CHAPTER 2: SITE SELECTION- ERA BRICK WORKS

Photo 2.2.1: Decomissioned buildings

INTRODUCTION

Bordered by the residential areas of Eersterust and Jan Niemand Park, as well as the industrial area of Silverton, the Era Brick Quarry is situated directly south of Derdepoort.

The Moreleta Spruit converges just north of the site with the Rietspruit tributary, originating further south in the more recent development of Pretoria, and flowing north and draining into the Roodeplaat Dam.

Clay bricks were first made on site approximately 60 years ago by the owner of the Derdepoort farm. The maize farmer discovered the abundance of quality clay and started producing handmade clay bricks, which later established into a brickworks company. (Jansen:2013)

The close proximity of the industrialized area of Silverton provided the brickworks with a constant and reliable client base.

In 1980 the private works was sold to Rosema and Klaver Company who were responsible for founding Era Bricks as it is known today. The depletion of clay in the quarry forced the company to rely on the importation of clay in order to continue brick production. The maintenance and cost involved in the unsustainable nature of production and upkeep resulted in the decommissioning of the Era Brickworks quarry. It was approximately two years ago that production ceased, and Era Bricks was sold and is currently in the process of change in ownership. (Van Dijkhorst 2013)

As an abandoned and decommissioned industrial site, like many others, they are perceived to be of low value and potential.

The sheer expanse of the abandoned quarry as well as the lack of activity and access to the surrounding communities has caused a disassociation between people from the residential areas and the site.

The site holds valuable historical significance and according to the research done by Jacques Pansengrouw, the site has become a landmark for the surrounding communities, with the the tall chimneys and a double row of Eucalyptus trees surrounding the factory and the quarry borders.

Through the integration of surrounding communities into the previously restricted site, it will provide a platform for not only ecological restoration but the restoration of the relationship between man and nature.

The current relationship between man and the site is the visual connection created by the view of the trees and chimneys. The intangible significance of the site has the potential to be transformed into a physical connection and experience through the design intervention.

Understanding the larger river system helped to inform the type of site to be investigated for the design intervention, through the detailed understanding and analysis of the chosen site, Era Brick Works, and its surroundings.

The opportunities and constrains can be identified and will ultimately guide the design response to meet the desired outcomes of the project intention.

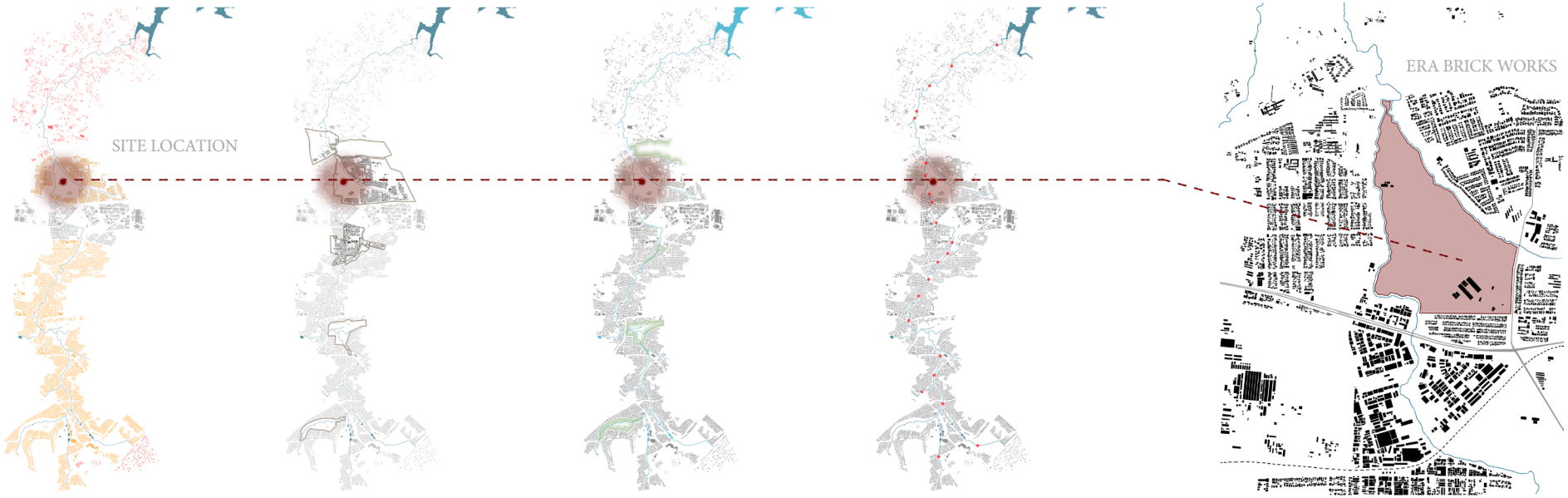


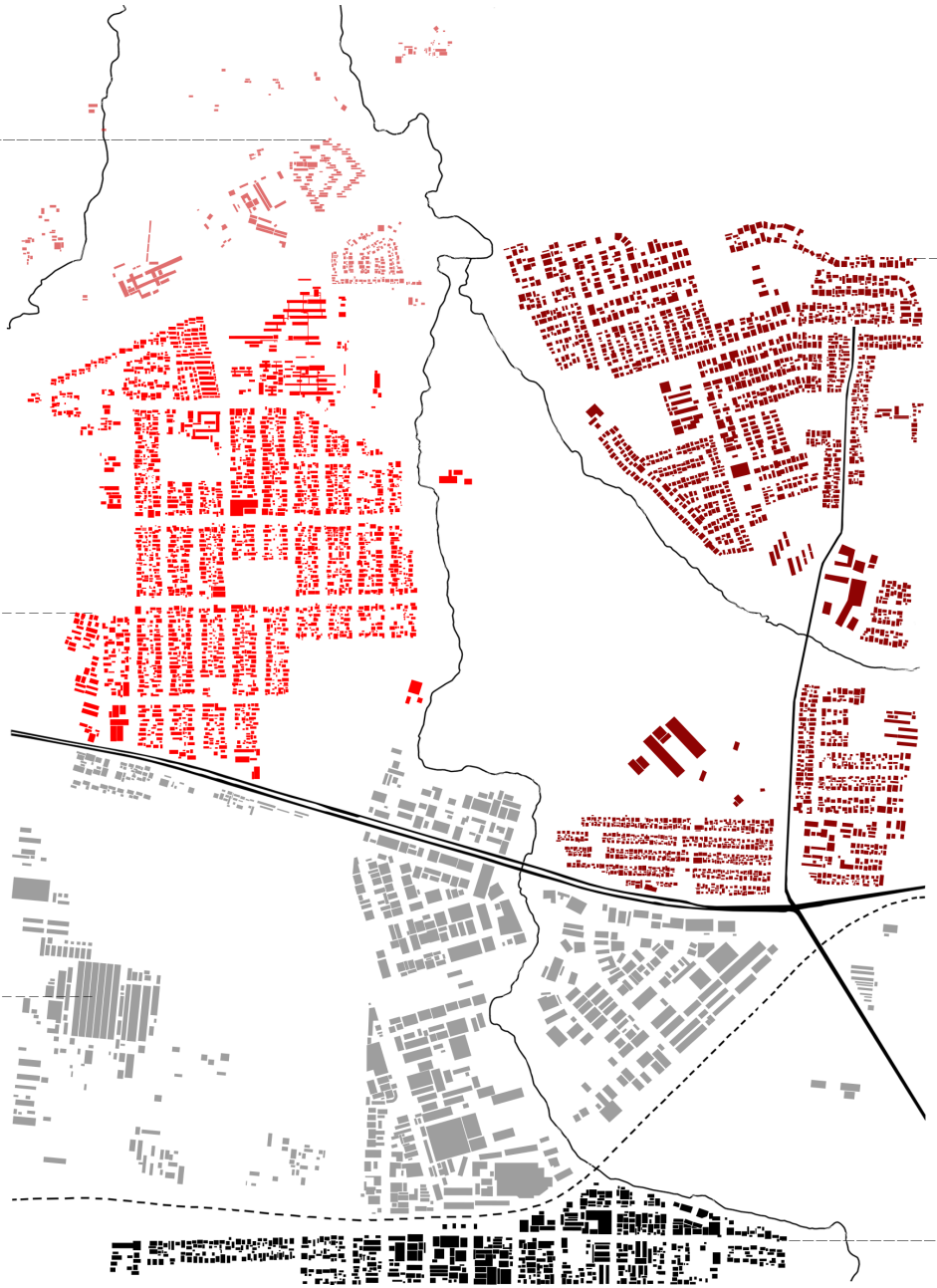
Figure 2.2.1: Site Location in relation to entire river system (Autor, 2015)

CONTEXTUAL OVERVIEW

DERDEPOORT
- Medium density
- Predominantly black community
- Historical value
- Low income residential area
- High crime and violence rate
- High pollution and runoff risk
- Unrestricted access to river

JAN NIEMAND
- Medium density
- Predominantly white community
- Low income residential area
- High pollution and runoff risk
- Unrestricted access to river

SILVERTONDALE
- Infrastructural area
- Direct influence on water quality entering residential areas
- High polution and runoff risk
- Direct access to river system



EERSTERUST
- Medium density
- Predominantly coloured community
- Area of historical value
- Low income residential area
- High crime and violence rate
- High pollution and runoff risk

SILVERTON
- Industrial area
- Area of historical value
- Negative influence on water system
- Partial residential suburb
- Medium density
- Unrestricted access to river system

Figure 2.2.2: Surrounding Urban Context (Author, 2015)

Surrounding Transportation Routes

Public Transportation

Public transportation routes will be an important study to assess accessibility for people who do not live in the immediate environment and may be visiting the site.

The integration of people from the surrounding residential areas across the rivers will need to address the pick-up and drop off points regarding public transportation, how people will move from transportation nodes into the site and vice versa.

Jan Niemand Park is more developed in terms of public transportation, with a number of bus stops throughout the suburb, while Eersterust has one bus stop which will need to be addressed the design intervention.

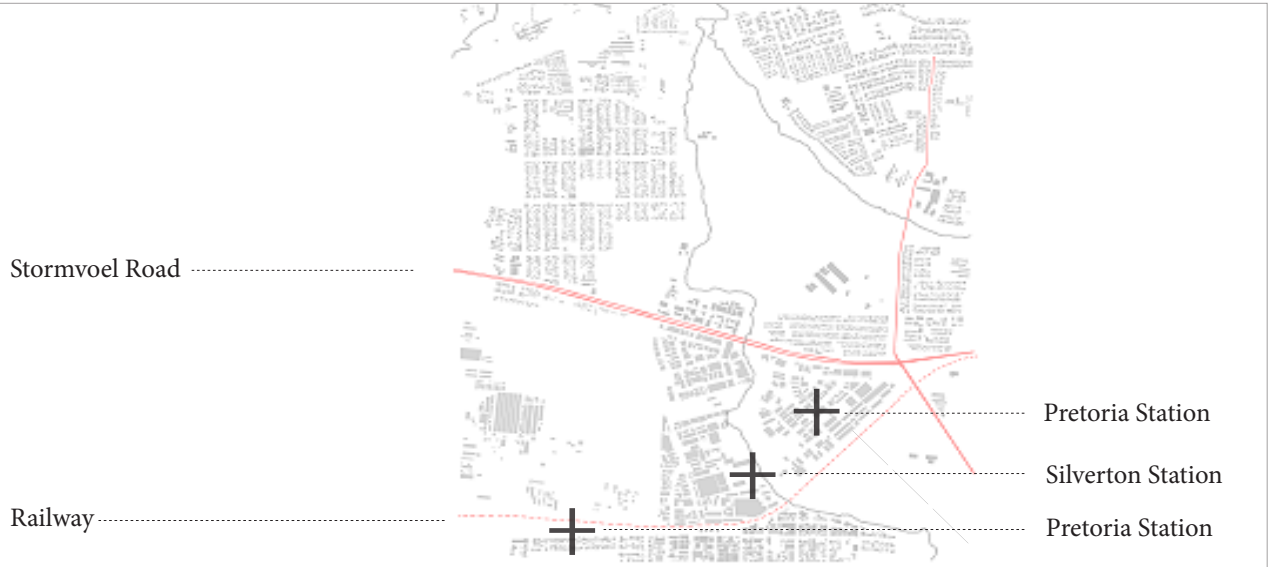


Figure 2.2.3: Transportation Routes - Roads and Railways (Author, 2015)

Surrounding Transportation Routes

Roads and Railways

The site is easily accessible from a number of important roads such as the N1 and Stormvoel road, which is also a main route to and from the Pretoria CBD.

There is close proximity to the railway line, as well as to two stations and the Koedoespoort shunting yards.

The ease of accessibility opens up many possibilities in terms of design for the site and is a major opportunity in terms of drawing people to the site from various areas, as well as for the servicing and delivery aspects associated with the site.

Figure 2.2.4: Transportation Routes - Public Transport (Author, 2015)

Surrounding Educational Facilities

There are a number of educational facilities surrounding the site, providing for both primary and secondary levels of education.

The inclusion of so many educational facilities and the potential that the site has to offer in terms of use by the schools as a space of further and alternative education.

The movement patterns of children to and from school may address the space as a movement link between and within the various residential areas.

The high number of children that are concentrated in the area due to the number of schools in such close proximity will cause a peak flow of children at various times in the day, the design of a safe, outdoor space which will cater for children on various levels is an important consideration.

FIgure 2.2.5: Surrounding Educational Facilities (Author, 2015)

Further Surrounding Activities and Facilities

The diversity in surrounding activities and facilities enriches the surrounding context of the site to which the design intervention needs to respond.

Surrounding Green Space

There are a number of undeveloped green spaces surrounding the park, a large number of these areas are not public parks and designed urban green space.

The presence of the two river systems has left a green corridor running through the residential areas but due to lack of maintenance and management, the green areas have transformed into negative spaces with high safety risks in the communities.

The design and development of the site will connect and provide for a safe and secure environment for use by the communities.

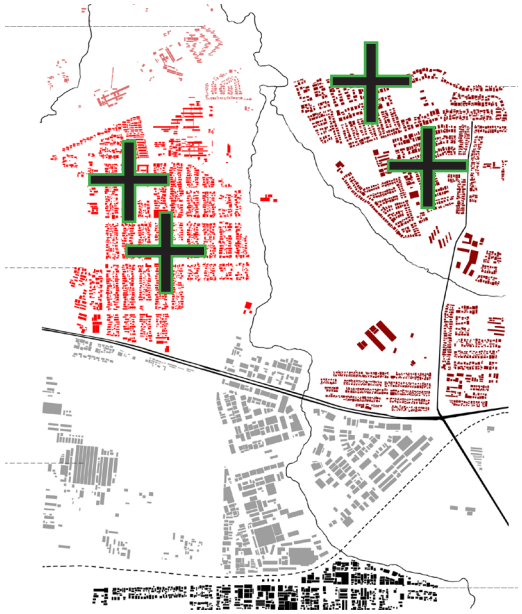


Figure 2.2.6: Surrounding Green Space (Author,2015)

SITE OVERVIEW

- Decomissioned clay brick quarry

- Ran out of clay approximately 15 years ago

- In the process of handover to an excavation company

- Place for dumping of excavated soil - allows for regrowth and establishment of pinoeer species.

- Quarry already in the process of natural rehabilitation, certain areas partially covered in establishing vegetation

- Existing dams and birdlife

- Delapidated old structures, hold significant value as social connection to site

- Informal housing on site

- Scar on landscape

- Barrier or industrial boundary between communities

- Restricted access between suburbs

- Existing topography allows for water collection

- Restricted access into quarry

- Location was based on presence of clay, development of industrial activity due to close proximity the river system.

- Settlement developed around river due to historical establishment of agricultural farms close to the river as a source of irrigation

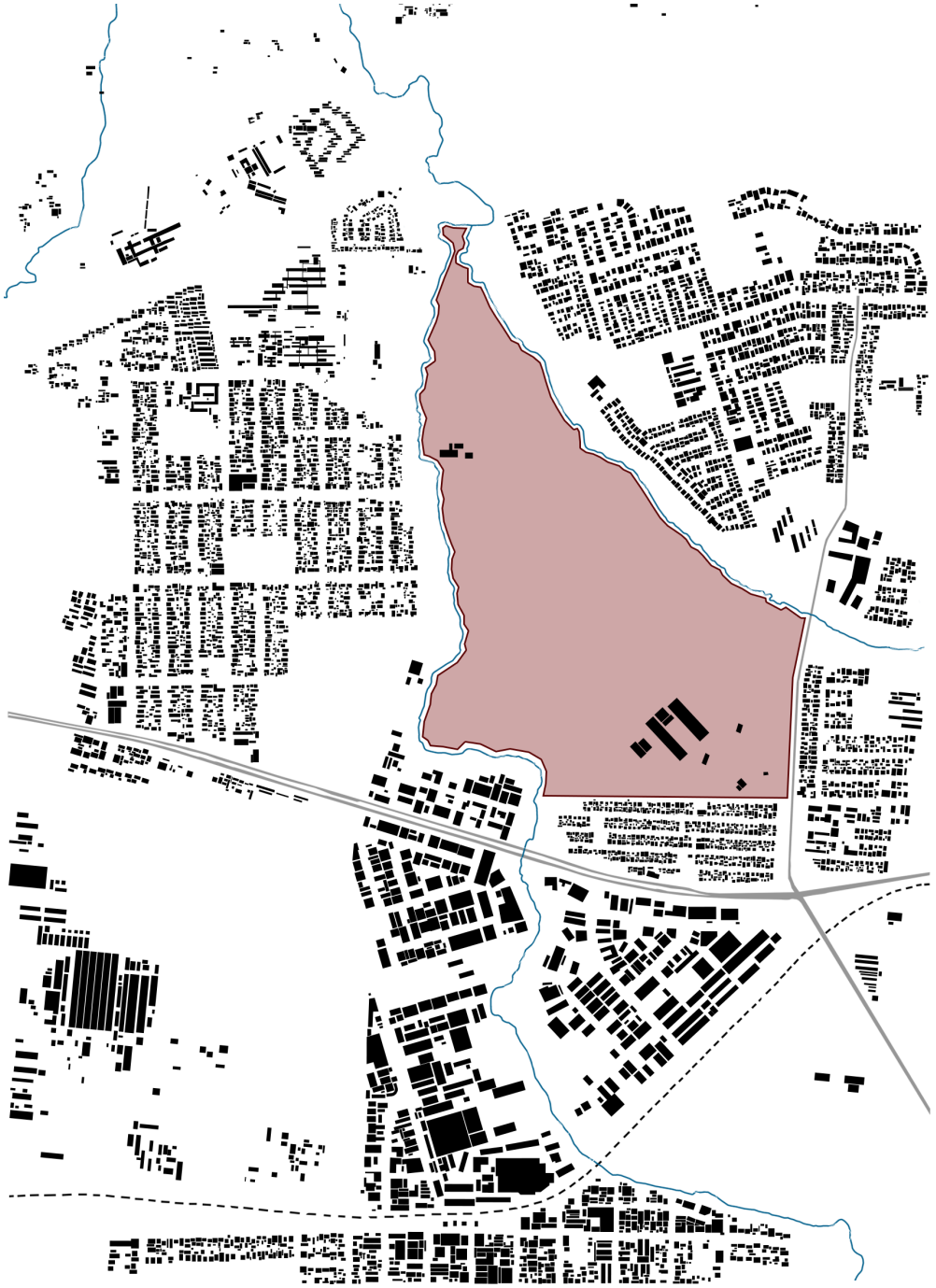


Figure 2.2.7: Site selection (Author, 2015)

The surrounding residential areas fall under the low income sector of the urban distribution along the course of the river system. The communities struggle with high levels of violence, drug and alcohol addiction, teenage pregnancy and crime.

Through continuous visits to the surrounding communities, there were many children who were not attending school, spending their days in their streets and homes. The lack of activity and purpose is highly dangerous as children are exposed to negative influences and environments.

The level of unemployment in the society is evident through the number of older individuals who are constantly found at home or in the streets, a similar situation to that of the children. The lack of purpose and activity has a fundamentally negative impact on an individual.

The violence in Eersterust is worse than that found in Jan Niemand Park which has become a defining characteristic or association with the suburb, a stigma which is very hard to overcome when attempting to progress forward as a community.

There is a strong sense of community in-fighting against the struggles experienced on a daily basis, the division between positive and negative influences are clearly visible and a large portion of the community are attempting to improve their quality of life and the assisting with the upliftment of the struggling community.

Existing Elements

The existing buildings on site are not older than 60 years and are therefore not covered by the National Heritage Resources Act of 1999 and are therefore not required to be kept by law.

However, the significance of the buildings from a cultural and historical perspective in the sense of paying tribute to the industrial past as a catalyst for development in the surrounding area should be taken into consideration in the proposed design intervention.

The atmosphere of the post-industrial landscape which will now be accessible to the public forms a connection between sites progressing from a visual connection to a physical one.

Movement and Accessibility

The site is currently inaccessible to the public, and is completely fenced off with a security controlled access at the one main entrance.

The quarry is bordered by the Eersterust sports stadium which is also fenced off from the public but is accessible through the southern boundary entrance.

The Rietspruit and Moreleta Spruit limit access to the site on the eastern, western and northern boundaries.

Further north of the site is an extensive undeveloped greenspace which is overgrown natural habitat bordering the river systems, which further discourages and limits access to the site due to safety concerns, it is not a highly utilised movement area.

There are currently roads and areas of movement which are evident in the quarry itself from previous use and activity in the industrial process. These roads allowed for movement of heavy machinery and vehicles and due to the extent of their use during the production process, these roads have taken longer to rehabilitate and are therefore still prominent on the landscape.

These roads and areas of already disturbed vegetation hold potential to determine movement patterns and strategies in the proposed design.

Geological and Soil Conditions

The main soil type previously existing on site was clay, through years of use and excavation the clay has been depleted. The site now consists mainly of quartzite and shale which will play an important role in the vegetation selection. Various degrees of erosion are evident on the site, due to the lack of vegetation and steep slope the walls and edges of the quarry are subject to higher levels of erosion that the lower areas.

The drainage of stormwater into the quarry is also responsible for the higher areas of erosion, drainage manipulation and stormwater management will be addressed. The increase in vegetation and soil stabilisation will need to be considered in the proposed design intervention.

Hydrological Study

There are three runoff catchments existing within the site, firstly the larger Moreleta River existing on the western edge of the quarry is the main river system being addressed in the design intervention.

All stormwater runoff from the Jan Niemand and Derdepoort suburbs is captured by the river, with a number of municipal stormwater management outlets along the river edge.

The river emerges directly from the industrial suburb of Silverton as it enters the site, the water quality is at its lowest at this point compared to the whole river system.

The Rietspruit is the tributary converging with the Moreleta Spruit just north of the site, this river is of a poorer quality than that of the Moreleta Spruit due to its origin located in Mamelodi to the east of the site.

The stormwater runoff and municipal management system ensures that all runoff is captured and released into the river forming the second catchment on the site.

Thirdly is the quarry itself which captures all additional water in the area that is not diverted into one of the river catchments, this water is of a relatively good quality considering it is all runoff from predominantly green spaces since

the quarry ceased production.

The water accumulates in the bottom of the quarry forming a permanent dam which is available for various uses, the dam water is not circulated and in order to maintain a higher quality of water this needs to be considered.

A wetland has also developed to the north of the dam with an abundance of water plants, there is great fluctuation on the water levels regarding seasonal change. Water leaving the wetland system is of a relatively high standard and accumulates along the northern boundary of the quarry.

There is no outlet for water from the quarry so water stands stagnant and decreases in quality, this is a fundamental consideration for the proposed water strategies.

The abundance of water for potential use and storage opens many possibilities and potential for design and incorporated activities.

The water quality concerning the river systems has been evaluated as well as the associated implications and purification potential.

The water was measured at various points by the COT and readings were given which were measured according to the water quality index, it is possible to monitor how the pollution fluctuates through the site and offers opportunity for purification interventions.

Vegetation Analysis

The site falls on the southern slope of the Magaliesberg Mountain range, on the boundary between the Savannah and Grassland Biomes. Many of the species are transitional and are found in both biomes, proving the site to be on vegetative level as well as economic and social level, a space of transition.

Through the severe destruction of the natural environment through the mining activity taking place on the site, minimal areas of natural vegetation are found, although natural rehabilitation did begin when production ended, it led to the invasion of the site by alien species. The main invasive found on site are the Eucalyptus trees, but no endangered or protected plants have been found.

The eucalyptus grandis trees hold value in the community as a visual connection to the site, if they are to be kept in terms of this significance, they will need to be addressed in the appropriate manner of a category 2 invasive species, requiring a demarcation permit for their existence. (According to SANBI (2014)).
The trees were planted originally as a dust barrier between the quarry and surrounding settlements. The vegetation type identified for the site is the Moot Plains Bushveld which is associated with the southern slopes of the Magaliesberg Mountains.

According to Mucina and Rutherford (2006), the Moot Plains Bushveld is characterised as a transitional open to closed composition of planting of low thorny savannah of which the Acacia species is dominant in the plains while the herbaceous layer is dominated by grasses.

The dominant species and complete Moot plains Bushveld vegetation will be further discussed and evaluated in chapter 13 regarding the planting strategy. This vegetation type is classified as vulnerable and requires a certain level of protection due to its invasion and disturbance through development of the built environment.

The significance of the site in terms of the existence of a river system and its associated habitats, environment and processes as well as a vulnerable vegetation type, gives the site potential and importance from an ecological aspect.

According to research previously done by Marina Burmeister (2014), there are a number of invasive plants identified on site which have been assessed according to the level of infestation ranging from light to intermediate and dense infestations throughout the site.

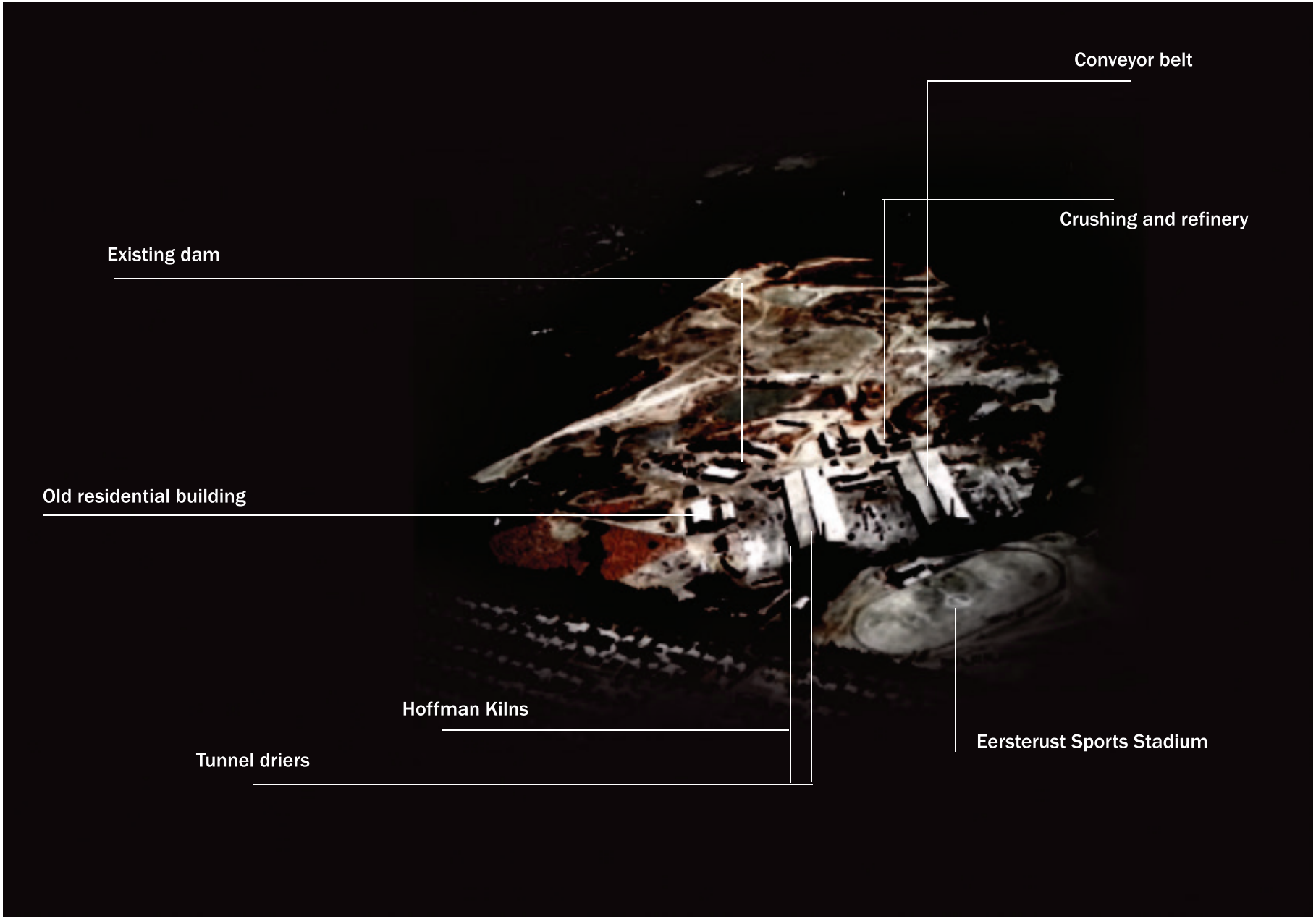
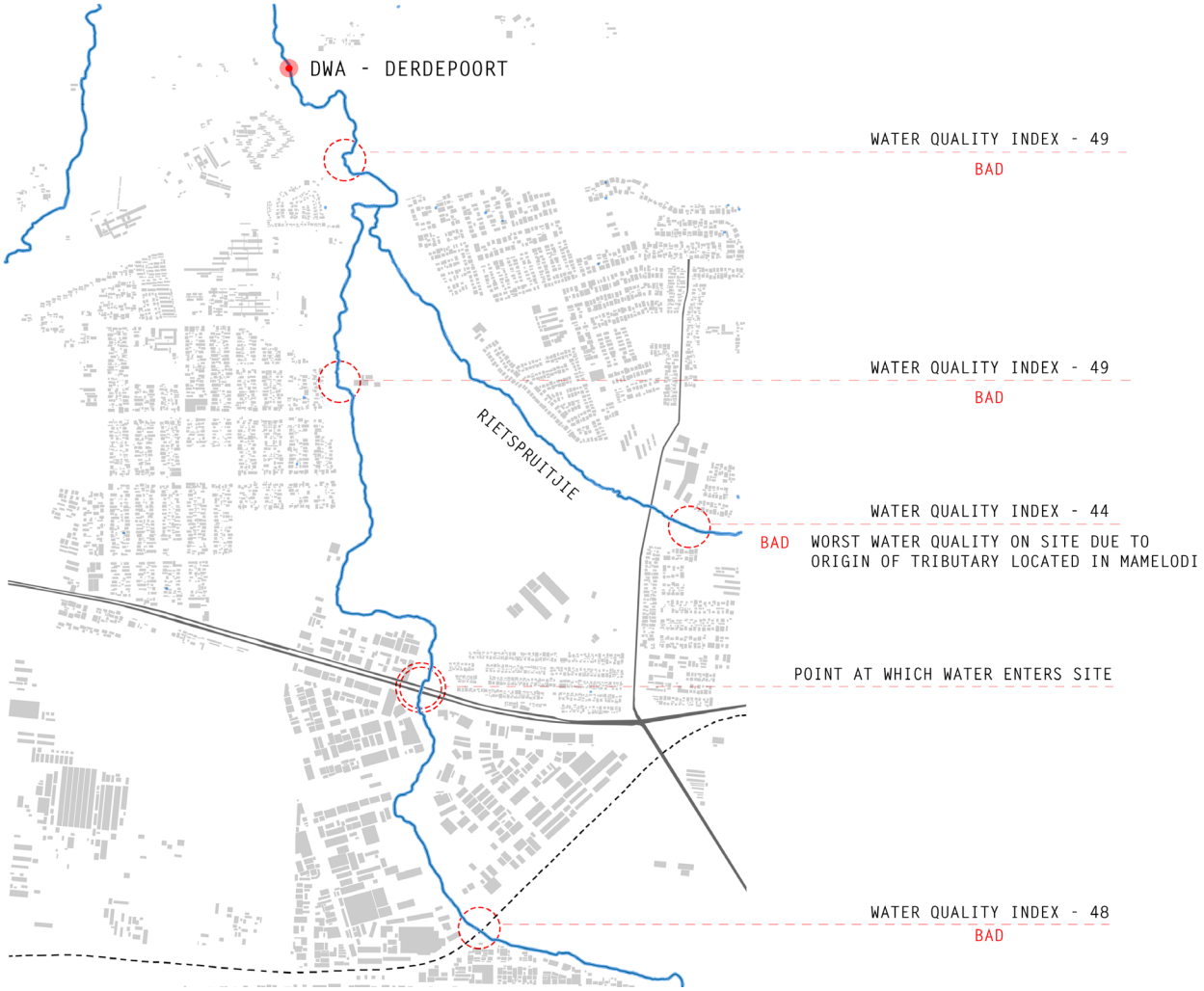


Figure 2.2.8: Existing structures on site (Author, 2015)



- CURRENT EXISTING WATER QUALITY = BAD.
- NO CONTACT WITH WATER SHOULD BE ALLOWED AND WATER
- IS NOT OF DRINKING STANDARD.
- WATER PURIFICATION IS AN IMPORTANT REQUIREMENT OF THE INTERVENTION.
- INTEGRATION OF PURIFICATION SYSTEM WITH OTHER SYSTEMS INCLUDED IN THE DESIGN SCHEME,

- INTENDED OUTCOME OF THE PURIFICATION PROCESS IS ACHIEVING A GOOD WATER QUALITY WHICH IS ABLE TO SUPPORT A HIGH DIVERSITY OF AQUATIC LIFE AS WELL AS OFFERING THE OPPORTUNITY FOR RECREATION AND HUMAN INTERACTION WITH WATER.
- THIS WILL BE DETERMINED THROUGH THE ANALYSIS OF THE COMPOSITION OF THE POLLUTANTS IN THE WATER AND CHOICE OF PLANTS WHICH SPECIALIZE IN THE REDUCTION AND ABSORPTION OF THE SPECIFIC POLLUTANTS.
- SECONDLY - MULTIPLE LEVELS AND PHASES OF PURIFICATION THROUGH VARIOUS SYSTEMS.

WATER INDEX QUALITY SCALE		
91 - 100	EXCELLENT	GOOD DRINKING QUALITY. MAY NEED SIMPLE PROCESSING. SUPPORT HIGH DIVERSITY OF AQUATIC LIFE. SUITABLE FOR ALL FORMS OF RECREATION, INVOLVING DIRECT CONTACT WITH WATER.
71 - 90	GOOD	SLIGHTLY POLLUTED, COULD BE USED AS DRINKING WATER AFTER TREATMENT SUPPORT HIGH DIVERSITY OF AQUATIC LIFE. SUITABLE FOR ALL FORMS OF RECREATION, INVOLVING DIRECT CONTACT WITH WATER.
51 - 70	MEDIUM	COULD BE USED FOR DRINKING AFTER PROCESSING, FOR SWIMMING AND FOR FISHING. LESS DIVERSITY OF AQUATIC ORGANISMS AND INCREASED ALGAE GROWTH
26 - 50	BAD	COULD BE USED FOR INDUSTRIAL PUTPOSES OR SERVICE INDUSTRY SUPPORT LOW DIVERSITY OF AQUATIC ORGANISMS
0 - 25	VERY BAD	COULD BE USED FOR IRRIGATION. ONLY SUPPORT LIMITED NUMBER OF AQUATIC LIFE FORMS ABUNDANT QUALITY PROBLEMS NOT ACCEPTABLE FOR ACTIVITIES INVOLVING DIRECT CONTACT WITH WATER

Figure 2.2.9: Water quality evaluation (Author, 2015)

Water Quality

There is a water meter located at Baviaanspoort just to the north of the site after the convergence of the Moreleta and Rietspruit rivers, the calculations of water volume, flow rates and water available for use is discussed further in when dealing with water strategies in Chapter 10.