

# BUILDING A BRIGHTER FUTURE

**DEVELOPER :** Murdoch University  
**MAIN CONSTRUCTION COMPANY :** Multiplex  
**ARCHITECT :** Lyons Architecture  
**SUPERINTENDENT :** Donald Cant Watts Cork (DCWC)  
**CONSTRUCTION VALUE :** \$105 million

Murdoch University's Boola Katitjin building is the largest mass engineered timber (MET) building in Western Australia and combines modern sustainable design with world-leading technology. The project includes 21 large flat-floor format teaching spaces, technology-rich labs, extensive informal 'peer to peer' learning areas, workspaces for staff, and new Student Central services with online queuing functionality.

**Murdoch University's Boola Katitjin raises the bar when it comes to mindfulness and connection.** Constructed from glulam and cross laminated timber, sourced from sustainable suppliers in Australia and Europe, Boola Katitjin is the largest mass-engineered timber building in Western Australia, as well as a demonstration of Murdoch's commitment to sustainability, with a 6 Star Green Star rating.

Boola Katitjin features universal accessibility and inclusive design including lifts, ramps and shaded walkways, plus all gender bathroom amenities and a parent room. Along with a technology-rich educational experience, the new building provides students with a place to learn, connect and belong.

Timber remains the hero of this building and a common phrase heard about this building is 'I just want to touch the timber.'

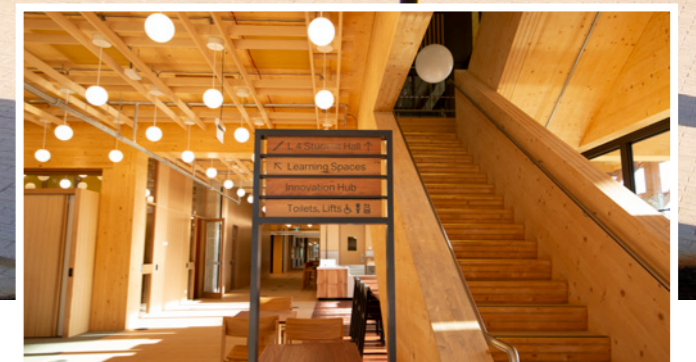
"Which is testament to the philosophy of wellbeing that is at the centre of this project," said Associate Director for Capital Works, Andrew Weston. "This closeness and connection with a natural product means people will actually feel better when they are in the building, and be more productive."

Boola Katitjin incorporates spaces where occupants can spend time engaging with others, inevitably leading to more collaborative teaching and innovative learning outcomes. It aims to attract community members to visit the campus, consequently becoming a contributing element of the precinct by demonstrating the value and importance of well resolved sustainable design principles.

The building accommodates up to 60% of the University's teaching requirements across 16,000m<sup>2</sup>, extending up to 4-storeys high and 180m in length and creating a new connection between Discovery Way and Bush Court.

The Welcome Space has a grand double-height space, contemporary lighting design and unique architecture. The building includes 21





large flat-floor format teaching spaces, technology-rich labs, extensive informal 'peer to peer' learning areas, workspaces for staff, two new food and beverage outlets and a new Student Central services with online queuing functionality.

"When the focus is on the project and not the entities involved, that's where the magic happens," said Andrew. "Across this five year journey, the physical product speaks for itself, but it is the team effort and the collaboration that has stood out amongst so many other achievements."

Robotic technology was trialled in the construction of Boola Katitjin in a world-first project, in conjunction with major partners Aurecon

and the University of Technology Sydney. The building also offers AR and collaborative technology making in-person learning more interactive and engaging for both teachers and students.

The technology also provided one of the biggest challenges. "We have a highly digitally enriched building kicking firsts all over in Australia and in the teaching landscape," said Andrew. "However, there is a global shortage of electronic equipment and acquiring some of the component parts has been a nearly two year journey."

This problem is not unique to Boola Katitjin with so many construction projects and education facilities waiting on tech to be delivered.

"The team have gone above and beyond to get the project ready," said Andrew. "With the delay of some technology arriving for Semester One, we were able to pivot the team to the highest priorities enabling teaching and learning to commence as scheduled."

Boola Katitjin has been an unheralded success, particularly in these COVID-changed times. The building has opened on schedule and within the approved Senate budget, thanks to an outstanding partnership between Murdoch University and Multiplex.

*For more information about Boola Katitjin,* [www.murdoch.edu.au/boola-katitjin](http://www.murdoch.edu.au/boola-katitjin)

**Below** Norman Disney & Young delivered core building and specialist engineering services for the project.

Norman Disney & Young (NDY) a Tetra Tech company, was engaged by Lyons Architects and Murdoch University to deliver core building and specialist engineering services designs for the Boola Katitjin Building. The company's scope included a sweeping range of services across the entire design including Electrical, Mechanical, Fire Protection, Fire Engineering, Hydraulics, Audio Visual, Communications, Security, Acoustics, Vertical Transportation, Bushfire assessment, Sustainability, and a Microclimate study including wind modelling.

"Sustainability was a key focus for the Murdoch University and the NDY team – Boola Katitjin is designed to achieve a 6 Star Green Star Design and As-Built v1.3 rating demonstrating leadership in sustainability on an international scale," said Associate Director, Renee Fourie. "Wind microclimate and thermal comfort studies informed the architectural and mechanical design and enabled the use of mixed mode ventilation to select areas of the project that can operate in natural ventilation for 40% of the year, significantly reducing energy consumption and enhancing the indoor environmental quality."

NDY has worked closely with the architect and façade consultant, through an iterative modelling process, to ensure the building's architecture will passively control solar gains to minimise cooling energy and enhance thermal comfort, incorporating deep eaves to the north, vertical fins to the southern façade, and horizontal fins to the eastern and western façades.

Additionally, the Boola Katitjin structure is the largest mass engineered timber building in Western Australia. Glue laminated and cross laminated timber is a building material produced by glue-laminating planks of timber together and layering them to form a rigid, multi-layered panel. It can be used in building construction to form slabs, walls, and roofs

"Mass timber construction not only reduces new carbon emissions entering the atmosphere but sequesters carbon from the atmosphere as it grows," said Renee. "The overall carbon reduction achieved for Boola Katitjin is world leading."

Mass Timber is becoming an increasingly popular building material for several reasons. Pre-fabricating mass timber panels can provide

an advantage over concrete construction due to shorter construction time, more consistent quality and easier maintenance.

The primary purpose of the project is to provide Murdoch University with state-of-the-art contemporary learning spaces, and NDY were tasked with ensuring the acoustics met the teaching and learning needs of each space, while the lighting created the right feel for specific areas, and the audio visual pedagogy enabled a digital transformation experience for students and lecturers.

"The lack of suspended ceilings created some challenges for acoustics and lighting," said Renee. "We needed to ensure that these systems did not distract from the timber, but rather enhance each space."

NDY designed a raised access floor with a deep cavity to improve the acoustic privacy between levels of the building. The floor cavity was also used for an under-floor air conditioning system, which reduced the amount of services exposed in the open ceilings.

"Using the raised floor cavity for ventilation also helped reduce ambient noise levels," said Renee. "The raised floor panels are relatively heavy and block noise from the ducts below which helps quieten the air conditioning system."

The timber was left exposed on the underside of the high ceilings to reveal the natural materials of the fitout. This exposed timber was partially treated with acoustic panels to absorb sound and reduce the reverberation.

"The combination of these solutions – an access floor, under-floor ventilation, and acoustic panels under the timber beams – came together to deliver all the benefits of a conventional tiled ceiling while allowing the desired architectural outcome," said Renee.

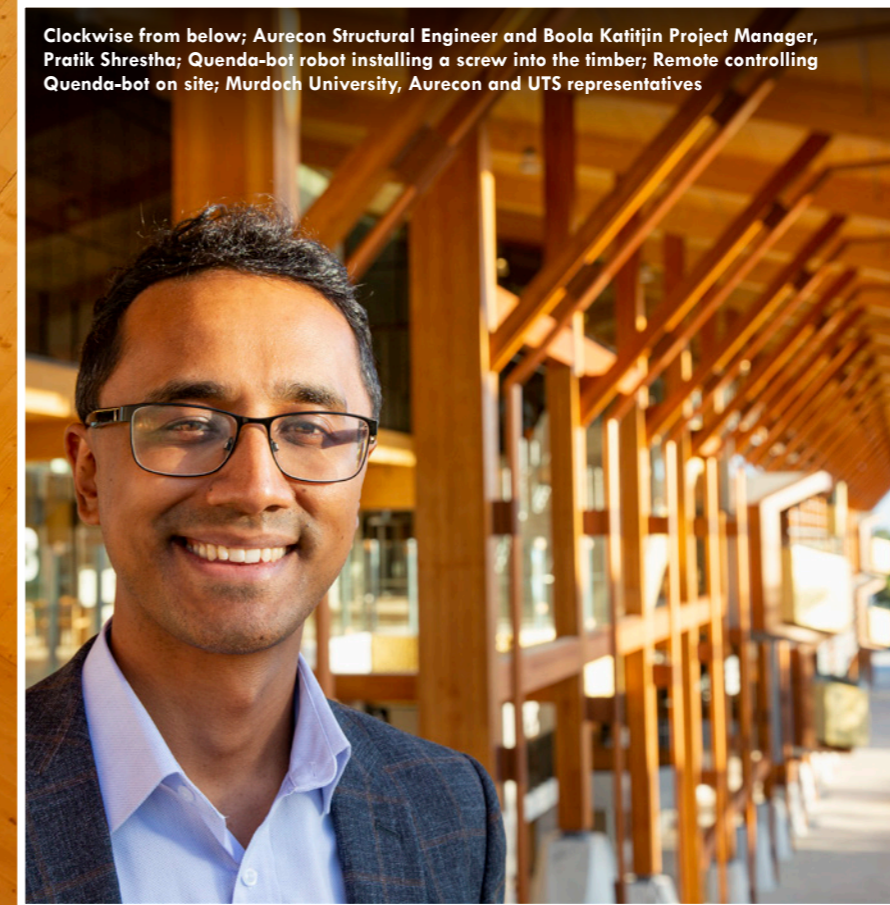
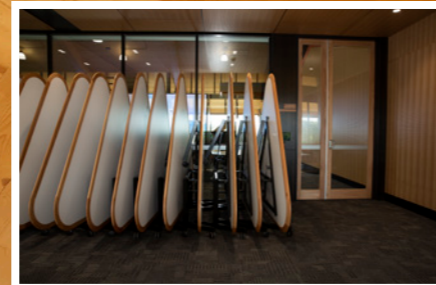
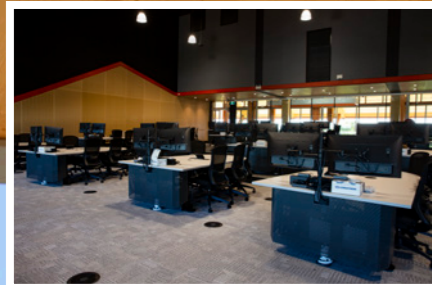
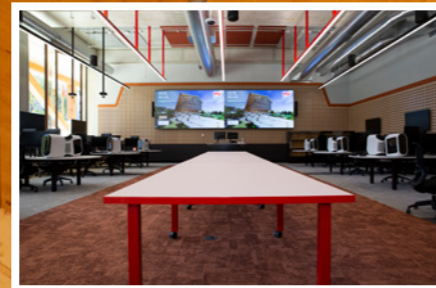
Founded in 1959, NDY provides sustainable engineering solutions that improve the value, reliability and efficiency of projects and the broader built environment. NDY has offices across Australia, New Zealand, the United Kingdom, and Canada.

**For more information contact Norman Disney and Young,** phone 08 9281 6800, website [www.ndy.com](http://www.ndy.com)

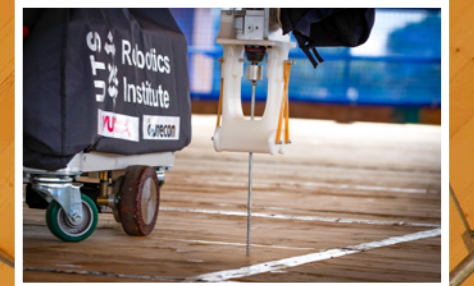


**Below** Australian Office Furniture Systems designed, supplied and installed a range of custom classroom tables for the Boola Katitjin Building.

**Below** Aurecon provided civil and structural engineering for the design of the Boola Katitjin Building.



Clockwise from below; Aurecon Structural Engineer and Boola Katitjin Project Manager, Pratik Shrestha; Qenda-bot robot installing a screw into the timber; Remote controlling Qenda-bot on site; Murdoch University, Aurecon and UTS representatives



**Workspace360 (formerly Australian Office Furniture Systems) designed, supplied and installed a range of architectural classroom tables for the Boola Katitjin Building.**

“It was a collaboration with the university, architects and builders,” said Projects Director, Jaden Crick. “The natural timber theme of the building was carried through into a lot of the furniture pieces.”

Workspace360 maintained their reputation as one of Australia’s premier commercial furniture solutions companies by providing solutions for two problems that no one else could.

“The JTA6C table on Level 4 is a large triangle shape that came with the brief of being able to be flipped up and wheeled around and set up in various configurations,” said Jaden. “Nothing like it existed until we designed and built it.”

The other challenge was in creating a disability compliant table that retained the consistent look and feel of every other table in the classrooms. Workspace360 again came up with the solution and designed an adjustable table that had the consistent and inclusive look the University was aiming for.

The timing of the project was caught in the middle of Australia’s logistics being in disarray which made project delivery very challenging.

“The rail lines were down between the East and West coast at the time we needed to transport the furniture, which increased transport timeframes and put pressure on delivery dates,” said Jaden. “Our team on the ground really went the extra mile to ensure the job got done on time.”

With many other furniture solutions services importing furniture from overseas and selling at exorbitant prices, Workspace360 strikes the balance between architectural high quality, fully functional furniture solutions that give great value for money. Co-owned by directors Laurence Earl and Jaden Crick, Workspace360 brings 20 years’ experience and expertise across the entire spectrum of office furniture solutions.

*For more information contact Workspace360, mobile (Jaden) 0437 980 956, mobile (Laurence) 0439 002 402, website [www.workspace360.com.au](http://www.workspace360.com.au)*

**International design, engineering and advisory company, Aurecon, provided civil and structural engineering for the design of the Murdoch University Boola Katitjin Building, Western Australia’s largest mass engineered timber building.**

Aurecon’s experience in the design and construction of mass-engineered timber buildings, such as 25 King, Australia’s tallest commercial engineered timber building and Monterey Apartments, Australia’s tallest residential engineered timber building - both in Brisbane – meant the team had a wealth of knowledge on which to draw for this project.

The project team is targeting a 6 Star Green Star Ecologically Sustainable Development rating for its use of mass-engineered timber, which has a lower carbon footprint than traditional building materials.

Aurecon also collaborated with Murdoch University and the University of Technology Sydney (UTS), in a world-first robotics technology trial. Conceptualised by Aurecon, the robots were uniquely designed by UTS researchers to install screw fixings. This task can cause fatigue and injury in workers given the repetitive and labour-intensive nature of this work.

Aurecon’s Managing Director, Built Environment, Australia, Tim Spies, said the pilot robotics project showed that by thinking more innovatively the timber industry could lead the way in improving project outcomes across the broader construction industry.

“The project’s immediate objective was focused on proof of concept, to demonstrate the robot’s capability of installing screw fixings in an accurate manner,” said Tim.

“The long-term objective is to prove that the modular nature of timber construction will benefit from the automation of some on-site construction activity, helping to increase productivity, reduce cost, improve workers’ OH&S, and advance innovation in the construction industry.”

Aurecon is an international design, engineering and advisory company, working with clients to tackle some of the world’s most complex challenges.

*For more information contact Aurecon, [www.aurecongroup.com](http://www.aurecongroup.com)*

Below Safemaster designed, manufactured, installed and certified the roof fall protection and access systems for the building.



Below Remington Matters constructed unique furniture pieces utilising West Australian timber species to enhance the internal space.



## INNOVATIVE WORKING AT HEIGHT SOLUTIONS

Safemaster has a solid reputation within the height safety industry for its technical knowledge, rigorous standards and fresh approach which was well utilised during their involvement in the Murdoch University – Boola Katitjin project.

Safemaster designed, manufactured, installed and certified the roof fall protection and access systems to ensure continuous maintenance works in safety.

The installed systems include X-ERT surface mount anchor points, X-CELERATE static lines, SLIPNOT walkway with FALLNOT guardrails and SKYCLIMB step ladders and staircases.

“The highlight of this project is the kilometre-long SLIPNOT levelled walkway system,” said Project Manager, Rob Quartermaine. “As well as the 175m long staircases with guardrails on both sides. The outcome is that all areas of the roof have been made fully accessible.”

Safemaster’s unique SLIPNOT Walkway Systems are an ideal solution for a lightweight, non-corrosive and anti-slip surface to protect the roof sheeting from unnecessary damage, while preventing against fall hazards.

“The main installation challenge was the narrow roof space and steep pitch,” said Rob. “But we were able to prefabricate the walkway support batten to suit the conditions and extra laborers were deployed to ensure the project met the deadline.”

Safemaster has been providing height safety equipment and roof safety systems since 1995 by successful consultation, design, manufacture and testing, supply and installation, as well as certification of a range of safety products that are not only user friendly but also meet the most stringent Australian Safety Standards.

Whether you simply need a reliable supplier of height safety equipment or a professional audit and consultancy service for your project, Safemaster can help you.

For more information contact Safemaster, 31-33 Catalano Road, Canning Vale WA 6155, phone 08 6243 3111, email info@safemaster.net.au, website www.safemaster.net.au

Multi-disciplinary design and production studio Remington Matters (RM) created a range of furniture for inside and outside the Murdoch University – Boola Katitjin Building.

RM built and supplied 139 bench seats, 89 stools, 86 tables and some custom cladding. RM also collaborated with The Fulcrum Agency to create the imposing and unique table constructed from four West Australian timber species with an organic shape covering some 40m<sup>2</sup> in surface area that is in the Welcome Space.

“Lyons Architects came to us with drawings for each of the pieces and we worked with them to ensure each piece would work structurally and suit the profile of the timber available,” said Director, Angus McBride.

RM became involved in mid-2022. Most of the timber came from east coast plantations and then went to RM’s Adelaide workshop where the joinery was done, and the components were made ready for assembly.

“That amount of solid timber joinery is very time consuming in terms of getting it all machined down and dressed up ready for the final

processes. There is a great deal of repeat joinery with a large focus on setting up to smooth the process,” said Angus. “Thankfully, we have that down to a fine art.”

Everything was then shipped to Western Australia for the Perth team, who completed the steelworks for all the frames, and then assembled and oiled every piece before delivery.

Remington Matters are currently working on their furniture range and its accessibility to architects, interior designers and builders.

“We’ve worked in the custom furniture space for a while and our products are unique, original and Australian made,” said Angus. “We want our range to be the go-to for high end commercial settings and still be suitable for residential.”

For more information contact Remington Matters, 2/6 Brockman Place, South Fremantle WA 6162, phone 0439 040 932, email angus@remingtonmatters.com, website www.remingtonmatters.com



## Boola Katitjin Building at Murdoch University

Property Fire Maintenance are experts within the passive Fire Industry and are passionate about installing solutions to ensure compliance to **Australian Standards in Western Australia**.

Managing Director, Gary Colliver said "We supply and install a wide range of Passive Fire protective solutions to prevent loss of life and property in the event of a fire. The passive fire products installed are tried, tested and trusted to contain a fire and protect the buildings structure."

PFM work closely throughout the projects with its shareholders to ensure the correct solutions are installed as tested.

PFM supplied Intumescent coating to the structural steel supports for this predominantly Timber structure.

Gary added that despite the steel element requiring protection was small in comparison it still requires a level of attention to detail to ensure performance is achieved in the event of a fire.

PFM have worked on some of Perth's most iconic projects with Multiplex and look forward to building on their relationship in years to come.

**Optus Stadium | New Museum Perth | 1 The Esplanade 6150 - Murdoch | The Grove | Joondalup Health Campus ECU Perth**



**A building as outstanding as Boola Katitjin requires outstanding signage and Perth-based Focus on Signs delivered, providing all of the internal and external signage, as well as the signs in the surrounding area.**

"Every sign is bespoke and handmade," said Managing Director, Michael Crookes. "We had to source the wooden slats that matched the timber used in the building as well as so many other components. The result is absolutely fantastic."

One of the biggest challenges for Focus on Signs was the 13-tonne precast concrete sign that forms the 'MU' out the front of the building. In collaboration with AUS Precast they designed and constructed the piece. "It was a little out of our comfort zone, but we made it work," said Michael. "We used two 80-tonne cranes to put the pieces in place, screw the parts together and then paint the finished structure."

"Everyone involved in this project put in a massive effort and the result is so rewarding. Everything looks amazing," said Michael.

Established in 1999, Focus on Signs is a Western Australian owned and operated signage manufacturing company, specialising in the

design and construction of illuminated and non-illuminated signs. All production is done inhouse at their purpose-built 1,000m<sup>2</sup> workshop in O'Connor, WA. Their experienced team can take on any challenge, including graphic design, CNC routing, plastic and metal fabrication, LED lighting, 2Pac spray painting, large format digital printing, and installation.

"Being a one stop signage shop allows us to control all aspects of manufacturing to deliver a professional and seamless service with high quality products," said Michael. "Everything we do is 100% Australian made."

With more than 40 years experience and a passion for signage, Focus on Signs can tailor a solution specific to your needs.

*For more information contact Focus on Signs, Unit 3 / 4 Adams Street, O'Connor WA 6163, phone 08 9303 4277, website [www.focusonsigns.com.au](http://www.focusonsigns.com.au)*

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**PROPERTY FIRE MAINTENANCE**

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"The cost of doing it right, will always be cheaper than doing it again"