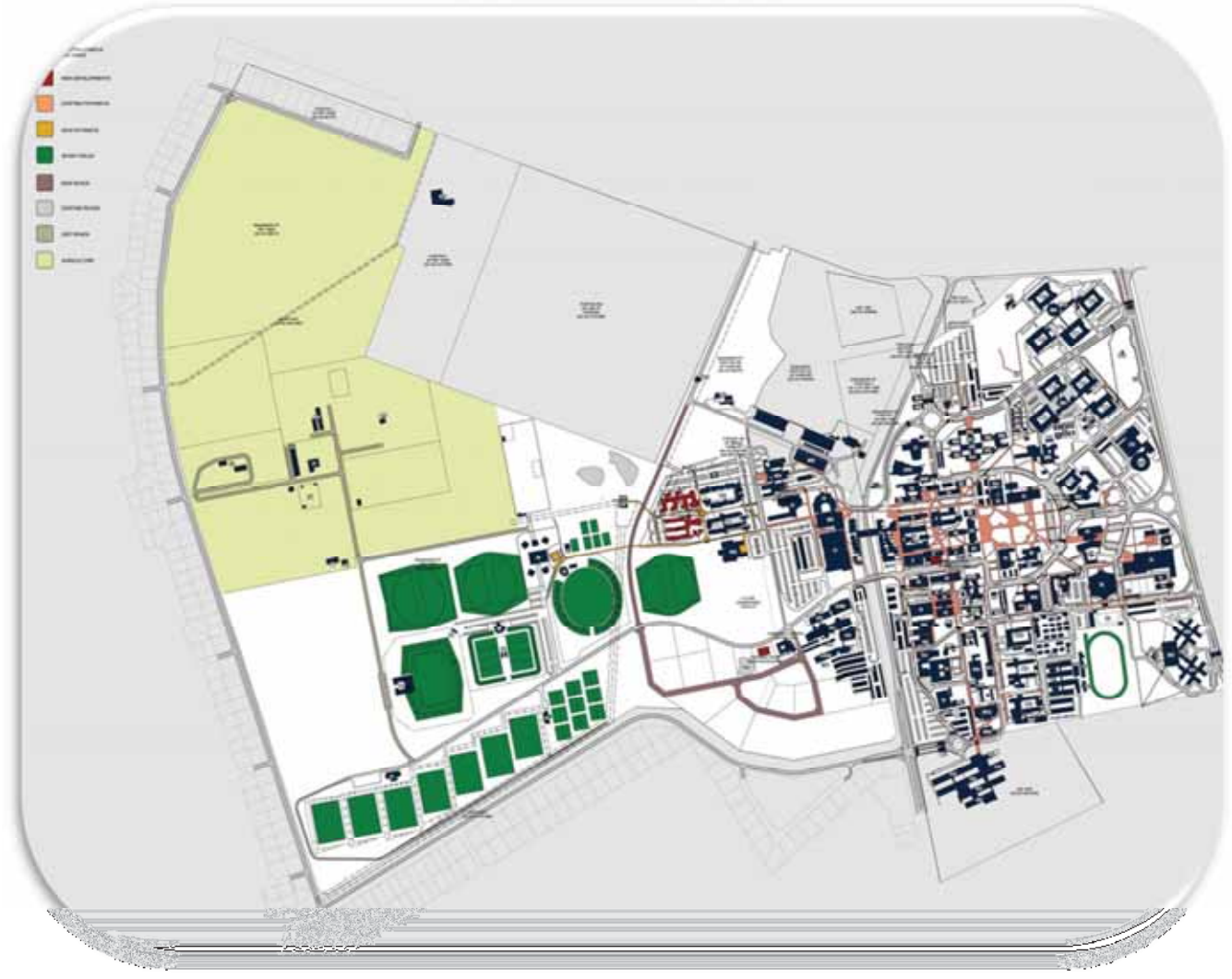
STRATEGIC DEVELOPMENT PLAN: UFS MAIN CAMPUS

NOVEMBER 2013

DEPARTMENT PHYSICAL PLANNING



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1. INTRODUCTION

1.1.BACKGROUND AND PURPOSE

Planning for the future begins with an understanding of the status quo: the place, the people and the social, economic and environmental forces underlying the trends that are shaping the University's development.

Change and growth are inevitable, and development pressures are a given.
Nevertheless, a university with foresight and insight can guide and manage development to ensure the best possible outcome.

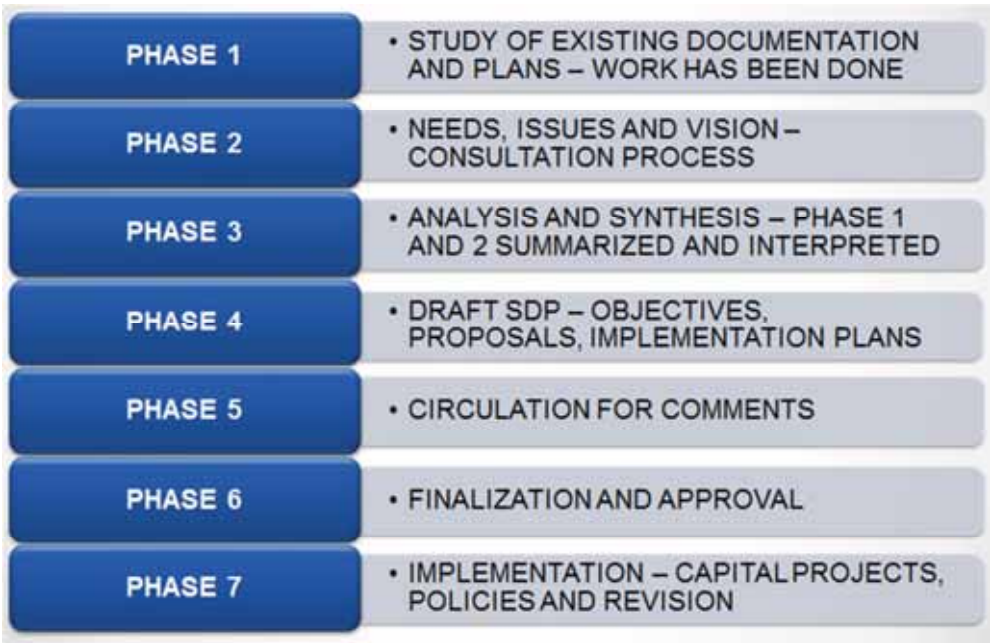
The overall intention of the UFS Strategic Development Plans (SDP's) is to guide and manage urban growth, and to balance competing land use demands, by putting in place a long term, logical development path that will shape the spatial form and structure of the campuses.

The proposed development path must be dynamic and adaptive and will need to be reviewed from time to time to ensure that they remain relevant, realistic and informed by changing events.

1.2.METHODOLOGY

Seven (7) phases are utilised to reach the desired outcome, as explained in Figure 1.

Figure 1: Methodology of UFS Strategic Development Planning



2. STATUS QUO

2.1.STUDY AREA

Consisting of four (4) erven and one (1) farm portion with a combined extent of 264.2864 Ha, the Main Campus of the University of the Free State is situated in central South Afirca in Bloemfontein bordered by Nelson Mandela Drive to the north, Koos van der Walt Street to the west, Grey College to the east with Wynand Mouton Street and Universitas Hospital to the south.

Map 1 and Table 1 provides information regarding the properties that together form the UFS main campus.

Table 1: Relevant Properties

	PROPERTY DESCRIPTION	SIZE (IN HA) 1HA = 10 000m²
	MAIN CAMPUS	
1	Erf 15873, Bloemfontein	16.106
2	Re/Erf 18329, Bloemfontein	162.8732
3	Erf 25025, Bloemfontein	62.6202
4	Re/Erf 3259, Bloemfontein	14.1678
5	Re/Ptn 229 of the farm Bloemfontein 654, district Bloemfontein	8.52
	TOTAL 1	**264.2872**

2.2.NATURAL CHARACTERISTICS

2.2.1. TYPOGROPHY, GEOLOGY AND SOIL

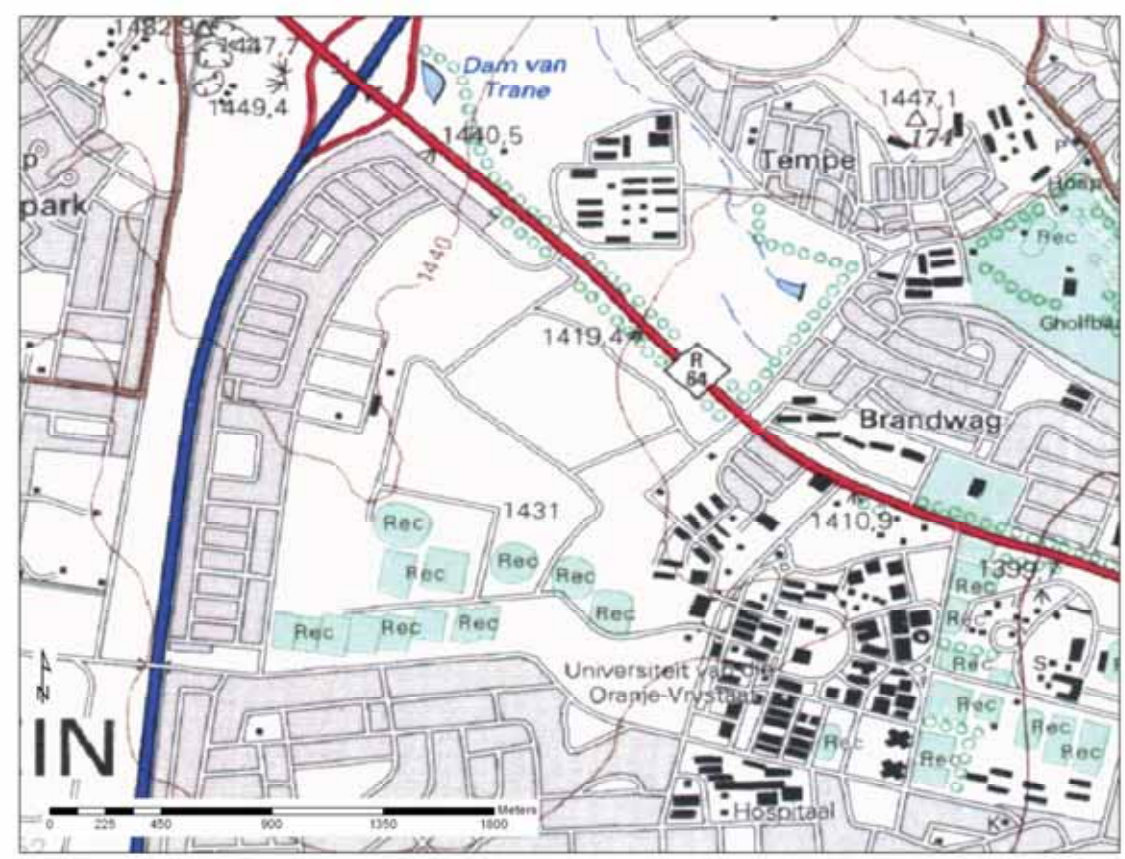
The Main Campus is situated at approximately 1430m above sea level with a gentle slope in a northern and southern direction with a ridge traversing the property in an east-west direction.

Typically the material found on site is clayey sand with decomposed mudstone and some calcrete, but outcrops of dolerite are also present especially on the central parts of the campus.

The material found on site falls under the Phanerozoic Group of Beaufort Adelaide formation which forms part of the Karoo Super Group.

The above is applicable before any development occurred.

Figure 2: 1: 50 000 Topographical Map



2.2.2. CLIMATE

The proposed site at the University of the Free State falls in the dry climatic region with Weinert's N – value greater than 5. The University is in a dry region with primarily summer rainfall. The rainfall is between 250mm and 500mm per year according to Vegetation of Southern Africa - By R M Cowling, D M Richardson and S M Pierce.

2.2.3. ENVIRONMENTALLY SENSITIVE AREAS

The Main Campus is indicated as falling within the urban edge and is earmarked as an institutional district in the Spatial Development Framework of the Mangaung Metropolitan Municipality.

No environmentally sensitive areas have been identified and the campus falls outside the Metropolitan Open Space System (Moss).

According to Prof. Maitland Seaman of the UFS centre for Environmental Management al so stated that they are not aware of any areas on the main campus that house endangered plant or animal life.

However, it would be advisable to analyse the site as a whole to determine the drainage areas as well as land that should be preserved as is.

Figure 3: Extract from the Mangaung Spatial Development Framework

2.3.INFRASTRUCTURE AND SERVICES

2.3.1. WATER

Map 2 provides a visual representation of the water reticulation network of the main campus, which varies from 250mm diameter to 63mm diameter water pipes. Because the campus was established 1904, the current condition of the reticulation network is not well known. Repairs and upgrading is done as and when problems occur and not according to a set maintenance plan. Table 2 provides information regarding the monthly water consumption for the year 2012.

Table 2: Monthly Water Consumption for 2012

Monthly Water Consumption 2012 in Kilolitre	
Month	**Main Campus**
January	94103
February	85331
March	103699
April	79089
May	74049
June	59762
July	52610
August	52135
September	70045
October	75631
November	80389
December	36991
TOTAL	**863834**
AVERAGE	**71986**

To put the water consumption into perspective: The January consumption equals more than double the amount of water that can be stored in the new municipal water reservoir on Naval Hill.

2.3.2. ELECTRICITY[1]

2.3.2.1. ELECTRICAL INFRASTRUCTURE AND CONSUMPTION

Map 3 and Map 4 provides a visual representation of the high- and low tension electrical reticulation of the Main Campus while Tables 3, 4, 5 and 6 provide information regarding the kWh, kVA and rand value of electricity consumption.

Table 3: kWh per m² per annum

kWh					
	2012	**2011**	**2010**	**2009**	**2008**
MAIN CAMPUS	46 858 420	46 545 442	44 366 685	44 112 817	43 345 369
kWh/m²/per annum	120	119	113	113	111

Table 4: Maximum Annual Electricity Demand

Maximum demand (kVA)					
	2012	**2011**	**2010**	**2009**	**2008**
MAIN CAMPUS	12 412	12 067	10 177	10 339	9 313
Annual Increase	345	1 890	-162	1 026	-

Table 5: Rand Value of Consumption

Annual Electricity Account (VAT Incl)					
	2012	**2011**	**2010**	**2009**	**2008**
MAIN CAMPUS	R 52 531 096	R 42 112 848	R 30 881 566	R 23 022 116	R 18 611 423
Annual Increase	R 10 418 248	R 11 231 281	R 7 859 450	R 4 410 693	-
% Increase	24.74	36.37	34.14	23.70	-

Table 6: Average R/kWh (VAT Incl)

Average R/kWh (VAT Incl)			
	2012	**2011**	**2010**
MAIN CAMPUS	R 1.12	R 0.90	R 0.70

[1] *Source: UFS Electrical - and Mechanical Engineers*

The main challenge with regard to the electrical infrastructure on the main campus is that the 11kV ring is not yet closed on the western side of the campus. This causes a risk due to the fact that if there is a failure along the line, the stream cannot be reversed to keep the number of users affected to a minimum.

2.3.2.2. JOHNSON CONTROLS BUILDING MANAGEMENT SYSTEM

The Johnson Controls BMS is a computer based control system used for plant control and monitoring and, very importantly, energy management.

From "bottom" upwards it consists of:

Electronic plant controllers: These controllers are computer programmed to execute control functions of air conditioning, ventilation, central heating and hot water plants. These specific control functions are done by the controllers, not the central computer.

About 450 of these controllers are used over the campus

Network Interface Units: These units are the interface between the central computer and the plant controllers. A large number of controllers are connected to one interface unit.

These units act as a gateway to convey messages between the central computer and the plant controllers. Currently there are 15 such units in operation on the campus to form the links between the central computer and the 450 controllers.

Central computer: The central computer is linked via the campus network infrastructure to the interface units. A highly developed and expensive program is used to do all the necessary control functions.

The following important functions are performed:

- Graphic display of each plant is available on the computer screen. On this display information such as temperatures, whether the plant is on or off, certain fault conditions etc. is available.
- Important alarm conditions can be programmed to come up automatically.
- Temperatures can be set remotely.

The plant can be switched on and off at pre-set scheduled times. For example the air conditioning systems for CR Swart Auditorium and Senate Hall only run at those times when the two venues are booked for functions or meetings. Similarly the lecture hall systems are programmed to be switched off in the evenings on weekdays and over weekends and holidays unless there are special reservations for meetings.

All the above functions play a major role in enhancing the maintenance of systems and in many cases fault conditions are attended to even before it is reported by building users.

Energy management: This is cost wise by far the most important function of the BMS.

The system monitors the total energy demand of the campus constantly and is programmed to limit energy usage to pre-set levels in order to save on electricity costs.

The monthly electricity bill consists of the following:

Maximum kVA demand measured over a period of 30 minutes any time during the month: This means that, should the demand be e.g. 10 000 kVA for 30 minutes this component of the bill will be R1 038 882 incl. VAT. The system is programmed to limit the demand to different levels during peak, standard and off peak periods. This is done by switching large energy users (e.g. large heating plants) on and off for maximum and minimum periods to limit usage without noticeable detrimental effect in building comfort as far as possible.

Access demand: The maximum peak demand measured during a 12 month period is used to calculate the access demand fee. In 2011 the maximum demand registered for the year was just under 11 000 kVA. On the 8th of Aug 2012, an extremely cold day, we hit 12 412 kVA, so from that day on until the 8th Aug 2013 an amount of about R450 000 (incl. VAT) formed part of the total monthly bill. But the BMS managed to limit the demand on that day to prevent it from reaching 13 114 kVA and by doing so resulted in a monthly saving of almost R40 000 (incl. VAT).

This year it was possible to bring this access demand down to 10 983 kVA, about the same level as that of 2011 despite the fact that several new buildings came into operation since then.

KWh consumption during peak, standard and off peak times: By using the pre-set maximum demand levels for the time of use periods, the system strives to minimize energy usage during expensive peak times by switching large users off and rather let them run during the less expensive periods. In most cases heating systems have large hot water storage vessels in which heating energy can be stored during less expensive periods and be used during peak times without switching on the heaters.

The total savings achieved by the BMS run into millions of Rand per year.

Table 7: Savings implemented by means of BMS

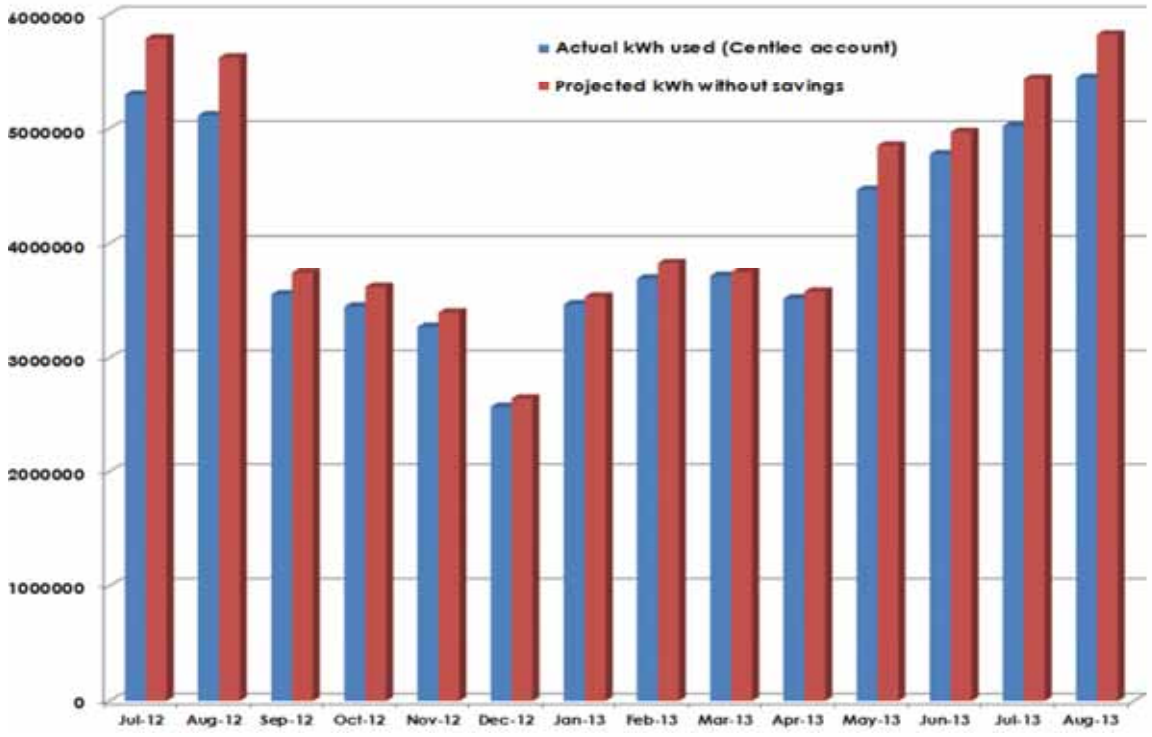
Month	Actual kWh used (Centlec account)	Actual kWh saved	Projected kWh without savings	Actual kVA Demand	kVA Saved	Projected kVA without savings
Jul-12	5294530	496412	5790942	10716	2098	12814
Aug-12	5115237	508276	5623513	12334	1154	13488
Sep-12	3547605	187326	3734931	7798	288	8086
Oct-12	3443487	170175	3613662	7378	672	8050
Nov-12	3268778	122978	3391756	7677	749	8426
Dec-12	2570445	72567	2643012	5925	560	6485
Jan-13	3464214	65073	3529287	8864	209	9073
Feb-13	3685629	146040	3831669	9388	72	9460
Mar-13	3707959	31234	3739193	9090	521	9611
Apr-13	3512851	59641	3572492	8305	743	9048
May-13	4461998	390543	4852541	9050	986	10036
Jun-13	4777323	192288	4969611	10499	594	11093
Jul-13	5022897	415644	5438541	10849	1161	12010
Aug-13	5447922	377183	5825105	10981	1405	12386
Total	**57320875**	**3235380**	**60556255**	**128854**	**11212**	**140066**
% Saved		**5.34**			**8.00**	

Table 8: Energy Savings and Decrease in Carbon Footprint

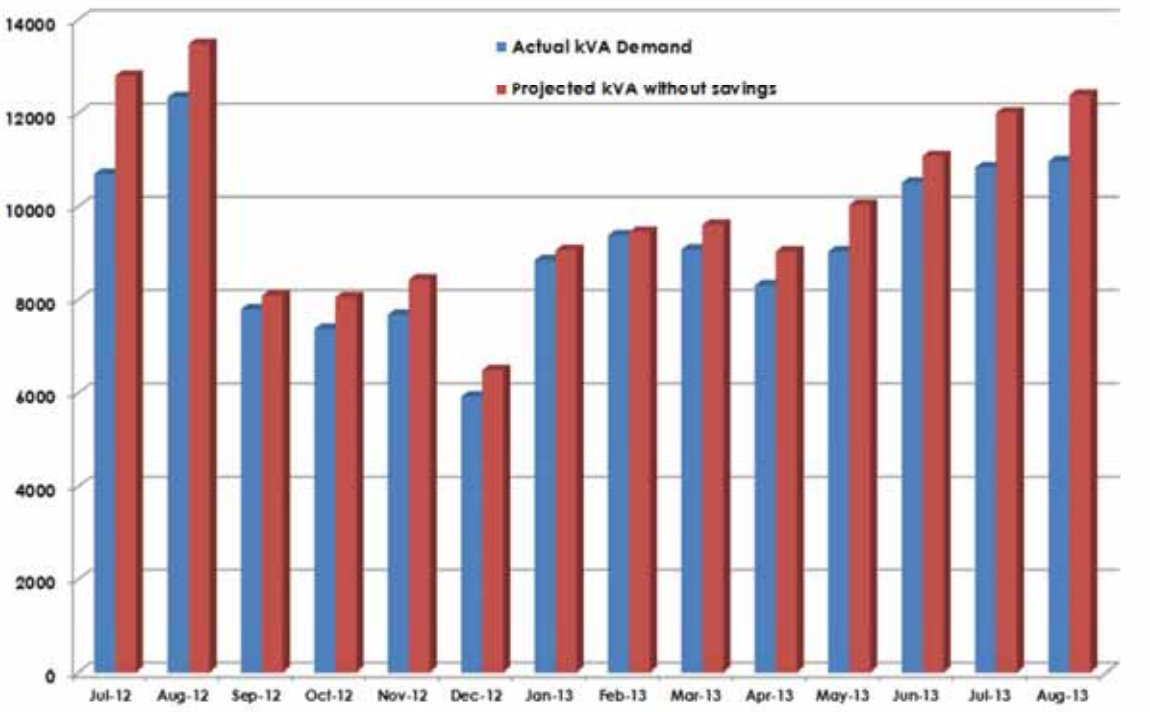
Month	Actual kWh saved	CO_2 Decrease (Ton)
Jul-12	496412	511.3
Aug-12	508276	523.5
Sep-12	187326	192.9
Oct-12	170175	175.3
Nov-12	122978	126.7
Dec-12	72567	74.7
Jan-13	65073	67.6
Feb-13	146040	50.6
Mar-13	31234	32.2
Apr-13	59641	61.4
May-13	390543	402.3
Jun-13	192288	198.1
Jul-13	415644	305.9
Total	**2858197**	**2722.5**

One major challenge is that there is still a large part of the campus where systems have not been connected and can therefore not be controlled. This includes items such as lights, individual air conditioning units and personal heaters.

Graph 1: Graphic Representation of kWh as per Table 7 above



Graph 2: Graphic Representation of kVA as per Table 7 above



2.3.3. SANITATION

Map 5 shows the water borne sewage reticulation network of the main campus, which varies in diameter between 300mm and 110mm. No sewer treatment plants or oxidation ponds are situated on the site.

Because the campus was established 1904, the current condition of the reticulation network is not well known. Repairs and upgrading is done as and when problems occur and not according to a set maintenance plan.

2.3.4. TELECOMMUNICATION & WI-FI ACCESS

Map 6 indicates the layout of computer cables on the main campus. According to information received from ICT, the condition of said cables at especially some of the older residences is not in an acceptable condition.

Telkom (see Map 7) and cell phone coverage is available. Wi-Fi Coverage will be finalised in March 2014.

2.3.5. ROADS & STORMWATER

Map 8 provides a graphic representation of the road and pedestrian network on the main campus.

A maintenance plan has been formulated and herewith a concise summary of information in this regard.

Table 9: Length and Surface – Paved/Tarred Roads

Main Bloemfontein Campus		
	Length	**Width**
Akademie EB	240	6.8
Akademie WB	240	7
Alumni	300	7
Dekaan	1935	7
Fakulteits1 WB	910	6.5
Fakulteits2	285	7
Fakulteits1 EB	910	6.5
Graduandi	720	7.1
Irawa	400	7
Kanseliers NB	1110	7
Kanseliers SB	1080	7
Konvokasie1	605	6.7
Konvokasie2	238	8.5
Kovsie	170	8
Predie	90	5.5
Registrateurs	148	6.7
Rectors	585	7.5
Senaat N	510	8.5
Senaat S	285	14
Shimla	320	6.5
Sokkie	435	6.8
Swot	200	6.5
Sport	515	6.2
Gate 5 Access	100	16
Gate 4 Access	390	7
Shimla Park	130	5
Furstenburg Extension	700	7
Total length of paved/tarred roads (m)	**13551**	
Total length of paved/tarred roads (km)	**13.551**	
Paved/Tarred Roads surface (m^2)		**97071**

Table 10: Gates, Entrance and Exit Lanes

ENTRANCE AND EXIT LANES		
MAIN CAMPUS	**IN**	**OUT**
Gate 1 – Nelson Mandela	3	3
Gate 2 – Badenhorst	1	2
Gate 3 – Wynand Mouton	2	3
Gate 4 – Furstenburg	1	1
Gate 5 – DF Malherbe	1	2
Total	**8**	**11**

Table 11: Traffic Volumes and Analysis, September 2013

	TOTAL TRAFFIC PER DAY			TRAFFIC IN MORNING PEAK	TRAFFIC IN AFTERNOON PEAK	OCCUPANCY (passengers per vehicle)	COMPOSITION %			
	IN	OUT	TOTAL	IN	OUT		STAFF	STUDENT	VISITOR	TOTAL
Main Bloemfontein Campus										
Gate 1	5801	6266	12067	693	755	1.63	29	35	36	100
Gate 2	2643	2686	5329	574	411	1.51	21	36	43	100
Gate 3	5495	5645	11140	1042	781	1.64	31	52	17	100
Gate 4	1864	1781	3645	403	341	1.57	32	30	38	100
Gate 5	1443	1416	2859	258	180	1.50	25	46	29	100
Total	**17246**	**17794**	**35040**	**2970**	**2468**	**1.57**	**27**	**40**	**33**	**100**

Table 12: Pedestrian Walkways

± Length Of Primary Pedestrian Walkways In Km	6.2
± Area Of Primary Pedestrian Walkways In Ha	1.5

2.4.TRAFFIC MANAGEMENT

2.4.1. ACCESS MANAGEMENT

As part of an overall endeavour to provide the best possible security for students on campus, security gate houses have been constructed at the main access points to the campus, with a symbolic entrance gateway added to the main entrance in 2011.

A comprehensive study is in process with the implementation of traffic (pedestrian and vehicular) access management on the main campus as goal.

The traffic surveys have been completed and the roll-out plan will be finalised by the end of November 2013.

The distribution of trip purpose for motorists entering the various gates are given in Table 13

Table 13: Trip Distribution of Vehicles

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5	Total
Pass through	6%	20%	1%	2%	1%	7%
Drop off/pick up passengers	17%	18%	11%	22%	19%	17%
Staff member	29%	21%	31%	32%	25%	27%
Student	35%	37%	52%	30%	47%	40%
Visiting with appointment	3%	1%	1%	1%	1%	2%
Visiting without appointment	3%	2%	2%	11%	3%	4%
Contractor	5%	0%	1%	1%	2%	2%
Delivery	3%	1%	1%	2%	0%	1%
Total	100%	100%	100%	100%	100%	100%

Source: UFS Traffic Access Management Study, Gibb Engineering & Science (Sept. 2013)

More information is provided in paragraph4.3 regarding the implementation of the Traffic Access Management Study.

2.4.2. PARKING POLICY

Table 14: Parking

Number of Parking Bays	6500
Number of Disabled Parking Bays	35
Additional Reserved for Disabled	25
± Area used for Parking Bays (Ha)	16.25

A parking policy was formulated and implemented in 2012/2013 for the Main Campus of the University of the Free State. The purpose of the policy is to establish guidelines and principles for the use of parking places with a view to alignment with the UFS's strategic objective to provide green, healthy, affordable, safe, fair and orderly parking.

See Map 8 for more detail in this regard.

Student Parking: All designated student parking areas that have been identified as part of the Parking Policy Study, have been clearly marked with yellow signage on curved frames.

Four (4) parking pylons have been manufactured and installed at the four large student parking areas. The locality of the mentioned parking areas are:

- Wynand Mouton gate opposite Francois Retief building;
- DH Malherbe gate opposite the Agricultural building;
- Adjacent to the Sasol Library; and
- Adjacent to the Odeion.

Residence Students: All designated residence student parking areas that have been identified as part of the Parking Policy Study, have been clearly marked with green signage on curved frames.

Staff Parking: All designated staff parking areas have been clearly marked with signage. One new reserved staff parking areas has been equipped with a boom opposite Provisioning.

An additional exercise was to demarcate the covered parking bays utilised by the Thakaneng tenants. A parking survey was conducted and parking bays clearly marked. Signage was also erected in this regard.

Visitors Parking: All designated visitors parking areas have been clearly marked with orange signage on curved frames.

Warnings regarding leaving valuables in vehicles have also been added in the vicinity/at five of the visitor's parking areas / zones, namely:

- Opposite Parexel;
- Adjacent to CR Swart Building;
- Adjacent to the Centenary Complex;
- Callie Human; and
- DF Malan gate

2.4.3. PEDESTRIAN / CYCLE PATHS

The main campus boasts dedicated pedestrian routes that offer safe and easy movement for students between destinations. These routes include directional way-finding as well as pause and socializing areas.

The primary pedestrian walkway comprise a distance of ±6,2 km and an area of ±1,5km.

The pedestrian system provides the connections between the different modes of transport and is a critical element in supporting the transit system.

To encourage more walking, the pedestrian element supports:

- Providing a continuous network so that pedestrians are not stranded short of their destination or forced into difficult or potentially dangerous situations;
- Ensuring a safe walking environment through adequate maintenance, vegetation trimming and lighting;
- Creating a pedestrian-oriented environment through high quality urban design and pedestrian amenities; and
- Providing routine education and enforcement on the rights and responsibilities of pedestrians, bicyclists and vehicle drivers.

2.5.EXISTING AND FUTURE LAND USE

The utilisation of the study area can be divided into eight (8) main land use categories, namely:

- Academic and Ancillary Buildings;
- Residential;
- Sport and Recreation (including active and passive open spaces);

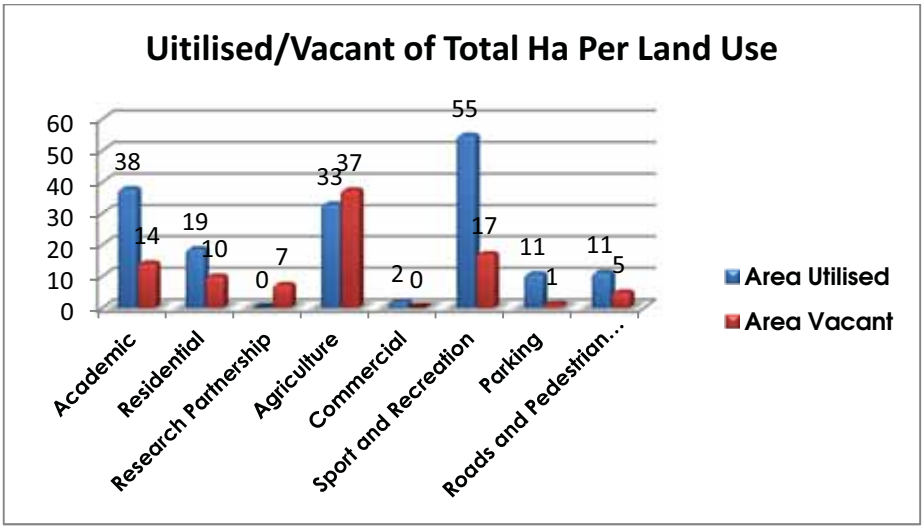
- Commercial / Business;
- Parking;
- Research Partnerships;
- Agriculture; and
- Roads and Pedestrian Walkways.

Map 9, Tables 14 and 15 as well as Graphs 3, 4 and 5 provide more information with regard to land use categories for future and existing land uses. Areas that were identified as vacant but with a potential land use was earmarked by means of future land use planning as per the current SDP. It thus reflects the status quo of the current situation, but as strategic planning is a dynamic process, this may change as the strategic planning of the campus develops.

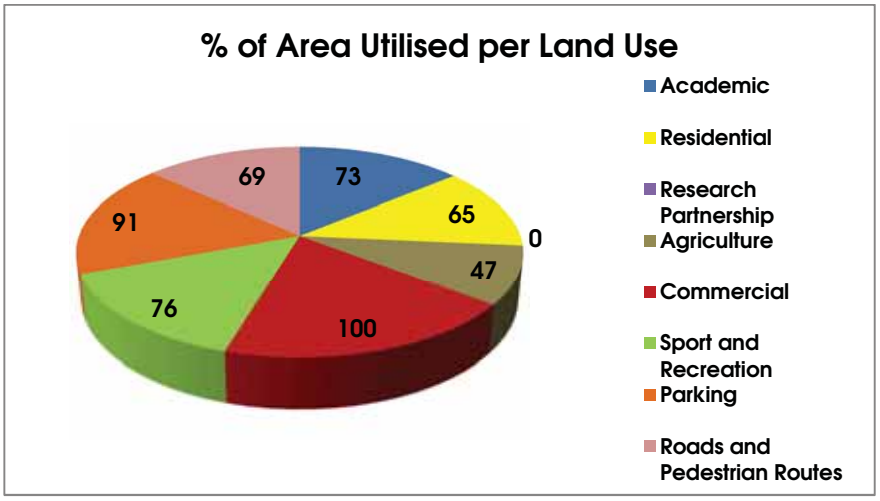
Table 15: Number of Ha per Land Use Category

LAND USE	AREA UTILISED (HA)	AREA VACANT (HA)	TOTAL (HA)
Academic	37.9	14.2	52.0
Residential	18.7	10.5	29.2
Research Partnership	0.0	7.4	7.4
Agriculture	33.0	37.5	70.5
Commercial	1.9	0.0	1.9
Sport and Recreation	54.8	17.1	71.9
Parking	10.7	1.1	11.8
Roads and Pedestrian Routes	11.2	5.0	16.2
TOTAL	**168**	**93**	**261**

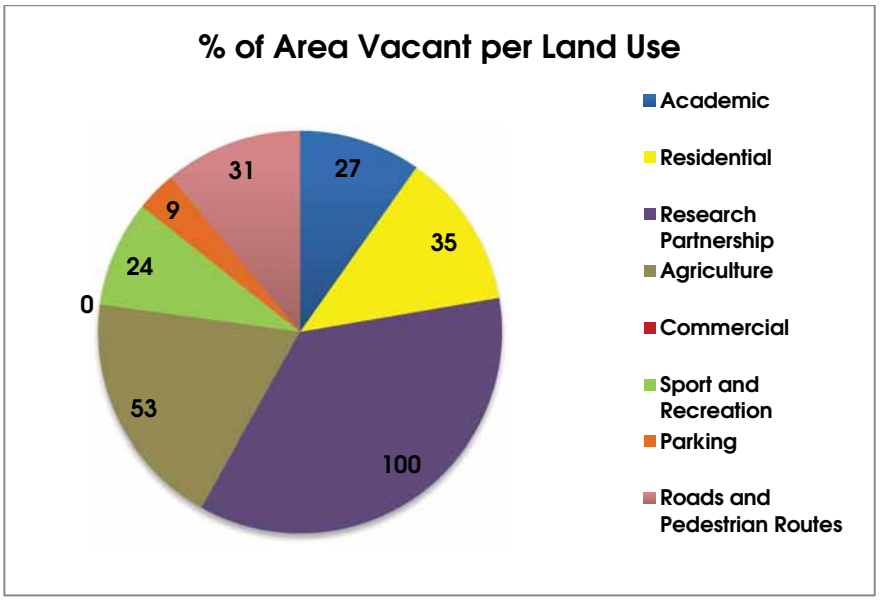
Graph 3: Vacant and Utilised Land per Hectare and Land Use



Graph 4: Percentage of Land (of 168Ha) Utilised per Land Use



Graph 5: Percentage of Land (of ±93Ha) Vacant per Planned Land Use



2.6.LAND AVAILABILITY

According to the calculation as represented in Table 15, theoretically 92Ha of land is available for various land use categories. It should be mentioned that there are certain factors that need to be taken into consideration that can negatively influence the optimal utilisation of the above, such as:

- Availability of Bulk Infrastructure
- Viability of Infrastructure development
- Soil conditions
- Practical Considerations of Infill Development; and
- Economy of Scale

3. SCENARIO PLANNING

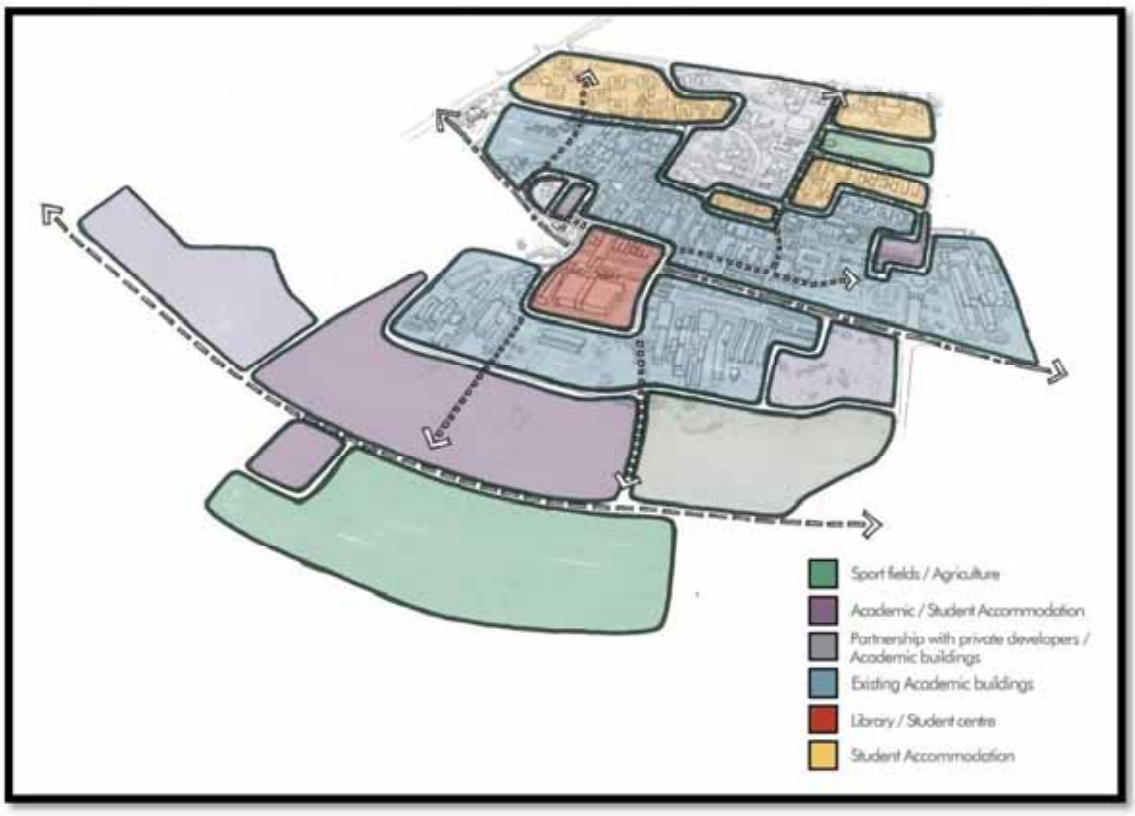
3.1.UFS VISION, SPATIAL OBJECTIVES, PRINCIPLES AND STRUCTURING ELEMENTS

It's often said that 'structure' follows strategy. This is particularly true of the University. The long range strategic plan of the University should inform its spatial development plan that by its very nature is a long term plan.[2]

As guiding principles, it was decided that the existing main campus to the east of DF Malherbe Avenue will be densified with infill projects where feasible, and the campus environment enhanced to create attractive spaces for students in which to learn and to socialize. Projects associated with this part of the campus include the creation of dedicated pedestrian routes that offer safe and easy movement for students between destinations. These routes include directional way-finding as well as pause and socializing areas.

A number of refurbishment projects were also undertaken during the last 10 years and these include the re-instatement of the campus leadership in the Main Building, the upgrading and refurbishment of the Centenary Complex, as well as the upgrading of various other buildings on the eastern side of the main campus. This also includes the rendering of buildings accessible to people with disabilities.

It was also decided that the portion of the campus to the west of DF Malherbe Avenue, will be utilized for future academic and residential developments. The decision to locate the new Library on the west portion of the main campus in the late 1970s suggested that future development will occur in this direction, but for many years this did not happen.



[2] Prof Verna Nel, UFS Dept. Urban Planning

The construction of a new Thakaneng Student Centre over DF Malherbe Avenue was the first step in physically uniting the two halves of the campus. Since its completion in 2004, other developments have followed. These include inter alia the Computer Centre, Financial Planning Law, the new Education Building, Carpool and additions to the Parexel Building.

As part of an overall endeavour to provide the best possible security for students on campus, security gate houses have been constructed at the main access points to the campus, with a symbolic entrance gateway added to the main entrance in 2011.

The Campus Strategic Development Plan or Structure Plan is taking shape and ultimately, the campus will reflect contemporary thinking on campus planning and layout. The Library and Student Centre must remain the core of the campus surrounded by academic and residential neighbourhoods and precincts. The siting of new developments is based on the principles and guidelines posited in the Structure Plan and the evolution of the plan is regularly reviewed by a committee especially convened for this purpose.

These include:

- Focus on the development of the western side of the main campus;
- Creation of a pedestrian-friendly and universally accessible landscape;
- Strong emphasis on providing suitable residential accommodation has resulted in the construction of two new residences, with another scheduled to start construction in the near future;

The University recognizes that a well-planned and attractive campus environment forms an integral part of the learning experiences of students and their transformation into the future leaders of our society.[3]

3.2.INFLUENCE OF RE-CURRICULATION AND POST GRADUATE STRATEGY

Changes in the academic strategies such as the new curriculum can lead to fewer modules and larger classes – which in return can influence the size of lecture halls, pedestrian linkage, parking space, infrastructure etc.

The post graduate strategy that will hopefully lead to substantial increase in the number of postgraduate students and has implications for among other research facilities, lecture rooms, study space and offices.

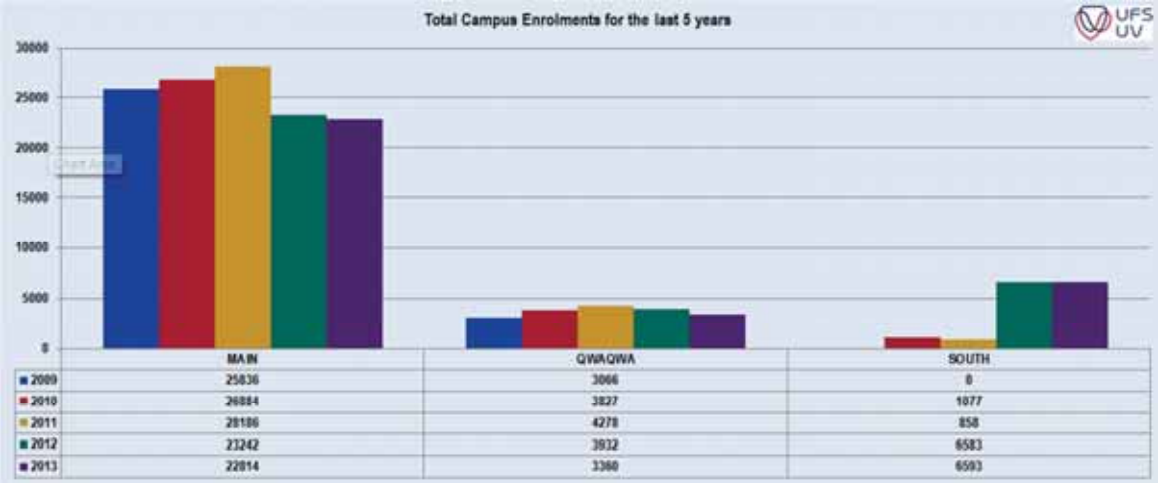
In other words, the physical demands of the above will have to be met timeously and within the available budgets as the academic structure of the university changes.

3.3.GROWTH PROJECTIONS (STUDENT NUMBERS INTEPRETED INTO INFRASTRUCTURAL AND SPATIAL NEEDS)

Additional facilities, for undergraduate students, will also depend on the University's strategy regarding growth. Should the University be able to stabilise its enrolments for the medium term (at least five years) and have a clear longer term growth path, it will enable better planning of the physical component of the university, such as lecture rooms and facilities, residences, and parking.[4] If the figures below are studied, this may be the case already which can be regarded as an opportunity to erase backlogs that have been causing challenges with regard to spatial realm of the main campus.

[3] Source: Roodt Partnership
[4] Prof Verna Nel, UFS Dept. Urban Planning

Graph 6: Enrolment Figures per Campus 2009-2013

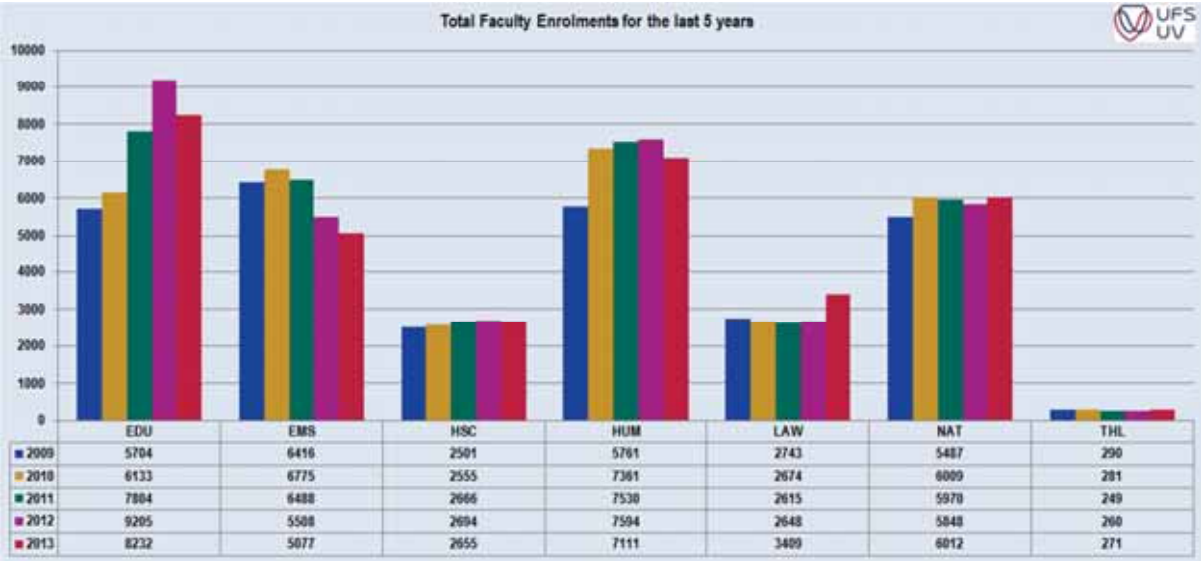


	MAIN	QWAQWA	SOUTH
2009	25836	3066	0
2010	26884	3827	1077
2011	28186	4278	858
2012	27242	3932	6583
2013	22814	3360	6593

Source: UFS Directorate for Institutional Research and Academic Planning (DIRAP)

Enrolment figures have increases from 25836 in 2009 to 28186 students in 2011. In 2013 enrolment was the lowest it has been in the past five years with 22814 students.

Graph 7: Enrolment per Faculty 2009-2013



	EDU	EMS	HSC	HUM	LAW	NAT	THL
2009	5704	6416	2501	5761	2743	5487	290
2010	6133	6775	2555	7361	2674	6009	281
2011	7804	6488	2666	7530	2615	5970	249
2012	9205	5508	2694	7594	2648	5848	260
2013	8232	5077	2655	7111	3489	6012	271

Source: UFS Directorate for Institutional Research and Academic Planning (DIRAP)

3.4.PRIORITY ISSUES IDENTIFIED

Table 16: Priority Issues Identified

	PROJECT LIST 2014 -2017	2014	2015	2016	2017
A	**Academic facilities**				
1	General: Emergency repairs/paintwork				
2	FGG Upgrading				
3	NatScience: Archriculture Building				
4	CR Swart Auditorium				
5	Batmiton Hall mezzanine floor				
6	Northblock/Southblock/West Block/Mainbuilding				
7	PC Media Building				
8	Revitilazation of Library - next phases				
	Support Services				
B	**Support Services**				
9	New Data Centre				
10	Storage facilities				
11	Visitors Center				
12	George du Toit Building				
C	**Student Facilities**				
13	Accessibility for disabled students / Universal Access				
14	Thakaneng Student Centre - Infrastructure and Upgrading				
D	**Landscaping**				
15	Landscaping (outside learning areas)				
E	**Road- and transport systems**				
16	Road- parking planning				
17	Masterplanning				
18	Managing of parking				
19	Addisional booms, changes to parking etc				
20	Road Maintenance Plan				
21	Accesss Management				
22	Parking area Roosmaryn				
23	Environmental Policy				
F	**Infrastructure and large asset perseverence projects**				
24	Electrical High voltage system (11KV Network)				
25	Infrastructure Survey and Mapping				
26	Upgrading Sewer/Water and power reticulation				
27	Electrical network: Upgrading of electrical work in buildings				
28	Chemical waste facility				
29	Residence Hotwater systems				
30	Health & Safety - Comply with regulations				
	General				
31	Smaller needs requested by faculties and support services				
	(Blue book requests)				
32	General Planning and managing of projects				
33	Airconditioning general areas				
34	Air Conditioning FGG Block B				
35	Air Conditioning Main Building	-			
36	Air conditioning Scholz Hall	-			
37	Air Conditioning EXR 3	-			
38	Airconditioning lecture halls	-			
39	Furniture - general				
40	Security systems to buildings				
41	Sport				
42	Unforeseen expences				
	Subject to annual evaluation, amendment and approval				

4. DEVELOPMENT PROPOSALS

4.1.SPATIAL

4.1.1. LAND USE

Paragraph 2.5 and Map 8, Tables 15 and 16 as well as Graphs 3, 4 and 5 already provide some information with regard to land use categories for future and existing land uses.

Areas that were identified as vacant but with a potential land use earmarked by means of future land use planning as per the current SDP is also indicated.

Table 17 provides a concise summary of the envisaged development concept on the main campus.

Table 17: Spatial Development

North	1. Land procurement from Department of Public Works 2. Development of Research/Technological Facilities in partnership with the private or public sector 3. Possible academic in-fill development to the north of the Agriculture building
East	1. Possible academic in-fill development 2. Possible residential in-fill
South	1. Residential in-fill development (Roosmaryn area) 2. Research Partnership – paediatric hospital 3. Parking 4. Academic development on the western side of the main campus
West	1. New Residential development 2. Completion of new student housing cluster 3. Expansion of agricultural activities and facilities in the north-west

Notwithstanding the above, a Space Audit was conducted on the main campus of the UFS from June 2013 to October 2013. The above-mentioned is a comprehensive review of currently assigned space and included building-specific inspections of space assigned to the relevant units.

This report can be made available via the UFS website so that the deans of faculties can firstly ascertain if the information is still up to date and secondly utilize it for internal spatial planning of the faculties and departments. This does not cover the condition of accommodation.

The Space Audit process is intended to serve as a planning tool and can provide information for reference during:

- Improving productive utilization of space;
- Internal assessments of space allocations;
- Prospective planning to accommodate changing situations; and
- Realignment of program priorities over a reasonable planning horizon.

In this time frame, it will be recognized that certain flexibility will be required to accommodate emerging opportunities, that identification of shrinking functions may provide the potential for phase-out, compaction, or relocation to make way for new programs or expanding projects.

4.1.2. PEDESTRIAN- AND CYCLE PATHS,

Pedestrian travel is the real measure of accessibility of a transportation system. Walking is the original mode of travel and is essential to all other modes. Whether a student is walking from a parked car to a lecture hall or from a residence to the student centre, the pedestrian portion of every trip helps determine the enjoyment, safety and convenience of that trip.

In most areas on the main campus, the pedestrian connections are strategic, providing pedestrian linkages between activity areas and transit.

Pedestrian Principals:

- Pedestrian travel is involved in every trip and is the basis for all other modes of travel. A high-quality pedestrian environment has been developed and will continue to be developed as the foundation for the desired multimodal transportation system.
- The university's standard for pedestrian mobility and accessibility is the ability of a wheelchair user to move safely and conveniently through the transportation system.
- A high-quality pedestrian environment includes the ability to travel safely and conveniently and to have reasonable crossing opportunities; to travel through a comfortable and interesting environment provided by high-quality design; and to have appropriate pedestrian amenities such as benches, shade and water fountains.
- New residences and academic development such as the proposed Genetics building will be linked with the existing pedestrian network.

4.1.3. OPEN SPACE

Linkage with the existing pedestrian paths and the provision of active and passive open spaces, are a priority. The planned new residence and new Genetics building will also be linked to the existing pedestrian network as has already been done with Con Laurês and Quiteniqua.

Outside learning areas and the implementation of an outside gym area (2013/2014) can all contribute to the provision of areas to support the integration and social development of our students.

4.2.INFRASTRUCTURAL

4.2.1. WATER

It became clear from the status quo analysis that the existing information regarding water infrastructure needs to be updated. The ideal would be to develop a GIS (geographical information system) that can be utilised during maintenance programmes, upgrading and the design of new capital infrastructure and services.

4.2.2. ELECTRICITY

The main challenge with regard to the electrical infrastructure on the main campus is that the 11kV ring is not yet closed on the western side of the campus. This causes a risk due to the fact that if there is a failure along the line, the stream cannot be reversed to keep the number of users affected to a minimum.

The above has been identified as a priority project to be implemented over the next four financial years.

4.2.3. SANITATION

It became clear from the status quo analysis that the existing information regarding sanitation infrastructure needs to be updated. The ideal would be to develop a GIS (geographical information system) that can be utilised during maintenance programmes, upgrading and the design of new capital infrastructure and services.

4.2.4. TELECOMMUNICATION & WI-FI ACCESS

It became clear from the status quo analysis that the existing information regarding water infrastructure needs to be updated in collaboration with ICT services. The ideal would be to develop a GIS (geographical information system) that can be utilised during maintenance programmes, upgrading and the design of new capital infrastructure and services.

4.2.5. ROADS & STORMWATER

The development and implementation of a roads and storm water maintenance plan is planned and must be budgeted for over the next three financial years. This study has already started and the outcome will significantly contribute to orderly maintenance of existing infrastructure.

Map 8 indicates the proposed layout planning pertaining to the academic development zone on the western side of the main campus. This road network will be implemented when it becomes necessary to establish access and accessibility to new facilities.

4.2.6. PARKING

A new visitor's centre is planned at Gate 5 (D.F. Malherbe Gate). Ancillary parking will have to be provided that can practically fit in with the proposed access management system and vehicular movement.

A need has also been identified to develop a parking area in the vicinity of Roosmaryn Residence and has been budgeted for in the 2015 and 2016 financial years.

4.3.TRAFFIC ACCESS MANAGEMENT

4.3.1. ACCESS MANAGEMENT

A comprehensive study regarding traffic access management has been concluded in November 2013.

Some of the aspects had to be addressed were ways to deal with visitors and the possible development of visitor centres, the re-arrangement of the facilities at the gates to effectively manage the impact on traffic and to secure pedestrian entrances.
The ultimate outcome of this investigation is expected to be a proposed access management system which the UFS will have to adopt, implement, operate and take ownership of.

The UFS set a requirement to have control over who comes on to the main Bloemfontein campus. The purpose of this study was also to determine the impact of access control and propose effective mechanisms for upgrading the network.

In this investigation the movement patterns of vehicular access on to the main Bloemfontein campus were considered.

The following is a summary of proposed actions in no particular order:

- Widen the incoming lanes at gate 1, provide one additional incoming lane, islands and a new roof structure.
- Provide an additional carriageway with 2 incoming lanes at gate 4, linking it to the existing road network with a traffic circle and providing a new roof structure.
- Develop a visitor centre at gate 5, incorporating changes to reserve part of P1 for parking for the visitor centre and provide a separate controlled access to the campus.
- Design and provide guidance signage from the external road network.
- Design and provide information signage at the gates to indicate lane differentiation.
- Provide and install an additional 14 boom gates at the various gates, each with an induction loop.
- Provide and install 4 distance censors at gates 1 and 3.
- Provide and install 8 proximity censors on poles at the relevant incoming lanes at the various gates.
- Compile a human resource plan to recruit and train the officials required to operate the system.
- Provide and install 11 fingerprint reader/proximity sensor combinations at the relevant outgoing lanes at the various gates.
- Design and install a drop zone, with 10 parking bays, each at gates 2 and 5.

The schematic drawings below indicate the proposed new infrastructure and changes to existing roads that need to be completed in order to implement the new Traffic Access Management System.

Figure 4: Proposed Changes at Nelson Mandela Gate

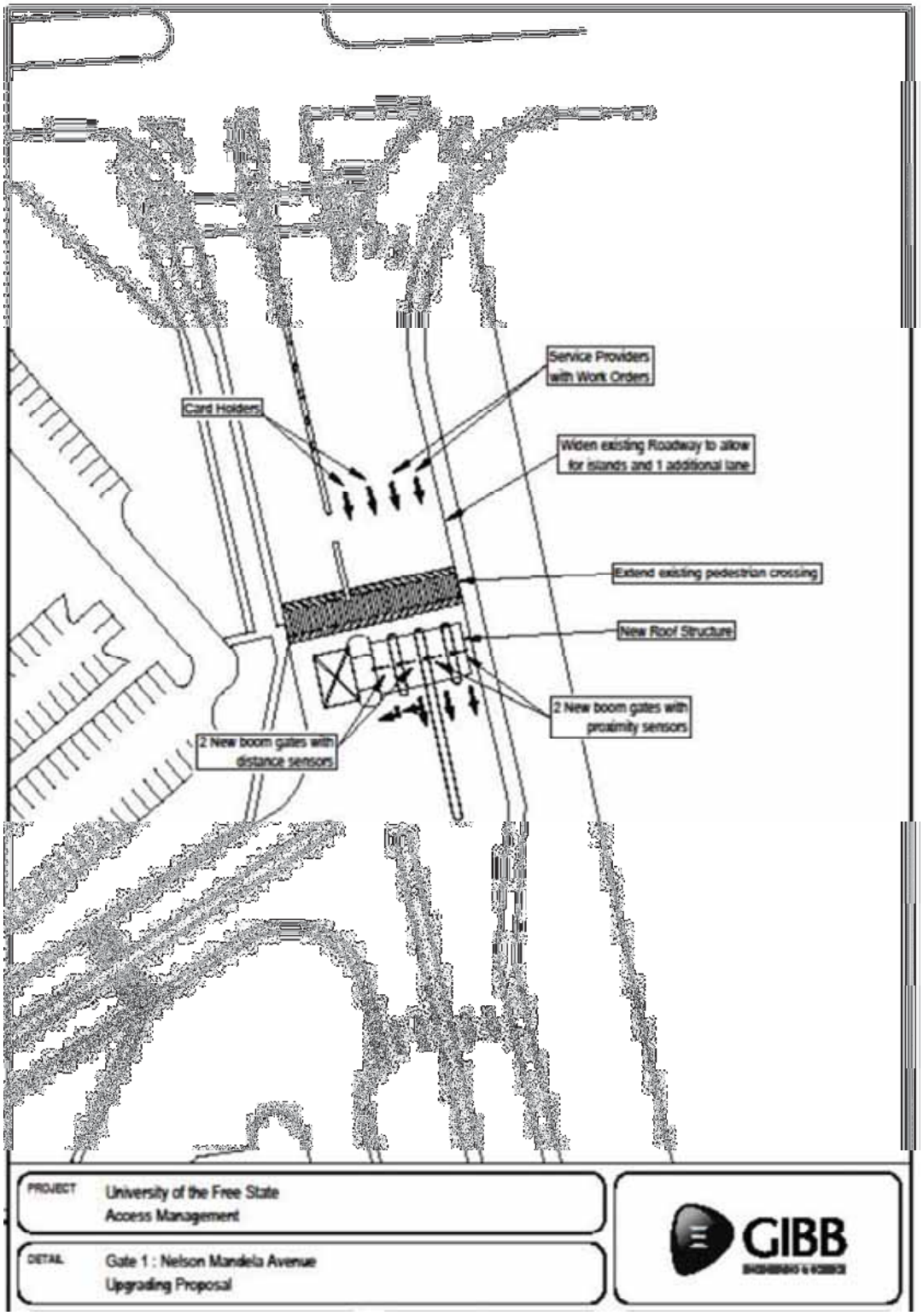


Figure 5: Proposed changes at Furstenburg Gate

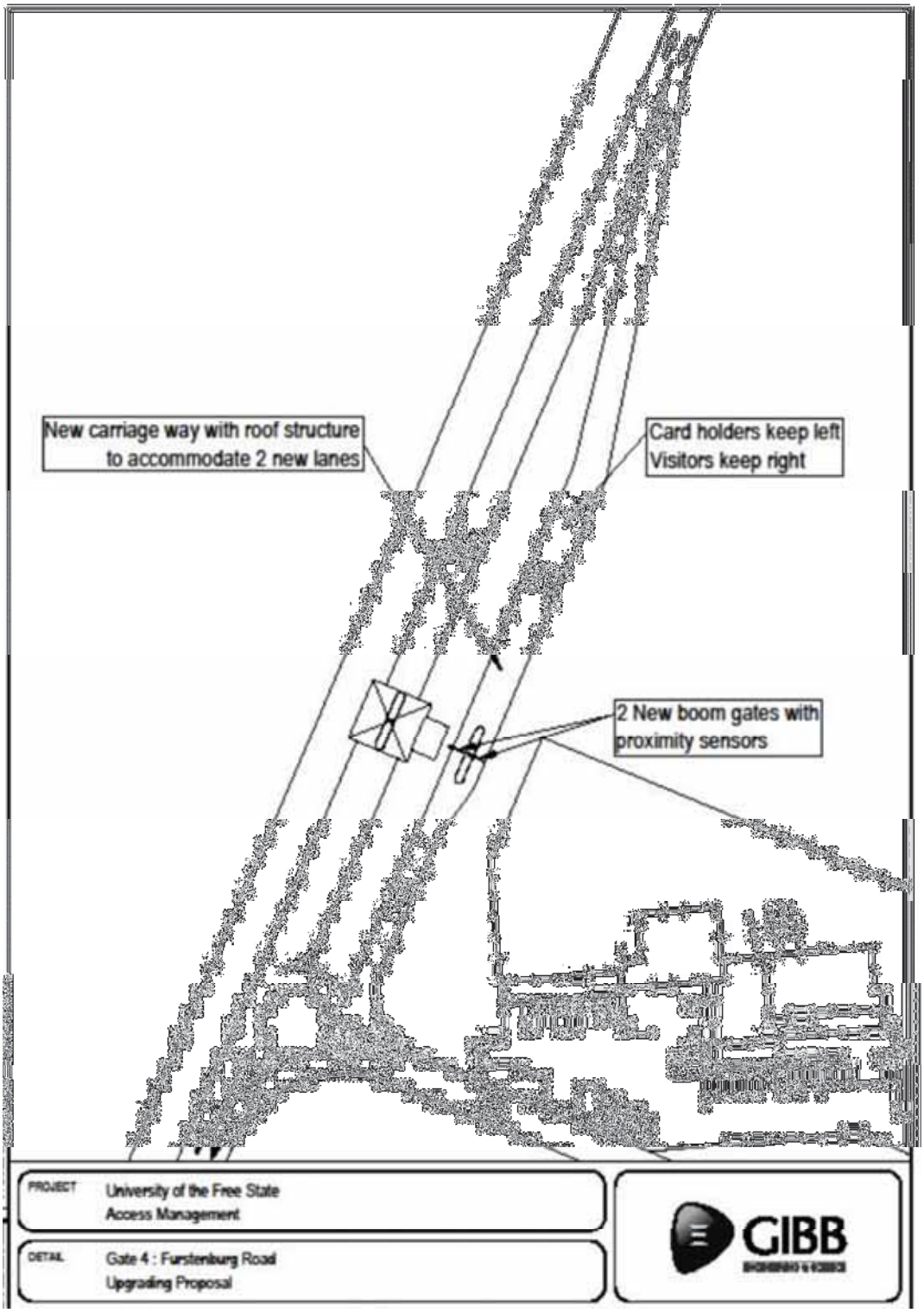
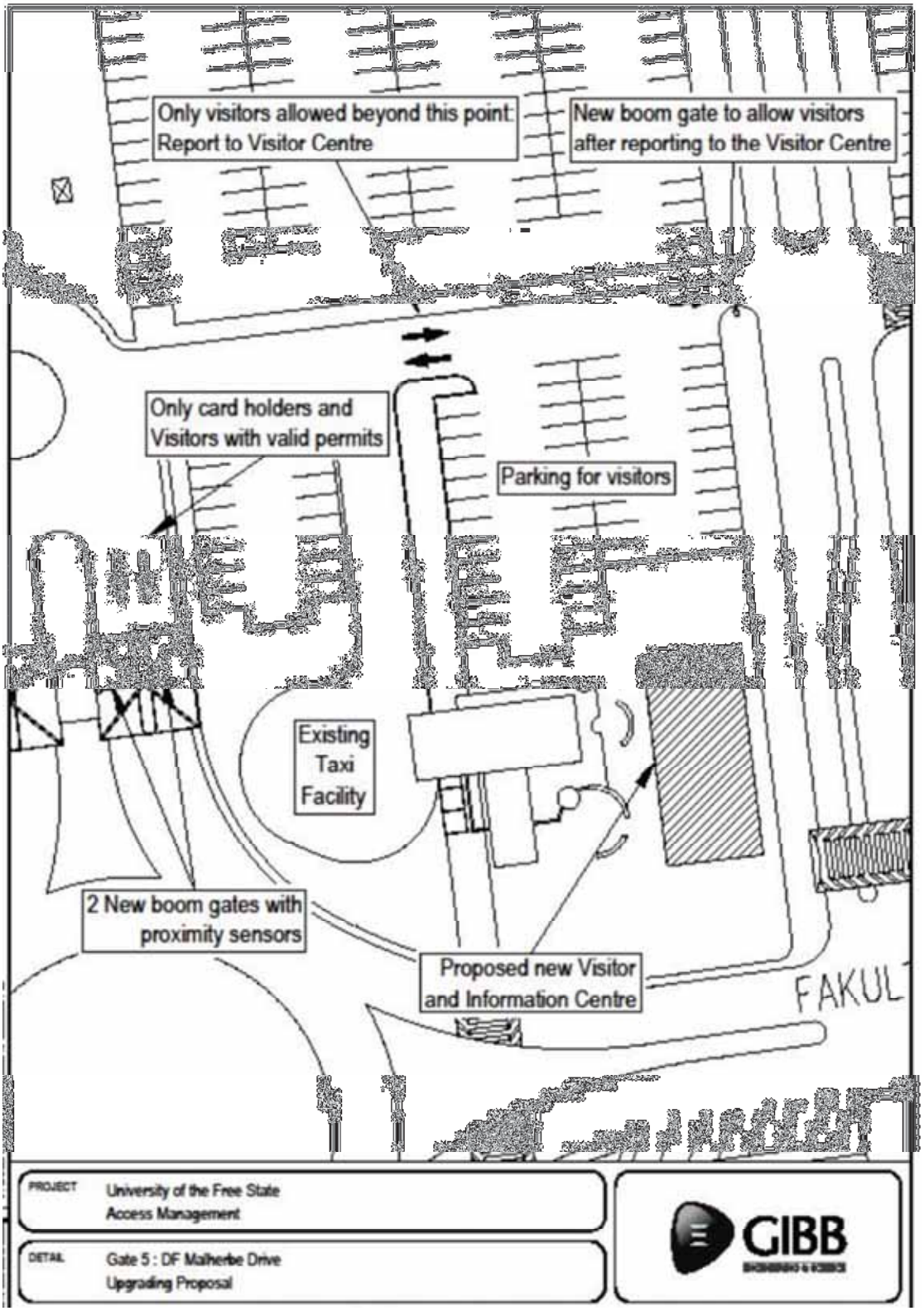


Figure 6: Proposed changes at D.F. Malherbe gate



4.4. ENVIRONMENTAL

At the University of the Free State there are various initiatives underway dealing with energy saving, the management of waste, and the conservation of water.

To date no formal planning policy for sustainability has been officially adopted by the University, but a draft report has been finalized for comments in November 2013.

The purpose of this policy is to address issues of sustainability in the following ways:

- The policy on the environment should form part of the core values of the institution.
- The policy should address not only the built, but also the natural landscape, i.e. the campus.
- The policy should set minimum standards of performance.
- The policy should seek synergy with the global university community, as well as offer leadership to the local communities in which the university is situated.

5. IMPLEMENTATION PLAN

5.1. POLICIES / GUIDELINES (MAY BE EXISTING)

The following UFS documents, policies and guidelines are relevant to support good order and amenity in the Physical Planning Department and its related functions and responsibilities:

Table 18: Relevant Policies and Guidelines

DOCUMENT	RELEVANCE
DEPARTMENT PHYSICAL PLANNING	
Physical Planning Technical Guide: Edition 1	This document is an overview of the key elements of the material and/or methods to be used in all UFS facilities, representing all preceding directives. It has been compiled to establish principles while at the same time endeavouring to promote uniformity in regard to the usage of materials and regulations. Building materials and methods given preference to would be economically justifiable and suitable for long-term usage and implementation in order to reduce maintenance and repair work.
Guidelines regarding directional signage and signage on buildings	Navigational system on campus, principles regarding signage on buildings (e.g. names of buildings only, departments on entrance doors etc.).
Guidelines regarding applications for structural changes	Management of and control over of structural changes of UFS property.
Parking Policy, 2012	The purpose of this document is to establish guidelines and principles for the use of parking places with a view to alignment with the UFS's strategic objective to provide green, healthy, affordable, safe, fair and orderly parking. This document only applies to the Main Campus.
Environmental Policy (Green Policy) – Draft at present	When draft document has been approved, the prescriptions of policy will guide construction projects to decrease the UFS's carbon footprint and environmental impact.

Guidelines for providing braille and tactile signage to facilities	Recommended guidelines from the RNZFB (Royal New Zealand Foundation of the Blind) were followed in compiling these signage specifications.
Procurement documents for contracts (below R1million, above R1million and above R5million)	Prescriptions regarding tendering procedure, returnable documents, prescribed contracts, verification of BBBEE status.
HESA's formal response: Government Gazette No 36361 of 11 April 2013 contains a proposed policy on student housing at public universities together with applicable norms and standards accompanied by a call for comment by interested parties.	Physical Infrastructure: Locality, Design, Health and Safety, Furnishings and Fittings, Construction, repairs and Maintenance etc.
DEPARTMENT FINANCE	
Policy and Procedure for Purchases	Strict adherence to the Procurement Policy and related procedures is of the utmost importance to ensure a successful audit and a good working relationship with Provisioning and Finance and Provisioning
UFS & OTHER	
Brand Identity Guidelines, 2013	Utilisation of UFS Logo and colours, faculty colours and fonts of internal directional signage.
Policy of the University of the Free State on Naming and Renaming, 2013	Naming of buildings, streets and spaces need to be approved by the naming and re-naming committee.
Occupational Health & Safety Act	Relevant Regulations.
Policy and Procedure of Council delegated authority	Signing of building contracts, lease agreements, offers to purchase and service agreements.
South African National Standards (SANS) Codes of the South African Buro of Standards	As applicable to a wide range of issues pertaining to Physical Planning's projects

5.2. LINKAGE WITH CAPITAL EXPENDITURE AND PROJECTS

Table 19: Concise Capital Expenditure and Linkage with Projects 2014 - 2017

CAPITAL BUDGET 2014	2014	2015	2016	2017
A: MAIN CAMPUS	**% Allocation per sector 2014 - 2017**			
Academic facilities	6	39	33	21
Support Services	67	33	-	-
Student Facilities		100		
Landscaping	22	24	26	29
Road- and transport systems	15	32	33	20
Infrastructure and large asset perseverence projects	27	22	24	27
General	21	24	28	27
Subject to annual evaluation and amendment				

6. CONCLUSION

The SDP should inform the decision-making process regarding the locations that are favoured for new investments and the provision of facilities and infrastructure. The strategy for spatial development cannot on its own ensure the success of the implementation of the SDP.

The spatial strategy is supported by various other UFS strategies and programmes which is part of a co-ordinated and integrated package to ensure that investments and programmes form the basis of longer-term growth and development.

It also requires that there must be a certain level of intervention with decision-making and implementation to ensure a deliberate move towards a more functional and optimal spatial pattern for the University, also creating sustainable spatial patterns and infrastructure development. The extents in which financial and institutional resources are mobilised can, and have had a major positive impact resulting in meaningful changes.

MAP 1: RELEVANT PROPERTIES – UFS MAIN CAMPUS

MAP 2: WATER RETICULATION

MAP 3: HIGH TENSION ELECTRICAL RETICULATION

MAP 4: LOW TENSION ELECTRICAL RETICULATION

MAP 5: WATER BORNE SEWAGE RETICULATION

MAP 6: DATA CABLES AND INFRASTRUCTURE

MAP 7: TELKOM CABLES AND INFRASTRUCTURE

MAP 8: PARKING POLICY

MAP 9: STRATEGIC DEVELOPMENT PLAN

University of the Free State

Strategic Development Plan

ROODT ARCHITECTS

UFS·UV