

NTR O

NATIONAL TRANSPORT
RESEARCH ORGANISATION



arrb GROUP LTD

Annual Report

2022 - 23



NTRO



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Picture: Peter Woronzow, Chairman, NTRO

Chair Report

I am pleased to present NTRO’s Annual Report for 2022-23 – a year in which ARRB Group Limited recorded a fourth successive positive financial result, achieving a surplus and maintaining financial self-sustainability.

In the financial year 2022/23 ARRB officially became the National Transport Research Organisation (NTRO), this is a great achievement which highlights the strength and diverse skills that NTRO’s staff possess as the organisation continues to help solve Australia and New Zealand’s transport challenges for its Member Agencies and stakeholders.

I would like to acknowledge my fellow directors for their work over the past 12 months, and Chief Executive Officer Michael Caltabiano and his executive team for shifting from a roads-based entity to one that works holistically across all modes of transport.

Throughout Australia and New Zealand, road agencies have transitioned to transport agencies. ARRB’s adaptation to that reality as NTRO means it can work across not only roads, but airports, ports and rail projects – reflecting the breadth of work of our stakeholders.

In my own state of WA, NTRO has done important work in the airport space surveying the State’s regional airport runways and will be involved in the Westport Program – the WA Government’s long-term plan to plan and build a world-class port and associated supporting transport infrastructure.

NTRO continues to deliver excellent benefit cost ratios across its joint initiatives and partnership programs, such as the WARRIP in WA and NACOE in Queensland. With new partnerships in New Zealand next financial year and more work coming online in both Victoria and South Australia with their transport agencies, those agencies can expect to see similar benefits for their transport networks as a result of NTRO’s cutting edge research and prioritisation of important programs of work.

Sustainable future transport, and better environmental outcomes when building new infrastructure, is critical for all of us. NTRO is doing important work in the sustainability space and its continued and growing focus on ESG, the circular economy, net zero emissions and decarbonisation of the transport network will be of major benefit to clients, and the Australian and New Zealand communities.

While there is a focus on all modes of transport, road safety remains a core tenet of the organisation. Nationally, more programs are emerging to ensure safer roads, especially in regional and rural areas. NTRO is also working with Local Government agencies to ensure they can make the most of these opportunities for safer, better, more resilient road links – vital to these communities.

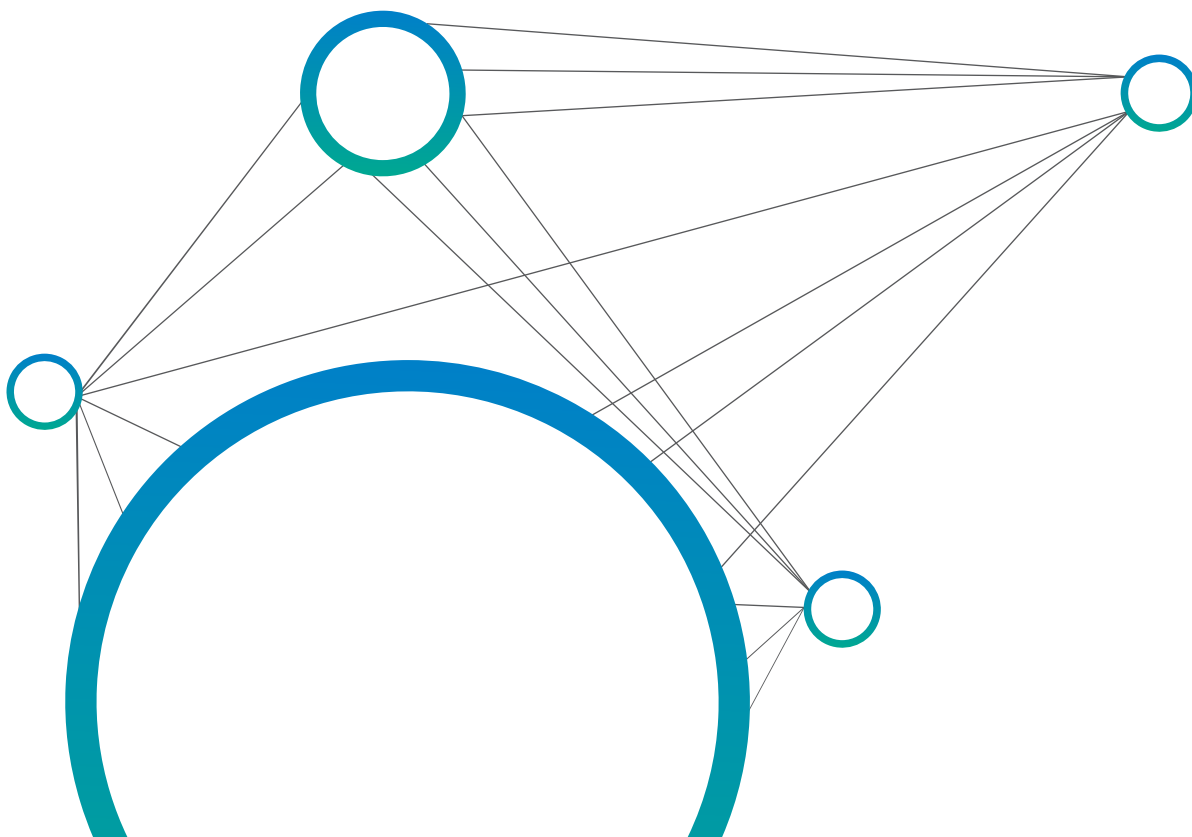
This work will only be accelerated with the Federal Government’s recent inquiry into the state of regional rural roads following recent severe weather events and a report expected back early in the 2023-24 financial year. NTRO has played, and will continue to play, a major role in the build-back of more resilient road assets following the widespread damage caused by the severe weather events in 2022 across Victoria, NSW, SA and WA.

My sincere thanks to the rest of the NTRO Board, the executive team, and the staff for their outstanding work and commitment to making NTRO a nimble, responsive organisation proudly shaping the transport future for all Australians and New Zealanders.

I look forward to another productive year for the organisation helping its Member Agencies in 2023-24.



.....
PETER WORONZOW
CHAIRMAN





Picture: Michael Caltabiano, Chief Executive Officer, NTRO

CEO Report

ARRB's transition into a fully mode-agnostic transport organisation to help our stakeholders to meet the transport challenges of tomorrow, has been completed as the organisation completed another successful financial year.

In 2022-23 we welcomed the National Transport Research Organisation (NTRO) brand, created and built on the 63 years of history of the Australian Road Research Board combined with the decade-long work of the Australasian Centre for Rail Innovation (ACRI) to better serve the Transport Agencies across Australia and New Zealand and the private sector.

ARRB has now transitioned to NTRO. As NTRO, we have delivered more than \$50 million in revenue for the first time in ARRB Group Ltd history – and the organisation is now established across road, rail, ports and airports.

The journey from ARRB to NTRO started in 2017 has been a period of skills development and detailed planning for our organisational future. In the 2022-23 financial year, a rush of new opportunities and new clients for the future has helped us to a fourth successive year of profitability for the business.

This has been achieved on the back of a very successful Infrastructure Measurement record year of delivery across Australia and New Zealand, serving Member Agencies in a routine fashion as well as supporting extensive flood recovery efforts in New South Wales and Victoria. Our Intelligent Pavement Assessment Vehicles (iPAVE) were in demand across Australia and New Zealand supporting the post-flood rebuild in northern Victoria and NSW. Our organisation is investing in a fourth iPAVE, and we expect that this will be operational early in 2024.

NTRO will become the portal through which Australia and New Zealand's transport research is conducted. This is the place where our international group of staff will partner with clients to develop solutions for tomorrow's transport challenges. We have ushered in a new era of collaboration with the University sector, private sector and international partners to bring to life new insights across the transport sector.

Our message around solving transport problems in a totally mode-agnostic way is being well received as we seek to undertake work across the spectrum of our skills to match industry and government needs.

NTRO was officially launched at our Port Melbourne headquarters in December 2022. Key to the launch was the commitment by Agency representatives, key stakeholders from the private sector and our international collaborators that they were committed to the success of the organisation and the mission of being at the centre of transport innovation in Australia and New Zealand.

Our new team of Executive Directors in Road, Rail, Ports and Airports are in place and ready to partner with our clients, new and old, to be the portal for the development of practical solutions for the transport sector.

We have commenced the journey to develop a new and ground-breaking strategic plan 2024-2027 that will define the research and development needs for our organisation, guided by the grand challenges faced by the Australian and New Zealand communities reflected through our Member Agencies.

NTRO's successful partnerships provide significant programs of work with our Member Agencies and continue to develop and deliver results with positive double digit benefit-cost ratio outcomes.

Both the Western Australian Road Research Innovation Program (WARRIP) and National Asset Centre of Excellence (NACOE) in Queensland have received multi-year extensions. They continue to provide excellent benefit-cost ratios for both the WA and Queensland Governments.

In addition to these programs, we have developed very strong partnership agreements with the Department of Transport and Planning in Victoria and the Department of Infrastructure and Transport in South Australia that are delivering real savings to agencies in the way in which work is developed and delivered on the ground. We have also added a new joint initiative in New Zealand, working with Waka Kotahi (NZTA). This was signed on June 30, and takes effect from the start of the new financial year.

In 2022-23, there has been wide political interest in what the NTRO is doing and the results we are achieving. We have had many visitors from Federal, State and Local government elected Members to our state-of-the-art transport research laboratories in Melbourne. All have been impressed by the work we are doing and the diversity of people and skills delivering this work.

In March 2023, I appeared before the Parliamentary Inquiry into the effect of severe weather events on our regional and rural roads to articulate not just the problems that are being experienced but some of the solutions that are available to support Local Governments to build and maintain more resilient infrastructure.

The House of Representatives Standing Committee visited our Port Melbourne facility recently to see our work first-hand. There is a clear role for the NTRO to play in supporting the provision of safer, more resilient, sustainable transport infrastructure as we build back following the severe weather events of late 2022 around Australia and in New Zealand.

The Australia and New Zealand Driverless Vehicle Initiative (ADVI) has been a wonderful vehicle for both ARRB/NTRO and the connected and automated community throughout its time. We took the opportunity to reset our presence on the journey to a safe, successful transition to a connected and automated transport future. The Centre for Connected and Automated Transport (CCAT) was launched by NTRO this financial year as the step-change towards this goal.

CCAT's aims are to support appropriate infrastructure development, provide a hub for policy and ideas exchange, promote the community benefits of driverless technology and identify the safety benefits, establish uniform standards, and engage government, industry, and policy groups towards the safe, successful move to our connected and automated future.

NTRO is also establishing itself as a provider of transport solutions for our defence forces. A renewed focus on national security and NTRO's successful leader-follower project with the Australian Army has led to more discussions about how we can support our nation's defence forces.

The great diversity of skills and abilities of our people brings a diversity of ideas to shape our transport future. We are seeing that in the outcomes being achieved for our NTRO Members and clients as we develop new solutions to the challenges we face.



.....
MICHAEL CALTABIANO
 CHIEF EXECUTIVE OFFICER





ARRB to NTRO

For more than 60 years, the Australian Road Research Board (ARRB) has been the source of independent expert transport knowledge, advising key decision makers on our nation's most important challenges for all aspects of roads and transport.

As road agencies have become transport agencies in Australia and New Zealand, our 'integrated' transport research, innovation and experience has been increasingly sought to drive innovative outcomes across rail, ports and airport projects. ARRB's transition into the National Transport Research Organisation (NTRO) has allowed us to formalise our offerings across all modes of transport.



Rail

NTRO Rail is Australia and New Zealand’s first dedicated innovation and solutions hub providing practical, implementable solutions to the rail sector’s challenges. NTRO Rail has dedicated expertise complemented by specialised rail safety expertise in heavy haul, level crossings, passenger rail and freight rail.

Ports

NTRO Ports offers policy, research and project-related services to port owners, operators and government at all levels. We provide engineering services and our offerings extend into sustainability/ ESG, master planning, energy/fuel transition including green corridors, freight and supply chain corridors management, digital technology and environmental management services.

Airports

NTRO Airports helps governments and enterprises manage airfields and land holdings across Australia and New Zealand.

NTRO offers the airports sector:

- Airfield pavement rating and pavement maintenance plans
- Pavement design and certification – both rigid and flexible pavements
- Emerging technology for the airports of the future to future-proof existing airport operations, maintenance and capital works
- Sustainability / ESG Advisory Services
- Master Planning Advisory
- Connected and automated vehicle certification and safety plans within the airport precinct, land side and aircraft side
- Testing and certifying marginal materials for use in airfield pavement construction in remote communities and throughout the Pacific region
- Designing for alternative fuels - generation and storage facilities

The image shows the NTRO logo in a large, white, sans-serif font, centered over a background of a blue and white Earth horizon against a dark starry space. The logo is partially overlaid by a semi-transparent blue circle. In the top left corner of the image, there is a grid of small white dots.

NTRO

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Empowering Change

The National Transport Research Organisation (NTRO) has, as a forward-facing team, a group of highly skilled and deeply talented people introducing the NTRO to clients across Australia and New Zealand.

Jeff Doyle, the NTRO Executive Director, Infrastructure Measurement, since July 2021, was elevated into the role of NTRO Executive Director, Roads in 2022 and holds both roles driving new knowledge across the Australian road system.

Mr Doyle is the former Chief Executive Officer of Altus Traffic and the Adecco Group (Australia and NZ). He had led Altus Traffic for six years before coming to ARRB/NTRO, and previously led recruitment giant Adecco as CEO of its Australia and NZ operations. He also held senior leadership roles at Adecco before his elevation to CEO, and office supplies company Corporate Express.

Jason Sprott was appointed Executive Director of the combined Ports and Airports portfolios.

Mr Sprott is an environmental planning, sustainability and major projects professional with nearly 30 years' experience – 21 years of which is in the ports industry. He comes to NTRO from an environmental planning consultancy firm, which has been involved in writing national guidelines, master planning, major projects, sustainability and policy tasks.

Mr Sprott holds both a Bachelor of Urban & Regional Planning and a Master of Science (Environmental Management). He has also recently completed Executive Education with Cambridge University in Business Sustainability.



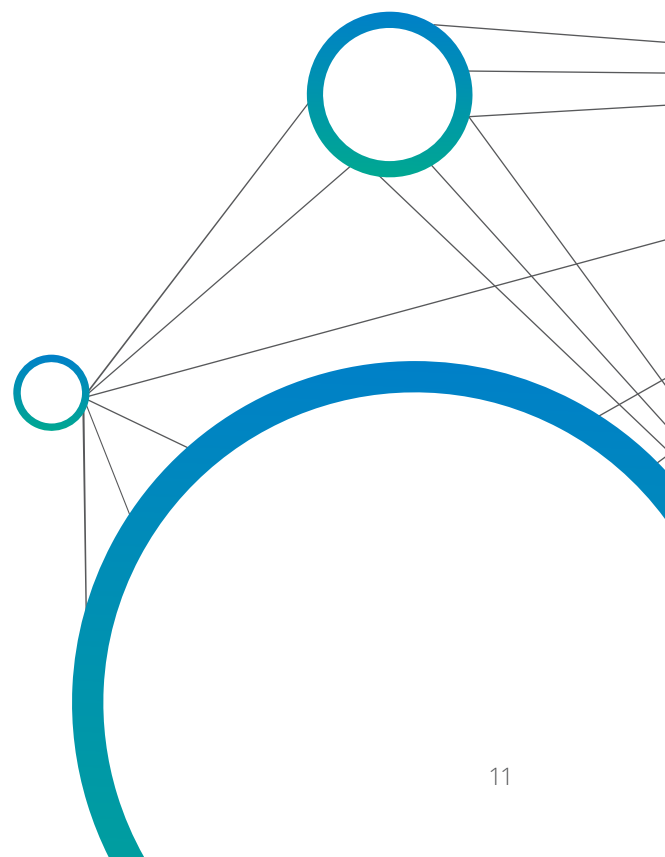
Left to right: Jeff Doyle, Jason Sprott and Natalie Loughborough

Experienced transport executive Natalie Loughborough has been appointed to take over the Executive Director, Rail, role in the new financial year from former ACRI Chief Executive Rob Moffat. Mr Moffat finished up as NTRO Executive Director, Rail on June 30, 2023.

Ms Loughborough has deep experience within the transport sector, both overseas and in Australia. She has worked for operators in the UK such as First Group, Serco and Abellio, in addition to local government bodies such as Transport for Greater Manchester. Natalie also brings experience working on rail and metro projects in the Middle East.

Ms Loughborough was Managing Director with Transdev in Queensland, responsible for its bus and ferries businesses, and most recently has been General Manager at Metro Trains Melbourne.

The three Executive Director roles report to NTRO Chief Executive Officer Michael Caltabiano.



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Our Board



PETER WORONZOW
CHAIRMAN

In November 2021, Peter Woronzow was appointed to the position of Director General – Department of Transport WA, which also sees him hold the concurrent roles of Chief Executive Officer of the Public Transport Authority and Commissioner of Main Roads. Peter had been undertaking the role of acting Director General since March 2020. Peter is responsible for setting the strategic direction of Transport for the State of WA, shaping the development of all major integrated transport plans and leading the implementation of some of WA’s most transformational capital projects such as METRONET and Westport. Prior to his appointment as Director General, Peter held the role of Managing Director Main Roads since 2016. Peter is a member of CPA Australia, Chairman of the ARRB Group Board, Director on the Board of Austroads Ltd, and is an ex officio Board Member of Infrastructure WA. He is also a member of the WA Planning Commission and the Road Safety Council of WA.



NEIL SCALES OBE
DEPUTY CHAIRMAN

Neil Scales OBE has worked in the transport industry for over 40 years and has extensive knowledge on all things transport, engineering, change management, and leadership. Most recently, he was the Director-General for the Queensland Department of Transport and Main Roads for 10 years, and has previously worked as Chief Executive of Merseytravel in Liverpool England and has consulted with the World Bank and the European Commission. With a strong commitment to mentoring the next generation, Neil has also previously taught at the Open University, has guest lectured at many universities and currently advises on other relevant boards, providing valuable knowledge and insight.



HON JOHN ANDERSON AC
BOARD MEMBER

The Hon John Anderson AC was the Deputy Prime Minister of Australia for six years, and is a former leader of the National Party. He served as a member of the Federal Parliament for nearly two decades. He is a former Transport and Regional Services Minister, remains active in the not-for-profit sector, and is a sixth-generation farmer. Mr Anderson joined the ARRB Group Board whilst being the Chair of the Australasian Centre for Rail Innovation ACRI organisation and successfully merged that organisation into the NTRO on the 30 June 2023.



KEVIN REID
BOARD MEMBER

Kevin Reid is currently a Chief Advisor at Waka Kotahi, the New Zealand Transport Agency. He is a Chartered Civil Engineer with over 35 years experience in the transport sector in New Zealand, the United Kingdom and the Caribbean.



STEPHEN TROUGHTON
BOARD MEMBER

Stephen has experience managing businesses in Australia, the United Kingdom (UK) and the Middle East with extensive technical expertise in major infrastructure delivery and property development. He is a Fellow of Engineers Australia and a Graduate of the Australian Institute of Company Directors (AICD). He has previously held senior roles at Main Roads Western Australia, Transport for NSW, Cross River Rail Delivery Agency and Transgrid.



LOUISE MCCORMICK
BOARD MEMBER

Louise is the Northern Territory Infrastructure Commissioner, charged with actively pursuing investment and driving major projects in the NT. She is an Executive Engineer, Chartered Fellow and Senior Civil Engineer with more than 20 years' experience in the public and private sectors. Louise is the former General Manager of the NT Government's Department of Infrastructure, Planning and Logistics Transport and Civil Services division, and is a Fellow of Engineers Australia chartered in Civil, Structural and Executive Engineering. . Louise is also the Chair of the AustRoads board



NICK MARINELLI
BOARD MEMBER

Nick brings extensive leadership experience and industry knowledge, with more than 35 years' experience in the infrastructure and construction materials sectors. From June 2017 to June 2019, Nick, as CEO Fulton Hogan Australia, led the company's combined Australian businesses of Construction, Infrastructure Services and Utilities. Nick has experience across multiple infrastructure sectors, including civil construction, water, telecommunications, asset management and road maintenance activities.



IAN WEBB
BOARD MEMBER

Ian Webb served as Chief Executive of Roads Australia, the national peak body for Australia's road industry from 2003 to 2018 and has an extensive knowledge of the stakeholders and policy issues facing the industry. During this period, he was also seconded to Geneva as Director-General of the International Road Federation. His career includes 17 years as a career diplomat and 30 years at Chief Executive level in both the public and private sectors in NSW and Victoria. He is also the chair of NTRO's Centre for Connected and Automated Transport (CCAT).



DR COLLETTE BURKE
BOARD MEMBER

Collette has spent more than 25 years in the design and construction sector with major contractors in road and rail. As well as being a co-founder of two engineering consultancy firms - Exner Group and Karsta Middle East - she was also Victoria's first Chief Engineer. Collette is an internationally acknowledged researcher and authority on risk management and the delivery of value for money in major infrastructure projects. Through her experience, Collette is passionate about technology and future cities, to see how we can make long-term use of, and decision making around, our assets.



PAMELA HENDERSON
BOARD MEMBER

Pamela is the Head of Technical Services at Transport for NSW, which provides specialised technical capability and services for the delivery, operations and management of the NSW transport network across all modes and focuses on innovation and driving best practice in engineering with an enabling sustainability focus. An electrical engineer, she also has 25 years of experience working in the energy industry. Pamela is a member of the UTS Transport Research Centre advisory board.



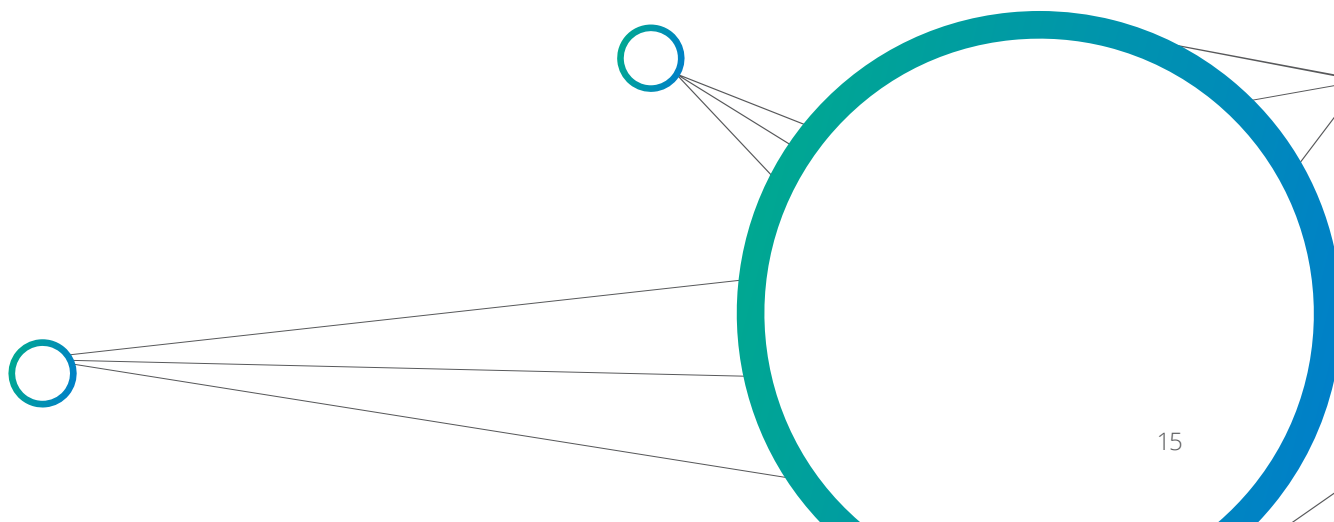
MARK CAMPBELL
BOARD MEMBER

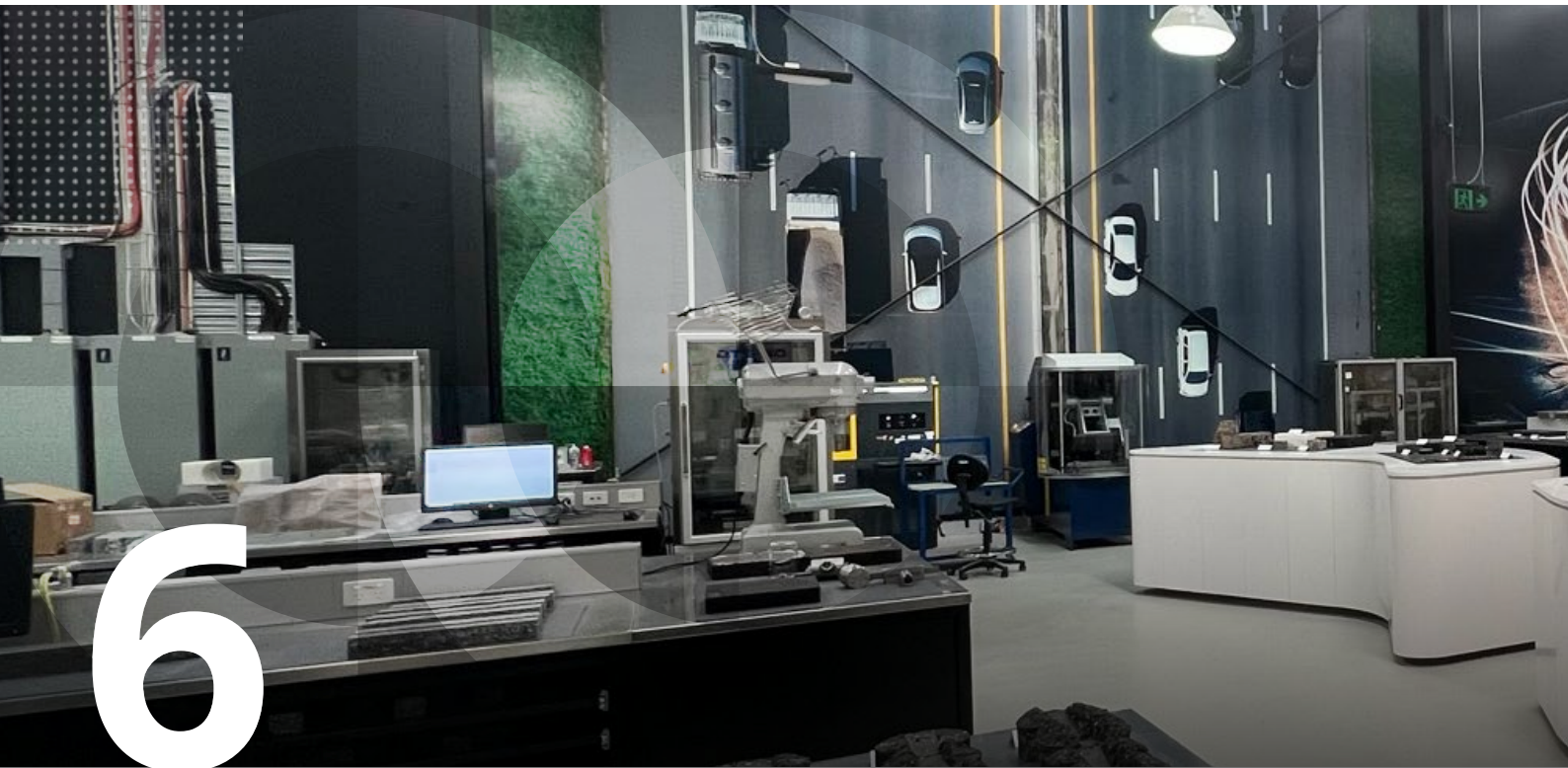
Mark Campbell was the Managing Director and Chief Executive Officer at ARTC, overseeing a team of over 2,000 people based in 38 locations across five states, who manage the transit of around 440 trains per day. With more than 30 years of international experience in light and heavy industrial fields, Mark led ARTC for three years until July 2023 coming from leading construction materials firm Holcim, where he led the company's Australia and New Zealand divisions for eight years. A civil engineer by trade, Mark also has significant board experience as a former director of Holcim Australia and New Zealand, Cement Australia, Cement Concrete & Aggregates Australia, Penrith Lakes Development Corporation, Skills DMC and Metromix.



ALISON PLAYFORD
BOARD MEMBER

Alison has more than 30 years' public sector experience in both the Commonwealth and ACT Governments. She is currently Director-General, Transport Canberra and City Services (TCCS). TCCS delivers essential services Canberrans rely on each day. Transport Canberra manages Canberra's public transport system. It ensures that buses and light rail are integrated, and with other forms of transport including taxis and active travel elements such as cycling and walking. City Services delivers a range of services including public libraries, the collection of recycling and waste, graffiti removal, shop and playground upgrades. Alison has held a range of positions in the Commonwealth Department of Finance, the Department of Prime Minister and Cabinet and the Attorney General's Department. These included the areas of native title, indigenous litigation, family law, administrative law, federal courts and tribunals.





Our Expertise

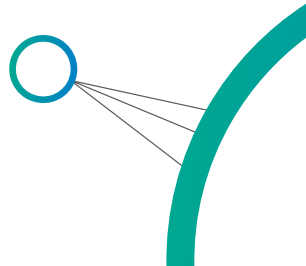
Our transport expertise applies across road, rail, ports and airports. Our expertise across all modes of transport includes:

Working on the next generation of road surface technology and mobility corridors to ensure a **smarter, safer infrastructure**, our pavement engineering experts understand the design and review of pavement thickness, asphalt mix and sprayed seals, as well as the characterisation of new materials and smarter construction outcomes.

Our staff utilise the NTRO's world-class transport laboratories facility to drive successful development of guidelines and specifications in transport infrastructure. This includes gaining better safety outcomes, more **sustainable** products, better recycling and environmental outcomes, along with the next generation of **material use and performance**.

Shaping Australia's future in the **asset performance** space for the next decade and beyond is the focus of our dedicated professionals in the Asset Performance team. A new and emerging field of Assurance Systems will put NTRO at the forefront of chartering new territory across the transport asset base.

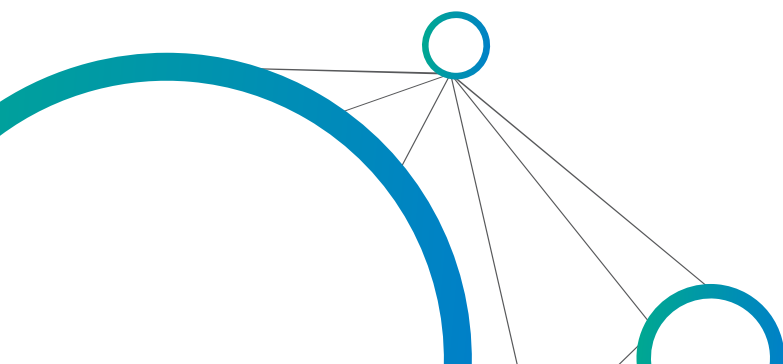
What does the future of mobility hold? NTRO is working on the answers to define our **mobility future**. Through our cutting-edge work with next generation transport systems such as driverless technology, electric vehicles and hydrogen power for all modes of transport, and analysing data collected from Australia's road networks, we can help stakeholders make data-driven decisions, shape policy and legislation ensuring transport networks have optimum operation – now and in the future.





With a suite of high-tech **infrastructure measurement** tools, NTRO can help Australia and New Zealand better manage their transport networks. From our three flagship Intelligent Pavement Assessment Vehicles (iPAVE) and our Intelligent Safe Surface Assessment Vehicle (iSSAVE) to a fleet of network survey vehicles, NTRO is leading the way in properly assessing the condition of Australia's and New Zealand's valuable transport assets.

Our **certification and training** arm provides confidence to the transport sector through the certification of products, processes, people and organisations. From development of industry standards and training to conformance and capability assessments, certification and maintenance of accreditation registers, NTRO offers an independent and reliable source of assurance to industry and government entities alike.





Our Role

ARRB's transition into the National Transport Research Organisation (NTRO) expands our work across all modes of transport – Road, Rail, Ports and Airports – in response to the shift of road agencies becoming multi-modal transport agencies. We have been on this journey for the past few years and made the formal announcement in December 2022 once we had the people, skills and industry acceptance of the NTRO model.

At the heart of our business is integrated mobility – innovative, impactful mobility solutions that benefit all Australians and New Zealanders.

We collaborate with all levels of government, transport agencies, consultants, and private sector organisations on all aspects of transport and mobility. NTRO delivers transport solutions that are safer, more sustainable and value-for-money.

As ARRB, we delivered more than 60 years' continuous service to the road and transport sectors of Australia and New Zealand. Now, as NTRO, we continue the uninterrupted service for the transport sector as we formalise our support within the rail, ports and airports spaces to better serve their needs.

We remain the source of trustworthy, independent, reliable, and robust guidance on the delivery of next generation infrastructure to serve the mobility needs of our community.

NTRO partners with its Members at Local, State and Federal Government levels to provide timely, accurate and impactful means of achieving the transport outcomes that build a better society. As we transition to a mobility-based community, the nature of the supporting transport infrastructure must change together with the attitudes to using this resource.



NTRO has deep connections across the UK, Europe, USA, Asia and China, providing access to Australian and New Zealand professionals, vast amounts of new knowledge.

Using this with our own deep skills and established expertise, we will play our part in forging the mobility future that all Australians and New Zealanders desire.



Our Values

NTRO has four corporate values, which sit at the heart of everything we do as an organisation. They are emblazoned on the walls of every office nationwide as a constant reminder of what we strive for. Employees who embrace and show commitment to these values are recognised with a series of awards through our individual State offices, and nationally with an annual awards ceremony.



Integrity

We offer independent, impartial research, and communicate clearly, honestly and respectfully with each other and we do what is right for our clients, our staff, our industry and our community.



Energy & Passion

We have a passion for good ideas (big and small), for expertise and for helping each other out. Positive energy is created by loving what we do, creating fun and having a 'can and will do' attitude.



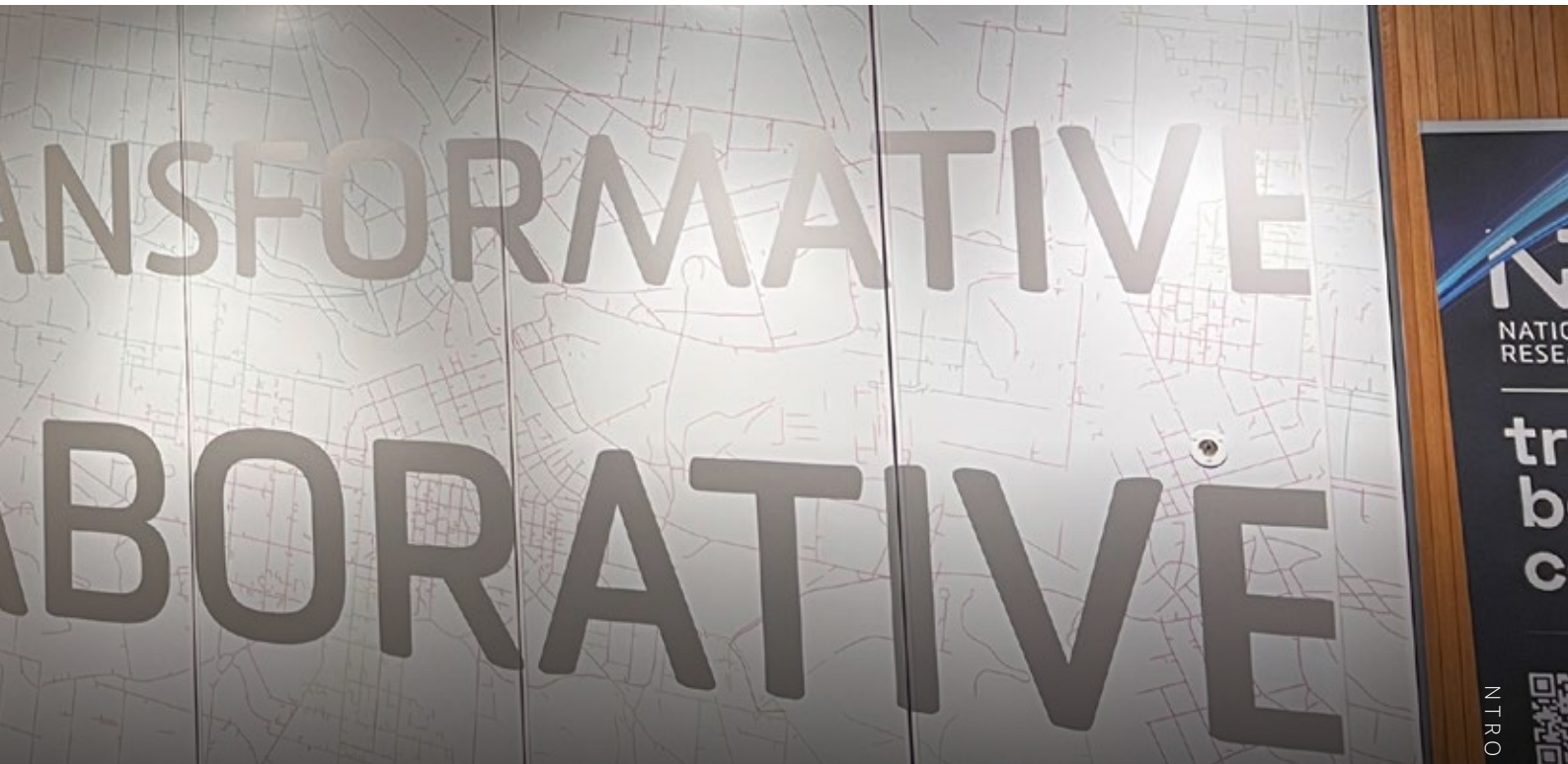
Collaborative

We communicate openly and constructively to deliver world-class research because our people work together and with partnering organisations and clients.



Transformative

We are continuously looking to improve the world around us, moving forward and innovating. The mobility solutions of the future will require adaptable skills, technologies and ideas.



How we recognise our staff

Regular Awards In Each State

Staff are recognised regularly throughout the year with awards for those who best epitomise each of our values.

Annual Awards

A national winner for each of our four values is chosen. They are recognised and awarded at a special ceremony held at our Port Melbourne headquarters.

Young Professionals Awards And Annual Gala Event

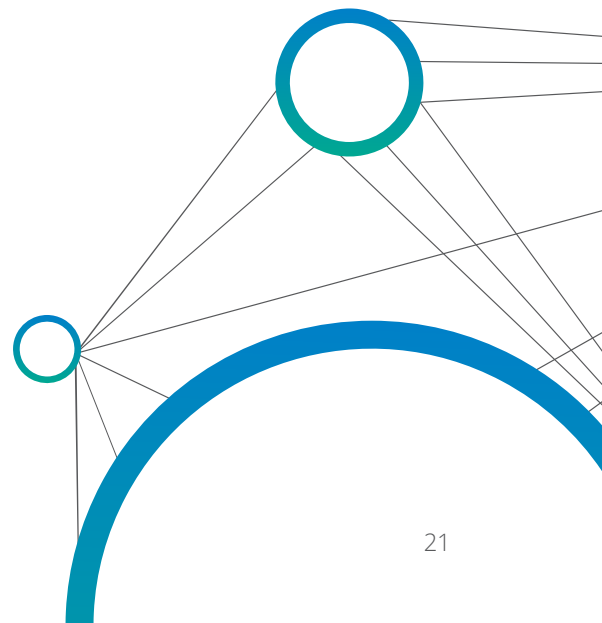
Our company's rising stars and young professionals are recognised annually with a special event at our Port Melbourne headquarters in which they are honoured with awards, and a celebration of their work within the organisation.

Insight Newsletter

Monthly internal newsletter for all staff highlighting achievements of both the company and individual staff members.

NTRONet

NTRO'S staff intranet - called NTRONet to recognise our work as the National Transport Research Organisation (NTRO) – provides staff with all information they need at their fingertips.





Flood Recovery

NTRO assists Australia in flood recovery

NTRO’s Intelligent Pavement Assessment Vehicles (iPAVE) and survey vehicles have provided significant help to the nation in its post-flood road recovery efforts. In Victoria, the State Government called in the NTRO iPAVE to assess more than 8,400km of roads in the wake of the floods and extreme rainfall during late 2022.

In northern NSW, NTRO has worked with the Department of Regional NSW (on behalf of the Northern Rivers Reconstruction Corporation), to support the efforts to build road infrastructure more resilient to future flooding events.

Our iPAVE fleet and Network Survey Vehicles (NSV) conducted a comprehensive road survey in the Northern Rivers region, which will inform the rebuilding effort and improve its ability to withstand future floods. More than 6,000km of road was surveyed.

The iPAVE helps assess the condition of road pavement at traffic speed. It has lasers and cameras mounted on it that collect information about the road as it drives. The information gathered includes the strength of the pavement, roughness, cracks, and other important details. This information helps road managers determine which areas of the road might have problems in the future and helps local governments decide where to spend money on road maintenance.



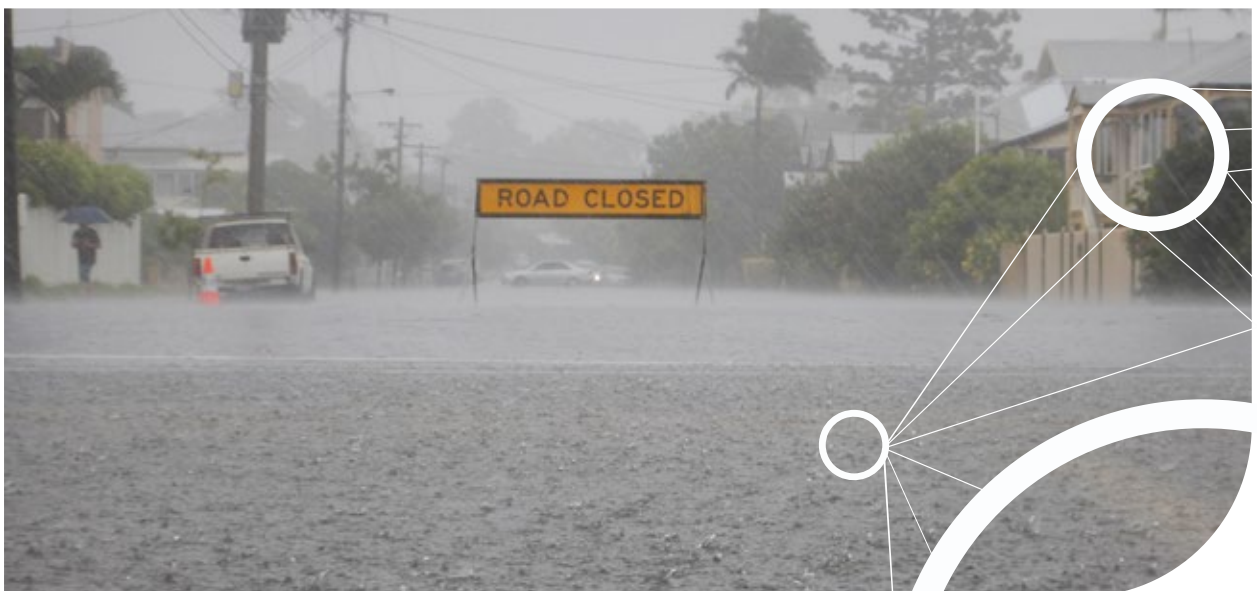
These datasets are collected at the same time, in one trip, at highway speed, making the iPAVE a cheaper, faster and safer way to collect intelligence.

The NSV provides similar information, using laser profiling and automatic crack detection to determine the condition of road networks.

Between them, they are gathering digital imagery and measuring roughness, texture, and rutting of the roads, and identifying the weaknesses that can make roads prone to water damage.

In NSW, the data collected by our survey vehicles will be used by local councils to inform and direct their maintenance efforts to where they're needed most, to restore and remedy vital infrastructure.

In Victoria, the collected data from iPAVE will help plan for upcoming large-scale repairs and road maintenance across both regional and metropolitan Victoria.





iPAVE

Intelligent Pavement Assessment Vehicle

NTRO’s flagship infrastructure measurement vehicles, the iPAVEs, have been busy throughout the 2022-23 financial year.

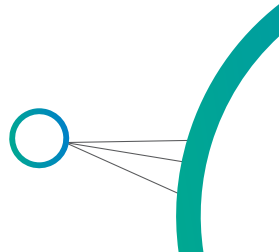
From helping with the flood recovery in Victoria and NSW, surveying the road networks all over Australia, to even working on airport runways and port pavements, NTRO’s three Intelligent Pavement Assessment Vehicles have become the go-to tools for transport agencies to measure and manage their transport networks.

The iPAVEs are prime movers and trailers equipped with a heavy weight over a single rear axle. A series of lasers mounted along the underside of the trailer along the wheel path measures the deflection velocity of the pavement in the left-hand and right-hand wheel paths as the truck travels down the road at highway speeds, all data captured in a single pass.

This information is used to assess the bearing capacity of the pavement. While predominately used for state road authorities, it has also been used on some local government networks.

iPAVE vehicles can also measure roughness, texture, rutting, digital imagery for visual rating and ACD cracking.

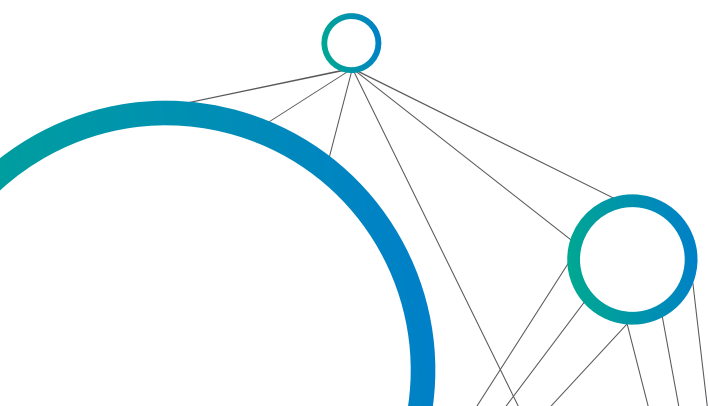
The latest iPAVE has ground penetrating radar to give a clearer picture of what lies beneath the road surface, and is able to detect sub-surface issues which may cause future pavement failures.





Finding solutions to challenges across all areas of transport is what NTR0 does, and that has led to the iPAVE being deployed for a new purpose - surveying airport runways and taxiways and heavy-duty port pavements.

NTR0 worked with Airport Consultancy Group (ACG) on a condition inspection survey done on one of its airport runways at Essendon Fields in Melbourne, significantly reducing the airport's downtime and runway closure time.





ARRB/NTRO and ALGA team up for Local Government Outreach

The extreme weather events in late 2022 which led to widespread flooding and road damage across four States led to ARRB/NTRO teaming up with the Australian Local Government Association (ALGA) to spotlight what was needed for recovery.

ALGA is the national voice of local government, representing 537 councils across the country.

With a damage bill for Australia's flood and rain damaged roads estimated at more than \$3.8 billion, ALGA and ARRB/NTRO joined forces in a media blitz to call for an urgent rethink of road construction, maintenance and funding.

ALGA President Councillor Linda Scott said rebuilding roads to current standards would only cost Australian communities more in the long term.

"Thousands of kilometres of local roads across NSW, Victoria, South Australia and Queensland have been severely damaged by flooding, and in some cases have been washed away," Cr Scott said.

"ALGA has estimated the total cost of fixing and replacing these roads is in the vicinity of \$3.8 billion, which is roughly the equivalent of Australia's annual foreign aid budget.



“Considering the ongoing impacts of climate change, we can’t simply rebuild our local infrastructure – including roads, footpaths and cycleways – to current standards, we need a fundamental shift in the way we fund, deliver and maintain these assets.”

ARRB/NTRO Chief Executive Officer Michael Caltabiano said the extensive damage to large parts of the road system across several states was a major wake-up call and an opportunity to evolve the way Australia’s roads are constructed, maintained and managed to deliver more resilient outcomes.

“Moisture is like the kryptonite for roads, and inevitably leads to potholes and road failure. The floods and torrential rains have caused large scale catastrophic damage to the road systems that connect communities and deliver freight. Now is the time to reassess what innovations are possible to prevent a repeat of this infrastructure emergency,” Mr Caltabiano said.

Mr Caltabiano said standards and materials used for constructing Australia’s road systems needed to change to improve water resistance and quicker recovery after significant rainfall events.

“Australia houses some of the smartest road technology in the world and the latest NTRO research shows many recyclables – including tyre rubber – are not only eco-friendly but create a more durable and resilient road surface,” Mr Caltabiano said.

“NTRO also has a range of the state-of-the-art vehicles fitted with lasers and high-tech equipment to measure road conditions, including strength, at traffic speed. Pinpointing the issues on a road can ensure valuable maintenance dollars are spent in the right place, at the right time.”

Media outlets around the nation covered ALGA and ARRB/NTRO’s position on what needed to be done for the post-flood road recovery. It led to the most significant focus on the future of the Australian road network in recent memory, and governments around the country at all levels committing funding to rebuild affected parts of their road networks.





NTRO Local

NTRO introduced NTRO Local in early 2023 – an offering specifically tailored to local government to help Councils manage, maintain and measure their roads.

NTRO Local provides affordable, achievable solutions for Councils to have better maintained, safer, sustainable and resilient roads, and offering cost-effective, sustainable, data-driven road solutions.

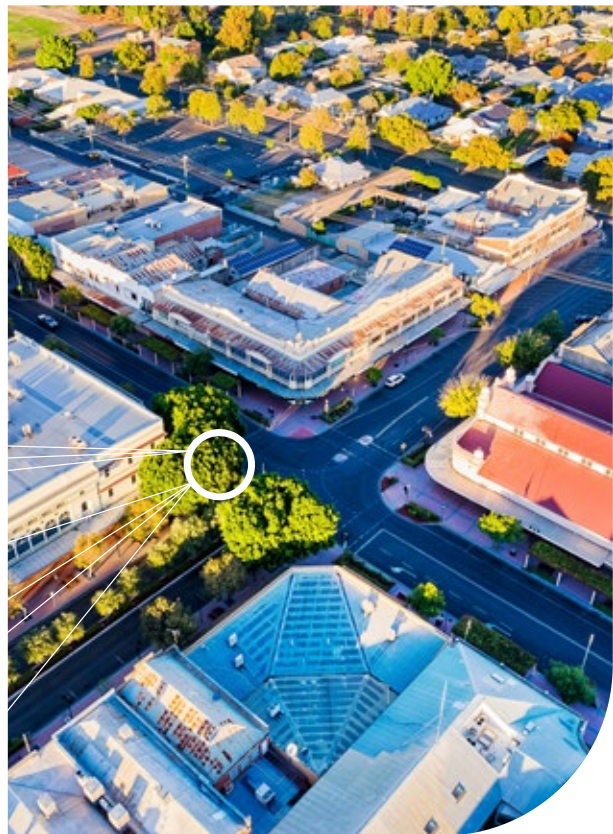
NTRO Local's offerings include:

- Helping local government take advantage of grant-funding opportunities available to upgrade their road networks, including using data-driven grant applications to help a Council's funding bid
- Trusted, independent technical and strategic advice on road projects
- On-site support such as quality management, inspections, work site management, independent verification services etc
- Project-specific assistance from maintenance and construction to asset management
- Asset assurance systems for all aspects of local government transportation projects
- Technical assistance for Councils on any project, including providing in-office personnel to Councils to assist over any timeframe

With local government controlling more than 75% of Australia's roads and the widespread damage done to local roads by the catastrophic flooding events of late 2022, NTRO Local was introduced to help and has already started doing so for Councils Australia-wide.



NTRO ANNUAL REPORT 22-23





NTRO Launch

More than 250 people attended the official launch of the National Transport Research Organisation (NTRO) in Melbourne in December 2022.

NTRO will create the new knowledge that will be used to provide world’s best practice across all modes of transport – road, rail, ports and airports – for Australia and New Zealand.

The official transition from ARRB to NTRO signalled an evolution from a roads-focused entity to one encompassing Australia’s entire transport network.

Leaders from around the transport industry, including Victorian Department of Transport and Planning secretary Paul Younis and Australian Local Government Association (ALGA) chief executive Matt Pinnegar were among the guest speakers at the launch function at the National Transport Research Centre in Fishermans Bend, Melbourne.

“State road agencies have been transitioning into transport agencies, and we’ve been planning this shift since 2017,” NTRO Chief Executive Officer Michael Caltabiano told the launch.

“NTRO will truly be the one source of truth for Australia and New Zealand Governments and the private sector, delivering solutions to the transport challenges of tomorrow and genuinely shaping our transport future.

“NTRO’s vision is to enable transport agencies to give effect to that change, by providing that central portal for innovation in Australia and New Zealand.”

As well as Melbourne, the NTRO also has offices in Brisbane, Sydney, Canberra, Adelaide, and Perth. In the 2023-24 financial year, NTRO will set up bases in Tasmania and New Zealand – making it a truly Australia and New Zealand-wide entity and reflective of a mode-agnostic road, rail, ports and airports organisation.

The Australasian Centre for Rail Innovation (ACRI) formally became part of ARRB in mid-2022 and has formed the core of NTRO Rail.

NTRO Ports and NTRO Airports divisions have also been established for those disciplines.





NACOE

In November 2022, a renewed agreement was signed between Queensland’s Department of Transport and Main Roads (TMR) and ARRB/NTRO, giving NACOE the green light through to 2028.

This reinforces the great work being delivered by the NACOE program which is contributing to lower-cost, quality infrastructure through knowledge and research, and provides benefits to the Australian road industry by enabling the effective use of innovative materials into practice.

The NACOE initiative has been running since 2013. ARRB/NTRO works with TMR to deliver engineering excellence through cutting edge road research and innovation in key disciplines – including pavement engineering, sustainability, asset management, bridges and structures and road safety. Knowledge transfer within the industry is also a key objective.

Project teams deliver and implement the latest applied research outcomes which benefit Queensland road users through safer, more sustainable transport infrastructure.

Projects undertaken during 2022-23 include:

- Intelligent Compaction – assessment of the benefits and limitations for road construction
- A joint initiative between the Western Australian Road Research Innovation Program (WARRIP) and NACOE on SAT4P – a sustainability assessment tool for pavements
- Bushfire resilience framework with the WARRIP
- Developing and optimising recycled material blends that will establish consistent specifications and design requirements to further increase their use in road pavements
- Sustainable sprayed sealing practices
- More flood resilient bridge approaches
- Evaluating traffic control measures at roadworks sites





WARRIP

Main Roads Western Australia and NTRO have renewed their partnership, extending the Western Australian Road Research Innovation Program (WARRIP) for a further four years.

The agreement has been extended until 2027, which will continue the collaboration research initiative delivering innovative, sustainable, and cost-saving solutions for road infrastructure projects throughout Western Australia.

The research program was first introduced in 2015 and has since then delivered many successful projects focused on pavements, bituminous surfacings, asset management and structures.

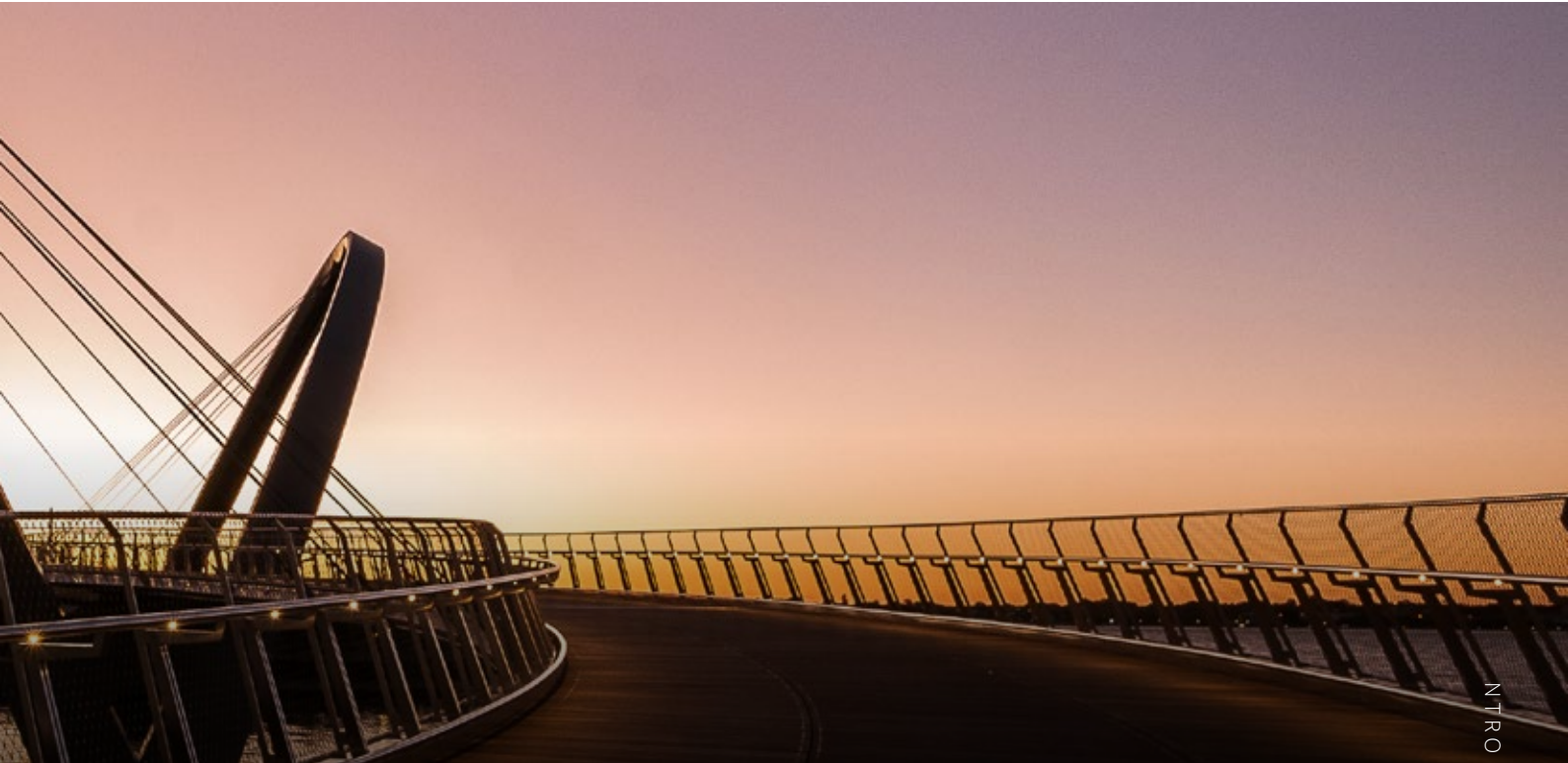
NTRO Chief Operating Officer, Dr Richard Yeo, and State Leader for Western Australia, Craig Manton, are very excited with the agreement renewal and the opportunities that come with the extended development of new knowledge for the WA infrastructure community.

“The renewal of the WARRIP partnership between Main Roads and the NTRO is a fantastic outcome which will enable ongoing innovation and new knowledge development to benefit management and operation of the WA transport network,” Dr Yeo said.

“WARRIP projects have been shown to deliver benefit cost ratios in the range of 8 to 10 times, and continuing the investment in this program will see even greater value added.”

Mr Manton said: “It is wonderful that Main Roads Western Australia recognises the real benefits achieved through the outcome focussed research program with a new four-year WARRIP agreement continuing the work through to 2027. This new agreement provides certainty for NTRO and MRWA teams and will enable continued growth of the NTRO Perth office to meet the ever-changing needs of WA’s infrastructure development.”

Managing Director of Main Roads Western Australia, John Erceg, is looking forward to what the next four years of the agreement will bring to the transport and infrastructure network of Western Australia.



“The signing of this new four-year agreement will see a decade of benefits and improved outcomes as WARRIP continues to deliver innovative solutions and proven research core activities of our business. The program is helping to improve safety, increase our knowledge on sustainability and our approaches to asset management. I look forward to another four years of strong collaboration with the NTRO through this program,” Mr Erceg said.

Key projects in 2022-23 include:

- Planning for infrastructure vulnerability due to climate change
- Review of moisture impacts on asphalt pavement performance
- Assessing heavy vehicle speeds and rollover risk within roundabouts
- SAT4P sustainability assessment tool developed in conjunction with Queensland’s National Asset Centre of Excellence (NACOE)
- Incorporating bushfire impacts into road design





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CCAT

The Centre for Connected and Automated Transport (CCAT) was launched in 2022-23.

As part of NTRO, CCAT aims to move Australia and New Zealand safely and successfully into the era of connected and automated transport by being the hub through which government, industry, academia and community bodies with a common interest in facilitating the transition to connected and automated transport can work together to make this happen.

CCAT is a membership organisation. It is open to all those companies with a stake in Australia and New Zealand's transport future. Transport agencies within government, innovative local Councils, industry participants big and small, technology and motor manufacturers, mining companies, the agricultural sector, researchers, next-gen technology developers and start-ups have been invited to be part of CCAT to shape the future of movement.

Members include the Government of Western Australia (Department of Transport), the Queensland Department of Transport and Main Roads (TMR), Transport for New South Wales and ConnectEast.

At the national launch in Sydney in May 2023, guests came from across the transport community, with leaders from both government and industry in attendance. They heard from speakers Rahila David, CCAT's Executive Director, Charles Griplas, CEO and Managing Director of ConnectEast, Phillip Davies, Partner at Deloitte and former CEO of Infrastructure Australia, and Ian Webb, CCAT's Chair about CCAT's mission and the importance of long-term planning for connected and automated transport.



Guests also got to experience the technology first-hand, with vehicles brought on-site from the Australian Centre for Field Robotics.

The national launch was also a chance to announce CCAT's plans for the future. CCAT Chair Mr Webb announced the first National Summit for Connected and Automated Transport Infrastructure, to be held in 2024.

The Summit will bring together government and industry to plan for a national approach to the application of connected and automated technologies to our transport systems.

"Our transport sector is already undergoing major transformation with the introduction of electric low and zero emission vehicles," Ms David said.

"But we won't future proof our transport infrastructure if we're only planning for electric vehicles. We need to recognise that automation is following right behind electrification. In fact new vehicles coming into the Australian market are technology capable but not enabled for higher

levels of autonomy. This transformation will be the largest in not only road transport but also rail, ports, agriculture, mining and defence and it's time we started planning for it nationally."

As part of a busy first year of operation, CCAT also sent a delegation to Europe for an outreach visit in June 2023.

The visit presented an important learning opportunity which brought to light important lessons on how we can prepare Australia and New Zealand's transport systems for connected and automated technologies.

Connected and automated transport technologies have the ability to provide massive benefits in safety, productivity, decarbonisation and accessibility.

But these benefits won't be achieved unless Australia and New Zealand's physical and digital infrastructure is ready for the technology – which CCAT is hoping to accelerate.



NTRO and Defence

NTRO's work with Australia's defence force reached a new and historic stage as our autonomous leader-follower project with the Australian Army became the first to operate a convoy autonomously on an open Australian highway.

The Army, with the NTRO and Deakin University as partners, has been progressing autonomous leader-follower technology for the past 12 months. It has been trialled on armed forces bases and on public roads – including a spin around the Mt Panorama motor racing circuit at Bathurst in October 2022.

Now the autonomous leader-follower project has been successfully tested on an open Australian highway. In June 2023, the convoy operated autonomously from Victoria's Mangalore Airport, two hours' north of Melbourne, to the Puckapunyal army base along the Goulburn Valley and Hume Highways under an Automated Driving System permit from Victoria's Department of Transport and Planning.

The trial showed how a convoy could undertake a resupply mission between an airfield and a military base, giving the Australian Army an idea of how this kind of technology could be used in the future.

Driving on a highway in traffic meant the technology was tested to stop safely, and leave distances between other vehicles, while following the path set by the leader. The Army believes that technology like this could remove our soldiers from dangerous environments or help free soldiers up for other roles.



NTRO’s role, together with Deakin University’s Institute for Intelligent Systems Research and Innovation (IISRI), has been to safely and successfully deploy the locally developed technology on public roads.

This involves testing and development to ensure that the technology can safely operate alongside other road users on roads and highways in Australia, with the Victorian highway trial an important step towards this goal.

NTRO project lead and discipline lead for mobility futures, Dr Charles Karl, said the Army leader-follower project had been a rewarding one, and a career highlight.

“Over the last eight years, NTRO’s efforts in deploying automated vehicles have largely focussed on Australian public roads. But more recently we

have worked to enable land vehicles that typically operate in other domains such as mines, ports, airports, agriculture and defence to operate on parts of our road network, without having to close the road,” Dr Karl said.

“We developed additional testing programs and specific safety management plans for each of these automated systems to secure approvals for safe on-road operations.

“The insights from this trial not only benefits the Army, but will also enable similar automated operations of freight vehicles on Australian roads in the future.”



Parliamentary Inquiry into Severe Weather Events

NTRO Chief Executive Officer Michael Caltabiano was invited to speak at the Federal Parliament House of Representatives’ Inquiry into the implications of severe weather events on the national regional, rural and remote road network.

Michael’s evidence to the House of Representatives’ Standing Committee on Regional Development, Infrastructure and Transport in Canberra in March 2023 focused on the following areas:

- If you don’t measure it; you can’t manage it
- Next generation materials
- New maintenance approaches
 - Building in Resilience
- Decarbonisation overlay

The inquiry aimed to look at road engineering and construction standards to strengthen road resiliency against natural disasters, including the critical role of climate change trends and data to inform next generation infrastructure standards.

It is expected to report back in late 2023 with its findings.





Replacement Materials Report

ARRB/NTRO's sustainability team helped to deliver the Replacement Materials report as part of Infrastructure Australia's Market Capacity Program.

The research analyses the market for recycled materials for major infrastructure road projects, identifying market constraints and opportunities to address these, and up-to-date estimates on the opportunity to use recycled materials in major infrastructure projects.

Australia currently generates just over 62 million tonnes of waste material annually, of which close to 40 million tonnes is recovered through waste/recycled materials suppliers and processors.

However, supply capacity is not uniform across material types, with a mix of common and specific issues causing shortages of some types and limiting supply growth.

With engagement of over 350 industry and government leaders, the research findings included the following:

- There is a low familiarity of available recycled material products, benefits and market opportunities across the resource recovery and recycling industry.
- Uncertainty, negative perceptions, and a risk aversion culture are key barriers to uptake.
- Environmental regulations are falling behind community and industry expectations and inhibit industry growth.
- Recycling infrastructure and availability of replacement product is not consistent or uniform across the country.



The engagement program revealed five key opportunities to address market constraints impacting the uptake of recycled materials in road infrastructure:

- Improving awareness and understanding of recycled materials, specification and opportunities - continued emphasis on the development of standards and specifications, which can support their use, as well as building awareness through education and knowledge sharing are key to overcoming these challenges
- Taking stronger action to enhance confidence in using recycled materials, including developing and delivering education and awareness programs, developing and updating specifications and standards and driving cultural changes to reward innovation.
- Addressing regulatory issues to facilitate industry development, advance market opportunities and grow the circular economy, whilst protecting against adverse impacts
- Improving and modernising recycling infrastructure and workforce capacity and expanding geographic reach with government assistance in new and emerging markets
- Driving demand through sustainable procurements and market signalling, including accommodating cost impacts of replacement materials in public procurement tenders, provisioning supporting infrastructure standards and specifications in most jurisdictions, provisioning easily accessible supplier and cost information and addressing concerns for the safety and performance impacts of the materials.



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Sydney Buses and New Technology Help Identify Potholes

NTRO has been undertaking cutting edge work on identifying potholes and other ride quality issues around Sydney using the existing bus network.

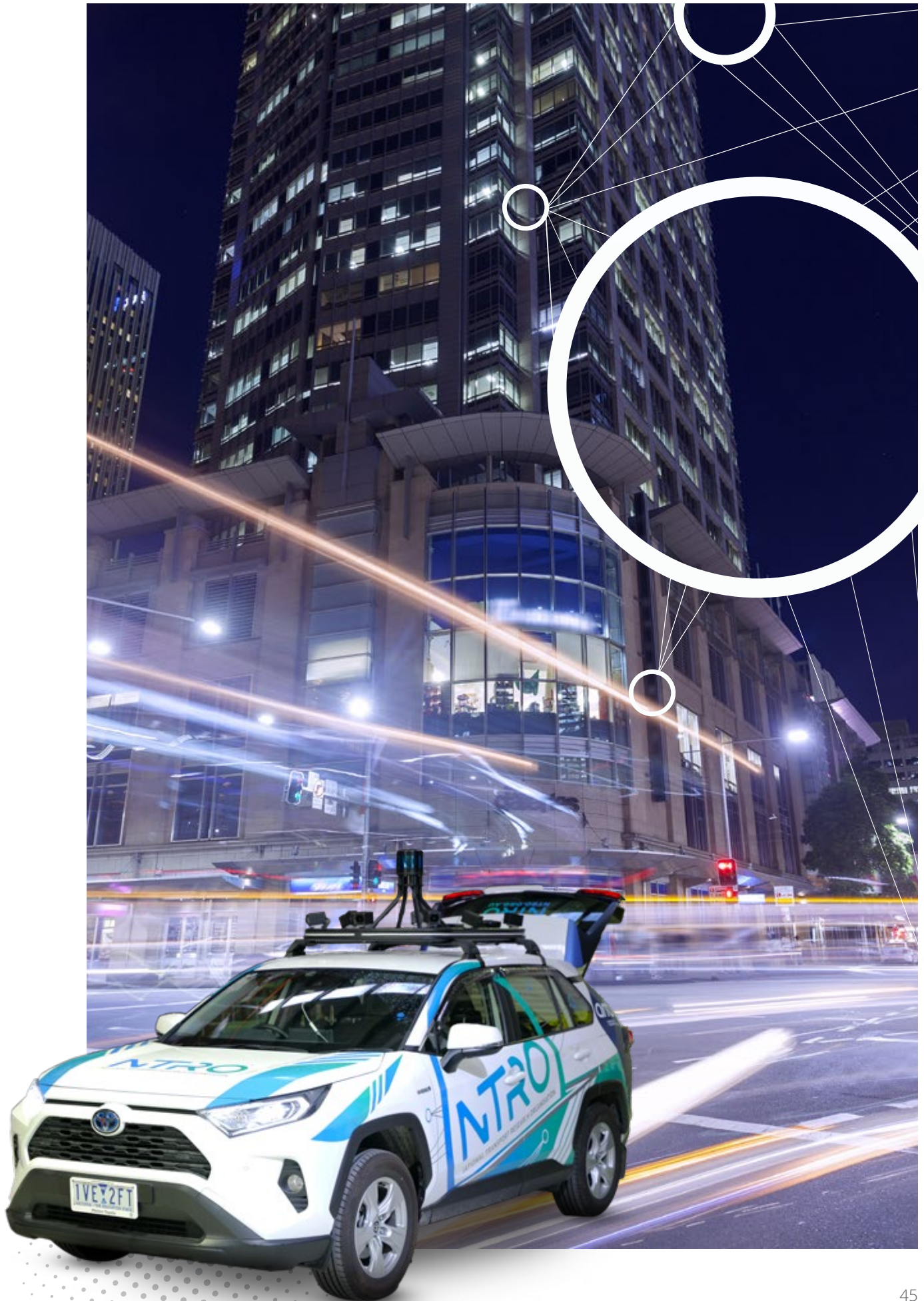
NTRO worked with Cisco and the University of NSW to trial a new live real-time road condition monitoring system using Cisco routers fitted to public buses operating in the Sydney metropolitan area. The team was undertaking the work for Transport for NSW.

The system uses the readings from an accelerometer in the router mounted to the Sydney bus fleet as a surrogate for roughness, using the information to locate road anomalies based on real-time changes to the ride quality across the road network. For example, the bus experiences a spike in the acceleration when it traverses a pothole or other pavement defect.

The results are overlaid on a map and displayed as a heat map, showing locations along the bus routes where the acceleration has consistently spiked and investigation needs to be carried out.

NTRO collected roughness data across a portion of the network to help validate the model.

Results have been very successful so far, and the concept was demonstrated at the Cisco Live event in Melbourne in December 2022. NTRO/ARRB also displayed one of its ride quality vehicles at the event.





NetRisk2 ACRS Award

NTRO’s next generation road safety tool NetRisk2 is now an award winner.

NetRisk2 was awarded a Highly Commended in the 2022 3M Australasian College of Road Safety Diamond Awards in Christchurch, New Zealand.

The NetRisk2 project team was led by NTRO Infrastructure Safety Management lead Emily McLean, and included Dr Brett Eastwood, David McTiernan, Ellen Forbes, David Milling, Joseph Affum, Noha Elazar and Lefei Zhan.

It is ARRB/NTRO’s second successive 3M ACRS Diamond Award, following on from ARRB’s Highly Commended in 2021 for a food delivery riders safety project.

NetRisk2 is technology developed by NTRO that can save lives on our roads and show if proposed treatments for road safety will have a positive effect before work begins.

The use of risk assessment models is well entrenched in Australian road safety. However, previously road managers had to make a choice between the two leading infrastructure risk assessment models – AusRAP or ANRAM – or attempt to find their own balance between them.

NetRisk2 integrates both AusRAP and ANRAM into the one web platform, offering the right lens for road safety practitioners to view and apply evidence-based risk assessments to their road networks.

It allows road managers to easily investigate the impact of alternative treatments and compare the performance of these to affect road safety risk, reduce fatal and serious injury crashes and understand the cost benefit return of the investment required to implement these treatments.



Using NetRisk2, road managers can:

- Identify high risk locations on their network
- Compare treatments and their impact on road safety risk before committing to a program of work
- Develop targeted and cost-effective interventions, using a data driven and evidence-based approach
- Deliver safer infrastructure and save lives
- NetRisk2 is ideal for State and Territory road agencies, but importantly it is a tool that can be used at local government level – both in cities and rural Australia.
- Councils control more than 75% of Australia's roads, and NetRisk2 provides local government with the means to actively improve road safety.





Ports

NTRO strengthens its ports sector bonds

NTRO has strengthened its ties to the ports sector both in Australia and overseas with membership of several key organisations.

NTRO has joined Ports Australia as an associate member, the World Association of Waterborne Transport Infrastructure (PIANC) through the Australia and New Zealand Chapter, and the International Association of Ports & Harbors (IAPH) as a global associate member.

Ports Australia is the National Industry Association leader for the port sector. Ports Australia members are responsible for over 95% of Australia’s seaport freight task through our nation.

Established in 1885, PIANC - the world port association - continues to be the leading partner for government and the private sector in the design, development and maintenance of ports, waterways and coastal areas.

IAPH is a global alliance of ports, representing member ports and port-related businesses in 87 countries.

NTRO Executive Director of Ports, Jason Sprott, said becoming members of these organisations allowed NTRO to share learnings, work together with others in the ports sector, and develop innovative solutions for the future.

“We hope to partner in every way possible with the industry – in policy development, ‘in-house’ advisory, sustainability, pavement science, decarbonisation pathways, automation, supply chain planning, master planning and major project advisory services,” he said.



Airports

NTRO joins Australian Airports Association

NTRO has entered a new era, joining the Australian Airports Association (AAA) as a corporate member to further bolster its airports credentials.

Established over 40 years ago, the AAA facilitates co-operation among airport members and their many and varied partners in Australian aviation, whilst contributing to an air transport system that is safe, secure, environmentally responsible and efficient for the benefit of all Australians and visitors.

The Association is the national voice that represents the interests of over 340 airports and aerodromes Australia wide – from the local country community landing strip to major international gateway airports.

In January 2023, Jason Sprott, NTRO Executive Director, Airports, welcomed the AAA’s CEO James Goodwin and Director Corporate Services Adrian Plumb to NTRO’s Melbourne headquarters.

The NTRO team showcased the state-of-the-art laboratory facilities focussing on infrastructure and airfield pavement design, sustainable materials and emerging technologies across the transport sector.

“This membership highlights a new era for NTRO,” Jason said.

“We are excited to be part of a professional association representing a sector of the economy that delivers enormous prosperity for our nation - in cities and throughout regional and remote areas.

“We hope to contribute in every way possible to the industry – through pavement science and asset management, airport planning policy, future mobility, automation opportunities, sustainability and project delivery work.”



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NTRO in the Media

CLEARER LINES, SAFER ROADS

THE AUSTRALIAN ROAD RESEARCH BOARD IS USING ITS CUTTING-EDGE LIME TECHNOLOGY TO PROVIDE DATA ON THE CONDITION OF ROAD LINE MARKINGS.

Clear line markings are critically important to the safety of Australian roads, but measuring and maintaining their performance can be a time-consuming process.

Not only is the optimal day and night performance of line marking critical for drivers, but increasingly so for vehicles equipped with lane guidance technology – something that will only become more important for the inevitable driverless vehicle revolution.

David Milling, Australian Road Research Board (ARRB) National Portfolio Leader for Safer Asset Performance, says the importance of clear line markings and their timely upkeep is often underestimated.

“Line marking is the one consistent attribute of a road that is regulated by a national standard” he says.

“But there are emissions involved in providing and maintaining high performance line marking that not everyone understands, such as different paint types, different paint thicknesses, when line gives lead use and quality, and how these all contribute to one product outlasting another.”

“Variations in line marking and road surface type, lane width and the number and size of vehicles result in highly variable line marking performance across the Australian road network. Maximising this performance over time is complex and time-consuming which has led to the wide data collection approach that ARRB champion.”

“We started looking at line marking effectiveness performance with the Queensland Department of Transport and Main Roads back in 2014, when they identified an issue with line marking not reflecting during wet weather,” Milling says. “We started along some trials

The LIME system measures both longitudinal levels of the road line, as well as current pavement markings and RIRRA.

technology was run without its limitations – ARRB’s original vehicle-mounted unit was locked to the side, restricting its ability to read edge lines if they were too close to a car or safety barrier.

“It was also difficult to collect the corridor via a road/highway, because you’d have this unit being towed on the side with vehicles moving the other way” Milling says.

This is where ARRB’s new LIME comes in. The front-mounted device means no equipment protrudes from the side of the vehicle, one of several major safety benefits.

The LIME is also capable of measuring both left and right lanes at the same time, as well as centre pavement markings and road reflective pavement markers (RPMs).

“The ability to pick up data on the left and right-hand sides at the same time means we don’t have to do two passes, and it also means that we have a stronger data set,” Milling says. “Depending on the type of road, you will find that the left or right line deteriorates quicker than the other. So we can measure and record the wear/reflectivity of that stretch based on whether side is underperforming.”

Milling says the LIME can operate at speeds up to 100 kilometres per hour, day or night – a huge benefit when mapping line marking condition on regional highways.

“Previously, if you were setting up a traffic control site to take readings with a handheld instrument, you’d be able to set up 300 metres,” he says. “Now we can measure those 300 metres in about 30 seconds.”

ARRB has already put its LIME fleet to the test and is still exploring the details potential users for councils and road owners can achieve combined with ARRB safety vehicles that collect other condition data such as the roughness, rutting, cracking and texture of roads, the result is a comprehensive data set that can be used to build a detailed network performance plan.

“We have used our LIME vehicles to map the Queensland network, which is about 30,000 kilometres of sealed roads,” Milling says. “Based on that, we’ve developed an evidence-based optimisation program, which allows them to identify which sections of which roads require line marking.”

Milling says road authorities will usually operate on a fixed cycle to schedule which roads are re-marked and how often. “Then, pavement marks are often removed along their entire length. With the data provided by the LIME, plans can be more targeted based on the health of specific sections.

“If they have the data at that high frequency, it allows them to say, ‘well, we might get another 12 months out of this road, or we might only need to remark 50 per cent of that one,’” he says. “The LIME allows that much higher level of detail.”

The means LIME can be allocated accordingly, and line marking budgets can be provided further – on top of savings from reduced use of road closures and traffic management.

Milling says there are often sections of a network that may require a different type of paint – whether due to the frequency or type of traffic they are subjected to.

Of course, the tougher the paint, the more costly it is, but ARRB does not allow that paint to be deployed only where it’s needed.

“There could be a section of road that currently is minimal use to a point, and the line marking might deteriorate quickly in that section,” Milling says. “We can collect evidence of that in the data, and the road authority can get a more flexible and longer-lasting paint down. Then they may start have to remark it every 12 months.”

Milling says line marking performance

David Milling
ARRB National Portfolio Leader for Safer Asset Performance

Data can also be used in combination with road safety and weather data to plan line marking based on push-ups.

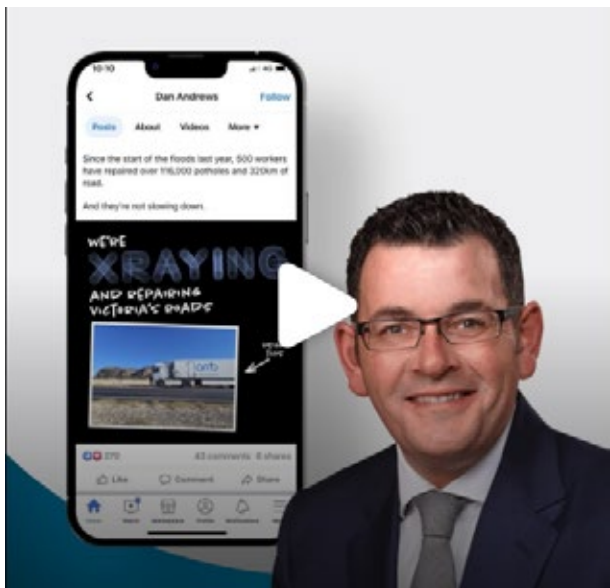
“Our data identifies that a road has a higher crash rate in wet conditions, the road authority can use this to evaluate the need for a special wet weather performance line marking product.”

“That’s what the LIME is all about. It’s just one example of how ARRB uses state-of-the-art technology to help improve Australia’s road network. By gathering more data, we can help councils and road authorities make more informed decisions, and develop evidence-based cost-effective programs to improve road safety.”

For more information, visit arrrb.com.au/ or contact info@arrrb.com.au

34 ROADS SEPTEMBER 2022

roadsline.com.au 35



Deep impact: Radars reveal Victoria's road damage is worse than it looks

Benjamin Peiris
July 18, 2022 - 5:00am

Victoria's battered regional and rural roads are in even worse condition than they appear on the surface, as new radar technology reveals hidden damage brought by extreme weather.

Authorities expect climate change will exacerbate the problem as the increased likelihood of natural disasters puts more pressure on the country road network.

- KEY POINTS**
- New technology including radars and lasers is warning the state of roads is in the dumps.
 - Many Victorian roads are in worse condition than they seem on the surface, including roads that appear 'visibly unamaged'.
 - The October 2022 floods are among recent disasters that inflicted extensive damage.



Road damage in Ararat in northern Victoria last November. JAMES WOODS



The Victorian government is calling on the Commonwealth to increase its funding for the state to manage major roads in the face of rising costs.

The October 2022 floods are among recent disasters that have inflicted extensive damage on the state's roads, leaving enormous potholes and shifting slabs of bitumen.

The disastrous flood event is among the issues being scrutinised by a federal parliamentary inquiry into extreme weather's implications for roads in regional and rural areas.

In its submission to the inquiry, the Victorian government said it deployed cameras, ground-penetrating radars and laser technology to survey 8400 metres of road after the floods.



EMILY MCLEAN
NATIONAL TRANSPORT RESEARCH



Hi-tech plan to fix roads

HI-TECH PLAN TO FIX ROADS

Smart truck has x-ray vision

EXCLUSIVE
IAN ROYALL

GROUND penetrating radar is being used as part of the months long project to repair Victoria's regional roads after devastating floods late last year.

A hi-tech truck is providing the new technology to assess deep damage to the bitumen on more than 8400km of road surface.

The iPAVE Intelligent Pavement Assessment Victoria's — is gathering data on the roads damaged when floodwaters swamped large parts of the state, especially communities along the Murray and Goulburn Rivers.

The move comes as 286 roads statewide remain closed awaiting assessment and repair.

The Murray Valley Highway between Robinvale and Pigeon has been closed since late November.

The iPAVE provided by the Australian Road Research Board will impact more than

Hume, Western, Midland, Goulburn Valley and Calder highways.

Roads Minister Melissa Horne said the work was part of the state government's \$100m emergency road repair plan. Warmer and drier weather is providing more suitable conditions for roadworks, Ms Horne said.

"Crews are making a start on delivering large scale, long term repairs and this data will help to plan for further work, ensuring that the communities hit hardest by these floods remain connected to vital supplies and services."

Since mid October, more than 18,000 potholes had been filled in as part of the blitz.

The Victorian Transport

Association last November estimated the cost of fixing flood-damaged roads to be as much as \$1bn.

The iPAVE vehicle is able to assess both the structural and functional condition of the road, using laser technology to look at characteristics including roughness, surface texture and rutting. Cracking and other surface data is assessed using a 3D monitoring system.

The truck also has exterior cameras to give road maintainers a view of the condition of the state's roads. Ground-penetrating radar can also collect sub-surface data.

Data collected will be compared with information collected in the previous year to assess the full flood impact.

bit.ly/roadfix2022

BEYOND CERTAINTY

THE NTRO — INTERNATIONAL TECHNICAL CONFERENCE IN OCTOBER WILL DIVE DEEP INTO THE LATEST INNOVATIONS IN TRANSPORT TECHNOLOGY FROM AROUND THE WORLD, AND EXPLORE HOW AUSTRALIA'S ROADS, RAILS, PORTS, AND AIRPORTS CAN PREPARE FOR THE FUTURE.

When the Australian Road Research Board (ARRB) transitioned to the multi-modal National Transport Research Organisation (NTRO) in late 2020, it didn't adapt to an evolving and increasingly interconnected transport industry by becoming the NTRO. ARRB expanded its road-focused research operations to encompass rail, ports, and airports. According to James Fox, NTRO Chief Engagement Specialist, it was a natural fit given the overlapping research occurring between these modes and the way they integrate into the lives of its travellers using them.

She says the change also reflected the maturity of the industry in Australia.

"All the departments that share ownership of the NTRO have given this direction," she says. For example, Victoria becoming the Department of Transport and Planning in March.

"The transport industry has become less about individual interests, and much more about the movement of people."

"Movement of people," Fox says, encapsulates the core job between the many modes of transport available across the country — as well as the patterns of behaviour of the people using them both today and into the future.

She says this will be reflected in the range of topics presented at the newly scheduled 2023 NTRO — International Technical Conference in October.

"I'd just been doing a similar conference for years as ARRB," Fox says. "I'd it used to be the technical, engineering, and operations coming together to present their conference papers."

"The presenters engaged in the day, it was something really special."

Fox says ARRB had put a pause on these conferences in recent years — partly for global health reasons, and partly due to the changing values of the transport industry.

"It will be the transition to NTRO and the way the organisation is now engaging with the whole transport industry, state departments, and also the Commonwealth, that has been a bit of a catalyst for a more technical conference concept," she says.

ALL IN THE DETAILS
The 2023 NTRO — International Technical Conference, hosted by the overarching theme of "Beyond — Beyond Certainty", is currently undergoing a review of abstracts for general conference papers following a wave of interest from the sector.

These topics are expected to include: sustainable infrastructure; Asset Australia; new and Emerging Markets; Light Transport Systems; Drivers of Innovation; Next Generation Researcher's and Technology Analysis.

She says the NTRO team is once again excited to highlight the technical expertise of the transport industry, both in Australia and overseas.

"A lot of conferences will seek to move high-level material, but we're targeting people in the industry who want to further their knowledge and research," she says. "That's the reason it's specifically called a 'technical' conference. It's about the content."



National Interest Services

NTRO’s National Interest Services (NIS) library celebrated its 60th birthday in style in December 2022.

The milestone was officially celebrated at the National Transport Research Centre in Melbourne, where the library is based. Dr Max Lay, a former long-time Executive Director of ARRB and whom NTRO’s MG Lay Library is named after, fittingly cut the birthday cake as guest of honour.

The library was established to service the needs of road research, facilitate the transfer of knowledge, and assist the realisation of turning research into practice and has for the past nine years been at the heart of the Rail Knowledge Bank. It manages the NIS program which provides structured and systematic access to authoritative land transport knowledge. Key tools for industry, researchers, students and practitioners include the Australian Transport Index (ATRI), the NTRO Knowledge Base, the Rail Knowledge Bank and the news alerts.

A key mission of the NIS is to be a source of trust. In a world now flooded with misinformation there is the potential where obfuscation, misinformation, and simply wrong information may all lead to poor, ineffective and wasteful decisions. Trusted information is a valuable commodity, and the ability to curate and navigate users to that information is the key to the future. With the volume of information escalating, the need to authenticate and synthesize data depends on appropriate services and input from information specialists who have the skills to find credible information and avoid pitfalls. The ‘next generation’ National Interest (transport information) Services program will provide the tools, expertise, and access to trustworthy transport information that is needed to keep pace with the changing digital world, including the rise of Artificial Intelligence.

With continued support, the program will innovate and meet the needs of its funding partners, providing a trusted, curated, and coordinated national transport research information service that will benefit all Australians.



CURRENCY: +3,000
records added in the last financial year



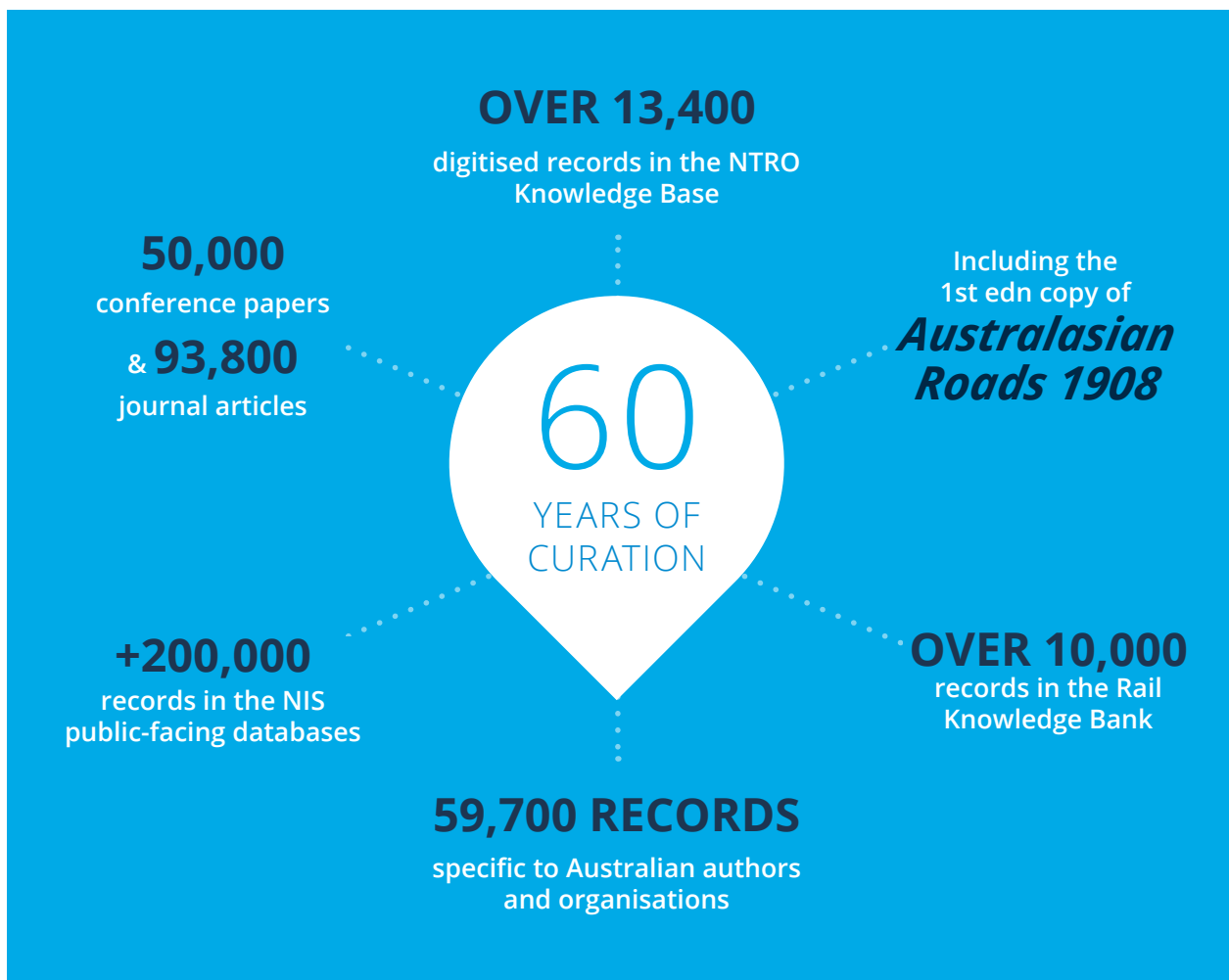
USAGE: OVER 50,000
records added in the last financial year



COVERAGE: +200,000
records in the NIS public-facing databases



AUTHORITATIVE:
includes reports, theses, core conference papers and peer reviewed transportation journals





What NTRO's National Research Labs have done during 2022-23




The total number of tests:
10,489




The total mass of material tested:
39,213 kg

Bitumen



The total tests
3,630



The total mass of bitumen tested:
2,833 kg

Asphalt



The total tests
6,034



The total mass of asphalt tested:
25,890 kg

Pavements




The total tests
825




The total mass of pavement material tested:
10,490 kg

Highlights



613
Asphalt beams tested



867
Dynamic Shear Rheometer (DSR) viscosity tests

NTRO has taken over Department of Transport laboratory testing, asphalt registrations, concrete approvals, SCRIM and PaSE services.

NTRO has registered 318 asphalt mix designs and issued 512 concrete mix approvals

The laboratory has achieved NATA accreditation for the calibration of thin-lift nuclear density gauges

Materials Testing and Performance portfolio have assessed several sustainable materials for use in road infrastructure (further work on recovered carbon black in asphalts, alternative cellulose fibre additives for asphalts, alternatives to asphalt fillers, conveyor belt rubber for asphalt and spray seals)

We have developed several new DSR viscosity tests allowing for a more detailed analysis of bituminous binders

Incorporating ASTM, AASHTO and EN test methods to expand our asphalt testing capabilities

NTRO



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Financial Statements

ARRB Group Limited | ABN 68 004 620 651

For the Year Ended 30 June 2023

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Directors' Report

In accordance with a resolution of the Board, the Directors present their report, together with the financial statements, for the year ended 30 June 2023.

Directors

The following persons were Directors of ARRB Group Limited (ARRB) during the whole or part of the financial year and up to the date of this report unless otherwise stated:

P WORONZOW

Chairman

Chair of Governance and Remuneration Committee

Member of Superannuation Policy Committee

CPA, Bachelor of Arts (Economics), Graduate Diploma in Public Sector Management

Current Employer: Department of Transport WA

Director General of Transport,

Commissioner of Main Roads, CEO of the Public Transport Authority in Western Australia.

Director – Austroads

N SCALES OBE

Deputy Chairman

Deputy Chairman

Member of Audit, Risk and Finance Committee

Member of Governance and Remuneration

Committee MBA, DMS with Distinction, MSc. Control Engineering & Computer Systems, BSc. Engineering, Vincent Fairfax Fellow (VFF)

Current Employer: Director-General Department of Transport and Main Roads, Queensland

NTC Commissioner Director – Roads Australia

Chairman – Austroads

K REID

Member of Strategy and Development Committee

BSc (Hons), Civil Engineering, Chartered Engineer, CEng (UK)

Member of the Institution of Civil Engineers, (UK) (MICE), Chartered Member of Engineering NZ (CMENZ), Member of the Institute of Directors NZ (MIoD),

Current Employer: Waka Kotahi - the New Zealand Transport Agency (NZTA)

Chief Advisor

L MCCORMICK

Member of the Audit Risk and Finance Committee

B. Eng (Civil), Dip Project Management

Fellow of Engineers Australia, Chartered Prof. Engineer

(Civil, Structural and Executive) Registered Prof Engineer of Queensland, National Engineering Register.

Current Employer: Infrastructure Commissioner, Infrastructure NT Northern Territory

Director – Austroads

S TROUGHTON

Chair of the Audit Risk and Finance Committee

Member of Governance and Remuneration Committee Fellow of Engineers Australia, GAICD

Chartered Professional Engineer, Chartered Engineer (UK),

Member of the Institution of Civil Engineers (UK)

I WEBB

Chair of Strategy and Business Development Committee

Chair of the Centre For Connected and Automated Transport

Director, Coffey Testing Pty Ltd

Member, Audit and Risk Committee, Department of Transport and Main Roads, Queensland

Former Chief Executive, Roads Australia

N MARINELLI

Member of Audit, Risk and Finance Committee

Member of Strategy & Business Development Committee

BBus (Acc), GAICD

Director - MACA Ltd.

Former Chief Executive, Fulton Hogan Australia Pty Ltd

Former Chair, Citywide North Melbourne Asphalt Pty Ltd

Former Director, Fulton Hogan Egis O&M Pty Ltd

DR C BURKE

Member of Strategy & Business Development

Bachelor of Engineering

Master of Project and Construction Management

PhD in Risk Management on the Life Cycle of Construction Projects

Director Exner Group

Director VicTrack

Victoria's first Chief Engineer

HON JOHN ANDERSON AC

Chairman of Crawford Fund for Agricultural Research

Chairman of PAGE Centre for Research

Chairman of Freeze-Dried Industries, Queensland

Holds a Master of Arts from the University of Sydney

Postnominals include AC and FTSE

P HENDERSON

Member of Governance and Remuneration Committee

Bachelor of Engineering (Electrical Hon.)

Advanced Diploma Management, GAICD

Current Employer: Executive Director Technical Services Infrastructure & Place - Transport for NSW

M CAMPBELL

(Appointed October 2022)

Bachelor of Engineering (Civil)

Advanced Diploma Management, GAICD

Former Chief Executive, Australian Rail Track Corporation (ARTC) Former ANZ General Manager, Holcim

Former Director, ARTC, Australasian Rail Association, Holcim ANZ

A PLAYFORD

(Appointed October 2022)

Bachelor of Business

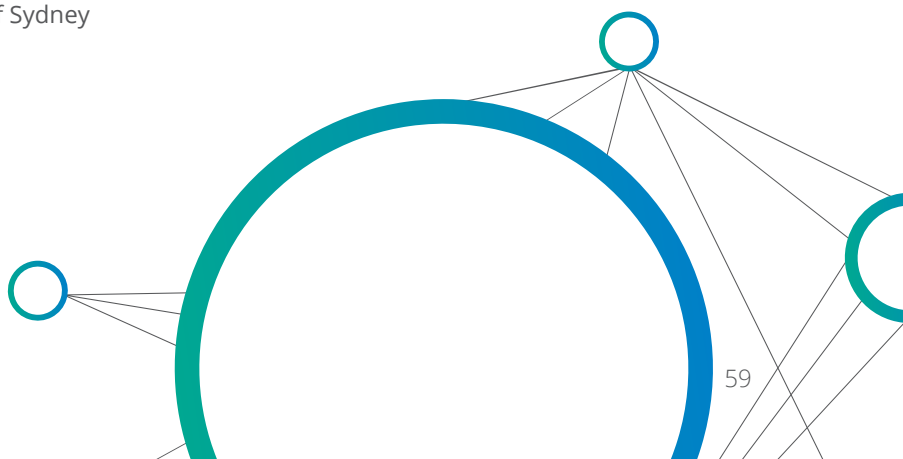
Bachelor of Law

Current Employer: Director-General - TCCS

Former Director-General: JACS

DIRECTORS' SHAREHOLDINGS

No Directors hold shares in the company.



Directors' Report (Cont...)

Meetings Of Directors

The number of meetings of the company's Board of Directors ('the Board') and of each Board committee held during the year ended 30 June 2023, and the number of meetings attended by each director were:

Director	Board		Committees								
			Finance, Audit, Risk & Safety		Governance & Remuneration		Strategy & Bus Devt		Superannuation		
	H	A	H	A	H	A	H	A	H	A	
P Woronzow	6	6	4	0	1	1				1	1
N Scales	6	6	4	2	1	1					
K Reid	6	6						3	3		
L McCormick	6	5	4	0							
S Troughton	6	5	4	4	1	0	3	1			
C Burke	6	5					3	0			
P Henderson	6	6			1	0					
I Webb	6	6					3	3			
N Marinelli	6	6	4	4			3	2			
J Anderson	6	6									
A Playford	4	3									
M Campbell	4	3									

H - represents the number of meetings held during the time the director held office or was a member of the relevant committee

A - number of meetings attended

COMPANY SECRETARIES

MARK STEIDLE

B.Acc, CPA
Chief Commercial Officer, ARRB Group Ltd

KENT WONG (RESIGNED JULY 2023)

FCPA, FCMA(UK), CGMA(UK), MComm (Acct) Senior Technology Leader, Finance Governance and Compliance, ARRB Group Ltd

REGISTERED MEMBERS OF ARRB GROUP LTD

- Department of Transport, Victoria
- Transport for New South Wales
- Environment, Planning and Sustainable Development Directorate – ACT Government
- Department of Transport and Main Roads, Queensland
- Department of Infrastructure, Planning and Logistics, Northern Territory
- Main Roads Western Australia
- Department for Infrastructure and Transport, South Australia
- Department of State Growth, Tasmania
- Australian Local Government Association
- Department of Infrastructure, Transport, Regional Development and Communications – Commonwealth of Australia
- Waka Kotahi - the New Zealand Transport Agency

MEMBERS LIABILITY

Each Member undertakes to contribute to the company's property if the company is wound up while he, she or it is a Member or within one year after he, she or it ceases to be a Member, for payment of the company's debts and liabilities contracted before he, she or it ceased to be a Member and of the costs, charges and expenses of winding up and for an adjustment of the rights of contributors among themselves, such amount as may be required by not exceeding one hundred dollars (\$100.00).

PRINCIPAL ACTIVITIES

During the year the principal activities of the company consisted of:

1. Transport innovation projects on a fee-for-service basis to deliver superior technology and new transport solutions. Increasingly these projects are undertaken as collaborative research programs including under the National Asset Centre of Excellence (NACOE), Western Australian Road Research and Innovation Program (WARRIP) and other agency specific programs with Major Road Projects Victoria (MRPV), the Department for Infrastructure and Transport, South Australia and local government. The innovation programs continue to yield significant improvements in practice through development of guides to best practice, new specifications and promotional activities including webinars, training events, workshops and other outreach activities.
2. Providing information on road and transport matters considered to be in the national interest including infrastructure measurement and data capture, analytics on big data sets and knowledge management
3. Delivering over 1,000 innovation and new knowledge projects to the road and transport industry across Australia and New Zealand
4. Researching, developing and the supply of new and emerging technologies and technical services.

DIVIDENDS

The company Constitution precludes the declaration or payment of any dividends.

Directors' Report (Cont...)

REVIEW AND RESULTS OF OPERATIONS

Operations focused on the transition to a fully mode-agnostic transport organisation in line with the 2020-2024 strategic plan, including the transition of our main brand to the National Transport Research Organisation (NTRO), and the merging of activities of the Australasian Centre for Rail Innovation (ACRI).

A significant milestone was achieved this year, with the company achieving \$50 million in operating revenue for the first time, on our way to posting our fourth successive year of profitability.

Both the Western Australian Road Research Innovation Program (WARRIP) and National Asset Centre of Excellence (NACOE) in Queensland were extended and continue to deliver excellent benefit-cost ratios for both the WA and Queensland Governments.

Partnership agreements with the Department of Transport and Planning in Victoria and the Department of Infrastructure and Transport in South Australia, with a new initiative executed with Waka Kotahi (NZTA) have underpinned an improvement to the company's long-term economic sustainability.

The NTRO has expanded our fleet of Infrastructure Measurement technology, which has enabled a greater proportion of members' networks to be serviced. This includes the support of extensive flood recovery efforts in New South Wales and Victoria.

The investment in a fourth iPAVE should see it operational in early 2024.

Our Sustainability and Materials Performance capabilities have been enhanced with a second Accelerated Loading Facility (ALF) having been acquired and in the process of being commissioned in Western Australia.

The NTRO has diversified its service offering, including the deployment of various software and data offerings, and is now providing the Victorian Department of Transport and Planning Field Testing and Laboratory Services.

The organisation increased its capabilities over the course of the year, now boasting a workforce of 240 staff, tackling a diverse and complex range of transport challenges.

We thank the leadership team and all the staff at NTRO for their excellent work, resilience and commitment. Our staff are proud of their work and have a passion for applying their skills for the benefit of members and clients.

We look forward to developing the next generation solutions for Australia's transport needs.

SIGNIFICANT CHANGES IN THE STATE OF AFFAIRS

There were no significant changes in the state of affairs of the company that occurred during the year not otherwise disclosed in this report or the Financial Statements.

MATTERS SUBSEQUENT TO THE END OF THE FINANCIAL YEAR

During July 2023, changes to the membership of ACRI resulted in effective control of the company's assets transferring to the NTRO.

In mid-July 2023, NTRO committed to the purchase of a further iPAVE asset from Greenwood Engineering (iPAVE 4). Additional costs will be incurred in shipping the asset ex Greenwood's workshop in Denmark, the procurement of a prime mover locally and the installation of additional sensor equipment as well as software.

On 1 July 2023 NTRO reached agreement with Waka Kotahi (NZTA), expanding NTRO's service offering to Waka Kotahi beyond infrastructure measurement to incorporate disciplines of asset management, technical support in project delivery/training programs, support for Waka Kotahi's zero-emissions objective and development of technical capability within the Waka Kotahi agency itself. This contract is valued at NZ\$1,000,000 per annum, incorporating funding contribution toward NTRO's NIS (Library). As part of this agreement, NTRO will establish a permanent operational presence in New Zealand based in Wellington early in Financial Year 2024.

No other matter or circumstance has arisen since 30 June 2023 that has significantly affected, or may significantly affect the company's operations, the results of those operations, or the company's state of affairs in future financial years.

LIKELY DEVELOPMENTS AND EXPECTED RESULTS OF OPERATIONS

At the date of this report, we are not aware of any likely developments in the operations of the company, other than business as usual.

ENVIRONMENTAL REGULATION

The company is not subject to any significant environmental regulation in respect of its activities.

DIRECTORS' BENEFITS

During the year no Director has received or become entitled to receive a benefit (other than a remuneration benefit included in note 20 to the Financial Statements) because of a contract that:

- a. the Director or
- b. a firm of which the Director is a member or
- c. an entity in which the Director has a substantial financial interest; has made (during the year ended 30 June 2023 or at any other time) with:
 1. the company or
 2. an entity that the company controlled or
 3. a body corporate that was related to the company when the contract was made or when the Director received, or became entitled to receive the benefit (if any).

INSURANCE OF OFFICERS

During the year, ARRB Group Ltd paid a premium of \$11,418.22 (ex GST) to insure the Directors, Company Secretaries, and the Senior Managers.

The potential liabilities insured are legal costs that may be incurred in defending civil or criminal proceedings that may be brought against the officers in their capacity as officers of the company, and any other payments arising from liabilities incurred by the officers in connection with such proceedings, other than where such liabilities arise out of conduct involving a wilful breach of duty by the officers or the improper use by the officers of their position or of information to gain advantage for themselves or someone else or to cause detriment to the company. It is not possible to apportion the premium between amounts relating to the insurance against legal costs and those relating to other liabilities



S TROUGHTON

CHAIR OF AUDIT, RISK AND FINANCE COMMITTEE

Sydney

Date: 17 October 2023

INDEMNITY AND INSURANCE OF AUDITOR

The company has not, during or since the end of the financial year, indemnified or agreed to indemnify the auditor of the company or any related entity against a liability incurred by the auditor.

During the financial year, the company has not paid a premium in respect of a contract to insure the auditor of the company or any related entity.

PROCEEDINGS ON BEHALF OF THE COMPANY

No person has applied to the Court for leave to bring proceedings on behalf of the company, or to intervene in any proceedings to which the company is a party, for the purpose of taking responsibility on behalf of the company for all or part of those proceedings.

No proceedings have been brought or intervened in on behalf of the company with leave of the Court.

ROUNDING OF AMOUNTS TO NEAREST THOUSAND DOLLARS

The company is an entity to which ASIC Instrument 2016/91 applies and, accordingly, amounts in the financial statements and Directors' report have been rounded to the nearest thousand dollars.

AUDITOR INDEPENDENCE DECLARATION

A copy of the auditor independence declaration is set out on page 8 of this Financial Report.

AUDITOR

RSM Australia continues in office.

This report has been made in accordance with a resolution of Directors.



P WORONZOW

CHAIR OF BOARD OF DIRECTORS

Perth

Date: 17 October 2023



RSM Australia Partners

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F +61(0) 3 9286 8199

www.rsm.com.au

AUDITOR'S INDEPENDENCE DECLARATION

As lead auditor for the audit of the financial report of ARRB Group Limited for the year ended 30 June 2023, I declare that, to the best of my knowledge and belief, there have been no contraventions of:

- (i) the auditor independence requirements of the Australian professional accounting bodies in relation to the audit; and
- (ii) any applicable code of professional conduct in relation to the audit.

RSM AUSTRALIA PARTNERS

B Y CHAN
Partner

Dated: 17 October 2023
Melbourne, Victoria

THE POWER OF BEING UNDERSTOOD
AUDIT | TAX | CONSULTING

RSM Australia Partners is a member of the RSM network and trades as RSM. RSM is the trading name used by the members of the RSM network. Each member of the RSM network is an independent accounting and consulting firm which practices in its own right. The RSM network is not itself a separate legal entity in any jurisdiction.
RSM Australia Partners ABN 36 965 185 036

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Statement of Profit or Loss and Other Comprehensive Income

For the year ending 30 June 2023

	Notes	2023 \$'000	2022 \$'000
Revenue	2	50,168	41,953
Expenses			
Employee benefits	3	28,036	24,053
Depreciation and amortisation	3	4,232	3,603
Borrowing	3	901	627
Direct materials	3	1,663	1,166
Direct other	3	6,952	6,506
Short term lease rental	3	114	100
Professional and consulting fees	3	3,944	3,595
Other	3	2,991	1,995
Total expenses		48,834	41,645
Surplus for the year		1,334	308
Other Comprehensive Income			
Items that will not be reclassified to the profit and loss			
- Defined Benefit Superannuation Plan actuarial gain / (loss)		(298)	169
- Adjustment of depreciation on sale of NSV to IRSM		1	4
- Gain / (loss) on change in market value of investments at fair value through other comprehensive income	11	1,305	(1,482)
Items that may be reclassified subsequently to profit and loss			
Foreign Currency Fluctuation Reserve			
- Share of gain / (loss) on translation of foreign currency of joint venture	10	25	(20)
Other comprehensive (loss) / income for the year		1,033	(1,329)
Total comprehensive (loss)/income for the year		2,368	(1,021)

The above Statement of Profit or Loss and Other Comprehensive Income should be read in conjunction with the accompanying notes

Statement of Financial Position

For the year ending 30 June 2023

	Notes	2023 \$'000	2022 \$'000
Current Assets			
Cash and cash equivalents	4	7,726	6,963
Receivables	5	8,501	10,191
Contract Assets	6	3,951	2,086
Prepayments		850	700
Other		69	74
Total Current Assets		21,097	20,014
Non-Current Assets			
Property, plant and equipment	7	20,576	18,825
Right-of-use assets	8	13,150	13,934
Intangible assets	9	-	29
Investments accounted for using the equity method	10	1,269	1,061
Financial assets at fair value through other comprehensive income	11	20,073	18,768
Retirement benefits	15	-	55
Total Non-Current Assets		55,068	52,672
Total Assets		76,165	72,686
Current Liabilities			
Interest bearing liabilities	12	7,975	7,950
Trade and other payables	13	4,341	3,436
Employee entitlements	14	4,755	4,776
Contract liabilities	16	10,587	10,387
Lease liabilities	17	1,489	1,474
Total Current Liabilities		29,147	28,023

The above Statement of Financial Position should be read in conjunction with the accompanying notes

Statement of Financial Position (Cont...)

For the year ending 30 June 2023

	Notes	2023 \$'000	2022 \$'000
Non-Current Liabilities			
Employee entitlements	14	836	640
Lease liabilities	17	13,753	14,203
Retirement benefits	15	242	-
Total Non-Current Liabilities		14,831	14,843
Total Liabilities		43,978	42,866
Net Assets		32,187	29,820
Equity			
Reserves	20	(206)	(1,536)
Retained earnings		32,393	31,356
Total Equity		32,187	29,820

The above Statement of Financial Position should be read in conjunction with the accompanying notes

Statement of Changes In Equity

For the year ending 30 June 2023

Notes	Reserve \$'000	Retained Earnings \$'000	Total Equity \$'000
Balance at 1 July 2021	(34)	30,875	30,841
Surplus for the year	-	308	308
Other comprehensive income			
- share of loss on foreign currency translation of joint venture	(20)	-	(20)
- adjustment on the depreciation on sale of NSV to IRSM	-	4	4
- actuarial gain on Defined Benefit Superannuation Plan	-	169	169
- loss in market value of investment	(1,482)	-	(1,482)
Balance at 30 June 2022	(1,536)	31,356	29,820
Balance at 1 July 2022	(1,536)	31,356	29,820
Surplus for the year	-	1,334	1,334
Other comprehensive income			
- share of gain of foreign currency translation of joint venture	25	-	25
- adjustment on the depreciation on sale of NSV to IRSM	-	1	1
- actuarial loss on Defined Benefit Superannuation Plan	-	(298)	(298)
- gain in market value of investment	1,305	-	1,305
Balance at 30 June 2023	(206)	32,393	32,187

The above Statement of Changes in Equity should be read in conjunction with the accompanying notes

Statement of Cash Flows

For the year ended 30 June 2023

	Notes	2023 \$'000	2022 \$'000
Cash flows from operating activities			
Cash was provided from:			
Receipts from customers		51,580	36,813
Interest received	2	77	2
		51,657	36,815
Cash was provided to:			
Payments to suppliers and employees		(40,876)	(34,275)
Interest paid	3	(281)	(34)
Net GST payment to ATO		(3,192)	(1,846)
Net cash inflow from operating activities	26	7,308	660
Cash flow from investing activities			
Proceeds from sale of property, plant and equipment		7	122
Payment for property, plant and equipment		(4,613)	(6,223)
Payment for intangible asset		-	(25)
Receipt of dividend from joint venture		12	-
Payment for investment		-	(20,250)
Net cash outflow from investing activities		(4,594)	(26,376)
Cash flow from financing activities			
Lease payments		(1,976)	(1,166)
Proceeds from external borrowings		1,501	8,257
Repayment of external borrowings		(1,476)	(307)
Net cash outflow from financing activities		(1,951)	6,784
Net (decrease)/increase in cash held		763	(18,932)
Cash at the beginning of the financial year		6,963	25,895
Cash at the end of the financial year	4	7,726	6,963

The above Statement of Cash Flows should be read in conjunction with the accompanying notes.

Notes to the Financial Statements

For the year ended 30 June 2023

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

This special purpose financial report has been prepared in accordance with Australian equivalents to International Financial Reporting Standards (IFRS), other authoritative pronouncements of the Australian Accounting Standards Board and the Australian Charities and Not-for-profits Commission Act 2012.

NEW OR AMENDED ACCOUNTING STANDARDS AND INTERPRETATIONS ADOPTED

The company has adopted all of the new or amended Accounting Standards and Interpretations issued by the Australian Accounting Standards Board (AASB) that are mandatory for the current reporting period. Any new or amended Accounting Standards or Interpretations that are not yet mandatory have not been adopted early.

BASIS OF PREPARATION OF FINANCIAL REPORT

ARRB Group Limited is not a reporting entity because in the directors' opinion, it is unlikely that users exist who are unable to command the preparation of reports tailored so as to satisfy, specifically, all their information needs.

This is a special purpose financial report that has been prepared for the sole purpose of complying with the Australian Charities and Not-for-profits Commission Act 2012 requirements to prepare and distribute a financial report to the members and must not be used for any other purpose. The directors have determined that the accounting policies adopted are appropriate to meet the needs of the members.

The measurement basis adopted in preparing this financial report is historical cost, except for certain assets which, as noted, are at valuation. Unless otherwise stated, the accounting policies adopted are consistent with those of the prior year.

The Company has applied Accounting Standard AASB 101 Presentation of Financial Statements and other applicable Australian Accounting Standards with the exception of the disclosure requirements in the following:

- AASB 7** Financial Instruments Disclosures
- AASB 124** Related Party Disclosures.
- AASB 13** Fair Value Measurement

The reader should also be aware of the relationship between ARRB Group Limited and its members, who are generally the government organisations which manage public transport infrastructure in Australia and New Zealand. ARRB Group Limited is a public company limited by guarantee and its members cannot benefit financially from its performance. The ARRB Group Limited operates as a not-for-profit entity and, in commercial transactions, on an arm's length basis from its members. Equally, members are also often clients and competitors. At the annual meeting, members may be entitled to elect some of their representatives as directors.

FOREIGN CURRENCY TRANSLATION

Functional and presentation currency

The functional currency of the Company is measured using the currency of the primary economic environment in which the Company operates. The Financial Statements are presented in Australian dollars which is the Company's functional and presentation currency.

Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of transactions. Foreign currency monetary items are translated at the year-end exchange rate. Non-monetary items measured at historical cost continue to be carried at the exchange rate at the date of the transaction. Non-monetary items measured at fair value are reported at the exchange rate at the date when fair values were determined.

Exchange differences arising on the translation of monetary items are recognised in profit or loss, except where deferred in equity as a qualifying cash flow or net investment hedge.

Notes to the Financial Statements (Cont...)

Exchange differences arising on the translation of non-monetary items are recognised directly in other comprehensive income to the extent that the underlying gain or loss is directly recognised in other comprehensive income, otherwise the exchange difference is recognised in the profit or loss.

REVENUE RECOGNITION

Revenue from contracts with customers

Revenue is recognised at an amount that reflects the consideration to which the company is expected to be entitled in exchange for transferring goods or services to a customer. For each contract with a customer, the company identifies the contract with a customer; identifies the performance obligations in the contract; determines the transaction price which takes into account estimates of variable consideration and the time value of money; allocates the transaction price to the separate performance obligations on the basis of the relative stand-alone selling price of each distinct good or service to be delivered; and recognises revenue when or as each performance obligation is satisfied in a manner that depicts the transfer to the customer of the goods or services promised.

Variable consideration within the transaction price, if any, reflects concessions provided to the customer such as discounts, rebates and refunds, any potential bonuses receivable from the customer and any other contingent events. Such estimates are determined using either the 'expected value' or 'most likely amount' method. The measurement of variable consideration is subject to a constraining principle whereby revenue will only be recognised to the extent that it is highly probable that a significant reversal in the amount of cumulative revenue recognised will not occur. The measurement constraint continues until the uncertainty associated with the variable consideration is subsequently resolved. Amounts received that are subject to the constraining principle are recognised as a refund liability.

Other goods/services

Revenue is recognised when goods/services have been dispatched/provided to a customer pursuant to an order and the associated risks have passed to the carrier or customer.

IMPAIRMENT OF ASSETS

Assets that have an indefinite useful life are not subject to amortisation but are tested annually for impairment. Assets that are subject to amortisation/depreciation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For the purpose of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash generating units).

CASH AND CASH EQUIVALENTS

Cash and cash equivalents include cash on hand, deposits held at call with financial institutions, other short-term, highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of change in value, and bank loans. Bank loans are shown within interest-bearing liabilities in the current liabilities on the Financial Statements.

TRADE AND OTHER RECEIVABLES

All trade debtors are recognised at the net amounts receivable as they are due for settlement. The ability to collect trade debtors is reviewed on an ongoing basis, with an allowance for expected credit losses recognised. Other receivables are recognised at amortised cost, less any allowance for expected credit losses.

CONTRACT ASSETS

Contract assets are recognised when the Company has transferred goods or services to the customer but where the Company has yet to establish an unconditional right to consideration. Contract assets are treated as financial assets for impairment purposes.

Contract assets comprised of contract jobs and expense jobs. Contract jobs and work in progress are valued at cost, plus profit recognised to date less any provision for anticipated future losses.

Cost includes both variable and fixed costs relating to specific contracts, and those costs that are attributable to the contract activity and that can be allocated on a reasonable basis.

FAIR VALUE ESTIMATION

The fair value of financial assets and financial liabilities must be estimated for recognition and measurement or for disclosure purposes.

The nominal value less estimated credit adjustments of trade receivables, contract works in progress and payables are assumed to approximate their fair values.

PROPERTY, PLANT AND EQUIPMENT

All property, plant and equipment are stated at historical cost less depreciation. Historical cost also includes expenditure that is directly attributable to acquisition of the item.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the company and the cost of the item can be measured reliably. All other repairs and maintenance are charged to the Statement of Profit or Loss and Other Comprehensive Income during the financial period in which they are incurred.

Depreciation on other assets is calculated using the straight-line method to allocate their cost or revalued amounts, net of their residual values, over their estimated useful lives, as follows:

Leasehold buildings & improvement	Estimated useful life or unexpired period of the lease
Right-of-use assets	Estimated useful life or unexpired period of the lease
Furniture, fittings & equipment	2 - 10 years
Research and Survey Equipment	2 - 20 years
Plant and equipment	3 - 10 years

Assets residual values and useful lives are reviewed, and adjusted if appropriate, at each reporting date and no changes have been made.

RIGHT-OF-USE ASSETS

A right-of-use asset is recognised at the commencement date of a lease. The right-of-use asset is measured at cost, which comprises the initial amount of the lease liability, adjusted for, as applicable, any lease payments made at or before the commencement date net of any lease incentive received, any initial direct costs incurred, and, except where included in the cost of inventories, an estimate of cost expected to be incurred for dismantling and removing the underlying asset, and restoring the site or asset.

Right-of-use assets are depreciated on a straight-line basis over the unexpired period of the lease or the estimated useful life of the asset, whichever is the shorter. Where the company expects to obtain ownership of the leased asset at the end of the lease term, the depreciation is over its estimated useful life. Right-of-use assets are subject to impairment or adjusted for any remeasurement of lease liabilities.

The company has elected not to recognise a right-of-use asset and corresponding lease liability for short-term leases with terms of 12 months or less and leases of low-value assets. Lease payments on these assets are expensed to profit and loss as incurred.

ACCOUNTING FOR ASSOCIATE ENTITY

Associates are entities over which the company has significant influence but not control or joint control. Investments in associates are accounted for using the equity method. Under the equity method, the share of the profits or losses of the associate is recognised in profit or loss and the share of the movements in equity is recognised in other comprehensive income. Investments in associates are carried in the statement of financial position at cost plus post-acquisition changes in the company's share of net assets of the associate. Goodwill relating to the associate is included in the carrying amount of the investment and is neither amortised nor individually tested for impairment. Dividends received or receivable from associates reduce the carrying amount of the investment.

When the company's share of losses in an associate equals or exceeds its interest in the associate, including any unsecured long-term receivables, the company does not recognise further losses, unless it has incurred obligations or made payments on behalf of the associate.

The company discontinues the use of the equity method upon the loss of significant influence over the associate and recognises any retained investment at its fair value. Any difference between the associate's carrying amount, fair value of the retained investment and proceeds from disposal is recognised in profit or loss.

Notes to the Financial Statements (Cont...)

INVESTMENTS AND OTHER FINANCIAL ASSETS

Investments and other financial assets are initially measured at fair value. Transaction costs are included as part of the initial measurement, except for financial assets at fair value through profit or loss. Such assets are subsequently measured at either amortised cost or fair value depending on their classification. Classification is determined based on both the business model within which such assets are held and the contractual cash flow characteristics of the financial asset unless an accounting mismatch is being avoided.

Financial assets are derecognised when the rights to receive cash flows have expired or have been transferred and the consolidated entity has transferred substantially all the risks and rewards of ownership. When there is no reasonable expectation of recovering part or all of a financial asset, its carrying value is written off.

Financial assets at fair value through profit or loss

Financial assets not measured at amortised cost or at fair value through other comprehensive income are classified as financial assets at fair value through profit or loss. Typically, such financial assets will be either: (i) held for trading, where they are acquired for the purpose of selling in the short-term with an intention of making a profit, or a derivative; or (ii) designated as such upon initial recognition where permitted. Fair value movements are recognised in profit or loss.

Financial assets at fair value through other comprehensive income

Financial assets at fair value through other comprehensive income include equity investments which the consolidated entity intends to hold for the foreseeable future and has irrevocably elected to classify them as such upon initial recognition.

Impairment of financial assets

The consolidated entity recognises a loss allowance for expected credit losses on financial assets which are either measured at amortised cost or fair value through other comprehensive income. The measurement of the loss allowance depends upon the consolidated entity's assessment at the end of each reporting period as to whether the financial instrument's credit risk has increased significantly

since initial recognition, based on reasonable and supportable information that is available, without undue cost or effort to obtain.

Where there has not been a significant increase in exposure to credit risk since initial recognition, a 12-month expected credit loss allowance is estimated. This represents a portion of the asset's lifetime expected credit losses that is attributable to a default event that is possible within the next 12 months. Where a financial asset has become credit impaired or where it is determined that credit risk has increased significantly, the loss allowance is based on the asset's lifetime expected credit losses. The amount of expected credit loss recognised is measured on the basis of the probability weighted present value of anticipated cash shortfalls over the life of the instrument discounted at the original effective interest rate.

For financial assets mandatorily measured at fair value through other comprehensive income, the loss allowance is

recognised in other comprehensive income with a corresponding expense through profit or loss. In all other cases, the loss allowance reduces the asset's carrying value with a corresponding expense through profit or loss.

TRADE AND OTHER PAYABLES

These amounts represent liabilities for goods and services provided to the Company prior to the end of the financial year which are unpaid. The amounts are unsecured and are paid within the agreed terms of trade. Due to their short-term nature they are measured at amortised cost and are not discounted.

BORROWINGS

Borrowings are initially recognised at fair value, net of transaction costs incurred. Borrowings are subsequently measured at amortised cost. Any difference between the proceeds (net of transaction costs) and the redemption amount is recognised in the Statement of Profit or Loss and Other Comprehensive Income over the period of the borrowings using the effective interest method.

CONTRACT LIABILITIES

Contract liabilities - effectively represent the Company's obligation to transfer goods or services to a customer and are recognised when a customer pays consideration, or when the Company recognised a receivable to reflect its unconditional right to consideration (whichever is earlier) before the Company has transferred the goods or services to the customer.

BORROWING COSTS

Borrowing costs incurred for the construction of any qualifying asset are capitalised using the period of time that is required to complete and prepare the asset for its intended use or sale. Other borrowing costs are expensed.

PROVISIONS

Provisions for service warranties are recognised when the Company has a present legal or constructive obligation as a result of past events, it is more likely than not that an outflow of resources will be required to settle the obligation, and the amount has been reliably estimated. Provisions are not recognised for unknown operating losses.

EMPLOYEE BENEFITS

Wages and salaries, annual leave and sick leave

Liabilities for wages and salaries, including annual leave expected to be settled within 12 months of the reporting date are recognised in other payables in respect of employees' services up to the reporting date and are measured at the amounts expected to be paid when the liabilities are settled, at their nominal values.

The portion of annual leave expected to be settled more than 12 months are classified as non-current liability. It is based on the experience of employee annual leave taken pattern. It is measured as the present value of the estimated cash outflows to be made by the entity. Consideration is given to expected future wage and salary levels. Expected future payments are discounted using market yields at the reporting date on national government guaranteed bonds with terms to maturity and currency that match, as closely as possible, the estimated future cash outflows.

Provisions made in respect of employee benefits which are not expected to be settled within 12 months are measured at their present value of the estimated future cash outflows to be made by the entity in respect of services provided by employees up to the reporting date. Regardless of the expected timing of settlements, provisions made in respect of employee benefits are classified as a current

liability, unless there is an unconditional right to defer the settlement of the liability for at least 12 months after the reporting date, in which case it would be classified as a non-current liability.

Long service leave

The liability for long service leave is recognised in the provision for employee benefits and measured as the present value of expected future payments to be made in respect of services provided by employees up to the reporting date. Consideration is given to expected future wage and salary levels, experience of employee departures and periods of service. Expected future payments are discounted using market yields at the reporting date on national government guaranteed bonds with terms to maturity and currency that match, as closely as possible, the estimated future cash outflows. Provisions made for unconditional long service leave would be classified as a current liability, where the employee has a present entitlement to the benefit. A non-current liability includes long service leave entitlements accrued for employees with less than seven years of continuous service.

Employee benefit on-costs

Employee benefit on-costs are recognised in employee benefit liabilities and costs when the employee benefits to which they relate are recognised as liabilities.

Employee incentives

The Company recognises a liability and an expense for bonuses based on the employee's performance against criteria of their employment contract. The Company recognises a provision where contractually obliged or where there is a past practice that has created a constructive obligation.

Retirement benefit obligations

The Company operates both defined benefit superannuation plan and defined contribution superannuation plan for the employees' retirement, disability or death.

The defined benefit plan provides defined lump sum benefits based on years of service and final average salary. The defined contribution plan receives fixed contributions from the Company and the Company's legal or constructive obligation is limited to these contributions.

A liability or asset in respect of defined benefit superannuation plan is recognised on the face of the Financial Statements, and is measured at the present value of the defined benefit obligation at the reporting date plus unrecognised actuarial gains (less unrecognised actuarial losses) less the fair value of the superannuation fund's assets at that date and any unrecognised past service cost. The present value of the defined benefit obligation is based on expected future payments which arise from membership of the fund to the reporting date,

Notes to the Financial Statements (Cont...)

calculated annually by independent actuaries using the projected unit credit method. Consideration is given to expected future wages and salary levels, experience of employee departures and periods of service.

Expected future payments are discounted using market yields on national government bonds at the reporting date with terms to maturity and currency that match, as closely as possible, the future cash outflows.

Actuarial gains and losses arising from experience, adjustments and changes in actuarial assumptions are charged or credited to the Statement of Profit or Loss and Other Comprehensive Income over the employees' average remaining working lives.

Past service costs are recognised immediately in income, unless the changes to the superannuation fund are conditional on the employees remaining in service for a specified period of time (the vesting periods). In this case, the past service costs are amortised on a straight-line basis over the vesting period.

Future taxes that are funded by the entity and are part of the provision of the existing benefit obligation are taken into account in measuring the net liability or asset.

Contributions to the defined contribution fund are recognised as an expense as they become payable. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in the future payments is available.

LEASE LIABILITIES

A lease liability is recognised at the commencement date of a lease. The lease liability is initially recognised at the present value of the lease payments to be made over the term of the lease, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the company's incremental borrowing rate. Lease payments comprise of fixed payments less any lease incentives receivable, variable lease payments that depend on an index or a rate, amounts expected to be paid under residual value guarantees, exercise price of a purchase option when the exercise of the option is reasonably certain to occur, and any anticipated termination penalties. The variable lease payments that do not depend on an index or a rate are expensed in the period in which they are incurred.

Lease liabilities are measured at amortised cost using the effective interest method. The carrying amounts are remeasured if there is a change in the following: future lease payments arising from a change in an index or a rate used; residual guarantee; lease term; certainty of a purchase option and termination penalties. When a lease liability is remeasured, an adjustment is made to the corresponding right-of use asset, or to profit or loss if the carrying amount of the right-of-use asset is fully written down.

INCOME TAX

The Company was granted income tax exempt status under section 50B of the Income Tax Assessment Act 1997, GST concessions under Division 176 of A New Tax System (Goods and Service Tax) Act 1999 and FBT rebate under 123E of the Fringe Benefits Tax Assessment 1986.

INTANGIBLES

Development cost

Expenditure during the research phase of a project is recognised as an expense when incurred. Development costs are capitalised only when technical feasibility studies identify that the project will deliver future economic benefits and these benefits can be measured reliably. Development costs have a finite life and are amortised on a systematic basis matched to the future economic benefits over the useful life of the project. Development costs are amortised over three years.

Rounding of amounts to nearest thousand dollars

The Company is an entity to which ASIC Instrument 2016/91 applies and, accordingly, amounts in the financial statements and Directors' report have been rounded to the nearest thousand dollars.

COMPARATIVE FIGURES

Where required by Accounting Standards, comparative figures have been adjusted to conform with changes in presentation for the current financial year.

When the Company applies an accounting policy retrospectively, makes a retrospective restatement or reclassification in its financial statements, a Financial Statement as at the beginning of the earliest comparative period is disclosed.

CRITICAL ACCOUNTING ESTIMATES

The Directors evaluate estimates and judgements incorporated into the financial report based on historical knowledge and best available current information. Estimates assume a reasonable expectation of future events and are based on current trends and economic data, obtained externally and within the company.

Contract Assets

Significant judgements are made with respect to the recoverable amounts of contract assets.

In making their judgement, management considered:

- whether the total contract revenue could be measured reliably
- whether the contract costs to complete the contract and the stage of contract completion at balance date could be reliably measured, and
- whether the contract costs attributable to the contract can be clearly identified and measured reliably so that the actual contract costs incurred can be compared with prior estimates.

After reviewing contract transactions management are satisfied that the above criteria have been met and the recognition of the revenue in the current year is appropriate, in conjunction with the recognition of the appropriate contract works in progress/revenue in advance amounts.

Lease term

The lease term is a significant component in the measurement of both the right-of-use asset and lease liability. Judgement is exercised in determining whether there is reasonable certainty that an option to extend the lease or purchase the underlying asset will be exercised, or an option to terminate the lease will not be exercised, when ascertaining the periods to be included in the lease term. In determining the lease term, all facts and circumstances that create an economical incentive to exercise an extension option, or not to exercise a termination option, are considered at the lease commencement date. Factors considered may include the importance of the asset to the company's operations; comparison of terms and conditions to prevailing market rates; incurrence of significant penalties; existence of significant leasehold improvements; and the costs and disruption to replace the asset. The company reassesses whether it is reasonably certain to exercise an extension option, or not exercise a termination option, if there is a significant event or significant change in circumstances.

Incremental borrowing rate

Where the interest rate implicit in a lease cannot be readily determined, an incremental borrowing rate is estimated to discount future lease payments to measure the present value of the lease liability at the lease commencement date. Such a rate is based on what the company estimates it would have to pay a third party to borrow the funds necessary to obtain an asset or a similar value to the right-to-use asset, with similar terms, security and economic environment.

Lease make good provision

A provision has been made for the present value of anticipated costs for future restoration of leased premises. The provision includes future cost estimates associated with closure of the premises. The calculation of this provision requires assumptions such as application of closure dates and cost estimates. The provision recognised for each site is periodically reviewed and updated based on the facts and circumstances available at the time. Changes to the estimated future costs for sites are recognised in the statement of financial position by adjusting the asset and the provision. Reductions in the provision that exceed the carrying amount of the asset will be recognised in profit or loss.

Notes to the Financial Statements (Cont...)

NOTE 2 - REVENUE

	2023 \$'000	2022 \$'000
Revenue from contracts with customers	49,908	41,617
Interest	77	2
Share of profit of IRSM associate entity	195	199
Profit on sale of fixed assets	7	122
Gain / (loss) on foreign exchange	(18)	13
Total revenue	50,168	41,953

NOTE 3 - EXPENSES

	Notes	2023 \$'000	2022 \$'000
Employee benefits			
Salaries, wages and on-costs		22,561	19,843
Termination benefits		19	64
Employee bonuses and incentives		265	-
Employer superannuation contribution - normal		2,557	2,093
- additional		48	-
Long service leave and annual leave		2,586	2,053
		28,036	24,053
Depreciation and amortisation			
Amortisation - intangibles		29	75
Depreciation - buildings		249	246
- plant and equipment		2,612	2,116
- building right-of-use assets		1,341	1,166
		4,232	3,603
Finance costs			
Interest and finance charges - borrowing		281	34
Interest and finance charges - lease liabilities		620	593
		901	627
Direct materials		1,663	1,166
Direct other			
Contractors		4,827	5,529
Travel and entertainment		1,989	930
Others		136	47
		6,952	6,506
Short term lease rental		114	100
Other			
Professional and consulting fees		3,944	3,595
Administrative		656	651
Travel and entertainment		699	346
Facilities and Maintenance		766	611
Other		871	387
		6,935	5,590
Total expenses		48,834	41,645

Notes to the Financial Statements (Cont...)

NOTE 4 - CURRENT ASSETS – CASH AND CASH EQUIVALENTS

	2023 \$'000	2022 \$'000
Cash at bank and on hand	7,076	6,313
Short-term deposits and deposits at call	650	650
	7,726	6,963

The weighted average interest in the cash at bank and deposits is 0.35% (2022: 0.01%)

Reconciliation of cash

Cash at the end of the financial year is reconciled to the Statement of Cash

Cash and cash equivalents	7,726	6,963
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There is no material difference between the fair value and the carrying amount of cash and cash equivalent.

NOTE 5 - CURRENT ASSETS - TRADE AND OTHER RECEIVABLES

	2023 \$'000	2022 \$'000
Trade debtors	8,082	9,800
Other receivables	418	391
Total receivables	8,501	10,191

(a) Fair value

The amounts are stated at fair values as they are expected to be settled, in the short term, less allowance for impairment loss.

(b) Interest rate risk

Trade and other receivables are non-interest bearing therefore not exposed to interest rate risk.

(c) Credit rate risk

The company has a large number of customers. The majority are the federal government, state and local authorities and as a result the risk of default is limited.

NOTE 6 - CURRENT ASSETS – CONTRACT ASSETS

	2023 \$'000	2022 \$'000
Contract work-in-progress	3,951	2,086

NOTE 7 - NON-CURRENT ASSETS – PROPERTY, PLANT AND EQUIPMENT

Movements in the carrying amounts of each class of property, plant and equipment between the beginning and the end of the reporting period:

\$'000	Leasehold Buildings & Improvements At Cost	Furniture, Fittings & Equipment At Cost	Research & Survey Equipment At Cost	Plant & Equipment At Cost	Capital Work in Progress At Cost	Total
Cost / Revaluation						
Balance at 1 July 2022	6,014	10,394	17,348	2,527	5,799	42,081
Addition	-	-	-	-	4,613	4,613
Transfers	32	891	7,625	-	(8,548)	-
Disposal	-	-	(51)	-	-	(51)
Balance at 30 June 2023	6,046	11,284	24,922	2,527	1,864	46,643
Accumulated Depreciation						
Balance at 1 July 2022	923	5,892	14,175	2,267	-	23,256
Addition	249	976	1,615	21	-	2,861
Disposal	-	-	(51)	-	-	(51)
Balance at 30 June 2023	1,171	6,868	15,739	2,288	-	26,067
Net Book Value						
1 July 2022	5,091	4,502	3,173	260	5,799	18,825
30 June 2023	4,875	4,416	9,183	239	1,864	20,576

Notes to the Financial Statements (Cont...)

NOTE 8 - NON-CURRENT ASSETS – RIGHT-OF-USE

\$'000	Leasehold Buildings & Improvements
Cost	
Balance at 1 July 2022	18,085
Addition	557
Disposal	(1,148)
Balance at 30 June 2023	17,494
Accumulated Depreciation	
Balance at 1 July 2022	4,151
Addition	1,341
Disposal	(1,148)
Balance at 30 June 2023	4,344
Net Book Value	
1 July 2022	13,934
30 June 2023	13,150

NOTE 9 - NON-CURRENT ASSETS – INTANGIBLE ASSETS

	2023 \$'000	2022 \$'000
Opening balance	29	79
Addition	-	25
Amortisation expense	(29)	(75)
Balance at the end of the year	-	29

The intangible assets represent the purchase of Big Cloud business specialising in software development and software hosting business.

NOTE 10 - NON-CURRENT ASSETS - INVESTMENTS ACCOUNTED FOR USING THE EQUITY METHOD

	2023 \$'000	2022 \$'000
Investment in Indian Road and Survey Management Private Limited	1,269	1,061

Investment in Indian Road and Survey Management Private Limited (IRSM) is accounted for using the equity method of accounting. ARRB's share in IRSM is currently 50%. ARRB is considered to have 'significant influence' in IRSM, as outlined in AASB 128 Accounting for Associates, paragraph 7. The share of profit is shown in Note 2, Revenue.

The summarised presentation of aggregate assets, liabilities and performance of IRSM is as follows, based on percentage of ARRB's share:-

	2023 \$'000	2022 \$'000
Current assets	1,511	1,565
Non-current assets	694	424
Total assets	2,205	1,989
Current liabilities	846	864
Non-current liabilities	109	64
Total liabilities	955	928
Net assets	1,249	1,061

Share of revenue, expense and results		
Revenue	990	926
Profit before tax	192	199

Carrying amount at the beginning of the year	1,061	878
Share of profit	195	199
Share of gain/loss of foreign exchange fluctuation	25	(20)
Adjustment of depreciation of sale of equipment	1	4
Dividend	(12)	-
Carrying amount at the end of the year	1,269	1,061

Notes to the Financial Statements (Cont...)

NOTE 11 - NON-CURRENT ASSETS - FINANCIAL ASSETS AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME

	2023 \$'000	2022 \$'000
Investment in		
Local and overseas diversified investment fund	10,828	9,801
Local and overseas fixed interest investment fund	8,459	8,217
Cash	786	750
	20,073	18,768

These are investments in various ANZ investment funds stated at fair value. The movement of the value of investments is accounted for in the Statement of Comprehensive Income. The bank holds a fixed charge on our investment for ARRB's liabilities to the bank.

NOTE 12 - CURRENT LIABILITIES – INTEREST BEARING LIABILITIES

	2023 \$'000	2022 \$'000
iPAVE loan	2,446	5,052
Working capital loan	4,552	2,446
Finance loan	190	-
Asset loan	786	452
	7,975	7,950

The weighted average interest rate for the bank loans is 5.50% (2022: 1.67%).
The bank holds a fixed charge against the investment funds for ARRB's liabilities to the bank.

NOTE 13 - CURRENT LIABILITIES – TRADE AND OTHER PAYABLES

	2023 \$'000	2022 \$'000
Trade payables	2,313	1,534
Other payables	2,028	1,902
Total payables	4,341	3,436

There is no material difference between the fair value and the carry amount of trade payables and other payables.

NOTE 14 - EMPLOYEE ENTITLEMENTS

	2023 \$'000	2022 \$'000
Provision for employee entitlement - annual leave - short term	1,728	1,661
Provision for employee entitlement - annual leave - long term	509	531
Provision for employee entitlement long service leave	2,518	2,584
	4,755	4,776
Non-current - provision for employee entitlement long service leave	836	640

NOTE 15 - RETIREMENT BENEFITS

Retirement plan

The Company operates both defined benefit superannuation plan and defined contribution superannuation plan for the employees' retirement, disability or death.

The parent entity, ARRB Group Ltd, has a defined benefit plan and a defined contribution plan. The defined benefit plan provides lump sum benefits based on years of service and final average salary. The defined contribution plan receives fixed contributions from the company and the company's legal or constructive obligation is limited to these contributions.

The following sets out details in respect of the defined benefit plan only.

	2023 \$'000	2022 \$'000
Retirement benefits net (assets) / liabilities	242	(55)
a. Financial Position amounts	2023 \$'000	2022 \$'000
Present value of the defined benefit obligation	5,211	5,534
Fair value of defined benefit plan assets	(4,968)	(5,589)
Net (assets) / liabilities recognised in the Statement of Financial Position	242	(55)

Notes to the Financial Statements (Cont...)

NOTE 15 - RETIREMENT BENEFITS (CONTINUED)

b. Categories of plan assets

The break-down of assets for disclosure purposes is as follows:

Asset Type	2023	2022
Australian equities	18.00%	18.00%
International equities	20.80%	19.00%
Australian fixed interest	12.00%	15.00%
International fixed interest	11.00%	12.00%
Property	12.00%	8.00%
Alternative assets (growth)	8.40%	12.00%
Alternative assets (defensive)	7.00%	6.00%
Cash	10.80%	10.00%
Total	100.00%	100.00%

c. Reconciliation

Reconciliation of the present value of the defined benefit obligation which is partly funded:

	2023 \$'000	2022 \$'000
Balance at the beginning of the year	5,534	8,711
Current service cost	134	190
Net interest expense	216	55
Member contribution	-	-
Actuarial (gains) / losses arising from changes in financial assumptions	43	(877)
Actuarial losses arising from changes in experience assumptions	216	166
Benefits and tax paid	(932)	(2,711)
Balance at the end of the year	5,211	5,534

	2023 \$'000	2022 \$'000
Reconciliation of the fair value of plan assets:		
Balance at the beginning of the year	5,589	8,597
Interest income	219	54
Return on plan assets (excluding interest income)	65	(380)
Employer contributions	27	28
Benefits paid	(932)	(2,711)
Balance at the end of the year	4,968	5,589

d. Amounts recognised in Statement of Profit or Loss and Other Comprehensive Income

	2023 \$'000	2022 \$'000
Current service cost	134	190
Net interest on the net defined benefit liability	(3)	1
Defined benefit cost recognised in the Income Statement	131	191
Remeasurement of the net defined benefit liability	194	(332)
Total included in employee benefits expense	194	(332)
Total defined benefit cost	325	(141)
Actual return on plan assets	284	(326)

The best estimate of contributions expected to be paid to the plan during 2023/24 is \$200,000.

e. Principal actuarial assumptions

The principal actuarial assumptions used (expressed as weighted averages) were as follows:

	2023	2022
Discount rate	5.30%	4.70%
Future salary increases	4.00%	3.00%
Price inflation	2.50%	2.50%
Number of active defined benefit members	3	3
Weighted average duration of defined benefit plan (years)	4	4

Notes to the Financial Statements (Cont...)

NOTE 15 - RETIREMENT BENEFITS (CONTINUED)

f. Projected defined benefit cost for 2024

The following table sets out the estimated defined benefit cost recognised in the Income Statement for the year ending 30 June 2024.

	2024 \$'000	2023 \$'000
Current service cost	163	134
Net interest	4	(3)
Defined benefit cost	166	131

g. Employer contributions

Employer contributions to the defined benefit section of the plan are based on recommendations by the plan's actuary. Actuarial assessments are made at no more than three-yearly intervals, and the last such assessment was made on 30 June 2021.

The objective of funding is to ensure that the benefit entitlements of members and other beneficiaries are fully funded by the time they become payable. To achieve this objective, the actuary adopted a method of funding benefits known as the aggregate funding method; this funding method seeks to have benefits funded by means of a total contribution which is expected to be a constant percentage of members' salaries over their working lifetimes.

The economic assumptions used by the actuary to make the funding recommendations were a long-term investment earning rate of 5% pa, a salary increase rate of 3.3% pa.

On 14 May 2021, the Superannuation Committee agreed the recommendation from the actuary to cease the employer contribution back dated from 1 April 2021.

h. Net financial position of plan

In accordance with AASB 1056 Superannuation Entities, the plan's net financial position is determined as the difference between the present value of the accrued benefits and the net market value of plan assets. This has been determined as at the date of the most recent financial report of the superannuation fund (30 June 2021), and a surplus of \$669,000 was reported.

NOTE 16 - CURRENT LIABILITIES – CONTRACT LIABILITIES

	2023 \$'000	2022 \$'000
Income received in advance	479	840
Contract work in progress - revenue received in advance	10,108	9,547
Total contract liabilities	10,587	10,387

There is no material difference between the fair value and the carrying amount of contract liabilities

NOTE 17 - LEASE LIABILITIES

	2023 \$'000	2022 \$'000
Lease liabilities current	1,489	1,474
Lease liabilities non-current	13,753	14,203

The lease liability is initially recognised at the present value of the lease payments to be made over the term of the lease, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, the company's incremental borrowing rate.

NOTE 18 - FINANCING ARRANGEMENT

Unrestricted access was available at balance date to the following lines of credit: -

	2023 \$'000	2022 \$'000
Total facilities		
Bank loan facilities	12,154	12,154
Other credit facilities	1,250	1,250
	13,404	13,404
Used at balance date		
Bank loan facilities	7,775	8,598
Other credit facilities	897	1,025
	8,672	9,623
Unused at balance date		
Bank loan facilities	4,379	3,556
Other credit facilities	353	225
	4,732	3,781

The bank holds a fixed charge over the assets and undertakings of the company.

Notes to the Financial Statements (Cont...)

NOTE 19 - MEMBERS' GUARANTEE

The company is a company limited by guarantee. The liability of each of its members is limited to \$100.

NOTE 20 - RESERVES

	2023 \$'000	2022 \$'000
Foreign Currency Translation Reserve		
Balance at beginning of year	(54)	(34)
Movement during the year	25	(20)
Balance at the end of year	(29)	(54)
Financial assets at fair value through other comprehensive income reserve		
Balance at beginning of year	(1,482)	-
Movement during the year	1,305	(1,482)
Balance at the end of year	(177)	(1,482)
Total	(206)	(1,536)

NOTE 21 - REMUNERATION OF KEY MANAGEMENT PERSONNEL

	2023 \$'000	2022 \$'000
Aggregated remuneration paid to or payable to the directors	224	159

The names of persons who were directors of ARRB Group Limited at any time for the year are as follows:

P Woronzow (Chairman)	N Marinelli (Non-Executive Director)
N Scales (Deputy Chairman)	C Burke (Non-Executive Director)
L McCormick (Non-Executive Director)	P Henderson (Non-Executive Director)
K Reid (Non-Executive Director)	J Anderson (Non-Executive Director)
S Troughton (Non-Executive Director)	M Campbell (Non-Executive Director)
I Webb (Non-Executive Director)	A Playford (Non-Executive Director)

The following table shows the schedule of fees available to the independent non-executive directors:

	Base Salary	Committee 1	Committee 2	Total Salary
Chairman	\$60,548	\$7,568	\$7,568	\$75,684
Deputy Chairman	\$42,888	\$7,568	\$7,568	\$58,024
Non-Executive Directors	\$25,228	\$7,568		\$32,796

Non-executive directors are encouraged to be a member on one committee only. If an independent non-executive director is a member on two committees, they will be remunerated accordingly. Besides, the above schedule of fees are the amounts the directors are eligible to claim for their services, they can opt to waive their fees.

NOTE 22 - DIRECTOR INTEREST IN CONTRACT

During the year no Director has received or become entitled to receive a benefit (other than a remuneration benefit included in note 20 to the Financial Statements) because of a contract that:

- a. the Director or
- b. a firm of which the Director is a member or
- c. an entity in which the Director has a substantial financial interest; has made (during the year ended 30 June 2023 or at any other time) with:
 1. the company or
 2. an entity that the company controlled or
 3. a body corporate that was related to the company when the contract was made or when the Director received, or became entitled to receive the benefit (if any)

NOTE 23 - REMUNERATION OF AUDITORS

During the year the auditor of the company and its related practices earned the following remuneration:

	2023 \$'000	2022 \$'000
Audit or review of financial reports of the company	73	61
Other services	26	11
Total remuneration	99	72

NOTE 24 - CONTINGENT LIABILITIES AND CONTINGENT ASSETS

Contingent Assets

There are no contingent assets at balance date.

Contingent Liabilities

After receiving a payment of \$201,101 from the Company, Macquarie Bank has issued Bank Guarantee for

- a. the amount \$159,847 in favour of Department of Transport, Victoria for the performance of projects engaged with the Company and
- b. the amount of \$41,254 in favour of the landlord for the ACT office

Notes to the Financial Statements (Cont...)

NOTE 25 - CAPITAL COMMITMENTS

Capital commitments due	2023 \$'000	2022 \$'000
Not later than one year	5,755	1,534
Later than one year but not later than 5 years	763	-
Total	6,518	1,534

NOTE 26 - RECONCILIATION OF PROFIT FROM ORDINARY ACTIVITIES AFTER INCOME TAX TO NET CASH INFLOW FROM OPERATING ACTIVITIES

	2023 \$'000	2022 \$'000
Operating profit after income tax	1,334	308
Adjustment for non-cashflow items		
Depreciation and amortisation	4,231	3,602
Net (profit) / loss on sale of non-current assets	(6)	(122)
Change in operating assets and liabilities		
Increase in receivable	1,344	(4,750)
Decrease in inventory	(1,299)	1,300
Increase in payables	1,704	322
Net cash inflow from operating activities	7,308	660

NOTE 27 - EVENTS AFTER BALANCE SHEET DATE

During July 2023, changes to the membership of ACRI resulted in effective control of the company's assets transferring to the NTRO.

In mid-July 2023, NTRO committed to the purchase of a further iPAVE asset from Greenwood Engineering (iPAVE 4). Additional costs will be incurred in shipping the asset ex Greenwood's workshop in Denmark, the procurement of a prime mover locally and the installation of additional sensor equipment as well as software.

On 1 July 2023 NTRO reached agreement with Waka Kotahi (NZ Transport Agency), expanding NTRO's service offering to Waka Kotahi beyond Infrastructure Measurement to incorporate disciplines of Asset Management, technical support in project delivery/training programs, support for Waka Kotahi's zero-emissions objective and development of technical capability within the Waka Kotahi agency itself. This contract is valued at NZ\$1,000,000 per annum, incorporating funding contribution toward NTRO's NIS (Library). As part of this agreement, NTRO will establish a permanent operational presence in New Zealand based in Wellington early in Financial Year 2024.

No other matter or circumstance has arisen since 30 June 2023 that has significantly affected, or may significantly affect the company's operations, the results of those operations, or the company's state of affairs in future financial years.

DIRECTORS' DECLARATION

The directors have determined that the Company is not a reporting entity, and that this special purpose financial report should be prepared in accordance with the accounting policies outlined in Note 1 to the Financial statements.

The directors declare that the financial reports and notes set out on pages 66 to 92.

- a. comply with Australian Accounting Standards as detailed in Note 1 to the Financial statements.
- b. give a true and fair view of the company's financial position as at 30 June 2023 and of its performance for the financial year ended on that date in accordance with the accounting policies described in Note 1 to the Financial statements.

In the directors' opinion:

- c. the Financial statements and notes are in accordance with the Australian Charities and Not-for-profits Commission Act 2012
- d. there are reasonable grounds to believe that the company will be able to pay its debts as and when they become due and payable.

This declaration is made in accordance with a resolution of the directors.



P WORONZOW
CHAIRMAN

Perth

Date: 17 October 2023



S TROUGHTON
CHAIR OF AUDIT, RISK AND FINANCE COMMITTEE

Sydney

Date: 17 October 2023

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INDEPENDENT AUDITOR'S REPORT To the Members of ARRB Group Limited

Opinion

We have audited the financial report of ARRB Group Limited (the Company), which comprises the statement of financial position as at 30 June 2023, the statement of profit or loss and other comprehensive income, the statement of changes in equity and the statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies, and the directors' declaration.

In our opinion, the financial report of the Company has been prepared in accordance with Division 60 of the *Australian Charities and Not-for-profits Commission Act 2012*, including:

- (a) giving a true and fair view of the Company's financial position as at 30 June 2023 and of its financial performance and cash flows for the year ended on that date; and
- (b) complying with Australian Accounting Standards to the extent described in Note 1 and Division 60 of the *Australian Charities and Not-for-profits Commission Regulation 2013*.

Basis for Opinion

We conducted our audit in accordance with Australian Auditing Standards. Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Report* section of our report. We are independent of the Company in accordance with the ethical requirements of the Accounting Professional and Ethical Standards Board's *APES 110 Code of Ethics for Professional Accountants* (the Code) that are relevant to our audit of the financial report in Australia. We have also fulfilled our other ethical responsibilities in accordance with the Code.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of Matter – Basis of Accounting

We draw attention to Note 1 to the financial report, which describes the basis of accounting. The financial report has been prepared to assist the Company to meet the requirements of Division 60 of the *Australian Charities and Not-for-profits Commission Act 2012*. As a result, the financial report may not be suitable for another purpose. Our opinion is not modified in respect of this matter.

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Other Information

Those charged with governance are responsible for the other information. The other information comprises the information included in the Company's annual report for the year ended 30 June 2023, but does not include the financial report and the auditor's report thereon.

Our opinion on the financial report does not cover the other information and accordingly we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial report, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial report or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and Those Charged with Governance for the Financial Report

The directors of the Company are responsible for the preparation of the financial report that gives a true and fair view in accordance with Australian Accounting Standards and the *Australian Charities and Not-for-profits Commission Act 2012* (ACNC Act) and for such internal control as the directors determine is necessary to enable the preparation of the financial report that gives a true and fair view and is free from material misstatement, whether due to fraud or error.

In preparing the financial report, directors are responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Auditor's Responsibilities for the Audit of the Financial Report

Our objectives are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of this financial report.

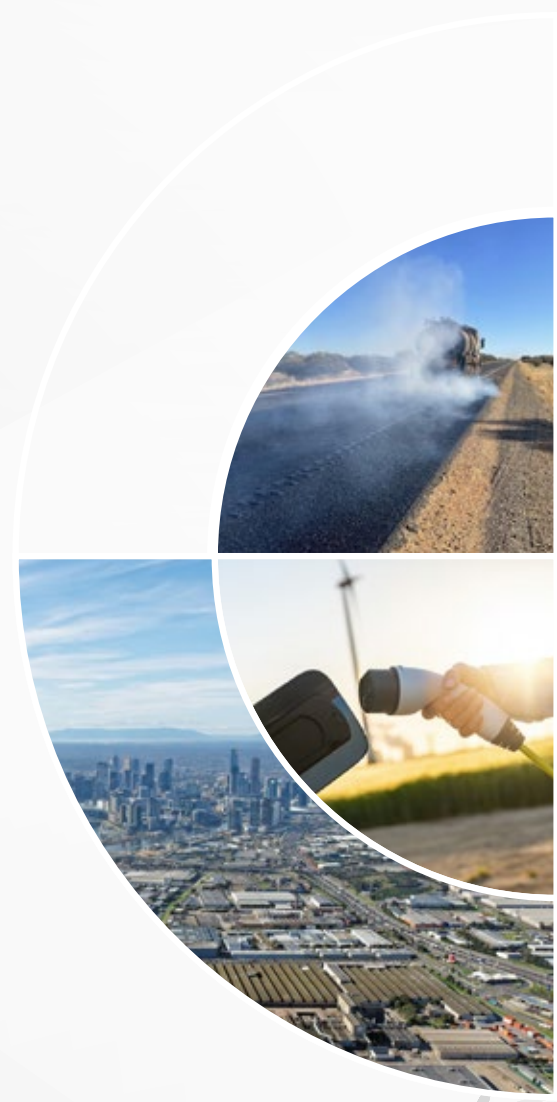
A further description of our responsibilities for the audit of the financial report is located at the Auditing and Assurance Standards Board website at: http://www.auasb.gov.au/auditors_responsibilities/ar4.pdf. This description forms part of our auditor's report.

RSM AUSTRALIA PARTNERS

B Y CHAN

Partner

Dated: 17 October 2023
Melbourne, Victoria



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