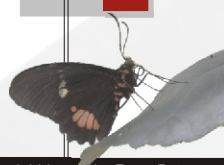


Hartbeespoortdam Butterfly Conservancy

PART 3

Context Study





NORTH WEST PROVINCE

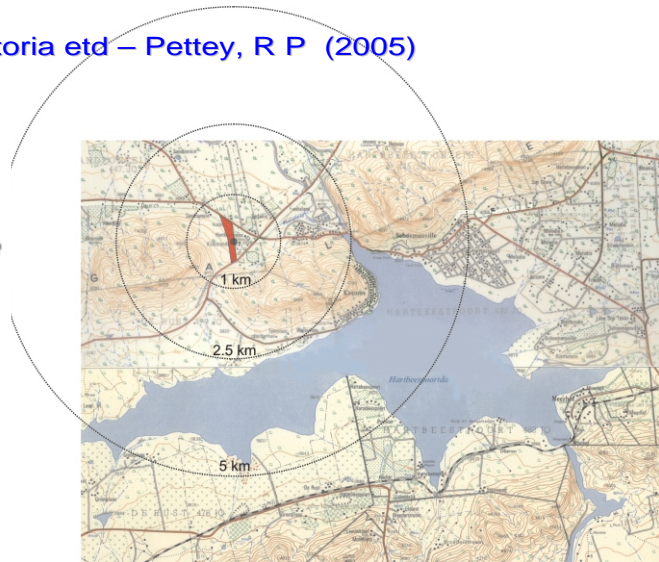
MADIBENG MUNICIPAL DISTRICT

HARTBEESPOORT DAM

3.01: PHYSICAL POSITION

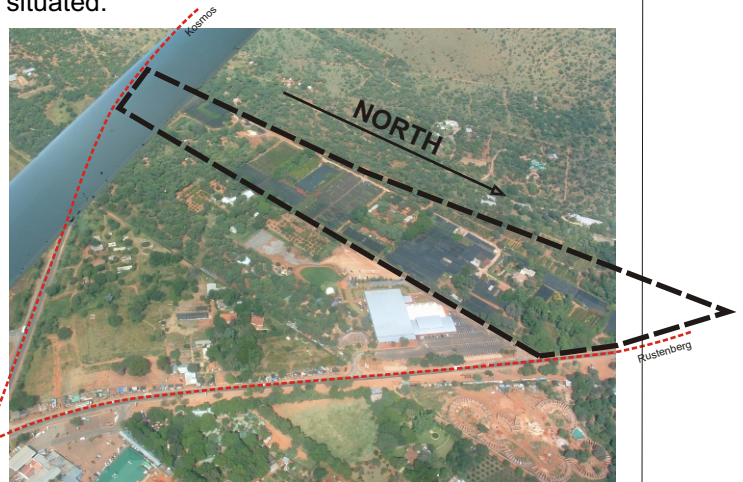
LOCATION

The site lies on the northern slopes of the Magaliesberg Mountain Range, in the South African province, North West. The North West province consists of 25 municipal districts of which the Madibeng Municipality forms the focus area. Hartbeespoort Dam falls within the Madibeng Municipal district, although prior to 2000 Hartbeespoort had its own Municipality (Hartbeespoort Local Municipality).



3.02: HARTBEESPOORT DAM

The Hartbeespoort Dam area is one of the fastest growing areas in the country, which attracts economic growth. Refer to Appendix C. Tourism is very important, not only to the area but South Africa as a whole. Tourist nodes have recently started to emerge throughout the Hartbeespoort area which attract people from all over the world. One such node is at Damdoryn, the area where the site is situated.



3.03: THE SITE AT THE DAMDORYN NODE

HISTORICAL OVERVIEW OF THE MAGALIESBERG AREA

“Until the last century, herds of game, extraordinary both in their numbers and variety, inhabited these mountains. It was they, more than anything else, which attracted the first Europeans to the area.

Traders, explorers, travellers, scientists, missionaries and hunters all found their rewards here and their journals and paintings are now the gems of the Africana”.¹

The Magaliesberg, known then (until about 1840) as the Cashan Mountains, were named after chief Kgwashwane of the Kwena Mmatau group who inhabited the southern and western slopes. During this time wars spread throughout the mountains range which included the South African war of 1899 to 1902. Two main battles occurred just east of the proposed butterfly conservancy at a mountain pass called Silkaatsnek.²

Twenty-one years later, an event started to unfold which was to become the greatest generative force behind the development of the Magaliesberg/Hartbeespoortdam area. “Investigations into the possibility of damming the Crocodile River at Hartbeespoort began before the outbreak of the First World War. Geological tests were carried out in 1913 and the following year an engineer’s report was submitted to Parliament. The Hartbeespoort Irrigation Scheme (Crocodile River) Act, No.32 of 1914, was passed but building was delayed by the rebellion and work only began in 1916. Two years later progress was again hampered when floods swept through the construction site, destroying much of the work that had been done. It was only in September 1923 that the dam was finally opened. In 1928 the last of the network of irrigation canals (544km long system of canals)³ was completed, bringing water to large areas of farmland around Brits. The dam was not only of direct benefit to agriculture but its construction had also provided work for a number of otherwise unemployed people during the post-war depression. Semi-literate ‘poor whites’ were taken on as labourers and were the principal beneficiaries of the scheme”.⁴

Andries Pretorius, a well-known Voortrekker leader, acquired the farm ‘Grootplaas’, now called ‘De Rust’ which was partly flooded by the Hartbeespoort Dam. The original farm house was also flooded by the rising water levels, although the house was gutted and moved to higher land before the waters engulfed it.

As the effect of the dam as a catalytic centre was realised, so too was the need to conserve the surrounding area. “Mountaineers and campers began visiting the Magaliesberg during the 1920’s

and for 30 or 40 years their impact on the environment was negligible. Many of those early visitors were members of the Mountain Club of South Africa. From the outset they adopted a strong conservation stance. However, by 1960 the number of day visitors had increased considerably and not all of them shared the responsible attitudes of the mountaineers. Litter accumulated at beauty spots and fires and erosion menaced the mountainside.”⁵

In 1975 legislation was past which was to have a profound effect on the future of the Magaliesberg. The physical Planning Act of 1975 provided for the concept of a ‘nature area’ wherein land was to remain in private hands but changes in land use was prohibited except with the permission of the Department of Planning and the Environment. In effect, townships, holiday resorts and other forms of development on what was originally farmland was restricted. At this stage the Magaliesberg was not proclaimed a ‘nature area’ but was cited in Parliament as the type of area for which the nature area status was intended. Later that year the Council for the Habitat organised a public meeting in Rustenburg at which landowners, environmentalists and other interested parties were united in their support for the conservation of the range. Together they founded the Magaliesberg Protection Association to arrest the environmental damage which was being done and put into practice the principles of the new Physical Planning Act.

Another 18 months went by while officials drew up boundaries and wrestled with the interpretation of the new law. On 12 August 1977 the Magaliesberg was formally proclaimed the first ‘nature area’ in South Africa. However, troubled waters lay ahead. Farmers objected to the proposed boundaries of the nature area which embraced valuable farm land at the foot of the mountain. Then the Transvaal Division of Nature Conservation, under whom the administration of the future nature area was to fall, suggested that the management of the area would be more effective under their direct control. They obtained authority from the central government to expropriate farms when funds became available and to incorporate such farms into a public nature reserve.”⁶

Discussions continued between landowners and provincial conservationists for three years, after which it was agreed not to expropriate the



Figure 001: Parides iphidamas by Ryan Pettey

farms but rather reduce the size of the nature area. In 1981 an interim board was elected who were to manage and enforce the guidelines that were agreed upon. Although many land use and unsightly projects were rejected, people continued to ignore the requirements for the new developments.

“In the meantime negotiations continued on the question of the final boundaries of the nature area. Gradually the confidence of farmers was regained by repeated assurances that expropriation was no longer intended. The range was divided into a series of wards, and every landowner was invited to see, debate and approve of the boundaries at special ward meetings. The process was a slow one, but by 1989-twelve years after the proclamation of the nature area-the much reduced boundaries were finally concluded.”⁷
Had the boundaries remained where they originally were, the site on which the butterfly conservancy is to be built, would more than likely have been part of the original, larger nature area.

“The greater part of this century has been a time of economic growth in the Magaliesberg. Irrigation schemes, technology and a burgeoning market have increased agricultural output, mining has brought widespread prosperity and tourism has flourished as a result of urbanisation nearby. With development has come the expansion of towns, roads, and communication links. So too, however, has come enormous pressure on the natural environment on which so much of the progress depends.”⁸

THE MACRO SITE

The site, presently known as Heuer’s Wholesale nursery, encompasses 152160 m² of prime property. It was first surveyed in 1964 at which time only agriculture and mining were prominent. Forty years later things have changed quite considerably. A look at the Municipalities’ vision for the area sums up what is expected as today’s development objectives.

“The area presently represents a fairly diverse character in respect of current land-uses. A significant trend towards tourist related activities

can be identified, although agricultural and low-density living is also present. It is therefore considered appropriate to firstly accommodate the present agricultural and country living uses but secondly to promote the evolving tourist industry associated with the Damdoryn node. The promotion of tourist activities capitalizing on local expenditure is viewed important for capacity building and economic empowerment, especially as these activities represent to some extent an informal economic sector. As is well known this informal economic sector encapsulate a significant portion of the lower income communities or community members unable to secure formal employment.

The contribution of such informal tourist related activities towards socio-economic development is thus recognized and should be encouraged. This should be done by utilizing low vehicular speeds at the Damdoryn intersection to encourage motorists to break their journeys providing opportunities conducive to local expenditure. Although it is not practical to discourage tourist activities along the length of Road K18 inside this area, increased vehicular speeds further away from the Damdoryn intersection decreases the probability for trip-breaking opportunities. Tourist related activities should therefore be focused around the Damdoryn node where such activities can capitalize firstly on the cumulative proximity of similar uses and secondly on the high profitability of trip breaking by motorists.

Light industry activities presently encountered in this area should be discouraged as it is seen as detrimental to the character of the area as popular tourist destination or stopover.”⁹
This is the Madibeng municipality's vision and proposal for the area. Mr Jeff de Klerk from the town planning division at the Madibeng municipality informed me that proposals for the area should fit within this vision.

According to the deeds of transfer - number 16279 of 1965, portion 173 of the farm Zandfontein No.447 the property is zoned for residential and agricultural purposes. The process of rezoning is

Context Study

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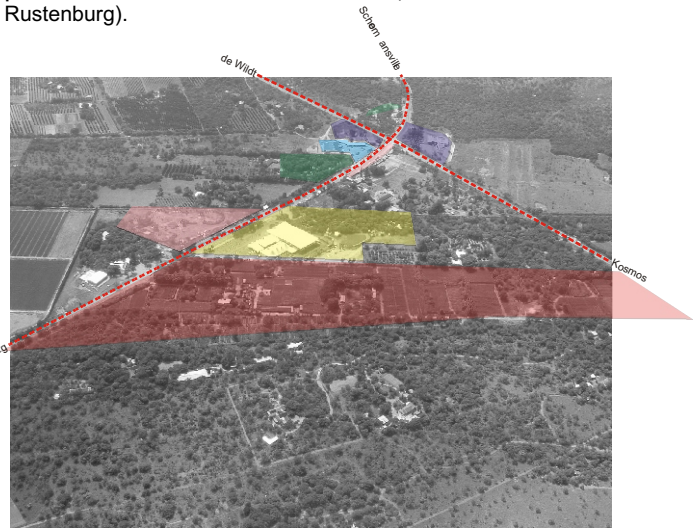


3.04 - 3.10:

subject to scrutiny by the Madibeng municipality. If the re-zoning application is successful the property would be zoned for use as a business no.2. This allows for the use of the property for shops, offices, for professional services, educational facilities, entertainment, etc.

The structuring of the regulations for specific individual sites are very vague as the area falls within the peri-urban planning scheme. There are a few general guidelines as to site boundaries, area ratios, heights of structures etc. The generator for these regulations is a site development proposal, which must accompany all re-zoning applications. The proposal is reviewed with respect to current conditions and if approved becomes integrated with the new title deeds for the re-zoned property. If approved the building lines, spatial structure and area ratios are based on the SDP.

Village, which is supposedly for the hawkers who at present line the sides of the R27 (Schoemansville to Rustenburg).



- THE SITE
- CHAMELEON VILLAGE
- COUNTRY MARKETS
- QUICK SPAR
- ENGEN GARAGES
- FUTURE MADIBENG HAWKERS MARKET

MUNICIPAL GUIDELINES				
Usage Zone	Coverage	F.A.R	Height	Building lines
Business No.2	60%	1.0	Not Restricted. The norm in the area is two stories.	The present title deeds refer to a 94.46 metre building line from the centre line of any public road and 5 metres from any other boundary.

3.11

The municipality also has guidelines as to minimum parking requirements for different use zones.

MINIMUM PARKING REQUIREMENTS	
Use Zone	Minimum Parking
Shops	6 parking spaces per 100m ² of shop floor area
Offices	4 parking spaces per 100m ² of office floor area
Restaurant	10 parking spaces per 100m ² of floor area
Place of Amusement	1 parking spaces per 4 seats
Commercial	2 parking spaces per 100m ² of floor area

3.12

The site is already part of a greater built context. One of the newest attractions being chameleon village, which opened for business at the beginning of 2004. The Madibeng municipality has also just broken ground - to the north of Chameleon Village - for the erection of a Hawkers Facility and Cultural

3.14: REGIONAL SITE AND SUPPORTING FUNCTIONS

CLIMATE

The region falls within the Highveld climatic zone. Winter and summer requirements differ considerably. In winter livable spaces need to be compact, well-insulated and promote solar gain. Openings for solar gain should be orientated towards the winter sun but need to be screened in summer to prevent over heating. (Solar control devices need to have a low thermal mass). Thermal mass in the way of mass flooring and walls need to be integrated into the design to help reduce daily temperature fluctuations. The design should incorporate exterior areas which are covered during summer to provide shade.¹⁰

Temperature

The ideal temperature to provide for human comfort is 21°C. With the use of the above systems temperatures within this range are attainable.

Context Study



3.13



Figure 001: Parides iphidamas by Ryan Pettey

TEMPERATURE		
Average daily temperature Hartbeespoort *	Maximum	Minimum
January	29,2°C	17,1°C
April	25,3°C	11,3°C
July	19,5°C	2,1°C
October	28,4°C	14°C

3.15

Precipitation

Hartbeespoort	681mm	100%
Average seasonal distribution of rain		
January - march	300mm	44%
April - June	75mm	11%
July - September	34mm	5%
October -December	272mm	40%
Average number of rainy days per annum	80	
Average number of thunderstorms per annum	75	

3.16

Wind

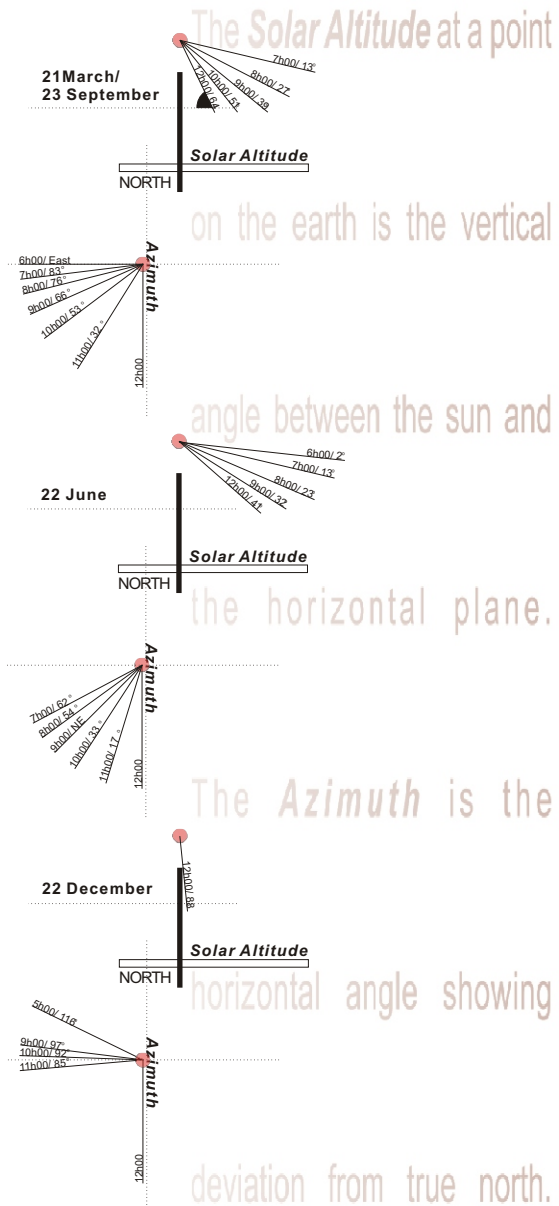
Wind in and around the site is not a factor that will affect the design considerably. The area experiences the strongest wind during August but even then only 3% of all wind measured in the area is stronger than 10km/h The local wind direction will be considered with regard to the enhancement of cross ventilation.

WIND VELOCITIES				
Average percentage probability of wind of varying velocities	less than 1km/h	0-5 km/h	5-10 km/h	more than 10 km/h
Pretoria	45%	37%	15%	3%
PREVAILING WIND DIRECTIONS				
	Morning		Afternoon	
Winter	SE to NW		NW	
Summer	E to NE		N to NE	

3.17

SUN ANGLES

The site is orientated in a north, south direction thus maximum use of solar radiation is possible. A set of three solar charts for the latitude 26° south have been compiled. The Solar Altitude and Azimuth are graphically represented which will allow quick calculation of roof overhangs and window positioning.



3.25

Context Study

018



3.18 - 3.24

THE MICRO SITE



3.26

NORTH

The presence of any man-made structure in an ecosystem creates conflicts with the ecosystem. Its presence may increase soil erosion, alter the runoff of rainwater, modify the speed and direction of air flow and change the way in which the sun's heat is absorbed and reflected. Not all human actions have destructive consequences on an ecosystem, nevertheless, the built environment does have an effect over a specific segment of space and time. By its physical presence, no matter how well designed, will intrude upon, displace spatially, and alter the ecology of the ecosystem on which it is located.

Ecological architecture is a designed system that seeks to minimize and at the same time be responsive to the negative impacts that it has on the earth's ecosystems and resources. Therefore, the framework for design is one that structures its interactions with the earth's ecosystems and resources in such a way that we can identify those that are undesirable and need to be minimized or altered through design synthesis.



3.34

NATURAL ENVIRONMENT

Natural areas were identified that still retained the original indigenous vegetative diversity that is integral to the area. These site characteristics must be retained wherever possible; thus areas that are identified as having a high conservation potential must be incorporated into the design and must be rehabilitated and managed throughout the life of the development.



3.35

MAN MADE ENVIRONMENT

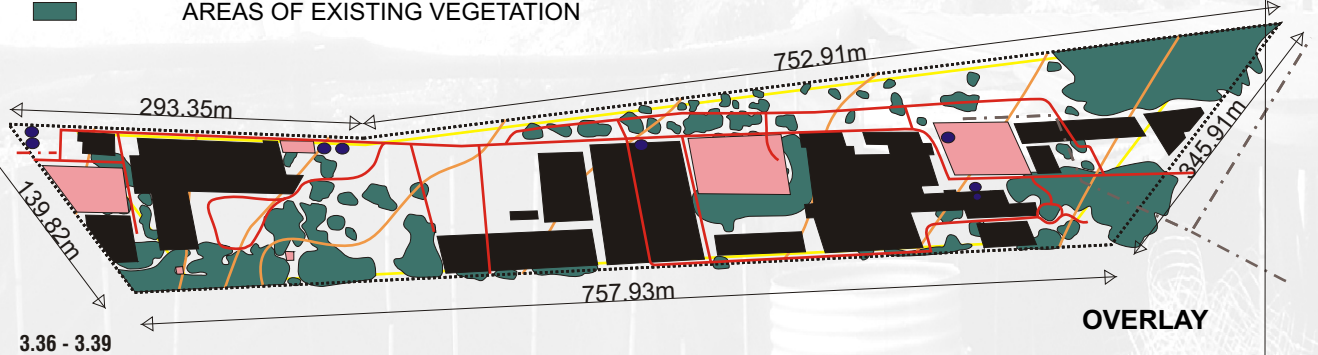
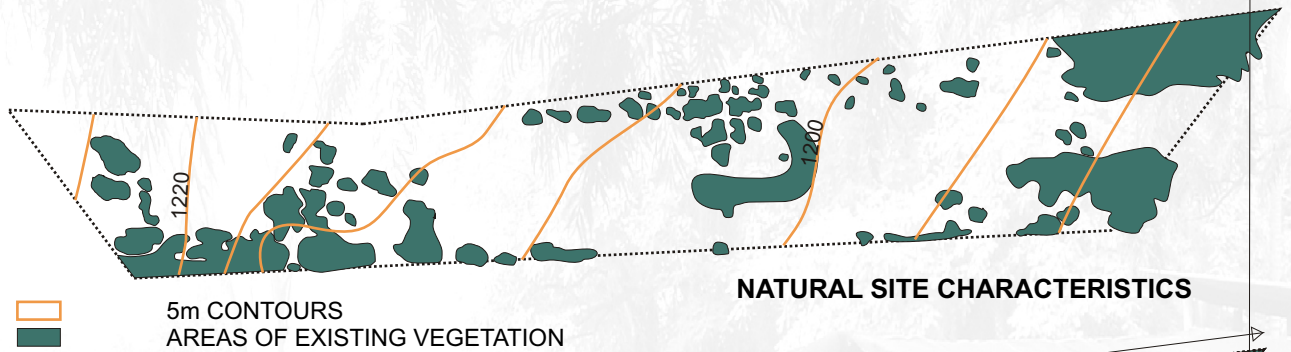
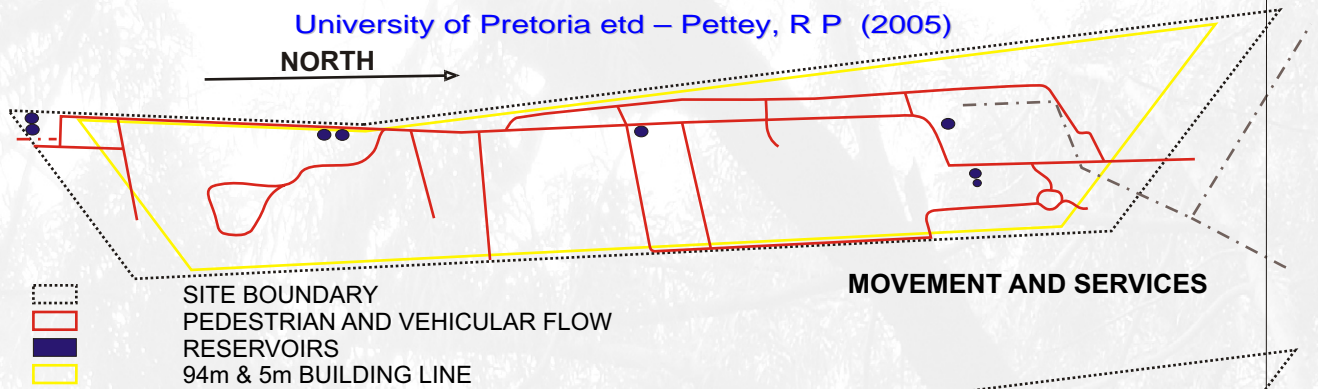
Areas which have been altered since the nurseries inception in 1963 were identified as brown fields and will become the core developmental area for the design project. These areas presently form the central operational components to the nursery and include the hot house, shadenet structures, the staff facilities and main house.

The nursery has a geometric layout that complements the shadenet structures. This geometric pattern has also shaped the movement and flow of people and functions on the site.



3.27 - 3.33

NORTH



Context Study

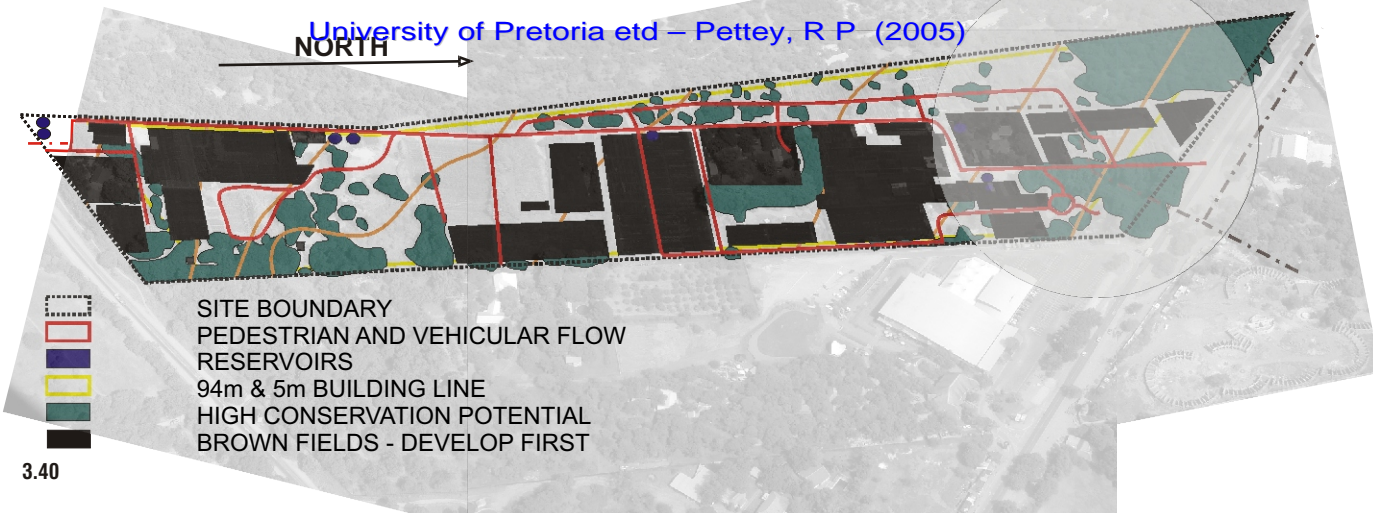
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Available water on the site is pumped from six boreholes and stored in concrete reservoirs which are located throughout the site. No municipal services are available on site apart from the power which is supplied through the national grid.

TOPOGRAPHY

The site is situated on a north facing slope, which at its highest point is about 42m higher than its lowest point. The slope is at a constant gradient.

NORTH



3.40

VIEWS

As previously stated the area is in its juvenile state with very little existing infrastructure but with rapid growth of new infrastructures. To the west of the site there are only farms and farm houses which I envisage will remain due to the close proximity of the Magaliesberg Nature Area. To the east, is Chameleon Village and many more smaller tourist developments. South and north of the site is still largely undeveloped.



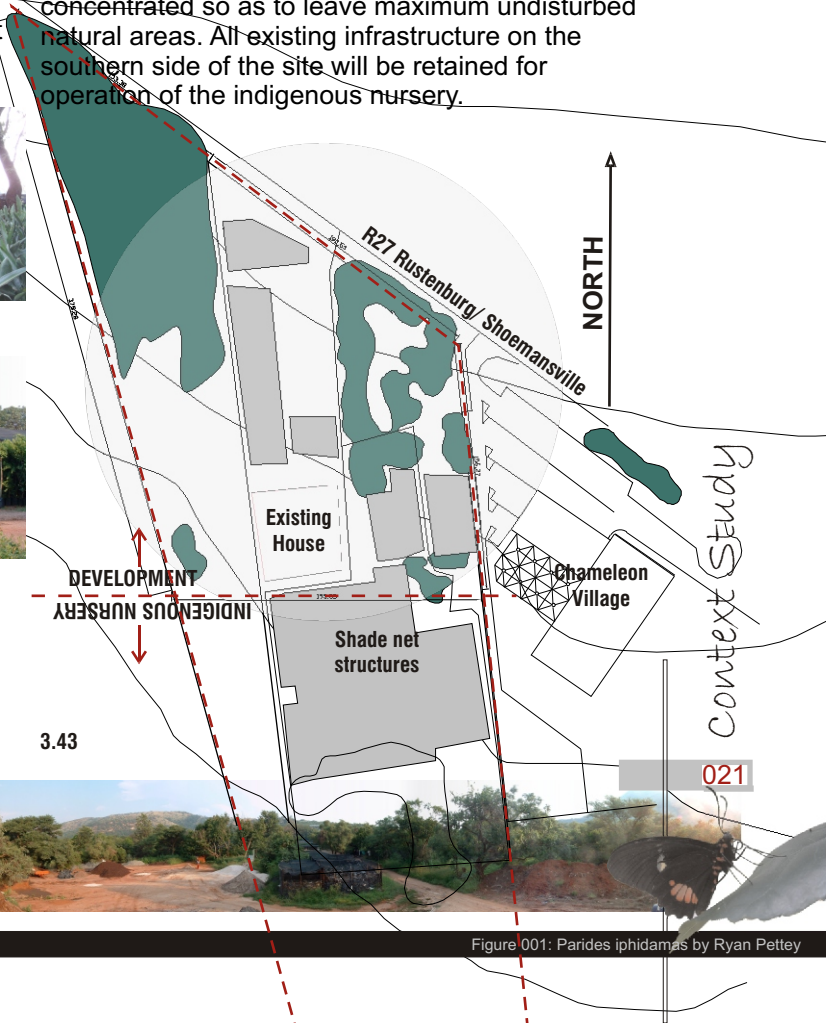
3.41: Chameleon Village from site



3.42: Chameleon Village from site

FOCAL SITE

The site design philosophy for the development is to focus design efforts on the most disturbed areas of the property; ie. the area where the existing house is situated as well as the front portion of property. The design footprint will also be concentrated so as to leave maximum undisturbed natural areas. All existing infrastructure on the southern side of the site will be retained for operation of the indigenous nursery.



3.43



3.44