solutions for change
“AARNet is firmly focused on delivering solutions that will help the research and education sector solve some of the most pressing challenges of our time.”

CHRIS HANCOCK, CEO AARNET
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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 41) and CSIRO, Australia’s national science agency, 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 and the arts. For researchers and educators working in today’s increasingly globalised data-intensive world, AARNet removes 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.

Since 1989, AARNet, Australia’s Academic and Research Network, has provided ultra high speed, ultra high quality broadband and collaboration services to institutions within the Australian education and research sector.
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
- 5 Gbps
- 5 Gbps backup
- 10 Gbps
- 100 Gbps
- *n* 100G DWDM Transmission
- Subsea cable investment (JGA Project)
AARNet provides critical national telecommunications infrastructure to support innovation in teaching and learning and seamless data access and movement between researchers, instruments, tools and resources.
Thirty years is a long time, especially in the technology business. Yet this is where we find ourselves – thirty years since the Vice-Chancellors of Australia’s universities established the project that brought the internet to Australia, and which went on to become AARNet. When we “plugged Australia in” permanently in June of 1989, few foresaw exactly how the internet would evolve to play a role in almost every part of our lives.

While we celebrate this important milestone it is apt to look forward to the next decade, during which the trends of the last decade will surely accelerate. Teaching and learning online is now the norm and big science, as well as the humanities, are exploring new ways to use technologies such as artificial intelligence and machine learning. These technologies are hungry for data, and AARNet provides the fabric for moving, and the tools for storing, sharing and handling this data.

As we become increasingly connected, and rely more heavily on the online world, trust becomes more important than ever. AARNet has established a focus on meeting the sensitive data handling needs of researchers through extending the CloudStor data storage and sharing service. 2019 also saw the team embark on a major project to establish a Security Operations Centre for the research and education sector. This innovative new facility will support our shareholders and customers in responding more thoroughly and rapidly to security threats and incidents. In a world that is entering uncertain times like never before, trust is the currency of the future and these projects will help to further develop a level of trust for the higher education and research community for many years to come.

The new Indigo subsea cable system, in which AARNet is a consortia partner along with Google, Indosat, Singtel, SubPartners and Telstra, went live this year, connecting Sydney to Perth and Singapore. Leveraging the new connectivity and capacity provided by Indigo, and collaborating with other National Research and Education Networks, AARNet played a key role in establishing the CAE-1 Collaboration Asia Pacific link connecting Singapore to London, and the AER (Asiapacific-Europe-Ring), which provides a stable and fast network ring connecting Singapore, London, Amsterdam, Tokyo and Hong Kong. These projects and the JGA South subsea cable system project (connecting Sydney to Guam, in which AARNet is also a consortia partner) are all multi-decadal in nature, and assure that AARNet will remain an infrastructure company dedicated to meeting the needs of Australia’s research and education community for many years to come.

As Chair of the AARNet Board, I would like to sincerely thank my fellow Board members for their ongoing support, our CEO, Mr Chris Hancock for his exceptional leadership, and our senior management and staff for their dedication and hard work throughout the year. Thank you too, to our shareholders and customers, represented by the AARNet Advisory Committee, for providing candid advice and invaluable support. Finally, I would like to acknowledge the Australian Government for their belief in AARNet as critical infrastructure for the growth and success of science, research, innovation, teaching and learning in this country.

All of us at AARNet are pleased that we have delivered value for all our shareholders and customers during 2019. We look forward to supporting Australia’s academic and research endeavours even more so in these unprecedented times of global change in the year ahead, and for the next thirty years to come.

Gerard Sutton AO, Chair, AARNet Board
Looking back at 2019, our thirtieth year in operation, society is changing as the global coronavirus outbreak is rapidly evolving in 2020 and massively impacting our shareholders, customers and the entire world. During the rapid transition to remote learning and working, the provision of reliable network connectivity and collaboration services has never been more vital and we’re proud to be delivering the robust connectivity and services the sector needs right now. 2019 marked the second of our five-year 2018-2022 strategic plan, which lays out the strategic platform and priorities that guide our investments in network and technology solutions for our shareholders and customers. Operating in an environment where change is the only constant, the five pillars of our strategic platform drive our performance and success: one, operating Australia’s research and education network; two, growing our communities; three, developing technology services to meet the needs of our customers; four, ensuring financial sustainability; and five, evolving and optimising our organisation.

All of our activities are focused on delivering against our strategic priorities. In 2019, AARNet devoted more investment than in any previous years towards upgrading the capacity of the AARNet network and to expanding its geographic reach. Within Australia, this priority is about owning fibre optic cable in the ground, and adding diversity and resiliency to the AARNet backbone in the form of fully redundant and diverse paths; to further strengthen the reach and reliability of our services. Internationally, this is exemplified by the subsea cable projects that went live in 2019, Indigo and CAE-1, as well as JGA-South, which is on track to go live in 2020. Wherever possible, we have continued to focus on our priority for building Regional Infrastructure, leveraging opportunities to extend the reach of the network to improve access to high-speed broadband services for campuses, study hubs, precincts and scientific instruments across regional Australia. Throughout the year, we strengthened our engagements with the health and medical research community, partnering with the Australian Bioinformatics Commons Pathfinder project and progressing sensitive data and targeted initiatives for health and medical research. We also continued working in close collaboration with the eResearch community on developing a National Collaborative Research Data Storage Platform, with AARNet’s CloudStor service as the foundation – another key priority. We added new capabilities to CloudStor storage, including data analysis, and the service logged approximately 80,000 users by the end of 2019. With Denial of Service (DoS) attacks and other malicious cyber threats to network availability and information security increasing, we focused effort and resources on developing AARNet’s cyber security capability. Our Early Warning and DDoS Detection systems proved their value by minimising the impact of attacks on AARNet and our customers’ networks, and our Security Operations Centre project achieved a significant milestone, concluding the initial proof-of-concept phase with several universities already on board during December 2019. Importantly, this year we placed a heavy focus on developing our people and company culture. We provided enhanced professional skills development and training programs across the organisation, and our three core values of One Team, Creativity and Trust were further embedded in our recruitment, training and performance management processes.

None of these achievements in 2019 would have been possible without a committed AARNet Board, AARNet Advisory Committee and our highly-dedicated team of people. I would like to personally thank our shareholders, customers and team, and everyone engaged with AARNet 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 challenges through this most critical time of change.

Chris Hancock, Chief Executive Officer, AARNet
The year in numbers

$222.80
NET ASSETS IN MILLIONS

$51.9 million
INVESTED DURING 2019

99.93%
Network availability

3,310,014
Meeting participants

65,556
New users

832,551
Zoom meetings

461,365
Australian visitors to Australian institutions

85,104
Australian visitors to international institutions

114,692
International visitors to Australian institutions

78,080
Users

3PB
Data stored

100000000000000 BITS
TERABIT NETWORK FOR RESEARCH AND EDUCATION

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TERABIT NETWORK FOR RESEARCH AND EDUCATION
AARNet’s operational activities are aligned to our strategic plan and priorities. Our activities during 2019 included the provision of internet and advanced telecommunications and network services, as well as security, data storage and collaboration services.

We collaborated with our shareholders and customers to ensure we continue to provide services and solutions that meet the unique needs of Australia’s research and education community. This is at the heart of everything we do.
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.
The core of AARNet’s mission is the operation of a fast, ultra-high quality, highly available and resilient national and international telecommunications network to meet the unique needs of the research and education sector.

NETWORK AVAILABILITY
AARNet provided excellent network performance and availability in 2019. The average network availability was 99.93% which was slightly higher than the level achieved in 2018 (99.92%). Network availability in 2019 was affected only by scheduled maintenance, specifically core backbone router upgrades; excluding the effect of those outages the level of availability would have been 100%.

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 tri-redundancy in the network design and equipment enables the operations team to deploy alternate paths and minimise the impact of outages on AARNet customers.

This meticulous design and careful operation of the network enabled AARNet to minimise the impact of outages during the bushfires in New South Wales and Queensland that began in late 2019. Just as communities were severely impacted, the bushfires posed a hazardous threat to the network in several locations across the eastern seaboard. Recognising how critical network services are to our customers, backbone traffic between Sydney and Brisbane was diverted to the alternate inland path at times, and in emergency cases links were manually reconfigured and restored by routing the connections via alternate paths.

One of the distinguishing features of a research and education network such as AARNet is careful capacity planning to remain ahead of the demand curve, and to accommodate the increasingly data-intensive requirements of research. 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 load of the AARNet backbone links to determine when upgrades are required. This approach enables us to provide the high-quality service our customers rely on.

Hardware upgrades of the AARNet4 backbone routers continued in 2019, enabling newer generation 100G/200G/400G line cards to be deployed across the network to ensure headroom for large research flows and provide redundancy in case of outages on one of our inter-capital paths.

In December 2019 AARNet’s second investment in a submarine cable system, Japan-Guam-Australia (JGA-South) landed into Australia. Image courtesy Alcatel Submarine Networks.
EXPANDING INTERNATIONAL CAPACITY

2019 was a year of many milestones in international connectivity for AARNet. The completion of the Indigo cable connecting Sydney and Perth to Singapore in May marked a significant milestone for one of our two investments in international submarine cable systems. Indigo provides AARNet with lifetime ownership of underpinning infrastructure to meet the future growth in collaborative research and transnational education between Australia and our important Asian partners. Indigo Central (connecting Perth to Sydney) extends AARNet’s wider terrestrial network to provide diverse undersea connectivity around Australia.

This year, extending Indigo to Europe became a priority for AARNet. The completion of the Indigo cable in May marked connectivity for AARNet. The completion of the Indigo cable in May marked AARNet’s transpacific capacity on the Southern or CAE-1, when combined with Indigo, effectively provides Singapore to London, known as Collaboration Asia Europe long term capacity from Singapore to London. This link from AARNet and we led a consortium of eight NRENs to acquire this year, extending Indigo to Europe became a priority for AARNet with lifetime ownership of underpinning infrastructure to meet the future growth in collaborative research and transnational education between Australia and our important Asian partners. Indigo Central (connecting Perth to Sydney) extends AARNet’s wider terrestrial network to provide diverse undersea connectivity around Australia.

AARNet, as the Sydney landing party, also built the seaward duct, land cable, and cable station infrastructure to enable the on-time completion of the marine activities. These long-term investments in subsea cable systems provide AARNet with control over scalable international capacity trades at the wholesale level for the next two decades. This boosts our network diversity and resilience, further reinforcing our position as a leading provider of national and international connectivity and data 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.

EXPANDING CAPACITY AND REACH IN AUSTRALIA

Our customers increasingly value the reliability of the AARNet network, particularly for accessing cloud services and content providers that are critical for teaching, learning and research. To improve the performance and availability of these services for AARNet customers, we increased capacity to selected domestic service providers and will continue to enter into partnerships to directly connect popular global content and service providers to the AARNet network. We also extended our network to Australia’s Northern Territory. This is a global initiative 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 Internet2 (USA), Indiana University / OmniSOC (USA), CANARIE (Canada) and JISC (UK). The intention is to share this threat-intelligence information with relevant Australian government agencies for the protection of the Australian Higher Education and Research sector. AARNet is grateful for the support of AustCyber and the Australian Government and the funding they are providing for this project.

To provide Australian universities with the best defence against cyber threats, AARNet has commenced work on establishing an international cyber threat-intelligence sharing capability in collaboration with AusCERT and other NRENs globally, including Internet2 (USA), Indiana University / OmniSOC (USA), CANARIE (Canada) and JISC (UK). The intention is to share this threat-intelligence information with relevant Australian government agencies for the protection of the Australian Higher Education and Research sector. AARNet is grateful for the support of AustCyber and the Australian Government and the funding they are providing for this project.

Illawarra or join New South Wales to improve connectivity to the various campuses of the University of Wollongong, lighting a high-speed light out to CSIRO’s Boorowa Agility in the Regional Broadband Blackspot Program network from Toowoomba through to Longreach.

During the year, customers across the sector and the country, including universities, schools, hospitals, medical and other research institutes, upgraded their connections to meet their growing bandwidth needs. Many universities and larger research facilities upgraded to multiple 10Gbps connections to support not only big science research, but also day-to-day business operations. Similarly, 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 AARNet network for curriculum delivery and operations.

NETWORK SECURITY

AARNet’s Early Warning System (EWS) and Distributed-Dos (DDoS) Detection System, which was commissioned for AARNet’s international borders in April 2019, proved their value. 84 attacks were detected, enabling the AARNet Operations team to notify any affected customers and filter out unwarranted traffic to minimise the impact of these attacks on our network and connected institutions. AARNet, along with 10 other NRENs in Europe, USA and China, and a number of commercial providers, is a member of the Mutually Agreed Norms for Routing Security (MANRS). This is a global initiative 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 Global NREN Security group, which consists of representatives from 12 NRENs. During 2019, the Group made progress on a number of initiatives, including sharing best practices and the development of a Global NREN Security Incident Response Plan.

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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.

**SUPPORTING INNOVATION IN 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.

The number of health education and research facilities connected to AARNet continued to grow during 2019, while eduroam was deployed in more 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.

During the year, we conducted workshops with the health and medical research and education community as part of our collaboration with customers and sector stakeholders to develop infrastructure to address the specific data transfer issues of health and medical researchers.

**DIGITAL PRESERVATION INFRASTRUCTURE FOR GLAMS**

Many of Australia’s state and national galleries, libraries, archives and museums (GLAMs) are now connected to AARNet. With this underlying network connectivity in place, AARNet is focused on delivering services “above the network” to enable the GLAM community to preserve and share their collections. AARNet’s CloudStor plays a key role in this endeavour and helps GLAMs strengthen their capacity to seize new opportunities for collaborative research, engagement and outreach, and develop large scale, data driven services. GLAMs working with AARNet have the opportunity to leverage unequalled access to storage and compute resources all connected to the research network, enabling humanities, arts and social science research and partnerships to flourish.

In October 2019, AARNet became a member of the Digital Preservation Coalition, an international organisation that seeks to secure the preservation of the world’s digital legacy.
Throughout 2019, Australian schools and TAFEs continued to collaborate with UNESCO PERSIST and Freiburg University, Germany, as part of the K-12 SCHOOLS AND TAFES initiative. The project is led by the Australian Centre for the Moving Image and RMIT University, aiming to contribute to the cultural heritage of Australia. The project focuses on the digital history of Australian-made videogames of the 1990s. AARNet’s Council Linkage project, which aims to recover and preserve the history of Australian-made videogames of the 1990s, is also working closely with the UNESCO project. AARNet has purchased access to the Digital Endangered Resources Platform (DERePs) to document, preserve, and exhibit digital resources. AARNet is also a partner in the Play It Again initiative, which aims to recover and preserve the history of Australian-made videogames of the 1990s. AARNet’s Council Linkage project, which aims to recover and preserve the history of Australian-made videogames of the 1990s, is also working closely with the UNESCO project. AARNet has purchased access to the Digital Endangered Resources Platform (DERePs) to document, preserve, and exhibit digital resources.

In 2019, AARNet strengthened its collaboration with the national Data and Digital eResearch Platforms (DERePs): the Australian Research Data Commons (ARDC), the Australian Access Federation (AAR), the National Computational Infrastructure (NCI) and the Pawsey Supercomputing Centre. In partnership with the DERePs, AARNet participated in strategic discussions with the National Collaborative Research Infrastructure Strategy (NCRIS) to develop solutions to address the collective need for sustainable persistent digital data systems, secure cloud storage, data sharing, and cloud services for sensitive data and a sustainable model for national data collections. To facilitate a greater collective understanding of the eResearch challenges faced by Australian researchers, AARNet hosted the inaugural AARNet eResearch Roundtable event. The event was positively received and will be repeated in 2020.

In addition, AARNet continued working with the Australia Radio Astronomy to explore technical data transfer and workflow challenges being experienced in the SKA-precursor projects. AARNet also continued working with both the Council of Australian University Librarians (CAUL) and the Council of Australian University Directors of IT (CAUDIT) on collaborative projects to support the Australian research community; and with the Australian Academy of Science, the Council of Australian University Directors of IT (CAUDIT) and the Council of Australasian University Directors of IT (CAUDIT) on collaborative projects to support the Australian research community.

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In February 2019, AARNet, Bioplatforms Australia, and ARDC officially launched the Pathfinder Project, an ambitious new initiative aimed at scoping national research infrastructure initiatives aimed at scoping national research infrastructure through the establishment of the Australian Bioinformatics Commons (BioCommons). The activities of the project will be repeated in 2020.

AARNet is also one of many sector partners involved in the Australian Characterisation Commons at Scale (ACCs) project announced by ARDC in December 2019. ACCs will run for three years to develop a coherent and accessible compute and data environment that promotes collaboration, increases ROI for the characterisation instruments, and delivers value for thousands of researchers in domains including health, advanced manufacturing, soil and water, food, energy and transport, and resources. AARNet has committed in-kind resources to solve the data movement part of the workflow. The project is led by the Australian Centre for the Moving Image and RMIT University, aiming to contribute to the cultural heritage of Australia. The project focuses on the digital history of Australian-made videogames of the 1990s. AARNet’s Council Linkage project, which aims to recover and preserve the history of Australian-made videogames of the 1990s, is also working closely with the UNESCO project. 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Developing services to meet the needs of our customers

In addition to AARNet’s primary focus, the provision of network and other telecommunications services, we are increasingly developing services and solutions that leverage the network to enable seamless and secure collaboration, data flow and mobility for the research and education sector.

We also work closely with customers’ eResearch and IT teams to help researchers make the most of AARNet’s powerful network infrastructure. AARNet’s portfolio of services includes network, consulting, collaboration, storage, cloud and security services.

VIRTUAL PRIVATE NETWORKS

During 2019, there was 71% growth in the number of AARNet4 VPNs (Layer-2 and Layer-3 virtual private networks) in service compared with 2018. The high growth rate was driven by the uptake of direct connect services to AARNet’s partner cloud service providers such as Amazon Web Services and Microsoft Azure, which account for 75% of all new VPNs delivered.

The AARNet Architecture and Applications team continues to explore opportunities and requests by our customers for partnerships with leading cloud technology companies, an approach that has led to a number of our most successful partnerships to date. Our goal is to facilitate access to services and drive cost efficient initiatives for the benefit of research and education.

ZOOM

The Zoom videoconferencing service continued to grow, with 88 customers subscribed to the product by the end of 2019, including universities, K-12 schools and cultural institutions. Great performance and an intuitive user interface are key contributors to the rapid uptake of the Zoom video conferencing service.

Zoom combines cloud video conferencing, online meetings for up to 300, 500 or 1,000 participants, webinars, group messaging and content sharing in one easy-to-use platform accessible on multiple devices. We host Zoom servers in Australia directly on the AARNet network, providing our customers with the best possible video conferencing experience, local Zoom support and Zoom cloud recording integration with our storage service, CloudStor.

2019 saw Zoom usage peak in August, when over 357,000 users participated in around 87,000 meetings, totaling over 15 million Zoom minutes in that month – a 46% increase from the equivalent period in 2018. We also saw significant growth in the number of Zoom Rooms deployed across institutions throughout the year and Zoom Cloud Recording stored in...
CloudStorage generated about three terabytes of video content per month. We continued to work closely with Zoom to provide a high-quality video content management service to the research and education sector in Australia.

EDUROAM
The reach and usage of eduroam continued to grow. EduroamAU logged 461,365 Australian and 114,692 international visitors to Australian institutions, and 85,104 Australian visitors to international institutions in 2019, a 6% increase on 2018 figures. Eduroam, the secure global roaming wireless network for the research and education sector, is now available at more than 12,000 locations in over 100 countries worldwide, including 38 Australian universities, CSIRO and other AARNet customers. AARNet continued to work with customer institutions and local councils to extend access to eduroam in metropolitan and regional Australia.

DDoS Detection and Early Warning Systems
A Denial of Service (DDoS) Detection System was commissioned in April 2019 to help defend the AARNet network and our connected institutions from malicious cyber attacks. The AARNet Early Warning System (EWS) complements the DDoS Detection System by providing early notification of issues affecting the performance of the network. Customers can monitor critical services, such as public websites and learning management systems, to be monitored 24x7 by the EWS system. Our Operations Centre is alerted when a nominated service at a customer site is not responding or not meeting performance metrics, allowing teams to respond quickly to DDoS threats and other incidents impacting network availability. 23 customers have now signed up for the AARNet EWS.

Security Operations Centre Services
During 2019 significant progress was made on developing a Security Operations Centre (SOC) capability on behalf of our shareholder Australian universities and CSIRO, Australia’s national science agency. The SOC will assist universities and other customers to be at the forefront of cyber security threat detection and response. The SOC will operate 24/7 to monitor and protect the networks and information of our universities and other customers, and identify and respond to threats and compromises. The Pilot phase commenced with small group universities in 2019, with production services slated for mid 2020. AARNet was also successful in an Australian Government AusCyber Projects Fund bid, and will receive funding in 2020 for developing an international cyber threat intelligence capability and for on-boarding universities to AARNet SOC services.

Cyber Security for Schools
AARNet’s CyberSecurity for Schools service launched in 2019. This service is a unique learning entitlement and cyber safety platform, designed to keep students safe while allowing them to access the online resources they need to accelerate their own learning. Co-developed by AARNet in partnership with customers and CyberHound exclusively for AARNet, the service offers a comprehensive and integrated set of network and security services. AARNet is continuing its collaboration with CyberHound to bring additional enhancements to this service in 2020.

Partnerships
AARNet, AAF, AusCERT, CAUDIT and REANZ have partnered to deliver the Australasian Higher Education Cybersecurity Service (AHECS) initiative, aligning activities with the aim of safeguarding the reputation of the Australasian Higher Education Sector through coordinated, complementary cyber security-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) to develop and potentially commercialise products and services that improve the cyber security posture of Australia. The CSCRC plays an important role in raising cyber security awareness more broadly and exploring key cyber security issues with respect to the legal, policy and regulatory implications of cyber security risks.

As part of AARNet’s customer engagement program, the AARNet Cyber Security team conducted state-based cyber security update sessions and table-top incident response exercises with customers.

ENTERPRISE SERVICES
The Enterprise Services team provides highly valued professional, engineering and technical services to assist with the provision of campus information technology across the research and education sector. Enterprise Services experienced its sixth consecutive year of growth, delivering assignments to both shareholder and non-shareholder customers.

Assignments included major network, data centre, cloud and security reviews for shareholder customers, complex multi-tenant university network architecture design guidelines, data centre and cloud migrations, technical support for eResearch and IT services for the delivery of connectivity solutions, and assisting K-12 schools with implementing diverse connections. The team also actively supported the design and delivery of on-boarding activities for AARNet’s Security Operations Centre, developing and facilitating customer workshops and information gathering exercises.

In addition, the Enterprise Services team established a Community of Practice (CoP) focused on network automation skills and technology. This CoP includes participants from each state across Australia, with informal meetups throughout the year providing the sector’s technical community with an opportunity to share best practices and knowledge around network automation technologies.

John O’Connor, Chief Technology Officer, AARNet
**CLOUDSTOR**

CloudStor is a research data storage, sharing and analysis service designed and built by AARNet to support data-intensive research collaborations. It is an on-net service for AARNet-connected institutions, providing individual researchers and staff with personal allocations of one terabyte free storage, with larger group allocations available on request. CloudStor storage is located in Australia and is hosted on equipment owned and operated by AARNet, avoiding data sovereignty issues.

CloudStor usage grew strongly in 2019, with over 78,000 registered user accounts from 105 institutions logged by the end of 2019; up 28% from the end of 2018. CloudStor is used by universities and other AARNet customers to share data with their collaborators in the research and education community, industry and government.

February saw the launch of a fourth CloudStor storage node, located at the National Computational Infrastructure (NCI) at the Australian National University in Canberra. This node has increased the storage capacity of CloudStor and will support a deeper strategic partnership between AARNet and NCI.

The focus for much of 2019 was on improving the reliability and performance of CloudStor. To this end, we implemented multiple infrastructure upgrades and co-developed and deployed a new high performance S3 storage facility for several customers.

Usage of SWAN (Service for Web-based ANalysis) within our CloudStor environment grew in 2019. SWAN provides a Jupyter Notebook (scientific notebook) capability to all users of CloudStor. Jupyter Notebook has gained widespread worldwide adoption as the preferred electronic lab book for researchers, enabling them to combine narrative with code and output in the one document. This adds processing and analysis to the data storage capability of CloudStor. SWAN has been enthusiastically taken up by researchers across many disciplines and complements CloudStor’s other capabilities, such as OnlyOffice document editing, FileSender data sharing, data ingest tools, data visualisation tools, and the packaging of data collections.

In response to demand from customers and stakeholders in the sector, this year, the Cloud Services team began exploring services for data preservation and the handling of sensitive/classified data. We are collaborating closely with several customers to develop these capabilities.

The Cloud Services team has also been actively collaborating with engineers from the European Organization for Nuclear Research, known as CERN, on the EOS file system that underpins CloudStor, as well as on the European Union-funded Science Mesh project that aims to develop seamless interchange services between international research data stores. In October, AARNet hosted key members of the CERN storage services team at our Brisbane office and jointly presented on the Science Mesh project at the eResearch Australasia conference. The eResearch community has responded very positively to these developments.

As CloudStor grows, AARNet is focused on continually developing and extending the service into a national collaborative research data platform to meet current and future needs of the research sector.
Our team

Throughout 2019, we continued to develop our organisation through building the expertise of and deeply engaging with our people. Over the course of the year, the AARNet team grew from 124 to 133 people, with significant expansion seen in the Cyber Security team.

During 2019 AARNet focused on three key areas: AARNet Values, Staff Training, and development of our Cyber Security structure and posture.

**AARNET VALUES**

The AARNET Values - One Team, Creativity and Trust - continued to play an important role. They continued to play an important role in employee engagement, and are solidly embedded into our recruitment, training, and KPI processes. In 2019, the AARNET Values became a key platform for day-to-day workplace conversations, at all levels of the company, showing that the values are now an integral and non-negotiable part of our cultural fabric.

**EMPLOYEE TRAINING & DEVELOPMENT**

Under the guidance of our Human Resources team, AARNet has made a significant commitment to employee training and development with key focus on the areas of presentation and public speaking skills, corporate and personal resilience, team leadership skills, and communication and influencing skills. In 2020 this work will continue. AARNet has continued to take a leadership role within our global NREN community, developing a two-year Leadership Training Programme for the global NREN group. The programme covers various areas of personal leadership skills and development as well as having a strategic technical focus on cyber security. It is expected that the first intake for the programme will commence in mid-2021.
As we do with our existing SOC analysts, providing participants to be placed on a path to industry certification, this will allow the Cyber Security Internship Programme to develop professional cyber security talent, leveraging our unique position in the sector to source talented development of security more generally. The Cyber Security Internship Programme is AARNet’s opportunity to participate in the growth and development of professional cyber security talent, leveraging our unique position in the sector to source talented graduates directly from our university SOC subscribers. This will allow the Cyber Security Internship Programme participants to be placed on a path to industry certification, as we do with our existing SOC analysts, providing practical experience that builds on their tertiary education. AARNet’s opportunity to leverage its SOC analysts as trainers provides invaluable hands-on experience that is rewarding to both the interns and to our SOC analysts – providing the first steps to developing mentoring relationships. The exposure and experience that Cyber Security Internship Programme participants will gain, will prepare them for a challenging and rewarding career within AARNet Cyber Security.

R+E COMMUNITY ENGAGEMENT

AARNet is involved in a broad range of research and education community events, includes sponsoring and network support for conferences, workshops, working groups, forums and mentoring.

Technologists working on networking and networked technologies at AARNet-connected universities and research institutions gathered in Melbourne on 6 and 7 June 2019 for the third edition of Networkshop, a two-day, technical, community-building event organised and hosted by AARNet. With an emphasis on technical collaboration, skills development and the exchange of ideas, Networkshop was well received by over 100 attendees and will be repeated in 2020.

AARNet supports STEM (Science, Technology, Engineering and Maths) programs in our community as part of our commitment to inspiring young people to pursue tertiary STEM studies. For the fifth year running, in addition to providing network connectivity and streaming, AARNet staff participated in judging the FIRST®Australia Robotics Competition hosted by Macquarie University. Teams from a number of universities and schools connected to AARNet took part.

AARNet staff also volunteered as judges for the National Young ICT Awards, an annual event that challenges school children from Year 3 to Year 12 to put the national ICT curriculum into practice by designing any technology project they are inspired to create.

AARNet continued its support for Australian Indigenous Mathematics Enrichment Project (AIME) by providing the high-speed broadband connectivity and Zoom video conferencing this innovative education program needs to strengthen and expand the services it offers Indigenous kids the length and breadth of Australia.


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. By the end of the year, there were 320 stories published on the site, covering a wide range of topics in the sciences and humanities and featuring 100 networks.


Right: AARNet CEO Chris Hancock opening Networkshop 2019. Top right: AARNet eResearch Director Curtis Kemp speaking about CloudStore at the HAC Summit - DARIAH Beyond Europe event in March 2019.
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 page 41.

AARNet is a Licensed Australian telecommunications carrier [#61 under the Telecommunications Act 1997 Cth].

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 page 41.

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

THE AARNET BOARD OF DIRECTORS
The Board of Directors is responsible for the overall direction and management of AARNet.

For 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. Regional Network Organisations, which are generally state based, elect one representative to the AAC. Members of the AAC are listed on page 41.

BOARD OF DIRECTORS

Chairman: Emeritus Professor Gerard Sutton AO*
Executive Director: Mr Chris Hancock (CEO)
Dr Christine Burns
Professor John Dewar AO
Professor Annabelle Duncan (until 5 July 2019)
Mr Robert Fitzpatrick*
Mr David Formica (appointed 25 March 2020)
Professor Brigid Heywood (appointed 22 October 2019)
Mr Jeff Murray (until 25 March 2020)
Ms Fiona Rankin (appointed 25 June 2019)
Mr John Rohan*
Professor Deborah Terry AO
Emeritus Professor Mark Wainwright AM*
Dr David Williams
*Denotes Independent Director

AARNET ADVISORY COMMITTEE

Chairman: Mr Jeff Murray (TAS, University of Tasmania)
(25 March 2020)
Mr David Formica (ACT, University of Canberra)
(25 March 2020)
EOA AARNet: Mr Chris Hancock
Mr Malcolm Caldwell (NT, Charles Darwin University)
Mr Vito Forte (WA, Edith Cowan University)
Mr Tim Mannes (NSW, Charles Sturt University)
Ms Bev Wright (SA, University of Adelaide)
Mr Tom Minchin (CSIRO)
Mr Scott Sorley (QLD, University of Southern Queensland)
Mr Zoran Sugarevski (VIC, Victoria University)

Corporate Governance
Here’s a closer look at some of the discoveries and success stories in the research and education community enabled by our powerful network and collaboration services. To read more stories, go to news.aarnet.edu.au
Ballarat Clarendon College implements an improved managed security service from AARNet in partnership with CyberHound. The solution enables access to cloud services and online learning resources, while also securing and protecting data.

When Ballarat Clarendon College was searching for a security solution they turned to AARNet and CyberHound as collaborators. The trio have co-developed a cyber security platform that offers an integrated set of network and security services to all AARNet Direct Connect schools.

Ballarat Clarendon College is a school where learning comes first and is not confined to the classroom. It is a coeducational school associated with the Uniting Church in Australia, enrolling students from Early Learning to Year 12. The College has a number of campuses catering for different year levels and learning experiences. In addition to their 1,200 day students they cater for a community of 150 boarding students.

The College’s learning environment has progressively transitioned to a predominantly digital experience, placing greater demands on the network. Providing high speed access to cloud-based services and online learning resources, while also securing and protecting data to ensure they meet compliance and regulatory requirements was a constant challenge and a key focus for the College.

Of further importance was the health and wellbeing of its students. In this new connected world, the College felt it lacked adequate visibility and controls to identify exactly what was happening across the network. With a 24/7 duty of care and special considerations for their boarding students, enhanced visibility to support pastoral care efforts has become increasingly important.

The existing managed security solution was restricted in terms of performance, security and functionality and did not sufficiently cater for the specific requirements of a K-12 education environment. As the demands on the network grew it was unable to cope with these changing requirements and they needed more.

Co-developing a cyber security solution for schools

With such business-critical requirements, the College’s ICT team wanted to ensure that they implemented a solution to meet current and future needs. To achieve this goal, they turned to the expertise of their trusted network infrastructure partner AARNet as a collaborator. Following an extensive review and testing process, leading security provider CyberHound was selected to partner with AARNet and the College to co-develop a solution specifically for schools directly connected to the AARNet network.

Both AARNet and CyberHound have extremely strong pedigrees in the education sector, with a combined 50 years of sector-targeted service development and innovation and a similar long-term approach to customer satisfaction.

A key requirement for the solution was performance to maximise the College’s high speed AARNet network service while allowing scalability for the future. The solution needed to provide comprehensive security capabilities and best practice support and change management processes to ensure the same high standard of service reliability the College has experienced from AARNet over many years.

With CyberHound’s capabilities, the solution provides a broad range of differentiated and specialised security and application controls, including full SSL visibility, enhanced malware/threat detection and granular reporting with CyberHound’s XGen platform. Data visibility was enhanced with the ability to log key data to the College’s intelligent central data repository.

The College’s student welfare program was enhanced through the inclusion of CyberHound’s behavioural analytics technology, ClearView. This capability delivers a new level of visibility, reporting and actionable intelligence to assist staff in providing immediate support for students.

The AARNet and CyberHound solution for AARNet Direct Connect schools is delivering other benefits to the College, including improved network security and data protection; enhanced visibility and control with customisable reporting; improved throughput for enhanced network performance; superior quality of service with best practice change management; and responsive support by highly experienced industry experts.

Cyber security is paramount in an environment where teaching and learning is a predominantly digital. Image courtesy Ballarat Clarendon College.
Visualising the story of Australia’s largest ever naval loss

An ambitious project to create digital 3D reconstructions of shipwrecks for virtual underwater heritage museum experiences relies on the AARNet network for the transfer of huge volumes of data from the research lab to supercomputer.

The Sydney-Kormoran Project, a Curtin University and Western Australian Museum collaboration, is using the latest imaging technology, research networking, supercomputing and advanced visualisation techniques to tell the story of two of Australia’s most significant shipwrecks – the HMAS Sydney (II) and the German raider HSK Kormoran.

The ships met their fate at the bottom of the Indian Ocean on 19 November 1941 after a short but fierce battle ending with the loss of all 645 crew of the Australian vessel. How and why Sydney, a state-of-the-art warship, was defeated by Kormoran, a modified merchant vessel, has long been the subject of much speculation and controversy.

Despite the historical significance of these vessels – whose resting place 200km off the coast of Western Australia was only discovered in 2008 – they have been largely inaccessible to the public due to their isolated location 2,500 meters below the ocean’s surface.

Now, thanks to detailed 3D imaging surveys carried out by Dr Andrew Woods, Senior Research Fellow at Curtin University, and his team, haunting images have emerged that reveal new insights about the last moments of the ships, including a previously-undocumented 15-centimetre shell hole through Sydney’s bridge.

“The Sydney-Kormoran Project is the first research project in Australia to have undertaken such an ambitious underwater survey and has set a new bar for this type of work,” said Woods.

The expedition to the ocean floor involved four years of preparation, 63 crew members and two remotely operated vehicles fitted with 14 digital cameras. Four dedicated 1Gbps links to 2,500 meters were used to transfer images from the cameras to the researchers on board the project’s service ship for quality assurance in real-time.

Over 500,000 images and 300 hours of high definition video footage were collected and recorded on hard drives. After pre-processing at Curtin University, the data was seamlessly transferred over the AARNet high capacity network to the Pawsey Supercomputing Centre for processing.

“We can’t do our research without AARNet,” said Woods. “We’ve got to move data around and we rely on the AARNet network to do that for us.”

The project team is using Pawsey’s Magnus supercomputer to generate detailed digital 3D models that will become the basis for a new museum exhibition, giving visitors an interactive and immersive experience of the shipwreck sites and this important piece of Australian history.

Researchers are using Curtin’s HIVE (Hub for Immersive Visualisation and eResearch) facility to test the 3D models and experiment with virtual reality scenarios.

“The plan is to provide underwater virtual heritage experiences at museum sites that will allow people to explore and understand the stories of these two wrecks as if they were down at the wreck sites. It’s a powerful way to tell a story and a great way of sharing cultural heritage,” Woods said.

USING THE LATEST IMAGING TECHNOLOGY, RESEARCH NETWORKING, SUPERCOMPUTING AND ADVANCED VISUALISATION TECHNIQUES TO TELL THE STORY OF TWO OF AUSTRALIA’S MOST SIGNIFICANT SHIPWRECKS.
Using satellite imagery to assess drought & track bushfires

Digital Earth Australia is used to assess the status of drought, with this information feeding into state and national drought monitors. The platform is also used to track bushfires and to help support more sustainable farming practices. DEA provides scientists with the ability to measure and consistently track environmental events and activities like these that were previously unmeasurable.

Dr Dhu says AARNet plays an important role in moving satellite imagery data around.

“We capture imagery at the Geoscience Australia Alice Springs ground station and we send it across the AARNet network to the NCI (National Computational Infrastructure) in Canberra where it is stored and transformed into decision-ready products using high performance computing,” he said.

DEA also relies heavily on Australian landscape data captured by European Sentinel satellites and on AARNet for the transfer of this data to and from the Copernicus Australasia Regional Data Hub located at the NCI. AARNet is also relied upon for transferring the data amongst the research and education community more broadly.

“What we’ve created in Australia with the Digital Earth platform is unique because it is more than a research capability; it is an operational capability. We are producing products that people can rely on for the long term. They are regularly updated and as reliable as weather reports. This is proving to be of great value to society,” said Dr Dhu.

Earth observation data captured by satellites is freely available globally, and today, the DEA open-source software, known as Open Data Cube, is already being implemented in more than 50 countries.
AARNet engineers routinely run experiments and test networking technologies for managing large data flows with colleagues at scientific organisations, supercomputing facilities and research and education networks in Europe, Asia and the United States, as well as optical network equipment vendors.

Testing ensures research network infrastructure meets the current and future big data transfer needs of researchers and scientists collaborating globally in data-intensive fields, such as high energy physics, radio astronomy, climate science and genomics.

In 2019, impressive results were achieved during long distance performance testing with live research data transfers over the AARNet spectrum of the new Indigo subsea cable system connecting Sydney, Perth and Singapore, and over the new CAE-1 (Collaboration Asia Europe) link connecting Singapore to London.

This round of network performance testing involved AARNet engineers collaborating with engineers at CERN (the European Organization for Nuclear Research) to transfer 1000 x 4GB high energy physics data files in parallel from the CERN storage infrastructure used for hosting data from Large Hadron Collider (LHC) experiments, located in Geneva, to Sydney at 49.8 Gbps sustained throughput. This test was run using the LHC Open Network Environment (LHCONE) virtual private network running over the CAE-1 and Indigo cable systems between London and Sydney.

Within Australia, another round of tests were performed with Cisco NCS 1004 and NCS 2000 FlexSpectrum Single Module ROADMs platforms in the AARNet production network under real world conditions without interruption to any customer traffic. With the ability to adjust modulation format and baud rate to achieve the maximum data throughput over different distances, ground-breaking results were achieved, including:
- 600 Gbps single wavelength in a metro data centre to data centre environment (approximately 15km) in Perth;
- 500 Gbps single wavelength over regional distances greater than 300km (roughly equivalent from Sydney to Newcastle, Wollongong or Goulburn); and
- 400 Gbps single wavelength over inter-capital distances greater than 750km (roughly equivalent to Sydney to Melbourne).

The University of Queensland (UQ) was the first in a wave of top universities in Australia to go live with a dual 100 gigabit per second (Gbps) connection to AARNet in 2019, and is set to benefit from AARNet’s ability to scale.

Areas of data-intensive research at UQ, including genomics, imaging, modelling, microscopy and computing are producing petabytes of data that needs to be transferred over the AARNet network. 100Gbps links will enable faster data transfer for research at UQ and will, for example, enhance the Queensland Brain Institute’s research into Alzheimer’s disease, schizophrenia and neurodegenerative disorders such as dementia; the Global Change Institute’s work to address the impacts of climate change and population growth; and a myriad of other research projects focusing on health, energy, sustainability, water and food security.

“UQ is extremely pleased to be the first university in Australia to migrate to AARNet’s 100Gbps service. Petabytes of data are being generated by research activities at UQ, and many of these activities are multi-disciplinary and multi-institutional, so reducing our transmission times for moving data between our national and global research partners is of significant benefit,” said Rob Moffatt, Chief Information Officer at UQ.

AARNet’s mission is to continuously develop the AARNet network and services to remove barriers to discovery and innovation for Australian researchers. Performance testing is an integral part of how we ensure AARNet-connected universities and research institutes have the bandwidth they can rely on now and into the future.
The AARNet network is critical underpinning infrastructure for the University of Wollongong’s new Molecular Horizons Research Facility, where scientists investigate the inner workings of living tissue at the molecular level.

Supporting researchers in the fight against diseases and antibiotic resistance

The University of Wollongong (UOW)’s Molecular Horizons facility is a state-of-the-art life sciences research facility, purpose built and equipped with advanced technologies to help scientists solve some of the world’s biggest health and medical challenges. Powerful microscopes, data mining and machine learning are enabling scientists to address challenges such as finding cancer cures, developing new antibiotics and anti-viral agents, and reversing Alzheimer’s disease.

To enable this critical research the IT team collaborated with the research team to understand their needs, and UOW invested in a suite of revolutionary technology. To enable this critical research the IT team collaborated with the research team to understand their needs, and UOW invested in a suite of revolutionary technology, including purchasing two of Australia’s most powerful biological electron microscopes, a Talos Arctica microscope and a Titan Krios Cryogenic Electron Microscopy (Cryo-EM) microscope. These sensitive microscopes with cameras that can detect single electrons are used for reconstructing 3D images showing the structures of molecules at atomic detail, revealing to researchers the secrets of how our cells respond to diseases and treatments.

The delivery of the Facility involved deploying high-speed 10 gigabit per second connections over the AARNet network to the microscopes and the associated data storage and processing equipment, both on campus and off campus. High performance computing (HPC) is required for processing and analysis of the images captured by the microscopes. Data is transferred over the AARNet network to on-campus HPC for real-time analysis, and to the Multi-modal Australian Sciences Imaging and Visualisation Environment (MASSIVE), Australia’s specialised HPC research facility located at Monash University in Melbourne, for intensive image processing, analysis and visualisation.

The deployment of Software Defined Networking technology ensures these huge data sets are delivered efficiently, securely and at the speed required whether on or off campus.

Fiona Rankin, UOW’s Director of Information Management and Technology Services, says the AARNet network is fundamental to enabling research at the Molecular Horizons facility.

“Big data needs a big network and AARNet enables us to efficiently and reliably move the ever-increasing volumes of research data this new facility produces around. This is about removing technical barriers to discovery for researchers, and ultimately saving lives.”
For more than thirty years, AARNet and CSIRO, Australia’s national science agency, have collaborated on building high capacity data networks to support Australian research.

Over the years, the partnership has seen networking infrastructure extended out to regional and remote parts of the country, interconnecting around 39 facilities and instruments, and supporting the ever-growing data transfer and collaboration needs of CSIRO researchers across many scientific fields, including radio astronomy, agriculture and health.

In outback Western Australia, fast reliable research network connectivity is critical for processing data generated by the radio telescopes located at CSIRO’s Murchison Radio-astronomy Observatory (MRO). The telescopes are used by astronomers to study galaxies and explore the origins of the Universe. Several years ago, AARNet expanded its network across the Nullarbor, from Adelaide to Perth and on to the MRO. CSIRO and AARNet engineers collaborated to develop the specialised data transmission networks for the next-generation telescopes located there, the Australian Square Kilometre Array Pathfinder and the Murchison Widefield Array.

The MRO will host 131,000 low-frequency antennas as part of the future Square Kilometre Array, a global science and engineering project to build the world’s largest telescope co-located in Australia and South Africa. AARNet provides the network services over its terrestrial and subsea network paths, connecting the telescopes at the MRO to the Pawsey Supercomputing Centre in Perth and to the National Computational Infrastructure in Canberra, CSIRO facilities and partners across Australia and the world.

AARNet also provides network services for three other observatories operated by CSIRO in regional New South Wales: the Parkes radio telescope, fondly known as ‘The Dish’, the Australia Telescope Compact Array near Narrabri, and the Mopra radio telescope near Coonabarabran. In November 2019, CSIRO opened its new Boorowa Agriculture Research Station, which is directly connected to AARNet’s high speed optical fibre network. Located 100kms from Canberra, in rural New South Wales, the 290-hectare facility is purpose built for research focused on developing Australian farms of the future. Drones, remote monitoring and advanced data analytics provide scientists with unprecedented accuracy in studying crops and farming systems to help build more resilient agriculture systems and increase food production. The AARNet link will enable scientists working at the research station to share research data efficiently with other CSIRO facilities and partner institutions across Australia.

The CSIRO FD McMaster Laboratory near Armidale in regional New South Wales is also connected to the AARNet network. The link went live in 2015, enabling scientists to share large data files with research partners in real time and boosting opportunities for agricultural research collaborations.

In regional Victoria, the AARNet network has been supporting scientific outcomes for the Australian Centre for Disease Preparedness, formerly known as the Australian Animal Health Laboratory, in Geelong for some time. Operated by CSIRO, this facility is the only bio-secure facility of its kind in the Southern Hemisphere. Research is focused on the highly infectious diseases of animals, including zoonotic diseases that pass from animals to humans, such as Hendra, Severe Acute Respiratory Syndrome (SARS) and COVID-19, with outcomes helping how the world predicts, prevents and manages disease and pandemics. The AARNet link connects researchers to compute and cloud services, as well as other CSIRO facilities and research collaborators.

AARNet is an indispensable partner to CSIRO for the development and deployment of networking technologies, infrastructure and resources that provide for the data transport needs of research ahead of demand.

Image above: An artist’s impression of the Square Kilometre Array’s antennas in Australia. ©SKA Organisation
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Directors’ declaration 35
of the financial year and up to the date of this report:
The following persons were Directors of AARNet during the whole
Your Directors present their report on the Company, AARNet Pty
Director of the Board and Chair of the Nomination and Remuneration Committee
Mr Robert Fitzpatrick
Member of the Audit, Finance and Risk Committee
Mr Chris Hancock
Chief Executive Officer
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
Dr David Williams
Professor Annabelle Duncan was a director from the commencement of the financial year until her resignation on 5 July 2019.
Mr Jeff Murray was a director from the commencement of the financial year until his resignation on 25 March 2020.
Ms Fiona Rankin was appointed a director on 25 June 2019, and remains a director at the date of this report.
Mr David Formica was appointed a director on 25 March 2020, and remains a director at the date of this report.
PRINCIPAL 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) assists Members and other customers with network design, engineering and consulting services to optimise the end-to-end performance, robustness and resilience of campus, data centre and cloud networks via the AARNet network;
d) 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
e) makes representations to all levels of government on policy, legislation and programmes to improve the telecommunications facilities and services available to its Members and other customers.
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 (2018: nil).
REVIEW OF OPERATIONS
Network Performance
Throughout 2019 AARNet network continued to perform at consistently high levels while carrying increasing volumes of traffic for Members and other customers. For 2019 the average availability was 99.935% which was slightly higher than the level achieved in 2018 (99.925%). Network availability in 2019 was affected by scheduled maintenance, specifically core backbone router upgrades, excluding the effect of those outages, the level of availability would have been ~100%.
Telecommunications traffic carried in 2019 was 1.4% higher than 2018, and within this, traffic carried on behalf of AARNet’s Members grew by just over 20% year-on-year (the key reason why overall traffic grew at a slower rate than Members’ traffic was due to the continued provision of services to overseas based national research and education network in mid-2019, see discussion on Subscriptions and Telecommunications Revenues below).
Network Expansion
During 2019 AARNet devoted more investment than in any previous year towards upgrading the capacity of the AARNet network and to expanding its geographic reach.
Overall spending on communication assets (including network infrastructure and equipment) was $43,297,410 during the year which was substantially higher than the $27,343,926 invested in 2018 (refer to note 21 to the financial statements).
The increased investment was devoted toward two international submarine cable systems, Indigo and JGA, as well as extensions of AARNet’s domestic fibre network.
Indigo Cable System
The Indigo consortium, of which AARNet is a member, has constructed a high capacity submarine cable system running around southern Australia, from Sydney to Perth, and then internationally from Perth to Singapore.
Indigo was brought into service during 2019 and is now carrying a substantial portion of AARNet’s traffic. The Sydney to Porton segment provides a direct, high speed path between the east and west coasts of Australia, adding diversity and resilience for AARNet’s domestic network.
The international segment to Singapore, provides AARNet with the highest capacity submarine cable system in Asia and also the major research and education networks and facilities in Europe.
JGA South
AARNet is also a member of the JGA South consortium laying a submarine fibre system between Sydney and Guam. Guam is a significant hub for telecommunications services and by participating in the construction and ownership of JGA South, AARNet will gain high capacity bandwidth able to connect to research and education networks in Asia (particularly into North Asia).
We expect JGA to enter service during 2020.
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 to the general internet). These charges form the largest single component of AARNet’s revenues.
During 2019 Members’ subscription and related charges were only 0.6% higher than in 2018 despite the growth in Members’ traffic discussed above.

<table>
<thead>
<tr>
<th>Members</th>
<th>2019</th>
<th>2018</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscriptions, Traffic and Access</td>
<td>40,825,590</td>
<td>40,593,177</td>
<td>0.6%</td>
</tr>
<tr>
<td>Non-Member: Subscription, Traffic and Access</td>
<td>16,456,613</td>
<td>18,153,717</td>
<td>(9.3%)</td>
</tr>
<tr>
<td>Other Services</td>
<td>19,453,705</td>
<td>16,915,079</td>
<td>15.0%</td>
</tr>
<tr>
<td>Telecommunications Revenue</td>
<td>76,739,908</td>
<td>75,641,975</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

Until mid 2019 a national research and education network based outside Australia used capacity on AARNet’s international network in return for paying a subscription to AARNet. The expiry of this contract resulted in lower non-Member subscription fees in 2019 compared to 2018.

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

0 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

8 Allow the network services which directly support the delivery of education and research outcomes (including Zoom, a video conferencing/meeting service offered in conjunction with Zoom Inc. and Cloudstor, a service which is optimised for the storage and sharing of research data sets).
Revenues from other services rose by 15.0% during 2019. AARNet’s suite of video conferencing and cloud storage services continue to be embraced by users across the research and education sector, and this was supplemented by continued growth in our more traditional services of transmission services and circuits.

Overall, subscriptions and service revenues increased by 1.4% after allowing for the expiry of the contract for international services, referred to above.

Telco Infrastructure

Infrastructure establishment fees (income from the provision of new fibre infrastructure) declined slightly in 2019 as the amount of recognised revenue for new fibre and transmission services brought into service was marginal, compared to the large depreciation charges on recognised revenue for contracts at the end of their revenue recognition profile.

<table>
<thead>
<tr>
<th>2019</th>
<th>2018</th>
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<tbody>
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</table>

Infrastructure Establishment Fees

2019 $4,652,770
2018 4,742,009 (1.9%)

Infrastructure Construction

Revenue

2019 6,035,894
2018 6,022,118 (0.1%)

Adoption of AAS16 Leases

With effect from 1 January 2019, AARNet implemented the new accounting standard on Leases, AAS16, as more fully described in note 35 to the financial statements.

Under AAS16 rights to use certain property (such as dark fibre, racks and data centre capacity, office space etc), which did not qualify as leased assets under the previous accounting standard on leases (AAS11), are now classified as assets and included in the balance of Property, Plant and Equipment (refer to note 8 to the financial statements).

The gain or loss on derecognition of plant and equipment in respect of the remaining lease payments.

The effect of this is to include in AARNet’s results for 2019, depreciation charges and interest charges in respect of leased assets and liabilities, which were not recognised in 2018 and earlier years.

Conversely, AARNet’s 2018 results include in various expense categories rental payments in respect of leased assets.

In 2019 and subsequent years, these payments are no longer recognised as expenses (and are instead applied to reduce related lease liability).

Telecommunication Expenses

Telecommunication expenses for 2019 were almost $1.0m higher than the previous year. The largest single contributor to this increase was the inclusion of interest expenses related to leased liabilities, as explained above, which were expensed in 2018 but are instead applied to reduce related lease liability.

Conversely, AARNet’s 2018 results include in various expense categories rental payments in respect of leased assets. There was no equivalent cost included in Telecommunication Expenses for 2018 as AARNet adopted AAS16 with effect from 1 January 2019.

In 2019 AARNet also had additional telecommunication costs driven by increases in traffic and capacity on the AARNet network. This includes costs for transmission, duct rental and maintenance as well as charges associated with the Indigo Cables System, which commenced operation during 2019.

Also included in this category are increased costs related to the operation of Dark Fibre, which also contribute to the access to demand, which continued to grow during the year.

Offsetting all these increases was the exclusion from Telecommunication Expenses during 2019 of rental charges on items now accounted for as leases, such as office space, which, as explained above, were expensed in 2018 but were treated as a reduction of a lease liability in 2019.

Employee and Administration Costs

To support the growth of our network, AARNet added staff to its infrastructure development team, and to support customers in the use of services, added staff to its service desk, cyber security and eResearch support teams.

Depreciation and Amortisation Charges

Depreciation and Amortisation charges, inclusive of depreciation on equipment, depreciation on infrastructure and amortisation of Indigene Rights to Use (IRUs) totalled $22,068,641 in 2019 compared to $20,051,764 in 2018.

There were three factors behind these higher charges:

a) the adoption of AAS16 referred to above, which requires the recognition of additional assets which existed at the date of AAS11, which was not required in the AAS16 method; and
b) a weakening of the Australian Dollar which has the effect of increasing amortisation charges on certain IRUs (see below); and
c) the adoption of AAS16 referred to above, which requires the amortisation of the Australian Dollar IRUs which has the effect of reducing the value of the IRUs.

Amortisation of the IRUs is calculated on the full value of the IRU (including any unpaid portion). Certain of AARNet’s international IRUs are subject to deferred payment terms with an outstanding balance denominated in US Dollars. When the Australian Dollar strengthens against the US Dollar the full value of the IRU (including the deferred portion, when measured in Australian Dollars) increases; therefore, amortisation charges also increase to reflect the higher asset value.

Other Expenses (including Finance Costs)

These costs of $977,811 are higher than 2018 ($104,120) mainly due to losses on foreign currency transactions, incurred as part of AARNet’s hedging activities (refer discussion in note 25).

Accumulated Surplus and Reserves

In 2019 AARNet recorded a net surplus of $7602,686 (2018 $214,198,927). The increase represents the surplus for 2019 plus the inclusion of interest expenses related to leased liabilities, recognised in previous years, as required by AAS16.

The largest single contributor to this increase was the inclusion of interest expenses related to leased liabilities, recognised in previous years, as required by AAS16.

In the Board’s view, it is prudent for AARNet to generate a surplus in order that investments in network capability and services may be funded from surpluses generated on Members to continue to offer equity to the company.

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

Surpluses earned in prior years, aided by conservative financial management, have therefore been accumulated into significant holdings of cash and investments. In 2019 and 2018 a significant portion of these funds were invested in:

• the Indigo and JGA South high capacity submarine cable systems (as described earlier);
• extensions and enhancements to AARNet’s own terrestrial fibre infrastructure to improve the reach, resilience and capacity of the domestic network.

These investments are expected to continue into future years. In addition, AARNet intends to use its surplus funds for:

• finance investments in technology to enhance the delivery of services to Members and other customers;
• supplement Members’ subscriptions and other income in future years;
• meet obligations to settle lease liabilities which totalled $46.1m at year end as shown in note 31 to the financial statements; and
• 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 $48.6m, refer note 28(i) to the financial statements.

Net Assets

Net assets at 31 December 2019 were $22,788,104 (2018 $214,198,927). The increase represents the surplus for 2019 plus the change in value of available-for-sale financial assets during 2019.

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 2019.

Matters Subsequent to the End of the Financial Year

In February and March 2020 the COVID-19 virus began to spread throughout Australia. AARNet, following directions issued by the Commonwealth and state governments, and in line with practices adopted by many other businesses, instituted a number of responses to assist in slowing the spread of the virus through the community, and to reduce the health risks to our employees, customers, suppliers and other groups with which we work and interact.

These responses include restrictions on travel, requirements for people to self isolate and the closure of our workplaces with employees directed to work from home. In order to assist our Members and other customers continue operations while their own campuses and workplaces are also closed, AARNet has been supporting these users by setting up and supporting both the continued operation of our network and our video conferencing services (in particular, Zoom) which are frequently used for both online teaching and in support of research.
continues in office in accordance with s.60-40 of the Australian Charities and Not-for-profits Commission Act 2012 is included on page 11 of this financial report.

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 11 of this financial report.

Emretus Professor MG Wamwamba AM
Director
Sydney
8th April 2020

Mr JF Rahan
Director

AARNet also holds a smaller value of equity investments which, since 31 December 2019, have declined by some 3.5% or approximately $1.8m. AARNet does not intend to sell any of these investments prior to maturity and, absent a default by an issuer, expects to recover most of this value 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.

INSURANCE FOR OFFICERS

During the financial year, AARNet paid a premium of $40,759 (2018: $33,091) 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.

Liability insurance is provided to cover the Directors and Officers subject to the exclusion of any liability arising out of conduct involving a lack of good faith. AARNet also holds a small value of equity investments, which since 31 December 2019, have declined by some 3.5% or approximately $1.8m. AARNet does not intend to sell any of these investments prior to maturity and, absent a default by an issuer, expects to recover most of this value from the investment portfolio in future.

Likely developments and expected results of operations

The potential impact of the COVID-19 virus on AARNet’s future operations and financial position is difficult to forecast. A key factor will be the length of time over which businesses may be required to operate without unfettered access to their operations and financial position is difficult to forecast. A

AARNet’s operations and resources may be 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 Opportunities Act 2006 and the National Greenhouse and Energy Reporting Act 2007.

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 Opportunities Act 2006 and the National Greenhouse and Energy Reporting Act 2007.
Auditor’s Independence Declaration

As lead auditor for the audit of AARNet Pty Limited for the year ended 31 December 2019, 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
8 April 2020

PricewaterhouseCoopers

PricewaterhouseCoopers, ABN 52 780 433 757
One International Towers Sydney, Watermans Quay, Barangaroo, GPO BOX 2650, SYDNEY NSW 2001
Level 11, 1PSQ, 169 Macquarie Street, Parramatta NSW 2150, PO Box 1155 Parramatta NSW 2124

Liability limited by a scheme approved under Professional Standards Legislation.
### BALANCE SHEET

#### Notes

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>31 December 2018</th>
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#### ASSETS

**Current assets**
- Cash and cash equivalents: $21,826,815
- Receivables: $55,394,340
- Derivative financial instruments: $418,344
- Accrued income: $24,503,602
- Total current assets: $102,895,768

**Non-current assets**
- Financial instruments at amortised cost: $35,470,029
- Property, plant and equipment: $188,802,379
- Indefeasible Rights of Use traffic paths: $65,905,781
- Total non-current assets: $306,083,925

**Total assets**: $408,979,693

#### LIABILITIES

**Current liabilities**
- Payables: $20,921,837
- Income in advance: $64,635,938
- Provisions: $5,750,872
- Lease liabilities: $1,586,377
- Other liabilities: $308,130
- Total current liabilities: $93,203,154

**Non-current liabilities**
- Income in advance: $47,602,483
- Lease liabilities: $44,494,632
- Derivative financial instruments: $25,131
- Total non-current liabilities: $92,978,435

**Total liabilities**: $186,181,589

**Net assets**: $222,798,104

#### EQUITY

**Contributed equity**
- $39,039

**Retained earnings**
- $222,011,085

**Total equity**: $222,798,104

### STATEMENT OF SURPLUS

#### Notes

<table>
<thead>
<tr>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

#### Services revenue
- $82,749,762
- $81,684,091

#### Other revenue
- $4,835,425
- $7,046,915

#### Grants and contributions received
- $554,333
- $401,189

**Total revenue**: $98,135,520

**Telecommunications expenses**
- $(10,129,253)
- $(19,145,255)

**Depreciation and amortisation - Telecommunications**
- $(14,849,014)
- $(12,306,823)

**Employee benefits expense - Telecommunications**
- $(20,216,618)
- $(17,816,893)

**Administration - Telecommunications**
- $(10,806,926)
- $(11,111,623)

**Infrastructure project construction**
- $(2,668,950)
- $(2,857,920)

**Depreciation and amortisation - Infrastructure projects**
- $(7,219,447)
- $(7,203,185)

**Employee benefits expense - Infrastructure Development Group**
- $(3,042,775)
- $(3,126,182)

**Infrastructure project construction - Administration - Infrastructure Development Group**
- $(750,042)
- $(913,753)

**Other expenses (including finance costs)**
- $(897,811)
- $(104,120)

**Total expenses**: $(80,540,834)

**Net surplus**: $7,602,686

**Other comprehensive income**

**Movement in the fair value of financial assets**
- $996,491
- $(837,568)

**Total comprehensive surplus for the year**: $8,599,177

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

### STATEMENT OF SURPLUS BALANCE SHEET

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

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total equity at the beginning of the financial year</td>
<td>$214,198,927</td>
<td>$199,567,835</td>
</tr>
<tr>
<td>Net surplus for the year</td>
<td>$7,602,686</td>
<td>$15,468,460</td>
</tr>
<tr>
<td>Other comprehensive income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in financial assets at fair value, net of tax</td>
<td>$996,491</td>
<td>$(837,368)</td>
</tr>
<tr>
<td>Total comprehensive surplus for the year</td>
<td>$8,599,177</td>
<td>$14,631,092</td>
</tr>
<tr>
<td>Total equity at the end of the financial year</td>
<td>$222,798,104</td>
<td>$214,198,927</td>
</tr>
</tbody>
</table>

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

## Statement of Cash Flows

### Notes to the Financial Statements

1. **Basis of Preparation**

These general purpose financial statements have been prepared in accordance with Australian Accounting Standards 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.

### Commitments and Contingencies

#### (a) Expenditure and capital commitments

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within one year</td>
<td>$22,184,680</td>
<td>$26,154,945</td>
</tr>
<tr>
<td>Later than one year but not later than five years</td>
<td>$5,695,480</td>
<td>$6,665,797</td>
</tr>
<tr>
<td>Later than five years</td>
<td>$9,539,874</td>
<td>$102,600</td>
</tr>
<tr>
<td>Historical cost convention</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The financial statements have been prepared on a historical cost basis, except for the following: financial assets at fair value through statement of other comprehensive income, 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.

### Commitments not recognised in the financial statements

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within one year</td>
<td>$11,643,217</td>
<td>$10,734,908</td>
</tr>
<tr>
<td>Later than one year but not later than five years</td>
<td>$22,031,491</td>
<td>$50,107,150</td>
</tr>
<tr>
<td>Later than five years</td>
<td>$13,107,998</td>
<td>$60,826,167</td>
</tr>
</tbody>
</table>

The 2018 Capacity Commitments total includes operating leases under AASB 117 Leases. See Note 8 for more detail on the application of AASB 36 Leases and Note 30 for the reconciliation between the 31 December figure of $121,648,225 and the 1 January 2019 lease liability figure of $47,546,908.

### 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 $1,035,269 (2018: $906,363).

The above Statement of Cash Flows should be read in conjunction with the accompanying notes.
3. CURRENT LIABILITIES - PAYABLES

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade payables</td>
<td>10,982,121</td>
<td>3,795,181</td>
</tr>
<tr>
<td>Other payables</td>
<td>9,939,716</td>
<td>8,134,238</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>20,921,837</strong></td>
<td><strong>11,929,419</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure establishment fees</td>
<td>44,951,317</td>
<td>42,262,308</td>
</tr>
<tr>
<td>Infrastructure projects</td>
<td>1,232,495</td>
<td>1,475,755</td>
</tr>
<tr>
<td>Other deferred income</td>
<td>1,418,671</td>
<td>1,730,754</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>47,602,483</strong></td>
<td><strong>45,468,827</strong></td>
</tr>
</tbody>
</table>

Accounting Policy

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

5. NON-CURRENT LIABILITIES - INCOME IN ADVANCE

6. CURRENT LIABILITIES - PROVISIONS

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee benefits</td>
<td>5,750,872</td>
<td>5,171,758</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee benefits</td>
<td>395,620</td>
<td>303,961</td>
</tr>
<tr>
<td>Make good on leased premises</td>
<td>484,059</td>
<td>436,903</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>879,679</strong></td>
<td><strong>740,864</strong></td>
</tr>
</tbody>
</table>

Movements in provisions

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

2019

<table>
<thead>
<tr>
<th></th>
<th>Make good on leased premises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-current liabilities - Provisions</td>
<td>436,903</td>
</tr>
<tr>
<td>Carrying amount at start of year</td>
<td>471,516</td>
</tr>
<tr>
<td>Additional provision to make good</td>
<td>484,059</td>
</tr>
<tr>
<td>Carrying amount at end of year</td>
<td>436,903</td>
</tr>
</tbody>
</table>

2018

<table>
<thead>
<tr>
<th></th>
<th>Make good on leased premises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-current liabilities - Provisions</td>
<td>436,903</td>
</tr>
<tr>
<td>Carrying amount at start of year</td>
<td>120,061</td>
</tr>
<tr>
<td>Additional provision to make good</td>
<td>343,491</td>
</tr>
<tr>
<td>Decrease in provision recognised</td>
<td>(126,651)</td>
</tr>
<tr>
<td>Carrying amount at end of year</td>
<td>436,903</td>
</tr>
</tbody>
</table>

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 Statement of Surplus.

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.

Movements in provisions

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

2019

<table>
<thead>
<tr>
<th></th>
<th>Make good on leased premises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-current liabilities - Provisions</td>
<td>436,903</td>
</tr>
<tr>
<td>Carrying amount at start of year</td>
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<td>484,059</td>
</tr>
<tr>
<td>Carrying amount at end of year</td>
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</tr>
</tbody>
</table>

2018

<table>
<thead>
<tr>
<th></th>
<th>Make good on leased premises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-current liabilities - Provisions</td>
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<td>(126,651)</td>
</tr>
<tr>
<td>Carrying amount at end of year</td>
<td>436,903</td>
</tr>
</tbody>
</table>
8. LEASES

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

Amounts recognised in the balance sheet

The balance sheet shows the following amounts relating to leases:

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>1 January 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication assets</td>
<td>47,346,908</td>
</tr>
<tr>
<td>Right-of-use assets</td>
<td>47,346,908</td>
</tr>
<tr>
<td>Lease liabilities</td>
<td>4,494,632</td>
</tr>
<tr>
<td>Non-current</td>
<td>4,494,632</td>
</tr>
<tr>
<td>Right-of-use assets recognised as at 31 December 2019</td>
<td>47,346,908</td>
</tr>
<tr>
<td>Additions to right-of-use assets</td>
<td>662,783</td>
</tr>
<tr>
<td>Opening Right-of-use assets as at 1 January 2019</td>
<td>47,346,908</td>
</tr>
<tr>
<td>Depreciation charge of right-of-use assets</td>
<td>2,275,488</td>
</tr>
<tr>
<td>Interest expense (included in Telecommunication Expenses)</td>
<td>2,015,895</td>
</tr>
<tr>
<td>Expenses related to short-term leases (included in Administrative Expenses)</td>
<td>2,070,170</td>
</tr>
<tr>
<td>Expenses related to leases of low-value assets that are not shown above as short-term leases (included in Administrative Expenses)</td>
<td>29,181</td>
</tr>
<tr>
<td>Expenses related to variable lease payments not included in lease liabilities (included in Administrative Expenses)</td>
<td>185,648</td>
</tr>
<tr>
<td>The total cash outflow for leases in 2019 was $7,784,002.</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>1 January 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication assets</td>
<td>47,346,908</td>
</tr>
<tr>
<td>Right-of-use assets</td>
<td>47,346,908</td>
</tr>
<tr>
<td>Lease liabilities</td>
<td>4,494,632</td>
</tr>
<tr>
<td>Non-current</td>
<td>4,494,632</td>
</tr>
<tr>
<td>The total cash outflow for leases in 2019 was $7,784,002.</td>
<td></td>
</tr>
</tbody>
</table>

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. Until the start of the 2019 financial year, leases of property, plant and equipment were classified as either finance leases or operating leases. From 1 January, 2019, leases are recognised as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by AARNet.

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 an 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 Statement of Surplus 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 generally derecognised 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 Statement of Surplus. 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.

Extension and termination options

Extension and termination options are included in a number of leases. These are used to maximize 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

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Telecommunications</strong></td>
<td>$40,825,990</td>
<td>$40,593,177</td>
</tr>
<tr>
<td>Members: Subscription, Traffic and Access</td>
<td>$16,456,613</td>
<td>$18,153,717</td>
</tr>
<tr>
<td>Non-Member: Subscription, Traffic and Access</td>
<td>$19,453,705</td>
<td>$16,913,079</td>
</tr>
<tr>
<td>Other Services</td>
<td>$76,735,908</td>
<td>$76,651,975</td>
</tr>
<tr>
<td><strong>Infrastructure &amp; service agreements</strong></td>
<td>$4,652,770</td>
<td>$4,742,008</td>
</tr>
<tr>
<td>Infrastructure Establishment Fees</td>
<td>$1,361,084</td>
<td>$1,280,109</td>
</tr>
<tr>
<td>Infrastructure Project Construction</td>
<td>$82,749,762</td>
<td>$81,684,091</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>At a point in time</td>
<td>$1,361,084</td>
<td>$1,280,109</td>
</tr>
<tr>
<td>Over time</td>
<td>$40,825,990, 16,456,613, 19,453,705, 4,652,770</td>
<td>$40,593,177, 18,153,717, 16,913,079, 4,742,008</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$40,825,990, 16,456,613, 19,453,705, 4,652,770, 1,361,084</td>
<td>$40,593,177, 18,153,717, 16,913,079, 4,742,008, 1,280,109</td>
</tr>
</tbody>
</table>

b) Assets and liabilities related to contracts with customers

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

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Liabilities- Income in Advance in relation to:</td>
<td>$24,109,009</td>
<td>$18,085,038</td>
</tr>
<tr>
<td>Infrastructure Establishment Fees</td>
<td>$24,109,009</td>
<td>$18,085,038</td>
</tr>
<tr>
<td>Other Deferred Income</td>
<td>$802,242</td>
<td>$1,273,242</td>
</tr>
<tr>
<td>Infrastructure Service Fees</td>
<td>$8,408,864</td>
<td>$7,359,282</td>
</tr>
<tr>
<td>Subscriptions</td>
<td>$31,314,823</td>
<td>$29,599,775</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$81,848,091</td>
<td>$76,537,116</td>
</tr>
</tbody>
</table>
10. OTHER REVENUE, GRANTS AND CONTRIBUTIONS RECEIVED

In 2019 and 2018 AARNet recorded significant amounts of Other Revenue, Grants Received and Other Contributions. These amounts are a material component of the surplus recorded by AARNet.

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest</td>
<td>$2,083,861</td>
</tr>
<tr>
<td>Gain on foreign currency transactions</td>
<td>$1,310,746</td>
</tr>
<tr>
<td>Other income</td>
<td>$822,120</td>
</tr>
<tr>
<td>Dividends</td>
<td>$576,040</td>
</tr>
<tr>
<td>Net gain on disposal of property, plant and equipment</td>
<td>$46,658</td>
</tr>
<tr>
<td>Gain on financial assets at fair value through other comprehensive income</td>
<td>-</td>
</tr>
<tr>
<td>Other Revenue</td>
<td>$4,830,425</td>
</tr>
<tr>
<td>Grants and Contributions received</td>
<td>$554,333</td>
</tr>
</tbody>
</table>

Foreign Currency Contracts

At year end, Foreign Currency Contracts are recognised at fair value as described in note 25 (see Derivative Financial Instruments). Realised and unrealised gain or losses on such contracts are taken into account each year in the Statement of Surplus. AARNet does not apply hedge accounting.

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.

11. EXPENSES

Accounting Policy

Interest and Dividend Income

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

12. CURRENT ASSETS - CASH AND CASH EQUIVALENTS

Accounting Policy

Depreciation and Amortisation

The accounting policy for depreciation and amortisation is described in notes 21 and 22 respectively.

Current assets

Cash at bank and in hand (AUD) $8,016,192 $12,865,159
Cash at bank (US$ and EUR) $9,191,540 $2,265,361
Deposits at call - all denominated in AUD $4,598,883 $6,572,812
Total $21,826,815 $23,702,332

Cash at bank and on hand

Cash at bank and on hand is held at interest rates varying between 0.00% and 0.90% (2018: 0.00% and 1.36%). During the year, cash is transferred to or from term deposits to meet liquidity requirements. Deposits at call are interest bearing deposits at call attracted interest rates between 0.10% and 1.70% (2018: 0.40% and 0.50%).

Banking and credit

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 SURPLUS TO NET CASH INFLOW FROM OPERATING ACTIVITIES

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net cash inflow from operating activities</td>
<td>42,593,961</td>
</tr>
</tbody>
</table>

14. CURRENT ASSETS - RECEIVABLES

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade receivables</td>
<td>43,206,574</td>
</tr>
<tr>
<td>Provision for impairment of receivables</td>
<td>(255,000)</td>
</tr>
<tr>
<td>Prepayments and Other Debtors</td>
<td>42,442,768</td>
</tr>
<tr>
<td>Total current assets</td>
<td>85,934,340</td>
</tr>
</tbody>
</table>

15. CURRENT ASSETS - ACCRUED INCOME

<table>
<thead>
<tr>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>809,652</td>
</tr>
<tr>
<td>Accrued interest receivable</td>
<td>34,356</td>
</tr>
<tr>
<td>Total current assets</td>
<td>843,946</td>
</tr>
</tbody>
</table>

16. FINANCIAL ASSETS AND INVESTMENTS

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

- Financial instruments at amortised cost (notes 17 and 18)
- Financial assets at fair value through other comprehensive income (note 19)
- Derivative financial instruments (shown on the Balance Sheet)

**Accounting Policy**

**Trade receivables**

Trade receivables are recognised at initial amount of the 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 uncollectable are written off. The group applies the simplified approach to providing for expected credit losses prescribed by IASB 9, which permits the use of the lifetime expected loss provisions 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 subsequently recognised in the Statement of Surplus 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.

**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 ARNet. 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.

**16. FINANCIAL ASSETS AND INVESTMENTS**

Impairment losses on equity financial assets at fair value through other comprehensive income are reversed in the Statement of Surplus if the fair value subsequently recovers. The Statement of Surplus is not reversed in subsequent periods. If the fair value of a debt security which has been impaired increases, due to an event which has occurred after the impairment was recognised, the impairment charge is reversed through the Statement of Surplus.

When securities classified as financial assets at fair value through other comprehensive income are sold, the accumulated fair value adjustments recognised in other comprehensive income are reclassified to net surplus.

**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.

**ARNet Income**

ARNet has entered into foreign 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**

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

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

**ASB 13 Fair Value Measurement**

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;
- **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 2019 and 31 December 2018:

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments</td>
<td>-777,798</td>
<td>-777,798</td>
</tr>
<tr>
<td>Financial assets at fair value through other comprehensive income</td>
<td>24,503,602</td>
<td>53,957,363</td>
</tr>
<tr>
<td>Derivative financial instruments</td>
<td>-3,641</td>
<td>-3,641</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>-3,641</td>
<td>-3,641</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>20,830,858</td>
<td>57,662,112</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments</td>
<td>1,320,407</td>
<td></td>
</tr>
<tr>
<td>Financial assets at fair value through other comprehensive income</td>
<td>4,101,645</td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments</td>
<td>-3,641</td>
<td>-3,641</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>-3,641</td>
<td>-3,641</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,422,052</td>
<td>4,101,645</td>
</tr>
</tbody>
</table>

19. NON-CURRENT ASSETS - FINANCIAL ASSETS AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
</tr>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank guarantee and credit facilities</td>
<td>9,606,181</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9,606,181</td>
<td></td>
</tr>
</tbody>
</table>

20. NON-CURRENT ASSETS - RECEIVABLES

<table>
<thead>
<tr>
<th></th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
</tr>
<tr>
<td>Prepayments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Freehold buildings</th>
<th>Leasehold improvements</th>
<th>Office equipment</th>
<th>Communication assets</th>
<th>Software</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At 1 January 2018</strong></td>
<td>$15,880,605</td>
<td>$777,798</td>
<td>$84,811,465</td>
<td>$32,145,390</td>
<td>$9,000</td>
<td>$201,802,398</td>
</tr>
<tr>
<td>Cost or fair value</td>
<td>-2,527,412</td>
<td>7,656,237</td>
<td>152,406,631</td>
<td>31,047,390</td>
<td>9,000</td>
<td>163,745,295</td>
</tr>
<tr>
<td>Accumulated depreciation</td>
<td>$84,811,465</td>
<td>$32,145,390</td>
<td>$9,000</td>
<td>$201,802,398</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net book amount</strong></td>
<td>-693,024</td>
<td>2,090,645</td>
<td>88,252</td>
<td>78,683,386</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year ended 31 December 2018</strong></td>
<td>$31,992,021</td>
<td>$71,385,523</td>
<td>$27,543,026</td>
<td>$129,605,885</td>
<td>$757,137</td>
<td>$319,492,360</td>
</tr>
<tr>
<td>Opening net book amount</td>
<td>-693,024</td>
<td>2,090,645</td>
<td>88,252</td>
<td>78,683,386</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additions</td>
<td>81,927</td>
<td>2,121,196</td>
<td>27,543,026</td>
<td>9,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposals</td>
<td>-</td>
<td>-260,796</td>
<td>-</td>
<td>-1,260,796</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal (finance leases)</td>
<td>-</td>
<td>(1,260,796)</td>
<td>-</td>
<td>(1,260,796)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depreciation charge</td>
<td>$2,953,438</td>
<td>$101,829,099</td>
<td>45,786</td>
<td>107,615,408</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closing net book amount</td>
<td>78,856</td>
<td>2,186,944</td>
<td>3,474,723</td>
<td>101,829,099</td>
<td>45,786</td>
<td>107,615,408</td>
</tr>
</tbody>
</table>

**NOTES TO THE FINANCIAL STATEMENTS**

**17. CURRENT ASSETS - FINANCIAL INSTRUMENTS AT AMORTISED COST**

- Debt securities (fixed and floating rates)
- Term deposits
- Derivative financial instruments
- Equity securities
- Bonds
- Total assets
- Bank guarantee and credit facilities
- AARNet has a $1,500,000 Bank Guarantee Facility provided by the National Australia Bank.

**18. NON-CURRENT ASSETS - FINANCIAL INSTRUMENTS**

- **At 31 December 2018**
  - 20,830,858
- **At 31 December 2019**
  - 5,422,052

**19. NON-CURRENT ASSETS - FINANCIAL ASSETS AT FAIR VALUE THROUGH OTHER COMPREHENSIVE INCOME**

- **At 31 December 2018**
  - 9,302,267
- **At 31 December 2019**
  - 9,606,181

**20. NON-CURRENT ASSETS - RECEIVABLES**

- Prepayments
  - 254,195
of equivalent value, being the right of use of 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:

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Depreciation Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leasehold improvements</td>
<td>10 years</td>
</tr>
<tr>
<td>Office equipment</td>
<td>5 years</td>
</tr>
<tr>
<td>Leasehold communication assets</td>
<td>5 - 6 years</td>
</tr>
<tr>
<td>Leasehold office equipment</td>
<td>5 years</td>
</tr>
<tr>
<td>Communication assets</td>
<td>3 - 25 years</td>
</tr>
<tr>
<td>Software</td>
<td>2 - 5 years</td>
</tr>
</tbody>
</table>

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 discounted replacement cost, which represents the present value of cash inflows expected to generate for an asset, and is the most relevant indicator of its future economic benefits.

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 Statement of Surplus.

22. NON-CURRENT ASSETS - INDEFEASIBLE RIGHTS OF USE TRAFFIC PATHS (INTANGIBLE ASSETS)

<table>
<thead>
<tr>
<th>Year ended 31 December 2019</th>
<th>$</th>
<th>Year ended 31 December 2018</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>170,169,013</td>
<td>Cost</td>
<td>199,125,252</td>
</tr>
<tr>
<td>Amortisation charge</td>
<td>(7,703,828)</td>
<td>Amortisation charge</td>
<td>(7,814,725)</td>
</tr>
<tr>
<td>Net book amount</td>
<td>62,465,185</td>
<td>Net book amount</td>
<td>71,310,527</td>
</tr>
<tr>
<td>Closing net book amount</td>
<td>65,905,781</td>
<td>Closing net book amount</td>
<td>75,746,689</td>
</tr>
<tr>
<td>Year ended 31 December 2018</td>
<td>$</td>
<td>Year ended 31 December 2019</td>
<td>$</td>
</tr>
<tr>
<td>Amortisation charge</td>
<td>(7,703,828)</td>
<td>Amortisation charge</td>
<td>(7,814,725)</td>
</tr>
<tr>
<td>Net book amount</td>
<td>62,465,185</td>
<td>Net book amount</td>
<td>71,310,527</td>
</tr>
<tr>
<td>Closing net book amount</td>
<td>65,905,781</td>
<td>Closing net book amount</td>
<td>75,746,689</td>
</tr>
</tbody>
</table>

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

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 21.

23. CONTRIBUTED EQUITY

Movements in retained earnings were as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>Number of shares</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 January 2018</td>
<td>Opening balance</td>
<td>78</td>
<td>39,039</td>
</tr>
<tr>
<td>31 December 2018</td>
<td>Balance</td>
<td>78</td>
<td>39,039</td>
</tr>
<tr>
<td>31 December 2019</td>
<td>Balance</td>
<td>78</td>
<td>39,039</td>
</tr>
</tbody>
</table>

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.

24. RETAINED EARNINGS AND RESERVE

Retained earnings
Movements in retained earnings were as follows:

<table>
<thead>
<tr>
<th>Date</th>
<th>Details</th>
<th>Shares</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 December 2018</td>
<td>$</td>
<td>214,408,399</td>
<td>198,939,999</td>
</tr>
<tr>
<td>31 December 2019</td>
<td>$</td>
<td>224,048,399</td>
<td>254,408,399</td>
</tr>
<tr>
<td>Balance 1 January 2018</td>
<td>$</td>
<td>214,408,399</td>
<td>198,939,999</td>
</tr>
<tr>
<td>Surplus for the year</td>
<td>$</td>
<td>7,603,686</td>
<td>15,488,463</td>
</tr>
<tr>
<td>Balance 31 December 2018</td>
<td>$</td>
<td>222,012,085</td>
<td>214,408,399</td>
</tr>
</tbody>
</table>
25. FINANCIAL RISK MANAGEMENT

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

a) Market risk (including currency risk, interest rate risk and equity price risk);

b) Credit risk; and

c) 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 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 commitments of outstanding receivables and committed transactions.

Further credit risk arises from credit exposures to customers in the form of outstanding receivables and committed transactions.

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.

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

<table>
<thead>
<tr>
<th>At 31 December 2019</th>
<th>Carrying amount</th>
<th>Surplus</th>
<th>Equity</th>
<th>Surplus</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-10%</td>
<td>+100%</td>
<td>-10%</td>
<td>+100%</td>
<td></td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>21,826,815</td>
<td>(35,166)</td>
<td>20,559</td>
<td>20,559</td>
<td></td>
</tr>
<tr>
<td>Trade receivables</td>
<td>777,768</td>
<td>(86,422)</td>
<td>70,709</td>
<td>70,709</td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments (assets)</td>
<td>(3,641)</td>
<td>(331)</td>
<td>(331)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments (liabilities)</td>
<td>Trade payables (10,982,121)</td>
<td>(126,721)</td>
<td>214,370</td>
<td>214,370</td>
<td></td>
</tr>
<tr>
<td>At 31 December 2018</td>
<td>Carrying amount</td>
<td>Surplus</td>
<td>Equity</td>
<td>Surplus</td>
<td>Equity</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------</td>
<td>---------</td>
<td>--------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>-10%</td>
<td>+100%</td>
<td>-10%</td>
<td>+100%</td>
<td></td>
</tr>
<tr>
<td>Financial assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>23,702,332</td>
<td>(251,707)</td>
<td>205,942</td>
<td>205,942</td>
<td></td>
</tr>
<tr>
<td>Trade receivables</td>
<td>49,057,561</td>
<td>(357,593)</td>
<td>292,576</td>
<td>292,576</td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments (assets)</td>
<td>1,320,407</td>
<td>(146,712)</td>
<td>120,037</td>
<td>120,037</td>
<td></td>
</tr>
<tr>
<td>Derivative financial instruments (liabilities)</td>
<td>Trade payables (1,795,181)</td>
<td>201,382</td>
<td>201,382</td>
<td>164,767</td>
<td>164,767</td>
</tr>
</tbody>
</table>

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

- Credit risk source
  - Management
  - Credit risk
    - Bank deposits and the derivatives financial instruments
      - Principally dealt with highly rated financial institutions.
    - Investments in hybrid loan notes and bonds
      - 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
      - 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.

(ii) Other financial assets at amortised cost

Other financial assets at amortised cost include debt securities and term deposits (previously held-to-maturity). All of these financial assets are considered to have low credit risk, and thus the impairment provision recognised during the year was zero. Management considers 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 have 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 Dollar.

AARNet's Board periodically considers longer range financial forecasts which can affect both the amount of depreciation and amortisation and the useful life of assets.

26. 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 for at least five years after the end of the reporting period. This useful life is based on the length of the term of the agreements with customers.

(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 (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 any lease is reasonably certain 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.

27. 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, CEO
- Non-executive Directors
  - Dr Christine Burns
  - Professor John Dewar AO
  - Professor Annabelle Duncan
  - Dr David Williams
- Emeritus Professor Mark Warwijk AM*

28. 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:

<table>
<thead>
<tr>
<th>Key Management Personnel</th>
<th>31 December 2019</th>
<th>31 December 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term and long-term employee benefits</td>
<td>$2,707,448</td>
<td>$2,722,364</td>
</tr>
<tr>
<td>Post-employment benefits</td>
<td>$407,842</td>
<td>$335,417</td>
</tr>
<tr>
<td>Total remuneration</td>
<td>$3,115,290</td>
<td>$3,057,781</td>
</tr>
</tbody>
</table>

Transactions with key management personnel

Several directors (Mr J Murray, Dr C Burns and Ms F Rankin) are members of the Council of Australasian 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.

29. REMUNERATION OF AUDITORS

PricewaterhouseCoopers

<table>
<thead>
<tr>
<th>Audit and other assurance services</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remuneration for audit services</td>
<td>$225,000</td>
<td>$217,500</td>
</tr>
<tr>
<td>Total remuneration for audit and other assurance services</td>
<td>$225,000</td>
<td>$217,500</td>
</tr>
<tr>
<td>Taxation services</td>
<td>$27,250</td>
<td>$54,208</td>
</tr>
<tr>
<td>Total remuneration</td>
<td>$252,250</td>
<td>$271,708</td>
</tr>
<tr>
<td>Other services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remuneration for advisory services</td>
<td>$15,000</td>
<td>$65,540</td>
</tr>
<tr>
<td>Total remuneration</td>
<td>$267,250</td>
<td>$337,248</td>
</tr>
</tbody>
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NOTES TO THE FINANCIAL STATEMENTS

AARNet has applied the following standards and amendments for the first time for their annual reporting period commencing 1 January 2019:

• AASB 16 Leasing (AASB 16)
• AASB 1058 Income of Not-for-Profit Entities (AASB 1058)
• AASB 2018-1 Amendments to Australian Accounting Standards - Annual Improvements 2015-2017 Cycle

AARNet had to change its accounting policies and make certain retrospective adjustment following the adoption of AASB 16. The other amendments listed above did not have any impact on the amounts recognised in prior periods and are not expected to significantly affect the current or future periods.

AARNet has adopted AASB 16 Leases retrospectively from 1 January 2019, but has not restated comparatives for the 2018 reporting period, as permitted under the specific transition provisions in the standard. The reclassifications and the adjustments arising from the new leasing rules are therefore recognised in the opening balance sheet on 1 January 2019. The new accounting policies are disclosed in note 8.

On adoption of AASB 16, AARNet recognised lease liabilities in relation to leases which had previously been classified as ‘operating leases’ under the principles of AASB 117 Leases. These liabilities were measured at the present value of the remaining lease payments, discounted using the lessee’s incremental borrowing rate as at 1 January 2019. The weighted average lessee’s incremental borrowing rate applied to the lease liabilities on 1 January 2019 was 6.47%.

The change in accounting policy affected the following items in the balance sheet on 1 January 2019:

- Lease liabilities - increase by $47,346,908
- Right-of-use assets - increase by $47,346,908

7. Leases

(i) Measurement of lease liabilities

AARNet leases comprise of leases entered into with third parties, which include arrangements that contain lease components. A lease is an agreement under which a lessee obtains the right to use, or the use of, an asset for a defined period of time in exchange for consideration. Each lease is evaluated to determine whether it is a lease or an option to purchase. If so, the lessee considers the classification of the lease as either a finance lease or an operating lease. Finance leases are required to be recognised on the balance sheet as at the date of initial application, and the lease liability is measured as the present value of the lease payments. Operating leases are not required to be recognised on the balance sheet, except for lease liabilities in relation to leases classified as short-term leases.

(ii) Practical expedients applied

In applying AASB 16 for the first time, AARNet has used the following practical expedients permitted in the standard:

- Applying a single discount rate to a portfolio of leases with reasonably similar characteristics
- Accounting for operating leases with a remaining lease term of less than 12 months as at 1 January 2019 as short-term leases
- Excluding initial direct costs for the measurement of the right-of-use asset at the date of initial application, and
- Using hindsight in determining the lease term where the contract contains options to extend or terminate the lease.

(iii) Measurement of right-of-use assets

Right-of-use assets were measured at the amount equal to the lease liability, adjusted by the amount of any prepaid or accrued lease payments relating to that lease recognised in the balance sheet as at 31 December 2018.

(iv) Adjustments recognised in the balance sheet on 1 January 2019

The change in accounting policy affected the following items in the balance sheet on 1 January 2019:

- Right-of-use assets - increase by $47,346,908
- Lease liabilities - increase by $47,346,908

Foreign currency translation

Foreign currency transactions are translated into the functional currency using 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 Statement of Surplus. Revenue recognition

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

Leases (In comparative period)

As explained above, AARNet has changed its accounting policy for leases where AARNet is the lessee. The new policy is described in note 8 and the impact of the change on the balance sheet is noted above.

Until 31 December 2018, leases of property, plant and equipment where AARNet is the lessee, has substantially all the risks and rewards of ownership are classified as finance leases. Finance leases are capitalised at the lease’s inception at the fair value of the leased property or, if lower, the present value of the minimum lease payments. The corresponding rental obligations, net of finance changes, are included in other short-term and long-term payables.

Each lease payment is allocated between the liability and finance cost. The finance cost is charged to the Statement of Surplus over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The property, plant and equipment acquired under finance leases are depreciated over the asset’s useful life or over the shorter of the asset’s useful life and the lease term. If there is no reasonable certainty that AARNet will obtain ownership at the end of the lease term, AARNet may, as described in note 21, enter into arrangements which are considered off-setting finance leases. Such leases are considered to be settled immediately after coming into effect with the result that no finance cost, or finance income is recognised, and no finance liability or receivable remains outstanding. Assets acquired under such arrangements are depreciated over the shorter of the asset’s useful life or the lease term.

Leases in which a significant portion of the risks and rewards of ownership are not transferred to AARNet as lessee are classified as operating leases. Payments made under operating leases (net of any incentives received from the lessor) are charged to the Statement of Surplus on a straight-line basis over the period of the lease.

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 at 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.
31. EVENTS OCCURRING AFTER THE REPORTING PERIOD

In February and March 2020 the COVID-19 virus began to spread throughout Australia. AARNet, following directions issued by the Commonwealth and state governments, and in line with practices adopted by many other businesses, instituted a number of responses to assist in slowing the spread of the virus through the community, and to reduce the health risks to our employees, customers, suppliers and other groups with which we work and interact.

The potential impact of the COVID-19 virus on AARNet’s future operations and financial position is difficult to forecast. A key factor will be the length of time over which businesses will be required to operate without unfettered access to their workplaces.

The financial impacts of the COVID-19 virus are also difficult to quantify. AARNet now expects to see benefits in Administration - Telecommunications’ section of the Statement of Surplus but these are likely to be more than offset by additional costs in Telecommunication expenses.

Volatility in investment markets resulting from the COVID-19 outbreak may also impact AARNet during 2020 and may reduce the investment income that AARNet would otherwise receive and also reduce the value of our financial instruments and assets portfolio. Since the end of the financial year:

- AARNet’s fixed interest investments have declined by some 3.5% or approximately $1.8m. AARNet does not intend to sell any of these investments prior to maturity and, absent a default by an issuer, expects to recover most of this value over the period until each security matures.
- AARNet’s equity investments (for which AARNet holds a smaller value), have declined by 31.1% or just under $3.0m. AARNet does not expect to sell any of these investments in the foreseeable future, but to avoid realising any of these losses, the value of these securities would need to recover before the investment is disposed of.

Similar volatility in foreign exchange markets has resulted in the Australia dollar depreciating against the US Dollar throughout the early part of 2020. Without any reversal of this currency movement across the remainder of 2020, AARNet would expect higher costs for equipment and services denominated in USD but would also expect these additional costs to be substantially offset by gains on our foreign exchange hedging instruments and holdings of foreign currency.

Despite this, AARNet does not see a change in its commitments and contingencies and expects to continue investing during 2020 in its domestic fibre network and in the JGA South submarine cable system.

DIRECTORS’ DECLARATION

In the Directors’ opinion:

(a) the financial statements and notes set out on pages 10 to 34 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 2019 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.

Emeritus Professor MS Wainwright AM
Director
Sydney
8th April 2020

Mr JF Rohan
Director
Independent auditor’s report

To the members of AARNet Pty Limited.

Our opinion

In our opinion:

The accompanying financial report of AARNet Pty Limited (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 2019 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 2019
• the statement of surplus 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 a summary of significant accounting policies
• 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 and 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 2019, but does not include the financial report and our auditor’s report 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 the directors for the financial report

The directors of the Company are responsible for the preparation of the financial report that gives a true and fair view in accordance with Australian Accounting Standards - 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, the directors are 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 the directors either intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.
Auditor’s responsibilities for the audit of the financial report

Our objectives are to obtain reasonable assurance about whether the financial report as a whole is free from material misstatement, whether due to fraud or error, and to issue an auditor’s report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of 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
8 April 2020

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