi effect – hot air rises and its speed can be accelerated by narrowing the duct, and/or heating the air even further

Wind catchers or multi-directional wind scoops placed at a height and orientation that will ensure maximal funneling of any available wind pressure into the desired spaces

Heating the air in enclosed spaces:

Source of energy

-The sun directly heating objects in a space

Cooling the air in enclosed spaces requires:

(Since chilled air is denser, it will tend to move downwards in space)

A source of cooler air

System by which the ambient temperature of air inside an enclosed space can be reduced.

8.4.2. COOLING THE AIR IN ENCLOSED SPACES REQUIERE:

Ventilation by the use of courtyards

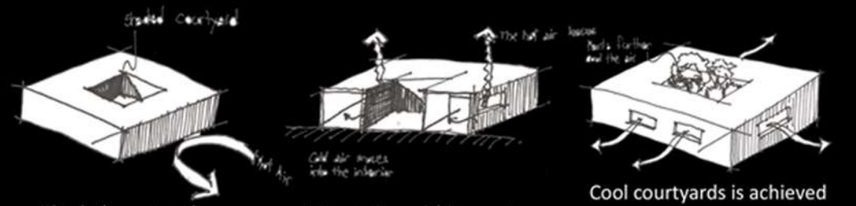
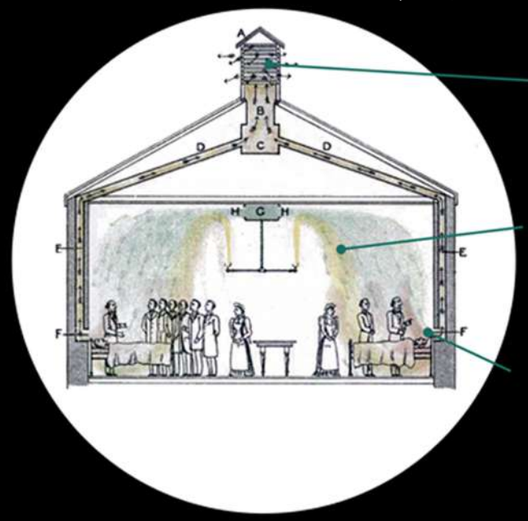


Figure 8.23
Ventilation diagrams adapter from Honors 2018, Veldsman S ,(Edited by Author 2019)

8.4.3. BOYLE VENTILATION STRATEGIES

Boyle's ventilation strategy uses a simple model to ensure sufficient fresh air within an enclosed space, as used within hospitals.



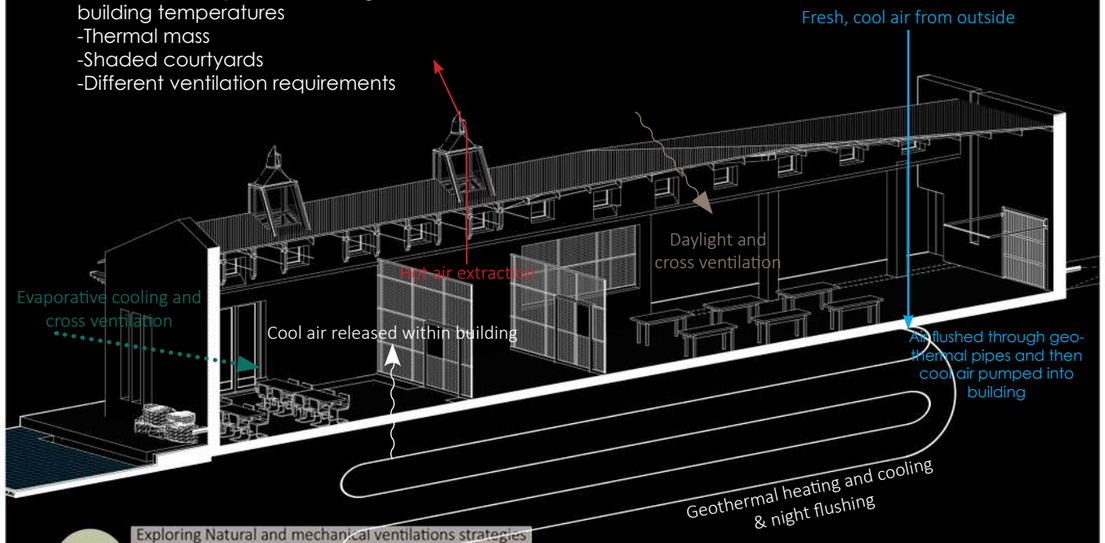
Exploring Roof as Ventilation device

Gawie Fagan
Beaufort west clinic

-The use of rock stores and mechanical system to regulate building temperatures
-Thermal mass
-Shaded courtyards
-Different ventilation requirements

Exploring program within ventilation strategy

Using the generated heat of the proposed program to accelerate the ventilation process



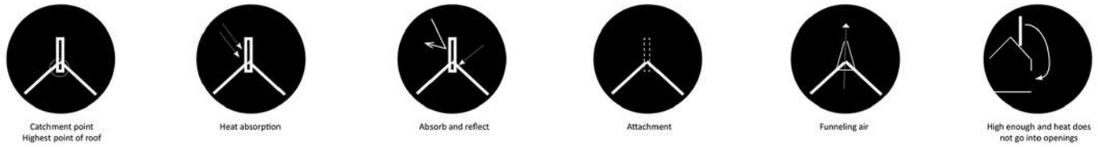
Exploring Natural and mechanical ventilations strategies

A geothermal heat pump is an electrically powered refrigeration unit which transfers energy to and from the earth

Passive design strategies
-Cross ventilation
-Shaded openings
-Courtyards

Figure 8.24
Ventilation diagrams, (Edited by Author 2019)

VENTILATION DEVICE PRINCIPLES



ENERGY 2D ASSESSMENT

ASSESSMENT 1: VENTILATION DEVICE ONLY

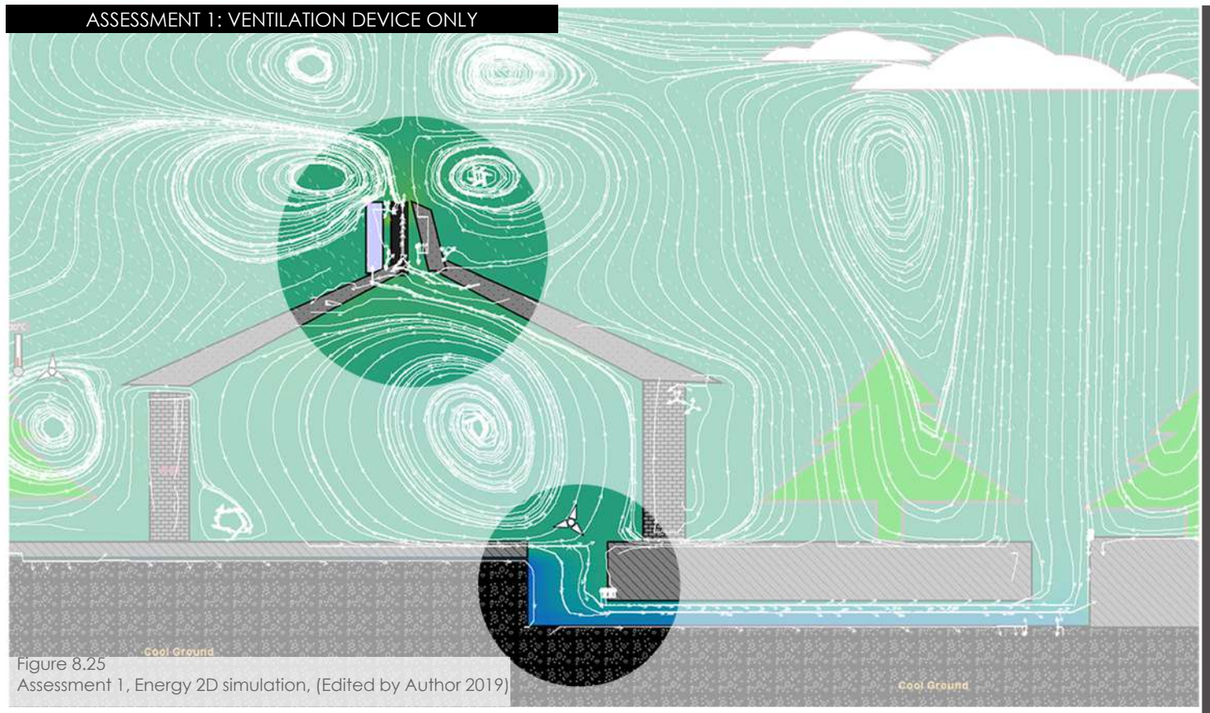


Figure 8.25
Assessment 1, Energy 2D simulation, (Edited by Author 2019)

ASSESSMENT 2: SOLAR STACK AND VENTILATION DEVICE COMBINED

Figure 8.26
Assessment 2, Energy 2D simulation, (Edited by Author 2019)

Energy 2D is a simulation program used to generate illustrations that mimics the conditions that influences ventilation within the space.

Note this is only a simulation used for demonstration purposes only

Assessment 1: investigates the ventilator at a 45 Degree roof slope. The simulation explores geothermal heating and cooling pumping fresh air within the building. Open eaves for cross ventilation and a ventilator connected to the roof itself.

Unsuccessful:
Hot air is pushed down into room(Yellow) even though roof slope is increased. The ventilator height should be increased to serve as a solar stack.

Assessment 2: investigates the ventilator at a 20 Degree roof slope. The ventilator height is increased and a solar stack is incorporated to accelerate hot air within the ventilator.

Successful:
Hot air is removed from the room(Yellow). Air circulates through the room.

BRAINSTORMING

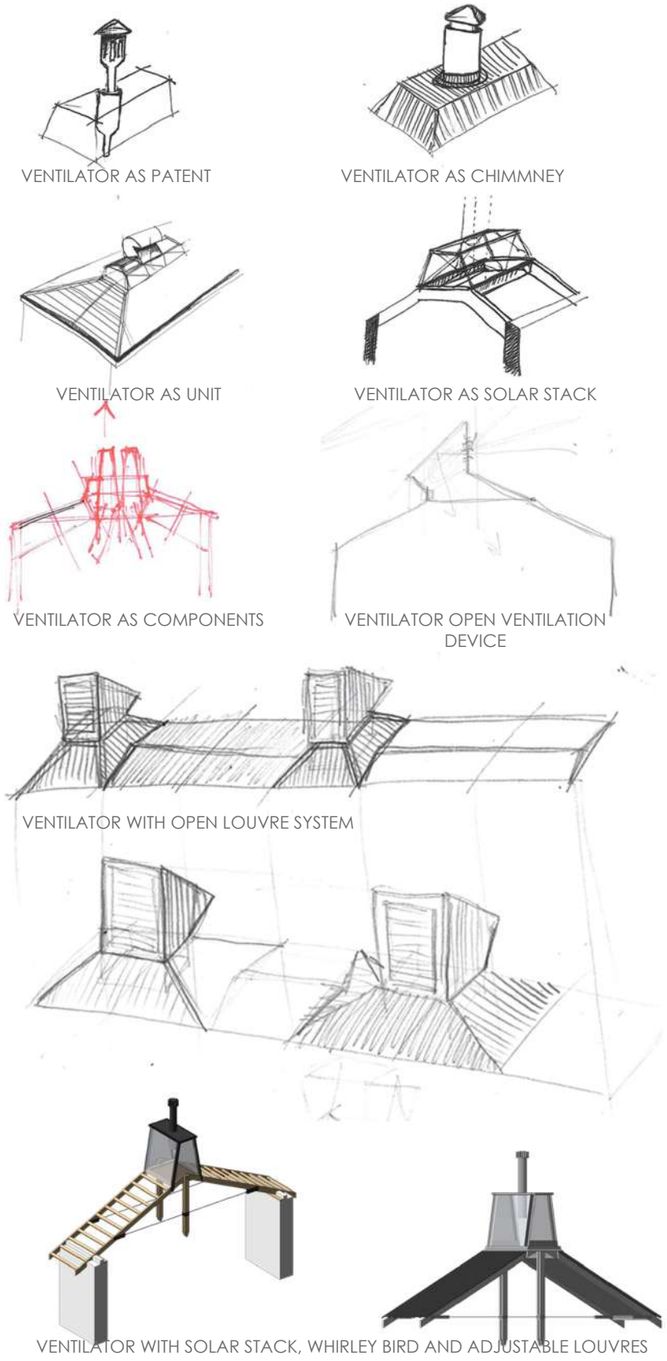
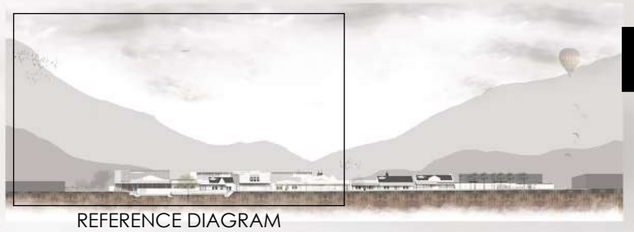


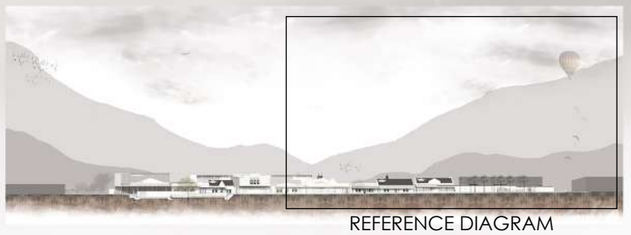
Figure 8.27
Development diagrams of the roof ventilator, (Edited by Author 2019)



REFERENCE DIAGRAM

8.5 FINAL PRODUCT

Figure 8.28
Elevation of the existing facades with the new intervention, (Edited by Author 2019)



REFERENCE DIAGRAM

REFERENCE DIAGRAM

SITE PLAN
SCALE 1:200
N

Somerset St

Market Square St

Caledon St

URQUHART HOUSE MONUMENT

DEPARTMENTAL OFFICES

RESIDENCE AND SMALL BUSINESS

RESIDENCE AND SMALL BUSINESS

RESIDENCE AND SMALL BUSINESS

HOUSING

PROPOSED SMALL BUSINESSES

PROPOSED SMALL BUSINESSES

EXISTING PUBLIC WORKS

PROPOSED TRANSPORTATION CENTRE

PROPOSED TRANSPORTATION CENTRE

EXISTING FURNITURE STORE

EXISTING GAS STATION

EXISTING OLD RESIDENCE

EXISTING RETAIL STORES

EXISTING RETAIL STORES

EXISTING RETAIL STORES

Caledon St

EXISTING RETAIL STORES

EXISTING GAS STATION

EXISTING FURNITURE STORE

PROPOSED TRANSPORTATION CENTRE

PROPOSED TRANSPORTATION CENTRE

EXISTING OLD RESODENCE

EXISTING PUBLIC WORKS

PROPOSED SMALL BUISINESSES

PROPOSED SMALL BUISINESSES

Market Square St

HOUSING

RESIDENCE AND SMALL BUSINESS

RESIDENCE AND SMALL BUSINESS

Somerset St

URQUHART HOUSE
MONUMENT

RESIDENCE AND SMALL BUSINESS

DEPARTMENTAL OFFICES

SCALE 1:200
GROUND FLOOR PLAN

N

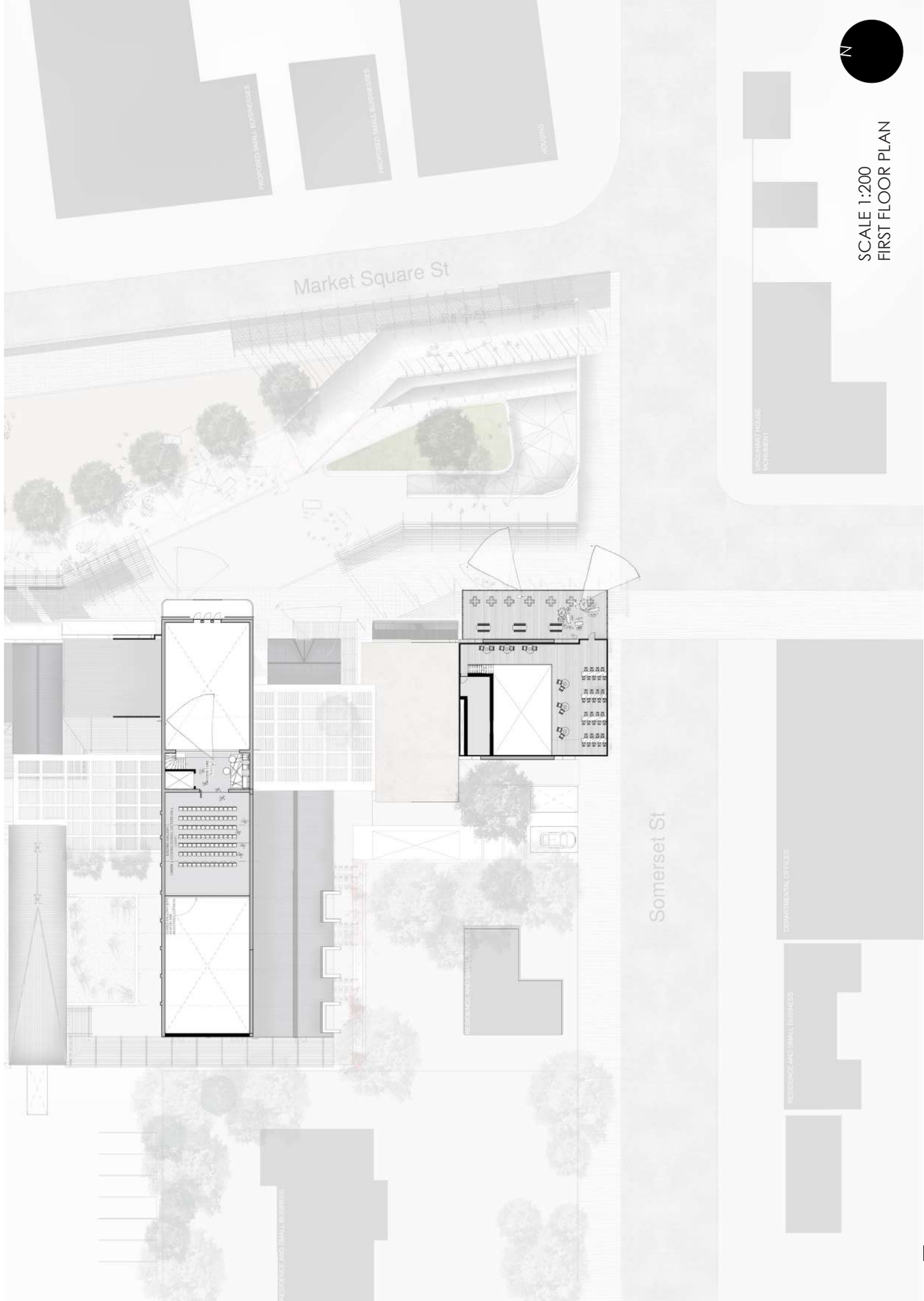


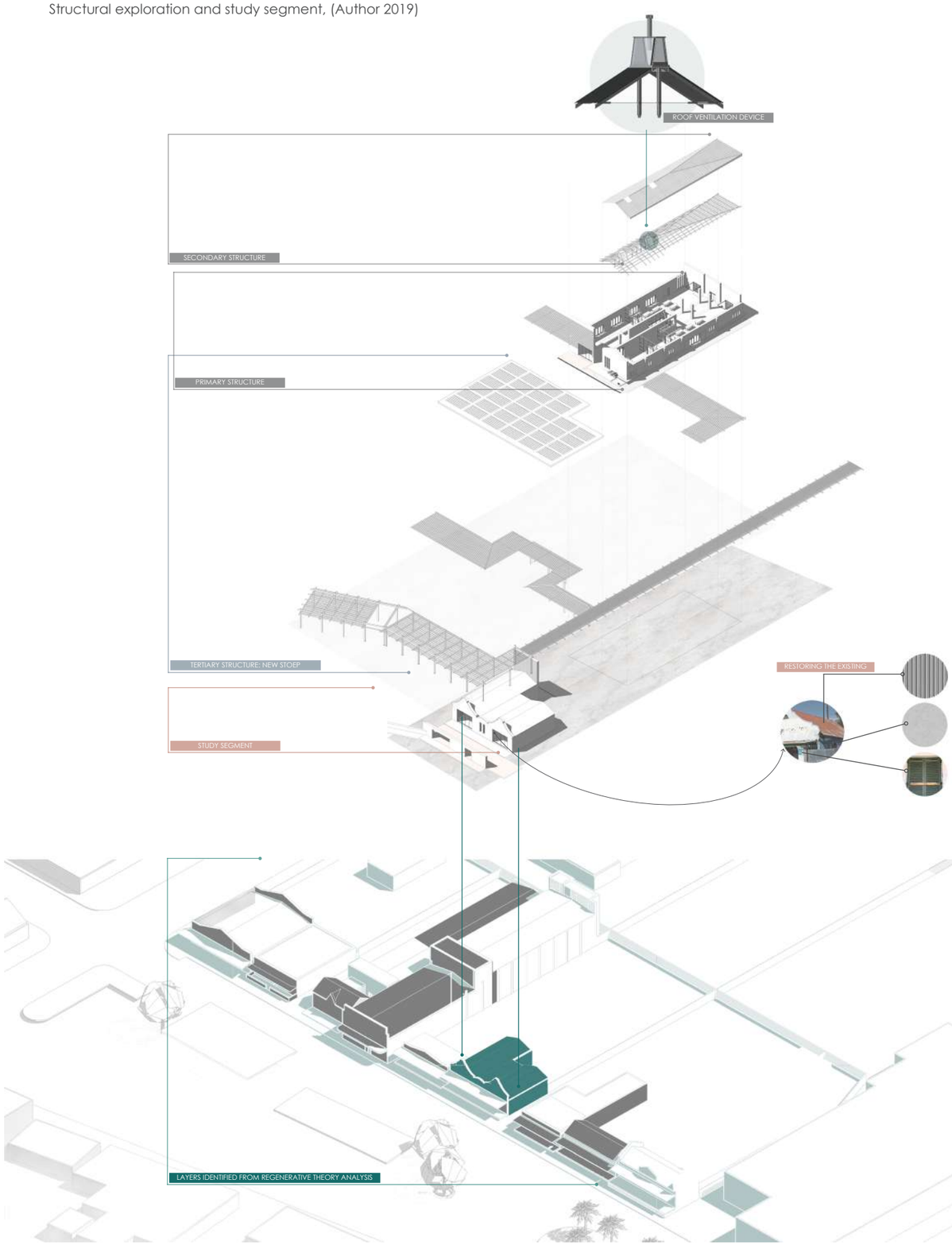
Figure 8.29 (p172)
Final design site plan, not to scale, original scale @ 1:200 (Author 2019)

Figure 8.30 (p174)
Final design ground floor plan, not to scale, original scale @ 1:200 (Author 2019)

Figure 8.31 (p177)
Final design first floor plan, not to scale, original scale @ 1:200 (Author 2019)

8.5.1 STUDY SEGMENT

Figure 8.32
Structural exploration and study segment, (Author 2019)



The Architecture is represented in a series of layers. Each layer indicates the contextual and design response of the technical investigation.

The **existing** consists of a gable villa that is restored to its original form.

The **primary structure** consists of thick walls that maintains thermal mass to regulate internal temperature in the Karoo. The walls have small openings for natural daylight, of what some can be regulated and the doors have shuttering .

The **secondary structure** consists of custom timber roof trusses that are supported by tension steel rods. The roof structure integrates with the concept of grafting, where the ventilation device is integrated as a clip on to the roof trusses.

The **tertiary structure** explores the architectural device, 'the stoep' that fills the in between of the existing and new. The stoep articulates between spatial conditions of creating courtyards, shaded walkways, shaded facades, structure for green walls and thresholds. The main function of the stoep is to create comfortable outdoor spaces of which the primary structure could utilise through evaporative cooling and shaded openings for ventilation and natural daylight

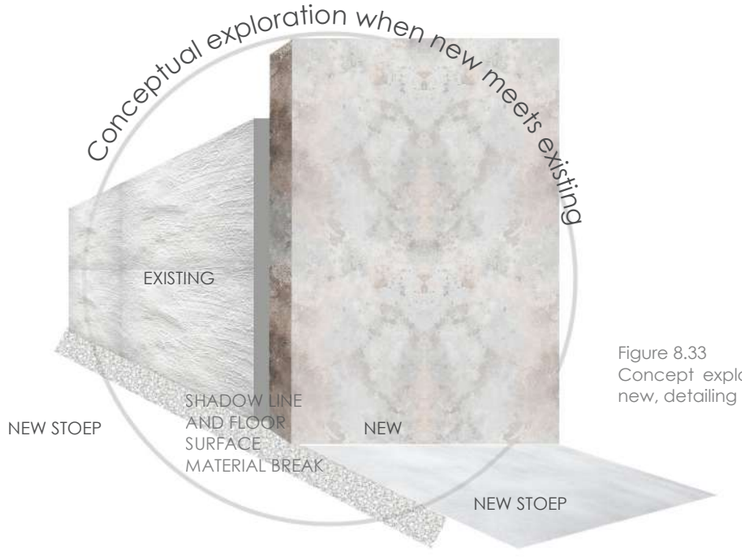
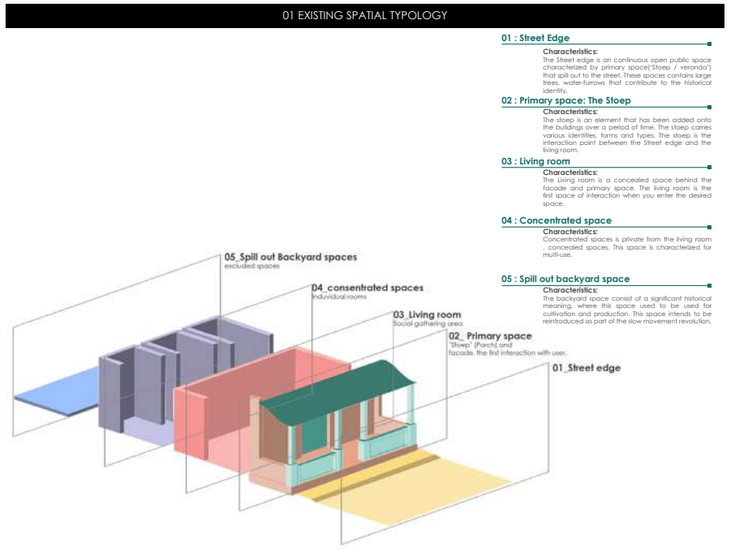
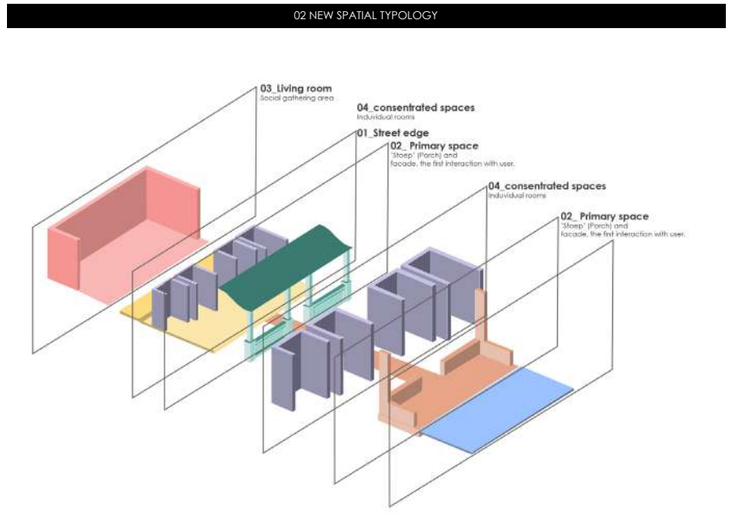


Figure 8.33
Concept exploring the existing and the new, detailing , (Author: 2019)

8.5.2 THE STOEP

Figure 8.34
Outline summary of the stoep, refer to chapter 7 (Author 2019)





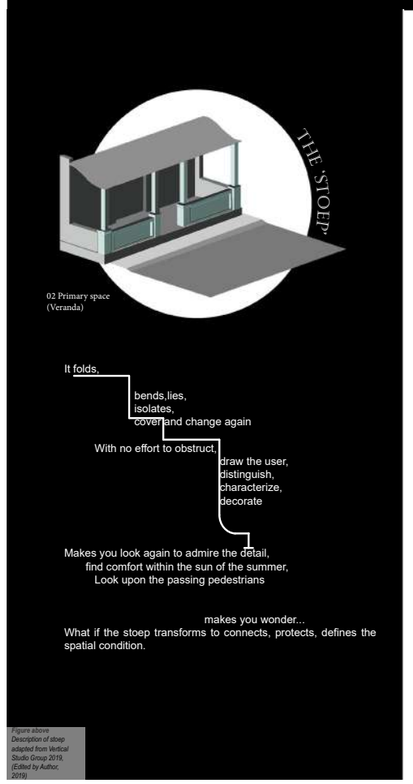
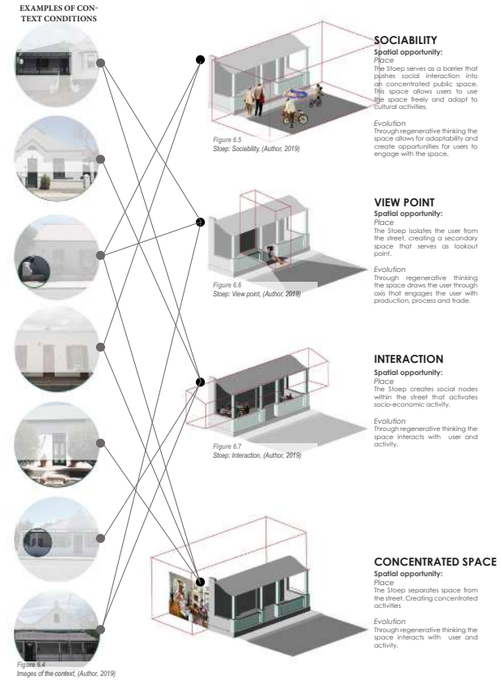
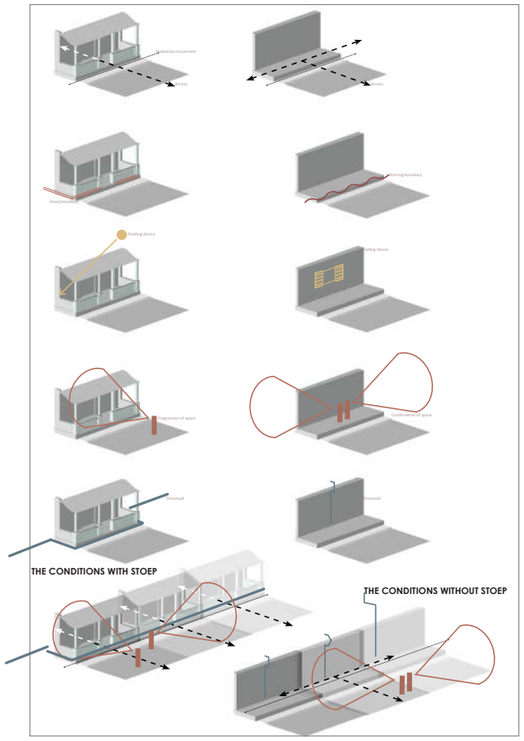
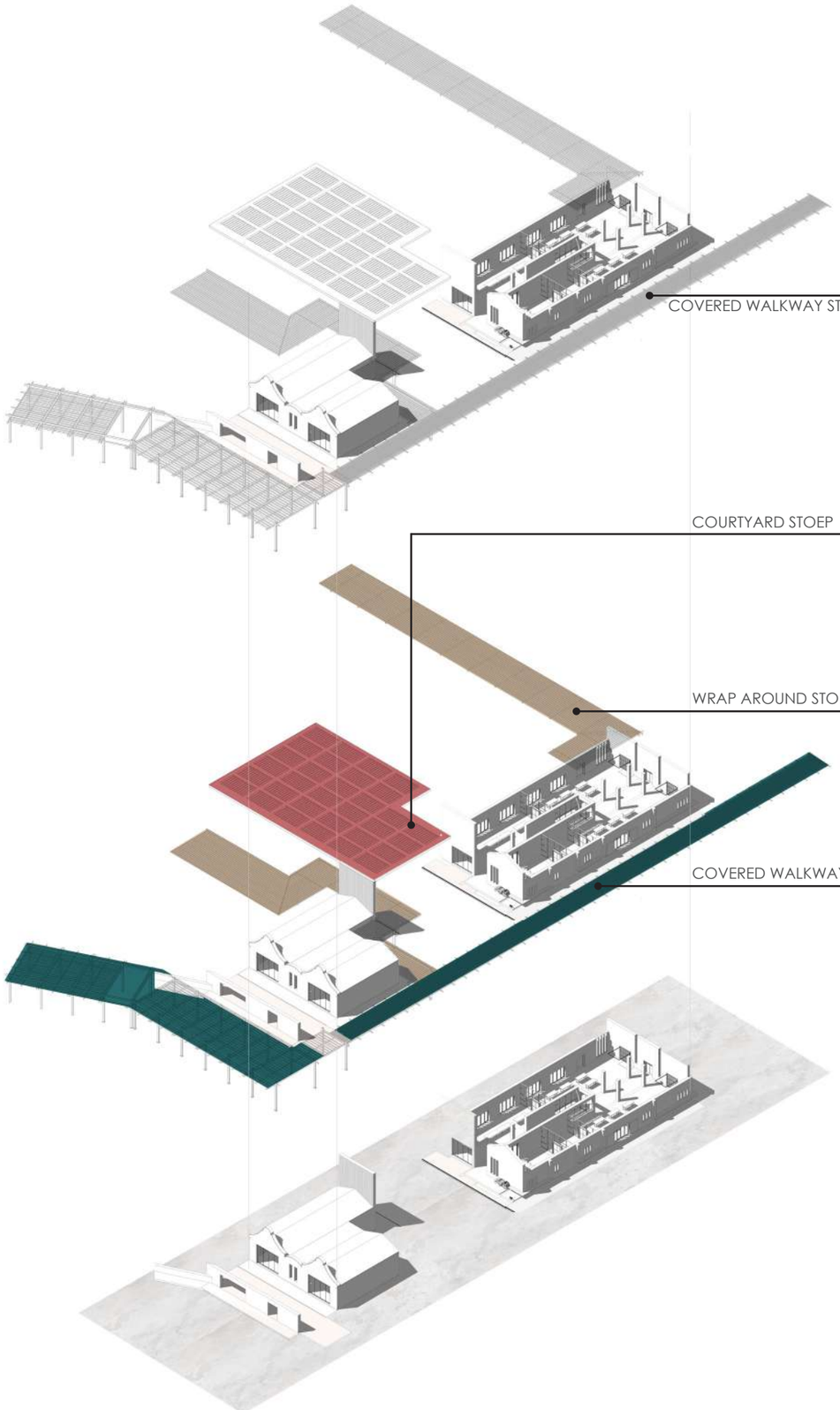


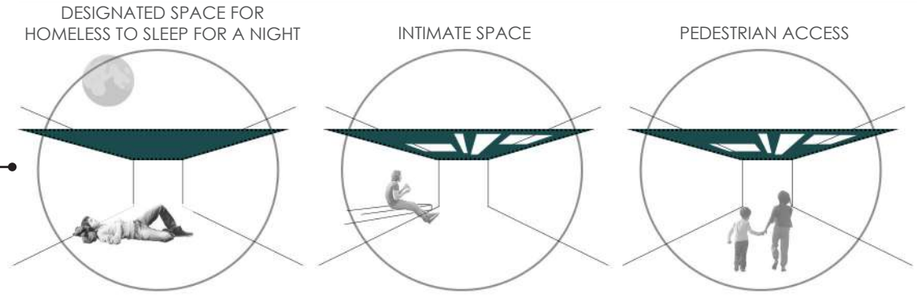
Figure above
Description of stoep, adapted from Vertical Studio Group 2019, (Edited by Author, 2019)







EXPLORING USE



THE ARTICULATION OF THE STOEP

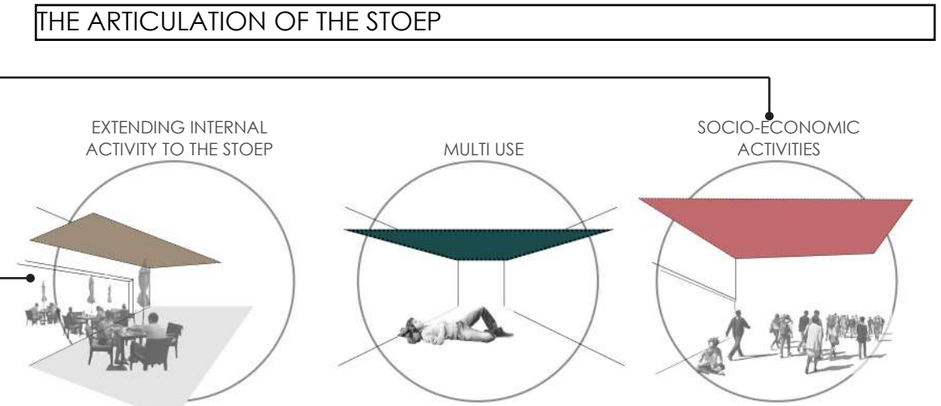
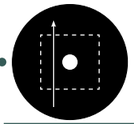


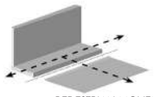
Figure 8.35
Investigating the use of the stoep, (Author 2019)

STOEP 01

ARCHITECTURAL INTENTION OF THE NEW STOEP



EXTENDED



PEDESTRIAN MOVEMENT & ACCESS

STOEP BOUNDARY

SHADING DEVICE

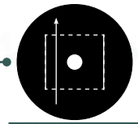
PROGRESSION OF SPACE

REFERENCE PLAN

Figure 8.36
Visualization of stoep 1, (Author 2019)

STOEP 02

ARCHITECTURAL INTENTION OF THE NEW STOEP



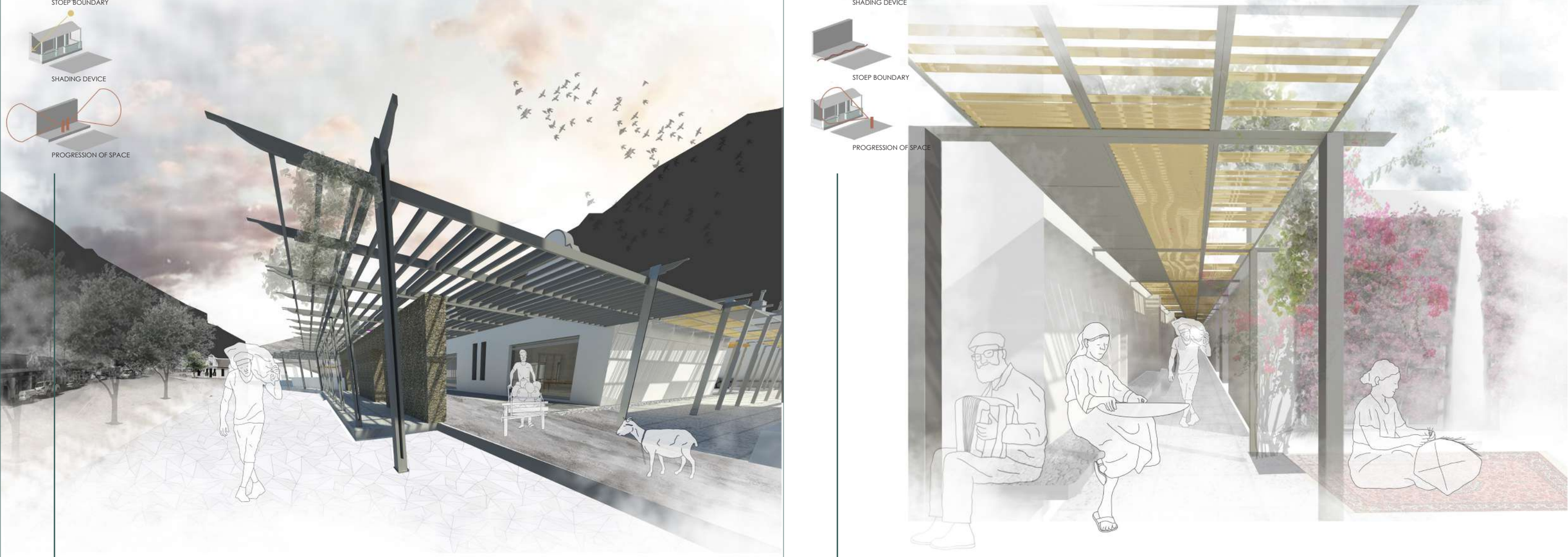
COVERED WALKWAY

PEDESTRIAN MOVEMENT & ACCESS

SHADING DEVICE

STOEP BOUNDARY

PROGRESSION OF SPACE

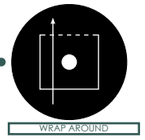


REFERENCE PLAN

Figure 8.37
Visualization of stoep 2, (Author 2019)

STOEP 03

ARCHITECTURAL INTENTION OF THE NEW STOEP



WRAP AROUND

PEDESTRIAN MOVEMENT & ACCESS

SHADING DEVICE

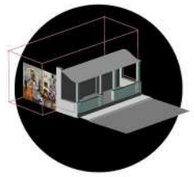
STOEP BOUNDARY

THRESHOLD

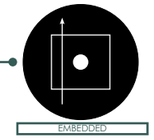
REFERENCE PLAN

Figure 8.38
Visualization of stoep 3, (Author 2019)

STOEP 04



ARCHITECTURAL INTENTION OF THE NEW STOEP



EMBEDDED

PEDESTRIAN MOVEMENT & ACCESS

SHADING DEVICE

STOEP BOUNDARY

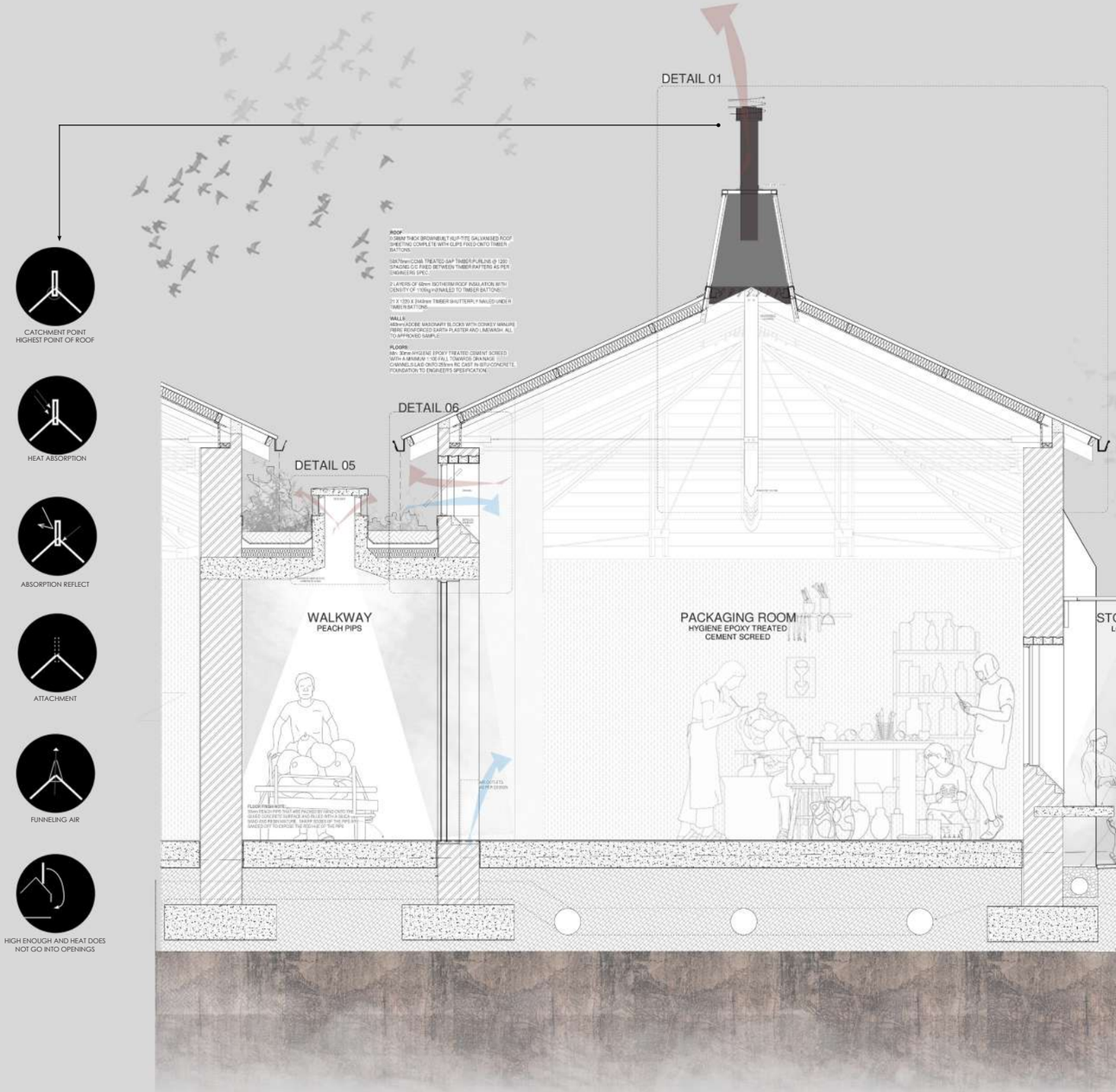
PROGRESSION OF SPACE

REFERENCE PLAN

Figure 8.39
Visualization of stoep 4, (Author 2019)

8.5.3 FINAL DESIGN RESOLUTION

Figure 8.40
Final design section 1,not to scale, original scale @ 1:20 (Author 2019)



SCALE 1:20
SECTION 01 THROUGH THE FOOD PACKAGING ROOM

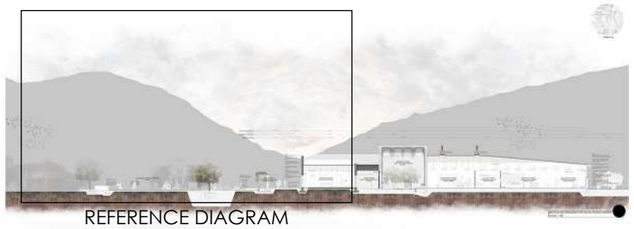
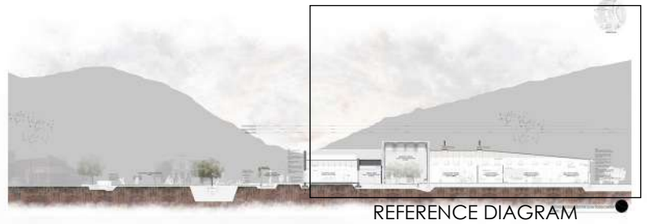
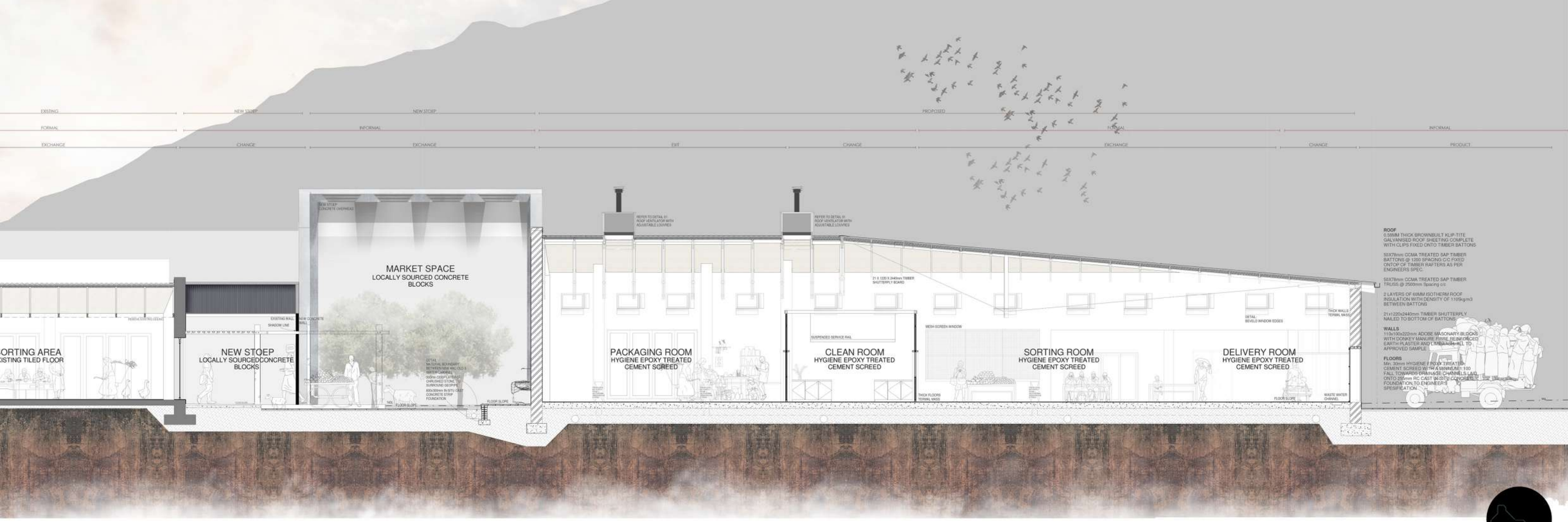


Figure 8.41
Final design section 2,not to scale, original scale @ 1:50 (Author: 2019)



REFERENCE DIAGRAM

REFERENCE PLAN



EXPLORING GRAFTING

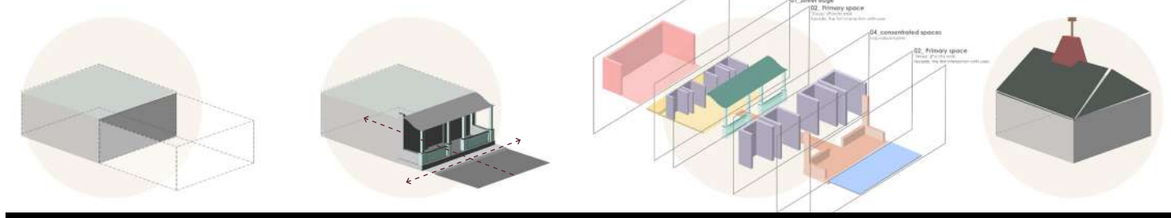
GRAFTING ONTO THE EXISTING

1 EXTENDING THE EXISTING INTO THE NEW

2 THE STOEP AS ARCHITECTURAL DEVICE

3 NEW SPATIAL TYPOLOGY
-VERNACULAR PRINCIPLES

4 EXPLORING SUSTAINABILITY
WITHIN THE NEW TYPOLOGY



THE PROCESS OF GRAFTING THE DETAILS

Integrating structure and systems

Existing and new

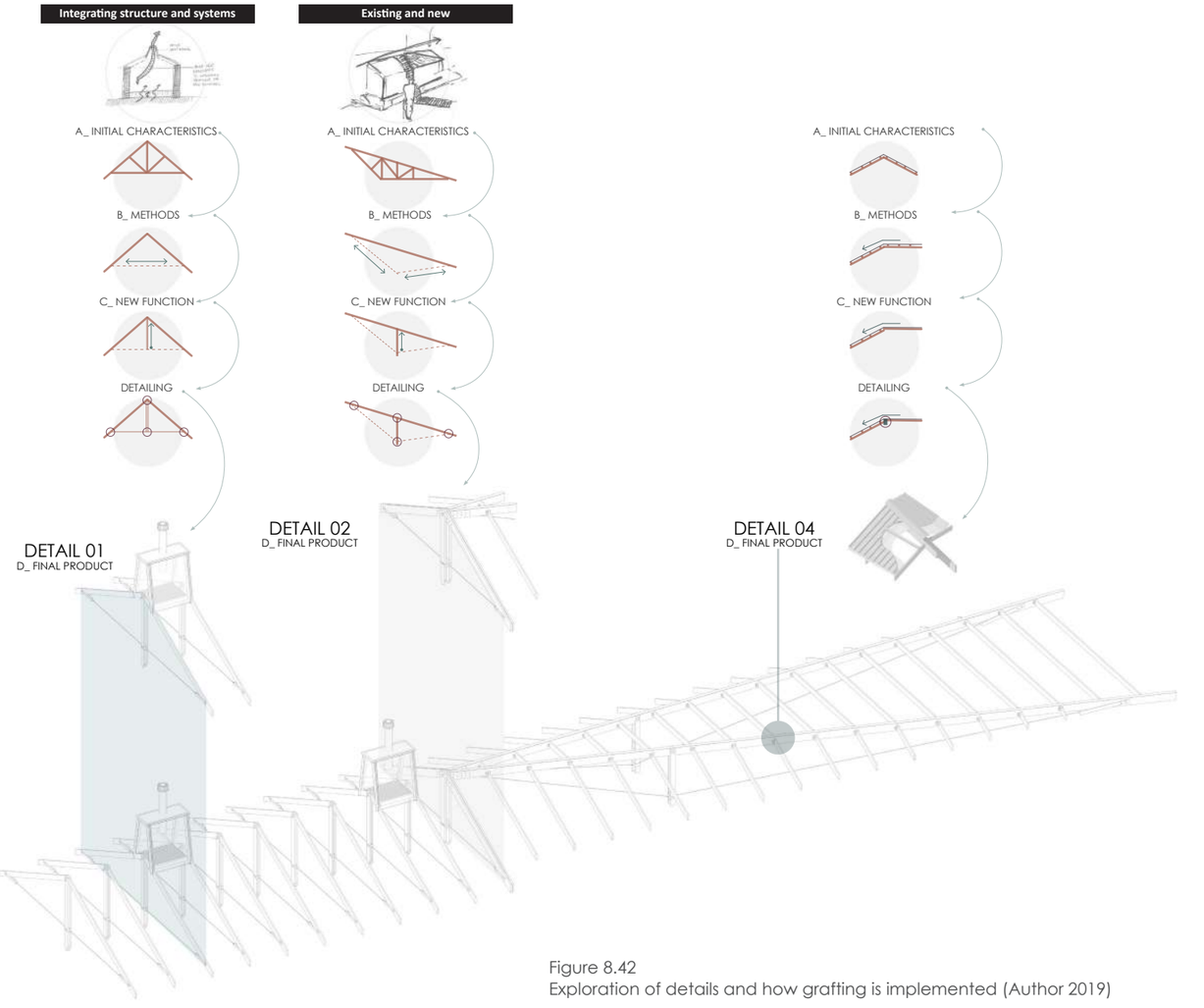


Figure 8.42
Exploration of details and how grafting is implemented (Author 2019)

Stereotomic

Kleinwingerd
Location: Prince Albert, Western Cape
Architects: Rudolf Perold Argitek

Figure 8.43
Photograph of the building in the landscape, (Author 2013)

Hybrid

Residence
Location: Franschhoek, Western Cape
Architects: Martin Kruger

Figure 8.44
Photograph of the building within the landscape, (Kruger 2019)

Tectonic

African relish
Location: Prince Albert, Western Cape
Architects: Team Architects

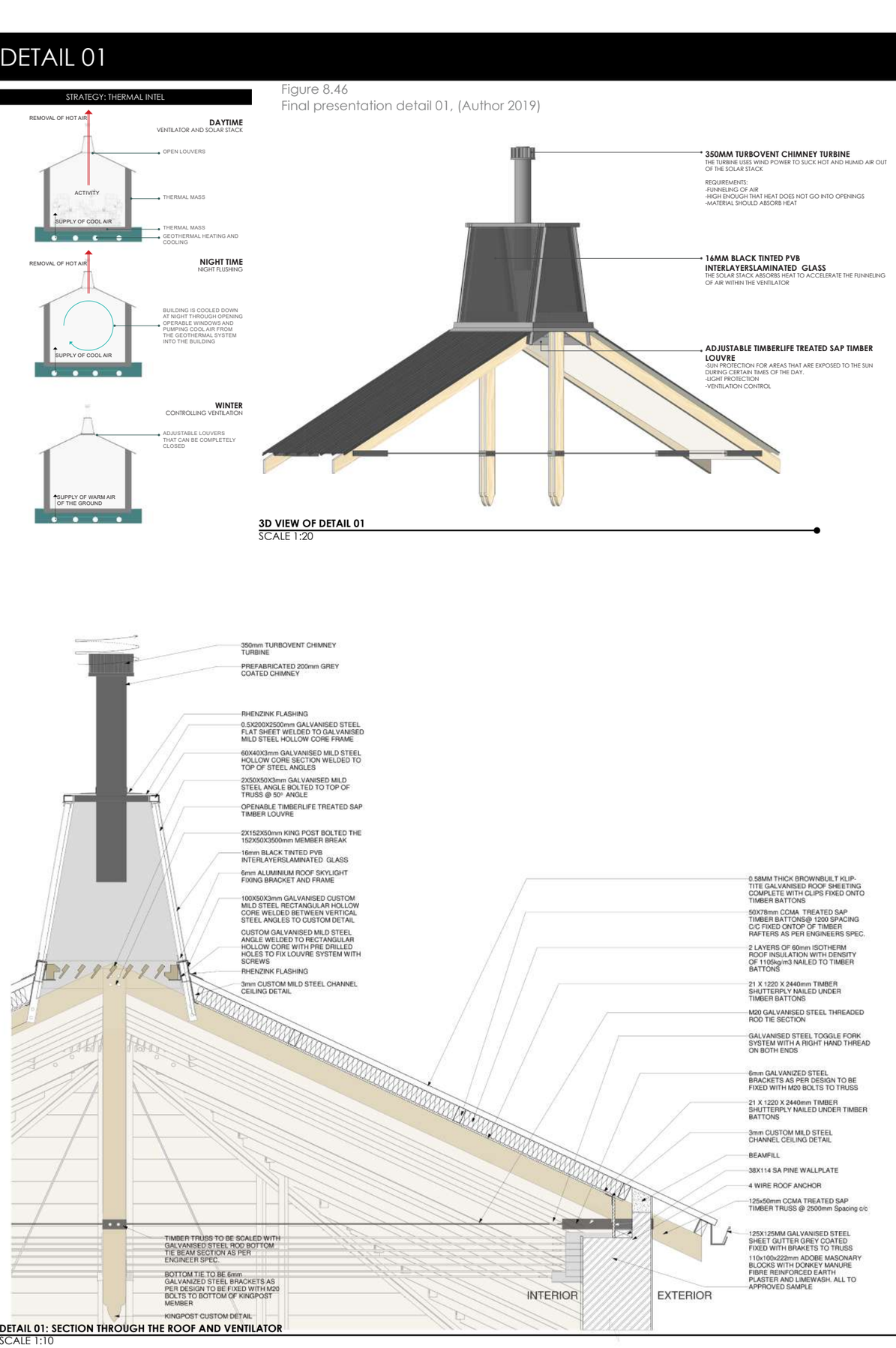
Figure 8.45
Photograph of the building in the landscape, (Team Architects 2009)

DETAIL 01

STRATEGY: THERMAL INTEL

Figure 8.46
Final presentation detail 01, (Author 2019)

3D VIEW OF DETAIL 01
SCALE 1:20

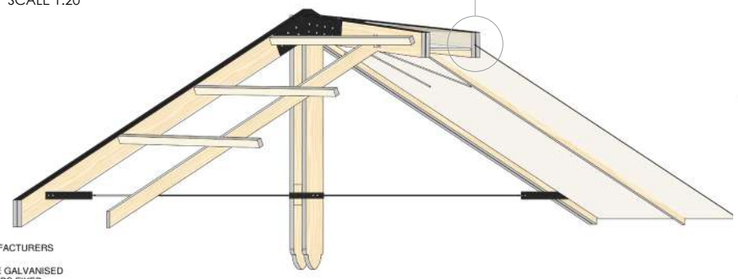


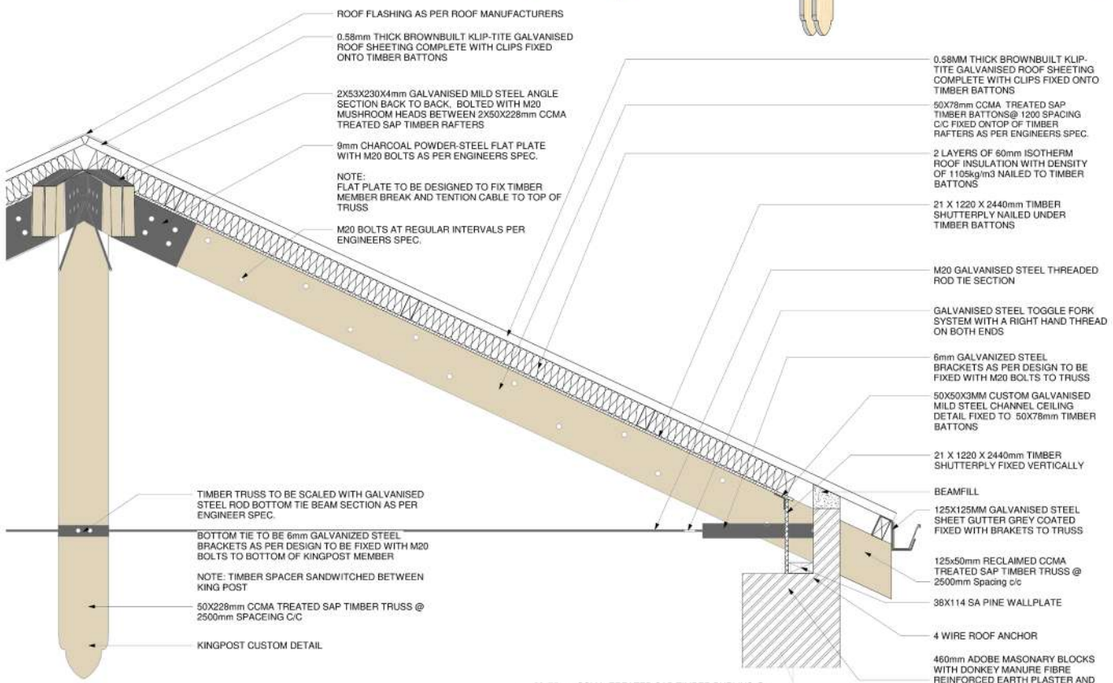
DETAIL 01: SECTION THROUGH THE ROOF AND VENTILATOR
SCALE 1:10

DETAIL 02 & 03

Figure 8.47
Final presentation detail 02 & 03, (Author 2019)

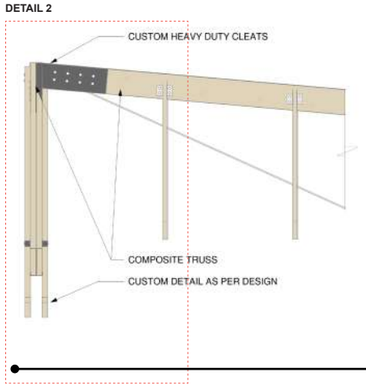
3D VIEW OF DETAIL 01 SHOWING ONLY THE TRUSS
SCALE 1:20

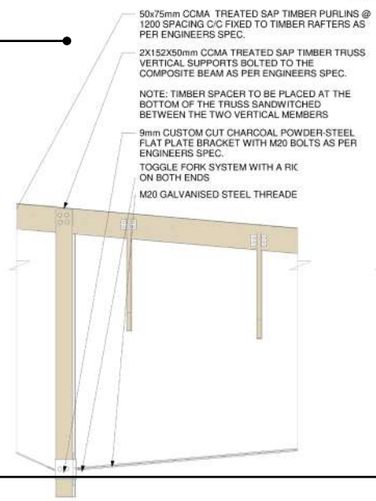


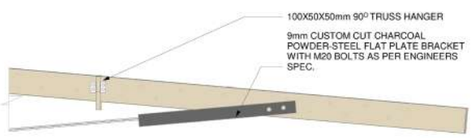


DETAIL 02: SECTION
SCALE 1:10

DETAIL 2



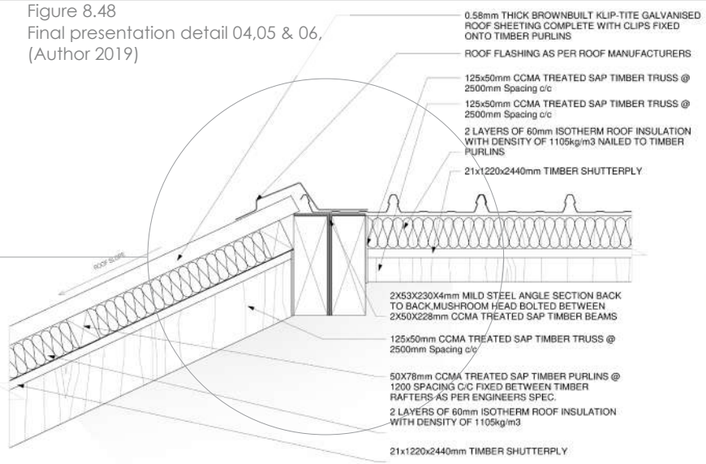




DETAIL 03: SECTION OF TRUSS
SCALE 1:20

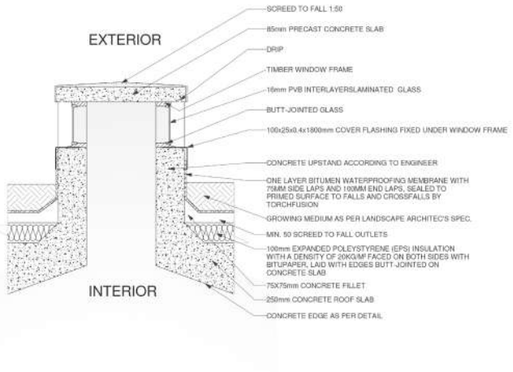
DETAIL 04,05 & 06

Figure 8.48
Final presentation detail 04,05 & 06, (Author 2019)

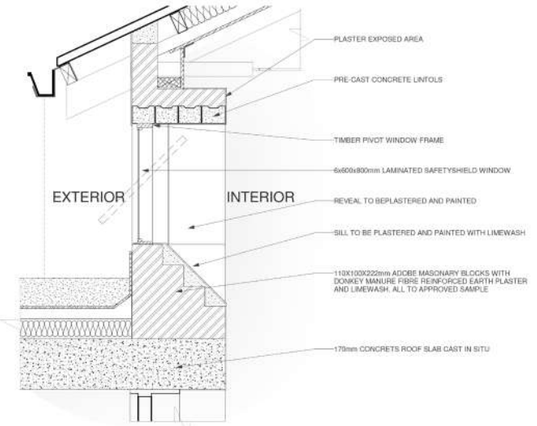


3D OF DETAIL 04
NOT TO SCALE

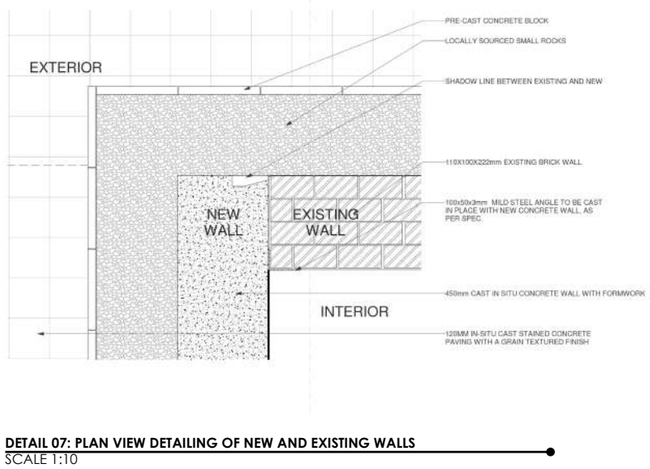
DETAIL 04: SECTION THROUGH COMPOSITE TRUSS MEMBER
SCALE 1:10



DETAIL 05 : SECTION THROUGH SKYLIGHT
SCALE 1:10

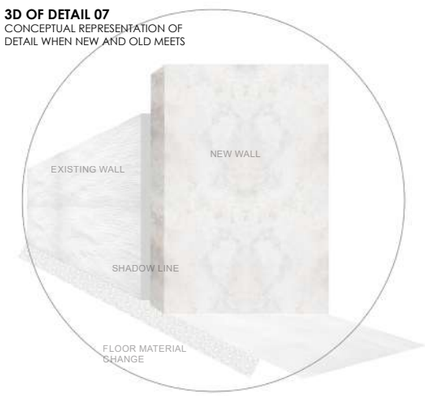


DETAIL 06 : SECTION THROUGH CLERESTORY WINDOW
SCALE 1:10



DETAIL 07: PLAN VIEW DETAILING OF NEW AND EXISTING WALLS
SCALE 1:10

3D OF DETAIL 07
CONCEPTUAL REPRESENTATION OF DETAIL WHEN NEW AND OLD MEETS



INTERIOR VIEW OF THE PACKAGING ROOM

EXTERIOR VIEW OF THE EXISTING STORP INTO THE SQUARE

VIEW OF THE COURTYARD

CHAPTER 09 CONCLUSION

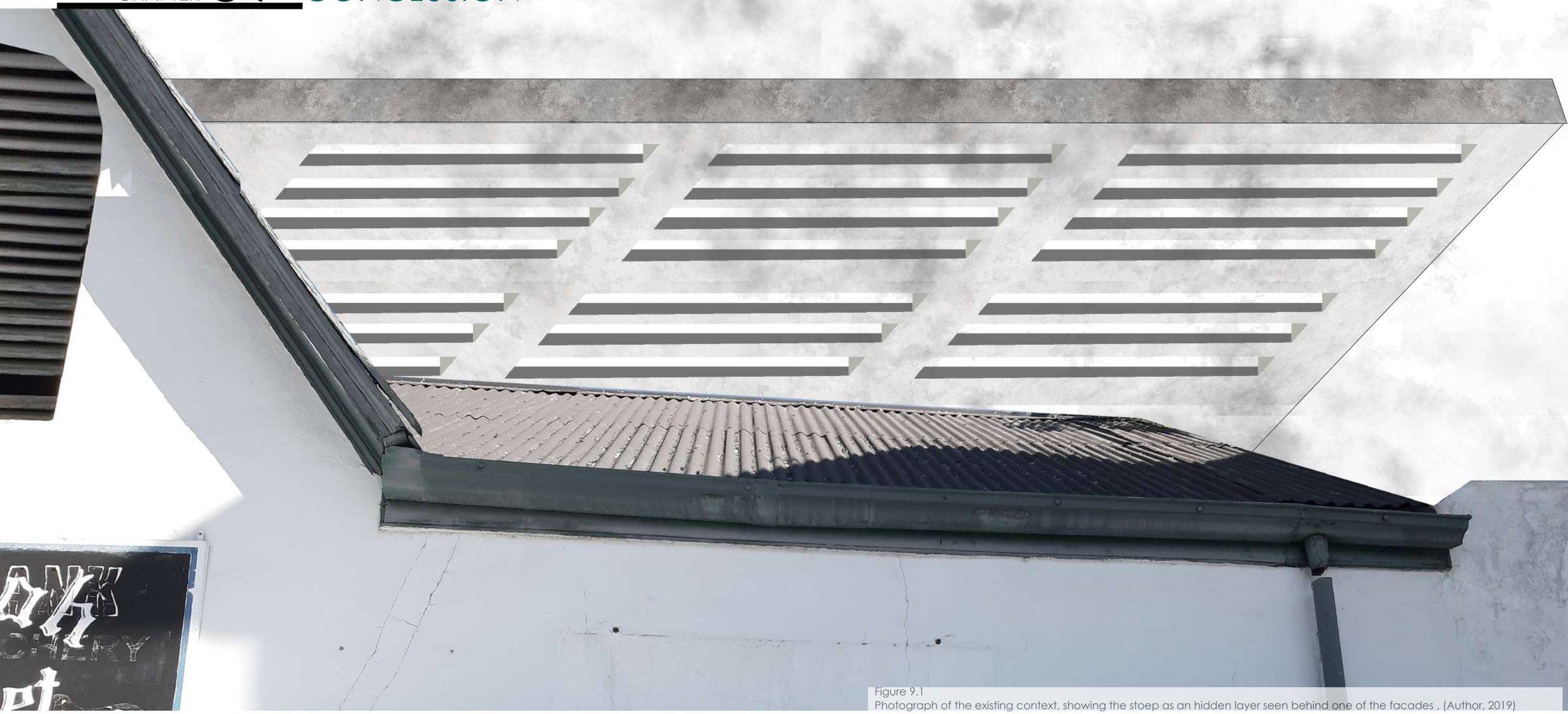


Figure 9.1
Photograph of the existing context, showing the stoep as an hidden layer seen behind one of the facades , (Author, 2019)

GRAFTING ONTO VULNERABLE HERITAGE

This dissertation's intention was to question the regeneration of vulnerable heritage within Graaff-Reinet as society's needs are constantly changing, and the building's value of vulnerable heritage layers have become inadequate .

The investigation was confronted with a contradiction about how to preserve heritage layers and at the same time how to change it. The Theoretical discourse investigated in Chapter 2, informed Regenerative design practices to take into account heritage management strategies through aligning these strategies with the Burra Charter. Proposing that the architectural discourse should investigate a new spatial typology through integrating local vernacular, densification of current urban conditions and regenerating socio-economic activity within Market Square.

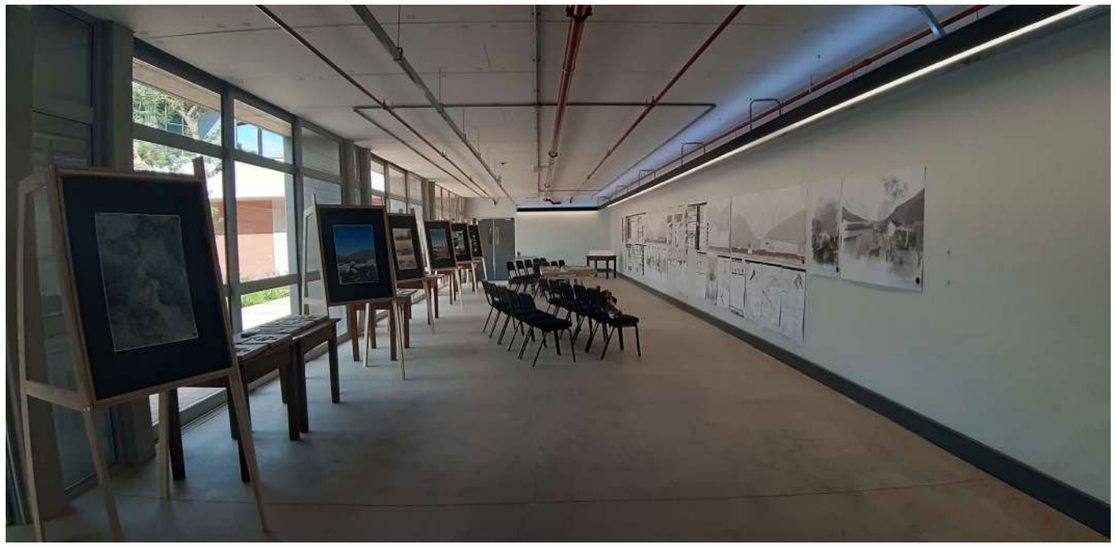
Regenerative design theories accompany the vernacular assessment of Market Square, through understanding the contributing factors of place within the context, the evolution of place and the developmental process of which vernacular should evolve to contribute to place.

The proposed architecture explores grafting as a relationship where the existing meets the new. The intention was to introduce the new layers by synthesising with the existing vernacular language and create an architectural rhythm that responds directly to the context. The design approach provides an example of how architecture can create value through a sensory experience of place and engage to reveal hidden heritage layers. Grafting explores the existing spatial typology through retrofitting the existing context to address environmental sustainability through materiality, structure and environmental informants.

The design suggests a regeneration of the existing spatial typology through exploring the 'stoep' as an architectural device that connects the proposed architecture with the existing vernacular. The architectural response explores the grafting of the "stoep", through wrapping around; embedding; extending and covering articulating thresholds between internal and external space. The "stoep" demonstrates the architectural language of the context whilst introducing new urban layers to the historical context.

This dissertation provides an approach to retrofit and regenerate vulnerable heritage sites within historical urban environments, as Graaff-Reinet. It demonstrates the potential of architecture that can engage with the community, through providing opportunities for socio-economic development. Through exploring Regenerative design, Market Square could regenerate as social catalyst between the local community, agriculture and tourism.

Figure 9.2
Final presentation, (Author, 2019)



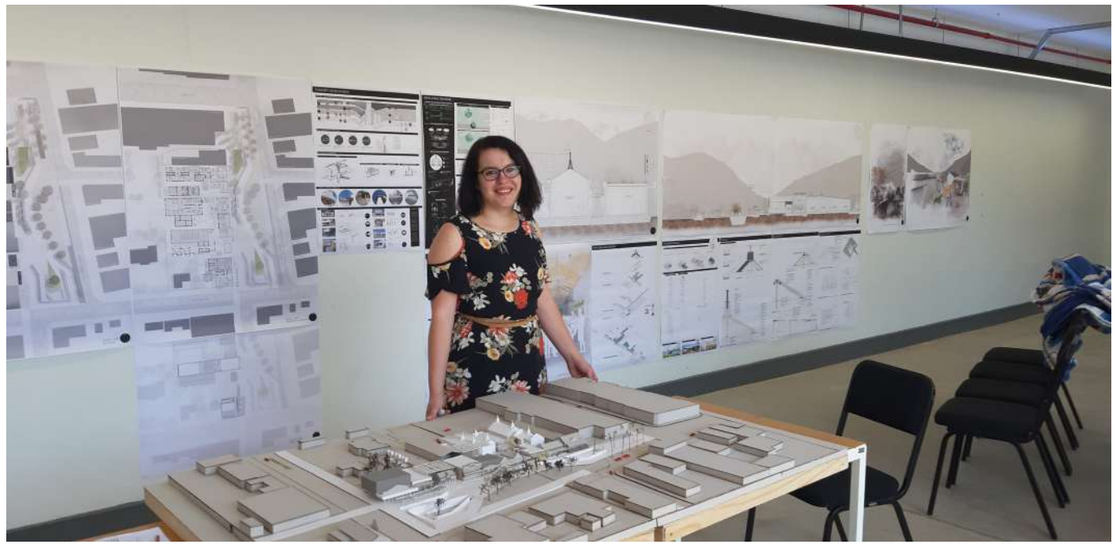


Figure 9.3
Final pin up, (Author, 2019)

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Figure 9.4
Photograph of the gable villa facade, (Author, 2019)

LIST OF FIGURES

Figure 9.5
Photograph of a downpipe on site, (Author, 2019)

01
CHAPTER

02
CHAPTER

03
CHAPTER

04
CHAPTER

Site assessment diagrams, (Author 2019)
Figure 4.14
Significant building types, (Edited by author Japha 1989: 38)
Figure 4.15
Roof and gable types, (Edited by author Japha 1989: 25)
Figure 4.16
Intrusions, (Edited by author Japha 1989: 48)
Figure 4.17
Landscape features, (Edited by author Japha 1989: 41)
Figure 4.18
Summary of regenerative design principles, (Author 2019)
Figure 4.19
Block vision, (Author 2019)

05
CHAPTER

Figure 5.1
Drawing of precinct buildings elevation, (Author 2019)
Figure 5.2
Heritage assessment summary, (Author 2019)
Figure 5.3
Heritage value diagram, (Author 2019)
Figure 5.4
Spatial conditions exploration diagram, (Author 2019)
Figure 5.5
Collection of photographs: Then photographs (Minnaar, G.R Museum) & Now photographs, (Author 2019)
Figure 5.6
Elevation of the precinct indicating the Plaza, (Author 2019)
Figure 5.7
Photo of front facade, (Minnaar, G.R Museum)
Figure 5.8
Photo of front facade, (Author 2019)
Figure 5.9 - 5.11
Interior photographs of Plaza, (Author 2019)
Figure 5.12
Exploration diagrams, (Author 2019)

06
CHAPTER

Figure 6.1
This photo taken inside the cash & carry on site. The store is located in an old house presumed built in the 1800's. The image highlights the old fireplace and animal trophy above the fireplace. These elements are considered part of the building, (Author 2019)

Figure 6.2
Diagrammatic outline of programme, (Author 2019)

Figure 6.3
Diagrams of users, (Author 2019)

Figure 6.4
Summary showing the evolution of Market Square, (Author 2019)

Figure 6.5
Compilation of images on site, exploring the narrative of Market Square, (Author 2019)

Figure 6.6
Programmatic exploration of the social catalyst, (Author 2019)

Figure 6.7
Programmatic exploration of the community production facilities, (Author 2019)

Figure 6.8
Programmatic exploration of the cooking school, (Author 2019)

Figure 6.9
Programmatic exploration of the economical opportunities, (Author 2019)

Figure 6.10
Programmatic requirements, (Author 2019)
(Program requirements influenced by Porter (2019)

07
CHAPTER

Figure 7.1
Design development crit cover page, (Author 2019)
Figure 7.2
Spatial model, (Author 2019)
Figure 7.3
New spatial model, (Author 2019)
Figure 7.4
Description of stoep adapted from Vertical Studio Group 2019, (Edited by Author 2019)
Figure 7.5
The evolution of the portico, (Correa 2019)
Figure 7.6
Example of a typical portico, (Cullen 2019)
Figure 7.7
Example of a stoep,Cradock Street,Graaff-Reinet, (Cullen 2019)
Figure 7.8
Images of the context, (Author 2019)
Figure 7.9
Stoep: Sociability, (Author 2019)
Figure 7.10
Stoep: View point, (Author 2019)
Figure 7.11
Stoep: Interaction, (Author 2019)
Figure 7.12
Stoep: Concentrated space, (Author 2019)
Figure 7.13
Explanatory diagrams of Physical characteristics of the Stoep, (Author 2019)
Figure 7.14
Diagrams exploring the evolution of the stoep, (Author 2019)
Figure 7.15
Wrap around stoep, (Author 2019)
Figure 7.16
Plan diagram of the embedded stoep, (Author 2019)
Figure 7.17
Plan diagram of the extended stoep, (Author 2019)
Figure 7.18
Plan diagram of the covered walkway stoep, (Author 2019)
Figure 7.19; 7.20 & 7.21 (Top to Bottom)
Diagrams exploring the spatial conditions, (Author 2019)
Figure 7.22; 7.23 & 7.24 (Top to Bottom)
Diagrams exploring the spatial conditions, (Author 2019)
Figure , 5.25
Compulation of Design development diagrams, (Author 2019)
Figure 7.26
Diagram indicating links , (Author 2019)
Figure 7.27
Massing, (Author 2019)
Figure 7.28
Creating edges, (Author 2019)
Figure 7.29
Exploring layering, (Author 2019)
Figure 7.30
Explanatory maquettes, (Author 2019)
Figure 7.31
Explanatory maquette 1, (Author 2019)
Figure 7.32
Explanatory maquette 2, (Author 2019)
Figure 7.33
Explanatory maquette 3, (Author 2019)
Figure 7.34
Design development maquette 1, (Author 2019)
Figure 7.35
Design development maquette 2, (Author 2019)
Figure 7.36
Design development maquette 3, (Author 2019)
Figure 7.37
Design development maquette 3, (Author 2019)
Figure 7.38
Design development maquette 4, (Author 2019)
Figure 7.39
Design development maquette 4, (Author 2019)
Figure 7.40
Spatial relationships of iteration 4, (Author 2019)
Figure 7.41
Diagram showing existing, demolished and new, (Author 2019)
Figure 7.42
3D of iteration 4, (Author 2019)
Figure 7.43
Conceptual explorations of the stoep, (Author 2019)
Figure 7.44
Exploring the Stoep and the existing, (Author 2019)
Figure 7.45
3D drawing of the cooking school, (Author 2019)
Figure 7.46
Exploration of the square and alterations on iteration 4 , (Author 2019)
Figure 7.47
Exploration vernacular principles: scale, structural integrity and unity in diversity, (Author 2019)
Figure 7.48
Diagrams of window openings, (Author 2019)
Figure 7.49
Elevation of existing and new facades, (Author 2019)
Figure 7.50
Exploration and old and new facades, (Author 2019)
Figure 7.51
Exploration diagrams ,the anatomy of an old traditional Brakdak roof, (Author 2019)
Figure 7.52
Site plan, (Author 2019)
Figure 7.53
Ground floor plan, (Author 2019)
Figure 7.54
Exploration of section, (Author 2019)
Figure 7.55
Details, (Author 2019)
Figure 7.56
Detail 1, (Author 2019)
Figure 7.57
Detail 2 , (Author 2019)
Figure 7.58
All diagrams of iteration 8, (Author 2019)

08
CHAPTER

Figure8.1
Photograph of the existing context , (Author, 2019)
Figure 8.2
Grafting , (Author, 2019)
Figure 8.3
The process of grafting, (Author, 2019)
Figure 8.4
Technical concept 1, grafting, (Author, 2019)
Figure 8.5
Technical concept 2, relationship between stoep,existing and new, (Author, 2019)
Figure 8.6
Technical concept 3, Defining new and old, (Author, 2019)
Figure 8.7
Technical concept 3 Integrating structure and system, (Author, 2019)
Figure 8.8
Wind rose, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019)
Figure 8.9
Climatic diagram, (Author:2019)
Figure 8.10
Average temperature and presepetation, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019
Figure 8.11
Percipitation amounts, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019
Figure 5.12
Maximum temperatures, (Online: https://www.meteoblue.com/en/weather/forecast/modelclimate/pretoria_south-africa_964137, accessed 2019
Figure 8.13
SBAT analysis of the space pre-intervention, (Author: 2019)
Figure 8.14
SBAT analysis of the space pre-intervention, (Author: 2019)
Figure 8.15
Diagrams of surface changes, (Author: 2019)
Figure 5.16
Illustration of the project startup, (Author: 2019)
Figure 5.17
Illustration of the contextual given, (Author: 2019)
Figure 5.18
Material pallet, (Author: 2019)
Figure 5.19
Illustration of photographs, (Author: 2019)
Figure 5.18
Material pallet, (Author 2019)
Figure 5.19
Planting pallet of existing plants within the context, (Author 2019)
Figure 8.20
Illustration of water strategy, icons adapted from the noun project, (Author 2019)
Figure 5.21
Photographs and Illustration of exploring the existing , (Author: 2019)
Figure 8.22
Photographs illustrating lessons from the context , (Author: 2019)
Figure 8.23
Ventilation diagrams adapter from Honors 2018, Veldsman S , (Edited by Author: 2019)
Figure 8.24
Ventilation diagrams, (Edited by Author: 2019)
Figure 8.25
Assessment 1, Energy 2D simulation, (Edited by Author 2019)
Figure 8.26
Assessment 2, Energy 2D simulation, (Edited by Author 2019)
Figure 8.27
Development diagrams of the roof ventilator, (Edited by Author: 2019)
Figure 8.28
Elevation of the existing facades with the new intervention, (Edited by Author: 2019)
Figure 8.29 (p172)
Final design site plan, not to scale, original scale @ 1:200 (Author: 2019)
Figure 8.30 (p174)
Final design ground floor plan, not to scale, original scale @

09 CHAPTER

CHAPTER 10 APPENDIX

Figure 9.6
Photograph of the square in February, people escaping the heat of the karoo under a tree, (Author, 2019)

Karla Veldsman

Grafting into vulnerable heritage

Analysing vulnerable heritage through applying regenerative design practices to attribute a collective community valued heritage vernacular.

Fig. 01. Above; Aerial map of Graaff-Reinet and the surroundings (Edited by Author, 2019)

INTRODUCTION

Historic Towns, such as Graaff-Reinet, have a long history. The genius loci of the architecture within the town fosters a critical reflection of the past. The preservation and conservation of architecturally significant towns within South Africa plays an increasingly assertive role in the unbalanced urban growth and the future development of these towns.

Because of the dynamic nature of our cities, current urban development is a mounting threat to the survival and preservation of the historical towns' unique urban environment, cultural landscape, place, architecture and the community who currently inhabit these towns (Corten et al., 2014: 21; McLachlan, 2010: 58).

This paper investigates architecture's role as re¬generator within the management of vulnerable heritage sites in sensitive urban heritage environments. Regenerative design is used to interpret place and serve as the mediator between urban conservation and sustainable strategies, in order to explore the potential of sustainable heritage within place. The regenerative design practices explore the relationship between sustainable community development, vulnerable heritage management and environmental potential. In doing so, the exploration hopes to achieve a concentrated development framework that assists with the improvement of vulnerable heritage management within the context.

Market square in the town of Graaff-Reinet, is the investigated case study with the architectural intention of developing a framework for further application and investigation.

LOCALITY

Graaff-Reinet, a Karoo town within the heart of the Eastern Cape, urban fabrics documents the development of a community in the unique environment of the Karoo (Japha, 1990: 21).

Green (1955) describes the town setting within the harsh landscape as ringed by mountains and surrounded by a great loop of the Sundays River. "When you look down on Graaff-Reinet from the high heights of the Valley of Desolation, the town is a rich green oval with the harsh surroundings of the Camdeboo district" (Green, 1955: 84).

Due to this description, early travellers referred to Graaff-Reinet as the "gem of the dessert" or, "gem of the Karoo" (Green,1955 :84).

The town has retained most of its original 19th century Townscape, reflecting an architectural hybrid of the bringing together and interchange of imported colonial practices, being both European and English (van Eeden, 2015: 6; Minnaar, 1987: 5; Japha, 1990: 21).

The architecture reflects unique streetscapes with buildings of different styles, originating from different periods. Each building spills out onto the street with decorated stoeps or verandas, where one can casually escape the heat of the Karoo, whilst enjoying the social activity of the street.

The traditional architecture owed much of its resilience to the fact that it was well situated to the frontier of the environment, lending itself to construction with crude materials and unskilled labour using relatively primitive building methods.

THEORETICAL PREMISE

Heritage, heritage management, vernacular and regenerative theories are explored in order to develop a strategy to advocate conservation and preservation of architecture as well as the cultural identity of the landscape within market square.

With regard to historical urban environments, the first challenge is to distinguish between the different interpretations of

Fig. 02. Below; Photograph of the town from the Valley of Desolation (Author, 2017)

Fig. 03. Left; Photograph of the old bioscope (Minnar, 1975)

Fig. 04. Right; The old bioscope current day, unused (Author, 2019)

architectural heritage. The process of heritage management tends to isolate heritage fabrics from the living environment and the people using these environments. Alienation takes place within the landscape, creating a discontinuity of the cultural architectural language.

The Theoretical context is divided into two parts: part 1: macro theory (theoretical strategy) and part 2: micro theory (an architectural response to the current vernacular contextual conditions).

Part 1 investigates macro theory that formulates an analogy around the architectural discipline as synthesis of the management of heritage, and investigates relating strategies that assist with formulating a new strategy to regenerate the architectural, urban and socio-economic condition of market square.

Part 2 examines the architectural response as micro theory to formulate this study's position within the architectural continuum. Part 2 provides a brief overview of vernacular theory, identifies Gawie Fagans architectural discourse towards a new vernacular and positions this argument within the evolution of vernacular as the strategy to preserve market square's architectural significance.

PART 1:MACRO THEORY

HERITAGE

Heritage within architectural term is the conservation and preservation of pre-dated relics and histories of a past regime. Within the architectural discourse, the general term 'heritage' advocates the cotton wool effect that creates the so-called 'black and white' world. This world assumes that everything tangible and intangible within the urban landscape must be preserved and protected (McCarthy, 2012: 624; Townsend, 2017: 11).

Bakker (2007: 14) describes South African histories as rich, complex and unique. Terdiman (1993) describes the notion of history as modernity's way to deal with our 'memory crisis', while Kammen (1995) postulates that the heritage movement has developed an obsessed sense of nostalgia with the preservation of heritage – the 'ultimate act' of not forgetting the past (Huysenn, 2003 cited in Harrison, 2012: 581).

Heritage management aims to respect and protect significant building proportions, spatial typologies, traces of demolished buildings, reconstruction of destroyed buildings, relocation of heritage buildings and adaptive re-use. Heritage conservation and preservation reflect more specific heritage values of the built heritage of the identified specific communities and pasts (McCarthy, 2012: 624).

South Africa's heritage and the management and protection of histories of the current society has not reached a coherent vision on the conservation and preservation of different heritage categories and places since South Africa's democracy in 1994 (Bakker, 2007:14). As a result, there are multi-layered contexts, such as a historical town's urban fabrics, which are determined by the community's values and use of the identified focused space.

HERITAGE MANAGEMENT

Heritage management is not applicable for all buildings, sites, places, cultural landscapes and environments within historical environments. Heritage management is determined on various factors namely: the significant contribution to cultural landscape and the value place contribute to the community.

Heritage management is synonymous with notions of care that includes the practice of protecting heritage and the process of conservation (Harrison, 2012: 582). Literature on Heritage management resources do not supply rigorous guidelines that situate or accommodate the regeneration and retrofit of place within heritage management, especially with regard to vulnerable heritage sites.

McCarthy (2012: 624) describes the process of heritage management which includes heritage legislation, policies, advocacy, identification, assessment, risk assessment, public awareness, technical skills, research into conservation, consolidation methods and sustainable tourism that are measured in years or sometimes over decades.

LIVED CONDITION WITHIN HISTORICAL URBAN LANDSCAPES

The lived condition carries the consequence of protecting many buildings in the environment that are in the process of piling up of disparate and conflicting pasts (Harrison, 2013: 580). The piling up leads to a crisis that accumulates the amount of alienation taking place within the landscape due to the lack of control over buildings, sites, places, cultural landscapes and environments that are not considered to be of significant value and/or a museum and/or a national monument (Foruzanmehr and Veillinga, 2011: 275). These buildings that are subjected to change are perceived in this study's investigation as vulnerable heritage.

The solution to the crisis is to pay more attention to the management of vulnerable heritage sites. Whereas, heritage site interpretations and presentations follow a formalistic approach embedded in heritage legislation, buildings that are considered to be within the vulnerable heritage sites within the precinct have not contained their original form and thus there is the danger of to the buildings' loss of identity and prosperity in relation to the context (Harrison, 2013: 580).

VULNERABLE HERITAGE

Vulnerable heritage is subject to a situation where vernacular building traditions are in a constant decline, through modern counterparts replacing vernacular technologies. Vernacular traditions are seen to be in a state of decline and are frequently looked down upon, abandoned, neglected or actively demolished.

The pressure develops when determining the act of reusing, regenerating and retrofitting buildings that become functionally redundant. The process mainly involves the negotiation of history and maintaining economic use within place (Salaman, 2018: 7). The challenge is to find synergy between the community's identity and the lifestyle adopted by the people in the community. The identified architecture within the historical environment, and vernacular architecture in particular, is the product of people's vibrant manifestation of how identity and sustainability are related. The study determines the sustainability between the surrounding natural environment, identity, vernacular and the available resources in the community.

Currently there are no existing legal instruments or formal policy for the conservation and sustainable management of vulnerable heritage or intangible cultural heritage in South Africa. This means by its nature that vulnerable heritage is a fragile heritage resource often vulnerable and susceptible to disintegration that if not adequately managed consistent with the heritage cultural value, essence and conservation needs.

Local knowledge can also be used to re-interpret heritage resources that are still subject to dominant colonial interpretations. Traditional knowledge could teach us how to interact with our natural environment and to 'relearn' ways of healing the degenerated urban environment that are consistent with the contextual vernacular interpretations (Maneti, 2006: 80).

REGENERATIVE DESIGN

Regenerative design theories are implemented within this study to establish a co-evolutionary relationship between nature and community's need retrofit and regenerate 'place'. Regenerative design transforms and renews a system that no longer has a relevant function, as vulnerable heritage sites' regenerative design allows for place to be evaluated to determine the missing component to develop place for evolution (Du Plessis, 2013: 37).

Regenerative theory is categorised according to three theories namely place, evolution of place and developmental process. The three theories are set out to create an integrated framework that evolves the definition of sustainability through the conceptual understanding of living within place (Mang and Haggard, 2016: 29; Atkinson & Ingle, 2010: 11).

The following criteria was developed to retrofit and regenerate market square as a vulnerable heritage site. Place should be adapted to owner's needs within the physical constraints of urban heritage fabrics. Any changes in market square should retain cultural significance and at

the same time be guided by the cultural significance of the place .

Theory 1: Determining Place
Determining place is the process tailored to express natural and cultural systems uniquely by creating strategies to achieve sustainability (Mang and Haggard, 2016: 29). Norberg-Schulz (1963) states that place carries the identity of the community who function within it. Place is defined by determining the basic value of architecture and the contribution architecture contributes to cultural significance of the urban landscape.

Theory 2: Determining the Evolution of Place
Enabling evolution engages with the understanding of how a place works, how the user constructs place architecturally and how place is used by the community that occupies the space. To determine the evolution of place, an architectural investigation is conducted to determine the significance of place. The statement of significance engages with regenerating co-design within the existing infrastructure and urban fabrics, exploring new function within the diverse heritage and urban layers (Mang and Haggard, 2016: 35).

Theory 3: Developmental Process
The developmental process explores opportunities of retrofitting the physical structure to benefit from the surrounding natural and social communities (Mang and Haggard, 2016: 35; Atkinson & Ingle, 2010: 11). The developmental process is determined by the analysis built up from regenerative design principles of place and evolution.

PART 2: MICRO THEORY ARCHITECTURAL RESPONSE
This section positions this research response within an architectural continuum that contextualises, locates the influences of vernacular and outlines basic principles to influence the evolution of vernacular within the context. Within the investigated context, vernacular is determined on three aspects: firstly, the local response to place; secondly, influence of the functionalist and modern architecture; and thirdly, precedent of local interpretations of vernacular.

The micro theoretical discourse presents the issues within representational aesthetic categories that derive from the level of the vernacular image, production and the object.

DEFINING TERMINOLOGY OF TYPE,TYPOLOGY AND VERNACULAR ARCHITECTURE
The connection of type, typology and vernacular architecture to the context of the Karoo, is an authentic expression of the collective memory of the historical urban landscape (Petruccioli, 2016: 5). The aim is to provide a brief overview of type, typology and vernacular and to discuss vernacular architecture practitioners' contributions, architectural responses and principles.

Type is the identifiable and similar features of a collective group of buildings from the same period and context. "Typology, not to be confused with type, is the science that studies the types, their mutual relations and their evolution in time" (Petruccioli, 2016: 5). The Typological process allows us to understand the evolution and development from one type to the next.

Vernacular architecture is identified as an established, collective characteristic of traditions. Vernacular architecture consists of typological variants of the leading type a-priori and can be studied through typological science (Petruccioli, 2016: 3).

MODERNISM INFLUENCE ON THE VERNACULAR
The modern movement inspired a great variety of architectural responses that followed the era. In the 1950s, architectural responses were synthesised through combining the spatial qualities of Cape vernacular and the architectural approaches of the modern movement. This response followed by architects such as Pius Pahl (1909-2003), Revel Fox (1924-2004) and Gabriel Fagan (1925-) (Barker, 2012: 36). These architects developed the process to adopt to place specifically and to suit new functional requirements.

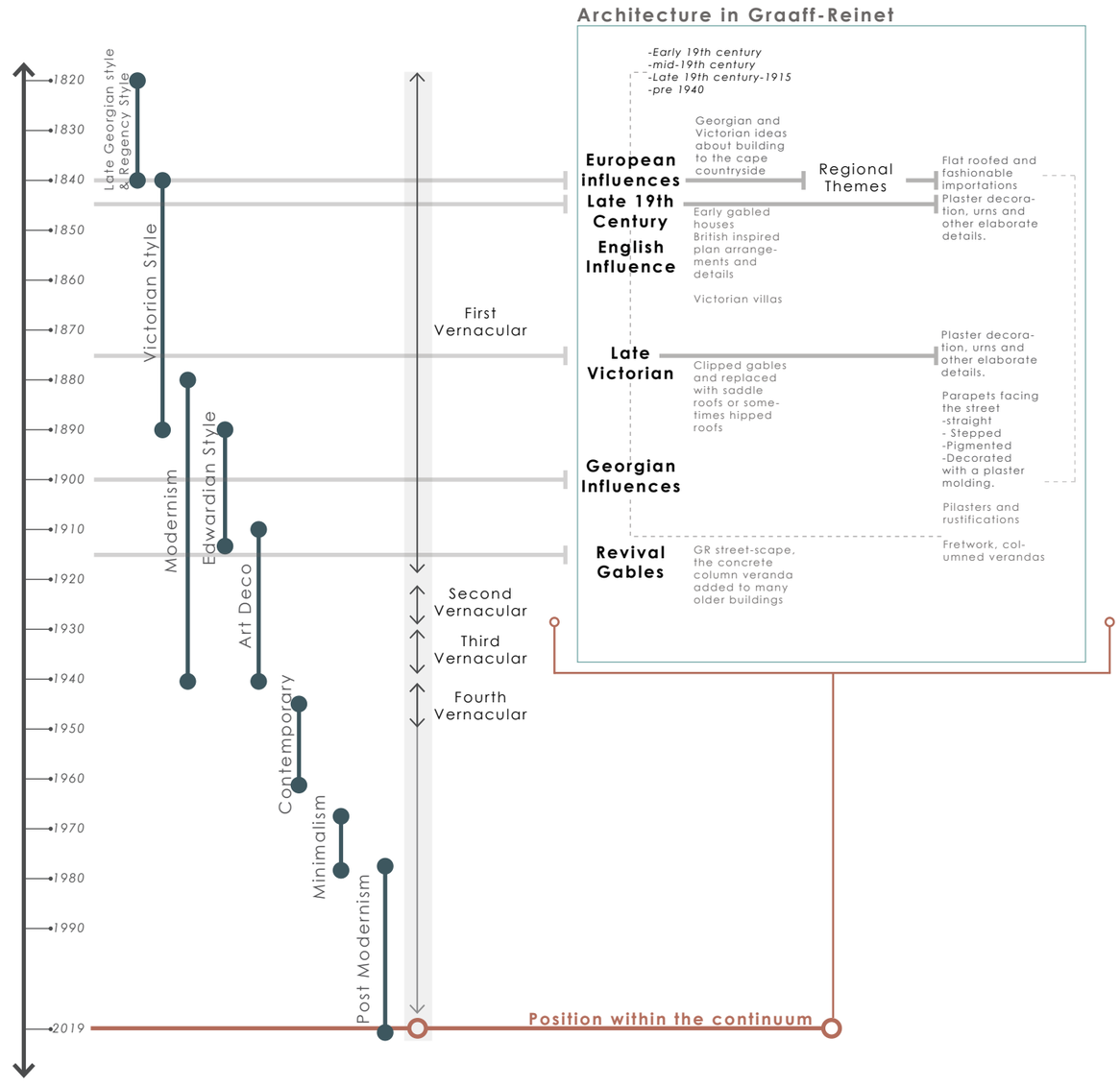
Rudofsky's (1964) vernacular studies motivated for a return to basics that responds to the authenticity of architecture. Looking back at the modern movement, their original intentions reflects those of vernacular of being authentic and true to the nature of existence (Barker, 2016: 2).

CAPE VERNACULAR
Cape vernacular, is an inherited tradition described by Biermann (1955) as intricate elaborations of renaissance revival, baroque and rococo, a continent away from their origins. This noble architecture has endured for over three hundred years, echoed amongst the imported oak trees and mountain peaks settling independent authority (Barker, 2012: 37).

Exploring the placeness of Karoo vernacular, the local response to place implies a rethinking of what is customarily done with vernacular. Reflecting on the origins of vernacular in the Karoo, Fagan (2008: 78) suggests that our priceless heritage, the flat-roofed building ('Brakdak'), as one of the first forms of vernacular will retain validity as unpretentious, rural architecture that is mostly forgotten and remains in old photographs.

The architectural continuum places intertwines with the origin of vernacular, the true essence of place and the vernacular context that defines place.

Fig. 06. Right; Architectural continuum (Author, 2019)



Through the application of regenerative theories, the physical control would be to regenerate place to not merely a building, but a place for community and evolution within vernacular contribution.

This dissertation explores the fourth interpretation of vernacular, which occurred within the 1950s and 1960s. The fourth vernacular's architecture built on the formal and technological legacy of the first three vernaculars. Architects such as Pius Pahl, Revel Fox and Gawie Fagan formulated a consistent approach to climate through window wall proportions and technology, simple white box forms generated through the reinterpretation of local vernacular form, often with fireplaces as focal elements either externally or internally placed.

The investigated precinct Market Square investigates the shift in formal influence that recognised principles of vernacular, heritage management strategies and regeneration of vulnerable heritage.

The formal attributes investigates a new response that considers past vernacular implementations of the historical contextual conditions within Graaff-Reinet. The fourth vernacular implementation investigates Gawie Fagans 10 principles of vernacular to assist in formulating the architectural response.

GAWIE FAGAN AND THE FOURTH INTERPRETATION OF VERNACULAR

Fagan's development of a new Cape vernacular typology enhances the understanding of his own vernacular interpretation which created a sound basis of his architecture. Fagan uses the chimney as focus point in all his designs. The chimney becomes the functional role that connects the past with the present, creates the warmth of place and the social gathering around the chimney with the intention for this space becoming the focal space in the design.

Fagan's intimate knowledge of the Cape vernacular has allowed him to understand its development and refinement over time. His development of a set of "lessons from the vernacular" (Barker 2012: 167-232) is analogous with Le Corbusier's search for form in the Mediterranean vernacular.

Fagan's Principles(lessons from vernacular):

1_Simplicity and economy of means: doing the most with the least.
2_Structural integrity and honesty
3_Plasticity or modelling: soft moulding of plaster.
4_Appropriate and consistent detailing
5_Unity in diversity
6_Colour: The simple use of colour in vernacular architecture is best illustrated by the bright whites of Mediterranean architecture set against the blue hues of its window shutters.
7_Proportion (relation to the whole): Type 1 proportion system: the concentric scheme; Type 2 proportion system: system of squares and double squares. He suggests that these systems provide a sense of order and dignity to the buildings but that their use today is rather limiting. Fagan has used the Hambidge system of proportions which is based on the Fibonacci series and principles of dynamic symmetry. He substitutes the arithmetic calculations with a system of drawing that uses various diagonals, giving better control over the outcome.
8_Human scale
9_Relation to the environment
10_A progression of experiences: the visitor is taken on a journey.

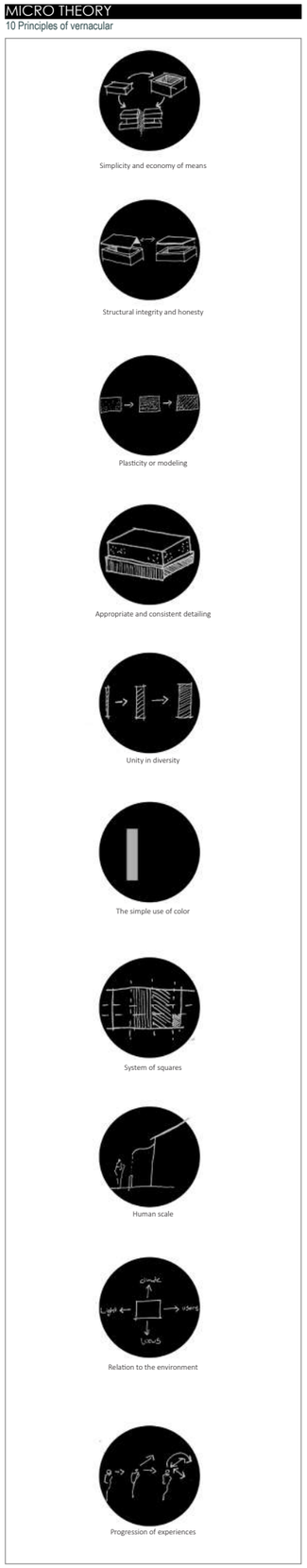


Fig. 07. Left; Diagrams of Fagan's 10 principles of vernacular (Author, 2019)

METHODOLOGY

To arrive at a more holistic understanding of the use, significance and sustainability of the current vernacular. The research methodology are based on conducting a literature review to the main concepts discussed in this chapter such as: Heritage, Heritage management, vulnerable heritage, vulnerable heritage management and sustainability within vulnerable heritage sites (Salman 2018:1). Regenerative design principles are used to investigate, evaluate and respond to the identified vulnerable heritage site.

The first objective was achieved through rigorous review of relevant literature related to heritage, heritage resource / management and the use of heritage. Understanding the shortcomings of use, contribution, sustainability and evolution of the current conservation and preservation strategies within our architectural heritage management structures. Exploring weather principles of the revised Burra Charter (Australia ICOMOS 2013) could provide clarity to the regarding the use of place.

The second objective was accomplished by a small-scale assessment of local vernacular on the western edge of Market Square. The analysis consisted of a field survey and historic background evaluation of each individual buildings variation and stylistic components, determining the significance of **place** and contribution to the larger environment.

The assessment of local vernacular was used to establish the significant elements of the individual buildings and conduct a thorough understanding of their value, age, significance, aesthetic committee remarks, description of building, historical value, potential and special remarks. This assessment showed whether or not these buildings.

The third objective explored the **evolution of place**, the identified buildings were assessed through analyzing them as a whole. At first, the analysis compared the spatial condition created by the different facades adjoining one another. The second part was to analyze the material and use through grouping and categorized the facades, stoeps, roofs and walls into high, medium and low significance. The analysis allowed gathered information represented into a 3D model for further design investigation, the model suggests that the facades contains the highest value of significance.

Observations of site were carried out throughout a range of fieldwork periods, due to restrictions of time fieldwork periods were restricted to various site visits conducted in January, April and July. Elements on site, use, maintenance, activities, spatial conditions, significant elements were documented in the form of drawings, photographs, notes and site visits.

HERITAGE MANAGEMENT STRATEGIES

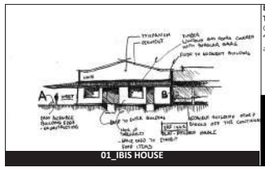
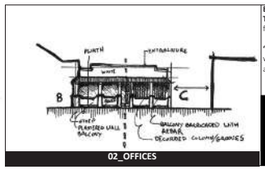
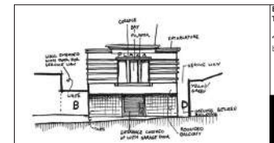
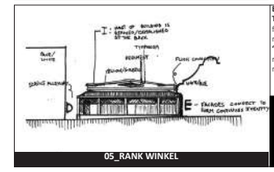
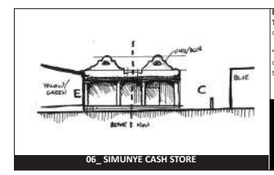
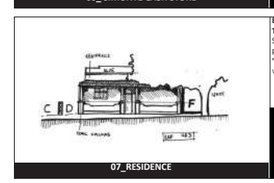
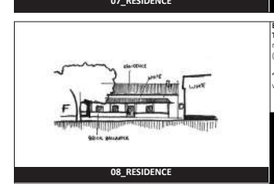
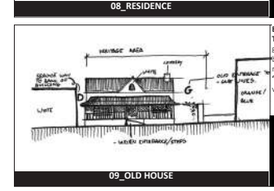
By considering the range of different heritage charters and heritage resource acts that specifically informs the architectural context of Graaff-Reinet . It is critical to evaluate the experimental possibilities of these prescribed documents, in light of the research problems addressed earlier. The national Heritage Resource Act (NHRA, 1999) and the Burra charter (Australia ICOMOS 2013) are considered of great importance within the design process.

The Act does not accommodate the alteration and regeneration of place, thus the Burra Charter (Australia ICOMOS 2013) was consulted to determine whether the Charter allows for place-making. The Burra Charter (Australia ICOMOS 2013) suggests that place should adapt to owner's needs within physical constraints of urban fabrics, change should be guided by and should retain the cultural significance of the place. Even though place can be identified as vulnerable heritage, vulnerable heritage sites in historical communities contain elements of significance that contribute to the larger environment.

NATIONAL HERITAGE RESOURCE ACT

With regard to South African national heritage legislation and regulations, the South African Heritage Resource Agency (SAHRA) was established under the National Heritage Resources Act (NHRA, 1999) for the preservation and protection of our cultural heritage resources. The Act is thus of great importance to the context of Graaff-Reinet, as well as market square.

Fig. 08. Right; First architectural analysis, determining the significance of place (Author, 2019)

Buildings on site	Background / Information							
			Aesthetic committee	Decryption of building	Historical Value	Potential	Special Remarks	Photograph on site
 01_IBIS HOUSE	ERF 1444 **Type:** Flat Pitched Gable roof **'Stoep':** Covered and no low wall Structural condition: Very Good / Good / Average ■ / Poor / Very Poor	**Value:** Significant Value **Age:** None **Building of Significance:** No	Remarks: Parapet plaster falling off, whilst the frontage is white it needs painting, illegal burglar guards over windows, illegal roof supported by iron beams.	Late 19th Century white flat pitched gable building. The building is situated on the corner of Market Street and Somerset Street. The roof over the veranda extends over the whole corner. The porch roof trusses shows timber craftsmanship and detailing, but it is in a degenerating state.	Low-Building has not contained its original form, as seen in photographs. The roof covering the walkway is of significant value.	Use; as is, some regeneration and retrofit is needed to contribute a functional value to the building.	-Group value medium -Contributes to variety	
 02_OFFICES	ERF 1447 **Type:** Single story flat parapet house **'Stoep':** Covered with low wall all around. Structural condition: Very Good ■ / Good / Average / Poor / Very Poor	**Value:** Significant Value Technology value **Age:** Building that contributes to the environment None **Building of Significance:** Yes	Remarks: Illegal burglar bars across veranda; plaster falling off walls; frontage needs to be panted; gutters and downpipes in a poor state.	The white, single story ,flat parapet house, extends with a covered stoep into the square, barricaded with a low wall.	Medium;	Use building as is; building contributes to the urban environment. The stoep can be extended, so can the building at the back.	-Group value medium -Contributes to the environment	
 03_ BISMILLAH MINI MARKET	ERF 4233 **Type:** Straight Gable **'Stoep':** none Structural condition: Very Good / Good / Average ■ / Poor / Very Poor	**Value:** Heritage value Significant Value **Age:** Building of national significance **Building of Significance:** Yes	Aesthetic committee Remarks: Frontage needs replastering, shutters needs to be repaired and window frames need replacing, illegal roof over front of shop; paint does not comply. Timber on pitched gable needs repairing. Flag stones in front of building needs replacing- pedestrian hazard.	The straight Gable ,white pitch, roof building carries an identity of national significance. The building sits between a parapet and an art deco building.	High; The building has contained its original value, the building has been considered in the previous alterations. The building still sits isolated in the context.	Building is in a good condition, the decorative elements and window shutters should be replaced.	-Group value high -Contributes to national significance	
 04_PLAZA	ERF 4233 **Type:** Art Deco **'Stoep':** Floating balcony Structural condition: Very Good ■ / Good / Average ■ / Poor / Very Poor	**Value:** Heritage value Significant Value **Age:** Building pre 1940 of Historic interest **Building of Significance:** Yes	Aesthetic committee Remarks: Frontage tiles needs to be cleaned(old poster pasted over them), parapet and overhang need painting; plaster falling off walls and iron roll up door unsightly.	The significant art deco building promotes the identity of an typical Bioscope. The building, known as the Plaza has been built the 1950s. The building has contained its original facade, although the entrance is covered up with a steel door.	Medium; The building has contained its original facade, the whole building has lost its originality. The building was upgraded in 1980, resulting in plastering, extensions, demolitions and alterations.	The building can be restored programmatically ,most of the cinema building was demolished to make way for the supermarket.	-Group value high -Unique building style within the larger context	
 05_RANK WINKEL	ERF 1450 **Type:** Single story flat pitched gable roof **'Stoep':** Asymmetrical columns with roof covering Structural condition: Very Good / Good / Average / Poor ■ / Very Poor	**Value:** Significant Value **Age:** Building which contributes to the environment **Building of Significance:** Yes	Aesthetic committee Remarks: Illegal burglar bars on front of building, illegal door for sub-division; front door has been replaces; windows boarded up; paint does not conform; plaster needs repairing on gable and front stoep needs resurfacing.	The building is a yellow and green, single-story flat pitched gable roof. The building style contributes to the environment.	Low; Building has not contained its original form.	The building has the potential to be incorporated with the adjacent building, the old Plaza. Most of the original building was demolished, luckily the facade of the building is still intact.	-Group value low -The building style contributes to the environment , the building has been altered and most of the building has been removed.	
 06_ SIMUNYE CASH STORE	ERF 1451 **Type:** Double concave gable villa **'Stoep':** Columns do not contribute to significance Structural condition: Very Good / Good / Average / Poor / Very Poor	**Value:** Significant Value **Age:** Building which contribute to the environment **Building of Significance:** Yes	Aesthetic committee Remarks: Illegal subdivide for shops, illegal burglar bars in front of veranda and doors; parapet and gable plaster falling off; windows boarded up, colours does not comply. There are fat aluminum garage doors.	The double concave gable villa.	Medium; The building has not been maintained and restored. Some elements as the columns should be reconsidered, for they don't fit into the context. The rebar on the stoep disrupts the facades aesthetic.	The villa brings an unique front to the diverse adjacent facades . The building interior consists of a open plan and has the potential to extend backwards into the open site.	-Group value medium -Contributes to the environment	
 07_RESIDENCE	ERF 1444 **Type:** **Single story parapets** **'Stoep':** Covered veranda Structural condition: Very Good / Good ■ / Average / Poor / Very Poor	**Value:** Heritage value Technology value Significant Value **Age:** Building which contribute to the environment **Building of Significance:** Yes	Aesthetic committee Remarks: Illegal burglar bars, stoep roof needs repairs and painting, plaster falling off walls, colour does not comply, back wall belonging to Simunye Cash store at back of property needs plastering and gutters needs to be replaced.	**Single story parapets** Building which contribute to the environment	High; The building appears as in its original form, well looked after. Some of the external decorative elements should be considered and restored.	This building represents a typical Karoo type, brakdak house. The form allows for new additions and density.	-Group value high -Contributes to the environment	
 08_RESIDENCE	ERF 1454 **Type:** Clipped rectangular barns (Early Victorian) **'Stoep':** Covered veranda Structural condition: Very Good ■ / Good / Average / Poor / Very Poor	**Value:** Heritage value Functional value Technology value Significant Value **Age:** Building of pre 1915 Historic interest **Building of Significance:** Yes	Aesthetic committee Remarks: Illegal brick wall in front, illegal burglar bars, roof needs repairing, paint peeling and color does not comply, illegal subdivision of veranda	Clipped rectangular barns (Early Victorian) Building of pre 1915 Historic interest	High; The building is in its original form. Some of the external decorative elements should be considered and restored.	Use as is, some regeneration and retrofit is needed to contribute a functional value to the building.	-Group value medium -Contributes to historic environment significance	
 09_OLD HOUSE	ERF 1444 **Type:** Clipped gabled rectangular barns (Early Victorian) **'Stoep':** Covered veranda Structural condition: Very Good / Good ■ / Average ■ / Poor / Very Poor	**Value:** Heritage value Functional value Technology value Significant Value **Age:** Building of national significance **Building of Significance:** Yes	Aesthetic committee Remarks: Illegal burglar guards, plaster falling off walls; windows frames and shutters broken and falling apart; roof rusted and needs repairing; down pipes and gutters falling apart; access door in lane of left side of house bricked up, chimney plaster falling off	Clipped gabled rectangular barns (Early Victorian) **Building of national significance**	High; The building appears in its original form, the building is degenerated and some of the plaster is falling off. Building is built from mud bricks, the pediment corners are wearing and some replacements should be considered. Some of the external decorative elements should be considered and restored.	Use as is, some regeneration and retrofit is needed to contribute a functional value to the building.	-Group value medium -Contributes to historic environment significance	

Considering conservation core of Graaff-Reinet, Market Square is excluded. Although the square is of significant value, the surrounding buildings need protection against alienation.

Heritage Management (National Heritage Resource Act) vs Regenerative thinking

Although the NHRA promotes that heritage and indigenous knowledge systems are protected, it is used for social and economic development (such as tourism). The Act for most cases in Graaff-Reinet protects a wide range of buildings spread throughout the town; thus two of the buildings in market square fall under the protection of the Act.

Regenerative thinking explores the restrictions in the Act, and it seeks opportunities to provide guidelines to regenerate and retrofit place.

The principles emphasise that the significant value should be retained through minimal change of the historical materials.

BURRA CHARTER

A rigorous investigation was undertaken of the different charters available and the Burra Charter was identified as a comparison with the National Heritage Resource Act. The Charter outlines the significance of place and how change to place should be handled.

Burra Charter vs Regenerative thinking

The Burra Charter is a national Charter for the conservation of cultural sites in Australia. The Charter defines standards for using cultural significance to manage and conserve cultural sites. The Charter provides sanction for change, but on the condition that the changes can be removed and/or the site restored to its original state.

Regenerative thinking explores the Burra Charter through allowing significance to determine the value of place and the evolution of place. The Charter is also applied in developing a sustainable strategy for the development of current vernacular.

ARCHITECTURAL ANALYSIS OF REGENERATIVE DESIGN THEORIES

The first architectural analysis: determining place (refer to Fig. 08.), consisted of an evaluation of the buildings within the precinct. The analysis determined each buildings variation, stylistic components, significant contribution of place and the significant elements of the individual buildings. The analysis highlighted that majority of the buildings contribute to local significance and only one contributed to national significance. The analysis also discovered that most of the buildings appear on the outside that the building is intact, but through site inspection the evidence is clear that these buildings, due to lack of management changes and/or alienation and/or altered internally and at the back of the facades.

Regenerative design identifies the key type and typological instances that should not be altered, which buildings need extensive repair and which elements should be retained within the precinct. The identified place shows that the precinct contains elements that contribute to local significance and that elements such as burglar bars, brick columns, advertising boards and tiles should be removed, for these elements does not contribute to the current vernacular. Within the investigated proposal, the contribution of new place should retain the character of the existing architectural elements through contributing to the vernacular interpretation of Karoo architecture.

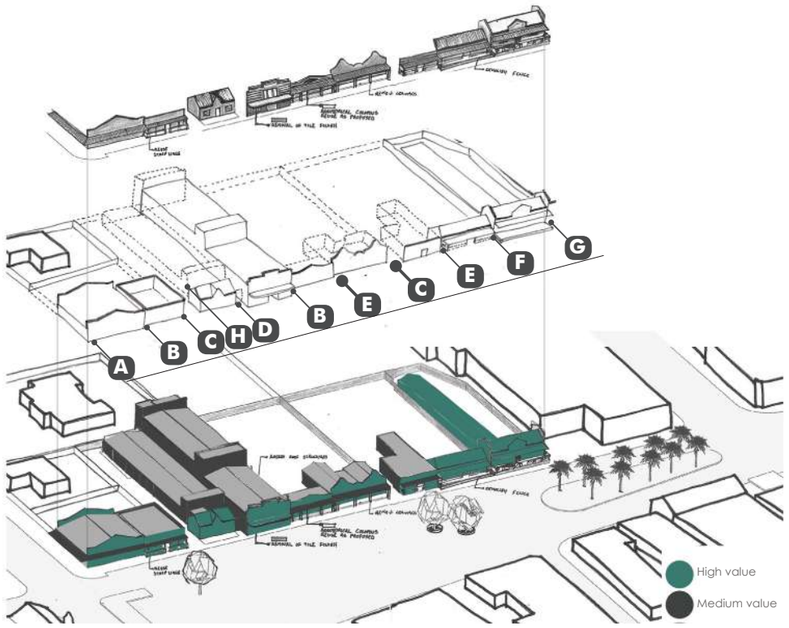
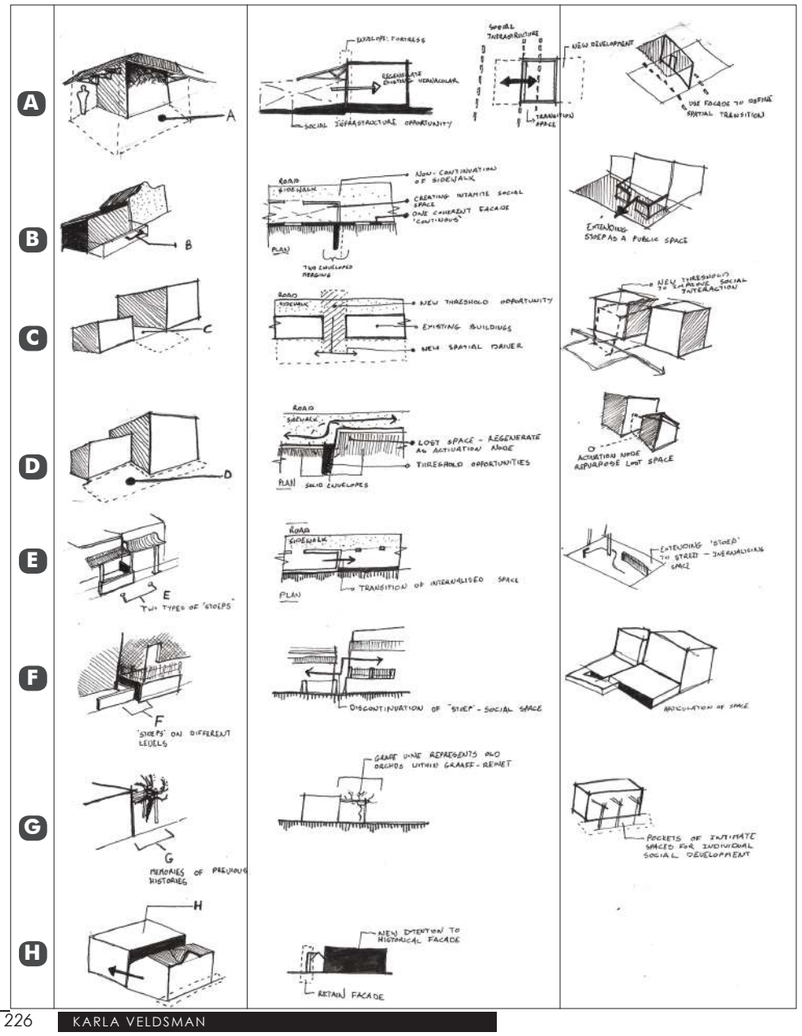


Fig. 09. Left top; Second architectural analysis, evolution of place (Author, 2019)
Fig. 10. Left below; Second architectural analysis, spatial condition(Author, 2019)



The second architectural analysis: evolution of place (refer to Fig. 09), assessed the buildings identified through analising the buildings as a whole. The buildings was assesed through analysing the urban fabrics as high, medium and low value. Through the assessment it was determined that the façades are of high value and little alienation has occurred within the façades. The back walls and roofs are not all in their original form, these elements has undergone unmonitored change, this allows the proposed intervention to consider whether to remove these elements completely or replace these element with new materials, indicating the change.

Regenerative design identified the analysis to be further investigated to determine the spatial conditions between the buildings. An analysis (refer to Fig. 10) determined the spatial relationship between the façades that are of high value. The investigation determined whether these façades should be retained in their original state and where new element could be introduced to improve the relationship between the edge of the building and the square.

The third architectural analysis: developmental process, explores an architectural response to the current vernacular model (refer to Fig. 11) to create a new model of spatial design. The new model suggest that the Stoep serves as the connecting axis between the identified layeres. The stoep consist

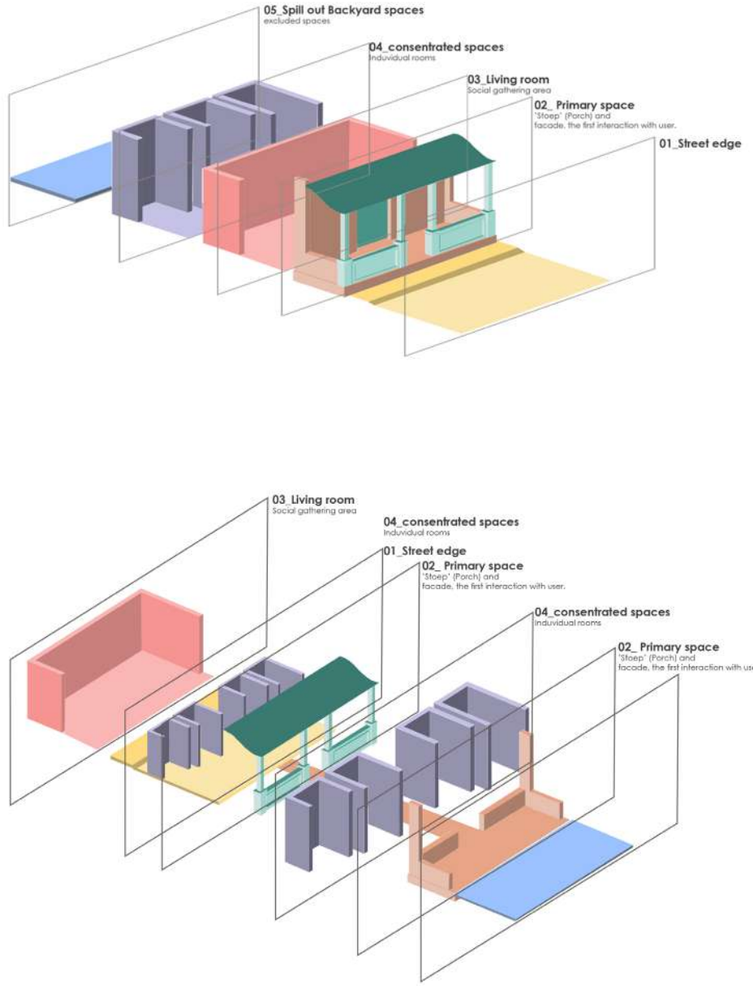
Fig. 11. Right top; Spatial typology (Author, 2019)
Fig. 12. Right below; New spatial typology (Author, 2019)

of characteristics such as sociability, viewpoint, interactive space and concentrated space. The Architectural device creates a condition in which the street condition of the vernacular is repeated within the new. The design of the proposed architecture respond to informants relate to the consideration of significant urban fabrics within the environment, as well as the site.

The New Spatial typology(refer to Fig. 12) restructures the existing spatial typology to consist of a more integrated model. The spatial model explores the mirroring of spaces, which allows these spaces to promote place and use.

CONCLUSION

In conclusion, Market square serves as a model that can be implemented on many other sites within Graaff-Reinet. Although there are many strategies and legislative practices in place to protect the historical urban landscape, the lived condition explores the users significant value to place. This document explores the value place contributes to heritage, heritage management and the lived condition through regenerative design. Retrofit and regeneration of vulnerable heritage sites within historical communities can contribute to the socio economic development of the community. Regenerative design explores reusing vulnerable heritage sites through revaluating the existing and retrofitting the proposed intervention to consider past and new vernacular technologies.



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ETHICAL CLEARANCE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

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/E11/2019

25 April 2019

Prof A Barker, Mr JN Prinsloo & Ms C Karusseit
Department Architecture
University of Pretoria
Pretoria
0028

Dear All

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

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

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

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

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

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

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

The Committee wishes you every success with the research project.

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