

# THE NARRATIVE OF A SANCTUARY

**A DIDACTIC DESIGN APPROACH FOR THE CULTURAL AND BIOPHYSICAL  
HERITAGE OF WONDERBOOM FORT AND NATURE RESERVE, PRETORIA,  
SOUTH AFRICA**

By Natanja Blom



Illus 1: Wonderboom Fort entrance, (Author, 2011)



Illus 2: Wonderboom Nature Reserve, view in the direction of the Wonderboom tree. (Author, 2011)



The Narrative of a Sanctuary: A didactic design approach for the cultural and biophysical heritage of Wonderboom fort and nature reserve, Pretoria, South Africa.

By Natanja Blom

Studyleader: Ida Breed

Studio master: Jacques Laubscher

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 Technology, University of Pretoria, South Africa.

November 2011



Illus 3: Wonderboom fort ruins, view of the rooms from outside of the ruin. (Author, 2011)

Full dissertation title: The Narrative of a Sanctuary: A didactic design approach for the cultural and biophysical heritage of Wonderboom fort and nature reserve, Pretoria, South Africa.

Submitted by: Natanja Blom

Student number: 25080513

Study leader: Ida Breed

Course coordinator: Jacques Laubscher (Dr)

Degree: Master of Landscape Architecture (Professional)

Department: Department of Architecture

Faculty: Faculty of Engineering, Built Environment and Information Technology

University: University of Pretoria

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 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.

signature \_\_\_\_\_  
Natanja Blom



## Project summary

Programme: A didactic narrative of Wonderboom fort, tree and reserve, revealing the heritage layers.

Site description: Wonderboom Nature Reserve, Pretoria north

Client: City Council of Pretoria

Users: Local residents, regional visitor's, national and international tourism

Site Location: Wonderboom Nature Reserve (remaining portion 18, 19, portion 7, 55 and 56 of the farm Wonderboom 302 JR)

Address: c/o Voortrekker Road and extension of Lavender Road, Wonderboompoort, Pretoria, South Africa

GPS Coordinates: 25°41'33"S  
28°11'39"E

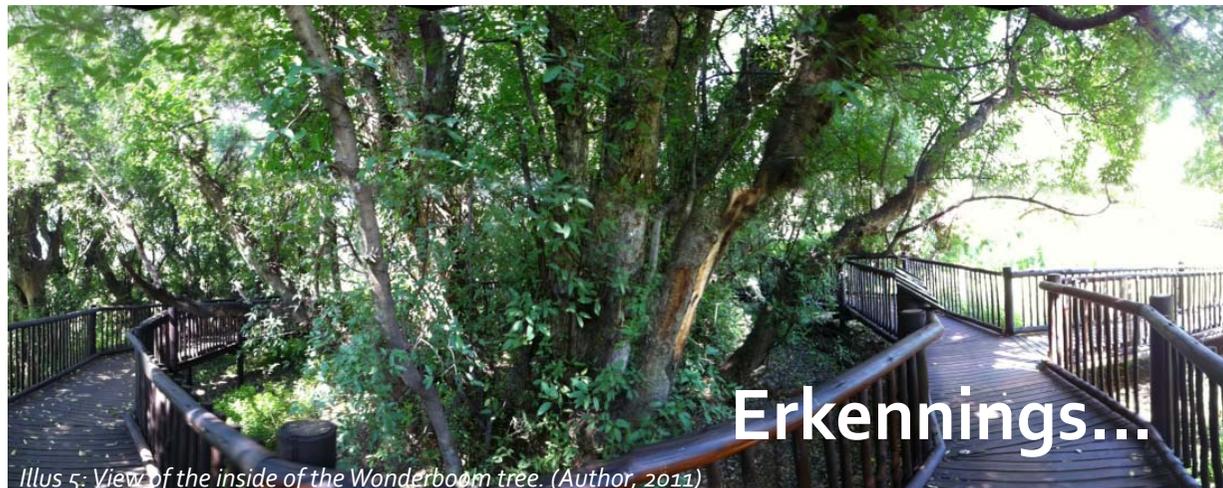
Architectural Theoretical Premise: Semiotics, narratives and didactics as communication tools to 'speak' of the site's cultural and biophysical elements and the history thereof.

Architectural Approach: Better access, heightened awareness and heightened interest through complexity and coherence. A reversible design intervention

Research field: Heritage and cultural landscapes



*Illus 4: Wonderboom fort, night view through one of the aiming holes towards Pretoria city. (Author, 2011)*



Ek dra hierdie verhandeling op aan die Groot Landskapsargitek wat my die vergunning gee om 'n junior vernoot in Sy skepping te kan wees.

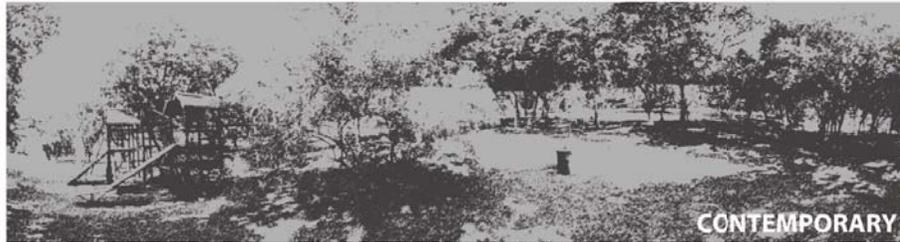
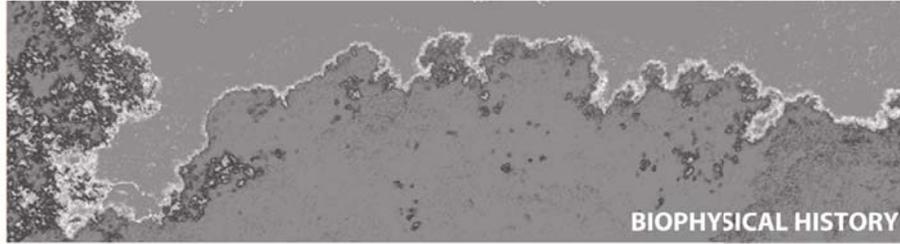
Baie dankie ook aan my studieleier, studiomaster en elke dosent wat 'n rol gespeel het in my opleiding.

My spesiale waardering aan my familie en vriende vir hulle ondersteuning.



*Illus 6: Wonderboom Tree, close up view with the wooden walkway around the tree. (Author, 2011)*

# Abstract



*Illus 7: The three typologies (Author, 2011)*

Many past events go unmarked and unremembered, and eventually lose their significance. One such area is the Wonderboom fort, tree and the Nature Reserve.

The research investigates how the landscape design can strengthen the existing spirit of place. The place's identity - that of a refuge - is intangible and unconscious, but can be made tangible through a narrative that engaged with the cultural and biophysical history of the site (the tangible world) by means of didactics and semiotics. This will provide a learning experience with added meaning that gives added identity of place. Furthermore, specific design principles are investigated namely: better access, heightened awareness, and heightened interest created through complexity and coherence in design.

Complexity and coherence will generate interest in the user to engage with the physical/conscious experience, engaging and learning about the physical aspects of the site's nature and culture. The unconscious experience will be guided through semiotics - the use of symbols that give meaning and add identity to place and user.

The design intervention will be a landscape which tells the story of the place and unveils the heritage and history of the site in such a way that visitors will have an engaging and informative experience of the past events.

The site can be the northern link and gateway into the city of Pretoria, a destination for local and international tourism, and a green corridor for people to experience the city in a different way.

The design approach ties in with the Burra Charter approach, namely "changing as much as necessary but as little as possible" but also with the Ename charter stating that Heritage sites should be presented to the public and the public should be educated to ensure their protection.

Hampton Adams rightfully says that: Only by looking at the past, can we plan the future.

Keywords:

Didactic	Meaning
Semiotics	Complexity
Narrative	Coherence
Cultural	Access
Biophysical	Awareness
Ruin	Genius loci
Identity	Landscape architecture
Experience	

# Table of Contents

## INTRODUCTION

## HISTORICAL BACKGROUND

## THEORETICAL DISCOURSE

## FRAMEWORK

1

2

3

4

- 1.1 Background to the problem
- 1.2 Core research question
- 1.3 Hypothesis
- 1.4 Sub-questions
- 1.5 Vision
- 1.6 Introduction to the site
  - 1.6.1 Study area
  - 1.6.2 User
  - 1.6.3 Client
- 1.7 Methodology and methods
- 1.8 Delimitations and assumptions

- 2.1 Introduction
- 2.2 Natural history of the Magaliesberg area
- 2.3 The cultural history of the Magaliesberg area
  - 2.3.1 Introduction
  - 2.3.2 The Stone Age
  - 2.3.3 The Iron Age
  - 2.3.4 Early travelers
  - 2.3.5 Voortrekker invasion
  - 2.3.6 South African Republic
  - 2.3.7 Founding of Pretoria
  - 2.3.8 British annexation of the Transvaal
  - 2.3.9 The first Anglo Boer War
  - 2.3.10 The second Anglo Boer War
  - 2.3.11 The nature area
- 2.4 Conclusion

- 3.1 Introduction
- 3.2 Literary investigation of core theoretical concepts
  - 3.2.1 Semiotics
  - 3.2.2 What is a narrative in terms of design?
  - 3.2.3 What is didactic design?
  - 3.2.4 How can identity be created?
  - 3.2.5 How can experience strengthen identity?
  - 3.2.6 Meaning in the landscape
  - 3.2.7 How do you create interest and discovery in the landscape?
  - 3.2.8 How can access be created?
  - 3.2.9 How can awareness be created?
- 3.3 Further investigation into key concepts of the site and design.
  - 3.3.1 The tangible and intangible
  - 3.3.2 Ruins
- 3.4 Conclusions

- 4.1 Introduction
- 4.2 Existing Open Space Framework
  - 4.2.1 Context and location
  - 4.2.2 The larger urban context analysis
- 4.3 The larger block context for urban development analysis
  - 4.3.1 Larger block context location
  - 4.3.2 Historical features
  - 4.3.3 Topography and setting patterns
  - 4.3.4 Gateways and main roads into Pretoria City
  - 4.3.5 Fortifications and monuments in Pretoria
  - 4.3.6 Open space, parks, landscape structure and waterways
  - 4.3.7 Educational institutes
  - 4.3.8 Link between Pretoria north and south
  - 4.3.8 Composite plan of the block context analysis
- 4.4 Framework concept
  - 4.4.1 Connection of the north and the south (concept 1)
  - 4.4.2 Activating Pretoria (concept 2)
  - 4.4.3 Framework narrative (concept 3)
  - 4.4.4 Conclusion
- 4.5 Location of the fortifications of Pretoria and their immediate environment
- 4.6 Large conceptual contextual framework proposal
- 4.7 Framework narrative

SETTING: THE SITE

DESIGN DEVELOPMENT SKETCHPLAN CLARIFICATION

TECHNICAL INVESTIGATION

5

- 5.1 Introduction
- 5.2 The larger context
  - 5.2.1 Site location
  - 5.2.2 Landuses
  - 5.2.3 Geology (Magaliesberg ridge)
  - 5.2.4 Vegetation (Magaliesberg ridge)
- 5.3 Wonderboom Nature Reserve
  - 5.3.1 Exisitng site
- 5.4 Historical background of the Wonderboom Nature Reserve and important aspects thereof
  - 5.4.1 Wonderboom tree
  - 5.4.2 The two caves
  - 5.4.3 Wonderboomppoort
  - 5.4.4 The Wonderboom fort
  - 5.4.5 Wonderboom Nature Reserve
  - 5.4.6 The man-made waterfall
- 5.5 Archaeological data analysis
  - 5.5.1 Historical sites on the nature reserve with cultural and archaeological significance
- 5.6 Cultural and biophysical aspects of the Wonderboom Nature Reserve
- 5.7 The site's contrasting factors/aspects
- 5.8 SWOT analysis
- 5.9 Concept
- 5.10 Conclusion

6

- 6.1 Introduction
- 6.2 Concept
- 6.3 Design guidelines
- 6.4 The specific focus areas on different scales
- 6.5 Wonderboom Nature Reserve frame work plan development
- 6.6 Wonderboom Nature Reserve master plan development
- 6.7 Conclusion

7

- 7.1 Introduction
- 7.2 Analysis summary
- 7.3 Final sketchplan: roof plan
- 7.4 Final sketchplan: building plan
- 7.5 Coherence
- 7.6 Complexity
- 7.7 The three narratives
- 7.8 Sections
- 7.9 Zoning of sketchplan
- 7.10 The discussion of the different spaces (zones)
  - 7.10.1 Entrance approach
  - 7.10.2 Entrance
  - 7.10.3 Narrative (history)
  - 7.10.4 Courtyard
  - 7.10.5 Lookout points 1-4
  - 7.10.6 Medicinal roof garden
  - 7.10.7 Geology, materiality and spirit of place
  - 7.10.8 Amphitheatre
  - 7.10.9 Restaurant and spill-out area
- 7.11 Exploration of existing structure and new intervention
- 7.12 Conclusion

8

- 8.1 Introduction
- 8.2 Location map
- 8.3 The site in context
- 8.4 Final sketchplan: roof plan
- 8.5 Final sketchplan: building plan
- 8.6 Soft materials
  - 8.6.1 Tree plan and list
  - 8.6.2 Medicinal roof garden plan
  - 8.6.3 Planting pallet
  - 8.6.4 Plant list
  - 8.6.5 Veld grass list
  - 8.6.6 Plant sources diagram and table
- 8.7 Hard materials
  - 8.7.1 Paving plan
  - 8.7.2 Material pallet, material sources diagram and table
- 8.8 Sustainability
- 8.9 Technical plans
  - 8.9.1 Reference plan
  - 8.9.2 Lighting plan
  - 8.9.3 Storm water management plan
  - 8.9.4 Storm water calculations
- 8.10 Technical sections and details

9. CONCLUSION

10. BIBLIOGRAPHY

11. APPENDICES

12. ADDENDUMS



*"A place of wilderness and war,  
a mountain chain  
linking the magnificence of nature  
with the turbulent history  
of our society"  
(Carruthers, 2000)*

# INTRODUCTION 01

1. BACKGROUND TO THE PROBLEM
2. CORE RESEARCH QUESTION (PROBLEM)
3. HYPOTHESIS
4. SUB QUESTIONS
5. VISION
6. INTRODUCTION TO THE SITE
7. METHODOLOGY AND METHODS
8. DELIMITATIONS AND ASSUMPTIONS

Chapter one provides an overview of the main idea of the study. It summarises what the author's objectives are and how she will go about achieving them.



## 1.1 Background to the Problem

Many past events go unmarked and unremembered, and eventually lose their significance.

It is only in the late 1900's that South Africa started to protect its heritage and realized the importance of its conservation. The Simon van der Stel Foundation, known today as Heritage South Africa, was established in 1959 and is currently the largest and oldest non-governmental organisation involved in heritage conservation (Heritage SA, 2011). South Africa only became part of UNESCO (United Nations Educational, Scientific and Cultural Organization), again in 1994, (South Africa was a member state during 1946 - 1956) (UNESCO Worldwide, 2007). ICOMOS (International Council on Monuments and Sites) was founded in 1965 in Warsaw (Poland), only in the last four decades. "It is the only international non-governmental organisation dedicated to promoting the application of theory, methodology, and scientific techniques to the conservation of the architectural and archaeological heritage." (ICOMOS, 2009) South Africa has only eight recognised world heritage sites. (UNESCO -SA, 2011) There are many more heritage sites worth conserving and treasuring, but the public needs to be made aware of their existence.

According to Lynch (1960), "Many symbolic and historic locations in a city are rarely visited by its inhabitants, but the survival of these unvisited, hearsay settings conveys a *sense* of security and continuity." History provides for a *sense* of belonging. Some South African heritage goes unnoticed and the neglect of these historically significant sites results in South Africans losing their identity.

For example, most of the public and tourists visiting Pretoria aren't aware of the significant fortifications within the cityscape, or their history. Most of the tourists and/or public are not aware of the fort, wonderboom tree or the existence of the Wonderboom Nature Reserve.

A questionnaire-survey was taken by 100 residents from Pretoria east, west, north and south, during March - June 2011 (Author, 2011). According to the results obtained 30% of the people was aware of the Wonderboom Nature Reserve and has visited it at some stage in their lives, 25% of the people was aware of the Wonderboom Nature Reserve, but has never been there and 40% of the people wasn't aware of the Wonderboom Nature Reserve. Upon closer inspection of the awareness of the reserve's main biophysical icon, the wonderboom tree, only 25% was aware of the tree, 29% was aware of it but has never visited it and 45% of the people wasn't aware of the tree at all. Looking at the main cultural aspect of the nature reserve, the fort, only 17% of the people was aware of it and has visited it in the past, 19% was aware of it but has never seen it and 64% wasn't aware of it.

Only three of the seven forts of Pretoria have been restored and studied by archaeologists, the rest were lost for ruins. These forts and places of heritage should be made more accessible to the public and the public should be made aware of these significant places.

"South Africa's natural and cultural heritage resources are continually being threatened as a result of unsustainable development, urban encroachment, and a lack of urgency to protect habitats, species, heritage sites and values." (Bewsher, 2005: 2)

Urbanisation has also played an enormous role in placing pressure on the conservation of the mountains. Valleys have been dammed, farming has moved into 'batteries' and hothouses, recreational facilities are proliferating and traditional land use has become less profitable than intensive development according to Carruthers (2000: 4). The need for conservation is now greater than ever.

Breedlove (2002) states that cultural heritage has been recognised as consisting of those ideas, things, and places we have inherited from past generations and desire to leave as our legacy for future generations.

Van Schalkwyk (in, Breedlove, 2002), states that someone without a tangible, visible, knowable past is indeed poor, no matter how many contemporary riches they may possess. Cultural heritage is important because it helps us to define who we are, where we have been, and where we are going. Breedlove (2002) defines cultural heritage as the "language, belief systems, knowledge, and ideas, as well as the more tangible places and things." All aspects of culture are interrelated. "The landscape provides the context for the built environment, and together they provide the context for understanding the present, by examining the past." (Breedlove, 2002: 16)

"Considering that, in a society where living conditions are changing at an accelerating 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 civilisation 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 Document 17 C/107 1972)

This dissertation will aim to look at the cultural and biophysical past of Wonderboom Nature Reserve and plan for its future. It is an attempt design to integrate Wonderboom Nature Reserve as part of Pretoria's identity.

Hampton Adams rightfully says that: Only by looking at the past, can we plan the future.

## 1.2 Core research question (problem)

How can a design narrative create awareness of the cultural and biophysical aspects of a site and ultimately create meaning and identity?

## 1.3 Hypothesis

The nature of the design proposal should be a didactic narrative that will create interest and discovery and through experience strengthen the local identity.

## 1.4 Sub-questions

1. What are the cultural and biophysical aspects of Wonderboom Nature Reserve?
2. How can narrative be used in design communication?
3. How can didactics be used in design communication?
4. How can identity of place be strengthened?
5. How do you create interest and discovery in the landscape?
6. How do you provide better access to a site?
7. How do you enhance awareness of a site?



## 1.5 Vision

A landscape which tells the story of the place, and unveils the heritage and history of the site in such a way that visitors will have an exciting but informative experience of the past events. The site can become a tourist attraction, a destination, a place everyone would go to and a place to get in contact with nature without being far away from the city. In a larger scheme this site can be the northern link and gateway into the Pretoria city, and a green corridor for people to experience the city in a different manner.

Illus 9: Sunset at the Wonderboom fort. (Author, 2011)

## 1.6 Introduction to the site

### 1.6.1 Study area

The Wonderboom Nature Reserve located on the Magaliesberg at Wonderboompoort in Pretoria north. The nature reserve is owned by the Tshwane City Council. See Illus. 10. (For greater/ indepth discussion of the site refer to chapter 5.)

#### 1.6.1.1 Historical context

Wonderboom Nature Reserve's history dates back 2300 million years with the beginning of the Magaliesberg ridge formation. This specific site is classified as the site with the longest period of human settling in this area. Traces of Stone Age and Iron Age settlements and artefacts were found in the nature reserve and surrounding area. One of the four forts was built on the mountain ridge, called Wonderboompoort fort which dates back to 1897. The Wonderboom is located in the nature reserve which is 1000 years old. The day-of-the-vow commemorations have been held underneath this tree for the past 77 years. Wars between Ndebeles and other indigenous tribes and Voortrekkers were fought in these mountains. A man-made waterfall on the western cliff celebrates the Union of South Africa and was constructed in 1960. (For indepth discussion of the site's history refer to chapter 2 and 5.)

The presence of water made the area suitable for keeping livestock. Mountainous areas also provide suitable shelter for people. The natural terracing may also have provided suitable agricultural space for prehistoric people. One would, therefore, suspect that the area have been used in the past by people as the environment suited their needs just fine. During times of turmoil the mountain would also have provide a safe haven from attacks. (Van Vollenhoven, 2008: 19)

#### 1.6.1.1 Physical context

The Wonderboom Nature Reserve is situated on part of the old farm Wonderboom. The Magaliesberg Mountain runs through the nature reserve from east to west and covers the entire southern side of the reserve.

The vegetation on the property mainly consists of natural indigenous species, but disturbance is evident via invader and pioneer species in certain areas, especially close to the river (west) and on the southern side of the reserve. According to Van Vollenhoven (2008, 19) this was probably caused by grazing of livestock as the farm used to be a commercial farm in the days of the old South African Republic (ZAR – Zuid-Afrikaansche Republiek).

On the western side: the boundary of the reserve is formed by the Apies River and a tributary thereof. The river drains the area in a northern direction. The northern boundary is formed by the extension of Lavender Road and the eastern boundary by the extension of Voortrekker Road. Lombard Street forms the southern boundary of the reserve. On this side residential dwellings are found just across the street. (See illus. 10)

The geology of the reserve is part of the Gold Reef Mountain Bushveld. It features rocky hills and ridges with more dense woody vegetation on south-facing slopes with distinct floristic differences. Historical information mentions a large variety of plant species in the area. (Van Vollenhoven, 2008:19)

The topography of the area is very steep due to the Magaliesberg Range running through it from east to west. On the western side: the mountain has vertical cliffs, giving access to some caves. A ravine cuts the western slope into two areas. The southern slope is less steep and some natural terraces are formed before the summit is reached. The eastern slope is steeper than the south, but not as much as the west. The northern slope also shows signs of natural terracing resulting in steep rocky areas alternated by flat areas. The summit of the mountain is relatively flat.

The part of the reserve furthest to the north is used as the resort area. This area is flat with a very slight fall from south to north. This area has been developed in the past and includes offices, an entrance building, picnic and braai facilities as well as some roads. The famous Wonderboom tree is situated in the northeast of this area.

Fauna species currently include impala, rock hyrax (dassie), porcupine, zebra and smaller mammals, amphibians and reptiles. The reserve hosts at least 200 bird species including the black eagle which regularly breeds here. Historical information shows that the environment surrounding the Wonderboom tree had an abundance of animals. Hunter-gatherer societies would therefore have found it a suitable habitat to settle in. (Van Vollenhoven, 2008: 20). (Refer to illus. 10)

#### 1.6.1.1 Social context

Currently, the Wonderboom Nature Reserve is surrounded by residential development on both sides of the Magaliesberg mountain. Some commercial activities are found on the northern side of the reserve opposite the resort. This commercial node is a new development in this area and brings about a lot of potential users. This commercial node is called 'Wonderboom Junction' and is a very busy node. The other commercial nodes close to the nature reserve are situated on the south western side of the reserve and along Voortrekker road to the south. A caravan park is located across the Apies river to the western side of the nature reserve and also provides some feet to go through the reserve. The "Boerefort Primary school" is located on the south eastern side of the nature reserve. (Refer to Illus. 10)



Illus 10: Wonderboom Nature Reserve and surroundings (Aerial photo, Geography building, University of Pretoria and modifications by Author, 2011)

## 1.6.2 User

### 1.6.2.1 Present user

Currently, the site is mostly being used by people from the Pretoria north area, as well as, to a certain extent, by people from other parts of Pretoria.

Refer to Table 1 for the current visitor data of Wonderboom Nature Reserve for the 2010/2011 book year and refer to Fig 1, illustrating the table data in graph format.

From the table and graph it is clear that a thousand plus people visit the nature reserve monthly, some of which are adults, pensioners, pre-schoolers and children. From this data one can argue that the resort area as well as the entire nature reserve must accommodate for different age groups and levels of interest. During December and January more visitors can be expected, as can be derived from the visitors' data table. During those months more minibusses and busses visit the reserve. From this information one can conclude that the facilities should be able to cater for the number of visitors. (Refer to the graph fig.1) As can be deduced from the graph and table, the majority of visitors are adults. This creates the opportunity to attract more children and pensioners through better access and awareness.

### 1.6.2.1.1 Questionnaire

A questionnaire-survey was conducted over a period of 3 months. A hundred people completed the questionnaire. The questionnaire was specifically intended for people living in Pretoria, thus people from Pretoria north, south, east and west regions completed the forms. A summary of the results and a sample of the questionnaire form can be found in appendix A and B.

#### Questionnaire analysis

The questionnaire analysed the following:

- People's awareness within Pretoria east, west, north, south, and within different age groups.
- How people perceive the place and what they really know and understand about the nature reserve and its elements.
- How did the people come to know about the Wonderboom Nature Reserve?
- How people use the Wonderboom Nature Reserve.
- What the Wonderboom Nature Reserve means to the people.

Wonderboom Nature Reserve												
Monthly Visitors												
Bookyear:	Months											
2010/2011	July	August	September	October	November	December	January	February	March	April	May	June
<b>Adults</b>	866	1723	1680	1868	1625	4673	3061	730	696	946	1083	
<b>Pensioners</b>	62	112	104	135	72	283	127	96	71	43	113	
<b>Pre-School</b>	96	173	336	238	110	204	290	38	46	109	95	
<b>Children</b>	205	391	278	331	154	192	409	50	79	95	121	
<b>Sub Total</b>	<b>1229</b>	<b>2399</b>	<b>2398</b>	<b>2572</b>	<b>1961</b>	<b>5352</b>	<b>3887</b>	<b>914</b>	<b>892</b>	<b>1193</b>	<b>1412</b>	<b>0</b>
<b>Hiking Trail</b>												
<b>Minibus</b>				6		13	13			1	1	
<b>Coasters</b>			1									
<b>Quantum</b>						1	2					
<b>Large Bus</b>				3			1	1				
<b>Total</b>	1229	2399	2399	2581	1961	5366	3903	915	892	1194	1413	0

Table 1: Visitors' data for the past book year of the Wonderboom Nature Reserve, 2010/2011. (Wonderboom management, 2011)

Visitors' data for Wonderboom Nature Reserves 2010/2011 book year.

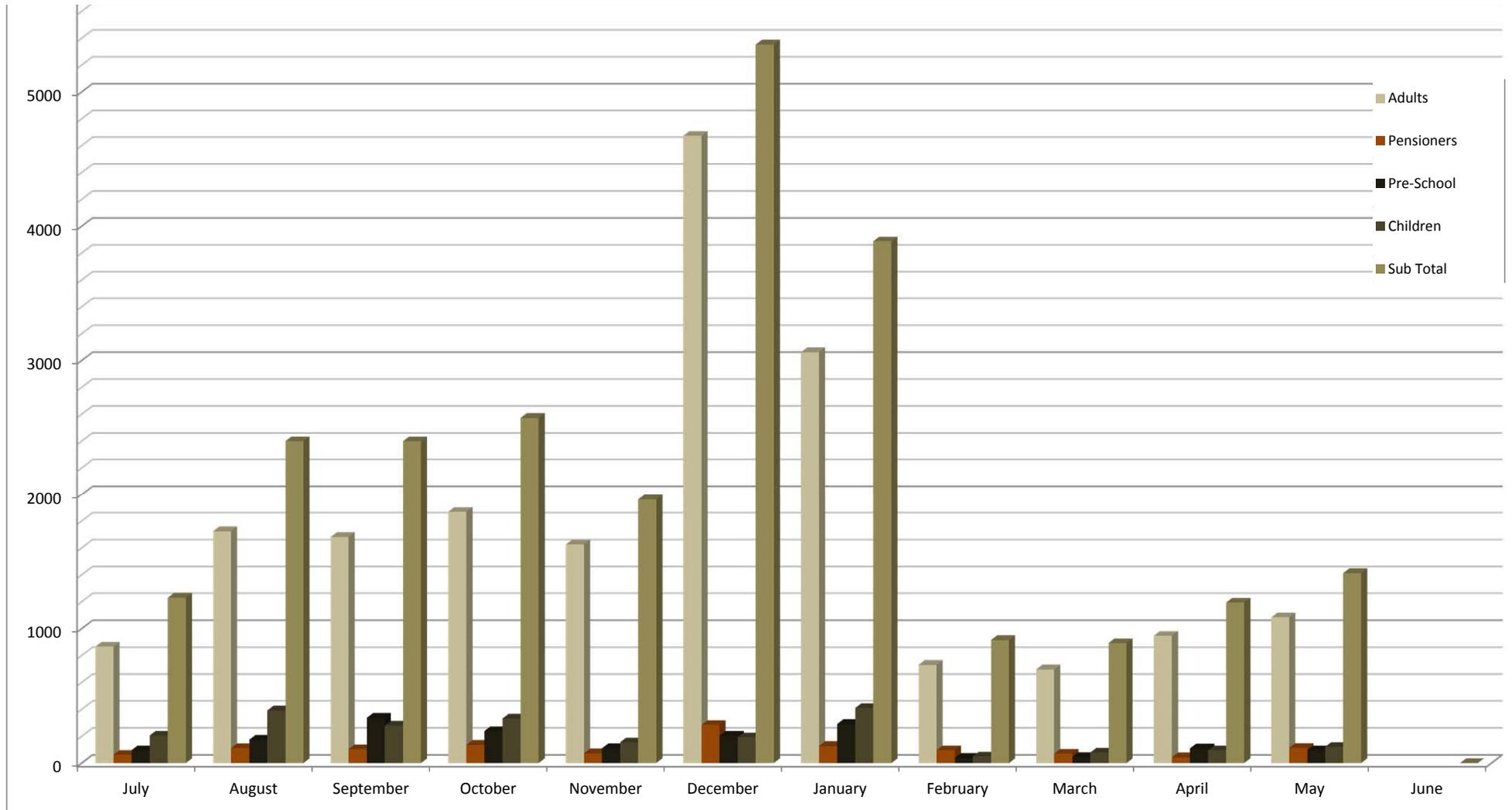


Fig. 1: Indicates the data in table 1 in graph format. (Wonderboom management, 2011)

### What did the data reveal?

Figure 2 illustrates the hundred people from the different regions and age groups who took part in the questionnaire. 30% of the people comes from Pretoria CPD region, 24% Pretoria north, 9% Pretoria south, 30% Pretoria east and 6% comes from Pretoria west.

This data indicates the spread over all these regions of Pretoria, and of all of them 72% of the people answered 'yes' to knowing the location of the Wonderboom Nature Reserve, and 31% is aware and visited the Wonderboom Nature Reserve. One can deduce that the resort part of the reserve is used as a regional park. This implies that one will need to take that into consideration in the design for future development.

The different regions and age groups who took part in the questionnaire

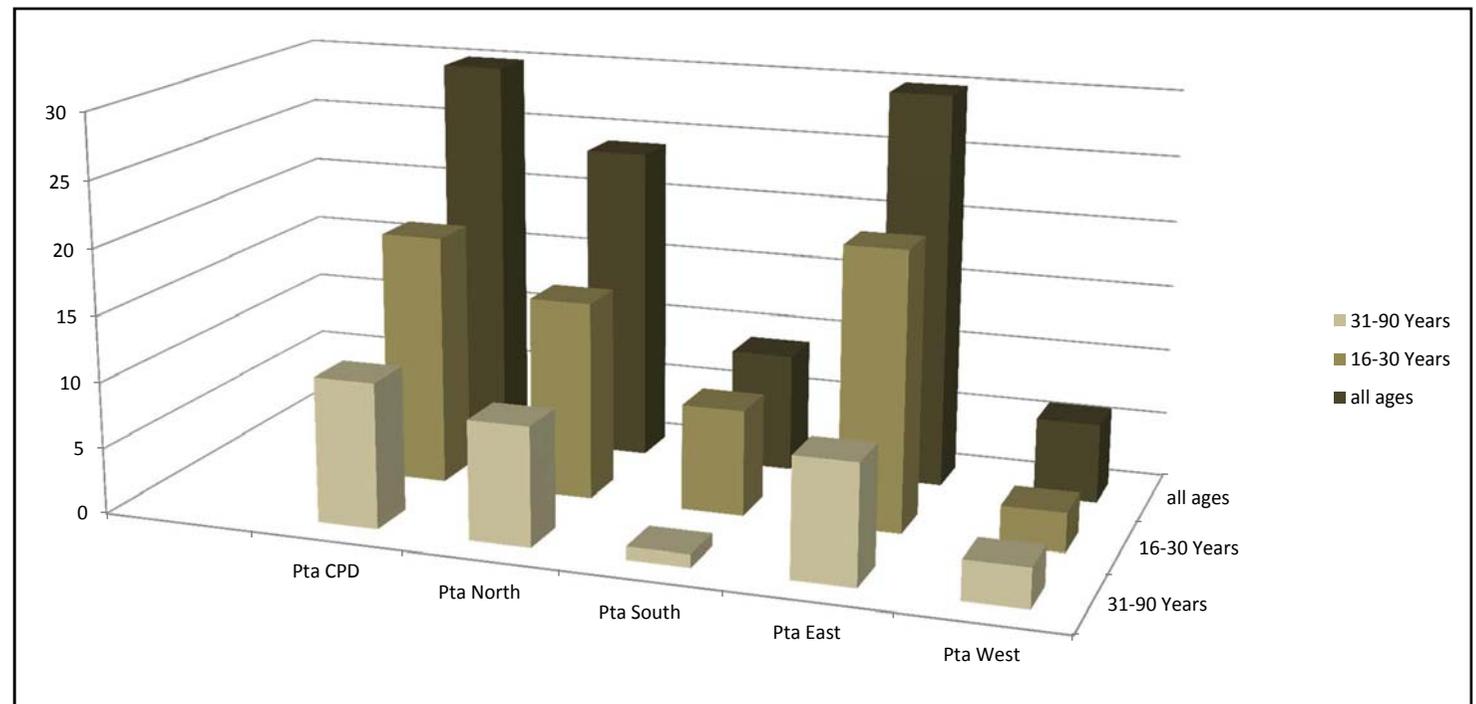


Fig. 2: The different regions and age groups of the people questioned (Author, 2011)

### Visitors' knowledge about the Wonderboom Nature Reserve

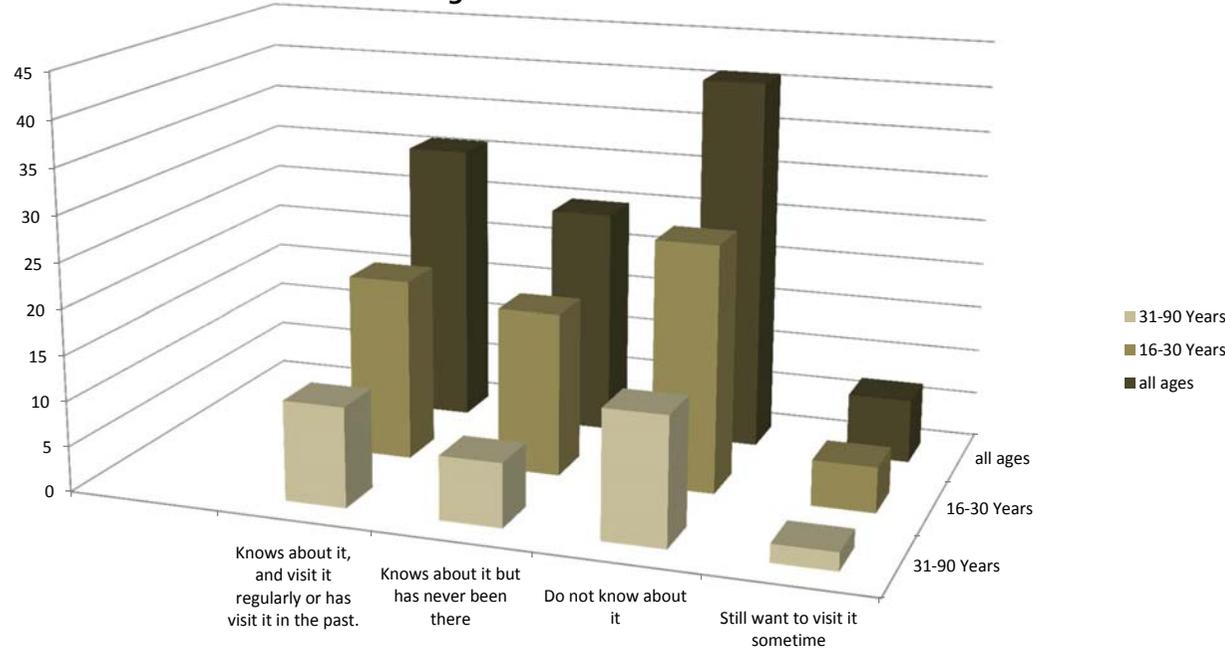


Fig. 3: The different age groups' knowledge about the Wonderboom Nature Reserve (Author, 2011)

Figure 3 refers to the different knowledge levels of the different age groups.

From this data one can conclude that very few people really know about the Wonderboom Nature Reserve, and people would like to go there if they knew about it. It is interesting to find that more young people know about the reserve than older people ranging from the age of 31 and up. A lot of people is aware of the place, but has never been there, it could be that they have no understanding of the importance, uniqueness, cultural value and recreational opportunities of the Wonderboom Nature Reserve.

### Visitors' knowledge about the Wonderboom tree

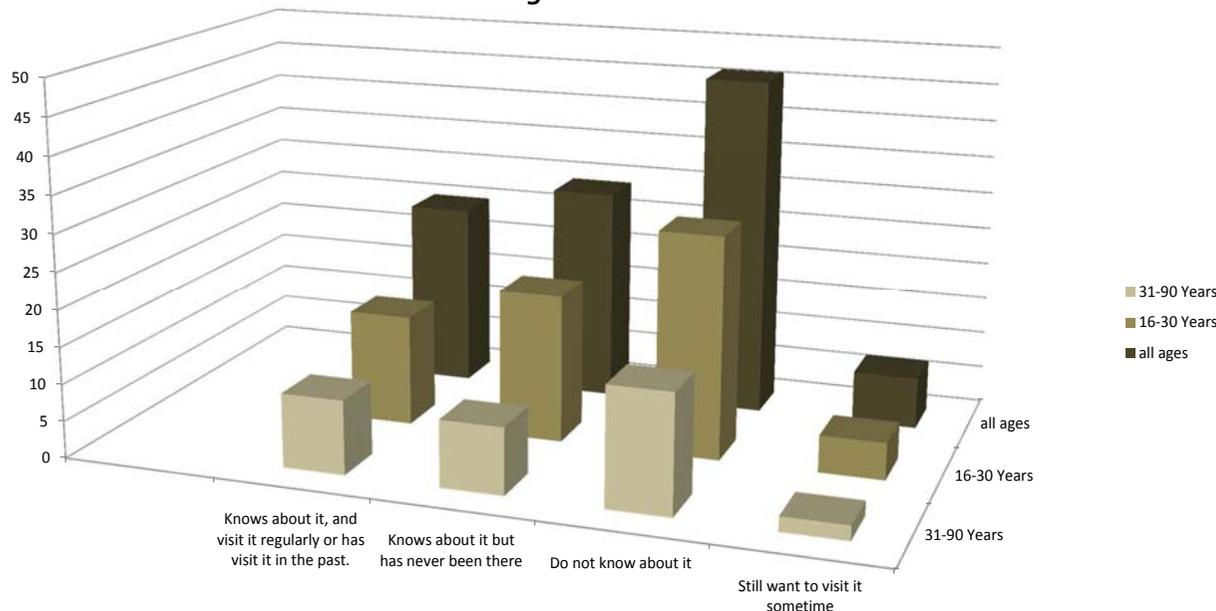


Fig. 4: The different age groups knowledge about the Wonderboom tree (Author, 2011)

Figure 4 and 5 indicates the knowledge that people have of the existence of the Wonderboom tree and boer fort respectively.

From both figure 4 and 5 one can conclude that less people are aware of the wonderboom tree than the nature reserve itself and even fewer of the fort on top of the mountain. Once again, the younger generation knows more about the tree and fort than the older generation. People would like to visit these areas if they were informed.

### Visitors' knowledge about the fort at Wonderboom Nature Reserve

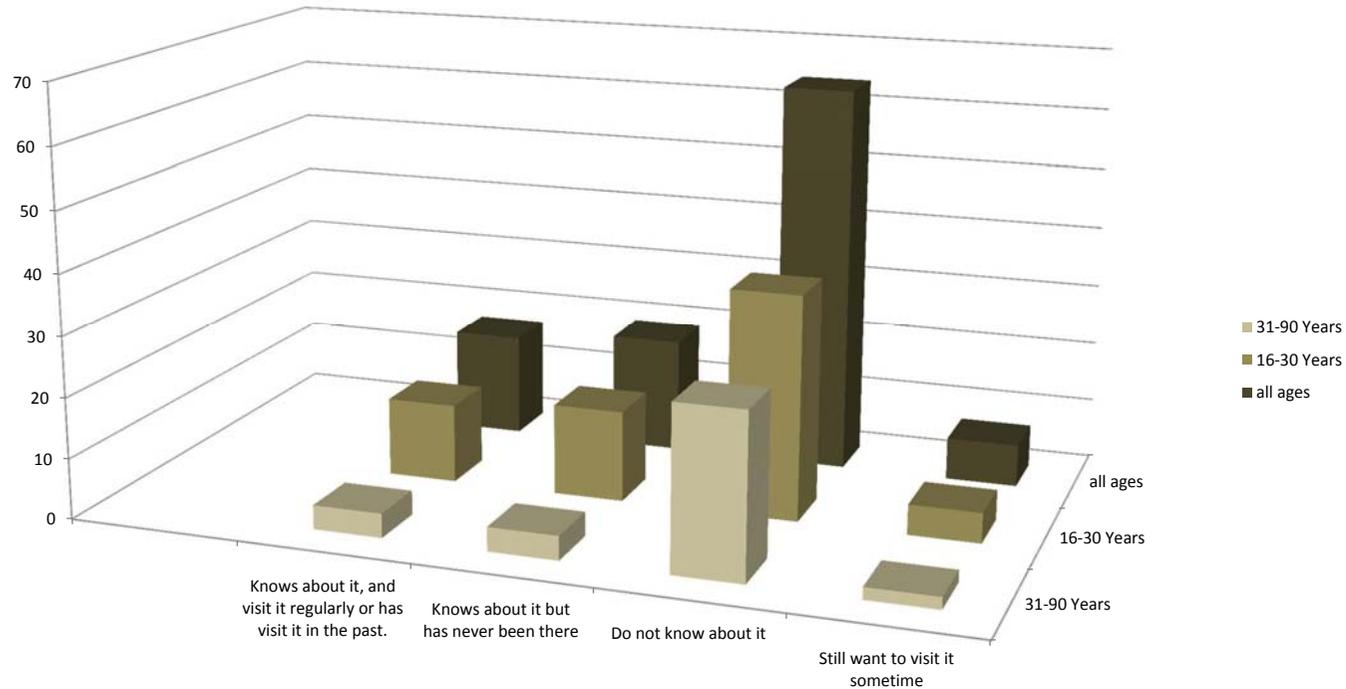
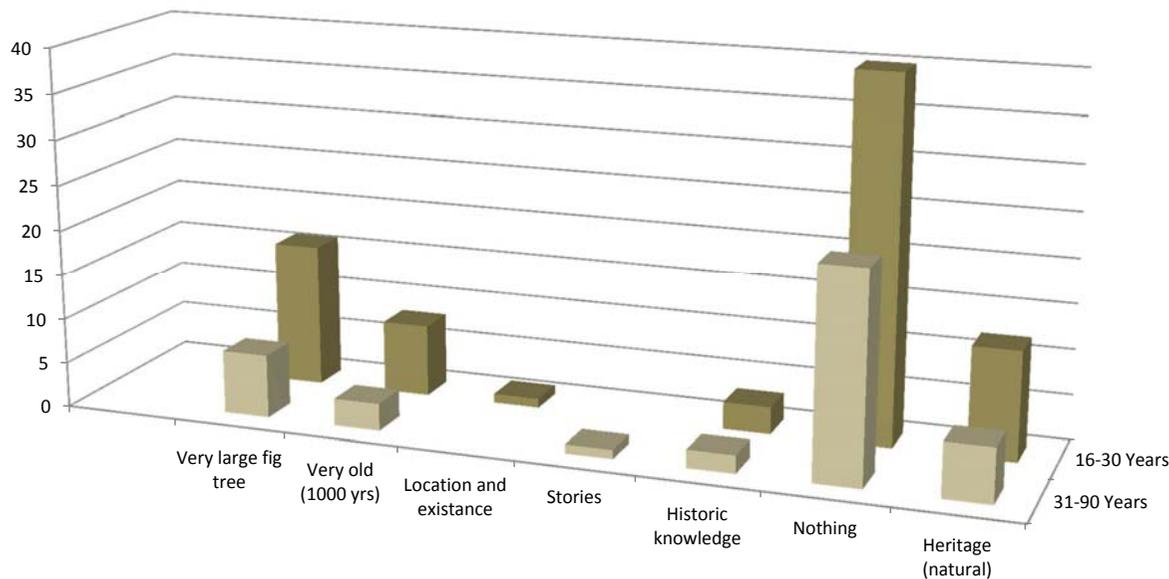


Fig. 5: The different age groups' knowledge about the fort at Wonderboom Nature Reserve (Author, 2011)

### Information about the tree that the people know about



From the data in fig. 6 it is clear that most of the people who know something, knows that the tree is big and old. The majority knows nothing and only a few know something more or different, for instance that it has heritage value and some truly know the history.

Fig. 6: Information on what the people know about the wonderboom tree (Author, 2011)

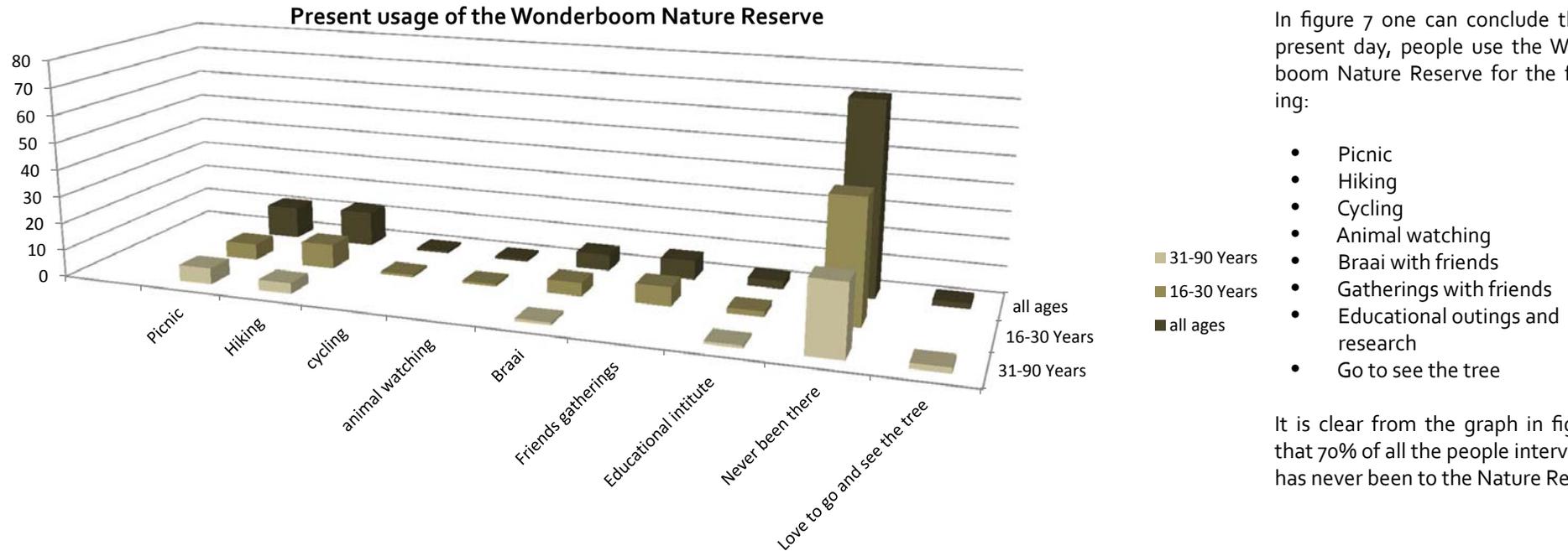


Fig. 7: Present usage of the Wonderboom Nature Reserve (Author, 2011)

### Summary

30% of people is aware of the wonderboom nature reserve and has visited it at some stage in their lives, 25% of the people is aware of the Wonderboom Nature Reserve, but has never been there and 40% of the people doesn't know about the Wonderboom Nature Reserve. Upon closer inspection of the awareness of the reserve's main biophysical icon, the wonderboom tree, only 25% is aware of the tree, 29% is aware of it but has never visited it and 45% of the people do not know about it. Looking at the main cultural aspect of the nature reserve, the fort, only 17% of the people is aware of it and has visited it in the past, 19% is aware of it but has never seen it and 64% do not know about it.

The data revealed that most of the people are unaware of Wonderboom fort and have never visited it. For this reason the author decided to focus on the fort for the design intervention (on sketchplan level).

The lack of awareness of the Wonderboom Nature Reserve, Wonderboom tree and Wonderboom fort is eminent. Some visitors who visit the nature reserve are in some cases unaware of the heritage and history of the place, they are unaware of the importance of the place and see it as a normal park. This leads to the possibility that there is a lack of information about the site's significance, identity and character as well as little encouragement to promote interest and discovery.

In figure 7 one can conclude that at present day, people use the Wonderboom Nature Reserve for the following:

- Picnic
- Hiking
- Cycling
- Animal watching
- Braai with friends
- Gatherings with friends
- Educational outings and research
- Go to see the tree

It is clear from the graph in figure 7 that 70% of all the people interviewed, has never been to the Nature Reserve.

### 1.6.2.2 Future user

The site should attract, local residents, regional visitor's, national and international tourism. Tourists, who would want to see the Wonderboom fort in its original state, experience the landscape intervention and the iconic Wonderboom tree. This site can then become a regional park, and conservation area with the accessibility to all the rich historic layers on the reserve.

### 1.6.3 Client

The client is the City Council of Pretoria. The Wonderboom Nature Reserve also belongs to the City Council.

### 1.6.4 Possible sponsors

- The Government
- World Wildlife Fund
- SAHRA (South African Heritage Resources Agency)
- Local Chamber of Commerce in the Moot area
- Friends of the Wonderboom Nature Reserve
- Covenant (Geloftefees) Committee

## 1.7 Methodology

The research methodology involved in this document is directed towards the end goal of a landscape intervention and the experience thereof. Thus the emergent theory is not confined to the written word, but rather embodies the eventual, proposed landscape intervention.

In order to formulate a design question and subsequent solution, the extent of the problem has to be investigated using a research methodology. Refer to fig. 8.

Considering the nature of the site, it has the contrasting aspects of the tangible and intangible, the seen and the unseen, known and the unknown, all at once or discovery, past and present, the temporary and permanent, the visual and the obscure, city and nature, and lastly the natural and cultural. With this in mind the study will investigate these aspects, which will be discussed in chapter 3 and 5.

The intangible refers to the inherent potential ( the significance of place ), heritage and history of the existing site and the experience it can offer the user: the memory. The tangible refers to the physical and numerically definable attributes of the site and environment investigated in a site analysis. Aspects such as movement, hydrology, sustainability, biophysical and cultural aspects.

Methods:

1. An analytical survey was conducted during the analysis phase of the project. This includes mapping and data gathering.
2. A questionnaire was conducted to determine the public awareness of the nature reserve and its heritage elements. A hundred questionnaires were distributed to students, visitors on the site, people from the south, north, west and east of Pretoria.
3. A historical method will be used to investigate the full extent of the history and heritage of the site, not only the cultural history, but also the natural history. A historical method refers to the understanding of the background of past events. Qualitative and Quantitative variables can be used in the collection of historical information. The conclusion of a historical method is recorded in a meaningful narrative. Historical research is the process of systematically examining past events to give an account of what has happened in the past, but it involves an interpretation of these events, and to communicate an understanding of past events.

These methods will continually shape and feed the theoretical argument that will culminate in a relevant design solution.

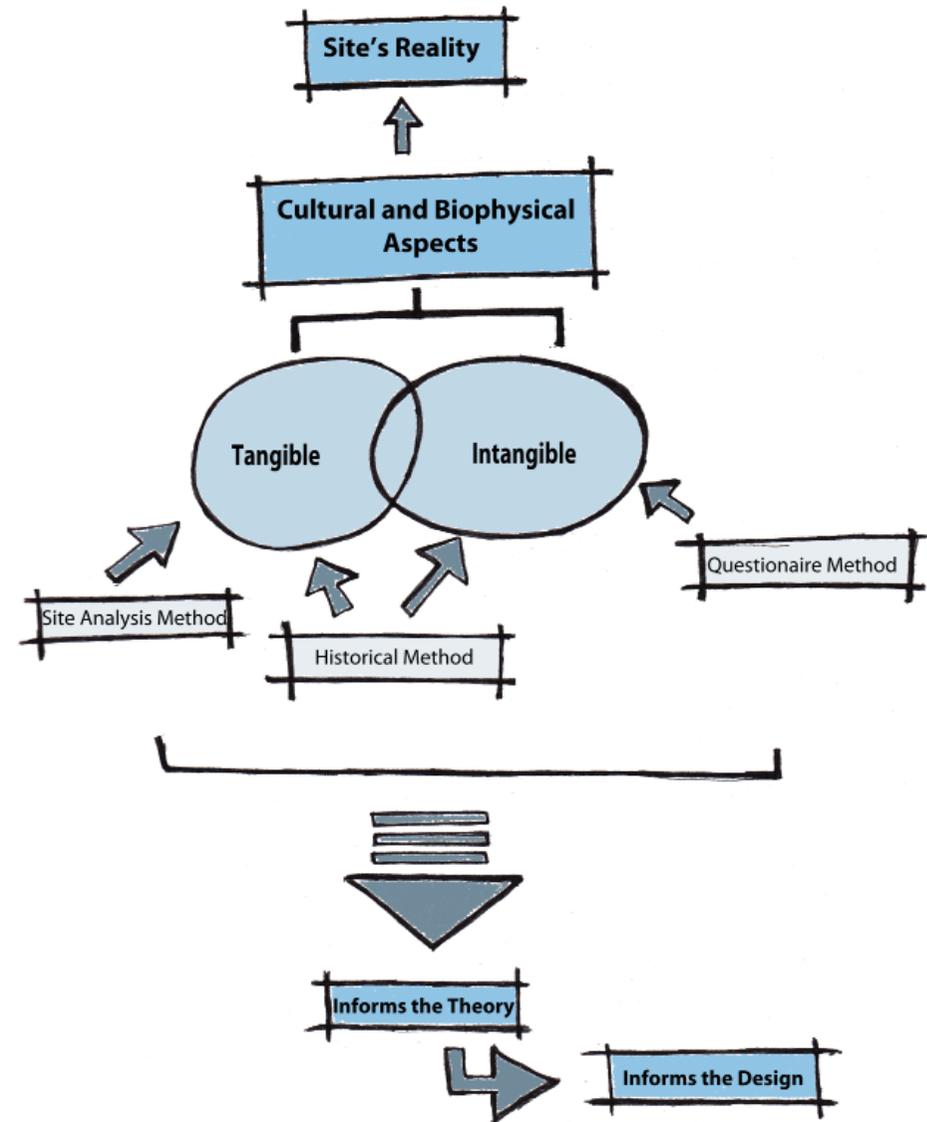


Fig. 8: Diagram showing the methodological approach (Author 2011)

## 1.8 Delimitations and assumptions

### Delimitations:

- Because of the limited time and the size and complexity of the site an in-depth research into all the aspects could not be performed.
- I am a landscape architect and therefore I have a limited knowledge of archaeological processes. I can only derive my own understanding and design accordingly.
- All information required on the fort could not be obtained, for example the foundational drawings of the fort could not be found and some activities of the fort during its operation are not clear, (e.g. whether they had some sort of sanitary facility).

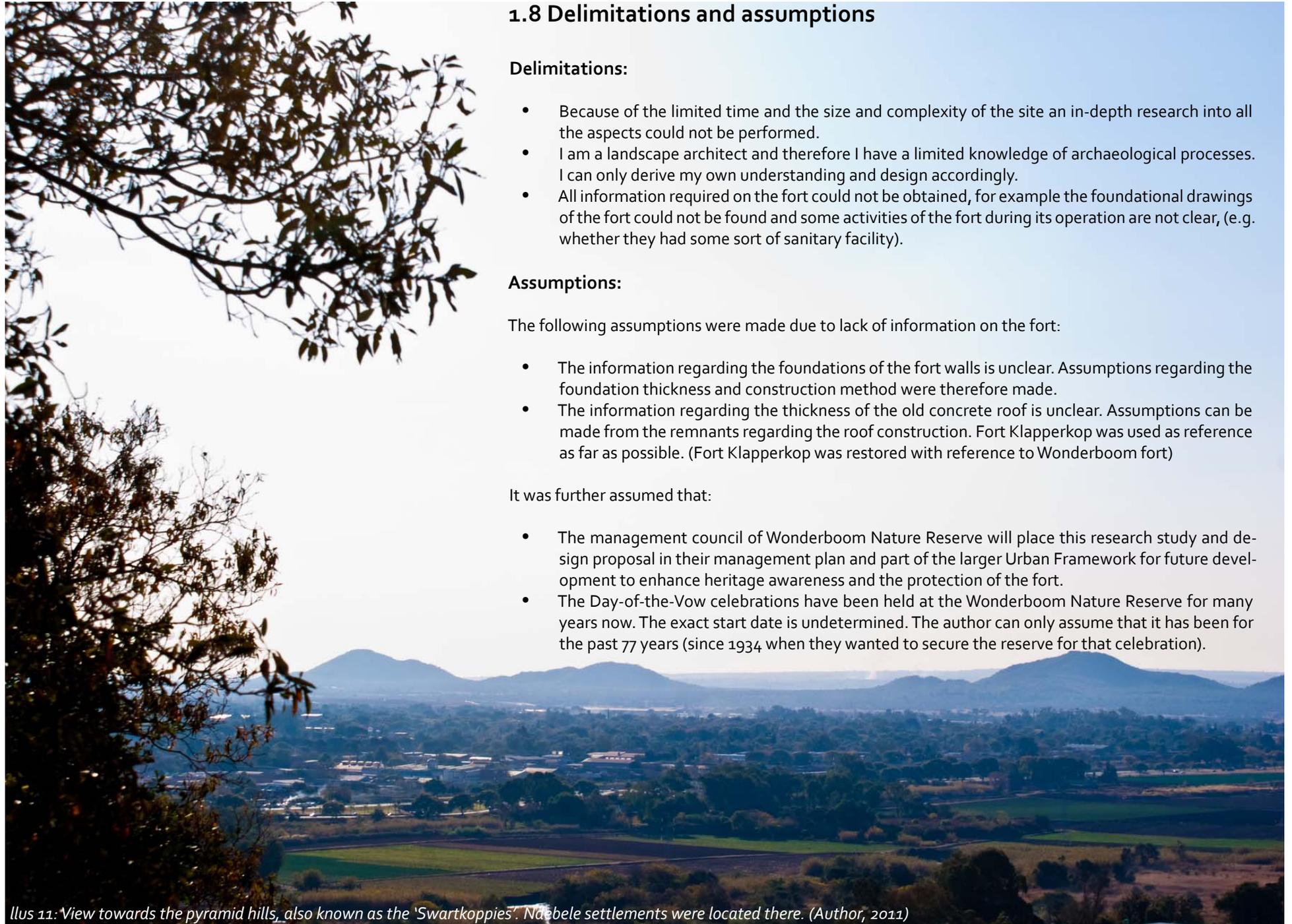
### Assumptions:

The following assumptions were made due to lack of information on the fort:

- The information regarding the foundations of the fort walls is unclear. Assumptions regarding the foundation thickness and construction method were therefore made.
- The information regarding the thickness of the old concrete roof is unclear. Assumptions can be made from the remnants regarding the roof construction. Fort Klapperkop was used as reference as far as possible. (Fort Klapperkop was restored with reference to Wonderboom fort)

It was further assumed that:

- The management council of Wonderboom Nature Reserve will place this research study and design proposal in their management plan and part of the larger Urban Framework for future development to enhance heritage awareness and the protection of the fort.
- The Day-of-the-Vow celebrations have been held at the Wonderboom Nature Reserve for many years now. The exact start date is undetermined. The author can only assume that it has been for the past 77 years (since 1934 when they wanted to secure the reserve for that celebration).



*Illus 11: View towards the pyramid hills, also known as the 'Swartkoppies'. Ndebele settlements were located there. (Author, 2011)*

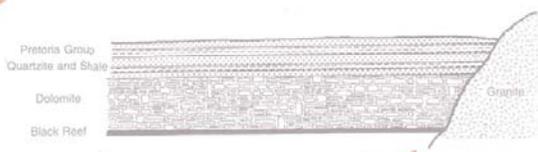
**Middle & Late Iron Age:** Ruins of the Late Iron Age culture was found on the southern slopes of the Magaliesberg. "Unlike people of the Early Iron Age, they tended to settle on hilltops rather than in valleys. This may indicate greater military activity and a need for security." (Curruthers, V: 226) Their huts were cylindrical. The first stonewalls in the Magaliesberg were built in about 1600. The largest village, was Ho Bupye sited on what is now Ollifantspoort farm. Late Iron Age pottery is thinner. Ornaments and decorations were important to these communities. By 1800 the gold, copper and ivory trade from the area had become well established.

In 1800 Kwena Magopa (Tswana) settled on the northern side of the Magaliesberg in the area between the Oori (Crocodile) and the Pembane (Apies) river. Early Ndebele (Nguni) advancing from the eastern coast lowlands moved into the area east of present day Pretoria. Of these the Po later settled at the Wonderboom before moving further west.

Period of disruption unprecedented in SA history. Beginning of the Difaqane, a period of social and economic breakdown due to rivalry and warfare. It was initiated when several Nguni clans retreated over the Drakensberg to escape Zulu expansionism. They attacked and displaced the main branch of the Tokwa who had settled in the Caledon River basin. They in return set about raiding other weaker groups nearby and a chain reaction of devastation swept through the southern high veld. In the early stages of the Difaqane the settlements in this region were not abandoned. Arrasment from the Marauders was severe and the difficulties it caused were compounded by a general increase in inter-group fighting.

**2300 Mill Yrs Ago**

**Transvaal Sequence, formed timeball hill (Salvokop), Daspoort, Magaliesberg and Smelterskop formations.**

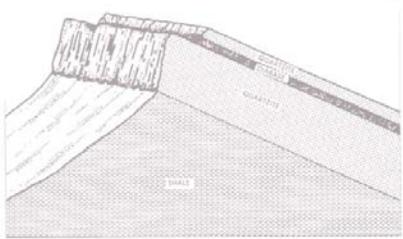


**The Bushveld Complex:** As a result from the upheaval of molten magma, contains a variety igneous rocks and considerable mineral wealth. The rock "norite" are found immediately north of the Magaliesberg, and are quantities of chrome, the richest platinum deposits in the world, and the largest known reserves of iron ore. The southern perimeter of the Pretoria Group broke out separately into parallel ridges, the highest of these being the Magaliesberg. The upper surface became the northern slope of the ridge after it tilted. As this surface was the closest to the magma, the quartzite melted in the heat and recrystallised into large, pebble-like crystals, sometimes combining with feldspar.

**570 - 410 Mill Yrs Ago**



**Griqua & Korana War (1828 - 1831):** The Griqua and Korana were frontiersmen of mixed racial origin who lived in scattered bands on the Vaal, Hartbees, and Orange rivers. They were persistent raiders of cattle and their use of horses and firearms compensated slightly for their tactical incompetence. They raided under Jan Bloem's command, the Ndebele settlements in the Magaliesberg, when Mzilikazi's main force is away. Three days later the Ndebele overtook the Griqua's and Korana's. The Griqua's traditional trading and hunting routes has dimished as a result of Mzilikazi's kingdom expansion.



**345 Mill Yrs Ago**

**The Karoo Sequence - Dwyka Glaciation:** Erosion occurred during the long ages that followed the creation of the Magaliesberg and brought the landscape to a stage in the carboniferous period. During the meteorological conditions, in Europe the southern hemisphere was subject to extreme cold and vast sheet of creeping ice. The Magaliesberg was totally submerged beneath the ice. The effects on Magaliesberg were considerable, the high quartzite crest was planed away all to the same height. Where

**Acrimony and Cival war, 1856 - 1864:**

January 1864, two Boer armies confronted each other at the Crocodile River, just north of the present Hartbeespoort Dam.

**1857**  
The firsts church built in Church Square.

**1856's**  
Cival War  
Naturalists & Explorers, 1840- 1879



uction of  
snek Dam  
dam wall.

**1932's**  
**1933's**

**1864's**  
Buffelspoort Dam completed

The subsequently elected President Burgers visited the Wonderboom

**1877's**  
**British annexation of the Transvaal:** The British were tired of the Boers exploitation of the Africans. Aggressive imperialists took the opportunity to annex the Transvaal, with little resistance, sir Theophilus Shepstone hoisted the Union jack in Pretoria on 12 April 1877. British rule changed Pretoria into a boisterous military camp and in the mountains themselves several English speaking families acquired farms.

**1871's**

**1879's**  
"The wonderboom, however belied its name. Perhaps some few years ago it might have had a striking appearance, but at present the rooted branches have been chopped away for firewood, and nothing remains but a moldy dilapidated stump."

It is evident from this unpublished report of R. Atcherly, that the Wonderboom was subject to vandalism even during the early days

**1949's**  
Proclaimed as the Wonderboom Nature Reserve



**2011**

**1977's**

**12 August 1977 the Magaliesberg was formally proclaimed the first "nature area" in South Africa**

**1985's**

One of the daughter trees of the Wonderboom collapsed. It was later discovered that the tree was infected by the fungus Ganoderma apalanatum.

**1881's**

**The Transvaal War, 1880-1881:** Boers was unhappy with British rule, they reproclaimed independence, a war broke out at Bronkhorstspuit, it lasted 15 minutes. British commander surrender. Siege of Pretoria. The British then build forts (Fort Royal, Commeline and Tullichewan) and blockades. The Boers cried victory in the end.

The large new church in central Pretoria built in 1881 was demolished.

**1829's**

**Robert Moffat and other early European visitors:** The first European visitors, hunter-traders to the area, were three scotsmen from Grahamstown, William McLuckie, Robert Scoon and David Hume. Mzilikazi acquired firsthand information as to the work that the missionary Robert Moffat was doing among the Tswana in Kuruman. Moffat was then invited to Mzilikazi's residence. Their friendship open the road to Kuruman.

**1988's**

The Wonderboom including the Wonderboom as a National Monument

**1994's**

# HISTORICAL BACKGROUND 02



1. INTRODUCTION
2. NATURAL HISTORY OF THE MAGALIESBERG AREA
3. CULTURAL HISTORY OF THE MAGALIESBERG AREA
4. CONCLUSION

Summary of the background of the natural and cultural history of the Magaliesberg ridge, and of Pretoria.

## 2.1 Introduction

In the following chapter the natural and cultural history of the Magaliesberg area will be discussed to give background to the research study. Everything started with the tectonic geological episodes which created the quartzite ridges. Many thousands of years later indigenous people started moving into these mountains. Hundreds of years later the Europeans came and Pretoria came into existence. "This is a story of immense diversity, of science and aesthetics, wilderness and war." (Carruthers, 2000: 1) It is this combination of geology, climate and nature which creates this spectacular scenery.

The background history of the study area is important, because by knowing what has happened in this area as well as in the Magaliesberg mountain, a better understanding of why the place is so significant and why it should be protected but also why everyone should be made aware of its existence is so important. This chapter will also give some background on some of the artefacts and aspects found on site. A better understanding of that will shed light on why the specific theory is investigated and why some design interventions are made the way they are.

## 2.2 Natural history of the Magaliesberg area

The formation of Pretoria's landscape began some 2300 million years ago, when quartzite, shale, dolomite and chert rocks were deposited in a series of layers. The series of cataclysmic events which produced this distinctive geomorphology can be grouped for convenience into four phases: deposition of the quartzite and shale from which the mountains are

constructed; tilting of the range through subterranean disturbances; burial of the range under ice and till; and re-emergence of the range and subsequent erosion to its present form. (Carruthers, 2000: 6)

The Voortrekkers who began settling in the area in the late 1830's named the northern most ridge the Magaliesberg after a local chief, Mohale (Mogale). Before that it was known as the Cashane (Khashan) mountains after another chief, and even earlier than that, it was called Boradi Mountains. (Carruthers, 2000)



Illus. 12: Map of the Magaliesberg Region (Carruthers, 2000:1)

2300 Mill Yrs Ago

### Pre-Cambrian period

Transvaal Sequence of sedimentary rock deposited in the following sequence: Black Reef Quartzite Formation, Malmani Subgroup (dolomite and chert), and the Pretoria Group, which included the Magaliesberg Quartzite Formation.

### The four stages in the formation of the Magaliesberg

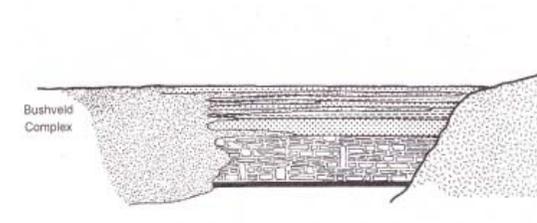


Illus 13: Stage 1, Deposition of the Transvaal Series on the floor of a shallow sea. (Carruthers, 2000: 14)

2000 Mill Yrs Ago

### Bushveld Complex

Transvaal Sequence tilts to form monoclinical ridges of quartzite and shale.



Illus 14: Stage 2: Molten magma builds up on the north and intrudes between the sedimentary layers. (Carruthers, 2000: 14)

570-410 Mill Yrs Ago

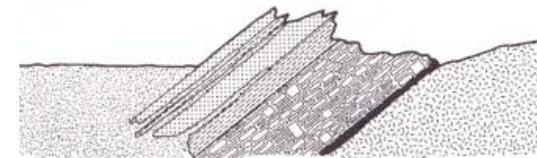
### Cambrian Period, Ordovician Period, Silurian Period and Devonian Period

These periods were the periods of exposure and erosion.

345 Mill Yrs Ago

### Carboniferous Period

Exposed ridges levelled by glacial abrasion and buried beneath the following Karoo Sequence sediments, called the Dwyka Formation (glacial)

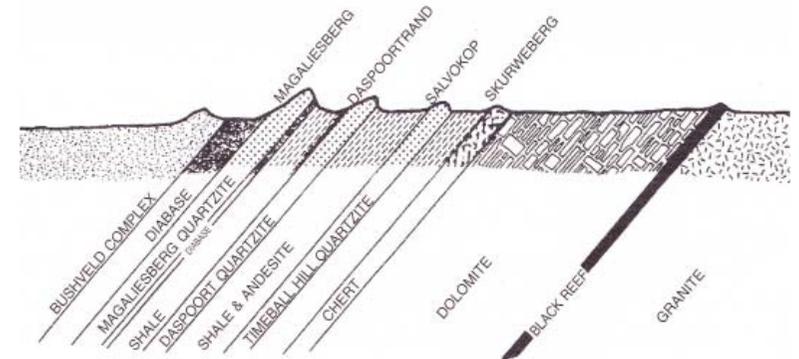


Illus 15: Stage 3: Rocks of the Transvaal Series subside into the magma. (Carruthers, 2000: 14)

280 - 63 Mill Yrs Ago

### Permean, Triassic, Jurassic, Cretaceous and Palaeogene Periods

During these periods the following groups developed, namely; Ecca, Beaufort, Stormberg, Drakensberg Basalt Group. During the Palaeogene Period, erosion and removal of Karoo Strata started, the warping of subcontinental watershed and the development of river beds and poorts came to existence.



Illus 16: Stage 4: The exposed edges of the tilted rocks are weathered by ice and other elements, the more resistant quartzite forming ridges (Carruthers, 2000: 14)

20 Mill Yrs Ago

### Neogene Period and Quaternary Period

During these periods, erosion continued and northward movement of the ridge started.

## 2.3 The cultural history of the Magaliesberg area

### Introduction

Before Wonderboom Nature Reserve's cultural resources (aspects) can be discussed in detail, a background regarding the different phases of human history in the Magaliesberg is needed. This will enable the reader to better understand the sites found during a survey by Anton van Vollenhoven in 2008. These sites will be discussed in further detail in chapter five.

From the time of their earliest evolutionary emergence human beings have been an integral part of life in the Magaliesberg. For hundreds of thousands of years a succession of societies, each with its own culture and technology, has inhabited the mountains (Carruthers, 2000: 210). According to Carruthers, "In consequence, the archaeological interest of this region is as important as that of the wildlife. It provides glimpses into the long unwritten history of southern Africa and the early development of mankind." (Carruthers, 2000: 210)

### The Stone Age Period

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Van Vollenhoven, 2008:13). In South Africa the Stone Age can be subdivided into three periods. The division for the Stone Age according to Korsman & Meyer (1999: 93-94) is as follows:

- Early Stone Age (ESA) 2 million – 150 000 years ago
- Middle Stone Age (MSA) 150 000 – 30 000 years ago
- Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

According to Van Vollenhoven (2008: 13) it is important to note that some of the oldest humanoid fossils have been found close to Pretoria, namely at Kromdraai, Sterkfontein, Swartkrans, Gladysvale and Drimolen (in the Krugersdorp area). These hominids include Australopithecus Africanus, Australopithecus Robustus and Homo Habilis and can be as old as 3 million years. These early people were the first to make stone tools.

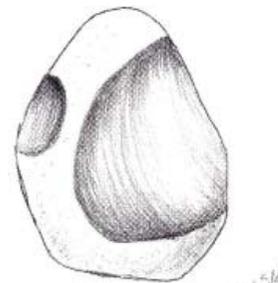
It is important to mention this as one of the important Early Stone Age sites are situated just east of the Wonderboom Nature Reserve. (Van Vollenhoven, 2008: 13)

### Early Stone Age

The early Stone Age is represented by large multipurpose hunting and butchering tools. The Wonderboom Early Stone Age site covers an area of approximately 650 square meters with a deposit of up to 3 meters deep and contains immense numbers of hand axes, cleavers, scrapers and stone flakes. This period is associated with the emergence of Homo habilis (toolmaker) and Homo erectus. (Mitchell, 2002)



*Illus. 17: Early Stone Age hand axe (Carruthers, 2000: 213)*



*Illus. 18: Core stone (Carruthers, 2000: 214)*

2 Mill - 150 000 Yrs Ago

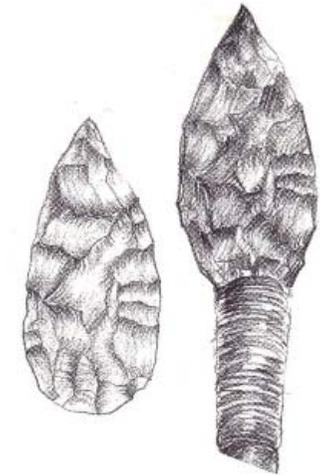
150 000 - 30 000 Yrs Ago

According to Anton van Vollenhoven (2008: 13) the Wonderboom site is a so-called Late Acheul site. This means that it is the later phase of the Acheulian culture, which is an Early Stone Age culture. These stone tools were probably manufactured by the earliest hominids as indicated above. These people would have undoubtedly utilised the area now known as the Wonderboom Nature Reserve as it would have been easy to hunt in the gateways through the mountain. (Van Vollenhoven, 2008: 13)

The artefacts (found by prof. Revil Mason in 1955) at Wonderboom were both useful tools and core stones showing that this part of the Magaliesberg was a place for camping and feasting on hunted game as well as a tool manufacturing centre. There are considerable similarities between these tools and those which had been made at Sterkfontein more than a million years previously by an earlier species of man. The later tools were, however, more often in the form of pear-shaped hand axes or cleavers between about 100 - 200mm in length. (Carruthers, 2000: 214-216)

### Middle Stone Age

Although no specific Middle Stone Age site has been identified in the Wonderboom Reserve, numerous artefacts and sites have been found in the Tshwane area. The Middle Stone Age was characterised by a reduction in tool size, and a refinement of stone tool technology. This also implied a refinement of hunting techniques, such as the hafting (attachment to a bone or wooden handle) of stone tools. A much larger range of stone tools makes their appearance in this age and typical Middle Stone Age tools include blades, knives, and spear points. The Middle Stone Age also marks the arrival of anatomically modern humans - Homo sapiens.

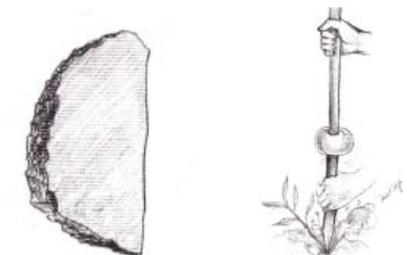


*Illus 19: Tools of the Middle Stone Age (Carruthers, 2000: 217)*

Middle Stone Age material was identified some years ago on the western side of Voortrekker Road across the Magaliesberg Mountain. This would have been inside the reserve (Van Vollenhoven, 2008: 14). Refer to chapter 5 for illustrations of these artefacts.

### Later Stone Age

The Later Stone Age is characterised by a further refinement of stone tools. Very small artefacts (known as microliths), requiring high skill levels to manufacture are typical of this period. This period is associated with hunter gatherers such as the San, a florescence of rock art and other symbolic behaviour, wide-spread expression of art in the form of ostrich eggshell beads, ostrich eggshell flasks, pendants. Bone points and stone inserts were used in composite poisoned arrows.



*Illus. 20: Late Stone Age blade (Carruthers, 2000:218)*

*Illus. 21: Digging stick with stone weight (Carruthers, 2000:218)*

According to Van Vollenhoven (2008) a Late Stone Age site has been identified to the west of Wonderboompoort. This phase of the Stone Age is associated with the San people. Although many San sites are associated with rock art it does not seem that rock art is present at the Wonderboom Nature Reserve.

Although only two Stone Age sites were identified during the survey, by Anton van Vollenhoven (2008: 14) a number of stone tools were found throughout the reserve. The lithic tools represent all three phases of the Stone Age and it is, therefore, clear that the hunter-gatherers associated with these tools utilised the area extensively.

40 000 Yrs Ago - 1850 A.D.

## The Iron Age Period

The Iron Age is the name given to the period of human history when metal was mainly used to produce artefacts. (Van Vollenhoven, 2008: 16) In South Africa it can be divided into two separate phases according to Van der Ryst & Meyer (1999: 96-98), namely:

- Early Iron Age (EIA) 200 – 1000 A.D.
- Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii), however, indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles according to Van Vollenhoven (2008: 16), are:

- Early Iron Age (EIA) 250 – 900 A.D.
- Middle Iron Age (MIA) 900 – 1300 A.D.
- Late Iron Age (LIA) 1300 – 1840 A.D.



*Illus. 22: Open hearth smelting (Carruthers, 2000: 222)*

### Early Iron Age

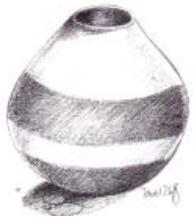
For the first time man identified with the land on which his crops were growing or from which he was mining iron ore. Informative relics of early Iron Age have been found at Broederstroom on the banks of the Hartbeespoort Dam. Inhabitants of the Moot valley were goatherders and metal workers. The huts were assembled in small villages. The metal was smelted in charcoal furnaces in the village. (Carruthers, 2000: 220-224)

### Middle & Late Iron Age

Ruins of the Late Iron Age culture was found on the southern slopes of the Magaliesberg. "Unlike people of the Early Iron Age, they tended to settle on hilltops rather than in valleys. This may indicate greater military activity and a need for security." (Carruthers, V: 224) Their huts were cylindrical, and according to Carruthers, they were mud-plastered walls capped with a coarsely thatched conical roof. Cattle enclosures and fences around settlements were made from branches of thorn trees. On the perimeter of each settlement sorghum and other crops were grown. (Carruthers, V: 224)

The first stonewalls in the Magaliesberg were built in about 1600. There was no apparent break between middle and late Iron Age, and indeed the lineage continued directly to modern Tswana people living in the area today.

Late Iron Age pottery is thinner, and Pottery found in the Magaliesberg bears a pattern of notches around the lip and broad bands of different colouring around the circumference. Ornaments and decorations were important to these communities, and according to Carruthers may have had religious or superstitious significance (Carruthers, 2000: 226). Basket weave, pottery, wooden spoons and iron knives were also things noticeable from the iron Age.



*Illus. 23: Late Iron Age pot (Carruthers, 2000: 228)*

250 - 900 A.D.

900 - 1840 A.D.

Early travellers have moved through the area that later became known as Pretoria as early as 1829. This was when the first white people visited the area, namely Robert Schoon and William McLuckie. During the same year the well known missionary Dr. Robert Moffat also visited the area (Rasmussen 1978: 69).

The first Bantu language speakers in the area were the so-called Transvaal Ndebele, specifically the southern group. Their history goes back to Chief Msi (Musi) and the genealogy of the Manala (Mahbena) clan, the Ndzundza (Mapoch) clan, the Mathombeni (Kekana) clan and the Hwanda clan (Horn 1996: 23).

Chief Msi lived in the Pretoria area somewhere between 1600 and 1700 A.D. His sons divided the tribe into three groups, namely the Hwaduba, Manala and Ndzundza (Horn 1996: 23). The Manala lived to the north of Pretoria and the Ndzundza to the north and west. The Hwaduba stayed in the vicinity of the confluence between the Pienaars and Apies River. This group took over the culture and language of the Kgatla, a Tswana group (Bergh 1999: 108).

It is also said that Msi had a son called Tshwane. This has not been proved yet and neither has it been proved that he stayed at the Wonderboom. Louwrens and Van Vuuren give lengthy discussions on why they believe such a person never existed. Although their arguments are logical and scientifically sound, there is an element of doubt which could only be clarified by further (archaeological) research, according to Van Vollenhoven (2008: 17).

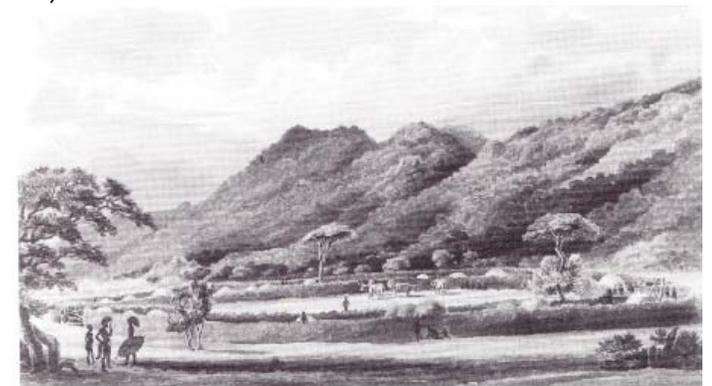
The largest group of Bantu speaking people in the Pretoria area is the Northern Sotho, but Southern Sotho's and Tswanas are also present. These groups have a typical building tradition consisting of large building complexes and round huts with conical roofs. At the beginning of the nineteenth century two Tswana groups, the Kwena and Kgatla stayed to the north and west of Pretoria in the vicinity of the Crocodile-, Pienaars- and Apies Rivers (Bergh 1999: 106).

It seems as if all these groups fled from the area during the Difaquane when Mzilikazi came here in 1827. He killed the men, burned down their villages, confiscated the livestock and took the women to marry members of his impi (Van Vollenhoven 2000: 156). Mzilikazi had many villages in the area. Particular mention is made of him staying at the Wonderboom. The site was called Kungwini (Carruthers 1990: 245).

An interesting argument Van Vollenhoven (2008: 17) makes is that "one can however not help to wonder why Dr Robert Moffat on a visit to this site did not mention the Wonderboom tree. One would expect that such an exceptional natural phenomena would have been mentioned as Moffat gives a very detailed description of his visit."



*Illus. 24: Late Iron Age village. (Carruthers, V.2000: 226)*



*Illus. 25: Ndebele kraal in the Magaliesberg. Painted by C. Bell, 1835. (Carruthers, 2000: 243)*

The missionary Jean-Pierre Pellissier even visited Mzilikazi in March 1832. In June/ July of that year he was attacked by the impi of Dingane, the Zulu chief. As a result he left the area during that year (Bergh 1999: 112). This left an area described as being deserted by the missionary Robert Moffat. Sotho groups, however, started moving back into the area after Mzilikazi left (Junod 1955: 68).

The first white people also came to the Pretoria area during this time (Coetzee 1992: 11). In 1839 JGS Bronkhorst settled on the farm Elandspoort. He was the first permanent white settler in the area (Van Vollenhoven 2005: 17-45).

Erasmus de Oude was the first owner of the farm Wonderboom 302 JR which is the farm on which the Wonderboom Nature Reserve was established. The boundaries of the original farm were the Wonderboom airport to the north, the Montana agricultural holdings to the east, Booyesen Street to the south and the Apies River to the west. (Van Vollenhoven, 2008: 17)

### **Voortrekker invasion (1836 - 1837)**

The Voortrekkers are known as people who became dissatisfied with life under the British administration, they migrated from the colony. At that time, they referred to themselves as "the emigrant farmers", but after half a century their movement became woven into Afrikaner national culture and they acquired the more heroic name of "Voortrekkers". (Carruthers, 2000: 259)

The Voortrekkers came from the Eastern Cape to the grassland highveld. Mzilikazi became uneasy with the Voortrekkers in his domain. Mzilikazi attacked, but the Voortrekkers built a defensive laager to hold off the Ndebeles. In the end Mzilikazi was evicted from the Magaliesberg through joint forces and various raids by the Tswana, Griqua, Zulu and the Voortrekkers. (Carruthers, 2000: 258) Mzilikazi abandoned his former territory and fled north of the Limpopo River. There he re-established his capital at Bulawayo and the descendants of his people are to be found in that region of Zimbabwe today. (Carruthers, 2000: 262)

### **South African Republic**

Hendrik Potgieter and Andries Pretorius both wanted independence from the British. Both Potgieter and Pretorius played a major part in the settlement of white farmers in the Magaliesberg. Potgieter had led the successful campaign against Mzilikazi and claimed the right for Boers to occupy the Ndebele kingdom. (Carruthers, 2000: 270)

A major difference between Pretorius and Potgieter is their methods of gaining independence from Britain. Where Potgieter preferred to move beyond British jurisdiction, Pretorius chose to confront the British directly. (Carruthers, 2000: 270)

A few months after the battle at Boomplaats (1848), Pretorius called another meeting at Derdepoort (present highway to Bela-Bela passes through the mountains). A draft constitution was approved and a joint Volksraad was established to govern all Boer communities north of the Vaal (1852). (Carruthers, 2000: 271)

In 1852 Pretorius saw a chance to accomplish through negotiation what he had failed to achieve by force at Boomplaats. The British public were growing tired of the financial cost of their involvement in the political instability north of the Cape colony. Pretorius hoped to exploit this feeling of dissatisfaction to gain Boer independence. (Carruthers, 2000: 271)

1836's - 1837's

1840- 1852

Andries Pretorius negotiated and received Boer independence of the Vaal River from British on the Sand River. Two years later, the new state, the Zuid-Afrikaansch Republiek was born (1854). (Carruthers, 2000: 272)

1855's

### Founding of Pretoria

Soon after Potgieter and Pretorius' reconciliation, they both died. Marthinus Pretorius, followed in his father's footsteps, and among the first undertakings was the acquisition of two farms on the southern slopes of the mountains where he intended to establish a seat of government for the inherent Volksraad. He continued to live at Grootplaas and the Magaliesberg remained at the centre of political developments in the Transvaal. It was only in 1855 that the proposed town was laid out, along the banks of the Apies River and named "Pretoria" in honour of Andries Pretorius. (Carruthers, 2000: 273)

1877's

### British annexation of the Transvaal

The British were tired of the Boers' exploitation of the Africans. Aggressive imperialists took the opportunity to annex the Transvaal, with little resistance, sir Theophilus Shepstone hoisted the Union jack in Pretoria on 12 April 1877. Although it only lasted four years, British rule changed Pretoria into a boisterous military camp and in the mountains several English speaking families acquired farms. (Carruthers, 2000: 278)

1880's - 1881

### The Transvaal War (First Anglo Boer War), 1880-1881

The Boers were unhappy with British rule, they reproclaimed independence of the South African Republic, after four years of annexation, on 16 December 1880. Paul Kruger, Marthinus Pretorius and Piet Joubert were the Boer leaders. Their declaration was delivered to the British High Commissioner in Pretoria, Sir Owen Lanyon, who immediately repudiated it and the situation erupted into war.

The 3600 troops of the British military under the command of Colonel William Bellairs were distributed in small garrisons throughout the Transvaal. On the other hand the Boer - directed under Commandant- General Piet Joubert - strategy was to besiege the widely scattered British troops in their isolated outposts, thus leaving the majority of the Boer force unharassed to defend the Natal border from the expected British invasion.

The first battle broke out at Bronkhorstspuit and lasted for 15 minutes. The Boers won the battle.

Pretoria was located between the Magaliesberg mountains, and not easy to defend, but after the British heard what happened at Bronkhorstspuit, the town prepared for a siege. The main fortification was Fort Royal, close to the site of the present day railway station, which guarded the roads from Heidelberg and Potchefstroom. On the northern side of Pretoria, however, there were no fortifications and it was defended by Bellairs, who patrolled alone.

In preparation of the siege, martial law was proclaimed and the entire population was relocated to fortified camps. The Loreto Convent in Skinner Street was commandeered and linked to the old goal to form a walled enclosure in which civilians were accommodated. Others were housed within the military camps at Fort Royal. (Clayton, 2010)

Two forts were hastily constructed on the hills to the south of the town. They were Fort Tullichewan, sited on Timeball Hill (Salvo-kop) and Fort Commeline on the hill to the west of it. They were stone structures each manned by a garrison of 25 men of the Royal Scots Fusiliers and a four-pounder Krupp gun.

General D.J Erasmus, in command of the siege, decided to set up ten blockades on the access routes to the town, and not to adopt an offensive strategy. Four of these blockades were to the south on the roads to Heidelberg and Potchefstroom. Three were to the east of the town on the Magaliesberg and Bronberg ranges. Two were in the Magaliesberg to the north at Wonderboom and Derdepoort and one was on the Daspoortrand to the west. (Van Vollenhoven, 1998)

Throughout the siege, minor skirmishes frequently broke out between British patrols and the surrounding Boer laagers.

The Boers cried victory in the end. The Union Jack was lowered in Pretoria and taken by a group of British loyalists to be formally buried in a secret ceremony outside the town. (Carruthers, 2000: 287) According to Carruthers, the following day, the Royal Scots Fusiliers exhumed the flag, and the flag then remained in the care of the regiment until nineteen years later, when as the first British soldiers to set foot in the Transvaal during the South African War, the Royal Scots Fusiliers once again hoisted the same flag in Potchefstroom.

## **The Second Anglo Boer War (1899 - 1902)**

The most important reason behind the Boers' fortification of Pretoria was probably the Jameson Raid of 1895/96. This event and the contemporary unrest amongst the foreigners on the Rand made the Government of the ZAR aware of an increasing foreign threat against peace that was present (Van Vollenhoven, 1998:50)

The 'Reformers' prepared a supply camp near Irene and were ready to march from there against Pretoria on 27 December 1896. Two hundred and fifty horses were allegedly kept at Halfway House for this purpose. Commandant-General Piet Joubert repeatedly expressed his fears about a possible attack on Pretoria. On New Year's day 1896 Commandant D.E. Schutte requested him to guard the roads between Pretoria and Johannesburg. (Van Vollenhoven, 1998:50)

The fact that the capital had been divided into defence wards and that a vigilance committee had been introduced there, proves that Pretoria did expect an invasion. All commandants in the Republic were instructed to have their men ready and Johannesburg was surrounded by Boer Commandos. (Van Vollenhoven, 1998:51)

The situation became even more serious when a secret map of Pretoria was discovered in the trunk of a British spy, Captain Robert White. He had already drawn this map in April 1895. Other proof of espionage activities were also found on him. It is a fact that the Jameson Raid was directly responsible for the Boers fortification of Pretoria (Van Vollenhoven, 1998: 51).

The Government of the ZAR built only four forts during the second Anglo Boer War, namely those at Schanskop, Wonderboompoort, Klapperkop and Daspoortrand.

War broke out between the British and the Boers once again, and battles took place in different places. It was the Boer leaders who dominated the Magaliesberg war, with their strategies, for example the guerrilla strategy.

The capture of Pretoria was an anticlimax for the British, according to Carruthers (2000), because even though the Union Jack was

1899-1902

hoisted at a victory parade in Church square, the ceremony could not disguise the fact that there could be no real victory over an enemy which had not accepted defeat.

South African War ruins in the Magaliesberg provide a valuable record of guerrilla military architecture.

### The nature area

The Physical Planning Act of 1975 provided for the concept of a "nature area" wherein land ownership might remain in private hands but changes in land use would be prohibited except with the permission of the Department of Planning and the Environment. The Magaliesberg was not yet proclaimed as a "nature area", but was cited as the type of land which should be proclaimed. (Carruthers, 2000: 346) On 12 August 1977 the Magaliesberg was formally proclaimed the first "nature area" in South Africa. (Carruthers, 2000: 347)

## 2.4 Conclusion

In conclusion from the above mentioned background on the natural and cultural history of the Magaliesberg and Wonderboom Nature Reserve in specific one can deduce that this study site is very important. It contains evidence of war, Stone Age and Iron Age sites with artefacts, ruins of the Anglo Boer Wars and remnants of other celebrated events. This site also takes you as far back as the origin of the Magaliesberg with its geology layers and the result of a series of cataclysmic events which produced this distinctive geomorphology thousands of years ago, named the Magaliesberg ridge. This site has layers of history which one can explore and through design create awareness, access and understanding of these significant features.

In the following chapter the theoretical approach will be discussed. Ways in which one can communicate these heritage and history will be explored, the communication of the site's cultural and biophysical aspects.

## The Landscape: A didactic Poem

'Tis still one principle thro' all extends,  
And leads thro' different ways to different  
ends.

Whate'er its essence, or whate'er its name,  
Whate'er its modes, 'tis still the same:

'Tis just congruity of parts combin'd,  
To please the sense, and satisfy the mind  
But cautiously will taste its stores reveal;  
Its greatest art is to conceal;  
To lead, with secret guile, the prying sight  
To where component parts may best unite  
And form one beauteous, nicely blended  
whole

To charm the eye and captivate the soul  
Whatever foremost glitters to the eye,  
Should near the middle of the Landscape lie;-  
Such as the stagnant pool, or rippling stream,  
That foams and sparkles in the sun's bright  
beam;

Not to attract the unskilful gazer's sight,  
But to concentrate, and disperse the light;  
To show the clear reflection of the day,  
And dart through hanging trees the refluent  
ray;

(Richard, 1794: 46-50)

# THEORETICAL DISCOURSE

# 03

1. INTRODUCTION
2. LITERARY INVESTIGATION OF CORE THEORETICAL CONCEPTS
3. FURTHER INVESTIGATION INTO KEY CONCEPTS OF THE SITE AND DESIGN
4. CONCLUSION



This chapter describes the theoretical investigation of the research study, and key concepts of the site and design. Case studies are discussed after a relevant theme.

### 3.1 Introduction

“Cultural geographers, calling upon a collective body of study that extends back well over half a century, interpret ordinary landscapes by first looking at the world around them; in their eyes meaning congeals in setting, dwelling; and use — and not alone from the designer’s intention.” (Treib, 1995: 89) Landscape architects attempt to instil their designs with significance by referring to such conditions as existing natural forms or to the historic aspects of the site. (Treib, 1995: 89) There is more to the idea of giving meaning to a landscape than merely looking at the history or natural forms, which will be discussed in this chapter. How does one keep a balance between the existing natural, -historical and the intentions of the designer?

Amos Rapoport and Robert E. Kantor (1967) identified what they believed to be the problem with many a contemporary architecture and urban design. They argue that it has become too simplified and cleaned up, that the visitor will experience everything, in this case, the landscape has to offer, at a glance. With the simplification many of the meanings and possibilities have been eliminated. This loss leads to a loss of interest — there is nothing to divert or to keep one’s attention as a result of lowered rates of perceptual inputs. Amos Rapoport and Robert E. Kantor (1967) says that “We may visualize a range of perceptual input from sensory deprivation (monotony) to sensory saturation (chaos). In the case of the former, there is not enough to observe, to select, to organize; there is an excess of order. In the latter, there is too much to observe, there is no relation between the elements, so that one is overwhelmed by multiplicity. In between, there is an optimal perceptual rate (an ‘ideal’) which enables one to explore, to unfold gradually, to see, to give meaning to the environment. One needs to move back and forth—either physically or with one’s eye and mind—not taking it all in at a glance. If there is no ambiguity, the eye is attracted only once and interest is lost. If all is designed and settled, there is no opportunity to bring one’s own values to the forms...” (Rapoport & Kantor, 1967: 210)

The aim of this research is to display what is authentic of Wonderboom fort. It might be that the pleasure and satisfaction to be derived from a ruin is perhaps not as great as that experienced in a historic house and it is certainly different in kind, but the carpets, furniture and pictures were actually a distraction from the building itself, while the ruin is the harsh architectural reality thrust upon us. According to Thompson (1981) the variations displayed in the ruin’s history is perhaps a truer reflection of the brutal course of events over several generations “than countless portraits of figures in doublets and hose, wigs, top hats and tailcoats.” (Thompson, 1981: 74)

This chapter will discuss the theory under investigation through different approaches and views to help the reader to, ultimately, understand how a landscape can give meaning to a place, and how to communicate the cultural values, history and heritage to the visitor. It will also become clear how the different approaches add to this landscape

### 3.2 Literary investigation of core theoretical concepts

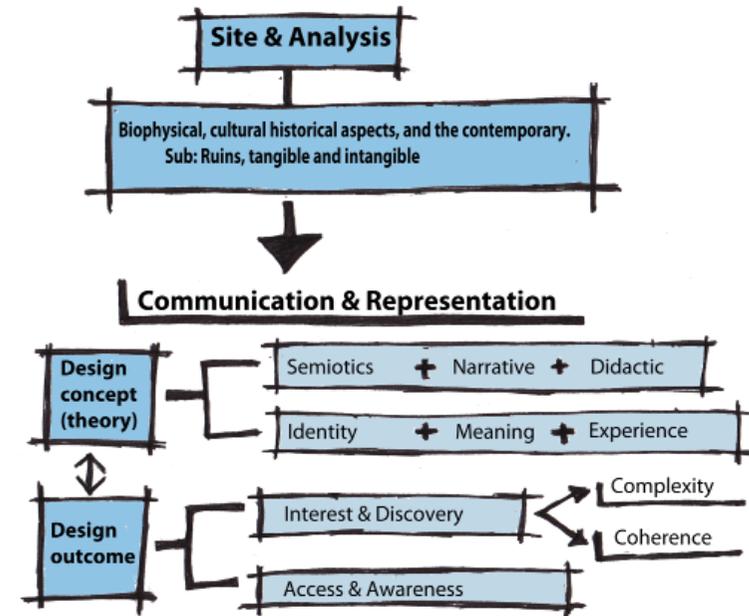


Fig. 9: Diagram indicating the different themes that can be deduce from the theory. (Author, 2011)

communication to bring about a completely different experience. If one refers back to the research question, it asks the question of how can a design narrative create awareness of the cultural and biophysical aspects of a site? These aspects will be discussed in detail in chapter 4. These cultural and biophysical aspects refer to the history and heritage of the Wonderboom Nature Reserve, and to create awareness one needs to answer the question of communication. How do you communicate the history and heritage to people?

#### 3.2.1 Communication and representation: Semiotics

Semiotics is one of the three critical theoretical currents in the landscape profession, (Howett 1987: 108), which in proposing analogies between language and architecture has forced a fresh understanding of the expressive meanings of built form and the devices of architectural communication — sign systems are as critical to the designer of landscapes as the natural systems are.

Semiotics can be used as a communication tool. According to Preucel (2006) Semiotics can be defined as “the field, multidisciplinary in coverage and international in scope, de-

voted to the study of the innate capacity of humans to produce and understand signs.” What are signs? Signs according to Preucel (2006) are such things as ideas, words, images, sounds, and objects that are directly implicated in the **communicative process**. Semiotics, therefore, investigates sign systems and the modes of **representation** that humans use to convey their emotions, ideas, and life experiences.

Preucel (2006) states that the focus changed from the ‘sentence’ to the ‘text’ and its ‘context’, and from ‘grammar’ to ‘discourse’ in linguistics. The same happened in social semiotics the focus changed from the ‘sign’ to the way people use semiotic ‘resources’ both to produce communicative artefacts and events and to interpret them.

You will notice that Preucel called it social semiotics. According to him social semiotics moves the focus on how people regulate the use of semiotic resources – again, in the context of specific social practices and institutions, and in different ways and to different degrees. Preucel (2006) argues that social semiotics is there for “opening our eyes and ears and other senses to the richness and complexity of semiotic production and interpretation, and to social intervention, to the discovery of new semiotic resources and new ways of using existing semiotic resources.”

The term social semiotics in the book of Preucel (2006), is not pure theory and should always engage with a theory, for example social theory. The following terms will be discussed to clarify the meaning of social semiotics and how to implement the theory.

### Semiotic resource

Preucel (2006) argues that the grammar of a language is not a code, not a set of rules for producing correct sentences, but a ‘resource for making meanings’. Preucel (2006) takes it further, and extends the idea of ‘grammar’ of other semiotic modes, and define semiotic resources as the **actions and artefacts we use to communicate**, whether they are produced physiologically (with our vocal apparatus; with the muscles we use to create facial expressions and gestures, etc. – or by means of technologies – with pen, ink and paper; with computer hardware and software; with fabrics, scissors and sewing machines, etc. Communication by means of physical elements can be included in this definition.)

According to Preucel (2006: 2), traditionally they were called ‘signs’. “For instance, a frown would be a sign of disapproval, the colour red a sign of danger, and so on. Signs were said to be the union of a signifier – an observable form such as a certain facial expression, or a certain colour – and a signified – a meaning such as disapproval or danger. The sign was considered the fundamental concept of semiotics.” Preucel (2006: 2) prefers to use the term ‘resources’, because it avoids the impression that ‘what a sign stands for’ is somehow pre-given, and not affected by its use.

In social semiotics resources are, according to Preucel (2006: 3-4), “signifiers, observable actions and objects that have been drawn into the domain of social communication and that have a theoretical semiotic potential constituted by all their past uses and all their potential uses and an actual semiotic potential constituted by those past uses that are known to and considered relevant by the users of the resource, and by such potential uses as might be uncovered by the users on the basis of their specific needs and interests. Such uses take place in a social context, and this context may either have rules or best practices that regulate how specific semiotic resources can be used, or leave the users relatively free in their use of the resource.”

Preucel (2006: 4) provides some principles to semiotic resources, namely;

- Semiotic resources are not restricted to speech and writing and picture making.
- Almost everything we do or make can be done or made in different ways and therefore allows, at least in principle, the articulation of different social and cultural meanings. Walking could be an example. (“Through the way we walk, we express who we are, what we are doing, how we want others to relate to us, and so on” Preucel (2006: 4))

Preucel (2006: 5) argues that when a given type of physical activity or a given type of material artefact constitutes, a semiotic resource is established, it becomes possible to describe its semiotic potential. In this case semiotic potential is its potential for making meaning according to Preucel (2006: 5) – for example, ‘what kinds of walking can we observe, and what kinds of meanings can be made with them?’

### Semiotic potential

“Studying the semiotic potential of a given semiotic resource is studying how that resource has been, is, and can be used for purposes of communication, it is drawing up an inventory of past and present and maybe also future resources and their uses.” (Preucel, 2006: 5-6)

Semiotics in this study can be defined as the manner in which to communicate and represent emotions, ideas, and life experiences through different aspects (on site) or approaches like narrative and didactic. To define the semiotic resources, for example; the fort (ruin), historic artefacts, shapes and forms which stimulate memory of past events, colour and textures etc. in your design to discover the semiotic potential, as was previously discussed.

Certain meanings are attached to certain nostalgic ideas. Howett (1987) mentioned the unconscious nostalgia for a simpler way of life. People identify this simpler life with ‘rural America’ in the argument of Howett, but in this case it will be the longing of people to live in the suburbs, close to nature. This underlying need can also be described as biophilia which can be defined as an innately emotional affiliation of human beings to other

living organisms. The subconscious need for people to connect to nature. (Wilson, 1984). This unconscious nostalgia is in direct contrast to our idea of city life. Howett (1987) implies that the suburban landscape communicates to us that its winding roads and tree-dappled lawns say 'country,' say 'retreat from the city,' and say it deliberately. Howett (1987) also uses the example of a steel and glass tower placed in the middle of a suburban neighbourhood. It would 'read' all wrong to us, and we would object to its presence in that context. To use another example, Sonfist's 'Time Landscape' discussed by Howett, the artist wants to "make the city-dwellers who see his wooded landscape aware of a past environment that time has erased but history has not. It is part of their own history, suddenly made real and present to them in the work." (Howett, 1987: 112)

To conclude, how you communicate is very important. Semiotics can be used as a communicative tool in the landscape and, in this case, at Wonderboom Nature Reserve.

Certain 'semiotic resources' can be used in the landscape to create meaning. The visitor can discover its potential as everyone may observe the semiotic potential differently because of their different needs, interests and situations. These 'semiotic resources' placed in the landscape can, in this case, cater for a wide range of people.

The opportunity is there to reveal 'semiotic potential' to effectively communicate the heritage and history of Wonderboom Nature Reserve.

Ways in which information can be communicated by using semiotics will be discussed and explored under heading 3.2.2 what is a narrative in terms of design and 3.2.3 what is didactic design?

### 3.2.2 How can narrative be used in design communication?

Porter defines narrative, he says a "[n]arrative is a spoken or visual commentary, account or story of unfolding, connected events or experiences. Narrative is a form of communication...Narrative also concerns transformation— a story unfolding until its meaning brings revelation." (Porter, 2004: p101-102)

A narrative in terms of design, is to communicate the design by using a story telling approach.

The approach of Rem Koolhaas (Porter, 2004: 102) to his buildings can be taken further into a narrative design with an approach to landscape architecture, in which the physical design will be communicated and experienced in a story telling manner, a narrative. Where the entrance of the the landscape is the introduction to your story - in this case the communication of the heritage and history of the Wonderboom Nature Reserve.- The introduction to everything which will unfold as the visitor moves further into the landscape and experiences how the narrative unfolds itself. The introduction

should reveal the complexity of the site, so that the visitor remains interested. With the movement through the landscape the 'plot' unfolds. This entails a journey full of 'mini-climaxes' - similar to what one finds in movies - which will lead to the ultimate 'climax' or denouement. Events, activities etc. become the mini climaxes which play with the senses and the need to explore further. In the case of a landscape it is not necessary for it to end. The visitor decides when it ends...

These 'mini climaxes' and main climaxes will be communicated with a semiotic approach, with the use of 'semiotic resources' and the 'semiotic potential' of the site and elements, which can create meaning through experience.

### 3.2.3 How can didactics be used in design communication?

According to the Oxford dictionary, didactic means; "Intended to teach, particularly in having moral instruction as an ulterior to be patronising." (Concise Oxford English Dictionary, 2008: 398) The term didactic will be used in this study to refer to one of the approaches of the research study as a means to communicate history, and in this instance, didactic will mean to teach the people about the significance and history/heritage of the study area to ensure educational value to the public and tourists.

Treib suggests that "[t]he didactic approach dictates that forms should tell us, in fact instruct us, about the natural workings or history of the place". "The didactic is usually more overt in its intentions", "not only should we consult the genius about its basis, but our resultant project should render an exegesis on what the genius told us." (Treib, 1995: 95) According to Treib, "[a] didactic landscape is supposedly an aesthetic textbook on natural, or in some cases, urban processes." (Treib, 1995: 95-96)

The following can be deduced from Treib's suggestions of a didactic approach (Treib, 1995):

- Forms should be used in a design to inform us about the natural systems in our environment, and
- Forms should instruct us about the history of the place.
- The didactic approach's intentions are usually shown more openly, it is clearly visible.
- The designer should consult the genius of the place, get to the base of everything and then interpret and explain clearly in his design what the genius is.
- The landscape is an aesthetic textbook on natural and urban processes and history of the place.

To come to the importance of a didactic design approach in the Wonderboom Nature Reserve. Through the didactic approach one can analyse the natural systems present in the nature reserve and through form one can teach the visitor about all the natural

systems, the same with the place history, through form, for example the use of the Iron Age circle enclosure form, in the landscape one stimulates the memory of the visitor of the past events and create awareness about these past civilisations.

Nothing in the design should be hidden, but rather shown openly to instruct the visitor. For instance hydrolic structures in the landscape etc.

In the case of the genius of the place, it should be investigated and known, and communicated through the design. To understand the term genius better, the term will be discussed in some detail with reference to the nature reserve.

### Genius of the Place

According to Treib, “[t]he presence of the genius is a bit more obvious in the undisturbed land, but there is precious little of that around these days; the genius is hardly unaffected by change in atmosphere and climate. Still, the genius provides major support for landscape design and its rationalisation today. Technically, studies of vegetation, hydrology, soil conditions, and the like are indeed the basis of design. But do these suggest a significant form for the design? If there is a stand of oaks, do you plant more oaks? Or should the stand be complimented by another species that, even to the untrained eye, appears to be foreign to the site? So much of landscape architecture in the past has been created to overcome what the genius of the place offered the “unimproved” land – for example - by bringing water to the dessert.” (Treib, 1995: 93)

In the case of this research the genius loci of the Wonderboom Nature Reserve is the fact that this area was always seen as a place of refuge, escape. Our human ancestors came to this place for refuge and stayed here most probably because of the abundance of food, shelter and water. The Voortrekkers found escape in this area, from the early origins of Pretoria the Voortrekkers come to Wonderboom to get away from the ‘city’, and now even today the people go to this reserve to get out of the city. This site remained, through all the ages, a place of refuge and shelter. It now forms a sanctuary, like an island surrounded by urban development.

The Wonderboom Nature Reserve also serves as security, with its mountain ridge, people also used it to secure Pretoria, by fortifying the mountain ridges.

The historic nature of this site is therefore a place to escape to, a sanctuary, a refuge.

Lastly, the landscape as an aesthetic textbook. In the case of the Wonderboom Nature Reserve design development, one must see the landscape as a textbook full of chapters, which can become activities, which at the same time teaches the visitor. It can be in the form of semiotics, or natural or cultural aspects existing on site.

To conclude, the landscape teaches, but at the same time tells a story, and through a narrative all the events/activities are connected to form a whole. This can be defined as a didactic narrative of a landscape.

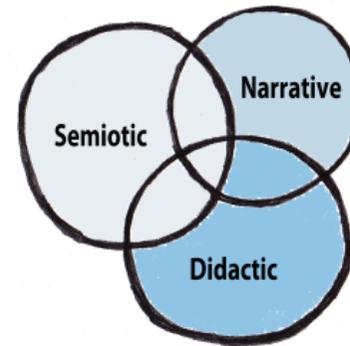


Fig. 10: Diagram indicating the interconnected relationship between semiotics, narrative and didactic design. (Author, 2011)

### Summary of design communication and representation

Semiotics, narrative and didactic can be seen as communication tools. Narrative design and didactic design would be the means through which, in this case, a landscape be communicated. In the manner of a story which at the same time teaches the visitors. ‘Semiotic resources’ will be used in this didactic narrative to communicate the heritage and history of the cultural and biophysical aspects of the site and provide meaning to that which is communicated. Refer to fig. 10.

The possible ‘semiotic resources’ will be discussed in detail in the design development chapter.

All three approaches create meaning in a landscape. It gives it complexity and order.

## Case study 1:

The following case study will look at semiotic, didactic and narrative design approaches.

*Freedom Park, Pretoria*

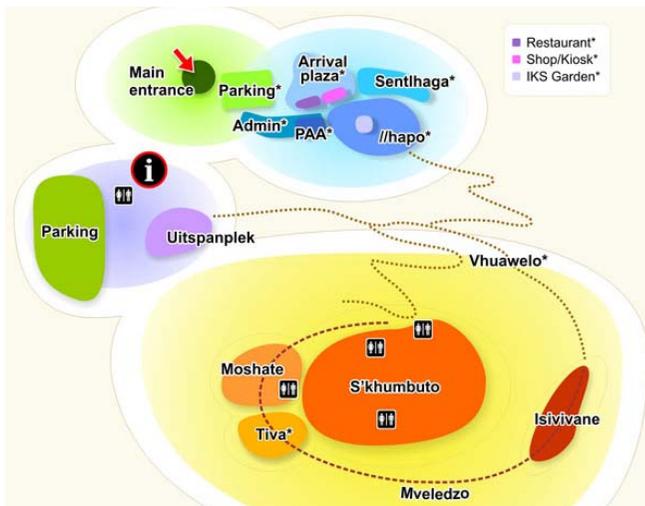
*Client: Freedom Park Trust*

*Designers: Newtown Landscape Architects, Bagale, Green inc, Momo Landscape Architects joint venture*

*Completion: 2007*

Freedom park was designed to commemorate those who have paid the ultimate price for freedom. This is done with a vast wall. An eternal flame paying tribute to the unknown and unsung heroes and heroines. Part of Freedom park is a gallery dedicated to the legends of humanity, a symbolic resting place for those who have died. A didactic narrative approach to the design tells the story of Southern Africa's 3.6 billion years of history. (Freedom Park, n.d)

According to the webpage: the struggle for humanity and freedom is the core theme embedded in the Park and symbolises the universal connections among South Africans of all backgrounds and ages. These connections are expressed through the elements that constitute Freedom Park, namely; Isivivane, S'khumbuto, Moshate, Mveledzo, Uitspanplek, //hapo, Pan African Archives, Tiva, Vhuawelo. In the following discussion of these elements used in the landscape it is eminent that 'semiotic resources' are used continuously to communicate the design. (Freedom Park, n.d)



*Illus. 26: Map of Freedom Park, showing conceptually and not to scale where all the elements are located. (Freedom Park, n.d)*

From the following it will be clear that different elements are used in the design to communicate or symbolise rituals, events, customs, beliefs, memory and history.

The following elements in the park will be discussed, where the designer made use of semiotics, didactic and narrative approaches. This is to explore ways in which one can communicate events, history etc. by means of a story which also teaches the user some important aspects and history.

### Isivivane - great example of a semiotic approach



*Illus. 27: A view of the resting place of the spirits. (Freedom Park, n.d.)*

The Isivivane element in the park is located on the eastern side of the hill. Isivivane is the resting place for the spirits of those who died in the struggles for humanity and freedom.

"The concept of Isivivane is derived from the word 'viva', which means 'to come together in a group'. It can also be interpreted as 'commitment to solidarity' and 'unity of purpose'. An accumulated heap of stones (beacons), called Isivivane, was believed to bring good fortune to long-distance travelers by paying homage to the landscape and all that it contains." (Freedom Park, n.d) The designer understands the 'semiotic resource' of past and present to create meaning.

### Lesaka within Isivivane

In this instance boulders are used as a 'semiotic resource' to symbolise the provinces. To construct Isivivane, the nine provinces of South Africa were asked to provide a boulder from a place within the province with historical significance.

Along with a boulder representing national government and a boulder representing the international community, these boulders were used to construct the Lesaka – the burial ground where the spirits of those who died in the struggles for humanity and freedom have been laid to rest. To emphasise cleansing and purity, the centre of the Lesaka is shrouded in mist. (Freedom Park, n.d).

## Lekgotla within Isivivane - example of narrative

In some African traditions, important matters are discussed in the presence of ancestors, and the Lekgotla at Isivivane allows for such discussions to take place. It consists of a semi-circular seating area constructed around a Umlahlankosi tree. (Freedom Park, n.d) This tells a story of culture's traditions.



Illus. 28: A view of Lekgotla. (Freedom Park, n.d.)

They took every element used in the design, into consideration. Everything has a connection to the past, or custom which was used, for instance the water, which symbolises healing and cleansing. It can be said that the elements are used as 'semiotic resources', which stimulate the memory or the meaning of the place.

## S'khumbuto



Illus. 29: A view of S'khumbuto - memorial to commemorate major conflicts in SA and a wall of names (Freedom Park, n.d.)

S'khumbuto is a memorial that commemorates the major conflicts that shaped South Africa.(Freedom Park, n.d)

The concept of S'khumbuto is drawn from siSwati nomenclature and signifies a place of remembrance for those who have died and also a place for invoking their assistance in current and future affairs.(Freedom Park, n.d)

S'khumbuto comprises of a number of elements, namely; wall of names (which is an example of semiotics, to use a wall with inscribed names of the people who suffered in wars and slavery - symbol of those no longer with us. The use of technology comes forth with a virtual wall accessible via touch screen to get more information of the names.), amphitheatre, sanctuary, eternal flame (also a semiotic approach to the design; the fire symbolises eternity), gallery of leaders and lastly reeds.

## //Hapo - is a great example of didactic narrative approach to design

The narrative approach comes in with the design of the //hapo, which is an interactive exhibition space where the story of Southern Africa, dating back 3.6 billion years, will unfold in narrative and visual form.(Freedom Park, n.d.).

There are specific times in the day when the story will be told.

"The name //hapo means 'dream', which has been drawn from a Khoi proverb " //hapo ge //hapo tama /haohasib dis tamas ka i bo" that translates into "A dream is not a dream until it is shared by the entire community."" (Freedom Park, n.d.).



Illus.30: Copper cladded buildings to imitate boulders, are the live exhibition spaces for the narrative to play off (Freedom Park, n.d.)

"Within //hapo, the history of our region is brought to life as each story is revealed in layers, creating a sense of wonderment and curiosity. It is a place where the historical, cultural and spiritual past of South Africa comes alive – a place where people are able to reach a new understanding of a complex past, explore the diversity that is South Africa and create shared dreams for the future." (Freedom Park, n.d.)

The permanent exhibitions are structured around social spaces that allow for live interpretation, performance and storytelling. The exhibitions will include a selection of cultural and historical objects that can be handled, discussed or used, transforming the visitor from a spectator to a participant.(Freedom Park, n.d.)

The history unfolds in seven epochs (eras), namely; the earth, ancestors, people, resistance and colonisation, industrialisation and urbanisation, nationalisms and struggle nation building and continent building. (Freedom Park, n.d.).

"By relaying the history of our region from an African perspective, we dip into the deep wells of African indigenous knowledge as well as reservoirs of contemporary western scientific knowledge. //hapo is therefore a fusion of African knowledge and western scientific knowledge that tells us what happened here, on the southern tip of the African continent."(Freedom Park, n.d.).

## Case Study 2:

*Ellis Park Precinct, Johannesburg*

*Client: Johannesburg Development Agency*

*Designers: Newtown Landscape Architects*

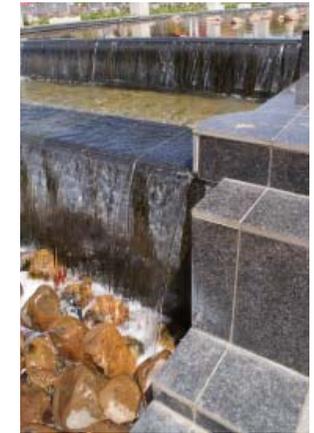
*Completion: for 2010*

Ellis Park Precinct is an example of a semiotic approach to design. The design symbolise and celebrate the location where the past Jukskei River flowed through Johannesburg. It is celebrated with a long water feature, with spouts along the semi dry paved strip. At the end of the water feature line is a small cascade. This provides for a calming water sound along with the sound of the water spouts.

Great consideration was taken with regards to the movement on the precinct and diagonal pathways across the water feature.

To conclude, the water feature provides for the symbol to instruct/ teach of the past river. The water feature are used as 'semiotic resource' to create meaning potential and to stimulate the memory of the past.

The importance of this case study to the Wonderboom Nature Reserve, is to illustrate different ways in which one can communicate past events. One can communicate past events via forms, shapes etc as well.



*Illus. 31: The small cascade at the end of the water feature (Author, 2011)*



*Illus. 32: The dry water paved strip and the pedestrian walkways crossing it. Notice the rhythm of the lighting structures and street furniture elements which provide unity in the landscape. (Author, 2011)*

### 3.2.4 How can identity of place be strengthened?

The Oxford dictionary defines identity as, "the fact of being who or what a person or thing is" (Concise Oxford Dictionary, 2008: 707) The characteristics determining this, as 'modifiers' serving to establish the identity of the owner. These 'modifiers' can refer to certain events over a period of time. These isolated events are combined by the people themselves to form a narrative of who they are and who they are not. This constitutes their identity.

With regards to Wonderboom Nature Reserve, the 'events' must be highlighted to be combined, to form a story. This results in the formation of an identity for the site.

#### 3.2.4.1 How can experience strengthen place identity?

"Experience of architecture falls in two categories of response: sensuality and aesthetics. The sensual experience results from the manner in which we see and touch, while, being less concerned with the sensate, the aesthetic experience is more dependent upon and affected by processes of thought. Therefore, our experience of environment seeks two fundamental responses: delight for our senses and also the need to respond to inherited memories of habitat." (Porter, 2004: p60)

Phenomenology is a term which can also be used to describe experience. Phenomenology is "an approach that concentrates on the study of consciousness and the objects of direct experience." (Concise Oxford English Dictionary, 2008: 1075-6)

Porter defines phenomenology "...based on a belief in subjective immediate sensory data as the only reality, and then that reality is only a reality for the particular individual involved. Each experience initiates a new ultimate outcome that did not exist before." (Porter, 2004: p60)

In this study phenomenology will refer to the unique experience of each visitor, to the site. It will refer to the objects in the landscape and how one will experience it through your immediate conscious sight and touch.

Environmental psychology, is one of the three theoretical currents, as stated by Howett (Howett, 1987: 108). This includes the work of such geographers as Yi-Fu Tuan, who speculate on the nature of place experience and the profound conscious and preconscious bonds that make us respond in specific ways to various environments." (Howett, 1987: 108)

According to Howett, environmental psychology is "[t]o speak of ways in which landscapes can communicate values shared by our culture, meanings whose discovery is part

of our aesthetic response to the places we inhabit or encounter" (Howett, 1987: 109-16)

Phenomenology is focussed on the individual experience and environmental psychology is focussed on typical (groups) ways of experience.

In the case of Wonderboom Nature Reserve, experience will be created as stated above, but also through different approaches to some element or activity/artefact. This will ensure interest and discovery in the landscape. These approaches will be discussed under 3.2.6 meaning in the landscape. These events stimulate experience and different manners of approaching these elements in the landscape provide for strengthening the identity of place as well as the people.

### 3.2.4.2 How can meaning strengthen identity?

#### 3.2.4.2.1 Three Dimensions of Meaning

Robert Thayer (1994), explained with an example how he and his friend experienced coming across an airplane wreckage one day, while they were hiking. They experienced three basic significant levels of human intrusion on the landscape, namely;

1. Perceptual,
2. Functional, and
3. Symbolic

"Attracted initially to a visual stimulus set off from its context, we first perceived the stimulus as 'technological' and human-made without knowing its function. Later, we recognized the function, and finally, made some symbolic connections." (Thayer, 1994: 105) Refer to fig 11, which illustrates these levels of intrusion but based on Wonderboom Nature Reserve.

Thayer (1994) argues that by developing this framework of the three dimensions "is to suggest that each dimension contributes, both individually and perhaps synergistically, to a participant's effective response to a particular utilitarian or technological landscape, and that by examining each dimension separately and more closely, we can learn much about how we react to the technologically influenced landscapes that form the context of our daily [South African] existence." (Thayer, 1994: 105)

In the case of Thayer and his companion, they approached the airplane wreckage in a linear fashion, therefore, their experience of each dimension was sequential. If, for instance, Thayer and his companion had stumbled upon the wreckage suddenly, they might have experienced all levels simultaneously. Thayer states that, "[w]hether the experience of complex levels of landscape meaning is linear (i.e., information processing) or simultaneous (e.g., Gestalt) and whether the perceptual, functional, and symbolic levels act independently one or another of the interactive, interdependent manner is

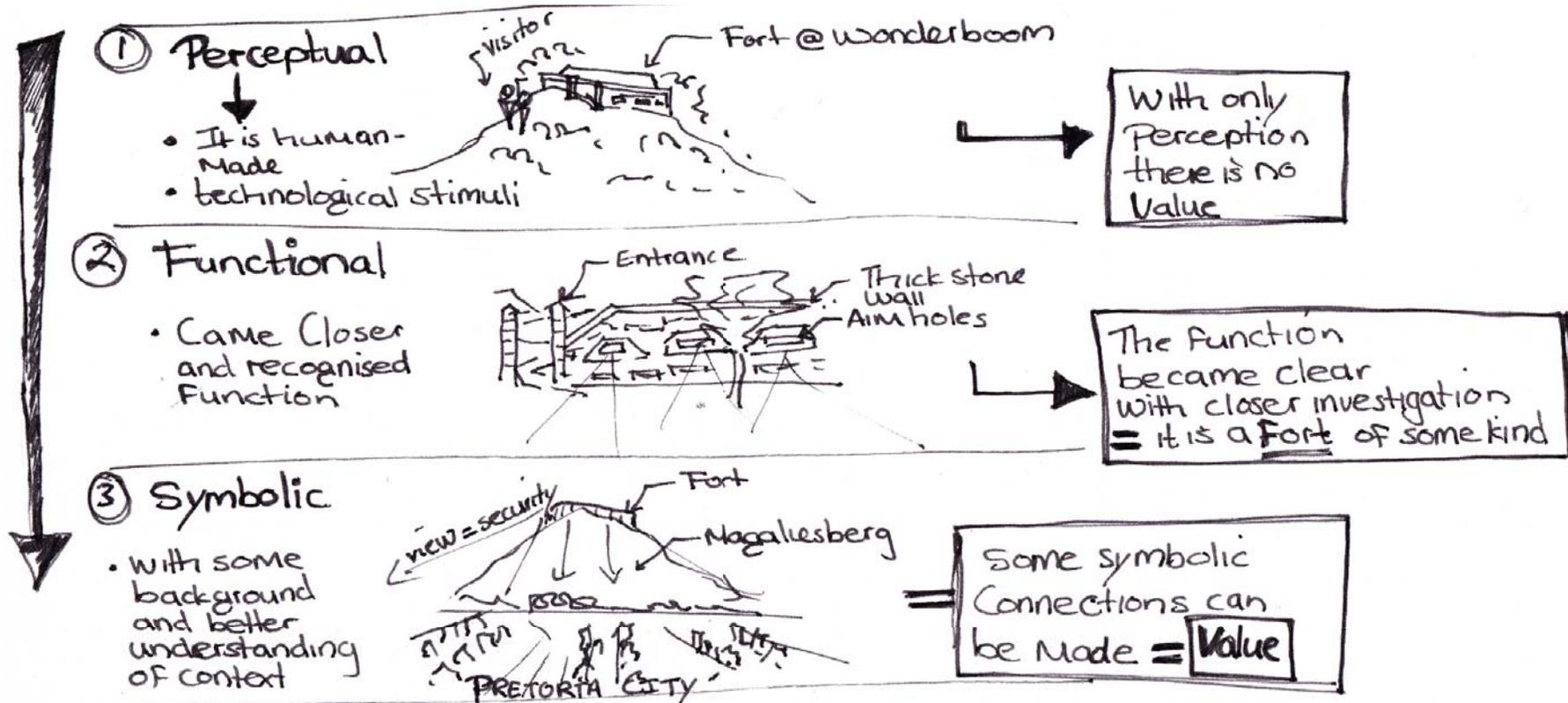


Fig 11: An illustration by the author to explain Thayer's three levels of intrusion. (Author, 2011)

unclear. However, I am convinced that humans evaluate the three meaning dimensions according to inner 'positive – negative' scales or operative procedures.

In short, each meaning dimension or significance level contributes something to overall affective or emotional response, be it negative or positive." (Thayer, 1994: 105)

### 3.2.4.2 .2 Meaning in environmental design

Joseph Grange gives three principles which should be kept in mind when a designer looks at an environment.

1. First, things are meanings, not material objects.
2. Second, these meanings are nodal points of expression that open out into a field of relationships.
3. Third, the goal of environmental design is to knot together these concentrations of meaning so that the participant can experience the radical unity that binds these different qualities. (Grange, 1985: 113)

### 3.2.4.2.3 The meaning of the fort at Wonderboom Nature Reserve.

The Wonderboom Nature Reserve can be seen as a sanctuary, a refuge, because it is in its nature to provide security, shelter and a place people can escape to when they want to get away from the city. It has been the function of this area since our ancestors migrated to the Magaliesberg, during the Voortrekker era and even now people still use it for that.

Refuge, according to the oxford dictionary, refers to "a place or state of safety from danger or trouble" (Concise Oxford Dictionary, 2008: 1209) In this case it will also refer to a place away from the city (danger), thus it becomes a sanctuary.

The Oxford dictionary describes sanctuary as "a place of refuge or safety." (Concise Oxford Dictionary, 2008: 1272) and a nature reserve is also described as a sanctuary, in the sense that it is where unwanted animals or injured animals are cared for. Sanctuary is also a spiritual place.

## To conclude:

People approach objects differently and for that reason one needs to accommodate for that. These two approaches mentioned by Thayer, namely linear or simultaneous, can be used in the approach of Wonderboom Nature Reserve. Different approaches can be established to create different experiences. For example, the Wonderboom tree can be seen all at once, but the fort on top of the mountain becomes a linear approach with a sense of discovery. The visitor will in some instances perceive the object presented to them without the functional and symbolic meaning, and as they progress in discovering this object of interest, they will come to understand the symbol and function. The visitor will also, in some instances, be confronted with the entire object presented to them and experience symbol, perceptions and function all at once.

The different activities (existing and proposed) in the nature reserve can be seen as nodal points of meaning, which are connected through a narrative. This can be seen as a field of relationships. These nodes of meaning which can be created in the design would in turn create experiences which forms the identity of place and person.

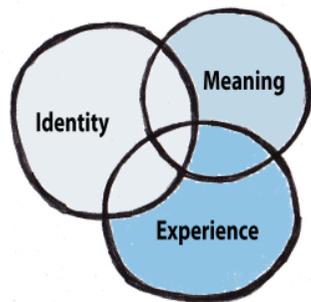


Fig 12: The interconnected relationships between identity, experience and meaning. (Author, 2011)

### Summary

This section can be seen as the second theme, with the first theme being semiotic, narrative and didactic approaches.

A series of events and experiences can be regarded as 'modifiers' which establish the identity of a person. Events/activities or themes in a landscape are connected through a narrative to result in identity formation of the site.

By accommodating for both categories of response; sensuality (in which we see and touch) and aesthetics (dependent and affected by process of thought), the

design need to respond by providing delight for our senses and also to the inherited memories of our habitat, this in turn create different experiences.

The two approaches, namely; linear (sequential) and suddenly is how one will experience the three dimensions of meaning, namely: functional, symbolic and perception.

Meaning can create a sense of reference and belonging (identity) for the Wonderboom Nature Reserve. The existing meaning is that of a refuge/sanctuary. Meanings related to the objects and different experiences created by objects in the landscape can results into identity growth of the site for the people.

## 3.2.7 How do you create interest and discovery in the landscape?

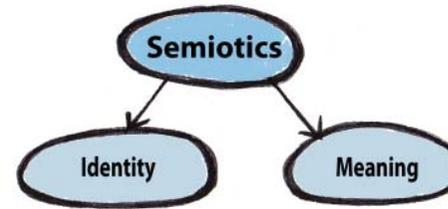


Fig. 13: The relationship between semiotics, identity and meaning. (Author, 2011)

A quick reference to the previous two themes will help with the understanding of interest and discovery in the landscape.

'Semiotic resources' can be used to give meaning to the landscape or object as well as providing identity to the site and the visitors. Refer to the previous themes.

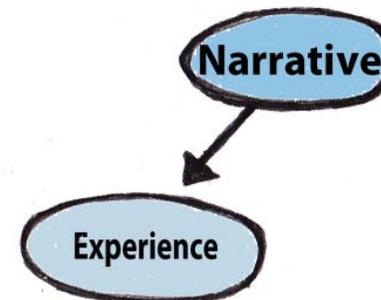


Fig. 14: The relationship between narrative and a whole creates experience in the landscape. (Author, 2011)

A narrative results in a chain of events, activities or objects placed in the landscape to communicate a story. These nodes can be linked with walkways. Semiotics is used as a tool to communicate the heritage and history of the site and to create meaning in the landscape and to the objects placed in the landscape. This narrative can also be approached by means of didactic design. This approach brings an educational factor into the narrative and teaches the visitor. This teaching might be done in different ways. The narrative as a whole creates experience in the landscape. How people approach an object also provides for the experience. The

different elements/objects in the landscape, their orientation and arrangement ensures for experience and the creation of identity. Refer to fig. 13 and fig.14 to see the relationship between the two themes.

### 3.2.7.1 Interest and discovery

According to Dee (2001: 17) there are four qualities in a landscape which influence peoples experience of the landscape. These qualities are mystery, legibility, complexity and coherence. With these four qualities intact in the design one will be able to create interest and discovery in the landscape, and with that provide for users experience and identity growth.

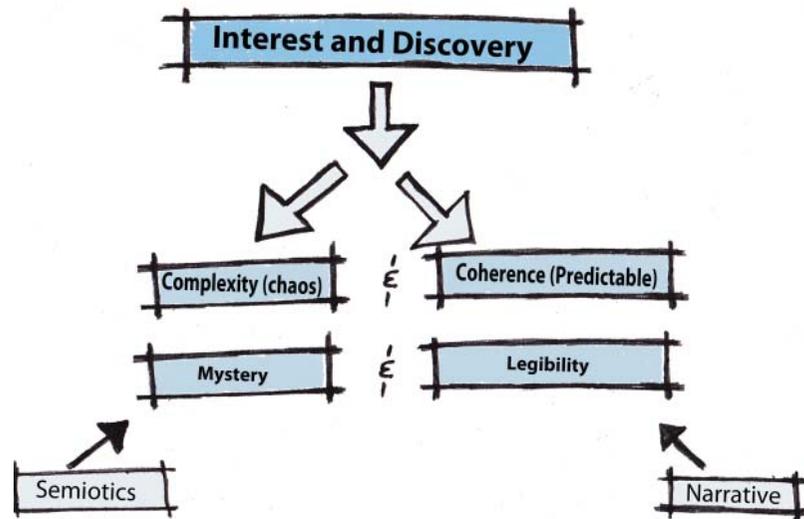


Fig. 15: Discovery and interest can be created through a balance in complexity and coherence in design. (Author, 2011)

Legibility refers to how easily an environment can be 'read' or 'made sense' of to enable people to understand and know what to expect in the landscape. Mystery describes the quality of an environment that encourages people to discover more about the place; to 'engage with it' according to Dee (2001: 17). Coherence refers to the order of a place; how well it 'fits together' to create a unity/whole. Complexity refers to the diversity and richness of elements within a place.

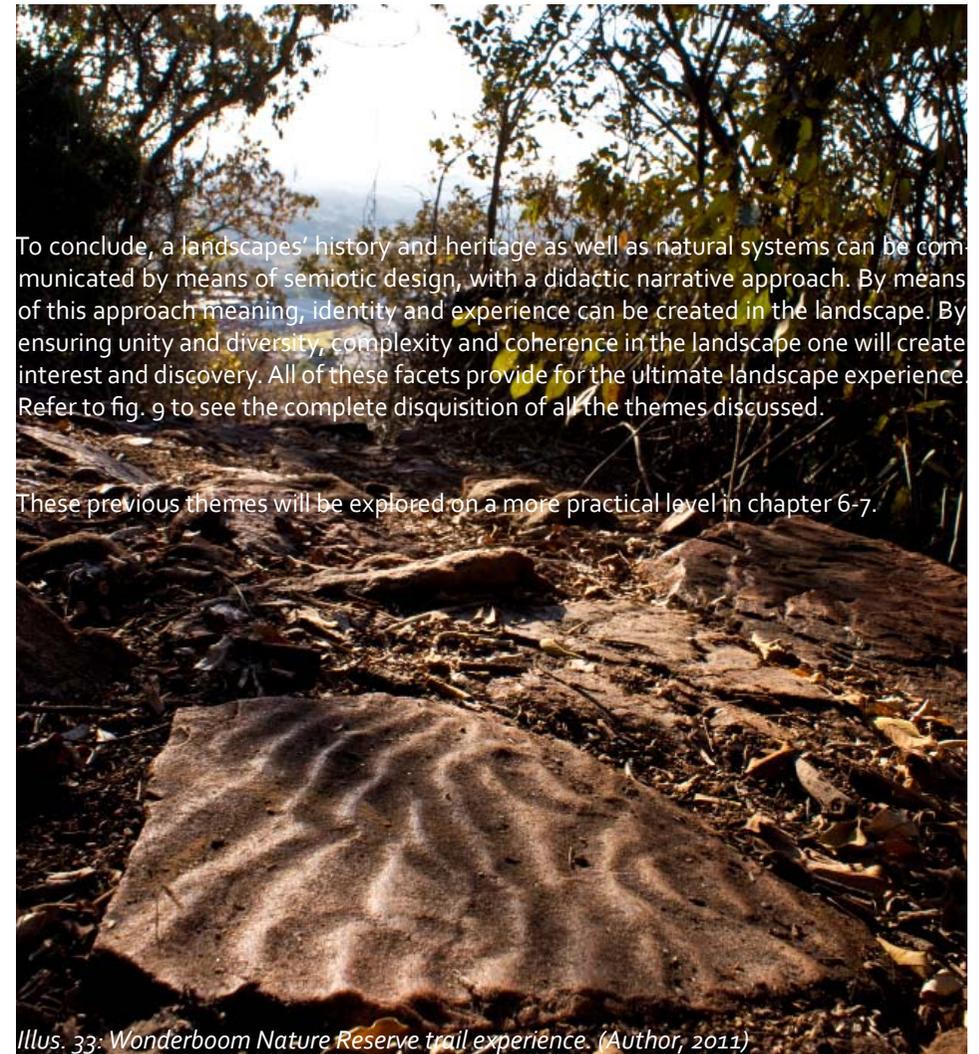
According to Dee (2001:17) all of these qualities are simultaneously required in order for people to fully enjoy and respond to places.

Figure 15 refers to the two main qualities, namely; complexity and coherence which can provide for discovery and interest in the landscape. This can be achieved by using semiotics to create meaning and complexity and a narrative to create coherence, order in the landscape. A narrative will ensure that the landscape will be legible and follow a sequence of events. Mystery will be created through means of arrangement of activities, and the different approaches the visitor will experience when walking through the landscape.

To further ensure complexity and coherence in the landscape one need to understand the principle of unity with diversity in the form and detail of landscape. This visual characteristic can ensure to capture the visitors interest and at the same time provide for his experience. A person experience things by the means of his senses, touch, feel, smell, taste, see and hear.

According to Dee (2001: 18) the need for people to make sense of the order of places requires a certain degree of unity of form, elements and detail. Unity can be achieved by means of the following: through repetition, use of specific geometry, and a limited 'palette' of materials.

Dee (2001: 18) states that a landscape that is unified but lacks diversity can be considered monotonous. The diversity in landscape according to Dee (2001:18) refers to difference in form, elements and detail. To balance unity and diversity is the ideal goal in any landscape, and the ideal goal in the design development of Wonderboom Nature Reserve.



To conclude, a landscapes' history and heritage as well as natural systems can be communicated by means of semiotic design, with a didactic narrative approach. By means of this approach meaning, identity and experience can be created in the landscape. By ensuring unity and diversity, complexity and coherence in the landscape one will create interest and discovery. All of these facets provide for the ultimate landscape experience. Refer to fig. 9 to see the complete disquisition of all the themes discussed.

These previous themes will be explored on a more practical level in chapter 6-7.

Illus. 33: Wonderboom Nature Reserve trail experience. (Author, 2011)

### 3.2.8 How can access be created?

Access becomes very important with respect to the approach of the site. What will the visitor experience? To what extent would the design give access to certain areas, artifacts etc.? To create access in the design as design resolution will be discussed in more detail in chapter 6 & 7. Access to the different heritage sites is limited and in some cases non existing. Through the design access to the different heritage sites can be provided.

#### 3.2.8.1 What is access?

Access is defined as “the means or opportunity to approach or enter a place.”(Concise Oxford English Dictionary, 2008: 07) And something which is accessible, is something one is able to access, whether it be physical or mental.

#### 3.2.8.2 Different ways of providing access:

1. Visual access
2. Physical access

##### 3.2.8.2.1 Visual access

The visitor would only have visual access to something. This means that you will not be able to touch it or experience it by walking through, on or under it. One can provide for visual access from a distance, or one can bring the viewer closer, but not within reach of the element, view, artefact etc. The visual access can be obscured, or open. Interest can be created if a view is only halfway accessible from a certain point.

##### 3.2.8.2.2 Physical access

The visitor can physically access the Wonderboom Nature Reserve in this case. The nature reserve is made more accessible through design solutions, for instance, the entrance to the nature reserve is made more visible from the road, the entrance to the fort for the proposed bus shuttle is reconstructed with new road lanes to regulate the traffic flow, and make it easier for people to turn into the entrance from the busy Voortrekker road.

Physical access is provided to the landscape, elements, artefacts etc. The visitor can experience every corner of the space or artefact. One can touch, smell, taste the element or artefact. You can move through, over and under the structure.

One can also regulate the means of access, to enable the visitor to touch the artefact or element, but you cannot move through it etc.

### 3.2.9 How can awareness be created?

#### 3.2.9.1 What is awareness?

Awareness is “having the knowledge or perception of a situation or fact.” (Concise Oxford Dictionary, 2008: 91)

#### 3.2.9.2 Awareness can be created by the following:

Refer to figure 16, results from the questionnaire which was conducted. These results indicate ways in which the people come to know about the Wonderboom Nature reserve.

#### Different ways the people come to know about the Wonderboom Nature Reserve

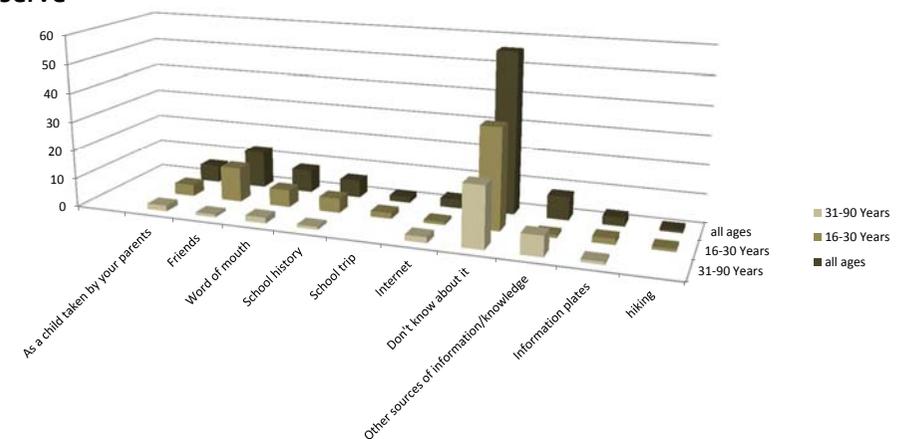


Fig. 16: Different ways by which people became aware of the Wonderboom Nature Reserve. (Author, 2011)

Awareness can be created by the following:

1. In Person,
  - Word of mouth
  - Prior knowledge or experience
  - Emotion
  - Questionnaires
2. The Media/ technology,
  - Phone (geocaching)
  - Internet
  - Radio

- Television
- Newspapers

### 3. Visual (physically on site),

- Sound (real or imitated)
- Kinetics (structures in the landscape)
- Posters
- Information plates
- Lights
- Signage
- Activities

### 4. Physical (visitor participant on site),

- Monthly exclusive activities/events (star gazing, moon walks etc.)
- Yearly architectural competitions (temporary pavilion structures)
- Artefacts and exhibitions

#### Examples of precedents:



*Illus. 34: The World Trade Centre's ghost towers, to commemorate what was there, and remind the people what happened on 9 September 2001. (Mossad, 2009)*

Refer to illus 34. The use of lighting can create a sense of awareness. This was accomplished with the World Trade Centre ghost towers. Two flood lights shine straight up from the exact location where the previous Trade Centres were before the terrorist attack in 2001. It is clearly visible from a distance and there is no way of missing this spectacular view, it is almost as if awareness is forced upon the viewer/people.



The 'reeds' at freedom park is a great example of ensuring awareness amongst the people living in Pretoria as well as people all over the world who see and hear about it.

These 'reeds' is a sculpture of ascending steel poles. With almost 200 reeds, the tallest measuring 32 metres in height, and small lights on top of each pole ensures visibility of Freedom Park from all around the capital city, night and day. (Freedom Park, n.d.) Refer to illus. 35



*Illus. 35: A view of Lekgotla. (Freedom Park, n.d.)*



*Illus.36: Lionshead in Cape Town; picturesque full moon. (Delpont, 2011)*

Refer to Illus.36. The fullmoon walk up Lionshead mountain in Cape Town. This is a great example of events which will attract visitors during the night time and ensures for some interesting stories to tell friends. This will create awareness.

There are also the moonlight markets at the Pretoria botanical garden, which attract a lot of people each month.

### 3.2.9.3 Different manners of Awareness:

1. Senses
2. Physically
3. Mentally

### **3.2.9.4 Awareness can be created of the following:**

The following aspects mentioned below were deduced from the site analysis. The aspects which the public needs to be made aware of were identified as:

1. Biophysical phenomena, in this case, the Wonderboom tree
2. Fauna and flora
3. Topography and geology
4. Cultural aspects, such as the wonderboompoort fort and artefacts.
5. History and historical eras, for instance the Stone Age and Iron Age, the war and the Pre-stone Age era.
6. Important cultural celebrations, in this case the Day-of-the-Vow, the Transvaal Ndebele tribe, and the Union of Pretoria.

### **3.2.9.5 Awareness to different degrees:**

1. General awareness
2. In-depth awareness

#### **3.2.9.5.1 General awareness**

One can see the objects in the landscape and the visitor knows about it. Objects in this case refer to any design intervention or examples mentioned in 3.2.9.4.

#### **3.2.9.5.2 In depth awareness**

The visitor is made aware of the object in every way. The visitor gets intensely aware of the object/landscape. Visually, physically and mentally etc. The visitor almost becomes part of the landscape in every way. Object in this case also refers to the examples mentioned in 3.2.9.4.

### **3.2.9.6 Awareness to different classes of people:**

Refer to the questionnaire analysis and visitor's book year table in chapter 1.

The following classes were distinguishable:

1. School children
2. Education oriented people
3. Specialists in certain fields of study
4. Nature lovers
5. Outdoor people
6. Socialising people

The abovementioned classes were obtained from a questionnaire analysis, by looking at who visits the nature reserve and for what reason.

It was found that some people come to socialise (braai and be with family and friends). In the results it was clear that different age groups visited the reserve. For instance primary school, older school kids, young adults, adults and pensioners. There were people who were more education oriented. They want to obtain more knowledge and they read the information plates. Some people would visit the reserve to go hiking, be close to nature and see the animals etc. Others still, come for the natural aspects of the site.

### **Summary**

Access can be created on different levels, namely visual access and physical access. This access can be of the people toward the elements and artefacts in the landscape as well as the access of people to the Wonderboom Nature Reserve itself. Accessibility can be improved in cases where access is difficult or impossible. For example the entrance to the fort from Voortrekkerweg.

Awareness can be created in different manners, namely; senses, mentally and physically by means of the following; in person, the media/technology, visual (physically on site), and physically (visitor participant on site). It can be to a different degree of intensity, namely; general awareness and in depth awareness, for a variety of classes of people, namely; school children, education oriented people, specialists in certain fields of study, nature lovers, outdoor people, socialising people.

### 3.3 Further investigation into key concepts of the site and design

#### 3.3.1 The Tangible and Intangible

Liana Muller (2008) investigated the intangible and tangible landscapes from an anthropological perspective, which gives her study a unique dimension. This research will investigate the relationship between landscape and culture, or landscape and memory.

According to Scazzosi in Muller (2008: 1), "There is currently a global movement towards a unified vision of landscape, focussing on the integration of culture and nature and incorporating the conservation of the identities of people and places". But with this honourable notion, within the development industry in South Africa, the concept and realities of preserving intangible heritage is still misunderstood, with the role of memory and meaning of place largely ignored in conservation policies. (Muller, 2008: 1)

Muller stated that, "[t]hrough qualitative anthropological fieldwork methods it became possible to access its intangible aspects. These intangible values of meaning, memory, lived experience and attachment, in relation to people's connection to locality and landscape, were then traced back to the tangible fabric of place."

"It could be stated that landscape and memory are fundamentally interconnected through the intangible dimension. Both are part of a continuum and both are equally susceptible to change." (Muller, 2008: 16)

#### 3.3.2 Ruins

The word ruin can mean a lot of different things for different people; to some the word can already indicate a derelict building or structure etc.

When is something a ruin, in what stage of deterioration should a place be to be called a ruin? One can get different states and phases of ruin. A derelict building can be explained as a building which is not in use anymore and some deterioration has started to take place. The Oxford dictionary explains derelict as a building "in a very poor condition as a result of disuse and neglect." The word ruin is described in the Oxford dictionary as "physical destruction or collapse" or "a dramatic decline; a downfall."

Thomson describes a ruin as the "roofless shell of a building or structure", after a building became derelict and deteriorated to a roofless shell. "The shell may stand to roof height or exist only as a foundation (or even merely as an archaeological fossil in the subsoil), but it is clearly sharply distinguished from a roofed structure which provides

shelter and is in some sense usable." (Thompson, 1981: 9)

What is interesting of the four remaining fortifications of Pretoria is that all the forts are in a different phase of ruin. (Refer to illus. 37) *Fort Schanskop* (1897), Krupp of Germany (n.d) — is in perfect condition after it has been restored and reconstructed. In this instance, this fort is restored to a monumental museum structure, more for the aesthetic than the original function and atmosphere. — *Fort Klapperkop* (1898) on the other hand is also in perfect condition, the only difference is that fort Klapperkop was restored to the original structure. *Wonderboom fort* (1897) was used as guide to reconstruct fort Klapperkop. *Wonderboom fort* is in a state of deterioration. The fort is the original structure with no previous restoration. This makes the fort significant. The fort is in a state of deterioration, but all the walls are still standing to provide the evidence of the past. Lastly is *West fort* (1897-1898), Leon Grunberg and Sam léon (n.d), Pretoria, South Africa — the fort is in a state of extreme deterioration. Not much is left of the fort structure except the impressive entrance. These ruins can be seen as great examples of ruins, as described by Thomson.

The interesting fact which can be deduced from these four examples is that the one in the best condition and full restoration is the fort which is most accessible and most visited by tourists. This fort is Fort Schanskop. The same goes for Fort Klapperkop. *Wonderboom fort*, is less accessible especially by car and people in general are not aware of the existence of this fort. The fort is located on the Magaliesberg in a nature reserve. The only access to the fort for visitors at this stage is by foot up the mountain. This results in more and quicker deterioration of the structure which was once unbreakable. *West Fort* on the other hand is in a degree of total destruction. The fort is also very difficult to access, no definite clear route leads to the fort. It is almost as if you do not know where the fort is; you will not be able to get to it. No one goes to that fort, except if you are doing research, because very few people are aware of that magnificent fort ruin.

In these instances it becomes clear that accessibility and awareness are two key factors of keeping, in this case, a fort ruin from deteriorating. Some development is needed to ensure the ongoing awareness and memory of these structures.

The four phases of ruin (restored to aesthetic monumental structure, restored to original structure, left as a ruin slowly deteriorating with some maintenance and lastly total destruction as a result of no awareness, access or maintenance) is an excellent example of how the *Wonderboom fort* would look if it would be restored to its original past structure or if it's left to deteriorate with now maintenance, access or awareness. (Refer to illus. 37) Should it be restored, or should one leave the genius of the place as is? The rationale behind the proposed intervention will become clear in the following pages.



Illus. 37: The different phases of ruin as mentioned before, from the left; Fort Schanskop, Fort Klapperkop, Wonderboom Fort and West Fort. (Author, 2011)

### 3.3.2.1 Why the destruction of ruins?

It is perhaps a debatable point whether natural erosion or human interference is the major agent of destruction.

Fire and pillage may create ruins, but deliberate levelling and quarrying for the reuse of stone or brick are probably a ruin's main enemies. The blockhouses in Gauteng, South Africa were stripped of their corrugated iron, and the stone bases were left for ruin by the British after the Anglo Boer war.

According to Thomson, the denser the population, the more likelihood there is of interference, and similarly it follows that the sparser the population the less the interference with ruins in the area. (Thompson, 1981: 9) Evidence of this can be found in the four fortifications of Pretoria as discussed previously.

The other agents of destruction are the natural effects of climate and vegetation, the two being closely related. According to Thomson: another factor is the varying degree of resistance of the passive materials of which the ruins have been constructed to withstand these destructive forces. (Thompson, 1981: 9)

Of all the factors mentioned only one can be controlled by legislation, and that is human interference. It can be prevented or reduced by prohibitory laws. Such laws and charters will be discussed later in this dissertation. Sadly, the laws and charters cannot prevent erosion and collapses caused by climate and vegetation, and these continue to effect most ruins. The only difference to be made by legislation with regards to the ruins is to preserve them and take them into their care.

Thomson believes that ruins have a finite life, and thus by preserving it one may increase its deterioration by removing the protective debris from the base of the ruin, this may hasten its erosion, but on the other hand, it is important that during this finite life we are using the ruin by rendering it intelligible to the visitor, both for pleasure and instruction/

education. (Thompson, 1981: 10)

Ruins are very emotionally evocative as we know, ruins speak of past events and times, which can now only be known through education and memory. "There is no general study, no periodical to which one can turn for an account of this work, and indeed much of it has now passed beyond living memory." (Thompson, 1981: 7)

### 3.3.2.2 What is to be done with ruins?

Should ruins be left in peace as they are, or should one attempt to restore the ruin to its original state or only preserve it in its current state of deterioration?

The term preservation means to "maintain in its original or existing state" (Concise Oxford dictionary, 2008: 1135), and to restore (restoration) in this research essay means to reconstruct the ruin to its original state.

We often try to restore what has been previously destroyed, or what is in ruin. Perhaps, for example, a stream which was culverted and buried is restored to its 'original' state, or for instance fort Klapperkop was restored to its 'original' state by Anton van Vollenhoven — "of course, it really isn't; everything has changed around it" (Treib, 1995: 95). And in some cases even the genius loci is lost.

It is important to remember that there was no question of preservation in the Romantic or Picturesque attitude towards a ruin, according to Thompson, in his book *ruins: their preservation and display*. He states that the ruin was there to stimulate and excite the onlooker; whatever increased the theatrical effect —ivy or moonlight—was desirable to heighten the sensation. (Thompson, 1981: 15)

William Gilpin in his journey down the Wye in 1770 said of *Tintern Abbey* (1131) (a picturesque ruin): "More picturesque it certainly would have been if the area, unadorned, had been left with its rough fragments scattered round; and bold was the hand that

removed them; yet as the outside of the ruin, which is the chief object of picturesque curiosity, is still left in all its wild and native rudeness; we excuse—perhaps we approve—the neatness that is introduced within.” (Gilpin, 1782: 32-35)

Gilpin described the vegetation growing in the abbey in detail, because in his eyes it enhanced it. Thus the vegetation growing later in the ruins can enhance the view and experience of the ruin, it brings a sense of mystery to the place.



*Illus. 38: Tintern Abbey (1131), Tintern, Monmouthshire, Wales. (Tintern Abbey, 2010)*

According to Thompson, many ruins in the picturesque era suffered from selective demolition “where the remains were not visible from the house or in a vista. The pleasure could as well be derived from an artificial ruin, a folly, as a real one. The ruin became like a toy in the landowner’s park.” (Thompson, 1981: 15) It was only with the dawn of the romanticism that a sense of sympathy arose towards the medieval remains. (Thompson, 1981: 17) It is interesting how people see things differently, to some “[h]istory became an image to be dusted off and applied to any current proposal as a means to validate it [,]” (Treib, 1995: 90) and to others ruins can be seen as sacred.

Romantic or non-Romantic attitudes towards ruins plays an important role in the human experience of ruins. Even the most down-to-earth person can feel his imagination stirred by a ruin, and as Thompson stated that that is the visitor’s main source of pleasure and satisfaction. (Thompson, 1981: 17) For that reason only, it would be best to leave ruins as they are, the deterioration of a ruin is part of its attraction.

Thompson stated that, “if there are other conditions, such as moonlight or thick vegetation, then the imagination produces quite a different state of mind.” (Thompson, 1981: 17) He mentioned his visit to the nineteenth-century, neo-Gothic Bayon’s Manor, Lincolnshire, when it was derelict but before it was demolished. Thompson described the dripping from leaves over this ‘castle’ which produced a most eerie experience.

“The pleasure of a ruin is to stimulate our imagination and reconstruct in our mind’s eye the structure in its original state. The better we understand the ruin (common sense or, if necessary, archaeology), the better the imaginative reconstruction. If it requires ivy and moonlight or the occasional fall of a stone to stimulate excitement, then this is probably a form of self-dramatisation and a different, more theatrical, experience. The boundary between the two is blurred, and the Romantic tends to flit from one side to another.” (Thompson, 1981: 17)

Why can a ruin not simply be left alone to preserve itself? In some cases for a ruin to be appreciated it needs to be preserved and protected to some extent, even though it is not desirable in all instances, but preservation gives ruins value in the fact that people can start to take note of them and the history which they present the evidence of. The preserver aims to secure what remains and to render what he thinks intelligible both to himself and to the onlooker that he is going to invite to the site, according to Thompson. Intelligibility is the foundation of the whole operation of preservation and display. (Thompson, 1981: 22)

Why interfere with a ruin at all, especially when a ruin is more evocative in its present condition. Ruins are deteriorating all the time, and it is only possible to halt this deterioration on a practical or economic level in a minority of cases by direct intervention which in any case cannot stop erosion from happening.

According to Thompson, you only restore or reconstructs a ruin where it is structurally necessary. (Thompson, 1981: 25) Wonderboom fort will in no means be restored to its original state.



*Illus. 39: Example of restoration. Fort Klapperkop (1898), restoration done by Anton van Vollenhoven (Author, 2011)*

In some cases the representation, in this case, meaning the replacement of a missing feature by an unmistakably modern substitute. This term was defined by Thompson. "The theory is that by using a modern substitute, such as concrete kerbing for a missing wall or recessed and rendered brickwork to fill a void in a wall, one does not beg the question of missing windows and doors. There may be structural reasons for its use, but more often than not it is required for rational display." (Thompson, 1981: 25)

In this research the focus lies in using ruins as ruins. "...if the purpose of a ruin is to remind us of some activity in the past, an entirely discordant modern use can defeat that purpose." (Thompson, 1981: 58)

### 3.3.2.3 Representation?

Representation refers to places where the ruin may not be restored, but where for structural or display reasons one cannot leave a void. In this case a modern substitute will be employed but it will be identifiable as such by the onlooker. The modern material will be chosen in such a way that it will be in harmony with the original ruin.

A common case is where there is a need to represent the shape or position of earlier buildings that have preceded the visible ones on the site and are important for their history. For example Co.Durham: the position of buildings of different dates marked out in the later cloister, refer to illus. 40.



*Illus. 40: Jarrow, Co.Durham: the position of buildings of different date marked out in the later cloister, through different paving strips. (Robpattison's photostream, 2009)*

### 3.3.2.4 Are ruins important in today's African society, and if so why?

In some sense it is important to not only leave the ruin as it is, but to preserve it in the sense that visitors can enjoy and appreciate the value the ruins bring. Ruins can be seen as the remains of evidence. According to Thompson the ruin can be regarded as a document which can tell us a great deal about its history if we have eyes to see and understand. The remains may be fragmented, but from slight traces, for instance at Wonderboom fort, Pretoria, South Africa traces such as steel brackets indicating the fixing of the windows here and the door there, or a hole in the floor can suggest something else such as water storage etc—a picture can now be formed in the mind's eye of the original building, in this example, the fort. Thompson stated that, "It will be appreciated at once that the preservation is that much more informative if this kind of evidence is kept and wherever possible left exposed for the discerning eye to see." (Thompson, 1981: 21)

We cannot go with the stance that "[t]he received body of historical landscape architecture was taken as meaningless because its significance belonged to other places and other times." (Treib, 1995: 90) This stance is problematic. The significance of the place is because of the evidence it gives of the historic events; that is what gives it meaning and importance, not the other way around.

### 3.3.2.5 Display

In this case the term display refers to the way in which the ruin is presented to the visitor.

A ruin can be extremely difficult to understand—especially when it is a large structure—without the historical and comparative knowledge that the ordinary visitor lacks.

The display of a ruin can be divided into two distinct categories: requirements to satisfy the physical needs of the visitor and requirements to satisfy his intellectual needs. The first covers a wide range of matters from toilet facilities to bridges, while the second is mostly, although not limited to, a matter of publications. But also the way in which the signage and information on site is implemented. (Thompson, 1981: 30)

The approach to the ruin is important. In this case it can be a linear approach, which will be a sequential experience of the ruin or it may be a sudden experience where everything is revealed at once.

According to Thompson, at the ruin itself the impression made upon the visitor will be influenced by its surroundings (Thompson, 1981: 30) and that is true in all cases.

For the display of a ruin, where there were existing trees growing, these are usually retained and can considerably enhance its appearance. Trees growing in the structure

must be removed because it can damage the structure even further.

It is important to maintain the area surrounding the ruin, for instance mow the lawn to ensure that people can still move freely around and through the ruin.



*Illus. 41: An example of grass that has overgrown the ruin. This makes it difficult for the visitor to appreciate the ruin or to walk freely on the site. (Author, 2011)*

It can be true that for some people a ruin can be very bewildering. Thompson describes it that, "The purely accidental shapes that have survived, the puzzling presence of face here but only core there, the complete absence of floors and roofs showing quite unfamiliar aspects of a building, the lack of plaster and exposure of harsh stonework; all these factors combine to present the ruin to the visitor in a somewhat brutal and enigmatic light. There are not the pictures, carpets and furniture of a historic house to wonder at, which was perhaps the main motive of the visit, but instead the rather bleak scene of a manicured ruin in a large expanse of lawn." (Thompson, 1981: 31)

It takes a lot of concentrated effort to have the appreciation for the ruin as required. It is difficult to understand everything of the ruin, even though it creates the mystery behind it. Step one to understanding the ruin would be to grasp sufficient understanding of the ground-plan to identify one's position and thus orient oneself in relation to the other buildings. To help provide this information plans can be displayed on boards and remains can be labelled. The second step in understanding the ruin would be to attempt, in the mind's eye, to restore to the fragmentary remains the roofs, floors and glazing of the original buildings. (Thompson, 1981: 31)

According to Thompson, the most satisfying experiences to be gained from a ruin can derive from the close correlation between a written source and the greater understanding of its construction that this gives. (Thompson, 1981: 32) The greater the familiarity of the public with the subject, the easier they find the remains to understand.

In exhibiting a ruin, the following can be done to further enhance the experience and understanding of the ruin. Diagrams, photocopies of documents, plans, photographs, can

be used on information boards. At Wonderboom fort glass information boards will be fixed onto the existing wall. The visitor will move through the arches with the displays on either side.

There is in an exhibition of this kind, a conscious attempt to instruct, which might be regarded as a form of adult education, a conscious and didactic design approach. This opens up the whole subject of the use of ruins for education. This value of education brings justification in the value of displaying and conserving ruins.

There are different ways in which the display and experience of the ruins or heritage site can be enhanced. One of these ways is the use of lighting. Thompson mentioned two types of lighting, which are floodlighting or *son et lumière*. The first he describes as the one which is widely employed, particularly on ruins in an urban setting. It gives pleasure to the onlooker and perhaps interest to the town without harming the fabric and may, indeed, attract attention to the monuments. The *son et lumière* is described as lighting with music, which is more difficult to apply. This measure was used for châteaux in France. They apply lighting combined with loudspeakers playing Gregorian chant. (Thompson, 1981: 32)

*Liliesleaf farm* (1963), GreenInc. (2001), Johannesburg, South Africa; Illustrations 42-45, is a farm in the outer suburb of Johannesburg. Nelson Mandela hid there during the liberation struggle in 1963. This farm is now a museum in commemoration of that. These illustrations show different manners in which the museum was displayed to the visitor.



*Illus. 42: A simple landscape done in such a way that nothing distracts the visitor from the old buildings or the layout of the museum. (Author, 2011)*

*Illus. 43: Signage boards are positioned at certain places in the landscape to inform the visitor if something is not clear in the display. All the original buildings are kept on site, with a few additional buildings to enhance the visitor's experience such as the restaurant etc. (Author, 2011)*





*Illus. 44: The designer even made use of a water feature, with the date of the struggle designed into that. This emphasises the important date, and directs the visitor's attention to that fact. (Author, 2011)*

*Illus. 45 below: The use of photographs, plans, models, and tour guides enhance the visitor's experience and understanding of what has happened during the struggle. Below is the model of the entire landscape/museum. (Author, 2011)*



The topography profoundly influences the impression a ruin makes on the mind of the viewer. In these cases it is the natural formation of the ground that plays the main role, but in others it may be the long-since altered landscape. In the case of Wonderboom fort, it is the magnificent Magaliesberg mountain ridge with its enchanting view.

Thompson regards gardens as a special case. According to him, a garden beside a ruin can look incongruous since it implies active occupation, but there may be circumstances when it is justified. (Thompson, 1981: 32)

By displaying the ruin, it can perform its function as a reminder, a monument in truth.

### 3.3.2.6 Interpretation

How does one set out about understanding the ruin when confronted with it? "There are two main ways of doing this: by looking at the remains themselves and by going to the library to find out what other people have written about them." (Thompson, 1981: 85) Ruins can be seen as frozen evidence from the past and the unending changes that kept on going through the years. These informational pieces left behind can inform us about the society that erected it.

Tompson argues that "[t]he best basis for understanding a ruin is therefore a wide knowledge of other structures of the same period, whether ruined or not, since the mind is consciously or unconsciously making comparisons, and the larger the stock upon which it is possible to draw, the more reliable the result is likely to be." (Thompson, 1981: 86)

"The nature of the written evidence, or lack of it, will have a considerable influence on our attitude towards the ruin." (Thompson, 1981: 87)

### 3.3.2.7 Conclusion

People didn't restore ruins in the romantic or picturesque era, they used it to stimulate and excite the onlooker. The moonlight, plants etc. heightens the experience of the ruin, if you take it away the excitement will be gone with it. Plants bring a sense of mystery.

Wonderboom fort ruin speaks of past events and times, it is very emotionally evocative. If it would be restored, that imagination of a visitor of what might have been will be lost together with the genius of the place.

The intention for the Wonderboom Nature Reserve is to stimulate the imagination of the visitor, so that he reconstructs the structure in his mind's eye to its original state. To ensure that people do not find it difficult to imagine, a better understanding of the ruin will be provided through 'semiotic resources' - which can be information plates, or a small model or signs and symbols.

The fort will be preserved in such a way that people will get the chance to take note of it and the history which it presents the evidence of. If at all the design intervention will be done in an intelligible way to teach and instruct the onlooker, and to enrich the experience of the ruin/place.

It is clear from the interpretation of ruins, that the more knowledge one has, the more appreciation and understanding one will have for the ruin. This is why awareness of the Wonderboom fort is so important as well as the education of the history and of the ruin itself. (Didactic approach as discussed earlier)

The examples and suggestions mentioned under display:

1. Satisfy the intellectual (signage and information on site) and physical (facilities) needs of the visitor
2. Display the ruin in such a way that the visitor will experience a linear approach to the fort
3. Sensitive to its surroundings
4. Vegetation growing in and around the fort ruin can be considered to enhance the appearance of the fort ruin.
5. Any trees growing in the fort which can harm the structure of the ruin should be removed
6. Use of lighting to enhance the ruin's appearance at night, create mystery and atmosphere as well as awareness

These examples will be considered in the display of the fort as well as more contemporary methods.

The case studies 3, 4 & 5 are examples of how other architects and landscape architects dealt with ruins.

### Case Study 3:

Verona Castle called  
Castelvecchio, Venice (1956-)

Castelvecchio was designed by Carlo Scarpa (1906 – 1978), he was an Italian architect, influenced by the materials, landscape and the history of Venetian culture, and Japan. Carlo Scarpa, was well known for his ability to integrate historic features into modern designs.



*Illus. 47: Castelvecchio ruin, changed into a museum by Carlo Scarpa. (Anniforscia, 2008)*



*Illus. 48: Scarpa distinctly separates the old from his new installations. (Magdarc, 2010)*

The Castelvecchio dates back to the 14th century and it was built for the Scaligeri family, who ruled over Verona during the Middle Ages. (Famous architect, 2011)

The castle was built more like a medieval fortress to protect the family from their enemies in Venice and also from popular uprisings, complete with a moat, a drawbridge, and a fortified bridge at the back that would allow the Scaligeris to escape in case of attack. (Famous architect, 2011)

The Castelvecchio was changed into an art museum, while one can explore the different rooms in the castle, the visitor is aware of these amazing views of the Adige River and Ponte Scaligero. (Famous architect, 2011)

It is evident in the Castelvecchio Museum, Verona (1956-) how Carlo Scarpa approached the ancient building very delicately. In this design the "floor patterns and materials interact to form a tactile play of pliant versus hard surfaces." (Famous architect, 2011)

The new is separated from the old by revealing joints and spatial slots that function as miniature conceptual "moats," according to the Famous architect webpage, and each work of art is held up to view by a stand or a bracket that is almost human in its anthropomorphic configuration. (Famous architect, 2011)



*Illus. 49: A new walkway, clearly distinguishable from the old castle. (Anniforscia, 2008)*



*Illus. 50: Scarpa's use of modern materials to create a platform for the artwork in the museum. (Anniforscia, 2008)*



*Illus. 51: Ornate metal lattice door designed by Carlo Scarpa. (Anniforscia, 2008)*



*Illus. 52: Weathered staircase in the Castelvecchio Museum — Verona, Italy. (Anniforscia, 2008)*

## Case Study 4:

### *Jerusalem Archaeological Park, Jerusalem*

Jon Seligman and Gideon Avni, were the IAA archaeologists responsible for the area, together with Ulrik Plesner. Michael Turner was involved in the landscape design.

The designer made use of plants to distinguish between different time eras ruin walls. This makes the legibility and understanding of the place to the visitor clearer. The new pathways are integrated with the old, but one can clearly distinguish between the old and the new. Refer to fig 57.

Refer to fig. 55 & 58. The new roofed structure are placed in the old courtyard area, which was used as a multifunctional space. Now with the new roof structure it provides for the same function as in the olden days, and with that celebrating what was there with the new.

Pathways are added within the ruins, one can distinguish between the ruins and the pathway. In the case of a threshold between the old path and a new path entering the visitors centre, the designer made use of a different material to indicate the transformation. A timber boardwalk is placed between the ruins but are elevated not to intrude on the history and heritage.

The visitor centre, is designed in such away that one is made aware of the archaeology approach to ruins. In the centre, the entire place is paved with stones with stone walls used as deviders.

Information is communicated via information plates linked to earphones at the ruins. A timeline, maps etc. in the visitor centre provide for additional information.

With regard to the Wonderboom Nature Reserve this can be seen as an excellent example of a landscape intervention between ruins. One can use planting to communicate the time difference and spaces. Old functions can be celebrated with new structures without taking away some of the places' character. Information can be provided in different manners as well as new technology for instance the earphones with information on can be implemented. There must be a clear indication of what is old and what is new, and how one would let the visitors go about the ruin, in regards with walkways, awareness and accessibility, etc.



*Illus. 55: The use of planting is clear to divide ruins from each other or to distinguish different time eras structures. Repetition is also created with the planting to ensure for unity in the landscape. Different plant textures are used do provide for diversity in the landscape. (Baker,2011)*



*Illus. 56: View of the ruin wall structures which differ in time eras, this was communicated by means of planting. (Baker,2011)*



*Illus. 57: Different manners in which the designer approaches the site pedestrian movement, with a clear indication of what is old and new. (Baker,2011)*



*Illus. 58: View of the new multifunctional area which celebrate the old function of the place. (Baker,2011)*

## Case study 5:

### *Castelo de Silves, Portugal*

Located at the highest point in town, Silves Castle once formed part of the wall that encircled the city. It was also an important defence when it was the capital and residence of the Moorish kings of the al-Garb.

Steeped in history, the castle has 11 towers, some of which have been modified over the centuries, and a set of sandstone walls that have remained virtually intact. A 60 metre-deep well can be found inside the building, as well as a set of vaulted cisterns that still supply the town with water. (Whatsonwhen, 2011)

The castle also hosts events throughout the year.

This case study is a wonderful example of how other places deal with their ruins. In this case the designer reconstructs some parts of the towers, to provide the visitor with a better understanding. One can clearly distinguish between the old structure and that which was added on. The Castle de Silves was constructed in the 1100's. Fig. 62 & 64.

Fig. 59. The designer made use of a model to explain the larger context of the site. Only parts of the ruin was excavated. Pathways were constructed between the ruin walls, slightly elevated from the ground. The visitor is brought close to the ruin but the visitor cannot walk between the ruins outside of the walkways. Handrails were constructed onto the defence wall. Refer to fig. 62

A circular shaped garden was constructed with a small amphitheatre. Information boards were placed at strategic points to inform the visitor of the place's history. Everywhere where people walk one finds elevated timber boardwalks. Fig. 60 & 61



*Illus. 59: Model used to represent the existing site (Gryffenberg, 2010)*



*Illus. 60: Elevated boardwalks which go over the ruins. (Gryffenberg, 2010)*



*Illus. 61: View within the water reservoir. Elevated glass boardwalks are used to take the visitor inside the reservoir and over the old flooring. The glass ensure a clear view of what goes on underneath. Glass signage is used to communicate the history. (Gryffenberg, 2010)*



Illus. 62: One of the towers. The new material added to the old structure is easily distinguishable as well as the handrail. (Gryffenberg, 2010)



Illus. 63: The city ruins within the castle wall, which were excavated and left as they were. Signage placed at these ruin structure walls. (Gryffenberg, 2010)



Illus. 64: The castle wall structure. (Gryffenberg, 2010)



Illus. 65: The landscape intervention with amphitheatre. (Gryffenberg, 2010)

### 3.4 Conclusion

How can a design narrative create awareness of the cultural and biophysical aspects of a site?

In terms of the theory, for the design to create awareness of the biophysical and cultural aspects of the site the nature of the design proposal should be a didactic narrative that would create interest and discovery and through experience strengthen the local identity. And by doing so the cultural and biophysical aspects of the site is communicated.

Semiotics can be used as a 'resource' to create and communicate meaning. Semiotics investigates sign systems and modes of representation to convey emotion, ideas and life experiences. It is the actions and artefacts we use to communicate.

The semiotic 'potential' would be the potential meaning which that specific semiotic 'resource' provides. (Examples of semiotic resources and their potential meaning will be explored in chapter 6)

1. What are the cultural and biophysical aspects of Wonderboom Nature Reserve? (The same aspects to be explored in Chapter 5: site analysis)

Biophysical aspects:

- Grassland and savannah biome
- Magaliesberg geology
- Wonderboom tree
- Caves
- Fauna and flora
- Apies river
- Protected nature area

Cultural aspects:

- Wonderboompoort fort (ruin)
- Wonderboom tree
- Historical features
- Stone Age sites
- Iron Age sites
- Day-of-the-Vow remnants
- Man-made waterfall

2. What is a narrative in terms of design?

Communicating the design by using a story telling approach which is concerned with the transformation of Wonderboom nature Reserve - a story which will unfolds its connected events and experiences until its meaning brings revelation. The narrative in terms of design brings unity and coherence and a definite sequence of events.

Introduction (entrance and arrival) - Plot (events and experiences) - To main climax (Wonderboom tree and Wonderboom fort)

3. What is didactic design?

Design to teach. Forms should be used to inform and instruct the visitor about natural

processes, history and heritage. In the design the approach's intentions can be clearly seen, thus everything is shown clearly and deliberately. The genius of the place is clearly visible in the design. The design/landscape 'read' as a textbook.

4. How can identity be created?

In person: A series of events and experiences can be regarded as 'modifiers' which establish the identity of a person.

Of site: 'Events' / activities or themes are connected through a narrative to result in identity strengthening of the site.

5. How can experience be created that will also strengthen the identity of place?

By accommodating for both categories of response, namely; sensuality (in which we see and touch) and aesthetics (dependent and affected by process of thought). The design needs to respond by providing delight for our senses and also to the inherited memories of habitat. Design with the two approaches in mind, namely; linear and sudden approach to create different experiences.

6. How do you create interest and discovery in the landscape?

The four qualities in the landscape, namely; mystery, legibility, complexity (through semiotics) and coherence (through narrative), with unity (of form, elements and detail) and diversity (in different forms, elements and detail) one will ensure interest and discovery.

7. How do you create access?

By designing for access, and improve the manner in which the visitor experiences the landscape. Access can be created in different ways, namely; visual access (one can see, but not touch), and physical access (one can touch, move through, under and over it). The designer can obscure views, direct views and prevent the visitor to go closer etc.

8. How do you create awareness of a site?

Awareness can be created in different manners, namely; senses, mentally and physically by means of the following; in person, the media/technology, visual (physically on site), and physically (visitor participant on site). It can be to a different degree of intensity, namely; general awareness and in depth awareness, for a variety of classes of people, namely; School children, education oriented people, specialists in certain fields of study, nature lovers, outdoor people, and socialising people.

It is clear that all of the above are necessary to communicate heritage and history. Fig.17

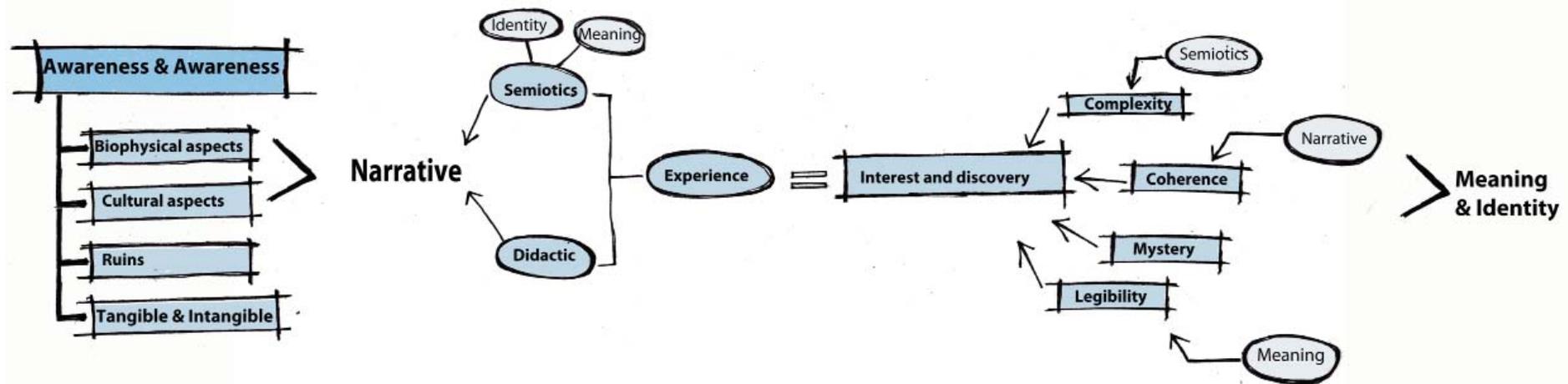


Fig.17: Links between theoretical topics. (Author: 2011)

Figure 17 sums up the conclusion of this study, and illustrate the conclusion graphically which is stated in this chapter.

With regard to the Wonderboom fort ruin, it will not be restored to its original state, because everything around it has already changed. It will be reserved in its current state of deterioration, and kept as a ruin, because one's imagination is stirred by the ruin, and it provides pleasure and satisfaction. For that reason only, it would be best to leave ruins as they are, the deterioration of a ruin is part of its attraction.

Wonderboom fort ruin speaks of past events and times, it is very emotionally evocative. If it would be restored, that imagination of a visitor of what might have been will be lost together with the genius of the place.

The intention for the Wonderboom Nature Reserve is to stimulate the imagination of the visitor, so that he reconstructs the structure in his mind's eye to its original state. To ensure that people do not find it difficult to imagine, a better understanding of the ruin will be provided through 'semiotic resources' - which can be information plates, or a small model or signs and symbols etc.

The fort will be preserved in such a way that people will get the chance to take note of it and the history which it presents the evidence of. If at all the design intervention will be done in an intelligible way to teach and instruct the onlooker, and to enrich the experience of the ruin/place.

By displaying the ruin, it can perform its function as a reminder, a monument in truth.

Each theme ended with a case study which was relevant to that specific theme. It served as an example of what had been done before with regard to the theme or topic.

This theoretical conclusion will serve as guidelines in the design development. These theoretical aspects will be further explored into physical design solutions in chapter 6 - 7.

URBAN

FABRIC

FRAMEWORK

NARRATIVE

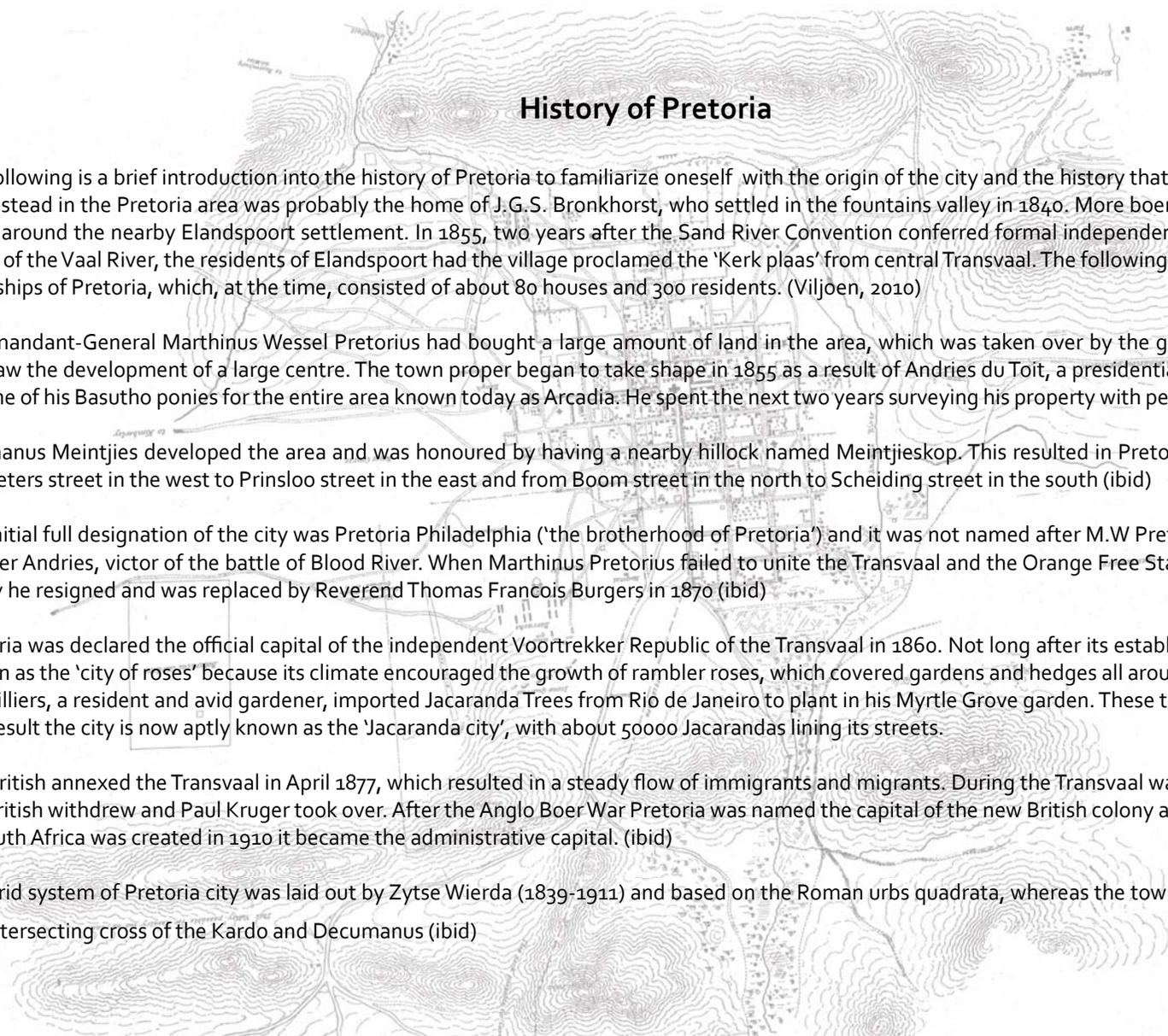


# FRAMEWORK 04

1. INTRODUCTION
2. EXISTING 'OPEN SPACE FRAMEWORK'
3. THE LARGER BLOCK CONTEXT FOR URBAN DEVELOPMENT ANALYSIS
4. FRAMEWORK CONCEPT
5. LOCATION OF THE FORTIFICATIONS OF PRETORIA AND THEIR IMMEDIATE ENVIRONMENT ANALYSIS
6. LARGE CONCEPTUAL CONTEXTUAL FRAMEWORK PROPOSAL
7. FRAMEWORK NARATIVE

The larger framework analysis and framework proposal for Pretoria to create a link between the north and the south through a narrative hiking/bike etc. trail along the hard landscapes and soft landscapes of Pretoria. This allows for a different experience of Pretoria.





## History of Pretoria

The following is a brief introduction into the history of Pretoria to familiarize oneself with the origin of the city and the history that follows it. The first homestead in the Pretoria area was probably the home of J.G.S. Bronkhorst, who settled in the fountains valley in 1840. More boer families put down roots around the nearby Elandspoort settlement. In 1855, two years after the Sand River Convention conferred formal independence on the territory north of the Vaal River, the residents of Elandspoort had the village proclaimed the 'Kerk plaas' from central Transvaal. The following year it became the townships of Pretoria, which, at the time, consisted of about 80 houses and 300 residents. (Viljoen, 2010)

Commandant-General Marthinus Wessel Pretorius had bought a large amount of land in the area, which was taken over by the government as they foresaw the development of a large centre. The town proper began to take shape in 1855 as a result of Andries du Toit, a presidential advisor, exchanging one of his Basutho ponies for the entire area known today as Arcadia. He spent the next two years surveying his property with pegs and chains (ibid)

Stephanus Meintjies developed the area and was honoured by having a nearby hillock named Meintjieskop. This resulted in Pretoria extending from Potgieters street in the west to Prinsloo street in the east and from Boom street in the north to Scheiding street in the south (ibid)

The initial full designation of the city was Pretoria Philadelphia ('the brotherhood of Pretoria') and it was not named after M.W Pretorius, but after his brother Andries, victor of the battle of Blood River. When Marthinus Pretorius failed to unite the Transvaal and the Orange Free State during his presidency he resigned and was replaced by Reverend Thomas Francois Burgers in 1870 (ibid)

Pretoria was declared the official capital of the independent Voortrekker Republic of the Transvaal in 1860. Not long after its establishment it became known as the 'city of roses' because its climate encouraged the growth of rambler roses, which covered gardens and hedges all around the city. In 1888 J.D. Cilliers, a resident and avid gardener, imported Jacaranda Trees from Rio de Janeiro to plant in his Myrtle Grove garden. These trees flourished and as a result the city is now aptly known as the 'Jacaranda city', with about 50000 Jacarandas lining its streets.

The British annexed the Transvaal in April 1877, which resulted in a steady flow of immigrants and migrants. During the Transvaal war of Independence the British withdrew and Paul Kruger took over. After the Anglo Boer War Pretoria was named the capital of the new British colony and when the Union of South Africa was created in 1910 it became the administrative capital. (ibid)

The grid system of Pretoria city was laid out by Zytse Wierda (1839-1911) and based on the Roman urbs quadrata, whereas the town was quartered by the intersecting cross of the Kardo and Decumanus (ibid)

## 4.1 Introduction

Before one can focus on the study site, a larger context analysis must be performed which will in turn inform the framework proposal and to some extent the design decisions. It is important to understand the larger context. Its functioning, opportunities and constraints before one zooms in to the site.

The City of Tshwane would be looked at to indicate what might influence the study area. The Tshwane Open Space Framework will be discussed in short and will be referred to in the analysis. After looking at the Existing Open Space Framework and how one can tie into that, the author's own analysis will be discussed in terms of a variety of information mapping, especially of Pretoria's heritage features.

## 4.2 Existing Open Space Framework

One look at the larger urban context

Vision: "A sustainable open space network which provides the setting for the Capital city, is of a high international standard yet based in the African context, empowers the community to prosper in a safe and healthy environment, and protects the integrity of its ecological systems." (Tshwane Open Space Framework (Nov 2005))

### 4.2.1 Context and location

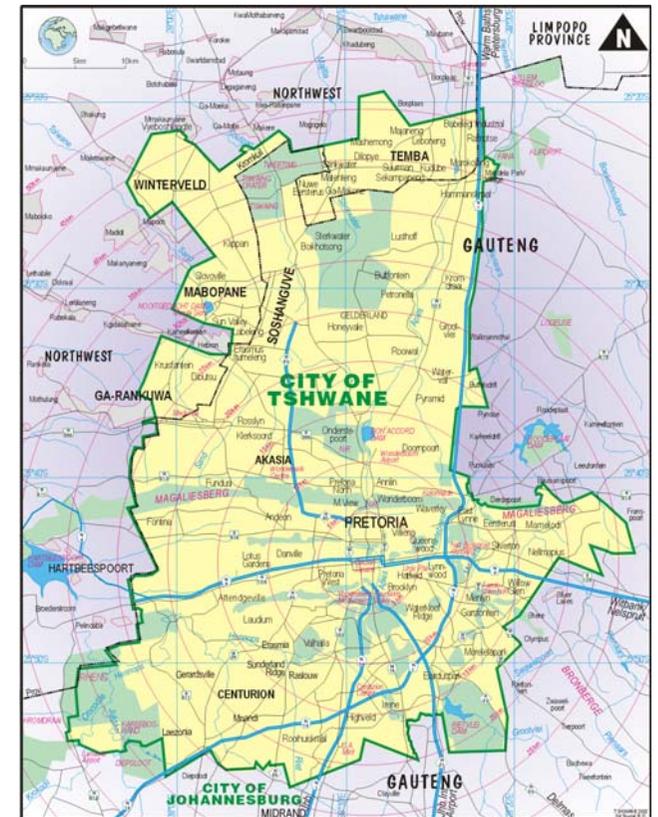


Illus. 66: Map of South Africa (Booking South Africa, 2010)

A framework proposal will be presented with the concepts which drive the proposal. This framework will provide the opportunity for visitors to experience Pretoria city on a totally different level and vantage point. Pretoria lies between these magnificent mountain ridges. Each landmark uses this natural feature as a backdrop. The narrative of the city can play off between these mountain ridges and the city itself. The focus is a different experience for the visitor of Pretoria.



Illus. 67: Map of Gauteng (Tours SA, 2000)



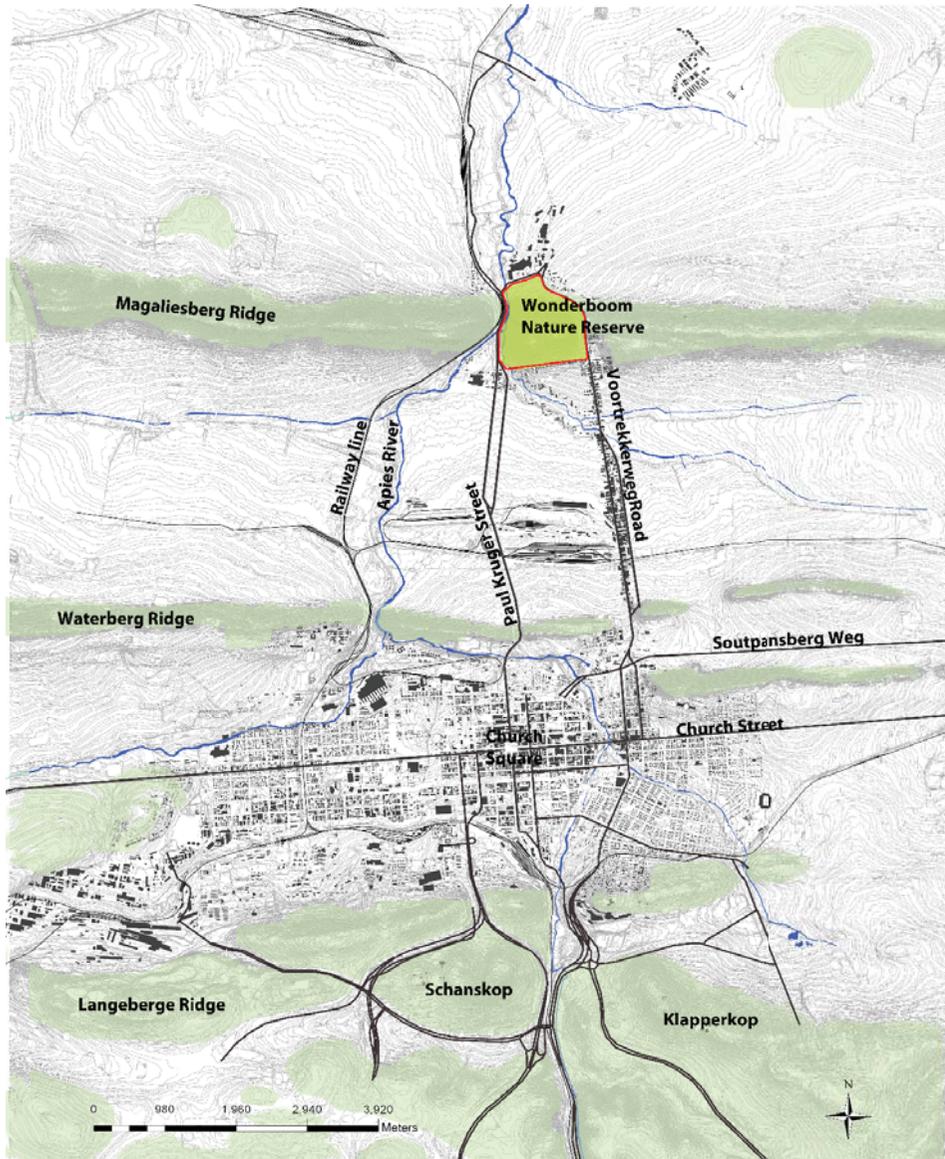
Illus. 68: City of Tshwane (Tshwane City Map, 2007)



*Illus. 69: View of Pretoria CBD from the Magaliesber ridge. (Author, 2011)*

### 4.3 The larger block context for urban development analysis

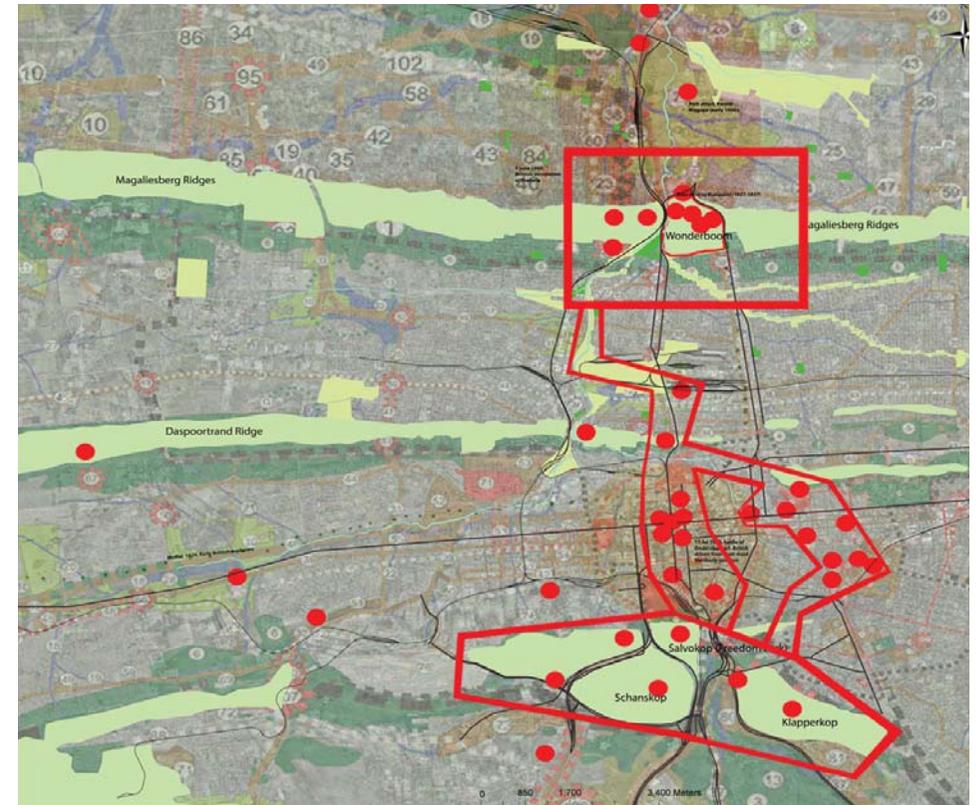
#### 4.3.1 Larger block context location



Illus. 70: Larger block context with the study site (Wonderboom Nature Reserve) highlighted in green. (Author, 2011)

#### 4.3.2 Historical features

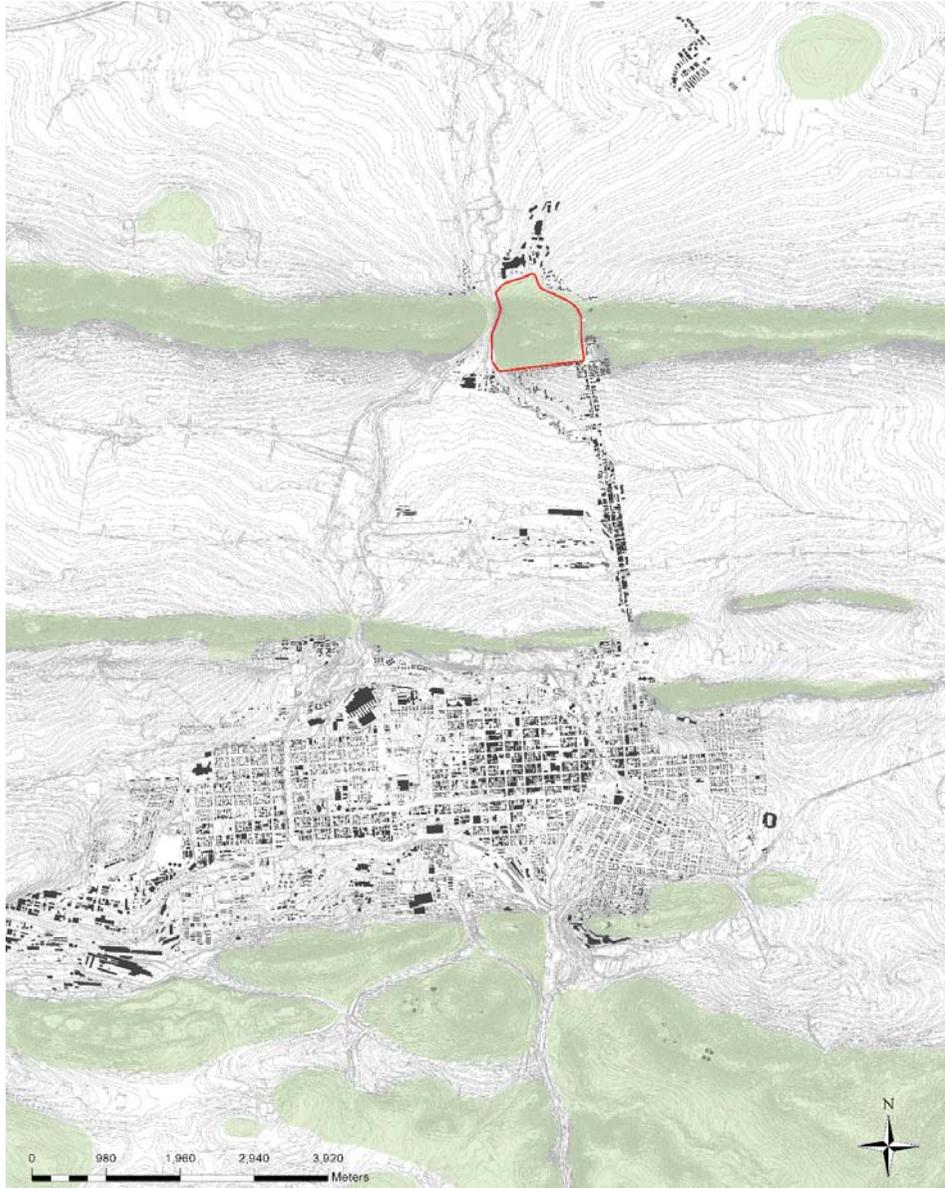
Refer to illus. 71. The historical landmarks are highlighted in red dots to indicate where the best possible linkage of the north and the south might occur, since they include the most heritage features. The red square on the top of illus. 71 indicates the research area, and the red squared lines indicate the possible connection with the south ridges.



Illus. 71: Historical points highlighted to indicate best area for hiking trail. (Author, 2011)

### 4.3.3 Topography and setting patterns

Three ridges cross Pretoria from east to west.



Illus. 72: Topography and setting patterns (Author, 2011)

### 4.3.4 Gateways and main roads into Pretoria city

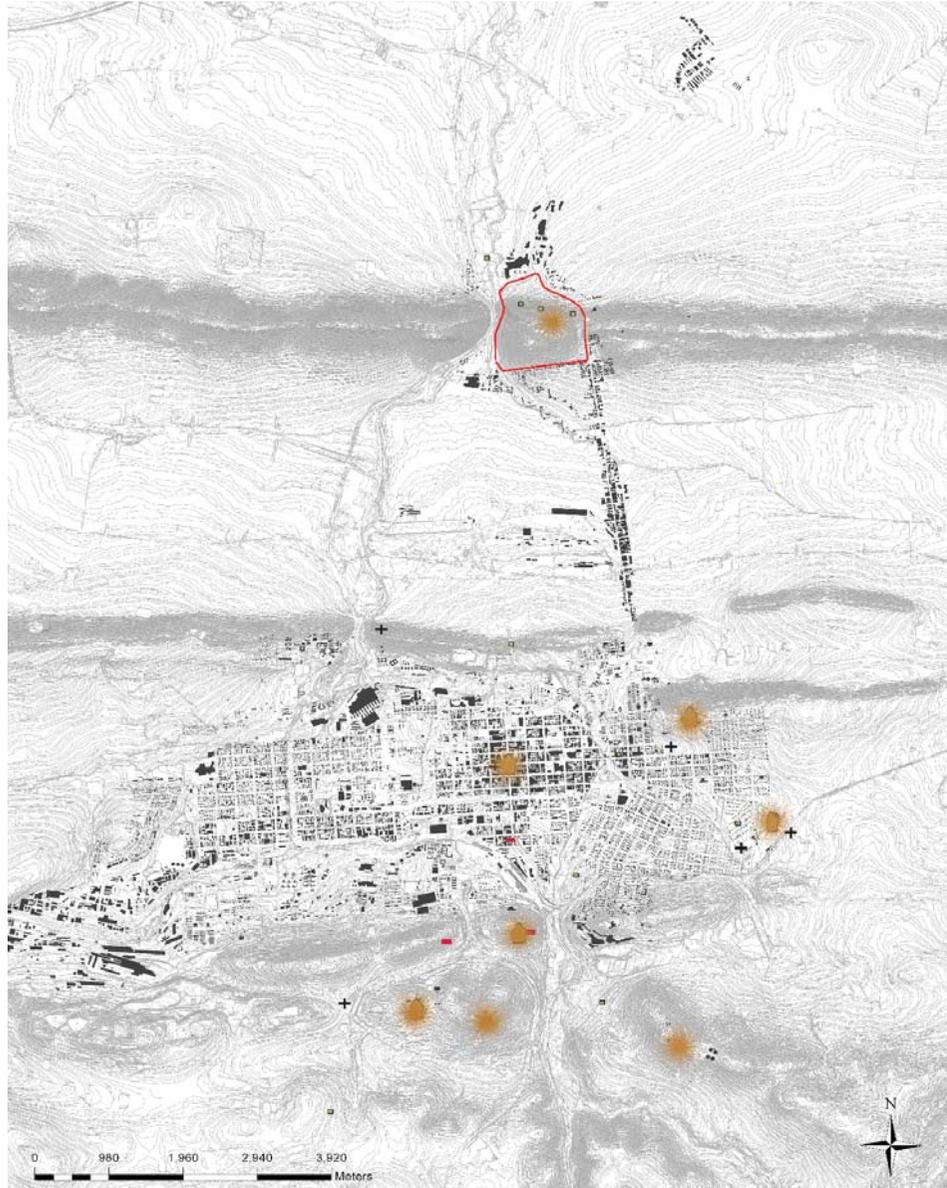
There are five main roads leading into Pretoria. The ridges creates a natural gateway through which the roads go. The R101 and Voortrekker road from the north passes the Wonderboom Nature Reserve on either sides creating a nature island.



Illus. 73: Gateways and main roads into Pretoria city. (Author, 2011)

### 4.3.5 Fortifications and monuments in Pretoria

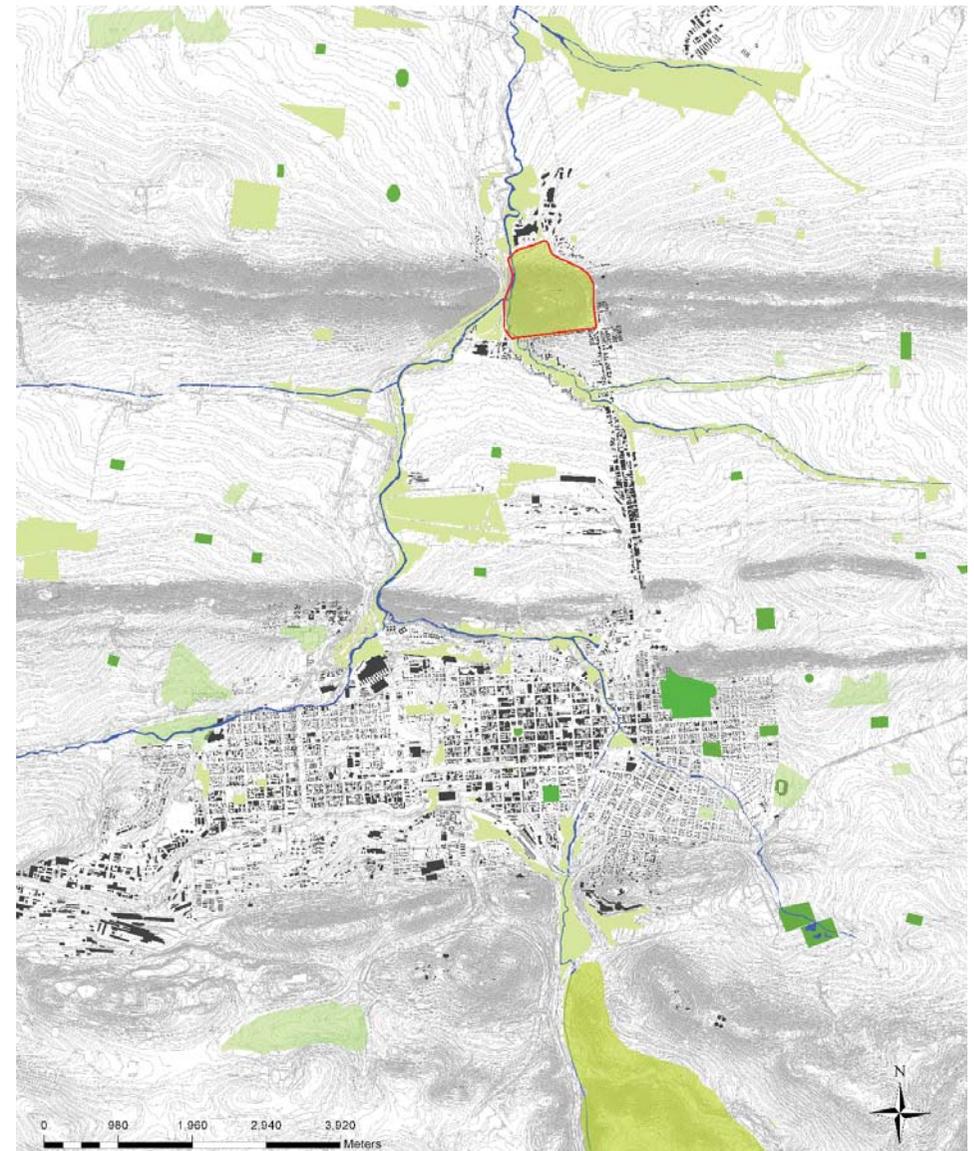
The fortifications and important monuments in Pretoria is mapped out. refer to illus below. The focus of the design intervention will be on creating general awareness of these fortifications and monuments/landmarks.



Illus. 74: Fortifications and monuments in Pretoria (Author, 2011)

### 4.3.6 Open space, parks, landscape structure and waterways

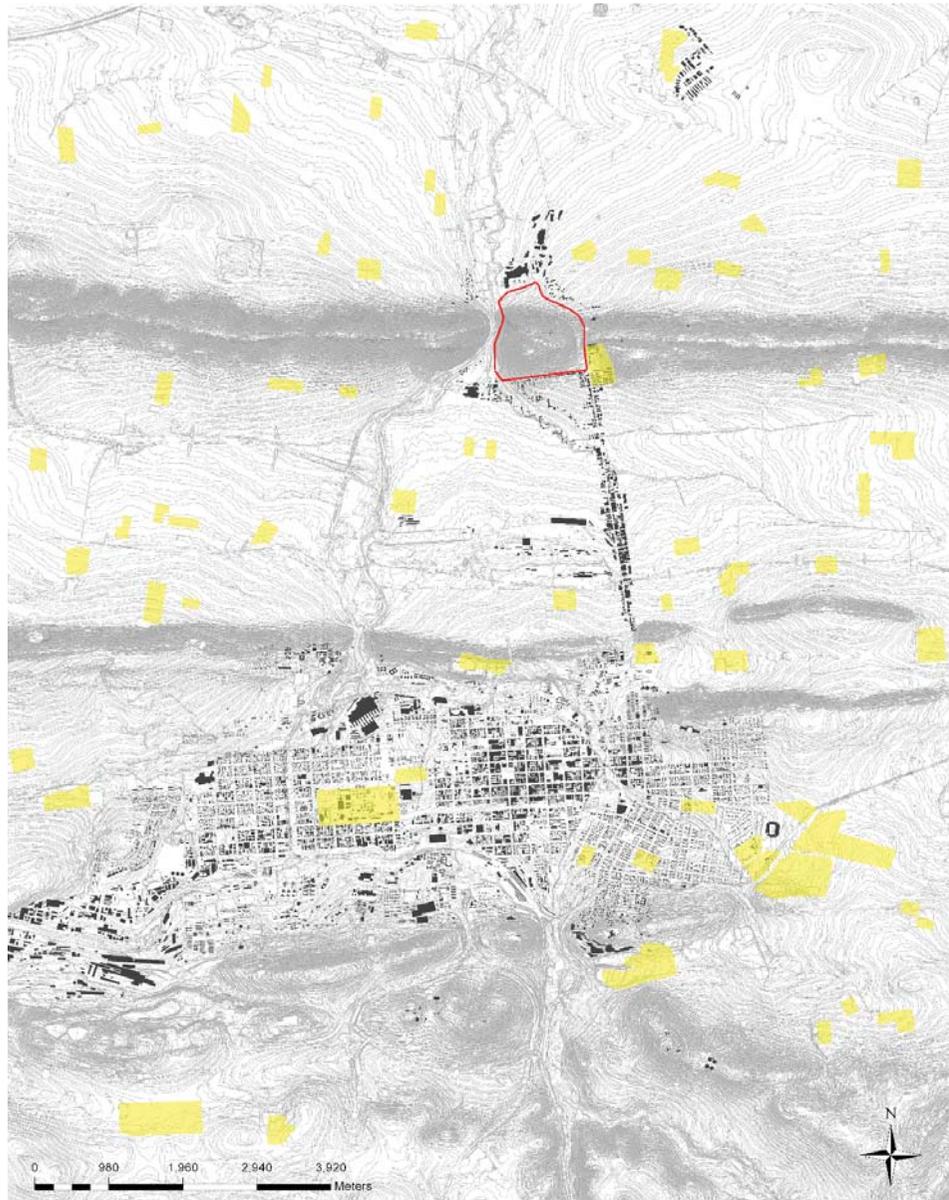
All the open spaces, parks and waterways were mapped to give a indication of open space near the Wonderboom Nature Reserve in context. One can see the importance of conserving Wonderboom Nature Reserve as a green space. The green spaces on a large scale can be connected as part of the north and south link.



Illus.75: Open space, parks, landscape structure and waterways (Author, 2011)

### 4.3.7 Educational institutes

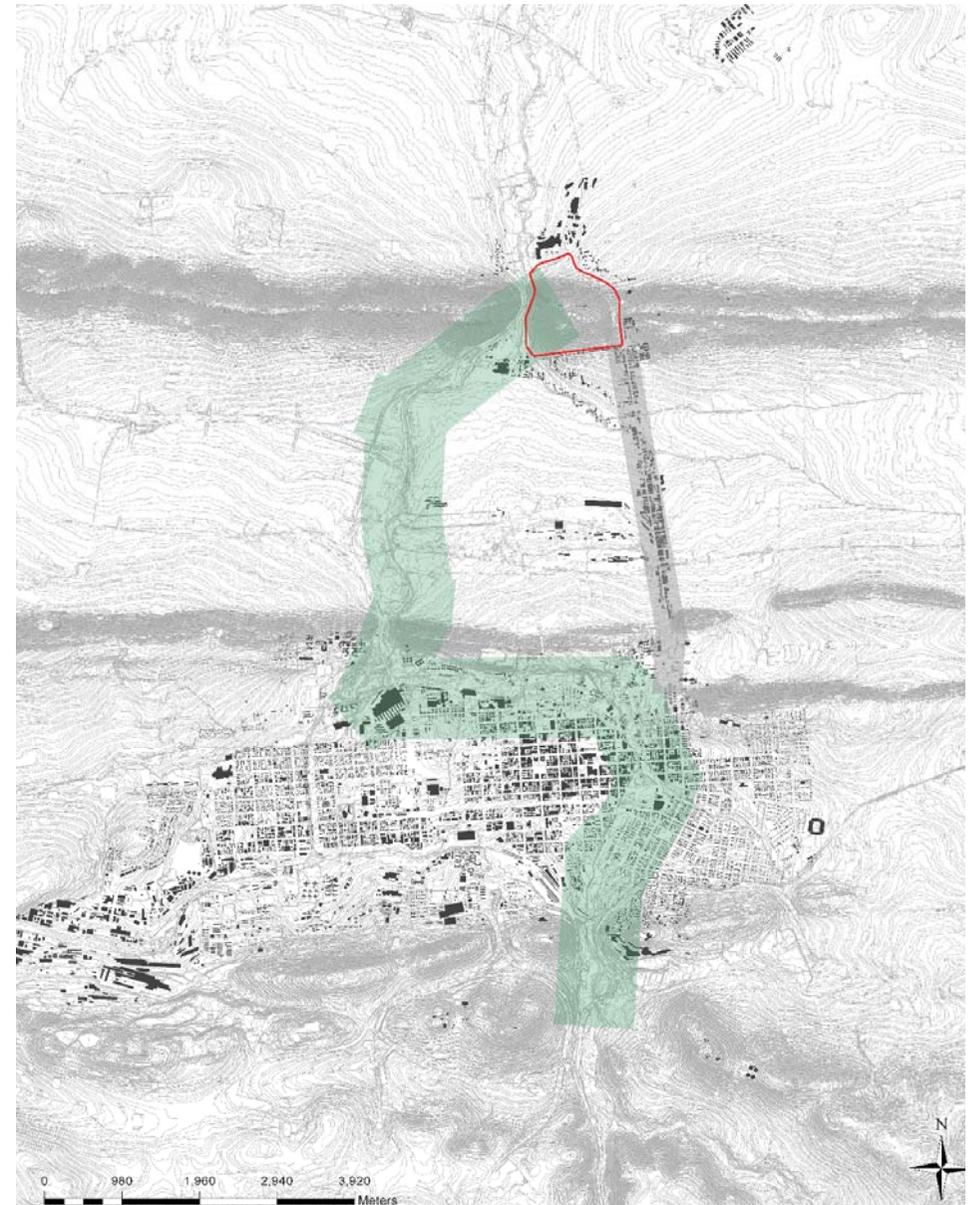
The mapping of educational institutions was done to pinpoint possible sources of young visitors. To educate them about Pretoria's heritage.



Illus. 76: Educational institutions (Author, 2011)

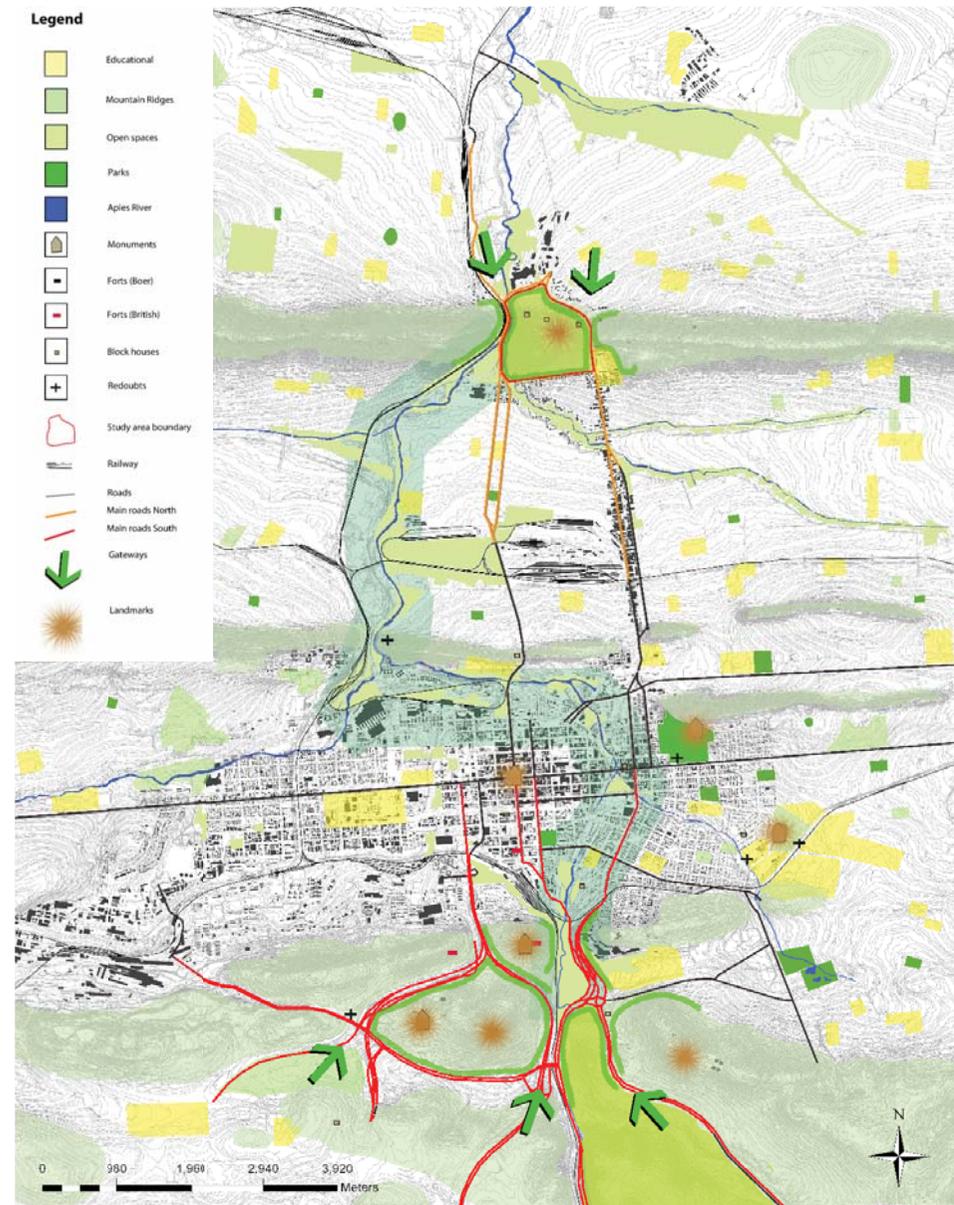
### 4.3.8 Link between Pretoria north and south

The possible green and hard landscape corridors for linking Pretoria north and south.



Illus. 77: Hard and soft landscape linkages between Pretoria north and south (Author, 2011)

### 4.3.9 Composite plan of the block context analysis



Illus. 78: Composite plan of the block context analysis (Author, 2011)

## 4.4 Framework concept

### 4.4.1 Connection of the north and the south (concept 1)

The study area is located in Pretoria north. The Wonderboom fort is located on the study site, this informed the design decision to design a trail which links the north to the south of Pretoria, to incorporate all the fortifications of Pretoria. With this as starting point, the route became a military defence history trail which touches upon all the heritage sites in Pretoria as well as Pretoria's landmarks. The trail will accommodate hikers, bikers, bicycle's etc. The trail will go along Pretoria's ridges and through open green spaces. This will be the green corridor running along the Apies River. A trail will also run along the hard landscapes of Pretoria, such as Voortrekkerweg etc. Now the user will experience the natural and cultural aspects of Pretoria and get informed on the heritage and history. Resting places and activity nodes will be placed along the trail. People who are not necessarily interested in the history can also use the trail to exercise fitness and health, or to be close to nature and lastly to experience Pretoria in a different manner. Fig 70-83.

### 4.4.2 Activating Pretoria (Concept 2)

The City of Pretoria will be activated on a different level. People will be able to explore different aspects of Pretoria in different manners which will create interest and discovery. This can result into identity growth of the city. Pretoria will be cleaned up and areas which were previously in a bad condition will be activated. These tributary branches of trails will activate a major part of Pretoria. The activity nodes and resting places along the trail will act as activators. Places which were previously unsafe will become safer with the growing pedestrian traffic. People would become aware of the history and heritage of Pretoria as well as its natural advantages. Fig 70-83.

### 4.4.3 Framework narrative (concept 3)

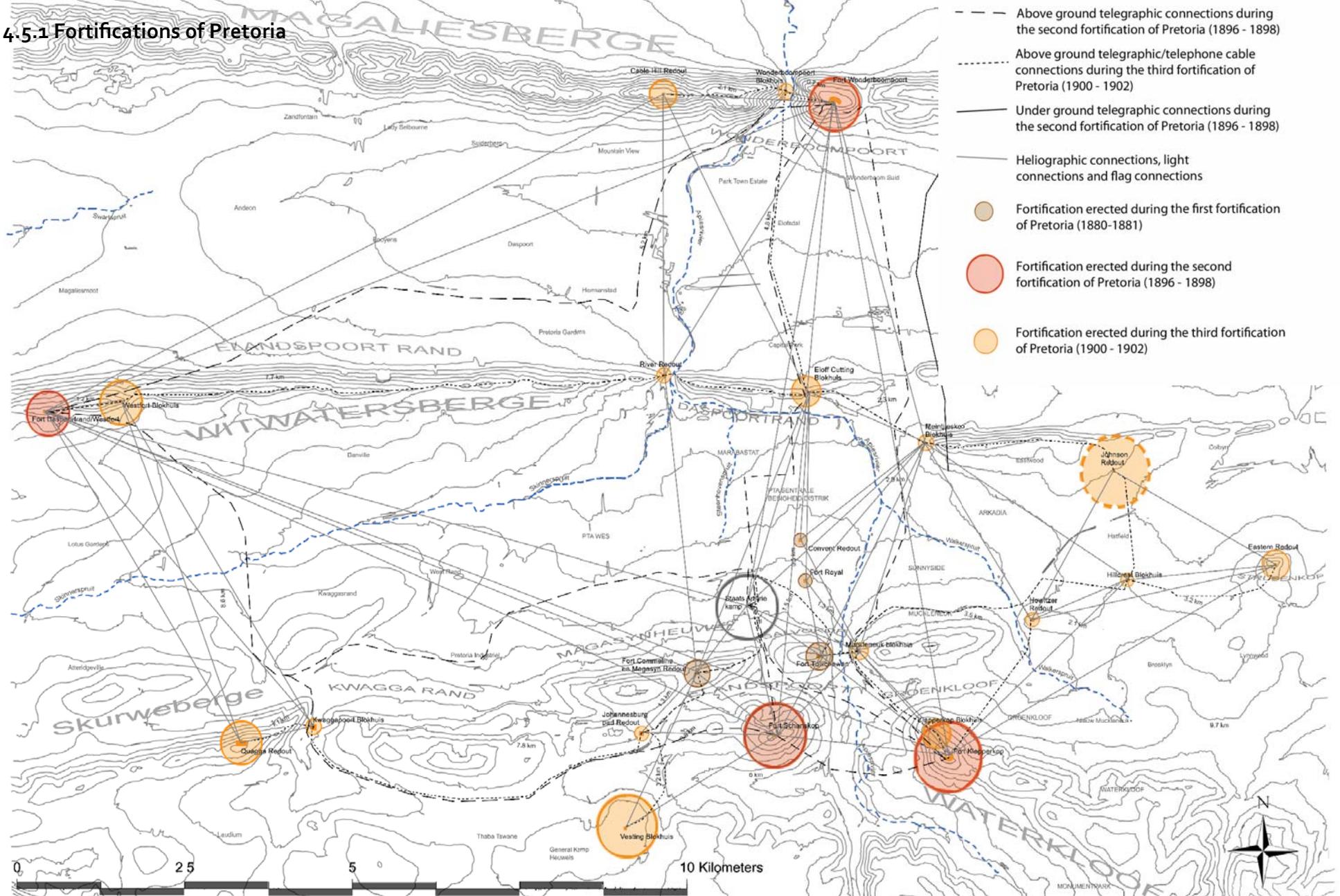
Pretoria has natural gateways coming from the west, north and south, formed by the mountain ridges. These gateways can be seen as the introduction to the city of Pretoria, the introduction to every event still in store for the user. All the event/activity nodes, heritage and landmarks sites become the plot unfolding Pretoria's gems. The narrative of Pretoria becomes the story told of its history and the natural and urban fabric interwoven, in contrast, but in harmony. Refer to fig.83

### 4.4.4 Conclusion

This trail would provide an entire different experience to the user. They will see Pretoria in a different light. It will be educational of Pretoria's heritage and history sites as well as creating awareness thereof.

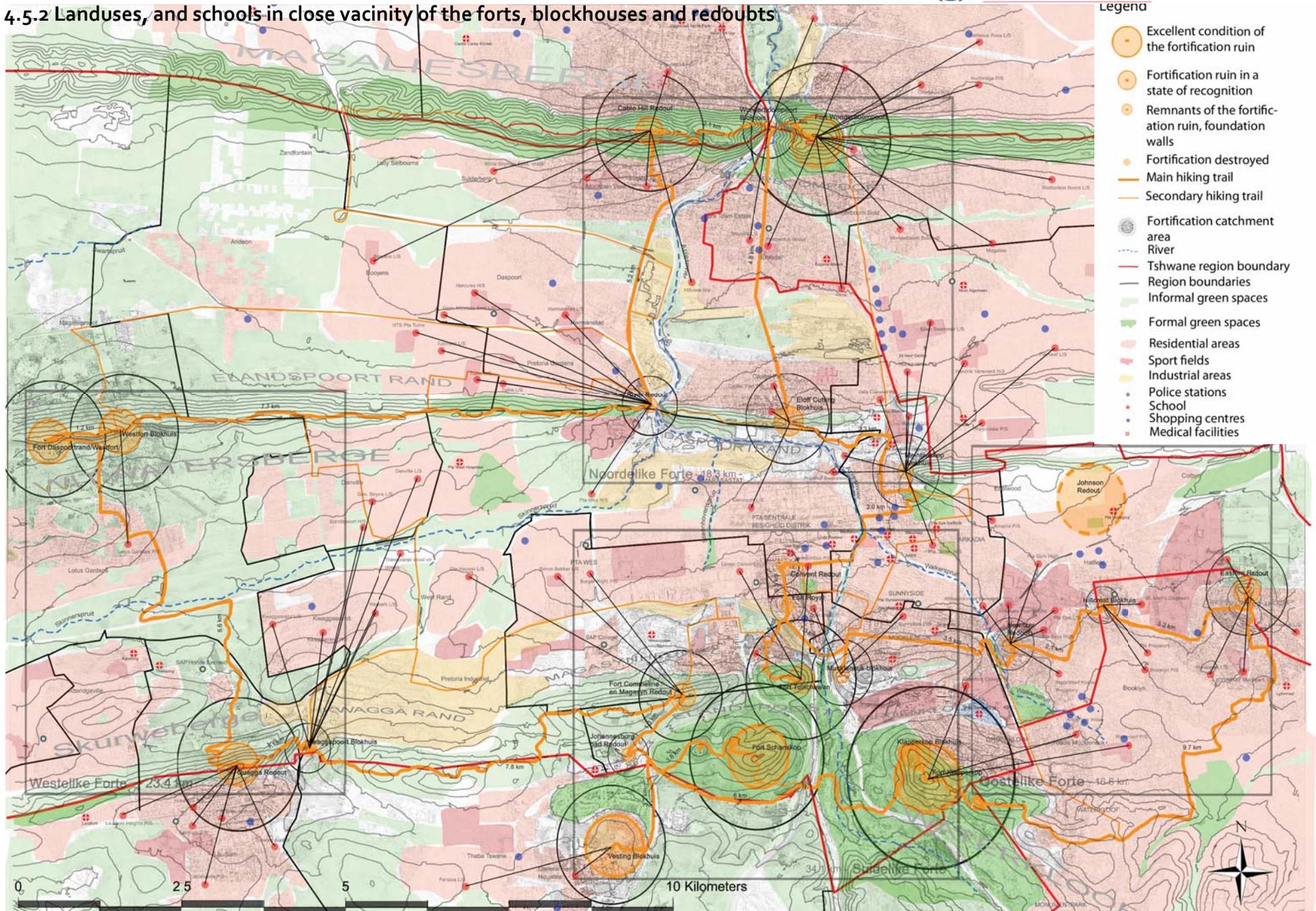
## 4.5 Location of the fortifications of Pretoria and their immediate environment analysis

### 4.5.1 Fortifications of Pretoria



Illus. 79: First, second, and third fortification locations and the connections between them. (Framework group, 2011)

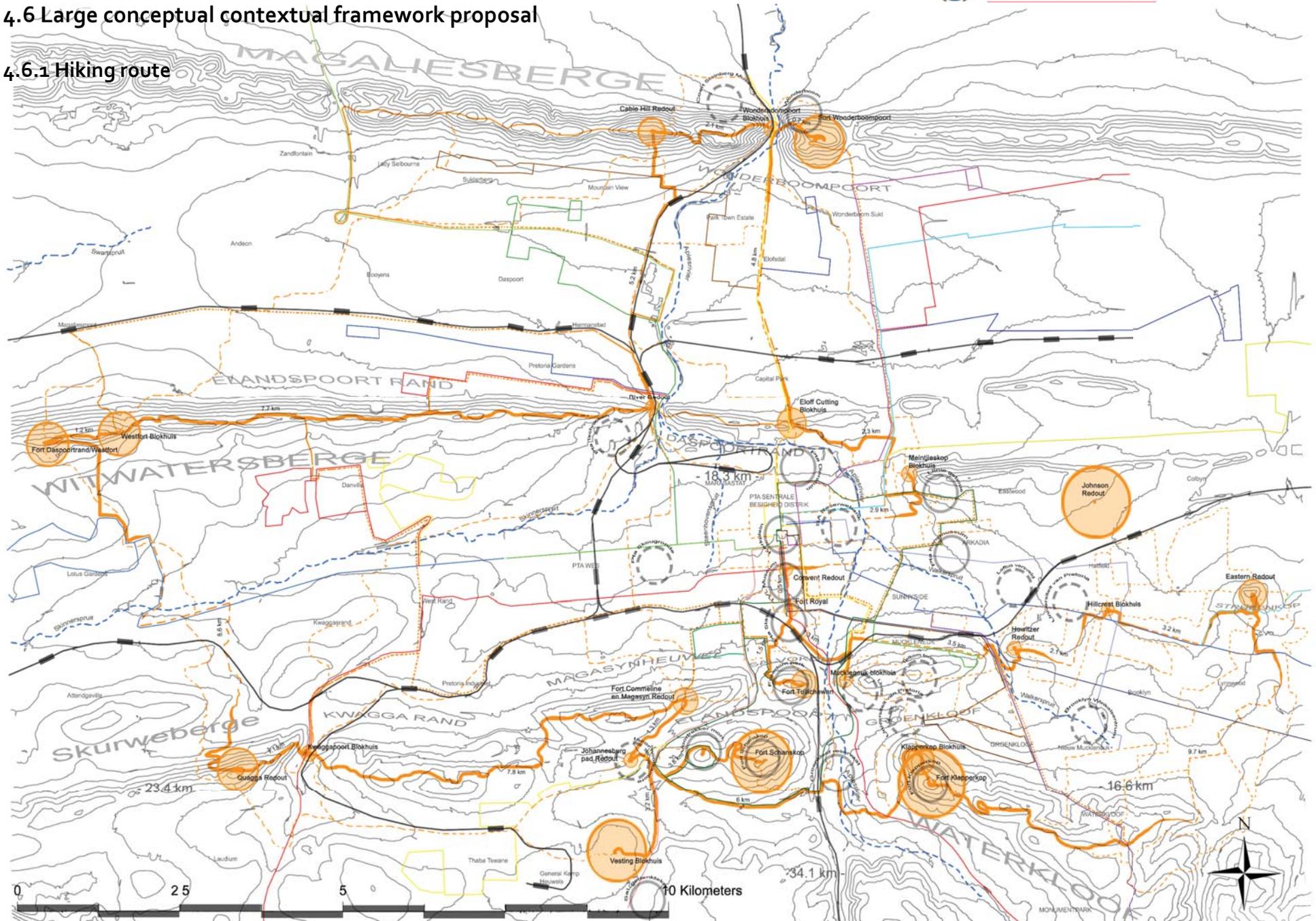
#### 4.5.2 Landuses, and schools in close vicinity of the forts, blockhouses and redoubts



Illus. 8o: Landuses and schools in close vicinity of the forts, block houses and redoubts. (Framework group, 2011)

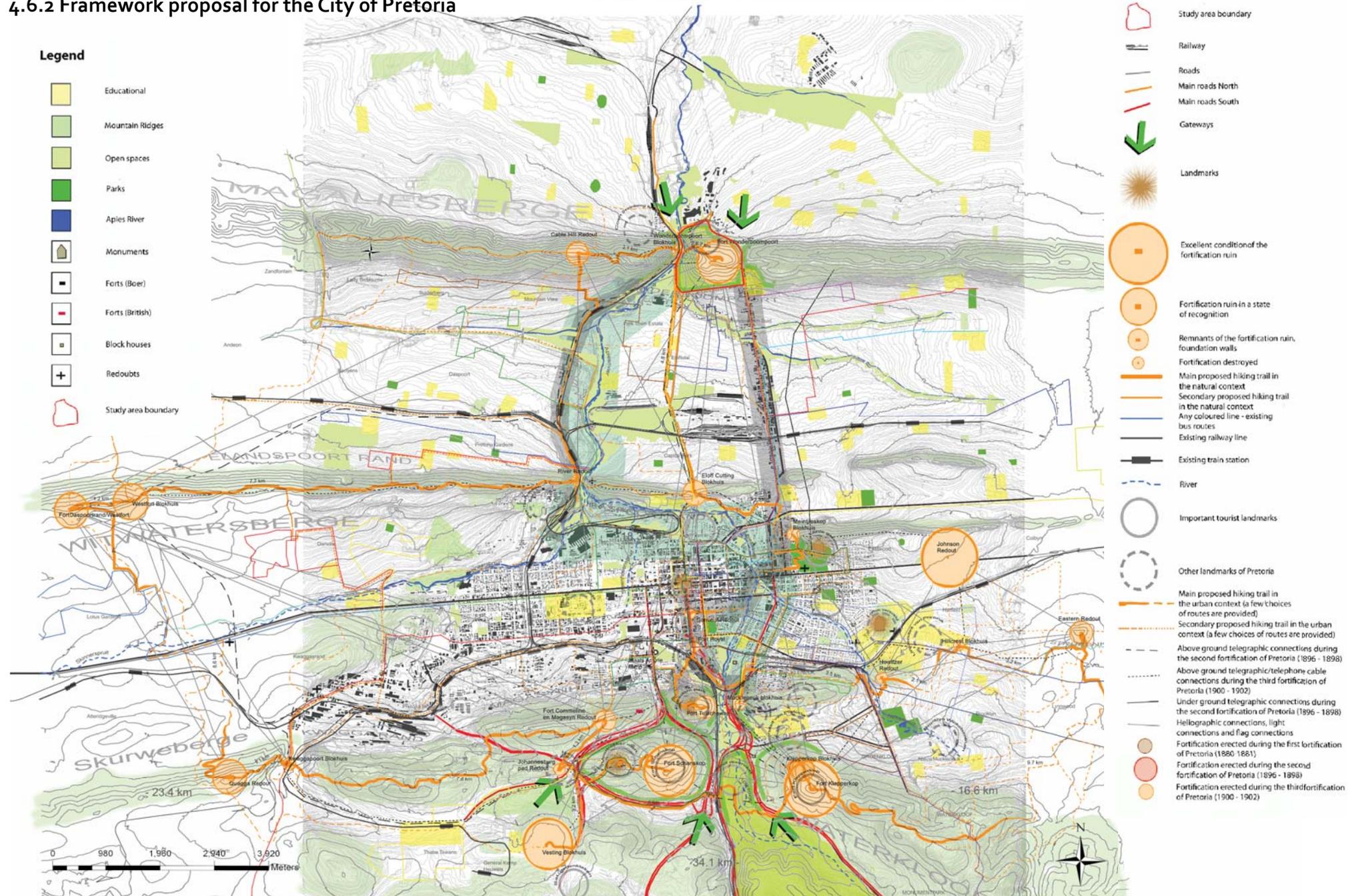
## 4.6 Large conceptual contextual framework proposal

### 4.6.1 Hiking route



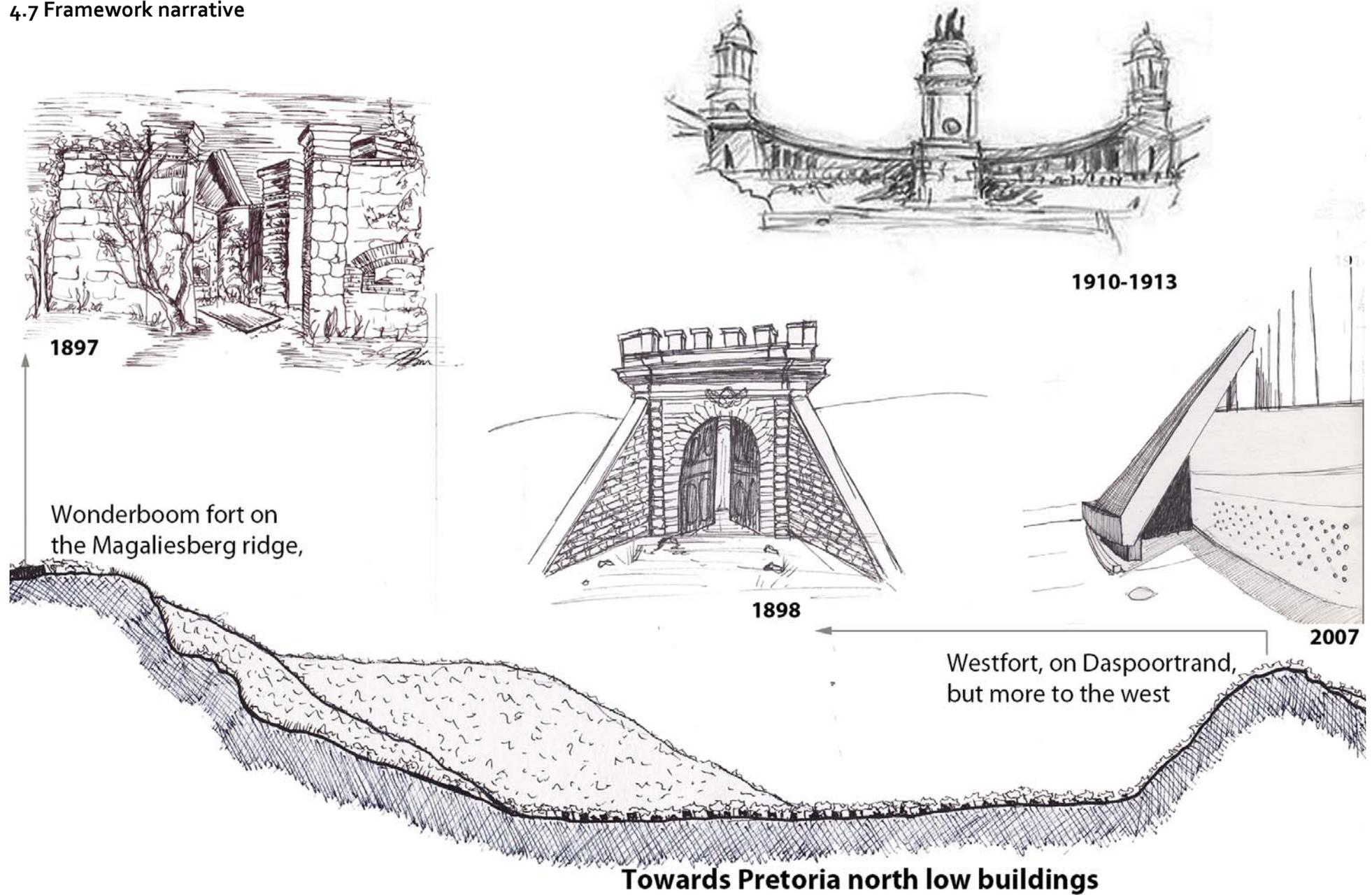
Illus. 81: Main and secondary hiking trail along Pretoria's ridges and inner city. (Framework group, 2011)

### 4.6.2 Framework proposal for the City of Pretoria

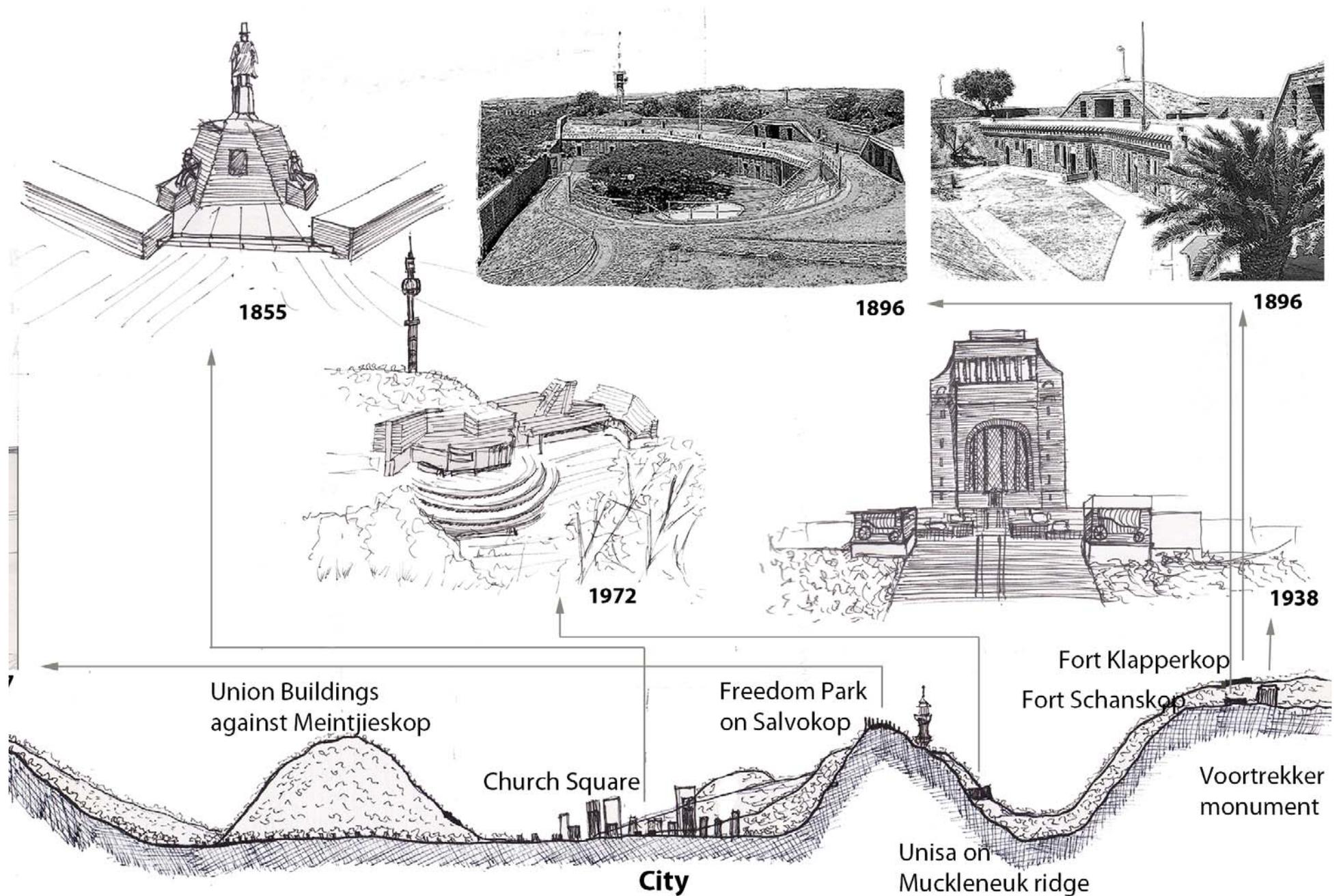


Illus. 82: Concept large framework proposal for Pretoria (Author, 2011)

4.7 Framework narrative



Illus. 83: North-south section through Pretoria, to indicate the ridges (natural) and city (cultural) relationship and narrative. (Author, 2011)





*Illus. 84: Pathway leading to the unexplored... (Author, 2011)*

# SETTING: SITE ANALYSIS 05



1. INTRODUCTION
2. LARGER CONTEXT
3. SITE CLIMATE, GEOLOGY, FAUNA AND FLORA-ANALYSIS
4. CULTURAL AND BIOPHYSICAL ASPECTS OF WONDERBOOM NATURE RESERVE
5. THE SITE'S CONTRASTING FACTORS/ASPECTS
6. SWOT ANALYSIS
7. CONCEPT
8. CONCLUSION

The site analysis explores the cultural and biophysical aspects of the site, their history and present significance as well as the present existing site uses/program.

## 5.1 Introduction

The Wonderboom Nature Reserve is a nature island in the middle of Pretoria, an urban city, which surrounds this magnificent biophysical gem. It was seen as a sanctuary since the first humans set foot on this piece of land. In the adult and in the child it arouses a dormant, innate interest in nature. It stimulates the pride of every inhabitant of Pretoria as a co-owner of the reserve. The reserve itself becomes a living source of knowledge and pleasure to the numerous educational institutions of the capital and the whole country, because of its richness in history and heritage. There are various layers of history to be unfolded by the visitor.

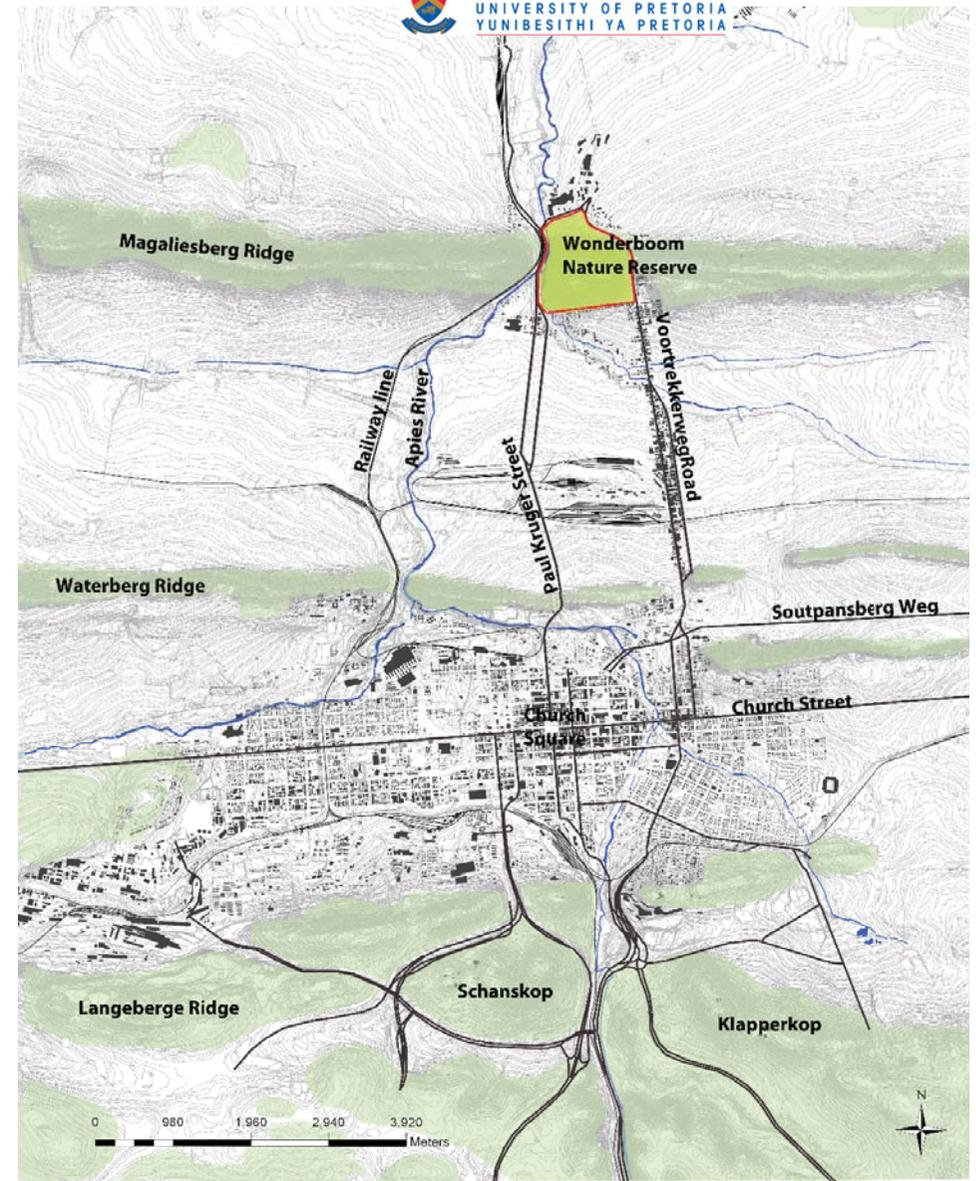
The analysis of this significant place starts by looking at the larger context of the area. The next step will be to zoom in on the existing site, to analyse how it is being used, what is already there and what the climate and geology of the site is. The historical background of the nature reserve and its important elements will be investigated to discover the significance, genius loci of the place and to define the cultural and biophysical aspects of the site—the first research question as set out in the first chapter. The analysis will go into defining the archaeological data of the site and to discuss the suggested management thereof by Anton van Vollenhoven (2008). A SWOT analysis will be conducted to see where the strengths and weaknesses of the site lie.

## 5.2 The larger context

### 5.2.1 Site location

The site under investigation is the Wonderboom Nature reserve, located on the Magaliesberg ridge in Pretoria north. Refer to chapter 1 for a full site location description and illus. 10.

The Wonderboom Nature Reserve is placed in a larger context before one moves in on the site itself. Refer to illus. 85.



*Illus. 85: Larger context of the Pretoria area with the Wonderboom Nature Reserve located to the North of Pretoria. (Author, 2011)*

## 5.2.2 Land uses

It is important to have a understanding of the different landuses around the studie area. The landuse around Wonderboom Nature Reserve is mostly residential which makes the location of the reserve ideal to function as a regional park.



### Legend

Special Residential	Existing street
General Residential	Existing Public Open Spece
Educational	Exisitng Private Open Space
General Business	Cemetry
Municipal	Aerodrome
General Industrial	South African Railway
Agricultural	Erf

0 320 640 960 1,280 Meters



## 5.3 Wonderboom Nature Reserve

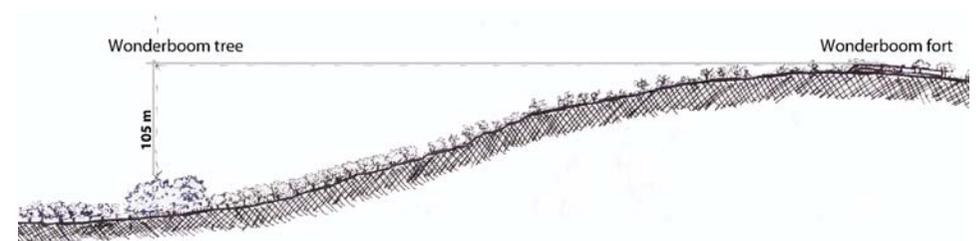
### 5.3.1 Existing site

To understand the study site, the following will be discussed in the site analysis:

1. The existng site (resort area)
2. The existng program and uses of the resort
3. The climate
4. Geology and topography
5. Flora and fauna

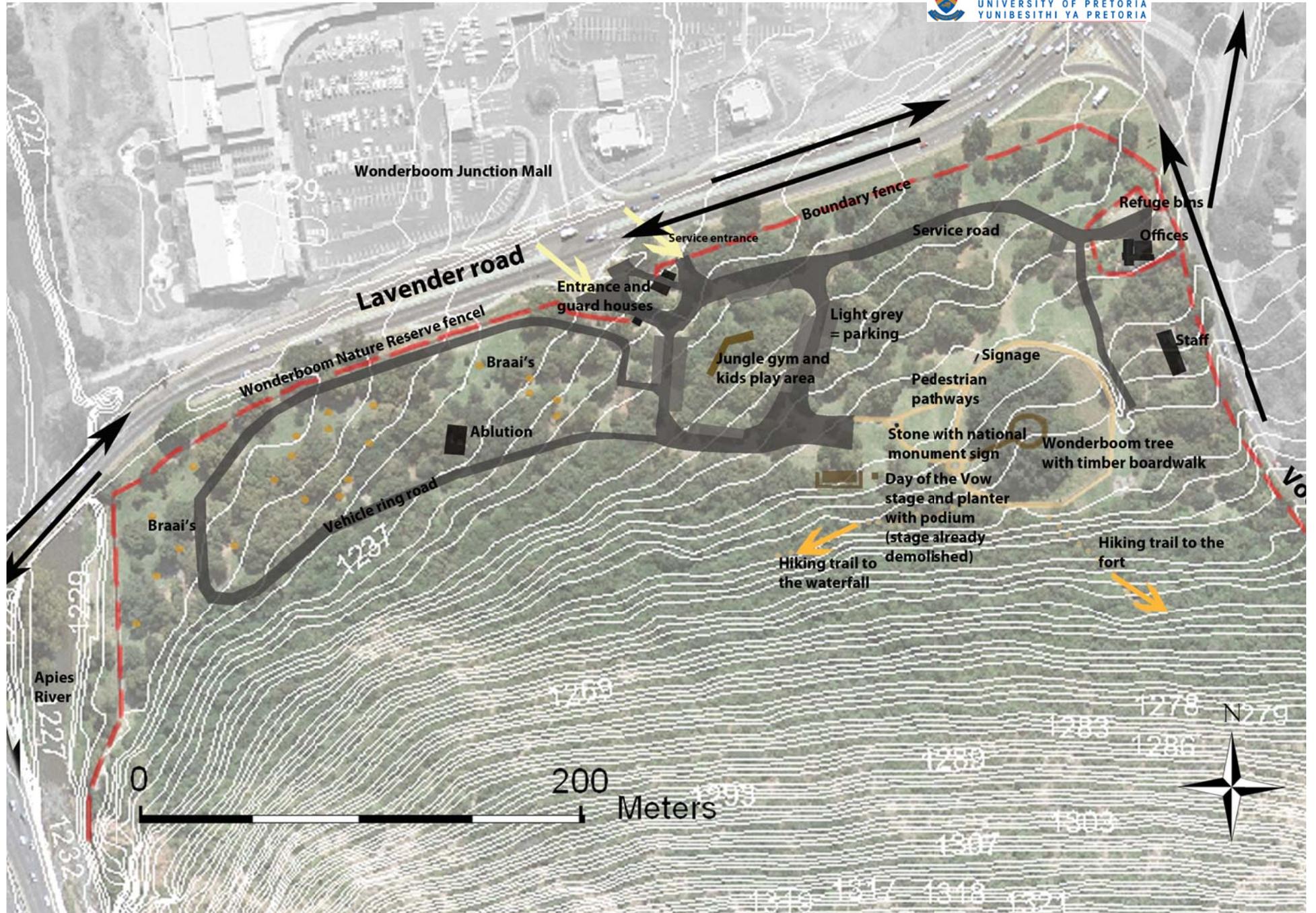
#### 5.3.1.1 Existing plan of the resort area

The Wonderboom Reserve is a small portion of the Magaliesberg bordered on the west by the Apies River and on the east and north east by the extension of Voortrekker Road across Wonderboom Nek. Its northern boundary runs just more than 91m north of the Wonderboom while Lombard Street, Wonderboom south, is its southern boundary. Refer to illus.10 and 88.



*Illus. 87: Section through Wonderboom Nature Reserve. The wonderboom tree in relation to the ridge and the wonderboom fort. (Author, 2011)*

*Illus. 86: The land uses within the larger context. (Geography at the University of Pretoria GIS database, modified by the author, 2011)*



Illus. 88: Aerial photograph of the resort area of the nature reserve indicating the existing facilities. (Geography at the University of Pretoria GIS database, modified by the author, 2011)

### 5.3.1.2 Current program and uses

The Wonderboom Nature Reserve is currently used as a regional park (refer to chapter 1 charts - people from over Pretoria visit the nature reserve), with the following program:

- Wonderboom tree interpretive trail 0.5km (This trail consist of a few information boards in the resort area around the tree.)
- Fort Hiking trail (2km)
- Waterfall hiking trail (1km)
- Joost Becker guided trail 2.6km
- Bird watching
- Picnic areas
- Braai facilities
- Abseiling (This can only be done per bookings)

### 5.3.1.3 Climate

A consideration of some climatological factors:  
(Refer to fig. 21)

- The area concerned has an annual rainfall of about 630mm practically confined to the summer months.
- The average dates of occurrence of the frost and last frosts are respectively the 20th May and 31st August. (Collett, 1956: 67-87)
- The direction of prevailing winds is not very constant, particularly during winter. During summer they are mainly north-east. During winter, south and west winds occur slightly more than in the summer but the seasonal variation is very slight.
- The mean hourly wind velocity for the year is 12.8 k.p.h.
- The average percentage frequency of wind direction for the year shows it to be most frequent in the north-east quadrant. (Collett, 1956: 67-87)
- The slope of the Magaliesberg is tilted northwards at an angle of 20° or 40°, thus the slope receives the full impact of the sun's rays throughout the day and the upper parts are usually hot and dry.
- Northern part dryer, but receive a lot of run-off perennial streams. (Information plates, 2011)

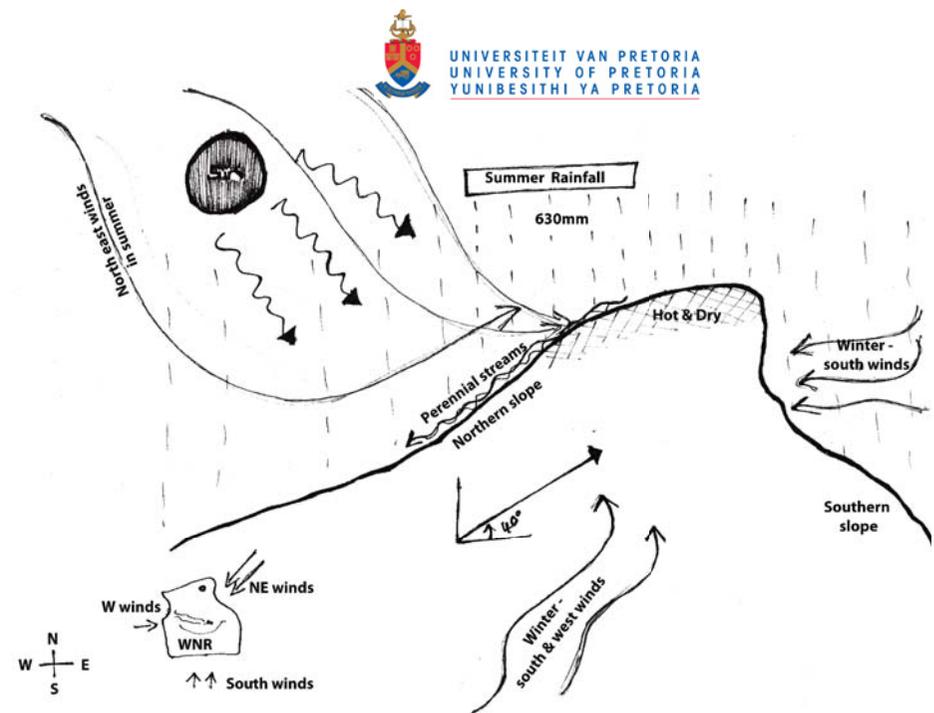


Fig 18: Sketch representation of the climatological factors at the Magaliesberg. (Author, 2011)

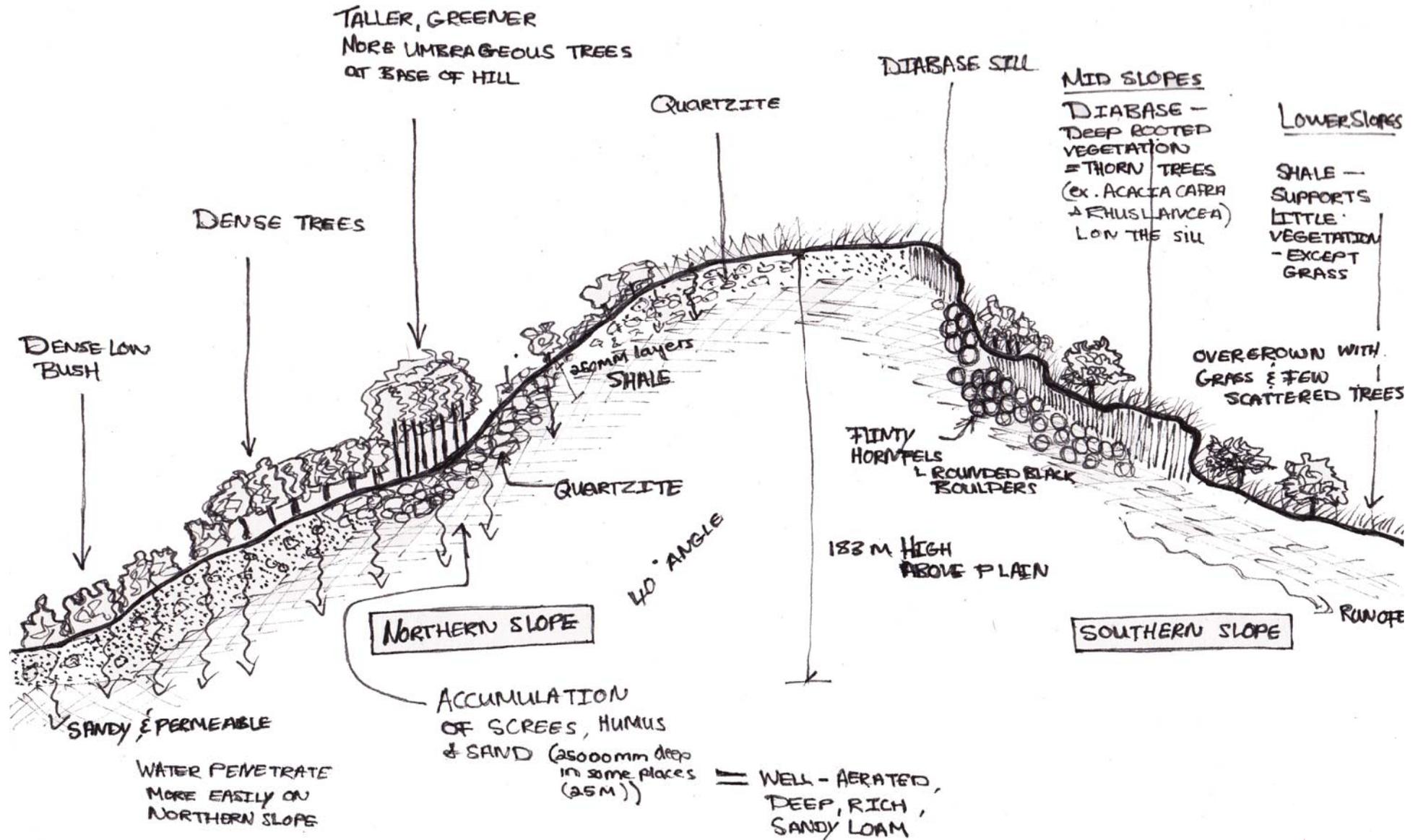
### 5.3.1.4 Geology and topography

The range rises to an elevation of some 183 meters above the plain.

According to Visser (1956) the visitor will see fine examples of current-bedded and ripple-marked quartzite displayed at their best as paving stones in the footpaths.

Considering the general geology of the area, a two-fold division is at once apparent from the topography. On the south side of the ridge, the hill slope is smooth and gentle and overgrown with grass and few scattered trees. Near the summit the weather-resisting quartzites form bold kranztes facing southwards while a steep dipslope, rather densely overgrown with bush and trees, faces northwards. This striking difference is brought about by the presence of shales below the succession of thickly-bedded quartzites which determine the ridge. (Visser, 1956: 35-41) The tree growth is encouraged by quartzite boulders. Animals are a major cause of erosion on the slopes. Soil is moderately deep on the lower part. It is sandy and permeable because of the high quartzite content and it supports a good plant cover including some substantial shrubs and trees. (information plates, 2011). Refer to illus. 89.

For a more indepth study of the geology and topography refer to appendix D.



Illus. 89: Sketch representation of the soil and vegetation types at the Magaliesberg. (Author, 2011)

### 5.3.1.6 Flora (Botanical features)

The Wonderboom Nature Reserve is situated within the Gold Reef Mountain Bushveld, which features rocky hills, and ridges often west-east trending with more dense woody vegetation often on the south-facing slopes associated with distinct floristic differences. (Wonderboom Nature Reserve pamphlet). Refer to illus 8g.

Refer to 5.3.1.4 Geology. Consequently from the facts mentioned previously, it is not surprising to find an abundant and luxuriant growth, of a diversity of kinds of umbrageous trees not elsewhere common in Pretoria. The famous Wonderboom is one of these species. The 'tree' itself is an evergreen Wild Fig, technically known as *Ficus pretoriae* Burt-Davy.

According to Mogg (1956), there are many examples of this species in the district, especially along the northern base of the Magaliesberg range, and fine specimens have been recorded as far west as Mexico. The best known individual tree is the Klein Wonderboom, which is to be found a quarter of a mile to the west of Wonderboompoort. Farther afield the species occurs in the Waterberg, the Lowveld areas of the Transvaal, in Portuguese East Africa, tropical East Africa, and Socotra, an island in the Indian Ocean, off the north-eastern tip of Africa.

Refer to illus 8g indicating a typical section through the mountain. Which shows the type of planting and soil found on the Magaliesberg ridges.

The following trees are found at the resort (park) and at the fort. Refer to heading 5.3.1.6.1



Illus. 93: Botanical aesthetic features nature reserve (Author, 2011)



Illus. 90: Examples of the quartzite rocks, white to pale pinkish and the ripple formation on some of the rocks (Author, 2011)

### 5.3.1.5 Fauna

A list of animals found in the nature reserve will be provided in the appendix.

Apart from the zebra, impala, rock hyrax, porcupine, various small mammals, reptiles and amphibians which can be seen. At least 200 bird species occur on the nature reserve. Amongst these are the Verreauxs/Black eagles which breed regularly on the reserve. (Wonderboom Nature Reserve pamphlet) Four zebras were placed in the reserve from Zkukuza in the Kruger National Park in 1965.



Illus. 91: These red bucks were spotted on one of the site visits to the nature reserve in 2011. (Author, 2011)



Illus. 92: These Zebras were spotted on one of the site visits to the nature reserve in 2011. (Author, 2011)

### 5.3.1.6.1 Trees of the Wonderboom Nature Reserve and their cultural significance

The following tree species are found at the Wonderboom Nature Reserve. These were identified at the park area and on top at the Wonderboom fort.

*Sclerocarya birrea subsp. Caffra*

SA. No: 360

Marula/Maroela

#### Interesting facts:

- In Marula trees the different sexes can be either on separate trees or on the same tree.
- Both the fruit and nuts are edible. The fruit can be used to make Marula beer, preserve or jelly.
- The nuts have a high oil and protein content. The oil has been used cosmetically.
- A single fruit can contain up to 4 times as much vitamin C as an orange.



Illus. 94: Marula tree (Author, 2011)

#### Cultural significance:

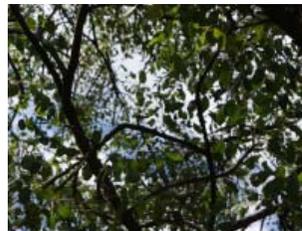
Most traditional healers have a marula stone amongst their divining dice.

Various parts of the tree are used in traditional medicine. The powdered bark is given to pregnant woman to ensure that the child is of the desired sex: for female child bark from a female tree is used, while for a male child the bark of a male tree is used.

(Palgrave, 2002: 122)



Illus. 95: Marula bark. (Author, 2011)



Illus. 96: Marula leaves. (Author, 2011)



Illus. 97: Marula fruits. (Author, 2011)



Illus. 99: Buffalo thorn bark. (Author, 2011)



Illus. 100: Buffalo thorn leaves. (Author, 2011)



Illus. 101: Buffalo thorn fruits. (Author, 2011)

*Zisiphus mucronata*

SA. No: 447

Buffalo Thorn / Blinkblaar-wag-'n-bietjie

#### Interesting facts:

- The tree is widely browsed by game and stock.
- The trees, if planted close together, form an impenetrable barrier.
- Fruit is edible. Dried fruit is ground and made into a type of porridge.
- The seeds can be roasted and ground and used as a substitute for coffee.
- Young leaves are boiled and eaten as a vegetable



Illus. 98: Buffalo thorn (Author, 2011)

#### Cultural significance:

The tree is widely used in traditional medicine. Leaves are boiled into porridge and used as antiseptic. An infusion of the roots is used for indigestion. (Palgrave, 2002: 241)

*Ficus Salicifolia* (vahl) (*F. pretoriae* Burttt Davy) (*F. Cordata* Thunb. Subsp.)  
*Salicifolia* (vahl) C.C. Berg  
SA No:60  
Wonderboom fig/vy

**General:**

Typically a spreading medium sized tree, seldom exceeding 9m; occurs in valleys along water courses on rocky outcrops and also in open woodland, semi-deciduous losing its leaves once every number of years.



*Illus. 102: The Wonderboom tree - Fig (Author, 2011)*

**Bark:** Dark grey and rough, but paler grey to smooth in young trees.

**Leaves:** Ovate to elliptic, or oblong, sides almost parallel, usually about 70 x 35mm, clear green, thick leathery, the main pair of veins at the base curling around running parallel to the lobe margin and unbranched, net veining clearly visible below, lateral veins very distinct on underside, apex broadly tapering to almost rounded, base square to shortly tapering to almost rounded, base square to shortly lobed, margin entire: petiole 5 x 50mm long, stipule falling early.

**Figs:** Massed along the branches in the leaf axils small, 5-8 mm in diameter, white turning yellowish pink or red with white dot, August – May (Palgrave, 2002: 147-148)



*Illus. 103: Fig bark. (Author, 2011)*

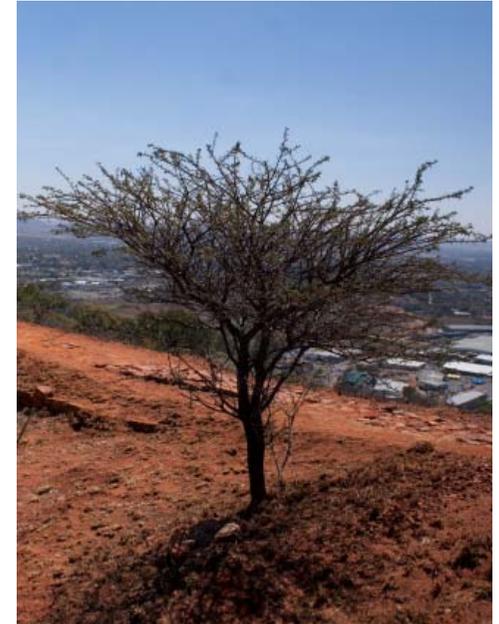


*Illus. 104: Fig leaves. (Author, 2011)*

*Senegalia nilotica* (*Acacia nilotica*)  
SA. No: 179  
Scented Thorn/lekkerruikpeul

**Interesting facts:**

- The tree is often associated with sweetveld.
- The pods are widely eaten by stock and game. Consuming large quantities of pods induces abortion amongst goats.
- Pods and bark can be used for tanning leather.
- Gum is edible and widely taken and can be used as glue.
- Furniture and fence posts have been made from the wood.
- The inner bark is used for making rope.
- Roots and dried pods can be boiled to produce ink.



*Illus. 105: The Scented thorn tree (Author, 2011)*

**Cultural significance:**

Numerous medicinal uses have been recorded.

Parts of the tree were used to treat eye diseases, as a tranquiliser, and as an aphrodisiac. A root extract was used to treat tuberculosis, impotence, diarrhoea, sores caused by leprosy, stomach ulcers, indigestion and haemorrhage. (Palgrave, 2002: 110)



*Illus. 106: Scented thorn bark. (Author, 2011)*



*Illus. 107: Scented thorn leaves. (Author, 2011)*



*Illus. 108: Scented thorn. (Author, 2011)*

*Dichrostachys cinerea*  
SA. No:190  
Sickle Bush/Sekelbos

**Interesting facts:**

- Sickle bush is regarded as a pioneer plant and is often associated with areas that have been subjected to overgrazing
- The leaves and pods are browsed by stock and game
- Strong rope can be made from the inner bark.
- The thorns are extremely hard and often puncture vehicle tyres.



*Illus. 109: Sickle bush (Author, 2011)*

**Cultural significance:**

The plant has limited medicinal uses. Powdered bark has been used for the treatment of various skin complaints. The roots are chewed and applied to snake bite and scorpion stings.

(Palgrave, 2002: 100)



*Illus. 110: Sickle bush bark. (Author, 2011)*



*Illus. 111: Sickle bush leaves. (Author, 2011)*

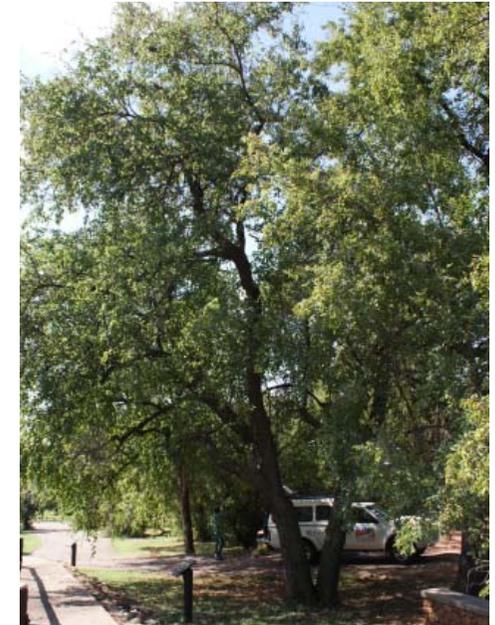


*Illus. 112: Sickle bush fruits. (Author, 2011)*

*Pappea capensis*  
SA. No:433  
Indaba Tree/ Doppruim

**Interesting facts:**

- The tree is widely browsed by game and stock. The edges of the young leaves are heavily serrated and spiny to discourage browsing, as the leaves mature the edges become entire.
- The fruit is edible and is used to make an alcoholic drink and vinegar.
- The seed yields heavy yellow oil which has been used as gun oil and in soap making.
- 



*Illus. 113: Indaba tree (Author, 2011)*

**Cultural significance:**

Various parts of the tree are used in traditional medicine. The oil is said to cure ringworm, and stimulate hair growth. Infusions of the leaves are used to treat sore eyes.

The name Indaba tree refers to the practice amongst the woman to gossip in the shade of this tree as well as the fact that the traditional court or 'Kgoro' was often held in its shade.

(Palgrave, 2002: 132)



*Illus. 114: Indaba tree bark. (Author, 2011)*



*Illus. 115: Indaba tree leaves. (Author, 2011)*



*Illus. 116: Indaba tree fruits. (Author, 2011)*

*Searsia lancea* (*Rhus lancea*)  
SA. No: 386  
Karee / Karree

**Interesting facts:**

- Occuring over a variety of altitudes and habitats, in open woodland, along river and stream banks , on termite mounds and often on calcareous substrates.
- Bark used for tanning.
- The edible fruits are either soaked in milk or mixed with sour milk before eaten.
- A pleasant tasting tea can be made from the dried fruits.
- Branchlets once used to make bows.
- Fruit pounded with water and brewed into a tasty beer.
- Widely cultivated as a garden ornament, drought and frost resistant.
- The wood has a sweet, spicy scent, but the trunks are frequently so twisted and crooked that they cannot be made into satisfactory planks.
- The trunks can be used as fencing posts and are used to make implement handles, bowls and tobacco pipes.
- The trunks make good firewood.
- Young, long branches are used for thatching.
- The bark is used for tanning leather brown.
- The trifoliolate leaves are high in tannin and are only browsed in times of drought. They can taint milk. (Palgrave, 2002: 574)



*Illus. 117: The Karee tree*  
(Author, 2011)



*Illus. 118: Karee bark.* (Author, 2011)



*Illus. 119: Karee leaves.* (Author, 2011)



*Illus. 120: Karee flower and leaves* (Author, 2011)



*Illus. 122: Mountain karee bark.* (Author, 2011)



*Illus.123: Mountain karee-leaves.* (Author, 2011)

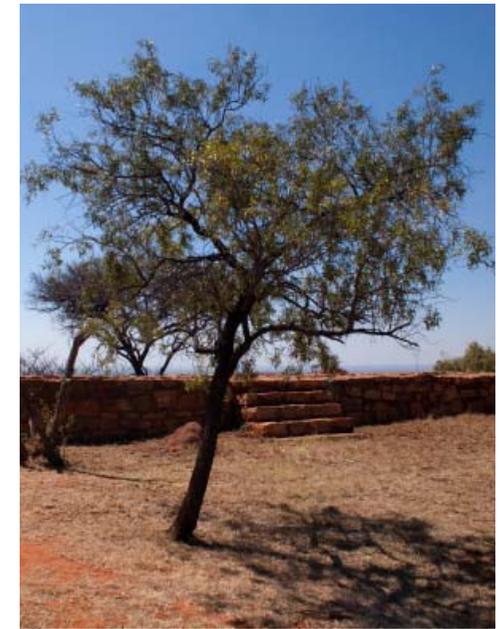


*Illus. 124: Mountain karee flower* (Author, 2011)

*Searsia leptodictya* (*Rhus leptodictya*)  
SA. No: 387  
Mountain karee / Berg Karree

**Interesting facts:**

- Occuring in busveld and grassland , often on rocky (particularly granite) ridges.
- Beer is brewed from the fruit.
- A decorative garden subject but sensitive to severe frost.
- An intoxicating liquor can be made from the fruits.
- Important horticultural plant



*Illus. 121: Mountain karee tree*  
(Author, 2011)

**Cultural significance:**

Various parts are used in traditional medicine.  
(Palgrave, 2002: 574)

## 5.4 Cultural and Biophysical aspects of the Wonderboom Nature Reserve

The following biophysical and cultural aspects can be found on site (mentioned in the column on the side). This was acquired after an in depth analysis of the history of the Wonderboom Nature Reserve and its important aspects. Only after thorough investigation and exploration of these aspects could all of the biophysical and cultural components be identified to be used throughout the design process with regards to access, awareness and semiotics. And to include in the design narrative. This aided in achieving an informed design proposal. The complete discussion and analysis of the historical background and important aspects can be found in appendix E with photo's and images.

An archaeological data analysis was done to determine what is archaeologically important on site, where the locations are and what may be done to that specific heritage site.

The following historical sites were identified on site (Wonderboom Nature Reserve):

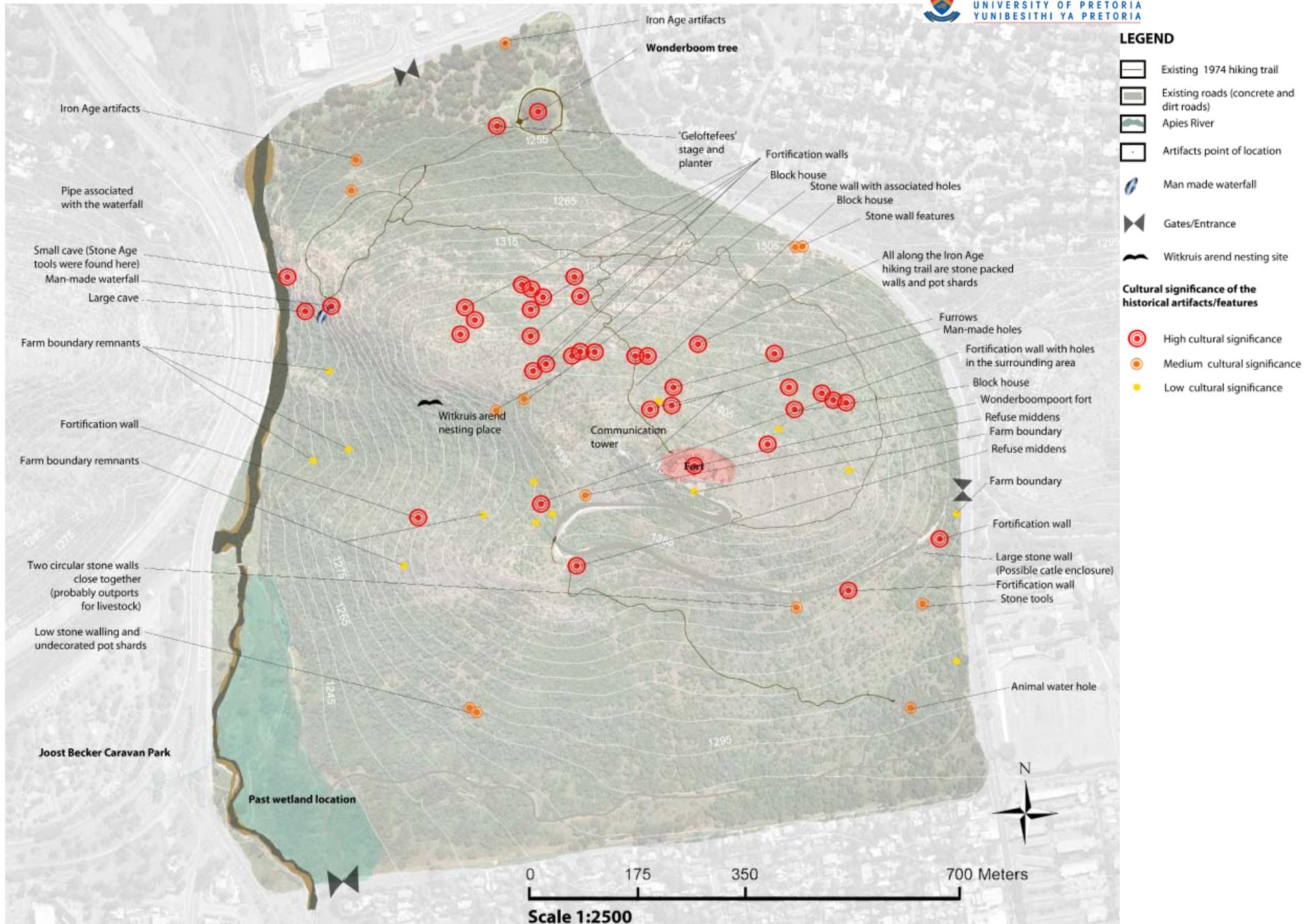
1. Two Stone Age sites
2. Five Iron Age sites
3. Seven 'other cultural sites' (This can include man-made holes, remnants of artefacts, refuse midden, man-made waterfall, Day-of the-Vow remnants and a small cement dam.)
4. Military features (This can include fortification walls, block house remnants, holes, fort, water furrows, cement platforms etc.)
5. 'Remains, icons not from a specific period in time' (This can include the two caves, and the wonderboom tree.)

The above mentioned archaeology sites were analysed and discussed completely in appendix F. For more information refer to appendix F.

The different cultural and biophysical sites and their cultural significance were mapped out together with illustrations of the main elements found on site. (Refer to illus. 125, 126 & 129)

## Biophysical Aspects

1. Vegetation
    - Rocky highveld grassland (grassland biome)
    - Mixed bushveld (Savanna biome)
    - Tree species of the Magaliesberg
  2. Geology
    - Soil rock layers
    - The quartzite rocks
    - Magaliesberg mountain
  3. Wonderboom Tree (icon)
    - Ficus salicifolia - a natural phenomena
  4. Caves
    - Natural rock formation in the Magaliesberg
  5. Different animal and bird species
    - Red data,
    - Rare species
    - Rare bird species
    - General game
  6. Apies River
    - One of Pretoria's main rivers
  7. Nature Reserve (conservation area)
    - Protected nature area
1. Wonderboompoort Fort
    - Ruin of the Boer fort, dates back to the history of the Anglo Boer Wars
    - Architecture in its most brutal form
  2. Wonderboom Tree
    - Cultural meaning thereof
  3. Historical features
    - Boundary line remnants
    - Man-made holles
    - Fortification walls,
    - Block houses remnants
    - Remnants
  4. Stone Age sites and artifacts
    - Stone tools
    - Remnants
  5. Iron Age sites and artifacts
    - Stone circle enclosures
    - Iron smelter remnants
    - Remnants
  6. Day -of -the -Vow
    - Remnants of the stage and planter
  7. Man-made waterfall
    - In celebration of the Union



Illus. 125: Mapping of the cultural and biophysical aspects on site. (Refer to appendix E and F for more information regarding these components. (Author, 2011)



Wonderboom tree



Wonderboom tree



Day-of-the-Vow remnants



Man-made waterfall



Small cave



Large cave



Fort entrance



Fort ruin walls and courtyard



Fort ruin walls and courtyard

*Illus. 126: The main components on site. (Refer to appendix E and F for more information regarding these components. (Author, 2011)*

## 5.5 The site's contrasting factors/aspects

From the site analysis a definite contrast character comes to the surface. The following constrasting qualities could be distinguished :

1. The known and the unknown
  - One knows about the reserve and its facilities
  - The unknown is the history, the fort ruin, etc
2. The seen and the unseen
  - Park can be seen but,
  - The historic layers cannot be seen unless it is known
3. The all at once and discovery
  - Wonderboom tree approach
  - The fort is a discovery
4. Past and present
  - Historical layers, artefacts, the ruin and the tree are from the past
  - The contemporary reserve (park area)
5. Tangible and intangible
  - Tangible - all the physical elements
  - Intangible - memory, meaning, history,
6. Permanent and temporary
  - Structures, and infrastructure are permanent elements
  - Ruin is temporary
7. Visual and the obscure
  - The tree and that which are right in front of you, the mountain all are visual
  - The fort, the route, noise and city is obscure at certain points and level
8. City and nature
  - The city lies beneath the
  - Ridges of Pretoria
9. Cultural and the natural
  - Cultural aspects vs.
  - Biophysical aspects

## 5.6 SWOT analysis

A SWOT analysis was done on the site. It was divided into three categories, namely; the socio-economic function, ecological function and the spatial function. The strength and weaknesses of each category were identified and documented, as well as its opportunities and threats. Some of the findings may overlap. Refer to table 2-4.

SWOT Analysis				
Socio-Economic Function (Cultural aspects)				
	Strengths	Weakness	Opportunities	Threats
1	Meeting outdoor users needs	Budget constrains	Community benefits	Security
2	Tourism	Man power	Legislative environment	Vandalism
3	Aesthetic ('Genius loci' sense of place), Topophilia (love of place)	Do not live up to its real value and potential	Park rangers	
4	Sanctuary to the city dwellers	Lack of awareness of function	EIA	
5	Park (natural area)	Lack of awareness of the history and heritage of the place and the importance thereof by the public to the public	Employment	
6	Historical value (Heritage)	No advertisement, no attraction anchor to bring people in and closer to appreciate what is there	Awareness - Environment and heritage education	
7	Awareness/Appreciation for environment	Some heritage features are obscured by vegetation, thus visitors not aware of them	Tourism	
8	Job opportunities		Regional Park	
9	Health		Gateway to the north	
10	Sense of well-being		Connection to the overall Pretoria	
11	Psychological		Green corridor	
12	Existing enforcement by laws (ordinances)_Protected 'nature area' and ridge conservation, etc.		Sanctuary to the city dwellers	

Table. 2: SWOT analysis of the socio-economic function in the Wonderboom Nature Reserve (Author, 2011)

SWOT Analysis				
Spatial Function (Contextual aspect)				
	Strengths	Weakness	Opportunities	Threats
1	Identity	Awareness	Connectivity	Vandalism
2	Orientation	disconnectivity	Tourism	Security
3	Vistas/vantage points	Random	Regional park opportunity	Little man power
4	Well defined entrances - gateway, landmarks		Coherence and complexity	
5	Aesthetic value - sense of place		Interest and discovery	
6	Meaning		Didactic design	
7	Experience		Narrative	
8			Semiotic design approach	
9			Green corridor	
10			Urban link	

Table. 3: SWOT analysis of the spatial function in the Wonderboom Nature Reserve (Author, 2011)

SWOT Analysis				
Ecological Function (Natural Aspects)				
	Strengths	Weakness	Opportunities	Threats
1	There are a approved EMP for Wonderboom	Awareness - people are not aware of these natural phenomena or biodiversity of plant and animal species.	Higher usage = higher awareness, better conservation and security	Ecological degradation due to lack of planning and understanding
2	Proximity - accessibility	Communication of natural elements	Quality of life	Alien vegetation
3	Unique interfaces - Magaliesberg		Sustainable development of open space with urban framework	Vandalism
4	Heritage value		Education	Little man power
5	Representation of biodiversity protection and red data presence		Linkage of the north and the south	
6	River running past - Apies river		Green corridor	
7	The wonderboom tree icon		Sustainable design in the reserve itself	
8	Economic benefits		Icon of the north	
9	High species diversity			
10	Historical & cultural site in ecological areas			
11	Fair level of connectivity			
12	Environmental education			
13	Visual relief			
14	Protected natural area			

Table. 4: SWOT analysis of the ecological function in the Wonderboom Nature Reserve (Author, 2011)

To conclude, allot of these aspects identified or suggested informed the theory and design, because one needs to know what is there on site to inform your theory and in turn your design. In the case of this dissertation the site informed the theory explored which in turn drived the design development. The heritage and history element on site informed the decision to apply a narrative approach to the design.

Out of this SWOT analysis the fact of 'little awareness' is mentioned a few times and can be considered a big issue but also a great opportunity. Communication of the history and heritage of the site with regards to its biophysical and cultural aspects are lacking. There are some information boards, but the opportunity for more creative information transfer is there. This can be done to educate but also provide for experience, identity growth, meaning, interest and discovery in the landscape.

The threats are also identified which should be dealt with in the design development.

This SWOT analysis can therefore serve as design guidelines.

## 5.7 Concept for the entire site

Unveiling the heritage/historic layers of the Wonderboom Nature Reserve through a didactic narrative. The three typologies (layers) namely; cultural symbols, biophysical aspects, and the contemporary are unveiled. Under each typology are layers to be unveiled and explored, these are:

Refer to fig.19

Cultural symbols (history):

1. The fort and wonderboom tree,
2. Caves and man-made waterfall,
3. Stone Age and Iron Age remnants,
4. Geloftefees features and festivities

Biophysical aspects (history):

1. Caves, once again,
2. Magaliesberg ridge, and
3. Wonderboom tree (icon)

Contemporary:

1. Recreational opportunities,
2. Tourist attraction,
3. Destination and being a sanctuary

There are 4 important elements to consider throughout the entire design and research:

1. Wonderboompoort fort
2. Stone Age and Iron Age Remnants
3. Wonderboom tree
4. The caves

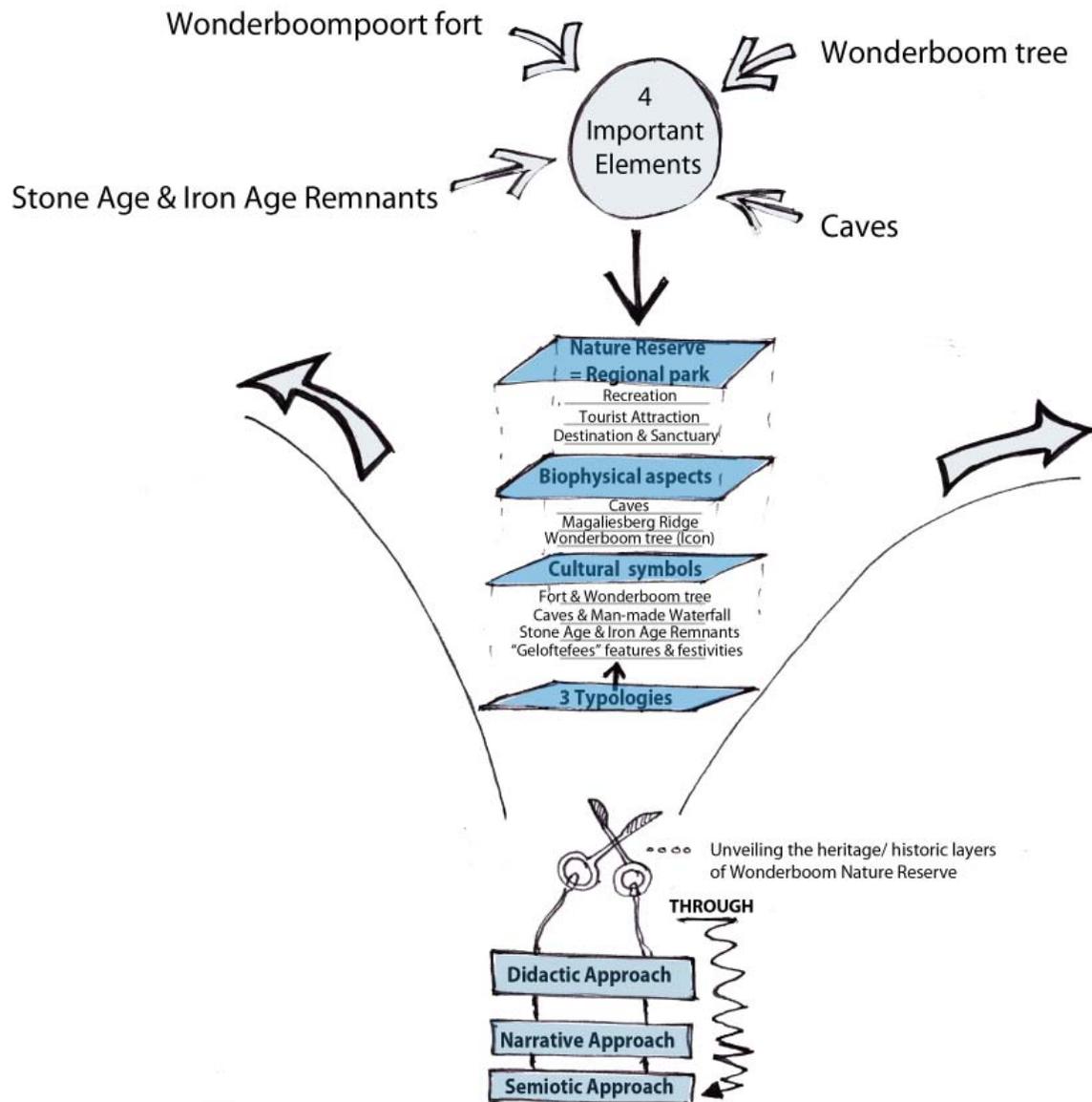


Fig. 19: Concept diagram of unveiling the historic layers (Author, 2011)

## 5.8 Conclusion

From the above site analysis one gets a clear understanding of the biophysical and cultural aspects of the site. The cultural and biophysical aspects were identified and discussed in detail in appendix E and F. In this analysis the different history layers were unfolded and explained (appendix E & F).

One can conclude that the Wonderboom Nature Reserve is used as a regional park, from the statistics that showed that people from all over Pretoria are using the site. (Refer to questionnaire in chapter 1) But at the same time one can conclude that people need to be made aware of the significance of the nature reserve, its history and heritage as well as biophysical aspects. People are unaware of these aspects. (Refer to questionnaire in chapter 1)

The site analysis informed the designer of the different biophysical and cultural aspects that needs to be communicated to the visitor. Certain approaches and principles were discussed in chapter 3 which serve as guidelines to methods of communication, different approaches and principles that need to be implemented. The charters discussed in chapter 6 serve as heritage principles which can be applied to the design.

### Guidelines derived from the SWOT analysis:

1. Highlight the genius loci of the site.
2. Enhance awareness of the history and heritage of the place and the importance thereof by the public to the public.
3. Enhance the awareness of its environmental significance and the protection thereof.
4. The need of an anchor attraction to bring people in and closer to be able to appreciate what the site can offer.
5. The heritage features should be unobscured so that people can notice and access them.
6. Access to the different heritage sites is important to create awareness and interest.
7. Education and communication of the history and different aspects on site.
8. The site is random and disconnected, one can apply the following principles; coherence and complexity, interest and discovery.



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



# DESIGN DEVELOPMENT

# 06

1. INTRODUCTION
2. CONCEPT
3. DESIGN GUIDELINES
4. FOCUS AREAS ON DIFFERENT SCALES
5. WONDERBOOM NATURE RESERVE FRAME-  
WORK PLAN DEVELOPMENT
6. WONDERBOOM NATURE RESERVE MASTER  
PLAN DEVELOPMENT
7. CONCLUSION

This chapter will focus on the practical design approach to the site, heritage stance, concept and principles. The development of the frame-  
work- and master plans of the Wonderboom Na-  
ture Reserve will then be discussed.



## 6.1 Introduction

### 6.1.1 Approach to the design

The Burra charter was mainly used to determine how to treat the ruin on the site and the Ename charter was mainly used to decide on how the ruin should relate to the public. This results in a two-pronged approach to the design, namely:

- A. **Heritage** - Preserving the physical through the Burra charter
- B. **Public** - awareness, education, experience, and meaning through the Ename charter

Theory was used to develop the design approach of a narrative in communicating the original meaning and explored through the Ename charter - public awareness, -education, -experience, -meaning and -identity.

The theory themes can be seen and linked in the following way:

- **Semiotics, Narrative, Didactic** - ways of design communication
- **Meaning, Experience, Identity** - user's subconscious reading of the design
- **Interest and discovery (complexity and coherence), Access, Awareness** - user's conscious reading of the design

### 6.1.2 What am I doing?

Strengthening the existing spirit of place (the place's identity and its meaning - that of a refuge – which is intangible and unconscious) through a narrative approach (a tangible approach) that engaged with the cultural and biophysical history of the site (the tangible world) by means of didactics (education) and semiotics (experience with added meaning that gives identity).

Specific design goals - better access, heightened awareness, and heightened interest created through complexity and coherence in design.

Complexity and coherence will engage with the physical/conscious experience (through didactics – teaching about the physical aspects of the site nature and culture) as well as the unconscious experience (through semiotics – use of symbols that give meaning and identity)

### 6.1.3 Heritage conservation stance

The design approach ties in with the Burra Charter approach, namely “changing as much as necessary but as little as possible”

Heritage sites should be presented to the public and the public should be educated to ensure their protection. Awareness and access should be created. To ensure public interest and use, a new use should be incorporated. No intervention should obscure any views of the heritage site, monument or setting. The Genius loci of the place, informs the design, to ensure that the character of the place isn't lost.

Ruins should not be restored to its original state, but left as a ruin. The public should be educated and the ruin should be displayed in an intelligible manner. Some intervention can be used to enhance the ruin's current use and ensure its protection.

### 6.1.4 Vision

A landscape which tells the story of the place, and unveils the heritage and history of the site in such a way that visitors will have an exciting but informative experience of the past events.

The site can become a tourist attraction, a destination, a place everyone would go to and a place to get in contact with nature without being far away from the city. In a larger scheme this site can be the northern link and gateway into the city of Pretoria, and a green corridor for people to experience the city in a different way.

## 6.2 Concept

The concept is a narrative - a design experience - to communicate the idea of refuge, the identity of place through experience. See figure 20.

1. To strengthen the current heritage identity of refuge
2. Structure the design experience into a narrative which makes people aware of the historic layers and significance

A definition for narrative in regards with this design proposal would be:

A landscape which tells the story of the place, and unveils the heritage and history of the site in such a way that visitors will have an exciting but informative experience of the past events. As per discussion on page 86-87.

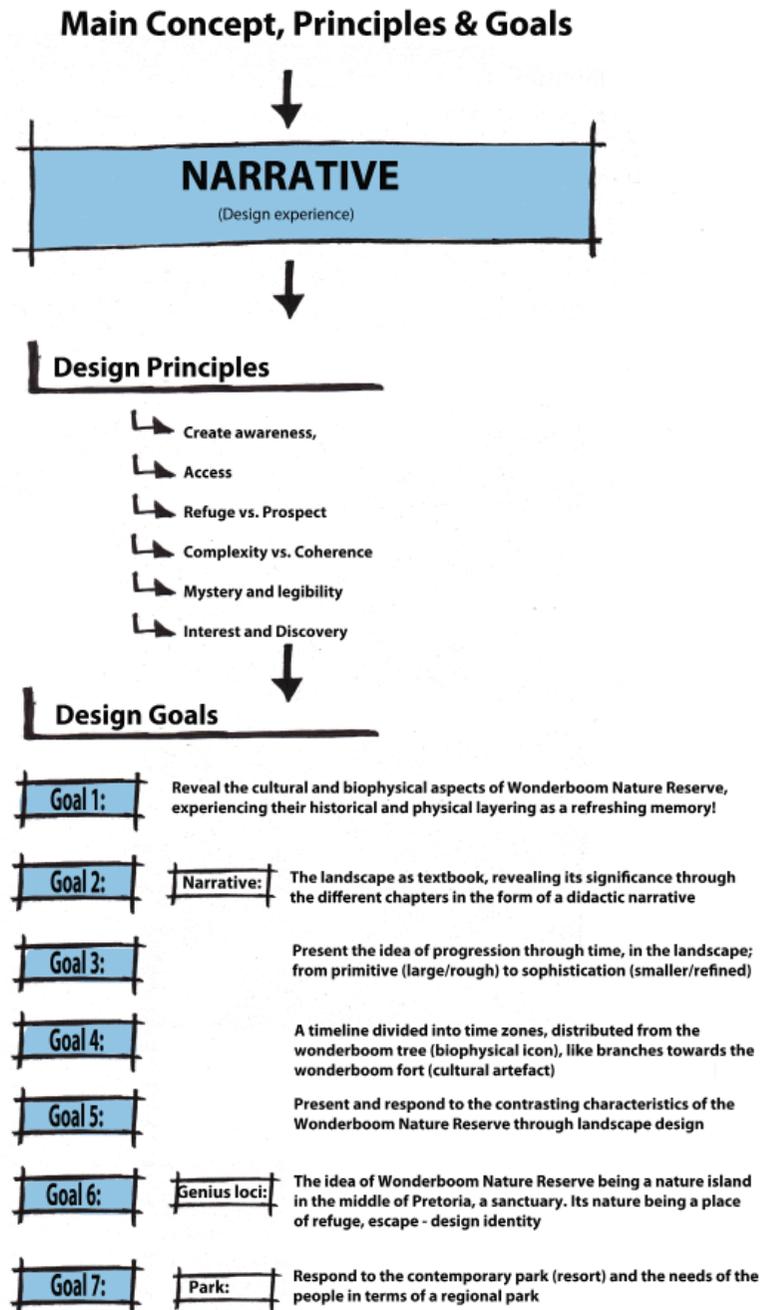


Fig. 20 : Indicating the main concept, design principles and goals

## 6.3 Design guidelines

### 6.3.1 Charters, policy and acts influencing the design approach

The following charters, policy and act were used. They concern the conservation of heritage, interpretation and management thereof.

1. The National Heritage Resources Act, 1999
2. The Gauteng Ridge Policy, 2001
3. Seven charters concerning the conservation of heritage, and their interpretation, as well as management.

The charters can be listed under the following headings:

#### Setting:

- ICOMOS - Xi'an declaration on the conservation of the setting of heritage structures, sites and areas. (21 Oct 2005)
- Burra charter (1999)

#### Interpretation:

- Burra charter (1999) – The Australia ICOMOS charter for the conservation of places of cultural significance.
- ICOMOS – Ename charter: for the interpretation of cultural heritage sites (23 Aug 2004)
- ICOMOS – International cultural tourism charter – managing tourism at places of heritage significance (1999)
- UNESCO convention (intangible cultural heritage) – Conservation for the safeguarding of the intangible cultural heritage (2003)

#### Conservation and management:

- ICOMOS – Principles for the conservation of heritage sites in China
- ICOMOS - Burra charter (1999) – The Australia ICOMOS charter for the conservation of places of cultural significance.
- ICOMOS - The Venice charter (1964): International charter for the conservation and restoration of monument sites,

See Appendix G: Charters, acts and policies summary



*Illus. 127: The landscape along the hiking trail in the Wonderboom Nature Reserve. Note the contrast: nature vs culture (development) (Author: 2011)*

### 6.3.2 The following Heritage principles were taken from the charters and implemented in the design:

1. Integrate historic areas harmoniously into contemporary life
2. In any intervention – the old must be clearly distinguished from the new
3. Any intervention must be sensitive to the character, the setting and the cultural and natural significance of the site, while remaining easily identifiable
4. New use - a socially useful purpose (compatible use)
5. Display - communication, education and understanding of the heritage site
6. No damage to heritage structures – reversible (temporary) interventions
7. Tangible and intangible exploration of Wonderboom fort, tree and reserve

### 6.3.3 Design principles

1. Access
2. Awareness
3. Interest and discovery (complexity and coherence)
4. Refuge vs. prospect

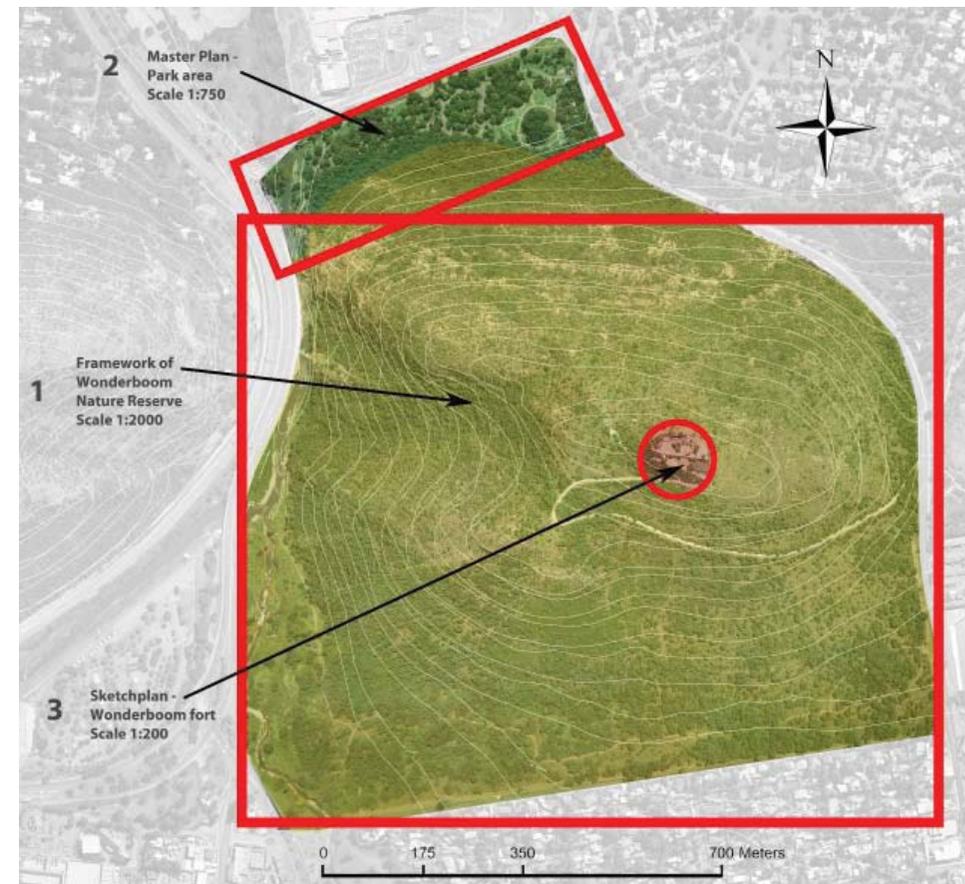
### 6.3.4 Design approach (design concept - refuge)

The design concept is that of a didactic narrative by means of semiotics.

The above mentioned Heritage principles, design principles and approaches will be used as guidelines in the design development. The use of these guidelines will be indicated clearly in the respective discussions of the framework, masterplan and sketchplan. The framework and masterplan will be discussed further in this chapter and the sketchplan in chapter 7.

### 6.4 The specific focus areas on different scales

It was decided to divide the Wonderboom Nature Reserve into three different scales and focus areas. The Wonderboom Nature Reserve was considered as a whole at framework level on a large scale to provide some guidelines for further development. The park area at the entrance to the reserve was looked at at masterplan scale - where the author provided solutions to the area and a program which follows the guidelines and principles set out at the beginning. The fort on the hilltop was looked at at sketchplan level and explored in more detail. In the end all three level plans serve as a new proposal for Wonderboom Nature Reserve informed by theory, site and charters. Refer to illus. 128



Illus. 128: The three focus areas on different scale levels (Author: 2011)

## 6.5 Wonderboom Nature Reserve framework plan development

### 6.5.1 Introduction

The entire nature reserve was considered at a framework scale. This framework serves as a guide for developing the nature reserve in such a way that all its historic layers can be accessible to and enjoyed by the public and be protected through their knowledge about the site's significance.

#### The Wonderboom Nature Reserve framework will aim to:

1. Reveal the cultural and biophysical aspects of Wonderboom Nature Reserve; experiencing the historical and physical layering as a refreshing memory!
2. Use landscape as a textbook, revealing its significance through the different chapters in the form of a didactic narrative.
3. Present the idea of progression through time, in the landscape; from primitive (large/rough) to sophistication (smaller/refined)
4. A timeline divided into time zones, distributed from the wonderboom tree (biophysical icon), like branches towards the wonderboom fort (cultural artefact).
5. Present and respond to the contrasting characteristics of the Wonderboom Nature Reserve through landscape design.
6. Promoting the idea of Wonderboom Nature Reserve being a nature island in the middle of Pretoria, a sanctuary. Its nature being a place of refuge and escape.
7. Conserve and rehabilitate the reserve.
8. Facilitate access to the wonderboom fort on top.

#### The framework will be explained under the following subheadings:

- A summary of guidelines from the analysis chapter (chapter 5)
- Program (activities) for the reserve (zoning)
- Conservation guidelines
- Proposal to reveal the cultural and biophysical aspects of Wonderboom Nature Reserve and approach to the heritage layers

### 6.5.2 Analysis summary

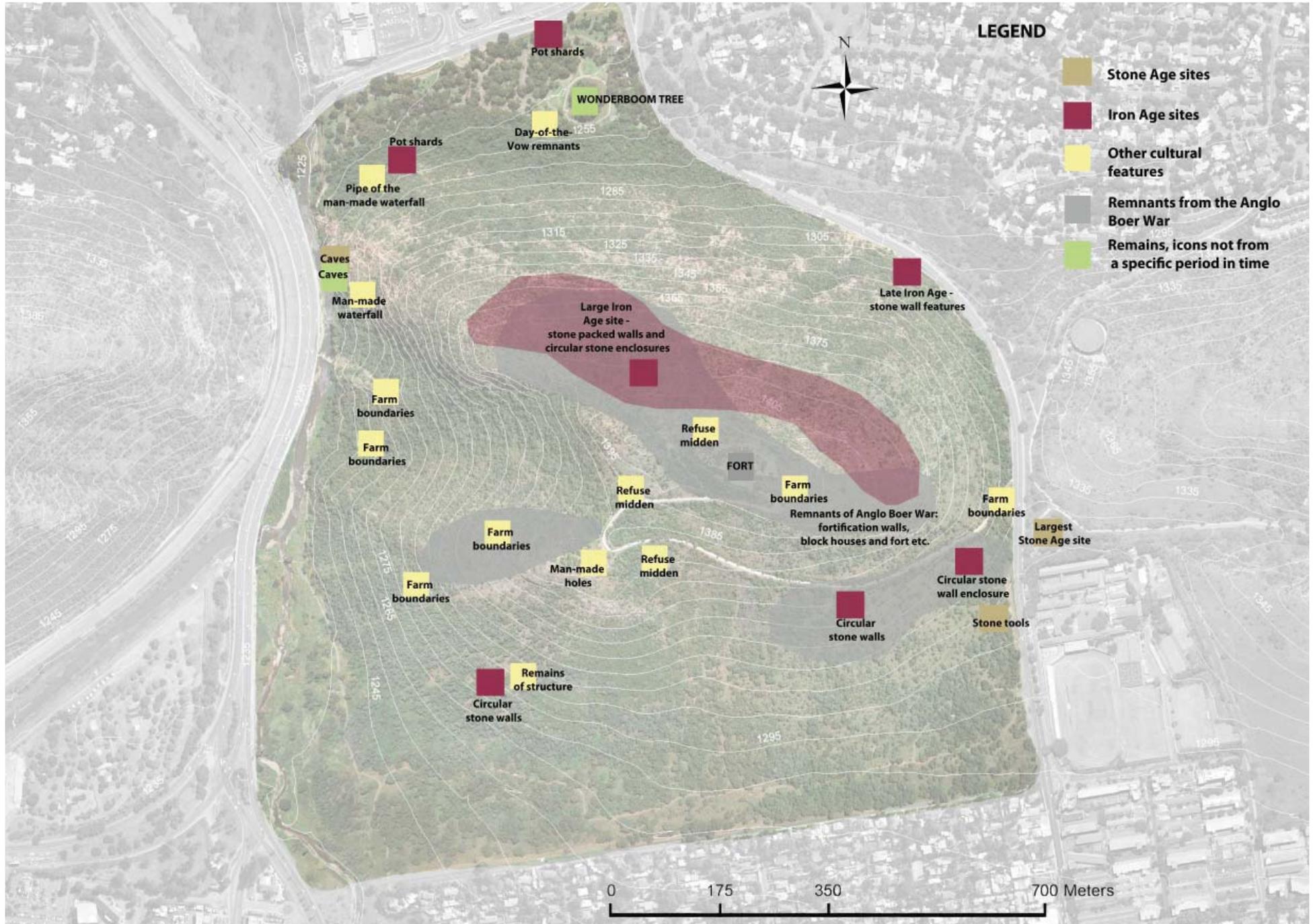
Each historic layer was explored and analysed in the previous chapters. See chapter 5. All the heritage sites were mapped out. (Refer to illus 125, 126, 129 and 130.) (Refer to appendix E & F for more information)

The following historic layers were mapped out by the author:

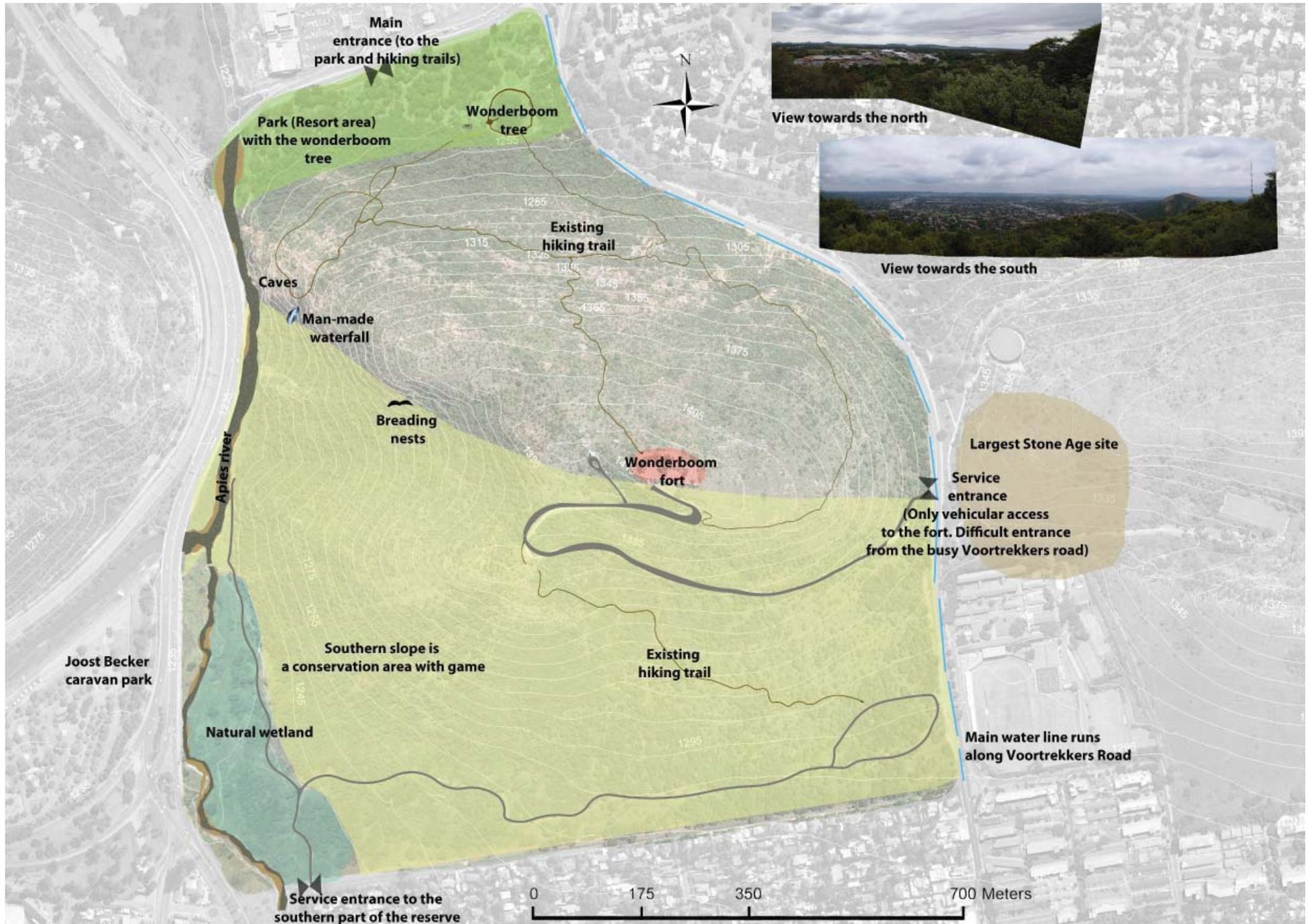
1. Stone age (2mil yrs ago – 1500 yrs ago) and
2. Iron age sites (1500 yrs ago – 1800's)
3. Remnants of the Anglo Boer War (fort ruin, etc) (1900's)
4. Two caves
5. The Wonderboom Tree (1000+ yrs ago) - this includes Ndebele celebrations
6. Historic features (1800's)
7. A man-made waterfall in celebration of the union of Pretoria
8. 'Day of the Vow' celebrations

Other aspects on the site were noticed, such as:

1. The location of a naturally occurring wetland which has dried up. (South western corner of the reserve near the river)
2. The fort is difficult to access by vehicles
3. People with disabilities' access to the fort is difficult to non existing
4. The southern slope is a conservation area. The White cross eagle breeding nest is at the peak. The Verreauxs' eagles (black eagle) breed regularly on the reserve. Endangered porcupine species also lives in the caves as well as two bat species and the violin spider.
5. The only service car access to the fort is from the busy Voortrekker road
6. There is some existing game on the reserve
7. The Apies River passes through the poort on the western side
8. Vehicle access to the rest of the southern side of the reserve is via Joubert street.
9. Locations for amazing viewpoints were identified by the author through personal site investigation. Some of these sites were chosen because of heritage site locations.
10. The largest Stone Age site is located to the eastern side just across Voortrekkerweg
11. Joost Becker caravan park lies to the south-west of Wonderboom Nature Reserve, with overnight accommodation.
12. A main waterline runs along Voortrekker road



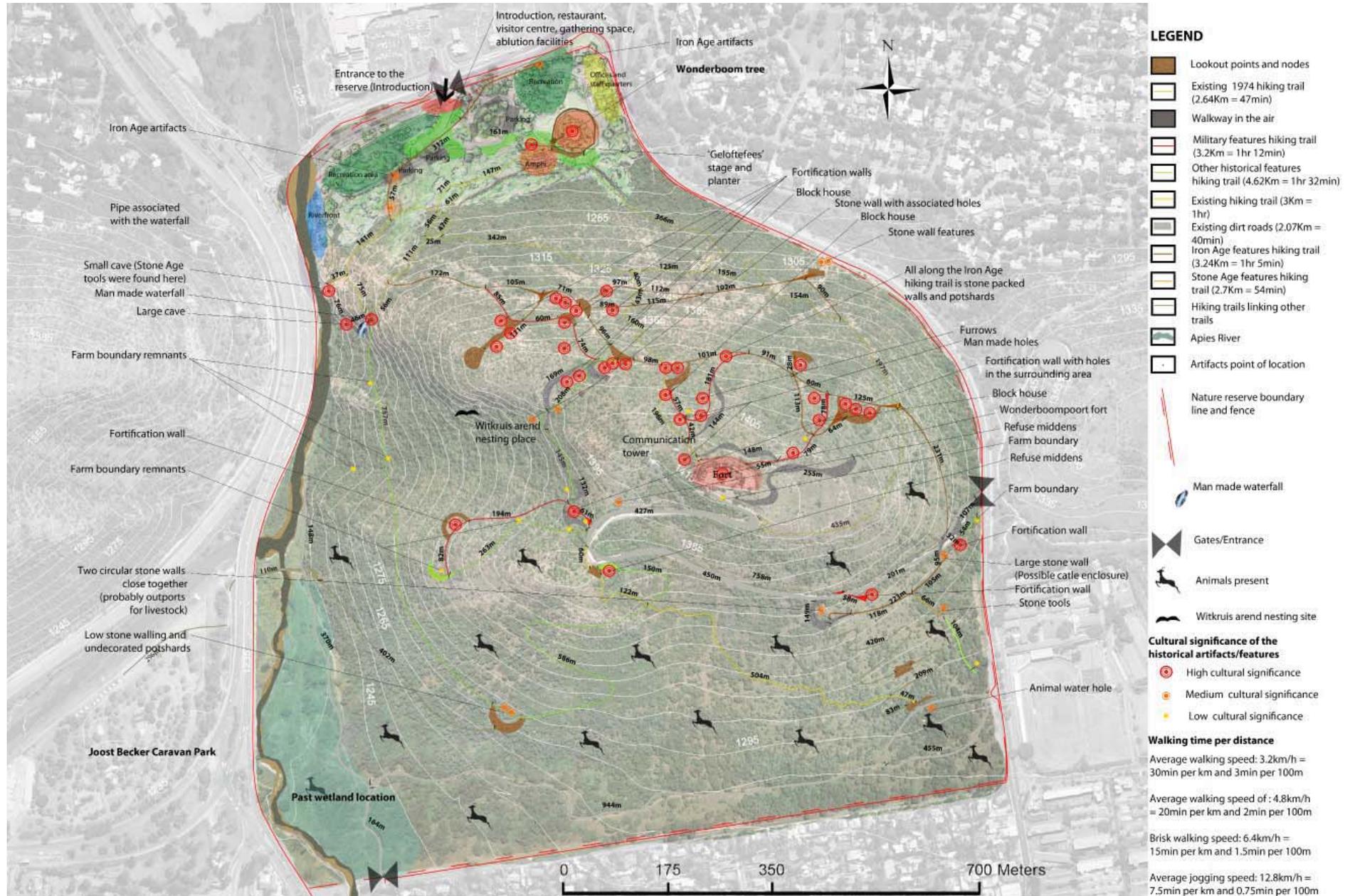
Illus. 129: Analysis plan indicating the different historical layers (Author: 2011)



Illus.130: General site analysis framework plan of the different aspects noticed on site. (Author: 2011)

## Conceptual framework mapping

One can clearly see from the plan below how the location of the different time era heritage sites influenced the framework for the reserve and informed the approach to the site.



Illus. 131: Analysis and conceptual framework mapping of all the heritage sites and their cultural significance value with possible hiking trail connections and view points (Author: 2011)



*Illus. 132: Hiking trail at the Wonderboom Nature Reserve leading to the top where the Wonderboom fort is sunken into the landscape (Author: 2011)*

### 6.5.4 Program (Zoning)

1. Hiking trails (Cultural and biophysical - linking the different time zones (heritage sites))
2. View points along the hiking trail
3. Conservation/rehabilitation
4. Service road for golf carts
5. Cable car
6. Bird watching (existing)
7. Game watching (existing)

### 6.5.5 Conservation guidelines

#### Southern slope

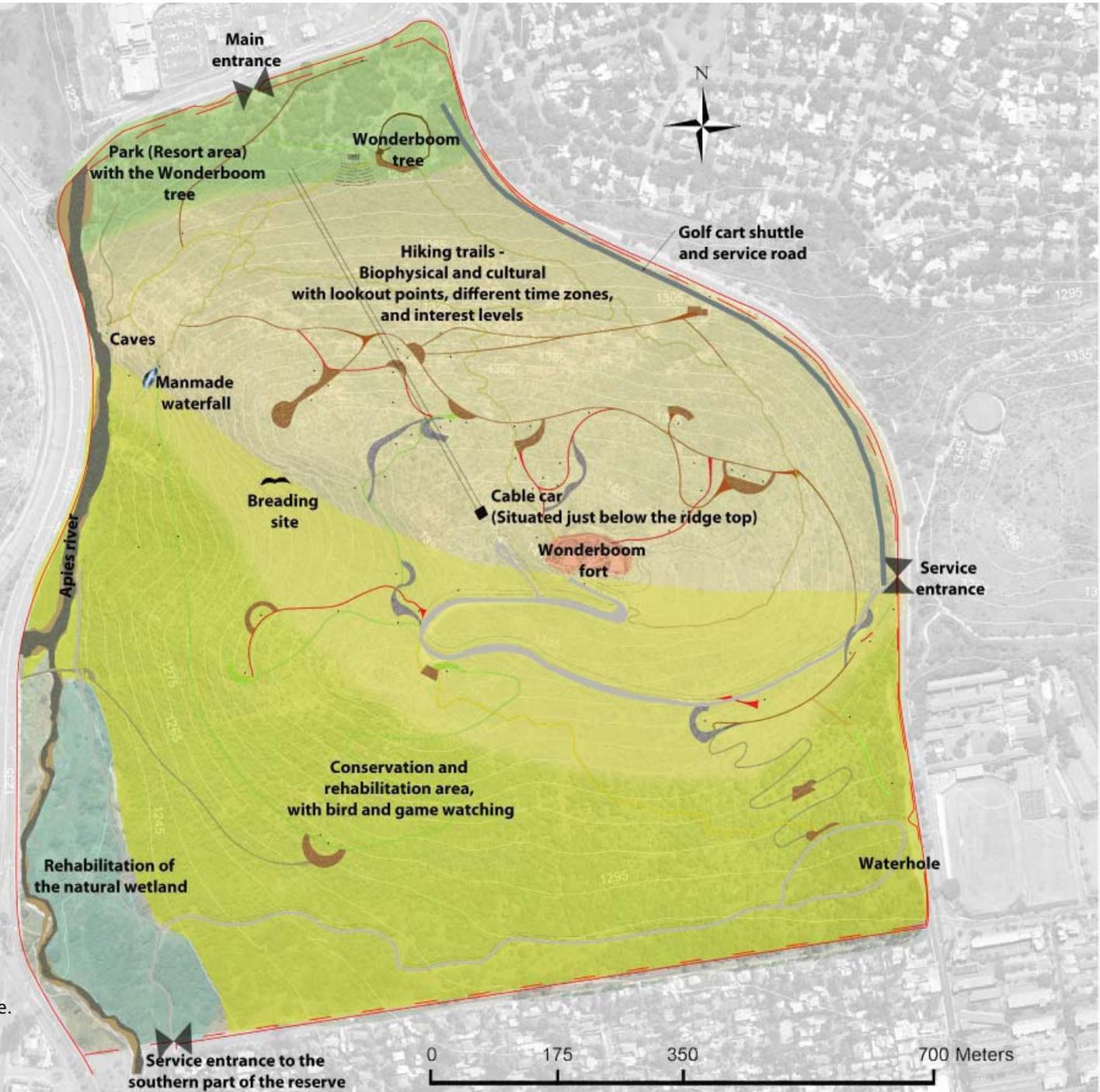
The southern side of the reserve would be rehabilitated over time, replacing all the invading species. To create more space for locally indigenous plants to flourish. This side is more sensitive to development because of all the different animal species occurring mostly on the southern slope. No major intervention will be conducted on this slope except for the hiking trails and some lookout points.

#### Wetland

Rehabilitate to reintroduce a wetland (see illus 133). This will add value to the reserve.

This location was a naturally formed wetland in the past. It is a natural attenuation area. The Mootspruit east and west joins here, and the Apies river breaks away at that point. There is a head cut of 3-4m deep in sediment. In the event of a flood the water will accumulate. The whole area is sedimented.

Illus. 133: Zoning plan (Author: 2011)





*Illus. 134: Nature's detail along the hiking trail strengthens and informs the identity and character of the place (Author: 2011)*

## Narrative

### 6.5.6 Proposal to reveal the cultural and biophysical aspects of Wonderboom Nature Reserve and approach to the heritage layers

One of the aims for the reserve is to create access and awareness of the site's historic layers mentioned earlier. To accomplish this the author looked at hiking trails that connect the different heritage sites. There are two different types of trails focusing on two different aspects of the site. The one being the biophysical aspects - this includes the natural phenomena of the site as well as people interested to be educated in the different plant species on site. This trail will also stimulate the interest of the nature lovers and active people who love to walk. Then there is the cultural aspects - this includes the heritage sites of the different time eras with regards to culture. (See heading 6.5.6.3 The different time zones and landscape progression)

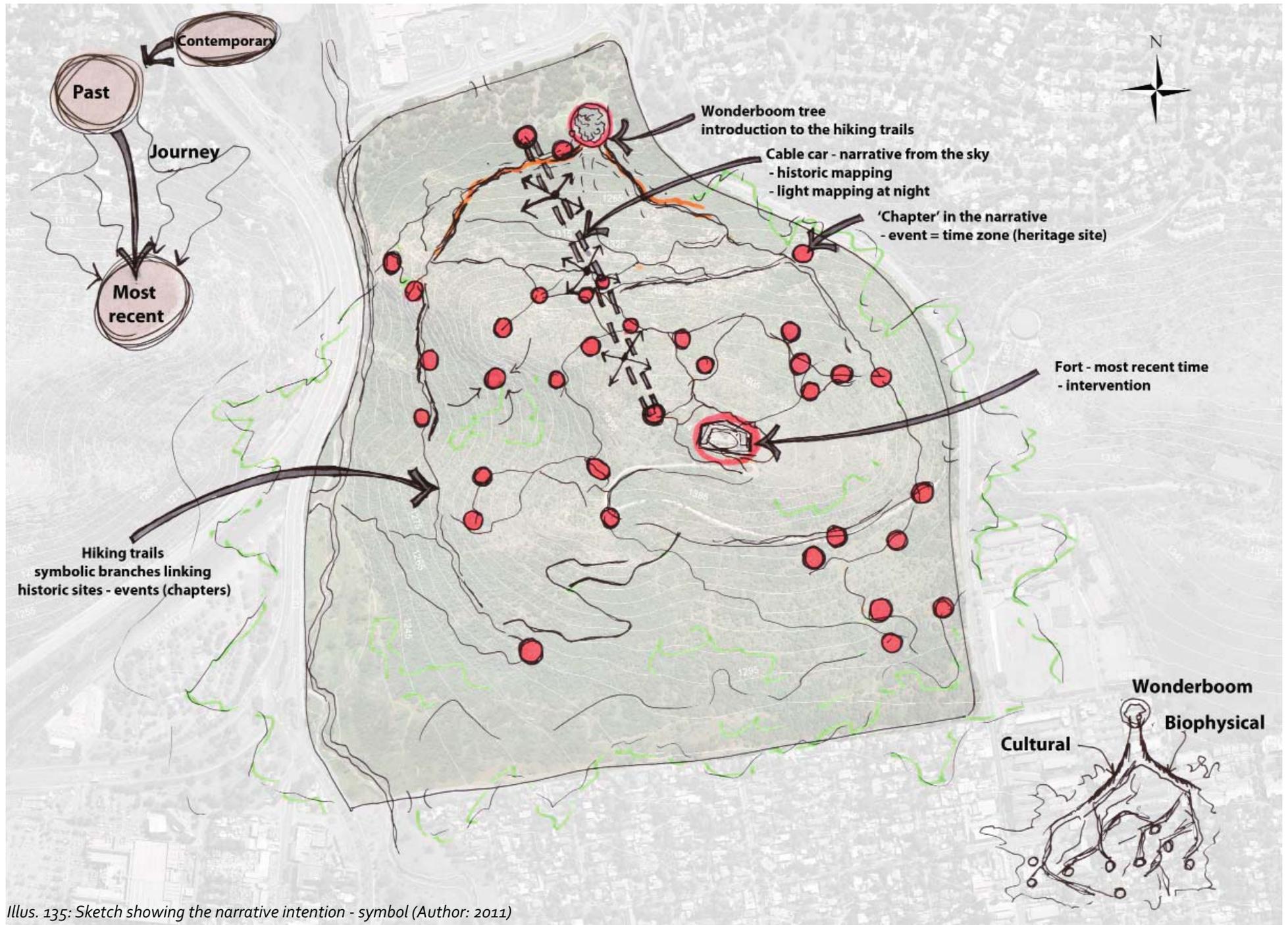
The author's approach to these hiking trails is that of a narrative, and communicates the different heritage aspects through a semiotic and didactic approach. The trail can be read as a textbook with the different time zones on the hiking trail (heritage sites) being the chapters which the visitor can choose to read, discover and unveil.

On these trails the visitor will discover and experience the different time zones, namely; Iron Age, Stone Age, Military history, and other historic aspects of the site. The progression in the landscape would be clearly visible as each time zone will be dealt with separately with the time era in mind. For example the Stone Age sites will come over as a more rough, unsophisticated and large elements and as one moves to the Iron Age sites, one will notice the change in material, texture, sophistication etc. This revelation of the historic layers teaches the visitor about the history of the site.

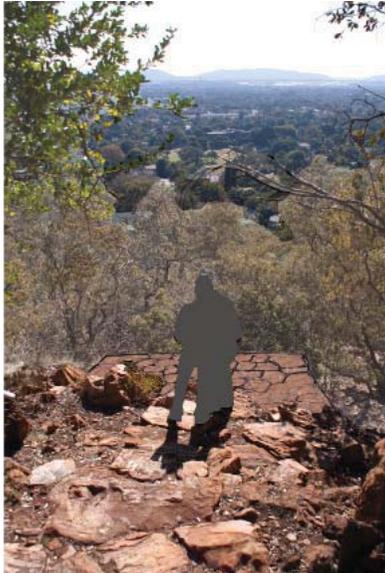
## Symbol (tree)

The proposed hiking trails start at the Wonderboom tree. Walking from the tree which is now contemporary into the past, and back to the present, most recent time, with the tree still being part of it, one can say that the branching of the hiking trails symbolises the branches of the tree which links history with the present. See illus 135.

Thus, the hiking trails take the shape of the Wonderboom tree (an icon of history, time and nature) which branches out from the location of the Wonderboom tree (revealing the historical layers with the different time zones) towards the more recent time era (the fort on top with the new landscape intervention - most recent).



Illus. 135: Sketch showing the narrative intention - symbol (Author: 2011)



Illus. 136: Concept image of a look-out point on the hiking trail (Author: 2011)

### 6.5.6.1 Hiking trails

#### Biophysical hiking trail

The biophysical hiking trail informs the visitor of the site's natural phenomena.

It foccusses the attention on the specific vegetation which grows in this Gold Reef Bushveld biome, and on the geology of the site.

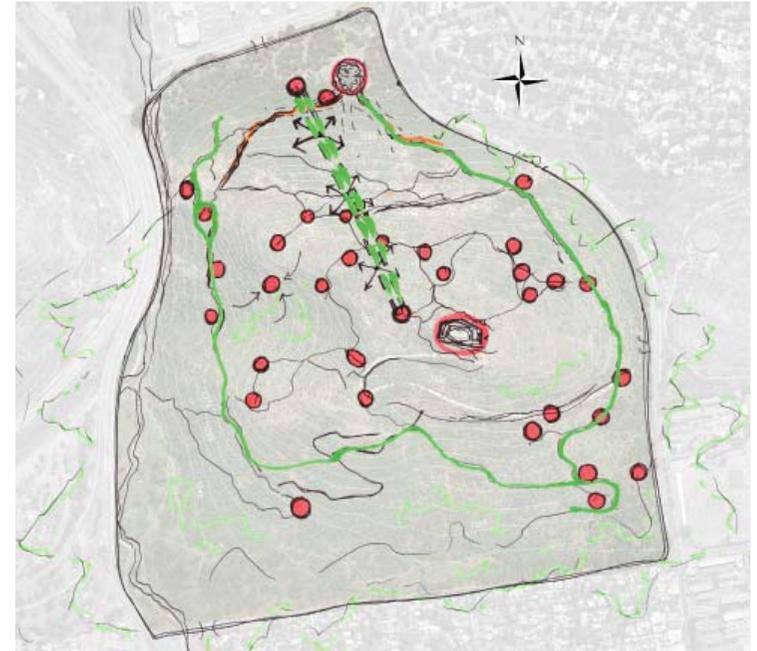
Trees with interesting facts and cultural significance can be seen along this trail. The *Sclerocarye birrea subsp. caffra*, *zisiphus mucronata*, *Ficus salicifolia*, *Senegalia nilotica*, *Dichrostachys cinerea*, *Pappea capensis* and *Searsia lancea* to name a few. Refer to page 80-83 heading 5.3.1.6.1 for information on the different trees and their cultural significance.

View points along the way direct the visitor's view to the intended view or information which the designer wanted to convey. Other view points will clearly show the contrasting elements such as the nature vs. city aspect.

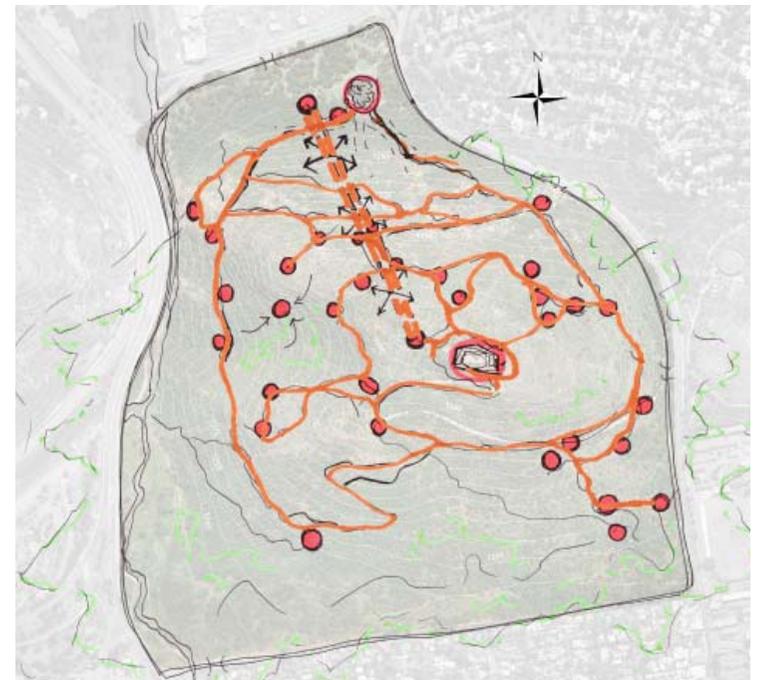
#### Cultural hiking trail

The cultural hiking trail creates awareness of the different time eras on site. The visitor can decide whether he wants to discover all the time eras on the hiking trail or whether he just wants to experience a specific time era, namely Military history.

This possibility of choosing what you want to experience provides for the accommodation of different interest groups. The trail is educational and informs the visitor of the different historic layers.



Illus.137: Biophysical hiking trail plan (Author: 2011)



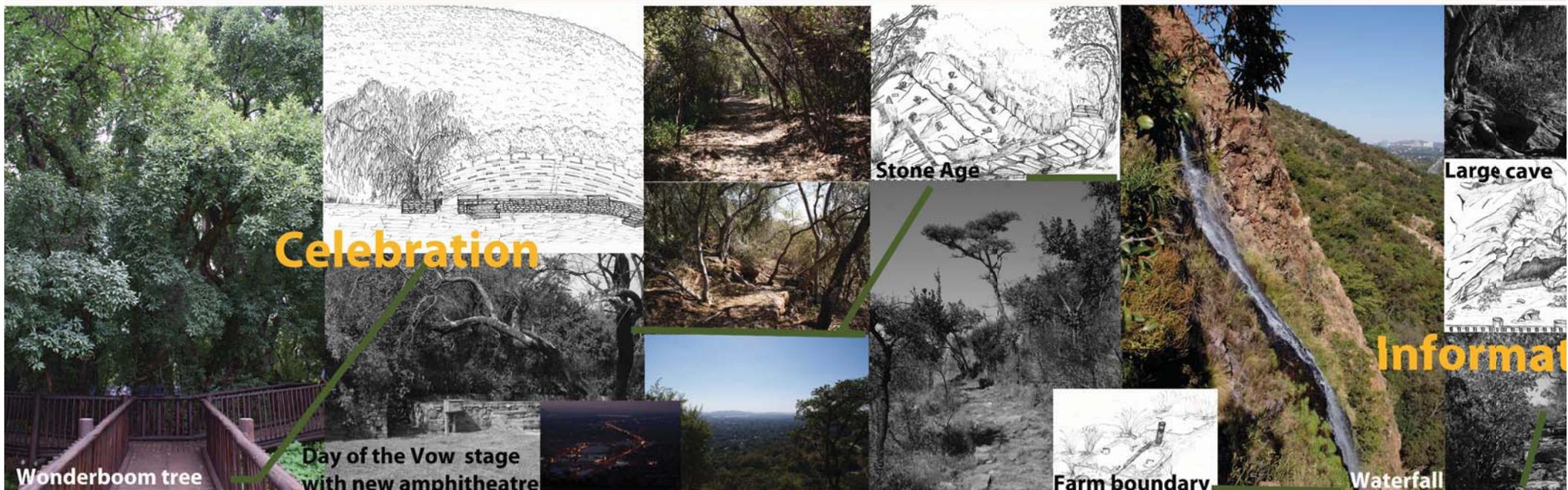
Illus. 138: Cultural hiking trail plan (Author: 2011)



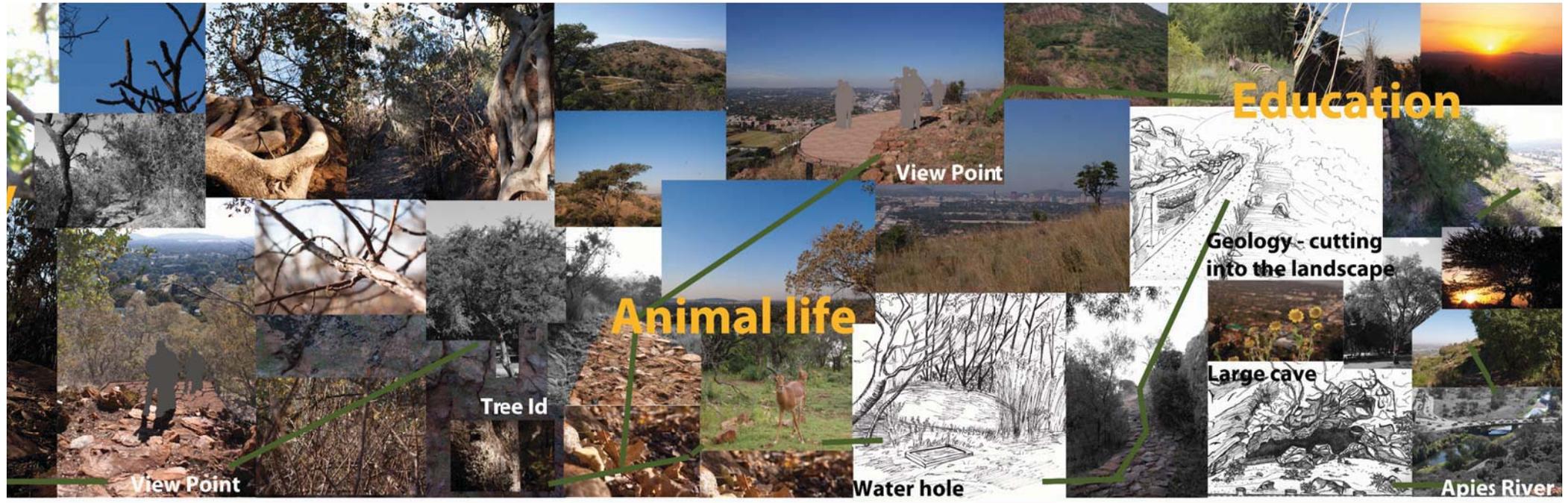
*Ilus. 139: Concept image of a viewpoint along the new proposed hiking trail (Author: 2011)*



*Illus. 140: Concept image of a viewpoint along the new proposed hiking trail (Author: 2011)*



Illus. 141: Visual presentation of the two proposed hiking trails, namely; biophysical and cultural hiking trail (Author: 2011)

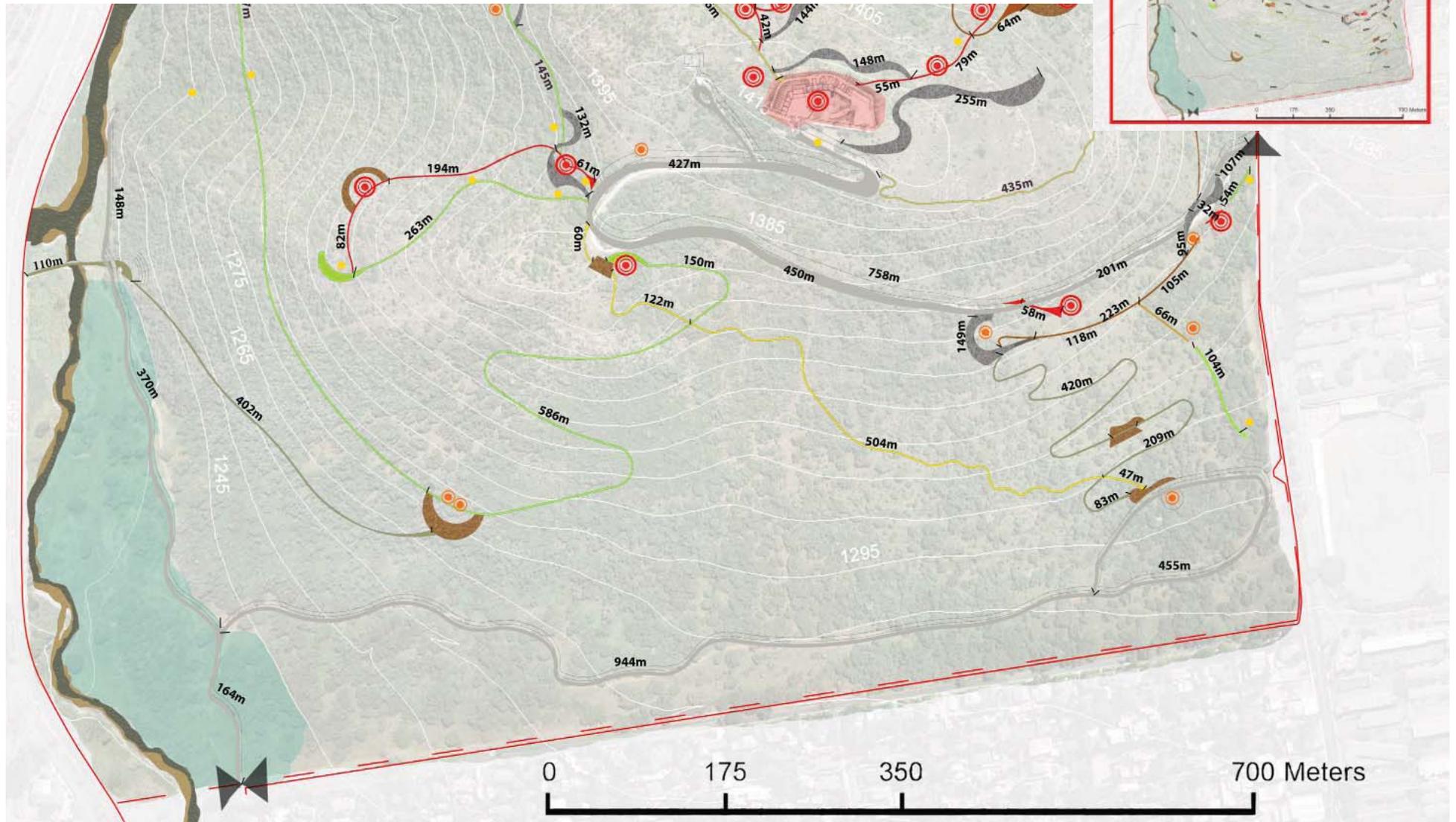




## New proposed hiking trail

See both illus. 142 & 143. The entire map was divided into two parts for it to fit on the page and to enhance legibility.

The map indicates the different heritage sites, their cultural significance levels, the new proposed hiking trails with their distances and average walking times. Viewpoints and rest areas have also been indicated on the map.



Illus. 143: Proposed hiking trails, namely; biophysical and cultural hiking trail. Bottom part. (Author: 2011)



*Illus. 144: Aesthetic detail provided by nature forms the character of the site and inspired the designer. These details will be discovered by the visitor on the hiking trails (Author: 2011)*

### 6.5.6.2 Signage and text

The author aims to tread lightly and, in a discreet manner, inform the visitor through the landscape. The visitor would be made aware of the hiking trail he is on by means of small steel plates on the ground or against rocks along the pathway, with the time era and date engraved on it. Refer to illus. 145.

To ensure that the visitor is fully informed of what is on site and how to experience it, a brochure would be handed to the visitor at the entrance.



*Illus. 145: Example of the signage steel plate on the hiking trails. This is an example for the military artefacts sites. It differs for each time zone. (Author: 2011)*

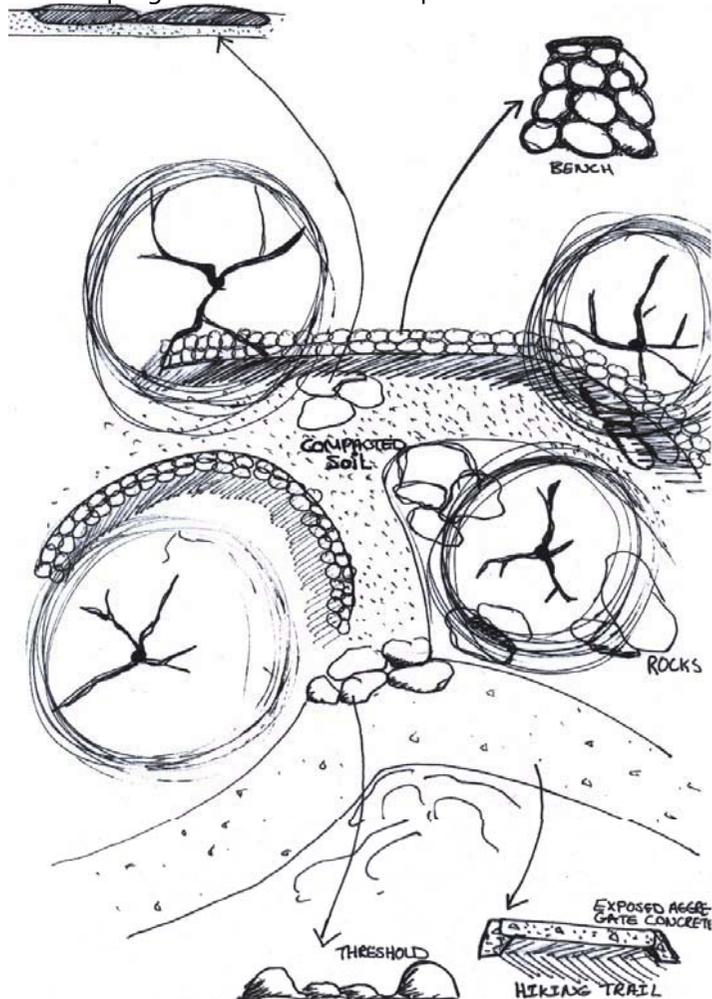


*Illus. 14.6: The contrasting aspects of city and nature; culture and nature can be clearly distinguished in this photograph (Author: 2011)*

### 6.5.6.3 The different time zones and landscape progression

#### Stone Age sites

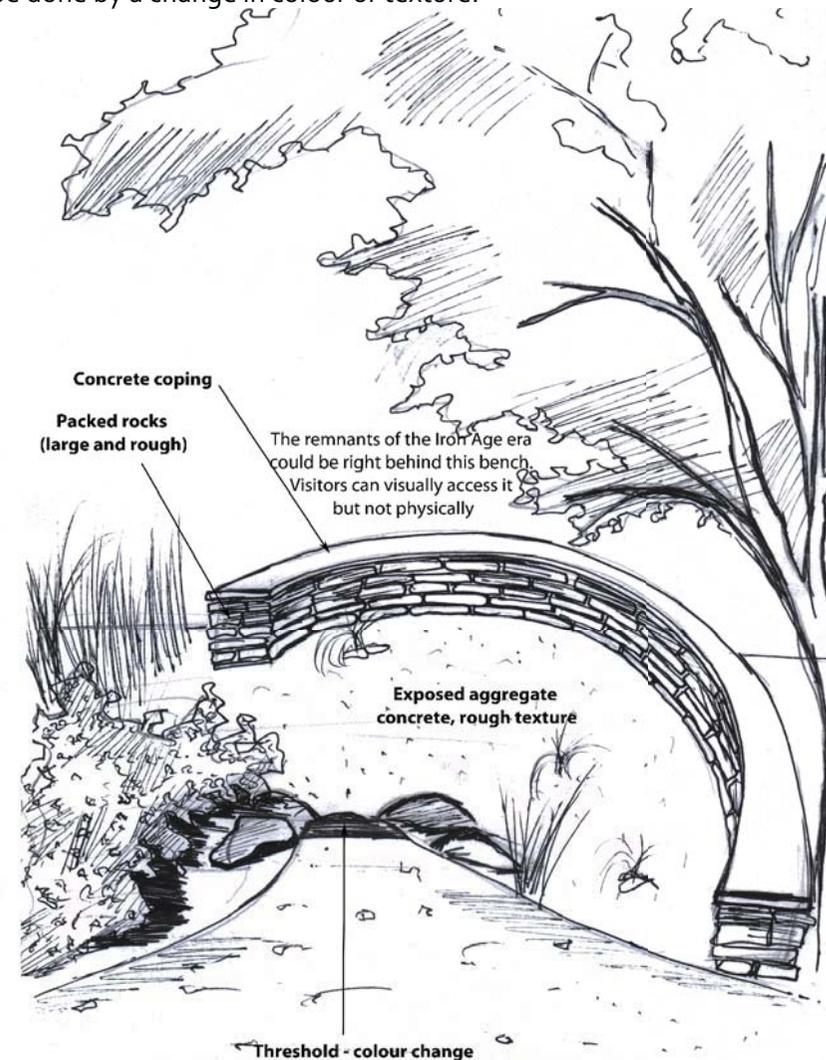
This is an example of the approach to one of the numerous stone age sites on site. Large rocks with rough textures can be used in the landscape elements such as seating walls and signage etc. The rocks are roughly packed with concrete poured on top to create seating surfaces. A change in surface material such as compacted soil will announce that the visitor is entering a specific time zone. This can, for example, be a stone threshold that the visitor crosses. This celebrates the progression in the landscape



Illus. 147: Example of the design approach to the Stone Age sites (Author: 2011)

#### Iron Age sites

This is an example of the approach to one of the numerous Iron Age sites on site. The circular seating wall symbolises the indigenous people's circular enclosures. The rocks are neatly packed and a concrete coping is placed on top. The rocks are large and rough. The threshold can announce the change in time eras - this can be done by a change in colour or texture.



Illus. 148: Example of the design approach to the Iron Age sites (Author: 2011)



*Illus. 149: Presentation of one of the fortification walls (Author: 2011)*

## Military historic sites and features

This is only one example of approaching the military features. Refer to illus. 149 which indicates a fortification wall.

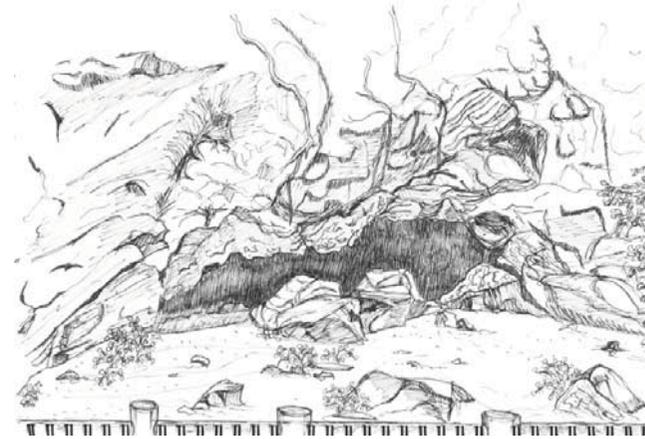
This is an example of one of the new proposed spaces at the Wonderboom fort. The approach to the fort was more contemporary to indicate the progression in the landscape over time. In this area elegant steel profiles are used with eucalyptus lathes to form a pergola structure. The benches were made from steel angles and steel mesh with rocks crushed into smaller pieces and neatly packed inside the steel mesh basket. A smooth concrete coping is cast on top. The surfaces are all exposed aggregate concrete which varies in texture and colour.



*Illus. 150: Example of the design approach to the military historic features (Author: 2011)*

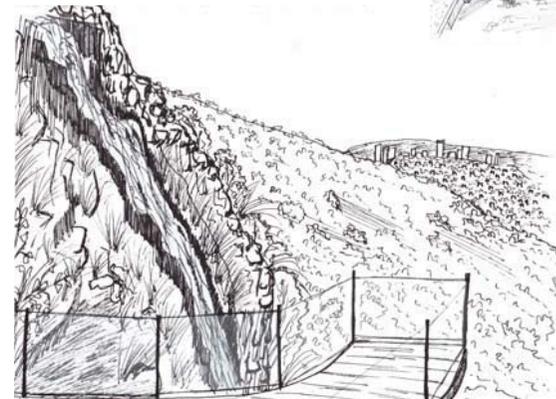
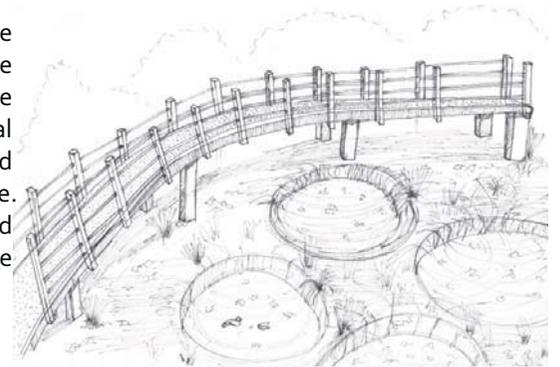
## Historic features

The following are examples of the author's approach to different historical features. These are only a few examples.



*Illus. 151: Example of the design approach to the large cave. Visitors can come close to the cave but they can't enter it. Only visual access is provided. People are guided by a timber boardwalk. Notice the rough look of the boardwalk. (Author: 2011)*

Historic features such as man-made holes as seen on the right, created the opportunity to take the visitor into the air on an elevated boardwalk. Visual access from all angles is provided, and a better understanding of the feature. Notice the rough, large bulky look and feel of the raised walkway (landscape progression).



A boardwalk is curved and is designed in such a way that the visitor can fully experience the waterfall. Notice how much lighter and more elegant the boardwalk is in comparison to the one at the four man-made holes (landscape progression).

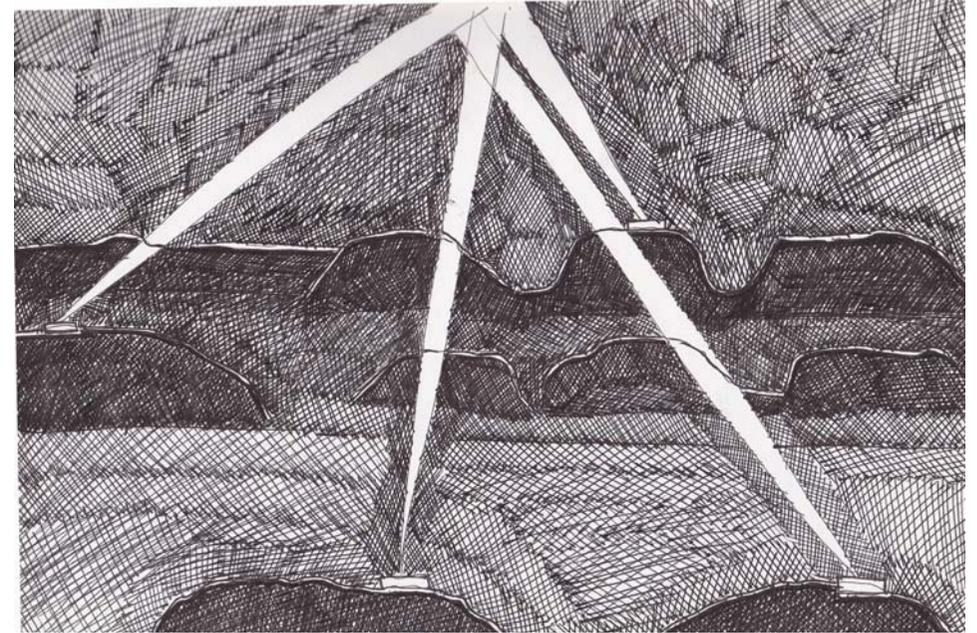
*Illus. 152: Example of the design approach to the man-made waterfall (Author: 2011)*



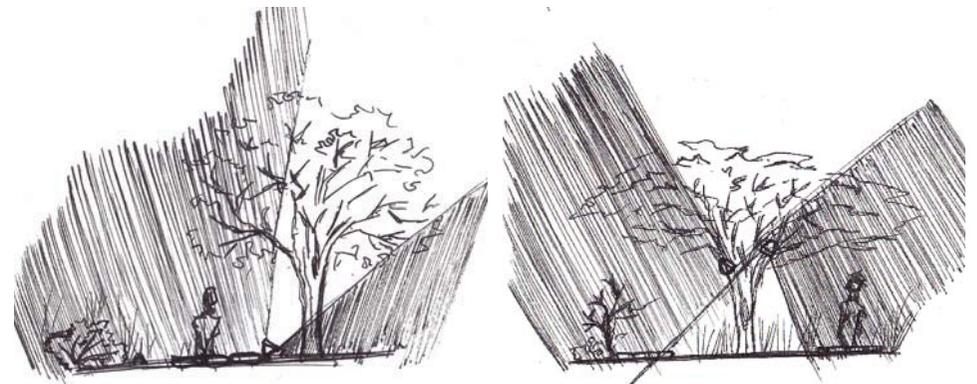
*Illus. 153: View towards the largest Stone Age site from Wonderboom Nature Reserve (Author: 2011)*

## 6.5.8 Design considerations

1. The historic heritage sites (history layers) - People should be made aware of the sites and different time eras as well as the significance thereof.
2. Access to the heritage sites - The visitor can come close to the sites and be informed of what the significance is.
3. Design thresholds - The different time eras are presented through a landscape progression to enhance the visitor's experience and create a clear distinction between time zones as well as old and new.
4. Conservation of the nature reserve.
5. Rehabilitation of the natural attenuation area into a wetland again.
6. Access for people with disabilities - Consider a cable car and golf cart road and possible ferri-culders between some view points.
7. A different access point than Voortrekker Road - Voortrekker should only be used as a service road.
8. To ensure awareness and experience during the proposed moon walks - light mapping (experience from the cable car) and floodlights can be used. Refer to illus. 254-256
9. Enhance the awareness of its environmental significance and the protection thereof.
10. The heritage features should be unobscured so that people can notice and access them.
11. Access to the different heritage sites is important to create awareness and interest.
12. Education and communication of the history and different aspects on site.
13. The site is random and disconnected, one can apply the following principles; coherence - with the directed pathways and view points - and complexity - with the detail, different texture and colour pathways, signage etc. Which will evoke interest and discovery.



*Illus. 154: The floodlights which shine from each fort once a year on reconciliation day to create awareness of the four forts of Pretoria (Author: 2011)*



*Illus. 155: Lighting up into the trees and moonlighting to create awareness and give some mystery (Author: 2011)*



*Illus. 156: View of the Wonderboom tree during the winter months. (Author: 2011)*

## 6.6 Wonderboom Nature Reserve master plan development

### 6.6.1 Introduction

#### The master plan will aim to:

1. Respond to the contemporary park (resort) and
2. Respond to the needs of the people in terms of a regional park
3. Present the idea of progression through time, in the landscape; from primitive (large/rough) to sophistication (smaller/refined)
4. A timeline within the park area, which starts to tell the story of the site
5. The idea of Wonderboom Nature Reserve being a nature island in the middle of Pretoria, a sanctuary. Its nature being a place of refuge, escape
6. Create access to the biophysical icon, namely the Wonderboom tree
7. Give access to the Wonderboom Nature Reserve and fort on top
8. Create awareness of the historic layers (starting at the park)

#### What is a regional park?

A regional park can be defined as a larger park that provides active and passive recreational opportunities for all city and regional residents. Accommodate large group activities.

It serves an entire region. A regional park is 202m<sup>2</sup> or more in size.

#### The master plan will be explained under the following subheadings:

- A summary of the guidelines from the context analysis
- Site exploration (past and present)
- Program for the park
- Zoning of the different spaces (nodes)
- The different spaces/zones
- Pedestrian movement
- Vehicle movement
- Master plan development plans
- Final master plan

Table 5: Materials of the different time eras. (Author, 2011)

### 6.6.2 Analysis summary

1. The park also known as the resort is where the Wonderboom tree is located. This tree has both cultural and biophysical significance. (Refer to chapter 2 & appendix E)
2. There is an existing timber boardwalk in and around the tree with information plates.
3. The park is used as a regional park (refer to chapter 1).
4. This area is already disturbed and developed.
5. The current facilities should be upgraded. (Refer to chapter 5)
6. The remnants of the old Day-of-the-Vow stage is located near the wonderboom tree.
7. The park is accessed from Lavender road.
8. The service gate is also accessed from Lavender road. There are two gates.

Refer to illus. 158 (analysis plan of the park area)

#### Site exploration (past and present)

##### The material used in the past:

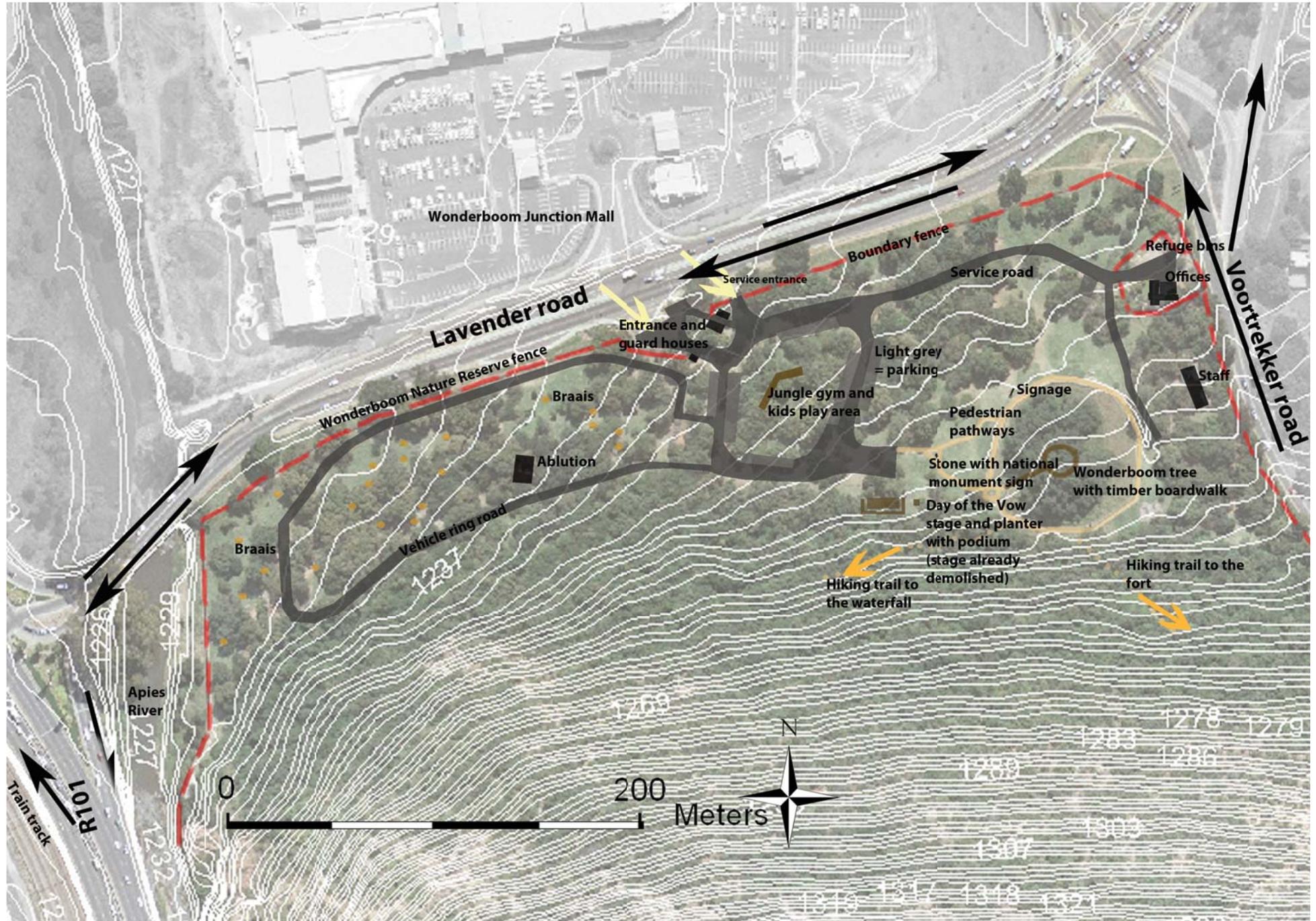
If one looks at the materials used during the different time eras, one can clearly see the change in sophistication or type of material being used. These same materials can be used in the landscape to place emphasis on the past materials and stimulate memory of past events, cultures etc. The knowledge of this change of sophistication or use in material can also be incorporated in the design. Refer to page 129 (park narrative) and see table 5 for the materials listed according to the different time eras.

Stone Age Materials	Iron Age Materials	Materials used during the Pretoria fortification (1800's)	Existing materials on site
Stone tools from quartzite	Iron ore	Sand stone	Quartzite rocks
Use the artefacts found on site (display)	Crops growing/agriculture	Metal (doors, window hatches, structures etc.)	Indigenous trees
Tools: hand axes, cleavers, scrapers, stone flakes, stone	Huts small villages, Charcoal furnaces	Raw bricks	Invader plant species
Expression of art, rock art, ostrich eggshell beads, flasks, pendants.	Huts were cylindrical, mud plastered, coarsely thatched conical roof	Aggregate concrete, cement	Planting – with cultural significance – use in the design to educate and stimulate memory.
Bone points and stone inserts used in composite poisoned arrows	Thorn tree cattle enclosures branches	Lime (white, pink and beige)	
	Stone walls	Red polish	
	Pottery thinner, pattern of notches around the lip and broad bands of different colouring around the circumference		
	Ornaments - religious or superstitious significance		
	Basket weave, pottery, wooden spoons, iron knives		



*Illus. 157: Part of the park next to the Wonderboom tree and the material pallet of the existing materials on site. (Author: 2011)*





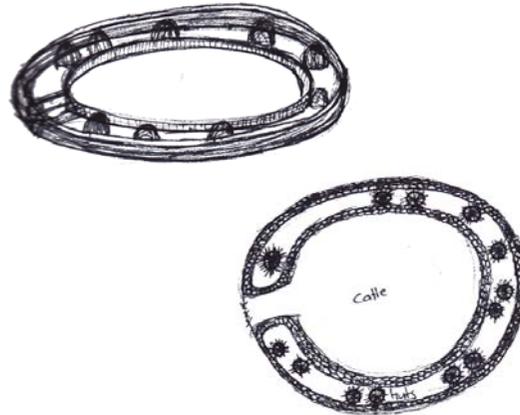
Illus. 158: Analysis plan (Author: 2011)



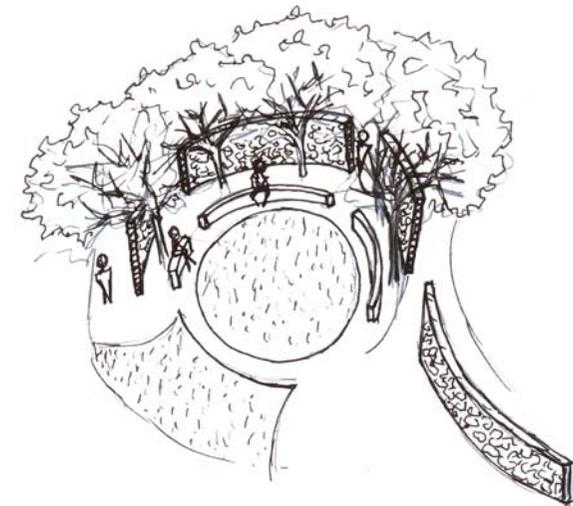
Semiotics

6.6.6 Examples of the different spaces in the park and the principles and approaches used

6.6.6.1 Entrance, parking and arrival area



*Illus. 160: Shape of circular enclosure which informed the design at the entrance and market space. It consists of two circles forming a ring. The cattle was in the middle with the huts on the outer circle. (Author: 2011)*

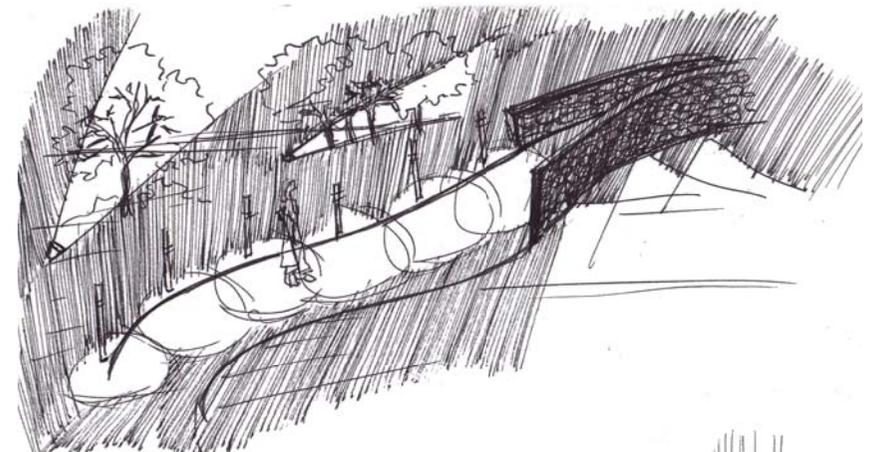


*Illus. 161: Arrival area with the two circular shapes. The visitor enter through the one and the second one is formed by a low circular bench wall. From here the visitor distribute further into the park. (Author: 2011)*

Access & Awareness



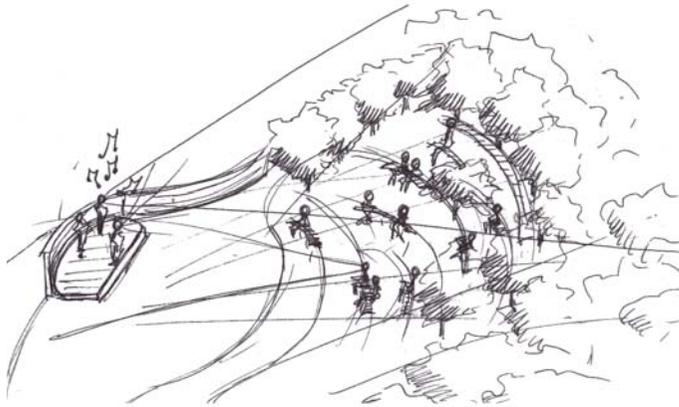
*Illus. 162: Lighting along the pathways (wall lighting) (Author: 2011)*



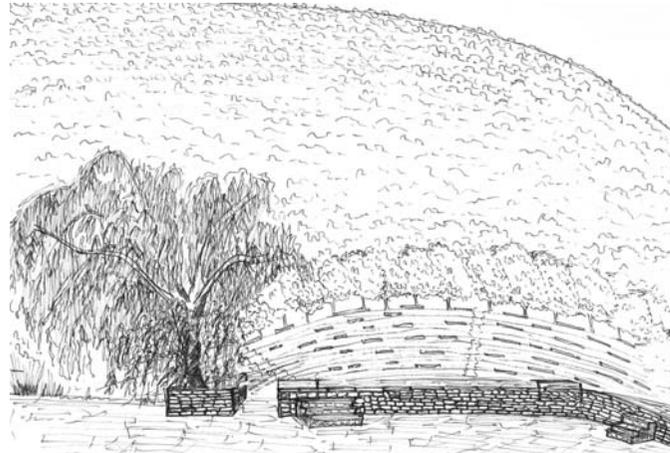
*Illus. 163: Lighting along the pathways (wall lighting) and lighting into the trees (Author: 2011)*

### 6.6.6.5 Amphi theatre

## Refuge & Semiotic

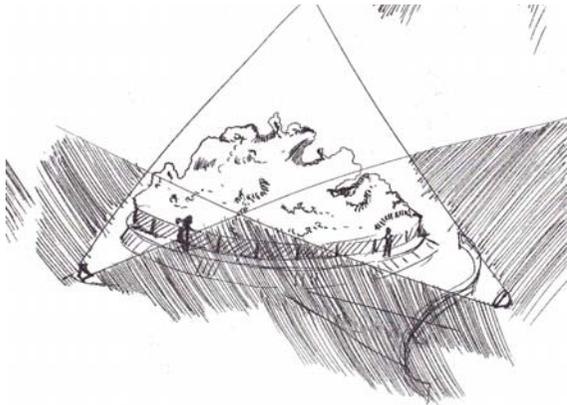


*Illus. 164: New proposed amphi theatre at the park at the location of the old Day-of-the-Vow stage. This drawing indicates the idea of refuge vs. prospect at the amphi theatre (Author: 2011)*

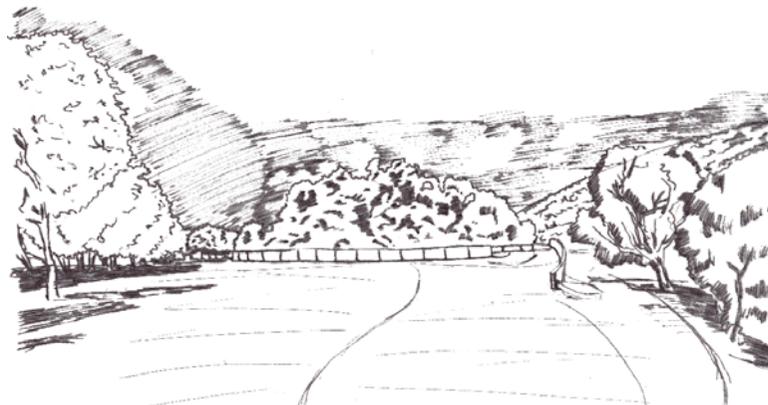


*Illus. 165: New proposed amphi theatre at the park at the location of the old Day-of-the-Vow stage. (Author: 2011)*

### 6.6.6.6 Wonderboom tree



*Illus. 166: Thumbnail indicating the spot lighting used at certain times to light up the Wonderboom tree to place emphasis on the natural icon and create awareness thereof (Author: 2011)*

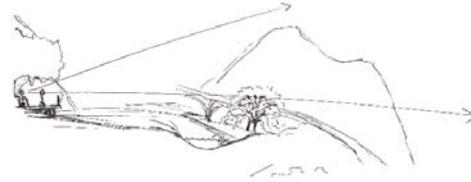


*Illus.167: Thumbnail indicating the view towards the Wonderboom tree is open and without obstruction (Author: 2011)*

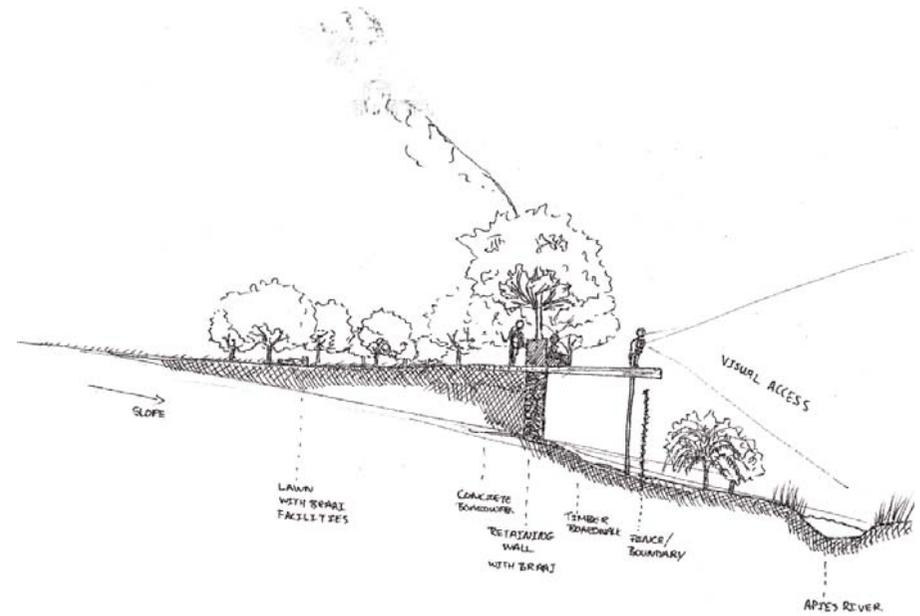
Access

6.6.6.8 River boardwalk

*Illus. 168: Thumbnail of the boardwalk at the river indicating the visual access without the physical access (Author: 2011)*



*Illus. 169: Thumbnail explaining the refuge vs. prospect theory (Author: 2011)*



Semiotic

6.6.6.9 Braai and picnic



*Illus. 170: The circular enclosure which inspired the author to use the shape as semiotic resource in the design. (Author: 2011)*

*Illus. 171: Braai areas. The braai areas take the shape of the circular enclosures of the indigenous people, to stimulate the visitor's memory. This is used as a semiotic resource in the landscape. It creates meaning, identity and awareness. (Author: 2011)*



### 6.6.6.3 Timeline

The timeline runs through the park and starts at the gathering area. The timeline is constructed from rock walls which differ in height and texture (namely large rocks or packed etc) to indicate the landscape progression (different time eras). The timeline splits into two, namely the biophysical history and the cultural history. Information will be displayed on these walls.



Illus. 172: Master plan (Park area) - timeline (Author: 2011)

**Park narrative**

Nature of the park area = Seen as a picnic place, escape from the city for the Voortrekkers - links to its original meaning and association – this is why the park area will cater for people to escape from the city, come and relax to enjoy a picnic or braai.

But at the same time experience the history of the area through a timeline which will start from the arrival area and continue to the Wonderboom tree and new proposed amphi theatre. From there the two hiking trails, namely the biophysical trail and cultural trail will start.

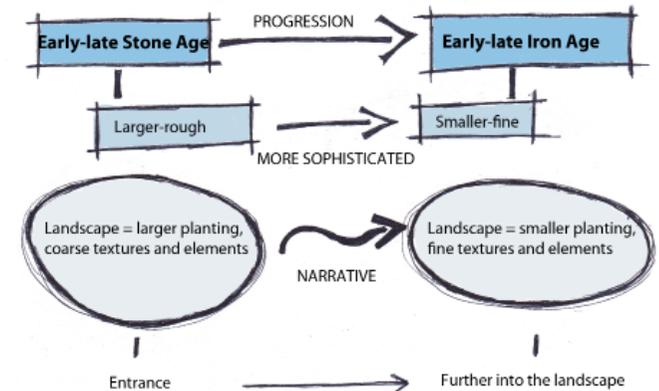
Shapes and forms of the indigenous people are used to create the spaces and experience of the visitor. One will experience the passing of time through the landscape progression (elements used), in the park, up the mountain until one reaches the fort on top which will highlight the most recent times. The circular enclosure forms the sheltered areas, braais and pathways as well as market space.

**The park can be divided into two zones:**

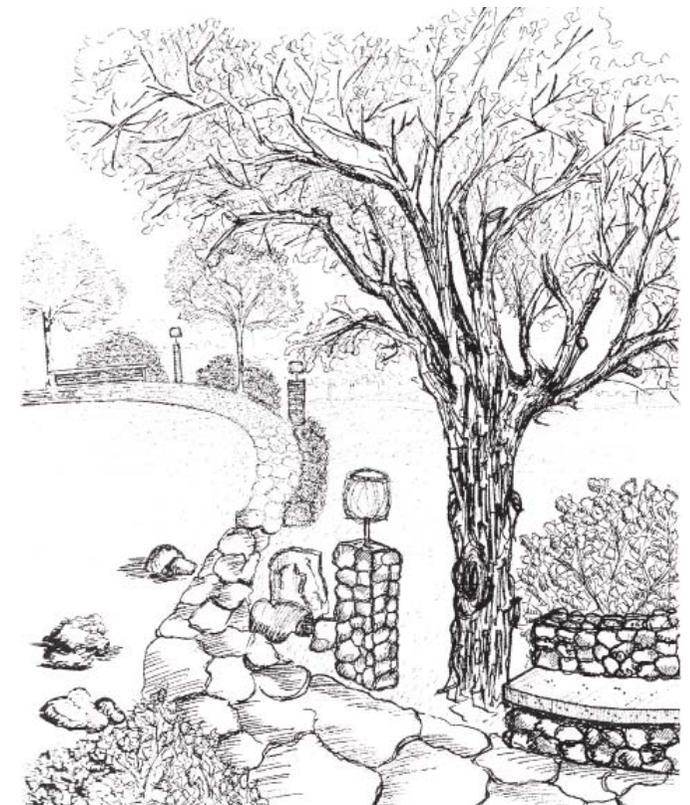
1. Recreation
2. History (narrative)

**Two narratives:**

1. Timeline extending through the park, ending at the Wonderboom tree (climax) and from there the narrative splits into two stories, namely the biophysical and cultural trails.
2. 'Skyline' narrative - the cable car:
  - The visitor can explore the northern slope of the mountain from the sky.
  - Certain historic information and directed views can be provided in the cable car (the view towards the outside of the cable car can be intentionally directed through design and openings.)
  - The cable car will stop just below the plateau to prevent the visitor from experiencing the southern slope as well. The visitor can later discover the rest of the views at the fort viewpoints and on the biophysical hiking trail.



*Illus. 173: Explaining the progression in the landscape concept (Author: 2011)*



*Illus. 174: Sketch to explain the progression in the landscape concept (Author: 2011)*

## 6.6.7 Pedestrian movement

Pedestrians have the opportunity to have a fun stroll, walk directly to the braai facilities or follow the timeline for educational information. Depending on their interest.



Illus. 175: Pedestrian movement (Author: 2011)

## 6.6.8 Vehicle movement

The visitor can access the parking and braai facilities by motor vehicle. The golf cart shuttle has a service route which goes all the way to the fort or takes the visitor to the cable car building. The service car has the same designated service road. Enough space is provided for large busses to enter the reserve (park) and drop the visitors at the drop-off area and exit the reserve. Refer to plan below.



Illus. 176: Vehicle movement (Author: 2011)

## 6.6.9 Master plan development: Concept plans



*Illus. 177: Master plan concept plan 1. (Author: 2011)*



Illus. 178: Master plan concept plan 2 (Author: 2011)

### 6.6.10 Final master plan



Illus. 179: Final master plan (Author: 2011)

## 6.6.11 Conclusion

The aims mentioned earlier for the framework of Wonderboom Nature Reserve were accomplished as follows:

The cultural and biophysical aspects of Wonderboom Nature Reserve were revealed by providing access to the different aspects namely, the two caves, Stone Age- and Iron Age sites, Wonderboom tree, the waterfall, fort and surrounding military remnants. In this way the visitor was made aware of each historic site. The author made use of a didactic narrative to reveal the site's significance and tie the different 'chapters' - time zones - together to form a unity; a sequence of events. Hiking trails lead to the different heritage sites (time zones). Each time era is addressed differently to present the idea of progression in the landscape (there can be a clear distinction between, for example Stone Age and Iron Age because some progression took place, the culture became more sophisticated) and gives a clear distinction of where one time era ends and the next begins. This is also done by thresholds (change in pathway texture, colour, shape and size of material). The visitor is made aware of the different contrast of the site by means of the hiking trail, different emphasis on different views and element. For example the visitor will be aware of the contrast between nature and cultural elements, the city and development vs. the nature reserve in which the visitor finds himself etc.) The 'timeline' running through the site with the different time zones which reads as different 'chapters' in a book, is symbolically distributed from the Wonderboom tree (a past element, representing past and contemporary) and branching out linking all the time zones towards the fort, which represents the military time era and also the most recent time with the new intervention. The visitor is completely aware of the Wonderboom Nature Reserve being an island surrounded by cultural development. The framework proposal provides access to the fort via a cable car (skyline narrative where the visitor will be educated about the heritage and history within the cable car and directed to certain important views), hiking trails and a golf cart shuttle, depending on the visitor's interest. Conservation and rehabilitation of the southern slope will be implemented as well as the rehabilitation of the natural attenuation area to become a wetland.

The aims mentioned earlier for the master plan of Wonderboom Nature Reserve were accomplished as follows:

The focus was to respond to the contemporary park in terms of a regional park to cater for the visitor's needs. This was done by upgrading the existing facilities, and to provide for more parking and bus access. A golf cart shuttle was introduced to get people to the fort and as service car for the Wonderboom Nature Reserve. A cable car was also introduced to create access to the fort, heighten visitor interest etc. Braai and picnic facilities are provided, a market place (once again the semiotic resource of circular walls and enclosures were used to shape the market place and stimulate the visitor's memory and experience) as well as visual access to the Apies River via a boardwalk. Semiotic resources are introduced by means of landscape elements such as the braai element – a circular enclosure shape stimulates the visitor's memory of past eras. The idea of pro-

gression is also introduced in the park area. This was done by means of circular shapes (different from the fort which used straight lines), material, texture, shape and size used in the timeline wall representing the different time eras. Planting textures and shapes can also be used to indicate progression. The park is designed so that the visitor can come to relax away from the city as was intended for the reserve's past existence. The place can be experienced as being a refuge and an escape. The visitor is educated and made aware of the different historic layers on site by means of a timeline, a wall running through the park leads the visitor on a historic journey.



*Illus. 180: The Wonderboom fort through the eyes and pen of the author, highlighting the quality, character and identity of place (Author: 2011)*

# SKETCHPLAN DEVELOPMENT 07



1. INTRODUCTION
2. ANALYSIS
3. FINAL SKETCHPLAN - ROOF AND BUILDING PLAN
4. COHERENCE
5. COMPLEXITY
6. THE THREE NARRATIVES
7. SECTIONS
8. ZONING OF THE SKETCHPLAN
9. DISCUSSION OF THE DIFFERENT SPACES
10. SITE EXPLORATION
11. CONCLUSION

This chapter will focus on the sketchplan (fort) development and the design clarification thereof.

## 7.1 Introduction

The author decided to focussing in on the wonderboom fort as sketchplan site. Situated on the Magaliesberg plateau of the Wonderboom Nature Reserve. The fort is chosen as sketchplan site because all of the principles and approaches set out in the beginning of this dissertation can be accommodated and accomplished in some way.

### The sketchplan will aim to:

1. Integrate the contemporary uses and facilities - this includes the new proposed intervention and the general catering of peoples needs - with the historic site/artefact.
2. The old will be clearly distinguishable from the new
3. The intervention will be sensitive to the genius loci of the place and its setting, but identifiable.
4. The introduction of a new use for the fort should be compatible with the existing.
5. The display of the historic artefact and history layers will be done in such a way to educate and create awareness.
6. Every intervention should be reversible with minimum demolition.
7. The tangible and intangible aspects will be explored in the design.
8. The design aim for meaning, experience and identity creation of the visitors subconscious reading of the site and
9. Interest and discovery (complexity and coherence), access and awareness of the visitors conscious mind through,
10. Semiotics, narrative and a didactic approach to the design.

### The sketchplan will be explained under the following 14 subheadingse and will include:

1. The sketchplan site location in context
2. Analysis
3. The three narratives
4. The zoning, program and
5. Discussion of the different spaces
6. Exploration of existing structure and new intervention
7. Final sketchplans
8. Sections

## 7.2 Analysis summary

Wonderboom fort was built in 1897 in the Second Anglo Boer War. There was never a shot fired from this fort. 18 Men was stationed at the fort during that time. (See chapter 2 and appendix E).

The fort was cut into the landscape. A ramp leads to the top part. The ramp was built for the conns. The fort is a heavy structure conctucted from hard shale, and sandstone walls with cement. Raw brick was used around the door and windows. Steel was used as doors and windows and column structures. Refer to heading 7.7 (exploration of existing structure and new intervention) to see how the old fort was constructed. Refer to ilus 181 for a plan of the existing site as seen today.

The fort consists of the following rooms:

1. Stable
2. Officer's room
3. Proviand
4. Garrison quarters
5. Machine room. Parrafin tanks are located under the concrete floor
6. Telegraph room
7. Hospital
8. Kitchen
9. Amunition store. The water reservoir is located underneath the room and accessed from a manhole just outside
10. Two cannon rooms on top with first amunition racks

These were the permanent structure with a heavy concrete roof with steel columns and beams. The roof has been blown up by Jan Smuts. The walls are in ruin and all the windows and doors are broken out. The fort is in a high state of deterioration.

There was also lookout towers and communication posts as well as a vegetable garden. Temporary corrugated iron buildings were erected for multifunctional purposes and amongst other things were used as a school.

The following are structures and elements that formed part of the fort, but are not present anymore:

1. Water furrows
2. lookout berms
3. Fort roof
4. Staircase leading to the roof (near the stables)
5. A 'pre-fabricate concrete' wall with aiming holes enclosed the the fort on the northern side

## Existing site - analysis

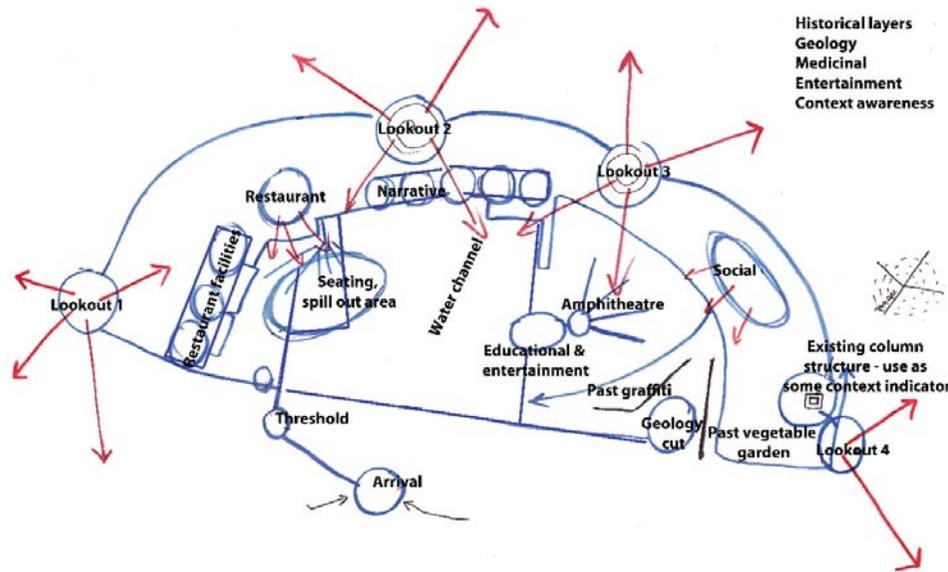
Below is the existing site as in 2011. The fort rooms is ruined walls without a roof.



Illus. 181: Existing plan in 2011. (Author: 2011)

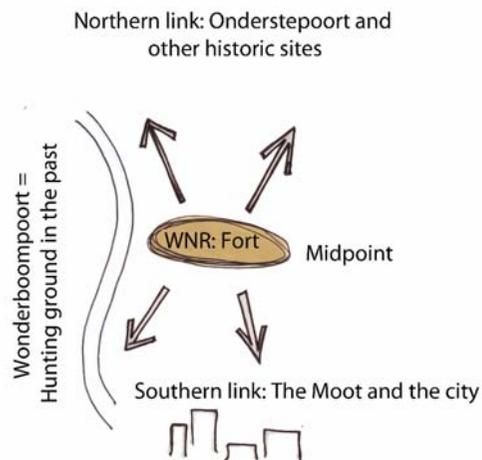
## Identified lookout points and nodes

Analysis of viewpoints and nodes where something should happen, and some proposals of activities.



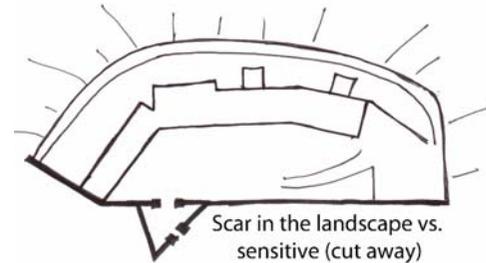
Illus. 182: The different viewpoints identified and certain proposed nodes. (Author: 2011)

Wonderboom Nature Reserve, the Wonderboom fort is the midpoint in the larger urban context.



Illus. 183: Wonderboom Nature Reserve linking the heritage/history of the north and the south. (Author: 2011)

- It is located central to Pretoria north and south
- It links the heritage sites further north for example Onderstepoort etc. and
- Links the heritage sites further south for example the Moot
- It links the city
- The poort cuts through the mountain range at the western side of the site. A very important hunting place in the past



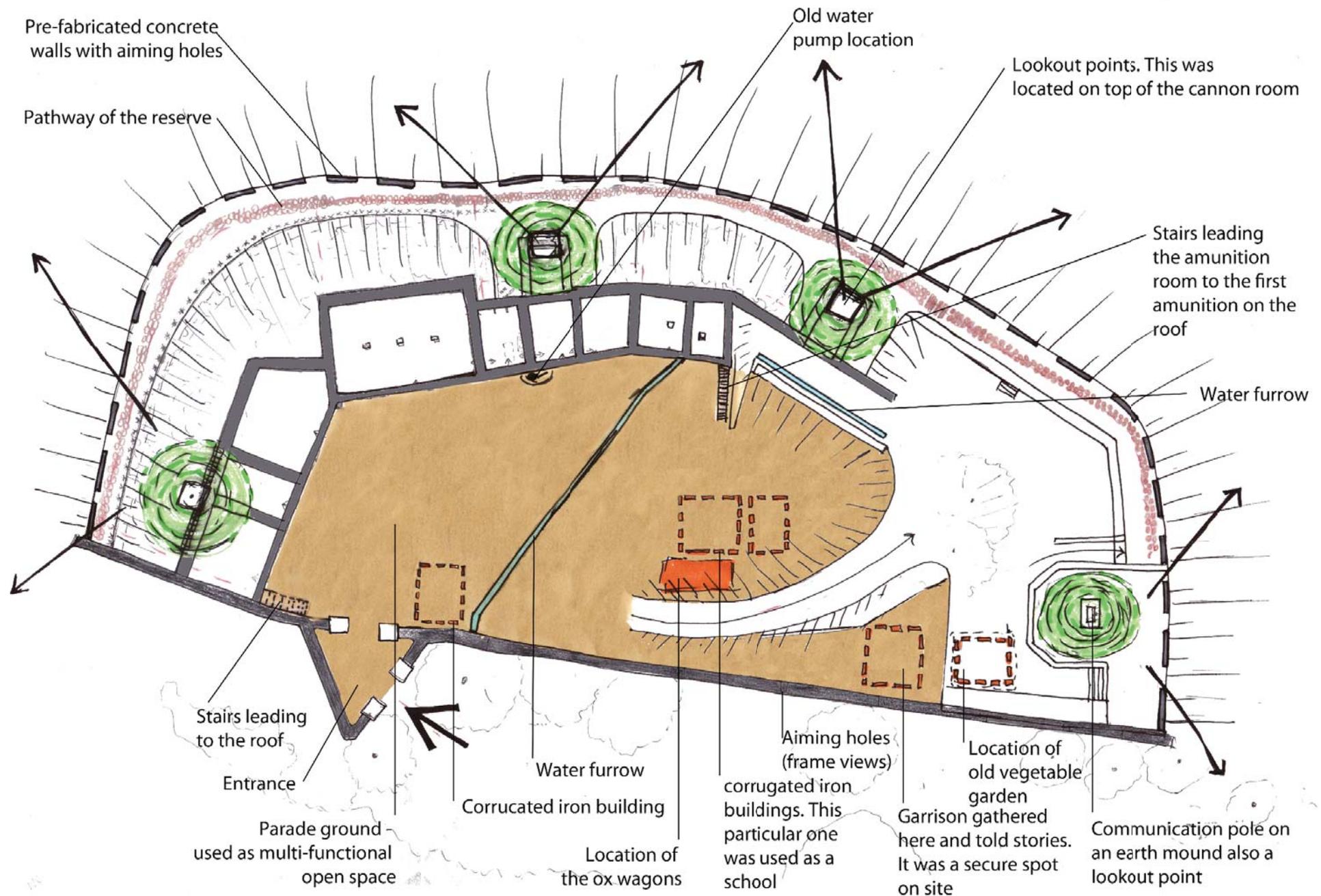
The fort can be seen as a scar in the landscape, but it is not a scar because you can never perceive it as such until you visit it yourself. Nobody knows about the fort. In this way it is sensitive to the landscape because it is sunken in to the landscape.

Illus. 184: The Wonderboom fort, a scar in the landscape. (Author: 2011)

Refer to illus. 185. The plan indicates past elements which were part of the fort during its operation. Most of these elements are no longer present but can function as semiotic resources. These semiotic resources can be used to stimulate meaning, memory and education. These elements can be celebrated and highlighted in the design to create awareness of these past activities and operations.

The following can be regarded as semiotic resources:

1. The old steps to the first ammunition (It is in a state of deterioration but present)
2. Parade ground - multi-functional (now overgrown with veld grass)
3. Entrance (present)
4. The earth mound lookout points - with aiming holes (not present)
5. Remnant of the communication post
6. Location of the vegetable garden (not present)
7. Locations of the temporary corrugated iron buildings, especially the school (not present)
8. The water furrows (remnants)
9. The idea of the old water pump (not present)
10. Pre-fabricated concrete wall with aiming holes at the northern side of the fort for protection from that side (not present anymore)
11. Old graffiti against the cannon ramp (present)
12. Garrison gathering area (where they told stories etc)
13. The idea of the roof - accessibility to the roof and the view from there. As was the case in the past. (The roof is not present anymore)

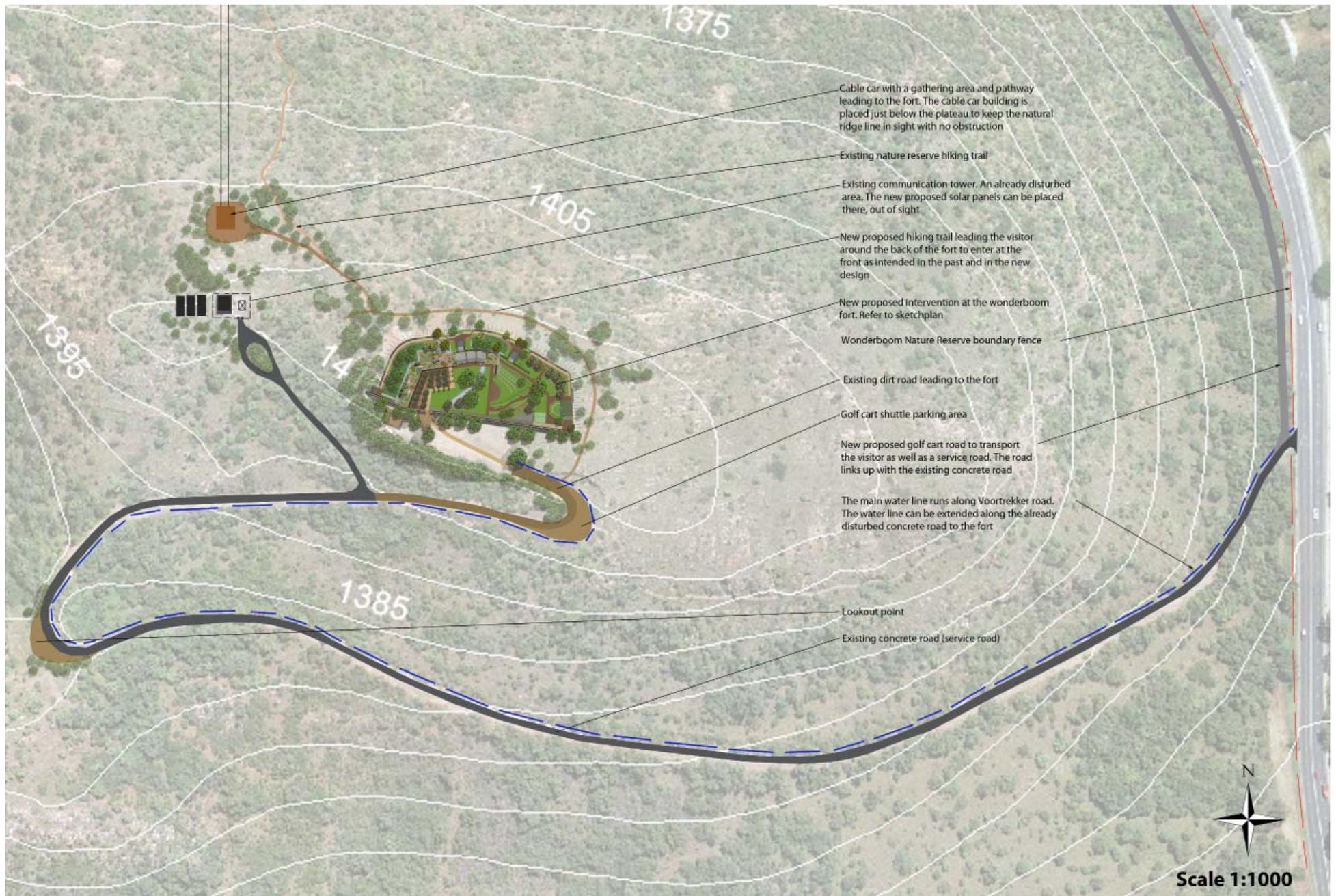


Illus. 185: The plan indicate some of the elements which was part of the fort during its operation. These can now be seen as semiotic resources which can be used to stimulate memory or celebrae which was there. Educate the visitor of the past operations in the fort. (Author: 2011)



*Illus. 186: The fort ruin as can be seen from the outside with its windows and doors broken out. (Author: 2011)*

## The site location in context



Illus. 187: Site (sketchplan) location in context (Author: 2011)



## 7.4 Final sketchplan: building plan

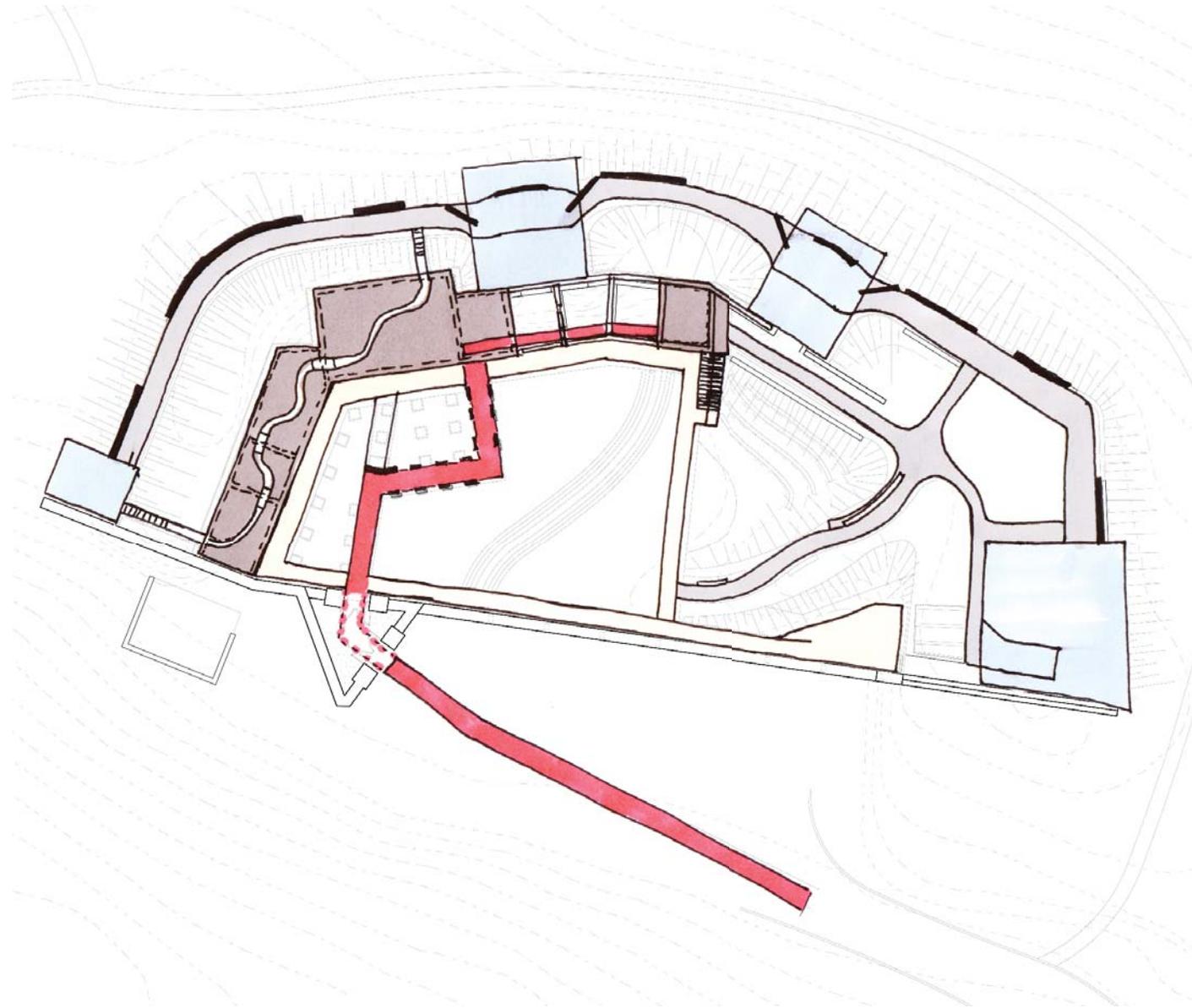
The plan indicates the final building plan of the design proposal.



Illus. 189: Final sketchplan - building plan (Author: 2011)

## 7.5 Coherence

This plan indicates the notion of coherence, one of the design principles set out at the beginning of this dissertation.



One can clearly see the unity of the whole and order of place. The site is legible and easy to understand. There is a clear hierarchy in the pathways through colour, texture and position.

The narrative which runs through the site creates coherence and order. The narrative ensures legibility and follows a sequence of events. It links everything together. It links the aspects of the site's history, context, medicinal connotation, social and lookouts.

Form and detail - visual characteristics ensure the capture of the visitor's interest and provide experience.

### Unity was acquired through:

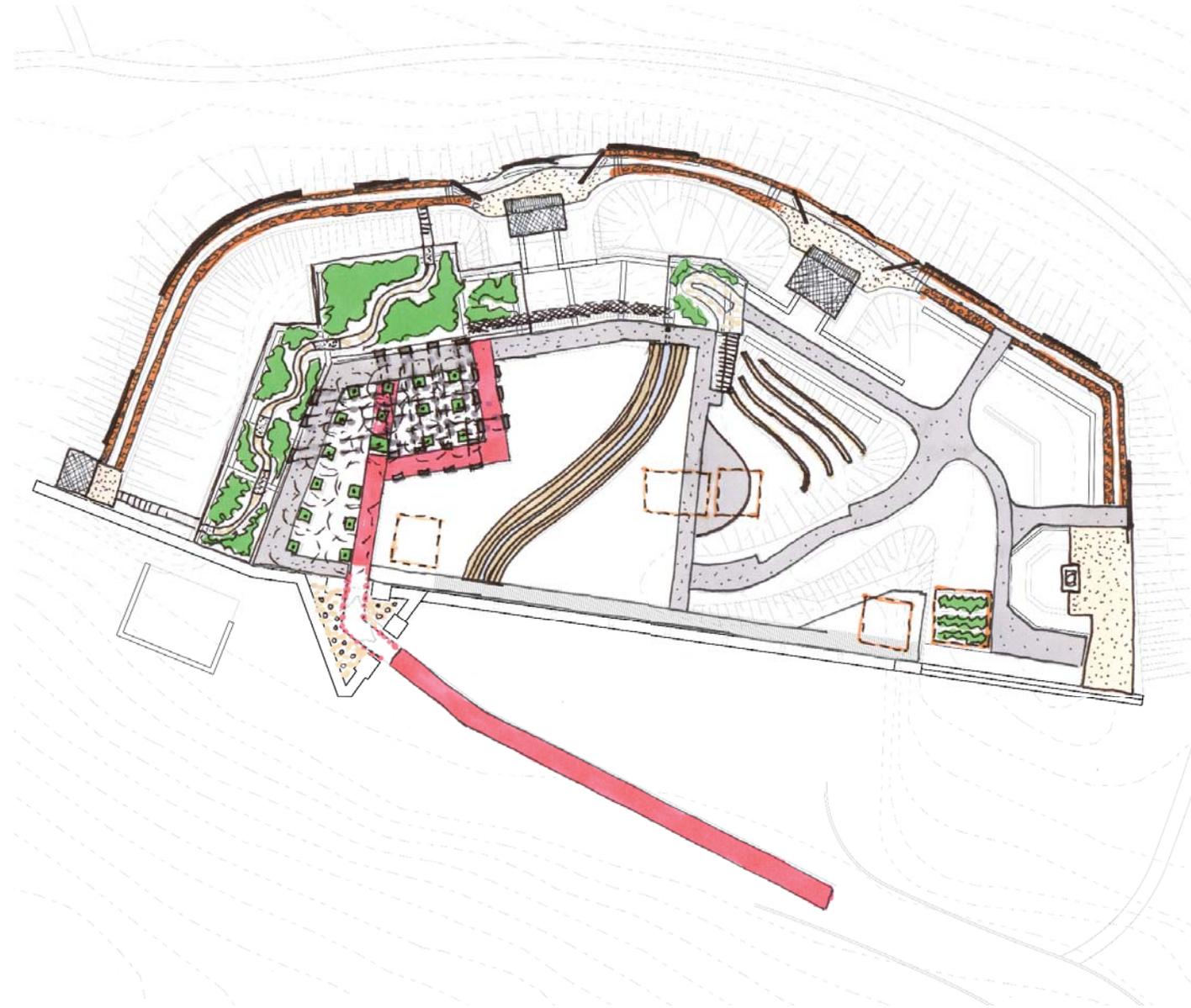
- A geometry of square and straight lines
- Repetition of wall structures (steel mesh baskets)
- A limited pallet of materials namely; concrete, steel, glass and timber

Unity in form, elements and detail.

*Illus. 190: plan indicating the principle of coherence in the design. (Author: 2011)*

## 7.6 Complexity

The plan indicates the notion of complexity; also one of the design principles.



One can clearly see how the different elements were used as semiotic resources to create meaning and complexity.

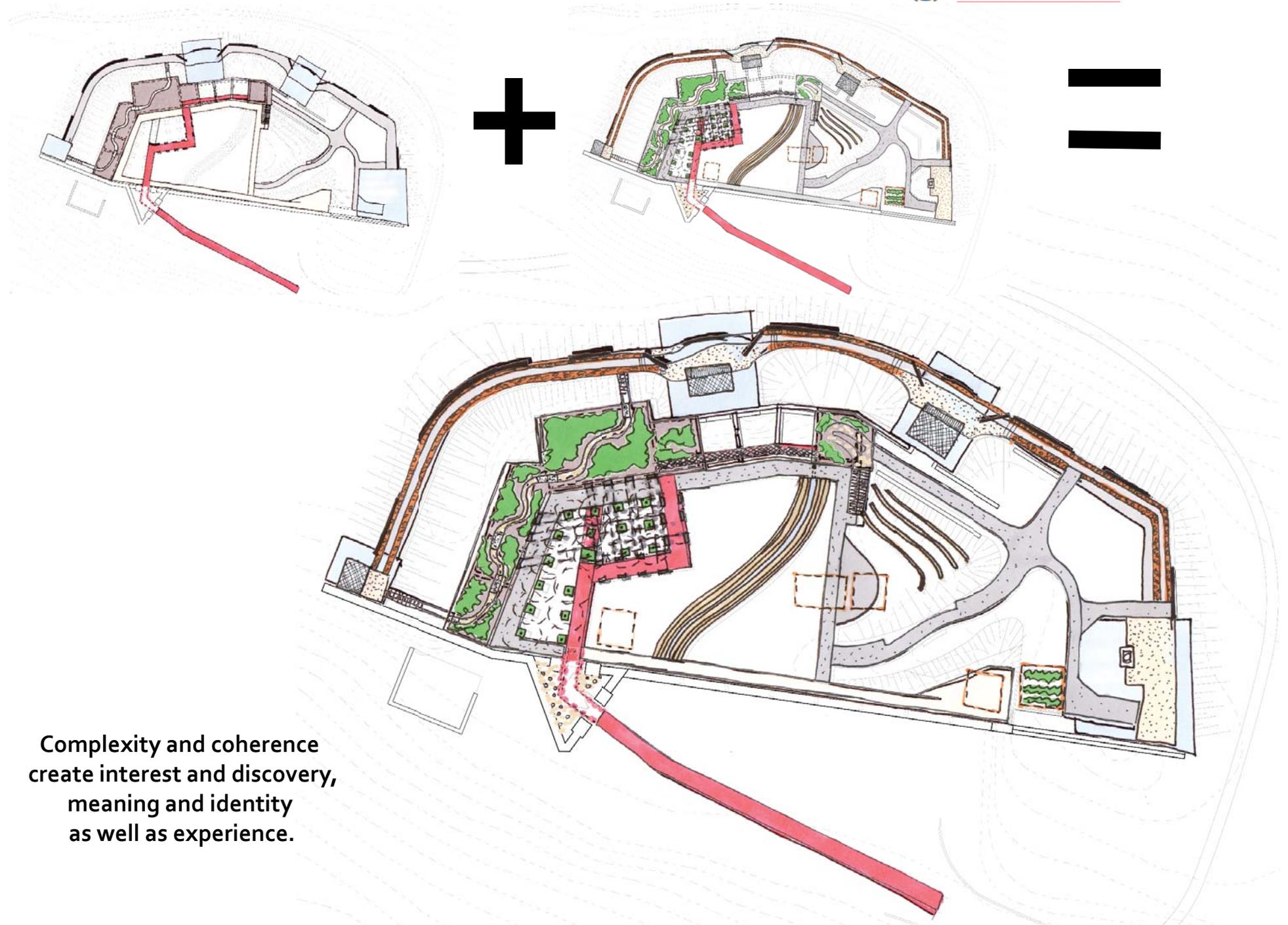
**Complexity is acquired through:**

- Diversity and richness in elements within the place.
- The narrative that links the events. These events create mystery through the arrangement of activities and the different approaches the visitor will experience walking through the landscape. These are: linear approach, obscured view, revelation, simultaneously.
- **Difference in:**
  - Form (rectangular form which changes in some areas to a simple curve),
  - Elements (steel mesh, walls, vegetable garden, direction indicator, paving patterns and texture, water channel feature, medicinal roof garden, 18 trees in the spill-out area, stainless steel rods and narrative trails etc.)
  - Detail (pathway surface texture and colour, the steel mesh elements etc.)

*Illus. 191: plan indicating the principle of complexity in the design. (Author: 2011)*



*Illus. 192: The Wonderboom fort entrance seen from the inside (Author: 2011)*

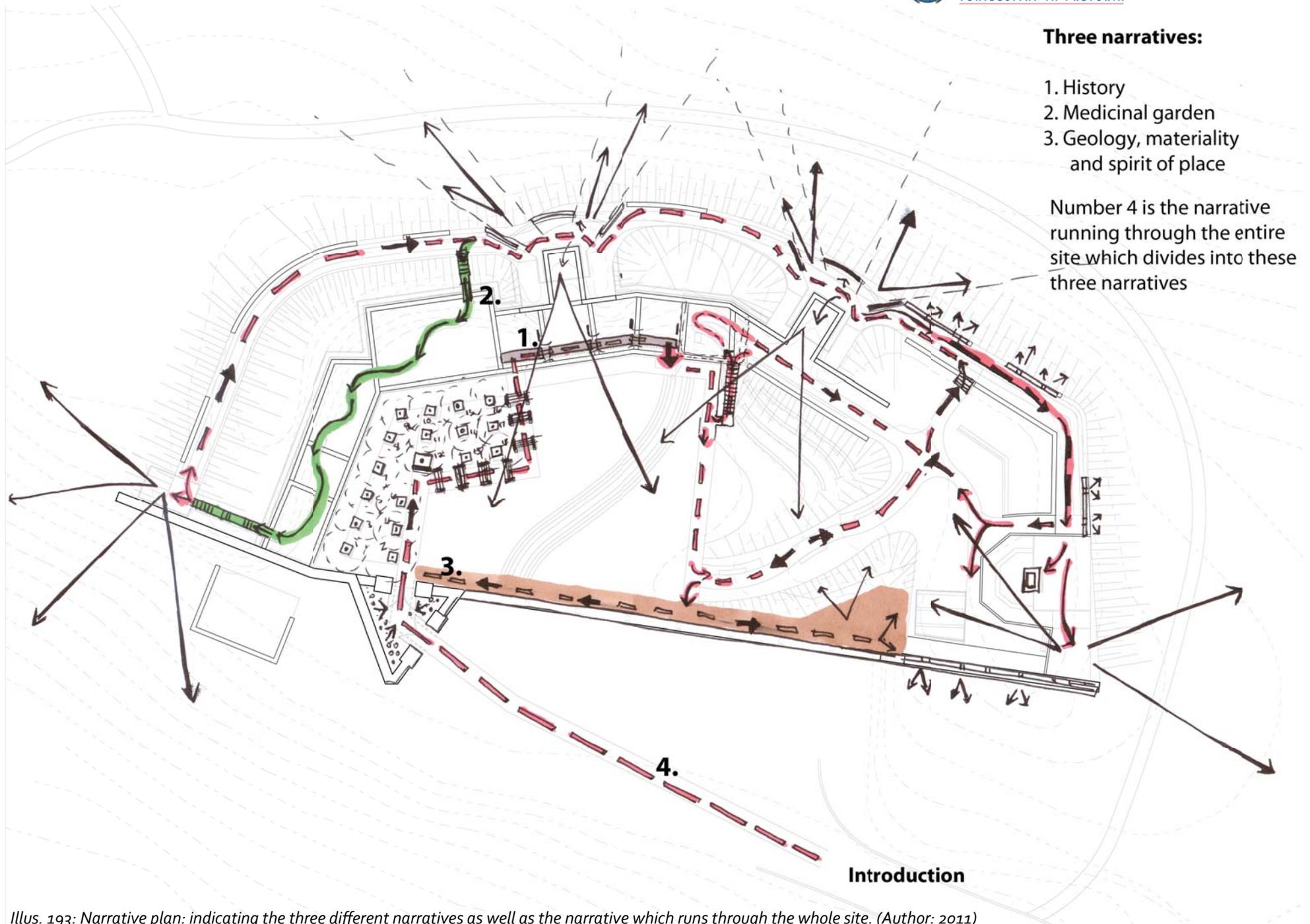


Complexity and coherence  
create interest and discovery,  
meaning and identity  
as well as experience.

**Three narratives:**

1. History
2. Medicinal garden
3. Geology, materiality and spirit of place

Number 4 is the narrative running through the entire site which divides into these three narratives



*Illus. 193: Narrative plan: indicating the three different narratives as well as the narrative which runs through the whole site. (Author: 2011)*

## 7.7 The three narratives

The site inspired three narratives. This caters for education on three levels:

### 1. History of the site (area) and fort:

- An elevated walkway will extend through all the arches in the ruin, providing an exciting experience for the visitor. The visitor can see the structural significance of the ruin, experience the different rooms and be informed of the different uses of the rooms via signage. Glass information boards will be fixed against the walls – information is clearly visible, but one can still see the wall behind it. This walkway takes the visitor through the history of the site (fort) and everything that relates to it. (see heading 7.6.4 Narrative (history) walkway (space 4) on page 164)
- A 'directional indicator of nearby historic landmarks'-element is placed in the landscape to ensure that the visitor will be placed in context, and back into the past when they made use of landmarks indicating distances in miles, for example 'Pretoria 2 miles'. This element will be a steel plate with the information engraved on it at lookout 4. (See heading 7.6.5 on page 171) It will indicate the direction and distance to Pretoria, the other forts, landmarks and historically important areas in Pretoria.
- Other elements were used in the landscape to tell the story of history aspects. It also refers to the semiotic resources used to stimulate memories of the past. Mnemotectonics is another term used to express this method. The following elements were implemented: (Refer to page 159-181 of the discussion of the different spaces.)
  - Water furrow – a water channel. A slightly curved water channel is proposed. It states/creates awareness of the location and existence of the old water furrows and, at the same time, serves as aesthetic element in the landscape and stormwater management;
  - Stainless steel rods at the entrance – enclose and dwarf the visitor; demanding a certain military order and respect. The visitor should be made aware of the atmosphere and emotions of the past. The visitor should also realise what this heritage structure is - a magnificent war artefact;
  - Steel elements used in the landscape, for example the light posts along the main pathway, were made from a hollow steel pipe with holes (openings) to symbolise bullet marks - this plays on the notion of war;
  - 18 trees are planted in the courtyard spill-out area of the restaurant to celebrate the 18 men stationed at the fort during its operation (garrison);

- View points located above the cannon rooms – providing the same view 'aim' to celebrate what was there, and direct the visitor's view towards important historic sites around Wonderboom Nature Reserve;
- View points are also designed at the two far ends of the fort (west and east) where previous watch towers and communication poles were - Placing the new proposed viewpoints at the historic locations takes the visitor back to the war time when the fort was in use.
- An amphi/educational area (for informal small shows, stargazing, school groups can be informed here, etc) is proposed in the courtyard area where the old corrugated iron structure was, which was used as a school;
- Footprints of the temporary old structures are paved with a paving edge to highlight what was there and to create awareness of that;
- The same paving edge is laid at the location of the past vegetable garden of the fort.

These elements in the landscape and materials used can inform the visitor of the history and historic uses of the place as well as stimulate the memory of the visitor of past events or feelings. In turn it has the potential to create meaning.

### 2. Medicinal plants roof garden: (Refer to page 174-175)

According to Prof. Chris van Vuuren (during an interview). Wonderboom Nature Reserve was seen by the Ndebeles and other indigenous people as 'the place of medicine'. The Ndebele settlements were mainly near Bon Accord dam at the 'swartkoppies'. This forms a very strong link between the 'swartkoppies' mountain ridge and the Magaliesberg range. This new intervention links back to the place's original meaning and association, namely a 'place of medicine' and from there came the idea of the medicinal roof garden. Refer to fig. 21

The medicinal roof garden stimulates the memory of the indigenous people's use of this site and at the same time educates the visitor on plants with medicinal value. The visitor is also taken on a journey on top of the new proposed restaurant roof, experiencing a similar view and atmosphere as that of the past garrison, but with a contemporary view (development).

It will be an exhibit of endemic/local indigenous medicinal plants. Some plants were used by the indigenous people, and the rest are plants with general medicinal value.

The visitors will be able to walk on the roof garden and experience all the different medicinal plants. Information can be provided via brochure, phone applications and information plates – to ensure everyone can access the information.

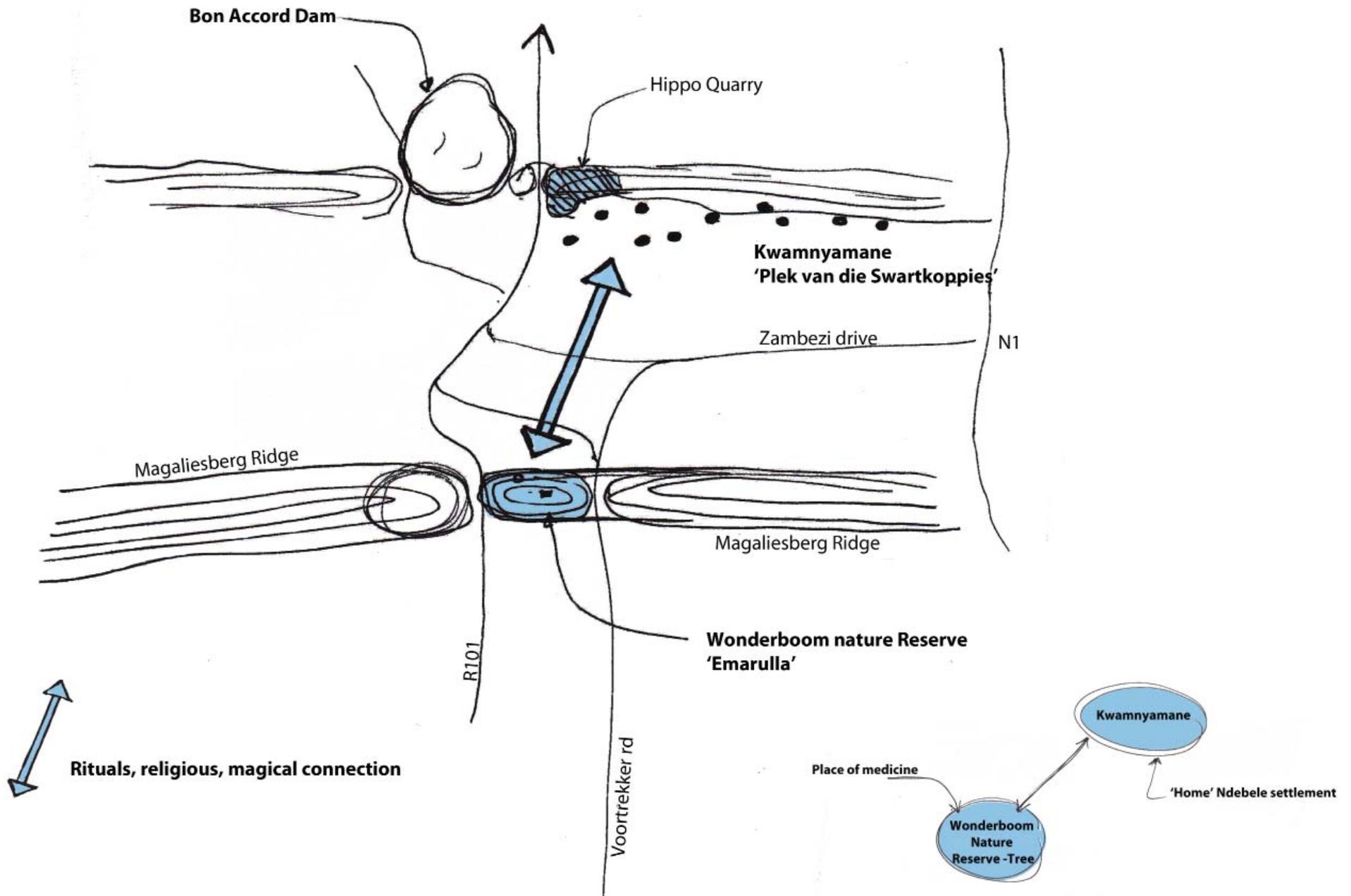


Fig. 21: Explaining the concept of the medicinal roof garden. The Wonderboom Nature reserve was once seen as 'the place of medicine' (Author: 2011)

### 3. Geology, materiality and spirit of place

The main focus is to present the different rock layers to teach the visitor. The historic graffiti can be found in this same space and dates back to the operational period of the fort. This in itself is a narrative. It creates meaning and identity. For this reason the visitor should be made aware of it. This space is also located in a location on site which in itself creates the feeling of refuge. This can then be reinforced in the design. (Refer to heading 7.6.9 on page 176-177.)

This narrative:

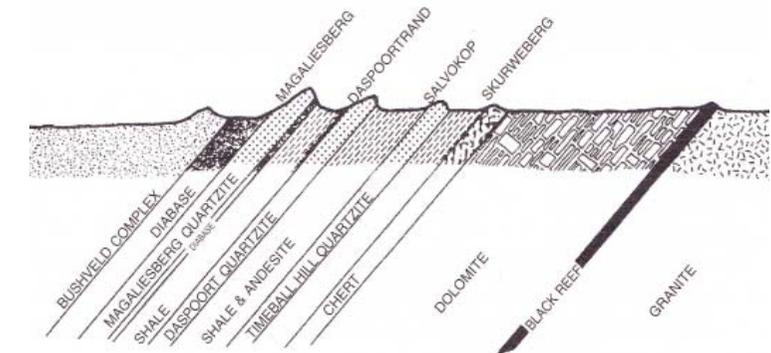
- Teaching the visitor about the different rock layers of the Magaliesberg. The existing cutting in the soil at the fort will be used to show the different layers of the Magaliesberg. (representation if necessary, with glass panel in front with the information) This is a didactic approach to the design. Refer to chapter 2 illus 13-16 of the four stages in the formation of the Magaliesberg and illus. 304.
- The visitor can become aware of the historic graffiti on the rock side of the old cannon ramp. The place becomes a node.
- This space becomes a strong refuge vs. prospect example. The visitor is surrounded by rock walls behind him but to the front a view towards the entrance and courtyard stretches out. He can feel safe and secure with a framed view.



Illus. 196: The cut in the landscape showing the rock layers clearly (Author: 2011)



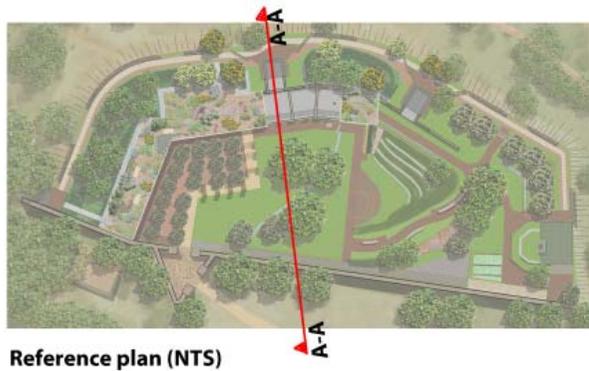
Illus. 194: Historical graffiti rock (Author: 2011)



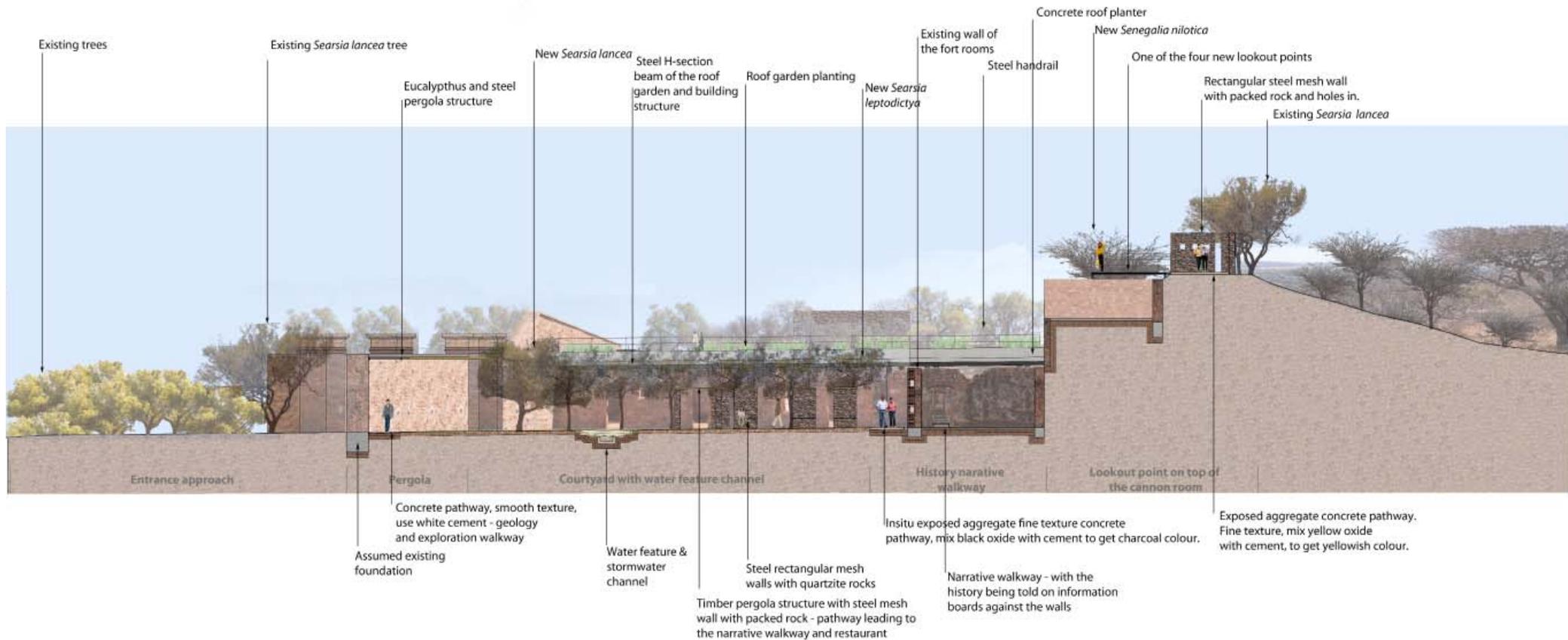
Illus 197: Stage 4 in the formation of the Magaliesberg: The exposed edges of the tilted rocks are weathered by ice and other elements, the more resistant quartzite forming ridges (Carruthers, 2000: 14)

Illus. 195: This engraving indicates the person's force number, surname and the date (Author: 2011)

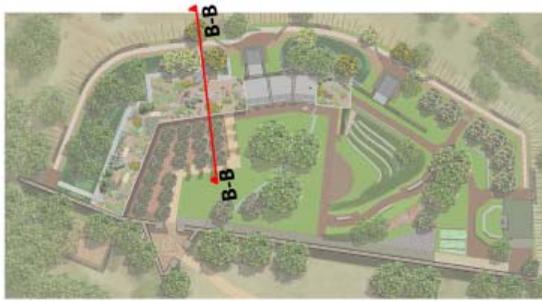
## 7.8 Sections



Section A-A cuts through the existing fort wall, courtyard with water channel feature, room with the elevated steel pathway for the history narrative, cannon room and lookout point 2. Both the pergola walkway towards the restaurant and the outdoor spill-out area are indicated.

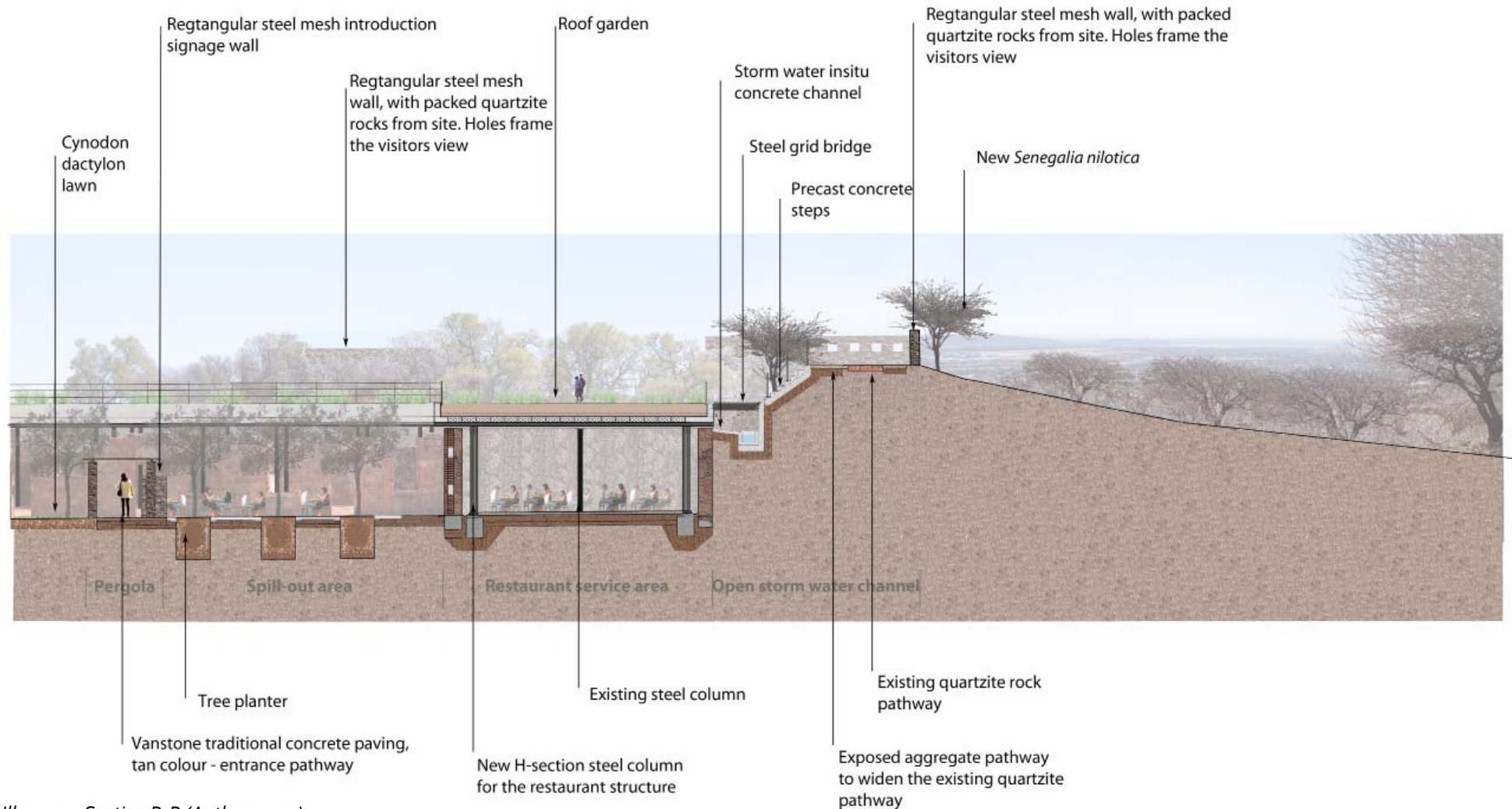


Illus. 198: Section A-A (Author: 2011)

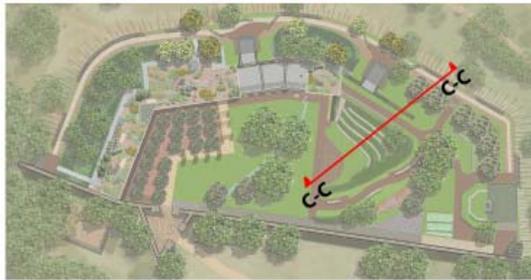


Reference plan (NTS)

Section B-B cuts through the restaurant spill-out area with the 18 trees and steel mesh wall and eucalyptus lathes pergola. It also cuts through the restaurant, medicinal roof garden, open storm water channel and the walkway along the steel mesh basket walls with holes in to frame certain views.

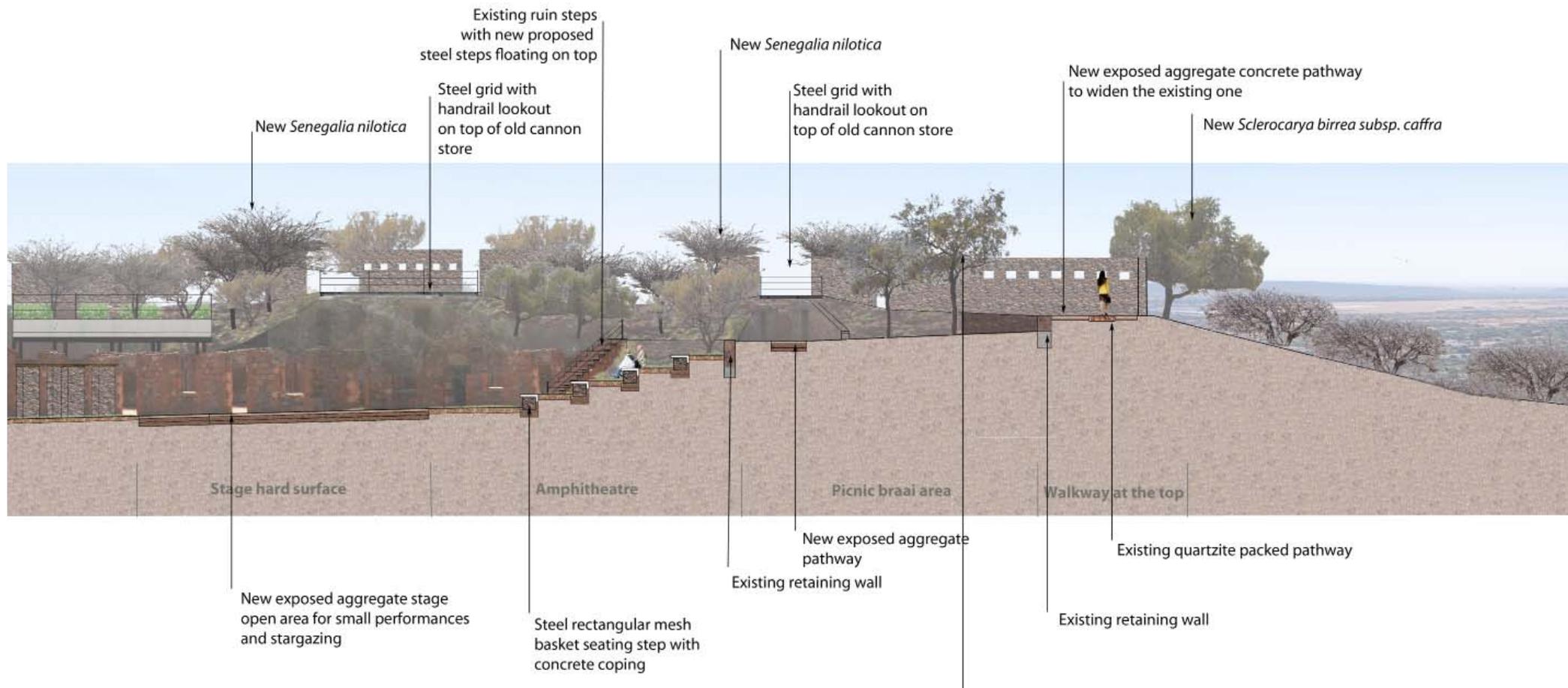


Illus. 199: Section B-B (Author: 2011)



Reference plan (NTS)

Section C-C cuts through the amphitheatre, the open area for picnics and the pathway around the back on the earth mound with the steel mesh basket walls.

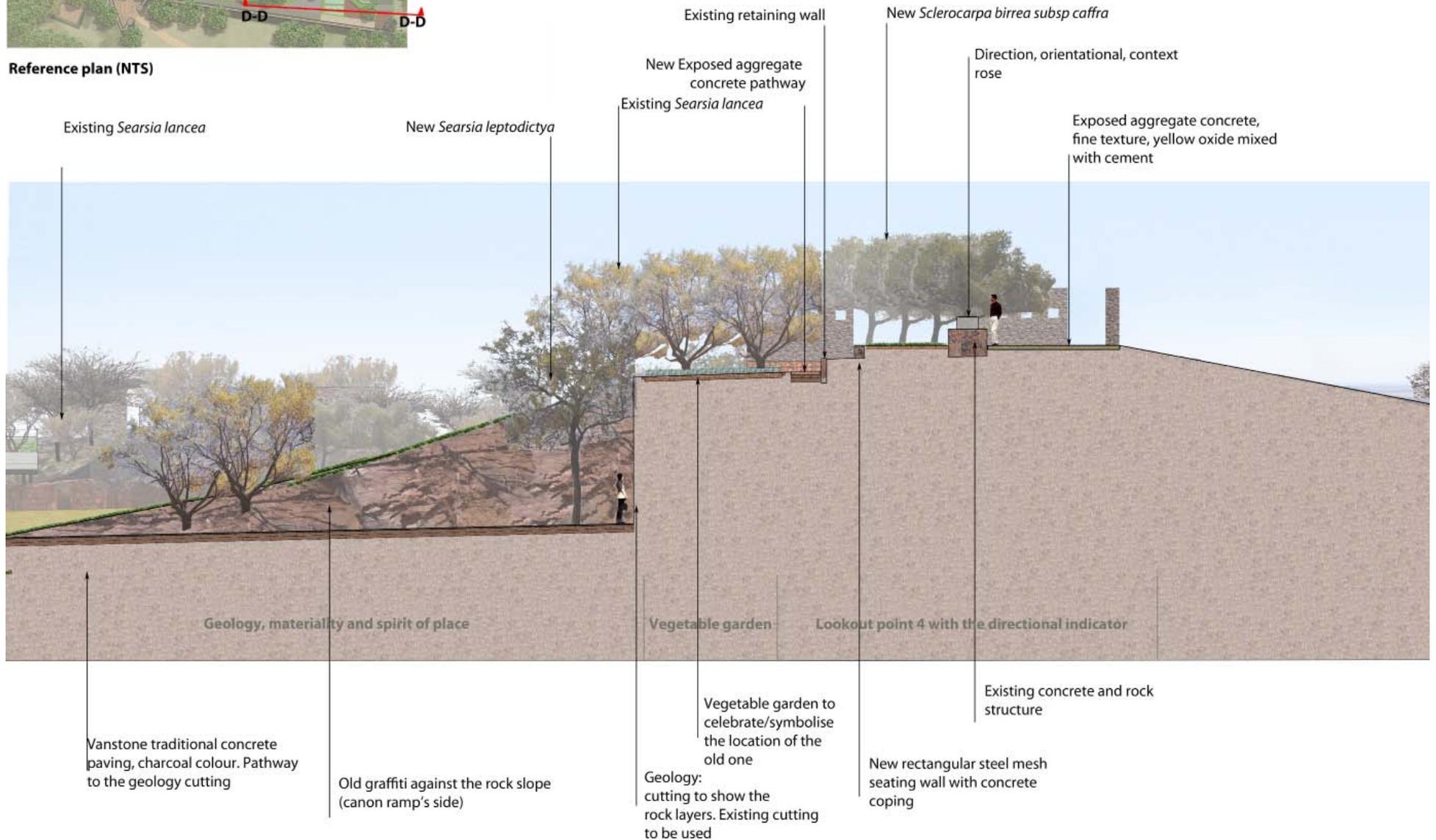


Illus. 200: Section C-C (Author: 2011)



Reference plan (NTS)

Section D-D cuts through the geology, materiality and spirit of place narrative. It indicates the high cutting existing from the construction of the fort. The section also indicates the direction indicator where people can become aware of their context. This is also lookout 4.

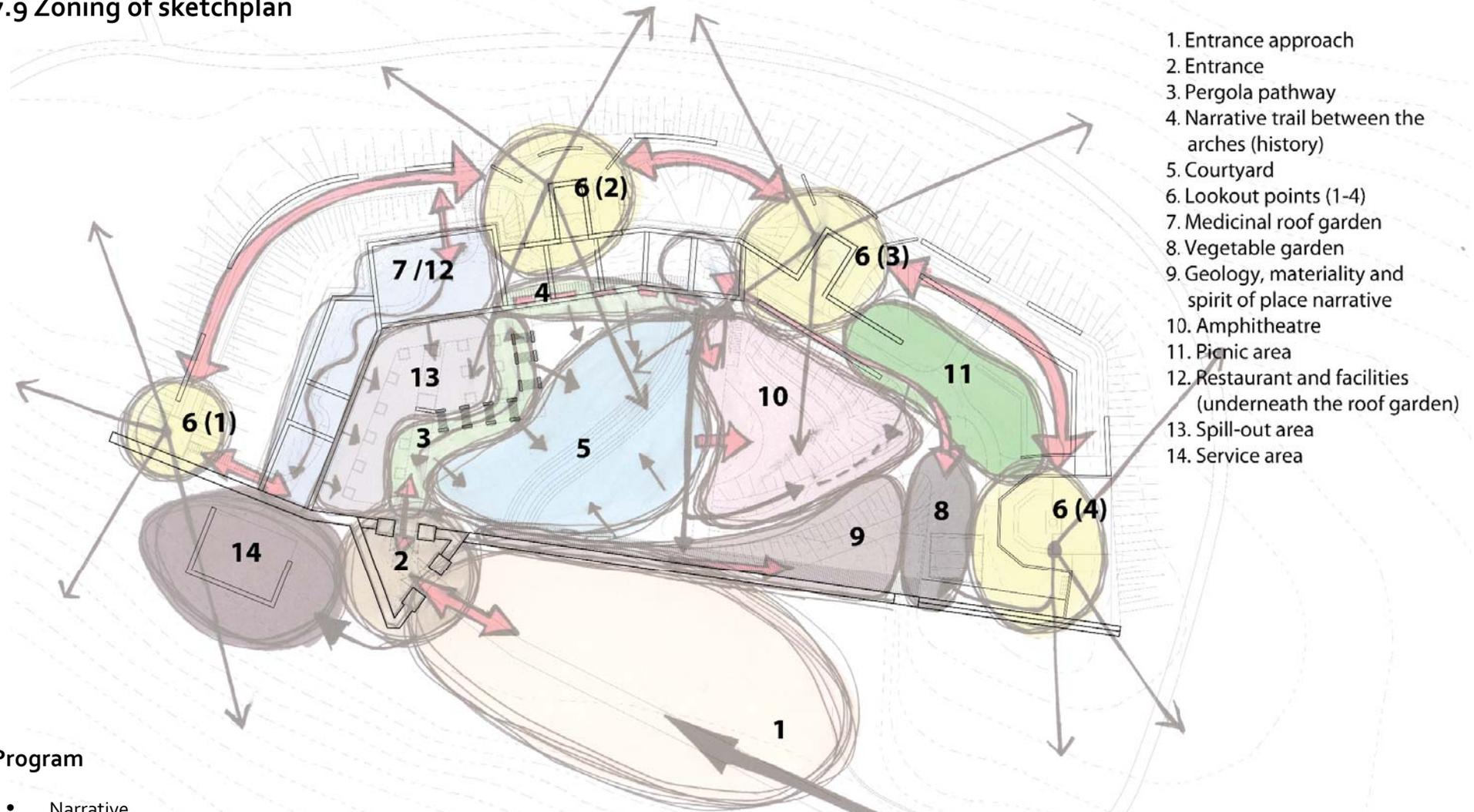


Illus. 201: Section D-D (Author: 2011)



*Illus. 202: Another characteristic detail of the Wonderboom Nature Reserve (Author: 2011)*

## 7.9 Zoning of sketchplan



1. Entrance approach
2. Entrance
3. Pergola pathway
4. Narrative trail between the arches (history)
5. Courtyard
6. Lookout points (1-4)
7. Medicinal roof garden
8. Vegetable garden
9. Geology, materiality and spirit of place narrative
10. Amphitheatre
11. Picnic area
12. Restaurant and facilities (underneath the roof garden)
13. Spill-out area
14. Service area

### Program

- Narrative
- Restaurant
- Amphi-theatre (small shows, story telling place, stargazing, education)
- Medicinal roof garden (narrative)
- Geology - make use of the existing cutting to represent the rock/soil layers of the Magaliesberg (narrative)
- Four view points (highest point in Pretoria)
- Picnic space
- Contemplation
- Education (signage) - history walkway within the fort along the arches (narrative)
- Water channel (which functions as water feature, symbol and storm water catchment)
- Ablutions
- Monthly events (stargazing, moonwalk, moon theatre and picnic)
- Yearly events - the lights (or green lasers) which shines from all the fortifications once a year to create awareness
- Vegetable garden

Illus. 203: Zoning plan (Author: 2011)

## 7.10 The discussion of the different spaces (zones)

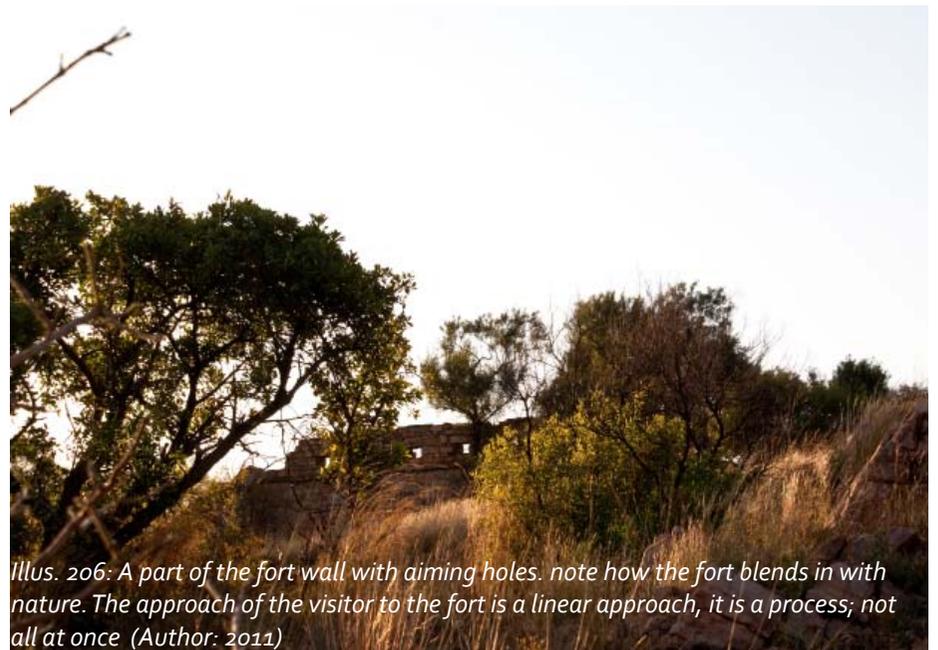
The site is divided into different zones. Each zone/space will be explained according to the following: The existing, intervention, experience, reasons, rationale (rationale & symbolic meaning) and materials. It is discussed in the same order as how the visitor is likely to experience the different spaces as intended by the author. This series of spaces will form the site's narrative. (number 4 on the narrative map, illus. 193)



*Illus. 204: The approach to the fort entrance (Author: 2011)*



*Illus. 205: The fort outer wall. This wall was used as part of the approach with the wall on the one side and the vegetation on the other. The visitor is almost forced to move only to the entrance without any deviations. (Author: 2011)*

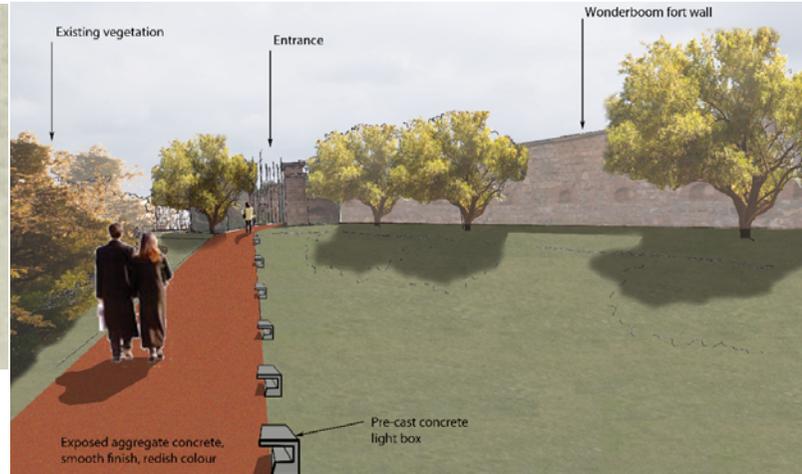


*Illus. 206: A part of the fort wall with aiming holes. note how the fort blends in with nature. The approach of the visitor to the fort is a linear approach, it is a process; not all at once (Author: 2011)*

### 7.10.1 Entrance approach (Space 1)



Illus. 207: Location of space one, the entrance approach. (Author: 2011)

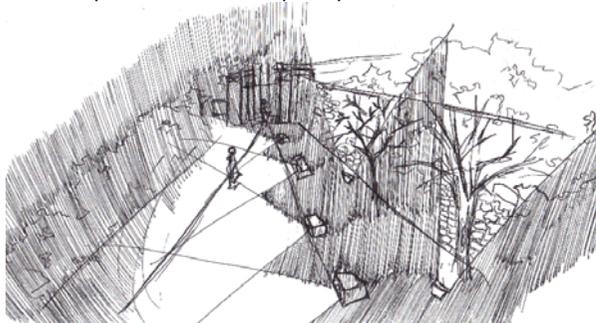


Illus. 208: The new proposed entrance approach (Author: 2011)

#### Design intervention and materials:

The design approach to the original entrance approach to the fort was simple and discreet. An exposed aggregate concrete pathway, with a smooth finish was used. The aggregate came from hippo quarry mixed with cement and red oxide to get a redish-pink pathway leading to the entrance. The pathway is clear and legible. It is clearly distinguishable from the surrounding material and the green grass. Light boxes (made of pre-cast concrete and Beka LED lights) are placed repeatedly on the one side of the pathway. Cynodon dactylon is kept short. The green grass with the light-redish-brown shale rock wall of the fort creates a beautiful contrast in colour and texture. The redish smooth pathway enhances the contrasts. Existing trees create shade along the wall, softening the harsh landscape.

Lighting is used at night time (during special events) to create awareness, focus attention to specific elements and serves to guide the visitor along the main pathway. The lights give atmosphere and reveals some aspects of an element and not everything at once. It provides some mystery.



#### Awareness

Illus. 209: Lighting along the entrance approach (Author: 2011)

#### Experience:

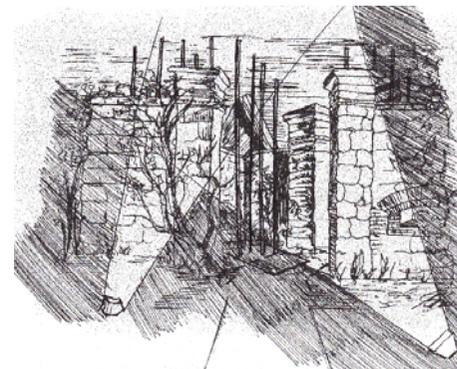
- Create anticipation
- Stimulate interest
- Journey to a destination (place of refuge)

#### Reason rationale - Symbolic:

- This was the approach long ago when the fort was in use.
- It is the approach to this heritage artefact (monument)
- The high security wall leads the visitor's eye to the entrance
- The fort is cut into the landscape, hidden and the visitor comes to make the discovery of its existence
- The landscape is discreet and no attention is taken away from the fort itself and its high walls.
- The shale and sandstone materials - heavy and permanent in contrast with the exposed concrete pathway (reversible).
- The pathway leads the visitor to his destination, with the focus on the entrance and threshold. The visitor is unaware of the amazing view from this point, because one has a high wall on the one side and high vegetation on the other, with the main focus being the entrance - the fort.

#### Semiotic

#### Interest & discovery



Illus. 210: Spot lighting to light up the fort entrance at night time during an event. (Author: 2011)

## 7.10.2 Entrance (Space 2)



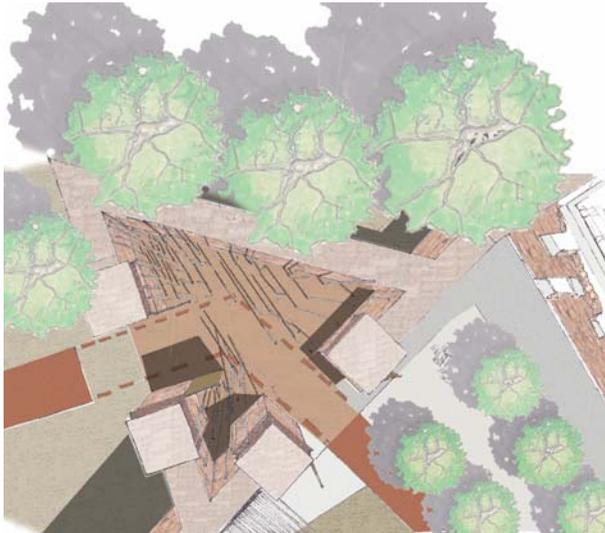
Illus. 211: The fort entrance as you approach it. (Author: 2011)



Illus. 212: Detail of the wall as seen from inside the entrance (threshold) (Author: 2011)



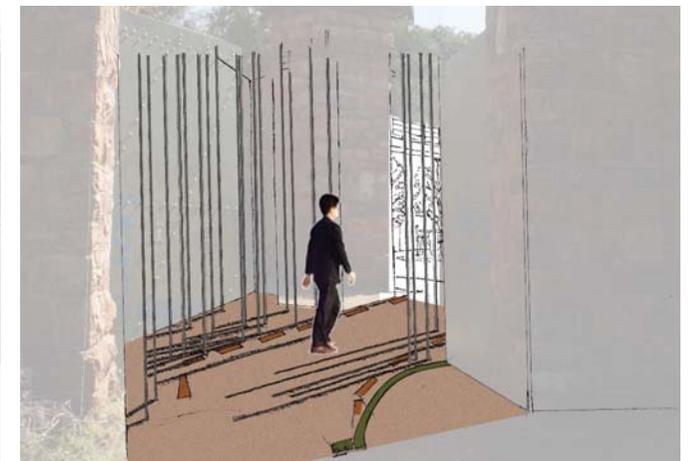
Illus. 213: Detail of the steel fort door. Notice the round head bolts. (Author: 2011)



Illus. 214: The fort entrance top view (Author: 2011)



Illus. 215: The fort entrance from inside the courtyard (Author: 2011)



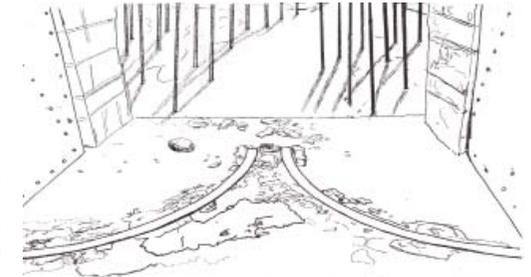
Illus. 216 The fort entrance with the new proposed stainless steel rods which demand respect from the visitor. (Author: 2011)



*Illus. 217: Location of space two, the entrance (threshold between the inside and outside). (Author: 2011)*



*Illus. 218 The fort entrance with the new proposed stainless steel rods which enclose the visitor. Create awareness of the small space and it also highlight the threshold of moving from one space to the next. (Author: 2011)*



*Illus. 219: The threshold at the fort entrance. The existing was left to emphasise the difference between the old and new as well as moving into a new space (Author: 2011)*

#### Experience:

- Experience anticipation
- The visitor is dwarfed to impose the feeling of respect, discipline and anticipation.
- Enclosurement - trapped
- Experience discomfort
- You feel intimidated by the entrance threshold

#### Design intervention and materials:

#### Awareness

The threshold space (entrance) is surfaced with compacted soil with stainless steel rods planted into the soil so that these 2.5m high rods fill the space. These posts symbolise an army accumulated into a small space. It enforces the feeling of enclosure. It becomes imposing and dwarfs the visitor so that he is forced to be disciplined. This space, filled with stainless steel rods, creates anticipation and interest.

The author uses stainless steel rods to create the wanted experience and emotion, but also a material which does not detract from the view and wall inside the entrance. The visitor can still experience the high intimidating walls and see the aiming holes. Visually it does not obscure the views, but physically it brings about the experience.

Awareness is created by accentuating the entrance and that which is old. The visitor is clearly aware that he enters a new space and moves over old ruins. The exposed aggregate concrete pathway ends right before the old steel door rails and continues with paving edges to lead the visitor inside and through the rods.

#### Reason rationale - Symbolic:

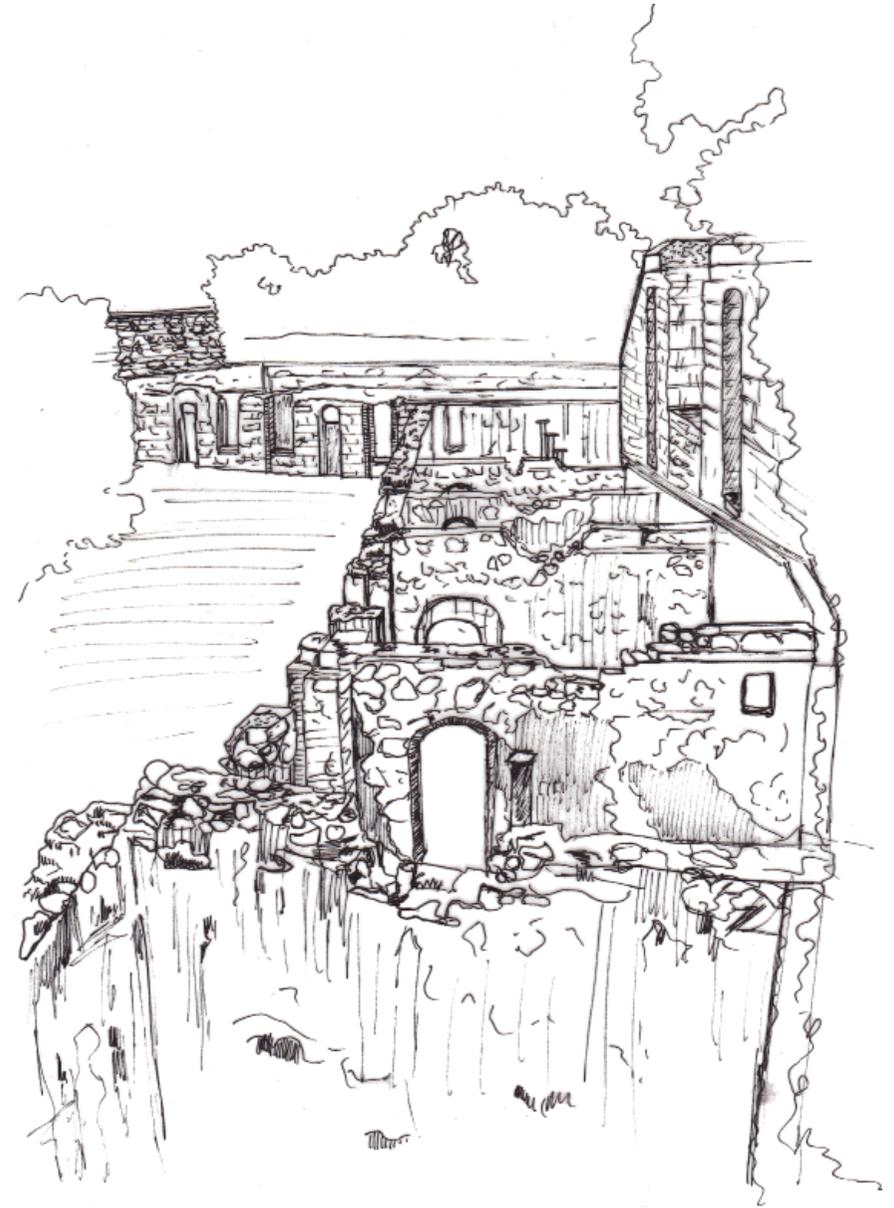
- The garrison would be bundled up during war and crowded in this entrance space, the threshold between the outside of the fort and the inside.
- The entrance gate with the high walls and columns impose respect and awe onto the onlooker.
- If the doors were to close, the only contact with the outside would be the aiming holes - as in the past.
- It is a small space, which encloses you
- It is intimidating, and in some way, disciplines you
- Upon your first visit, one experiences the sense of anticipation

#### Semiotics

### 7.10.3 Narrative (history) - walkway (pergola & arches) (Space 3 & 4)



Illus. 220: The existing arch structures linking the different rooms. (Author: 2011)



Illus. 221: A graphic representation of the existing fort rooms with the arches which links the different rooms. (Author: 2011)



Illus. 222: Location of space three and four - the history narrative. (Author: 2011)

### Design intervention and materials:

### Reversible

The pathway is constructed from the same material used at the entrance. Red-pink exposed aggregate with a smooth finish concrete pathway. The red pathway is intended to read as the main route and an important pathway, because it takes the visitor on a narrative history journey.

Rectangular steel mesh walls filled with shale rocks from site was chosen as a main material element in the landscape; it suggests a temporary structure, it is reversible and can be clearly distinguished from the old structure.

Eucalyptus lathes are used as pergola roof. The timber is a temporary material and creates a nostalgic atmosphere with the shade lines on the ground and against the wall.

Steel is mainly used to contrast the heavy stone fort structure. Steel structures are more delicate (smaller/thinner) and appears like a lighter structure. It is clearly distinguishable as new.

The walkway between the arches inside the fort is slightly raised to accentuate that this is not part of the ruin, it creates awareness of the route and guides the visitor along the intended route.

Glass is used for the information boards and signage so that the visitor can clearly see through it so none of the existing walls' significance is lost and it can be clearly distinguished from the old. The signage is fixed to the walls by using round head bolts to mimic the round head bolts used in the fort's construction. This is used as a semiotic resource to stimulate memory and create awareness as well as aiming for coherence. It takes into consideration the aesthetics of the old fort fixings and accentuates it.



Illus. 223: The narrative trail (history) - elevated steel profile frame with steel grid surface, and glass information boards on either side of the walls. (Author: 2011)



Illus. 224: The main pathway to the narrative trail and restaurant (Author: 2011)

### Experience:

- Informative
- Educational
- Discovery and interest

### Semiotics & didactics

#### Reason rationale - Symbolic:

- The narrative starts at the entrance and moves along the main pathway which forms a strong axis leading to the historic information and restaurant.
- The pergola wall structures are set out from the fort ruin openings to create an outdoor room.
- The narrative takes you on a journey through the fort and informs you of the history.
- The raised steel grid walkway within the ruin runs along the arches.
- Glass information boards are fixed against the existing ruin wall. The visitor is constantly informed while exploring through the fort walls.

## 7.10.4 Courtyard (Space 5)



*Illus. 225: The existing courtyard toward one of the cannon and first ammunition store. And the one below. (Author: 2011)*



*Illus. 226: The existing ammunition store room (now proposed to be the visitor ablution facilities with a medicinal roof garden on top). The existing stairs lead to the top (now proposed to install steel treads which seem to float on top of the existing). This is also a semiotic resource - it stimulates the memory of the past when the soldiers would run up these steps. It celebrates the existing. And above image. (Author: 2011)*





*Illus. 227: Location of space five, the courtyard. (Author: 2011)*



*Illus. 228: View towards the new proposed courtyard. (Author: 2011)*

### Experience:

- Openness
- Freedom
- Stimulated memory of some historic aspects (fort element remnants) - semiotic resources

### Awareness

#### Design intervention and materials:

The courtyard is kept open, but with a directed pathway to the narrative trail and restaurant. Paving is laid in the location of the old corrugated iron buildings, to stimulate the memory of those past buildings and also to create awareness of the history. The imprint in the landscape also serves to create interest and curiosity.

The water channel has an organic flow, different from the original furrows, but this channel celebrates the location and existence of the water furrows in the past. It stimulates the memory of the visitor.

The water channel is laid out with rocks and on the edges, a concrete strip and some steps indicate its position. Children can play there and people can sit close by the water which has a calming effect on a person.

#### Reason rationale - Symbolic:

- The old parade field
- This was open and used for multiple purposes. It was also the place where corrugated iron buildings were erected to serve as a school etc.
- The courtyard is kept open, the visitor can experience openness and freedom especially after the threshold entrance with the intimidating closeness.
- The footprints of the corrugated iron buildings are celebrated at their locations with paving in the grass.
- The courtyard holds remnants of the old water furrows.
- A water channel celebrates the historic existence of a water furrow. It also serves as a water feature and stormwater catchment.
- Water feature creates atmosphere

### Semiotics & didactics

### 7.10.5 Lookout points 1-4 (Space 6)



*Illus. 229: A 360 degree view of and from lookout point 1 (Author: 2011)*



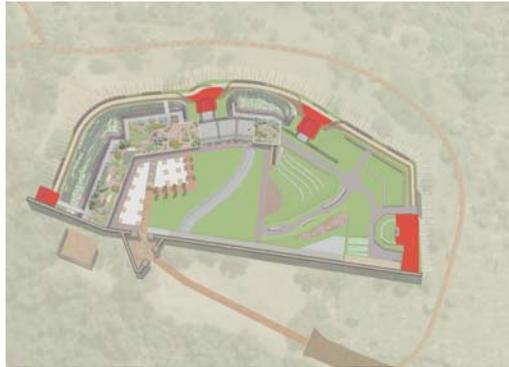
*Illus. 230: A 360 degree view of and from lookout point 2 (Author: 2011)*



*Illus. 231: A 360 degree view of and from lookout point 3 (Author: 2011)*



*Illus. 232: A 360 degree view of and from lookout point 4 (Author: 2011)*



Illus. 233: Location of space six, the four view-points. (Author: 2011)



Illus. 234: Lookout point 2 (Author: 2011)



Illus. 235: Lookout point 4 (Author: 2011)

## Design intervention and materials:

## Semiotic & Didactic

Lookout points 2 and 3 has an exposed aggregate concrete, fine texture surface. Yellow oxide is mixed with cement to give a yellowish colour to the surface. The part crossing the cannon room (without a roof) of the lookout point is constructed from steel channel frame with steel grid over it. A part of the grid is also made of checker plate to make it easier for some people to walk. Steel grid is used with large openings (50mm x 50mm) to ensure the visitor is able so see the ground or in this case the cannon room floor and walls (visual access). Steel is used to construct a light structure, reversable and clearly distinguishable as a new intervention. Lookout point 1 is the same except for the steel checker plate surface.

The existing quartzite pathway is kept, but exposed concrete pathway strips are laid on both sides of the existing pathway to widen it. The concrete has a rough finish with large dark aggregate mixed with cement and brown (red + yellow + black) oxide. The old pathway can be clearly distinguished from the new concrete path extension.

The benches consist of steel mesh baskets with shale rocks from site and a smooth in-situ concrete seating surface. Lighting is also incorporated into the bench for night time events.

The surface colour differs from the rest of the pathway leading around the top at the back of the fort to accentuate that this is a different space and something else is happening.

At lookout point 1, precast concrete stairs lead down to the roof garden. The visitor can enter or exit the roof garden at this point.

The 2m high steel mesh walls with shale rocks from site, are placed in segments along the northern side of the fort. Holes are designed on different levels to improve access for everyone. The holes frame the intended views. The steel mesh walls with shale rocks from site are placed in flanging positions to direct the visitor's view and to create a more intimate space.

New *Senegalia niloticae*, *Searsia lanceae* and *Searsia leptodictyae* are planted and the existing *Searsia lanceae* are used to create shaded areas and help in directing views.

People can either sit, relax and enjoy the view or do it standing or just pass by.

At lookout 4 one can clearly see where the old earthmound lookouts were with the low retaining wall remnant. The grass slopes slightly upwards towards the existing column structure. This informed the design decision to place a landscape seating step. The seating wall is constructed from rectangular steel mesh baskets with shale rocks from site and a smooth in situ concrete seat (coping).

The existing column structure at lookout 4 is given a new use as mentioned earlier. This creates awareness for the visitor of his surroundings and the historic context he is in.

The directional indicator is made of galvanised steel plate onto which the information is engraved. This steel plate would then be bolted onto the existing column structure made from a rock and cement base with concrete column on top. It doesn't damage the heritage element at all, but provides a new compatible use. The old can clearly be distinguished from the new.

No balustrades are needed at lookout 4, because the slope on the eastern side is very gradual and no one will fall.



*Illus. 236: Lookout point 1: plan (Author: 2011)*



*Illus. 237: Lookout point 2: plan (Author: 2011)*



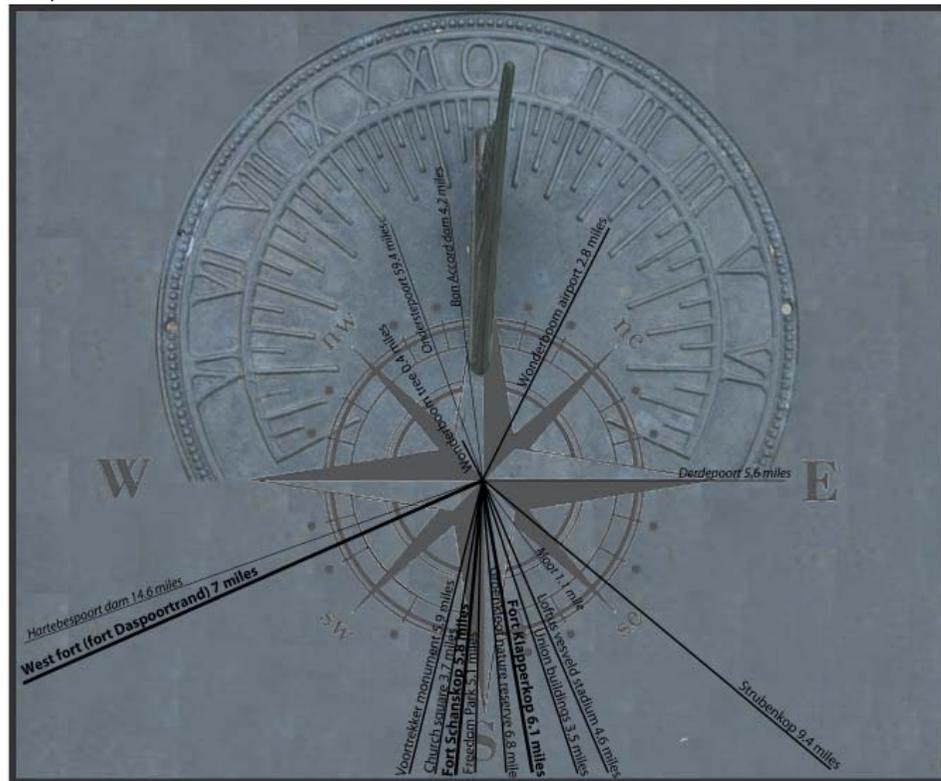
*Illus. 238: Lookout point 3: plan (Author: 2011)*



*Illus. 239: Lookout point 4: plan (Author: 2011)*



Illus. 240: Existing remnant of the old communication mast onto which the directional indicator element to all the historic landmarks and fortifications will be constructed (Author: 2011)



Illus. 241: Directional indicator element to all the historic landmarks and fortifications (Author: 2011)

## Experience:

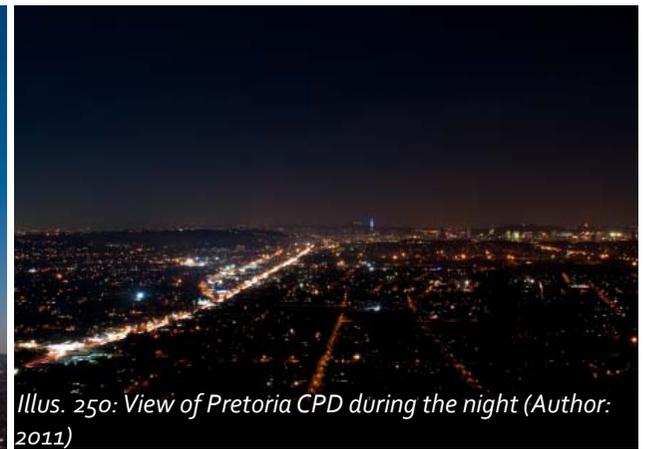
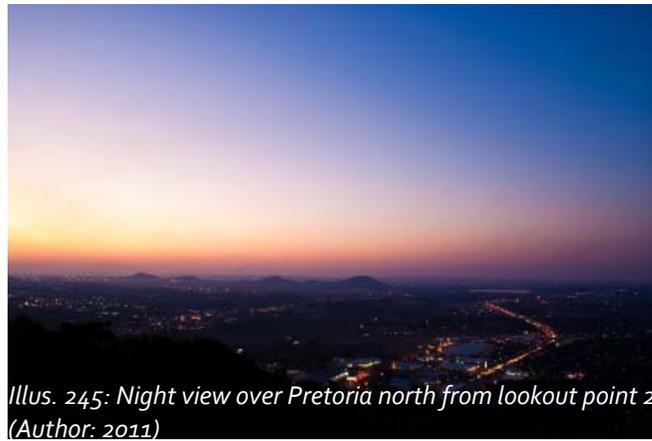
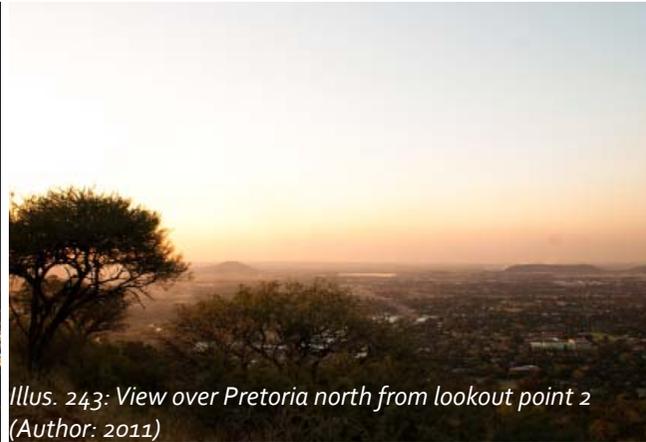
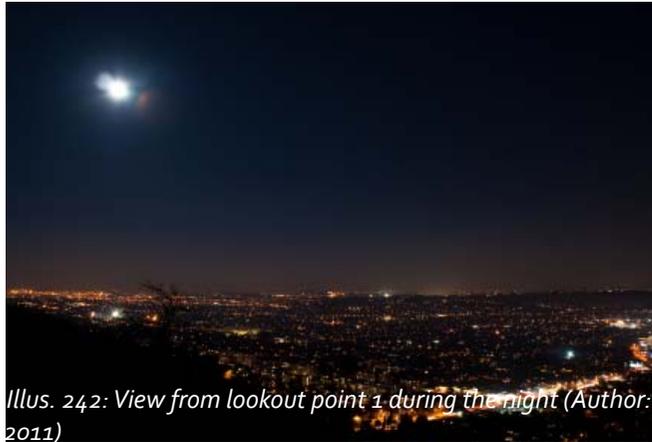
- Framed views
- Direct views to historic elements and areas
- Celebrate what was there
- Interest and discovery
- Relaxing/contemplating
- Educational
- Memory

## Reason rationale - Symbolic:

## Semiotics

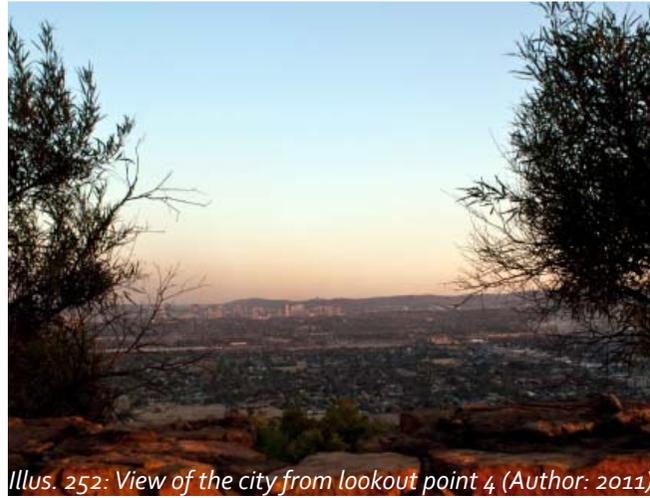
- The Wonderboompoort can be seen from lookout point 1.
- The visitor's view is directed to the poort.
- An information plate informs the visitor about what he is seeing or should be seeing.
- Lookout points 2 & 3 are both located on the old positions of lookout points. It was always an earth mound with a walled structure with aiming holes.
- There was a wall all around the northern side of the fort with aiming holes - the new proposed design proposes wall segments all around the northern side to symbolise what was there and create awareness of the historic uses. These wall segments have holes in them to once again aim the visitor's view to the intended historic element or area as well as to frame different views.
- At lookout 2 the visitor's view is directed to Onderstepoort, Bon Accord dam and surrounding area.
- At lookout 2 & 3: The visitors can experience a fantastic view of Pretoria central, historic areas such as the Moot as well as see the three other forts, monuments and landmarks to the south.
- At lookout 3, the visitor's view is directed to Wonderboom airport, the agricultural piece of land, 'Swartkoppies', Pyramid hills and surrounding area.
- At lookout 4, the visitor's view is directed over Voortrekker weg where the largest Stone Age site is located.
- At lookout 4, the holes in the existing fort wall provide for framed views of the city
- The existing column structure at lookout 4 is given a new function by fixing a steel plate on top. This element is a 'directional/contextual indicator' of the direction and distance of the other forts and historical landmarks. Refer to illus. 241
- The distance is provided in miles to stimulate the memory of the visitor of the past when distances were given in miles. Takes the visitor back into the past. (semiotic resource - to create meaning)

The different views one can experience from the different lookout points

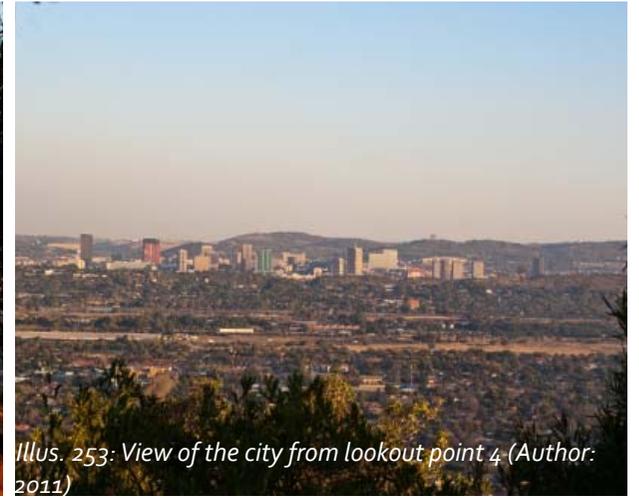




*Illus. 251: View over the courtyard (Author: 2011)*



*Illus. 252: View of the city from lookout point 4 (Author: 2011)*



*Illus. 253: View of the city from lookout point 4 (Author: 2011)*



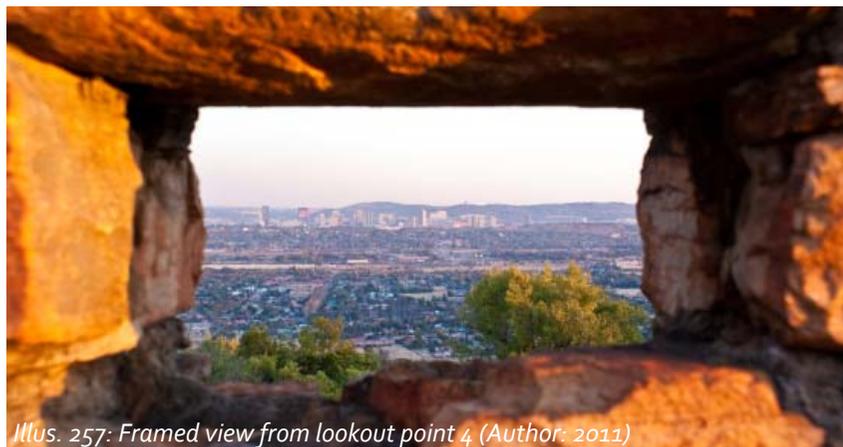
*Illus. 254: Photograph at lookout point 4 (Author: 2011)*



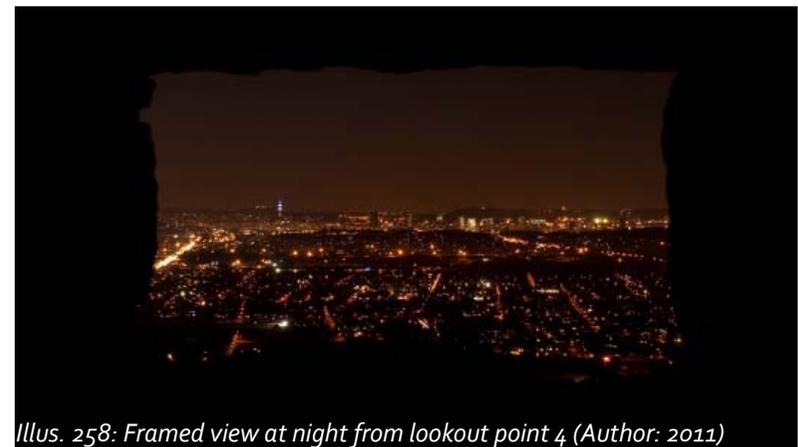
*Illus. 255: Moonlight through the tree (Author: 2011)*



*Illus. 256: View of the city in moonlight from lookout point 4 (Author: 2011)*



*Illus. 257: Framed view from lookout point 4 (Author: 2011)*



*Illus. 258: Framed view at night from lookout point 4 (Author: 2011)*

### 7.10.6 Medicinal roof garden (Space 7)



*Illus. 259: Medicinal roof garden plan view (Author: 2011)*

*Illus.260: Medicinal roof garden sketch to indicate the colour, texture and atmosphere (Author: 2011)*



*Illus. 261: Location of space 7 - Medicinal roof garden (Author: 2011)*



*Illus. 262: Medicinal roof garden bird view (Author: 2011)*

## Semiotic & Didactic

### Design intervention and materials:

Locally indigenous medicinal plants are used. Some plants occur on site. This serves as a medicinal plant exhibit of plants occurring in Pretoria. The visitor is made aware of the different species and their uses.

It provides for an exciting experience as one strolls through the garden, smells, touches and sees the different scents, textures and colours. The visitor is also confronted with a spectacular view of the city. One experiences Pretoria on a different level.

A steel balustrade is placed inward from the edge to minimize the visual impact from the courtyard.

The pathway is laid out with compacted soil with exposed aggregate pieces at the location where the visitor would cross the existing room walls. This creates awareness of the existing ruin walls underneath the roof garden.

## Narrative

### Experience:

- Educational
- Discovery
- Interesting
- Narrative
- Experiencing different textures and colours

### Reason rationale - Symbolic:

- The medicinal garden refers back to the site's past association with the indigenous people - as the 'place of medicine'
- Local indigenous medicinal plants are used

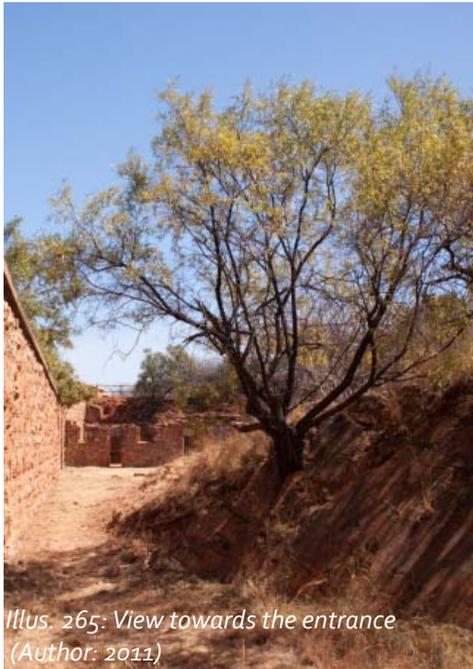
### 7.10.7 Geology, materiality and spirit of place (Space 9)



Illus. 263: Existing fort wall with aiming holes. (Author: 2011)



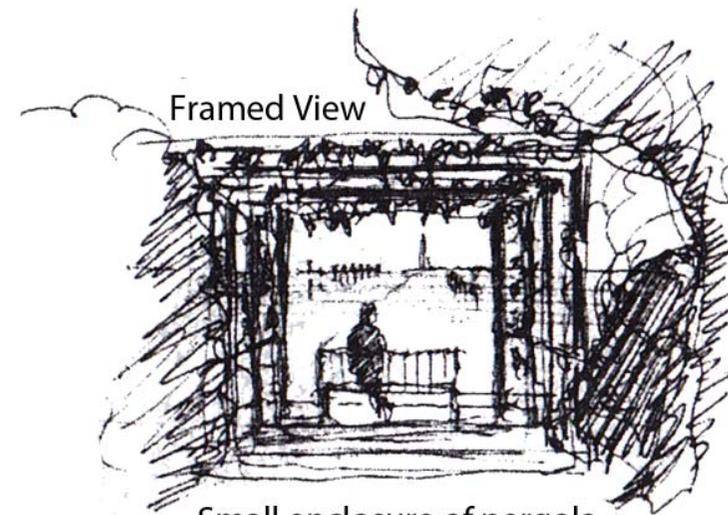
Illus. 264: Existing geology exposure. (Author: 2011)



Illus. 265: View towards the entrance (Author: 2011)



Illus. 266: Aiming hole (Author: 2011)



Framed View  
Small enclosure of pergola  
creates refuge with prospect  
of vista

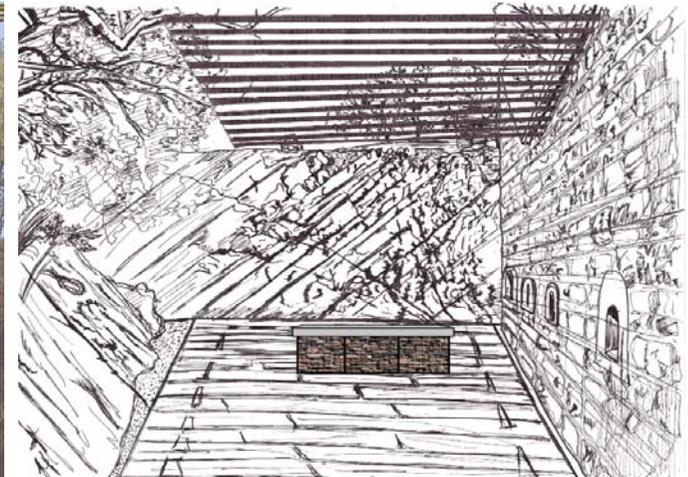
Illus. 267: Dee's explanation of a refuge vs. prospect. (Dee, 2001: 23)



Location of space 9 - Geology, materiality and spirit of place narrative (Author: 2011)



Illus. 268: View towards the entrance - refuge vs. prospect theory. Spirit of place. (Author: 2011)



Illus. 269: Geology, materiality and spirit of place narrative. View towards the cut with the different rock layers. The aiming holes on the one side and the graffiti wall to the left. (Author: 2011)

**Experience:**

- Refuge
- Education
- Memory
- Relaxation

**Didactic & Refuge**

**Design intervention and materials:**

This narrative of the geology layers was approached with the notion of teaching and to create some interest and discovery once the visitor finds the graffiti.

This route starts at the entrance. The visitor is attracted by the pergola timber roof structure stretching from the existing fort wall leading to the cut in the landscape. To create an even more emphasised pathway the author decided to construct this pathway from in situ smooth concrete and use a very light colour cement to create a very light walkway. This contrasts the shale and sandstone walls and can be clearly distinguished as such. The existing aiming holes in the fort wall further directs the visitor to move in that direction, creating awareness of the geology and historic graffiti.

Steel, timber and concrete are used. A bench is placed as seating if the visitor would like to enjoy the silence and refuge atmosphere.

A representation or presentation of the rock layers is provided.

**Reason rationale - Symbolic:**

- This space is secluded/concealed from the rest of the site.
- It forms a secure niche for the visitor and was likely used by the garrison to gather and socialise, tell stories etc.
- The refuge vs. prospect theory comes through very strongly at this space, where the visitor can feel secure but with a clear view of the entrance and courtyard activities.
- Historic graffiti is found on the rock gradient of the ramp. This graffiti dates back to when the fort was in use. The men carved their force number, surname and date on the rock. To see this touches ones interest and heart to actually realise that these men were at this site so long ago, fighting.
- The existing cut in the landscape is part of the ramp construction during the fort construction. Here you can clearly see the different rock layers. The visitor can be educated with regards to the Magaliesberg geology.

### 7.10.8 Amphitheatre (Space 10)



*Illus. 270: View towards the existing gradient. This is the location for the proposed amphitheatre. (Author: 2011)*



*Moonlight theatre and -walks are part of future events that might be held here.*



*Illus. 271: The new proposed amphitheatre and ramp (Author: 2011)*

**Experience:**

- Excitement (during a show)
- Interest (If educational value is provided)
- Relaxing seating
- Educational
- Socializing



*Illus. 272: Location of space 10 - Amphitheatre and ramp (Author: 2011)*



*Illus. 273: Amphitheatre and ramp (Author: 2011)*

**Semiotic & Didactic**

**Design intervention and materials:**

The steps are constructed along the existing contours. Less cutting and filling is therefore needed. The steps will be constructed with rectangular steel mesh baskets filled with shale rocks from site. An in situ concrete coping will be constructed on top for seating. This method and material used is reversible and clearly distinguishable from the old (existing).

The benches along the cannon ramp pathway is constructed in the same manner and is designed to be used as extra seating during an event if needed.

The stage is an open extension of the pathway which links all the spaces together. This hard open space can be used to set up a temporary structure (such as a tent) if required.

The small intimate amphitheatre has a clear view over the activities in the courtyard.

**Reason rationale - Symbolic:**

- The steps are cut into the existing gradient following the existing contours
- The amphitheatre is located next to the location of the corrugated iron school building. Thus the amphi symbolises education and the fact that the garrison received it here
- This space is also given a new function which is compatible with the existing heritage site.
- Intimate shows can be held here, stargazing, school education and general seating. (Monthly events)

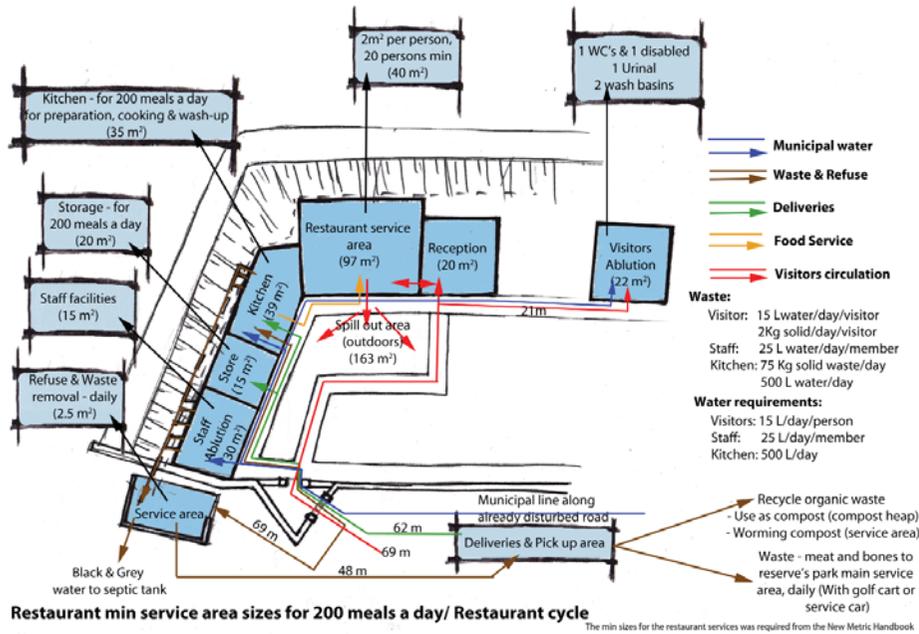
### 7.10.9 Restaurant & spillout area (Space 12 & 13)



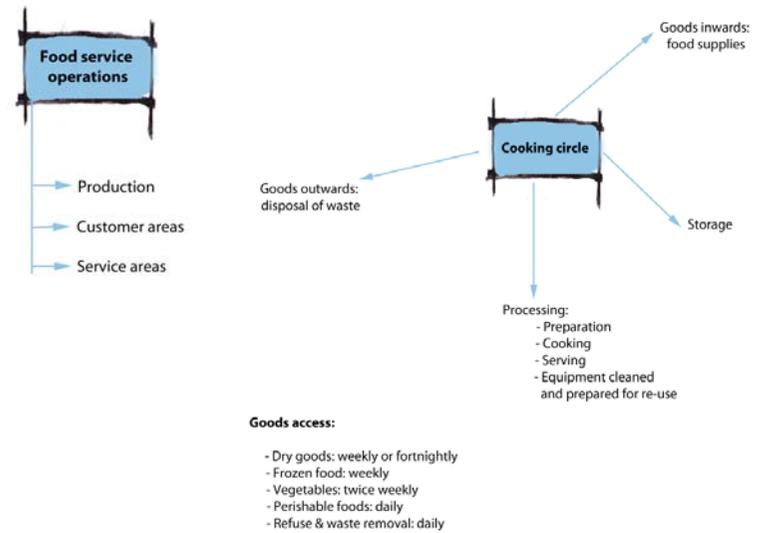
Illus. 274: Courtyard and location of the proposed restaurant spill-out area (Author: 2011)



Illus. 275: Bird view of the restaurant spill-out area, entrance and main pathway. (Author: 2011)



Illus.276: Restaurant cycle. (Author: 2011)



Illus. 277: Diagrams of operations in a restaurant. (Author: 2011)



Illus. 278: Location of space 12 & 13 - Restaurant and spill-out area. (Author: 2011)

### Design intervention and materials:

### Semiotics

#### Restaurant and services:

The restaurant is constructed using steel H-section columns and I-beams with hollow core concrete slabs which forms the roof.

The surfaces within the restaurant will be a concrete layer with clear epoxy. New concrete surfaces will be poured because the existing concrete floor of the fort is breaking up in some areas. If a ruin becomes a public space certain precautions should be made, and concrete which deteriorates cannot be used in a restaurant configuration where people work with food. Some fort room floors are left unchanged to illustrate how the old structure looked.

Aluminium and glass stacking doors are used to enclose the restaurant. This ensures that the existing walls can be seen through the glass. The visitor is constantly aware of being in the fort - the historic structure. Stacking glass doors are used to ensure that the glass can be cleaned on both sides.

Refer to illus. 276-277 to see the restaurant cycle and operation.

#### Spill-out area:

The surface of the spill-out area is a polished concrete surface with a white finish. White cement is used to get the lighter colour.

Eighteen *Searsia leptodictya* trees are planted within this space. This can be seen as a semiotic resource to create meaning.



Illus. 279: The restaurant spill-out area underneath the 18 trees which symbolise the men stationed at the fort during the second Anglo Boer War. (Author: 2011)

#### Experience:

- Relaxing
- Educational
- Socializing

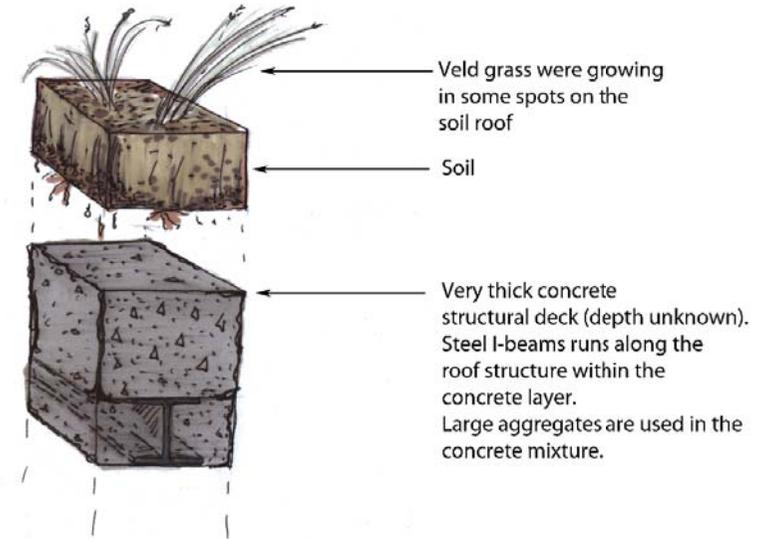
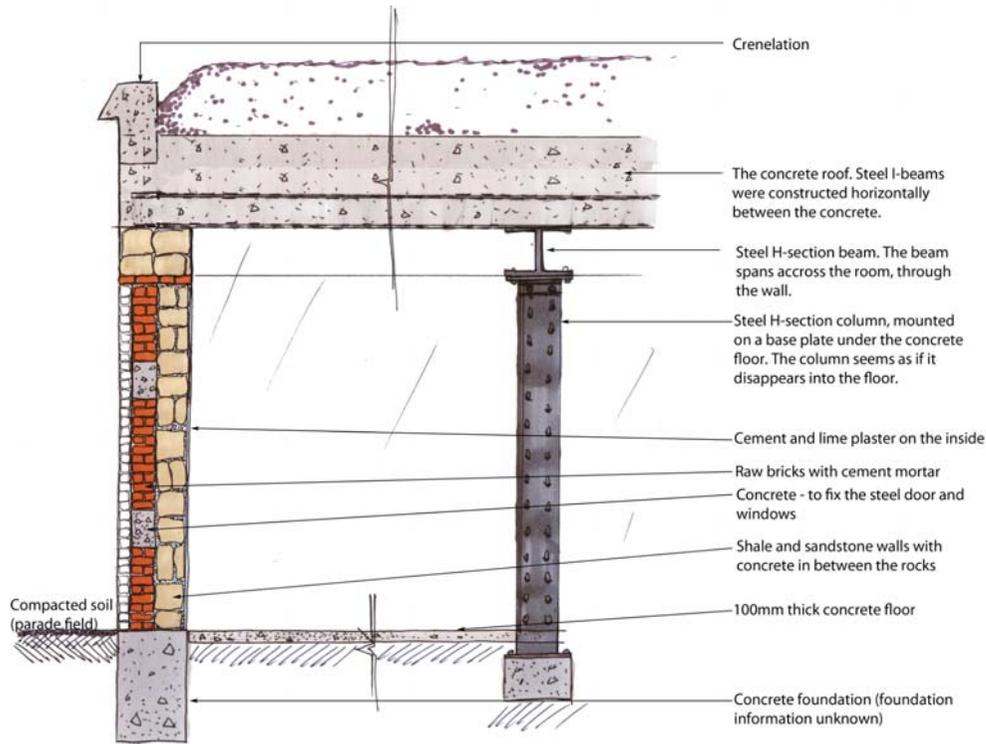
#### Reason rationale - Symbolic:

#### Awareness

- The fort needs to have a compatible new use to attract people who, in turn, protect the heritage site.
- A restaurant is a compatible use. The new proposed structure with the medicinal garden on the roof will use 6 of the 9 fort rooms. The other rooms are left as they are with only the elevated steel walkway that runs through the arches. The visitor can clearly see and identify the old structure.
- The roof of the proposed restaurant floats on top of the existing walls, protecting it from further deterioration.
- The restaurant will bring some life back into the fort ruin.
- Visitors are educated in the old structure and some aspects and past experiences can be experienced. For example: the visitor can walk on the roof as in the past and experience the contemporary (development).
- Steel profiles are mainly used to be clearly identified as new. It is a lighter structure than the existing.
- Aluminium and glass stacking doors are used to keep the existing walls as backdrop in the restaurant. Create awareness of the existing ruin walls.
- 18 Trees are planted in the spill-out area to symbolise the men (garrison) which was stationed at the fort during its operation (during the Second Anglo Boer War).

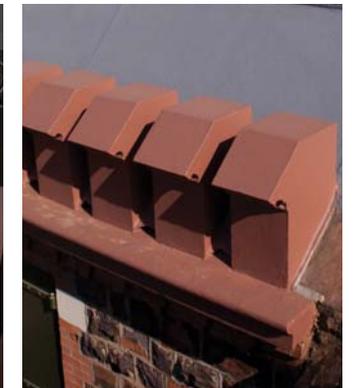
## 7.11 Exploration of existing structure and new intervention

### Section through the old fort structure foundation, wall, and roof



Illus. 280: Original roof layers (Author: 2011)

Fort Klapperkop as example of the old construction methods (A restored site to refer to):

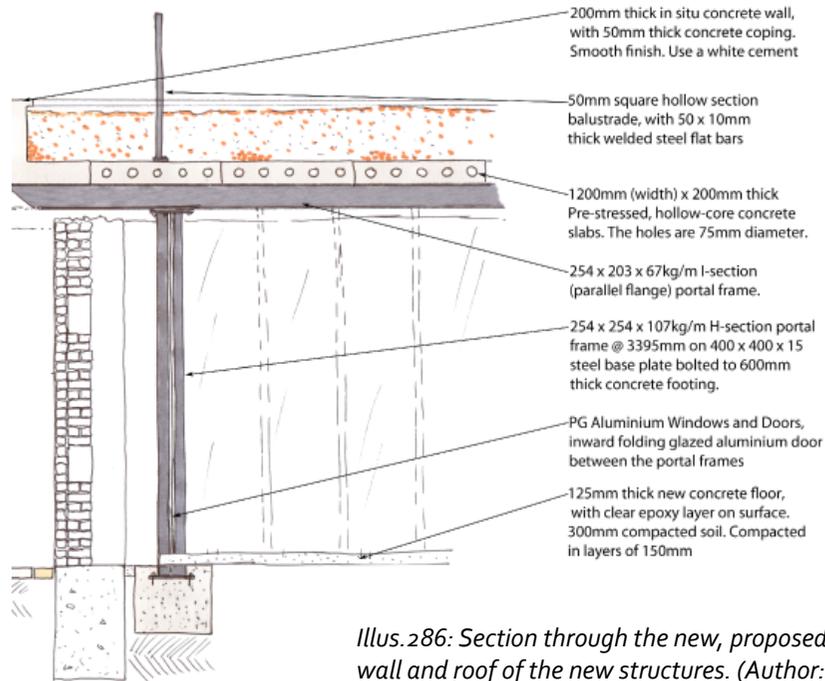


Illus. 281: Detail of the wall of fort Kapperkop how it is restored to the original. This gives a clear indication of how Wonderboom fort was constructed. Note the different wall layers.

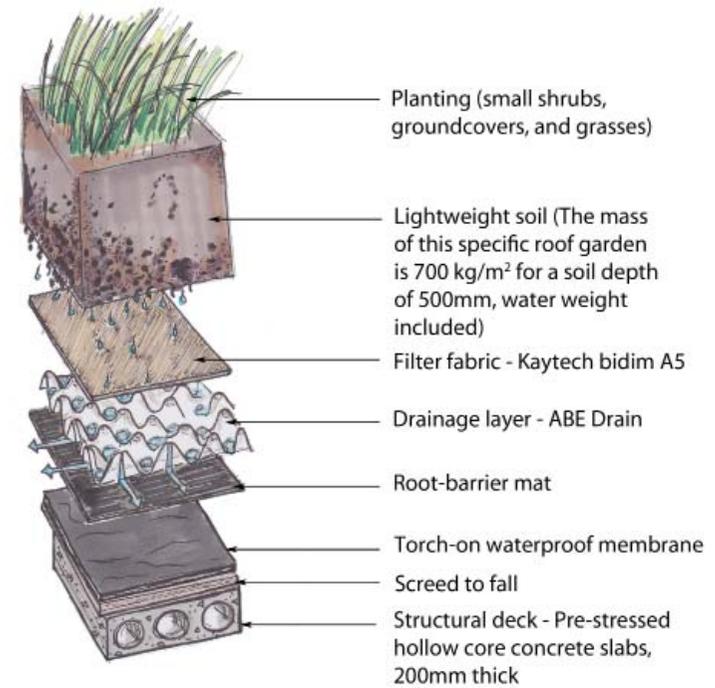
Illus. 282-284: View of the large steel beams and columns used as main structure with smaller steel beams crossing the middle beam. These smaller beams are built into concrete so that the steel strips and concrete are visible. Note the bolts with round heads. These are also photos taken from fort Klapperkop during research. Fort wonderboom seems to have black steel columns and not green like the ones at fort Klapperkop.

Illus. 285: The crenelation on top of fort Klapperkop. Wonderboom fort also had crenelated roof edges like these.

## Section through the new proposed structure foundation, wall, and roof



*Illus. 286: Section through the new, proposed foundation, wall and roof of the new structures. (Author: 2011)*



### The green roof layers (NTS)

*Illus. 287: Layers of the new proposed medicinal roof garden. (Author: 2011)*

## Examples of Wonderboom fort remnants of the old construction methods:



*Illus. 288: Part of the ruined wall at Wonderboom fort. Clearly shows how the walls were constructed.*



*Illus. 289: Close-up of the wall at Wonderboom fort ruin.*



*Illus. 290: Close up of the steel column at Wonderboom fort. Deteriorated, but one can clearly see how it was fixed etc.*



*Illus. 291: Remnant of Wonderboom fort's roof. One can see that they used large aggregates in their concrete mix. Note the pinkish colour of the lime on the officer's wall*



*Illus. 292: Close-up of the wall plaster at Wonderboom fort. They made use of a cement plaster over the shale rocks. Tinted with white, beige and pink lime*

## 7.12 Conclusion

The following matrix indicates the different spaces discussed and where the design principles, approaches and heritage principles were applied.

Sketchplan - fort												
Guidelines	Space 1: Entrance approach	Space 2: Entrance	Space 3: Pergola_ Narrative (history)	Space 4: Arches_ Narrative (history)	Space 5: Courtyard	Space 6: Lookout point 1 -4	Space 7: Medicinal roof garden	Space 8: Vegetable garden	Space 9: Geology, materiality and spirit of	Space 10: Amphi- theatre	Space 11: Picnic areas	Space 12 & 13: Restaurant & spill out area
<b>Design &amp; theory Principles</b>												
1	Create awareness											
2	Create access											
3	Prospect vs. refuge											
4	Interest & discovery: Complexity vs. coherence											
<b>Theory approach</b>												
5	Narrative											
6	Didactic											
7	Semiotic											
<b>Design (Heritage) Principles from charters</b>												
1	Integrate historic areas harmoniously into contemporary life											
2	In any intervention – the old must be clearly distinguished from the new											
3	Any intervention must be sensitive to the character, the setting and the cultural and natural significance of the site, while remaining easily identifiable											
4	New use - a socially useful purpose (compatible use)											
5	Display – communication, education and understanding of the heritage site											
6	No damage to heritage structures – reversible (temporary) interventions											
7	Tangible and intangible exploration											

The aims mentioned in the beginning of the chapter were accomplished in the following ways:

The author attempted to integrate the contemporary uses and facilities with the historic artifact (fort ruin). This was done by finding a compatible use for the fort site which will cater for the needs of the people and at the same time protects the heritage site. A restaurant was proposed with a medicinal garden on the roof as the new use for the site. This new intervention will ensure the attraction of visitors and by doing so, protect the ruin from further deterioration. The new restaurant structure was placed within the ruin rooms. The overlapping protects a large part of the ruin for future generations. The new structure is made of steel, glass and concrete. Steel are mainly used on site to emphasise the new structures. Steel is a more elegant and light structure and can be perceived as reversible. Every addition to the site is reversible.

The intervention is aimed at retaining the genius loci of the place and its setting. This was achieved by creating spaces for the visitor which reads as a refuge (secure, an escape, with a prospect). The entire site (fort) becomes a place people can escape to and get away from the city. This fort gives the visitor amazing views towards the city and surrounding areas and history.

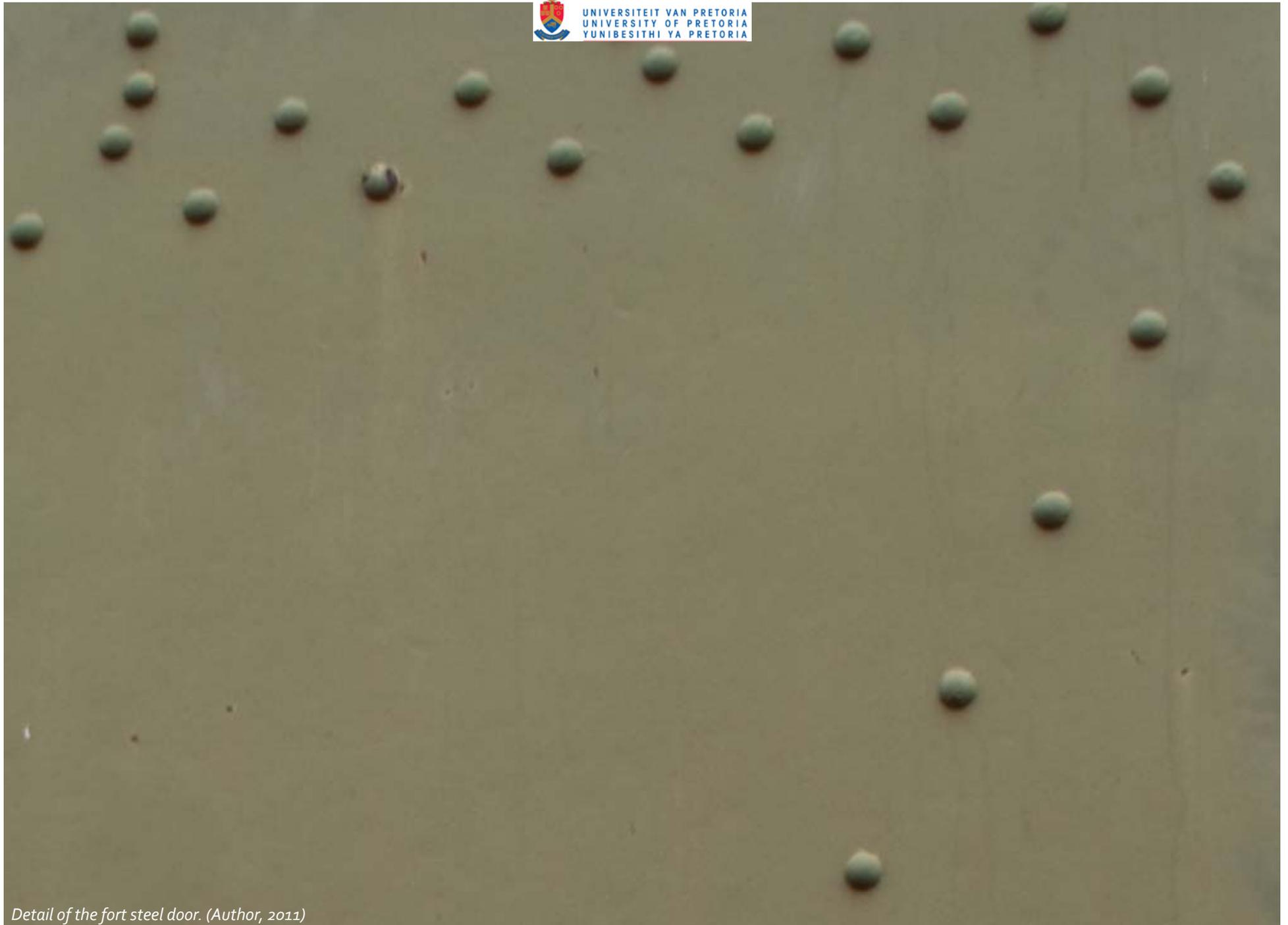
Meaning, experience and identity creation was done by means of semiotic resources (discussed in chapter 3 and 7) as design elements in the landscape to stimulate the visitor's memory or educate the visitor to create awareness. Elements such as a water channel feature presents and symbolises the water furrows of the fort. New steel stairs running on top (floating) of the existing stairs lead to the top. Steel mesh baskets with shale rocks and aiming holes symbolise the pre-cast wall at the back of the fort. The holes frame the views of the visitor and directs them into certain directions. They are educated about historic areas and landmarks in context. An existing column was used to introduce a new use namely, a directional indicator (this is a steel plate which indicates the direction and distances to different landmarks and monuments) to give context to the visitor. By indicating distances in miles the visitor is taken back to the past. The medicinal garden is also used as semiotic resource to symbolise and educate the visitor about what Wonderboom Nature Reserve was known for in the past, namely: 'a place of medicine'. The eighteen trees in the spill-out area is also a semiotic resource to symbolise the eighteen men who were stationed at the fort during its operation. The spill-out area's shape and size were informed by the size of the garrison room. The walls of the pergola structure are repetitions of the door and window openings of the fort – creating an outdoor room.

Interest and discovery was created by means of complexity and coherence. Complexity was created by the different semiotic elements used on site and the diversity of them. Different textures, shapes and forms in the landscape provided for complexity. Coherence was created by means of the narratives, which link the different events (nodes)

and elements together. Unity was created through the repetition of the steel mesh wall structure and by means of a minimum material pallet of steel, concrete, glass and timber. Mostly steel was used for the new elements and concrete for the pathways.

Access to and knowledge about the different elements was provided. Awareness of the different historic layers was given by means of the narrative trails, their information plates and the use of the semiotic resources. Awareness of and distinction between the old and the new is created through the use of steel to act as thresholds.

The following chapter will take this design sketchplan intervention further into technical clarification.



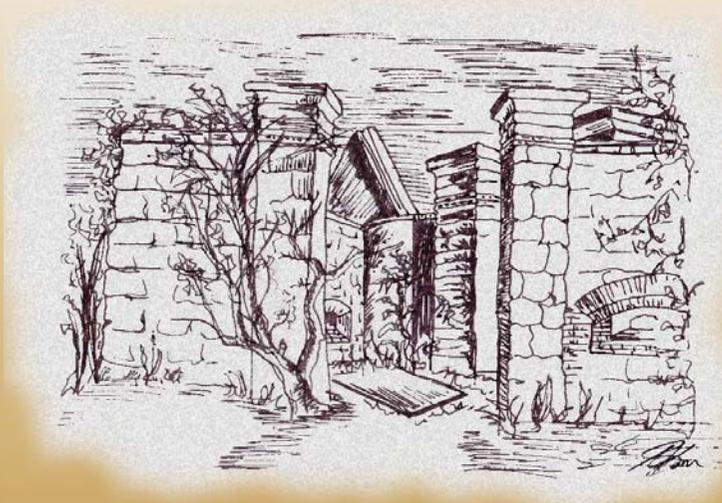
*Detail of the fort steel door. (Author, 2011)*

# TECHNICAL RESOLUTION

# 08

1. INTRODUCTION
2. SOFT MATERIALS
3. HARD MATERIALS
4. SUSTAINABILITY STRATEGIES
5. TECHNICAL PLANS
6. SECTIONS
7. DETAILS

This chapter will focus on the technical resolution and clarification of the sketchplan.



## Introduction

This chapter investigates the technical resolution of the proposed design. The site location and site in context plans are presented to orientate the reader. The final sketchplans are presented followed by the following:

- Soft materials
- Hard materials
- Sustainability strategies
- Reference plan
- Lighting plan (atmosphere and technical)
- Stormwater management plan
- Stormwater calculations
- Technical sections and details

The sections reference the details, which explain how the design would be implemented and constructed.

## 8.2 Location map



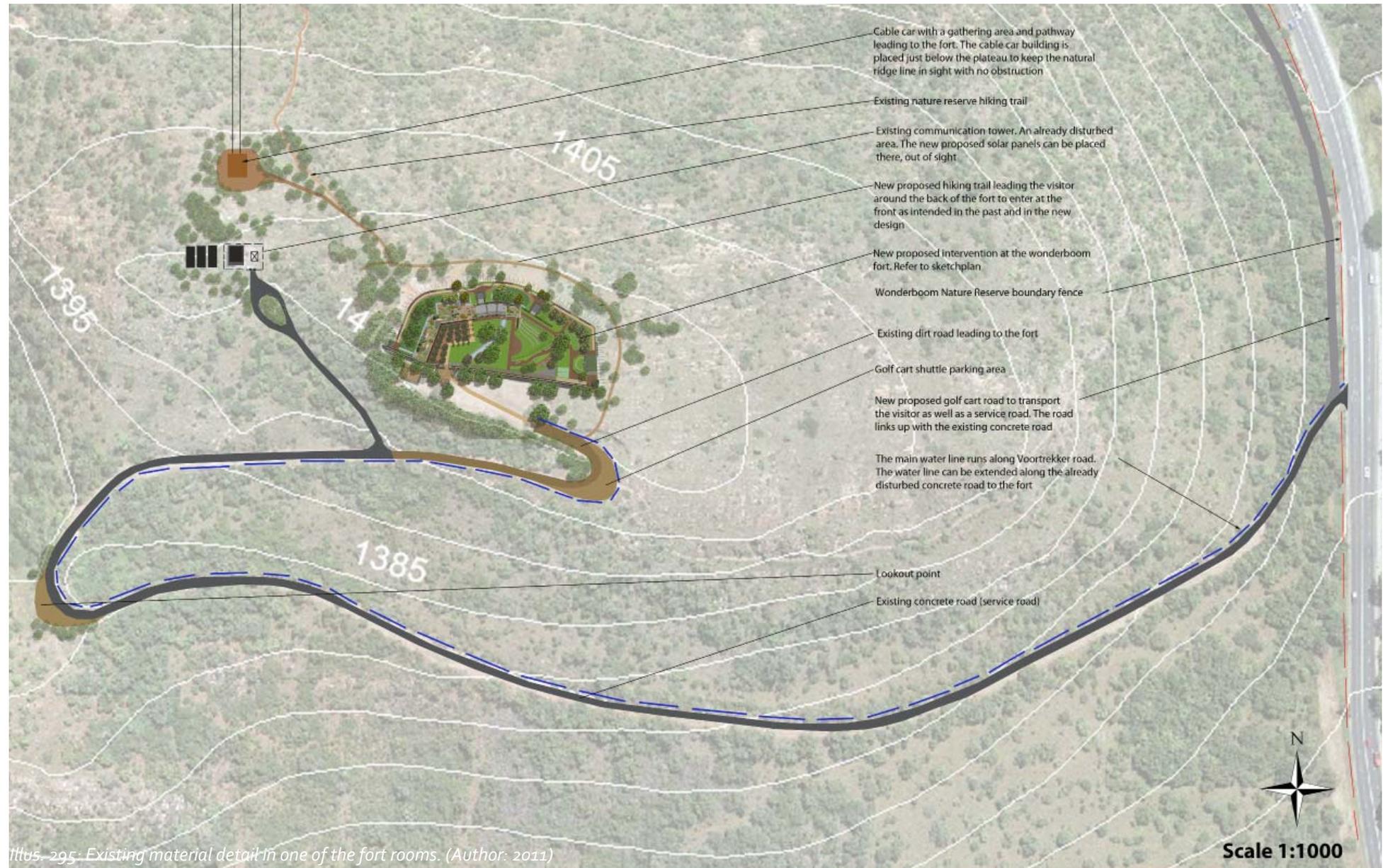
Illus. 294: Location map of Wonderboom fort (Author: 2011)



Illus. 293: Existing material detail in one of the fort rooms. Note the steel column, deteriorating concrete floor and ruined walls. (Author: 2011)

### 8.3 The site in context

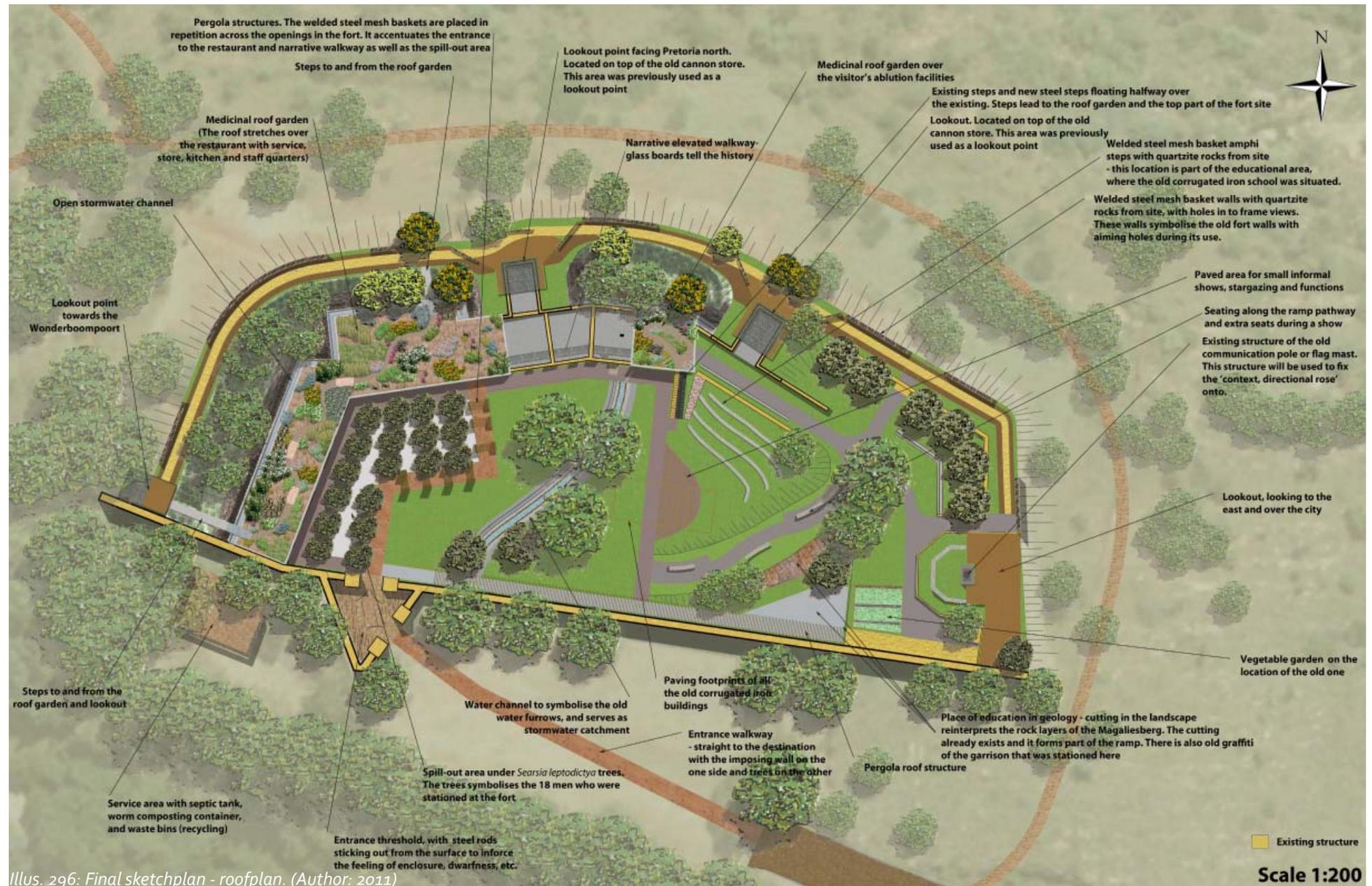
This plan refers to the context in which the Wonderboom fort is located and gives a general understanding of the surrounding area. It indicates the existing concrete road leading to the fort and the golf cart road linking with it. The proposed municipal waterline will run along the concrete road (already disturbed area). The location of the proposed solar panels are indicated near the existing communication tower. This area is easily accessible and out of sight. The location of the cable car is also shown.



Atlas 295- Existing material detail in one of the fort rooms. (Author: 2011)

## 8.4 Final sketchplan - roof plan

This plan illustrates the roof plan of the site where the landscape intervention is illustrated on a detail level and the various components of the design are indicated.



Illus. 296: Final sketchplan - roofplan. (Author: 2011)

## 8.5 Final sketchplan - building plan

This plan illustrates the building plan of the site where the landscape intervention is illustrated on a detail level.

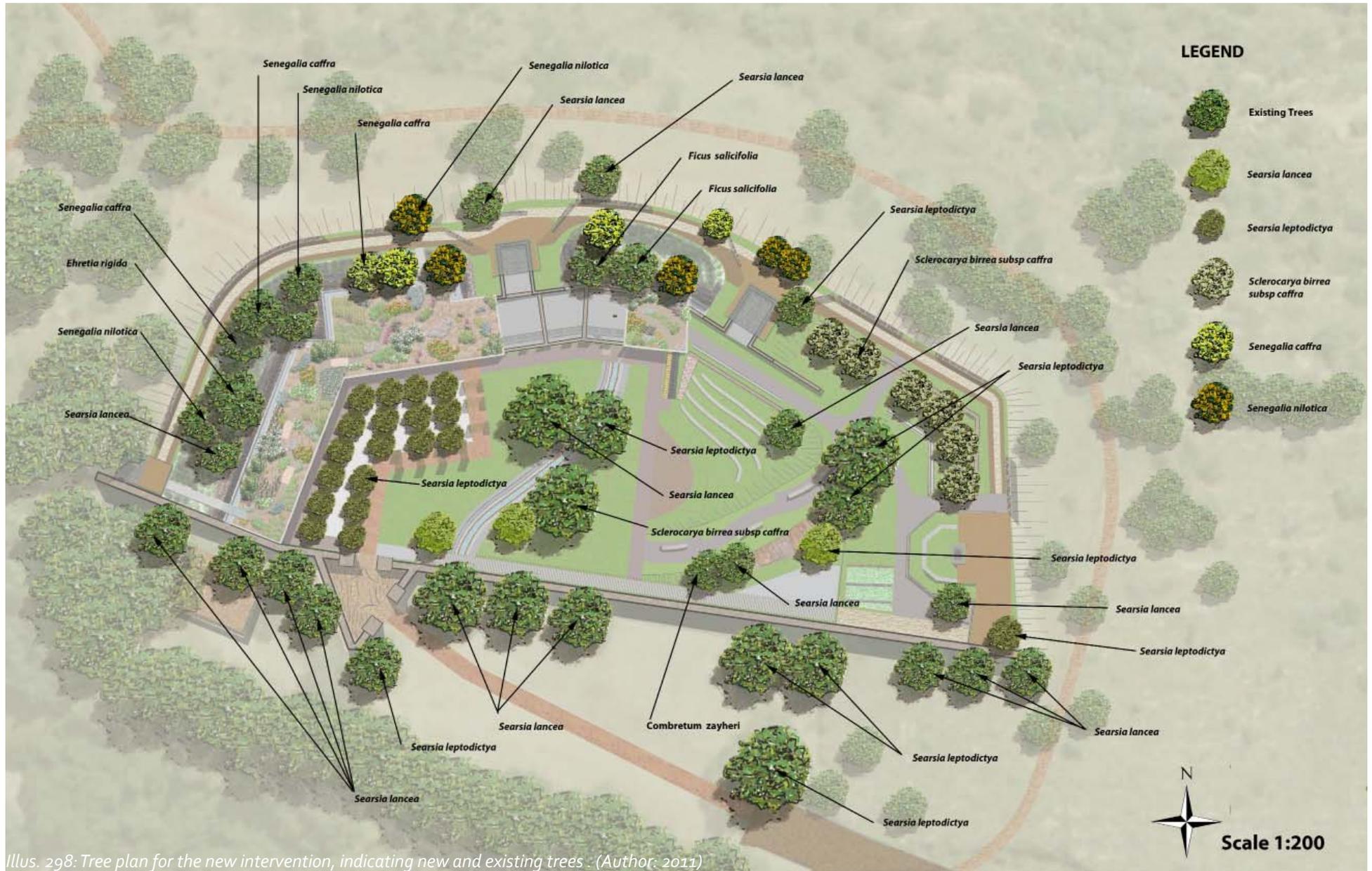


Illus. 297: Final sketchplan - building plan (Author: 2011)

## 8.6 Soft Materials

### Tree plan

The tree plan indicates the position and type of tree species specified for the design as well as the existing tree locations on site.



Illus. 298: Tree plan for the new intervention, indicating new and existing trees. (Author: 2011)

## Tree list

Locally indigenous trees were selected and trees occurring on site. This ensures the character of the place and won't detract from it and that the trees will fit into context. The trees chosen also has a medicinal value which enhances the medicinal garden narrative. See the tree description list below.

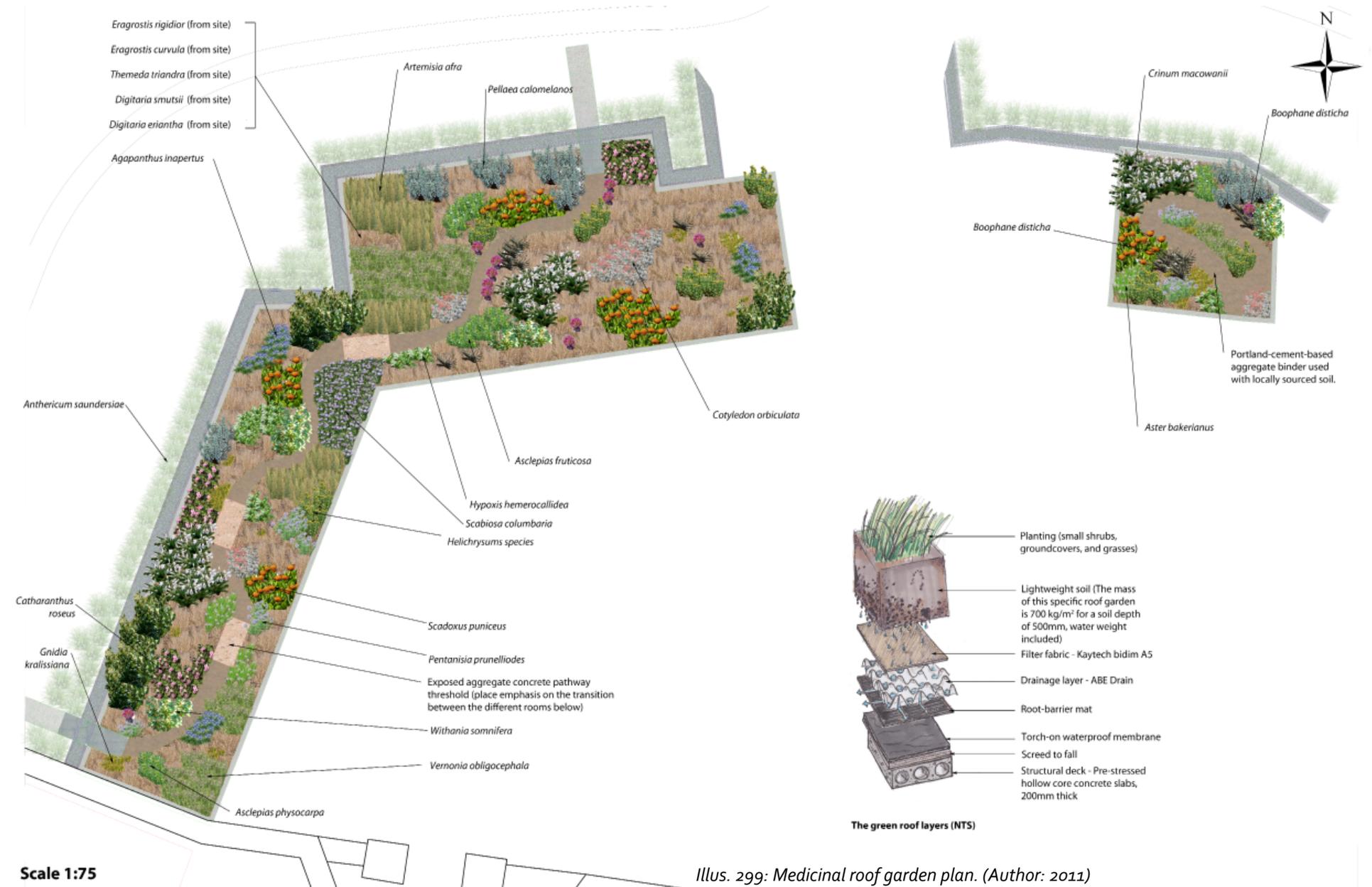
Wonderboom Fort - Tree species (proposed and existing on site)								
Num	Scientific name	Common names	Family	Botanical description	Medicinal use	Plant parts used	Distribution	Flower
1	<i>Combretum molle</i>	Velvet Bushwillow	Combretaceae	Soft velvety leaves, often contorted trunks and deep-red four-winged papery fruits. Dark brown to blackish bark breaks up into small blocks that peel off. Dense spreading crown. Leaves are velvety above and slightly rough below. The foliage turns yellow to bronze in autumn before falling. Spikes of tiny honey-scented yellowish flowers.	In Venda the roots are used to treat infertility. Parts of the tree are used to treat fever and stomach complaints. The trunks are used for grain stamping mortars. Leaves provide red dye and roots a yellow dye for weaving.	Roots mainly and other parts of the tree	Distributed to the east of south africa. Open woodland and on rocky hillsides - often quartzite	Flowering time: Sept - Nov
2	<i>Combretum zeyheri</i>	Large - fruited bushwillow	Combretaceae	It is common on crests . A indicator of sourveld. It has huge, brown, four-winged pods for most of the year. It is a single or multi-stemmed tree with large, drooping leaves. The leaves are darkish-green, leathery and dull. The branches curve downwards and may hang to the ground. The bark is brownish-grey to grey, smooth to finely fissured and flaking in small pieces, giving it a mottled look. Flowers - Single, sweet-smelling, yellow-green, with orange anthers in axillary spikes are borne at the base of the leaves, just before or after the first leaves. Medium size tree with yellow flowers. Deciduous.	Leaf extracts are used to treat backaches and eye ailments.	Leaves	Distributed in South Africa	Flowering in the summer, from Sept - Nov
3	<i>Sclerocarya birrea subsp. Caffra</i>	Marula	Anacardiaceae	The marula is a medium-sized tree of up to 15m in height. The rough bark is flaky, with a mottled appearance due to contrasting grey and pale brown patches. The flowers are borne in small, oblong clusters. Male and female flowers occur separately, usually but not always on separate trees. The flowers are small, with red sepals and yellow petals. Large, rounded, slightly flattened fruites are much sought after for their delicious pulp, high vit c content and edible nuts.	In SA, diarrhoea, dysentery and unspecified stomach problems are treated with the bark, with the bark, which is believed to be of value in combatting fever and in the treatment of malaria. It is also used as a general tonic. Chewing the fresh leaves and swallowing the astringent juice will help with indigestion. Numerous other traditional uses have been recorded. Treatment of diabetes.	The bark, roots or leaves are the medicinal products	Widely distributed in African continent. In southern africa, only the subspecies caffra is found	Feb - June
4	<i>Searsia leptodictya</i>	Mountain karee	Anacardiaceae	Reddish branches and a rounded, drooping crown of light-green leaves. The greyish to dark-brown trunk is rough and deeply furrowed. Sprays of very tiny yellowish flowers are followed by small shiny edible flattened fruits that ripen yellow-brown to brown. Non aggressive root system. Evergreen. Can reach 8m in height.			Open woodland, on forest margins and rocky hillsides.	Flowering time: Jan - Apr
5	<i>Searsia lancea</i>	Karee	Anacardiaceae	It has a drooping crown of glossy olive-green foliage, and a contorted rough black-brown trunk. Sprays of minute, sweetly scented greenish-yellow flowers, followed by small shiny slightly flattened, rounded fruits that are brown and sometimes sticky when ripe. Evergreen. Non aggressive root system. 7 - 9 m high			Widely distributed throughout south Africa Variety of habitats	Flowering time: Jul- Sept

Num	Scientific name	Common names	Family	Botanical	Medicinal use	Plant parts used	Distribution	Flower
6	<i>Ficus salicifolia</i>	Wonderboom fig	Moraceae	Typically a spreading medium sized tree, seldom exceeding 9m. Dark grey and rough, but paler grey to smooth bark in young trees. Leaves are ovate to elliptic, or oblong, sides almost parallel, and clear green, thick leathery leaves. Figs massed along the branches in the leaf axils.			Distributed to the north east of south africa	
7	<i>Senegalia nilotica</i>	Scented thorn	Fabaceae	Can reach a height of 10 m, with an average of 4-7 m in height. The crown is somewhat flattened or rounded, with a moderate density. The branches have a tendency to droop downwards if the crown is roundish. The bark is blackish grey or dark brown in mature trees and deeply grooved, with longitudinal fissures. The young branches are smooth and grey to brown in colour. The young twigs are covered in short hairs. Paired, slender, straight spines grow from a single base and sometimes curve backwards, are up to 80 mm long and whitish but often reddish brown in colour. The leaves are twice compound. It bears single to several, bright, golden yellow, globose, scented inflorescences between the leaves. The flower stalks are hairy.	Parts of the tree were used to treat eye diseases, as a tranquiliser, and as an aphrodisiac. A root extract was used to treat tuberculosis, impotence, diarrhoea, sores caused by leprosy, stomach ulcers, indigestion and haemorrhage. The Voortrekkers made ink and dyes from the pods (red, black and yellow).	Parts of the tree, especially roots	Occurs in the northern part of Gauteng	Flowering time: Sept - Jan
8	<i>Senegalia caffra</i>	Common hook-thorn	Fabaceae	Pale-green, soft and feathery drooping spring foliage and fluffy flower-spikes are particularly pleasing. The rough red-brown bark has shallow grooves and furrows and tends to peel off in rectangular flakes and strips. The hard brown hook-thorns are in pairs and do not shed easily. Cream-to pale-yellow sweetly scented flowers are followed by straight flat brown pods, up to 10cm long. Aggressive root system. 9 x 9 m high			Woodland and wooded grassland, mountain slopes, along streams and rivers, and in coastal scrub. Distributed to the east of south africa	Flowering time: Sept - Oct
9	<i>Dodoniaea viscosa</i>	Cape sand olive	Sapindaceae	Can grow into a small tree of 6m high. Can be a good hedge. Bark is dark grey and stringy and its droopy, shiny new leaves are covered in a resinous substance. Small yellow-green flowers are followed by decorative clusters of winged greenish-red fruits.	A traditional remedy for fever, colds, throat infections, flu and arthritis is prepared from the new leaf tips. The plant was also used to cure pneumonia, tuberculosis and skin rashes.	New leave tips and other parts of the shrub/tree	A variety of habitats, from arid semi-desert regions to the margins of moist evergreen forest, from the south-western cape northwards into tropical Africa.	Flowering time: Apr - Aug

Table 6: List of trees in table format with their botanical description and medicinal value. (Author: 2011)

# Medicinal roof garden planting plan

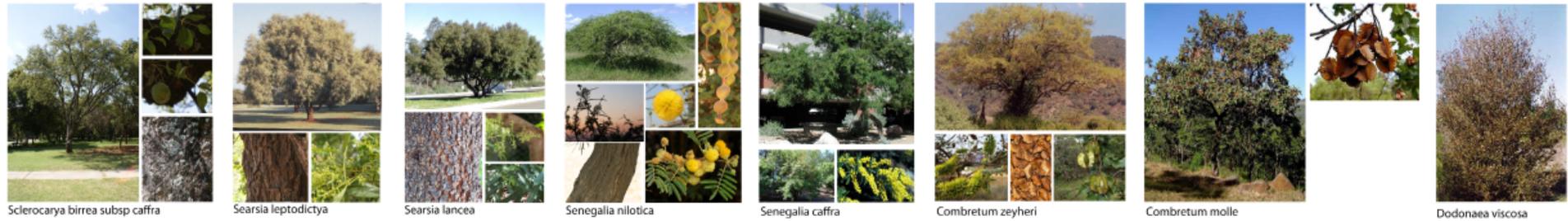
The medicinal plants used in the design are all locally indigenous and will thrive with minimum water after establishment. All the plants can grow in a 500mm soil depth. The medicinal garden serves as a life exhibition of past remedies. The plants provide for an interesting experience for the visitor with different textures, colours, forms and smells.



## Planting pallet

The plant pallet indicates the proposed trees and medicinal shrubs and groundcovers. It illustrates the different colours, textures, shapes and forms of the plants. The plants and trees are locally indigenous not only for ecological benefits, but also because indigenous plants and trees require less water and maintenance.

### Trees



### Shrubs and groundcovers



*Illus. 300: Planting pallet indicating the different plants, colours, textures, shapes and forms. (Author: 2011)*

## Plant list

The plant list below discusses each proposed plant species and its medicine

Wonderboom Fort - Plant species (proposed and existing on site)								
Num	Scientific name	Common names	Family	Botanical description	Medicinal use	Plant parts used	Distribution	Flower
The shrubs and groundcovers are locally indigenous, drought resistant and grows in the sun								
10	<i>Agapanthus inapertus</i>	Blue lily (English)	Alliaceae or Agapanthaceae	Widely grown in gardens. They are all geophytes with thick tuberous rhizomes. Long narrow, strap-shaped leaves, some what fleshy, dark green and about 400mm long. Flowers are borne in a dense cluster (umbel) on a long slender stalk. Pale to dark blue colour, or white.	Used in so-called 'isicakathi', a decoction given orally or rectally as an antenatal and postnatal medicine, and also to the baby immediately after birth. It is mildly purgative and may also be used to ease a difficult labour and to ensure that the placenta is expelled.	Rhizomes and roots are used	widely distributed in the eastern parts of SA	Flowering time: Dec-March
11	<i>Artemisia afra</i>	African wormwood	Asteraceae	Highly aromatic plant. Erect multi-stemmed perennial shrub of up to 2m high. Feathery leaves, with greyish green colour. Pale yellowish and inconspicuous flowers.	Numerous ailments are treated with it, mainly coughs, colds and influenza, but also fever, loss of appetite, colic, headache, earache, malaria and intestinal worms, among others.	The leaves are mainly used, but sometimes also the roots	common species in SA	March - May
12	<i>Asclepias fruticosa</i>	Milkweed	Asclepiadaceae	Erect, multistemmed shrublet of up to 2m in height, with long thin stems and narrow, opposite leaves. All parts of the plant produce a white, milky latex when broken. The greenish-yellow flowers are borne in pendulous clusters, followed by large, bladder seed pods. The surface is covered with sparse, wiry hairs. Each pod is much inflated, but ends in a narrow tip.	The dried leaves are finely ground and used as snuff, not only for headache, but also to treat tuberculosis and as an emetic to strengthen the body.	Leaves are mainly used, but sometimes the roots as well	Indigenous to South Africa, but it has become a weed in disturbed places.	Dec - March
13	<i>Asclepias physocarpa</i>		Asclepiadaceae	Erect, multistemmed shrublet, 2m in height, long thin stems and narrow, opposite leaves. All parts of the plant produce a white, milky latex when broken. The greenish-yellow flowers are borne in pendulous clusters, followed by large, bladder seed pods. The surface is covered with sparse, wiry hairs. The pods are more strongly inflated and rounded, with no narrow tip.	The roots relieve stomach pain and a general ache in the body.	Leaves are mainly used, but sometimes the roots as well	Indigenous to South Africa, but it has become a weed in disturbed places.	Dec - March
14	<i>Boophane disticha</i>	Bushman poison bulb	Amaryllidaceae	Bulbous plant with strap-like leaves arranged in a very distinctive fan-shaped manner. Bulb partly exposed above the surface with numerous papery scale. The rounded inflorescence has numerous pink flowers all at an equal distance from the main flowering stalk.	The dry outer scales of the bulb are used as an outer dressing after circumcision and are also applied to boils or septic wounds to alleviate pain and to 'draw out' the pus. Weak decoctions of the bulb scales are administered by mouth or as an enema for various complaints such as headaches, abdominal pain, weakness and eye conditions. An old belief was that sleeping on a mattress filled with bulb scales will relieve hysteria and insomnia. Very weak decoctions of the bulb scales are used as an effective sedative. Higher doses induce visual hallucinations, which are sometimes used for divination and even higher doses can be fatal. The indigenous people used this plant to talk to their ancestors and to bury their bodies in.	The bulb scales are used	widely distributed in the southern and further north. Usually found in open grassland.n parts of SA	Spring



Num	Scientific name	Common names	Family	Botan	Medicinal use	Plant parts used	Distribution	Flower
The shrubs and groundcovers are locally indigenous, drought resistant and grows in the sun								
15	<i>Cotyledon orbiculata</i>	Pigs's ear	Crassulaceae	Succulent small shrub with woody branches and thick fleshy leaves. The leaves are bright green to grey, often with a reddish margin and usually covered with a waxy layer on the surface. Orange or red tubular flowers are borne on a long, slender stalk 300mm - 450mm.	The fleshy part of the leaf is applied to corns and warts to soften and remove them. A single leaf is eaten as a vermifuge. The warmed leaf juice is used as drops for earache and toothache. It may also be applied in the form of a hot poultice to treat voils, earache or inflammation. The juice has been used to treat epilepsy.	Leaves or leaf juice	Widely distributed over the almost the whole of south africa	Flowering time: Aug - Sept
16	<i>Crinum macowanii</i>	River lily/ Umduze (Zulu)	Amaryllidaceae	This geophyte has a large bulb of about 200mm in diameter, with long, strap-shaped leaves radiating from it. The leaf margins are undulating and the tips end abruptly as a result of frost damage. The wide open trumpet-shaped flowers with their black anthers are characteristic of this species.	The plant is a zulu remedy for various complaints, mainly scrofula, micturition and rheumatic fever. It is also used for blood cleansing, kidney and bladder disease, glandular swelling, fever and skin problems such as sores, boils and acne.	Bulbs and leaves are used	Indigenous to southern africa	Flowering time: Oct - Feb
17	<i>Ehretia rigida</i>	Puzzle bush	Boraginaceae	Many stemmed shrub has a slightly weeping habit, its arching branches spread and curve stiffly downwards, giving it a rigid, tangled and untidy appearance. Clusters of small sweetly scented lilac flowers are followed by edible berries which are orange red to black when ripe.	This tree is traditionally considered a good luck charm, and powdered root is used to treat gall-sickness in cattle. Another remedy deals with chest pains.	Root	Widely distributed throughout south Africa. Variety of habitats	Flowering time: Spring
18	<i>Gnidia kraussiana</i>	Yellow heads	Thymelaeaceae	Dense shrublet, 300mm high, with numerous erect, hairy stems arising from a woody base. The small oblong leaves are about 30mm long and 10mm wide and usually have silky hairs on the upper and especially the lower surfaces. Dense rounded heads of small, yellow, tubular flowers are produced in spring	Highly toxic plant, ranging from the topical treatment of burns and snake bites to enemas for stomach complaints and decoctions used to ensure an easy childbirth.	Rootstock and roots are used	Widely distributed in Africa, grassland areas	August flowering
19	<i>Helichrysum species</i>	Everlastings	Asteraceae	Aromatic perennial herbs or shrublets with densely hairy or woolly leaves and persistent flower heads. The smoke of which is a ritual incense, called 'imphepho'	Many ailments are treated with these popular medicinal plants, including coughs, colds, fever, infections, headache and menstrual pain. It is a popular ingredient for wound dressings.	Leaves and twigs are mainly used and sometimes the roots.	All over south africa	Differs for each specie
20	<i>Hypoxis hemerocallidea</i>	Star flower / Inkomfe (zulu)	Hypoxidaceae	Tuberous perennials with long, strap-shaped leaves and yellow, star-shaped flowers. Slightly hairy leaves which are arranged one above the other to form three distinct groups spreading outwards from the centre of the plant. Bright yellow, star-shaped flowers are borne on long, slender stalks.	Infusions of the corm are used as emetics to treat dizziness, bladder disorders and insanity. Decoctions have been given to weak children as a tonic and the juice is reported to be applied to burns. The stems and leaves are mixed with other ingredients to treat prostate problems. Traditional uses are also said to include testicular tumours, prostate hypertrophy and urinary infections.	The tuberous rootstock (corm), which is dark brown or black on the outside and yellow within when freshly cut, is used	Widely distributed in the grassland areas of South Africa	Flowering time: Sept - Jan
21	<i>Pelargonium luridum</i>	Ishaqa (zulu)	Geraniaceae	This herbaceous perennial has a tuberous rootstock from which a rosette of leaves develops in the growing season. The flower heads are borne on tall slender stalks of up to a metre in height. The flowers are usually pink but may occasionally be white or greenish-yellow.	Infusions of the tubes are used to treat diarrhoea and dysentery.	Tuberous, fleshy rootstock which is bright red inside, is harvested	Occurs over a large part of the interior of southern africa	



Num	Scientific name	Common names	Family	Botan	Medicinal use	Plant parts used	Distribution	Flower
The shrubs and groundcovers are locally indigenous, drought resistant and grows in the sun								
22	<i>Pallaea calomelanos</i>	Hard fern	Adiantaceae	Common fern, with underground rootstock of about 6mm in diameter, covered with small brown scales. The firm-textured leaves are composed of numerous blue-green leaflets which are broadly triangular in shape, with a distinct line of brown spore-producing bodies (sori) along the edges.	The leaves are smoked for head colds, chest colds and asthma. Decoctions of rhizomes are traditionally used to treat boils and abscesses, and for intestinal parasites. The leaves of several other species of ferns are also smoked to relieve head and chest colds.	The leaves and rhizomes are used	Occurs over a large part of South Africa	
23	<i>Rhoicissus tridentata</i>	Bushmen's grape /Wild grape	Vitaceae	A shrubby creeper with the branches spreading outward from a thick woody base. The dark green, glossy leaves have three leaflets, each wedge-shaped, with a serrated margin. The inconspicuous greenish flowers are followed by small berries. 3m x 1.5m	The roots or tubers are used for stomach ailments, kidney and bladder complaints, infertility and dysmenorrhoea. It is also administered as an enema for delayed menstruation and to facilitate childbirth.	The roots or tuberous rootstock are used. They have bright red pigments in the outer layer, resembling blood when fresh.	Occurs over a large part of south africa	Flowering time: Nov - Jan
24	<i>Vernonia oligocephala</i>	Sefafatse (Tswana)	Asteraceae	Herbaceous perennial with erect, flowering branches developing from a woody rootstock. Leaves are elliptic in shape, usually not more than twice as long as broad, with a sharp point and a very short stalk. Dark green and almost hairless on the upper side but densely hairy and silvery below. Bright violet flower heads are about 10mm in diameter and are borne in large groups towards the branch tips.	Infusions are taken as stomach bitters to treat abdominal pain and colic. Other ailments treated include rheumatism, dysentery and diabetes. The roots have been used to treat ulcerative colitis.	Leaves and twigs are used. rarely the roots	Plant is widespread in the grassland regions of South Africa.	Aug to Dec
25	<i>Withania somnifera</i>	Winter cherry	Solanaceae	An erect perennial shrublet with densely velvety stems and leaves. The leaves are oblong, pale green and covered with short, dense hairs, particularly when young. Small white or yellowish flowers are produced in short clusters, followed by small round berries 8mm in diameter. The berries are completely enclosed in brown papery and bladder-like structures.	Leaf poultices are widely used in south africa for wound healing. It is applied externally to treat open cuts, wounds, abscesses, inflammation, haemorrhoids, rheumatism and syphilis. Root infusions are taken for asthma and tinctures as tonics. In Ayurvedic medicine, the plant is considered to be sedative and hypnotic, as well as adaptogenic.	Leaves or root bark are mainly used	Indigenous to south africa and has become a weed of disturbed places.	
26	<i>Aster bakerianus</i>	Undlutshana (zulu)	Asteraceae	Herbaceous perennial with one to several annual stems of up to 500mm high, developing from a perennial woody base. Leaves are 80mm long and vary in size and shape, with coarse hairs on the surface and sparse, minute teeth along the margins. Flowerheads are blue, mauve or rarely white.	Traditional headache remedy, the dried roots are powdered and used as snuff to induce sneezing.	The cluster of roots	Widely distributed in the grassland areas of South Africa	



Num	Scientific name	Common names	Family	Botani	Medicinal use	Plant parts used	Distribution	Flower
The shrubs and groundcovers are locally indigenous, drought resistant and grows in the sun								
27	<i>Bowiea volubilis</i>	Climbing potato	Hyacinthaceae	A greenish-white, fleshy tuberous bulb, without any papery or fibrous outer scales. Thin green leafless climbing and creeping flowering stems arise. Flowers are small greenish in colour and rather inconspicuous	Used to treat a wide variety of ailments, including headaches. A hot water extract of the roasted bulb is taken as a purgative. The fresh bulb is taken for oedema and infertility in women. The fresh juice may be rubbed into the skin of a sick person or a decoction applied as a lotion for sore eyes. A hot water extract of the fresh outer bulb scales is a Zulu remedy for ascites, sterility and bladder complaints.	The bulb or bulb scales	Widely distributed in the eastern part of SA	Spring and sometime will bloom twice in a year.
28	<i>Catharanthus roseus</i>	Madagascar periwinkle	Apocynaceae	Perennial herb, 1m high, with somewhat woody base. The leaves are dark green and glossy, with a prominent white midrib. Flower colour varies from pink to white, or white with a pink centre. This popular and attractive garden plant has become a weed in some parts of South Africa.	An infusion of the leaf has been used to treat diabetes, but even dilute mixtures can be extremely toxic. The two main alkaloids of the plant are used in combined chemotherapy and small doses are injected weekly or monthly	The roots or more commonly the leaves are used	Commonly grown in SA and has become a weed.	
29	<i>Pentanisia prunelloides</i>	Wild verbena	Rubiaceae	The plant is a perennial herb of about 300mm in height and 600mm wide, with leafy branches spreading from a thick, tuberous root. The leaves are oblong and usually somewhat hairy, and are borne in pairs. Small pale purple flowers occur in dense groups on the branch ends	Decoctions are often used for burns, swellings, sore joints and rheumatism. The plant is also used to treat heartburn, vomiting, fever, chest pain, toothache, tuberculosis, blood impurities, haemorrhoids and snakebite. It is taken regularly by pregnant women to ensure an easy childbirth. A leaf poultice is applied for a retained placenta.	The fleshy, tuberous root is mainly used, but sometimes also the leaves	The plant is an important component of grasslands in the eastern parts of South Africa	from August to January
30	<i>Scabiosa columbaria</i>	Wild scabious	Dipsacaceae	Perennial herb of up to 1m in height, with annual branches developing from persistent fleshy roots. Thin-textured, slightly hairy leaves form a rosette on the ground. Basal leaves have serrated margins, while those higher up have lobed margins. Flowers are borne on several multi-branched stalks of up to 1m high. The attractive white flower heads have a daisy-like shape.	The plant is a remedy for colic and heartburn. Some other traditional uses have also been recorded. Dried roasted roots are made into a wound-healing ointment, and the powdered roots are also used as a pleasant-smelling baby powder.	Leaves or fleshy roots are used	Widely distributed in south africa, common in western cape	
31	<i>Senecio serratuloides</i>	Two day plant	Asteraceae	Herbaceous perennial with erect stems of up to 1m in height, sprouting from a woody rootstock. Serrated leaf margins. Small yellow flowers are borne in sparse clusters towards the ends of the branches.	Leaves are applied externally to cuts, swellings, burns and sores to promote healing. Infusions are taken in small doses as blood purifiers for skin eruptions or for swollen gums and chest pains. The dried, powdered leaves are snuffed for treating headaches.	Leaves and stems are used rarely also the roots	Widely distributed in the summer rainfall area of South Africa	
32	<i>Anthericum saundersiae/ Clorophytum saundersiae</i>	Weeping anthericum/ St. Barnard's lily	Anchericaceae	Upright plant. The grey-green leaves are long and thin, resembling grass. The small, white flowers are trumpet-shaped and produced in long, spikes, in early summer. Up to 350mm, clump-forming, grass-like perennial. White flowers. Evergreen, water moderately. Excellent for mass planting. Frost resistant. 500mm x 250mm			To the east of Sout Africa near the coastal areas	Flowers early summer. Sept March

Table 7: Shrubs and groundcovers plant list. (Author: 2011)

## Veld grass list

Existing grass species at Wonderboom Nature Reserve		
Num	Scientific name	Common name
1	Sourveld	Sourveld
2	Hyparrhenia hirta	Common thatching grass
3	Themeda triandra	Red grass
4	Cynodon dactylon	Couch grass
5	Digitaria eriantha	Common finger grass
6	Heteropogon contortus	Spear grass
7	Pennisetum sphacelatum	Bull grass
8	Melinis repens	Natal red top
9	Eragrostis curvula	Weeping love grass
10	Aristida congesta subsp. Barbicollis congesta	Tassel three-lawn

The veld grass species occurring on site will be harvested and the cuttings will be used between the medicinal plant species on the roof garden.

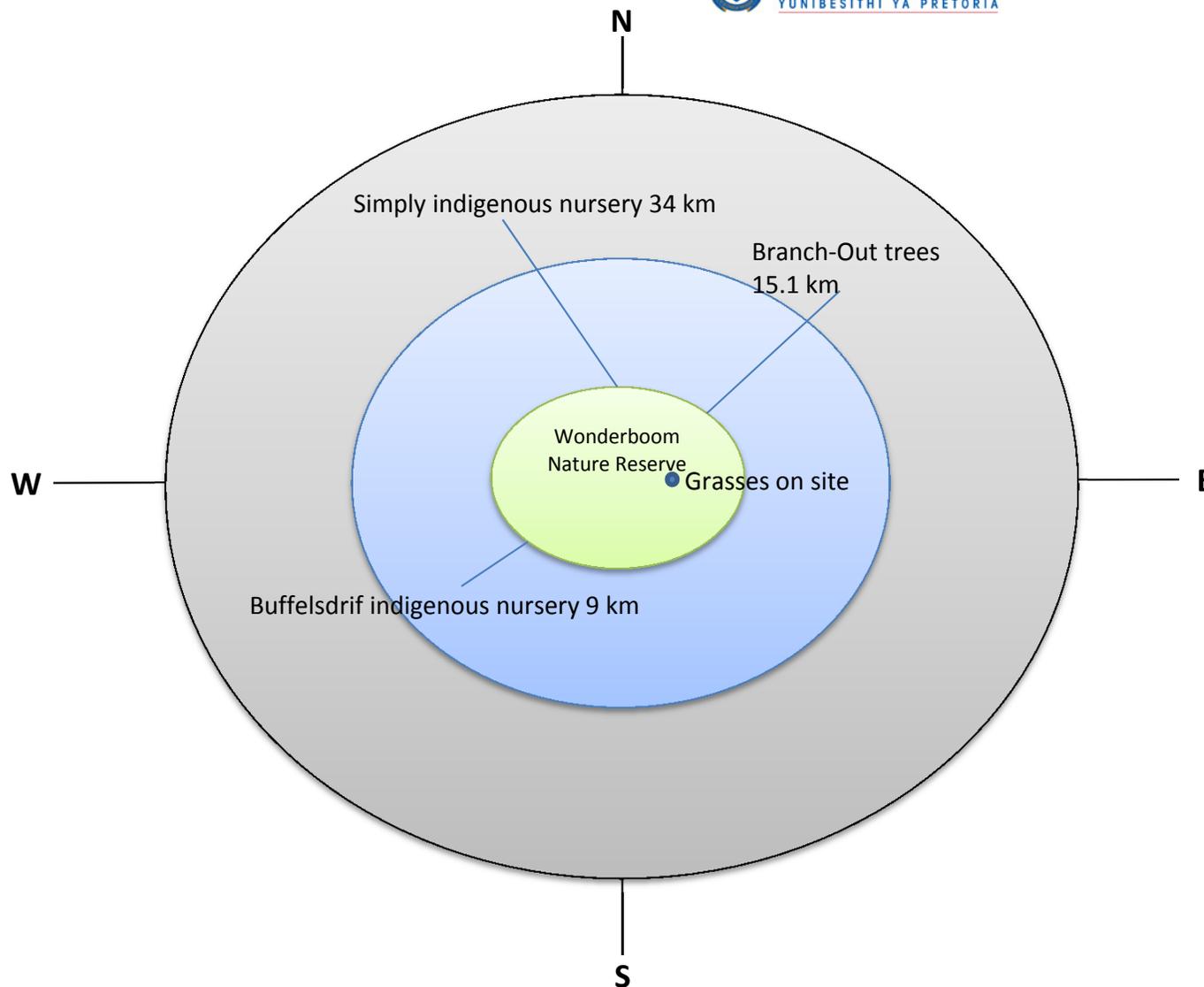
*Cynodon dactylon* will be used as lawn in the courtyard. It will be planted from wild type seeding.

See the existing grass species list to the left. These grass species were identified on site during site analysis.

Table 8: Above: Existing veld grass list. Left: The proposed veld grass species to be used in the design. (Author: 2011)

Wonderboom Fort - Plant species (proposed and existing on site)						
Num	Scientific name	Common names	Botanical discription	Distribution	Flower	Area to be used
Locally indigenous grasses						
33	<i>Cynodon dactylon</i>	Couch grass	A short mat-forming grass which spreads by means of stolons and rhizomes. Inflorescence exclusively digitate. Spikelets are flat and without awns. Grows in disturbed places. Leaves point upwards. Flowers from Sept - May. Grows in all types of soil, especially sandy soil and fertile soil. Popular cultivated pasture.	It occurs in all moderate parts of the world. Found in disturbed places		Used as lawn
34	<i>Eragrostis rigidior</i>	(Broad) curly leaf	Curly leaf usually grows in disturbed places. It is mostly found in sandy and loam soil. It is a hard perennial tufted grass with dry curly leaves. Inflorescence is a panicle with the lower branches arranged in a whorl.	It occurs in southern Africa. It mostly occurs in warm regions	Oct to May	On roof garden mixed with the other medicinal plants
35	<i>Eragrostis curvula</i>	Weeping love grass	Weeping love grass usually grows in disturbed places. It is a robust, densely perennial tufted grass which produces many long, loose, hanging leaves. Inflorescences are mostly an open panicle. Spikelets are dark grey to dark olive green. Leaves are often concentrated at the base of the plant.	It originates from South Africa	August to June	On roof garden mixed with the other medicinal plants
36	<i>Themeda triandra</i>	Red grass	A varying perennial tufted grass. Inflorescence comprises groups of spikelets which are partially enclosed by a spathe. Each spikelet pair has a long, dark, twisted awn. Leaf sheaths are compressed. Leaf blade has a prominent midrib. The nodes are dark-coloured. Ligule usually has a notch at the point. The entire plant has a red colour late in the season.		Flowers from oct - July.	On roof garden mixed with the other medicinal plants
37	<i>Digitaria smutsii</i>		Robust grass with stolons. It is a perennial tufted grass. The inflorescences are semi-digitate or digitate with long, thin fingers. Lower part of the plant is usually hairy.	Naturally in southern Africa	January to April	On roof garden mixed with the other medicinal plants
38	<i>Digitaria eriantha</i>	Common finger grass	A perennial tufted grass. Inflorescences semi-digitate or digitate with long, thin fingers. The lower part of the plant is usually hairy. It often has long, hairy stolons. Culms are usually unbranched. Populations vary considerably in terms of size, hairiness, shape of inflorescence and other characteristics.	Occurs only in South Africa	Flowers from January to April	On roof garden mixed with the other medicinal plants

## Plant sources diagram and table



All the medicinal planting on the roof garden are sourced locally from nurseries in a 40km radius. Refer to the diagram and table below which indicate the distance to the nursery from the Wonderboom Nature Reserve.

This method of sourcing plants locally is more ecologically sustainable and lowers the carbon footprint.

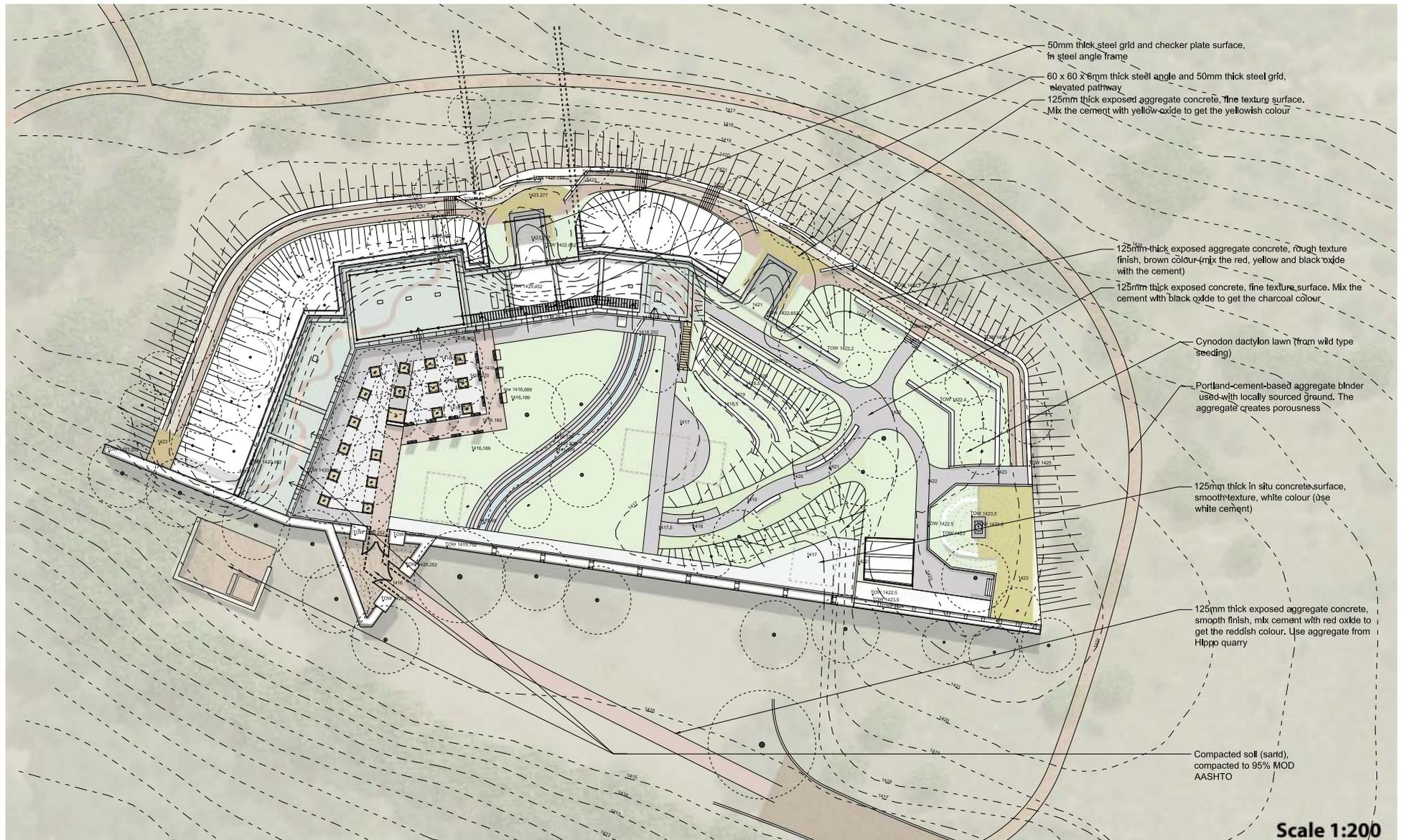
Fig. 22: Diagram indicating the distances from the Wonderboom Nature Reserve to the different nurseries. (Author, 2011)

Table 10: Nurseries, their location and distance from the Wonderboom Nature Reserve (Author: 2011)

Company name	Location	Plant type	Distance (km)
Nature	Wonderboom nature reserve	Grasses	Harvested on site
Branch-Out Tree farm	Pretoria North	Trees	15.1
Simply indigenous nursery	Hartbeespoortdam	Bulps	34
Buffelsdrif indigenous nursery	Buffelsdrif	Shrubs	9.4

## 8.7 Hard Materials - Paving plan

Different colour and texture concrete surfaces and pathways were chosen to keep the material pallet to a minimum and to ensure unity and coherence in the design. Exposed fine or rough textured concrete surfaces, smooth concrete surfaces, which are pigmented with red, yellow and black oxide (mixed with cement). Light cement was used to ensure a white colour on some surfaces. The three colours can be mixed to form brown. Aggregates from the quartzite and shale on site will be used as well as the aggregates from hippo quarry. Steel grids and checker plates are used in some instances to provide visibility of the artefact below or existing ground.



Illus. 301: Proposed paving plan (Author: 2011)

## Material pallet, material source diagram and table

The design aims to use locally manufactured products/materials as far as possible within a radius of 50 km. It is more sustainable with a smaller carbon footprint.

Steel profiles are mainly used for new proposed structures to be clearly identifiable as such. Natural materials are used, such as eucalyptus lathes, soil and shale rocks (shale rocks from site).

The material pallet is kept to a minimum to ensure coherence and unity in the design as well as legibility. The details and different colours and textures enhance the complexity and diversity in the design.

The following materials were chosen (refer to paving plan, sections and details):

1. Exposed aggregate concrete (rough and fine textured; different colour pigmented concrete). Refer to paving plan.
2. Soil material:
  - Portland-cement-based aggregate binder used with locally sourced ground
  - Compacted soil (refer to paving plan).
3. Steel:
  - Steel grating
  - Steel profiles
  - Rectangular steel mesh
  - Steel checker plate
4. Eucalyptus lathes
5. Glass (laminated glass) for signage and information boards
6. Shale rocks (within the steel mesh baskets)

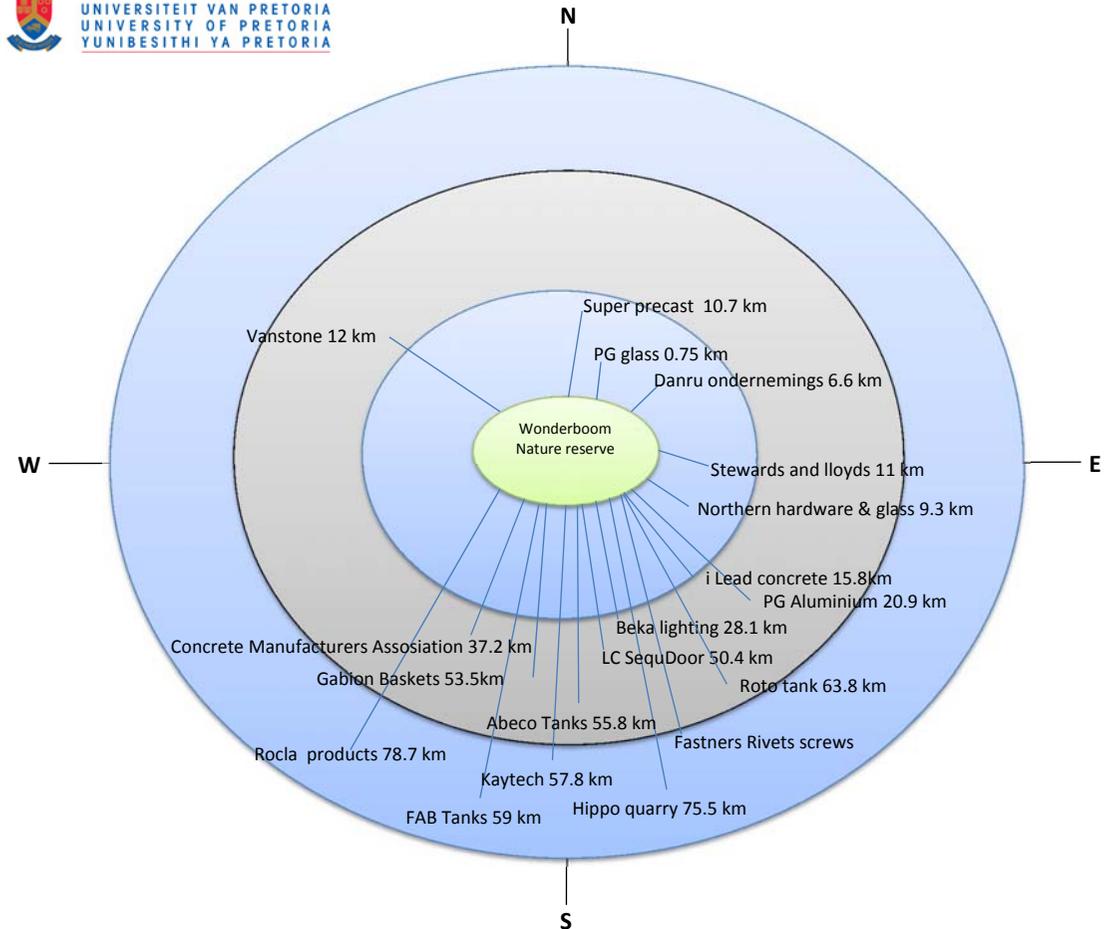
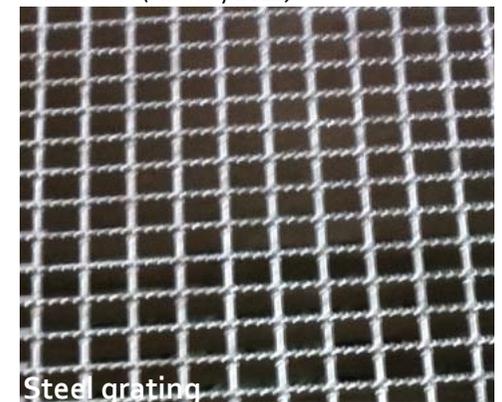
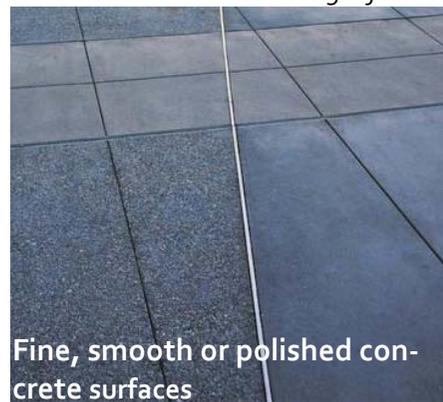


Fig. 23: Material sources diagram which indicates the different distances to the manufacturing companies. See table on the right for more information regarding the product, company and distances. (Author, 2011)



Company Name	Location	Product	Distance (km) from WNR	Manufacturer/ Depot
Abeco tanks	6A Bedford road; Bedfordview; Johannesburg	Steel sectional water tanks	55.8	Manufacturer
African gabions	Central Johannesburg	Gabion	62	Manufacturer
Beka lighting	13 West View Road Olifantsfontein, Johannesburg	Lights	28.1	Manufacturer
Concrete Manufacturers Association	Block D, Lone Creek, Waterfall Office Park, Bekker Road, Midrand	Pre-stressed hollow core concrete slabs and in situ concrete	37.2	Manufacturer
Fastners Rivets Screws Bolts	Boksburg North Mushwelldate	Screws and bolts	57.9	Manufacturer
Gabion Baskets	Brighton Rd Lombardy west Jhb	Gabion Baskets	53.5	Manufacturer
Hippo quarry	Middle road, Anderbolt 1459, Boksburg	Quartzite aggregate	75.5	Manufacturer
i lead concrete	The innovation hub Pretoria	Concrete	15.8	Manufacturer
Kaytech	53 Harris Avenue, Isandovale, Edenvale	Bidim (geotextiles)	57.8	Depot: Jhb; Manufacturers: Cape town
LC SequDoor	Pilkington Industrial Park, Cnr. Johan le Roux & Morris str. Meyerton	Aluminium sliding folding door (stacking doors)	107	Manufacturer
Northern hardware & glass	Koedoespoort industrial Pretoria	Glass	9.3	Manufacturer
PG aluminium windows doors	Cnr Hans Strydom and Von Backstroom Street Silver lakes	Aluminium sliding folding door (stacking doors)	20.9	Manufacturer
PG glass	Pretoria north	Glass (Signage)	0.75	Depot
Rocla products	Cnr Main Reef Road and Houtkapper Street, Roodepoort	Culverts for storm water	78.7	Manufacturer
Roto tank	Kempton park	Septic tank	63.8	Manufacturer
Stewards and lloyds Structural steel products	Cnr stormvoel & Asetileen Pretoria	Steel angles, channels and grids, I beams and H sections	17.1	Depot: Pta; Manufacturer: Jhb
Super precast	Plot 55, Rentia Street, Onderstepoort	Concrete (pre-cast)	10.7	Manufacturer
Vanstone	Rosslyn Pretoria	Brown pink Quartzite / Concrete (different pigments)	12	Manufacturer



Steel checker plate



Steel profiles mainly used in new structures



Rectangular steel mesh basket with shale rocks



Eucalyptus lathes

## 8.8 Sustainability strategies

### Storm water management

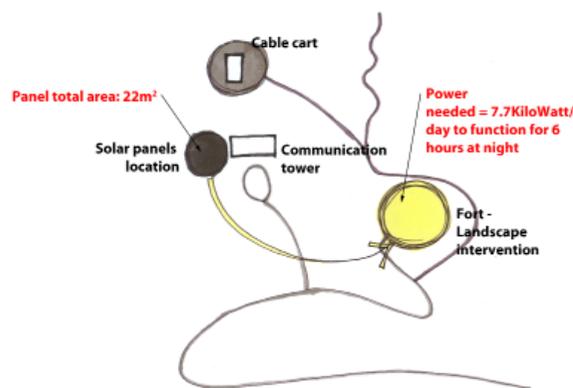
- A symbolic water feature channel (symbol of the old water furrows found on site) not only function as a semiotic resource but also serves as stormwater catchment. The channel operates with rainwater which is stored in a tank. Any excess water overflows into a second tank which is then channeled to a reservoir steel sectional tank.
- A concrete open channel is constructed behind the existing wall of the fort rooms to catch the storm water run-off from the steep gradient slope. The water is then channeled through the berm with concrete culverts into a steel sectional tank.
- The water yield from both systems are used for irrigation. See water budget tables and graphs on page 211. Their are enough water in the reservoir during the year to cater for the irrigation demand. Thus 100% of the irrigation water comes from rainwater harvesting.

### Materials

- Locally sourced material within a 50 km radius as far as possible.
- Use material from site if possible (shale, soil, veld grass etc.)

### Solar panels

Solar panels are used to power the restaurant and landscape lighting. The solar panels will be located at the existing communication tower. It is an already disturbed site and out of the visitor's sight, but easily accessible.



Solar panel diagram, indicating the location and operation requirements cycle (Author: 2011)

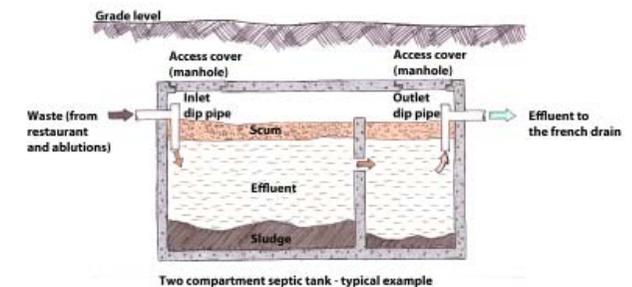
LED lights are used in the floodlights, spotlights, pathway and amenity lighting. It uses less energy and needs a lower wattage. This makes it easier to power by solar panels. The solar panels therefore cover a smaller area.

### Plants

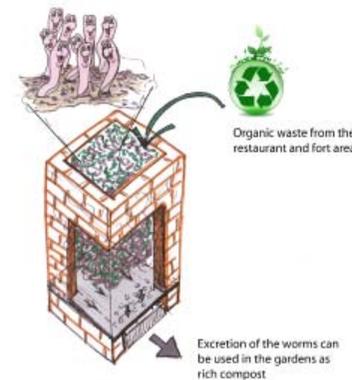
Locally indigenous plants and trees are used.

### Waste

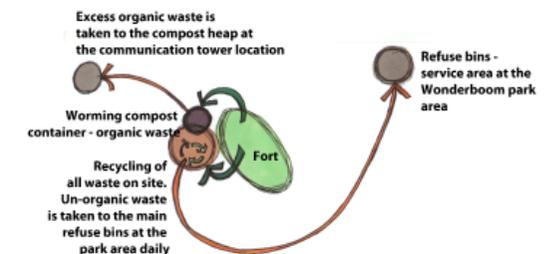
The organic waste of the restaurant and from on site recycle bins is collected and placed in a worming compost container. The excess waste is taken to a larger compost bin at the existing communication tower just of-site. The compost and worming compost can then be used in the gardens (vegetable and roof garden). Septic tanks are used as sanitary management. A septic tank is less of an intrusive system than normal sewage lines especially in a conservation area.



Septic tank (sanitary waste management) (Author: 2011)



Recycling of organic waste to produce compost for the gardens - worming compost container. (Author: 2011)



Waste cycle diagram. (Author: 2011)

## 8.9 Technical plans Lighting plan (atmosphere)



Illus. 302: Lighting plan which indicates the atmosphere created at night and the location and type of lighting. (Author: 2011)

## Lighting strategy:

LED lights will be used in the design, together with solar panels which will be located near the existing communication tower. LED technology is long lasting, durable, cool, mercury free, more efficient and cost effective.



**Beka LED lighting** - This tube will be placed in a perforated steel post

The light posts are placed at 2m intervals along the path

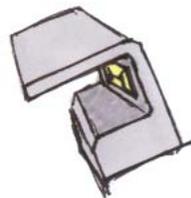
21 lights (low posts) x 13 W = 273 Watt, thus needs 2.184 kiloWatt/day to function for 8 hours. A solar panel of 6m<sup>2</sup> will have an output of 375 Watt/hr which will deliver 2.25 kiloWatt/day (6 hours)



Base type: 2 pin  
Width: 26mm in diameter  
Length: 900mm  
Power consumption: 13 Watt  
Voltage: 220 V  
Lumens: 1200 LM  
Beam angle: 120 deg  
Light source: 217 SMD LEDs x 0.06W LED  
Lumi factor: 8  
Lumen flux: 760 LM  
1m high illumination: 100 Lux  
IP rating: 65



**Beka series 51 light** - This light will be used within a custom made low box casing



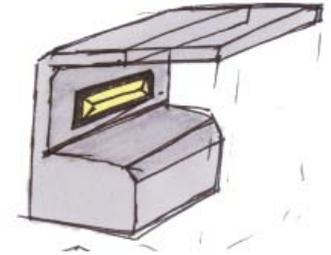
The light boxes are placed 1.5m intervals along the path

27 lights (boxes) x 15W = 405W, thus needs 3.24 kiloWatt/day to function for 8 hours. A solar panel of 9m<sup>2</sup> will have an output of 562.5 Watt/hr which will deliver 3.375 kiloWatt/day (6 hours)



UNIVERSITEIT VAN PRETORIA : high pressure die cast aluminium.  
UNIVERSITY OF PRETORIA :n head screws  
YUNIBESITHI YA PRETORIA

Opaque: clear prismatic non-discolouring high impact acrylic injection moulded diffuser.  
Ingress protection: IP66  
Luminaire: power factor corrected to a min of 0.9  
Bulkhead LED power consumption: 15W  
Lamp: LED 12/1.2W  
Lumen: 1270 LM



**Bekadart LED spot light** - This light will be used to light up trees & structures

20 lights x 9W = 180 W, thus needs 1.44 kiloWatt/day to function for 8 hours. A solar panel of 4m<sup>2</sup> will have an output of 250 Watt/hr which will deliver 1500 kiloWatt/day (6 hours)

35 - 70 Watt (depending on the structure)  
Ingress protection: IP66  
Aluminium casing  
Bekadart LED power consumption: 9W  
LED 6/1.2W  
Lumen: 642 LM



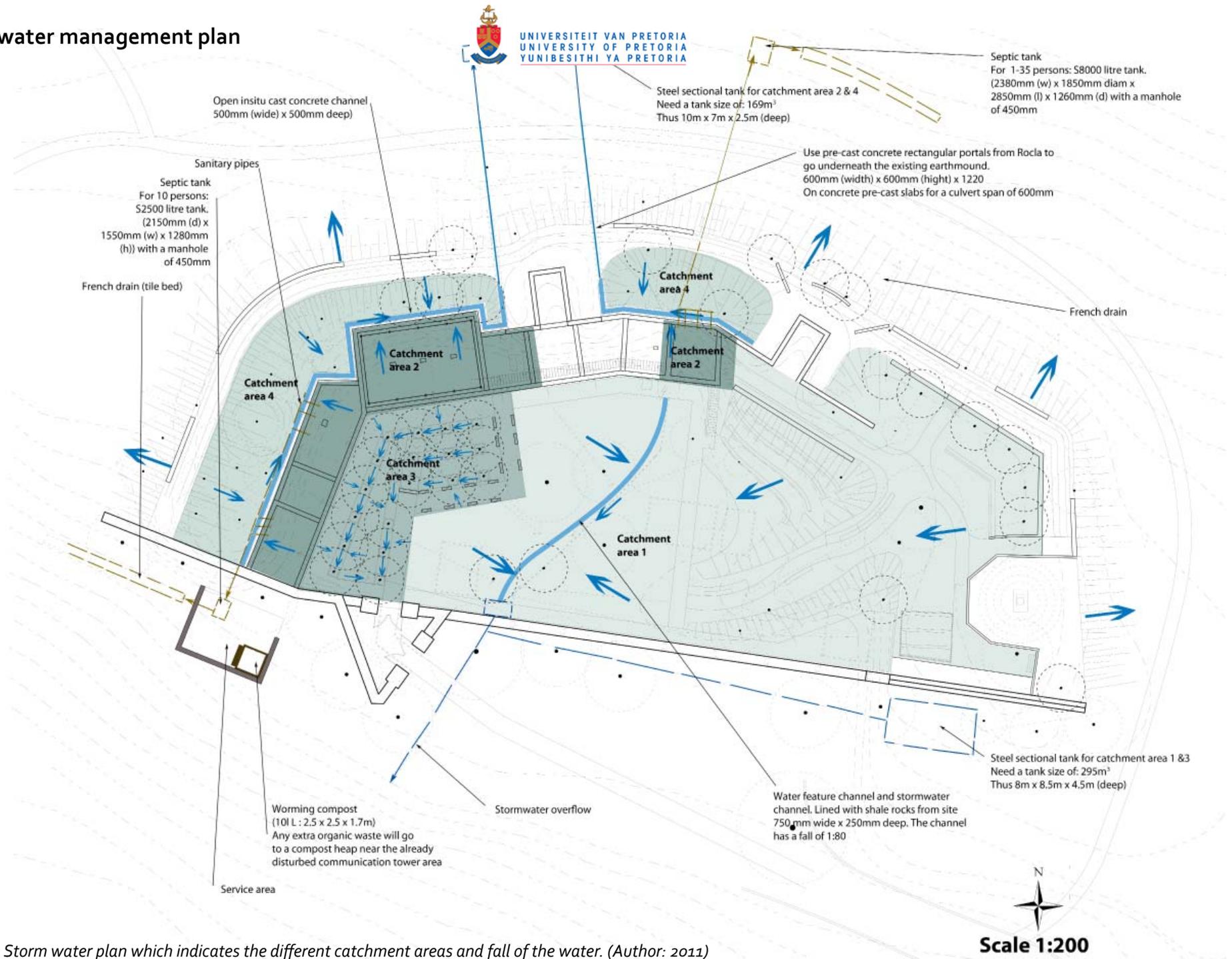
**Beka Neos 1 LED floodlight** - This light will be used if a large area needs to be lit up during functions and for facade lighting

3 lights x 36W = 108 W, thus needs 0.864 kiloWatt/day to function for 8 hours. A solar panel of 3m<sup>2</sup> will have an output of 187.5 Watt/hr which will deliver 1.125 kiloWatt/day (6 hours)



High-tightness floodlights with IP 66  
30 LED's, of 1.2 W in red, 10 in green and 10 in blue  
Cast aluminium alloy casing

# Stormwater management plan



Illus. 303: Storm water plan which indicates the different catchment areas and fall of the water. (Author: 2011)

## Stormwater calculations

The table and graph below indicate the average monthly precipitation for Pretoria. Refer to the storm water management plan on page 209.

### Average monthly precipitation, P (mm)

Month	Average Monthly Precipitation (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

Table 11: Average monthly precipitation of Pretoria (Author: 2011)

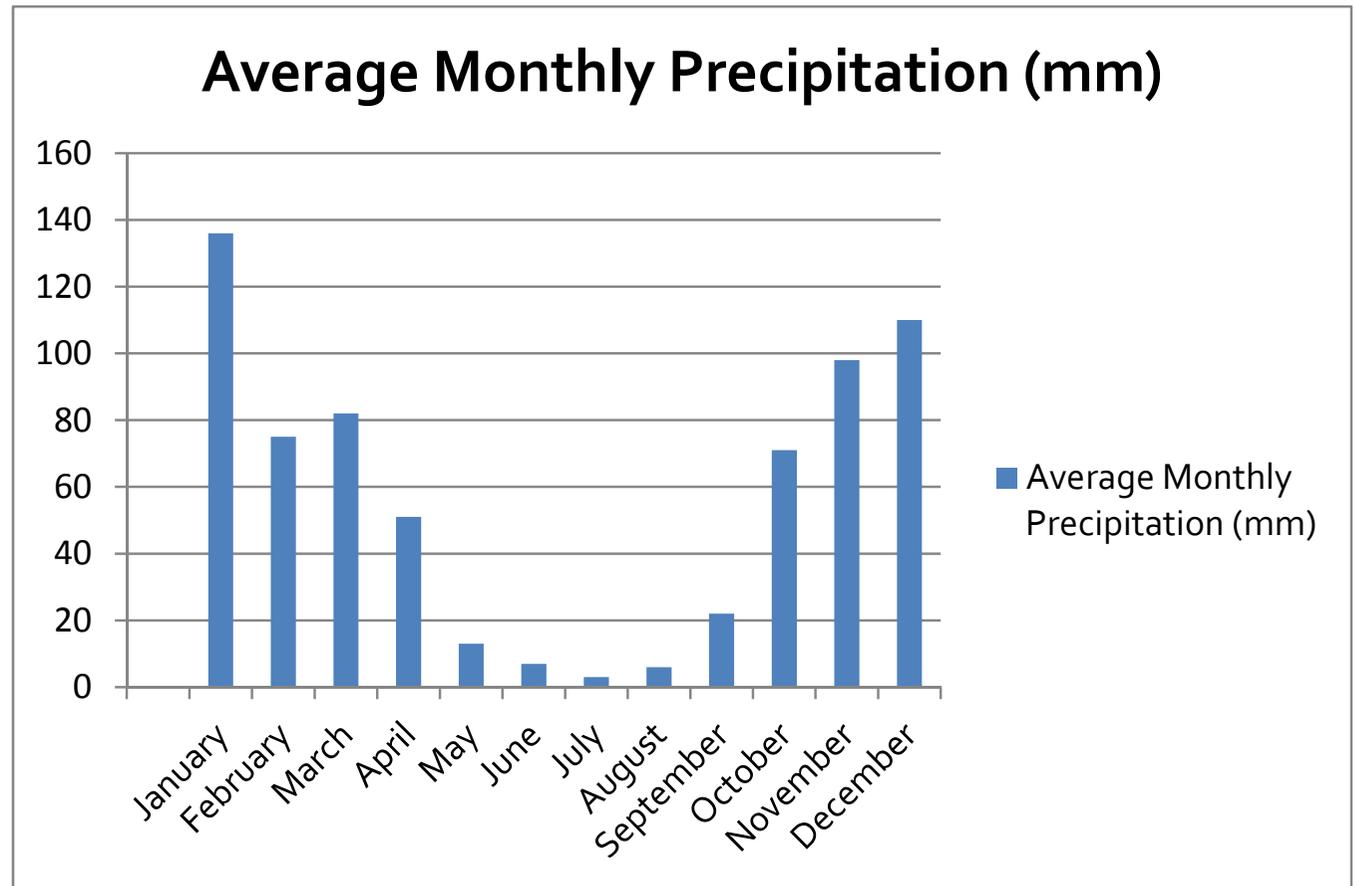


Fig. 24: Average monthly precipitation (Author, 2011)

The water budget for area 1, 2 and 4 was calculated. Area 3 is calculated to area and the volume of water in the reservoir.

and graphs indicate the irrigation demand per month, total yield of the area and the volume of water in the reservoir.

From the graphs one can deduce that there is enough water in the reservoir during the year to cater for the irrigation demand.

### Water Budget: Catchment area 1

Month	Total Yield for area 1&3 (m³) (Yield = P x A x C)	Total Irrigation Demand (m³) (for veg garden (30m²) & water for water feature & 40 trees)	Monthly Balance	Volume of water in Reservoir (m³)
January	69.8496	14.07	55.7796	140.6084
February	38.52	11	27.52	168.1284
March	42.1152	11	31.1152	199.2436
April	26.1936	11	15.1936	214.4372
May	6.6768	11	-4.3232	210.114
June	3.5952	11	-7.4048	202.7092
July	1.5408	11	-9.4592	193.25
August	3.0816	11	-7.9184	185.3316
September	11.2992	11	0.2992	185.6308
October	36.4656	11	25.4656	211.0964
November	50.3328	11	39.3328	250.4292
December	56.496	11	45.496	295.9252
<b>Total</b>	<b>346.1664</b>	<b>135.07</b>	<b>211.0964</b>	<b>2456.904</b>

Table 12: Water budget for catchment area 1 (Author: 2011)

Water Budget Chart

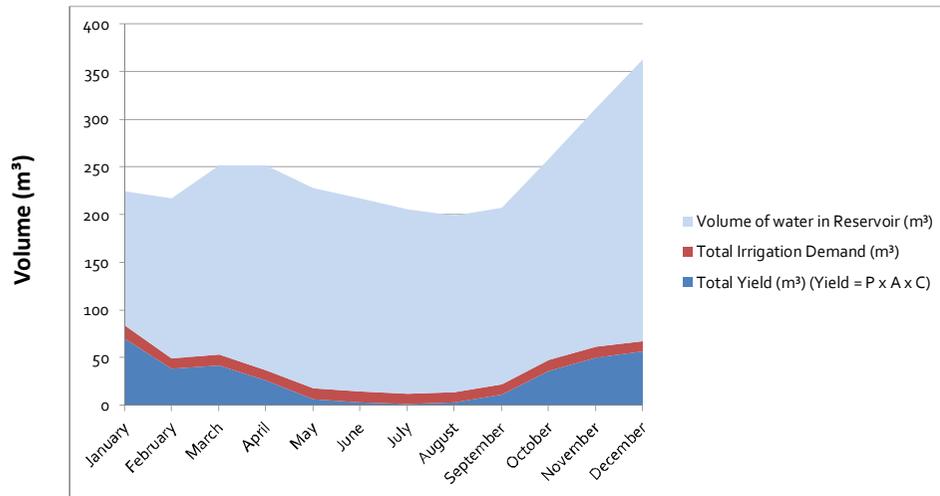


Fig. 25: Water budget chart for catchment area 1 (Author, 2011)

### Water Budget Catchment area 2 & 4

Month	Total Yield for area 1&3 (m³) (Yield = P x A x C)	Total Irrigation Demand (m³) (for planting on gradient. 252m² and the excess water for roof garden)	Monthly Balance	Volume of water in Reservoir (m³)
January	100.8576	40	60.8576	135.1104
February	55.62	40	15.62	150.7304
March	60.8112	40	20.8112	171.5416
April	37.8216	40	-2.1784	169.3632
May	9.6408	40	-30.3592	139.004
June	5.1912	40	-34.8088	104.1952
July	2.2248	40	-37.7752	66.42
August	4.4496	40	-35.5504	30.8696
September	16.3152	40	-23.6848	7.1848
October	52.6536	40	12.6536	19.8384
November	72.6768	40	32.6768	52.5152
December	81.576	40	41.576	94.0912
<b>Total</b>	<b>499.8384</b>	<b>480</b>	<b>19.8384</b>	<b>1140.864</b>

Table 13: Water budget for catchment area 2 & 4 (Author: 2011)

Water Budget Chart

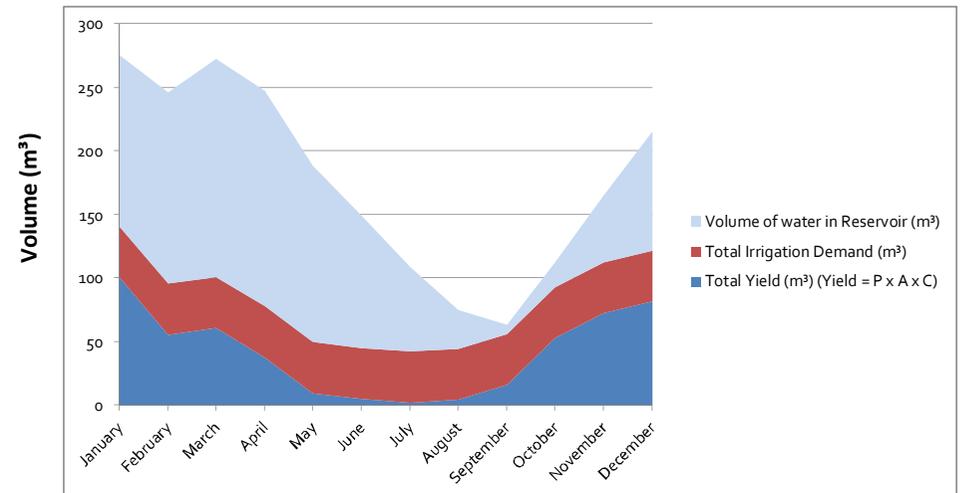
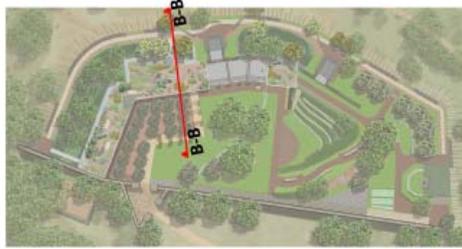
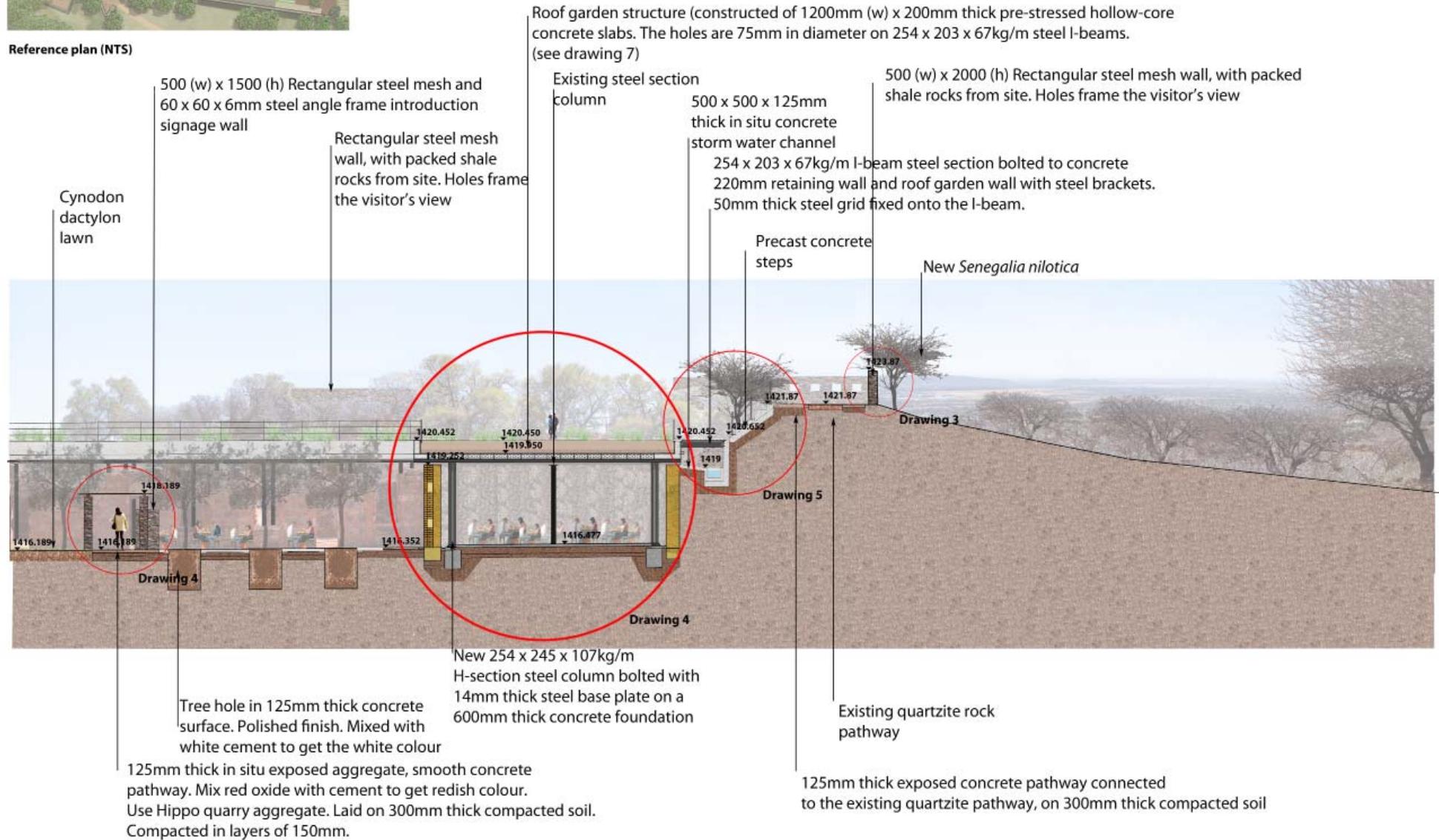


Fig. 26: Water budget chart for catchment area 2 & 4 (Author, 2011)





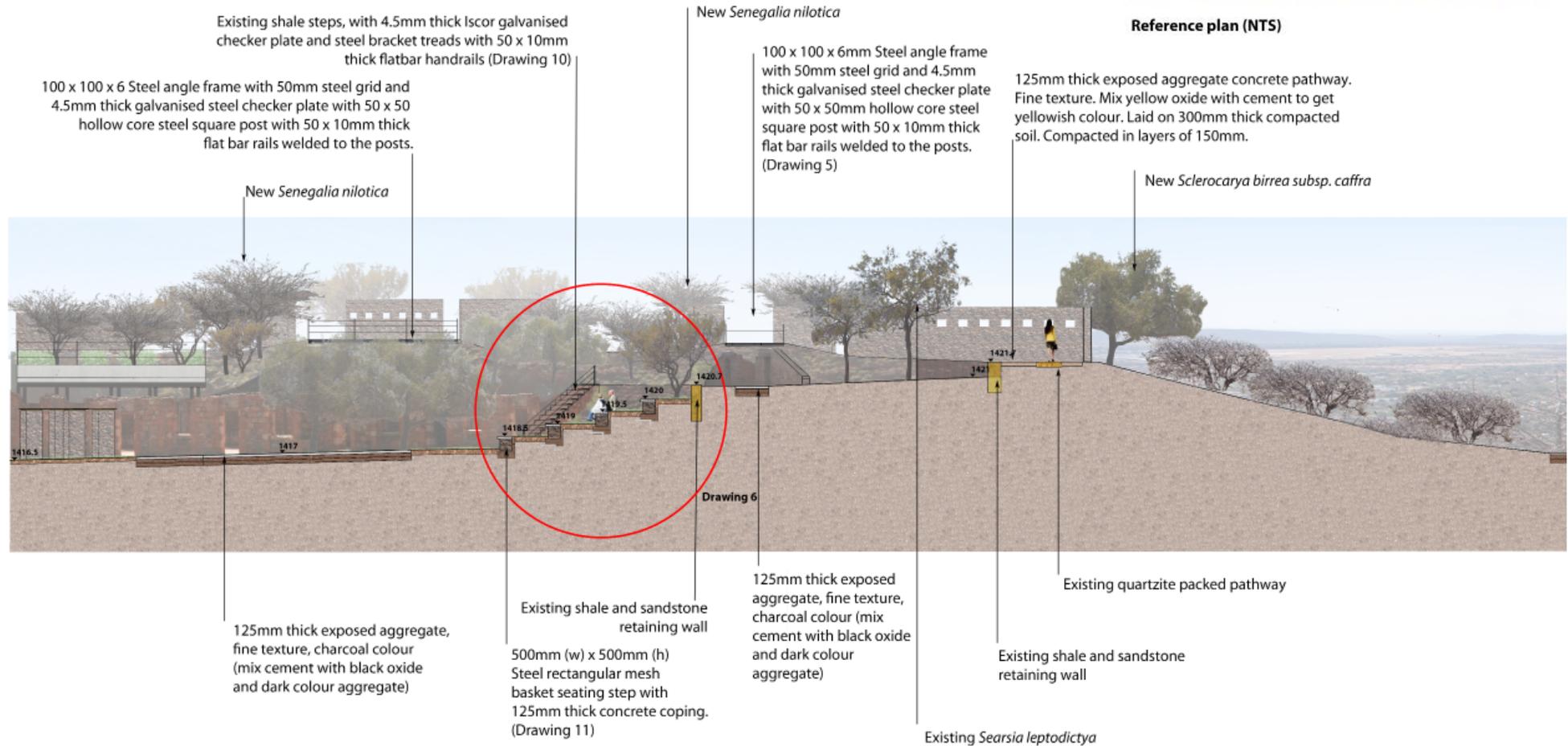
Reference plan (NTS)



Illus. 307: Section B-B through the restaurant spill-out area, service area and open storm water channel (Author: 2011)



Reference plan (NTS)

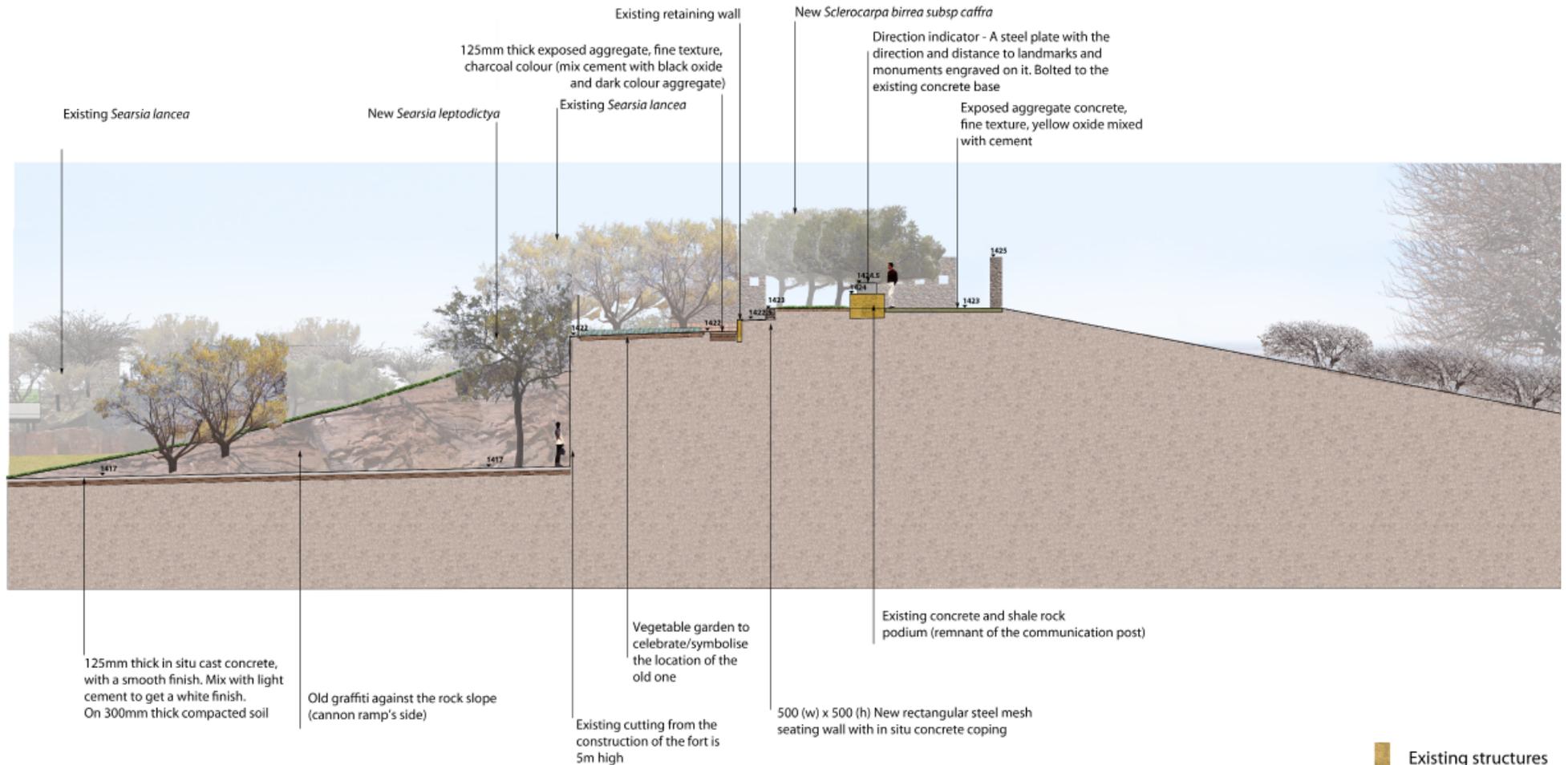


Existing structures

Illus. 311: Section C-C through the amphitheatre (Author: 2011)

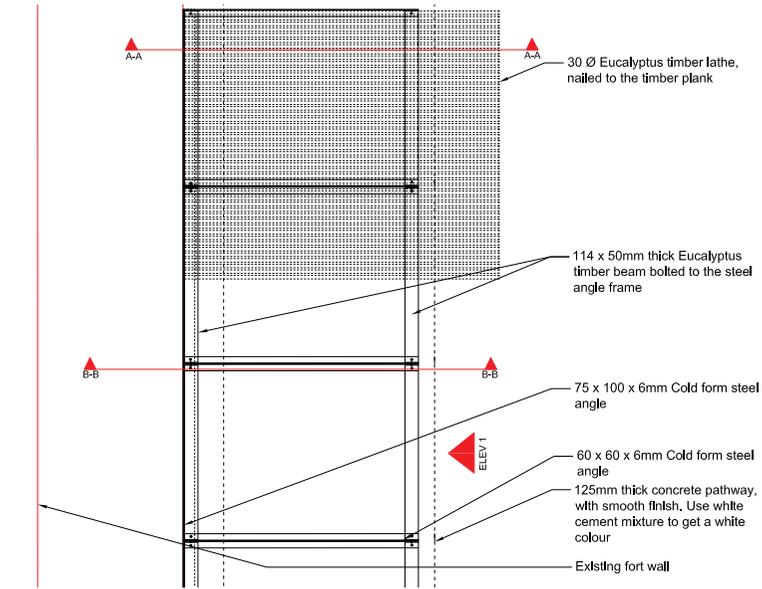


Reference plan (NTS)

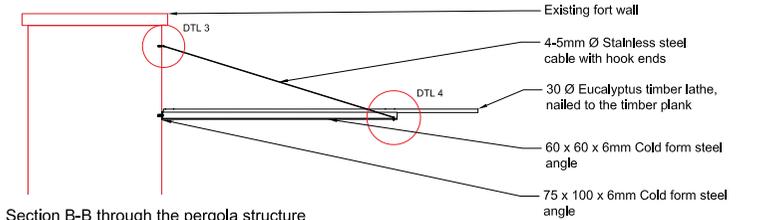


Existing structures

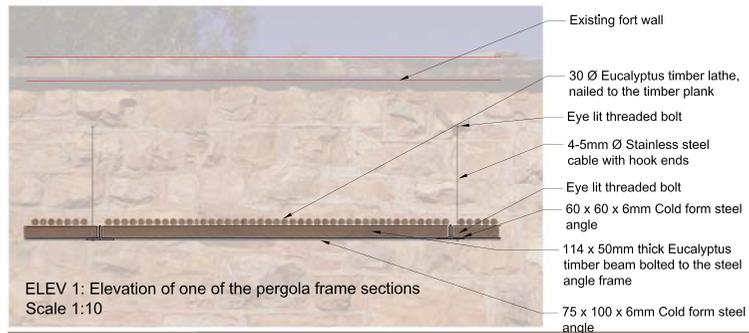
Illus. 313: Section D-D through the geology, materiality and spirit of place space as well as lookout point 4 (Author: 2011)



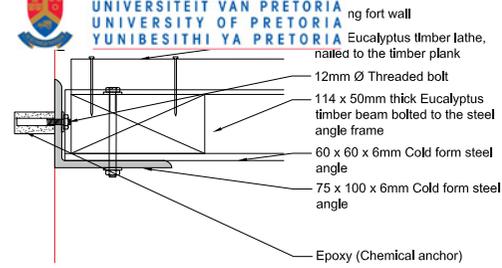
Plan of the steel and timber pergola against the existing wall  
Scale 1:20



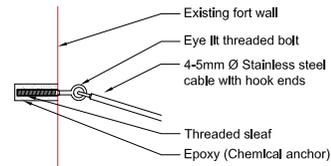
Section B-B through the pergola structure  
Scale 1:20



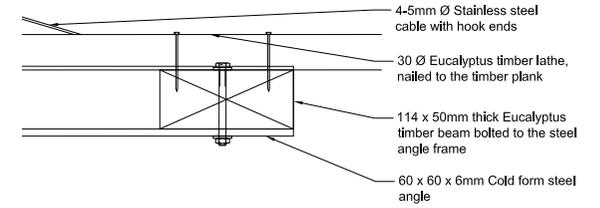
ELEV 1: Elevation of one of the pergola frame sections  
Scale 1:10



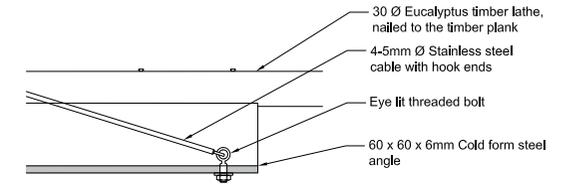
DTL 1: Detail steel angle frame to existing wall  
Scale 1:2



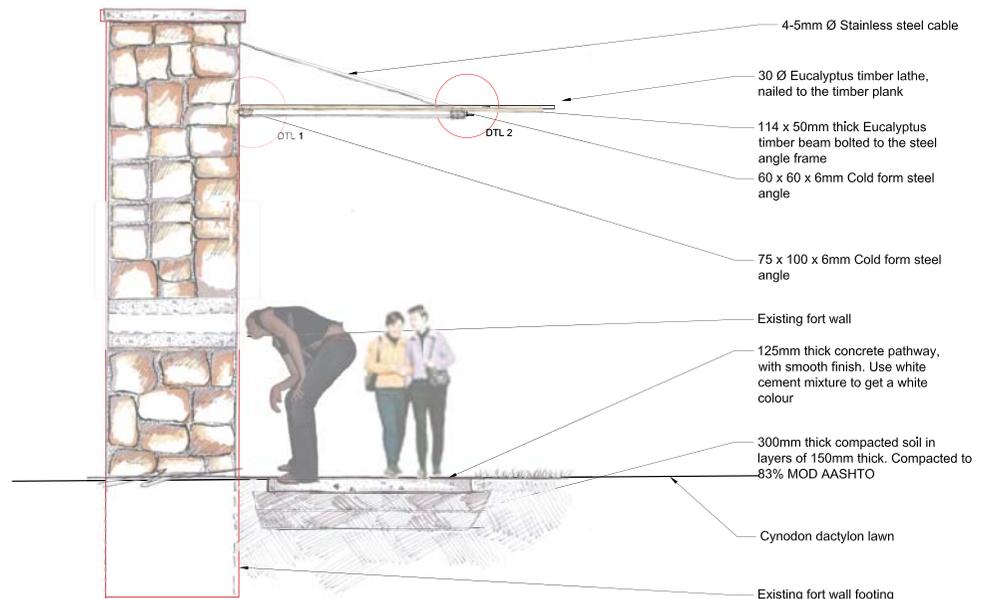
DTL 3: Detail of cable fixture to the existing wall  
Scale 1:2



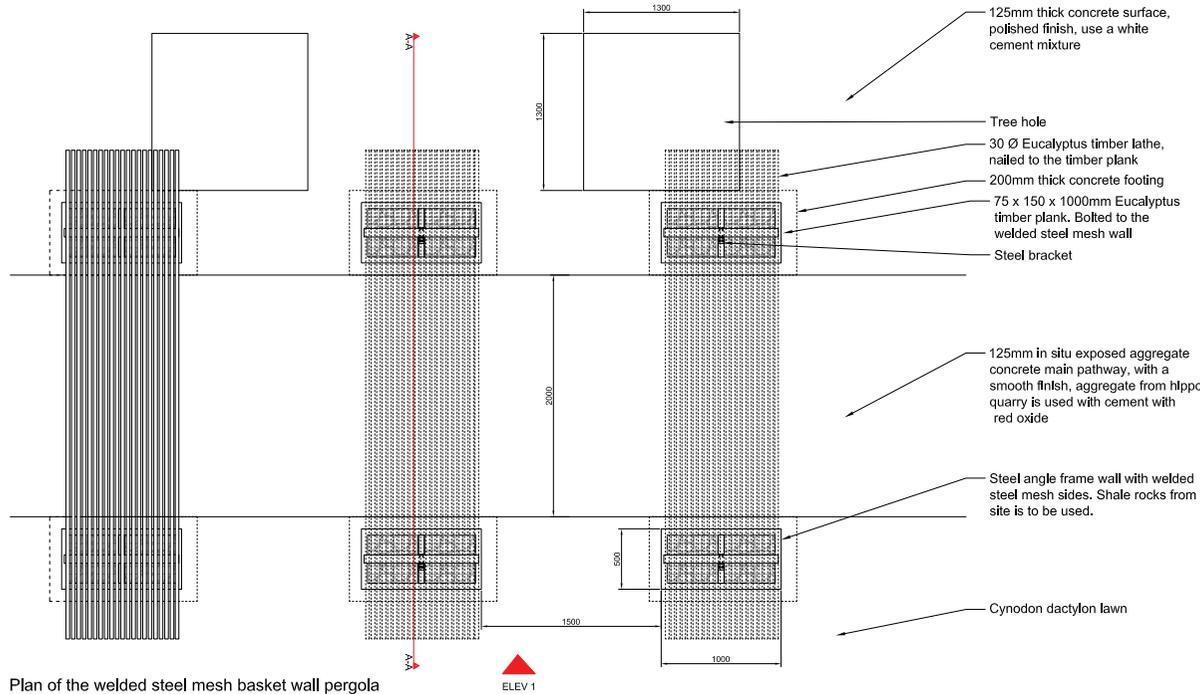
DTL 2: Detail of timber beam fixed to steel angle  
Scale 1:2



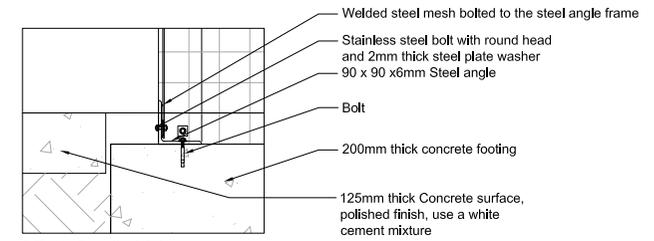
DTL 4: Detail of cable fixture to the steel angle  
Scale 1:2



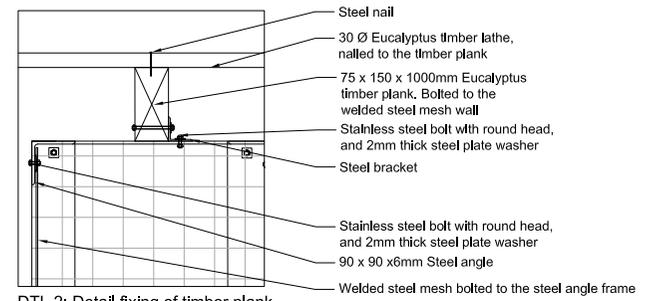
Section A-A through the pergola structure  
Scale 1:20



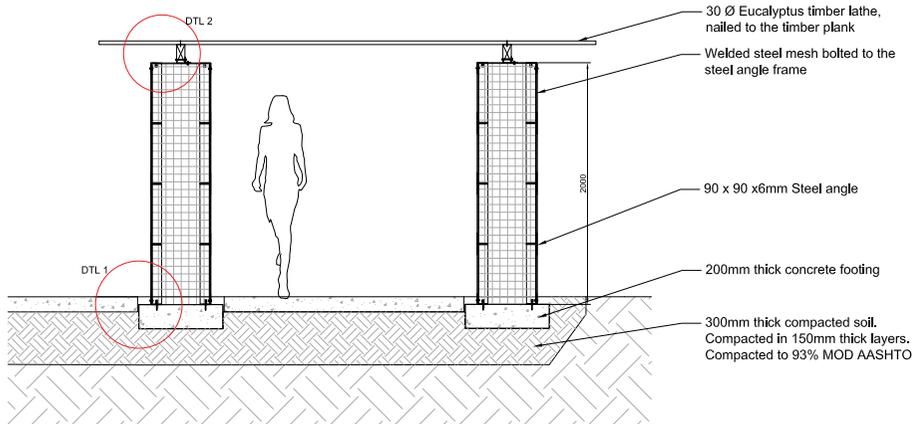
Plan of the welded steel mesh basket wall pergola  
Scale 1:20



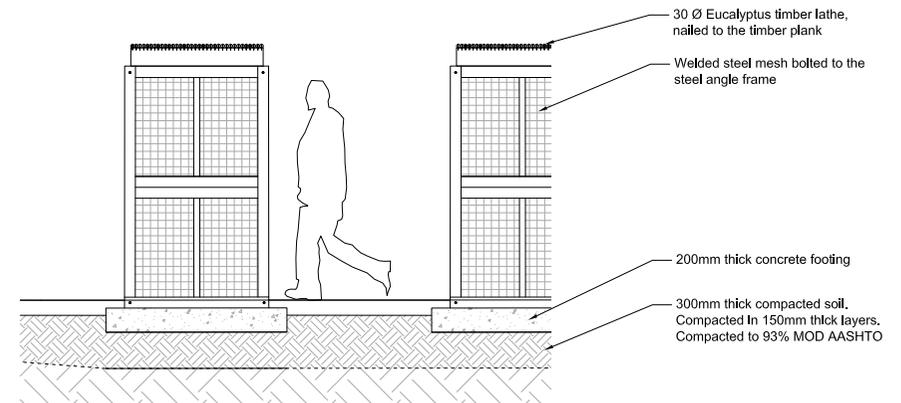
DTL 1: Detail of fixing to concrete footing  
Scale 1:5



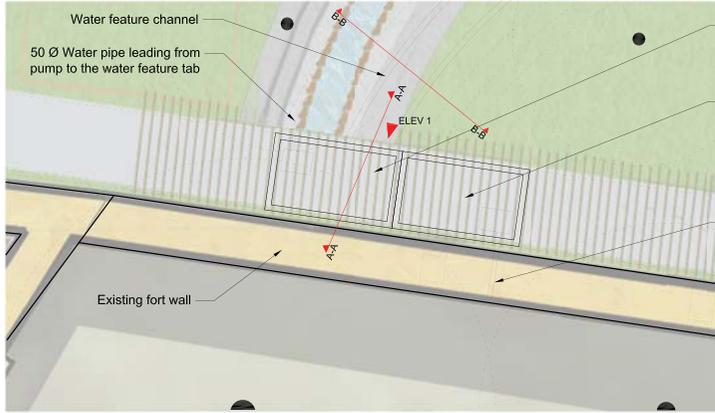
DTL 2: Detail fixing of timber plank to welded steel mesh wall  
Scale 1:5



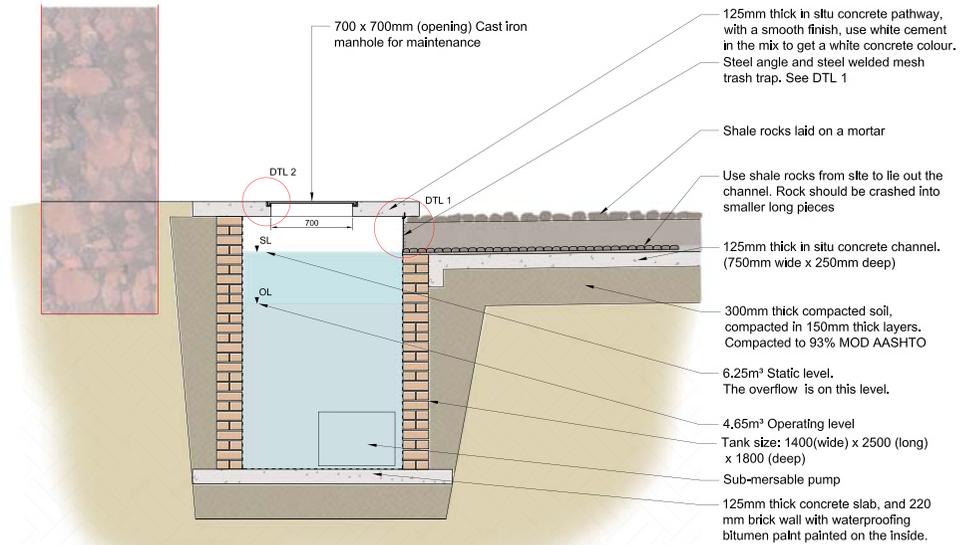
Section A-A through the welded steel mesh basket wall pergola  
Scale 1:20



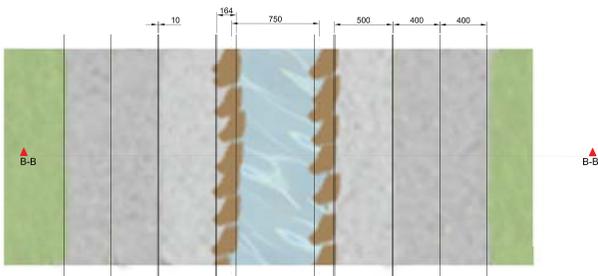
ELEV 1: Elevation of the welded steel mesh basket wall pergola  
Scale 1:20



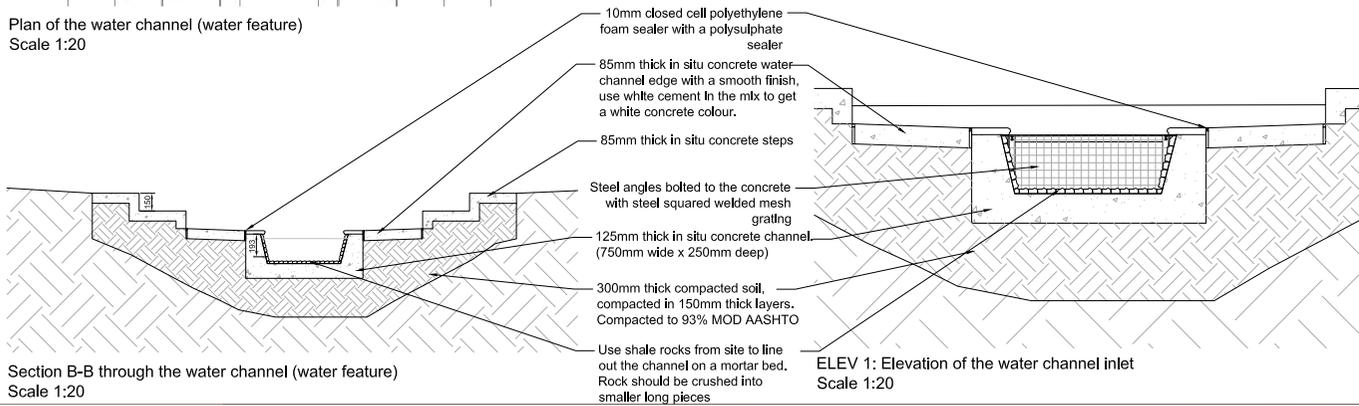
Detail section plan of the water channel and catchment tanks  
Scale 1:50



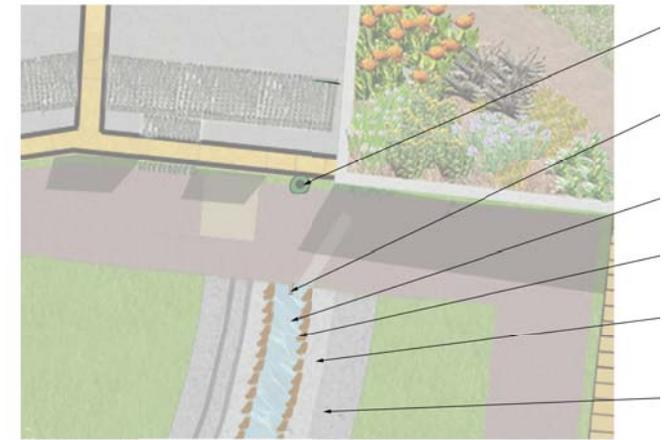
Section A-A of the water channel inlet  
Scale 1:20



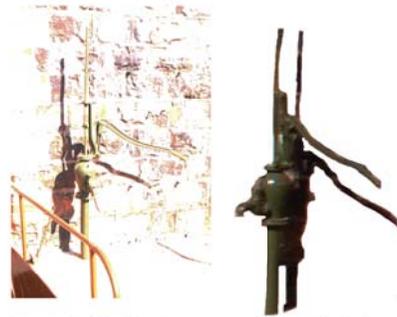
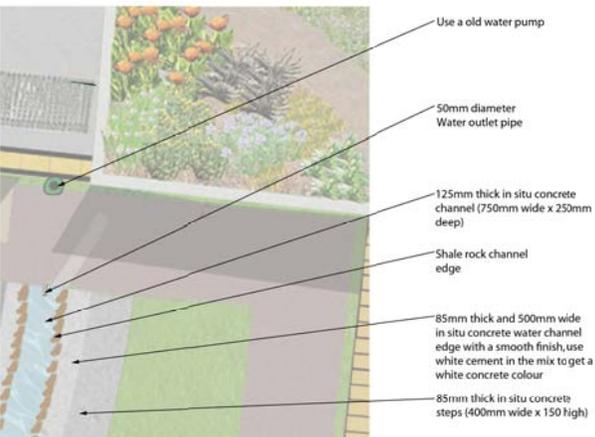
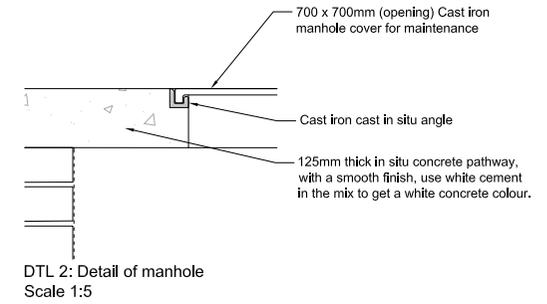
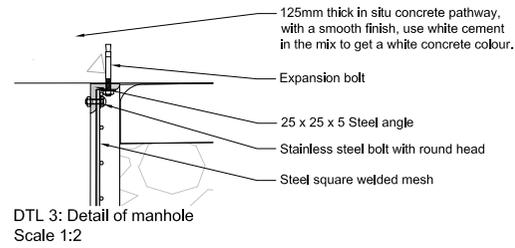
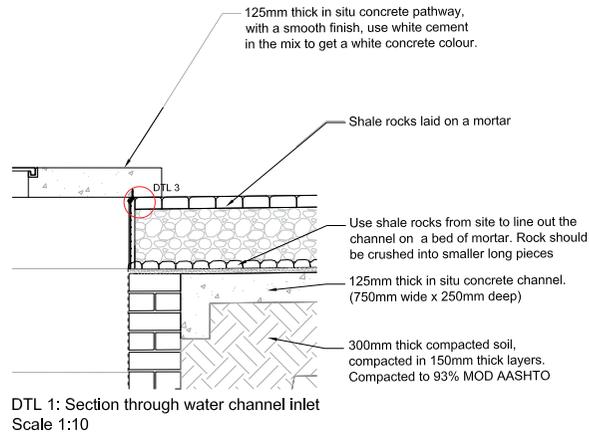
Plan of the water channel (water feature)  
Scale 1:20



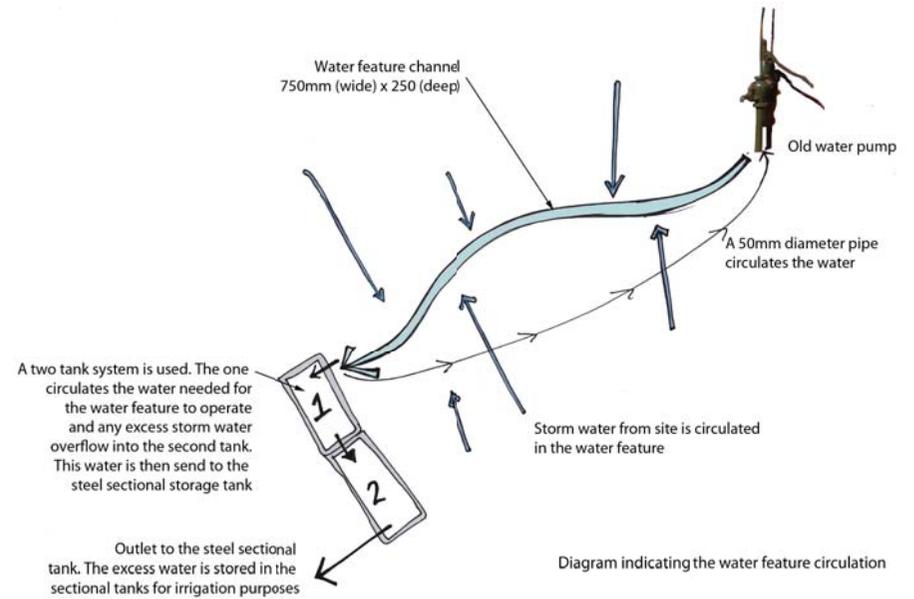
Section B-B through the water channel (water feature)  
Scale 1:20



Detail plan of the water feature channel outlet  
Scale 1:50



A example of a old water pump used during the fort's operation. This will be used as a water outlet for the water feature channel  
NTS

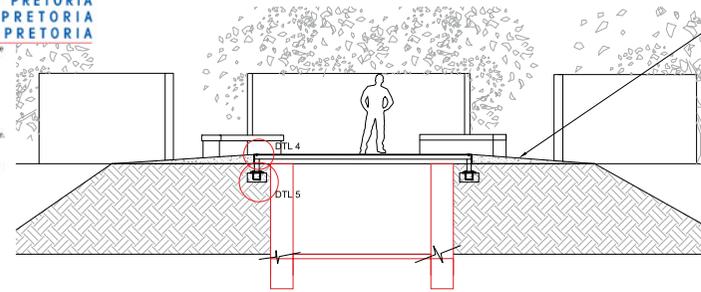




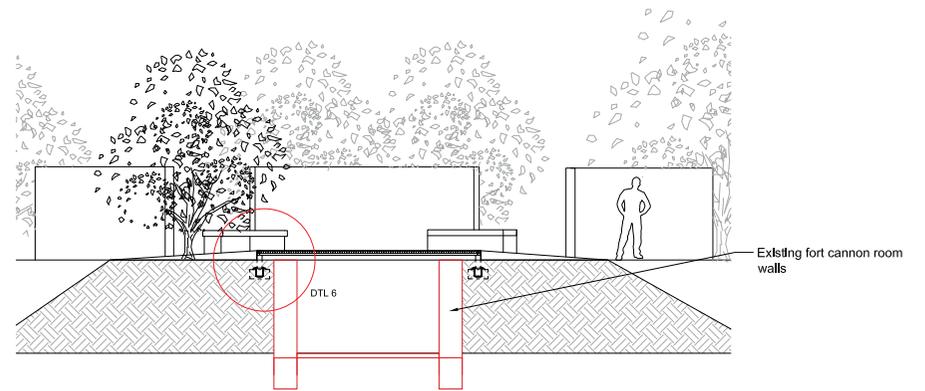
UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA



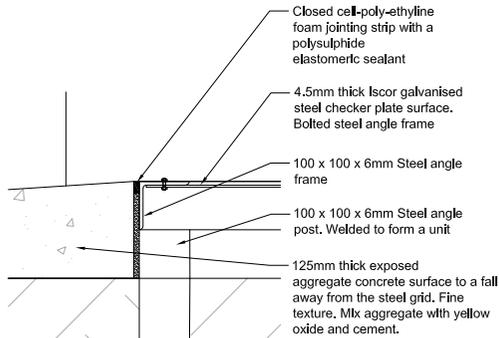
Plan of one of the four lookouts (lookout 3)  
Scale 1:50



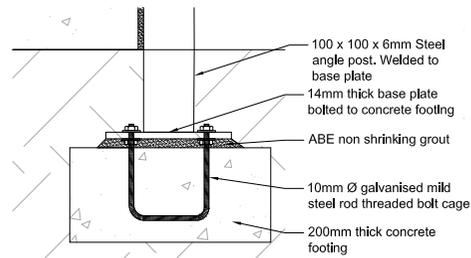
Section A-A through lookout point 3 - checker plate surface  
Scale 1:50



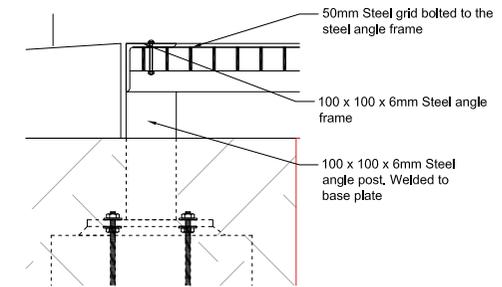
Section B-B through lookout point 3 - galvanised steel grid surface  
Scale 1:50



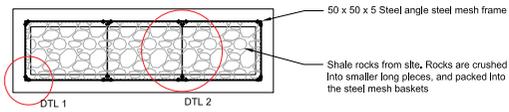
DTL 4: Detail of checker plate and concrete edge  
Scale 1:5



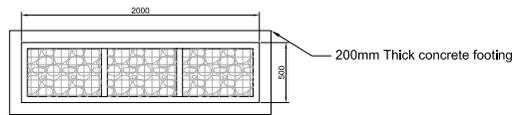
DTL 5: Detail of steel angle frame lookout footing  
Scale 1:5



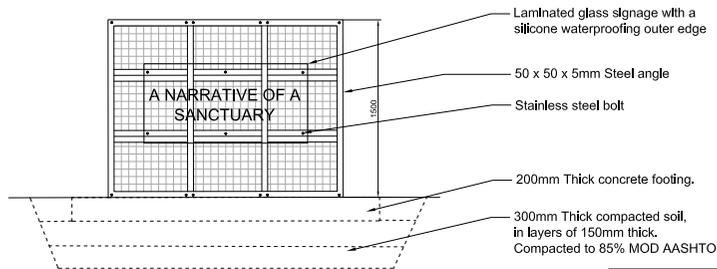
DTL 6: Detail of steel grid and angle frame  
Scale 1:5



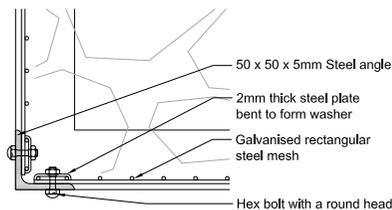
Section plan of the steel mesh basket wall with signage  
Scale 1:20



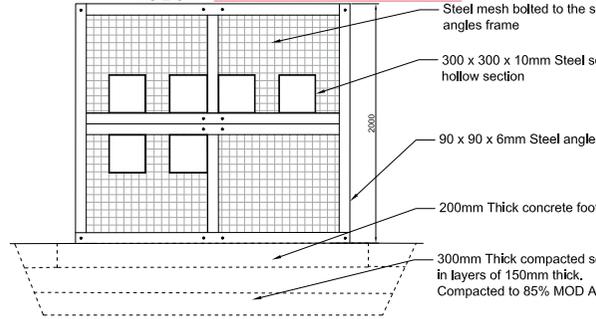
Plan of the steel mesh basket wall with signage  
Scale 1:20



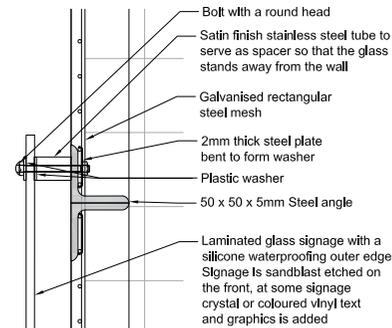
Elevation of the steel mesh basket wall with signage  
Scale 1:20



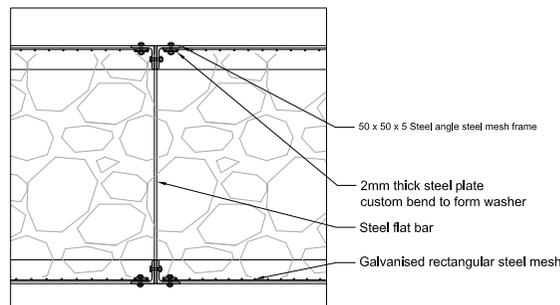
DTL 1: Detail of the steel mesh basket wall corner  
Scale 1:2



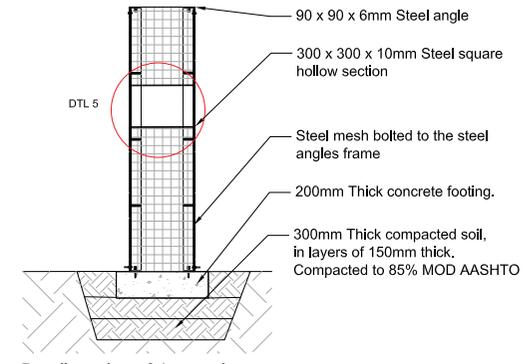
Elevation of the steel mesh basket wall with holes



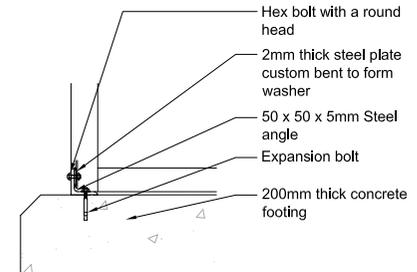
DTL 3: Detail of glass signage fixing to the steel mesh wall  
Scale 1:2



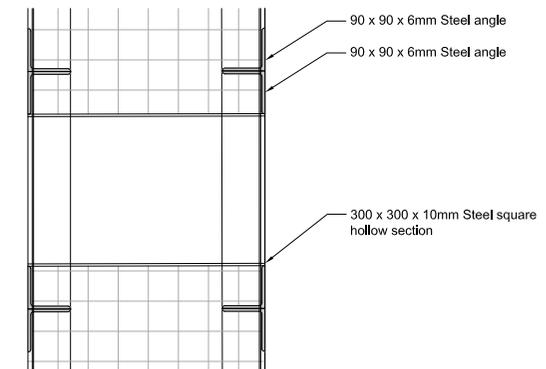
DTL 2: Detail of steel mesh basket divider  
Scale 1:5



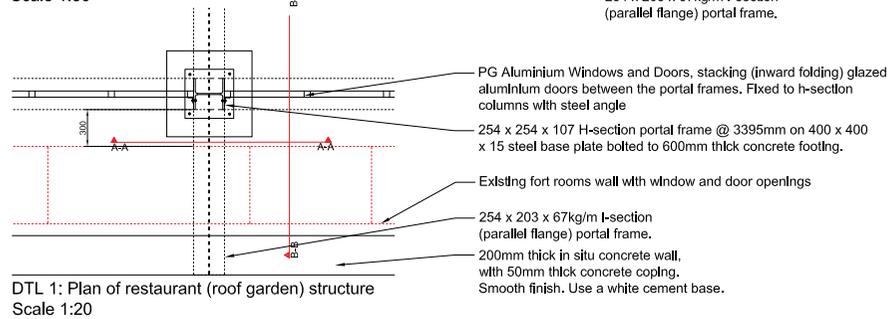
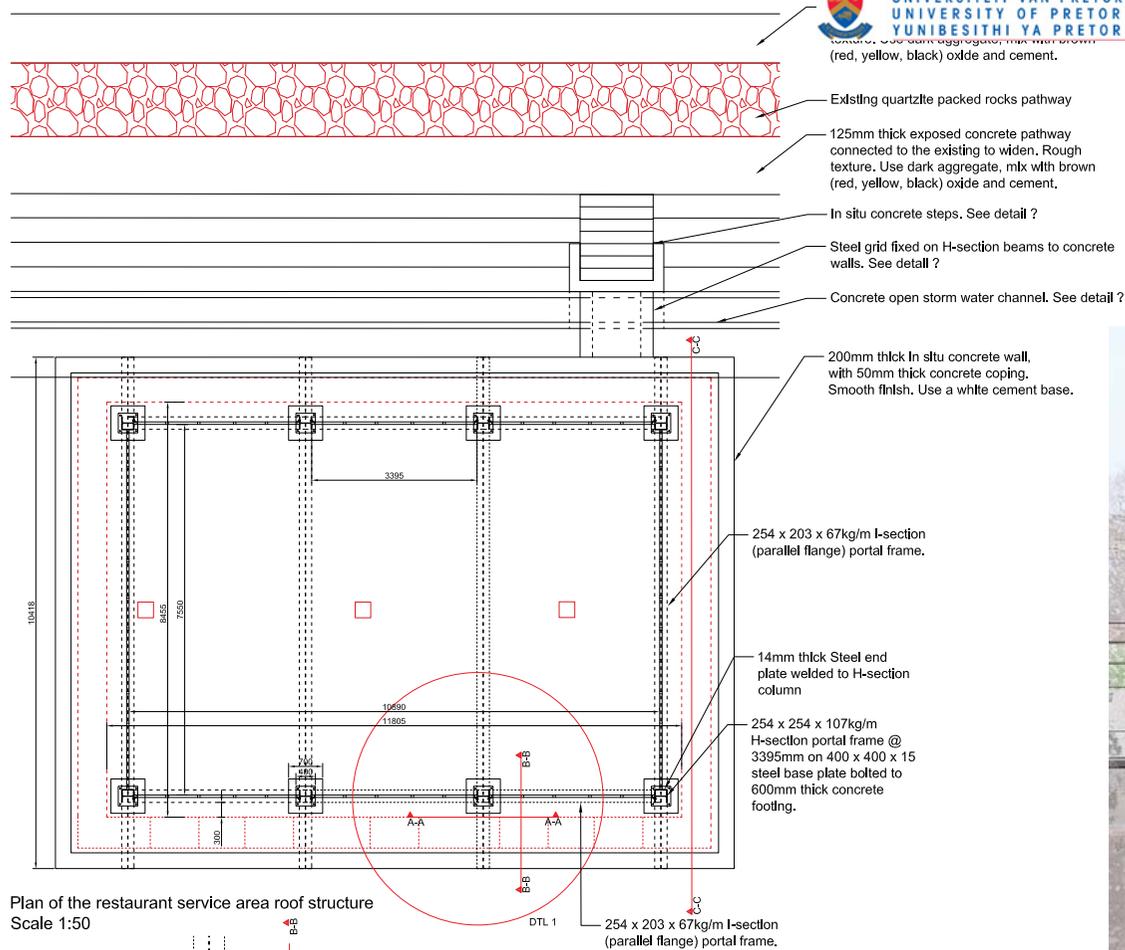
Detail section of the steel mesh basket wall with holes  
Scale 1:20

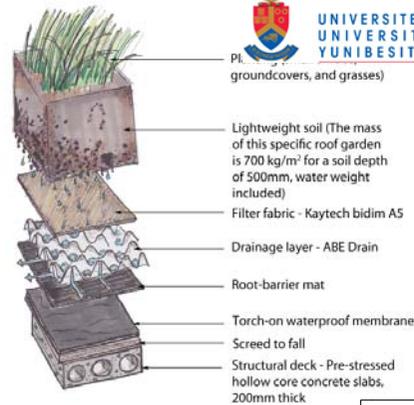


DTL 4: Detail section of the steel mesh basket wall to the concrete footing  
Scale 1:5

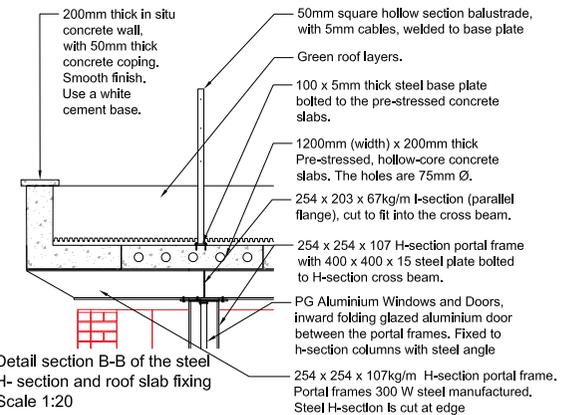


DTL 5: Detail of steel square hollow tube  
Scale 1:5

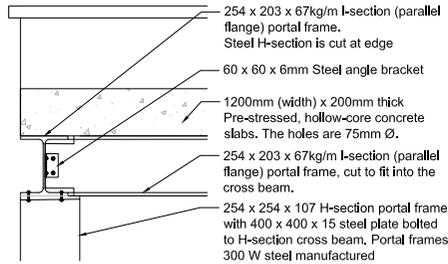
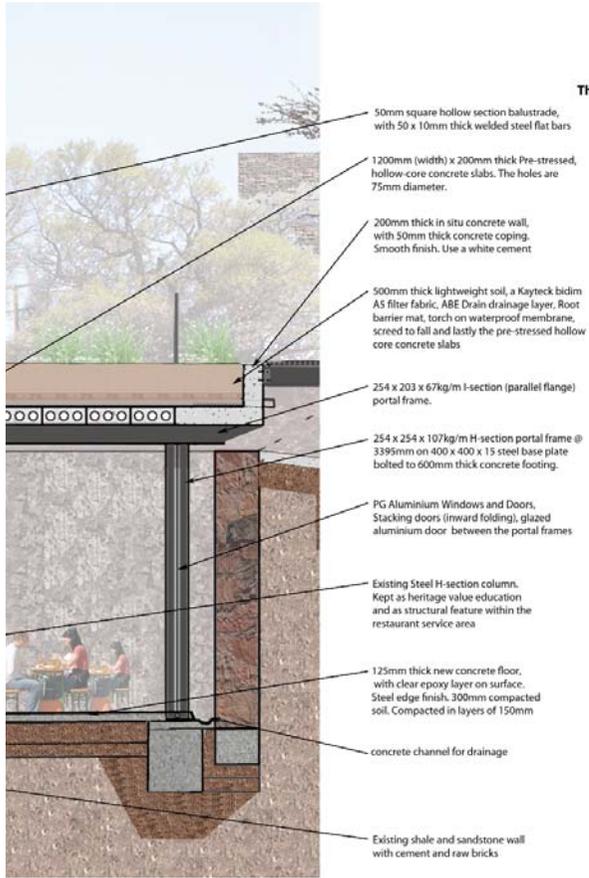




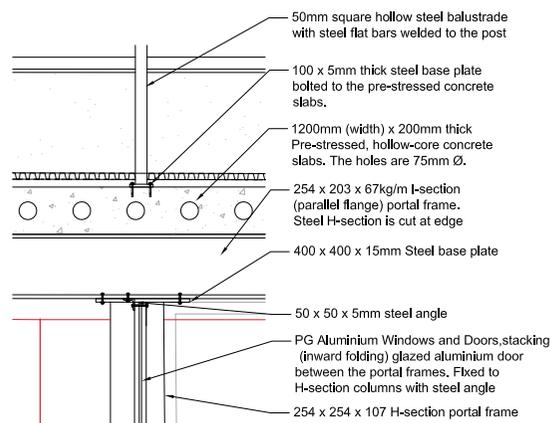
The green roof layers (NTS)



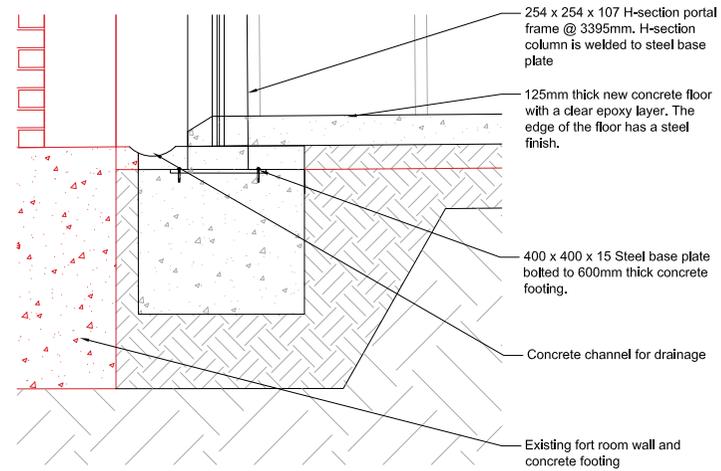
Detail section B-B of the steel H-section and roof slab fixing  
Scale 1:20



Detail section A-A steel H-section fixing  
Scale 1:10

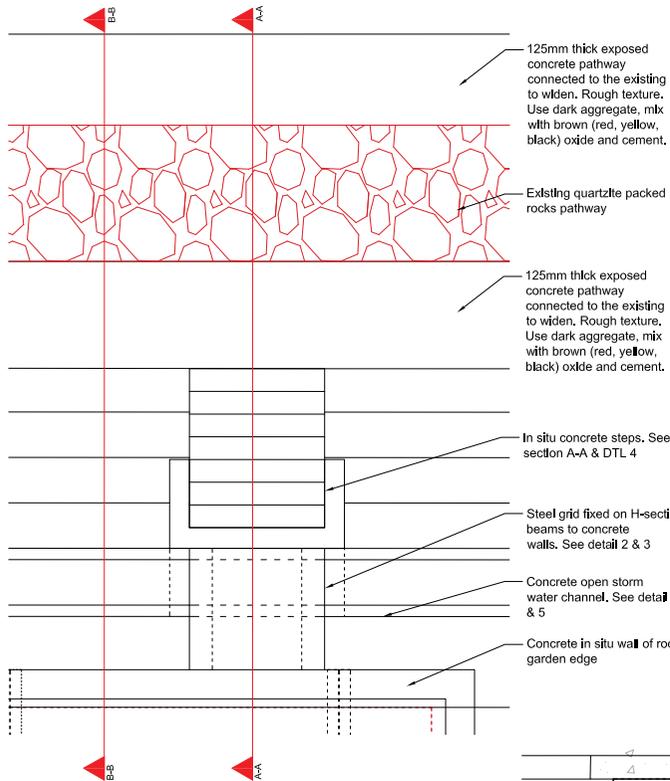


DTL 3: Detail of H-section to roof and aluminium glazing fixing  
Scale 1:10

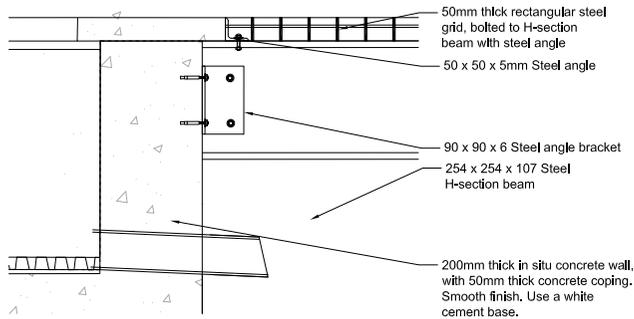


DTL 2: Detail of the steel H-section fixed to concrete footing  
Scale 1:10

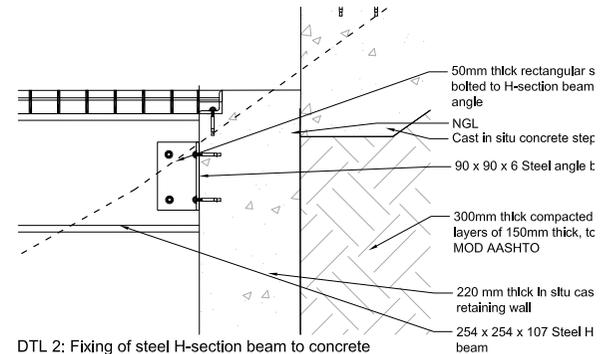
TECHNICAL DETAIL - RESTAURANT SERVICE AREA



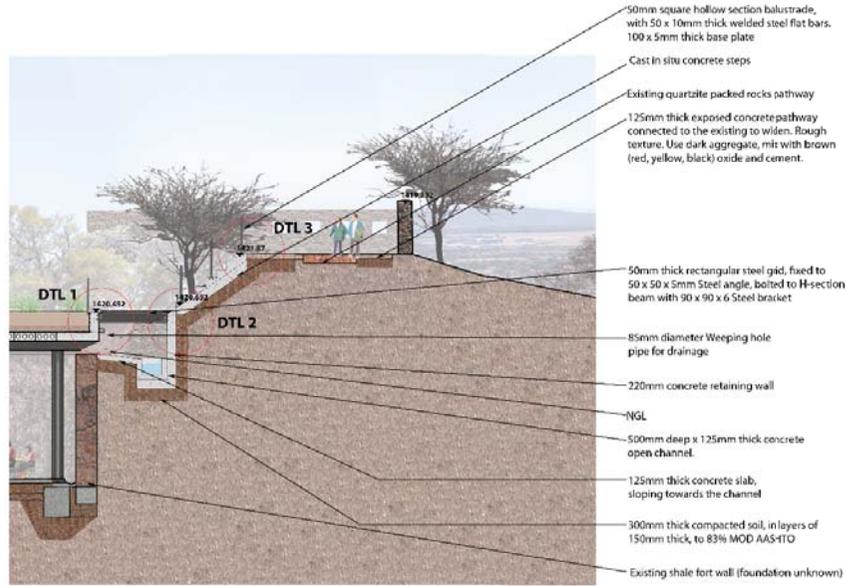
Plan of the concrete open storm water channel and steps  
Scale 1:25



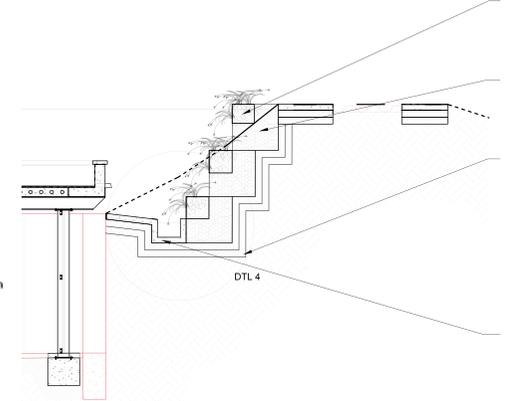
DTL 1: Fixing of steel H-section beam to concrete wall and steel grid  
Scale 1:5



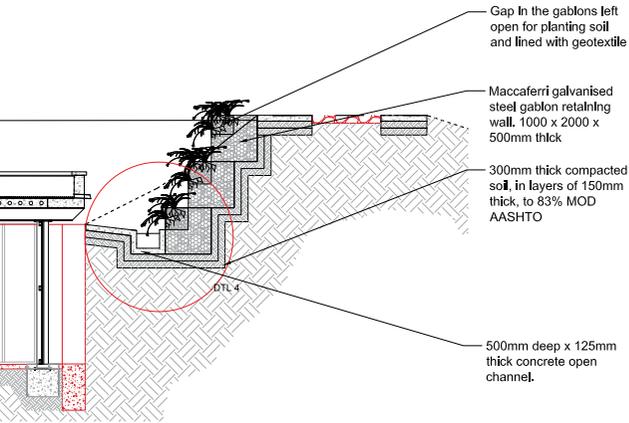
DTL 2: Fixing of steel H-section beam to concrete retaining wall and steel grid  
Scale 1:5



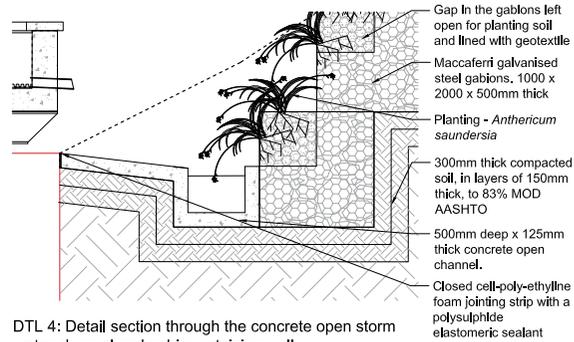
Section A-A: Detail section through the concrete open storm water channel and steps  
Scale 1:50



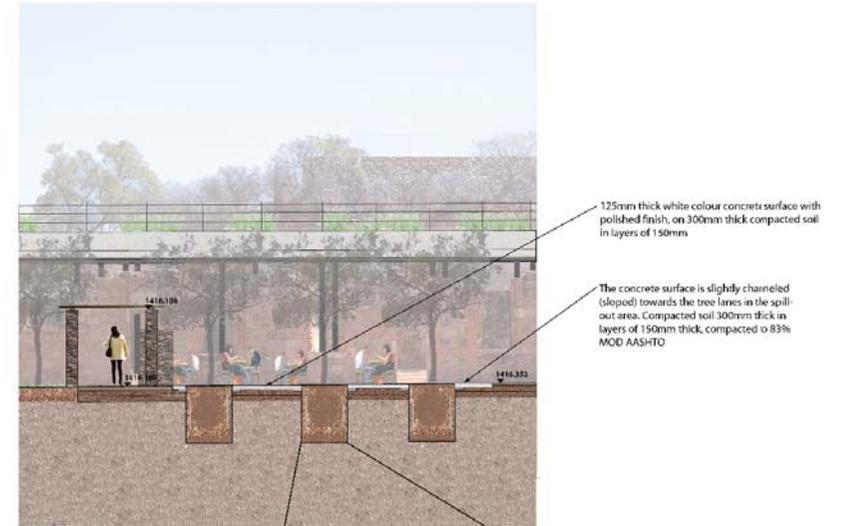
Section B-B: Detail section through the concrete open storm water channel and gabion retaining wall  
Scale 1:50



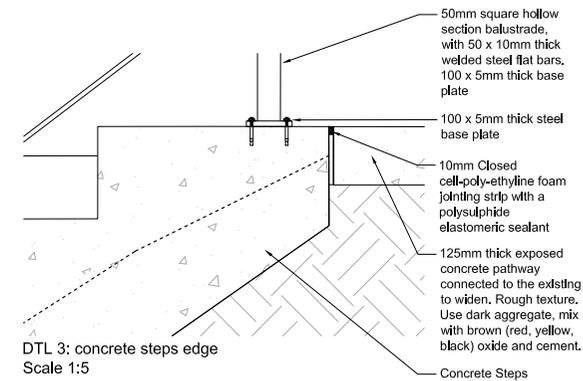
Section B-B: Detail section through the concrete open storm water channel and gabion retaining wall  
Scale 1:50



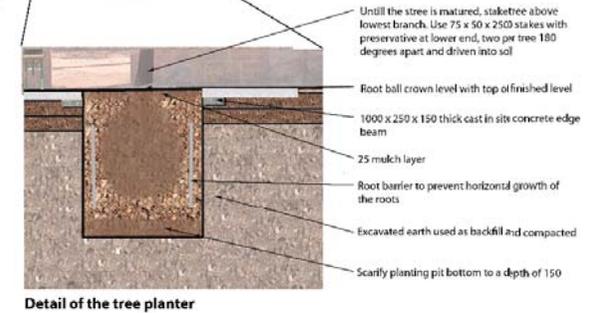
DTL 4: Detail section through the concrete open storm water channel and gabion retaining wall  
Scale 1:20



Section through the spill-out area  
Scale 1:75



DTL 3: concrete steps edge  
Scale 1:5



Detail of the tree planter



Existing shale rock stairs  
200 x 75 x 80kg/m steel channel (PFC) fixed to a 200mm thick concrete footing with a 100 x 10mm thick galvanised steel bent plate

Iscor 4.5mm thick galvanised checker plate tread on galvanised steel triangular shaped tread plate, bolted to steel channel

50mm square hollow tube steel balustrade post with 50 x 10mm thick steel flat bar rails, welded to a 5mm thick steel base plate and bolted to checker plate tread

Cynodon dactylon lawn

125mm thick exposed concrete pathway, with fine texture finish. Use small fine pieces of aggregate and mix with a black oxide cement mixture. On 300mm compacted soil in 150mm layers

Existing shale rock retaining wall

Kayteck bidim A4

125mm thick cast in situ concrete seating, with a movement joint every 2m

Kayteck bidim A1

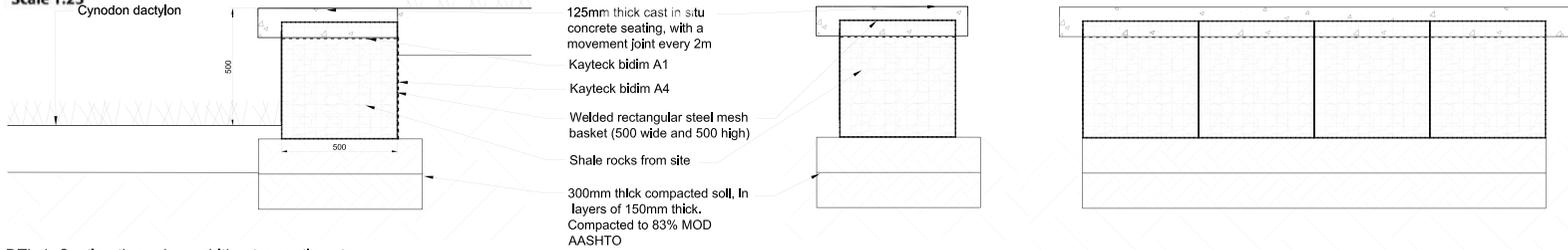
Welded rectangular steel mesh basket (500mm wide and 500mm high) with shale rocks from site (crushed smaller and packed neatly). On 300mm thick compacted soil, in layers of 150mm thick. Compacted to 83% MOD AASHTO



Plan of the existing stair and new proposed steel stairs to the roof garden  
Scale 1:50

**Section through the amphitheatre**

Scale 1:25



125mm thick cast in situ concrete seating, with a movement joint every 2m

Kayteck bidim A1

Kayteck bidim A4

Welded rectangular steel mesh basket (500 wide and 500 high)

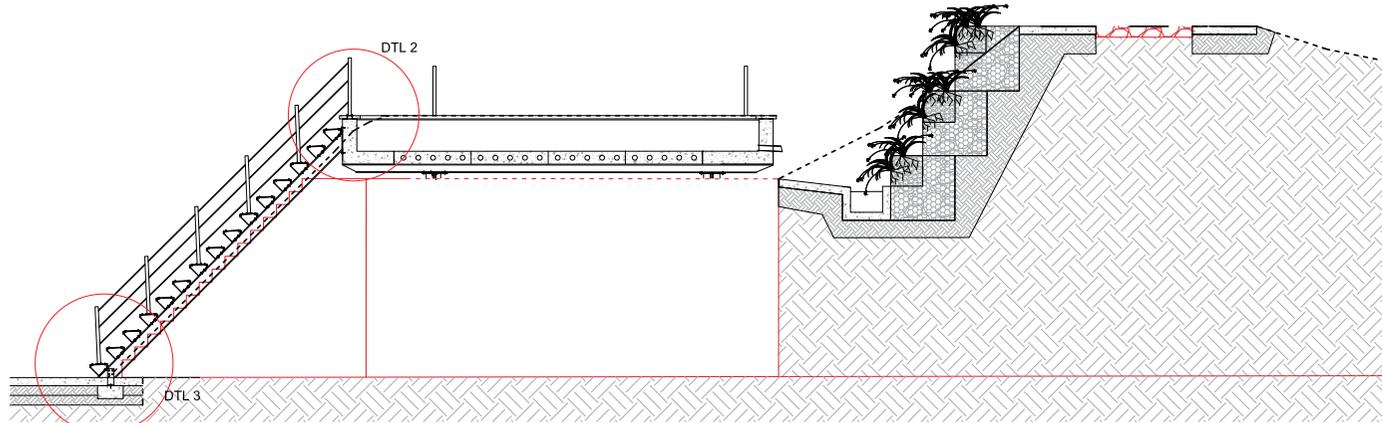
Shale rocks from site

300mm thick compacted soil, in layers of 150mm thick.

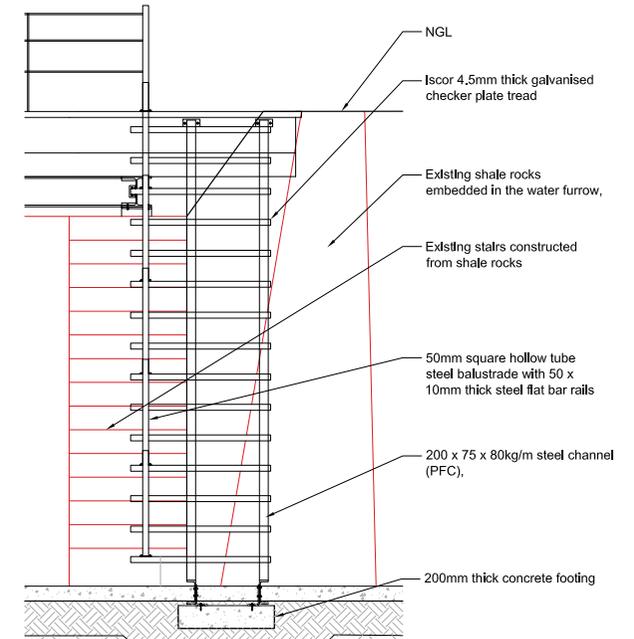
Compacted to 83% MOD AASHTO

Section through bench  
Scale 1:10

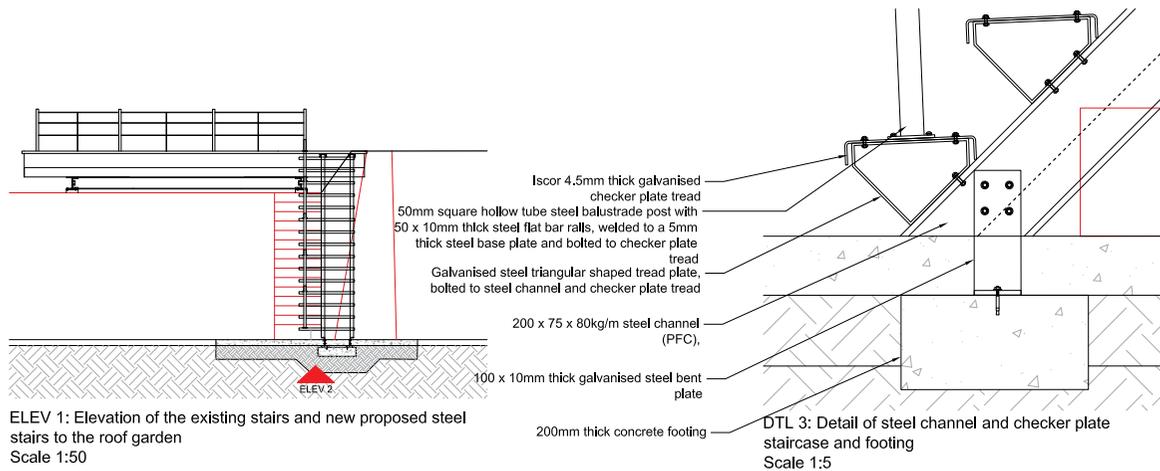
DTL 1: Section through amphitheatre seating steps  
Scale 1:10



Section A-A of the existing stair and new proposed steel stairs to the roof garden  
Scale 1:50

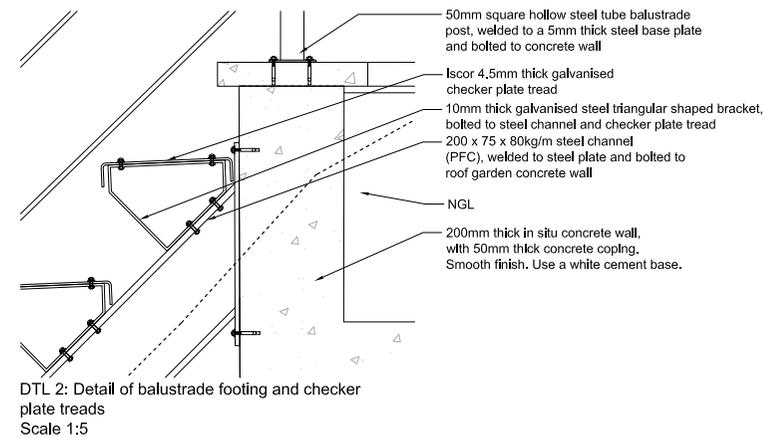


ELEV 2: Detail elevation of the existing stairs and new proposed steel stairs to the roof garden  
Scale 1:20



ELEV 1: Elevation of the existing stairs and new proposed steel stairs to the roof garden  
Scale 1:50

DTL 3: Detail of steel channel and checker plate staircase and footing  
Scale 1:5

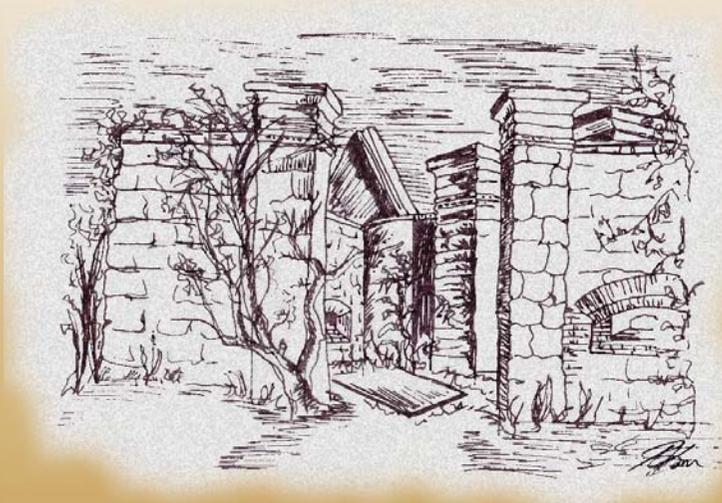


DTL 2: Detail of balustrade footing and checker plate treads  
Scale 1:5



*Illus. 314: Detail within the vegetation of Wonderboom Nature Reserve. These natural details strengthen the site's identity. (Author, 2011)*

# CONCLUSION 09





*Illus. 315: Nature's beauty and elegance. A view from the Wonderboom fort at the sunset (Author, 2011)*

Wonderboom Nature Reserve is rich in natural and cultural heritage, a magnificent place. It is a nature island, a sanctuary surrounded by development, the perfect place to escape from the city. It is important to preserve this site and provide public access for people to be able to appreciate this multifaceted place. It has so much to offer the visitor and by designing the site to create awareness, access and understanding of these significant features it will attract more people. More people will ensure the sustainable future existence of the site for generations to come.

The Wonderboom fort ruin speaks of past events and times, it is very emotionally evocative. If it were to be restored, the visitor's imagination of what might have been will be lost together with the genius of the place.

The Burra charter was used mainly in the dissertation to determine how to treat the ruin on the site and the Ename charter was used to decide on how the ruin should relate to the public. This resulted in a two-pronged approach to the design, namely:

- A. Heritage - Preserving the physical through the Burra charter
- B. Public - Awareness, education, experience, and meaning through the Ename charter

Theory was used to enhance the design approach as a narrative in communicating the original meaning and – also explored through the Ename charter - public: awareness, education, experience, meaning and identity.

Wonderboom Fort was intended to stimulate the imagination of the visitor so that the structure is reconstructed to its original state in the mind's eye of the visitor. To ensure that people do not find it difficult to imagine, a better understanding of the ruin was provided through 'semiotic resources' – namely physical information boards (glass), and further reference to certain historic events, structures and/or memories through landscape elements or signs and symbols placed in the landscape design.

The fort was preserved in such a way that people will get the chance to take note of it and the history which it presents the evidence of. The design intervention was done in an intelligible way to teach and instruct the onlooker and to enrich the experience of the ruin/place.

The more knowledge one has, the more appreciation and understanding one will have for the ruin. This is why awareness of the Wonderboom fort was so important as well as the education regarding the history and the ruin itself. (Didactic approach as discussed in the research)

Semiotics, narratives and didactics were used as communication tools in this research to "speak" of the site's cultural and biophysical elements and the history thereof.

The existing spirit of place, the place's identity and its meaning - that of a refuge (which

is intangible and unconscious) was strengthened through a narrative approach (a tangible approach) that engaged with the cultural and biophysical history of the site (the tangible world) by means of didactics (education/ teaching) and semiotics (experience with added meaning that gives identity).

Specific design goals - better access, heightened awareness and heightened interest was accomplished through complexity and coherence in design.

The user is engaged with the physical/conscious experience through didactics – teaching about the physical aspects of the site (nature and culture), Furthermore, the user is engaged with the unconscious experience through semiotics) –by using symbols that give meaning and identity

Coherence was established by means of unity in the design. Firstly the narrative of the site and linking the different activities created coherence. A minimum material pallet of steel, concrete and glass further provided coherence. The design was made legible through the different colour and texture pathways with a clear hierarchy. The use of straight lines and squares provided a similar geometry which in turn provides legibility, and unity of the design.

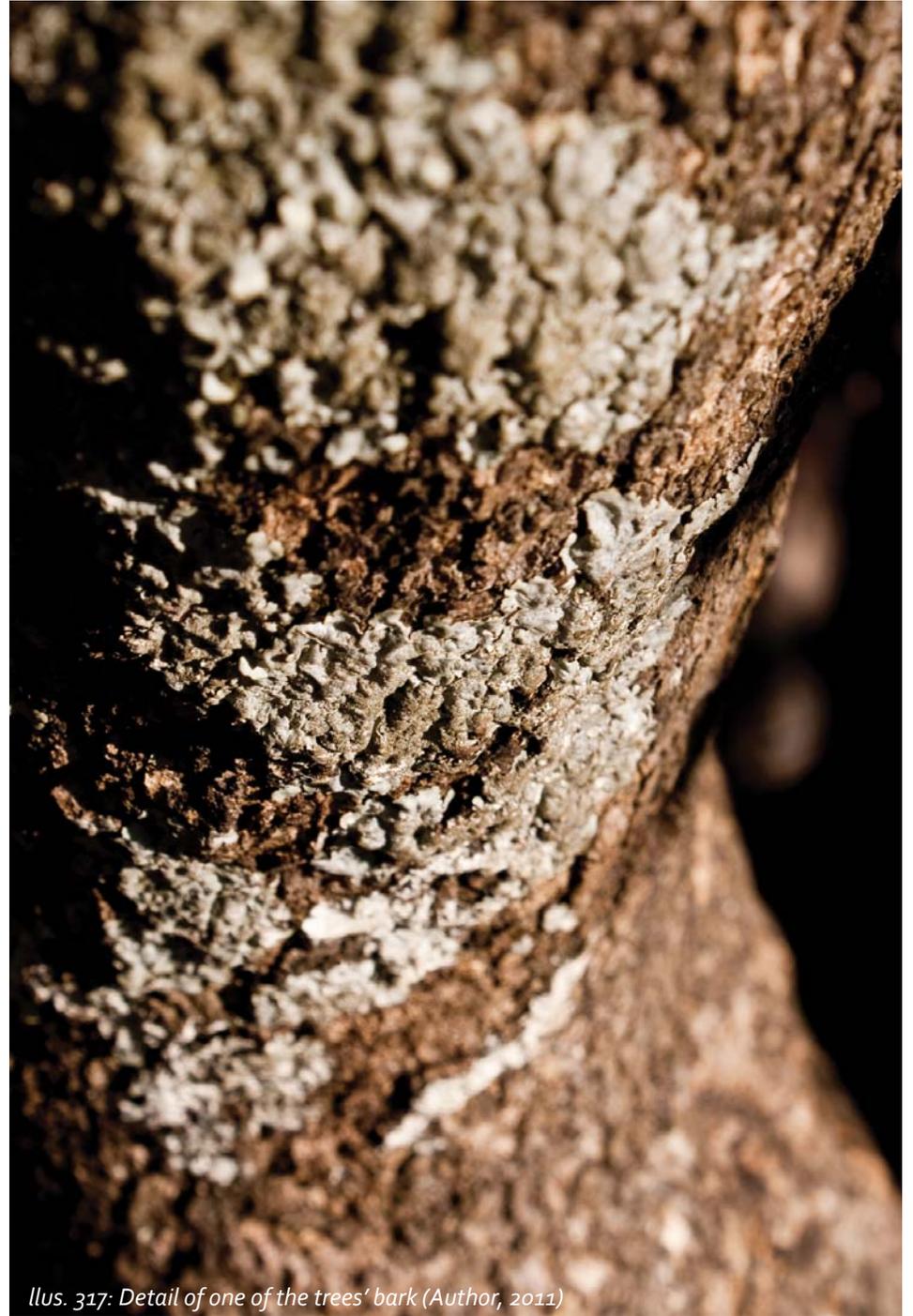
Complexity in the design was obtained through the semiotic resources used to stimulate memory, provide education and to create meaning. These resource elements are connected via the narrative trail (pathways). Details such as different textures, colours, shapes and sizes of different elements and pathways on site also provided complexity.

How can a design narrative create awareness of the cultural and biophysical aspects of a site and ultimately create meaning and identity?

A didactic narrative can create interest and discovery and through experience communicate the cultural and biophysical aspects of the site which as a result will strengthen the local identity of the site and of the user.



*Illus. 316: Vegetation characteristic of the site (Author, 2011)*



*Illus. 317: Detail of one of the trees' bark (Author, 2011)*

# BIBLIOGRAPHY 10



- Anniforscia. 2008. Castelvechio Museum. [http://justabroadineurope.blogspot.com/2008\\_11\\_01\\_archive.html](http://justabroadineurope.blogspot.com/2008_11_01_archive.html). [22 May 2011]
- Behrens, H.P.H. 1956. History of the Wonderboom and its Nature Reserve, in; Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 7-21. Pretoria: The Government Printer.
- Behrens, H.P.H. 1956. The Wonderboom Fort, in; Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 43-45. Pretoria: The Government Printer.
- Bergh, J.S. (red.). 1999. Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. Pretoria: J.L. van Schaik.
- Bewsher, P. 2005. Integrated Environmental Management Plan: Tswaing Meteorite Crater. South Africa: Northern Flagship Intitute.
- Carruthers, V, (Ed.). 2000. The Magaliesberg. Pretoria: Protea Book House. pp. 388
- City of Tshwane Council. n.d. Die Wonderboom Natuur-Reservaat. Pretoria
- City of Tswane, Agriculture and environmental management department, 2011. Nature conservation and resorts, Wonderboom Nature Reserve. Brochure.
- Collet, D.G. 1956. Some botanical features of the Wonderboom Nature Reserve, in; Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 67-87. Pretoria: The Government Printer.
- Concise Oxford English dictionary. 11th ed. 2008. Oxford: Oxford University Press.
- Dee, C. 2001. Form and fabric in landscape architecture: A visual introduction. New York: Spon Press. Pp 211
- Delport. 2011. We walked up Lionshead under Full Moon. <http://easytraveltours.blogspot.com/>. [22 May 2011]
- Dr. A.C. van Vollenhoven. 2008. A cultural heritage management plan for the Wonderboom Nature Reserve, City of Tshwane. Report: AE 810. Pp150.
- Famous Architect. n.d. Carlo Scarpa: architect biography. <http://architect.architecture.sk/carlo-scarpa-architect/carlo-scarpa-architect.php>. [22 May 2011]
- Freedom Park. n.d. Overview of the elements. [http://www.freedompark.co.za/cms/index.php?option=com\\_content&view=article&id=23&Itemid=26](http://www.freedompark.co.za/cms/index.php?option=com_content&view=article&id=23&Itemid=26). [16 Jun 2011]
- GEHL, J. 2007. Public Spaces for a Changing public Life. Topos 61: Urban Space: 16-22
- Gilpin, W. 1782. Observations on the river wye and several parts of south wales, etc relative chiefly to picturesque beauty. London. Pp 32-35.
- Grange, J. 1985. Radiant lessons from the Failed Landscape of Desire. Places 2, no.2
- Hanisch, H.M.E. 1956. Stone Age men at Wonderboom, in; Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 53-59. Pretoria: The Government Printer.
- Heritage SA. 2011. Heritage.org. <http://www.heritagesa.org/> [7 May 2011]
- Horn, A.C. 1996. Okkupasie van die Bankeveld voor 1840 n.C.: 'n sintese. Suid-Afrikaanse Tydskrif vir Etnologie, 19(1).
- Howett, C. 1987. Systems, signs, and sensibilities: in Swaffield, S. 2002. Theory in Landscape Architecture: A reader. Pennsylvania: University of Pennsylvania Press. Philadelphia
- Huffman, T.N. 2007. Handbook to the Iron Age. The archaeology of pre-colonial farming societies in Southern Africa. Cape Town: CTP Book Printers.
- Joffe, P. 2005. Creative gardening with indigenous plants: A South African guide. Pretoria: Briza publications. Pp373.
- Korsman, S.A. & Meyer, A. 1999. Die Steentydperk en rotskuns. Bergh, J.S. (red.). Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies. Pretoria: J.L. van Schaik.
- Lynch, K. 1960. The image of the City. Cambridge: MIT Press.
- Magdarc. 2010. Castelvechio, Verona- Carlo Scarpa. <http://magdarc.wordpress.com/2011/03/03/castelvechio-verona-carlo-scarpa/>. [22 May 2011]
- Mason, R. 1962. Prehistory of the Transvaal. A record of human activity. Johannesburg: Witwatersrand University Press.
- Maynard, E.J. 1956. The wonderboom caves, in; Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 47-51. Pretoria: The Government Printer.
- Mogg, A.O.D. 1956. The Wonderboom: Botanical and historical features, in; Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 23-33. Pretoria: The Government Printer.
- Mossad. 2009. World trade centre ghost towers. <http://ronmossad.blogspot.com/2009/09/lights-in-night-sky.html>. [22 May 2011]
- Müller, L. 2008. Intangible and tangible landscapes: an anthropological perspective
- Palgrave, K.C. 2002. Trees of South Africa. Cape Town: Struik publishers.
- Payne-Knight, R. 1794. The landscape: A didactic poem, in Gallagher, C. The designed landscape of Crom: the visual matrix and arrangement of views. Curator (Gardens & Parks), North Territory (pp 46- 50) in the journal Views – landscape, issue 47 Autumn 2010. National Trust
- Perkins, S. 1995. Experience. London: Booth-Clibborn Editions.

- Porter, T. 2004. *Archispeak: An illustrated guide to architectural terms*. Routledge. Pp218.
- Preucel, R.W. 2006. *Archaeological semiotics*. Oxford: Blackwell publishing. Pp331
- Rasmussen, R.K. 1978. *Migrant kingdom. Mzilikazi's Ndebele in South Africa*. London: Rex Collings.
- Republic of South Africa. 1998. *National Environmental management Act. No 107*. Pretoria: The Government Printer.
- Republic of South Africa. 1999. *National Heritage Resources Act. No 25*. Pretoria: the Government Printer.
- Roberts, A. 1956. *The birds of the wonderboom nature reserve*, in; *Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 107-125*. Pretoria: The Government Printer.
- Roberts, A. 1956. *The mammals of the wonderboom nature reserve*, in; *Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 125-139*. Pretoria: The Government Printer.
- Scazzosi, Lionella. (2004). *Reading and assessing the landscape as cultural and historical heritage*, *Landscape Research*, Vol. 29:4, pp. 335 – 355.
- Seligman, J and Avni, G. n.d. *Jerusalem Archaeological Park in Meiron*, E and Bar, D (ed.). n.d. *Planning and Conserving Jerusalem – the Challenge of an ancient city*. Jerusalem: Yad Ben Zvi Press.
- Steyn, T. 1956. *The Wonderboom Nature Reserve. Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal*. Pretoria: The Government Printer.
- Swaffield, S. 2002. *Theory in Landcape Architecture: A reader*. Pennsylvania: University of Pennsylvania Press. Philadelphia
- Thomas, V. & Grant, R. 2004. *Sappi tree spotting: Kwazulu-Natal and Eastern Cape*. Johannesburg: Jacana Media.
- Thompson, M.W., 1981. *Ruins: Their Preservation and Display*. London: British Museum Publications Limited.
- Tintern Abbey. 2010. *Sacred Destinations*. <http://www.sacred-destinations.com/wales/tintern-abbey>. [7 May 2011]
- Treib, M. 1995. *Must landscapes mean?* In Swaffield, S. 2002. *Theory in Landcape Architecture: A reader*. Pennsylvania: University of Pennsylvania Press. Philadelphia.
- UNESCO: World Heritage Convention. 2011. South Africa. <http://whc.unesco.org/en/statesparties/za> [7 May 2011]
- UNESCO: Worldwide. 2007. South Africa. <http://erc.unesco.org/cp/cp.asp?country=za&language=e> [7 May 2011]
- Van der Ryst, M.M. & Meyer, A. 1999. *Die Ystertydperk*. Bergh, J.S. (red.). *Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies*. Pretoria: J.L. van Schaik.
- Van Leeuwen, T. 2005. *Introducing social semiotics*. New York: Routledge. Pp297
- Van Oudshoorn, F. 2006. *Guide to grasses of southern Africa*. Pretoria: Briza publications. Pp288.
- Van Vollenhoven, A.C. (Translation: Bailey, A.) 1998. *The Military Fortifications of Pretoria: A study in Historical Archaeology*. A.C van Vollenhoven.
- Van Vollenhoven, A.C. 1998. *Kultuurhulpbronbestuur (KHB) binne die funksionels konteks van museums in Suid-Afrika*. (Unpublished M.A.-dissertation, Stellenbosch: University of Stellenbosch).
- Van Vollenhoven, A.C. 2005. *Die eerste blanke bewoner van die Pretoria-omgewing*. *Suid-Afrikaanse Tydskrif vir Kultuurgeskiedenis*, 19(2).
- Van Vuuren, C.J. 1995. Ndebele. In: J. Middleton & A. Rassam, *Encyclopedia of world cultures*. Vol. 9. Boston: GK Hall.
- Van Vuuren, C.J. 2006. *Ndebele place names and settlement in Pretoria*. *South African Journal of Cultural History*, 20(1).
- Van Wyk, B. & Gericke, N. 2000. *People's plants: A guide to useful plants of South Africa*. Pretoria: Briza publications. Pp 303.
- Van Wyk, B. & Van Oudshoorn, B. & Gericke, N. 2000. *Medicinal plants of South Africa*. Pretoria: Briza publications. Pp 303.
- Van Wyk, B. & Van Wyk, P. 1997. *Field Guide to Trees of South Africa*. Cape Town: Struik publishers.
- Viljoen, C. 2010. *Architecture in Ruins: A visitors + Archaeological Research Centre*. M.Prof.Architecture. Thesis, University of Pretoria.
- Visser, D.J.L. 1956. *Aspects of the geology of the Wonderboom Nature Reserve*, in; *Fauna & Flora: An official publication of the Transvaal Provincial Administration. No 7. Transvaal. 35-41*. Pretoria: The Government Printer.
- Wager, H.W.F. 1906. (Ed. Macdonald, W ). *The visit of the botanist of the British Association to Pretoria*. *The Transvaal argricultural journal*. Vol IV. Oct-Jul 1905-1906. Pretoria: Government printing and stationery office.
- Whatsonwhen: *The worldwide guide from rfrommer's*. 2011. *Castelo de Silves*. <http://www.whatsonwhen.com/castelodesilves.html>. [30 June 2011]
- Wonderboom Nature Reserve pamphlet. 2011

## Table of figures

Fig. 1: Indicates the data in table 1 in graph format. (Wonderboom management, 2011)	7
Fig. 2: The different regions and age groups of the people questioned (Author, 2011)	8
Fig. 3: The different age groups' knowledge about the Wonderboom Nature Reserve (Author, 2011)	9
Fig. 4: The different age groups knowledge about the Wonderboom tree (Author, 2011)	9
Fig. 5: The different age groups' knowledge about the fort at Wonderboom Nature Reserve (Author, 2011)	10
Fig. 6: Information on what the people know about the wonderboom tree (Author, 2011)	10
Fig. 7: Present usage of the Wonderboom Nature Reserve (Author, 2011)	11
Fig. 8: Diagram showing the methodological approach (Author 2011)	12
Fig. 9: Diagram indicating the different themes that can be deduce from the theory. (Author, 2011)	30
Fig. 10: Diagram indicating the inter-connected relationship between semiotics, narrative and didactic design. (Author, 2011)	33
Fig. 11: An illustration by the author to explain Thayer's three levels of intrusion. (Author, 2011)	38
Fig. 12: The interconnected relationships between identity, experience and meaning.(Author, 2011)	39
Fig. 13: The relationship between semiotics, identity and meaning. (Author, 2011)	39
Fig. 14: The relationship between narrative and experience. (Author, 2011)	39
Fig. 15: Discovery and interest can be created through a balance in complexity and coherence in design. (Author, 2011)	40
Fig. 16: Different ways by which people became aware of the Wonderboom Nature Reserve. (Author, 2011)	41
Fig. 17: Links between theoretical topics. (Author: 2011)	55
Fig. 18: Sketch representation of the climatological factors at the Magaliesberg.(Author, 2011)	77
Fig. 19: Concept diagram of unveiling the historic layers (Author, 2011)	89
Fig. 20 : Indicating the main concept, design principles and goals	93
Fig. 21: Explaining the concept of the medicinal roof garden. The Wonderboom Nature reserve was once seen as 'the place of medicine' (Author: 2011)	152
Fig. 22: Diagram indicating the distances from the Wonderboom Nature Reserve to the different nurseries. (Author, 2011)	202
Fig. 23: Material sources diagram which indicates the different distances to the manufacturing companies. See table on the right for more information regarding the product, company and distances. (Author, 2011)	204
Fig. 24: Average monthly precipitation (Author, 2011)	210
Fig. 25: Water budget chart for catchment area 1 (Author, 2011)	211
Fig. 26: Water budget chart for catchment area 2 & 4 (Author, 2011)	211
Fig. 27: Pergola roof structure and steel mesh wall pergola structure. (Author, 2011)	213
Fig. 28: Water feature channel. (Author, 2011)	214
Fig. 29: Lookout point 3. (Author, 2011)	216
Fig. 30: Steel mesh walls filled with rocks. (Author, 2011)	218
Fig. 31: Restaurant service area. (Author, 2011)	219
Fig. 32: Open storm water channel and restaurant spill-out area with the tree holes. (Author, 2011)	222

## List of tables

Table. 1: Visitors' data for the past book year of the Wonderboom Nature Reserve, 2010/2011. (Wonderboom management, 2011)	6
Table. 2: SWOT analysis of the socio-economic function in the Wonderboom Nature Reserve (Author, 2011)	87
Table. 3: SWOT analysis of the spatial function in the Wonderboom Nature Reserve (Author, 2011)	87
Table. 4: SWOT analysis of the ecological function in the Wonderboom Nature Reserve (Author, 2011)	88
Table. 5: Materials of the different time eras. (Author, 2011)	121
Table. 6: List of trees in table format with their botanical description and medicinal value. (Author: 2011)	194
Table. 7: Shrubs and groundcovers plant list. (Author: 2011)	200
Table. 8: Above: Existing veld grass list. Left: The proposed veld grass species to be used in the design. (Author: 2011)	201
Table. 10: Nurseries, their location and distance from the Wonderboom Nature Reserve (Author: 2011)	202
Table. 11: Average monthly precipitation of Pretoria (Author: 2011)	210
Table. 12: Water budget for catchment area 1 (Author: 2011)	211
Table. 13: Water budget for catchment area 2 & 4 (Author: 2011)	211
Table. 14: Summary of the hundred questionnaire answers/ results (Author: 2011)	250
Table. 15: Summary of all the heritage charters, acts and legislation the author has researched to formulate the heritage principles used in the design (Author: 2011)	308

## List of Illustrations

Illus. 1: Wonderboom fort entrance. (Author, 2011)	i
Illus. 2: Wonderboom Nature Reserve, view in the direction of the Wonderboom tree. (Author, 2011)	ii
Illus. 3: Wonderboom fort ruins, view of the rooms from outside of the ruin. (Author, 2011)	iv
Illus. 4: Wonderboom fort, night view through one of the aiming holes towards Pretoria city. (Author, 2011)	vi
Illus. 5: View of the inside of the Wonderboom tree. (Author, 2011)	vii
Illus. 6: Wonderboom Tree, close up view with the wooden walkway around the tree. (Author, 2011)	viii
Illus. 7: The three typologies (Author, 2011)	ix
Illus. 8: It's the small things in life that counts. Detail along the existing hiking trail. (Author, 2011)	xxviii
Illus. 9: Sunset at the Wonderboom fort. (Author, 2011)	3
Illus. 10: Wonderboom Nature Reserve and surroundings (Aerial photo, Geography building, University of Pretoria and modifications by Author, 2011)	5
Illus. 11: View towards the pyramid hills, also known as the 'Swartkoppies'. Ndebele settlements were located there. (Author, 2011)	13
Illus. 12: Map of the Magaliesberg Region (Carruthers, 2000:1)	18
Illus. 13: Stage 1, Deposition of the Transvaal Series on the floor of a shallow sea. (Carruthers, 2000: 14)	19
Illus. 14: Stage 2: Molten magma builds up on the north and intrudes between the sedimentary layers. (Carruthers, 2000: 14)	19
Illus. 15: Stage 3: Rocks of the Transvaal Series subside into the magma. (Carruthers, 2000: 14)	19
Illus. 16: Stage 4: The exposed edges of the tilted rocks are weathered by ice and other elements, the more resistant quartzite forming ridges (Carruthers, 2000: 14)	19
Illus. 17: Early Stone Age hand axe (Carruthers, 2000: 213)	20
Illus. 18: Core stone (Carruthers, 2000: 214)	20
Illus. 19: Tools of the Middle Stone Age (Carruthers, 2000: 217)	21
Illus. 20: Late Stone Age blade (Carruthers, 2000:218)	21
Illus. 21: Digging stick with stone weight (Carruthers, 2000:218)	21
Illus. 22: Open hearth smelting (Carruthers, 2000: 222)	22
Illus. 23: Late Iron Age pot (Carruthers, 2000: 228)	22
Illus. 24: Late Iron Age village. (Carruthers, V.2000: 226)	23
Illus. 25: Ndebele kraal in the Magaliesberg. Painted by C. Bell, 1835. (Carruthers, 2000: 243)	23
Illus. 26: Map of Freedom Park, showing conceptually and not to scale where all the elements are located. (Freedom Park, n.d)	34
Illus. 27: A view of the resting place of the spirits. (Freedom Park, n.d.)	34
Illus. 28: A view of Lekgotla. (Freedom Park, n.d.)	35
Illus. 29: A view of S'khumbuto - memorial to commemorate major conflicts in SA and a wall of names (Freedom Park, n.d.)	35
Illus. 30: Copper clad buildings to imitate boulders, are the live exhibition spaces for the narrative to play off (Freedom Park, n.d.)	35
Illus. 31: The small cascade at the end of the water feature (Author, 2011)	36
Illus. 32: The dry water paved strip and the pedestrian walkways crossing it. Notice the rhythm of the lighting structures and street	

furniture elements which provide unity in the landscape. (Author, 2011)	36
Illus. 33: Wonderboom Nature Reserve trail experience. (Author, 2011)	40
Illus. 34: The World Trade Centre's ghost towers, to commemorate what was there, and remind the people what happened on 9 September 2001. (Mossad, 2009)	42
Illus. 35: A view of Lekgotla. (Freedom Park, n.d.)	42
Illus. 36: Lionshead in Cape Town; picturesque full moon. (Delpont, 2011)	42
Illus. 37: The different phases of ruin as mentioned before, from the left; Fort Schanskop, Fort Klapperkop, Wonderboom Fort and West Fort. (Author, 2011)	45
Illus. 38: Tintern Abbey (1131), Tintern, Monmouthshire, Wales. (Tintern Abbey, 2010)	46
Illus. 39: Example of restoration. Fort Klapperkop (1898) , restoration done by Anton van Vollenhoven (Author, 2011)	46
Illus. 40: Jarrow, Co.Durham: the position of buildings of different date marked out in the later cloister, through different paving strips. (Robpattison's photostream, 2009)	47
Illus. 41: An example of grass that has overgrown the ruin. This makes it difficult for the visitor to appreciate the ruin or to walk freely on the site. (Author, 2011)	48
Illus. 42: A simple landscape done in such a way that nothing distracts the visitor from the old buildings or the layout of the museum. (Author, 2011)	48
Illus. 43: Signage boards are positioned at certain places in the landscape to inform the visitor if something is not clear in the display. All the original buildings are kept on site, with a few additional buildings to enhance the visitor's experience such as the restaurant etc. (Author, 2011)	48
Illus. 44: The designer even made use of a water feature, with the date of the struggle designed into that. This emphasises the important date, and directs the visitor's attention to that fact. (Author, 2011)	49
Illus. 45 below: The use of photographs, plans, models, and tour guides enhance the visitor's experience and understanding of what has happened during the struggle. Below is the model of the entire landscape/museum. (Author, 2011)	49
Illus. 47: Castelvecchio ruin, changed into a museum by Carlo Scarpa. (Anniforscia, 2008)	50
Illus. 48: Scarpa distinctly separates the old from his new installations. (Magdarc, 2010)	50
Illus. 49: A new walkway, clearly distinguishable from the old castle. (Anniforscia, 2008)	50
Illus. 50: Scarpa's use of modern materials to create a platform for the artwork in the museum. (Anniforscia, 2008)	50
Illus. 51: Ornate metal lattice door designed by Carlo Scarpa. (Anniforscia, 2008)	50
Illus. 52: Weathered staircase in the Castelvecchio Museum — Verona, Italy. (Anniforscia, 2008)	50
Illus. 55: The use of planting is clear to divide ruins from each other or to distinguish different time eras structures. Repetition is also created with the planting to ensure for unity in the landscape. Different plant textures are used do provide for diversity in the landscape. (Baker,2011)	51
Illus. 56: View of the ruin wall structures which differ in time eras, this was communicated by means of planting. (Baker,2011)	51
Illus. 57: Different manners in which the designer approaches the site pedestrian movement, with a clear indication of what is old and new. (Baker,2011)	51
Illus. 58: View of the new multifunctional area which celebrate the old function of the place. (Baker,2011)	51

Illus. 59: Model used to represent the existing site (Gryffenberg,2010)	52
Illus. 60: Elevated boardwalks which go over the ruins. (Gryffenberg,2010)	52
Illus. 61: View within the water reservoir. Elevated glass boardwalks are used to take the visitor inside the reservoir and over the old flooring. The glass ensure a clear view of what goes on underneath. Glass signage is used to communicate the history. (Gryffenberg,2010)	52
Illus. 62: One of the towers. The new material added to the old structure is easily distinguishable as well as the handrail. (Gryffenberg,2010)	53
Illus. 63: The city ruins within the castle wall, which were excavated and left as they were. Signage placed at these ruin structure walls. (Gryffenberg,2010)	53
Illus. 64: The castle wall structure. (Gryffenberg,2010)	53
Illus. 65: The landscape intervention with ampnitheatre. (Gryffenberg,2010)	53
Illus. 66: Map of South Africa (Booking South Africa, 2010)	59
Illus. 67: Map of Gauteng (Tours SA, 2000)	59
Illus. 68: City of Tshwane (Tshwane City Map, 2007)	59
Illus. 69: View of Pretoria CBD from the Magaliesber ridge. (Author, 2011)	60
Illus. 70: Larger block context with the study site (Wonderboom Nature Reserve) highlighted in green. (Author, 2011)	61
Illus. 71: Historical points highlighted to indicate best area for hiking trail. (Author, 2011)	61
Illus. 72: Topography and setting patterns (Author, 2011)	62
Illus. 73: Gateways and main roads into Pretoria city. (Author, 2011)	62
Illus. 74: Fortifications and monuments in Pretoria (Author, 2011)	63
Illus. 75: Open space, parks, landscape structure and waterways (Author, 2011)	63
Illus. 76: Educational intitutions (Author, 2011)	64
Illus. 77: Hard and soft landscape linkages between Pretoria north and south (Author, 2011)	64
Illus. 78: Composite plan of the block context analysis (Author, 2011)	65
Illus. 79: First, second, and third fortification locations and the connections between them. (Framework group, 2011)	66
Illus. 80: Landuses and schools in close vacinity of the forts, block houses and redoubts. (Framework group, 2011)	67
Illus. 81: Main and secondary hiking trail along Pretoria's ridges and inner city. (Framework group, 2011)	68
Illus. 82: Concept large framework proposal for Pretoria (Author, 2011)	69
Illus. 83: North-south section through Pretoria, to indicate the ridges (natural) and city (cultural) relationship and narrative. (Author, 2011)	70
Illus. 84: Pathway leading to the unexplored... (Author, 2011)	72
Illus. 85: Larger context of the Pretoria area with the Wonderboom Nature Reserve located to the North of Pretoria. (Author, 2011)	74
Illus. 86: The land uses within the larger context. (Geography at the University of Pretoria GIS database, modified by the author, 2011)	75
Illus. 87: Section through Wonderboom Nature Reserve. The wonderboom tree in relation to the ridge and the wonderboom fort. (Author, 2011)	75
Illus. 88: Aerial photograph of the resort area of the nature reserve indicating the existing facilities. (Geography at the University of Pretoria GIS database, modified by the author, 2011)	76
Illus. 89: Sketch representation of the soil and vegetation types at the Magaliesberg.(Author, 2011)	78
Illus. 90: Examples of the quartzite rocks, white to pale pinkish and the ripple formation on some of the rocks (Author, 2011)	79

Illus. 91: These red bucks were spotted on one of the site visits to the nature reserve in 2011. (Author, 2011)	79
Illus. 92: These Zebras were spotted on one of the site visits to the nature reserve in 2011. (Author, 2011)	79
Illus. 93: Botanical aesthetic features - nature (Author, 2011)	79
Illus. 94: Marula tree (Author, 2011)	80
Illus. 95: Marula bark. (Author, 2011)	80
Illus. 96: Marula leaves. (Author, 2011)	80
Illus. 97: Marula fruits. (Author, 2011)	80
Illus. 98: Buffalo thorn (Author, 2011)	80
Illus. 99: Buffalo thorn bark. (Author, 2011)	80
Illus. 100: Buffalo thorn leaves. (Author, 2011)	80
Illus. 101: Buffalo thornfruits. (Author, 2011)	80
Illus. 102: The Wonderboom tree - Fig (Author, 2011)	81
Illus. 103: Fig bark. (Author, 2011)	81
Illus. 104: Fig leaves. (Author, 2011)	81
Illus. 105: The Scented thorn tree (Author, 2011)	81
Illus. 106: Scented thorn bark. (Author, 2011)	81
Illus. 107: Scented thorn leaves. (Author, 2011)	81
Illus. 108: Scented thorn. (Author, 2011)	81
Illus. 109: Sickle bush (Author, 2011)	82
Illus. 110: Sickle bush bark. (Author, 2011)	82
Illus. 111: Sickle bush leaves. (Author, 2011)	82
Illus. 112: Sickle bush fruits. (Author, 2011)	82
Illus. 113: Indaba tree (Author, 2011)	82
Illus. 114: Indaba tree bark. (Author, 2011)	82
Illus. 115: Indaba tree leaves. (Author, 2011)	82
Illus. 116: Indaba tree fruits. (Author, 2011)	82
Illus. 117: The Karee tree (Author, 2011)	83
Illus. 118: Karee bark. (Author, 2011)	83
Illus. 119: Karee leaves. (Author, 2011)	83
Illus. 120: Karee flower and leaves (Author, 2011)	83
Illus. 121: Mountain karee tree (Author, 2011)	83
Illus. 122: Mountain karee bark. (Author, 2011)	83
Illus. 123: Mountain kareeleaves. (Author, 2011)	83
Illus. 124: Mountain karee flower (Author, 2011)	83
Illus. 125: Mapping of the cultural and biophysical aspects on site. (Refer to appendix E and F for more information regarding these components. (Author, 2011)	85

Illus. 126: The main components on site. (Refer to appendix E and F for more information regarding these components. (Author, 2011)	86
Illus. 127: The landscape along the hiking trail in the Wonderboom Nature Reserve. Note the contrast: nature vs culture (development) (Author: 2011)	94
Illus. 128: The three focus areas on different scale levels (Author: 2011)	95
Illus. 129: Analysis plan indicating the different historical layers (Author: 2011)	97
Illus. 130: General site analysis framework plan of the different aspects noticed on site. (Author: 2011)	98
Illus. 131: Analysis and conceptual framework mapping of all the heritage sites and their cultural significance value with possible hiking trail connections and view points (Author: 2011)	99
Illus. 132: Hiking trail at the Wonderboom Nature Reserve leading to the top where the Wonderboom fort is sunken into the landscape (Author: 2011)	100
Illus. 133: Zoning plan (Author: 2011)	101
Illus. 134: Nature's detail along the hiking trail strengthens and informs the identity and character of the place (Author: 2011)	102
Illus. 135: Sketch showing the narrative intention - symbol (Author: 2011)	104
Illus. 136: Concept image of a lookout point on the hiking trail (Author: 2011)	105
Illus. 137: Biophysical hiking trail plan (Author: 2011)	105
Illus. 138: Cultural hiking trail plan (Author: 2011)	105
Illus. 139: Concept image of a viewpoint along the new proposed hiking trail (Author: 2011)	106
Illus. 140: Concept image of a viewpoint along the new proposed hiking trail (Author: 2011)	107
Illus. 141: Visual presentation of the two proposed hiking trails, namely; biophysical and cultural hiking trail (Author: 2011)	108
Illus. 142: Proposed hiking trails, namely; biophysical and cultural hiking trail. Top part. (Author: 2011)	110
Illus. 143: Proposed hiking trails, namely; biophysical and cultural hiking trail. Bottom part. (Author: 2011)	111
Illus. 144: Aesthetic detail provided by nature forms the character of the site and inspired the designer. These details will be discovered by the visitor on the hiking trails (Author: 2011)	112
Illus. 145: Example of the signage steel plate on the hiking trails. This is an example for the military artefacts sites. It differs for each time zone. (Author: 2011)	113
Illus. 146: The contrasting aspects of city and nature; culture and nature can be clearly distinguished in this photograph (Author: 2011)	114
Illus. 147: Example of the design approach to the Stone Age sites (Author: 2011)	115
Illus. 148: Example of the design approach to the Iron Age sites (Author: 2011)	115
Illus. 149: Presentation of one of the fortification walls (Author: 2011)	116
Illus. 150: Example of the design approach to the military historic features (Author: 2011)	117
Illus. 151: Example of the design approach to the large cave. Visitors can come close to the cave but they can't enter it. Only visual access is provided. People are guided by a timber boardwalk. Notice the rough look of the boardwalk. (Author: 2011)	117
Illus. 152: Example of the design approach to the man-made waterfall (Author: 2011)	117
Illus. 153: View towards the largest Stone Age site from Wonderboom Nature Reserve (Author: 2011)	118
Illus. 154: The floodlights which shine from each fort once a year on reconciliation day to create awareness of the four forts of Pretoria (Author: 2011)	119

Illus. 155: Lighting up into the trees and moonlighting to create awareness and give some mystery (Author: 2011)	119
Illus. 156: View of the Wonderboom tree during the winter months. (Author: 2011)	120
Illus. 157: Part of the park next to the Wonderboom tree and the material pallet of the existing materials on site. (Author: 2011)	122
Illus. 158: Analysis plan (Author: 2011)	123
Illus. 159: Zoning plan (Author: 2011)	124
Illus. 160: Shape of circular enclosure which informed the design at the entrance and market space. It consists of two circles forming a ring. The catle was in the middle with the huts on the outer circle. (Author: 2011)	125
Illus. 161: Arrival area with the two circular shapes. The visitor enter through the one and the second one is formed by a low circular bench wall. From here the visitor distribute further into the park. (Author: 2011)	125
Illus. 162: Lighting along the pathways (wall lighting) (Author: 2011)	125
Illus. 163: Lighting along the pathways (wall lighting) and lighting into the trees (Author: 2011)	125
Illus. 164: New proposed amphi theatre at the park at the location of the old Day-of-the-Vow stage. This drawing indicates the idea of refuge vs. prospect at the amphi theatre (Author: 2011)	126
Illus. 165: New proposed amphi theatre at the park at the location of the old Day-of-the-Vow stage. (Author: 2011)	126
Illus. 166: Thumbnail indicating the spot lighting used at certain times to light up the Wonderboom tree to place emphasis on the natural icon and create awareness thereof (Author: 2011)	126
Illus. 167: Thumbnail indicating the view towards the Wonderboom tree is open and without obstruction (Author: 2011)	126
Illus. 168: Thumbnail of the boardwalk at the river indicating the visual access without the physical access (Author: 2011)	127
Illus. 169: Thumbnail explaining the refuge vs. prospect theory (Author: 2011)	127
Illus. 170: The circular enclosure which inspired the author to use the shape as semiotic resource in the design. (Author: 2011)	127
Illus. 171: Braai areas. The braai areas take the shape of the circular enclosures of the indigenous people, to stimulate the visitor's memory. This is used as a semiotic resource in the landscape. It creates meaning, identity and awarness. (Author: 2011)	127
Illus. 172: Master plan (Park area) - timeline (Author: 2011)	128
Illus. 173: Explaining the progression in the landscape concept	129
Illus. 174: Sketch to explain the progression in the landscape concept (Author: 2011)	129
Illus. 175: Pedestrian movement (Author: 2011)	130
Illus. 176: Vehicle movement (Author: 2011)	131
Illus. 177: Master plan concept plan 1. (Author: 2011)	132
Illus. 178: Master plan concept plan 2 (Author: 2011)	133
Illus. 179: Final master plan (Author: 2011)	134
Illus. 180: The Wonderboom fort through the eyes and pen of the author, highlighting the quality, character and identity of place (Author: 2011)	136
Illus. 181: Existing plan in 2011. (Author: 2011)	139
Illus. 182: The different viewpoints identified and certain proposed nodes. (Author: 2011)	140
Illus. 183: Wonderboom Nature Reserve linking the heritage/history of the north and the south. (Author: 2011)	140
Illus. 184: The Wonderboom fort, a scar in the landscape. (Author: 2011)	140

Illus. 185: The plan indicate some of the elements which was part of the fort during its operation. These can now be seen as semiotic resources which can be used to stimulate memory or celebrae which was there. Educate the visitor of the past operations in the fort. (Author: 2011)	141
Illus. 186: The fort ruin as can be seen from the outside with its windows and doors broken out. (Author: 2011)	142
Illus. 187: Site (sketchplan) location in context (Author: 2011)	143
Illus. 188: Final sketchplan - roof plan (Author: 2011)	144
Illus. 189: Final sketchplan - building plan (Author: 2011)	145
Illus. 190: plan indicating the principle of coherence in the design. (Author: 2011)	146
Illus. 191: plan indicating the principle of complexity in the design. (Author: 2011)	147
Illus. 192: The Wonderboom fort entrance seen from the inside (Author: 2011)	148
Illus. 193: Narrative plan: indicating the three different narratives as well as the narrative which runs through the whole site. (Author: 2011)	150
Illus. 194: Historical graffiti rock (Author: 2011)	153
Illus. 195: This engraving indicates the person's force number, surname and the date (Author: 2011)	153
Illus. 196: The cut in the landscape showing the rock layers clearly (Author: 2011)	153
Illus. 197: Stage 4 in the formation of the Magaliesberg: The exposed edges of the tilted rocks are weathered by ice and other elements, the more resistant quartzite forming ridges (Carruthers, 2000: 14)	153
Illus. 198: Section A-A (Author: 2011)	154
Illus. 199: Section B-B (Author: 2011)	155
Illus. 200: Section C-C (Author: 2011)	156
Illus. 201: Section D-D (Author: 2011)	157
Illus. 202: Another characteristic detail of the Wonderboom Nature Reserve (Author: 2011)	158
Illus. 203: Zoning plan (Author: 2011)	159
Illus. 204: The approach to the fort entrance (Author: 2011)	160
Illus. 205: The fort outer wall. This wall was used as part of the approach with the wall on the one side and the vegetation on the other. The visitor is almost forced to move only to the entrance without any deviations. (Author: 2011)	160
Illus. 206: A part of the fort wall with aiming holes. note how the fort blends in with nature. The approach of the visitor to the fort is a linear approach, it is a process; not all at once (Author: 2011)	160
Illus. 207: Location of space one, the entrance approach. (Author: 2011)	161
Illus. 208: The new proposed entrance approach (Author: 2011)	161
Illus. 209: Lighting along the entrance approach (Author: 2011)	161
Illus. 210: Spot lighting to light up the fort entrance at night time during an event. (Author: 2011)	161
Illus. 211: The fort entrance as you approach it. (Author: 2011)	162
Illus. 212: Detail of the wall as seen from inside the entrance (threshold) (Author: 2011)	162
Illus. 213: Detail of the steel fort door. Notice the round head bolts. (Author: 2011)	162
Illus. 214: The fort entrance top view (Author: 2011)	162
Illus. 215: The fort entrance from inside the courtyard (Author: 2011)	162

Illus. 216 The fort entrance with the new proposed stainless steel rods which demand respect from the visitor. (Author: 2011)	162
Illus. 217: Location of space two, the entrance (threshold between the inside and outside). (Author: 2011)	163
Illus. 218 The fort entrance with the new proposed stainless steel rods which enclose the visitor. Create awareness of the small space and it also highlight the threshold of moving from one space to the next. (Author: 2011)	163
Illus. 219: The threshold at the fort entrance. The existing was left to emphasise the difference between the old and new as well as moving into a new space (Author: 2011)	163
Illus. 220: The existing arch structures linking the different rooms. (Author: 2011)	164
Illus. 221: A graphic representation of the existing fort rooms with the arches which links the different rooms. (Author: 2011)	164
Illus. 222: Location of space three and four - the history narrative. (Author: 2011)	165
Illus. 223: The narrative trail (history) - elevated steel profile frame with steel grid surface, and glass information boards on either side of the walls. (Author: 2011)	165
Illus. 224: The main pathway to the narrative trail and restaurant (Author: 2011)	165
Illus. 225: The existing courtyard toward one of the cannon and first amunition store. And the one below. (Author: 2011)	166
Illus. 226: The existing ammunition store room (now proposed to be the visitor ablution facilities with a medicinal roof garden on top. The existing stairs lead to the top (now proposed to install steel treads which seem to float on top of the existing. This is also a semiotic resource - it stimulates the memory of the past when the soldiers would run up these steps. It celebrates the existing. And above image. (Author: 2011)	166
Illus. 227: Location of space five, the courtyard. (Author: 2011)	167
Illus. 228: View towards the new proposed courtyard. (Author: 2011)	167
Illus. 229: A 360 degree view of and from lookout point 1 (Author: 2011)	168
Illus. 230: A 360 degree view of and from lookout point 2 (Author: 2011)	168
Illus. 231: A 360 degree view of and from lookout point 3 (Author: 2011)	168
Illus. 232: A 360 degree view of and from lookout point 4 (Author: 2011)	168
Illus. 233: Location of space six, the four viewpoints. (Author: 2011)	169
Illus. 234: Lookout point 2 (Author: 2011)	169
Illus. 235: Lookout point 4 (Author: 2011)	169
Illus. 236: Lookout point 1: plan (Author: 2011)	170
Illus. 237: Lookout point 2: plan (Author: 2011)	170
Illus. 238: Lookout point 3: plan (Author: 2011)	170
Illus. 239: Lookout point 4: plan (Author: 2011)	170
Illus. 240: Existing remnant of the old communication mast onto which the directional indiator element to all the historic landmarks and fortifications will be constructed (Author: 2011)	171
Illus. 241: Directional indicator element to all the historic landmarks and fortifications (Author: 2011)	171
Illus. 242: View from lookout point 1 during the night (Author: 2011)	172
Illus. 243: View over Pretoria north from lookout point 2 (Author: 2011)	172

Illus. 244: View over Pretoria CBD from lookout point 2 (Author: 2011)	172
Illus. 245: Night view over Pretoria north from lookout point 2 (Author: 2011)	172
Illus. 246: Night view over Pretoria north from lookout point 2 - closer (Author: 2011)	172
Illus. 247: Sunset from lookout point 3 (Author: 2011)	172
Illus. 248: View at night from lookout point 3 (Author: 2011)	172
Illus. 249: View of Pretoria CPD (Author: 2011)	172
Illus. 250: View of Pretoria CPD during the night (Author: 2011)	172
Illus. 251: View over the courtyard (Author: 2011)	173
Illus. 252: View of the city from lookout point 4 (Author: 2011)	173
Illus. 253: View of the city from lookout point 4 (Author: 2011)	173
Illus. 254: Photograph at lookout point 4 (Author: 2011)	173
Illus. 255: Moonlight through the tree (Author: 2011)	173
Illus. 256: View of the city in moonlight from lookout point 4 (Author: 2011)	173
Illus. 257: Framed view from lookout point 4 (Author: 2011)	173
Illus. 258: Framed view at night from lookout point 4 (Author: 2011)	173
Illus. 259: Medicinal roof garden plan view (Author: 2011)	174
Illus. 260: Medicinal roof garden sketch to indicate the colour, texture and atmosphere (Author: 2011)	174
Illus. 261: Location of space 7 - Medicinal roof garden (Author: 2011)	175
Illus. 262: Medicinal roof garden bird view (Author: 2011)	175
Illus. 263: Existing fort wall with aiming holes. (Author: 2011)	176
Illus. 264: Existing geology exposure. (Author: 2011)	176
Illus. 265: View towards the entrance (Author: 2011)	176
Illus. 266: Aiming hole (Author: 2011)	176
Illus. 267: Dee's explanation of a refuge vs. prospect. (Dee,2001:23)	176
Illus. 268: View towards the entrance - refuge vs. prospect theory. Spirit of place. (Author: 2011)	177
Illus. 269: Geology, materiality and spirit of place narrative. View towards the cut with the different rock layers. The aiming holes on the one side and the graffiti wall to the left. (Author: 2011)	177
Illus. 270: View towards the existing gradient. This is the location for the proposed amphitheatre. (Author: 2011)	178
Illus. 271: The new proposed amphitheatre and ramp (Author: 2011)	178
Illus. 272: Location of space 10 - Amphitheatre and ramp (Author: 2011)	179
Illus. 273: Amphitheatre and ramp (Author: 2011)	179
Illus. 274: Courtyard and location of the proposed restaurant spill-out area (Author: 2011)	180
Illus. 275: Bird view of the restaurant spill-out area, entrance and main pathway. (Author: 2011)	180
Illus. 276: Restaurant cycle. (Author: 2011)	180
Illus. 277: Diagrams of operations in a reataurant. (Author: 2011)	180
Illus. 278: Location of space 12 & 13 - Restaurant and spill-out area. (Author: 2011)	181

Illus. 279: The restaurant spill-out area underneath the 18 trees which symbolise the men stationed at the fort during the second Anglo Boer War. (Author: 2011)	181
Illus. 280: Original roof layers (Author: 2011)	182
Illus. 281: Detail of the wall of fort Kapperkop how it is restored to the original. This gives a clear indication of how Wonderboom fort was constructed. Note the different wall layers.	182
Illus. 282-284: View of the large steel beams and columns used as main structure with smaller steel beams crossing the middle beam. These smaller beams are built into concrete so that the steel strips and concrete are visible. Note the bolts with round heads. These are also photos taken from fort Klapperkop during research. Fort wonderboom seems to have black steel columns and not green like the ones at fort Klapperkop.	182
Illus. 285: The crenelation on top of fort Klapperkop. Wonderboom fort also had crenelated roof edges like these.	182
Illus. 286: Section through the new, proposed foundation, wall and roof of the new structures. (Author: 2011)	183
Illus. 287: Layers of the new proposed medicinal roof garden.(Author: 2011)	183
Illus. 288: Part of the ruined wall at Wonderboom fort. Clearly shows how the walls were constructed.	183
Illus. 289: Close-up of the wall at Wonderboom fort ruin.	183
Illus. 290: Close up of the steel column at Wonderboom fort. Deteriorated, but one can clearly see how it was fixed etc.	183
Illus. 291: Remnant of Wonderboom fort's roof. One can see that they used large aggregates in their concrete mix. Note the pinkish colour of the lime on the officer's wall	183
Illus. 292: Close-up of the wall plaster at Wonderboom fort. They made use of a cement plaster over the shale rocks. Tinted with white, beige and pink lime	183
Illus. 293: Existing material detail in one of the fort rooms. Note the steel column, deteriorating concrete floor and ruined walls. (Author: 2011)	188
Illus. 294: Location map of Wonderboom fort (Author: 2011)	188
Illus. 295: Existing material detail in one of the fort rooms. (Author: 2011)	189
Illus. 296: Final sketchplan - roofplan. (Author: 2011)	190
Illus. 297: Final sketchplan - building plan (Author: 2011)	191
Illus. 298: Tree plan for the new intervention, indicating new and existing trees . (Author: 2011)	192
Illus. 299: Medicinal roof garden plan. (Author: 2011)	195
Illus. 300: Planting pallet indicating the different plants, colours, textures, shapes and forms. (Author: 2011)	196
Illus. 301: Proposed paving plan (Author: 2011)	203
Illus. 302: Lighting plan which indicates the atmosphere created at night and the location and type of lighting. (Author: 2011)	207
Illus. 303: Storm water plan which indicates the different catchment areas and fall of the water. (Author: 2011)	209
Illus. 304: Section A-A through the fort courtyard, room, cannon store and lookout 2 (Author: 2011)	212
Illus. 305: Water feature channel (Author: 2011)	215
Illus. 306: Lookout 2 (Author: 2011)	216
Illus. 307: Section B-B through the restaurant spill-out area, service area and open storm water channel (Author: 2011)	217
Illus. 308: Section through the restaurant service area (Author: 2011)	218
Illus. 309: Spill-out area with the tree holes (Author: 2011)	224

Illus. 310: Section through the open storm water channel (Author: 2011)	225
Illus. 311: Section C-C through the amphitheatre (Author: 2011)	219
Illus. 313: Section D-D through the geology, materiality and spirit of place space as well as lookout point 4 (Author: 2011)	221
Illus. 314: Detail within the vegetation of Wonderboom Nature Reserve. These natural details strengthen the site's identity. (Author, 2011)	228
Illus. 315: Nature's beauty and elegance. A view from the Wonderboom fort at the sunset (Author, 2011)	230
or to walk freely on the site. (Author, 2011)	231
Illus. 318: Note the contrast between nature and culture (Author: 2011)	250
Illus. 319: Historic timeline of Wonderboom Nature Reserve(Author, 2011)	262
Illus. 320: Examples of the quartzite rocks, white to pale pinkish and the ripple formation on some of the rocks (Author, 2011)	263
Illus. 321: The Wonderboom tree, long ago. The date can not be determined. (Pretoria archives, 2011)	267
Illus. 322: The Wonderboom tree, long ago. The date can not be determined. (Pretoria archives, 2011)	267
Illus. 323: The Wonderboom tree, long ago. The date can not be determined. (Pretoria archives, 2011)	267
Illus. 324: The Wonderboom tree with some Voortrekkers camping in front of it. No date. (Pretoria, archives)	268
Illus. 325: The Wonderboom tree, in about 1937 (Pretoria archives, 2011)	269
Illus. 326: The Wonderboom tree,n.d (Pretoria archives, 2011)	269
Illus. 327: The Wonderboom tree,n.d (Pretoria archives, 2011)	269
Illus. 328: The Wonderboom tree,n.d (Pretoria archives, 2011)	269
Illus. 329: The Wonderboom tree,n.d (Pretoria archives, 2011)	269
Illus. 330: The Wonderboom tree, in the 1900. (Pretoria archives, 2011)	269
Illus. 331: Dimensions of the Wonderboom tree as stated by Wager (1905). (Author, 2011)	270
Illus. 332: Diagrammatic plan of the Wonderboom. Showing positions of the new growths. (Wager, 1905)	270
Illus. 333: The National Monument sign on a large rock near the Wonderboom tree. (Author, 2011)	271
Illus. 334: The Wonderboom tree in 2006. (Built Architects, 2006)	272
Illus. 335: The Wonderboom tree in 2011. (Author, 2011)	272
Illus. 336: Articles on the Wonderboom tree. (Management, 2011)	273
Illus. 337: Small cave (Author, 2011)	274
Illus. 338: The large cave (Author, 2011)	274
Illus. 339-344: Old photographs of Wonderboompoort (Pretoria Archives, 2011)	275
Illus. 345: A photo of Wonderboompoort out of the Tom Andrews collection. This photo was taken before 1900. (Swanepoel, 2003)	276
Illus. 346: The apies river was dammed up more than a century ago at Wonderboompoort. Only a small trail crossed the dam wall through the poort (1882) (die weg, vol 44)	276
Illus. 347: Boating at the Wonderboompoort in 1918. (Pretoria archives, 2011)	276
Illus. 348: The Pretoria-Polokwane route goes through the poort from the previous century. The railway was the most important reason for the development of Pretoria (1980) (Die Weg, vol 44)	277
Illus. 349: Newspaper articles on the new highway system going through the poort. (Management, 2011)	277
Illus. 350: Fort Schanskop in use during the second Anglo Boer War. Notice the corrugated buildings and bell tent in the	

courtyard. (International Archives, 2011)	279
Illus. 351: Fort Schanskop in 1938 (Pretoria Archives, 2011)	279
Illus. 352: Fort Klapperkop in use. Notice the wagons. (International Archives, 2011)	280
Illus. 353: Fort Klapperkop during in use during the Anglo Boer War. Notice the corrugated buildings and activities in the courtyard.(International Archives, 2011)	280
Illus. 354: Fort Klapperkop in use. Notice the water furrows (International Archives, 2011)	280
Illus. 355: Fort Wonderboompoort in use during the second Anglo Boer War. Notice the corrugated buildings and wagons (International Archives, 2011)	281
Illus. 356: Fort Wonderboompoort in use during the second Anglo Boer War. Notice the corrugated buildings and wagons (International Archives, 2011)	281
Illus. 357: Fort Daspoortrand (Westfort) in the time when it was still in use. (International Archives, 2011)	281
Illus. 358: Fort Daspoortrand (Westfort) in the time when it was still in use. Notice the corrugated building and tent. (International Archives, 2011)	281
Illus. 359: The entrance gate of Westfort at Daspoortrand in 1984 (Pretoria Archives, 2011)	281
Illus. 360: Ruins of Westfort at Daspoortrand in 1984 (Pretoria Archives, 2011)	281
Illus. 361: Aerial photo of Wonderboom Nature Reserve in 1947. Notice the minimum urbanization. The tree is clearly visible. Note the Wonderboom fort on top.(Tshwane, 1947)	282
Illus. 362: Aerial photo of Wonderboom Nature Reserve in 2006. Note the development at the foot of the mountain (Built Architects, 2006)	283
Illus. 363: Aerial photo of Wonderboom Nature Reserve in 2011. Note the new Wonderboom junction development opposite the resort area. (Geology Dept. University of Pretoria, 2011)	283
Illus. 364: The proclamation of Wonderboom Nature Reserve in 1949, as game and native flora reserve article. (Wonderboom management, 2011)	286
Illus. 365: Newspaper articles on Wonderboom Nature Reserve and the Wonderboom fort (Management, 2011)	287
Illus. 366: The man-made waterfall view from the wonderboompoort highway (Author, 2011)	288
Illus. 367: Man-made waterfall, view from the side. (Author, 2011)	288
Illus. 368: Old articles on the Wonderboom Nature Reserve's waterfall (Management, 2011)	288
Illus. 369: The landscape at Wonderboom Nature Reserve (Author, 2011)	290
Illus. 370: Locations of Stone Age artefacts (Author, 2011)	291
Illus. 371: Middle Stone Age tools (Van Vollenhoven, 2008)	292
Illus. 372: The large cave (Van Vollenhoven, 2008)	292
Illus. 373: Middle Stone Age tools found at the cave (Van Vollenhoven, 2008)	292
Illus. 374: Decorated potsherds (Van Vollenhoven, 2008)	292
Illus. 375: Locations of Iron Age artefacts (Author, 2011)	293
Illus. 376: Stone walls, part of the large enclosure and a circular stone enclosure at site 3 (Van Vollenhoven, 2008)	294
Illus. 377: Locations of other cultural features (Author, 2011)	297
Illus. 378: Large cement block with remains of an old farm boundary. (Author, 2011)	297

Illus. 379: One of four man-made holes in the ground close together. (Van Vollenhoven, 2008)	297
Illus. 380: Artefacts found at site 12 (Van Vollenhoven, 2008)	298
Illus. 381: Man-made waterfall. (Van Vollenhoven, 2008)	299
Illus. 382: Catchment of the waterfall. (Van Vollenhoven, 2008)	299
Illus. 383: Pillar to keep water pipe serving the waterfall in place. (Van Vollenhoven, 2008)	299
Illus. 384: Day of the Vow podium, flower bed and stage. (Built Architects, 2006)	300
Illus. 385: Pedestal used as part of the Day of the Vow celebrations. (Van Vollenhoven, 2008)	300
Illus. 386: Drinking place for the animals (Author, 2011)	300
Illus. 387: Locations of military features (Author, 2011)	301
Illus. 388: Remains of a blockhouse from the Anglo Boer War (Van Vollenhoven, 2008)	302
Illus. 389: Half moon shape fortification wall (Van Vollenhoven, 2008)	302
Illus. 390: Concrete construction behind the fort which was probably used to fixed large machinery on. (Van Vollenhoven, 2008)	302
Illus. 391-392: Fortification walls (Author, 2011)	302
Illus. 393: Entrance to fort wonderboompoort (Author, 2011)	303
Illus. 394: View of the fort from the top (Author, 2011)	303
Illus. 395: View from the side of the fort (Author, 2011)	303
Illus. 396: View from in side of the fort looking through all the openings (Author, 2011)	303
Illus. 397: Locations of remains, icons not from a specific period in time (Author, 2011)	304
Illus. 398: Small cave below the waterfall (Author, 2011)	305
Illus. 399: Large cave near the waterfall (Author, 2011)	305
Illus. 400: The Wonderboom tree (Author, 2011)	305
Illus. 401: Existing hiking trail (Author: 2011)	306
Illus. 402: Existing hiking trail (Author: 2011)	306



*Illus. 318: Note the contrast between nature and culture (Author: 2011)*

# APPENDIXES

# 11



1. APPENDIX A: QUESTIONNAIRE EXAMPLE
2. APPENDIX B: QUESTIONNAIRE RESULTS
3. APPENDIX C: TIMELINE
4. APPENDIX D: GEOLOGY AND TOPOGRAPHY OF THE WONDERBOOM NATURE RESERVE
5. APPENDIX E: HISTORICAL BACKGROUND OF THE WONDERBOOM NATURE RESERVE AND IMPORTANT ASPECTS THEROF
6. APPENDIX F: ARCHAEOLOGICAL DATA ANALYSIS
7. APPENDIX G: CHARTERS, ACTS AND POLICIES

This chapter include all the research information results, methods and summaries which is extra or to much to include in the dissertationtext body.

## APPENDIX A: Questionnaire handout example

Questionnaire about the Wonderboom Nature Reserve						
This questionnaire is conducted as part of a landscape architecture masters thesis at the University of Pretoria to determine the awareness and accessibility of the people in Pretoria of the Wonderboom Nature Reserve, especially the significance of the site, with the Boer fort and Wonderboom tree on the reserve.						
<b>Name</b>					<b>Date</b>	
<b>Surname</b>						
<b>Age</b>						
<b>Region</b>	(mark the following with an x mark)					
Pta North	Pta South	Pta East	Pta West	Pta CPD	Other:	
Please answer the following questions:						
1 How often do you come to Wonderboom Nature Reserve?						
Every day	Once a week	Once a month	Other:			
2 Do you know where Wonderboom Nature Reserve is?						
		Yes	No			
3 Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?						
		Yes	No			
4 If yes, how did you come to know about the Fort?						
5 If you visit Wonderboom Nature Reserve, what do you normally do there/here?						
6 Do you know about the Wonderboom tree?						
		Yes	No			
7 If you know about the tree, what do you know about it?						
8 What does this place mean to you?						

Fig. 37: Questionnaire (Author, 2011)



## APPENDIX B: Questionnaire excel spreadsheets results



No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place means to you?	comments
1	Ingred	Booyesen	25-05-2011	58	employed	Hatfield (Colbyn)		Yes	Hardly ever	Yes	Internet and other who've been there		Yes	Fig tree and very old	It needs to be protected - cultural heritage value	
2	Analike	Blom	26-05-2011	20	Student	Hatfield		No	never	No			No			
3	W.J	Van Staden	26-05-2011	20	Student	Hatfield		No	never	No			No			
4	Ida	Breed	27-05-2011	35	employed	Pta east		No	Never	No			Yes	Nothing really	Heritage of Pretoria	
5	Keamogetswe	Mabatle	28-05-2011	16		Hammanskraal		Yes	Once a year	No		Go hiking, see animals, spend time with friends and family	Yes	It is a big tree, evergreen through out the year	Bond with nature	
6	Boitumelo	Mabatle	28-05-2011	19		Hammanskraal		Yes	Once in a decade	Yes	I read the signs	Braai some meat, enjoy time with family and friends and go hiking	Yes	It is evergreen and known for its nature to preserve its greenness throughout the year	It is a great place, makes a person appreciate nature	Get more animals on view
7	Katlego	Mabatle	28-05-2011	23		Hammanskraal		Yes	Once a year	Yes		Go hiking	Yes	The tree is big and nice everytime it's green	Nice big and good place, we reliese the stress	The animals must be there in view
8	Letinegouoto	Mabatle	28-05-2011	22		Hammanskraal		Yes	Once a year	No		Relax with friends and go hiking up the mountain	Yes	It is an evergreen tree and for tourists attraction	It makes me admire the nature and make me realise that our nature is beautiful	
9	Mabatle	Mabatle	28-05-2011	43		Hammanskraal		Yes	Once in 8 years	Yes	History at school level plus informaiton plates	Picnic and hiking	Yes	It is an evergreen tree and this makes it to be the wonder tree	A tourist attraction place which needs to be well -looked after. The proceeds to be shared to the historically disadvantaged people	
10	Phetolo	Mabatle	28-05-2011	21		Hammanskraal		Yes	Once a year	No		Relax with friends	Yes	It is a tree that catches the tourists		
11	Lynette	Roets	28-05-2011	40		Pta North (Montana)		Yes	first time	No		Came for a braai	Yes		heritage of the park	
12	Reuben	Roets	28-05-2011	30		Pta North (Montana)		Yes	first time	Yes	My friend	Braai and raak gesuip	Yes	It's a tree	Don't know yet	
13	Nico	de Lange	28-05-2011	20		Pta North (Montana)		Yes	first time	No		Braai	Yes		Heritage	

No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place mean to you?	comments
14	Cathering	Grimsell	28-05-2011	18		Pta North (Montana)		Yes	first time	No		Having a braai with my friends and family	Yes	That it is the biggest tree on this nature reserve	It's a very calming place to get closer to nature and nothing should change	
15	Tina	Chalmers	28-05-2011	35		Pta north		Yes	first time	No		Picnic	Yes	That it been there for 1000 years	It is nice	
16	Cindy	Horn	28-05-2011	35		Centurion		Yes	first time	No		Picnic and hiking	Yes	It is big,	Peacefull	
17	Darryn	Botha	30-05-2011	23	Master student	Pta East	In Pta since 20	No	Never	No			No			Never heard of it
18	Tommy	Van Deventer	30-05-2011	29	Master student	Pta East		Yes	Never	No			No			
19	Leon	Grobbelaar	30-05-2011	25	Master student	CBD		No	Never been	Yes	A friend told me about it	Drink wine, relax, picnic	Yes	It is big, it has mystical powers	I like to know it's there and that I could go if I want to	
20	Isabel	Van Wyk	30-05-2011	30	Master student	Moot (waverley)		Yes	Never	No			No		Didn't know there was any heritage value to WNR - thought is was just a nature reserve	
21	Jankel	Nieuwoudt	30-05-2011	27	Master student	Pta South	Been in Pta for 18 months	No	Never	No			No			
22	Juliette	Hart	30-05-2011	25	Master student	Hatfield	In Pta 1.5 years	No	Never	Yes	Heritage quarter in honors architecture year, know it exist but nothing about it		No			
23	Heinrich	Olkers	30-05-2011	25	Master student	Pta east (Weavind park)		No	Never	No			Yes	One of the oldest biggest? I can't remember	Nothing?	I know it is one of the areas which has been inhabited for the longest time span?
24	Anneke	vd Berg	30-05-2011	24	Master student	Pta East		No	Never	No			Yes	Only that it is a tree		Nothing much - I know approxametly where it is.
25	Catherine	Deacon	30-05-2011	24	Master student	Centurion		No	Never	No			No			
26	Jacobus	Erasmus	30-05-2011	26	Master student	Hatfield		No	Never	Yes	Word of mouth		Yes	Word of mouth	Cultural heritage/ environmental significance	
27	Fransa	van Zyl	30-05-2011	25	Master student	Pta east		No	Never	No			Yes	not much	little	
28	Henry	Boardman	30-05-2011	25	Master student	Pta east		Yes	I've been there once	Yes	Through a range of master's projects	If I visit again I will tell you. Now I feel bad	Yes	There is a band named after the tree. I think it is a wild fig	I can remember it from my childhood but very little else	



No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place mean to you?	comments
29	Wessel	Oosthuysen	30-05-2011	25	Master student	Pta east		Yes and No	Never	No			Yes	Landmark	Don't know context, facilities etc	
30	Byron	Snow	30-05-2011	24	Master student	Hatfield	Only been in Pta 18 months	Yes	Never	Yes	Architecture/Landscape architecture master's presentations	Never been there	No		Never been, am sure I'd like it if I did.	
31	Natalie	Uys	30-05-2011	25	Master student	Pta east	Only four years in Pta	No	Never	No			No			
32	Elize	Meyer	30-05-2011	22	Master student	Hatfield	I've been in Pta for only	Yes	Never	No	A friend told me about it		Yes	Only that there is a tree, nothing more	Nothing?	
33	Jane	Pretorius	30-05-2011	24	Master student	Pta east		No	Never	Yes	Friends		Yes	That there is a special tree	Not much	
34	Willie	Mothowamodimo	30-05-2011	27	Master student	Pta West		No	Never	No			No		Nothing but would like to know more about it	
35	Gloria	Di Monte	30-05-2011	24	Master student	Pta east (constantia park)		Yes	Never	Yes	Through family	Haven't been there	Yes	I don't know much about it	Nothing at the moment, I would like to visit it and learn about it	
36	Ruben	Schroeder	30-05-2011	30	employed	Johannesburg		Yes	3 times in the last 30 years	Yes	Primary school outing	School outing, kiddies party and research for university	Yes	That is is big (more than 20 yrs ago)	It's a place where children can go to climb the Magaliesber, explore nature and the wonders of the highveld. I think it should be visited more by school children and there must be more guided tours to make visitors and children aware of our biom of the highveld. It is a great bio-diversity in the City of Pretoria. The reserve must also link up with other reserves in Pretoria such as the one in Lynnwood and Mamelodi to give children and other citizens a greater understanding and view of the wonderful biom of the highveld and that of what Pretoria was and is and how to preserve it!	
37	Nanja	van Rooyen	31-05-2011	25	employed	Pta east		Yes	Never (to far from current residence)	Yes	My father went to Boerefort primary school close by and live in the area his whole life.		Yes	That it is regarded as a heritage 'object' and is protected	No significance (because of ignorance)	
38	Pieter	van der Merwe	02-06-2011	60	employed	Moot		Yes	Never	Yes	Reading		Yes	That it's there	Nothing	
39	Yvette	Bevis	02-06-2011	21	Student	Hatfield	Only been living in Pta for 2.5 years	No	Never	No			No			I would like to visit the nature reserve one day.
40	Anali	Blom	03-06-2011	54	employed	Mpumalanga		No	Never	No			Yes	Read about it long ago		
41	Ben	Blom	03-06-2011	56	employed	Mpumalanga		Yes	Once in a lifetime	No			Yes	It is a very big tree	I was as child there with my parents (I was about 7yrs old)	



No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place mean to you?	comments
42	Louniel	Blom	03-06-2011	27	employed	Pta east		Yes	never	Yes	Friends		Yes	I know it is very big, but I haven't seen it	Nice, part of our history and nature	
43	Anelda	Meyer	03-06-2011	25	employed	Moot		Yes	once	Yes	I've been there once when I was a child		No		Nothing - I don't know its history etc so it has no meaning to me.	
44	Annika	Mouton	06-06-2011	19	Student	Hatfield		No	Never	No			No			
45	Bertin	Jacobs	06-06-2011	25		Pta east		Yes	Once	Yes	On a day hike at Wonderboom	Hike	Yes	It's big and old - think over 1000yrs	Nice place to visit in the middle of Pta apart from nature, I like the historical connection it has with Pta	
46	Nadine	van der Merwe	08-06-2011	25		Pta east (Moreleta park)		Yes	Never	No	Don't know about it	I have never been there	No	Nothing	No meaning	
47	Irma	van Breda	08-06-2011	26		Pta east		Yes	Never	No			No			
48	Ilana	Mouton	09-06-2011	44		Namibie		No	Never	No			No			
49	De Wet	Mouton	09-06-2011	44		Namibie		Yes	A long time ago	No			Yes			
50	Stefan	van Zyl	09-06-2011	27		Centurion		yes	Never	Yes	Internet		Yes	Wild fig tree, approximately 1000 years of age discovered by the Voortrekkers	Not familiar with the place, but seems like one with historical significance	
51	Sean	Kruger	09-06-2011					No	Never	No			No			
52	Hendrikwillem		09-06-2011	26		Moot (waverley)		Yes	Once a long time ago	Yes	By word of mouth	I would like to visit it again	Yes	That it is a significant tree (big and old). Heard that some of the Voortrekker companies set up laager at that specific tree.	A place of sentimental, historical value. Another fine example of natures masterpieces and a reminder that people should value and protect God's creation	
53	Casper	Booyesen	09-06-2011	24		Middelburg (Mpumalanga)		Yes	seldom	Yes	I grew up in Daspoort and people told me about the fort	Mountain climbing to the fort and	Yes	Where the branches touch the ground roots form	Wonder of Nature	
54	Erhar	Prins	09-06-2011			Roodepoort (Jhb)		Yes	Once or twice a year	Yes	Friends	Picnic	Yes	What it looks like	It contains a piece of cultural history	
55	Coen	Jacobs	09-06-2011	24		Jhb south		No	never	No			Yes	it is very old and big	never visited it before	
56	Danica	Odendaal	09-06-2011	23		Pta Central		Yes	Never	Yes	friends told me	I have never been there	Yes	Just that it is one of the oldest and biggest Wonderboom	No specific meaning linked to it. Appreciate it though that it protects the trees and	
57	Willem	Prins	10-06-2011	24		Pta east		No	Never	No			No			



No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place means to you?	comments
58	Rachelle	Visser	10-06-2011	24		Pta east		No	Never	No			No			
59	Retha-mari	Bierman	10-06-2011			Pta east (Equestria)	6 years in Pta	Yes	Never	Yes	History books in primary school	Would like to go, was not there yet	Yes	It's a very old fig tree	It is an important nature and history reserve that should be better known, for people to visit. I'm living in Pretoria for 6 years and still didn't went for a visit and I know about it.	
60	Saki	Marais	12-06-2011	20		Hatfield		Yes	4 maal per jaar	Yes	The first time I was there with my parents	Normally we go cycling in the park	No		It is a fun place to hang out and go cycling with my friends	
61	Talita	Hugo	12-06-2011	23		Pta west (sunnyside)		Yes (vaguely)	never	No			Yes	It is apparently very big	Nothing, I think there are bigger trees elsewhere	
62	Stefan	Coetzee	15-06-2011	33		Pta North		Yes	never	No			No			
63	Evette	Kotze	13-06-2011	26		Pta North (Kameeldrift oos)		Yes	Once a year	Yes	Went on a Sunday school excursion to the fort	Picnic, braai, and the Sunday school excursions	Yes	I know that it is a gaint fig tree (Ficus salicifolia) and its 1000 years old	No knowledge of the history behind the tree, therefore the place itself of no significance to me, but the tree is very special.	
64	Werner	Boshoff	13-06-2011	28		Pta East		Yes	Never	Yes	Word of Mouth		Yes	Know the location and existance of the tree but no knowledge of its history		
65	Vaughn	Gryffenberg	18-06-2011	31		Pta East		No	Never	No			No			
66	Nadine	Brookryk	27-06-2011	29		Pta North (Waverley)		Yes	Been there twice	No		Hiking and picnic	Yes	It's the largest and oldest fig tree in the country. National heritage site	Contributes to our countries biodiversity and 'uniqueness'	
67	Human	Buirski	27-06-2011	38		Pta East		Yes	once in my lifetime so far	No	never been there	Wanted to see the fig tree	Yes	It's a fig tree and very big	Would like to see the preservation of forest	
68	Andre	Damuli	27-06-2011	35		Pta East (Silverton)		No	Never	No			No			
69	Natalie	Hausmann	27-06-2011	30		Pta north (Villieria)		No	Never	No			No	It must be wonderfull		
70	Trevor	McIntyre	27-06-2011	31		Pta north (Villieria)		Yes	Never	No			No			
71	Mathew	Masumbuko	27-06-2011	29		CBD		No	Never	No			No			



No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place mean to you?	comments
72	Birimba	Mwevy	27-06-2011	28		Pta south (Jhb)		Yes	casually	Yes	From friend who ventured me around	For us it is all of recreations and all motives of excursion	No		Not a straight idea beyond recreation	
73	Mothiba	Lebepe	27-06-2011	19		CBD (Hatfield)		No	Never	No			No			
74	Thembelihle	Mabuza	27-06-2011	18		CBD (Hatfield)		Yes	Once a month	Yes	Was told by a landscape architect	To relax and have a picnic	No		Its where you could go and distress after a long hard day at school	
75	Anele	Maseko	27-06-2011	20		CBD (Hatfield)		No	Never	No			No			
76	Donald	Gwambe	27-06-2011	43		CBD (Hatfield)		Yes	Never	Yes	Mystic stories	Never visited	Yes	Just stories and other accounts	Just one of those sacred places that little knowledge exists about	
77	Marinda	Cilliers	27-06-2011	46		CBD (Hatfield)		Yes	Often / once a week	Yes	Old enough to know my heritage and area	calm and preserve	Yes	heritage - parents/nature lovers	To protect for our children	
78	Jane	Olwoch	27-06-2011	45		Pta east		Yes	Never	No		Never visited	Yes	I have heard about it but never known its importance to us		
79	Hannes	Routenbach	27-06-2011	47		Pta east		Yes	was there once as a child	No		Picnic walk	Yes	Biggest tree in country	Historical reserve	
80	Nandipha	Ndabana	27-06-2011	28		Pta south (midrand)		No	never	No			No			
81	Poppy	Mahlangu	27-06-2011	48		Pta north (Soshanguve)		No	Never	No			No			
82	Jason	Sampson	27-06-2011	32		Kromdraai		Yes	Never	Yes	Research internet	I'd love to see the Wonderboom	Yes	Largest clonal forest in south africa	Place of special botanical interest	
83	Derek	Townshend	27-06-2011	38		Pta east		No	Never	Yes			No			
84	Peter	Rathapane	27-06-2011	53		CBD (Hatfield)		NO	Never	No			No			
85	Jenny	Van Rooyen	27-06-2011	35		Pta east		Yes	Never	Yes	Childhood	Braai areas, mountain climbing	Yes	Not much	Not much	
86	Lesiba	Ntsoabe	27-06-2011	30		CBD		No	Never	No			No			
87	Cathy	Nkabinde	27-06-2011	27		Pta east		No	Never	No			No			
88	Sell	Kgasedane	27-06-2011	29		CBD (Hatfield)		No	Never	No			No			
89	Rachel	mahlangu	27-06-2011	47		CBD		No	Never	No			No			
90	Mooki	Gomba	27-06-2011	45		Pta north (soshanguve)		No	Never	No			Yes	Word of mouth, that it has a huge trunk		
91	Lisa-mari	Swanepoel	27-06-2011	25		Pta east		Yes	Never	Yes	Word of Mouth		Yes	That it is a great attraction of wonderboom	Part of the heritage of SA, and of the conservation of nature in general	
92	Sinentokozo	Zviv	27-06-2011	22		Hatfield (CPD)		No	Never	No			No			



No.	Name	Surname	Date	Age	Student/ employed	Region	How long have you been in Pta	Do you know where Wonderboom Nature Reserve?	How often do you come to the reserve?	Do you know about the fort on top of the mountain at Wonderboom Nature Reserve?	If yes, how did you come to know about the fort?	If you visit Wonderboom Nature Reserve, what do you normally do there/here?	Do you know about the Wonderboom tree?	If yes, what do you know about it?	What does this place means to you?	comments
93	Makhanani	Mashaba	27-06-2011	36		Hatfield (CPD)		No	Never	No			No		It is my first time to know it, I cannot tell what does it mean	
94	Gerda	Ewers	27-06-2011	51		Pta east		Yes	Never	No			Yes		General heritage	
95	Elana	van der Wath	27-06-2011	42		Pta east		No	Never	No			No		Nothing I will visit it now	
96	Sipho	Nkabinde	27-06-2011	20		Hatfield (CPD)		No	Never	No			No			
97	Shirley	Mokwape	27-06-2011	35		Pta north		Yes	Once a month	No			No			
98	Lauren	Smith	27-06-2011	20		Pta north (Wonderboom )		Yes	Never	Yes	Told by people that knows about it	Nature walk	Yes	That its some big tree, don't know really a lot about it	Its an heritage site and an environmental safety place	
99	Marina	Janse van Rensburg	27-06-2011	45		Pta West		No	Never	No			No			
100	Jan	Eloff	27-06-2011	48		Pta West		No	Never	No			No			

Table 14: Summary of the hundred questionnaire answers/ results (Author: 2011)

## APPENDIX C: Timeline



## APPENDIX D: Geology and topography of Wonderboom Nature Reserve.

The range rises to an elevation of some 183 meters above the plain.

According to Visser (1956) the visitor will see fine examples of current-bedded and ripple-marked quartzite displayed at their best as paving stones in the footpaths.

Considering the general geology of the area, a two-fold division is at once apparent from the topography. On the south side of the ridge, the hill slope is smooth and gentle and overgrown with grass and few scattered trees. Near the summit the weather-resisting quartzites form bold krantzies facing southwards while a steep dip slope, rather densely overgrown with bush and trees, faces northwards. This striking difference is brought about by the presence of shales below the succession of thickly-bedded quartzites which determine the ridge. (Visser, 1956: 35-41) The tree growth is encouraged by quartzite boulders. Animals are a major cause of erosion on the slopes. Soil is moderately deep on the lower part. It is sandy and permeable because of the high quartzite content and it supports a good plant cover including some substantial shrubs and trees. (information plates, 2011). Refer to illus. 89.

Visser (1956) mentioned that the one exposure are found in an excavation and in a trench nearby, about half-way up the hill and due south of the old fort. Here the shales show signs of having been baked to a hard black, almost flinty hornfels, which weathers into rounded black boulders. On the south-western flank of the hill, just before one descends on to the alluvial terrace leading towards the Apies River, the hornfels are found exposed again.

The cause for this baking and alteration of the shale to hornfels must evidently be sought in some igneous rock which has been intruded into it and evidence, for the presence of two sheets of diabase has been found according to Visser (1956).

Because the rock weathers so readily, in contrast with the quartzite, its position in the field is marked by a smooth belt below the Krantzies of quartzites, and it occupies the depression west of the fort, leading down to the Apies River. (Visser, 1956: 35-41)

The quartzite is whitish to pale pinkish, thickly bedded as a rule, though individual layers are often less than an 25mm thick. They dip to the north at an average angle of 40°. (Visser, 1956: 35-41)



*Illus. 320: Examples of the quartzite rocks, white to pale pinkish and the ripple formation on some of the rocks (Author, 2011)*

Mogg (1956) sketches an image that if one approaches the Wonderboom Reserve from the north, one notices, besides comparatively dense, low bush, which covers the mid- and summit slopes, a line of distinctly taller, greener, and more umbrageous trees densely packed at the immediate base of the hill.

The reason for this more luxuriant growth is the following:

1. Erosive effect of weather, root-action and slope-directed drainage which resulted in the accumulation at the base of the northern slopes, of screens, humus and sand to a great depth ( $\pm$  25m deep in some places), providing a well-aerated, deep, rich, sandy loam.
2. The 'buffer' which the ridge provides with its protected angle of 40 degrees on this sunny aspect, from the extremes of the climatic elements (Mogg, 1956: 23-33).
3. According to Mogg (1956) for example; "conservation of heat; high soil and atmospheric moisture; minimised wind effect; maximum rainfall benefit, and you find conditions very favourable to arborescent growth."

The lower south slopes consist of shale which supports very little vegetation except for grass. Across the mid slopes on the south side runs a narrow sill of diabase which supports a fair amount of deep-rooted vegetation, especially thorn trees, and it is on this diabase that *Acacia caffra* and *Rhus lancea* occur. The upper south slope, the summit and the whole northern slope are quartzite with the exception of a second diabase sill running between the summit and the aforementioned sill on the southern mid slopes. This just east of the road going over Voortrekker Nek to the *Acacia caffra* valley going down to the Apies River, supporting trees of this species and of *Rhus* species along its course. (Collett, 1956: 67-87)

Besides the formations on the northern and southern slopes being different, there is

more moisture on the north side. This is for various reasons namely:

1. The North Slope rises at an angle of about 40 degrees from the plain so that the run-off of water is not so considerable on this more gentle dip slope and it has an opportunity to penetrate underground. On the southern slopes on the other hand, the steeper incline carries the water away more rapidly so that it does not have the same opportunity to enter rock gaps and cracks, to go underground.
2. Then the sandstone of the northern dip slopes is hard and well stratified and so controls the circulation of water. The strata dip north, causing the underground water supply to follow the stratification planes and thus it is kept near the surface. Moisture is thus more easily available to the roots of plants whereas on the south slope they must penetrate deeper in their quest for water and thus they encounter rock. (Collett, 1956: 67-87)

The vegetation is denser near the foot of the hill on the north side not only because of its sheltered position but also because this area enjoys a better water supply, both subterranean and above-ground. The underground water is inclined to rise nearer the surface as it approaches the foot of the hill while the area benefits by the run-off from the hill slopes. Besides being more water-receiving the ground is rendered more water-retaining by being relatively full of humus. Thus we find it occupied by the taller bushveld forms while the thorn scrub area just north of the Wonderboom itself is apparently where more diabase comes in, diabase being recorded for this region. North of this is shale and sand again, with a transgression of trees across the geological borders. (Collett, 1956: 67-87)

An interesting feature is the syenite dyke whose position is marked by the strip of dense vegetation it supports. This is clearly visible on approaching the Magaliesberg from the North. The dyke runs from the plain up to Voortrekker Nek over the summit of which its course is followed by the road. Similar in chemical composition to diabase, it is no doubt the presence of this syenite which accounts for the cluster of 'kareebome' on top of the Nek. (Collett, 1956: 67-87)

## APPENDIX E: Historical background of the Wonderboom Nature Reserve and important aspects thereof

## 5.4 Historical background of the Wonderboom Nature Reserve and important aspects thereof

### 5.4.1 Wonderboom Tree

#### The age of the tree

Many people have enquired as to the probable age of the Wonderboom. To provide some sort of answer, several foresters a few years ago took slices from where several of the large laterals had been severed, for the purpose of counting the number of annual rings, as to arrive at an estimate. But it was found that this species does not lend itself readily to such a method of computation. However, from general considerations, and the comparison of the determinable growth rates in similar trees of large diameter in a like climate, it could be said that the original main trunk might be 1000 years old, and it could probably be much more.

There are a lot of stories about the Wonderboom tree. Some say that the Matabele chief, Mzilikazi, disturbed the peaceful and tranquil atmosphere of this fertile valley when he pitched his camp in the vicinity of the tree and from there staged his fearful raids in the countryside. (Behrens, 1956: 7-21)

Mr. D.B. Menne, an early European pioneer's father camped under the tree for about four nights or longer while he was constructing a road through the Magaliesberg range. It was around 1843-1850, before the establishment of Pretoria. Mr. Menne's father was, at that time, trading from Pietermaritzburg, which was called 'Black Velt' in that time. As the story goes, Mr Menne made a kraal under the tree for his cattle and the servants slept there. A black rhinoceros broke into the enclosure, stampeded the cattle and charged the servants. The fire in the process scattered. Even though the story sounds far-fetched, some evidence indicates that rhinoceroses were known in the Hartebeespoort area in about 1850 and bones of rhinoceroses were found in the Fountains Valley by Dr. Austin Roberts. (Behrens, 1956: 7-21)

#### What makes this Wonderboom tree so unique?

But what makes the Wonderboom remarkable is its mode of spreading, and the extent to which this has been achieved in this 'individual', especially one occurring so far south. In fact, no other example of this species has been found which has attained such considerable dimensions. Pretoria is the southernmost limit in which this species has yet been recorded. To find trees of the magnitude of the Wonderboom adopting the same mode of spread as the strawberry plant or climbing shrubs and lianas, is very unusual, if not unique, states Mogg (1956). "A visitor once described the process as 'walking out radially to produce offspring at each step'" (Mogg, 1956: 23-33). According to Mogg (1956) the extent to which this has proceeded in the Wonderboom, in this climate, is surprising. No fewer than 13 'individuals' have arisen from the original trunk.

The wonderboom tree complex originated from a single tree. Over many years the huge branches drooped and where they touched the ground, they rooted and there, new trees have grown. The tree is sometimes referred to as a family-tree consisting of a mother with seven daughter/second generation trees. Three of the daughter trees have subsequently rooted and established three daughter/third generation trees themselves. This vegetative reproduction of the wonderboom specimen is not typical of this species. The original tree stump has been dated by means of radiocarbon dating and it is estimated that the tree dates back 1000 years. (Information plate, 2011)

1000 + yrs ago

1843-1850

n.d



*Illus. 321: The Wonderboom tree, long ago. The date can not be determined. (Pretoria archives, 2011)*

**Why the tree could reach such enormous proportions.**

The reason why the Wonderboom group tree could attain such large proportions and persist to such an impressive age in the Pretoria climate, even though there is no other tree like that is explained by late Rev. J. Gerstner, a botanist and he suggests that "the only reason why this tree could develop to these proportions and be preserved for so long a period, was that it had been specially protected. He postulates that, early in its history, most likely when it had already become large and umbrageous, it was used as the burial place of some important chief. Thenceforth it was reserved for the burial place of other chieftains, revered as a Sacred Place, a rendezvous of ghosts, and invested with superstition. Thus it would become guarded and preserved from generation to generation." (Mogg, 1956: 27)

This seems to be a credible theory, particularly in view of its more recent history. For, ever since the European occupation of these parts over a hundred years ago, and the consequent brushing aside of 'sanctuary' for the tree, the tree has been subject to mutilation. (Mogg, 1956: 27)

During more than fifty years that Mogg had personally known the tree, all but one of the connecting trunks have been severed. And, during the period following World War I, when the tree was afforded quite inadequate protection, many instances occurred where large and small branches were hacked off—surely a poor kind of firewood and a gross act of vandalism. In the early thirties, too, treasure-seekers after the mythical Kruger millions dug about the roots a large number of holes, which remained unfilled for a long time, occasioning considerable erosion. (Mogg, 1956: 27)

It did some good, according to Mogg (1956: 27) because after that incident the Wonderboom Purchase Committee more energetically took up the matter, and today the Wonderboom is in a proclaimed nature reserve.

n.d



*Illus. 322: The Wonderboom tree, long ago. The date can not be determined. (Pretoria archives, 2011)*

The famous Pretoria Wonderboom was described by Dr. I. B. Pole Evans, the Director of the Botanical Survey of South Africa, as "the most remarkable example of its species in Africa and a National Monument." (Mogg, 1956: 23-33)



*Illus. 323: The Wonderboom tree, long ago. The date can not be determined. (Pretoria archives, 2011)*

### Earliest records of the tree.

The earliest record of the tree is that of Fr. W. G. Atherstone who was the first to preserve a specimen twig gathered from this tree in 1873.

"The boers laager of some twenty wagons was right on the bank of the Apies River at Wonderboom poort and their headquarters further north. 'Voortrekker nek' the boers built a stone breastwork as a means of defence, and occupied it." (Mogg, 1956)



*Illus. 324: The Wonderboom tree with some Voortrekkers camping in front of it. No date. (Pretoria, archives)*

1873

### Cultural History

The Ndebele regard the wonderboom as an important ancestral burial ground. Unfortunately it is not clear who was buried under the trees as various attempts to locate the grave/graves have failed.

It has been alleged that Nyabela Mahlangu, the Ingwenyama ('paramount') of the Ndzundza Ndebele of SA, could be buried under the tree. (Van Vuuren, 2003)

Ndebele occupied the throne between approximately 1879 and 1883 at a stronghold called koNomtjharhelo (near Roosenekal, Mpumalanga). He and his people were involved in the Mapoch ('Mabhoko') war of 1882/3 against the ZAR forces. When the Ndzundza were defeated (by hunger), Nyabela and Mampuru of the Pedi, whom he gave refuge, were trailled in Pretoria for treason. Mampuru was hanged and Nyabela imprisoned. He was released in 1899 and settled with a number of followers in villages on the northern slope of the Magaliesberg on the farm Derdepoort (KwaMkhina or Emlalaganye) at the present Sinoville. Nyabela died in 1902 (or 1903) and was buried at the site of the royal village. The last Ndebele left this site around 1952/3 and settled near Klipgat, better known as KwaMsiza village that attracted many tourists over the years.(ibid)

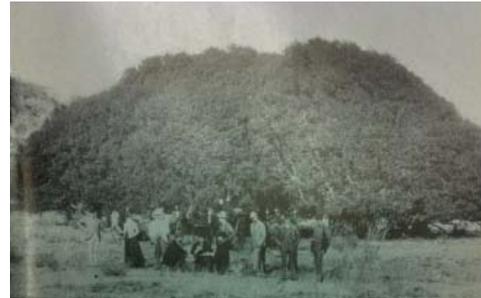
The Ndebele graves at the wonderboom are believed to be those of regional headmen (amakosana or iinduna)and definitely not the royal leader. (Van Vuuren, 2003)

1879-1883

n.d



*Illus. 325: The Wonderboom tree, in about 1937 (Pretoria archives, 2011)*



*Illus. 326: The Wonderboom tree, n.d (Pretoria archives, 2011)*



*Illus. 327: The Wonderboom tree, n.d (Pretoria archives, 2011)*



*Illus. 328: The Wonderboom tree, n.d (Pretoria archives, 2011)*



*Illus. 329: The Wonderboom tree, n.d (Pretoria archives, 2011)*

1882

Another reference of the Wonderboom was in the book entitled in the land of misfortune, by lady Florence Dixie, published in 1882.

“Trees and ferns grew everywhere luxuriously, and the gurgling of the river over its rocky bed was a pleasant and soothing sound, which added to the charm of an impressive and awe-inspiring scene. But one of the principle sights we were bent on seeing that day was the great Wonderboom, or Wonderful Tree, which had grown and extended to such a size as to give it this appellation. Under its wondrous canopy several hundred people, it was said, could find shelter, and indeed, when we had threaded the pass and skirted a reedy lake from which the cry of Wild Duck arose, the tree, with its heavy mass of foliage hove in sight, looking like some huge giant amidst the comparatively dwarf vegetation that surrounded it.” (Mogg, 1956: 31)



*Illus. 330: The Wonderboom tree, in the 1900. (Pretoria archives, 2011)*

“Besides the laager referred to above, I learn on good authority that the Waterberg Commando was quartered beneath the tree. The tree can conceal a regiment of soldiers or accommodate over twenty-two wagons of twenty oxen each.” (Mogg, 1956: 31)

The size of the tree in 1905, recorded by late Prof H. W. F Wager.

Refer to illus.331, illustrating the dimensions of the tree. Its diameter from N.N.E to S.S.W is 55m, and from E. to W. 43m. Its height, as estimated by a certain method, is 20m.

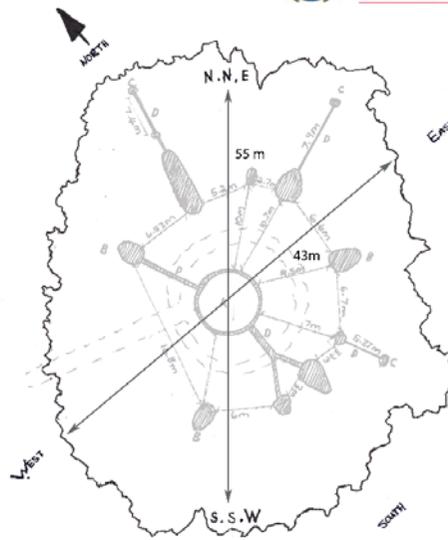
The tree spreads in a peculiar manner. Some of the branches from the centre spread out laterally in a radial direction and gradually droop towards the ground. At a distance of about 9m they come into contact with the ground and send out roots from which new groups of stems arise. From these other branches may be given off, still in the same radial direction, and these, coming in contact with the ground, may in turn become rooted, and send up a third group of stems.

From measurements made on the spot we found an inner ring of nine groups surrounding the main central mass, three of them still connected to it by their drooping branches.

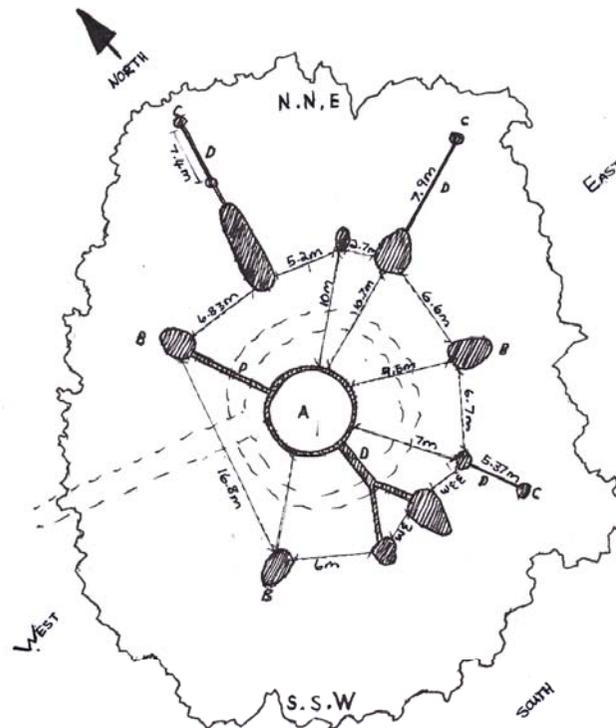
The circumference of the central mass of stem is 24.7m, and the second group forms approximately a circle at an average distance of about 9m. Beyond the ring there were three other groups at a distance of about 7.6m from the outside of the ring. Still connected by the branches from which they had originated."

The tree, of course, covers a slightly larger area of ground today, and the height is at least 23m.

Wager (1905) states that one of the tragedies in connection with this tree is that hardly any of the loop connections remain today. Those from the original or main stem have been chopped off, and only one in the secondary circle is left: even this is badly mutilated. Refer to illus. 332



Illus 331: Dimensions of the Wonderboom tree as stated by Wager (1905). (Author, 2011)



Illus 332: Diagrammatic plan of the Wonderboom. Showing positions of the new growths. (Wager, 1905)

- A. Oldest remaining circle of trunks
- B.B.B Second series of trunks
- C.C.C Third (youngest) series of trunks, just forming
- D.D.D.D Connecting branches still intact

1905

## Drought

1984

"Pretoria se Wonderboom deur droogte verdor" reads the heading of one news article from 16 August 1984. It seems that the tree was busy to dry out, because it is said that some parts of the tree's leaves were changing colour. The parks department had thousands of litres of water pumped to the tree from the Apies river. (Wonderboom management, 2011)

In the meantime Pretoria received the 'Lowerstad' award, awarded by the Institute of Parks and Recreation of South Africa (Instituut van Parke en Ontspanning van Suidelike Afrika). (Wonderboom management, 2011)

A national tree plant day was held on the 10th of August 1984. The Wild Fig tree was identified as the tree of the year. The Wonderboom tree also falls under that species. It was known as 'Ficus cordata' and then the name was changed to 'Ficus pretoria' according to Brutt-Davy. Today it is known as the 'Ficus salicifolia' according to Vahl's reclassification. (Wonderboom management, 2011)

1985-1994

### 1985 The catastrophe year

Jackson, the Wonderboom 'veldwagter' during that time, reported the morning of 7 January 1985 that one of the twelve daughter trees, fell at eight 'o'clock the previous night. (wonderboom management, 2011).

An inspection was started and the results showed that the tree on the eastern side of the group trees had fallen down. They found that the root system collapsed and they found that the root secreted a watery secretion (afskieding). (wonderboom management, 2011).

Management was notified immediately about the tree's condition. The photographic department from the city council was called in to take some photos. Specialists on fungi (swamkunde) were contacted from the University of Pretoria and the department of agriculture, to get some insight. Samples were taken to further analyse the data. A press conference was held on Wednesday 9 January at ten o'clock. After the conference certain measures were decided upon, namely;

- The disposal of all the infected material
- Sealment of all the open wounds
- Quarantine precautions were established
- Sanitary prevention

A fence of 1.8m was erected to protect the tree, and to limit the access of anyone. Only authorised personnel could enter. (Wonderboom management, 2011).

The loss of part of this historically old tree, made the authorities and public aware of how fragile the tree really was. Photos were taken every three months to monitor the growth of the tree. (Wonderboom management, 2011). All the rules and the fence, will ensure the trees' health and the return of wildlife. The fence ensures that kids who would previously climb onto the lower branches cannot get close now. (Wonderboom management, 2011).

The Magaliesberg west of Derdepoot was proclaimed a Protected Natural Environment in 1994. (Wonderboom management, 2011). The Wonderboom tree is a National Monument.



Illus. 333: The National Monument sign on a large rock near the Wonderboom tree. (Author, 2011)

### The ecological value of the Wonderboom tree

Food:

The fruit is taken by a number of birds and mammals.

The following have been recorded:

Animals and birds:

Numerous insects also visit the tree. A range of insectivorous birds that feed on the insects that live off the decaying plant matter, are therefore also attracted.

Habitat:

The tree provides shelter for a host of animals ranging from rock hyrax, numerous birds and a multitude of insects. This microclimate is favoured by numerous animals.

Microclimatic influence:

The tree plays an important role in controlling climate by having a moderating effect. It is also of significance in controlling soil moisture content. This is demonstrated by the comparatively large trees that surround the wonderboom. (Information plate, 2011)



*Illus. 334: The Wonderboom tree in 2006. (Built Architects, 2006)*



*Illus. 335: The Wonderboom tree in 2011. (Author, 2011)*

2006

2011

**Wat is die Wonderboom?**  
 Pretoria se Wonderboom is bekend om die hoë kwaliteit van sy natuursonne, die berovende Wonderboom. Hierdie boom is een van die oudste en grootste boomsoorte in die wêreld. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Pretoria se Wonderboom**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Wonderboom - eenf'nsig!**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**A true conservationist...**  
 • loves people as much as nature;  
 • is selflessly serving the cause;  
 • resists the temptations of power and prejudice;  
 • is a humble learner, a searcher for scientific truth;  
 • persuaded with knowledge and modesty;  
 • is fair, forgiving and helpful.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Wonderboom is een 'dogter' kwyl**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Botanists concerned over Wonderboom**  
 Botanists are concerned over the Wonderboom tree in Pretoria. They are worried about the health of the tree and the impact of human activities on its environment.

**Bekendste boom het seer gekry**  
 The Wonderboom tree has become a symbol of South African identity. It is a tree that has stood for centuries and has become a part of the country's heritage.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

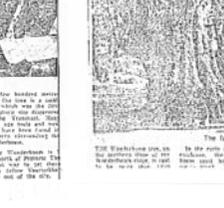
**Swam bedreig historiese boom**  
 A swamp is threatening the Wonderboom tree in Pretoria. The tree is a unique species and its survival is at risk due to the encroachment of the swamp.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.

**Die Wonderboom se geskiedenis**  
 Die Wonderboom is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne. Dit is 'n unieke boomsoort wat in die wêreld bekend is vir sy hoë kwaliteit van natuursonne.



## 5.4.2 The two caves

In the Wonderboom Nature Reserve, overlooking the Wonderboom Poort, are two caves, one below the other. These caves occur in the Magaliesberg quartzite of which the hill is formed. According to Maynard (1956: 47-51) the quartzite dips at a fairly steep angle, and a weak brecciated stratum between two stronger strata has worn away. In this way the caves have been formed.

According to Maynard (ibid) The most striking feature of the upper cave is its situation. Standing in front of the cave entrance, one has a wonderful view of the valley on either side of the Magaliesberg, as well as of the Wonderboom Poort through which the Apies River flows. For this reason alone, it is no wonder that the cave bears evidence of habitation from the earliest times.



*Illus.337: Small cave (Author, 2011)*

The cave had one large main entrance chamber and a subsidiary entrance chamber at one side. Beside this subsidiary entrance chamber is a small rock shelter. According to Maynard (ibid) the cave probably extends a long way back into the hillside, but the roof makes parts of the entrance chambers damp, especially in summer, and it is quite probable that there is water further inside the cave. The river below provided water for cave-dwellers a long time ago. (Maynard, 1956: 47-51)

The Early Stone Age hunters, are represented in the Wonderboom Cave by implements which have been found there. The Middle Stone Age people and Later Stone Age people were also sheltered by the caves in later years. (ibid)

Maynard (1956: 47-51) states that the most typical of the stone tools which they left in the cave are the spherical bored stoes which were used as clubheads or as make-weights for digging-sticks. The Bushmen also used these stones, so it is not improbable that they, too, inhabited the cave. The Stone Age people, including the Bushmen, were all hunters. According to Maynard (ibid) the valleys around the present site of Pretoria teemed with game, and the Wonderboom Cave was an ideal vantage-point as well as being a shelter from the weather.

At the same time as Van Riebeeck landed at the Cape (1652 A.D) Bantu tribes were migrating into South Africa from the North. These newcomers, who were cattle-keepers, tillers of the soil and knew the use of iron, either killed off the local inhabitants or intermarried with them. Those who escaped, fled to the Kalahari where they still live out their existence. In course of time, the various Bantu tribes settled throughout the Transvaal and seem to have led a fairly peaceful existence, until the beginning of the nineteenth century with the rise of the Zulu tribe in Zululand. Shortly before the first Voortrekkers arrived in the Transvaal ( $\pm$  1838 A.D.), the Zulu Chief Chaka, was terrorizing his neighbours, slaughtering whole tribes and scattering others far and wide. One of Chaka's generals, Mzilikazi by name, broke away with his army and marched into the Transvaal, plundering and killing as he went. The terrified local tribes, hid, sometimes for years, in the numerous caves scattered over the South-Western Transvaal. Potsherds of typical Bantu manufacture have been found in the Wonderboom Cave, so the place was undoubtedly used as a refuge in recent times. (ibid)



*Illus. 338: The large cave (Author, 2011)*

n.d

### 5.4.3 Wonderboompoort

n.d - 1896

The photos below illustrate the Wonderboompoort over a period of time. No dates are available. (Pretoria archives, 2011)



*Illus. 339-344: Old photographs of Wonderboompoort (Pretoria Archives, 2011)*

1896-1898

According to Hettie Cilliers in the Pretoria newsletter (Swanepoel, 2003) the wonderboompoort only closed once in her lifetime and it was during the second Anglo Boer War after Lord Roberts' annexation of Pretoria. It was said that after a few months they opened the poort for some boers to enter, but they had to show a permit in order to enter the town. At Wonderboompoort two guards were stationed, one in front of the poort on the side of Pretoria and one in the poort, with orders to look at each passenger's pass and to be on the lookout for any suspicious looking persons.

The story goes that Margaretha Malan from Haartbeeshoek, situated at the back of the Magaliesberg, — the same farm where brother Danie Malan started his tree nursery and where the Malan brothers still have their nursery — made use of her pass twice a week to take some fruit to the market and do some shopping herself. She used a 'molwaentjie' and oxes because all the horses were taken for the army (Swanepoel, 2003).

Rosal Swanepoel mentioned the article written in the *Ou Pretoriana*. Hettie Cilliers wrote about her experience of Wonderboompoort at the age of 96. She was a child when they went through the poort, in 1892. She talks about the wild nature, and magnificent mysterious character of the poort. It was rare to find someone else on that route on the same day. The Apies river would overflow the pass during the rainy seasons, and then the water would fill the wagons. She talks about the large mountain ridges on both sides of the poort. (Swanepoel, 2003)

Margaretha Malan also helped poet Jan Cilliers to escape through the Wonderboompoort in August 1900.



*Illus. 345: A photo of Wonderboompoort out of the Tom Andrews collection. This photo was taken before 1900. (Swanepoel, 2003)*



*Illus. 346: The apies river was dammed up more than a century ago at Wonderboompoort. Only a small trail crossed the dam wall through the poort (1882) (die weg, vol 44)*

1882



*Illus. 347: Boating at the Wonderboompoort in 1918. (Pretoria archives, 2011)*

1918

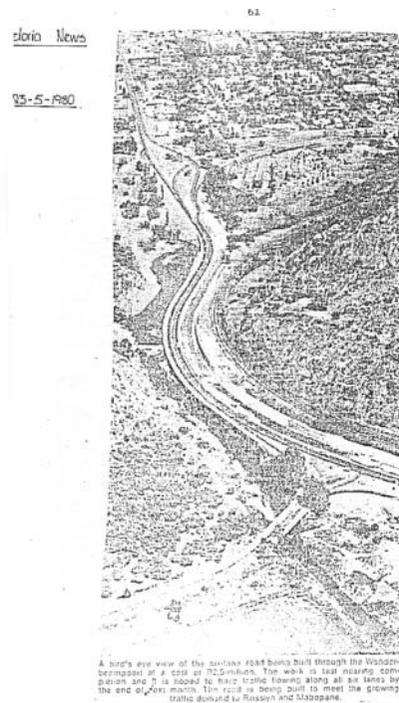
1979 -1980



Illus. 348: The Pretoria-Polokwane route goes through the poort from the previous century. The railway was the most important reason for the development of Pretoria (1980) (Die Weg, vol 44)

In January 1979 the new freeway through Wonderboompoort has progressed immensely. To avoid any damage to the nature reserve, the freeway was built on the western side of the Apies river. The freeway was implemented in the winter of 1980. This road greatly improved the traffic flow to the north. The road construction costs were R2.5 million. (Wonderboom management, 2011)

There were some rumors of a ringroad, which meant that there was the possibility of a tunnel through Magaliesberg, or the cutting of a part of the eastern side of the ridge, which would have been highly problematic for the animal biodiversity in the reserve. The third option was to build a bridge system over the Apies river. (Wonderboom management, 2011)



Illus.349: Newspaper articles on the new highway system going through the poort. (Management, 2011)



#### 5.4.4 The Wonderboom Fort

At the top of the Wonderboom Hill are the ruins of the Wonderboom Fort, one of four forts built by the former South African Republic at the end of the 19th century to defend Pretoria against the British forces. (Brochure, 2010)

Shortly before the Anglo Boer War (1899-1902) the Government of the Zuid Afrikaan Republiek (ZAR) decided to fortify Pretoria in order to protect the capital. A defence plan was drawn up by a former French artillery officer and military engineer, Leon Grunberg. He identified eight strategic places around Pretoria and suggested that armoured revolving dome towers, equipped with heavy artillery be erected at these places. The eight positions that he had in mind were Klapperkop, Schanskop, Kwagga-spoot, Daspoortrand (west), Magaliesberg west (possibly at hartebeeshoek or Hornsnek), Wonderboompoort, Derdepoort and Strubenkop. By doing this, Pretoria would have been turned into a virtually impregnable fortified town. (Van Vollenhoven, 1998)

Since his plan could not provide sufficient shelter and accommodation for a large number of soldiers, it was rejected, and as an alternative the plan of two German engineers, Otto. Albert Adolph van Dewitz and Heinrich C. Werner to build forts was accepted. It was decided to build a fort at each of the places referred to, and a building commission under chairmanship of Commandant General Piet Joubert was established to manage the activities. (Van Vollenhoven, 1998)

Owing to a shortage of money only four forts were completed and the commission was dissolved in 1899. The forts completed were those at Klapperkop, Schanskop, Daspoortrand and Wonderboompoort. (Van Vollenhoven, 1998)

Fort Wonderboompoort was built by the German Krupp firm, and was completed on 4 September 1897. The costs of erecting this fort amounted to £49 000. It had the same type of entrance gateway as fort Schanskop. Ramparts were erected around the fort to improve its defences. (Van Vollenhoven, 1998)

Initially, members of the Rijdende Artillery were on duty in the forts. Later a special division of the staatsartillerie namely the Corps Vesting Artillerie, consisting of 100 men, was established to man the forts. Although the German forts were built for a garrison of 30 men, they were never fully manned. Lieutenant J. Wolmarans was commander of fort Wonderboompoort. (Van Vollenhoven, 1998)

This fort was also provided with electricity generated by a paraffin engine, and lightning conductors were erected. An underground telegraph connection was installed. The fort was also connected by telephone with the office of the commandant general. Water was pumped from the Apies River in the poort to the fort where it was stored in a reservoir under the ammunition room. (Van Vollenhoven, 1998)

On 23 October 1899 18 men were stationed there along with the 3 canons that were planned for the fort; a Long Tom, a 37mm-Maxim-Nordenfelt and a Martini-Henri- hand maxim. The Wonderboom fort was very modern for its day as it had telegraphic and telephone equipment. (Pamflet, 2011)

It was never used. It was blown up, probably on the instruction of Prime Minister Jan Smuts, in the early days of the Second World War, lest it be used by anti-government dissidents as a springboard for an attack on the state. (Brochure, 2010)

1897

1899

1900-1951

When the British troops advanced on Pretoria, it was quite obvious that the forts were useless for the purpose for which they were built according to Behrens (1956: 43-45). Behrens states that General Louis Botha, Commandant General of the Republican forces, had all the ammunition and guns removed from the forts with the result that when Lord Roberts's troops entered Pretoria on 7 June 1900, not a single shot was fired from these forts. The fort was handed over to the British.

On 7 July 1904 it was opened to the public as it was not under military possession anymore. (Pamflet, 2011)

In 1936 the Skanskop and Klapperkop Forts were declared national monuments and entrusted to the care of the municipality. When the Second World War broke out these two forts were up to January 1951 used by the military authorities. They are now again maintained by the municipality. (Behrens, 1956: 43-45)

Wonderboom Fort was not proclaimed a national monument, and as the photographs show, it was damaged not only by human hands but there is also luxuriant vegetation within the area that formerly constituted the fort. The damage to one of the entrance pillars was caused by fortune hunters who thought that the imaginary Kruger millions might possibly be hidden in it. (ibid)

#### 5.4.4.1 Historic images of the four Boer fortifications of Pretoria and their uses (1896 - 1898)

##### 5.4.4.1.1 Fort Schanskop

1896 - 1900's



*Illus. 350: Fort Schanskop in use during the second Anglo Boer War. Notice the corrugated buildings and bell tent in the courtyard. (International Archives, 2011)*



*Illus. 351: Fort Schanskop in 1938 (Pretoria Archives, 2011)*

5.4.4.1.2 Fort Klapperkop

1896 - 1900's



*Illus.352: Fort Klapperkop in use. Notice the wagons. (International Archives, 2011)*



*Illus. 353: Fort Klapperkop during in use during the Anglo Boer War. Notice the corrugated buildings and activities in the courtyard.(International Archives, 2011)*



*Illus. 354: Fort Klapperkop in use. Notice the water furrows (International Archives, 2011)*

5.4.4.1.3 Wonderboomfort

1896 - 1900's



*Illus. 355: Fort Wonderboompoort in use during the second Anglo Boer War. Notice the corrugated buildings and wagons (International Archives, 2011)*



*Illus.356: Fort Wonderboompoort in use during the second Anglo Boer War. Notice the corrugated buildings and wagons (International Archives, 2011)*

5.4.4.1.4 West fort

1896 - 1900's



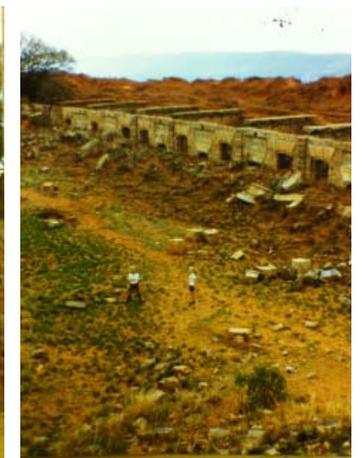
*Illus.357: Fort Daspoostrand (Westfort) in the time when it was still in use. (International Archives, 2011)*



*Illus.358: Fort Daspoostrand (Westfort) in the time when it was still in use. Notice the corrugated building and tent. (International Archives, 2011)*



*Illus. 359: The entrance gate of Westfort at Daspoostrand in 1984 (Pretoria Archives, 2011)*



*Illus. 360: Ruins of Westfort at Daspoostrand in 1984 (Pretoria Archives, 2011)*

### 5.4.5 Wonderboom Nature Reserve

According to the oldest deeds office entry found relating to the farm Wonderboom, the beacons were erected and pointed out on 10th August 1847, before the establishment of Pretoria and L.A. and T.C.J Erasmus were the first owners. (Fauna & Flora, 1956: 3)

According to H.P. Behrens 'Wonderboom' is most likely one of the oldest European place names found in the Pretoria area. It is said that historians traced its origin back to the days prior to the first white men settling in this part of the Transvaal—when the Magaliesberg was still known by its original name, the 'Cashan Mountains'. (Behrens, 1956: 7)

The tree and its surrounding area most likely played an important role in the life of the native people inhabiting this part of the country before Europeans made their appearance.

The exact age of the tree is unknown, but according to Behrens (1956) the tree dates back to when Stone Age people roamed this area. Their camp was discovered to the east of the tree, and they might have used the tree as an ideal feasting spot after their hunt along the Apies River.

*Illus. 361: Aerial photo of Wonderboom Nature Reserve in 1947. Notice the minimum urbanization. The tree is clearly visible. Note the Wonderboom fort on top. (Tshwane, 1947)*



1947

2006



*Illus. 362: Aerial photo of Wonderboom Nature Reserve in 2006. Note the development at the foot of the mountain (Built Architects, 2006)*

2011



*Illus. 363: Aerial photo of Wonderboom Nature Reserve in 2011. Note the new Wonderboom junction development opposite the resort area. (Geology Dept. University of Pretoria, 2011)*

### 5.4.5.1 The establishment of the nature reserve

For many years the Dingaan's Day (also known as the Day of the Covenant 'Geloftefees', and today it is known as Reconciliation Day) celebrations were held at the Wonderboom. The festivities were organised by the Wonderboom Dingaan's Day Celebrations Committee (the committee during that time), and it was this committee which seriously concerned itself with the future of the Wonderboom. This committee requested and approved the establishment of a committee which would collect funds for the purchase of a piece of the Wonderboom farm, with the tree on. They needed to acquire the entire property eventually. The committee would also be in control of the maintenance and improvements. The tree would then be transferred to the Commission for the Preservation of Natural and Historical Monuments, Relics and Antiques. This committee was called the Wonderboom Purchase Committee. (Behrens, 1956: 7-21)

At the first meeting of the committee on 7 August 1931, Mr. van Gass, representing the Wonderboom Dingaan's Day Committee, explained the reasons that prompted his committee to support the purchase of the Wonderboom. His committee obtained the option to purchase an area of about 44 morgen surrounding the Tree. These options will then be given to an approved body, such as the National Monuments Commission, provided that his committee was authorised to continue holding Dingaan's Day celebrations at the Wonderboom. The Purchase Committee agreed upon everything and that there should be a place where national celebrations can be held. At this meeting it was decided that this area could also serve for recreational purposes and that it could be developed as a botanical garden. (Behrens, 1956: 7-21)

According to Behrens (1956), the committee decided that every effort should be made to acquire the tree in the view of its historical and scientific value for the nation so that it could serve as a permanent meeting place for Dingaan's Day and other national celebrations. Should sufficient funds be collected, the Wonderboom area should be developed as a botanical garden and recreational centre. Another decision was to collect funds from the public, the Government, the Provincial Administration and municipal councils.

The options that had been obtained to purchase the wonderboom area were transferred to the Purchase committee in February 1934 and in April 1934 the committee's activities aroused considerable interest in Johannesburg, according to Behrens (1956) which resulted into the establishment of a sub-committee.

The committee decided that a brochure would help in the advertisement to raise funds, but it never happened even though the Travel Department of the South African Railways had offered to bear half of the costs of publishing such a brochure.

Representations made to the City Council of Pretoria received full sympathy from the council in regards with the development of the Wonderboom. Five or six years after the representation of the alternative outlet from Pretoria to the North were brought about with the co-operation between the Province and the Council. This new outlet—the road via Voortrekker Nek which skirts the Wonderboom terrain on its eastern side was made a reality. (Behrens, 1956: 7-21)

1931

1934

1935

In September 1935, the committee came to the conclusion that there is still not enough funds collected from the private sector, they decided then to approach the City Council of Pretoria, the Provincial Administration and the Union Government with a suggestion that each of them should accept the principle of paying one-third of the purchase price of about 60 Morgan around the Tree.

The City Council responded positively and agreed upon paying one third and even suggested that they will play guardian should the Tree be acquired and be transferred to the Historical Monuments Commission. It was intimated that as the area south of the Tree, which the Council was proposed to buy was already municipal property, the possibility of incorporating this with the proposed nature reserve, would be considered favourably. The hope was expressed that the Board of Trustees of the National Zoological Gardens would assist in stocking the area with suitable animals.

The province did not respond that positively to the negotiations, of agreeing to pay the same amount as the City Council (£1.100) as well as the Government turned them down in November 1935, because according to them this is not a national matter. (Behrens, 1956: 7-21)

1936

The Purchase Committee did not give up and in February 1936, they sent a deputation to the City Council's General Purposes Committee and suggested that the City Council should be the sole owner of the proposed reserve.

The City Council agreed on 28th September 1936 to purchase the Wonderboom area with the tree. The area bought by the Council was subsequently incorporated into the municipal area.

In December 1936, at the last meeting of the Purchase Committee, they suggested to the Council that a similar Committee should remain in being to act in an advisory capacity in assisting the City Council in the achievement of its other objective, namely, the development of the area around the Wonderboom as a nature reserve. This committee would be called the Wonderboom Advisory Committee. The Committee also suggested that the Council should be urged to take immediate steps to preserve the tree. The need to appoint a caretaker was considered.

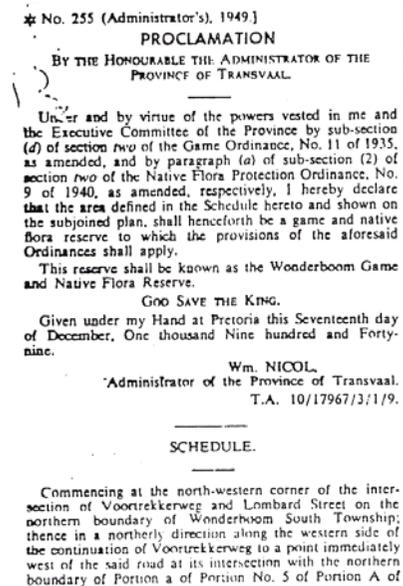
The decision was made that the area around the tree should be fenced, because some damage can be done to the tree by picnickers, casual visitors and animals which now had unrestricted access to the Tree. This measure was taken for the time until the entire area could be developed and managed. (Behrens, 1956: 7-21)

The Advisory Committee held its first meeting in February, 1937, and shortly thereafter submitted a number of suggestions to the Council. The Committee was then informed that the area around the tree was already fenced, they renewed their former pleas that the whole area should be proclaimed as a nature reserve, and added that the area already acquired should be enlarged by the acquisition of about 60 acres on the southern slope of the mountain.

The Council agreed in principle that the area around the tree should be proclaimed a game and nature reserve to be known as the 'Wonderboom Reserve'.

The Council learned that the National Roads Board proposed that the Great North Road pass through the Wonderboom Poort east of the river. This meant that any game in the proposed reserve would be cut off from the water. Many suggestions were made to the Road Board, but in the late 1938 they persisted in proposing the road on the eastern side of the reserve. The Second World War broke out and no road construction work was done. (Behrens, 1956: 7-21)

1937 - 1938



The Advisory Committee requested the Council to agree to the establishment of a Pretoria Reserves Advisory Committee. The Council announces the Pretoria Reserves Advisory Committee in March 1940.

In July 1941, Mr Abercrombie offered to sell his portion of the Wonderboom farm to the Council. This property adjoining the Council's portion, stretches from the north to south along the Apies River. The property was then bought by the Council from Mr Abercrombie for £6000.

Towards the end of 1943, the Reserves Advisory Committee urged the Council to apply to the Administrator to have the Wonderboom Reserve proclaimed as a nature, game and bird sanctuary and such an application was submitted in due course to the Provincial Administration. In May, 1949, the Provincial Secretary informed the Council that the Administrator-in-Executive Committee had agreed to the Wonderboom area being declared a game and native flora reserve.

After the war in January 1947, the Advisory Committee protested against the proposed location of the road. In March 1949, at a General Purpose Committee meeting, the Town Clerk reported that a new proposal was submitted to the National Roads Board, with the new road running on the western side of the Apies River.

The Advisory Committee made frequent suggestions for the development of the nature reserve but due to funding the Council could not agree to any of them. There was a little progress and various improvements were made, such as new latrines and native quarters in early 1947 and the provision of water in March 1952.

1940 - 1952

*Illus. 364: The proclamation of Wonderboom Nature Reserve in 1949, as game and native flora reserve article. (Wonderboom management, 2011)*

Although several suggestions for developing this area on lines similar to the Fountains Valley were made from time to time by the Director of Parks, lack of funds has thus far prevented the Council from giving effect to these schemes.

In addition to the proposed Wonderboom Reserve, the City Council had reserves at Rietvlei and Fountains Valley, and it was possible that more would be established through the course of time. (Behrens, 1956: 7-21)



THE remains of the Wonderboom Fort — one of four fortresses built around Pretoria before the South African War — have been cleaned out by the city council.

Perched high on the Magaliesberg to the north of the city, the fort's weathered walls offer visitors an interesting look into the past.

Although built for the defence of Pretoria, it was captured during the war by the Wonderboom Fort and its three counterparts — Westfort, Skanskop Fort and Klapperkop Fort — would be useless to stop the advancing British troops at bay.

General Louis Botha, commandant general of the Boer forces, had all ammunition and stores removed from the fort. As a result not a single shot was fired from there when Lord Roberts' troops entered the city in June 1900.

Visitors to the Wonderboom Nature Reserve can reach the fort at the top of the mountain by way of three hiking trails, starting near the entrance gate.

According to a spokesman for the city council's parks department, Mr Dirk van Heerden, the middle path going straight uphill is well recommended for the way in. Hikers interested in a more luxurious walk can reach the fort by any of the other two paths in about an hour.

The nature reserve is open to the public from 8 a.m. to 5 p.m. throughout the week, with an entrance fee of R1 a car being charged on Saturdays, Sundays and public holidays.



Below: Miss Alta Oberholzer, of the city council's public relations department, points to an enormous underground water storage tank. Now empty.

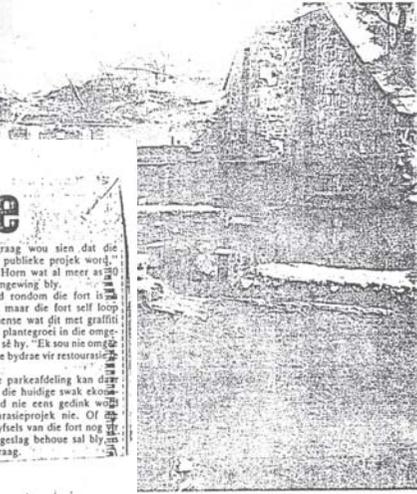
VOL. 2 BYLAE 2  
PRETORIA NEWS Thursday July 10 1986

# Opknappingskuur vir die park

DIE Wonderboom natuurwekkende Wonderboomreservaat tuisle van 'n opknappingskuur ondergaan. Die Leerlinge van die Hoërskool Overruin, het onlangs toestemming gekry om 'n skema oor natuurbewaring in die park te loods. Hulle sal die terrein skoonhou, ekologiese opnames van die plante en diere maak, 'n lys van al die bome, klein soogdiere en voëls opstel, en nommers op die bome aanbring, sodat besoekers sal weet wat hulle sien. Die leerlinge sal ook gedurende naweke as gidse diens doen; wanneer hulle eers met die park vertrou is. Die doel van die skema is om die bewaringsgedagte by leerlinge aan te wakker en die bydrae aan besoekers van die park oort te dra.



Viewed through an embrasure, Pretoria lies far down below.



Like ancient Roman ruins the old fort's weather-beaten walls are set to become another historic landmark in Pretoria. (Pictures: Morris Legoabe.)

## Die Transvaler 19 Desember 1984

### Stadsraad ondervind las met mense in natuurreservaat

Die STADSRAAD ondervind las met mense wat nie die beperkings van die Wonderboom-natuurreservaat op hulle eie, het 'n woordvoerder van die parkafdeling gesê.

Daar is vroeër reeds aan die reservaat wat nie ag staan om die stadsraad se reëls om die natuur en wild te bewaar. Dit wil voorkom asof daar nog mense wat die natuur vernietig, het die woordvoerder gesê.

Die stadsraad se reëls om die natuur te bewaar, is 'n belangrike deel van die natuurreservaat se reëls. Die stadsraad se reëls om die natuur te bewaar, is 'n belangrike deel van die natuurreservaat se reëls.

## DIE TRANSVALER WOENSDAG 24 APRIL 1985

# Ou fort gaan ten gronde

PRETORIA — Wonderboompoortfort sal moes tot die oorspronklike vorm teruggevoer word. Die ingang is reeds oopgemaak en die hekke sal oorspronklik wees hang.

50 sê mnr. Tom Andrews van die Skanskop Oud-Pretoria, hoewel die hoop om die reël as nasionale monument te gebruik te neem altyd sal bly.

"Watter kans bestaan daar om die fort sonder geld na die oorspronklike vorm te herstel?", wil hy weet. Deur die jare is beperkte restaurasie onderneem, maar die meeste van die projekte is beplan te klein om 'n besliddende verskil te maak.

In die stadium is leerlinge van Pretoria-Noord Hoërskool ook op die terrein doernig. Hulle het onderneem om die kelder- en troepkamer asook die perdestal skoon te maak. Die ingang is reeds oopgemaak en die hekke sal oorspronklik wees hang.

Hulle beplan ook om die voetlaanpad tot by die ingang uit te heri en boomspesies in die omgewing te identifiseer met die oog op besoekers wat daar 'n draai kom maak. Sodra dit afgehandel is, word 'n bronspaat met die Tweede Vryheidsoorlog, terwyl Klapperkop van daar tot met ons geskiedenis is, sê mnr. Andrews.

Invoners in die omgewing wat sedert hul kinderdae by Wonderboompoortfort rondgespeel het, sou graag wou sien dat daar iets aan gedoen word.

Die fort is op die stadsraad se grond geleë en was een van die vier forte wat in 1965 deur die Weermag vir restaurasie oorweeg is. Klapperkop en Skanskop kon teen die minste koste gerestoureer word, maar Wonderboompoort en Westfort moes laat vaar word.

"Vandag dra Skanskop ons land se geskiedenis van die Groot Trek tot met die Tweede Vryheidsoorlog, terwyl Klapperkop van daar tot met ons geskiedenis is, sê mnr. Andrews.

"Ek sou graag wou sien dat die restaurasie 'n publieke projek word," sê mnr. Peet Horn wat al meer as 20 jaar in die omgewing bly.

"Die gebied rondom die fort is 'n wildreservaat, maar die fort self loop deur onder mense wat dit met graffiti bekrap en die plantegroei in die omgewing vernietig," sê hy. "Ek sou nie omgee om 'n geldelike bydrae vir restaurasie te maak nie."

Volgens die parkafdeling kan daar in die lig van die huidige swak ekonomiese toestand nie eens gedink word aan 'n restaurasieprojek nie. Of die huidige oorbylyfsels van die fort nog vir die volgende geslag behoue sal bly, is 'n ope vraag.

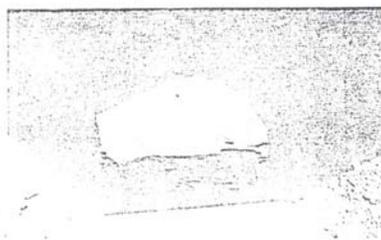
Illus. 365: Newspaper articles on Wonderboom Nature Reserve and the Wonderboom fort (Management, 2011)

## Fort to the north gives peek into the past

COR UYS  
THE remains of the Wonderboom Fort — one of four fortresses built around Pretoria before the South African War — have been cleaned out by the city council.

Perched high on the Magaliesberg to the north of the city, the fort's weathered walls offer visitors an interesting look into the past.

Although built for the defence of Pretoria, it was captured during the war by the Wonderboom Fort and its three counterparts — Westfort, Skanskop Fort and Klapperkop Fort — would be useless to stop the advancing British troops at bay.



Viewed through an embrasure, Pretoria lies far down below.

### 5.4.6 The man-made waterfall



Illus. 366: The man-made waterfall view from the wonderboompoort highway (Author, 2011)

For the 50 year anniversary of Pretoria, it was decided to build a waterfall as a permanent reminder of the union festivities, of 4 November 1910.

Within a few months the waterfall already stopped working due to blockages in the pump and pipes. With the five year anniversary of the republic, money was taken out of the funds to double the waterflow of the waterfall. The water comes from a local water distribution network, and not from the Apies river. (Wonderboom management, 2011)



Illus. 367: Man-made waterfall, view from the side. (Author, 2011)

1960.

The collage consists of several newspaper clippings. On the left, a clipping from 'Die Vaderland' dated 12-1-61 is titled 'Waterval Weer In Aksie'. It features a photograph of the waterfall and a short article. On the right, a larger clipping from 'Oggendblad' dated 9-8-1918 is titled 'Poort se waterval ingeboet'. This article includes a sub-headline 'Stadsake - Pretoria' and the name 'Louis Roux'. It discusses the state of the waterfall, the involvement of the municipal council, and the cost of repairs. Another smaller clipping from 'Oggendblad' dated 18-7-1918 is also visible, mentioning the 'ingebou' (built) status of the waterfall.

Illus. 368: Old articles on the Wonderboom Nature Reserve's waterfall (Management, 2011)

## APPENDIX F: Archaeological data analysis



*Illus. 369: The landscape at Wonderboom Nature Reserve (Author, 2011)*

## 5.5 Archaeological data analysis

### 5.5.1 Historical sites on the reserve with cultural and archaeological significance

#### 5.5.1.1 Stone Age

2 mill yrs ago - 1850 A.D.



*Illus. 370: Locations of Stone Age artefacts (Author, 2011)*

According to Hanisch (1956) men of the Old Stone Age used the hardest material they could find for making their implements such as the quartzites. Hanisch (1956) suggest that this area was an excellent location for settlement and hunting. The valley which was most probably densely wooded in Old Stone Age times which provide excellent shelter against the cold winter winds blowing from the Eastern Transvaal Highveld and from the Witwatersrand in the south. A fountain from which water could be obtained was within easy walking distance to the east of the site. (Hanisch, 1956)

One has a magnificent view over the plains on which northern suburbs of Pretoria now stands. A perennial stream crossed the plain, and must have attracted a lot of game. Huge migrations of game which early European travellers in southern Africa still witnessed, probably also took place 100,000 or 200,000 years ago when men of the Old Stone Age roamed the Transvaal. (ibid)

The Magaliesberg ridge must have acted as a barrier to these game migrations, and in the whole range there are only six gaps through which the antelopes could pass. One is at the near-by Wonderboom Poort. According to Hanisch (1956) thousands of antelopes probably left the sourveld of the Vaal River area at the beginning of winter to find better pastures and a less rigid climate in the Bushveld of the Central Transvaal. Life must have been easy for these ancient hunters and the ample meat supplies seem to have encouraged a measure of indolence, as is evidenced by the fact that many waste flakes on the site show signs of usage. Those Stone Age men did not always take the trouble of making well-shaped tools for cutting up their prey.

#### Site 1:

Refer to illus.370 . The site on the righthand side was a Middle Stone Age site against the southeastern slope of the mountain. According to van Vollenhoven (2008) it is possible that the stone tools may have been washed down from somewhere higher up the slope.

Location: GPS: 25°41'40"S  
28°11'52"E  
1304m

Cultural significance:

Medium cultural significance as it may only be loose stone tools. The importance thereof is that it indicates that Middle Stone Age people were present in this environment. (Van Vollenhoven, 2008)

Management guidelines from an archaeologist:

1. The position of the site should be taken note of, but no action is necessary.
2. Should any developments be planned here it should be re-evaluated.

**Site 2:**

According to Van Vollenhoven (2008) the well-known cave just above the waterfall against the western rock face of the mountain as well as at a secondary cave south of the main one, some Middle Stone Age tools were identified. Undecorated potsherds here indicate that the cave might also have been used during the Iron Age. Potshards are also found in abundance in the area around the cave, both above and down slope .

location:           GPS: 25°41'16"S  
                          28°11'23"E  
                          1012m

Cultural significance:

According to Van Vollenhoven (2008) the site is of a high cultural significance as it may contain many layers of cultural deposit below the top layer which mostly consist of soil mixed with rodent dung. These layers most probably are undisturbed and therefore may contain valuable information on past people.

Management guidelines from an archaeologist:

1. The fence should be replaced by a more suitable one. The position of the fence also should be moved a few metres further from the cave entrance as this will enhance the natural beauty of the area. It will also include and therefore protect cultural material contained just outside of the cave. The fence should have a gate giving access to visitors and researchers, but this should be kept under lock.
2. The recent material inside of the cave should be removed.
3. Archaeological excavation inside of the cave and just outside should be considered. Information obtained from this and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate. Information signs on site may be considered.
4. Visitors should be monitored. No visits inside the cave should be allowed without supervision of trained guides.



*Illus. 371: Middle Stone Age tools (Van Vollenhoven, 2008)*



*Illus. 372: The large cave (Van Vollenhoven, 2008)*



*Illus. 373: Middle Stone Age tools found at the cave (Van Vollenhoven, 2008)*



*Illus. 374: Decorated potsherds (Van Vollenhoven, 2008)*

### 5.5.1.2 Iron Age

250 A.D. - 1840 A.D..



*Illus. 375: Locations of Iron Age artefacts (Author, 2011)*

regarding the time Mzilikazi spent in the Wonderboom area. No archaeological proof for this has ever been presented. It is also possible that the site is linked to Musi or one of his sons and therefore it may present evidence regarding the possible existence of Tshwane, who has yet to be scientifically proven.

Management guidelines from an archaeologist:

1. The site should be documented by drawing a plan thereof. Clear the area of vegetation.
2. Archaeological excavation of the site should be considered in order to elucidate the questions posed above. The cleaning of the site will make it possible to get a clearer understanding of the site.
3. The site should be kept clean and included in the interpretation of the reserve.
4. Information obtained from the research and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate.
5. Visitors to the site should be monitored.
6. The pathways may continue through the site, but should research determine it to have a negative effect on the Iron Age site, it should be re-routed.

Site 3:

According to Van Vollenhoven (2008) this is a large Late Iron Age site consisting of various stone packed walls and other stone enclosures, such as circular enclosures which links to smaller circles (it might have been use as a gathering space 'Kgoro'), large circular enclosures under trees, terrace stone walls, Stone walling including different circular and semi-circular enclosures and scalloped walls.

The site almost stretched from east to west, almost across the entire crest of the mountain.

According to Van Vollenhoven (2008) the site is too overgrown to make any further interpretations. It does seem as if stones from these walls may have been used for later structures such as the pathways for visitors and some fortification walls. There even is a slight possibility that stones from this site may have been used in the building of the fort. The stone paved pathways for visitors leading up the mountain cut through the site.(Van Vollenhoven, 2008)

Cultural significance:

Van Vollenhoven (2008) states that this site is of a high cultural significance. Not only is it a substantial site, but it may contain information



*Illus. 376: Stone walls, part of the large enclosure and a circular stone enclosure at site 3 (Van Vollenhoven, 2008)*

#### Site 4:

Site 4 consists of possible low stone walling and undecorated potshards. The area clearly shows signs of having been disturbed. According to Van Vollenhoven (2008) it possibly dates to the Late Iron Age.

Location:       GPS: 25°41'45"S  
                      28°11'27"E  
                      1385m

#### Cultural significance:

According to Van Vollenhoven (2008) the site is of a medium cultural significance as it does not seem to be very large and does not seem to contain cultural deposit.

#### Management guidelines from an archaeologist:

1. As long as no development is planned here, the site should just be left as it is.
2. Should any developments be planned here, it should be re-evaluated.

#### Site 5:

The site is located in the resort area. It consists of different features related to the Late Iron Age. The information signs at the Wonderboom tree indicate that people may have lived around the tree and that they also may have buried some of their ancestors here. However, it is also indicated that this could not be proved yet. (Van Vollenhoven, 2008)

Due to the developments in the resort, this area has been disturbed extensively. In accordance the cultural features here are in a bad state and almost non-existent. According to Van Vollenhoven (2008) potshards are found almost anywhere within the resort area, but these may have washed down from up the mountain as potshards are also found on different spots against the northern slope of the mountain.

Location:

GPS: 25°41'11"S  
28°11'29"E  
1234m

This is an area with iron slag and potshards. Some stones within the grass may be the remains of walls, but this is very uncertain.

GPS: 25°41'17"S  
28°11'21"E  
1230m

At least three circular stone features are vaguely visible in this area. It may be the remains of Late Iron Age stone walling.

Cultural significance:

According to Van Vollenhoven (2008) the site is of a medium to high cultural significance. It may contain very important information regarding either Mzilikazi or Musi and his sons (including Tshwane). If this could be proven the site will increase in significance. However the state of preservation of the site is very poor and it is possible that not much remains thereof.

Management guidelines from an archaeologist:

1. Archaeological excavation by means of test trenches should be considered in order to elucidate the questions posed above.
2. From the research a re-evaluation of the site can be made.
3. Useful information obtained from the test excavations and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate. Information signs on site may be considered, but it is always difficult to maintain.
4. Should any new developments that may impact on the site be planned, the area should be carefully monitored for more signs of cultural material being unearthed. Should that be the case an archaeologist should immediately be contacted to investigate the find. As the site is in the developed part of the reserve it may indeed be impacted upon frequently and it should therefore be monitored constantly.

Site 6:

This is a Late Iron Age site and consists of a number of stone walled features. Firstly there is a circular stone wall of 0,40m high and 6m in diameter. It is placed on top of a rock outcrop at the mountain slope in the northeast of the reserve. Access to the site is very difficult because of a rock face above and below it. The stone wall is basically built on the edges of a small terrace between the rock faces. (Van Vollenhoven, 2008)

According to Van Vollenhoven (2008) such a feature found in isolation may indicate a place where someone stayed while in hiding (perhaps during the Difaquane) or where livestock (only goats would have been able to reach this location) may have been hidden. It also may indicate an outpost linked to the large site mentioned earlier (site 3).

Above this wall another oval shaped one is situated. It is 0,40m high and has a diameter of 4m. Access to this is also very difficult. Another two walls are found a few meters higher up against the rock face.

Location:	GPS: 25°41'22"S 28°11'48"E 1341m First circular wall	25°41'23"S 28°11'48"E 1344m Oval shaped wall
-----------	---	---

Cultural significance:

According to Van Vollenhoven (2008) the site is of a medium cultural significance on its own, but if it is contemporary with site no 3, it would be of high cultural significance. In such a case it could indeed contain valuable information that may shed light on lifestyle during times of turmoil.

Management guidelines from an archaeologist:

1. Test excavation of the features may indicate its link to site no 3 and should therefore be considered.
2. From the research a re-evaluation of the site can be made.
3. Useful information obtained from the test excavations and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate.

Site 7:

According to Van Vollenhoven (2008) this site probably dates to the Late Iron Age. It consists of two circular stone walls close together on a level area on the southern slope of the mountain. It could have been an outpost for livestock

Location:	GPS: 25°41'40"S 28°11'45"E 1337m
-----------	--

Cultural significance:

On its own the site is of a medium cultural significance, but if it is contemporary with other sites, it would be of a higher cultural significance.

Management guidelines:

1. see above mentioned guidelines.

Site 8:

This site consists of a large circular stone walled enclosure of more or less 30 m in diameter. It may have been used as a cattle enclosure according to Van Vollenhoven (2008)

Cultural significance:

Medium cultural significance, but if it is contemporary with other sites, it would be of a higher cultural significance.

### 5.5.1.3 Other cultural features

1827 - 1988



*Illus. 377: Locations of other cultural features (Author, 2011)*

Site 11:

This feature consists of a man-made hole in the ground. It is one of many similar holes found on the site as indicated in fig. 379. This particular one has a diameter of approximately 8m.

According to Van Vollenhoven (2008) it is impossible to determine what the purpose of the hole was and when it was dug. It may have been created by prospecting activities both during the Iron Age or the historical era, but it may also have been created when stones were cut to build the fort. Other possibilities are that it was dug to serve as water cistern or for the purpose of a toilet or refuse hole. The one farm boundary ends in this particular hole and it therefore is possible that the stones used for that purpose came from this hole.

Location: GPS: 25°41'35"S  
28°11'30"E  
1386m

Site 10:

Many different indications of the old farm and camp boundaries and fences were identified. Although these are not necessarily linked together, they are all numbered feature 10 and only indicate where such fences existed in the past.

Cultural significance:

The indications of old fences are of low cultural significance. However the indication of a boundary wall and piece of heavy machinery may increase the cultural significance if more could be learned about it.

Management guidelines:

1. As long as no development is planned here the features should just be left as it is.
2. The stone packed boundary should be preserved.
3. Should any developments be planned here it should be re-evaluated.



*Illus. 378: Large cement block with remains of an old farm boundary. (Author, 2011)*



*Illus. 379: One of four man-made holes in the ground close together. (Van Vollenhoven, 2008)*

#### Cultural significance:

The feature is of a low cultural significance as it has no contextual information. It also is not unique.

#### Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. Should any developments be planned here it should be re-evaluated.

#### Site 12:

According to Van Vollenhoven (2008) this site consists of the vague remains of a structure build from stone. It is associated with potsherds, pieces of glass, parts of a metal cooking pot (driepootpot) and other artifacts. Iron slag was also identified, but no clear indication of a smelting furnace could be identified. It may be a chance find. Middle Stone Age artifacts were also found here.

Location: GPS: 25°41'45"S  
28°11'29"E  
1267m

The site is on both sides of the gravel road at the foot of the mountain on its southern side.

#### Cultural significance:

The site is of a medium cultural significance as it most probably is associated with other features. Should remains of smelting furnaces be identified later the site which is unlikely it will change to a high cultural significance. (Van Vollenhoven, 2008)

#### Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. Archaeological research should be considered, but it should not be a priority at this stage.
3. Any developments here should rather not be on this specific spot.
4. The site should be re-evaluated if more information is gathered.

#### Site 13:

According to Van Vollenhoven (2008) this is a possible refuse midden and includes potsherds, porcelain, metal, concrete and glass pieces. A ceramic inkpot and ginger pot from the late 19th – early 20th century was also found here as well as the inside parts of an accordion. These artifacts are similar to what has been found at other sites dated to the Anglo Boer War. It seems as if the midden was covered with stones at some stage.

#### Cultural significance:

The site is of a high cultural significance as it most probably is associated with the fort. It may be the original refuse midden of the fort.



*Illus. 380: Artefacts found at site 12  
(Van Vollenhoven, 2008)*



*Illus. 381: Man-made waterfall.  
(Van Vollenhoven, 2008)*



*Illus. 382: Catchment of the waterfall.  
(Van Vollenhoven, 2008)*



*Illus. 383: Pillar to keep water pipe serving the waterfall in place.  
(Van Vollenhoven, 2008)*

#### Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. The site should be excavated to determine its age and the depth of the deposit.
3. No developments should be allowed here.
4. The site should be re-evaluated after research has been completed.

#### Site 14

This site includes the waterfall and the features associated with the waterfall.

The man-made waterfall is located on the western side of the mountain.

Location:           GPS: 25°41'23"S  
                              28°11'18"E  
                              1012m

#### Cultural significance:

The feature is of a high cultural significance as it was made as a monument to the 50 years celebrations of the Union of South Africa in 1960. Today it also is a well known feature in the city. (Van Vollenhoven, 2008)

#### Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. No developments should be allowed here except if it is done to enhance the waterfall and associated features.

The catchment dam of the waterfall is of medium cultural significance.

#### Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. Should developments be planned here the dam should not be demolished, but if it is replaced by another system serving the same purpose, it may be left to deteriorate naturally.

#### Site 15:

According to Van Vollenhoven (2008) this site consists of a U-shaped flowerbed and small pedestal as well as a stage, all made from stones and concrete with slate cladding. It is the old stage used for the Day of the Vow (Geloftedag) commemorations, nowadays called Day of Reconciliation.

Day of the Vow is the commemoration of the Battle of Blood River which took place on 16 December 1838 where the Voortrekkers

had a victory over the impi of Dingane in what is seen as the final battle to break the power of the Zulu king. Before the battle the Voortrekker made a vow to God that they would commemorate this day should they be successful in battle. (Van Vollenhoven, 2008)

Location:           GPS: 25°41'13"S  
                          28°11'30"E  
                          1249m

Cultural significance:

The site is of a high cultural significance as it is regarded a central focus point of the yearly commemorations on the 16th of December of an important chapter in the history of this country.

Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. No developments should be allowed here if it is harmful to the site. However it would be possible to incorporate it within a development plan.
3. The site should be re-evaluated should such developments be planned

Site 16:

This is a small cement dam and trough made as water drinking place for the wild animals on the reserve. It was found in the south-east of the property next to the gravel road.

Cultural significance:

This is of low cultural significance, because it is not very unique.



*Illus. 384: Day of the Vow podium, flower bed and stage. (Built Architects, 2006)*



*Illus. 385: Pedestal used as part of the Day of the Vow celebrations. (Van Vollenhoven, 2008)*



*Illus. 386: Drinking place for the animals (Author, 2011)*

### 5.5.1.4 Military features

1897 - 1902



- Sites indicated with the light grey arrows are other features such as furrows and stone cement structure and circular shaped walls.
- Sites indicated with the dark grey arrow are fortification walls
- Sites indicated with the white arrows are block houses
- Sites indicated with darkest grey arrows are man-made holes
- And lastly the red arrow indicates the Wonderboom fort

The circular packed stone structures are probably according to Van Vollenhoven (2008) the remains of the British block houses build during the Anglo-Boer War (1899-1902).

Location: GPS: 25°41'30"S  
28°11'45"E  
1415m

Cultural Significance:

As not many remains of blockhouses from the Anglo-Boer remains, the site is of a high cultural significance.

*Illus. 387: Locations of military features (Author, 2011)*

Management guidelines:

1. Test excavation of the site may be considered, but it would not be a priority.
2. From the research a re-evaluation of the site can be made.
3. Useful information obtained from the test excavations and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate.
4. If any developments are planned where the site is located, it should be re-evaluated within the context of such plans.

The man-made holes, refer to the explanation under heading 5.5.1.3, but these holes are close to the fort and it seems that it was filled up at some stage to contain its contents. Because it is associated with the fort, it becomes of high cultural significance.

The fortification walls according to Van Vollenhoven (2008) gave cover for one or two persons. Some fortification walls are very long to protect access to the fort via the valley. It is of high cultural significance, as it falls within the context of the fort.

Management guidelines for the fortification walls:

1. As long as no development is planned here the site should just be left as it is.
2. Should any developments be planned here it should be re-evaluated, but within the context of being part of the defence system around the fort, it should be left in situ and may be utilized as tourist destination.
3. Visitors to the site should be monitored.

The furrow at the back and northwest of the fort, it may have something to do with the draining of water away from the fort. It is of high cultural significance as it has an association with the fort.

The cement structure behind the fort near the furrow has remnants of large bolts, which may indicate that some kind of machine was fixed on this structure. It may have been a pump for water which was pumped from the Apies River to the fort. This is also of high cultural significance.

This is the remains of a corrugated iron blockhouses that was built by the British during the Anglo Boer War (1899-1902). It is situated to the west of the fort and to the north of the large radio tower on the mountain crest.

According to Van Vollenhoven (2008), what remains to be seen on site includes a circular wall made from medium to small sized stones. South and east of this other wall remains can be seen. Some corrugated iron is also left on the site. The blockhouse would have been placed inside of the mentioned stone walls.

Location:           GPS: 25°41'28"S  
                          28°11'36"E  
                          1412m

Cultural significance:

The feature is of a high cultural significance as it is connected with the fort and the Anglo Boer War.

Management guidelines:

1. As long as no development is planned here the site should just be left as it is.
2. No developments should be allowed here except if it is done to enhance the historical fort and associated features.
3. In the event of any such developments be planned here the feature should be re-evaluated and incorporated within such a development plan.
4. The feature should be interpreted within the context of the fort.
5. Archaeological excavation of the site may be considered, but should not be a priority. Information obtained from this and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate. Information signs on site may be considered, but it is always difficult to maintain.
6. Visitors to the site should be monitored. No visits to the fort and associated features should be allowed without supervision of trained guides.

The remains of two circular shaped stone walls of more or less 0,20m high is found near the fort. According to Van Vollenhoven (2008) it may have been used for a flag staff or to place a heliograph on during the Anglo Boer War (1899-1902). A heliograph is an instrument used to send signals via mirrors.

Location:           GPS: 25°41'31"S  
                          28°11'44"E  
                          1411m

The site is of high cultural significance as it is connected with the fort and Anglo Boer War. The guidelines is the same as above.



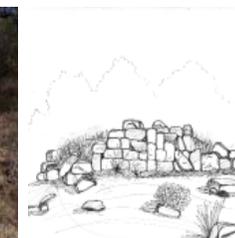
*Illus. 388: Remains of a blockhouse from the Anglo Boer War (Van Vollenhoven, 2008)*



*Illus. 389: Half moon shape fortification wall (Van Vollenhoven, 2008)*



*Illus. 390: Concrete construction behind the fort which was probably used to fixed large machinery on. (Van Vollenhoven, 2008)*



*Illus. 391-392: Fortification walls (Author, 2011)*

The last site under military features, the Wonderboom fort.



*Illus. 393: Entrance to fort wonderboompoort (Author, 2011)*



*Illus. 394: View of the fort from the top (Author, 2011)*



*Illus. 395: View from the side of the fort (Author, 2011)*



*Illus. 396: View from inside of the fort looking through all the openings (Author, 2011)*

The fort was built by the ZAR Government prior to the Anglo Boer War (1899-1902). The fort was completed in 1897 as part of the fortification plan for Pretoria. What remains to be seen on site is the walls and floors of the building. No roof, doors or windows are left inside, but the entrance doors are still in tact. The fort also includes smaller features contributing to the importance thereof. refer to heading 4.4 for more information regarding the fort. For more information with regards to the archaeological aspects of the fort refer to 'Van Vollenhoven, 1999, The military fortifications of Pretoria: a study in historical archaeology'.

Location:           GPS: 25°41'33"S  
                              28°11'39"E  
                              1422m

Cultural significance:

The feature is of a very high cultural significance as it is connected with the Anglo Boer War. It is one of only five built during this time and one of only three built by a German company. It is the only one that can still be studied in its original form. It therefore is of the utmost importance in studying this chapter in the history of South Africa. (Van Vollenhoven, 2008)

Management guidelines:

1. No developments should be allowed here except if it is done to enhance the historical fort and associated features.
2. In the event of any such developments be planned here, the site should be re-evaluated and incorporated within such a development plan.
3. The site should be interpreted within the context of all other fortifications and associated features.
4. The recent graffiti at the fort should be cleaned with a substance that will not damage the building.
5. Continuous research especially with regards to detail aspects should be supported. Information obtained from this and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate. Information signs on site may be considered, but it is always difficult to maintain.
6. The fort does not need to be restored. In fact it is the only one of the forts where the original fabric is in such a good condition and this is what improves the value of this fort.
7. Visitors to the site should be monitored. No visits to the fort and associated features should be allowed without supervision of trained guides.

### 5.5.1.5. Remains, icons not from a specific period in time

Site 22:

This is a cave below the waterfall and to the south thereof. It is much smaller than the other one mentioned previously. According to Van Vollenhoven (2008) no cultural remains could be identified, but it may be concealed under ground as Stone Age people would undoubtedly have utilized this cave. It also may have been used during later periods.

Location:       GPS: 25°41'24"S  
                      28°11'18"E  
                      1309m

Cultural significance:

According to Van Vollenhoven (2008) the site is of a medium cultural significance as it may contain many layers of cultural deposit below the top layer. Should this be determined the cultural significance will be increased to high. These layers most probably are undisturbed and therefore may contain valuable information on past people.



*Illus. 397: Locations of remains, icons not from a specific period in time (Author, 2011)*

Management guidelines:

1. The cave does not need to be fenced off as it holds no danger to people. However, once it has been established that it indeed holds valuable historical information, such an option may be considered.
2. Recent material inside of the cave should be removed.
3. Archaeological test excavation inside of the cave and just outside should be considered in order to determine whether there is a cultural deposit. After excavation the site should be re-evaluated. Possible information obtained from this and even a display of artifacts can be used in a visitor's centre to be placed close to the entrance gate. Information signs on site may be considered, but it is always difficult to maintain.
4. Visitors should be monitored.
5. An addition to this management plan can be done once a decision regarding the above mentioned has been taken.

Site 23:

This is the famous and well known Wonderboom tree (*Ficus salicifolia* vahl). Although it is a natural resource it had meaning for many people in the past and present and therefore also is considered a cultural resource. It was declared a national monument in 1980.

n.d



*Illus. 398: Small cave below the waterfall (Author, 2011)*



*Illus. 399: Large cave near the waterfall (Author, 2011)*



*Illus. 400: The Wonderboom tree (Author, 2011)*

Due to the uniqueness of the tree it even received its own scientific name, being *Ficus Pretoriae* as indicated on an old information board on the site. This name is not used much nowadays as the correct scientific name, indicated above, is rather used. The tree consists of a mother tree with daughters and even granddaughters.

The tree has been dated by C14 method and proved to be older than 1000 years. Unfortunately it has been damaged many times and has therefore lost some of its beauty and splendor (Wiese n.d. : 7-10).

It is said that ancestors of the Ndebele people are buried underneath the tree, although this could not be proved yet. Without any indication of grave dressings it would indeed be almost impossible to determine whether there is any truth in these allegations.

The tree also has been used by the white farmers and first inhabitants of the town for picnics and outings. It is still being used for the commemoration of the Day of the Vow (Geloftedag) each year on 16 December.

The tree and other aspects of the nature reserve are interpreted with information panels close to the tree. This is called the Wonderboom Interpretive Trail.

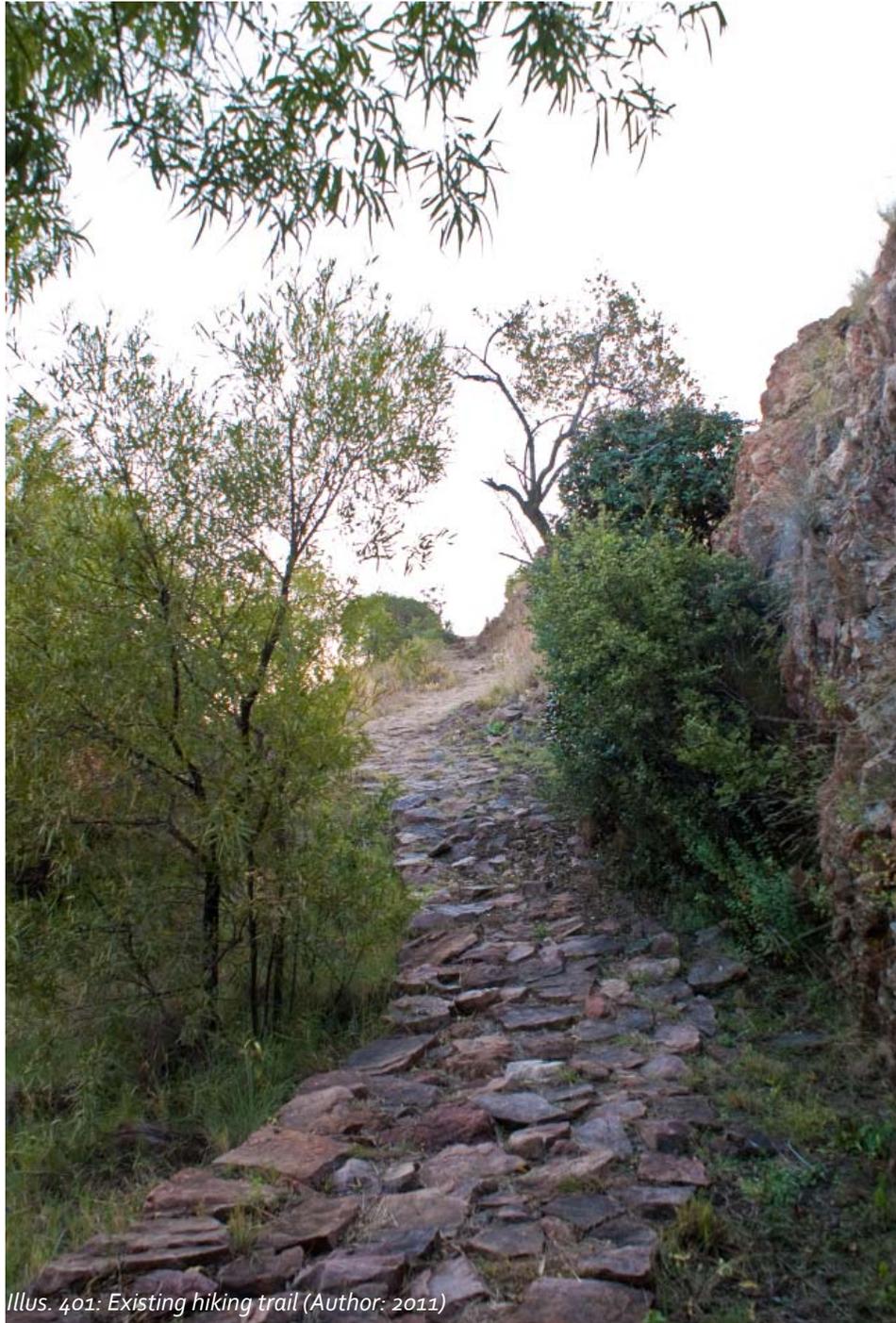
Location:           GPS: 25°41'14"S  
                              28°11'30"E  
                              1015m

Cultural significance:

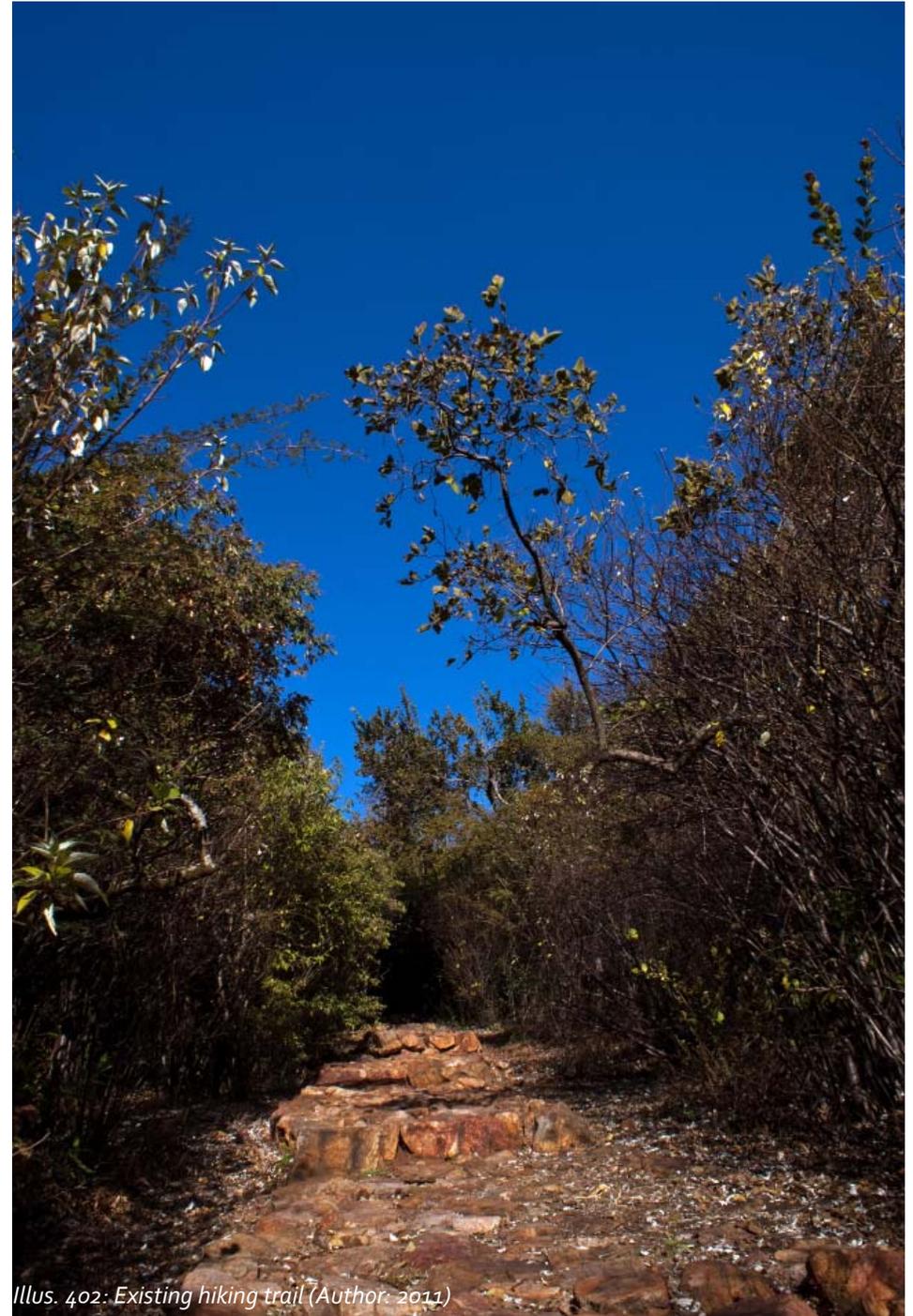
The feature is of a high cultural significance.

Management guidelines:

1. The tree should be fenced off as is currently the case in order to protect it.
2. The information panels should be maintained, but it should at least be replaced once every five years as it is not durable for a longer period. This would allow the opportunity to add and update information from recent research projects.
3. Archaeological test excavation may be considered in order to determine whether indeed graves can be found. However it should not be a priority and should not damage the tree as the tree on its own is important enough.
4. After excavation the site should be re-evaluated, but the tree will always remain of high cultural importance.
5. Visitors should be monitored.
6. An addition to this management plan can be done once a decision regarding the above mentioned has been taken.



*Illus. 401: Existing hiking trail (Author: 2011)*



*Illus. 402: Existing hiking trail (Author: 2011)*

## APPENDIX G: Charters, policies and acts summary

## Legislation, Acts and Charters influencing the design development of Wonderboom Nature Reserve

<b>Legislation/Act/ Charter:</b>	<b>1972, UNESCO Convention (World Heritage):</b> Convention concerning the protection of the World Cultural and Natural Heritage, adopted in Paris, 16 November 1972
<b>Influences on the studied area:</b>	Wonderboom Nature Reserve can be seen as cultural heritage according to this charter, because it contains monumental structures of archaeological nature and can bring value. The state must ensure that this heritage be protected, conserve and presented intellectually.
<b>Legislation/Act/ Charter:</b>	<b>1975, Council of Europe Charter (Architectural heritage):</b> European Charter of the Architectural Heritage, adopted by the Council of Europe in Amsterdam, 21-25 October 1975.
<b>Influences on the studied area:</b>	The surroundings of a monumental or heritage site is important, if not taken in consideration, the monuments or heritage sites can lose their character.
<b>Legislation/Act/ Charter:</b>	<b>1976 UNESCO Recommendation (historic Areas):</b> Recommendation concerning the safeguarding and contemporary role of historic areas, adopted by UNESCO in Nairobi, 26 November 1976
<b>Influences on the studied area:</b>	Views from and to monuments and historic areas should not be spoilt and historic areas should be integrated harmoniously into contemporary life.
<b>Legislation/Act/ Charter:</b>	<b>1990, ICOMOS Charter (Archaeology):</b> International Charter for Archaeological Heritage Management
<b>Influences on the studied area:</b>	Living traditions of indigenous peoples are part of the site - and for such sites and monuments the participation of local cultural groups is essential to their protection and preservation. Knowledge of the public about the archaeological heritage site is important for its protection. Heritage site or monument should remain in its original site. It is important to promote understanding of the public through presentation. Reconstruction should only be considered if really needed, and the old must be clearly distinguished from the new.
<b>Legislation/Act/ Charter:</b>	<b>1995, Council of Europe (Cultural landscapes):</b> Recommendation No. R (95)9 of the Committee of Ministers to Member States on the Integrated Conservation of Cultural Landscape Areas as Part of Landscape Policies
<b>Influences on the studied area:</b>	Conservation by application of appropriate legal, economic and operational measures to preserve specific assets from destruction or deterioration and to safeguard their future. Managing the cultural landscape's evolution and its enhancement, in accordance with the wishes of society as a whole. Prevent any visual pollution, such as the accumulation of installations or technical equipment (pylons, advertising boards, signs and other publicity material) or from the presence of inappropriate or badly sited tree planting, forestry or building projects.
<b>Legislation/Act/ Charter:</b>	<b>2001, UNESCO (Cultural diversity):</b> Universal Declaration on Cultural Diversity
<b>Influences on the studied area:</b>	It is very important to present and preserve culturally diversity remains, examples, because it is important for the common heritage of humanity and should be recognized and affirmed for the benefit of present and future generations.
<b>Legislation/Act/ Charter:</b>	<b>The National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)</b>
<b>Influences on the studied area:</b>	This Act is relevant because it provides for integrated and coordinated biodiversity planning and monitoring, the protection of threatened or protected species as well as the prevention, management and control of alien and invasive species.
<b>Legislation/Act/ Charter:</b>	<b>2003, UNESCO Convention (Intangible Cultural Heritage):</b> Convention for the Safeguarding of the Intangible Cultural Heritage
<b>Legislation/Act/ Charter:</b>	UNESCO convention concerning the protection of the World Cultural and natural Heritage (1972)
<b>Influences on the studied area:</b>	Places a duty on parties to ensure that the identification, protection, conservation, presentation and transmission to future generations of both cultural heritage and natural heritage.

<b>Legislation/Act/ Charter:</b>	<b>The National Environmental Management: Protected Areas Act (Act No. 57 of 2003)</b>
<b>Influences on the studied area:</b>	The protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes
<b>Legislation/Act/ Charter:</b>	<b>2003, UNESCO Convention (Intangible Cultural Heritage):</b> Convention for the Safeguarding of the Intangible Cultural Heritage
<b>Influences on the studied area:</b>	<p>The "intangible cultural heritage" means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible heritage transmitted from generation to generation, is constantly recreated by communities responding to their environment and history = identity and continuity - promoting respect for cultural diversity and human creativity.</p> <p>Intangible heritage can manifest in:</p> <ul style="list-style-type: none"> <li>(a) Oral traditions and expressions, including language as a vehicle of the intangible cultural heritage;</li> <li>(b) Performing arts;</li> <li>(c) Social practices, rituals and festive events;</li> <li>(d) Knowledge and practices concerning nature and the universe;</li> <li>(e) Traditional craftsmanship.</li> </ul> <p>Ensuring the viability of the intangible cultural heritage, including the identification, documentation, research, preservation, protection, promotion, enhancement, transmission, particularly through formal and non-formal education, as well as the revitalization of the various aspects of such heritage.</p>

<p><b>Legislation/Act/ Charter:</b></p>	<p><b>The National Heritage Resources Act, 1999 (Act No. 25 of 1999)</b></p>
<p><b>Influences on the studied area:</b></p>	<p>General principles:</p> <ul style="list-style-type: none"> <li>• Persons and communities involved in heritage resources management’s skills and capabilities must be developed</li> <li>• Laws, procedures and administrative practices must be clear and generally available to those affected thereby; in addition to serving as regulatory measures, also provide guidance and information to those affected thereby</li> <li>• Heritage resources contribute significantly to research, education and tourism and they must be developed and presented for these purposes in a way that ensures dignity and respect for cultural values</li> <li>• The identification, assessment and management of the heritage resources of South</li> <li>• Africa must— take account of all relevant cultural values and indigenous knowledge systems; take account of material or cultural heritage value and involve the least possible alteration or loss of it; promote the use and enjoyment of and access to heritage resources, in a way consistent with their cultural significance and conservation needs; contribute to social and economic development; safeguard the options of present and future generations</li> </ul> <p>Structures:</p> <p>Act 34: No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.</p> <p>Archaeology, palaeontology and meteorites:</p> <p>Act 35:</p> <ul style="list-style-type: none"> <li>• Protection of archaeological and paleontological sites and material is the responsibility of a provincial heritage resources authority</li> <li>• The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collection policy acceptable to the heritage resources authority and may in so doing establish such terms and conditions as it sees fit for the conservation of such objects.</li> <li>• No person may, without a permit issued by the responsible heritage resources</li> <li>• authority—destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site or any meteorite;</li> </ul> <p>Presentation of protected resources:</p> <p>Act 44:</p> <ul style="list-style-type: none"> <li>• Heritage resources authorities and local authorities must, wherever appropriate, co-ordinate and promote the presentation and use of places of cultural significance and heritage resources which form part of the national estate and for which they are responsible in terms of section 5 for public enjoyment, education, research and tourism, including—             <ul style="list-style-type: none"> <li>(a) The erection of explanatory plaques and interpretive facilities, including interpretive centres and visitor facilities;</li> <li>(b) The training and provision of guides;</li> <li>(c) The mounting of exhibitions;</li> <li>(d) The erection of memorials; and</li> <li>(e) Any other means necessary for the effective presentation of the national estate.</li> </ul> </li> <li>• A person may only erect a plaque or other permanent display or structure associated with such presentation in the vicinity of a place protected in terms of this Act in consultation with the heritage resources authority responsible for the protection of the place.</li> </ul>

<p><b>Legislation/Act/ Charter:</b></p>	<p><b>ICOMOS Ename Charter:</b> for the interpretation of cultural heritage sites (23 August 2004)</p>
<p><b>Influences on the studied area:</b></p>	<p>Just as the Venice Charter established the principle that the protection of the extant fabric of a cultural heritage site is essential to its conservation, it is now equally acknowledged that Interpretation of the meaning of sites is an integral part of the conservation process and fundamental to positive conservation outcomes.</p> <p>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 community development and intercultural and intergenerational dialogue.</p> <p><b>Principles:</b></p> <p><b>Principle 1: Access and understanding</b> - In regards with principle 1, the Wonderboom Nature Reserve is to communicate the values of the cultural heritage site(s), and conservation importance thereof. To enhance the visitor’s experience, increase public respect and understanding of the significance of the site(s). The Wonderboom Nature Reserve project aim to encourage the visitors to reflect on their own perceptions of the site and their relationship to it. An effective interpretation should establish emotional connection to the site and provide insights as well as facts, to stimulate further learning and interest. Interpretation of a cultural site is a dynamic, on-going activity, in which all multiple perspectives should be included. All associated communities and stakeholders should be included in the interpretation development process. Interpretation of the cultural site should insure that it meets the needs of the varied audiences and is accessible to a wide range of public.</p> <p><b>Principle 2: Information Sources</b> - The Interpretation of heritage sites must be based on evidence gathered through accepted scientific and scholarly methods as well as from living cultural traditions. Interpretation should show the range of oral and written information, material remains, traditions, and meanings attributed to a site. It should also clearly identify the sources of this information. Interpretation should be based on a multidisciplinary study of the site and its surroundings, and should indicate clearly and honestly where conjecture, hypothesis or philosophical reflection begin</p> <p><b>Principle 3: Context and setting</b> - The Interpretation of cultural heritage sites should relate to their wider social, cultural, historical, and natural contexts and settings.</p> <ul style="list-style-type: none"> <li>• Interpretation should explore the significance of a site in its multi-faceted historical, social, political, spiritual, and artistic contexts. It should consider all aspects of the site’s cultural and environmental significance.</li> <li>• The contributions of all periods to the significance of a site should be respected. Although particular eras and themes may be highlighted, all periods of the site’s history as well as its contemporary context and significance should be considered in the interpretation process.</li> <li>• Interpretation should also take into account the cultural contributions of all communities associated with the site, including minority groups.</li> <li>• 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 in its interpretation.</li> <li>• Intangible elements of a site’s heritage such as cultural and spiritual traditions, stories, music, dance, theatre, literature, visual arts, personal customs and cuisine should be noted and included in its interpretation.</li> </ul>

- The cross-cultural significance of heritage sites, as well as co-existing or contested viewpoints, should become part of the interpretation, providing 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).

- Authenticity is a concern relevant to human communities as well as material remains. The design of a heritage interpretation programme should respect and safeguard the traditional social functions of the site and the cultural practices and dignity of local residents and associated communities.
- Interpretation should contribute to the conservation of the authenticity of a cultural heritage site by communicating its significance without adversely impacting its cultural values or having recourse to irreversible alteration of its fabric or the installation of irreversible interpretive infrastructure. Physical reconstruction that permanently changes the character of the site should not be undertaken for the purpose of interpretation alone.
- The public interpretation of a cultural heritage site should always clearly distinguish and date the successive phases and influences in its evolution, and clearly identify additional interpretive interventions.
- At cultural heritage sites where traditional storytelling or memories of historical participants provide an important source of information about the significance of the site, interpretive programmes should incorporate these oral testimonies—either indirectly, through the facilities of the interpretive infrastructure, or directly, through the active participation of members of the associated communities as on-site interpreters.

**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 development and implementation of interpretive programmes must be an integral part of the overall management and planning process for a cultural heritage site. The potential effect of interpretive infrastructure and visitor numbers on the cultural value, physical characteristics, integrity, and natural environment of the site must be fully considered in heritage impact assessment studies.
- A wide range of interpretive strategies should be discussed early in the site planning process, to assess their cultural appropriateness as well as their economic and technical feasibility. 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. The light and sound from concerts, dramatic performances, screens and speakers must be restricted to their immediate area, so as not to affect adversely the surroundings or disturb nearby residents.

	<p><b>Principle 6: Inclusiveness</b> - The Interpretation of cultural heritage sites must actively involve the participation of associated communities and other stakeholders.</p> <ul style="list-style-type: none"> <li>• The efforts and interests of associated communities, property owners, governmental authorities, site managers, scholars, tourism operators, private investors, employees, and volunteers should be integrated into the development of interpretive programmes.</li> <li>• 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.</li> <li>• The traditional rights, responsibilities, and interests of the host community, property owners, and associated communities should be respected. These groups should be consulted and have a major role in the planning process of the interpretive programme and in its subsequent development.</li> <li>• Interpretation activities and subsequent plans for expansion or revision of the interpretive programme should be open for public comment and involvement. It is the right and responsibility of all to make their opinions and perspectives known.</li> <li>• 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. To that end, the training and employment of site interpreters from the host community should be encouraged.</li> <li>• Every interpretation programme should be seen as an educational resource and its design should take into account its possible use in school curricula, communications media including the internet, special activities, events, and seasonal volunteer involvement.</li> <li>• Because the question of intellectual property and traditional cultural rights is especially relevant to the interpretation process and its expression in various communication media (such as onsite multimedia presentations, digital media, and printed materials), legal ownership and right to use images, texts, and other interpretive materials should be taken into account in the planning process.</li> </ul> <p><b>Principle 7: Research, Evaluation and Training</b> - The Interpretation of a cultural heritage site is an on-going, evolving process of explanation and understanding that includes continuing research, training, and evaluation.</p>
<b>Legislation/Act/ Charter:</b>	<b>ICOMOS. International cultural tourism charter</b> - managing tourism at places of heritage significance (1999)
<b>Influences on the studied area:</b>	<p><b>Principles of the cultural tourism charter:</b></p> <p><b>Principle 1:</b> Encourage Public Awareness of Heritage - Since domestic and international tourism is among the foremost vehicles for cultural exchange, conservation should provide responsible and well managed opportunities for members of the host community and visitors to experience and understand that community's heritage and culture at first hand.</p> <p><b>Principle 2:</b> Manage the Dynamic Relationship - The relationship between Heritage Places and Tourism is dynamic and may involve conflicting values. It should be managed in a sustainable way for present and future generations.</p> <p><b>Principle 3:</b> Ensure a Worthwhile Visitor Experience - Conservation and Tourism Planning for Heritage Places should ensure that the Visitor Experience will be worthwhile, satisfying and enjoyable.</p> <p><b>Principle 4:</b> Involve Host and Indigenous Communities - Host communities and indigenous peoples should be involved in planning for conservation and tourism.</p> <p><b>Principle 5:</b> Provide Benefit for the Local community - Tourism and conservation activities should benefit the host community.</p> <p><b>Principle 6:</b> Responsible Promotion Programmes - Tourism promotion programmes should protect and enhance Natural and Cultural Heritage characteristics.</p>

<b>Legislation/Act/ Charter:</b>	<b>The Venice charter (1964)</b> - International charter for the conservation and restoration of monuments sites, ICOMOS
<b>Influences on the studied area:</b>	<p>Conservation: Article 4. It is essential to the conservation of monuments that they be maintained on a permanent basis.</p> <p>Article 5. The conservation of monuments is always facilitated by making use of them for some socially useful purpose. Such use is therefore desirable but it must not change the lay-out or decoration of the building. It is within these limits only that modifications demanded by a change of function should be envisaged and may be permitted.</p> <p>Restoration: Article 9. The process of restoration is a highly specialized operation. Its aim is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents. It must stop at the point where conjecture begins, and in this case moreover any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp. The restoration in any case must be preceded and followed by an archaeological and historical study of the monument.</p> <p>Article 12. Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence.</p> <p>Article 13. Additions cannot be allowed except in so far as they do not detract from the interesting parts of the building, its traditional setting, the balance of its composition and its relation with its surroundings.</p>

<p><b>Legislation/Act/ Charter:</b></p>	<p>ICOMOS. Principles for the conservation of heritage sites in China</p>
<p><b>Influences on the studied area:</b></p>	<p>Public education should be enhanced to ensure the general public's support and participation in the protection of heritage sites.</p> <p><b>Conservation Principles:</b></p> <p>Article 19 Intervention should be minimal. Apart from routine maintenance, there should be no intervention on parts of a building or site that are not at imminent risk of serious damage. Intervention should only be undertaken when absolutely necessary and then should be kept to a minimum. The main goals of conservation and management measures are to preserve the site's existing condition and to slow deterioration.</p> <p>Article 23 Appropriate aesthetic criteria should be observed. The aesthetic value of a site derives from its historic authenticity. Alterations to the historic condition may not be made for enhancing purposes or to attain completeness.</p> <p>Article 24 The setting of a heritage site must be conserved. Natural and cultural landscapes that form part of a site's setting contribute to its significance and should be integrated with its conservation. Elements in the setting that are potentially hazardous or that may adversely affect the landscape must be addressed. Oversight and management of the setting should be improved and appropriate conservation and management measures proposed when needs are identified.</p> <p><b>On Retaining the Historic Condition of Heritage Sites</b> - It is a legal requirement in the conservation of heritage sites that the historic condition must not be changed. The principle of retaining historic condition involves either preserving existing condition or reinstating historic condition.</p> <p><b>The existing condition of the following must be preserved.</b></p> <ul style="list-style-type: none"> <li>i Archaeological sites and ruins, particularly those with aboveground remnants.</li> <li>ii The overall design and layout of architectural ensembles within a site.</li> <li>iii Individual components of significance from different periods within architectural ensembles.</li> <li>iv Components and artisan techniques from different periods that have significance for a site.</li> <li>v Works of art, either independent or associated with a building.</li> <li>vi Damaged remnants of a site resulting from natural disasters, that retain research value.</li> <li>vii Damaged remnants resulting from important historical events, that have acquired commemorative significance.</li> <li>viii Historic settings that have not undergone major change.</li> </ul> <p><b>On the Social and Economic Benefits of Heritage Sites</b> - An important part of heritage conservation is the proper protection and display of the values of a site through rational use.</p> <p>4.2 The social benefits of heritage sites are maximized through the following uses:</p> <p>4.2.1 Scientific research function.</p> <p>4.2.2 Social function. Sites may also become</p> <ul style="list-style-type: none"> <li>i Places for the commemoration of significant events or important historic figures.</li> <li>ii Foci of education by providing knowledge of history, the arts, and the sciences.</li> </ul>

	<p>iii Tourist venues where history and culture are the main themes. iv Recreational places that provide healthy activities for the mind and body. v Places of traditional custom and continuing religious practice.</p> <p>4.2.3 The aesthetic function of heritage sites includes: i Fostering love for and interest in higher cultural and aesthetic values among the public through the influence of the site’s artistic values. ii Enhancing the public’s artistic appreciation through enjoyment and study of the site. iii Enhancing artistic creativity and techniques by providing arenas in which the public may learn through direct experience of the art and in which it may gain greater understanding of the past.</p> <p>In order to open heritage sites to the public and use them appropriately, additions or alterations for the purpose of providing necessary facilities should be restricted and conform to the following principles.</p> <p>4.4.1 Changes may only be made to buildings or parts of buildings that are not of major significance. In cases in which it is necessary to build facilities at a site that does not have aboveground remains, the archaeological resource should be protected and the setting should not be adversely affected. 4.4.2 Harm to the original structure or artistic components of a site is not permitted. 4.4.3 Physical interventions should not result in permanent structures and should be reversible, allowing a site to be restored to its historic condition when necessary.</p>
<p><b>Legislation/Act/ Charter:</b></p>	<p><b>The Burra Charter (1999)</b> - The Australia ICOMOS charter for the conservation of places of cultural significance</p>
<p><b>Influences on the studied area:</b></p>	<p><b>Conservation principles:</b></p> <p><b>Article 2:</b> Conservation and management of cultural significant places <b>Article 3:</b> Cautious approach - Conservation is based on a respect for the existing fabric, use, associations and meanings. It requires a cautious approach of changing as much as necessary but as little as possible. Changes to a place should not distort the physical or other evidence it provides, nor be based on conjecture. <b>Article 4: Knowledge, skills and techniques-</b> 4.1 Conservation should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the place. 4.2 Traditional techniques and materials are preferred for the conservation of significant fabric. In some circumstances modern techniques and materials which offer substantial conservation benefits may be appropriate. <b>Article 7: use</b> 7.1 Where the use of a place is of cultural significance it should be retained. 7.2 A place should have a compatible use. (The policy should identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. New use of a place should involve minimal change, to significant fabric and use; should respect associations and meanings; and where appropriate should provide for continuation of practices which contribute to the cultural significance of the place. ) <b>Article 8: Setting</b> Conservation requires the retention of an appropriate visual setting and other relationships that contribute to the cultural significance of the place.</p>

New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate. (Aspects of the visual setting may include use, siting, bulk, form, scale, character, colour, texture and materials. Other relationships, such as historical connections, may contribute to interpretation, appreciation, enjoyment or experience of the place. )

**Article 9: Location**

The physical location of a place is part of its cultural significance. A building, work or other component of a place should remain in its historical location. Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival. Some buildings, works or other components of places were designed to be readily removable or already have a history of relocation. Provided such buildings, works or other components do not have significant links with their present location, removal may be appropriate. If any building, work or other component is moved, it should be moved to an appropriate location and given an appropriate use. Such action should not be to the detriment of any place of cultural significance.

**Article 12: Participation**

Conservation, interpretation and management of a place should provide for the participation of people for whom the place has special associations and meanings, or who have social, spiritual or other cultural responsibilities for the place.

**Conservation Processes:**

**Article 14: Conservation processes**

Conservation may, according to circumstance, include the processes of: retention or reintroduction of a use; retention of associations and meanings; maintenance, preservation, restoration, reconstruction, adaptation and interpretation; and will commonly include a combination of more than one of these. (There may be circumstances where no action is required to achieve conservation.)

**Article 15: Change**

15.1 Change may be necessary to retain cultural significance, but is undesirable where it reduces cultural significance. The amount of change to a place should be guided by the cultural significance of the place and its appropriate interpretation.

15.2 Changes which reduce cultural significance should be reversible, and be reversed when circumstances permit.

15.3 Demolition of significant fabric of a place is generally not acceptable. However, in some cases minor demolition may be appropriate as part of conservation. Removed significant fabric should be reinstated when circumstances permit.

15.4 The contributions of all aspects of cultural significance of a place should be respected. If a place includes fabric, uses, associations or meanings of different periods, or different aspects of cultural significance, emphasising or interpreting one period or aspect at the expense of another can only be justified when what is left out, removed or diminished is of slight cultural significance and that which is emphasised or interpreted is of much greater cultural significance.

**Article 17: Preservation**

Preservation is appropriate where the existing fabric or its condition constitutes evidence of cultural significance, or where insufficient evidence is available to allow other conservation processes to be carried out. (Preservation protects fabric without obscuring the evidence of its construction and use. The process should always be applied:

- where the evidence of the fabric is of such significance that it should not be altered;
- where insufficient investigation has been carried out to permit policy decisions to be taken in accord with Articles 26 to 28.

New work (e.g. stabilisation) may be carried out in association with preservation when its purpose is the physical protection of the fabric and when it is consistent with Article 22. )

**Article 21: Adaptation**

Adaptation must be limited to that which is essential to a use for the place determined in accordance with Articles 6 and 7.

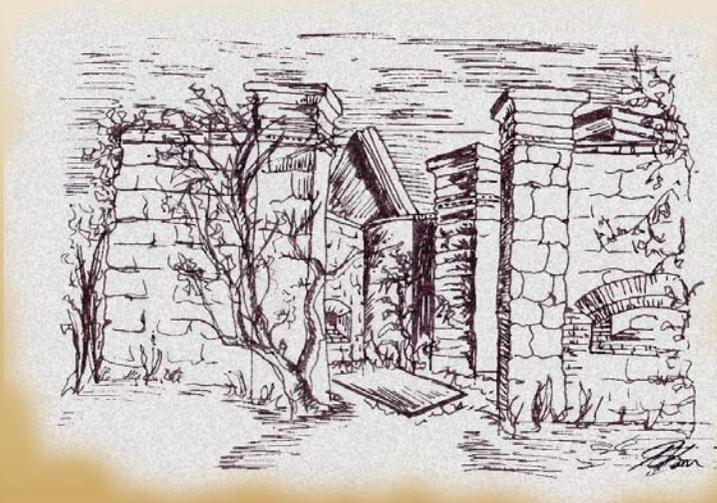
	<p>Adaptation is acceptable only where the adaptation has minimal impact on the cultural significance of the place. Adaptation should involve minimal change to significant fabric, achieved only after considering alternatives.</p> <p><b>Article 22: New work</b></p> <p>22.1 New work such as additions to the place may be acceptable where it does not distort or obscure the cultural significance of the place, or detract from its interpretation and appreciation.</p> <p>22.2 New work should be readily identifiable as such. (New work may be sympathetic if its siting, bulk, form, scale, character, colour, texture and material are similar to the existing fabric, but imitation should be avoided.)</p> <p><b>Article 23: Conserving use</b></p> <p>Continuing, modifying or reinstating a significant use may be appropriate and preferred forms of conservation. (These may require changes to significant fabric but they should be minimised. In some cases, continuing a significant use or practice may involve substantial new work. )</p> <p><b>Article 24: Retaining associations and meanings</b></p> <p>24.1 Significant associations between people and a place should be respected, retained and not obscured. Opportunities for the interpretation, commemoration and celebration of these associations should be investigated and implemented.</p> <p>24.2 Significant meanings, including spiritual values, of a place should be respected. Opportunities for the continuation or revival of these meanings should be investigated and implemented. (For many places associations will be linked to use.)</p> <p><b>Article 25: Interpretation</b></p> <p>The cultural significance of many places is not readily apparent, and should be explained by interpretation. Interpretation should enhance understanding and enjoyment, and be culturally appropriate.</p>
<b>Policy</b>	<b>Gauteng Ridge Policy:</b> (Department of agriculture, conservation, environment and landaffairs. Directorate of nature conservation - Development guidelines for ridges. Compiled by Michele PFAB scientific services. 19 April 2001)
<b>Influences on the studied area:</b>	<p>The Magaliesberg ridge are classified as class 2 (5-35% transformed), this means that:</p> <p>No further subdivisions will be allowed and consolidation of subdivisions will be encouraged. No-go development policy; low impact (e.g. tourism developments) will be considered requiring full EIA (including public participation exercise) with full set of specialist reports including.</p> <p>All specialist studies to examine cumulative impacts. Ecological footprint<sup>2</sup> of low impact developments to cover no more than 5% of a property. All impacts for these developments must be sufficiently mitigated. A management plan to maintain the ecological integrity of remaining property is required and implementation is the responsibility of the developer.</p> <p>A 200m buffer zone of low impact development is required around class 2 ridges.</p> <p>Development proposals within the buffer zone should proceed at least to the mini EIA stage. DACEL undertakes to conduct Strategic Environmental Assessments for these ridge systems</p>

Table 15: Summary of all the heritage charters, acts and legislation the author has researched to formulate the heritage principles used in the design (Author: 2011)



# ADDENDUMS 12

1. ADDENDUM A: PRESENTATION PHOTO'S
2. ADDENDUM B: MODEL
3. ADDENDUM C: MOVIE DVD



## Addendum A: Presentation photo's





Addendum B: Model (images and photo's)



