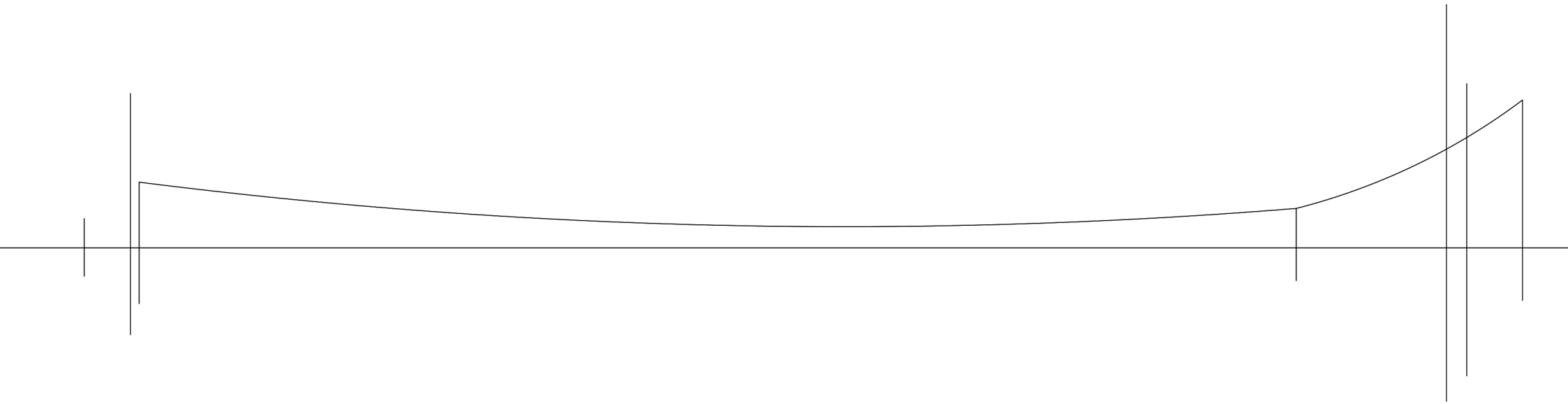
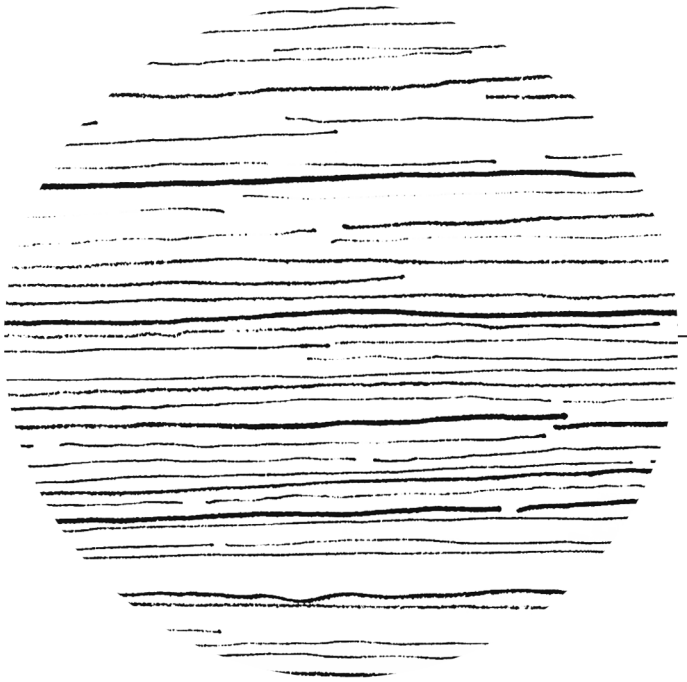


RURAL JUNCTION

[ARCHITECTURE BRIDGING THE GAP]

Anchen Pretorius
2016084366



Declaration

This dissertation is submitted in partial fulfilment of the requirements for the degree M.Arch. (Prof) at the University of the Free State Bloemfontein, South Africa.

Department of Architecture, Faculty of Natural and Agriculture Sciences University of the Free State.

Submitted:

Anchen Pretorius | 2016084366 | pretoriusanch@gmail.com

Declaration of original authorship:

The work contained in this dissertation has not been previously submitted to meet the requirements for a qualification at this or any other institution of higher education. To the best of my knowledge, this dissertation contains no material previously published or written by any other person, except where due reference is made.

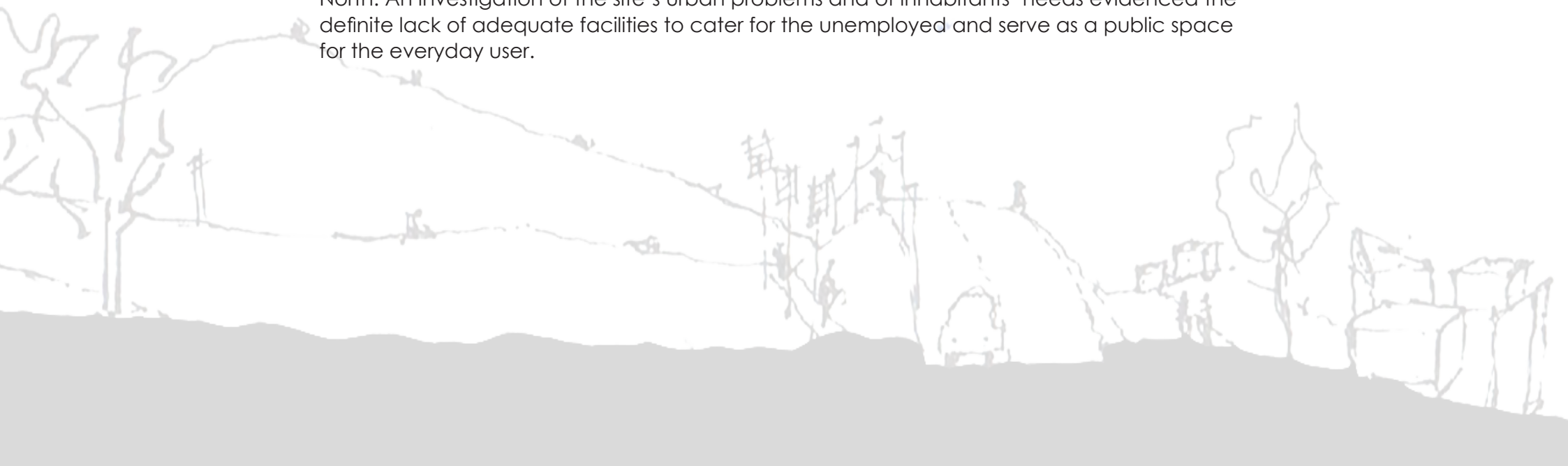
Supervisors:

Prof. J.D. Smit, Prof. J.A. Noble, P. Jooste-Smit, H. Raubenheimer, J.H. Nel

I have been driving by this site ever since I can remember. I always wondered why the vast open space? Let me explain. When you exit Aliwal North (in the Eastern Cape) on the R58 to the west, it seems as if you have left town – open terraced grassland greets you on the left – but after 1km you find a new neighbourhood. So, why the gap?

How do the inhabitants of the adjacent neighbourhood find jobs in such a small community? Seeing children on the side of the road during school hours is no strange occurrence. The sight of adults walking, sitting and talking during office hours is just as ordinary. The issue of unemployment is a harsh reality in South Africa. What architectural intervention could bring about change here?

The site characteristics in combination with the demand for job opportunities inspired the design of a centre where training, trading and human interaction can materialise in Aliwal North. An investigation of the site's urban problems and of inhabitants' needs evidenced the definite lack of adequate facilities to cater for the unemployed and serve as a public space for the everyday user.



CONTENTS

A

INTRODUCTION

1.1 Introduction 02-03
1.2 Project motivation 04-05
1.3 Project rationale 06-09
- 1.3.1 Statistics
- 1.3.2 Client
- 1.3.3 User
- 1.3.4 Project aim

1.4 Touchstone 10-11

EXPLORATION & GROUNDING

2.1 Site selection 14-21

2.2 Conceptual approach 22-29
- 2.2.1 Locus of skill 24-25
- 2.2.2 Remolding influences 26-27
- 2.2.3 Engage 28-29

2.3 Research methodology 30-41

MAKING

3.1 Technical synthesis 44-55
- Precedent study 44, 48

3.2 Design development 52-57
- 3.2.1Programme 58-59

3.3 Final design 60-73

3.5 List of figures 74-75

3.6 References 76-77

PART 1

1.1

INTRODUCTION

The Joe Gqabi District Municipality, one of 40 municipalities in the Eastern Cape, has an unemployment rate of 30.94% (Department of Statistics South Africa, 2021). This begs the question: What causes or contributes to such a high unemployment rate?

During the search for contributing factors, educational statistics of the Joe Gqabi District Municipality were uncovered. The statistics indicate that only 57.8% of learners complete grade 9 or higher and only 25.1% of inhabitants have a matric or higher qualification.

This led to the next question: Are there facilities (other than schools) where education, training and skills development are offered to improve inhabitants' employability?

By asking questions, analysing statistics on unemployment data and researching people's needs within rural communities, part 1 identifies the problem areas, the client and the aim of the project.

1.1 Introduction	02-03
1.2 Project motivation	04-05
1.3 Project rationale	06-09
1.3.1 Statistics	
1.3.2 Client	
1.3.3 User	
1.3.4 Project aim	
1.4 Touchstone	10-11

INTRODUCTION

1.1

The small town of Maletswai is a place of connection – a junction for goods and people. It is therefore the ideal platform for architectural inventiveness regarding solutions for unemployment, where architecture plays a role in establishing a locus for opportunities with training as the main focus.

This dissertation focuses on architectural interventions that promote participation in training, which centres on personal skills and the redevelopment of the urban environment.

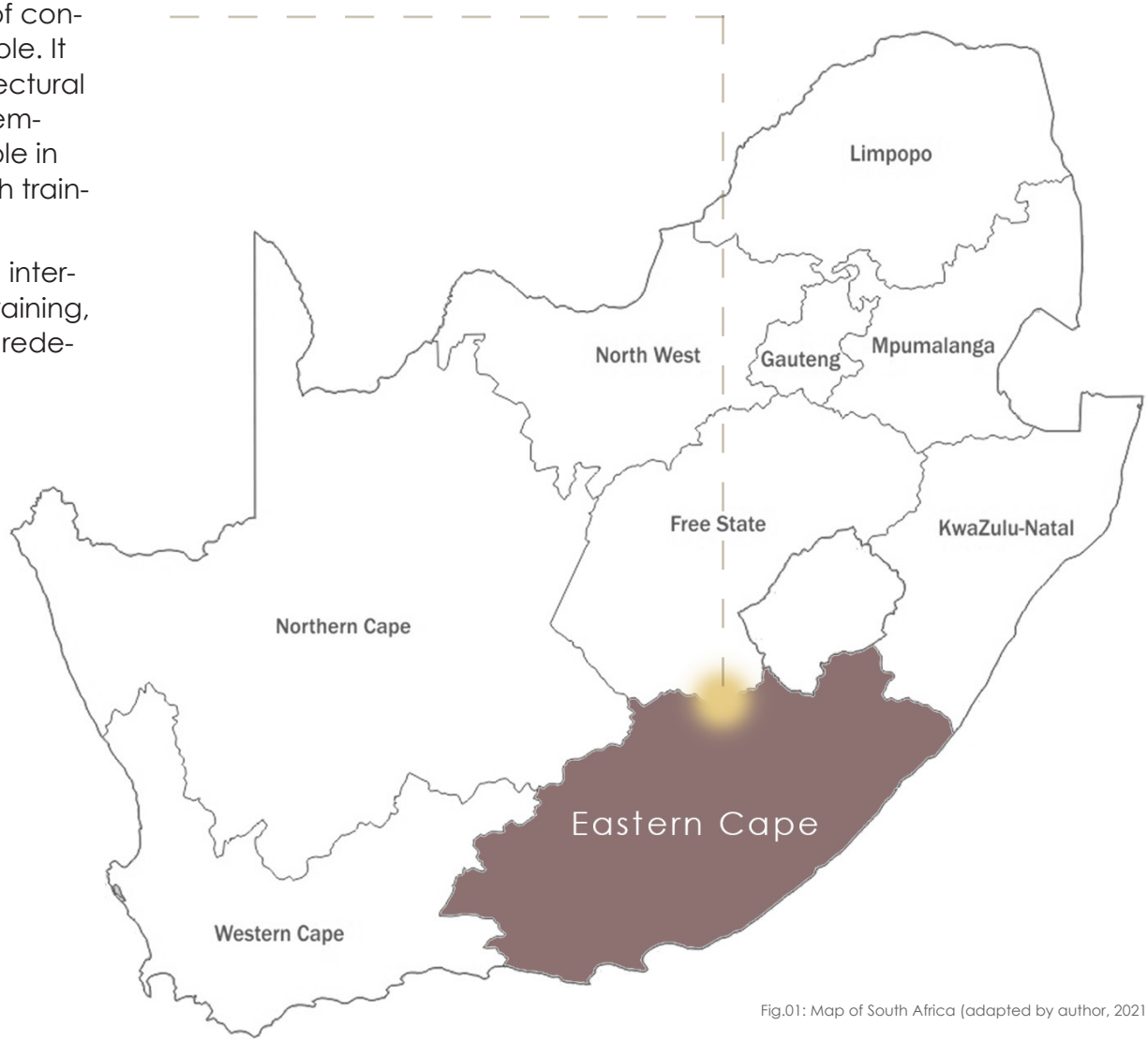


Fig.01: Map of South Africa (adapted by author, 2021)

Fig.02: Local house within in Maletswai (author, 2021)

PROJECT MOTIVATION

1.2

Approaching from the west on the road R58 (Robinson Raod), I notice the gap. The smell of sewage and the sight of a non-official dump site make this an unpleasant space to pass through, yet it is crossed by footpaths, as the main road is not safe for pedestrians.

But why the open space?

An analysis of the site and local conditions revealed the following salient points.

Firstly, as Seymour Papert stated, "You can't teach people everything they need to know. The best you can do is position them where they can find what they need to know when they need to know it."

Secondly, the Eastern Cape has an unemployment rate of 47.1% – the highest in South Africa (Department of Statistics South Africa, 2021).

The combination of the site characteristics and the demand for jobs, creates the perfect opportunity and setting for a centre where training, trading and human interaction can materialise.

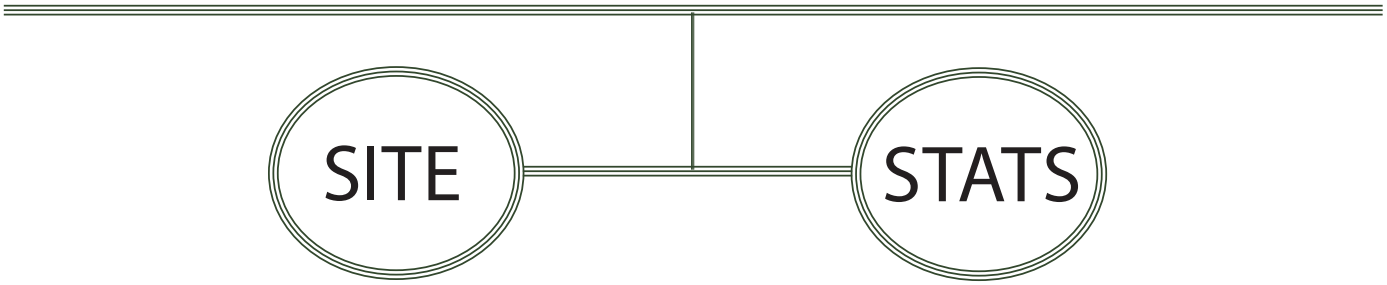


Fig.03: Site existing conditions (author, 2021)

PROJECT RATIONALE

1.3.1 STATISTICS

According to Statistics South Africa, the total unemployed and those discouraged from seeking work comprise 11.1 million or 42.6% of people in South Africa (Staff, 2021). In the final quarter of 2020 (October-December), 7.2 million/32.5% of South Africans were unemployed. Furthermore, in the Joe Gqabi District Municipality, only 57.8% of children complete grade 9 or higher and only 25.1% complete matric or a higher qualification.

The Southern Africa Labour and Development Research Unit states that South Africa youth NEETs (Not in any kind of Education, Employment or Training) are disconnected from education and the labour market (De Lannoy, 2019) (see tables 1, 2 & 3).

Why are so many people unemployed in South Africa?

How can architecture contribute to a solution?

TABLE 1: NEETs youth by educational attainment level and province

	Lower than matric	Matric or higher
Western Cape	62.0	38.1
Eastern Cape	72.2	27.8
Northern Cape	67.5	32.5
Free State	56.0	44.0
KwaZulu-Natal	54.7	45.3
North West	61.3	38.7
Gauteng	45.7	54.3
Mpumalanga	52.6	47.4
Limpopo	62.1	37.9
National	57.3	42.7

Fig.05: (De Lannoy, 2019)

TABLE 2: NEET's education attainment by detailed level and province

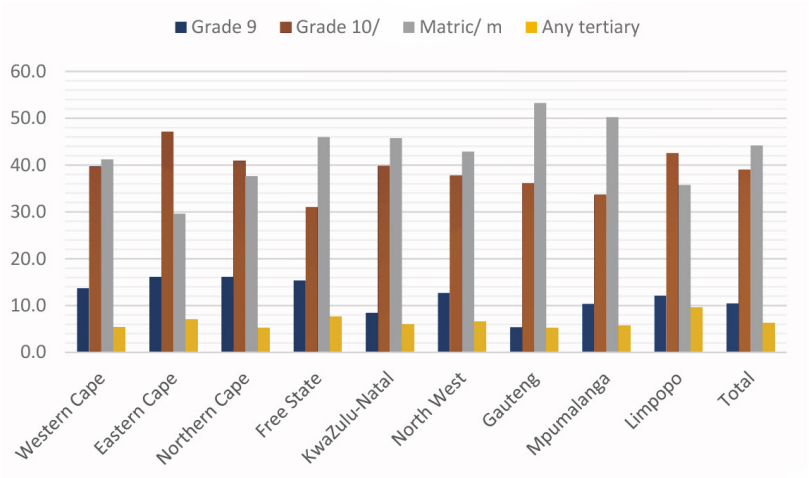


Fig.06: (De Lannoy, 2019)

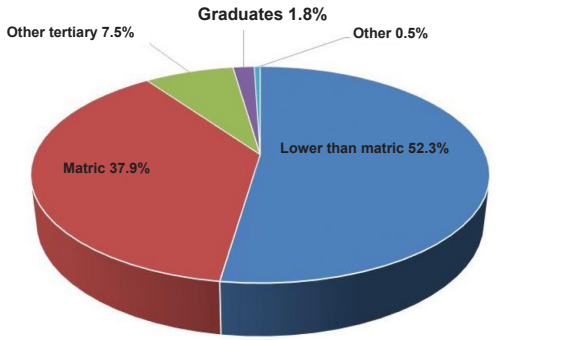


Fig.04: Population by highest education (Department of Statistics, 2020)

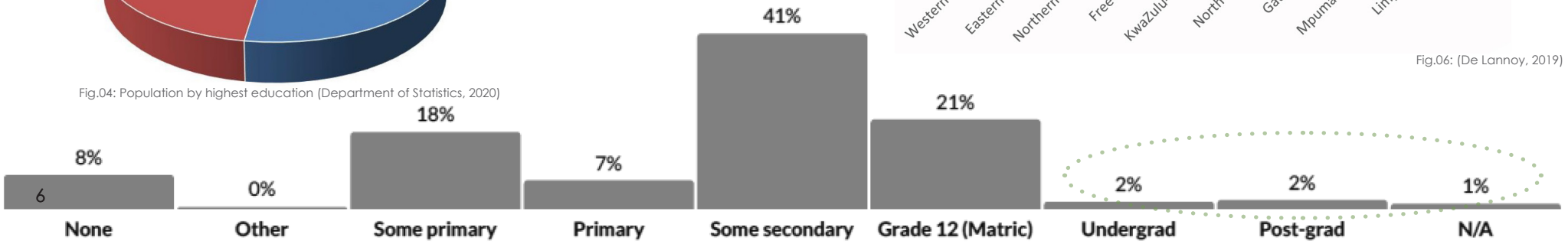


TABLE 3:Population by highest education

Fig.07: (Department of Cooperative Governance and Traditional Affairs, 2020)

POSSIBLE ANSWERS

- Food security
- Energy security
- Support for tourism
- Green economy interventions
- Public employment programmes
- Infrastructure roll-out
- Localisation through industrialisation

Public employment programmes (PEPs)

The goal of PEPs is to expose participants to training activities that will help develop personal skills and contribute to them obtaining a job.

The Department of Cultural Affairs and Sport (DCAS) within the Expanded Public Works Programme (EPWP) aims to provide accredited training to its recipients through (Western Cape government, 2021):

-Skills programmes:
Occupationally-directed programme.

-Leadership development: Structured learning programme within a specific industry.

-Artisan development: Technical training system, including practical, theoretical and workplace learning components offered in designated trades to achieve artisan status.

Green economy interventions

Green economy interventions are a "system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks or ecological scarcities" (Department of Forestry, Fisheries and the Environment, 2020).

- *water management*
- *agriculture & food production*
- *green jobs*

Food security

The estimation of the availability of food and the means to acquire it.

- *food bank*
- *individual skill-building strategies*

Energy security

In South Africa's 2007 Energy Security Masterplan, energy security is defined as, "ensuring that diverse energy resources, in sustainable quantities and at affordable prices, are available to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions among economic sectors" (DME 2007a: 13).

- *solar panels*

Support for tourism

The introduction of activities that can provide for people's individual needs, which, in

- *passenger transport services*
- *cultural services*
- *traditional food stalls for travellers*

1.3.2 CLIENT

The Jobs Fund, launched in 2011, is a National Treasury initiative with the main goal to address unemployment in South Africa. Its objective is to support job creation through project collaboration with public, private and civil society organisations.

It endeavours to create incentive for investment and innovation in projects that contribute to sustainable job creation and continuing employment (Jobsfund, 2021, online).

1.3.3 USERS

The following inhabitants of Aliwal North are potential users for the skill centre and public market:

-Children who dropped out of school for a non-specific reason.

-Young adults with only school grades as qualifications.

-Adults who want to enhance their skills.

-Farmers who contribute to the local market (see page 17).

-Teachers and experts who present workshops to learners.

The project will serve as testing ground where analysis can be made on what type of educational programmes would benefit the community and positively impact on South Africa's unemployment rate.

THE JOBS FUND

South Africa Siyasebenza

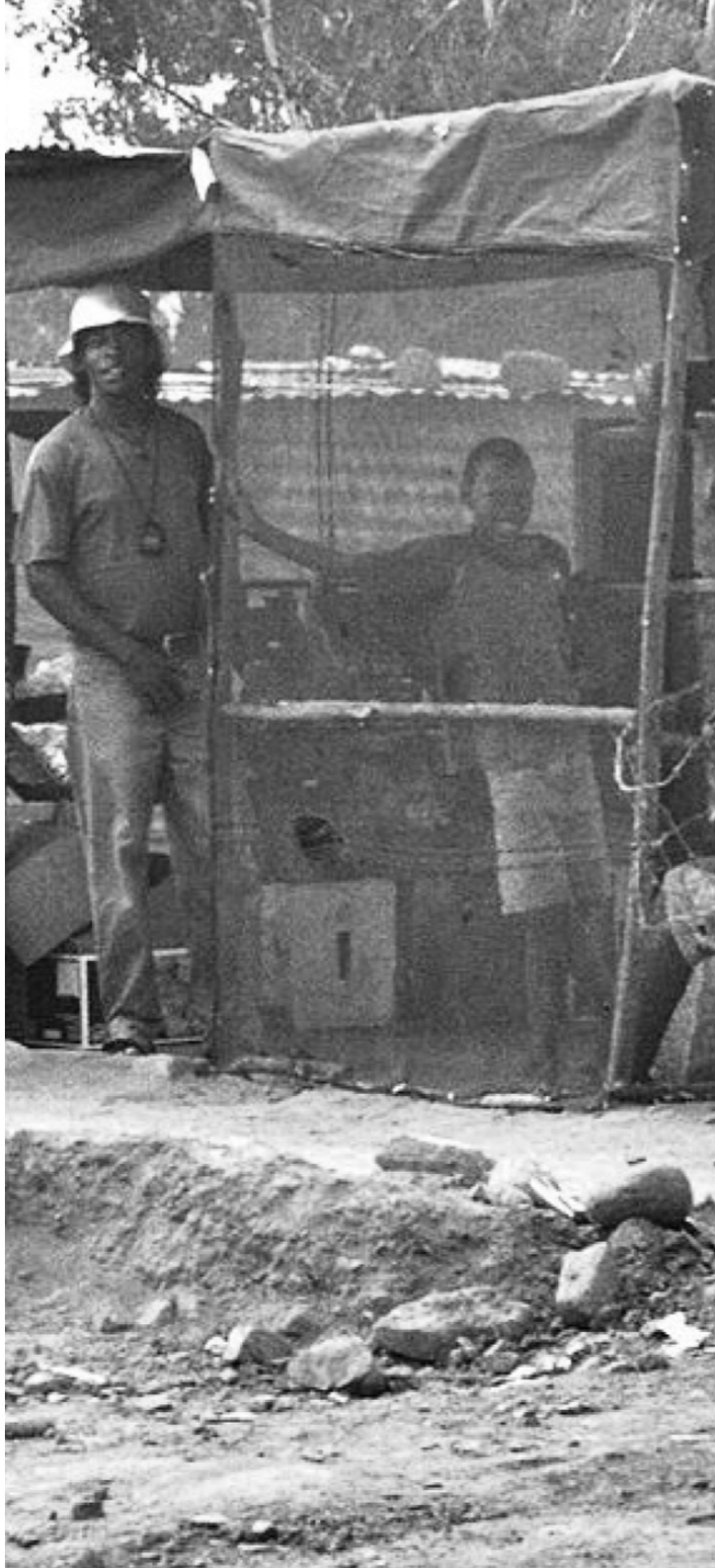


Fig.08: Contextual photo (author, 2021)

1.3.4 PROJECT AIM

In order to establish an outline for the project, the users' needs must be evaluated to create sustainable training programmes with the main aim of future employment. This facility must thus be the gateway and provide tools for both the learners and teachers/instructors. PEPs aim to uplift the economy by "placing resources in the hands of poor people and poor communities and allowing the impacts to trickle up into the wider economy from there, with area-based approaches enabling spatial targeting" (Philip, 2013).

Having the local community as the principal user provides an opportunity for growth, which is one of the project's main objectives.

Through architecture, a combined facility can be designed, where energy, security, tourism, skills and employment programmes are offered.

Fig.09: Contextual photo (author, 2021)

TOUCHSTONE
LET THE COMMUNITY SPEAK

1.4

This touchstone represents the refinement and improvement of the identified skills in the community and the implementation of new skills (see page 11). As a result, these skills will have a positive effect on users' competency levels and enable them to participate in the economy of South Africa. Human interaction is needed (see fig:10), as it causes a reaction that reflects the impact (imprint) on the site and the community. The architecture will focus on the human skill required for a sensitive design (for example, critical regionalism which focuses on place - the uniqueness of a space) in addressing the site characteristics, which include the fact that the site falls partially within the flood line of the Orange River.

Improvement

Imprint

Sensitive

This is illustrated by the architecture, which is lifted on stilts. The stilts also allow for year-round accessibility of the site, both for pedestrians and users participating in programmes at the facility.

The site characteristics tells us how the building should react, the needs of the people indicate what type of human action (programme) is required for improvement through transparent architecture that allows the community to speak.

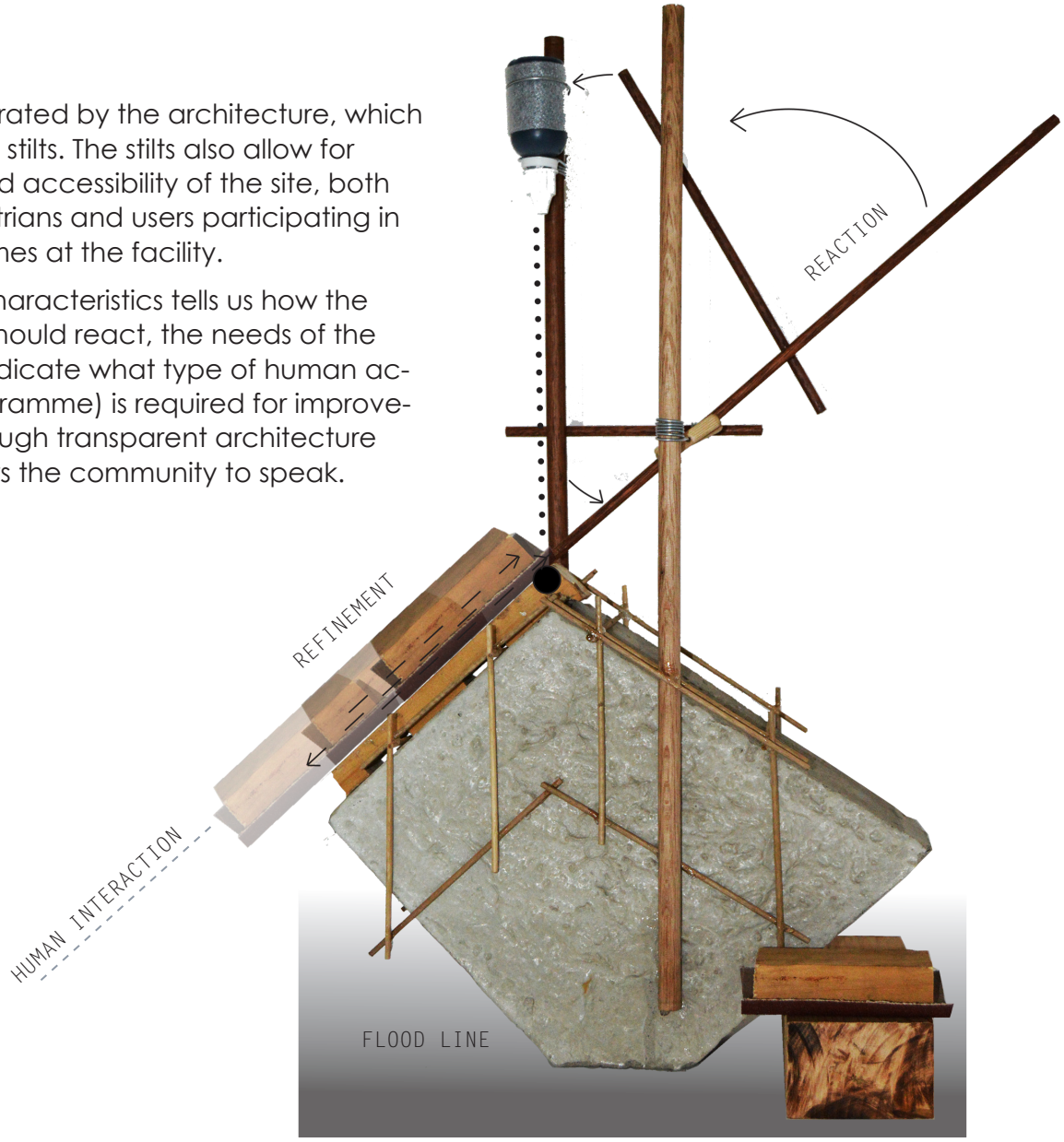
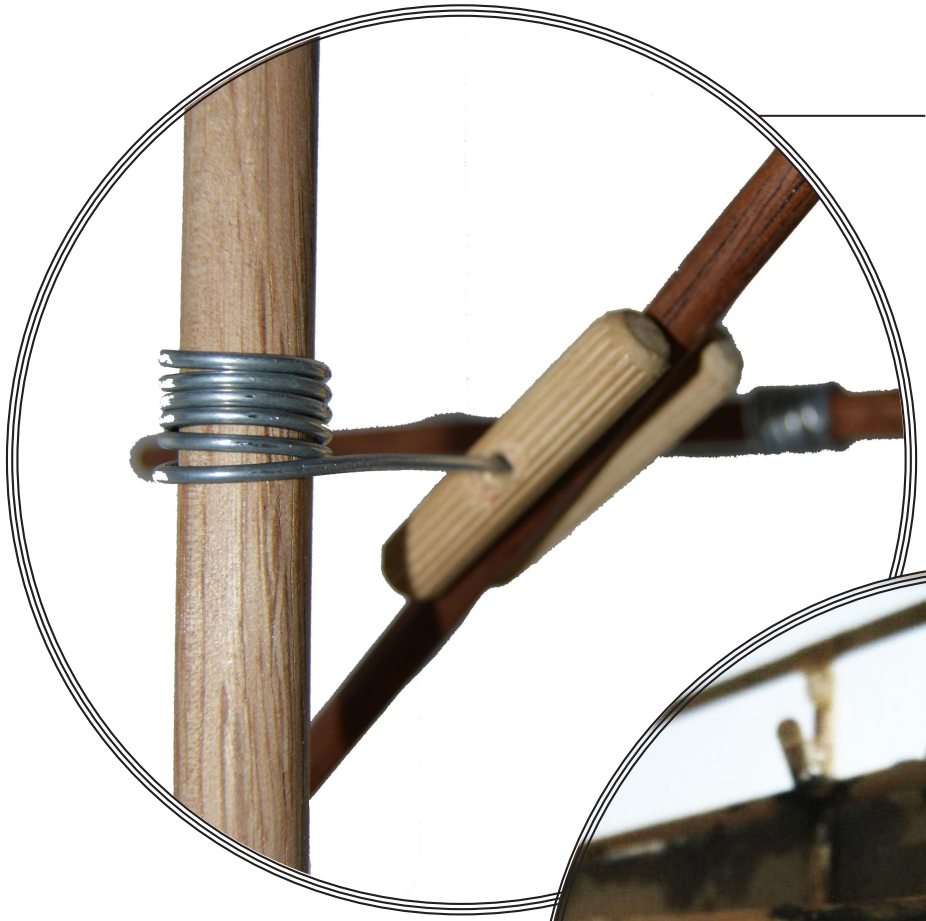


Fig.10: Touchstone (author, 2021)



SKILLS TRAINING

(LOCAL SKILLS IDENTIFIED)

-WELDING

-WOOD WORK

-MECHANICS

Fig.11: Touchstone (author, 2021)

IMPROVEMENT

IMPRINT

Fig.12: Touchstone (author, 2021)

PART 2

2

EXPLORATION & GROUNDING

The site forms a junction for central business and connects the surrounding suburbs of Dukatole, Hilton, Joe Gqabi, the Springs and Abersig as well as the nearby Goedemoed Prison (situated on the Free State side of the Orange River).

Neighbouring towns: Lady Grey, Burgersdorp, James Town and Rouxville.

Throughfare for tourists en route to the Eastern Cape and KwaZulu-Natal.

2.1 Site selection 14-21

2.2 Conceptual approach 22-29
2.2.1 Locus of skill 24-25
2.2.2 Remolding influences 26-27
2.2.3 Engage 28-29

2.3 Research methodology 30-41

SITE SELECTION

2.1

The site is located on the bank of the Orange River in the Eastern Cape in Aliwal North, now named Maletswai, that falls under the Walter Sisulu local municipality. The town was founded in the 19th century and named after a battle against the Sikhs of India in 1846 (Goldberg, 2009).

The town was a platform for events that helped sculpt South Africa in the Anglo Boer wars. According to Heyningen (2018):

"A small camp had already been established by Aliwal North municipality for refugees from across the river.

Major Apthorp made a favourable impression on Emily Hobhouse, who considered that his camp was one of the best organised she had seen. 'His camp can barely be called a prison, he has no soldiers or sentries and everyone is free to walk into the town or to receive visits

Maletswei has two thermal hot springs and once featured one of the largest resorts in South Africa.

In 1885, the railway connected East London with Aliwal North and thus a primary economic interchange originated for services and goods. This formed an agricultural base for the north-eastern part of the Eastern Cape (Goldberg, 2009).

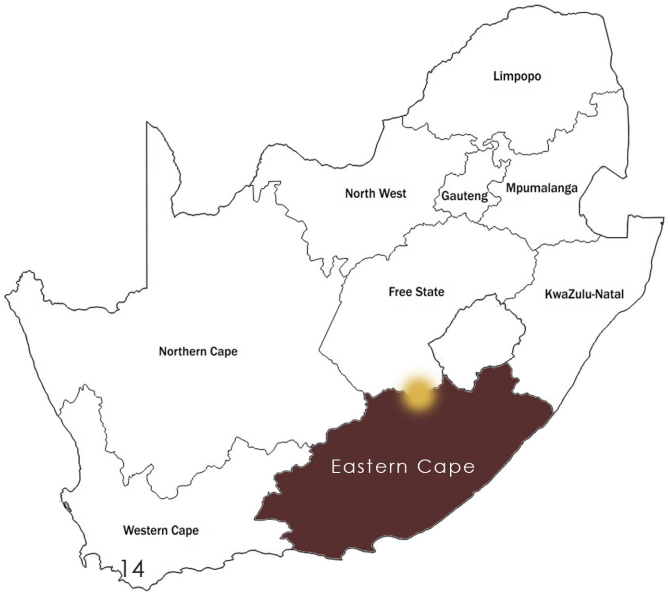


Fig.13: Map of South Africa (adapted by author, 2021)

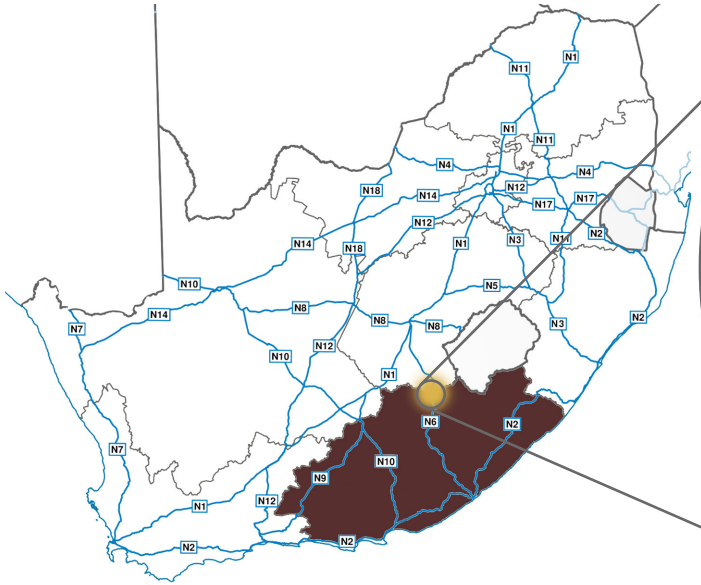


Fig.14: Map of main routes in SA (adapted by author, 2021)

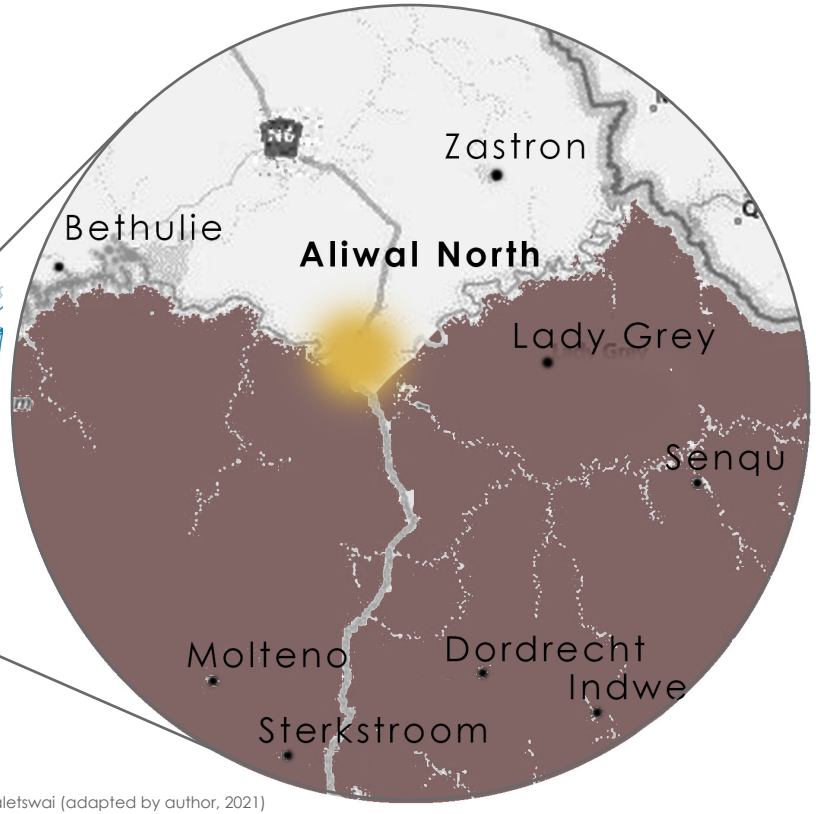


Fig.15: Nearby towns to Maletswai (adapted by author, 2021)

Fig.16: Hot springs swimming pool (Drisa, 1952)

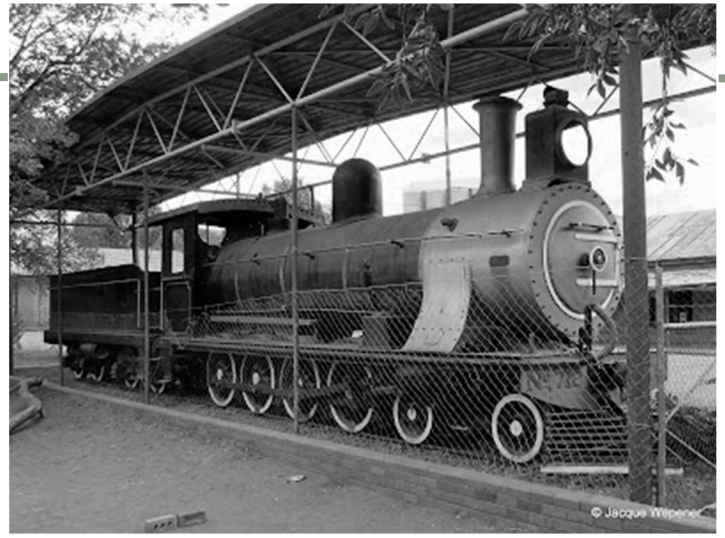
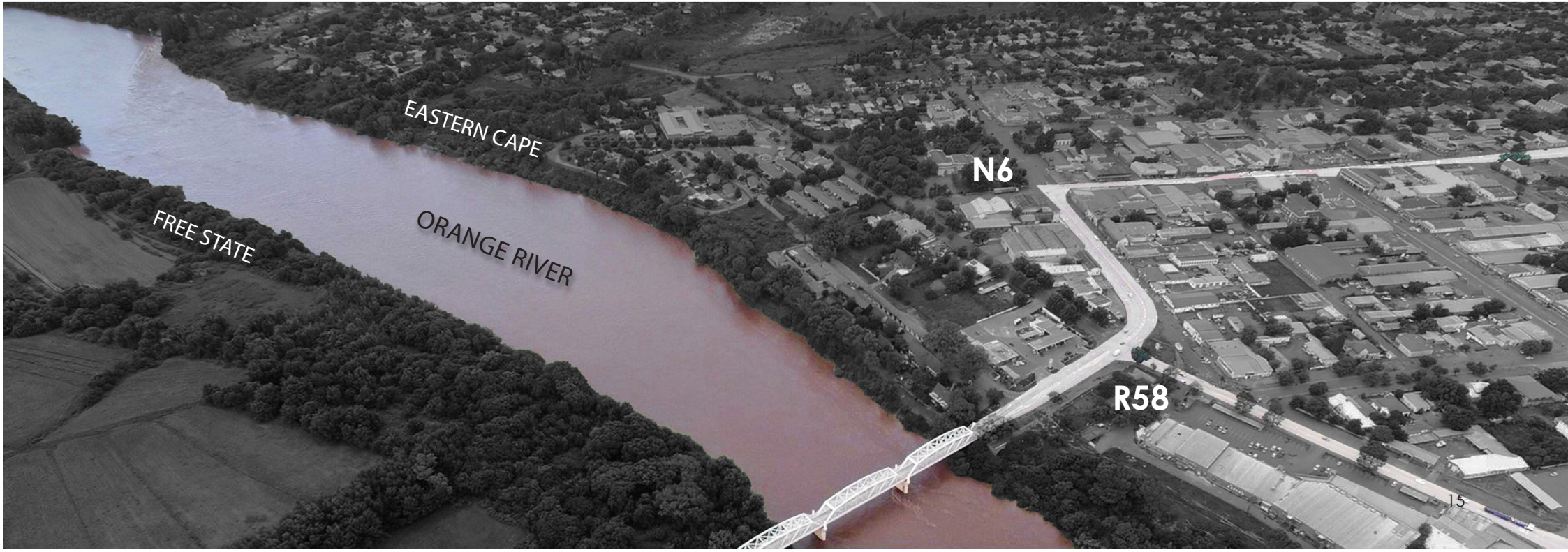


Fig.17: SAR Clas GB 2166 on plinth at railway station (Drisa, 1974)

Fig.18: Aerial view of Maletswai (adapted by author, 2021)



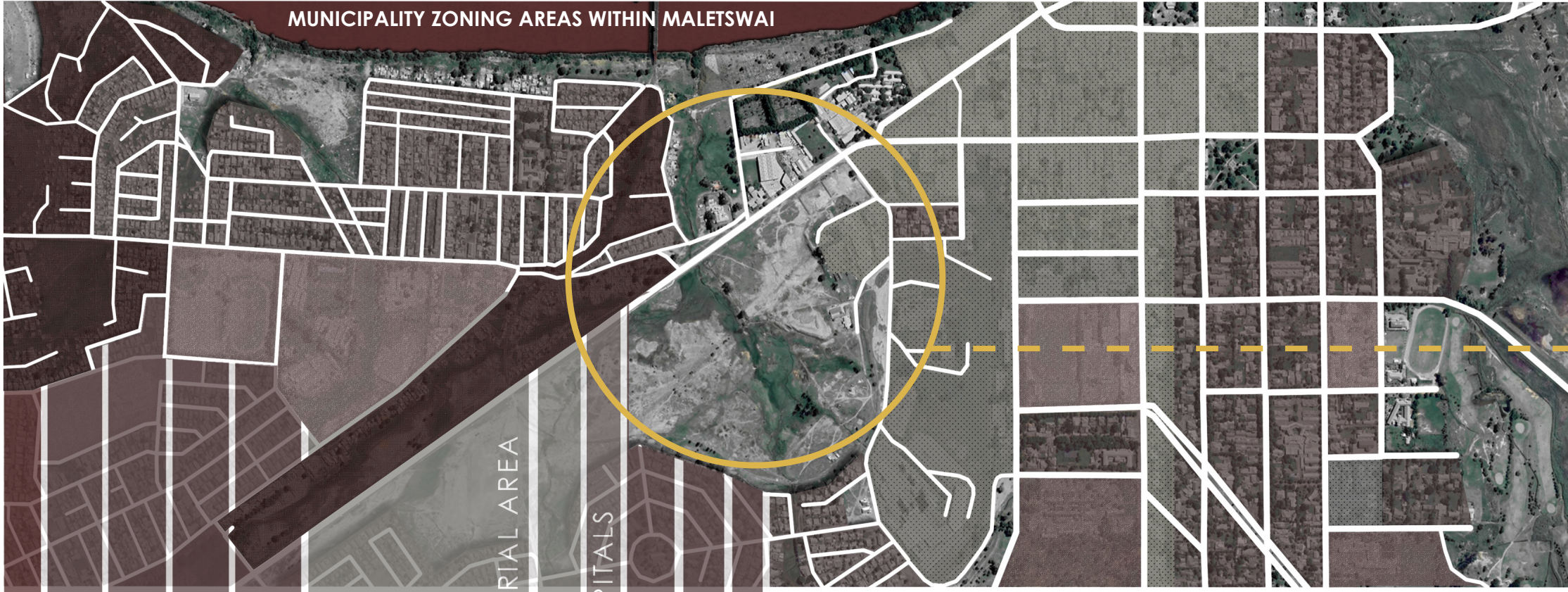


Fig.19: Map of Maletswai municipal zones (adapted by author, 2021)

TABLE 4: Growing season in Maletswai (lasts for 7.5 months)

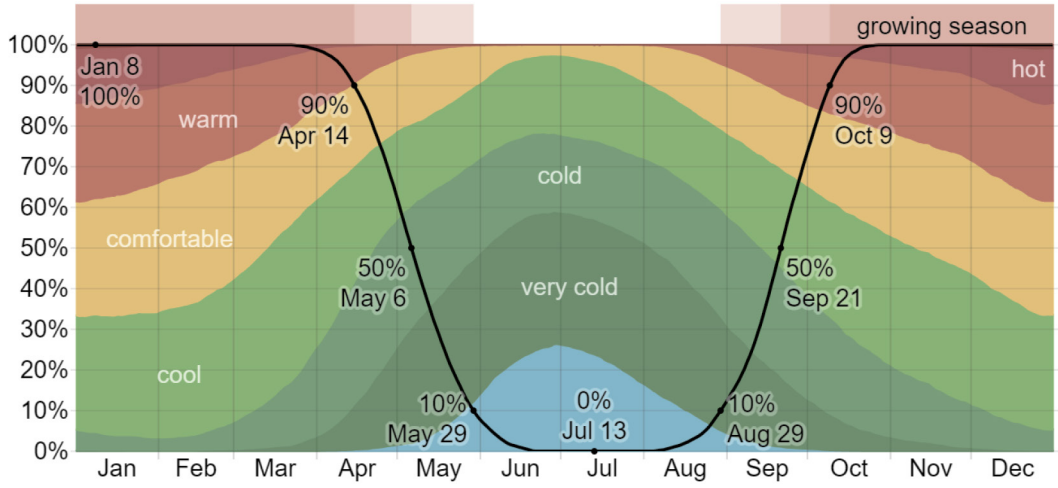


Fig.20: Growing season in Aliwal North (Weather spark, 2021)

SITE LOCATION WITHIN MALETSWAI

Surrounding zoning areas neigbouring the site:
-Industrial area
-Informal settlement

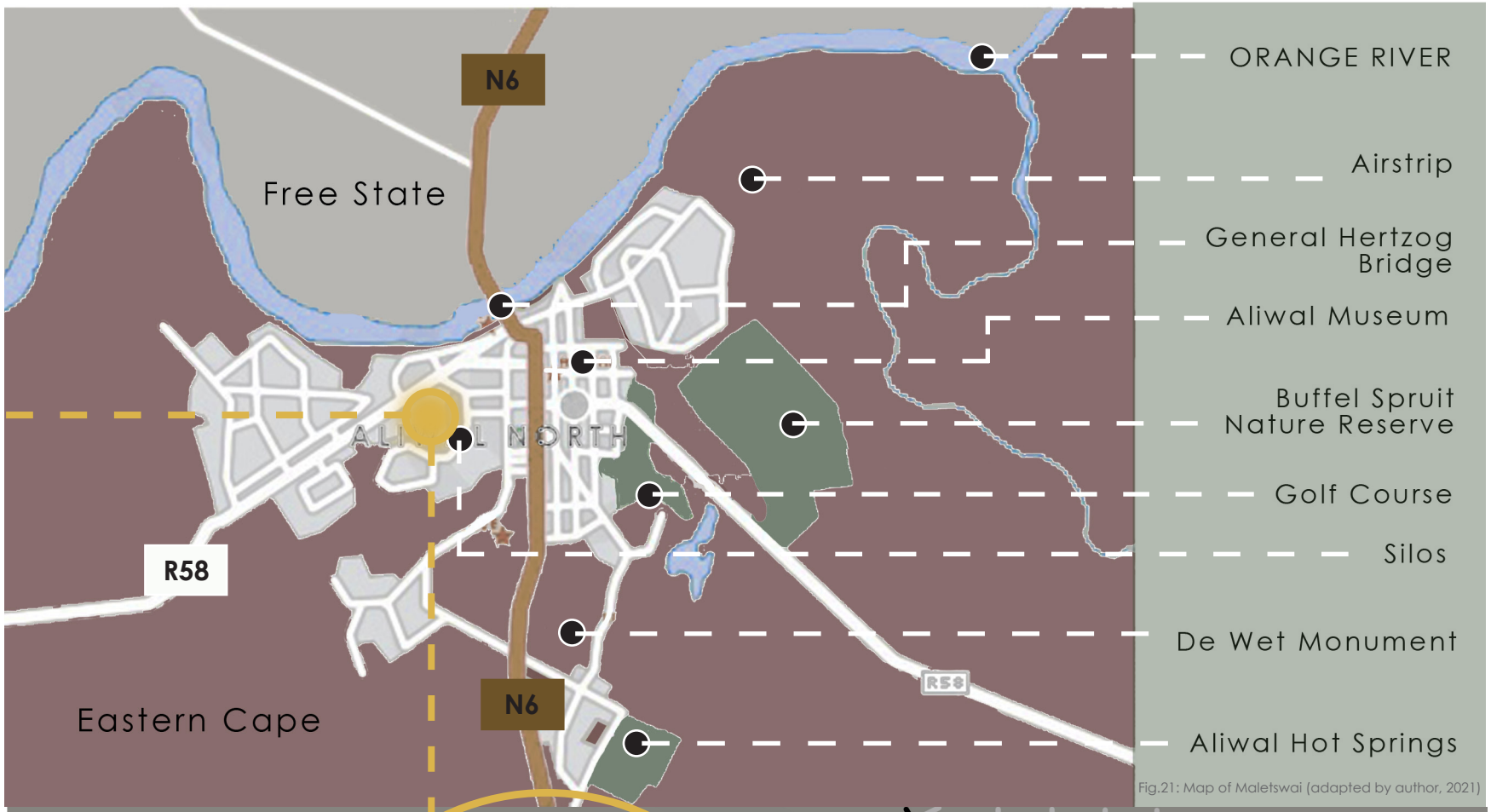
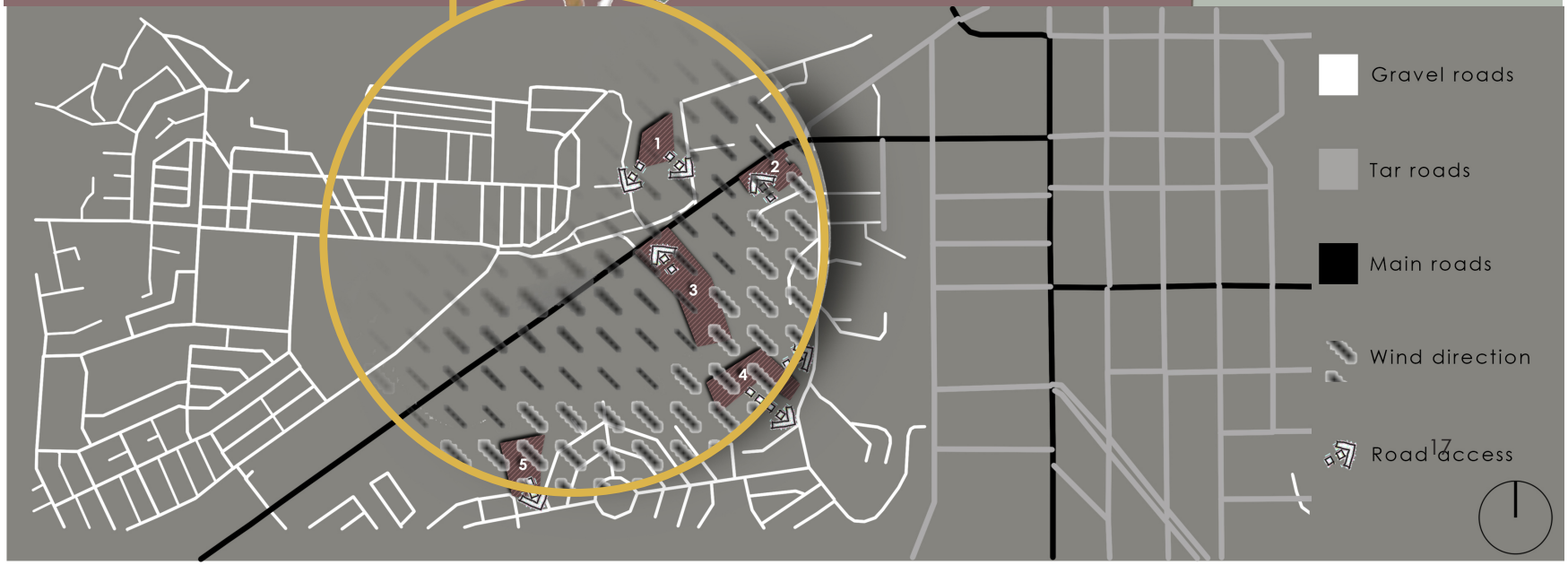


Fig.21: Map of Maletswai (adapted by author, 2021)

ROADS CONNECTED TO SITE



GREEN BELT

INDUSTRIAL AREA

The chosen site is located in the green buffer zone dividing the town from the settlement, which is has a minimum number of access roads to the city (Hillier, 1984).

Interactions are generated between movement, distance and the edge of the site. The separation of these nodes creates a conjunction and the site thus becomes a connection point: that action of pause before you cross the edge of the site is replaced by the notion of being part of the town – being intertwined with the urban plan.

REASONS FOR CHOSEN SITE

- IN GREEN ZONE
- CONNECTION POINT

Fig.22: Site allocation (adapted by author, 2021)

ORANGE RIVER

General Hertzog Bridge

Bishop Demont High School

Holy Cross Primary School

Technical Orientation

Ikhala Public FET College

Licencing & Testing Station

Silos

Aliwal North Primary School

Nchafatso Primary School

Aliwal High School

Fig.23: Site allocation (adapted by author, 2021)

Closer inspection of the site location indicated a definite decline to the northwest that presents lower ground: during seasonal rainfall water thus flows from higher ground to the site and from there to the Orange River. Small streams, individual dump sites, and an identifiable footpath are evident and create a pattern of the important nodes around the site. These also show user motives for walking along the site.

SITE LIMITATIONS

- GREEN BUFFER ZONE
- ROADS
- WATER LEVEL

REASONS FOR CHOSEN SITE

- DUMP SITE
- SEASONAL WETLAND
- HIGH PEDESTRIAN TRAFFIC

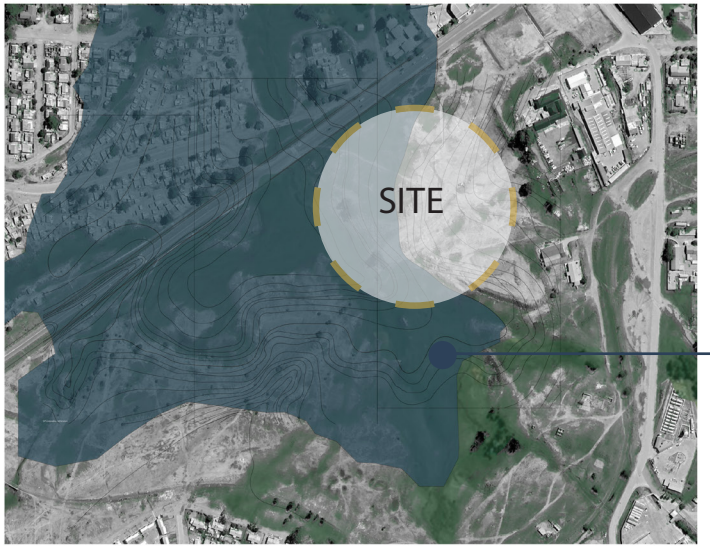
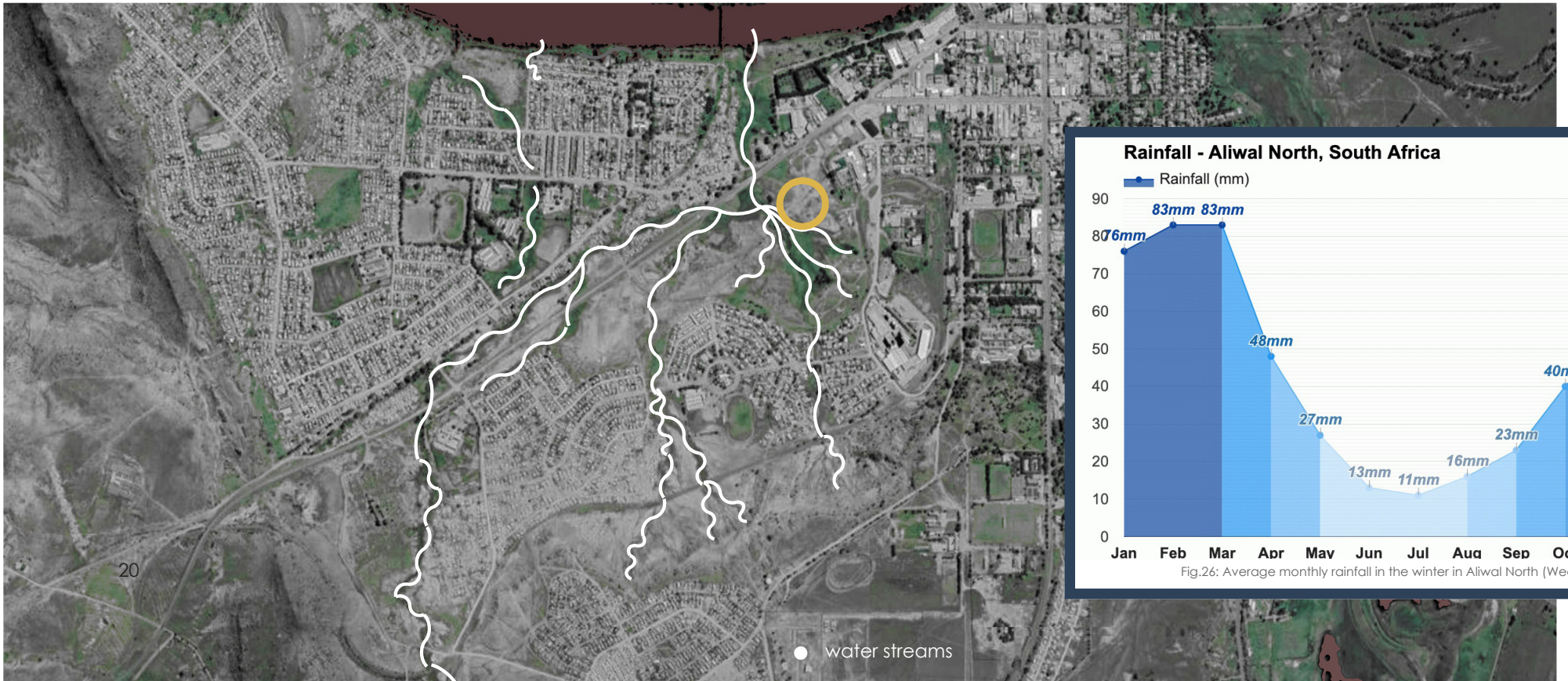


Fig.24: Site restrictions and site indication (author, 2021)

Fig.25: water streams on and around site (Weather spark, 2021)



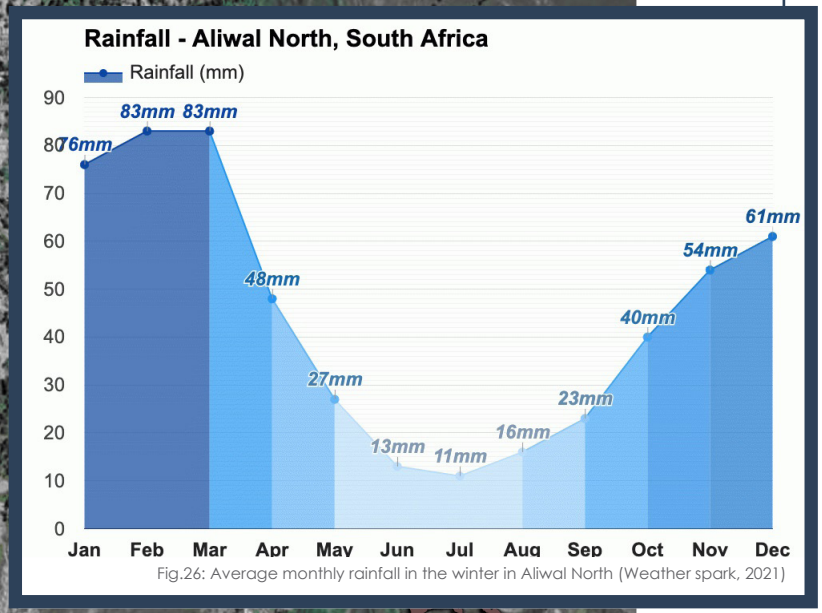


Fig.26: Average monthly rainfall in the winter in Aliwal North (Weather spark, 2021)

Fig.27: Site photos (author, 2021)

CONCEPTUAL APPROACH

2.2

The main focus of the project is to combine the setting with the programme that focuses on training, trading and human interaction.

The sight of open garages with cars being fixed and welding sparks flying around is no new occurrence within the surrounding suburbs of Dukatole and Hilton. Therefore the first concept, locus of skill, attends to the local community's existing needs for a centre where people have the opportunity to improve their skills and obtain legal qualifications.

The second concept confronts how the layout of the town and the suburb is disjointed and intentionally designed to create separation, by using the "old grid" and materials as inspiration to follow the old system in a new way.

Thirdly, engage, this concept emphasizes the importance of people interactiong with their environment and in return the responsibility of building creating a safe, identifiable space for growth.

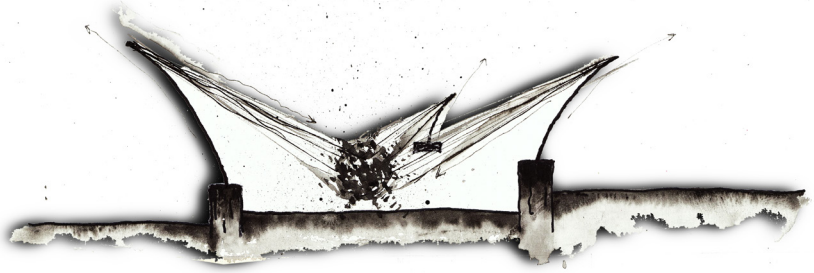


Fig.28: Concept 1 abstract drawing (author, 2021)

Shear
Tension
Transition
Interface

LOCUS OF SKILL

2.2.1

CONNECTION OF PARTS

In the creation of a space in which to learn new skills, the architecture itself must be totally honest in its usage and display of construction materials and methods. Therefore, an open structure that showcases joints, techniques and craftsmanship was deemed important.

The co-dependency of separation and connection led to the concept of a bridge – connecting the town with Hilton settlement; connecting different materials; connecting people and skills; and, finally, bridging the gap on the greenbelt.

The General Hertzog Bridge that connects the Free State and Eastern Cape served as further inspiration for the outline of this concept.

CONNECTION OF PARTS

Fig.29: Concept 1 (author, 2021)

Fig.30: Concept 2 abstract drawing (author, 2021)

Concept 2 focuses on the grid used in the initial layout of the settlement, which is most evident in the 5×5m houses and broad street widths. It also incorporates the materials most commonly used to build these houses: cinder blocks, corrugated iron and wood. Concept 2 aims to reuse these materials aesthetically with inspiration drawn from the General Hertzog Bridge and the settlement's grid to define the design and provide a controlled plan.

Threshold
Edge condition
Bricolarge
Urbanism

REMOLDING INFLUENCES

FOLLOW THE SYSTEM

2.2.2

FOLLOW THE SYSTEM

Fig.31: Concept 2 (author, 2021)

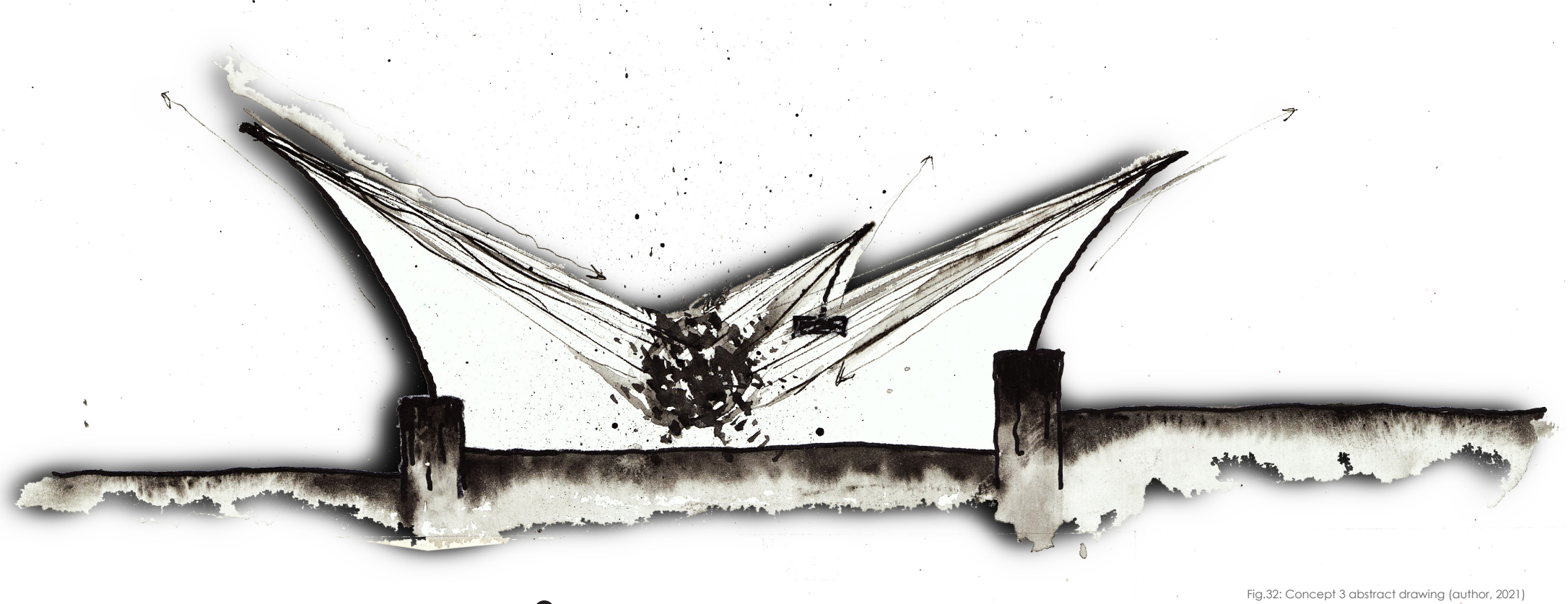


Fig.32: Concept 3 abstract drawing (author, 2021)

Tensgrity
Give and take
Envelope
Reciprocity

ENGAGE 2.2.3

WORK WITH THE FORCES

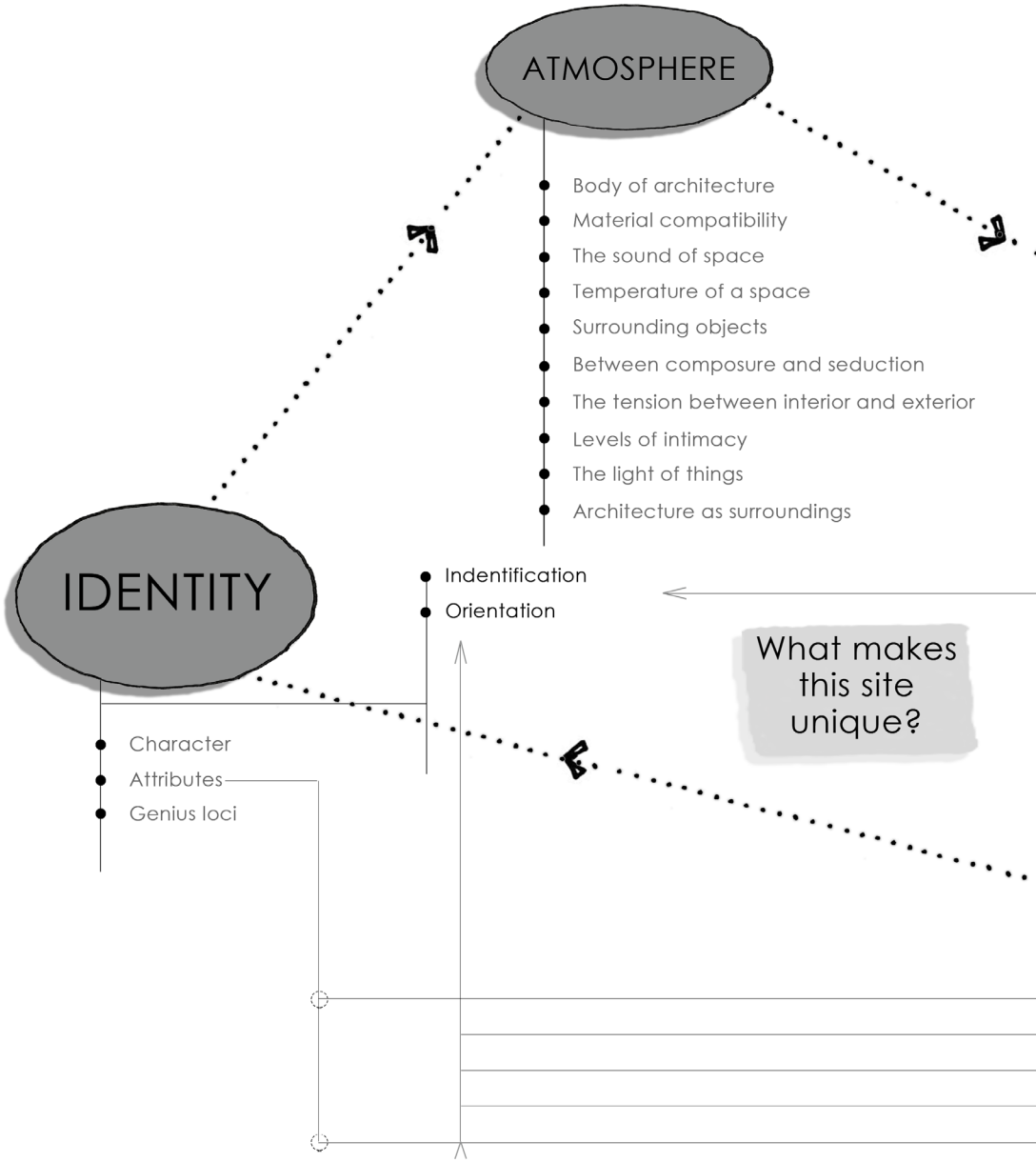
Concept 3 illustrates and emphasises the conflict and tension between people and the environment. People do not exists in isolation from the environment: the one (people) needs the other (building/ programme).

Well-kept urban green spaces can promote mental and physical health, which, in turn, positively impact on the environment and surrounding areas.

WORK WITH THE FORCES

Fig.33: Concept 3 (author, 2021)

2.3



MORPHOLOGY

Theoretical discourse

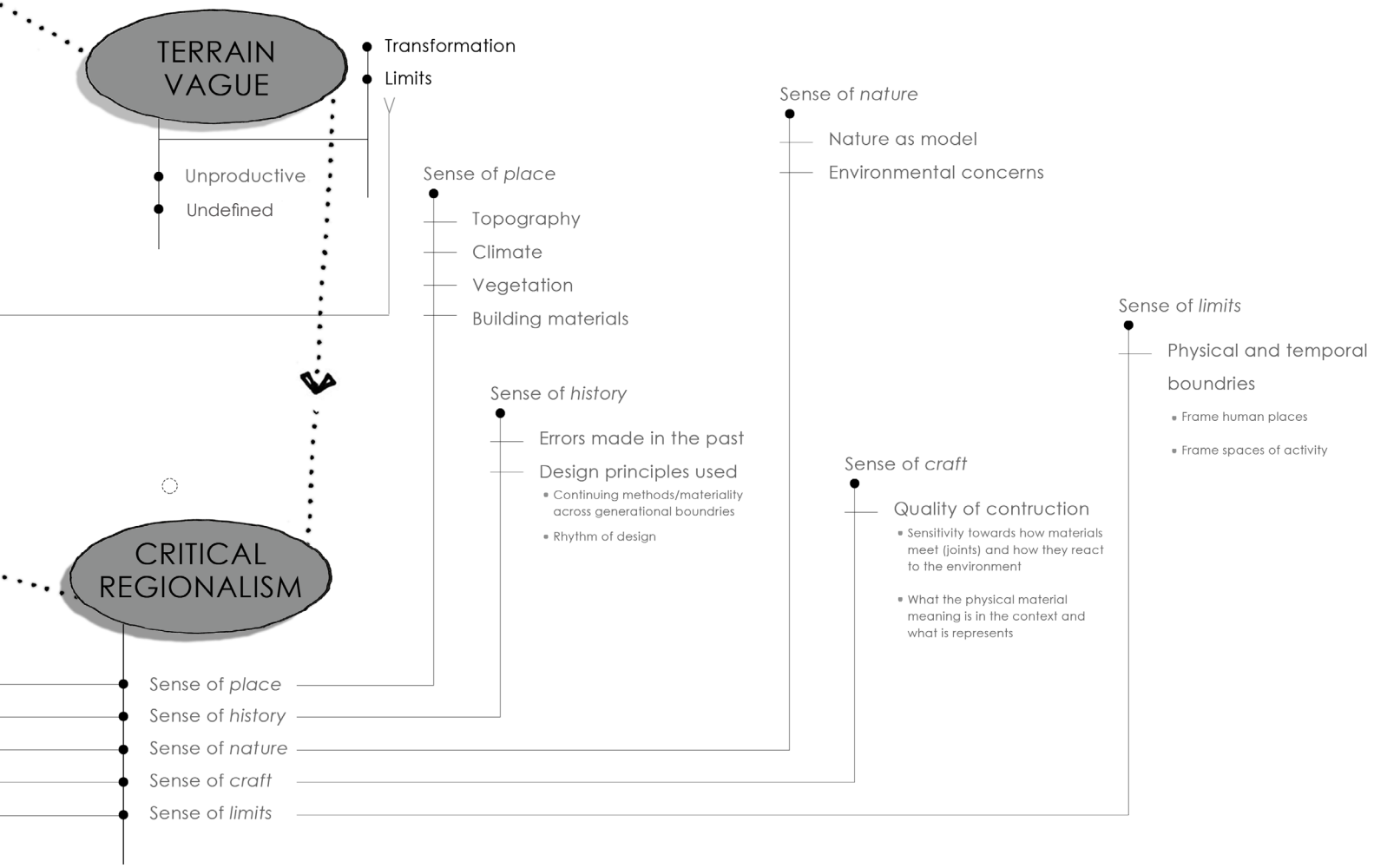


Fig.34: Theoretical strategy diagram (author, 2021)

2.3 RESEARCH METHODOLOGY

Dr Glen Mills, former professor of architecture at the University of the Orange Free State, stated that any building is essentially a "domain of knowledge" in that it embodies a spatial ordering of category and a "domain of control" in the sense of the ordering of boundaries (Hillier, 1984).

When discussing the original design and layout of settlements in apartheid South Africa, this can be seen as buildings that are discursive expressions of the knowledge and forms of control or power. The settlement plan was a strategic device that realised a particular form of power-knowledge (Foucault, 1986). In South Africa specifically, that form of power-knowledge was shaped by the ruling white minority who, since the arrival of the first European settlers in the 17th century, detailed a distinct view of society – an innovation that involved a broad set of principles, in particular white supremacy, racial segregation and a Christian nationalist state (Platzky, 1985).

These principles were enforced through legislation from the inception of the apartheid era when the National Party came to power in 1948. One key element was the insertion of a green buffer zone to separate settlements from "white" urban centres.

The green wedge idea – the typology of green space – was a priority in the minds of city planners when considering urban growth and the allocation of open spaces in modern cities. The term 'green belt' was advocated by Ebenezer Howard in his book *To-Morrow: A Peaceful Path to Real Reform*, as a solution to manage urban growth, establish farmland and supply a buffer zone between cities (Oliveira, 2017).

These identifiable aspects, (green wedge that creates separation) led to the theory of urbanism. The built environment disintegrates with the passage of time and the stresses of use and neglect. Unemployment, health epidemics, poverty, shortages of affordable housing and transportation problems often accompany physical decay in cities and towns. Attempts to alleviate these social problems through the maintenance, rehabilitation, and rebuilding of the physical environment are known as urban redevelopment (Gotham, 2011).

The World Health Organisation (WHO) stated that urban green space interventions can bring about a broad scope of results, which comprise lifestyle and behavioural aspects, health and well-being, social equity, exposure to environmental risks and general quality of life (WHO, 2017).

The way in which green spaces are displayed to become part of the everyday ritual affects the community.

As "people interact with objects", the way in which open spaces is designed will affect the surrounding population (Gotham, 2011). Therefore, the threshold (green zone) between the town and Hilton settlement creates a stage for communication and an opportunity to bridge the gap of separation. The site has obstructions created by nature and human residue, which have resulted in the prohibition of growth both within the social realm and in the physical state of the town.

REASON FOR THE GAP

THEORY
- THRESHOLDS
- URBANISM
- NON-PLACE & PLACE
- TERRAIN VAGUE
- CRITICAL REGIONALISM

Fig.35: Site boundaries (author, 2021)

In his book, *Radical Reconstruction*, American architect Lebbeus Woods explained that although walls are shut out zones, which are strengthened by themselves, they are the essential edges of "urban life and culture as a whole" (Woods, 1997, p.13).

Walls can be ethnic groups, institutions or a whole city that is in the middle of eroding or diverged "ideologies and cultures" (Woods, 1997, p.13). Walls are mostly known for their physical presence, therefore, this design can exploit the water streams, flood zone and distance of non-walkable surfaces to engage with the old conditions and present a zone

These edges are emphasised by the desire paths present on the site (see Fig.37). Desire lines are pathways created by human feet. They are a way of bridging the abstract (desire) and the material (patterns of use in urban spaces) (Walters, 2017).

Fig.36: Pedestrian travel routes (author, 2021)

Fig.37: Pedestrian travel routes (author, 2021)

As seen in Fig.36, 37 the site has been touched by humans, either voluntarily through movement and interaction on the site or through a forced annual reaction to floods. The imprint that this has left on the site became the planning tool for the building's spine (see fig.36).

The design endeavoured to merge the existing communal atmosphere with the opportunity to sell or buy produce. It incorporates the existing footpaths, as they are not harmful to the urban environment and narrow footpaths encourage belonging and closer encounters with people.

Fig.39: Pedestrian travel routes merged with initial building direction (author, 2021)

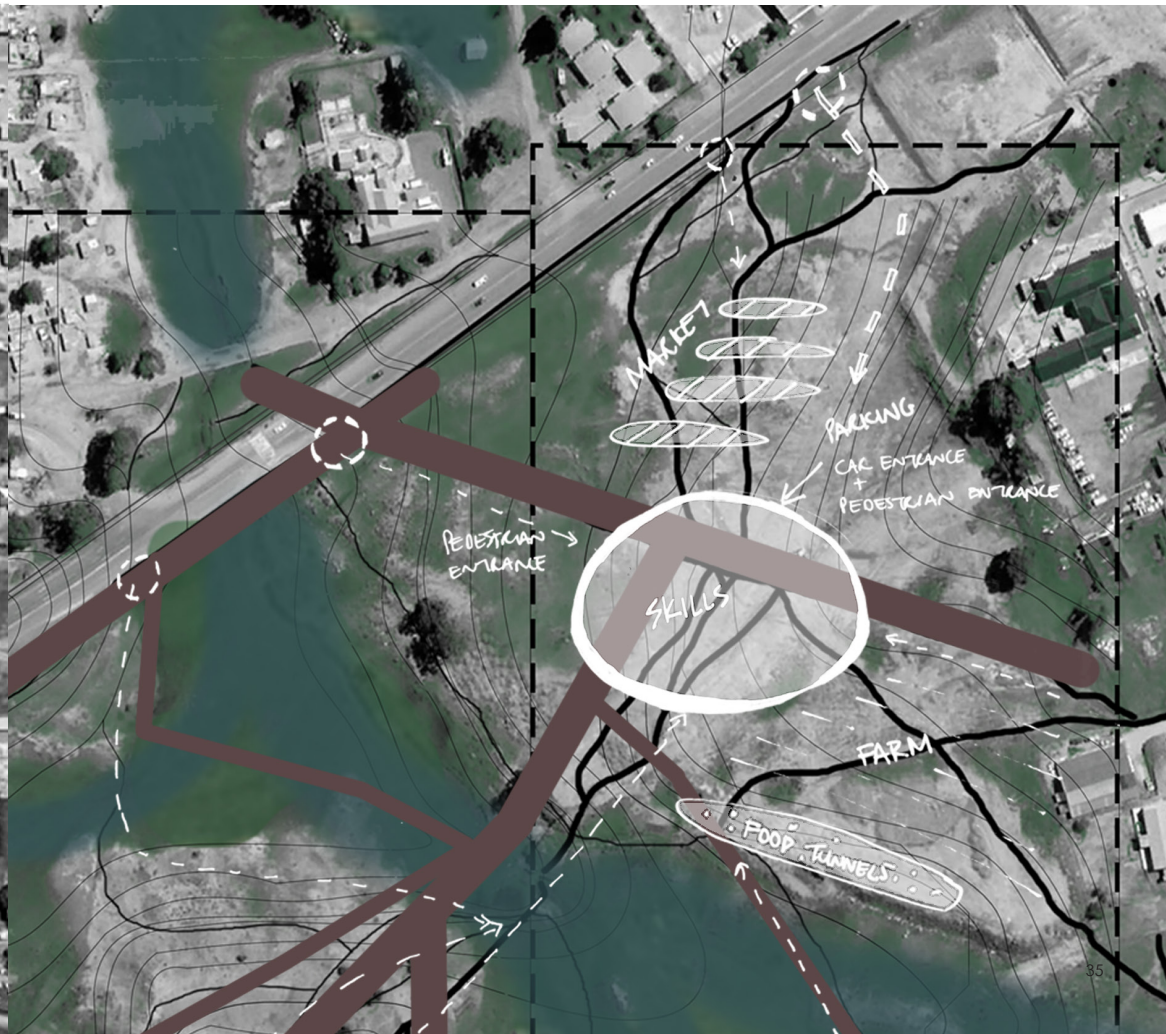


Fig.38: Initial site plan (author, 2021)

Pedestrian pathways

Ground floor level pedestrian pathways

Water during the year

Green space

INSPIRATION
TERRAIN VAGUE
IDENTITY
GENIUS LOCI
ORIENTATION
CRITICAL REGIONALISM

"Society develops in a place. Without the grounding of place, society will not be rooted. A society that can exist in all places is a society that exists in no place. Without this grounding, a sense of alienation can exist. Arguably, there are elements of western society that are becoming similar across countries due to the influence of mass culture, however, there is a greater part of society that is unique in its identity. This uniqueness is part of society's memory. Without the grounding of place, this memory would not exist."

-Lester Korzilius

The above quote by Lester Korzilius expresses the importance of a society possessing an identity, which implies a uniqueness or a distinguishing characteristic (Butts, 2021). "Human identification with a place presupposes that places have character, that is, attributes which distinguish one place from another and which lend to a place its unique presence or genius loci" (Abel, p.143).

Closer inspection of the site indicated that the theory of terrain vague is applicable. Regarding this theory, Almy (2007) stated that "empty, abandoned space in which a series of occurrences have taken place seems to subjugate the eye of the urban photographer. Such urban space, which I will denote by the French expression terrain vague, assumes the status of fascination, the most solvent sign with which to indicate what cities are and what our experience of them is." The term can also be broken into its separate parts. In a 1995 paper written by the Spanish architect Ignasi de Sola Morales, he interprets this term as "the idea of a script of land fit for creation, with a direct corollary to the urban. Vague is intrinsically tied to an assortment of ideas" (Almy, 2007).

The design thus focused on the unique landmarks of the context and endeavoured to amalgamate the visual characteristics of Maletswai with the programme.

Fig.40: General Hertzog Bridge (Harington, 2006)

Fig.41: Silos (author, 2021)

Fig.42: Context design inspiration (author, 2021)

Christian Norberg-Schulz, Norwegian architect, educator and architectural theorist, discussed the importance of individuals being able to identify with their environment. Orientation is crucial because someone has to know where he or she is to gain an "existential foothold", and identification is necessary because of the importance of knowing how one is in a specific place (Norberg-Schulz, p.423).

A person's relationship with these objects of identification is improved during childhood and determines all future encounters. Examples of such objects include the colour of the spaces and texture of the surfaces (sand, earth, stone, etc.) in and on which we play as a child, characteristics of the climate (hot, cold, sunny, overcast, windy, etc.) and the noises we associate with these objects of identification (Norberg-Schulz, p.424). Without any means of identification or orientation, man cannot "feel safe" in his place (Butts, 2021).

These paths indicate points of hierarchy on the site and the direction in which the building should face to focus on pedestrian movement.

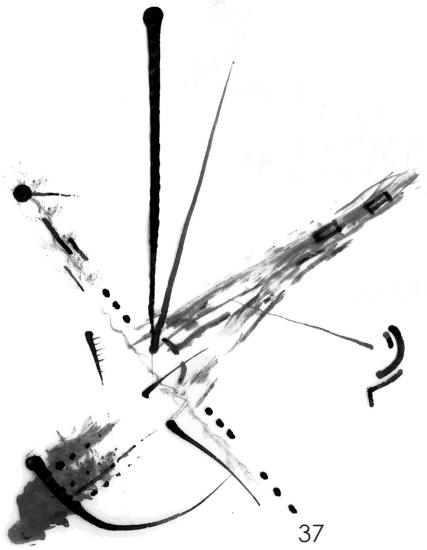


Fig.44: Pedestrian pathways give shape to the building footprint (author, 2021)

Fig.43: Sense of place, painting (author, 2021)

When discussing environment or space, understanding the elements that impact on a space's atmosphere is crucial. To this end, Zumthor identified 12 spatial elements:

The body of architecture: Anatomy – the collection of different things and materials combined to create a space. "A body that can touch me."

Material compatibility: Materials respond to each other and each material has its own radiance; therefore, material composition gives rise to something unique.

The sound of a space: Each interior is viewed as an instrument that accumulates sound – amplifying it and transmitting it somewhere else.

The temperature of a space: Each building has a temperature and the balance of context material in a space allows temperature self-regulation. For example, a warm interior when it is cold outside and a crisp interior when it is hot outside. "It's

The tension between interior and exterior: Buildings portray a voice. They say something to the street or square – the exterior. This element describes the "imperceptible transition between the inside and the outside, an incredible sense of place..."

Levels of intimacy: This element describes proximity and distance. It is the human scale to a design and what that effect has on a person.

The light of things: This examines what natural light has to offer on the surface of a material. It is "where and how the light fell" and "where the shadows are."

Architecture as surroundings: This element refers to the building becoming part of its surroundings. It is the "attempt

to

env

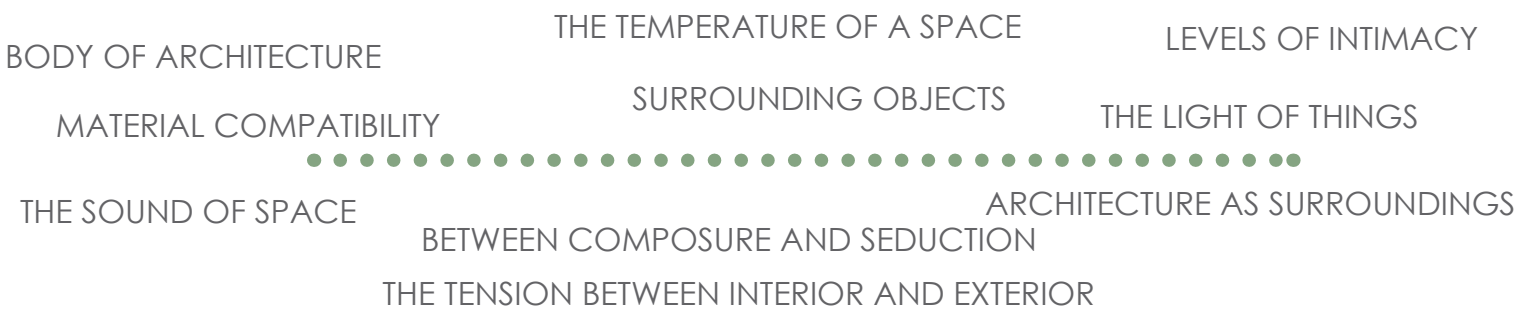


Fig.45: Site abstract painting (author, 2021)

The question is what makes this site design unique from other terrains with similar influences. To find an answer, one might turn to the theory of critical regionalism. Kelbaugh (1997) provided five characteristics or "attitudes" that are typical to critical regionalism: a sense of place, a sense of nature, a sense of history, a sense of craft, and a sense of limits. These principles, when applied, lead to an architecture of "place".

A sense of place seeks to liberate the genius loci. Genius loci is the intangible quality of a material place and is perceived both physically and spiritually. It reveals itself through visible, tangible, and perceivable non-material features (Vecco, 2021). It respects climate, topography, vegetation, building materials, and building practices. Local authenticity is more valued than sophisticated imitation.

A sense of nature deals with environmental considerations and the significance of using nature as a model for design.

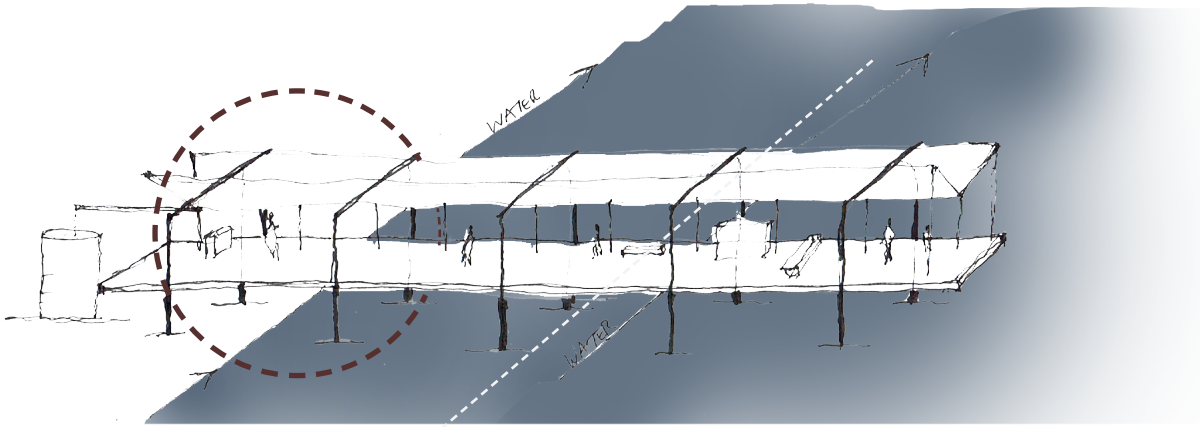
A sense of craft is an understanding of what craft implies and the reinstatement of a local craft quality in construction.

A sense of history addresses the misunderstandings made by past revivalists and revivalist styles. This understanding of a certain place's history can contribute to the continuity of design across generational boundaries. Thus when design "rhymes across time it demonstrates a sense of history" (Kelbaugh, 1997). This helps to preserve a memory of the site history and to develop a place-specific architecture.

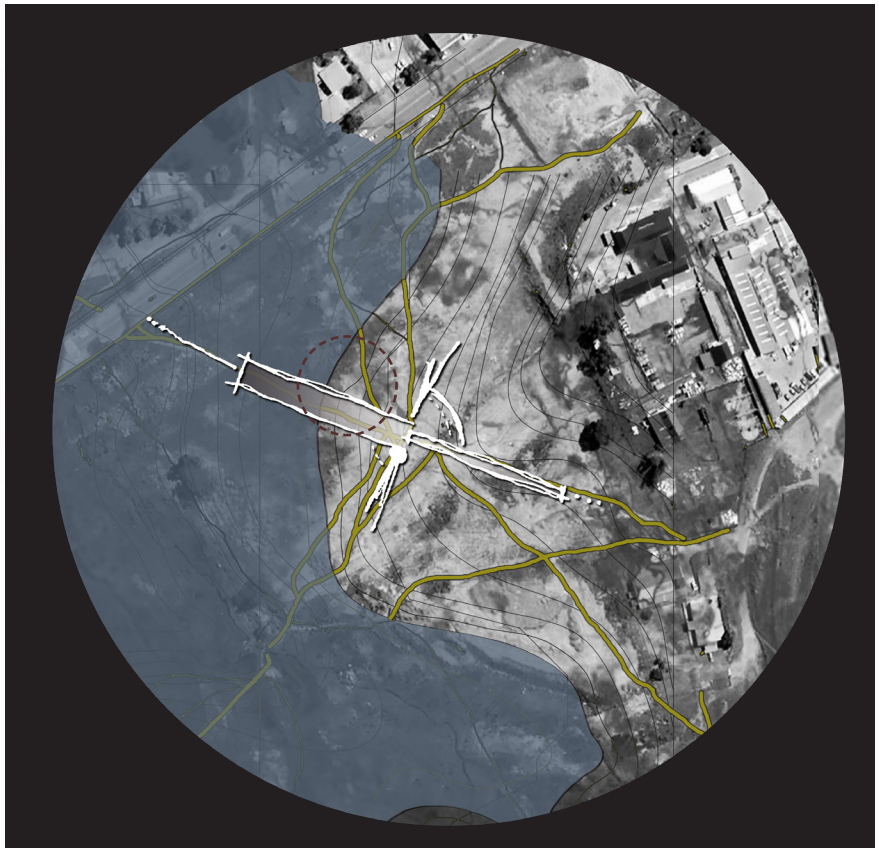
A sense of limits is "about the need for finitude and physical and temporal boundaries to frame and limit human places and activities. Limits "are what differentiate place from raw space" (Kelbaugh, 82).

The site position features a stage viewpoint that asks for interaction. In the design, this interaction surfaces through the adherence to site limits, context hierarchies and the needs of the community - all of which create a sense of history and future.

The landscape terraces display a given priority from a nature point of view. Therefore, these terraces helped shape the landscape design regarding the agricultural part of the programme (see page 42).



The occurrence of seasonal water on site prompted the use of construction methods that will allow for human passage all year round. The use of reinforced concrete columns, rib and block slabs, and silo-shaped walls form the main structure of the bridge.



PART 3

3.1

MAKING

Creating a place identity by introducing an accommodation list that feeds the essentials of the community through a programme of skill development. This will not only revitalise the site and create safe walkways for pedestrians by addressing storm water management but also create cherished public spaces for gatherings.

3.1 Technical synthesis	44-55
Precedent study	44, 48
3.2 Design development	52-57
3.2.1Programme	58-59
3.3 Final design	60-73
3.5 List of figures	74-75
3.6 References	76-77

TECHNICAL SYNTHESIS

3.1

The inspiration for the structure of this building came from the General Hertzog Bridge that connects the Free State to the Eastern Cape (see Fig.46).

The bridge's cantilever structure acts as a tension system that supports it. In the same way that the bridge relies on its cantilever structure for support, this building programme required community participation to be successful. Community participation influenced the theoretical application and gave shape to the design structure.

The connection point between each arm is in essence the beginning and end of a boundary. A sense of limits (see page <?>) is "about the need for finitude and physical and temporal boundaries to frame and limit human places and activities. Limits "are what differentiate place from raw space" (Kelbaugh, 82).

Whilst physical boundaries establish an awareness of moving into another space, human participation reveals what the design can offer (see Fig.45) The physical limitations of the overall site – including a fall of 20 meters, see Fig.47 – support the concept of the bridge design for the building, as seasonal floods occur here. The building itself has a span of 10 meters.

"...nature as a model for design...", (see page 38).

Fig.46: General Hertzog Bridge (Harington, 2006)

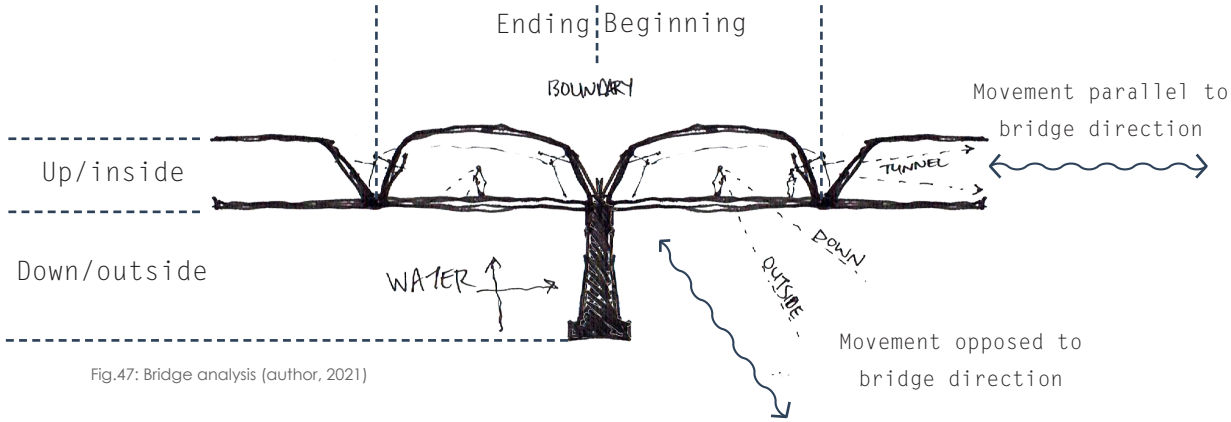


Fig.47: Bridge analysis (author, 2021)

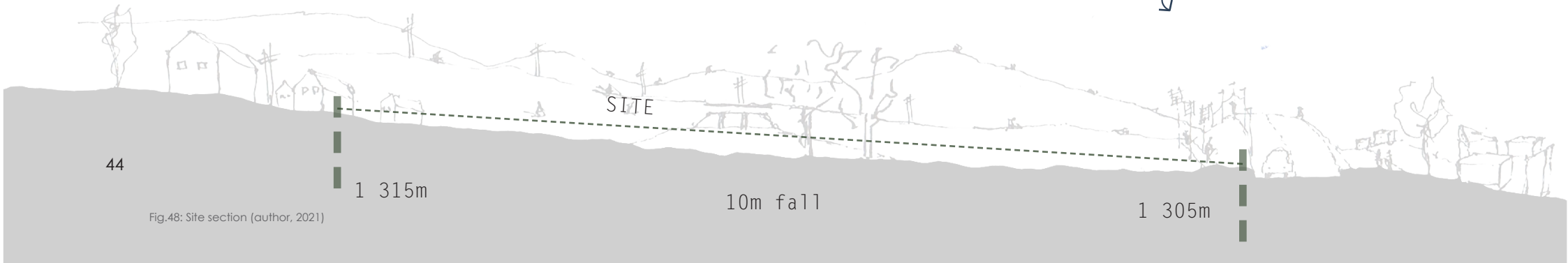


Fig.48: Site section (author, 2021)

Collection of water

Open up to community

Main structure connected to small infill structures

- Bridge
- Wetland
- Pile foundation

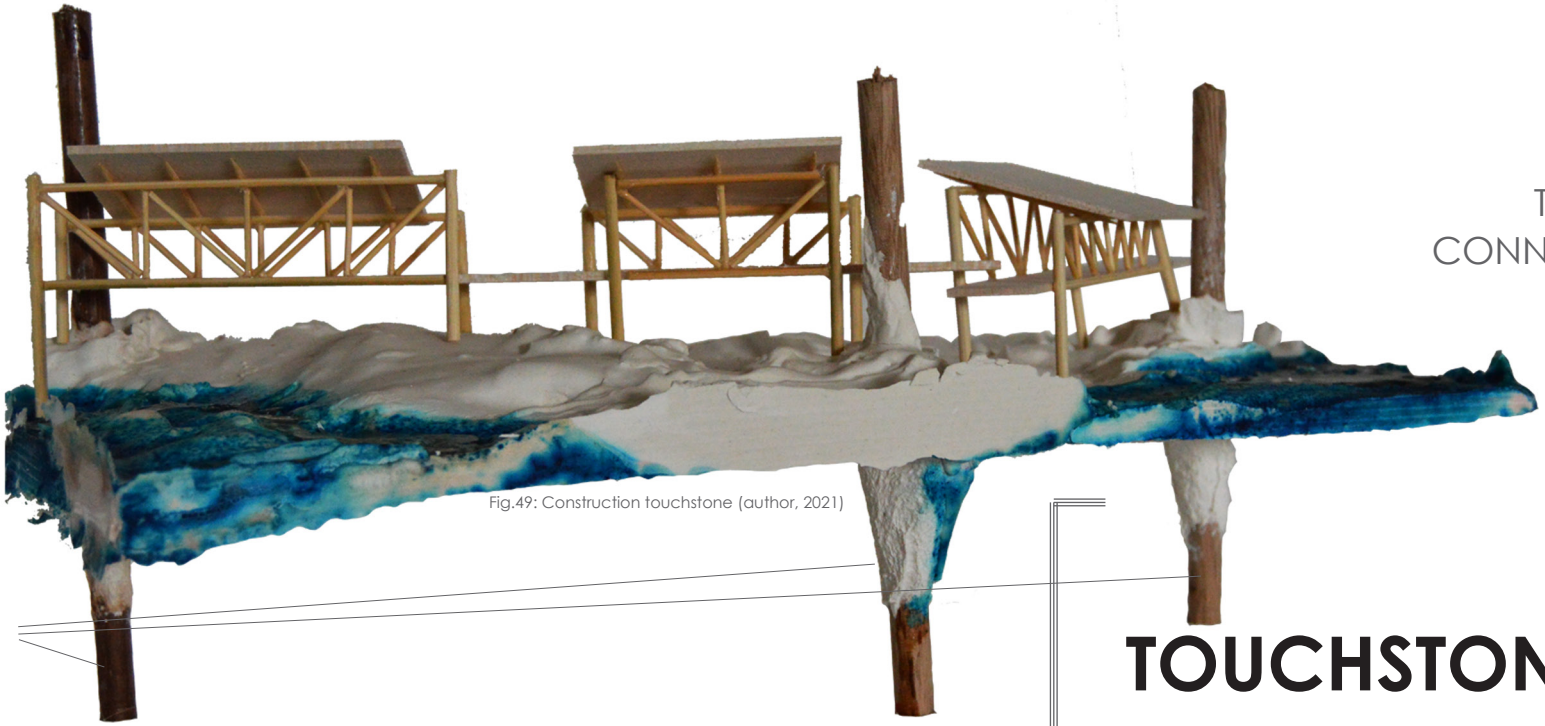


Fig.49: Construction touchstone (author, 2021)

TENSION
CONNECTION

PRECEDENT STUDY

3.2

1

CONTEXTUAL GUIDANCE

CURRA COMMUNITY HALL

Bark Architects
Queensland, Australia

Curra Community Hall in Curra, a village located in rural Queensland, Australia.

The design brief consisted of a flexible space utilising cost effective materials.

The building has been in use since 2007 as a gathering space for 14 diverse user groups that are involved in design – stimulating their sense of belonging and identity by the integration of their culture and artistic endeavours.

The building consists of a single skin construction that symbolises the local vernacular timber sheds. Since the immediate surroundings are subject to flooding, the whole floor is raised, while the orientation is situated for natural ventilation.

At first, the steel cantilever structure of the Hertzog bridge served as inspiration for the design intervention, as it addressed the possibility of a lifted building. But consideration of where on the site the building and the programme would benefit prompted the creation of a local, non-hierarchical atmosphere that portrays a public scale and dimension.

allow for ventilation ***through the structure***

local house shape used as identity

flexible open space - user friendly

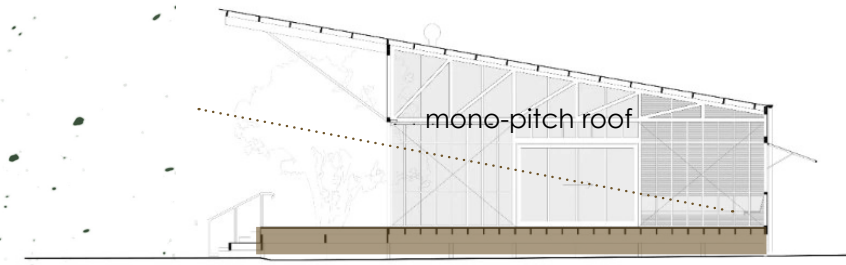
Principles attained

structure divided into six spans

services

flexible open space

raised outdoor floor space



access ramp

veranda

seating nook

hall

entry walkway from car park

water tank

ablution toilet

ventilation

sliding main entry door

service entry

Fig.50: Curra Community Hall floor plan (author, 2021)

Fig.51: Hilton houses (author, 2021)

Fig.53: Hilton houses (author, 2021)

The rainwater collects on the ground next to the house and causes damage

FLEXIBLE OPEN SPACE

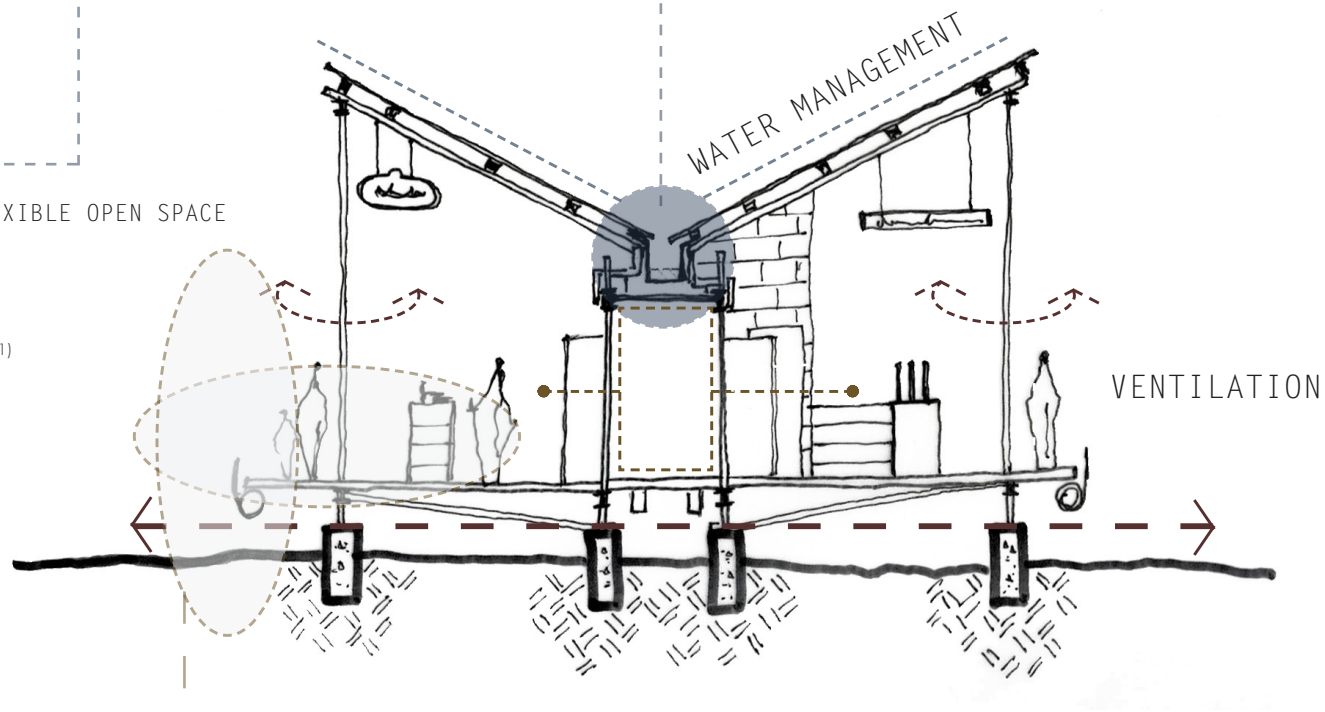


Fig.52: Market section (author, 2021)

Site accessibility – circulation

The site's location in the open grassland between the town and Hilton settlement creates an engaging asset to the project.

This specific greenbelt consists of small streams of water flowing from the surrounding higher ground. Unfortunately, these have been contaminated by wastewater over time, and the site has become a temporary dump.

The site is the connection point to the town and thus highly pedestrianised, but during the rainy season, it becomes a flooded landscape, which is inaccessible.

The R58, a main road that connects the small towns of Burgersdorp and Steynsburg, neighbours the site and connects it to the bigger urban fabric.

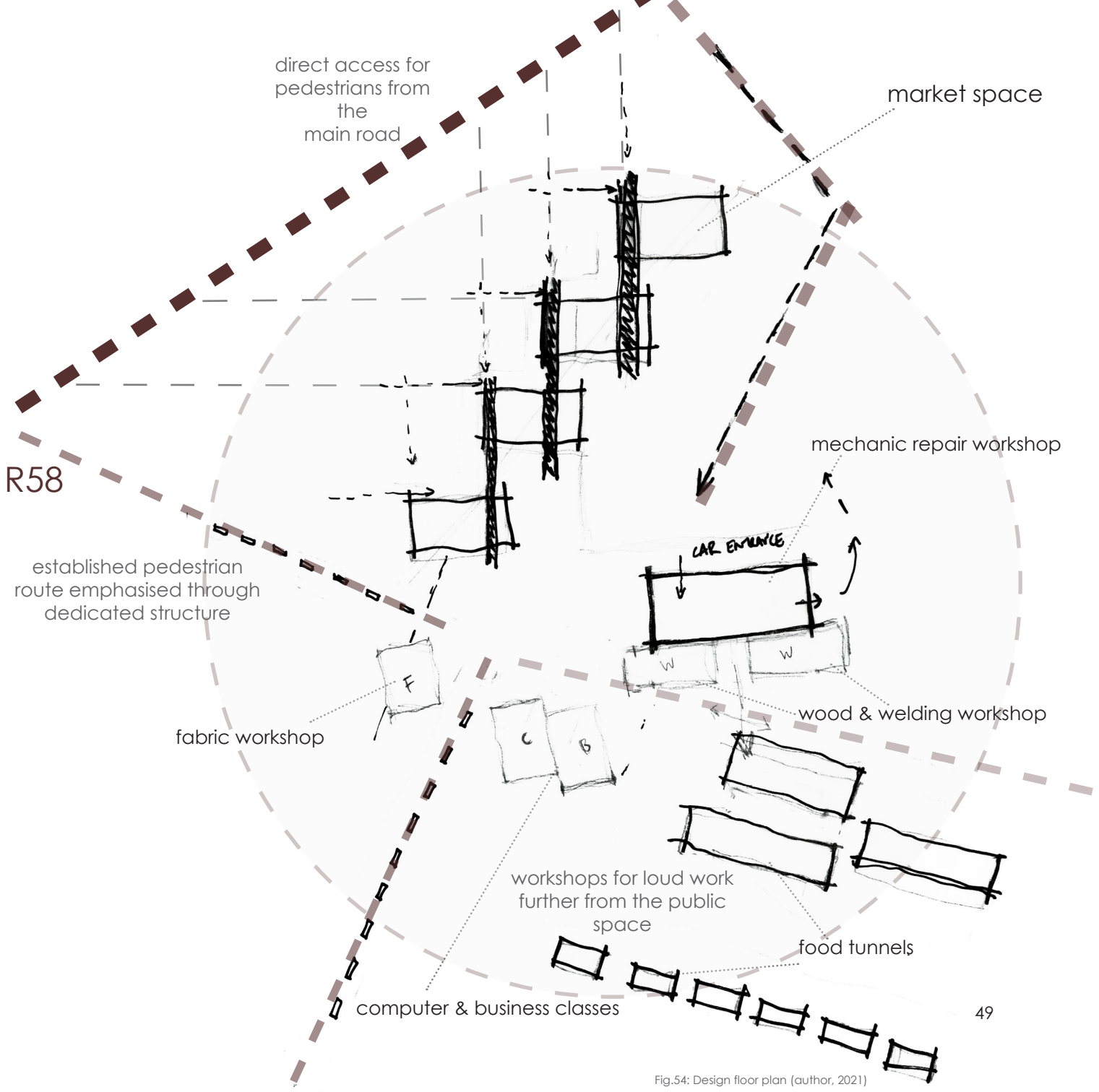


Fig.54: Design floor plan (author, 2021)

3.3

PRECEDENT STUDY

2

MINGHU WETLAND PARK

Turenscape
Western Guizhou, China

creation of space underneath building due to terrain

the site conditions (rainfall) are accommodated by the design implementations

the pathways create a connection to the bigger urban fabric

Principles attained

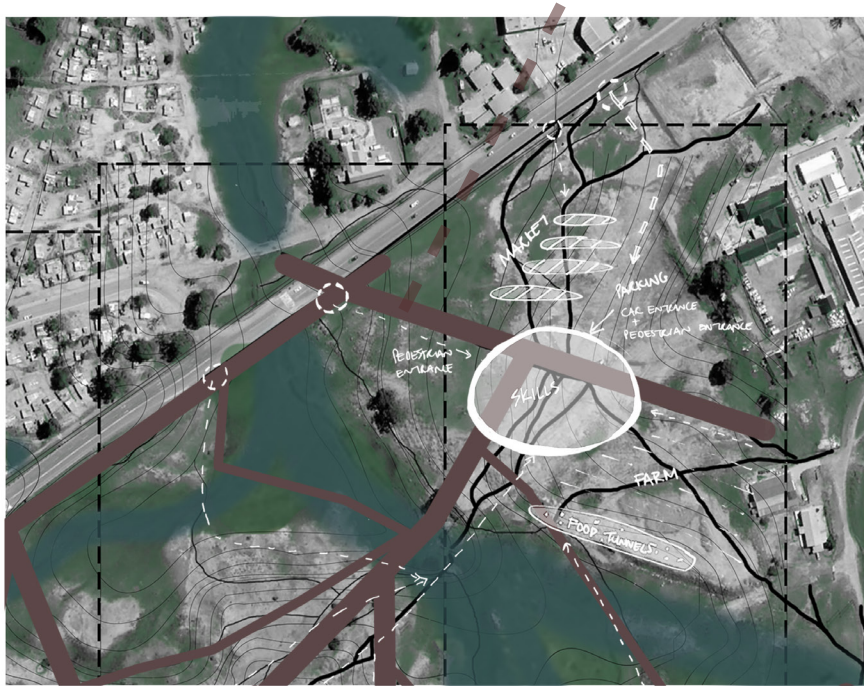
Circulation – pathway

The main scope of the project was to revitalise and improve the ecological, recreational and social value of the Mother River.

Turenscape utilised the topographical features of the site and the existing fish pond system to create a terraced wetland system for water purification, especially the collecting, control and purification of water streams flowing down to the wetlands from the surrounding mountainous area. A pedestrian bridge, named Steel Rainbow, crosses the wetland to form a landmark that manifests the city's long history as an important industrial base for coal and steel production in southwest China.

The creation of continuous pedestrian and bicycle paths helps integrate the urban recreational space with the wetlands (Turenscape, 2014).

walkways connect the design with the bigger urban fabric



walkways give inspiration for circulation through connected buildings.

PRECEDENT STUDY

3

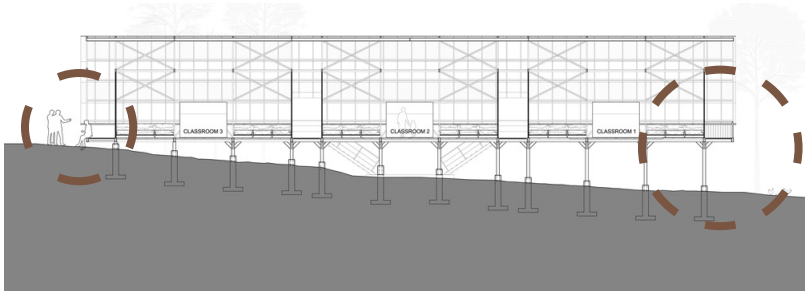
BAAN HUAY SARN YAW SCHOOL

Vin Varavarn Architects
Chiang Rai Province,
Thailand

Structure

The site is sloped, which enabled a design in which the short side of the structure touches the ground, while the opposite side is raised from the ground by steel stilts. The space created under the structure can be used as an outdoor activity space (Mairs, 2021).

According to Vin Varavarn Architects (Chiang Rai News, 2015), "natural materials were proposed in selected areas to illustrate how local materials can substitute expensive modern materials and at the same time, harmonise the architecture with its context."



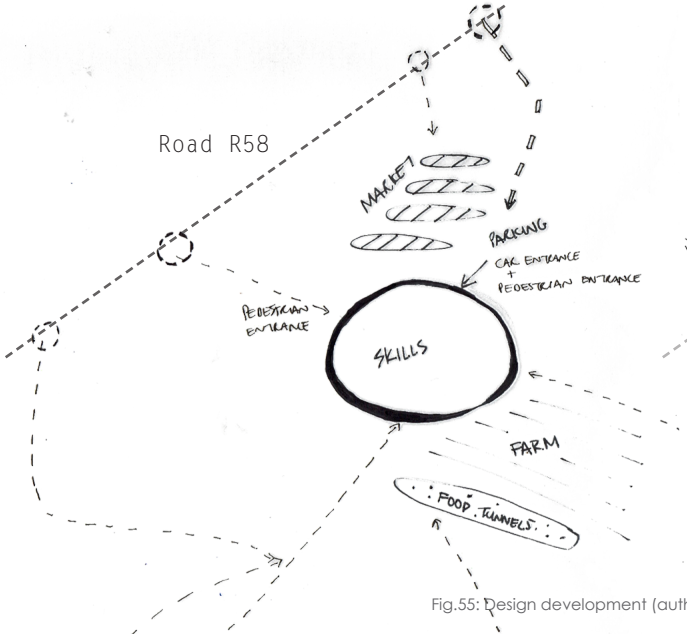


Fig.55: Design development (author, 2021)

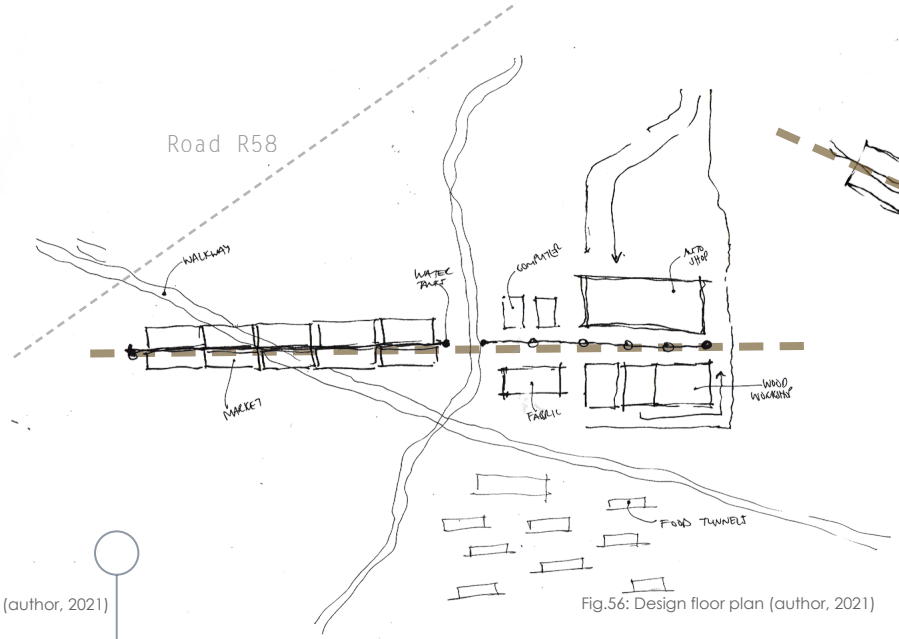


Fig.56: Design floor plan (author, 2021)

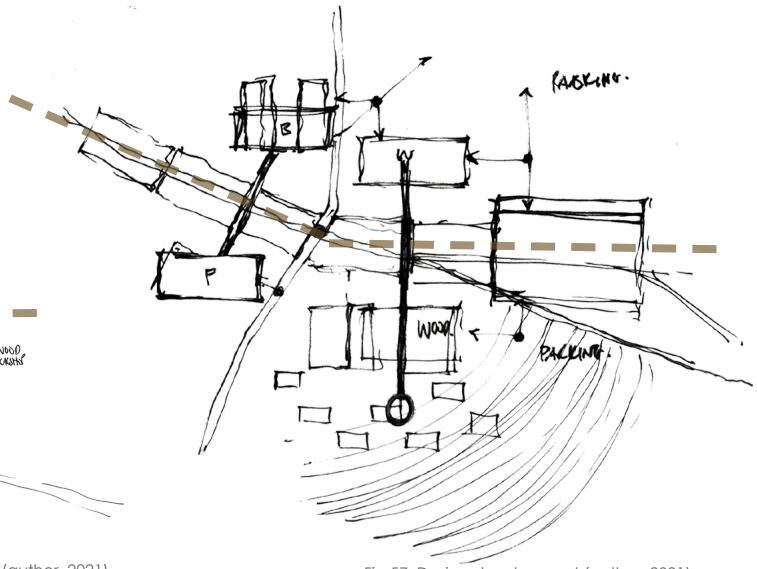
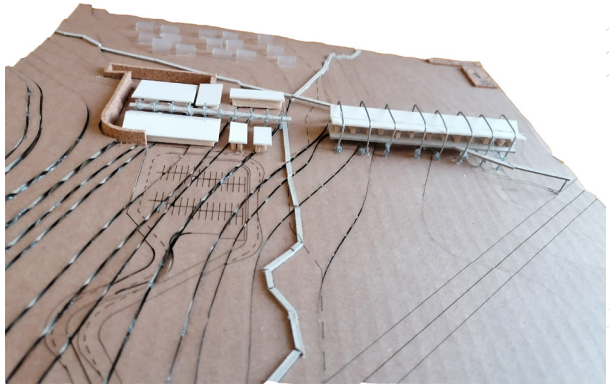


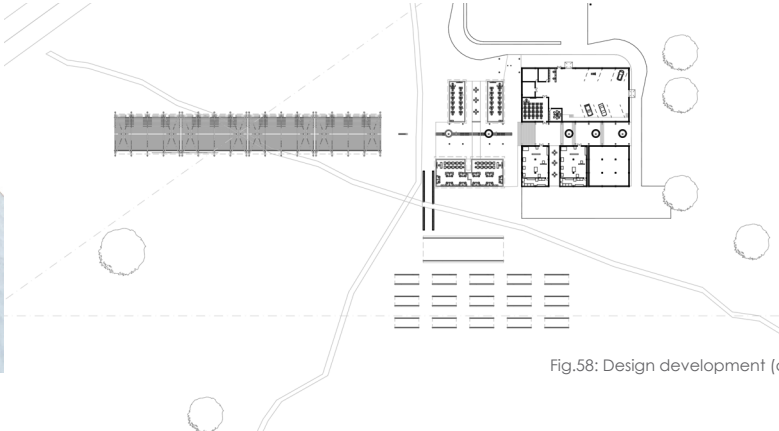
Fig.57: Design development (author, 2021)

The initial sketch plan for the design (see Fig. 55). Design development (author, 2021)" on page 52) followed a mapping analysis of the existing hierarchical characteristics of the urban plan on and around the site. Using the preliminary programme for the design, a final accommodation list was developed (see page 58). The plan allows direct pedestrian access from the R58 to market pockets that connect to a skill centre and level ground for food tunnels above the flood line.

As discussed in Concept 1, which focused on the connection of parts, the bridge creates a direct datum to connect two parts that have been separated from each other. The datum is further emphasised by the roof structure, which enables water collection to contribute to green economic interventions. The bridge inspires movement towards the centre, which hosts the skills programme.

The plan developed with the main focus on integrating the bridge with the skills centre. The bridge thus became the spine of the design that connects the training programmes, which then act as the limbs of the body. The bridge therefore enlightens users to facilities that promote interaction and participation.





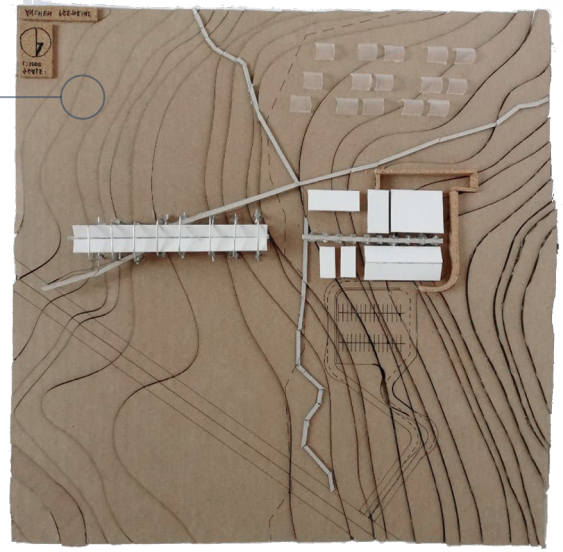


Fig.58: Design development (author, 2021)

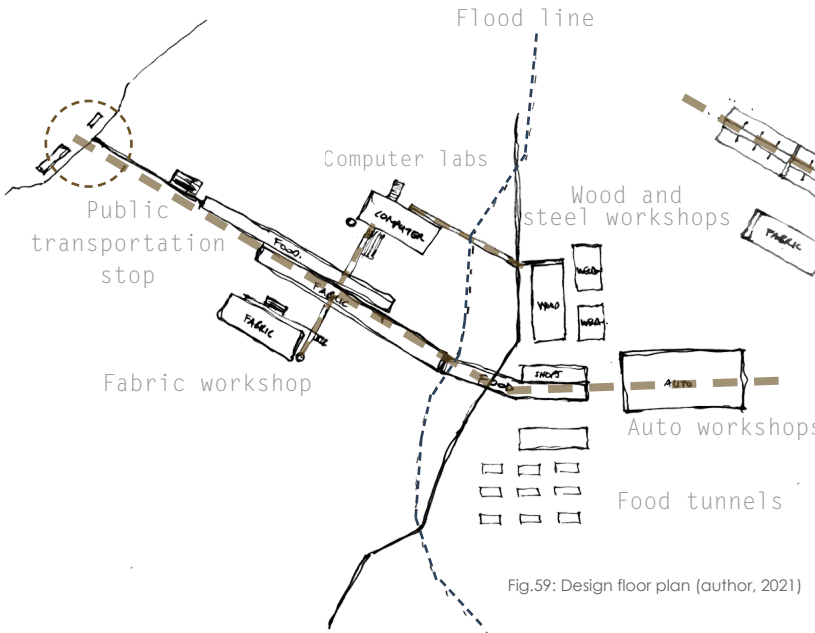


Fig.59: Design floor plan (author, 2021)

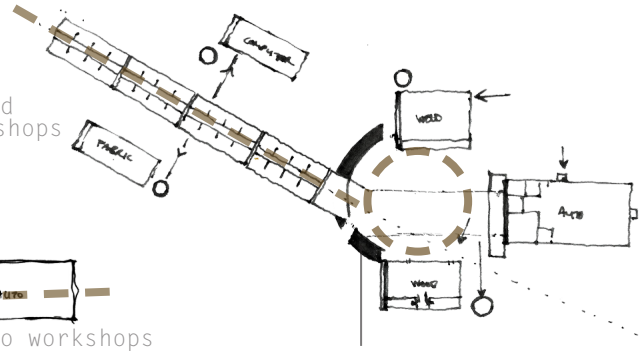


Fig.60: Design development (author, 2021)

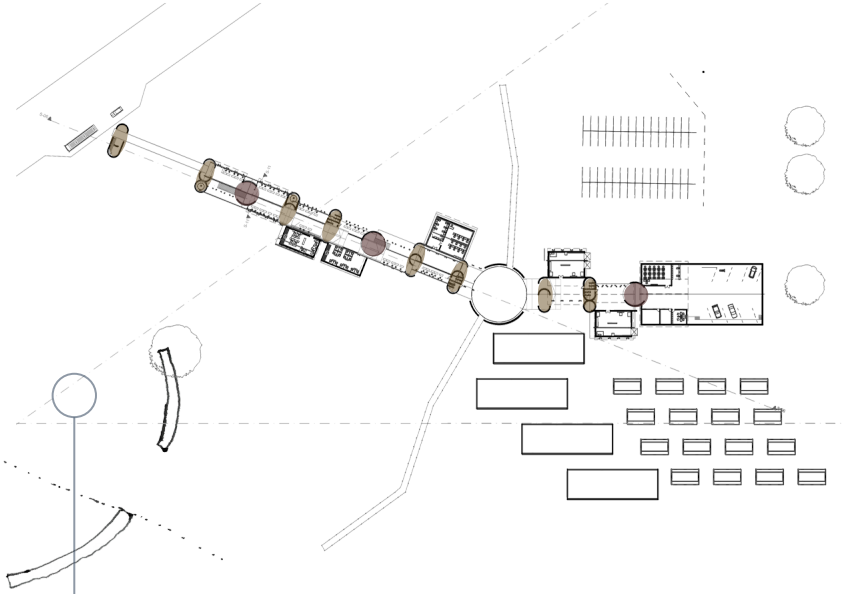


Fig.61: Design development (author, 2021)

The combination of a focused programme (see page 56) and the identified urban connection points helped place the start and end points of the bridge.

The theories of genius loci and critical regionalism (see page 36) and the analysis of the town's existing landmarks (see page 39) inspired smaller pause spaces on the bridge. These spaces emphasise vertical circulation, urban landmarks for transportation, and the points of entry to the centre.

These pause spaces provide places on the bridge where people can gather. The building thus becomes not just a place to work or walk through, but also a place with which the community can identify.

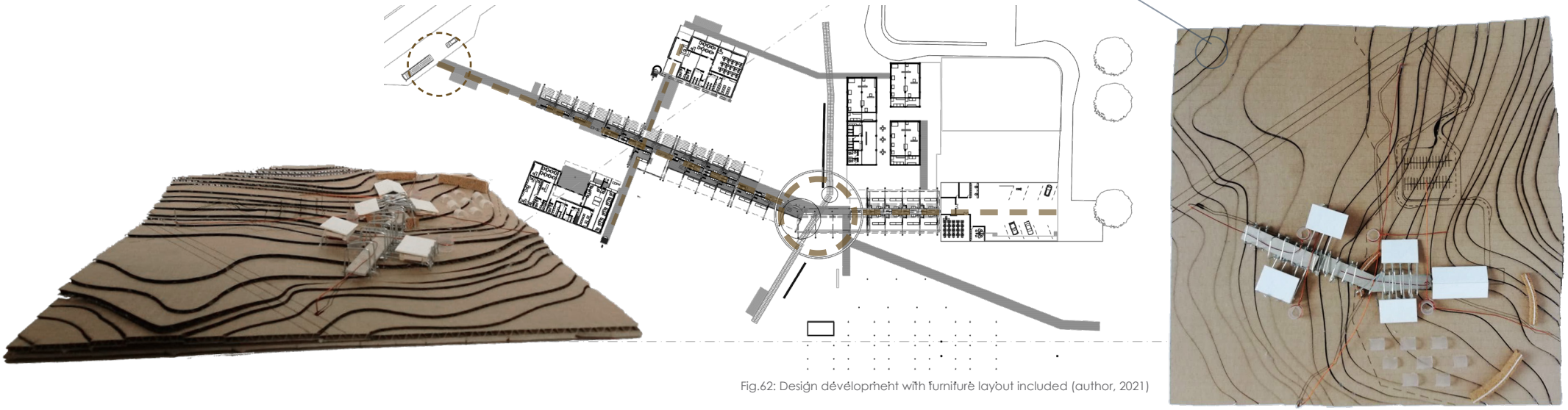


Fig.62: Design development with furniture layout included (author, 2021)

PRECEDENT STUDY

4

SUSPENDED PAVILION

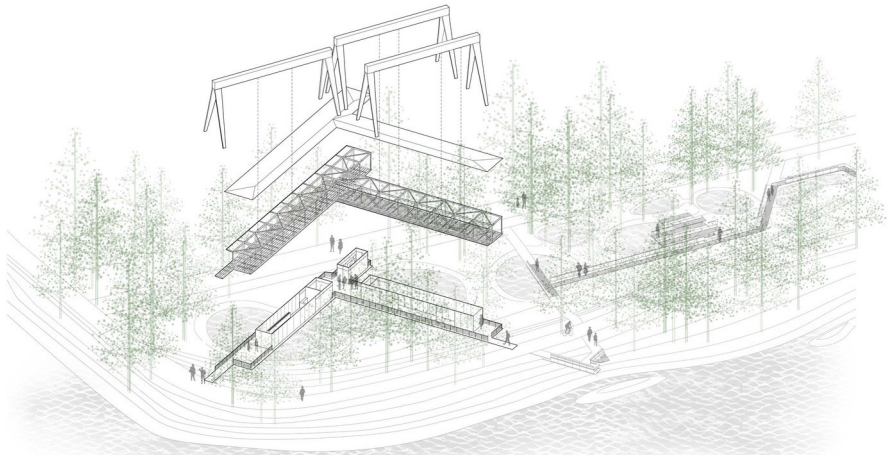
TJAD Original Design Studio
Shen Zhen, China

Structure -Wetland- Circulation

Located on the Bank of the Maozhou River in Bao'an District, Shen Zhen, this steel trestle system is suspended over the wetland. It connects the wetlands on both sides of the bordering top road to form an unbroken, wandering path. The main steel structure truss of the building is mostly composed of 150mm thick steel square columns, 125mm thick diagonal braces and 200mm×150mm cross beams. Steel cables (6mm) are connected through six anchor points and suspended under the gantry crane.

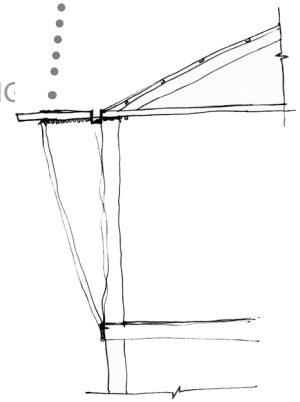
The steel roof is light and thin, with its end shrinking to a thickness of 66mm (Shuangyu, 2021).

Fig.63: Suspended pavilion (author, 2021)

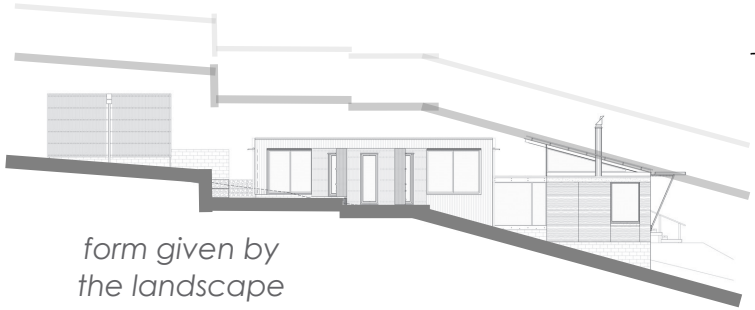


MATERIAL PALLET GATHERED FROM LOCAL DWELLING

MATERIALS EMPHASISING CRAFT



Principles attained



form given by the landscape

Design development

3.4

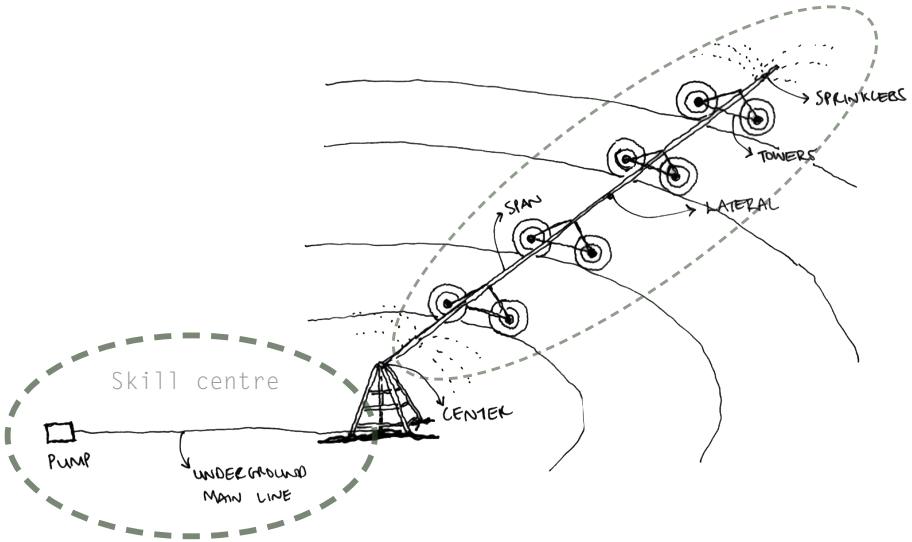
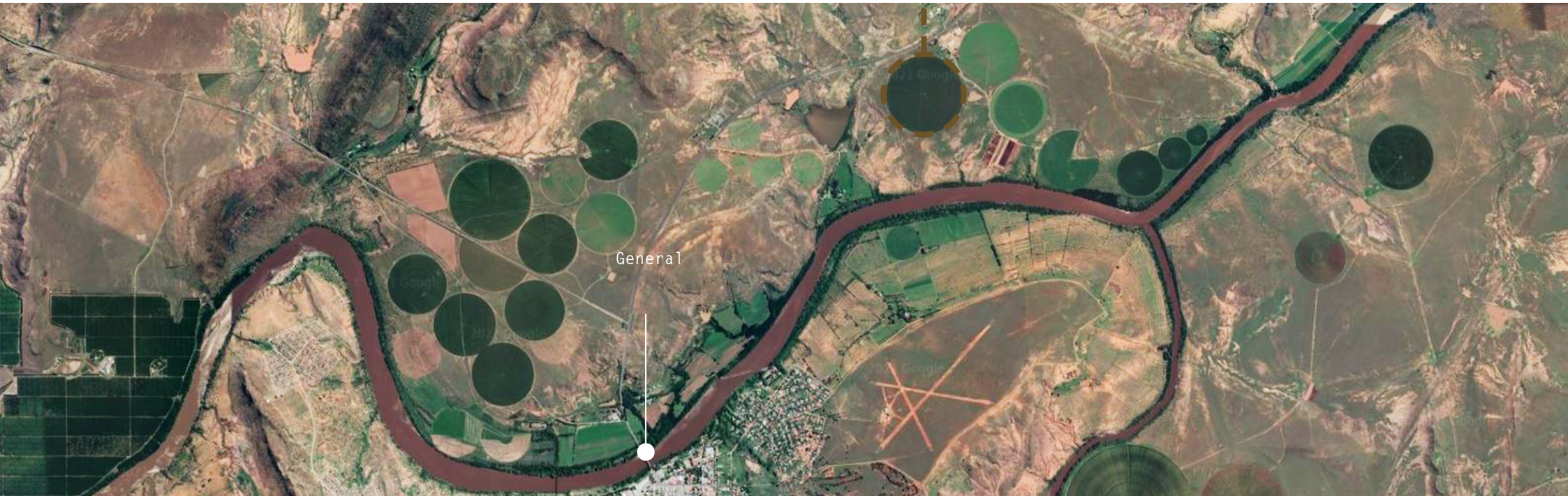


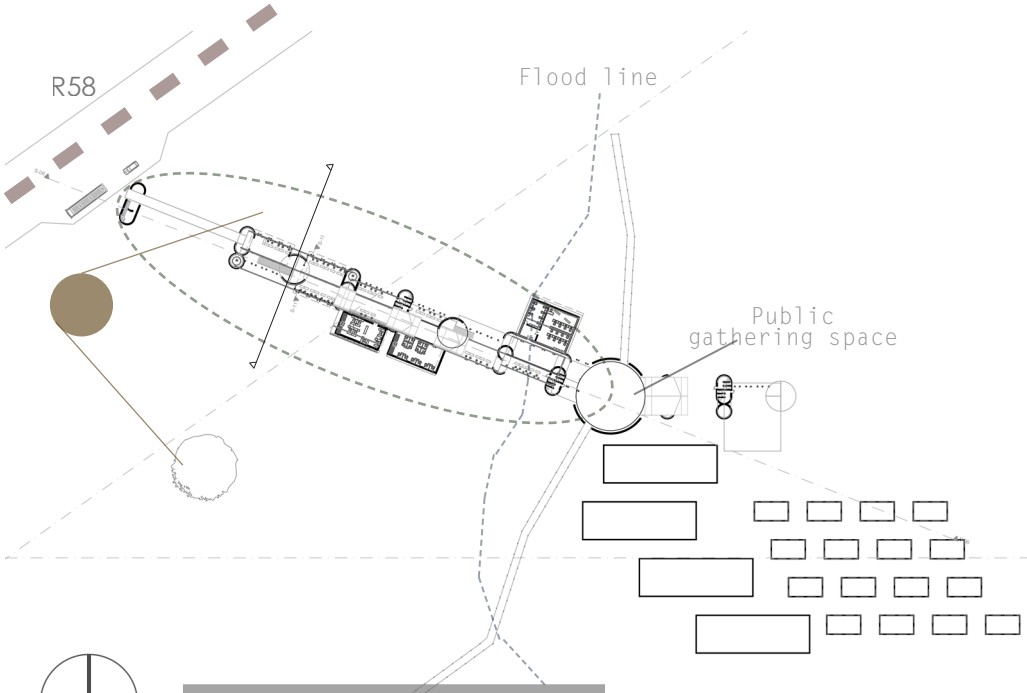
Fig.64: Pivot point sketch plan (author, 2021)

As the design developed and the influences from the context (silos) came into focus, the floor plan of the building evolved to reference these recognisable forms from the nearby fields.

The landscape design of this project follows the form of a pivot point. The market space (the bridge) represents the pivot point and the skill centre the underground main line, which feeds the market.

Fig.65: Birds eye view of adjacent landscape (author, 2021)





Preliminary floor plan

Fig.66: Ground floor plan (author, 2021)

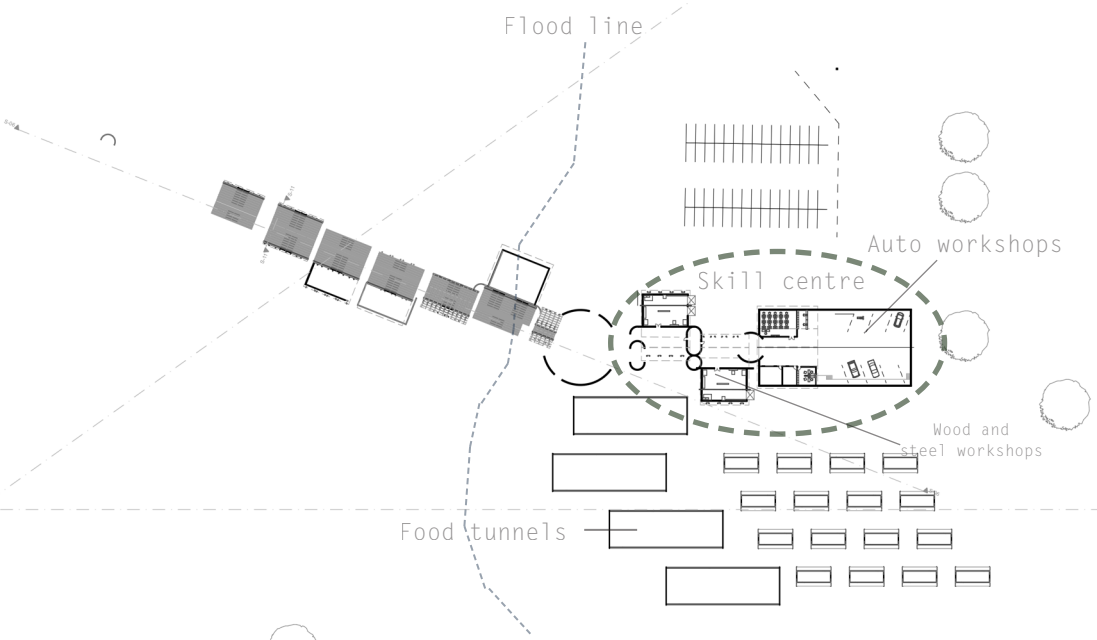
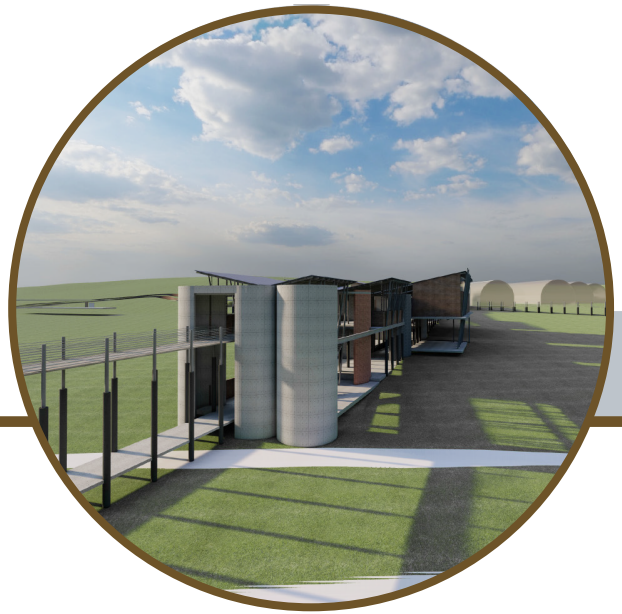


Fig.67: Top ground floor plan (author, 2021)



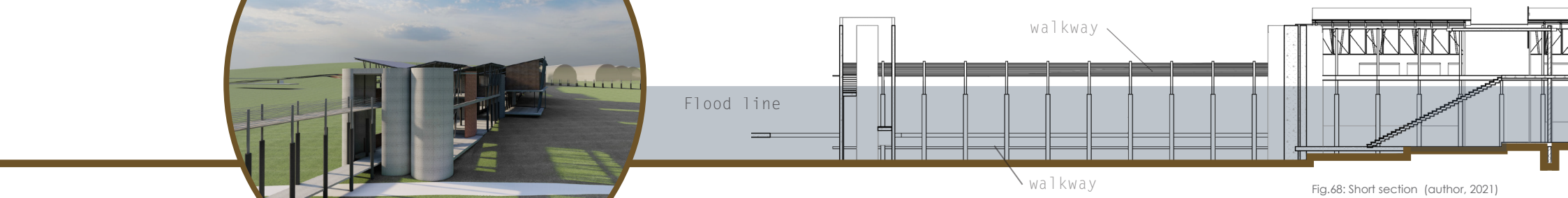


Fig.68: Short section (author, 2021)

ACCOMMODATION LIST

3.2.1

MARKET
939.565 m^2

- STORAGE 89,536 m^2
- FEMALE ABLUTION
- MALE ABLUTION = 31.343 m^2
- DISABLED ACCESSIBLE ABLUTION
- VENDOR 732.76 m^2
- PERMANENT VENDOR 71.134 m^2
- FABRIC WORKSHOP 52.34 m^2
- RECEPTION / SECURITY OFFICE 29,602 m^2

FOOD TUNNELS
21 041.622 m^2

- STORAGE 135,055 m^2
- FEMALE ABLUTION
- MALE ABLUTION
- DISABLED ACCESSIBLE ABLUTION
- STAFF TOILETS
- SERVICE SHAFT
- TRAINEE LOCKER ROOMS 17,545 m^2
- TRAINEE LOUNGE
- VENDOR
- PERMANENT VENDOR
- RECEPTION / STAFF OFFICE/ SHOP 77,148 m^2
- SERVICE YARD

VOCATIONAL CENTRE

1566,493 m²

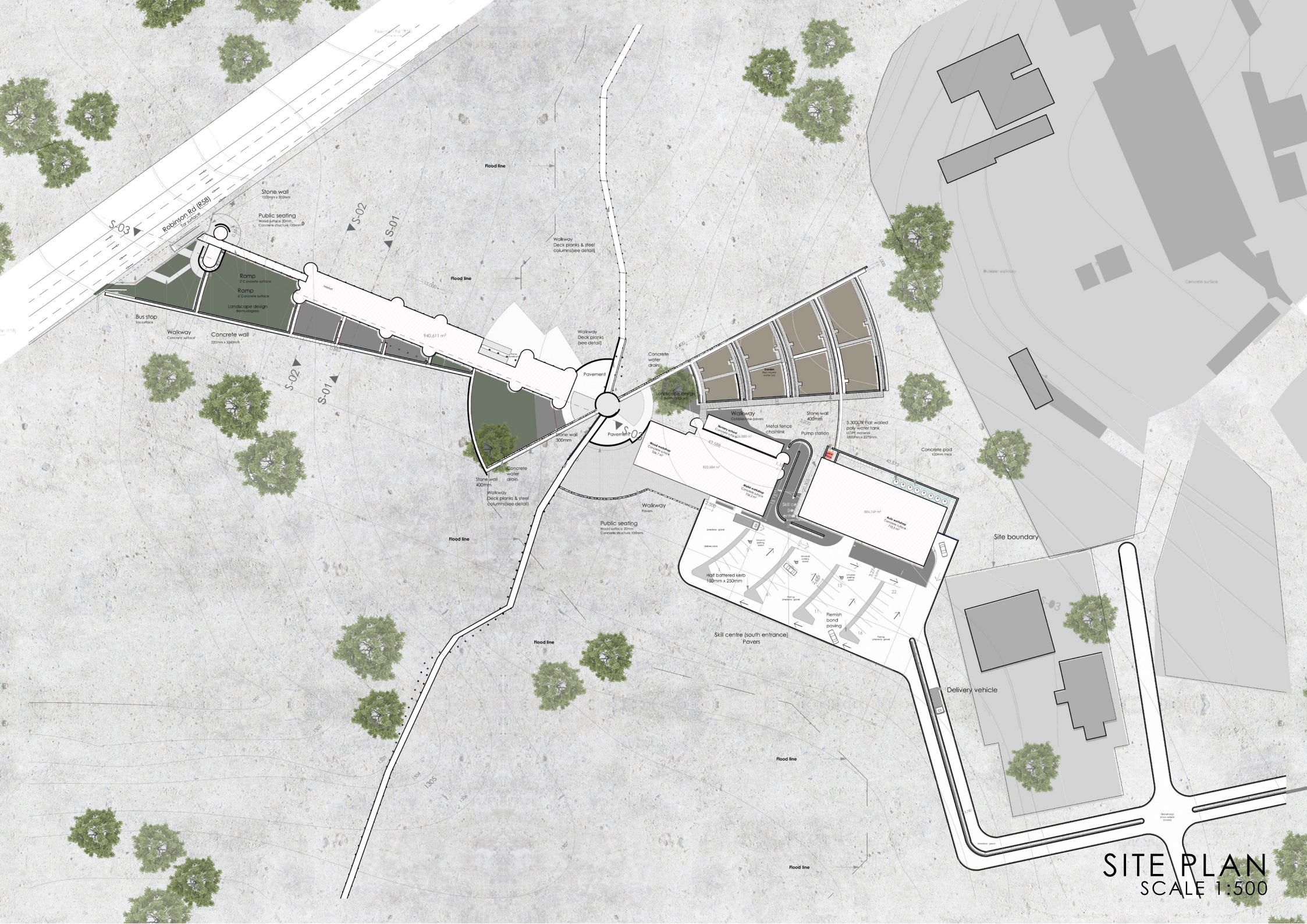
- RECEPTION 17,128 m²
- STORAGE 69,382 m²
- FEMALE ABLUTION
- MALE ABLUTION
- DISABLED ACCESSIBLE ABLUTION
- STAFF TOILETS 15,622 m²
- TRAINEE LOCKER ROOMS 17,545 m²
- TRAINEE LOUNGE 45,838 m²
- SERVICE YARD 2374.844 m²
- SERVICE SHAFT

- WOOD WORKSHOP 336.719 m²
  - STORAGE
  - FEMALE ABLUTION
  - MALE ABLUTION

- STEEL WORKSHOP 106,273 m²
  - STORAGE
  - FEMALE ABLUTION
  - MALE ABLUTION

- AUTO WORKSHOP 710,503 m²
  - RECEPTION
  - STAFF OFFICES
  - TRAINEE LOCKER ROOM
  - TRAINEE LOUNGE

PART 3
3.6
ORANGE RIVER
GENERAL HERTZOG BRIDGE
FINAL DESIGN
SPAR
R58
SILOS
ALIWAL NORTH
HIGH SCHOOL
N6

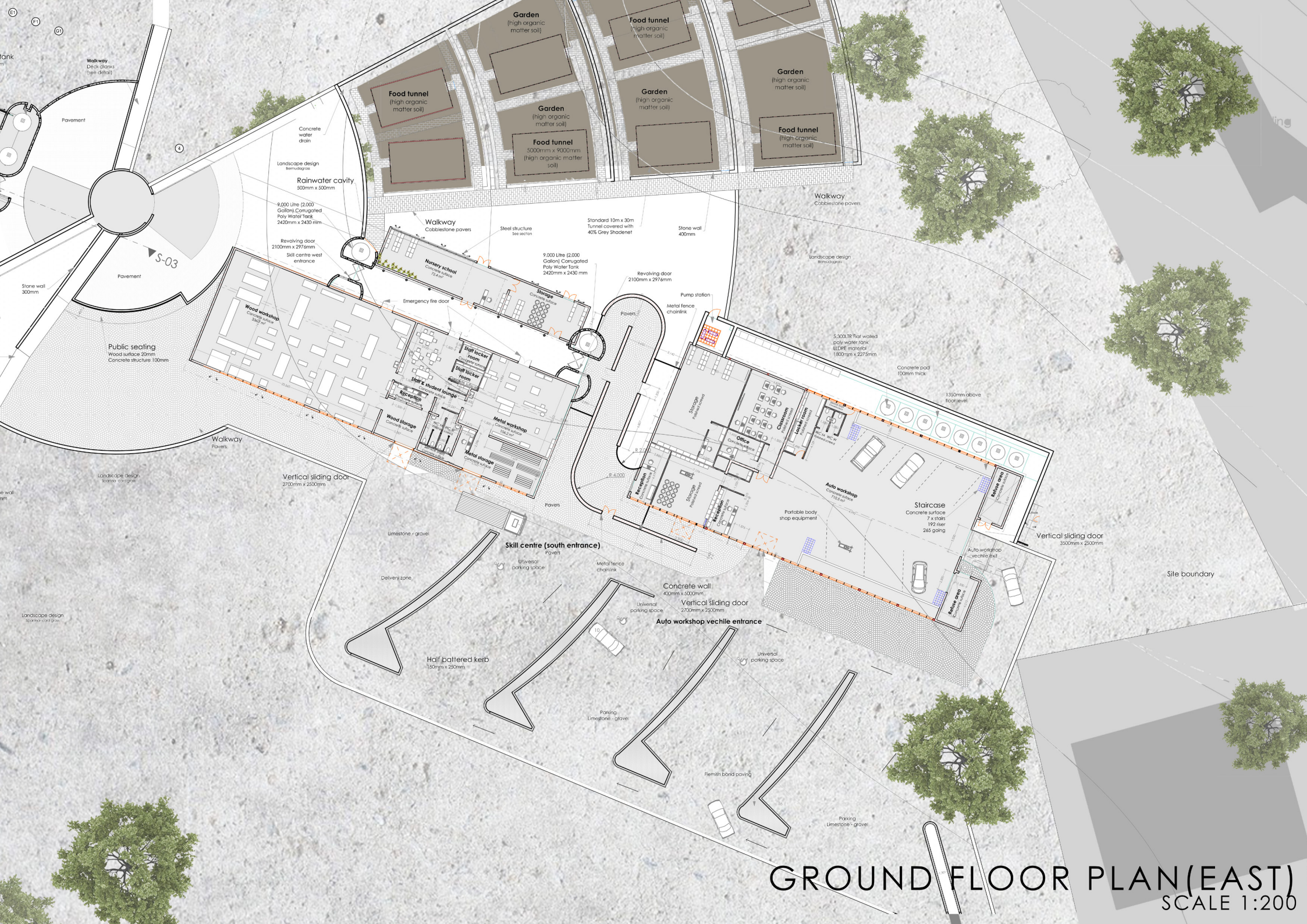


SITE PLAN

SCALE 1:500

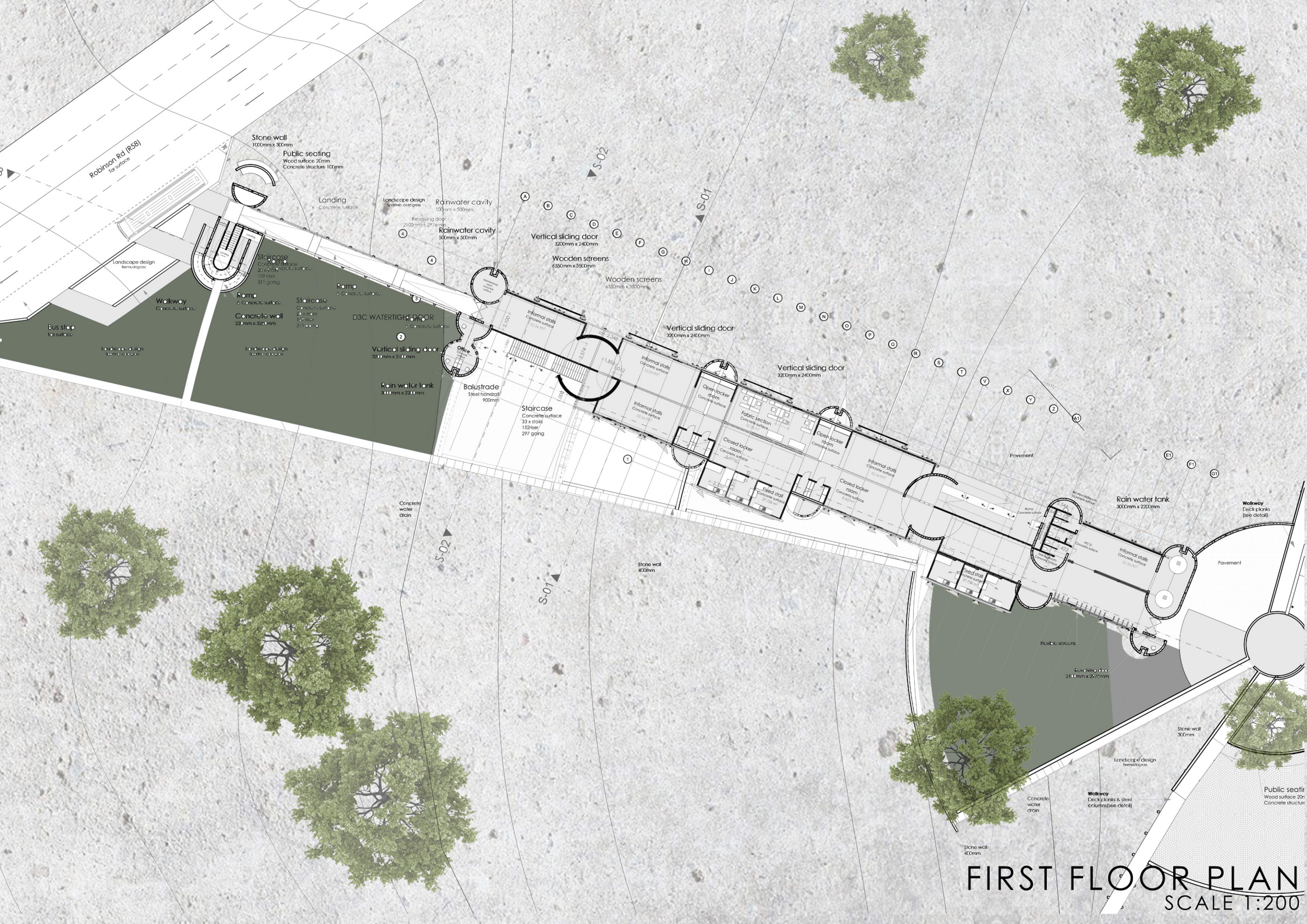
GROUND FLOOR PLAN

SCALE 1:200



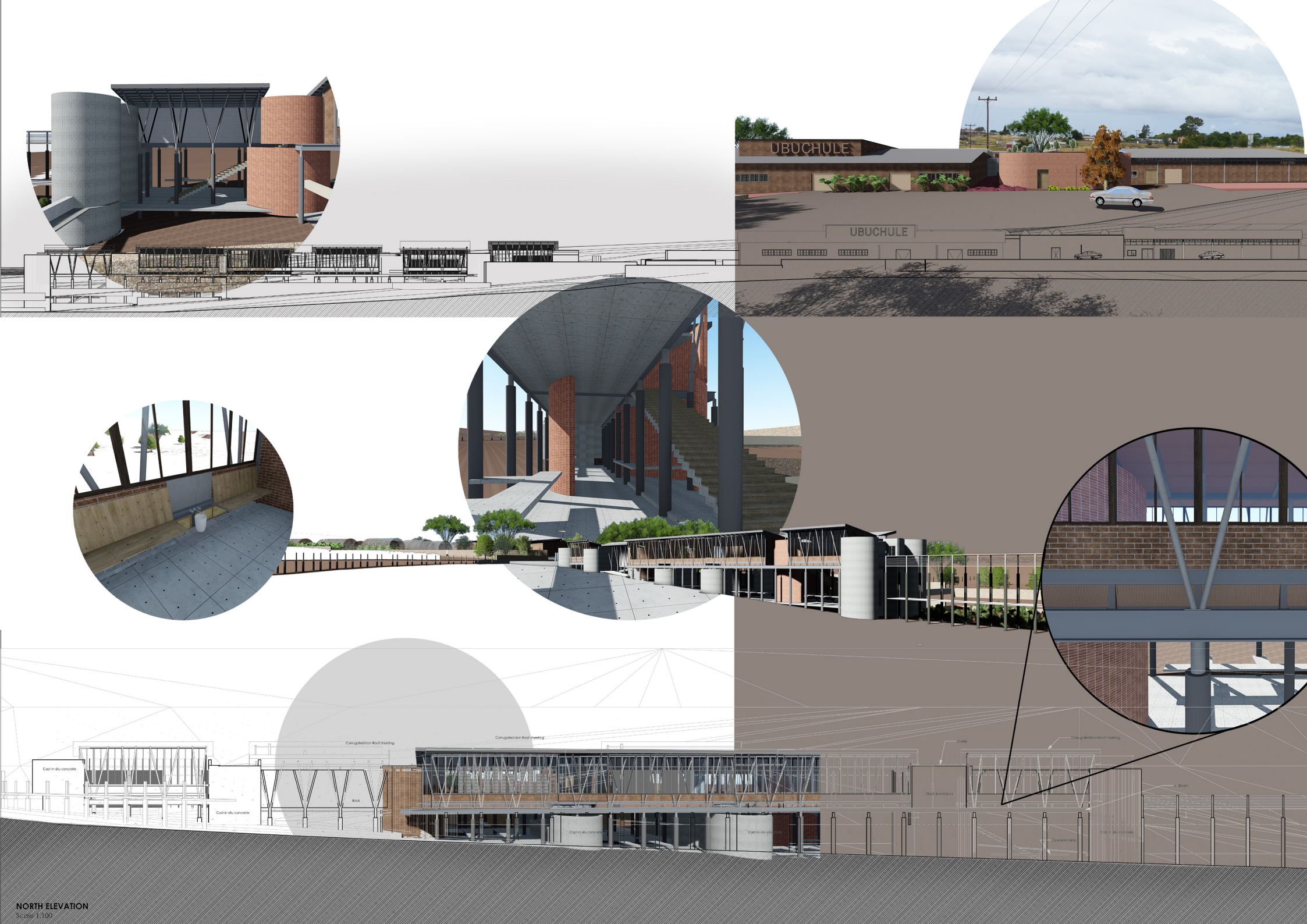
GROUND FLOOR PLAN(EAST)

SCALE 1:200



FIRST FLOOR PLAN

SCALE 1:200

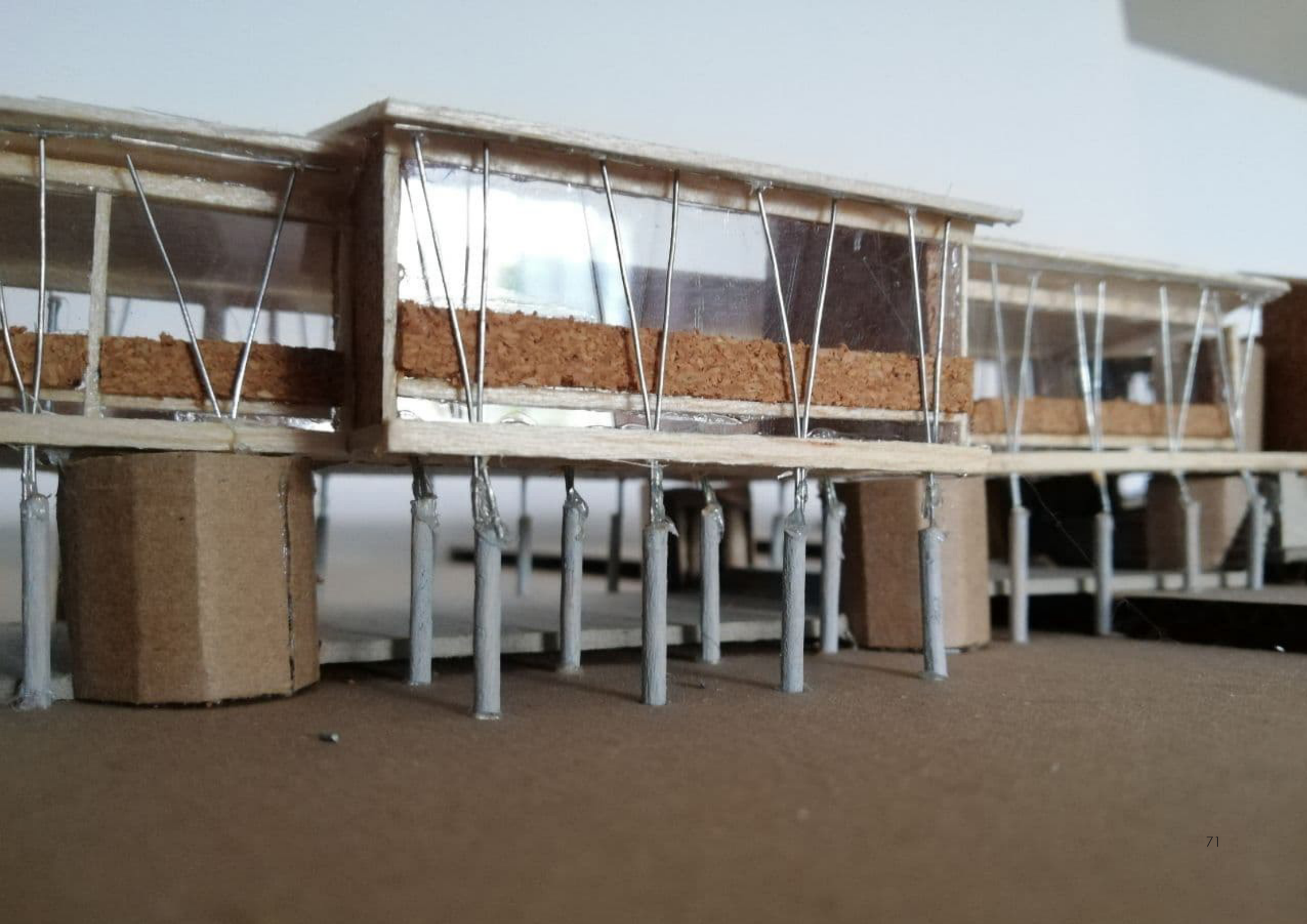


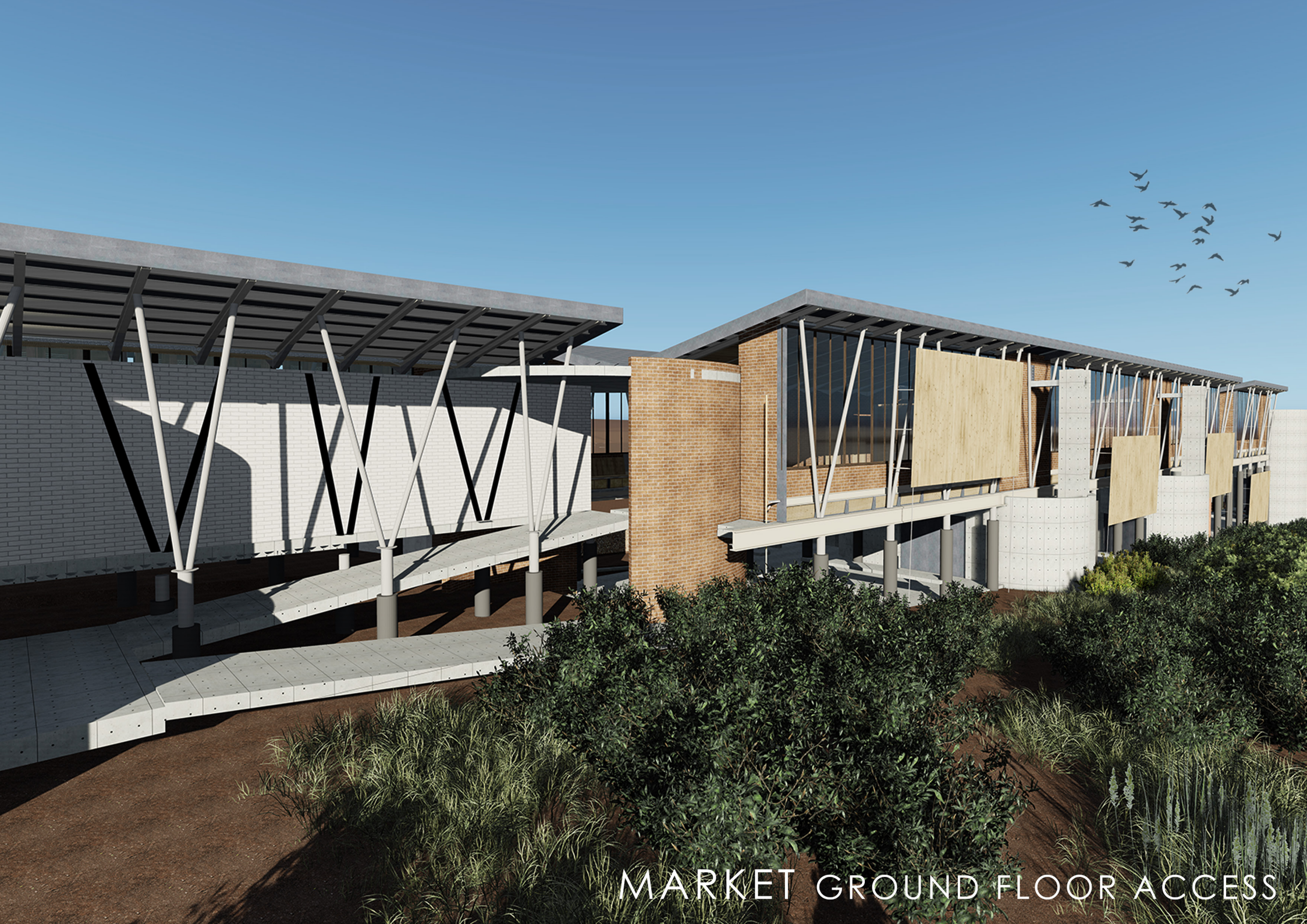
NORTH ELEVATION
Scale 1:100

RURAL JUNCTION

MARKET SOUTH ENTRANCE

COMMUNITY GARDENS

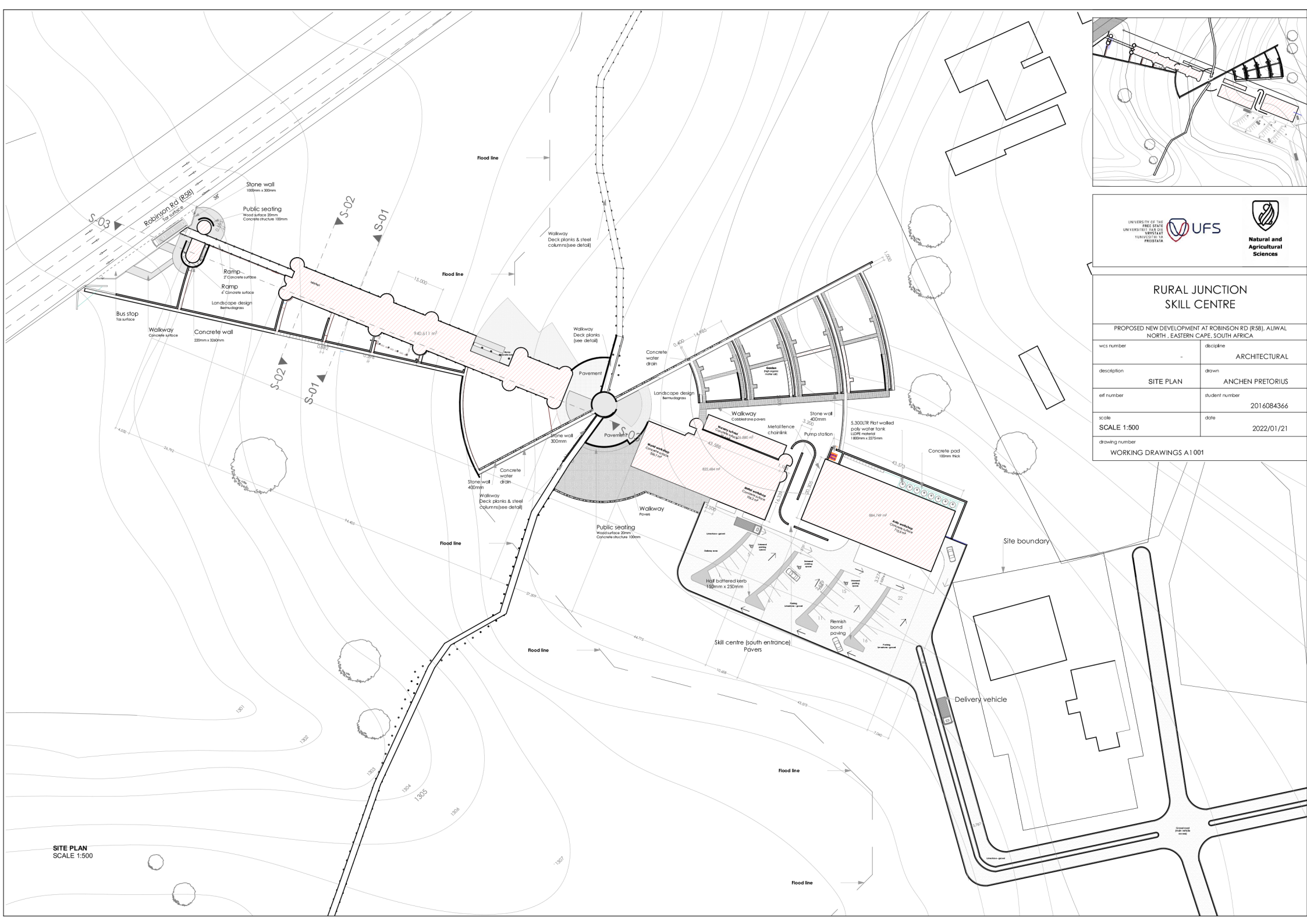



MARKET GROUND FLOOR ACCESS

BUS STOP (WEST)

BUS STOP
MARKET

NORTH ELEVATION
MARKET WEST ENTRANCE



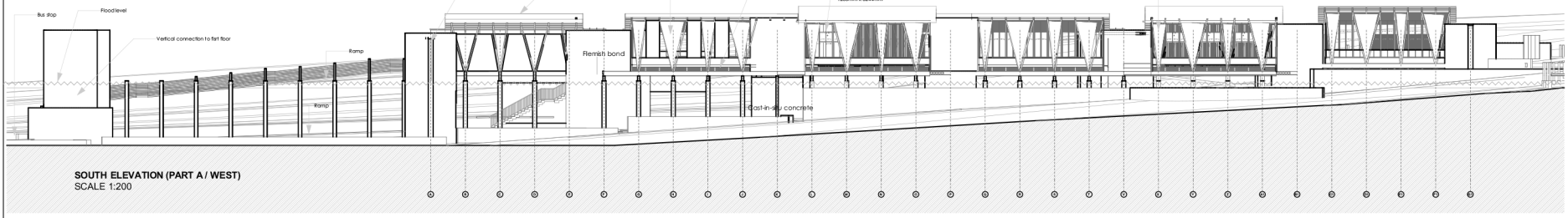
SITE PLAN
SCALE 1:500

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS
Natural and Agricultural Sciences

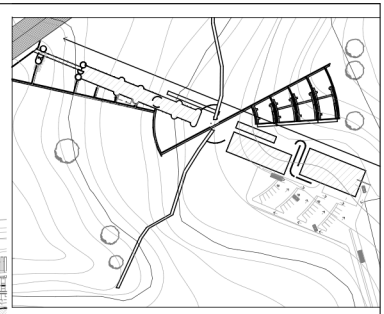
RURAL JUNCTION SKILL CENTRE

PROPOSED NEW DEVELOPMENT AT ROBINSON RD (R58), ALIWAL NORTH , EASTERN CAPE, SOUTH AFRICA

wcs number: -	discipline: ARCHITECTURAL
description: SITE PLAN	drawn: ANCHEN PRETORIUS
erf number:	student number: 2016084366
scale: SCALE 1:500	date: 2022/01/21
drawing number: WORKING DRAWINGS A1 001	



SOUTH ELEVATION (PART A / WEST)
SCALE 1:200



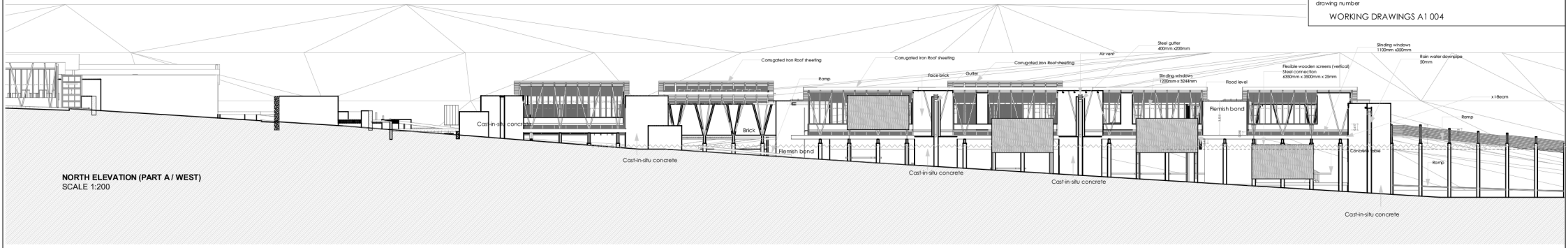
UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS

Natural and Agricultural Sciences

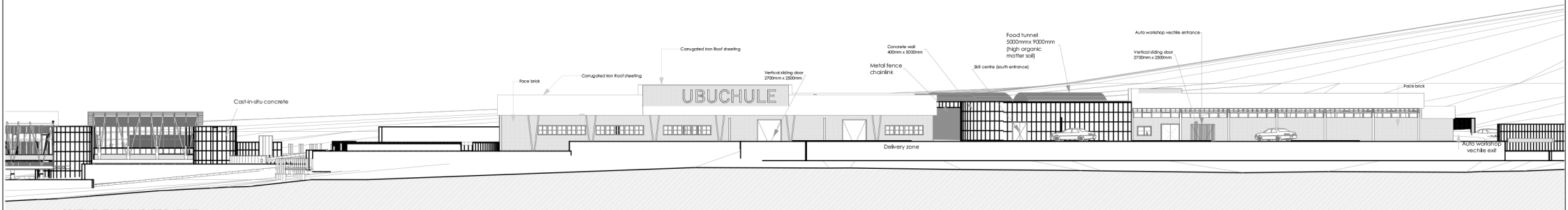
RURAL JUNCTION SKILL CENTRE

PROPOSED NEW DEVELOPMENT AT ROBINSON RD (R58), ALIWAL NORTH , EASTERN CAPE, SOUTH AFRICA

wcs number: -	discipline: ARCHITECTURAL
description: ELEVATIONS	drawn: ANCHEN PRETORIUS
erf number:	student number: 2016084366
scale: Scale 1:200	date: 2022/01/21
drawing number: WORKING DRAWINGS A1 004	



NORTH ELEVATION (PART A / WEST)
SCALE 1:200



SOUTH ELEVATION (PART B / EAST)
SCALE 1:200

GROUND FLOOR WEST
SCALE 1:200

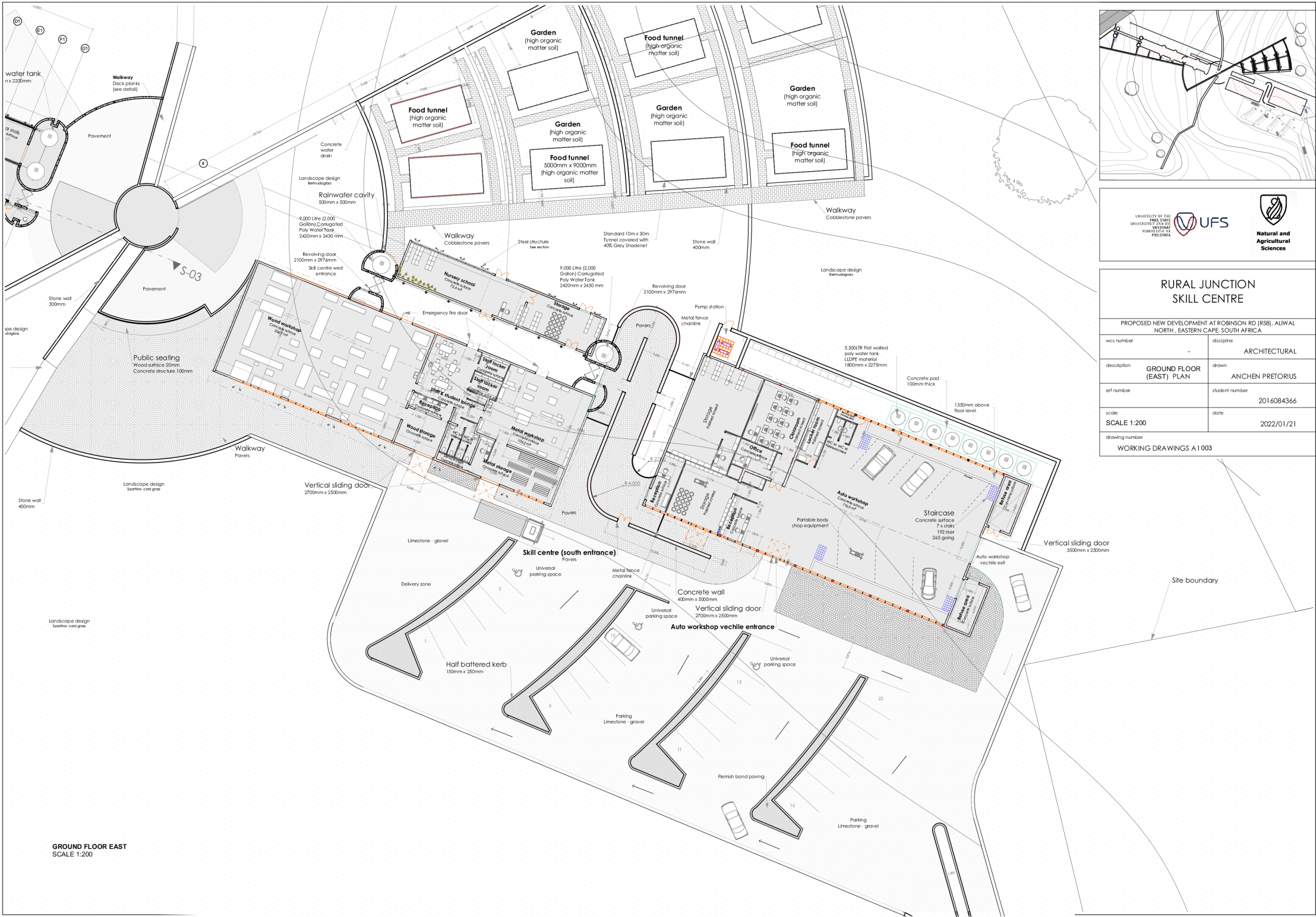
UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS
Natural and Agricultural Sciences

RURAL JUNCTION SKILL CENTRE

PROPOSED NEW DEVELOPMENT AT ROBINSON RD (R58), ALIWAL NORTH , EASTERN CAPE, SOUTH AFRICA

wcs number: -	discipline: ARCHITECTURAL
description: PLAN	drawn: ANCHEN PRETORIUS
erf number:	student number: 2016084366
scale: SCALE 1:200	date: 2022/01/21

drawing number: WORKING DRAWINGS A1 002



UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS
Natural and Agricultural Sciences

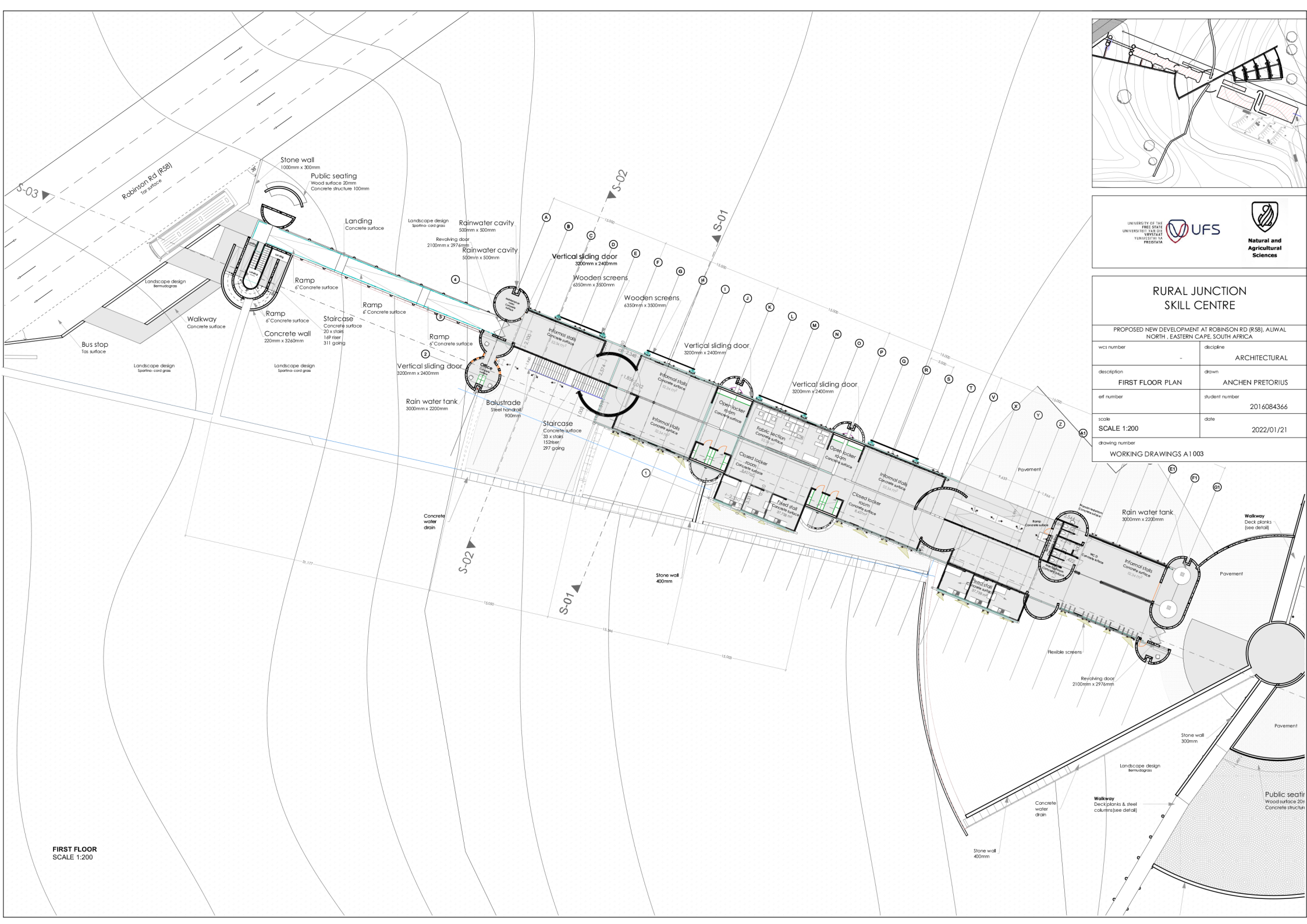
RURAL JUNCTION SKILL CENTRE

PROPOSED NEW DEVELOPMENT AT ROBINSON RD (R58), ALIWAL NORTH , EASTERN CAPE, SOUTH AFRICA

wcs number: -	discipline: ARCHITECTURAL
description: GROUND FLOOR (EAST) PLAN	drawn: ANCHEN PRETORIUS
erf number:	student number: 2016084366
scale: SCALE 1:200	date: 2022/01/21

drawing number: WORKING DRAWINGS A1 003

GROUND FLOOR EAST
SCALE 1:200



UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA

UFS

Natural and Agricultural Sciences

RURAL JUNCTION SKILL CENTRE

PROPOSED NEW DEVELOPMENT AT ROBINSON RD (R58), ALIWAL NORTH , EASTERN CAPE, SOUTH AFRICA

wcs number -	discipline ARCHITECTURAL
description FIRST FLOOR PLAN	drawn ANCHEN PRETORIUS
erf number	student number 2016084366
scale SCALE 1:200	date 2022/01/21
drawing number WORKING DRAWINGS A1 003	

LIST OF FIGURES

3.5

Fig.01: Map of South Africa (adapted by author, 2021)
Fig.02: Local house within in Maletswai (author, 2021)
Fig.03: Site existing conditions (author, 2021)
Fig.04: Population by highest education (Department of Statistics, 2020)
Fig.05: (De Lannoy, 2019)
Fig.07: (Department of Cooperative Governance and Traditional Affairs, 2020)
Fig.06: (De Lannoy, 2019)
Fig.08: Contextual photo (author, 2021)
Fig.09: Contextual photo (author, 2021)
Fig.10: Touchstone (author, 2021)
Fig.11: Touchstone (author, 2021)
Fig.12: Touchstone (author, 2021)
Fig.13: Map of South Africa (adapted by author, 2021)
Fig.14: Map of main routes in SA (adapted by author, 2021)
Fig.15: Nearby towns to Maletswai (adapted by author, 2021)
Fig.16: Hot springs swimming pool (Drisa, 1952)
Fig.17: SAR Clas GB 2166 on plinth at railway station (Drisa, 1974)
Fig.18: Aerial view of Maletswai (adapted by author, 2021)
Fig.20: Growing season in Aliwal North (Weather spark, 2021)
Fig.19: Map of Maletswai municipal zones (adapted by author, 2021)
Fig.21: Map of Maletswai (adapted by author, 2021)
Fig.22: Site allocation (adapted by author, 2021)
Fig.23: Site allocation (adapted by author, 2021)
Fig.26: Average monthly rainfall in the winter in Aliwal North (Weather spark, 2021)
Fig.25: water streams on and around site (Weather spark, 2021)
Fig.24: Site restrictions and site indication (author, 2021)
Fig.27: Site photos (author, 2021)
Fig.28: Concept 1 abstract drawing (author, 2021)
Fig.29: Concept 1 (author, 2021)
Fig.30: Concept 2 abstract drawing (author, 2021)
Fig.31: Concept 2 (author, 2021)

Fig.32: Concept 3 abstract drawing (author, 2021)
Fig.33: Concept 3 (author, 2021)
Fig.34: Theoretical strategy diagram (author, 2021)
Fig.35: Site boundaries (author, 2021)
Fig.36: Pedestrian travel routes (author, 2021)
Fig.37: Pedestrian travel routes (author, 2021)
Fig.39: Pedestrian travel routes merged with initial building direction (author, 2021)
Fig.38: Initial site plan (author, 2021)
Fig.40: General Hertzog Bridge (Harington, 2006)
Fig.41: Silos (author, 2021)
Fig.42: Context design inspiration (author, 2021)
Fig.44: Pedestrian pathways give shape to the building footprint (author, 2021)
Fig.43: Sense of place, painting (author, 2021)
Fig.45: Site abstract painting (author, 2021)
Fig.48: Site section (author, 2021)
Fig.47: Bridge analysis (author, 2021)
Fig.46: General Hertzog Bridge (Harington, 2006)
Fig.49: Construction touchstone (author, 2021)
Fig.50: Curra Community Hall floor plan (author, 2021)
Fig.51: Hilton houses (author, 2021)
Fig.53: Hilton houses (author, 2021)
Fig.52: Market section (author, 2021)
Fig.54: Design floor plan (author, 2021)
Fig.55: Design development (author, 2021)
Fig.56: Design floor plan (author, 2021)
Fig.58: Design development (author, 2021)
Fig.57: Design development (author, 2021)
Fig.59: Design floor plan (author, 2021)
Fig.60: Design development (author, 2021)
Fig.62: Design development with furniture layout included (author, 2021)
Fig.61: Design development (author, 2021)
Fig.63: Suspended pavilion (author, 2021)
Fig.64: Pivot point sketch plan (author, 2021)
Fig.65: Birds eye view of adjacent landscape (author, 2021)
Fig.66: Ground floor plan (author, 2021)
Fig.67: Top ground floor plan (author, 2021)
Fig.68: Short section (author, 2021)

REFERENCES

3.6

Africa, S. S. (2021, 25 6). Statssa. Retrieved from StatsBiz: http://www.statssa.gov.za/wp-content/uploads/2021/02/StatsBiz_January2021.pdf

Almy, D. (2007). Centre, On Landscape Urbanism . In D. Almy, Centre, On Landscape Urbanism . The Center for American Architecture and Design; 1st edition.

B. Hillier, J. H. (1984). The Social Logic of Space | B.Hillier & J.Hanson - Bartlett School of Architecture and Planning. Retrieved from Academia: https://www.academia.edu/2330957/The_Social_Logic_of_Space_B_Hillier_and_J_Hanson_Bartlett_School_of_Architecture_and_Planning

Butts, P. (2021, 05 20). The Portable Particular: An Integral Theory of Place. Retrieved from Trace Tennessee Research and Creative Exchange: https://trace.tennessee.edu/utk_gradthes

Department of Statistics, 2020, Quarterly Labour Force Survey, Quarter 4, South Africa.

Department of Forestry, Fisheries and the Environment, 2020, About Green Economy, South Africa.

DME 2007a. South Africa Energy Security Master Plan – Electricity. South African South African Department of Minerals and Energy, Pretoria.

Foucault, M. (1986). Review: Foucault's "Discipline and Punish"--An Exposition and Critique. JSTOR, 847-880.

Gotham, K. (2011). Critical Perspectives on Urban Redevelopment, Reseach in Urban Sociology. New York: Jai Press.

Kelbaugh, D. (1997). Common place: Towards neighborhood and regional design. Seattle: Seattle : University of Washington Press.

K. Philip. 2013. The transformative potential of Public Employment Programs. https://www.ilo.org/global/topics/employment-intensive-investment/themes/pep/lang--en/index.htm Date of access: 14 Mei 2021

I. Platzky, C. W. (1985). The surplus people: forced removals in South Africa. Johannesburg: Ravan Press.
Labs-Ehlert, B. (2005). Peter Zumthor Atmospheres: Architectural Environments - Surrounding Objects. Berlin: Die Deutshe Bibliothek.

Mills, G. (1989). Space and power in South Africa: The township as a mechanism of control. JSTOR (pp. 65-70). Bloemfontein: Athens Center of Ekistics.

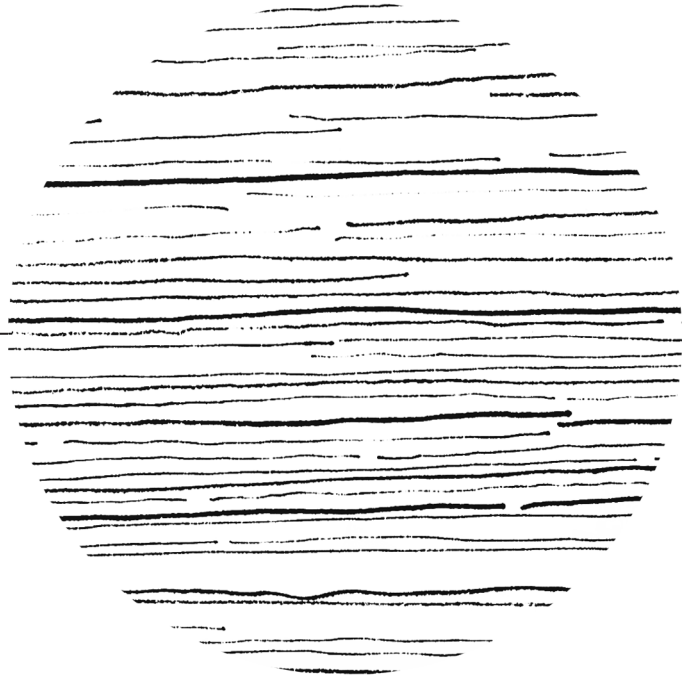
Oliveira, F. L. (2017). Green Wedge Urbanism: History, Theory and Contemporary Practice. London: Bloomsbury Academic .

Reuters Staff. 2021. South Africa unemployment rate jumps to new record high. https://www.reuters.com/article/us-safrica-economy-unemployment-idUSKBN2AN0S1 Date of access: 05 Mei 2021.

Jobsfund. (2021, 04 2). JobsFund. Retrieved from The Jobs Fund: http://www.jobsfund.org.za/ApplicationStages.aspx

Siyasebenza. (2021, 04 2). JobsFund. Retrieved from The Jobs Fund: http://www.jobsfund.org.za/ApplicationStages.aspx

Vecco, M. (2021, 05 24). Genius Loci as a meta-concept. Retrieved from Elsevier: https://www.elsevier.com/about/policies/open-access-licenses/elsevier-user-license

WHO (World Health Organization). 2017. Urban Green Space Interventions and Health. https://www.euro.who.int/en/health-topics/environment-and-health/urban-health/publications/2017/urban-green-space-interventions-and-health-a-review-of-impacts-and-effectiveness.-full-report-2017 Date of access: 17 Jun. 2021

Woods, L., 1997, Radical Reconstruction, Princeton Architectural Press, New York, 13.