

009 CONCLUSION

The building and the landscape are perceived as a whole. The building radiates into the landscape as an extension of the open spaces within the building. The nature, the institutions and the context are cast into an interactive relationship to benefit the community, university and students alike. The architecture has been set to enhance the individual experience and create a shared social landscape.

The language of the building is free from literal translations and instead, sets a neutral language by looking into the future and not the reminiscence of the past. The building provides a rich collision of events, where the boundaries of one event blend into that of the next, setting

the stage for unexpected events to occur, with functional integration and professional interaction at the core.

The unexpected combinations of movement, events and space contribute qualities of vitality to the building that are relevant to the reality of contemporary architecture, resulting in the embracing of urban life in its most exciting manifestations.

The building achieves multi-faceted unity: on plan, in section and detailing, as well as in sensory experience of the space. The expressive presence of the building is true and honest in construction. The user can truly experience architecture by moving through spaces that

change shape to accommodate and communicate changes in function, natural light that leads you through spaces, and unexpected entrances and views into other parts of the building.

It exposes the user to architecture and art in an interactive and fresh way, by revealing not only the product but the process. The experience is thus propelled through time as well as space, as it changes with the ebb and flow of the creative inhabitants. Through guidance, exposure and interaction, creative professions are promoted, to future artists and public alike.

A place where students, professionals and general public can rest, play, learn and work.

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10.1 References

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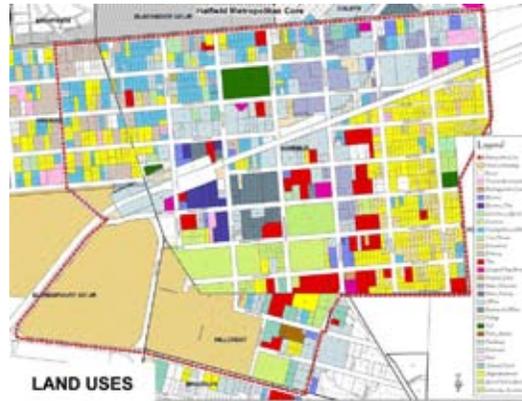
HATFIELD METROPOLITAN CORE URBAN DEVELOPMENT FRAMEWORK

Presented by Metropolitan Spatial Planning
City Planning, Development and Regional Services
Department

14 August 2007



City of Tshwane Metropolitan Municipality



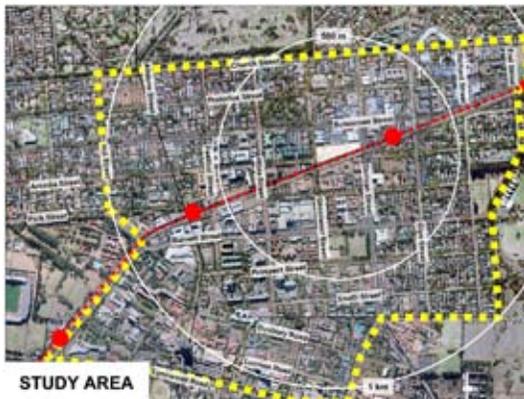
LAND USES

UNDERSTANDING TRANSIT ORIENTED DEVELOPMENT

- "Transit Oriented Development is the exciting new fast growing trend in creating vibrant, livable communities. Also known as Transit Oriented Design, or TOD, it is the creation of compact, walkable communities centered around high quality train systems. This makes it possible to live a higher quality life without complete dependence on a car for mobility and survival."
- The components of Transit Oriented Design are –
 - Walkable design with pedestrian as the highest priority
 - Train station as prominent feature of town center
 - A regional node containing a mixture of uses in close proximity including office, residential, retail and civic uses
 - High density, high-quality development within 10-minute walking radius surrounding train station
 - Collector support transit systems including trolleys, streetcars, light rail and buses
 - Designed to include the easy use of bicycles, scooters and walking as daily support transportation systems
 - Reduced and managed parking inside 10-minute walking radius around town center/train station



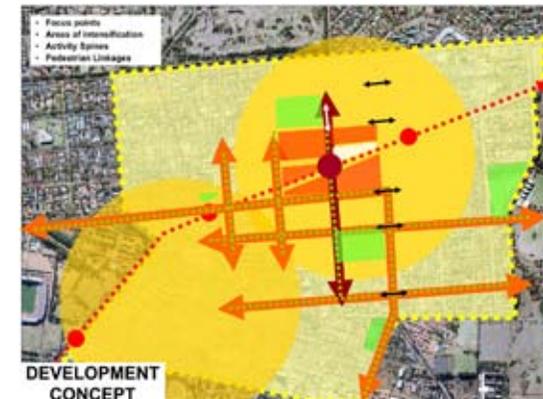
City of Tshwane Metropolitan Municipality



STUDY AREA



URBAN MANAGEMENT



DEVELOPMENT CONCEPT



CURRENT LAND USE PATTERNS



KEY DRIVING FORCES



DEVELOPMENT PROPOSALS

10.3 Frameworks

10.3.1 Hatfield Spatial Development Framework

The Hatfield area may be regarded as an international window for the larger City of Tshwane Metropolitan Area due to the fact that the majority of international embassies and trade missions in South Africa are located in this area. The overall vision for the Hatfield Gautrain Station is to create a highly accessible, pedestrian friendly environment where all major destinations are connected. However, Hatfield must continue to be an "urban place" where people want to be, creating a safe, clean, attractive and user-friendly environment to retain existing business and attract further investment. It is important to consider that with the development of the Hatfield Gautrain Station, the Hatfield area will be an evolving locale (www.tshwane.gov.za).

Urban Design Objectives:

- Implement generous sidewalks to facilitate pedestrian movement.
- Ensure appropriate assistance signage.

- Reduce lack of permeability
- Ensure appropriate lighting and safety.
- Guide development to enhance the public domain
- Restrict informal development.
- Allocate space and co-ordinate interaction at modal transfer points.
- Road improvements to cater for pedestrian movement.
- Develop and monitor the potential spatial structure.
- Promote mixed use developments
- Support and extend the CID
- Promote linkages through existing developments.

Hatfield Station Development Framework guidelines:

- Open space development
- Provision of a range of residential units
- Pedestrianisation
- building massing
- Housing typologies
- Building Fabric
- Interface conditions
- Street hierarchy and treatment.

10.3.3 Group Framework in association with the Holm-Jordaan Campus Framework

VISION STATEMENT

"TRANSFORMING THE UNIVERSITY OF PRETORIA FROM AN ISOLATED FRAGMENTED KNOWLEDGE PRODUCTION INSTITUTION, TO A UNIVERSITY CITY, A CITY OF INNOVATION."

Transforming the University and the Hatfield precinct in to a UNIVERSITY CITY, an integrated networked city of innovation and social cohesion, where public sector interfaces with the private sector, interfaces with the academic sector. Removing physical, social and psychological boundaries that are constraining both the University and Hatfield precincts growth. Creating a social blend that celebrates and empowers the uniqueness, vitality, potential and culture of South Africa's premiere Academic community.

The University City

The University of the Future is a city of knowledge. To achieve the University of Pretoria's strategic objective of becoming a world class research institute, the surrounding



Hatfield area and the university need to merge from two vibrant successful independent isolated entities to a coherent spatially integrated community, without boundaries and borders. There is an intense need to allow the community to enter upon campus grounds to fully utilise all facilities and integrate community and student life.

The transformation is a long term undertaking and will have to be achieved in phases over time. Currently, the university is not ready to be integrated with the city, but needs to be prepared for the eventual merger by designing the urban fabric to first function as two separate entities and later as a single mechanism. The campus will keep its own tangible and definable character, identity and vitality, that has clarity of circulation dominated by pedestrians. The urban fabric will be designed at human scale, where the buildings become nodes of social and academic interaction, and the exterior spaces act as outdoor rooms for academic discourse and social play. A campus designed for the night time, which has a vibrant and cultural night life. It will function as a community, working as an inter-related whole, a symbiotic relationship of allied units.

Social Hub

Hatfield precinct is to be developed to create destination place. A place of continual social, cultural and civic regeneration; a place that defines itself as the vibrant, multifunctional "body" of the "University City", Hatfield is to be the gateway of the "University City" precinct. Hatfield's continual transformation will be driven by the creation of interdependent nodes including, transport, mixed use, culture, commerce and political, allowing a dynamic interface for social expression. Hatfield must become a place for the people, for businessmen, academics, students, professionals, politicians, workers; Hatfield must be a place for all.

The unification of these two distinct identities must not allow the dissolution of either's unique identity but rather reinforce each other's key strengths and opportunities to allow a true city of knowledge to be born, a "UNIVERSITY CITY".

Five concerns addressed within the precinct:

- a) Public transport services and facilities,
- b) Pedestrians and bicycles,
- c) Traffic and parking
- d) Security
- e) University as isolated community

Performance Criteria:

- a) Vitality
- b) Accessibility
- c) Diversity
- d) Equity
- e) Control

Clues for Intervention:

- Edges
- Nodes
- Precincts
- Paths (activity links & visual links)
- Gateways
- Areas of Intervention
- Thresholds
- Green Spaces

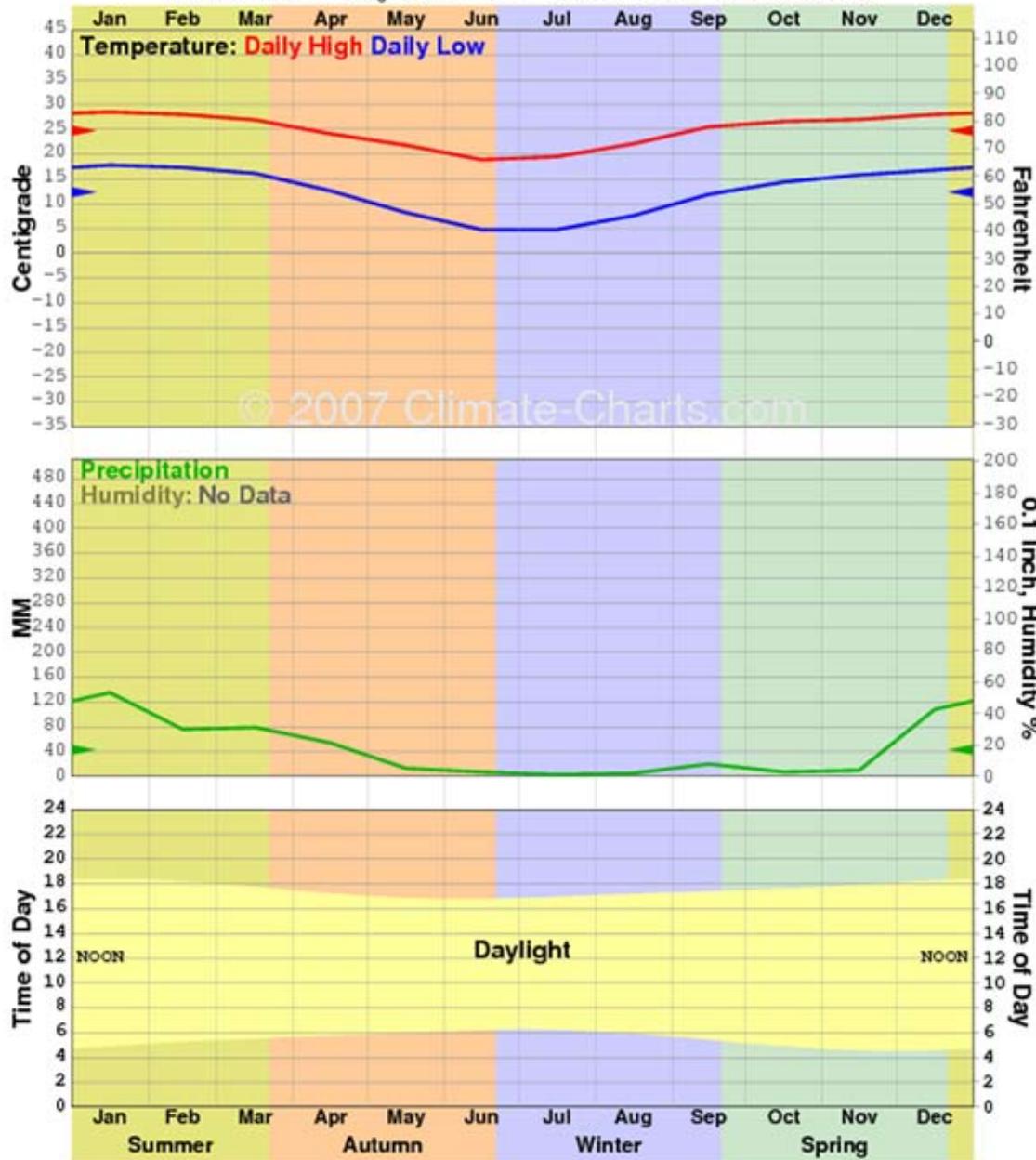
10.4.3 Existing Physical Features





Pretoria, South Africa

Latitude: 25°44'S Longitude: 028°11'E Elevation: 1330m Station: UA68262



10.4.4 Climate Data

10.4.4.1 Macro-Climature

Pretoria is located in the 'Highveld' or Northern Steppe climatic zone which is characterised by warm summers with occasional afternoon showers and winters that are dry and cool.

10.4.4.2 Micro-Climature

Pretoria, being a densely built urban environment is subject to the heat island effect created in most city centres. Buildings store and emit large amounts of heat due to long-wave re-radiation. This coupled with heat generated by people, traffic, industry, and by the heating of the interiors of buildings contributes to increased temperatures within the city necessitating shaded areas for pedestrians and increasing the need for cooling within the buildings. The tree lined streets of Pretoria help overcome this problem by filtering the air and providing shade. The site's climate can be described as unpleasant. Designing for the micro- and macro climate will have to be an important consideration in the surfacing of the site and the building. (Shultz, 1986:49)

TEMPERATURE	Summer: 20-38°C Winter: 10-27°C	Highest Maximum: 36,3°C; average monthly max (January) 24,8°C Lowest minimum: -5,5°C; average monthly minimum (June/July) 12,1°C	Pretoria is characterised by generally high temperatures due to thermal mass of the built environment. Relatively high local humidity can combine with high afternoon temperatures to cause uncomfortable heat.
HUMIDITY	Minimum (Sept): Maximum (March): Average relative humidity:	57% at 08h00 to 29% at 14h00 75% at 08h00 to 48% at 14h00 59%	101
RAINFALL	Average: Rainfall Season: Peak: Thunderstorms:	674mm per year Summer between Nov & March January Rate of 90-100mm per hour	Varies between 125-375mm in summer and 62-250mm during winter. 50-80 rainy days per year with some hail expected.
SUN ANGLES AT 12h00, DAYLIGHT & SUNSHINE	Summer (22 Dec): Winter (21 June): Equinox (21 March & 23 Sept):	88° altitude 44° altitude 64,23° altitude	Pretoria receives high amounts of solar incidence with approximately 80% during the summer months and 67% during the winter months. The percentages translate into solar radiation energy as 8Whr/m ² /day in summer and 4.5Whr/m ² /day in winter (AAL 310, 2002:19)
CLOUD COVER	Average 33%	Varying between 13% in July to 54% in December	
WIND	Summer: Winter:	North-easterly to south-easterly direction North-westerly direction	Light to Moderate. The density of the built fabric surrounding the site forms wind channels that alters micro scale atmospheric pressure, increasing wind velocity.
VEGETATION	According to Ad Destinatum 1910-60, the vegetation existing in 1910 on the future campus-site, was primarily thorn trees (presumably various <i>Acacia</i> -species) and <i>Rhus Lancea</i> . The existing vegetation is primarily perennial shade trees for the current parking area. The parking area is lined with <i>Sesiquia Ceretonia</i> (Carob) trees.		

10.4.5 Cadastral Information

2. KADASTRALE SAMESTELLING

Lot 779 bestaan uit die volgende gekonsolideerde Lotte:

KADASTRALE INLIGTING (VERWYS NA PLAN 1) LOT 779, HATFIELD				
Kadastrale samestelling	Oppervlakte	Diagram Nummer	Vorige erf beskrywing	Aanhangsel
Lot 759, Hatfield	8752m ²	8090/2001	Restant en Gedeeltes 1, 2 en 4 van Erf 45 en Erf 632, Hatfield	"A5"
Lot 760, Hatfield	32704m ²	8091/2001	Erwe 750 en 596, Hatfield	"A6"
Lot 762, Hatfield	7898m ²	8093/2001	Erwe 122, R/123, 1/123, 124, R/125, Erf 574 en 1/126, Hatfield	"A7"
Lot 778, Hatfield (gedeelte van Suidstraat)	4642m ²		Voorheen 'n gedeelte van Suidstraat	"A8"
TOTAAL LOT 779, HATFIELD	53989m²		Voorheen Lotte 759, 760, 762 en 778, Hatfield	

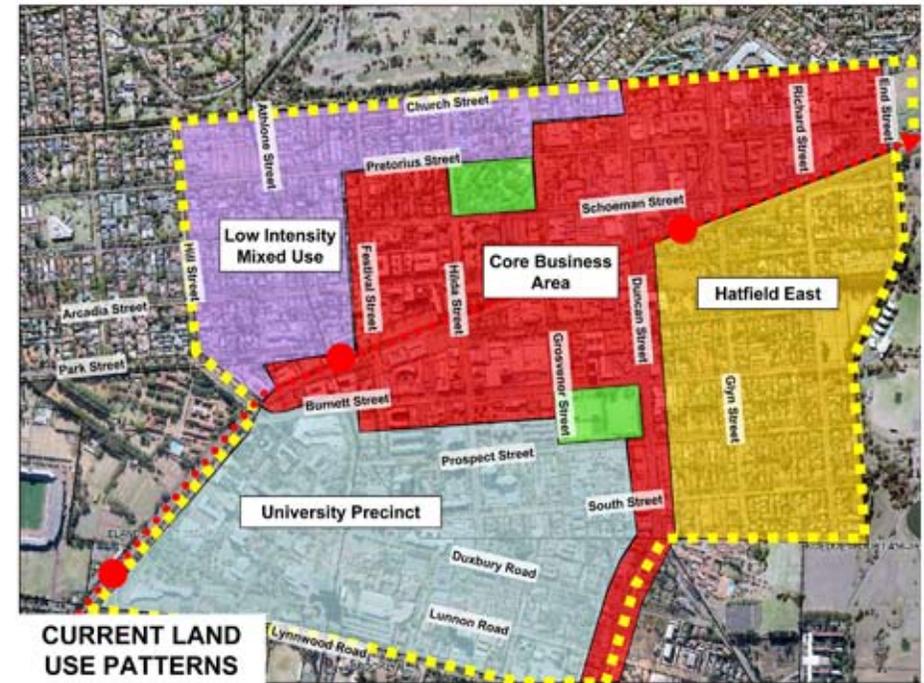
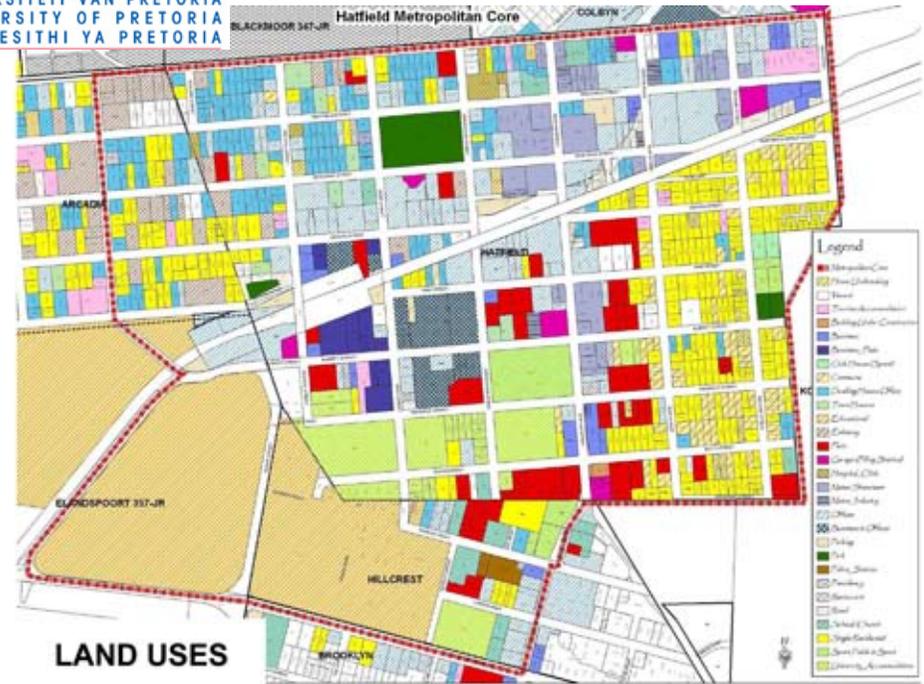


10.4.6 Land Use & Adjacent Zoning

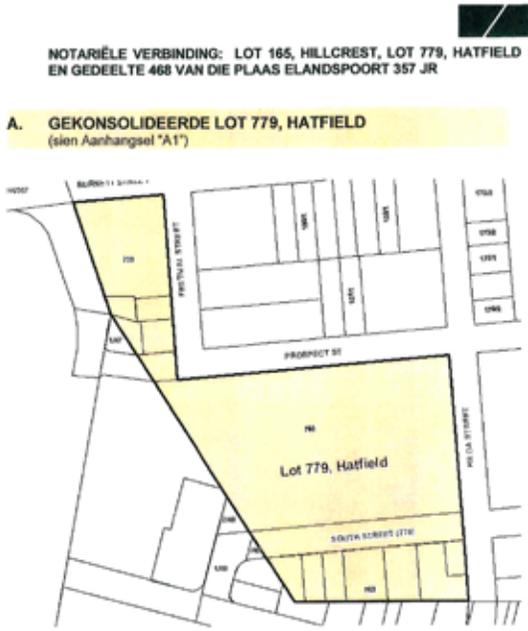
3. SONERING SAMESTELLING (sien Aanhangsel 'AS')

SONERING INLIGTING (VERWYS NA PLAN 2) LOT 779, HATFIELD						
Erf Beskrywing	Sonering	VRV	Dekking %	Hoogte	Wysigings- sistems Nr.	Aanhangsel
Lot 759, Hatfield	"Opvoedkundig" vir parking atonivik	0	0	0	9926	"A10"
Lot 760, Hatfield	"Opvoedkundig" in terme van Scene 5	1.5	40%	19m		"A11"
Part EFGH	"Opvoedkundig" vir een woonhuis	0.1	10%	1 verdieping	9926	"A10"
Part JKMN	"Opvoedkundig" vir oop ruimte	0	0	0	9926	"A10"
Lot 762, Hatfield	"Opvoedkundig" in terme van die Pretoria Dorpsbeplanningskema, 1974	0.75 Bepoel 11 500m ² BVO	TOP	4 verdiepings	9384	"A12"
Lot 778, Hatfield (gedeelte van Suedstraat)	"Opvoedkundig" in terme van die Pretoria Dorpsbeplanningskema, 1974	2.0	60%	19m	10753	"A13"

TABEL 2



10.4.7 Services & Servitudes

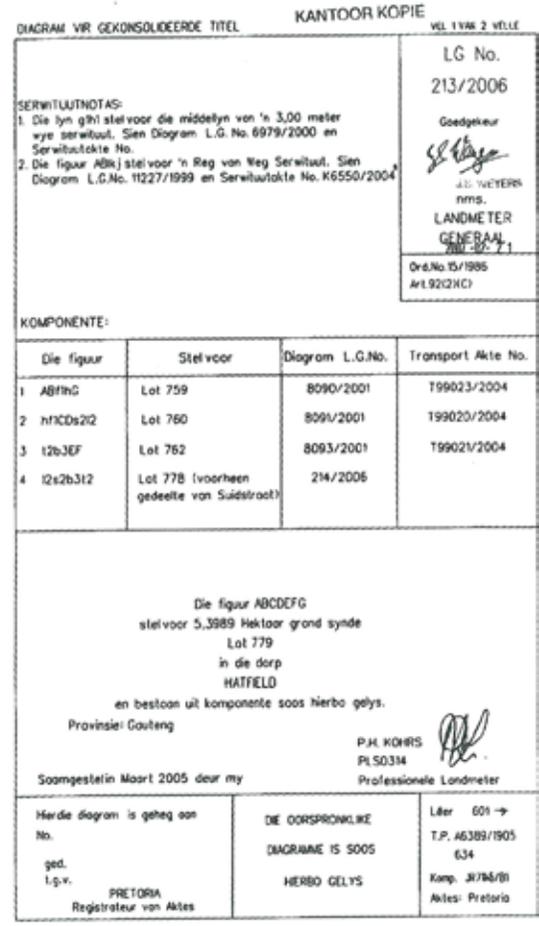
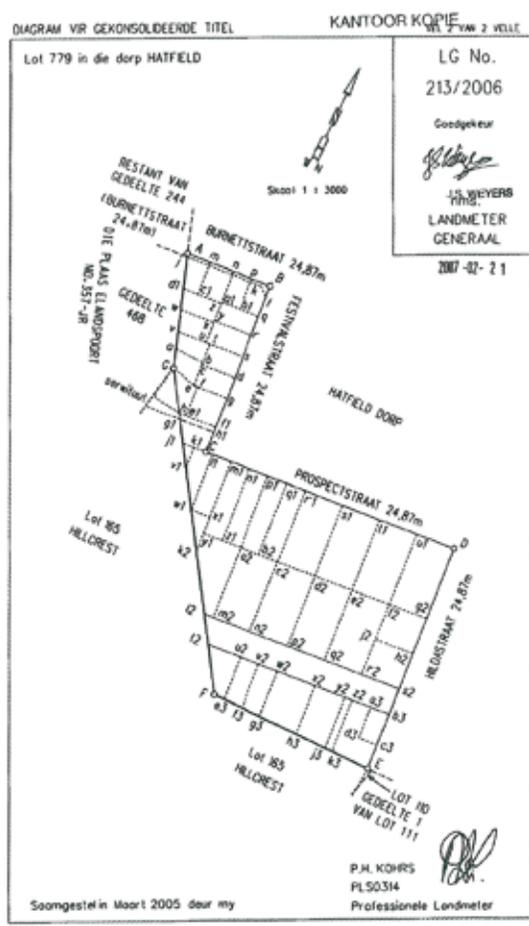


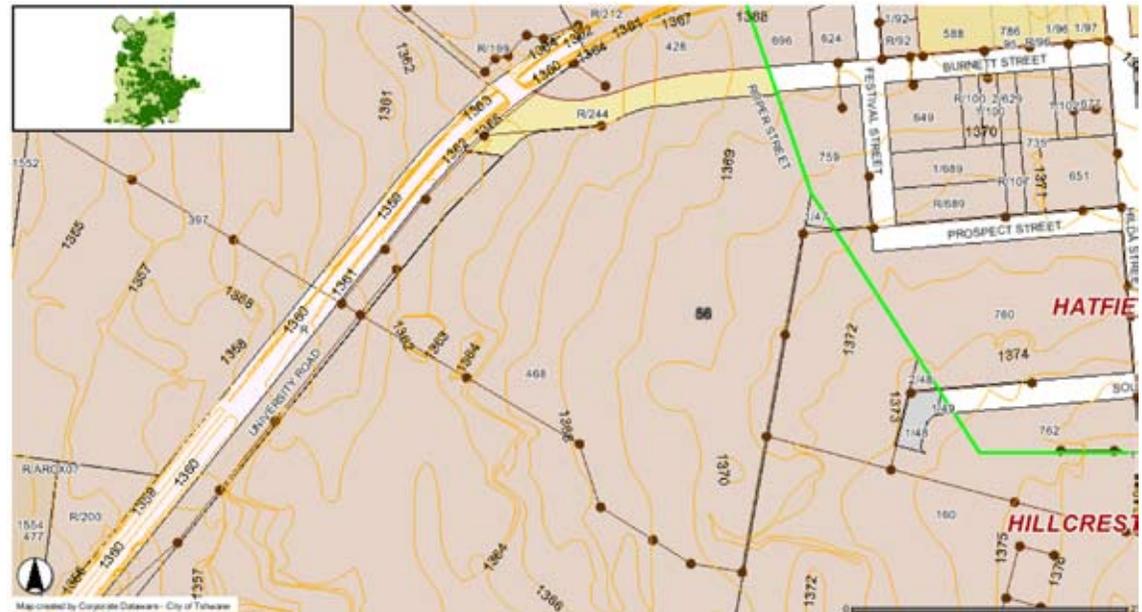
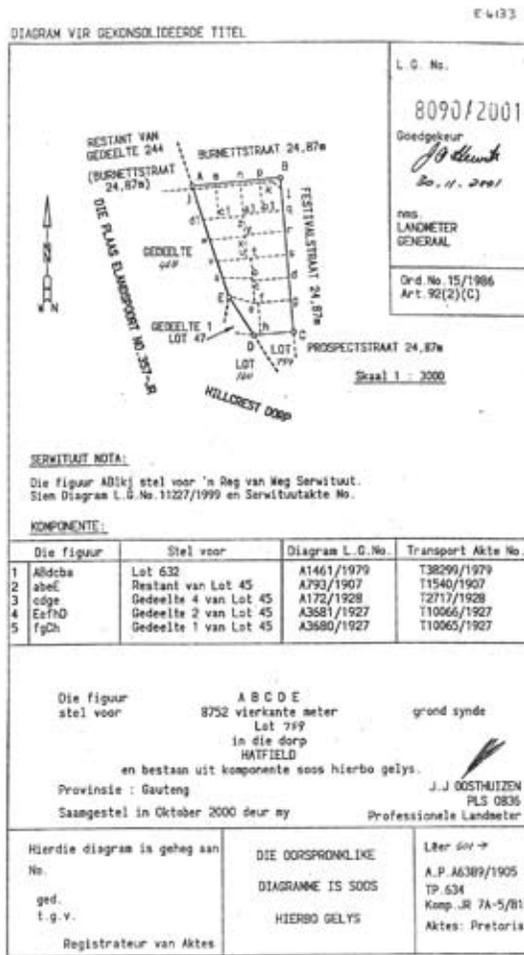
1. SERWITUTE

Aangeheg is die Algemene Plan van die Dorp Hatfield A6309/1905 (sien Aanhangsel "A2")

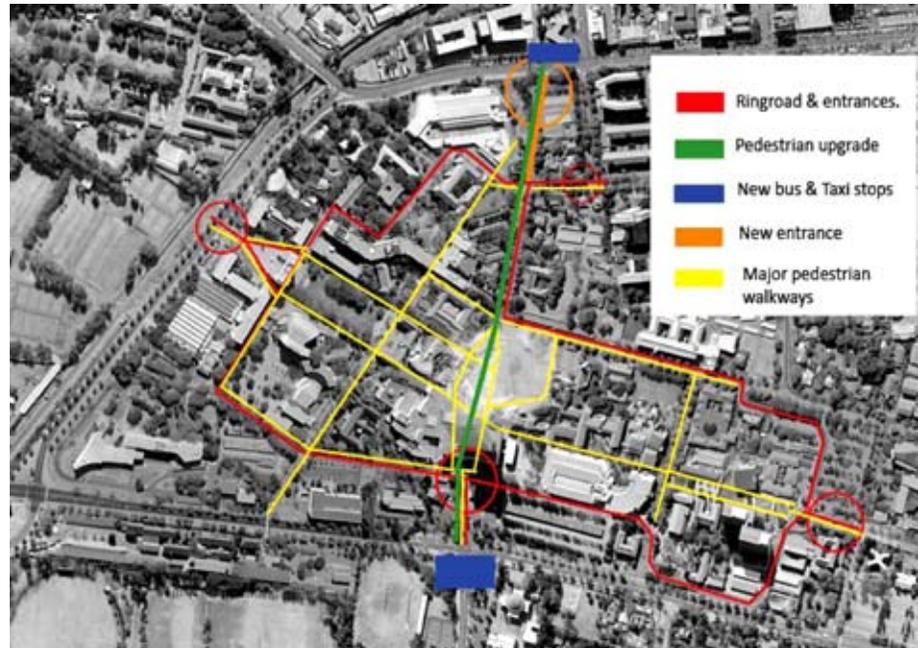
Lot 779 (5,3996ha groot) word deur sekere serwitute geraak naamlik:

- 1.1 L.G. No. 8979/2000 (Aanhangsel "A3");
- 1.2 L.G. No. 11227/1999 (Aanhangsel "A4")





10.4.10 Movement Patterns



10.5 Legislation

10.5.1 National Heritage Resources Act, 1999 (Act 25 of 1999)

Section 34:

- 1) 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.
- 2) Within three months of the refusal of the provincial heritage resources authority to issue a permit, consideration must be given to the protection of the place concerned in terms of one of the formal designations provided for in Part 1 of this chapter. This making provision for a structure to be declared as a Provincial Heritage Site.

Section 38. Heritage resources management

- 1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as--
 - a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
 - b) the construction of a bridge or similar structure exceeding 50 m in length;
 - c) any development or other activity which will change the character of a site--
 - i) exceeding 5 000 m² in extent; or
 - ii) involving three or more existing erven or subdivisions thereof; or
 - iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
 - d) the re-zoning of a site exceeding 10 000 m² in extent; or

e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

f) must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)--

a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or

b) notify the person concerned that this section does not apply.

3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

- a) The identification and mapping of all heritage resources in the area affected;
- b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;
- c) an assessment of the impact of the development on such heritage resources;
- d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- g) plans for mitigation of any adverse effects during and after the completion of the proposed development.

4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development, decide--

- a) whether or not the development may proceed;
- b) any limitations or conditions to be applied to the development;
- c) what general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
- d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of the development; and
- e) whether the appointment of specialists is required as a condition of approval of the proposal.

5) A provincial heritage resources authority shall not make any decision under subsection (4) with respect to any development which impacts on a heritage resource protected at national level unless it has consulted SAHRA.

6) The applicant may appeal against the decision of the provincial heritage resources authority to the MEC, who--

- a) must consider the views of both parties; and
- b) may at his or her discretion--
 - i) appoint a committee to undertake an independent review of the impact assessment report and the decision of the responsible heritage authority; and
 - ii) consult SAHRA; and
- c) must uphold, amend or overturn such decision.

7) The provisions of this section do not apply to a development described in subsection (1) affecting any heritage resource formally protected by SAHRA unless the authority concerned decides otherwise.

8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements

of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

9) The provincial heritage resources authority, with the approval of the MEC, may, by notice in the Provincial Gazette, exempt from the requirements of this section any place specified in the notice.

10) Any person who has complied with the decision of a provincial heritage resources authority in subsection (4) or of the MEC in terms of subsection (6) or other requirements referred to in subsection (8), must be exempted from compliance with all other protections in terms of this Part, but any existing heritage agreements made in terms of section 42 must continue to apply.

10.5.2 Statutory Legal Regulations

The Floor Area Ratio for developments on campus is 2.5, with a height restriction of six storeys (+/- 18m). If developments occur on existing parking areas, alternative parking should be provided.

NOTARIELE VERBINDING: LOT 779, HATFIELD, LOT 165 HILLCREST EN GEDEELTE 468, ELANDSPOORT 357 JR

GEKONSLIDEERDE LOT 779, HATFIELD

GEKONSLIDEERDE LOT 759, HATFIELD (L.G. NOMMER: 8090/2001)

ERF BESKRYWING	OPP. VAN ERF m²	GEBOU NR.	FOOTPRINT TOTAAL	F/PRINT BIJGEBOU	F/PRINT HOOGBOU	AANTAL VLOERE	TOTALE VLOER OPP.	BESTAANDE VRV	BESTAANDE DEKKING %	WYSIGING SKEMA NR.
632	6247.00	4138	281.81		111 x 60	4	111 x 60	0.04	4.24	9926
6465	488.00	4133	17.88		184 x 9	1	184 x 9	0.36	37.74	9926
6465	606.00	4133	21.56		107 x 20	1	107 x 20	0.35	33.42	9926
6465	493.00	4119	280.22	218.62	41 x 8	1	280.22	0.53	52.78	9926
6465	858.00	4124	276.22	28.68	247 x 54	1	276.22	0.32	32.19	9926
TOTAAL	8752.00		1208.09				1208.09	0.14	13.80	

TOELAATBARE VRV EN DEKKING IN TERME VAN WYSIGINGSKEMA 9926

Erf Beskrywing	VRV	Dekking	Grondgebruik	Hoogte
Lot 759, Hatfield	0	0	Parkeerterrein	0



GRONDGEBRUIKSONE: V "OPVOEDKUNDIG"

Doelindes waarvoor geboue opgerig of gebruik, of grond gebruik mag word indien die eiendom "Opvoedkundig" gesoneer is in terme van Sone 5 van die Pretoria Dorpsbeplanningskema, 1974:

Grondgebruiksone	Primêre Reg:	Toelaatbaar met toestemmingsgebruik aansoek	Toelaatbaar met hersonerings aansoek
Opvoedkundig	-Onderrigplekke, -Geselligheidsale, -Plekke vir Openbare godsdiensoefening	-Inrigtings -Spesiale Geboue, -Woongeboue, -Woonhuise, -Tuisondernemings ingevolge Schedule IX(g)	Ander gebruike nie onder die vorige kolomme genoem nie.

(i) WOORDOMSRYWINGS

- Onderrigplekke:** Beteken 'n gebou en grond gebruik vir 'n skool, kollege, tegniese instituut, akedemie, lesingsaal, monnikelooster, nonneklooster, openbare biblioteek, kunsmuseum, museum, kleuterskool, kinderbewaarhuis-cum-kleuterskool, kinderbewaarhuis-cum-kleuterskool-cum-naskoolsentrum of ander opvoedkundige sentrum en omvat 'n koshuis vir persone wat enige van die voorgenoemde bywoon maar omvat nie 'n gebou wat ontwerp is om uitsluitlik of hoofsaaklik as 'n gesertifiseerde verbeterings- of nywerheidskool gebruik te word nie.
- Geselligheidsale:** Beteken 'n gebou ontwerp of gebruik vir, onder ander, gesellige byeenkomste en ontspanning en 'n nie-residensiële klub maar dit sluit nie dié gebruike soos onder 'n "Vermaaklikheidsplek" gedefinieer in nie.
- Plekke vir Openbare Godsdiensoefening:** Beteken 'n gebou ontwerp of gebruik vir 'n kerk, kapel, sinagoge, Sondagskool of 'n ander plek vir openbare godsdiensoefening en omvat 'n inrigting of ander gebou vir die doel van gesellige verkeer en ontspanning op dieselfde terrein en verbonde aan enigeen van die

voorgenoemde geboue, maar omvat nie 'n begrafniskapel of roulokaal nie.

(ii) VRV, DEKKING EN HOOGTE

Die Gebruiksone "Opvoedkundig" spesifiseer in die Hatfield en Hillcrest-gebied dat die VRV, Dekking en Hoogtebepalings van Sone 5 van die Pretoria Dorpsbeplanningskema, 1974 geld.

Stadsbeplanningkontroles	Gebruike
VRV vir Sone 5:	Vir Duplekswonings, Woonstelle, Hostelle en blokke huurkamerwonings.
1,5	
2,0	Vir alle ander gebruike ingevolge die woordomsrywings toelaatbaar.
Dekking vir Sone 5:	Vir alle ander gebruike ingevolge die woordomsrywings toelaatbaar.
60%	
40%	Vir blokke Duplekswonings, blokke Woonstelle en blokke huurkamerwonings.
Hoogte vir Sone 5:	Vir alle gebruike.
19m	

(iii) GEVOLGTREKKING

Indien die bovermelde toelaatbare VRV, Dekking en Hoogte onder Item 3. vergelyk word met die bestaande gebou inligting onder Item 4. kan die volgende gevolgtrekking gemaak word:

- Die bestaande geboue opgerig op die Universiteitsgronde val binne die beperkings van die VRV en Dekking vereistes van die Pretoria Dorpsbeplanningskema, 1974.
- Die rekords van die Universiteit sal waarskynlik wys dat toestemming verkry was om die hoogte beperkings soos gestel in die Pretoria Dorpsbeplanningskema, 1974, t.o.v. die geboue wat 'n hoogte van 19m oorskry verkry is.



4. BESTAANDE GEBOUE

Hierby aangeheg is 'n tabel uiteensetting van alle bestaande geboue op Lot 779, Hatfield (sien Aanhangsel "A14")

BESTAANDE GEBOU INLIGTING LOT 779, HATFIELD							
Erf Beskrywing	Opp. Van geboue op Erf / m ²	Opp van Erf / m ²	VRV	Dekking %	Maksimum Hoogte	Lys van bestaande geboue Aanhangel	Berekening van bestaande VRV ens. Aanhangel
Lot 759, Hatfield	1208.09	8752	0.14	13.8	1 verdieping	"A15"	"A14"
Lot 760, Hatfield	27866.55 (afdakke 221.56m ² uitgesluit)	28876	0.97	38.04	13 verdiepings	"A16"	"A14"
Ged EFGH	165.88	2552	0.7	6.5	1 verdieping	"A16"	
Ged JKMN	0	1276	0	0	0	"A16"	
Lot 762, Hatfield	4976.90 (afdakke 1189.50m ² uitgesluit)	7898	0.63	38.82	4 verdiepings	"A17"	"A14"
Lot 778, Hatfield (gedeelte van Suidstraat)	0	4642	0	0	0		"A14"
Totaal Lot 779	-	53996m²					

TABEL 3

Notas: VRV: Vloer Ruimte Verhouding
TOP: Terrein Ontwikkelings Plan
BVO: Bruto Vloer Oppervlakte
Opp: Oppervlakte

10.5.3 Promotion of Equality & Prevention of Discrimination Act, 2000 (Act 7 of 2000) - regarding disability.

No person may unfairly discriminate against any person on the ground of disability, including -

- a) Removing any supporting facility necessary for their functioning in society.
- b) Contravening the code of practice or regulations of South African Bureau of Standards, that govern environmental access.
- c) Failing to eliminate obstacles that unfairly limit or restrict persons with disabilities from enjoying equal opportunities.

10.5.4 SABS Building Regulations 0400-1990

The building has been designed in accordance with the South African Bureau of Standards - National Building Regulations.

Part S of the National Building Regulations (NBR) and its associated code 0400 includes regulations setting out national requirements for an accessible built environment.

Barrier-free Access:

The built environment contains a number of barriers that prevent people with disabilities from enjoying equal opportunities. For example: structural barriers such as flights of stairs, inaccessible toilets and bathrooms and uneven pavements; inaccessible entrances due to security systems such as turnstiles; poor town planning such as schools, clinics positioned at the highest point in town, narrow pavement areas, and lack of demarcated parking bays; and poor interior design such as fixed seats in restaurants, cluttered overall spaces, bad lighting, and inaccessible tables.

10.6 Research Methodology

10.6.1 Research Methods

The research methodology comprises several different methods of research for the different aspects of the project. It will also be a combination of a Linear and Systems approach to problem solving. Because of the nature of Architecture, the project has a systemic focus but will also progress generally in a linear fashion and will constantly be updated and corrected as the research and analysis produces more data.

The Objective will therefore be: the optimisation of the system (Systemic) as well as produce the best answer to the problem (Linear). The Process will be: building and modifying the system to the ideal (Systemic) while using analysis and synthesis to reach this goal. The Accent will be equally on the components of the problem (Linear) as well as the linkages between components (Systemic).

10.6.2 Historical & Analytical Research Method

For the theoretical investigation parallel to the project, I will use a combination of the Historical and Analytical research methods.

The historical method will be used to analyse and investigate other Architectural theorists and their writings (historical and literary data) on relevant topics to my theoretical investigation.

The precedent studies will be undertaken as analytical research method, studying its functional aspects, characteristics and qualities. By analysing different projects of similar form, function or structure, I will deduce successful methods of implementing such practices in

10.6.3 Descriptive Survey Method

the project.

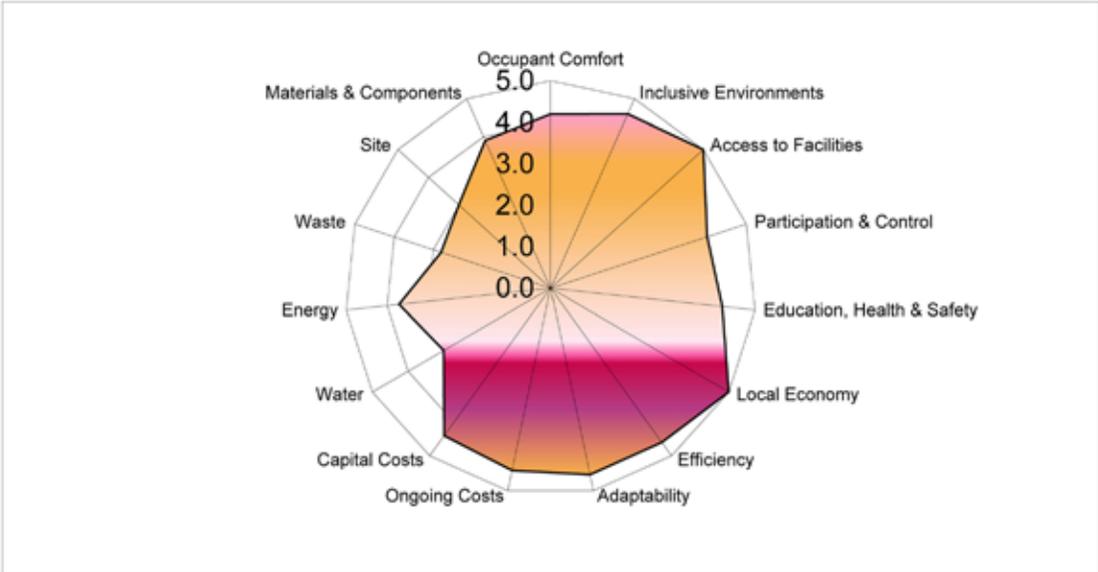
A small part of the research for the project will be the analysis of contextual data collected from observation of student movement patterns, energy flow on and onto campus, and volumes of traffic handled by various access routes and points. The objective will be to identify

10.6.4 Grounded Theory Method

movement patterns, norms, criteria, standards, and the aesthetic context.

The bulk of the project research will be done according to the Grounded Theory Method as information is generated inductively from the analysis of the contextual data. It will be the most applicable research method as it is context-centred and will lead to fit the context theoretical frameworks and design guidelines leading to a grounded design (De Villiers, 2008). The grounded theory method will help me to define sets of methods, so that a Grounded Theory will emerge systematically and inductively through ongoing covariant data collection and analysis. Through this ongoing process a grounded theory will grow, be adjusted, expanded and refined (Lincoln & Guba, 1985). The method includes interviews, observation, fieldwork, documenting and recording, videotaping, and analysis.

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) V1



10.7 Baseline Criteria

Constant comparative coding will form part of the validation process, patterns will be identified, new data coded into categories, reviewed and expanded as the theory emerges (De Villiers, 2008).

This baseline study serves as a guideline to direct the conceptual process towards an integrated sustainable outcome. The Sustainable Building Assessment Tool (SBAT), which was developed by the Sustainable Building group of the CSIR in Pretoria, has been selected to generate the baseline guiding criteria and performance targets.

The tool is used to assess the performance of a building but its main aim is to influence the design of buildings and construction early on in the planning process, stressing the importance of sustainable development and allowing sustainability to become an integrated aspect rather than a retrofit attempt. The sustainability rating obtained can then aid in setting benchmarks and also allows for comparative sustainability and performance analysis between buildings.



Building Performance - Environmental

Criteria	Indicative performance measure	Measured	Points
EN 1 Water			3.0
EN 1.1 Rainwater	% of water consumed sourced from rainwater harvested on site	80	0.8
EN 1.2 Water use	% of equipment (taps, washing machines, urinals showerheads) that are water efficient	80	0.8
EN 1.3 Runoff	% of carparking, paths, roads and roofs that have absorbant/permeable surfaces (grassed/hatched/fooselaid paving/ absorbant materials)	30	0.3
EN 1.4 Greywater	% of water from washing/relatively clean processes recycled and reused	30	0.3
EN 1.5 Planting	% of planting (other than food gardens) on site with low / appropriate water requirements	80	0.8
EN 2 Energy			3.7
EN 2.1 Location	% of users who walk / use public transport to commute to the building	100	1.0
EN 2.2 Ventilation	% of building ventilation requirements met through natural / passive ventilation	90	0.9
EN 2.3 Heating & Cooling	% of occupied space which has passive environmental control (no or minimal energy consumption)	100	1.0
EN 2.4 Appliances & fittings	% of appliances / lighting fixtures that are classed as highly energy efficient (ie energy star rating)	80	0.8
EN 2.5 Renewable energy	% of building energy requirements met from renewable sources	0	0.0
EN 3 Waste			2.8
EN 3.1 Toxic waste	% of toxic waste (batteries, ink cartridges, fluorescent lamps) recycled	80	0.8
EN 3.2 Organic waste	% of organic waste recycled	80	0.8
EN 3.3 Inorganic waste	% of inorganic waste recycled	80	0.8
EN 3.4 Sewerage	% of sewerage recycled on site	0	0.0
EN 3.5 Construction waste	% of damaged building materials / waste developed in construction recycled on site	40	0.4
EN 4 Site			3.0
EN 4.1 Brownfield site	% of proposed site already disturbed / brownfield (previously developed)	100	1.0
EN 4.2 Neighbouring buildings	No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100	1.0
EN 4.3 Vegetation	% of area of area covered in vegetation (include green roofs, internal planting) relative to whole site	40	0.4
EN 4.4 Food gardens	Food gardens on site (100%)	0	0.0
EN 4.5 Landscape inputs	% of landscape that does not require mechanical equipment (ie lawn cutting) and or artificial inputs such as weed killers and pesticides	60	0.6
EN 5 Materials & Components			3.9
EN 5.1 Embodied energy	Materials with high embodied energy (aluminium/plastics) make up less than 1% of weight of building (100%)	80	0.8
EN 5.2 Material sources	% of materials and components by volume from grown sources (animal/plant)	80	0.8
EN 5.3 Ozone depletion	No materials and components used requiring ozone depleting processes (100%)	100	1.0
EN 5.4 Recycled / reuse	% of materials and components (by weight) reused / from recycled sources	60	0.5
EN 5.5 Construction process	Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	80	0.8



Building Performance - Economic

Criteria	Indicative performance measure	Measured	Points
EC 1 Local economy			5.0
EC 1.1 Local contractors	% value of the building constructed by local (within 50km) small (employees<20) contractors	100	1.0
EC 1.2 Local materials	% of materials (sand, bricks, blocks, roofing material) sourced from within 50km	100	1.0
EC 1.3 Local components	% of components (windows, doors etc) made locally (in the country)	100	1.0
EC 1.4 Local furniture/fittings	% of furniture and fittings made locally (in the country)	100	1.0
EC 1.5 Maintenance	% of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	100	1.0
EC 2 Efficiency			4.6
EC 2.1 Capacity	% capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	80	0.8
EC 2.2 Occupancy	% of time building is occupied and used (actual average number of hours used / all potential hours building could be used (24) *100)	100	1.0
EC 2.3 Space per occupant	Space provision per user not more than 10% above national average for building type (100%)	100	1.0
EC 2.4 Communication	Site/building has access to internet and telephone (100%), telephone only (50%)	100	1.0
EC 2.5 Material & Components	Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	80	0.8
EC 3 Adaptability			3.2
EC 3.1 Vertical heights	% of spaces that have a floor to ceiling height of 3000mm or more	50	0.5
EC 3.2 External space	Design facilitates flexible external space use (100%)	80	0.8
EC 3.3 Internal partition	Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%))	50	0.5
EC 3.4 Modular planning	Building with modular structure, envelope (fenestration) & services allowing easy internal adaptation (100%)	80	0.8
EC 3.5 Furniture	Modular, limited variety furniture - can be easily configured for different uses (100%)	60	0.6
EC 4 Ongoing costs			4.5
EC 4.1 Induction	All new users receive induction training on building systems (50%), Detailed building user manual (50%)	100	1.0
EC 4.2 Consumption & waste	% of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%))	50	0.5
EC 4.3 Metering	Easily monitored localised metering system for water (25%) and energy (75%)	100	1.0
EC 4.4 Maintenance & Cleaning	Building can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials (100%)	100	1.0
SO 4.5 Procurement	% of value of all materials/equipment used in the building on a daily basis supplied by local (within the country) manufacturers	100	1.0
EC 5 Capital Costs			4.4
EC 5.1 Local need	Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	80	0.8
EC 5.2 Procurement	Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	100	1.0
EC 5.3 Building costs	Capital cost not more than fifteen % above national average building costs for the building type (100%)	80	0.8
EC 5.4 Sustainable technology	3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	80	0.8
EC 5.5 Existing Buildings	Existing buildings reused (100%)	100	1.0

Building Performance - Social

Criteria	Indicative performance measure	Measured	Points
SO 1 Occupant Comfort			4.2
SO 1.1 Daylighting	% of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	90	0.9
SO 1.2 Ventilation	% of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with unpolluted air source	90	0.9
SO 1.3 Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dBa)	80	0.8
SO 1.5 Thermal comfort	Temperature of occupied space does not exceed 28 or go below 18°C for less than 5 days per year (100%)	80	0.8
SO 1.5 Views	% of occupied space that is 6m from an external window (not a skylight) with a view	80	0.8
SO 2 Inclusive Environments			4.6
SO 2.1 Public Transport	% of building (s) within 400m of disabled accessible public transport	100	1.0
SO 2.2 Information	High contrast, clear print signage in appropriate locations (100%)	80	0.8
SO 2.3 Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users	100	1.0
SO 2.4 Toilets	% of space with fully accessible toilets within 50m	100	1.0
SO 2.5 Fittings & Furniture	% of commonly used furniture and fittings (reception desk, kitchenette, auditorium) fully accessible	80	0.8
SO 3 Access to Facilities			5.0
SO 3.1 Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	100	1.0
SO 3.2 Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities	100	1.0
SO 3.3 Retail	All users can walk (100%) / use public transport (50%) to get to food retail	100	1.0
SO 3.4 Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post, telephone and internet)	100	1.0
SO 3.5 Exercise	All users can walk (100%) / use public transport (50%) to get to recreation / exercise facilities	100	1.0
SO 4 Participation & Control			4.0
SO 4.1 Environmental control	% of occupied spaces able to control their thermal environment (adjacent to openable windows/thermal controls)	80	0.8
SO 4.2 Involvement	% of users actively involved in the design process (workshops / meetings with models / large format drawings)	80	0.6
SO 4.3 Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100	1.0
SO 4.4 Sharing facilities	5% of facilities shared with other users / organisations on a weekly basis (100%)	80	0.8
SO 4.5 User group	Active representative user group involved in the management of the building / facilities / local environment (100%)	80	0.8
SO 5 Education, Health & Safety			4.2
SO 5.1 Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied spaces (75%). Construction training provided on site (25%)	100	1.0
SO 5.2 Safety	All well used routes in and around building well lit (25%), all routes in and around buildings (25%) visually supervised, secure perimeter and access control (50%), No crime (100%)	100	1.0
SO 5.3 Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel)	80	0.6
SO 5.4 Materials	All materials/components used have no negative effects on indoor air quality (100%)	100	1.0
SO 5.5 Accidents	Method in place for recording all occupational accidents and diseases and addressing these	60	0.6

10.7.1 Economic State

The tool was specifically designed for buildings in developing countries and it therefore focuses on pertinent issues in the economic, social and environmental domains as summarised below:

"Responsive systems and technologies that are able to

10.7.2 Social State

accommodate change and ensure that limited resources are used and maintained as efficiently and effectively as possible to provide for the needs of existing and future populations without damaging the biophysical environment" (Gibberd, 2003:115).

10.7.3 Environmental State

"Safe, happy, healthy, cohesive, fulfilled, societies that have organisational structures and are able to develop innovative solutions, which enable them to share limited resources equitably and in ways that enable all existing and future populations' needs to be met" (Gibberd, 2003:115).