Close out Report
of the New Universities Project Management Team on the
Development of New Universities in
Mpumalanga and the Northern Cape
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Chapter 7
Spatial Development Framework
7. Spatial Development Framework

7.1. INTRODUCTION AND PURPOSE

This section describes the historical development, methodology and processes followed towards the establishment of the Spatial Design Framework of both the Sol Plaatje University and the University of Mpumalanga.

The campus design and the development of a Spatial Framework for the new universities can be described as the putting together of the processes and methods that give form, content and meaning to the physical requirements of the two new institutions. The Spatial Development Frameworks of the campuses aimed to establish universities with a sense of place, communicating each institution’s purpose, presence and distinctive identity.

The Design and Development Framework for each university established the spatial and infrastructural framework within which the government’s evolving vision and thinking on the establishment of the new institutions could take place. The framework has provided a strategic tool within which the diverse elements and activities required for the establishment of the new universities could be conceptualised, planned, structured, and prioritised, creating a context and strategy for implementation by:

a) providing the DHET and the leadership of the two new universities with a coherent, holistic vision, with easily understood guidelines and principles for implementation;
b) establishing a clear understanding of what the future campuses of the new universities would look like and how that translates into a unique sense of identity;
c) establishing appropriate linkages to the host city and communities around the new university campuses;
d) creating a campus environment that promotes ease of movement and access for both vehicular and pedestrian traffic;
e) creating an environment that is safe for students, lecturers and visitors alike;
f) exploring development flexibility that ensures a spatial framework structure that can respond to changing requirements;
g) providing spatial principles that ensure a clear and understandable framework within which the university management structures can expand their own vision;
h) establishing a framework that identifies lead projects and phasing methods to ensure a holistic approach through the lifespan of the universities;
i) providing an implementation strategy to assist the university management in the development of the universities; and
j) providing a practical and easily understood document that can act as spatial guideline and development framework to steer the New University.

Development of the spatial plans recognised that the two universities vary in purpose, prospects, institutional structure, mission, location, environs and contextual community. Each institution deserved to be shaped by a plan that acknowledges its own contextual realities, guiding the university’s own mission and vision in a workable and attractive manner. From the beginning the influences and informants determining their form were multi-faceted and complex, and understanding these determinants was essential in generating a useful and sustainable campus design.
Apart from the complexity facing both universities in terms of local conditions, influences and principles, the conceptualisation of the new campuses also followed universal and normative spatial applications. These universal design principles have been applied in varying forms, again dependent on the specifics of context.

7.2. THE APPROACH AND METHODOLOGY

The approach to establishing a Spatial Design Framework for the two new universities was based on two pillars. The first was the adoption of a ‘package of plans’ approach. This approach promotes consistent thinking across scales. It does not seek to be comprehensive but is minimalist: At each scale the minimum necessary framework actions were identified and these provided the fixes for successively more detailed scales. Working from a regional, city and town scale to the smallest design aspects, for example those effecting the student as pedestrian.

The second pillar was to transform the nature of the plan from opinion to a widely-agreed argument about the direction which the university campuses should be taking. The starting point for the argument was an interrogation of the spatial implications of the academic mission statement. At all times it was emphasised that the spatial planning and academic planning cannot be separated.

An ‘Inquiry by Design’ process was followed from the outset. This design methodology was cyclical in nature, allowing changes to take place without the need to start the process again. No data work was disregarded, and information was fed into the process resulting in an integrated design solution to both larger and smaller scale issues. The report of the original Task Team titled “Final Report on the Establishment of new Universities in the Northern Cape and Mpumalanga Provinces” [7-1] produced in August 2011, was viewed as the point of departure around which the work towards the establishment of a Spatial Development Framework was generated. Ongoing refinement and definition incorporated both regional and local issues and has continued into the latter implementation phases of the project.

7.3. SPATIAL INFORMANTS AND DRIVERS

A central issue was the concerns that should drive the new universities’ spatial frameworks. The academic/DHET vision and the spatial directions of the universities were considered to be complementary and synergistic, but equally, spatial issues in their own right had to be taken into account.

Direction was derived from three major directives:

- Interrogating the DHET mission statement for the establishment of the two new universities, in order to explore the spatial implication of the academic mission. The academic mission provided the highest order of direction.

- Identifying the desirable performance qualities which universities in South Africa in the 21st Century should be seeking to achieve. Again, these performance qualities had spatial implications which were overtly identified.

- Establishing a comprehensive understanding of the contextual informants. The contextual informants embodied very different properties in accordance with the unique cultural and environmental conditions of the place within which the two
universities were to be established. The place was not simply a reflection of the locality but also considered aspects of material substance, shape, topography, environmental character, climate, texture, as well as socio-economic features.

**Directive 1: Unfolding vision & mission of the university within the S African context**

The visions, missions and values of the two universities were mostly aligned to creating an enabling, vibrant, learning environment, fostering teaching, innovation and research – all in the context of South Africa’s transition to democracy and the need for expanded student access. These goals were tempered and moulded around university specific academic aims, which supported local, national or international goals.

As South Africa’s first new institutions of higher learning since 1994, the planned universities were envisaged as symbols of a new order, of democracy and inclusiveness. A crucial aspiration was that these institutions should be an enduring source of pride, both nationally and provincially and should able to attract the best academics.

It was envisaged that these new universities would expand the higher education system and provide qualifications in a range of fields for young people wishing to develop high level skills for the economy and for their personal advancement. Both universities had to establish a strong academic hub, drawing on the individuality of each province to develop a unique academic focus and strong main campuses that would support multi campus expansion over time. It was further envisaged that both institutions would be comprehensive universities, each aspiring to be a destination of choice for qualifying school leavers from across South Africa and the continent.

In the 2012 *Development Framework for New Universities in the Northern Cape and Mpumalanga Provinces* [7-2], Government highlighted its vision for the new universities:

a) as *sites of learning and culture* which give expression to democracy and social justice and increase participation in political, social, cultural and economic life;

b) as *active participants* taking centre stage in addressing the challenges confronting society and playing their role in the context of a *Developmental State*;

c) as *African universities*, part of a broader network and community of African institutions of higher learning with a long tradition of scholarship, rooted in the African experience, contributing to African knowledge production and generating ideas and insights with global relevance;

d) as *21st century social institutions* that must develop innovative modalities of governance, funding, teaching and learning, research and civic engagement in order to respond to ever-changing social, cultural, political, environmental and economic demands;

e) as *relevant leaders of the knowledge economy*, actively engaging communities to produce knowledge for social development and delivering innovation-driven research for commercial and economic advancement.

**Directive 2: Spatial Performance Qualities**

A great number of stakeholders were approached regarding the desired performance qualities that these two new institutions should embody. Apart from DHET, these included members of the New University Project Steering Committee (PSC), academics at various universities including University of the Witwatersrand, University of Pretoria, University of the
Free State, the Vaal University of Technology and the University of Kwazulu-Natal, municipal officials in Mbombela, Nelspruit and Sol Plaatje, Kimberley. It was agreed that for the campuses to be sustainable a number of performance qualities should be integrated into the spatial frameworks as set out below.

a) Equity of Access
A concern with equity does not imply that everything should be the same. Rather, equity of access means that all people should be able to access a broadly equivalent set of opportunities. Spatially, equity of access implies commitment to a movement system anchored by the lowest common denominator: people on foot. Spatially, it requires:

- The promotion of principles of universal access;
- A commitment to the promotion of pedestrian, non-motorised transport and public transport over private vehicular movement;
- The promotion of pedestrian priority;
- Developing a non-obtrusive parking strategy.

b) Integration
A number of kinds of integration were considered important.

Integration with the City
Place-based attributes at the urban scale, their role in ‘place making’ and in the local community, emerged as critical components influencing the development trajectories of both universities. It was soon realised that university and the city could both benefit from spatial integration.

The plan was for the universities to expand within the city context, while attempting to reduce any negative impact on the life of the host city. The spatial design of universities was viewed as an opportunity to create meeting points between the city and university. It was further believed that integration could stimulate economic development, regeneration and growth of the city.

Social Integration
Social integration requires informal gathering and meeting places, which are pleasant public spaces and which celebrate South Africa’s cultural diversity, while at the same time promoting a recognisable identity based on tolerance.

Campus Integration
A characteristic of most university campuses is the poor spatial integration of the different campuses making up the university as a whole. The central spatial debate was whether to seek to integrate sub-campuses more closely, or to pursue a model of smaller, more self-sufficient, satellite campuses.

Integration and Sport
Sport is a dimension of university life with considerable potential to contribute to social integration, which takes place within the full range of facilities provided, such as a regional competitive sports complex; club facilities and kick-about spaces; that encourage informal and residence-based sport.
c) Dignity
It was highlighted by stakeholders that it should be a basic right of all students to meet in dignified public spaces which are ‘owned’ by all, regardless of personal circumstances.

d) Safety and Security
There is a wealth of experience to show that spatial design can assist in reducing the incidence of crime and this is discussed further on in this chapter under the sections dealing with each university.

e) Heritage
Most universities have a number of buildings and places of heritage value and these need to be respected. Spatial responses to heritage, which have found relevance at both universities, include:

- The use of new development to frame and celebrate buildings and objects of value;
- Respect for the visual settings of buildings, places and objects of value;

f) Sustainability
Spatial planning was grounded in the conviction that the new universities should play a leadership role in demonstrating sustainable practices. One dimension of this was efficiency of land utilisation. Most existing campuses in South Africa follow a suburban model of individual free-standing objects on large land parcels. It was deemed important to create a much more urban model.

Sustainable practices applied at both universities relate to the following:

- Energy: reduce private vehicular movement and improve energy usage;
- Waste: promote re-cycling of solid waste;
- Water: accommodate storm-water run-off on the surface; use water as a place-making element; practise local water capture and recycle grey water for irrigation;
- Land: Ensure there is no residual or ‘left over’ space. Where appropriate, ensure strategic, selective infill projects to create a more urban model;
- Architecture: practise principles of green architecture.

g) Place-Making
An important part of creating a sense of spatial uniqueness and identity required an appropriate response to the site, including working with the land; working with water; use of landmarks; and the appropriate use of indigenous vegetation.

h) Flexibility
The challenge was to create campus plans which are strong enough to give clear direction but also flexible enough to accommodate growth and change.

i) Identity and Legibility
The term ‘identity’ was used to evoke two meanings: the one relates to the physical presence of the university; the second relates to academic identity (the need for relatively clear disciplinary gatherings or clusterings involving cognate disciplines).
Directive 3: Contextual Informants

Both universities enjoy distinct environments, providing specific contextual informants that directly influence the spatial plan of each campus. The distinct environments are also related to the sites selected for each of the universities, with SPU located within the inner city of Kimberley, and UMP on the fringes of Nelspruit in an open agricultural environment.

Both university sites and their contextual informants, are elaborated in the following sections of this chapter.

Fig 7.1: Sol Plaatje University Spatial Framework Study Area.
Fig 7.2: SPU Integration with existing movement network, ensuring integration with the local street network.

Fig 7.3: SPU Heritage impact and assessment. Oppenheimer Memorial Park setting of the former Malay Camp.
Fig 7.4: SPU changes to the historical William Pescod School. Entrance changed to allow access through to the Central Campus.

7.4. **Sol Plaatje University - Design and Development Framework**

Several primary elements of structure and place have informed the design and development framework for the Sol Plaatje University (SPU). These are described below,

a) **Location within the City** (Fig 7.1)

Sol Plaatje University is situated in the inner city of Kimberley. Two points emerge from this. The first is that the campus is centrally located, but its sub-parts are not integrated to the same degree. The iconic section around the Oppenheimer Memorial Park and the Central Campus are effectively part of the inner city and the historic core of Kimberley. The southern portion of the campus at Hoffe Park, now defined as the South Campus, is located within a residential neighbourhood, surrounded by sport amenities and schools. The second notable aspect is that the three campus land holdings are only weakly and indirectly linked to one another.

b) **Regional Movement Network**

In terms of movement, the highest order routes are mainly vehicular-orientated, and cross through the inner city. These routes cause the campus to split, which makes internal integration a challenge. The partial closure of Bultfontein Road, due to sagging caused by the Big Hole, has increased the traffic along Lennox and Du Toitspan Road, both important campus feeder routes.

The train station is within walking distance of the university campus, but the pedestrian link is
poor, requiring students to cross extremely busy vehicular roads. Minibus taxi operators
gather at the Market Street Taxi Rank, behind the historical City Hall. The rank is less than
400 metres from the Oppenheimer Memorial Park. The Kimberley Airport is less than 10km
away on the N8 to Bloemfontein. No public transport service links the city to the airport. Few
non-motorised initiatives have been implemented by the Sol Plaatje Municipality.

c) Local Network (Fig 7.2)
All modes of transport, and movement routes cross and meet to the north east of the
university campus. The city is dominated by vehicular movement routes, and very little has
been done to accommodate non-vehicular movement and pedestrians.
Heavy vehicular traffic is experienced along Bultfontein and Lennox Streets, which requires
detailed traffic assessment. In terms of pedestrian movement, too, the structure is not
particularly legible. The link from the Oppenheimer Memorial Park to the historical city centre
is across Lennox Street, a heavily used vehicular route. A potentially dangerous conflict
between pedestrians and vehicles exists at the crossing with Bultfontein Road, to link the
Oppenheimer Memorial Park and the Central Campus.
Public transport routes currently follow the national routes and do not enter into the finer
gained neighbourhoods. The planned cycle routes also follow the same pattern.

d) Topography
The city is extremely flat with no natural features to orientate the visitor. The most striking
topographical feature of the city are the man-made indentations in search of diamonds and
the waste material mounds that surround them.
The uniform topography has had negative implications for water run-off and bulk service
 provision. Together with the shallow rock formations, this has had significant cost
implications during construction. The shallow rock found across the site also precluded the
provision of basements for both services and parking.

e) Green Structure
The university campus includes much green and open space, in the form of sport fields and
public parks. A variety of green spaces also occur on the edges of the campus, particularly to
the south, west and east. The highest order natural feature is the Oppenheimer Memorial
Park, which will mark the iconic seat of the new university campus. The park is well
established, has a variety of significant landscape features and is historically important.
The Central Campus and South Campus (Hoffe Park) consist of a significant number of sport
and recreation venues. Large parts of the former Transnet Hoffe Park were underutilised.
The surrounding streets are lined with fully-grown trees contributing to a leafy pleasant
atmosphere.

f) Heritage
Issues of heritage constitute an important layer of informants on the Inner City campus
complex. Expert interpretation of heritage resources and their spatial implications was
undertaken by GXY Architects.
The Oppenheimer Memorial Park was identified as the element within the campus with the
greatest heritage significance. The park also contains memorials of Sol Plaatje and Ernest
Oppenheimer, and the former Malay Camp. The park and the surrounding buildings have
been constructed on the former Malay Camp. All references to the former camp were consciously erased in the redevelopment of the Oppenheimer Memorial Park in the 1960s. The university, with agreement from the Sol Plaatje Municipality, will commemorate the former Malay Camp in the design of the Northern Campus. (Fig 7.3)

The second element of heritage significance was the former William Pescod School, which was the school serving the former Malay Camp. Its adaptation to university usage involved the submission of a heritage report to the Northern Cape Heritage Association. Only a few minor changes were proposed to this heritage building. The most significant change was the opening of the Gable on the east façade facing onto Bultfontein Road. The opening of the façade allowed the free flow of student and visitors walking from the North Campus to the Central Campus. (Fig 7.4)

Significant buildings not specifically covered by the National Heritage Resources Act included the former Provincial Government Building, now renamed Luka Jantjie House, and the Community Hall on the South Campus. Care is being taken not to destroy their original character.

7.5. SPU: SPATIAL CONCEPT AND MAIN IDEAS

A number of main ideas underpin the concept for the Sol Plaatje University Campus.

PRINCIPLE 1: Promote Integration

The framework promotes the principle that the most successful urban environments are those that have the best global integration and strong interaction with surrounding communities.

a) Integration with the City

If the university is to be of its place, integration with the city is deemed to be of great significance. From the beginning of the discussions with stakeholders and the municipality, it was emphasised that the plan for the Sol Plaatje University should be the plan of the city, and the plan for the city should be the plan of the university. This implied that the new campus footprint ingrains itself into the city fabric. A number of spatial ideas were introduced to contribute to this:

- Share university activities with the public, on a controlled basis;
- Insert and extend the city grid into the campus;
- Encourage programmes which engage with the city (outreach, research, public displays and broader-scale interventions, such as sport and recreation programmes);
- Establish places of public display; and
- Create places and squares for social exchange, where the city and the university can meet.

b) Integration with City Movement Structure

The campus is located at the junction of two national roads, the N8 linking Upington and Bloemfontein and the N12 Gauteng Cape Town Route. These major roads allow maximum accessibility, but also fracture the campus, creating barriers for pedestrians to cross over. The speed and volume of traffic at crossing points has demanded special attention to ensure safe movement for all campus users.
The Sol Plaatje University Campus was planned as an addition to the current urban grain of Kimberley. The plan does not block movement through the city nor create an island within the city fabric. The existing city structure is merely extended, and the plan for the university aims to enhance flow through it by adding an additional patina of routes and streets.

c) Integration of Modes of Movement

The integration of all modes of movement was deemed essential for efficient public transport and non-motorised transport. Ideas that were tested included:

- Extending the current public bus system which only operates on the National roads traversing the city. The plan and discussion with the municipality aimed to extend the public transport routes to include the South Campus (Hoffe Park);
- A shared Public Transport Hub was originally planned in Lyndhurst Road on the property behind the Northern Cape High Court. The plan was to provide a space location that will serve the needs of both city bus and taxi operators. The facility would offer students places to embark and wait within a secure environment. This plan was altered after the Northern Cape High Court indicated that it would use the property for future expansion. A new site to the west of the Sol Plaatje Municipality was earmarked to fulfil the same role. A second smaller public transport hub is proposed along Reservoir Road;
- Joint city-university non-motorised transport projects were also discussed with the municipality. A proposal was put forward for the extension of a citywide cycle network incorporating the campus;
- A comprehensive parking strategy was proposed to minimise the on-campus parking.

d) Social Integration

Encouraging informal gathering and meeting is central to the spatial plan of the university. Opportunities for meeting and exchange were promoted by planning the campus around a variety of common and shared spaces. These include the ‘University Walk’, the Central Campus Square, parks, spaces gardens and recreation spaces.

e) Integration of Sport and Recreation Amenities

The plan realised that sport and recreation is a dimension of university life with considerable potential to contribute to social integration. The central spatial issue was the range of facilities to be provided.

The city of Kimberley was already blessed with a variety of quality sport and recreation amenities. Instead of providing for its own use only, the university plan aimed to share and enhance the current sport and recreation offerings of the city. The university plan aimed to contribute significantly to the upkeep and maintenance of existing facilities over and above providing for additional sport amenities.

Investigations undertaken together with the city focused on which sport and recreation amenities were lacking and identified the additional need for a regional competitive sports complex; competitive club facilities, astro-turf hockey fields and kick-about spaces; particularly in close association with residences, to encourage informal and residence-based sport. These were mostly planned, and are being implemented, on the South Campus.
PRINCIPLE 2: Equity of Access

The plan for the university emphasised equity as a high spatial priority. It implies that all students, staff and visitors should have the opportunity to access a broadly equivalent set of opportunities. Spatially, equity of access implies commitment to a movement system anchored by the lowest common denominator: people on foot.

Therefore, the plan required:

- The promotion of principles of universal access, supporting people with disabilities;
- A commitment to the promotion of pedestrian, non-motorised transport and public transport over private vehicular movement;
- The promotion of pedestrian priority; and the
- Development of a non-obtrusive parking strategy.

a) Permeability

Central to the principle of equity of access, was spatial permeability, particularly pedestrian permeability. Since most internal university movement was planned to be on foot, the ability to move easily in all directions fundamentally affected the convenience of campus users.

Of note was the fact that the university campus was not planned to be closed off to the general public, and entry points to the campus were established via extensions of the existing street pattern.

b) Balanced Movement Network and Pedestrian Dominance (Fig 7.5)

Clear hierarchies of movement were important dimensions of legibility for the spatial framework. The Kimberley Inner City is well served by regional and local connectors, which provide ample connections for vehicular traffic. This focus on vehicular traffic has resulted in a fractured urban area, with poor pedestrian links between various sub-campuses. Non-vehicular traffic was also poorly represented in the city-planning scheme.

The spatial plan envisages improved links between the various campus portions by catering for a broader spectrum of urban users. A new network of streets, that promotes predominantly pedestrian and public transport, was placed over the existing city grid, thus creating a more complete street pattern. The plan for the new university improved the movement network by:

- Extending the existing street pattern into the campus;
- Differentiating between pedestrian, non-motorised and vehicular routes;
- Establishing a new student walk that is planned around pedestrians and cyclists;
- Vehicular traffic was to be pushed to the edges, in order to promote pedestrian dominance.

To encourage pedestrian traffic, streets were provided with:

- Safe street crossing points at Bultfontein Road and Scanlan Street;
- Crossing points which are visually prominent;
- Elements that reduce vehicle speeds; and
- Pavement apparatus that supports handicapped pedestrians.
PRINCIPLE 3: Promote Identity

The term ‘identity’ was used to evoke two meanings: the one related to the physical presence of the university within the inner city of Kimberley; the second related to academic identity of the Sol Plaatje University. Whilst the integration of the university with its city and surrounding community was a primary objective, it has also been important to ensure the visual identity and presence of the university within the city.

a) University Walk (Fig 7.6)

To ensure identity, orientation and legibility of the university, a prominent route was introduced that links the various campuses via a series of parks, common spaces and squares. This route is planned to be immediately recognisable and distinct as the ‘University Walk’ by way of its landscaping, urban furniture, signage and lighting. It is anticipated that over time, this walk become the most active campus space.

Visitors crossing, or using, the University Walk’ will immediately be aware that they have entered into the domain of the new university. The route is planned to become a place of attraction where people meet and exchange - a junction between the city and the university.

b) Place Making

A primary focus of the plan for the university was the principle of place-making: the creation of a sense of spatial uniqueness and identity. The spatial implication of this included working with the land; working with water; the use of landmarks and the appropriate use of indigenous vegetation.

Equally important for the plan was to ensure that the campus is identifiable as a distinctly African university and this has required the involvement of the community in respect to issues such as:

- Locally based craftsmanship and technology;
- Materials with different textures and colours that are found in the local environment and which enhance diversity in the buildings;
- Climatic controls and responses that ensure maximum environmental performance and bring associative, cultural and historic reference to the architecture;
- Arts and crafts involving as broad a spectrum of people as possible;
- The choice of vegetation, landscape structuring elements, storm-water channels, lighting and signage, which all contribute to achieving a greater sense of place.

These requirements formed an important part of the architectural competition as well as the basis for broader discussion with stakeholders and specialist groups.

c) Gateways Spaces, Landmarks and Legibility (Fig 7.7)

The plan of the university has aimed to establish awareness of physical patterns of use by emphasising the method and route a visitor to the campus would follow. The plan introduced a hierarchical order via gateways, public space and landmarks to identify the university and to orientate the visitor. The spatial framework realigned the urban fabric to those elements, which deserve celebration and which can act as features to identify the campus including:

- A new traffic circle with a memorial structure at the intersection of Bultfontein, Bishops and Lyndhurst Roads;
- Landmark structures to act as gateways along the ‘University Walk’;
• The Library as focal point of the Central Campus – A ‘Lantern of Knowledge’;
• Public open spaces, squares and parks along dominant movement routes;
• The introduction of landmark structures on building corners to strengthen important vistas and axes;
• A distinct language for campus urban furniture, lighting, benches and signage, which further enhances legibility and a sense of orientation;
• A distinct surface treatment of the pavements within the university campus;
• An increased quality and quantity of night light within the university campus.

PRINCIPLE 4: Dignity: Creating a Network of Shared Spaces (Fig 7.8 and 7.9)

a) Linking with the City Green Structure

The university plan aimed to strengthen and integrate with the substantial green areas within the inner city of Kimberley. These include the Botanical Gardens, the sport and recreation areas of Kimberley Boys and Diamantveld High Schools, the Karin Muir Swimming Pool, the McGregor Museum and the Memorial Park. Greater integration of these city spaces with the university required the municipality to upgrade a number of streets that lead to these amenities.

b) Landscape of Possibilities

A fundamental principle of the university plan was to create common spaces for students, staff and residents to gather, places that ensure a sense of place. A variety of shared spaces were proposed, which spatially emphasised the creation of dignified places for informal meeting. The new buildings for the university were used to define the various gathering spaces. The plan also emphasised landscaping of different types to create shade and shelter in these spaces.

A variety of shared spaces were proposed, which are positioned at various intervals along the ‘University Walk’ and include the following:

• Focal squares, for example the Central Campus Square;
• Public parks;
• Intimate and protected gardens at the heart of the William Pescod building;
• Sport fields at the Central Campus and the South Campus.

c) Oppenheimer Memorial Park

One of the highest order public spaces was identified in the Oppenheimer Memorial Park, which forms the iconic heart of the new university. The space is of historical significance and has been planned with care. Six new land parcels have been demarcated in the park, which will house both academic and administrative buildings. Four of the land parcels are placed on the outer wings of the park, and two at the northern and southern end facing the Miner’s Memorial.

The plan, in consultation with the Sol Plaatje Municipality, will close part of the Jan Smuts Boulevard ring road around the park, thereby increasing the size of the park. Importantly, the park will remain fully accessible to the public.

The university plan also proposes that the park be redesigned to commemorate the former
Malay Camp, which used to be located there. It is envisaged that the street pattern of the former Malay settlement will be reflected in the park layout and new university buildings. This will be done without materially affecting the existing memorials and landscaping.

d) Public Space Edge Consolidation

The quality of common space is influenced as much by the activities surrounding and facing onto it, as by the quality of the amenities it offers within. The plan recognised that an important underlying characteristic of good public space is that it must have definition, boundaries (usually buildings) that clearly communicate the edges. Further, the plan aimed to distinguish clearly between common and private environments. It required the development of building typologies that define the degree of enclosure, privacy and definition of the open spaces within the campus.

The spatial framework introduced the perimeter block typology as building block for the university buildings. Perimeter blocks have various advantages over the more typical pavilion type buildings found in our cities – in particular they ensure an active street edge and ‘eyes on the street’, therefore contributing to a safer urban environment.

e) Active Public Space Edges

The plan understood that successful public open space is not dependent on definition alone. The activity along the public face was deemed as equally important. The plan defined building edges that house activities which benefit from interaction with the public and contribute to the life in the campus street or square. The most publicly accessible activities are placed along the squares and the ‘University Walk’ and include coffee shops and student amenities as well as publicly accessible university buildings.

f) Safety and Security

Spatial design factors aimed at reducing the propensity for crime include: creating a clear hierarchy of pedestrian and bicycle networks; good lighting associated with this hierarchy; the promotion of surveillance or ‘eyes over space’; the removal of dead-edges; the removal of cluttering vegetation; and the use of security devices such as cameras along major pedestrian passages.

Management of the various security thresholds on campus remains a challenge.

PRINCIPLE 5: Variety of Use and Form (Fig 7.10)

Development of the plan was based on the understanding that a diverse experience requires a place with varied forms, uses and meaning. The introduction of a greater mixture of uses unlocked additional levels of variety.

a) Campus Functional Layout

The plan of the university identified three sub-campuses with varying functions attached:

- The North Campus was planned as the iconic heart of the university and will house predominantly administrative functions, academic lecture venues, academic offices and shared facilities such as a library.
- The Central Campus accommodates the greatest variety of uses, and accommodates the broadest spectrum of university functions. In addition to
academic and administrative uses, it also incorporates residences, sport and recreation amenities.

- The South Campus will predominantly be used for residential accommodation and sport related activities. Limited academic facilities are envisaged.

**b) Adopting a Hierarchy of relative Privacy**

The university campus is an integral part of the city and the plan has had to address the requirements for privacy and security differently from traditional universities, which have defined borders and edges. All university activities can be characterised by the extent to which they are private or open to the public. The more publicly open activities have been positioned along the University Walk and around public/common squares.

**Fig 7.5: SPU Ensuring a Balanced Movement Pattern integrated with the city movement structure.**
Fig 7.6: SPU Establishing a University Walk, along which pedestrian and non-motorised movement links the three sub-campuses. Along it all the important common spaces are located.

Fig 7.7: SPU Establishing Landmark structures along axis and vistas to increase legibility and orientation.
Fig 7.8: SPU The focus on the quality of open common spaces

Fig 7.9: SPU A network of Common open spaces
Fig 7.10: SPU Integrated land-uses mixed across the extend of the campus.
Fig 7.11: SPU Overall Spatial Vision

Fig 7.12: 3-Dimensional visualisation of the SPU Spatial Vision
Fig. 7.13: Physical Model of the Spatial Framework displayed in the William Humphrey Gallery, Kimberley.

Fig. 7.14: Detail of the Northern Campus of the SPU Model.
PRINCIPLE 6: Efficiency and Sustainability

Development of the spatial framework for the university needed to demonstrate leadership in sustainable practices. One dimension of this was the efficiency of land utilisation. Existing campuses in South Africa tend to follow a suburban model of individual freestanding objects on large land parcels. Planning for the Sol Plaatje University aimed to create a denser, more urban model.

The framework also aimed to demonstrate best practice in terms of a broad spectrum of environmental and sustainability aspects including:

- Regarding land as a scarce resource not to be wasted;
- Designing spaces to ensure thermal comfort by maximising passive heating and cooling;
- Providing water management strategies;
- Providing integrated recycling and waste management strategies;
- Maximising opportunity for rainwater harvesting and grey water applications;
- Understanding and designing for the different energy use requirements of buildings;
- Investigating energy saving options and potential for renewable energy resources;
- Engaging with the city to maximise opportunities for long-term sustainability.

PRINCIPLE 7: Flexibility in Phasing and Implementation Strategies

An underlying principle of the implementation strategy was to create a completed portion of the campus and a corresponding sense of identity from the start. Most large-scale developments have an ad hoc approach, with the final vision only apparent when the whole project is complete. The intention at SPU was to establish a microcosm of the completed New University Campus from day one. In this context the first phase aimed to create a complete piece of the campus around the Central Campus Square, the William Pescod Courtyard and the beginnings of the ‘University Walk’.

It is envisaged that further phases will take the same course and extend the completed campus fabric over time.

7.6. UNIVERSITY OF MPUMALANGA - DESIGN AND DEVELOPMENT FRAMEWORK

Several primary elements of structure and place have informed the design and development framework for the University of Mpumalanga. These are described below.

a) Location within its context (Fig 7.15)

A number of regional aspects have influenced the UMP spatial framework. These include the following:

- The campus is located on the edge of the current urban development area of Nelspruit and is still within the agricultural hinterland;
- The campus is strategically positioned at the crossing of two major development corridors. These are the R40, which links Nelspruit with White River, Hazyview and Bushbuckridge, and the N4 Development Corridor which connects Gauteng with Mozambique. The strategic location of the site implies that development will in future envelop the new university site;
The location of the campus on the urban edge would place significant strain on the provision of bulk infrastructure and services to the site;

The location is of iconic importance, sharing the stage with the Mpumalanga Legislature.

b) Regional Network (Fig 7.16)

Nelspruit is well served with a regional and local movement network, with both national and provincial roads leading past the site to the city and surrounding towns.

The city is also well served by a rail network, and has an international airport, which is 25km north-east of the city. The R40 and D725 serve as connection to the airport past the new university site. The regional BRT Network is planned to pass the university campus on the D725.

c) Local Network

The chosen university site, although well connected regionally, suffers from poor local connectivity. Only the D725, a district road, offers access to the university campus. The greatest challenge from the beginning of the planning process, was with the connection of the D725 and the R40 route. The intersection is currently not controlled and, given the high traffic volumes on the R40, this makes it a dangerous intersection.

Apart from some roads around the former Lowveld College of Agriculture, all internal streets were farm tracks. Access to the site was at the main entrance to the former Lowveld College of Agriculture, now referred to as the Mbombela Lower Campus. A further service entrance, on the southwestern corner of the Boschrand Farm off the D725, provides access to the Hill Campus and was used as construction access during the first phases of implementation.

d) Topography (Fig 7.17)

The bulk of the 240Ha university site has a slightly undulating topography with a distinct rock outcrop and steeper hills on its northern border. The landfall is a relatively gentle slope from north to south. A stream through the centre of the Boschrand Farm portion of the site folds the contours inwards, turning the orientation slightly in an east-west direction.

The gentle slope has had three major implications for the plan of the university: it opened the possibility of terracing and the creation of building platforms which allow different levels of access; it suggested the possibility of an easy east-west movement pattern along the contour; and it ensured that the university enjoys superb long views south towards Nelspruit.

e) Green Structure

The campus forms part of an extensive range of green spaces with a number of important natural features. Three natural features were deemed of considerable significance ecologically:

- The first is the extensive riverine corridor of the Nels River, which joins the Crocodile River downstream in the Botanical Gardens;
- The second consists of the prominent rock outcrops and ridges that shape the northern and western edges of the site;
- The third feature is a stream creating a wide wetland running north to south and splitting the Boschrand Farm property into two distinct pieces, with an agricultural dam as its source.
The university is custodian to very sensitive and environmentally valuable land. Most of the natural features occur on the steeper slopes, rocky outcrops and around the watercourses. Not all of the green fabric surveyed was natural, as a large proportion of the site was used for orchards and annual crops. The orchards have an average lifespan of 30 years and had to be considered in the overall layout of the campus.

Fig 7.15: University of Mpumalanga Context and Regional connections.
Fig 7.16: UMP Site Informants: Movement, Landmarks and Views.

Fig 7.17: UMP Site Informants: Topography and Natural Edges.
Fig. 7.18: UMP Internal Campus Street Network based on the existing farm roads and contours.
f) Land use
The surrounding development patterns are influenced by the R40 Development Corridor. Campus planning took cognisance of the fact that development pressure on properties facing the R40 will gather momentum and will impact the future development of the university. The Infrastructure Development Plan (IDP) of Mbombela Municipality has been adjusted to change the zoning of the site for the new university from agriculture to educational. The land east of the campus is intensively cultivated agricultural land, and according to the District Municipality will remain agricultural.

Planning of the Development Framework foresaw that Nelspruit will continue growing at a rapid pace and that eventually the university site will be absorbed into the urban fabric.

7.7. UMP: Spatial concept and main ideas
The nature of the site for the University of Mpumalanga is distinct and critically informs the spatial concept for the campus. The natural landscape, agricultural fields, undulating topography, waterways and vistas demanded a place specific approach to the Design and Development Framework.

A number of main ideas underpin the concept for the UMP Mbombela Campus.

PRINCIPLE 1: Making Connections

a) Connections with the surrounding context and the City
The plan for the university campus placed great emphasis on integration and strong interaction with surrounding communities. The long-term sustainability of the university depends on physical accessibility, appropriate connections and links to various locations. The connections that required specific attention include:

- Connections with Regional and Local movement corridors by providing ease of access onto the R40;
- Integration with public transport routes and initiatives by introducing a number of public transport stops along the D725;
- Provision of safe waiting areas for students and visitors at the entrance to the university campus;
- Pedestrian links to surrounding amenities; and
- Integration and promotion of a non-motorised system on and off the campus.

b) Regional and local movement network (Fig 7.18)
The university campus enjoys very good regional vehicular connections as it is located at the intersection of the R40 and N4 routes. The transfer of movement from the regional movement system to the local streets is extremely poor. A number of issues to improve regional and local connectivity have been proposed:

- The junction of the D725 district road with the R40 required substantial upgrading to ensure that it can accommodate the expected increase of future traffic and address traffic safety concerns. After various meetings and continuous pressure on the
Provincial and Local Authorities by the DHET, NUPMT and the university, an implementation strategy and programme was agreed. The construction of a raised intersection commenced in June 2017;

- No public transport stops were provided for along the D725. For the campus to be properly integrated with its surroundings, the public transport routes had to be extended to include the D725, with sufficient drop-off zones;
- The upgrade of the D725 needed to include pedestrian walkways and cycle lanes;
- A pedestrian link is required between the university and the Riverside Mall across the N4 and Nels River;
- Three substantial traffic circles are planned on the D725 to allow proper access to the university site. These circles become important entrance markers, and provide opportunity to celebrate the university.

c) Campus Access

Three points of access were proposed for the university campus. A central new traffic circle would lead to the main entrance gate of the university. This entrance provides sufficient space for student drop-off, public transport stops and ranking for visitors accessing the university.

Two further points of access were planned, one close to the R40 interchange and the second at the existing entrance to the former Lowveld College of Agriculture, now the UMP Lower Campus. At the existing Lower Campus entrance gate, upgrades have already been implemented. These include widening of the roadway, creation of bus stops and waiting shelters and the introduction of traffic calming measures.

PRINCIPLE 2: Establishing a Balanced Movement Network

The plan for the university campus aims to create a balanced movement network addressing the needs of all university users, visitors and residents in terms of both vehicular and non-vehicular movement.

a) An Integrated Network of Streets

An integrated network or grid of streets provides the most flexible use, facilitates ease of movement, provides for a variety of routes and increases legibility. The integrated street plan avoids cul-de-sacs and dead corners on campus. The planned grid of streets enables the following:

- It is legible and easily understood;
- It becomes part of the a network of common and shared open spaces;
- It allows for a variety of land parcels, therefore flexibility of building sizes and academic uses;
- It allows for a structured hierarchy of streets.
b) Hierarchy of Streets

As a working farm, the site displayed a distinct land use pattern that responds with a clear underlying logic to the topography, water runoffs and orientation. The original location of farm roads, fields and buildings was carefully considered. The new campus plan was viewed as an extension and formalisation of the former farm tracks, fields and routes. Thus farm tracks became primary movement routes, the weir crossing the stream became a bridge, and agricultural land parcel sites were converted to development parcels for buildings.

The movement pattern and hierarchy of roads followed three informants:

- The existing farm tracks were formalised to become the primary movement routes to link the different sub-campus areas. These roads are mostly located on the periphery of the built-up area, and serve as primary access routes;
- The topography of the land informed the secondary layer of movement. These streets follow the natural flow of the contours and they serve mostly low levels of traffic, pedestrians and cyclists. They are mostly internal streets, of smaller scale, lined with street trees, with distinct urban furniture and lighting;
- The last layer of movement was focused on the pedestrian. A network of intimate walkways is placed over the campus, which link together functions, spaces and places.

Fig 7.19: UMP Internal Campus Street follow contours. Buildings orientated along contours to ensure minimum cut-and-fill.
Fig 7.20: UMP Designing a variety of common spaces: squares, parks and sport fields

Fig 7.21: UMP Containing and limiting the development of the university campus to avoid destroying arable land and natural bush, veld and rock outcrops.
Fig. 7.22: Acknowledging Mpumalanga Legislature Building by aligning it with the major open space and central administration buildings of the Hill Campus.
PRINCIPLE 3: Place Bound University to strengthen Identity

The Spatial Framework of the university placed great emphasis on place-making: the creation of a sense of spatial uniqueness and identity. This has required working with the land; working with water; the use of landmarks and the appropriate use of indigenous vegetation. For the university to be ‘of its place’ has had a number of spatial implications, specifically:

- The plan had to strengthen the visual identity and presence of the university by utilising the topography, vistas and views of the site;
- The architecture has to reflect the environmental challenges;
- Spaces and places have to reflect the climate in its scale and landscaping;
- The architecture has to use appropriate materials and technology;
- The plan had to strengthen and integrate the substantial green areas found on and around the site.

For the Campus to be of its place, a distinctly African University, required its people to participate in its making in terms of the following:

- Locally based craftsmanship and technology had to be applied;
- Use of materials with textures and colours found in the local environment;
- Use of climatic controls and responses that promote environmental performance and bring associative, cultural and historic reference to the architecture;
- A choice of vegetation, landscape structuring elements, storm-water channels lighting and signage that contribute to achieving a greater sense of place.

a) Topography to shape Campus Plan

The most striking feature of the site was the slope from north to south with the distinct outcrops and ridgeline. The contours were used to shape the movement network, which in turn defined the campus footprint and the open spaces.

Contours specifically shape the spatial layout of the Hill Campus whereby:

- The highest order functions were placed on the highest point of the Hill Campus; These include the university Great Hall, senior management offices, student centres and the main library;
- The second level terraces were planned to accommodate academic functions, teaching spaces and student amenities;
- The third level terraces were planned to accommodate student residences, which overlook the green spaces and sport fields.

b) A defined Campus area (Fig 7.21)

The plan for the university aimed to utilise the land in a meaningful manner, avoiding being wasteful and sprawling over what is a very large tract of land. The development footprint was specifically defined and no-go areas are clearly demarcated. A clear line was drawn beyond which the university campus could not impinge. These include:

- Areas where the slope becomes too steep;
• Rocky outcrops and ridge lines;
• The edge defining the start of the natural vegetation;
• The water course that runs north-south between the Hill and Orchard Campuses.

The Spatial Framework distinguished also between annual agricultural fields and orchards. The lifespan of the orchards is approximately 30 years and will not be affected within the first part of the university development. The orchards are considered areas for future expansion beyond the 15,000 student population as currently planned.

It was also important for the plan to consolidate the edges of the campus in order to promote the ideas of the defined campus and to discourage future sprawl. The edges were made in two major ways:

• By strict application of ‘build-to’ lines at all edges of the campus;
• By wrapping built-up edges with sports fields and recreation areas which create a spatial buffer.

c) Gateway Spaces, Landmarks and Legibility (Fig 7.22)

The plan of the campus aimed to create an immediate understanding of access, movement pattern, the location of public amenities and the overall structure of the campus. The plan aimed to achieve a highly legible university campus.

Legibility and a sense of orientation was enhanced by placing landmarks and landmark buildings around traffic circles, at entrances and in the most important common gathering spaces. Legibility and a sense of identity was also strengthened by aligning the most important open space on the Hill Campus with the Provincial Legislature Assembly Building.

PRINCIPLE 4: Network of Shared Spaces

a) Linking with the City Green Structure

The University Plan aimed to strengthen and integrate with the substantial green areas surrounding the new university site. These included the Botanical Gardens, the Nels and Crocodile River Green Corridor, and the outcrops and ridges to the north and east of the campus. Routes and paths of access to these destinations were planned in consultation with the local authorities and affected stakeholders.

b) Landscape Plan

A fundamental part of the university plan was the creation of common spaces for students and staff to gather, places that ensure a sense of place. A variety of shared spaces were proposed, which represent the primary informal gathering or meeting spaces for students, staff and residents alike. The emphasis was on creating dignified places for informal meeting: using all new buildings and objects to define and make space; using selective, landscaping in different ways to define place, and to create shade and shelter. A variety of spaces are positioned at various intervals throughout the campus and include:

• Focal squares;
• University lawns;
• Parks;
- Kick-around spaces;
- Intimate and protected gardens;
- Sport fields;
- Nature trails and parks.

c) Public Space Edge Consolidation: Perimeter Blocks

The quality of common spaces was influenced as much by the activities surrounding and facing onto them, as by the quality of the amenities offered within. The plan proposed that good public spaces have one important underlying characteristic, they have clear boundaries, usually buildings of some sort that define the edges and set the public space apart from the private space. The spatial framework proposed the perimeter block typology as building block for the university buildings.

d) Safety and Security

Design factors that were incorporated to support a safer campus included: creating a clear hierarchy of pedestrian and bicycle networks; good lighting associated with this hierarchy; the promotion of surveillance or ‘eyes over space’; the removal of dead-edges; removing cluttering vegetation; and the use of security devices such as cameras along major pedestrian passages.

PRINCIPLE 5: Variety of Use and Form

a) Campus Functional layout (Fig 7.23)

The size of the university properties dictated that a series of sub-campuses be established, each with their own identity, character, form and predominant use. In this context the following distinction has been proposed:

- The Hill Campus was planned as the iconic heart of the new university and will house predominantly administrative functions, academic lecturing venues, academic offices and shared amenities e.g. library. Student residences were placed on the lower terrace of this campus and overlook the sport and recreation areas;
- The Orchard Campus was planned predominantly to focus on residential, sport and recreation. Some academic and shared amenities were located around the focal square;
- The Lower Campus had to be seen together with the former Lowveld College of Agriculture structures. This sub-campus was planned with the greatest variety of uses, and accommodates all university functions. The Lower Campus also became the focus of the first phases of development.

The proposed clustering of uses into three distinct sub-campuses becomes a useful tool for phasing the university development. It is important that each of the sub-campuses is experienced as a microcosm of the whole university.
PRINCIPLE 6: Flexibility and Phasing

The underlying principle for a project of this scale was that the campus had to create its own urbanity and sense of identity right from the start. The aim of the framework was to establish a microcosm of the completed New University Campus from day one. The phasing plan aimed not only to focus on buildings and infrastructure, but on establishing complete public spaces. The aim was to create a complete piece of urbanity, preferably around the central squares, parks and common spaces.

The first phases of implementation focused on the Lower Campus around the former Lowveld College of Agriculture buildings. The plan originally aimed to construct on both the Hill and Lower Campus, but this strategy was changed in 2016 to completion of all infrastructure and building on the Lower Campus by 2019, before moving onto the Hill Campus.

Fig 7.23: Clustering of a mix university functions around the two primary sub-campuses – The Hill Campus and the Lower Campus.
Fig 7.24: Physical Model of the Mbombela Campus displayed at various locations

Fig. 7.25: Physical Model of the Hill Campus
Fig 7.26: Spatial Urban Design and Development Vision of the Mbombela Campus.

REFERENCE DOCUMENTS

7-1 Final Report on the Establishment of new Universities in the Northern Cape and Mpumalanga Provinces, 24 August 2011

7-2 Development Framework for New universities in the Northern Cape and Mpumalanga Provinces July 2012

7-3 List of stakeholder meetings and presentations