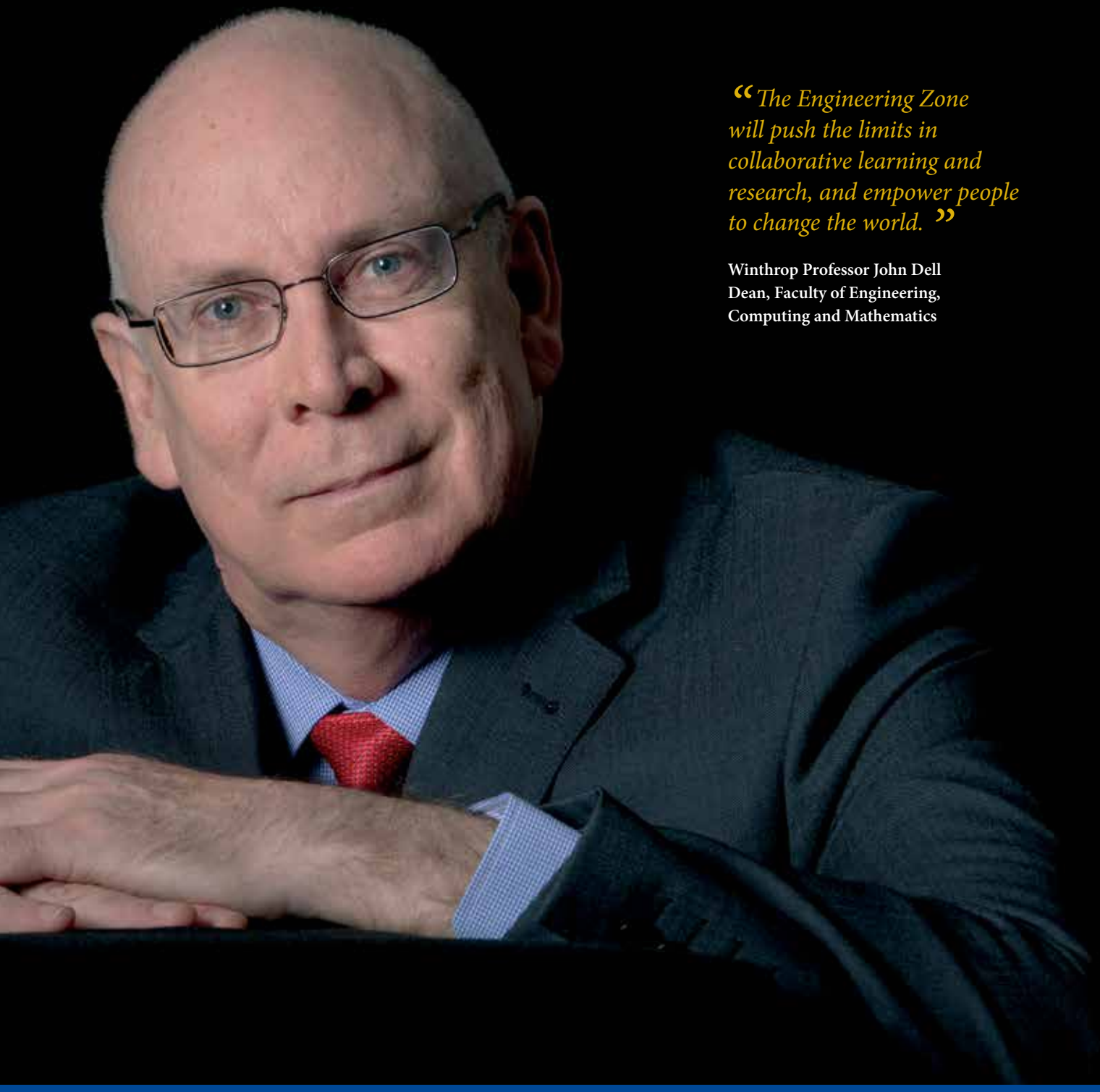

"The Engineering Zone will push the limits in collaborative learning and research, and empower people to change the world."

Winthrop Professor John Dell
Dean, Faculty of Engineering, Computing and Mathematics

Create the future

There is a story told about the drama surrounding the construction of the reflection pond outside Winthrop Hall. On the eve of the Great Hall opening, the pond was not complete. In a flurry of last-minute enthusiasm and ingenuity, students stepped forward to get the job done. Engineering and Science students, all young men, dug the pond and laid the cement while Arts students, all young women, brought food and refreshments. The pond was finished just hours before the debut, with none of the dignitaries in attendance the wiser.

That was 1932 and things at The University of Western Australia – including gender roles – have changed a lot since then. Still, the story lives on, a testament to the resourcefulness, creativity and collaborative spirit that drive this campus. It is a story that will be told again and again, with a knowing smile. It speaks to something Western Australians know very well: *never tell an engineer it can't be done*. They are the can-do people of the world, the problem solvers, the fixers, the shapers and the builders.

There is, perhaps, a more subtle moral to this story. It is that engineers do their best work in collaboration with others. At UWA, we have a vision: to create a space in which the very best engineers will work with the very best mathematicians and computer scientists to solve the greatest challenges facing our world. And there's more. Modern reality dictates that extraordinary solutions will not be found in silos. The problems we face today cross the boundaries of traditional disciplines like medicine, agriculture, architecture and the arts. To solve them, we must cross those lines as well.

The *New Century Campaign* will provide funding toward the creation of a space that transforms our vision into reality. The UWA Engineering Zone is that space: a centre where engineers work hand in hand with the best minds from other disciplines to develop ways of managing precious resources, curing disease and building livable cities. This is a place where students will learn to take a multidisciplinary approach to answering complex questions. It is a revolutionary approach — and it *will* change the world.

Empowering people to

Confronting the world's most complex problems requires the height of creativity and innovation. Never has it been more important to think outside the box. In particular, the nation looks to Western Australia to protect and grow the industries that have become its economic powerhouse. The agriculture, minerals and energy sectors look to UWA for safe, sustainable and profitable solutions to the challenges of remote operations.

UWA's vision is to ensure our campus is a place of world-class expertise, learning and leadership so that we create the very best future for those who rely on us. The Engineering Zone is designed to equip Western Australia and the world with engineers, computer scientists and mathematicians who can solve far-ranging problems that arise in multiple disciplines. A revolutionary research, teaching and learning facility, it will combine the talent, technology and equipment required to make a real and lasting difference.

Based on the overarching principle of collaborative creativity, the Engineering Zone will develop UWA's strong expertise, and create spaces for innovative multidisciplinary education and research. It will enrich Western Australia's engineering capacity and boost our economy, stimulating new business and industries. It will create a prosperous future for all Australians.

change the world

Today's challenges demand a radical new approach that will deliver exceptional technical skills along with a holistic understanding of complex problems and their solutions. The Engineering Zone will attract the world's best researchers, and will allow UWA to cement its reputation as the global leader in engineering for remote operations. In the future, UWA graduates will be the most sought-after of any in the world.

One of the challenges of establishing the Engineering Zone, and all that comes with it, is funding. With the central hub at UWA's Crawley Campus, and other hubs at Shenton Park Campus and Technology Park, Bentley, we will have an unprecedented network of engaging, fully-equipped and open spaces. Building it requires the largest investment in engineering education in Western Australia's history: a $250 million game-changing stake, from multiple sources, that will feed the knowledge economy and put UWA at the top of the engineering echelon.

Winthrop Professor John Dell

Dean, Faculty of Engineering, Computing and Mathematics

We are developing a new way of educating future engineers — one that reflects the challenges facing industry. The Engineering Zone is about providing infrastructure to realise our new approach to teaching and research. Yes, the engineers of tomorrow must have technical depth. They must also have an understanding that projects are much more than technical specifications. They are financial, social and cultural. The most robust solutions come from a multidisciplinary approach. This is truer now than ever before.

The same applies in research. The solutions to societal and industry challenges will no longer come from a single discipline. That is why the Engineering Zone will make interdisciplinary collaboration a standard way of operating, a catalyst for complex approaches to complex issues that go well beyond the fields of engineering, computing and mathematics.

UWA has a reputation for innovation, excellence and industry relevance. Now we need the infrastructure to go further, to push the limits of anything that has been done before. Through the Engineering Zone, we will take the next big step in collaborative learning and research. We are not content to rest on our laurels and we believe there are people out there who want us to take hold of that leadership role and run with it. I believe Western Australia needs that. The country, the world, need that.

The region in which we operate is home to more than 60 per cent of the world's population, with China and India dominating. Massive urbanisation in those countries is raising critical questions about the sustainable delivery of water, energy and food to major population centres, with the producers of these essential resources located farther and farther away. Already, UWA is internationally recognised for our work related to remote operations.

The Engineering Zone will create the infrastructure that supports our mission to *empower people to change the world*. Our aim is to be recognised internationally for the excellence and relevance of our work, ensuring UWA reaches its goal to be a top 50 university by 2050. The true measure of our work will be whether, through education and research, we are able to lead on issues of sustainability, living standards and resource management. The Engineering Zone and the multidisciplinary teams we bring together there, will make sure we do.

Engineering has been at the heart of UWA since its founding and Mining Engineering was one of the foundation professorships. The Engineering Zone will build on our successful history and, at the same time, transform how we work to reflect the economic and social needs of Western Australia and the world. I am proud to be part of the team making this happen and am determined to succeed, for our students, our staff and, most importantly, our community.

Winthrop Professor Mark Cassidy

Director, Centre for Offshore Foundation Systems, and UWA Oceans Institute

Australia's resource boom means our biggest private investments are now in building the civil engineering infrastructure required to transform offshore reserves into liquefied natural gas (LNG). The $43 billion Gorgon project, for example, is the single largest resource project in Australia's history. It is one of $120 billion worth of LNG projects currently under construction off the northwest coast of Australia.

Installing oil and gas infrastructure off Australia's coasts is challenging and costly because of our carbonate seabed soils. In addition, generic Gulf of Mexico and North Sea operating technology do not transition well to our unique soils. These challenges have been the genesis for UWA's Centre for Offshore Foundation Systems.

My research develops practical models for use in the engineering design and assessment of offshore infrastructure, such as oil and gas platforms, seabed foundations, anchors and pipeline systems. I use observations from sophisticated experiments to create simplified, practical design formulas and analysis software.

As an Australian Research Council (ARC) Laureate Fellow, I work with a team to conquer new frontiers in offshore gas extraction, which involves ever-deeper water and more complex and uncertain seabed conditions. The geotechnical foundations and anchors required in these environments are mobile and suffer major transitions during installation and operation. Our team works to enable the safe and economic construction of Australia's next generation of offshore infrastructure, securing long-term energy sources for our future prosperity.

I am passionate about building state of the art physical testing facilities at UWA. We currently operate geotechnical centrifuges capable of accelerating up to 400 gravities. This equipment has been essential in the analysis and design of offshore foundations because the sheer size of offshore engineering structures means you can't perform full-scale physical tests. You need to create small-scale simulations to analyse stability safely and lower the risk of collapse in offshore anchors, pipelines, platforms, risers, foundations and manifolds.

With the help of the ARC, UWA is enhancing Australia's testing capabilities by commissioning a new centrifuge, the largest in the southern hemisphere. We are empowering Australia's knowledge industry and contributing to Perth's growth as an international oil and gas hub. There is intense competition in this area and many of our competitors around the world have the advantage of cheaper engineering labour and local rig-building capacity. Australia must raise its intellectual capital through high-level research, new facilities and by fostering the great minds of the future if we are to lead in this area.

Professor Melinda Hodkiewicz
School of Mechanical and Chemical Engineering

In the last 10 years, the Australian resources sector has invested more than $400 billion in gas, coal, iron ore and other minerals sectors. Delivering a return on this investment requires reliable, efficient operations and equipment. Historically, the sector has relied on skilled technicians who often work in dangerous and difficult conditions to maintain operational assets. We are striving to maintain technical depth and skills.

We are just beginning to explore the important issue of what motivates maintenance technicians to perform the very best work, safely and productively. At UWA, we are looking at how to align maintenance practices with the desired outcomes of safety, availability and productivity. Understandably, this involves a multidisciplinary approach and I work with colleagues in UWA Engineering, Mathematics, Psychology and the Business School, all coordinated through the newly-established Centre for Safety.

These issues of productivity and safety are of paramount importance to Australian industry and, in fact, businesses, organisations and governments around the world. At the moment, there is little research or understanding of the nature of maintenance work, outside of aviation and nuclear industries. Our research will directly inform strategy, policy, training and operations in the real world. It can also be incorporated into teaching at UWA's Accelerated Learning Laboratory and AIM WA•UWA Business School Executive Education.

We are seeing a steep change in how resource assets are designed and operated, with more and more autonomous equipment and remote operating centres. In the future, operators may not be needed but, unless equipment failure is eliminated, skilled maintenance workers will be. Our research will help to anticipate the competencies and organisational processes needed to ensure those workers are available and effective. The maintainers of the future are 10 years old today and their expectations, ambitions and competences will be vastly different from what we have now. Our vision is to shape the work environment so that this next generation can perform at a high level.

Maintenance is an often overlooked part of business and, yet, failure to maintain assets well can have devastating results. Earlier in my career, I worked in maintenance and I have enormous respect for maintainers and what they do. Undertaking research that will keep them safe in challenging but rewarding work environments means a great deal to me. I am excited to be part of the multidisciplinary team that will make a difference in their lives, while improving the productivity of the sectors that employ them.

Tobias Penno

Bachelor of Science student (Engineering Science major),
President of the University Engineers' Club

By the time I was finishing my final year of high school, both of my elder brothers had attended university, one at UWA and one at another university. I had some idea from them of what it was like. Most people are aware of UWA's prestige and its standing in the academic and research worlds. Quite often, one of UWA's most outstanding features is overlooked: student life.

The plethora of student clubs, societies and groups makes the UWA experience stand apart. UWA offers something more. That 'something' is the community of students and a campus that is literally bursting with energy, enthusiasm and a desire to see positive change in the world. I can easily say that what UWA offers for me is a truly holistic experience. I have immersed myself in the campus culture and I do everything from going on trips to teach underprivileged kids basic science, to getting together with friends on campus.

Whilst learning to be an engineer, I have grown as a person. I've gained skills from running the UWA Engineers' Club, one of the many clubs on campus. I've made good friends. I am certain that I will cherish the time I spend at UWA. Through my experience here, I feel prepared and empowered to excel not only in my field, but also to think outside the box and dedicate my time and energies to broader areas of need in my community.

This year, the 93rd year since its nascence in 1921, I have poured all my energy into running the Engineers' Club.

I am extremely proud of our achievements and I never forget that none of it would be possible without the support of the UWA alumni and patrons who kindly donate their money to our University. The UWA community would not be the same without this support: from the infrastructure and land that makes this campus one of the most beautiful in the world, to the clubs and other initiatives that give UWA a special feel and, finally, to the research and teaching which make it a world-class place to learn.

I would like to think that, if I have the financial opportunity later in my life, I will contribute to keeping the campus life at UWA thriving.

We invite you to create the future by supporting the bold and ambitious Engineering Zone vision. Empower the people who will change the world.

Recognising your generosity

The University of Western Australia recognises and celebrates the generosity of our graduates and friends. This proud tradition continues today. We would be delighted to assist you to explore how you can contribute to creating a brilliant future, with and through UWA, in whatever way speaks to you.

For major donors, we are pleased to offer a range of naming opportunities.

We look forward to talking with you.

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