

NELSON MANDELA  
UNIVERSITY



The Legacy  
**Nelson Mandela University**  
**2005 – 2017**

**Change the world**

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No society, no civilisation has ever been successfully built without present generations investing in the education of future generations.

– Professor Derrick Swartz,  
Vice-Chancellor of Nelson Mandela University (2008 – 2017)

## The Legacy Continues

South Africa has a reputation for its many courageous people, who, through the course of the country's history have confronted wrong head on with a view to building a more just and socially inclusive society, premised on the sanctity of respect for human rights.

Nelson Mandela University has been privileged to be moulded in this crucible under the ten-year leadership of Vice-Chancellor Professor Derrick Swartz whose life purpose has been fashioned by decades of actively pursuing these goals and intentions. Arriving to assume leadership of an institution forged in the fires of merger from three distinct higher education institutions – Vista, Port Elizabeth Technikon and the University of Port Elizabeth – Nelson Mandela Metropolitan University was born.

Acutely aware of groupings of staff cleaved to their institutions of origin, and of the deep-rooted ideological and cultural rifts and prejudices in the young democracy, Prof Swartz drew all staff and students into a collective crafting of a future vision for this new university. And so Vision 2020 was woven together into a charter of inspiration and new paths of possibility in which all staff and students could locate themselves and release new energy and creativity. Vision 2020 was, and remains, a captivating invitation to bring to fruition a values-based higher education institution that creates opportunities for staff and students to become the best that lies within each and every one of them.

Vision 2020 also opened up space to lead the university into new audacious areas of intellectual endeavour, with a multitude of new academic programmes, research initiatives and engagement entities being brought to the fore. New talent was attracted to the university and, together with seasoned staff, they rose to the challenge of embracing these fresh winds of change.

Accompanying this was a dedicated and deliberate campaign to open the doors of learning to academically deserving students from under-resourced communities who had previously been locked out of access to higher education opportunities. This infusion of a massively expanded diverse student population called into question the fundamental organisational principles that had informed the systems on which the university had previously operated. A comprehensive re-imagining of how to re-purpose

the university to meet the needs of the many students with few or no financial resources and disadvantaged schooling backgrounds had to be embarked upon.

This has been undertaken under the firm leadership of a Vice-Chancellor committed to widening access. As a result, visiting any one of the university's seven campuses will reveal a student population that confirms the values espoused in South Africa's exemplary Constitution are blossoming at Nelson Mandela University.

The university is proud to have been re-named Nelson Mandela University – the only university in the world to carry the name of the first President of a democratic South Africa, and whose legacy of pursuing the interests of human rights, irrespective of the personal human cost, is globally respected and renowned.

This lays open a new journey for the university. What does the responsibility of bearing this honourable and venerable name mean for every part of the university and its staff and students? It heralds a new conversation and a new journey, that behoves of the university to achieve and surpass the goals and intentions set out in Vision 2020 and beyond; to continue being bold and forthright in imagining and realising what the university can and must be, to live up to the honour of carrying Nelson Mandela's name.

It is most fitting that at this significant juncture in the life of the Nelson Mandela University, that a new Vice-Chancellor, Dr Sibongile Muthwa, assumes office with the responsibility to lead the next era of growth and development of a university that honours the aspirations of the next generation of young people from South Africa, the continent and internationally, who choose to study at 'Mandela'.

Nelson Mandela University's inaugural Vice-Chancellor, Prof Swartz, has served with distinction, and the university deeply thanks him for this and wishes him every success and life inspiration as he hands over the legacy continua to Dr Sibongile Muthwa. With her unequivocal track record of service to the university, our country and humanity, Dr Muthwa, is welcomed to the helm with resounding applause. Halala, Mandela, Halala.



# Nelson Mandela University – a new generation university

## The impact of Vice-Chancellor Professor Derrick Swartz (2008 – 2017)

In July 2017 Nelson Mandela Metropolitan University officially became Nelson Mandela University: the only university in the world to carry the name of Nelson Rolihlahla Mandela.

This watershed moment is hugely significant for strategically positioning our university in South Africa, continentally and globally. At the same time, it ushers in a unique opportunity to advance our transformation imperatives and align our university with Mandela's ideals, values and vision for a more equal, fair and just world.

Who we are and what we are becoming as a 21st century institution of higher learning is our way of taking responsibility for the Mandela legacy and ensuring that it is reflected in the way that we teach, learn, do research, engage with our communities and partners, and work and live as staff, students and alumni.

The urgent requirement for Higher Education Institutions (HEIs) today is to create innovative, decolonised and transformative environments that are designed to enable under- and postgraduate students to succeed and achieve their full potential, and at the same time to nurture well-rounded human beings in ways that will contribute to developing and building South Africa, Africa and beyond.

This is an important time of change in our country. Nelson Mandela University, like most HEIs within the broader higher education sector, are operating under severe pressures and financial strain as a result of the cumulative effects of far-reaching demands for "free higher education", ending of outsourcing and social transformation within the unstable political situation and stagnant economic conditions in South Africa today.

The multiple underlying instabilities in higher education are predictably going to persist for as long as the wider political, economic and social causes are not effectively and sustainably addressed. Adding to this is global political instability and the pressure on universities worldwide to become relevant to society. This requires a re-think of the purpose of the modern university, and Nelson Mandela University is well placed to play a leading role in this. Following on this, it is essential to align the university's

short-term decisions with long-term sustainability imperatives, as expressed in our Vision 2020, initiated by Vice-Chancellor Prof Derrick Swartz, and launched in 2010.

*The tradition of open debate, enquiry and challenge remains fundamental to the life of a university and indeed of a country ... There are heavy social responsibilities placed on the university by its claimed right to decide who and what shall be taught and who shall teach. – Nelson Mandela.*

*The vision of Nelson Mandela University is:*

*To be a dynamic African university, recognised for its leadership in generating cutting-edge knowledge for a sustainable future.*

This places the academic project at the very heart of both the sustainability and transformational journey. "Our academic project is an integrated, humanising pedagogy that includes all the role players at the university, academic and non-academic," says Prof Swartz. "It recognises the need to leverage the cultural and intellectual wealth that South Africa's diverse communities offer, and to incorporate this knowledge into education and the curriculum."

Nelson Mandela University would not have transformed as much as it has without these deep-rooted socio-political and philosophical foundations replacing those of its apartheid legacy.

In 2005 the university proactively shed this legacy when it merged the University of Port Elizabeth, the Port Elizabeth Technikon and the Port Elizabeth campus of Vista University to create the engaged, new generation, comprehensive university it is today.

Nelson Mandela University was one of the first universities in the country to establish a centre specifically aimed at proactively encouraging non-racial, democratic citizenship. The Centre for the Advancement of Non-Racialism and Democracy (CANRAD) was launched in 2010 out of concern that racism and related influences has not been given sufficient scholarly attention in South Africa.





It has taken an enormous amount of compassionate leadership and deliberate intervention, such as the *Courageous Conversations* where staff members and students are guided through the painful process of speaking their minds, sharing honest perceptions, shedding deep-rooted prejudices and getting to know each other as human beings.

Since 2005 the university has focused on addressing the many transformational requirements of a 21<sup>st</sup> century South African university, including globalisation, free and affordable university education, new curricula development, multilingualism, blended learning, and staff diversity.

The university has prioritised the need for innovative solutions for South African and global needs and challenges; engaged research to deepen and expand knowledge, transdisciplinary and trans-university partnerships to address the pressing requirements for new knowledge that can advance a sustainable, better quality of life for all.

"Today we have seven campuses and seven faculties in two cities (Port Elizabeth in the Eastern Cape and George in the Southern Cape); 27 000 students, 3000 staff members, 450 academic programmes and a wealth of strong partnerships with industry, communities, state institutions and universities on six continents," says Prof Swartz.

Over the past twelve years over R2 billion has been invested in new infrastructure that includes new lecture halls, residences, faculty buildings, laboratories and equipment, on the university's campuses in Port Elizabeth and George.

Through his leadership Prof Swartz positioned the university "as a living laboratory for experimentation and innovation where our students are encouraged to develop new ideas, new inventions and new approaches to being in the world."

Nelson Mandela University is producing more than 5000 graduates every year in scarce skills and sought-after professions such as Information Technology, Engineering, Accounting, Law, Health Sciences, Physical and Life Sciences, and Initial Teacher Education.

It is leading South Africa and the continent in a number of key research areas that are attracting talented researchers, lecturers and students from all over the world. These include:

- Ocean Sciences, for which a dedicated campus was launched in 2017; this will position Nelson Mandela as the leading ocean sciences university in the country and continent;
- Physics research with the establishment of the Centre for High Resolution Transmission Electron Microscope (HRTEM), which has become the leading facility for advanced microscopy and nanoscale characterisation of materials on the African continent;
- The origins of human consciousness and cognitive development based on novel research done by the Centre for Coastal Palaeoscience along the Eastern and Southern Cape coastline;



**From infrastructure growth through to fundraising for students, Vice-Chancellor Professor Derrick Swartz's visionary leadership has guided Nelson Mandela University towards an exciting future.**

- The creation of a non-racist, non-sexist, decolonised and transformative culture;
- A new scholarly approach to teaching and learning, student access and development, based on the university's signature, emancipatory approach to education known as *humanising pedagogy*.
- Technology for sustainability, such as solar-powered charging stations for electric vehicles that can serve a dual purpose to electrify homes with a plug in from the vehicle.

Prof Swartz's insight into the inseparable requirements of academic excellence and social justice and equality has proved a driving force in the evolution of a new generation and distinctive university.

With his extensive higher education leadership experience, he has proactively contributed to sectoral and institutional initiatives to address the pressing triple challenge of poverty, unemployment and inequality that manifested sharply in the 2015 and 2016 #FeesMustFall protests.

In 2012, Professor Swartz led a sector-wide Ministerial task team to explore the feasibility of fee-free higher education in South Africa. More recently, he has been leading a Ministerial task team to develop a national plan for post-school education and training that will provide a blueprint for an expanded, effective and integrated post-school system from 2017 to 2030.

Speaking of #FeesMustFall, he remarked that: "It is one of the most remarkable social movements in recent years, and it shows

an awakening of a new social and political consciousness among a significant section of our student communities. We are here to ensure that all deserving students at our university get some form of funding, and to create the best possible learning opportunities for all young people."

To contribute to this, in 2015 and 2016, he climbed Mount Fuji and Machu Picchu respectively, and raised over R2 million for students in need. The South American climb fund specifically helps final year students without the required funds to complete their qualifications and enter society as well educated graduates with entrepreneurial knowledge and an advanced consciousness to help improve the lives of others.



"Today, the biggest challenge of our generation, arguably, is that of sustainability," says Prof Swartz. "To balance human development – as expressed in the Sustainable Development Goals (SDGs) – with planetary sustainability will require major transformations: in the ethics and patterns of human consumption; our understanding of natural systems; our respect for biodiversity and environmental health; and in aligned, evidence-based policy-making and decision-making systems.

"If we look at the new focus on the ocean as an example, South Africa's policy goal, as expressed in Operation Phakisa Oceans Economy, is to grow the country's GDP value to R177 billion and create a million jobs by 2033 by stimulating economic activity in our oceans and coasts. This must be moderated with a deeper understanding of how best to manage the difficult challenges of sustainability. This, in turn, requires better investment in basic and applied science and technology to advance knowledge and understanding of our marine ecosystems. It also requires an investment in growing new careers and skills, especially in areas previously neglected or narrowly developed – for example, marine spatial planning, deep-sea oceanography, climate modelling, bioacoustics and long-range studies of the Indian and Southern Ocean systems.

"There is an equal need to grow the contribution of social sciences and humanities in promoting sustainable development. Firstly, if human adaptation is a prerequisite to ecological sustainability, then we require more effective tools to promote ecological citizenship. Secondly, if Operation Phakisa is to avoid reproducing the same patterns of inequality we see, for example, in the mining and financial sectors, then we must find more effective models of economic ownership, participation and inclusion – particularly focused on marginalised and poor communities.

"Nelson Mandela University is committed to a research and training agenda that brings questions of social justice and equity into focus. We also hope to contribute to recording 'hidden maritime histories' - the stories and heritage of coastal and island peoples in Africa and western Indian Ocean islands."

Prof Swartz says the overall goal of Nelson Mandela University is to develop into a globally recognised, cutting-edge, innovative and pioneering "laboratory" for original and applied knowledge that enlightens the management of our planet and universe – its geophysics, chemistry, biology, climate system, economics, social and cultural value, history and future.

Towards this end, Nelson Mandela University is driving its research, training and innovation agenda to help find better tools for managing the twin challenges of human development and sustainability.

Something new and special has come out of this approach, which extends in unique and special ways to all of the university's disciplines and faculties; something that you can feel on Nelson Mandela University's campuses. Like all universities, it is facing significant challenges, but at the same time you can feel its pulse of possibility and its determination to seek a new and better future to *change the world*.



**Prof Derrick Swartz has been integral in building key partnerships – internally with staff and students (bottom), nationally, with various government departments including the Minister of Science and Technology Naledi Pandor (middle), and internationally, as with Norway towards developing the Ocean Sciences proposition.**

## The Future



# Change the world

## Nelson Mandela University's new Vice-Chancellor, Dr Sibongile Muthwa

Dr Sibongile Muthwa, the incoming Vice-Chancellor, will lead Nelson Mandela University from January 2018. It is fitting that the only university in the world to carry Nelson Mandela's name has appointed a black African female as its Vice-Chancellor.

Dr Muthwa, whose appointment was announced by the university's Council on 13 October 2017, is an experienced strategist and internationalist with a PhD from the School of Oriental and African Studies at the University of London, an MSc in Development Policy and Planning from the London School of Economics, a BA Honours from Wits University and a BA in Social Work from the University of Fort Hare.

From 1999 to 2004, she was the Director of the Fort Hare University Institute of Government. She served as Director General of the Eastern Cape provincial government from 2004 to 2010 and as Deputy Vice-Chancellor: Institutional Support at Nelson Mandela University from 2010 to 2017. In 2016, she was Acting Vice-Chancellor during which time she demonstrated her ability to manage complex, volatile dynamics in the thick of the #FeesMustFall student protests with skill, compassion and courage.

Prof Swartz called Dr Muthwa's appointment "an historic moment" in the life of the university. "It is an exceedingly proud moment for us all and, without doubt, Dr Muthwa will inspire new generations to rise to the highest levels of achievement. We are absolutely delighted with her appointment."

Dr Muthwa is well placed to lead the university into a new era:

"As we all know, our sector and country is at crossroads. As a higher education institution, we need to be acutely attuned to the issues of our country, including poverty and inequality, and to be committed to improving the lives and educational opportunities of the marginalised in particular. The call for free education for the poor has made this task urgent and critical.

One of the commanding challenges facing all our universities is, of course, resource sustainability. Dr Muthwa says: "At Nelson

Mandela we are devising means to increase our revenue through cost containment and efficiency measures, new programmes, a diversified student body, and generating third-stream income.

"Cognisant of the implications of local and global economic and geopolitical developments for the sustainability of a modern university, our university is securing our place in the global arena by driving innovations geared to solving current and future problems, including environmental degradation, food insecurity, rapid migration and global injustice.

"Our new Ocean Sciences Campus and our new inter-professional education Health Sciences strategy, which includes the development of South Africa's 10th new medical school, has placed us in an advantageous position to attract strategic partnerships, and secure the talent of world-renowned academics, scholars and researchers in key and diverse fields of science, technology, innovation and the humanities.

"We see ourselves as a driver of change in Africa and the global South. The challenge, and one that is facing all South African universities, is to develop a strong student and postgraduate pipeline. University first-time entrants in South Africa are often ill prepared for tertiary education due to the generally poor schooling system. This requires us to institutionally strengthen our instructional support and foundational programmes, as well as enhance our existing early warning systems to ensure that all our students are placed in a conducive environment that enables them to complete their qualifications on time."

Nelson Mandela University is committed to improving education especially in the Eastern Cape, from the first day of school through its focus on Foundation Phase Teacher Education. Dr Muthwa explains that Foundation Phase teachers guide the development of each child from Grade R to Grade 3, from age five to nine, developing their mathematical ability, language and literacy, self-concept and self-confidence. How and what they teach has a profound influence on the children's life paths, including their ability to get a university education.





She is unequivocal that every person with academic ability should have the opportunity to attend university. If they cannot afford it, because of poverty – a situation many families still find themselves in – then it must be free.

The post of Vice-Chancellor at a South African university today is one of the most complex, difficult jobs in the land, and Dr Muthwa is under no illusions. During the 2015/16 #FeesMustFall protests, she played a prominent role in managing the volatile environment.

She explains that “while the contestation of ideas, and paradigms, and constant engagement on issues of change and transformation in particular, are hallmarks of a learning institution, at the same time we need to carefully manage the dynamics to ensure that these contestations happen within the framework of mutual respect, respect for human rights and human dignity.

“This university has long embarked on courageous conversations about the nature of the institution we want to become. Having been part of this journey, and in various ways having influenced many of the positions that have been adopted, I have a particular affinity with our vision to be a dynamic African university, recognised for our humanising pedagogy and leadership in cutting-edge knowledge for a more just, sustainable future.

“I am indebted to Professor Swartz for his sterling and visionary work in laying these foundations and for his inspirational leadership over the past decade. We will continue to strive, with great pride and humility, to live up to our responsibility of leading the only university in the world that carries Nelson Mandela’s name.”



**Dr Sibongile Muthwa, who joined Nelson Mandela University as Deputy Vice-Chancellor in 2010, will lead the institution into a new era from 2018.**





# Strategic planning and future development trajectories

**“The period from the merger in 2005 to 2017 has been a whole-scale change process for our university. As challenging as it has been at times, it is the most positive transformation process we could have undergone to create a distinctive university with a new culture and a new way of being.” – Professor Heather Nel, Senior Director: Institutional Planning, Nelson Mandela University**

Professor Heather Nel has a deep understanding of the profound institutional change and planning that has gone into the evolution of the university since the merger in 2005.

Prior to the merger, she was a professor in Public Administration in the Faculty of Arts at the former University of Port Elizabeth. She was seconded to assist with the strategic planning and implementation of the merger. From the design of new academic and administrative units to the formulation of an institutional operating and infrastructural plan, to the wide range of new policies that needed to be developed for the new comprehensive university, she was at the centre of it all. She was at Prof Swartz’ side in the implementation of Vision 2020, and she will be at Dr Muthwa’s side into the next era, starting 2018.

## Nelson Mandela University Vision 2020 Change the world

### Vision

To be a dynamic African university, recognised for its leadership in generating cutting-edge knowledge for a sustainable future

### Mission

To offer a diverse range of life-changing educational experiences for a better world

### Values

- Diversity
- Excellence
- Ubuntu
- Social justice and equality
- Integrity
- Environmental stewardship

### Strategic priorities

- Student access and success
- Engaged innovative scholarship
- Responsible resource stewardship
- Transformative institutional culture
- Enabling systems and infrastructure
- Talented, high-performing staff

“Vision 2020 has been the university’s planning blueprint since 2010 and has been continuously reviewed and updated to take cognisance of the changing environment in which we operate,” Prof Nel explains.

### Highlights from 2016/17

Revised portfolio-based strategic plans (2018-2020) for all members of executive management and deans are in place, providing a foundation for ensuring that Nelson Mandela University is strategically positioned as a distinctive university that is widely recognised for its life-changing education and its research and innovation that contributes to a sustainable future, advances democracy and social justice, and promotes the public good.

As an outcome of the Vision 2020 review in 2017, three transversal strategic enablers have been distilled to guide strategic implementation and resource allocation from 2018 to 2020. They are:

- Strategic positioning and identity
- Transformation; and
- Sustainable resource stewardship

Alongside this, the university is developing a Vision 2030 strategy, taking into account new areas of growth, constraints and

opportunities in the renamed institution and higher education landscape, including:

- Strategic advantages accruing from the new name Nelson Mandela University;
- Strategies for enhancing our future (intellectual, financial, social) sustainability;
- Transformation imperatives such as greater diversity within the academic staff profile, decolonisation and Africanisation of the curriculum, and an inclusive institutional culture at all levels;
- Academic optimisation and strategic differentiation of the current and future programme and qualification mix;
- Fit for purpose organisational structures, inclusive of the reintegration of employees from outsourced service functions;
- Institutional operating models that reduce costs and improve efficiencies, and
- Re-imagining revenue mobilisation, commercialisation and overhead recovery.

## Future Academic Programme Development Trajectories

The academic optimisation drive rests on two key expansionary efforts mandated by Council, namely, the establishment of the new Ocean Sciences Campus and the establishment of the new Medical School.

### Ocean Sciences Strategy

The launch of the Ocean Sciences Campus in September 2017 was a huge milestone for the university, especially since the campus is the first of its kind in the country. The campus will be a creative hub for ground-breaking transdisciplinary, postgraduate ocean sciences research, teaching, innovation and engagement.

Through a range of emerging collaborative partnerships with government, local universities and continental and overseas universities and institutions, the university’s aim is to partner with the most influential marine and maritime universities and organisations on the African continent and internationally.

Nelson Mandela University is recruiting and training future students, building research programmes at scale across core areas to grow our core strengths, and enabling our science, engineering, law and humanities community to contribute significantly to tackling the many developmental and sustainability challenges of our oceans and how they are used by society. While our core focus will be on South African oceans, our interests extend to East Africa (particularly Kenya, Tanzania, and Uganda), Indian Ocean rim countries, the Southern Indian Ocean and Antarctica.

For the first decade, the primary Ocean Sciences research, training, innovation and engagement work will be focused on four wide-ranging institutional themes (each with sub-themes):

- Marine food security and sustainable livelihoods for coastal communities
- Ocean governance and global change
- Oceanography and marine biodiversity conservation
- Marine technologies and infrastructure

## Centre for Coastal Palaeoscience

As part of our quest to build a formidable Ocean Sciences Campus portfolio, the university established South Africa’s first Centre for Coastal Palaeoscience, which is conducting pioneering research on the origins of early modern humans with cognitive abilities along the coasts of South Africa dating back to approximately 195 000 years ago. The research has resulted in several seminal articles published in *Nature* in recent years and considerable global scientific interest.

The university will be pursuing an ambitious multi-site strategy from Pinnacle Point (west of Mossel Bay) eastwards to the Mpondoland coast (north of Port St Johns), for a scale-up human origins mapping project. More empirical work is required simultaneously across a larger number of known and undiscovered sites for more evidence to test the underlying hypotheses of the research team about the specific conditions of the ancient southern African coastal planes where it is believed distinctive human cognition and proclivity for complex, collaborative behaviour first emerged.

The international lead partner for this project is the Arizona State University’s (ASU) Human Origins Project, led by Professor Curtis Marean (also an Honorary Professor at Nelson Mandela University). He has been able to secure American philanthropic funding of \$1m for 2018, as well as a contribution from ASU of R2.7m towards funding a core part of the costs. An equipment-funding bid has been submitted to Department of Science and Technology (DST).

### EBEIT on a fast track

The Faculty of Engineering, the Built Environment and Information Technology’s (EBEIT) is on a fast track into the marine and maritime realm, with several new appointments, programmes, partnerships, facilities and funding.

EBEIT’s expansion coincides with the completion of the futuristic New Engineering Building Phase II, completed in 2017 at a cost of approximately R35m. It complements Phase I of the New Engineering Building, completed in 2011, which cost approximately R45m. Included in the space are two training studios for shipbuilding and high definition video conferencing facilities. The combination of contact and live video lectures combined with practical instruction offers EBEIT students access to the world’s best education.

The faculty has received much support for its ocean focus, including funding from the manufacturing, engineering and related services SETA (merSETA) of R10m per year for three years, starting in 2016.

“Drawing on our significant base knowledge in Mechanical and Electrical Engineering, we have developed the new Bachelor of Engineering Technology Marine Engineering, which will hopefully be offered at Nelson Mandela from 2018 once it has been externally accredited,” says EBEIT’s Marine Engineering and Nautical Science Project Manager, Howard Theunissen. He is a senior lecturer in Mechanical Engineering and the programme leader for this unique qualification in South Africa that is endorsed and approved by the Engineering Council of South Africa (ECSA) and the South African Maritime Safety Authority (SAMSA).



# FASCINATING FACTS ABOUT THE OCEAN

**50-70%** of our oxygen comes from the ocean. That's more than is provided by all of the world's rainforests combined.

At present an estimated **30%** of the CO<sub>2</sub> released into the atmosphere from human activity dissolves into the oceans.

Currently, **58%** of South Africa's gross domestic product (GDP) is based on trade and **98%** of South Africa's trade volume moves by ships

**20-25 million** tonnes of CO<sub>2</sub> are being added to the oceans each day, increasing the acidity of ocean waters and threatening the survival of many marine species.

Humans have climbed Mount Everest and walked on the moon, but **95%** of the Earth's waters are still unexplored.



South Africa's rich and productive coastal waters support thousands of jobs and contribute millions of rand to the national economy each year, with coastal goods and services estimated to contribute **35%** to South Africa's gross domestic product (GDP).

by **2050** oceans could contain more plastics than fish

With its **800km** of coastline, South Africa's Eastern Cape is set to become South Africa's leading hub of maritime economic activity. The province is home to the two major port cities of Port Elizabeth and East London, both established industrial manufacturing coastal centres.

Tiny phytoplankton provide **50%** of the oxygen on earth and form the basis of the ocean food chain up to fish and marine mammals, and ultimately human consumption.

From 2020, another new degree will be offered by EBEIT, the Bachelor of Nautical Science, to train ship captains and ship navigators. It is being designed in collaboration with Captain Richard Dunham from the Australian Maritime College (AMC) in Tasmania.

Part of the funding from merSETA is being used to hire experts in Marine Engineering to teach, support and grow students for the marine and maritime industry and to increase research for naval architecture and ship engineering.

The new degrees and the association with merSETA will significantly contribute to the maritime future of the Eastern Cape and South Africa, and the approach is aligned with the Nelson Mandela Bay Metro's request that Operation Phakisa invest in a shipbuilding sector in Port Elizabeth.

"EBEIT intends to play a significant role in the development of Port Elizabeth as a manufacturing hub for marine vessels of all sizes, with handsome incentives offered to manufacturers," says EBEIT's Executive Dean, Dr Oswald Franks.

One of EBEIT's key industry partners is the Finnish corporation Wärtsilä, which manufactures and services engines for about 40% of all ships worldwide, in addition to a range of equipment in the marine and energy industry. The company routinely trains engineers and technicians from all over the world, with English as the medium of instruction.

Adding to EBEIT's applied Marine Engineering skills is the Advanced Mechatronics Technology Centre (AMTC) at Nelson Mandela University, which is a Siemens' accredited Programmable Logic Controllers (PLC) training provider in South Africa. "From 2016 we will increasingly be turning these capabilities to the marine sector because the underlying process technology is used in Marine Engineering," says Theunissen.

"The AMTC has received support from the merSETA to develop their capabilities in process control in the marine industry – such as controlling ship rudders, heating and cooling systems, and the integration and visualisation of systems, many of which are remotely controlled. To set up the base process knowledge we have built an industry standard simulator. We are also starting to develop online tools where students can, for example, work with depth control of a submarine online, which is part of the research of one of our master's students, Ngonidzashe Zata."

## Interprofessional Health Sciences education

The Faculty of Health Sciences is currently re-orientating its sizeable and growing faculty with about 4000 students in ten departments. From 2017, all these departments are working together in a transdisciplinary manner through the Inter-professional Education (IPE) platform with the theme: *Transforming health sciences education to support equity in health.*

Within this framework, plans are underway towards the establishment of a medical school, which will offer a medical practitioner training programme within the next three to four years.

All health practitioners will be trained in primary healthcare settings, and they will provide services while they learn. This will help to address the delivery of health training and services in an equitable and socially just manner. This approach is in line with South Africa's National Health Insurance vision and re-engineering of primary health care services.

As part of the faculty re-circulation, the Executive Dean of Health Sciences, Professor Lungile Pepeta, says: "Our training goals include rolling out integrated training of all health sciences students at various levels, right from admission to graduation and their integration into the health professions' work force; ensuring community engagement and involvement in the training of health practitioners.

"This advances restoration of dignity in our communities while ensuring disease prevention and health promotion at the same time. We will also be drawing on the expertise of consultants from tertiary and quaternary hospitals, such as Livingstone Hospital in the Nelson Mandela metro, to deliver tutorials and lectures through eLearning platforms such as video conferencing, podcasts, Moodle or Blackboard."

Following a series of engagements, Walter Sisulu University is supportive of the establishment of Nelson Mandela University's plans to offer a new medical programme. "We are committed to assisting the province and Walter Sisulu University in shouldering some of the administrative and logistical needs associated with the returning Cuban trained medical students in June 2018. We need to embrace partnerships and be part of all these initiatives together," says Prof Pepeta. "As Madiba said: 'The important thing is that no single person can do everything.'" (Nelson Mandela, June 2001).





# Highlights from 2005 – 2015

## The Merger: 2005

During the first five years of the merger, the process of academic integration, and policy and systems development, solidly occupied the university.

“In addition to the myriad of planning and administrative issues, we also had to manage staff, students and parents who were uncertain about the change,” Prof Nel recalls. One of the projects, called SANTED, which the Norwegian and South African governments co-funded, focused on the programme and qualification mix and curriculum development for a new, comprehensive university, and there were many heated discussions around this.

“The whole point of the merger was not to revert to a new form of ‘business as usual’ with inherited streams and silos from the three former institutions,” says Prof Nel. “We had to facilitate new and highly complex student mobility and articulation pathways between degree and diploma qualifications in the same discipline, when the curricula had emerged from very different academic and knowledge traditions and often served different purposes.

“You have to understand that the curriculum for most academics is the ‘holy grail’; curriculum transformation is always a thorny issue and the leadership of a visionary vice-chancellor, deputy vice-chancellors and the executive deans is crucial.”

The Vice-Chancellor at the time was Dr Rolf Stumpf who is today a private consultant to the Centre for Higher Education Transformation (CHET) and a member of the Higher Education Quality Committee’s Board.

“He placed a lot of emphasis on getting the new integrated policies and systems approved, including by national government. His approach was that once these were in place, and people felt more settled, the university’s strategic plan could follow.”

To reassure stakeholders that the merger would greatly enhance access to a leading higher education institution, the university held many meetings with political, religious, educational, societal and trade union leaders, as well as with local government ward

councillors and national government departments, including the Department of Science and Technology and the Department of Higher Education and Training (DHET).

The importance to the new university of under-resourced communities, such as the greater Missionvale community, was emphasised through the design and offerings of its cutting-edge, modern Missionvale Campus. It includes the new Foundation Phase building for the Faculty of Education, which is central to the university’s focus on pioneering new methods of teaching, learning and scholarship that ignites the potential and talent of every South African child.

The university also conducted surveys and hosted focus groups with staff and students from the pre-merged institutions, all of which had very different and entrenched identities and cultures. The George Campus, for example, was previously the Saasveld Forestry College dating back to 1911.

The Saasveld academic offerings were re-curriculated and are now offered by the School of Natural Resource Management within the university’s Faculty of Science. The school is one of the most prestigious in South Africa, offering qualifications in Agricultural Management, Forestry, Game Ranch Management, Nature Conservation and Wood Technology.

In addition, George Campus also includes academic offerings housed within the School of Business and Social Studies.

### In 2008 when Professor Swartz took over

In 2008, when Prof Derrick Swartz took over from Dr Rolf Stumpf as the Vice-Chancellor of Nelson Mandela Metropolitan University, he carried the transformation process to the next level.

“When I took up my post in January 2008, my predecessor, Dr Stumpf, had already done an excellent job of converging the complex legal, business and administrative processes, and of guiding the three institutions through the first three teething years of the merger,” says Prof Swartz.

“Nelson Mandela University today is a very different and exciting new species of university. One of the contributing factors, we believe, is the hybrid vigour created from the merger where we put considerable thought and effort into integrating the best of all three former institutions to create a new university and synthesise three different pedagogies, research, and teaching and learning cultures.

“Twelve years later, the university has its own distinct identity, culture and expertise, and we are contributing a rich repository of knowledge and skills that seek to answer the epic questions and existential challenges of our time. These include social inequality, which seems perniciously difficult to undo, global warming, weather patterns that are threatening food security, a massive global population of seven billion people, resource crises above and below the surface of the Earth and socio-political crises that demand transformation in many different ways.”

Prof Swartz is frequently described as a charismatic, democratic leader with a visionary sense of direction who is capable of making hard decisions when necessary.

“He ushered in a new strategic direction for the university and a strong message that maintaining the status quo was not in the best interests of the university or of higher education in a democratic South Africa,” says Prof Nel.

“He expected the senior leadership and executive deans to tackle the hard questions of what transformation means and how this translates into the curriculum of a dynamic, African university.”

The process gathered a momentum of its own, and in its path, domains that were resistant to change, found that they could no longer cling to outdated academic silos as defaults for not transforming.

To get the university behind him, Prof Swartz started engaging with leaders across the university from the outset to develop the broader strategy which evolved into Vision 2020.

“I was extremely energised by this because it had always been my impulse to manage the merger within the framework of a broader institutional strategy,” says Prof Nel. “The whole university needed to be inspired by an exciting new vision, because without a sense of strategic direction and an enabling and transformative institutional culture, most people tend to revert back to what they know.”

### The Vision 2020 roadmap

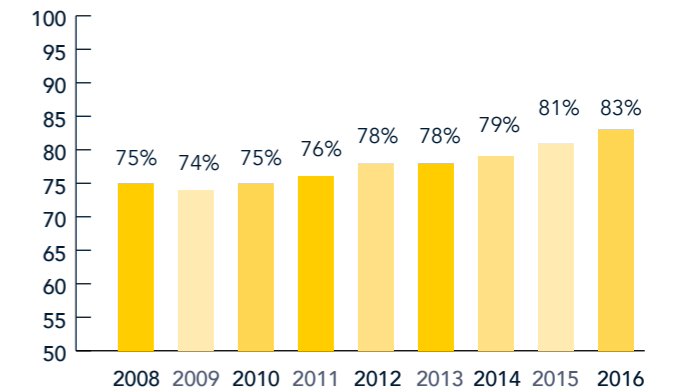
Prof Swartz initiated the roadmap for Vision 2020 by asking the entire university and various external stakeholders three key questions:

- What kind of university do we want to become?
- What will help us become this?
- What will hold us back from becoming this?

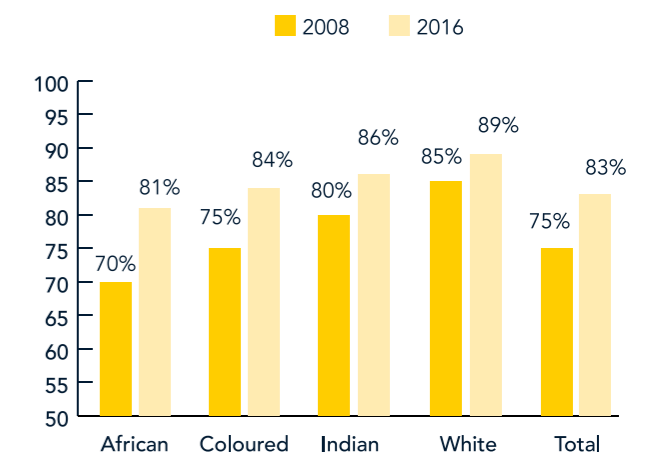
“It was a lengthy, back and forth process of consultation over two years, until we brought all the responses together in our vision, mission, values and strategic priorities, which were approved by Council in June 2010.

“We have achieved an incredible amount since the merger, including a noteworthy increase in our student pass rates, postgraduate numbers and academic achievements within our new democratic institutional culture,” says Prof Nel.

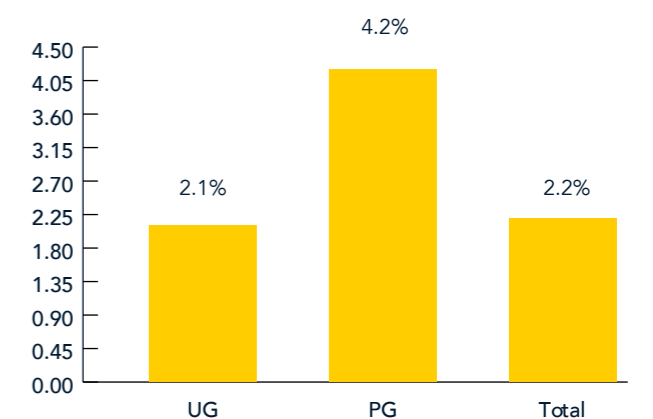
**Graph 1 Success rates in coursework modules for the years 2010 to 2016**



**Graph 2 Success rates in coursework modules 2008 and 2016**



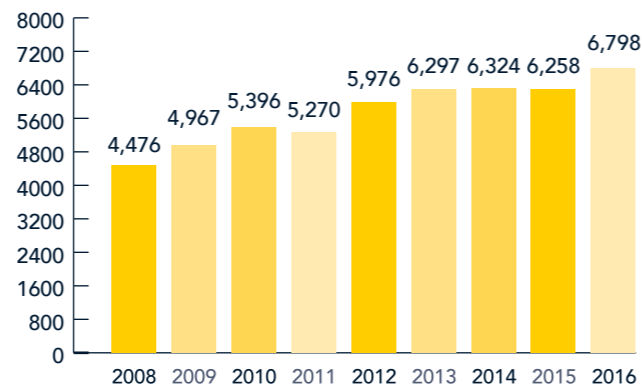
**Graph 3 Average annual growth rate for undergraduate and postgraduate enrolments, 2008 to 2017**







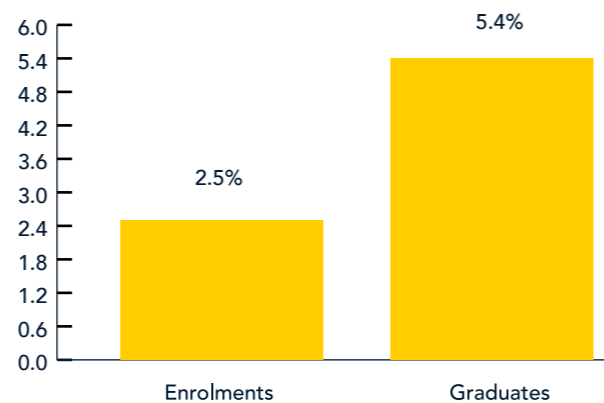
**Graph 4 Graduates 2008 to 2016**



“Our achievements and strengths as a comprehensive university are increasingly being recognised nationally and internationally, and our re-curriculation journey, which includes our transdisciplinary drive, is manifesting in exciting new academic directions,” says Prof Nel. “I believe Prof Swartz’s most important legacy will be his commitment to embedding innovative, transdisciplinary approaches to solving the vexing sustainability challenges confronting the planet, as well as his unwavering commitment to transformation.”

“All our graduates must be able to head into the world as competent, confident, compassionate global citizens who embrace the legacy of our iconic namesake. Living our values is a key philosophy for us and it includes transforming how staff members and students engage with each other and how they experience life on campus. Many staff members have said this is what attracted them to take up positions at Nelson Mandela University.”

**Graph 5 Average growth rate for enrolments compared to graduates**



## Institutional climate and quality of student and staff life

The starting point of campus life at Nelson Mandela University is an institutional climate that promotes an ethos of a diverse, democratic university where all students and employees are in a safe, supportive stimulating environment with every opportunity to succeed, irrespective of their background.

Nelson Mandela University pursues a holistic approach in preparing students for life and work. This includes the provision of infrastructure and facilities that collectively support and enhance the living, learning and working experience of our students. To improve the overall success of our students, we continue to provide support via access to financial aid; quality and affordable on- and off-campus student accommodation; reliable student transport; safe campus settings in addition to numerous opportunities for participation in co-curricular activities and community engagement activities.

“At Nelson Mandela University we unreservedly recognise the hardship faced by students coming from poor or less affluent backgrounds in paying university fees, and for several years we have urged the South African government to rapidly rectify its waning financial support for public higher education and make it the priority it should be,” says Prof Swartz.

“My view, as expressed in the document of the working group of Vice-Chancellors that I chaired to research the feasibility of free higher education, is that free university education for the poor in South Africa is feasible and should be introduced.”

The document was presented to the former Minister of Higher Education and Training, Blade Nzimande, in 2012. It specified that the definition of “poor” should be extended to include children of professionals such as nurses and police – known as the “missing middle” - who currently do not qualify for National Student Financial Aid Scheme (NSFAS) loans.

“Our working group proposed that our document should be seen as a starting point for developing a fully-fledged costing model

both for free university education for the poor and, ultimately, for a comprehensive student financial aid and academic support system that takes into account adequate housing, proper nutrition, cultural inclusion and enhanced awareness through career and vocational guidance at school level,” says Prof Swartz.

“Dr Muthwa and I have had many meetings about all these issues with our colleagues and student leaders, and our university supports the cause of a ‘fee free’ system for the poor and lower middle class. We believe it is entirely doable, but not within the current Higher Education funding framework; it would require a revised framework.

“The leadership of the university does, however, have serious disagreements about the disruption of classes – and we hold the strong view that in exercising the right of protest, the rights of others cannot be deprived. Our constitution is very clear on this and it is a principle we must insist on.

“From a space of mutual respect, we need to reinvent the manner in which universities are funded, and we need to take this further and re-examine how the global economic system has evolved. We need to support innovation and change. We have pockets of this, but overall our social and economic systems in South Africa and throughout the world are too conservative, too conventional and unsustainable.

“We need to break through conventions that no longer serve the majority of people, we need to encourage disruptive innovations across our institutions and in all disciplines and faculties in order to embrace the sustainability consciousness we require to survive.

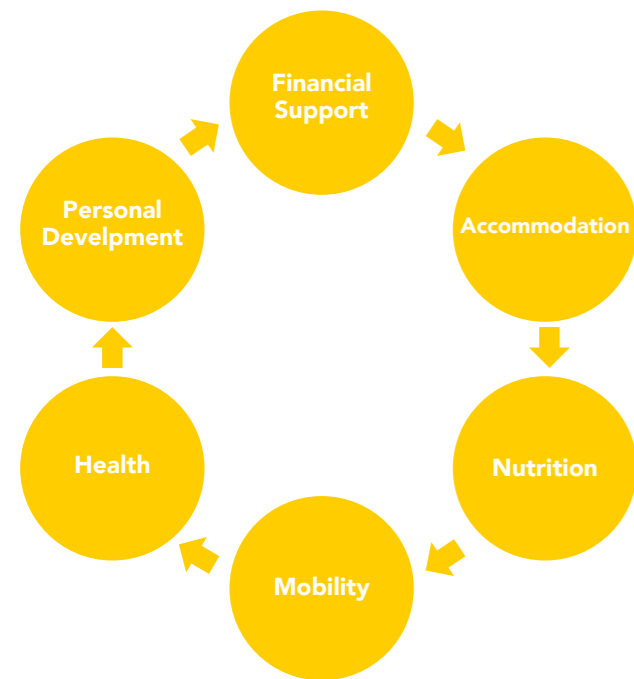
“Universities are indispensable in this process, they are precious; they are the living laboratories for the experimentation of new and radical alternatives. These alternatives must inspire and encourage our students to tackle the challenges of our time, to reinvent their world, our world at this crossroads time.”



## Student Life

### Six pivotal aspects for quality of student life

Nelson Mandela University's model for quality of student life is premised on six pivotal aspects: financial support, accommodation, nutrition, mobility, health and personal development. Student success requires each of these aspects to be in place, and in the case of financially stressed students in particular, university assistance is required for the provision of financial support and related services.



### Student financial support

The three channels of financial support for students are National Student Financial Aid Scheme (NSFAS); non-NSFAS bursaries; and private-family fee payments or a combination of these. For 2017, NSFAS significantly increased its loan funding by 80%, relative to 2016, to R285m, plus an additional R76.9m for first-time entering students, which amounts to a total of R362m for Nelson Mandela University. Almost 6000 of our 27 000 students are NSFAS-funded, many from Zero Expected Family Contribution (EFC) backgrounds.

The university's debt relief interventions, approved by Council, were effectively implemented, assisting many academically deserving and financially needy students to gain access to the institution. These costs were either fully provided for in the 2016 financial year or included in the 2017 budget as follows:

- 1493 academically deserving Zero EFC students received Council-funded NSFAS loan allowances to the value of R10 482 500;
- Academically deserving Zero EFC students rolled over 2016 debt to value of R9 123 900;
- Academically deserving Zero EFC students currently have 2017 debt to value of R25 828 559;
- Academically deserving "missing middle" students (as

defined by the university), have 2016 debt carried over to the value of R1 111 177, with signed acknowledgment of debt contracts in place.

These home-grown interventions have been instrumental in assisting students who were unable to access NSFAS or who are part of the "missing middle", and who would otherwise have dropped out and been lost to society and the university system.

### Student accommodation

There is high demand for on-campus accommodation particularly for first year students and those with NSFAS loan funding. The total capacity of residences for our Port Elizabeth and George campuses is 3 285, which is far below demand. The R141m allocation from the DHET disbursed over two financial years will enable the building of new residences. The university relies on the private sector to provide the balance and some 4 445 beds were accredited for 2017, with 3 714 in large properties mainly around Central, North End, Walmer and Korsten; 483 in smaller properties in Summerstrand, Humewood and Forest Hill properties; and 248 in George.



*Be it singing, sport or living alongside the coast, Nelson Mandela University's 27 000 students are encouraged to embrace all opportunities and facilities available to them during their study years.*





### Student nutrition

Considerable numbers of indigent students are in need of nutritional support, and those who do not have bursary funding often struggle to have proper meals. The university is working on a new nutrition system that ensures no students have to face hunger. In addition to centralised and decentralised bulk catering, Nelson Mandela University has spent millions in developing self-catering facilities within residences. Food options are being diversified with a number of food trucks operating on campuses. Tuck-shop and entrepreneurship activities associated with on-campus residences have also been introduced and are well supported, providing part-time employment and income for approximately 40 students.

### Student mobility

Students make use of a range of transport options to get to campus and to move between campuses. To support students from poorer communities for whom travel costs are a major impediment to access, a proper, well-functioning and city-integrated student mobility strategy is being developed.

### Student health and wellness

In addition to general health services provision, Campus Health Services has a special focus on HIV and Aids. The Student Counselling, Career and Development Centre (SCCDC) continues to guide students in terms of their career development and provides counselling and support for students to cope with the challenges of university life, academic adjustment and personal/emotional issues.

### Holistic student development

The university's Co-Curricular Record (CCR) is an official institutional record to recognise involvement in co-curricular activities per academic year of study. The initiative's aim is to assist students to develop themselves holistically, develop the attributes required of Nelson Mandela University graduates and pursue their career and personal goals throughout their university experience. This innovative approach to formally recognising co-curricular learning is the first of its kind in South Africa and serves as a benchmark for other universities to consider.

### Beyond the Classroom

Beyond the Classroom (BtC) is an eight-month voluntary leadership, engagement and self-development co-curricular student programme, pioneered by Nelson Mandela University, and facilitated by a team within the Department of Student Governance and Development (SGD).

In synopsis, the aim of the programme is to:

- Increase students' level of social awareness and responsible citizenship
- Help them to learn how to adapt to change, ambiguity and different views
- Foster creativity in their thoughts and actions
- Boost their thinking ability and ability to see things from new perspectives
- Enhance their intra- and interpersonal skills
- Strengthen their verbal, written and electronic communication skills
- Expand their knowledge in their field of study

Students have to commit to the programme and an 80%



**Students at Nelson Mandela University are exposed to cultural, sporting and other opportunities during their studies.**



### Recruitment and registration

The university's Institutional Support team has reconstituted and improved the applications, admissions and registration management process for 2017/18 as part of a wider re-engineering of the whole student enrolment management strategy.

Traditionally, recruitment has been driven through a conventional, but effective formula of "Open Days", during which families and prospective students are invited to visit a large-scale recruitment exhibition on campus. However, the reach should be much wider, and given the digital age we live in, Nelson Mandela University is diversifying and modernising how the university's value-proposition is communicated. To this end, the Student Recruitment Strategy is being revised to focus on strategic objectives relating to:

- Recruitment of talented learners
- Expanding Nelson Mandela University's national and international footprint
- Proactively building readiness for the advent of the Central Application Service (CAS)
- Developing community/stakeholder partnerships
- Implementing a rural communities partnership strategy
- Student involvement in recruitment initiatives, and
- A stronger online presence.

attendance rate forms part of the programme criteria. Once a student completes their BtC co-curricular programme, it is entered into their online co-curricular record, alongside their academic record, and is available in perpetuity after they graduate. It is signed off by the Vice-Chancellor as confirmation that the student did indeed graduate from Nelson Mandela University with the stipulated qualification, and that they completed the BtC programme listed on their co-curricular record.

Other student leadership and development programmes include the PASSAGES programme in the residences and Connect 2 Your Future for all first year Vice-Chancellor Scholars. The PASSAGES programme works with a curriculum run on a monthly basis, led by the residence house committees. PASSAGES symbolises the action the student needs to take to transition from high school

to university, with the primary focus on creating opportunities for learning which will positively influence the residential first-year student experience.

In addition to the above, the Dean of Students, Luthando Jack, has been at the forefront of creating an overarching student leadership development strategy, which will have an empowering and stabilising influence on student governance.

### An internationalised university

All South African universities recognise that internationalisation is essential if we want to function as respected partners in the global environment. Nelson Mandela University has partnerships, exchange programmes and diverse staff and students from over 66 countries, and is recognised as one of South Africa's leading universities in internationalisation, with other universities emulating its model.

The university's leadership has played an important role in promoting innovation in the practising of internationalisation, such as the bi-annual Nelson Mandela University "Family Week", a gathering of all the university's international partners, which sets the university apart. This was encouraged by Prof Swartz and given guidance through his personal engagement and intellectual participation during the international colloquium that takes place during Family Week.

"Internationalisation is as much about ensuring a good experience at Nelson Mandela University for all our international students, postgraduates, lecturers and researchers, as it is about extending our university's international partnerships, impact, connectedness and mindset," says Dr Nico Jooste, the Senior Director of International Education.

"Nelson Mandela University firmly subscribes to the philosophy of a globally connected university. Through our international endeavours and partnerships we collaborate with a wide, international network of universities, organisations, donor agencies and multinational companies.

"We pride ourselves on what we are able to bring to the world through our strengths in both fundamental and applied research that leads to the creation of new knowledge for South Africa and the world. It is all about universities operating as a globally networked environment or 'knowledge commons' where we share and grow with and through each other. No university can claim to have all the knowledge it needs; we all need to collaborate to drive the knowledge domain."

Nelson Mandela University's international postgraduate cohort is particularly active, and 37% of the university's full-time masters and doctoral students are international students. The university's international PhD alumni group is distributed throughout Africa and other parts of the world. They play an important role in their local communities and economies, as well as being ambassadors promoting the university and South African higher education.





## The Beautiful Academic Completion Plan

The Nelson Mandela Stadium, initially built for the 2010 FIFA World Cup, was transformed into both a teaching and exam site with classrooms for teaching, computer labs for assignments and accessing information, and exam venues established for the university's 27 000 students in November and December 2016, and January 2017.

The four women steering the academic completion plan at the stadium were: Professor Cheryl Foxcroft. Dr Jennifer Winstead and Aileen Ownhouse – all from the Higher Education, Access and Development Services (HEADS) division, and Chantal van Heerden from the Examinations division. They were supported by all the faculties' executive deans, directors of schools, heads of departments and academic staff who all played key roles in conceptualising the individualised academic completion plan for each faculty, set up online access to content, materials and assignments, and closely communicated and engaged with students and colleagues.

"When we realised time was fast running out to complete the academic year and campuses were still too unsafe as a result of the #FeesMustFall protests, the heads of the university got together with our city's Business Chamber to discuss our options, including teaching and exam-writing venues where our staff and students would feel safe," explains Prof Foxcroft, the Dean of Teaching and Learning, and the head of the Higher Education Access and Development Services.

"That is when I was given the cellphone number of the CEO of the Nelson Mandela Stadium, Chantal Dupisani, who told me: 'The stadium is waiting for you'."

The stadium was built with the highest security in mind to comfortably accommodate 46 000 people. Dupisani and Jaco Diedericks from the stadium, along with the Mayor of Nelson Mandela Metropolitan Municipality, Athol Trollip, were highly supportive of the university's needs, and Prof Foxcroft and her team immediately set to work.

Plans to convert the stadium into an instant university started in earnest from 24 October 2016. Eight days later, with outstanding support from a number of university divisions, including ICT Services headed by Dr Samuel Bosire and Creswell du Preez, and Estate and Facilities Management headed by Reenen du Plessis, students were able to safely enter the stadium and complete their

final lectures from 2 November, before starting exams on 25 November.

It was a major undertaking, with everything from desks and chairs to white boards, projectors, WiFi and three-phase electricity to support the 200 computers the ICT team brought in, had to be installed by the university. Each faculty was given a different wing with dedicated teaching and exam venues.

Critical to the project were the security and access considerations, with the university's Head of Protection Services, Derek Huebsch, teaming up with the stadium's security to ensure that all access to the stadium and activities within the stadium were 100% safe. Then there were the transport logistics, with shuttles organised for students to and from the stadium to the usual university shuttle stops throughout the metro.

As part of the rollout, the university installed free WiFi at 11 studying points throughout the metro, such as libraries and community centres. Mobile phone companies assisted with free data for all students until the end of the academic year.

The logistics were considerable but by the beginning of November the instant university was launched. "Overnight, lecturers had to embrace blended learning - blending face-to-face teaching with online notes, videos and tutorials," says Prof Foxcroft.

For some lecturers, the shift to the stadium and having to rapidly advance their online learning skills required a significant mindset change. It paid off and many of the classes had 90 – 100% attendance. On campus, arrangements were made with the assistance from the university's security team for subjects that require laboratory practicals.

Fortunately, Prof Foxcroft and her team had been working on advancing blended learning and flipped classrooms as part of teaching and learning at the university for some time: "We are always looking five to ten years ahead, and we have been gearing ourselves for the reality of a very different university space – we didn't realise how quickly we would need to implement this at the stadium, but it worked," says Prof Foxcroft.

## Staff Life



**Aileen Ownhouse (from left), Prof Cheryl Foxcroft and Dr Jennifer Winstead were among those to play a key in ensuring that the university's 27 000 students completed their studies through implementation of the Academic Completion Plan in 2016.**

### Quality of staff life

One of the goals in Vision 2020 is to be an employer of choice in order to provide a stimulating and welcoming environment for staff and the best possible education for its students.

Since 2008, several measures have been introduced to promote this goal, including a progressive remuneration strategy, employee wellness, integrated promotions and a performance management system – each of which has had varying degrees of impact and success.

This is coupled with a commitment to the university's recognition of staff excellence and its many offerings that address the staff's "whole person" needs. This includes music, dance, art, poetry, movies, archives and exhibitions, cultural events and celebrations for all staff and students, as well as citizens of the Nelson Mandela Bay Metro, organised by the head of the university's Department of Arts, Culture and Heritage, Michael Barry.

One of the eagerly anticipated annual events is the isiSusa music concert (*isiSusa* is an old isiXhosa word meaning "bringing together" or "celebration") where local and national musicians and singers come together and perform different styles, including playing together in a big band. "During this event we give recognition to the divas from our local communities who are the stalwarts of the local music scene," says Barry.

Another project is the annual poetry book that the Department of Arts, Culture and Heritage produces with contributions from all students and staff. A bi-annual staff concert is organised where staff from all the different faculties and departments participate.

Then there is the annual drama production that is taken to the National Arts Festival in Grahamstown choreographed and directed by staff members, with students performing.

### A united, values-driven workforce

The future stability and sustainability of Nelson Mandela University is dependent on successfully building a united, values-driven workforce – from the lowest to the highest grade staff member – where all staff members – academic, support and service employees – feel collegially connected in a shared employment space, and work together with common purpose to achieve the strategic intentions of the university.

Given the scale of the reintegration process, it cannot be a case of merely bolting on out-sourced services to the existing university organisational structure. The configuration of the entire university structure needs to be looked at afresh, to design a fit-for-purpose and sustainable working model. This is a complex undertaking that requires firm leadership and continuous staff engagement, supported by a clear-cut change management plan. It further requires detailed financial remodelling, to ensure the sustainability of the university.

### Reintegration of support service functions

In November 2015 Council took the landmark decision to end the outsourcing of support service functions. This decision - informed by Council's commitment to the principle of social justice - has required of the university to carefully consider the implication of integration for the existing staffing structure, management of the reintegrated support service functions going forward, grading and remuneration of posts, and general integration of





service employees into the support service staffing structure and systems. It also requires a new institutional culture and change management strategy to facilitate total integration of the new service employees into the university system, and their full support as part of the university family.

Towards this, our Human Resources (HR) Department's capacity is set for major upgrading. The appointment of a Director: Employee Relations and the Senior Director: Organisational Development & HR Operations, will provide leadership on the critical aspects of employee relations and organisational development.

### Harassment, discrimination and gender-based violence

Disturbingly, the university has experienced a rise in incidents of sexual harassment cases referred for prosecution, and others shared on social media. Harassment, gender-based violence and all forms of discrimination are totally unacceptable, and considerable efforts have been made to educate residence staff and students on sexual harassment and gender-based violence. Despite this, certain issues have required disciplinary intervention and a zero tolerance approach is being adopted. A review of the university's Sexual Harassment Policy and the associated structures dealing with cases of sexual violence is underway, to ensure that there are effective enforcement mechanisms to deal with perpetrators, as well as to provide support for affected staff and students.

### The quality of our staff

In discussing the quality of staff life, the university would also like to talk about the quality of its staff.

In 2016, the overwhelming majority of staff members rose to the challenges of the #FeesMustFall protests that swept through South Africa.



The completion of the 2016 academic year was enabled through their commitment to a comprehensive Academic Completion Plan (ACP). Multi-mode teaching was implemented to complete the teaching programme, including e-learning and the use of alternative, secure sites.

Alternative methods of assessment were introduced where appropriate, with students being provided with options of writing examinations in November-December 2016 or January 2017. In November 2016, more than 10 000 student entries were recorded to complete classes. In addition, in excess of 32 000 student entries were recorded to write around 1000 papers in 24 days with two exam sessions daily across the two exam periods.

The entire university staff, academic, support and professional, went above and beyond their duties to ensure the completion of the 2016 academic plan. Their dedication and efforts were recognised, commended and appreciated by the Vice-Chancellor and all the leaders of the university.

Ongoing engagement with student formations is greatly helping to facilitate the co-creation of the way forward for a "new normal". Key elements of this include embedding the decolonised African context in curricula and reflecting alternative epistemologies and knowledge paradigms within the core pillars of teaching and learning, research and engagement. In addition, the original institutional values of respect for diversity, excellence, integrity, *ubuntu*, taking responsibility and respect for the natural environment need to be evident in the lived experiences of staff and students.



**Creating an empowering and enriching environment for staff through recognition, the nurturing of talent, and via engagement events, is seen as key for the university.**



# Improving academic excellence

## Teaching and learning, research and engagement

*“Teaching and learning is about courageously confronting the hard educational issues we face in South Africa; it is about developing students who go beyond getting a degree; igniting young minds to take flight; holding people to high expectations and helping them to achieve this.” – Professor Denise Zinn, Deputy Vice-Chancellor: Teaching and Learning.*

### Teaching and Learning

“All students and all lecturers are human beings, equal in their humanity. We are all in the process of ‘becoming’, and the purposes of higher education are thus to extend this humanity through opportunities for creativity, imagination, and interaction with others and the world,” says Prof Zinn.

“Throughout the university’s curriculum redesign process, our philosophical approach is accordingly based on a culture of enquiry and a humanising pedagogy that is committed to creating a vibrant, socially just and democratic institution.”

Nelson Mandela University is recognised as a leader in the field of humanising pedagogy or the “humanisation of education”, with Prof Zinn as the key driver of this approach:

“It is about dislodging outdated theories and narrow-minded preconceptions of teaching, learning and human engagement in order to stimulate a critical, enquiring approach to education. It is about re-looking at who owns the power of knowledge in the classroom, and recognising that it is not only the teacher or lecturer; that learners and students bring their own knowledge and intelligence, which needs to be acknowledged and encouraged.

“This requires a conducive environment, as opposed to the outmoded authoritarian that shuts down thinking and demotivates a lecture room of first years by announcing that two-thirds of them are going to fail. Rather, it is about telling them that they all have the potential to be top-performing students.

“Humanising pedagogy recognises the need to leverage the cultural and intellectual wealth that South Africa’s diverse communities offer, and to incorporate our homegrown knowledge into education and the curriculum. It also recognises the diversity of backgrounds in which learners grow up and to ensure this is recognised and developed within our schools and universities.

“Prior to 1994, all teachers were subjected to fundamental pedagogics that adopted Christianity as the ‘only’ philosophy of life. Following on this, all forms of ‘isms’, such as pragmatism, liberalism, Marxism, existentialism and humanism were seen as undermining Christianity and as such rejected. Progressive education texts that proposed critical pedagogy, such as Brazilian educator and philosopher Paulo Freire’s *Pedagogy of the Oppressed* (1975), were banned as they were regarded as promoting liberal, communist ideology.

“Educational discourse at most state-controlled teacher education institutions during the apartheid years disregarded the impact of poverty, racism, and cultural struggles on the education of the vast majority of South African children. Thoughtful engagement with profound transformation was thus necessary to transform faculties, renew curricula and facilitate much-needed educational change.

“This has led us towards a set of fundamental questions guiding the curriculum choices we need to make, namely, *what* do we choose to teach or learn, *who* teaches this, *how* do we do so, *where* does this learning and teaching take place, and *how* do we know that learning has taken place?

“Integral to all these questions are new pillars of education, including the need to encourage new generations of teachers and lecturers to be change agents, inspired by models of possibility.”

*“For to be free is not merely to cast off one’s chains, but to live in a way that respects and enhances the freedom of others.” – Nelson Mandela*

### Teaching and learning for a transformed university

“At Nelson Mandela University we are always looking five to ten years ahead, and right now we are gearing ourselves up for the reality of a very different university space; one where blended and online learning will play an increasingly prominent role in higher education in South Africa and globally,” says the Dean of Teaching and Learning, and Head of the Higher Education Access and Development Services (HEADS), Professor Cheryl Foxcroft.

“Our pilot modules and electronic activities (e-tivities) have shown that students can be wonderfully supported online. If, for example, their studying technique is not working, or they are not coping, they will go online and, in time, receive 24-hour tutoring, guidance or counselling to assist them in every way, including improving their weak areas and studying techniques.”

A growing number of lecturers are already offering online tutoring classes and lectures, in addition to recording their live lectures and putting them online, so that students, who might not have digested all the information during the lecture, can listen to it again. During the online tutoring class, students can also ask questions that they might not have had the opportunity to address in class or felt too shy to ask.

To advance novel teaching and learning methods and modules, Prof Foxcroft and her team are intensively exploring the continuum from high school to university.

“There is a stark disjuncture between school and university, and so one of our online initiatives helps high school learners to understand what higher education is about, what our admission requirements are, how they can prepare themselves for this, and how to access and fill out application forms,” she explains.

“We are also developing academic literacy and writing development modules and multilingual online academic glossaries so that students for whom English is their second or third language can look up terms in their first language, notably in isiXhosa in the Eastern Cape.”

A core focus of Nelson Mandela University is on access for success, and several projects are operating at high school level to offer learners from disadvantaged educational backgrounds the head start they need to access university studies and succeed.

Nelson Mandela University has a two-tiered admissions system – applicants are either admitted if they meet the direct-entry admission requirements or, if their school performance falls within a certain range, they are tested by a team from the Centre for Access Assessment and Research (CAAR). The test and school results, together with relevant background information, are taken into account to make an admissions decision.

The student is supported in a number of ways, including participating in academic skills programmes, or they are enrolled in the extended programme where an extra year is added to their degree or diploma.

Extended programme students are given intensive support during their first two years. Many disciplines, including those with high student numbers, such as the School of Engineering, have worked extremely hard to support student learning and success, and to redevelop curricula, including those for extended programmes.

Nelson Mandela University is achieving growing success rates through its extended programmes, including subjects that students notoriously fail, such as Mathematics, Chemistry and those in Business and Economic Sciences.



**The university seeks to provide world-class teaching facilities, such as the state-of-art equipment available in the Nursing Department; and is able to offer marvellous outdoor laboratory opportunities because of its location.**



### Early detection system

The Kresge-funded Siyaphumelela Project has enabled Nelson Mandela University to develop a unique early detection system, called RADAR, to identify academically vulnerable students needing academic and other support. This tracking system is being piloted in the Faculty of Law, and there is a lot of enthusiasm in the university to speed up further enhancements so that the system can be rolled out in all the faculties. The effectiveness of RADAR will depend on the ongoing and timeous capturing of test and assignment marks by faculties on the Integrated Tertiary Software (ITS) system from which RADAR links the student performance data.

An interesting statistic is that each year 36% - 39% of Nelson Mandela University graduates have come through the access testing and developmental support route. Thousands of students who would not ordinarily have been admitted to university have successfully graduated this way. It does require a lot of staff support and commitment from the student, but it is entirely worth it. It exemplifies the university's commitment to access for success.

### Blended learning development and support

At an institutional level, the use of blended learning and digital support for teaching and learning is expanding rapidly. A further 1446 new Moodle module sites have been created since 2007, bringing the total to 4708 modules that have online learning possibilities spread over 5 269 sites across five Moodle platforms. This is a remarkable institutional innovation for current and future generations of students.

In order to participate optimally in blended learning, staff and students need to have mobile devices that can access the different sites. The number of student devices connecting to Nelson Mandela University's WiFi has increased considerably, with 19 628 student devices connected in one month.

The faculties of Law and Science have also experimented with using Skype as a mode of delivery to engage with students on the George campus in real time. Other innovations include the introduction of an instructional material designer (IMD) by the



**Meeting the real needs of society is the key driver at Nelson Mandela University, be it through our focus on health professions, commitment to the arts or via the new FishFORCE Academy to combat seas fisheries crime and related criminal activities.**

Faculty of Engineering, the Built Environment and IT to provide instructional design support to staff for the development of digital and online learning materials as part of the move towards blended learning solutions. In addition, the Faculty of Health Sciences is utilising e-learning platforms like video-conferencing and podcasts to perform outreach activities and teach in community-based health facilities. It is important to combine this impressive array of technological innovations with a new set of epistemological and curriculum statements to produce exciting and challenging educational experiences to students across the disciplinary spectrum.

The university has further teamed up with Academic Partnerships, an international company that is working alongside the university to offer selected academic programmes online. This strategic initiative will provide a new cohort of prospective students – the adult working market – with opportunities to access further studies at Nelson Mandela University.

### E-assessments

The use of e-assessment for the purposes of formative assessment and semester tests is currently being piloted. The lessons learned have been captured as part of a draft e-assessment policy that will be subsumed under the umbrella Assessment Policy approved by Senate on 7 November 2017.

The policy framework provides academics with e-assessment procedures and guidelines to inform practice, improve quality standards, and accelerate the adoption of assessment principles to promote consistency in e-assessment.

### Capacity development linked to academic career trajectories

The University Capacity Development Grant (UCDG) funded by DHET will provide much-needed funding from 2018 to enable the university to accelerate the development of the next cohort of academics, and the continued development and support of mid-career and senior academics.

Four different groups of academics and researchers have been identified for support through the grant, namely:

- Emerging academics and researchers from designated equity groups;
- Established academics who need to be supported in preparation for future academic management roles (such as heads of departments and directors of schools);
- Established academics who wish to grow into internationally renowned researchers and teachers; and
- Academics nearing retirement who need to be prepared for future mentoring roles.

It will also provide funding for student tutoring and other academic development initiatives to assist with increasing overall student success rates, as well as curriculum development initiatives. The university is seizing this opportunity to source the additional funding required to develop a new cohort of promising young equity scholars while also giving support for existing equity academics to advance within the academic pathways.

# African Engagement

Growing International Education & Research Partnerships







**The contribution of the arts and social sciences to decolonise endeavours of the university is already underway.**

### How Far We Have Come

“Over the past ten years, pioneering thinkers in the Arts and Social Sciences in South Africa have significantly expanded our understanding of what constitutes teaching, learning and engagement,” says Professor Rose Boswell who joined Nelson Mandela University in 2015 as the Executive Dean of Arts.

Prof Boswell, formerly a professor and researcher in anthropology at Rhodes University for 17 years, believes there is so much to learn from this discipline. “Anthropology as a social science is thriving again after a lull in the 1960s and 1970s when its orientation and perception of traditional communities was far from liberatory,” she explains. “The shift came to anthropology and the social sciences as scholars began to question colonial and Eurocentric understandings of humanity and the ways in which these aspects were framing thinking and the treatment of those deemed ‘other’. Since the 70s, more disciplines in the arts and social sciences have embraced the deconstructionist approach to knowledge, producing new paradigms for learning that take into account global and vernacular forms of expression.”

Boswell argues that, given the “tectonic” shifts occurring in the national landscape and in global society, the arts and social sciences are ideally positioned to positively transform higher education: “It is the disciplines of visual art, music, fashion, design, media studies, politics, history, linguistics, literature and philosophy that will advance a decolonial, global and grounded thinking.

“These disciplines will help us to consciously keep an open mind, which is key to both a cutting edge and socially relevant academia. Indeed, the contribution of the arts and social sciences to decolonise endeavours of the university is already evident. Each year is yielding multilayered knowledge production and a rich seam of critical art exhibitions, acclaimed musical performances, insightful architecture treatises and thought-provoking debates. The faculty intends to further encourage and enthuse all colleagues to unleash their creativity to benefit the university and South Africa as a whole.”

As part of this, Prof Boswell believes that all academic staff members should participate in the Centre for Teaching, Learning and Media’s (CTLM) evaluations and peer-reviewed lecturing evaluations to better understand how they engage with students; how they respond to difficult questions and how they deliver challenging or potentially controversial material.

While student enrolment in the Arts is high (and growing), a key priority for the faculty is to advance success and throughput rates for undergraduate and postgraduate students. Prof Boswell says: “We are not there yet. One of the indicators is the dropout rate – which is still far too high at all South African universities.

“I am confident that we can change this at Nelson Mandela University if we entrench the practice of teaching and course



### We need to think as one

“Our vision for Nelson Mandela University in the southern Cape is for it to be a critical knowledge catalyst, which educates sustainable future leaders, says George Campus Principal, Professor Quinton Johnson. “Through high quality education, we must reduce the vast canyon of inequality in the world, and build a socio-economically more inclusive society.”

George Campus has grown dynamically since 2005 when it transformed from the former Saasveld Forestry College and thereafter PE Technikon into a fully-fledged campus of Nelson Mandela University. “Historically only white men studied at what was then the Saasveld Forestry College, but our institution has significantly transformed in opening its doors to men and women from all communities, locally and internationally, irrespective of race, culture or economic standing, as we move towards a people’s university,” says Prof Johnson.

The university has invested over R120m in this campus since 2005. This funding has supported the campus vision to grow its student numbers, strengthen its staff, improve its graduation rates, amplify its research strength, expand its infrastructure and deepen its community impact. The campus currently has 1492 students and aims to grow this number to 2000 by 2020.

George Campus has a strong sustainability ethos, with many green innovations, including solar-driven

heating systems, water conservation, recycling and energy-saving technologies, and a permaculture food centre.

The campus is renowned for its School of Natural Resource Management in the Faculty of Science, which offers six career-focused programmes, namely forestry, wood technology, nature conservation, game ranch management, agricultural management and fire management.

The George Campus’ Faculty of Business and Economic Sciences has seen good growth over the years and now has 575 students.

The Faculty of Engineering, the Built Environment and Information Technology has been expanded to George Campus to service the southern Cape, and the faculty has introduced a range of new certificates, such as the Higher Certificate in ICT to offer qualifications that connect to the digital economy.

“What and how we teach, together with the nature of our research and engagement speaks to the transformation of the institution,” says Prof Johnson. “We must constantly assess whether our curriculum and the manner in which students and staff experience the university, is reflective of this imperative. We have made very good progress, and will accelerate to do more.”



evaluations; seek out best practices in teaching and learning; coach staff; lighten teaching loads and make smarter choices in the creation and management of postgraduate research programmes.

"The faculty is seeking to achieve this by reviewing protocols in its faculty level committees; opening up debate on niche research areas; excavating supervisory practices, engaging with student bodies to understand student priorities and pursuing the path of great achievers like Steve Jobs, by approaching our work with passion, caring, intelligence and bravery."

### The Foundation Phase

"Nelson Mandela University is proud to say it has the leading Foundation Phase degree programme in South Africa, with a wealth of experience in this area dating back to the 1980s," says the Executive Dean of Education, Dr Muki Moeng.

Dr Moeng's mentor in Foundation Phase teaching and learning was the late Executive Dean of the faculty, Professor Wally Morrow. "I served under Prof Morrow in 2000 and he was a prolific researcher in higher education," Dr Moeng explains. "Just before he died he said to us: 'The future of teacher education is in your hands, especially Foundation Phase. It is so important, as is mother tongue education'. I am responding to Prof Morrow's call."

Foundation Phase teachers are responsible for the educational foundation of children between the ages of approximately 5 to 9 years (Grade R to Grade 3). How and what they teach, and how they engage in the classroom, profoundly influences the life path of these children.

Recognising this as a critical educational phase, the Faculty of Education offers its flagship BEd Foundation Phase Programme, which specialises in the foundation fields of literacy, numeracy and life skills.

Dr Moeng emphasises the importance of including a range of indigenous knowledge systems and cultures in the curriculum: "Because the Foundation Phase bridges the link between home and school, teachers need to start with something that is familiar to the child, such as the rhymes they sing at home or the games they play. "For example, English first language South Africans will teach their children rhymes like *Twinkle Twinkle Little Star*, which are good for literacy development. IsiXhosa first language South Africans will teach their children games like *Upuca*, which is good for the development of mathematical skills and hand-eye coordination."

Teachers need to be conscious of including diverse cultures in the curriculum. This accommodates all children's frames of reference, which is essential for inclusiveness and, in the bigger picture, towards creating a society where diversity is celebrated and no single culture dominates the others.

The flagship Foundation Phase programme started its new life on Missionvale Campus in 2016. Architect Neal Fisher designed a striking new building for this purpose, featuring postgraduate facilities and inviting, versatile learning spaces with movable furniture that can be used for lectures, music, drama, meetings and afterschool programmes such as literacy development.

The magnificent Library and Information Services building on the Missionvale Campus is equipped with over 60 000 books and journals (including e-books and e-journals). It seats 410 people, has 32 internet stations; and forms part of the university's network of libraries.

"Prof Swartz was very much part of our selection of the Missionvale Campus for the Foundation Phase programme because it is close to a large number of primary schools in Zwide, Missionvale and New Brighton. It is also located midway between Port Elizabeth and Uitenhage districts, thus providing easy access to both ends of the metro," says Faculty of Education Operations Manager, Dr Tulsi Morar.

"Its location complements the Foundation Phase programme's practice of partnering with schools that provide the contextual realities we need to address in South Africa if teacher education is to make a real difference.

"The entire Foundation Phase project reflects an extremely important uniting of communities that demonstrates that there is no place for 'us' and 'them' in a Nelson Mandela University education."



**Be it the critical role of Foundation Phase or the importance of conservation, the university is increasingly referred to as the MIT of Africa.**

## Research & Engagement

### Research and Engagement

*"We are positioning ourselves as the MIT of Africa by supporting basic and applied transdisciplinary research to create new knowledge for the world, and at the same time to create jobs, educational opportunities and a more just society."*  
– Professor Andrew Leitch, Deputy Vice-Chancellor: Research and Engagement, Nelson Mandela University

"Now that we are Nelson Mandela University, we will be seeking to enhance our collaborations and partnerships with all those who wish to work with us in honour of our iconic leader and statesman, Nelson Mandela. Our name should not only be in memory of Mandela, it should reflect the living legacy of an exceptional man from the rural Eastern Cape who stood up for educational advancement, justice and freedom," says Prof Leitch.

"There are high expectations of us, as expressed by Cyril Ramaphosa and George Bizos at our launch in July 2017. This expectation includes research and engagement that can impact and improve the lives of all our communities – from Nelson Mandela Bay to the rest of Africa and the world.

"It gives me immense pleasure to say that our name change, combined with our research achievements and new focus areas, including our new Ocean Sciences Campus, have opened many new South African and international doors for us. Leading institutions in a wide range of countries are partnering with us or are keen to partner with us in transdisciplinary research.

"There is a strong move towards transdisciplinarity and we are building this into everything that we do; where sociologists are working with scientists and educationalists are working with engineers to address the global challenges confronting us. This is the approach of our times.

"An example of this is a new collaboration with seven Swedish universities called STINT. Funded by Sweden, the programme was launched in the second half of 2017 and will run to 2020. Several South African and Swedish institutions will exchange staff and senior students for collaborative academic activities through a multi-year partnership. The overall focus of the collaboration will be sustainability.

"The increasingly leading role played by Nelson Mandela University in the field of global change research was further recognised by the Department of Science and Technology with the awarding of funding support of R11 million per year for 2017 – 2019, to Prof Maarten de Wit, the Chair of Earth Stewardship Science.

"A key aspect of both our research and transformational agenda is to grow the university footprint on the African continent. During 2017, all existing linkages with other African countries were examined, including student exchanges, research collaborations and formal partnerships.

"Our aim is to develop further strategic partnerships with selected institutions in other African countries. These will include Malawi (Agriculture, IT), University of Nairobi (in Mombasa, for Maritime studies linked to the FishFORCE Academy in the Centre for Law in Action, Faculty of Law), University of Dar-es-Salaam (Marine Sciences Institute at Zanzibar), and Ghana (Marine Studies).

"In 2016 alone we launched two SARChI Research Chairs: Professor Mike Roberts' Chair in Ocean Science and Marine Food Security, and Professor Mandy Lombard's Chair in Marine Spatial Planning. Prof Roberts' Chair is jointly hosted by ourselves and the University of Southampton, with support from the National Oceanography Centre based in Southampton – the United Kingdom's two leading marine science research and technology institutions. The Chair is attracting considerable interest and funding, as it creates an innovation bridge of research and postgraduate development between the northern hemisphere and Africa, with regional projects extending from South Africa all the way up Africa's eastern coastline.

"Pan-African programmes are also a strength of the Law Faculty, including the SARChI Chair on the Law of the Sea and





Development in Africa, led by Professor Patrick Vrancken, the leading legal specialist on the law of the sea in South Africa. The Chair's research includes the east coast of Africa and the Indian Ocean, the west coast of Africa and the Atlantic Ocean, and the southern ocean and Antarctica. Prof Vrancken's legal input has also been invaluable in recommending critical legal improvements to South Africa's new Marine Spatial Planning Bill.

"Researchers across all faculties continue to shine on local and international platforms in all our faculties, with the Faculty of Engineering, the Built Environment and Information Technology's Professor Darelle van Greunen receiving multiple awards and European Union grants. Her team continues to research and implement novel ICT connectivity solutions, as well as education and health-focused advancements for poorly resourced communities in South Africa and the continent.

"We are committed to researching and engaging on the many issues facing poorly resourced communities, and in 2016 our Faculty of Education was awarded a R1m grant from the Mott Foundation for the Centre for the Community School (CCS), led by Dr Bruce Damons."



The Centre's goal is to reimagine what well-functioning schools in poorly resourced communities should look like, and how to go about achieving this in partnership with the schools, learners, and their communities.

"In 2016, Executive Dean of Arts, Professor Rose Boswell led a multidisciplinary group of postgraduate students to research police dockets at the Gelvandale Police Station in the metro's Northern Areas, known for the high incidence of gang-related crimes. The South African Police Service (SAPS) approached the Faculty of Arts to work with them on this project in order to gain a better understanding of the social background of these crimes.

"The Science Faculty had fascinating research published in *Nature* in February and March 2017. One paper focused on the evolution of feathers for flight, while the other paper reported on



*The university is embarking on an exciting new journey around ocean sciences.*



stromatolites – cyanobacteria organisms dating back billions of years and contributing oxygen to the earth's atmosphere.

"Approximately 70% of Earth's oxygen comes from the ocean, produced by marine plants. Key research on the ocean and coast is being undertaken by the Institute for Coastal and Marine Research (CMR), launched in 2016 and headed by one of our preeminent researchers, Professor Janine Adams. Over 40 years of coastal and marine research at Nelson Mandela University underpins the institute – the largest on the Ocean Sciences Campus.

"Our university is ambitiously growing niche, scarce skills qualifications, research outputs, postgraduate numbers, partnerships and engagement opportunities. This is being admirably achieved in our transdisciplinary Centre for Coastal Palaeoscience, which is constructing the palaeo-landscape



and seascape or "palaeoscape" of South Africa's southern and southeastern coasts.

"The university is uniquely situated at the possible ground zero of human cognitive origins and is engaging in a range of unbelievably exciting national and international collaborations to investigate fundamental evolutionary questions.

"We are in discussion with the Department of Science and Technology (DST) regarding the creation of a new palaeoscience laboratory, including the study of fossilised pollen, which reveals the plants that were around 100 000 and more years ago. Nelson Mandela University has signed a Memorandum of Understanding with a not-for-profit organisation in Mossel Bay to establish an interpretative site that showcases what the palaeoscience research is revealing about the early modern humans who lived on the Mossel Bay and southern Cape coast. This has been proposed as a World Heritage Site. All these research areas emphasise our common human ancestry.

"The Faculty of Business and Economic Sciences is doing key research on transgenerational, successful, indigenous African family businesses and what can be done to increase the number of these, as they are a vital part of the economy and make substantial contributions to economic growth and social stability. The faculty is pioneering new avenues of inquiry, including Islamic finance, feminist economics, food and environmental security, the future of work and the fourth industrial revolution.

"The School of Natural Resource Management's Professor Raymond Auerbach, our Engagement Excellence Award Winner for for 2016, is part of the DST-NRF Centre of Excellence in Food Security, jointly hosted by the University of the Western Cape and the University of Pretoria, with several South African universities contributing innovative thinking to this vital space.

"There is a great willingness to create partnerships and networks

between academic institutions in South Africa, Africa and globally. Combining specialist research skills and advancing staff and student mobility exchanges is all part of the productive tide of the times.

"We are also advancing engaged research as a core, third responsibility of the university, along with research, and teaching and learning. From engaging with Karoo communities on baseline water research that can inform any decisions taken around shale gas development, to partnering schools in under-resourced areas in the Eastern Cape and assisting learners to attain university entrance Mathematics and Science marks, we are engaging on the ground as much as we are networking abroad."

Throughout the world the STEM fields – Science, Technology, Engineering and Mathematics – are highly in demand today.

"It is far easier to get funding for these fields than the Humanities, which are so important. The effect is that postgraduate students are often not attracted to pursuing research in the Humanities because they don't see evidence of funding," explains Prof Leitch.

"Our approach is to find the funding for Humanities research and to leverage off the STEM sector, which can and needs to bring the Humanities on board through transdisciplinary research. This considerably strengthens STEM research because it approaches it far more holistically and comprehensively."

#### **Attracted to an academic career**

By developing a cohort of postgraduate students across all faculties, Nelson Mandela University is proactively growing its own timber, as several of these students will be attracted to an academic career.

"We are working on increasing the number of academics with doctorates - from the current 43% to over 50% in the near future - and on increasing our black and women academic staff at all levels," says Prof Leitch.

The university has a number of academics on the New Generation of Academics Programme called "nGAP", launched in 2015 by the DHET to increase the number of black and women academics. It funds academics to pursue their PhDs and to develop their teaching skills. The programme is aimed at new academics as well as assisting existing academics to advance to higher levels, including the professoriate.

#### **Appropriate channels for skilling future leaders**

Prof Leitch does not believe in automatically steering senior academics into management positions, given that some are far more suited to research or teaching and learning than management.

"Staff members who do not want to be managers but who would like to be top NRF-rated researchers need to be supported to achieve this, just as staff members seeking to occupy management positions need to be supported to acquire these skills," he adds.

Most senior staff members in higher education management positions in South African universities have no formal management and leadership training or experience specific to the sector.



To address this, the university is offering short, higher education management courses, and it is leading the Future Leaders Initiative (FLI). This is a pioneering, formal higher education postgraduate management qualification partnership between the DHET, Nelson Mandela University and the University of Bath in the United Kingdom, launched in September 2015. All South African universities are participating in the partnership. The University of Bath is renowned for its postgraduate leadership and management training in higher education.

Two cohorts of 27 senior staff members, one from each South African university and DHET, enrolled in January 2016 and 2017 respectively for a professional Doctorate in Business Administration in Higher Education Management, called the DBA (HEM), through the University of Bath.

The four-to-five-year doctorate is being offered as a part-time, blended learning qualification, with a combination of online and face-to-face lectures at both the University of Bath and Nelson Mandela University.

## Research

The university has been steadily improving its research standing over the past few years. The audited number of journal articles for 2016 is 319.4 units. In total, the publication units (including conference proceedings and chapters in books) increased from 342.1 in 2013 to 398.5 in 2015, which amounts to a 16% increase over the two years.

By the end of 2016, the number of research and engagement entities included four institutes, 16 centres and 18 units. The entities fulfilled their mandates successfully during 2016 by producing high-level outputs in the form of peer-reviewed journal articles, books and book chapters, conference proceedings, masters and doctoral graduates and patents.

The Research Capacity Development Office provides support to both postgraduate students and researchers in building their research skills and capabilities. This is evident in the number of NRF-rated researchers that submitted new and re-evaluation applications during 2016, with four newly-rated researchers and seven having been successfully re-evaluated. We also have a record 15 Thuthuka grant-holders currently funded by the NRF.

Various exciting developments have occurred on the technology and innovation front. Our Innovation Office is currently managing 18 projects (total value R8.5m) funded by the Technology Innovation Agency (TIA). In addition, the number of large international project proposals, particularly to European Union funding streams, has risen significantly over the last year.

The following are some of the research funding proposals that have received approvals:

- City University London/Centre for Broadband Communication (Prof Tim Gibbon), Faculty of Science – £50 000 from Royal Academy of England
- HEDIS project: IT for Sustainability (Dr Brenda Scholtz), Faculty of Science – €500 000 from DAAD



**This humpback whale (*Megaptera novaeangliae*) photographed during a research study in Algoa Bay in 2009 reflects the challenges of maintaining a healthy ocean when facing the growing pressures of global change.**

Image: Dr Stephanie Plön

- Seven bursaries from Armscor for students in the Faculty of Engineering, Built Environment and IT (EBEIT)
- mHealth4Afrika (Mobile Health For Africa) project: Centre for Community Technologies (Prof Darelle van Greunen), Faculty of EBEIT - €3m from the European Union-funded Horizon 2010 Project
- The Centre for HRTEM (Prof Jan Neethling), Faculty of Science – R130m from the DST, Sasol, Nelson Mandela University, DHET and GHO Ventures
- SOLSTICE Project (Prof Mike Roberts), SARChI Chair in Oceanography and Food Security – R160 million from the British Council

The number of external research-related contracts handled by the Innovation Office has risen significantly over the past few years: an increase of 122% in the last four years. All in all, this has resulted in an increase in external funding to the university (linked to special projects and research), from R327m in 2016 to R374m in 2017.

## Faculty of Science: research frontrunner

The Faculty of Science is the frontrunner in research outputs, with more than 50% of the university's total research outputs emanating from the faculty, which is home to six SARChI Chairs and 92 research associates. The faculty prides itself on the fact

that 64% of its academics have PhDs, 28% have master's degrees and 8% other qualifications.

"In 2016, seven of our researchers were rated positively by the National Research Foundation (NRF), adding to its host of NRF-rated researchers and entities that continue to lead the cutting edge of innovation," says the Executive Dean of the Faculty of Science, Professor Azwinndini Muronga.

"With the launch of the Ocean Sciences Campus, more than 90% of the current ocean sciences research is conducted within the Faculty of Science, with the Institute for Coastal and Marine Research (CMR) leading the way.

"The Faculty has also made headway with our *Shaping the Future of Science* engagements. As part of this, we are committed to issues of curriculum transformation, cutting edge research, knowledge generation and engaged scholarship. One of the key challenges facing the Faculty of Science is transformation, and the need to take collective responsibility to embed transformation objectives, indicators and targets in its strategic plans. In addressing curriculum transformation issues, one of the faculty's interventions is to hold discussions towards establishing a *History of Science* programme.

"In order to boost our research publications, the faculty is identifying key research themes to foster transdisciplinary collaborations among academics in the faculty and beyond. We will also need to create more time for emerging researchers to write papers. We will identify new niche research areas where there is already appetite to venture into particular directions.

"Postgraduate-wise, for the year 2016/17, the faculty saw 42 master's students and 26 doctoral candidates graduating in April 2017, compared to 42 master's and 17 doctorates graduating in 2015/16. We are intent on increasing the number of postgraduate students. To achieve this, we need to increase the number of academics with PhDs, and ensure that we have a pipeline of future science students. In 2017 the university received excellent exposure when it hosted National Science Week 2017, driven by the Faculty of Science.

"From 2016, the faculty established a flagship Science Education, Outreach and Communication (SEOCP) programme to facilitate this within the faculty and outside the university. My goal is to see learners from the Eastern Cape featuring among the top Maths and Science learners in South Africa. I want to see our faculty admitting increasing numbers of learners from throughout the province who pass matric with distinctions in Maths and Science. The SEOCP programme focuses on science education from Grade R learners to undergraduate university students, with outreach programmes for learners, teachers and communities across the province.

"Significant successes are possible, and to achieve this we are partnering with a range of educational engagement activities in the province, already being run by various departments within the university. Having worked in Maths and Science advancement for many years, I am motivated by the potential in the Eastern Cape."

## Faculty of Law: transdisciplinary research themes

The Faculty of Law is producing relevant, high-impact research ranging from hate speech to transformative constitutionalism. Faculty members have also focused on disseminating their research findings by publishing in accredited journals and by presenting papers at important national and international conferences.

"The research work of law academics and faculty-linked associates at the university is spread across a range of themes, with many contributions focusing on laws directed towards improving the living and working conditions of vulnerable members of society, safeguarding their interests from human rights violations, or identifying legislative anomalies or lacunae," says the Executive Dean of the Faculty of Law, Professor Avinash Govindjee. "These focus areas are being carried forward by the growing body of postgraduate work produced by students registered with the faculty.

"Many members of staff are immersing themselves in research areas that are new for the faculty, and in work that dovetails with transdisciplinary research themes, including academic contributions and the development of networks relating to marine and maritime law. The Centre for Law in Action, headed by Professor Hennie van As, has established the FishFORCE Fisheries Crime Law Enforcement Academy, with funding from





**The university is taking a transdisciplinary approach at its new Ocean Sciences campus.**

the Norwegian Department of Foreign Affairs. To address the rampant fisheries and related crime, it is building enforcement expertise and strengthening cooperation between agencies, domestically and cross border. Prof van As serves on a panel that includes INTERPOL and the United Nations Office on Drugs and Crime (UNODC).

"The Chair of the Law of the Sea and Development in Africa,

headed by Prof Patrick Vrancken, has given extensive input on the draft Marine Spatial Planning Bill. He also oversaw the publication of the first issue of the *Journal of Ocean Law and Governance in Africa* and updated the *South African Ports Law Handbook*. Importantly, significant progress has been made on a major, multi-authored imminent publication on *The African Union and the Law of the Sea*."

### Faculty of Business and Economic Sciences

The Faculty of Business and Economics Sciences has set off on a course of meaningful transformation, bringing together staff, students, stakeholders in civil society and government, to work on new ideas, concepts and methods.

This includes asking deeper questions about the role of business and economics sciences in society.

The entrepreneurial orientation and transgenerational potential of indigenous African family businesses and factors influencing black consumers' perceptions of financial planning are two fields of novel research being pursued by PhD candidate Tony Matchaba-Hove, a lecturer and researcher in the Department of Business Management.

In economics and development studies the avenues of inquiry range from Islamic finance to food security to the future of work, the fourth industrial revolution, and the protection of the natural environment, including waterways and oceans. The faculty is opening up tourism studies as an active commercial activity, exposing the tourist gaze to the region's historical, environmental, scientific and cultural heritage.

In business, the faculty is looking closely at companies as social entities in a social world, and how to work with business leaders and government to reduce the cost of doing business, and create access for new entrepreneurs, industrialists and innovators. This is pursued in collaboration with the faculty's schools of Management Studies and Industrial Psychology and Human Resources.

The School of Accounting is one of the best in South Africa, and it continues to expand its scholarship and present to the country, the best chartered accountants. In 2016, the Director of the School of Accounting, Professor Houdini Fourie, was awarded a Category C (established researchers) by the NRF.

Transformation-wise, the faculty is mentoring a group of young scholars who stand ready to take up leadership positions through the PhD process and into the professoriate. Transformation cannot be claimed to have been achieved when only the student numbers meet equity objectives; meaningful transformation includes a deep overhaul of the curricula and professoriate.

In 2016 the faculty's Journal for Development and Leadership (JDL) published two editions and a pan-African, Special Student Edition, through the international Southern African Development Studies Association (SADSA). This issue included papers from a SADSA conference that explored local and regional economic issues. The idea for this special issue was to foreground the best or promising research done by younger scholars in Africa.

The JDL was conceived in 2010 by Economics Professor Hendrik Lloyd to serve as an academic vehicle for the dissemination of niche research in the Social Sciences. "The JDL has an average of two editions per year, with eight articles per issue, including four from international contributors outside of South Africa, two from national institutions and two from Nelson Mandela University, with an emphasis on foregrounding the research of younger scholars," says Prof Lloyd.

"We have found that the partnership factor works particularly in Africa as part of our goal is to have a far more prominent footprint on the continent and to focus on development and leadership research throughout Africa."

### Internationally recognised applied research

On 24 July 2015, the Director of Nelson Mandela University's research and innovation group, eNtsa, Professor Danie Hattingh, sent out the following email:

*"After 12 years of contract and fundamental research (3 x PhD and 5 x masters), and about R32 million investment, we have made a contribution that will change the way engineers look at life extension of high value engineering components. We were successful in getting the NMMU/Eskom-developed WeldCore® welding and repair procedure accepted on to the ASME Section IX code. This puts this process on the international front as an accepted procedure for all users in the world. To all who assisted and supported this effort, a big thank you – it has really been a team effort."*

WeldCore® technology has saved Eskom and South Africa hundreds of millions of rands in replacement costs because it is able to significantly and safely extend the life of South Africa's 30-plus-year-old turbines. To replace them costs approximately R250m apiece, with a wait of up to four years to have them custom-manufactured, typically in Germany.

The stamp of approval for WeldCore® by the American Society for Materials Engineers (ASME) marks the first time that the ASME has approved a process from South Africa. Mantacor (Pty) Ltd, a university spinoff company, has been created to take the WeldCore® products and processes to the market.

This is the calibre of applied research and development being produced by eNtsa, currently an engagement institute within the University, launched in 2002 as part of the Department of Science and Technology (DST) technology station programme currently being managed by the Technology Innovation Agency (TIA).

eNtsa's motto is "Innovation through Engineering" and it is recognised as a prominent research, design and technology support unit for the advanced manufacturing sector in South Africa.

"We offer applied research as an engineering consulting service to industry and we are a home for government-funded programmes promoting innovation," says Prof Hattingh.

A born researcher and innovator, Prof Hattingh has had a profound influence on the mechanical engineering doctoral candidates and graduates he has supervised at the university and internationally. He has a reputation for putting them through a trial of fire, where nothing short of extremely high standards and innovative engineering solutions suffices.

"The term innovation refers to new ways of doing things but it is often far too loosely applied. In our field, something new must be substantially different to be called innovative. It must also lead to increased sustainability, efficiency and productivity, as these are fundamental sources of increased wealth and employment."



An example is South Africa's groundbreaking solar charging system for electric vehicles.

After a year of development (2015-2016), a smart grid pilot project for the energy-efficient charging of electric vehicles (EVs) through battery storage and energy management across a network of charging stations has proved successful. The project, innovated by the uYilo e-Mobility Technology Innovation Programme (EMTIP), a national multi-stakeholder programme hosted by Nelson Mandela University, paves the way for a new era of green transport and smart cities, and accelerates the development and commercialisation of South African electro mobility technologies.

The Director of the uYilo EMTIP, Hiten Parmar, who also serves as the Secretariat of the national Electric Vehicle Industry Association of South Africa, is extremely pleased with the breakthrough: "Charging EVs with optimised management of renewable energy is a groundbreaking achievement for South Africa and globally. We are not aware of anyone else who has achieved this kind of outcome, which incorporates demand management and load levelling."

With the software the uYilo team has developed, the green future of energy-efficient charging of EVs is now a reality. Further technology advancements will also include opportunities to be able to transfer power from the EV into the grid or to power people's homes through a bidirectional charger. The initiative around vehicle to grid functionality is already supported by Nissan and BMW South Africa. What this all means is that instead of the energy utility having to increase infrastructure for EVs, this system considerably reduces the load on the national grid.

"Petrol and diesel vehicles are the biggest carbon emitters in the transport sector and the major thrust globally is to use renewable energy as far as possible to ensure that EVs are 100% green; powered by renewable energy sources and not by fossil-fuel-generated, CO2 emitting sources of electricity," says Parmar.

"Within the next five years we are likely to see strict policies coming into effect around energy efficiency and green transport in South Africa. It's already happening globally. Japan today has more electric vehicle (EV) charging stations than fuel stations."

"uYilo is in discussion with suitable partners to exponentially expand and revolutionise the e-Mobility landscape in South Africa and internationally."

### An engaged institution

Nelson Mandela University is conducting a review of its engagement agenda with a view to critically examining how it can link its engagement activities to core national developmental challenges such as poverty, inequality and unemployment.

One such project is the groundbreaking Disease, Activity and Schoolchildren's Health (DASH) study in the Faculty of Health Sciences, which focuses on children's health in poorly resourced primary schools and the effect of common infections on their growth and learning ability.

"Our research shows that children infected with worms and parasites and children who do not receive treatment or proper nutrition experience growth and learning problems, including stunting and lower attention levels. This is one of the issues we are addressing through DASH," says Professor Cheryl Walter.

Through DASH, the children are monitored and guided in terms of diet, exercise, and overall physical and mental development. The programme, a joint collaborative project with the University of Basel (Switzerland) is in its third year and has proved to be a resounding success. It has secured significant international funding from the Swiss-based Novartis Foundation and will be scaled up over the next three years with interventions in the metro across all grades. It will also look at teachers' health and various health risks. The Novartis Foundation is also interested in the project being scaled up by the team for the rest of South Africa and other countries in Africa.



**Renewable energy is a key focus at Nelson Mandela University, including the work undertaken by uYilo which is examining the green future of energy-efficient charging of electric vehicles.**

### The many forms of engagement

Essential to the transformation of universities is the process of engagement in its many forms, as Nelson Mandela University's Director of the Engagement Office, Professor George de Lange explains:

"At Nelson Mandela University engagement is the third, core academic function, along with teaching and learning, and research. Through its engagement conceptual framework, the university recognises four integrated categories of engagement:

- Engagement through community interaction, service and outreach;
- Engagement through professional and discipline-based service provision;
- Engagement through teaching and learning; and
- Engagement through research and scholarship.

"Our vision of engagement is that it should be integrated in all aspects of scholarship and the academic project, and that it should speak to the soul of who we are as a socially aware, academic institution," says Prof de Lange.



## A First for Africa

In a first for Africa scientists at Nelson Mandela University are able to investigate materials down to the atomic level with the only double aberration corrected transmission electron microscope in Africa.

The university's Centre for High Resolution Transmission Electron Microscopy (HRTEM) is the leading facility for advanced electron microscopy on the African continent, and houses a suite of state-of-the-art electron microscopes. Since its launch in October 2011, the centre for HRTEM has contributed to the publication of over 80 peer-reviewed articles. Research at the centre is multi-disciplinary and focuses on the application of high resolution and analytical electron microscopy techniques for the characterisation of strategic materials such as steels and ceramics used in power plants; nanoparticle catalysts and polycrystalline diamond compacts.

"With the HRTEM we are working at the same level as the best laboratories in the world. It has helped us to solve problems that have mystified international researchers for many decades, and it has enabled us to do research on the application of materials like diamond, silicon carbide and platinum and titanium in advanced alloys," says the Director of the Centre, Professor Jan Neethling.

The establishment of the Centre was in response to the urgent need for an advanced electron microscopy facility in South Africa; coupled with the need to develop human capacity skilled in the use and interpretation of modern TEM. "Without the HRTEM, nanomaterials, which are of fundamental as well as strategic industrial importance for the development of new industries, and the commercialisation of innovations, cannot be adequately researched and developed in South Africa," Prof Neethling explains.

Nanoscience has the potential to significantly enhance the properties of a wide range of products. It has already made important contributions to fields such as electricity, computers, cell phones, clean water and air and space travel. The development of nanotechnologies relies on the ability to optimise and characterise materials at the micro- and nanoscale.

In the advancement of knowledge, what is of absolute importance to Prof Neethling is the mentoring of the next generation of physicists: "To increase the number of South African physicists requires that many more learners matriculate with strong marks in Mathematics, Physical Science and English. To achieve this we need teaching to be elevated to its rightful place as a prestigious occupation. To become a physicist you need at least a BSc degree with Physics and Mathematics majors, and Chemistry in second year, followed by postgraduate degrees. Centres like the HRTEM are essential for nurturing physicists and advancing research and the development of high tech industries, which South Africa needs to boost its economy."

Since its launch, the centre has made a significant contribution to human capital development through the provision of electron microscopy support and training to students, scientists, and operators from over 70 institutional departments including local and international universities, science councils and industry clients. Over the last five years, the centre has contributed towards over 200 postgraduate degrees and has provided operator training to over 60 postgraduate students (60% black, 40% female), 11 industry members (Sasol, Eskom, Hulamini) and 22 operators from electron microscopy units across the country including the University of Cape Town, the University of Pretoria, the University of Kwazulu-Natal and Mintek.

A large part of the centre's research success is due to its extensive network of local and international collaborations which includes Hulamini; Sasol; Eskom; the Microbiology and Biochemistry and Mechanical Engineering departments at Nelson Mandela University; the Physics Department at the University of the Free State; the DST-NRF CoE in Strong Materials at Wits University; DST-NRF CoE in Catalysis at UCT; the Mechanical Engineering Departments at Stellenbosch and UCT; the Joint Institute for Nuclear Research in Dubna (Russia); Element Six (UK and RSA); The Ohio State University (US); Oxford University, Manchester University and King's College London (UK); Max Planck Institute (Germany); and Linköping University (Sweden).





**The Centre for Higher Resolution Transmission Electron Microscopy is the only place in Africa where scientists can examine materials down to the atomic level.**

The variety of research-based scholarly outputs produced through the university's scholarship of engagement includes a growing number of books, book chapters, monographs, articles, reviews, papers, presentations, artistic and creative endeavours, policy analyses, technical reports, artefacts, and impact studies.

Some of the faculties and entities that are active in producing scholarly outputs through engagement and collaboration with external partners and knowledge networks include:

- Faculty of Education (Science Mathematics and Technology Education Unit, the Action Research Unit, the HIV and Aids in Education Chair);
- Faculty of Engineering, the Built Environment and Information Technology (eNtsha, Volkswagen International Chair of Automotive Engineering, General Motors Chair of Mechatronics, Advanced Mechatronics Training Centre, Centre for Community Technologies);
- Faculty of Science (InnoVenton, Centre for African Conservation Ecology, Institute for Coastal and Marine Research, Sustainability Research Unit, Centre for Expertise in Forecasting);
- Faculty of Business and Economic Sciences (Unit for Economic Development and Tourism); and
- Centralised entities (HIV and Aids Research Unit, Earth Stewardship Research Institute, Centre for Post School Education and Training).

The Engagement Office has developed a highly efficient engagement management information system to benchmark academic projects across all seven faculties in terms of the university's engagement vision. "We record all the academic projects across the university on the system to examine the impact of all the engagement projects on the university, society and development," explains Prof de Lange.

In response to educational and national imperatives, as well as the deteriorating socio-economic conditions for the majority of

people in South Africa, the Engagement Office is working with Nelson Mandela University academics to increase the number of socially engaged projects, particularly within the financially impoverished communities in the Nelson Mandela Bay Metro and Eastern Cape.

The university is scaling up Science, Technology, Engineering and Mathematics (STEM) development engagements, and community education. This is in line with one of the university's key focus areas on strengthening democracy, facilitated by its Centre for the Advancement of Non-Racialism and Democracy (CANRAD).

Other entities involved in socially engaged projects include the Centre for Community Technologies (CCT), the Centre for the Community School (CCS), the Centre for Post School Education and Training (CIPSET), the Govan Mbeki Mathematics Development Centre and the services offered by the Law Faculty through its Street Law Programme, Law Clinic and Refugee Rights Centre.

"This is part of the growing acceptance by researchers of a problem-driven approach to epistemology and methodology that is characteristic of contemporary scholarship and specifically of engaged scholarship," says Prof de Lange.

The language of engagement suggests reciprocal and collaborative knowledge production that is unique to these forms of scholarship. Engagement requires not only communication with public audiences, but also collaboration with partners in the community in the production of knowledge.

"Most engaged researchers have moved away from acting upon communities to answer a research question or solve a problem. The researcher is now working side by side with communities, practitioners and external knowledge networks to define the questions and methods, collaboratively implement the research and share the findings," says Prof de Lange.



## Big data for sustainability

Water management, energy efficiency, waste management, sustainable mobility, education on sustainability and sustainability entrepreneurship are the six major research- and practice-focused areas being explored by the Hub for Education on ICT for Sustainability (HEdIS).

HEdIS is a collaborative project of Nelson Mandela University's Department of Computing Sciences, the University of Cape Town and Carl von Ossietzky University of Oldenburg, Germany, that is being run over four years and is primarily funded by the German Academic Exchange Service (DAAD). Professor Jorge Marx Gómez is the German project manager for the HEDIS project, while Dr Brenda Scholtz is the project manager for the South African team. From the University of Cape Town, Professor Ulrike Rivett manages her team of researchers and postgraduate students.

The project presents their first Summer School on Innovative Internet of Things (IoT) for Sustainable

Citizens in December 2017. IoT has been earmarked as the key driver of the fourth industrial revolution and the future internet. However, most African countries are not keeping pace with these technological advancements and do not have the skills and research required for IoT. The research undertaken in the HEDIS project involves leading international researchers in this field, as do other Computing Sciences projects at Nelson Mandela University, such as the collaboration with the uYilo e-Mobility Technology Innovation Programme electric vehicle research.

"The HEDIS research has a high potential impact for Africa and the projects bring together multi-disciplinary experts to find big data solutions for critical sustainability issues (such as the shortage of energy and water) in our communities and how ICT can be used to facilitate such solutions," explains Head of the Department of Computing Sciences, Dr Brenda Scholtz.

## ICT for the development of human potential

The work of the Centre for Community Technologies (CCT) is focused on the development of human potential, particularly in disadvantaged, vulnerable and deep rural communities. "Our tool towards achieving this is Information and Communications Technology (ICT)," says Professor Darelle van Greunen, Director of the CCT in the Faculty of EBEIT. Championed by Prof Swartz, the CCT is the first of its kind to be established at a South African university.

One of the projects Prof van Greunen is leading is the mHealth4Afrika (Mobile Health For Africa) project, which is the only European Union-funded Horizon 2020 (H2020) Project that was awarded to South Africa out of seven national submissions. This €3m grant over three years is building a mobile, electronic health record system for patient/client data in public clinics and hospitals in South Africa, Kenya, Malawi and Ethiopia, initially focusing on the records and data for pregnant women and their full pregnancy cycle until the newborn phase.

In South Africa and other African countries, primary and public healthcare records are all still mostly paper-based. The electronic management of records will go a long way towards better and more efficient healthcare management. The maternal health management system will work on any device (laptop, cellphone, tablet, PC) that can access the internet, and it also works without internet connectivity. Nelson Mandela University is partnering with several universities on this project, including Strathmore University in Kenya, Chancellor College/University of Malawi, the University of Gondar in Ethiopia and the University of Oslo in Norway.

If the mHealth4Afrika project is successful, the aim is to roll out the solution to 14 additional African countries, and expand it to include all areas of public hospital healthcare. This project is one of a fleet of ICT solutions that Prof van Greunen and her postgraduate team at the CCT are currently working on. The solutions developed by the CCT are used in both the Eastern and Western Cape provinces of South Africa with a view to expand it to more provinces.

Another of the CCT's community engagement initiatives in Port Elizabeth is the Learn2Code programme for Grade 6 – 8 learners from schools in the Northern Areas. The programme started in February 2017 to teach learners basic programming skills, which enhances their mathematical and problem-solving capabilities. It also aims to foster an interest in STEM careers.

To teach primary school children in under-resourced communities to do basic software coding, the CCT uses fun techniques such as Lego cars with little computers. The young learners are taught to programme the cars to ride around. Young learners are also taught to make their own makeshift kite "drones" and to capture video footage of their neighbourhood from up high. The children have to calculate the dimensions of the kite to ensure it responds to wind velocity and resistance.

Yet another incredible project led by a CCT master's student is to teach deaf primary school learners to do computer programming – there is no syllabus for this in South Africa – and, true to the CCT's track record, it is groundbreaking work.





# Transformation

Nelson Mandela University is committed to bringing the proto-concepts of decolonisation and Africanisation into the academic and broader university system as a core part of redefining the nature, role and purpose of the university in society.

Much work still needs to be done still to develop this social and intellectual process into coherent and workable concepts that open the space for critical discursive approaches, literatures, methodologies and pedagogies to emerge in teaching and learning.

This responds to the DHET's requirement of all universities to have integrated transformation plans covering key areas, notably: governance; institutional culture; language; staff development and equity; curriculum reform; student support; disabilities; complaints; monitoring and accountability; and collaborations. These areas are part of Nelson Mandela University's revised 2018 – 2020 University Strategic Plan as a means of ensuring that transformation is integrated and driven from the highest levels.

Three key avenues in which the university is taking this process forward are:

1. Curriculum and intellectual change: to reinvigorate and drive the current curriculum renewal process across all faculties with a defined set of epistemological and curriculum statements, including issues of social justice, democracy, equality and sustainability, ecological justice, globalisation, technological change and the changing nature of work;

Establishing faculty transformation forums, with students and staff facilitating co-creation of curricula, teaching and learning, research and engagement and innovations praxis, and staff orientation workshops for all academics to embrace the new knowledge and curriculum paradigms, and proper monitoring and evaluation.

2. The university is building on the positive advances of its longstanding Institutional Culture Enlivening Process (ICEP) that is focusing on finding more effective

instruments to deal with various forms of prejudice and discrimination.

3. The university has proposed setting up a prestigious Nelson Mandela Chair of Social Change, which still has to be formalised and taken through the approval process. It would promote scholarship that embraces the challenges of decolonisation, contextualisation, Africanisation and responsiveness in the context of a changing world (marked by globalisation, demographic and technological changes). It would provide analytical pathways across the disciplinary spectrum to enable academics to ground new thinking in alternative ways of knowing and thinking about the challenges of a changing world.

Ongoing work is being done involving the executive deans, faculty representatives, young academics, scholars and students to reposition teaching and learn to reflect the principles, values, conditions, and critical elements of an institutional curriculum framework that will support the university's transformation goals.

There is a need to build on such momentum by drawing on staff and students to "translate" and inscribe these insights into various programmes, courses and modules as an intrinsic part of re-curriculation processes.

All reviews should be subjected to critical scrutiny beyond their technical and professional competency, to demonstrate their social and intellectual assumptions and modes of enquiry, with the aim of sufficiently preparing students to face a world in which critical consciousness and new skills are a prerequisite for democratic citizenship.

## Leading SA in democracy and transformation

"The 'who, what, when, where, why and how' of non-racialism, transformation and emancipation is the reason we launched the Centre for the Advancement of Non-Racialism & Democracy's (CANRAD) in March 2010," says its Director, Allan Zinn.

"These are the pillars of democracy, yet from about 2008 we recognised that there was a rapid re-racialisation taking place



**Prof Derrick Swartz engages with students during the 2015 #FeesMustFall protests.**

in South Africa. Instead of building the nation, which was a vital national call pre-1994, and still is, South Africa started retrogressing into enclaves of ethnicity and nationalism, with grave implications for the development of our democracy.

"As a university we recognised that we needed to create a centre that could confront this by advancing non-racialism and democracy through academic research, evidence-based advocacy, education and targeted interventions."

At the launch, Prof Swartz said that it marked a historic moment in the evolution of university: "It creates the possibilities for making a progressive contribution to contemporary understanding of the non-racial project in post-apartheid South Africa, and at the same time for practically engaging with civil society, especially schools and neighbourhoods, to nurture a multicultural consciousness."

CANRAD's ongoing objectives include:

- Conducting basic and applied research on non-racialism and democracy;
- Initiating projects that critically analyse the notion of 'Race' and the manifestation of racism and its alternatives;
- Strategically facilitating the integration of scholarship and transformative action relating to the advancement of non-racialism and democracy;
- Developing and implementing strategies relating to social cohesion within the university and broader society; and
- Providing an advocacy platform for the advancement of non-racialism and democracy.

Over the years CANRAD has grown into a renowned space where new approaches to emancipation and democracy in South Africa, Africa and globally are explored.

"Politically, for example, we are dealing with issues of xenophobia in South Africa and questioning what it means to be patriotic. Is it possible to be patriotic without being xenophobic? We need to address these questions, not only theoretically, but also actively when we have outbreaks of xenophobia in broader society," Zinn explains.

CANRAD's impact is also experienced on the ground at the university where staff and students are prepared to engage in difficult racial and cultural spaces that many were not prepared to enter before. "We still have a long way to go but the cultural and institutional change is progressing," says Zinn.

Prof Swartz's leadership role in higher education transformation plays no small role in this. In addition to high-level strategy around the transformation agenda, he initiated the university's Courageous Conversations.

The aim of these conversations is for everyone to be able to freely question the Vice-Chancellor and his senior team about pressing internal and external issues and problems. Hundreds of staff members and students attend these sessions and questions about transformation and suggestions for achieving greater transformation dominate the discussions.

To assist the student leadership in being the transformation they want to see, CANRAD members actively engage with the executive of the Students Representative Council each year.

Academically, CANRAD works across disciplines to serve the institution as a whole through its programmes, including focusing on the intersectionality between race, class and gender. It also partners with other South African universities to galvanise the common transformation goal of a better, more equal, respectful and just life for all.





**The university strives to create an inclusive environment in which all students and staff can meet their full potential.**

Given its transdisciplinary nature, CANRAD encourages research partnerships and the sharing of skills and scholars engaged in aligned research. “We have a strong reciprocal relationship with other such institutes,” says Zinn.

CANRAD works closely with the Wits Centre for Diversity Studies (WiCDS) at Wits University, launched in 2014 by its Director, Professor Melissa Steyn who is also the DST-NRF SARChI Chair in Critical Diversity Studies. Professor Andre Keet who is acknowledged as a leading figure nationally in studying, doing and guiding transformation within Higher Education has also recently joined Nelson Mandela University new Chair: Critical Studies in Higher Education Transformation.

### **Institutional Culture Enlivening Process (ICEP)**

The intensive Institutional Culture Enlivening Process (ICEP) is a long-term transformation process, initiated and championed by Prof Swartz. It was designed around Vision 2020 and responds to the institution’s positioning of a transformative institutional culture as one of the apex priority areas.

Using novel social technologies, groups of staff members are engaged in facilitated conversations on difficult issues, including: the identity of the university; the impact of the legacy of apartheid on psyches, workplaces, discriminatory practices and pedagogies; how to embrace the university’s institutional values and co-create a new generation university and institutional culture.

Progress is being made in institutionalising ICEP to sustain the process after the exit of the external lead facilitator, Ilze Olckers, at the end of 2017. Olckers is an experienced South African change and development consultant, who has designed and facilitated the the ICEP at Nelson Mandela University.

Three sets of facilitation skills workshops were conducted in the second semester of 2017, attended by approximately 50 staff members, most of whom had previously attended the ICEP immersion retreats. The aim is to equip them to serve as transformation catalysts and change agents within various domains of the university. The Dean of Students is also in the process of developing a Student Leadership Programme supported by ICEP and making use of the ICEP methodologies and processes.

### **Transformation is a lived experience**

“Transformation is about the whole university community committing to the daily lived experience of a non-racist, non-sexist, equal opportunity transformational culture to ensure we live Vision 2020,” says Olckers.

She has led ongoing university-wide transformational workshops and retreats for the university under the new theme of “Deepening the Conversations”.

“My involvement with Nelson Mandela University started when Professor Denise Zinn, now the Deputy Vice-Chancellor of Teaching and Learning, joined the university as the Executive Dean of Education in 2009,” Olckers explains. “Vice-Chancellor

a deep sense of being heard and seen,” Olckers explains. “At the same time it deepens the speaker’s ability to discern appropriate problem-solving and creative solutions that they were not able to do without the quality of presence the listener provides them in these sessions.

“Through these various processes, academic, professional and administrative staff members and students find their voice and are empowered to challenge knowledge, cultural and leadership traditions that do not represent them or serve them.

The cumulative effect of the multiple engagements led by ICEP at the university are creating what in complexity language is called “emergence”; a tangible emergence of transformational leadership with new innovations and changes increasingly taking place across the university.

One of the departments that have been extremely willing to embrace the process from the outset, is the Finance division led by Executive Director: Finance, Mike Monaghan. Olckers describes them as “star performers”, with over 120 of their staff members participating in the workshops from the first phase.

Olckers adds that it has been “inspiring to see how the university’s top management and many heads of departments have embraced the spirit of innovation for a transformed institution. They serve as important catalysts for others to take up the challenge. This way, resistance and fear starts transforming into engagement and curiosity.

“To give you an example, the then Head of the Department of Mathematics and Applied Mathematics, Professor Eugen Straeuli, invited us to come and work with his team in January 2014,” Olckers explains. “This intervention led to the Director of the School of Computing Sciences, Mathematics, Physics and Statistics, Professor Charmain Cilliers, inviting us to work with the entire school. This intervention, in turn, encouraged other leaders in the Faculty of Science to approach us to work with them.

“When the new Dean of Science arrived he could begin his transformational work with a team that had at least begun to have some of the difficult conversations. It’s an organic process that builds on the momentum of change.”

In October 2017, as part of its Occasional Publication Series, CANRAD published a set of reflections entitled *Deepening the Conversations: Practice Reflections on the Institutional Culture Enlivening Process at the Nelson Mandela University 2013 – 2017*, authored by Olckers.

### **Tell no lies, claim no easy victories**

The transformation process at Nelson Mandela University has taken on a life of its own, sometimes more informed, sometimes reduced to a couple of tweets. It has inspired a wide range of articles, columns and discourses, many of which have been published in the mainstream media, including a column by the university’s Senior Director of Communications and Stakeholder Liaison, Lebogang Hashatse, titled *Tell no lies, claim no easy victories*. It was published in *The Herald* on 20 November 2016 and elicited a great deal of response. An excerpt from the column is included here:

Prof Swartz had been in office for just over a year, since January 2008. His understanding of the complexity of organisational change, together with his commitment to a truly transformative university, created the environment in which we could begin to experiment with deep organisational change.

“The process started with the Faculty of Education as Prof Zinn brought with her a commitment to transformation, based on a liberatory approach to education known as humanising pedagogy.”

Humanising pedagogy advances a reinvention of the principles and practices of education as an essential part of the journey towards liberation and transformation.

Olckers bases her facilitated interventions on social technologies that include disruptive processes, which create the conditions for change to happen, including deep listening, courageous conversations, reflective journaling, rich pictures, storytelling and open space. All are accompanied by selected pre-readings.

The concept of disrupting is about getting people to engage in narratives that are unfamiliar to them and literally disrupt their dominant world view, such as texts that challenge their thinking, writing poems and the deep-listening exercises – where they participate in a timed listening exercise.

“This deep, active listening not only allows the listener to enter into the world view of the speaker, it also mirrors back to the speaker



Amilcar Cabral, whose name, along with that of Franz Fanon and Bantu Biko, invoked since the advent of the FeesMustFall (FMF) movement, has been on my mind. The depth of thought, intellect and strategy of Cabral, as with Fanon and Biko, is the hallmark of their liberation legacy. Yet in this “social media” period, in which profound and substantive historical moments and struggles are told in 140 characters, it has become popular and convenient to reduce significant contributions of revolutionaries like Cabral, Fanon and Biko to ahistorical, acontextual, unrecognisable utterances.

Repeated often enough, with passion and fervour, and necessarily at mass gatherings, the result is that the opportunity to analyse dispassionately and to arrive and adopt the best of strategies and tactics has been lost. This phenomenon has driven the advocates and participants, onlookers and sympathisers, into a forbidding corner, a corner that makes no room for critical voices and positions to emerge.

And so we find ourselves at this ignominious point where a social movement based on a noble cause that promised loads, is at a point at which it is in danger of delivering little. To remind ourselves, the cause seen as noble and just by many, was about correcting once and for all, a higher education system that placed a too high and unfair a burden of funding on the poorer section of South African society, thereby absolving the state and private sector, who are the greatest beneficiaries of the output of the very system, from a responsibility, which, should to a larger and not lesser extent, be theirs.

Also foregrounded and requiring urgent attention was the need to decolonise and transform higher educational content, curricula, the ways in which knowledge is produced, for whom, for what purpose and for whose benefit, and the role universities play in the life of the people of South Africa and on the continent. While the #FMF movement and campaign may not have been fully understood and supported in its early genesis, support for both movement and campaign grew steadily over time, culminating famously in the “zero percent” increase proclaimed by President Jacob Zuma at the end of 2015.

Over the months, the steady growth in support of the campaign, then morphed into a decline, with growing opposition as the strategy changed from “no fee increase” to “no fee higher education system for the poor in our lifetime”, and then to “free, quality, decolonised education for all, NOW”; and tactics changing from robust debates and engagements, to strident and boisterous engagements, to forceful and ‘violent’ enforcement of the campaign.

As the campaign rolled out from campus to campus, the “violent” tactics employed by the FMF movement as a source of power in accordance with revolutionary tactics, allegedly espoused by Fanon, articulated into what the movement proclaimed to be “righteous violence” in response to was seen as institutional and police violence. Within this articulation, we saw black bodies becoming *de rigueur* and a prominent feature of the “no fee struggle”, white students becoming less of a feature, and the racial divides bringing to the fore the politics of race, thereby invoking what was argued to be the Black Consciousness philosophy of Biko.



Students gathered during the #FeesMustFall protests.

Those who critiqued such tactics, attempted to explain what Biko really said or questioned FMF's strategy, instantly became the enemy as the campaign's binaries of us and them, friend and foe, black and white, hardened. In this and through this, the innocence of the movement and campaign was shattered, principled and values-based struggle and ethical leadership was sacrificed and lost.

And so we again return to Cabral, who, writing in his 1965 *Revolution in Guinea* text, emphasised the importance of responsibility and intellectual endeavor amongst liberation movement members: “that they dedicate themselves seriously to study, that they interest themselves in the things and problems of our daily life and struggle in their fundamental and essential aspect, and not simply in their appearance. Learn from life, learn from our people, learn from books, learn from the experience of others. Never stop learning.”

He concludes by reminding his comrades to “...practice revolutionary democracy in every aspect... Every responsible member must have the courage of his responsibilities, exacting from others a proper respect for his work and properly respecting the work of others. Hide nothing from the masses of our people. Tell no lies. Expose lies whenever they are told. Mask no difficulties, mistakes, failures. Claim no easy victories...”



## Improving the quality of operations, infrastructure and support services

“Responsive organisations are continuously engaged in processes of organising, reviewing and transforming,” says the Deputy Vice-Chancellor: Institutional Support, Dr Sibongile Muthwa whose portfolio includes Student Affairs.

Dr Muthwa ends her seven years in this position at the end of 2017 to take up her role as the new Vice-Chancellor.

From 2010, guided by Dr Muthwa, the Institutional Support (IS) team initiated change from within in keeping with the reflective change model whereby there is an ongoing internal drive to improve processes, and introduce new ways of doing things in response to changing times.

Leading organisational change and renewal commentators emphasise that healthy organisations benefit from:

- Creating their own future;
- Easily adapting to change;
- Positioning themselves to take advantage of opportunities for improvement; and
- Encouraging risk-taking and learning from mistakes.

“Change and reflexivity are key pillars in enabling Nelson Mandela University's Vision 2020, and transformation within the institution is as relevant to Institutional Support as it is to the academic projects,” says Dr Muthwa. “This includes the change process elicited by #FeesMustFall and a range of pressing transformational processes, ranging from re-curriculation to holistic staff development.”

One of the key changes Dr Muthwa started implementing in 2010 was to restructure IS to create cohesion between the different divisions. It proved a monumental task, creating a culture of collaboration, with a golden thread linking all divisions. Towards achieving this, she has been supportive of the ICEP and encouraged all IS staff members across her portfolio to participate in this transformational process.

### #FeesMustFall

At the beginning of 2015, Dr Muthwa emphasised that the student fees crisis, if left unaddressed, would lead to protest. The #FeesMustFall came as no surprise to her or any of the leaders of South Africa's universities who had been appealing to government to urgently address this since 2012.

All universities are heavily reliant on government funding through the DHET. For example, for the 2014 period, Nelson Mandela University (then NMMU) received government funding of R771m for its annual operational cost of R1.5bn. All the above puts pressure on universities to increase tuition fees, which accentuates the problem of affordability.

“The range of student funding initiatives, including the government's National Student Financial Aid Scheme (NSFAS), are unable to meet national needs because of the great number of students coming into South African universities who cannot afford the fees,” says Dr Muthwa.

Student need is significant in the Eastern Cape, which remains beset by poverty, unemployment and a lack of education, particularly in the rural areas, combined with retrenchments and jobs becoming scarcer in the key sectors, such as the mining and automotive industries.

“Poverty and indigence is a major problem among our students. Many of them do not even have money for food, which is why we have a vibrant student nutrition programme on campus where every student is provided with one free, decent meal a day,” says Dr Muthwa.

To address its students' needs, Dr Muthwa engaged in a number of initiatives, including a pilot project with NSFAS to proactively work on trying to resolve the range of systems and disbursement issues that have dogged the scheme.

“It has included working on our own internal financial systems to make sure they are compatible with those of NSFAS,” Dr Muthwa explains.



"To assist students caught in disbursement delays, Nelson Mandela University admits students on commitment of funding from NSFAS. At the same time, we are working on a far more streamlined system to avoid problems and delays, including moving our financial aid platform to the student accounts platform, which is now working far more efficiently.

"As a result of this, NSFAS released funding for significant numbers of additional students who were not previously funded as a result of systems mismatches. We have also managed to get NSFAS to fund qualifications such as the BTech, which they did not previously fund.

"The fees issue is a hugely challenging process, but we are getting there and our position as a university is clear: every person with academic ability should have the opportunity to attend university. If they cannot afford it, because of poverty – a situation many families still find themselves in - then it must be free."

Another highly challenging portfolio that Dr Muthwa is managing is student housing. "One of the first tasks I undertook after joining the university was to scope the size and nature of the student accommodation problem," she explains.

"Vision 2020 states that we would like all of our first-year students and 35% of our full-time students to reside on campus. In 2010 only 13% of our student population resided on campus and we have developed a strategy to increase this to 35% by 2020. It's a hugely expensive project as the shortfall amounts to 8000 units or 'beds' as we refer to them.

"Our latest residence has 300 beds but with so many thousands of



beds still to go, the R141 million that we received from the DHET will not nearly cover the shortfall.

"We therefore submitted an alternative proposal to the DHET where, instead of us using the R141 million to build 500 beds, that they rather allow us to use this amount as equity to borrow the amount we need to build 2000 beds," Dr Muthwa explains. To date, this has not been approved.

"In addition, we have put in place a really good policy of accreditation for the standards and norms we require for privately-run, off-campus accommodation for our students." As a result of this, by 2017, 14% of full-time students were residing on campus and another 11% in off-campus student accommodation."

The IS team is also engaged in improving business processes, where all aspects of administration are migrated online. "We are still going to need to run a parallel paper-based system because of the diverse communities we serve where, for example, many students applying to Nelson Mandela University, do not have access to the internet, and therefore cannot apply online. We make sure that they are not disadvantaged by this," says Dr Muthwa.

### **A University is a Small City**

"A university is a small city. Like all cities, the urban design and spatial framework should reflect and meet our 21<sup>st</sup> century needs, now and into the future," says Dr Greg Ducie, Director of Infrastructure Planning and Sustainability.

"Since 2010, with a combination of our own funds and funding from the DHET, Nelson Mandela University has invested over R1.6 billion in infrastructure. This significantly enhances our teaching, learning and research facilities for our 27 000-plus students and our 3 000 academic and non-academic staff members," Dr Ducie explains.

What to finance and for how much is the constant challenge. Nelson Mandela University is acutely conscious of costs and of keeping university fees affordable; this is weighed up against offering students the best possible education and facilities.

In 2011/12 a partnership of South African architects, urban designers, engineers and quantity surveyors, including Dave Dewar, Piet Louw, Tiaan Meyer and Mokena Makeka worked closely with the university's executive management to create the Urban Design Framework for five of Nelson Mandela University's campuses – North, South, Missionvale and Second Avenue in Port Elizabeth and the campus in George.

"The Urban Design Framework lays the foundation for appropriate growth on our campuses, and for sustainable, green development such as our flagship Business School building on Second Avenue Campus, which opened in August 2015," Dr Ducie explains.

The R116m Business School is the first building in the education or public sector to achieve a "4 Green Star design rating" by the Green Building Council of South Africa (GBCSA).

In 2013, Nelson Mandela University's Urban Design Framework



**Images: Protea Residence on South Campus**



received the prestigious International Architectural Award from the Chicago Athenaeum and the European Centre for Architecture, Art, Design and Urban Studies. The entry was the only one selected for the award from Africa.

The Urban Design Framework is part of the university's Vision 2020.

"Urban design, sustainability and spatial management are essential for a functioning, human- and environmentally-friendly university space. To complement the Urban Design Framework, we have developed a Space Optimisation and Utilisation Model," says Dr Ducie.

"From facilities management to foot traffic, we are analysing all usage of space on our campuses as part of managing the university more effectively and more economically. This is all captured on a GIS database."

A major cost is electricity and Dr Ducie's team is working with Prof Ernest van Dyk, the Director of Nelson Mandela University's Centre for Energy Research (CER) to establish the first solar farm on campus to start offsetting some of the university's electricity costs with renewable energy. They are also close to implementing reclaimed water.



**Clockwise from left – Foundation Phase building on Missionvale Campus, the green Business School building on Second Avenue Campus and the new Ocean Sciences Campus.**

Renewable energy combined with retrofits and improved water and energy management plans, play a key role in Vision 2020's sustainability goals.

**2010 – 2013 infrastructure growth**

Since 2010, the university has been one of the busiest building sites in the metro, with long-term infrastructure plans being rolled out according to the Urban Design Framework.

As soon as the first three-year cycle of DHET funding was received in 2010, the university set about building a new library at its Missionvale Campus, upgraded and expanded the laboratories on this campus, and installed lifts and ramps for greater accessibility. During the same funding period, the university built a new link road between its North and South campuses, built new lecture halls, refurbished numerous student admissions facilities and upgraded the ventilation and lighting in its main library and other buildings.

On South Campus the university built the R30m Centre for High Resolution Transmission Electron Microscopy Centre - the most sophisticated building of its kind in the southern hemisphere, housing a suite of cutting-edge microscopes.

On North Campus, several buildings were expanded. On Second Avenue Campus, the library was extended and the old gym was converted into the new home of the university's archives. On George Campus, a new library, new lecture halls and computer labs were built. A new student recreational facility was established and a much-needed upgrade of infrastructure services was completed.



**Transforming campus**

Restructuring the IS portfolio required updating Nelson Mandela University's campuses for 21<sup>st</sup> century requirements, such as creating smart campuses and embedding the pursuit of a sustainable, green university as a managed, monitored process.

"When you visit Nelson Mandela University you should feel that you are in a connected, inspired natural environment," says Dr Muthwa. "Our main campus is, after all, situated in a nature reserve on the coast. We need to accentuate this unique environment and create a strong feeling on campus that you are part of a sustainable, green university that can *change the world.*"



### 2013 - 2015 infrastructure growth

The next three-year cycle of funding saw the university renovate its pharmacy laboratories and built:

- An iconic engineering block;
- The 4 Green Star design-rated Business School;
- Several new residences; and
- A new Human Movement Science Centre, complete with an indoor sprint track for research and a high performance centre.

Two new state-of-the-art buildings completed at the end of 2015 include:

- A R57m Life and Physical Sciences building on South Campus; and
- A R56m Foundation Phase building on Missionvale Campus.

"The completion of these two buildings – both in support of national priorities for more science and teaching graduates – marks a period of exceptional building growth at the university," says Dr Ducie.

### New Priorities for Nelson Mandela University

In the latest round of DHET funding, the university received the necessary financial resources to construct additional residences on campus along with ensuring the necessary maintenance of facilities at the new Ocean Sciences Campus (transformed from the CSIR Campus, which the university purchased).

Dr Ducie adds that there is still much work to be done on campus, including adding to the vibrancy through the creation of student resource centres where students can get together to socialise and relax or work in on-site computer labs. Improved transport and shuttle systems on campus and between the metro and campus are also required, as well as improved management of taxis on campus.



*Clockwise from top – the new Engineering building on North Campus, the new Science building on South Campus and the Library on Missionvale Campus.*







# Financial sustainability

Like all South African universities, Nelson Mandela University is facing an underfunding challenge as it seeks to find sustainable answers to the major areas of under-funding – student financial aid, subsidy and staffing.

The university is effectively trapped between a “fee-freeze” (even with marginal inflationary increases) and subsidy lags falling increasingly behind the real running costs of universities. This comes at a time of stagnant economic growth during the country's post-apartheid history when universities are facing significant expansionary growth pressure.

On the fundraising side, the university has moved considerably forward in setting up a new fundraising mechanism in the Office of the Vice-Chancellor, called the Strategic Resource Mobilisation Office. The university's Trust has been successfully restructured and will now focus on endowment management. In addition, a new Nelson Mandela University Investment Company has been established to seek and drive all major commercial ventures to raise third-stream income.

Over and above this, the existing policies and practices in respect of private work and secondary contracts, as well as the overhead recovery models for short learning programmes, are being reviewed to ensure that the university generates fair return for the use of its infrastructure, facilities and brand. This includes assessing the existing institutional operating model to explore opportunities for improved efficiencies, including scaling up of blended learning and other flexible modes of delivery to provide for learning anywhere, anytime.

## Innovation Pipeline

An important part of the university's financial sustainability matrix is its Innovation Office, started in 2007 and led by its Director Jaci Barnett until 2017 when she took up a position in the United Kingdom. The acting Director is Leoné Nowell.

The Innovation Office facilitates the innovation pipeline of products or processes by Nelson Mandela University researchers from conception all the way through to commercialisation. It is a

demanding pipeline that often requires many years and millions of rands in research and development to take a product or process to market.

The Innovation Office works closely with the university's wholly-owned commercialisation company, *Innovolve*, and its entrepreneurial incubator *Propella*, which supports the development of small businesses in Port Elizabeth, including the university's spin-off companies, with a focus on advanced manufacturing and renewable energy businesses, as well as ICT for industry. *Propella* also has a satellite creative arts incubator based at the university's Bird Street Campus in the hub of the city's burgeoning creative and entrepreneurial precinct.

An example of an internationally successful arts incubated business is the range of Xhosa-inspired knitwear brand called MaXhosa by Laduma® – designed by textile design alumnus, Laduma Ngxokolo.

“The Innovation Office assisted him with manufacture, cash flow and costing, and today Laduma is one of Africa's finest knitwear designers.

An outstanding engineering achievement, developed with the support of the Innovation Office is the pioneering process called WeldCore®, which changes the way that engineers worldwide look at life extension of high value engineering components, such as electricity turbines.

Other examples of innovations supported by the Innovation Office since its inception include:

- A new fuel called Coalgae® - developed from a combination of waste coal dust and algae that could save South Africa up to 40% of its crude oil imports. The brains behind this is the late Professor Ben Zeelie and his postgraduate and postdoctoral team from the research and development institute InnoVenton. It took five years to perfect Coalgae®, and to demonstrate that it can be produced economically and at scale.

- Twerly® - a renewable energy powered streetlight, which provides off grid lighting. Powered by a combination system of a vertical axis wind turbine, a solar panel and rechargeable battery system, it can be used in any public street, including residential areas as the wind turbine is quiet. The innovator is Professor Russell Phillips of the Department of Mechanical Engineering.
- Kelly Dillon - a fashion design graduate of the university who uses her name as the brand identity for an innovative range of knitwear products manufactured from wool and mohair (the Eastern Cape is the centre of mohair and wool production in South Africa).
- Rubber Nano Products - Innovation of a nanozinc-related compound as a replacement for zinc oxide in rubber with considerable benefits in terms of its faster reaction rate and reduced energy use. The main inventor is Robert Bosch who invented a novel zinc replacer as part of his PhD studies in Chemistry, together with his supervisors.

## Financial Performance 2016

The positive results in respect of the 2016 financial year were achieved by implementing immediate and short-term austerity measures. A financial sustainability strategy is being implemented to ensure that recurrent costs are financed from recurrent revenue streams, excluding finance income, and that earmarked reserves for funding five-year capital maintenance, replacement of teaching and research equipment and IT infrastructure plans are maintained.

For 2016, the university received an unqualified audit opinion, which is an accurate reflection of the premium placed on sound financial management and good corporate governance, led by the university's Executive Director: Finance, Mike Monaghan, and his team, and supported by the Finance and Facilities Committee's solid financial management stewardship during these difficult times.

## Capital funding secured for 2016/17 and 2017/18

Despite the difficulties and concerns, the university has been hugely successful in securing new capital funding to the value of R218.5m from DHET for the following purposes:

- Student accommodation – R75m
- Ocean Sciences Campus – R75.5m
- Maintenance – R54.5m
- Priority projects (e.g. ICT, security, disability access) - R13.5m

This funding is in addition to the R150.6m (2015/16) received for the purchase of the CSIR property (R59.5m), maintenance backlog (R24.5m) and towards new student accommodation (R66.6m).

To date, R156.7m of the R218.5m has been received, with the balance to be received before the end of March 2018, dependent on the submission of project implementation plans and satisfactory progress.

Collectively, the faculties and the Nelson Mandela University Trust have worked diligently towards securing external funding and third-stream income opportunities, *inter alia*:

- Faculty of EBEIT, which managed to secure external funding in excess of R3m for the purchase of equipment and for developing mobile applications;
- Faculty of Health Sciences has secured funding from the Eastern Cape Department of Health through the Health Professionals Training and Development (HPTD) grant;
- Faculty of Education is in the process of developing an Eskom-funded School Incubation Teacher Training Programme together with the Business School to be offered to 560 high schools in the Eastern Cape;
- Facilitated by the Trust, the university has secured funding via Absa to provide financial aid to “missing middle students” worth R17m over three years, including R2m for 2016 student debt and R5m for each of the next three years.

Among the key strategic issues going forward are:

- Planning and execution of new infrastructure and efficiency projects;
- Implementation of the Nelson Mandela University branding strategy and sustainability plan;
- Enrolment and access process re-engineering;
- Ocean Sciences Campus refurbishment phases;
- Medical School funding planning;
- New residences/own build model.

## Sustainability and student support

By Mike Monaghan, Executive Director: Finance

Nelson Mandela University is working extremely hard to support its students and simultaneously develop new approaches and avenues to achieve financial sustainability. Towards this, the management teams are collaborating with student leaders in various task teams.

Several austerity measures are in place, including a hold on the automatic filling of vacant administrative posts and cost cutting of non-core operational budgets.

Vice-Chancellor Professor Derrick Swartz has led the university in developing and embarking on a significant sustainability plan that addresses the following key areas to ensure future sustainability and to further support our students:

1. The assessment of all academic programmes with developed models and dashboards from which the executive deans can determine which programmes are not academically viable (such as programmes that are outdated or need to be enhanced or are not financially viable in terms of staff costs and space required). This enables the university to concentrate on what needs to be done to turn these programmes around or replace them with more relevant, viable ones. It includes developing unique offerings such as growing the Health Sciences programmes and launching the unique Ocean Sciences Campus to specialise in ocean sciences disciplines.





**Students, as seen here in building 123, have benefited from the streamlining of organisational structures to optimise the support of the academic structures.**

2. The realignment of the Nelson Mandela University Trust with the university's financial and sustainability needs, including fast-tracking revenue mobilisation strategies and attracting more funding from donors and business;
3. The implementation of a range of cost-saving measures including business remodelling of insourced services.
4. The streamlining of organisational structures to optimise the support of the academic structures.

To support students, some concessions approved for 2017 include exempting the 2016 zero-EFC cohort of students from paying the minimum down payment at registration and allowing students in this cohort to register with outstanding debt. The university has successfully moved the majority of these academically deserving students onto the NSFAS system. Nelson Mandela University is

committed to ensuring that students in this cohort are assisted for the duration of their qualifications, as long as they remain academically deserving.

Students from the missing middle cohort (with a family income up to R600 000 per annum), qualify for an 8% fee grant from DHET. The obligation was on the students to apply for the grant through an online process, and the university assisted students with their applications.

Students require a certain peace of mind financially in order to focus on their academics, complete their qualifications and make way for the next intake of students. While funding for higher education remains in the balance, Nelson Mandela University is gratified to say its well-conceived sustainability plans, led from the front by Professor Swartz for the past ten years, significantly contribute to the university's long-term financial sustainability and success.



## Thank you and go well Prof Swartz

### Incoming Vice-Chancellor, Dr Sibongile Muthwa who served as Deputy Vice-Chancellor: Institutional Support 2010 - 2017

"The past few years, serving under the leadership of Professor Derrick Swartz has been a privilege for me, and I believe for all of us in the Management team. I continuously learned the importance of the bold vision, followed by decisive action as necessary pillars for good stewardship of a successful organisation. What for me, has stood out in his leadership tone is the integrity within which his work was always framed – the integrity of the vision, of the strategy, of team-building, of consultation, of stakeholder engagement – all of which made us want to do better for this great institution.

"Derrick's deep sense of fairness and social justice, and his belief in the indivisibility of human rights, has informed our approach to issues of transformation and change, and our engagement of staff and students. Professionally, Derrick is a touchstone for excellent work ethic. We are honoured to have worked under his leadership."



### Deputy Vice-Chancellor: Teaching and Learning, Professor Denise Zinn

"The first connection I made with Derrick Swartz was as a fellow educator. He has always been interested in the critical pursuit of knowledge. Critical, because knowledge development is critical to our humanness and our progress. But critical also because the inequities and inequalities that have existed throughout history, but particularly in South African society, have made Derrick Swartz an activist.



"I reconnected with Prof Swartz in the higher education environment, after his period of exile, during which time he spent studying, earning his doctorate in the United Kingdom. He was appointed Vice-Chancellor at the University of Fort Hare, at the tender age of 39, when he was requested by Nelson Mandela to take on the reins of leadership, which he held for two terms.

"Derrick has now served two terms at Nelson Mandela University, where his leadership has been both firm and flexible, encouraging experimentation and innovation, criticality, open-mindedness, debate and knowledge creation. It has been an honour to work alongside a human being of such intellect, such gravitas, such a sense of humanity. He is perpetually curious, and critically interrogates and seeks to understand how everything in the world works, from the largest phenomena in the cosmos, to the smallest components of cells, atoms and subatomic particles. At the same time, he has been an unequivocal advocate for social justice, for a humanising pedagogy, for a higher education system that can give access to all students who are keen to learn, to gain, own and create new knowledge, irrespective of their financial status, creed, gender or colour.

"We will miss Derrick Swartz, but he will not be gone. In the words of Pablo Neruda in his poem 'Goodbyes': "It is well known that he who returns, never left."



**Deputy Vice-Chancellor: Research and Engagement, Professor Andrew Leitch**

“For me personally, our Vice-Chancellor has been an inspirational leader, under whom it has always been a singular honour and privilege to work. His professionalism and acute ability to always see the bigger picture has been phenomenal. He has taken our university to new heights in a manner that has attracted the attention of the country and further afield.

“Derrick has always displayed a deep sense of passion and commitment to the poor, to those who remain marginalised, to those for whom life is a struggle each day. He has, with great energy and singular purpose, driven the need for the university to focus on redress and social justice.

“His enquiring mind and his avid reading of literature across all fields including the natural sciences and the humanities have amazed all who have listened to his speeches and reflections – both at public events as well as in small informal meetings and gatherings.

“We owe a lot to our Vice-Chancellor; his influence on the university and his legacy will remain for decades.”



**Executive Director:  
Human Resources: Ntoza Bam**

“I have not had the privilege of working with Prof Swartz for long, having started my career at Nelson Mandela University in June of 2016. However, from the start and during my interview, I was struck by his obvious intelligence as well as his warm and welcoming nature. It was a difficult period for all higher education institutions but Prof Swartz’s manner made me feel comfortable and keen to accept the challenge.

“Having got to know him and to appreciate his guidance and progressive, forward thinking and visionary leadership, has been an honour. He is a humble man who is able to speak to all people from all walks of life. His knowledge of a variety of issues is amazing and his ability to talk with authority on these matters is remarkable. He articulates any situation accurately and clearly, thereby paving a way for solutions - this is appreciated and admired. His leadership in working towards transformation has been hugely effective and he has set a path that will see Nelson Mandela University standing tall, now and into the future.”



**Executive Director:  
Finance, Mike Monaghan**

“The university sector and Nelson Mandela University has been privileged to benefit from the inspirational and visionary leadership of Professor Derrick Swartz over the past decade.

“Our university has seen a significant growth trajectory under Prof Swartz’s leadership, importantly maintained in a sustainable manner to give us the ability to absorb in the short term the impact of the cost and revenue challenges in the higher education sector. It was Prof Swartz who both introduced and spearheaded our sustainability plan.

“As a leader who lives the values of Nelson Mandela University, Prof Swartz is an easy man to follow. But he has been so much more. Personally, he is a mentor from whom I was privileged to learn as he gave clear direction and guidance. Thank you, Prof Swartz, for your significant contribution to our university and to so many of us as individuals.”





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**Content:** Heather Dugmore



**Change the world**

PO Box 77000,  
Nelson Mandela University  
Port Elizabeth, 6031

[info@mandela.ac.za](mailto:info@mandela.ac.za)



[mandela.ac.za](http://mandela.ac.za)