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**A**S South Africa's first new institutions of higher learning since 1994, the University of Mpumalanga (UMP) and Sol Plaatje University (SPU) are envisaged as symbols of our new order of democracy, inclusiveness, growth and opportunity.

Urban design perspectives required that both institutions be visibly centres of academic quality, excellence, innovation, relevant to and engaged within their settings and able to create a growing knowledge environment of the highest standard.

Since the start of the infrastructure programme, R1.5-billion has been invested in the development of the two universities, enabling both to start their academic programmes in a variety of renovated and purpose-built new buildings on fledgling campuses.

The challenge for these universities has been to adapt innovative ideas regarding the release of knowledge development and exchange of information from traditionally isolated activities tied only to lecture halls, laboratories and libraries, and to integrate the development and exchange of knowledge into the campus design and the new buildings.

In spatial terms a number of principles drive the design of the infrastructure and architecture of both universities, namely;

- The campus integration with its host city;
- Shared space as a driver for the campus plan;
- Accommodating students;
- Student and staff transport;
- Collaboration and exchange of ideas; and,
- Environmental sustainability.

### Integration with the host city

In order to support the academic mission of each university, all solutions to physical planning needed to be comprehensive, with nothing considered in isolation.

Building placement, traffic and parking, engineering systems and aesthetics were all woven together to form a tapestry of buildings and spaces that foster a successful academic community.

Promoting integration in a society historically obsessed with separation was a starting point for the planning of the university campuses.

Optimising spatial integration with the host city requires the campus plan to manifest knowledge development in all its facets, by designing public spaces, squares and parks to facilitate the occurrence of public meetings, events and exhibitions, and thus maximising sites for exchange.

In the case of the SPU, designing the campus into the fabric of the city was paramount, forcing it to act in a civic manner, participating with all the functions of the host city.

To further enhance the principle of full integration and inclusiveness, no distinction is drawn between the plan for the university campus and the plan for the City of Kimberley.

The reduced impact of the mining industry on Kimberley requires the university to fill a greater role in regeneration of the urban fabric, a responsibility only achievable if the campus is cohesively integrated within the city.

Universities are increasingly expected not only to conduct education and research, but also to contribute actively to the economic, social and cultural development of their regions and host cities.

The civic nature of the campus

# DEMOCRACY & INCLUSIVENESS: The campus design and architecture of the new two new universities helps them engage with their settings



**ELECTRIFYING:** The curriculums of the two universities stress science and technology.



**RAISING EXPECTATIONS:** Academic teaching and administrative building as part of the first phase of completed buildings at the University of Mpumalanga.

**GETTING GOING:** An academic building as part of the first phase of completed buildings at the Sol Plaatje University.

plan uses its location to help form the identity of the university and provides opportunities for the prosperous growth of learners, businesses and public institutions.

An example of this involves the integration of the Oppenheimer Memorial Park into the Sol Plaatje University campus.

The park was formerly the setting of the Malay Camp, home to thousands of migrant workers in the mining industry, evicted in the 1950s to make way for the expansion of the Kimberley Civic Centre and the creation of a new park.

The City of Kimberley and the Sol Plaatje University have made the Oppenheimer Park a shared responsibility, addressing social injustice, commemorating the heritage associated with the land, but also creating a generous, active and eminent urban gathering space for the whole city to enjoy.

### Shared as drivers for the campus plan

The university campuses were designed with the understanding that students come to shared spaces with simple needs — rest, relaxation, recreation and respite — but the spaces also enable chance meetings, fostering exchange, stimulating ideas, giving hope and a sense of possibilities.

The idea of sharing, which is a particularly positive African notion, is reinforced by the provision of multiple

common spaces on the campus ranging from focal squares, to parks and tranquil courtyards.

These common spaces are designed to inspire, foster appreciation of what is good among us, and broaden the student community capacity to imagine and create a better future.

They are places with no copyright: students share them, benefit from them.

They are the interface of university exchange and a platform for learning with the broader community.

For too long our university campuses have focused primarily on the individual faculty buildings, with little regard for the open space surrounding it, or the greater campus setting.

To maximise learning and exchange, both new universities have used shared and common spaces as the drivers and backbone for the campus plan.

Open spaces of varying size, form and function have been planned to link via pedestrian and non-motorised routes, forming the stage onto which all the new university buildings face.

Campus buildings have been planned to engage with and focus onto the common spaces, allowing a variety of activities such as restaurants, shops, coffee shops, book stores, banks and laundries to spill out onto these public spaces.

At the UMP, where the setting is more rural, the academic buildings were designed to maximise spaces for chance encounters and exchange among students and staff.

All buildings have attractive

courtyards, designed to provide quiet, landscaped, contemplative spaces, or for gatherings to discuss and deliberate or for people to simply enjoy sharing.

### Accommodating students

Until recently, universities tended to emphasise their role as places for teaching and research, with a minority of students in residences and the rest left to arrange their own accommodation.

The two new universities underline the positive aspects of students living on or close to campus in "living-learning communities".

These communities are seen as enhancing integration and orientation, promoting students' intellectual, cultural and social development, and improving retention and academic success.

The Department of Higher Education and Training committed both new universities to a large proportion of campus based student residences. Campus residences will accommodate up to 80% of SPU students, and 60% of the students at UMP.

Providing student housing for high numbers constitutes a large portion of the infrastructure spend and is an important component of the overall campus.

Creating a sense of community and belonging, a home away from home and an environment that uplifts the human spirit is integral for providing an environment conducive to cross-

collaboration with other students and researchers from different sciences and levels of study.

With this in mind, student residences were designed to be more than dormitories, becoming places of mixed use by including seminar and teaching spaces, study areas and even entertainment zones.

The residences are arranged as several smaller buildings clustered around varying central courtyards and gardens, which is an ideal configuration for informal gatherings and meetings.

The courtyards are quiet and partly shaded outdoor spaces that serve as a transition between individual apartment units and the broader campus.

Moving away from traditionally planned, faceless corridor dormitories, students are instead clustered into smaller groups around shared amenities to ensure their greater sense of cohesion.

### Student and staff mobility

Most South African university campuses are dominated by private vehicular movement and parking zones.

Not only does this detract from the quality of the campus environment, but it also drains valuable resources from the academic programme.

Planning for a more balanced movement network entails a fundamental shift of focus to non-motorised transport and the pedestrian. In the case of SPU, cars are pushed to

the periphery, allowing the campus to be car-free, and to make way for pedestrians and cyclists.

In mandating a non-motorised campus, the university has introduced a very successful cycling programme, and students and staff receive a university-branded bicycle to commute to and from campus.

Universal access is a further component of the inclusive university design, and aims to produce buildings and environments that are inherently accessible to people with disabilities.

Equality of access demands that all have equal access to all facilities and amenities on campuses.

The principles of Universal Access have been used from the onset of the planning and design process to promote human equity and dignity.

This includes ensuring that all renovated and newly constructed buildings are free of potential environmental barriers and follow consistent accessibility standards throughout the campuses.

By ensuring ease of access to the university campus, the shared spaces and facilities support independent living and full participation in all aspects of university life, ultimately reinforcing the inclusion and integration of diverse members of society.

### Collaboration and exchange of ideas

In the past, architects designed campus buildings to meet the needs of specific

programmes or faculty.

It was assumed that the programmes would never change, and buildings were constructed accordingly; solid and often inflexible.

But no more. At both universities, flexible and resilient building design is the point of departure. The new universities are imagined as campuses populated with spaces that create a culture of 24/7 learning.

The rise of a generation that embraces social media and connectivity means that learning spaces must no longer operate as mono-functional spaces with limited usage after lecture hours.

All the spaces and buildings, from residences to resource centres, function as environments that support collaboration, with flexibility for restructuring depending on academic needs.

Where in the past pedagogy has normally been constrained by the physical structure of space, this flexible approach allows new teaching models that are varied and encourages the sharing of resources and the uniting of disciplines in vibrant cross-fertilising containers.

Academic spaces are planned as robust places able to accommodate change over time.

Over the course of eight years, the Department of Higher Education and Training has supported the development of infrastructure expansion at South African universities.

A large variety of buildings have been developed, all showcasing best

practice in accommodating a greater number of students, lecture venues, laboratories and support amenities.

These examples were hugely beneficial to the design and planning of the new universities and were used as precedents in guiding the development of the new buildings and facilities.

This, together with the aim of creating resilient structures that can accommodate a greater mix of academic spaces, forced the development of new architectural typologies, which stand in contradiction to traditional single use academic buildings.

In the first phase, multi-purpose buildings were constructed to accommodate the developmental nature of the two universities' respective academic programmes.

These included libraries, residences, multi-purpose teaching venues, offices and student support, all of which were completed in time for the 2016 academic year.

The improved understanding of the academic programmes that both universities are pursuing, and their increased confidence and sense of respective identity, now requires the development of more specialised academic buildings.

These buildings constitute the next phase of construction, and include research laboratories, teaching kitchens for new hospitality and tourism programmes, specialised teacher education amenities and computer science laboratories, all of which will be completed by January 2017.

improve the living and natural environment.

Deliberate placement, form and orientation of buildings with respect to local conditions provides for favourable micro-climates in all spaces.

The latest research in bio-climatology was applied to the architecture, greatly reducing the need for heating and cooling in the buildings.

Passive strategies, utilising locally attuned responses to the distinct environmental conditions found in Kimberley and Nelspruit, were key to creating self-sufficient and low-energy solutions.

The same sensitivity was fundamental during the design of the landscaping and public spaces.

Here the focus was on designs where only indigenous trees are planted, water runoffs are contained and reused, and local materials applied attuned to attractive public spaces.

### Iconic nature and identity

As the first new universities to be developed since 1994, the architectural language strives to be representative of our democracy, expressing a deep understanding of its sense of place.

While both universities are designed to be of their place and of a distinct African appeal, the architecture is further underpinned by a "dignified utility" that is both essential and economical.

To ensure that both campuses have meaning, the architecture is bound in the human experience of the environment, and not a mere manifestation as artifact.

The quality of space created by the holistic campus designs is instead focused on atmosphere, joy, surprise and wonder.

The campus environment expresses the interplay of textures and colour, the shifting mood of light through day, of smell and sound.

It is about designing sensual space that invokes interactive emotion. These facets are all closely related to and chosen from their respective direct contexts.

It follows that a distinct African appeal emerges — simple, straightforward and honest use of materials; bold articulation of forms, subservient to and yet respectful of the natural environment; a gentle composition of colour, texture and patterns woven into fabrics and bricks that allow the passage of light, direct the breeze, create silence and finally protect.

Out of this emerges an architecture which makes UMP and SPU unique and distinct.

We are designing, with hopefulness and confidence, an injunction to be effective but with planned expansion predicated on budgets provided by a developing economy.

Bearing in mind that universities are built for the ages, they also seek to both celebrate the achievements and critically assess the impact of the multiple and diverse projects which have been transforming and augmenting the higher education landscape.

Both universities are forging ahead with their expansion and physical capacity, continuing to target their aim to be centres of academic quality and excellence, innovation, relevant and engaged within their settings.

Information on local climate, wind, sun exposure and temperatures for the two respective areas were fundamental to the design of buildings, infrastructure and outdoor environments.

The universities have been developed on the basis of a comprehensive environmental strategy encompassing transport, health, energy, water and waste to bolster their ambitious socio-economic target.

This design philosophy is captured in a Sustainability Charter, establishing their stance on environmental performance through mandating the ideals of the Sustainability Master Plan.

The development of both the overall campuses and their buildings eliminates negative environmental impact by adopting a sensitive design approach. A focus on rainwater harvesting, grey water application, renewable energy, air purification, environmental remediation, energy conservation, eGain forecasting and the integration of proven building and infrastructure design are all principles employed to

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