

For(t)midable Landscapes

Past cultural landscapes as a model to aid ecological and social healing at Fort West Village



Illustration 1: Housing complex at Fort West in Pretoria West (Author, 2012).

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Illustration 2: Type of signage found at Fort West Village (Author, 2012).

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Study Leader: Ida Breed
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Submitted in partial fulfillment of the requirements for the degree
Magister of Landscape Architecture (Professional)

Department of Architecture, Faculty of the Built Environment, Engineering and Information
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Full dissertation title: For(t)midable Landscapes: Past cultural landscapes as a model to aid ecological and social healing at Fort West Village.

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Project Summary

Site description: Fort West Village, Pretoria West
Client: Dept. of Tourism, Dept. of Human Settlements, Dept. of Arts & Culture and Private enterprises, i.e. Leprosy Mission.

Users: The Fort West Village community, as well as visiting tourists
Site location: Remainder Fort, farm number 646-JR, Portion 0 & 3
Address: Van Den Berg Street, Fort West, Pretoria, South Africa
GPS Coordinates: 25° 44' 11.99" S, 28° 05' 23.51" E

Landscape Architectural Theoretical Premise: Utilising the principles of cultural landscapes and ecological design in order to develop a model for the regeneration of future sustainable cultural landscapes.

Landscape Architectural Approach: Regeneration of Fort West's cultural landscape into a multifunctional sustainable landscape

Research Field: Cultural landscape and environmental potential

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertations and theses, I declare that this thesis, which I hereby submit for the degree Master of Landscape 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 thesis has already been, or is currently being submitted for any such degree, diploma or any other qualification.

I further declare that this thesis 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.



Tosca Dina Grünewald

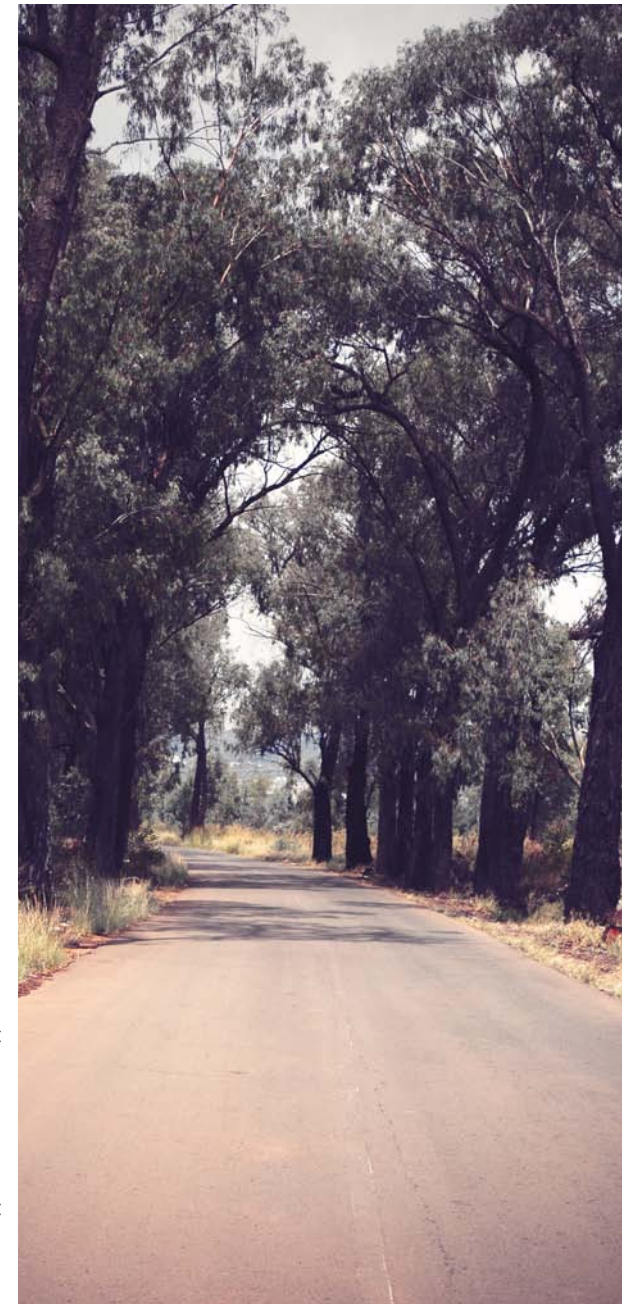


Illustration 3: Eucalyptus avenue leading to the entrance (Author, 2012).



Illustration 4: *Zinnia peruviana*, introduced weed to South Africa found on site (Author, 2012).

DEDICATION

This dissertation is a culmination of many years of hard work and dedication, all of which would not have been possible without the love, support and encouragement of the following people:

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For making all of my dreams possible, even if it required 'tough' love at times, for that I will forever be grateful. Without your unfailing love, patients and support none of this would have been possible.

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To my Family, the Arthur's, Maraschin's, Zerbt's and Adrian's

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To my Grandparents,

My dearest Granny thank you for always having such faith in me, your constant love, support, and especially prayers are what have kept me grounded in my faith. Grandpa you will always be remembered for your tall tales and incredible imagination.

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Jeff, Lynette, Megan & Abby, thank you for always been my second family that I can count on in times of crisis. Your love, support and general madness will always be remembered as the much needed break in the monotony.

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together we have weathered the storm. Thank you!

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For helping turn my world into 3D.

Many thanks must also be give to the following people: Anton Jansen, Koos le Roux (Dr), Peter Lamb (Dr), Erna Moller (Leprosy Mission), Karel Anthonie Bakker (Prof), Pieter Tobias Vosloo (Dr), Johan Kirsten (Prof) & Neal Dunstan.

ABSTRACT

Traditionally cultural landscape of the past involved a dialogue between natural system, human modifications and the value given by humans to the landscape, ultimately nurturing a healthy interaction between human and natural systems. Development pressures on remnants of these past harmonious cultural landscapes threatens the memory and therewith the future possibility of this healthy interaction. With looming exponential urban growth in African cities in the near future, it is important to learn from and protect the few past remnants that are left. The main question that was explored in the dissertation is how a degraded cultural landscape can be regenerated to establish social and ecological health. The hypothesis proposed that degraded cultural landscapes can be regenerated using principles of past cultural landscapes that can reconnect fragmented human and natural systems.

A degraded cultural landscape settled against the backdrop of the Witwatersberg Ridge served as the location for the testing of the hypothesis. This site, situated near Danville and Lotus Gardens in Pretoria West is a former leprosy colony called Fort West. The aim of the dissertation was to find methods for the regeneration of the degraded cultural landscape. It was proposed that an integrated methodology be followed that brings together a site's cultural, natural and economic 'capital' or latent potential. The integration of these three capitals was proposed in two ways: through applying five principles of ecological design as set out by Van der Ryn and Cowan (1996); and by raising awareness and educating society and the community as proposed by Farina (2000). This process delivered a set of design guidelines for degraded cultural landscapes. The approach matches biological diversity with cultural diversity, ensuring that that the ecological relevance of a cultural landscape and its capacity to inform and guide other human activities are met.

The design intervention was applied at three different scales: framework, master plan and sketch plan. Interventions are proposed at each scale that can improve the natural and social health of Fort West. The cultural, natural and economic capital of the site is harnessed by reconnecting past and existing potential in these three fields and integrating proposed natural and cultural systems in this way. Education and awareness is at the forefront of all proposed interventions. In this way a public space that facilitates the reintroduction of biodiversity and also assists in the regeneration of the Fort West community can be established.

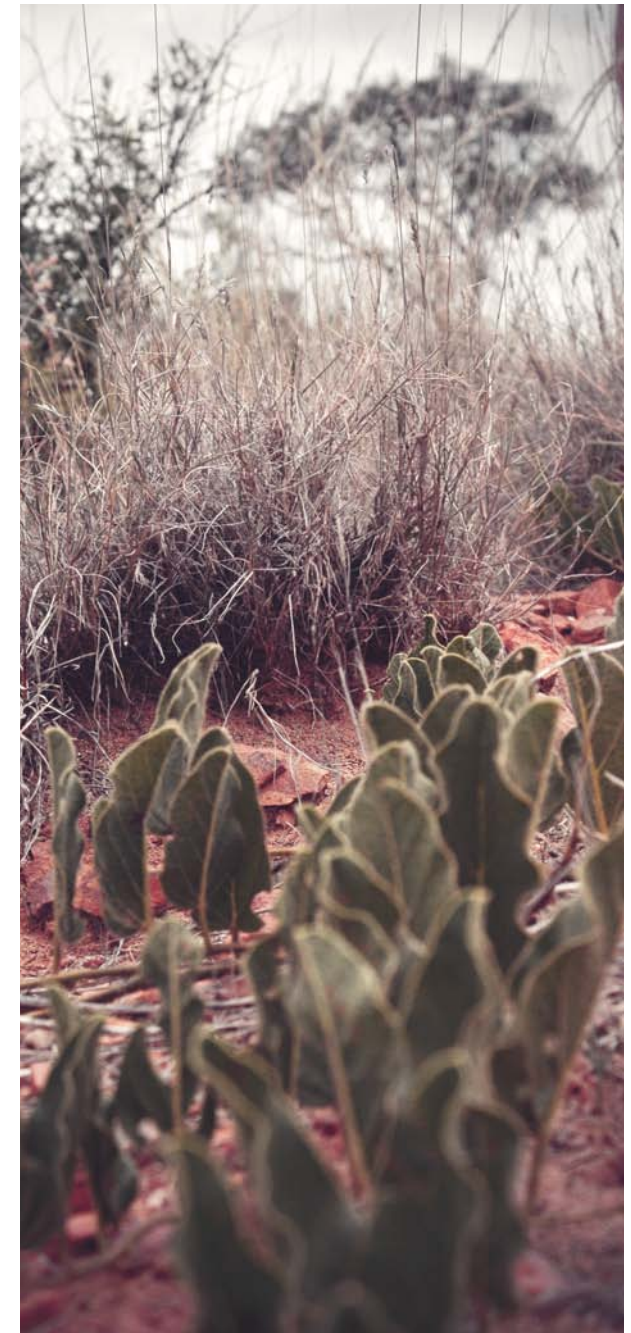


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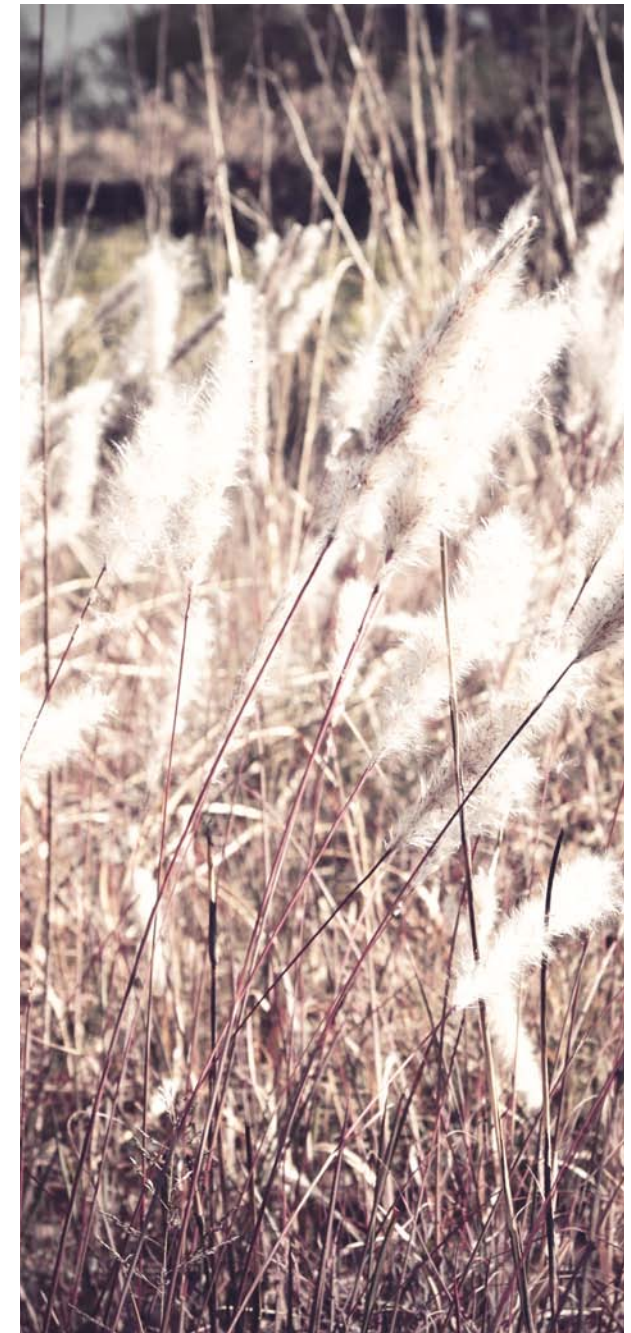


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DEFINITION OF TERMS

Capital	A valuable resource of a particular kind.
Natural capital	The stock of a particular places natural resources and ecological systems and processes that provide vital life-support services to its society and all associated living things (Farina, 2000:317).
Cultural capital	Refers to a non-financial social asset, such as the ways of life, forms of knowledge, skills and patterns of consumption that makes the places that the people are associated to distinct (Farina, 2000:314).
Economic capital	Refers to how a community can sustain themselves through the diversified use of local resources found on the landscape. Only once this has been achieved does economic capital extend to the possible monetary value that can be achieved (Farina, 2000:319).
Feedback mechanisms	Feedback is a process in which information about the past or the present influences the same phenomenon in the present or future. Therefore a feedback mechanism is the action or means used to subsequently return the information (Wikipedia Contributors, 2012).
Interpretation	According to the ICOMOS Ename Charter for the Interpretation of Cultural Heritage Sites (2004), interpretation is considered to be the carefully planned public explanation or discussion of a cultural heritage site, encompassing its full significance, multiple meanings and values.
Cultural landscapes	The cultural landscape consists of a dialogue between the natural physical setting, the human modifications to that setting, and the meanings of the resultant landscape to insiders and outsiders. The continuous interaction between these three elements takes place over time, in a continuous state of becoming. The concept of ‘cultural landscape’ therefore embodies a dynamic understanding of history, in which the past, present and future are seamlessly connected (O’ Hare, 1997:47).
Ecological design	Any form of design that minimizes environmentally destructive impacts by integrating itself with living processes (Van der Ryn & Cowan, 1996; x)
Shisa nyama	Is a term used in many South African townships to describe an informal barbecue or braai where friends come together near a butchery, to grill meat in an open fire. The site is usually provided by the butcher owner and only people who buy meat from the butcher are allowed to use the facility. Shisa nyama is a Zulu phrase and it literally means “burn the meat” (Wikipedia Contributors, 2010).

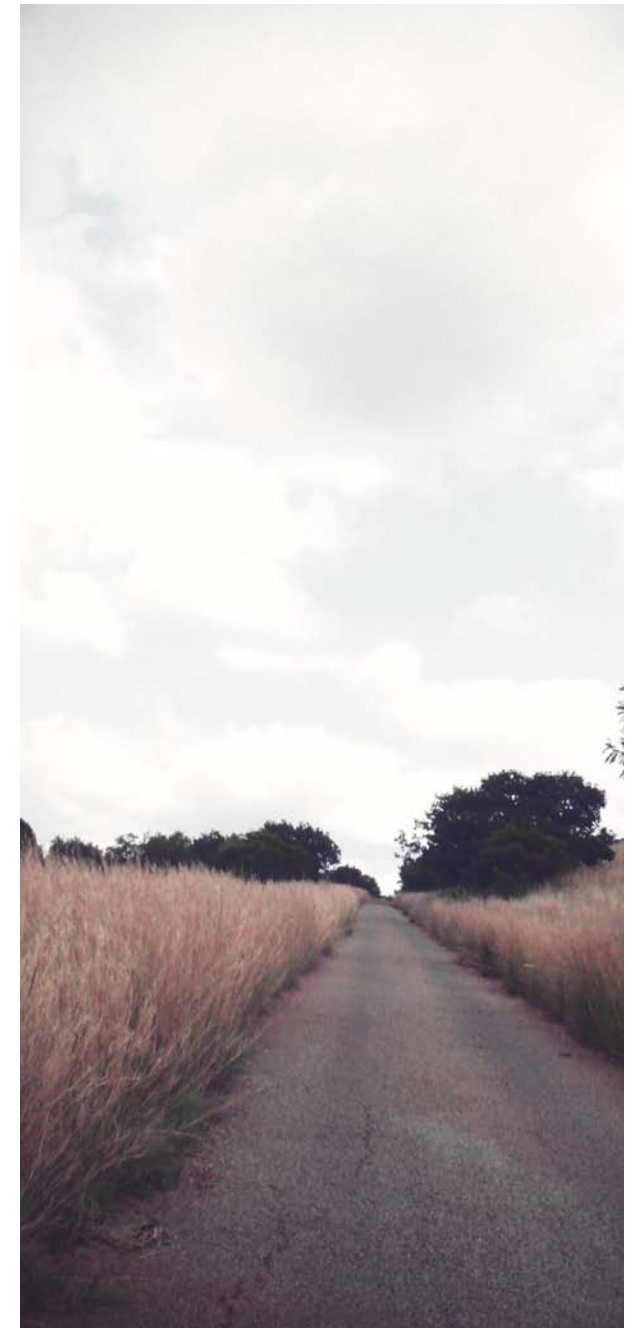


Illustration 13: Road to West Fort (Author, 2012).



“When a piece of architecture is completed, it begins its decline. When a piece of landscape architecture is done, it is just beginning.”
(Merkel, 2007: 47)

Illustration 14: Chimney stack Fort West (Author, 2012).

CHAPTER 01

INTRODUCTION

BACKGROUND

Since the Industrial Revolution society has acted under the illusion that, with the help of science and technology, humankind can rule and control nature (Naveh, 1998:135). Economic globalisation has produced new driving forces and disturbances that have in turn transformed landscapes around the globe, making them increasingly prone to the risks of rapid resource depletion and biological ruin (Farina, 2000:313). As a result, hardly a day has passed without news headlines reporting on some form of adverse environmental or social issues occurring in the world. The consequences of our activities are already being witnessed around the world (Twill *et al*, 2011:6).

The World Wildlife Foundation's (2012) Living Planet Report, is an indicator that monitors the state of the world's biodiversity. According to this report all of our global ecosystems are either under stress or have been in steady decline since the mid 1980's. Numerous reports by thousands of respected researchers and organisations from around the globe reveal that human activities are putting such strain on the environment that the planetary systems required to sustain life on earth (i.e. clean air and water) can no longer be taken for granted.

The paradox of our modern age is that at the same time natural resources are disappearing, our demand for them is increasing (Twill *et al*, 2011:6). Historical trends analysis show that our global demand for resources and ecosystems services has been rising steadily since the 1970's. However, global biodiversity has declined by 30% (see illustration 15 and 16). More simply stated, it would take 1.5 planets worth of resources to meet our current demand (WWF, 2012).

The consequences of living beyond the planet's means is that ecosystems are being run down, resources are disappearing and waste is accumulating in the air, land and water. The well-being and development of all nations is at risk, with the biggest impact being felt by the world's poorest people who rely most directly on these ecosystems to survive (Twill *et al*, 2011:6).

The built environment is a huge contributor to the ecological footprint of all nations. In Africa urban populations are growing rapidly. It is predicted that by 2050 Africa will have a higher number of people living in cities than Europe, Latin America or North America (WWF & AfDB, 2012). This will have a massive impact on climate change, biodiversity loss, diminished connection to nature, and many other environmental and social issues.

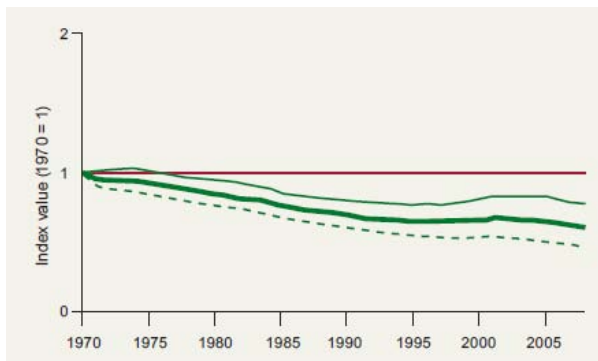


Illustration 15: The Global Living Planet Index showing a biodiversity decline of around 30% from 1970 to 2008 (WWF & AfDB, 2012).

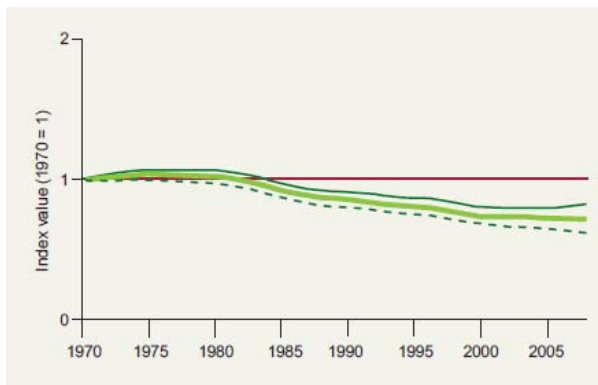


Illustration 16: Africa's Living Planet Index indicates there has been an overall reduction of 39 per cent in biodiversity over the 38 year period (1970 – 2008) (WWF & AfDB, 2012).

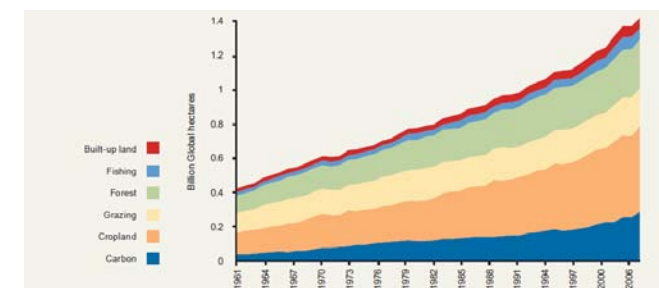
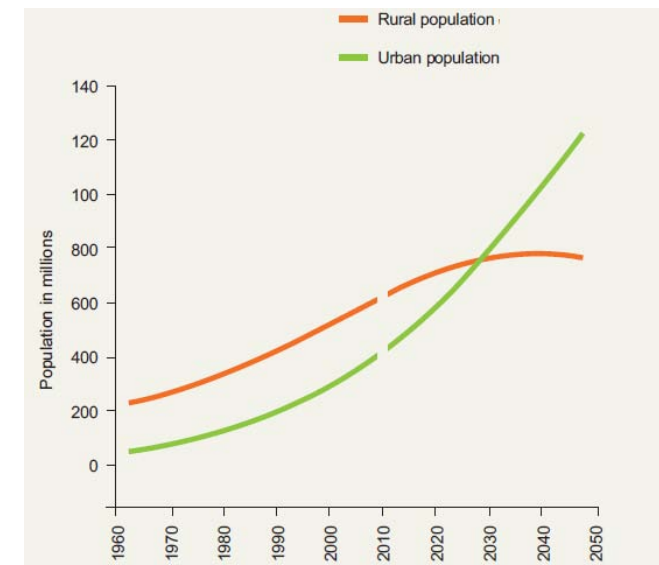


Illustration 17: Projected growth in urban population in Africa and Historical trends in Africa's Ecological Footprint (WWF & AfDB, 2012).

In the opening years of the twenty-first century there has been a general shift. This shift has resulted in a raised awareness on sustainable practice due to environmental decline that is scientifically linked to bad practice (Corner, 2006:23). Yet as we enter into this new age of sustainability, we may begin to shift our understanding of the built environment as something that the natural world has to be protected from, to seeing it as humanities greatest tool by which to restore the world (Twill *et al*, 2011:7). This in turn has lead to the seemingly old-fashioned term 'landscape' curiously coming back into vogue. Perhaps it is through new approaches to the design of these 'landscapes' in our cities that the built environment can be transformed from a source of environmental and social stress to a restorative fabric that can support a more resilient world.

Natural systems serve to keep us connected; reminding us of how natural systems sustain mankind. Regular visits to more pristine wilderness areas deepen and broaden these connections, and anchor our souls against currents of cultural madness (Ludwig, 2003:6). In order to avoid further destruction of these areas we need to ensure future environmental growth, therefore society needs to become nature's conscious partner and not its master (Naveh, 1998:135). This will then result in a regenerated symbiotic relationship between human society and nature.

Pre-industrial societies of the past developed within the constraints and opportunities of their natural environments, resulting in the development of cultural landscapes. These landscapes involve a dialogue between natural systems and human modifications. This in the past ultimately nurtured healthy interaction and connections between people and the natural environment. However, many of these past cultural landscapes are under threat of been destroyed by the practices of modern society. As a result of this threat and through the growing concern about the state of the planet, the ecological and social values of cultural landscapes have been brought forth (Farina, 2000:313). Through the acknowledgement of these values of cultural landscapes a new approach has been developed where we use these values as a basis for the development and regeneration of

current and future landscapes.

RESEARCH QUESTION

How can a degraded cultural landscape be regenerated to improve social and ecological health?

HYPOTHESIS

The hypothesis states that:

Degraded cultural landscapes can be transformed using principles of past cultural landscapes for the regenerative development of a site, through connecting fragmented human and natural systems.

SUB-QUESTIONS

CULTURAL LANDSCAPES

1. What is the value of cultural landscapes in an urban environment?
2. How can degraded cultural landscapes be regenerated in order to revive their past formidable character?
3. How can principles of past cultural landscapes be used as a model for future regenerative development?

ECOLOGICAL DESIGN

- 1.How can ecological and social health be improved?
- 2.How can fragmented human and natural systems be connected?

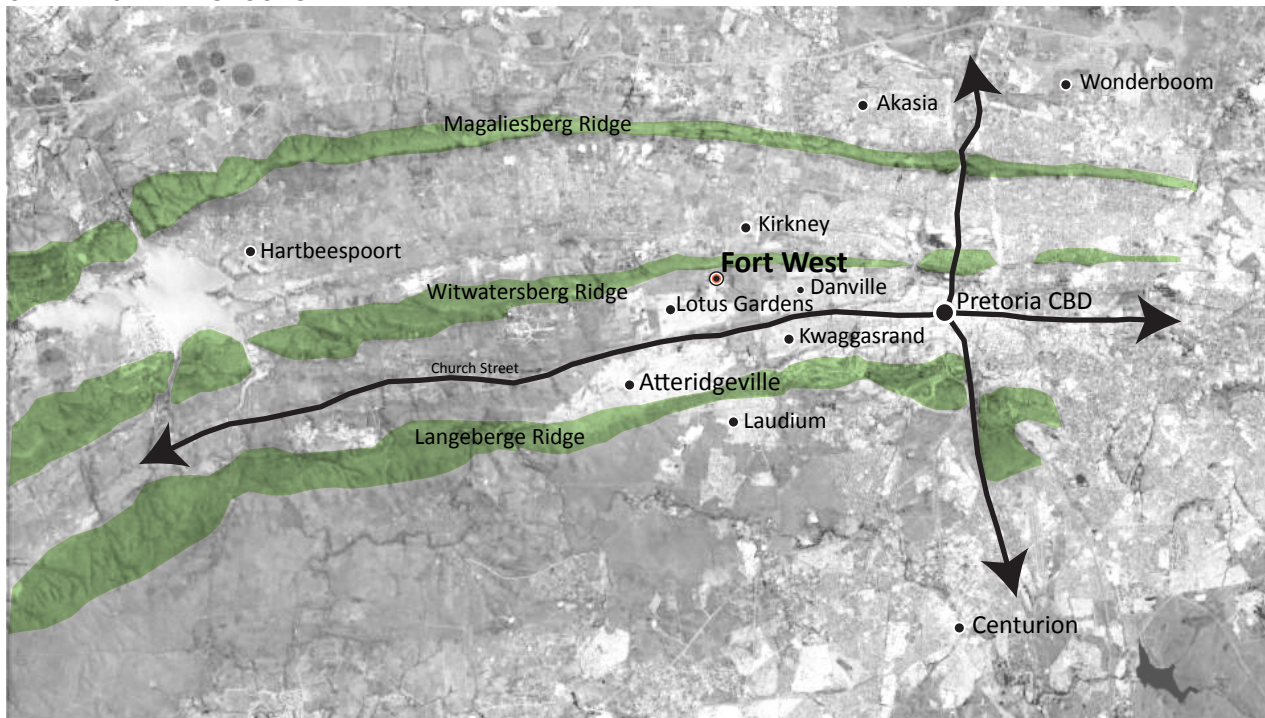


Illustration 18: Site Location in context of Pretoria CBD. (Author, 2012).

SITE AND SITE LOCATION

An isolated historical settlement settled against the backdrop of the Witwatersberg Ridge has been chosen. This site, situated near Danville and Lotus Gardens in Pretoria West is called Fort West, formerly known as the West Fort Hospital or Pretoria Leper Asylum (see illustration 18).

PATRONS

Due to the diverse nature of the site the regenerative development of Fort West will be a joint venture between:

- City of Tshwane and Government Departments such as;
 - Department of Human Settlements
 - Department of Arts and Culture
 - Department of Environmental Affairs
 - Department of Tourism

- Private enterprises such as;
 - IDEA (International Association for Integration Dignity and Economic Advancement)
 - Leprosy Mission
 - NEA Foundation
 - Wildlands conservation Trust

IDEA

Is an NGO that works to build a strong international network that supports the efforts of conserving leprosy communities and historic sites as part of the important history of the world. This organisation is already involved in Robben Island. They also facilitate databases of leprosy achieves around the world, which include leprosaria records, museums and libraries. This organisation aims to ensure that the voices of the people affected by leprosy are heard through their Oral History Project.

LEPROSY MISSION

The Leprosy Mission is an NGO that has been working in South Africa since 1949. They focus predominately on the treatment of and education about leprosy. As such they are an organisation that was very involved in Fort West when it was open. However, they also maintain a database of patients and a wide range of resources for people looking for information about leprosy, i.e. old photographs. Therefore, they are looking for a suitable location for the implementation of this database.

NEA FOUNDATION

NEA is a Swahili word for “purpose, to prepare the way, to set in motion, to be a starting block”. The NEA Foundation is a non-profit organisation already involved in Fort West. They get involved with communities to start project are specifically required in that community, such as the Westfort Community Crèche and Skills Group. They then equip these communities to take responsibility for their own projects while still providing support.

WILDLANDS CONSERVATION TRUST

The Wildlands Conservation Trust is South Africa’s largest environmental NGO (based on income generated). They

are progressively developing and implementing initiatives across the country. Their work is structured around a set of activities that combine to form a holistic approach to creating sustainable communities that will underwrite a sustainable future. These activities aim to unlock the potential of impoverished and unemployed communities by nurturing the development of ‘green-preneurs’. These ‘green-preneurs’ collect recycling, grow trees and organic food. They then barter what they have grown and collected for items such as food, clothes, education support, building material, water tanks, solar water heaters, solar lighting and bicycles. This encourages the creation of a ‘Green Economy’.

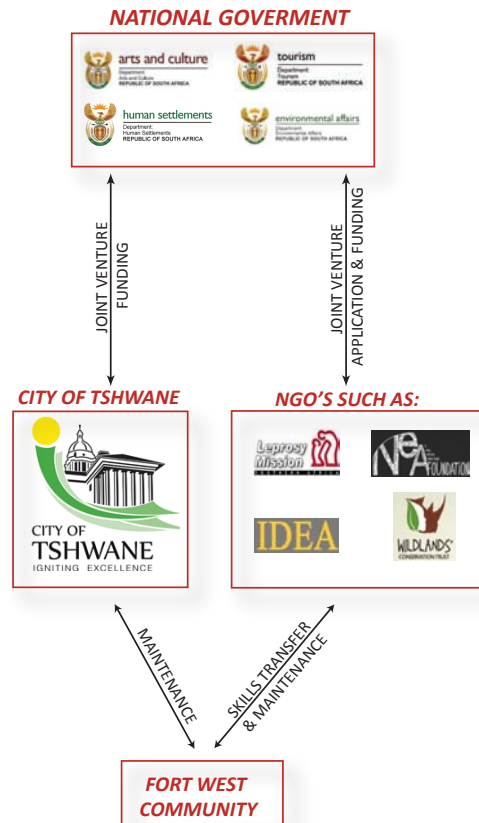


Illustration 19: Relationships between different patrons on site (Author, 2012).

AIM

The importance of this dissertation will be in addressing how cultural landscapes linked with ecological design, can connect people with natural systems.

The ultimate aim of this dissertation is to find methods for the regeneration of the degraded cultural landscape of Fort West. Therefore, a public space that will facilitate the reintroduction of biodiversity and also assist in the revitalisation of the Fort West community will be established.

DESIGN STRATEGY

The site will be the first departure point in determining the problem and the body of theory needed to be investigated. Next, through the evaluation and use of contemporary theory, the research questions will be answered. Thereafter a

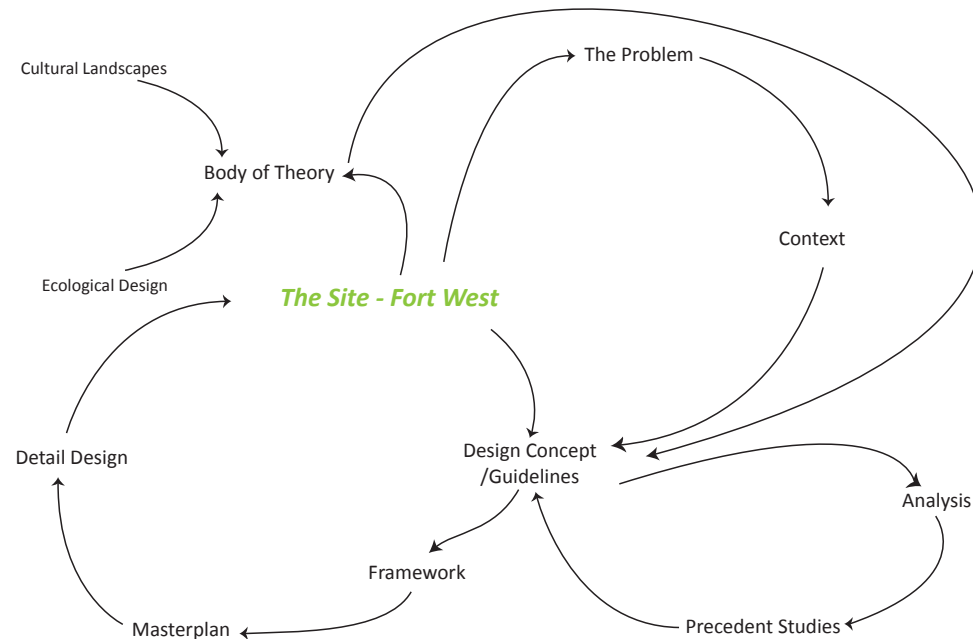


Illustration 20: Design strategy to be followed (Author, 2012).

desktop study and observations will be undertaken in order to determine the contextual analysis. The synthesis of the theoretical and contextual research will be used in this dissertation in order to establish guidelines and principles for the development of Fort West. The aim of these guidelines will be to inform all decisions made, at every level, during the design process. They will then inform the development of an open space framework, which will ultimately serve to create improved opportunities for social and ecological health, and regeneration of meaning and identity at Fort West. It will also help inform the location and design development of a sketch plan area that is appropriate to the open space framework, serving as a catalytic area to the rest of the precinct. This area will then be resolved technically for the most prominent structures in the sketch plan area.

RESEARCH METHOD AND METHODOLOGY

A qualitative and quantitative approach will be used as a research method. Data will be researched by means of the Descriptive Survey Method and the Historical Method, as set out by Leedy and Ormrod (2001: 119-171), in order to interpret the latent meaning of the history and to be able to process the data that comes through observation.

According to Leedy and Ormrod (2001:119), the Historical Method aims to assess the meaning and to read the message of the happenings in which men and women and the events of their lives and the life of the world around them relate meaningfully to each other. The object, therefore, is to provide a means through which to deal with problems that have arisen from events past and to interpret what might otherwise be considered merely as happenstance. This method relies on the accumulation of data in the form of written documents, archive photographs, stories and past aerial photographs, providing a time line of the history of the site.

The Descriptive Survey Method, according to Leedy and Ormrod (2001:132), is merely observation with insight. We observe what others do, think, believe, prefer and aspire to.

Once this data has been collected it is then examined and the real meaning is discerned, thereby seeking an insight into that which lies below the act of mere observation. It includes taking photographs on the selected site and observing the area under investigation.

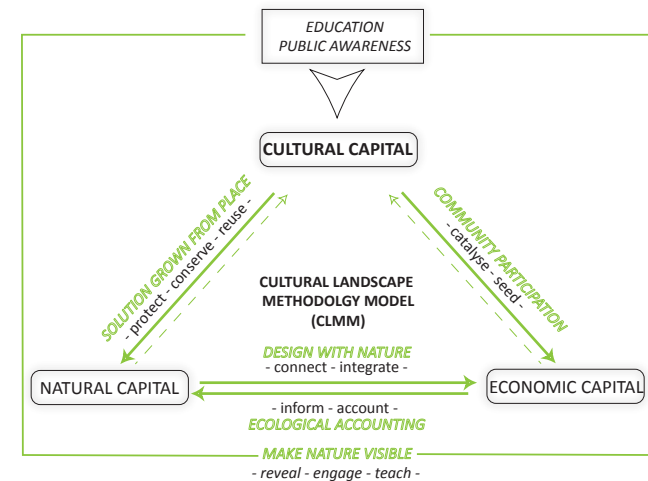


Illustration 21: Future cultural landscape model (as proposed by Farina, 2000) showing the three capital systems and the ecological design principles (as proposed by Van der Ryn & Cowan, 1996) that can link and inform them (Author, 2012).

The main theoretical approach and methodology was derived from Farina (2000) and Van der Ryn and Cowen (1996). Future landscape regenerative development should be organised according to an integrated methodology that brings together ecological, cultural and economic understanding. In order to achieve this the author has applied the five principles of ecological design (Van der Ryn & Cowan, 1996) to the future cultural landscape model (Farina, 2000), see illustration 21. Such an approach matches biological diversity with cultural diversity (rather than compromising both the way that conventional solutions do). Consult the theoretical investigation chapter in order to see a more in depth explanation of this methodology.

ASSUMPTIONS AND DELIMITATIONS

- It is assumed that the Fort West Village development plan which fell through in 1997, developed by Amtrad Properties (Pty) Limited, will not continue.
- It is assumed that the new Fort West Urban Development Framework (UDF) will be implemented on the western boundary of the site, as Phase 1 of the UDF. As proposed by the Town Planning Hub (TPH) and Arengo 6 for the City of Tshwane.
- It is assumed that the proposed Phase 2 of the UDF for Fort West will go ahead. As proposed by the TPH and Arengo 6 for the City of Tshwane.
- This dissertation is based on the condition of the site and presence of historic trees when first visited by the Author in March 2012. Many of the historic trees have been harvested by logging taking place in the area. Therefore, it is assumed that the vegetation indicated will remain as is.
- The current informal settlers on site will remain and are assumed to be the new community of Fort West. Only residents affected by building reprogramming of public buildings that need to fulfil communal functions for a sustainable urban setting, will need to be relocated to phase 1 of the UDF, which specifically deals with housing.



Illustration 22: Administration Building Fort West (Author, 2012).



Illustration 23: Dry *Protea caffra* flower casing, Fort West (Author, 2012).

“Progress, far from consisting in change, depends on retentiveness. Those who cannot remember the past are condemned to repeat it.”
George Santayana (1905: 284)

CHAPTER 02

CONTEXT

LEPROSY IN SOUTH AFRICA

"...a people condemned, through no fault of their own, to a life of segregation and isolation from the world...cruelties inflicted on those, through ignorance and fear, by the people of the world."

(Lawson, 1957:11)

Throughout its history, leprosy has been a feared and misunderstood disease. For a long time it was thought to be hereditary, a curse, or a punishment from God. Leprosy patients were stigmatised and shunned by society before and even after the discovery of its biological cause in 1873. During the Middle Ages leprosy sufferers in Europe, had to wear special clothing, ring bells to warn others that they were close, and even walk on a particular side of the road, depending on the direction of the wind due to the fear of this misunderstood disease (Stanford, 2009). Even in South Africa there were accounts of people inflicted with leprosy having to suffer the cruelty of society: "A woman and two children afflicted with leprosy were conveyed in a scotch cart through the streets of Pretoria yesterday. Many spectators viewed the gruesome sight" (Le Roux, 1953:10).

Leprosy, also known as Hansen's disease, is a chronic, infectious disease involving the skin and nerves of individuals. In the past, nerve damage and other complications occurred as the disease progressed, this resulted in numbness and lack of feeling in the limbs which often led to festering wounds on the hands and feet of patients, and then to the characteristic deformities of the face and limbs (1980:350). The discovery of the leprosy bacillus *Mycobacterium leprae* (M. leprae) by the Norwegian Dr. Gerhard Henrik Armauer Hansen in 1873 was the first strong evidence to support the theory that leprosy had a contagious or infectious origin (Horwitz, 2006:275). In many communities this led to an already terrible and unwarranted stigma towards those affected and their families, to escalate, causing them to be shunned and even further excluded from everyday life, in order to prevent the spread of the disease (Lawson, 1957:12).

During the fifteenth to eighteenth centuries leprosy spread through Africa downwards from the East. It is thought that the first reported case of leprosy in South Africa was made in the Cape in 1756 in the district of Stellenbosch. This resulted in a resolution being passed in August 1756, by an appointed commission, which recommended that people affected by leprosy should not be allowed to mix with others (ILEP, 2009). This resolution was just the beginning of a string of policies in South Africa that would lead to a fear so great it would change people's lives forever.

There was a belief that there were a limited number of leprosy cases in South Africa and that strict control and segregation would lead to a halting of new infections and thus the eventual eradication of the disease. Therefore, President Paul Kruger, in November 1897, signed Law No. 15, the Leprosy Segregation Law, into effect. While the details of isolation varied over time, those living with Leprosy in South Africa were strictly segregated from the outside world into what became known as leprosy institutions or colonies. The people sent to these institutions lived, ate, worked and very often died and were buried in the confines of the institution grounds (Horwitz, 2006:271-275).

In the following year, 1898, the Kruger government opened the institution that was to become known as Westfort. Westfort was just one of many leprosy institutions opened in South Africa; however it was one of only two multiracial leprosariums in the country. With the closure of the leprosy wards on Robben Island in 1931, Westfort remained as the only multiracial leprosarium. The fence, guard towers and prison comparisons were symbolic of more than just the treatment of patients at Westfort. They highlight one of the themes that has run through the history of leprosy treatment and control – isolation and segregation. The physical construction of institutions such as Westfort seems to reinforce this. Westfort was built on the outskirts of town and was surrounded by a four meter barbed wire fence. Once patients were admitted to the institution, close and physical contact with the rest of society was to be prohibited. Westfort leprosy patients, were not only isolated from the outside world but were also internally segregated along



Illustration 24: A 14th Century manuscript depicting a leper with his warning bell (Richards, 2000:52).



Illustration 25: This cemetery on Robben Island is one of the last remaining remnants that the Island was once a 'leper colony' (Yvonne, 2010).



Illustration 26: One of the housing complexes at Westfort Institution in Pretoria West (Author, 2012).

gender, class and racial lines (Horwitz, 2006:274-280).

In 1913 the Public Health Act 36, declared leprosy a notifiable disease throughout the Union of South Africa. This Act made further attempts to set up uniformed methods of dealing with the disease. As a notifiable disease, compulsory institutional segregation could be enforced for life. Teams were set up to round up leprosy patients, this resulted in the numbers of patients in government-run institutions increasing significantly (Horwitz, 2006:276). At Westfort, especially in the early years, segregation and isolation was central. Even before the passing of the Public Health Act,

isolation was seen as permanent. Lay Superintendent J.W. Phillips stated bluntly "most of the inmates are here for life". "Patients are segregated primarily in the interests of public health and only secondarily in their own interests" this is what a Dr. A.R. Davison (1953), Medical Superintendent at Westfort, is quoted as saying in an article on Leprosy in South Africa, in the well known South African Medical Journal. Therefore, it seems that life-long segregation was a public health measure for the benefits of the public, not essentially for treatment of the patient, which was seen secondary to segregation (Horwitz, 2006:276). This ultimately resulted in a social ignorance that had taken the word 'leper' and



Illustration 27: Chaulmoogra nut from which the oil was extracted and used as a treatment of leprosy (Standford, 2009).

twisted it, so that no longer did it simply mean a person suffering from a disease called leprosy, but had come to be descriptive of, and associated to, anything that is foul, or horrible, or unclean, or to be avoided (Lawson, 1957:71).

Until the late 1940s, leprosy doctors all over the world treated patients by injecting them with oil from the chaulmoogra nut. This course of treatment was painful, and although some patients appeared to benefit, its long-term efficacy was questionable (Stanford, 2009). Effective treatment for leprosy appeared later, in the 1950s, with the introduction of dapsone and its derivatives. These were exciting times for leprosy patients around the globe and many patients were released. However, the criteria for determining whether the disease had been contained were strict:

“Patients in whom bacilli have been demonstrated are not discharged until 12 months examinations have revealed their absence in the skin of nose. Frequent bacteriological checks, each of which consists of a minimum of 6 smears taken from different parts of the body on the same day, are an essential requirement. If all the tests prove satisfactory the patient is discharged provisionally. Thereafter he is kept under observation at home for a further period of 6 years before being given a complete discharge.”
(Davison, 1953)

Many patients did not receive the 12 consecutive negative test results and were therefore not released. Others who did and were released, found it very difficult to overcome the stigma associated with leprosy within their communities. This proved to be very stressful times in the lives of leprosy patients, resulting in many of the released patients returning to the Institutions, which were, for some, the only homes they really knew. In his book, ‘No More Unclean!’ which relays the story of leprosy patients in Westfort during this time, E.T. Lawson (1957) describes one such situation. A lady suffering from leprosy, is released after 45 years, spent in both Robben Island and Westfort Institutions, was, together with her family the result of such cruelty in her community that she decided to go back to Westfort. This is

the letter she wrote:

*“I stand at the gates of Westfort and knock.
Let me enter, O you keepers of the gates that I may hide
from the peoples of the world.
The song that was in my heart is dead, and the sun no longer
shines in the heavens. There is a cloud that covers the face
of the sun, and where I stand there is a shadow. The name
of the cloud is Ignorance, and the name of the shadow is
Fear; and Ignorance and Fear begat Cruelty, who drove me
back here to knock.
Open quickly, you keepers, let me enter, for Cruelty stands
close behind me.
She has lashed me with the whip that is in her hand; and
she has lashed those whom I love because they took me into
their house that I might be happy.
Now I come back, O Westfort, that I may hide in the shelter
of your mighty trees. The world shall see me no longer, and
the lash will not fall on my loved ones because I am near.
And here with my garden and my memories, and the songs
of the birds to comfort me, will I end my days.”* (Lawson,
1957:174)

Owing to the overuse of the drug, the leprosy bacilli became resistant to dapsone. It was not until the introduction of multidrug therapy (MDT) in the early 1970s that the disease could be diagnosed and treated successfully within the community (News-medical, 2012). In South Africa, this resulted in the laws governing compulsory segregation of patients being revoked in 1977 (Horwitz, 2006:291). Owing to the realisation that leprosy is fully treatable and the discovery that most people have a natural immunity to the disease; it was no longer seen as a highly infectious disease. Isolation was then seen as an outdated form of control, therefore those affected were no longer institutionalised. Institutionalisation for leprosy ended in 1997 when Westfort, the last institution specialising in care of people affected by leprosy, was closed.

FORT WEST - CELEBRATING 114 YEARS

E.T Lawson (1957:28-30) writes a beautiful account of a traveller first entering Westfort:

"If you travel westward along Church Street, going on and out of the city of Pretoria until you pass the village of Iscor on your left, you will, if you look carefully, see a little sign pointing to the right and reading simply 'Westfort'. There was a time when that sign was larger, bearing the words 'Westfort Leper Institution'. It has been changed in deference to the wishes of the patients of the place; for, of all the words in the English language, there is none that could be hated more bitterly than the word 'leper' is hated by those unfortunate enough to contract the disease; hated for all the untrue and cruel things it has come to mean.

Turn at the sign and follow the road for perhaps three-quarter of a mile and you will come to the gates of Westfort. There a police-boy will stop you and, when you have signed the visitors' book, stating your business, he will open the gates so that you may pass into the avenue of trees that runs for half a mile right up to the buildings of the Institution itself; tall trees, these, black-stemmed, beautiful in their majesty; trees reaching high to the heavens, great arms locked in embrace far overhead. Shrouded in mystery, splendid, lovely in all its moods, this avenue.

Travel on, and there will open before you the village of Westfort, for village it is.

Clusters of little cottages where the patients live; gardens, beautiful always – in summer, roses and all the lesser flowers that magnify the beauty of the rose; in winter, sweet-peas, stocks and Iceland poppies; gardens reflecting in their beauty the loving care of those who tend them.

Paved streets leading to the cottages; to the recreation halls; to the churches; to the hospitals; to the laboratory, where patient research seeks always the final miracle that will crush forever the evil thing that lies hidden.

Green lawns and great jacarandas, glorious in their season, casting down their petals to weave mauve carpets on the earth below. On fences everywhere, bougainvillea, wild in its exotic beauty.

High on the hill, overlooking it all, the nurses' quarters; and away to the other side, on still another hill, the house of the

Medical Superintendent, from whose windows can be seen in the distance the city of Pretoria and, nearer, the mighty works of the South African Iron and Steel Corporation, belching flame and smoke.

Below, the houses of the staff; and farther below, the office block and Staff Recreation Room.

Back and behind, the great compounds, kitchens and dining halls, where dwell the Africans, the Coloureds, and Indians, and yes, even Chinese.

When you reach the head of that great avenue of trees and, before you pass once more into the open, look carefully to the right and there, nestling among the trees, peaceful and serene, you will see the little cemetery, where lie the broken, battered bodies of courageous souls: bodies broken on the wheel of the evil thing whose presence taints and mars the exquisite beauty of the place; great souls freed from their earthly bondage, at peace, at rest.

Men and women entered that avenue without hope; travelled up its beautiful length with nothing but despair in their hearts; despair blacker than the black stems of the trees of the avenue; despair that warped their senses and closed their eyes to the beauty about them..."

According to Dr A. van Zyl (1989:75), who was a Superintendent of Westfort Hospital, in the late 1880s a hospital for research into the treatment of smallpox was established on the outskirts of the city of Pretoria, now known as the City of Tshwane. This hospital for research was named the Daspoort Hospital, because it was situated at the foot of the southern slope of the Daspoortrand, now known as the Witwatersberg Ridge. However, this facility was never used for smallpox; instead it was used as a leprosarium from the time it was completed, due to the need for a place to treat leprosy patients. The earliest reference to the Daspoort Hospital is in 1888 by the official architect of the then government, the ZAR, Zytse Wierda (1839-1911). At this stage the Daspoort Hospital consisted of four rooms, with an outside toilet, which housed eight patients. Leprosy barracks were added in 1890. Further accommodation was required in 1892; therefore, additional bedrooms, lounge, kitchen and dining hall were constructed. By 1896, the Daspoort Hospital housed a total of 99 patients.

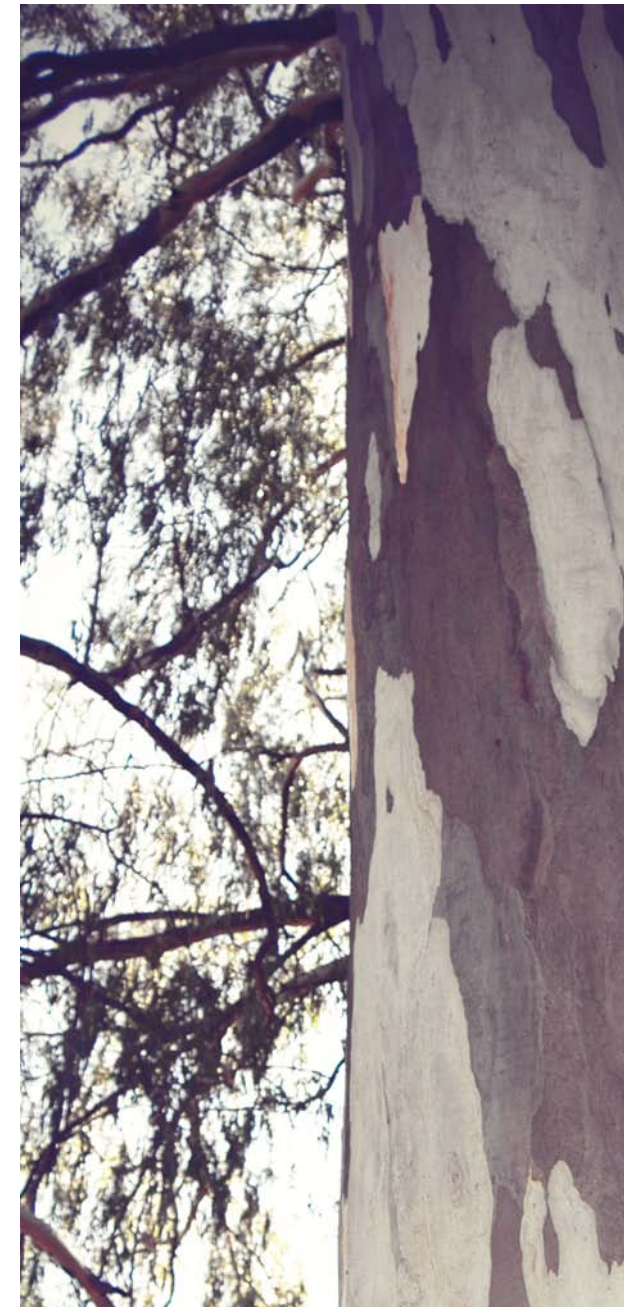


Illustration 28: Bark of Eucalyptus tree found in entrance avenue, Fort West (Author, 2012).

CHAPTER 02 - CONTEXT



Illustration 29: Administration building designed by Sytze Wierda (Meiring, 1980:15).

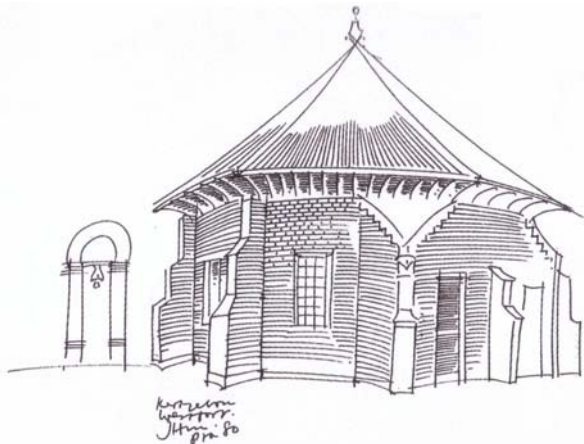


Illustration 30: South Africa's only octagonal Dutch Reform Church designed by Sytze Wierda (Meiring, 1980:14).



Illustration 31: One of the eight watch towers that were erected to prevent patients from escaping (Meiring, 1980:15).

In 1896 architect Sytze Wierda designed and, by 1898, erected the 'leprozen-inrichting' to replace the older, inadequate one at Daspoort. His guidelines to his staff were that the place should provide "in the most humane way" a pleasant and attractive residence for those 'unfortunates' who through an incurable disease would be tied to it as long as they lived. He designed the complex of buildings like a small village (Meiring, 1980:15). The Pretoria Leprosy Asylum was started in 1899 on the 454 Morgen large Rinderpest farm near the Skinner Spruit outside Pretoria (van Zyl, 1989:75). It was situated on the outskirts of Pretoria, away from society, surrounded by farmlands and plantations.

The first buildings erected consisted of an administration block, clinic and staff accommodation. The structures built during the ZAR period are characteristic of the type of building erected by the Department of Public Works under Wierda: elegantly proportioned, substantially built brick structures with corrugated iron roofs, stone plinths and sandstone detailing. Examples of these are the administration building, the post office, two staff residences and South Africa's only octagonal Dutch Reform Church (1899). Some of the buildings from this period have been finished in stucco, such as the dispensary, certain dormitories for patients and the first hospital buildings.

In its first year of existence 99 patients were transferred from the Daspoort Hospital, 100 from Pankop and six from Rietfontein. Initially lay people were appointed to manage the hospital, but in 1900 for the first time a Dr Von Gernet was appointed on a part-time basis as medical officer in charge. It is likely that, due to the threat of war, further construction of buildings was halted as materials and labour were required for the construction of the fort, Fort Daspoortrand or West Fort as it is now known, situated on the Witwatersberg Ridge above the hospital (Van Zyl, 1989:75).

In the early 1900s the institution functioned as a totally independent farm and village, complete with; shops, post office, police station, gaol, churches and school. According



Illustration 32: Patients gardening and been taught to garden at Fort West (Leprosy Mission Archives, 2012).

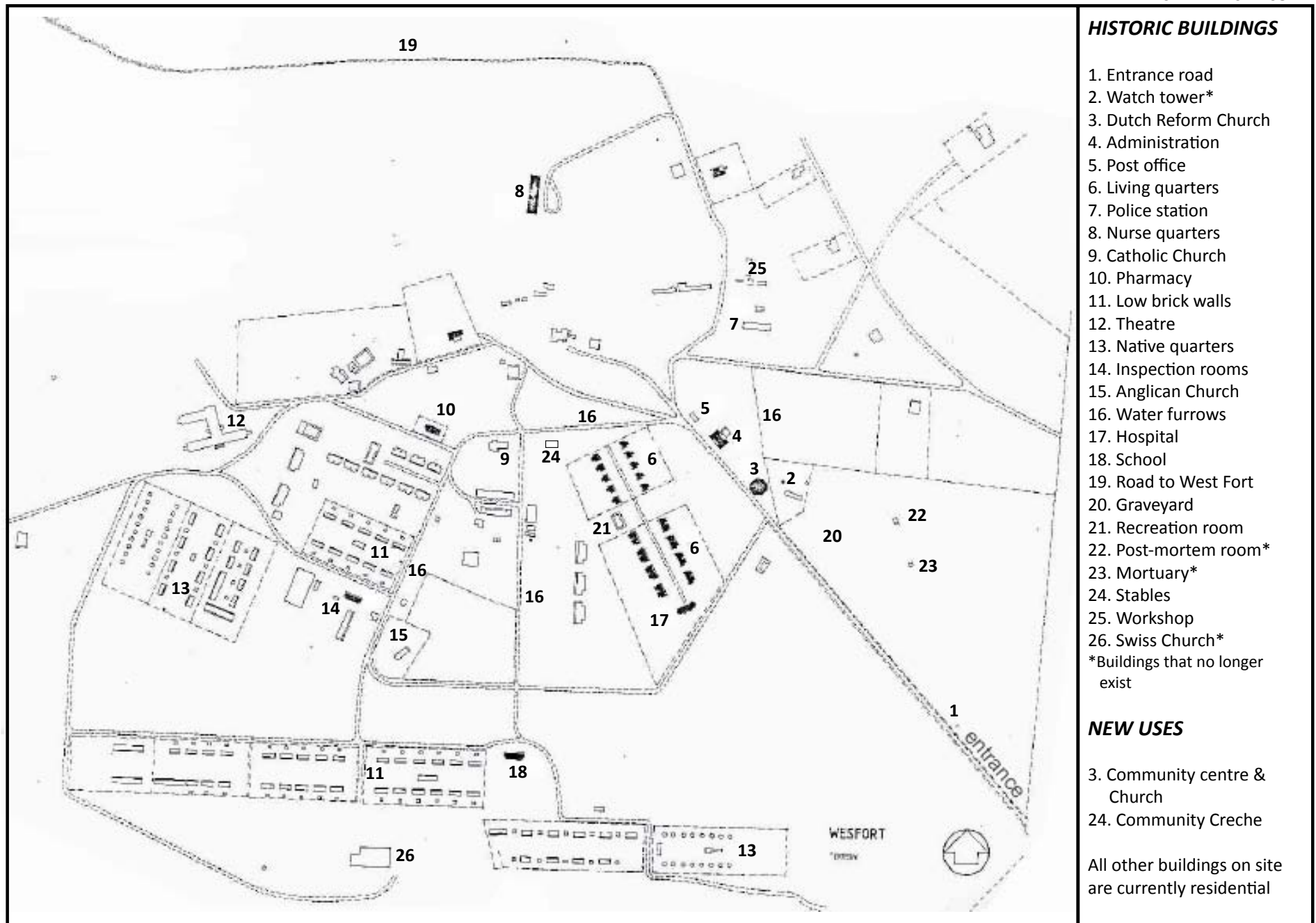


Illustration 33: Fort West, map that indicates the site dated 1930 (Author, 2012).

CHAPTER 02 - CONTEXT



Octagonal Dutch Reform Church



First hospital building



Typical Housing unit from the back



Patient Recreation Room



Typical Housing complex



Catholic Church



Anglican Church



Low brick walls enclosing a housing complex



Inspection rooms



Old Stables, facilitating a Community Creche



Stone packed water furrows



Rondavel housing type



Recreation building added at a later stage



Oldest Housing complex



Administration building



Graveyard

Illustration 34: Photographs of historic elements of Fort West (Author, 2012).



Illustration 35: Workshop buildings found at Fort West (Author, 2012).

to Davison (1953) agricultural land was made available to patients who desired to work the land for their own profit. Schools, staffed by qualified teachers, were provided for patients who were children. In addition to physical training, which formed an important part of the curriculum, boys were taught gardening and girls sewing and basket-making. He further states that the spiritual needs of the patients were met by the provision of places of worship for the adherents of the Anglican, Dutch Reformed, Swiss Mission and Roman Catholic churches. The ministers were paid by the Department of Health.

By 1902, 328 patients were housed at the institution. At this stage the Pretoria Leprosy Asylum was divided into four compounds, namely; the European section, the Native male and female sections and the Asian section. The first full-time medical superintendent Dr. George Turner was appointed from 1901 to 1906. Remarkable landscape features of the period 1900-1918 are the low brick and sandstone walls that enclose a number of wards, as well as the water furrow system for the complex. In February 1906 roads, a wall around the institution and other site works, such as the drainage and water furrow systems were completed. An Anglican Church was built in 1914, and in 1916 a Roman Catholic Church was constructed. Apart from

the stained glass windows and the 14 panels depicting the Stations of the Cross; painted and donated by the artist Sir Frank Brangwyn (which have now been removed), the Roman Catholic Church building possesses no exceptional architectural qualities. Soon after, the complex eventually also had its own carpenter shop, smithy, bookbinding shop, laundry, dairy, orchards and produce farm. The earliest workshop buildings were prefabricated corrugated iron structures; most of these old buildings still exist today, but are in state of disrepair. Recreational facilities were also provided for in the form of a bioscope, concert hall, and library. In 1917 eight watch towers were erected and policed day and night in order to prevent patients from escaping (van Zyl, 1989:76).

By 1918, all leprosy patients in the Transvaal and the Orange Free State had been transferred to the Asylum. It housed a total of 892 patients. In 1927 the Pretoria Leprosy Asylum was renamed Westfort Leper Institution. In 1931 the leprosy wards on Robben Island were closed down, as the island was required for other functions, and the patients were transferred to Westfort, pushing the patient numbers up to 2000. Under the auspices of the Department of Public Works, a number of substantial face-brick buildings were erected during this period (van Zyl, 1989:75).



Illustration 36: Wards designed by Sytze Wierda (Meiring, 1980:14).



Illustration 37: Hospital building designed by Sytze Wierda (Meiring, 1980:15).

CHAPTER 02 - CONTEXT



Illustration 38: Fort West over time, aerial photographs from 1939 to 2011. Note the development of the adjacent lands into residential (By courtesy of the National Geo-spatial Information, 2012).

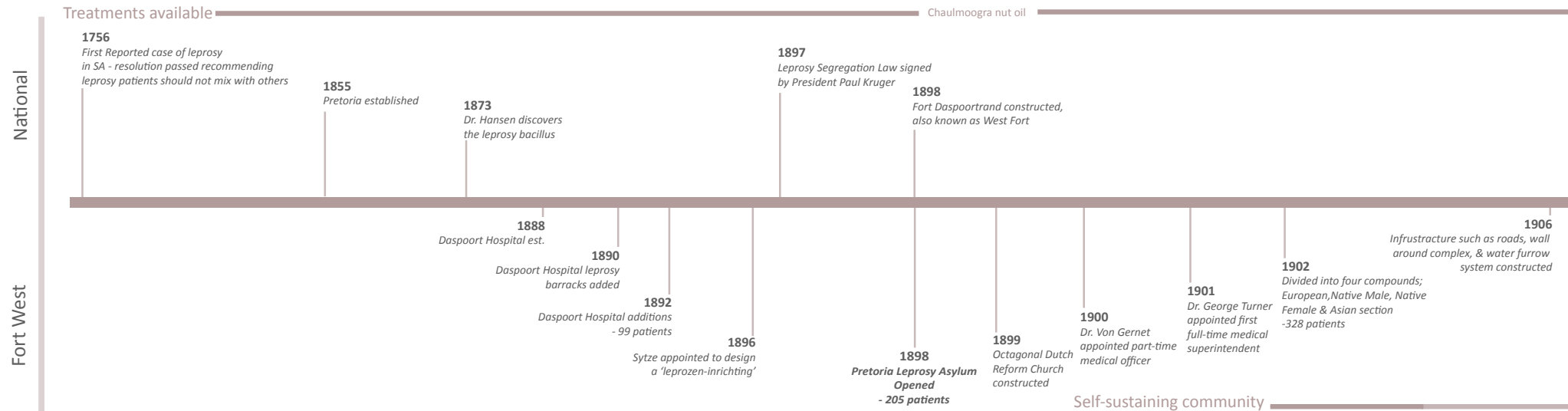


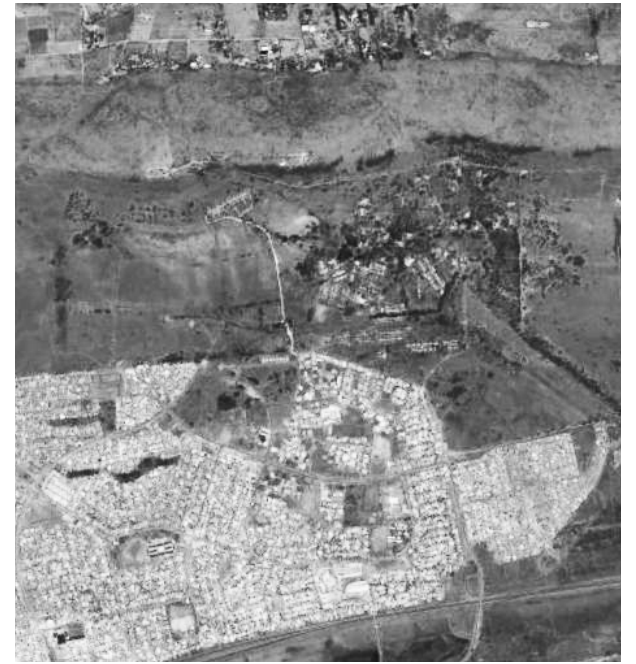
Illustration 39: Timeline of Fort West Village as well as other events that occurred elsewhere that influenced the development of Fort West (Author, 2012).



1976



2005



2011

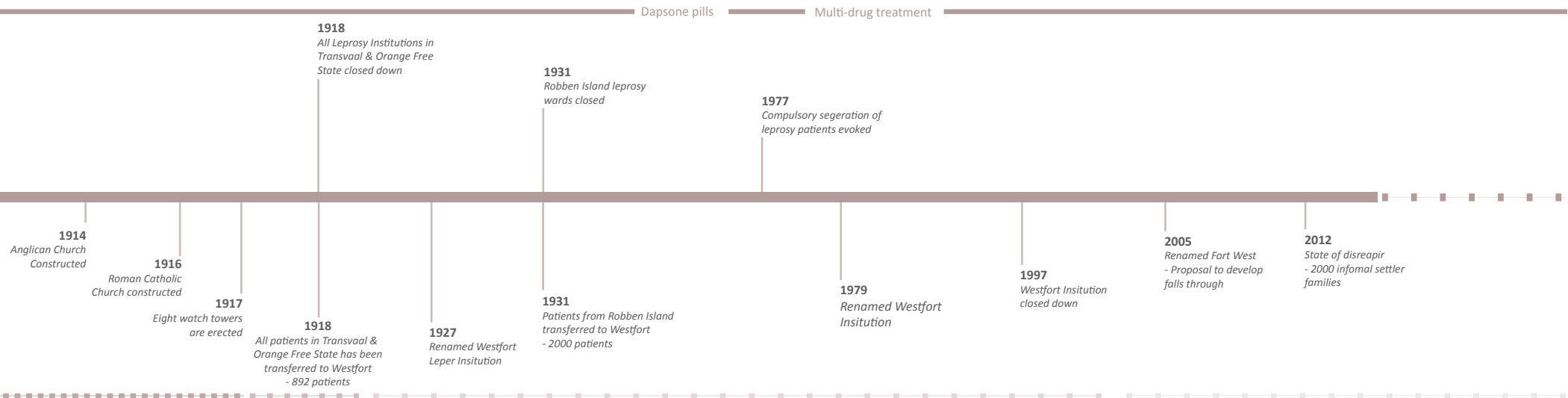




Illustration 40: Old Pharmacy building (Author, 2012).

The most prominent buildings dating back from this time are the kitchen complex, theatre and store. During this time other leprosy hospitals were closing and their patients were transferred to Westfort, as a result more accommodation was needed, thus necessitating the construction of additional wards. As it was still believed at the time that leprosy was a highly contagious disease the original pattern of constructing isolated rooms was followed. A new structural type was a concrete roofed rondavel, which was an attempt at making native patients from traditional areas feel more at home. This constitutes to a vernacular being created for the user to familiarize himself with his surroundings.

Since 1931, as treatment for leprosy became more effective, the number of patients gradually decreased. Some patient and staff accommodation was built after 1931, including hostel accommodation for nurses. In 1979, the patients request that the word 'leper' be removed and it was once again renamed to Westfort Institution.

THE FORT WEST LANDSCAPE

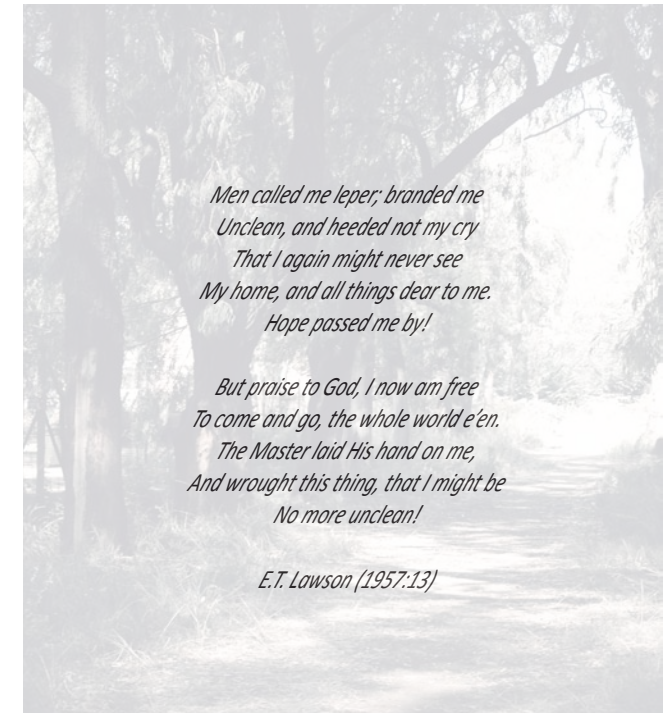
"Then at the very entrance he had found beauty – beauty so great that its glory could not be dimmed even by the fear that was in his heart"
(Lawson, 1957:74)

Throughout Westfort Institution's existence the landscape played an important role in the lives of the patients. Working the land was seen as both physically and mentally therapeutic. As mentioned previously, patients, if they so wished, could get a piece of agricultural land allocated to them in order that they might produce food for themselves and sell the surplus back to the institution at the store. The gardens surrounding the houses were just as important; grapevines stretched along the front of the little cottages, they had vegetable gardens at the back of their rooms, roses, and other flowers grew in abundance, all this topped off with mighty trees to provide shade (Lawson, 1957:80,100). The gardens and especially the trees were seen as more for the patients than just a hobby, a physical beautification; this was something that they prided themselves in, it was

symbolic. The site has over the years been heavily planted with exotic trees, especially around the eastern perimeter near the cemetery, e.g. eucalyptus, jacarandas and palms. These trees have great significance more than just being old and classified as protected; they were and still are an intangible sense of both confinement, as well as freedom.

"He watched once more as those discharged travelled down the avenue of trees that leads to the gates of Westfort, and on to the world outside, free to come and go as they would"
(Lawson, 1957:212)

Westfort Institution was finally closed down in 1997, after a government investigation found that it was unsuitable for patients. Policy regarding the treatment of leprosy patients had changed. It was found that leprosy is not a contagious disease and that the best treatment for sufferers was to be in their own communities.



HISTORIC APPROACH TO FORT WEST

The International Council of Monuments and Sites (ICOMOS) is a multidisciplinary organisation which was set up to work for the conservation and protection of cultural heritage places (ICOMOS, 2011). For the purpose of this dissertation the ICOMOS Ename Charter has been selected for its appropriateness and applicability to Fort West in developing an historic approach.

ENAME CHARTER FOR THE INTERPRETATION OF CULTURAL HERITAGE SITES

The interpretation of the meaning of sites is an integral part of the conservation process and fundamental to positive conservation outcomes. The aim of this Charter is to define the basic objectives and principles of site interpretation in relation to authenticity, intellectual integrity, social responsibility, and respect for cultural significance and context. The Charter seeks to encourage a wide public appreciation of cultural heritage sites as places and sources of learning and reflection about the past, as well as valuable resources for sustainable development and intercultural and intergenerational dialogue.

Principle 1: Access and Understanding

The appreciation of cultural heritage sites is a universal right. The public discussion of their significance should be facilitated by effective, sustainable interpretation, involving a wide range of associated communities, as well as visitor and stakeholder groups.

- Primary purpose should be to communicate the values of the cultural heritage site.

Principle 2: Information Sources

The interpretation of heritage sites must be based on evidence gathered through accepted scientific and scholarly methods as well as from living cultural traditions.

Principle 3: Context and Setting

The interpretation of cultural heritage sites should relate to their wider social, cultural, historical, and natural contexts and settings.

- Should consider all aspects of the site's cultural and environmental significance.
- The surrounding landscape, natural environment and the overall cultural and geographical settings are all integral parts of a site's significance, and, as such, should be taken into account.
- Should provide outside visitors as well as local residents and associated communities with a sense of personal connection.

Principle 4: Authenticity

The interpretation of cultural heritage sites must respect their authenticity, in the spirit of the Nara Document (1994).

- Communicate the sites significance without adversely impacting its cultural values. Physical reconstruction that permanently changes the character of the site should not be undertaken for the purpose of interpretation alone.
- Public interpretation of a cultural heritage site should always be distinguishable.

Principle 5: Sustainability

The interpretive plan for a cultural heritage site must be sensitive to its natural and cultural environment. Social, financial and environmental sustainability in the long term must be among the central goals.

- The scale, expense and technology of interpretive programmes must be appropriate to the location and available facilities.
- A site's interpretive infrastructure should be well designed, soundly constructed, safe, responsibly maintained, and kept in good repair.
- All visible interpretive programmes and infrastructure (such as kiosks, walking paths and information panels) must be sensitive to the character, the setting and the cultural and natural significance of the site, while remaining easily identifiable.

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Illustration 41: Water furrows on site which forms part of the stormwater system (Author, 2012).



Illustration 42: Low walls surrounding some housing complexes (Author, 2012).



Illustration 43: Historic trees under threat due to logging. (Author, 2012).

Principle 6: Inclusiveness

The interpretation of cultural heritage sites must actively involve the participation of associated communities and other stakeholders.

- Interpretation should serve a wide range of educational and cultural objectives. The success of an interpretive programme should not be judged solely on the basis of visitor attendance figures or revenue.
- Interpretive activities should aim to provide equitable economic, social, and cultural benefits to the host community at all levels, through education, training, and the creation of economic opportunities.

Principle 7: Research, Evaluation and Training

The interpretation of a cultural heritage site is an ongoing, evolving process of explanation and understanding that includes continuing research, training, and evaluation.

- Interpretation of a site should not be considered complete with the establishment of a specific interpretive infrastructure. Continuing research and consultation are important to furthering the understanding and appreciation of a site's significance and should be integral elements in every heritage interpretation programme.



Illustration 44: Rooms in what used to be wards have been divided up into smaller informal dwellings. Sometimes there can be up to nine people living in a small room (Author, 2012).

FORT WEST TODAY

The area was renamed in 2005 to Fort West, which it will be referred to from now on for the remainder of this dissertation.

Over the years the city of Pretoria has grown exponentially, which has resulted in development extending far to the west. This means that Fort West, which once was considered to be on the outskirts of town in the farmlands, is now located in the western sector of the City of Tshwane.



Illustration 45: Residents waiting for a taxi (Author, 2012).



Illustration 46: Residents receiving water from tanks that are filled daily (Author, 2012).

Pretoria West is one of the oldest areas of the Capital. This sector has traditionally been associated with low income housing. However, most of the people living in the surrounding neighbourhoods, Danville, Elandspoort, Saulsville, Atteridgeville, Kwaggasrand and Wespark, live in formal housing, with the exception of the Atteridgeville informal settlement (SEC, 2012:59).

Demographics of a study area are important to ensure that new developments will complement the existing land uses. The most dominant industries / places of employment in the Atteridgeville and Lotus Gardens area, are social and personal services (27%), followed by wholesale and retail services (18%), and manufacturing (13%). People in the informal areas are predominantly employed as private household workers and construction workers (SEC, 2012:59). The Pretoria Industrial Area is three kilometres from the study area and is one of the main possibilities of employment.

The two closest hospitals to the development area are Kalafong Hospital, situated three kilometres south-east of Fort West and the Pretoria West Hospital, which is situated eight kilometres east of Fort West. However, several clinics exist in the area, which are within walking distance (TPH & Argeno 6, 2010:8).

After its closure in 1997 the Westfort Institution was abandoned and left to fall into ruin. Today Fort West houses a new kind of 'colony', people society see as outcasts. Today there are approximately 2000 multi-racial families, or who have settled here illegally. These informal settlers have one common denominator though, unemployment, which according to Fraser (2007), is estimated at 90%. Phillip Williams (as quoted by Fraser, 2007) says that there is no electricity, no running water, and no sewerage facilities. He further states that you can have up to nine people living in a small room, sometimes even with people living in what used to be the toilets. The people are living in buildings over 100 years old which are in a serious state of disrepair. These people are the new community of Fort West.

In order to address the immediate needs of the community the Tshwane Metro Municipality has installed five water tanks, that are filled daily (see illustration 46) and 10 porta-loos (see illustration 49). Even through the addition of these amenities slightly improves the lives of the community they aren't nearly enough for a community of approximately 4000 people. It was also mentioned that the community have taken ownership of these amenities and therefore keep them clean (interview: van Vuuren, 2012).

The current conditions of Fort West are harsh. After many years of neglect, vandalism and greed, buildings have been gutted until just a shell remains. These are in serious need of maintenance. In terms of the landscape, fragments of this once self-sustaining community can still be seen today. The grandeur gardens are no longer; instead they have been replaced by areas overgrown with weeds. As previously stated, many exotic trees were planted on the site, however, even these majestic giants are under threat. According to a resident (interview: Breedts, 2012), a private company has been tendered, through the Department of Water Affairs - Working for Wetlands, to cut these trees down for wood needed in the mines (see illustration 43). Even though these trees are considered invasive exotics none of them fall under Category 1 (invader plants must be removed and destroyed immediately) of the CARA list, therefore this action seems uncalled for. Other landscape elements that can still be seen today are the water furrows (see illustration 41), which formed part of the drainage and stormwater system in days past, the low walls surrounding some complexes (see illustration 42) and lastly stone terraces and carved stone steps situated on a northern slope found just below the nurse's quarters (see illustration 47 and 48).

Even though the situation at Fort West seems hopeless today, there is so much potential to be found that can be tapped into in order to regenerate this cultural landscape. (see theoretical investigation). Through an interview with the NEA Foundation much of this potential was discovered.



Illustration 47: Stone-terraced slope below the nurses quarters (Author, 2012).



Illustration 48: Steps carved out of stone leading up the slope to the nurses quarters (Author, 2012).



Illustration 49: Toilet facilities provided by the Tshwane Metro (Author, 2012).

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Illustration 50: The NEA Foundation Logo (NEA Foundation, 2012)



Illustration 51: Former stables converted to the Thando Westford Community Crèche (NEA Foundation, 2012).



Illustration 53: Workshop teaching the women how to print material (NEA Foundation, 2012).



Illustration 54: Workshop teaching the women how to sew (NEA Foundation, 2012).

The NEA Foundation is the only organisation currently involved with the community of Fort West. They first got involved with a small existing crèche at Fort West, that was started by a Fort West resident to address the lack of preschool education (interview: van Vuuren, 2012). The former stables have been converted to house the children (see illustration 51) who are cared for by women of the Fort West community (see illustration 52). Through their involvement with the crèche the NEA Foundation has slowly but surely got involved in other aspects of community life.



Illustration 52: Women from the Fort West community are employed to look after and cook a daily meal for the children at the crèche (NEA Foundation, 2012).

In 2011 the NEA Foundation was approached by the women of Fort West who asked if they would help them set up a skills development workshop. The first workshop was held early in 2012. The ladies were taught how to print material (see illustration 53). Through the success of this workshop the ladies have been employed by a local designer to print material for her. This then also lead to another workshop been held that taught the ladies how to sew (see illustration 54). The profits from the sales of both the material printing and sewing work is then divided up between the ladies. These profits are then mainly used to pay for their children's school fees (interview: van Vuuren, 2012).

Community life at Fort West is regulated by the Fort West Community Forum (FWCF), which was set up by the community for the protection of the community as well

as the heritage of Fort West. The FWCF holds monthly meetings in the octagonal NG Church which functions as both a church and a community centre. The FWCF also limits the addition of structures to the existing historic buildings (interview: van Vuuren, 2012).

A small informal retail sector already exists in Fort West, they include small tuck shops, a fresh fruit and vegetable store, a car wash, and a basic shisa nyama. There is also a group of men who collect recyclable materials and a small group of ladies that weave mats from the recycled plastic bags collected. The NEA Foundation is looking at expanding both of these sectors (interview: van Vuuren, 2012).

In this communities limited capacity they are already trying to take control of their own the future, as well as the future of Fort West.

FORT WEST IN THE FUTURE

Over the years proposals have been put forward for the development of this degraded cultural landscape. Some have wanted to develop the land for housing, others to protect the sites incredible history, while many have wanted to turn it into a village used as a Hollywood set. However, all these development proposals have fallen through. Fortunately there are positive prospects for the future of the entire area of Fort West.

The development of the greater "Fort West self-sustainable urban village" has been identified as a Special Mayoral Development for many years. The entire land portion is council-owned land. The idea is to redevelop the historical Fort West village, into a new residential, self-sustainable township. The greater area is being developed in phases (see illustration 55), to facilitate economic development and job creation. The Fort West development will trigger further development in the west of Pretoria, bringing places of work and social facilities closer to spatially separated communities (SEC, 2012:27).

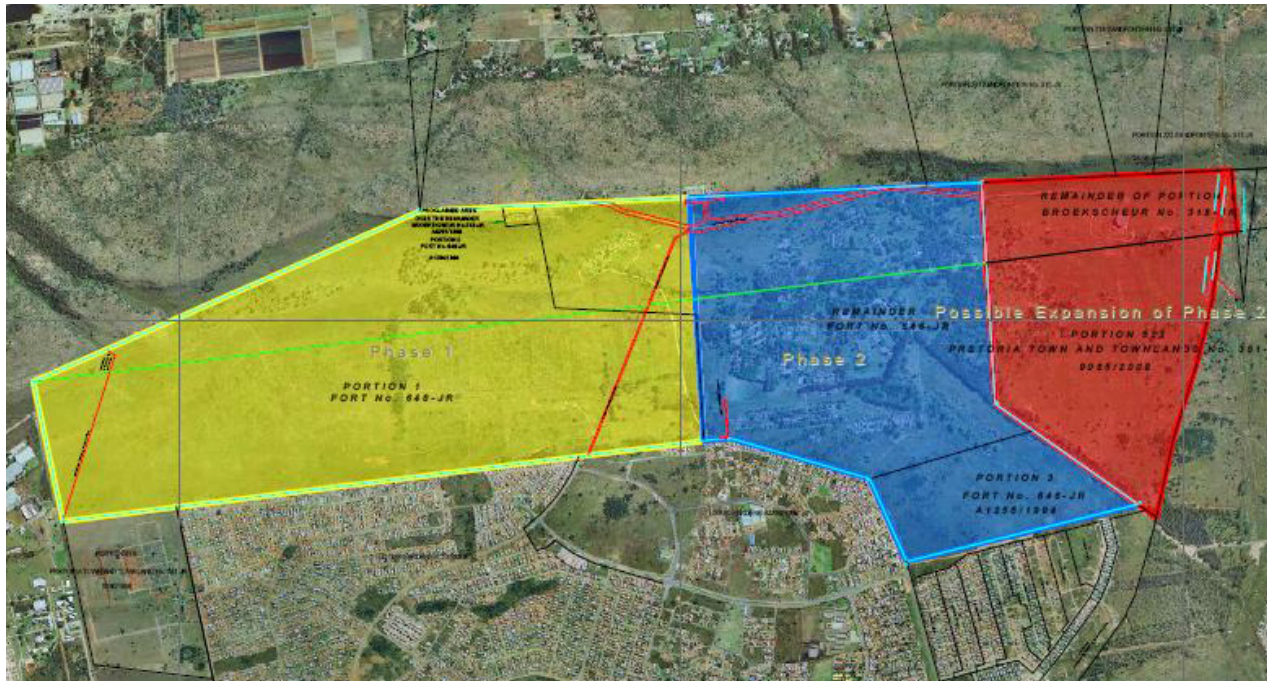


Illustration 55: Aerial photograph taken from council proposal showing how the greater area will be developed according to its different phases (van Schalkwyk, 2012:12).

The Town Planning Hub (TPH) and Arango 6 (2010) have compiled a proposed Fort West Urban Development Framework (UDF). However, this UDF is currently only for phase 1 of the project which is located on the vacant land to the west of the chosen site. Phase 2 is located on Fort West Village (the site); however the UDF for this phase has not yet been completed. The vision of the UDF for phase 1 is to create a liveable environment managed in a transparent and democratic way where its natural resources, accessibility, mobility and user needs are addressed. All the while accommodating a culturally rich, healthy, safe and secure community where economic opportunities for all exist (TPH & Arango 6, 2010:4). The ultimate aim is to make it possible to protect the historical buildings and natural landmarks and to enhance the surrounding areas by creating a design framework that fits in with both the natural as well as the build up environment.

Outcomes of the UDF:

- Ensure integrated and sustainable development by focusing on a compact mix land-use design.
- Identify environmentally sensitive and historical elements to preserve and protect. The township layout has accommodated a continuous west – east open space “corridor” through the site, which incorporates the flood line area, and links it with a pair of faults in the Witwatersberg system, located immediately to the north-west of the site (SEC, 2012:32).
- Design for optimal vehicle and pedestrian movement; vehicle movement focusing mainly on the development of public transport nodes and pedestrian movement on walking pathways and cycling lanes.
- Develop a management tool to guide land uses as well as to encourage a more appropriate settlement design and encourage a wider range of housing types.
- Promote a multi-purpose cluster concept.



Illustration 56: The proposed phase 1 development (SEC, 2012:58).

CONCLUSION

It can be concluded that:

- The heritage of this site is unique and significant far beyond the boundaries of the City of Tshwane. Therefore the historical layer of the area should be revealed in order to pay tribute to its heritage.
- The buildings are in need of attention.
- Significant features exist in the landscape.
- An historic approach to the interpretation of Fort West will be guided ICOMOS Ename Charter. Interpretation of a cultural heritage site should:
 - Always be distinguishable
 - Be sensitive to the character, the setting and the cultural and natural significance of the site, while remaining easily identifiable.
 - Should aim to provide equitable economic, social, and cultural benefits to the host community at all levels, through education, training, and the creation of economic opportunities.
 - Establishment of a specific interpretive infrastructure, furthering the understanding and appreciation of the site's significance.
- In the planning process the potential of existing initiatives should be tapped into in order to generate job creation and community integration. By also providing further job-creating facilities such as restaurants, cafes, and community centres, attracting more people to the area and providing passive surveillance.
- The author agrees with the basic approach that will be taken by the Fort West UDF, therefore this dissertation will tie into the Fort West Urban Development Framework for phase 1. However, it will change aspects of the approach to focus a lot more on environmental concerns and less on the provision of stereotypical housing. Therefore this dissertation will build forth on the UDF's outcomes, visions and proposals to develop an Open Space Framework for phase 2.
- The following from the UDF should be taken forward into the design:
 - Create a liveable environment managed in a transparent and democratic way where its natural resources, accessibility, mobility and user needs are addressed. All the while accommodating a culturally rich, healthy, safe and secure community where economic opportunities for all exist.
 - Ensure sustainable development
 - Should be environmentally sensitive
 - Preserve and protect the historical elements
 - Design for optimal vehicle and pedestrian movement
 - Promote a multi-purpose cluster concept



Illustration 57: First hospital Building, Fort West (Author, 2012).



Illustration 58: New *Protea caffra* shoot, Fort West (Author, 2012).

“Some see nature all ridicule and deformity, and some scarce see nature at all. But to the eyes of the man of imagination, nature is imagination itself. “

-William Blake-

CHAPTER 03

THEORETICAL INVESTIGATION

INTRODUCTION

“Standing stones, circular ramparts: from the earliest times, man has confronted nature with these signs, to define his place, to create community, to establish an order that makes “world” into something he can understand.”
(Broberg 2004:7)

Over the centuries man has used signs that have varied, from pyramids, to the constructions of mighty cathedrals, from citadels and castles to palaces and cities with their defensive walls. However, in the past these defined places created by man, were always small in comparison with the nature around it. In the meantime this has been reversed (Boberg, 2004:7).

Human activities and nature are the two main forces that have helped shape the landscape as we see it today. It is these human activities that have played a critical role in the decline of natural environments around the globe. Therefore, the challenge today is to curb this environmental decline by once again connecting people with natural systems.

Pre-industrial societies developed within the constraints and opportunities of their natural environments. This harmonic relationship between man and nature resulted in the development of places which historians termed ‘cultural landscapes’. The concept of cultural landscapes is relatively new. Over the years it has emerged as a significant way of looking at historic places that focus not on monuments but on the relationship between human activity and the natural environment (Breedlove, 2002:162).

In 1992 the World Heritage Committee adopted a definition for cultural landscapes (WHC, 2011). They defined cultural landscapes as following:

“Cultural landscapes are cultural properties and represent the ‘combined works of nature and of man’. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints

and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.”

O’Hare (1997:47) also offers his own definition for cultural landscapes (see illustration 59) by stating that:

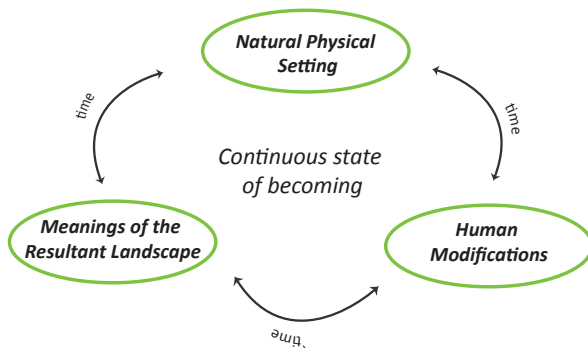
“The cultural landscape consists of a dialogue between the natural physical setting, the human modifications to that setting, and the meanings of the resulting landscape to insiders and outsiders. The continuous interaction between these three elements takes place over time, (in a continuous state of becoming). The concept of ‘cultural landscape’ therefore embodies a dynamic understanding of history, in which the past, present and future are seamlessly connected.”

According to the definitions above, Fort West is considered a cultural landscape. While, individual definitions vary, their direction focuses consistently on the inter-relatedness between human society and the natural environment. This reveals the important ecological and social values of cultural landscapes like Fort West. The reviving of these ecological and social values is particularly important in curbing environmental decline in our urban environments. Therefore, the importance of cultural landscapes lies in their abilities to connect people with natural systems in urban environments.

PAST, PRESENT, FUTURE SCENARIOS

“Considering that, in society where living conditions are changed at an accelerated pace, it is essential for man’s equilibrium and development to preserve for him a fitting setting in which to live, where he will remain in contact with nature and the evidences of civilization bequeathed by past generations, and that, to this end, it is appropriate to give the cultural and biophysical heritage an active function in community life and to integrate into an overall policy the achievements of our time, the values of the past and the beauty of nature.”

UNESCO, Recommendation Concerning the Protection, at a



The concept of ‘cultural landscape’ embodies a dynamic understanding of history, in which the past, present & future are seamlessly connected



Therefore, ‘cultural landscapes’ deal with the interaction between people & the natural environment

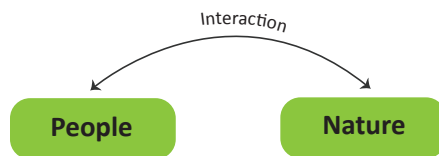


Illustration 59: Graphically illustrating O’Hare’s definition of cultural landscapes (Author, 2012).

National Level, of the Cultural and Biophysical Heritage as Written and adopted by the UNESCO General Conference in 1972.

Cultural landscapes are an expression of past human attitudes and values. However, many of these cultural landscapes today are under threat of being destroyed by the practices of modern society, as can be seen at Fort West. As a result of this threat and through the growing concern about the state of the planet a new approach has been developed. This approach developed by Farina (2000: 313-320) uses past values as a basis for the regenerative development of future cultural landscapes. In order to understand Farina's final approach, one must first understand the evolution of cultural landscapes over time – past and present scenarios. As Hampton Adams (n.d.) rightfully says *"Only by looking at the past, can we plan for the future."*

In the past, cultural landscapes were created as the result of the interactions between three main components. These components are cultural, natural and economic capital. Cultural capital refers to a non-financial social asset, such as the ways of life, forms of knowledge, skills and patterns of consumption that makes the places people are associated with distinct. Natural capital is the stock of a particular place's natural resources and ecological systems that provide vital life-support services to its society and all associated living things. Lastly, economic capital deals with how a community can sustain themselves through the diversified use of local resources found on the landscape. Only once this has been achieved does economic capital extend to the possible monetary value that can be achieved (Farina, 200:314-317).

In the past cultural landscape scenario (see illustration 60), each type of capital interacted with the other by feedback mechanisms, see Illustration 53 (Farina, 2000:319). These feedback mechanisms nurtured healthy interaction and connections between people and the natural environment. Over the years, due to the changes in the global environment, this past cultural landscape scenario has not been considered important. Due to this, the abandonment, simplification and

destruction of many past cultural landscapes has occurred (Farina, 2000:317). This has resulted in the creation of the present cultural landscape scenario.

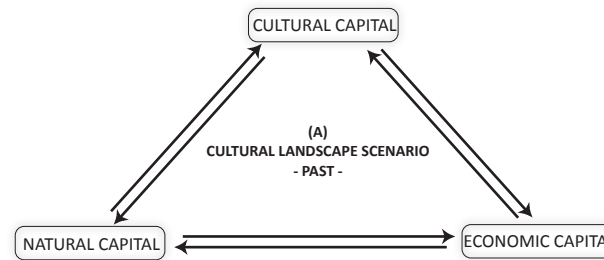


Illustration 60: Past Cultural Landscape scenario, feedback mechanisms between 'capitals' (Farina, 2000:314).

The present cultural landscape scenario differs from past cultural landscapes in many respects. Present cultural landscapes are dominated by economic capital and only consider natural capital as a source of energy or biomass, see Illustration 61. As a result economic decisions are generally not balanced by an equal consideration for ecological processes. Instead they focus on the economic components while ignoring the ecological components. This has created landscapes that are ecologically and socially vulnerable (Farina, 2000:319).

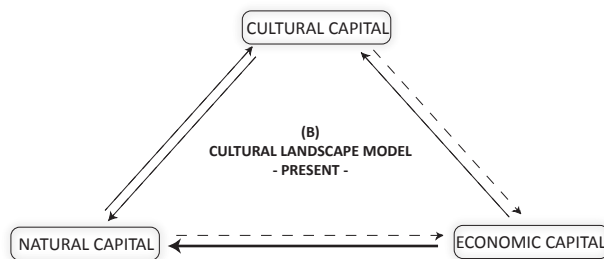


Illustration 61: Present Cultural Landscape scenario, illustrating the destruction of many past cultural landscapes (Farina, 2000:314).

Definition feedback mechanism

Feedback is a process in which information about the past or the present influences the same phenomenon in the present or future. Therefore a feedback mechanism is the action or means used to subsequently return the information (Wikipedia Contributors, 2012).

CHAPTER 03 - THEORETICAL INVESTIGATION

Fort West can be used to illustrate these two scenarios perfectly. The past cultural landscape of Fort West in the early 1990's functioned as a totally independent village and farm, which sustained the needs of the community. The people sustained themselves through the diversified use of local resources found on the landscape, all the while never depleting the stock of natural capital (see illustration 62).



Illustration 62: Past Cultural Landscape scenario found at Fort West - totally independent village and farm sustaining the needs of the community (Leprosy Mission Archives, 2012).

In contrast, the current situation of Fort West illustrates the present cultural landscape scenario. Since its closure in 1997 abandonment, simplification and destruction has occurred. The sites stock of natural capital, the historic trees for example, is seen just as a source of energy or biomass. The stock of natural capital is slowly but surely been depleted (see illustration 63).



Illustration 63: Present Cultural Landscape scenario at Fort West - abandonment, simplification and destruction (Leprosy Mission Archives, 2012).

It is this understanding of the evolution of cultural landscapes that lead Farina to develop the future cultural landscape model, see illustration 64. In this model Farina argues that the past cultural landscapes scenario can provide a powerful basis for future regenerative development, by understanding the integration and value of nature and culture. In other words, once the public is made aware of and educated about the unsustainability of the present day scenario of development (see illustration 61), the relationship between the 'capitals' can start to be regenerated. Applying the future cultural landscape model will help reduce the formation of a random landscape mosaic that has a mono-function and has lost its capacity to sustain a healthy society.

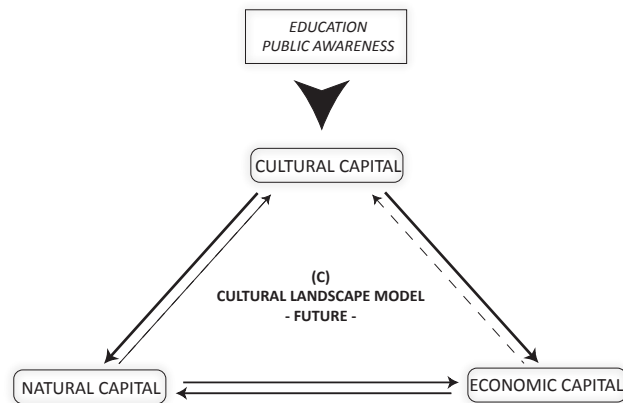


Illustration 64: Future Cultural Landscape Model, reducing the formation of a random landscape mosaic (Farina, 2000:314).

In comparison to the present scenario (see illustration 61) economic choices in future cultural landscapes (see illustration 64), are strengthened by a feedback loop that is based on the responses of natural systems. In future cultural landscapes, local conditions determine the mosaic of productive lands at a scale that is many times smaller than in the present cultural landscape scenario of the global economy. Cultural landscapes are based not on massive production but on the production of items in quantities sufficient to satisfy the local market. A true economic

balance in the future cultural landscape, therefore, considers not only crude income from food products but also the ecological costs and benefits of the processes (Farina, 2000:316-315).

However, the application of this model alone will not improve social and ecological health. To face the challenges of resource depletion and the abrupt degradation of the quality of human life, it is imperative that the relationships between the three 'capitals' be strengthened. It is through the realization of these relationships between the three 'capitals' that the regenerative development of a site will take place. Therefore, the author proposes that the principles developed by the field of ecological design will be used as a key guiding discipline to ensure an ecologically sustainable approach to the design, see illustration 65.

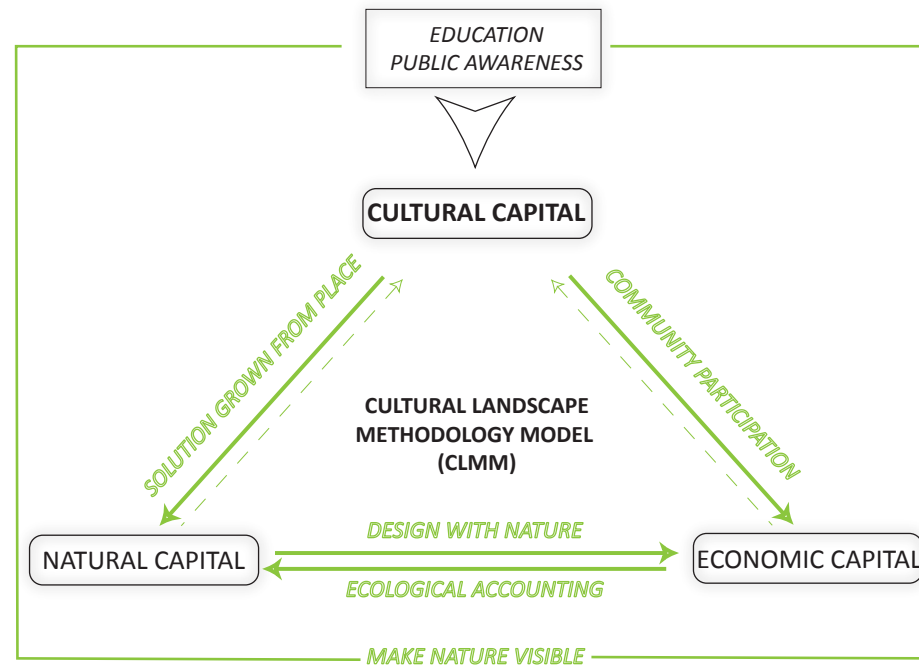


Illustration 65: Cultural Landscape Methodology Model - ecological design principles applied to the Future Cultural Landscape Model in order to ensure regenerative development of a site (Author, 2012).

ECOLOGICAL DESIGN

In our search for comfort, convenience, and material wealth, humankind has begun to sacrifice not only our own health, but also the health of all species. We are starting to exhaust the capacity of the very systems that sustain us, and now we must deal with the consequences (Van der Ryn & Cowan, 1996:3). Due to this the study of ecological relationships has assumed a heightened level of significance in the design profession, resulting in ecological design.

Ecological design is the process of actively shaping the form and functions of complex environments. It does so in such a way that the composition and processes, in these environments, help to increase the integrity of the ecological and social relationships. It aims to improve ecological functioning, preserve and generate resources for human use, and foster a more resilient approach to the design and management of our built environments (Rottle & Yocom, 2010:13-14).

The principles developed by Van der Ryn and Cowan (1996:51) were used in this study. There are five principles of ecological design that are used to ensure a social and ecological healthy approach to design. They are:

1. Make nature visible,
2. Solution grown from place,
3. Community participation,
4. Design with nature and,
5. Ecological accounting informs design.

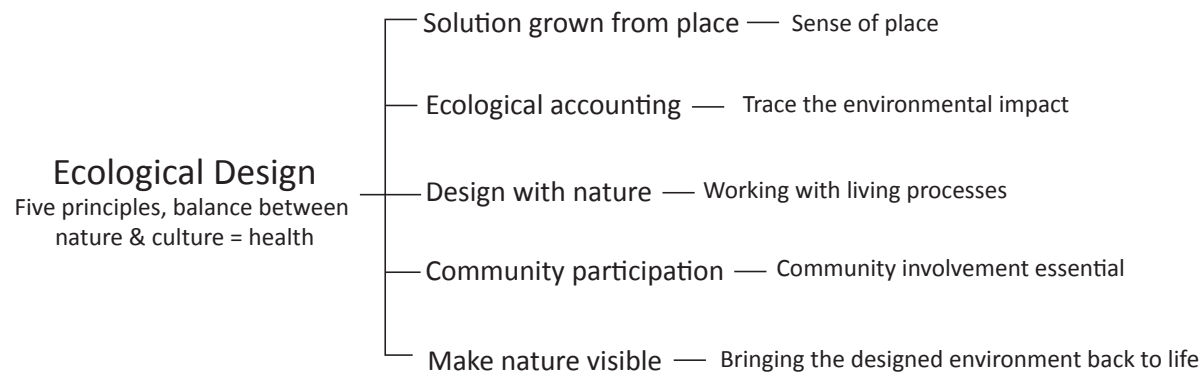
As populations become increasingly urbanized, opportunities for people to be in contact with nature become more elusive. As an interactive approach, ecological design combines human and natural systems, in order to create resilient landscapes. Taking an ecologically grounded approach to the design of degraded cultural landscapes in urban areas, enables communities to re-form and develop in ways that minimize environmental impact while increasing social equality. It serves people's needs while connecting people with nature in ways that reveal processes, promote stewardship and benefits both human and natural systems (Rottle & Yocom, 2010:16,180).

Therefore, the five ecological design principles should be implemented in a manner that is responsive to both human needs as well as the natural systems operating in the landscape.

DESIGN GUIDELINES

The design of degraded cultural landscapes, whatever the scale, should be organized according to an integrated approach that brings together ecological, cultural and economic understanding. This integrated approach has been achieved in Farina's model mentioned above, see illustration 64. However in order to ensure the regenerative development of a site the five ecological design principles together with the heritage approach mentioned in the context chapter will serve as design guidelines.

The application of the ecological design principles by the author to the Future Cultural Landscape Model as proposed by Farina, results in the development of a methodological approach to the regenerative development of degraded cultural landscapes. In the Cultural Landscape Methodology Model (CLMM), see illustration 65, the existing cultural, natural and economic capital available on the site needs to be established through a site analysis. Once this has been established then the ecological design principles (EDP) can be applied in in order to guide the design implemented.



1. MAKE NATURE VISIBLE

The CLMM approaches the three ‘capitals’ through the main avenue of education and public awareness. In other words, to make sure that the CLMM develops more than just the formation of a random landscape mosaic, the landscape has to contain and tap into society’s potential for learning. Van der Ryn and Cowan (1996:160-172) state that, our environments are the most powerful teachers we have. In order to tap into this powerful resource we must make nature visible again. Therefore the over-arching element of education and public awareness will be driven by the EDP ‘make nature visible’ (see Illustration 66).

This will be done by making natural cycles and processes visible in all three capitals, essentially bringing the designed environment back to life. This effective design will help inform the community and other visitors to the site of their place within nature. The design realization of this can be achieved through revealing, engaging and teaching.

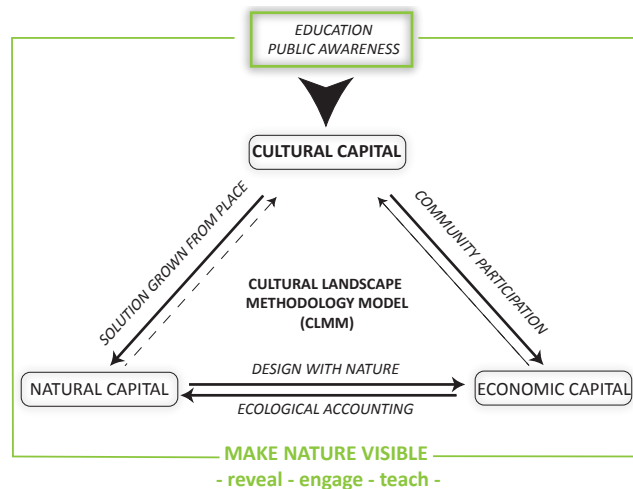


Illustration 66: The over arching element of education and public awareness will be driven by the EDP ‘make nature visible’ (Author, 2012).

1.1 REVEAL

Natural systems and processes occurring in a landscape should be revealed and exposed in order to tap into nature’s powerful resources as a teacher. This can be achieved in the form of, rehabilitating the historic water furrows, biofiltration swales, stormwater planters, retention dams and stormwater squares. These hydrological system components may also provide habitats and enhance the condition of public open space.

1.2 ENGAGE

Scientific studies overwhelmingly document the benefits of contact with nature, including recovery from illness, mental health, relaxation and concentration and lowered crime rates (Rottle & Yocom, 2010:59). Therefore the site should accommodate the design of a diverse public open space system and recreation activities. These spaces should include community parks, craft and farmers markets, multifunctional spaces such as squares, rehabilitated natural areas, children’s playgrounds, community food gardens and the public realm of the street. Recreation activities should include, hiking, nature trails, bird watching, nature education, picnicking, and a information centre. Such spaces contribute to the physical, mental and community health of an area.

1.3 TEACH

Most landscapes and sites have already been impacted by human actions. Therefore, the design of degraded cultural landscapes should strive to teach people about the importance of restoring and rehabilitating the site’s native ecological functions. An example of how restoration and rehabilitation is implemented is through the removal of existing invasive plants and replanting with appropriate indigenous plant species that will support desired ecological processes. This provides opportunities for the addition of design elements to draw attention to these restoration actions, such as integrated hiking trails and pathways, lookout points, information markers and even an environmental education centre, into the design of the site. Such markings and features for human interaction foster awareness of human care and place attachment,

which in turn can attract additional public appreciation and stewardship of a site.

2. SOLUTION GROWN FROM PLACE

The EDP behind the relationship between cultural capital and natural capital in the CLMM will be 'solution grown from place' (see Illustration 67). This EDP will allow for the established intimate knowledge of a particular place to be utilized in a small-scale and direct design initiative that is both responsive to local conditions (both cultural and ecological) and the community. It will allow the design to inhabit the site without destroying either the cultural or the natural capital.

It begins with the particularities of place. The task is to integrate the design with these conditions in a way that respects the health of the place (Van der Ryn & Cowan, 1996:72). The design realization of this can be achieved through protecting, conserving and reusing.

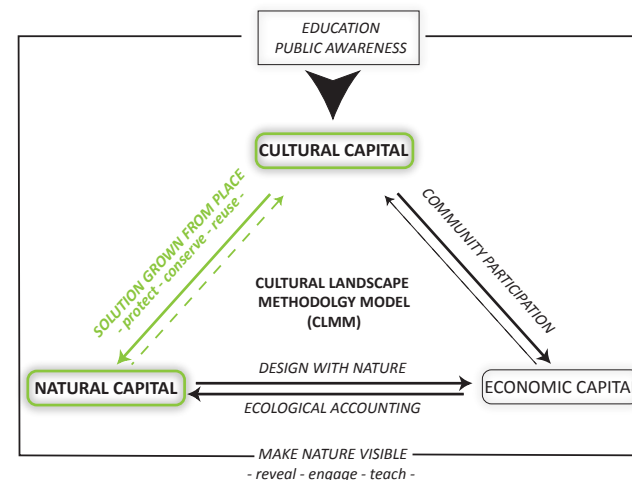


Illustration 67: EDP 'solution grown from place' establishes the relationship between cultural and natural capital (Author, 2012).

2.1 PROTECT

It has already been established that the protection of cultural landscapes are essential for future regenerative development. Every landscape contains a narrative of

meaning related to its past and present use and function. Therefore, interpretation of this meaning is required in order to protect a site. Interpretation will be guided by the ICOMOS Ename Charter (as mentioned in Context Chapter). Interpretation can be achieved by a tourism enterprise that utilises, interpretive trails, lookout points, signage, materials used, local community guides, the establishment of information centres and museums.

In order to protect the existing 'sense of place' all historic trees that have been removed can be replaced with indigenous trees similar in structure and planting design, i.e. avenues. A planting strategy that supports a multi-layered habitat of canopy trees, small trees, shrubs, native grasses and ground covers can also be implemented in order to increase the sites biodiversity and support a broader range of species.

With the introduction of an site interpretation and tourism community privacy needs to be protected. This can be achieved by ensuring private and semi-private areas are lined by edges and boundaries. These boundaries should preferably be soft and align with what historically occurred on the site.

2.2 CONSERVE

Compact multi-purpose communities should be encouraged where shops and services, such as clinics are provided for in close proximity to where people reside and work. Circulation often forms the structure of an area both spatially and operationally. In these compact communities walking and bicycling become viable when facilities such as primary and secondary routes, trails, sidewalks, bicycle tracks and stands, traffic calming and pedestrian-priority crossings are provided. Amenities such as benches and lighting also encourage walking. These human scaled systems of circulation, in connection with public transport nodes, generate resilience and support healthy conditions in urban areas.

2.3 REUSE

Reuse of a sites available resources or 'capitals' can reduce

the demand for off-site resources. Reuse can take form in the following ways; adaptive reuse of existing buildings and structures, collection and reuse of stormwater in retention dams for irrigation, recycling enterprises, and by using materials collected on or available on site.

3. COMMUNITY PARTICIPATION

The EDP behind the relationship between cultural capital and economic capital in the model will be ‘community participation’ (see illustration 68); this relationship will also help establish what the introduced economic capital will be. In order to establish a successful economic capital on the site, we must listen to the community this will establish what the needs of the community, are and what special knowledge they bring that can make a design initiative practical (within the communities scope), both economically and culturally. If the economic capital established on the site is compatible with the community of people, then as people work together to heal their places, they also heal themselves. The design realization of this can be achieved through catalysing and seeding.

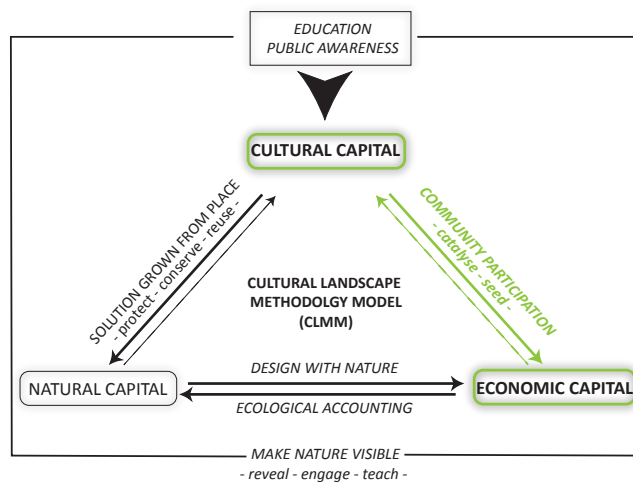


Illustration 68: EDP ‘community participation’ establishes the relationship between cultural and economic capital (Author, 2012).

3.2 CATALYSE

Public participation should go beyond just the design and planning phase of a project. Participation in the construction process should also be taken into account, in order to ensure the community is more likely to take ownership of a project and to provide long-term stewardship of the landscape. Therefore, short term projects and associated workshop training can be set up in the construction phase to teach skills such as mosaic for community art installations.

3.3 SEED

While our societies are becoming increasingly reliant upon regional and global forces, communities should rather be attempting to become more self-sufficient and resilient. In order to cultivate opportunities for human interaction and stewardship that will be required to maintain a landscape, community enterprises should be implemented. These enterprises should be revealed through the participation process. Examples of such enterprises can be a diary, bee keeping, an indigenous nursery, community food garden and recycling station. These enterprises also have the potential to over time extend beyond self-sufficiency into generating income.

4. DESIGN WITH NATURE

The EDP behind the relationship between natural capital and economic capital in the model will be ‘design with nature’ (see illustration 69). In order to make sure that the natural capital is utilised effectively and not inhibited or destroyed in the production of economic capital on the site, the design will need to work with the living processes found on the site (the natural capital). This will then guarantee that the design respects the needs of all species while also meeting the needs of the community. By engaging the economic capital in the processes that regenerate rather than deplete, the designed landscape and the community will become more alive. The design realization of this can be achieved through connecting and integrating.

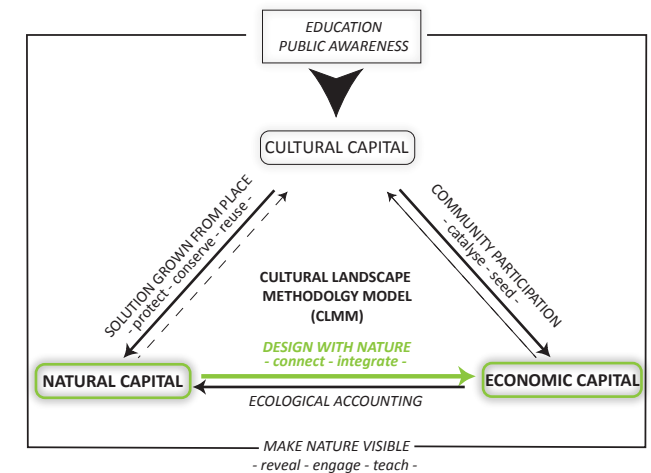


Illustration 69: EDP ‘design with nature’ establishes the relationship between natural and economic capital (Author, 2012).

4.1 CONNECT

The provision of ecological corridors in urban areas creates opportunities for regenerating a larger, connected network of healthy public open space. By connecting isolated landscape patches with these corridors it will not only facilitate movement of wildlife and plants but also people and water.

4.2 INTEGRATE

In order to integrate everyday life of a community with nature, sustainable practices should be encouraged. These practices should also better the lives of the community. Sustainable systems such as biogas converters, solar power geysers, permeable paving and rainwater tanks to harvest water off roofs can be used.

5. ECOLOGICAL ACCOUNTING

The EDP behind the relationship between economic capital and natural capital in the model will be 'ecological accounting' (see illustration 70). Tracing the environmental impacts of a proposed design will ensure that the economic capital (productive landscape) established on the site will not adversely affect the natural capital. The design realization of this can be achieved through informing and

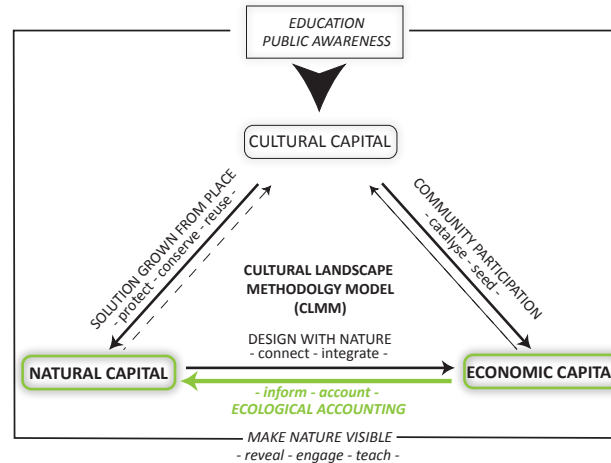


Illustration 70: EDP 'ecological accounting' establishes the relationship between economic and natural capital (Author, 2012).

accounting.

5.1 INFORM

In order to make good design decisions that reflect the overall ecological costs and ultimately informing the design process a Material Comparison Table can be done. This will provide an understanding of the impacts incurred during a materials entire life-cycle, from extraction through to manufacturing, use and eventual recycling or discard.

5.2 ACCOUNT

Sustainable sites Initiative (SSI) is an interdisciplinary effort by the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Centre at University of Texas, Austin, and the United States Botanic Garden, to develop a sustainability rating system for landscapes (similar to Green Star for buildings) that works to transform land development and management practices (SSI, 2009). Therefore an SSI can be done in order to account for the designs environmental implications.

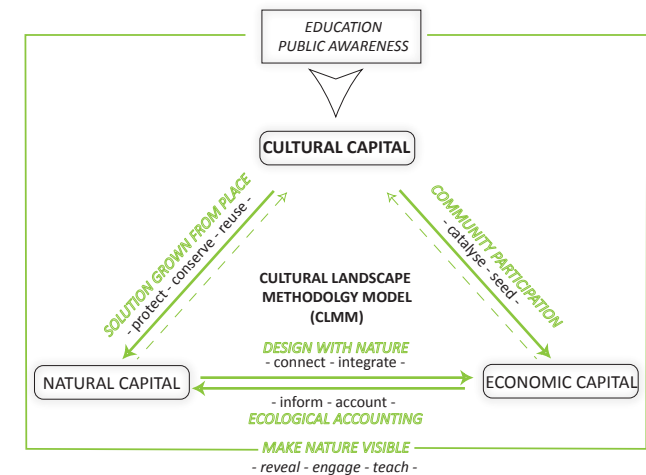


Illustration 71: Overall Cultural Landscape Methodology Model (CLMM) with design guidelines applied (Author, 2012).

CONCLUSION

Such an approach, as seen in the CLMM, matches biological diversity with cultural diversity rather than compromising both the way conventional solutions do. It now appears clear that the maintenance of a healthy society requires not only a healthy economy but also a well-conserved natural system. The CLMM could be used to create new strategies for achieving healthy societies and economics. It may seem idealistic and naive to think that centuries of cultural landscaping could be maintained or re-created in today's society. Nevertheless, the concepts contained in such a model can be used to guide the convergence of environmental, technological and socioeconomic processes to produce liveable and sustainable environments.

By looking at the above-proposed model (see illustration 71) and associated theoretical investigation, it can be concluded that:

- Cultural landscapes are a continuous exchange between the natural physical setting, human modifications and the resultant meaning over time. They embody a dynamic understanding of the history of a site, in which the past, present and future are seamlessly connected, dealing with the interaction between people and nature. Therefore by definition cultural landscapes are an ideal platform where human and natural realms can be connected, adding value to the urban environment.

- The importance of cultural landscapes lies in its ability to connect nature and culture, provide a basic model for future development and regenerate meaning and identity back to a place and its associated community. This can be done by utilising the five ecological design principles of solutions grown from place, ecological accounting, design with nature, community participation and lastly make nature visible which aim to root and involve the community back to the landscape.

- Cultural landscapes of the past were both socially and ecologically healthy, which also contributed to a self

sustaining economic health. Therefore degraded present cultural landscapes can be regenerated utilizing the CLMM. As such, by determining the three capitals available on site and reestablishing the important relationships between these capitals fragmented human and natural systems can be connected.

- Through the application of the five ecological design principles as design guidelines human and natural system connections can be strengthened and ecological and social health can be improved on a site.



*“The landscape does not sit silent awaiting the arrival of an architectural subject. The site - the land - speaks prior to the act of design.”
(Meyers, n.d.)*

Illustration 72: *Cussonia spicata* over looking Davisonville & Atteridgeville (Author, 201

CHAPTER 04

ANALYSIS

INTRODUCTION

This chapter focuses on Fort West’s status quo in detail in order to inform the design of the site. The quantitative aspects of the site are thus focused on. Through this analysis the three capitals (cultural, natural and economic) present on the site will be established and opportunities and constraints will be identified. This will ensure that the resultant design is responsive to existing conditions.

LOCATION AND CITY CONTEXT

Fort West is significant in the context of South Africa not only because, historically, it was the last remaining leprosy institution but also because today it is one of the best remaining examples of these institutions in South Africa.

The property is located within the western sector of the Tshwane Metropolitan Municipality. It can be found on the remainder of the Fort Farm, farm number 646-JR, Portions 0 & 3. The developable portion of the site measures approximately 156 ha in extent. The site is located north of Lotus Gardens, and south of the Witwatersberg Ridge System. The entire land portion is council-owned land and has been earmarked for many years as a Special Mayoral Development, in order that the greater Fort West is developed into a “Fort West self sustainable urban village”.

Pretoria West is one of the oldest areas of the City of Tshwane. It is characterised by some of the most historic buildings in the city. The Fort West area forms part of the Atteridgeville and Lotus Gardens ISDF. The Atteridgeville - Lotus Gardens population is in the order of approximately 172 000 people. Most of the people living in the surrounding neighbourhoods live in formal housing, with the exception of the Atteridgeville informal settlement. Kwaggasrand and Wespark have a small percentage of high rise flats and apartments. This area to the west of the Tshwane Inner City between the Witwatersberg and Schurveberg currently experiences significant pressure for urban development. The area is strategically well-located relative to the Tshwane Inner City and it has good regional access via various freeways, roads and railway lines (SEC, 2012:59).

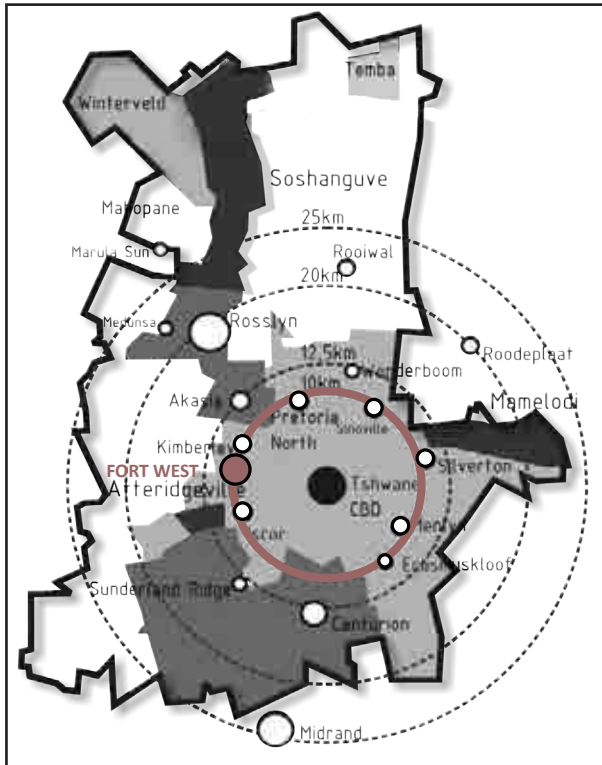


Illustration 73: Location of site in the City of Tshwane (Author, 2012).



Illustration 74: Location of site in Gauteng (Author, 2012).



Illustration 75: Location of site in South Africa (Author, 2012).

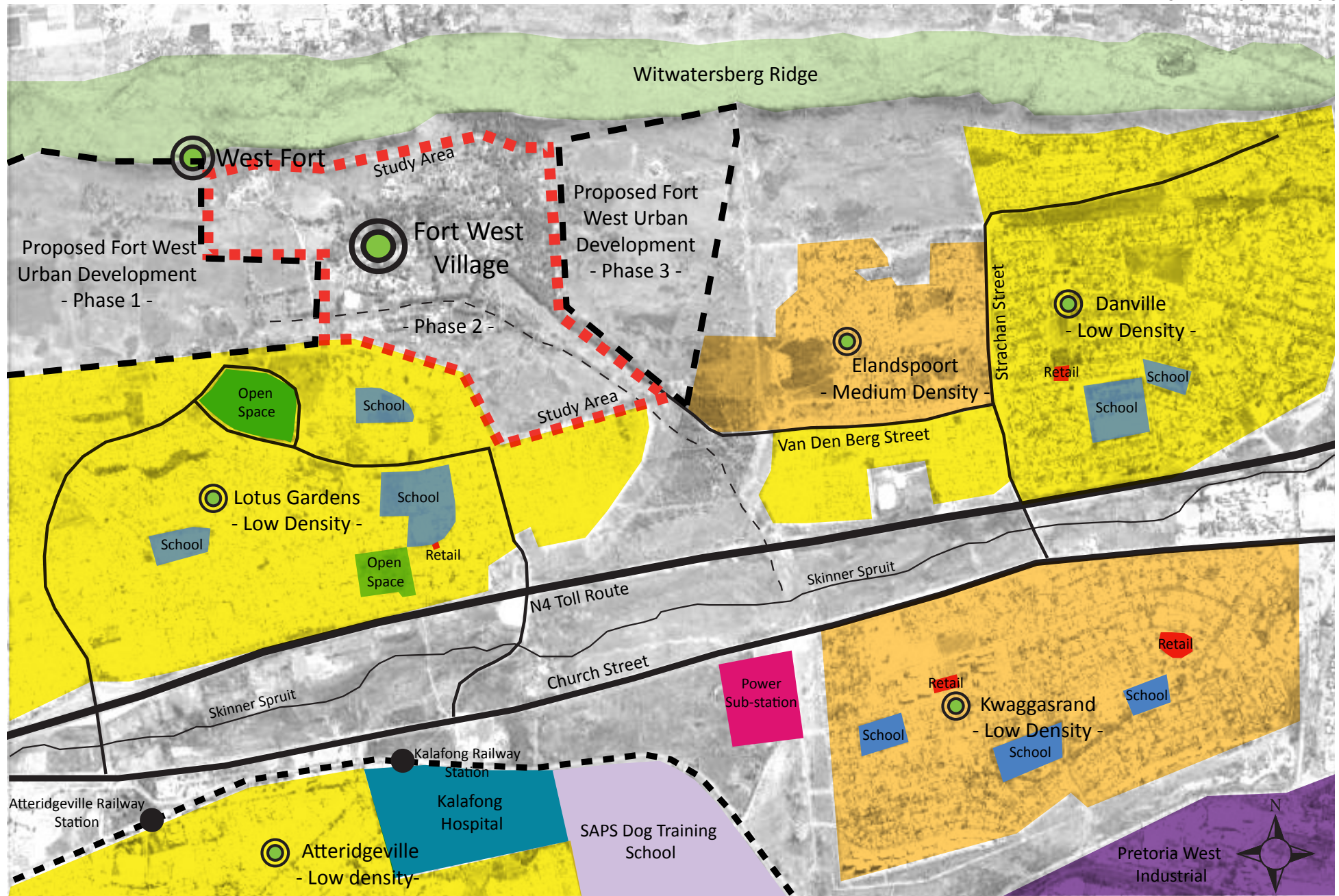


Illustration 76: Existing land uses and residential areas surrounding the study area (Author, 2012).

CHAPTER 04 - ANALYSIS

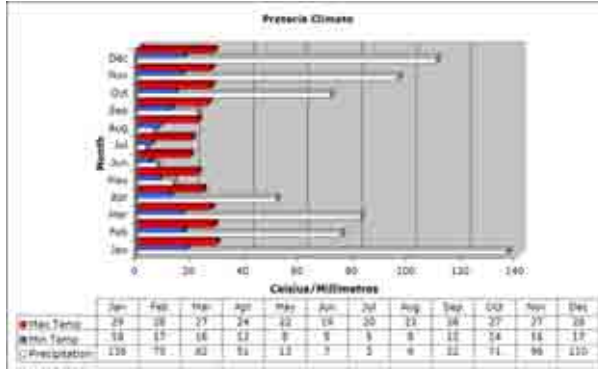


Illustration 77: Climate Chart for the City of Tshwane (Safarinow, 2012).

The dominant land use in and around the study area is residential, which comprises of formal and informal structures (see illustration 74). There are no major regional shopping centres or industrial areas within easy walking distance of the study area. The area south of church street is well served with a range of educational, health, sports and recreational facilities, however this does not extend to the north closest to the site. Therefore an opportunity exists for Fort West to address these needs of the surrounding community. The study area has an extensive range of primary and secondary schools. More schools are needed, especially ones dealing with adult education. Kalafong Hospital represents the regional medical facility, of which a satellite clinic is needed for the northern region.

TOPOGRAPHY AND CLIMATE

The northern boundary of the site is formed by the Witwatersberg and Daspoort Ridge systems, which represent a prominent quartzite Class 2 Ridge system, running east-west across the site. According to the GDARD Ridges policy, a maximum of five percent of the ridge on the property may be developed. This development may only take place adjacent to current transformed areas on the ridge system. Hence, the majority of the Class 2 Ridge on site is not developable and therefore has the opportunity

to become a protected area. The majority of the site slopes in a southerly direction, towards the small existing drainage feature on site, running from west to east, at an approximate slope angle of 2-6°. Areas of steeper slopes, with slope angles ranging between 6-12° occur in the northern half of the site (WSM Leshika Consulting, 2010:3).

The climate is typical of Highveld conditions; with relatively warm to hot summers consisting of temperatures reaching the lower thirties. This implies that shading will need to be provided for in and around the site. Fairly high rainfall in summer and moderate to cool winters with little or no rain expected. Valleys and wetlands are much cooler at night and more prone to frost than higher lying areas. The area experiences thunderstorms, which usually occur in the late afternoons during the summer months. The project area falls within the summer rainfall area, with the majority of rain falling within the months of October to March. Therefore adequate provisions for stormwater run-off as well as shelter from sudden rainstorms will need to be provided. A relative humidity of 30% will most likely be experienced; however since this falls within a comfortable range no compensating measures will need to be taken.

Prevailing Winds:

- Summer: North-East
- Winter: North-East to North-West

Since the prevailing winds are from the North-East for most of the year, the site, except for the ridge, is sheltered from the wind throughout the majority of the year. As a result this will increase the ambient air temperature, making the provision of shade even more important.

VEGETATION TYPES

Biomes are broad ecological units that represent major life zones extending over large natural areas. The site falls within what is classified as the Savanna Biome. Biomes are further divided into bioregions, which are spatial terrestrial units possessing similar biotic and physical features, and processes at a regional scale. This site is situated within the Central Bushveld Bioregion (Mucina & Rutherford, 2006:32-51).

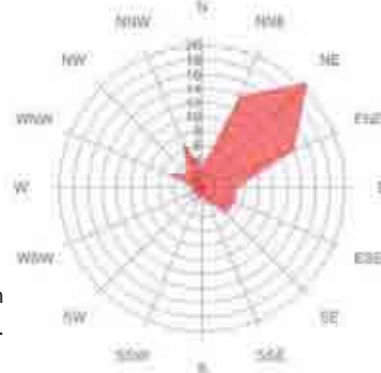


Illustration 78: Wind direction (Windfinder, n.d.).

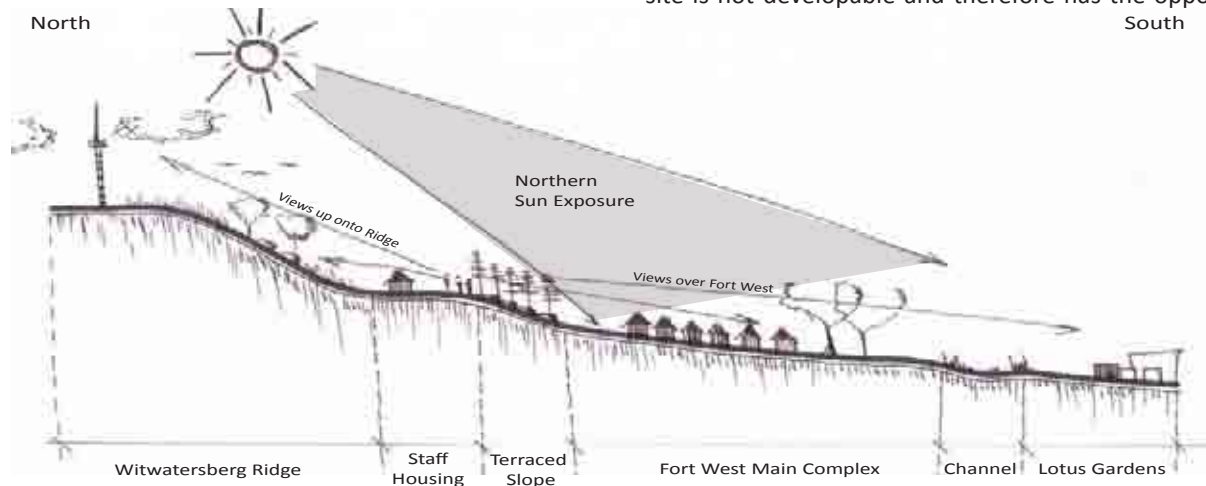


Illustration 79: Typical topography of West Fort allowing views to the city and maximum sun exposure (Author, 2012).

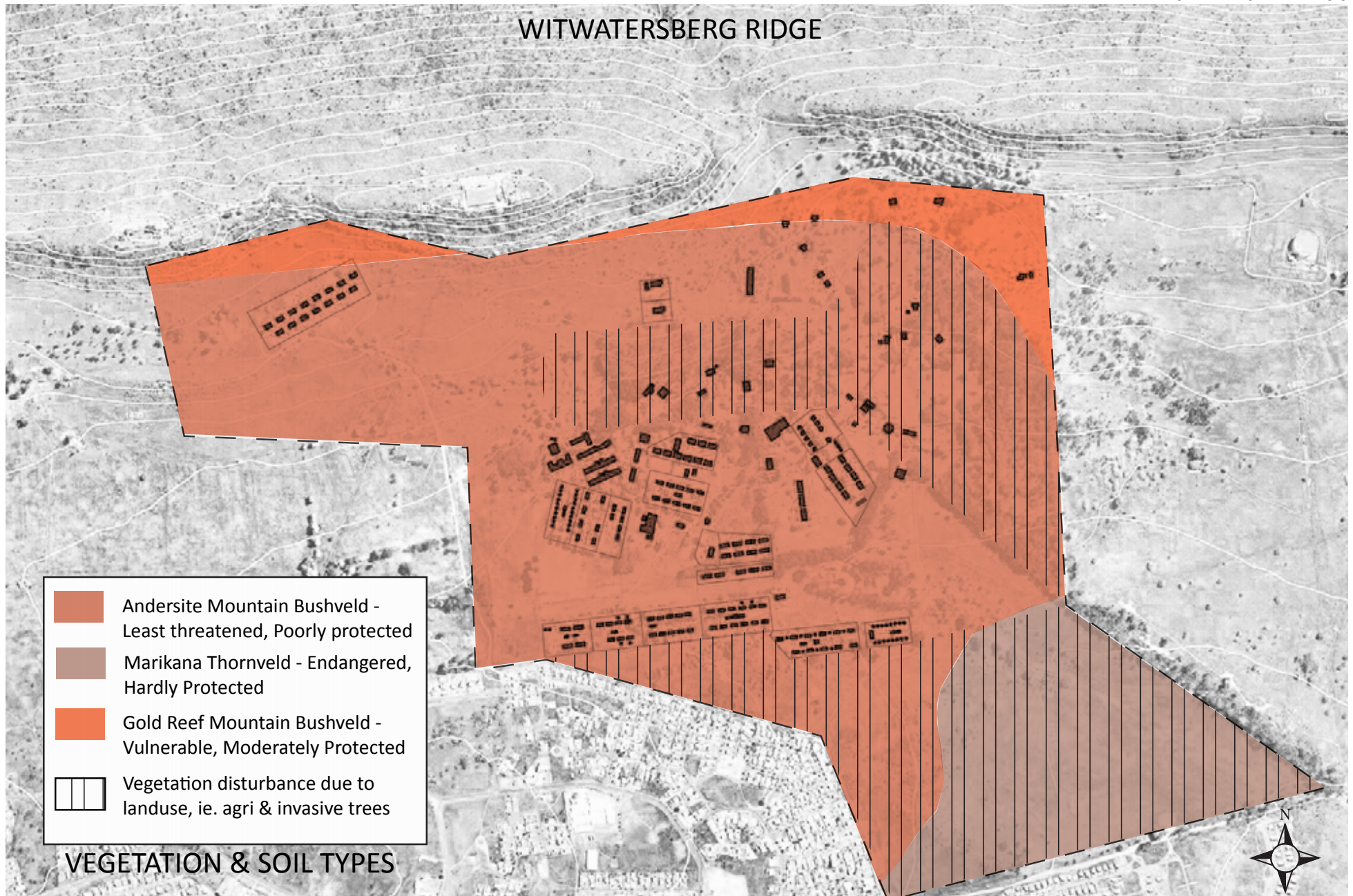


Illustration 80: Vegetation types found at Fort West also determining the geology and soil types (Author, 2012).



Illustration 81: Andesite Mountain Bushveld (Mucina & Rutherford, 2006:468).



Illustration 82: Goldreef Mountain Bushveld (Mucina & Rutherford, 2006:466).



Illustration 83: Marikana Thornveld (Mucina & Rutherford, 2006:464).

While biomes and bioregions are valuable as they describe broad ecological patterns, they only provide limited information on the actual species that are expected to be found in an area. Knowing which vegetation type an area belongs to provides a further indication of the floral composition that would be found if the assessment site was in a pristine condition, which can then be compared to the observed floral list and so give an accurate and timely description of the ecological integrity of the assessment site. When Fort West is superimposed on the vegetation types of the surrounding area, it is evident that the majority of the site falls within the Andesite Mountain Bushveld vegetation type. A very small section of the ridge in the northern section of the site, falls within the Gold Reef Mountain Bushveld, and most of the southern section of the site lies within the Marikana Thornveld (Mucina & Rutherford, 2006:32-51).

Andesite Mountain Bushveld

Vegetation and landscape features consist of dense, medium-tall thorny bushveld with a well-developed grass layer on hill slopes and some valleys with undulating landscape. Its conservation status is considered least threatened. About seven percent is statutorily conserved, mainly in the Suikerbosrand Nature Reserve and Magaliesberg Nature Area. An additional 1-2% is conserved in other reserves. Some 15% is already transformed, mainly due to cultivation and some urban and built-up areas. The altitude ranges between 1350 and 1800 meters.

The dominant and typical floral species of Andesite Mountain Bushveld are listed below:

Small trees: *Acacia caffra*, *A. karroo*, *Celtis africana*, *Protea caffra*, *Zanthoxylum capense*, *Ziziphus mucronata*

Tall Shrubs: *Asparagus laricinus*, *Euclea crispa* subsp. *crispa*, *Rhus pyroides* var. *pyroides*, *Diospyros lycioides* subsp. *lycioides*, *Gymnopia polyacantha*, *Lippia javanica*, *Rhamnus prinoides*.

Low Shrubs: *Asparagus suaveolens*, *Rhus rigida* var. *margaretae*, *Teucrium trifidum*.

Woody climber: *Rhoicissus tridentata*

Graminoids: *Eragrostis curvula*, *Hyparrhenia hirta*, *Setaria*

sphacelata, *Themeda triandra*, *Cymbopogon pospischilii*, *Digitaria eriantha* subsp. *eriantha*, *Elionurus muticus*, *Eragrostis racemosa*, *E. superba*, *Panicum maximum*

Herbs: *Commelina africana*, *Vernonia galpinii*, *V. oligocephala*

Succulent Herb: *Aloe greatheadii* var. *davyana* (Mucina & Rutherford, 2006:467-8).

Gold Reef Mountain Bushveld

This vegetation occurs along rocky quartzite ridges and hills often west-east trending with more dense woody vegetation often on the south-facing slope associated with distinct floristic differences. Its conservation status is considered least threatened. Some 22% is statutorily conserved. At least an additional one percent is conserved in other reserves, which brings the total conserved areas very close to its target of 24%. About 15% is transformed mainly by cultivation, urbanisation and built-up areas. Some areas contain dense stands of the alien tree species *Melia azedarach* but are often associated with drainage lines or alluvia embedded within this unit. Altitude ranges from 1200 to 1750 m.

Key indicator species of this vegetation type include:

Small trees: *Acacia caffra*, *Combretum molle*, *Protea caffra*, *Celtis africana*, *Dombeya rotundifolia*, *Englerophytum magalismontanum*, *Ochna pretoriensis*, *Rhus leptodictya*, *Vangueria infausta*, *V. parvifolia*, *Ziziphus mucronata*

Tall Shrubs: *Canthium gilfillanii*, *Ehretia rigida* subsp. *rigida*, *Grewia occidentalis*, *Gymnosporia buxifolia*, *Mystroxydon aethiopicum* subsp. *burkeanum*

Low shrubs: *Athrixia elata*, *Pearsonia cajanifolia*, *Rhus magalismontana* subsp. *magalismontana*, *R. rigida* var. *rigida*

Woody Climber: *Ancylobotrys capensis*

Graminoids: *Loudetia simplex*, *Panicum natalense*, *Schizachyrium sanguineum*, *Trachypogon spicatus*, *Alloteropsis semialata* subsp. *eckloniana*, *Bewsia biflora*, *igitaria tricholaenoides*, *Diheteropogon amplexens*, *Sporobolus pectinatus*, *Tristachya biseriata*, *T. leucothrix*.

Herbs: *Helichrysum nudifolium*, *H. rugulosum*, *Pentanisia angustifolia*, *Senecio venosus*, *Xerophyta retinervis*

Geophytic Herbs: *Cheilanthes hirta*, *Hypoxis hemerocallidea*, *Pellaea calomelanos*

Endemic Taxa: *Aloe peglerae* & *Frithia pulchra* (Mucina & Rutherford, 2006:466).

Marikana Thronveld

Vegetation and landscape features consist of open Acacia karoo woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Its conservation status is considered endangered. Less than one percent is statutorily conserved. It has been considerably impacted, with 48% being transformed, mainly to cultivated and urban or built-up areas. In the areas around the City of Tshwane the greatest land transformation threat is due to industrial development with agricultural development also contributing. Alien invasive plants occur localised in high densities, especially along drainage lines. The altitude range is from 1050 to 1450 m.

Important taxa found in the Marikana Thronveld include:

Tall Trees: *Acacia burkei*

Small Trees: *Acacia caffra*, *A. gerrardi*, *A. Karroo*, *A. tortilis*, *Combretum molle*, *Rhus lancea*, *Ziziphus mucronata*, *A. nilotica*, *Celtis africana*, *Dombeya rotundifolia*, *Pappea capensis*, *Peltophorum africanum*, *Terminalia sericea*.

Tall shrubs: *Euclea crispa*, *Olea europaea* subsp. *africana*, *Rhus pyroides*, *Diospyros lyciodes*, *Ehretia rigida* subsp. *rigida*, *Euclea undulata*, *Grewia flava*, *Pavetta gardeniifolia*.

Low Shrubs: *Asparagus cooperi*, *Rhynchosia nitens*, *Indigofera zeyheri*, *Justicia flava*.

Woody Climbers: *Clematis brachiata*, *Helinus integrifolius*.

Herbaceous Climbers: *Pentarrhinum insipidum*, *Cyphostemma cirrhosum*.

Graminoids: *Elionurus mutucus*, *Eragrostis lehmanniana*, *Setaria sphacelata*, *Themeda triandra*, *Aristida scabrivalvis* subsp. *scabrivalvis*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyperthelia dissoluta*, *Melinis nerviglumis*, *Pogonarthria squarrosa*.

Herbs: *Hermannia depressa*, *Ipomoea obscura*, *Baleria macrostegia*, *Dianthus mooiensis*, *Ipomoea oblongata*, *Veronia oligocephala*.

Geophytic Herbs: *Ledebouria revoluta*, *Ornithogalum*

tenuifolium, *Sansevieria aethiopica* (Mucina & Rutherford, 2006: 463-4).

GEOLOGY AND SOIL TYPES

According to the 1:50 000 scale 2528CA PRETORIA geological sheet, the investigated area is underlain by:

- Shale, locally ferruginized with chert and quartzite;
- Andesitic lava, locally with interbedded shale, agglomerate and tuff, and
- Quartzite.

All of the above mentioned form part of the Daspoort Stage of the Pretoria Group, Transvaal Supergroup. No potentially soluble rock formations such as dolomite are indicated on/ or in close proximity to the site (WSM Leshika Consulting, 2010:3-4).

Andesite Mountain Bushveld

The weathering of these rocks gives rise to shallow, rocky clay soils of mainly Mispah and Glenrosa soil forms (Mucina & Rutherford, 2006:467).

Gold Reef Mountain Bushveld

Soils are shallow, gravel lithosols of the Mispah and Glenrosa forms (Mucina & Rutherford, 2006:466).

Marikana Thornveld

Soils are mainly vertic melanic clays with some dystrophic or mesothrophic plinthic catenas and some freely drained, deep soils.

GAUTENG C-PLAN

The Gauteng Conservation Plan or Gauteng C-plan as it is more commonly known focuses on the mapping and management of biodiversity priority areas within Gauteng. It aims to identify and map the distribution of protected areas, irreplaceable and important sites, due to the presence of Red Data species, endemic species and potential habitat for these species to occur.

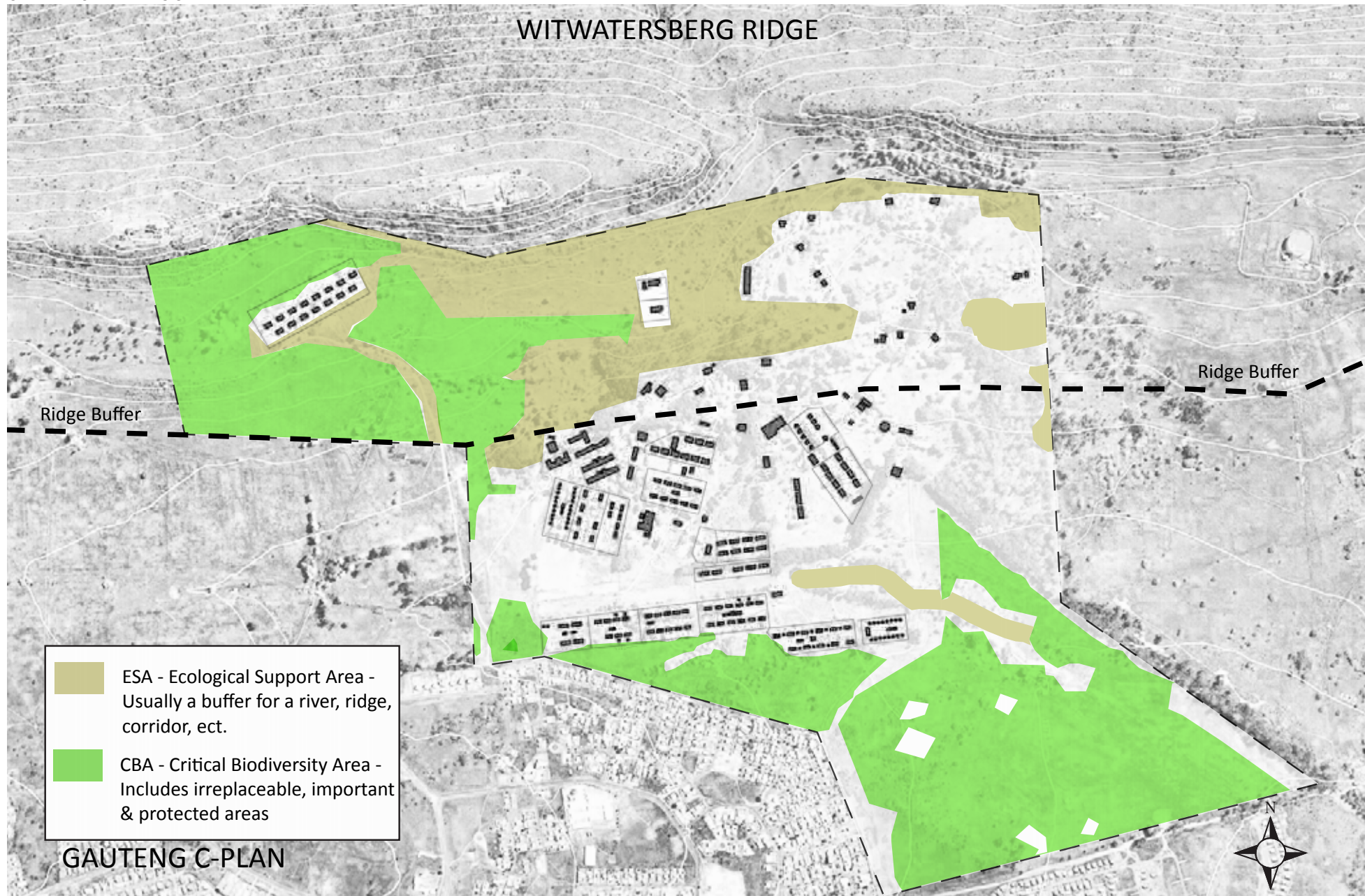


Illustration 84: Gauteng C-Plan indicating the biodiversity importance of Fort West (Author, 2012).

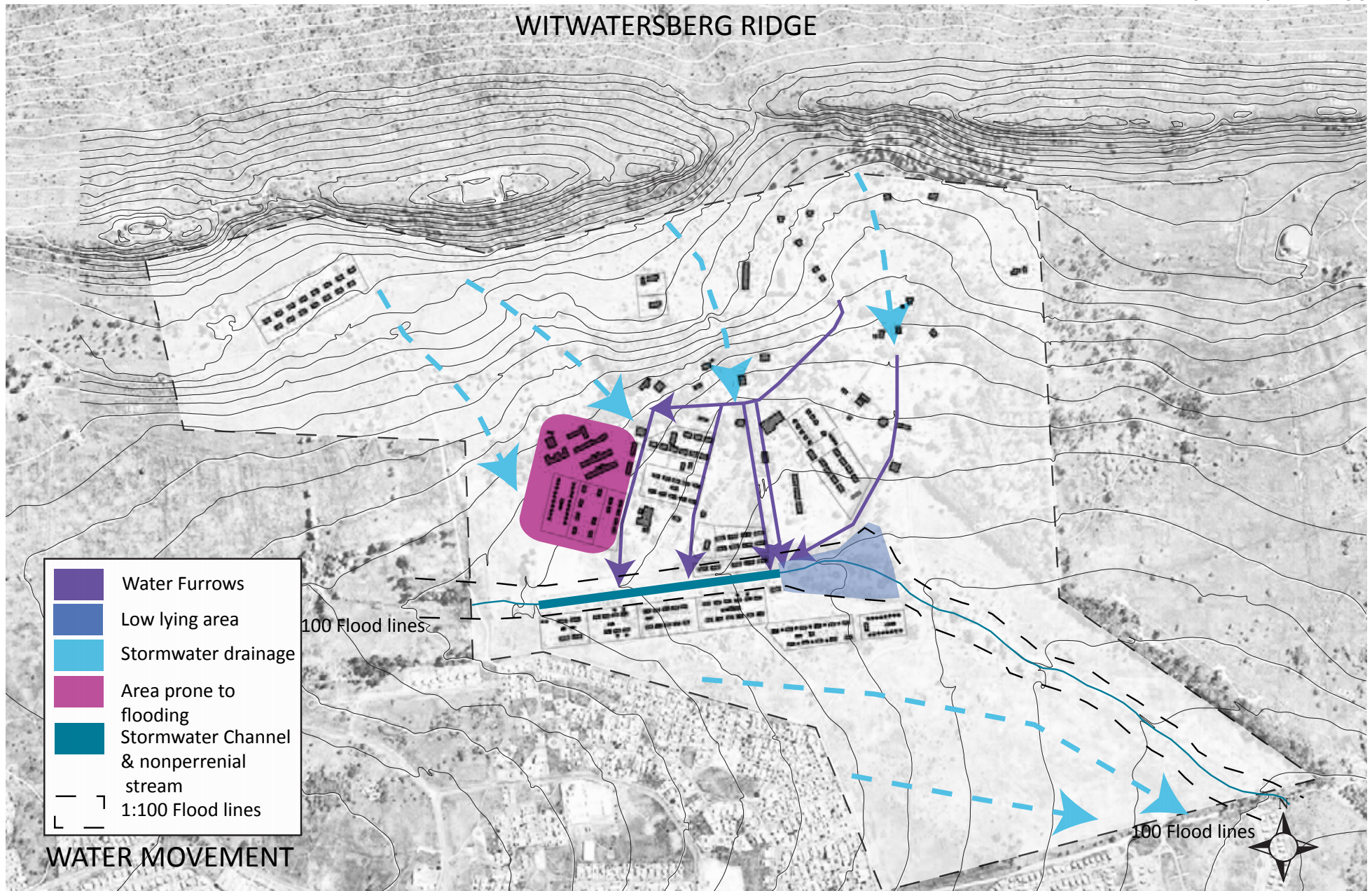


Illustration 85: Existing stormwater movement across the site (Author, 2012).



Illustration 86: *Eucalyptus camaldulensis* (WFHC, 2004).



Illustration 87: *Jacaranda mimosifolia* (Author, 2012).

The C-plan (Version 3) has indicated that the site falls in ecologically important areas (ridges) with primary vegetation. An important area is a site designated as significant in meeting targets set for the conservation of biodiversity. The site is important to protect in some way, but not essential and can be replaced by a similar site, therefore a trade-off in the efficiency of the conservation plan may be the result.

The subject property does not fall within one of the priority areas identified by the Grasslands Program. This is mainly due to significant impact from current and historical subsistence agricultural activities and residential infrastructure development. Isolated areas within the site are starting to return to more natural bushveld communities. However it is doubtful that the floral community will return to a pristine ecological state without help, due to its isolation from similar habitat as well as increasing anthropogenic encroachment within surrounding areas.

The northern boundary of the subject property runs along a well-defined ridge, forming part of the Witwatersberg and the Daspoortrand. These ridges are presently open space areas and consequently have seen little transformation and are considered to be of high ecological condition, with the highest species diversity encountered of all habitat units. These ridge areas are considered of high sensitivity and are important for ongoing ecological condition and functioning of the areas that will surround the proposed development in the future. It is therefore recommended that these areas remain undeveloped as public or private open space and a buffer is implemented in order to prevent future urban development from encroaching further up the ridge.

STORMWATER MOVEMENT

Pretoria is situated in the summer rainfall region and receives an average annual rainfall of 674mm. Therefore it is recommended that stormwater be captured in the summer months and stored for the dryer winter months, due to the high sheet flow of water that runs off the southern slope of the ridge. A single drainage feature, concrete stormwater

channel was identified near the southern boundary of the site. Rainwater will mainly drain as surface flow or sheetwash and percolate through the upper, more permeable topsoil and colluvium horizons and drain on the contact with the lower less permeable bedrock or pedoconcrete towards the lower slopes and in the direction of the drainage channel (WSM Leshika Consulting, 2010:3).

Water furrows were also constructed within Fort West to help catch and direct the surface flow of water towards the stormwater channel. This system seems effective, therefore there is an opportunity to re-establish this system and further enhance it in order to deal with stormwater in an effective and environmentally sound way, see illustration 70. The section of Fort West that was constructed after the water furrows is prone to flooding.

EXISTING VEGETATION ON SITE

Alien invaders are plants that are of exotic origin and are invading previously pristine areas or ecological niches (Bromilow, 2001). Not all weeds are exotic in origin, but as these exotic plant species have very limited natural “check” mechanisms within the natural environment, they are often the most opportunistic and aggressively-growing species within the ecosystem. Therefore, they are often the most dominant and noticeable within an area. Disturbances of the ground through trampling, excavations or landscaping often leads to the dominance of exotic pioneer species that rapidly dominate the area. Alien vegetation invasion causes degradation of the ecological integrity of an area, causing (Bromilow, 2001):

- A decline in species diversity;
- Local extinction of indigenous species;
- Ecological imbalance;
- Decreased productivity of grazing pastures; and
- An increased agricultural input costs.

Due to anthropogenic activities within Andersite Mountain Bushveld Vegetation Type (Andesite Unit) on Fort West the majority of exotic and weed species identified were within this area. The Witwatersberg ridge (Gold Reef Mountain

Species	Common Name	Origin	Category
Trees/Shrubs			
Melia azederach	Seringa	Asia	3
Eucalyptus camaldulensis	Red Gum	Australia	2
Jacaranda mimosifolia	Jacaranda	South America	3
Pinus sp.	Pine	Asia & North America	2
Acacia mearnsii	Black wattle	Australia	2
Senna didymobotrya	Peanut butter cassia	Tropical Africa	3
Grevillea robusta	Silky oak	Australia	N/A
Plumeria rubra var. acutifolia	Frangipani	Central America	N/A
Solanum mauritianum	Bugtree	Asia	1
Forbs			
Bidens formosa	Cosmos	Native to S America	N/A
Hibiscus trionum	Bladder hibiscus	Weed	N/A
Bidens pilosa	Common blackjack	Native to S America	N/A
Asclepias fruticosa	Shrubby milkweed	Weed	N/A
Conyza bonariensis	Flax-leaf fleabane	Native to N and S America	N/A
Lantana camara	Common lantana	America	1
Plantago lanceolata	Buckhorn plantain	Europe	N/A
Tagetes minuta	Tall khakiweed	Native to S America	N/A
Agave americana	American agave	America	N/A
Ipomoea purpurea	Common morning glory	America	3
Zinnia peruviana	Redstar zinnia	America	N/A
Protasparagus laricinus	Wild asparagus	Weed	N/A
Grasses			
Pennisetum clandestinum	Kikuyu	East Africa	N/A

Category 1 - Declared weeds. Prohibited plants, which must be controlled or eradicated.

Category 2 - Declared invader plants with a value (usually a useful commercial quality). Only allowed in controlled demarcated areas.

Category 3 - Mostly ornamental plants. Alien plants presently growing in, or having escaped from areas such as gardens, but are proven invaders. No further planting or trade in propagative material is allowed (Bromilow, 2001).

Illustration 88: List of dominant exotic species noted at Fort West, especially in Andesite Unit (Author, 2012).

Bushveld) and the Marikana Thornveld units have seen some disturbance, but are still representative of the natural vegetation type and only require minimal rehabilitation.

The dominant exotic species noted in Andesite Unit was

Eucalyptus camaldulensis and Jacaranda mimosifolia, the trees that are noted as been more then 60 years old and contribute to the 'genius loci' of place will be retained, i.e. trees located in avenues. The dominant exotic species are listed in illustration 71. All species listed as category 1 are



Illustration 89: *Lantana camara* (Author, 2012).



Illustration 90: *Solanum mauritianum* which is listed as a category 1 weed (Greenwell, 2005).

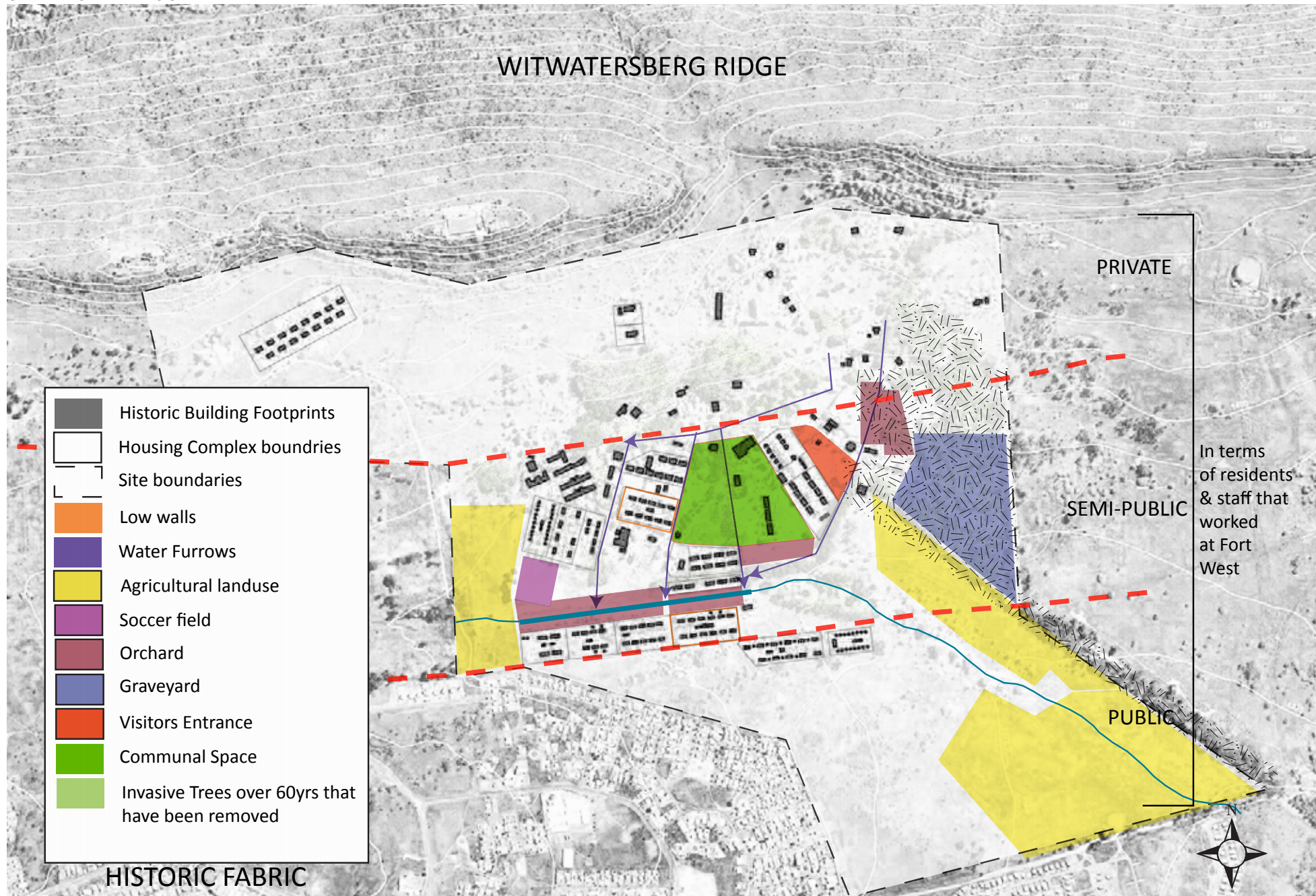


Illustration 91: Map indicating the overlaying of all historic information into a historic fabric (Author, 2012).



Illustration 92: View from West Fort on the ridge showing the visual connection to other iconic structures, both natural & built (Author, 2012).

required to be removed and as such will be removed.

HISTORIC FABRIC

Heritage practitioners employ the term ‘cultural landscape’ to refer to land with its associated memories, perceptions, stories, practices and experiences which give that particular landscape its meaning. A cultural landscape thus provides the essential (physical and metaphysical) context for a range of heritage resources, which can take a variety of forms, which can take on a variety of forms, yet is itself a heritage resource in its own right. It could be regarded as the ‘tapestry’ within which all other heritage resources are embedded and interwoven, and which gives them their sense of place and belonging. As the concept of cultural landscape gives spatial and temporal expression to the processes and products manifested by the interaction of people with the environment, it may be conceived as a particular configuration of topography, vegetation cover, land use and settlement pattern that establishes some coherence (or legibility) of natural and cultural processes (Gibbs & Muller, n.d.).

The tapestry constitutes layers of information which overlap

and intersect; founded upon natural factors such as past land use, built and removed structures, amongst others. Each of these layers of information may endure in whole or remain in part only. The objective in understanding a cultural landscape is therefore to distil each layer of information and to perceive what meaning it reveals. Inasmuch as buildings change over time – with the addition and removal of components, and whereby the residue of these changes can be perceived and understood, the same is true for landscape: cultural landscapes record land use change over time. In addition to these static physical remnants that are layered over time, landscapes are also composed of dynamic elements: for example movement of flowing rivers – creating and cutting off channels over time; and the seasonal growth patterns of trees and shrubs that can then die back – leaving their mark which can be studied and understood (Gibbs & Muller, n.d.).

MOVEMENT AND ACCESS

The existing vehicular movement system at Fort West is illegible and haphazard with no formal hierarchy. There are no safe pedestrian crossings on vehicular routes or safe places to wait for public transport.



Illustration 94: Informal taxi pick-up point, unsafe waiting environment (Author, 2012).



Illustration 95: Informal taxi stop under the Jacaranda trees (Author, 2012).

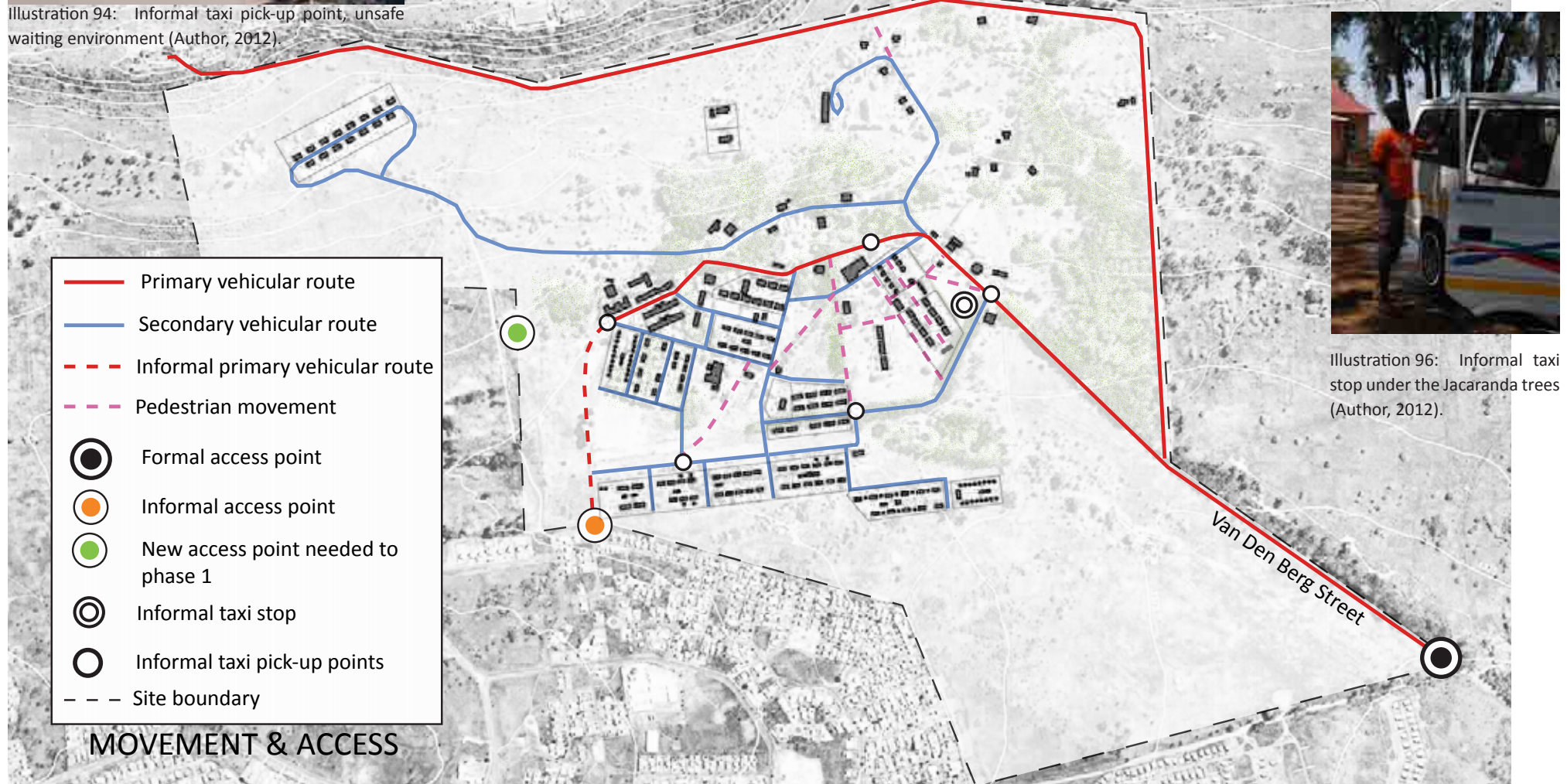


Illustration 96: Informal taxi stop under the Jacaranda trees (Author, 2012).

Illustration 93: Map indicating the vehicular and pedestrian movement on the site (Author, 2012).

Vehicular Movement

Upon observation (see illustration 91) on the site more frequently used roads (primary vehicular routes) were distinguished from less frequently used roads (secondary vehicular routes). The primary routes were noted as the roads with the most vehicular traffic throughout the day. Secondary routes are mainly used for pedestrian movement due to the lack of a formal walkway system. The only vehicular traffic on secondary routes are the odd vehicle owned by a community member.

Access

The site is formally accessed from one point along Van Den Berg Street. Historically this street, which was lined with Eucalyptus trees, is important. The only other access point into Fort West borders with Lotus Gardens, however this point is an informal point created by the residents existing onto Henna Street. A new access point and road will need to be established into phase 1.

Public Transport

Taxis are informally accommodated in the area, however they are the only public transport system serving the area. Informal taxi pick-up points (see illustration 92) were noted across the site, however no formal waiting space has been designated making waiting for a taxi unsafe at peak times. There is also an informal taxi stop (see illustration 93) where drivers park and wash their vehicles during off-peak times (see illustration 94). This area is located under big jacaranda trees providing a comfortable place for the drivers to rest.

Pedestrian Movement

Pedestrian movement is the main type of transport relied on at Fort West. However, due to a lack of a formal walkway system, pedestrians make use of informal paths and vehicular routes across the site to move around. No pedestrian crossing are provided for across busier vehicular routes. This results in an unsafe pedestrian environment.

OPPORTUNITIES AND CONSTRAINTS

Through the information gathered in the context and the analysis chapters the following opportunities and constraints were identified:

OPPORTUNITIES	CONSTRAINTS
Multi-purpose cluster concept can be employed in order to provide amenities, such as clinics, retail, religious infrastructure and recreation, for the Fort West community. These amenities can also serve the needs of the surrounding communities.	Some Fort West community members will need to be relocated temporarily in order to retrofit buildings. While people in buildings such as the catholic church will need to be permanently relocated to more suitable housing provided in phase 1.
Historic layer should be revealed (according to the ICOMOS Ename Charter) in order to pay tribute. Therefore, an opportunity for the development of a tourism industry that is managed and employs local Fort West Community members exists.	Historic fabric has been degraded due to lack of ownership.
Accommodate community enterprises that will instil a sense of ownership and help with unemployment in terms of job creation.	Small enterprises will need to be managed and funded in order to expand.
Ecological rehabilitation using locally grown indigenous plant species found on the site can reestablish historic 'sense of place'.	Removal of historic trees resulting in a loss of 'sense of place'
Natural and steep areas can be used for an interpretive hiking trail that will provide users with a historic as well as a wilderness experience. The topography also provides excellent views over the site as well as across the city's skyline. Lookout points can be installed to enhance these views.	Limited development in Northern portion of the site due to steep incline as well as a buffer protecting the environmentally sensitive ridge
Stormwater runoff from roofs and the ridge can be captured and stored for domestic use or irrigation. The design of these systems can be aesthetically pleasing as well as educational - connecting human and natural systems.	Large amounts of stormwater run off is experienced causing flooding in some areas. Historic water furrows will need to be upgraded. New 'bioswales' will need to be introduced in areas of flooding. Safety should be considered when designing water systems.

<p>The low lying area identified at the end of the stormwater channel can facilitate the development of a retention dam - recreation and functional.</p>	<p>Area must be fenced off for safety reasons.</p>
<p>Design of diverse open space system that create social interaction between the community and visitors. Can accommodate social events such as music festivals and markets that are open to the public.</p>	<p>Lack of interaction between community and visitors to the site resulting in the community feeling 'watched'.</p>
<p>Pedestrian pathways should be planned in such a way that they expose the different users to the widest variety of different experiences while still allowing residents to move around comfortably and unobstructed.</p>	
<p>Establish primary and secondary vehicular routes. Secondary routes can have limited vehicular access, forming part of the pedestrian movement system. Pedestrian movement and its links to public transport nodes can be improved. Design of formal taxi points.</p>	<p>Access, legibility and connection of the site has no visible hierarchy.</p>
<p>Upgrade existing buildings using sustainable systems such as solar power, biogas production and rainwater harvesting</p>	<p>Buildings are in a serious state of disrepair, not habitable for people currently, therefore community will need to be relocated temporarily (in phase 1) while buildings are made habitable.</p>
<p>Opportunity to engage the site users (both community and visitors) with their natural surroundings, in order to establish their link to nature. Regenerate natural systems back into place. Rehabilitate natural vegetation.</p>	<p>Environmental destruction in areas marked as ESA and CBA according to the Gauteng C-plan.</p>

CONCLUSION

This degraded cultural landscape could be regenerated to improve social and ecological health by providing a unique outdoor experience as well as amenities needed within the site and surrounding community. As presented in the table above, the site analysis has indicated the relative opportunities and constraints available in Fort West. For these reasons the outdoor environment at Fort West

has great potential to serve as a connection between fragmented human and natural systems.

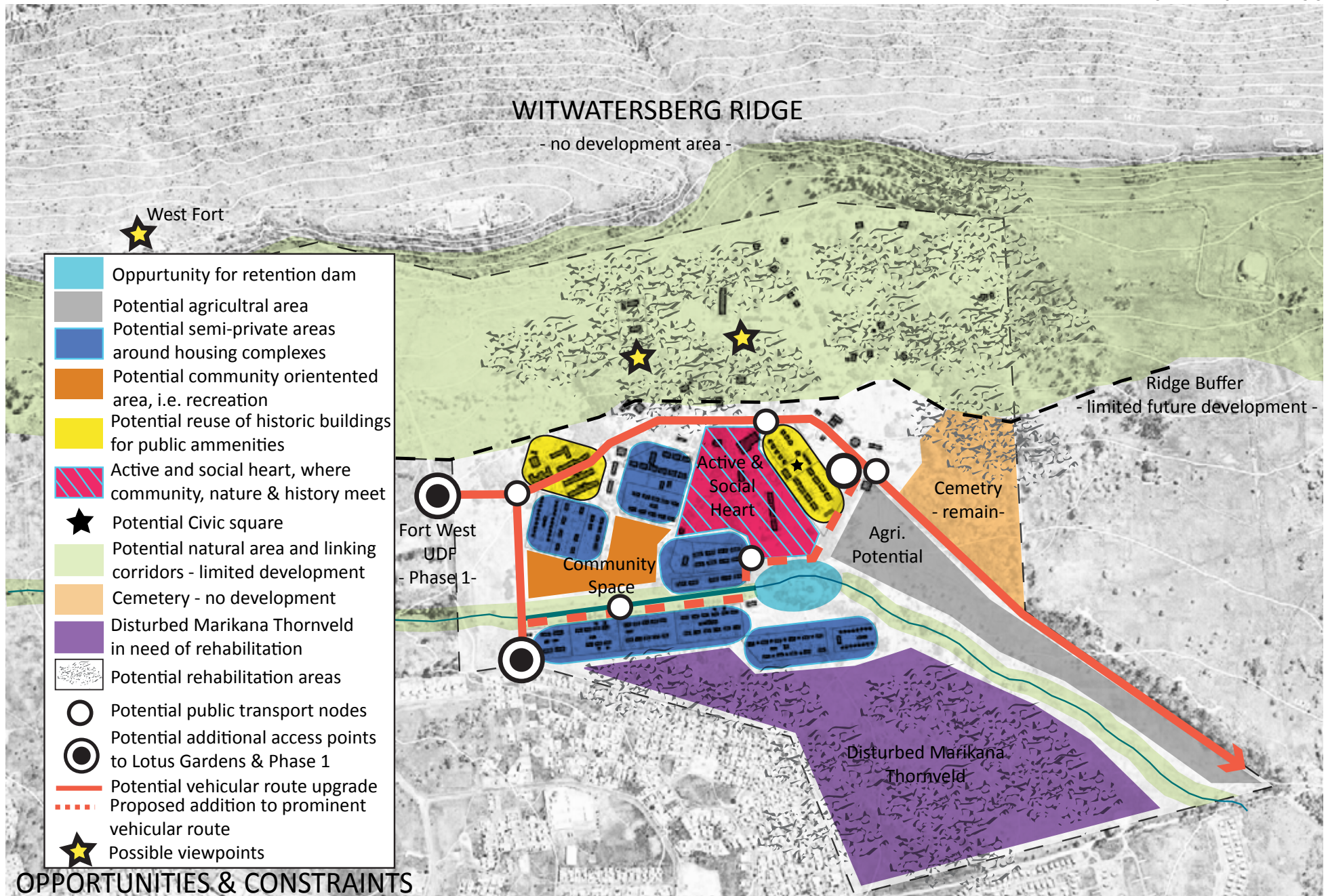


Illustration 97: A summary of opportunities & constraints that could influence the development of the open space framework (Author, 2012).



“In nature, there is a careful choreography of function and form bridging many scales. It is this dance that provides the wider context for our own designs.”
(Van der Ryn & Cowen, 1996:21)

Illustration 98: Rondavel housing type, Fort West (Author, 2012).

CHAPTER 05

PRECEDENT STUDY

CHAPTER 05 - PRECEDENT STUDY



Illustration 99: Culion as a former leprosy colony (Jongnono, 2012)



Illustration 100: Eco-hotel in Culion (Jongnono, 2012).



Illustration 101: Eco-tourism in Culion (Jongnono, 2012).

INTRODUCTION

The following precedent studies are successful and recently established examples of important themes established in this dissertation. As no exact design precedent for this dissertation was found the following precedent studies have been chosen according to specific themes or topics relevant to Fort West. The grouping themes are; cultural landscapes, landscape strategy, ecological design, and lastly stewardship precedents. Cultural landscapes such as Culion Island and the Confluence Project have been explored. Culion Island offers an example of how a former leprosarium was converted into a functioning town, whereas the Confluence Project illustrates the use of design to interpret a cultural landscape. The landscape strategies theme deals with two project, Yongsan Park and Bulemu Village. Yongsan Park looks at ways to incorporate the history of a site on a framework design level, whereas Bulemu Village deals with the practicalities of making a disadvantaged community self-sustainable. The Kai-kai Wall of Expression and Water Squares project illustrate ways to involve and educate the community throughout the design process in order to ensure sustained community stewardship.

CULTURAL LANDSCAPE PRECEDENT

CULION ISLAND

LOCATION: CULION ISLAND, PHILIPPINES

DESCRIPTION

This Island was once the world’s largest colony for people with leprosy. At its peak, Culion Island was home to 16,000 patients. Culion was singled out as a suitable location for the leper colony because of its remoteness and self-sustaining isolation.

Today it has undergone a remarkable transformation. Culion is a vibrant, happy island with a gentle pace of life and a developing eco-tourism industry. There are two aspects to the tourism in Culion; history and nature.

Today, the Leprosarium wing of the hospital on Culion

Island is open to the public as a museum with a magnificent collection of memorabilia from the first dark days on ‘the island of the living dead’ to the happier times when it became clear that a cure was possible. There is also a beautiful old Spanish fort and church to visit.

Due to the Islands isolation, Culion has retained its pristine natural beauty. Through eco-tourism development has taken place on the island, bringing with it prospects for the people. There’s a new eco-hotel, and tourists can enjoy a mountainous landscape with diverse species – from anteaters to sea turtles and parrots.

Tourists are enthralled with the island’s history and its traditional ways. “Our past is essential to our future, we want to share our extraordinary history with visitors who come to enjoy the natural beauty of our island.” Hilarion Guia, former patient and Culion’s first mayor

OPPORTUNITIES AND GENERAL IDEAS

Through the development of an eco-tourism industry the people of Culion have used past traditions to regenerate this cultural landscape. Therefore, this precedent is a good example of how a former leprosy colony can be regenerated for future use through;

- Tourism initiatives to boost the economic capital
- Utilising natural capital available as an asset to attract people, ultimately creating jobs and a self-sustaining future for the people
- Development of a Eco-hotel



CULTURAL LANDSCAPE PRECEDENT

THE CONFLUENCE PROJECT

LOCATION: MULTIPLE SITES IN THE WESTERN UNITED STATES

ARTIST: MAYA LIN

DESCRIPTION

Environmental and cultural landscape restoration is at the heart of the Confluence Project, comprised of seven sites along the Columbia River Basin in Washington and Oregon, stretching 450 miles from the Idaho border to the Pacific Ocean. The project's goal is to use place and art to explore possibilities for a better future. Maya Lin has used the historic journey of Lewis and Clark through this cultural landscape as a 'lens' giving insight into the physical and cultural histories of these sites.

Throughout these projects Lin is carefully redesigning these spaces so that one's first connection is to the landscape itself providing visitors an immediate and powerful connection back to the land. While also embedding historical and cultural histories into each place giving one a deeper understanding of these sites.

Lin collaborates with landscape architects to restore natural environments and uses a palette of natural elements indigenous to each site to connect the art to the land. Each artwork will draw text from Lewis and Clark's journals or traditions grounded in Native American cultures to address cultural, historical or environmental implications across the breadth of time.

Cape Disappointment

Cape Disappointment is where Lewis and Clark reached the Pacific Ocean. It is where the first of the Confluence Project sites was completed. The site encompasses a restored oceanfront dunes area, an outdoor amphitheatre, and a relocated and redesigned rest and parking area.

Boardwalk planks leading to Waikiki Beach are inscribed

with a summary from Lewis and Clark's Journals of their westward journey. Symbolically paralleling this path is a quieter, more secluded path of crushed oyster shells that follows the basalt formations along the shoreline as it was 200 years ago, before man-made jetties reshaped the landscape. Along this path is set a Chinook praise song spoken at Cape Disappointment by a member of the tribe exactly 200 years ago to the day after Lewis and Clark arrived at this site. The path leads to a circle comprised of seven found driftwood columns - raised to form a glade where the coastal forest meets the dune grass. The number was determined by the seven directions recognised by Native American tradition north, south, east, west, up, down and in.

A pathway is being built that will connect the ocean side of the site to the bay side, taking visitors through restored wetlands and describes the shifts that occur as ecosystems change from salt to freshwater.

At the bay a significant portion of the parking area was removed and a sustainable landscape installed to naturally filter the stormwater runoff, and a viewing platform was installed drawing visitors directly to the water's edge. A basalt table replaces a rusty fish cutting sink.

OPPORTUNITIES AND GENERAL IDEAS

The confluence project shows how a cultural landscape can be interpreted through design and in this case specifically art. Interpretation methods include:

- Pathways inscribed with the narrative
- Art installations to announce places of significance
- Public spaces that allow for both recreation, narration and education
- Utilising materials available on site



Illustration 104: Confluence Project (Lin, 2008).

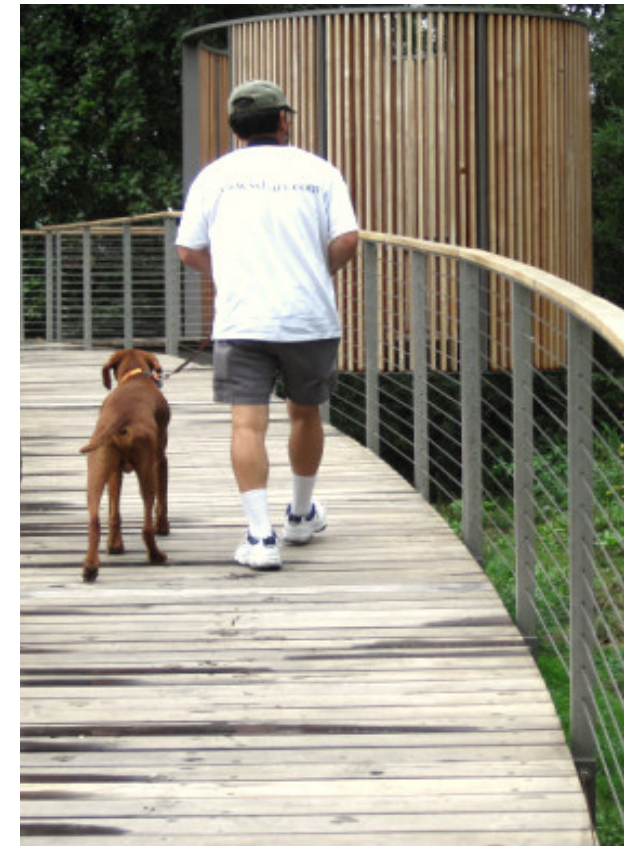


Illustration 103: Walkway to bird hide Cape Disappointment (Lin, 2008).



Illustration 102: Lewis and Clark's journey written in the pavement (Lin, 2008).

LANDSCAPE STRATEGY PRECEDENT

YONGSAN PARK

LOCATION: SEOUL, REPUBLIC OF CHINA

LANDSCAPE ARCHITECT: WEST 8

CLIENT: MINISTRY OF LAND, TRANSPORT AND MARITIME AFFAIRS

DESCRIPTION

The project site is a large area in the centre of Seoul with a total area of circa 243 ha that has been in use as a military base for an extensive period both during the Japanese occupation and under post-war American protection. The vision was to create a park in which nature, culture, history and the future are in harmony. A park which restores, sublimates and expands upon the history and local characteristics of the area. It aims to regain respect for nature and reclaim the lost and damaged ecological system. It will eventually become a park of new urban culture for the preservation of green spaces and a sustainable future.

The new Master Plan for Yongsan National Park proposed by West 8 was developed through an iterative process that consistently returned to the fundamental concept of healing. The act of healing is a process that transforms the existing site through an awareness of its history into a world-class park that inspires illusions of nature, ecological restoration and a wide ranging urban park culture. The act of healing is developed on three fundamental levels in the transformation of the site:

Healing Nature - "Sam Cheon Li Geum Su Gang San"

Recover the forgotten landscape in the military base but also recover the illusion of Korean landscape mentally, visually and ecologically. To build an illusion of naturalistic Korean landscape.

Healing History - Confrontation and exposure

The location of Yongsan Park symbolizes an extremely turbulent history of war and occupation. The approach for the park design on the site is to uncover the traces and layers of the history by reusing many of the existing

buildings and roadways.

Healing Culture - "Park-metropolis interface"

For over 100 years the Yongsan site has been cut off from the city by a secured wall. The departure of the US army gives the city a unique opportunity to reclaim the excavation and to colonise it. The new Yongsan Park will transform the adjacent urban fabric and work as a magnetic field for urban growth.

OPPORTUNITIES AND GENERAL IDEAS

This project is a good example of how, on a framework level, the history of Fort West can be incorporated into its future planning in order to heal both the landscape and the people. This can be done by:

- Recovering the forgotten landscape ultimately reclaiming lost and damaged ecological systems, ecological health.
- Reusing the uncovered traces and layers of history in order to expand upon the history and local character of the area, regenerating meaning and identity.
- Create opportunities for the community to be connected to its surroundings, socio-cultural well being.

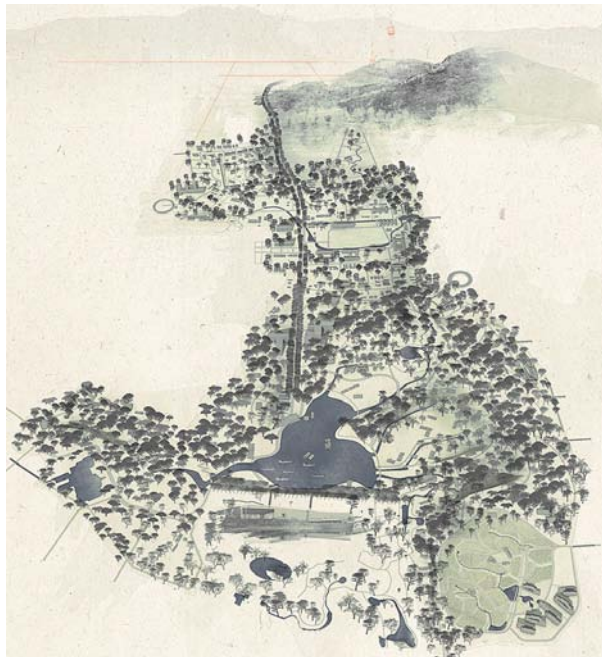


Illustration 105: Masterplan Yongsan Park (West 8, 2012).

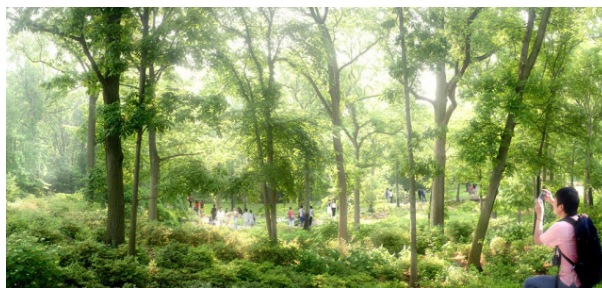


Illustration 106: Healing nature recovering the forgotten landscape (West 8, 2012).



Illustration 107: Park-metropolis interface (West 8, 2012).

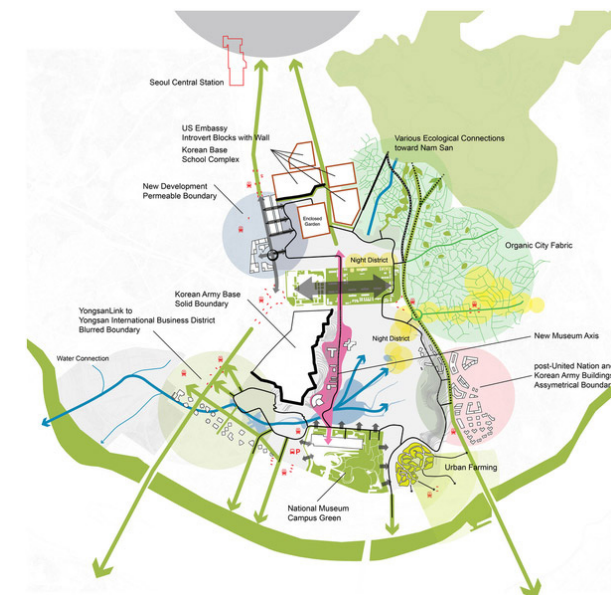


Illustration 108: Reusing traces & layers of history (West 8, 2012).

LANDSCAPE STRATEGY PRECEDENT

BULEMBU VILLAGE

LOCATION: SWAZILAND

CLIENT: BULEMBU MINISTRIES SWAZILAND

DESCRIPTION

In 2001, the mining company that had built and operated Bulembu for more than 60 years, closed its doors and walked away. With no jobs the town was soon abandoned. Today, Bulembu has a clear vision to become a vibrant, self-sustaining community. This vision for sustainability includes fostering the development of a new generation of emerging leaders through orphan care, education, health services and commerce. Bulembu Ministries Swaziland functions on the premise that the creation of sustainable enterprises can be the solution to Swaziland's chronic poverty. The goal is for Bulembu to become an economically self-sustaining community. Examples of current community enterprises include a Creativity Centre, Honey, Water, Tourism, Timber, Bakery, and a Dairy.

Creativity Centre

Empowers women in the community using a skills based artistic development to produce creative functional items. These items are then sold to tourist who come to the area.

Honey

Over the years 850 hives have been set up in the natural areas and plantations surrounding the village. 15 Tons of honey is harvested annually. Local production and bottling then takes place in Bulembu by the community. The honey is then sold to various stores in Swaziland and South Africa.

Water

Spring water found high in the mountains is bottled in a processing plant in Bulembu. The plant employs local community members. The water is then sold locally.

Tourism

Tourism also plays a role in Bulembu. Accommodation and conference centre have been set up and are run by

the community. These facilities offer activities, such as hiking, and tours within the surrounding area, such as the enterprise tours which focus on exposing people to the community enterprises.

Bakery

Community members are employed and taught how to bake. They bake bread mainly for the orphan care facility as well as the rest of the Bulembu community. Excess bread is then sold.

Dairy

The community turned the former mining gold course into a dairy. Community members are employed to milk twice daily, seven days a week. The milk produced provides first for the needs of the community and the excess is sold to Parmalat, which is one of the leading milk and dairy product suppliers in Swaziland.

Timber

OPPORTUNITIES AND GENERAL IDEAS

The approach Bulembu has taken in setting up a self-sustaining village is a good example of how community enterprises can play an important role. Economic capital can be established by:

- Involving the local community
- Starting small and expanding slowly
- Setting up enterprises that satisfy the local market first



Illustration 115: Bulembu community in Swaziland (Bulembu, 2012).



Illustration 109: Creativity centre (Bulembu, 2012).



Illustration 110: Bakery (Bulembu, 2012).



Illustration 111: Timber and saw mill (Bulembu, 2012).



Illustration 112: Dairy (Bulembu, 2012).

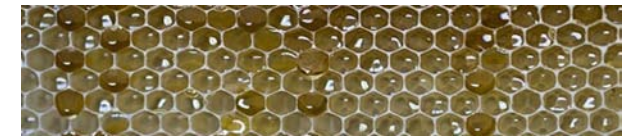


Illustration 113: Dairy (Bulembu, 2012).



Illustration 114: Water bottling plant (Bulembu, 2012).



Illustration 116: High Line (FHL, 2012).
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ECOLOGICAL DESIGN PRECEDENT

HIGH LINE

LOCATION: NEW YORK, UNITED STATES OF AMERICA

LANDSCAPE ARCHITECT: JAMES CORNER, FIELD

OPERATIONS

CLIENT: CITY OF NEW YORK AND FRIENDS OF THE HIGH LINE

LINE

DESCRIPTION

The High Line was an elevated railway track built in the 1930s, as part of the massive public-private infrastructure project called the West Side Improvement. No trains have run on the High Line since 1980. The High Line is now a complete reuse and transformation public park built on this historic freight rail line elevated above the streets on Manhattan's West Side. It is owned by the City of New York, and maintained and operated by Friends of the High Line. Friends of the High Line, a community-based non-profit group, formed in 1999 when the historic structure was under threat of demolition.

The High Line's planting design is inspired by the self-seeded landscape that grew on the out-of-use elevated rail tracks during the 25 years after trains stopped running. Therefore the park maintains the spirit of the existing vegetation, special character and memory of the site. The species of perennials, grasses, shrubs and trees were chosen for their hardiness, sustainability, and textural and colour variation, with a focus on native species. Many of the species that originally grew on the High Line's rail bed are incorporated into the park's landscape. The design is furthermore successful in terms of its ecological diversity and long-term transformation. The park celebrates the past and takes natural processes, patterns and energies into account. In addition, the design produces a variation and a maximum of functions within a constrained space. High Line is successful in working with the existing potential of a site.

OPPORTUNITIES AND GENERAL IDEAS

This project is a good example of how ecological principles have been applied to a design. The design reuses and

reactivates the existing infrastructure repurposing the line as public open space, while still staying true to the history of the site. It also inserts additional pathways for people plants and insects, which are inspired by the self-seeded landscape encountered before construction.



Illustration 118: High Line wildflower field (FHL, 2012).



Illustration 117: High Line street viewing spur (FHL, 2012).

ECOLOGICAL DESIGN PRECEDENT

GUBEI PEDESTRIAN PROMENADE

LOCATION: SHANGHAI, CHINA

LANDSCAPE ARCHITECT: SWA GROUP

CLIENT: SHANGHAI GUBEI (GROUP) COMPANY LTD.

DESCRIPTION

The Gubei Pedestrian Promenade is a rare example where a city chose to rezone a vehicular road into a 700m-long pedestrian-only sanctuary. The vision is to provide a contiguous pedestrian open space that is safe, multi-functional, sustainable, fun and exciting. The layering and integration of five distinct considerations: cultural infrastructure, environmental sustainability, healthy living, interpretive nature, and inventive design, brought to life, in built form, a dynamic urban environment.

Cultural Infrastructure

Acting as a piece of cultural infrastructure, the promenade recalls moments of the city's history by reinterpreting pieces of the past into design elements incorporated into the open space.

Environmental Sustainability

The potential of this large tract of land to strengthen the urban forest and thus reduce the urban heat-island effect was utilised mainly through the planting of vegetation. The planting also makes use of colour, texture and scale to strengthen the promenades linear orientation.

Healthy Living

Creating a platform to promote health and well-being was a prime consideration during the programming phase of the project. Therefore flexible open spaces on the promenade provide public space for outdoor exercise, social interaction and passive, stress-relieving activities such as Tai-Chi, reading, dining and people watching.

Interpretive Nature

The promenade reintroduces "nature" into the park by incorporating bioswales and lush vegetation to capture and treat stormwater while nurturing a regenerative ecology that could support urban wildlife habitat for birds, insects and amphibians. As an ecological initiative, the integration

of natural processes within the design of the promenade serves as an educational precedent for the community.

Interpretive Design

Level changes serve as transitional elements between primary pedestrian circulation and gathering spaces. In order to activate these gathering spaces architectural follies are strategically located with related outdoor programs such as retail kiosks.

OPPORTUNITIES AND GENERAL IDEAS

Like the Gubei Pedestrian Promenade, Fort West has the potential to become a catalyst for the greater whole, where the success of the project can inspire other developers and public agencies to see the value of such an urban amenity, which will ultimately benefit the public. The value of such an amenity lies in:

- Flexible community space
- Utilise planting
- Incorporates pieces of the past into design elements
- Incorporating an ecological initiative in the form of bioswales to not only deal with stormwater but also serve as an educational precedent for the community.



Illustration 119: Aerial view of promenade (Fox, 2011).

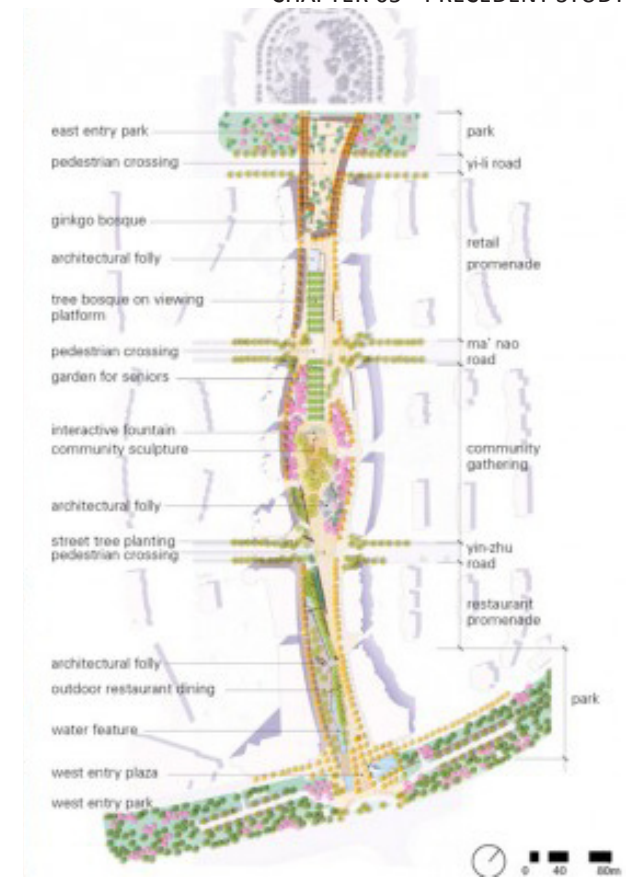


Illustration 120: Plan Gubei Pedestrian Promenade (Fox, 2011).

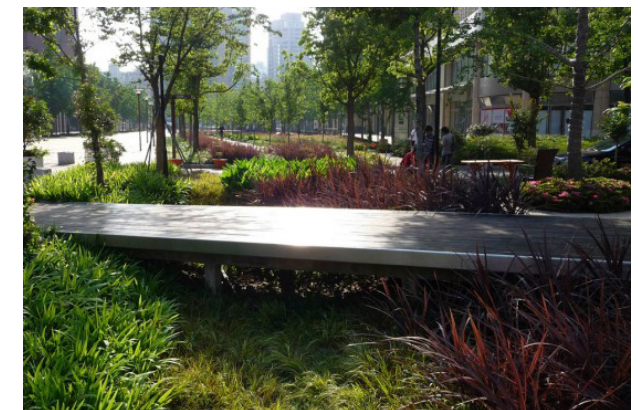


Illustration 121: Interpretive nature bioswales (Fox, 2011).

STEWARDSHIP PRECEDENT

KAI KAI WALL OF EXPRESSION

LOCATION: PORT NOLLOTH, SOUTH AFRICA

ARTISTS: PORT NOLLOTH COMMUNITY

CLIENT: KAI KAI RESIDENTIAL DEVELOPMENT AND THE RICHTERSVELD MUNICIPALITY

DESCRIPTION

In the furthest north-western corner of SA, a wall is being built that is not an enclosure or a barrier. The free-form structure is an open-ended celebration of the skills and artistry of the people of Port Nolloth.

KaiKai is a residential development like no other. In the Nama language “kaikai” means “to cultivate, to elevate with praise or to nurture with pride” and the project aims for just such a perfect symbiosis between privileged property owners and the poverty plagued local community. Lead by this principle, the magnificent centrepiece – the KaiKai Wall of Expression – is a piece of art. Instead of a forbidding and divisive structure that separates the rich from the poor and the good from bad, as demanded by a market with a neurotic obsession with safety and security, it is rather a symbol of hope and reconciliation, of sharing and of not doing unto others.

The community of Port Nolloth has become an integral part of the creation of this brick, mortar and mosaic installation. At the outset of the project, an artist from Johannesburg taught 16 members of the local community the art of mosaic who in turn have transferred their knowledge to their peers, with 65 local mosaic workers now employed permanently on the site.

The art is conceived, debated and created in the on-site KaiKai studio and then converted into exquisite and colourful mosaic pieces. These will eventually cover an almost three kilometre-long structure meandering over the dunes. KaiKai has created more than 80 sustainable jobs, all built on the living format of a monumental dream that is already recognised as a truly unique and remarkable South

African community project.

OPPORTUNITIES AND GENERAL IDEAS

This project illustrates how beneficial it is to include the community in the implementation of the design. The design of Fort West will seek to implement a community mosaic project that will depict not only the history of Fort West and leprosy in South Africa but also the future of the Fort West community today.



Illustration 122: Kai Kai wall of Expression (Stemmet, 2010).
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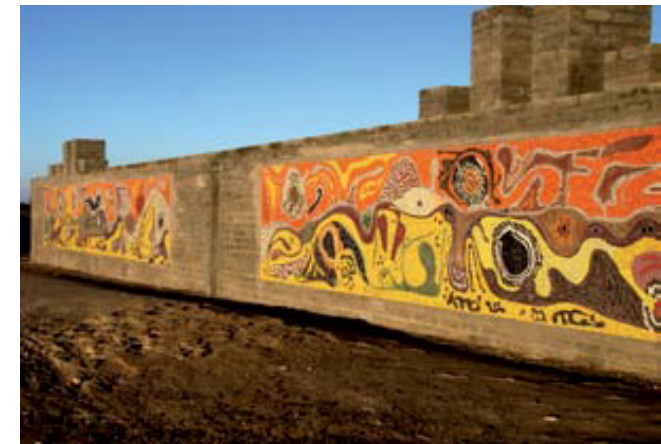


Illustration 123: Example of community mosaic work (Stemmet, 2010).



Illustration 124: Mosaic of the names of the artists (Stemmet, 2010).

STEWARDSHIP PRECEDENT

WATER SQUARES

LOCATION: ROTTERDAM

CLIENT: CITY OF ROTTERDAM

DESCRIPTION

The water square concept combines water storage with the improvement of the quality of urban public space. The water square can be understood as a twofold strategy. It makes water storage facilities visible and enjoyable. It also generates opportunities to create environmental quality and identity to central spaces in neighbourhoods.

They are designed to hold the heavy runoff from storms. During sunny days, the water square will be dry and in use as a recreational space. These plaza's invites people to sit, lunch, read, watch and play. The space is captured by a green frame of grass and trees.

But as it rains, the water square begins to fill with water, and the deeper the rain, the more water will cover the square, creating new patterns. Rainwater that is collected from the neighbourhood will flow visibly and audibly into the water square in order to make a natural process visible ultimately engaging the users of the space. Short cloudbursts will only fill parts of the square. When the rain continues, more and



Illustration 125: Water Squares as public spaces (WebEcoist, 2012).

more parts of the water square will gradually be filled with water. The rainwater is filtered before running into the square.

OPPORTUNITIES AND GENERAL IDEAS

This project is a good example of how creative urban water management solutions can go beyond protecting lives and property, by creating attractive places for people to engage with natural process. The value of this project lies in its ability to:

- Connect fragmented human and natural systems by exposing the natural process of water
- Educate the public about natural processes in order to ensure community stewardship

CONCLUSION

Evaluation of the precedents has shown that:

- The natural environment can serve as the backdrop for social interactions and provides the opportunity to expose people to nature.
- Social interventions can be used to expose people to the natural environment and thus gain an appreciation for nature.
- The history of a place can be incorporated into its future planning in order to heal both the landscape and the people.
- The visual impact of a place can be maintained by allowing the historical to guide the design process, in terms of:
 - The types of materials that are chosen.
 - The form that the new intervention adheres to.
 - The functions of the buildings and surrounding landscape.
 - The new activities that are introduced.
- It is beneficial to incorporate the community into the implementation of the design in order for it to be sustainable (maintained), developing a sense of stewardship from the community.



Illustration 126: Water Square when its dry (WebEcoist, 2012).



Illustration 127: Water Square after a light rain event (WebEcoist, 2012).



Illustration 128: Water Square fills up after a heavy rain event (WebEcoist, 2012).



Illustration 129: Aloe marlothii, Fort West (Author, 2012).

“In nature, there is a careful choreography of function and form bridging many scales. It is this dance that provides the wider context for our own designs.”
(Van der Ryn & Cowen, 1996:21)

CHAPTER 06

FRAMEWORK

INTRODUCTION

This chapter seeks to provide a framework that will guide the design interventions of this dissertation. As no other student projects were located in close proximity to the study area the framework was developed solely by the author.

The framework will serve as a regeneration strategy for the development of Fort West. In order to create improved opportunities for ecological and social health as well as connecting fragmented human and natural systems the application of the CLMM and associated design guidelines (see Chapter 3 *'Theoretical Investigation'*) will be applied.

The regeneration strategy will aim to:

- Regenerate a multi-purpose self-sustaining village.
- Communicate the values of Fort West.
- Relate site interpretation to wider social, cultural, and natural contexts and settings.
- Connect fragmented human and natural systems
- Establish a social and active centre which will become the heart of Fort West where site users can meet.
- Improve access, legibility and connection of the site.
- Serve a wide range of educational and cultural objectives
- Better the lives of the Fort West community.
- Provide all users with a variety of experiences and activities.
- Generate a sustainable landscape in order to aid social and ecological health.

Different new land uses that contribute to creating a social and ecologically healthy environment with a variety of experiences will be proposed. They will be explained under nine different sub-headings, these include:

- Land use and activity,
- Relocation,
- Open space system
- Movement network,
- Social and community facilities, to facilitate site interpretation,
- Edges to distinguish public areas from semi-private

areas,

- Stormwater strategy,
- Community enterprise, and
- Sustainable systems

This regeneration strategy forms phase 2 (see illustration 123) of the already existing UDF for Fort West as proposed by the TPH and Arengo 6 for the City of Thswane. As such it will tie into and take into account services and amenities already provided for in phase 1.



Illustration 130: Aerial photograph taken from council proposal showing the phases (van Schalkwyk, 2012:12).

1. LAND USE AND ACTIVITY

The CLMM suggests that compact multi-purpose communities should be encouraged. Therefore, specific reference is made to land uses as this determines a sustainable community in a harmonious environment (see illustration 125).

The land uses envisaged for the Development Area will include:

- Single residential units
- High and medium density residential units, with a density of between 80 and 120 units per hectare are provided for in phase 1.
- Community Facilities that will include amenities such as, a police station, post office, sport facilities, community centre and clinic.

- Public Open Space. This will include the ridge buffer, the non-perennial stream and stormwater channel, and the sport stadium. Provision will also be made for community parks forming patches, and ecological corridors in order to create a connected open space system.
- Institutional facilities. One school will be made provision for in addition to the two proposed in phase 1. Provision will also be made for the extension of the existing community crèche and 3 Places of Public Worship. Most of the residence will be within a five minute walking distance from a crèche

- and a church.
- Retail facilities, which will also accommodate visitor orientation, parking as well as public transport. Most of the residence will be within a 10 minute walking distance from one of the retail facility.
- Productive land that will include tree nursery, community food gardens, orchard, ect.
- Cemeteries, existing cemetery will be retained.



Illustration 131: Land use map illustrating the compact multi-purpose community concept employed linking phase 1 and phase 2 (Author, 2012).

CHAPTER 06 - FRAMEWORK

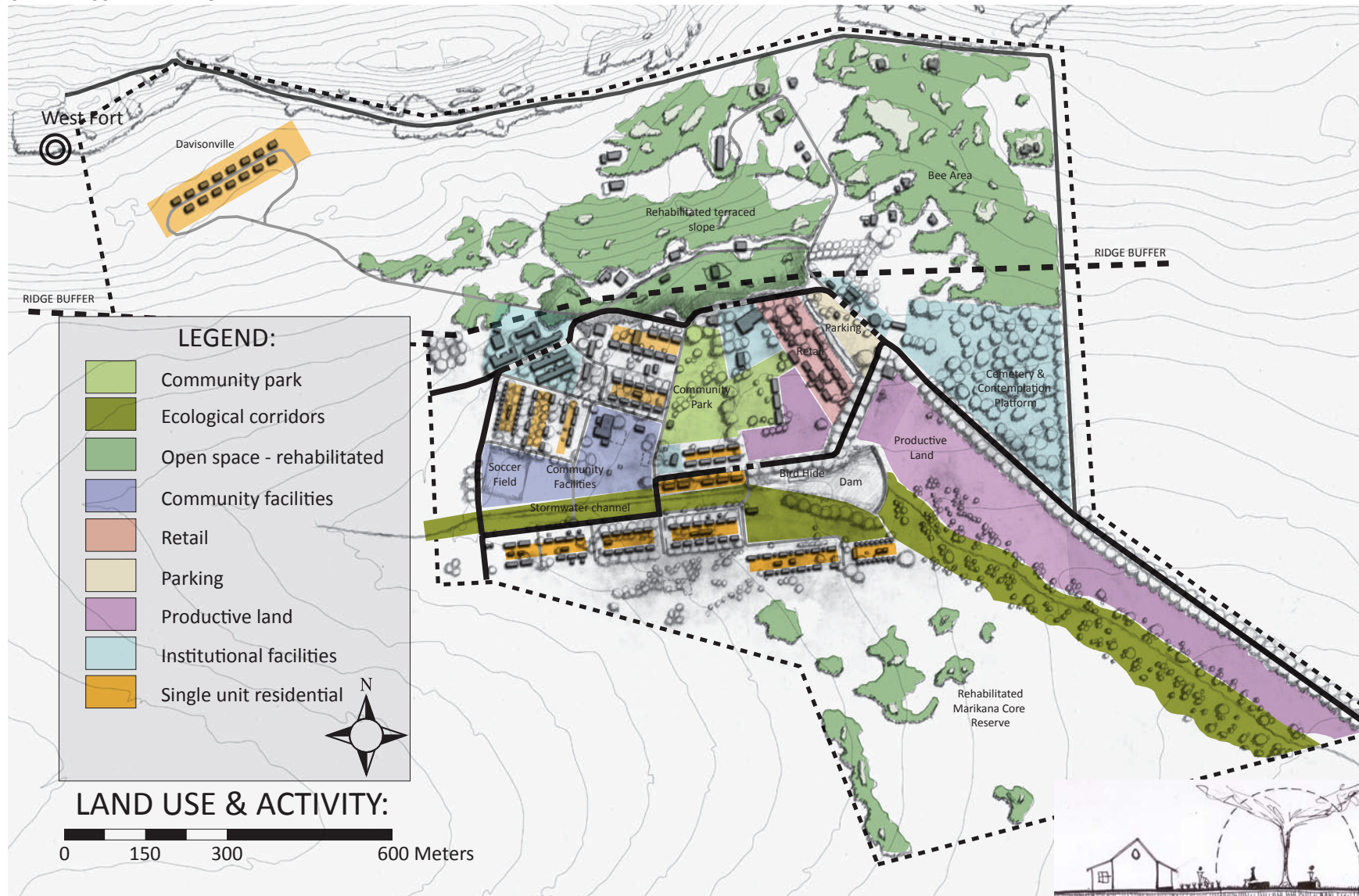


Illustration 132: Map indicating the land uses specifically of phase 2 of the regeneration strategy (Author, 2012).

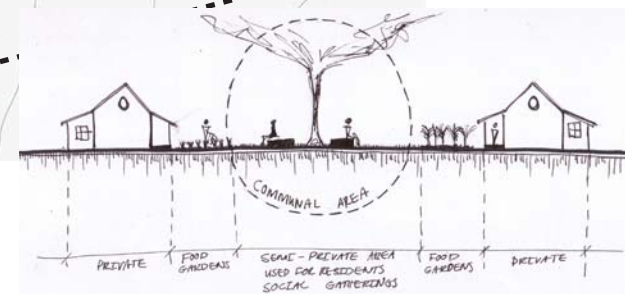


Illustration 133: Typical section through single residential unit (Author, 2012).

2. RELOCATION

In order to accommodate the development of a multi-purpose community some Fort West community members will need to be relocated. People who are currently residing in the buildings that will house the school, churches, etc.

will need to be permanently relocated to housing provided for in phase 1. People in the proposed retail area will need to be temporarily relocated in order to retrofit these buildings. All other single residential units will also need to be temporarily relocated to phase 1 in order to upgrade the facilities in these buildings.



Illustration 134: Map indicating the relocation strategy (Author, 2012).

CHAPTER 06 - FRAMEWORK

3. OPEN SPACE SYSTEM

Ecological open space such as rivers and ridges form a key structuring element of the urban system. The CLMM guideline suggests that the provision of ecological corridors in urban areas to connect isolated landscape patches creates opportunities for regenerating a larger, connected network of healthy public open space. Therefore open space system of Fort West should consist of three types of open space, namely:

- Open spaces (Witwatersberg ridge and non-perennial stream),
- ecological corridors, and
- community parks

This open space system will not only facilitate movement of wildlife and plants but also people and water.

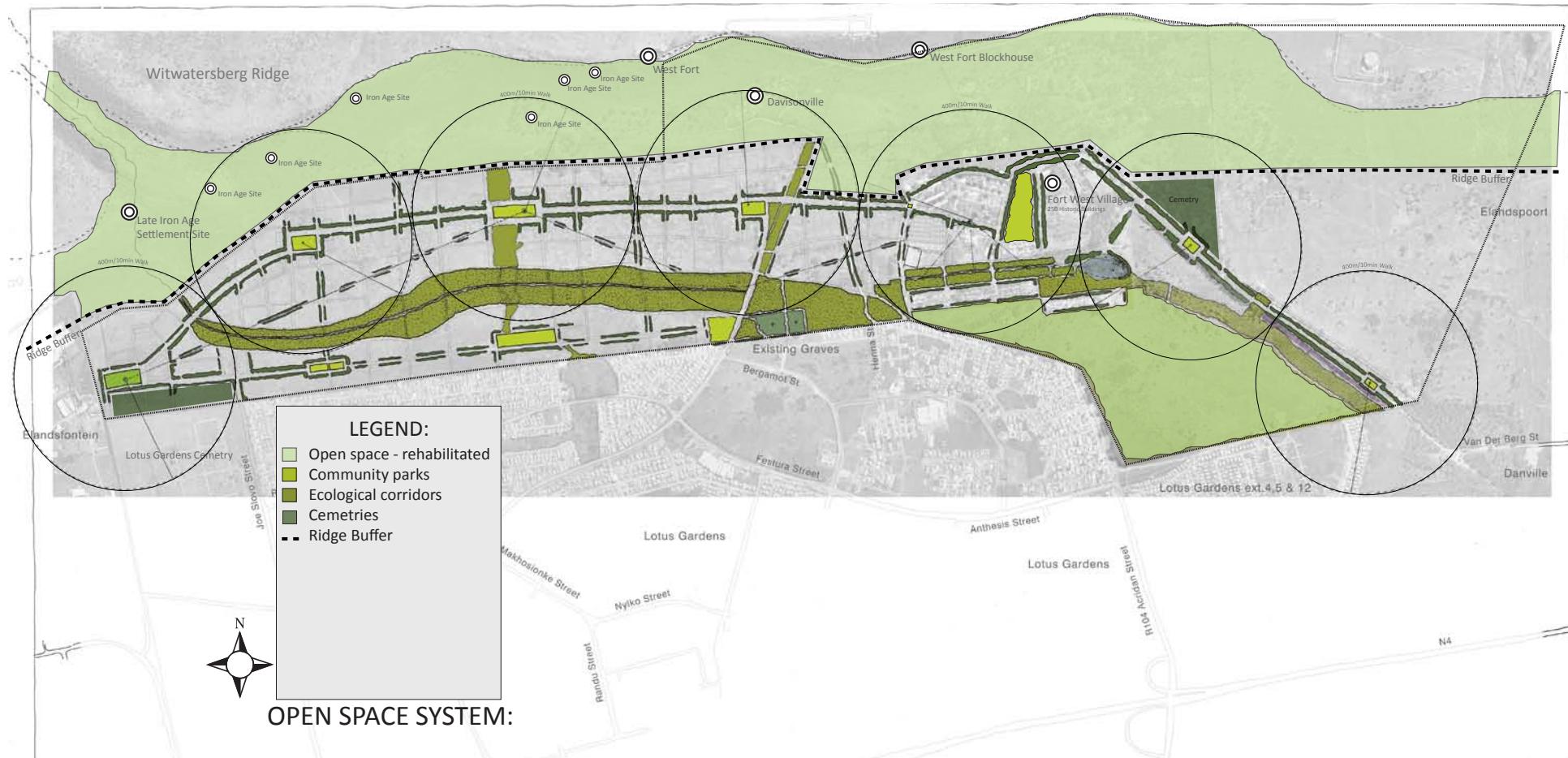


Illustration 135: Map indicating the application of the CLMM 'connect' guideline in order to create an open space system connecting phase 1 and 2 (Author, 2012).

4. MOVEMENT NETWORK

The existing vehicular movement system at Fort West is illegible and haphazard with no hierarchy (see chapter 4 'Analysis'). There are no safe pedestrian crossings on vehicular routes or safe places to wait for public transport.

Circulation often forms the structure of an area both spatially and operationally. The CLMM proposes an improved hierarchy network consisting of primary routes, and secondary routes (see illustration 131). The secondary routes will facilitate mainly pedestrian movement. To improve legibility, accessibility and connection to the site, the following should be applied:

Primary routes

The following guidelines are applicable to the proposed primary route:

- The primary vehicular route should be more visually prominent by having avenue of trees on both sides of the road.
- A pedestrian sidewalk should be accommodated on at least one side of the primary route.
- Amenities such as lighting and benches should be provided along the primary route for safety and legibility.

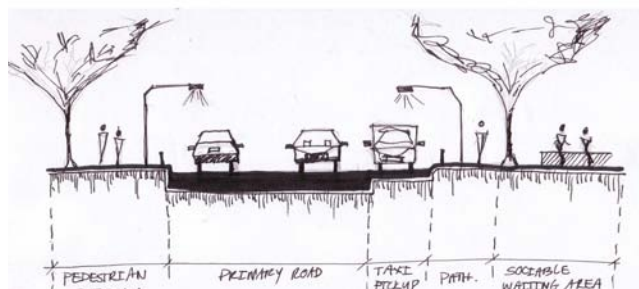


Illustration 136: Typical cross section through primary route (Author, 2012).

- Signage should be provided along the primary route for navigation.
- Pedestrian-priority crossings should be raised to slow traffic down.
- Should be connected with public transport nodes.
- Public transport nodes should have comfortable, sociable waiting areas adjacent to them.

Secondary routes

The secondary vehicular routes are connected from the primary route to the semi-private and private areas. They should:

- Be less prominent, mainly facilitate pedestrian and bicycle movement.
- Limited access to only resident's vehicles.
- Distinguishable from the primary route by the surface material used. For example brick pavers can be used in order to slow traffic down and create a friendlier pedestrian environment.

Pedestrian Pathways

Pedestrian pathways should be accommodated for where secondary routes don't extend.

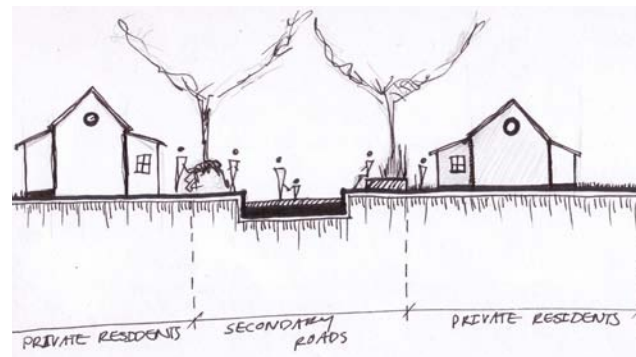


Illustration 137: Typical section through secondary roads and the associated edge conditions between semi-private and private areas (Author, 2012).

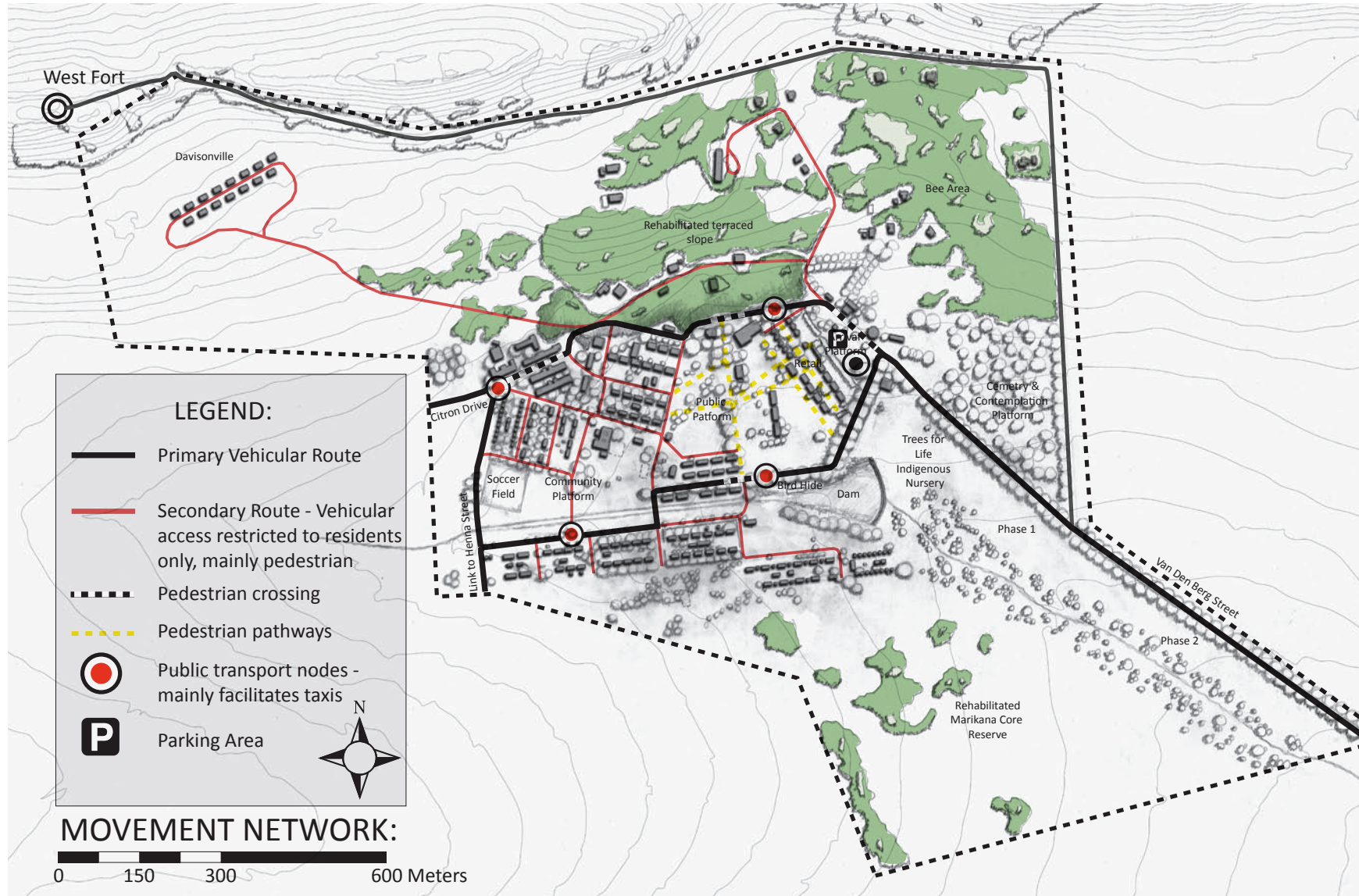


Illustration 138: Map indicating the proposed movement network (Author, 2012).

5. INTERPRETIVE AND COMMUNITY FACILITIES

In order to fulfil the ICOMOS Ename Charter objectives (see chapter 2 'Context') of communicating the value of the site, relate site to wider social, cultural, and natural contexts and settings, and serving a wide range of education and cultural objectives, interpretive infrastructure and community facilities should be included in the regenerative strategy of Fort West (see illustration 133). These should include facilities such as clinics, information centres, museums, educational facilities, view points, historic buildings, places

to eat and socialise, signage, and experiential hiking rails/routes, according to the CLMM.

The interpretive infrastructure and community facilities should benefit all the users of the site, through education training and the creation of economic opportunity.

In order to relate to the wider social, cultural, and natural contexts and settings the experiential route can also extend to points of interest in Phase 1 (see illustration 132).



Illustration 139: Map indicating the interpretive infrastructure relating to the wider context and setting (Author, 2012).



Illustration 140: Map indicating the interpretive infrastructure and community facilities (Author, 2012).

6. EDGES

The CLMM specifies that edges should be utilised in order to ensure privacy for residents (see illustration 138). These edges should be preferably be soft and in keeping with what historically took place, i.e. hedges and low walls. The intention of these edges is not to make the residents feel segregated, as was the intention in the past, but rather to help distinguish public from semi-private areas for both security and privacy reasons. They include physical edges and visual edges.

Physical edges

These should be soft where ever possible by making use of ha-ha's. This boundary is only used along van Den Berg Street to protect the productive land.

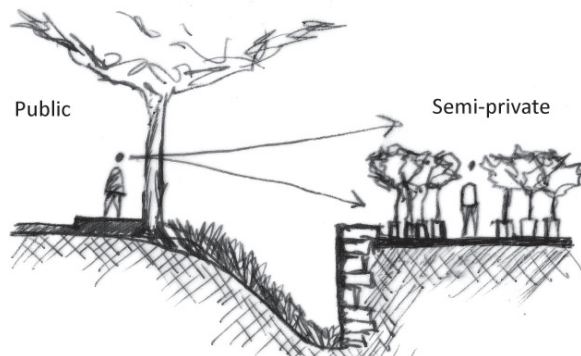


Illustration 141: Physical edge, although a person cannot physically get to the Trees for Life Nursery, they still have a view of the community project (Author, 2012 from van der Walt, 2009).

Visual Edges

To achieve a sense of privacy in the semi-private areas surrounding the residential housing complexes, visual boundaries will be implemented. These boundaries will use a variety of techniques for screening, such as berms, vegetation screens or hedges and low seating walls. Most of these types of visual boundaries have historically been used.

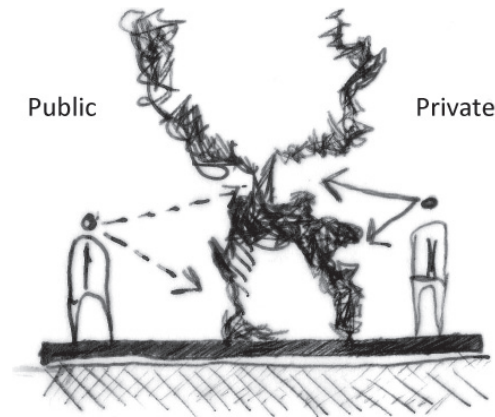


Illustration 142: Hedges can act as a visual screen where privacy is required (Author, 2012 from van der Walt, 2009).

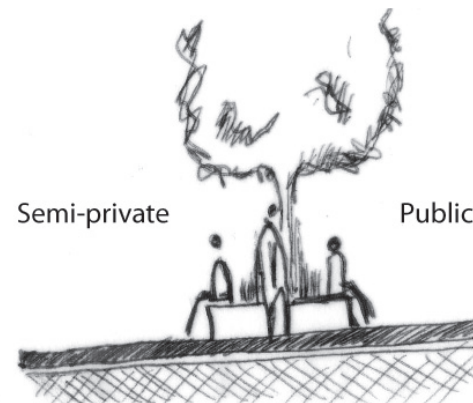


Illustration 143: Low seating walls define a edge but also create an opportunity for social behaviour (Author, 2012 from van der Walt, 2009).



Illustration 144: Berms are a social way of defining a edge but also creating a visual screen (Author, 2012 from van der Walt, 2009).

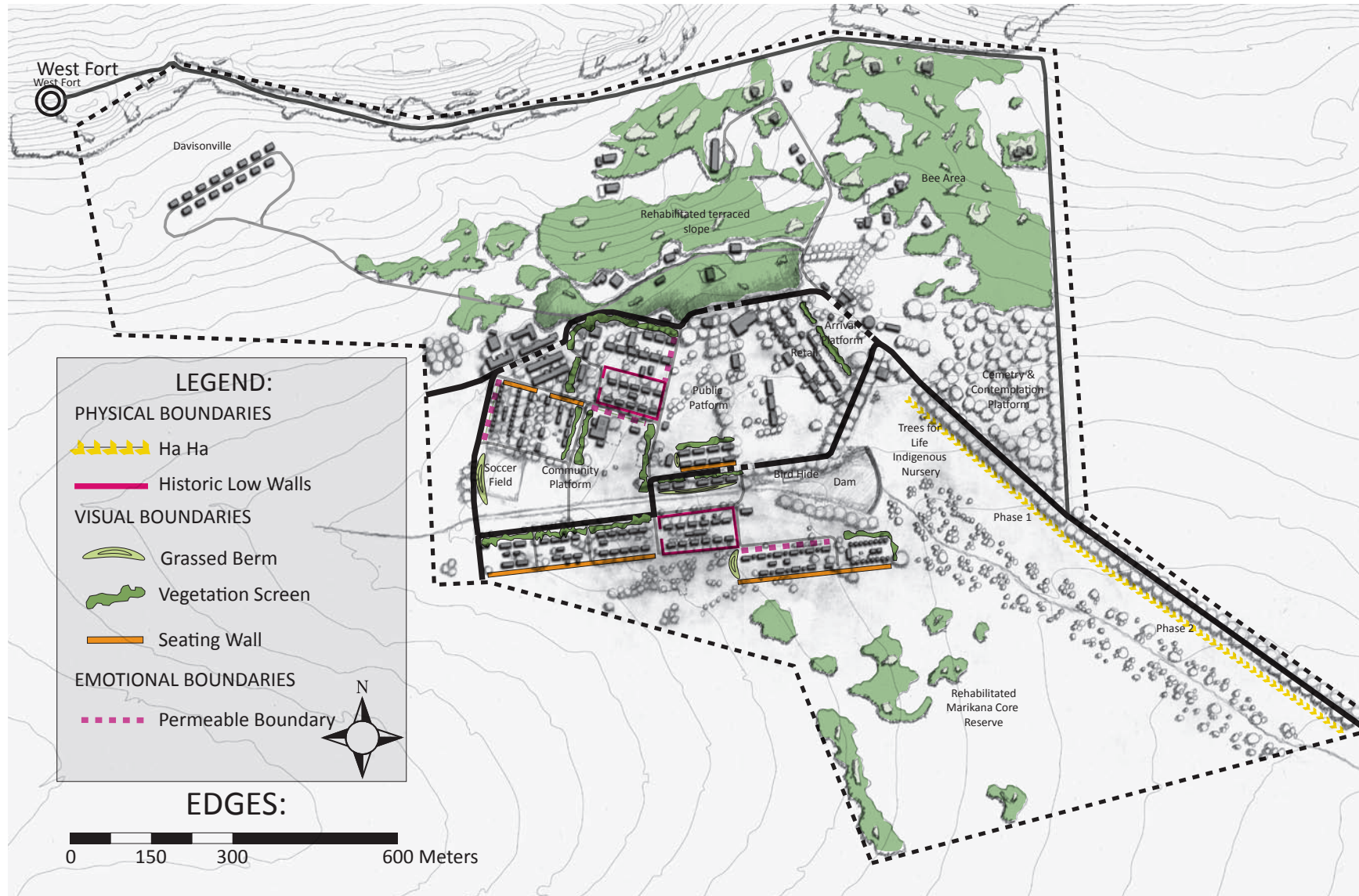


Illustration 145: Edges map indicating the proposed positions of different kinds of edges helping to distinguish between public and semi-private areas. (Author, 2012).

6. STORMWATER STRATEGY

Historic landscape processes should be maintained in the stormwater system, therefore the CLMM suggests revealing and reusing the historic water furrows and channel (see illustration 141). The introduction of new stormwater bioswales is also essential in order to contain the immense surface runoff from the ridge which causes flooding in certain areas (see chapter 4 'Analysis').

Therefore the following strategies should be applied:

- All stormwater from the site should be captured and transported to a retention dam in a previously identified low lying area.
- Historic furrows should be reused and repaired to be fit for use.
- New channels should be bioswales.
- The stormwater system should be as open and natural as possible to allow for contact between the users of the site and the natural systems as an educational experience, while still considering safety (see illustration 140).

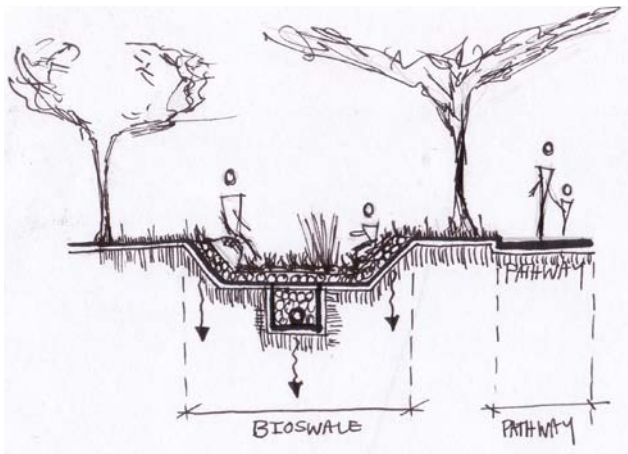


Illustration 147: Illustration of a natural stormwater system that allows users to get as close as possible (Author, 2012).



Illustration 146: An example of a bird hide that can safely bring users closer to the water (Grainge Architects, 2012).

- Water captured in the retention dam should be used as both a recreational amenity as well as for gravity fed irrigation of productive lands below, as was done in the past.
- The retention dam needs to be sized accordingly. The retention dam should carry a total capacity of 13 663 m³ (See stormwater calculations in Appendices Chapter at the back for more details).
- People should be encouraged to get close to the water in the retention dam through the building of a bird hide (see illustration 139). This will also encourage contact with nature and the natural system.

7. COMMUNITY ENTERPRISES

In order to cultivate opportunities for human interaction and stewardship that will be required to maintain a landscape, the CLMM suggests that community enterprises should be implemented.

The following enterprises have been identified as being appropriate for the Fort West Community:

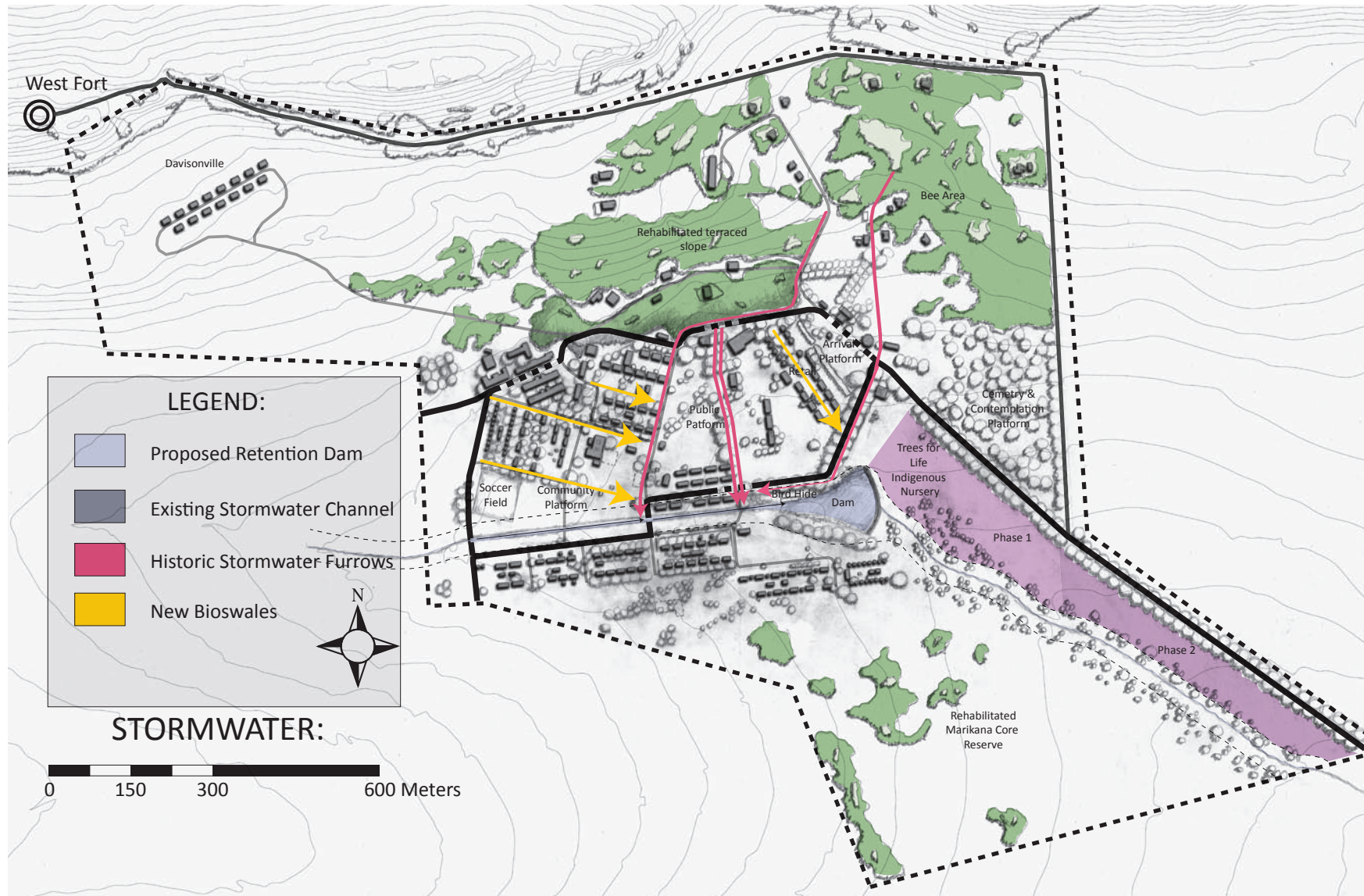


Illustration 148: Map indicating the existing and proposed stormwater system for Fort West (Author, 2012).

'GREEN-PRENEURSHIP'

Trees and food gardens have historically always played an important role on this site, therefore, a community enterprise that deals with trees, food production and other relevant fields should be chosen to help uplift the community.

These enterprises run by the Wildlands Conservation Trust (WCT), entails nurturing the development of waste-preneurs, tree-preneurs, bike-preneurs and food-preneurs (collectively referred to as 'green-preneurs') that collect recycling (already small enterprise on the site), grow trees, and vegetables, and assemble bikes. The people then barter what they have grown and collected for food, clothes, education support, building material, water tanks, solar water heaters, solar powered lighting and bicycles. This enterprise nurtures the growth of these individuals into fully-fledged entrepreneurs who can harness the opportunities to become viable small businesses in their own right. This enterprise empowers community members to become self-sustainable.

A small indigenous nursery, bike shop, monthly craft and farmers market should also be set up for the sale of these products to the general public.

GREEN TEAMS

The WCT, also sets up a 'Green Team', whose main objective is to purchase the saplings from the 'tree-preneurs'. They are then contracted to plant these saplings as part of greening projects in their communities and other surrounding communities that have the same need. They are then expected to care for these saplings for up to a year (WCT, 2011). Therefore, all trees used in the rehabilitation of the site will be provided for by the Tree for Life Initiative and planted by the Fort West 'Green Team' that will be set up. The continuation of this enterprise into the rest of the site will be just one more example of how the community and visitor to the site will be educated and made aware, of nature. This initiative will also work towards building a sense of stewardship from the community towards their landscape.



Illustration 150: Training community members to grow food (Gatlin, n.d.).



Illustration 151: Trading Trees for food (Rivers-Moore, 2010).



Illustration 152: Green team planting trees (WCT, 2011).



Illustration 153: Training community members to grow food (WCT, 2011).



Illustration 154: Community members grow indigenous trees from seed (Trautman, 2011).



Illustration 155: Community members collect and sort recyclable materials (Nolan, 2011).



Illustration 156: Rainwater tanks should be provided for each residential unit (WCT, 2011).



Illustration 157: Biogas converter.

HONEY

Areas where development is limited, i.e ridge buffer and rehabilitated marikana thornveld are ideal areas for the introduction of a honey and bee keeping enterprise. Honey is relatively inexpensive to produce, and also has many environmental benefits. Fort West community members can be trained in beekeeping and honey processing. A processing and bottling plant can also be set up in workshop building already on the site. The honey can then be sold to the surrounding community (see Bulembu precedent in Chapter 5).

TOURISM

With the introduction of an interpretive infrastructure, a tourism community enterprise can be developed. Community members can be trained as guides, and stewards who will impart the historic, natural and community related information of the site and surrounding area to visitors. A boutique hotel and conference facility run by the community can also be setup (see Bulembu Village in Chapter 5 'precedent study').

MATERIAL PRINTING AND CRAFTS

Existing material printing, sewing and plastic bag weaving enterprises (see chapter 2 'context') within the community can be expanded slowly over time. These enterprises should be located in the retail area.

DAIRY

A small dairy can be set up in order to provide for the peoples needs. Productive land located in phase 3 can be utilised as pastures for the cows. Excess milk production can then be sold to the surrounding community (see Bulembu Village in Chapter 5 'precedent study').

BAKERY

A bakery should be set up in order to produce bread for the Fort West community. Community members should be employed and trained to make the bread. Excess bread can then be sold to the surrounding community daily in the retail area (see Bulembu Village in Chapter 5 'precedent study').

The above mentioned community enterprises will not only result in an attractive environment for the residents and visitors to the site but will also provide work opportunities for the community and ultimately help make the community aware of their natural surroundings and the value of sustainably managed resources. It will attract the public by presenting them with a unique experience within the city, as this project is one of the points of interest on the experiential route.

8. SUSTAINABLE SYSTEMS

In order to address the current status quo of the Fort West community and integrate their everyday lives with nature the CLMM suggests that sustainable systems such as biogas converters, solar power and rainwater tanks should be implemented within the housing complexes.

BIOGAS

Biogas converters should be installed in each housing complex. These converters produce biogas as a by product of organic matter and sewage which is fed into the tank. The grey water in the tanks can also be used to water a food garden. Therefore, these converters will improve sanitation, produce gas for cooking as well as recycle water to produce food.

SOLAR POWER

A solar power unit should be installed in each residential unit. These panels can be used to run a geyser and power solar powered lighting.

WATER TANKS

Rainwater tanks should be installed on each building. These tanks will harvest rain water from the roofs of the buildings. Water collected in these tanks can be used to water a food garden.

CONCLUSION

The framework serves as a regeneration strategy for the development of Fort West. It creates improved opportunities for ecological and social health as well as connecting fragmented human and natural systems through:

- The application of the CLMM and associated design guidelines (see Chapter 3 *'Theoretical Investigation'*).
- The regenerate of a multi-purpose self-sustaining village by introducing a compact community using varied land uses.
- Connecting human and natural realms, by making sure that natural process and human processes feed back on one another, resulting in community stewardship.
- The establishment of social and active centres which become the heart of Fort West where community, nature and history can meet.
- Improved access, legibility and connection of the site by introducing a hierarchal movement network.
- Bettering the lives of the Fort West community through the community enterprises and sustainable systems.
- Providing a unique attraction through the experiential route and community enterprises.
- By providing all users with a variety of experiences and activities which include:
 - Retail and recreation,
 - community enterprises,
 - interaction with water through revealing the stormwater system,
 - rehabilitation of the environment - connection back to nature, and
 - the history of the site.
- The generation of a multifunctional and sustainable landscape in order to aid social and ecological health by maintaining introducing sustainable systems .

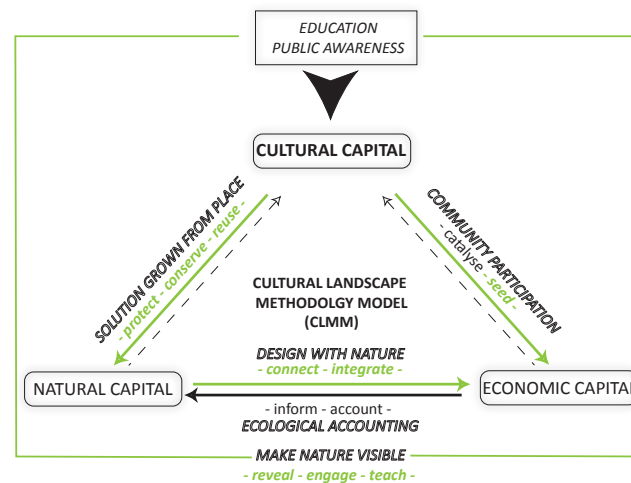


Illustration 158: Highlighting the CLMM design guidelines applied at framework level (Author, 2012).



*“Nature is more than a bank of resources to draw on: it is the best model we have for all the design problems we face.”
(Van Ryn & Cowan, 1996:7)*

Illustration 159: Oldest housing complex, Fort West (Author, 2012).

CHAPTER 07

DETAIL DESIGN

CHAPETR 07 - DESIGN DEVELOPMENT

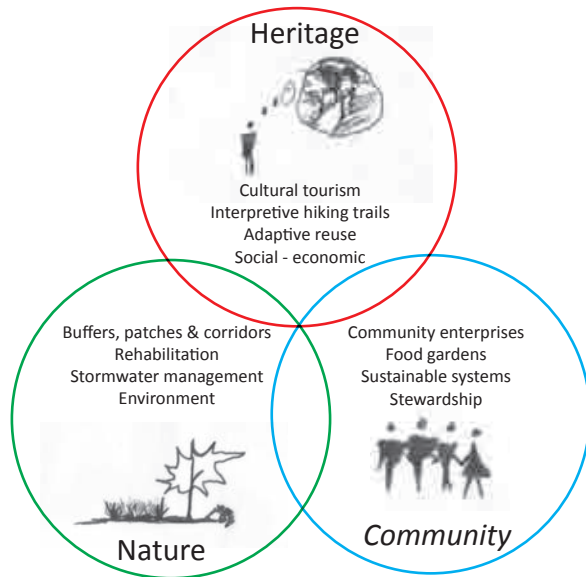


Illustration 160: Three participants on site, nature, heritage & community, determined through the application of the CLMM (Author, 2012).



Illustration 161: Map indicating the location of the detail design area according to land use and activity (Author, 2012).

INTRODUCTION

Through the application of the CLMM to the framework regenerative strategy it can be stated that there are three participants or users on the site. They are heritage, nature and community (see illustration 159). Therefore the location of the detail design area (masterplan and sketchplan) within Fort West was chosen where all of these participants were most likely to come together.

The area with the most diverse land uses implies that it will be the area where most of the participants would naturally gravitate towards. Therefore, the area with the most diverse land uses and activities in the framework regeneration strategy was chosen (see illustration 160). This area was also identified as the social and active heart of Fort West (see chapter 4 'Analysis'). Therefore, this is the area where most of the interactions between all the users of the site, nature, heritage and community, will take place and as such will be developed into a masterplan.

MASTERPLAN

The masterplan provides a general vision and catalyst for Fort West in context. As such the masterplan will aim to:

- Connect human and natural realms by establishing natural vegetation.
- Establish a social and active centre which will become the heart of Fort West where community, nature and history can meet.
- Generate a multi-purpose and sustainable landscape in order to aid social and ecological health.
- Provide opportunities for civic functions on site to serve the wider community as well as the creation of multi-purpose spaces that can accommodate social events such as music festivals and markets that are open to the public.
- Design spaces that create social interaction between community and visitors.
- Accommodate community enterprises that will instil a sense of ownership and help with unemployment in terms of job creation.

- Provide opportunity for retail and economic activities.
- Put natural systems back into place, in order to engage the site users with nature and ensure sustainable development.
- Create a liveable environment managed in a transparent and democratic way where its natural resources, accessibility, mobility and user needs are addressed. All the while accommodating a culturally rich, healthy, safe and secure community where economic opportunities for all exist.
- Preserve and protect the historical elements

ZONING

Zoning for the masterplan was done in order to establish appropriate activity and uses of the area and its associated buildings (see illustration 161).

- Community park - This will be developed into a park-like space that will facilitate recreational activities such as picnics etc., for both the community as well visitors.
- Catholic Church - The area around and adjacent to the Catholic Church will be developed into a remembrance garden. This space will then be able to also be used as a wedding venue with spill out into the open green space.
- Thando Community Crèche (existing), - The historic stable buildings have been converted already into a community crèche run by the NEA Foundation. The facilities for the crèche will be upgraded along with the development of a bigger, better located playground to the south and a adjoining toy library.
- Community food garden and orchard - Historically gardening was an important activity for the patients of Fort West, therefore a community garden and pecan nut orchard will be re-established in areas where they once historically occurred.
- Spillover and recreation area - It will be situated near existing buildings that will house a shisa nyama, a workshop building as well as a buildings for the community garden.
- Retail area - This once housing complex will be developed in order to facilitate further economic activity on the site. This area has been chosen as the detailed design area as it is the entrance to the entire site. It is proposed that this

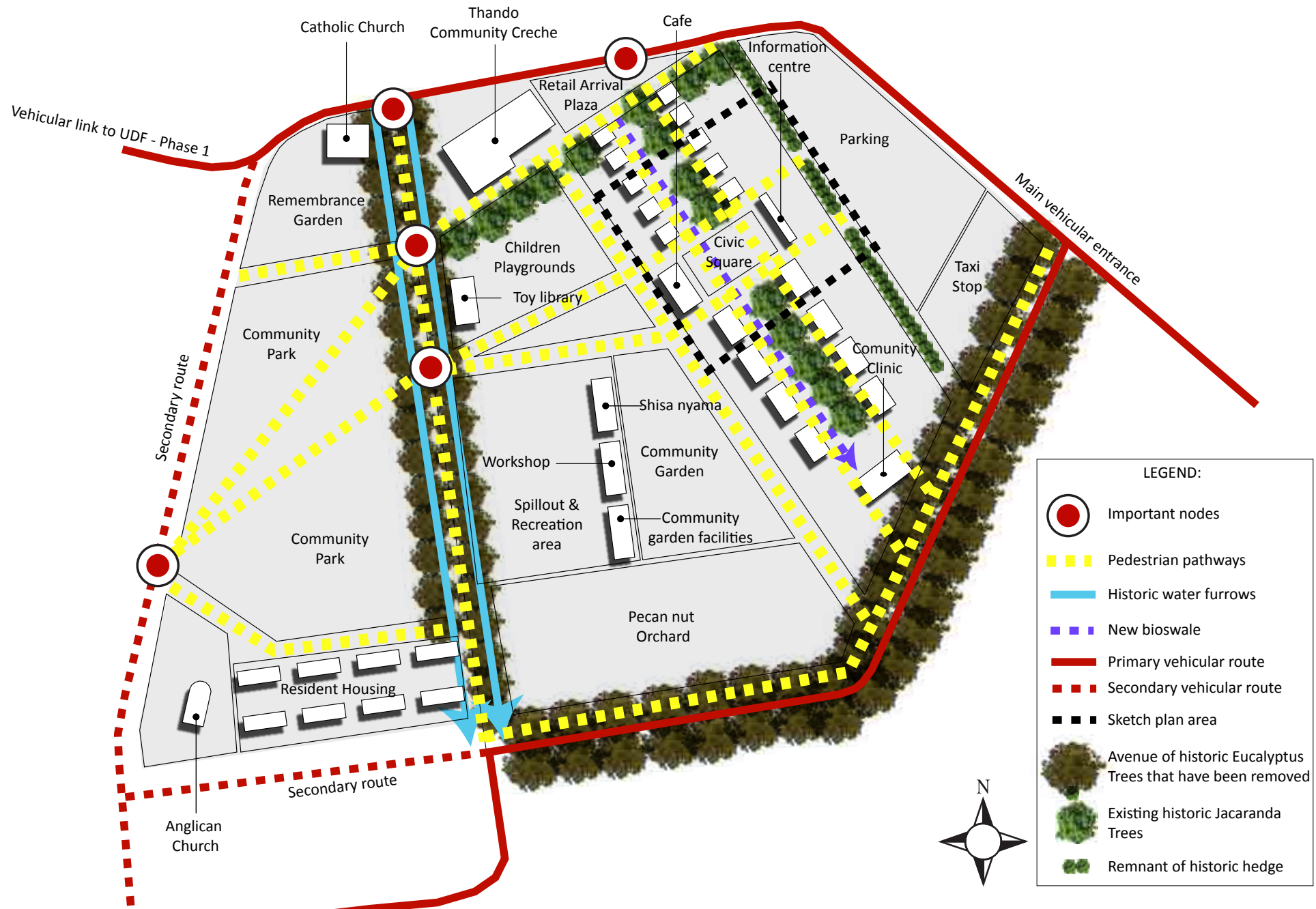


Illustration 162: Zoning masterplan illustrating the connection of the detailed design area to its surroundings (Author, 2012).

space together with the civic square will become the 'town centre' of Fort West.

Bioswale - Within the retail platform the introduction of a new bioswale is proposed in order to facilitate not only the stormwater movement in this area, but also to bring people back in contact with nature and to establish a link back to the historic water furrows elsewhere on the site, in an ecologically sound way.

- Retail arrival plaza - This space will celebrate the area where the crèche's playground used to be. It will become a plaza that accommodates a taxi pickup point as well as a arrival space for the retail space when approaching it from the North.
- Parking & Taxi stop - This area was historically the arrival space for visitors to the site. This function will be reinstated as such in the form of a parking lot. The existing taxi stop will also be formalised.
- Water furrows and Avenue - It is proposed that the historic water furrows found underneath the avenue of Eucalyptus trees will be upgraded in order to once again facilitate the movement of water across the site.
- Pedestrian pathways - All historic routes within this area will become pedestrian pathways in order to facilitate the movement of people. Note that the historic pedestrian pathways found in the retail platform are situated along a grid.
- Historic trees - All historic trees will be retained on the site in order to keep the character of this area. Any trees that have been removed will be replaced with indigenous species in order to ensure continued 'sense of place' created by the avenues.
- Hedge remnant - The remnant of a screening hedge found between the retail platform and the arrival platform will be re-established by using indigenous shrub species.

Revealing

Natural systems and processes occurring in a landscape should be revealed. This has been achieved in the form of, rehabilitating the historic water furrows in the historic boulevard, addition of biofiltration swales in the retail area, and stormwater squares. These hydrological system components will provide habitats and enhance the condition of the public open space.

Engaging

Diverse public open space system and recreation activities should be accommodated. Therefore, spaces such as the community parks, multi-purpose civic square, remembrance garden, retail arrival plaza, rehabilitated natural areas, children's playgrounds, and community food garden have been introduced. Recreation activities such as, nature education, picnicking, and socialisation take place in these areas. Such spaces contribute to the physical, mental and community health of an area.

Teaching

The design should strive to teach people about the importance of restoring and rehabilitating the site's native ecological functions. This is implemented through the rehabilitation of the community park and wilderness areas with appropriate indigenous plant species. The addition of an environmental education centre functioning from the workshop building and information markers will help draw attention to these restoration actions. Such actions foster human awareness, in turn attracting additional appreciation and stewardship of a site.

Conserving

Circulation often forms the structure of an area both spatially and operationally. As such walking and bicycling is encouraged through the addition of sidewalks, pedestrian pathways big enough to accommodate bicycles as well as pedestrians, removal of vehicular to the periphery of the site, and inclusion of bicycle stands in public areas. Amenities such as benches and lighting are also introduced to encourage walking. These human scaled systems of circulation, generate resilience and support healthy

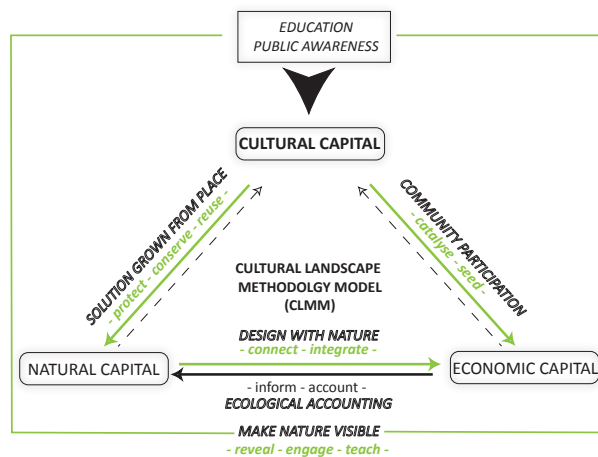


Illustration 163: Highlighting the CLMM design guidelines applied at masterplan level (Author, 2012).

APPLICATION OF CLMM

Through the application of the CLMM design guidelines the main aim of encouraging both formal and informal social interaction between all the users should be realised in the design of the masterplan (see illustration 162) in the following ways:

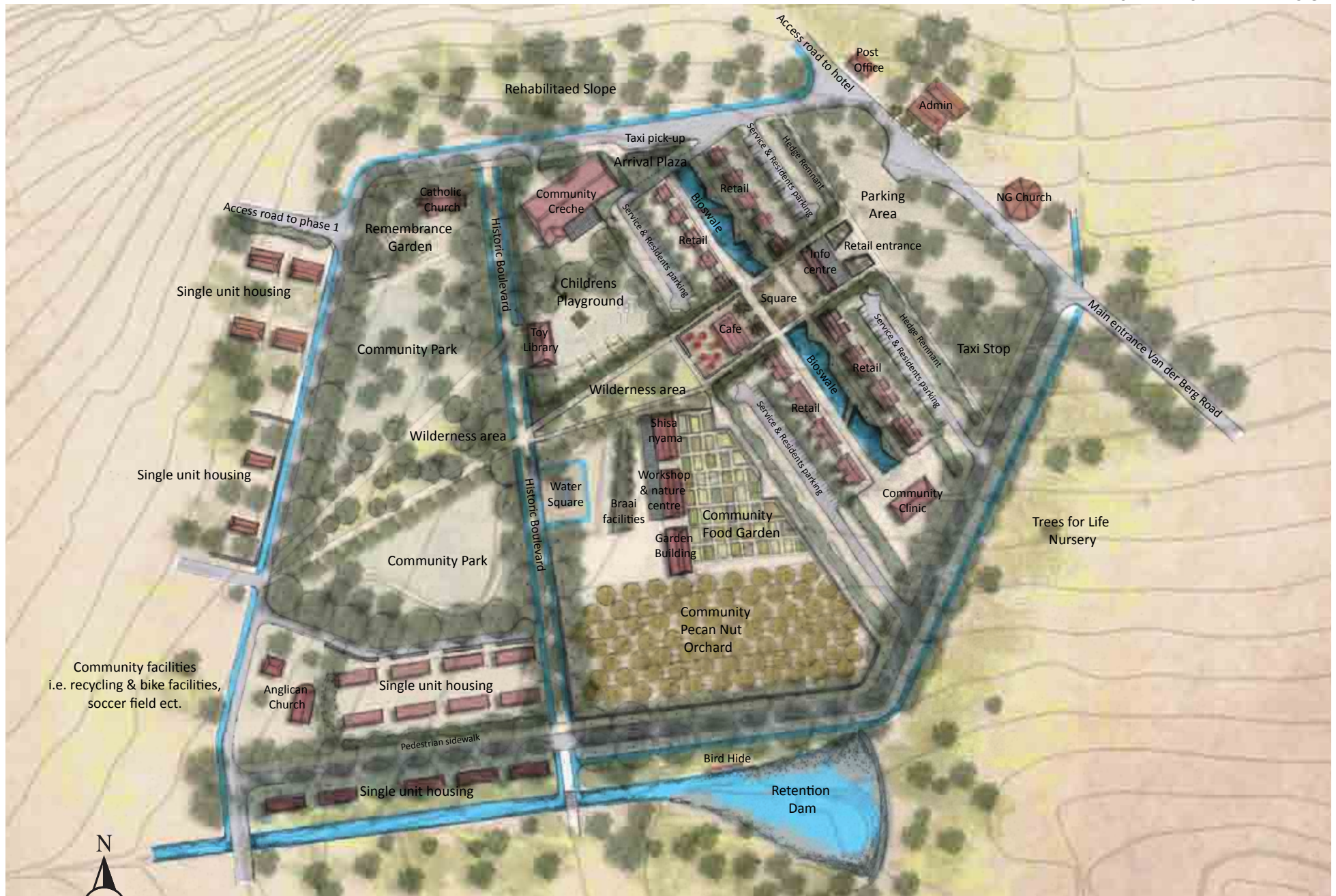


Illustration 164: Finalized masterplan (Author, 2012). **Still to be rendered and further designed for examination.*

conditions in urban areas.

Protection

In order to protect the previous 'sense of place' all historic trees that have been removed will be replaced with indigenous trees.

Reusing

Reuse of a sites available resources or can reduce the demand for off-site resources. Reuse takes form in the following ways; adaptive reuse of existing buildings and structures and by using reusing logs felled from the historic trees in the play equipment needed in the playground.

Catalysing

Public participation should go beyond just the design and planning phase of a project. Therefore, a training centre has been introduced in the workshop building.

Seeding

Communities should rather be attempting to become more self-sufficient and resilient. In order to cultivate opportunities for human interaction and stewardship that will be required to maintain a landscape, the community food garden and orchard enterprise is located on the site.

Connecting

The provision of ecological corridors in urban areas creates opportunities for regenerating a larger, connected network of healthy public open space. As this space is proposed to form part of a larger network (see chapter 6 'Framework') the addition of natural areas (wilderness area) and movement corridors (historic boulevard and other pedestrian pathways) are essential.

Integrating

In order to integrate everyday life of a community with nature, sustainable practices should be encouraged. The water from the biogas converters installed in the surrounding public buildings will be utilised to water the community food garden and pecan nut orchard.

SKETCH PLAN

The further development of a section of the retail platform is proposed at the detailed sketch plan level. An historic approach to the interpretation of Fort West was guided by the ICOMOS Ename Charter. Therefore the interpretation of this sketch plan area should, always be distinguishable, be sensitive to the character, the setting and the cultural and natural significance of the site, while remaining easily identifiable, aim to provide equitable economic, social, and cultural benefits to the host community at all levels, through education, training, and the creation of economic opportunities, further the understanding and appreciation of the site's significance.

This section of the retail platform was chosen and designed in order to establish a social and active centre which will become the heart of Fort West where community, nature and history can meet. In order to aid social and ecological healing within this space a multifunctional and sustainable landscape needs to be generated. This was done in a variety of ways;

- One of the essential aspects of the development of this sketch plan area was the need to preserve and protect the historic elements. The elements found on this particular site were the buildings, which included housing units (20), recreation hall (9) and ablution facilities (4,5 and 6), the existing jacaranda (12) and palm trees (10), the grid pathway system (13, 17 and 18), and lastly the hedge remnant (16). All of these historic elements and landscape patterns have being maintained and enhanced in the following ways.
 - The housing units (20) will be converted to retail stores that will contain shops that community members can run and manage, as well as use on a daily basis. These stores will also be of interest for visitors to the site. They will contain programmes such as, a bakery, a hairdresser, furniture shop, leather shop, cellphone repair shop, and material printing shop for example.
 - The recreation hall (9) will be converted into a cafe with the existing stoep and surrounding space accommodating spillover and outdoor seating.



1. Entrance
2. Grass berms
3. Pergola - entrance
4. Information centre
5. Female ablutions
6. Male ablutions
7. Orientation plaza
8. Fort West Square
9. Cafe
10. Existing palm trees
11. Bioswale
12. Existing jacaranda trees & seating space
13. Pathway - retail
14. Service entrance
15. Semi-private backyard - possibility for building extension
16. Hedge
17. Pathway - parking
18. Pathway - residents
19. Pathway - service
20. Retail & Residential buildings
21. Pergola - retail
22. Mosaic walls
23. Water Tanks
24. Bridge



Illustration 165: Sketch plan. Not to scale (Author, 2012).

- The former ablution block will now house the new information centre (4) and essentially becomes the entrance into Fort West for visitors. From this building they will be orientated in the adjacent plaza (7) where they will continue to explore the rest of the site using the pedestrian movement system proposed by the framework. This building will also once again provide both female (5) and male (6) ablution facilities for the entire retail section.

- The existing trees have been incorporated and celebrated with different spaces. The jacarandas (12) form part of seatings spaces that break out from the retail pathway. Grass blocks will be used in order to accommodate water infiltration for these trees. The palms (10) announce the entrance to the cafe. They also act as visual anchors to the Fort West Square from most of the site.

- The grid pathway system (13,17 and 18) forms the basis for all other spaces on the site. It has been celebrated through the placement of new indigenous trees and the bioswale (11). The surface of the pathways will be exposed glass aggregate concrete, see material palette for more details.

- Lastly, the hedge remnant (16) will be re-established in order to screen off the service entrance (14) and semi-private retail space (15) from the parking areas, it will also be enhanced by the use of indigenous shrubs that are known to attract a variety of birds and butterflies.

- By providing the opportunity for civic functions to happen on the site, that will serve the wider community. The creation of multi-functional spaces is therefore essential. The Fort West Square (8) is an example of this it is a robust open paved space, lined and shaded with trees that can accommodate social events such as music festivals and markets that are open to the public, therefore providing opportunity for social interaction between the community and visitors. This space is deliberately levelled to facilitate the setting up of a stage or marquee easily. Lugs have also been sunk into the paving to further facilitate this multi-functionality.

- By reintroducing natural systems back into place, in order

to engage the site users with nature and ensure sustainable development a bioswale (11) will be introduced. Not only will the bioswale aid and ease the stormwater movement within the retail platform, but it will also allow for water infiltration and establish a link back to past stormwater systems (water furrows) on site in an ecologically sound way. It will ultimately engage the site users with nature, resulting in the natural processes and human processes feeding back on each other and stewardship leading to environmental resilience.

- Community projects are essential in the process of social healing as they instil a sense of ownership and stewardship towards the site, ultimately helping to alleviate unemployment through skills development and job creation. A variety of community projects have already been proposed throughout the site, i.e. Trees for Life Initiative and the community orchard and garden. In the development of the sketch plan area two community projects in the construction phase will be facilitated, namely;

- The first is a mosaic project (22) which will entail the community members been taught how to mosaic and then using this new skill to mosaic the seating walls around the grass berms (2) at the entrance to the site, as well as the walls used to screen off the ablution facilities (22).

- The other project is a recycling initiative in conjunction with the proposed recycling centre in the community platform (see framework). This initiative will entail the community members to collect glass bottles at the recycling centre. These glass bottles will then be cast as the aggregate in the exposed aggregate pathways. It is also further suggested that the concrete panels are cast be groups of community members.

- Pergola structures (3 and 21) will be constructed to announce an entrance (3) and provide continuity of the stoep and seating areas between retail buildings (21). They will also act as visual reminders of the historic eucalyptus trees that have been removed as they will be constructed from eucalyptus timber.

NEW AND EXISTING

This plan illustrates the new elements introduced onto the site and the existing historic elements already on site, contributing to the sites character.

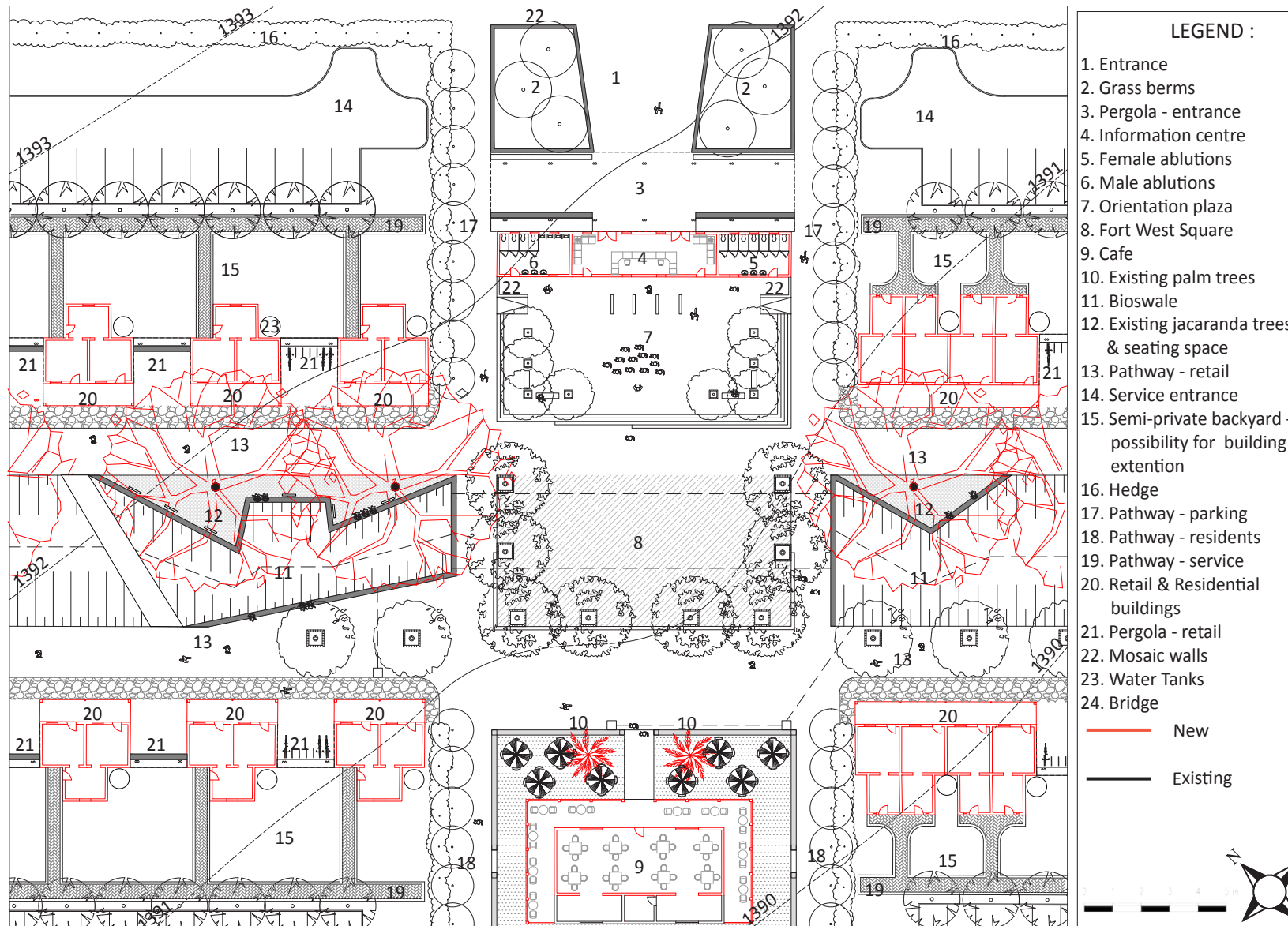


Illustration 166: Sketch plan illustrating new (black) and existing (red) historic elements on site. Not to scale (Author, 2012).

BIOSWALE AND BRIDGE

Scientific studies overwhelmingly document the benefits of contact with nature, including recovery from illness, mental health, relaxation and concentration and lowered crime rates. Therefore natural systems and process occurring in a landscape should be revealed and exposed in order to tap into nature’s powerful resources as a teacher. One of the ways this has been achieved is through the addition of a bioswale into the retail promenade.



Illustration 167: Bioswale & Bridge - Education and public awareness can be facilitated in public spaces through the revealing of natural processes & the application of the CLMM (Author, 2012).



Illustration 168: Bridge - Reed-like railing of bridge forms part of the revealing process at night (Author 2012).



Illustration 169: Inspirational images of signage, educational sculptural elements and bridge lighting (Warner, 2011 & Author, 2012).

REVEALING WATER

Natural systems and process occurring in a landscape should be revealed and exposed in order to tap into nature's powerful resources as a teacher. One of the ways this has been achieved is through the addition of a bioswale into the retail promenade as well as a sculptural stormwater feature that highlights that collection and movement of water across the site.

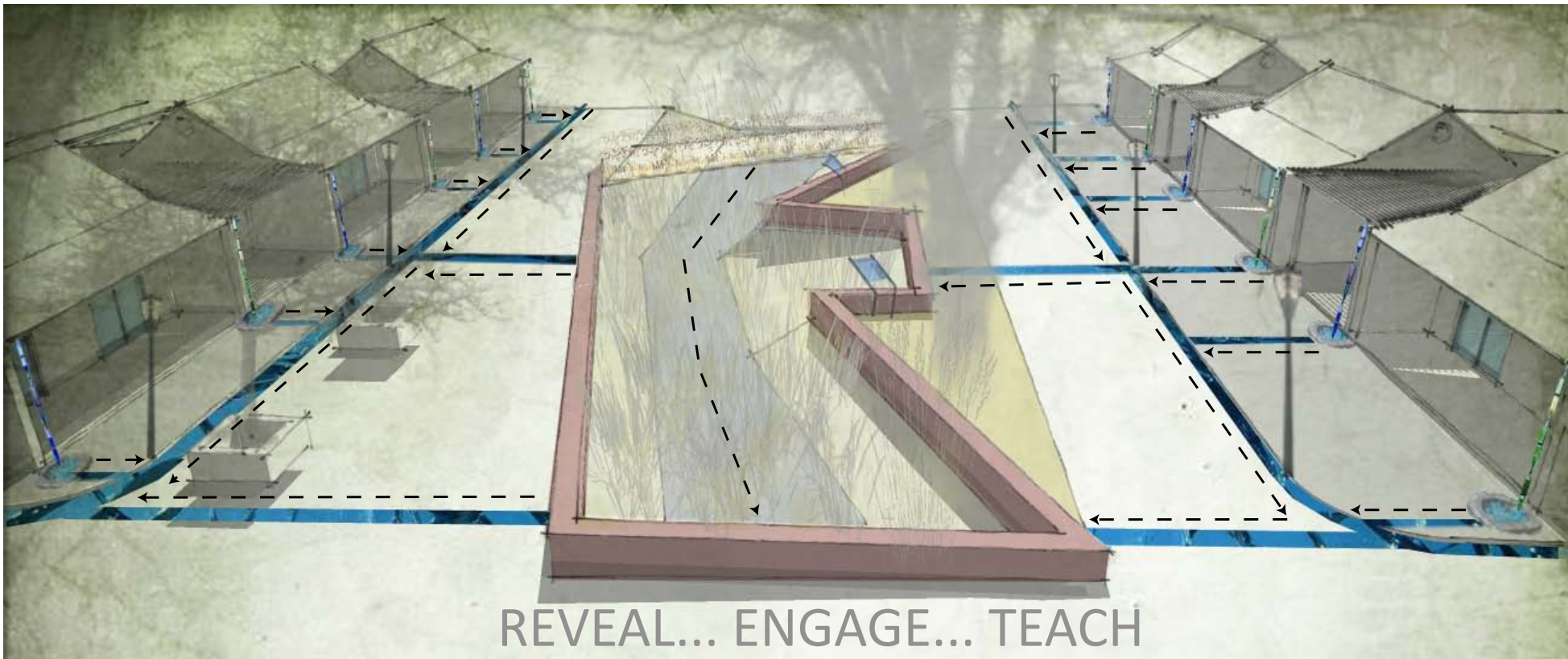


Illustration 170: The Retail Buildings and Promenade facilitate a sculptural stormwater feature that will reveal, engage and teach users of the site (Author, 2012).

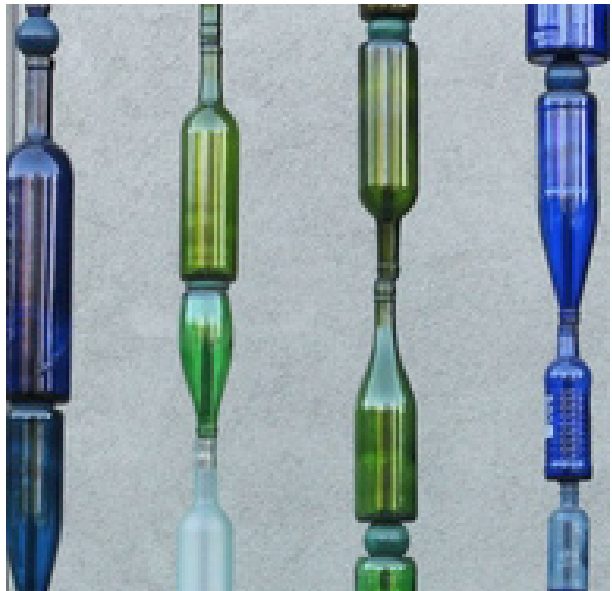


Illustration 171: Examples of recycled glass rain chain, mosaic channels and splash pond used.

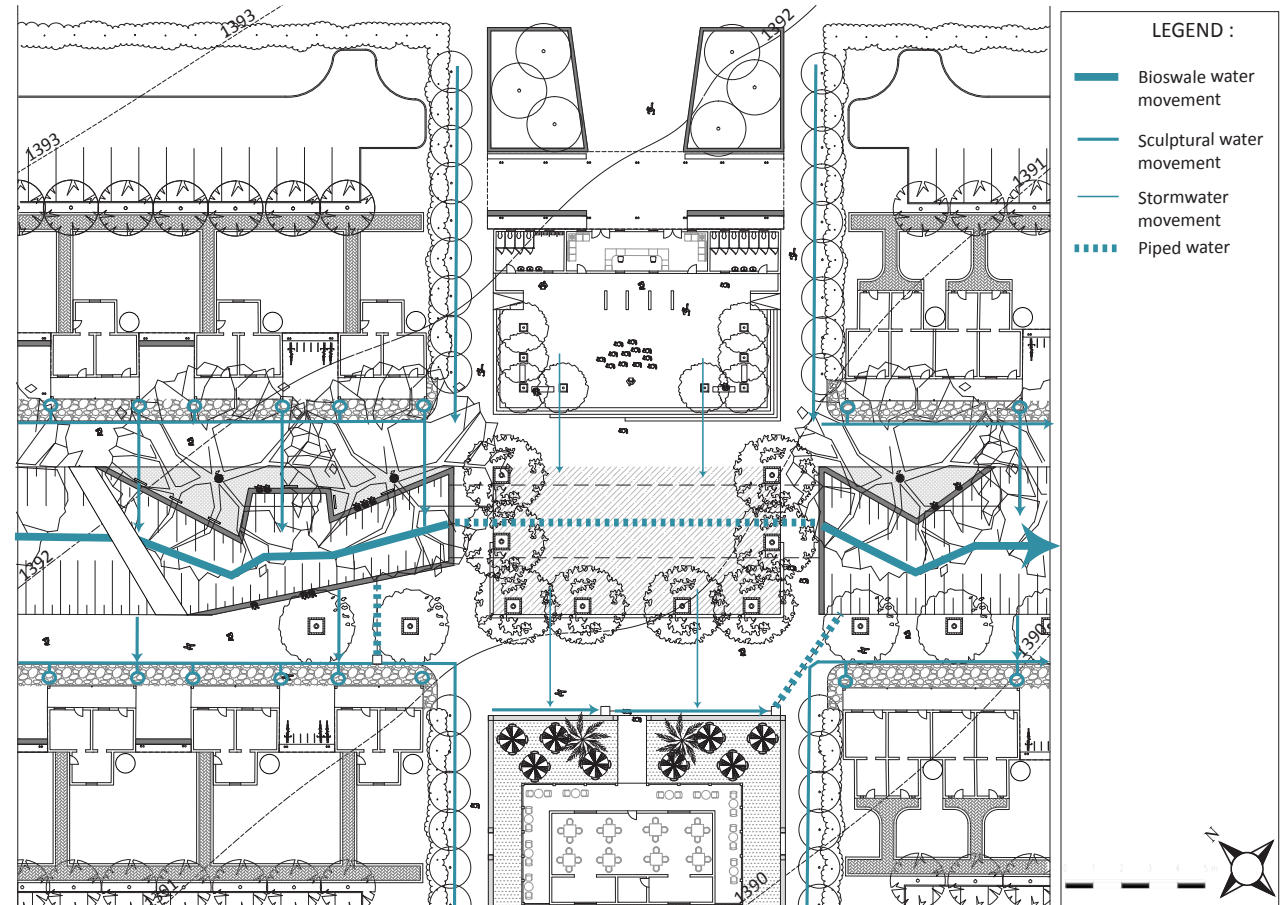


Illustration 172: Sculptural stormwater system implemented on site (Author, 2012).

CHAPTER 07 - DETAIL DESIGN

LIGHTING

Lighting is used to enhance the important features of the design, such as the trees and bridge. This allows the landscape to be safely used at night and to accentuate different parts of the design at different times of the day.



Illustration 173: Section A lighting (Author, 2012).



Illustration 174: Section B lighting (Author, 2012).

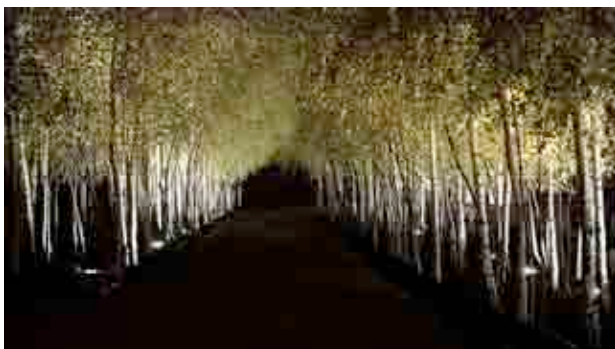


Illustration 175: Examples of solar powered street lamps, sculptural lighting and uplighting used.

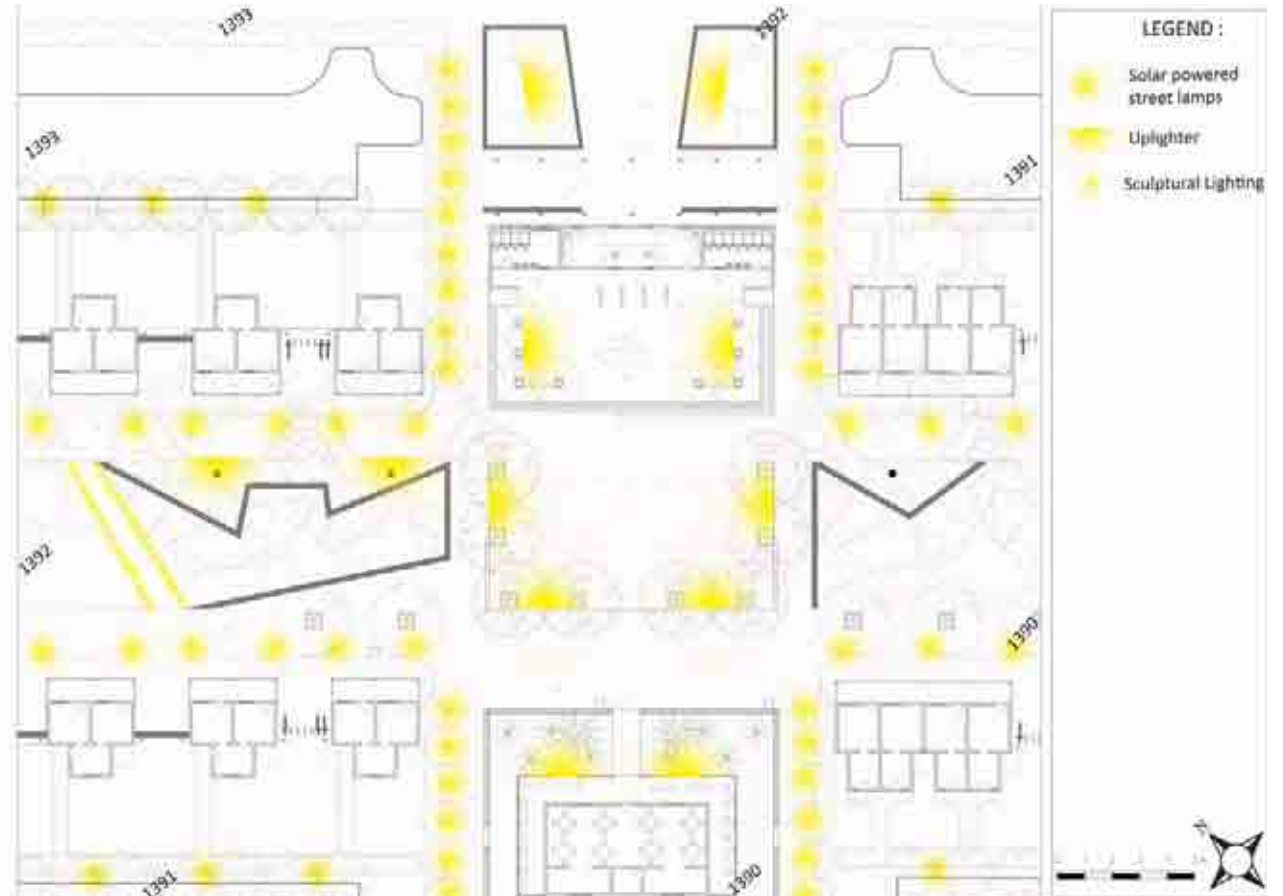


Illustration 176: Lighting plan (Author, 2012).

CHAPTER 07 - DETAIL DESIGN

MULTI-PURPOSE SPACES

According to the CLMM the site should accommodate the design of diverse multi-purpose public space. The Fort West Square, Retail Promenade and Entrance are examples of robust multi-purpose spaces which allow for a variety of recreational and retail activities to take place. These spaces encourage the interaction between the community and visitors to the site. The Fort West Square is a robust open paved space, lined and shaded with trees that can accommodate social events such as music festivals and markets that are open to the public. This space is deliberately levelled to facilitate the setting up of a stage or marquee easily. Lugs have also been sunk into the paving to further facilitate its multi-functionality.



Illustration 177: Fort West Square & Orientation Plaza - Monthly farmers & craft markets can be accommodated in this area supporting community enterprises established on the site (Author, 2012).



Illustration 178: Fort West Square & Orientation Plaza - Recreational activities such as jazz concerts can be accommodated in this area resulting further public exposure of the site. (Author, 2012).



Retail Promenade - Application of the CLMM design guidelines in the retail promenade in order to create a diverse public space (Author, 2012).



Fort West Entrance - Utilising the CLMM design guidelines to invite people arriving at fort West into the retail area (Author, 2012).

CHAPTER 07 - DETAIL DESIGN

PLANTING STRATEGY

In order to create a landscape that is and remains sustainable, is integrated with the environmental characteristics of the site and results in human disturbances (stewardship) leading to environmental resilience, naturally occurring indigenous trees, plants, and veld grass will be planted.

Three vegetation types have been identified as occurring on the site, therefore majority of the planting material will be selected from the plants identified as occurring in these vegetation types (see analysis chapter). However, in the bioswale, for example, very few of the plants found in the three vegetation types can withstand prolonged periods of water, therefore planting material that occurs in the City of Tshwane region will be used.

All planting material for this project will be grown by community members at the Trees for Life Initiative. The following planting list should serve as a guidelines for planting:

Hedge (16)

- *Rhamnus prinoides*
- *Diospyros lycoides*
- *Lippia javanica*

Grass berms (2)

- mixed veld grasses such as, *Eragrostis curvula*, *Panicum maximum* and *Eragrostis superba*
- *Ancylobotrys capensis*
- *Acacia karroo*
- *Ziziphus macronata*

Pergolas (3 and 21)

- *Clematis brachiata*
- *Rhoicissus tridentata*
- *Pentarrhinum inspidum*

Pathways (17 and 18)

- *Dombeya rotundifolia*

Pathway (13)

- *Combretum molle*

Orientation plaza (7)

- *Rhus leptodictya*

Fort West Square (8)

- *Celtis africana*

Bioswale (11)

- veld grasses such as, *Themeda triandra*, *Digitaria eriantha*, and *Miscanthus junceus*
- *Gomphostigma virgatum*
- *Vernonia galpinii*

Semi-private space (15)

- *Peltophorum africanum*



Illustration 179: *Gomphostigma virgatum* (Mutshinyalo, 2001).



Illustration 180: *Lippia javanica* (Le Roux, 2004) and *Pentarrhinum inspidum* (Bester, 2008).



Illustration 181: *Ancylobotrys capensis* (Bester, 2005).



Illustration 182: *Themeda triandra* (Fish, 2004).



Illustration 183: *Miscanthus junceus* (Balt, n.d.).



Illustration 184: Exposed glass aggregate concrete (BetonBild, n.d.).



Illustration 185: Clay brick pavers (SA-paving, 2012).



Illustration 186: Grass blocks (Tropicalfoodforest, 2011).



Illustration 187: Eucalyptus timber (GumPoles.co, 2011).

MATERIAL PALETTE

In order to create a landscape that is sustainable and is sensitive to the character, the setting and the cultural and natural significance of the site, while remaining easily identifiable, materials, colours and textures will be inspired by the site and applied in modern ways to make them easily identifiable. If not possible, materials specified should be easily available, sourced from local manufacturers, should be potentially recyclable or made from recycled materials and have a low embodied energy. The maintenance requirement of each material was also taken into account.

Exposed glass aggregate concrete paving

Concrete paving with a glass exposed aggregate finish has been selected for the pathways throughout this project. Exposed aggregate finish provides a nonslip surface. The construction of this will also be a community project initiative, see recycling initiative mentioned above.

Clay brick paver

The clay brick paver will be used to pave the orientation plaza (7) as well as the Fort West Square (8). Clay pavers have been decided for these spaces as it is robust as well as historically significant. Clay pavers were historically used to pave the pathways of Fort West. Clay pavers are locally manufactured and readily available.

Precast concrete grass blocks

Precast concrete grass blocks have used in the seating areas adjacent to the pathways, where existing jacaranda trees are located (12). The reason for the use of this material is to accommodate the jacaranda trees allowing for water infiltration, as well as to provide a green space for users to get off the busy pathway and relax. The grass block reduces runoff by decreasing the hard surface area of the paved surface.

Red clay brick

The red clay brick has been chosen for its visual aesthetic and will be used for the seating walls throughout the site. The reason that red brick was chosen is due to its historic significance all around the site. The colour red is also a common thread that binds the buildings found on site, no matter what era the buildings were constructed in they all contain red, either at the top of chimney stacks, or in the corrugated iron roofs or even as a facebrick. Red bricks are also locally manufactured and readily available.

Timber

Eucalyptus timber will be used throughout the site, mainly in the construction of the pergola structures (3 and 21) as well as certain benches. The reason that Eucalyptus timber will be used is to provide a symbolic link back to the historic Eucalyptus trees that have been cut down already on the site. It is also an easily available timber that can and will be sourced from an accredited sustainable manufacturer.

Gravel

Gravel will be used in the space surrounding the cafe (9). It will facilitate the infiltration of water to the existing palm trees as well as create a relaxed atmosphere for the space.



Illustration 188: Red clay brick (Author, 2012).

SECTIONS AND DETAILS

Two cross sections have been taken through the site. Section A illustrates the progress through the site from the parking all the way to the cafe. Section B illustrates the transition from public to semi-private space as well as the thresholds.

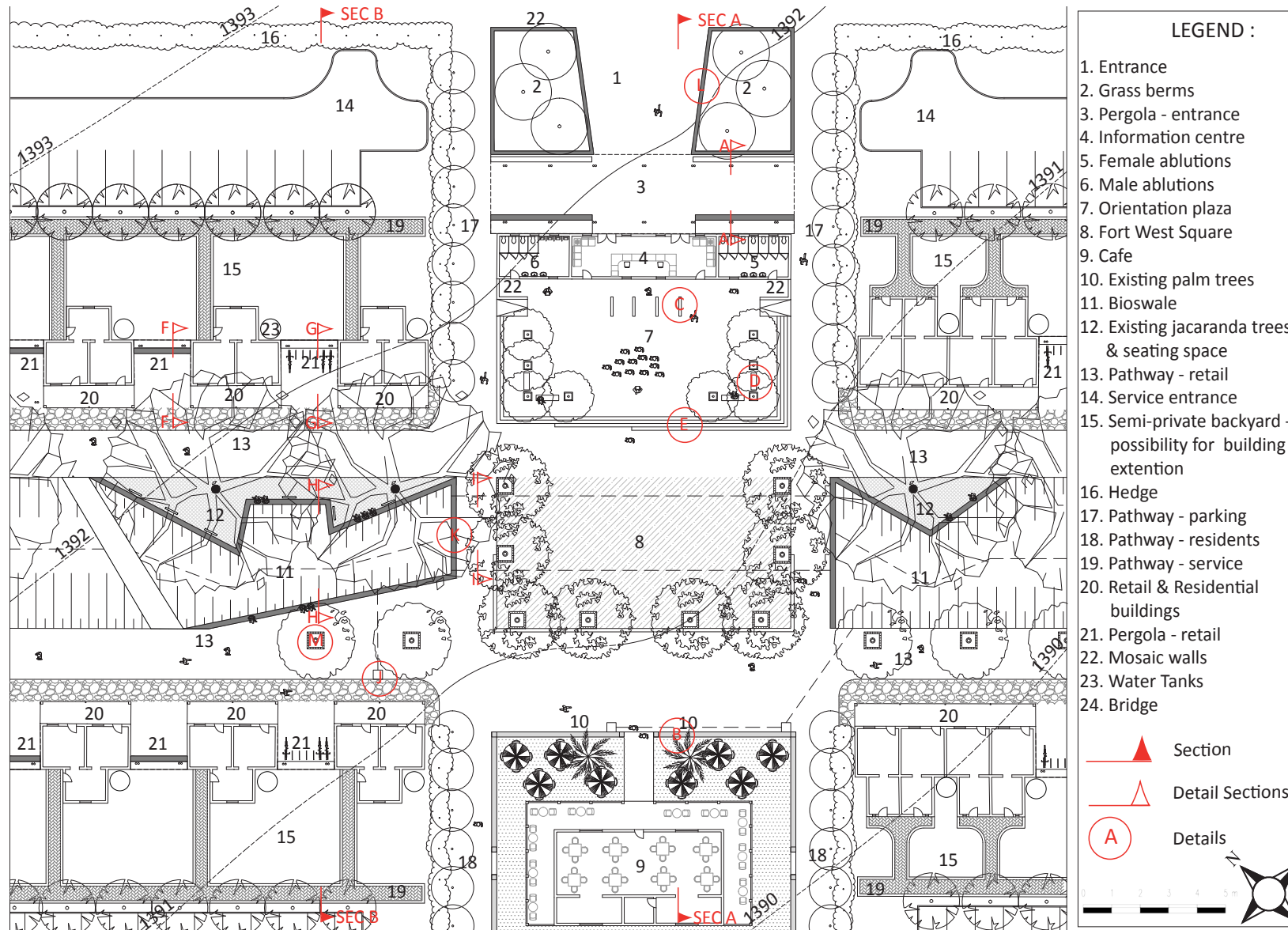


Illustration 190: Plan showing the locations of the sections and details (Author, 2012).



Illustration 191: Section A illustrating the progress through the site from the parking all the way to the cafe. (Author, 2012).
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FORT WEST SQUARE
- MULTI-FUNCTIONAL -

PATHWAY
- RETAIL -

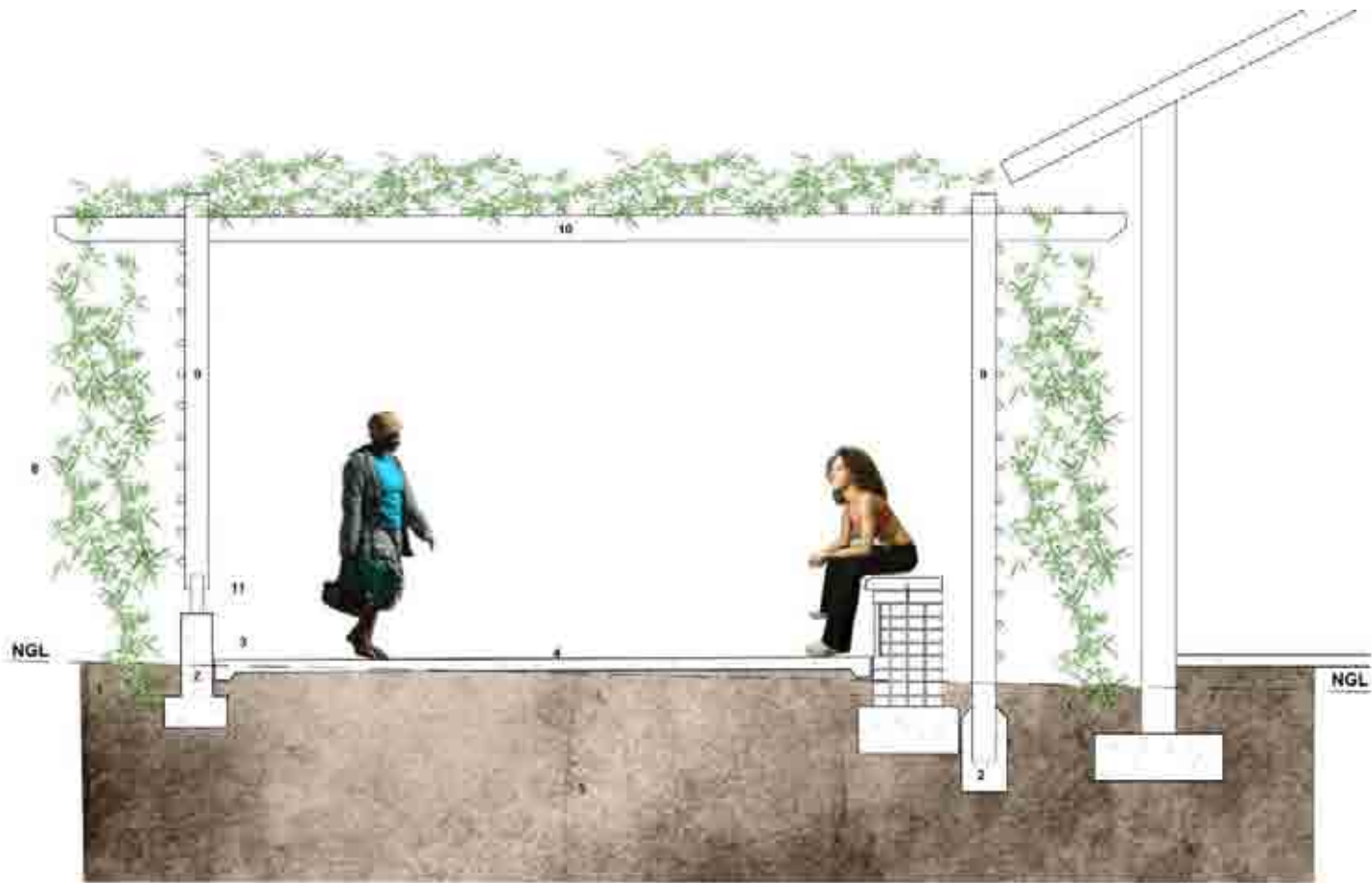
CAFE SPILLOVER &
EXISTING PALM TREE

CAFE BUILDING



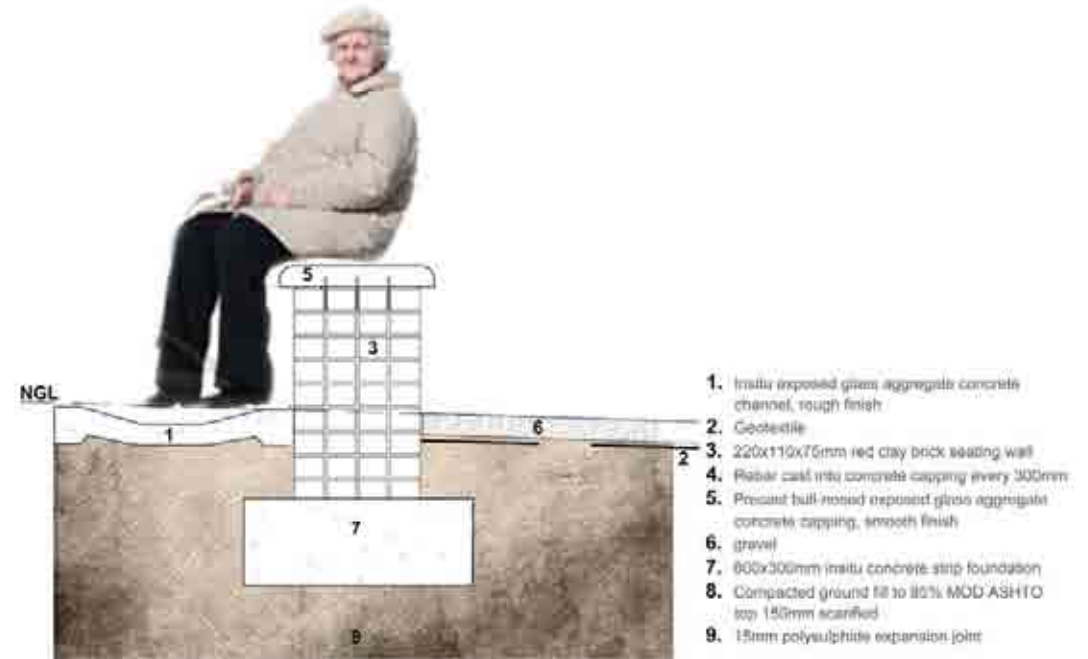
Illustration 192: Section B illustrates the transition from public to semi-private space as well as the thresholds (Author, 2012).





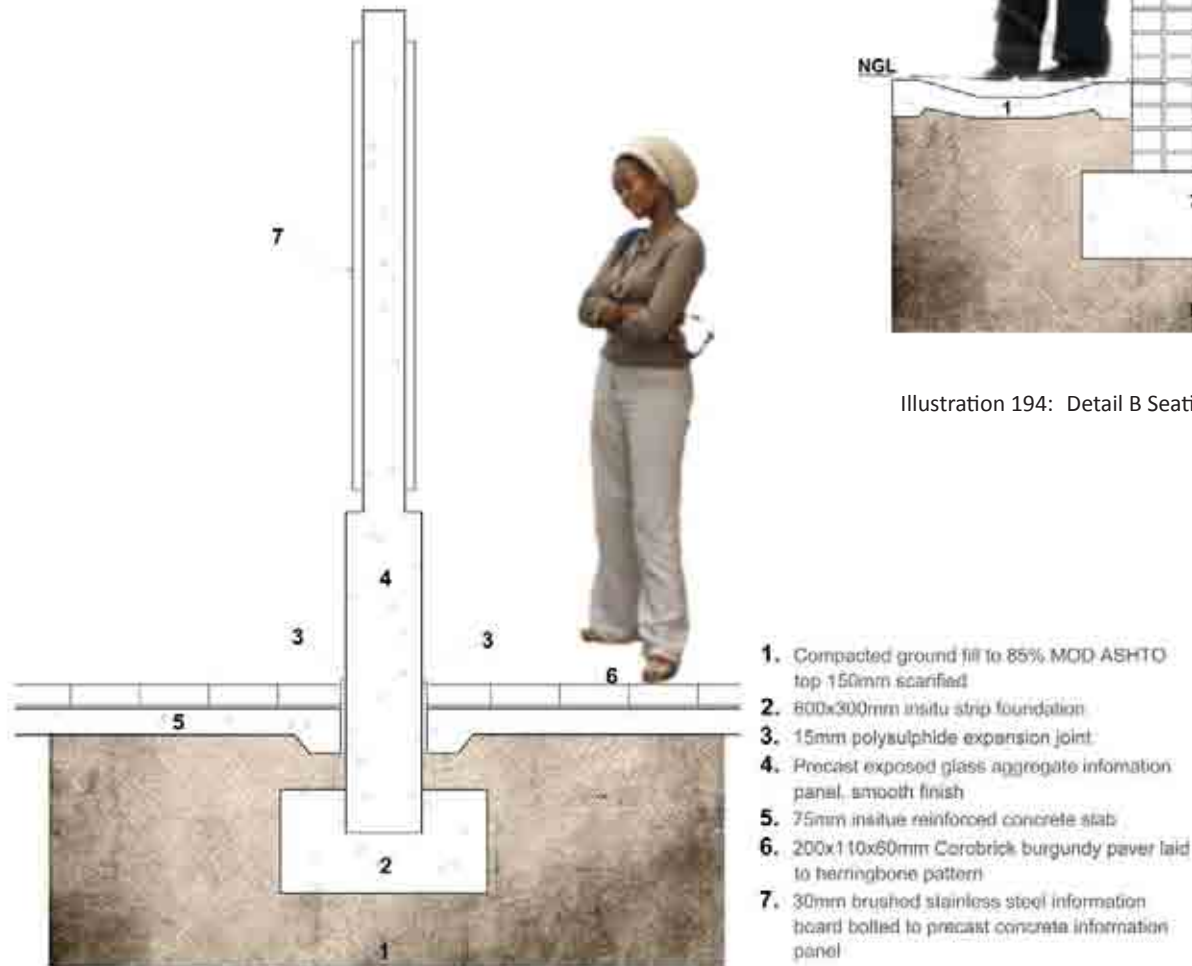
1. Growing medium
2. Concrete footing
3. 16mm polysulphide expansion joint
4. Insitu exposed glass aggregate concrete, rough finish
5. Compacted ground fill to 85% MOD ASHTO top 150mm scarified
6. 45mm eucalyptus lathes
7. Mosaic
8. Creepers such as Clematis brachiata, Rhoicissus-identata & Pentanthinum inipidum
9. 150mm dia. eucalyptus gum pole treated with ecosseal wood preserver
10. 175x50mm eucalyptus timber member
11. U-channel bolted onto concrete footing

Illustration 193: Detail A through entrance pergola (Author, 2012).
112



1. In situ exposed glass aggregate concrete channel, rough finish
2. Geotextile
3. 220x110x75mm red clay brick seating wall
4. Rebar cast into concrete capping every 300mm
5. Precast bull-nosed exposed glass aggregate concrete capping, smooth finish
6. gravel
7. 600x300mm in situ concrete strip foundation
8. Compacted ground fill to 85% MOD ASHTO top 150mm scarified
9. 15mm polysulphide expansion joint

Illustration 194: Detail B Seating wall cafe (Author, 2012).



1. Compacted ground fill to 85% MOD ASHTO top 150mm scarified
2. 600x300mm in situ strip foundation
3. 15mm polysulphide expansion joint
4. Precast exposed glass aggregate information panel, smooth finish
5. 75mm in situ reinforced concrete slab
6. 200x110x60mm Corobrick burgundy paver laid to herringbone pattern
7. 30mm brushed stainless steel information board bolted to precast concrete information panel

Illustration 195: Detail C Signage - Information boards (Author, 2012).

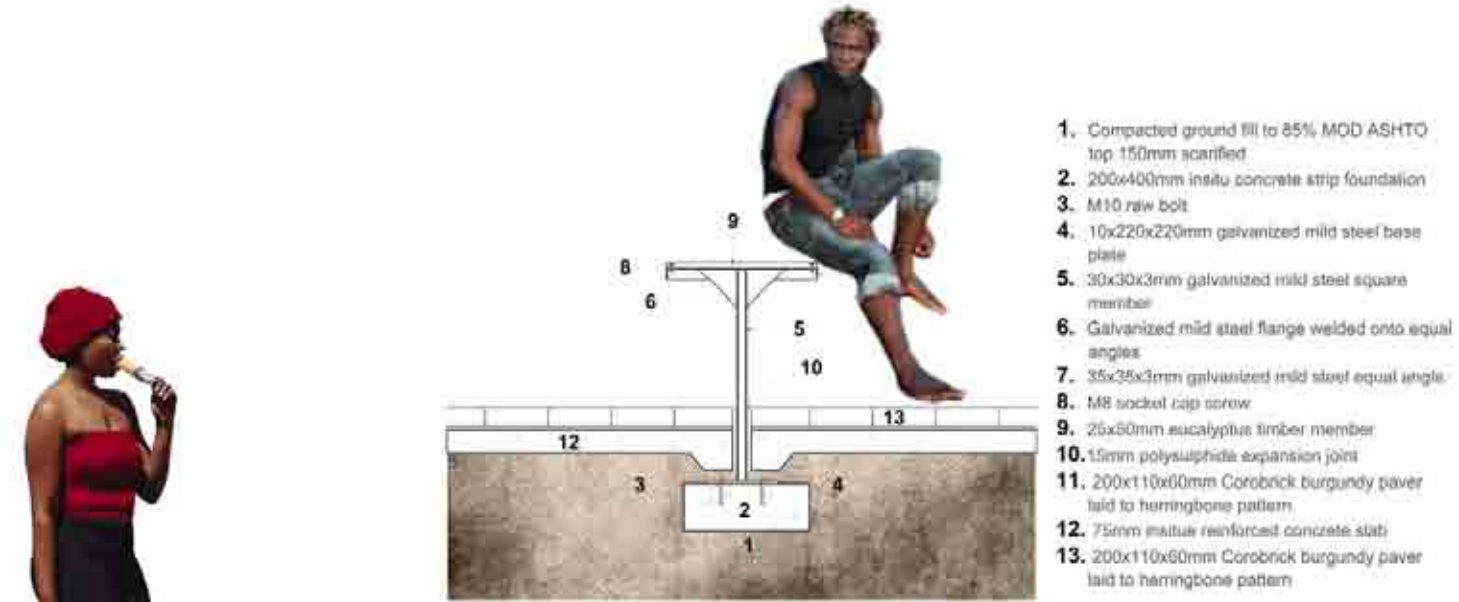


Illustration 196: Detail D Bench (Author, 2012).

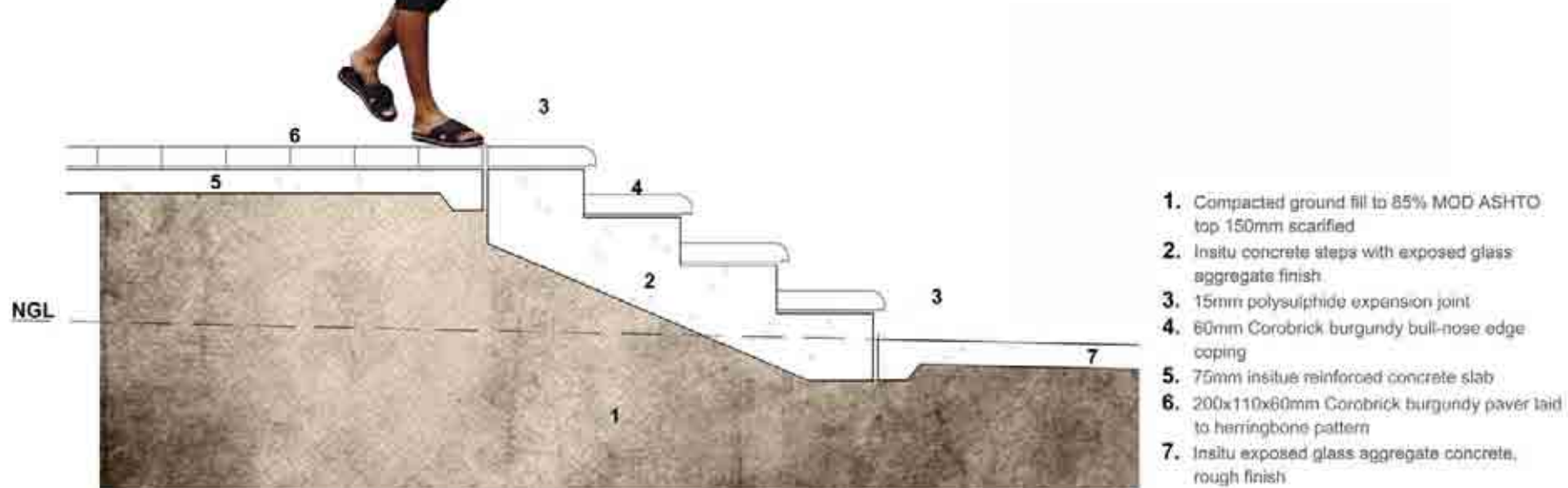


Illustration 197: Detail E Stairs - meeting of materials (Author, 2012).
114

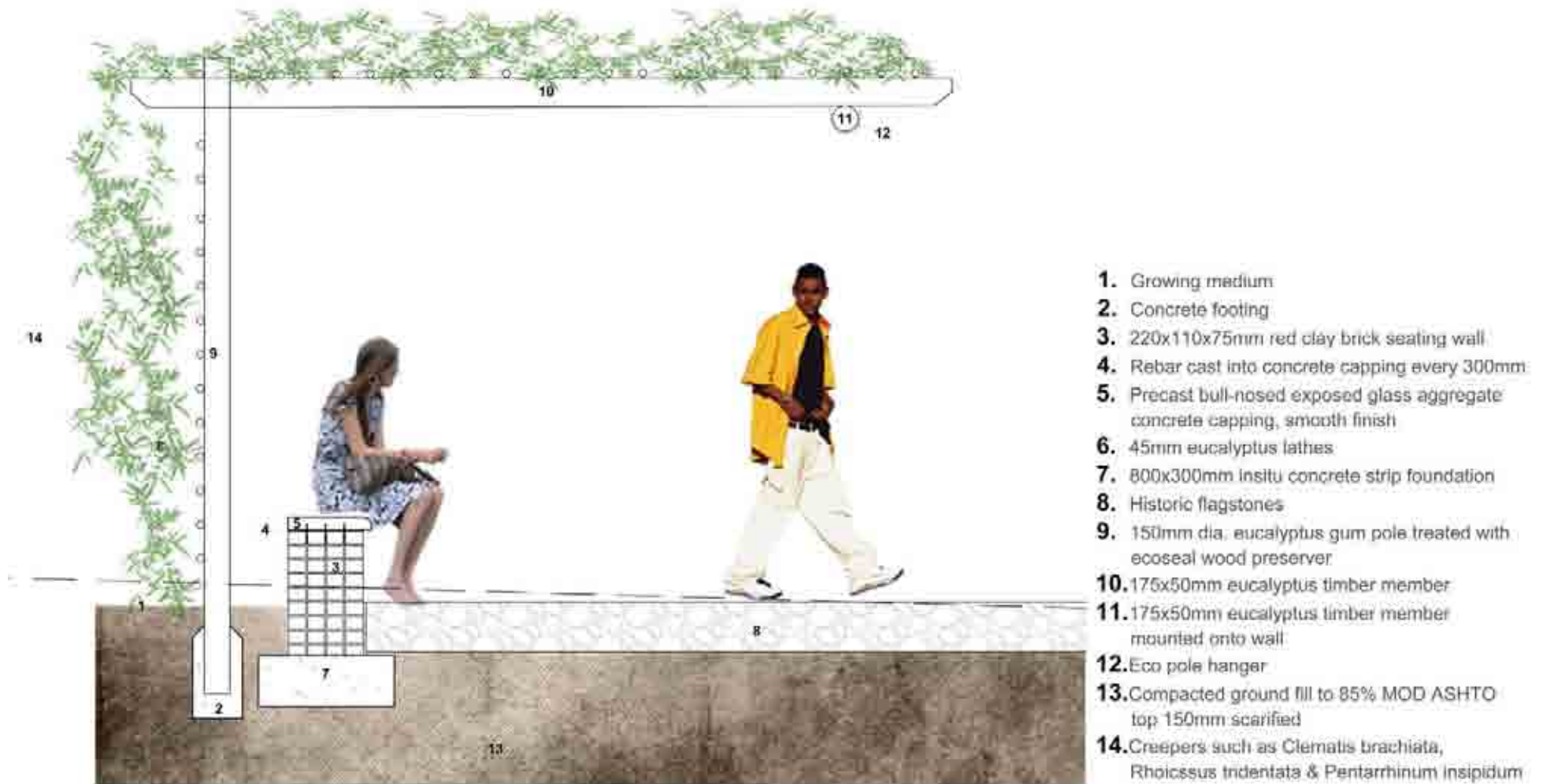
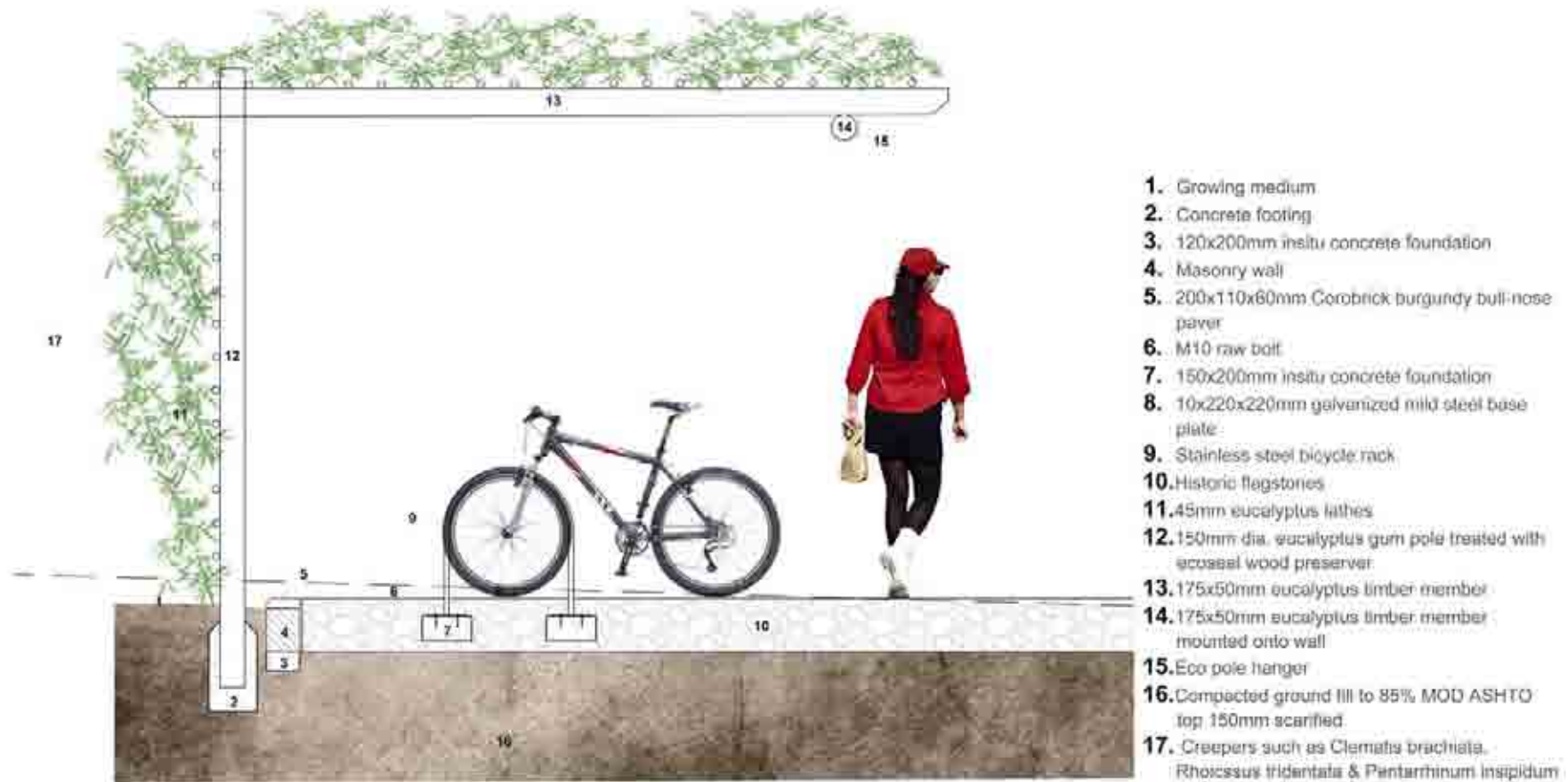


Illustration 198: Detail F Retail pergola with seating (Author, 2012).



1. Growing medium
2. Concrete footing
3. 120x200mm insitu concrete foundation
4. Masonry wall
5. 200x110x60mm Corobrick burgundy bull-nose paver
6. M10 raw bolt
7. 150x200mm insitu concrete foundation
8. 10x220x220mm galvanized mild steel base plate
9. Stainless steel bicycle rack
10. Historic flagstones
11. 45mm eucalyptus lathes
12. 150mm dia. eucalyptus gum pole treated with ecoseal wood preserver
13. 175x50mm eucalyptus timber member
14. 175x50mm eucalyptus timber member mounted onto wall
15. Eco pole hanger
16. Compacted ground fill to 85% MOD ASHTO top 150mm scarified
17. Creepers such as Clematis brachiata, Rhoissus tridentata & Pantarrhinum inspidum

Illustration 199: Detail G Retail pergola with bicycle stand (Author, 2012).
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Illustration 200: Detail H Bioswale (Author, 2012).

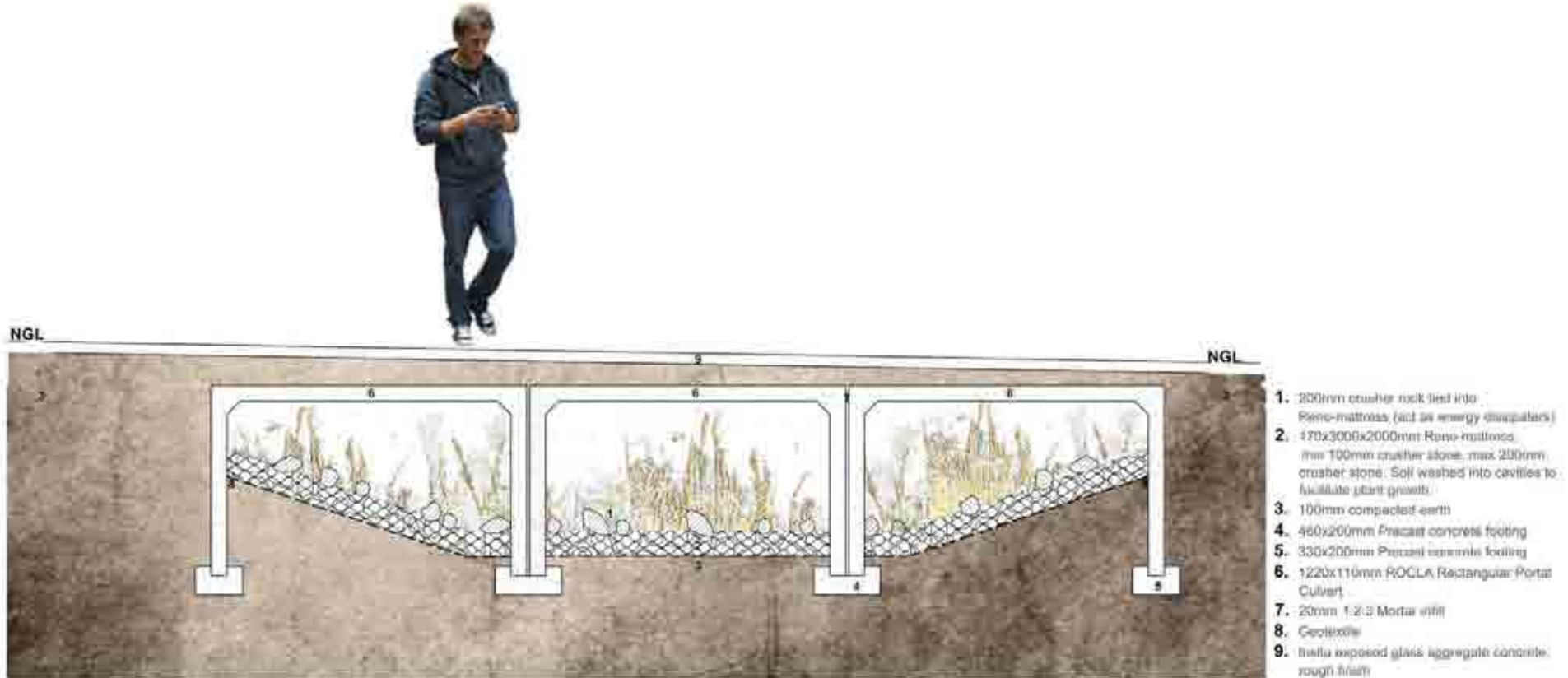


Illustration 201: Detail I Bioswale culvert (Author, 2012).
118

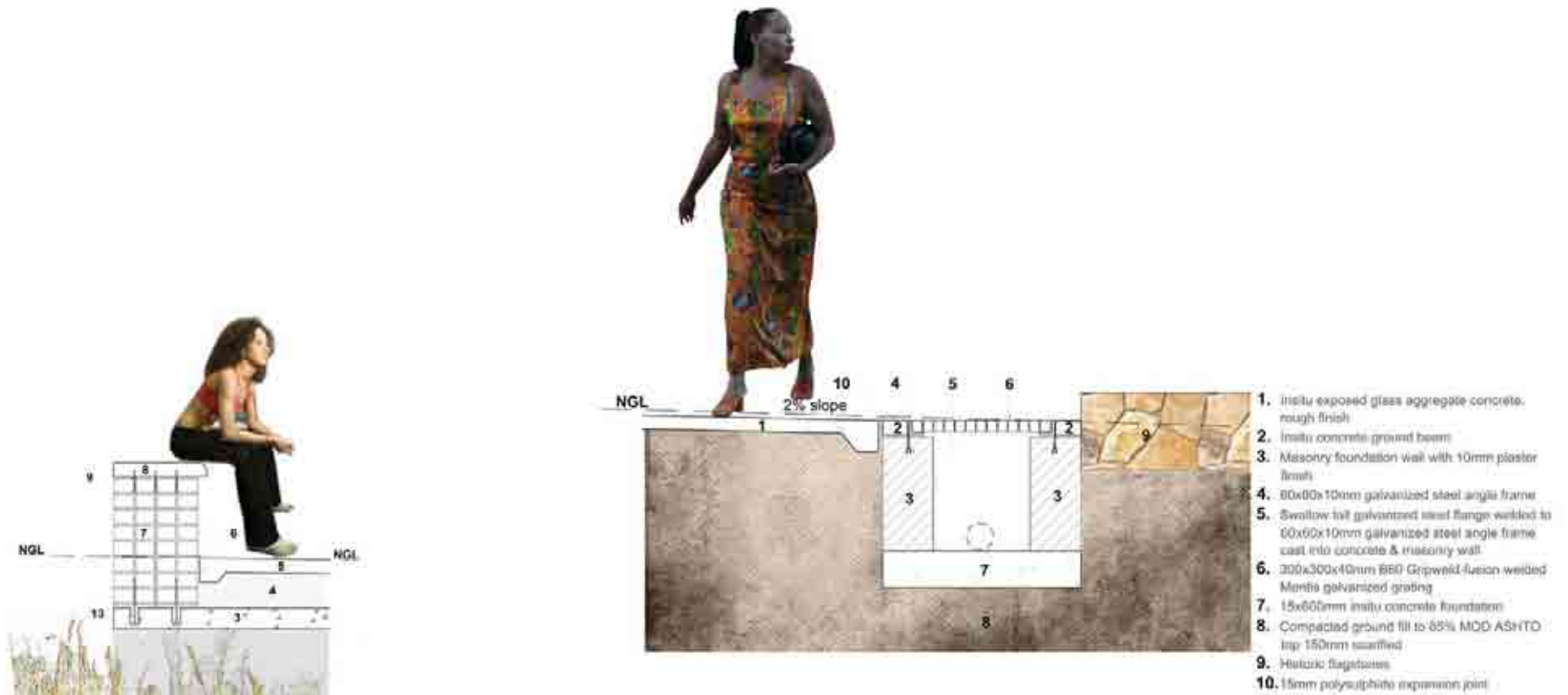


Illustration 202: Detail J Stormwater inlet (Author, 2012).

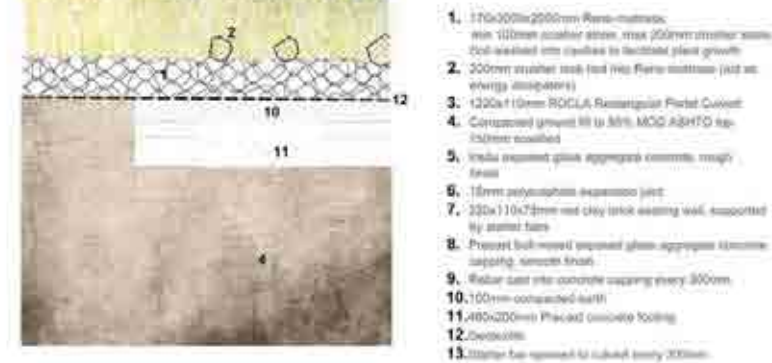


Illustration 203: Detail K Seating wall culvert (Author, 2012).

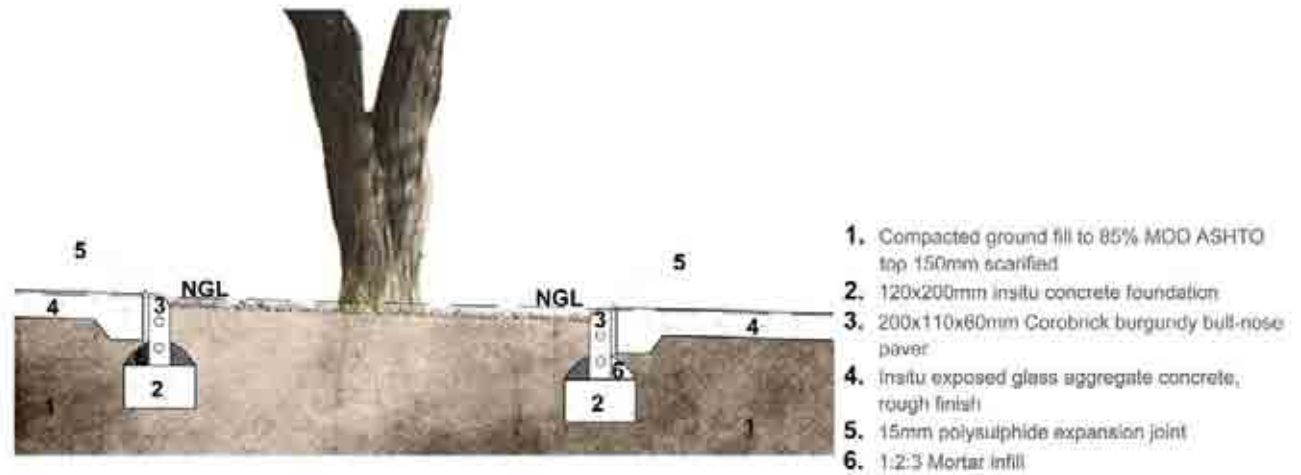


Illustration 205: Detail M Tree Planter (Author, 2012).

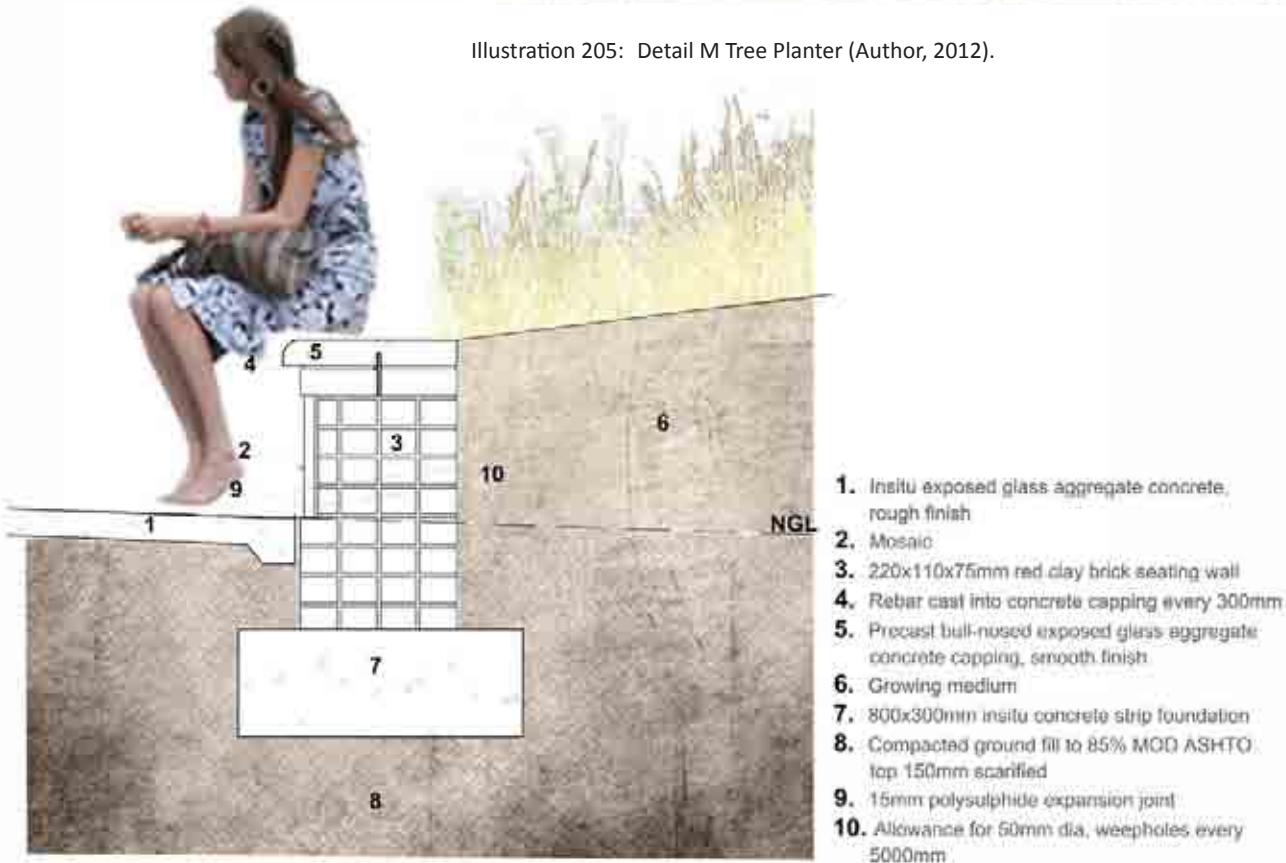


Illustration 204: Detail L Entrance Seating wall with community mosaic (Author, 2012).

SUSTAINABILITY RATING

As part of the ecological accounting the Sustainable Sites initiative (SSI) tool was used in order to generate a sustainability rating for the proposed Fort West intervention. This tool is used to establish and encourage sustainable practices in the landscape design, construction, operation and maintenance (SSI, 2009).

The prerequisites and credits are organised into nine sections that are based on the process of site development (SSI, 2009:9). The Fort West Intervention achieved the following ratings:

1. Site selection: 18/21
2. Pre-Design Assessment and Planning: 4/4
3. Site Design - Water: 43/44
4. Site Design - Soil and Vegetation: 46/51
5. Site Design - Material Selection: 34/36
6. Site Design - Human Health and Well-Being: 30/32
7. Construction: 17/21
8. Operations and Maintenance: 17/23
9. Monitoring and Innovation: 18/18

The project achieved an overall sustainability rating of 230 points out of a total of 250 points which classifies it as a four star sustainable project. See appendices for more detail.

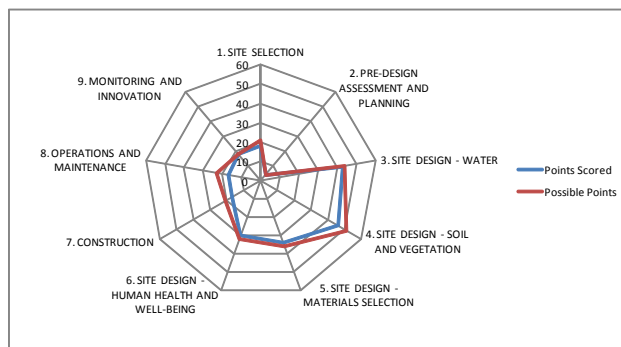


Illustration 206: Sustainable Sites Initiative graph (Author, 2012).



Illustration 207: Purple veld grass, Fort West (Author, 2012).

To forget how to dig the earth and to tend the soil is to forget ourselves
-Mahatma Gandhi-

CHAPTER 08

CONCLUSION

CONCLUSION

Fort West and the leprosy community have experienced a painful history. Communities were created through the common bond of this painful history. However, through the advancement of medical knowledge these communities suddenly ceased to exist, or did they? The current informal settler community illustrates how even though leprosy is no longer an issue there are other social issues that have resulted in the formation of a new kind of segregated community. Throughout this dissertation it is found that through the acknowledgement of the past for the development of the future, communities can be connected back to nature, ultimately regenerating meaning and identity. It also found that by respecting the environment and generating a multifunctional and sustainable landscape it is possible to aid social and ecological healing in these communities.

Fort West is an incredible place, rich with history, culture and nature. It is a uniquely textured and layered landscape that is just bursting to be shared. The author sincerely hopes that this incredible story of triumph and trials will not be lost through future development so that this place can become a world-renowned cultural landscape destination for all people, nationally and internationally.



Illustration 208: Birds nest, Fort West (Author, 2012).



*Suburbia is where the developer bulldozes out the trees, then names
the streets after them
- Bill Vaughan-*

Illustration 209: Cracked earth, Fort West (Author, 2012).

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LIST OF SOURCES

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INTERVIEWS

Marlie van Vuuren, Co-founder of the NEA Foundation, 17 December, 2012.

Pieter Breedt, Fort West resident, 24 May 2012.

Anton Jansen, Tshwane Heritage Association, 30 March 2012.

Erna Moller, Leprosy Mission, 7 August 2012.



Illustration 210: Tombstone, Fort West (Author, 2012).

“If a man walks in the woods for the love of them half of each day, he is in danger of being regarded as a loafer; but if he spends his whole day as a speculator, shearing off those woods and making the earth bald before her time, he is esteemed an industrious and enterprising citizen.”

-Henry David Thoreau-

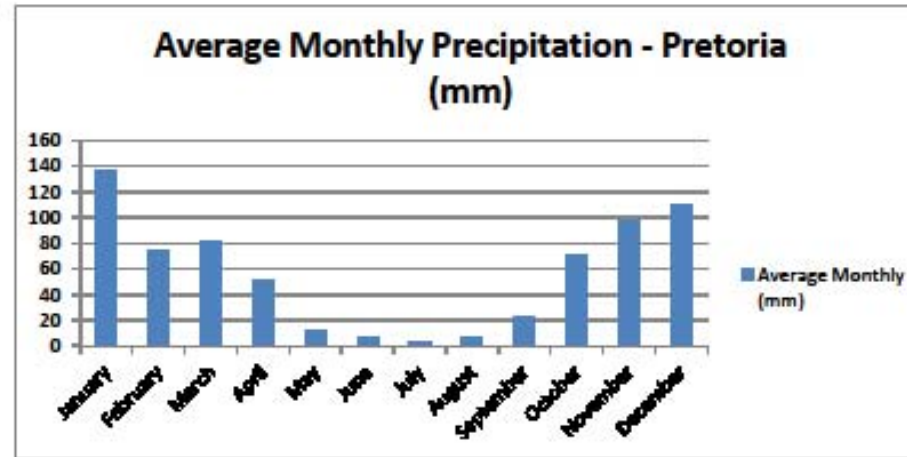
APPENDICES

STORMWATER CALCULATIONS

Stromwater Harvesting : Calculating Reservoir Capacity

Pretoria Climate Data - Precipitation

Month	Average Monthly (mm)
January	136
February	75
March	82
April	51
May	13
June	7
July	3
August	6
September	22
October	71
November	98
December	110
Year	674



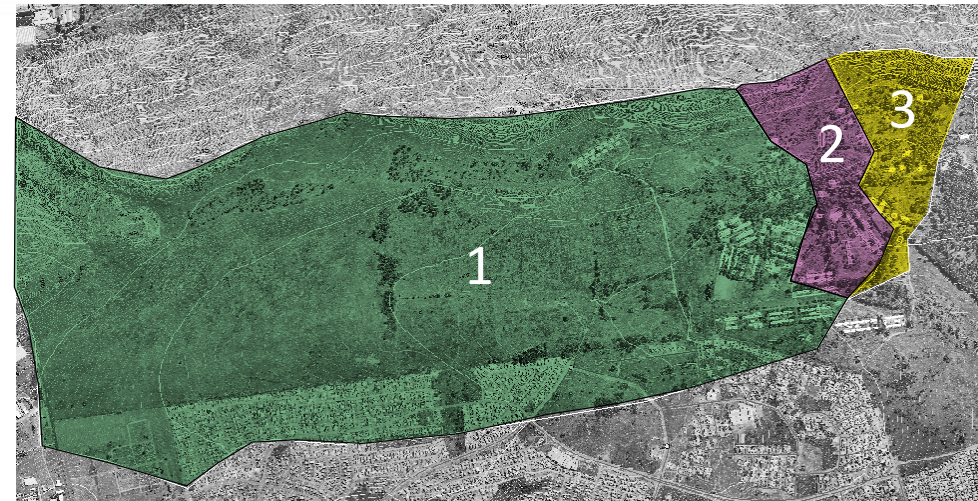
$$\text{Yield} = P \times A \times C$$

Table 1:

Catchment	Area (m ²)	Runoff Coefficient	Total (A x C)	Total
1	3751787	0.5	1875894	1875894
2	285813	0.5	142907	276166
3	266518	0.5	133259	133259

Table 2:

Planting Area	Total Planting Area (m ²)	Irrigation Depth/ Month (mm)	Total Water Demand
Phase 1	33313	0.16	5330
Phase 2	52084	0.16	8333



Rainwater Yield Calculation Phase 1

Month	Ave. Monthly precipitation (m)	Yield (m ³)	Total Water Demand (m ³)	Monthly Balance	Estimated Size of Dam (m ³)
January	0.136	273245	5330	267915	
February	0.075	150686	5330	145356	
March	0.082	164751	5330	159420	
April	0.051	102467	5330	97137	
May	0.013	26119	5330	20789	
June	0.007	14064	5330	8734	
July	0.003	6027	5330	697	5330
August	0.006	12055	5330	6725	
September	0.022	44201	5330	38871	
October	0.071	142650	5330	137320	
November	0.098	196897	5330	191567	
December	0.11	221007	5330	215677	
Annual Average	0.674	1354169	63961	N/A	5330

Rainwater Yield Calculation Phase 2

Month	Ave. Monthly precipitation (m)	Yield (m ³)	Total Water Demand (m ³)	Monthly Balance	Estimated Size of Dam (m ³)
January	0.136	273245	8333	264911	
February	0.075	150686	8333	142353	
March	0.082	164751	8333	156417	
April	0.051	102467	8333	94133	
May	0.013	26119	8333	17786	
June	0.007	14064	8333	5731	
July	0.003	6027	8333	-2306	8333
August	0.006	12055	8333	3721	
September	0.022	44201	8333	35868	
October	0.071	142650	8333	134316	
November	0.098	183838	8333	175504	
December	0.11	221007	8333	212673	
Annual Average	0.674	1354169	100001	N/A	8333

Once Phase 1 & Phase 2 are both implemented the dam will need to be able to carry a total of $5330+8333=13663\text{m}^3$

Therefore a Dam with a area of 12000m^2 and an average depth of 2m will be more then sufficient enough to be able to water both phases as well as retain enough water in the dam year around for recreation purposes

SUSTAINABLE SITES INITIATIVE

SUSTAINABLE SITE INITIATIVE - FORT WEST

TOSCA GRUNEWALD 27134131

1. SITE SELECTION			
Select locations to preserve existing resources and repair damaged systems			
Prerequisites & Credits	Possible Points	Points Achieved	Notes
1.1 Limit development of soils designated as prime farmland, unique farmland and farmland of statewide importance	N/A	N/A	
1.2 Protected floodplain functions	N/A	N/A	
1.3 Preserve Wetlands	N/A	N/A	
1.4 Preserve threatened or endangered species and their habitats	N/A	N/A	
1.5 Select brownfield or greyfields for development	5-10	7	Greyfield site - a site that has been previously developed or graded
1.6 Select sites with existing communities	6	6	
1.7 Select sites that encourage non-motorized transportation and use of public transit	5	5	Option 2: The project is located on a site with existing transit services within walking distance
Sub Total	21	18	
2. PRE-DESIGN ASSESSMENT AND PLANNING			
Plan for sustainability from the onset of the project			
Prerequisites & Credits	Possible Points	Points Achieved	Notes
2.1 Conduct a pre-design site assessment and explore opportunities for site sustainability	FULFILLED	FULFILLED	
2.2 Use an Integrated site development process	FULFILLED	FULFILLED	
2.3 Engage users and other stakeholders in site design	4	4	Community participation was utilised in the site design
Sub Total	4	4	
3. SITE DESIGN - WATER			
Protect and restore processes and systems associated with a site's hydrology			
Prerequisites & Credits	Possible Points	Points Achieved	Notes

3.1 Reduce potable water use for landscape irrigation by 50% from established baseline	FULFILLED	FULFILLED	
3.2 Reduce portable water use for landscape irrigation by 75% from established baseline	2-5	5	Reduce use of portable water, natural surface water and groundwater by 75%
3.3 Protect and restore riparian, wetland and shorelines	3-8	8	
3.4 Rehabilitate lost streams, wetlands, and shorelines	2-5	8	
3.5 Manage stormwater on site	5-10	10	100% improvement in water storage capacity
3.6 Protect and enhance on-site water resources and receiving water quality	3-9	9	
3.7 Design rainwater/stormwater features to provide a landscape amenity	1-3	3	100% of the rainwater/stormwater feature on site are designed as amenities and are visible & accessible from the high-use portion of the site
3.8 Maintain water features to conserve water and other resources	1-4	3	
Sub Total	44	46	
4. SITE DESIGN - SOIL AND VEGETATION			
Protect and restore processes and systems associated with a site's soil and vegetation			
Prerequisites & Credits	Possible Points	Points Achieved	Notes
4.1 Control and manage known invasive plants found on site	FULFILLED	FULFILLED	
4.2 Use appropriate non-invasive plants	FULFILLED	FULFILLED	
4.3 Create a soil management plan	FULFILLED	FULFILLED	
4.4 Minimize soil disturbance in design and construction	6	6	Limit disturbance of healthy soil
4.5 Preserve all vegetation designated as special status	5	5	Preserve all vegetation with heritage value

4.6 Preserve or restore appropriate plant biomass on site	3-8	8	Semi Restore appropriate plant biomass
4.7 Use native plants	1-4	4	100% of the site vegetation is composed of native plants
4.8 Preserve plant communities native to the ecoregion	2-6	4	
4.9 Restore plant communities native to the ecoregion	1-5	4	Restore native plant communities to comprise at least 75% of the site vegetated area
4.10 Use vegetation to minimise building heat requirements	2-4	4	
4.11 Use vegetation to minimise building cooling requirements	2-5	4	
4.12 Reduce urban heat island effects	3-5	5	Reduce heat island effect for 60% of all site hardscape & structures
4.13 Reduce the risk of catastrophic wildfire	3	3	
Sub Total	51	46	

5. SITE DESIGN - MATERIALS SELECTION			
Reuse/recycle existing materials and support sustainable production practices			
<u>Prerequisites & Credits</u>	<u>Possible Points</u>	<u>Points Achieved</u>	<u>Notes</u>
5.1 Eliminate the use of wood from threatened tree species	FULFILLED	FULFILLED	
5.2 Maintain on-site structures, hardscape and landscape amenities	1-4	4	All existing amenities on site will be maintained and used
5.3 Design for deconstruction and disassembly	1-3	2	40% of materials ect, used for construction facilitate reuse and are designed for deconstruction
5.4 Reuse salvaged materials and plants	2-4	4	20% of all materials used on site are salvaged
5.5 Use recycled content materials	2-4	3	

5.6 Use certified wood	1-4	4	100% of the material will be recycled
5.7 Use regional materials	2-6	6	90% of all materials are sourced within the region
5.8 Use adhesives, sealants, and coatings with reduced VOC emissions	2	2	
5.9 Support sustainable practices in plant production	3	3	All plants will be bought from a provider that reduces resource consumption and waste
5.10 Support sustainable practices in materials manufacturing	3-6	6	
Sub Total	36	34	

6. SITE DESIGN - HUMAN HEALTH AND WELL-BEING			
Build strong communities and a sense of stewardship			
<u>Prerequisites & Credits</u>	<u>Possible Points</u>	<u>Points Achieved</u>	<u>Notes</u>
6.1 Promote equitable site development	1-3	3	The construction of the site will provide for a range of community benefits during its construction
6.2 Promote equitable site use	1-4	4	The project will provide for a range of community benefits in regards to its post-construction site use, i.e. Skills development & Formal trading

6.3 Promote sustainable awareness and education	2-4	4	Skills development which is a recycling centre encourages the understanding and expands knowledge of sustainability, this is linked both to the community and the schools surrounding the site
6.4 Protect and maintain unique cultural and historical places	2-4	4	The project ensures the lasting protection of the cultural/historical site features
6.5 Provide for optimum site accessibility	3	3	Promote site use by increasing user's ability to understand & safely access outdoor spaces
6.6 Provide opportunities for outdoor physical activity	4-5	4	Different opportunities for outdoor physical activities are provided for, i.e. Bicycle racks, stage for concerts, & informal soccer fields
6.7 Provide views of vegetation and quiet outdoor spaces for mental restoration	3-4	3	Visual and physical connections to the outdoors are provided for each building
6.8 Provide outdoor spaces for social interaction	3	3	Various outdoor gathering spaces are provided for in order to accommodate communities and improving social ties
6.9 Reduce light pollution	2	2	
Sub Total	32	30	
7. CONSTRUCTION			
Minimize effects of construction-related activities			

Prerequisites & Credits	Possible Points	Points Achieved	Notes
7.1 Control and retain construction pollutants	FULFILLED	FULFILLED	
7.2 Restore soils disturbed during construction	FULFILLED	FULFILLED	
7.3 Restore soils disturbed by previous development	2-8	7	Soil is very disturbed by previous development
7.4 Divert construction and demolition materials from disposal	3-5	3	reuse and/or salvage at least 50% of structural materials
7.5 Reuse or recycle vegetation, rocks and soil generated during construction	3-5	5	Retain 100% of land-clearing materials on site
7.6 Minimize generation of greenhouse gas emissions and exposure to localized air pollutants during construction	1-3	2	
Sub Total	21	17	
8. OPERATIONS AND MAINTENANCE			
Maintain the site for long-term sustainability			
Prerequisites & Credits	Possible Points	Points Achieved	Notes
8.1 Plan for sustainable site maintenance	FULFILLED	FULFILLED	
8.2 Provide for storage and collection of recyclables	FULFILLED	FULFILLED	
8.3 Recycle organic matter generated during site operations and maintenance	2-6	5	Compost and/or recycle 100% of vegetation trimmings on site
8.4 Reduce outdoor energy consumption for all landscape and exterior operations	1-4	3	
8.5 Use renewable sources for landscape electricity needs	2-3	2	
8.6 Minimize exposure to environmental tobacco smoke	1-2	2	The landscape will be a 100% smoke free zone
8.7 Minimize generation of greenhouse gasses and exposure to localized air pollutants during landscape maintenance activities	1-4	3	

8.8 Reduce emissions and promote the use of fuel-efficient vehicles	4	2	
Sub Total	23	17	
9. MONITORING AND INNOVATION			
Reward exceptional performance and improve the body of knowledge on long-term sustainability			
Prerequisites & Credits	Possible Points	Points Achieved	Notes
9.1 Monitor performance of sustainable design practices	10	10	
9.2 Innovation in site design	8	8	
Sub Total	18	18	
TOTAL - RATING	250	230	<i>Four Star Rating</i>

2009 Rating System:
250 Points Total

One Star:	100 Points	(40% of total points)
Two Stars:	125 Points	(50% of total points)
Three Stars:	150 Points	(60% of total points)
Four Stars:	200 Points	(80% of total points)