[RE]CONNECTING ECOLOGY

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DECLARATION OF WORK

[RE]CONNECTING ECOLOGY
a Centre of knowledge transfer and exposure to ecological systems

By Petrus Johannes Odendaal

Submitted in fulfillment of part of the requirement for the degree of Master in Architecture (Professional)

Department of Architecture
Faculty of Engineering, Built Environment and information Technology.
University of Pretoria

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Pretoria 2021

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.

2. I declare that this essay is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.

P.Odendaal

SIGNATURE DATE 30/10/2021

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

Pieter Odendaal

2021

ACKNOWLEDGMENTS

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Thank you to my study leader, Dr Jan Hugo, for helping me this year and for all of the knowledge and motivation provided through the year.

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Lastly, thank you to the United students studio republic for all the conversations, late nights and hard work. Without you I would not have completed this year.

PROJECT SUMMARY

PROGRAMME:	CIVIC & ECOLOGICAL CENTRE
SITE DESCRIPTION:	THE ABANDONED STRUCTURE OF DE VILLA BOIS
SITE LOCATION:	WINGATE PARK, PRETORIA, GAUTENG
ADDRESS"	CNR OF DELMAS, DE VILLEBOIS MARIEUL STREET
COORDINATES:	25°50'30"S 28°16'27"E ELEVATION 1,574M
RESEARCH FIELDS:	REGENERATIVE & RESILIENT CITIES, DESIGNED ECOLOGIES
KEYWORDS:	DEEP ECOLOGY, ECOLOGICAL DESIGN, REGENERATIVE DESIGN, SUSTAINABLE
THEORETICAL PREMISE:	THE INTRODUCTION OF AN ECOSYSTEM INTO THE BUILT ENVIRONMENT THROUGH DEEP ECOLOGICAL THINKING.

ABSTRACT

The natural world is an interconnected system made up of ecosystems and an abundance of species diversity that inevitably supports all life on Earth, including humans. Since our origin the humans race has worked in this system to sustain ourselves. This relationship has impacted every aspect of our current societies and our future as a species depend on the health of this system.

Human impact on the natural world has been excessive as our population and our need for resources has grown. Pollution, habitat loss, extinction and climate change is rampant.

A rift has been created, one where humans have severed the relationship with the natural world. Our urban centres do not support natural functions and even within our arts; music, poetry, film and children's books have had terms dealing with the natural world replaced with terms for human made objects.

It is time for change.

A paradigm shift is required, one where humans and nature can once again live with together in a symbiotic relationship - for the benefit of both.

This project proposes a reconnect and an alternative way of thinking, that can alter our current development strategies. Where the needs of **all** organism are considered and the reuse of neglected space is important.

The project will add to the architectural discourse by adding to the discussion around regenerative sustainability and deep ecological thinking.

This is necessary not only for the health and flourishing of our future ecological systems but also for human physical health and mental wellbeing.

TABLE OF CONTENT

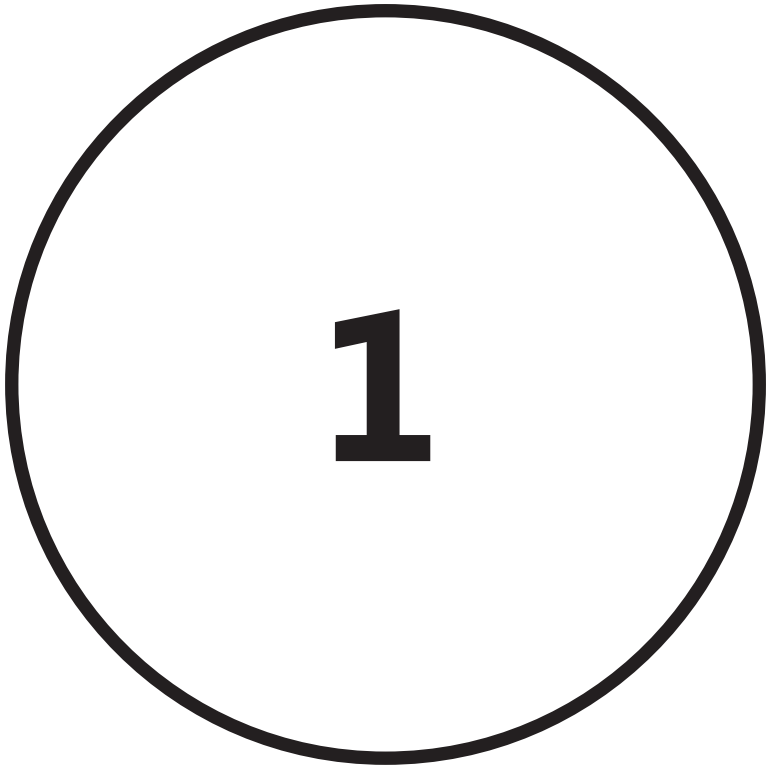
a four part document setting out the problems, research into design, technical synthesis and a reflection

LIST OF FIGURE

Figure.1: DEEP ECOLOGY

"There is a pleasure in the pathless woods,
There is a rapture on the lonely shore,
There is society, where none intrudes,
By the deep Sea, and music in its roar:
I love not Man the less, but Nature more,
From these our interviews, in which I steal
From all I may be, or have been before,
To mingle with the Universe, and feel
What I can ne'er express, yet cannot all conceal."

- Lord Byron, Childe Harold's Pilgrimage



POSITION & SITUATION

SITUATING THE PROBLEM

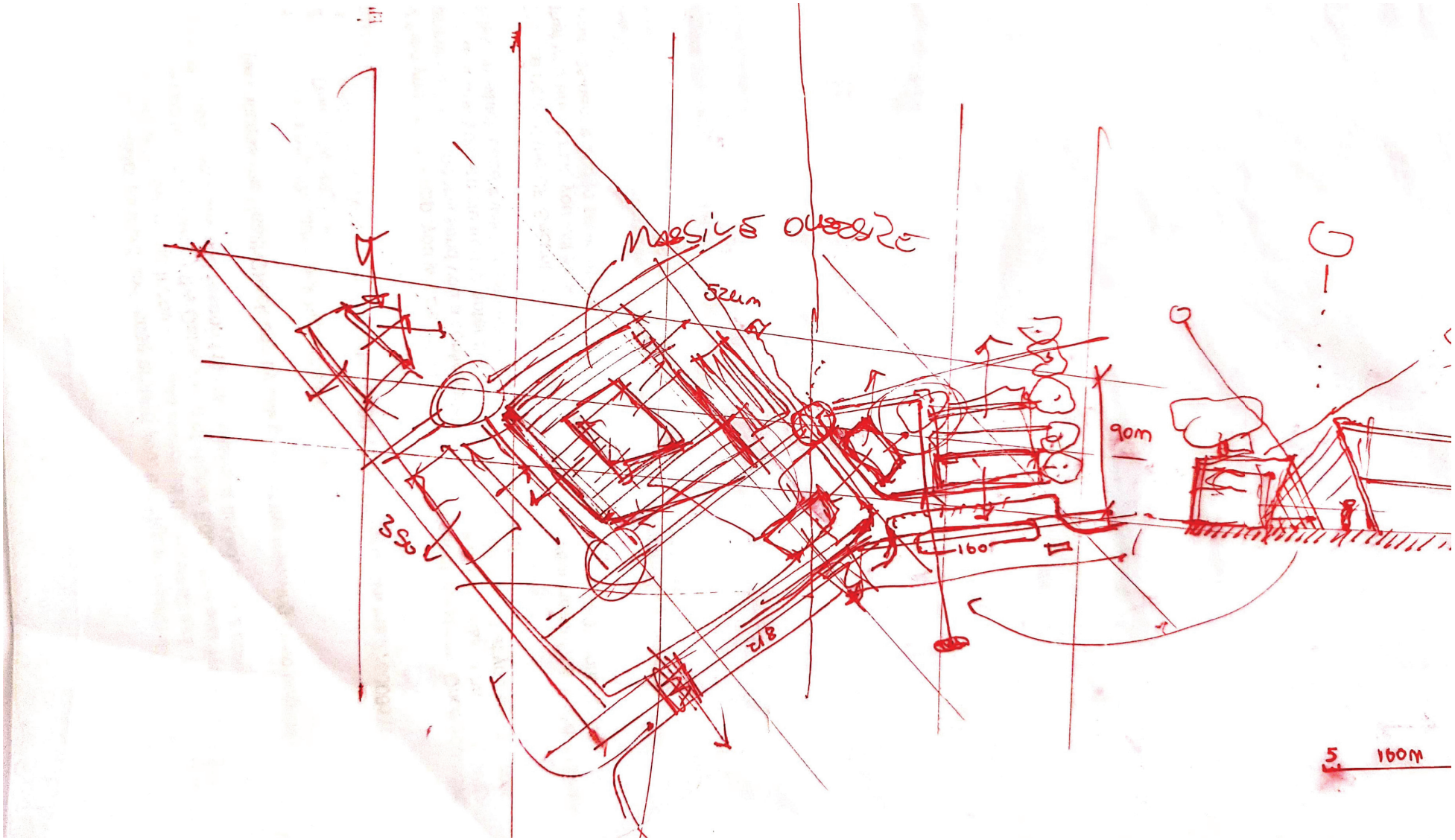


Figure.2: INCEPTION (AUTHOR 2021)

1.1 INTRODUCTION

The natural world is a complex system of entities working in unison and producing no waste. Since its origin the human race has had a fundamental relationship with the natural world; which has shaped the course of our species and our current societies. This relationship impacts every aspect of life human life.

Since the industrial revolution, the human impact on the natural world has been substantial, it has changed land use, caused pollution and is mining away at resources and pushing ecosystems to the brink (Corvalan, Hales & McMichael 2005) in the name of development.

In response, Arne Naess and George Sessions developed the Deep Ecology framework (Naess and Sessions 1985), which is a direct critique on the anthropocentric nature of our current society's development.

They propose a new system of thinking which instead of placing humans as the most important organism on Earth, places humans into an eco-centric model. In other words: placing them firmly within the greater web of life (Capra 1997:7). This is done through a platform with 8 principles, which gives intrinsic value to all organisms, with none being more important than the other. These principles call for humans to ask deeper questions, whilst striving for more meaning in their lives. Naess and Sessions (1985) argue that this will impact all aspects of human society, including the built environment.

In contrast to these ideas, development within our current urban centres face various challenges, namely;v urban sprawl, outdated urban development models and decentralisation (Horn 2009, Bor 1972). These problems are caused by various factors including past policies from apartheid city planning (Reddy 2019) and even more recent failures by the post-apartheid government to rectify issues surrounding the apartheid city. This has caused the periphery of our cities to expand and move ever outwards. As development persists various spaces fall into the cracks of our urban fabric, rendering them abandoned or neglected (Trancik 1986). These spaces have potential to be reused and woven back into the urban fabric. Simultaneously, the reuse of such areas and buildings, allows resources and space to be spared. By rehabilitating these sites, conditions can be made suitable to allow ecosystems to flourish, whilst allowing for the use by humans, within the framework of Deep Ecology.

DE VILLA BOIS & THE GARTSKLOOF SITE

ABANDONED AND IN DECAY

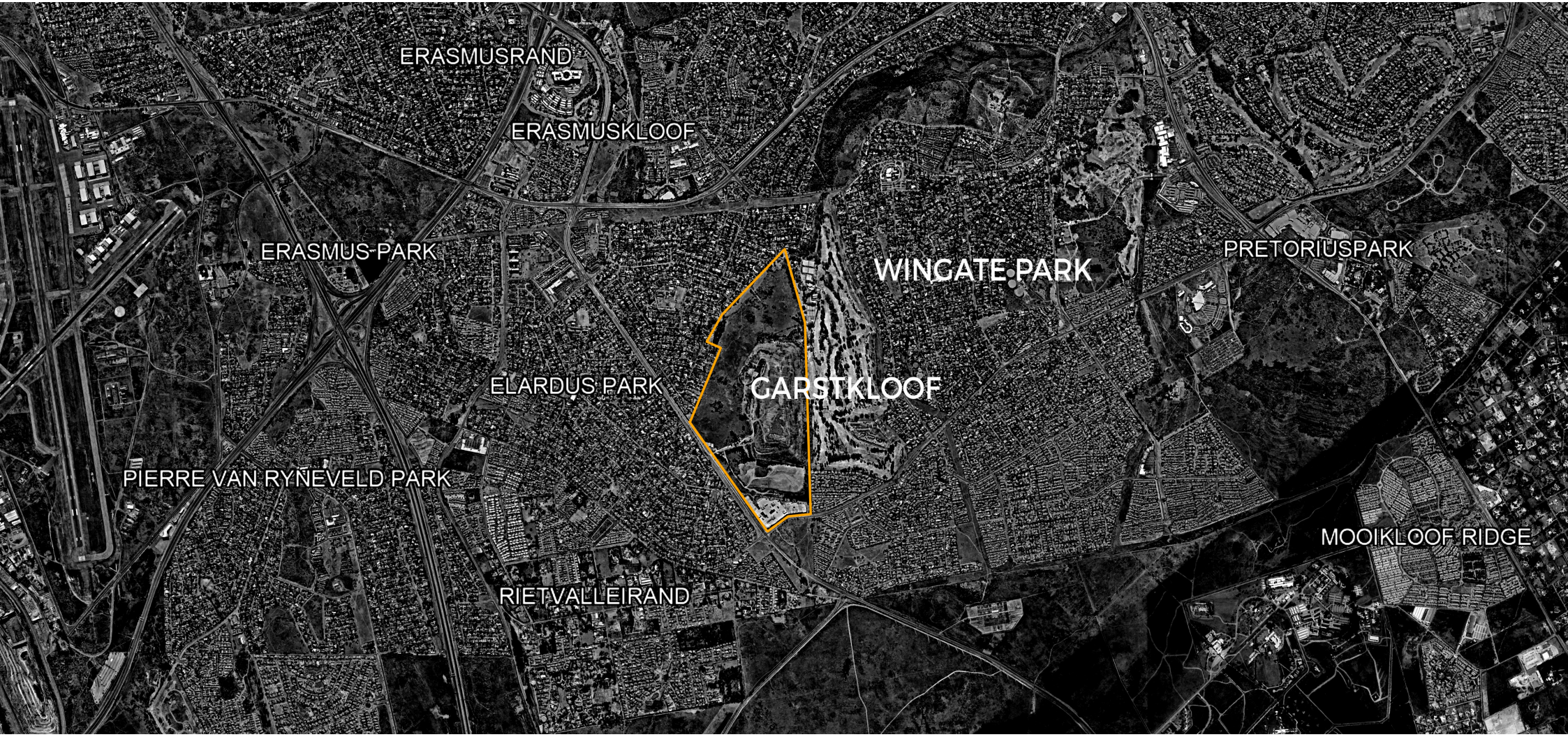


Figure.3: SITE LOCATION (AUTHOR 2021

1.2 SITE INTRODUCTION

The site is an abandoned structure called De Villa Bois (Fig. 4). It has been abandoned from 2010 and left to decay during this time. Its function at this stage is housing equipment for the contracting group that built the structure: GDIrons. It is an eyesore for the neighbouring community, many of whom either lost or know of people that lost substantial amounts of investment capital in this failed development. It is found in the South-Eastern entrance of Pretoria (Fig.3), on the corner of Delmas road and De Villa Bois Marrieul drive in Wingatepark, adjacent to the rehabilitated Garstkloof Landfill.

1.3 THEORETICAL APPROACH

The project follows the ideas of the triple bottom line (Elkington et al 1998) that transformed into the nested approach (Giddings, Hopwood and O'Brien 2002) and the Deep Ecological framework (Naess & Sessions 1985) as the foundational theory that informs the project. This was followed by a literature review from various other ideas and authors that will add and is associated with Deep Ecology.

Figure.4: DE VILLA BOIS (AUTHOR 2021)

1.4 TRIPLE BOTTOM LINE & THE NESTED APPROACH

In 1994 Johan Elkington coined the term triple bottom line (Elkington et al 1998) which at the time introduced a new way of thinking in terms of sustainability. Although the triple bottom line (TBL) was originally designed for corporate business to analyse their impact on social and ecological process, whilst they continue with their business model, various industries across the globe have adopted this paradigm. This idea shifted towards the Nested Model (Giddings, Hopwood and O'Brien 2002) which is a more accurate representation of the connection between societal, economic and environmental spheres (Giddings, Hopwood and O'Brien 2002:191).

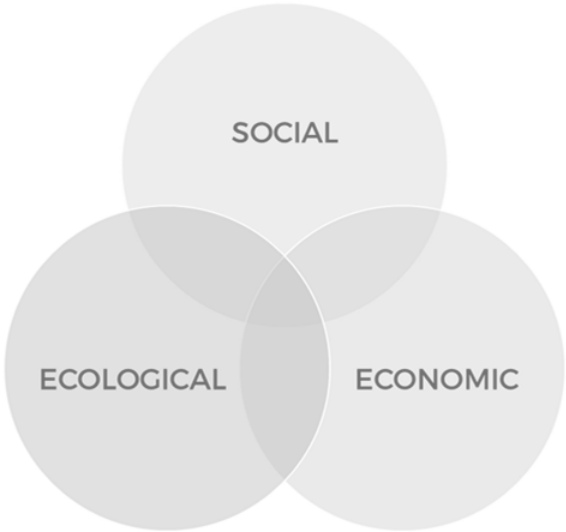


Figure.5: TRIPLE BOTTOM LINE (ELKINGTON 1998)

Human society depends on the environment, in contrast the environment would be able to continue without society (Lovelock 1988).

It states that without the environment there can not be society, and without the society there can be no economy. Acknowledging that there are significant constraints for the economy. Subsequently, the environment does not require the economy or society to continue functioning.

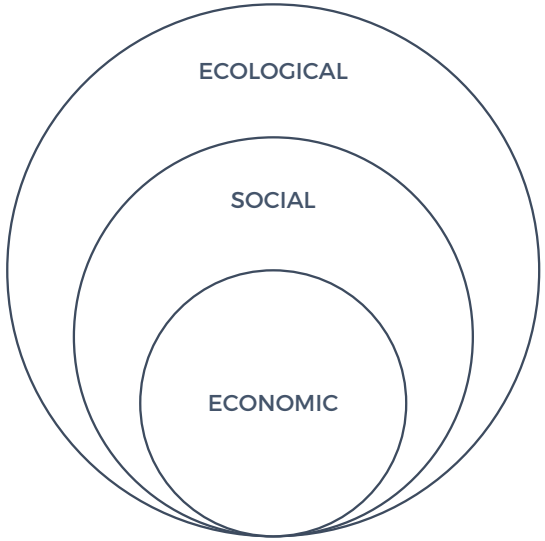


Figure.6: NESTED APPROACH (GIDDINGS ET AL 2002)

1.5 DEEP ECOLOGY

The theoretical framework of the project is built around the radical work of Deep Ecology by Arne Naess and George Sessions (1985). Deep ecology is based on a platform of principles that form the core of its values (Naess & Sessions 1985).

The Deep Ecological platform principles:

1. The health and thriving of human and non-human life on Earth have intrinsic value. These values do not depend on the worth of non-human life for human purposes. This is called biospheric egalitarianism: the view that all living things have value in their own right, irrespective of their usefulness to others

2. Species richness and diversity contribute to these values and are also values in themselves.

3.Humans do not have the right to decrease the richness and diversity of species, except to perform vital needs.

4. The current impact of human life in the non-human world is extreme and it is only becoming worse

5. The improvement of human life and the flourishing of cultures can be achieved with a drastic decline in the human population. The health and well-being of non-human life is dependent on such a decrease.

6. A change in policies and legislation is required. These changes will have an impact on basic economic, technological and ideological spheres. The situation that is born from this will be inherently different from our current circumstances.

7. The ideological change that needs to happen is that of appreciating quality of life, by living with the idea of intrinsic value, rather than the constant need for a higher standard of living.

8. If you pledge to the above-mentioned points, you have a responsibility to directly or indirectly participate, to cause the necessary changes.

(Naess & Sessions 1985)

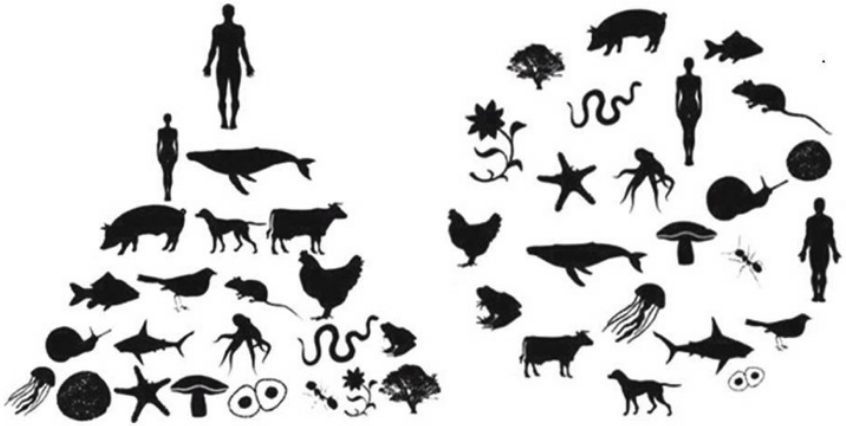


Figure.7: SHALLOW VS DEEP ECOLOGY DIAGRAM

The **first principle** tries to portray a few basic points: Firstly, that all living things, human and non-human, have value and therefore its own right to live, flourish and reproduce. Non-human life does not necessarily mean only living things but also entails lakes, rivers, landscapes, ecosystems, forests, etc. All of which have value in their own right. Then, the value that these species have is not connected in any way to their usefulness, specifically relating to humans. And, lastly, deep ecology is not about anthropocentrism (or human approach), but rather about ecocentrism, which places humans within the interconnected system of life instead of above it (Naess & Sessions 1985).

The **second principle** explains the importance of biodiversity on the planet and introduces the interconnectedness of all systems in the world (Devall & Sessions, 1985:71). It emphasises the relationship as the most important aspect and explains that everything is related. This relationship as well as this "connection" has value (Naess & Sessions 1985).

The **third principle** explains to what extent life can be decreased for human use. The word "vital" is important to consider - What are vital human needs? Some would say Maslow's hierarchy of needs: self-fulfilment, psychological and basic needs (McLeod 2020). The principles delineate the importance of taking into consideration all living things and how they impact the vital needs of human beings. Naess and Sessions seems to have deliberately made this vague as to not exclude things that people find important (Naess & Sessions 1985).

The **fourth principle** is the most talked about part of the deep ecological movement and the area which receives criticism. The rapid growth of the human population inevitably places strain on ecological systems and resources. Deep ecology calls for the decrease in the human population which will lead to a greater quality of life and protection of natural resources. Naess (1985) has stated that if population is allowed to grow it will have a substantial impact on the richness and diversity of species (Sessions 1995:69). One of the main critiques to deep ecology is that it has been called anti-human, or trying to disconnect humans from the natural world (Watson 1983:251). This is however a misinterpretation; in the deep ecological platform it is stated that human interferences on the natural world is excessive but it is cautious not to promote the elimination of humans from the web of life. "Deep ecology does not separate humans – or anything else – from the natural environment" (Capra 1997:7).

The **fifth principle** identifies human interference as the cause of environmental problems. It further explains that improvement of quality of life and flourishing of culture will not be impacted in a negative way with a decrease in human population. Nevertheless, an increase will create problems for the environment (Naess & Sessions 1985).

The **sixth principle** proposes changes in policies and legislation, which is a drawn-out process for the betterment of the environment. The premise is that thought must be given to every aspect of human life. This will lead to a change in worldviews and mindsets regarding our role within the environment (Naess & Sessions 1985).

The **seventh principle** calls for a minimalistic way of living and for greater purpose or happiness, instead of a materialistic lifestyle. It suggests that quality of life must take precedent over the number of things we own (Naess & Sessions 1985).

The deep ecological platform is not without criticism. Richard A. Watson is one of its main opponents, with his largest issue surrounding deep ecology being; he believes that it will fall short in its anti-anthropocentric approach (Watson 1983). He is also of the opinion that humans will only care about the environment if they see its usefulness for humans. This is a valid argument and one that remains important throughout the project, by referring for instance to, ecosystem services. It should however not be the driving point for the protection of ecological systems as only species that benefit humans in some way will reap the benefit of such thinking.

The deep ecological platform influences architects in the way we think about design and development, specifically, in the 1st, 2nd, 3rd, 6th and 7th points. These points speak about the value of the natural world, biodiversity, vital human needs, the need for legislation change and a more minimalistic way of living. All of these can factor into the built environment in some form.

Our species inevitably struggles with the idea of bio-spheric egalitarianism, or seeing the natural world as not benefiting us in any way. It is of paramount importance that this idea be educated and spread throughout our society, to allow for the improvement of ecological system without these needing to “give” anything to human society. This does not mean that ecological services are not important to humans, it rather states that shouldn’t be the sole reason ecology is introduced into human systems.

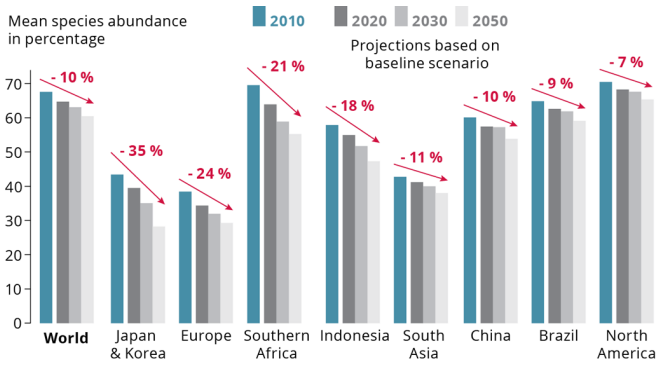
This is where the Nested approach (Giddings, Hopwood and O'Brien 2002:191) and its trinity of factors: ecological, economic and social are all placed within a relationship with each other understanding the dependence and limitation of each of these factors. Deep Ecology does not see the world as separated objects but rather as a system of phenomena that are fundamentally interconnected and interdependent (Capra 1997:7).

1.6 PROBLEM STATEMENT

GLOBAL ISSUE

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) found in a landmark report, that ecosystem health globally is deteriorating faster than ever (Stokstad 2019). This has caused a drastic decline in fauna and flora (Fig. 8), predominantly due to habitat loss.

The five main drivers of change in nature, stated by the report are: changes in land and sea use, direct misuse of species, climate change, pollution and invasive alien species (Corvalan, Hales & McMichael 2005). Architecture and the built environment may be categorised as part of the first point; changes in land and sea use.



This predominately occurs when a piece of land is altered and its ecosystem is stripped away, merely to support the human function of the development.

URBAN ISSUE

In our urban system, we promote issues such as sprawl, unsustainable urbanisation and decentralisation. Past policies and various economic approaches are the reason for the current state of our urban centres (Steenkamp 2004). Apartheid city planning divided the people of South Africa, by means of race and allocating areas according to race (Christopher 1999).

The previous planning (Fig. 9) of South African cities has led to urban sprawl that can now be seen happening to the east of Pretoria; developing vast tracts of land that was once agricultural or rural land into urban (Horn 2009). As the city continues to grow, certain spaces that once had functions cease to be in operation and and as a result, areas are left with half-built or abandonded structures and in decay.

These spaces have the potential to be reunited with the urban fabric and reused in a sustainable fashion; with the reintroduction of social, economic and ecological function.

Figure.8: DECLINE IN FAUNA & FLORA GLOBALLY

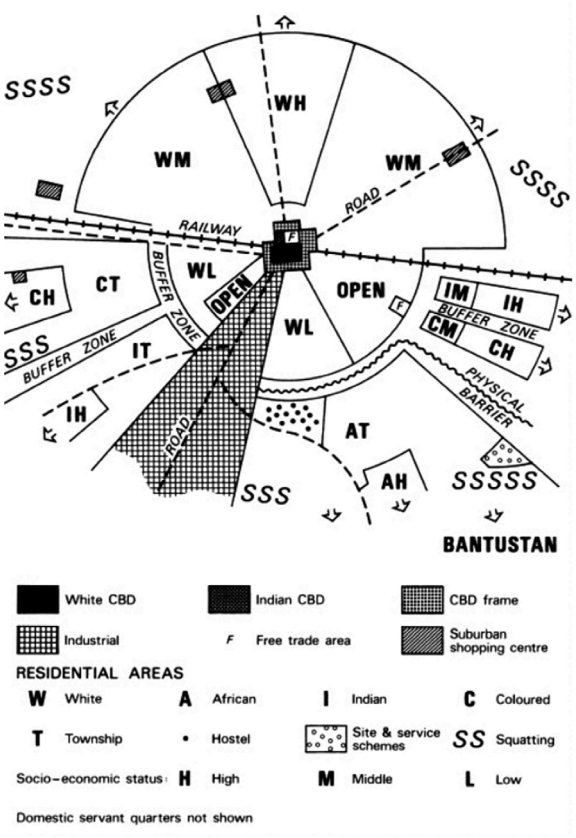


Figure.9: THE APARTHEID CITY (MAHARAJ 2019)

ARCHITECTURAL ISSUE

Within architecture the end of a structure's lifetime is rarely planned for or even thought of. All structures will inevitably need to be adjusted, retrofitted, adapted, strengthened, destroyed or dismantled. This process usually becomes a wasteful endeavour, whereas it has the potential to become a process of recycling and reuse. Designing for disassembly is a good construction practice (Rios, Chong & Grau 2015) and of paramount importance for sustainable building.

In summary; there is a global decline in the number of fauna and flora, and our current development strategies do not aid in the restoration or conservation of important green areas. By developing new areas, we are adding to the problem of habitat destruction and removal of ecosystems. A more sustainable approach needs to be taken for the development of new areas. Abandoned and neglected spaces have the opportunity to be made usable again for both human and non-human life alike.

1.7 RESEARCH QUESTION

How can an ecological system be introduced into a human system at the De Villa Bois structure through the development of an architectural intervention?

1.8 RESEARCH METHODOLOGY

The study will make use of literature, mapping/ site analysis and applied research to address the research question.

Theoretical studies related to deep ecology and the normative position were undertaken. An in-depth analysis of the larger site was conducted to gain an understanding of the area.

Analysis of the current social, economic and ecological functions were conducted and informed on the design. General climatic conditions, vegetation units, circulation, boundaries and edges were important to understand.

Data gathered, together with the influence of the normative stance and the theoretical approach informed decisions surrounding the programmatic response ,general design and pragmatic direction.

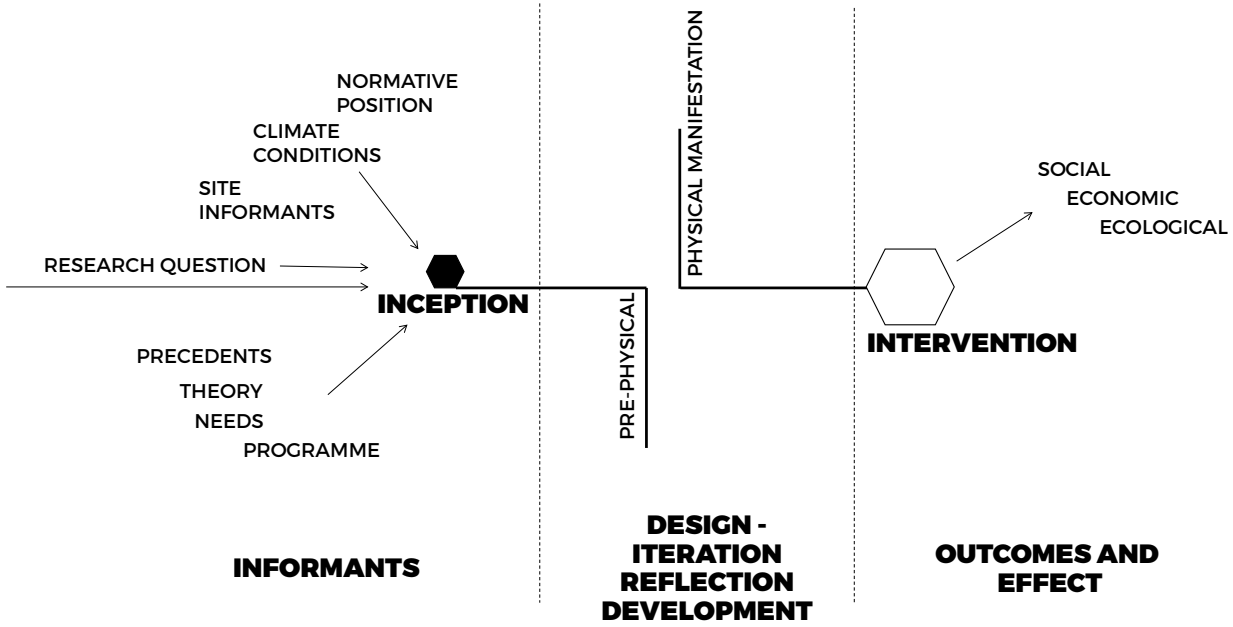


Figure.10: PROCESS

1.9 SITE LOCATION

Figure.11: SOUTH AFRICA

Figure.12: GAUTENG

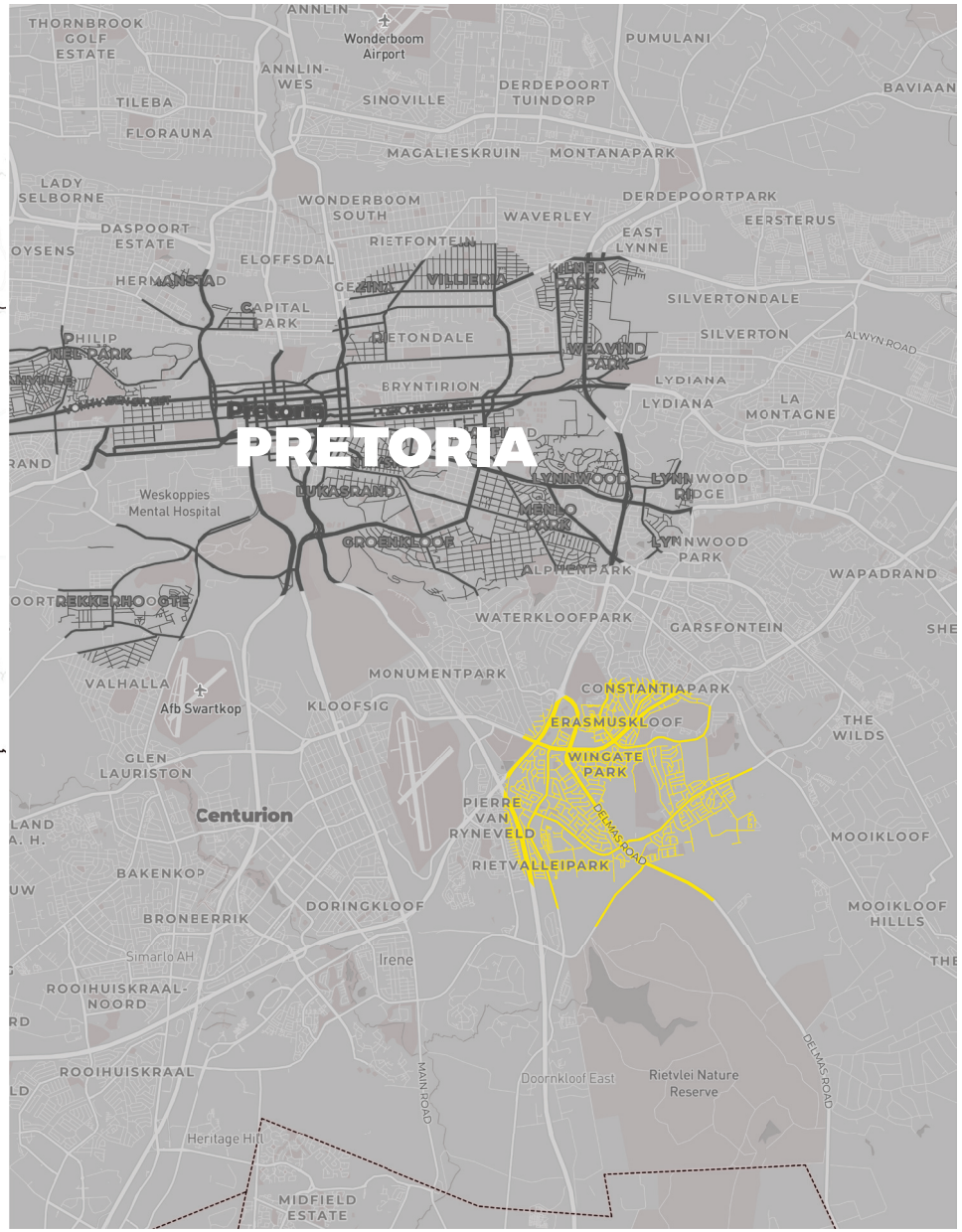


Figure.13: SOUTH EAST PRETORIA (AUTHOR)

1.10 SITE INFO

SOUTH EAST PRETORIA

CLIMATE:

Mean max and min Temperature: Mean Max and Min: 31˚C & -1˚C.

Rainfall: 650mm per annum. Summer thunderstorms brings rain and hail.

VEGETATION UNIT(s)

Gauteng Shale Mountain Bushveld & Rand Highveld Grassland (Mucina and Rutherford 2006). Provides an indication of the general taxa in the area.

GEOLOGY AND SOIL

Shale with quartzite ridge.

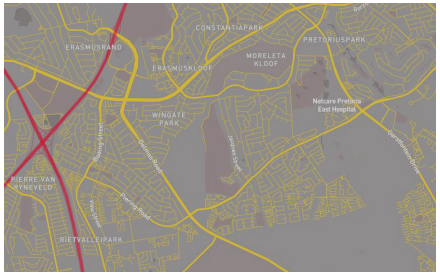


Figure.14: ROAD NETWORK (AUTHOR 2021)

Figure.15: EDUCATION (AUTHOR 2021)

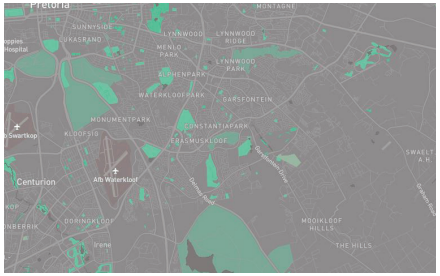


Figure.16: OPEN GREEN SPACE (AUTHOR

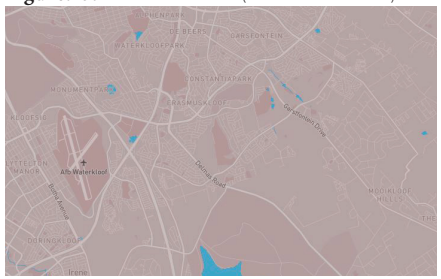


Figure.17: HYDROLOGY (AUTHOR 2021)

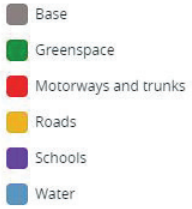
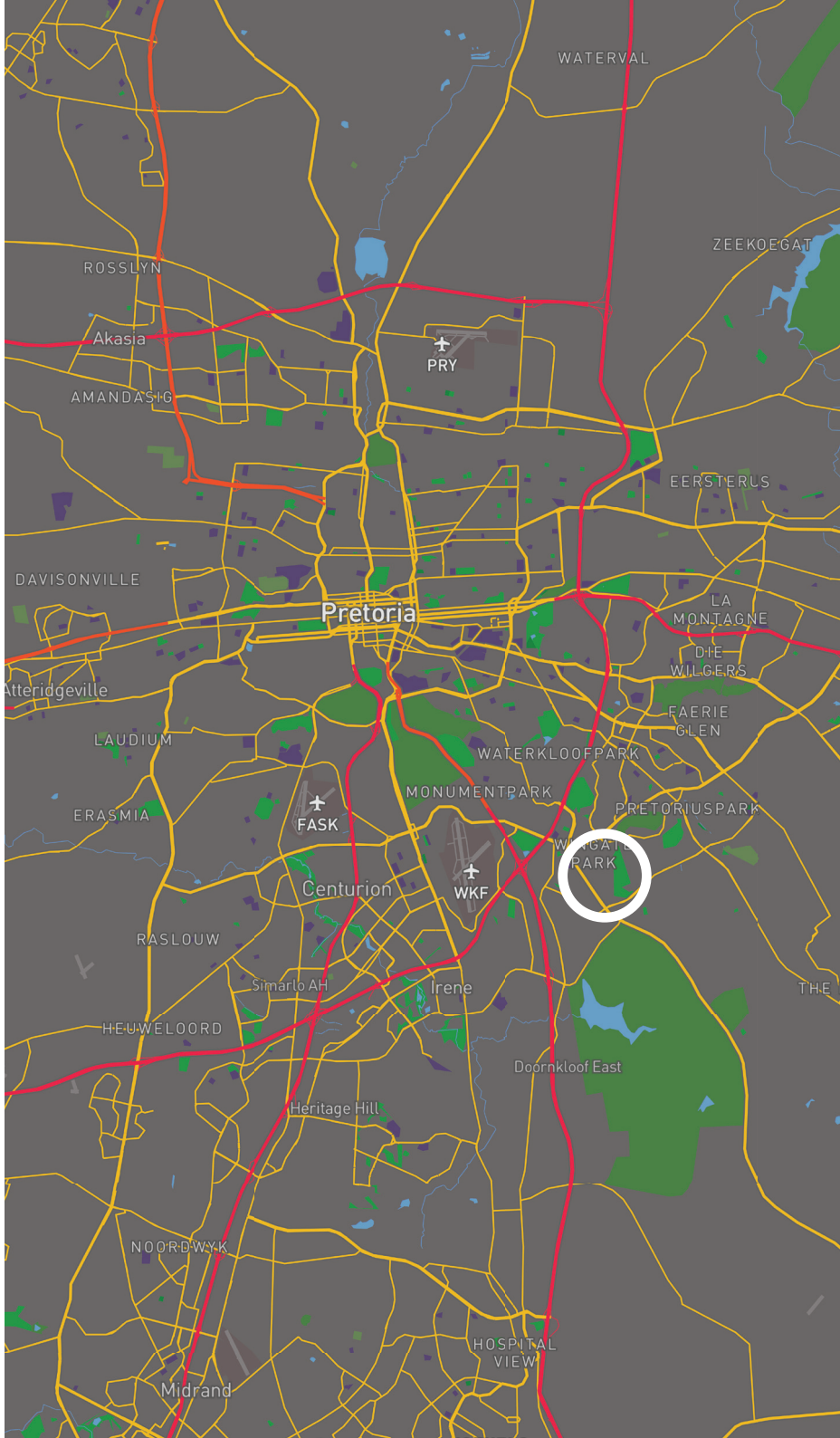


Figure.18: LARGER ANALYSIS



1.11 SITE

The site: De Villa Bois (or the Villa) is a 65% incomplete structure that would have been a GBSCA Greenstar rated mall in the South-East of Pretoria (marked yellow in Fig 19) located in the periphery of the city. It was planned to achieve a 4-star rating. It has been abandoned from 2010 and it is currently inhabited by the contractors GD Irons. The construction of the building halted due an alleged finding by the South African Reserve bank that the investor group is in contravention with regards to the bank act. This is still an ongoing dispute.

As a result, the company has been liquidated and placed under business rescue. Various shareholders, mostly pensioners, lost all of their investments with no guarantee of receiving anything back. Because of this, the structure has become an eyesore to the community and has a general bad reputation, with no change in sight, it has become known as the Sharemax Tombstone.

It is located in the Wingate Park area (Fig. 13) and shares a larger site with (Fig. 19): The Garstkloof nature area (Fig. 22), which the public does not have access to.

Located in a threatened ecosystem (Witwatersberg Pretoria Mountain bushveld) the nature area is home to some red list species of flora and is in good condition and has a high conservation potential. The Garstkloof Landfill (Fig. 20 & 21), is a landfill that has been discontinued and rehabilitated to an impressive state, except for a few invasive species and some rubble that still remains.

The site as a whole has the potential to become a healthy ecosystem, filled with activity for use by humans and non-humans alike, linking it with the Deep Ecological platform (Naess & Sessions 1985).

Furthermore, the larger site has the opportunity to be connected into the larger open green space within this area of the city. This forms part of the The Gauteng Conservation Plan that identifies a set of areas that are required to achieve certain conservation targets (Pfab et al. 2017). It becomes a corridor through which the natural spaces are connected in a strategy knowns as Island Biogeography (which will be elaborated upon in the next chapter).

1.12 SITE INFO - GARSTKLOOF

GARSTKLOOF NATURE AREA

·30HA 'IRREPLACEABLE AREA'

·Not open to the public

·Located in a threatened ecosystems (Witwatersberg Pretoria mountain bushveld)

·Supports red data plants with critically endangered status

·Only entrance at Selmy street

·High conservation potential

GARSTKLOOF LANDFILL SITE

·Currently in the process of being rehabilitated

·Used as a recycling centre

·Possible security risk

·More information needed

·Class 4 ridge

·Invasive species

·Low conservation potential

DE VILLA BOIS TOMBSTONE

·Incomplete structure

·Remnant of a failed investment group

·Currently occupied by GDIrons (contractors)

·Eyesore for community

Figure.19: GARSTKLOOF PARTS EDITED FROM GOOGLE EARTH (AUTHOR 2021)

REHABILITATED GARSTKLOOF LANDFILL

Figure.20: REHABILITATED GARSTKLOOF LANDIFLL (AUTHOR 2021)

GARSTKLOOF NATURE AREA

Figure.22: GARSTKLOOF NATURE AREA (AUTHOR 2021)

REHABILITATED GARSTKLOOF LANDFILL

Figure.21: REHABILITATED GARSTKLOOF LANDIFLL (AUTHOR 2021)

1.13 DE VILLA BOIS

The massive abandoned building is found at the corner of Delmas road and De Villa Bois Marueil drive. Its incomplete column, beam and slab structure decaying in the sun and wind with exposed re-bar and crumbling slabs clear to see in certain areas. There was only primary structural elements erected in the structure, which is not fully completed, no shop fronts or railing were installed.

Total gross floor area in completion: 129,056m²

Various equipment and materials remain on site, some of which were never removed or built. De-constructed cranes stand idle at the back of the structure, unable to complete their task. Massive steel staircase stand outside the structure on the southern side, with no handrails, some treads removed and risers over 300mm, it becomes a frightful experience.

The Southern edge of the structure on De Ville Bois Mareuil street becomes somewhat of a taxi stop, with it transporting people from the local business and residential areas.

A drainage line exists on the eastern boundary of the site, running parallel to Delmas road.

The structure has a few typology of space. Divided into parking area, commercial shop areas and larger open space area which I assume would have become food courts or similar spaces.

Circulation “shafts” exist in the structure to accommodate escalators. Elevators shaft are still evident in some area, some of which can be reused.

The structure impressive as it is, stands mostly empty, some invasive vegetation started propagating in areas where there was a little soil. This gave the entire building a feeling of a ruin, one that is only +-10 years old.

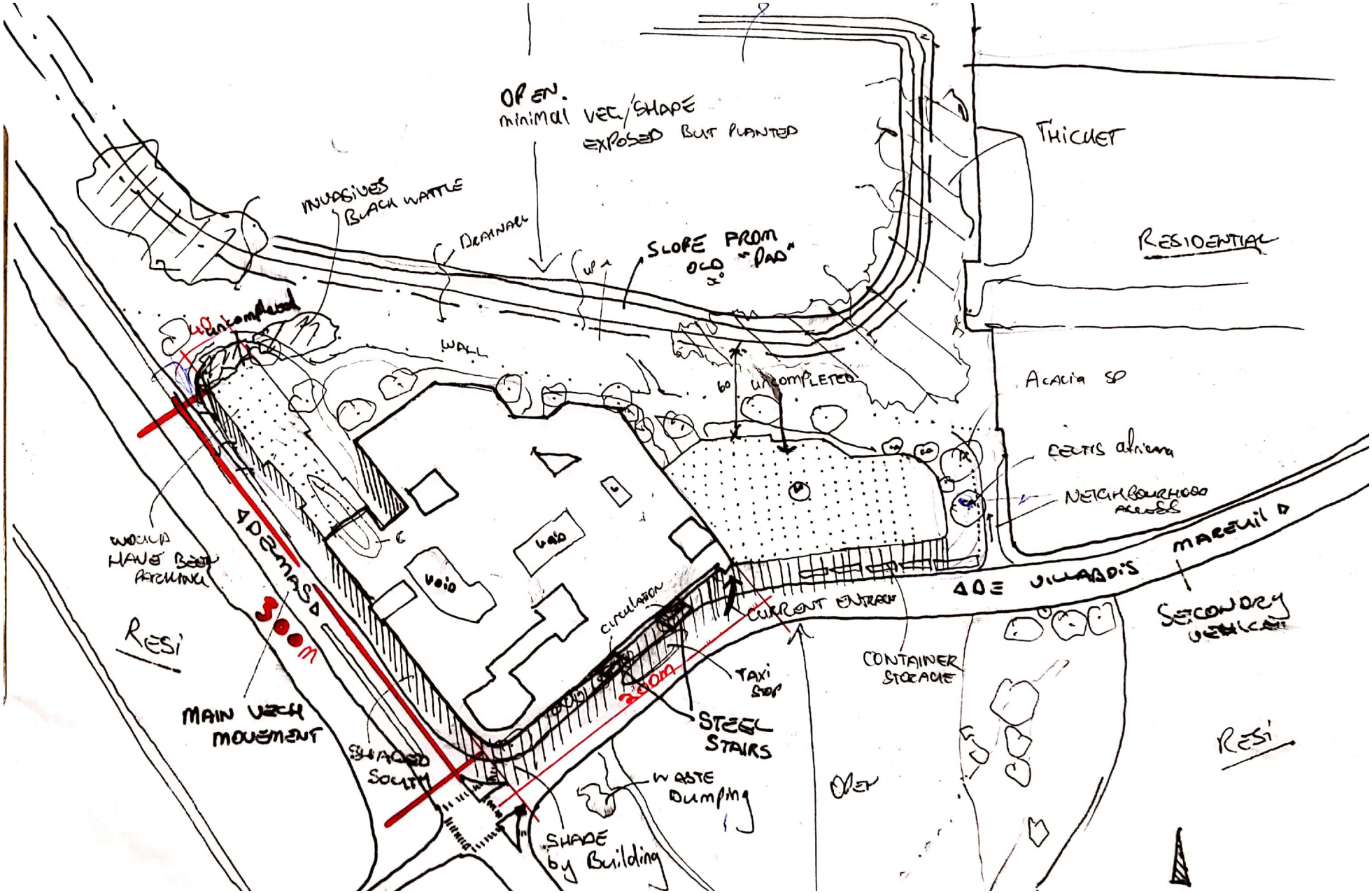


Figure.23: SITE - DE VILLA BOIS (AUTHOR 2021)

1.14 EDGE

Figure 24-28

The Southern edge mostly verges on De Villebois Marueil Drive with a small part of its eastern side verging on a residential estate on Benfleur street.

The building is stepped back from the street edge, with a buffer of about 10-15m.

The North edge runs along a sloped area that was the what once was area for the contractors machinery and equipment (site yard), but has now become overgrown with vegetation ,mostly invasive. A wall with a fence separates these spaces and there is major potential for conservation/ rehabilitation of this area.

The adjacent landfill was rehabilitated to an impressive degree, with most remnants of its prior use seemingly removed (except for larger elements). It too has potential to be connected to the larger combination of green space within the area.

All edges have the opportunity to be improved and adjusted. This is specifically important for the ecological system on the adjacent sites, to allow for the movement and spread of the species across the larger Garstkloof site.

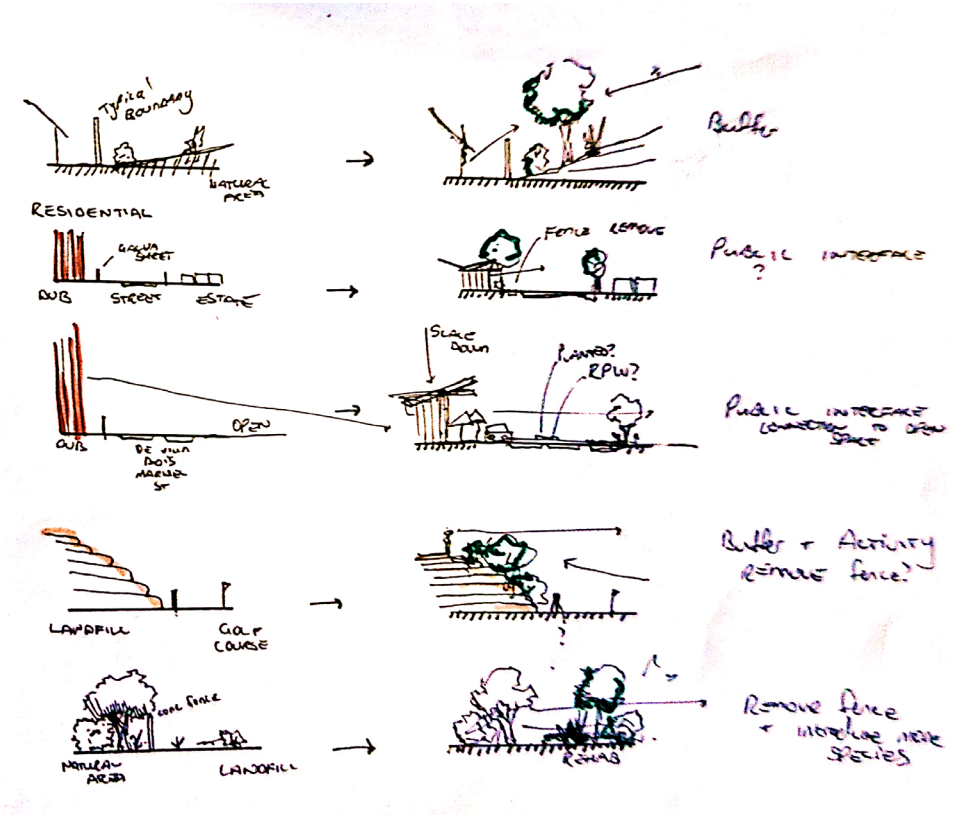
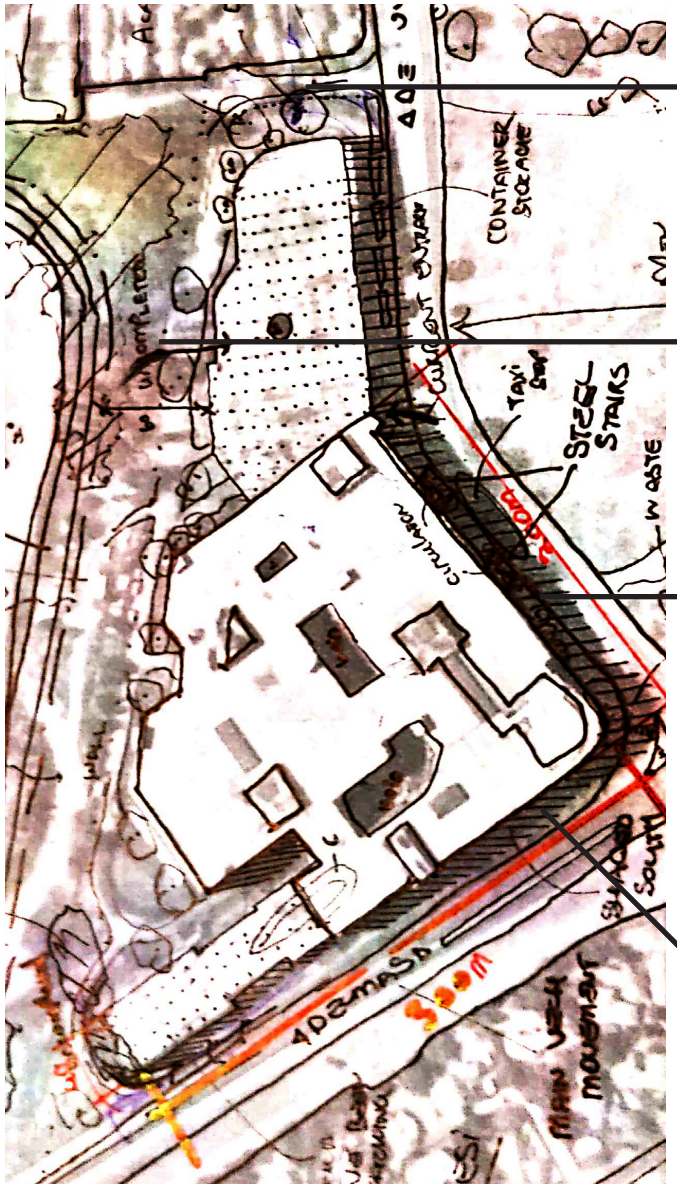


Figure.24: EDGES & APPROACHES



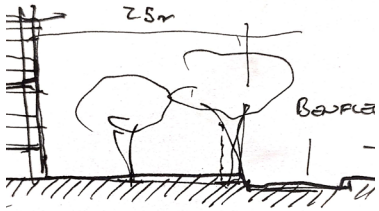


Figure.25: DE VILLA BOIS EAST EDGE (AUTHOR 2021)

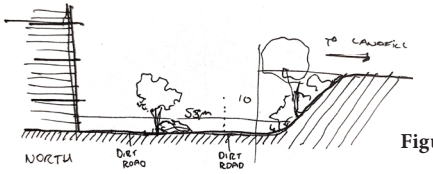


Figure.26: DE VILLA BOIS NORTH EDGE (AUTHOR 2021)

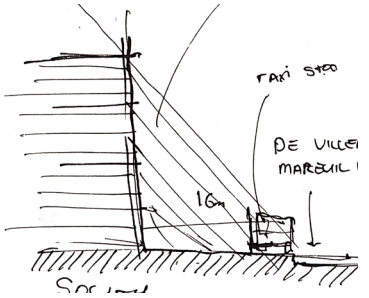


Figure.27: DE VILLA BOIS SOUTH EDGE (AUTHOR 2021)

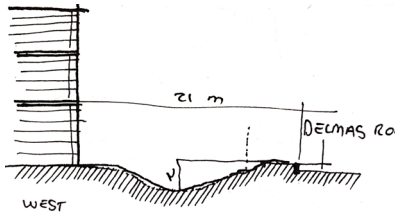


Figure.28: DE VILLA BOIS EAST EDGE (AUTHOR 2021)

Figure.29: DE VILLA BOIS FROM GARSTKLOOF LANDFILL (AUTHOR 2021)

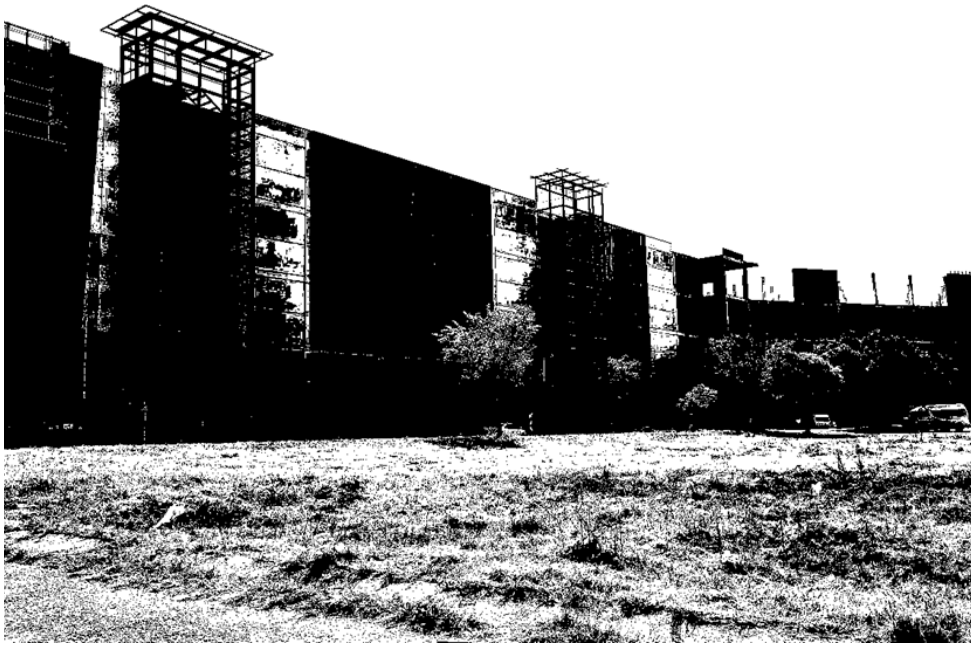


Figure.30: STEEL STAIRS SOUTHERN FACADE (AUTHOR 2021)

Figure.32: CORNER OF DELMAS AND DE VILLA BOIS MAREUIL DRIVE (AUTHOR 2021)

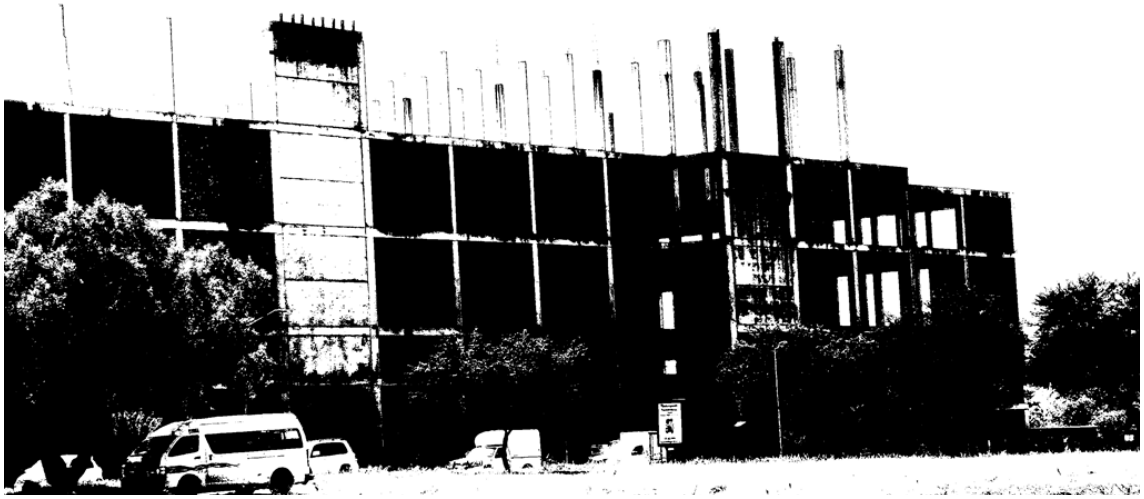


Figure.31: UNFINISHED COLUMNS AND REBAR (AUTHOR 2021)

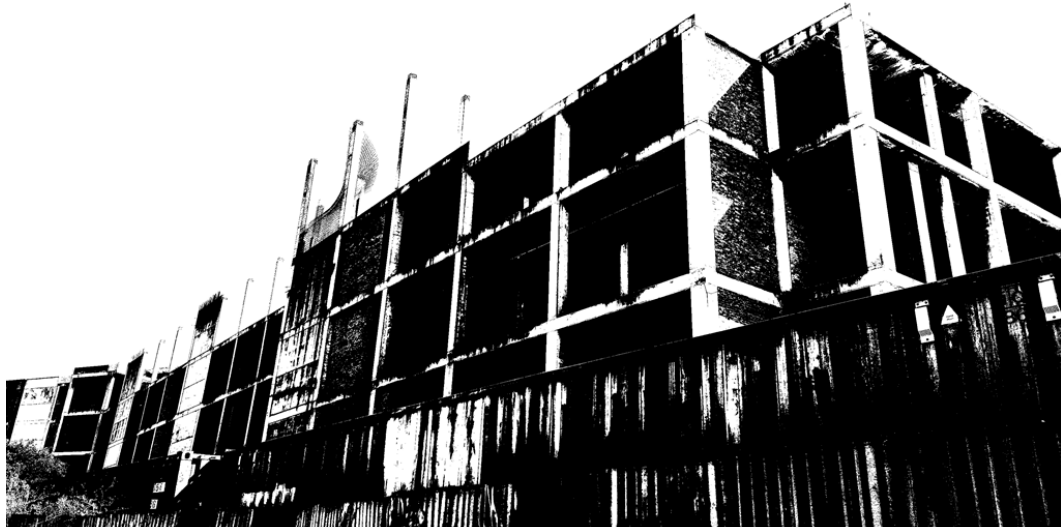


Figure.33: EASTERN CORNER (AUTHOR 2021)

1.15 POSTULATION OF PROGRAMME

From the normative position, the Nested Model (Giddings, Hopwood and O'Brien 2002), it is imperative that social, economic and ecological function be introduced, restored and/or regenerated on site. A Deep Ecology stance will be taken and will inform all of the decisions made for the site. This ecocentric approach will guide the design towards a symbiotic approach where the human system and ecosystem co-exist in a symbiotic relationship.

The current site approach requires the introduction of a system which generates activity for the reuse of the landfill, keeping in line with the theoretical approach of Deep Ecology. Deep Ecology linked with the term "friluftsliv" (meaning: "outdoor life") highlighted the importance of outdoor activity both as an unprompted way of being at home in the world, and also as a way to improve human education and socialisation (Brennan 2013).

This requires the further rehabilitation of the landfill; removal of invasive species and the introduction of local fauna and flora through habitat creation.

From the site analysis and larger analysis, it is clear that there is a general lack of cultural spaces and civic activity within, not only this area, but the larger Pretoria-East.

There is an opportunity in developing a civic precinct through the reuse of the De Villa Bois structure by dismantling or partly dismantling the building.

The programme will then become culturally informed by introducing functions like: a data centre that houses and shares various types of knowledge in various forms, complete with study areas, meeting spaces and online learning. A theatre & art gallery, allowing for exhibitions by various types of artists. The structure will have various temporal spaces for pop up art galleries and perhaps even workshop space for artists and the community.

Together with the introduced civic functions an rehabilitation function and urban agricultural wing can be introduced to make the site "productive"

All of this will be developed within a theoretical approach as the premise for decision making. Creating a narrative where the human and natural world lives within symbiosis on the site and surrounds.

1.16 CONCLUSION

In conclusion, the problems are clear. Species decline globally are caused by human factors. A drastic change in thinking is required. Where humans see ourselves as part of the natural world, rather than above it.

The structure and larger site has opportunity to become a prototype that improves upon the ecological function of the site and further allows for the reuse of the structure by humans, through social and economic means. In following the Deep Ecology platform (Naess & Sessions 1985), there is clear way of approaching the design and development of the structure.

The next chapter will address research into design. Where our relationship with the natural world will be investigated and a reconnection will be proposed, through the development of the De Villa Bois structure.

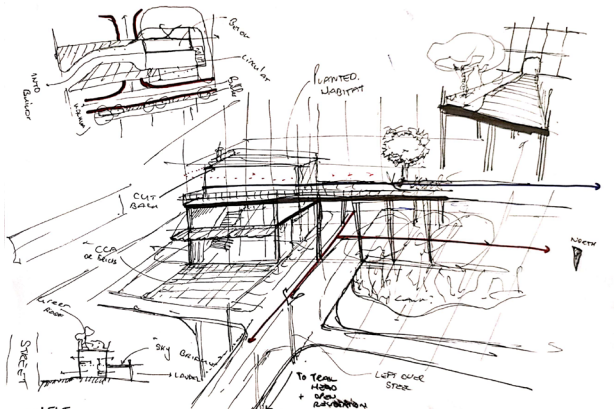


Figure.34: ACTIVITY FACILITATOR (AUTHOR 2021)

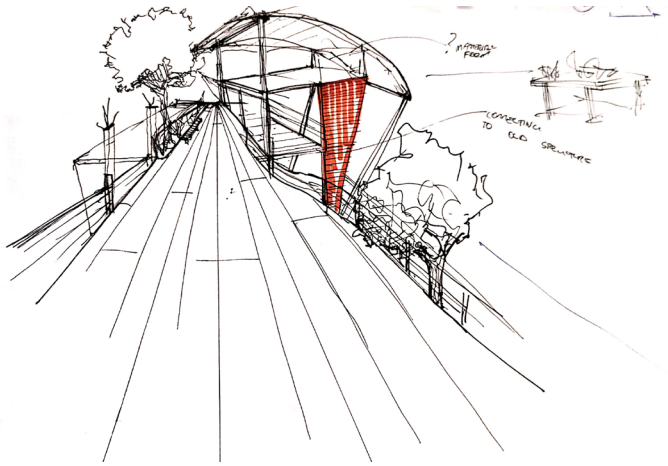


Figure.35: FLYOVER (AUTHOR 2021)

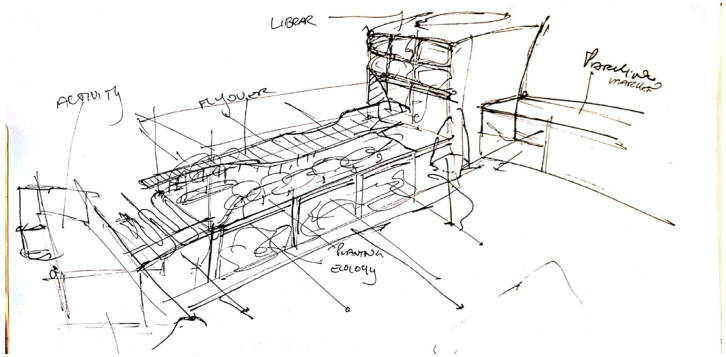


Figure.36: DATA CENTRE (AUTHOR 2021)