

MAKERERE UNIVERSITY

FACULTY OF TECHNOLOGY AND ESTATES DEPARTMENT

PHYSICAL PLANNING AND SPACE AUDIT

COMMISSIONED BY
PLANNING AND DEVELOPMENT DEPARTMENT

DRAFT FINAL REPORT

**STUDY OF THE EXISTING SITUATION:
SUMMARY FINDINGS AND RECOMMENDATIONS**

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CONTENTS

1. INTRODUCTION
2. TERMS OF REFERENCE
3. METHODOLOGY
4. EXISTING SITUATION
5. ANALYSIS AND RECOMMENDATIONS
6. CONCLUSION

BIBLIOGRAPHY

APPENDICES

SPACE AND PHYSICAL PLANNING AUDIT OF MAKERERE UNIVERSITY

1. INTRODUCTION

During the month of November 2006, the Planning and Development Department of Makerere University commissioned a core team to conduct a value for money and fitness for purpose audit of the current space and physical planning status of the University. The team was given one month to report. Team Members include: Dr A G Kerali [Team Leader], Eng. D Mpango [Estates Manager], and Dr T Sanya [Physical Planner]. Three Research Assistants and two Field Staff were used for data collection and measurement. The findings are to be presented and used during a senior staff and management retreat. Given the limited time at the disposal of the team, the scope of study was limited to the main campus land of the University. Wherever possible, other estates of the University are mentioned, but they will be studied in greater detail later so that a holistic and comprehensive report on space needs can be made of all university estates and properties.

This summary report is presented in six sections, namely; introduction, terms of reference, methodology, existing situation, analysis and recommendations, and conclusion. Relevant bibliography used and appendices are provided at the end of the report.

2. TERMS OF REFERENCE

The team was tasked to undertake a situation analysis of the;

- Current space composition in square meters covering: lecture rooms, laboratory, library, studio, and office space in faculties and administrative units.
- Physical planning status; land use, vehicular traffic, parking, etc
- Relationship of the above elements to the Institutional Strategic Plan

Recommendations were to follow from the findings and analysis.

3. METHODOLOGY

The following methods, considered adequate and appropriate, were used;

1. Desk and documentation study;
2. Basic data collection on existing staff and student numbers;
3. Physical inspection/on-site measurements of existing infrastructure; and
4. Interviews with academic and administrative staff.

4. EXISTING SITUATION

4.1 Estates and Properties of the University in General

1. Estates and Properties: Makerere University has a number of estates and properties. The key ones identified are listed in Table 1.

Table 1: Estates/Properties of Makerere University

ESTATE	SIZE [ACRES]	LOCATION [DISTRICT]
General Estates		
1. Main Campus	321	Kampala
2. Medical School	12	Kampala
3. Katanga Valley	15	Kampala
4. Kabanyolo MUARIK	590	Wakiso
5. Buyana Field Station	350	Mpigi
6. Kibale Biological FS	75	Kibale
7. Kasangati Health Centre	12	Wakiso
8. Business School, Nakawa	190	Kampala
9. Continuing Education	-	Various
	1,565	
Residential Estates		
10. Kololo Housing	25	Kampala [30 senior staff units]
11. Katalemwa Housing	60	Wakiso [60 senior staff units]
12. Makindye Housing	9	Kampala [3 senior staff units]
13. Makerere North	9	Kampala [4 senior staff units]
14. Bwaise Road Quarters	7	Kampala [50 junior staff units]
15. Junju Road Quarters	1	Kampala [5 blocks /20 units]
17. Sir Apollo Kagwa	1	Kampala [1 block/12 units]
18. Kololo Hill Drive	2	Kampala [vacant]
	114	
	1,679	

In all the University owns close to 1,700 acres of land (about 2.8 square miles), making it among one of the largest landed property holders in the country. The scope of the present study is limited to the main campus alone. Other estates and lands of the university are mentioned in this report for the sake of completeness. Unfortunately, the last time certificates of title and checking of boundaries was done on behalf of the University was exactly 46 years ago, in April 1961 by Z M Studzinski, Chartered Surveyor [Schmetzer & Kerali, 1994].

2. Off-Campus Academic Lands: these are lands of Makerere University mainly dedicated to particular Faculties, thus;

- Mulago and Kasangati Health Centre under the Faculty of Medicine,
- Makerere University Business School [semi-autonomous]
- Kabanyolo under the Faculty of Agriculture,
- Buyana Farm under the Faculty of Veterinary Medicine, and,
- Kibale Forest under the Faculty of Forestry and Nature Conservation.

It is evident that most of the facilities on these off-campus areas need extensive renovation, upgrading and expansion. Apart from the Medical School and the Business School, there appears to be no evidence on the ground of any long-term discipline-specific strategy to develop, upgrade and optimally use these areas as would have been expected.

3. Off-Campus Residential Areas: these are residential estates for both teaching and non-teaching staff. The lands are scattered around Kampala City, and are fairly well developed. The major estates include:

- Katalamwa 6km along Gayaza Road: 60 no. 3-bed houses.
- Kololo just above Kololo Airstrip: 30 no. 3-bed houses.
- Makindye at the very top of the hill: 03 no. 3-bed houses.
- Makerere North at the Old Veterinary site: 04 no. 4-bed houses.
- Bwaise Quarters along Bombo Road: 50 single roomed units.

It is a pity to note that 90% of buildings and other infrastructure on these estates are in a severely run down state, a situation that has unfortunately remained unchanged for several decades. Despite the fact that the university lacks funds to rehabilitate and restore them to acceptable standards, it nevertheless continues to meet huge bills for emergency repairs, and for water, sewerage and electricity. In areas such as Kololo and Makindye where formerly Government owned housing were sold to sitting civil servants, and rehabilitated, the dilapidated university

properties depict a particularly sore site. Even within the vicinity of Katalemwa Estate houses, adjacent privately owned buildings are in excellent conditions. Having lost patience, members of staff have over the years been abandoning staff houses, preferring to move to their own units, even when not yet complete. The abandoned units can sometimes remain vacant for years due to lack of funds to renovate them. Even desperate new allocatees turn down the offer to occupy them. Moreover, when left vacant for long, they end up being vandalized. It is becoming a vicious circle of despondency, with no winners either way, only losers irrespective of from which side you look at it. For example, House No. 4 Ekobo Avenue in Kololo has remained vacant since 1994 when it was condemned by the Estates and Works Committee and Council. The repairs to the house delayed so much that the floors began to sink, and the walls broke apart. With money, the unit could have been rescued by a process known as underpinning. Another more recent example is House No.15 Katalemwa estate which remains in a very dilapidated condition ever since the last occupant retired from University service in early 2006. Houses in Makindye have similar problems. In all, it was concluded that the fate of these 97 houses need to be determined through a radical change of policy. Houses within the campus do not fair any better, but a different policy could still rescue them.

Figure 1: Side view of house No 4 Ekobo Avenue in Kololo, abandoned since 1994. The house has remained unoccupied since then. [Photo dated January 2007].

Figure 2: A close-up shot of the sunken front-steps of the entrance to house No. 4 Ekobo Avenue, Kololo [Photo dated January 2007]. Worse internally.

Figure 3: Inside the kitchen of house No 4 Ekobo Avenue in Kololo. [Photo dated January 2007].

Figure 4. Side view of a house no 26 A Upper Kololo Terrace, Kololo. The house has not been renovated for the past 30 years. [Photo dated January 2007].

Figure 5: Front view of house no.26 A Upper Kololo Terrace, Kololo. [Photo dated January 2007].

Figure 6: Exterior of House No 15 Katalemwa Estate. The unit has been vacant since mid 2006. Understandably, no one wants to enter it in its current state. [Photo dated January 2007].

Figure 7: Close-up shot - front of House No 15 Katalemwa Estate. [Photo dated January 2007].

Figure 8: The interior of house No 15 Katalamwa Estate. [Photo dated January 2007].

Figure 9: The servant's quarters of house no.15 Katalamwa Estate. [Photo dated January 2007].

4.2 Audit of the Main Campus

Physical Features and Planning

4. Size and Features of the Main Campus: in summary, Makerere University main campus land can be described geographically as follows;

- it is situated about 5 km from the City centre;
- it comprises 321 acres [120 hectares, or 1,200,000 m²];
- it is approximately 1.5 km long from north to south [Faculty of Veterinary Medicine to the Main Gate], and 1.1 km wide from east to west [East Gate to West Road area];
- its lowest point, located at Bombo Road Sports Ground, is about 1182m above sea level [ASL];
- its highest point [Nyanjerabe Peak/Water Tank Area] is about 1274 ASL;
- there is a total vertical gradient of about 100 metres.

The physical cross-section appearance of the main campus is like that of a saddle, with two peaks on either side of a flattened ridge [Observatory hill and the Edge]. Most of the terrain of the main campus is therefore hilly and steep.

5. Land Use: a close study reveals that most of the main campus consists of a disproportionately high component of residential and other non-academic zones, leaving only minimal space for academic purposes. The zoning has been done according to what obtains on the ground. There is no known agreed demarcation of any unit-specific land-use by the University Council. As shown in Table 2, and **Appendix A**, less than 10% of the land is currently used for academic purposes.

Table 2: Summary of Current Land Use Composition

LAND USE TYPE	PERCENT GROUND COVER [%]
Academic	9
Residential [and Vacant]	72
Recreational	10
Religious	2
Administrative	3
Commercial	4
TOTAL	100

'Vacant' lands exist throughout the main campus. The term vacant here is difficult to define since the land is being used in one way or the other, but with no structures. The current land use clearly needs review to redress the existing imbalance between academic and non-academic uses, in favor of the former.

6. Building History: it was found that the first buildings were constructed in 1922, starting from the lower points of the estate, and moving gradually towards the peaks. More buildings were put up in the 1930's. The majority of existing buildings were put up in the decades of the 1950's and early 1960's. After the 1970's, hardly any buildings were put up. Modest building activity resumed during the decade of the 1990's, continuing to date. The building history is summarized in Table 3, and also shown in **Appendix B**.

Table 3: Percentage of Buildings Erected per Decade

DECADE	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s
PERCENT	5.1%	6.7%	2.2	65.3	10.4%	6.6	1.1	1.4%	1.2
RANK	5	3	6	1	2	4	9	7	8

About 90% of buildings on the main campus are therefore over 50 years old. This inevitably has a direct impact on the annual maintenance budget.

7. Physical Planning: there is no current formally approved Master Plan or Physical Plan for the Main Campus. What are available are the 1955 Kendall Plan providing for a University of 2000 students, and the 1994 Schmetzer/Kerali Plan allowing for a University of up to 30,000 students. The latter plan adopted the spirit and parts of the Kendall Plan, and recommended more intensive use of existing buildings and land, as well as the gradual moving out of certain academic units to off-campus locations. The absence of a master plan means that developments on the ground will remain adhoc for the foreseeable future. By being allowed to erect new buildings in other parts of the campus, academic units under the same faculty, with similar needs, instead of being made to congregate together in one localized area, are splitting up. This scenario is a recipe for confusion, and goes against the basic principles of physical planning. Moreover, it prevents other academic units from developing and expanding within their recognized zones [Schmetzer & Kerali, 1994]. The department of Food Science and Technology for example is part of the Faculty of Agriculture, but it has been allowed to erect a new building in a zone that should have been

reserved for the future expansion of the Faculty of Technology. Such moves appear to justify the urgent need to create the position of a physical planner within the university establishment. Both the Estates Department and the Planning and Development Departments should contribute to Physical Planning. The later should become a one-stop centre for master planning on a more long-term strategic basis. The former can assist in the implementation of what is in agreement with strategic requirements for the location of new buildings.

8. Land-use Density: based on density, the current physical set up reveals four categories of land use intensity on campus, namely: high-density, medium-density, low-density, and vacant lands. The figures are shown in Table 4:

Table 4: Summary of Plot Density and Ratios at Makerere University.

AREA	SIZE [ha]	PLOT RATIO [%]
High-density	44.5	36
Medium-density	18.0	15
Low-density	30.0	6
Vacant lands	15.5	0
TOTAL/ AVERAGE	107.5	19%

The average plot ratio is 19%, compared to 51%, for the Medical School. The Medical School has made far better use of its land than its parent main campus.

9. Building Types: the main campus has over 487 buildings of different sizes and architectural forms. These include

- blocks,
- bungalows,
- quadrangles,
- courts,
- flats
- low-rise
- medium-rise, and
- high-rise buildings.

The diversity of buildings makes the campus look a delightful place to tour. The majority of the buildings are unfortunately in varied states of disrepair, with

some being barely useable. A select few have recently been renovated, mostly using donor funds. There is however a uniform problem of over congestion within the buildings, especially academic and residential ones. Following a study of the building inventory conducted, it was found that:

Table 5 : Summary of Ground Cover of Buildings and Total Floor Space

	YEAR	
	1993	2007
Ground cover of Buildings	101,242 m ²	129,579 m ²
Total Internal Gross Area	197,936 m ²	251,734 m ²

In terms of percentage, it was determined that, of the total floor space in buildings, the following utilization percentages obtain:

- 40% for academic purposes,
- 31% for student residences,
- 26% for staff residences, and
- 3% for other purposes.

In 1993, buildings covered only 101,242m² of the ground, i.e 8.3% of the land. The plot ratio was then 16.5%, i.e. the total floor space of 197,936 m² corresponds to 16.5% of the total site area. This reveals an extremely generous use of the land. In 2007, buildings covered 129,579 m² of the ground, i.e. 10.7% of the land. This shows an increase of only 2 % over a period of 14 years. And the plot ratio is now 20.9%. Similarly, this shows an increase of about 4% over a period of 14 years. Over a 15 year period, with an exponential increase in student numbers, these are not encouraging figures to write home about. The updated building inventory is shown as **Appendix C**.

10. Building Identification: buildings on campus and other estates lack proper naming and numerical identification codes. It is therefore impossible for residents, newcomers and visitors to find their way around the campus. In other universities, all buildings are listed with names and code numbers. Pamphlets and A4 size pocket maps are provided to all prospective students. Naming and coding are also useful for maintenance and security purposes. All buildings on campus with names of sorts received such names during the Colonial days.

Academic Space Composition

11. Staff and Student Numbers: at present, staff and student numbers stand at 3,860 and about 38,589 respectively. These numbers are utilizing space originally meant for about 1000 members of staff and 2000 students only. Academic staff alone were 1,172 in December 2006, up from 1,086 in December 2005. Senior administrative staff are about 193. Other staff, namely intermediate and support are about 2,581 only. Of the 1,172 academic staff, the breakdown by rank is as shown in Table 6.

Table 6: Summary of Academic Staff Numbers [2005 and 2006]

RANK	December 2005	December 2006
Professor	34	38
Associate Professor	61	76
Senior Lecturer	183	183
Lecturer	578	368
Assistant Lecturer	134	302
Teaching Assistant	98	205
TOTALS	1086	1172

The 2005 numbers were obtained from the 2005 Annual Report from the Planning and Development Department of Makerere University. The 2006/7 figures were obtained directly from academic units.

Apart from staff, the university has a large student population. Details on student numbers are shown in Table 7.

Table 7: Summary of Student Numbers at Makerere University [2006/7].

UNIT	UNDER-GRADUATE	GRADUATE	OTHERS	TOTAL
FACULTIES	26,019	2,565	49	28,633
SCHOOLS, INSTITUTES, CENTRES	9,732	196	28	9,956
TOTALS	35,751	2,761	77	38,589

These 2006 figures were obtained directly from academic units.

Student numbers reveal the following:

- 35,751 are undergraduates 92.6%
 - 2,761 are graduate students 7.1%
 - 77 are diploma and certificate students 0.3%.
- TOTAL** **100%**

The later are mainly in the School of Librarianship, Faculty of Arts and IACE. The consequences of the high numbers are several, but notably; extreme congestion, overcrowding, health and safety problems, strain on existing services, disproportionate staff: student ratios, competition for space, high utility and energy costs, overstretching of staff, etc.

12. Academic Space Composition: academic space at Makerere has witnessed a minor increase since the last space census of 1993. About fourteen years ago in 1993, it was found that the total gross area for classrooms, laboratories, workrooms, communal and circulation space was 66,881 m². The latest space study done in 2007 shows that the total gross area figure has now increased to 99,160 m² only. Details under each category are shown in **Appendix D**, and here as Table 8.

Table 8: Summary Academic Space Composition at Makerere University.
[1994 and 2007]

YEAR	Classrooms	Laboratories	Workrooms	Communal	Circulation	Gross Area
	m ²	m ²	m ²	m ²	m ²	m ²
1994/5	9832	22467	12933	7815	13834	66,881
2006/7	19262	26719	16999	14175	22000	99,146
DIFF	9430	4252	4066	6360	8166	32,265
%	96	19	31	82	59	48

13. Academic Space per Unit: the contribution to the gross area presented in the previous section is derived from different academic units. These are summarized in Table 9.

The top five academic units with the largest amount of space are:

- Faculty of Medicine [Ranked 1]
- Faculty of Computing and Information Science [Ranked 2]
- Faculty of science [Ranked 3]
- Faculty of Agriculture [Ranked 4]
- Faculty of Veterinary Medicine [Ranked 5]

The academic units with the least amount of space in decreasing order are: Faculty of Law, Institute of Environment, Institute of Psychology, School of Library and Information Science, and the Institute of Statistics and Applied Economics. Analysis of space demand per academic unit vis a vis student numbers are presented in Section 5 of this report.

Table 9: Summary of Academic Space per and Ranking Academic unit

FACULTY/SCHOOL/INSTITUTE	GROSS AREA EXISTING	RANK
	m ²	No.
FACULTIES		
Agriculture	10,187	4
Arts	3,397	9
Computer Science	13,218	2
Economics & Management	3,505	9
Education	6,200	7
Forestry & Nature Conservation.	1,371	12
Law	955	13
Medicine	17,080	1
Science	11,219	3
Social Science	3,553	8
Technology	8,242	6
Veterinary Medicine	9,877	5
SCHOOLS/INSTITUTES		
MT School of Industrial & Fine Art	1,624	11
E A School of Library & Inf. Science	559	15
Institute of Environment & Nat. Resources	394	17
Institute of Psychology	516	16
Institute of Statistics & Applied Economics	950	14
Institute of Adult & Continuing Education	1,886	10
	94,733*	

* Excludes academic areas in the MISR and Senate Building [Lecture rooms, research rooms]

Road Network, Traffic and Parking

13. Road Network: the main campus has a total of about 18 km of roads with different surface finishes ranging from tarmac to gravel and earth. The network is however evenly distributed thus enabling a motorist to reach most parts of the campus. From the main gate there is a straight spinal road in the middle of the campus that leads all the way to the Faculty of Science. There is also a major ring road around the spinal road, namely Pool Road, New Avenue and Mary Stuart Road. There are then a series of networks of feeder, cul-de sacs and minor access roads. The average width ranges from between 4m and 6m of riding surface. The 4m roads are narrow, with students usually being reluctant to give way. The state of the roads is however deplorable, with all of them having exceeded their original design lives. Potholes and blocked drains are evident throughout the network. Given the natural gradient of the campus, the roads are steep, and any redesign that follows the natural terrain should be able to permanently sort out the problem of drainage blockages.

Figure 10: A typical potholed road on campus. Note that no amount of pothole patching can solve the problem since the expiry of service life is more fundamental. [Photo dated January 2007].

14. Traffic Count: the traffic levels on campus have increased tremendously. A network designed to serve only 2000 students is now serving over 30,000 students and over 5,000 staff. Approximately 15,000 vehicles enter and exit the campus on a daily basis, with the numbers almost doubling during term time, and in the evenings. This has had a major adverse impact on the condition of the roads on the one hand, and for parking on the other.

15. Parking Space: provision for parking on the main campus can be found close to the respective academic and residential units. Details of actual parking space measurements are shown in **Appendix E**. A common complaint encountered was that given the high number of vehicles owned by both students and staff, commuters and visitors, finding free parking space was increasingly becoming a problem for all. Moreover, current provisions are mainly for off-street parking, with limited on-street parking spaces now being provided. It was established that: total off-street parking space stands at **27,344.6 m²**, adequate for about **1,789** vehicles; parking space per vehicle is not uniform throughout the campus, but varies from carport to carport. Individual bays range from 10m² to 23m², with 14.5m² being the most common. The space is far from being adequate.

Figure 11: A typical carport in the university, showing the entrance and part of the New Faculty of Science Building parking area. [Photo dated January 2007].

The condition survey showed that the surface quality of these parking areas is very poor, with widespread potholes, and no demarcations. Most of them require upgrading, and provision of security. The consequences of demand for parking exceeding capacity on the campus include; parking in inappropriate locations, queuing of cars waiting for space, and circulation of cars looking for parking. Motorists eventually park in undesignated areas, thus overloading traffic on the network and creating potential scenarios for accidents, and traffic congestion and jams. Parking charges are not in operation at the University.

16. Road Furniture and Signs: regulatory, warning and informatory signs are visibly absent, and where seen are inadequately provided for both in terms of numbers and fitness for purpose. The main campus is vast even by mean standards to those who are very familiar with it. To those who are not, finding ones way around can be a nightmare. For instance, several non-standardized and small-featured mounted signs can be seen erected at intersections along the campus road network, apparently individually, by the various units. One intersection alone had over 16 directional signs, not to mention the single multipurpose one which was also there. This not only exposes the fact that there is no central unit to handle signs, but also that there is no policy regarding road furniture on campus.

Figure 12: The intersection or roundabout at CCE. With over nine different types of directional signs, only confusion and the opposite effect is achieved. [Photo dated January 2007].

17. Road Names and Identification: the roads on campus neither have clear road names nor identification numbers. There is hardly any road name sign on campus. This has created a situation of confusion to residents and visitors. Naming of roads and their proper mounting along the routes is important for a large educational establishment like Makerere University. All six major roads within Katalamwa Estates do not have names. Surely the University can at least find names from amongst former Vice-Chancellors, or other prominent professors. Existing road names can be traced as far back as the Colonial days.

Campus Support Services

18. Campus Support Services: include areas such as catering, security, portering, cleaning, management of student residences, and secretarial services. These areas lag behind modern trends. They are important given their direct relationship to space use. Security is treated separately. At the moment, despite the large student and staff numbers, the majority of whom are non-resident, there is no central paying catering and recreation center for either. Vacation letting of residences, and pay-to-eat arrangements are also not in place.

19. Security: security of persons and property is critical in an educational set up of this level. Lack of a secure environment impacts negatively on development. Capital assets, as well as modern and expensive equipment are purchased and used in the university. All these require protection. There are no CCTV facilities such as are common in other universities. The visibility of campus security personnel is hardly noticed, as they seem to be lacking in numbers and facilitation. The perimeter of the University along the main roads and lands immediately surrounding it remain largely unfenced.

Utilities

20. Services: the utility services on campus are the usual ones to be found in a residential educational institution of this kind. The main ones include: power lines, water mains, sewerage, telephone, and computer networks. They were designed for a student population of about 2000, and an overall combined population of 4000. Water supply comes in from NWSC via two channels; one directly from the link to the municipal lines to the low lying areas, and the second through the booster pumps and storage tanks at Observatory Hill. The sewer network connects to the municipal mains, but is in a poor state. Power

supply comes through an 11 kv supply at the eastern gate, stepped down by 12 number 500 kVA transformers located in various parts of the campus. Telephone lines where they exist are in a dilapidated state. The computer cables were recently installed. Proper and updated comprehensive inventory of all these service lines is required.

Institutional and Strategic Plans

21. Institutional and Strategic Plan: of recent, institutional planning in the university has been based on a quinquennial system whereby plans are made every five years. The current strategic plan for example spans a five-year period, but was extended for a further two years. No Institutional Plan was found at the time of writing this report. This normally covers a much longer period than strategic plans. This system of planning only started around the mid 1990s. During the 1970s and 1980s, no institutional strategic plans could be traced. The current document is generally well presented, but will require review. Evidence that a directional matrix was used in its preparation should be made clearer. It needs for example to state rather more clearly the Universities strengths and weaknesses if any in the various subject areas relative to other institutions. Future attractiveness of disciplines and identification of priority areas for consolidation, growth and rationalization should also be made more clear. The imbalance between undergraduate and graduate studies need to be addressed.

There is also no evidence that individual strategies were formed then integrated into one overall document in an interactive approach. Individual strategies are required of: finance, academic disciplines, research, staff and student numbers, estates, space, residential, catering, library, information technology, support services, and linkage with industry. The planning cycle and period of cover is 5 years, not the 10 years normally used. Three yearly intermediate plans actively fed in by annual reviews will make the strategic plan livelier, continuous and a valid collective exercise of foresight in an integrated set-up.

5. ANALYSIS AND RECOMMENDATIONS

The analysis has been done in the same format in which the findings were presented in the previous section, with emphasis being given to matters appearing in the terms of reference. Since space matters cannot be discussed in isolation, pertinent issues likely to directly or indirectly affect the efficient and effective use of space are also discussed.

5.1 Estates and Properties.

The University has over 18 estates of different sizes in various parts of the capital and the country in general. A key to the future development of the University will be the adequacy of its estate to accommodate the greatly increased numbers which are forecast, and as well as the diversity of present and future programmes. The university estate is substantial, and varied in its nature, origins, and condition. In order to manage its estate effectively and optimize its use, the university estate requires active, dynamic and positive management.

It is therefore recommended that;

1. *An **Estate Strategy** which is integrated with the overall institutional and strategic plans be formulated. The Estate Strategy should include a sufficient level of detail to allow operational planning to take place. An estate strategy should include: objectives, problems, accurate data, opportunities, alternative options, and investment programme.*
2. *A **Comprehensive Information Database** on all the estates of the University be established urgently. As a minimum, the information should include the following; details on all property owned, leased, or rented; details on physical condition; functional suitability and fitness for purpose of buildings and rooms; service costs and energy consumption; legal status; and maps and drawings.*
3. *The university employs **Competent Staff** with an appropriate mix of skills, and at an appropriate level to manage the estate. The Estate Manager post should be elevated to that of Director, and he or she should be on the senior management team. The unit should be well funded and responsible for four core functions: Strategic Planning, Project Design and Management, Maintenance and Upkeep of Property, and Direct Resource Management. The establishment be expanded*

and decentralized to cater for the various estates. Some of the responsibilities can be outsourced, but under the coordination of the Estates Manager or Director..

- 4. A consultancy firm be appointed to study the **Legal Status and Boundaries** of all the estates of the university. A Chartered Surveyor has the competence to handle such matters. All certificates of title be traced and any changes made updated.*

5.2 Off-Campus Academic Lands

Academic unit affiliated estates of the University such as Mulago, Kabanyolo, Nakawa and Buyana in particular, should be studied in more detail and used more intensively than at present. As pressure grows for space on the main campus, it will become imperative and urgent that some academic units with affiliated off-campus estates move off campus. It is recognized that the process of collapsing units into colleges is likely to be the future direction of the University. Faculties such as Medicine, Agriculture, Veterinary Medicine, Forestry and Nature Conservation could then make more intensive use of these estates.

It is recommended that;

- 1. Academic unit affiliated estates be **more intensively used**, and those that are not, be occupied by the parent faculties.*
- 2. **Developments** on these lands be **integrated** into the **overall institutional plan**. The Estates Strategy must incorporate the future aspirations and plans for optimally using these estates.*

5.3 Off-campus Residential Areas

The way property assets are managed can contribute or detract an institution from achieving its overall objectives. Makerere is a university. It is not the primary activity of the university to provide staff housing. The university has about 1300 academic and senior administrative staff. Only 30% of these are housed by the university. These few put an enormous strain on the finances of the university in terms of maintenance and upkeep, as well as payment of utility bills such as water, electricity, sewerage bills, etc. Off-campus residential areas

such as Kololo [30 units], Makindye [3 units], Makerere North [4 units], and Katalemwa [58 units] are in a severely run down state. These estates all have one thing in common; they are all in a very sorry state of disrepair. No prospect of immediate rehabilitation appears to be forthcoming. Moreover, worldwide universities are divesting themselves from the provision of residential accommodation to staff. Even on-campus staff accommodation have all been converted and remodeled for either academic use, or for student lettings. Examples witnessed by the author include leading universities such as: Oxford, Cambridge, Warwick, Loughborough, Birmingham, Cape Town, etc. Residential universities were created in the colonies by the British not only because they wanted to live together, but more importantly because they thought they would not leave one day. Government, in one of its most successful policies to date, divested itself from housing of staff in pool houses by selling these units to sitting tenants. The move has resulted in substantial and permanent savings, better maintenance, and generated a lot of revenue.

It is recommended that;

1. *The **policy on staff housing** be reviewed as a matter of priority by Council to bring it in line with current national and international trends.*
2. *The university completely **divests** itself from direct housing of staff. This can start in a pilot way by having Katalemwa, Makindye, Kololo, and Makerere North houses **valued, and then sold off** to sitting members of staff.*
3. *The **revenue or proceeds** generated from the sale, and from the renting of remodeled on-campus staff housing to students, be used as **revolving loans** to other staff to **move out and build or buy their own houses** elsewhere. This move is not only likely to be well received, but will also make the university focus more on its core objectives of teaching and research.*

5.4 Land Use and Density

The size of the main campus allows a diversity of uses. The present land use includes the following categories: academic, residential, recreational, religious, agricultural, commercial, and vacant. The zoning for these uses has been done arbitrarily based on the existing use on the ground. It was found that currently, less than 10% of the main campus land is being used for academic purposes. Proposed changes in land use in terms of percentage are shown in Table 10.

Table 10: Existing and Proposed Land Use

LAND USE TYPE	EXISTING GROUND COVER [%]	PROPOSED GROUND COVER [%]
Academic	9	59
Residential [and Vacant]	72	22
Recreational	10	9
Religious	2	2
Administrative	3	3
Commercial	4	5
TOTAL	100	100

The increase in ground cover for academic use can be obtained by a combination of measures; building on presently vacant land, more intensive use of low-and medium density areas, and a change of policy towards staff and student accommodation. It was also found that the land on campus comprises three levels of density; high, medium, and low. Existing and proposed changes in density are shown in Table 11.

Table 11 : Summary of Plot Density and Ratios at Makerere University [2007].

AREA	NUMBER OF SUB- AREAS no.	PLOT SIZE [ha]	EXISTING PLOT RATIO [%]	PROPOSED PLOT RATIO [%]
High-density	9	44.5	36	36
Medium-density	6	18.0	15	20
Low-density	5	30.0	6	44
Recreation/Vacant	6	15.0	0	0
TOTAL/ AVERAGE	26	107.5	19%	34

It is recommended that:

1. *The imbalance between academic and non-academic use be redressed in favor of the former. Close to 60% of the land be used for academic purposes, up from 9% over the long-term.*

2. *More intensive use of existing space and land, infill-development within and between buildings, and reclamation of residential, recreational and vacant land be done to achieve the 60% mark for academic use.*
3. *Land use zoning for academic and non-academic purposes or allocation for particular uses or units be **approved by Council well in advance.***
4. *Adhoc allocation of land for new buildings should be **discouraged and avoided** all together. The present practice of allocating land to any faculty or academic unit purely on the basis of having secured funding alone should be discouraged.*
5. *A long-term institutional plan for infrastructure developments on campus be adopted by Council. The plan should integrate strategies from all the different sectors of the university, namely; academic, residential, library, estates, information technology, etc.*

5.5 Physical Planning

It was found that there is no current formally approved Master Plan or Physical Plan for the Main Campus, and its satellite estates. What are available are the 1955 Kendall Plan providing for a University of 2000 students, and the 1994 Schmetzer/Kerali Plan allowing for a University of up to 30,000 students. The latter plan adopted the spirit and parts of the Kendal Plan. Some of the highlights still hold, and these are summarized in the recommendations that follow.

It is recommended that;

1. *A **Master Physical Plan** for infrastructure development on campus and its other estates be formulated and adopted as a matter of urgency. A consultancy firm can be assigned the task through competitive bidding.*
2. *More **intensive** use of existing buildings and land be made before permission to build elsewhere can be granted.*
3. ***Infill development** between and within existing buildings to augment academic space be encouraged and allowed to actively take place on the main campus.*

4. *Academic and multi-user general buildings be built and **concentrated within the center of the campus along the ridge**, while residential and recreational buildings be **spread along the perimeter**.*
5. ***Zoning** of unit-specific areas be done throughout the campus and adopted for their future expansion.*
6. *In areas where academic and residential areas are heavily mixed in a disorganized manner, the **later should be remodeled** in favour of the former.*
7. *Old and spaciouly built junior staff quarters to the west of the campus be **demolished to pave way for more modern income generating ventures** such as residential halls for letting or multipurpose student center.*
8. *Certain **academic units** gradually **move to off-campus locations**: Agriculture, Veterinary Medicine, Forestry are examples.*
9. *Initiatives to negotiate and gradually **acquire lands to the north and east of the main campus** from their present owners on a win-win basis be blessed by Council and given a priority.*
10. *Physical planning be considered a **continuous and collective exercise** of foresight in an integrated way in matters affecting the long-term future of the university.*
11. *The post of **Physical Planner** be created within the Estates Department or Planning and Development Department, and a suitable person appointed.*

Given that physical planning is expected to be a continuous and cyclic exercise, any approved Master Plan should be periodically reviewed. A five-year period of review of a 20-25 year plan should be adequate.

5.6 Building Inventory, Types, and Identification

The amount and type of buildings in a university are important. It was found that there are over 480 buildings on the campus, mostly of different types and age brackets. The buildings range from bungalows to high rise ones for academic, residential, recreational, religious and other purposes. Apart from the Schmetzer/Kerali report of 1994 which produced the first ever inventory of buildings, information about specific buildings remains sketchy. The information is not collected systematically, and regularly updated by the university. It was found that buildings on campus and other estates lack proper naming and numerical identification codes. It is therefore impossible for residents, newcomers and visitors to find their way around the campus. Maintenance records are also difficult to keep in such situations. In other universities, all buildings are listed with names and code numbers. Pamphlets and A4 size pocket maps are provided to all prospective students. Naming and coding are also useful for maintenance and security purposes.

It is recommended that;

1. *A **Comprehensive Inventory** of buildings should be maintained by the university. The records should indicate; name, age, size, location, use, type, physical condition, gross area, net area, nature of rooms, toilets and bathrooms, replacement value, suitability, fitness for purpose, utility costs, drawing records, maintenance records, etc.*
2. *All buildings be properly **named and coded**. The names should be written and properly displayed in front or mounted onto the building.*
3. ***Pamphlets and A-4 size maps** of buildings be produced and provided to all new members of staff, students, guests, and visitors.*
4. ***Maps of the campus** in A-3 sheets or bigger showing the location of buildings and their names and codes be **mounted at strategic locations** on campus, including the corridors of large buildings. Wherever erected or displayed, the map should have an arrow showing the information seeker his or her current location relative to other places on campus.*
5. *The map of the university showing the location and names of buildings be **posted on the University website**, and should be regularly updated.*

5.7 Staff Numbers

The current total number of academic staff stands at 1,172 out of a total establishment of about 1,408. Only 77% of the established posts are filled, mostly at the lower academic ranks. The breakdown per faculty, and its adequacy in terms of staff: student ratio are summarized in Table 12.

Table 12: Academic Staff-Student Ratio at Makerere University [2007]

ACADEMIC UNIT	STAFF NUMBERS	STUDENT NUMBERS	STAFF STUDENT RATIO	IDEAL	
				NOCAG	NCHE
	no.	no.	-		
FACULTIES					
Agriculture	94	1017	1:11	1:9	1:10
Arts	124	6195	1:50	1:11	1:15
Computer Science	46	2884	1:63	1:11	1:10
Economics & Management	45	1483	1:33	1:14	1:15
Education	69	4505	1:65	1:11	1:15
Forestry & Nature Conservation	33	288	1:9	1:9	1:10
Law	41	1680	1:41	1:11	1:15
Medicine	194	1153	1:6	1:6	1:8
Science	124	3476	1:28	1:9	1:10
Social Science	83	4058	1:49	1:12	1:15
Technology	104	1349	1:13	1:9	1:10
Veterinary Medicine	93	545	1:6	1:9	1:8
INSTITUTES/CENTRES					
MT School of Industrial & FA	41	525	1:13	1:10	1:15
EA School of L&IS	13	186	1:14	1:11	1:15
Institute of Stat. & Applied Economics	35	1449	1:41	1:14	1:15
Institute of Adult & Cont. Education	17	6525	1:384	1:11	1:15
Institute of Environment and NR	6	252	1:42	1:9	1:10
Institute of Psychology	7	1019	1:146	1:11	1:15
TOTALS	1172	38589			

LEGEND: NCHE: National Council For Higher Education [Uganda]

UGC/NOCAG: University Grants Committee [United Kingdom]

Only three out of all the academic units meet current staff-student ratio requirements. These are the faculties of Medicine, Veterinary Medicine, and Forestry and Nature Conservation. The most severely constrained units, in the order of severity include: Institutes of Adult and Continuing Education, and Psychology, and Faculties of Education, Computer Science, Arts, and Social Sciences. These academic units are operating well beyond acceptable limits.

It is recommended that;

1. *Units with high Staff: Student ratios be caused to justify in writing the need for **increase in staff establishment**. At the moment it appears the initiative is being left to the administration to solve the problem, instead of being the other way round, using the interactive or bottom up-approach.*
2. *Staff should continue to be **facilitated to upgrade their qualifications** to a minimum of PhD for academic staff and MSc for senior administrative staff, unless otherwise exempted. Heads of key administrative units should hold PhDs. Schemes to enable required staff without PhDs obtain them should be put in place and given priority.*

5.8 Student Numbers

Student numbers per academic unit, and the corresponding staff-student ratios, as well deficits and surpluses, are shown in Table 13.

Table 13: Comparison of Student Numbers to current Norms [2007]

ACADEMIC UNIT	STAFF NUMBERS	STAFF STUDENT RATIO	STUDENT NUMBERS	IDEAL NOCAG	DEFICIT [-] SURPLUS [+]	IDEAL RANK
	no.	-	no.	no.	no.	no.
Agriculture	94	1:9	1017	846	+171	6
Arts	124	1:11	6195	1364	+4831	17
Computer Science	46	1:11	2884	506	+2378	14
Economics & Management	45	1:14	1483	630	+853	9
Education	69	1:11	4505	759	+3746	16
Forestry & Nat. Conserv.	33	1:9	288	297	-9	3
Law	41	1:11	1680	451	+1229	12
Medicine	194	1:6	1153	1164	-11	2
Science	124	1:9	3476	1116	+2360	13
Social Science	83	1:12	4058	996	+3062	15
Technology	104	1:9	1349	936	+413	8
Veterinary Medicine	93	1:9	545	837	-292	1
MT Sch. of Industrial & FA	41	1:10	525	410	+115	5
EA School of L&IS	13	1:11	186	143	+43	4
Inst Stat. & Applied Econ.	35	1:14	1449	490	+959	11
Inst. of Adult & Cont. Educ.	17	1:11	6525	187	+6338	18
Institute of Env. and NR	6	1:9	252	54	+198	7
Institute of Psychology	7	1:11	1019	77	+942	10
TOTALS	1172		38,589	11,263	+27,326	

Using the NOCAG Norms, the Faculties of Veterinary Medicine, Medicine, and Forestry and Nature Conservation have less than the required number of students. At the other extreme, the Institute of Adult and Continuing Education, and the Faculties of Arts, Education, Social Science, and Computer Science have excessive numbers of students. The impact of the later on space requirements cannot be underestimated.

It was further established that of the 38,589 students, only 2,761 are graduate students. This represents a percentage of only 7%. The highest number of graduate students were found in the Faculties of Economics and Management [80%], Medicine [28%], and Arts. The lowest were in the Faculties of Veterinary Medicine [1%], Science [1%], Agriculture [2%], and Technology [3%], and in the Institute of Psychology [0.5%]. The University is therefore currently predominantly more of an under-graduate establishment than a graduate and research led one. This is not in keeping with international trends. Moreover, there is a huge backlog of former students wishing to upgrade through graduate studies but are constrained.

It is recommended that;

1. *The University make a gradual move over a long-term period to **optimize student numbers** taking into account both **staff and space deficits**, with particular observance and compliance being made of NOCAG and NCHE requirements. NOCAG norms have been well tested and are widely used in the United Kingdom.*
2. *The **percentage of graduate students per academic unit** be increased while that of undergraduates are optimized through downsizing according to the required norms. A strategic balance of **30-40%** of students enrolled being graduate students would be ideal, and in line with other leading universities in the world.*
3. *The **imbalance** in undergraduate admissions between sciences and humanities/arts be **investigated and redressed** over the long term.*

5.9 Academic Space Composition

There was no readily available computerized database on room sizes, capacities, functions, identification by user, and number of teaching and research workrooms. The academic space composition at Makerere University, including the Medical School, was determined using as built drawings and physical measurements. It was not possible to obtain information on occupancy, frequency of use and utilization rates. It was found that each academic unit was doing timetabling independently. While there was evidence of recent introduction of space charging in some academic units, no university wise central-timetabling system could be found in place. Table 14 shows the existing and required academic space at Makerere [also see **Appendix D**].

Table 14: Summary of Existing and Required Academic Space at Makerere University

YEAR	Classrooms	Laboratories	Workrooms	Communal	Circulation	Gross Area
2007	m ²					
EXISTING	19,267	26,719	16,999	14,175	22,000	99,146
REQUIRED	46,206	61,605	41,135	36,013	38,779	223,724
DEFICIT	26,939	34,886	24,136	21,838	16,779	124,578
RANK	2	1	3	4	5	
INCREASE SINCE 1994: %	96	19	31	82	59	48

By being ranked 1 and 2, the data in Table 12 shows that classrooms and laboratories respectively are currently the most urgently required type of academic space in the university. This is despite a 96% and 19% increase in space [m²] since 1994 for the former and later. Classrooms include lecture theatres, and seminar rooms. Laboratories include specialized areas, stores, and cold rooms in science and technology based units. Workrooms and communal areas follow the two. These increased by 31% and 82% respectively since 1994. Workrooms include offices, and staff rooms for academic, administrative and support staff. Communal areas include libraries, computer rooms, as well as audiovisual rooms. Circulation areas include corridors, staircases, and washrooms. These run through all the academic units. Circulation areas increased by 59% since 1994. The total of these categories constitute the gross area.

The existing gross internal area was found to be **99,146 m²**. The gross internal area includes floor space and any additional space of upper floors in multistory buildings. The required gross internal area which was calculated basing on current student numbers and NOCAG space norms was established as being **223, 724 m²**. This leaves the University with an overall current gross space deficit of **124,578 m²**. This means that the University has to increase existing gross space by about 226%. Summary of the space composition per academic unit, including the required area based on current student numbers, are presented in Table 15.

Table 15: Summary of Academic Space per and Ranking Academic unit [2007]

FACULTY/SCHOOL	GROSS AREA	REQUIRED	DEFICIT -	RANK
	EXISTING	AREA	SURP. +	[NEED]
	m ²	m ²	m ²	No.
Agriculture	10,187	9,882	+305	16
Arts	3,397	17,529	-14,132	4
Computing & Inf. Science	13,218	21,966	-8,748	5
Economics & Management	3,505	9,124	-5,619	9
Education	6,200	22,525	-16,325	3
Forestry & Nat. Conservation.	1,371	2,956	-1,585	12
Law	955	4,222	-3,267	10
Medicine	17,080	18,274	-1,194	13
Science	11,219	32,336	-21,117	2
Social Science	3,553	10,512	-6,959	8
Technology	8,242	13,488	-5,246	9
Veterinary Medicine	9,877	5,084	+4,793	17
Sch. of Industrial & Fine Art	1,624	4,773	-3,149	11
Sch. of Library & Inf. Science	559	593	-34	15
Inst. of Env. & Nat. Resources	394	1,472	-1,078	14
Institute of Psychology	516	8,413	-7,897	6
Inst. of Stat. & Applied Econ.	950	7,953	-7,003	7
Inst. of Adult & Cont. Educ.	1,886	32,622	-30,736	1
	94,733		-134,089	

It was found that at the moment, the Institute of Adult and Continuing Education, and the Faculty of Science, are the two academic units with the greatest need for additional space. This is followed by the Faculty of Education, Arts, and Computing and Information Science. Conversely, Faculty of Veterinary Medicine and agriculture have excess space. The calculations are based on current full time student equivalent numbers.

To cope with the huge deficit, it is recommended that:

1. The university make more **intensive use of existing space** by inter-faculty sharing of dedicated and general purpose rooms; **frequency of use, occupancy and utilization rates** be increased and monitored closely, e.g. by changing the length of the teaching day, week or even semesters. Final examinations could for example be done during the last lecture in all departments. This is common practice elsewhere in developed countries.
2. The system of **space charging** be made compulsory so that booked space attracts a charge even when booked but not used. This will encourage vigilance, accountability, and better value for money management of space.
3. The system of **central timetabling and bookable space**, controlled by the central administration and available for use by any academic unit depending on availability and booking procedures, be introduced. A **Central timetabling Unit** be created in the Academic Registrars department. Faculties can have representatives on the unit on a rotating basis.
4. Funds be sourced to remodel space in some faculties to create room for urgently needed space for **laboratories and classrooms**. These are by far the .Modest additions and extensions to existing buildings have been known to contribute greatly in augmenting space. Infilling of atria and voids in the floor plan increases the floor area on essentially the same footprint. Balance areas can be captured in the refurbishment process for active use.
5. Funds be sourced to **build new structures** to increase the capacity of space in the University to cope with increased numbers. The ratio of useable area to gross built area be made higher.
6. Provide **versatile space, furniture, fittings and partitions** that can be quickly transformed and used for different purposes. Space occupied by furniture be optimized. The use of carefully specified, standardized, and the right type of furniture be promoted and planned.
7. Appoint a **champion or desk officer** for space management and cost in use. The appointee can systematically collect data and update space and cost information and compare to agreed targets and monitor their attainment.

8. *Faculties with affiliated estates such as Agriculture and Veterinary medicine consider **relocating to their extensive estates off campus**. Their status could be elevated to College level. Some academic units could even merge or collapse into larger units. Faculties moving off campus can maintain a skeletal staff presence and front office on the main campus for liaison purposes.*
9. *The overall **Institutional Plan** should set widely known long-term **ceilings and annual growth rates** for student numbers and composition for the diverse courses on the campus.*

5.10 Road Network, Traffic Management, and Road Signs

It was found that the road network on the main campus had a total length of about 18 km. The surface finish ranged from earth, gravel to tarmac. Some of the major roads are complete with paved shoulders for pedestrians, the sort of classification you would expect of a higher education setting. Unfortunately the state of most of the roads was poor mainly due to the widespread potholes patches, rutting and blocked drains [about 82%]. Most of the tarmac roads were designed and built in the 1950's. The design life of a flexible tarmac road surfacing is 20 years. These roads have therefore outlived their original design lives by over 35 years. The surface of the untarmacked road sections are washed away during the rainy seasons, a situation made worse by the hilly terrain of the campus. This causes silting of the already undersized culverts [450 mm]. The roads on the campus lack road furniture of all types, namely; regulatory, warning, and information signs. This has had a negative impact on directing traffic on campus. Even road name signs are missing throughout the campus. The types of directional signs placed by each and every unit on campus is not sustainable, and if anything they make the place look disorganized, as they block each other. At the CCE roundabout for example, there are over 14 signs from different units, each of a different dimension, height and template [a general one, academic registrars office, stanbic bank, guest house, faculty of computing, etc. this is unacceptable, and rather obtuse. Moreover, this being the first intersection on the campus from the main gate gives an everlasting bad impression of the place as a whole. It was further established that on average, during peak periods, just over 14,670 vehicles of all categories [motorbikes, cars, minibuses, pickups, lorries, articulated trucks, and other heavy vehicles] enter and leave the main campus each day. This is by any account an enormous volume of traffic.

It is recommended that;

1. *A **Technical Feasibility Study** followed by a **Detailed Engineering Design** be commissioned for the upgrading and service life extension of all roads on the main campus.*
2. *Presently **earth and gravel roads** be **tarmacked** to help protect them and reduce cases of dust which could otherwise be harmful to both people and to sensitive equipment commonly found in university laboratories.*
3. *The new road design considers **widening all narrow roads to 6m** width complete with **1.2m paved shoulders** on either side for pedestrian traffic.*
4. *To improve **drainage** and protect the roads, the **diameter** of all culverts be increased, with none being allowed to be below 600mm.*
5. *Road furniture in the form of **signs** for guidance, warning, ordering and any others be restored and **properly mounted and displayed** on all roads, including intersections.*
6. ***Guidance or directional signs** be **consolidated and compressed** to cater for the needs of multiple units. One large signpost can contain names and arrow directions for multiple units and locations on campus. The use of multidimensional and separate signs is obtuse, confusing, and must be stopped.*
7. ***Road names** be provided and appropriately mounted on all roads within the campus. The same applies for other estates such as Katalemwa, Kabanyolo, and Buyana. These should be kept simple and devoid of abbreviations.*
8. *A **comprehensive road inventory and identification codes** be created within the estates department for maintenance purpose. The inventory should include interalia; name, location, length, width, shoulders, surface type, intersections, culverts, speed restrictions, service life, etc.*
9. *A **Traffic Management Study and Safety Audit** for the main campus be commissioned through consultants to examine in greater detail the impact of the increased number of vehicles on the campus. These can report on traffic flow issues such as: capacity, speed, density, interruptions, accident prevention, etc.*

5.11 Parking Management

By its very nature, a higher educational institutional set-up will generate a lot of traffic to and from, thus requiring that adequate parking spaces be provided. It was found that the provision of parking spaces to cope with existing and increased traffic numbers to and from campus was grossly inadequate. This has caused cars to be parked in inappropriate places, queuing for parking, and unnecessary circulation of vehicles on adjacent roads in search of parking. There are two options for parking: on-street, and off-street. Most of the parking spaces were 'off-street', although a few 'on-street' parking spaces were being provided at the time of writing this report. The former refers to designated car parking lots, while the latter refers to parking along the streets. The total off-street parking space was found to be 27,344.6 m², being adequate for only 1,789 vehicles. Moreover, this figure includes residential parking spaces within staff quarters and student residences which are not normally available to other motorists including non-resident staff and students. Even existing lots, when properly demarcated, should be able to take on extra vehicles as shown in Table 16.

Table 16: Capacity of Existing Car Parking Lots at Makerere University [2007]

LOCATION	Existing Parking Lot Area	Actual number of vehicles served by lot	Expected number of vehicles served by lot	Deficit [-] or Surplus [+]
	m ²	no.	no.	no.
General	8150.2	510	562	-52
Faculties	11909	735	821	-86
Residential Staff	2569.3	191	177	+14
Residential Students	4916.1	362	339	+23
TOTAL	27544.6	1798	1899	-101

The condition of the parking lots and their bays, entry and exits designs, as well as their security were found to be wanting. At the moment parking appears to be on a first come first serve basis with no control or charging system in place. There are areas on the campus that could be converted into parking lots as shown in Appendix . This could provide extra 1382 parking spaces. The solution could be to introduce medium rise parking lot buildings that minimize on ground cover but maximize on numbers served. For example a well built single medium rise car parking lot building covering a ground floor space of only 8,100, and gross internal area of 40,500 [5-floors] could hold up to 3000 vehicles. Provision of such buildings are common in most universities and cities abroad.

The parking is then controlled and provided at a cost, thus generating revenue for the university. The procurement could be done on a design, build, manage and long-term handover basis, thus costing the university no initial capital cost.

It is recommended that:

1. *All existing car parking lots on the campus be **re-habilitated, upgraded and used more optimally**. This will require that funds are procured so that they can be remodeled, demarcated, and made more secure.*
2. *Parking lot **dimensions be standardized** throughout the campus in terms of; bay size, bin width, stall width, stall length, stall depth, aisle width and length, and parking angles. This measure will ensure optimal use and efficiency of carports.*
3. *A system of **charging for parking space** be introduced for all on-street and off-street parking where appropriate. Roads that are wide enough, especially one-way streets, be demarcated and used for on-street parking. The charging policy should take note of; **free and non-exempt** parking motorists, **method** of collecting parking fees, **scale** of the charges [including conditions such as time and motorist], **special** arrangements, and **enforcement** measures. The advantages of charging are to; **generate revenue, deter unnecessary parking, prevent entry to illegals, and to restrict times of use of parking facilities.***
4. ***Multistory car parking lots** be introduced on the campus in strategic locations on a design, build and operate basis. The main advantages include optimization of space use, generation of revenue, and provision of security.*
5. *Non-resident staff and other authorized persons be given **entry stickers** with **designated parking lots** shown. The service can be provided at a **nominal fee** to discourage unnecessary use of the lots, and to encourage use of alternative means.*
6. ***Management** of parking spaces on campus be **outsourced** to an outside firm to manage and collect revenue on behalf of the university.*
7. ***Security** of existing and future carports be improved by use of gate attendants, guards, CCTV cameras, and proper lighting.*

8. *Regular **paring surveys** [annual] be conducted to report on parking space data [supply], parking concentration, occupancy, volume, turnover, and parking durations.*
9. *A **parking champion** be appointed and a permanent desk established within the Estates and Finance Departments .*

5.12 Campus Support Services

Campus support services include areas such as catering, custodianship, cleaning, management of student residences, mail services, and secretarial services. Security is included but is discussed separately. It was found that practice and provisions in these areas lag behind, and are not consistent with modern trends elsewhere. These areas are considered critically important given their direct relationship to space use, revenue generation and expenditure control in the university. The university has taken on the enormous and unsustainable task of directly undertaking the provision of non-core activities.

It is recommended that;

1. *A **central catering building** for both students and staff complete with the usual social amenities be provided at a central location in the university. This will cater for feeding needs of all non-resident students, staff and visitors. The move will significantly help **free up the numerous spaces** currently devoted to canteens in academic buildings. It will also help **generate revenue** for the university, improve on food safety, and reduce on overall time wasted during breaks. Services could run for longer hours than is currently provided by halls and canteens.*
2. *The **cleaning** of buildings including student residences be **outsourced** through the normal procurement system. A pilot scheme could be introduced before full implementation. Again this will provide savings and freeing up of tied space.*
3. *The **policy on management of student residences** be reviewed. A system of **full letting** of all halls of residences be introduced both during and after semesters. The high cost of operating these residences will then be eliminated. Some self-catering wings or units can be introduced in suitable wings.*

4. *Additional halls of residences for **graduate students** be constructed, and operated on a letting basis.*
5. ***Secretarial services** be provided centrally, or at well-established locations within the campus, and at a cost to students. These include services such as typing, photocopying, printing, reprographics, binding, sealing, faxing, etc. at the moment these services are provided by each faculty, and in some cases considerable amount of floor space is taken. The safety of buildings is also put at risk as corridors are concerted for such uses, and background of the proprietors are not well established.*

5.13 Security

Security and space are interrelated in that lack of the former can adversely affect the effective use of the later. Vandalism and theft of property hampers effective use of even the most modern of facilities. Security will therefore always remain an area of concern in an environment comprising of high value items and assets surrounded by a large number of predominantly youthful population. Moreover, the University must provide security on a 24-hour basis throughout its breath and depth. Although incidences of insecurity to property and person have greatly reduced, the potential for resurgence is always there. The potential for student or staff induced disturbances are also ever present. While the need not to interfere with the freedom of speech, association and movement can be appreciated in a university level setting, nevertheless vigilance must be maintained. Security provides a means of protecting both fixed and moveable investment. Unfortunately, most University buildings are easy to enter by just about any body, including non-university persons.

It is recommended that the University;

1. *Increase **numbers and professionalize the existing security personnel**, or fully or partially **outsource** the provision of security services to specialized security firms. The arrangement can go through the tendering and procurement system.*
2. *Cause the security unit to become **more visible** on the campus through foot patrols, and vehicle patrols. They should also have radio links, with widely publicized contact numbers.*

3. *Install and improve on **street and external building lighting**, and on their management.*
4. *Provide more **robust fencing** to the university perimeter using long lasting and durable materials such as grilles on low plinth walls. There appears to be a move to do this already, and the process should be facilitated to its conclusion.*
5. *Provide **closed circuit television (CCTV) facilities and burglar alarms** in select buildings such as Senate, Main Building, Halls of residences, and Laboratories, Computer rooms. The thought that one is being monitored greatly reduces incidences of misconduct, theft, and greatly improves the ability of security services to apprehend petty and hardened criminals.*
6. *Provide and install sophisticated **door entry and access systems** that allow in only permitted users. Security cards incorporated into the identity card system can be quite useful.*
7. *Provide good, polite, well informed but **security conscious gate staff** to monitor the entry and exit of students, staff, and visitors at the major entry and exit points. They are the first and last points of contact to people.*

5.14 Utility Services

Utility services on campus are the usual ones to be found in a residential educational institution of this kind. The main ones include: power lines, water mains, fire fighting facilities, sewerage, telephone, and computer networks. It was found that they were designed for a student population of only about 2000, and an overall combined population of about 7000. Numbers have now increased to over 40,000. The increased numbers of users is therefore exerting an unbearable strain on them.

It is recommended that;

1. *A **comprehensive study of all utilities** be conducted at consultant level to audit their whereabouts and determine their adequacy in light of the increased number of users.*

2. *Any upgrading work should **well documented** and focus on requirements for future maintenance.*
3. ***Fire-fighting equipment** be installed and regularly serviced in all major buildings on campus. Fire escape and assembly drills be conducted on a regular basis, particularly in buildings with a high concentration of users and residents.*

5.15 Institutional and Strategic Plans

It was found that institutional strategic planning in the university has been based on a quinquennial system whereby plans are made every five years. The current strategic plan for example was meant to cover a five-year period from 2000/01 to 2004/05, but was extended for a further two years to 2006/07. No longer-term institutional plan was found at the time of writing this report. This normally covers a much longer period than strategic plans. The current system of planning only started around the mid 1990s. No institutional strategic plans for the 1970s and 1980s could be traced at the time of the study. Although the current document is generally well presented, it is about to reach its end. Evidence that a directional matrix was used in its preparation should be made clearer. It needs for example to state rather more clearly the Universities strengths in the various subject areas relative to other institutions. Future attractiveness of disciplines and identification of priority areas for consolidation, growth and rationalization should also be made more clear. The imbalance between undergraduate and graduate students need to be addressed.

There was no evidence to show that individual strategies were formed then integrated in an interactive approach; finance, academic disciplines, research, staff and student numbers, estates, space, residential, catering, library, information technology, support services, and linkage with industry. The planning cycle and period of cover is 5 years, not the 10 years normally used for strategic planning in institutions of a similar nature. Three yearly intermediate plans actively fed in by annual plans will make the institutional plan livelier, continuous and a valid collective exercise of foresight in an integrated set-up.

It is recommended that;

1. An overall **Institutional Plan** covering a longer period, say 15-20 years be formulated and adopted by Council. This can then be supported by shorter duration strategic plans. The considerable lead time involved in turning plans into action means that shorter duration plans can be overtaken with little achieved in the inter-planning period. Long term Institutional Plans are widely popular in other higher educational setups abroad. They tend to set future targets and guide strategic plans on long-term core institutional issues such as; overall student numbers, undergraduate student numbers, graduate student numbers and composition (research or taught), ratio between undergraduate and graduate students, staff composition and minimum qualifications, levels of academic organization (Departments, Institutes, Schools, Faculties, or Colleges), type and diversity of courses, quality assurance, residential provision, etc.
2. The next **Strategic Plan** of the University be made to cover a **ten year period**, and be formulated using a combination of the **bottom-up and interactive approaches**. The strategic plan be a result of integration of various unit strategic plans, especially; **Academic, Finance, Estates, Library, Residential and Catering, Human Resources, Information Technology, Campus Support Services, Security, Linkages/Collaboration**, etc. Each of these sub-strategic plans must be supported by factual data of the existing situation and future projections. Directional policy matrices can be used for each and the overall strategy.
3. **Intermediate Plans** [3-yearly] and **Annual Plans** [yearly] for the university be made to feed into the Strategic Plan. Reviews be made towards the end of each planning period.
4. All Institutional Plans, Strategic Plans, operational plans, and Annual Plans be subjected to the **six tests of; continuity** [non-static], **collectivity** [participatory], **foresight** [future consideration], **integration** [multidimensional and broad based], **information** [key data], and **approval** [decision of appropriate unit]. Plans with these characteristics are more likely to be accepted, supported and therefore to succeed.

6. CONCLUSION

The university estate is substantial, and varied in its nature, origins and condition. From the findings and recommendations in this report, it can be concluded that any changes leading to effective space management at Makerere University can be expected to provide measurable benefits not only to the academic experience of students and staff, but also to its long-term financial viability and sustainability. The key drivers of the size of the estate and its use happen to be the number of students and diversity of courses offered. The university estate and property require positive and active management right from the level of Council. The study clearly showed that good space management practices such as central timetabling, sharing, and space charging are likely to have a significant positive effect on performance. Space and certain provisions such as residential accommodation were once regarded as being free but this attitude must change. Policy changes with respect to student and staff residential provisions, campus support services such as catering, lettings, cleaning, and security can equally lead to significant monetary savings, increased availability of space, and increased revenue generation. The university needs to balance student admissions to allow for increased intake of graduate students to provide access to a large local and regional market. This will not only contribute to revenue but will also facilitate research in the university. A long-term institutional plan setting reasonable and achievable ceilings is long overdue. Lastly, the University Council is obliged to make policy changes that will bring Makerere in line and in tandem with current trends and practice in similar institutions abroad. Recommendations made in this report were greatly supported by the exposure of the authors to good practice both locally, regionally and overseas. Comments, contributions and suggestions to the report will be highly appreciated.

BIBLIOGRAPHY

1. HRD. 2006. *Academic Staff as of November 2006*. Makerere University Human Resource Department [HRD]. Kampala, Uganda.
2. Leicester University. 1994. *Estates Strategy to 2005/06*. University of Leicester. Leicester, England.
3. Loughborough University. 1994. *Estates Strategy to 2004*. Loughborough University of Technology. Loughborough, England.
4. Mamdani, M. 2007. *Scholars in the Market Place*. Fountain Publishers. Kampala, Uganda.
5. NCHE. 2001. *Checklist of Quality and Other Tertiary Institutions Capacity Indicators*. National Council For Higher Education [NCHE], Schedule 5; Regulation 13. Kampala, Uganda.

6. NCHE. 2001. *Checklist of Quality and University Capacity Indicators*. National Council For Higher Education [NCHE], Schedule 4; Regulation 9. Kampala, Uganda.
7. Nottingham University. 1994. *Estates Strategy to 2004*. University of Nottingham
8. PDD. 2000. *Makerere University Strategic Plan 2000/01-2004/05*. Planning and Development Department. Kampala, Uganda.
9. PDD. 2004. *Makerere University Strategic Plan 2000/01-2006/07*. Planning and Development Department. Kampala, Uganda.
10. PDD. 2005. *Makerere University Annual Report 2005*. Planning and Development Department. Kampala, Uganda.
11. PA Consulting Group. 1991. *Value for Money Audit of Estates Departments: Leicester, Warwick, Loughborough, Birmingham: Final Report*. Manchester, England.
12. Schmetzer, H; Kerali, A. 1993. *Master Action Plan For the Physical Rehabilitation of Makerere University: Interim Report - Appraisal of the Existing Situation*. ADB II/GoU/GTZ Project [March 1993]. Kampala, Uganda.
13. Schmetzer, H; Kerali, A. 1994. *Master Action Plan For the Physical Rehabilitation of Makerere University: Interim Report - Ongoing Rehabilitation*. ADB II/GoU/GTZ Project [March 1994]. Kampala, Uganda.
14. Schmetzer, H; Kerali, A. 1994. *Master Action Plan For the Physical Rehabilitation of Makerere University: Final Report*. ADB II/GoU/GTZ Project [August 1994]. Kampala, Uganda.
15. SMG. 2006. *Promoting Space Efficiency in Building Design*. UK Higher Education Space Management Project. Higher Education Funding Council for England [HEFCE]. Space Management Group [SMG]. March, 2006. London, England.
16. SMG. 2006. *Impact on Space of Future Changes in Higher Education*. UK Higher Education Space Management Project. Higher education Funding Council for England [HEFCE]. Space Management Group [SMG]. March, 2006. London, England.
17. SMG. 2006. *Review of Space Norms*. UK Higher Education Space Management Project. Higher education Funding Council for England [HEFCE]. Space Management Group [SMG]. September, 2006. London, England.
18. SMG. 2006. *Space Management Project: Summary*. UK Higher Education Space Management Project. Higher education Funding Council for England [HEFCE]. Space Management Group [SMG]. September, 2006. London, England.
19. SMG. 2006. *Space Utilization: Practice, Performance, and Guidelines*. UK Higher Education Space Management Project. Higher education Funding Council for England [HEFCE]. Space Management Group [SMG]. September, 2006. London, England.

20. SMG. 2006. *Managing Space: A Review of English Further Education and HE Overseas*. UK Higher Education Space Management Project. Higher education Funding Council for England [HEFCE]. Space Management Group [SMG]. September, 2006. London, England.
21. UGC. 1987. *Subject Group FTE Space Allowances*. Notes on Control and Guidance for University Building Projects [NOCAG]. University Grants Committee [UGC]. London, England.
22. UFC/PCFC. 1992. *Capital funding and Estates Management in Higher Education*. Universities Funding Council. London, England.