



Chapter 1

1.1 Background

2008 is the University of Pretoria's centenary year. In celebrating this event, master students had to choose a campus of the University of Pretoria for their thesis study area. The location, history and size of Groenkloof campus made it a good choice for a landscape intervention project.

Landscape Architecture brings together multiple disciplines and it was the dynamics of this field that made it become an absolute passion. Like the French landscape architect Bernard Lassus (1998) something other than the plain schemes we hurry through and past is sought after, a layered landscape in which imagination, heritage and experience are brought into play.

1.2 Problem setting

WHAT

L.C de Villiers is the official sports-grounds of the University of Pretoria and hosts the High Performance Centre (HPC). This world class sports clinic was designed as a rugby training facility, but is currently used as a training and accommodation centre catering for various sport codes. The HPC has enjoyed great success; to such an extent that the facility is overcrowded and expansion plans are in the pipeline.

WHY

A twin HPC facility is planned on the Groenkloof campus. This campus has developed sportsfields, existing infrastructure, ample space for development, cultural significance and forms part of the southern gateway of Pretoria.

HOW

This study investigates how a HPC integrates with Groenkloof campus. Furthermore, stormwater management will be investigated. Lastly a material selection referenced from relevant history will be put together for detail design.

1.3 Sub-problems

Sub - problem 1:

How does a HPC integrate with a campus facility?

Sub - problem 2:

How can stormwater management be applied to enhance HPC activities and maintain the scheme?

Sub - problem 3:

Can history/memory of a place be restored through structures and material choice?

1.4 Hypothesis

The hypothesis is made that Groenkloof campus would be better utilized when a HPC is introduced.

It is hypothesized that stormwater can be used in recreation and to maintain and satisfy the proposed scheme.

It is hypothesized that a material selection inspired by relevant history could commemorate cultural significance.

1.5 Research methodology

The grounded research method will be used to determine the opportunities and constraints of Groenkloof campus.

Groenkloof campus will be analysed as follows (Figure 4):

Contextual analysis will identify the land use and river systems around Groenkloof campus.

The **history** of Groenkloof campus and surrounding area will be documented.

The local investigation will be an analysis of the Groenkloof campus site.

Existing facilities, hydrology, circulation, vegetation, geo-technical, heritage, slope, visual impact and interviews will be used to better understand the site.

The **“genius loci”** of Groenkloof campus will be described.

Legal analysis will indicate some limitations regarding the site and proposal.

The National Water Act and National Environmental Management Act will be studied to identify relevant legal implications regarding the proposed design.

The Landscape Development Program of the site will be based on the outcomes of the analysis.

1.6 Delimitations

-For the purpose of this study the confines of the study area will be; Unisa to the north, George Storrar Drive to the south and west and Leyds Street to the east.

-The quality of the water in the stormwater management plan will not be addressed.

-All stormwater calculations are basic and should be confirmed by hydrological engineers.

1.7 Assumptions

It is assumed that:

1. The development plan for the University of Pretoria proposed by Holm Jordaan is accepted as the preferred policy.

2. The HPC on L.C de Villiers is overcrowded and a twin facility will be developed on Groenkloof campus.

3. No access roads will be allowed along George Storrar Drive due to the speed of vehicles on that road.

4. The compaction of the fill in the landfilled cavities is not optimal for building construction.

5. The buried landfill has not polluted the groundwater or leached into the drainage system that leads to the Apies River.

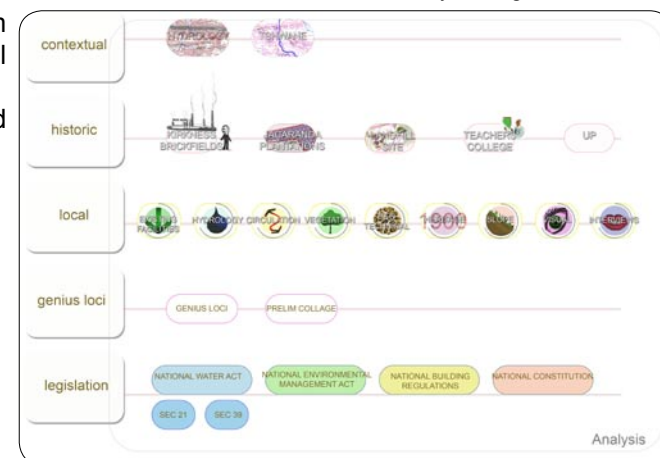
6. The volume of stormwater run-off could increase when the Tshwane ridge policy is implemented to rehabilitate the Klapperkop Hill from plantations to grasslands.

7. Permission has been granted to reroute stormwater from the existing channel onto the campus.

8. After the installation of the new water pipe system along George Storrar Road environmental rehabilitation will take place and the stormwater run-off will contain less silt.

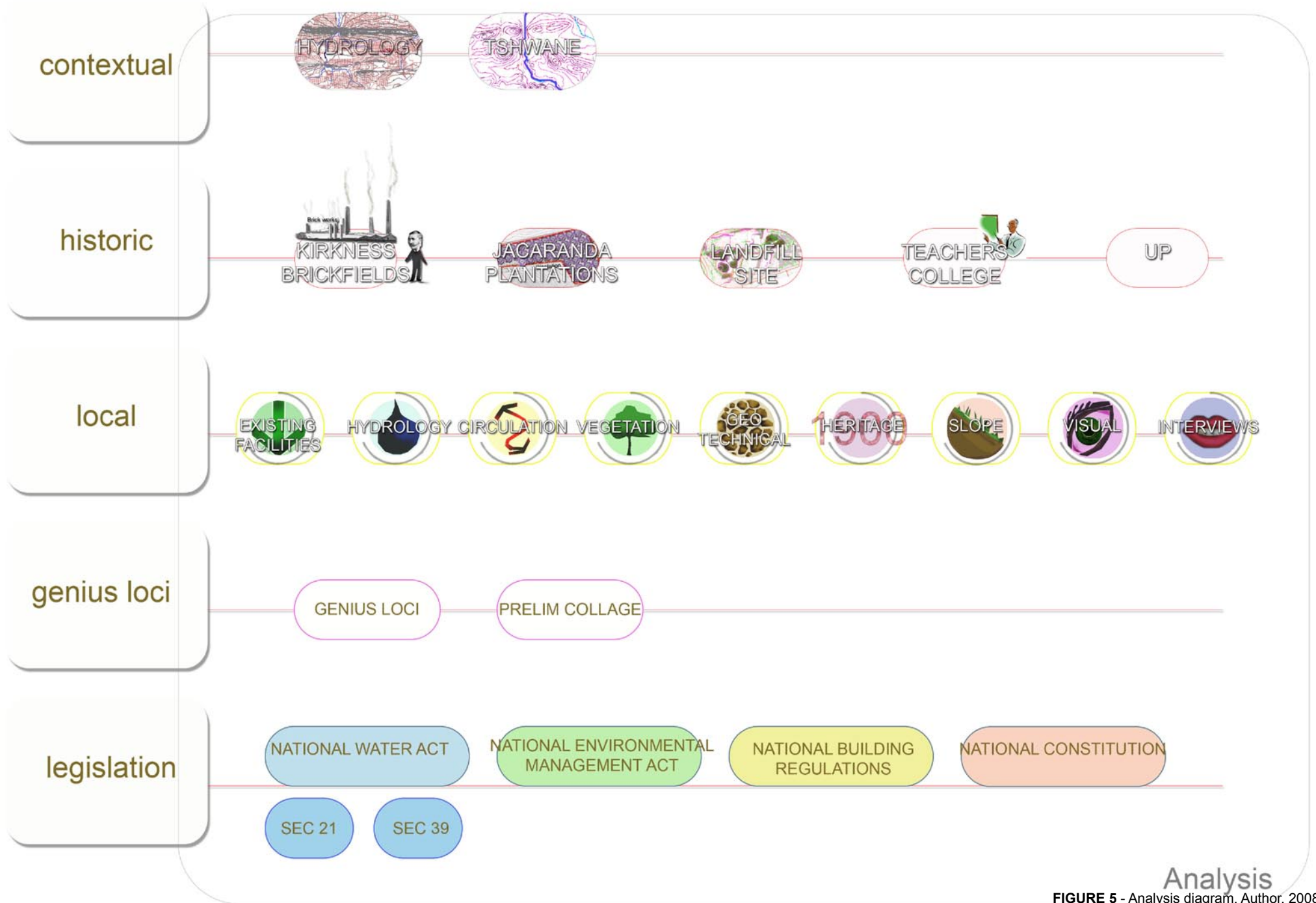
9. All studies and applications needed for the proposed development will be done and approved.

FIGURE 4 - Analysis diagram, Author, 2008





Chapter 2



Analysis
FIGURE 5 - Analysis diagram, Author, 2008

2 CONTEXT STUDY

2.1 Analysis

2.1.1 Contextual

Background

The Apies River was named after the many vervet monkeys that inhabited the white stinkwood (*Celtis africana*) forest along its banks. Chief Mzilikaze (a Nguni chief that lived in the area in the 1800's) called the river *Zubuhlungu* ("that which hurts"), referring to the sharp stones found at the two springs that in part feed the river. Sothos call this river Tshwane, after a historical chief. Tshwane is currently used as the name for the metropolitan area which includes Pretoria (Van der Waal & Associates, 1999).

Urban context

Pretoria is situated between ridges and valleys with three main catchments, namely the Apies River, Moreletta Spruit and the Pienaars River. The Apies River catchment area with its main tributaries from the west is the largest. The Apies River draws together many natural and urban elements of importance on metropolitan scale. Major natural elements of importance along its way include the following: Fountains Valley (Groenkloof campus), Bon Accord Dam, three ridges that are crossed, namely Time Ball Hill at Unisa, the Witwater Mountain range at Daspoort and the Magalies Mountain Range at Wonderboom airport.

Urban nodes and original farm portions in Groenkloof linked to the Apies River are: Unisa, *Groenkloof 358-JR* (*Groenkloof campus*), Berea Park and Muckleneuk to name a few.

In the Apies River Urban Design Framework (1998), 14 precincts were identified by evaluating the character of the river. The first two precincts (Precinct A: Fountains Valley, Precinct B: Unisa Poort) fall in the Groenkloof study area and further enhance the importance of Groenkloof campus (Figure 12).

River water

The two springs at Fountains Valley are the sources of the Apies River. Other streams and tributaries into the Apies River include:

- Eufees Spruit (Precinct A: Fountains Valley),
- Bergklapper Loop (Precinct B: Unisa Poort),**
- Kerameikos Loop (Precinct B: Unisa Poort),** (both these tributaries are located in the Groenkloof study area)
- Timeball Creek (Precinct C: Berea),
- Walker Spruit (Precinct H: Daspoort),
- Steenoven Spruit (Precinct G: Marabastad),
- Skinner Spruit (Precinct H: Daspoort),
- Modder Spruit (Precinct J: Mountain View)
- De Moot Spruit (Precinct K: Wonderboompoort), and
- Wonderboom Spruit (Precinct M: Onderstepoort).

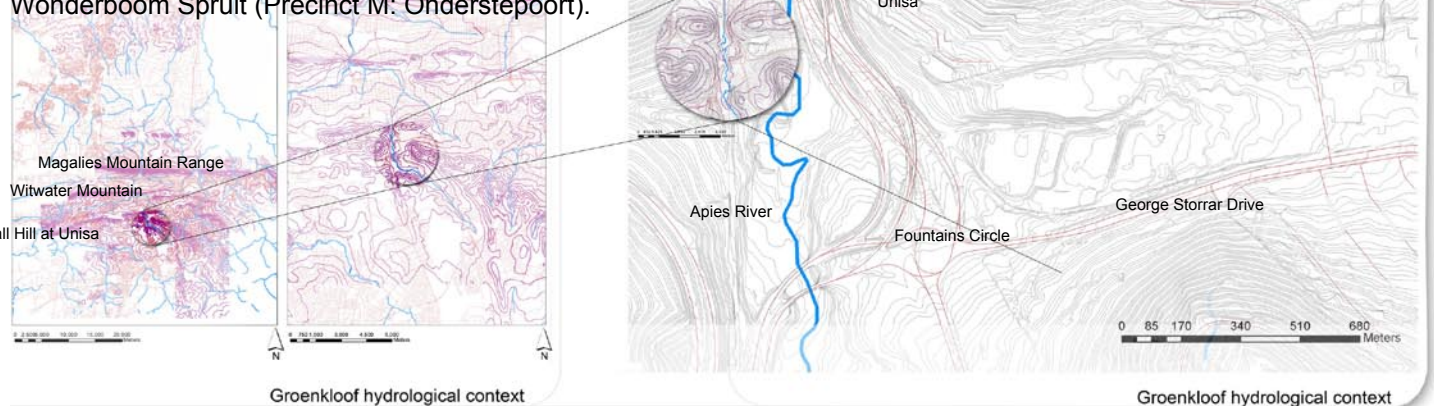


FIGURE 7 - Hydrological diagrams, University of Pretoria Geography Department, assembled by Author, 2008

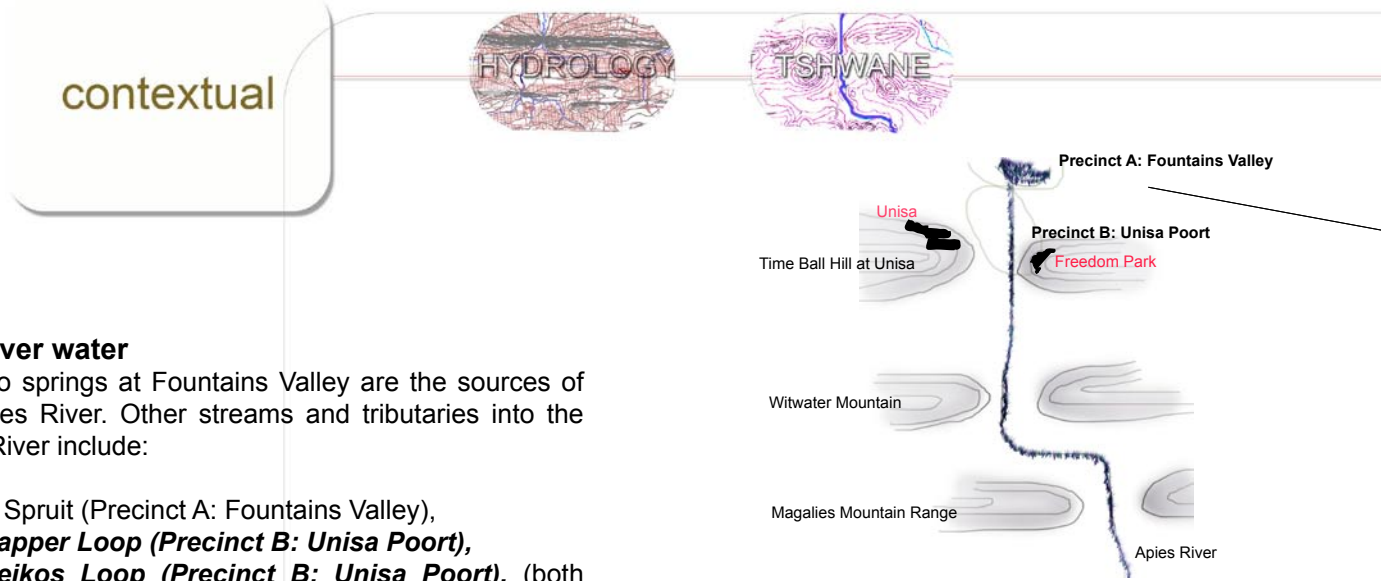


FIGURE 12 - Precincts of the Apies River, Pretoria City Council and the Action Apies River Working Committee, 1999, reworked by author, 2008

FIGURE 6 - Contextual diagram, Author, 2008

Precincts A & B

Precinct A: Fountains Valley (Figure 12)

Precinct B: Unisa Poort (Figure 12)

City context

-Site Location

The site is located in the south-westerly portion of Pretoria. This is a dynamic cultural and ecological precinct with monuments and nature reserves (Figure 11). In Figure 11 Groenkloof campus is rendered yellow and the location of the mayor monuments (Unisa, Klapperkop, Voortrekker Monument, and Freedom Park) are clearly indicated.

As shown in Figure 9, the R21 highway borders Groenkloof campus towards the west. George Storrar Drive forms the southern boundary, Leyds Street the eastern boundary and Unisa acts as the boundary towards the north. The Apies River is situated towards the west of the site (Figure 7), and Fountains Circle towards the south-west. Figure 10 shows the land use of Groenkloof campus and surrounding area.

FIGURE 8 - Apies River relative to site, University of Pretoria Geography department, assembled by Author, 2008

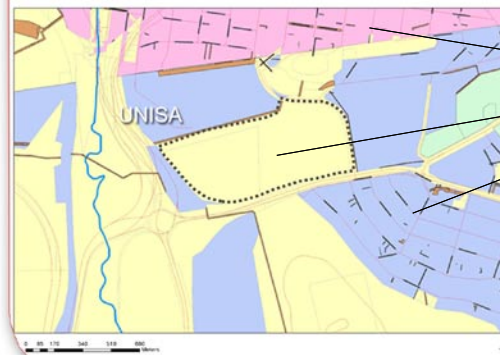


FIGURE 9 - Roads relative to site, University of Pretoria Geography Department, assembled by Author, 2008

FIGURE 10 - Land use, University of Pretoria Geography Department, assembled by Author, 2008

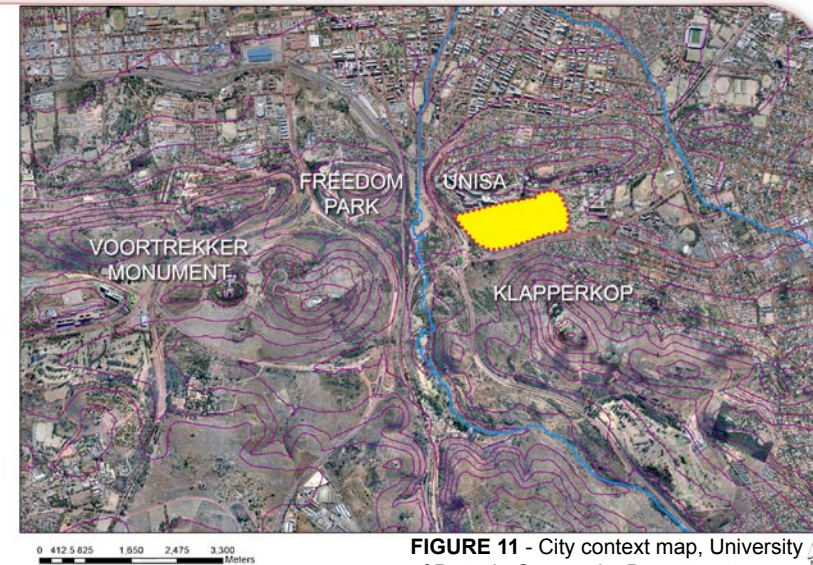


FIGURE 11 - City context map, University of Pretoria Geography Department, assembled by Author, 2008

2.1.2 History

-Kirkness Brickfields

Groenkloof campus is located on farm 419, which was a part of Lukasrand farm. The ownership of farm 419 was transferred to the government when a water shortage occurred in 1860 due to the large water usage by Lukasrand (Peacock, 1955:70).

Lukasrand is situated in the Fountains Valley and the two major springs feeding the Apies River is located here. Farm 419 was exchanged for the block between Potgieter Street, Vermeulen Street, Schubart Street and Church Street (erfs-273-311) to obtain water rights and solve the water shortage in Pretoria (Peacock, 1955:120).

John Johnston Kirkness was a joiner from Orkney and came to Pretoria in 1879 with his contracting business (Allen 1950). The brickfields were taken over by Kirkness from a bankrupt Italian firm who held the republican concession for brickmaking in 1887 (Bolsmann, 1958:86).

The Raadsaal would be one of many buildings in Pretoria built by Kirkness. The Kirkness bricks were used all over South Africa (Muller, 1985:167). Kirkness later became the mayor of Pretoria in 1907.

Figure 14 is a photograph of the original lithographed Surveyor General's Office map of Pretoria dated December 1900. Next to the impression of JJ Kirkness "brickworks" indicate the location of the Kirkness brickworks in 1900. The location of the Government Farm 419 (Groenkloof campus) is also indicated.

- FIGURE 13 (A)** - Fountains Valley traffic circle showing the two new fountains, by Jan, info photo 2030, title id IS 594532, Tswh. info in 3311441, 1961
- FIGURE 13 (B)** - Aerial view of the Fountains Circle with the brickfields of J.J Kirkness on the left, info photo 1900, title id IS 593912, Tswh. info in 3307532, 1958
- FIGURE 13 (C)** - J.J Kirkness brickfields at the fountains, info photo 2654, title id IS 602674, Tswh. info in 3348244, 1935
- FIGURE 13 (D)** - J.J Kirkness brickfields at the fountains, info photo 2655, title id IS 602674, Tswh. info in 3348343, 1935

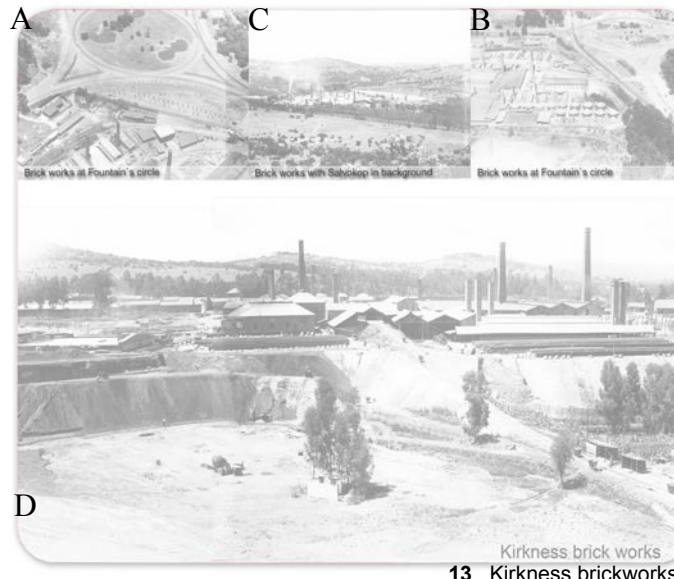
-Jacaranda plantation

Pretoria has the colloquial name of the Jacaranda City. This is of course due to the many Jacaranda trees along the streets. Very few people realize that the presence of the trees was due to an accident. James Clarke (a horticulturist in the 1900's) got commissioned to plant trees in the government nursery in Groenkloof.

historic



Jacaranda seeds were by accident included in a seed order. Clarke planted these seeds and unwittingly started the Jacaranda City (Stadsraad - Nuusbrief Nov. 1978). The government farm on which Groenkloof campus is situated is said to have been used as a plantation for Jacaranda saplings which were then planted on the roadside throughout the city.



13 Kirkness brickworks

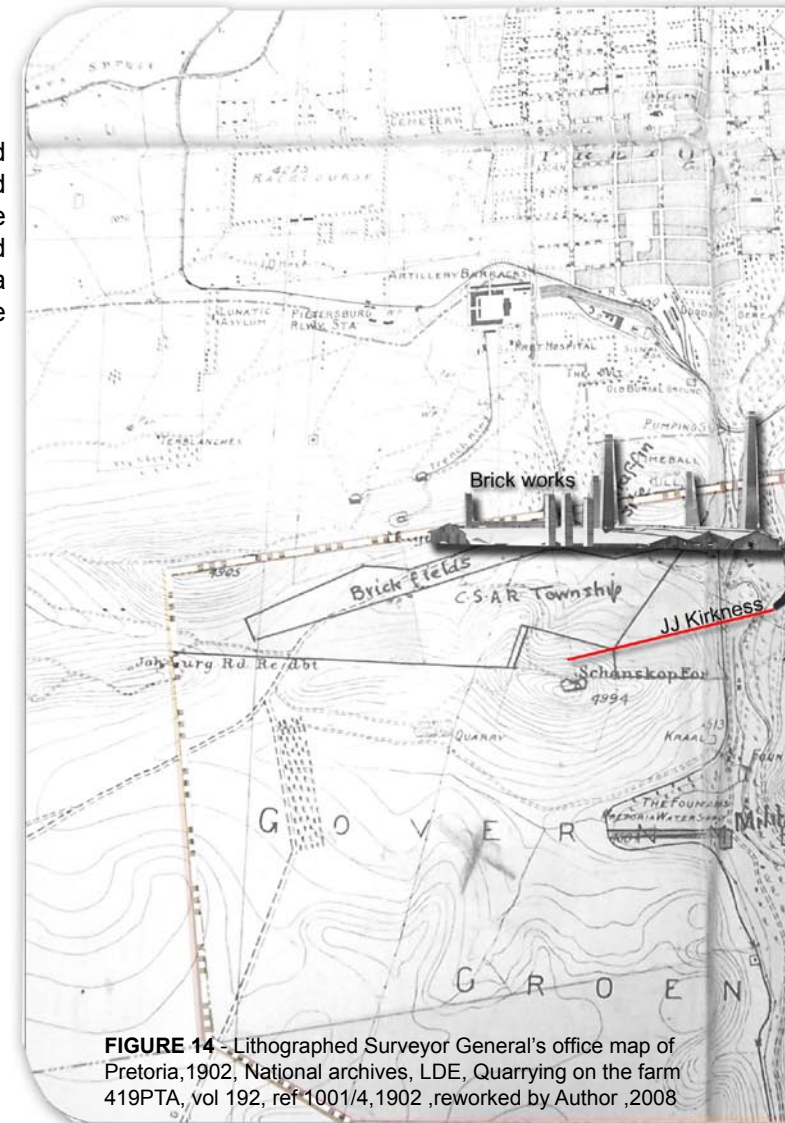


FIGURE 14 - Lithographed Surveyor General's office map of Pretoria, 1902, National archives, LDE, Quarrying on the farm 419PTA, vol 192, ref 1001/4, 1902, reworked by Author, 2008

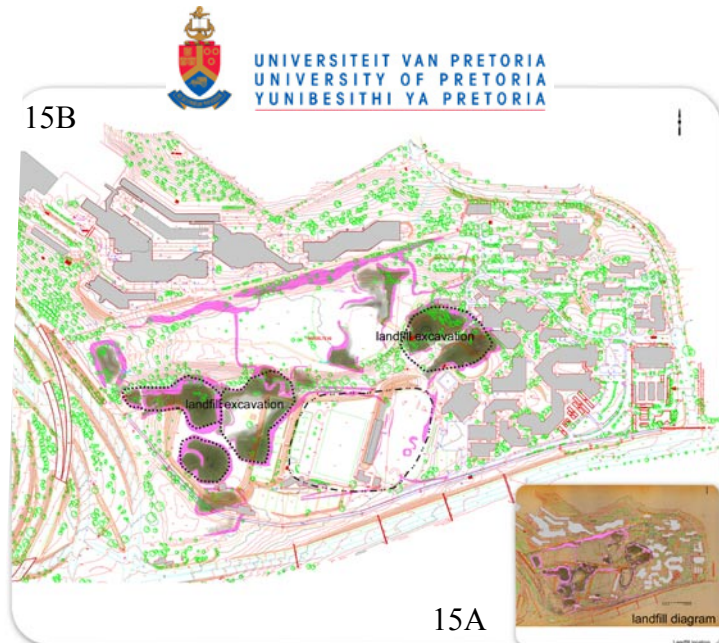
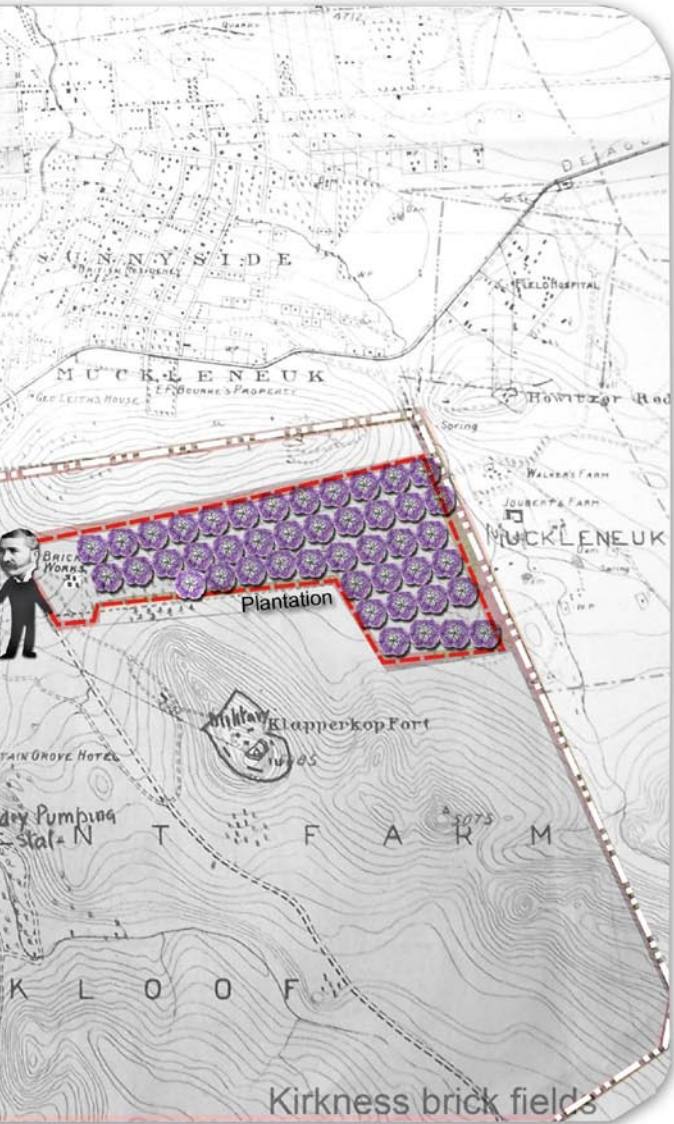


FIGURE 16 - Aerial photograph ,University of Pretoria, Van der Waal collection, stip 6 at no 117, 1954

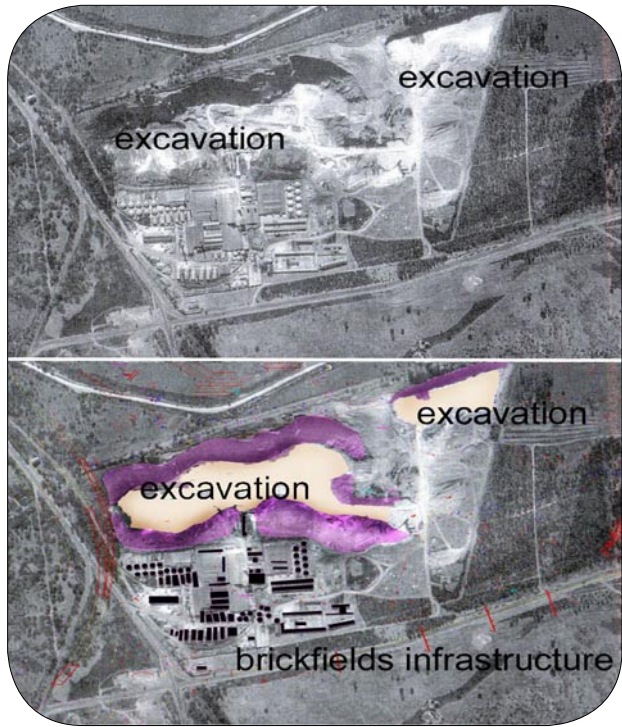


FIGURE 17 - Aerial photograph ,University of Pretoria, Van der Waal collection, stip 6 at no 117, 1954, reworked by Author, 2008

FIGURE 15 B- Landfill location diagram, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects,1973,reworked by Author, 2008

FIGURE 15 A- Landfill location diagram, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects,1973,reworked by Author, 2008

-Landfill site

Due to the excavation of clay at the Kirkness brickfields, large depressions in the landscape were left when brick production came to an end. These excavations functioned as Pretoria's landfill site during the following years. Figure 16 is an aerial photograph of the depressions. In Figure 17 the infrastructure of the brickfields is highlighted. Only the building on the far southern corner remains on the site today. Figure 15 (A) shows the original plan of the landfill site. In Figure 15 (B) the existing infrastructure is overlaid with the landfill plan that maps the location of the dump areas. These dump areas are circled with dots and indicate areas on the site with possible compaction problems.



FIGURE 18 – Photograph A of model, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects, 1973

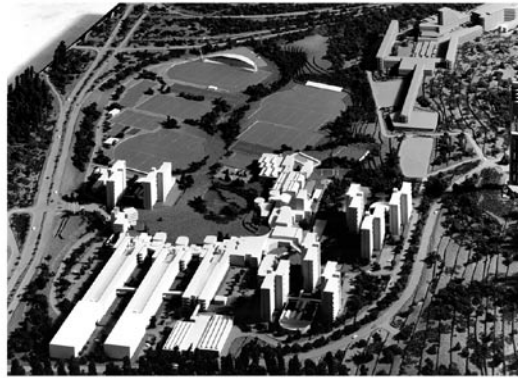


FIGURE 19 – Photograph B of model, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects, 1973

SLEUTEL

- A. ADMINISTRATIEBLOK
- B. LEESBLOK
- C. WISWAGOPPE
- D. BUREAUBLOK
- E. AMFITEATER
- F. SPOORTERMINAAL EN SAAL
- G. KAM
- H. WEDER
- I. LIGGAANDE OPVOEDING
- J. TECHNIEK OPVOEDING
- K. DRUKWERK
- L. DRAAI- ENKELWARTERE
- M. WATROEWE KWARTIERE
- N. DANKSBERG
- O. WANDERBLOK
- P. ESTELLE EN KENNIS
- Q. FOUWELING VAN 1940
- R. BAKTERY
- S. TECHNIEK OPVOEDING

- 1. KLEINER
- 2. WEDER
- 3. KENNIS
- 4. WANDERBLOK
- 5. WATROEWE
- 6. ROEP
- 7. DANKSBERG
- 8. WEDER
- 9. KENNIS
- 10. WANDERBLOK
- 11. WEDER
- 12. WANDERBLOK

VOORGESTELDE NUWE KONTOERE

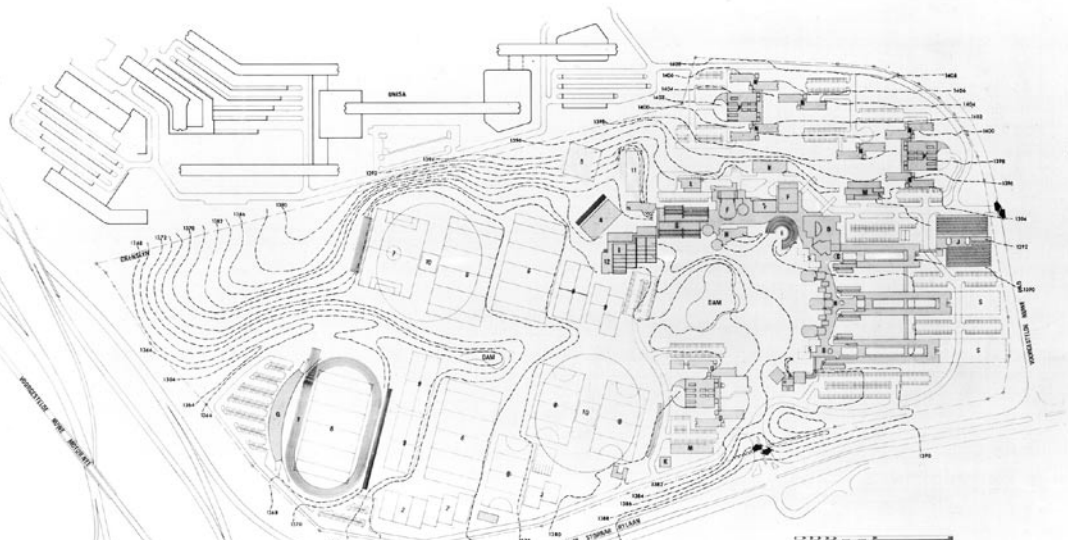


FIGURE 20 - Sketch plan of the proposal in photos A & B, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects, 1973

FIGURE 21 - Impact of Unisa and the Telkom tower on the city skyline, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects, 1973

-Timeline of the Teachers College

1-10 July 1902:

The Conference of Teachers in Town and Refugee Camp Schools in Transvaal and Orange River Colony, establish the “Normaal Schools” in Johannesburg and Pretoria to train teachers (Oberholzer, 1952:17-19)

1903:

The Johannesburg “Normaal School” closes and 40 students are transferred to Pretoria. The 2 institutions merge and is named the “Transvaal Normaal College” (Oberholzer, 1952: 17-19)

1908:
The Transvaal University College (the University of Pretoria) is established. The first students include students from the Normaal College.

1974:

The education of secondary school teachers was then the sole responsibility of the University of Pretoria.

1975:

New College grounds are bought in Groenkloof.

1978:

The Teachers College Pretoria together with the University of Pretoria agrees to the training of teachers in conjunction with one another.

1988:

The Teachers College Pretoria moves to the new campus in Groenkloof.

8 October 2001

The Teachers College Pretoria is incorporated into the University of Pretoria.

2004:

The High Performance Centre School (A UP sports talent school) for scholars from grade 3-12 is established on Groenkloof campus.

Figure 18 is a photograph of a model of one of the proposals for the design of The Teachers College Pretoria. Figure 19 is another view of the same model. This proposal was not built. Figure 20 shows a plan of the model in Figures 18 & 19. Figure 21 indicates the dramatic impact that Unisa and the Telkom tower have on the urban context.

-UP

Figure 22 shows the sports field of Groenkloof campus as viewed from Unisa. Figure 23 is the view towards the east, with the Telkom tower in the background. Figure 24 shows the existing dam on Groenkloof campus.



FIGURE 22 - Panorama towards Klapperkop, by Author, 2008



FIGURE 23 - Panorama towards the east, by Author, 2008



FIGURE 24 - Panorama of existing dam and main campus, by Author, 2008

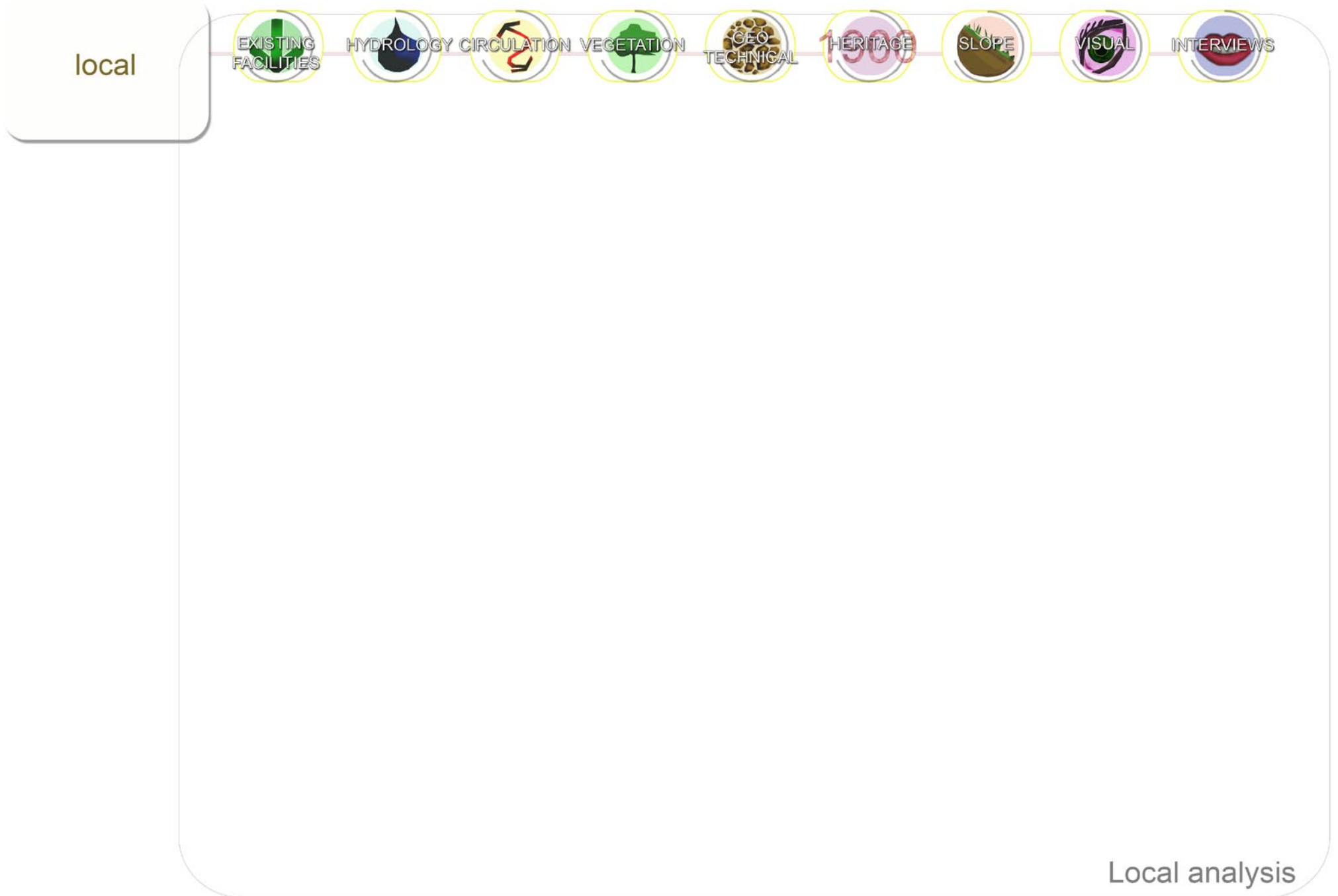


FIGURE 25 - Local analysis diagram, by Author, 2008

2.1.3 Local - Existing facilities



As indicated in Figure 27, Groenkloof campus has residential buildings located in the north-easterly corner of the campus. The academic buildings are arranged around the existing irrigation dam. The north-western (upper) and south-western (lower) quarters of Groenkloof campus have existing sportfields. The upper sportfields are used as parking by students. The lower (and more developed sportfields) have a grass athletics fields, rugby / soccer field, netball and tennis courts, a cricket field and a swimming pool.

FIGURE 26 is a panorama towards the north-east, showing the dramatic impact of Unisa and the Telkom Tower on the site context.

Opportunities:

- Groenkloof campus has ample space for development.
- The surrounding cultural and natural setting makes the location of the site optimal.
- The campus is lower than the roads around the site. This allows visual access onto the site.
- The steep slope that separates the upper and lower sportfield has terrace potential.
- The architectural line and shadow rhythm on Unisa's façade can be continued on Groenkloof campus.

Constraints:

- The existing buildings are not legible, this causes disorientation.
- The existing dam has aesthetic qualities, but the dam edges are steep and dangerous for physically challenged.
- The lack of a ring road system makes vehicle circulation difficult.

FIGURE 27 - Aerial photograph of Groenkloof campus, University of Pretoria Geography department, assembled by Author, 2008

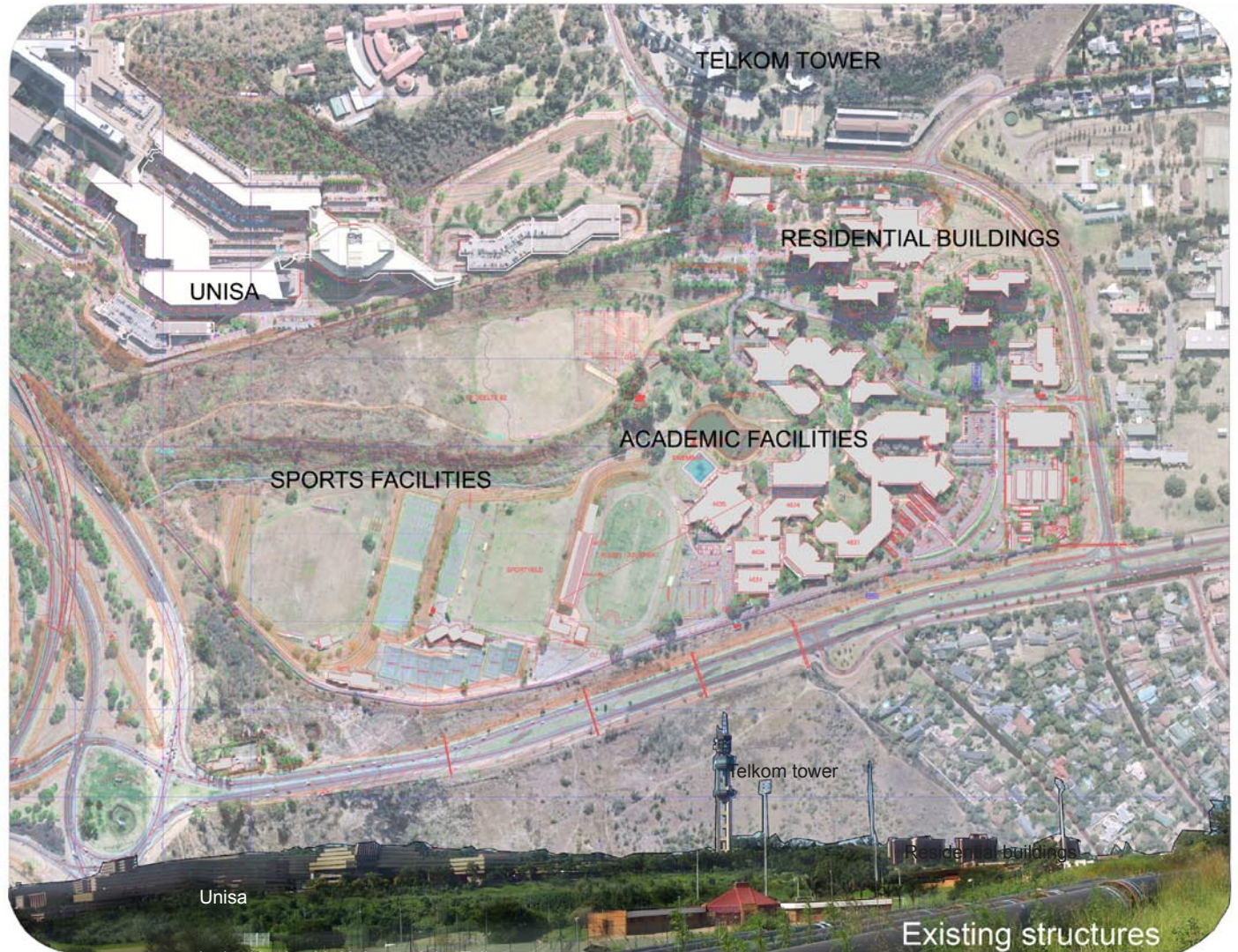


FIGURE 26 - Panorama towards the north, by Author, 2008

- Hydrological potential



Figure 32 is a stormwater diagram of Groenkloof campus. A large stormwater channel bends around the campus southern boundary. Four pipes guide the water underneath George Storrar Drive into the channel. This channel drains stormwater from Klapperkop (Bergklapper Loop) and Groenkloof residential area. This channel terminates in an inlet that pipes the stormwater underneath the highways (to the west of the site) and flows into the Apies River (refer to 2.1.1).

Stormwater from Groenkloof campus is channelled into the existing irrigation dam. The dam overflows into an eroded drainage line that becomes a wetland. This drainage line is called the Kerameikos Loop. The sport fields' drainage system also drains into the wetland. The wetland terminates at a drainage point that connects the water to the Apies River. Figure 28 shows the wetland at the western end of the site. In Figures 29 & 30 the eroded drainage ditch is shown. Figure 31 shows the inlet of the wetland drainage point that leads to the Apies River.

Opportunities:

- The large volumes of stormwater running past the site has great recreational and ecological potential for Groenkloof campus.
- The existing drainage system connected to the Apies River makes the upgrade of this drainage line less complicated.
- Groenkloof campus has ample space to reroute water onto.

Constraints:

- The water quality of the water flowing in the channel.
- Cost of intervention will be large.
- The Water Users Licence Application will be needed
- NEMA and Section 21 of the Water Act of 1994 will impose restrictions.

FIGURE 32 - Hydrology diagram of Groenkloof campus, by Author, 2008

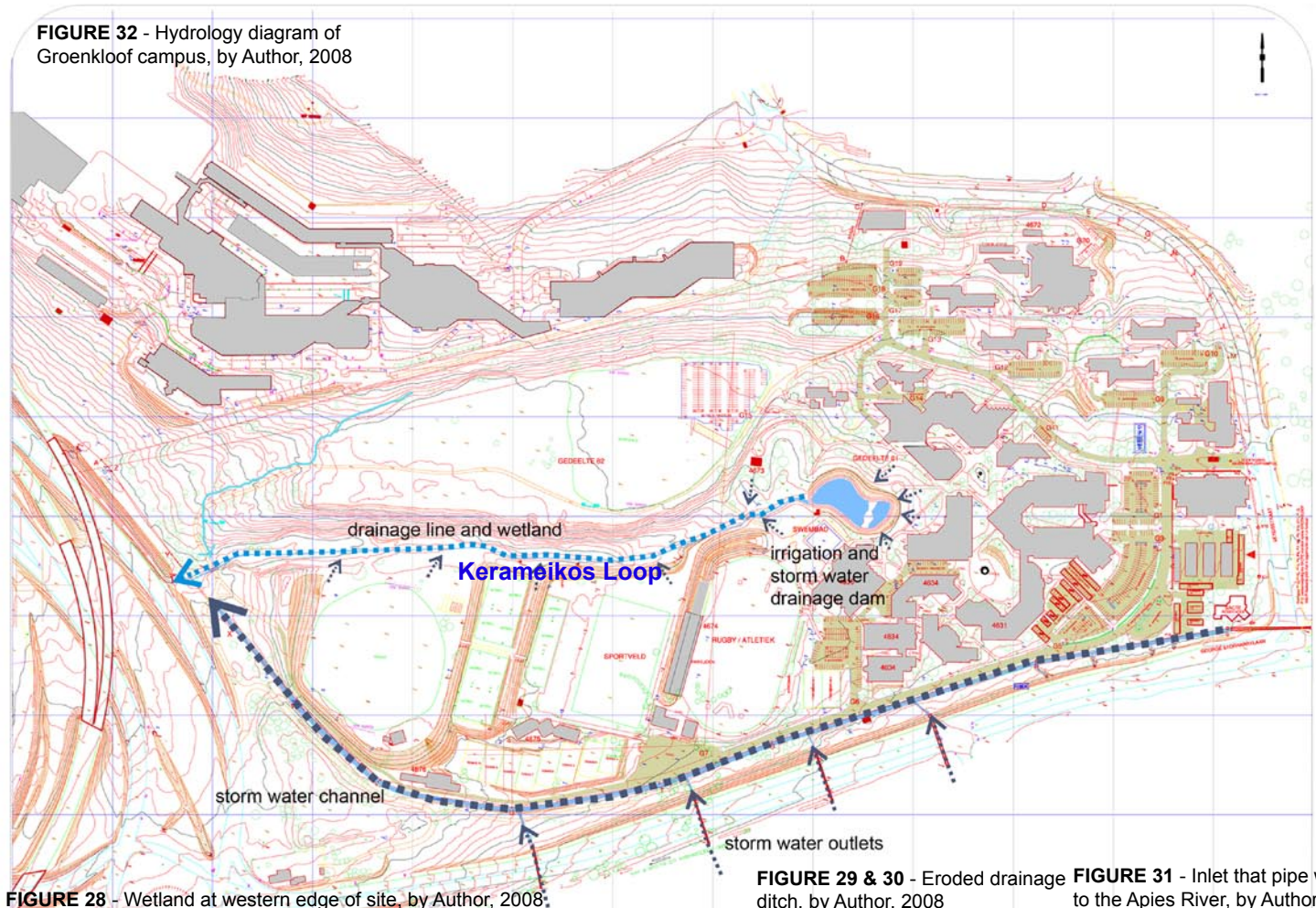


FIGURE 28 - Wetland at western edge of site, by Author, 2008

FIGURE 29 & 30 - Eroded drainage ditch, by Author, 2008

FIGURE 31 - Inlet that pipe water to the Apies River, by Author, 2008



- Existing circulation

EXISTING FACILITIES

HYDROLOGY

CIRCULATION

VEGETATION

GEO TECHNICAL

HERITAGE

SLOPE

VISUAL

INTERVIEWS

Figure 33 is a vehicle and pedestrian analysis. Groenkloof campus has one entrance along Leyds Street and a service entrance further up in Leyds Street. Vehicle circulation is simple and walking is encouraged by strategically located parking areas. Traffic is not a problem as the low student numbers cause little congestion. No formal road exists connecting the upper and lower sports fields.

The architectural illegibility of the buildings contributes to pedestrian and vehicle disorientation. No prominent pedestrian circulation hierarchy exists. The pedestrian movement is scattered. The existing dam acts as the campus "heart", this space is not celebrated or user-friendly.

Opportunities:

- A ring-road system can easily be implemented by extending the existing roads.
- The service road along Leyds Street could become another entrance.
- Positioning bulk parking for those students parking on sportsfields could structure pedestrian movement.

Constraints:

- A bridge is needed to complete the ring road between the upper and lower terrace.

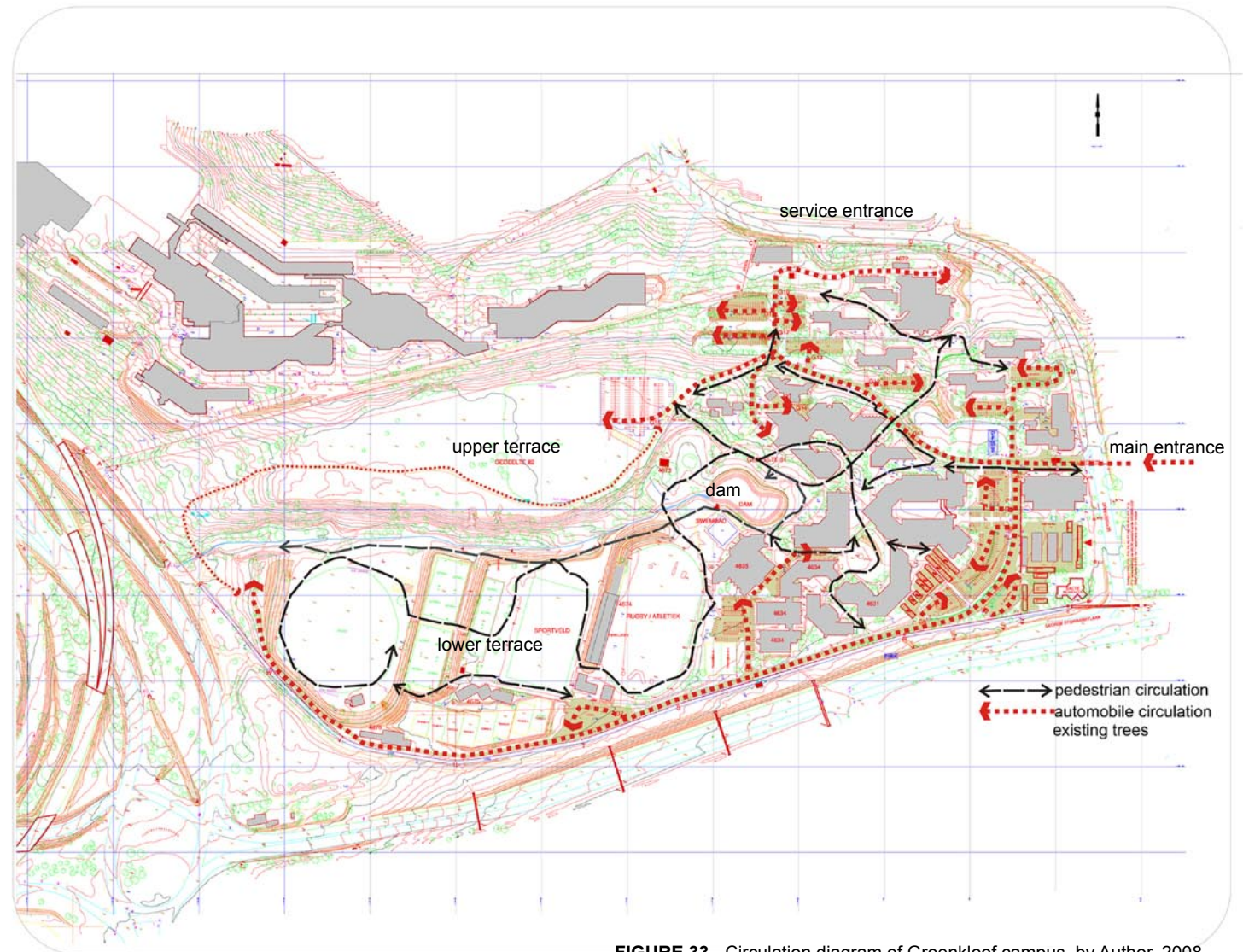


FIGURE 33 - Circulation diagram of Groenkloof campus, by Author, 2008

- Existing vegetation

EXISTING FACILITIES

HYDROLOGY

CIRCULATION

VEGETATION

GEO TECHNICAL

HERITAGE

SLOPE

VISUAL

INTERVIEWS

Figures 34 indicates the existing trees and “green” areas on Groenkloof campus. The built campus has rolling landscapes with lawns and manicured gardens. The landscape around the existing dam consists of lawns and indigenous and exotic trees. The drainage line and wetland system are covered with lawn and typical wetland species. Many of the large Eucalyptus trees that grew in the drainage way were removed and only a few remain around the irrigation dam.

The upper sports field is partially rehabilitated on the western edge and the grass is cut short on the eastern end of the sportsfield. The lower sportsfield is fully manicured lawn and rounded off by indigenous trees.

Opportunities:

- Groenkloof campus has large open green spaces that could easily be adjusted to satisfy the proposed development.
- Existing trees are well established and irrigation systems are in place.
- The proposed scheme aim to replace all “natural” sportsfields with synthetic fields. Synthetic fields are more costly initially but have long term benefits ecologically and financially.

Constraints:

- Many exotic species will have to be removed.



FIGURE 34 - Vegetation diagram of Groenkloof campus, by Author, 2008

- Geo-technical investigation



Figure 36 shows sections through the landfill site. The subsurface shale was covered with broken bricks before landfill filled these excavations. The yellow in the diagram indicate shale, the grey represent the rubble and the broken brick course is shown by the red-brown layer. Figure 37 shows the landfill site plan overlaid with one of the proposals for the Teachers College.

Opportunities:

- Exposing these “history layers” could attract tourist and historians to Groenkloof campus.

Constraints:

- Compaction and soil stability problems due to the landfill.
- Possible ground water contamination by the landfill.

FIGURE 35 - Legend of landfill sections, by Author, 2008

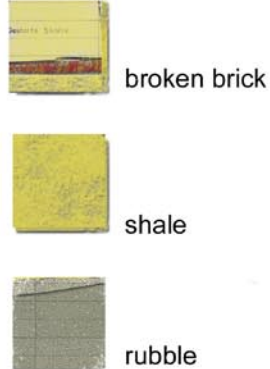


FIGURE 36 - Sections through landfill, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects, 1973, reworked by Author, 2008

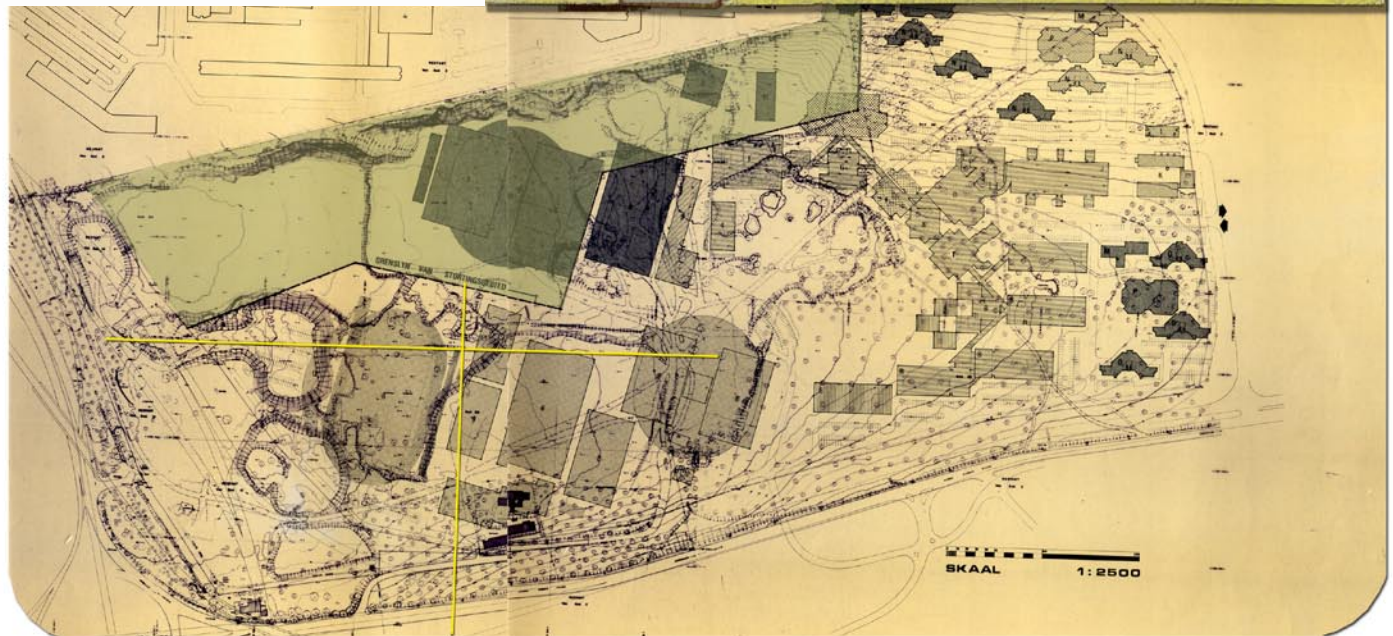
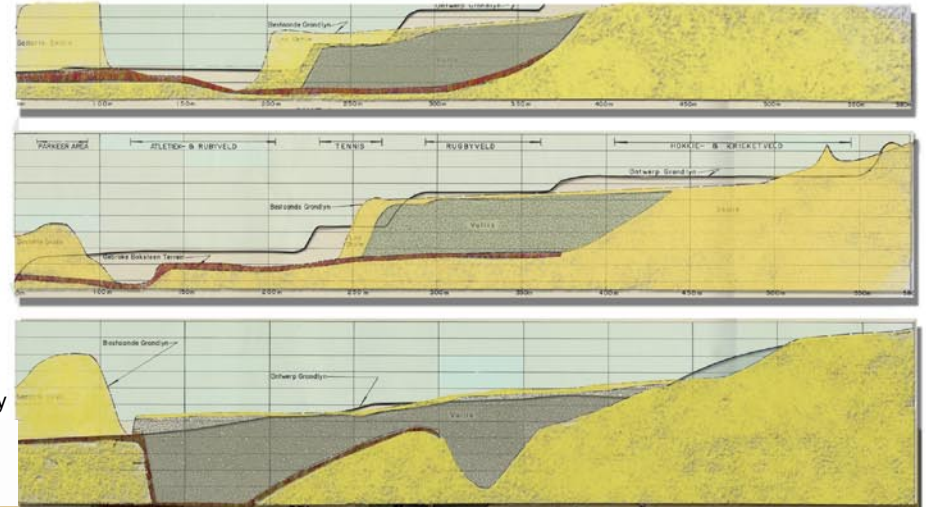


FIGURE 37 - Landfill site plan, University of Pretoria archive, J-3-2-1-D, Pretoria teachers college proposal, Taljaard Carter and associate architects, 1973, reworked by Author, 2008

- Heritage overlay diagram
(Figure 39)



Opportunities:

- The brickfield chimneys have aesthetic potential. The scale of these structures could function as floodlights or climbing walls.
- The chimney structures created a sense of place and the reintroduction of these strong vertical elements could enhance the cultural and historic context of the area.

Constraints:

- Reinventing the brick towers will have large cost implications.
- The chimneys must have a function to make these structures feasible.



FIGURE 38 - Design inspiration from relevant history, by Author, 2008

FIGURE 39 - Lithographed Surveyor General's office map of Pretoria, 1902, National archives, LDE, Quarrying on the farm 419PTA, vol 192, ref 1001/4, 1902, reworked by Author, 2008

- Slope analysis



The locations of the sections done to analyse the slope are shown in Figure 40.

Figure 43 is section A through Groenkloof campus. Unisa's terraces, the upper sportsfields, drainage line, lower sportsfields, stormwater channel and George Storrar Drive can be seen in this section.

Figure 42 is section B. The upper and lower sportsfields are separated by a dramatic step in the landscape. The visual access onto the site is enhanced with George Storrar Drive situated higher than the campus. Klapperkop and Unisa have full visual access onto Groenkloof campus.

Opportunities:

- The visual access onto the site requires the proposed scheme to be aesthetically and functionally attractive.
- The views of surrounding monuments expand the context of the site. These vistas should be enhanced.

Constraints:

- The proposed scheme must act as a base for Unisa.
- This scheme must not compete with the grandeur of this gateway into the city but enhance the sense of place.

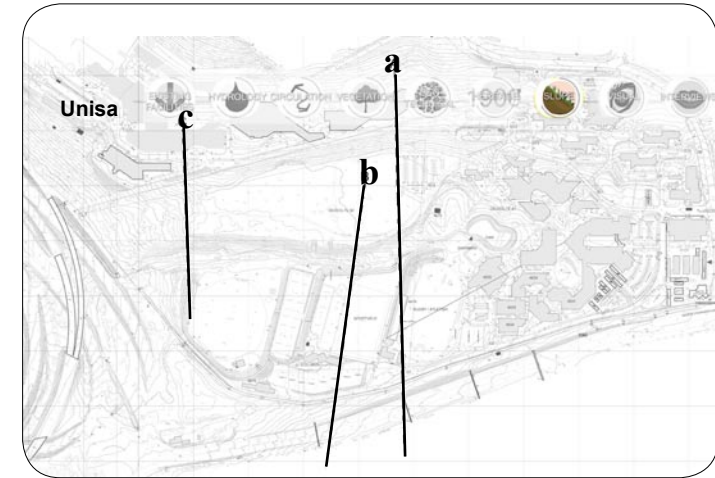


FIGURE 40 - Plan of Groenkloof campus that indicate section locations, Author, 2008

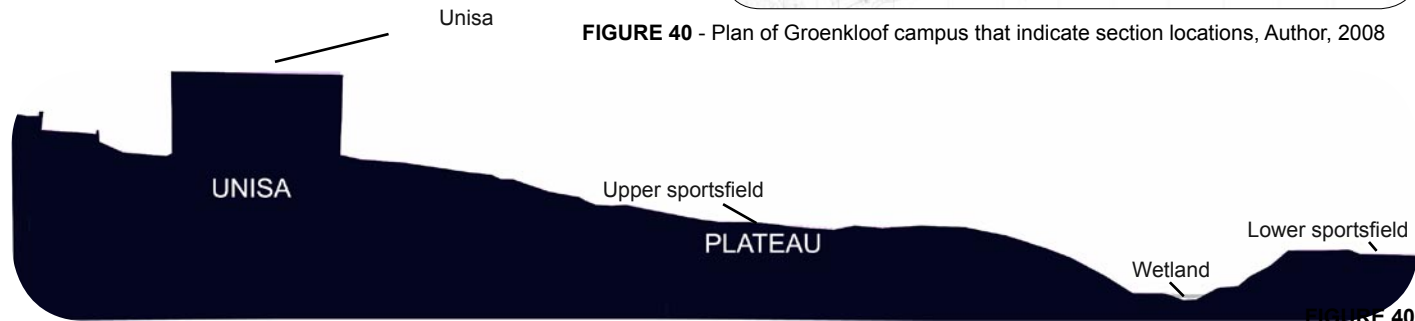


FIGURE 41 - Section C, Author, 2008



FIGURE 42 - Section B, Author, 2008

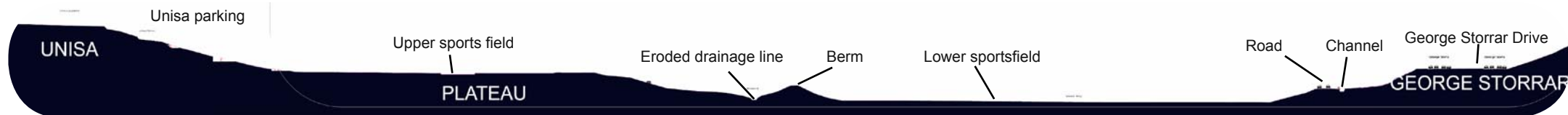


FIGURE 43 - Section A, Author, 2008

- Photographic analysis



Figure 44 indicates the city of Groenkloof campus. The dots are cultural and historical monuments. The lines show vistas towards these monuments from Groenkloof campus.

Figure 44a shows the vista towards the west with the Voortrekker monument, Freedom Park and Unisa.



FIGURE 44 A - View towards the west, Author, 2008

Opportunities:

- These vistas extend the site context to beyond the boundary line of Groenkloof campus.
- Enhancing these visual connections to surrounding monuments will tie Groenkloof campus to the cultural context.

Constraints:

- The grandeur of Unisa could easily be cluttered by additions to this southern gateway into Pretoria.
- The proposed scheme should enhance the existing setting.

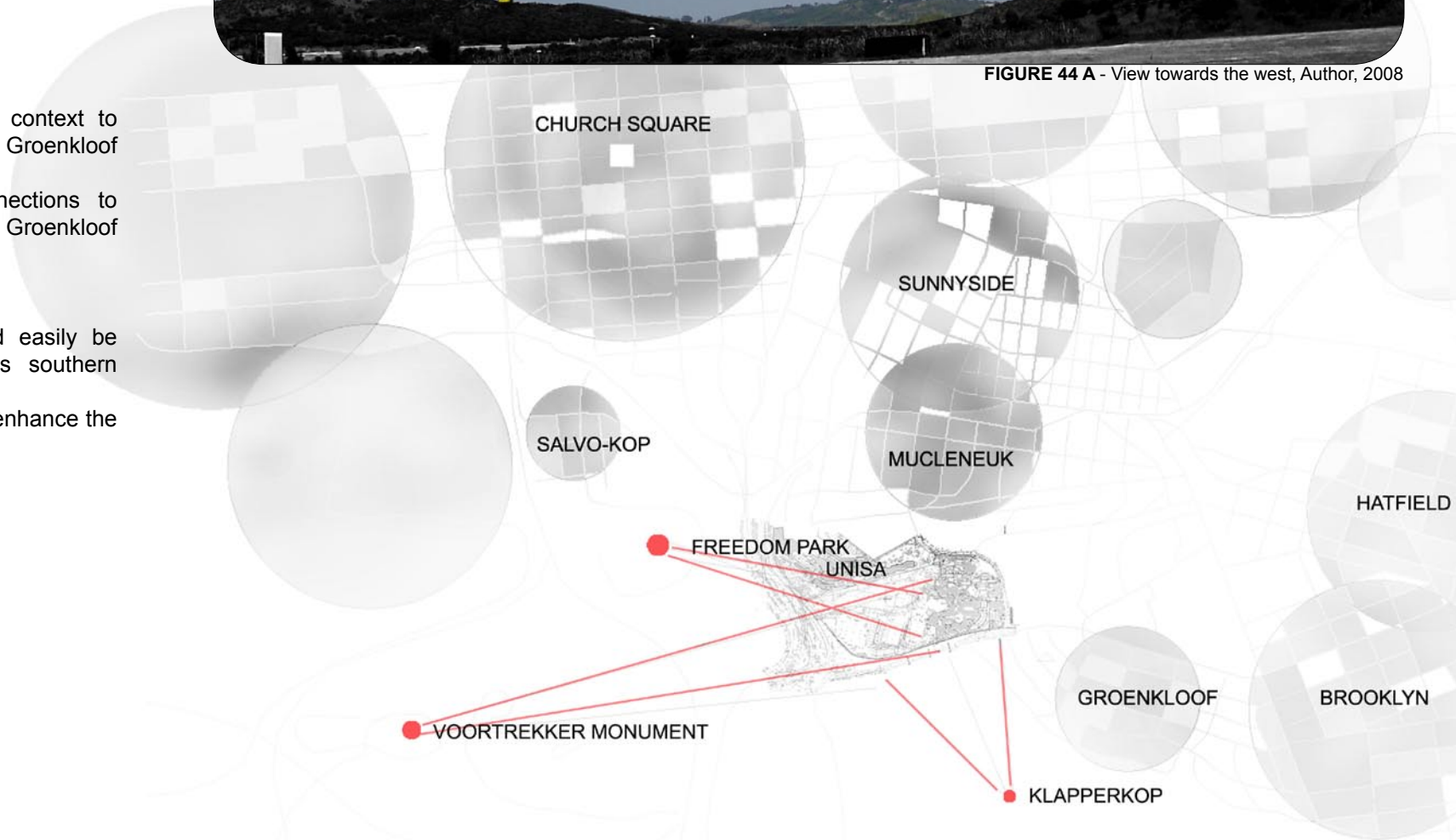


FIGURE 44 - City context diagram, Author, 2008

- Interviews and University policy on sport

EXISTING FACILITIES

HYDROLOGY

CIRCULATION

VEGETATION

GEO TECHNICAL

HERITAGE

SLOPE

VISUAL

INTERVIEWS

According to Van der Merwe, G. 2008, the only rowing facility on campus is the L.C de Villiers dam. This water body has apparently had many water quality problems, and the shape and length of this dam is not optimal for flat water rowing. Groenkloof has been considered for new canoeing facilities. Van der Merwe, G. (2008) mentioned that flat water, slalom and white river rafting facilities are needed in Gauteng as these sportsmen travel great distances to train in rivers and dams.

Van Zyl, R. (2008) (a white-water athlete) explained the various components of flat rowing, white water kayaking and white water slalom.

Rowing is a sport where athlete's race against each other on relatively flat water, such as rivers, lakes, the ocean or man-made channels. The boats are propelled by the forces on the oar blades as they are pushed against the water. This is said to be one of the oldest Olympic sports.

In **white-water kayaking** a kayak is maneuvered on a moving body of water, typically a white-water river or synthetic course. White-water kayaking can range from gentle moving water to dangerous white-water rapids. River rapids are graded (like ski runs) according to the challenge and danger of the rapids. White-water grades range from 1 (easiest) to 6 (the most difficult and dangerous).

Grade 1 can be described as water moving gently with ripples. Grade 6 is described as severe or almost "unrunnable white-water",



such as the Niagara Falls.

Slalom is a technical and competitive form of kayaking, and the only white-water event at the Olympic Games. Racers paddle as fast as possible from the top to the bottom of a designated section of river while correctly negotiating gates (a series of double-poles suspended vertically over the river).

Soccer:

"The Tuks Soccer Club has, over the last three years, grown from three teams to 43 teams, making it one of the largest clubs in South Africa. It offers opportunities for participation in and specialized coaching to groups ranging from 8-year old children to students, women's teams as well as senior and semi-professional players". (University of Pretoria strategic plan, 24 September 2002)

The soccer clubs currently practicing on Groenkloof campus were interviewed to understand the needs of these sport teams.

These include:

- Club house
- Dribble areas
- Events space

Hockey team:

"...and hockey with 47 outdoor teams" (University of Pretoria strategic plan, 24 September 2002). Hockey teams were



interviewed on L.C de Villiers sports field to determine whether more facilities are needed. The following needs emerged:

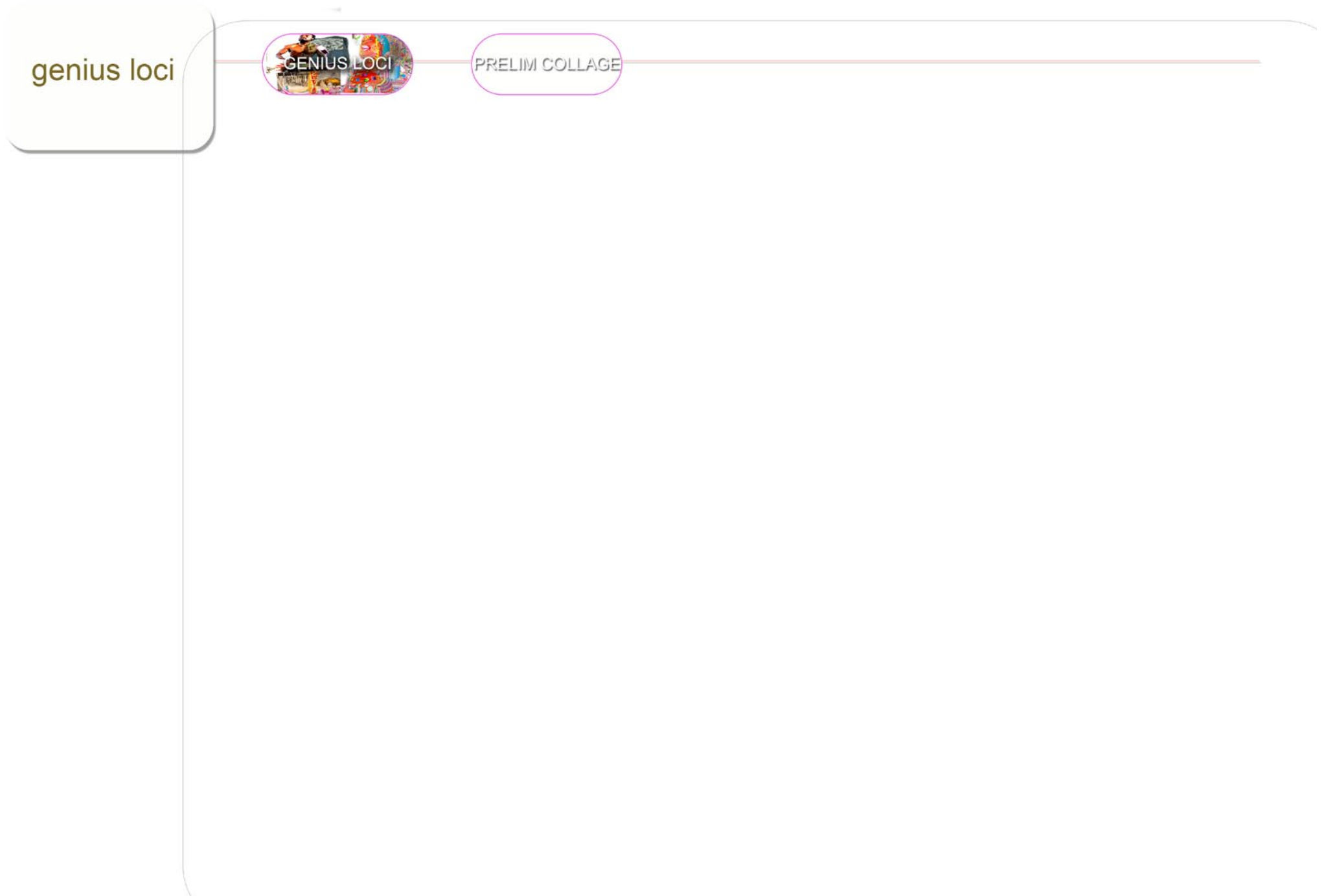
- Club house
- More astro turf
- Dribble goals practice areas

Opportunities:

- Some of the existing sport infrastructure on Groenkloof campus could easily be integrated into a new development plan for hockey and soccer facilities.
- The large demand for soccer and hockey facilities enforce the proposal of a HPC catering for these sports.
- Groenkloof campus has already been identified as a possible site for water sport facilities.

Constraints:

- Some existing sport facilities on Groenkloof campus will have to be demolished to provide soccer and hockey facilities.
- The soccer and hockey facilities on L.C de Villiers campus must be reshaped to become sports fields that service the rest of the sports types catered for by the HPC on L.C de Villiers.
- Large amounts of water are needed to satisfy a rowing and slalom facility. Municipal water is not a sustainable source.



2.1.4 Genius loci

The genius loci is an important principle in garden and landscape design. It is referenced by Alexander Pope with the following lines from *Epistle IV, to Richard Boyle, Earl of Burlington*:

*“Consult the genius of the place in all;
That tells the waters or to rise, or fall
Or helps th’ ambitious hill the heav’ns to
scale,
Or scoops in circling theatres the vale;
Calls in the country, catches opening glades,
Joins willing woods, and varies shades from
shades,
Now breaks, or now directs, th’ intending
lines;
Paints as you plant, and, as you work,
designs”.*

*“... all must be adapted to the genius of the
place, and ... beauties not forced into it, but
resulting from it’.*

The distinctive atmosphere of the pervading spirit at Groenkloof campus is the setting nestled between four hills. Groenkloof campus is the podium to Unisa and part of the green banks that flows in to the southern gateway of Pretoria. Groenkloof campus looks like a stepped tapestry seen from Klapperkop. The drainage line is the heart line and separates the upper and lower terrace of the campus.

- Collage

The analysis has highlighted various opportunities and constraints. A collage was put together communicating all ideas in pictures. Hockey, soccer, water sport, habitat creation, recreation, day-night activities, heritage, modern finishes and hydraulic potential are illustrated in the collage.



PRELIM COLLAGE

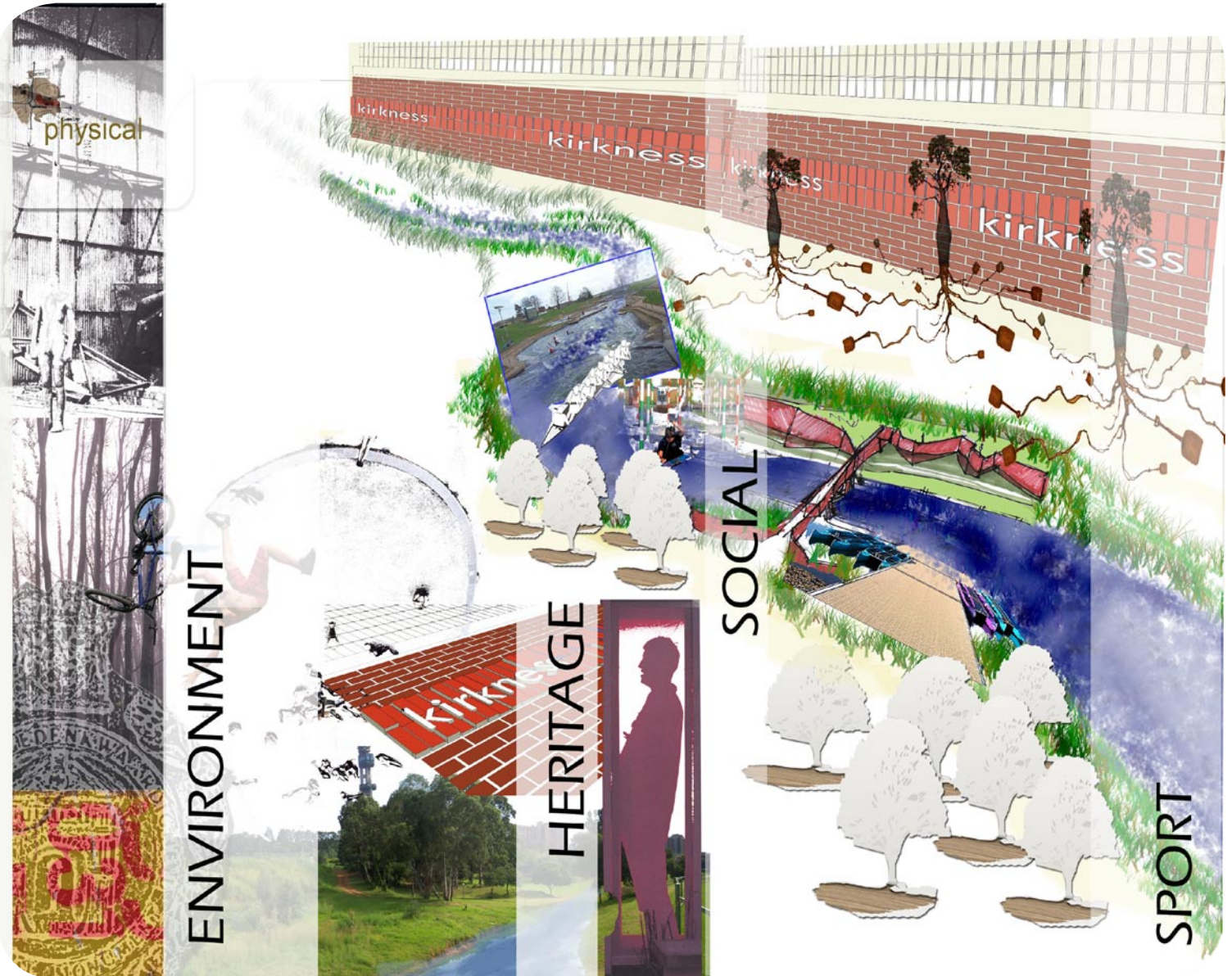
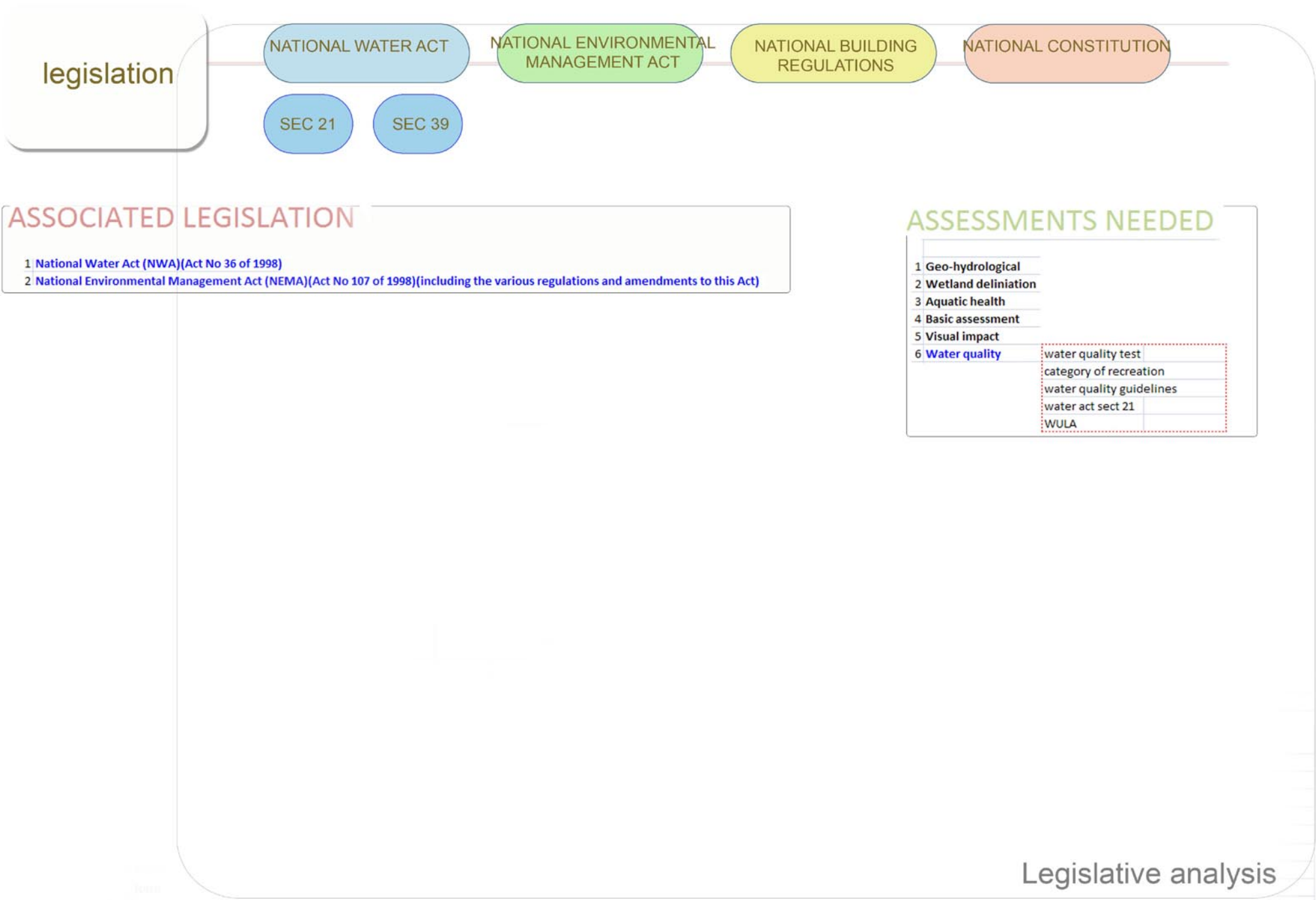


FIGURE 47 - Concept collage, Author, 2008



legislation

NATIONAL WATER ACT

NATIONAL ENVIRONMENTAL
MANAGEMENT ACT

NATIONAL BUILDING
REGULATIONS

NATIONAL CONSTITUTION

SEC 21

SEC 39

ASSOCIATED LEGISLATION

- 1 National Water Act (NWA)(Act No 36 of 1998)
- 2 National Environmental Management Act (NEMA)(Act No 107 of 1998)(including the various regulations and amendments to this Act)

ASSESSMENTS NEEDED

- 1 Geo-hydrological
- 2 Wetland deliniation
- 3 Aquatic health
- 4 Basic assessment
- 5 Visual impact
- 6 Water quality

water quality test	
category of recreation	
water quality guidelines	
water act sect 21	
WULA	

Legislative analysis

2.1.5 Legislation

Parts 5.1, 5.2, 5.3, 5.9 and 5.11 of Section 21 of the National Water Act (Act No 36 of 1998) and Section 39 of the National Water Act (Act No 36 of 1998) 398, could have some impact on the proposed development. These sections were investigated.



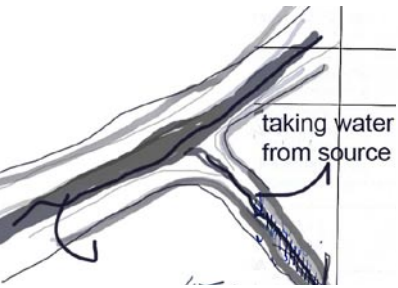

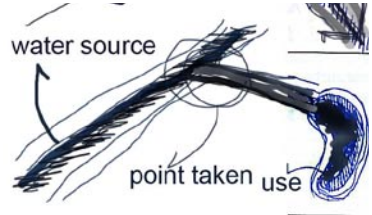
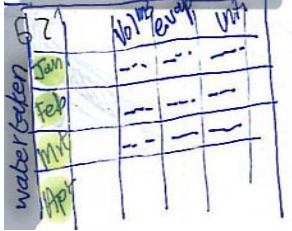
<p>Section 21 of the National Water Act (Act no 36 of 1998)</p>			
<p>(5.1) Taking water from a water source:</p>			
<p>Taking water from a water source is a water use of section 21 of the NWA. A water source includes a river, stream, dam, spring, aquifer, wetland, lake, and pan.</p>		<p>Abstracting water from an off-channel dam having no catchment (a balancing dam), a channel, or a pipeline is not taking from a resource.</p>	<p>channel to m), a pipeline from a</p> 
<p>The water use occurs at the point where the water is taken from the source and not at the point where it is applied.</p>		<p>Monthly volumes of water to be taken must be specified in a schedule, by the applicant.</p>	

FIGURE 48-77 Author, 2008

<p>(5.2) Storing water:</p>			
<p>Storing of water is a water use which may require a license in terms of Section 21 (b) of the National Water Act.</p>		<p>Every dam with a wall more than 5 m high, or which is capable of storing more than 50 000m³, may pose a dam safety risk, needs to be classified and may need Dam Safety licenses to construct and to impound, in addition to the water use license.</p>	
<p>(5.3) Impeding or diverting the flow of water in a water course:</p>			
<p>An obstruction in the flow of water in a watercourse or diverting some or all of the flow from a watercourse are water uses which may require a license in terms of Section 21 (c) of the National Water Act. The diverted water must eventually be returned to the natural water course.</p>		<p>- to facilitate water flow monitoring through measuring weirs in order to attenuate floods or to move a stream from its current location to facilitate activities that would deteriorate the resource quality of the stream should it remain in its current position.</p>	
<p>(5.9) Altering the bed, banks, course or characteristics of a watercourse:</p>			
<p>This water use refers to the physical changes made to a watercourse, for instance, to widen or straighten the channel of a river. A license in terms of Section 21 of the National Water Act will be required to authorize such activity.</p>		<p>Alterations of the bed and banks are usually needed for construction and infrastructure development near or across a river.</p>	

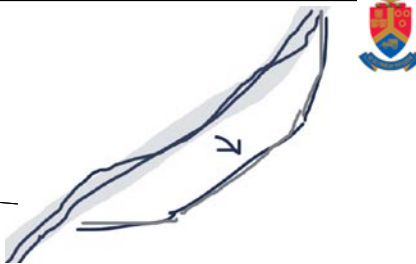
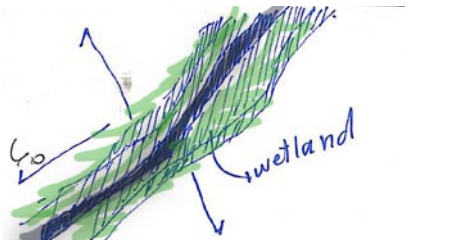
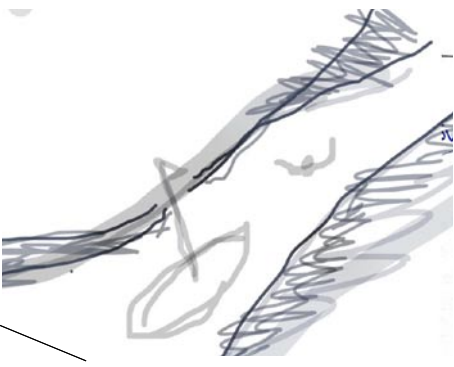
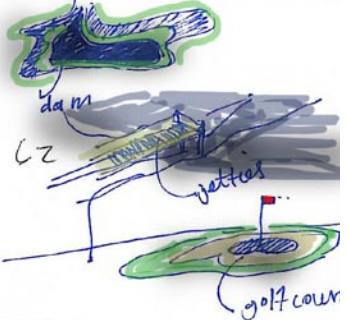
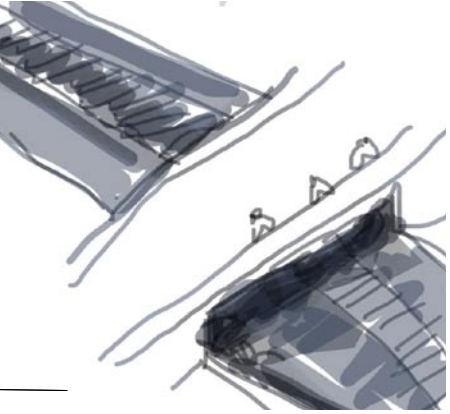
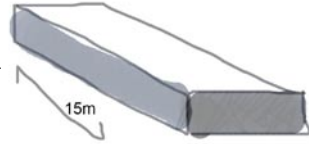
<p>Diversion of a water course: The river channel is usually constructed or replaced with a canal that may extend for several kilometers from the original course.</p>		<p>UNIVERSITEIT VAN PRETORIA UNIVERSITY OF PRETORIA YUNIBESITHI YA PRETORIA</p> <p>more than 500m upstream or downstream from the boundary of any wetland or estuary is a Section 21 (i) water use.</p>	
<p>(5.11) Using water for recreational purposes:</p>			
<p>This water use recreation is restricted to activities using water bodies for recreational activities such as swimming and boating, and will in future be regulated by means of a Section 21(k) authorization. No water use license is required for this water use.</p>		<p>The establishment of dams, jetties, and golf courses are not considered to be using water for recreation as they may involve other water uses, such as taking and storing of water and altering the bed and banks of watercourses, and would need to be licensed in terms of the appropriate section.</p>	
<p>General authorisation in terms of Section 39 of the National Water Act (no 36 of 1998) no 398.</p>			
<p>Impeding or diverting the flow of water in a watercourse:</p> <p>"DIVERTING FLOW" means the temporary or permanent diversion of flow for (d) Construction and maintenance purposes ofbridges..-</p> <p>"IMPEDING FLOW" means the temporary or permanent obstruction or hindrance to the flow of water into watercourse by structures built either fully or partially in or across a watercourse including...bridges and culverts..weirs...structures for water abstraction...slipways</p>			

FIGURE 48-77 Author, 2008

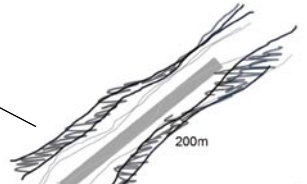


Any structure built in a water course does not...

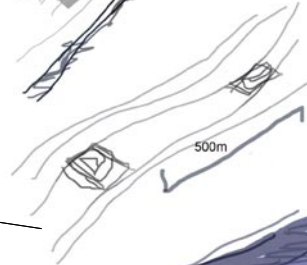
-exceed foundation width of 15m



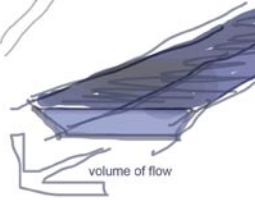
-exceed a length of 200m measured from one side to the other



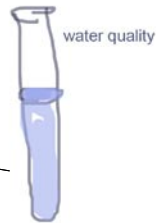
-does not occur within a distance of 500m upstream or downstream of a another that impedes or diverts flow on the same watercourse, measured along the water course



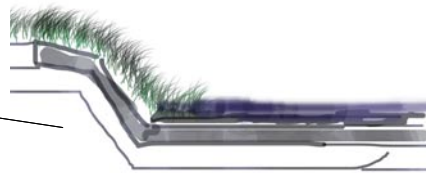
-volume of the flow is not reduced except for natural evaporative losses



-water quality is not detrimentally affected



-strict erosion control measures are to be taken during and after construction to ensure no erosion of the beds of the banks of a water course takes place



-Rehabilitation of riparian habitat integrity by ensuring that during rehabilitation only indigenous species are used in restoring the bio-diversity.



-Rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat to sustain a bio-diverse riparian ecosystem;



-Rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat to sustain a bio-diverse riparian ecosystem;



-Removal of all alien vegetation and new alien vegetation recruitment must be controlled



FIGURE 48-77 Author, 2008



Altering the bed, banks or characteristics of a watercourse

“Altering the bed, banks or characteristics of a watercourse” means the temporary or permanent alteration of a water course for...
...construction and maintenance purposes of infrastructure such as....bridges, water abstraction structures, structures for slope stabilization and erosion protection.....”

-The alteration activity does not **extend for more than 50m continuously** or a **cumulative distance of 100m** on that property or land measured along the water course.

-Any structure built partially in or across a watercourse does not exceed

-**a height of 10m**, measured from the natural level of the bed of the watercourse on the downstream face of the structure to the crest of the structure

-**a width of 10m**, measured at the widest part of the structure;

-**a length of 50m**, measured from edge of the water course to the other

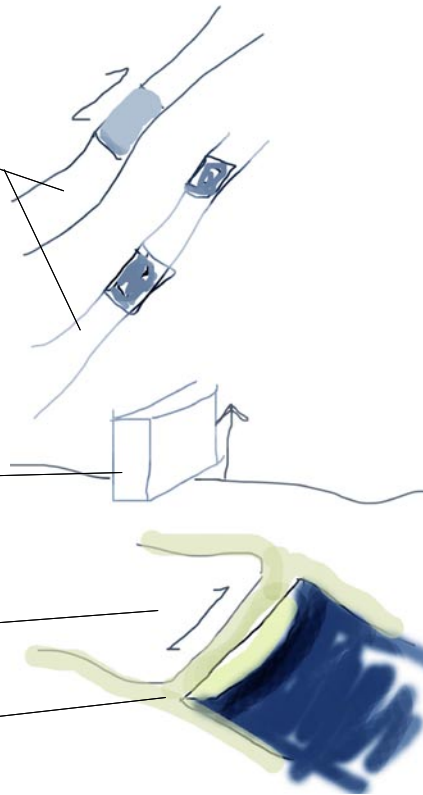


FIGURE 48-77 Author, 2008

2.2 Synthesis

-Contextual

Groenkloof campus is set in a rich cultural and environmental setting. The Apies River, Unisa, Voortrekker monument, Freedom Park and Klapperkop enhance the Groenkloof context.

- Historical

Groenkloof campus has a rich historic relevance. The Kikkess brickfields, the landfill period and the development of the Teachers College all enhance the historic richness of Groenkloof campus.

- Local

Groenkloof has ample space for development and existing infrastructure. Groenkloof needs a “catalyst” to generate new activities and visitors. The stormwater channelled on the boundary of Groenkloof has great potential if rerouted onto Groenkloof campus. The vistas towards the surrounding monuments broaden the boundaries of the site and should be emphasised.

- Genius loci

Groenkloof has unique qualities, not only in terms of physical makeup, but of how the site is perceived. It is the responsibility of the architect and landscape architect to be sensitive to these unique qualities, to enhance them rather than to harm them.

- Legislation

Parts 5.1, 5.2, 5.3, 5.9 and 5.11 of Section 21 of the National Water Act (Act no 36 of 1998) and Section 39 of the National Water Act (no 36 of 1998) 398, could impact on the proposed development.

2.3 Concept

Figure 78 is a diagram of the design concept for Groenkloof campus. The “heart” symbolizes a new catalyst for the campus, the line through the heart symbolize a “green spine” that stitch activities together. The smaller lines indicate detail design that commemorate cultural significance.

- The catalyst for Groenkloof campus is the HPC. This facility will cater for soccer, hockey and water sports.
- A green spine (stormwater management plan) is proposed that ties the built campus and sports facilities together.
- A material selection that reflects the relevant history will be assembled and used in the detail design of the proposal.

2.4 Brief

The client is the University of Pretoria and the HPC development group.

- Incorporate a HPC on Groenkloof campus that caters for soccer, hockey and water sport facilities. The Groenkloof campus should be transformed into a sports park able to function day and night. Circulation and parking should be dealt with on a master plan level. Incorporate a storm water management plan for Groenkloof campus. The material selection used should have historic relevance.

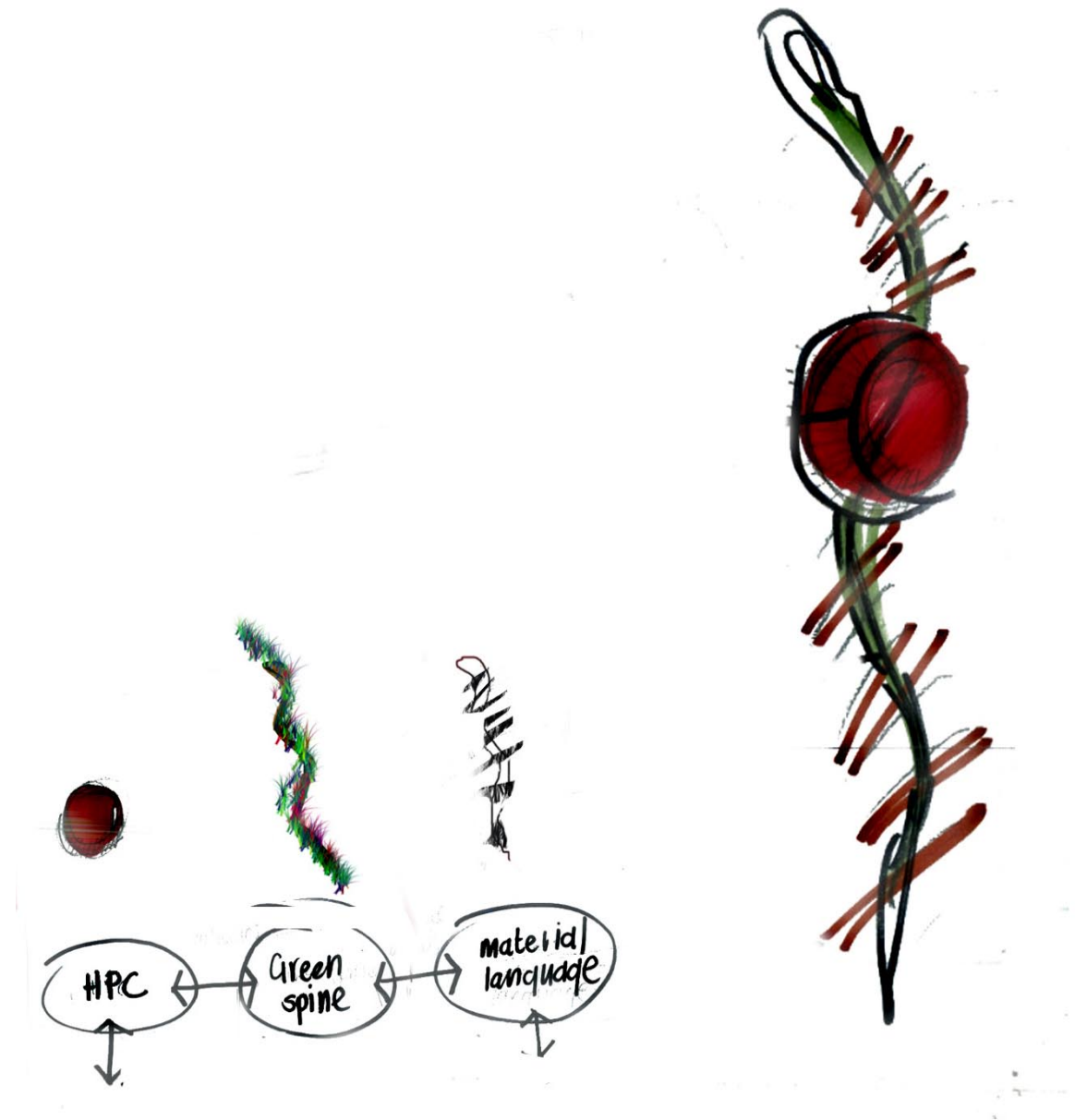


FIGURE 78 - Concept diagram, Author, 2008