Bringing the connection home
Broadcast Australia

Bringing the connection home

Broadcast Australia stands at the forefront of broadcast transmission in this country, responsible for delivering Australia’s television and radio services for Australia’s national broadcasters since 1928.
Pedigree
The Broadcast Australia of today was created following the privatisation of the government-owned and managed National Transmission Agency in 1999. Since its inception, Broadcast Australia has been primarily focused on linear television and radio broadcasting and has remained consistent in its commitment to excellence in design, build and operation of highly available networks to meet our customers’ stringent needs.

Leader in digital broadcasting
Australia was one of the first countries in the world to launch digital terrestrial television broadcast services. The National Transmission Agency, and then Broadcast Australia spearheaded field trials of the new standards and helped pioneer digital network design, implementation and management ready for the government-mandated switch-on date of 1 January 2001.

Since this time, Broadcast Australia has continued to strengthen its position as a digital broadcast leader. Significant achievements include:

- Rolling out a national digital TV network covering 774 public broadcaster (ABC and SBS) services, providing 98.6% coverage of the Australian population and offering the Broadcasters the opportunity to deliver more channels at better picture and sound quality to their audiences.
- Participating in high-profile trials of emerging digital technologies, including mobile TV and 3D TV, both in Australia and internationally.
- Implementing the final phase of the digital switchover program, which involved turning off analogue services and transition to digital only television.
- In 2014, delivering ahead of time and within budget the significant project to restack all TV transmission services in Australia to allow spectrum to be sold to the mobile phone carriers – spanning 1,476 digital television transmission services nationwide.
- Designing, building and operating digital radio services for ABC and SBS in Sydney, Melbourne, Perth, Brisbane and Adelaide.
- Operating long-term trials of datacasting in Sydney and digital audio broadcast in Canberra and Darwin.
- More recently, building capability for the next-generation Digital Video Broadcast – Terrestrial Second Generation (DVB-T2) standard. Broadcast Australia is working with the Broadcasters to establish a trial of this new technology.

Trusted partner
Our deep engineering, delivery and operational capability have made Broadcast Australia a trusted partner for the national broadcasters, the government, and industry stakeholders alike.

Throughout the transition to digital broadcasting, Broadcast Australia worked with ABC, SBS and industry to provide spectrum planning advice to the Australian Communications and Media Authority (ACMA) – most recently relating to the restack of spectrum to deliver the digital dividend, following analogue switch-off.
Cross group capability

Broadcast Australia is part of BAI Communications – a communications infrastructure group with operations spanning Australia, Hong Kong, the USA and Canada. The expertise of BAI Communications lies in the design, build and operation of highly available communications networks – broadcast, radio cellular, Wi-Fi, digital – for our customers across the globe.

Successes across the group of companies (Broadcast Australia, Hostworks, Transit Wireless, BAI Canada and RFE) include:

- The Department of Defence commissioned Broadcast Australia to design, build and maintain satellite ground station infrastructure for military communications.
- Optus extended its national site sharing agreement with Broadcast Australia, supporting Optus’ rollout of LTE in rural and metro areas.
- The NSW Telco Authority selected BAI Communications to operate and maintain the NSW Government Radio Network.
- Ergon Energy relied on BAI Communications to deliver a highly resilient P25 Radio Communications Network, supporting an area of 177,000km in Southern Queensland.
- The Metropolitan Transit Authority (covering the Tri-State area of New York) chose Transit Wireless to deliver cellular and Wi-Fi networks to the 279 underground stations in the New York City subway.
- Southern Cross Austereo worked in partnership with Hostworks to stream Coldplay’s only 2014 Australian concert live across the world.
- The Toronto Transit Commission (TTC) signed an exclusive 20+ year agreement with BAI Canada to deploy and operate a commercial wireless network at 65 stations and associated tunnels in the TTC subway.
- Hong Kong’s MTR Corporation has a state-of-the-art cellular network designed, built and regularly updated by RFE. Other multi-carrier, multi-band DAS projects which RFE has been involved in include the Taipei Mass Rapid Transit, Bangkok’s Blue Line Mass Rapid Transit, Guangzhou Metro and Mass Rapid Transit Singapore.

Since 2009, BAI Communications has been majority owned by the Canada Pension Plan Investment Board (CPPIB) an AAA rated organisation with C$268 billion under management. CPPIB invests in assets around the world on behalf of 18 million contributors and represents highly stable, ethical ownership. CPPIB’s commitment to long-term investment is consistent with BAI Communications’ core values and its commitment to customers.

World-class digital broadcast network

Experience in advanced planning and design underpins the reliability of Broadcast Australia’s network and the optimisation of its operations.

Network overview

- Operating from 622 sites (404 owned or controlled by Broadcast Australia with the balance operated using third party sites under established relationships).
- Covering 99% of Australia’s population.
- 1,529 managed transmission services provided.
- 24/7 monitoring and customer support.
Other services
Broadcast Australia operates and maintains AM and FM radio services for ABC, SBS and commercial broadcasters across the country. In addition, we provide site sharing, co-hosting and infrastructure services to the telecommunications, utilities, emergency services and broadcasting industries as well as network design and build capabilities.

Broadcast Australia has Australia’s largest pool of broadcast transmission equipment spare parts strategically located at maintenance bases around the country. This is further supported by the availability of spare transmitter and antenna systems.

Research and development
Committed to ongoing network and service improvements, Broadcast Australia develops world-class solutions and applications for new and emerging technologies. This includes planning for future network improvements which allow our customers to take advantage of technology innovations. Examples include:

World’s first DAB+
Broadcast Australia actively participated in an Australian working group which tested and then assisted with the specification of the ETSI-ratified DAB+ standard for digital radio broadcasting. In 2009 the company then launched on behalf of ABC and SBS a world first DAB+ national broadcaster system in Australia’s five largest capital cities.

World’s first long range digital radio system
Pioneering technology developed by BAI Communications brings digital HF radio communications to almost one million square kilometres of Western Queensland in support of critical services. This new technology has the potential to improve the capabilities of organisations that rely daily on radio communications, such as the police, fire, ambulance and government departments that cover a broad and remote geographic area and is based on long range HF technology also used in the broadcast network.

Other technologies
Over the past 15 years and more, Broadcast Australia has been actively involved in field trials of emerging technologies including datacasting, digital radio, mobile TV and 3D TV.

CASE STUDY
Tackling terrestrial 3D TV
In 2010, Broadcast Australia supported SBS and Nine Network Australia in a landmark trial of free-to-air 3D television. A temporary licence was awarded jointly to both broadcasters for delivery of the 2010 State of Origin Series between NSW and Queensland, and the 2010 FIFA World Cup in South Africa in 3D.

Broadcast Australia provided the broadcast transmission infrastructure for these services in Sydney and Perth, and supported the establishment of trial broadcast systems in Brisbane, Melbourne and Adelaide. All five services were integrated with our NOC in Sydney. For the duration of the two-month trial, the NOC provided 24-hour monitoring and control of the transport stream to ensure integrity of the 3D TV signal.

The world’s first terrestrial 3D TV transmission took place at Sydney and Brisbane on 19 May 2010, followed by the broadcast of all three State of Origin matches and around 15 World Cup soccer matches. The 3D content was well received by those with 3D TVs around the country, providing important insight into the fledgling 3D TV industry.
CASE STUDY

Mount Bellenden-Ker site upgrade

Broadcast Australia’s tower at the summit of Mount Bellenden-Ker in far north Queensland is one of the most difficult environments in which we operate, given its location at the top of a mountain within a World Heritage Park, surrounded by rainforest that is subjected to 8m of rain annually.

Accessible only by cable car (owned and operated by Broadcast Australia), the site delivers multiple digital television, FM radio and telecommunications services to Cairns and the Atherton Tableland, either directly or via 12 translator sites.

As part of a strategic maintenance program over recent years, Broadcast Australia has committed in excess of $15 million of expenditure, to upgrade much of the site infrastructure including both the company-owned cable car and power lines running through the protected environment of the World Heritage Park.

After 12 months of detailed planning, the preparatory works for the upgrade of the cable car and cable way commenced in September 2013 with a dedicated rigging crew working across eight towers replacing 175 steel members, 2000 bolts and installing new platforms to support the ultimate cable replacement. This required a specialist logistics effort to move over 9 tonnes of materials to the towers and up the mountain. Despite weather issues, the tower works were completed to schedule in November 2013.

Following the pre-works, Broadcast Australia and specialist contractors commenced the cableway cable replacement. During the works, access to the top station was possible only by helicopter or an eight hour hike through the tropical rainforest. When weather did not permit access by helicopter, a number of Broadcast Australia staff completed this hike to resolve a fault on the SBS transmitter, restoring the service to the region.

The cableway project presented unique challenges, requiring replacement of both a 5km and 10km steel rope - each weighing up to 20 tonnes. Despite significant weather and terrain challenges, the project was completed to schedule, with the cableway re-opened for services in January 2014.

A total of 20 staff were engaged full time on this project: five specialist overseas contractors, together with 11 rigging staff and full project management and structural engineering support from Broadcast Australia.

The upgrade program at the site continues with teams currently on site to upgrade the power line support structures and replace the power line itself. Following the completion of these works Broadcast Australia will then proceed with the refurbishment of the broadcast tower, replacing 22 tonnes of steel and ensuring the longevity of the site for a further 20 years.

A SPECIALIST LOGISTIC EFFORT MOVED OVER 9 TONNES OF MATERIALS TO THE TOWERS & UP THE MOUNTAIN
Network Management

Network Operations Centre: a unique capability

Broadcast Australia’s Network Operations Centre (NOC) at the Gore Hill transmission site in Sydney is the operational heart of our network – ensuring services perform to demanding contractual standards and provide a contact hub for our customers.

The NOC manages the demands of a complex network

- 24/7 monitoring of all services and sites in the network.
- 24/7 operations team overseeing the network and managing incidents.
- Customer fault and incident reporting, and network data analysis.
- Integrated fault management including escalation, remediation and reporting.
- Remote control service restoration capability.
- Outage planning and negotiation.

In one year, the NOC typically handles:
- More than 7,000,000 network alarm/information events.
- Over 120,000 phone calls.
- Over 6,000 planned network events including maintenance, annual service testing and scheduled upgrade works.
- Remote resolution of approximately 6,800 network issues per year.

Keeping services ‘On Air’

The NOC provides real-time remote monitoring and control of the network 24 hours a day, 365 days a year. This is achieved through a combination of advanced telemetry systems, IP connectivity and software management systems connecting nearly 10,000 devices at 622 sites, supported by a team of experienced control room engineers and technicians.

Providing transparency to customers

Working together with our customers, Broadcast Australia has developed operational and governance procedures which provide a highly professional and collaborative approach to operations management. Our monitoring and information management systems allow us to log all events that take place in the network, reporting and escalating where required, including issuing daily status reports. We also provide real time information to the Broadcasters about their services via our online portals.

A direct line for customer communication

As the primary operational interface between Broadcast Australia and its customers, the NOC is a conduit for customers to communicate their needs, and the NOC Operations Team marshal the entire resource base of Broadcast Australia to maximise on-air availability. The NOC control room is available 24/7. Critical events are quickly escalated to on call managers and company executives to ensure that services are restored as quickly as possible and to ensure we are meeting the customers’ expectations.

The control room

Based at the NOC, our highly skilled control room operators are able to react quickly to changing operational requirements, taking advantage of forward control and redundant system capabilities within the network and deploying first-in maintainers or field services technicians whenever required.

From the control room, the NOC sends over 27,000 individual remote control commands per year to devices around the network. Approximately half of all service-affecting faults are resolved remotely from the NOC under proactive measures such as remote resets, input switching and capital city switching. Our NOC operators are trained to react quickly so that when remote resolution is not viable our first in maintainers, technicians and support engineers are engaged to take immediate action.

Our Network Management System (NMS) provides a real-time view of all sites and services within the network. This remote interrogation allows the NOC to pro-actively manage fault intervention and service restoration.

Our Fault Management System (FMS) tracks and manages network events. Fully complementary with the NMS, the FMS documents and reports on events that occur, provides email/SMS notification and online visibility of events to customers, and manages escalation procedures (such as communication with the customer, or whether a field technician needs to be dispatched). The FMS administers planned outage and site access requests and helps the NOC to efficiently manage emergency broadcasting activities.

These two systems enable on-site fault conditions to be managed remotely by the operations team – meaning a great number of conditions can be corrected without dispatching technicians to site, dramatically reducing rectification times. Many conditions are therefore fixed in minutes, achieving maximum on-air time for customers and minimising impact on viewers and listeners.
Fault Analysis Customer Team

Complementing the control team is the Fault Analysis Customer Team (FACT). Based at the NOC, FACT is a dedicated customer liaison team of two Customer Liaison Officers, a Fault Trend Analyst and the Customer Liaison Manager. Their primary function is to manage proactively network performance whilst acting as the customer advocate in operations.

FACT is the point of contact for any enquiries relating to network and service performance. To deal with customer enquiries in an efficient manner, FACT has an established contact regime with ABC and SBS which includes a dedicated phone line and email inbox. An escalation protocol to the Customer Liaison Manager and the Operations Manager is also available and Broadcast Australia has an Operational escalation contact via the Operations Manager and the 24/7 on-call manager service is supported by two members of FACT.

The FACT team produces customised reports which provide ABC and SBS with transparency of network performance right down to service level events.

**Planned outages**

The planned outage team works with our customers to coordinate all planned maintenance and project activities to ensure they are conducted at a time that best suits them (outside of critical programming times). The team works closely with our customers to minimise disruption to service whilst balancing required maintenance activities and construction priorities.

Broadcast Australia’s field force is distributed across four regions and 11 districts, to ensure faults are repaired as quickly as possible.
Through constant contact with all of the stakeholders in relation to planning network events, the planned outage team ensures that scheduling is focused on maximising on-air availability for affected customers. The team organises all network events according to customer agreed protocols, however in circumstances where our customers have critical programming that requires a flexible approach they will engage affected stakeholders to find the best solution. We have tailored our reporting system to enable the transfer of planned event data in the format that our customers require. This is periodically reviewed in collaboration with our customers to ensure that it matches changing needs and efficiency measures are incorporated.

Field services
Broadcast Australia has built a well-earned reputation for the quality, capability and dedication of our field services personnel.

Broadcast Australia employs the largest team of broadcast trained field resources in the country. A total of 134 specialist field technicians, maintenance specialists and support staff are strategically deployed across the country in 24 maintenance points of presence. All of this team are direct employees of Broadcast Australia ensuring that we are able to directly control their work and priorities to match those of our customers. Our field teams are trained and experienced in the operation and maintenance of all the equipment in the network and continue to receive specialised training from our internal team of qualified trainers.

Broadcast Australia recognises the need to recruit and train the next generation of Field Service Technicians. Taking a leadership role in the industry, we have established a successful Apprenticeship Training Scheme. This scheme has already qualified 17 new technicians ensuring Broadcast Australia has experienced technicians into the future.

This core Field Service team is sustained in their preventative maintenance and fault response activities by our own specialist engineering and support teams including, antenna systems, power and buildings, structural engineering, rigging, RF transmission and civil engineering.

Our on the ground teams are also supported by 520 trained local first-in maintainers and a large network of local specialist subcontractors including High Velocity Air Conditioning specialists, Emergency Power Plant repairer/maintainers, electricians, Programmable Logic Controller specialists, plumbers and security. Together, these key personnel maintain the 622 sites at which Broadcast Australia operates, responding 24/7 to maximise availability of services.
CASE STUDY

Keeping services on air

Faults in the network can vary from the minor to the complex with the latter involving multiple teams and experts within Broadcast Australia.

In late June 2014 during the FIFA World Cup Broadcast Australia’s NOC received transmitter alarms from our site Mt Baranduda serving parts of northern Victoria. The NOC immediately attempted to reset the transmitters remotely but this failed to resolve the underlying issue. The NOC operator then escalated the fault to the Broadcast Australia’s Shepparton Field Service office that organised a First In Maintainer to promptly attend the site and to identify potential issues. Due to the nature of the fault a broadcast technician was concurrently dispatched to the site to investigate more thoroughly.

The cause of the fault was identified to be an antenna system failure and the repair was escalated further to Broadcast Australia’s specialist Antenna Infrastructure team (AIT) based in Sydney.

In the meantime the ABC, SBS and commercial DTV services were reconfigured to all services to continue to be broadcast on reduced transmitter power and half antenna with reduced coverage.

Over the following two days, whilst the equipment and AIT team were dispatched to site, the Broadcast Australia NOC coordinated the outage planning with all the broadcasters to facilitate the antenna repairs. This was especially complicated due to the need to not interfere with the broadcast of the FIFA World Cup games and events. Once agreement had been reached the AIT team affected the repairs and returned all of the services to normal.

The subsequent field coverage testing by Broadcast Australia’s Wireless Planning and Validation team also confirmed a latent deficiency with the antenna which was also repaired.
Our people

Working together allows Broadcast Australia to forge true partnerships with our customers built on trust and respect.

Culture
The culture at Broadcast Australia encourages our people to embody the core values of excellence, innovation and collaboration. We work together, and with our customers, to deliver high-availability network solutions; we leverage current and future technologies to deliver the best outcomes for our customers and we deliver excellence in all we do - design, engineering, construction and operations.

Our employees are passionate about the network we have built and proud of what we do, with our customers, to deliver television and radio to people across Australia. Australia’s national broadcasters are unique in the world and our people do whatever is necessary to ensure that communities can receive these services even in challenging circumstances, 24/7, in remote areas of the country, or in the midst of a natural disaster.

Account management
Dedicated Account Managers provide our customers a voice throughout our business and are specifically placed to oversee the operational, legal, technical and financial elements of the contracts on a day-to-day basis. In addition, our Account Management Team has developed highly effective systems and communication procedures to meet customer needs.

Property management
Our full time, dedicated property team possesses the skills and experience necessary to procure, manage and protect the performance of Broadcast Australia’s extensive portfolio of 622 sites. For those sites under lease, the team works closely with owners to ensure the continuation of reliable and dependable services for our customers.

Other key functions
- We employ a dedicated Risk Manager to further enhance our Risk Management, Internal Audit and Crisis Management (including Business Continuity) capability. Part of this role is to create business continuity simulation activities to test the crisis management teams and the response plans.
- We are continually monitoring the performance of our network to identify opportunities to improve the availability, performance and efficiency of our systems. This is driven by the Network Strategy and Planning department consisting of Network Planning, Energy Management and Decision Support functions.
- Corporate functions including legal, finance, IT, sales, HR and procurement.

Processes and systems
The shareholders of BAI Communications take a long term view and have a philosophy of investing in our assets and people to ensure our infrastructure remains world class into the future. Committed to continual improvement, we have invested heavily in Information Technology introducing new Enterprise Asset Management and Network Monitoring systems. These major programs have not only implemented new software, but also holistic business wide projects which have enhanced and refined our business processes and systems.
CASE STUDY

Supporting young talent

In 2011 SBS and Broadcast Australia joined forces to support young Indigenous cadet Larteasha Smith in a year-long news and current affairs apprenticeship at SBS.

Larteasha spent a year working across different teams at SBS, including a stint with Broadcast Australia, gaining the knowledge she needed to chart a successful career as a broadcast journalist.

At the end of her one year internship, Larteasha was appointed into a full time position as a Video Journalist on ‘Living Black’, produced in-house by the SBS News & Current Affairs Department. In early 2014 Larteasha left SBS to take an opportunity with ABC.

The Indigenous cadetship formed part of a joint commitment from the two organisations to ‘The Year of Giving Back’, an initiative by SBS and Broadcast Australia that identified multiple programs aimed at ‘giving back’ to the community.

Supporting the Community

Every year 10,000 cyclists take part in the annual MS Gong Ride, cycling 90km from Sydney to Wollongong to raise money for the more than 20,000 Australians living with Multiple Sclerosis.

From 2010 to 2014, Broadcast Australia and SBS joined forces to show their support by entering a team in the event. The joint team, known as SBS-BA Cycle Safari was made up of staff from both organisations plus associated family and friends.

Since our association began, we have donated more than $600k in support of people living with MS.

The SBS-BA Cycle Safari team was acknowledged by event organisers as the biggest team in the 2014 event.
Engineering and project management capability and experience

Broadcast Australia is a world-class centre of excellence for broadcast engineering employing a highly skilled team of 110 engineers, project managers, specialist designers and implementation staff.

Digital broadcasting demands a high level of specialisation. As a broadcast network specialist, our engineering core competencies span all aspects of the delivery of analogue and digital transmission systems including:

- Network planning, design and integration.
- Project management.
- Construction and commissioning.
- Network operations, management and maintenance.

Broadcast Australia provides engineering consultancy services to the broadcast industry, as well as the Federal Government and its agencies. Our extensive experience encompasses a wide range of communications, distribution and transmission services – including microwave links, antenna and combiner systems, interface equipment, transmission plant and associated site infrastructure.

Our dedicated engineers apply expert knowledge across all facets of broadcast transmission support and infrastructure. This breadth of knowledge is unique in the Australian industry and allows us to prioritise resources to achieve the best response time and quality outcome for our customers.

Wireless, Planning and Validation Group

Based in Canberra, Broadcast Australia’s Wireless, Planning and Validation Group (WPV) includes 11 dedicated RF engineers specialising in coverage and network planning, spectrum management and interference analysis. Working closely with government regulators and authorities, this highly specialised team has spearheaded the RF planning for several landmark projects in Australia, including:

- Digital radio coverage planning for the national broadcasters in the five largest capital cities.
- Spectrum restacking viability study and channel plans for NSW, Queensland and Victoria to explore the potential of the digital dividend for the Federal Government.
- Planning and interference management of more than 30 digital terrestrial television wide-area single-frequency networks as part of Australia’s DTV deployment.

Key capabilities of the WPV group include antenna modelling, satellite link budgets, coverage mapping and validation, single-frequency network planning, interference assessments, EME predictions, microwave link design and field measurements. The team employs best engineering practice at all times and has a strong understanding of the regulatory framework. The WPV team’s engineering expertise is deployed every day to assist with design, build and RF investigation work throughout the network to deliver exceptional service to our customers.

Project management and implementation

Broadcast Australia’s substantial capability combines management and technical skills which, together with best practice methodologies, form the foundation for excellence in programme and project delivery.

Our 18 person project management team supports nationwide broadcast and infrastructure projects. Our capability includes broadcast systems, power upgrades, structures and superstructures, environmental, fire systems, asbestos removal and numerous other site activities. Our extensive in-house capability is augmented using partners and specialist contractors who have been qualified to meet Broadcast Australia’s high standards of quality and safety.
Our project delivery management systems and tools are based on global best practice methodologies such as Prince2® and MSP®. We also use industry leading programme and project information management systems, developed specifically for use within broadcast, communications and infrastructure industries, ensuring superior results and efficient execution across broadcast and infrastructure projects for internal and external customers alike. Our methodology is applied to all projects, guaranteeing consistency, whilst also being scalable to cater for any project type from small single site works or upgrades to major network builds and roll-outs.

Augmenting the project management function are several dedicated senior project engineers, responsible for the overall co-ordination of the engineering, technical and physical installation aspects of projects, and undertaking testing, commissioning and handover of new services and systems. This embedded technical approach allows flexibility to deliver innovative and complete solutions, leveraging both a project management and in-project engineering capability.

This group also manages the project governance and audit processes across all phases of our projects, providing a transparent approach to management of programmes and projects, with a focus on the key areas of scope, schedule, safety, environment, cost, quality, risk and procurement, and their overall interaction.

National project warehouse

Our national project warehouse is equipped for the pre-build of broadcast and communications systems for hot-staging of equipment prior to dispatch to site. Complex systems can be assembled, fully tested and commissioned in a clean and controlled environment prior to packing and distribution to site or a regional staging area, reducing risk and ensuring high quality construction through the network.

In addition, our end to end inventory management system ensures that inventory strategically located across Australia can be utilised to provide immediate local support to projects or maintenance operations. Broadcast Australia also has an existing network of distribution partners for the efficient management and dispatch of material, equipment and test equipment. This ranges from interstate sensitive freight delivery to the haulage and delivery of heavy industrial and structural components.
CASE STUDY

Restacking the spectrum
In October 2012, Broadcast Australia was engaged by the Department of Communications as the Program Implementation Manager (PIM) for the Federal Government’s important Spectrum Restack Program.

Restack at a glance
- Retuned DTV services at 427 transmission sites
- 346,000 man hours
- Peak workforce of 200 – including 6 different contractor companies
- Completed under FSC accreditation, with zero lost time injuries
- Awarded ‘Project of the Year’ award by the Project Management Institute Australia
- Delivered within budget and ahead of the official timeframe for ABC, SBS and Commercial Broadcasters

1476 national and commercial digital television services at 427 transmission sites. Completed in less than two years approximately 30% of transmitters, 10% of antennas and almost 100% of RF combiners were replaced.

Industry expertise
The scale and technical complexity of this project demanded an implementation manager with a high level of expertise across system design, network planning and implementation – as well as strong project management, procurement, legal and financial capabilities. By virtue of its size and experience, Broadcast Australia was selected through a negotiation process to lead this project – which required the participation and cooperation of the whole industry.

To act on behalf of the Federal Government, Broadcast Australia was required to establish an independent Restack PIM team that functioned outside the company’s day-to-day operations and adhered to strict governance reporting and auditing requirements.

A dedicated team of 30 worked in close collaboration with Australia’s entire broadcast industry – including the national and commercial broadcasters, site owners, and a fleet of installation contractors – to deliver the project within budget and ahead of schedule.

Making it happen
Broadcast Australia’s Restack PIM team designed and adopted several innovative systems and software tools that proved instrumental to the efficiency and success of the project – the schedule of which included 13,000 line items.

To assist with installation planning, the Restack PIM team created specialist software which drew key information from the Spectrum Restack Database (site details, channel plan, equipment that needed to be changed) and generated a scope of work for each of the 427 sites. Installation contractors (including Broadcast Australia’s project management and implementation team) were assigned to sites based on price, expertise and availability.
Over a period of two years, up to 29 installation crews from six different companies were in the field at any one time, with site works taking from a few days to several weeks, depending on complexity. The entire project was delivered under Federal Safety Commission (FSC) accreditation for Health and Safety covering both employees and contractors with no lost time injuries (LTI’s).

Another valuable tool developed by the Broadcast Australia Restack PIM team was the Restack Automated Testing System (RATS), which handled the vast quantities of field testing and commissioning data – plus ensured consistency and standards compliance. RATS generated a pre-prepared piece of software for each site, which defined and ran the required system tests from laptop computers and flagged immediately whether they were successful. This meant installation crews knew immediately if the system met requirements or whether further work was required.

**Spirit of cooperation**
To ensure everyone involved with the Restack project was appropriately qualified, Broadcast Australia conducted rigorous technical training for all installation crews – up to three weeks for technicians working at high-power sites. In addition, Work Health & Safety training was conducted for everyone involved with the project, in accordance with the Federal Safety Commissioner’s (FSC) Occupational Health and Safety Scheme, of which Broadcast Australia is a member.

Throughout the project, the Restack PIM team reported daily to the Department of Communications, with all decisions, processes and systems audited and approved by the government. Working together, the two organisations ensured that everything was done for the project to deliver on its objectives and within the very tight timeframes.

The Restack project also marks the first time Australia’s broadcast industry has come together in such a demonstration of cooperation. Broadcast Australia considers the level of teamwork and transparency – both within its Restack PIM team and across the industry – as key factors in the success of the overall project.
Health, Safety, Environment and Quality

Broadcast Australia maintains a dedicated team of Health, Safety, Environment and Quality (HSEQ) professionals to ensure we continue to act safely and responsibly on behalf of all personnel, customers and the broader community.

Health and safety

Broadcast Australia’s safety principles are integrated with everyday work practices to promote a safe and healthy work environment for all employees and visitors or contractors. Our safety framework is informed by continual engagement with all stakeholders, benchmarking against industry leaders, due diligence and legal compliance obligations.

In addition, we are committed to identifying and addressing hazards and risks in the workplace on an ongoing basis, and review our policy every three years to ensure it remains relevant and appropriate. Furthermore, all field activities are conducted in accordance with our Safe Work Method Statement - a task specific risk assessment that must be prepared and approved before any work is commenced that involves identified hazards.

Member of the Federal Safety Commissioner’s OHS Scheme

Broadcast Australia was accredited under the Federal Safety Commissioner’s (FSC) Occupational Health and Safety (OHS) scheme in 2012 – a requirement for all government-funded construction programs with a value over $4 million. We are the only FSC accredited broadcast managed service provider in the country providing additional comfort and security for our customers and the Commonwealth.

Under this heavily audited scheme, Broadcast Australia successfully delivered the Spectrum Restack Program with zero lost time injuries – a significant achievement for high-risk project involving 200 workers across 426 sites nationally.

Compliance with Australian and international standards

Underpinning Broadcast Australia’s activities is a suite of fully certified integrated systems accredited to various Australian and International standards:

- Australia/New Zealand Standard and ISO Standard 14001 for environmental management.

The company has achieved 100% compliance with the standards under a rigorous external audit programme and operates at a lost time injury rate well below the national average. This applies to both employees and contractors.

Broadcast Australia also participates in the Australian Government’s Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience.

A dedicated Risk and Internal Audit Manager is responsible for assessing and maintaining appropriate actions and accreditations across our business.

Environment

Broadcast Australia’s 622 sites exist over the full range of climatic zones, habitat types and geological conditions in Australia. Many of our sites of responsibility contain flora and fauna species or ecological communities that are protected under the Environmental Protection and Biodiversity Conservation Act. Our property team manage the myriad environmental compliance requirements throughout the network and environmental management plans are implemented across the business to ensure natural values are preserved.

A key focus is reducing the overall power consumed by transmission sites. We have invested in a number of initiatives over the past four years to reduce our power consumption and to reduce the amount of carbon released into the atmosphere. These initiatives include a program of progressively replacing high-power transmitters with new models that are three times as power-efficient, implementing synchronised generators and installation of wind and solar powered generating systems with the aim of removing certain sites from the power grid. A pilot solar-power site has recently been launched at Muswellbrook (see case study).

We are currently engaged in discussions with University of Technology, Sydney (UTS) and Australian Renewable Energy Agency (ARENA) to review the economic viability of removing more than 50 transmission sites from the grid deploying the latest technology developments in battery storage. In the past five years Broadcast Australia has achieved a 25% reduction in CO2 emissions and we are committed to improving this result through our ongoing energy efficiency investment and target program.
CASE STUDY

First solar-powered transmission site

Broadcast Australia has launched the first of 100% solar-powered transmission sites at Muswellbrook, NSW, in a process to pilot the removal of sites from the national power grid.

The new photo-voltaic system uses advanced German battery storage technology, coupled with 96 solar panels. The 24 batteries can store 215kWh of power, producing enough solar energy to run the Muswellbrook transmission system for up to 43 hours and take just over 5.5 hours to charge at full efficiency.

Serving a community of some 50,000 people, the Muswellbrook antenna broadcasts local medium wave radio services and is also relied upon by local emergency services for communications during bushfires and floods.

The pilot solar-powered system has been designed with the ruggedness and reliability demanded by the Australian outback, where many sites are extremely remote and operate under harsh conditions.

Broadcast Australia is proud to trial this renewable energy solution – and take Australia’s first transmission site completely off-grid.

It is this kind of investment which has enabled Broadcast Australia to deliver an efficiency dividend to ABC and SBS every year in the form of price rises below CPI and significantly below average price increases in power.
Emergency broadcasting support and disaster management

In times of crisis, Broadcast Australia steps up to provide critical emergency management support – well beyond its contractual obligations – to ensure those impacted have access to emergency communications when and where they need them.

Emergency broadcasting for ABC Local Radio

ABC Local Radio is the most trusted source of communication in times of emergency such as cyclones, fires and floods and Broadcast Australia works closely with the ABC to ensure this vital community service can reach listeners during critical times. Together, we have developed special procedures to support emergency response on behalf of the ABC, based on the level of emergency. The NOC provides a single point-of-contact through which the ABC directs its broadcast capability to affected areas. Activities extend from monitoring and information gathering, to emergency warning, through to remediation and rebuilding of services should this be required.

Where an emergency warning is issued, or anticipated, Broadcast Australia will undertake a series of risk mitigation activities at affected sites which include:

- Cancellation of planned outages.
- Local monitoring of affected services.
- Anticipating standby power requirements including refuelling plans, and installation of temporary generators where requested.

The NOC’s bespoke Emergency Response tool manages critical activities such as:

- Prioritised monitoring and escalation of all service affecting faults associated with active Emergency Broadcasting sites.
- Remote switching of Emergency channel content feeds as directed by the ABC.
- Deployment of emergency response equipment such as the ABC’s flyaway FM transmitters and other infrastructure to support emergency broadcasting.

Disaster management

Broadcast Australia maintains up-to-date emergency response plans, developed and reviewed regularly in conjunction with local emergency services (ES), to minimise the risk to critical network infrastructure. As a result, our sites are included in the ES’s Essential Infrastructure Defence Plans, ensuring transmission facilities are protected as a matter of priority. Our strong relationships with the ES also mean Broadcast Australia’s field teams experience faster and safer access to sites during and after events, ensuring maximised continuity of coverage for our broadcast services.

The importance of communication during emergency events is well understood. That is why we have clear communication plans agreed with our customers, so that timely information is provided to help them manage their internal stakeholders. Our on-call Emergency Manager provides a two way communication channel, via a dedicated phone number, so the customer can contact them directly without inhibiting the control and command of an incident through the NOC control room.

Broadcast Australia has played a key role in maintaining broadcast communications during many high profile natural disasters – such as the bushfires in the Grampians, Eden Valley, Flinders Ranges, and Billiat during January 2014 which burned through more than 100,000 hectares of land combined, and Cyclone Marcia – a Category 5 cyclone which affected Rockhampton during February 2015. During these harsh conditions, the continuous broadcast of the ABC Local Radio and Digital TV services in the affected areas ensured vital emergency information reached local residents.

NSW Government Radio Network

Broadcast Australia has earned a reputation as the expert in Emergency Broadcasting and has proven time and again that we have the commitment and capability to maximise continuity of service in the most difficult of situations. In 2013 BAI was appointed by the NSW Government to operate and maintain the NSW Government Radio Network (GRN), one of the world’s largest government radio networks. Consisting of approximately 160 sites with 30,000 users from 30 government agencies and departments, the GRN serves agencies such as the Ambulance Service of NSW, Fire and Rescue NSW and NSW State Emergency Service. This partnership was successfully tested in October 2013 during the Blue Mountains bushfire disaster. The BAI Field Services team provided enhanced two way communications capacity at some sites and deployed standby power facilities to maximise the availability of the GRN services during this critical time.
CASE STUDY

Emergency broadcasting – keeping services on air during adverse conditions

During challenging times, local radio and emergency programming services play a critical role in the safety of the general public.

Broadcast Australia works closely with its customers to ensure the resilient delivery of critical communication services relied upon during times of adversity. The resilience of our network and the ability of our experienced staff to safeguard the delivery of services is a highly valued element of our service offering.

One example of this was the key role Broadcast Australia played during the extreme flooding that impacted the eastern states of Australia in early 2013. Broadcast Australia worked very closely with the ABC to ensure it remained on air, delivering important safety messages to residents.

Locally based Field Services teams, together with the NOC, were faced with a number of unique obstacles to ensure the continuation of communications in the heavily affected areas of South East Queensland and Northern NSW:

- Access to sites including Mt Nardi in Northern NSW was blocked by flooding, fallen trees and landslides, making conditions at times extremely dangerous. With safety the top priority, Broadcast Australia worked closely with the SES and Local Councils to ensure staff were able to get on the ground as soon as possible. In areas where access routes were blocked, staff walked to sites, around obstructions, in order to gain access.
- During high winds at least four large trees collapsed at the Mount Tamborine site, one unexpectedly crashing directly onto critical transmission infrastructure, temporarily interrupting service. As soon as it was safe to attend site a Broadcast Australia Field Team was able to activate a temporary solution and restore service. The Field Team had prepared a number of restoration plans in order to ensure the service was restored as quickly as possible and permanent repairs completed.
- Several sites, notably Gladstone and Roma ABC (Local Radio services emergency broadcasting), unlike most Broadcast Australia sites, were not equipped with standby satellite signal capability. Most Broadcast Australia sites transmitting local radio hold back-up program feeds including satellite and microwave links. At these two sites, Broadcast Australia Field Teams attended the sites and installed temporary equipment ensuring that vital emergency warnings were able to be broadcast.
- In other cases where it wasn’t possible to reach sites, Broadcast Australia worked closely with the ABC’s Transmission services team to provide the necessary expertise to utilise other services that provided effective coverage into the affected areas ensuring minimal service interruption to the transmission of emergency information to the public.

In addition to the services Broadcast Australia provides to the ABC in Queensland, BAI’s dedicated Critical Communications team partnered with Ergon Energy to deliver its new digital voice radio and narrowband data communications system. During floods, this system remained active and was relied upon by Ergon staff as a means of communication when other options became unavailable.
CASE STUDY

Saying thank you

Summer is certainly the toughest season for emergency services across Australia, and the summers of 2013 and 2014 were no different.

During the summer of 2013, Broadcast Australia supported our customers with 365 separate Emergency Site Warning Level Status changes – 15 were due to cyclone, 49 were flood/heavy rain, 47 were classified as other, and a staggering 253 were for fire.

In many instances, the community provided support, and it was great to see people come together to save critical infrastructure. In the devastating blazes that affected Coonabarabran, NSW in February 2013, the Rural Fire Service worked long and hard to protect the Broadcast Australia site at Mt Cenn Cruaich. To acknowledge this support and to commend the efforts of those involved, Broadcast Australia made donations to the RFS and other supporting agencies, as well as the Mayor’s rebuilding fund.

In January 2014, firefighters spent over a month battling the Bangor fire in the Port Pirie region in South Australia, located approximately 250km from Adelaide in the Southern Flinders Ranges.

This fire came dangerously close to the Broadcast Australia Bluff site, located at the summit overlooking Port Pirie, where a Government Radio Network communications hut (relied upon by public safety agencies to transmit radio communications) resides next to the transmission tower, also relied upon to deliver critical radio and television broadcasts for ABC and SBS during these times of emergency.

A number of local brigades from the Country Fire Service worked for days to save the Bluff, where fire came, circled and came back again.

Chief Operating Officer Peter Lambourne travelled to Port Germein, a little town within the affected community where a number of the CFS firefighters and volunteers who were tasked with protecting the site reside. Peter presented the CFS with a donation in support of local resources to say thank you for their efforts.

It is very difficult (and costly) to rebuild and replace a site and Broadcast Australia wanted to formally thank the brigades that worked shifts controlling the fire that twice circled the Bluff site. Without their help we would be in a very different position.
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