



**ANNUAL REPORT
2021**

**DELIVERING
AND SECURING
THROUGH GLOBAL
CHALLENGES**





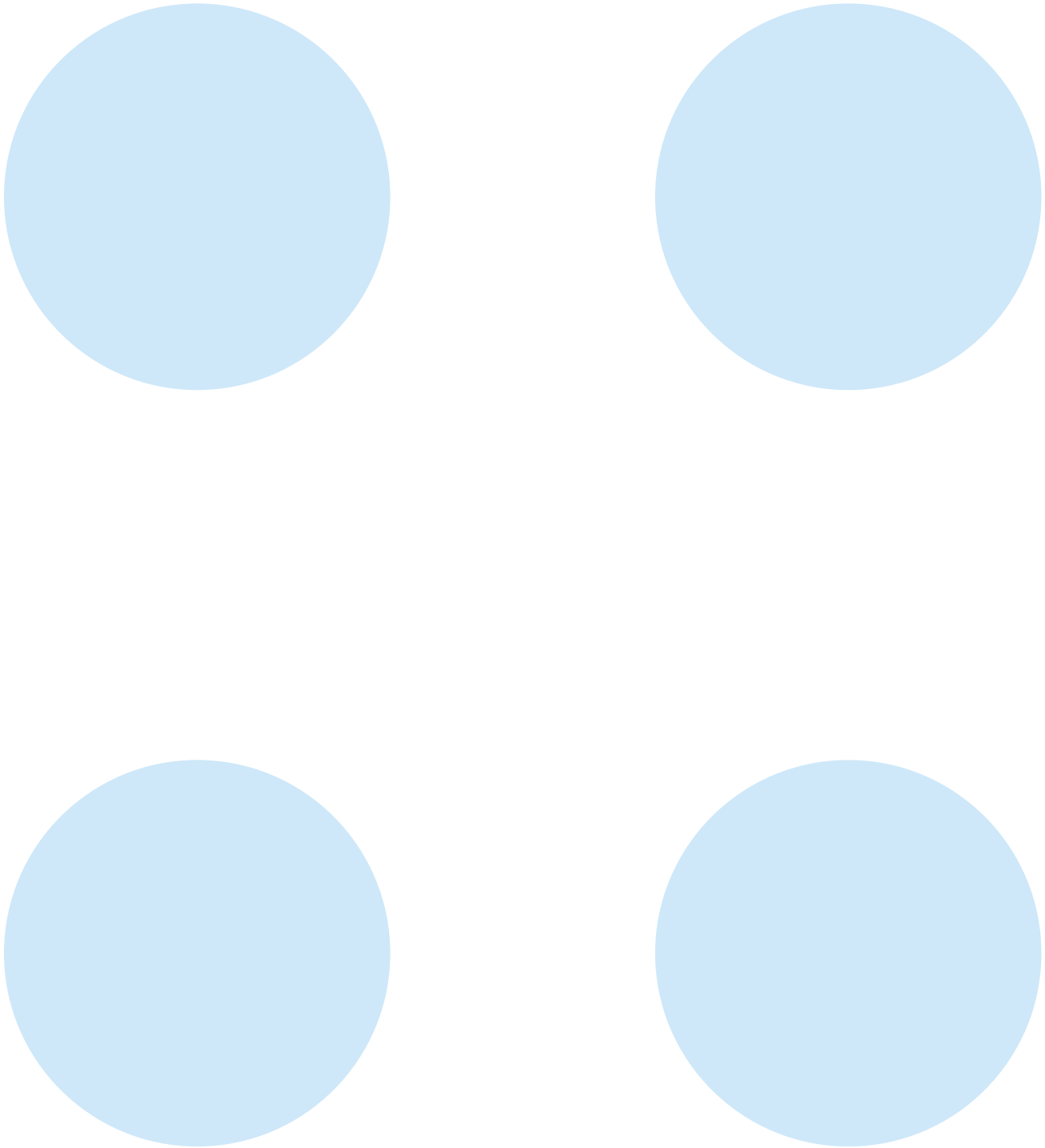
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ANNUAL REPORT 2021
DELIVERING AND SECURING
THROUGH GLOBAL CHALLENGES



"Through lockdowns and border closures our people demonstrated **extraordinary resilience and perseverance.** This enabled us to navigate the challenges and **successfully deliver** against our strategy for our shareholders and customers."

CHRIS HANCOCK, CEO AARNET

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WHO WE ARE AND WHAT WE DO

For more than **30 years** AARNet has provided reliable telecommunications services, along with an **expanding range** of data, collaboration and cyber security services, all designed to **meet the unique and ever-changing needs** of the research and education sector.

AARNet is a national resource, a national research and education network, run by AARNet Pty Ltd, a not-for-profit company owned by 38 Australian universities and CSIRO.

AARNet's customers include the shareholder universities (listed on page 42) and CSIRO, as well as most of the publicly funded research agencies, such as Australian Nuclear Science and Technology Organisation, Geosciences Australia and Australian Institute of Marine Science, several state government agencies, hundreds of schools, many TAFEs and hospitals, and most state and federal galleries, libraries, archives and museums.

AARNet infrastructure interconnects over two million users—researchers, faculty, staff and students—at institutions across Australia with each other and research and education institutions worldwide, the public internet, and resources such as scientific instruments, data storage and high-performance computing facilities. We also interconnect content and service providers and organisations that collaborate with the research and education community.

AARNet underpins education across the life-long learning spectrum and research across a diverse range of disciplines in the sciences and humanities, including high energy physics, climate science, genomics, radio astronomy, defence, space and the arts.

For researchers and educators working in today's increasingly globalised data-intensive world, AARNet services remove barriers to discovery and innovation.

WHAT SETS AARNET APART?

We pride ourselves on being future focused and providing what commercial operators are unequipped or unable to provide: an ultra-high-speed network and over-the-top services that push the boundaries of networking technology whilst delivering cost-effective and sustainable infrastructure for Australia. The research and education community relies on AARNet for outstanding service availability and service quality.

Our vision

Our vision is of a high bandwidth, globally connected research and education network that connects Australian educators and researchers to those with whom they wish to collaborate anywhere in the world, with ease, speed and convenience that makes the issue of physical separation irrelevant. Unashamedly, we care about enabling outcomes that benefit future generations of Australians.

Our mission

Our mission is to enable globally competitive research, education and innovation by providing transformational connectivity and collaboration services to meet the unique needs of our customers.

Our values

ONE TEAM

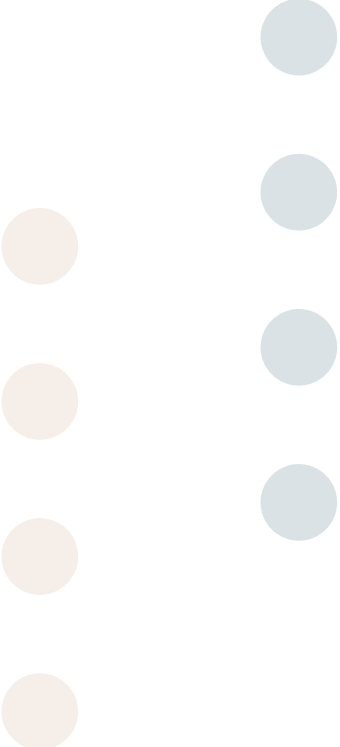
Everyone counts and is accountable. We are committed to teamwork and partnerships – collaboration is at our heart.

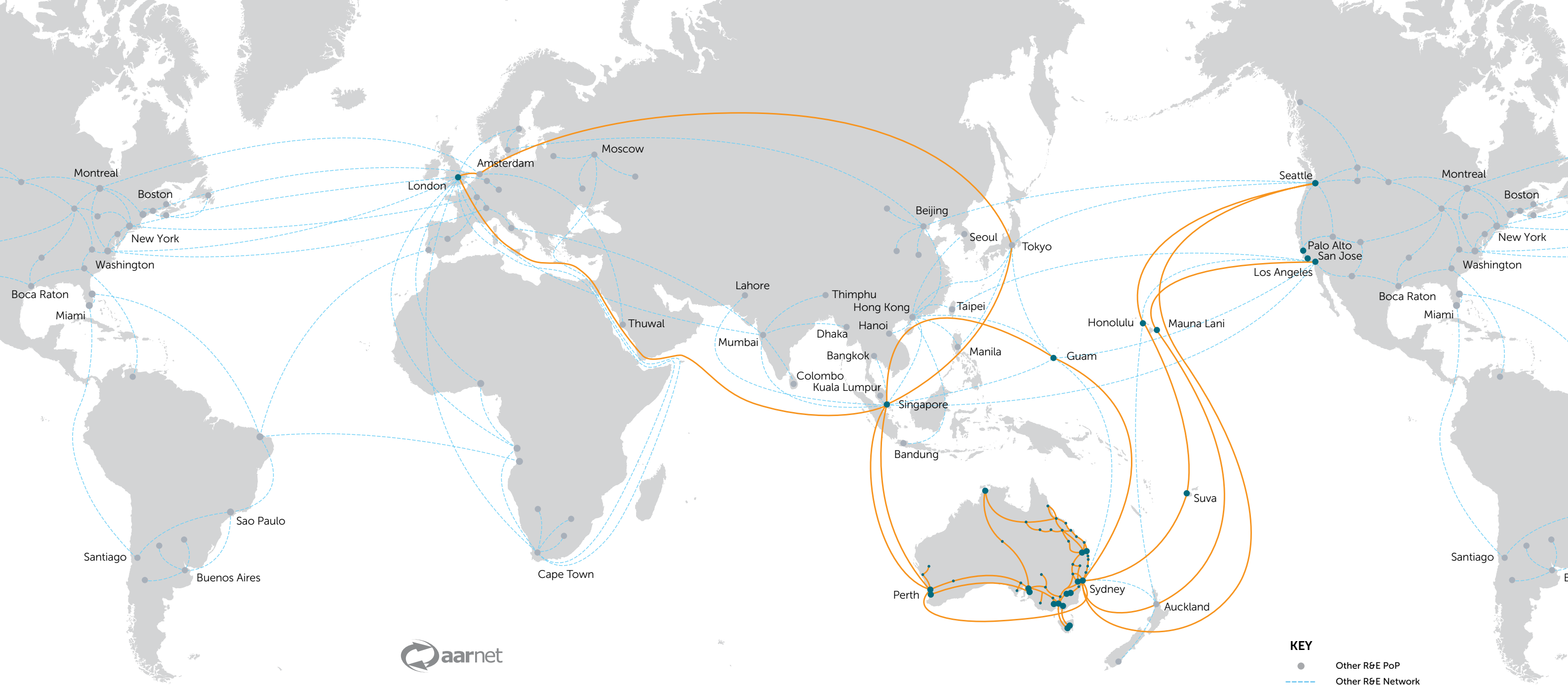
CREATIVITY

Strive to innovate – it's in our DNA. We embrace creative solutions to problems, seek out diverse perspectives and enjoy what we do.

TRUST

Communication is open and transparent. We are honest and ethical, and always respect and support each other.



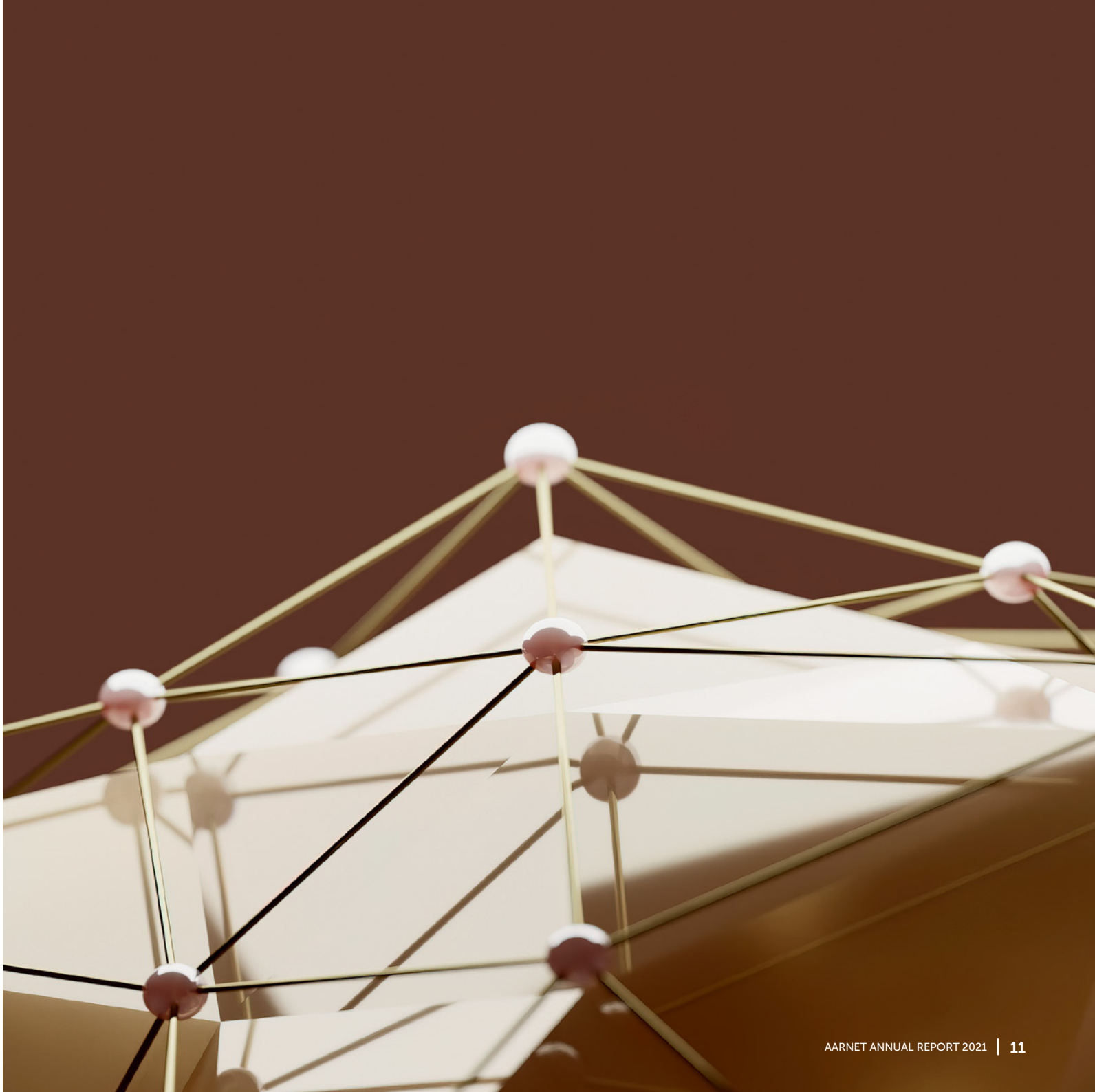
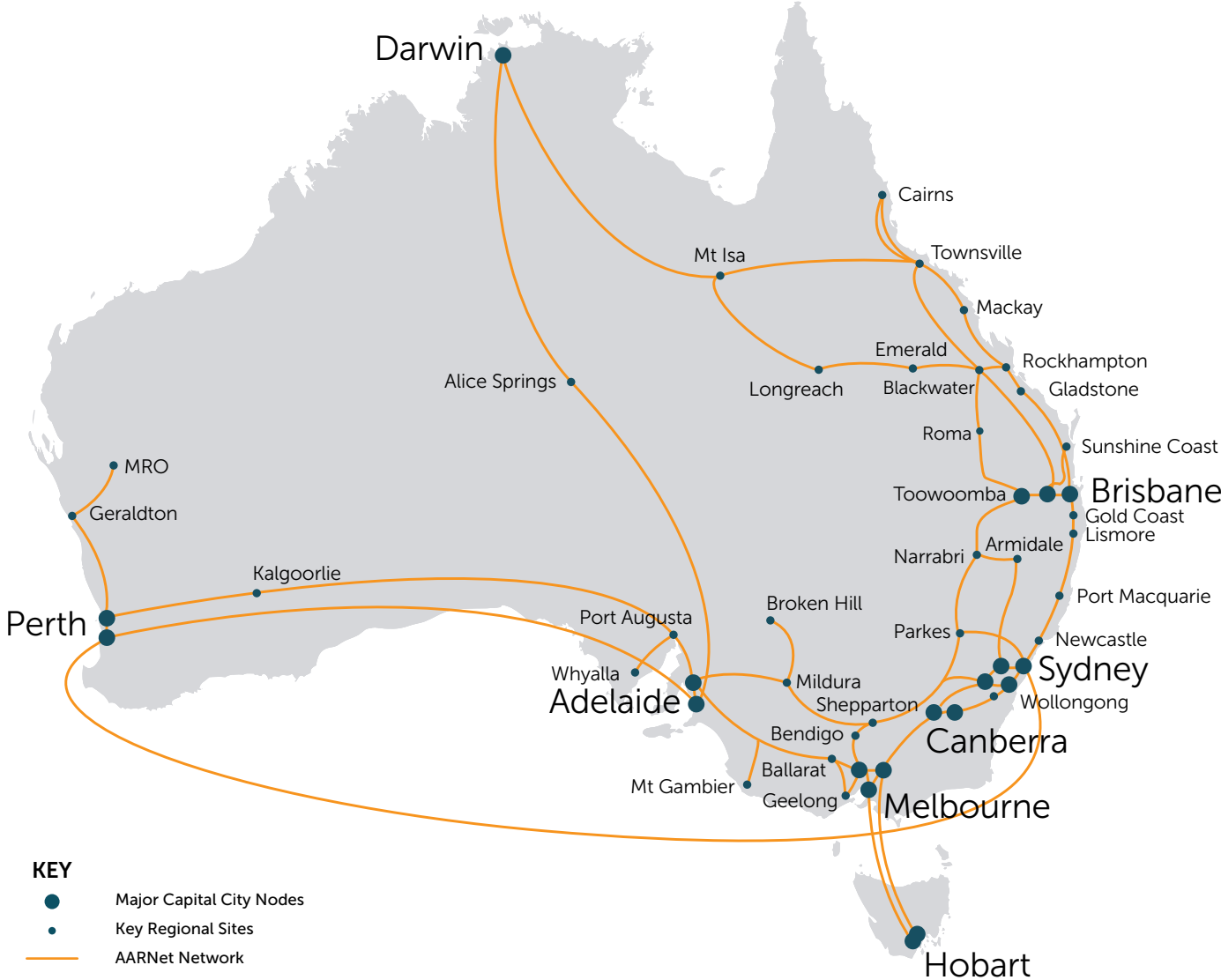


This map is designed to be a conceptual representation of the international R&E network

- KEY**
- Other R&E PoP
 - Other R&E Network
 - AARNET PoP
 - AARNET Network

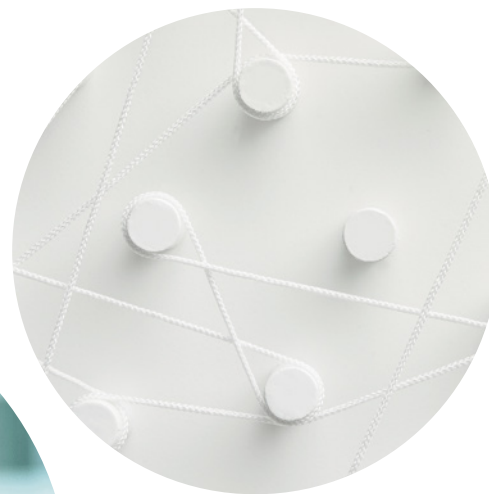
AARNET INTERNATIONAL NETWORK

AARNET NATIONAL NETWORK





MESSAGE FROM OUR CHAIR



Today, when some might expect me to feel a tinge of sadness, instead I feel energy and optimism.

I will retire as Chair of the AARNet Board at the company's AGM in 2022, after more than a decade in this role. The company has more than trebled in size on many measures, including assets, staffing, and revenue. But of course, these are just numbers, and none reflect the true nature of the transformation that has occurred during these past ten years.

In recent months and years, we have witnessed terrible natural disasters in Australia just as we did in 2011, the year in which I joined as Chair, each time showcasing the spirit of Australians, who as an inextricable part of their nature come together to help those in need.

Yet things today could not be more different from 2011 in many ways. Where video conferencing was beginning to have an impact on education through AARNet's leadership, we now see it as an indispensable tool of business and indeed part of everyday life.

The international reach of our network has vastly grown, with AARNet now owning a number of subsea cables, and with points of presence in Asia, Europe, Fiji and the United States.

Domestically, too, we have built many thousands of kilometres of fibre-optic cable to connect many more schools, TAFEs, GLAMs (Galleries, Libraries, Archives and Museums), instruments and indeed universities than we did a decade ago. And the speed at which we connect them has increased by several orders of magnitude in that time.

We have developed a cyber security operations centre that now serves more than half of all Australian universities and have plans to expand even more in the cyber security space. With the recent escalation of geopolitical instability, not only has cyber security risen in importance, but it has

become critical for our institutions and their researchers to collaborate with their counterparts safely and securely.

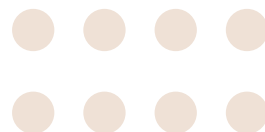
But none of this matters if it is not for the people who make up our community. We do all of this for the researchers, educators and students, each of whom seeks to drive their disciplines, and hence Australia forward. AARNet exists to enable and support the life-changing teaching and world-class research that occurs at our nation's universities and research agencies, schools, TAFEs, and all the institutions that surround them. Looking back at the last ten years reveals just how much has occurred over that time, but reflecting has revealed to me what has always been true of AARNet – it is all about the future.

The future of this organisation is incredibly bright. We are focussed on sustainability in all senses of the word. We plan now for the decades ahead, not just years ahead. We are working to support researchers to use digital tools and data more effectively as part of their efforts, and we are structuring to execute more deftly, with trust built into everything that we do.

I am incredibly proud of the contribution that AARNet makes to the communities it serves, and of the team who makes it all happen. But even more so, I have a great sense of optimism about what will be achieved over the coming ten years.

To everyone who I have worked with in my time as Chair: our highly capable CEO Chris Hancock AM, our dedicated senior management team and staff, my fellow board directors, academics, Vice-Chancellors and CIOs, politicians and those who supported us within government – thank you for your support and contributions to making AARNet a success. I have enjoyed every minute of this journey and wish all of you, and my successor, the very best as AARNet starts this important new chapter.

Gerard Sutton AO – Chair, AARNet Board





MESSAGE FROM THE CEO

Looking back, 2021 was **challenging** but highly rewarding. Like all businesses, AARNet **operated in a changing and uncertain environment** due to the persistence of the pandemic. Despite this, we **successfully delivered** for our shareholders and the company remains in a **strong financial position**.

Before I report on our performance, it is with mixed feelings that I must acknowledge the end of an era with the retirement of our AARNet Board Chair, Emeritus Professor Gerard Sutton AO. For the past ten years, Gerard has steadily steered us through times of turbulence and rapid growth. We have benefited greatly from his vision and wisdom, which have proven pivotal in building AARNet into the thriving enterprise that it is today and positioning us for growth in the post-pandemic era.

2021 was a very successful year getting the company back into a surplus position. This result was only thwarted by some late unforeseen accounting changes. While it was disappointing for these changes to occur after the close of the year, AARNet still remains in a very strong financial position. Net assets are \$215,759,182 and we have no borrowings.

There are some aspects of these financial adjustments that bear further explanation. Our income statement shows that AARNet recorded a deficit in 2021 of \$2,961,421. There are two major factors that significantly impacted these results. First, the well-publicised solvency problems of a supplier (Basslink) which provides capacity for AARNet from Victoria to Tasmania. The second is a highly unusual accounting rule which produces a very counterintuitive result – it requires AARNet to book a notional interest charge in respect of “free” up front financing which is implicit in some of our infrastructure construction arrangements. Both of these impacts are outlined in more detail and with greater explanation in the financial report. Importantly, both items are non-cash adjustments, and the significant financing adjustment will be offset by greater revenues (also non-cash) in future years.

AARNet would have returned a surplus of \$2,755,335 in 2021 were it not for the combined effect of the need to write down Basslink and these new accounting standard adjustments.

Network availability measured an outstanding 99.99%. Aligned to our strategy, we focused resources and activities on upgrading capacity, building diversity, and expanding the geographic reach of the AARNet network.

Within Australia our priority is building and owning fibre infrastructure and to that end works included expanding our footprint in both capital cities and regional areas to connect more campuses, facilities and instruments. Our focus in regional areas is on improving access to high-speed networking for the broader research and education communities.

Internationally, we built on our investments in subsea cable systems, collaborating with our consortium partners to add capacity and diversity to the Asiapacific-Europe Ring (AER) and signing a new consortium agreement for connectivity between Guam and Singapore. We joined forces in the Asia Pacific Oceania region to form APOnet, a collaboration to improve high-speed networking in the region, and we added capacity across the Pacific Ocean by deploying high-capacity connectivity between Sydney and Seattle on the Hawaiiki cable system. The value of diverse links was demonstrated when we were able to step in and provide a backup path over our Indigo and JGA cables when connectivity between Singapore and Japan was impacted by submarine cable disruptions.

Despite expansion in the use of other collaboration tools, Zoom usage continued to grow in 2021. AARNet Zoom customers conducted over 6.8 billion Zoom meeting minutes, a 17% increase on the previous year. As usage increased, many universities reported that their users found Zoom highly effective, which justified AARNet’s initial vision to bring Zoom to serve Australia back in 2012.

The escalation of geopolitical instability and proliferation of cyber attacks has brought to the fore the importance of cyber security, and protecting Australia’s education and

research facilities, and its sovereign data. Well over half of our shareholders are now subscribed to the AARNet Security Operations Centre (SOC) service. We also saw growth in the uptake of our DDoS Protection and Cyber Security for Schools services and will continue to expand our service offerings and build on our capabilities in this area.

We refocused our research data infrastructure initiatives for supporting data movement and collaboration for data-intensive research disciplines, as well as the development of digital preservation capabilities for the humanities and social sciences. Our team worked on diverse projects with research groups, including a plan for a secure network environment to support research collaboration between government, industry and universities within the defence and space sector. Following an extensive review and consultations with our shareholders and users, we began a much-needed program of work to improve CloudStor, our popular collaboration service for storing, sharing and working with research data.

We are extremely proud of our people, and the efforts made above and beyond by all to address the challenges of 2021 and deliver for our shareholders. In anticipation of employee pressures in 2022, we renewed our employee value proposition and extended our policy for Maternity & Paternity Leave; Adoption Leave; Family and Domestic Violence Leave; and leave to support employees in times of family bereavement and natural disaster. We also commenced work on our Modern Slavery and our Social Responsibility & Ethics policy and practice. This work will continue into 2022 and beyond.

As we move into 2022, Australia is facing further natural disasters, there is increasing geopolitical instability in the world and the research and education sector we serve is undergoing significant changes. These are challenging times, but the sector we work in is more vital than ever. I see immense opportunities for AARNet ahead and am very optimistic about the future.

Finally, the achievements of 2021 were made possible thanks to the commitment of the AARNet Board, AARNet Advisory Committee and our highly dedicated AARNet Team. I would like to personally thank our shareholders, customers and team, and everyone who worked with us during this past year for their support and we look forward to continuing to deliver vital infrastructure services that support the nation's research and education institutions through this time of change.

Chris Hancock AM
Chief Executive Officer

THE YEAR IN NUMBERS



\$215.76 million
Net assets

\$26.27 million
Invested in network and related infrastructure



99.99%
Network availability



430+
Locations in Australia

100+
Countries worldwide



35,000
Active users in 2021

3.79PB
Data stored



6.8 BILLION
Meeting minutes

119 MILLION
Meeting participants

19 MILLION
Meetings

10000000000000000 BIT/S
TEN TERABIT PER SECOND NETWORK FOR RESEARCH AND EDUCATION

123 NEW
FIBRE INFRASTRUCTURE PROJECTS COMPLETED



2021: The year in review

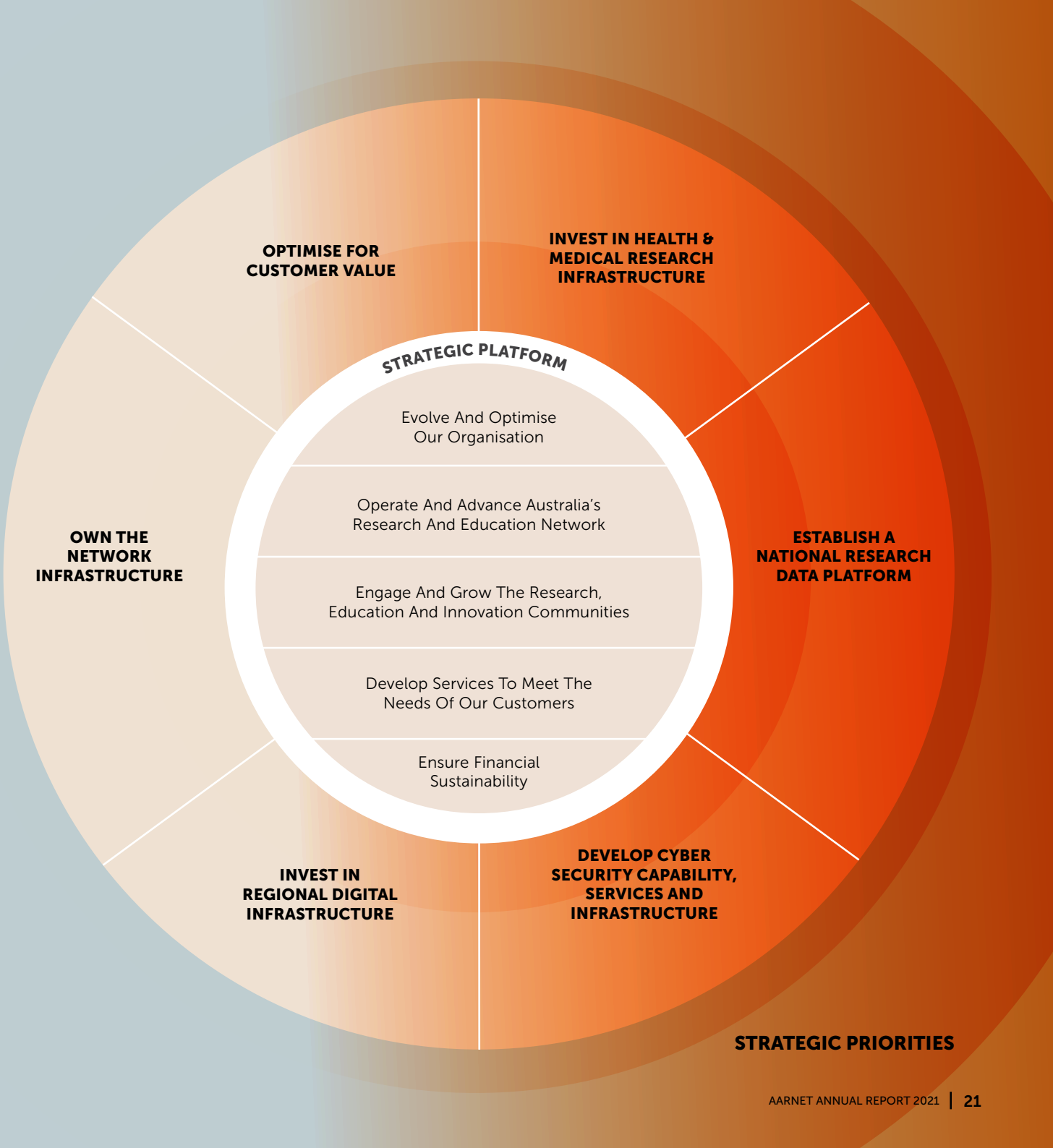
Our operational activities are aligned to our strategic plan and priorities. During 2021, our activities included **responding to the global challenges of the pandemic** and delivering reliable, high-performing telecommunications, cyber security, data and collaboration services.

Collaborating with our shareholders and customers is at the heart of everything we do. This approach ensures we continue to **provide the services and solutions that Australia's research and education sector needs** not only now, but also into the future.

Strategic plan

The AARNet 2018-2022 Strategic Plan defines a **long-term vision** for a globally networked data-sharing ecosystem that **accelerates knowledge creation and innovation**, reinforces the resilience of AARNet’s infrastructure and builds out **new capabilities** to meet the evolving digital needs of our customers.

We will **continue to develop new and innovative products** and services to accelerate Australia’s participation in teaching, learning and research on a **global scale**.



OPERATING AND ADVANCING AUSTRALIA'S RESEARCH AND EDUCATION NETWORK

Core to AARNet's mission is the operation of an **ultra-fast** high-quality and highly-available and resilient national and international telecommunications network to **meet the unique needs** of the research and education sector.

NETWORK AVAILABILITY

The AARNet network continued to perform at consistently high levels while carrying increasing volumes of traffic for AARNet customers. For 2021, the average network availability was 99.99% which was higher than the level achieved in 2020 (99.96%).

This exceptionally high level of reliability is achieved over the vast geographic footprint of our infrastructure through strategic long-term planning and carefully designed network redundancy. Diversity and triversity in the network design and equipment enables the operations team to deploy alternate paths and minimise the impact of outages on AARNet customers.

NETWORK TRAFFIC

Traffic volumes recovered in 2021, growing 21% compared to 2020 traffic volumes, and exceeding pre-pandemic (2019) levels by 8% overall.

NETWORK EXPANSION

During 2021, AARNet continued to invest in upgrading capacity, building diversity, and expanding the geographic reach of the AARNet network.

Careful capacity planning to remain ahead of the demand curve, and to accommodate the increasingly data-intensive requirements of research is one of the distinguishing features of a research and education network such as AARNet. The peak demands of the academic year determine the sustained capacity required, and the needs of the most data-intensive research disciplines, such as radio astronomy, climate science and bioinformatics, determine the absolute peak capacity. We continually monitor the network traffic levels on the AARNet backbone links to determine when upgrades are required. This approach enables us to provide a consistently high-quality service for our customers.



NATIONAL NETWORK

Throughout 2021, we extended the reach and diversity of our national network. We deployed a third path to North Queensland and expanded our fibre footprint in Sydney, Melbourne, Brisbane, and Darwin, closing loops and shortening paths to provide connected institutions with multiple diverse connectivity options, greater network resiliency and reduced latency.

During the year, customers across the sector and the country, including universities, schools, hospitals and research institutes, upgraded their connections to meet their growing bandwidth needs. Universities and larger research facilities upgraded to multiple 100Gbps connections to support not only big science research, but also day-to-day business operations. Deployments included capacity upgrades to 100Gbps for several inter-capital and metropolitan links for CSIRO, a direct connection to AARNet for Bond University, and new diverse connections for the NSW State Archives, NSW Department of Education, Western Sydney University, University of Queensland, Queensland University of Technology and Deakin University, among others.

Throughout 2021, we continued to work on expanding our network footprint in regional areas across Australia to connect campuses, facilities and scientific instruments, and to improve access to reliable high-speed telecommunications services for the broader research and education community. Projects included fibre builds in Bendigo, Ballarat and Shepparton in Victoria and the Mackay Fibre Ring in Queensland. Diverse 100Gbps services were delivered to the new University of Wollongong Shoalhaven campus in New South Wales and to the University of Queensland Gatton campus.

Larger K-12 schools required multiple 10Gbps network links over diverse paths rather than the 1Gbps internet connections of the past, as they increasingly depend on the high-capacity dedicated links AARNet provides for curriculum delivery and operations.

Our customers value the reliability of the AARNet network, particularly for accessing data centres that are critical for business operations, teaching, learning and research. To

improve the performance and availability of cloud and content provider services for AARNet customers, we increased our capacity to Amazon Web Services, Microsoft Azure and Google Cloud. We also deployed multiple direct-connect links to cloud service providers for AARNet customers. We will continue to enter into partnerships for connecting popular global content and service providers to the network.

INTERNATIONAL NETWORK

In 2021, we continued to expand the capacity and diversity of AARNet's international network and worked closely with our global NREN partners to optimise routing policies and configurations between international endpoints.

AARNet is a participating network in the Asiapacific Europe Ring (AER), a great example of an international collaboration providing diversity for research and education traffic. AER consists of several links: a path via Tokyo, trans-Siberia and Amsterdam to London, providing a backup path for Collaboration Asia Europe or CAE-1, which runs from Singapore to London across the North Indian Ocean, Egypt and the Mediterranean Sea. In 2021, King Abdullah University of Science and Technology (KAUST) joined the AER collaboration, providing further capacity and diversity between Europe and Asia over two links, one connecting Saudi Arabia to Europe, and the other connecting Saudi Arabia to Singapore. AER together with AARNet's Indigo links to Singapore provides AARNet with resilient connectivity over the vast distance from Australia to Europe.

AARNet also added diversity and capacity across the Pacific Ocean to North America in 2021 with a circuit from Sydney to Seattle on the Hawaiiki submarine cable system.

The value of diverse network paths for the international research and education network community was demonstrated during the year when AARNet was able to step in and provide temporary international transit for NRENs SingAREN (Singapore), and TEIN*CC (pan Asia) during a major network outage. Similarly, when research and education network connectivity between Japan and Singapore was impacted by a submarine cable cut, AARNet was able to help



by providing a back-up path via the AARNet Japan-Guam-Australia (JGA) and Indigo subsea cable system links, connecting Tokyo, Sydney, Perth, Singapore.

The need for diversity in international capacity was one of the factors that led to AARNet and ten other research and education networks in North America, East Asia, Southeast Asia, and Oceania formalising a collaboration by signing a Memorandum of Understanding in June 2021 to improve high-speed network services in the region. Known as the Asia Pacific Oceania network (APOnet) collaboration, the participating networks agreed to support multinational research collaborations and associated data movement requirements by contributing resources that together create a high-speed trans-oceanic network services delivery system that is more resilient, flexible, and consistent than any individual network on its own.

In July 2021, following discussions and negotiations that commenced in November 2020, AARNet entered into a consortium agreement with Internet 2 (USA), ARENA-PAC (Japan) and Indiana University (USA) to acquire and share a circuit between Guam and Singapore. The new Guam-Singapore capacity complements AARNet's investments in the JGA South and Indigo subsea cable links and once activated will establish a diverse ring of connectivity for AARNet from Sydney to Perth, Singapore, Guam and back to Sydney. The path of the Guam-Singapore circuit was deliberately chosen to avoid the South China Sea and the approaches to Hong Kong.

As is the case with AARNet's investments in the Indigo and JGA South subsea cable systems, Guam-Singapore is a long-term investment. These investments provide AARNet with control over scalable international capacity upgrades at the ownership or wholesale level for the next 15 to 25 years, depending on the asset. This boosts our network capacity, diversity and resilience, further reinforcing our position as a leading provider of national and international connectivity and data

Top image: Researchers in the field at the University of Queensland Gatton campus. Credit: © University of Queensland. Centre image: University of Wollongong Shoalhaven campus. Credit: Paul Jones © University of Wollongong. Bottom image: Rolling out the AARNet network in regional Australia.



services. AARNet's participation in the development of these new international systems not only benefits the research and education sector in Australia, but also provides new and much needed competitive infrastructure for the nation's commercial telecommunications market.

AARNet and Japan's JGN R&D Network Testbed established two direct and diverse connections between Sydney and Tokyo to support the 2021 Data Movers Challenge. This is an annual competition, organised collaboratively by several NRENs and research organisations, that brings together experts from industry and academia in a bid to test software and solutions for transferring huge amounts of research data. This was an important event because it allowed us to develop a test bed that used our JGA and Indigo links to push the limits of traffic flow for data-intensive research projects.

AARNet is a founding member of the Global Network Advancement Group (GNA-G), a community of network professionals from research and education networking organisations from all over the world. The GNA-G community meets several times a year. These meetings were held virtually during 2021 and working groups overseen by the GNA-G leadership team focused on various activities, including supporting data intensive science, developing a GREN map, network automation, connecting students during the pandemic, and routing best practice. The goal of the GNA-G is to work together to better align resources and make the country-to-country interconnections more efficient for global science collaborations and transnational education.

INTERNATIONAL SECURITY

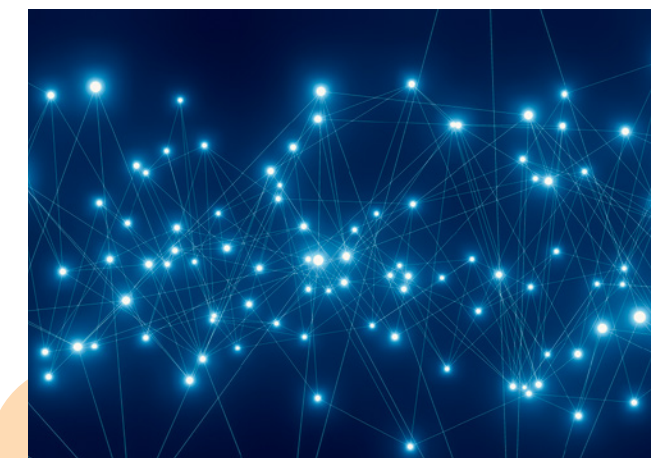
AARNet's Early Warning System (EWS) and Distributed Denial of Service (DDoS) Detection System proved their value. 504 attacks were detected in 2021, enabling the AARNet Operations team to notify any affected customers and filter out unwanted traffic to minimise the impact of these attacks on our network and connected institutions.

AARNet's Head of Network and Systems Architecture is a Steering Committee Co-Chair of the Mutually Agreed Norms for Routing Security (MANRS) initiative. MANRS is a global effort,

supported by the Internet Society, with the aim of protecting the stability and reliability of the internet. Throughout the year, MANRS shared information with network operators and provided crucial fixes to reduce routing threats, including route hijacking, route leaks, and IP address spoofing.

AARNet is a founding member of the Securing the GREN Working Group, a global research and education network (GREN) initiative established in 2020 to facilitate cyber security collaboration amongst member NRENs for creating capabilities that are unique to the global research and education sector. The collaboration is focused on compliance, sharing and capacity building and the group is working toward developing a GREN standard aligned to MANRS.

AARNet, Jisc (UK), OmniSOC (USA) and CanSSOC (Canada) signed a memorandum of understanding in 2021 for the co-development of a threat sharing capability. Threat intelligence information will be shared by AARNet with relevant Australian government agencies for the protection of the Australian higher education and research sector. We are grateful for the support of AustCyber and the Australian Government and the funding they provided for this project. AARNet and Jisc are also aligning several security operations and engineering development efforts to share learnings across both organisations.



GROWING THE RESEARCH, EDUCATION AND INNOVATION COMMUNITIES

AARNet fosters collaboration, knowledge sharing and discovery by **connecting organisations with a research and education mission** across Australia and working closely with them to provide the infrastructure and services they need to deliver excellence in research and education.

RESEARCH PROJECTS AND PARTNERSHIPS

AARNet is one of Australia's national Data and Digital eResearch Platforms (DDeRPs). In 2021, virtual meetings ensured that collaborations with the other DDeRPs (Australian Research Data Commons (ARDC), Australian Access Federation (AAF), the National Computational Infrastructure (NCI) and the Pawsey Supercomputing Centre) progressed. We are working closely with the other DDeRPs, the Australian Government's National Collaborative Research Infrastructure Strategy (NCRIS) facilities and the wider eResearch community to develop solutions to address the collective need for sustainable, persistent data tools and data services, secure cloud storage, transfer and compute services for sensitive data, and a sustainable model for national data collections.

Our team worked with research groups on various data management projects during 2021, including with the Australian Characterisation Commons at Scale community. This project is focused on establishing a data commons for microscopy laboratories in Australia. The aim is to ensure that data from these laboratories is easily transferred to cloud and high-performance computing analytical environments.

AARNet also joined the Square Kilometre Array Organisation (SKAO) Regional Data Centres Committee to advise on data management and transportation solutions for the SKA telescope.

Throughout the year, we worked with our shareholders and with industry to explore opportunities for providing connectivity and collaboration services that will help bridge the gap between industry and universities to support research commercialisation priorities.

Our engagement with the international NREN, eResearch and Research Data communities, including the Research Data Alliance, also continued throughout 2021 to ensure that our services are leading edge and that they leverage innovations from the international community. AARNet is a founding partner in the Global Research Engagement Group (GREG), a global NREN strategic collaboration to share knowledge

and facilitate a co-ordinated and aligned effort in engaging with established and emerging Big Data research groups. The goal is to ensure that these groups are aware of and can maximize the value of the global research and education network community to enable a frictionless research experience throughout the research and data lifecycle.

DIGITAL PRESERVATION, GLAMS AND HUMANITIES AND SOCIAL SCIENCES

Many of Australia's state and national galleries, libraries, archives and museums (GLAMs) are connected to AARNet. With this underlying connectivity in place, we are focussed on delivering services 'above the network' to enable the GLAM community to preserve, share and analyse their collections.

During 2021 AARNet continued its involvement in digital preservation and humanities research initiatives.

An Australian Research Council Linkage Infrastructure, Equipment and Facilities (LIEF) grant was awarded to establish the Australian Emulation Network: Born Digital Cultural Collections Access. Led by Swinburne University with AARNet as a partner organisation, this project involves over a dozen stakeholder institutions, including universities, galleries, libraries, museums, and archives.

The Emulation Network aims to conserve and render Australian born-digital cultural collections, including games, software art and architectural applications, and make these widely accessible. The project expects to generate new knowledge across media arts, design, and architecture with outcomes including the stabilisation of technically obsolete (but historically significant) digital material and providing researchers with emulated access to born-digital cultural artefacts, sharing legacy computer environments across the network, and establishing an Australian software preservation community of practice. The project will build skills in conserving and preserving digital cultural artefacts with substantial future applications in other domains including research data and the reproducibility of scientific experiments.

Through the Australian Research Data Commons (ARDC), AARNet participated in the Australian Text Analytics Platform (ATAP) and Language Data Commons of Australia (LDaCA) projects. AARNet is enhancing CloudStor's Service for Web-based Analysis (SWAN) and exploring novel data packaging and preservation tools that will have lasting benefits for researchers working with digital cultural collections.

AARNet's continued membership in GLAM Peak, the Software Preservation Network and Digital Preservation Coalition demonstrates our commitment to supporting Australian and international efforts to preserve digital cultural heritage and to help advance Australia's humanities, arts and social sciences research capability.

We also participated in the Coordinated Access for Data, Researchers and Environments (CADRE) project, which aims to establish a shared and distributed sensitive data access management platform for the social sciences and related disciplines. This project is supported by ARDC and led by the Australian Data Archive based at the Australian National University.



DEFENCE RESEARCH

During 2021, AARNet engaged across the defence and space sector to refine the use cases for and role of a secure network environment to support sensitive sovereign research collaboration between government, industry and the research community. This engagement has included significant Defence and industry partner consultations and briefings with AARNet shareholder institutions to determine the nuanced challenges relating to national security data sharing.

HEALTH AND MEDICAL RESEARCH AND EDUCATION

By connecting researchers and educators at university campuses, health research organisations, health systems and health precincts across Australia, AARNet underpins and enables life-changing research and innovation in education for the next generation of health researchers and medical practitioners.

A growing number of health education and research facilities are connected to AARNet, including facilities involved in COVID-19 vaccine and treatment research across Australia. Eduroam is also deployed in many hospitals and health-related institutions to support mobility between campuses, research facilities and hospitals for students, faculty and researchers.

With the volumes of data used in health research increasing exponentially – primarily due to rapid advances in imaging and genomic sequencing capabilities – the need for high-speed network access has become vital for moving data generated in a clinic or laboratory to supercomputing resources for analysis, and on to researchers at institutions across the country.

K-12 SCHOOLS AND TAFES

Throughout 2021, Australian schools and TAFEs continued to take advantage of the benefits of AARNet; both new customers accessing powerful research network bandwidth for the first time, as well as schools already connected to AARNet using their access to leverage online content and

cloud services and manage the remote delivery of teaching and learning during the pandemic.

By the end of 2021 over 600,000 K-12 school students at more than 1,200 schools were connected to AARNet. We continued to focus on improving access to high-speed telecommunications services for K-12 schools in metropolitan and regional Australia.

AARNet worked with many K-12 schools, delivering network and cyber security solutions, as well as providing support for Zoom usage when staff and students were working and learning from home due to the pandemic.

TRAIN-THE-TRAINER WORKSHOPS

As the network provider for Australia's universities and research institutions, AARNet's aim is to enable all researchers to get the most out of the network and the technologies available to support their work. Training is one of the ways we do this. Our workshops are for research support staff in a train-the-trainer style so participants such as librarians, eResearch analysts or faculty research support staff can reuse the content to train researchers at their institutions.

Our training is focused on workshops that demonstrate how to use the services we provide, such as CloudStor and SWAN, and improve the sector's understanding of the capabilities of networks and data movement. The content we deliver encompasses the practical knowledge needed to transfer, store and manage research data (of any size) in complex workflows throughout the research and data lifecycle.

We continued to engage and build the community through online training workshops during 2021, providing tailored training to universities and research organisations across Australia. The online format has enabled AARNet to scale and deliver these popular workshops to more people at shareholder universities. 478 people from 9 universities, as well as other customer institutions, including galleries, libraries, archives and museums participated in 34 workshops during the year.



DEVELOPING SERVICES TO MEET THE NEEDS OF OUR CUSTOMERS

Along with our network and other telecommunications services, AARNet's expanding portfolio of data, collaboration and cyber security services continued to be embraced by the research and education sector. We are focused on **developing services and solutions** that leverage the network to enable seamless and secure collaboration, **data flow and mobility** for the sector.

ZOOM

Despite the strong competition from other collaboration tools, Zoom usage and revenue continued to grow in 2021. AARNet Zoom customers conducted over 6.8 billion Zoom meeting minutes, a more than 17% increase on the previous year. As usage increased, many universities reported that their users preferred Zoom over other available tools. The peak months of the 2021 Spring semester saw new daily highs in usage as universities continued online modes of teaching and explored Zoom and Zoom Rooms for hybrid mode learning.

The AARNet Zoom partnership was renewed in July 2021 for a further 3 years. The new arrangement means that AARNet will continue to support the research and education community in Australia with the best subscription value for AARNet customers, as well as thought leadership, support and best practice guidance for Zoom. Zoom will take an increased role in providing the in-country hosting services. The renewed partnership also expands the product offering from AARNet to include Zoom Events, an online event, conference and ticketing system closely integrated with Zoom, and Zoom Phone, a modern, reliable and intuitive cloud-based telephone service suitable for both desk and soft phones, and with call centre extensions.

The mix of hosting for Zoom across the Australian education sector changed in 2021, with more than 70% of universities transitioning to Zoom's public cloud hosting. This was driven by the availability of in-country storage, fully automated live transcriptions to improve accessibility, and the availability of focus mode. Focus Mode delivers didactic content in a way where students can't see each other, yet the academic can still see all participants. AARNet's expertise assisted many universities to transition to Zoom's public cloud hosting, setting policies around the storage of Zoom recordings and concurrent licensing. Regardless of the choice of hosting, all AARNet customers receive the benefits of our sector-wide visibility of Zoom usage, trends, and AARNet's collaborative Zoom community.

EDUROAM

Eduroam (education roaming) is the secure, world-wide roaming Wi-Fi access service developed for the international research and education community. Eduroam provides students, researchers and staff from participating institutions with secure connectivity at thousands of hotspots across more than 100 countries. With many international borders and campuses still closed and students and staff working from home due to the pandemic, eduroam usage remained low in 2021. AARNet continued to work with shareholder universities, customers and local councils throughout 2021 to extend access to eduroam beyond campuses in metropolitan and regional areas. New deployments included the Queensland Museum Network and Quantum Terminal, a co-working and technology hub in Sydney's CBD.

CYBER SECURITY

Malicious cyber threats to network availability and information security are rapidly increasing in the research and education sector. In response, AARNet is building out a portfolio of integrated security services. We are co-developing services with our customers to detect and help them respond to incidents quickly and keep AARNet and our customers' networks and services up and running.

Early Warning System

The AARNet Early Warning System (EWS) monitors nominated key online services for customers 24/7, such as public websites and learning management systems, to provide early notification of issues affecting performance and allow teams to respond quickly to incidents impacting network availability. 23 customers are signed up for the AARNet EWS.

DDoS Protection

By the end of 2021, 29 customers were onboarded to the AARNet DDoS Protection managed service. The solution helps customers manage DDoS attacks and the risk of business disruption. We have developed a system for the research and education sector that efficiently detects, filters and mitigates attacks well before they reach campus networks. Using AARNet's extensive international and domestic network of border routers, real-time traffic analysis and automated application of firewall filters, mitigation of attacks occurs in seconds, significantly faster than most current commercial offerings. Legitimate traffic remained unaffected in 100% of incidents, following its normal route, without limitation or disruption.

Security Operations Centre

By the end of 2021, 13 universities were onboarded to the AARNet Security Operations Centre (SOC), with a further 9 slated to go live in 2022. AARNet has developed the SOC on behalf of our shareholder universities and CSIRO. The SOC is supporting efforts to uplift the security posture and capability of the higher education and research sector. The AARNet SOC operates 24/7 to monitor and protect the networks and



information of our universities by identifying and responding to threats and compromises. In 2021, funding from the Australian Government's AustCyber Projects Fund supported the development of SOC onboarding processes targeted at small-medium sized institutions and the development of a cyber threat intelligence sharing capability.

Cyber Security for Schools

Uptake of AARNet's Cyber Security for Schools service grew in 2021, with 10 schools signed up to the service by the end of December. This service is a unique learning enablement and cyber safety platform, co-developed by AARNet in partnership with K-12 school customers and leading cyber security service provider CyberHound. The solution offers a set of integrated network and security services to help schools identify, mitigate, and respond to cyber threats. AARNet is continuing its collaboration with CyberHound to bring additional enhancements to this service in 2022.

Cyber Security Partnerships

The Australasian Higher Education Cybersecurity Service (AHECS) initiative, an AARNet, AAF, AusCERT, CAUDIT and REANNZ partnership, delivered the second AHECS Cybersecurity Summit in November 2021. The theme for the summit was "Extraordinary Together" reflecting the fact that cyber security is best played as a team sport. The event was well attended and will be repeated in 2022. The aim of AHECS is to help safeguard the reputation of the Australasian higher education sector through coordinated, complementary cybersecurity-related portfolios of activity.

AARNet is an industry participant in the Cyber Security Cooperative Research Centre (CSCRC). The CSCRC connects participants from industry, government, and leading cyber security research organisations (including six universities and CSIRO's Data61) to develop and potentially commercialise products and services that improve Australia's cyber security posture.

RESEARCH DATA INFRASTRUCTURE

Collaborating with the research community to develop technologies and services that meet the unique needs of researchers is at the heart of what we do. We are focused on developing national collaborative research data infrastructure to meet current and future needs of the research sector.

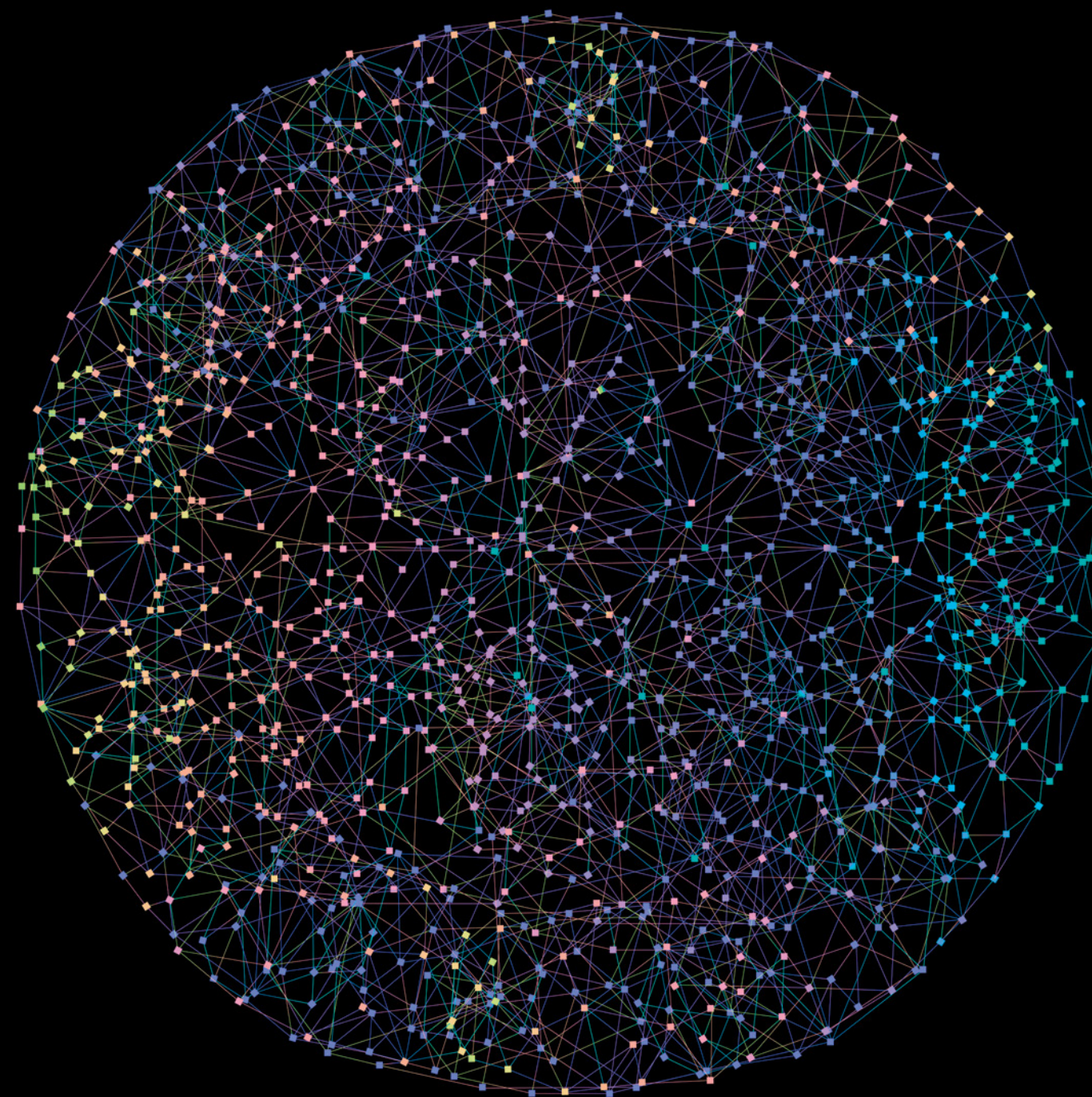
CloudStor

CloudStor is a research data storage, sharing and analysis service designed and built by AARNet to make collaborating on data easy for researchers and academics. CloudStor provides integrated applications to support research workflows, including FileSender and SWAN (Service for Web-based Analysis). Individual researchers and academics receive personal allocations of one terabyte free storage, with larger group and institutional allocations available on request. CloudStor storage is located in Australia and is hosted on equipment owned and operated by AARNet, avoiding data sovereignty issues. Launched in 2008, the service has seen strong uptake year on year.

In 2021, with the data needs of researchers growing exponentially, we conducted a comprehensive review of CloudStor. The review involved extensive consultations with AARNet customer institutions and users. We learnt that CloudStor is useful and delivers value. Findings are informing how we evolve the service to ensure that it meets the changing needs of the research community into the future. A program of work for improving CloudStor commenced in late 2021.

Sensitive Data

A research data platform that enables the research community to collaborate on sensitive data in a safe and secure way was identified as an opportunity during investigations into how AARNet could invest in health and medical research infrastructure. Extensive engagement with our customers and the research community indicated that the community wanted a version of CloudStor that had its features limited to reduce the risk of sensitive data within a research project being shared incorrectly.





AARNet established a Sensitive Data Working Group with interested customers to co-design a proof-of-concept Sensitive Data Service. In 2021, following the completion of the proof-of-concept phase, the project moved into pilot phase with several universities and health and medical research institutes.

In late 2021, following the CloudStor review, the decision was made to integrate the Sensitive Data Service capability into CloudStor as part of the CloudStor improvement program of work. We thank the participants for their invaluable contributions to the development of the sensitive data capability.

Research Data Movement

Packaging up huge volumes of data for transfer between scientific instruments, data storage and high-performance computing facilities over AARNet, the high-speed research network that connects them, is not always a simple task. Researchers sometimes resort to the risky practice of driving and flying hard drives around. This is a complex data movement problem that AARNet has been working with the research community to address, with the help of Globus, a fast, reliable and secure data management service developed by the University of Chicago and used by researchers at hundreds of universities and research institutions worldwide.

In 2021, we worked with research groups at several Australian institutions to trial Globus. The service addresses the problem by orchestrating the secure (encrypted) movement of data between scientific instruments, laptops, supercomputers, tape archives, and cloud storage. The tool provides web browser, command-line and comprehensive application programming interfaces (APIs), and automatically restarts transfers after interruption. It maximises use of the network and will form a key part of AARNet's CloudStor improvement program of work by enabling integrations with instruments and high-performance computing facilities, addressing a researcher requirement, identified in the CloudStor review, for CloudStor to be accessible from multiple environments.

By the end of 2021, 8 institutions had implemented the service under the 12-month trial arrangements, and work is underway to develop an AARNet Globus subscription for the sector

BioCommons Galaxy

Through a partnership with the Australian BioCommons, a project to host Galaxy Australia on AARNet infrastructure commenced in 2021. The AARNet-hosted solution provides the life sciences community with high-performing reliable access to Galaxy, the web-based platform scientists use for conducting accessible, reproducible and transparent computational biological research.

CUSTOMER SUCCESS

AARNet's Customer Success team provides advice, technical design, and engineering assistance to AARNet customers across the research and education sector. The team is focused on ensuring that the solutions we provide are both tailored to meet the unique needs of our customers and delivered smoothly. The team also provides ongoing support to ensure our customers are making the most of their AARNet products and services. Key activities during 2021 included supporting the design and delivery of on-boarding activities for the AARNet SOC; onboarding schools to the network; deploying diverse connections; providing advice and support to Group of Eight universities for eduroam deployment, IOT networking and cyber security uplift programs; hosting Zoom Brunch & Learn knowledge sharing sessions; among other activities.

OUR TEAM

2021 was a year of **huge achievement** for AARNet and one that required a **renewed focus** and vigour from our workforce.

HEADCOUNT AND DIVERSITY

During 2021, our workforce grew by 15% to finish the year with 167 staff members, comprised of 26% female and 74% male. It is pleasing to note that our talent development slate for future leaders is comprised of 58% females, which will provide for a further female representation in management positions in future years. This is positive when compared to the national IT Leadership average of 23% female.

COVID-19 MANAGEMENT

AARNet continued our outstanding record of Covid-19 management throughout 2021, resulting in another year without a case of contraction in the course of AARNet duties or workplace transmission. In the latter part of the year we launched our 'New Ways of Work' strategy, which offers employees a true hybrid working environment, underpinned by the confidence of a fully vaccinated workforce.

SUPPORTING OUR EMPLOYEES

Throughout 2021, AARNet focussed on renewing the employee value proposition in anticipation of the 2022 challenges in the employee attraction and retention equation. AARNet is now a technical market leader in our policy

position on Maternity & Paternity Leave; Adoption Leave; Family and Domestic Violence Leave; and leave to support employees in times of family bereavement and natural disaster. Additionally in 2021, we commenced significant work on our Modern Slavery and our Social Responsibility & Ethics policy and practice. This work will continue into 2022 and beyond.

2021 also saw our employees supported by two further tailor-made training offerings focusing on personal resilience, with a particular focus on wellbeing during and post lockdowns.

EXCELLENCE IN HR COMPLIANCE

Significant advances were made in HR compliance during 2021 with the implementation of external background checking for all employees, the completion of a Recruitment RFP, and a thorough review of our Industrial Award compliance. We enter 2022 with a strong compliance foundation and plans for future developments in this area.

LEARNING AND DEVELOPMENT

Although our COVID operating environment of 2021 somewhat hampered the level of face-to-face training we had planned for, our employees were still well supported through online offerings in the areas of team development and communication skills. 2021 also saw the introduction of our online Learning Management System, which will not only prove pivotal in our future L&D offerings, but also provide an excellent vehicle for required compliance and security training.

Most significantly, in 2021 we introduced the SOC Internship Program. The intern program allows AARNet to actively participate in the development of professional cyber security talent, leveraging our unique position in the sector to source talent directly from our subscribers, and identify candidates suitable for a challenging and rewarding career in this highly competitive industry.





R&E COMMUNITY ENGAGEMENT

Every year AARNet is involved in a broad range of research and education community events: presenting, attending and/or providing sponsorship and network support for conferences, workshops, working groups and forums. In 2021, many events were cancelled or postponed to 2022 due to the pandemic, and some were held online. The AARNet team supported and participated in various national virtual events throughout the year, including eResearch Australasia, AHECS Cybersecurity Summit, AusCERT, Australian Cyber Week and others.

INTERNATIONAL ENGAGEMENT

AARNet continued to host and oversee content production for the In The Field website (inthefieldstories.net), a global collaboration for sharing impact stories and promoting the value of research and education networks worldwide. AARNet staff continued to collaborate with their global peers and participated remotely in international projects, working groups, conferences and forums for the benefit of the research and education community. These included Research Data Alliance, Science Mesh, Cloud Storage Services for Synchronization and Sharing (CS3), Asia Pacific Advanced Network (APAN) meetings, Global NREN CEO Forum, GÉANT Marcomms Special Interest Group, Global Researcher Engagement Working Group, GÉANT Research Engagement Development Task Force, GÉANT Education Task Force, Global Network Advancement Group, Securing the GREN Working Group, MANRS, Digital Preservation Society, and others.

AARNET STAFF AS AT END OF 2021

TOTAL: 167
ACT 6
NSW 67
QLD 26

SA 2
VIC 51
WA 14
EUROPE 1

CORPORATE GOVERNANCE

THE ORGANISATION

AARNet Pty Ltd [ACN 084 540 518] is the not-for-profit company that operates the AARNet network, Australia’s national research and education network, also known as an NREN.

Shares in AARNet Pty Ltd [AARNet] are held by 38 Australian Universities and the CSIRO as listed on this page.

AARNet is a licensed Australian telecommunications carrier [#61 under the Telecommunications Act 1997 C’t].

The Chief Executive Officer is charged with the efficient and cost-effective operation of the company and reports to the Board of Directors, as listed on the opposite page.

THE AARNET BOARD OF DIRECTORS

The Board of Directors is responsible for the overall direction and management of AARNet.

For more than 30 years, AARNet and its predecessor have shared and exchanged expertise with shareholders and customers in many ways, supporting national and international collaboration and innovation in networking and associated services for research and education.

AARNet has been effective in making representations to government on policy, legislation, strategy and programs to improve the telecommunications facilities and services available not only to the education and research sector, but to all Australians.

THE AARNET ADVISORY COMMITTEE

The AARNet Advisory Committee [AAC] represents the interests of the members and is a source of advice on policy and business matters. CSIRO and shareholders in each state elect one representative to the AAC. Members of the AAC are listed on the opposite page.

LIST OF SHAREHOLDERS

- Australian National University
- Commonwealth Scientific and Industrial Research Organisation
- University of Canberra
- Charles Sturt University
- Macquarie University
- Southern Cross University
- The Australian Catholic University
- University of New England
- University of New South Wales
- University of Newcastle
- University of Sydney
- University of Technology, Sydney
- Western Sydney University
- University of Wollongong
- Charles Darwin University
- Bond University
- Central Queensland University
- Griffith University
- James Cook University
- Queensland University of Technology
- University of Queensland
- University of Southern Queensland
- University of the Sunshine Coast
- Flinders University of South Australia
- University of Adelaide
- University of South Australia
- University of Tasmania
- Deakin University
- La Trobe University
- Monash University
- RMIT University
- Swinburne University of Technology
- The University of Melbourne
- Federation University Australia
- Victoria University
- Curtin University
- Edith Cowan University
- Murdoch University
- The University of Western Australia

BOARD OF DIRECTORS

- Emeritus Professor Gerard Sutton AO
Chair of the Board and Chair of the Nomination and Remuneration Committee
- Dr Christine Burns
- Mr Robert Fitzpatrick
Member of the Audit, Finance and Risk Committee
- Mr Chris Hancock AM
Chief Executive Officer
- Professor Brigid Heywood
- Ms Fiona Rankin
- Mr John Rohan
Deputy Chair of the Board, Chair of the Audit, Finance and Risk Committee and member of the Nomination and Remuneration Committee
- Professor Deborah Terry AO
- Emeritus Professor Mark Wainwright AM
Member of the Audit, Finance and Risk Committee and the Nomination and Remuneration Committee
- Mr David Formica (until 12 February 2021)
- Professor John Dewar AO (until 2 June 2021)
- Dr David Williams (until 30 November 2021)
- Mr Scott Sorley (appointed 18 March 2021)
- Professor Bevil (Barney) Glover AO (appointed 2 June 2021)
- Professor Elanor Huntington (appointed 22 February 2022)

AARNET ADVISORY COMMITTEE

- Chair: Mr David Formica – ACT, University of Canberra (until 12 February 2021)
- Chair: Mr Scott Sorley – QLD, University of Southern Queensland (appointed 18 March 2021)
- Mr Chris Hancock AM – AARNet CEO
- Mr Malcolm Caldwell – NT, Charles Darwin University
- Mr Adrian Dillon – TAS, University of Tasmania
- Mr Vito Forte – WA, Edith Cowan University
- Mr Mark Griffith – NSW, University of New South Wales
- Ms Bev Wright – SA, University of Adelaide (until July 2021)
- Mr Luke Havelberg – SA, Flinders University (appointed August 2021)
- Mr Tom Minchin (CSIRO)
- Mr Zoran Sugarevski – VIC, Victoria University (until December 2021)
- Mr Craig Warren – VIC, Deakin University (appointed February 2022)

AARNET CHAIR EMERITUS PROFESSOR GERARD SUTTON AO RETIRES

An admired and respected leader with a great commitment to the cause of education, **Emeritus Professor Gerard Sutton AO** will step down as Chair of the AARNet Board at the 2022 Annual General Meeting after 10 years in the role.

Gerard was appointed as Chair in 2011, but his influential journey with AARNet began more than a decade earlier, as a Non-executive Director from 2000 to 2004. A former Vice-Chancellor of the University of Wollongong, Sutton widely credits the Commonwealth Government's investment in AARNet "as one of the most significant investments the Commonwealth has made for education in Australia". As Chair, he has steered AARNet through periods of change and growth to become the thriving technology company it is today, supporting Australia's research and education sector with national and international connectivity and a range of data, collaboration and cyber security services.

AARNet CEO Chris Hancock AM says, "Under Gerard's outstanding leadership, AARNet has evolved and grown significantly in response to the rapidly changing needs of the sector. He leaves the company strategically well-positioned for the future and we thank him for his dedication and contributions to the success of AARNet."



Spotlight

Mysteries in our cosmos, teaching and learning in challenging times, digital preservation for museums, and connecting Australia's fastest supercomputers. Here's a closer look at some of the interesting projects, partnerships and discoveries enabled by AARNet's powerful network infrastructure and services.

To read more stories, go to
aarnet.edu.au/news-events



RADIO TELESCOPE DATA REVEALS THE MYSTERIOUS IN OUR COSMOS

Large data projects require fast and reliable networks to achieve their ambitious aims. Radio astronomy is just such a project, with huge amounts of data being produced by telescopes in some of Australia’s most remote regions. Throughout 2021, never-before-seen radio waves were sending signals through AARNet networks, infrastructure and managed resources, to be shared with researchers all over the world, resulting in a flurry of new discoveries.

This was especially evident in research produced by teams using the ASKAP radio telescope, owned and operated by Australia’s national science agency, CSIRO.

CSIRO has partnered with AARNet to create a reliable data network for the streams of information produced by ASKAP’s 36 dishes, which can exceed 4 terabytes each hour. This year, ASKAP entered the second phase of its pilot surveys, meaning more data more often was being transported across the expansive distances between the Murchison Radio-astronomy Observatory, the town of Geraldton, and Perth in Western Australia.

And this data has been exceptional.

Science survey team Evolutionary Map of the Universe (EMU) made waves when it published an image of shapes surrounding distant galaxies, which take on the appearance of dancing ghosts.

However, the ‘ghosts’ are clouds of energetic particles spewing from the black-hole centres of two galaxies. But the

shape of these clouds does not fit into typical models of how intergalactic particles move through space. There must be other forces at play, which researchers are yet to determine.

EMU’s aim is to scan the skies with great depth and precision to uncover new objects in space. There are eight other survey science teams who use ASKAP and the AARNet resources to further our understanding of the Universe. The Variable and Slow Transients team is another, seeking out objects that flash in our cosmos such as pulsars, and supernovae. This year, they gained world-wide coverage with the discovery of a mysterious signal coming from the centre of our galaxy. What is causing this repetitive pattern of radio waves is unknown, but the team – along with researchers around the world – are looking into it.

New discoveries are only possible when data, collected from the world’s best telescopes like ASKAP, is sent along the best quality optical fibre networks to be processed and shared by multi-disciplinary researchers of all academic levels. Open collaboration is key.

ASKAP’s data is being downloaded and analysed within universities all over the world. In Australia, AARNet’s network is allowing researchers to access the publicly available data from the CSIRO ASKAP Science Data Archive (CASDA). As ASKAP is one of the most capable telescopes in the world, CASDA houses project data that is being accessed and used to further studies in many areas of radio astronomy.

Managing these amounts of data is one of the key challenges for operating the future SKA radio telescope. Situated in Australia and southern Africa, the SKA project is a huge undertaking in radio astronomy. AARNet alongside CSIRO is helping to find solutions to these challenges and bring the stars closer to home.

Opposite page: Centre image - the ASKAP radio telescope dishes. Credit: Alex Cherney and CSIRO. Outer image - Dancing Ghosts, captured by ASKAP, are overlaid on an optical image from the Dark Energy Survey. Credit: Norris et al.

TEACHING AND LEARNING THRIVE THROUGH CHALLENGING TIMES

A strategic **vision for digital education** allowed Haileybury to seamlessly **transition to an online environment** during the COVID-19 pandemic. Lessons learned are also helping to shape the School's K-12 classrooms for the future.

Haileybury is Australia's largest independent school, boasting over 4,700 students and 850 staff, with six campuses across Melbourne, Darwin and China. The campuses work like the separate limbs of a single body so connectivity is the lifeblood of the Haileybury model. A couple of years ago, when the School was looking for a connectivity solution to support its ambitious digital strategy, the ICT team turned to AARNet for advice. A scalable high-speed 10Gbps AARNet internet connection and AARNet Zoom services were subsequently deployed. The high performance and reliability of this solution has empowered teachers to use new technologies and helped to revolutionise teaching and learning.

Deputy Principal Anna Sever says, investing in infrastructure and technologies, and developing digital teaching and learning capabilities, were fundamental for delivering the School's long-term vision for digitally driven education.

"When we implemented Zoom and the Canvas learning management system, teachers quickly adapted to these technologies and we saw a huge uplift in skills across the entire school in a very short time," she said.

When COVID-19 spread in early 2020 and lockdown sent teachers and students home, it was the mastery of these digital technologies and skills that enabled Haileybury to quickly transition to an online learning environment. The School was able to keep students on track with little change to their learning habits.

Prior to the pandemic, Haileybury was already taking advantage of Zoom for delivering classes across campuses, used in tandem with Canvas for coursework, assignment tracking and reporting to parents. Having virtual classroom practices and processes already in place meant that Haileybury was able to quickly adapt and implement them for online learning across the entire school when lockdown was enforced.

While times were tough through the COVID-19-imposed lockdowns, the lessons Haileybury learned under difficult circumstances have been invaluable. When on-campus teaching and learning returned, a lot of the techniques refined during that time were retained, creating an innovative digitally driven environment, enabled by the School's high-speed AARNet connection.

With teachers needing to rely on Canvas even more during the lockdown, they became more familiar with its functionality, and a positive outcome is that students are now offered self-paced classes. This approach also allows students to catch up if they miss a class, which is not always possible with traditional in-class teaching.

Haileybury also now offers more bimodal classes, where some students are in the classroom with the teacher, while students from other campuses are conferenced into the room via Zoom. This allows the school to offer a wide range of subjects, including English Literature, Latin and Chinese, delivered by one teacher to students across all four campuses. By fitting out rooms with multiple cameras and TV screens for beaming in the remote students, Haileybury provides a fully integrated experience so that students both on Zoom and onsite are given equal opportunities in class.

Sever says one of the biggest lessons for Haileybury from those challenging times is that having all of this technology in place means that the school is no longer beholden to traditional methods of teaching or teacher recruitment.

For example, faced with a limited pipeline of local teachers, particularly for specialist subjects, the school recently recruited a teacher based in the United States. This teacher delivers classes via Zoom to students at the Melbourne campuses. "Technology has opened up a whole new world of teachers. Looking beyond local talent and using technology in innovative ways ensures that Haileybury can provide the best education for its students," said Sever. "We can now have the best teachers in front of the class, no matter where they are in the world."

The reliability and performance of the AARNet solution have empowered teachers to use new technologies.
Credit: © Haileybury





CONNECTING THE SUPERCOMPUTERS AT THE CORNERSTONE OF AUSTRALIAN RESEARCH

High-performance computing (HPC), also known as supercomputing, is a powerful tool for researchers in the pursuit of scientific discovery. AARNet's partnerships with supercomputing centres, universities and research institutes allows researchers to connect to some of the fastest supercomputers in Australia and undertake globally competitive research.

Supercomputers use many thousands of central processing unit (CPU) and graphic processing unit (GPU) technologies in tandem, achieving in minutes what a general-purpose computer would need weeks, months or even years to accomplish. HPC aids in computationally difficult tasks like modelling the properties of atoms and complex weather systems, and mapping genomes. This information helps researchers uncover the mysteries of the universe, predict the impacts of climate change, improve our response to natural disasters and track the spread of viruses.

In the era of exascale computing, the need for ultra-fast, scalable, high-capacity network connectivity for moving large-scale research data to and from supercomputing centres for analysis has never been greater. This is where AARNet plays a vital role, as the data connector for the research community. AARNet network services connect research facilities across the country to the computing power of Australia's Tier-1 supercomputers at the National Computational Infrastructure (NCI) based at the Australian National University in Canberra and to the Pawsey Supercomputing Research Centre in Perth, enabling life-changing research projects.

Work investigating rare diseases by researchers at the Garvan Institute of Medical Research whole-genome sequencing facility relies on powerful technology and network connectivity. The data produced by whole-genome sequencing is highly complex and goes through multiple stages of analysis and quality control. Some of this is done at Garvan, while other stages are run at dedicated supercomputing facilities including the NCI in Canberra. AARNet partnered with the University of New South Wales IT team and Garvan to design and deploy the network infrastructure required for Garvan's human genome sequencing centre, which includes a high-speed AARNet link connecting Garvan to NCI. The link is enabling faster access to data than ever before for researchers aiming to find cures and improve treatments for COVID-19, cancers, and other diseases.

Large-scale data captured by powerful telescopes located at the Murchison Radio-astronomy Observatory in outback Western Australia travels over a dedicated high-speed AARNet link to Pawsey, more than 700 kilometres away in Perth. Supercomputers there map the night sky and detect stellar objects, and data can be shared with researchers around the globe over AARNet's national and international network. To help Australia transition to a lower emissions economy, researchers at Griffith University in Queensland are also using Pawsey and AARNet to explore new materials for enabling more efficient green energy production.

The researchers are using one million supercomputer core hours to simulate the atomic action of quantum dots, the world's most efficient solar cells, and test lead-free alternatives. The team at Griffith connects to Pawsey in Western Australia via AARNet. Pawsey's ongoing partnership with AARNet provides researchers at universities and research institutes across Australia with high-speed access to Pawsey's supercomputers and, for the Griffith University team, this was invaluable during Queensland's COVID-19 lockdowns.

As Australia's international research impact continues to grow, fast scalable connectivity between supercomputers and research facilities becomes ever more vital. Increasing data volumes require new techniques to draw value from them. Connectivity for automatic data collection and processing pipelines for major projects needs to be near-real-time and scalable to handle flows of petabytes of data. AARNet's high-speed network is purpose-built for the task, and exists to provide seamless connectivity between researchers, research facilities, instruments and supercomputers to enable discovery and innovation for Australia.

The original artwork created for NCI's Gadi supercomputer featured on opposite page is by Lynnice Letty Church. Credit: © NCI

USING NEW TECHNOLOGIES TO SHOWCASE AND PRESERVE DIGITAL MEDIA

ACMI, Australia's museum of screen culture, is one of many state and national galleries, libraries, archives and museums connected to AARNet. ACMI celebrates the past, present and future of the moving image, across film, TV, video games, digital culture, and art. AARNet's high-performing low-latency network infrastructure underpins exhibitions and public programs, as well as collaborations with the research and academic community that are driving innovations in media, technology and user experience for museums.

Located in Melbourne's famed Fed Square, ACMI reopened its doors to the public in 2021 following an extensive redevelopment project that has transformed the museum's spaces, technologies, and programming.

Now, through the innovative use of immersive and interactive technologies, visitors experience ACMI's collection in new and exciting ways. The Lens, for example, is a free take-home device that lets visitors curate a personal online collection of artworks and objects from The Story of the Moving Image exhibition, all linked to stories and ideas that can be explored long after they've left the building.

New spaces host ground-breaking programs, such as the collaboration between ACMI and research partner RMIT University. The ACMI+RMIT Audience Labs are where game developers, filmmakers, artists, technologists and other creators can beta test their products and prototypes on ACMI audiences.

ACMI is also focussed on addressing challenges around the preservation of digital artefacts in its own growing collection and for collecting institutions in general, to ensure that they are accessible to future generations.

Inside ACMI's Blackmagic Design Media Preservation Lab, staff and collaborators are digitising ACMI's film and time-based media collections, assessing physical artefacts from the videogame and film collections, as well as conducting hours of quality assessment work on born-digital works to make the collection accessible onsite and online. Visitors to the museum can observe the lab in action through a window that also displays collection objects. The once concealed activities of conserving and preserving media are now revealed in a central space in the museum.

ACMI's involvement in collaborative research projects includes Play It Again II, exploring ways of documenting, preserving and creating an accessible and playable history of 1990's Australasian videogames and videogame culture. ACMI is working with AARNet, Swinburne University and RMIT University to solve the problem of obsolete hardware and bring games such as Beam Software's Shadowrun (1993), a role-playing game set in a gritty cyberpunk future; Ratbag Games' Powerslide (1998), a post-apocalyptic racer; and Interactive Binary Illusions' Flight of the Amazon Queen (1995), a point-and-click adventure set in the Amazon, back to life. The team is testing emulation as a preservation strategy using the Emulation-as-a-Service platform developed by computer scientists at Freiburg University. The platform provides access to obsolete computer environments, enabling legacy software and other digital artefacts to be emulated and accessed by users in a web browser.

This collaboration will continue with the ARC LIEF-funded Australian Emulation Network: Born Digital Cultural Collections Access project that commences in 2022.

Supporting ACMI in this way is a great example of how AARNet works with customers to provide the network infrastructure and solutions 21st-century GLAMs need now and into the future.

A view into ACMI's Blackmagic Design Media Preservation Lab.
Credit: Shannon McGrath © ACMI.



AARNet Pty Ltd Financial Report and Directors' Report 2021

for the year ended 31 December 2021
ABN 54 084 540 518



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DIRECTORS’ REPORT

Your Directors present their report on the Company, AARNet Pty Limited (“AARNet”), for the year ended 31 December 2021.

The following persons were Directors of AARNet during the whole of the financial year and up to the date of this report:

- Emeritus Professor Gerard Sutton AO**
Chair of the Board and Chair of the Nomination and Remuneration Committee
- Dr Christine Burns**
- Mr Robert Fitzpatrick**
Member of the Audit, Finance and Risk Committee
- Mr Chris Hancock AM**
Chief Executive Officer
- Professor Brigid Heywood**
- Ms Fiona Rankin**
- Mr John Rohan**
Deputy Chair of the Board, Chair of the Audit, Finance and Risk Committee and member of the Nomination and Remuneration Committee
- Professor Deborah Terry AO**
- Emeritus Professor Mark Wainwright AM**
Member of the Audit, Finance and Risk Committee and the Nomination and Remuneration Committee

Mr David Formica was a director from the commencement of the financial year until his resignation on 12 February 2021.

Professor John Dewar AO was a director from the commencement of the financial year until his term expired on 2 June 2021.

Dr David Williams was a was a director from the commencement of the financial year until his resignation on 30 November 2021

Mr Scott Sorley was appointed a director on 18 March 2021 and remains a director at the date of this report.

Professor Bevil (Barney) Glover AO was appointed on 2 June 2021 and remains a director at the date of this report.

Professor Elanor Huntington was appointed on 22 February 2022 and remains a director at the date of this report.

PRINCIPAL ACTIVITIES

AARNet is a not for profit, proprietary company in which 38 Australian universities and the Commonwealth Scientific and Industrial Research Organisation (CSIRO) have an equal shareholding.

AARNet’s principal activity is the provision of internet and advanced telecommunication and network services to its shareholders (“Members”) and to other relevant organisations. Services are provided in accordance with the AARNet Access Policy in order that Members and other customers may:

- a) use AARNet’s internet and other telecommunications facilities and services to provide educational programs and conduct research activities in an efficient and cost effective manner, and
- b) collaborate with other parties (nationally and internationally) in furtherance of research and education objectives.

OTHER ACTIVITIES

In addition, AARNet:

- a) facilitates the construction of optical fibre infrastructure to extend the AARNet backbone and to connect campuses and other locations to facilitate services for Members and customers;
- b) provides applications and services which operate across the AARNet network supporting education and research activities;
- c) secures those applications and services operating across the AARNet network through a Security Operations Centre and additional cyber security-related applications and services;
- d) monitors Member’s equipment and infrastructure on campuses and other premises to identify and alert Members to potential cyber attacks or potential cyber threats allowing the Member to take early action to prevent, close down or mitigate cyber risks;
- e) participates in the design and deployment of advanced network infrastructure in partnership with network organisations in Australia and internationally, to develop national and global research and education networks; and
- f) makes representations to all levels of government on policy, legislation and programs to improve the telecommunications facilities and services available to its Members and other costumers.

DIVIDENDS

AARNet’s constitution prohibits the payment of dividends or other distributions to its shareholders. Accordingly, no dividends have been paid, declared or recommended either during the financial year or in the period since that year ended (2020: nil).

REVIEW OF OPERATIONS

Network Performance

Throughout 2021 AARNet’s network continued to perform at consistently high levels while carrying increasing volumes of traffic for Members and other customers. For 2021 the average availability was 99.99% which was higher than the level achieved in 2020 (99.96%).

Telecommunications traffic in 2021 exceeded pre-COVID (2019) levels, growing 8% higher than in 2019 and 21% higher than 2020. Within the 21% total traffic growth compared to 2020, Member traffic grew 15% and Non-Member traffic growth was even higher than Members due to significant growth in a small number of large user customers.

Network Expansion

During 2021 AARNet continued to invest to upgrade the capacity of the AARNet network and to expand the geographic reach of the network’s fibre footprint.

Overall spending on communication assets (including network infrastructure and equipment) was \$26,270,409 during the year (2020: \$43,531,648) (refer to note 22 of the financial statements).

This investment reflected the continued investment in AARNet’s domestic fibre footprint.

Non-Cash Accounting Adjustments

While AARNet’s operations continue to thrive, AARNet’s 2020 and 2021 financial results have been affected by two non-cash accounting adjustments.

- ii)

AARNet utilises a fibre cable owned by a company which was placed in receivership in November 2021. AARNet’s use of this fibre was granted under a 15 year Indefeasible Right to Use (“IRU”) established in 2010; the prepayment of this IRU is recognised over the 15 year life of the IRU, with a balance of some \$5.1m at the end of December, 2021. At December 2021, given uncertainty as to whether the IRU will provide any further benefits, AARNet has determined to accelerate expense recognition of \$4.3m of the \$5.1m remaining balance.

- ii)

AARNet’s practice when constructing network infrastructure is to receive contributions from its Members and others toward the cost of that infrastructure. In recent years, several significant transactions have been concluded which, due to the value and term of the arrangements, are considered transactions which, under AASB15, contain a “significant financing” element. Under AASB15, AARNet is required to treat payments received from the counter-parties as a notional loan, on which notional interest payments are also recorded in the financial statements (note: no interest is actually payable on the amounts received).

Consequently, AARNet’s results for 2020 and 2021 now include these non-cash notional interest charges of \$0.8m for 2020 and \$1.4m in 2021. These charges will be eventually offset by future non-cash revenues which will flow over the term of the agreements.

The IRU accelerated expense recognition and these notional interest charges have a significant impact on AARNet’s financial results for both 2021 and 2020 as shown in the table below.

	2021	2020
	\$	\$
Net (Deficit) Surplus Before Accounting Adjustments	2,755,335	(2,397,462)
IRU accelerated expense	(4,299,423)	
Non-cash interest charges related to significant financing elements of infrastructure contributions	(1,417,333)	(771,449)
Net (Deficit) Surplus After Accounting Adjustments	(2,961,421)	(3,168,911)

Refer to note 31 of the financial statements for more information on the restatement of our 2020 financial results.

Subscriptions and Telecommunications Revenues

AARNet’s Members pay subscription and related fees for connection to the network and carriage of data across the network (to research and education facilities in Australia, international research and education networks, and the general internet). These charges form the largest single component of AARNet’s revenues.

During 2021, Members’ subscription and related charges were in line with 2020 revenues, despite the growth in Members’ traffic discussed above.

	2021	2020	Increase
	\$	(Restated) \$	
Members: Subscription, Traffic and Access	40,986,055	40,840,735	0.4%
Non-Member: Subscription, Traffic and Access	14,192,814	14,294,221	(0.7%)
Other Services	24,519,362	24,242,160	1.1%
Telecommunications Revenue	79,698,231	79,377,116	0.4%

Other Services

AARNet offers a range of other services to Members and other customers. Broadly, these services fall into three categories:

- i) transmission services providing point-to-point capacity: these enable Members and customers to link together geographically diverse campuses, research centres and remote research instruments; or to provide dedicated high-speed capacity between user facilities and third party data centres; and
- ii) above the network services which directly support the delivery of education and research outcomes (including Zoom, a video conference/meeting service offered in conjunction with Zoom Inc, and Cloudstor, a service which is optimised for the storage and sharing of research data sets).
- iii) Cyber security-related applications and services, predominately the Security Operations Centre.

Revenue from these other services increased by 1.1% during 2021. During 2021 AARNet renewed its partnership with Zoom Video Communications Inc (“Zoom”). Under the renewed agreement Zoom has assumed further responsibility to host and operate services for users on AARNet’s network.

Previously, AARNet accounted for payments from users as revenues with payments to Zoom expensed; leaving AARNet with a margin representing the services and support AARNet provided to users.

Under the renewed agreement, while accounting margin from the Zoom service is unaffected, AARNet’s accounting treatment for the Zoom service is changed. AARNet now recognises only the margin it retains as income, with the effect that reported revenues and costs associated with AARNet’s provision of Zoom services have fallen.

Without this change in accounting treatment, revenue from other services in 2021 would have shown growth of 16.4% as AARNet’s suite of video conferencing, cloud storage and cyber security services continue to be embraced by users across the research and education sector.

Overall, subscriptions and service revenues decreased by 0.4% from 2020 after accounting for the change accounting treatment for Zoom. Under the accounting treatment used for Zoom in 2020, overall revenues grew by 5.1%.

Infrastructure Revenues

Infrastructure establishment fees (income from the provision of new fibre infrastructure) grew by 12.1% in 2021 reflecting the value of infrastructure projects completed and brought into service.

	2021	2020	Increase
	\$	(Restated) \$	
Infrastructure Establishment Fees	6,167,807	5,502,005	12.1%
Infrastructure Construction Revenue	1,370,055	1,999,445	(31.5%)
	7,537,862	7,501,450	0.5%

Revenues from infrastructure construction and allied activities (such as services to relocate infrastructure) were (31.5%) lower in 2021 than 2020. This income stream is very reactive to the impact of activity by utility providers, other telecommunications carriers and civil infrastructure projects (such as transport projects) and income can vary significantly from year to year.

Other Revenues

In addition to revenues from the provision of telecommunications services and infrastructure, AARNet also gains income from interest and dividends on invested funds. In 2021, this investment income totalled \$6,626,317 (2020 Restated: \$5,445,234) (see note 10 to the financial statements). In 2021 investment returns were lower than the previous year due to lower amounts held in investments (as funds were expended on the investments in the network outlined earlier), lower interest rates and the impact of COVID-19 on financial markets.

Telecommunication Supply Expenses

Telecommunication supply expenses totalled \$34,589,853 in 2021 compared with \$35,071,145 in the 2020 restated financial result.

The decrease in expenditure is primarily from the aforementioned change in accounting treatment of Zoom services.

Employee and Administration Costs

To support the growth of our network and services, AARNet added staff to its infrastructure development and cyber security teams.

Depreciation and Amortisation Charges

Depreciation and Amortisation charges, inclusive of depreciation on equipment, depreciation on infrastructure and amortisation of Indefeasible Rights to Use (IRUs) totalled \$19,145,188 in 2021 compared to \$18,654,365 in 2020.

Other Expenses (including Finance Costs)

These costs of \$1,974,575 are lower than 2020 (\$3,335,094 after restatement) mainly due to an improved performance in hedging foreign currency contracts, incurred as part of AARNet’s hedging activities (refer discussion in note 26).

ACCUMULATED SURPLUS AND RESERVES

In 2021, AARNet recorded a net deficit of (\$2,961,421) (2020 restated: net loss of \$3,168,911).

Surpluses earned in prior years, aided by conservative financial management, have enabled AARNet to withstand the impact of the COVID-19 pandemic with a significant holding of cash and investments (net \$86,043,839 at the end of 2021.)

Surpluses earned by AARNet cannot (by virtue of the terms of AARNet’s constitution) be distributed to the shareholders.

In the Board’s view, and in line with the company’s long range plans, it is prudent for AARNet to generate a surplus in order that investments in network capability and services may be funded without calling on Members to contribute further equity into the company.

Investments in network capability and services are expected to continue into future years to:

- a) finance investments in technology to enhance the delivery of services to Members and other customers;
- b) supplement Members’ subscriptions and other income in future years;
- c) meet obligations to settle lease liabilities which totalled \$49.0m at year end as shown in note 8(i) to the financial statements; and
- d) defray part of the significant financial commitments in respect of capacity commitments (principally rights to use the traffic paths of cable systems operated by other telecommunication carriers) which, at year end, were \$24,464,475, refer to note 2(b) to the financial statements.

NET ASSETS

Net assets at 31 December 2021 were \$215,759,182 (2020 restated: \$218,720,603). The decrease represents the deficit for 2021.

SIGNIFICANT CHANGES IN THE STATE OF AFFAIRS

Except for the matters discussed under the heading “Review of Operations” there were no significant changes in the Company’s state of affairs during the financial year ended 31 December 2021.

MATTERS SUBSEQUENT TO THE END OF THE FINANCIAL YEAR

Except for matters discussed under the heading “Review of Operations” no other matter or circumstance has arisen since 31 December 2021 that has significantly affected or may significantly affect:

- a) AARNet’s operations in future years;
- b) the results of those operations in future financial years; or
- c) AARNet’s state of affairs in future financial years.

LIKELY DEVELOPMENTS AND EXPECTED RESULTS OF OPERATIONS

AARNet expects network traffic will continue to grow during 2022. In addition, investment in AARNet’s domestic fibre network will continue during 2022.

With the continuence of AARNet receiving contributions from its Members and others toward the cost of constructing network infrastructure, AARnet will incur similar ‘significant financing’ non-cash expenditure.

AARNet also expects to generate increasing revenues and incur additional costs in relation to the provision of cyber security services to Members and other customers.

ENVIRONMENTAL REGULATION

AARNet’s operations are not adversely affected by any significant environmental regulation. AARNet believes its greenhouse gas emissions are substantially below the thresholds that are subject to the reporting requirements of either the *Energy Efficiency Operations Act 2006* and the *National Greenhouse and Energy Reporting Act 2007*.

INSURANCE FOR OFFICERS

During the financial year, AARNet paid a premium of \$77,485 (2020: \$71,280) in respect of liability insurance for the Company’s Directors and Officers. The liabilities insured against are costs and expenses that may be incurred in defending civil or criminal proceedings that may be brought against the Directors and Officers in their capacity as Directors and Officers of AARNet, 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 Directors or Officers or the improper use by the Directors or Officers of their position or of information to gain advantage for themselves or someone else or to cause detriment to AARNet. It is not possible to apportion the premium between amounts relating to the insurance against legal costs and those relating to other liabilities.

No known liability has arisen under these indemnities to the date of this report.

AGREEMENT TO INDEMNIFY OFFICERS

Under the terms of its Constitution, AARNet provides indemnity to persons who are, or have been, an officer or auditor of AARNet, but only to the extent permitted by law and to the extent that the officer or auditor is not indemnified by Directors’ and Officers’ liability insurance maintained by AARNet. The indemnity is against liability incurred by that person as an officer or auditor of AARNet to another person and for costs and expenses incurred by the officer or auditor in defending such proceedings.

Separately, AARNet and each director of AARNet have entered into a Deed of Indemnity under which AARNet indemnifies each director against any liability:

- a) to a third party (that is, other than to AARNet) unless the liability arises out of conduct involving a lack of good faith; and
- b) for legal costs incurred in successfully defending civil or criminal proceedings or in connection with proceedings in which relief is granted under the *Corporations Act 2001*.

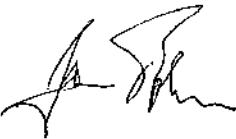
No known liability has arisen under these indemnities as at the date of this report.

AUDITOR

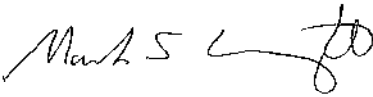
A copy of the Auditor’s Independence Declaration as required under s.60-40 of the Australian Charities and Not-for-profits Commission Act 2012 is included on page 7 of this financial report.

PricewaterhouseCoopers continues in office in accordance with section 327 of the Corporations Act 2001.

This report is made in accordance with a resolution of Directors.



Mr JF Rohan
Director
Sydney
19th May 2022



Emeritus Professor MS Wainwright AM
Director

AUDITOR’S INDEPENDENCE DECLARATION



Auditor’s Independence Declaration

As lead auditor for the audit of AARNet Pty Ltd for the year ended 31 December 2021, I declare that to the best of my knowledge and belief, there have been no contraventions of any applicable code of professional conduct in relation to the audit.



Scott Walsh
Partner
PricewaterhouseCoopers

Sydney
19 May 2022

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Liability limited by a scheme approved under Professional Standards Legislation.

PROFIT AND LOSS STATEMENT

	Notes	2021 \$	2020 \$(Restated)
Services revenue	9	87,236,093	86,878,566
Other income	10	6,626,317	5,445,234
Grants and contributions received	10	260,000	454,333
Total revenue		94,122,410	92,778,133
Telecommunications supply expenses		(34,589,853)	(35,071,145)
Depreciation, amortisation and impairment - Telecommunications	11	(12,007,226)	(10,630,084)
Employee benefits expense - Telecommunications		(24,133,445)	(22,677,181)
Other administration - Telecommunications		(9,883,812)	(8,757,129)
Infrastructure construction expenses		(3,238,562)	(3,363,268)
Depreciation and amortisation - Infrastructure	11	(7,137,962)	(8,024,281)
Employee benefits expense - Infrastructure		(3,200,834)	(3,297,882)
Other administration - Infrastructure		(917,562)	(790,980)
Other expenses (including finance costs)	11	(1,974,575)	(3,335,094)
Total expenses		(97,083,831)	(95,947,044)
Net (deficit) surplus		(2,961,421)	(3,168,911)

The above Profit and Loss Statement should be read in conjunction with the accompanying notes.

BALANCE SHEET

	Notes	31 December 2021 \$	31 December 2020 \$(Restated)
ASSETS			
Current assets			
Cash and cash equivalents	12	15,665,807	27,161,647
Receivables and other assets	14	19,091,048	16,271,513
Accrued income	15	578,704	384,453
Financial instruments at amortised cost	17	10,007,041	13,000,508
Financial assets at fair value through profit and loss	18	1,005,670	1,523,270
Derivative financial instruments	26	129,420	-
Total current assets		46,477,690	58,341,391
Non-current assets			
Financial instruments at amortised cost	19	26,465,477	24,744,022
Financial assets at fair value through profit and loss	20	32,899,844	22,968,989
Receivables and other assets	21	39,870,561	43,842,499
Property, plant and equipment	22	252,244,500	241,365,943
Intangible Assets	23	984,570	508,061
Derivative financial instruments	26	25,382	-
Total non-current assets		352,490,334	333,429,514
Total assets		398,968,024	391,770,905
LIABILITIES			
Current liabilities			
Payables	3	8,147,867	11,913,940
Income in advance	4	19,227,166	20,417,043
Provisions	6	8,047,032	6,832,450
Lease liabilities	8	3,357,847	2,437,987
Other liabilities		179,484	150,032
Derivative financial instruments	26	55,746	651,580
Total current liabilities		39,015,142	42,403,032
Non-current liabilities			
Income in advance	5	97,568,508	82,034,937
Provisions	7	959,155	1,017,400
Lease liabilities	8	45,666,037	47,266,848
Derivative financial instruments	26	-	328,085
Total non-current liabilities		144,193,700	130,647,270
Total liabilities		183,208,842	173,050,302
Net assets		215,759,182	218,720,603
EQUITY			
Contributed equity	24	39,039	39,039
Retained earnings	25	215,720,143	218,681,564
Capital and reserves attributable to members of AARNet Pty Ltd		215,759,182	218,720,603
Total equity		215,759,182	218,720,603

The above Balance Sheet should be read in conjunction with the accompanying notes.

STATEMENT OF CHANGES IN EQUITY

	31 December 2021 \$	31 December 2020 \$ (Restated)
Total equity at the beginning of the financial year (As originally presented)	218,720,603	222,798,103
Restatement amounts (as presented in Note 31)	-	(908,589)
Total equity at the beginning of the financial year (Restated)	218,720,603	221,889,514
Net (deficit) surplus for the year	(2,961,421)	(3,168,911)
Total equity at the end of the financial year	215,759,182	218,720,603

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

STATEMENT OF CASH FLOWS

	Notes	31 December 2021 \$	31 December 2020 \$ (Restated)
Cash flows from operating activities			
Receipts from members and customers (inclusive of goods and services tax)		111,557,869	128,180,337
Payments to suppliers and employees (inclusive of goods and services tax)		(75,047,050)	(84,924,716)
Interest received		182,539	1,116,637
Interest payment on leases		(3,083,307)	(3,248,695)
Net cash inflow from operating activities	13	33,610,051	41,123,563
Cash flows from investing activities			
Payments for property, plant and equipment		(35,555,978)	(46,533,751)
Payments for intangible assets		(476,509)	-
Payments for financial assets at fair value through profit and loss		(11,089,397)	(4,277,431)
Payments for financial instruments at amortised cost		(18,426,469)	(30,753,725)
Proceeds from sale of financial assets at fair value through profit and loss		2,794,685	4,334,736
Proceeds from sale of financial instruments at amortised cost		20,124,435	43,500,000
Dividends received		587,873	351,183
Proceeds from sale of property, plant and equipment		-	10
Net cash outflow from investing activities		(42,041,360)	(33,378,978)
Cash flows from financing activities			
Principal elements of lease payments		(3,064,531)	(2,409,753)
Net cash (outflow) inflow from financing activities		(3,064,531)	(2,409,753)
Net increase/(decrease) in cash and cash equivalents		(11,495,840)	5,334,832
Cash and cash equivalents at the beginning of the financial year		27,161,647	21,826,815
Cash and cash equivalents at end of year	12	15,665,807	27,161,647

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

NOTES TO THE FINANCIAL STATEMENTS

1. BASIS OF PREPARATION

These general purpose financial statements have been prepared in accordance with Australian Accounting Standards - Reduced Disclosure Requirements and interpretations issued by the Australian Accounting Standards Board and the Australian Charities and Not-for-profits Commission Act 2012. AARNet Pty Ltd is domiciled in Australia and is a not-for-profit entity for the purpose of preparing the financial statements. The registered address of AARNet Pty Ltd is Tower A, Level 7, 799 Pacific Highway, Chatswood, NSW, 2067.

Going concern

The Company has net current assets of \$7,462,548 as at 31 December 2021 (2020 Restated: net current assets of \$15,938,359) and incurred a deficit of \$2,961,421 for the year ended 31 December 2021 (2020 Restated: deficit of \$3,168,911). Included within current liabilities is income in advance of \$19,227,166 (2020 Restated: \$20,417,043) which is not expected to be cash settled. Accordingly, the directors are of the opinion that the Company will be able to pay its debts as and when they become due and payable and have prepared the financial report on a going concern basis.

Historical cost convention

The financial statements have been prepared on a historical cost basis, except for the following: financial assets at fair value through Profit and Loss Statement, financial assets and liabilities (including derivative instruments) and certain classes of property, plant and equipment.

Income tax

AARNet is exempt from income tax under Section 50-5 of the Income Tax Assessment Act 1997 and therefore, no provision for income tax is included in these financial statements.

2. COMMITMENTS AND CONTINGENCIES

(a) Expenditure and capital commitments

	31 December 2021 \$	31 December 2020 \$
Within one year	6,762,460	8,330,480
Later than one year but not later than five years	8,018,298	9,723,158
Later than five years	30,852,925	38,058,285
	45,633,683	56,111,923

(b) Capacity commitments

	31 December 2021 \$	31 December 2020 \$
Within one year	5,962,917	10,325,705
Later than one year but not later than five years	10,275,473	13,201,439
Later than five years	8,226,085	10,624,890
Commitments not recognised in the financial statements	24,464,475	34,152,034

(c) Contingent Liabilities

AARNet's bankers have issued bank guarantees in favour of the Company's landlords and a third-party contractor with total face value of \$1,037,889 (2020: \$1,035,270).

3. CURRENT LIABILITIES - PAYABLES

	31 December 2021 \$	31 December 2020 \$ (Restated)
Current liabilities		
Trade payables	5,012,598	7,098,743
Other payables	3,135,269	4,815,197
	8,147,867	11,913,940

Trade payables and accruals are expected to be paid within 30 days.

These amounts represent liabilities for goods and services provided to AARNet prior to the end of the financial year which are unpaid. The amounts are unsecured and are usually paid within 30 days of recognition.

Accounting Policy

The fair value of financial liabilities for disclosure purposes is estimated by discounting the future contractual cash flows at the current market interest rate that is available to AARNet for similar financial instruments.

4. CURRENT LIABILITIES - INCOME IN ADVANCE

	31 December 2021 \$	31 December 2020 \$ (Restated)
Infrastructure establishment fees	8,126,319	8,085,610
Other deferred income	803,242	1,376,534
Infrastructure service fees	7,092,857	5,341,024
Subscriptions	3,204,748	5,613,875
	19,227,166	20,417,043

Accounting Policy

The Accounting Policy for Income in Advance is described in note 9.

5. NON-CURRENT LIABILITIES - INCOME IN ADVANCE

	31 December 2021 \$	31 December 2020 \$
Infrastructure establishment fees	95,844,025	79,939,125
Infrastructure projects	929,997	989,233
Other deferred income	794,486	1,106,579
	97,568,508	82,034,937

Accounting Policy

The Accounting Policy for Income in Advance is described in note 9.

6. CURRENT LIABILITIES - PROVISIONS

	31 December 2021 \$	31 December 2020 \$
Employee benefits	8,047,032	6,832,450

Accounting Policy

Wages and salaries and annual leave

Liabilities for wages and salaries, including non-monetary benefits and leave entitlements expected to be settled within 12 months of the reporting date, are recognised 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.

7. NON-CURRENT LIABILITIES - PROVISIONS

	31 December 2021 \$	31 December 2020 \$
Employee benefits	568,508	549,788
Make good on leased premises	390,647	467,612
	959,155	1,017,400

Movements in provisions

Movements in each class of provision during the financial year, other than employee benefits, are set out below:

2021	Make good on leased premises \$
Non-current liabilities - Provisions	
Carrying amount at start of year	467,612
Decrease in provision recognised	(76,965)
Carrying amount at end of year	390,647
2020	Make good on leased premises \$
Non-current liabilities - Provisions	
Carrying amount at start of year	484,059
Decrease in provision recognised	(16,447)
Carrying amount at end of year	467,612

Accounting Policy

Employee benefits

These are liabilities for long service leave and annual leave not expected to be settled wholly within 12 months after the end of the period in which the employees render the related service. They are therefore 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 end of the reporting period using the projected unit credit method.

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 end of the reporting period of corporate bonds with terms and currencies that match, as closely as possible, the estimated future cash outflows. Re-measurements as a result of experience adjustments are recognised in the Profit and Loss Statement.

Make good on leased premises

Provisions for make good costs on leased premises are recognised when AARNet 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.

8. LEASES

This note provides information for leases where AARNet is the lessee.

i) Amounts recognised in the balance sheet

The balance sheet shows the following amounts relating to leases:

	31 December 2021 \$	1 January 2020 \$ (Restated)
Right-of-use assets		
Communication assets	63,096,625	66,085,002
	63,096,625	66,085,002
Lease liabilities		
Current	3,357,847	2,437,987
Non-current	45,666,037	47,266,848
	49,023,884	49,704,835

The movement in the right-of-use assets over the year are as follows:

	\$
Opening right-of-use assets as at 1 January	66,085,002
Depreciation charge of right-of-use assets	(5,371,957)
Additions to right-of-use assets	2,383,580
Right-of-use assets recognised as at 31 December 2021	63,096,625

ii) Amounts recognised in the Profit and Loss Statement
The Profit and Loss Statement includes the following amounts relating to leases:

	2021 \$	2020 \$ (Restated)
Depreciation charge of right-to-use assets		
Communication assets	5,371,957	4,911,741
Interest expense (included in Other Costs)	3,157,337	3,248,695
Expense related to short-term leases (included in Other Administration Expenses)	725,036	903,851
Expenses related to leases of low-value assets that are not shown above as short-term leases (included in Other Administration Expenses)	7,389	7,822
Expenses related to variable lease payments not included in lease liabilities (included in Other Administrative Expense)	255,918	271,286

The total outflow for leases in 2021 was \$9,343,395

iii) AARNet’s leasing activities and how these are accounted for
AARNet leases various offices, data centre space and dark fibre. Rental contracts are typically made for fixed periods of 1 to 20 years, but may have extension options as described in (iv) below.

Contracts may contain both lease and non-lease components. AARNet allocates the consideration in the contract to the lease and non-lease components based on their relative stand-alone prices. However, for leases of real estate for which AARNet is a lessee, it has elected not to separate lease and non-lease components and instead accounts for these as a single lease component.

Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. The lease agreements do not impose any covenants other than the security interests in the leased assets that are held by the lessor.

Assets and liabilities arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- Fixed payments (including in-substance fixed payments), less any lease incentives receivable
- Variable lease payments that are based on an index or a rate, initially measured using the index or rate as at the commencement date
- Amounts expected to be payable by AARNet under residual value guarantees, and
- Payments of penalties for terminating the lease, if the lease term reflects AARNet exercising that option.

Lease payments to be made under reasonably certain extension options are also included in the measurement of the liability.

The lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be readily determined, which is generally the case for leases at AARNet, the lessee’s incremental borrowing rate is used, being the rate that the individual lessee would have to pay to borrow the funds necessary to obtain as asset of similar value to the right-of-use asset in a similar economic environment with similar terms, security and conditions.

To determine the incremental borrowing rate, AARNet uses a build-up approach that starts with a risk-free interest rate adjusted for credit risk for leases held by AARNet.

AARNet is exposed to potential future increases in lease payments based on an index or rate, which are not included in the lease liability until they take effect. When adjustments to lease payments based on an index or rate take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

Lease payments are allocated between principal and finance cost. The finance cost is charged to Profit and Loss Statement over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

Right-of-use assets are measured at cost comprising the following:

- The amount of the initial measurement of lease liability
- Any lease payments made at or before the commencement date less any lease incentives received
- Any initial direct costs, and
- Restoration costs

Right-of-use assets are generally depreciated over the shorter of the asset’s useful life and the lease term on a straight-line basis.

Payments associated with short-term leases and leases of low-value assets are recognised on a straight-line basis as an expense in the Profit and Loss Statement. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise of equipment and small items of office furniture.

iv) Extension and termination options

Extension and termination options are included in a number of leases. These are used to maximise operational flexibility in terms of managing the assets used in AARNet’s operations. The majority of extension and termination options held are exercisable only by AARNet and not by the respective lessor.

9. SERVICE REVENUE

	31 December 2021 \$	31 December 2020 \$ (Restated)
Telecommunications		
Members: Subscription, Traffic and Access	40,986,055	40,840,735
Non-Member: Subscription, Traffic and Access	14,192,814	14,294,221
Other Services	24,519,362	24,242,160
	79,698,231	79,377,116
Infrastructure & service agreements		
Infrastructure Establishment Fees	6,167,807	5,502,005
Infrastructure Project Construction	1,370,055	1,999,445
	87,236,093	86,878,566

a) Disaggregation of revenue from contracts with customers

AARNet derives revenue from the transfer of goods and services over time and at a point in time in the following major product lines:

	Teleco- Members	Teleco- Non-Member	Teleco- Other Services	Infra Establishment Fees	Infra Project Construction	Total
2021						
At a point in time	-	-	-	-	1,370,055	1,370,055
Over time	40,986,055	14,192,814	24,519,362	6,167,807	-	85,866,038
Total	40,986,055	14,192,814	24,519,362	6,167,807	1,370,055	87,236,093
	Teleco- Members	Teleco- Non-Member	Teleco- Other Services	Infra Establishment Fees	Infra Project Construction	Total
2020 (Restated)						
At a point in time	-	-	-	-	1,999,445	1,999,445
Over time	40,840,735	14,294,221	24,242,160	5,502,005	-	84,879,121
Total	40,840,735	14,294,221	24,242,160	5,502,005	1,999,445	86,878,566

b) Assets and liabilities related to contracts with customers

AARNet has recognised the following assets and liabilities related to contracts with customers:

	31 December 2021 \$	31 December 2020 \$ (Restated)
Current Liabilities- Income in Advance in relation to:		
Infrastructure Establishment Fees	8,126,319	8,085,610
Other Deferred Income	803,242	1,376,534
Infrastructure Service Fees	7,092,857	5,341,024
Subscriptions	3,204,748	5,613,875

	31 December 2021 \$	31 December 2020 \$
Non-Current Liabilities- Income in Advance in relation to:		
Infrastructure Establishment Fees	95,844,025	79,939,125
Infrastructure Projects	929,997	989,233
Other Deferred Income	794,486	1,106,579

(i) Significant changes in contract assets and liabilities

Contract liabilities for Infrastructure and service agreements have increased due to an increase in establishment fees for new projects that have not been completed as at 31 December 2021, despite no change in the timing of satisfied performance obligations; the nature of the goods supplied; nor the terms of payment.

There are no material amounts of revenue recognised for both financial years in relation to performance obligations satisfied in previous periods.

(ii) Unsatisfied long-term transmission service contracts

The anticipated timing for revenue recognition of liabilities related to contracts with customers (including Infrastructure establishment fees) is as follows:

	31 December 2021 \$	31 December 2020 \$ (Restated)
Within one year	19,227,165	20,417,043
Later than one year but not later than five years	36,467,588	40,306,781
Later than five years	61,100,921	41,728,156
	116,795,674	102,451,980

Accounting Policy

Service revenues (derived from contracts with customers) have been accounted for under the accounting standard, AASB15 *Revenue from Contracts with Customers*.

(i) Telecommunication Services

Telecommunication services consist of a series of performance obligations where revenue is recognised as data services have been delivered in accordance with the contract.

The performance obligation for telecommunication services is coupled with a performance obligation relating to access rights to the AARNet network, for the service agreement performance obligation cannot be executed without an access agreement.

An establishment fee forms part of the transaction price for telecommunication services. The establishment fee is not a consideration for a performance obligation in its own right, for the work to enable a transmission service cannot be separated from the transmission service itself.

(ii) Other Services

Other services consist of transmission services providing point-to-point capacity, above the network services and security-related products. Revenue is recognised as performance obligations within contracts are delivered.

(iii) Infrastructure Project Construction Revenue

Revenue from the provision of infrastructure where the infrastructure becomes the property of the customer is recognised when the underlying performance obligation is completed.

(iv) Stand alone selling price in the application of AASB15 Revenue from Contracts with Customers

The stand alone selling price in relation to all performance obligations contained within service contracts with customers is judged to be the fair value of those performance obligations if bought on a stand-alone basis.

(v) Discounts and Taxes

Amounts disclosed as revenue are net of any discounts or taxes paid.

(vi) Income in Advance

Amounts received or due and receivable in respect of future subscription periods or for services which have not been delivered are recorded as Income in Advance and appear as a liability (refer notes 4 and 5). Income in Advance is classified as either a current liability or a non-current liability depending on when the relevant subscription expires or the related service is expected to be delivered.

10. OTHER INCOME, GRANTS AND CONTRIBUTIONS RECEIVED

In 2021 and 2020 AARNet recorded significant amounts of Other Revenue, Grants Received and Other Contributions.

These amounts are a material component of the Profit and Loss Statement recorded by AARNet.

	31 December 2021 \$	31 December 2020 \$ (Restated)
Interest	3,591,602	3,744,811
Gain on foreign currency transactions	-	739,588
Other income	112,707	498,377
Dividends	616,788	462,448
Net gain on disposal of property, plant and equipment	-	10
Gain on financial assets at fair value	1,226,499	-
Gain on foreign currency contracts	1,078,721	-
Other Income	6,626,317	5,445,234
Grants and Contributions received	260,000	454,333

Gain on Foreign Currency Contracts

AARNet hedges a significant proportion of its exposure to foreign currency movements (refer note 26) and does not apply hedge accounting. The accounting policy adopted with respect to derivatives and hedging activities is described below. During 2021 movements in the Australian dollar produced a gain (including realised and unrealised gain) on the hedging instruments held during and as at the end of the year of \$1,078,721 (2020: loss of \$1,753,821).

Grants and Contributions Received

This item includes amounts received by AARNet by way of grants and contributions where AARNet does not supply a service to the organisations providing the funding, however grants and contributions are recognised only upon completion of all performance obligations and when there are no unfulfilled conditions or other contingencies attaching to the grants.

Accounting Policy

Interest and Dividend Income

Interest and dividend income is recognised as it accrues and dividends are recognised as revenue when the right to receive payment is established.

Contributed Assets

Contributed assets (including the contribution of funds by government agencies or other persons to facilitate the construction

of infrastructure for the AARNet network) are recognised at fair value when title and control of the asset passes or when the conditions to receive or retain funding are met.

Foreign Currency Contracts

At year end, Foreign Currency Contracts are recognised at fair value as described in note 26 (see Derivative Financial Instruments). Realised and unrealised gain or losses on such contracts are taken into account each year in the Profit and Loss Statement. AARNet does not apply hedge accounting.

The Accounting Policy for Gain on financial assets at fair value is described in note 16.

11. EXPENSES

	31 December 2021 \$	31 December 2020 \$ (Restated)
Depreciation		
Communication assets	15,845,250	15,919,077
Office equipment	2,639,996	2,105,021
Leasehold improvements	451,638	405,141
Software	130,027	147,044
Buildings	3,277	3,282
Total depreciation	2219,070,388	18,579,565
Amortisation		
Intangible assets	2374,800	74,800
Total depreciation and amortisation	19,145,188	18,654,365
Other expenses (including finance costs)		
Significant financing expense element in contracts with customers	1,417,334	771,448
Loss on foreign currency contracts	-	1,753,821
Loss on financial assets at fair value	-	803,125
Loss on disposal of assets	-	6,700
Loss on foreign currency transactions	557,241	-
Total other expenses	1,974,575	3,335,094
Superannuation expense	3,481,513	3,292,520

Accounting Policy

Depreciation and Amortisation

The accounting policy for depreciation and amortisation is described in notes 22 and 23 respectively.

12. CURRENT ASSETS - CASH AND CASH EQUIVALENTS

	31 December 2021 \$	31 December 2020 \$ (Restated)
Current assets		
Cash at bank and in hand (AUD)	7,191,602	6,788,076
Cash at bank (USD and EUR)	366,851	5,768,652
Deposits at call - all denominated in AUD	8,107,354	14,604,919
	15,665,807	27,161,647

Cash at bank and on hand

Cash at bank and on hand is held at interest rates varying between 0.00% and 0.05% (2020: 0.00% and 0.66%). During the year, cash is transferred to or from term deposits to meet liquidity requirements.

Deposits at call

Interest bearing deposits at call attracted interest rates between 0.22% and 0.45% (2020: 0.10% and 0.10%).

Accounting Policy

For the purpose of presentation in the statement of cash flows, cash and cash equivalents includes cash on hand, deposits held at call with financial institutions, bank overdrafts and other short-term, highly liquid investments with original maturities of three months or less that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

13. RECONCILIATION OF NET (DEFICIT) SURPLUS TO NET CASH INFLOW FROM OPERATING ACTIVITIES

	31 December 2021 \$	31 December 2020 \$ (Restated)
(Deficit)/ surplus for the year	(2,961,421)	(3,168,911)
Depreciation, amortisation and impairment	19,145,188	18,654,365
Dividend income	(616,788)	(462,449)
Net loss (gain) on sale of investments	(475,825)	632,816
Net amortised interest income	116,081	21,980
Net loss on sale of property, plant and equipment	-	6,690
Decrease/ (increase) in trade receivables	(1,111,195)	3,180,390
Decrease/ (increase) in accrued income	(165,336)	145,157
Decrease/ (increase) in prepayments and other debtors	5,326,129	(592,266)
Decrease/ (increase) in derivative financial instruments	(1,078,721)	1,753,822
Increase/ (decrease) in trade payables	(1,720,443)	(3,737,966)
Increase/ (decrease) in other operating liabilities	29,452	(158,098)
Increase in provisions	1,156,336	1,221,300
Increase/(decrease) in income received in advance	15,921,059	24,006,726
(Increase)/decrease in financial assets at fair value	45,535	(379,993)
Net cash inflow from operating activities	33,610,051	41,123,563

14. CURRENT ASSETS – RECEIVABLES AND OTHER ASSETS

	31 December 2021 \$	31 December 2020 \$ (Restated)
Trade receivables	1,391,397	280,202
Provision for impairment of receivables	(255,000)	(255,000)
	1,136,397	25,202
Prepayments and Other Debtors	17,954,651	16,246,311
	19,091,048	16,271,513

Trade Receivables

Trade receivables are due for settlement no more than 30 days from the date of recognition.

At 31 December 2021, trade receivables included balances of \$1,022,194 which are past due but not impaired or considered uncollectable. These amounts have been outstanding for more than 90 days. These relate to a number of customers for whom there is no history of default.

Prepayments and Other Debtors

Payments for goods and services which are to be provided in future years are recognised as prepayments.

Other debtors generally arise from transactions outside the usual operating activities of AARNet. Interest is not normally charged.

Fair Value

Due to the short-term nature of these receivables, their carrying amount is assumed to approximate their fair value.

Accounting Policy

Trade receivables are recognised initially the amount of consideration that is unconditional, unless they contain significant financing components when they are recognised at fair value. They are subsequently measured at amortised cost, less provision for impairment.

Collectability of trade receivables is reviewed on an ongoing basis. Debts which are known to be uncollectible are written off. The group applies the simplified approach to providing for expected credit losses prescribed by AASB 9, which permits the use of the lifetime expected loss provision for all trade receivables. To measure the expected credit losses, trade receivables have been grouped based on shared credit risk characteristics and the days past due. The amount of the provision is recognised in the Profit and Loss Statement in Administration-Telecommunications expenses.

The carrying value less impairment provision of trade receivables is assumed to approximate fair value due to the short-term nature of the receivables.

15. CURRENT ASSETS - ACCRUED INCOME

	31 December 2021 \$	31 December 2020 \$
Current assets		
Accrued interest receivable	578,704	375,565
Other	-	8,888
	578,704	384,453

16. FINANCIAL ASSETS AND INVESTMENTS

AARNet holds financial assets and investments (other than prepayments or trade receivables) including:

- Financial instruments at amortised cost (notes 17 and 19)
- Financial assets at fair value through Profit and Loss (notes 18 and 20)
- Derivative financial instruments (shown on the Balance Sheet)

Accounting Policy

Purchases and sales of financial assets are recognised on the date on which AARNet commits to purchase or sell the asset. Financial assets are derecognised when the rights to receive cash flows from the financial assets have expired or have been transferred and AARNet has transferred substantially all the risks and rewards of ownership.

Initial recognition - measurement

At initial recognition, AARNet measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss (FVPL), transaction costs that are directly attributable to the acquisition of the financial asset. Transaction costs of financial assets carried at FVPL are expensed in profit or loss

Debt instruments

Subsequent measurement of debt instruments depends on AARNet’s business model for managing the asset and the cash flow characteristics of the asset. There are three measurement categories into which AARNet classifies its debt instruments:

Amortised cost: AARNet classifies its financial assets as at amortised cost only if both of the following criteria are met:

- the asset is held within a business model whose objective is to collect the contractual cash flows, and
- the contractual terms give rise to cash flows that are solely payments of principal and interest.

Interest income from these financial assets is included in Other Income - Interest using the effective interest rate method. Any increase/(decrease) in financial assets at fair value through profit and loss is recognised directly in Profit and Loss Statement and presented in gain/(loss) on financial assets at fair value (note 10 or 11) together with gain/(loss) on sale of investments.

FVOCI: Assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets’ cash flows represent solely payments of principal and interest, are measured at FVOCI. Movements in the fair value are taken through OCI, except for the recognition of impairment gains or losses, interest income and foreign exchange gains and losses which are recognised in profit or loss. When the financial asset is derecognised, the cumulative gain or loss previously recognised in OCI is reclassified from equity to profit

or loss and recognised in other gains/(losses). Interest income from these financial assets is included in finance income using the effective interest rate method. Foreign exchange gains and losses are presented in other gains/(losses) and impairment expenses are presented as separate line item in the Profit and Loss Statement.

FVPL: Assets that do not meet the criteria for amortised cost or FVOCI are measured at FVPL. A gain or loss on a debt investment that is subsequently measured at FVPL is recognised in profit or loss and presented net within other gains/(losses) in the period in which it arises.

Equity instruments

AARNet subsequently measures all equity investments at fair value. Changes in the fair value of financial assets at FVPL are recognised in other gains/(losses) in the Profit and Loss Statement as applicable.

Impairment

AARNet assesses on a forward-looking basis the expected credit losses associated with its debt instruments carried at amortised cost and FVOCI. The impairment methodology applied depends on whether there has been a significant increase in credit risk.

Derivatives and hedging activities

Derivatives are initially recognised at cost on the date a derivative contract is entered into and are subsequently remeasured to their fair value at each reporting date.

AARNet has entered into forward exchange contracts which are economic hedges for foreign currencies to be traded at a future date but do not satisfy the requirements for hedge accounting. Any changes in fair values are taken to other comprehensive income immediately.

Fair value measurements

AARNet measures and recognises the following assets and liabilities at fair value on a recurring basis:

- Financial assets at fair value through profit or loss; and
- Derivative financial instruments.

AASB 13 Fair Value Measurement requires disclosure of fair value measurements by level of the following fair value measurement hierarchy:

Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities;

Level 2: inputs other than quoted prices included within level 1 that are observable for the asset or liability, either directly or indirectly; and

Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs).

The following table presents the company’s assets and liabilities measured and recognised at fair value at 31 December 2021 and 31 December 2020:

31 December 2021	Level 1 \$	Level 2 \$	Level 3 \$	Total \$
Assets				
Derivative financial instruments	-	154,802	-	154,802
Equity securities - fair value through profit and loss	10,658,952	-	-	10,658,952
Bonds – fair value through profit and loss	-	23,246,562	-	23,246,562
Total assets	10,658,952	23,401,364	-	34,060,316
Derivative financial instruments	-	(55,746)	-	(55,746)
Total financial liabilities	-	(55,746)	-	(55,746)

31 December 2020 (Restated)	Level 1 \$	Level 2 \$	Level 3 \$	Total \$
Assets				
Equity securities - fair value through profit and loss	8,868,569	-	-	8,868,569
Bonds – fair value through profit and loss (Restated)	-	15,623,690	-	15,623,690
Total assets	8,868,569	15,623,690	-	24,492,259
Derivative financial instruments	-	(979,665)	-	(979,665)
Total liabilities	-	(979,665)	-	(979,665)

The fair value of financial instruments traded in active markets (such as financial assets at fair value through Profit and Loss Statement) are based on quoted market prices at the end of the reporting period. These instruments are included in level 1.

The fair value of financial instruments that are not traded in an active market (such as derivative financial instruments) are determined using valuation techniques. These valuation techniques maximise the use of observable market data where it is available and rely as little as possible on entity specific estimates. If all significant inputs required to fair value an instrument are observable, the instrument is included in level 2.

17. CURRENT ASSETS - FINANCIAL INSTRUMENTS AT AMORTISED COST

	31 December 2021 \$	31 December 2020 \$ (Restated)
Debt securities (fixed and floating rates)	4,000,220	7,000,508
Term deposits	6,006,821	6,000,000
	10,007,041	13,000,508

Bank guarantee and credit facilities

AARNet has a \$1,500,000 Bank Guarantee Facility provided by the National Australia Bank. AARNet has drawn on this facility to provide bank guarantees in favour of the landlords for leased premises and a third party contractor. AARNet has an unsecured credit card facility of \$300,000.

18. CURRENT ASSETS – FINANCIAL ASSETS AT FAIR VALUE THROUGH PROFIT AND LOSS

	31 December 2021 \$	31 December 2020 \$ (Restated)
Debt securities (fixed and floating rates)	1,005,670	1,523,270

19. NON-CURRENT ASSETS - FINANCIAL INSTRUMENTS AT AMORTISED COST

	31 December 2021 \$	31 December 2020 \$ (Restated)
Debt securities (fixed and floating rates)	26,465,477	24,744,022

20. NON-CURRENT ASSETS - FINANCIAL ASSETS AT FAIR VALUE THROUGH PROFIT AND LOSS

	31 December 2021 \$	31 December 2020 \$ (Restated)
Non-current assets		
Debt securities (fixed and floating rates)	22,240,892	14,100,420
Equity securities	10,658,952	8,868,569
	32,899,844	22,968,989

21. NON-CURRENT ASSETS – RECEIVABLES AND OTHER ASSETS

	31 December 2021 \$	31 December 2020 \$ (Restated)
Prepayments	39,870,561	43,842,499

22. NON-CURRENT ASSETS - PROPERTY, PLANT AND EQUIPMENT

	Buildings \$	Leasehold improvements \$	Office equipment \$	Communication assets \$	Software \$	Total \$
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At 1 January 2020						
Cost or fair value	81,927	4,209,954	12,098,157	311,602,762	1,921,152	329,913,952
Accumulated depreciation	(6,343)	(1,256,516)	(7,752,042)	(110,710,853)	(1,152,859)	(120,878,613)
Net book amount	75,584	2,953,438	4,346,115	200,891,909	768,293	209,035,339

Year ended 31 December 2020						
Opening net book amount	75,584	2,953,438	4,346,115	200,891,909	768,293	209,035,339
Additions (Restated)	-	90,281	5,825,257	37,498,069	1,469,684	44,883,291
Additions (Right-of-Use Assets)	-	-	-	6,033,579	-	6,033,579
Disposals	-	-	(6,700)	-	-	(6,700)
Depreciation charge	(3,282)	(405,141)	(2,105,022)	(15,919,077)	(147,044)	(18,579,566)
Closing net book amount (Restated)	72,302	2,638,578	8,059,650	228,504,480	2,090,933	241,365,943

At 31 December 2020						
Cost or fair value (Restated)	81,927	4,253,085	17,811,534	354,813,944	3,390,835	380,351,325
Accumulated depreciation	(9,625)	(1,614,507)	(9,751,884)	(126,309,464)	(1,299,902)	(138,985,382)
Net book amount (Restated)	72,302	2,638,578	8,059,650	228,504,480	2,090,933	241,365,943

	Buildings \$	Leasehold improvements \$	Office equipment \$	Communication assets \$	Software \$	Total \$
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Year ended 31 December 2021						
Opening net book amount	72,302	2,638,578	8,059,650	228,504,480	2,090,933	241,365,943
Additions	-	407,854	4,750,050	23,886,829	97,997	29,142,730
Additions (Right-of-Use Assets)	-	-	-	2,383,580	-	2,383,580
Disposals	-	-	-	(1,577,365)	-	(1,577,365)
Depreciation charge	(3,277)	(451,638)	(2,639,996)	(15,845,450)	(130,027)	(19,070,388)
Closing net book amount	69,025	2,594,794	10,169,704	237,352,074	2,058,903	252,244,500

At 31 December 2021						
Cost or fair value	81,927	4,580,439	22,545,165	379,470,405	3,488,830	410,166,766
Accumulated depreciation	(12,902)	(1,985,645)	(12,375,461)	(142,118,331)	(1,429,927)	(157,922,266)
Net book amount	69,025	2,594,794	10,169,704	237,352,074	2,058,903	252,244,500

Communication Assets- Finance Leases

AARNet provides other parties with rights to use components of AARNet’s fibre and other infrastructure in return for that party providing AARNet with similar rights to use components of its fibre and infrastructure.

These arrangements are in the nature of two separate finance leases with each party acting as lessor and lessee. Each lease is treated as settled when both sides of the swap agreement come into force. Consequently, there is no lease finance cost or outstanding lease liability arising in respect of such transactions.

Right-of-use assets

Communication assets include both assets and leased right-of-use assets. See Note 8 for more detail on right-of-use assets.

Assets in the course of construction

Included in the carrying amounts of the assets shown above are assets that were in the course of construction as at the end of the reporting period. The relevant amounts are as follows:

	31 December 2021 \$	31 December 2020 \$
Communication assets	60,496,462	41,639,027
Office equipment	6,922,955	4,894,098
Leasehold improvements	469,523	61,669
Software	1,924,064	1,836,746
Total assets in the course of construction	69,813,004	48,431,540

Accounting Policy

Acquisition

Property, plant and equipment is stated at historical cost less depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of the items.

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 AARNet and the cost of the item can be measured reliably.

Fibre and Infrastructure Swaps

AARNet may enter into arrangements granting other parties the right to use AARNet’s fibre or infrastructure in return for receiving rights to use fibre or infrastructure owned by the other party (“swaps”). Where such swaps involve significant values of assets, AARNet records an asset disposal in respect of the assets used by the other party at the carrying value of the relevant assets at the time the swap becomes effective. AARNet then recognises an asset

of equivalent value, being the right to use the fibre or infrastructure of the other party.

Unincorporated Joint Operations

AARNet accounts for interests in unincorporated joint operations by recognising its share of the assets and liabilities held or owed by the joint operation along with its share of the expenses incurred by the joint operation.

Where the assets held within the joint operation include assets in the course of construction, AARNet’s share of those assets is included in the values for assets in the course of construction shown in this note.

Depreciation

Property, plant and equipment is depreciated using the straight-line method to allocate cost, net of residual value, over each item’s estimated useful life, as follows:

Leasehold improvements	10 years
Office equipment	3 years
Leased communication assets	5 - 6 years
Leased office equipment	3 years
Communication assets	3 - 20 years
Software	2 - 3 years

The assets’ residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period; such adjustments may result in a revised useful life shorter than that shown above.

Impairment of Assets

Assets that are subject to depreciation or amortisation are reviewed for indicators of 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. As a not-for-profit entity, value in use is calculated on the basis of the depreciated replacement cost, which represents the current replacement cost of an asset less, where applicable, accumulated depreciation calculated on the basis of such cost to reflect the already consumed or expired future economic benefits of the asset.

For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash generating units). The company has only one cash generating unit.

Gains and Losses

Gains and losses on disposals are determined by comparing proceeds with carrying amount. These are included in the Profit and Loss Statement.

23. NON-CURRENT ASSETS - INTANGIBLE ASSETS

	Security \$	Storage \$	Indefeasible Rights to Use traffic path \$	Total \$
Year ended 31 December 2020 (Restated)				
Opening net book amount	-	-	583,061	583,061
Amortisation charge	-	-	(74,800)	(74,800)
Closing net book amount	-	-	508,061	508,061
Total payments	-	-	8,707,978	8,707,978
Accumulated amortisation on a straight line basis	-	-	(8,199,917)	(8,199,917)
Net book amount	-	-	508,061	508,061
Year ended 31 December 2021				
Opening net book amount	-	-	508,061	508,061
Additions	156,755	394,554	-	551,309
Amortisation charge	-	-	(74,800)	(74,800)
Closing net book amount	156,755	394,554	433,261	984,570
At 31 December 2021				
Cost	156,755	394,554	8,707,978	9,259,487
Accumulated amortisation	-	-	(8,274,917)	(8,274,917)
Net book amount	156,755	394,554	433,061	984,570

Intangible assets in the course of construction

AARNet’s intangible assets include indefeasible rights to use (IRU) capacity on traffic paths across communication infrastructure owned by other parties.

	31 December 2021 \$	31 December 2020 \$
Security	156,755	-
Storage	394,754	-
Total intangible assets in the course of construction	551,509	-

Accounting Policy

The value of each IRU is amortised from the date each right become available for service and will continue to be amortised over the term of the right, which varies from 10 to 28 years. The longest remaining amortisation period is approximately 20 years.

Impairment

IRUs are also subject to impairment review as described in note 22.

24. CONTRIBUTED EQUITY

	31 December 2021 Shares	31 December 2020 Shares	31 December 2021 \$	31 December 2020 \$
Ordinary shares				
Fully paid ordinary shares	78	78	39,039	39,039
Movements in ordinary share capital				
Date	Details	Number of shares	\$	
1 January 2020	Opening balance	78	39,039	
31 December 2020	Balance	78	39,039	
31 December 2021	Balance	78	39,039	

AARNet’s shareholders are 38 Australian Universities and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Each shareholder holds two ordinary shares.

Holders of ordinary shares are entitled to one vote per share on resolutions put before the members. Holders of ordinary shares are not entitled to dividends and have no right to receive any distribution during a winding up.

25. RETAINED EARNINGS AND RESERVE

Retained earnings

Movements in retained earnings were as follows:

	31 December 2021 \$	31 December 2020 \$ (Restated)
Balance 1 January (Restated)	218,681,564	221,850,475
(Deficit) surplus for the year	(2,961,421)	(3,168,911)
Balance 31 December	215,720,143	218,681,564

26. FINANCIAL RISK MANAGEMENT

AARNet's activities are exposed to a variety of financial risks including:

- Market risk (including currency risk, interest rate risk and equity price risk);
- Credit risk; and
- Liquidity risk.

This note explains the Company's level of exposure to these risks, how these risks could affect the Company's future financial performance and how AARNet manages the impact of these risks.

AARNet's overall risk management program focuses on managing its liquidity and seeking to minimise potential adverse effects on financial performance. The Board, through the Audit, Finance & Risk Committee, is responsible for setting the overall objectives for risk management and provides specific policies where necessary.

The day to day risk management is carried out by identifying, evaluating and hedging financial risks. This is the responsibility of the Chief Executive Officer (CEO) and the Chief Financial Officer (CFO) and they are supported by operating management.

a) **Market risk**

(i) *Currency risk*

AARNet operates equipment at international locations and deals with certain suppliers in foreign currencies and is impacted by changes in foreign exchange rates. The Company is primarily exposed to changes in the US dollar (USD) and to a smaller extent, the Euro (EUR). AARNet currently has monthly requirements in excess of USD200,000, for the purchase of international communications capacity and other services. These requirements are expected to increase over time.

Currency risk is measured using sensitivity analyses and cash flow forecasting, summarised below.

Currency risk is managed by holding foreign currency, entering into forward foreign exchange contracts and purchasing options to acquire foreign currency. At year end, AARNet held USD4,362,219 (AUD5,659,390) in USD denominated bank accounts and EUR68,872 (AUD109,261) in a EUR denominated bank account. AARNet's risk management policy is to hedge at least 60% of anticipated short-term cash flows (mainly for the purchase of capacity to the USA) in USD.

The following table summarises the sensitivity of the Company's financial assets and financial liabilities to foreign exchange risk for the year.

		Currency risk			
		-10%		+10%	
At 31 December 2021	Carrying amount \$	Surplus \$	Equity \$	Surplus \$	Equity \$
Cash and cash equivalents	15,665,807	(40,761)	(40,761)	33,350	33,350
Trade Receivables	1,391,397	(44,471)	(44,471)	36,385	36,385
Derivative financial instruments (assets)	154,802	(17,200)	(17,200)	14,073	14,073
Derivative financial instruments (liabilities)	(55,746)	6,194	6,194	(5,068)	(5,068)
Trade payables	(5,018,598)	162,498	162,498	(132,953)	(132,953)

		Currency risk			
		-10%		+10%	
At 31 December 2020	Carrying amount \$	Surplus \$	Equity \$	Surplus \$	Equity \$
Cash and cash equivalents	27,161,647	(640,962)	(640,962)	524,422	524,422
Trade Receivables	280,202	(50,330)	(50,330)	44,087	44,087
Derivative financial instruments (liabilities)	(979,665)	108,852	108,852	(89,060)	(89,060)
Trade payables	(7,104,742)	122,000	122,000	(106,868)	(106,868)

(ii) *Interest rate risk*

AARNet's main interest rate risk arises from its cash at bank, cash in deposits and financial instruments at amortised cost.

The Company's interest rate risk is monitored using sensitivity analysis and is reviewed by management and the company's external investment consultant.

The following table summarises the sensitivity of the Company's financial assets and financial liabilities to interest rate risk for the year.

				Interest rate risk	
		absolute -1%		absolute +1%	
At 31 December 2021	Carrying amount \$	Surplus \$	Equity \$	Surplus \$	Equity \$
Financial assets					
Cash and cash equivalents	15,665,807	(1,663)	(1,663)	152,990	152,990
Financial instruments at amortised cost, term deposits	6,006,820	(27,784)	(27,784)	60,068	60,068
Financial instruments at amortised cost, floating rate notes	30,465,479	(276,826)	(276,826)	304,657	304,657

		Interest rate risk			
		absolute -1%		absolute +1%	
At 31 December 2020	Carrying amount \$	Surplus \$	Equity \$	Surplus \$	Equity \$
Financial assets					
Cash and cash equivalents	27,161,647	(3,886)	(3,886)	213,930	213,930
Financial instruments at amortised cost, term deposits	6,000,000	(60,000)	(60,000)	60,000	60,000
Financial instruments at amortised cost, floating rate notes (Restated)	31,744,530	(317,445)	(317,445)	317,445	317,445

(iii) Financial assets at fair value through Profit and Loss Statement (price risk)

AARNet's equity price risk arises from holding financial assets at fair value through profit and loss such as equity instruments, listed bonds and hybrid investments.

Price risk is measured and using sensitivity analysis and is monitored by management and the company's external investment consultant.

The following table summarises the sensitivity of the Company's financial assets and financial liabilities to price risk for the year.

			Other price risk		
			-1%	+1%	
At 31 December 2021	Carrying amount \$	Surplus \$	Equity \$	Surplus \$	Equity \$

Financial assets					
Financial assets at fair value through profit and loss	33,905,514	(339,055)	(339,055)	339,055	339,055

			Other price risk		
			-1%	+1%	
At 31 December 2020	Carrying amount \$	Surplus \$	Equity \$	Surplus \$	Equity \$

Financial assets					
Financial assets at fair value through profit and loss (Restated)	24,492,259	(244,923)	(244,923)	244,923	244,923

b) Credit risk

Credit risk arises where a debtor fails to make contractual payments to AARNet as and when they fall due. AARNet is exposed to credit risk on its holdings of cash and cash equivalents, term deposits, corporate bonds and loan notes, hybrid securities and derivative financial instruments. Further credit risk arises from credit exposures to customers in the form of outstanding receivables and committed transactions.

AARNet's credit risk is mainly managed through the following measures:

Credit risk source	Management
Bank deposits and derivative financial instruments	<ul style="list-style-type: none">• Principally deal with highly rated financial institutions.
Investments in hybrid loan notes and bonds	<ul style="list-style-type: none">• Bound by an approved investment policy which stipulates minimum ratings or other criteria for investment funds.• Investment decisions based on recommendations from a licensed investment advisor.
Customers	<ul style="list-style-type: none">• Assessment of credit quality of the customer, taking into account its financial position, past experience and other factors.• Invoicing in advance for significant portion of income.

(i) Trade receivables

AARNet applies the simplified approach to providing for expected credit losses prescribed by AASB 9, which permits the use of the lifetime expected loss provision for all trade receivables. To measure the expected credit losses, trade receivables have been grouped based on shared credit risk characteristics and the days past due.

During the year, no material gain/(loss) was recognised in Profit and Loss Statement in other expenses in relation to impaired receivables.

In the prior year, the impairment of trade receivables was assessed based on the incurred loss model. Individual receivables which were known to be uncollectible were written off by reducing the carrying amount directly. The other receivables were assessed collectively, to determine whether there was objective evidence that an impairment had been incurred but not yet been identified. For those receivables, the estimated impairment losses were recognised in a separate provision for impairment. The group considered that there was evidence of impairment if any of the following indicators were present:

- Significant financial difficulties for the debtor
- Probability that the debtor will enter bankruptcy or financial re-organisation
- Default or delinquency in payments (more than 60 days overdue).

(ii) Other financial assets at amortised cost

Other financial assets at amortised cost include debt securities and term deposits. All of these financial assets are considered to have low credit risk, and thus the impairment provision recognised during the period was zero. Management consider 'low credit risk for listed bonds to be an investment grade credit rating with at least one major rating agency. Other instruments are considered to be low credit risk when they have a low risk of default and the issuer has a strong capacity to meet its contractual cash flow obligations in the near term.

c) Liquidity risk

Prudent liquidity risk management implies maintaining sufficient cash to meet the needs of the business. Management monitors AARNet's liquidity and cash and cash equivalents on a rolling forecast expected cash flow basis. This analysis is prepared in Australian Dollars.

AARNet's Board periodically considers longer range financial forecasts (5+ years) provided as part of the normal course of its deliberations. The Board also considers the expenditure commitments disclosed in note 2 when assessing the liquidity of the Company.

27. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS

The preparation of financial statements requires the use of certain critical accounting estimates. It also requires management to exercise its judgement in the process of applying the Company's accounting policies.

Often, this involves estimates and assumptions concerning the future. The resulting accounting estimates will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below.

(i) Useful life of intangible assets

The Directors have assumed in the ordinary course of business that AARNet's customers will continue to use AARNet's services into the foreseeable future. The useful economic lives assigned for intangible assets are based on the contractual terms agreed for each Indefeasible Right to Use.

(ii) Useful life of assets

AARNet is the owner of a significant amount of assets and infrastructure. Estimates are made as to the useful life of these assets which can affect both the amount of depreciation and amortisation expense during the year and the amount of revenue recognised in relation to Establishment Fees.

(iii) Lease term

In determining the lease term, management considers all facts and circumstances that create an economic incentive to exercise an extension option, or not exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

For leases, the following factors are normally the most relevant:

If there are significant penalties to terminate (or not extend), AARNet is typically reasonably certain to extend (or not terminate).

If any leasehold improvements are expected to have a significant remaining value, AARNet is typically reasonably certain to extend (or not terminate).

Otherwise, AARNet considers other factors including historical lease durations and the costs and business disruption required to replace the leased asset.

The lease term is reassessed if an option is actually exercised (or not exercised) or AARNet becomes obliged to exercise (or not exercise) it. The assessment of reasonable certainty is only revised if a significant event or a significant change in circumstances occurs, which affects this assessment, and that is within the control of the lessee.

(iv) Significant financing

AARNet has recognised that receiving contributions from Members and others toward the construction cost of AARNet owned network infrastructure and provision of services in the future includes a significant financing expense element. There are judgements in determining the relevant interest rate.

Similarly, AARNet has recognised that providing prepayments to suppliers ahead of services being provided in the future includes a significant financing element. There are judgements in determining the relevant interest rate.

(v) Identification of performance obligations in customer contracts and allocation of consideration

The company has entered into contracts which contain lease and non lease components. The non lease components require the company to deliver multiple performance obligations. Management has estimated the stand alone selling price of each component with reference to observable prices for similar arrangements. The standalone selling price is used to allocate contractual consideration to each of the components.

(vi) Identification of whether a contract contains a lease

The company has entered into buy side and sell side capacity contracts for telecommunications bandwidth. The company makes an assessment as to whether the arrangement contains a lease including analysis as to whether an identified specific asset is subject to the contractual arrangement.

(vii) Impairment assessment including whether there are impairment indicators

The company considers whether there are indicators of impairment for property, plant and equipment and intangible assets with reference to the fair value of each cash generating unit relative to its carrying value. Relevant factors considered by the company include movement of key cost inputs over time.

(viii) Classification of financial instruments

The company has applied judgement in determining the classification of financial assets including assessment of the business model for each of its portfolios of financial assets and consideration as to whether contractual cash flows represent solely payments of principal and interest.

(ix) Classification of joint arrangements

The agreement in relation to the Indigo Central consortia is classified as a joint operation and the company is one of the joint operators because there is only one combination of the voting combinations that can approve relevant activities and that combination requires the company's voting rights. Indigo West and JGA South are not considered joint arrangements because either a third party has control or there are different combinations of operators that can approve relevant activities.

28. DIRECTORS

The Directors of AARNet Pty Ltd during the financial year were:

Chairman - non-executive

Emeritus Professor Gerard Sutton AO*

Executive Directors

Mr Chris Hancock AM, CEO

Non-executive Directors

Dr Christine Burns
Professor John Dewar AO (resigned 2 June 2021)
Mr Robert Fitzpatrick*
Mr David Formica (resigned 12 February 2021)
Professor Bevil (Barney) Glover AO (appointed 2 June 2021)
Professor Brigid Heywood
Professor Elanor Huntington (appointed 22 February 2022)
Ms Fiona Rankin
Mr Scott Sorley (appointed 18 March 2021)
Mr John Rohan*
Professor Deborah Terry AO
Emeritus Professor Mark Wainwright AM*
Dr David Williams (resigned 30 November 2021)

*Denotes independent director

29. KEY MANAGEMENT PERSONNEL DISCLOSURES

Key management personnel compensation

The key management personnel are those who had authority and responsibility for planning, directing and controlling the activities of AARNet, directly or indirectly, during the year. The remuneration for key management personnel including directors is as follows:

	31 December 2021 \$	31 December 2020 \$
Short-term and long-term employee benefits	3,240,069	3,131,021
Post-employment benefits	384,207	369,895
	3,624,276	3,500,916

Transactions with key management personnel

Director Ms F Rankin is a member of the Council of Australian University Directors of Information Technology (CAUDIT) to which AARNet provides payroll bureau services. AARNet receives no consideration for this service.

Other directors represent, act for, or hold offices at certain AARNet shareholders and customers. AARNet provides services to these shareholders on arm’s length terms.

30. REMUNERATION OF AUDITORS

PricewaterhouseCoopers

Audit and other assurance services

	2021 \$	2020 \$
Audit and other assurance services		
Audit and review of financial statements	248,240	232,000
Other assurance services		
Audit of special purpose finance reports	-	12,000
Total remuneration for audit and other assurance services	248,240	244,000
Taxation services		
Taxation services	80,000	3,000
Total remuneration of PricewaterhouseCoopers	328,240	247,000

31. OTHER SIGNIFICANT ACCOUNTING POLICIES

New, revised or amending Accounting Standards and Interpretations adopted

AARNet has not applied any new standards and amendments for the first time in this reporting period.

In preparation of the financial statements for the year ended 31 December 2021, AARNet identified certain areas which required correction to 2020 reported balances. These areas relate to:

- Constructing Network Infrastructure - In reviewing AARNet’s work in constructing network infrastructure, the company concluded
 - alternative capacity provided to customers while construction was ongoing represented a separate performance obligation under AASB 15 Revenue from Customers with Contracts and thus recognised an additional \$250,000 in Service Revenue for Infrastructure Service Fees in 2020,
 - contributions from Members and others toward the cost of AARNet owned infrastructure and future services include significant financing under AASB 15 and increased 2020 Other Expenses – Significant Financing expenses by \$771,449, and
 - \$20,540,954 in Infrastructure Establishment Fees included in Current Liabilities in 2020 would be reclassified as Non-Current Liabilities.
- OCI to P&L - AARNet also re-assessed the presentation of a sub-class of its financial instrument portfolio under AASB 9 Financial Instruments. Holdings in equities and hybrid securities would no

longer be classified as ‘Financial assets at fair value through other comprehensive income,’ but rather as ‘Financial assets at fair value through profit and loss.’ Changes in fair value would be included in the Net (deficit) surplus figure within the profit and loss and not recognised through other comprehensive income.

- SPPI Evaluation - AARNet also re-assessed the presentation of some debt securities within its financial instrument portfolio under AASB 9 Financial Instruments. The re-assessed debt securities relate to bonds that held terms and conditions that resulted in the bond’s cash flows failing to represent solely payment of principal and interest. These holdings would no longer be classified as ‘Financial assets at amortised cost,’ but rather as ‘Financial assets at fair value through profit and loss.’
- IRU to Prepayments - AARNet has also re-assessed the presentation of a sub-class of its Intangible Assets – Indefeasible Rights to Use (IRUs). The re-assessed IRUs relate to agreements where AARNet was provided capacity rather than a dedicated asset, and therefore determined the IRUs were in effect pre-payments of services to be provided. Previously, AARNet recognised the payments made as an intangible asset. Considering that AARNet receives the capacity service evenly throughout the contract term, AARNet, with the rectification, has recognised expense for the capacity service evenly considering the total consideration under the contract. Further, with the long term nature of such arrangements, AARNet has assessed that the arrangements include a significant financing component and has accounted for the component separately. Consequently, AARNet has recognised interest income on the prepayment balance, and the prepayment balance (gross of the interest income) is the basis for recognition of the capacity service expense over the contract period. Expenditure for the IRUs, previously included as amortisation under ‘Depreciation, amortization and impairment – Telecommunications’ would be included in ‘Telecommunications Supply Expense.
- IRU to ROU Assets - AARNet has also re-assessed the presentation of a separate sub-class of its Intangible Assets – Indefeasible Rights to Use (IRUs). The re-assessed IRUs relate to agreements where AARNet effectively entered a lease agreement under AASB 16 Leases, and therefore determined the IRUs were in effect right-of-use (ROU) assets. Expenditure for the IRUs, previously included as amortisation under ‘Depreciation, amortization and impairment – Telecommunications’ would be included as Communication assets depreciation under ‘Depreciation, amortization and impairment – Telecommunications’.
- Security revenue - AARNet has reclassified security revenue from ‘Other Revenue - Other Income’ to ‘Service Revenue - Other Services’
- Unpaid invoices - AARNet has historically recognised receivables and income in advance upon billing customers in December for services to be provided the following year. However, AASB 15 provides that income in advance is recognised when payment is made or the payment is due (whichever is earlier.)’ For AARNet, this means

derecognising unpaid invoices for the following year’s annual or first quarter subscription/service invoices. The reductions to accounts for 2020 included:

- Receivables - Trade Receivables by (\$39,745,981).
- Current Liabilities - Payables by (\$3,613,271).
- Current Liabilities - Income in Advance by (\$36,132,710).

In addition the following change in accounting policy has been applied:

SaaS - The company previously capitalised costs incurred in configuring or customising Software-as-a-Service (SaaS) arrangements as intangible assets, as the company considered that it would benefit from those costs to implement SaaS arrangements over the contract term of the arrangements. Following the IFRS Interpretations Committee agenda decision on Configuration or Customisation Costs in a Clod Computing Arrangement in March 2021, the company has reconsidered its accounting treatment and adopted the treatment set out in the IFRS IC agenda decision, which is to recognised those costs as intangible assets only if the implementation activities create an intangible asset that the entity controls and the intangible asset meets the recognition criteria. Costs that do not result in intangible assets are expensed as incurred, unless they are paid to suppliers of the SaaS arrangement to significantly customize the cloud-based software for the company, in which case the costs are recorded as a prepayment for services and amortised over the expected renewable term of the arrangement. As a result \$125,530 of previously capitalised costs have been expensed in 2020.

The impact of the above on the Balance Sheet, Profit and Loss Statement, Statement of Changes in Equity and the Statement of Cash Flows is as follows:

Balance sheet (extract)	31 December 2020 as originally presented	Constructing Network Infrastructure	OCI to P&L	SPPI Evaluation	IRU to Prepayments	IRU to ROU Assets	Security Revenue	Unpaid Invoices	SaaS	Other	31 December 2020 Restated
Current Assets											
Receivables and other assets	47,407,290				8,610,204			(39,745,981)			16,271,513
Current Assets											
Financial instruments at amortised cost	14,500,508		(1,500,000)								13,000,508
Current Assets											
Financial assets at fair value through profit and loss	-		1,523,270								1,523,270
Non-Current Assets											
Financial instruments at amortised cost	32,704,868		(7,960,846)								24,744,022
Non-Current Assets											
Financial assets at fair value through other comprehensive income	14,985,878		(14,985,878)								-
Non-Current Assets											
Financial assets at fair value through profit and loss	-		14,985,878	7,983,111							22,968,989
Non-Current Assets											
Receivables and other assets	2,561,679			41,280,820							43,842,499
Non-Current Assets											
Property, Plant and Equipment	222,324,601				19,166,872			(125,530)			241,365,943
Non-Current Assets											
Intangible assets	69,510,202			(50,368,602)	(18,633,539)						508,061
Current Liabilities											
Payables	15,533,210							(3,613,271)		(5,999)	11,913,940
Current Liabilities											
Income in Advance	76,044,057	(19,494,304)						(36,132,710)			20,417,043
Non-Current Liabilities											
Income in Advance	61,493,986	20,540,951									82,034,937
Equity											
Reserve	543,374		(543,374)								-
Equity											
Retained Earnings	219,203,077	(1,046,647)	543,374	45,534	(477,576)	533,333		(125,530)	5,999		218,681,564

Balance sheet (extract)	1 January 2020 as originally presented	Constructing Network Infrastructure	OCI to P&L	SPPI Evaluation	IRU to Prepayments	IRU to ROU Assets	Security Revenue	Unpaid Invoices	SaaS	Other	1 January 2020 Restated
Current Assets											
Receivables and other assets	55,394,340				8,610,204			(41,551,042)			22,453,502
Current Assets											
Financial instruments at amortised cost	24,503,602			(502,309)							24,001,293
Current Assets											
Financial assets at fair value through profit and loss	-			507,655							507,655
Non-Current Assets											
Receivables and other assets	-			35,966,311							35,966,311
Non-Current Assets											
Financial instruments at amortised cost	35,470,029			(8,493,855)							26,976,174
Non-Current Assets											
Financial assets at fair value through other comprehensive income	15,880,605		(15,880,605)								-
Non-Current Assets											
Financial assets at fair value through profit and loss	-		15,880,605	8,618,361							24,498,966
Non-Current Assets											
Property, Plant and Equipment	188,802,379					20,232,960					209,035,339
Non-Current Assets											
Intangible assets	65,905,781			(45,652,724)	(19,669,997)						583,060
Current Liabilities											
Payables	20,921,837							(3,777,367)			17,144,470
Current Liabilities											
Income in Advance	64,635,938	(16,409,071)						(37,773,675)			10,453,192
Non-Current Liabilities											
Income in Advance	47,602,483	16,934,269									64,536,752
Equity											
Reserve	747,980		(747,980)								-
Equity											
Retained Earnings	222,011,085	(525,198)	747,980	129,852	(1,076,207)	562,963					221,850,475

Profit and Loss Statement (extract)	31 December 2020 as originally presented	Constructing Network Infrastructure	OCI to P&L	SPPI Evaluation	IRU to Prepayments	IRU to ROU Assets	Security Revenue	Unpaid Invoices	SaaS	Other	31 December 2020 Restated
Services Revenue	85,885,120	250,000					743,446				86,878,566
Other Revenue	3,483,356			(118,614)	2,823,938		(743,446)				5,445,234
Telecommunications Supply Expenses	(26,460,940)			(2,225,308)	(6,384,897)						(35,071,145)
Depreciation, amortisation and impairment - Telecommunications	(16,985,351)					6,355,267					(10,630,084)
Other Administration - Telecommunications	(8,653,256)							(109,872)		5,999	(8,757,129)
Other Administration - Infrastructure	(775,321)							(15,659)			(790,980)
Other Expenses	(2,393,337)	(771,449)	(204,606)	34,298							(3,335,094)
Net (deficit) surplus	(2,808,008)	(521,449)	(204,606)	(84,316)	598,630	(29,630)		(125,531)	5,999		(3,168,911)
Other comprehensive income	(204,606)		204,606								-
Total comprehensive (deficit) surplus for the year	(3,012,614)	(521,449)	-	(84,316)	598,630	(29,630)	-	-	(125,531)	5,999	(3,168,911)

Statement of Changes in Equity (extract)	31 December 2020 as originally presented	Constructing Network Infrastructure	OCI to P&L	SPPI Evaluation	IRU to Prepayments	IRU to ROU Assets	Security Revenue	Unpaid Invoices	SaaS	Other	31 December 2020 Restated
Net (deficit) surplus for the year	(2,808,008)	(521,449)	(204,606)	(84,316)	598,630	(29,630)			(125,531)	5,999	(3,168,911)
Other comprehensive income											
Changes in financial assets at fair value	(204,606)	-	204,606						-		-
Total	(3,012,614)	(521,449)		(84,316)	598,630	(29,630)			(125,531)	5,999	(3,168,911)

Statement of Cash Flows (extract)	31 December 2020 as originally presented	Constructing Network Infrastructure	OCI to P&L	SPPI Evaluation	IRU to Prepayments	IRU to ROU Assets	Security Revenue	Unpaid Invoices	SaaS	Other	31 December 2020 Restated
Cash flows from operating activities											
Payments to suppliers and employees	(73,698,410)			(11,100,776)					(125,530)		(84,924,716)
Cash flows from investing activities											
Payments to property, plant and equipment	(46,659,281)								125,530		(46,533,751)
Cash flows from investing activities											
Payments for Intangible Assets	(11,100,776)			11,100,776							-
Cash flows from investing activities											
Payments for financial assets at fair value through other comprehensive income	(4,277,431)		4,277,431								-
Cash flows from investing activities											
Payments for financial assets at fair value through profit and loss	-		(4,277,431)								(4,277,431)
Cash flows from investing activities											
Proceeds from sale of financial assets at fair value through other comprehensive income	4,334,736		(4,334,736)								-
Cash flows from investing activities											
Proceeds from sale of financial assets at fair value through profit and loss	-		4,334,736								4,334,736

Foreign currency translation

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the Profit and Loss Statement.

Revenue recognition

The accounting policies for the group's revenue from contracts with customers are explained in Note 9.

Leases

The accounting policies for the group's leases are explained in Note 8.

Goods and Services Tax (GST)

Revenues, expenses and assets are recognised net of the amount of associated GST, unless the GST incurred is not recoverable from the Australian Taxation Office (ATO). In this case it is recognised as part of the cost of acquisition of the asset or as part of the expense.

Receivables and payables (except accrued expenses) are stated with the amount of GST included.

The net amount of GST recoverable from, or payable to, the ATO is included as a current asset or liability in the Balance Sheet.

Cash flows are included in the Statement of Cash Flows on a gross basis. The GST component of cash flows arising from investing and financing activities which are recoverable from, or payable to, the ATO are classified as operating cash flows.

Investments and other financial assets

The accounting policies for the group's revenue from investments and other financial assets are explained in Note 10.

New Accounting Standards and Interpretations not yet mandatory or early adopted

AARNet has not early adopted any standards that have been issued but are not yet effective.

The AASB has issued a new standard (AASB1060) providing a revised Financial Statement and simplified disclosure framework for Tier 2 Not-for-Profit Entities like AARNet.

The new AASB 1060 standard is required to be applied to financial years beginning on or after 1 July 2021.

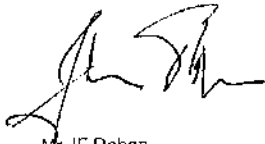
AARNet will be applying AASB 1060 from 1 January 2022

DIRECTORS' DECLARATION

In the Directors' opinion:

- (a) the financial statements and notes set out on pages 8 to 36 are in accordance with the Australian Charities and Not-for-profits Commission Act 2012, including:
 - (i) complying with Accounting Standards and other mandatory professional reporting requirements, and
 - (ii) giving a true and fair view of the entity's financial position as at 31 December 2021 and of its performance for the year ended on that date, and
- (b) 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 Directors.

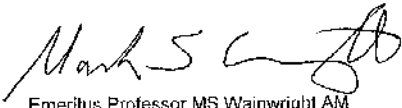


Mr JF Rohan

Director

Sydney

19th May 2022



Emeritus Professor MS Wainwright AM

Director



Independent auditor's report

To the members of AARNet Pty Ltd

Our opinion

In our opinion:

The accompanying financial report of AARNet Pty Ltd (the Company) is in accordance with Division 60 of the *Australian Charities and Not-for-profits Commission (ACNC) Act 2012*, including:

- (a) giving a true and fair view of the Company's financial position as at 31 December 2021 and of its financial performance for the year then ended
- (b) complying with Australian Accounting Standards - Reduced Disclosure Requirements and Division 60 of the *Australian Charities and Not-for-profits Commission Regulation 2013*.

What we have audited

The financial report comprises:

- the balance sheet as at 31 December 2021
- the profit and loss statement for the year then ended
- the statement of changes in equity for the year then ended
- the statement of cash flows for the year then ended
- the notes to the financial statements, which include significant accounting policies and other explanatory information
- the directors' declaration.

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

Independence

We are independent of the Company in accordance with the ethical requirements of the Accounting Professional & Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants (including Independence Standards)* (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.

Other information

The directors are responsible for the other information. The other information comprises the information included in the annual report for the year ended 31 December 2021, but does not include the financial report and our 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 on the other information that we obtained prior to the date of this auditor's report, 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 the directors for the financial report

Management is responsible for the preparation of the financial report that gives a true and fair view in accordance with Australian Accounting Standards - Reduced Disclosure Requirements and the *Australian Charities and Not-for-profits Commission (ACNC) Act 2012* 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, Management is responsible for assessing the ability of the Company 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 intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.

The directors are responsible for overseeing the Company's financial reporting process.

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 the 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.



PricewaterhouseCoopers



Scott Walsh
Partner

Sydney
19 May 2022

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