RE-CREATION

THE DE-STIGMATISATION OF A POST-INDUSTRIAL SITE

ROBERT JORDAAN
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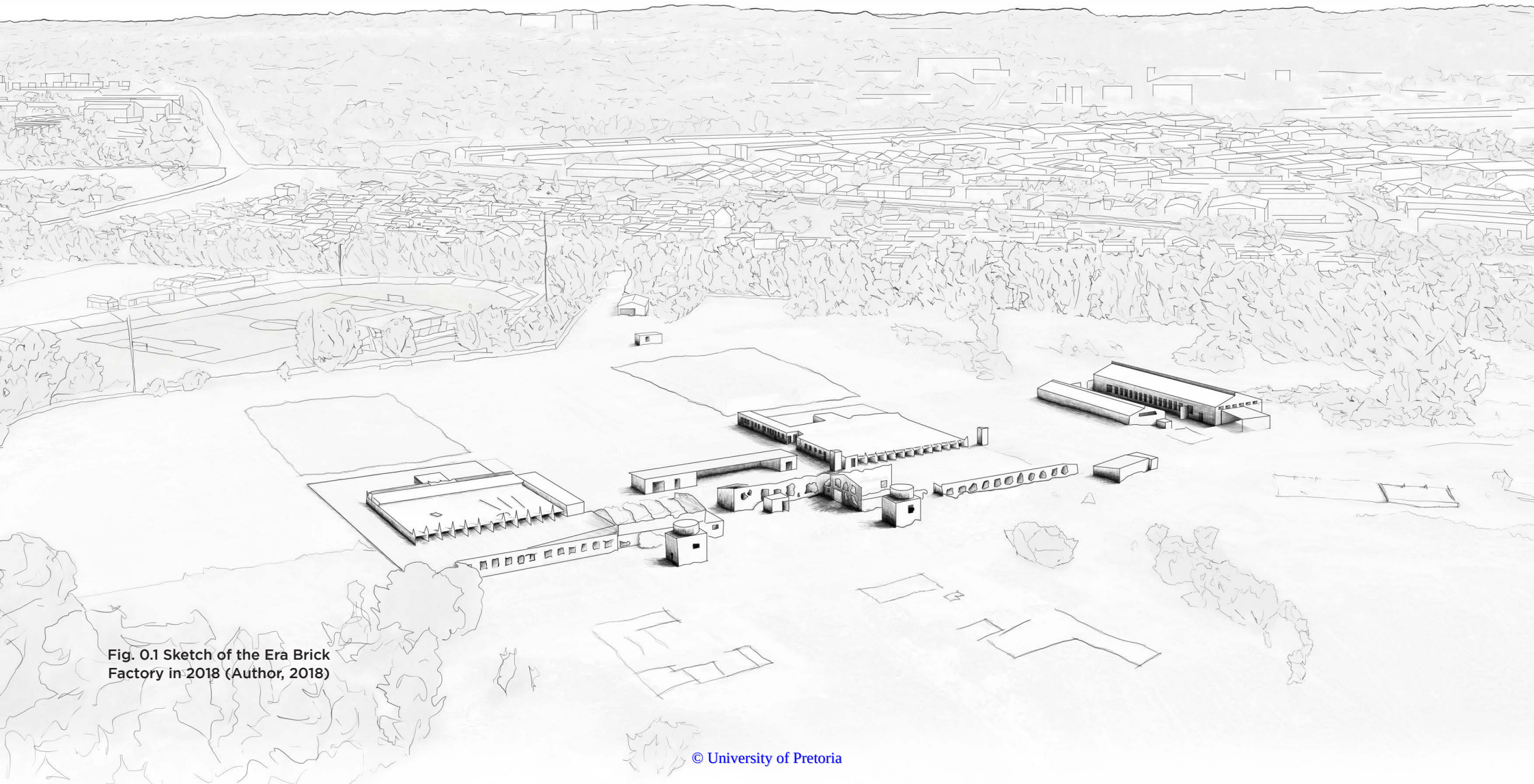

Fig. 0.1 Sketch of the Era Brick Factory in 2018 (Author, 2018)

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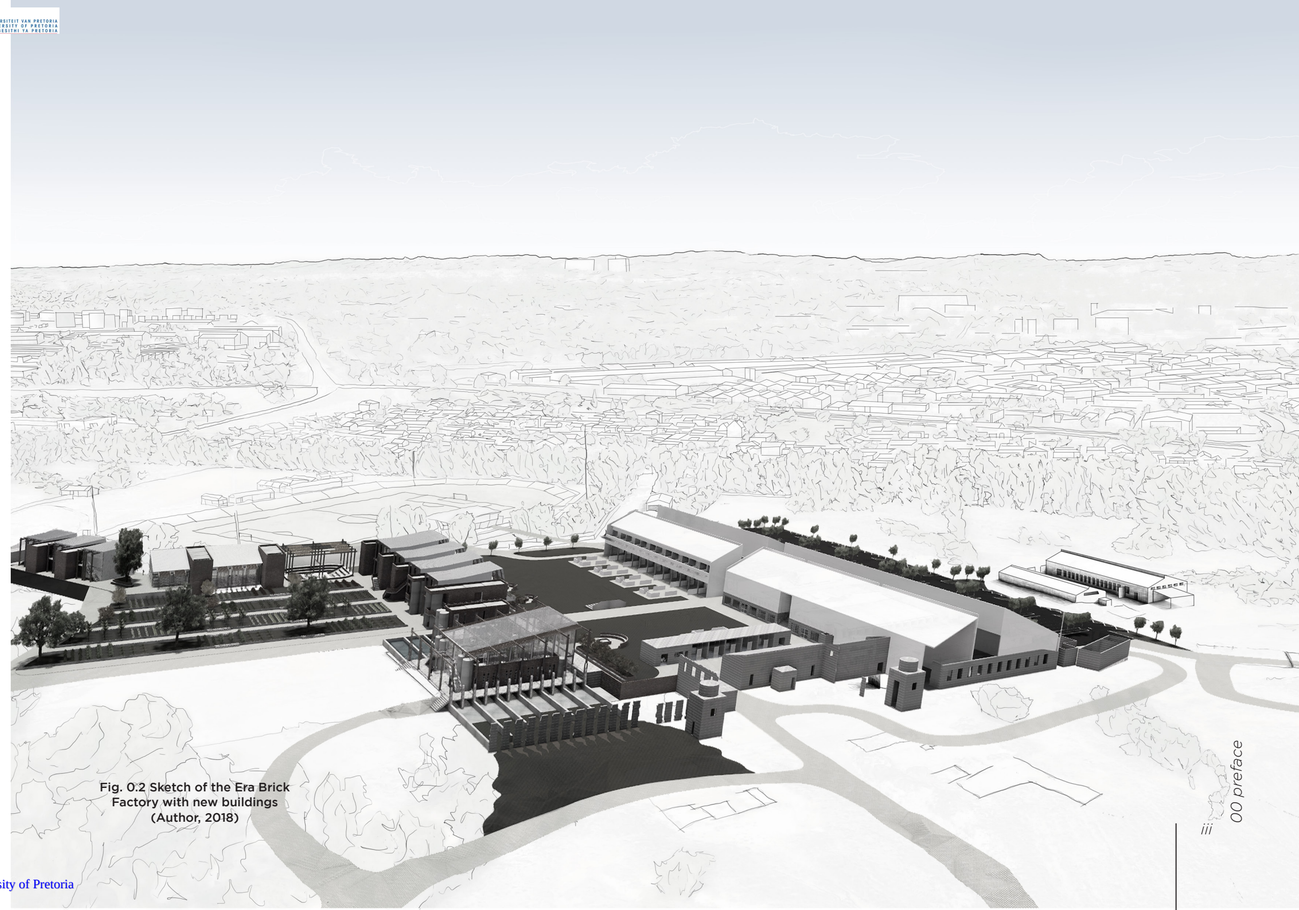

Fig. 0:2 Sketch of the Era Brick Factory with new buildings (Author, 2018)

Fig 0.3 Existing ruins of the old Era Brick Factory (Author, 2018)

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preface

Fig 0.4 Existing ruins of the old Era Brick Factory (Author, 2018)

00.1 DECLARATION

In accordance with regulation 4(e) of the General Regulations (G. 57) for dissertations and theses, I declare that this dissertation, *Re-Creation, the de-stigmatisation of a post industrial site*, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my dissertation has already been submitted for any such degree, diploma or other qualification. I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Robert Jordaan

11022257

00.2 EXPRESSION OF THANKS

To my loving parents, who made this project possible from an emotional, physical and financial standpoint, I owe my deepest gratitude. To my dear girlfriend, Lise, friends and loved ones, thank you for your support throughout my studies and especially this year.

To my study leader, Prof. Arthur Barker, thank you for your unwavering support and guidance throughout the year.

Lastly and most important, to my Source of strength and wisdom, who blessed me with talents and capabilities beyond comprehension. To Who I owe all my accomplishments and abilities, my Creator and Saviour.

Soli Deo Gloria.

00.3 ABSTRACT

Eersterust, where the site is located, was born out of a series of discriminatory laws and actions by the Apartheid government, with the so-called Coloured community relocated to the area and further segregated by natural and industrial boundaries.

The old Era Brick-factory and its quarry was an important economic generator in Eersterust; however, after depletion of its clay resources and various other economic factors, operations were stopped and relocated. After nearly seven decades the heavily worked site was abandoned, leaving a void that fostered stigmas like, pollution attracting crime and other associated preconceived ideas of post-industrial sites.

The intention of this dissertation is to address said stigmas through an architectural lens, using architectural theories and other related strategies to revitalise the derelict site and unlock the potential of existing infrastructure and stakeholders, in and around it. Context was the main design informant, with theory to strengthen and support design decisions with regards to programme, urban strategies and, architectural language as as heritage interpretations.

00.4 SAMEVATTING

Eersterust, waar die terrein geleë is, het ontstaan uit ‘n reeks diskriminerende wette en aksies deur die vorige regering, met die omliggende kleurling-gemeenskappe wat na die gebied verskuif is. Die gemeenskap is toe verder geskei deur natuurlike en industriële grense.

Die ou Era-baksteenfabriek en steengroef was voorheen ‘n belangrike ekonomiese bron in Eersterust. Ná die uitputting van sy klei-bronne en verskeie ander ekonomiese faktore is produksie gestop en verskuif. Na sowat sewe dekades is die terrein verlaat en ‘n leemte is nagelaat wat stigmas en ander gepaardgaande vooropgestelde idees van na-industriële terreine bevorder het.

Die doel van hierdie skripsie is om stigmas deur middel van ‘n toepaslike argitektuur aan te spreek, deur argitektoniese teorieë en ander verwante strategieë te gebruik om die verlate werf te laat herleef en die potensiaal van bestaande infrastruktuur en belanghebbendes in en om die werf te ontsluit. Konteks is die hoofontwerp-informant, met teorie om ontwers
pbesluite te versterk met betrekking tot program, stedelike strategieë, argitektoniese taal en erfenisinterpretasies.

Fig 0.5 Existing ruins of the old Era Brick Factory (Author, 2018)

Fig 0.6 Existing ruins of the old Era Brick Factory (Author, 2018)

00.5 DOCUMENT INFORMATION

PURPOSE
This dissertation is submitted in partial fulfilment of the requirements for the degree of Master of Architecture (Professional). MArch (Prof), in the Faculty of Engineering, the Built Environment & Information Technology

STUDY LEADER
Prof. Arthur Barker.

UNIVERSITY
Department of Architecture, University of Pretoria, South Africa

PROGRAMMES(S)
Main: Agricultural School
Sub: Sports & Recreational Facility

DEGREE
Master of Architecture (Prof)

SITE LOCATION
25°42'46.4"S 28°18'12.0"E
The Era Brick Factory and Eersterust Soccer Stadium, St Joseph Ave, Eersterust, Pretoria.

COURSE CO-ORDINATOR
Prof. Arthur Barker.

RESEARCH FIELDS
Heritage and Cultural Landscapes and Environment Potential.

00.6 TERMINOLOGY

INDUSTRIAL ARCHAEOLOGY:
Methods of investigation most suited to increasing understanding of the industrial past and present (Nizhny Tagil, 2006: 1).

INDUSTRIAL HERITAGE:
Refers to the remains of industrial culture which are of historical, technological, social, architectural or scientific value (Nizhny Tagil, 2006: 1).

LEBENSWELT - LIFEWORLD
The entirety of normal, daily human experiences and interactions, particularly as considered to be a subliminal understanding of the nature of human knowledge and life. (Oxford Dictionaries. 2018)

PALIMPSEST:
A layering or "writing over" of previous versions, still bearing traces of its earlier form. (Synthesis of multiple definitions: Machado, 1976: 47; Macmillan Dictionary, 2018; Merriam-Webster, 2018 and Oxford Dictionaries, 2018.)

POST-INDUSTRIAL:
Belonging to relating to an economy or characteristic that is no longer based on heavy industry or is related to the era following industrialisation. (Cambridge Dictionary, 2018 and Dictionary.com, 2018)

STIGMA:
(n) A perceived negative attribute or feeling of disapproval that causes someone to devalue or think less of a circumstance, quality, place or person. (Synthesis of multiple definitions: Oxford Advanced Learner's Dictionary, 2018; Cambridge, 2018 Collins, 2018 and Gluck, 2018.)

THRESHOLD:
(n) The method of connecting one space to another. Also the connecting fabric between two spaces. Thus the transition to a new space. (Synthesis of multiple definitions: Architecture Design Primer, 2018; Oxford Advanced Learner's Dictionary, 2018; and Merriam-Webster. 2018).

Fig 0.7 Existing ruins of the old Era Brick Factory (Author, 2018)

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“Everything will flourish at the edge...”

Jacques Derrida, “Parergon”
(Casey, 2008:1).
t

“Industrial heritage is the record of the lives of ordinary men and women, and as such it provides an important sense of identity.”

(The Nizhny Tagil, 2003:1).

Fig 0.12 Mozambican Architect
José Alberto Basto Pereira Forjaz
(José Forjaz Arquitectos, 2004)

"Two factors are inextricable from architectural practices today: Ideological coherence & environmental determinants"

Jose Forjaz
(Ribeiro, 2011:186).

Fig 1.1 Existing ruins of the old Era Brick Factory (Author, 2018)

CHAPTER

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introduction

Fig 1.2 Existing ruins of the old Era Brick Factory (Author, 2018)

01.1 BACKGROUND

The remnants of our past have shaped South African cities for decades, The two most relevant to this dissertation are **post-industrial sites** (the majority for the extraction of natural resources) and the **spatial legacy of Apartheid.**

With regard to the proposed site, the above mentioned have created barriers and borders between the communities in and around Eersterust. This dissertation argues that it creates environments where stigmas or preconceived notions are formed - notions that are very hard to change.

Eersterust is still segregated by race, as a result of the Apartheid spatial planning policies. The specific setting on which this dissertation focuses on, is the site of the old **Era brick factory and quarry,** abandoned since the end of 2013. Being a post-industrial site, separated from and bordering on residential suburbs, it has contributed to an unhealthy site condition; fostering stigmas associated with degrading buildings and spaces as a consequence of the lack of use and ownership.

This then begs the question, how do we approach the development of sites like this? Upon a recent visit to Maputo, Mozambique I found that several of the old colonial buildings still stand, having survived the war, changing regimes and other impacts. As such, the powers that be are striving for a new identity within the context they have inherited.

The old fort, *Fortaleza se Maputo,* for example, is now a war and military museum, housing all the old and controversial statues of the colonial period to the revolution and the civil war. They acknowledge their history rather than wiping it away. This can be an informant on how to address and interpret controversial heritage sites.

01.2 PROBLEM STATEMENT

Throughout this dissertation it is argued that architecture can be a tool to combat stigmas or preconceptions; and specifically, that the Eersterust post-industrial heritage site has the potential to be re-used and reincorporated into its context so as to once again be significant and relevant.

The downfall of the site's previous function was it's reliance on a non-renewable resource that has been depleted. Thus, this dissertation attempts to find an alternative programme to reinvigorate the site and beneficially contribute to the communities bordering the site while maintaining and respecting the site's heritage value.

01.3 THE ISSUES

01.3.1 GENERAL ISSUE

Once a stigma is attached to an entity, it can be very hard to change. The Era brick factory, and even the suburb of Eersterust, is affected by stigmas and misconceptions. The lack of activity on the site (after the factory closed), pollution from the previous and current owners, and the underutilisation of the stadium resulted in a general perception of risk, and hostility.

In the greater Pretoria area, preserved examples of the city's industrial heritage are few and far between. This site however, presents itself as an opportunity for change from a derelict scar in the landscape to something that can contribute to the community and at the same time enjoy more than merely functional meaning .

01.3.2 URBAN ISSUE

At an urban scale, the site forms a barrier between two suburbs, *Eersterust* and *Jan Niemand Park.* This separation is reinforced by the natural barriers of the two rivers, *Moretele and Rietspruit,* flowing on either side of the site, with the mountain to the north and the man-made barriers of *Stormvoël Road* and industrial areas such as *Silvertondale*,strengthening the barrier.

According to Tshwane's zoning diagrams, the site has no specific zoning associated with it - nor are there any specific future urban plan in place for the site. Currently the sole consideration is a housing development proposed by developers.

This dissertation focuses on the above mentioned - urban scale challenges so that more interaction can be stimulated, consequently adding more value to the site than a housing development could.

01.3.3 ARCHITECTURAL ISSUE

How can architecture be a tool to reinvigorate a derelict site that has heritage value, while strengthening an existing stadium that is underutilised?

The real challenge this dissertation attempts to address is to create an architectural response that gives the site new meaning and purpose that will give back to the community.

Fig 1.3 Existing ruins of the old Era Brick Factory (Author, 2018)

Fig 1.4 Existing ruins of the old Era Brick Factory (Author, 2018)

01.4 RESEARCH QUESTIONS

The following research questions arose:

- How can architecture change preconceptions of space and place?
- How can architecture break the boundaries of Apartheid spatial planning?
- What are the significance of stigmas and what relation do they have to architecture?
- What are the most prevalent stigmas that the site is subject to?

01.5 INTENTIONS

This dissertation intended to use the post-industrial site – *the old Era brick factory and quarry in Eersterust*, as the proposed site, but which has negative preconceptions and stigmas associated with it.

In the South African context, and, as mentioned, particularly in the context of Pretoria, there are not many examples of post-industrial sites being rehabilitated or reused effectively, especially sites of historic or heritage value.

This study attempts to find practical solutions to transforming these stigmas, with a specific focus on rehabilitating existing environmental degradation, preserving heritage and mediating between segregated communities.

This dissertation uses architectural and other supporting theories as design informants, while the main driver for design is a synthesis of site and context specific opportunities. Various programmes and the existing fabric acted as catalysts for design.

01.6 RESEARCH METHODOLOGY

To achieve an appropriate architectural response and design approach to the problems previously stated, the following methods were be used:

Understanding the Context - Content Analysis & Historical Studies

- This was done by piecing together the site's history and development - using mapping, by reading existing publications and through historic photos.
- Establishing the current condition of the site - this was achieved through sketches and photographs.
- Identifying existing stigmas associated with the site and other relevant post-industrial sites - done in order to establish the site's tangible and intangible qualities.

Investigating Possibilities

- An investigation was undertaken at an urban level concerning available possibilities utilising a *SWOT* analysis (*strengths, weaknesses, opportunities and threats*).

Critical Theoretical Exploration

- Theories were investigated in relation to the alleviation of stigmas associated with place.
- Theories related to heritage, and specifically, industrial heritage and cultural landscapes: the heritage value of the site, heritage conservation and adaptive reuse were examined.
- Lastly, theories related to environment potential i.e., resilience and regenerative design were explored.

Precedent/Case Studies

- After an appropriate programmatic response was established, an analysis of a number of existing buildings was undertaken and these are discussed to substantiate and refine the proposed architecture. Precedents include, but are not limited to a contextual, technological, formal and functional examples.

Site Scale + Delimitations

- Although the entire old Era brick factory and quarry site were analysed, the dissertation focused just on the south-eastern portion of the site adjacent to the existing football stadium.
- A proposed programme and broad urban layout of the site is indicated, but not designed in detail in this dissertation.
- An understanding of the local community was gained through observation and secondary sources rather than direct interviews, due to constraints imposed by ethical clearance procedures.

Fig 2.1 Satellite image of Eersterust + Jan Niemand Park + Silvertondale (Google Earth, 2018)

CHAPTER

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context + site analysis

Fig. 2.2 Gauteng (Google Earth/Author 2018)

Fig. 2.3 Pretoria (Google Earth/Author 2018)

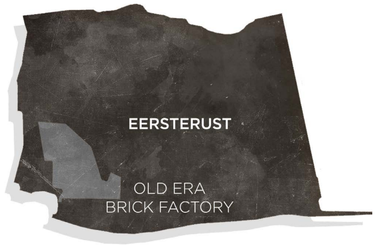


Fig. 2.4 Eersterust (Google Earth/Author 2018)

Fig. 2.5 Era Brick Factory & Sports Fields (Google Earth/Author 2018)

02.1 SITE LOCATION

This chapter sought to contextualise problems facing the site by utilising a historical time-line so as to have a greater understanding of the site and what opportunities it presented for this dissertation.

As stated earlier, the area where the old Era brick factory and quarry is located, is known as Eersterust. It is roughly 15km east of the Pretoria CBD. Notable suburbs close to the site include Jan Niemand Park to the west, Silvertondale to the south and Mamelodi to the east. (See figure 2.1)

Eersterust forms part of the Tshwane Metro and is known for being Pretoria's largest so-called Coloured settlement.

02.2 BRIEF HISTORY + CONTEXT OF EERSTERUST

At the start of the 20th century the settlements of Eersterust and Riverside were set out on a portion of the farm Vlakfontein, by JB & IHJ Wolmarans (Potgieter, 2002:32) and (Van der Walt, 1966:32).

With the advent of the 1958 Group areas act, the area was zoned for, a so-called 'Coloured area.' Any residents of the area that were not 'Coloured' were removed from the settlement. As such many of the people settled in the racially mixed settlements of Pretoria were in turn forcibly relocated to Eersterust. To this day the suburb is mostly inhabited by the 'Coloured' community (Potgieter 2004:46) & (Van der Walt 1966:33).

In 1994 Eersterust was assimilated into the City Council of Pretoria and in the year 2000 it was assimilated in-to the City of Tshwane Metropolitan Municipality (Potgieter 2004: 46).

Directly translated, Eersterust means "first-rest". The true source of the suburb's name is not known but the most prevalent theories are:

- It used to be the first-place mail coaches stopped to rest before traveling from Pretoria to Lydenburg (Potgieter 2004: 46).

- The Wolmarans family wanted the Coloured community to settle here as their first place of permanent residency (Potgieter 2004: 46).

- During the Anglo-Boer war, the Boer Forces rested at the location after the siege of Pretoria (Van der Walt 1966).

According to the 2011 Census, the suburb (at that time) had just under 30,000 residents, of which approximately 84% of the 'coloured' population group. About 78% of the community identify Afrikaans as their first language. (South African Census, 2011)

02.3 BRIEF HISTORY OF THE ERA BRICK FACTORY

The manufacturing of bricks on site pre-dates the settlement of Eersterust by several years. According to the Companies and Intellectual Property Commission (CIPC) the first company registered was Era Stene (Era Bricks) in 1947. At this time the manufacturing of bricks was done in a very primitive way through the use of a 'veld-oond' -(field oven). Before this the site was merely used for farmland (Enslin, 2018).

From the limited photographic evidence available, it is difficult to determine when the first factory building was constructed. The evidence would suggest the late 1950's to early 1960's (National Geo-Spatial Information Database, 2018).

Fig 2.6 The Era Brick Factory in 2013 (Taljaard,2013)

Fig 2.7 The Era Brick Factory in 2013 (Taljaard,2013)

In the dissertation *Kleurlingbehuising in Eersterust, Pretoria,* by T. Van der Walt (1966), he noted that construction of a sports complex has begun. By 1968, a soccer field is visible east of the Era brick factory. In a photo from 1976, a second brick factory building is visible running parallel to the original building. At this stage the older building was insufficient, being of much older technology. The two factories only produced bricks together over a very short span of time. By the end of the decade the old factory was decommissioned (National Geo-Spatial Information Database, 2018; Enslin, 2018).

In 1982 the company was bought and registered under the Rosema & Klaver Group (CIPC, 2018) & (Enslin, 2018).

At an unconfirmed date in the 1990's, the clay resources found on site were depleted and clay had to be imported to the site; the main source being the company's other clay site at *Olifantsfontein*. Between 1991 and 2001 the soccer field was upgraded with stands surrounding the field, turning it into a stadium (National Geo-Spatial Information Database, 2018; Enslin, 2018).

In December 2013, the company decommissioned the entire factory and quarry. The factory buildings on site were dismantled. The unusable metal was sold for scrap, and the bricks in the walls were dislodged and sold as *'mampara'* bricks (clay stock bricks). In the process the company realised the roof covering contained asbestos, common for roofs of that era.

The same material that is still visible on the roofs of the surrounding houses south and east of the site. (National Geo-Spatial Information Database, 2018; Enslin, 2018).

At this time the site was sold to the Labucon Resources (Pty) Ltd Group, a civil engineering company that focuses on bulk earthworks, construction of roads and the transportation of commodities. Currently, they transport truckloads of earth from the sites and projects on which they are working to the Era brick factory, filling up the scar left by the clay quarry (Labucon, 2018).

A current proposal is to sell the site to a developer and populate with a housing scheme. The exact extent of the development is unclear, another quarry and factory site previously owned by Era (in Monument-park) has been converted into a retirement village. It is plausible that a similar approach is being considered by potential developers.

02.4 VISUAL HISTORY OF THE ERA BRICK FACTORY

The diagrams (Figures 2.8-2.23) on pages 012-014, depict the site's development over time with the help of aerial photography obtained from the National Geo-Spatial Information Database; the earliest photographs date from 1958 and the most contemporary from 2015, when the last major development took place on site.

Fig. 2.8 + 2.9 Site in 1958
(National Geo-Spatial Information Database, 2018; Author, 2018)

- The first residential area of Eersterust, visible south of future Era brick factory site.
- The suburb of Jan Niemand Park, visible to the west.

Fig. 2.10 + 2.11 Site in 1968
(National Geo-Spatial Information Database, 2018; Author, 2018)

- First Era-Brick Building is visible.
- Soccer field visible east of Era-Brick factory site.
- Expansion of Eersterust to the east.

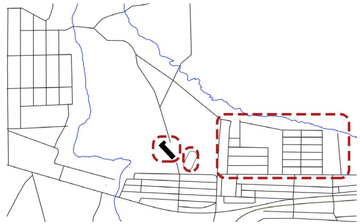


Fig. 2.12 + 2.13 Site in 1976
(National Geo-Spatial Information Database, 2018; Author, 2018)

- Expansion of Era-brick site, additional buildings and demarcated site visible.
- Soccer field east of Era-brick site boundaries visible.
- Expansion of Eersterust to the north.
- Industrial area to the south-west is visible.
- Decommission of oldest oven.

1976

Fig. 2.14; 2.15 Site in 1984
(National Geo-Spatial Information Database, 2018 + Author, 2018)

- Further expansion of Eersterust to the north.
- Water is visible on site, because of quarry.
- Industrial sites expand to the south.

1984

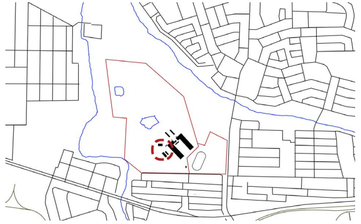


Fig. 2.16; 2.17 Site in 1991
(National Geo-Spatial Information Database, 2018 + Author, 2018)

- Auxiliary buildings added to site.

1991

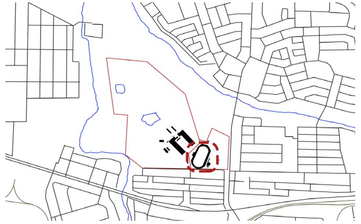


Fig. 2.18; 2.19 Site in 2001
(National Geo-Spatial Information Database, 2018 + Author, 2018)

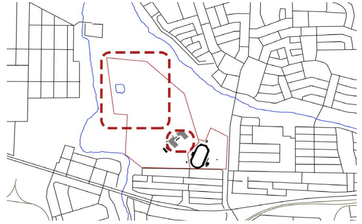
- Major upgrades to soccer stadium and surrounding site.

Fig. 2.20; 2.21 Site in 2014
(National Geo-Spatial Information Database, 2018 + Author, 2018)

- Demolition of oldest brick oven.

Fig. 2.22; 2.23 Site in 2015
(National Geo-Spatial Information Database, 2018 + Author, 2018)

- Entire brick factory now decommissioned, various buildings now demolished.
- New owners of the site using it as a dumping ground, most of the ponds on site have been filled up with imported soil and building rubble.



2014

2015

Fig 2.24 The Era Brick Factory in August 2013 (Enslin,2013)

Fig 2.25 The Era Brick Factory in 2013 (Taljaard, 2013)

Fig 2.26 The Era Brick Factory in 2013 (Taljaard, 2013)

Fig 2.27 The Era Brick Factory in 2013 (Taljaard, 2013)

Fig 2.28 The Era Brick Factory in 2013 (Taljaard, 2013)

Fig 2.29 The Era Brick Factory in 2013 (Taljaard, 2013)

Fig 2.30 The Era Brick Factory in 2013 (Taljaard, 2013)

Fig 2.31 The Era Brick Factory in 2013
(Taljaard, 2013)

Fig 2.32 The Era Brick Factory in 2013
(Taljaard, 2013)

Fig 2.33 The Era Brick Factory in 2013
(Taljaard, 2013)

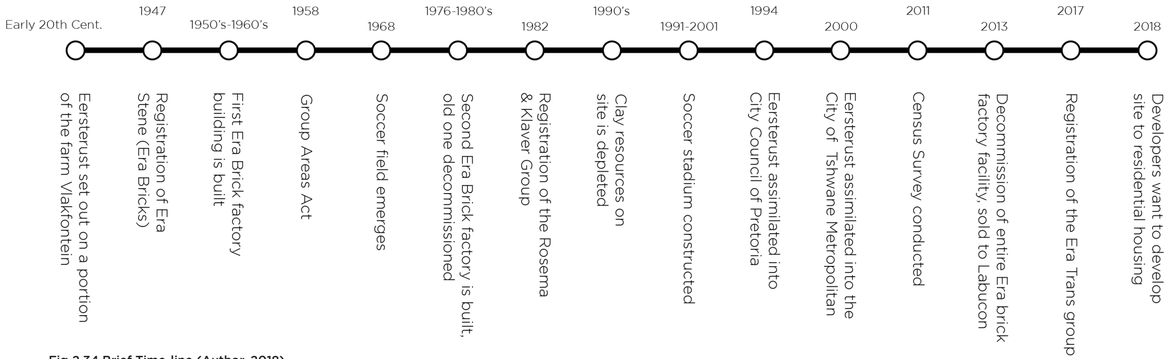


Fig 2.34 Brief Time-line (Author, 2018)

02.5 SITE ANALYSIS

From an appreciation of the history of the site, it is important to understand the current conditions and challenges facing it. The following section is an investigation into the current state of the site.

The diagrams to the right depict the various states the site has been in, from a totally natural state before the factory or quarry existed (Fig. 2.35), to a disturbed "nature" when production was at its peak. (Fig. 2.36)

As seen in Fig. 2.36, at this stage, the clay resources were extracted from the site, processed, baked and sold as bricks; natural resources were used to produce the bricks.

Figure 2.37 represents the current condition of the site, where soil extracted from sites in and around Pretoria is transported and deposited on site, by the current owners, Labucon. On site, there are visible deposits of building rubble. Although the intention was to rehabilitate the site after the closure of the quarry (see section 02.3), it seems that this intention has fallen by the wayside in recent times.

This dissertation argues that the desired condition would rather be to have a state of equilibrium, where resources are extracted and brought back on equal terms as in Figure 2.38.

Fig 2.35 Original Condition of site - Natural
(Author, 2018)

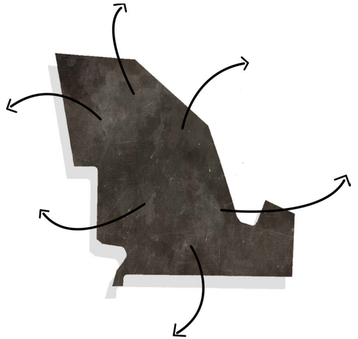


Fig 2.36 Quarry & Factory Condition - Extraction
(Author, 2018)

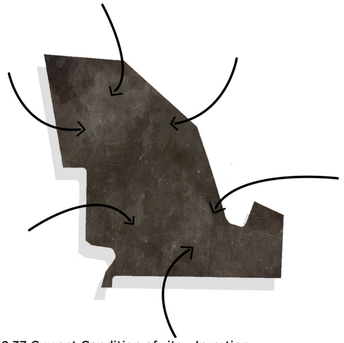


Fig 2.37 Current Condition of site - Insertion
(Author, 2018)

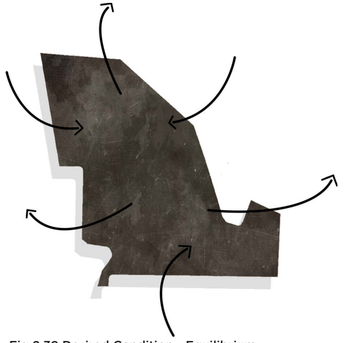


Fig 2.38 Desired Condition - Equilibrium
(Author, 2018)

02.6 CLIMATIC ANALYSIS

The site is located on the borders of Pretoria, as such climate data of Pretoria will be used in the following section to inform the design of the proposed intervention. Figure 2.39 depicts the climate zones of South Africa, with Pretoria falling in zone 2, the temperate interior zone (Wegelin. 2009:25).

The city lies on an altitude of about 1,350m above sea level, as such it has a hot to temperate climate, Pretoria and indeed Eersterust is surrounded by hills from the Magalies mountain range, the valleys between the hills are quite fertile (Pretoria. 2018).

Pretoria falls in a summer rainfall zone, with rain reaching its peak from November to January, during the winter months there is little to no precipitation. (Figure 2.39-2.40) The city has an average of 8.8 daily sunshine hours, with winter days being predominantly sunny (Meteoblue. 2018) & (Avg Sunshine Hours. 2018.).

With the above-mentioned information - it is clear that the site is quite arable, ideal to harvest solar energy, through PV panels, daylighting and space heating and rain water harvesting.

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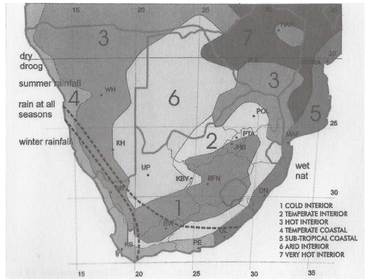


Fig 2.39 Climate Zones in SA (Wegelin, 2009:25).

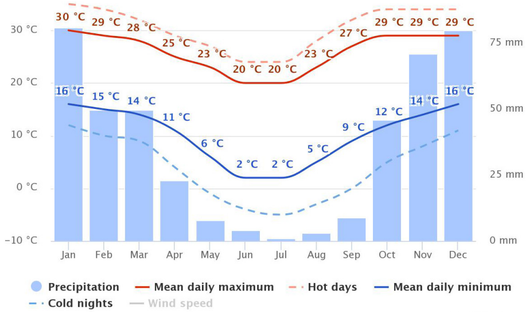


Fig 2.40 Average temperatures & precipitation of Pretoria (Meteoblue. 2018).

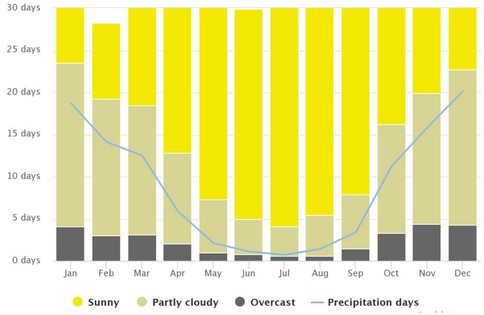


Fig 2.41 Average daily sunshine hours of Pretoria (Meteoblue. 2018).

02.7 GEOLOGICAL ANALYSIS

As the site's history would suggest, the soil of the site contain major clay deposits making building new buildings on the site a difficult and expensive process.

The two rivers, Moretele and Rietspruit, each contribute to the site morphology, the Moretele flowing west of the site is much wider and stronger when compared to the Rietspruit, that flows east of the site creates a wetland area. The two rivers meet at the north end of the site.

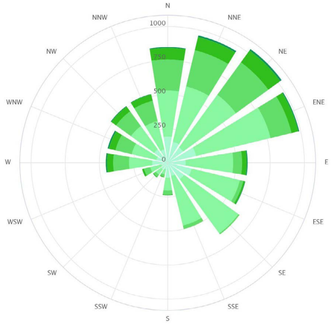


Fig 2.42 Wind rose diagram of Pretoria (Meteoblue. 2018).

02.8 ZONING

According to current zoning the site is zoned as undetermined, most likely because the previously industrial site has been unused since the end 2013. T*he Tshwane Regional Spatial Development Framework* (RSDF) indicated that the site has to be zoned at a suburban density (see Figures 2.43 and 2.44). This makes sense for a prospective housing development as is currently at a proposal stage. (Tshwane GIS. 2018).

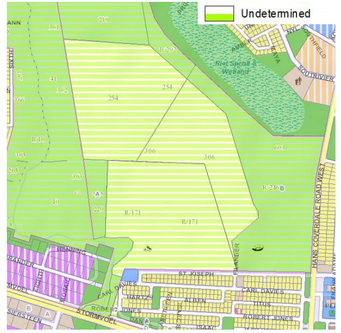


Fig 2.43 Zoning of Eersterust (Tshwane GIS. 2018).

02.9 FAUNA + FLORA ANALYSIS

The site form part of a long green belt - thanks to the rivers, the footprints of the old factories are overgrown by grass and weeds. On the quarry area, foliage has slowly taken over the areas that has been filled up by imported soil by Labucon.

The border of the site is exaggerated and set out by alien trees planted many years ago, as fences were regularly stolen. No animals were found on site while doing site visits.

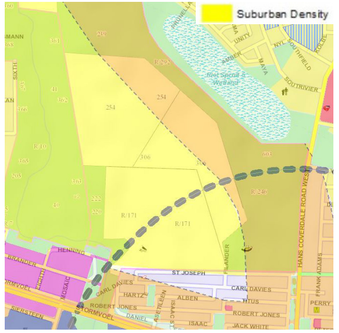


Fig 2.44 Tshwane RSDF (Tshwane GIS. 2018).

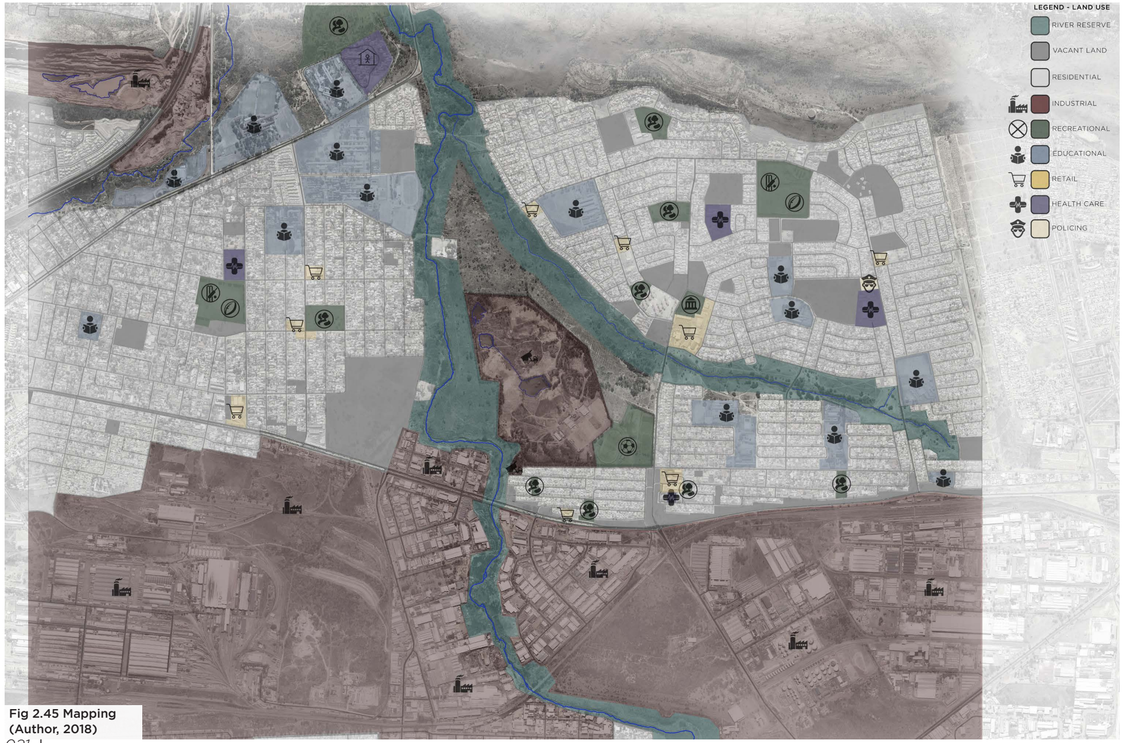


Fig 2.45 Mapping (Author, 2018)

02.11 MAPPING + OBSERVATIONS

While mapping the area, it became clear that there are many schools surrounding the site (marked in light blue in Figure 2.45). The pupils attending school in Jan Niemand park are often from Eersterust, as better school facilities are available in this area.

Because, as explained, there are very few connecting roads between Eersterust and Jan Niemand park, it is very difficult for pupils to travel between their homes and the various campuses, the only road available being Stormvoël road, making travel time much longer.

The vacant land available for further development and densification is marked in dark grey (Fig. 2.31). Eersterust is only 12km away from the Pretoria CBD, making it much better for settlement than the informal settlements forming further to the east, in places like Mamelodi.

Because Eersterust is so close to the large industrial area to the south, (marked in red) economic opportunities are available to residents, without the need to commute long distances to work - as opposed to those travelling from the further eastern settlements.

As illustrated in the diagram to the left, the flood plains and reserved land beside the rivers form quite a barrier between the two settlements. At the same time the rivers offer a connection between the settlements where the areas can be cleaned up and linked.

The eastern portion of the Rietspruit river has been cleaned with footpaths connecting Eersterust south and north. This is an ideal example to apply to the rest of the river reserves.

There are very little recreational opportunities for residents from both Eersterust and Jan Niemand park, the most prominent in the area include shebeens, bars and sports facilities. There is at least a community centre in Eersterust, but there are not enough facilities to accommodate the large amount of school pupils and young adults in the area. A worrying observation is the lack of healthcare and policing facilities in the area.

From the above-mentioned observations it can be argued that the Era brick factory site should not simply be converted to a residential compound as there is more than enough other vacant land to use for that purpose.

The site affords a much greater opportunity if converted into something that will beneficially serve both neighbouring communities and the school pupils.

Fig 2.46 View from stadium towards the existing ruins. Old factory footprint overgrown with grass and weeds. (Author, 2018)

Fig 3.1 Sketch of Existing ruins of the old Era Brick Factory (Author, 2018)

CHAPTER

03

theory

Fig 3.2 Existing ruins of the old Era Brick Factory (Author, 2018)

03.1 INTRODUCTION

This chapter focuses on the theoretical approaches used in the dissertation. Theories and strategies from both the *Heritage & Cultural Landscapes and Environment Potential* discourses are considered, and further synthesised with theories that focus on the alleviation of stigmas.

First it must be understood what a stigma is, what are the significance of stigmas - what relation do they have to architecture, and lastly, what are the most prevalent stigmas that the site is subject to?

03.2 STIGMA

A stigma (noun) is defined as a perceived negative attribute or feeling of disapproval that causes someone to devalue or think less of a circumstance, quality, or person. (Synthesis of multiple definitions, see 03.11 Endnotes).

According to a 2009 article by the Government of Western Australia, a stigmatising often leads to an individual being stereotyped. In turn, this leads to prejudice and lastly to discriminatory actions against the said individual or group.

STIGMA = STEREOTYPING –> PREJUDICE –> DISCRIMINATION
(Government of Western Australia, 2009)

This progression can then be further extrapolated to focus on stigmas of place.

Usually, the notion of 'stigma of place' is associated with landscapes that carry severe damage or that are linked to a certain negative event, such as the Chernobyl nuclear disaster or to Auschwitz, for example. This is not limited to historically significant places, as any productive facility that is currently in operation or has ceased operations (post-industrial sites), can carry a stigma (Leiss, 2013:2).

Thus, it is unsurprising that stigmas are often associated with areas where disenfranchised communities dwell. This notion is often held by both parties: those directly associated with such and area as well as those outside of the community in question, albeit from different perspectives and with different outcomes (Flanagan et al. 2017:6).

What are some of the most important characteristics of a stigmatized place?

- There is a **perception of risk.**
- **Avoidance** of the place as a result of the perceived risk.
- There is an **abnormality associated** with the place.
- The place has come to be associated with a **socio-economic or socio-political issue.**
- It is **discussed in a negative light** in the media or personal conversations.
- There is a **stereotypical mentality and image** associated with the place.
- **Suggestive language** is used by people when discussing the place.
- **Negative emotions and rash reactions** are evoked by the place. (Leiss, 2013:3,8) (Flanagan et al. 2017:7).

03.3 SIGNIFICANCE OF STIGMA

Now that it has been established what a stigma is, and more specifically what a stigma of place is, what danger does it hold to the immediate communities around the site?

This dissertation argued that stigmas are a threat to social systems, a phenomenon the philosopher, Jurgen Habermas, calls a legitimisation crisis, in other words an existential crisis that threatens the foundation of a social system (Habermas, 1978:68). He divides social systems into three fundamental components:

- Political/governmental
- Socio-cultural
- & Economic.

(Habermas, 1978:6).

These components interact and influence each other and the following is a breakdown of each, and how they related to the settlements of Eersterust and Jan Niemand Park.

03.4 POLITICAL/ GOVERNMENTAL STIGMAS

A government needs a story, idea or ideology to give it legitimacy (Habermas, 1978:51). With the vast differences in political identity in the north-east of Pretoria (Jan-Niemand Park, Eersterust, Mamelodi and Silvertondale) placing this legitimacy in question.

According to the municipal election results of 2016, voters in Eersterust Jan Niemand Park and Silvertondale voted for similar parties, the majority being DA, where as the voters of Mamelodi voted mostly for the ANC (IEC. 2016).

Although this does not mean these communities held the same political view, background, or ideology. When taking the area's history in consideration there was not a coherent story that gave the social system in the area legitimacy.

According to the 2011 census - vastly different population groups tended to settle at Jan Niemand Park (69.3% white, 28.4% black, 10.8% coloured) than in Eersterust (83.5% coloured, 14.4% black). It seems as if Jan Niemand park is going to be more integrated than Eersterust in the future (see figure 3.4) (Census, 2011).

The data show that these communities had some common ground related to first language, yet the segregation by physical barriers was a cause for concern. The brick factory site is large, creating a permanent barrier that is reinforced by the two rivers running on either side.

To the south, the prominent Stormvoël Road creates yet another barrier between Eersterust and Silvertondale, which is predominantly an industrial area. An added result of Apartheid era spatial planning, and the decades of segregation, is the polarisation of the so called ethnic/racial groups who live in isolation from one another.

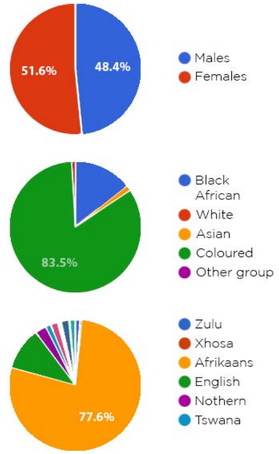


Fig 3.3 Population Statistics Of Eersterust in 2011 (Population Statistics, 2011)

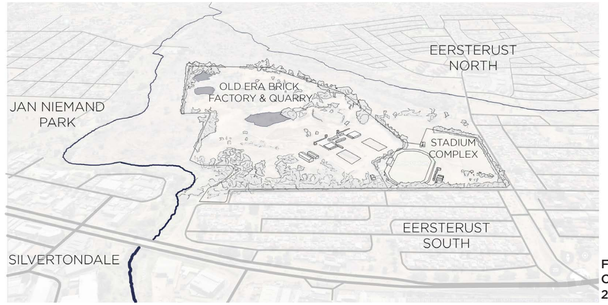


Fig 3.4 Current Site Condition (Author, 2018)

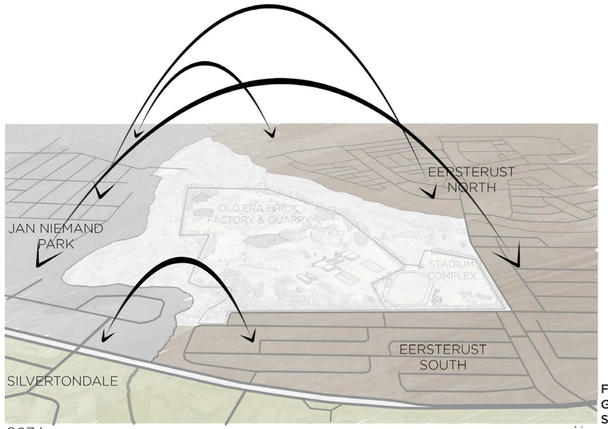


Fig 3.5 Political/ Governmental Stigma (Author, 2018)

Within Eersterust itself there is segregation between the north and south by the Rietspruit river. Figure 3.5 illustrates the three segregated communities around the site where their- cultural, religious and political differences are reinforced by physical and natural barriers.

03.5 ECONOMIC/ ENVIRONMENTAL STIGMA

Habermas links the legitimacy of a governmental system to a stable economic system. In an industrial setting the economic system is often related to production (Habermas, 1978:6 & 69).

This fits in perfectly with the productive history of the site, that gave many families in the area jobs and security, however since the factory has ceased production it has left an economic void. This void is exacerbated by the environmental scar that has been by the quarry. The perception of post-industrial sites are generally negative, especially one that has been abandoned. The current owners are exacerbating the situation using the site as an excavated soil and building rubble dump.

The stadium itself is completely underutilised and the combination of the two components creates an even worse perception of the site.

For the economic system to stabilise a new program that creates **economic opportunity** and is not decremental to the landscape must be introduced.

03.6 SOCIAL STIGMA

Habermas refers to a socially cohesive system as a *lebenswelt* or a lifeworld. Socio-cultural groups often have shared beliefs values and agreed upon rules of operation (Habermas, 1978:6 & 16).

Eersterust is by no means the most impoverished community in Pretoria, yet there is a clear difference between Jan Niemand park and Eersterust. Within Eersterust there are further differences in income between the south and north. The poorer members of the community live in the older southern part of Eersterust and the more affluent members of the community live to the north, up the hill towards the newer areas of the suburb.

This creates conflicting world-views with little shared beliefs values and agreed upon rules of operation. The rather large derelict site creates a breeding ground for unfavourable circumstances, like substance abuse. While walking on the stadium grounds, the author encountered a couple

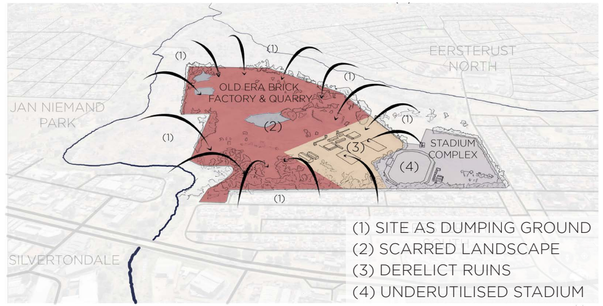


Fig 3.6 Environmental Stigma (Author, 2018)

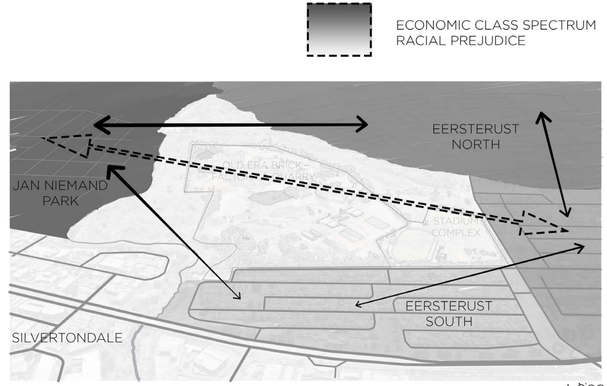


Fig 3.7 Social Stigma (Author, 2018)

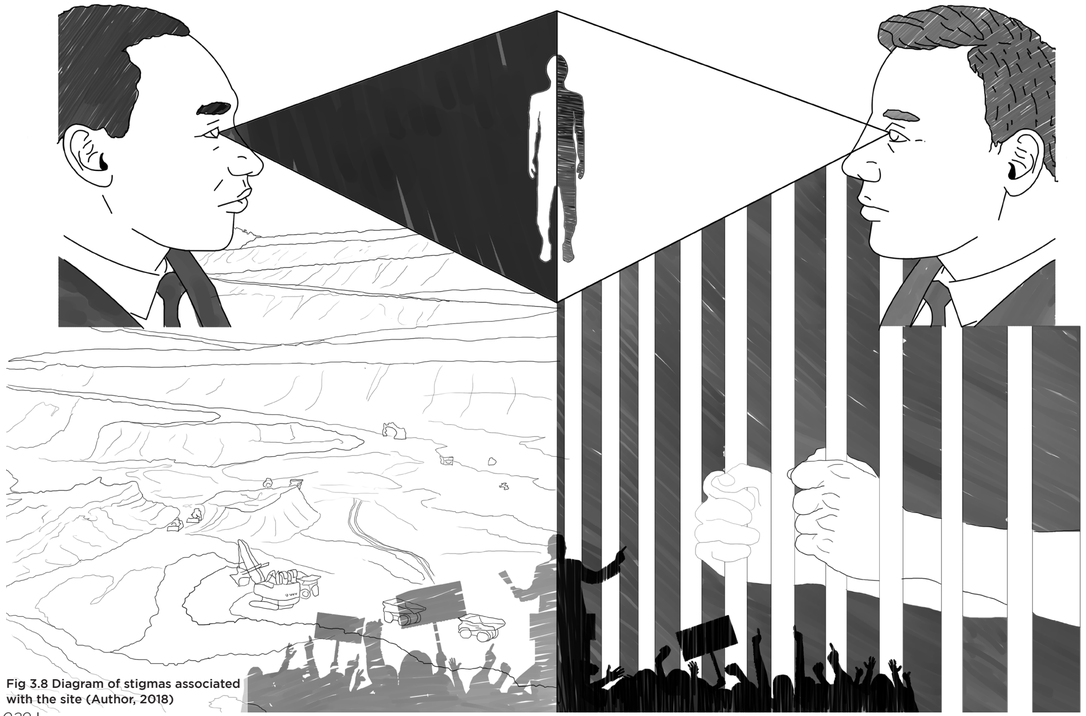


Fig 3.8 Diagram of stigmas associated with the site (Author, 2018)

of teens using drugs in broad daylight. Crime is a major problem in the area as multiple local newspaper articles and recent service delivery protests indicate.

Thus the picture of Eersterust being put out by the media reinforces preconceived ideas of the area by outside communities. The gross **lack of interaction** between these communities and a **lack of activity** on the site hampers the creation of a so called *lebenswelt*.

03.7 STRATEGIES

So what can be done to alleviate these stigmas and create successful social structures?

As the previous section alluded to, governmental, economic and social systems need to be stabilised to give them legitimacy, through common goals and shared beliefs.

In order to do that, this dissertation will use various general stigma alleviation strategies and attempt to interpret them into spatial solutions. Relevant sources were consulted, synthesized and reinterpreted to alleviate stigmas of place based on the various stigma-alleviating strategies that exist in a general sense:

- **Encourage communication & interaction** between the opposing communities.
- **Education**, learning from and about each other.
- **Create shared spaces**, where social interaction can take place.
- **Facilitate empowerment**, through education, skills development and equal opportunity.
- **Build a community,** where competition and interaction can happen.

(Mend the Mind. 2018, Socialist Health Association. 2018, The Mighty. 2018, Government of Western Australia. 2009, Flanagan, et al, 2017:5-8).

03.8 HERITAGE & CULTURAL LANDSCAPES

The first Era brick factory building was built between the late 1950's and the mid-1960's and, the second factory building was built during the period 1976-1980's. Thus, several of the buildings on site are actually more than 60 years old. Unfortunately the oldest factory building was decommissioned, used as storage and finally demolished by 2014.

Because the majority of the buildings on site were less than 60 years and were not protected by any heritage charter, this undoubtedly contributed to the demolition of the factory buildings.

However, this dissertation's argument is that the site has significance through what it meant to the community by providing jobs and skills. If one extends that significance to the adjacent sports stadium, it becomes clear that there is still value in the post-industrial site that is worthy of protection and re-interpretation.

As may be seen in Figure 3.1, the existing leftover physical fabric does have a certain quality that evokes a sense of intrigue. As mentioned above, this contributes to the overall *genus loci* of the site and, the argument can be made that the leftover fabric presents an opportunity for re-use that hints at a possible architectural language.

The two main charters used in this argument are the *Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas and the Nizhny Tagil Charter for the Industrial Heritage.*

The following is a summary and synthesis of the relevant theoretical information applicable to the site in question and the approaches which this dissertation used in the design. The Xi'an Declaration is focused on general heritage buildings and landscapes, while the Nizhny Tagil Charter concentrates on industrial heritage.

Fig 3.9 Existing ruins of the old Era Brick Factory (Author, 2018)

- One must first **acknowledge the significance of the setting**, particularly for post-industrial sites-, as even their environmental leftovers can be considered for their archaeological and ecological value. The site has significance from a functional perspective, if not particularly from an architectural perspective. The site under consideration was used as a quarry and brick factory, even before the first building was built-, and before the establishment of Eersterust itself (Xi'an 2005:2).

- Secondly, the charter calls for an **understanding of the history, evolution and character of the setting** through diverse forms of documentation, literature, interviews and media. This dissertation has mapped the development and subsequent demise of the Era brick factory and its buildings, as well as the ill-proposed future plans by developers (Nizhny Tagil, 2003:2; Xi'an, 2005:2).

- Thirdly, the charter dictates that any development on such a site should **positively re-interpret and contribute to the character** that makes the site significant. With sites that are at risk, appropriate measures should be implemented to reduce the risk and **assist interventions that aim to repair or re-use the site.** In other words an intervention on the Era brick factory location should protect the most important buildings left on site and utilise the productive nature of what is left without losing this significance (Nizhny Tagil, 2003:2; Xi'an, 2005:3).

- Fourthly, the historic significance should **not prevent or obstruct development** from happening on site as long as it is handled with respect. New uses should, respect, maintain, and interpret the existing fabric (Nizhny Tagil, 2003:3; Xi'an, 2005:3).

- Fifth, the charters calls for an intervention to **engage with local communities** and stakeholders to give the site a **new significance**, this is vital to protect and conserve its heritage (Nizhny Tagil, 2003:3; Xi'an, 2005:4).

- Lastly, **adaptation and re-use** should be reinforced by contributing to **sustainable development**. Industrial heritage can have an important role in **economic regeneration**, if such a re-use creates new employment opportunities (Nizhny Tagil, 2003:3).

From the charters discussed above, this dissertation will build on and interpreted the existing built fabric of the Era brick factory site. To be more specific, a new intervention must consider the various layers on site as palimpsest, to inform the design.

One of the most important documents on the subject matter is the article by R., Machado, entitled *Toward a Theory of Remodelling, Old buildings as Palimpsest, 1978.*

Machado can be used in the following ways as a strategy with which to develop a design:

- **The building as palimpsest** – The most obvious approach this dissertation took was to use the old layers of the site as a design informant for the new architecture (Machado, 1976:46). Specifically the footprint of the old factory and the leftover concrete work, as seen in Figure 3.1, was reused for the design.

- **Remodelling as rewriting** – Changing the features of a building to suit its new functions. This calls for innovation and sensitivity (Machado, 1976:46).
Because the original factory does not exist anymore, the new architecture references its industrial nature, but is not be a carbon copy of the old buildings.

- **Re-funtionalising** – Or, adaptive re-use, is an approach that is an attempt to add new functions to the left over built fabric (Machado, 1976:48).
The remaining functional parts of the old factory – the drainage and drying ducts (fig 3.1), the old offices, various workshops and sheds, were adapted for new functions.

- **As a repository** – the past layers of the site are a resource to draw from to inform design (Machado, 1976:48).
The dormant potential of the stadium immediately beside the site, add to the sites overall value and layers that informed the new programme and design

- **The past itself as the materia**l – The past layers act as a material to use or to build on top of, in a new interpretation of the site or building (Machado, 1976:49). It was hoped that a quite literal translation of this strategy- the old bricks laying scattered throughout the site, left over ruins, bricks used as paving and the like could be retrieved and used as building materials.
This again pays homage to the old brick buildings that were present on site and the functional history of the factory.

- **Type Transformation** – The type of a building can be changed to suit new conditions (Machado, 1976:49). Obviously, while social, environmental and economic conditions differ drastically from the era in which the old factory was conceived it is expected that the programme considers contemporary issues. Thus, a sustainable building and programme in the broader sense was necessary.

The final strategies and approaches from both the charter and Machado sections above, allude to an environmentally considerate design response, one that is sustainable from a environmental, economical and social perspective. This will be discussed and substantiated with other relevant architectural theories in the following section.

Fig 3.10 Existing ruins of the old Era Brick Factory (Author, 2018)

Fig 3.11 Existing ruins of the old Era Brick Factory (Author, 2018)

03.9 ENVIRONMENT POTENTIAL

From an ecological response position, this dissertation concentrated on regenerative design as a framework to respond to the environment potential of the site. Mostly due to the site's historic significance and scared landscape.

The following approaches support the design decisions taken in this dissertation. The approaches adopted were set out by P. Mang and B. Reed in their paper titled; *Designing from Place - A Regenerative Framework and Methodology, 2012.*

- "Organize activities on site that continuously **feed and are fed by the living systems** within which they occur." Thus man as part of nature, not above nature. This of course refers to the growing of fresh produce, capture and use of water, and lastly harnessing the sun's energy for electricity generation and day lighting (Mang & Reed, 2012:28,31).

- From a **regeneration potential** standpoint, the design has to take **maintenance and operation** in to consideration (Mang & Reed, 2012:27).

- "Consider **permaculture** as a design informant, in other words, shifting from dominance to a close relationship with nature, through mutually beneficial interactions. Weave the human and natural together into a dynamic whole" (Mang & Reed, 2012:29,31).

- The notion of story of place, was referred to in section 03.4 above as well, that by creating a new significance one creates an incentive for the community to take ownership of a place. In this way they are more likely to take care and maintain such a facility (Mang & Reed, 2012:30).

- When looking at a new design it is imperative that one considers the **potential** it has from a larger perspective, specifically how it can integrate into and enhance the existing systems in and around the site. This, in turn, will contribute to the viability and vitality of a project (Mang & Reed, 2012:30).

- As stipulated in section 03.4 above, by **engaging with the community and relevant stakeholders** the project will have greater significance, making a stronger case for it's very existence (Mang & Reed, 2012:31).

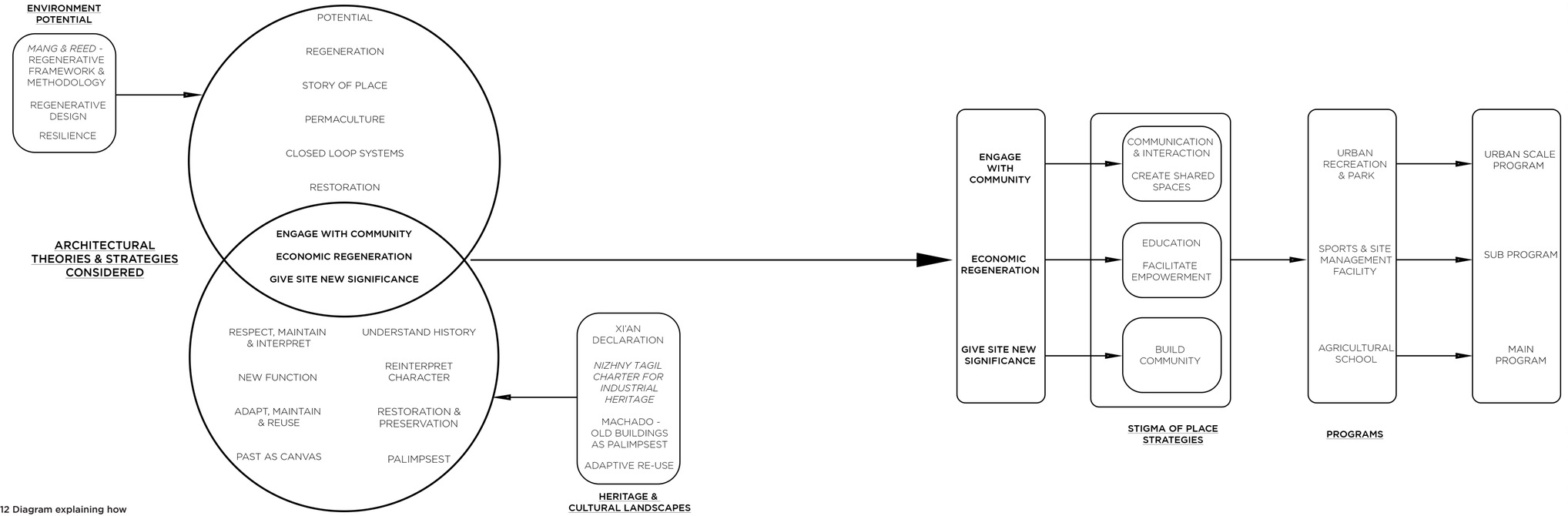


Fig 3.12 Diagram explaining how stigma strategies and architecture theory can be merged (Author, 2018)

03.10 CONCLUSION

From the diagram in Figure 3.13, it is evident that there is a confluence of ideas from the *Heritage and Cultural Landscapes and Environment Potential* discourses. This confluence of these ideas was the focus of this dissertation as the main theoretical drivers and the rest as supportive ideas to influence and strengthen the design. The most important notions being:

- **Engagement with the community**
- **Economic regeneration**
- **Giving the site a new significance**

This represents what has to be done, the aspects that are related to stigma of place strategies represents how it must be done. They can be grouped together in the following way:

- **Communication & interaction + Create shared spaces**
- **Education + Facilitate empowerment**
- **Build a community**

By engaging with the community this dissertation intend to consider the needs of these people, by creating the opportunity for communication and interaction between the neighbouring communities, while facilitating a building and landscape that can be used by both.

Fig 3.13 Existing ruins of the old Era Brick Factory (Author, 2018)

To generate economic growth it is vital to educate and facilitate empowerment for both communities, in other words the people need to learn new skills, which can be used to generate an income.

Perhaps the most important is to give the site a new significance, without the community taking ownership of the new intervention it will fail. The intention is to make the new facility a place where the different communities can come together.

The premise that makes this dissertation unique, is that it argues that architecture can be a viable solution to solve stigmas associated with place. By combining theories on stigma of place and merging those with architectural theory this dissertation intended to find a program and architecture that alleviates stigmas, which respects the site's history/heritage and considers the environment when making design decisions. The three solutions above were approached and addressed on different scales, as follows:

- **Engagement with the community: Urban vision scale**
- **Economic regeneration: Site vision & programmatic scale**
- **Give site new significance: Architectural scale**

The specific programs and how they relate to the theories will be discussed in the next chapter.

03.11 ENDNOTES

Various definitions of a stigma: (See 03.2)
A mark of disgrace associated with a particular circumstance, quality, or person (Oxford Dictionaries, 2018).

A strong feeling of disapproval that most people in a society have about something, especially when this is unfair (Cambridge Dictionary, 2018).

If something has a stigma attached to it, people think it is something to be ashamed of (Collins Dictionary, 2018).

Stigma is a perceived negative attribute that causes someone to devalue or think less of the whole person. (Gluck, 2018).

Fig 4.1 Existing ruins of the old Era Brick Factory (Author, 2018)

CHAPTER

04

reactions

Fig 4.2 Existing ruins of the old Era Brick Factory (Author, 2018)

04.1 INTRODUCTION

The various forms of site analysis and theoretical explorations led this researcher to believe that- a suitable intervention on the site would have more value for the community than a housing development, would serve the school pupils in the community, promotes economic re-generation and provide the site with a new significance.

The initiative taken by the Rosema brick group (until they sold the site to Labucon) had been to rehabilitate the site to a usable state. The new owners are however daily bringing alien soil and other natural material to the site to "fill" the excavated clay quarry. Based on Chapter 3, this chapter explores the following 3 objectives:

- **Engagement with the community: Urban vision scale**
- **Economic regeneration: Site vision & programmatic scale**
- **Give site new significance: Architectural scale**

04.2 URBAN VISION

The first objective is to create an urban vision that engages with the community.

HOUSING

One of the most important challenges facing the ever expanding eastern sector of Pretoria is the need for affordable housing. It comes as no surprise that developers are suggesting converting the site into housing units, this falls in-line with the *Tshwane Regional Spatial Development Framework* (RSDF). As seen in the mapping exercise in Figure 2.45, there is more than enough vacant land to develop housing in the settlements around the site. This dissertation instead suggests that the vacant land surrounding the site be developed for housing- as depicted in dark grey in Figure 4.3.

THE ROAD

The diagram represented by Figure 2.45 clearly illustrates how the site forms quite a prominent barrier, with the two rivers forming a natural border between the suburbs of Eersterust and Jan Niemand Park. With many people, especially school children walking through rough and unsafe terrain to save time.

The rivers also present themselves as having the capacity to be connection. The south-east corner of Figure 2.46, the area around the Rietspruit River has been cleared, is maintained and has many safe roads and pedestrian-bridges.

Thus, the first infrastructural proposal this dissertation makes, is to apply the same road and bridge system along the Rietspruit river, connecting the schools in the area with one another, thus formalising the existing footpath running through the north end of the site (see yellow line representing the new roads in figure 4.4).

By introducing the new road, the two neighbouring communities could finally be connected in a safer manner. In addition, the urban vision also proposes adequate cycle and foot paths to be built along this new route.

Eersterust faces a number of challenges with schools in the area, not necessarily having all the necessary sport and recreation facilities available on their own premises; - thus it is vital that the said new road connects to the existing stadium complex. The dual benefit will be to help the schools with their lack of infrastructure and also to give more users to access the underutilised stadium.

THE STADIUM

The stadium holds great potential to bring users on site. One user base would be school children coming for practice- while another way to expand the user base, would be to extend the number of types sports that are practiced on site- bay investing in more fields and other related infrastructure. The stadium field itself is large enough to incorporate rugby and athletics. The "B" and "C" fields are suitable for rugby and cricket. The unused spaces could cater for new tennis courts and hockey fields and so forth (See Figure 4.4).

THE QUARRY

The old excavated quarry is currently used a soil dump and- as such it is grossly underutilised and in need of rehabilitation. This dissertation suggests referring to the research undertaken by a landscape architecture student, Bridgette Botha, in her 2015 dissertation, titled "Small Scale Rivers, Large Scale Impact". In it, Botha sought to manipulate the contours of the site using the influx of new soil (see Chapter 2) to divert the two rivers into the interior of the site to flow through and into the existing ponds (see Figures 4.4 & 4.5).

Fig 4.3 Master Plan, designed by Bridgette Botha (Botha, 2015)

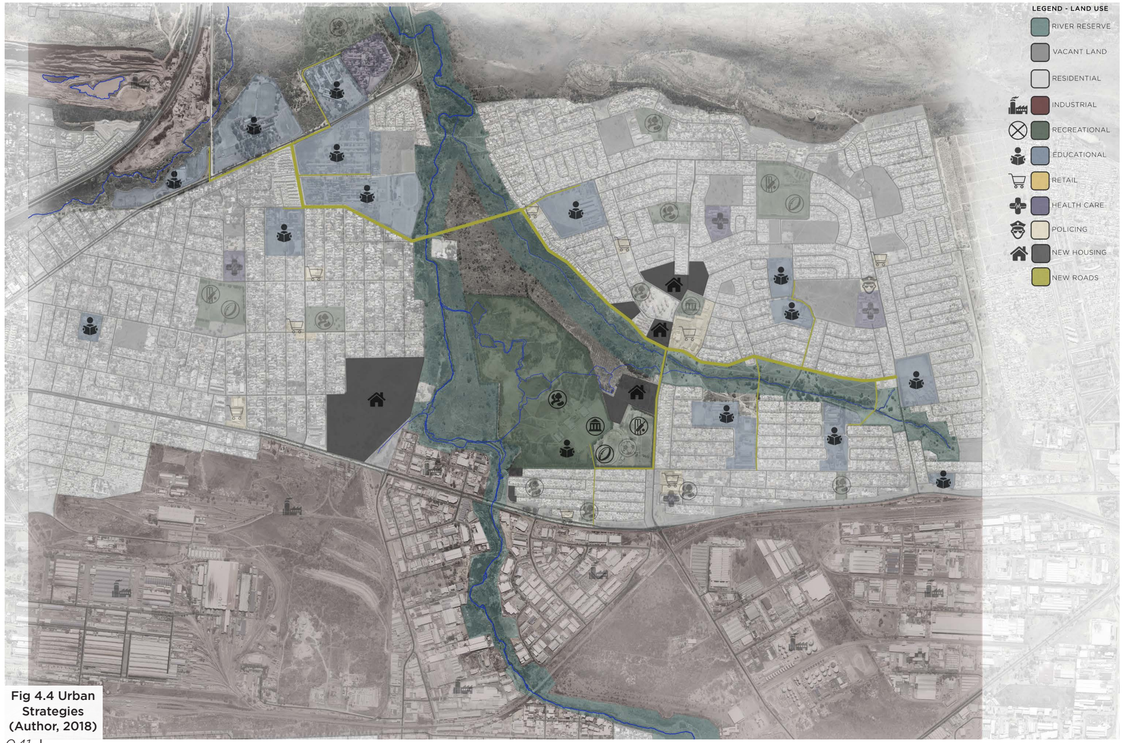


Fig 4.4 Urban Strategies (Author, 2018)

Her design incorporated water purification through the creation of a wetland and board-walks and paths in and around the site. This forms part of the delimitations set out for this dissertation- Botha's focus of a recreational park, was expanded to include the ruins of the old factory and the existing stadium east of the site.

Botha's work demonstrates a drive to rehabilitate the scarred landscape left by the brick factory and its clay quarry.

THE URBAN FARM & RECREATION PARK

There is an opportunity for this dissertation to address the- current land ownership and land use question being debated in the South African media and political circles. By leasing land parcels to community members to grow crops to support themselves- (see Figure 4.5)

The crops will be irrigated by the rivers and retention ponds on site- while the excess crops could be sold on the new market place proposed in this dissertation.

The combination of Botha's dissertation and the new, proposed programmes allows for the creation of an urban farm and recreational park. The park would have multiple access points from both the Eersterust and Jan Niemand Park sides.

Ablution blocks and food stalls would be provided so that recreational activities like mountain-biking, trail running and the like would be feasible.

04.3 SITE VISION + PROGRAMS

The second objective explores the provision of a programme to promote economic regeneration.

THE AGRICULTURAL SCHOOL

Eersterust is a low to medium income community, and therefore it is imperative that the programme must contribute to the industrial heritage, mitigate the environmental degradation and contribute to the greater community so that it may bear the fruits of such an initiative.

The main programme suggested by this dissertation concerns establishing an agricultural school to teach community members and school children how to subsistence farm. The school is to be built on the footprint of the eastern factory building, closest to the stadium. Functions include experimental farming, green-houses, cafeterias, a multi-use hall, work areas and locker rooms. The classrooms are to be used by agriculture school pupils, after school pupils and adults attending night school to finish their high school certificates.

SPORTS MANAGEMENT FACILITY

The sub-program of this dissertation is the creation of a facility to support and manage the newly revamped and expanded sports stadium. The building will be located east of the main school building.

Functions include a gym, food stalls, locker rooms, offices, team meeting rooms and medical professionals' consultation rooms (physiotherapist, biokineticist etc.).

VOCATIONAL SCHOOL

To tie in with the educational aspect of the main programme, a vocational school is proposed for the old factory footprint which lies to the west of the main school building. This building design is not included in this dissertation, it is just suggested and shown as a mass on the drawings to follow.

A vocational school fits perfectly into the site programmes and proposal, as it keeps to the productive nature of both the old functions of the site and the new proposed programmes. Next to the vocational school a building to house some over-night rooms for teams visiting the stadium from a distant location is proposed.

A market place is proposed to be established under this building, where goods manufactured in the school and the farm land on site can be sold to the public.

Fig 4.5 Urban Design (Author, 2018)

LEFTOVER BUILDINGS

The miscellaneous buildings that are relatively intact in comparison to the rest of the factory- would be restored and reused as formalised shops and storage spaces for recreational users of the site.

04.4 THE CLIENTS

The last objective of this dissertation is to give the site a new significance. As the buildings themselves will be made from reclaimed brick found on site and, built on the old footprints in an attempt to breathe new life into the existing infrastructure and give the site a new more sustainable program, hopefully this will give the site new significance.

The sum of all the parts of this proposal is what will give the site a much greater significance than it has now, or than what is currently being proposed by developers.

The clients in this proposal would be firstly, be the primary user base, school children, athletes, supporters (spectators) and able-bodied workers. To fund such a scheme the previous owners (Rosema Bricks), the current owners (Labucon), the schools and local government would all have to contribute to ultimately rehabilitate and re-develop the site.

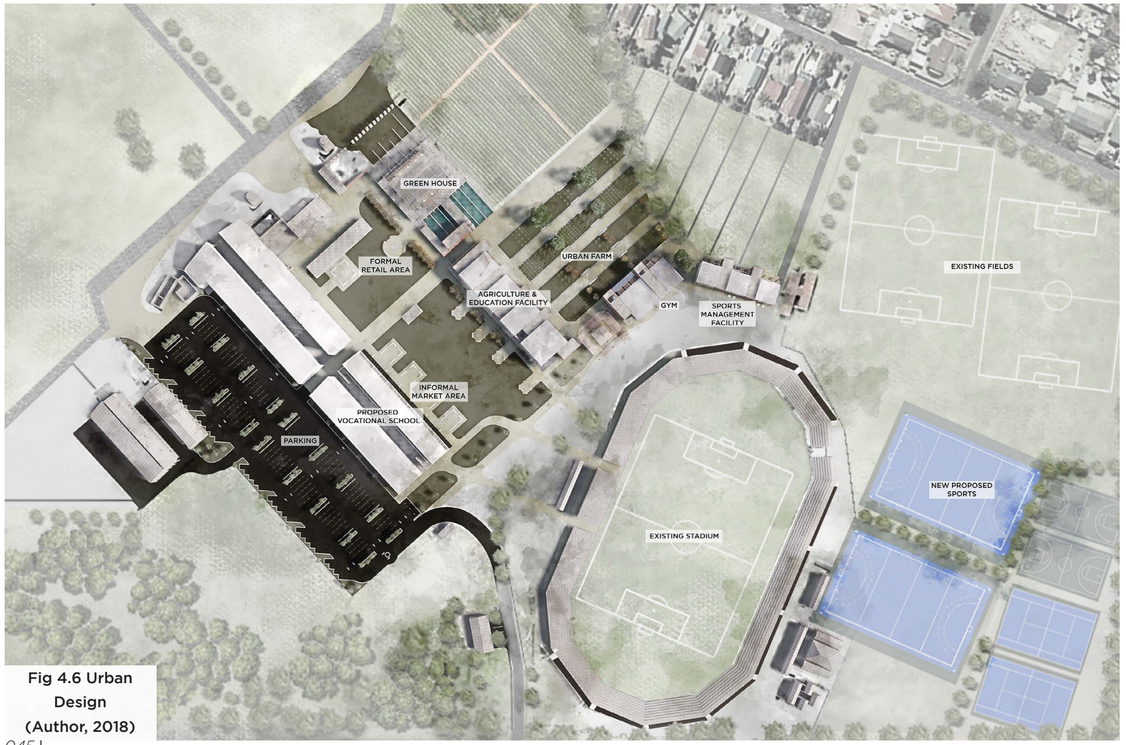


Fig 4.6 Urban Design (Author, 2018)

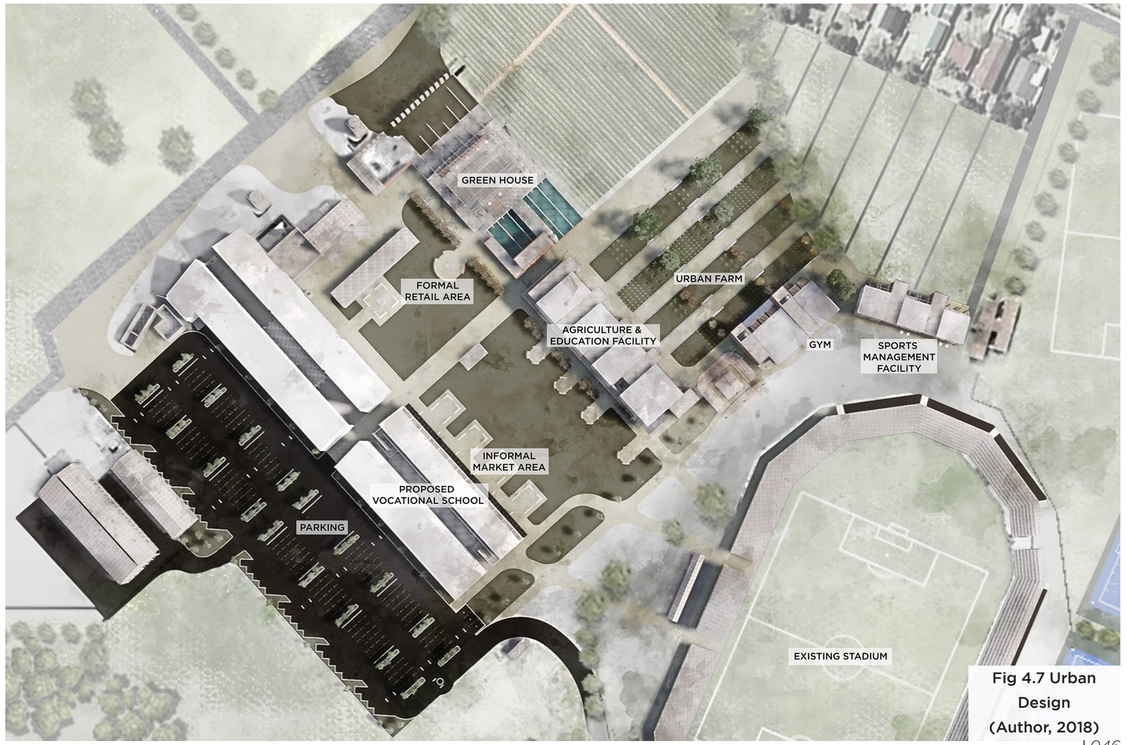


Fig 4.7 Urban Design (Author, 2018)

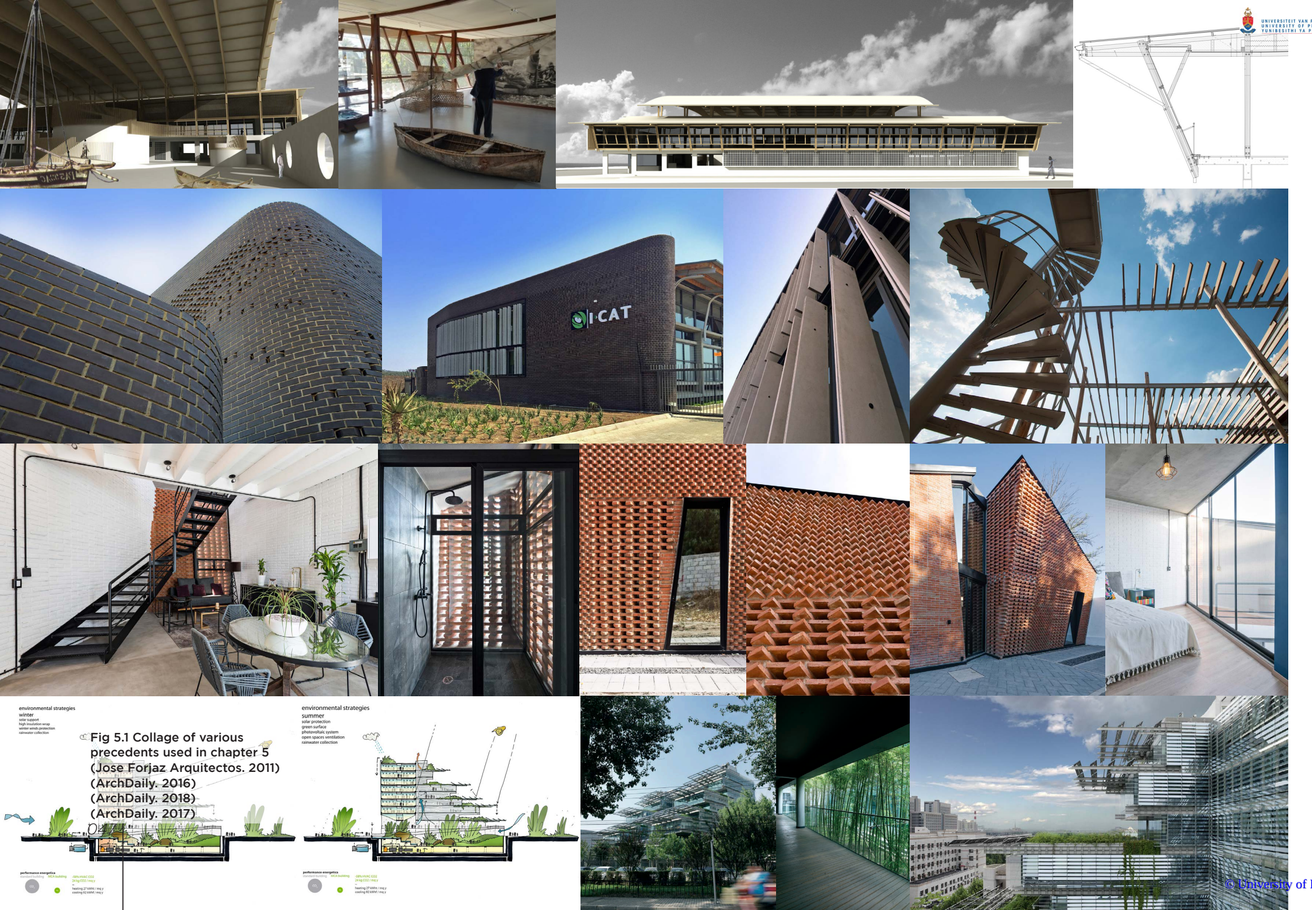


Fig 5.1 Collage of various precedents used in chapter 5
(Jose Forjaz Arquitectos. 2011)
(ArchDaily. 2016)
(ArchDaily. 2018)
(ArchDaily. 2017)

CHAPTER

05

precedents

Fig 5.2 Fisheries museum - Rendering of the museum (Jose Forjaz Arquitectos. 2011)

Fig 5.3 Fisheries museum - Street Elevation (Jose Forjaz Arquitectos. 2011)

Fig 5.4 (L) & Fig 5.5 (R) Fisheries museum - Details (Jose Forjaz Arquitectos. 2011)

05.1 INTRODUCTION

The four buildings described in this chapter were used as informants for the contextual, the design/formal language, functional and technological development phases of the dissertation.

05.2 FISHERIES MUSEUM BY JOSE FORJAZ CONTEXTUAL PRECEDENT

The fisheries museum is an excellent example of an African architecture that pays homage to the **context's industrial heritage.** Located in the harbour precinct of Maputo, Mozambique, the building was a competition entry by the Mozambican architect, Jose Forjaz. The museum was built on a very important public square in a historic location, on a very limited budget, as such, and they therefore resorted to building it in phases (Jose Forjaz Arquitectos, 2011).

Functionally the museum provides spaces to view examples of boats and fishing tools used in Mozambican waters. Great care was taken to make economic use of materials, both in the construction process and for future maintenance (Jose Forjaz Arquitectos, 2011).

Why is it important? Attention to proportions, interesting approach to thresholds, use of materials and Forjaz's fundamental understanding of the subject matter he was referencing. The museum is located in an industrial setting, with a particular design language that Forjaz has referenced without it being a cliché.

The architectural language is derived from ship building, yet it does not look like a boat, that would be too obvious, the technology used is derived from boat building conventions, particularly in the shape of its roofs. The ground floor is much more solid (below a boat deck) while the first floor is much lighter and open (above a boat deck).

The same care and understanding to the site's industrial history and context would be applied to the Era brick factory site, where the industrial nature of the old factory will be referenced in the creation of the new architecture, without being a mere carbon copy of the old buildings.

The bricks that will be used in the proposed intervention, were found on site, were made on the site and from the very soil on which the new building would be built.

Fig 5.6 Fisheries museum - Street Elevation Render (Jose Forjaz Arquitectos. 2011)

Fig 5.7 I-CAT Offices and Warehouse - Courtyard Facade (ArchDaily. 2016)

Fig 5.8 I-CAT Offices and Warehouse - Pergola Detail (ArchDaily. 2016)

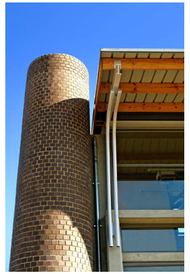


Fig 5.9 (Left) & Fig 5.10 (Right) I-CAT Offices and Warehouse - Details (ArchDaily. 2016)

05.3 I-CAT OFFICES & WAREHOUSE BY EARTHWORLD ARCHITECTS & INTERIORS

TECHNOLOGICAL PRECEDENT

The main concept and design driver for this building was to create a flagship building was based on ecologically sustainable principles, its focus on ecological-, social- and economic sustainability. (ArchDaily, 2016).

The building utilises passive systems like orientation, shading, natural ventilation and lighting, with the main courtyard seen in Figures 5.7 and 5.9, being orientated to the south, with day lighting being a priority (ArchDaily, 2016).

Furthermore, the northern façade was designed to allow for summer shading and winter heat gain. A photo-voltaic system was implemented to supplement the building's electricity requirements. Runoff from the buildings' roofs is collected for use in the building (ArchDaily, 2016).

The same economic principles that guided Forjaz in the previous example were used in the material choices for the I-Cat building, materials and finishes were used to keep maintenance to a minimum. Solid face brick walls were used to great effect as a contrasting element to the "softer" elements as the glass, steel and pergola structures.

From the above mentioned, this dissertation took its inspiration from the use of solid face brick walls as a contrasting element to the softer areas of the building. The attempt to connect the interior to the exterior, through the use of transparent façades and pergolas to soften the transition or thresholds of this building, is of particular interest.

Vegetation and permeable paving were also used to great effect to soften this threshold. The new proposed building would implement the same sustainable principals and use of materials to achieve a similar result.

Fig 5.11 I-CAT Offices and Warehouse - Brick Facade (ArchDaily. 2016)

Fig 5.12 Saint Peter House - Street Elevation (ArchDaily. 2018)

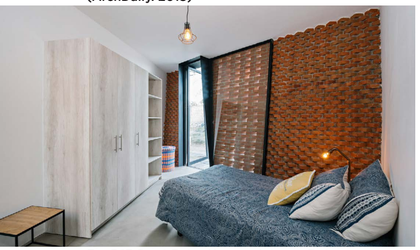


Fig 5.13 Saint Peter House - Interior Detail (ArchDaily. 2018)

Fig 5.14 (Left) & Fig 5.15 (Right) Saint Peter House - Brise Soleil Details (ArchDaily. 2018)

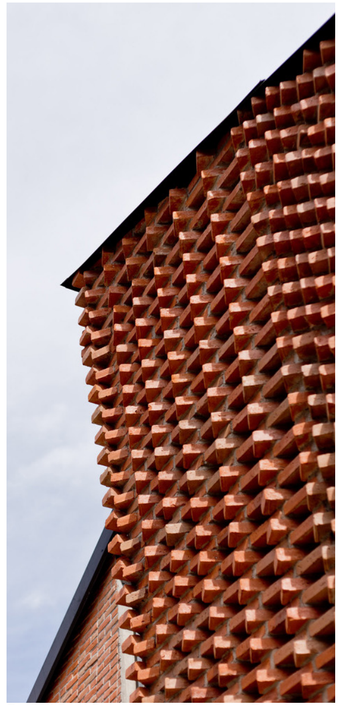


Fig 5.16 Saint Peter House - Brise Soleil Elevation Detail (ArchDaily. 2018)

05.4 SAINT PETER HOUSE BY PROYECTO CAFEÍNA & ESTUDIO TECALLI

FORMAL PRECEDENT

This house was constructed from locally sourced red face bricks. The house showcases a handmade quality with the use of brise soleil and the dramatic geometry of the façades. The geometry allows for interesting openings that provide day lighting, ventilation and the framing of appropriate views.

The abnormal footprint of the building lends itself to an open plan layout on the ground floor. The first floor contains two bedrooms and a roof garden. All these spaces are built around an internal courtyard to help with ventilation and day lighting.

The windows seen in Figure 5.12 and 5.14 are particularly interesting as waterproofing them can be challenging when implementing *brise soleil* in interior to exterior spaces.

05.5 SINO-ITALIAN ECOLOGICAL & ENERGY EFFICIENT BUILDING BY MARIO CUCINELLA ARCHITECTS

FUNCTIONAL PRECEDENT

SIEEB is located at the Tsinghua University in Beijing and houses the *Sino-Italian Centre of Education, Training and Research for the protection of the environment and energy conservation.* Naturally, the building would be designed with sustainability in mind. The building integrates passive and active systems to control day lighting, temperature and fresh air conditions.

This building, like the two previous examples, is also designed around a central courtyard with public spaces that have views on to a garden. The building is orientated to a north-south axis, taking cold winter winds and a transparent southern façade into consideration.

The functional spaces, which include offices and labs, on the upper levels have stepped gardens covered by solar-panels that serve as sun shields, pergolas and electricity generators.

The important aspects of this building are, the innovative use of solar panels that serve more than one purpose, the landscape being pulled into the building and the systems that cools and ventilates the building.

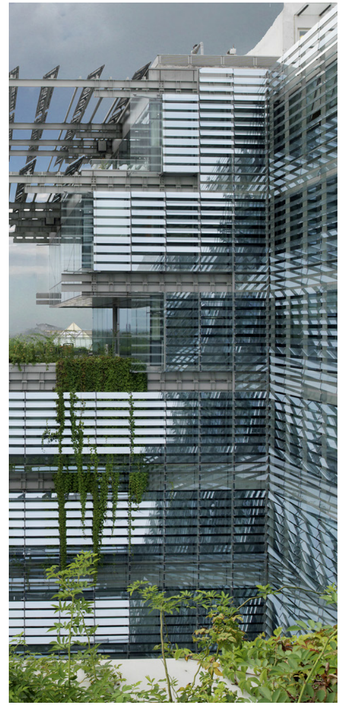


Fig 5.17 SIEEB - Functional Elevation (ArchDaily. 2017)

Fig 5.18 SIEEB - Functional Elevation (ArchDaily. 2017)

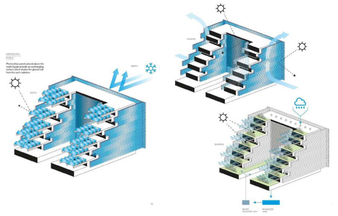
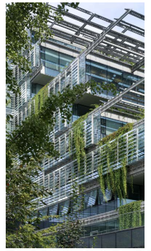


Fig 5.19 SIEEB - Systems diagram (ArchDaily. 2017)



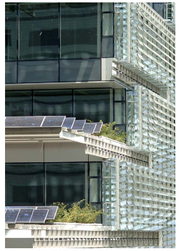


Fig 5.20 (Left) & Fig 5.21 (Right) SIEEB Louvre Details - (ArchDaily. 2017)

Fig 6.1 Rendering of seating area and walkway in front of a classroom (Author, October 2018)

CHAPTER

06

concepts +
design development

06.1 PROJECT INTENTION

The intention of this dissertation is to create a model to deal with stigmas associated with a post-industrial site through the creation of architecture, with a specific focus on rehabilitating the environmental degradation, preserving the heritage and mediating the segregation of communities. The aim of the program and architecture proposed for the site is to make a contribution to the local context, making the intervention contextually driven.

As the Mozambican architect, Jose Forjaz, has suggested, architects have a responsibility to design public buildings that create social spaces, are environmentally sustainable and that contribute to the social integrity of the city (Ribeiro, 2011: 12).

This dissertation intends to adhere to the principles set out by Forjaz, which are very similar to the approaches discussed in the theory section of this document (see chapter 3). Expanding on Forjaz's principles of design, it is evident that he has an affinity towards contextual architecture that responds to the social and economic needs of the community. He particularly highlights the importance of agricultural production within the confines of the city, as international examples are not necessarily relevant to the African context (Ribeiro, 2011: 41-42). Frorjaz highlights that we need to create an architecture that creates equal opportunities for all who use it, the time for careless architect is over. (Ribeiro, 2011:52).

The intervention will consist of four separate buildings each with a similar design language, yet each will have a unique response to solar angles, climate and program. The fundamental starting point of the concept was re-using the old footprints and leftover fabric of the now demolished factory.

06.2 CONTEXTUAL INTENTIONS

To contextualise the project in its post-industrial setting it is important to remember the value of the existing heritage fabric and the responsibility to reinterpret the fabric to give it value once again. This dissertation deems it important to continue the industrial nature of the site in a new and responsible manner. The landscape presents itself as an opportunity, the natural resources available on site include rivers, large open spaces with fertile soil and existing fauna growing on site. Because the landscape was so scarred by the quarry this dissertation intends to work with the current owners (Labucon) to use the imported soil in a productive manner. Purposefully manipulating and "fixing" the landscape through the imported daily loads of soil, in this way the new farmland and urban park can be created.

06.3 PROGRAMMATIC INTENTIONS

The program facilitates an architecture that engages with the community, that paves the way for economic regeneration and an architecture that will give the site a new significance. The agricultural school will create a source of valuable knowledge and economic regeneration where pupils and users from the surrounding communities can learn together.

The utilisation of the existing programmatic opportunities on site is vital to strengthen a new intervention, such as the value of the existing stadium complex, next to the Era brick factory. The value something has, can be quantified by the possibilities it creates. Thus the new sports and management facility will strengthen both the stadium complex and the new proposed agricultural school.

By having an established public space in the context of the site, adds to latent potential of the new intervention. Sport has the power to bring communities together, and can form new bonds between people. This can then foster new career paths and other economic opportunities

06.4 FORMAL INTENTIONS

The intervention sought to understand the industrial buildings of the sites past and the stadium complex and using the most important aspects of this typology in the new interpretation of a sustainable industrial building. The proposed programs could run their course in time and as such the building is intended to be easy to dismantle and re-use the materials. The school building has large enough spaces that they can in future be re-purposed, the only parts that would be unlikely to be reprogrammed are the brick service core spaces as they are built in smaller and rigid structures.

The following section will expand on the process and development of the final architectural concept.

06.5 INITIAL CONCEPT: MARCH

As seen in figures 6.2-6.5 on pages 55 and 56, the first inclination was to frame certain parts of the site, particularly the footprints of the old factory, located south of the leftover concrete and brick structures where bricks were dried.

Interaction between the existing stadium complex and the new building was paramount in this iteration. With axes being highlighted coming from the stadium, main entrance into the site, into the new recreational park and between the new proposed buildings. An over reliance on framing important areas, covering and surrounding the leftover fabric was unfortunately limiting.

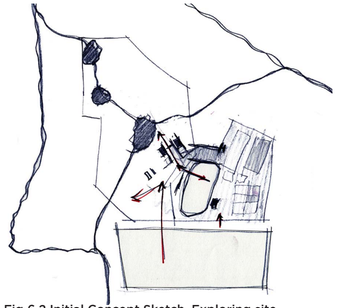


Fig 6.2 Initial Concept Sketch, Exploring site possibilities (Author, March 2018)

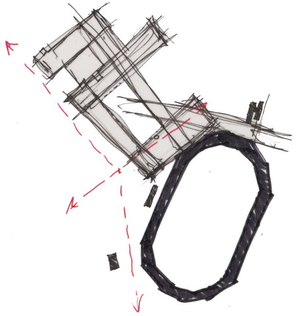


Fig 6.3 Initial Concept Sketch, Exploring site possibilities, more related to the stadium (Author, March 2018)

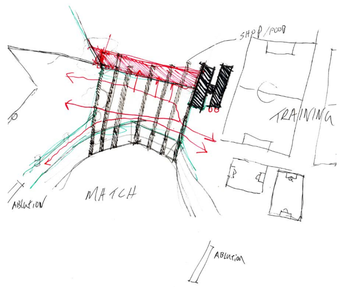


Fig 6.4 Initial Concept Sketch, Exploring site possibilities between the stadium and factory site (Author, March 2018)

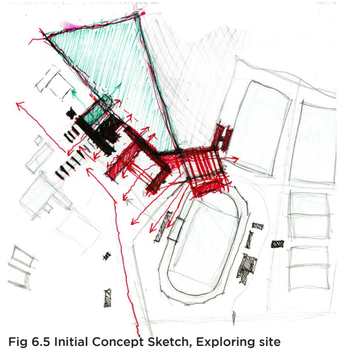


Fig 6.5 Initial Concept Sketch, Exploring site possibilities between the stadium and factory site (Author, March 2018)

Fig 6.6 First Re-development Sketch (Author, 2018)

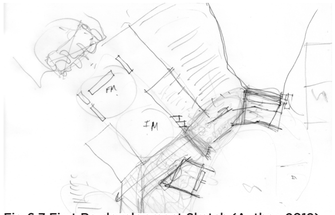


Fig 6.7 First Re-development Sketch (Author, 2018)

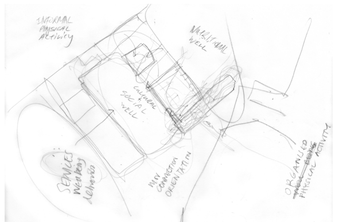


Fig 6.8 First Re-development Sketch (Author, 2018)

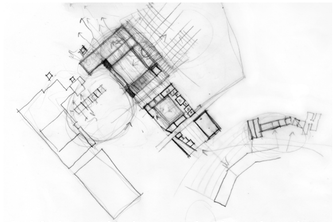


Fig 6.9 First Re-development Sketch (Author, 2018)

Fig 6.10 First Re-development Sketch (Author, 2018)

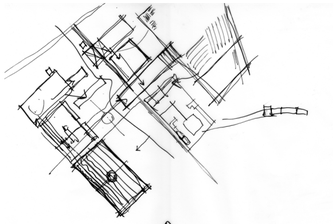


Fig 6.11 First Re-development Sketch (Author, 2018)

The obsession with preserving the old fabric was too much of a barrier for appropriate architecture to happen, so in the next iteration a decision was made to allow the architecture to be more contextual and independent.

06.6 FIRST REDEVELOPMENT: APRIL - MAY

By May, the program was not yet finalised, but it was a step closer to the end product. As seen in figure 6.6-6.8, zones were set out that were carried over into later iterations.

Figure 6.6 depicts the various 'green' zones where the landscape is either used for farm land, recreation or public areas. Figure 6.7 shows the zones that were more functional, including the formal and informal market spaces, framing important zones around the stadium and the sub-program spaces.

Figure 6.7 zoned spaces in broader terms, focusing on contrasting spaces and how they relate to one another, for example formal vs. informal recreation, nutritional wellness vs. social wellness.

Figures 6.9-6.11 depicts the layout and conceptual approach of the programs. Focusing on framing the old footprints by creating a series of courtyards, with private spaces located in them. An important focus was on how these spaces would live and spread out towards particular routes and foci.

06.7 SECOND RE-DEVELOPMENT: MAY - JUNE

By mid May the entirety of the old footprints were enveloped, (figures 6.12-6.15). A bamboo plantation and processing plant were part of the project at this point.

The main driver for the bamboo centred program was to use processed bamboo as a replacement material in fibre-cement boards. The old factory buildings used to have asbestos roofs that were very dangerous. The previous owners spent quite a lot of money to properly dispose of them (Naudé, 2018).

Upon further investigation it became apparent that most of the original houses built in Eersterust (south and east of the site) have asbestos roofs. The new intervention would then serve the community both from an economic and health standpoint.

From the iterations in figure 6.16-19 the focus shifted from programs centred around bamboo to a nutrition and sport centred program. The importance of the stadium and the need for economic revival and broader issues became more important.

The footprint of the western factory building was removed from the iteration's focus, with it being zoned and programmed without being fully designed.

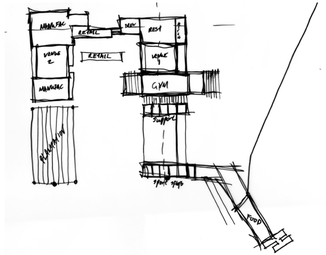


Fig 6.12 Second Re-development Sketch (Author, 2018)

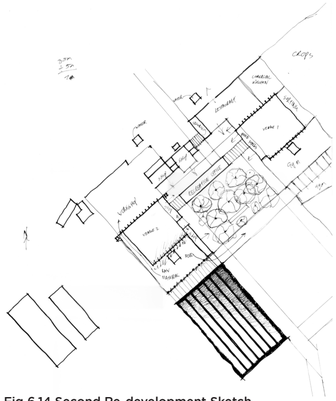


Fig 6.14 Second Re-development Sketch (Author, 2018)

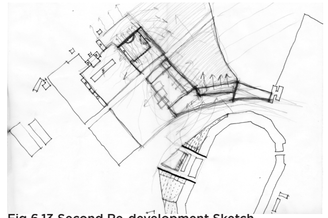


Fig 6.13 Second Re-development Sketch (Author, 2018)

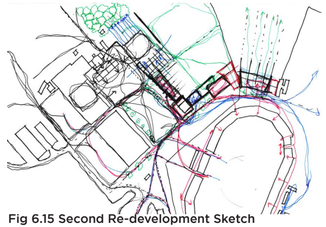


Fig 6.15 Second Re-development Sketch (Author, 2018)

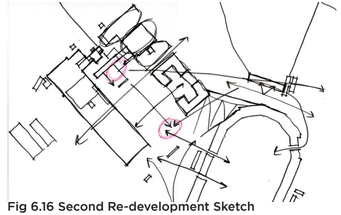


Fig 6.16 Second Re-development Sketch (Author, 2018)

Fig 6.17 Second Re-development (Author, 2018)

Fig 6.18 Second Re-development (Author, 2018)

Fig 6.19 Second Re-development (Author, 2018)

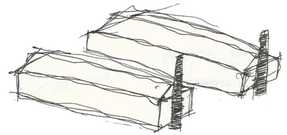


Fig 6.20 Exploration of Form (Author, 2018)

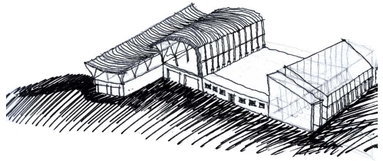


Fig 6.21 Exploration of Form (Author, 2018)

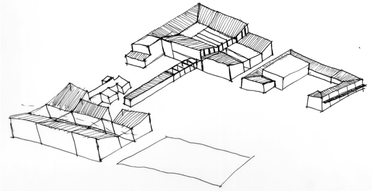


Fig 6.22 Exploration of Form Author, 2018)

06.8 FINDING AN ARCHITECTURAL LANGUAGE MAY-JUNE

Figures 6.20-36 show the various explorations of form, with an initial departure point being the use of the existing form and language of the old factory. References to the left-over concrete ruins and pitched roofs were tested, which evolved to courtyards and framing of various points of interest on the site.

However this approach was dislocated from the context that needed to be a main informant for the new building.

Figures 6.27 and 6.36 show the first iterations to make the building part of the landscape though the use of pergola structures, that serve both as protection from the elements and the distribution of water to the crops, north-east of the building.

The language created by industrial and factory buildings was explored and transformed to 'fit' into the new language of the proposed building. This is particularly visible in figures 6.29-6.35. The above mentioned approach was vital to the contextual grounding of the design.

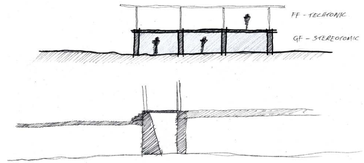


Fig 6.23 Exploration of Form Sketch (Author, 2018)

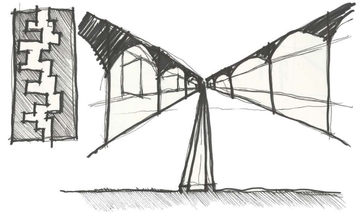
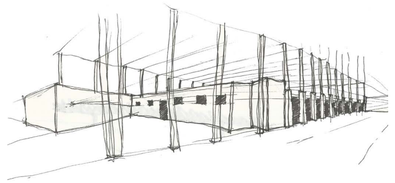


Fig 6.24 Exploration of Form Sketch (Author, 2018)



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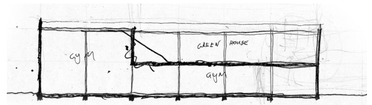


Fig 6.26 Exploration of Form Sketch (Author, 2018)

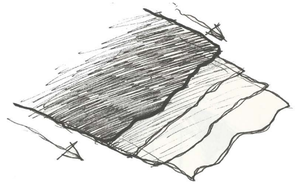


Fig 6.27 Exploration of Form Sketch (Author, 2018)

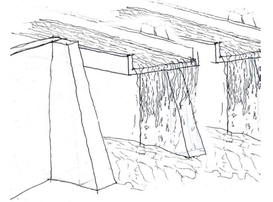


Fig 6.28 Exploration of Form Sketch (Author, 2018)

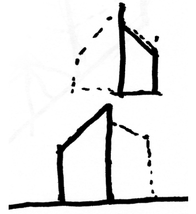


Fig 6.29 Exploration of Form Sketch (Author, 2018)

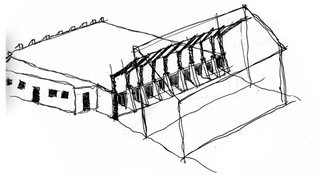


Fig 6.30 Exploration of Form Sketch (Author, 2018)

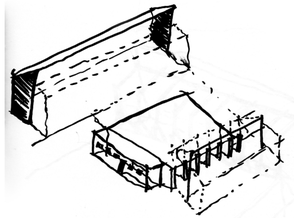


Fig 6.31 Exploration of Form Sketch (Author, 2018)

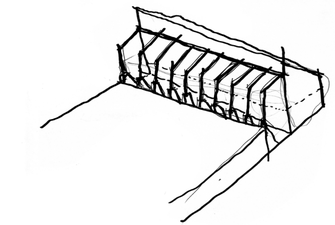


Fig 6.32 Exploration of Form Sketch (Author, 2018)

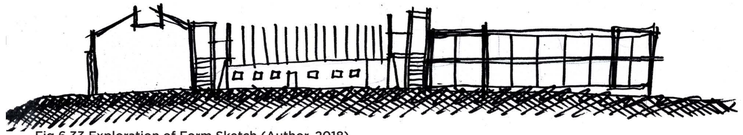


Fig 6.33 Exploration of Form Sketch (Author, 2018)

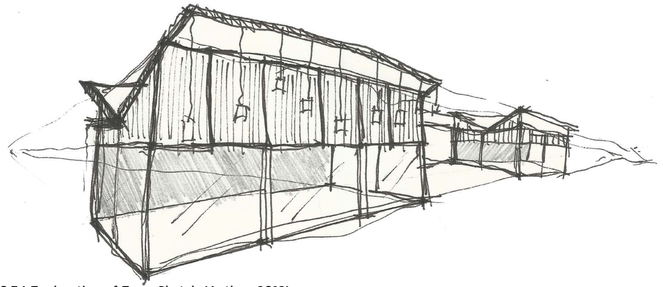


Fig 6.34 Exploration of Form Sketch (Author, 2018)

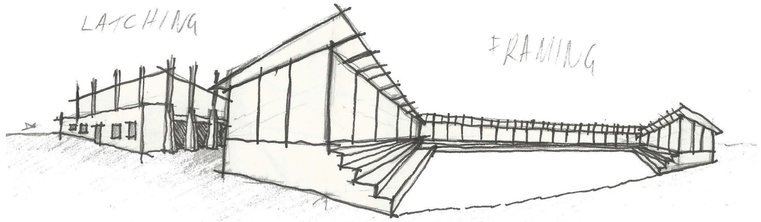


Fig 6.35 Exploration of Form Sketch (Author, 2018)

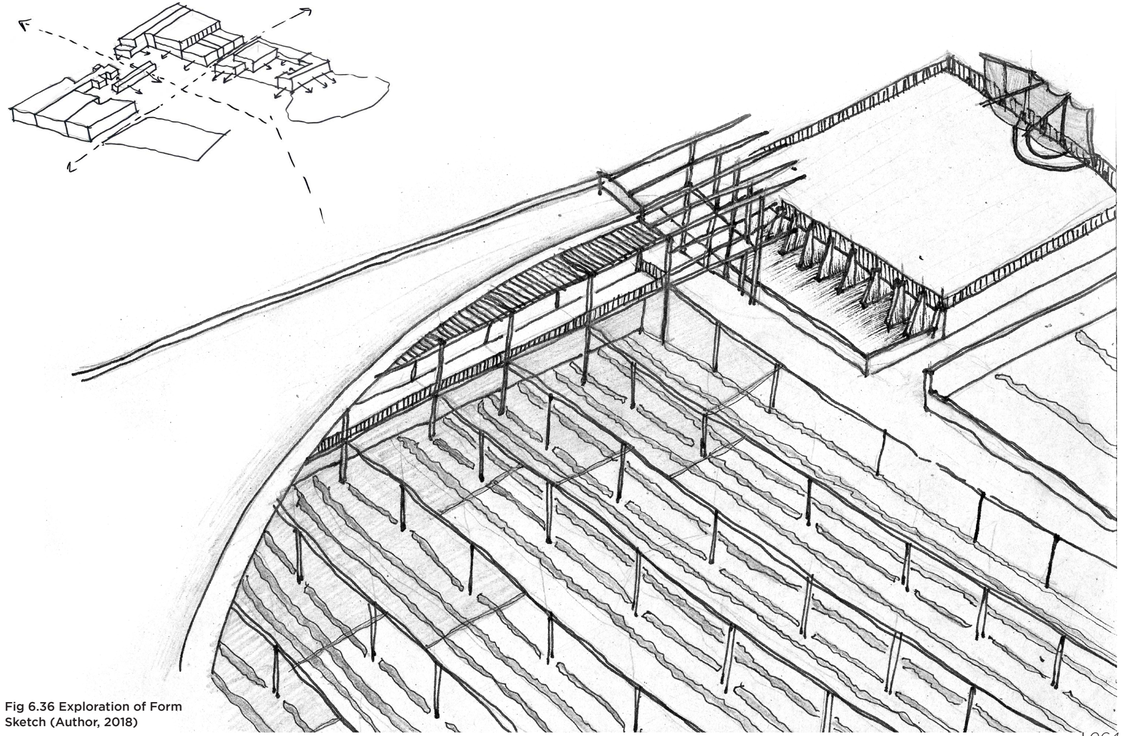
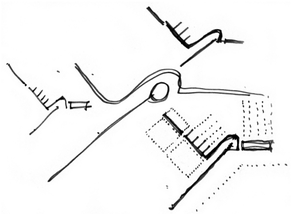


Fig 6.36 Exploration of Form Sketch (Author, 2018)



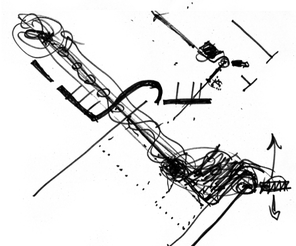


Fig 6.37 Exploration of Form Sketch (Author, 2018)

Fig 6.38 Exploration of Form Sketch (Author, 2018)

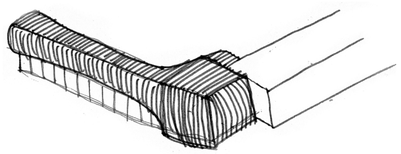


Fig 6.39 Exploration of Form Sketch (Author, 2018)

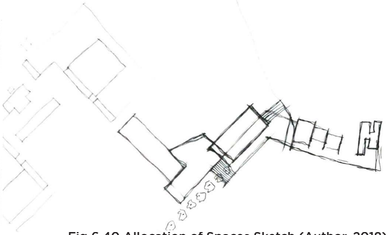


Fig 6.40 Allocation of Spaces Sketch (Author, 2018)

Fig 6.41 Allocation of Spaces Sketch (Author, 2018)

06.9 ALLOCATION OF SPACE & EXPLORATION OF FORM

The last major departure from the final design language, forged in future iterations, is evident in figures 6.36-6.39. An organically shaped building with various foci was used. It was an exploration outside of the author's usual design language, to test the feasibility of a design. These were explorations of from rather than suitable contextual architecture. At this stage the focus was very much on the landscape and outside spaces.

In sketches illustrated in figures 6.40-6.47 the program had been finalised, with the various sub-programs being allocated on the site. The programs began to influence the language of the building.

The agricultural school became the main focus of the building. The class rooms shifted from the ground floor to the first floor, while the sports management facility was split into two parts, namely the gym and green house forming one unit attached to the school building and the offices, while the medical suite and food stalls formed the second building.

Three class rooms initially formed the three boxes visible in the initial layout of the building. In later iterations leading up to the June exams the three boxes were relegated to service boxes housing water tanks, plumbing and electrical ducts.

The multi-use hall appeared in the same iteration. The hall serves both as a means to tie and separate the two distinct functions of the main building, but also to lead and guide users around the important public edge coming from the main road and the stadium.

The greenhouse/gym was the point where sport-programmes met nutritional functions, where the most prominent connection of building and landscape would be. The greenhouse would de-materialise into the landscape tying it to the management building to the east.

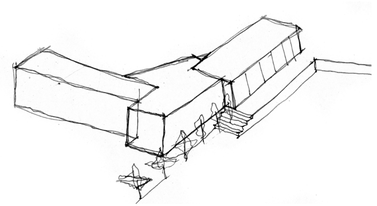


Fig 6.42 Exploration of Form Sketch (Author, 2018)

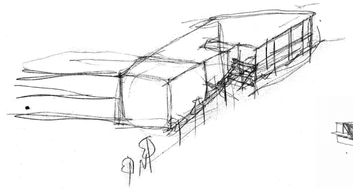


Fig 6.43 Exploration of Form Sketch (Author, 2018)

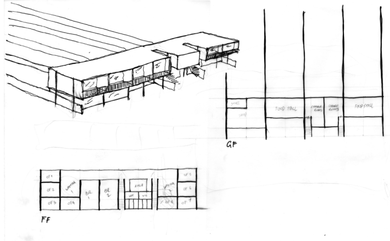


Fig 6.44 Exploration of Form Sketch (Author, 2018)

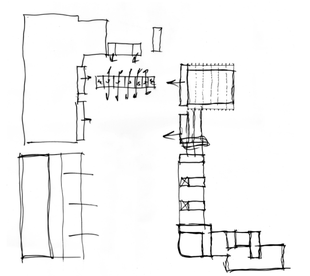


Fig 6.45 Exploration of Form Sketch (Author, 2018)

Fig 6.46 Exploration of Form Sketch (Author, 2018)

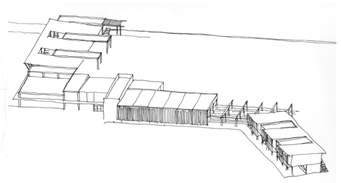


Fig 6.47 Exploration of Form Sketch (Author, 2018)

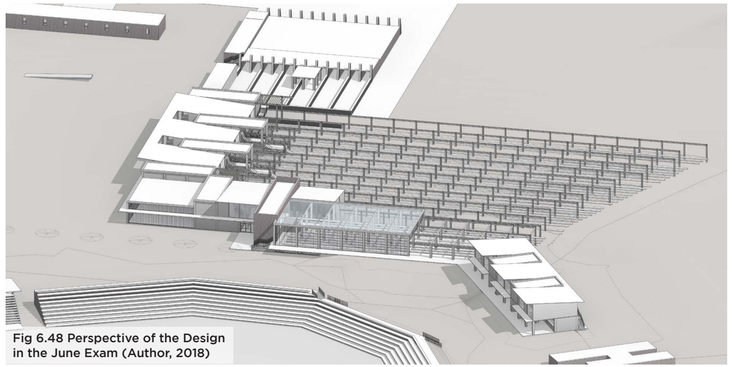


Fig 6.48 Perspective of the Design in the June Exam (Author, 2018)

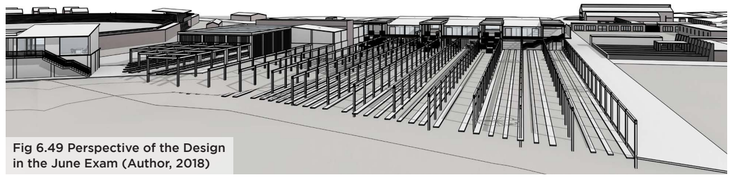


Fig 6.49 Perspective of the Design in the June Exam (Author, 2018)

Fig 6.50 Perspective of the Design in the June Exam (Author, 2018)

06.10 QUARTER 2 CRIT: JUNE

The most prevalent features of the building as seen in figure 6.48 are the slanted roofs meeting the flat roofed boxes and connecting to the landscape through the functional pergola structures.

The multi-use hall and greenhouse used the same language. Unfortunately the existing ruins, (visible to the top of figure 6.48), were not sufficiently addressed. Materiality and further landscape design was still lacking at this point.

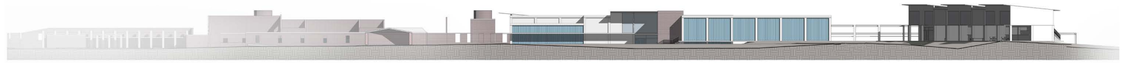
Figure 6.49 attempts to convey the landscape to building connection, but the pergola structures overwhelmed the site and did not serve enough uses for the building.

The elevations (figure 6.51) were unarticulated and lacked depth because of homogeneous use of materials and inadequate thresholds.

The layout of spaces reflected a lack of sensitivity to the site, inadequate treatment of practical services and environmental conditions.

The 'restaurant' on the ground floor was vastly over sized and irrelevant. The last problem facing this iteration was the lack of functional spaces for the agricultural school to utilise on the ground floor.

SOUTH WEST



SOUTH EAST

NORTH EAST

NORTH WEST

Fig 6.51 Elevations of the Design in the June Exam (Author, 2018)

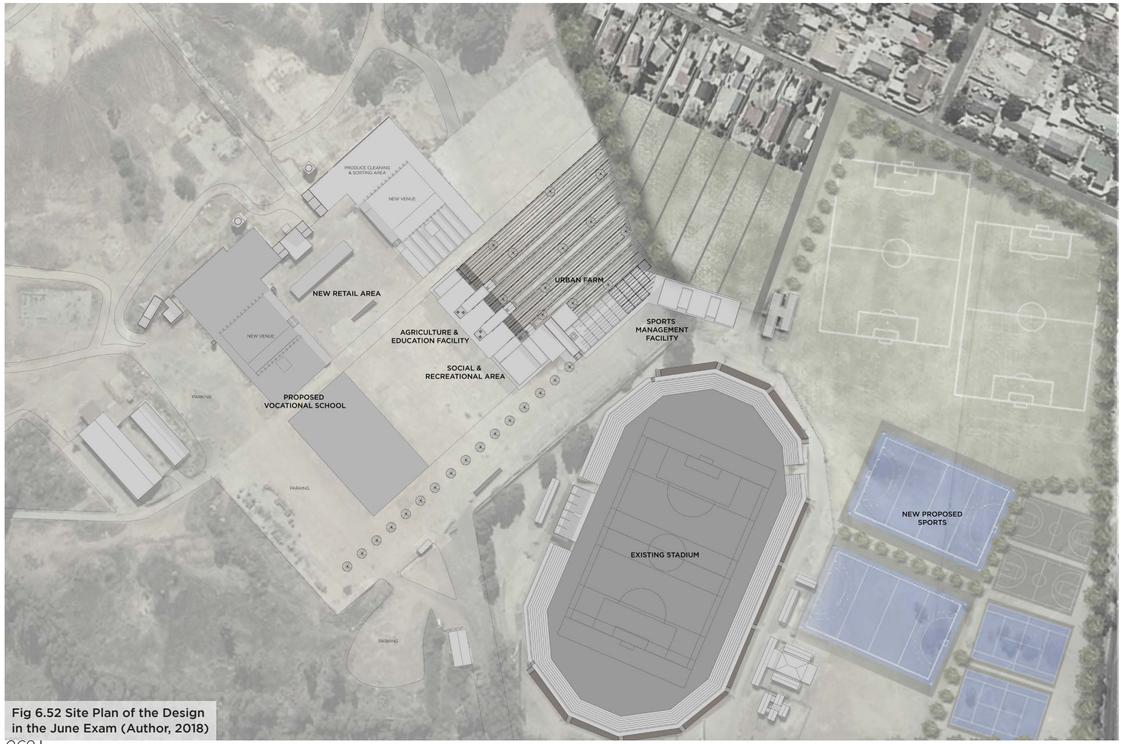


Fig 6.52 Site Plan of the Design in the June Exam (Author, 2018)

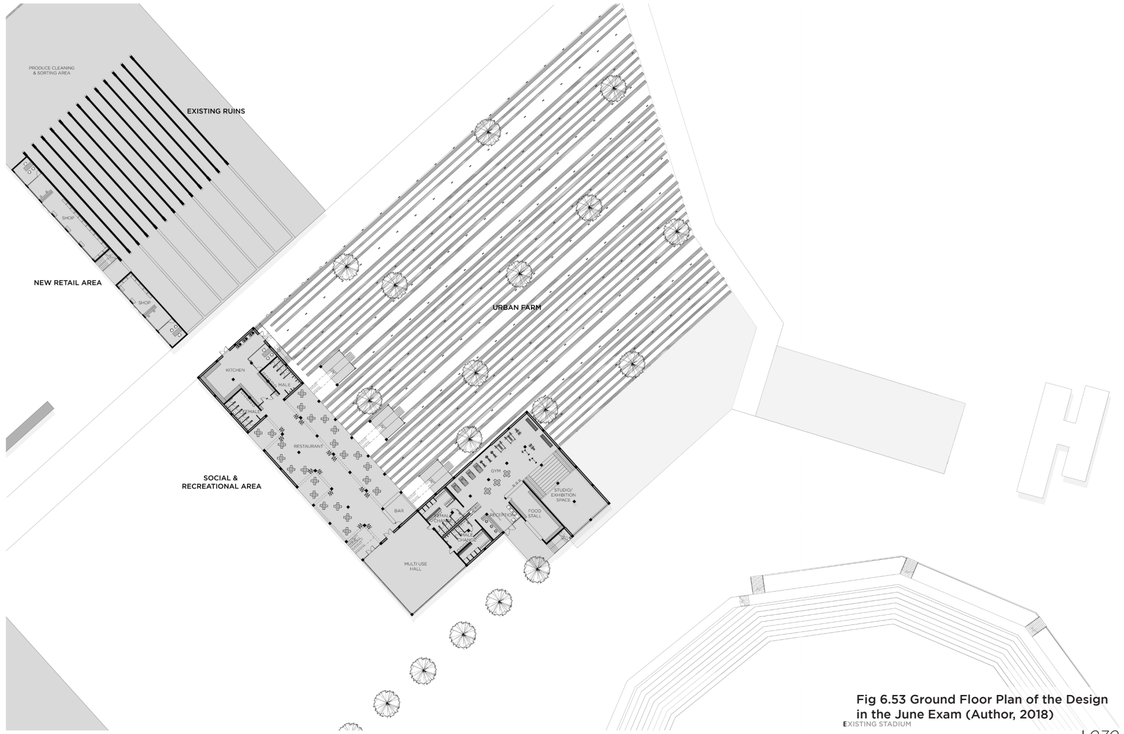


Fig 6.53 Ground Floor Plan of the Design in the June Exam (Author, 2018)

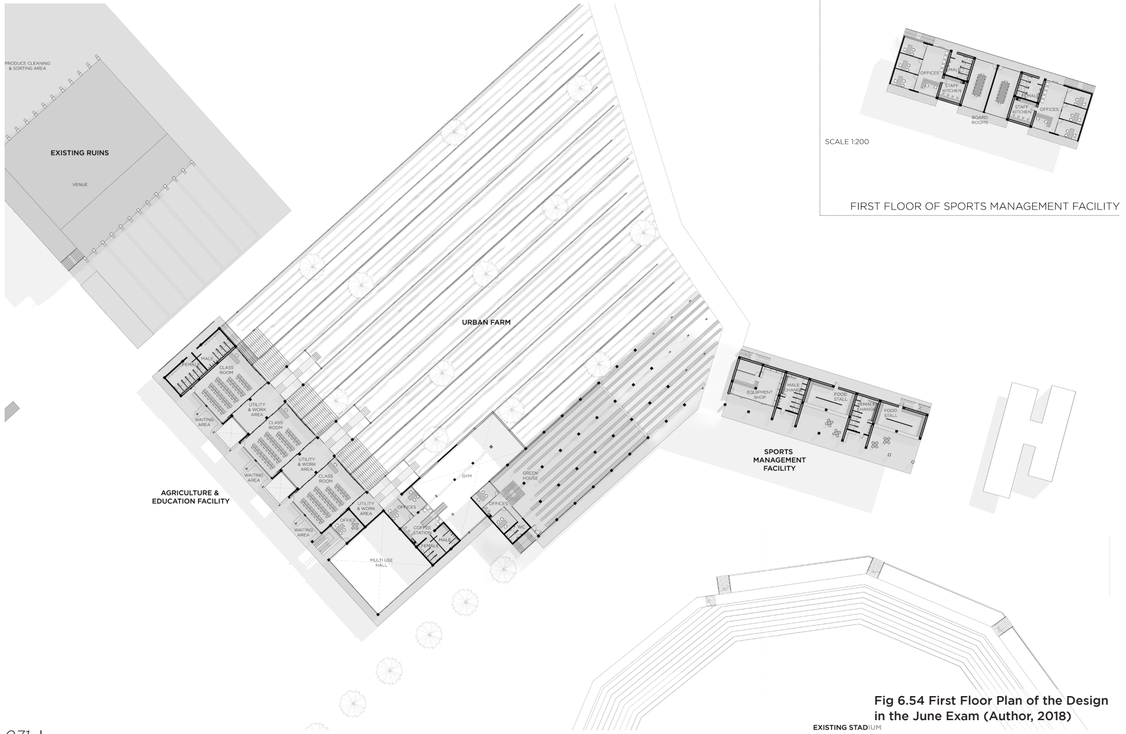


Fig 6.54 First Floor Plan of the Design in the June Exam (Author, 2018)

06.11 POST-CRIT RE-DEVELOPMENT: JUNE-SEPTEMBER

After the June exam the problems that were not, or inadequately addressed, were made apparent. Some of the lessons learned in chapter 5 of this dissertation were applied. New theories to guide the making of the building and its various spaces were investigated and lastly the context was put in front once again to generate design.

Several of the new theories introduced came from a journal article by Edward Casey titled: *Edges and the in-between*, (Casey, 2008:2). It served as the stating point to guide the dissertation in its new direction. The article expands on the use of thresholds, Casey makes it clear that one must create edges that serves to frame a building, to create possibility inside it and not to end or limit it.

The possibility that is created by the new edge, Casey calls the *in-between*, which is essentially where activity/program can take place. One must not think of the edge as the absolute limit. This dissertation interprets it as the edge (building) becoming landscape, that becomes the site boundary, that becomes the road around the site. Casey uses the analogy of a successively framed painting. (Casey, 2008:9)

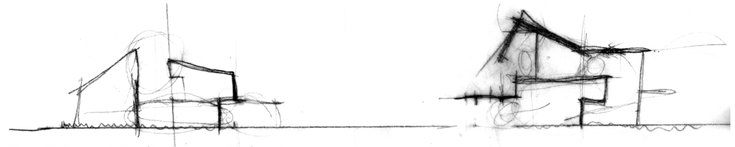


Fig 6.55 Post-Crit Re-development Exploration (Author, 2018)

Fig 6.56 Post-Crit Re-development Exploration (Author, 2018)

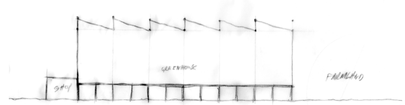


Fig 6.57 Post-Crit Re-development Exploration (Author, 2018)

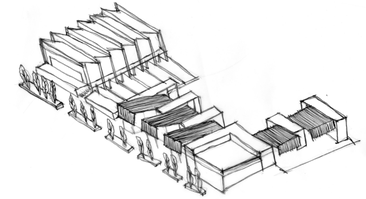


Fig 6.58 Post-Crit Re-development Exploration (Author, 2018)

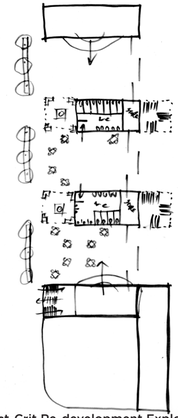


Fig 6.59 Post-Crit Re-development Exploration (Author, 2018)

Fig 6.60 Post-Crit Renderings
(Author, 2018)

Fig 6.63 Post-Crit Renderings
(Author, 2018)

Fig 6.61 Post-Crit Renderings
(Author, 2018)

Fig 6.64 Post-Crit Renderings
(Author, 2018)

Fig 6.62 Post-Crit Renderings
(Author, 2018)

Fig 6.65 Post-Crit Renderings
(Author, 2018)

The *in-between* is a much looser concept, as it can be immeasurable or abstract as the *artist* wills it to be. One can interpret it as the volume contained in the building, but this dissertation would argue that this parameter can fluctuate according to the influx of light, atmosphere, activity, public vs. private etc.(Casey, 2008:10)

One of the fundamentals missing in all previous iterations was the interpretation and use of light in the building. Once the building was investigated in section it became apparent the challenge that light imposed on the design. The buildings are not orientated according to the sun angles, rather to the footprints of the old factory buildings and to interact with the stadium.

Light is of course important from an environmental and a phenomenological point of view. According to architect Jose Forjaz, in the right hands light and darkness can become *tangible matter* in itself, especially when used with the correct materials (Ribeiro, 2011: 41).

Forjaz highlights light's importance through the following quote: *"Architecture is a fabrication of the spirit; it rises from the interiorized vision of space imprisoned by matter and it is triggered only when the de-materialisation process has come to an end and the idea, bright and poetic, transforms materials into means that arouse sensation."* (Ribeiro, 2011: 41)

As seen in figures 6.55-6.67 this iteration is a far departure from it's previous incarnations, light/solar control played a major roll in the shapes of the façades and roofs.

Bricks found on site were reused in the brick boxes that now serve a more prominent roll in the façades, housing all the services of the building including: bathrooms, kitchens, plumbing, rain water harvest and storage, electrical wiring, cool air supply from geo-thermal pipes and fire staircases. Rejected bricks were used as paving all round the old factory buildings, these bricks were harvested along with demolished structures that were not deemed necessary to reuse or restore on site.

The concrete ruins that were neglected in previous iterations now house the greenhouse, that is fully independent from the rest of the building. Light weight materials were applied and conservatively connected to the heritage fabric.

The Klip-Lock roofs pay homage to the industrial past of the site, while being a contemporary interpretation. The roofs are shaped according to the environmental response to solar control.

Fig 6.66 Post-Crit Renderings (Author, 2018)

Fig 6.67 Post-Crit Renderings (Author, 2018)

Fig 6.68 Quarter 3 Crit Renderings (Author, 2018)

Fig 6.69 Quarter 3 Crit Renderings (Author, 2018)

06.12 QUARTER 3 CRIT: SEPTEMBER

The focus of the September crit was to technify the building, focusing on structure, construction details, materials, connections and systems. These will be discussed in chapter 7.

The main success of this iteration it that it became much more practical, the spaces function better, services improved, materials and their connections became more realistic. The necessary rooms and functions were added to make the building more functional. Functions were added to make the hall and public cafeteria more useful and adaptable spaces.

The four buildings were iterated according to their functions and climatic response. They are all distinct enough to be legible yet share a common architectural and language and material pallet. The brick-box structures would repeat in each building with the tectonic parts of the buildings being unique in each instance (compare figures 6.75 to 6.81 to 6.82). Spaces and structures (pergolas, planters seating etc.) were added to connect the four buildings.

The façades were much more dynamic, with the strong tectonic inclination on the south-western facade and a more stereotomic dominance on the north east facade. This was due to solar/climatic considerations and to give the façades different qualities.

Practicalities such as parking, zoning of over night accommodation and the proposed vocational school on the footprint of the other factory building were implemented in this iteration.

Importantly new edges were defined by the architecture to let spaces reveal their potential for further uses. The edges proves to be useful to create new private waiting areas in the school building.

By shutting entrances to the main public stairs with *brise soleil* brick walls, orientating fire escapes and the other stairs toward the farmland fields that are framed by the buildings and the site's boundaries, more privacy was created for students and workers in this manner.

The greenhouse, located far from potential threats at the stadium, is elevated from the ground as it is built on top of the concrete ruins. The edge of the greenhouse then dematerialses, while the floor slopes into the landscape and ultimately extends into the landscape.

Underneath the classrooms are the main public spaces that have the deepest connection to the landscape. The first of these spaces is on the western end of the building, and houses a workshop area where students can replant seedlings and learn other practical farming techniques.

The middle space is the foyer area for male and female change rooms with plenty of locker storage space. The third and final space is the cafeteria and tea area (that serves the hall as well).

On the corner to the east is the multi-use hall that looks on to the landscape and a amphitheatre. This hall can be used for meetings, concerts, religious activities and as a formal function venue. The amphitheatre creates another edge to visually connect people from the stadium to the productive landscape to the north, yet restraining access via narrow paths.

Further to the east is the gym and it's various functions and programs. The gym building has similar brick boxes housing its services. Where it differs drastically from the school is its orientation and subsequent solar control through pergolas, a steeper and lower roof and less exposure to glazing.

The facade facing the stadium is much more open and glazed, to let in constant daylight throughout the day. The gym opens up toward the farm land with outside running paths and exterior exercise areas. The gym houses a food stall, admin block and medical suites.

Further east where the gym and the management buildings meet is a large planter with seating and two large trees to create a pleasant space full of shade to stitch the two buildings.

Fig 6.70 Quarter 3 Crit Renderings (Author, 2018)

Fig 6.71 Quarter 3 Crit Renderings (Author, 2018)

Fig 6.72 Quarter 3 Crit Renderings (Author, 2018)

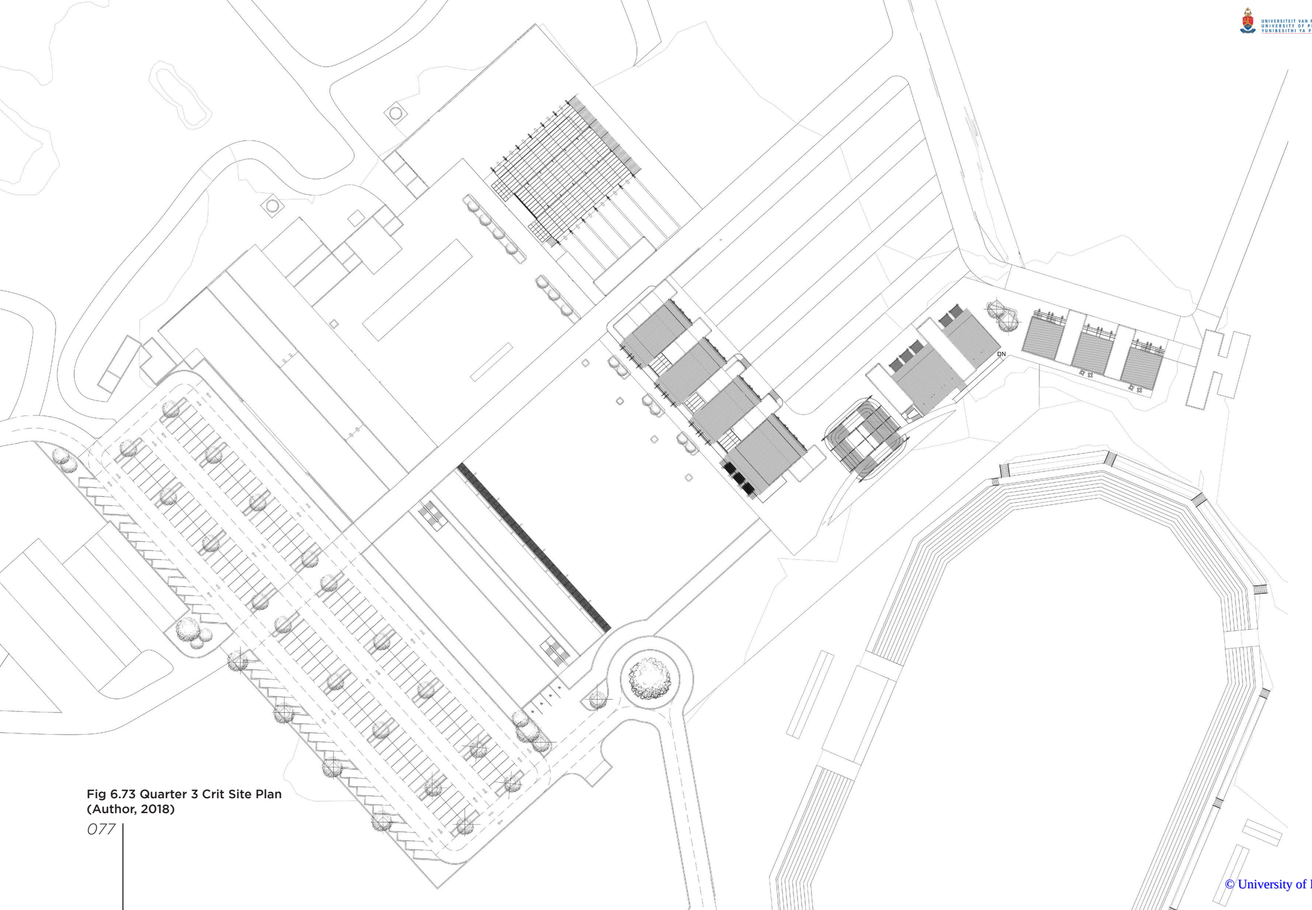


Fig 6.73 Quarter 3 Crit Site Plan
(Author, 2018)

The management building is the simplest of the four with the least harsh solar control imposed on the façades. This building acts as the gateway into the stadium complex. It houses the team and site managers offices, board rooms, locker rooms, equipment shop and two food stalls.

The pergolas did not relate to the landscape and only the building, the site design (roads, green spaces and defining leftover space) is to be finalised and the greenhouse was under developed at this stage.

Electricity generation was also underutilised , the intention is to integrate photovoltaic panels into small structure in the large open courtyard to populate the large open space with structure that can provide shade for users and other useful amenities like comfortable seating, drinking fountain and a place to charge a cellphone.

Although a stronger connection is made with the stadium complex and the proposed sport management facility further interactions and thresholds are necessary.

Fig 6.74 Quarter 3 Crit Renderings
(Author, 2018)

Fig 6.75 Quarter 3 Crit Renderings
(Author, 2018)

Fig 6.76 Quarter 3 Crit Renderings
(Author, 2018)

Fig 6.77 Quarter 3 Crit Ground Floor Plan - Not To scale
(Author, 2018)

Fig 6.78 Quarter 3 Crit First Floor Plan - Not to Scale
(Author, 2018)

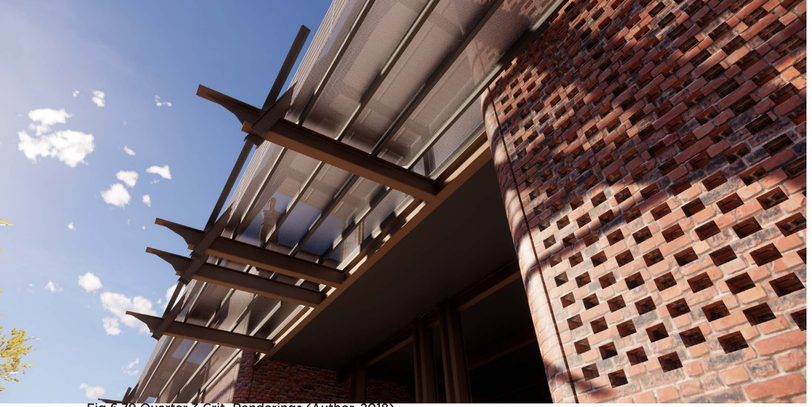


Fig 6.79 Quarter 3 Crit Renderings (Author, 2018)

Fig 6.80 Quarter 3 Crit Renderings (Author, 2018)

06.13 DESIGN AS A RESPONSE TO ISSUES

The most important issue this dissertation sought to address was the stigmas associated with the post industrial site of the Era brick factory. The major issues were a lack of activity, a scarred landscape, under utilisation of the stadium and the fact that we have very few preserved pieces of post-industrial heritage in Pretoria.

The site formed a barrier between two suburbs; *Eersterust* and *Jan Niemand Park*. Reinforced by the natural barriers of the two rivers flowing on either side of the site, the mountain to the north and the man-made barriers of *Stormvoël road*, and industrial areas like *Silvertondale*.

The site has lost its significance since its abandonment. Lastly the intervention needs to be an architecture that is more valuable than a housing development currently being proposed by developers.

This dissertation addressed the above mentioned issues through adopting strategies to alleviate stigmas in general and connecting them to architectural theories to make the solutions spatial in nature (see chapter 3)

The three identified solutions were addressed on different scales, as follows:

1) Engaging with the community: Urban vision scale

2) Economic regeneration: Site vision & programmatic scale

3) Give site new significance: Architectural scale

1) The community can engage with one another through the urban scale programs. The old quarry being converted into rentable farmland, affording equal opportunities to the segregated communities. Interaction on a social level through informal sports and recreation (hiking, mountain-biking, fishing and pick-nics etc.) Lastly the new proposed roads connect the communities directly.

2) Economic opportunities were created through the programs proposed on site. The main program of an agricultural school created opportunities for locals to learn how to farm and become subsistence farmers, promoting nutrition.

The proposed vocational school can help further practical skills and knowledge. The gym and sports management facility enables children and athletes in the community to expand their skills in various sporting disciplines while promoting their health and well-being.

Fig 6.81 Quarter 3 Crit Renderings (Author, 2018)

Fig 6.82 Quarter 3 Crit Renderings (Author, 2018)

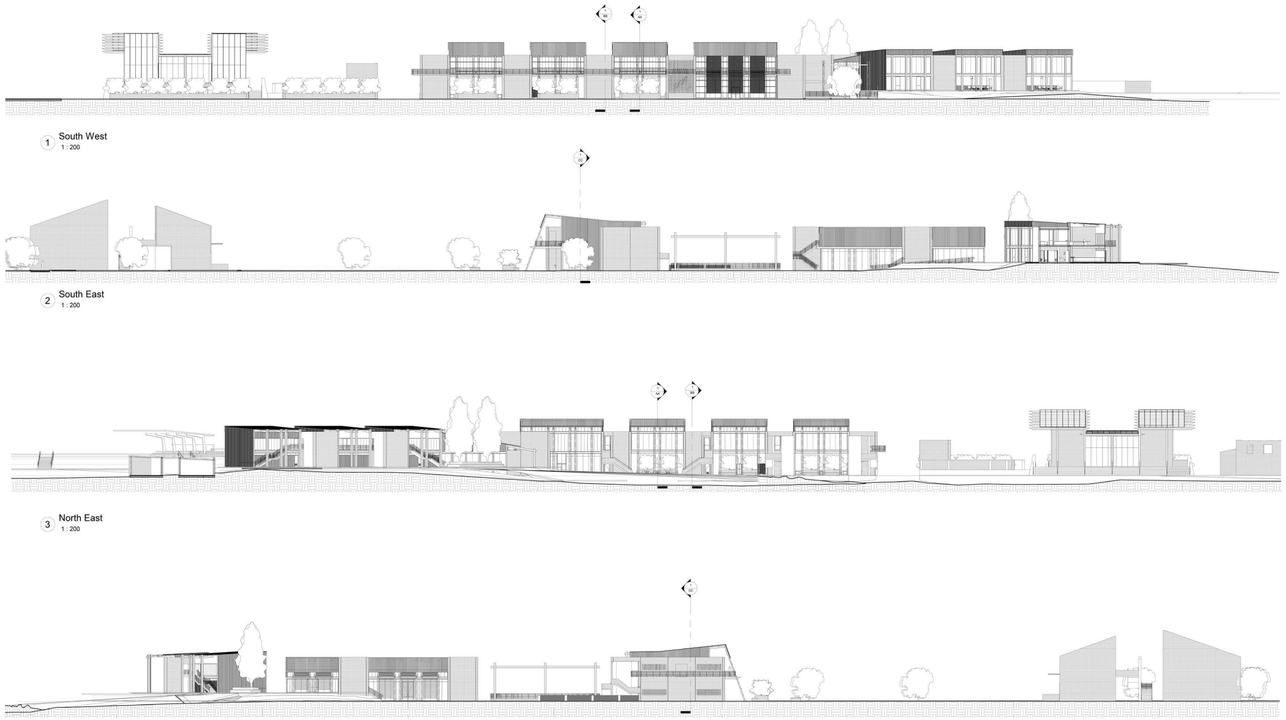


Fig 6.83 Quarter 3 Crit Elevations - Not to Scale
(Author, 2018)

The formal and informal markets on site provide the community a platform to capitalise on their newly acquired skills.

3) The architecture has gained significance through the various programs that were mentioned above. Yet it can be expanded to include the reuse of heritage fabric, frugal use of new materials, responsible climatic and environmental design, creating comfortable spaces for users (thermal & fresh air), harvesting natural resources instead of relying on municipal sources (water and electricity).

To summarise the building, its materials and its programs can add value to a community, it can break preconceived notions, it can be more valuable than another housing development

It can break its associated stigma.

Fig 7.1 Render of the new steel walkway and steel details (Author, 2018)

CHAPTER

07

technification

Fig 7.2
Axonometric Explosion of new School Building (Author, September 2018)

07.1 INTRO

Architecture can have more than mere functional meaning, as the architecture critic and writer Deyan Sudjic suggests in his book *The Edifice Complex:* "...we need to consider whether architecture is an end itself, or a means to an end." (Sudjic, 2005:9).

Architecture differs from other scientific disciplines that are free of ideology and expression, it can convey a message or be an artistic expression, from concept to built form. (Sudjic, 2005:9).

This chapter explores this expression through the use of technology and systems while paying homage to the site's industrial heritage. Theory, context, analysis and precedents influenced design and technical decisions.

07.2 CONCEPT

The very nature of the site was grounded in an industrial narrative that sought to exploit the natural resources for economic gain - an unsustainable model. This dissertation sought to reinterpret the materials used and found on site towards a more symbiotic relationship between the building and the landscape. The building responds to its landscape driven program while respecting the industrial setting. Thus a play with thresholds and light vs. heavy to illustrate this narrative.

The tectonic approach taken is one that honours industrial heritage and the context of the site. While the previous buildings are respected by utilising footprints and leftover building material to incorporate into the new buildings, the new architecture is a contrast and departure from the factory that precedes it.

All the proposed buildings have a similar design language with repeating brick service cores binding the new architecture together. The buildings differ due to the differences in their programmatic requirements and response to solar angles.

Fig 7.3 Existing farmland north of the site. (Google Earth, 2018) (Author, 2018)

07.3 SITE SCALE SYSTEMS

After the establishment of this dissertations' program it became important to test the viability of an agricultural school on the site. With further investigation and mapping it became clear that the site sits in a large green belt running along the banks of the *Moretele* River (See figure 7.3).

The river flows north / north-east past the site eventually flowing into the *Roodeplaat* Dam. Along this flow a couple of small scale farms are visible. Around the dam the scale and frequency of farms increase.

As stated in chapter four, a suggestion made by Bridgette Botha, in her 2015 dissertation, is to channel the two rivers around the site into the existing ponds on site, This premise has been adopted and applied to this dissertation to make the program more viable,

As seen in figure 7.4 the intention is that the site serves all the communities surrounding it. The opportunity for farmland expansion to the whole site is made more plausible

Fig 7.4 Initial Urban Design (Author, 2018)

Fig 7.5 Latest Urban Design (Author, 2018)

through new irrigation opportunities. Parcels of land can now be leased and farmed on by anyone, with entrances and roads all over the site,

The need for water is then supplemented from excess runoff and surplus rain water collected off the new roofs designed in this dissertation. The final suggested farmland scheme would then resemble figure 7.5.

07.4 EXPLORATION & DEVELOPMENT OF STRUCTURE

The brick cores of the building house the services that make the building function. These cores are constructed from a concrete frame and filled in by bricks found on site. The spaces in between these stereotomic blocks are constructed from lightweight materials that depend on the *brick-cores* for services and additional structural stability in the clay soil condition. The following section explains the development of the technologies used in this dissertation.

07.4.1 MATERIALITY

The choice of materials are informed by the site's history, current state and climatic responses.

The stereotomic, brick service cores are made from concrete pile foundations, concrete columns, cast in situ reinforced concrete slabs and with reclaimed brick (found on site) infill façades.

The tectonic, lightweight steel structure between the boxes are constructed from painted steel I-section beams, parallel flange steel columns, bond-deck permanent shuttering floor system, dry walls with *Klip-lok* cladding and a steel sub-frame.

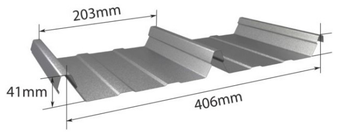
The fenestrations is constructed of two types of *Danpalon* panels. A translucent panel to let direct light into spaces and an opaque one to make light defuse into the spaces.

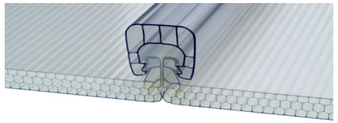
The roofs is covered with the same *Klip-lok* sheets as the clad walls, with cold-formed C-section purlins.

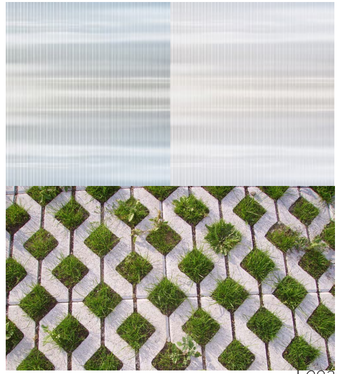
On the first floor a light-weight steel walkway and handrail surrounds the façade facing the large open courtyard.

A permeable paving used around the building and at the open areas under the class rooms.

Fig 7.6 Materiality Pallet (Author, 2018)







07.4.2 FOUNDATIONS

The following sketches are an exploration of the buildings foundations, beginning as a raft foundation and later being replace by a pile foundation system. The pile foundation was used under the brick boxes and under the parallel steel flange columns of the tectonic structure.

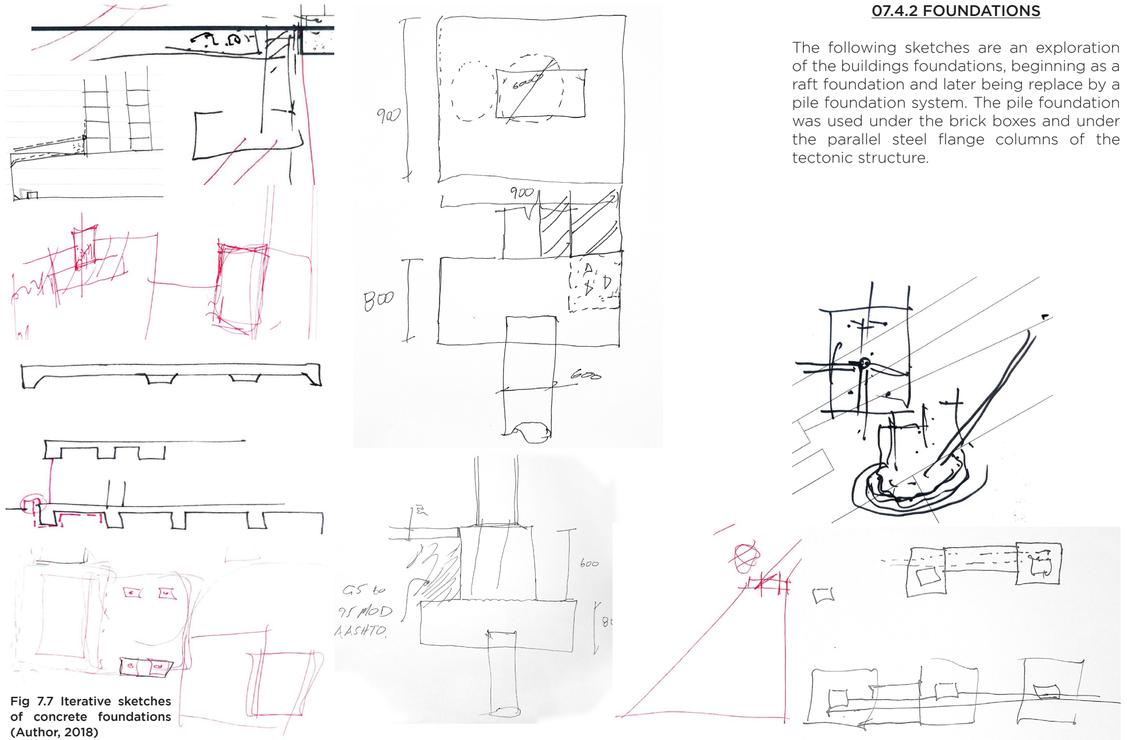


Fig 7.7 Iterative sketches of concrete foundations (Author, 2018)

07.4.3 CONCRETE COLUMNS & SLABS

The following sketches are an exploration of the brick service cores and their concrete slabs and columns. This aspect of the building went thorough many iterations to accommodate the rounded corners of the brick infill and to the services that have to run through these boxes.

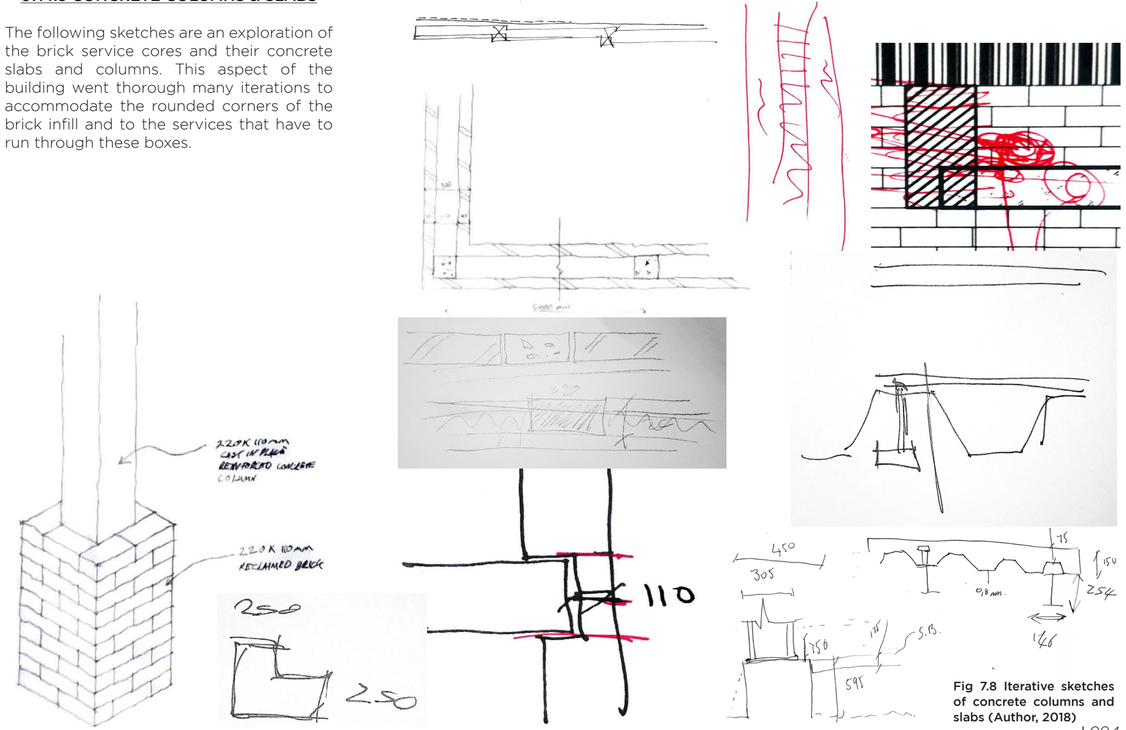


Fig 7.8 Iterative sketches of concrete columns and slabs (Author, 2018)

07.4.4 STEEL CONNECTIONS

The following sketches are an exploration of the steel connections used through the intervention. A mixture of I-sections, parallel flanges and cold-rolled c-channels were used. Previous iterations included steel v-columns, a rigid 5x5m column grid to list a few, before settling on the final iteration.

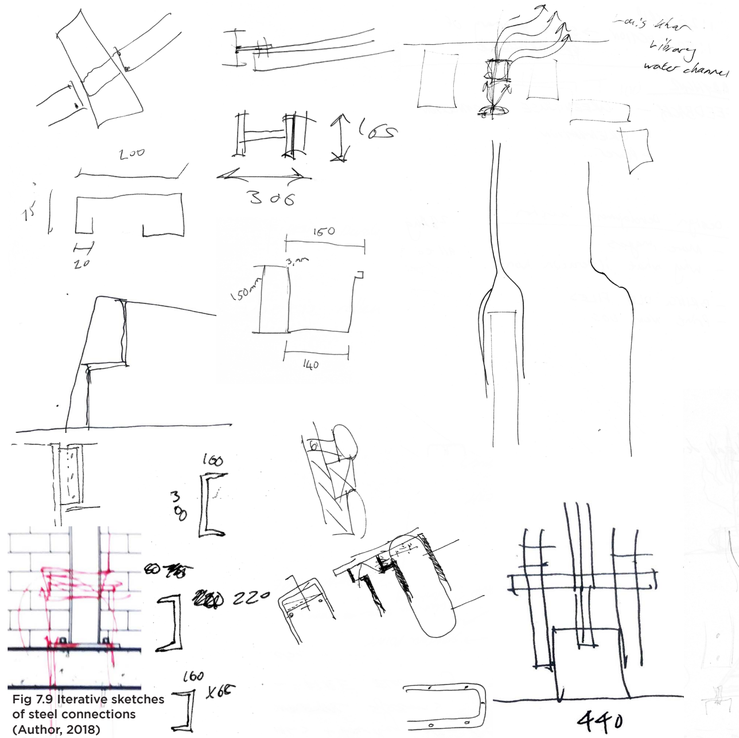


Fig 7.9 Iterative sketches of steel connections (Author, 2018)

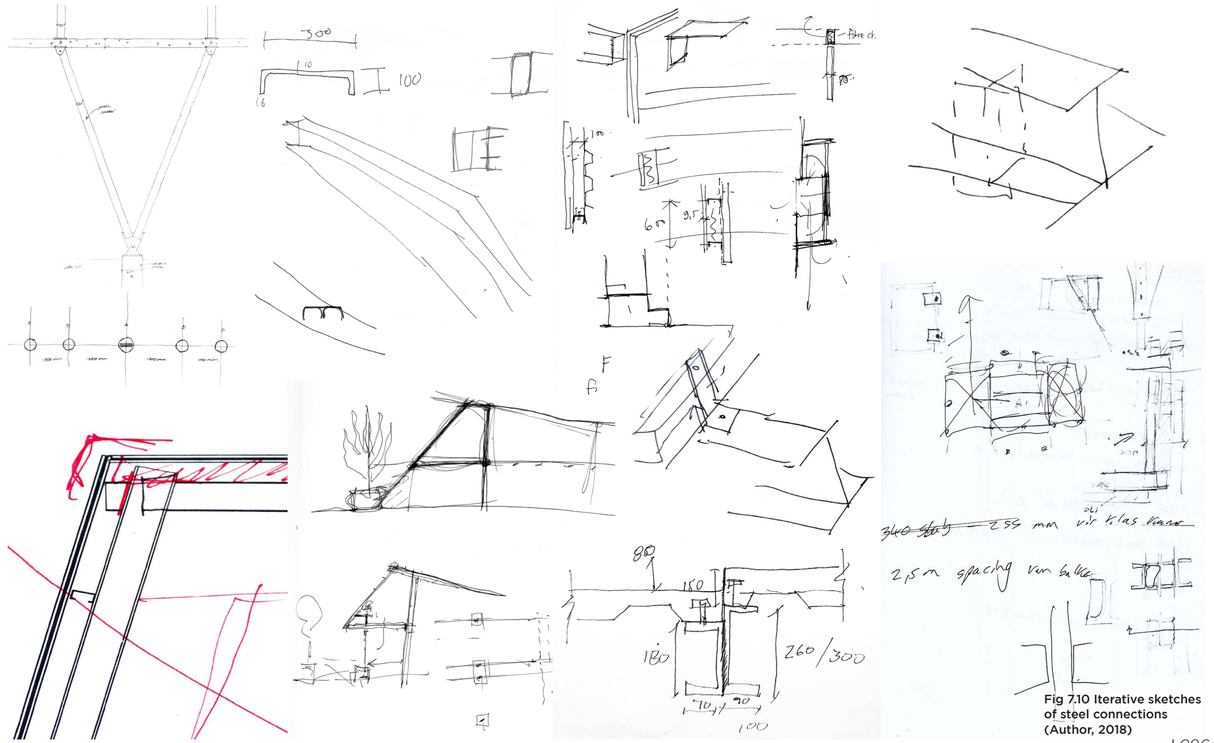


Fig 7.10 Iterative sketches of steel connections (Author, 2018)

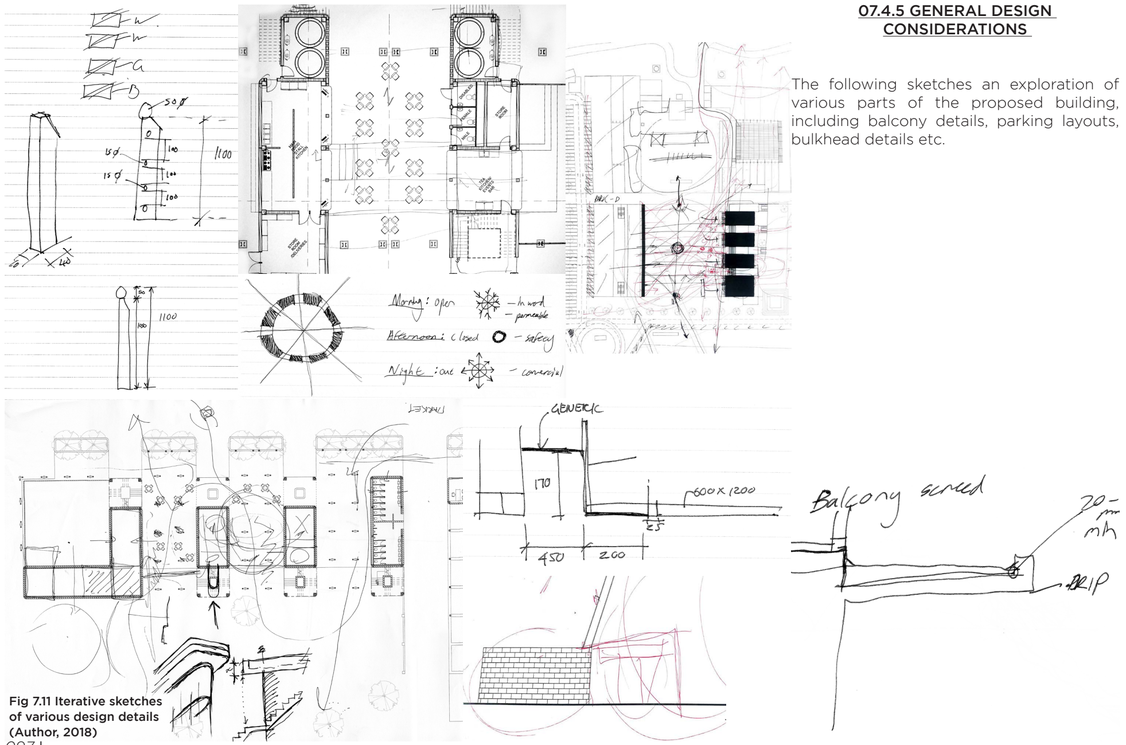


Fig 7.11 Iterative sketches of various design details (Author, 2018)

07.4.5 GENERAL DESIGN CONSIDERATIONS

The following sketches an exploration of various parts of the proposed building, including balcony details, parking layouts, bulkhead details etc.

07.5 SERVICES & SYSTEMS

07.5.1 WATER

Because of the exploitation of natural recourse in the site's past, this dissertation suggests harvesting rain water off of the buildings roofs and utilising the channelised rivers in the site. The harvested water will be used for irrigation and the building's internal water uses, like showers toilets and sinks.

With 3001.5 square meters of roof space to catch rain water, the building can catch an average of 1810 cubic meters of water a year. Irrigating the landscaping, the test grounds and the green house will use at least 5380 cubic meters of water a year. Thus the deficit will be supplemented with the rivers flowing in to the site.

The school building alone will use an estimated 142.3 cubic meters of water a year. Meaning that for plumbing and drinking water needs the harvesting of rain water would be more than ample.

The total capacity of all the water tanks are 557 cubic meters. Extra storage capacity is also possible under the green house in the old brick drying channels.

In each brick-core building 2 water pumps are placed to move water between the channels in the productive landscape and the reserve dam under the green house.

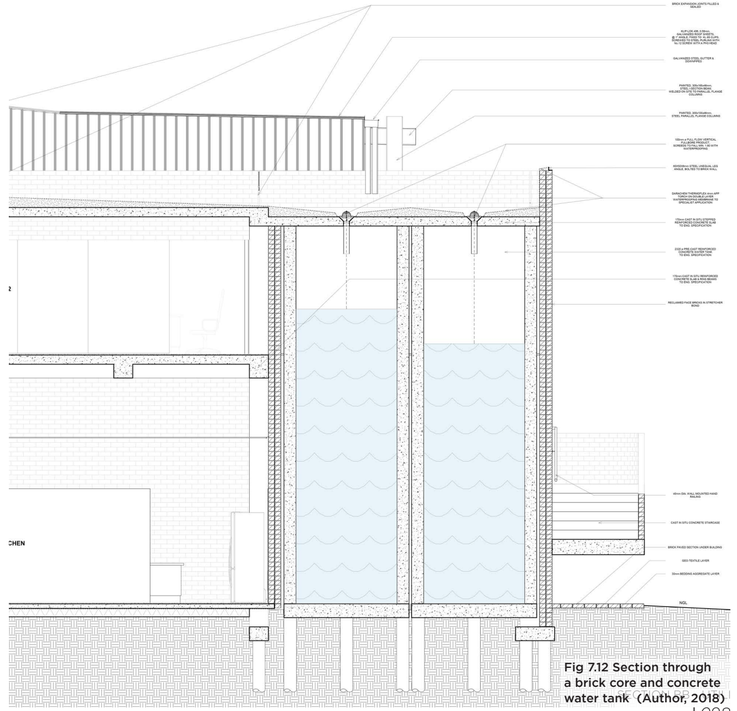
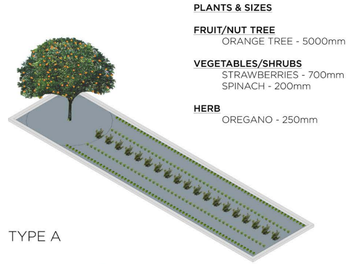


Fig 7.12 Section through a brick core and concrete water tank (Author, 2018)



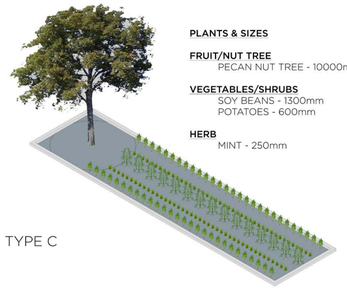
PLANTS & SIZES

FRUIT/NUT TREE
ORANGE TREE - 5000mm

VEGETABLES/SHRUBS
STRAWBERRIES - 700mm
SPINACH - 200mm

HERB
OREGANO - 250mm

TYPE A



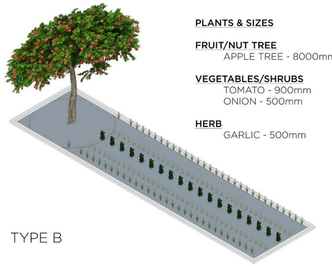
PLANTS & SIZES

FRUIT/NUT TREE
PECAN NUT TREE - 10000mm

VEGETABLES/SHRUBS
SOY BEANS - 1300mm
POTATOES - 600mm

HERB
MINT - 250mm

TYPE C



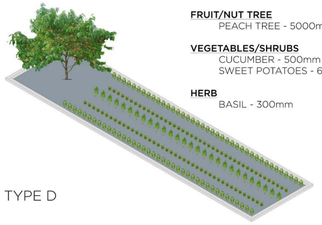
PLANTS & SIZES

FRUIT/NUT TREE
APPLE TREE - 8000mm

VEGETABLES/SHRUBS
TOMATO - 900mm
ONION - 500mm

HERB
GARLIC - 500mm

TYPE B



PLANTS & SIZES

FRUIT/NUT TREE
PEACH TREE - 5000mm

VEGETABLES/SHRUBS
CUCUMBER - 500mm
SWEET POTATOES - 600mm

HERB
BASIL - 300mm

TYPE D

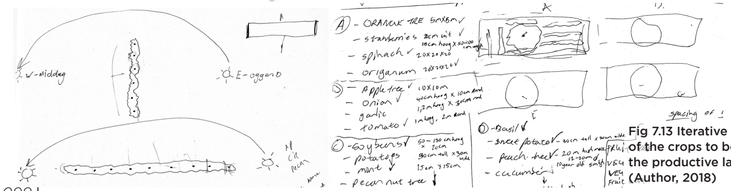


Fig 7.13 Iterative sketches of the crops to be used in the productive landscape (Author, 2018)

07.5.2 FARMING & CROPS

At the test grounds, (“*proef plaas*”), and green house the following crops will be planted together in groups, these plants are listed as complementary to each other as they hold certain advantages to the other.

They are divided in to four groups as follows, A fruit/nut tree, two vegetables or shrubs and a herb.

Group A: Orange tree
Strawberries
Spinach
Oregano

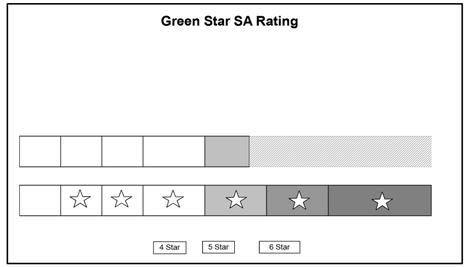
Group B: Apple tree
Tomato
Onion
Garlic

Group C: Pecan Nut tree
Soy Beans
Potatoes
Mint

Group D: Peach tree
Cucumber
Sweet potatoes
Basil

07.5.3 GREEN STAR RATING

This intervention achieved a four star rating, narrowly missing the 5 star mark by a small margin. With more iteration and finer calculations the building can achieve a 5 star rating.



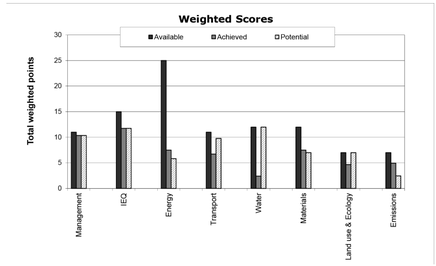
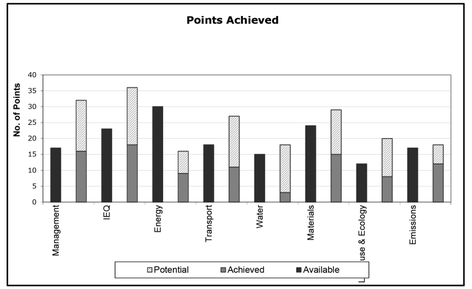


Fig 7.14-17 Graphs depicting the Green-Star scores of this building (GBCSA, 2018)



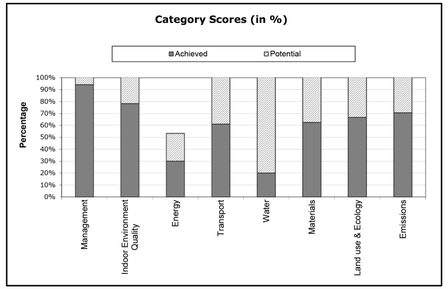


Fig 7.18 First iteration of the class room, severely over-lit and overheating.
(Author 2018)

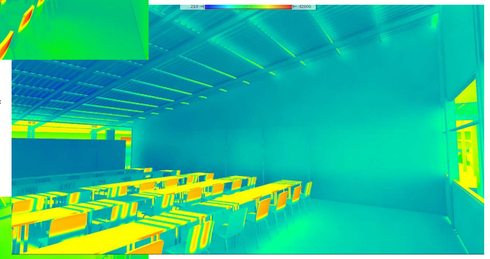


Fig 7.19 Second iteration of the class room, still over-lit and overheating.
(Author 2018)

Fig 7.19 Third iteration of the class room, only the back of the class over-lit and overheating.
(Author 2018)

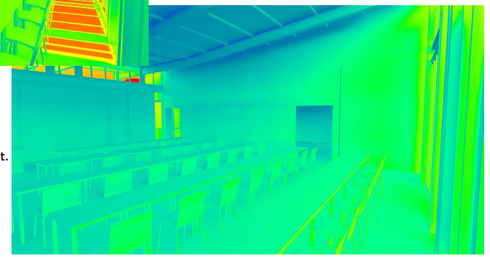


Fig 7.20 Fourth iteration of the class room, uniformly lit.
(Author 2018)

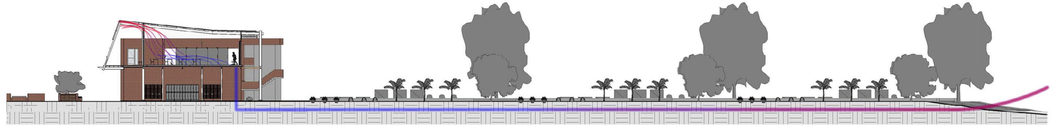
07.5.4 DAYLIGHTING

As a response to the heritage fabric the buildings orientation is not directly north-south, the school building is orientated south-west to north-east, making daylighting and solar heat gain control more challenging. This factor more than any other contributed to the shape and size of louvres, overhangs, recesses and roof covers being constructed in a certain way.

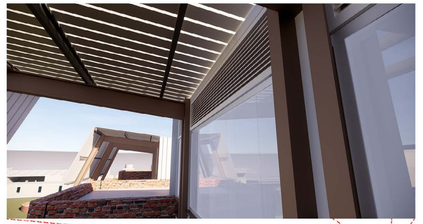
The opaque Danpalon panels were used on the south-west facing facade to disperse late afternoon light from making the space over lit. On the north east facing facade a clear Danpalon panel was used so views are possible in to the landscape. A white board on rollers was used as a solar control device for early morning sun.

The four simulations to the left depict the solar exposure at the summer solstice at 17:00, in three different iterations, with each new iteration being closer to being uniformly lit.

The same principals and methods were applied to all three the proposed buildings.



ALUMINIUM AIR VENT TO LET OUT STALE AIR



FLOOR VENT TO LET IN FRESH AIR

07.5.5 GEO-THERMAL HEAT EXCHANGE

Cool air is supplied to the building through a geo-thermal heat exchange system. Ambient air in the vegetated landscape is blown in to pipes with a mechanical fan, the pipes carrying the air is buried under ground, the pipes are subject to heat exchange, energy from the hot air is absorbed by the soil through the heat conducting pipes. Cooler air can then be pumped into the building through the brick cores.

During colder months the average temperature of the soil will be higher than the air temperature and the system will supply the building with warmer air, heating up the desired spaces.

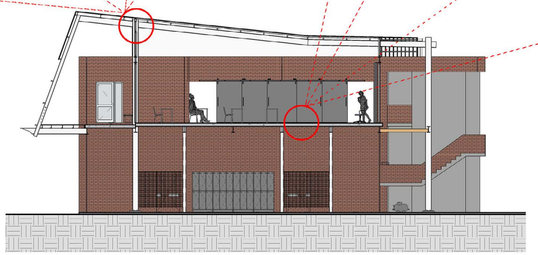


Fig 7.21 Diagrams depicting air flow system.
(Author 2018)

07.6 CONSTRUCTION PHASES

The building will be built in phases, the first phase being the concrete slabs and columns of the brick boxes, with the concrete water tanks.

Phase two the brick infill, with expansion joints every 5 meters is built and the boxes are made water proof

Phase three the steel work is installed with the bond deck permanent shutter flooring shortly after.

Phase four includes fenestration, dry walls and klip loc roofing system

Fig 7.22 PHASE 1 - REINFORCED CAST IN SITU CONCRETE COLUMNS, RING BEAMS & SLABS (Author 2018).

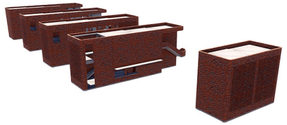


Fig 7.23 PHASE 2 - RECLAIMED BRICK INFILL (Author 2018).

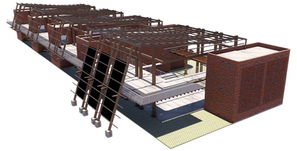


Fig 7.24 PHASE 3 - STEEL BEAMS, COLUMNS & WALKWAY. COMPOSITE BOND-DECK FLOORS. PERMEABLE PAVING AT EXTERIOR SPACES. (Author 2018).

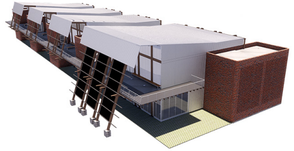


Fig 7.25 PHASE 4 - DANPALON POLLY CARBONATE GLAZING. KLIPLOCK 406 ROOF SHEETING, WITH STEEL SUB-FRAME, DRYWALLS & INSULATION. (Author 2018).

Fig 7.26 PHASE 5 - LANDSCAPING & VARIOUS OTHER SITE ELEMENTS (Author 2018).

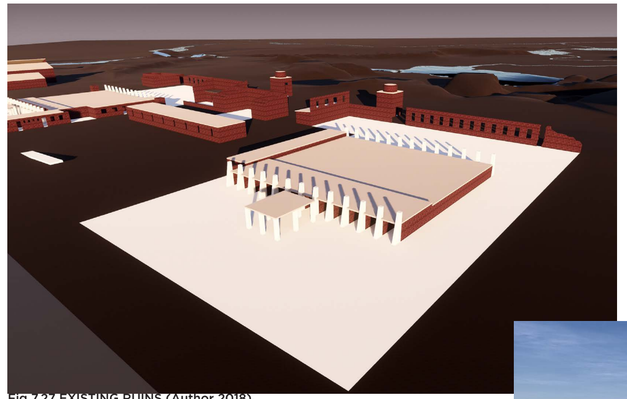


Fig 7.27 EXISTING RUINS (Author 2018).

Fig 7.28 NEW GREENHOUSE BUILT ON EXISTING RUINS (Author 2018).

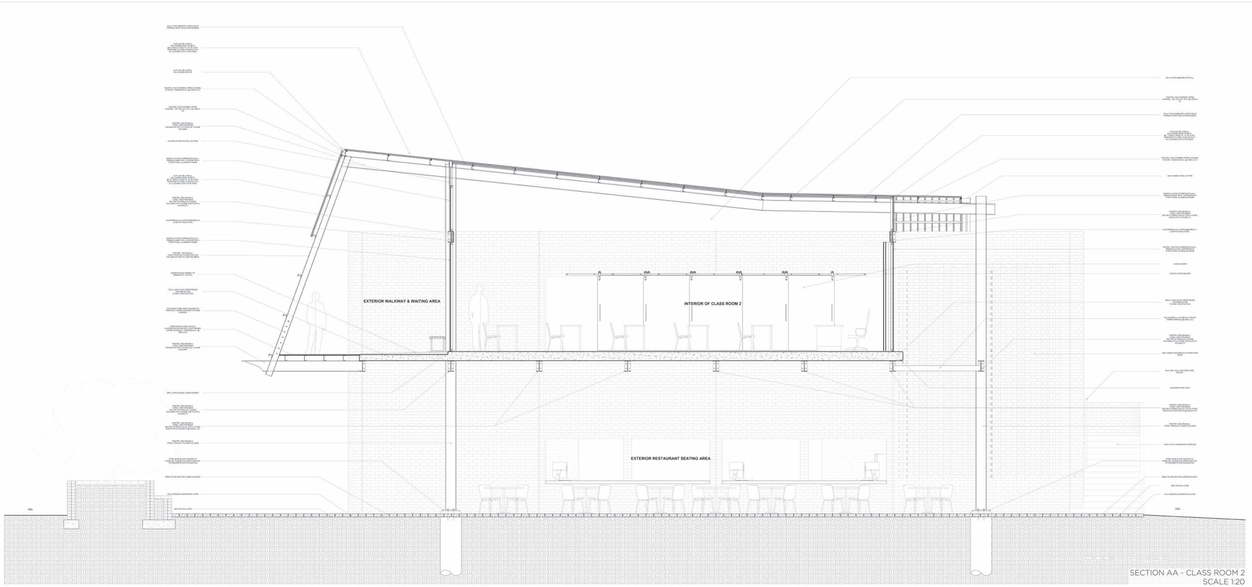


Fig 7.29 September Crit section - AA through class room (Author, 2018)

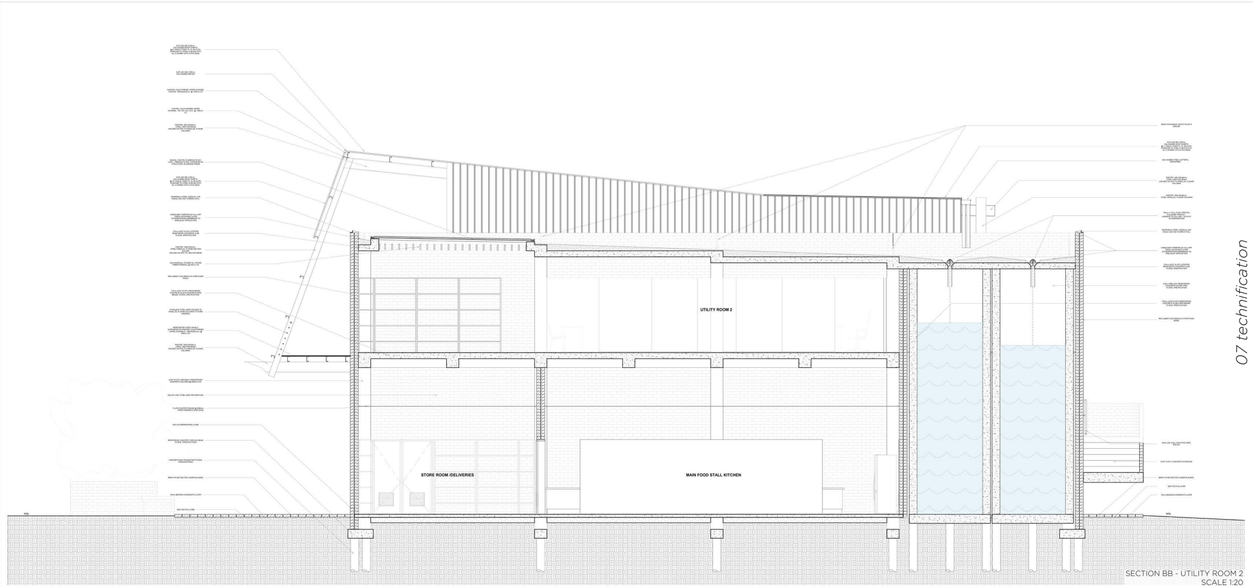


Fig 7.30 September Crit section - BB through Brick box (Author, 2018)

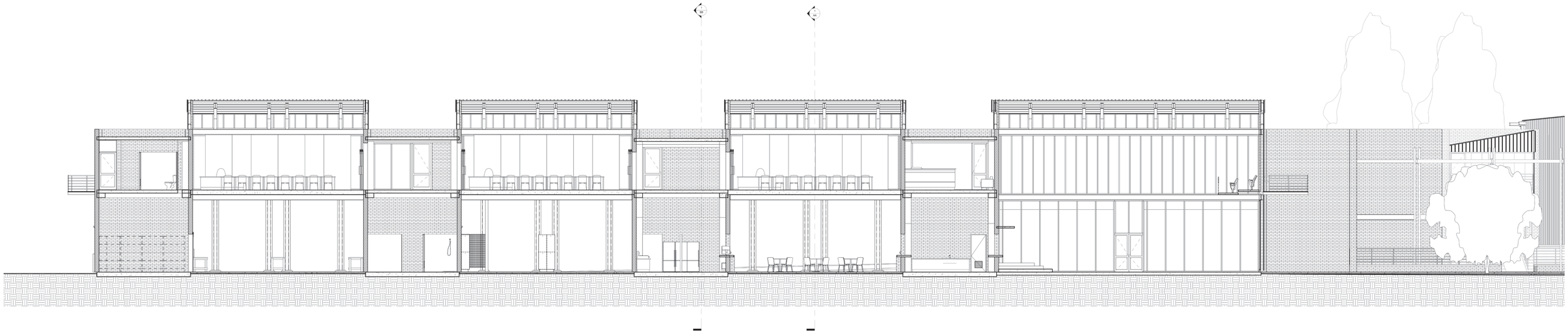


Fig 7.31 September Crit section - CC through Entire school (Author, 2018)

Fig 8.1 Rendering of the school & productive landscape (Author 2018).

CHAPTER

08

conclusion

08.1 CONCLUSION

This dissertation has highlighted the dangers associated with stigmas, particularly, stigmas associated with a post industrial site.

The particular site's stigmas had their origin with the Apartheid spatial planning legacy, the loss of economic activity and ownership has only amplified the situation.

As Jurgen Habermas suggests, a legitimisation crisis looms if a social structure is not protected, if there is no structure there is chaos. This dissertation argued that it can be mitigated through architecture. Therefore, this dissertation's gaol was to create a model that can address stigma through the creation of architecture, and test it with a new intervention.

The success of such a project can probably only be measured by building this intervention in real life. But this dissertation would argue that the model set out by the theory and contextual analysis is a viable solution in a similar predicament.

Because this is an interpretation of a context that is not directly relatable to every one, more theories and approaches can be added to strengthen this dissertation's hypothesis.

The last sentiment of Casey's paper that has to be highlighted is that, a work of art, or design, is never the only solution. Every architect, in this case, would have a different take on the problem, a different approach to design and a different architectural language (Casey, 2008:10).

The veil of uncertainty has been lifted from this site, where stigmas can be broken or suppressed by architecture.

Fig 9.1 Existing ruins of the old Era Brick Factory (Author, 2018)

CHAPTER

09

references

Fig 9.2 Existing ruins of the old Era Brick Factory (Author, 2018)

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Fig 9.3 Existing ruins of the old Era Brick Factory (Author, 2018)

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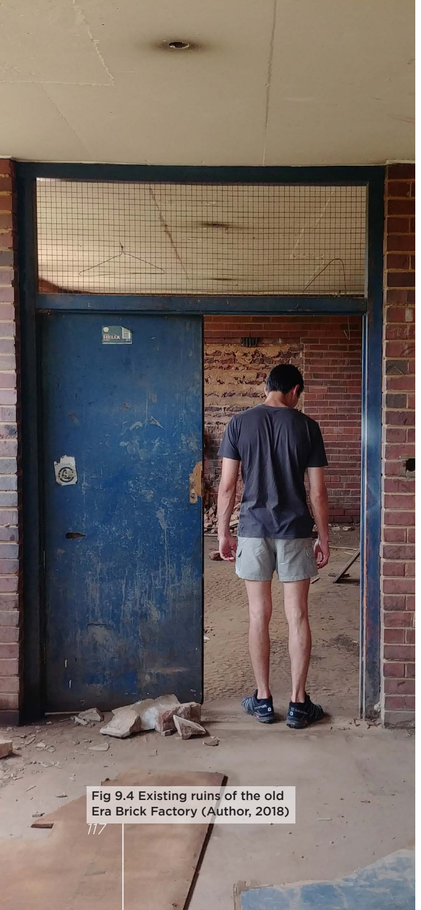

Fig 9.4 Existing ruins of the old Era Brick Factory (Author, 2018)

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Fig 10.1 Existing ruins of the old Era Brick Factory (Author, 2018)

CHAPTER

10

appendices
(article & final presentation)

Re-Creation

The de-stigmatisation of a post-industrial site, at the old Era-Brick factory in Eersterust.

Fig. 01. Above; Photo, ruins of the old Era Brick Factory (Author, 2018)

INTRODUCTION

The Era Brick-factory used to be an important economic generator in Eersterust. Yet as time and development progresses, industrial sites are often abandoned. As such, negative connotations and preconceived ideas or stigmas are formed about these sites. The same can be said for many post-industrial sites around the world and our local context.

This article will attempt to create strategies to address these stigmas, by synthesising architectural theories from both heritage and ecological standpoints, with theories surrounding stigma alleviation.

THE ISLAND

The site is a result of many historic layers including industrialisation, forced re-settlement policies, urban sprawl etc. The most pertinent issue facing the site is the fact that it is isolated from its urban context and it separates neighbouring communities, obviously by historic design.

The spatial legacy of apartheid can clearly be seen when looking aerial photos of the site, as it formed a barrier between the 'white' community of Jan-Niemand Park and the 'coloured' community of Eersterust.

This forms the first layer of this article's argument. The decades of separation has fuelled stereotyping and stigmas on both sides of this urban-island. The history of the site and Eersterust will be discussed in the next section. The other factors contributing to the site's current state, include abandonment from the end of 2013, the detrimental effect the quarry and factory had on the sites ecology, current owners using it as a dumping ground and the vast amounts of space left derelict to name but a few.

ADDRESSING THE SHADOW

In architectural theory the notion of stigma associated with place has not been addressed adequately, as previously stated this article will attempt to use existing theories in architecture and layering them with theories that address stigmas in a general sense. Thus creating a possible template to address similar situations on other post-industrial sites with social, political and environmental stigmas following them like a shadow.

Left untreated, stigmatised post-industrial sites, like the old Era Brick Factory, can deteriorate even further, causing loss of heritage fabric, urban decay and more social and political tension.

What follows is an attempt at synthesizing the above mentioned theoretical premises and coming up with possible strategies that can address the complex challenges that succeed a post-industrial site.

Fig. 02. Top Left; Site Location (Author, 2018)

Fig. 03. Below Right; Sketch, ruins of the old Era Brick Factory (Author, 2018)

THE PAST MEETS PLACE - HISTORY & CONTEXT

Eersterust was born out of a series of discriminatory laws and actions by the previous government, with the coloured community relocated to the area and further segregated by natural and industrial boundaries. The site is located 12km east of the Pretoria city- centre. Adjacent to the site is an underutilised soccer stadium complex.

BRIEF HISTORY OF EERSTERUST

In the early 1900's a settlement east of Pretoria was established on the Vlakfontein farm, owned by the Wolmarans family. Directly translated from Afrikaans, Eersterust means first-rest. Although the true origin of the settlement's name is not known, there are a couple of theories ranging from it being the first spot mail-coaches stopped while traveling to Lydenburg from Pretoria. The above-mentioned Wolmarans family wanting the coloured community to have their own place of permanent residency. And lastly during the Anglo-Boer war, the Boer-forces rested at the location after the siege of Pretoria. (Potgieter, 2002:32, 46) & (Van der Walt, 1966).

The 1958 Group Areas Act, imposed by the previous government, relocated coloured citizens to the area. From then on it became known as a predominantly coloured community, which is true up until this day. In 1994 Eersterust became part of the City Council of Pretoria and at the millennium it became part of the City of Tshwane Metropolitan Municipality. (Potgieter, 2002:46) & (Van der Walt, 1966).

The settlement has just under 30,000 residents, of which approximately 84% are of the coloured population group. About 78% of the community identify Afrikaans as their first language. (Census, 2011)

BRIEF HISTORY OF THE ERA BRICK FACTORY

On the original farm that would eventually become Eersterust, brick manufacturing was established because of the natural abundance of clay soil found between the two rivers running around the site. The first formal brick manufacturing company was established in 1947, called Era Stene (Era Bricks). (CIPC, 2018) & (Enslin, 2018).

From the middle of the 20th century the operation became formalised with the first factory buildings appearing on site. By the end of the 1960's the sports fields adjacent to the site were constructed. (National Geo-Spatial Information Database, 2018).

In the 1990's the clay found on site was exhausted and alternative sources had to be transported daily to the factory. In the last decade of the previous century, the soccer fields were upgraded to the stadium complex as it stands today. (National Geo-Spatial Information Database, 2018) & (Enslin, 2018).

In late 2013 the entire brick factory and quarry were decommissioned. The buildings were demolished, and usable components were sold/recycled. The site was then sold to the Labucon group, a civil engineering company that uses the site to dump excavated soil from building sites in and around Pretoria. (National Geo-Spatial Information Database, 2018), (Enslin, 2018) & (Labucon, 2018)

Fig. 04. Left; Sketch, ruins of the old Era Brick Factory (Author, 2018)

Fig. 05. Opposite Top; Sketch, of stigmas (Author, 2018)

ISSUES
GENERAL ISSUE

The most prevalent issue(s) this article seeks to address is the stigmas associated with post-industrial sites. Stigmas often have a push-away effect, which can have dire consequences for interaction, development or preservation. The old Era brick factory site has multiple stigmas associated with it. The main stigmas associated with this site are divided in three broad categories to make the reaction strategies quantifiable, and easier to relate to architectural theories. They are as follows:

1. Social stigmas. Loss of jobs (after the factory closed), the lack of activity on the derelict site, underutilisation of the stadium.
2. Political stigmas. Continuous segregation of neighbouring settlements with little to no interaction between communities separated along racial and economic divides.
3. Environmental stigmas. Pollution from the previous and current owners that resulted in a scar in the landscape.

THE URBAN ISSUE

At an urban scale the site forms a barrier between two suburbs, namely Eersterust and Jan Niemand Park. This separation is reinforced by the natural barriers of the two rivers flowing on either side of the site, the mountain to the north and the man-made barriers of Stormvoël road, and industrial areas like Silvertondale. Thus strategies need to be adopted to address the site as an urban island to break this barrier between segregated communities. Making the site a common ground rather than a barrier.

ARCHITECTURAL ISSUE

The underutilisation of the adjacent stadium and the complete lack of activity on site presents an opportunity to create an architecture that has more than mere functional significance, rather than a housing development currently being proposed by developers that will inflict more damage to the site. Creating an architecture that seeds ownership and pride, for more than one group of users.

THEORETICAL CONTEXT

This article argues that architecture can be a viable solution to solve stigmas associated with place. Strategies to address stigmas in general are being adapted to suit a spatial problem. To ground this argument in architectural constructs, theories from the Heritage & Cultural Landscapes and Environment Potential are synthesised.

The confluence of these theories are then connected to the aforementioned stigma approaches. (See diagram)

STIGMA

A stigma is defined as a perceived negative attribute or feeling of disapproval that causes someone to devalue or think less of a circumstance, quality, place or person. (Synthesis of multiple definitions, see endnotes).

According to a 2009 article by the Government of Western Australia, stigma often leads to an individual being stereotyped. In turn this leads to prejudice and lastly to discriminatory actions on said individual or group.

STIGMA = STEREOTYPING –> PREJUDICE –> DISCRIMINATION
(Government of Western Australia, 2009)

This can then be further unpacked to focus on stigmas of place. Usually this is associated with landscapes that carry severe damage or that are linked to a certain negative event, the Chernobyl nuclear disaster or Auschwitz for example. This is not limited to historically significant places, as any productive facility that is currently in operation or has ceased operation (post-industrial sites), can carry a stigma. (Leiss, 2013:2.)

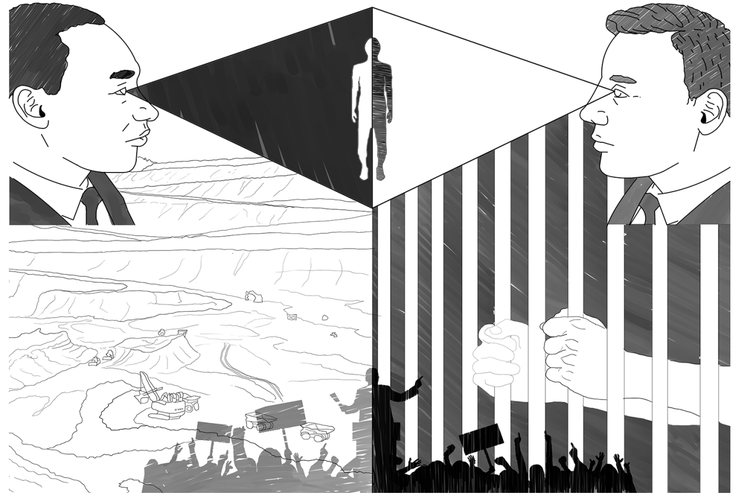
Thus it is unsurprising that stigmas are often associated with areas where disenfranchised communities dwell.

This notion is often perceived by both parties directly associated and outside of the community in question, al be it from different perspectives and different outcomes (Flanagan et al. 2017:6).

Thus what are some of the most important characteristics of a stigmatized place?

- There is a perceived risk.
- Avoidance of the place as a result of the risk.
- There is an abnormality associated with the place.
- Associated with a socio-economic or socio-political issue.
- It is discussed in a negative light in the media or personal conversations.
- There is a stereotypical mentality and image associated with the place. Suggestive language is used by people when discussing the place.
- The negative emotions and rash reactions the place evokes.

(Leiss, 2013:3 & 8.) (Flanagan et al. 2017:7).



STIGMA RELIEF STRATEGIES

Various strategies exist in a general sense to alleviate stigmas- the relevant sources were consulted, synthesised and reinterpreted to alleviate stigmas of place:

- Communication & interaction between the opposing communities.
- Education, learning from and about each other.
- Create shared spaces, where social interaction can take place.
- Facilitate empowerment, through education, skills development and equal opportunity.
- Build a community, where competition and interaction can happen.

(NAMI. 2018) (The Mighty. 2018) (Socialist Health Association. 2018) (Mend the mind. 2018) (Gluck, S. 2018) (Government of Western Australia. 2009) (Leiss, W. 2013).

Fig. 06. Opposite Top; Photo, ruins of the old Era Brick Factory viewed from stadium (Author, 2018)

Fig. 07. Right; Diagram, of Theories & Strategies Considered (Author, 2018)

HERITAGE & CULTURAL LANDSCAPES APPROACHES

The first Era brick factory building was built between 1950's-1960's and the second factory building was built between 1976-1980's. Thus, some of the buildings on site are older than 60 years and are protected by the heritage charters. Unfortunately the bulk of the buildings on site are not old enough to be protected. This undoubtedly contributed to the demolition of the factory buildings.

However, it is arguable that the site has significance through what it meant to the community by providing jobs and skills. If one expands the significance to the adjacent sports stadium, it becomes clear that there is value left on the post-industrial site that needs protection and reinterpretation. The leftover built fabric has a unique character that still speaks to its original design and honesty of materials. The buildings were constructed from mostly bricks, bricks that were manufactured from the very soil it stands on. This adds layers of significance that vouch for its importance in Eersterust's history.

The two main charters to be used in this argument are the Xi'an declaration on the conservation of the setting of heritage structures, sites and areas and the Nizhny Tagil charter for the industrial heritage. The following is a summary of what aspects in a theoretical sense are relevant to the site in question and the approaches that will be used to design with. The Xi'an declaration is focused on general heritage buildings and landscapes, where the Nizhny Tagil charter is focused on industrial heritage.

- First, one must acknowledge the significance of the setting, particularly for post-industrial sites, even their environmental leftovers can be considered for their archaeological and ecological value. The site has significance from a functional perspective, not particularly from an architectural perspective. The site was used as a quarry and brick factory, even before the first building was built, or the establishment of Eersterust itself. Furthermore the adjacent stadium complex adds another layer of significance (Nizhny Tagil. 2003) (Xi'an. 2005).

- Second, the charters calls for an understanding of the history, evolution and character of the setting through diverse forms of documentation, literature, interviews and media. (Nizhny Tagil. 2003) (Xi'an. 2005).

- Third, the charter dictates that any development on such a site should positively reinterpret and contribute to the character that makes the site significant. With sites that are at risk, appropriate measures should be implemented to reduce risk and assist interventions that aim to repair or re-use the site. In other words an intervention on the Era brick factory should protect the most important buildings left on site and utilise the productive nature of that what is left without losing this significance (Nizhny Tagil, 2003) (Xi'an, 2005).

- Fourth, the historic significance should not prevent or obstruct development from happening on site as long as it is handled with respect. New uses should, respect, maintain, and interpret the existing fabric (Nizhny Tagil, 2003) (Xi'an, 2005).

- Fifth, the charters call for an intervention to engage with local communities and stakeholders to give the site a new significance, this is vital to protect and conserve its heritage (Nizhny Tagil, 2003) (Xi'an, 2005).
- Lastly, adaptation and re-use, should be reinforced by contributing to sustainable development. Industrial heritage can have an important role in economic regeneration. If such a re-use creates new employment opportunities. (Nizhny Tagil, 2003)

From the above mentioned charters it is clear that it is vital to build on and interpret the existing built fabric and story of place of the site. To be more specific a new intervention will have to consider the various layers on site as palimpsest, to inform design. One of the most important documents on the subject matter is the article by R., Machado, entitled Toward a Theory of Remodelling, Old buildings as palimpsest. As a strategy to design with, Machado can be used in the following ways:

- The building as palimpsest – The most obvious approach this dissertation will use is to use the old layers of the site as a design informant for the new architecture.

- Remodelling as rewriting – Changing the features of a building to suit its new functions. This calls for innovation and sensitivity.

- Re-functionalizing – Or adaptive re-use, is an approach that is an attempt to add new functions to the left over built fabric.

- As a repository – the past layers of the site is a resource to draw from to inform design.
- The past itself as the material – The past layers act as a material to use or to build on top of in a new interpretation of the site or building.

- Type Transformation – The type of a building can be changed to suit new conditions.

(Machado. 1976).

ENVIRONMENT POTENTIAL

The factory and more importantly the quarry, left a scar on the landscape. Thus it is vital that the argument must be supplemented with an ecological response. The article will focus on regenerative design as a framework to respond to the environment potential that the site has. The following approaches are merely to support the design decisions taken in this proposed framework. The approaches to be adopted is set out by P. Mang & B. Reed in their paper entitled; Designing from Place a Regenerative Framework and Methodology.

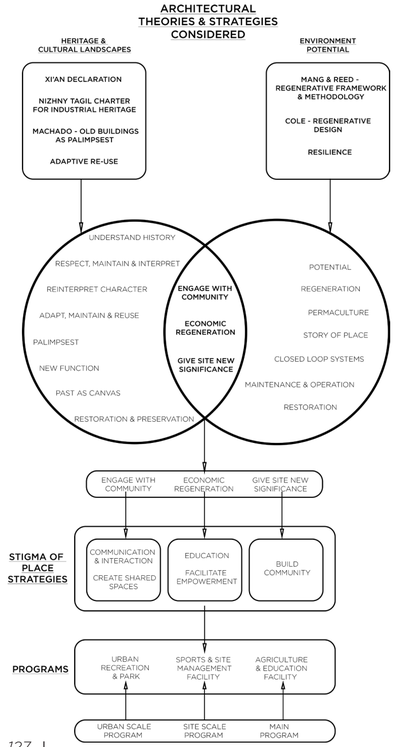
- Organize activities on site that continuously feed and are fed by the living systems within which they occur. Thus man as part of nature, not above nature. This of course refers to the growing of fresh produce, capture and use of water, and lastly harnessing the sun's energy for electricity generation and day lighting.

- From regeneration potential standpoint, design will have to take maintenance and operation in to consideration.

- Consider permaculture as a design informant, in other words, shifting from dominance to a close relationship with nature, through mutually beneficial interactions. Weave the human and natural together into a dynamic whole.

- The notion of story of place, as referred to in the HCL section above as well, that by creating a new significance creates an incentive for the community to take ownership of a place. In this way they are more likely to take care and maintain such a facility.

- When looking at a new design it is imperative that one considers the potential it has from a larger perspective, specifically how it can integrate into and enhance the existing systems in and around the site. In turn this will contribute to the viability and vitality of a project.



- As stipulated in the HCL section above, by engaging with the community and relevant stakeholders the project will have greater significance, making a stronger case for its very existence

(Mang & Reed. 2012) (Cole. 2012).

From the diagram in Fig 7, it is clear that there is a confluence of ideas from the Heritage and cultural landscapes and Environment potential discourses. The confluence of these ideas will be linked to stigma of place theories that relate to them the most. These links will act as the main theoretical drivers for informing design. The most important notions being:

Engaging with the community --- Communication & interaction, Create shared spaces.

Economic regeneration --- Education, Facilitate empowerment

Giving the site a new significance --- Build community

The three solutions above will be solved and addressed on different scales, as follows:

Engaging with the community: Urban vision scale.

Economic regeneration: Site vision & programmatic scale.

Give site new significance: Architectural scale.

Thus it can be argued that architectural intervention can be a viable solution to solve stigmas associated with place, in this case a post-industrial site. The premise mentioned in the theoretical section of this article along with the context of the site is what informed the proposed program(s) for the site.

THE PROGRAM(S)

URBAN VISION - AN URBAN RECREATIONAL FACILITY & PARK

From what has been uncovered in the previous sections of this paper, the urban scale program needs to engage with the community. It needs to respond to its context in a way to alleviate the stigma surrounding the site in an urban scale. It has to break the notion of the site being a barrier and make it a middle ground.

The rivers forming the first layer of this barrier, can be used as a spine to connect the neighbouring communities to one another. There are several schools in the immediate vicinity of the Era brick factory. With children from both communities attending schools in the area, coupled with the existing foot paths towards the northern edge of the site, presents itself as an opportunity to improve the linkage between the settlements.

The urban vision proposes a new road with adequate cycle and foot paths supporting it, to be built along the Rietspruit river, to connect the schools North of Jan Niemand Park to the schools situated along the Rietspruit river and south to the Eersterust soccer stadium.

The natural landscape needs to be rehabilitated on areas where extensive damage has been inflicted by the quarry. A series of board-walks and paths are proposed, so the natural landscape can be transformed into a recreational park, activities like hiking, trail running and mountain biking would then be possible. The phenomenological experience the ponds found on site need to be strengthened to add to the character of this new recreational park.

To revitalise the Eersterust stadium complex, the addition of multiple sports are proposed, to give the site a more diverse user base, while attracting more users on a more regular basis.

SITE VISION & PROGRAMMATIC SCALE - AN AGRICULTURAL & EDUCATION FACILITY

The focus of this scale of program needs to be on economic regeneration and empowerment. Thus, education and skills development is vital. The western portion of the existing buildings and ruins are proposed to become a new vocational school. This portion will not be designed but be in a proposal phase only. The eastern portion, that is closest to the stadium complex, will be dedicated to urban farming, teaching the communities how to provide form themselves and generating an income.

A portion of the landscape around the new proposed building will act as a proof ground, for farmers to test and expand their skills and knowledge. Connected to this an

Fig. 08. Top; Photo, ruins of the old Era Brick Factory (Author, 2018)

Fig. 09. Right; Photo, ruins of the old Era Brick Factory (Author, 2018)

educational facility that can aid in gaps of knowledge left in the community. Multi-use class rooms that can serve more than one demographic of 'student'. Teaching urban farmers, providing school children a safe place to do homework, to name but a few prospective 'clients'.

ARCHITECTURAL SCALE - A SPORTS & SITE MANAGEMENT FACILITY

At this scale it is vital to give the community a sense of ownership and pride. Thus, one cannot and should not ignore the untapped potential of the adjacent stadium complex. It is evident that the lack of activity on site has contributed to the dismal state of both the derelict brick factory and the underutilised stadium.
The final program proposed is a sports- and site- management facility, to be the transition between the stadium complex and the old factory site.

To build the sense of ownership it is important to provide areas for social interaction, especially when a sporting event is taking place. Thus the program suggests providing various food stalls, both permanent and informal. The need for adequate nutrition and the sense of community surrounded by eating and preparation of food, is a vital program to strengthen all the other programs mentioned. Providing space for formal and informal commerce for goods and produce produced on site. Lastly providing facilities like a gym, team meeting spaces and gym to strengthen the sporting leg of this proposed program.

PRECEDENT

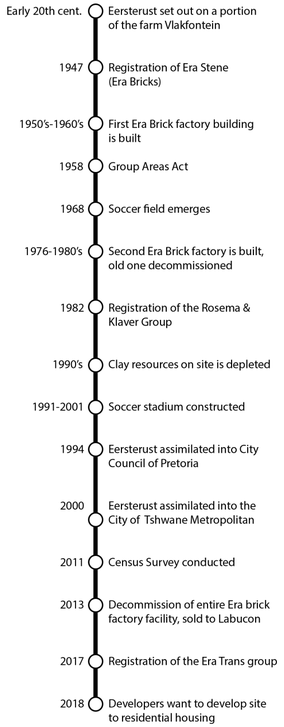
I am particularly influenced by the work done by Jose Forjaz, his minimalist designs are frugal yet detailed. Forjaz uses a simple pallet of materials that he manipulates to form extraordinary designs. A strong believer in context and making true African architecture. This can be seen is his Fisheries museum in Maputo, Mozambique.

The building sits on a very prominent square, in one of the oldest parts of the city. The building is very simple to read and to navigate, which is a testament to his cleaver design. The aspect of this building that is most relevant to this project is the fact that it plays with transparency of its facades and levels. Creating interesting thresholds for the users to pass through and experience. A very simple plan that is very cleaver with its use of large open spaces. The same vastness and transparencies are akin to the Era brick factory site. With areas that need to be public and the deeper reaches of the building being more private and intimate as the program calls for it. His building although relatively large feels light, and sensitive to its context. Forjaz designs buildings to human scale and it is no deferent in this instance (Forjaz, J. 2011).

The I-CAT Offices and Warehouse by Earthworld Architects is a beautiful building in Pretoria designed with ecological principles in mind. The building was designed to be sustainable on various levels including economic, environmental and social levels. The philosophy behind the building is to realise that these three factors have impacts on each other and was thus a confluence of the three ideologies. Being such an environmental considerate building, both active and passive systems were implemented to improve human comfort and minimize environmental impact.

Honesty of materials that have low maintenance requirements were used. On the southern side of the building the architects designed pergola structures that allow trees to eventually grow in the structures. The building dematerialises where the threshold between inside and outside gets blurred. Thus strengthening the buildings connection to nature (ArchDaily. 2018).

These principles match the strategies proposed in this article, that the confluence of numerous philosophies can be a conceptual driver for a new building design. The use of natural materials and materials of low maintenance reinforces this ideal. Moreover the connection of inside and out through clever thresholds is of vital importance to the proposed design.



CONTRIBUTION/CONCLUSION

This proposals contribution is grounding the project in a unique South African context. A post-industrial site that has stigmas associated to it, that originates out of South Africa's spatial-legacy.

This project hopes to have a unique approach to using the existing context to the projects advantage, from seeing the opportunities in the greater urban context, contributing to the school infrastructure in the area. Creating a place where different communities can find common ground. A space where people can be empowered rather than being shunned by the preconceived ideas the site had been associated with.

This project aims to create thresholds that create the perception of safety in an otherwise bleak context. Where the architecture contributes to the character of the landscape rather than feeding on and scaring it.

Yet the main contribution is connecting architectural theory to the relief of stigmas theories and making new applicable spatial principles. It stands to reason that an island site as the old Era brick factory can have very negative urban consequences, and that this proposal can be a viable solution to the challenges facing such a site.

Fig. 10. Top Left; Diagram, Era Brick Factory Timeline (Author, 2018)

ENDNOTES

Various definitions of a stigma:

- A mark of disgrace associated with a particular circumstance, quality, or person. (en.oxforddictionaries.com, 2018).
- A strong feeling of disapproval that most people in a society have about something, especially when this is unfair. (dictionary.cambridge.org, 2018).
- If something has a stigma attached to it, people think it is something to be ashamed of. (collinsdictionary.com, 2018).
- Stigma is a perceived negative attribute that causes someone to devalue or think less of the whole person. (healthyplace.com, 2018).

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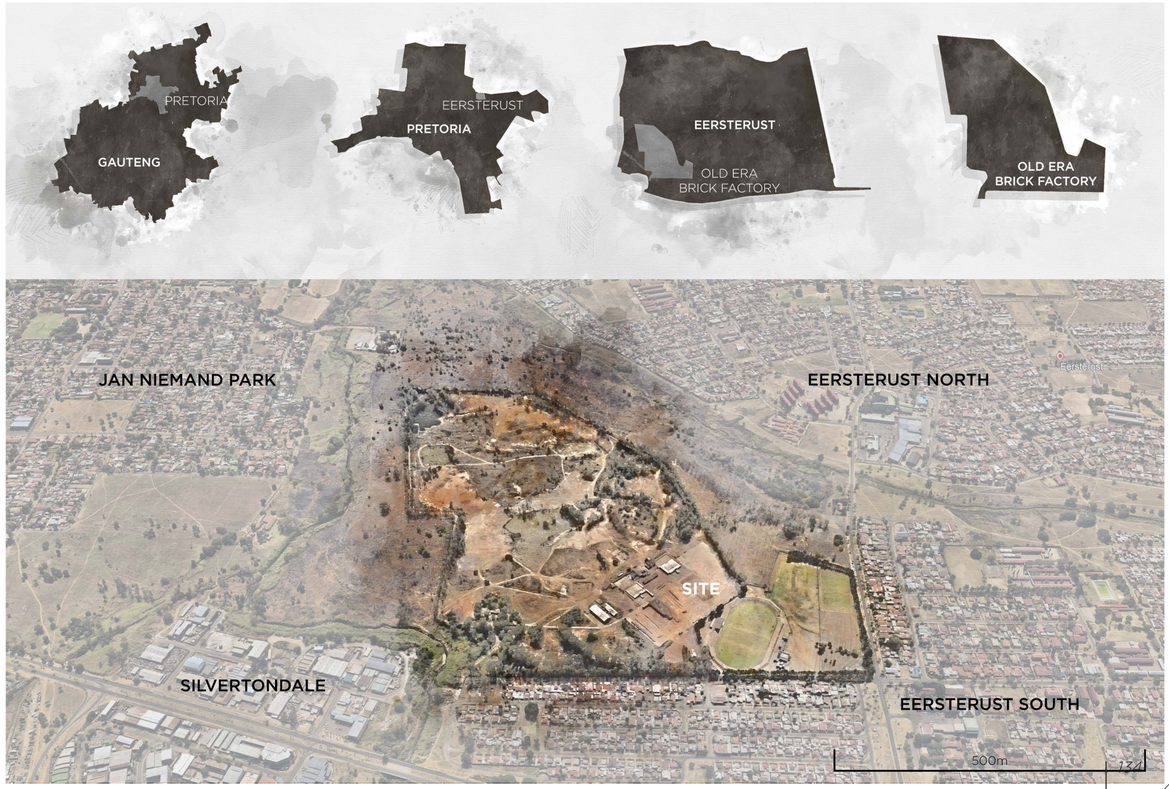
FINAL PRESENTATION



SITE LOCATION

2013

AERIAL PHOTO JUST BEFORE THE FACTORY'S CLOSURE

DECOMMISSIONED BRICK OVEN

ACTIVE BRICK DRYING TRACKS

OLDEST BRICK FACTORY BUILDING

2018

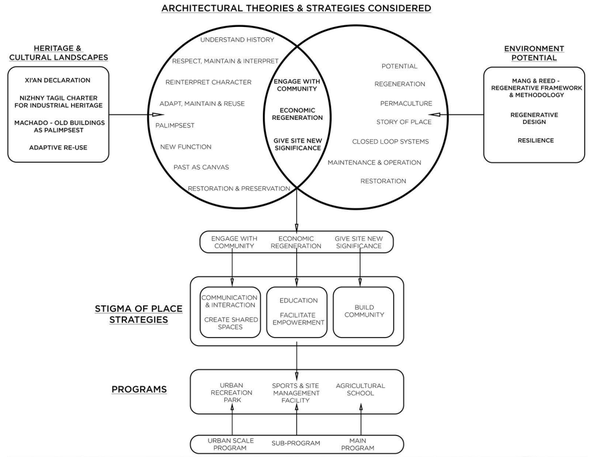
SKETCH OF THE REMNANTS OF OLD BRICK FACTORY (2018)

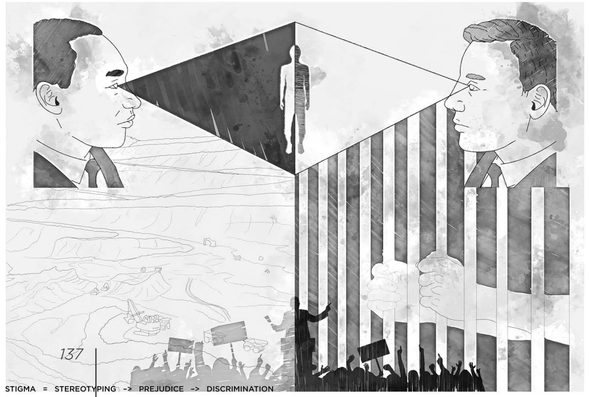
OVERGROWN BUILT FABRIC

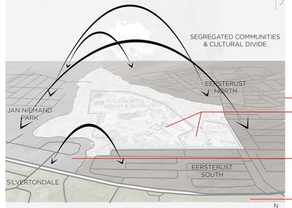
LEFTOVER BRICK DRYING TRACKS

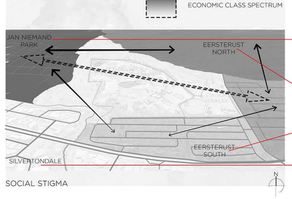
VIEW FROM STADIUM

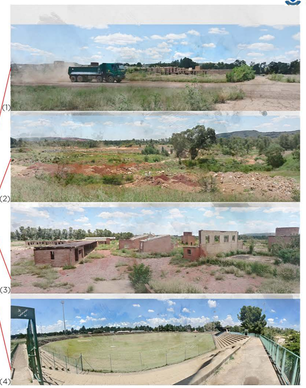
SITE DETERIORATION











EERSTERUST: CLASSIFICATION: RESIDENTIAL AREA
POPULATION: 83.5% COLOURED 14.4% BLACK
LANGUAGE: 77.5% AFRIKAANS 10.5% ENGLISH

SITE: CLASSIFICATION: INDUSTRIAL & RECREATIONAL

JAN NIEMAND PARK: CLASSIFICATION: RESIDENTIAL AREA
POPULATION: 59.3% WHITE 28.4% BLACK 10.8% COLOURED
LANGUAGE: 66.9% AFRIKAANS 6.68% ENGLISH 4.6% SESOTHO

SILVERTONDALE: CLASSIFICATION: INDUSTRIAL AREA

THEORETICAL PREMISE & STIGMA

FISHERIES MUSEUM
JOSE FORJAZ

CONTEXTUAL PRECEDENT

-Pays homage to the context's industrial heritage.

-Located in the harbour precinct of Maputo, Mozambique, the building was a competition entry by the Mozambican architect, Jose Forjaz.

-The museum was built on a very important public square in a historic location, on a very limited budget- resorted to building it in phases (Jose Forjaz Arquitectos, 2011).

-Great care was taken to make economic use of materials, both in the construction process and for future maintenance (Jose Forjaz Arquitectos, 2011).

-Attention to proportions, interesting approach to thresholds, use of materials.

-The architectural language is derived from ship building, yet it does not look like a boat, that would be too obvious, the technology used is derived from boat building conventions, particularly in the shape of its roofs. The ground floor is much more solid (below a boat deck) while the first floor is much lighter and open (above a boat deck).

-The bricks that will be used in the proposed intervention, were found on site, were made on the site and from the very soil on which the new building would be built.

I-CAT OFFICES & WAREHOUSE
EARTHWORLD ARCHITECTS & INTERIORS

TECHNOLOGICAL PRECEDENT

-The building utilises passive systems like orientation, shading, natural ventilation and lighting, with the main courtyard, being orientated to the south, with day lighting being a priority (ArchDaily, 2016).t

-Furthermore, the northern façade was designed to allow for summer shading and winter heat gain. A photo-voltaic system was implemented to supplement the building's electricity requirements. Runoff from the buildings' roofs is collected for use in the building (ArchDaily, 2016).

-Materials and finishes were used to keep maintenance to a minimum. Solid face brick walls were used to great effect as a contrasting element to the "softer" elements as the glass, steel and pergola structures.

-This dissertation took its inspiration from the use of solid face brick walls as a contrasting element to the softer areas of the building. The attempt to connect the interior to the exterior, through the use of transparent façades and pergolas to soften the transition or thresholds of this building, is of particular interest.

-Vegetation and permeable paving were also used to great effect to soften this threshold.

SAINT PETER HOUSE
PROYECTO CAFEÍNA & ESTUDIO TECALLI

FORMAL PRECEDENT

-This house was constructed from locally sourced red face bricks. The house showcases a handmade quality with the use of brise soleil and the dramatic geometry of the façades.

-The geometry allows for interesting openings that provide day lighting, ventilation and the framing of appropriate views.

-The abnormal footprint of the building lends itself to an open plan layout on the ground floor.

-The first floor contains two bedrooms and a roof garden. All these spaces are built around an internal courtyard to help with ventilation and day lighting.

-The windows are particularly interesting as waterproofing them can be challenging when implementing brise soleil in interior to exterior spaces.

SINO-ITALIAN ECOLOGICAL & ENERGY EFFICIENT BUILDING
MARIO CUCINELLA ARCHITECTS

FUNCTIONAL PRECEDENT

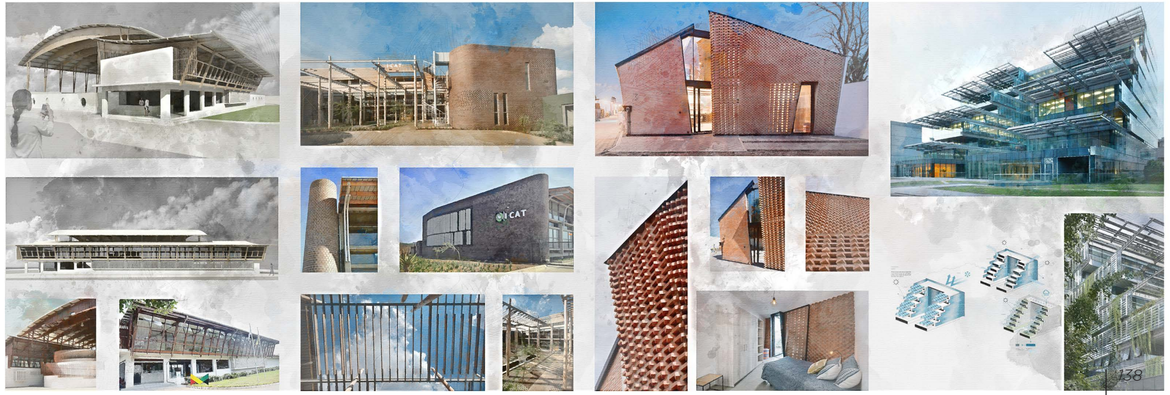
-The building integrates passive and active systems to control day lighting, temperature and fresh air conditions.

-This building, like the two previous examples, is also designed around a central courtyard with public spaces that have views on to a garden.

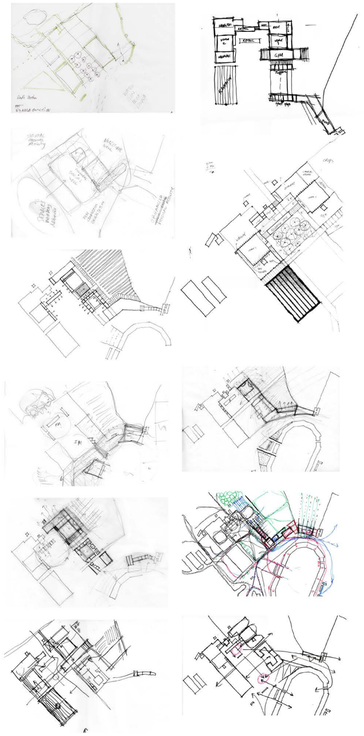
-The building is orientated to a north-south axis, taking cold winter winds and a transparent southern façade into consideration.

The functional spaces, which include offices and labs, on the upper levels have stepped gardens covered by solar-panels that serve as sun shields, pergolas and electricity generators.

The important aspects of this building are, the innovative use of solar panels that serve more than one purpose, the landscape being pulled into the building and the systems that cools and ventilates the building.

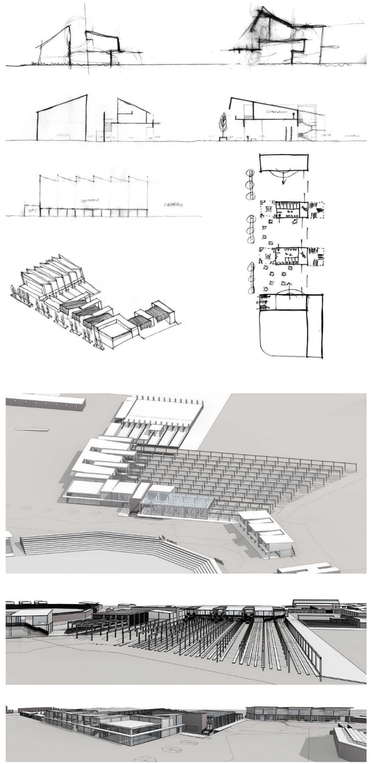


PRECEDENTS

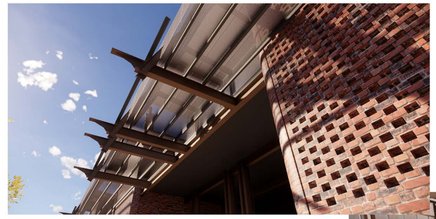


APRIL-MAY

MAY-JUNE



JUNE - SEPTEMBER



SEPTEMBER - NOVEMBER

MAPPING
SCALE 1:10000

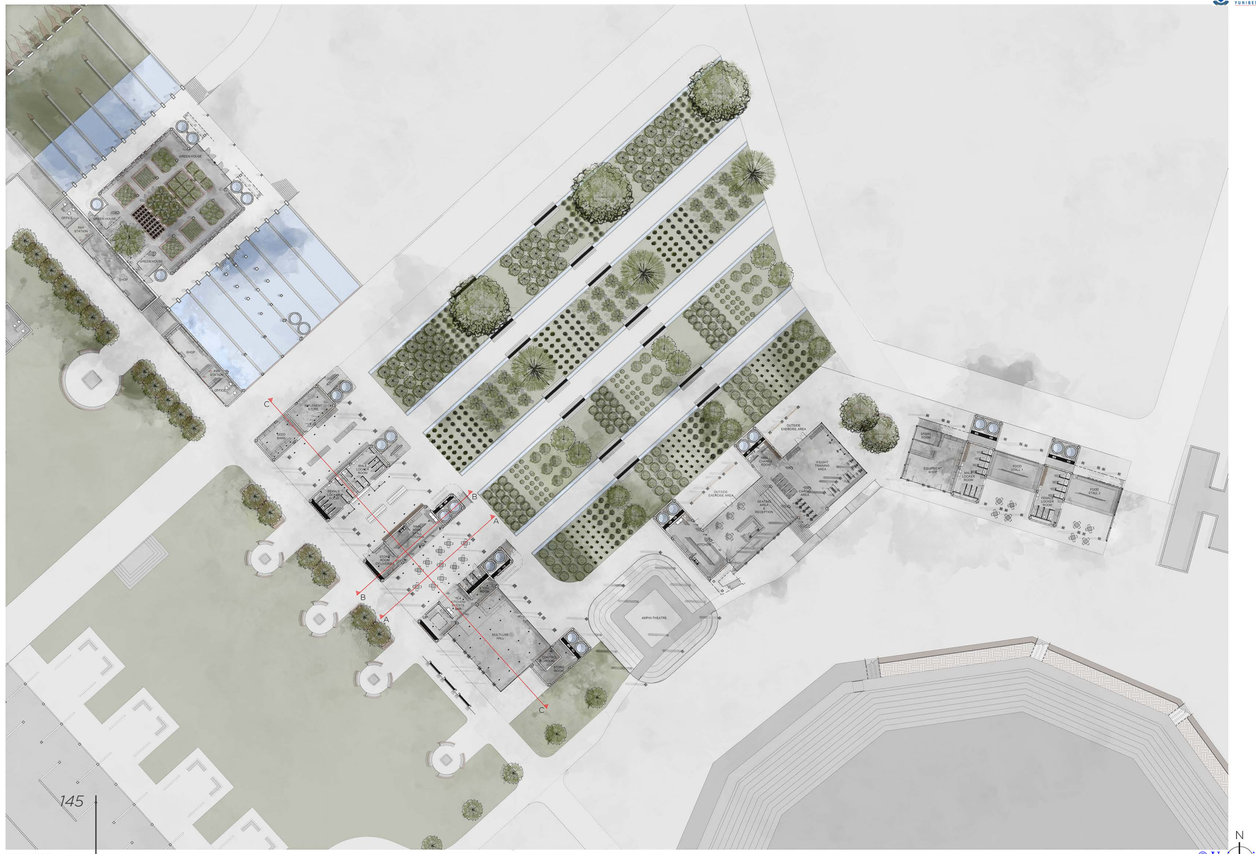
MAPPING & URBAN STRATEGIES

STRATEGIES
SCALE 1:10000

SCALE 1:2500 (BOTHA 2015, JORDAAN & VAN RENSBURG, 2018)

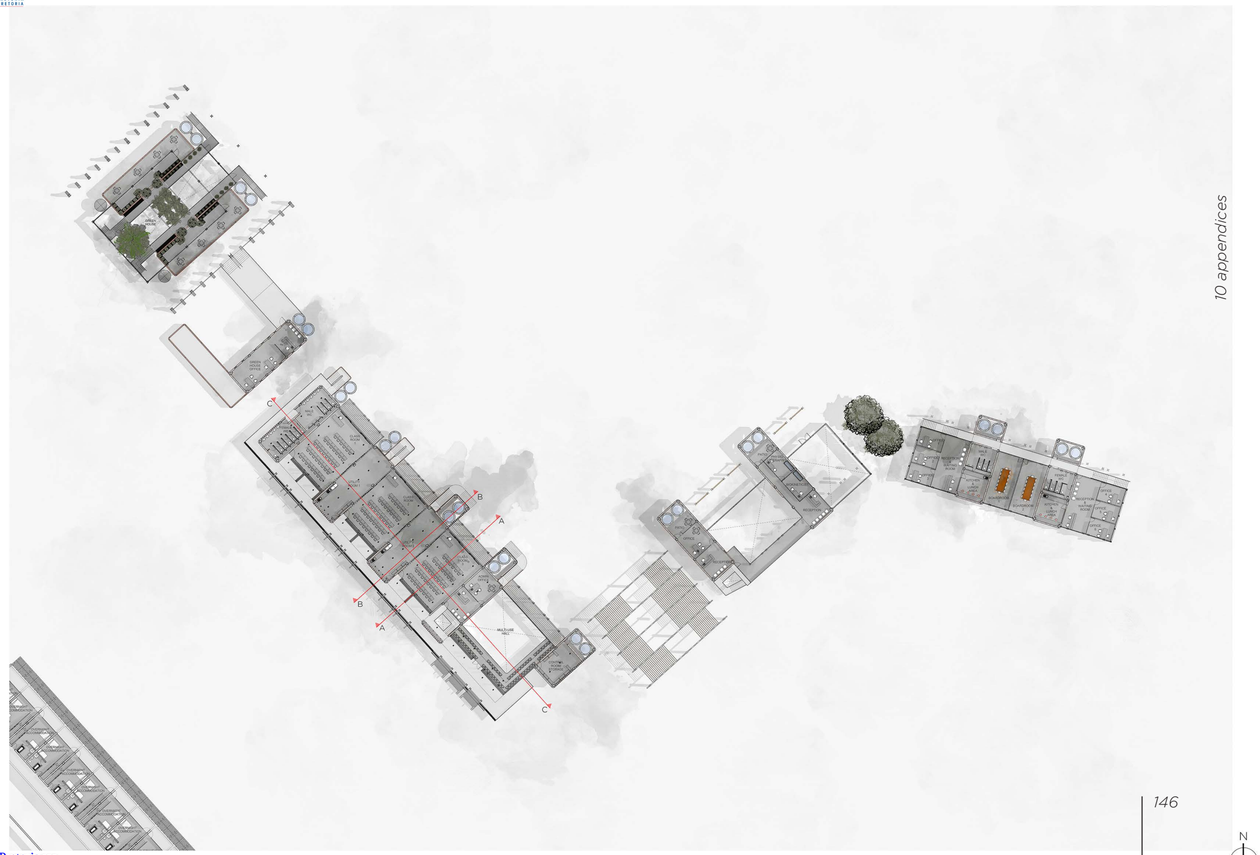
URBAN VISION

SITE PLAN



SCALE 1:200

GROUND FLOOR PLAN



SCALE 1:200

FIRST FLOOR PLAN

147

AGRICULTURAL SCHOOL

148

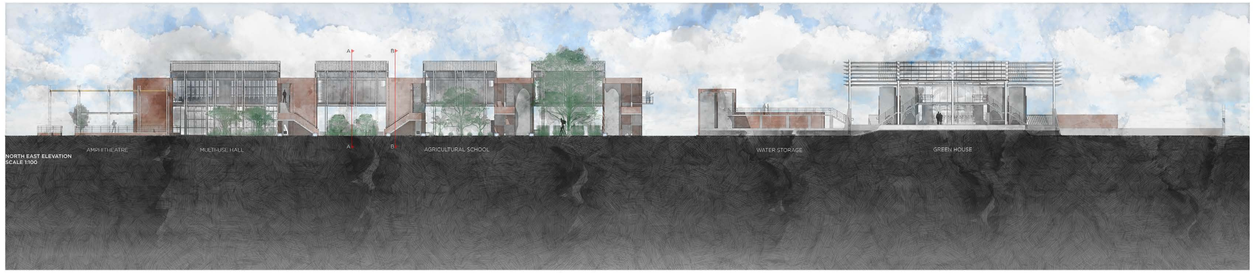
CLASS ROOM

BRAAI AREA

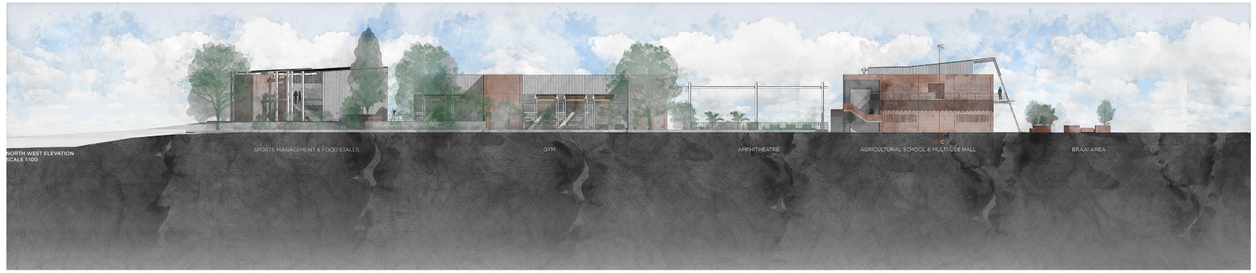
GREEN HOUSE & COURTYARD

GREEN HOUSE INTERIOR

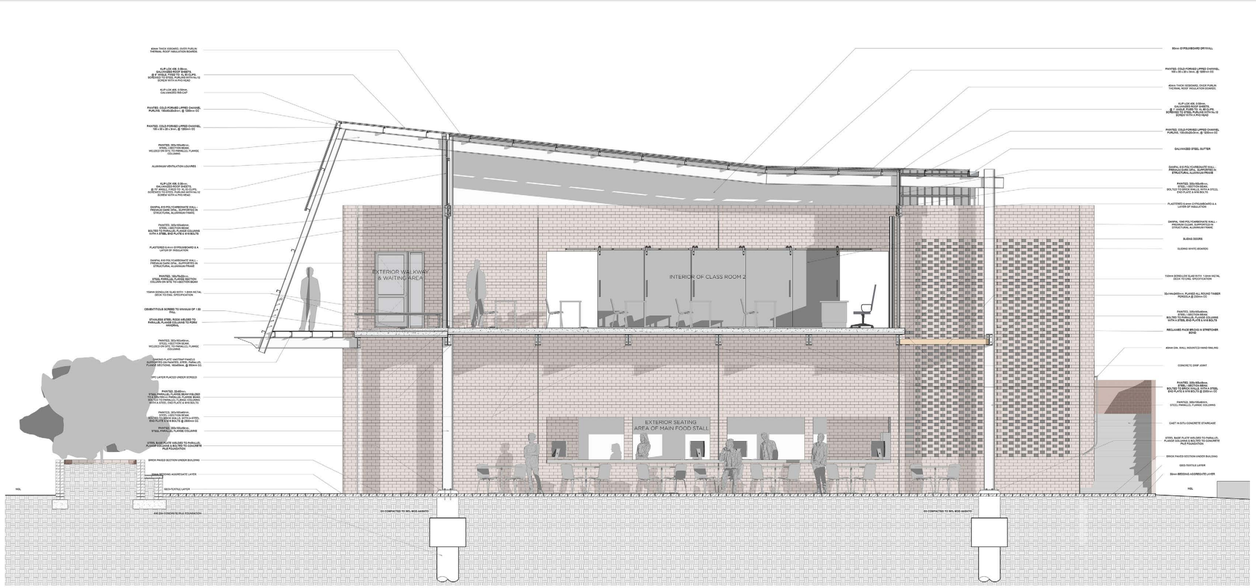
GREEN HOUSE

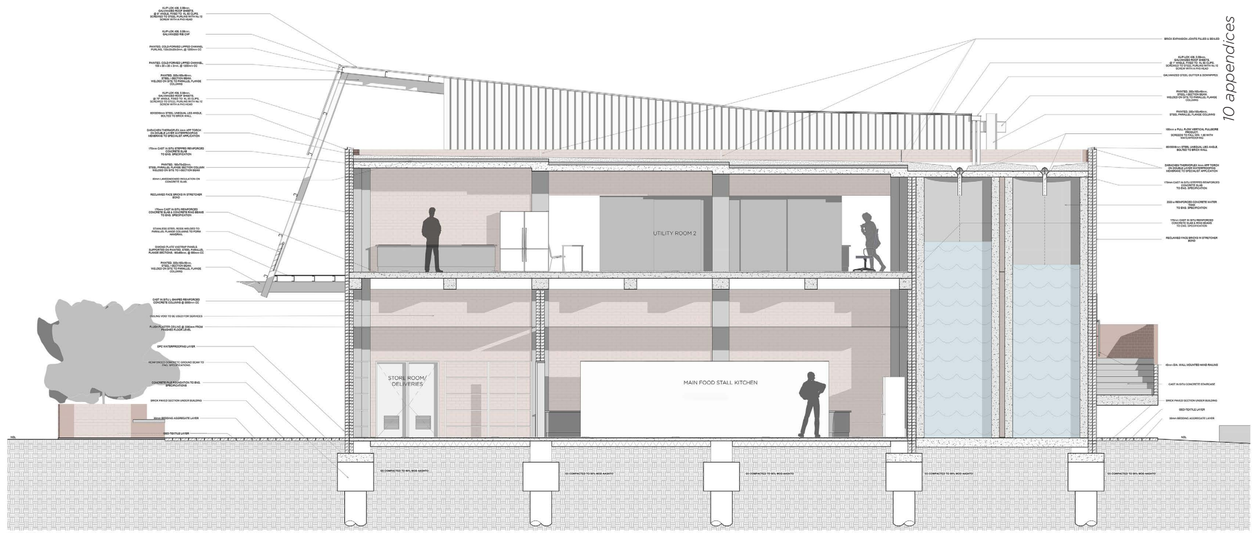


ELEVATIONS



ELEVATIONS

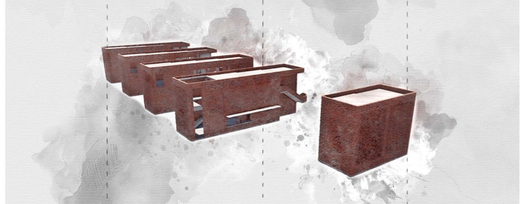




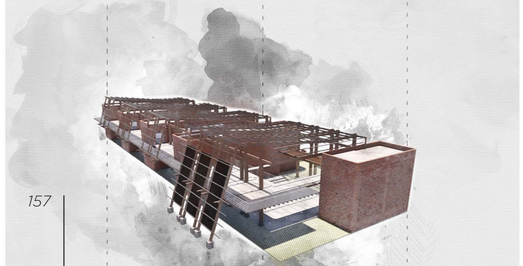
SCALE 1:20

SECTION BB

PHASE 1 - REINFORCED CAST IN SITU CONCRETE COLUMNS, RING BEAMS & SLABS



PHASE 2 - RECLAIMED BRICK INFILL



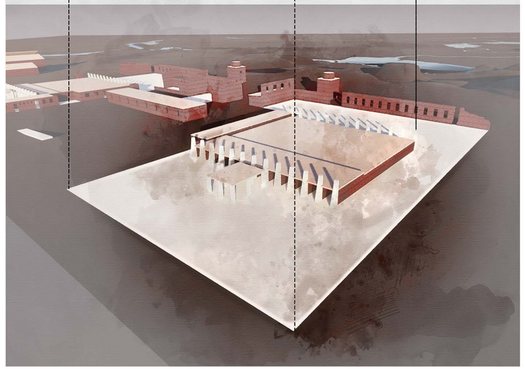
PHASE 3 - STEEL BEAMS, COLUMNS & WALKWAY. COMPOSITE BOND-DECK FLOORS. PERMEABLE PAVING AT EXTERIOR SPACES.

PHASE 4 - DANPALON POLLY CARBONATE GLAZING. KLIPLOCK 406 ROOF SHEETING, WITH STEEL SUB-FRAME, DRYWALLS & INSULATION.

PHASE 5 - LANDSCAPING & VARIOUS OTHER SITE ELEMENTS

CONSTRUCTION PHASES

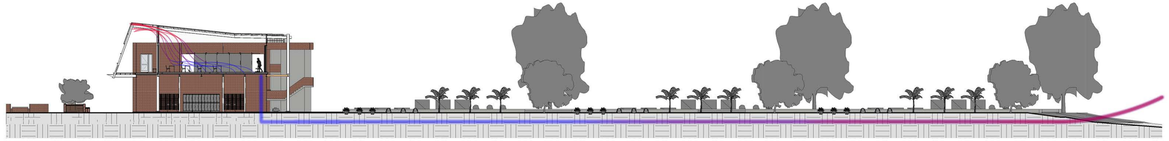
NEW GREENHOUSE BUILT ON EXISTING RUINS



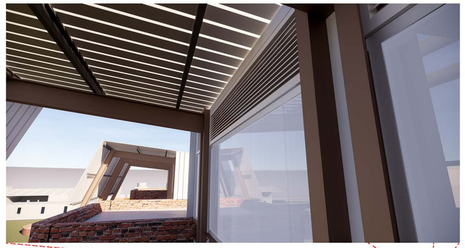
REUSED BUILDINGS & FOOTPRINT

SCALE 1:50

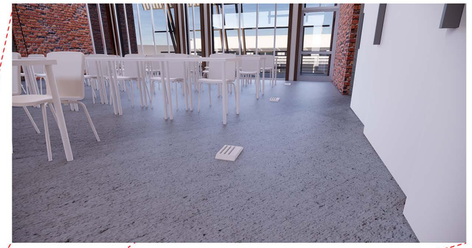
SECTION CC

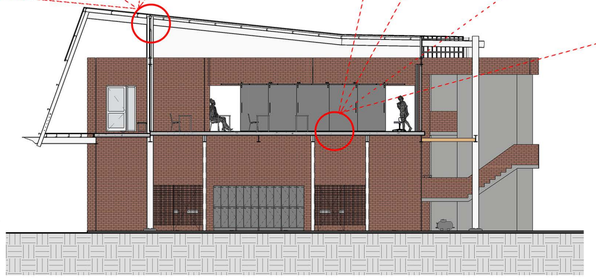


ALUMINIUM AIR VENT TO LET OUT STALE AIR



FLOOR VENT TO LET IN FRESH AIR

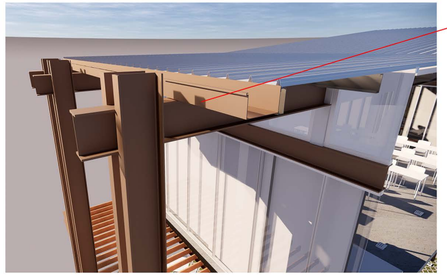


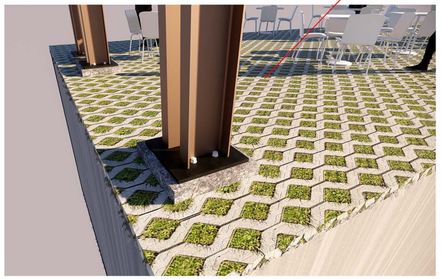


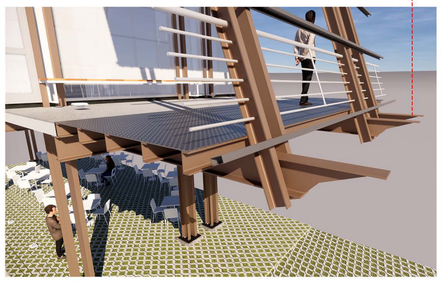
Cool air is supplied to the building through a geo-thermal heat exchange system. Ambient air in the vegetated landscape is blown in to pipes with a mechanical fan, the pipes carrying the air is buried under ground, the pipes are subject to heat exchange, energy from the hot air is absorbed by the soil through the heat conducting pipes. Cooler air can then be pumped into the building through the brick cores.

During colder months the average temperature of the soil will be higher than the air temperature and the system will supply the building with warmer air, heating up the desired spaces.

GEO-THERMAL HEAT EXCHANGE SYSTEM





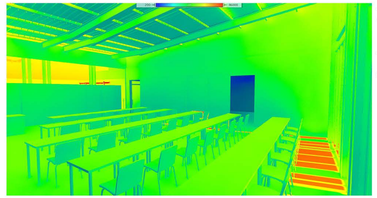


10 appendices

STEEL DETAILS

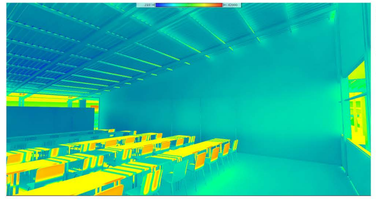
EARLY ITERATION

OVER EXPOSED WINDOW HARSH SUN IN SUMMER AFTERNOON.



THIRD ITERATION

ENTIRE FACADE CHANGED TO DANPALON, BETTER SPREAD OF LIGHT IN ROOM, BACK ROW OVEREXPOSED.



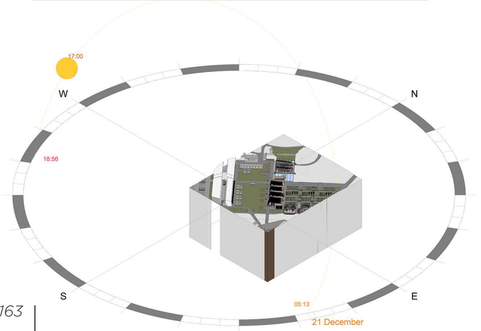
SECOND ITERATION

THE ROOM IS BETTER LIT, YET CHAIRS AND TABLES ARE OVER LIT.

FOURTH ITERATION

SHADING-DEVICE OUTSIDE ITERATED TO GET BEST POSSIBLE SPREAD OF LIGHT AND STOP OVER EXPOSURE IN THE ROOM.

SOLAR TEST RAN IN LATE AFTERNOON AT SUMMER SOLSTICE



SOLAR CONTROL DEVICES

DAYLIGHTING ITERATIONS