COMMUNITY AND ITS INFLUENCE ON ARCHITECTURE:

A proposed agriculture facility in Mariannhill, Kwazulu Natal.

By

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_____

Fathima Kadir 210 502 109

Date: _____

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DEDICATION

This dissertation is dedicated to my parents. Thank you for all your love and support. This would not have been possible without your constant encouragement and faith. I am truly grateful.

ABSTRACT

South Africa's political legacy of Apartheid has left the majority of its population living in urban and peri - urban communities characterized by extremely poor environmental conditions. Lack of infrastructure and resources as well as basic needs like food, water and shelter have left these communities destitute. As a survival response these communities engage in subsistence farming - with formal and informal production - as their primary source of income which is a skill that has been passed on for generations. However, these subsistence farmers are often afflicted by various social ills, which include poverty, hunger and poor remuneration (Mudhara 2010)

Starting from these assumptions, this dissertation focusses on research surrounding subsistence farming communities and their potential influence on architecture and vice versa in order to provide a design proposal for an integrated agricultural support and training facility for small and medium scale farmers within the peri-urban context of Mariannhill. This facility would provide a platform for farmers to gain access to greater opportunity and simultaneously provide support, training and skills development in order to aid in community empowerment. Research into peri-urban agriculture as a driver for community empowerment will aim to provide greater opportunities, establish household food security and be a means of inserting informal farm production into the formal market through the built environment. Peri - urban agriculture therefore provides many opportunities for community development and empowerment by contributing towards increasing household food security and reducing vulnerability by providing a direct or indirect income source. The activity of farming together as a community increases community resilience and becomes a driver for social development (Smith et al. 2005) .

The literature being analysed explores content that would provide a platform for enquiry towards ‘architecture for community’ through a conceptual and theoretical framework. The principles are developed through the exploration of community and its construct and Roger Trancik’s (1986) approaches to ‘urban spatial design’ through figure ground theory, place theory and linkage theory. Sub concepts being explored include cultural connection to place as well as ‘New Ruralism’ (Viviers et al. 2017), empowerment and regenerative architecture in order to provide a holistic design solution towards community empowerment.

These concepts and theories are studied in order to gain a greater understanding of community, its relationship to its context and to gain insight towards community empowerment through an architectural perspective. The research method includes primary data collection consisting of interviews conducted with subsistence farmers by means of a questionnaire and informal conversations. The three parameters under investigation are access to markets, access to information and access to technology. Data was collected, analysed and discussed. This helped develop the guiding concept of 'community support' which ultimately informed the spatial construct of the proposed agricultural facility. The study concludes with recommendations for 'architecture for community' as a proposed agricultural facility for the subsistence farming communities of Mariannhill.

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“A lot of architects who come into the business want to build monuments; they want to become star architects or rich planners. We have to re-educate them so they realize that they are agents of social change. We need to highlight that architecture is not just Frank Gehry and Renzo Piano…it’s not just about beautiful houses. It is all about everyday people’s lives.”

Amelia Gentleman “Architects aren't ready for an urbanized planet”

The New York Times

20-08-2007

CHAPTER 1

PART 1:

INTRODUCTION TO THE RESEARCH

INTRODUCTION TO THE RESEARCH

1.0 INTRODUCTION

South Africa's political legacy of Apartheid has left the majority of its population living in urban and peri - urban communities characterized by extremely poor environmental conditions. Lack of infrastructure and resources as well as basic needs like food, water and shelter have left these communities destitute. As a survival response these communities engage in small and medium scale farming as their primary source of income which is a skill that has been passed on for generations.

Peri - urban agriculture provides many opportunities for community development and empowerment by contributing towards increasing household food security and reducing vulnerability by providing a direct or indirect income source. The activity of farming together as a community increases community resilience and becomes a driver for social and community development (Smith et al. 2005).Despite the seemingly positive outlook for small and medium scale farmers in South Africa, these farmers are afflicted by various social ills which include poverty, hunger, poor remuneration and lack of access to market infrastructure, information and technology (Mudhara 2010).

Due to a lack of resources in terms of available infrastructure, training and a limited exposure to economic opportunity, those most active in and reliant on farming are not able to make their gardens economically viable (Smith et al. 2005). According to Mutero, J.et al (2015) statistical analysis revealed that access to markets, access to funding, access to information and access to technology not only influenced the economic success of small and medium scale farmers in the eThekwini metropolitan, but that all four variables were not within access. It was further revealed that although farmers had the basic tools to work with they still lacked access to suitable market information, irrigation, water storage facilities, transport and tractors (Mutero 2015). This study focusses on the context of Mariannhill and its surrounding farming communities and uses these parameters based on investigated community constraints (access to markets, information and technology) to determine the viability of subsistence farmers practicing in this area.

Access to relevant market information and market places proves to be of great need since as much 70% of the working population in African economies - as seen in the South African

context (Fig.1.1) - may depend directly on agricultural production. This indicates that agricultural markets are vital economic activities and their potential for linking the different parts of the economy is often overlooked (McGregor et al 2006).

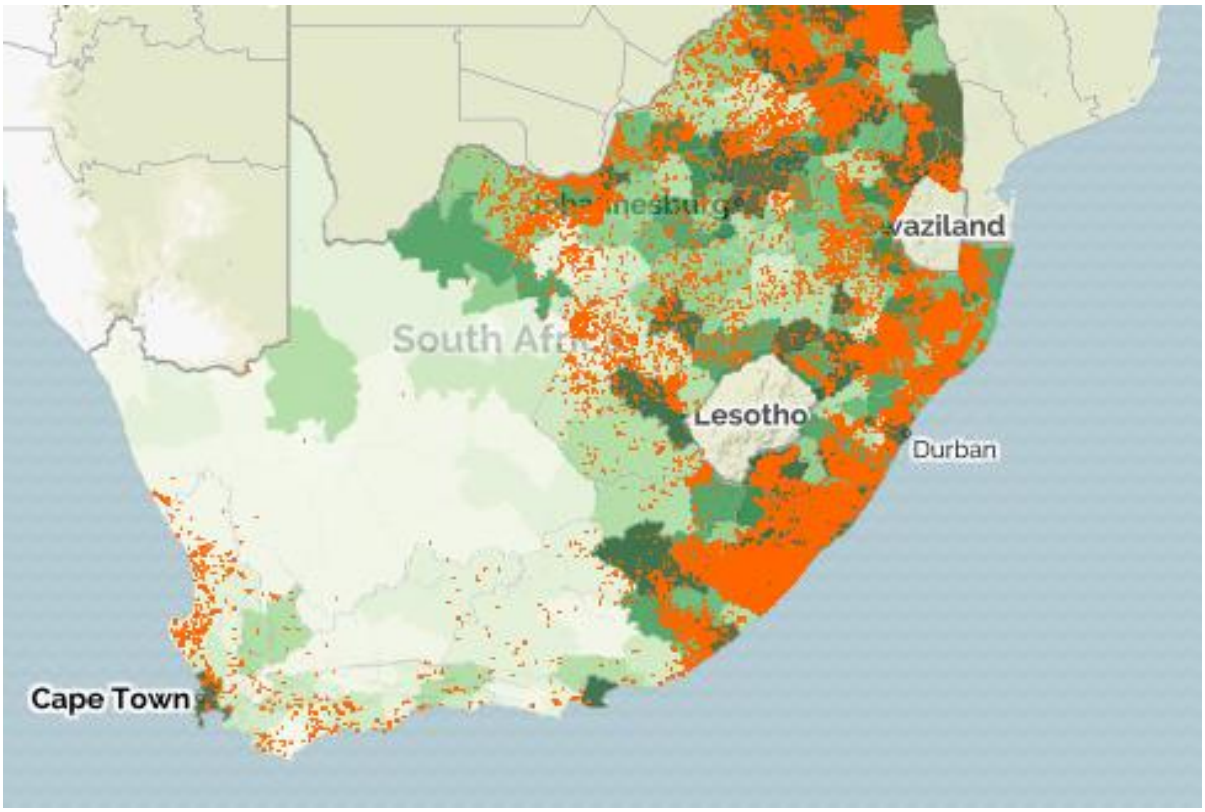

Figure 1.1: Agricultural zones in South Africa Image Source: www.mapable.co.za

Total households involved in Agriculture

Informal Agriculture

Research by Siddle and Swindell (1990) on the significance of market places in African society uncover that whilst international and western society develop highly sophisticated methods of formal exchange and accompany them with informal social activity, African societies tend to shape their elaborate informal exchange mechanisms by a minimum number of formal procedures (McGregor et al 2006). This signifies that there is an aspect of spontaneity in market development which suggests that it is a highly rational response to context specific circumstances.

In rural and peri – urban areas, access to infrastructure and market information offer an important means by which small and medium scale farmers can enhance their livelihood opportunities (Mutizwa – Mangiza, 1999). Following this, the researcher sees a need to

improve the understanding of subsistence and informal farming communities in South Africa and the mechanisms by which these producers and other food market participants overcome informational and infrastructural constraints related to their main source of income. This would allow for options for community development to be put forward that have a contextual grounding and relevance.

This chapter introduces the peri – urban study area of Mariannhill, the role of agriculture in its surrounding farming communities and the constraints these farmers and producers face. This dissertation follows the following discourse:

Chapter 1

Chapter one provides an introduction to the research and introduces the context and site of the study, the intended aims and objectives, the relevant concepts and theories that are used as a lens to understand community and its influence on architecture, and the overall methodology of the research.

Chapter 2

Chapter two elaborates on the conceptual and theoretical framework of this study. It is structured around achieving 'architecture for community' through the lens of answering the key research questions and objectives of this dissertation by understanding the aspects that define community, the significance pf 'place' in community and how community empowerment can be achieved through linkage systems and empowerment. These concepts and theories will further help to inform an architecture that will aim to promote community empowerment through the guiding concept of 'community support'.

Chapter 3

The conceptual and theoretical framework and principles developed in the literature review will be used to explore relevant precedent studies which will inform the architectural concept for the research and architectural intervention.

Chapter 4

Chapter four analyses Mariannhill as a case study where primary research by means of interviews and informal conversations with local community members are conducted as well

as a figure ground study of the surrounding community context. The guiding concept of ‘community support’ (infrastructural support, informational support and economic support) for the resulting architecture was formed through primary data gathered from formal and informal interviews and conversations with community members.

Chapter 5

Research findings and recommendations are presented in this chapter where the findings will identify the thoughts, skills and ideas of community members and professional architects, as well as information gathered through on site observations in Mariannhill and interviews done with local community members discussed in chapter four. Recommendations and key principles will be presented so that the Integrated Agricultural facility may be developed according to key design principles that encourage a holistic community architecture.

PART TWO

Part two consists of the pre-jury design report.

1.1 RESEARCH BACKGROUND

1.1.1 Mariannhill - Roots of Community, Seeds of Empowerment

The area of Mariannhill lies within the Pinetown Municipality and is a relatively thinly-developed, centrally-located, large land parcel within the EThekwini Municipality (Uytenbogaardt & Dewar 1992). An ongoing problem currently facing the area is that of disintegration and a lack of access and network connection for its subsistence farming communities in relation to the agricultural activities that are present in the area.

Developmentally, the area consists of the surrounding peri-urban informal farming communities of Tshelimnyama, Mpola, Mazakhele and Southcliff. A considerable amount of uncontrolled squatting occurs, which leads to 'war-lording' and the illegal sale of land (Uytenbogaardt & Dewar 1992). The pattern of this settlement is uncontrolled and availability of land for informal agriculture primarily informs settlement. The majority of people settling on the land have very limited means and as a result resort to subsistence farming to sustain their livelihoods.

Mariannhill is also situated centrally in terms of surrounding agricultural communities in KZN which allows for a catalytic developmental proposal allowing Mariannhill to become a centre for connection or a linking peri urban interface in order to create a network for agricultural exchange and market access.

Figure 1.2 indicates the proximity of available produce markets to the relevant agricultural communities. These markets are situated along the coast and benefit the core urban communities. The Shongweni market is only open on a Saturday morning between 6:30 am and 11:30 AM and hosts mostly established business stalls. **There is an apparent gap in market availability for peri - urban small scale farmers in the interior with accessibility constraints.**

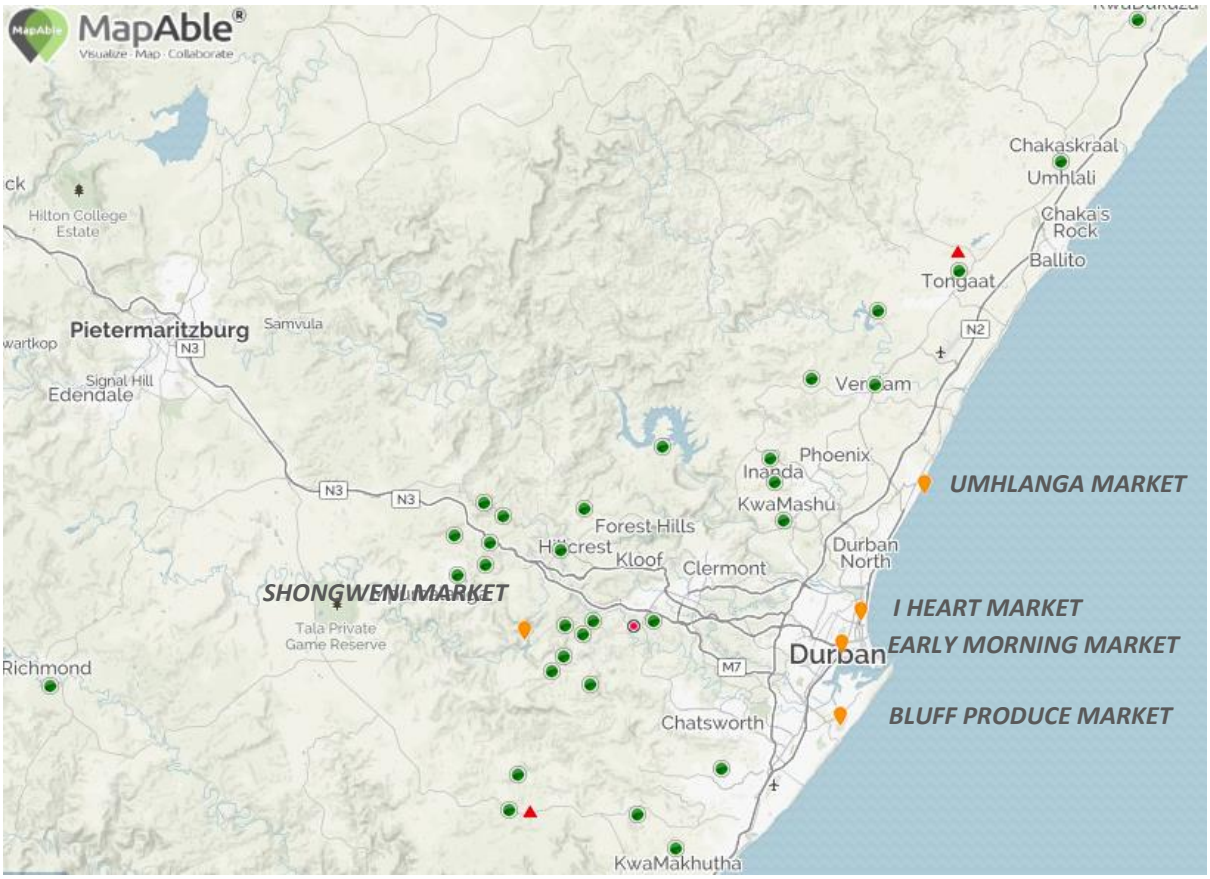

Figure 1.2: Agricultural zones in South Africa and Market proximity Image Source: www.mapable.co.za

- Non Operational Agri- Hub
- Subsistence Farming Community
- Market
- Proposed Site at Mariannhill

In a study entitled "*The survival of peri-urban agrarian livelihoods in transitioning spaces of Kwazulu Natal, South Africa"* (De Silva 2011), it was established that small-scale farmers, accessing larger consumer markets outside of the respective farming communities was challenging due to a number of barriers. These challenges included a lack of transportation to carry goods from the field to the markets, the cost of public transportation and a lack of market related knowledge (De Silva 2011). The subsistence farming communities of Mariannhill and its surrounding areas have many perceivable constraints which include not producing a sufficient amount of produce in order to be considered in the larger commercial markets. It was also found that amongst small scale subsistence farmers the ability to meet the timing of orders made by large commercial buyers could not be met and furthermore, farmers did not have adequate access to market information in order to competitively price their goods to attract buyers from larger markets.

In general, it was concluded that these communities did not have enough markets or access to markets to sell their produce to and subsequent to that, it becomes especially hard to successfully run a business in these peri – urban transitioning spaces.

1.1.2 Political impasse

South Africa's history of a skewed agriculture development policy has led to many challenges affecting the current farming sector. A recent shuffle in parliamentary designation has led to the AgriHub initiative – a governmental program to assist small scale farmers – being side-lined and negatively affected in terms of development and progression. A visit to the Umbumbulu AgriHub by the researcher in May 2017 revealed an abandoned site and minimal engagement with surrounding farmers. An interview with Ms. Paula Osborn from the Fair Food Company which is based at the Edamame research farm in Mariannhill (where this study is situated) – confirmed the derelict state of the Umbumbulu Agrihub and the Hambanathi Agro-ecology hub in Tongaat.

These revelations beg to question the level of engagement and commitment from the government in terms of assistance and development of small scale farmers and reveal a significant gap in infrastructure that the built environment can fulfil in terms of community development opportunities. Through the guiding concept of 'community support' these

constraints can be addressed through access to infrastructure, information and economic support in an aim to achieve 'architecture for community'.

1.1.3 Current situation

The Edamame Development Programme is a registered Public Benefit Organisation (PBO) established primarily to develop opportunities for emerging farmers & disadvantaged communities with initial seed capital from Catholic funding bodies (Coughlan 2016). Given the political situation, typical challenges faced on the ground include that of 'means of production' (incl. lack of specialized and high care spatial construct and equipment), lower group collective in terms of 'commercial skills' for greater production of niche crops and ventures into other crop production, capacity of the given built environment to successfully utilize space and quality farming experience. A major challenge faced is market access and poor planning layout which generally yields lower levels of economic output.

1.1.4 Motivational response for research

The food markets in South Africa are at present controlled by four retail chains namely, Shoprite-Checkers, PicknPay, SPAR and Woolworths (Chikazunga and Paradza 2012). As a result of this control small and medium scale farmers are side-lined by the retail chains as they fail to meet the demands, as well as the high transaction and quality control costs involved in administration (Chikazunga and Paradza 2012). This leads to these small and medium scale farmers selling their produce at their farm gates or on the roadside where their returns are low. Van Schalkwyk et al. (2012) reports that small and medium scale farmers also found that the transport costs to access markets outside their communities and within the city were extremely high.

Using architecture to provide the infrastructure for opportunity, these communities can reap many benefits in terms of greater exposure to positive prospects, market related information and skills development. An integrated intervention would allow farmers to get access to resources which would in turn allow for surplus produce that could be sold at the market and make farming a viable economic opportunity. A successful scheme would provide a platform for these communities to strengthen their identity, market agriculture as a source of food security and allow for social integration between the rich and the poor. Thus, this study aims to understand the nuances of farming communities and the constraints they face in order to

provide a design proposal for an integrated agricultural facility for small and medium scale farmers within the peri-urban context of Mariannhill. This facility would provide a platform for surrounding smallholder farmers to gain access to greater economic opportunity and simultaneously provide support, training and skills development in order to aid in community development.

1.2 DEFINING THE PROBLEM: AIMS AND OBJECTIVES

1.2.1 Definition of problem

Peri - urban small and medium scale farmers within the surrounding context of Mariannhill are faced with many social ills as a result of the segregational effects of apartheid. These issues include poverty, decreased food security and a lack of opportunity in terms of exposure to market trade and the greater opportunities that market access would provide.

In order to survive, subsistence agriculture has become their main source of food and income however due to a lack of opportunity and exposure they are not able to able to make their gardens and production output economically viable (Smith, P.M 2005). The primary problem of this study is of how architecture can be presented in order to be used as a means to empower a community by bringing people together and establishing community 'place', enhance farming communities' culture and identity, creating a stable working environment for many people within the informal farming sector and ultimately better lives for generations to come. The following diagram (Fig 1.3) is a representation of data gathered through primary data collection that informed the problem statement of this dissertation.

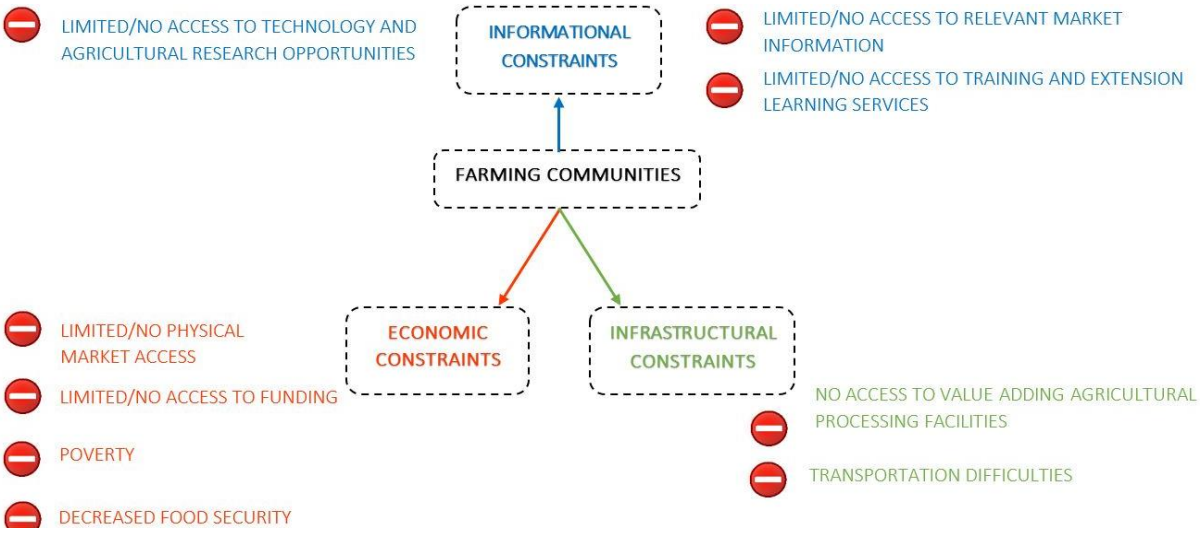

Fig 1.3 Developing the Problem Statement. Image by Author 2018

1.2.2 Problem statement

The problem statement of this research is thus:

Peri urban farming communities within the surrounding context of Mariannhill lack community development necessities in terms of market access, access to funding, access to market information and access to technology which directly influences the economic viability of the small and medium scale farmers in these areas. Lack of infrastructure to encourage exchange limits community economic empowerment and growth.

1.2.3 Aim of research

The aim of this study is to explore and understand the peri-urban agricultural communities within the surrounding context of Mariannhill, the developmental constraints they are afflicted with and how architectural intervention can be presented as a facilitator for community empowerment. It will provide a design proposal for an integrated agricultural support and training facility for small and medium scale farmers within the peri-urban context of Mariannhill. Using the guiding concept of 'community support' this facility would provide a platform for small and medium scale farmers to gain access to greater opportunity from the surrounding context and simultaneously provide support, training and skills development in order to aid in community empowerment and provide 'architecture for community'.

1.2.4 Objectives

Specifically, the intended objectives of the research follow:

1. To understand the constraints faced by small and medium informal farming communities and use these constraints to develop design drivers for a community agriculture facility.
2. To explore the benefits of peri-urban agriculture and how it can be used as a driver for community empowerment.
3. To aid in community empowerment and revitalisation using architecture as infrastructure

1.3 THE SCOPE

1.3.1 Delimitation of the research problem

In order to define the scope of the research problem, the argument will be limited to the following points discussed below:

To limit the scope of this study, the research conducted primarily deals with better understanding the socio economic issues faced by subsistence farmers in the area of Mariannhill, and how architecture can assist in providing infrastructure for opportunity and in turn increase food security and support in the area.

The researcher intends to:

- Explore a part within the peri - urban sector dealing with the marginalised or survivalist informal farming community. This sector contains activities such as: street hawking, farming and roadside vending. Not as much emphasis has been placed on the workers within the informal sector sub-contracted to the formal sector/economy.
- Define the construct of the human condition within a specific culture and community.
- Develop a set of criteria with which to reinterpret community empowerment through architecture.
- Where it has been acknowledged that the apartheid regime has had a major impact on the spatial and social construct of peri urban areas within South Arica and the development (or lack thereof) of the informal economy. Apartheid in its entirety will not be explored but only the impacts of the regime on peri urban farming and the informal sector respectively.

1.3.2 Definition of terms

Community

According to (Matarrita-cascante et al. 2012) a community can be defined as an area that consists of a group or groups of people that reside within a specific geographic region; the resources such people need to live and prosper; and the processes in which such individuals interact with each other in order to share expertise to meet their needs and wants.

Built Environment

Buildings or structures made by people, as opposed to natural features, including architecture that is engineered for the purpose of human benefit, such as market places.

Resilience

The ability of a system to move through periods of intermittent transformation and absorb or recover from disturbances without losing its functional identity.

Peri Urban

A transitional space on the edge of a more formal city.

Informal Settlement

Usually consisting of self-built homes in clusters

Culture

Culture can be described as the activities in subjects such as art and literature. It is passed down from generation to generation as logic to which people live and the manner in which they do things. Culture is in evolution and can be affected by politics, religion and economics.

Identity

Identity is the individual's expression of character and opinion. It can be a reflection of one's belief and cultural heritage

1.3.3 Stating the assumptions

It is assumed that the built environment in the Mariannhill area can play a role in the empowerment and development of farming communities. If addressed it can add great value in understanding disadvantaged communities and their potential to thrive with improved access to opportunity and the agricultural market sector. Assumptions are made that the farming community of Mariannhill and its surrounds feel disadvantaged and that the built environment can benefit them in promoting access through market infrastructure, teaching and learning about new farming technology and providing training and skills development so that there may be more resilient farming community generations in the future.

1.3.4 Key question

How can architecture assist in providing opportunities for peri-urban farming communities facing development constraints?

1.3.5 Sub questions

1. What socio economic issues do peri urban farmers face that hinder production and economic viability?
2. How can the formalisation of informal (subsistence) farming to surplus farming lead to community empowerment?
3. How can architecture be presented in order to aid in community empowerment and revitalisation?

1.4 CONCEPTS AND THEORIES

The developing world has seen an exponential growth rate in the 21st century however, many of the theories of how cities function remain rooted in the developed world. There is a need to look at a conceptual and theoretical framework that allows for context specific enquiry in a South African setting. The conceptual and theoretical framework in the form of a literature review explores content that would provide a platform for exploration towards 'architecture for community' with the guiding concept of 'community support'. It would be broadly geared toward answering the key questions and objectives of this study by understanding the nuances and dynamics of community, the relationship between the community and its surrounding context and how community empowerment through agriculture can be achieved using architecture as infrastructure using Mariannhill as a connective peri-urban interface.

Roger Tranick in *'Finding Lost Space – Theories of Urban Design'* (1986) discussed the three Theories of Urban Spatial Design; figure-ground theory; linkage theory; and place theory. These three theories vary significantly from each other, "*but taken together can provide us with potential strategies for integrated urban design*" (Trancik, 1986). As Mariannhill and its surrounding farming communities form part of a peri-urban belt, the exploration of these theories will begin to allow for an integrated context driven approach to architecture for the community.

Sub concepts being explored include culture and identity and its connection to place and community as well as regenerative architecture and empowerment as an aspect of linkage theory in order to develop economic and food security through agriculture. New Ruralism

(Viviers J et al, 2017) will be explored in order to provide a lens for understanding the architectural perspective in relation to establishing networks and community development opportunity. This conceptual and theoretical framework delivers a platform for enquiry towards the architectural design of an agricultural support and training facility for Mariannhill, Kwa Zulu Natal that stems from a contextual approach with a focus on the communities it will serve. The following diagram (Fig 1.4) indicates the connection between the concepts and theories.

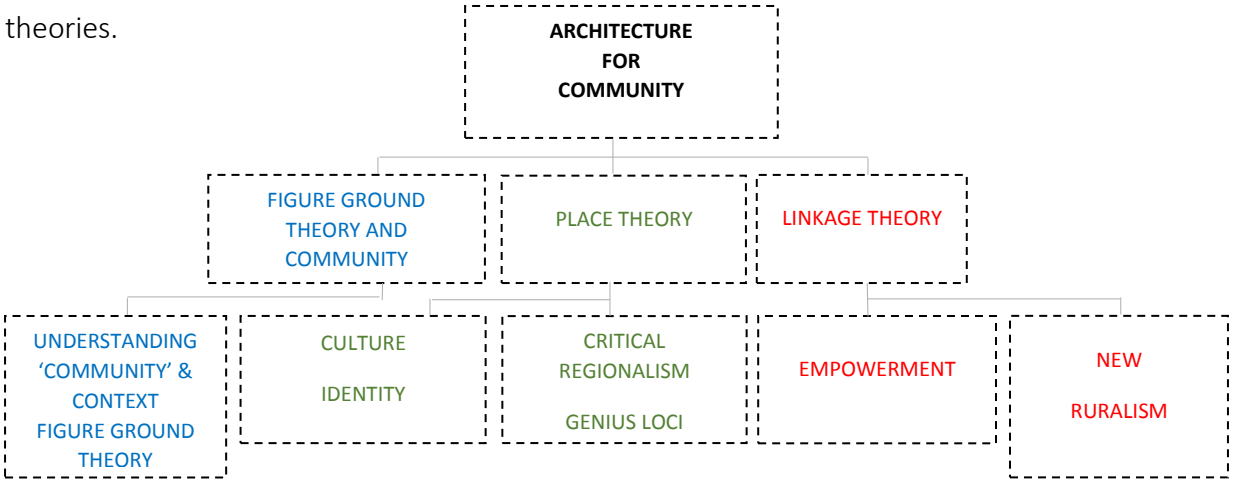

Figure 1.4: A diagram linking the concepts and theories (illustration by author; 2018)

1.4.1 Figure Ground Theory and Community

According to Matarrita-cascante et al (2012) a community can be defined "*as a locality comprised by people residing in a geographical area; the resources such people require to subsist and progress; and the processes in which such individuals engage to distribute and exchange such resources to fulfil local needs and wants*". This indicates that there are numerous aspects that have an influence on the construct of a community. In order to develop a design proposal to support and benefit the community, extensive analysis of the people and their surrounding context is needed. The figure ground theory thus provides an avenue into looking at community through a contextual and social lens. The figure-ground theory is founded on the study of the relationship between solid mass (buildings) and voids (open ground) (Trancik, 1986). This theory is used to distinguish the structure of the surrounding context by analysing the hierarchy of different spaces and scales in the environment. This is a noteworthy approach in order to identify patterns and problems within the current fabric and spatial constraints and aspects that affect the community.

Figure ground theory allows for the identification of gaps or barriers to spatial continuity as a means to situate proposed implementations and architectural interventions. In doing such, neglected peri urban space can be transformed into positive 'place' where it facilitates discourse and interaction among members of the community. In the context of this study, the figure ground theory will be used as a lens to understand the spatial context of the peri urban interface where informal subsistence farming occurs, as well as how the context influences the construct of the community. Understanding the aspects of community through figure ground and social research is thus used to explore livelihood approaches of small-scale, peri-urban farmers living in the farming community of Mariannhill and its surrounds in KZN in line with the first key question and objective of this disstertation. The evidence suggests that significant aspects affecting community construct include its context and surrounding urban fabric, its innate culture, traditions and orientation and its connection to surrounding communities and urban cores.

1.4.2 Place theory

The theory of place bound architecture is explored in order to view the built environment as a response to the cultural determination of place and its community. Place theory will be explored in order to establish the link between the built environment, community and agriculture and the way in which they all interact in line with the second key question and objective of this dissertation. As defined by Rapoport (1982) culture encompasses two dimensions: one is based on world views and values that is manifested in a person's lifestyle, and the other is rooted in social variables where family roles and kinship is the main concern. Culture in the context of this study alludes to the response of communities when faced with a set of challenges. This correlates to the social structure of communities and how their identity is developed around common values and circumstances that shape their relationships with each other and the ways in which they subsist.

In essence, place theory within 'spatial design' is "*understanding the cultural and human characteristics of physical space*" (Trancik, 1986). If space is to be considered as a void bounded by an urban fabric with the potential to link people and spaces, then 'space' becomes 'place' when it is given a contextual meaning derived from cultural or regional content (Trancik, 1986).Therefore place and culture aim to provide a lens to understand the

relationship between community and its connection to place in order to provide public spaces and / or infrastructure with respect to people's experience.

Food is something that every city and town has the resources to produce locally, therefore agricultural markets are an ideal intervention for community development (Davies S, 2014). Therefore the literature review will also expand on the relationship between marketplaces and community development. Kenneth Frampton's (1993) 'critical regionalism' as a grounding complementary investigation will be explored as a more responsive connection to community development through the built environment in a South African context. 'Genius Loci' most notably by the theorist Christian Norberg-Schulz (1980), makes a necessary cultural connection to place in this research, where it will be explored so that the communities, moods, activities and materials are recognised.

1.4.3 Linkage theory

The Linkage theory will be explored in order to provide a lens for understanding the architectural perspective in relation to establishing networks and community development opportunity through subsistence and informality essentially establishing Mariannhill as a connective landscape. This theory explores the context of the urban fabric and presents elements as 'lines' that aim to form a connection between all forms of layers and forms of activity within the context of the city. The principle revolves around the design of a spatial datum which encompasses *"flow of movement, and organisational axis, or a building edge"* (Trancik, 1986). In the peri urban interface of Mariannhill, the application of this approach to design will allow for a system of interconnectedness and collaboration that aims to address a community's multifaceted constraints that can be established from an architectural standpoint to support the idea of Mariannhill as a catalytic developmental focal point and a peri-urban connective interface.

The distinctiveness of the Southern African landscape, characteristically being rural and peri urban, necessitated a rural accentuation on multifunctionality in the peri urban interface. Rural Urban Interdependency and New Ruralism will be discussed to present a new design philosophy whereby "farming, playing and living" is achieved through the collective application of new urbanism (Viviers J et al, 2017).

The social theory of empowerment and regenerative architecture introduces the philosophical concept of inclusivity. In the context of this study this revolves around the notion of revitalising and enriching a community by harnessing and developing existing skills. Kanter (1993) notes that "*the theory of empowerment is promoted in work environments that provide employees with access to information, resources, support, and the opportunity to learn and develop*". With relation to 'architecture for community' it is important to look at the psychological aspect of empowerment which includes feelings of capability, independence, job meaningfulness, and an ability to have an influence. When people start taking charge of their lives and the decisions that affect them they automatically feel a sense of empowerment. Through the lens of empowerment and regenerative architecture this study will also introduce architecture as infrastructure both physically through the built environment and as a facilitator for empowerment of a community by offering greater access to opportunity through linkage systems.

The forgoing concepts and theories together form a conceptual and theoretical framework from which principles will be extrapolated and applied to the design of an agricultural support and training facility for Mariannhill. The following diagram (Fig 1.5) presents the development of the guiding concept of 'community support' that will be discussed further in the conceptual and theoretical framework.

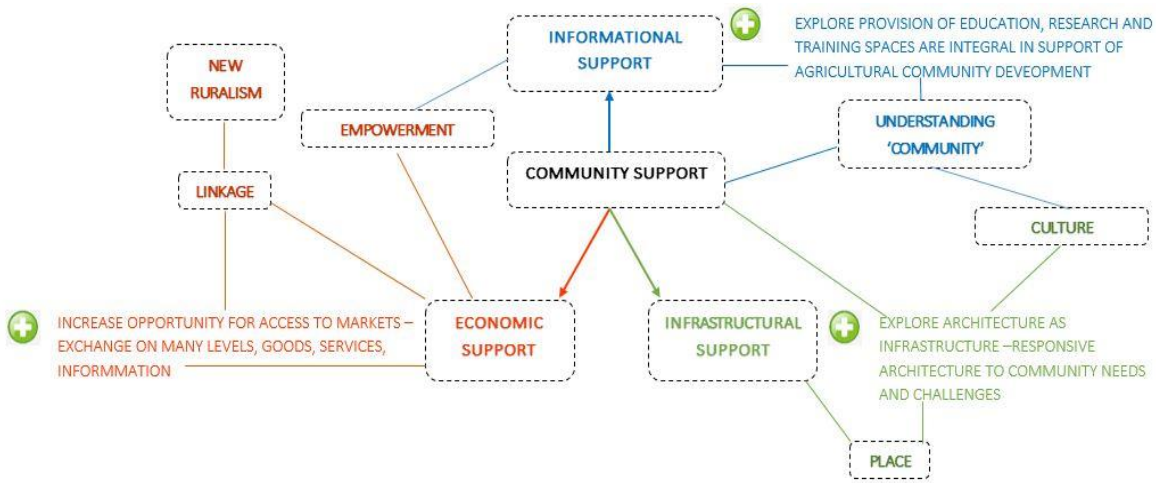

Fig 1.5 Mapping of guiding concept 'Community Support' Image Source: By Author

Each approach bears its own significance, but it is important to draw from all in a holistic manner by understanding community in its context, responding to human needs and attachment to place and establishing the links between parts and unique elements of the

particular environment. The resulting concept of 'community support' for architecture is developed through the theoretical framework based on community needs and constraints in the aim to achieve 'architecture for community'.

1.5 RESEARCH METHODS AND MATERIALS

Approach

The research is based on a qualitative and quantitative method of investigation, as it deals with the human experience in the built environment and analysation of raw data by the means of primary and secondary data gathering. In order to design a proposal for a community it is imperative that ground research is done to get the views and opinions of members of the immediate community to allow for authenticity and inclusivity. Interviews with qualified professional architects who have analysed or designed markets such as professor and architect Rodney Harbour and people from community organizations for farmers such as Ms. Paula Osborn, Partner Farmer Manager at the Fair Food Company will be conducted. Data will also be gathered by means of observation in and around the chosen area of Mariannhill, figure ground research and in the form of questionnaires to professionals and the community. The parameters for investigation are access to markets, information and technology. The data will be analysed in order to inform the driving concept behind the design of an integrated training facility in the area of Mariannhill, South Africa.

Primary Data

Interviews will be carried out with key personnel, organizations and architects, through personal interviews, observation and questionnaires. Material gathered in terms of the primary resources will be gathered by means of an investigation into the "daily life" of peri-urban farmers as shall be delineated below. As stipulated the population chosen for this study includes small and medium scale farmers. The samples thus selected, as explored through the following primary research and analysis is that of 30 informal farmers in the peri-urban areas of Mariannhill and the surrounding Tshelimnyama and Mpola communities, adopting various strategies of agriculture to develop and support their livelihoods. By understanding the broader context of accessibility, social integration and peri-urban agriculture, this research will facilitate in developing a design proposal for the selected area of Mariannhill and its surrounding community.

Secondary Data

Literature review

Literature will be reviewed as part of the conceptual and theoretical framework in order to draw on relevant concepts and theories in response to the research question. Analysis of theory via the literature review will be aimed at finding answers to the key questions and objectives regarding agriculture infrastructure as a facilitator for community empowerment.

Case study

The case study of Mariannhill will be analysed in understanding the needs of the community and how architecture can respond to these needs. It will also provide a perspective of the surrounding issues facing agriculture. The study will be conducted by observation and discussions with key personnel from respected organizations. The theories of figure ground, place and linkage as discussed in the conceptual and theoretical framework will be used as a lens in order to understand and analyse the communities and context of Mariannhill and provide insight towards answering the key questions and achieving the key objectives of this dissertation.

Document searches

Relevant Government Guidelines on issues for designing for agriculture facilities as well as policies related to agriculture communities in Kwazulu-Natal will be observed. The following material will also be looked at:

- Books by various authors
- Journal articles by various authors
- Reports, documents and academic papers
- Television Broadcasts
- World Wide Web

Data analysis and observations

All data collected will be analysed by studying the collection of field notes and observations, informal and formal conversations, and recordings of personal experiences within the context of the study area. These will then be structured in order to understand the dynamics of the

context and draw common and distinct observations and patterns in order to lead toward achieving the study aims and objectives.

1.6 CONCLUSION

The chapter highlighted the necessity for need-based designed architecture instead of architecture just being perceived as an object. Architectural design should engage with the 'community as the client' with an approach that is bottom-up and not top-down, so that the beneficiaries are those that require it most.

It was established that the peri-urban farming community of Mariannhill and its surrounds has suffered from developmental constraints particularly due to Apartheid and its segregational implications. Subsequently, this has led to disadvantaged farming communities that struggle to afford access to markets, and instead rely on small scale subsistence farming that provide little economic yield.

The parameters and guidelines by means of conceptual and theoretical framework and research methodology have been set, along which the research will take place. The particular theoretical and conceptual framework has been established in chapter one and will be carried out in more detail in chapter two which will undertake secondary research by means of a literature review. Thereafter chapter three and chapter four will explore relevant precedent studies and the Mariannhill area focused case study respectively. After which the findings of the research will be presented along with the recommendations of key principles upon which the integrated agricultural facility will be conceived in order to encourage architecture for the community.

CHAPTER 2

CONCEPTUAL AND THEORETICAL FRAMEWORK

CHAPTER: 2 CONCEPTUAL AND THEORETICAL FRAMEWORK

2.0 INTRODUCTION

The concept of 'community' is one that is born out of social sciences and therefore developing theories for architecture that represent it, is only possible via an interdisciplinary approach. This chapter sets out to explore a conceptual and theoretical framework that aims to answer the key questions and objectives of this dissertation by understanding 'community' and its relationship to the built environment and vice versa.

Community influenced architecture is based on a sensitive approach to people and their given context. Therefore, design for such should be explored in a process that considers the surrounding environment, understands the human connection to place and cultural identity and establishes and promotes a deliberate intervention linking the subject community to greater opportunity. Roger Trancik (1986) established three approaches to the architectural design of urban development which when holistically applied adheres to these sentiments. These approaches are the theories of:

1. The figure-ground theory – understanding the context

2. The place theory – understanding the cultural connection of community to place

3. The linkage theory – establishing physical and metaphysical links to opportunity and empowerment

This has been translated into a conceptual and theoretical framework which will provide the platform for enquiry towards 'architecture for community' and the relationship and link between community, subsistence agriculture, and the built environment. In order for architecture to be relevant to the subject community it needs to respond to the aspects and constraints that affect the community, thus the concept of 'community support' born from these constraints is the guiding concept within this study. This chapter sets out to develop the conceptual and theoretical framework based on the dissertations primary research questions and objectives in order to generate a valuable and solid line of argument towards extrapolating design principles for community influenced architecture.

The following diagram (Fig 2.1) outlines the objectives going to be accomplished in this chapter along with the questions that have been posed in order to achieve these objectives. This is geared towards answering the key question: "*How can architecture assist in providing opportunities for peri-urban farming communities facing development constraints?*" The chapter will conclude by outlining the principles extrapolated from the conceptual and theoretical literature review in order to achieve 'Architecture for Community'.

Fig: 2.1 Image outlining the development of the conceptual and theoretical framework - Source: By Author 2018

2.1 FIGURE GROUND THEORY AND COMMUNITY

Fig 2.2: The relationship between community and agriculture is strong and needs to be nurtured.

Image Source: www.citizen.co.za Date accessed: 20 March 2018

"Community is much more than belonging to something; it's about doing something together that makes belonging matter."

– Brian Solis, 2014

This section sets out to explore and understand the different aspects that constitute 'community' and the constraints faced by subsistence farmers in Mariannhill. It begins by presenting aspects that define community and play an influence in settlement and livelihood patterns. Communities are a group of individuals that connect and establish relationships with each other in a variety of roles. This is not only integral in terms of human contact and personal growth, it enables individuals to benefit others and the community by contributing a wider range of talents and abilities. The result is the interaction of various elements of the community creating a system of social and physical collaboration. The concept of 'community' is imbedded in the verb of interaction. In order to understand 'community', it is necessary that we understand how the components interrelate and communicate with each other and how individuals interact with the physical world and built environment. It is sometimes necessary to examine an entire community in its context in order to understand the people within that community. Similarly, we often gain new understandings into local issues and practices such as peri-urban agriculture, when we recognize the connection and impact on the larger context.

There is an inextricable link between the environment, society, and economic systems together with humans and all of the other species with whom we share the planet. The figure ground theory allows for the in depth analysis of the given context by showcasing the relationship between 'solids' and 'voids' of community space. It can be surmised that the figure ground theory can be instrumental in understanding the context of the Mariannhill subsistence farming communities and shed insight in identifying patterns and problems within the communities' peri – urban fabric. This allows for connections to be drawn showcasing the dynamic, interdependent relationship between architecture and community where active and passive roles are shared.

2.1.1 Understanding 'community'

The word 'community' to most people brings about some indication of belonging which is associated with acceptance and is positively regarded. A 'community' can thus be defined as any group sharing a common bond (Ife J et al, 2006). These bonds include all types of connections that range between social or academic connections and interactions, geographic attachment and cultural and economic facets. A community is a complex system that is more

than the sum of its parts. In fact, communities exhibit characteristics and behaviours that cannot be predicted by studying standalone parts. Furthermore, each community forms part of a larger 'whole' that influences and is influenced by said community. The behaviour of any community can only be understood by looking at both the community as a whole and its surrounding context (Ife J et al, 2006). Successfully building sustainable communities requires a multidisciplinary responsive approach based on a broad understanding of the communities involved – their complexity and the interdependence of their many components.

Thompson et al states that "*a healthy community has well-connected, interdependent sectors that share responsibility for recognizing and resolving problems and enhancing its well-being. Successfully addressing a community's complex problems requires integration, collaboration, and coordination of resources from all parts*" (Thompson et al., 1990).This speaks of community as an organisation that is in a constant process of energy exchange.

According to this approach, the community can be viewed as a system comprised of statuses and roles, and groups and institutions that are closely articulated with one another (Poplin, 1979). Therefore it is impossible to view community as an isolated component. Instead 'community' must be understood as a complex system of interaction between physical, social, cultural and psychological elements (Fig. 2.3).

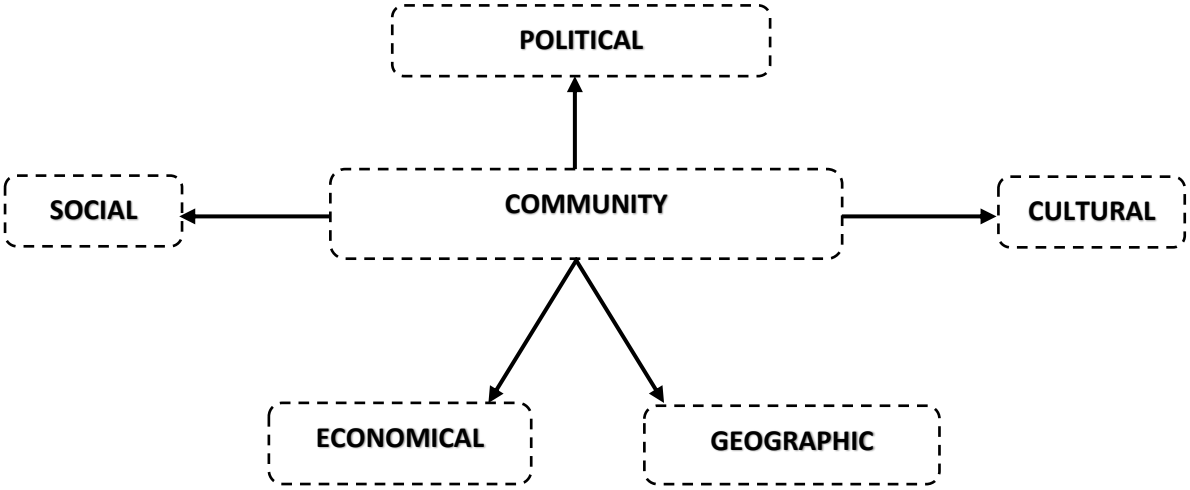

Fig: 2.3 Image showing interconnected aspects of community - Source: By Author

The human population works and stays alive by integrating both living and non-living components of the ecosystem into a system of social action. This is understood to mean that the people try to obtain maximum energy (in the context of this study energy refers to economic gain) or positive output from living and non-living components. This systemic perspective presents community as a complex hierarchical order of sub-systems in interaction (Ferrinho, H. 1980). This hierarchy consists of various levels of organization which result in 'community life' as a product of the interaction of all of these levels. However entropy (disorder) can develop in a system of community when there is an import of free energy and a lack of organization and communication in development efforts (Ferrinho, H. 1980).

The input of energy in this context can refer to a technical nature, a cultural nature, a demographic nature, and so on. If these interventions are not adequately integrated into the system there is a risk of damage or destruction. This suggests that without the proper research, contextual, demographic and community analysis, an external intervention might not necessarily be successful if the context and community system is not intimately understood. Therefore in order for a community to develop and progress there is not only an increasing need for 'energy' but also the capacity to promote the complexity of the organization so as to integrate the energy or intervention at an inception level (Ferrinho, H. 1980).

As established in chapter one, Mariannhill faces many developmental and infrastructural constraints that hinder production and their livelihoods. The peri urban communities practicing informal or subsistence agriculture find it increasingly difficult to become a part of mainstream agriculture. There are a number of constraints that contribute to this problem and this results in the subsistence agricultural sector not operating at full potential (Phogole, M., 2010). These factors include, lack of access to market infrastructure, a lack of transportation to carry goods from the field to the markets, the cost of public transportation and a lack of market related knowledge. These constraints are largely responsible for creating the extreme dualism and inequality in agriculture between the poor and the rich sectors. Due to this dualism, the policy making and service delivery sectors have adopted this polarised view of 'us' and 'them' that forces agriculture to be split into two facets, —one for 'commercial farmers' and one for so-called 'emerging farmers'. Therefore a common vision

of a unified 'agricultural community' is missing which results in little sense of togetherness and belonging (Phogole, M., 2010).

This leads to the need for adjustment assistance in order to develop sustainable and resilient farming communities. According to the Organisation for Economic Co-operation and Development (OECD, 2006) there are two aspects that prove essential not only in regard to farm technologies, but also in marketing and financial management; these two aspects are: training and access to information. There is a host of deliverables that need to be achieved in order to reach the sectors full potential. Mentoring, financial services, market information and infrastructure, input supply networks, transportation and storage infrastructure need to be developed so that communities may develop and prosper with subsistence agriculture (OECD, 2006).

Given the legacy of segregation and discrimination, the challenge presented is to unlock the talents and creative cultural identity of the community and improve their participation in all aspects of the sector and rid it once and for all of the many entry barriers rooted in its historical dualism. The challenge remains to identify programmes to encourage new entrants of all backgrounds: black and white; young and old; men and women; small and medium-scale enterprises, to enter the agricultural sector. Finally, it is important to find ways to ensure that all these different constituents of the sector genuinely feel and see themselves as belonging to a single entity or 'community'.

2.1.2 The Figure Ground Theory

The figure ground theory in the context of this study is used to analyse and understand the peri-urban landscape in order to establish principles for architectural design that is site and community specific. The analysis of the physical context through the figure ground theory as well as the character of subsistence farming communities through place and linkage will help to provide a holistic picture of the construct of the community within its context. The figure-ground theory is based on the study of solid (buildings) versus void (ground). The objective in essence is to establish a hierarchy of spaces ranging in scales which form the urban fabric (Trancik, 1986).

In the context of this study this would suggest allowing for not only an analysis of the different subsistence farming communities in Mariannhill, but also a great extent of communication and context analysis of the peri-urban agricultural landscape of Mariannhill and its surrounding farming communities in order to develop and present a viable proposal for community development. A contextual analysis of the peri urban interface of Mariannhill will allow one to understand the topography and the factors that influence community settlement and informal economic initiative. The figure ground and contextual analysis of Mariannhill and its surrounding farming communities posits the landscape in a 'transitional zone' or peri – urban 'agricultural belt'. Figure 2.4 shows a figure ground graphical representation of Mariannhill in the middle, a transitional zone.

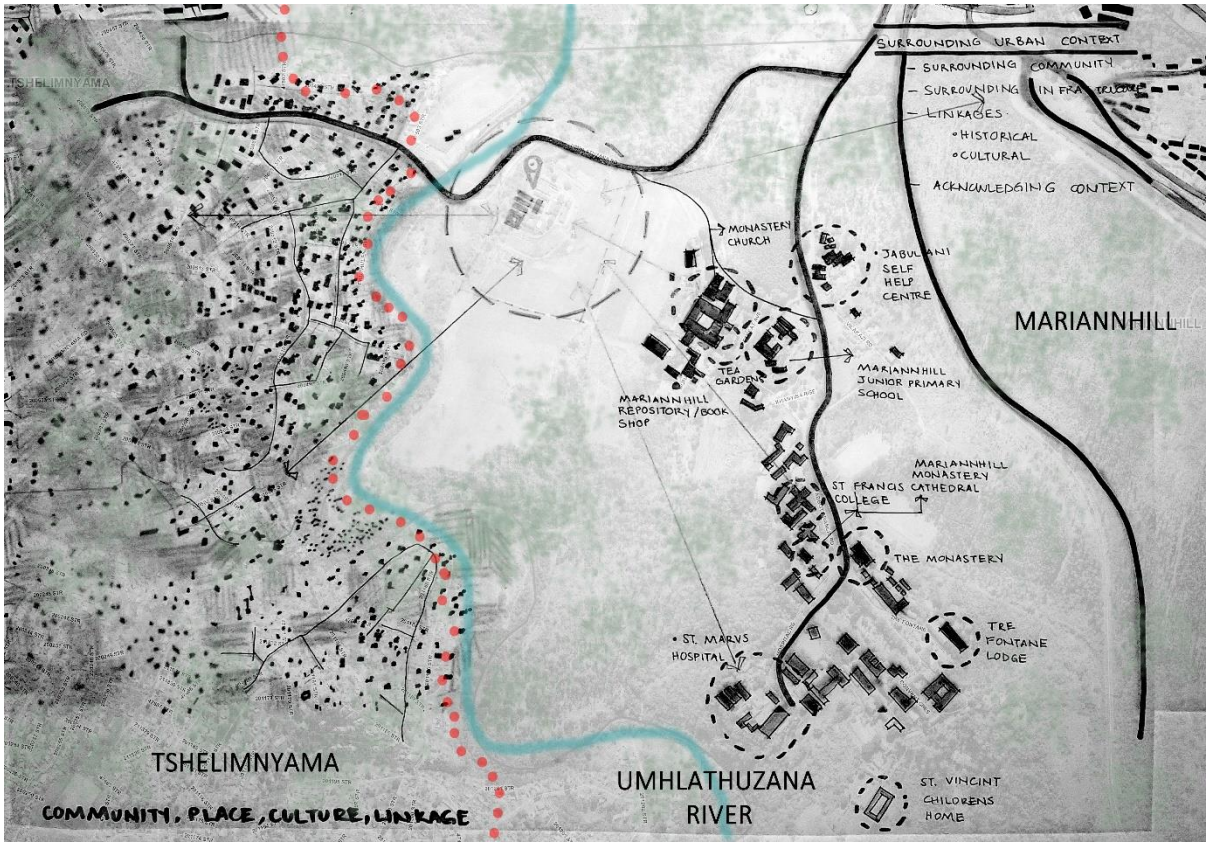

Fig 2.4: Figure showing the dualistic Urban Structure of Mariannhills' s Urbanisation - schematic diagram. Source: Author 2018

For the purpose of the study, the figure-ground analysis will be used as part of the analytical toolset that forms the base of the case study of Mariannhill and will be discussed in greater detail in chapter four.

2.1.3 Observations

This section set out to establish the aspects that constitute community and the significance of contextual analysis for architectural intervention. Community was presented as a system of interconnectedness and collaboration and suggested that in order to successfully address a community's multifaceted difficulties, integration, collaboration, and coordination of resources from all parts is required. The constraints facing subsistence farmers were explored and it was established that an inclusive approach to community development is needed in order to unlock the talents and creative cultural identity of the community and improve their participation in all aspects of the sector in order to achieve sustainability. This provided insight towards understanding community through the lens of the first key question and objective of this dissertation.

Community can essentially be defined "*as a locality comprised by people residing in a geographical area; the resources such people require to subsist and progress; and the processes in which such individuals engage to distribute and exchange such resources to fulfill local needs and wants*" (Matarrita-Cascante D, & Brennan A M. 2012). The figure-ground theory was introduced as a lens through which contextual analysis of the focussed case study of Mariannhill will be studied. This allows for not only a physical understanding of space from an architectural standpoint but also an insight into landscape barriers that affect community interaction and empowerment. As this section presented 'community' and its influencing aspects, the following section focusses on the significance of 'place 'in community as the interdependency of these aspects weigh greatly on the successful outcome of community development initiatives in agricultural communities (Manzo & Perkins 2006).

2.2 PLACE AND COMMUNITY

Fig 2.5: Markets are age old in providing a sense of place and belonging for community.
Image Source: www.ibtimes.co.uk Date accessed: 20 March 2018

"Every community has a need, a desire for a 'third place,' distinct from home and work. Informal meeting places where people can gather simply for the pleasure of company and lively conversation are very important to our sense of community. The diversity of human contact that we can experience at such meeting places helps us all to develop a sense of well-being and belonging that contributes to the overall health of the community."

- Claudia Becker

In the previous section the concept of 'place' and geographical situation was introduced as an aspect of community in order to understand community and its construct. This section expands further on place theory as people's attachment to place are often intertwined with their sense of community (Manzo & Perkins 2006). It draws on the significance of place attachment in relation to peri-urban communities and the exploration of the meaning of cultural identity in community in line with the second research question and objective of this dissertation. In creating an 'architecture for community' it is important to understand the emotional connection the community has with their environment. It is when the community's expectations, needs and feelings are taken into consideration and understood that an informed intervention can successfully take place. When taken from the urban spatial design approach, place theory can essentially be seen as "*understanding the cultural and human characteristics of physical space*" (Trancik, 1986). This indicates that if space is considered as being a void bounded by urban fabric with the potential to link people and spaces, it only becomes a 'place' when it is a reflection of its people and given a contextual meaning derived from cultural or regional content. Therefore the discussion of place theory in this section will be accompanied by understanding the significance of agriculture and cultural identity in community.

This section will also expand on the relationship between marketplaces and community development. Food is something that every city and town has the resources to produce locally, therefore agricultural markets are an ideal intervention for community development (Davies S, 2014). Kenneth Frampton (1993) and Norberg Schulz (1980) analysis of 'Critical regionalism' and 'Genus Loci' respectively lend significant grounding to the notion of place bound architecture and aims to help develop key design principles for architecture for the community. Therefore, exploring the significance of orientation in community development through the lens of place theory helps to identify the design principles necessary to develop an architecture for the community. This will enable the design to respond to the South African context, and establish the link between the built environment, the natural environment and man and the way in which they all interact.

2.2.1 Significance of 'place' in community

Places develop as the centre for participation in the activities of everyday life and human interrelationships. These places form from the overlapping of common community need, social structures, systems and parts. (Menin, 2003). Heidegger (1971) describes 'place' as the placement of human existence. 'Places' can then be defined by the activities carried out by the communities and individuals who inhabit them. The classic work of Yi-Fu Tuan (1974, 1977) was among the first to describe and examine the ways in which people attach meaning to place (Manzo C L, 2006). In his work he presented the notion that 'space' subsequently evolves into 'place' as we become more acquainted with certain places and bestow upon them value. Thus places acquire a greater meaning through the "*steady accretion of sentiment*" and familiarity (Tuan 1974, 33). 'Community', as established in the previous section, contains many aspects that form an interconnected system. These traits include geographic location and attachment to place, social interaction, commonly shared needs and goals and shared culture and views of the world (Tookey 2011) ; none of which is achievable without interaction and communication between members of the community.

Consequently, community empowerment has a greater chance of success when the subject community hold a common positive value for their space or territory (Tookey 2011). Therefore, it is important to consider the relations between community, space and place as communities develop on the foundation of many kinds of interaction. An understanding of place is fundamental to the concept of community development and empowerment. People inhabit and grow in places, they move within and between surrounding places, and rely on the movement of goods to and from places to survive (National Research Council 2002). Places have unique and individual characteristics and these elements are vital in determining quality of life. In terms of socio-economic inequality, the differences in the internal structure of places play a pivotal role. However, defining what matters about places is difficult to establish because their nature depends on both physical and social characteristics (National Research Council 2002). This indicates that places are not only a geographical location and natural environment, they also form part of social constructs, shaped by human behaviour and interactions

Trancik states that people need a *"relatively stable system of places in which to develop themselves, their social lives, and their culture. These needs give manmade space an emotional content – a presence that is more than physical."* (Trancik, 1986) This signifies that understanding how people experience a place plays a pivotal role in the design process of infrastructure and/or public place. This in turn, influences the user to rethink their relationship with the environment, both built and natural. This is relevant when applying principles of place for 'architecture for community' as this reflection seeks to "*inspire action because people are motivated to seek, stay in, protect and improve places that are meaningful to them."* (Tornaghi & Van Dyck, 2015). Therefore, in order to provide an architectural intervention that is conducive to 'community support' there is a need for engagement with the community and its peri-urban environment in order to find the most suitable proposal that respects the physical, and cultural context and the needs and aspirations of contemporary users.

Jane Jacobs (1961) and Herbert Gans (1968), in their exploratory work on architectural paradigms advocated for a greater understanding of community social dynamics in order to inform planning practice (Manzo & Perkins 2006). In their work, they were not explicit in elaborating the direct impact and significance of place meanings in the design process of architecture, but they began to draw critical connections among people's experience of place '*on the ground'* and its implications for planning (Manzo & Perkins 2006). Fig 2.6 illustrates the connection of community values to place.

Fig 2.6: Figure showing connection of community values to place. Source (http://www.pps.org)

This suggests that like 'community', place is an ensemble concept. Place should not be seen as a single location or territory, but it should be seen as part of the community in that *"A place is distinguished by its people, markets, governments, and institutions, as much as it is by its physical landscape and natural resources, transportation systems (including streets and roads), buildings, and boundaries"* (Tookey 2011).

There is an inextricable link between 'place' and community in that the very essence of community can be expressed in the physical attributes of the place they reside in. The foregoing text advocates for community 'place' to bear meaning to its users by expressing its cultural context and allowing ownership in order for there to be elements of pride and empowerment. This can be achieved by understanding the significance of agriculture in these communities.

2.2.2 Place and Cultural Identity

The word 'community' to most people brings about some indication of belonging which is associated with acceptance and is positively regarded. This idea of community creates a sense of identity. Peri-urban communities thrive on systems that are connected to place and help support their well-being. Local culture is essential in shaping conversations about debate and action and biased perceptions miss this important aspect of the developmental process. Local culture also presents unique opportunities for community based economic development and empowerment. By understanding a community's history and context and their understandings and interpretations of it, development practitioners are afforded the opportunity to reflect and consider the importance of culture in efforts to improve local well-being.

Agricultural practice in the peri-urban interface of Mariannhill afford subsistence farmers with a sense of cultural identity by allowing for the facilitation of common understandings, traditions, and values. These aspects are all central to the identification of plans of action to improve well-being and foster healthy community development. Agriculture and its complementary activities such as informal trade and community gardening, contribute

to building a sense of local identity and solidarity and an attachment and element of pride toward the place where these activities are successful.

This culture of food production and common identity influences the confidence rural communities have for coming together to address specific needs and problems. According to Brennan (2009) the importance of understanding the place that culture plays in development is integral as by providing a local linkage and cultural basis for development, the community is more likely to take part in and remain committed to development efforts to which they have a direct connection. Development efforts focussing on cultural identity of the given community provide a mechanism for linking local residents to the development process. These initiatives allow local residents to encourage development that preserves or promotes their culture. Ultimately Brennan suggests that *"In understanding the place of culture in the development process, it is important to consider the social basis of culture, its relationship to interaction, and the types of development and local actions it can contribute to*".

Local commitment among residents to farming, regardless of economic or political conditions, can serve as a valuable tool in shaping the effectiveness of development options and local actions. Such commitment, based on community culture and common identity, can be seen as a potentially important tool in sustaining local government, development, and social improvement efforts. Each community comes with a huge diversity of cultural norms and practices and cultural identity is indeed a vital factor to be taken into consideration when discussing or contemplating action in development."

South African disadvantaged peri-urban communities are plagued with a lack of institutions that encourage a sense of identity. This prompts the need for the built environment to respond with infrastructure that allows for interaction that fosters pride and identity to be easily accessible to all. As previously established, lack of access to market infrastructure, a lack of transportation to carry goods from the field to the markets, the cost of public transportation and a lack of market related knowledge are major constraints faced by subsistence farming communities. The marketplace is one such institution that would encourage identity and the establishment of community 'place' by bringing community members together as structures that people have control of, allow for the formation of ownership and pride. This study therefore indicates that for community development

initiatives cultural identity and subsistence agriculture form major drivers for place bound architecture and community empowerment.

2.2.3 The Marketplace and Community

The foregoing text discussed how place is linked to cultural identity in subsistence farming communities. Fostering an opportunity to enhance and strengthen a community's identity through architecture stems from the ability of the built form to encourage a multiplicity of experiences. Community influenced and focussed design draws heavily upon creating multi point experiences that assist in building vibrant neighbourhoods and lively communities. Historically towns and cities globally grew up and developed around markets, which served as original civic centres. Many of the great public markets known today once started out as nothing more than roadside exchanges (Dreessen T 2018), so there is reason to believe that existing informal exchanges within peri-urban settlements can be built upon if they become reintegrated into the life of their surrounding neighbourhoods and given exposure to positive opportunities.

Mariannhill's rich historical connection to the Trappist monk's agricultural fields and the surrounding communities inherent subsistence livelihoods draw a strong connection to food and agriculture. This allows the idea of a community marketplace to be born. However, in order to maintain sustainability of the marketplace there needs to be a clustering of activity, as Steve Davies from the organisation Project for Public Space (PPS) explains: "*Great markets are created through the clustering of activity. They require the intentional aggregation of local food production, but also of other services and functions. The food is the central reason for why people gather, and that gathering creates a hub for community life.*"(Davies S, 2014).

In the context of this study, along with the creation of a facility that addresses developmental community constraints it is important to build on the social aspect of community life and establish beautiful and exciting 'place' for community. 'Healthy food hubs' provide an innovative way to add value to a market vicinity (Davies S, 2014). This implementation speaks to the socio economic issue of malnutrition in impoverished areas and therefore allows for the creation of spaces that is focussed on nutrient-rich, natural foods. This would mean

clustering health-related activities around markets to encourage visitors not just to eat more fruits and vegetables, but to take a more proactive approach to their own well-being.

In some cases, markets can include ancillary spaces that are needed by the community, according to Davies (2014) "*healthy food hubs are especially useful in low-income areas where the need is more acute because of the high cost of regular preventative medical care*." (Davies S, 2014). The market typology is age old and has proved to amplify cherished aspects of local culture. Over time, the marketplace develops into a central core that showcases the talents and interests in a given region. Food will always be the core, but how architecture responds depends on local needs. Markets not only build off of, they also strengthen local identity. They provide people who have ideas for a product a platform, when they couldn't have gotten it into a store because they were too small. Factors such as globalisation and urban sprawl creeping out into the peri-urban belt of informal communities result in a loss of identity. Markets offer an opportunity to start rebuilding some of that identity and informal economic activity. Food is something that every city and town has the resources to produce locally, therefore agricultural markets are an ideal intervention for community development (Davies S, 2014).

In relation to the connection of people and culture to place, the view of Kenneth Frampton (1993) that architects should analyse local character and context and reinterpret it with appropriate contemporary terms, rather than adapting to the traditions directly is of great significance. An example would be the concept of using local construction methods or ideas with a more durable material comes into play. The following sections focus on Kenneth Frampton and Norberg Schulz analysis of Critical regionalism and Genius loci respectively which lend significant grounding to the notion of place bound architecture and aims to help develop key design principles for architecture for the community.

2.2.4 Critical regionalism

Frampton draws upon the words of philosopher Paul Ricoeur in "*Towards a Critical Regionalism*" where according to Ricoeur, globalization took away the variety of local and traditional culture of different civilisations which essentially are the main qualities for defining space (Frampton K, 1993). This fact is more apparent in developing countries such as

South Africa, as the aim to develop a better livelihood requires a critical balance between retaining identity and the condition to participate in progressive civilization.

Frampton theorizes that architecture should fuse the past, the present and the future by paying attention to social value and history and effectively combining it with a nod to futuristic activities. However, he underlines that critical regionalism is not the same thing when compared to vernacular architecture.

"*The climatic condition, culture, myth, and craft of a region are not to be reduced to indigenous forms. Both ancient and modern cultures are not to the product of a single heritage, but rather hybrids of several cultures found in region's past. A global modernization continues to reduce the relevance of agrarian-based culture, and our connection to past ways of life is broken, as the presence of universal world culture overpowers regionalist tendencies. Therefore, regional culture must not be taken for granted as automatically imposed by place but, rather, cultivated and presented through the built environment.*" (Frampton K, 1993).

Frampton presents architecture towards gaining a new theoretical perspective which is about bringing back the actual components of architecture such as topography, tactile, light, climate, tectonics etc. He compares six conceptual pairings with a critical language.

1. *Culture and Civilization*

   Frampton comments on the effects of civilization in terms of cultural diversity on communities where the role of technological improvements and financial waves limit the scope of urban design in many ways.

   Summing up this point Frampton states, "*Twenty years ago the dialectical interplay between civilization and culture still afforded the possibility of maintaining some general control over the shape and significance of the urban fabric. The two last decades, however, have radically transformed the metropolitan centres of the developed world. What were still essentially 19th-century city fabrics in the early 1960's have since become progressively overlaid by two symbiotic instruments of Megapolitan development rise and the serpentine freeway. The former has finally come into its own as the prime device for realizing the increased land value brought into being by the latter. The typical downtown which, up to twenty years ago, still*

presented a mixture of residential stock with tertiary and secondary industry has now become little more than a burolandschaft city-scape: the victory of universal civilization over locally inflected culture" (Frampton K, 1993).

2. *The Rise and Fall of the Avant-Garde*

   In the second point Frampton states that the movements in architecture in the mid-19th century were due to the starting of the industrial age and the neoclassic form. Architecture became a reaction to tradition and to modernization as the Gothic Revival and the Arts-and-Crafts ideas took up a categorically negative attitude.

3. *Critical Regionalism and World Culture*

   In the third point Frampton suggests that "*the fundamental strategy of Critical Regionalism is to mediate the impact of universal civilization with elements derived indirectly from the peculiarities of a particular place. It is clear from the above that Critical Regionalism depends upon maintaining a high level of critic self-consciousness. It may find its governing inspiration in such things as the range and quality of the local light, or in tectonics derived from a peculiar structural mode, or in the topography of a given site*" (Frampton K, 1993). This further emphasizes the fact that Critical Regionalists seek to avoid 'placelessness' and disconnection of buildings from their local contexts, and encourage engagement with issues of identity and place, and the use of contextual identity and characteristics as major design generators.

4. *The Resistance of the Place-Form*

   The fourth point is grounded in place centred thinking as it suggests that architects must take into consideration contextual features instead of treating it as a free standing object. The built form should be adapted to the characteristic of place. According to Frampton, the physical space of region and the place of communication and interaction between people are not the same thing. When applying critical regionalism to the design, architects should contemplate the idea that there is no limitation to physical space and the characteristic of place cannot be consisted of as an independent building. Spaces may be created by enclosing the area, however its borders and periphery should be the beginning of the place instead of its ending. The

spatial organization of a building should be solved in terms of its relation between exterior qualification of place such as; its entrance, exits, and the circulation.

5. *Culture versus Nature: Topography, Context, Climate, Light and Tectonic Form*
   "*Critical regionalism necessarily involves a more directly dialectic relation with nature, more than abstract, formal traditions of modern avant-garde architecture allow*" (Frampton K, 1993). In the aforementioned quote, Frampton suggests that an architectural structure should marry local culture and the qualities of the landscape in its design. Architecture should in fact merge local culture and the natural landscape in order to achieve a positive relationship between the two, rather than create a free standing object with no contextual relevance. The geographical characteristics and the cultural legacy will be decisive in the ecology, climate, and the symbolic aspect of place. That's creating the "place-form" balance between the natural environment and the cultural legacy of society.

6. *The Visual versus the Tactile*
   According to Frampton cooperation between all senses makes architecture deeper and unique. This concept supports the usage of all materials which target all senses and that will allow variable emotional reactions. In summation, "*Critical Regionalism seeks to complement our normative visual experience by readdressing the tactile range of human perceptions. In so doing, it endeavours to balance the priority accorded to the image and to counter the Western tendency to interpret the environment in exclusively perspectival terms*." (Frampton K, 1993).

According to architectural theorist, Alexander Tzonis, Critical Regionalism was a reaction to the *"...state of stagnation and disrepute..."* that modernism had brought architecture into (Zarzar, K.M., 2008). A general lack of relation of buildings to their contexts became a major concern in the late 1970's, at the height of 'High-Tech' architecture.

In understanding the significance of the six conceptual pairings with a critical language, the Critical Regionalist approach advocates a building that gives *"...the feeling of a world being there... which does not require a translator... to be understood, but also requires no effort to be totally possessed"* (Lefaivre, L. and Tzonis, A., 2012). It encourages personal ownership

and familiarity of the user with their built environment that places focus on the human tactile, intangible experience, and considers its unique property of place. A Critical Regionalist approach would also allow for the significant intangible characteristics of heritage and the culture of food production and agriculture in Mariannhill and its surrounding communities to come into play, through the availability and contextual use of construction materials, and for future changes and flux of building use under different conditions.

Due to the fact that the resulting architectural intervention is based on 'architecture for community' with the guiding concept of 'community support', it is necessary for the proposal to aspire to contribute to an environment which allows for the influence of the user by providing chances for the user to influence it with their own individual characteristics thus enabling it to be taken over by each person as an essentially familiar place. This would create an interchangeable relationship between the resulting form and the user by allowing for interpretation and adaptation to each other, each enhancing the other in a process of mutual submission and appreciation.

This presents an opportunity to allow for the community to take ownership. The resulting intervention can be put forward with the concept of 'community gardens' enabling each person to as if insurgent gardeners, reflect their participation in the space through the means of having a space to call their own. In this regard, the resulting agricultural facility would put forward a system of support that encourages facilitation of the community to come together and work on their own 'plot garden' as part of a collective or communal setting. This is where the concepts of pride and friendly competition will arise where, if facilitated successfully, those who would partake would be motivated to upkeep their plot to match their peers.

2.2.5 Genius Loci

Genius Loci or 'Spirit-of-Place' (Norberg-Schulz, C. 1980) can be defined as the distinctive atmosphere that is expressed by a specific location. This can be attributed to the activities and cultures of the people that inhabit the space. Norberg Schulz (1980) introduced this notion to architecture speaking of the ability of an area to charm its visitor. The character of place, the harmony between human culture and nature is something that is not planned and is rather spontaneous. The complexity of the peri urban interface is a testament to this 'spirit of place'. *"The spirit of a place feeds, and is fed by, the attitudes and actions of those who*

administer, build, maintain and use it" (Day, C. 2002). The multifunctionality of the peri urban interface possess its own hybrid spirit that allows for many developmental opportunities from the built environment.

Genius Loci, or the 'Spirit-of-Place' refers to the relationship between the proposed design where places are made up of a system of spaces that have an identity and of spirit that is recognised through place moods, activities and materials. This can be achieved by allowing the user choice and opportunities to reflect in an environment. Ultimately human thought and action is what greatly influences the spirit and place (Day, C. 2002).

In understanding how 'sense of place' plays a role in architecture that is derived from its serving community's influence, Panikkar (1991) suggests that connection to the landscape, to its living components and dwelling components is what forms and informs the human being (Panikkar, 1991) therefore establishing opportunities to foster an identity will allow for the enhancement of a 'sense of place'. Agriculture in peri-urban communities plays a strong role in the formation of identity and place. In the context of the communities of Mariannhill, place for subsistence agricultural production greatly informs settlement patterns. A place may only be meaningfully shaped if it reflects the needs and values of its community, both in the tactile use of materials, the designed public spaces and spiritually, essentially becoming a 'self-built' place.

A place tells a story, one that is about people and events, which ultimately forms the basis for experience, being present or historic (Norberg-Schulz, C. 1980). As agriculture and informality becomes the livelihood of peri urban communities, what is sacred to them is what should be the guiding force that frames the experience of that place.

It becomes evident that an architecture that responds to context, local materials and socio-cultural factors can create a symbolism that connects man and nature by celebrating the Genius Loci of the site.

2.2.6 Observations

This section identified the theory of place as an integral part in the process of community development and empowerment and designing 'architecture for community'. Cultural identity and its connection to place was discussed and it was revealed that in order for a successful intervention for the community to be established, the culture of subsistence agriculture needs to play a pivotal role in the design process. This was put forward by introducing ideas for architectural interventions such as the Marketplace and implementing community gardens. It drew upon concepts that showcase the significance of place bound architecture such as Critical Regionalism and Genius Loci. Architecture should capture the spirit of place by identifying by the existing context, both built and natural, the way the local people experience that place, their perceptions of that place, familiarity of a place, how safe they feel in a place and a strong sense of belonging to place. In terms of understanding community through 'place theory', context specific design plays a pivotal role in community development. The context of Mariannhill should first be identified, then the topography of the surrounding area, the surrounding architectural language, the local materials, vernacular and modern building techniques and natural environmental conditions should all form critical bases for an architecture that captures the spirit of place. This will ultimately connect the building to the context, people, culture and natural environment.

With respect to all that has been discussed, the words of Herman Herzberger (as cited in Trancik, 1986) should be considered where "*design is nothing more than finding out what the person and object want to be: form then makes itself. There is really no need for invention - you must just listen carefully".* This presents a key research component in the approach of the design for an agricultural facility for Mariannhill by backing up the guiding concept of 'community support'.

2.3 LINKAGE THEORY AND MARIANNHILL AS A CONNECTIVE LANDSCAPE

Fig 2.7: The surrounding culture of agriculture is one that has been passed down for generations
Image Source: www.theafricangourmet.com Date accessed: 20 March 2018

"As we search for a less extractive and polluting economic order, so that we may fit agriculture into the economy of a sustainable culture, community becomes the locus and metaphor for both agriculture and culture."

- *Wes Jackson, 1993*

This section aims to understand the role of the peri urban interface and its relation to urban and rural cores. The Linkage theory is introduced in order to provide the platform for enquiry towards the discussion of the urban connection to the peri-urban interface and establishing Mariannhill as a peri-urban connective crossing point in line with the third research question and objective of this dissertation. This is explored in order to establish the interdependent link that these two vicinities share. This is complimented by understanding the approach to community development through 'New Ruralism' (Viviers et al. 2017). Concluding the section, regenerative architecture and empowerment through agriculture is discussed through the lens of linkage theory in line of the guiding concept of 'community support' towards the design of 'architecture for community'.

2.3.1 The Linkage Theory

The Linkage theory formed part of Roger Trancik's approach to 'urban spatial design' and in this study provides an interesting lens in which to understand the architectural perspective in relation to establishing networks and community development opportunity through linkage systems. Using 'community' as the influencing factor in the design process, Trancik's Linkage in 'urban spatial design' can be interpreted with a social factor that connects and links community to place and enhances cultural identity. The Linkage theory is essentially based on the design of a spatial datum upon which movement and flow of people and external elements is influenced (Trancik, 1986) and in the context of this study used to support the proposal of Mariannhill as a connective landscape.

Fumihiko Maki's discourse '*Investigation into Collective Form'* introduced three different forms of linkage when applied to architectural form which was examined by Trancik, and includes, compositional form, mega-form, and group form (Figure 2.8). Compositional form consists of buildings designed in isolation where linkage is implied rather than obvious and surrounding space is not as important as the building itself. The second approach to linkage is the mega-form. This consists of a framework of integrated and interconnected space and elements where linkage is a physical attribute in the structure. Mega-form structures are similar to compositional form structures in the sense that physical context and human scale tends to be ignored (Trancik, 1986). The third approach is called group form and is the result of incremental placement of elements and structure in a context that is particular to many

historic towns. The group form sees linkage as being neither implied nor imposed but evolves as part of a naturally occurring process forming an integral part of the existing landscape (Trancik, 1986).

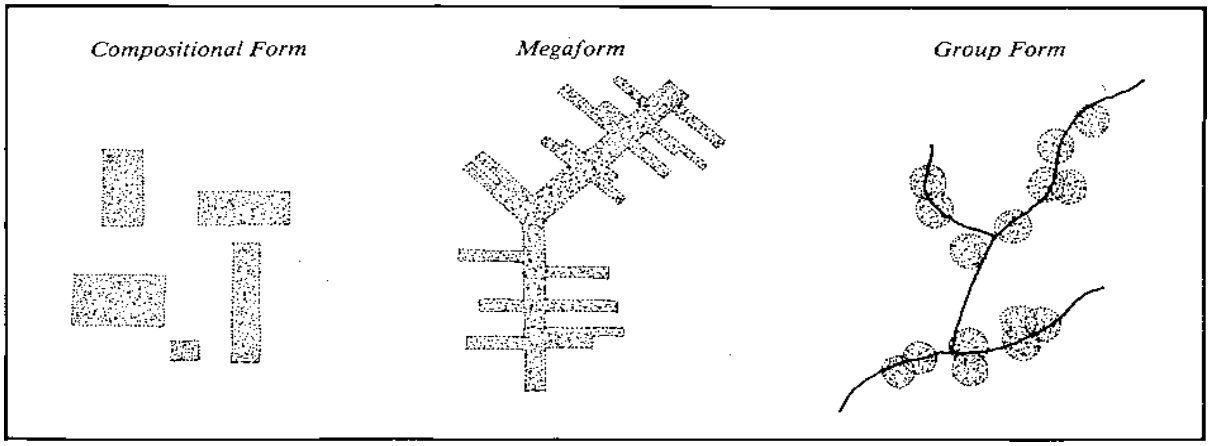

Fig 2.8: Fumihiko Maki. Three Types of Spatial Linkage. Source: Finding Lost Space, Roger Trancik (1968)

Drawing from this, it can be deduced that this approach of group form is congruent to the principles upon which the peri urban informal communities of Mariannhill were formed. These approaches to linkage theory are important to note as it showcases how linkage becomes the controlling idea in the design of space and structure. The peri-urban interface of Mariannhill provides an interesting vantage point from which to view the elements of Linkage. It can be proposed that this dynamic context of multiplicity can in fact be the connector between the urban and the rural as depicted in Figure 2.9 presenting an architectural intervention in Mariannhill as a facilitator for development and connection.

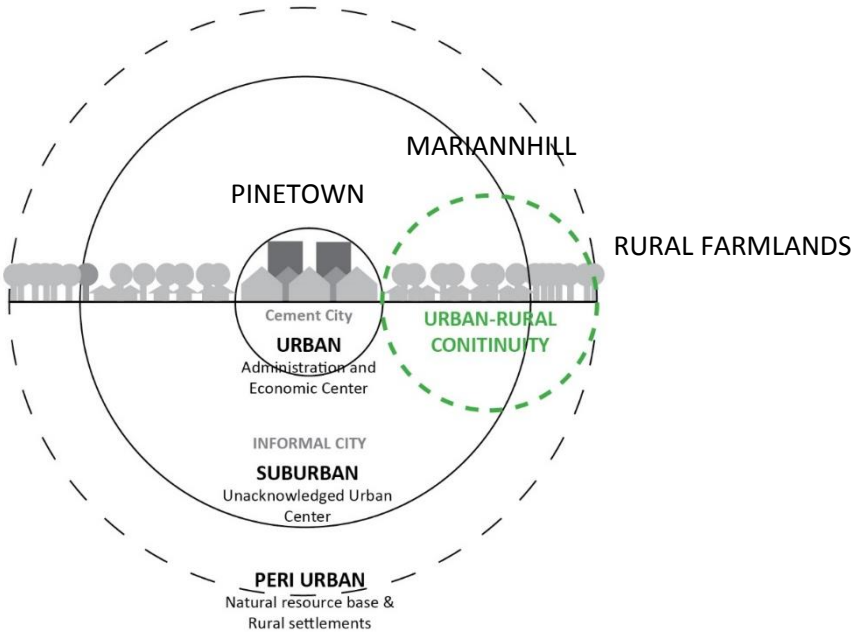

Fig 2.9: Figure showing Mariannhill as the linking interface between the urban and the rural - schematic diagram. Source (https://journals.openedition.org) edited by author 2018

Understanding the essence of what the linkage theory stands for is to allow for considerations of the concept of linkage and movement both within the proposed architectural intervention and how it positions itself within the urban fabric of the city to be explored. This speaks to the idea of rural urban interdependency and contributing to the connection of people and contexts through the peri-urban interface. The following section expands on this notion.

2.3.2 The Rural Urban Interdependency and New Ruralism

This section draws on the notion of interdependent community systems between the urban and the rural. Central place theory (Christaller W, 1996) suggests that within any given area or region, communities can be organised based on their demand for goods and services. This ordering is developed into a hierarchy that ranges from rural villages and towns, where subsistence farming is the primary economic activity, up to capital cities that provide more complex services to the region such as specialized health facilities, financial services and schools and tertiary education (Hughes & Litz 1996). Figure 2.10 below depicts this linkage.

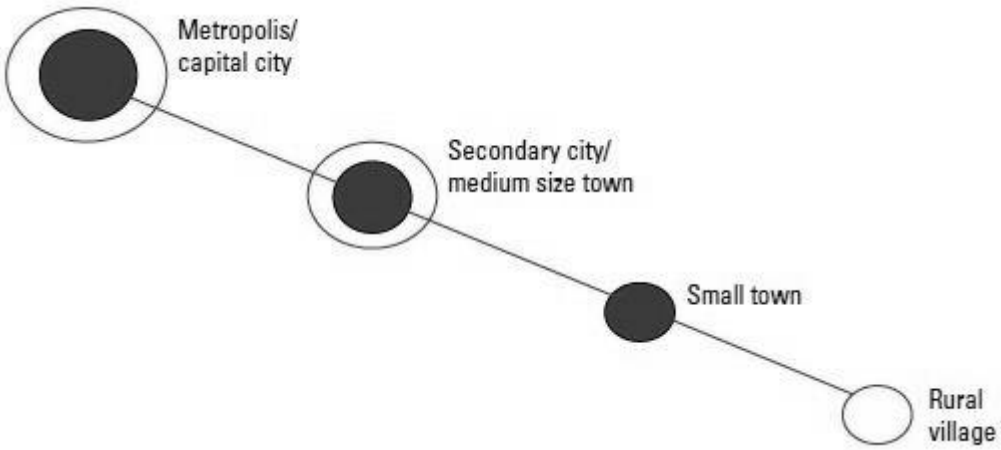

Fig 2.10: Rural urban linkages from small villages to the main core town. Image Source: Integrated Urban Development framework, Melorose et al. 2015 pg. 19

Following this it can be said that the peripheral semi-rural region surrounding the urban core is an extension to the central place concept. As the central core generally controls the economic structure of the region by providing value adding services to the region, the surrounding peri urban interface becomes largely dependent on the central core or main city for higher-order and value added goods and services (Hughes & Litz 1996). The Firm location theory (Hughes & Litz 1996) on the other hand proposes that many periphery regions and

peri urban areas have an advantage economically wherein the production of agricultural commodities happen here. This competitive advantage is likely due to the abundance of local natural resources such as fertile ground for agricultural production or to inexpensive employment used in lower end manufacturing (Hughes & Litz 1996). In this instance the periphery can use this advantage and build on what is strong within the community to strengthen its economic viability as well as create a stronger identity.

The interdependency of the urban rural relationship can be seen wherein higher order food processing and other industries are dependent on local agriculture on the periphery or other natural resource-based industries for primary inputs. However, peri urban transitional spaces can be a place where trade and services may flow from to the core or from the periphery to other national and international markets (Hughes & Litz 1996). An example would be where agricultural commodities may be transferred from a peri urban area to its urban core for further processing or consumption, or might be exported out of the region entirely. In this instance, core sectors are dependent on agricultural products, such as food processing, and have strong linkages with the periphery economy (Hughes & Litz 1996).

Activating the peri urban interface with relevant architectural infrastructure allows the subject communities to gain greater access to opportunity and thus, the core areas in a city become more dependent on the periphery for value added products subsequently empowering these peri-urban communities.

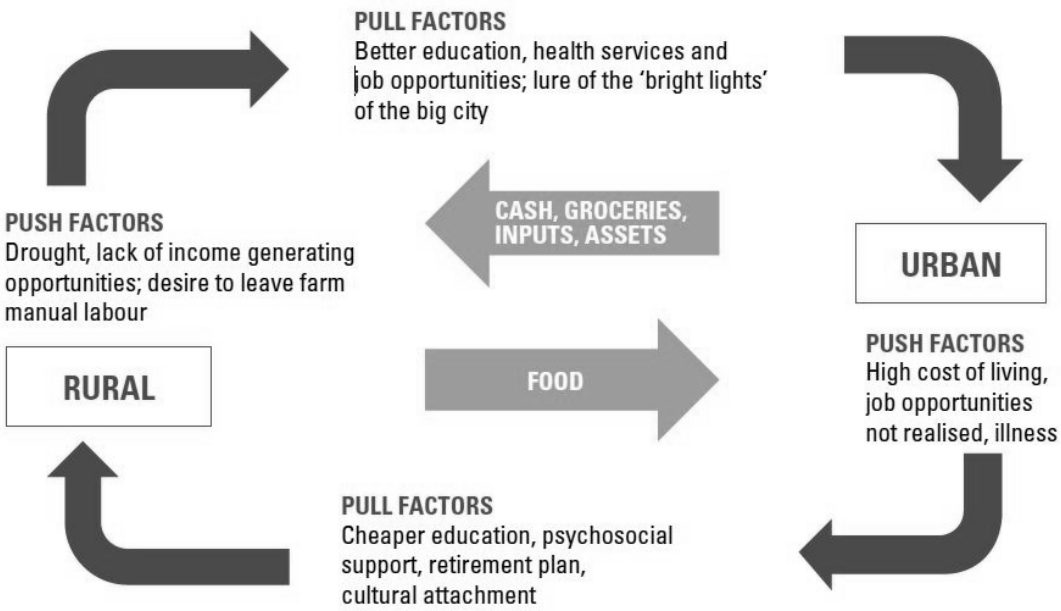

Fig 2.11: Image showing interdependent rural urban linkages. Image Source: Integrated Urban Development framework, Melorose et al. 2015 pg. 18

Although the economic, social and environmental interdependent relationship between the urban and the rural is extensively recognised, the dichotomy between the two still persists (Melorose et al. 2015). There is a divide that exists in traditional development policy where 'rural' referred to farm villages and 'urban' referred to more developed towns and cities separating the two entities however, these two places tend to share structural, social, economic and cultural linkages, as illustrated in Figure 2.11.

Taking into consideration the complexity of these relationships and linkages, it becomes necessary to view the peri urban interface through the lens of 'New Ruralism' (Viviers et al. 2017). New Ruralism explores a new design philosophy whereby 'farming, playing and living' is attained through the collective appliance of new urbanism (Viviers et al. 2017). The concept considers a multifunctional approach to land use in future peri urban life and proposes that in order to attain a sustainable community development there needs to be a combination of economic and ecological principles in the development process, therefore enhancing economic results in peri-urban and rural areas.

If rural and urban areas are seen separately it becomes increasingly difficult to develop solutions for sustainable development especially since the superimposition of the urbanisation process onto the rural landscape, usually contributes to the disappearance of the agricultural heritage and fertile land. By establishing and focussing on creating infrastructure that enhances linkages (not disconnectedness) between the urban and rural interface, positive community development can occur by encouraging growth through the facilitation of resources to where the largest net economic and social benefits is present (Melorose et al. 2015).

According to the Integrated Urban Development Framework (Melorose et al. 2015) South Africa faces many challenges that affect the link between the urban and the rural which include:

1. The local governments inadequate use of spatial planning mechanisms
2. The ongoing conflict between elected local councils and traditional leaders
3. Poor infrastructure in agriculture and communications
4. Small and medium towns suffering sluggish and stagnated economies

5. The weak or non-existent partnerships between government and NGO institutions

In order to assist with inclusive development, these challenges need to be addressed in a manner that connects rural and urban frameworks. This linkage needs to start on a ground level that supports local communities with the provision of infrastructure that allows for a resource flow and access to opportunity that enables communities to become active participants in the economy and avoid being marginalised (Melorose et al. 2015). Therefore this study has established that strengthening the link between urban and rural development can be achieved by:

1. Using **architecture as infrastructure** by linking urban and rural through strategic and sectoral (e.g. infrastructure, agriculture) initiatives
2. Establishing **urban rural synergies** for enterprise development and **economic development support**
3. Establishing links between various economic sectors by developing value chains and **access to information**

It can be surmised that sustainable community development and alleviation of poverty in marginalised communities does not come exclusively from the rural economy. Agriculture isn't an overnight process and for rural community development, New Ruralism provides a fresh approach to community development that encourages access to urban markets, inviting non-farm sectors and a strong urban rural link (Melorose et al. 2015).

The foregoing discussion reveals that there is a great deal of evidence that suggests the peri-urban environment can be referred to as a linking and connective interface. Reflecting on the backgrounds of subsistence communities it can be put forward that empowerment can be achieved through the conceptualisation of the peri-urban in terms of rural and urban communities of production and exchange. In the context of this study, growth in the periphery would essentially drive growth in the core through the peri urban landscape as a linking interface. By activating the periphery, economic growth is strengthened thereby increasing demand for products in the core city that are primarily found in the periphery. The New Ruralism response implies a relatively fixed pattern of trade between the core and periphery communities and economies.

2.3.3 Regenerative Architecture and Empowerment

Regenerative design and empowerment is an approach grounded in an understanding of 'Place' as a living system (Anon 2006). The term 'regenerate' can be defined in several ways, generally it represents one of the following three denotations. First, initiating major change for the better in terms of greater access to opportunity or resources. Second, creating a new sense of spirit and identity for the community. And third, giving back energy to the source by activating the periphery and providing infrastructure for empowerment for the given community. These characteristics form the principles of regenerative design and development and this is a philosophy that can be applied to 'architecture for community'. It provides a wonderfully fresh approach on how to reconcile the relationship between man and his environment. Essentially, regenerative development is focussed on the notion that a place can be healed and regenerated *through* human development (Cole 2012).

This correlation is understood by recognising that humans have always developed the places they've inhabited, and that many cultures throughout history have had a mutually beneficial and refined partnership with their land of dwelling. Thus the main goal of regenerative development is to rekindle this wisdom, partner it within the process of architectural intervention, and apply it to the development and regeneration of physical places.

Regenerative design, in the context of this study, relates to approaches that support the symbiotic relationship of man and agriculture and foster that relationship in order to create opportunity for the community. When related to the given site, It is not the building that is 'regenerated' in the same sense as the self-healing and self-organizing attributes of a living system, but by the ways that the act of building and provision of a marketplace or community gardens and complimentary facilities can be a catalyst for positive change within the unique 'place' in which it is situated.

An analysis of peri-urban farming communities elicit the notion that an interest in agriculture can only be stimulated "*if agriculture is seen to compete with urban employment in terms of income generating potential*" (Protz M, Van Crowder L. 2002). There is a need to expose and assist developing farmers to explore other agricultural opportunities beyond current production that will greatly empower these communities. This speaks to a contextual response that aims toward the idea of a sustainable and inclusive community. This study

develops the idea that for the development of sustainable communities, a contextual response is integral. This means that the use of practices and systems which maintain or enhance the ability of people to provide for their social and cultural well-being, the economic viability of agriculture, the natural resource base of agriculture, the ecosystems influenced by agricultural activities and the quality and safety of food should be taken into account in order for community empowerment to be embodied. It is evident that whilst the establishment of agricultural education and training in the informal sector would positively impact the financial viability of agriculture, it would not have much of an effect unless issues of markets, training centres and establishing community 'place' are taken into consideration. This enforces the notion of regeneration through empowerment and the provision of architectural interventions that attest to these principles.

2.3.4 Observations

Architecture needs to capture the place in which it sits. In order for architecture to represent the community it serves, there is a need to establish a relationship and linkage between the people and their context. With respect to the foregoing discussion, the linkage theory was presented as a lens to view the peri urban interface as a connecting landscape. The uniqueness of the Southern African landscape, inherently being rural and peri-urban, necessitated a rural accentuation on multifunctionality in the peri urban interface. Exploring the concept of New Ruralism, a new design philosophy is offered, whereby a system of "farming, playing and living" is attained through the collective application of new urbanism (Viviers J et al, 2017). This allows for the notion of regenerative design to be explored by using the peri urban interface and its positive strengths as a means to empower its subject communities. This provides an approach that helps bound architecture to place and community cultural identity simultaneously. The site will be studied intensively so that the proposed building will be bound to that place. The architecture will be influenced by the cultural activities of Mariannhill, as well as the social structures, human interrelationships and the physical constraints. This is crucial so that over time the building may adapt and change to the everyday activities of Mariannhill and the community thereof linking its people to greater opportunities.

2.4 CONCLUSION: ARCHITECTURE FOR COMMUNITY

This chapter provided an in depth discussion of the conceptual and theoretical framework that had been introduced in chapter one. Each section focussed on a guiding conceptual and theoretical aspect that formed part of the guiding concept of 'community support' towards 'architecture for community' as well as answering the key questions and objectives of this dissertation. The aim of this chapter was to establish guiding principles from a focussed literature review that would help inform the design of an agricultural support and training facility for the subsistence farming communities of Mariannhill.

This chapter was led by an enquiry grounded with the concept of 'community as the client'. This unravelled into the aspects of community being introduced and understanding that community is made up of many facets that together form a collective body of people sharing a common bond. In order to understand community within its context it was revealed that the figure-ground theory becomes integral in understanding how space and form is influenced by community. This was established as part of the toolset by which the Mariannhill focussed case study would be analysed.

This discussion led to the question of what 'place' signifies to community. Place theory allowed for the understanding of how place bound architecture can play a positive role in community development. The discussion spoke of a critically regionalist approach to design not only pragmatically but also towards the design of the facilities that encompass the building that would allow for empowerment through the strengthening and development of community skills. Thus the cultural identity of the community is preserved.

The chapter concluded by presenting Mariannhill as a connective landscape supported by the linkage theory. This supported the notion that the peri urban interface as a transitional zone can be a connector between urban and rural cores. New Ruralism and Empowerment was explored in order to present principles for design that speak to a multifunctional and sustainable nature.

The resulting principles extrapolated from the research suggested that for the design to be relevant, in depth contextual analysis is needed. Furthermore, the design and architectural intervention would have to encompass principles that form an overlapping system of

functions that will encourage people of the area to use the building and to better understand the architecture as a vehicle for empowerment; as it is derived from the communities practices of agriculture and relationship with the surrounding natural environment and not from preconceived ideas. It should capture the spirit of the place by identifying the local culture and practices of people within the area, the local building techniques used and the local materials available in the area. This should then be considered in the construction of the buildings. In this way the building may be rooted to its context, through tectonics, materiality, people and place as well as regenerate and adapt over time and through seasons to its surrounding environment. The design should include opportunity for empowerment and the ability to foster pride and ownership and this suggests the introduction of a community marketplace and community gardens. Finally, the design will allow for the creation of linkages between the periphery and the urban core. If these linkages are strong, the expansion of such sectors such as agriculture could imply growth in the periphery economy as well allowing Mariannhill to become a connective landscape.

Architectural examples by means of precedent studies of how these principles have been achieved will be explored further in chapter three.

CHAPTER 3

PRECEDENT STUDIES

TOWARDS AN ARCHITECTURE FOR MARIANNHILL: KEY PRECEDENT STUDIES

3.0 INTRODUCTION

Precedents are studied to stimulate the designer, whilst informing the design process through specific qualities and aspects. This chapter evaluates existing projects that are similar to this dissertation proposal or used as inspiration for the design process. The projects were selected for their theoretical, functional, typological, or thematic similarities. The precedent studies focused on the following projects:

3.1 Friendship Centre, Gaibandha, Bangladesh

3.2 Agricultural Training Center, Nianing, Senegal

The discourse of this study has established the definition of 'architecture for community' as a response to community constraints and a representation of the relationship of the community member's perspectives to the processes and data that support them. The precedents studied are indicative of the proposed architectural typology wherein they represent various similarities and therefore inherent issues. Through the study of the selected precedents and organisations and their daily operations, the researcher will look to extract valuable information and spatial lessons to help address similar socio economic issues in Mariannhill and its surrounding communities to produce a responsive design proposal for an Agricultural support and training facility.

The precedents will be summarised against principles that emerged from the conceptual and theoretical framework towards the design of 'architecture for community'. This will be focussed on understanding the subject community, analysing the significance of the project in terms of creating 'place' and representing and celebrating cultural identity and finally on how the architecture provides a source of linkage to opportunity and empowerment. This analysis of these precedents against the aforementioned principles showcases the selected architecture's response to this dissertation's guiding research questions.

3.1 PRECEDENT 1: FRIENDSHIP CENTRE, GAIBANDHA (BANGLADESH)

Architect: Kashef Mahboob Chowdhury/URBANA

Client: Friendship NGO

Design: 2008: 2010

Completed: 2011

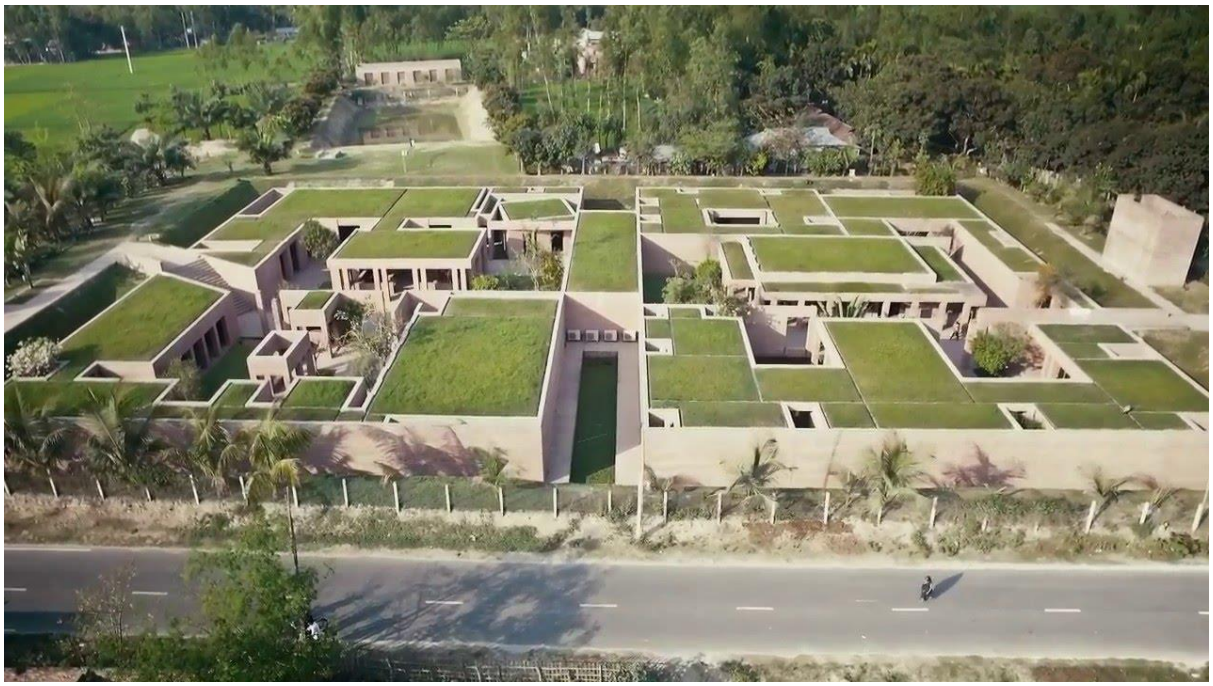

Figure 3.1: View of Friendship Centre, Gaibandha, Bangladesh

Image Source: www.archnet.org Date accessed: 06 August 2018

3.1.1 Introduction

The Friendship Centre is a training facility located near the town of Gaibandha, Bangladesh which is in close proximity to the Brahmaputra-Jamuna River. Designed for the Friendship NGO, the centre services the surrounding community who are subjected to very limited access and opportunities. The Friendship NGO uses the facility for its own training programs in agriculture and rents the space out for meetings, training, conferences etc. as income generation. The low lying land, where agriculture is predominant, is under threat of flooding if the embankment encircling the town and peripheries break (Site & Report 2016).

The design was such that it required protection from flooding however an extensive program with a very limited fund meant that raising the structures above flood level (a height of about 2.4 meters) was not an option.

The architect, Kashef Mahboob Chowdhury, chose then to build directly on the low land and protect the entire site with an embankment which could be built and maintained for much less.

The centre serves and brings together some of the poorest of poor in the country and -by extension - in the world. In response to financial constraints faced by the community, Chowdhury articulates an architecture of the essential – the basic and fundamental are at the core of this design process and at the centre of the lives of the people the building serves. In the direness of the situation and in the extreme limitation of means there remains a search for the luxury of light and shadows, of the economy and generosity of small spaces and of the joy of movement and discovery in the bare and the essential (Site & Report 2016).

3.1.2 Urban context and locality

Figure 3.2: Urban context and locality, Gaibandha, Bangladesh

Image Source: www.google.co.za/maps/friendship centre Date accessed: 06 August 2018

Bangladesh is geographically situated in the delta (a relatively flat area at the mouth of a river or a river system in which sediment load is deposited and distributed) of the Ganges-Brahmaputra river system and though the topography within the territory is hilly, a majority of the country is in the deltaic basin (Site & Report 2016). The people of this region are subjected to extreme poverty as there isn't much economic sustenance in the vicinity. The

knowledge that with every monsoon the ravages of the river could destroy their lives is constant and ever present, yet they remain only because the alluvial soil is rich with fresh silt deposits (Site & Report 2016). The Friendship NGO provides much needed aid and has progressively built its distinctive integrated community-development model, which includes: health; nutrition; education; disaster management; infrastructure development; good governance; and sustainable economic development (Site & Report 2016).

The local architecture is of a simple design with most structures being temporary and built with bamboo, thatch and galvanised-iron sheets. The more permanent structures are built on raised mounds of earth, on the edge of low-lying paddy fields. These are homes in brick masonry, plastered and lime-washed. Chowdhury states that the inspiration for the design was derived from the Buddhist monasteries in the area, and the exposed brickwork, stark character and quadrilateral layout are clearly the architectural influence. The most prominent building material in Bangladesh is terracotta. This is the most common craft material, as the clay in the delta is exceptional. Stone is scarce in the region, and so all construction of low-rise structures is in brick, usually loadbearing, or a reinforced-concrete frame with brick infill. There are thousands of brick kilns dotted across the country, as this is a large part of the informal economy (Site & Report 2016).

Figure 3.3: The inspiration for the building came from the Buddhist monasteries in the area, Gaibandha, Bangladesh
Image Source: www.archnet.org Date accessed: 06 August 2018

3.1.3 Objectives

Friendship is an NGO that focusses its work on the people that live in the remote *char'*, or sandbars/ islands in the river (Site & Report 2016). The main objective of the organisation was to establish a training centre for classes or meetings, or as a facility they could rent out as an income generator. The Architect Kashef Chowdhury states, "*We wanted to take this idea further and truly create a centre, around which the activities of this wonderful organisation would revolve, but that could also serve as a place which brings people together. In this way the architecture needed to be simple and bare: a response to the economy of the region, and with a quality of calmness and serenity that echoes the nature of its riverine landscape setting.*" (Site & Report 2016).

The NGO at the time was a small organisation and it was noted that certain additional needs, such as classrooms could have the option to be combined to become one, the dining hall that could have two spaces for times when two sets of training or conferences were going on, and two "flats" for longer-term researchers or trainers with families, etc.

Figure 3.4: The pavilions help achieve cross ventilation in the building, Gaibandha, Bangladesh

Image Source: www.archnet.org Date accessed: 06 August 2018

3.1.4 Programme and Planning

The design became further complicated due to the site being in an earthquake zone and the low bearing capacity of the silty soil. Therefore the architect ensured that the design allowed for rainwater and surface run-off to be collected in internal pools and the excess pumped to an excavated pond, also to be used for fishery (Site & Report 2016). The design relies on natural ventilation and cooling, being facilitated by courtyards and pools and the earth covering on roofs. The courtyards allow for meeting, contemplation and community gathering space. An extensive network of septic tanks and soak wells ensure the sewage does not mix with flood water.

The ‘Ka' Block contains the reception pavilion, offices, library, training/conference rooms and pavilions, a prayer space and a small 'cha-shop’. The 'Kha' Block, connected by three archways, is for more private functions and houses the dormitories, the dining pavilion and staff and family quarters. The laundry and drying shed is located on the other side of the pond. There is no air-conditioning and the entire lighting is through LED and energy efficient lamps (Site & Report 2016).

Figure 3.5: Between the two blocks are large tanks to collect rainwater. The ‘Kha’ Block, connected by three archways, is for more private functions and houses the dormitories, the dining pavilion and staff and family quarters., Gaibandha, Bangladesh Image Source: www.archnet.org Date accessed: 06 August 2018

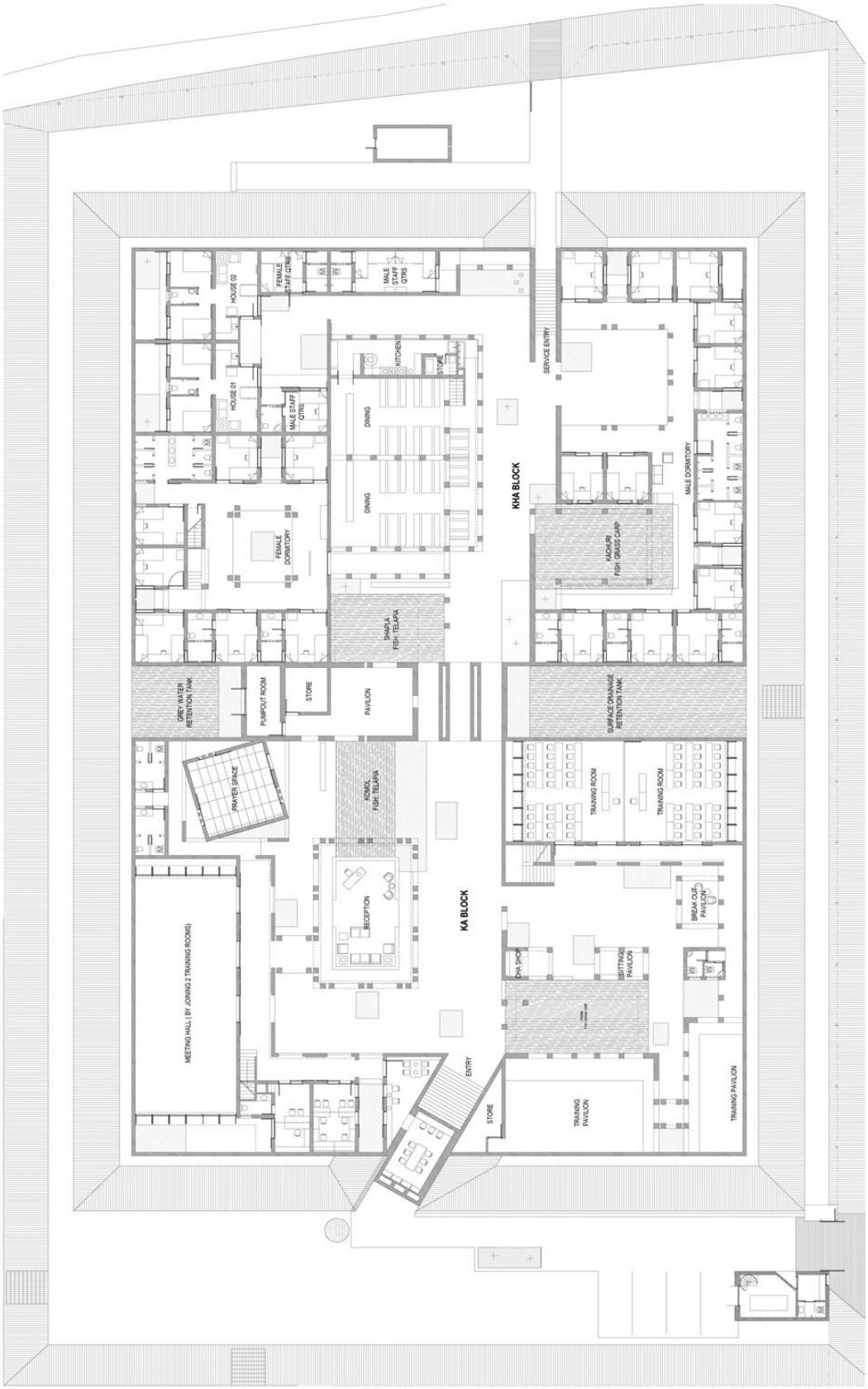

Figure 3.6: Plan showing the 'KHA' block and the 'KA' block, Gaibandha, Bangladesh Image Source: www.archnet.org Date accessed: 06 August 2018

3.1.5 Design Rationale

The building can be described as understated; it searches for a simple truth. It responds to restraints – an architecture of the essential (Site & Report 2016) . The building calls on simplicity and beauty that ultimately is what makes this such a sensitive and apt approach to context and community.

Structural systems

The structure is loadbearing brick masonry with reinforced concrete at times due to it being a seismic zone.

Materials

Loadbearing brick walls:

The brick, used in the paving, steps, plinth, benches, half-walls and loadbearing walls are locally made in a kiln 3.5 km away from the site. The bricks were sorted for size, shape and colour by the site engineers, and only 300 bricks were kept out of every 1,000 produced at the kiln. Even out of the 300, those that were aesthetically inferior were used in the foundations and other unseen parts of the building; so only the highest-quality bricks are visible. This was another way costs were kept down and a beautiful exposed brick finish was achieved.

Renderings and finishes

Terracotta brick: Paving, steps, plinth, benches, half-walls, loadbearing walls

In-situ reinforced concrete: Reinforced concrete frame

Kota stone: Flooring in cafeteria, bedrooms, bathrooms

Mahogany wood, local: Frames and shutters for doors and windows

Glass: Windows

Mesh: In window frames, to keep out mosquitos

Brass: Hardware

Technology

The technology used is appropriate for the environment and the local conditions. It is labour-intensive and uses skill sets available locally. Much of the labour was unskilled, from the nearby villages where the NGO works.

・Traditional brick masonry used in a modernist expression.

・Economical means, appropriate for the budget and community.

Building services, site utilities

The building services are basic due to the low-cost nature of the project:

・Water – well water, treated by reverse osmosis.

・Electricity, with back-up generator.

・Kerosene for cooking meals.

・Ceiling fans for cooling, and cross-ventilation in all rooms.

・ Air-conditioning (as split units) in a handful of the bedrooms and the two apartments, which was added as an option for when the Training Centre is rented out to other organisations.

3.1.6 Observations: Aspects of an 'Architecture for Community'

The Friendship Centre was selected as a precedent for this study due to its connection to community, context and values. The theoretical similarities bear a resemblance to the grounding concepts and theories of the proposed agricultural centre. The centres guiding philosophy remains that the central focus should be the needs of the community and the resulting architecture should respond to these needs and constraints in a sensitive and aesthetically pleasing manner. This allows for the building to become a source of pride for the community it services.

The analysis of the conceptual and theoretical framework explored in this dissertation against The Friendship Centre draws out many take backs that prove to be useful in developing design principles for the proposed agricultural support and training facility. The architecture is successful in providing much needed support for the community due to the extensive cultural and contextual research and groundwork that was done. This allowed for a structure to be designed that was inherently a part of its context and responded to community constraints which provided a place that encouraged pride and admiration from the community. This speaks to the first objective of this study concerning the aspects and constraints that affect the subject community. Using local materials and establishing opportunities for reflection within the building through courtyards and open space allowed for a context and community influenced outcome. This work of architecture symbolises

‘architecture for community’ in that it responds to community constraints, celebrates local culture and identity and promotes empowerment through educational and training spaces and initiatives.

Figure 3.7: Community classes in progress at the centre, Gaibandha, Bangladesh. Image Source: www.archnet.org Date accessed: 06 August 2018

3.2 PRECEDENT 2: AGRICULTURAL TRAINING CENTER, NIANING (SENEGAL)

Architect: UNESCO/BREDA (Kamal El Jack, Pierre Bussat, Oswald Dellicour, Sjoerd Nienhuys, Christophorus Posma, and Paul de Wallik)

Client: Ministry of Education

Design: 1976 - 1977

Completed: 1977

Figure 3.8: External view of the Agricultural Training Center, Nianing, Senegal. Image Source: www.akdn.org Date accessed: 07 August 2018

3.2.1 Introduction

The Agricultural Training Center, Nianing, Senegal was an experimental initiative that offered a program to fifty youth from surrounding villages that focussed on training in market gardening and small scale animal husbandry. They then would return to their home villages at the end of their training in order to start off market gardening or animal husbandry together with the villagers. CARITAS Senegal (an international catholic aid organisation) assisted in providing water and equipment that was needed to start. The centre was to aid in regional and community development as sponsored by CARITAS (Nienhuys, S et al. 1977).

The construction of the building itself was done over 12 months and this allowed the team to develop a system of assisted self-construction. Local labour was employed during the construction which aided in the architecture becoming integrated within the community and environment (Nienhuys, S et al. 1977).

3.2.2 Urban context and locality

Figure 3.9: Urban context and locality of the Agricultural Training Center, Nianing, Senegal

Image Source: www.google.co.za/maps/agriculturaltrainingcentre Date accessed: 07 August 2018

The Agricultural Training Centre sits on roughly 160 square meters of land in the village if Nianing, Senegal and is less than a kilometre from the North Atlantic Ocean. The site is mostly flat and dusty and is populated with large baobab trees. The area is prone to drought and as a result CARITAS the sponsors of the centre are committed to community development through agriculture (Nienhuys, S et al. 1977). This centre is a response by CARITAS to the 1968-1972 drought that affected many people and livestock.

3.2.3 Objectives

The centre's aim was to use agriculture as a facilitator for development and introduce new methods of farming to youths throughout Senegal in order to bring the nation closer to the goal of self-sufficiency (Nienhuys, S et al. 1977). The school holds classes that are divided between theoretical and practical training. As a result a 60 hectare demonstrational farming

area was developed on the adjacent farm. There has been a large influx of students over time and although the initial design saw to a capacity of 50 students, as many as 80 students are known to be enrolled at a time (Nienhuys, S et al. 1977).

3.2.4 Programme and Planning

The schools spatial programme was divided into three zones according to function: the teaching block, the student dormitories with adjacent sanitary block and the teachers housing quarters. The main block is the teaching block which opens into a large open hall that hosts all social activities such as meetings, instruction and dining. The single large classroom and library is organised around an interior garden courtyard. A second courtyard is enclosed by director's offices, a kitchen and the service area (Nienhuys, S et al. 1977). The courtyard design allows for social spaces to be created at the heart of the teaching environment.

3.2.5 Design Rationale

1) The materials and techniques contributed towards providing buildings that possess the durability and performance of those ones conventionally built, using cement block walls and reinforced concrete or corrugated iron sheet roofs that were acceptable to the communities.

2) Materials and techniques used in the construction play the role whereby they contribute directly to socio-economic development. They provided an alternative to imported materials and gave preference to those fabricated from locally available materials in order to generate employment opportunities for local labour.

3) Materials that work in tension are avoided, such as timber and reinforcement steel which were costly and imported. The employment, therefore, of materials working in compression under determined geometrical forms and which permit the provision of spaces of reasonable proportions implied the possibility of using the arch, the vault and the dome.

Structural systems

The architecture of the centre is supported by a structural system of barrel vaults and parallel solid, load bearing sand and cement block walls. The vaults, whose thickness at the crown is only a little over 4 centimetres, were formed using three layers of cement mortar

stabilised with wire mesh at the top of the vault. Rounded plywood struts were used to support the shuttering formed from millet matting. Buttresses counteract the horizontal thrust of the vaults (Nienhuys, S et al. 1977).

3.2.6 Observations: Aspects of an 'Architecture for Community'

This precedent is relevant because of its guiding philosophy to aid in community development. This was achieved through close attention to the context and a sensitive design approach. The centre provided information and training to the surrounding community and helped to aid in community self-sustainability. A context driven approach further allowed for community to be the focus and facilities therefore relevant to the community. Local materials and construction allowed for the enhancement of local cultural identity and agriculture became the driver for empowerment. The building and its complimentary services became a connective factor between the community and opportunity by allowing for skilled training and development creating a strong link between the community and future sustainability. This work of architecture allows for the achievement of 'architecture for community' through context specific design and spaces for empowerment. This is in line with this dissertations key questions and objectives in achieving 'architecture for community' in the sense that the agricultural training centre formed a beacon of support for its surrounding communities and provided much needed linkage to empowerment opportunities.

3.3 CONCLUSION

This chapter set out to analyse the precedents using the principles developed through the literature review that formed the conceptual and theoretical framework. The precedents selected showcased an extensive understanding of the subject community and its context in order to provide relevant architectural interventions. The designs focussed on capturing the spirit of the place through context and scale, specific to the place. The precedents succeeded in capturing vernacular tectonics, materials used in the surrounding built environment and responding to the topography appropriately. The Nianing agricultural training centre was more congruent to the proposal of a connective building due to the fact that it provided services to the subject communities that provided opportunities for empowerment. The Friendship Centre responded to the local climate more appropriately through the use of

materials and construction methods that limited the buildings impact on the natural environment. Due to the community and context, The Friendship Centre is a more appropriate precedent for the proposed agriculture facility. The designers were sensitive to community constraints and presented architecture that respected cultural identity and local construction methods. Empowerment was achieved by providing spaces for teaching and reflection by the incorporation of courtyards and gardens. This is a significant principle for further application as courtyard design has many benefits and allow for much needed community interaction and development. The architecture that was showcased provided a link to greater opportunity for the subject communities through design and facilitative initiatives and provide great inspiration for the proposed agricultural facility for Mariannhill.

'Architecture for community' needs to be contextually bound to place. Therefore the area of study, being Mariannhill and its surrounding informal communities, needs to be explored in greater detail. The following chapter looks at Mariannhill and its surrounding communities and context as a case study.

CHAPTER 4

CASE STUDY

OF

MARIANNHILL

4.0 INTRODUCTION

This chapter sets out to understand the context of the study by analysing Mariannhill and its surrounding farming communities through figure ground and interactive research. The key research question has been formulated as: **How can architecture assist in providing opportunities for peri-urban farming communities facing development constraints?** The primary research conducted in the study area aimed to understand the constraints faced by peri-urban farming communities and investigate the ways in which the built environment can be presented in order to respond to these constraints. The brief for an agricultural facility was established through informants from the literature review and primary research conducted by the researcher. The grounding concept of '**community support**' was formulated by the researcher to guide the design process. This **concept aims to allow for a self-supporting system to be available to subsistence farmers that respond directly to their needs and challenges thus guiding the thread of community influenced architecture**.

The previous chapter examined specific architecture that encompassed the principles of designing for communities in a disadvantaged and peri - urban setting. However, as no site is the same, there is a need to explore the given context in greater detail in order to respond in a manner that is holistic and relevant. This is due to the different dynamic systems that make up different communities and how these communities connect to their given context. As each community is formed around many different instances and circumstances their needs and subsequent constraints are generally specific. Therefore this chapter begins by exploring the location of Mariannhill and how it has grown into the community it is today. The context of Mariannhill will then be analysed through figure ground study and discussed, both the peri-urban and rural setting of the informal settlement. This is crucial so that the spirit of Mariannhill and context may be understood.

The materiality and tectonics of Mariannhill are greatly informed by the natural environment and its surrounding context. The history and culture of the founding Mariannhill Trappist Monastery and its surrounding and accompanying initiatives are deep rooted in servicing the surrounding communities. The architectural language of the surrounding context has manifested in a way through the constant use of certain materials which has enhanced a certain spirit of place which will be explored and elaborated further on in this chapter.

Culture plays an integral role in community development thus the human activities and cultural rituals within Mariannhill will be discussed so that the resultant architecture responds in a manner that is supportive and accommodating to its subject community.

As this is a study that presents community as the influencing factor for responsive design, observation and discussions with key personnel from respected organizations and the subject community will be discussed in order to understand how architecture can respond to the needs of the community. It will also provide a perspective of the surrounding issues facing agriculture.

The area sits within the Pinetown municipality in a bordering peri-urban agricultural belt. The landscape is undulating and for the communities of Tshelimnyama and Mpola, subsistence agricultural production takes preference; therefore the topography of the area will need to be explored so that the architecture may respond accordingly.

This chapter will review how communities use space in response to their constraints with regard to informal and subsistence farming. The identified elements conducted through the research will then be used to identify the spaces needed within the Agricultural facility through the guiding concept of 'community support'. Other elements highlighted will be accessibility in order to inform the location of the building in relationship to its context, the materials and methods that will be used in the construction of the building and the type of landscape that the building will need to respond to.

The chapter concludes by presenting the evidence for the suitability of an agricultural facility intervention for Mariannhill.

4.1 CONTEXT: IN THE SHOES OF THE RESEARCHER

This study focussed on understanding peri-urban farming communities and the constraints they faced in their daily lives, therefore, multiple visits to the site were imperative in order to understand the context and the needs of the community. In order to gain authenticity and inclusivity informal interviews with residents of Mariannhill, but specifically with the farming community members of Tshelimnyama and Mpola were conducted. Semi structured interviews with The Fair Food Company manager Ms Paula Osborne who deals with partner

farmer initiatives were undertaken as well as observations of the place (Mariannhill, Tselimnyama and Mpola), the way people use the place and their daily activities. Photographs of observations were taken and are presented in this chapter. However some informal sector activity was difficult to identify owing to its range of activities that are both legal and illegal and as such permission was not granted for photography and a working knowledge of informal activity in the area was gained through informal conversations with community members. As the nature of this research is vast and spanned over a large area, multiple visits to the site and engagement with the communities were necessary in order to gain a well-rounded understanding of the community and the context.

There was some limitation on data collection due to the language barrier that was present. This resulted in time consuming interviews and the need for a translator to assist with translating the questions and answers. However, engagement with community members and informal conversations proved to be a lot more informative as local community members found it easier to talk about the constraints and issues they faced in an informal manner.

Nevertheless, despite the challenges faced, the information gained was valuable and helped inform the design of an agricultural facility for Mariannhill that is inherently a response to the constraints faced by the community concerned.

4.1.1 Location

Mariannhill is a region that roughly covers approximately 176 square km. The N3 highway borders the area to the North and is flanked by Shallcross, Chatsworth and Queensburgh on the East, the KwaZulu border and Mlazi river fall to the South and to the West by the Shongweni river (Wilson n.d. 1992). The origin of Mariannhill can be attributed to the establishment of the Mariannhill Monastery and the development of its surrounding community initiatives such as the St Marys hospital and St Francis college within the last century (Wilson n.d. 1992).

The founding fathers of Mariannhill bought two farms – Zeekoegat (which included the present-day areas Thornwood, Mpola and Tshelimnyama – the subject communities) and Klaarwater (which included the areas of St Wendolins and Klaarwater) and in the wake of

their missionary work allowed settlers to stay on the land with the condition that they were baptised into the Catholic faith (Wilson n.d. 1992).

The areas of Tshelimnyama and Mpola form part of the main study area where the major economic and livelihood strategy is subsistence farming. Although subsistence farming as a livelihood strategy exists beyond these two communities further into the interior, due to the vastness of the area and time constraints, Mariannhill, Tshelimnyama and Mpola were selected as the subject communities for the basis of this study. Figure 4.1 depicts the study areas of Mariannhill, Tshelimnyama and Mpola.

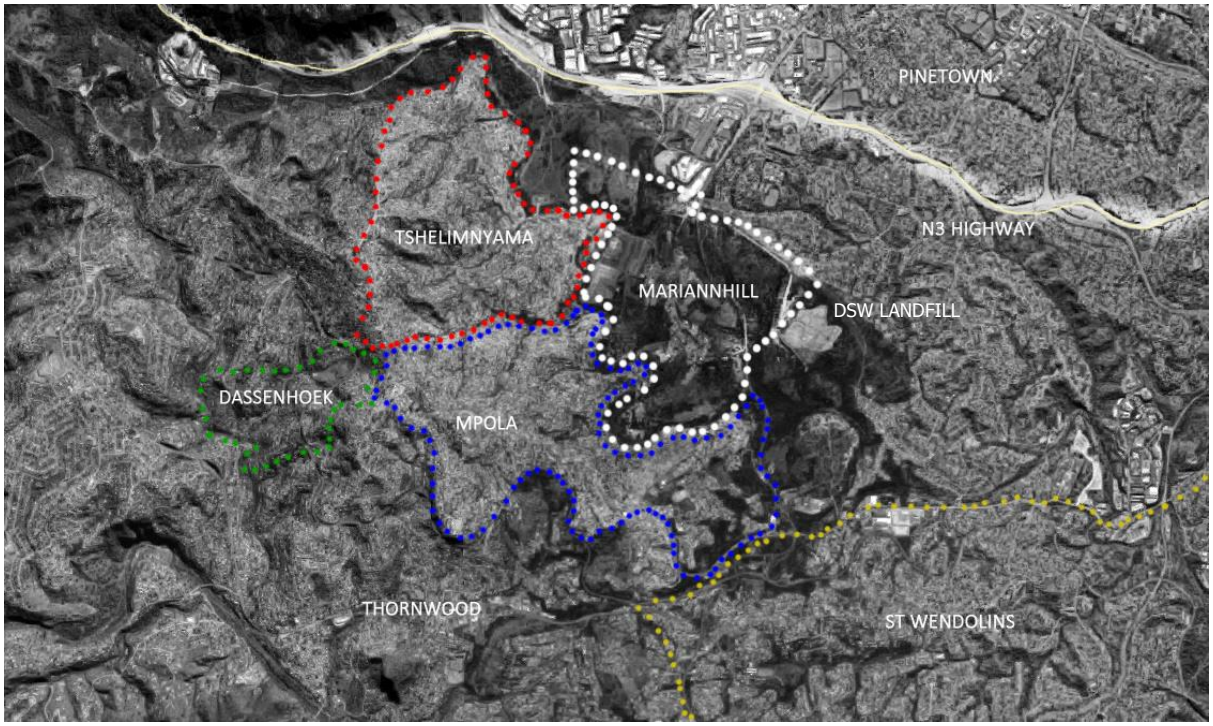

Figure 4.1: Image depicting the study areas of Mariannhill, Tshelimnyama and Mpola. Image Source: www.google.com Edited by Author 2018

4.1.2 Accessibility

The main road that allows for vehicular access into Mariannhill and the surrounding communities is Umhlathuzana Road (Fig. 4.2). This road joins to the N3 highway and also connects to the informal roads within the informal settlements of Tshelimnyama and Mpola. Umhlathuzana road is frequently used by mini-van taxis as well as private vehicles going to and from the settlements. There exists an informal taxi rank at the entrance of Tshelimnyama which remains busy throughout the day however, peak periods are mostly in the morning between 5am and 7am and in the early evening between 4pm and 7pm. The internal parts of

the settlements are plagued with increased levels of poverty, poor sanitation and limited access to nutritious food and clean water due to the hilly and undulating landscape causing limited accessibility

This results in these communities depending heavily on the informal economic sector and subsistence agriculture for income and food. The peri urban dualistic identity that exists between Mariannhill and the surrounding informal Settlements is formed by the influence of the context on the community and the accessibility and proximity to higher order services. The first being an area of housing for community members whilst the other being the only place they can derive their livelihoods from through subsistence agriculture. This identity creates a sense of hybrid 'place' that offers a great deal of potential for community development initiatives that speak to a 'New Ruralism' (Viviers et al. 2017) perspective of 'farming, living, playing'.

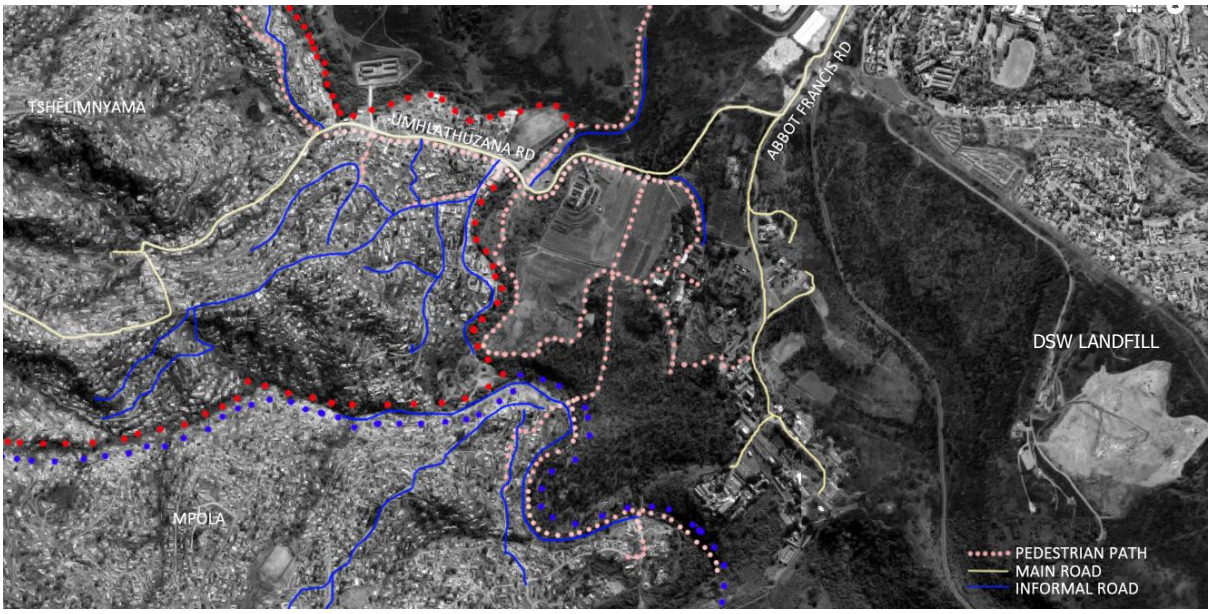

Fig 4.2 Image depicting the main accessibility routes. Image Source: www.google.com Edited by Author 2018

4.1.3 Topographical Analysis

The topography of the region is generally undulating however, over the years many informal roads and footpaths have been formed that allow for easier navigation. The region consists of a settlement pattern that is scattered and informed primarily by the availability of land for agriculture and avoidance of harassment (Uytenbogaardt, R.S et al, 1992).

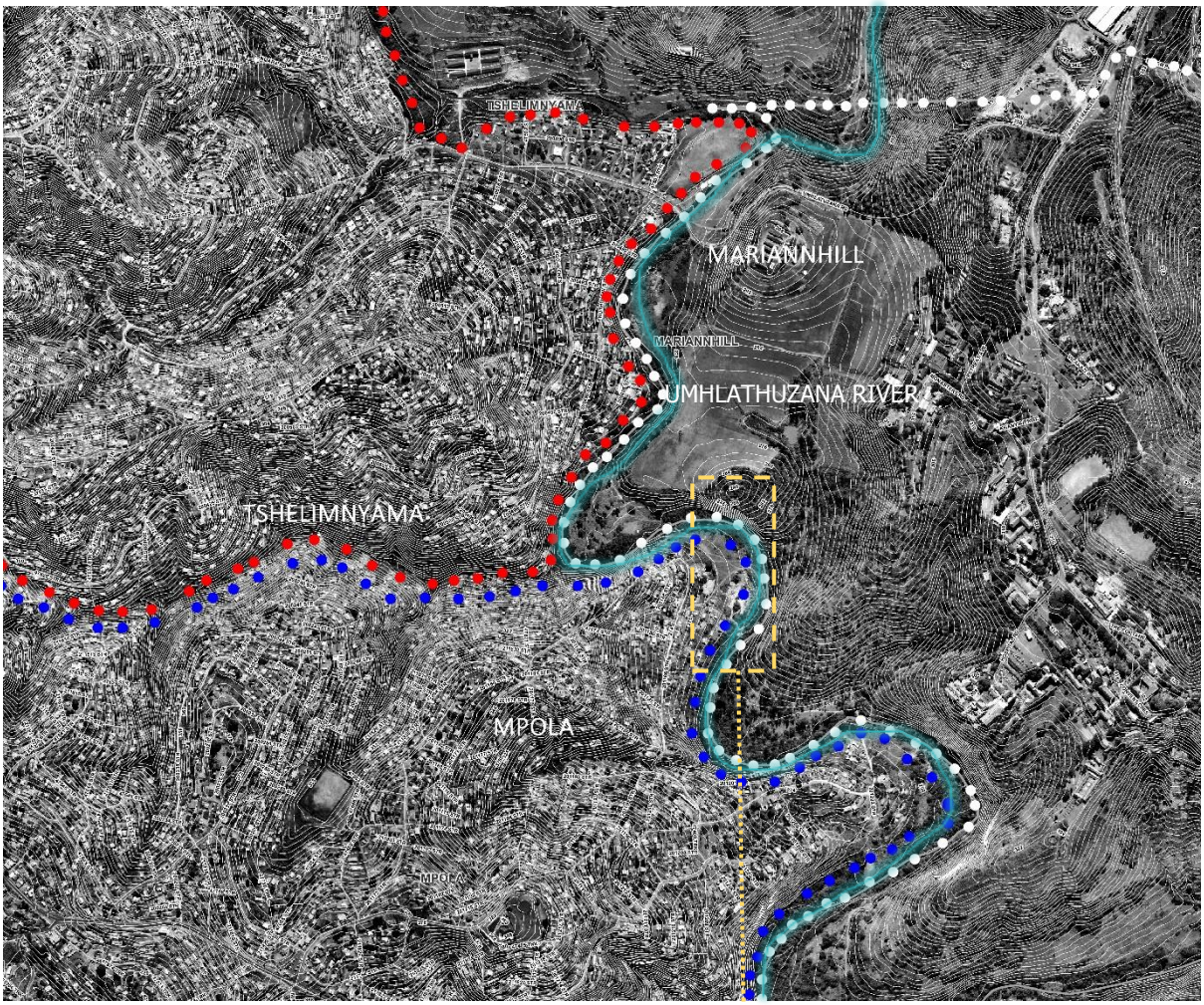

Fig 4.3 Image depicting the general topography of the subject area. Image Source: EThekwini Municipality. Edited by Author 2018

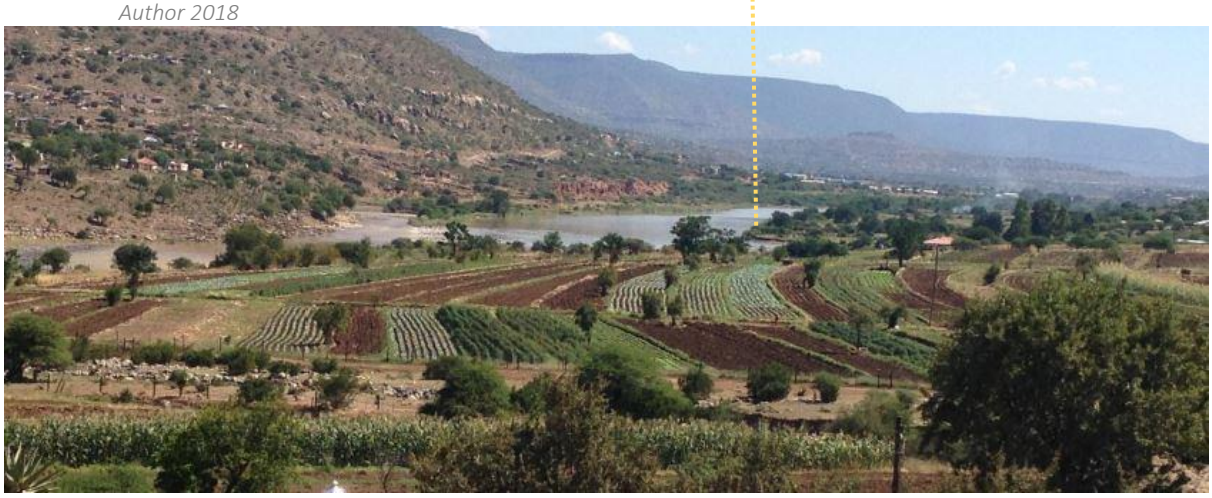

Fig 4.4 Image depicting community gardens on the banks of Umhlathuzana River. Image Source: Courtesy of The Fair Food Company (TFFC). Edited by Author 2018

4.1.4 Figure Ground Analysis of Surrounding Context

Before proceeding to examine the chosen site in detail it is necessary to analyse the surrounding context in order to understand the history and past influences on society that has helped shape the context today. The figure ground analysis (Fig 4.5) provides great insight into the development patterns and local morphology of the context. As previously stated, Mariannhill owes its establishment to the dedicated Trappist monks who settled on the land in December 1882 (Mcallum Graham Leslie, 2017). The leadership of Abbot Francis Pfanner saw the monastery flourishing on the mission fields of Natal and Zululand so much so that it was impossible to realise the obligations of a contemplative life (Mcallum Graham Leslie 2017). Due to this, in 1909 the monastery was re-constituted as the Congregation of the Missionaries of Mariannhill and this allowed the remaining brothers to focus on the fields and the thriving agricultural harvest and farming (Mcallum Graham Leslie 2017). The figure ground analysis of the context showcases the dualistic nature of this peri-urban interface with an apparent formal and informal positioning of architecture. The location of the selected site provides a great opportunity to encourage linkage through architectural form connecting the urban and rural cores.

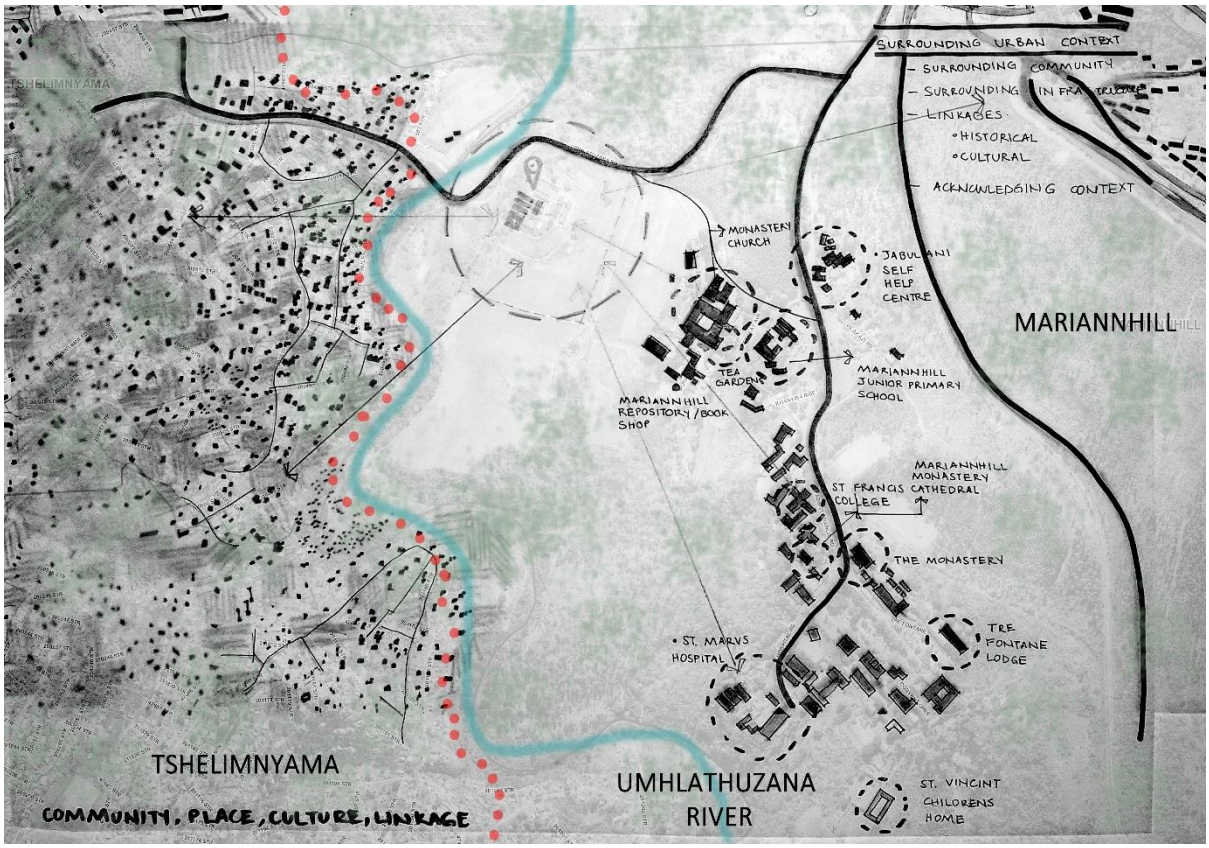

Fig 4.5 Image depicting the surrounding context of Mariannhill. By Author 2018

Mariannhill is known to be the largest mission station in South Africa and boasts an exquisite group of brick buildings (KZNIA 2014). The surrounding buildings include the Saint Marys Hospital, Mariannhill primary and secondary schools, the Saint Francis College and the Saint Vincent Children's home, all of which bear the same brick exterior and similar construction.

The Mariannhill Church

The monastery church is a modest building that encompasses a simple timber structure that is slotted within the walls of bricks that were made on site, with a roof that is corrugated iron sheeting (KZNIA 2014). The basilican structure helps to combat the humid Durban climate and allows for cross ventilation and necessary air flow in the building through a central courtyard.

Fig 4.6 The Monastery Church of Mariannhill. Image photograph by Author 2018

A beautiful feature of the church facades are the handcrafted reliefs on the internal walls which are set in a circular niche and placed between each Romanesque arch. The reliefs pay homage to the identity of the initial settlers and speak of the time that each was finished and

installed. The agricultural heritage of the region is beautifully crafted into the reliefs by depicting indigenous food varieties and fruits and vegetables as depicted in Fig 4.7

These would have come from the large vegetable gardens that were established by the monastery and still exist today (Mcallum Graham Leslie 2017).

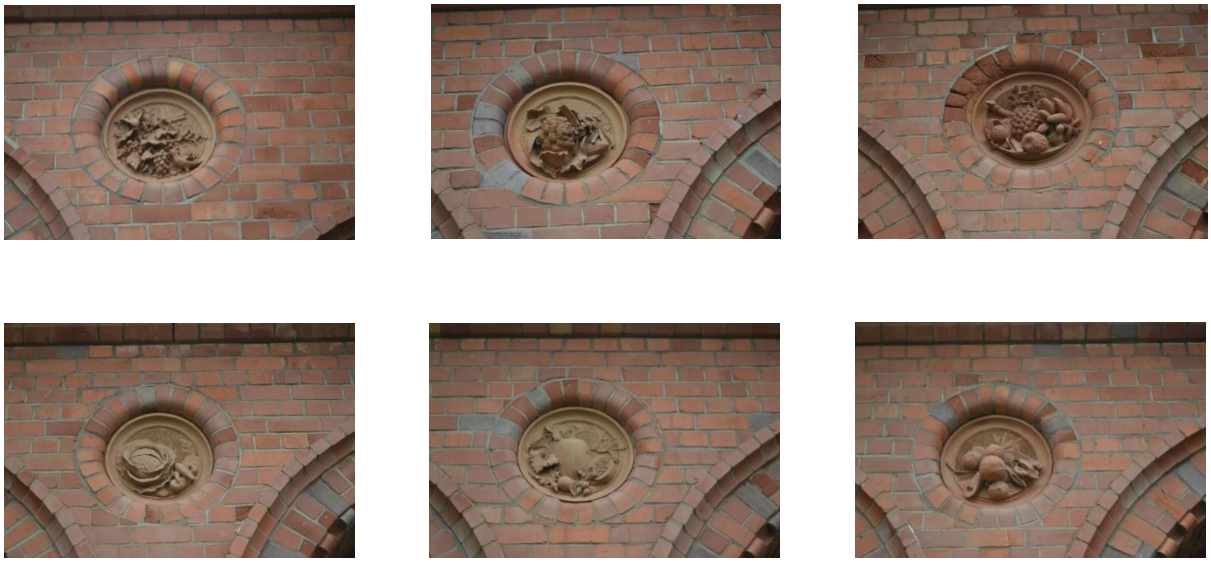

Fig 4.7 Images of the handcrafted reliefs showing the fruits and vegetables from the gardens on the internal walls of the Mariannhill Church. Image www. grahamlesliemccallum.wordpress.com 2018

Mariannhill Jubilee Primary and Secondary School, Saint Francis College and Saint Vincent's Childrens Home

It is worth mentioning the educational and youth care institutions within the Mariannhill region as the youth play a very integral role in community development. Establishing an interest in agriculture through extension support and training allows for sustainable community empowerment. Through informal conversations with teachers and learners at Mariannhill Jubilee Primary it was established that children enjoy outdoor gardening activities and the provision of educational gardens could be quite beneficial to the youth and the community as a whole. Developing links between the proposed agricultural facility and youth institutions thus becomes one of the aims of this study.

Fig 4.8 Mariannhill Jubilee Primary and Secondary Schools. Image by Author 2018

St Mary's Hospital

The St Mary's Hospital in Mariannhill was first opened in 1922 and has been taking care of the surrounding communities up to the present day (Ulwazi Programme 2016). The Hospital has developed from a few temporary buildings to having an operating theatre, maternity section, outpatients' clinic and nurses training centre. As health and nutrition is an important social issue that requires attention within informal settlements providing opportunities to learn about healthy nutrition through 'healthy food hubs' as mentioned in chapter two, and alternative natural medicine and healthcare would benefit the surrounding communities significantly.

Fig 4.9 Mariannhill St Mary's Hospital. Image by Author 2018

DSW Mariannhill Landfill

The DSW Mariannhill Landfill site is a noteworthy mention in this case study due to the fact that as much as 20.4% of greenhouse emissions can be attributed to agriculture and land use (Csir 2018). This is caused mainly by deforestation, emissions from livestock, fuel used for agriculture, forestry and fishing, direct soil emissions and forest fires (Luetkehans Nate 2017). The DSW Mariannhill Landfill has incorporated within its design an ecosystem restoration development and has been registered as a National Conservancy Site (The Citizen 2016). The landfill consists of many innovative methods to deal with waste management as well as

maintaining indigenous ecosystems, preserving local biodiversity and moves toward decreasing landfill impacts in regard to the emission of greenhouse gases.

Fig 4.10 DSW Mariannhill Landfill. Image Courtesy Ethekwini Municipality 2018

The facility treats Leachate (a chemical produced when rainfall passes through waste) and converts it into to a re-usable standard (quality) that significantly lessens the dependence on the municipal sewer and water supply and subsequently supplies water to areas on the site that require dust control and irrigation of green and planted areas. The plant also reuses waste products like methane gas as fuel to generate electricity and as result, the plant is mostly self-sustainable (Ingenieurswese Siviele 2007).

Fig 4.11 leachate treatment plant, indicating construction on steep topograpgy to blend in with the surrounds - Image Source https://journals-co-za.ukzn.idm.oclc.org 2018

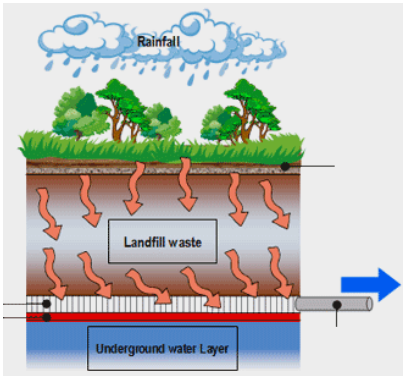

Fig 4.12 Leachate Conversion Process Image Source http://www.getec21.com 2018

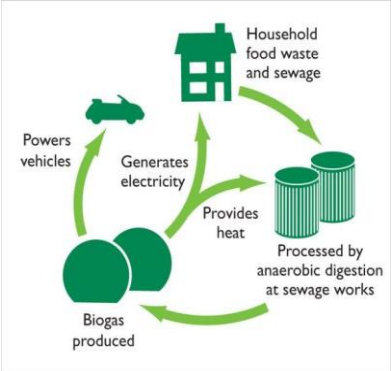

Fig 4.13 Methane Conversion Process Image Source methanegaskimawashi.blogspot.com 2018

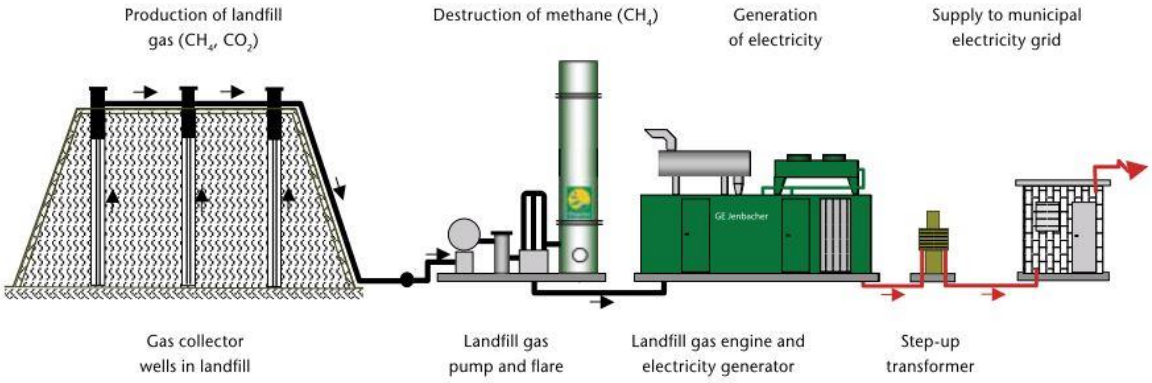

Fig 4.14 DSW Mariannhill Landfill – gas to electricity schematic diagram. Image Source https://journals-co-za.ukzn.idm.oclc.org 2018

The DSW Mariannhill Landfill has seen much success in keeping with its philosophy of the use of 'natural, low-cost and robust' treatment processes which in turn benefit the environment and the surrounding community (Ingenieurswese Siviele 2007). This project indicates a valuable takeback wherein the methods utilised in running the landfill can be used and implemented as a blueprint for the proposed community agricultural facility and in that way benefit the community and the environment.

Surrounding Informal settlements

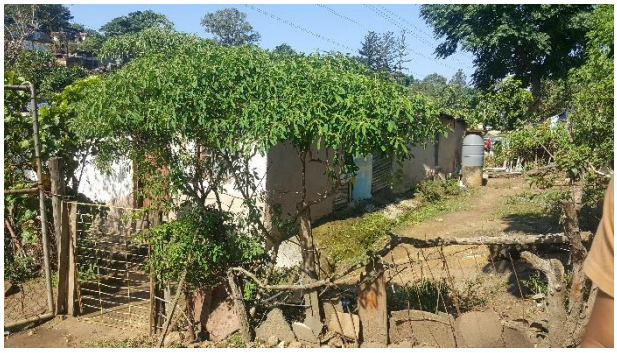

Fig 4.16 Peri Urban Dwelling – Tshelimnyama. Image by Author 2018

Fig 4.15 Informal pathway betwee Tshelimnyama. Image by A

Fig 4.17 Informal subsistence agriculture Tshelimnyama. Image by Author 2018

The peri urban settlement of Tshelimnyama and Mpola feature self-built dwellings in close proximity to each other. The arrangement is largely dependent on the topography and the availability of land for agriculture. Most dwellings have small vegetable plots that feed the immediate family and surplus is sold to the surrounding neighbours or taken far out to the Warwick Junction Markets to be sold. Informal pathways are formed between the dwellings to make it easier to traverse. Figure 4.18 depicts an illustration of the type of building arrangement on the peri urban landscape. The dwellings are constructed along the natural contours of the land. The dwellings are small and this is due to the use of vernacular building techniques and the allowance of structural strength of local materials. There are often more vegetable gardens between dwellings and these sites can only be accessed by foot.

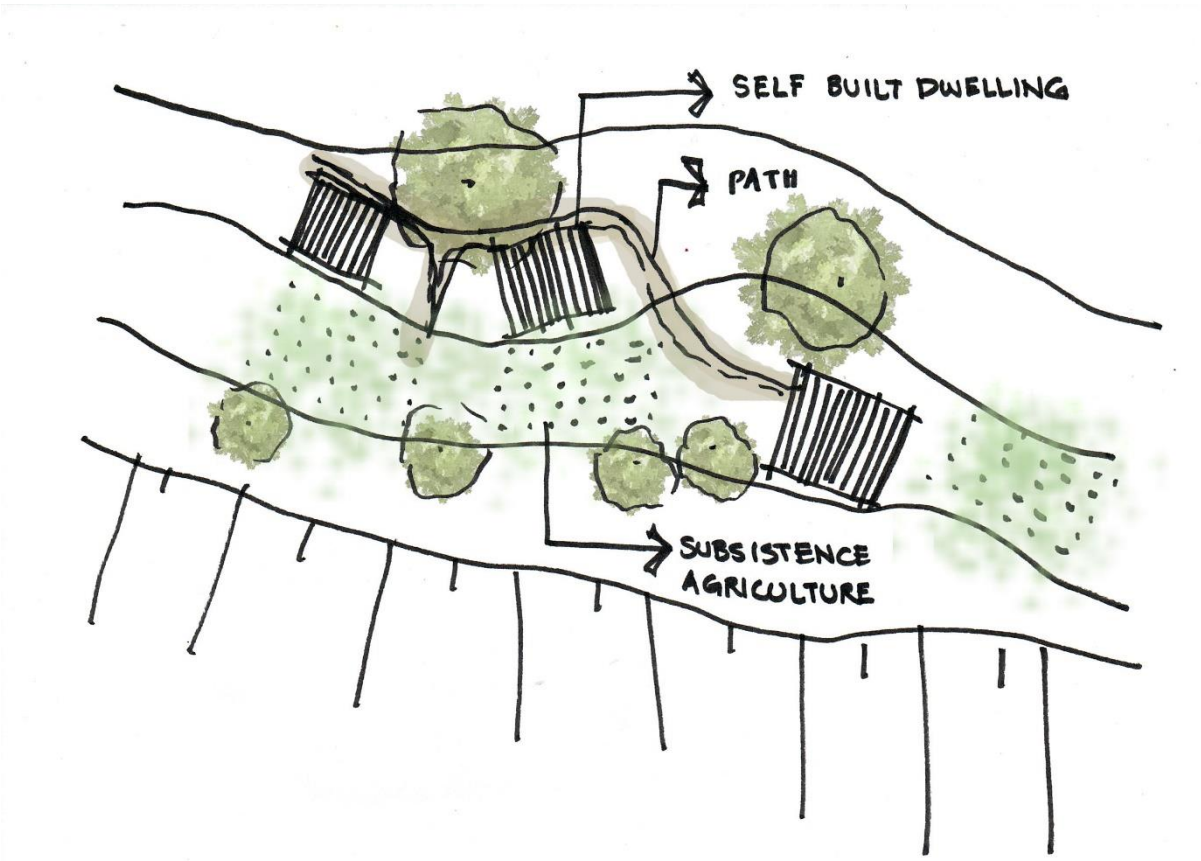

Fig 4.18 Illustration indicating informal dwellings, Informal subsistence agriculture and footpaths- Tshelimnyama. Image by Author 2018

The layout of the surrounding context of informal settlements through figure ground analysis was revealed to be spread out in an uncontrolled mat pattern. This is a source of inspiration

for the researcher in terms of using the existing topography and architectural language to build on a community identity and encourage what is strong within the community. Using familiar materials and cultural practices with new methods of construction and technologies allow for the strengthening of the hybrid identity which is inherently what gives these communities its spirit. The following section focusses on identifying the user groups, the culture and human activities of the community. The figure ground and contextual analysis of the surrounding context of Mariannhill provides great insight into the construct of community systems and the influence of surrounding architecture. The analysis of these buildings through figure ground study provides the opportunity to further establish Mariannhill as a connective landscape by providing linking spaces and place for empowerment initiatives to allow for the proposed agricultural facility and the surrounding architectural and agricultural context to interact.

4.2 IDENTIFYING THE 'PLACE' OF MARIANNHILL

Mariannhill and its surrounding areas consist of diverse communities that host a variety of user groups. From various visits to site, three user groups were identified that form part of the main population. The urban 'tourist', the youth, and the local community members of Mariannhill, Tshelimnyama and Mpola are the key user groups that were identified. This was important to note as these user groups will ultimately define the spaces that are needed in the Agricultural facility. The resulting architecture becomes influenced by these user groups and begins to provide spaces that will be utilised and fulfil their function for the particular user groups of the area essentially embodying 'architecture for community'.

The Urban 'Tourist'

The urban 'tourist' consists of the visiting public from Pinetown and the surrounding urban context. The Mariannhill church sees a lot of the surrounding community members frequent the church and tea garden on Sundays. The group is multi-generational and creating place for families to enjoy is important. There is potential for the design to develop as an agri-park that would invite the public in, as the area contains beautiful greenery and natural high traffic foot paths around the site. The facilities ranging on site will look to invite tourism by developing the high traffic foot paths into an agri-trail around the site and Umhlathuzana River. The urban tourist user group shares a youth profile where it can include touring groups such as schools or universities, through whom awareness may be enhanced for future generations,

through observatory learning and participatory physical learning. For the urban tourist user group, places to dwell are important and should be taken into consideration. This can be portrayed through the use of courtyard design in the final proposal.

The Youth

The youth form part of the second user group and care should be taken to not blanket label the youth as one uniform crowd. There exists a need to recognise the situation of the youth being both from the urban and peri urban/rural backgrounds. It can be further distinguished that young people aspire to make a living out of various sectors and agriculture can provide many different opportunities. Agriculture need not be confined to farming or production and processing operations; it can include a wide variety of activities such as homesteading, small-scale farming, agro processing, setting agricultural policies, marketing and doing international trade in agricultural commodities, among others (Brown 2012).

As such this multiplicity indicates that land acquisition need not be a mandatory prerequisite in order to support the youth in their field of career choice. The availability and provision of extension and training opportunities, business administration and communal experimental gardens would allow the youth great opportunities regardless of the career direction be it professionals in the sector or farm engagement (Brown 2012).

The local community

The Local community form the third and largest influencing user group. Socially restrictive systems such as patriarchy, colonialism and apartheid produced a stigma regarding the involvement of small non-white farmers within society. These systems have manifested an urban rural dichotomy that has translated into the built environment and related infrastructure. Due to embodying beliefs from these systems which marginalized the non-white population, the resultant peri-urban interfaces remain largely unsupportive of farmer's needs and lifestyles. A responsive architectural strategy would see the provision of a facility that harnesses community agriculture and provides a platform for greater exposure to opportunity and value adding sectors.

Community Activities

Informal sector activities consist of a wide variety of both legal and illegal activities. These activities include shebeens, majority of the women are involved in vegetable gardens and

dressmaking, selling new and second hand clothes that is purchased outside the area. Small informal 'spaza' shops and street hawkers occur in all areas and sell a range of items that include cold drinks, paraffin and small household commodities. Skilled and unskilled economic activity also exists which include backyard mechanics, informal construction workers, and informal herbalists working in the area. Through informal conversation with community members it was learned that there are a number of difficulties that face the informal sector which hinder development into a more lucrative economic outcome, these include;

- No means of furthering skills development in any sector i.e. business, agricultural etc.
- Markets are non-existent and access to markets are a great constraint due to distance and transport costs
- Equipment like sewing machines that the women have are old and do not work well and acquiring new ones is expensive and difficult to achieve

The informal sector is typically a survival strategy for majority of the community of Tshelimnyama and Mopla and there exists a potential for growth. However, as mentioned in the literature review and evidenced in this case study, the informal sector cannot survive and address the unemployment issue as a single entity, there needs to be a strong link between the formal and informal sectors in order for community development to occur.

Fig 4.19 Images of local women gardening in informal home gardens. - Tshelimnyama. Image Courtesy The Fair Food Company 2018

Small scale – subsistence home gardens are the main source of food and income, a major constraint is market access where people have to travel to the Warwick markets to sell their produce as there is no access to markets within the vicinity. No high care processing or value adding services available to community members.

Fig 4.20 Image of shipping conta to tuck shop Tshelimnya Author 2018

Fig 4.21 Image of hawker on the roadside Tshelimnyama. Image by Author 2018

Fig 4.22 Image of informal timber construction Mpola. Image by Author 2018

Fig 4.23 Image of roadside 'spaza' shop Mpola Image by Author 2018

4.3 THE SIGNIFICANCE OF AGRICULTURE AND PROPOSING LINKAGE

Agriculture plays a significant role in shaping the cultural identity of Mariannhill, Tshelimnyama and Mpola as most homes are involved in various types of cultivation. This includes home-based business, backyard shacks, street trading, squatting amidst formal dwelling areas and urban agriculture. Agricultural practice in the peri-urban interface of Mariannhill afford subsistence farmers with a sense of cultural identity by allowing for the facilitation of common understandings, traditions, and values. These aspects are all central to the identification of plans of action to improve well-being and foster healthy community development.

Agriculture and its complementary activities such as informal trade and community gardening, contribute to building a sense of local identity and solidarity. This culture of food

production and common identity influences the confidence rural communities have for coming together to address specific needs and problems. Harnessing and expanding on this local culture would mean establishing initiatives that celebrate and promote agriculture and education which will ultimately lead to community empowerment. Proposing Mariannhill as a connective landscape between the urban and rural cores would allow for much needed community empowerment and economic security. Harnessing the existing culture of agriculture provides an important link to identity and place of these rural communities.

4.4 AN AGRICULTURAL FACILITY INTERVENTION FOR MARIANNHILL – 'ARCHITECTURE FOR COMMUNITY'

Peri-urban farming communities within the surrounding context of Mariannhill, Tshelimnyama and Mpola face numerous informational, economic and infrastructural constraints that hinder community growth and development. These include that of access to value adding agricultural processing facilities, physical market access, access to funding, access to market information and access to technology which directly influences the economic viability of the small and medium scale farmers in these areas. Lack of infrastructure to encourage exchange in these areas limit community economic empowerment and growth. The suitability for an agricultural facility for Mariannhill is evidenced in the constraints that small farmers face and the need for greater access to opportunity. An agricultural facility designed in this hybrid context will provide for an array of community members and help to uplift communities by celebrating cultural identity and fostering empowerment supporting a strong link between the urban and rural interfaces. The information gathered from the focussed case study of Mariannhill showcased the need for an intervention that supports the community in a way will help develop existing potential. The literature review provided the framework and platform for enquiry into the design for community influenced architecture. This case study allowed for an in depth analysis of the community and its context and provides valuable insight towards design drivers for the proposed architectural intervention and Mariannhill as a connective landscape. These drivers suggest the inclusion of informational, infrastructural and economic support by means of establishing architecture for education, market exchange and greater links to opportunity from the larger surrounding context. The design of an agricultural facility that provides support and training opportunities to small subsistence farming communities around

Mariannhill will inherently be what symbolises ‘architecture for community’ as this is a result of architecture influenced by community needs and thus embodying ‘community support’

4.5 CONCLUSION

The case study that was carried out in the Mariannhill, Tshelimnyama and Mpola regions laid down the foundations for understanding the nuances of these communities, the constraints they are afflicted with and in turn how these constraints can be used to influence and guide the design for a responsive architectural proposal. The figure ground analysis allowed for an extensive review of the surrounding architecture and urban pattern and produced a map of Mariannhill that can be proposed as a connective landscape due to its hybrid nature. Elements from the surrounding architecture and community can be incorporated into the proposed architecture that would allow for a strengthening of community spirit and cultural identity. The significance of place and cultural identity in Mariannhill is evidenced to hold great value and harnessing this would provide great opportunity and potential. The situation of Mariannhill in its larger context through figure ground analysis showcases the niche opportunity to develop Mariannhill as a connective landscape in essence providing opportunity and benefit to both urban and rural cores. In its hybridity, this region displays its spirit of place through its developing context and its communities. Understanding the user groups further allows for a greater contextual and community specific response in design. The constraints and conditions of the context ultimately aid in developing the design concept of ‘community Support’ in line with community influenced architecture. This concept of the desired outcomes of the proposal will be developed further in the findings and recommendations section of this dissertation towards achieving ‘architecture for community’.

CHAPTER 5

FINDINGS AND RECOMMENDATIONS

FINDINGS AND RECOMMENDATIONS

5.0 INTRODUCTION

This chapter shall present the analysis of findings that was garnered from the formal interviews and questionnaires and informal conversations that was undertaken within the Mariannhill, Tshelimnyama and Mpola communities. Primary data was gathered by means of an investigation into the "daily life" and constraints faced by peri-urban farmers. Interviews and discussions with community members that were active participants in informal subsistence farming as well as conversations with Ms. Paula Osborne and Mr Walter Coughlan from the Fair Food Company have provided insights and helped develop strategies for responsive architecture influenced by the communities' needs and constraints. This helped to provide a vital understanding of the subject communities and develop what is needed socially and architecturally in order to help alleviate developmental constraints faced by the communities. The theoretical and conceptual framework analysed alongside existing precedents evaluated the different approaches and solutions to designing for underprivileged communities. The body of literature researched within the literature review set out to address the problem statement of this dissertation and In turn answer the main key question of this dissertation:

Peri-urban farming communities within the surrounding context of Mariannhill face numerous informational, economic and infrastructural constraints that hinder community growth and development. These include that of access to value adding agricultural processing facilities, physical market access, access to funding, access to market information and access to technology which directly influences the economic viability of the small and medium scale farmers in these areas. Lack of infrastructure to encourage exchange in these areas limit community economic empowerment and growth.

How can architecture assist in providing opportunities for peri-urban farming communities facing development constraints?

It was revealed through the conceptual and theoretical enquiry that in order to design for disadvantaged communities a holistic approach to design needs to be applied. Understanding the community, the context and cultural identity play an important role in the design process for 'architecture for community'. New Ruralism (Viviers et al. 2017) is an approach that takes

in the hybridity of the landscape and proposes an overlapping approach of 'farming, playing, living' which results in a multi-functional and sustainable methodology to development. The establishment of 'place' and celebrating the cultural identity of farming communities spoke to the ability for the design to foster an identity containing notions of education and sustenance which proved to be imperative for supporting small and medium scale farmers. A meaningful and nurturing identity as well as one containing a safe and functional interface were deemed to be important guiding factors in the design process.

5.1 ANALYSIS OF RESEARCH FINDINGS

The foregoing research used the conceptual and theoretical framework of figure ground analysis, place, and linkage in order to understand what constitutes community and as a platform for enquiry into the different approaches toward a sustainable architectural response to community needs. This chapter will analyse the most significant responses and views from questionnaires and formal and informal interviews that were key informants in developing the grounding concept of 'community support'. Three operational parameters were investigated namely: access to technology, access to markets and access to information in order to understand how the above mentioned factors affect sustainability of small and medium scale farming, as well as to establish strategies for a design proposal. A total of 30 community members engaged in informal subsistence farming were interviewed.

Access to Technology

The first objective was to determine the availability and access to technology that community members practicing informal subsistence farming had. The results indicated that majority of the interviewed community members believed that they were always behind as depicted in Fig. 5.1.

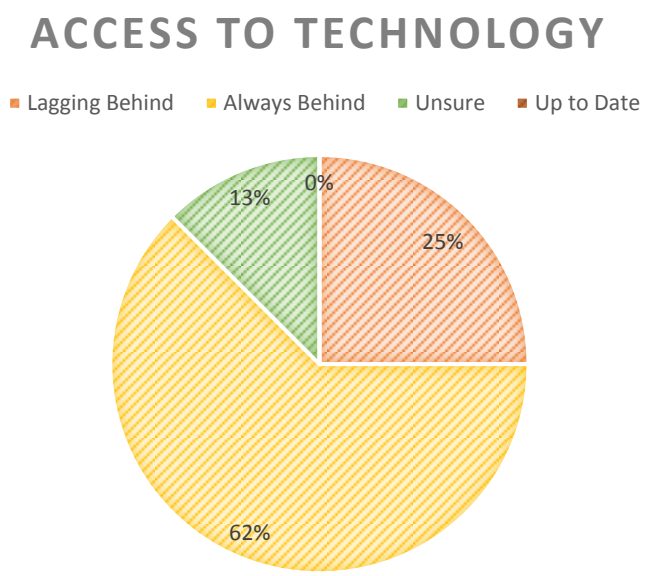

Fig 5.1 Analysis of 'Access to Technology'. Image by Author 2018

Fig. 5.2 portrays results of when farmers were asked about their access to farming equipment, soil testing equipment, storage facilities, and transport. The results indicated that Research and laboratory testing facilities (soil testing equipment) were not available to them, however, most had basic tools and used primitive methods of farming. Due to the effects of social patriarchy, these non-white members of community are marginalised and resort to subsistence farming as it is their only method of survival. Technology can play a pivotal role in enhancing productivity and effectiveness saving on costs and minimising losses.

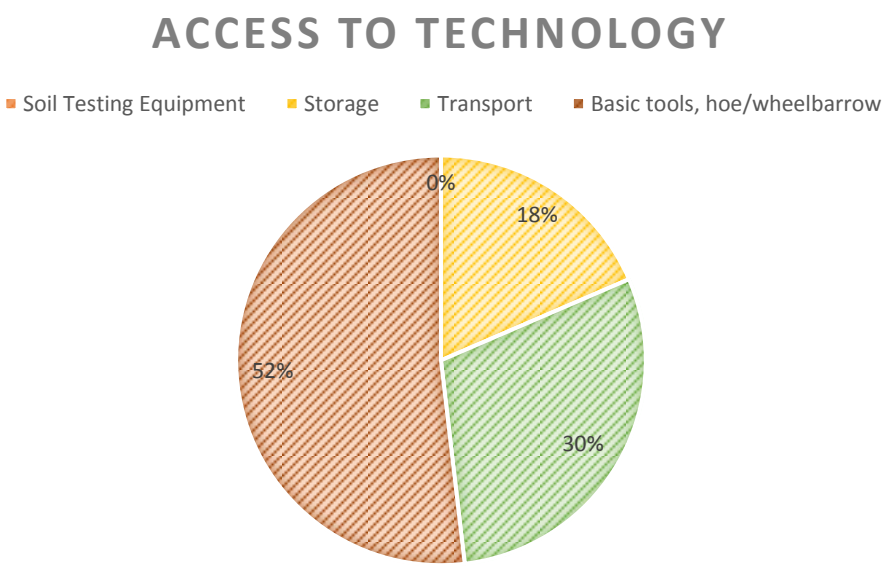

Fig 5.2 Analysis of 'Access to Technology and equipment'. Image by Author 2018

The findings from the access to technology segment helped develop the first tier of *informational support* for the concept of 'community support' for the proposed agricultural facility.

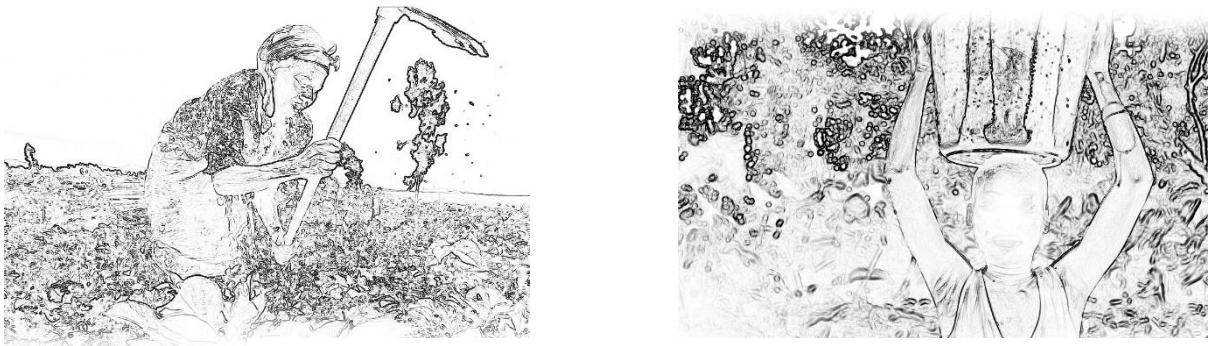

Fig 5.3 Limited means of equipment – Source www.ofm.co.za Image edits by Author 2018

Access to Markets

The second objective was to determine the availability and access to markets that community members practicing informal subsistence farming had. Findings indicate that majority of the respondents sold their produce at their vegetable garden gates or to the surrounding locals. Another finding was that farmers chose to sell their produce to middle men. When questioned on why the use of a middle man, they responded with not having a working marketing knowledge and higher returns as the main motivating factors.

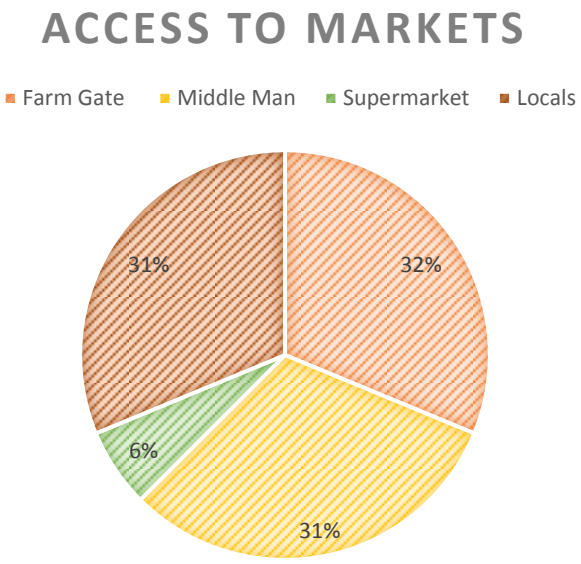

Fig 5.4 Analysis of 'Access to Markets' . Image by Author 2018

Accessibility to markets and relevant market information proved to be a major constraint to the selected respondents and it was noted that high transportation costs also played a part in reaching markets. It was found that small farmers don't have much of an option with regard to market access and their farm gates and middlemen were their only options. Market access plays an important role in developing lucrative subsistence farming opportunities and farmers in these communities do not have access or the relevant information. As established in the literature review, Marketplaces can play a vital role in encouraging and promoting community 'place' and cultural identity. Informal subsistence farming communities of Mariannhill are in dire need for a third 'place' within their vicinity.

The findings from the access to markets segment helped evidenced the need for a marketplace and helped develop the second tier of *economic support* for the concept of 'community support' for the proposed agricultural facility.

Access to Information

The third objective was to determine the availability and access to relevant agricultural and market information that community members practicing informal subsistence farming had. This also included access to extension support and education and training opportunities.

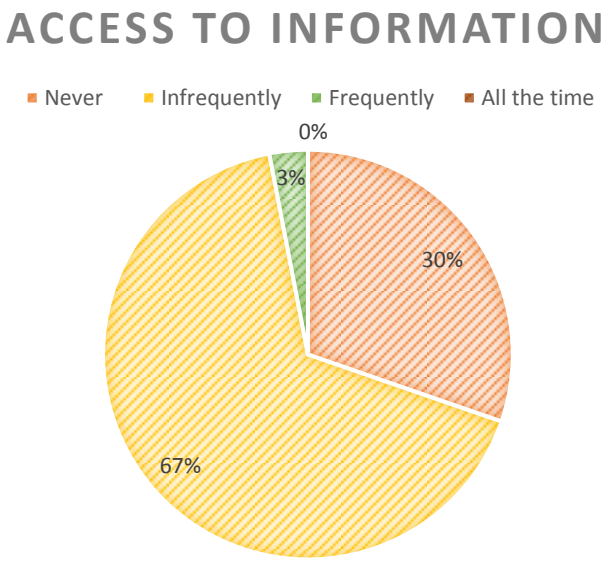

Fig 5.5 Analysis of 'Access to Information'. Image by Author 2018

The resulting and majority of the respondents as depicted in Fig 5.5 indicated that access to information was few and far between. This scenario reveals that subsistence farmers in the region aren't up to date with new technologies and developments in farming and are not exposed to relevant market information. This drastically affects their viability in terms of getting their produce to markets. Similarly relevant agricultural information access was lacking and farmers were generally late to respond to threats and outbreaks of diseases etc.

An investigation into how information, if any, was received was done and it was gathered that radio and TV were the popular sources of information (Fig 5.2.6). However, as discussion on these platforms are often very general farmers complained that they often did not get

answers or support with specific problems that they faced. Some respondents indicated that they had received training and information through short courses and workshops it was noted that these are infrequent and transport and accessibility was a problem.

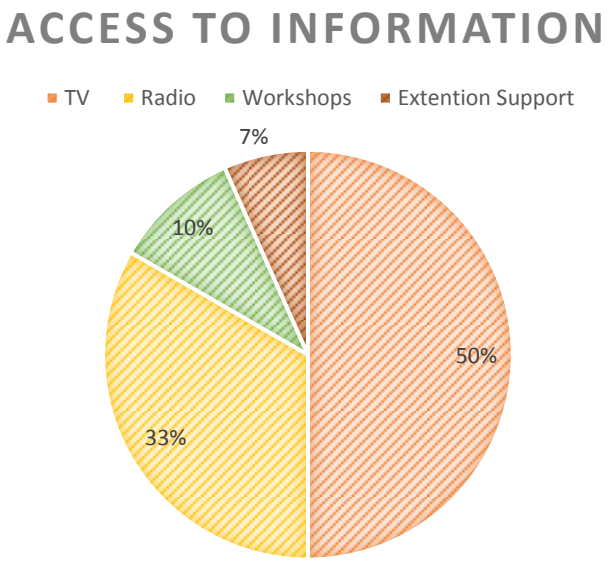

Fig 5.6 Analysis of 'Access to Information'. Image by Author 2018

The findings from the access to Information segment helped develop the third tier of *Infrastructural support* for the concept of 'community support' for the proposed agricultural facility. This would see to the provision of infrastructure for community development.

It is evident from the responses of the selected farmers, that the built environment can play a key factor in supporting these peri urban communities. The following section provides the discussion of the findings and theoretical implications that inform the design process.

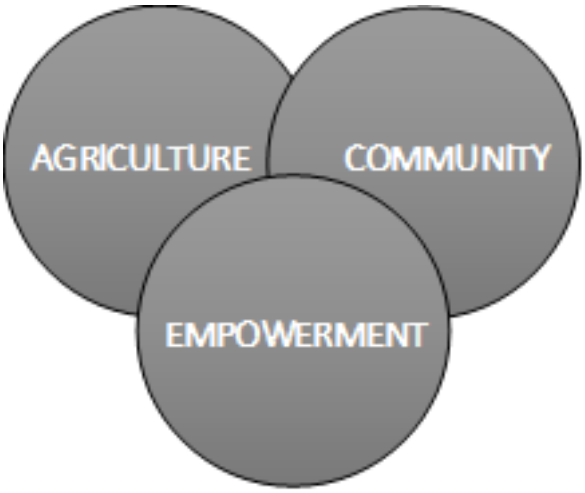

Fig 5.7 Agriculture, Community Empowerment Image by Author 2018

5.1.1 Discussions and Theoretical Implications

Throughout the discourse of this study the lives and nuances of community and in particular the investigation into informal subsistence farming communities was carried out. This study was guided by concepts and theories that supported the key questions and objectives of this dissertation. These concepts and theories were analysed toward informing a responsive design proposal that is influenced by the subject communities' needs and informed by the constraints they are afflicted with. As previously stated much of the urban growth trajectory of the 21st century is taking place in the developing world, but many of the theories of how cities function remain rooted in the developed world. This necessitated a contextual approach to development that was specific to the South African peri-urban context.

The conceptual and theoretical framework developed in this study looked toward allowing for a context specific enquiry in a South African setting. Community and its construct was analysed in order to understand community dynamics. It was established that 'community' is a multifaceted organism and to design for such requires adherence to principles based on specific needs. Place and Cultural identity was investigated as this forms a major part of community life, and these theories were used as a lens to inform design principles for the proposed community agricultural facility. The significance of place in community draws strong relation to cultural identity and in order to be relevant to community, cultural identity needs to be harnessed and celebrated. Furthermore, this was complimented by understanding the relationship between the urban and the peri urban/ rural interface and the hybrid nature of the peri urban region. New Ruralism was looked at as a concept that speaks to this multiplicity and puts forward a proposal that enhances community identity through farming, living and playing. The study ultimately looked towards establishing Mariannhill as a connective landscape providing opportunity and 'community support' and sought evidence from the linkage theory and understanding the rural – urban interdependency relationship.

The conceptual and theoretical framework together with the precedent studies and primary data collection from the case study aimed to answer the main research questions of this dissertation.

1. What socio economic issues do peri urban farmers face that hinder production and economic viability?

   This was achieved by understanding community and its construct as well as in depth analysis of the context through figure ground analysis in order to understand the constraints faced by small and medium informal farming communities and use these constraints to develop design drivers for a community agriculture facility.

2. How can the formalisation of informal (subsistence) farming to surplus farming lead to community empowerment?

   Using the theory of place and cultural identity, the benefits of peri-urban agriculture and how it can be used as a driver for community empowerment was showcased. Providing 'place' for community to grow and prosper using agriculture which forms an innate part of their culture is a key ingredient in achieving community empowerment.

3. How can architecture be presented in order to aid in community empowerment and revitalisation?

   In order to achieve 'architecture for community' community empowerment and revitalisation can be achieved using community as the client. The use of Place, Cultural Identity and Linkage ultimately provide the lens in order to establish Mariannhill as a connective peri-urban interface thus aiding in community empowerment and revitalisation.

The guiding concept developed from the objectives then saw the development of design drivers of which the proposed architecture would aim to satisfy. These design drivers were unpacked into design principles that ultimately helped to develop the form and social underpinning of the resulting architecture. The following diagrams Fig 5.8. 5.9, 5.10 and 5.11 depict the development of the guiding concept and the resulting design principles.

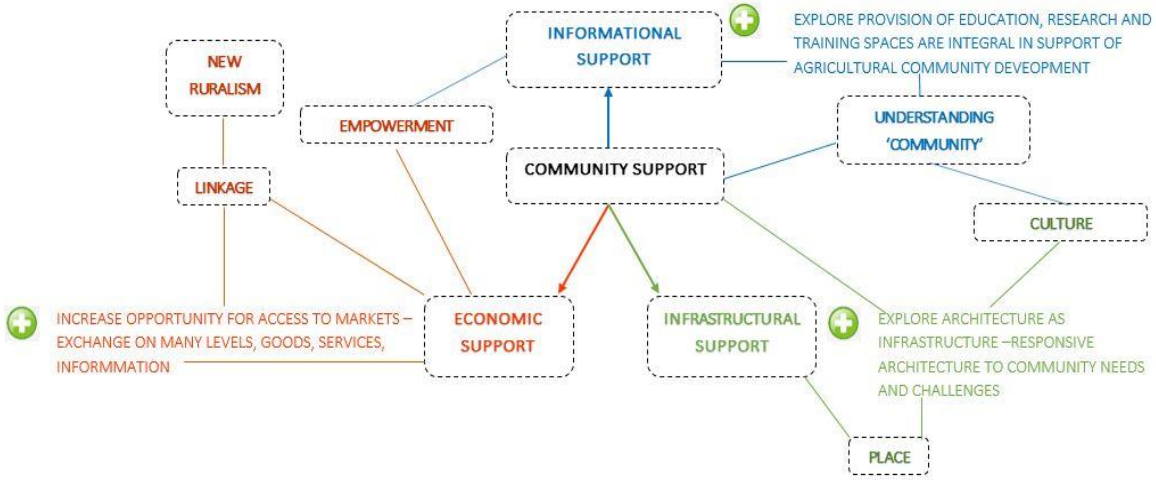

Fig 5.8 Mapping of guiding concept 'Community Support' Image Source: By Author

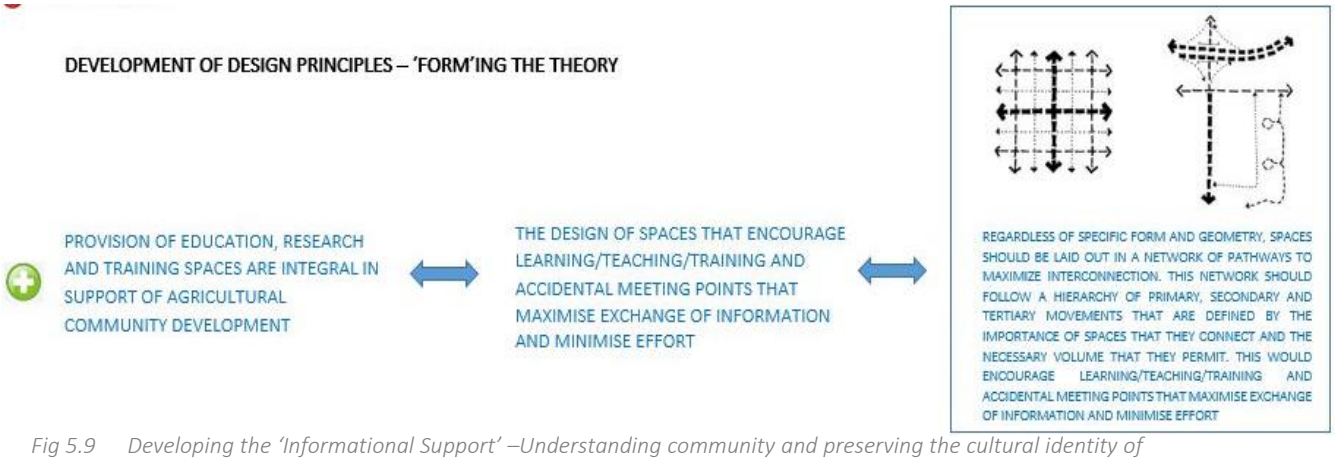

Fig 5.9 Developing the 'Informational Support' –Understanding community and preserving the cultural identity of community through education and training. Image by Author 2018

Fig 5.10 Developing the 'Economic Support' – Using Linkage and New Ruralism to develop a multifunctional approach to community influenced architecture- Image by Author 2018

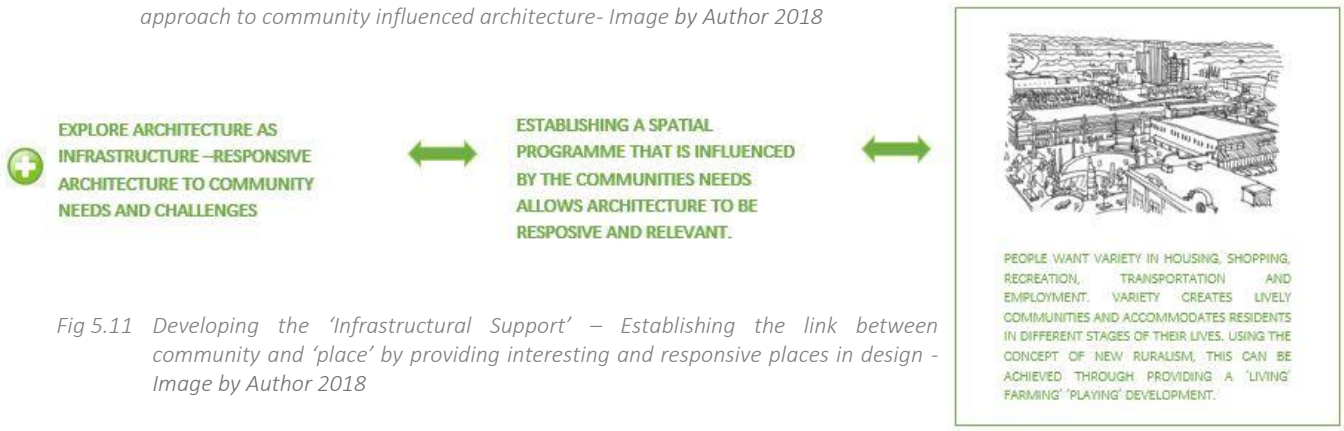

Fig 5.11 Developing the 'Infrastructural Support' – Establishing the link between community and 'place' by providing interesting and responsive places in design - Image by Author 2018

The design proposal aims to be a networked innovation system of agro-production, processing, logistics, marketing, training and extension services, located in close proximity to subsistence farmers i.e. Mariannhill. As a network, it enables a place-driven combination and integration of various agricultural activities and rural transformation services. It envisions the creation of a comprehensive, centrally planned agricultural facility with multiple cross linkages. The idea is both to stimulate production in the peri urban interface as well as link community farmer's products to agro-processors for the local and export markets. The main goal of the project is to push forward a design that is in relation to the theme of supporting farming communities. The term 'supporting communities' refers to the act of improving the human condition within the given context. Architecture then plays an important role in providing a space that betters the quality of human life, and helps to improve day to day activities. In the context of Mariannhill, to support community is to celebrate place and cultural identity and create a self-sustaining system- one that depends very little on external factors to survive.

The issue of over commercialization of architecture affects the society in a way that the local community no longer has any sense of attachment to the local buildings. This project therefore aims to restore the sense of place within the community. The following section sets out informed design guidelines for the proposed agricultural facility for Mariannhill.

5.1.2 Recommendations

The following guidelines will provide an insight into the proposed community agricultural facility for Mariannhill, Kwa Zulu Natal. Recommendations are subsequently made as a way of offsetting the challenges which smallholder farmers face. The chapter also suggests areas of further study in the future.

In light of the research findings outlined in the previous sections, the following recommendations have been proposed:

1. Primary data collection revealed the difficulty that small farmers face regarding accessibility to markets. These constraints include that of access to transport and high transportation costs. Furthermore the volumes of produce sold at their farm gates and to middlemen does not justify the cost of transport. As a way to combat this challenge a rural urban market centre as well as a resource and processing facility as

part of the urban design strategy is proposed. This should be designed in accordance to the ideology of creating public learning 'place' to celebrate cultural identity. Architecture should be sensitive to the context and respond to human scale and create spaces that are welcoming and allow for connection and reflection.

2. As the access to technology and information plays an important role, a farmer support section should be provided that would allow for small business and enterprise development as well as education and training spaces. These spaces should be community centred and allow for public and personal interaction. Extension support was deemed highly valuable therefore space should be provided for extension support and training. The agricultural facility can also have communal demonstration gardens where trainers can conduct practical sessions and trials with farmers during workshops and training sessions.
3. The provision of processing and value adding facilities would greatly benefit the communities as processing facilities and cold storage allow for more sustainable farming. Processing adds value to produce and this would allow farmers to get better returns for produce. Cold and dry storage will reduce pressure on farmers to quickly dispose of produce and this would allow for less spoilage.
4. Providing accommodation for trainees and staff allow for a whole system approach to agricultural training and development. Spaces for relaxation and private learning should also be provided. This adds a multi-functional approach and can be adapted to a social housing strategy later on.
5. Access to information is important as such spaces for research and development should be provided. Laboratories and business development space allow for alternative career development in agriculture and that helps develop more opportunities for the youth and a lucrative economic opportunity potential.
6. Sustainable farming practices should be encouraged. Principles from the DSW Mariannhill landfill should be considered in order to relieve pressure on municipality for water and waste disposal. Rainwater harvesting, bio gas digesters, solar harvesting and composting methods should be looked into.
7. There is great potential for the facility to partner with the local surrounding context by providing agricultural products, plant starts for school gardens, and a location for educational field trips and gardening and cooking classes.

8. The facility could do outreach to local restaurants and secure commitments from them to purchase foods from the facilities rural urban market.
9. Place should be designed for custom special events, such as team-building cooking classes and “agri-tainment” parties. This could be in the form of public open space or pockets along the proposed river promenade.
10. Establish a hierarchy of components ranging from those inviting high public interaction (the rural urban market) to those needing controlled public access (processing operations or potentially dangerous farm equipment).
11. Opportunity for interactivity, education, and passive recreation should be provided.
12. Designing for a community ultimately requires a flexible spatial program that can be adapted in the future. Accommodate some flexibility and cost-effective adaptation for the foreseeable development of programming and infrastructure needs

5.1.3 Site Selection Guidelines

The site selection is a crucial factor in the design of an agricultural facility. The site selection must be derived from the needs of the community and the appropriate choice of site will help the broader society to form connections to the source of food production. These are some of the guidelines for an appropriate site selection:

- Located near subsistence farming communities on the peripheral edge which allows for community empowerment and urban edge activation
- Close to a transport vicinity
- Visible to the public and allow for interaction
- Large enough for markets, experimental gardens and courtyards
- Selected in terms of creating a Genius Loci for the area
- Selected close to communities
- Supportive of public health
- Aim for the reuse and adaptability of existing infrastructure
- Must stitch with the existing peri urban framework and act as a connective link
- Must be approachable for the subject community, surrounding context must not make them feel unwelcome
- Offer good views for reflection and meditation

The site needs to respond to the needs of the community and recreate a nurturing environment in which they can relate to and feel safe. The site should allow for future development and provide opportunities for rural urban connection.

5.1.4 Further Research

This study was limited to three areas namely Mariannhill, Tselimnyama and Mpola. There are, however, many more areas falling within the eThekwini metropolitan where further investigations could be carried out to establish if the same challenges apply to them. Other possible areas for future studies include:

1. A comparison of male to female farmers to find out if the problems affecting both sexes are the same and how this would affect architectural spatial construct.
2. Although the age distribution of smallholder farmers displayed a normal distribution curve for all three parameters, data collected seems to suggest that a small percentage of people below 30 years of age are participating in agricultural practises. An investigation can be carried out to investigate the factors which could attract more young people into agriculture toward the development of agricultural schools and colleges.
3. Coincidentally, all the participants in this survey belonged to the African race. The research could be extended to other races and comparisons made to establish if the same challenges are faced across races

5.2 CONCLUSION

The aim and intent of this study was to explore and understand the peri-urban agricultural communities within the surrounding context of Mariannhill, the developmental constraints they are afflicted with and how architectural intervention can be presented as a facilitator for community empowerment. It focussed on research surrounding subsistence farming communities and their potential influence on architecture and vice versa in order to provide a design proposal for an integrated agricultural support-training facility for small and medium scale farmers within the peri-urban context of Mariannhill and its surrounding farming areas. This facility would provide a platform for small and medium scale farmers to gain access to

greater opportunity from the surrounding context and simultaneously provide support, training and skills development in order to aid in community empowerment.

A literature review was conducted through a conceptual and theoretical framework which centred on understanding community and its construct. Theories of 'figure ground', 'place' and 'linkage' were analysed against the driving concept of 'community support' developed as a response to primary data collection findings which formed the key questions and objectives of this study, in order to provide an 'architecture for community'. Precedent studies were selected to inspire the researcher in order to view existing projects and the approach to community development through the built environment. The driving concept for the design was developed from three operational parameters on the viability of smallholder farmer's businesses. The research method was chosen and interviews conducted on farmers by means of a questionnaire and informal conversations. The three parameters under investigation were access to markets, access to information and access to technology. Data was collected, analysed and discussed. Key findings from the study revealed that all three parameters under investigation have got an effect on the competitiveness of smallholder farmers in the Mariannhill district. The study also revealed that the smallholder farmers did not have enough access to markets, agricultural information and farming technology.

The brief for an agricultural facility was established through informants from the literature review and primary research conducted by the researcher. The grounding concept of 'community support' was formulated by the researcher to guide the design process in achieving 'architecture for community'. This concept aims to allow for a self-supporting system to be available to subsistence farmers that respond directly to their needs and challenges thus guiding the thread of community influenced architecture. Socially restrictive systems such as patriarchy, colonialism and apartheid produced a stigma regarding the involvement of small non-white farmers within society. These systems have manifested an urban rural dichotomy that has translated into the built environment and related infrastructure. Due to embodying beliefs from these systems which marginalized the non-white population, the resultant peri-urban interfaces remain largely unsupportive of farmer's needs and lifestyles.

Several recommendations were also given and it was recommended that a multi-functional agricultural facility be established. These centres would be equipped with processing and

storage facilities, training facilities, as well as other necessary communal places. Other recommendations included providing accommodation and training for students and extension support members, involvement of outer communities in smallholder farmer development programs, interventions to lure the youths into farming and adoption of sustainable farming techniques like rain water harvesting, solar harvesting, waste recycling among others all of which is supported through insight gained from the study of the communities and their surrounding context.

The ability for the design to foster an identity containing notions of education and sustenance was proven to be imperative for supporting small and medium scale farmers. A meaningful and nurturing identity as well as containing a safe and functional interface were deemed to be important guiding factors in the design process. Various sustainable techniques and strategies were utilised in accordance with the concept to produce a building which harnesses its natural surroundings. The resultant agricultural facility will aim to house a rural urban market centre on the ground level with a 'stem' pathway that is formed as part of an edible landscape. This will lead to the informational and infrastructural support parts of the facility. The dynamics and spatial mechanics of the building take inspiration from the rural landscape and is based on a 'mat building' typology which allow for a support structure which is easily accessible and user friendly. The building will also contain spaces such as experimental gardens and community kitchens which can become meaningful spaces that uplift community members and reconstruct a healthy and positive self-identity.

PART 2

DESIGN REPORT

CONTENTS

1.0 INTRODUCTION

1.1 PROBLEM STATEMENT

1.2 PRIMARY RESEARCH QUESTION

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3.0 DESIGN DEVELOPMENT

1.0 INTRODUCTION

This document serves to demonstrate the manner in which the research findings outlined in the dissertation have been utilised to inform and guide the design process of a proposed agricultural facility. The brief for an agricultural facility was established through informants from the literature review and primary research conducted by the researcher. The grounding concept of 'community support' was formulated by the researcher to guide the design process. This concept aims to allow for a self-supporting system to be available to subsistence farmers that respond directly to their needs and challenges thus guiding the thread of community influenced architecture. Socially restrictive systems such as patriarchy, colonialism and apartheid produced a stigma regarding the involvement of small non-white farmers within society. These systems have manifested an urban rural dichotomy that has translated into the built environment and related infrastructure. Due to embodying beliefs from these systems which marginalized the non-white population, the resultant peri-urban interfaces remain largely unsupportive of farmer's needs and lifestyles.

The ability for the design to foster an identity containing notions of education and sustenance was proven to be imperative for supporting small and medium scale farmers. A meaningful and nurturing identity as well as containing a safe and functional interface were deemed to be important guiding factors in the design process. Various sustainable techniques and strategies were utilised in accordance with the concept to produce a building which harnesses its natural surroundings. The resultant agricultural facility houses a rural urban market centre on the ground level with a 'stem' pathway that is formed as part of an edible landscape. This leads to the informational and infrastructural support parts of the facility. The dynamics and spatial mechanics of the building take inspiration from the rural landscape and is based on a 'mat building' typology which allow for a support structure which is easily accessible and user friendly. The building also contains spaces such as experimental gardens and community kitchens which can become meaningful spaces that uplift community members and reconstruct a healthy and positive self-identity.

1.1 PROBLEM STATEMENT

Peri-urban farming communities within the surrounding context of Mariannhill face numerous informational, economic and infrastructural constraints that hinder community growth and development. These include that of access to value adding agricultural processing facilities, physical market access, access to funding, access to market information and access to technology which directly influences the economic viability of the small and medium scale farmers in these areas. Lack of infrastructure to encourage exchange in these areas limit community economic empowerment and growth.

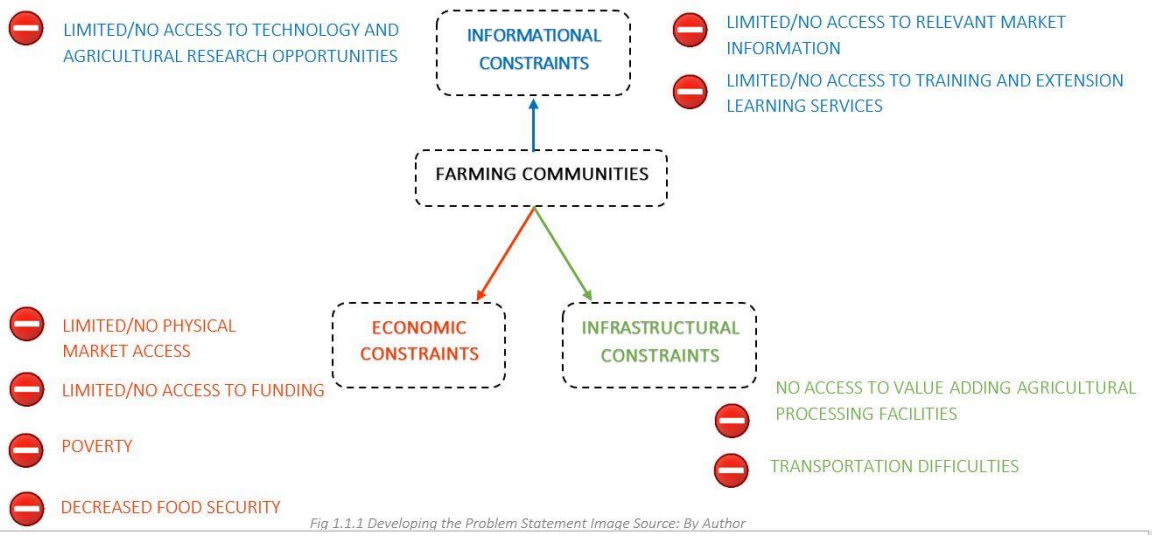


Fig 1.1.1 Developing the Problem Statement Image Source: By Author

1.2 PRIMARY RESEARCH QUESTION

How can architecture assist in providing opportunities for peri-urban farming communities facing development constraints?

The design proposal aims to be a **networked innovation system of agro-production, processing, logistics, marketing, training and extension services**, located in close proximity to subsistence farmers i.e. Mariannhill. As a network, it enables a **place-driven combination and integration of various agricultural activities and rural transformation services**. It envisions the creation of a comprehensive, centrally planned agricultural facility with multiple upward linkages. The idea is both to stimulate production in the peri urban interface as well as link community farmer's products to agro-processors for the local and export markets. The main goal of the project is to push forward a design that is in relation to

the theme of supporting farming communities. The term “supporting communities” refers to the act of improving the human condition within the given context. Architecture then plays an important role in providing and designing a space that betters the quality of human life, and helps to improve day to day activities. In the context of Mariannhill, to support community is to create a self-sustaining system- one that depends very little on external factors to survive. The issue of over commercialization of architecture affects the society in a way that the local community no longer has any sense of attachment to the local buildings. This project therefore aims to restore the sense of place within the community.

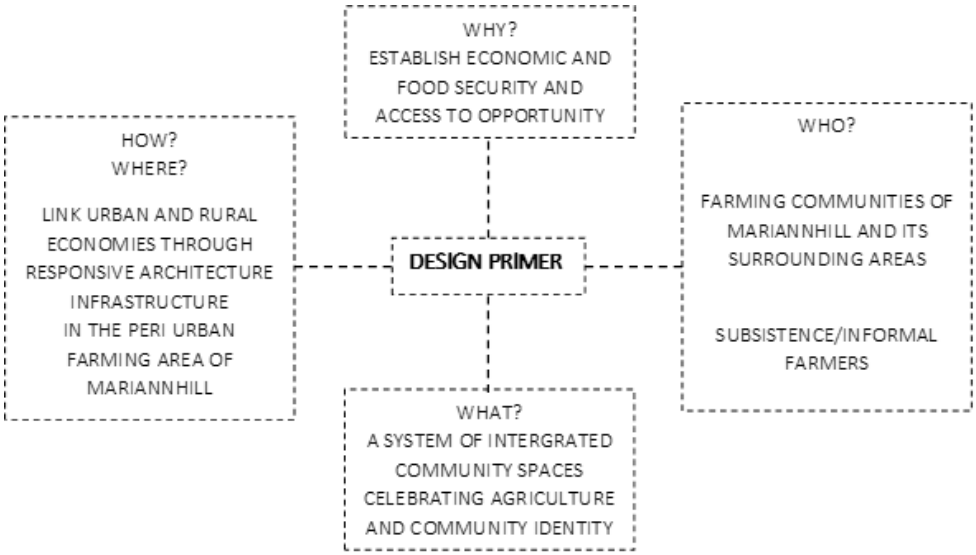


Fig 1.2.1 Who? Why? What? Image Source: By Author

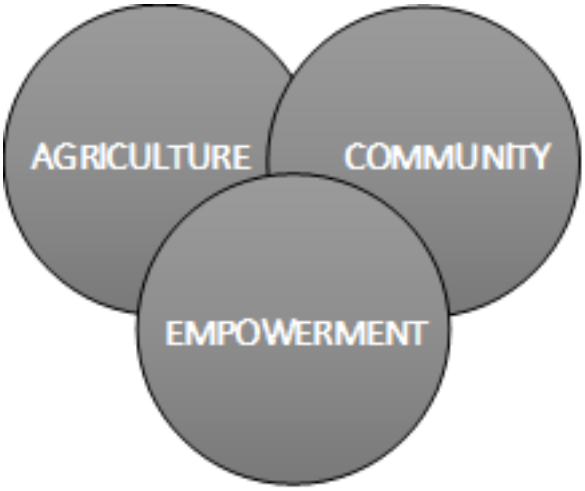


Fig 1.2.2 Image Source: By Author

1.3 METHODOLOGY

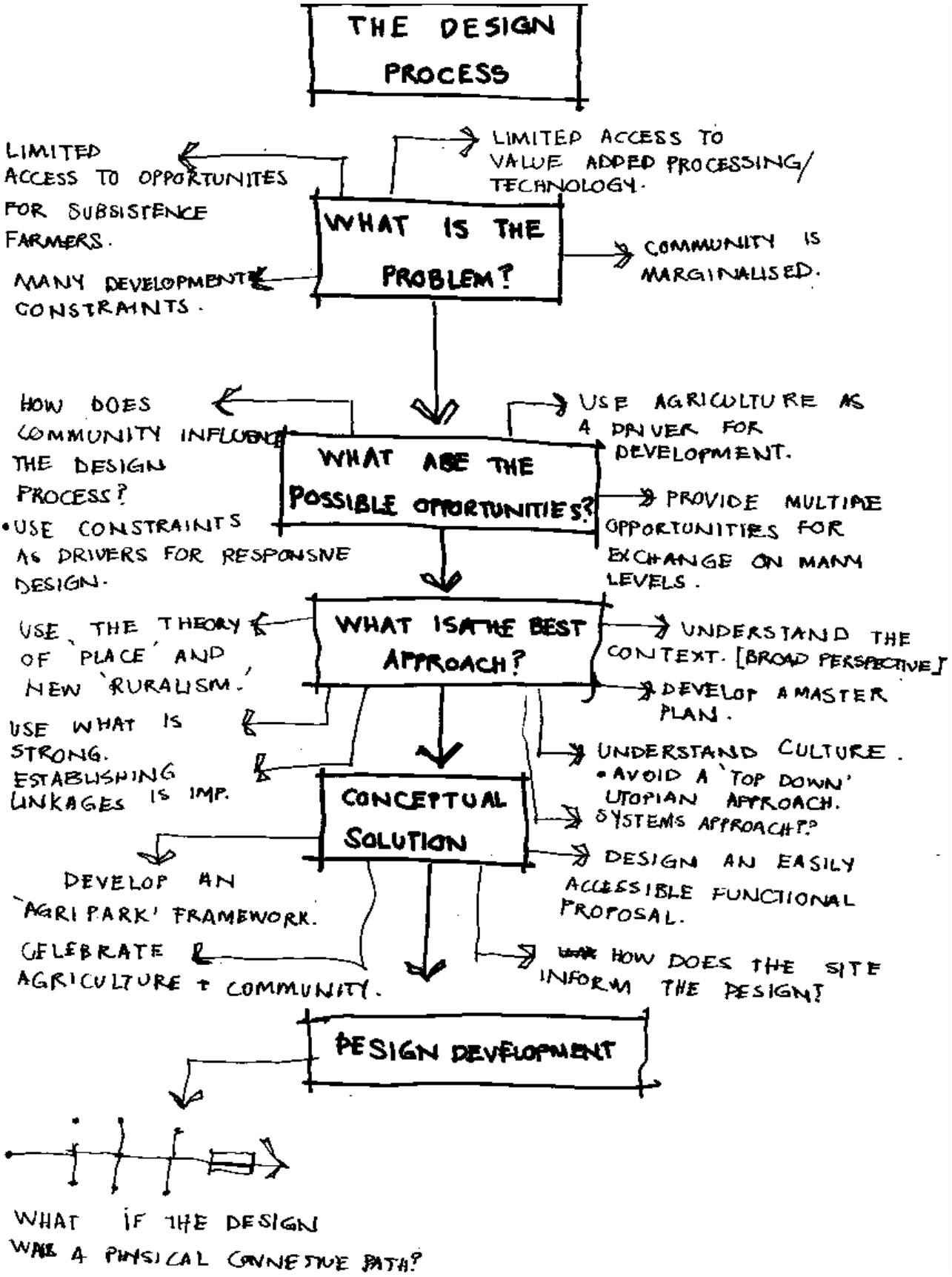


Fig 1.3.1 The design process. Image Source: By Author

Approach

The research is based on a qualitative and quantitative method of investigation, as it deals with the human experience in the built environment and analyzation of raw data by the means of primary and secondary data gathering. In order to design a proposal for a community it is imperative that ground research is done to get the views and opinions of members of the immediate community to allow for authenticity and inclusivity. Interviews with qualified professional architects who have analysed or designed markets such as architect Richard Dobson and people from community organizations for farmers such as Paula Osborn, Partner Farmer Manager at the Fair Food Company have been conducted. Data was gathered by means of observation in and around the chosen area of Mariannhill and in the form of questionnaires to professionals and the community. The data was analysed in order to inform the design of an integrated agricultural facility in the area of Mariannhill, South Africa.

Primary Data

Primary data was gathered by means of an investigation into the "daily life" and constraints faced by peri-urban farmers. The population chosen for this study included small and medium scale farmers. The samples thus selected, as explored through the following primary research and analysis is that of the informal and formal farmers in peri-urban areas, adopting various strategies of agriculture to develop and support their livelihoods.

By understanding the broader context of accessibility, social integration and peri-urban agriculture, this research aided in developing a design proposal for the selected area of Mariannhill and its surrounding community.

Secondary Data

Literature review

The literature review focussed relevant theories in response to the research question, 'How can architecture assist in providing opportunities for peri-urban farming communities facing development constraints?' Analysis of theory via the literature review was aimed at finding answers to the questions regarding agriculture infrastructure as a facilitator for community empowerment.

Case study

The case study of Mariannhill will be analysed in understanding how architecture can respond to the needs of the community. It will also provide a perspective of the surrounding issues facing agriculture. The study will be conducted by observation and discussions with key personnel from respected organizations.

1.4 THEORETICAL AND CONCEPTUAL FRAMEWORK

The developing world has seen an exponential growth rate in the 21st century however, many of the theories of how cities function remain rooted in the developed world. There is a need to look at a conceptual and theoretical framework that allows for context specific enquiry in a South African setting. The conceptual and theoretical framework in the form of a literature review explores content that would provide a platform for exploration towards 'architecture for community' with the guiding concept of 'community support'. It would be broadly geared toward answering the key questions and objectives of this study by understanding the nuances and dynamics of community, the relationship between the community and its surrounding context and how community empowerment through agriculture can be achieved using architecture as infrastructure using Mariannhill as a connective peri-urban interface.

Roger Tranick in *'Finding Lost Space – Theories of Urban Design'* (1986) discussed the three Theories of Urban Spatial Design; figure-ground theory; linkage theory; and place theory. These three theories vary significantly from each other, "*but taken together can provide us with potential strategies for integrated urban design*" (Trancik, 1986). As Mariannhill and its surrounding farming communities form part of a peri-urban belt, the exploration of these theories will begin to allow for an integrated context driven approach to architecture for the community.

Sub concepts being explored include culture and identity and its connection to place and community as well as regenerative architecture and empowerment as an aspect of linkage theory in order to develop economic and food security through agriculture. New Ruralism (Viviers J et al, 2017) will be explored in order to provide a lens for understanding the architectural perspective in relation to establishing networks and community development

opportunity. This conceptual and theoretical framework delivers a platform for enquiry towards the architectural design of an agricultural support and training facility for Mariannhill, Kwa Zulu Natal that stems from a contextual approach with a focus on the communities it will serve. The following diagram (Fig 1.4) indicates the connection between the concepts and theories.

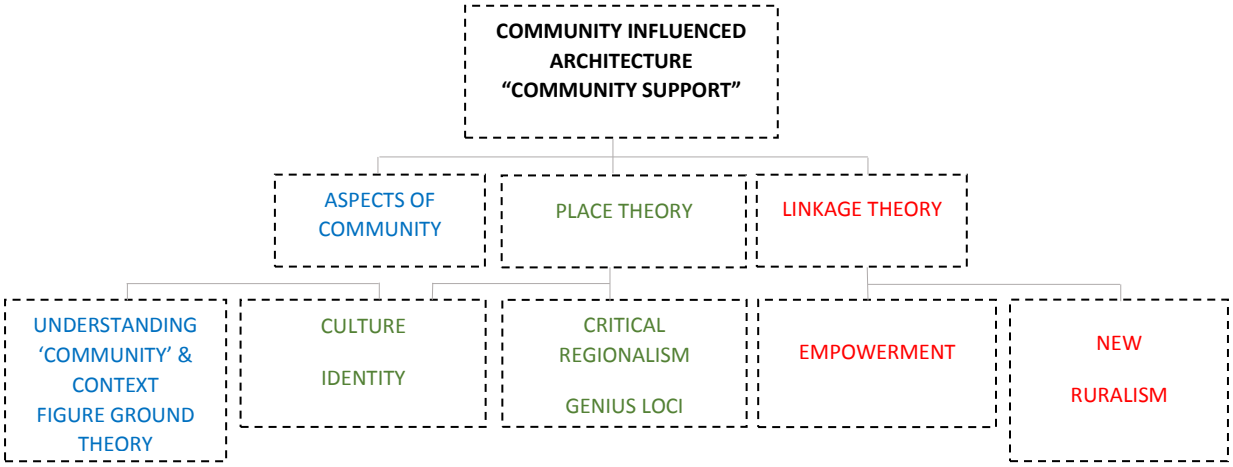


Figure 1.4: A diagram linking the concepts and theories (illustration by author; 2018)

CONCEPT OF 'COMMUNITY SUPPORT'

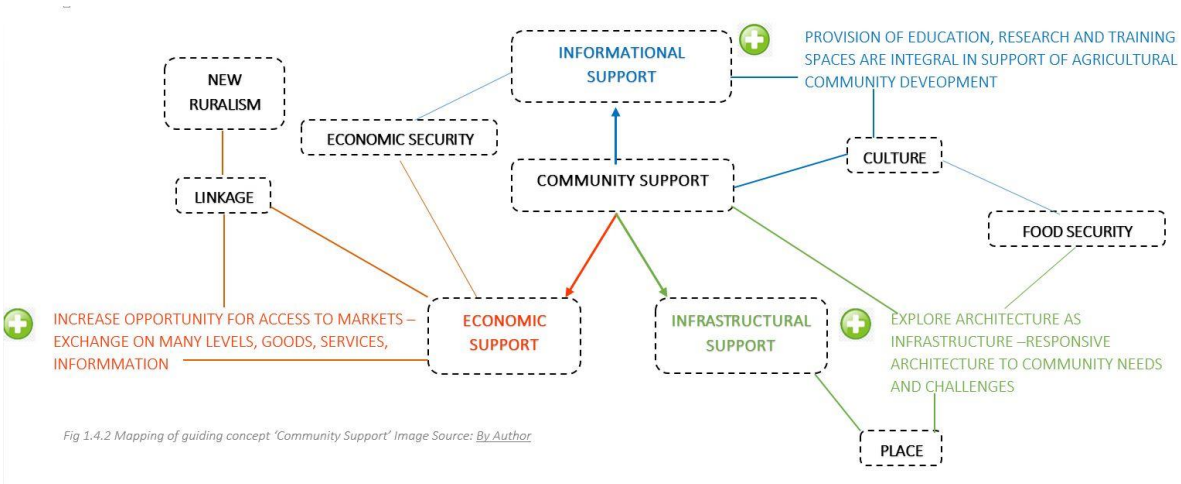


Fig 1.4.2 Mapping of guiding concept 'Community Support' Image Source: By Author

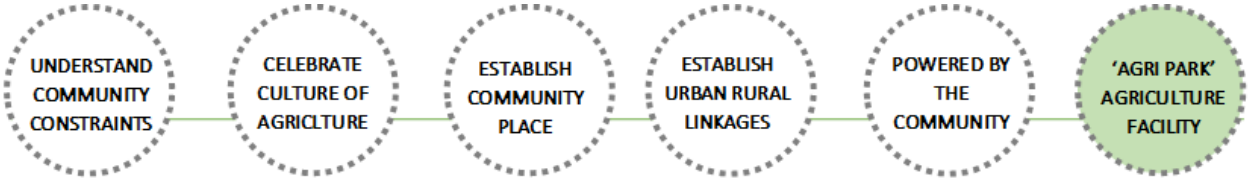
Sub concepts being explored would include the development of economic and food security through agriculture, the treatment of architecture in order to provide a sustainable design solution and celebrating the culture of community farming leading to social development.

Kevin Lynch's theories of 'urban spatial form' and 'linkage' will be explored in order to provide a lens for understanding the architectural perspective in relation to establishing networks and community development opportunity. The uniqueness of the Southern African landscape, inherently being rural and peri urban, necessitated a rural accentuation on multifunctionality in the peri urban interface. Exploring the concept of New Ruralism, a new design philosophy is offered, whereby "farming, playing and living" is attained through the combined appliance of new urbanism (Viviers J et al, 2017).

2.0 PROJECT BACKGROUND

2.1 DESIGN INTENT

The aim and intent of this study is to explore and understand the peri-urban agricultural community within the surrounding context of Mariannhill, the developmental constraints they are afflicted with and how architectural intervention can be presented as a facilitator



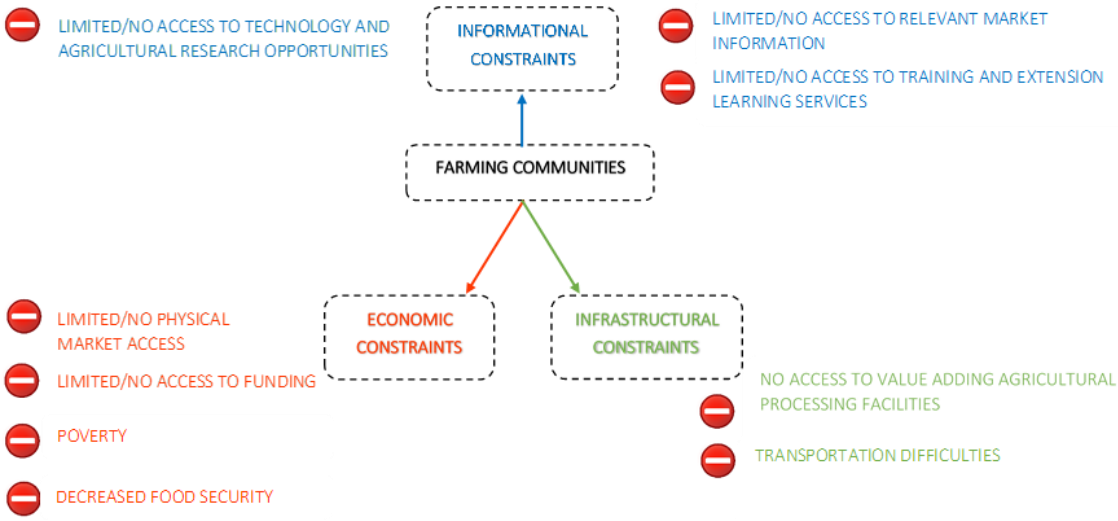
for community empowerment. It will provide a design proposal for an integrated agricultural support-training facility for small and medium scale farmers within the peri-urban context of Mariannhill and its surrounding farming areas. This facility would provide a platform for small and medium scale farmers to gain access to greater opportunity from the surrounding context and simultaneously provide support, training and skills development in order to aid in community empowerment.

THE DESIGN INTENT IS DIRECTLY LINKED TO SATISFY THE PROJECT OBJECTIVES WHICH ARE:

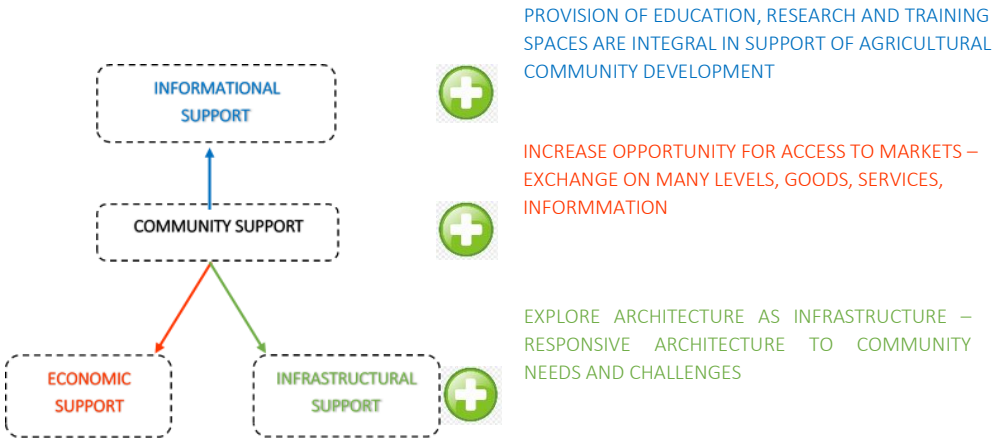
1. To understand the constraints faced by small and medium informal farming communities and use these constraints to develop design drivers for a community agriculture facility.
2. To explore the benefits of peri-urban agriculture and how it can be used as a driver for community empowerment.
3. To aid in community empowerment and revitalisation using architecture as infrastructure

DEVELOPMENT OF DESIGN DRIVERS

WHAT ARE THE CONSTRAINTS?



DESIGN DRIVERS

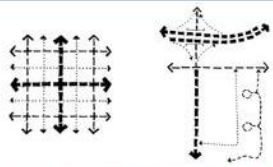


DEVELOPMENT OF DESIGN PRINCIPLES – 'FORM'ING THE THEORY

DEVELOPMENT OF DESIGN PRINCIPLES – 'FORM'ING THE THEORY

PROVISION OF EDUCATION, RESEARCH AND TRAINING SPACES ARE INTEGRAL IN SUPPORT OF AGRICULTURAL COMMUNITY DEVELOPMENT

THE DESIGN OF SPACES THAT ENCOURAGE LEARNING/TEACHING/TRAINING AND ACCIDENTAL MEETING POINTS THAT MAXIMISE EXCHANGE OF INFORMATION AND MINIMISE EFFORT



REGARDLESS OF SPECIFIC FORM AND GEOMETRY, SPACES SHOULD BE LAID OUT IN A NETWORK OF PATHWAYS TO MAXIMIZE INTERCONNECTION. THIS NETWORK SHOULD FOLLOW A HIERARCHY OF PRIMARY, SECONDARY AND TERTIARY MOVEMENTS THAT ARE DEFINED BY THE IMPORTANCE OF SPACES THAT THEY CONNECT AND THE NECESSARY VOLUME THAT THEY PERMIT. THIS WOULD ENCOURAGE LEARNING/TEACHING/TRAINING AND ACCIDENTAL MEETING POINTS THAT MAXIMISE EXCHANGE OF INFORMATION AND MINIMISE EFFORT

INCREASE OPPORTUNITY FOR ACCESS TO MARKETS – EXCHANGE ON MANY LEVELS, GOODS, SERVICES, INFORMATION

DEVELOP STRATEGIES FOR ECONOMIC DEVELOPMENT AND MARKETING. MIXED UP: THE RIGHT PROGRAMMATIC BLEND OF USES AND THE WAY IN WHICH THE FUNCTIONS INTERACT SHOULD SET THE STAGE FOR A DYNAMIC COMMUNITY SPACE, CELEBRATING COMMUNITY ASSETS – AGRICULTURE

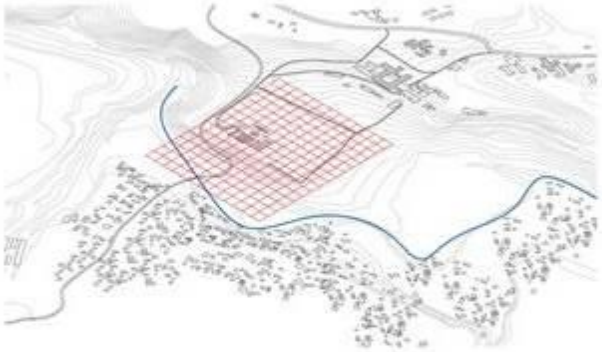
PLANS FOR BUILDING THE COMMUNITY'S ECONOMIC HEALTH AND SPREADING THE WORD ABOUT ITS ASSETS (AGRICULTURE) AND FARM TO TABLE CONCEPTS SHOULD BE PART OF HE INITIAL DESIGN PROPOSAL. BEAUTIFUL, FUNCTIONAL SPACES CAN ENHANCE A COMMUNITY'S OTHER EFFORTS.

EXPLORE ARCHITECTURE AS INFRASTRUCTURE –RESPONSIVE ARCHITECTURE TO COMMUNITY NEEDS AND CHALLENGES

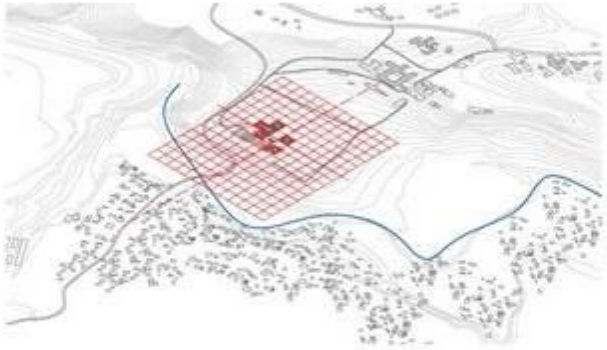
ESTABLISHING A SPATIAL PROGRAMME THAT IS INFLUENCED BY THE COMMUNITIES NEEDS ALLOWS ARCHITECTURE TO BE RESPOSIVE AND RELEVANT.

PEOPLE WANT VARIETY IN HOUSING, SHOPPING, RECREATION, TRANSPORTATION AND EMPLOYMENT. VARIETY CREATES LIVELY COMMUNITIES AND ACCOMMODATES RESIDENTS IN DIFFERENT STAGES OF THEIR LIVES. USING THE CONCEPT OF NEW RURALISM, THIS CAN BE ACHIEVED THROUGH PROVIDING A 'LIVING' FARMING' 'PLAYING' DEVELOPMENT.

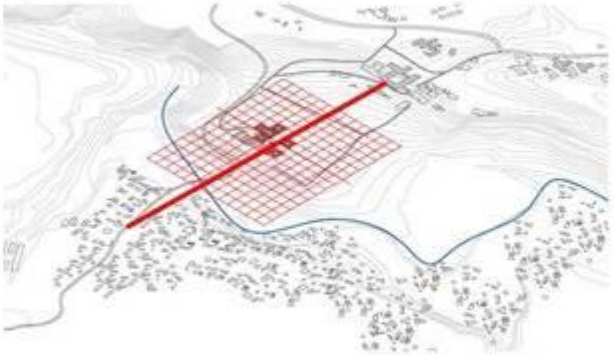
2.2 EVOLUTION OF FORM + SPACE



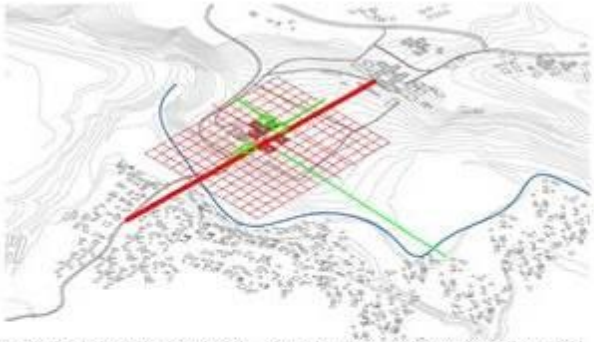
GRID DERIVED FROM EXISTING ARCHITECTURE AND THE PATTERN OF EXISTING AND SURROUNDING AGRICULTURAL FIELDS



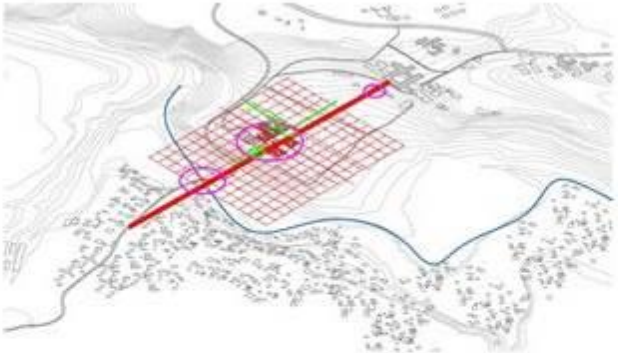
EXTEND GRIDS TO DEVELOP ON EXISTING COURTYARD BUILDING TO FORM **A SYSTEM OF INTERCONNECTED COURTYARDS AND SPACES** ENCOURAGING EXCHANGE



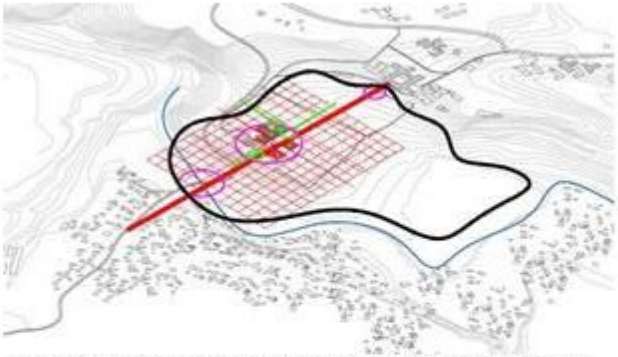
ESTABLISH **URBAN RURAL LINKAGE SPINE** ON EAST WEST AXIS TO MAXIMISE BEST ORIENTATION OF CONNECTED SPACES AND TO FRAME COMMUNITY



ACCESSIBILITY TO SITE THROUGH CONNECTION TO SURROUNDINGS AND MAIN ROAD – SPINE CONNECTS TO MONESTRY, CHURCH AND SCHOOLS AS WELL AS THE SUBJECT FARMING COMMUNITY

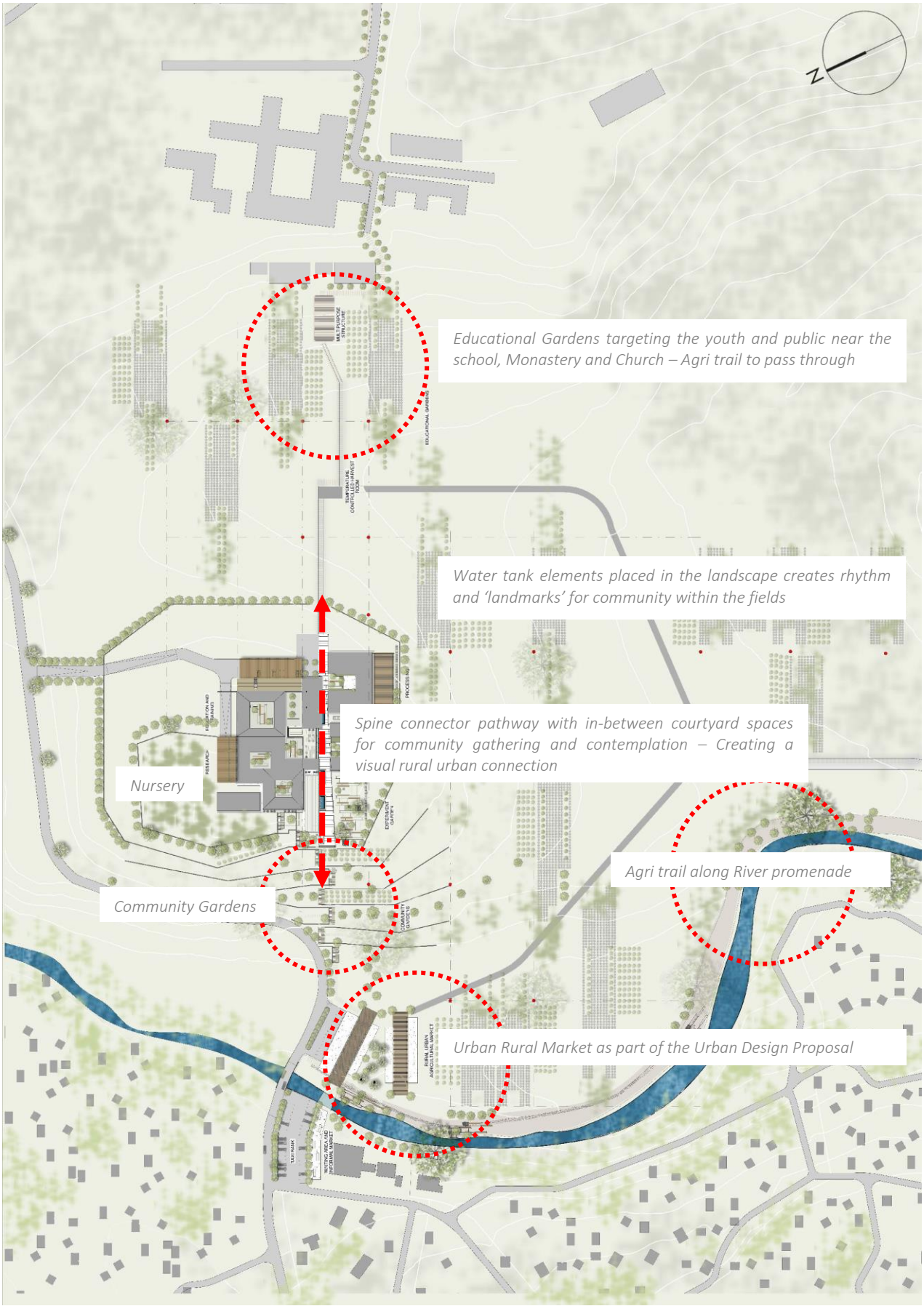


ESTABLISH ZONES FOR DEVELOPMENT TAKING INTO CONSIDERATION LINKAGE AXIS, **SURROUNDING CONTEXT** AND EXISTING AGRICULTURAL FIELDS. **ESTABLISH MARKET POINTS AT SPINE ENDS**



USE **EXISTING HIGH TRAFFIC FOOT PATHS TO CREATE 'AGRI TRAIL'** AROUND SITE - EDUCATION AND LEARNING TRAIL

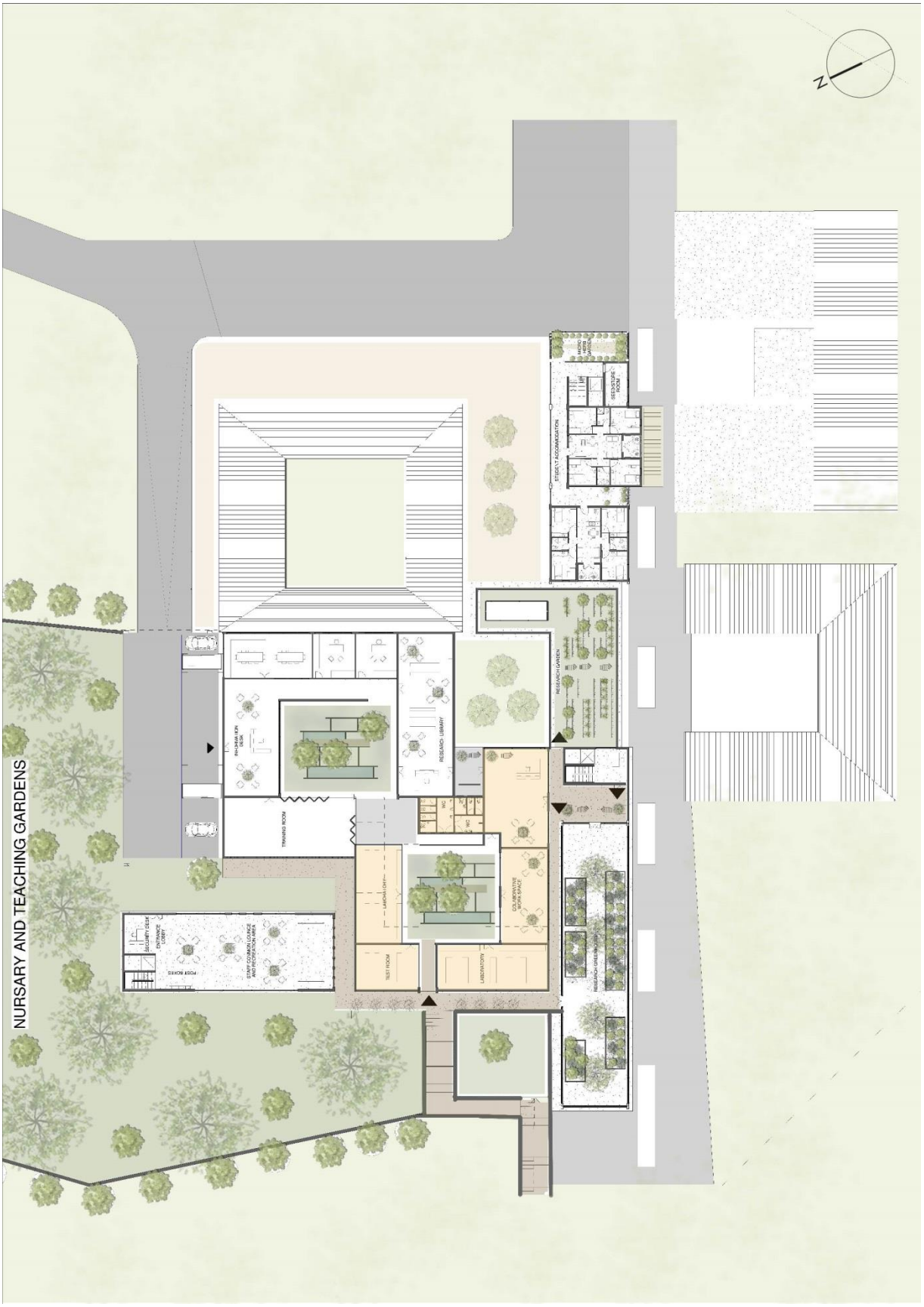
2.3 SITE RESPONSE + DESIGN STRATEGIES



3.0 DESIGN DEVELOPMENT – GROUND FLOOR NTS

DESIGN DEVELOPMENT – FIRST FLOOR NTS

DESIGN DEVELOPMENT – SECOND FLOOR NTS



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APPENDICES