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Melbourne Head Office

NAS

nas.solutions

INTRODUCING NAS

NAS (National Audio Systems) is how progressive manufacturers choose to establish and grow their brand across the entire Australia Pacific region.

Widely considered Australia's most diverse distributor, NAS' established network of partnerships includes the dealers, resellers and stores that quality manufacturers need for brand exposure, brand building and product sales. Premium global brands choose NAS because of our track record in brand building and because we are a trusted and respected source of Professional Audio, Commercial Audio and Pro Visual.

Since 1998, NAS has built a strong reputation for quality and service. Actively sourcing products and accessories backed by cutting edge technology and superior customer care, we support a quality ethos that is adopted company-wide and demonstrated daily by a team of dedicated employees.

With a successful distribution model established in 1998, a strategic restructure occurred in 2002 ahead of an Australia-wide expansion. Improved dealer and end user support was achieved by carefully selecting experienced and knowledgeable staff for specialist market verticals. Through its positive impact on productivity, efficiency and response times, this structure lifted sales significantly. Today, NAS specialist divisions capably supports the vertical markets of:

· Commercial Audio

· Professional Audio

· Pro Visual

· Audio Visual

Because NAS distribute products exclusively throughout Australia and New Zealand, our enviable contact database extends through to Broadcasters, Entertainment Venues, Stadia, Retail, Corporate, Healthcare, Hospitality, Airports, Architects, Consultants, Law Courts, Banking, Government and Education via a supportive and active dealer database of over 3,000 accounts.

For more than 20 years, this diverse group of clients have discovered that our breadth of expertise means NAS enjoys one distinct advantage — The ability to provide a complete state-of-the-art solution for almost any application.

Sydney Office

FUTURE FOCUSED VISION

With a clear goal to create a single source for AV, Pro Audio and related products, NAS has forged a secure place in the Australian music industry.

Committed to ongoing organic investment that meets rapid industry growth and changing client requirements, our vision for the future is to set the industry benchmark in Australia.

Our Vision for Manufacturers
By keeping suppliers front of mind with dealers and end users, NAS offers the best opportunity for Australian Pacific brand growth.

Our Vision for Clients
By enhancing our high value, state of the art product range with distributor unique, value added services such as NAS finance, CAD and 3D system design, EASE modelling and the highest level of system support, NAS offers unsurpassed quality and service. Our "first in, last out" approach ensures that each system we design and implement performs to the highest standards according to not only manufacturers' expectations but also exceeding the expectations of clients and investors.

Our Vision for Ourselves
By consolidating long term partnerships with leading brands, NAS will hone our industry cutting edge to exceed our own expectations and secure the future.

Much of what has been achieved so far is the result of our dedicated, loyal staff and ongoing development of the dealer and reseller network. NAS will continue to foster an environment that supports these two vital elements to our success.

In the active pursuit of perfection our unapologetic commitment is to progressive manufacturers that believe in the longevity, stability and support of their own products. NAS will continue to be selective about the products and brands we distribute.

In meeting and exceeding supplier expectations, NAS will protect our sole Australia Pacific distributorship with premium brands. We will continue to offer a range of products to maximise benefits, economies of scale and value to our clients.

By aligning ourselves with suppliers and brands that fit into our markets, NAS will underpin a client service ethic and attain our goal to provide the most outstanding service.

Through continuous improvement driven by integrity, teamwork and dedication, NAS aims to be the leading distributor of Commercial Audio, Professional Audio, Audio-Visual and MI-related products and services in Australia and throughout the South Pacific territories.

Auckland Office

INSPIRED LEADERSHIP

Shane Bailey ~ Managing Director and Founding Director

Shane is the Managing Director and has extensive business experience working with companies and building brands in Australia and New Zealand including d&b audiotechnik, ElectroVoice, Midas, Mackie, Australian Monitor and Telex. Shane has completed almost 5 years of undergraduate education at College and University in Australia with the focus being on audio engineering and recording and sales within the music industry.

As the Managing Director, Shane is responsible for overseeing and steering all operations of the company and setting the future direction of the business.

Shane is a founding director and has played a pivotal role in the growth and success of NAS. Building the company from a small boutique concern to its current status as a leading player in the wholesale distribution and representation of leading professional audio brands, Shane ensures the company provides strong customer focus through the highest delivery of personal customer service and ethics. He practices and maintains a high level of personal dealer and customer communication and is also an active member of the sales team taking personal responsibility for the bottom line.

Paul Anderson ~ General Manager and Founding Director

Rohan Broadway ~ Chief Financial Officer

James Piper ~ Operations Manager and Product Specialist

Dave Jacques ~ Technical Sales, Design and Support
     NAS Projects Team — Team Leader
     Head of Training and Education

Thomas Kelly ~ Consultant Liaison and Projects Team Sales

Brad Kivela ~ Product/Brand Development and Acquisition

There are few private companies that stand the test of time in such a competitive market. Since its inception, NAS has continued to become a market leader, dedicated to innovate and offer a wide range of successful products and services on the market.

ACTIVE PARTNERSHIPS

The quality of relationships is fundamental to any business. NAS offers manufacturers the confidence their brand will be represented with integrity and a proven track record.

As specialists in the wholesale distribution to the markets of Commercial Audio, Professional Audio and Pro Visual, NAS enjoys both a firm reputation for quality customer service and a secure footing in the Australia Pacific market.

Quality global brands partner with NAS for many reasons, including:

· An independent company that is 100% Australian owned and funded

· Long standing career managers with extensive industry contacts and experience

· Clear company structure with set goals and objectives

· Dedicated internal and on road sales staff

· Established network of over 3,000 active dealers

· Strong brand partner relationships and a successful track record

· Proactive marketing utilising traditional, online and evolving social media tactics

· Comprehensive product and technical training and education for staff, dealers, consultants and end users

· Local support and the flexibility to generate ongoing business

NAS Mission Statement

NAS will grow our business by providing the best service in our industry, coupled with the most desirable products that represent best value for money; that are technically innovative and/or positioned at the peak of emerging technologies. This will be done by supplying in a timely manner and building positive, lasting relationships with our customers, suppliers and staff alike.

1.   Provide the best possible service and products to our customers

2.   Respect staff and develop future opportunities for growth

3.   Build long term positive relationships with our suppliers

If we adhere to the 3 key elements, we will achieve our vision and goals.

Understanding the customer is our key to the market.

WHO WE REPRESENT:

A2T

Activ Touch

Amphenol

ASHLY

ASL INTERCOM
A RIEDEL COMPANY

Cloud

cymatic audio

d&b audiotechnik

dB Technologies

fitness audio

GHOST
Convergent Network System

HR HALL RESEARCH

inDESIGN

ISO ACOUSTICS
Sound quality by design

array K

KLARK TEKNIK

KLIK

Listen EVERYWHERE

LISTEN TECHNOLOGIES

MAXIMUM CABLES

MIDAS

NEUTRIK

PARALLEL AUDIO

PLIANT TECHNOLOGIES

POWEREX
Empowering Your Digital Life.

ProCases

QUIK LOK

SECRET SOUND

SOUNDTUBE ENTERTAINMENT

Superlux

TRIAD-ORBIT

Unilumin

THE RIGHT EXPOSURE

A diverse product range calls for some marketing inspiration!
The NAS marketing team are specialists in creating cross media
strategies designed to highlight each of our unique product divisions.

From traditional media placement to online marketing, trade shows
and evolving technologies like mobile marketing, all communication
is carefully co-ordinated to meet the agreed style and format by our
in-house marketing team. To maintain cohesion with each distinctive
brand, every piece is delivered within an overall NAS framework.

By harnessing the power of the right coverage, NAS has placed a
number of leading brands at centre stage. Just some of the exposure
we enjoy is achieved via:

· An enthusiastic dealer network

· Regular media attention in both traditional print format and
  electronic media

· Well utilised internet presence including the NAS website, NAS
  Facebook page and NAS YouTube page

· Education, training and support showcasing on location
  throughout Australia and New Zealand

Our in-house marketing department carefully co-ordinates
all NAS communications.

TRADE SHOWS

NAS proudly participates in the following trade shows across Australia:

INTEGRATE

ENTECH

As well as the above, NAS attends these international trade shows annually:

Integrated Systems Europe

infocomm

NAMM®

prolight+sound

*Our biggest and best stand to-date at INTEGRATE 2018.
Celebrating 20 years!*

KNOWLEDGE BUILDERS

Confident salespeople are the result of product belief. In building knowledge, NAS empowers others to grow an assurance that translates to lead generation and sales.

Better education enables dealers, architects and end users to associate products and technology with their market. So the NAS ethic of support reaches beyond dealers to the users themselves. Our robust training resources have proved successful in establishing and consolidating many brands.

A range of training programs are conducted under our Head of Training and Education, Dave Jacques', expert guidance at our own training facilities. Because each session is structured to meet individual participants' needs and their own market, NAS is often a first point of reference. Our own experts offer partners, clients and potential purchasers thorough product installation, operation and maintenance training including:

· Familiarisation with the product and its use

· Introduction to audio and the signal chain

· The basics of acoustics

· Application of 100v line

· System design

· Live sound engineering

· Live sound production

Regular training is an important part of our service offering as it helps maintain a healthy level of customer skill and offers a good opportunity to showcase new products and brands.

A few snaps from some of our d&b audiotechnik and Midas training sessions.

SERVICE WITH A SMILE!

It is reassuring to know that NAS offers a high quality experience from inquiry to ownership. With a team of skilled professionals, we quickly get equipment back in order should repair or service ever be required.

Clients depend on our advice and the fastest turnaround can be relied upon from our Technical Service and After Sales Department. The choice of an optional on-site repair (as required) or returning the product to one of our authorised service centres also appeals. We have a network of NAS authorised service agents throughout both Australia and New Zealand who understand and represent the NAS customer ethic.

Because we know out of order equipment can be costly and inconvenient, NAS provide service of the highest standard that:

· Puts equipment back into action as soon as possible

· Keeps clients informed about progress with regular updates

· Is carried out by qualified, professional technicians

Staff pride themselves on their ability to listen to customers desires and to provide effective solutions that reflect their knowledge and understanding.

NAS carries in excess of 8,000 different product lines and over 108,000 stock items ensuring products are received when required and without delay.

NAS

nas.solutions

STREAMLINED DISTRIBUTION

Fast, efficient warehousing and logistics are critical to NAS' success. To best support over 3,000 active dealers our rapid response warehousing and logistics runs on intelligent inventory management system operated by an experienced and dedicated team. That's how we maintain adequate stock levels and accomplish smooth, efficient product distribution across Australia, New Zealand and the Pacific Islands.

Localised Sydney, Queensland and Western Australian priority warehousing is supported by a central distribution centre in Melbourne. For added security, all products pass through this centre with most goods delivered anywhere in Australia 48 hours from ordering. Precision tracking means goods can be swiftly located, even when shipping internationally.

Because every item is double inspected prior to shipping, customers can be sure we take inventory seriously. Armed with a 'can do' attitude, warehouse staff consistently demonstrate our core company values by:

· A passion for everything they do

· Striving to be the best

· Continuous improvement

· Being open and flexible

· Getting it right the first time

· Staying focused

· Caring

The goal is simple — To get products where they need to be, safely and in the shortest possible time.

SUSTAINABLE THINKING

Considering the impact of what we do is central to a global view. Not only is NAS compliant with both regional and national environmental protection regulations, we are committed to taking an industry leadership role.

Through active staff participation, we nurture an environmental management focus. This helps to develop and grow procedures appropriate to our activities, products and services.

Eco Practice Accountability

NAS is recognised for making sustainable choices and achieving our environment objectives through:

· An effective Environmental Management System adopting legislative requirements as our minimum standard and demonstrating due diligence to local by-laws and formal Government policies

· Employing recycling program partners for recycling of cardboard packaging, scrap steel and metal, magnet recycling and battery recycling

· Educating our people to think sustainably and make the environment policy part of what they do every day

· Measurement of performance against our environmental goals and striving for continued program improvement and best practice management

· Encouraging innovation and practical, cost effective ideas to minimise any adverse environmental impact

FAIRNESS AND EQUALITY

Success depends on finding the right people and creating the right culture. NAS is a proud equal-opportunity employer, where staff can enjoy and expect to go about their work in a discrimination free environment.

ASSOCIATION

It is important for people to enjoy freedom of access to discussion and debate. Our employee's right to organise and bargain collectively in a lawful, peaceful manner is always respected.

HEALTH AND SAFETY

The well being of others who visit or work in each of our business units is a paramount concern. Taking active responsibility and leadership, each NAS site features a health and safety plan meeting all Government requirements. Local coordinators keep fire and OH&S compliance front of mind, which contributes to a prevailing attitude of care.

RECOGNITION AND REWARD

To be exceptional, we need an outstanding team. Recognition is vital to motivation, so staff remuneration is designed to foster, acknowledge and reward excellence. Using a Federal or State Award base line, commitment, loyalty and effectiveness are all identified. Staff participate in an across company bonus scheme for performance.

A LEGAL PERSPECTIVE

Maintaining a highly regarded reputation involves conducting dealings with integrity. A registered Australian company, NAS complies with local, state and national legal requirements.

Ideals and Aspirations

- Passion for everything we do

- Lead the world in our approach

- Learn what works and do more of it

- FOCUS

- Together we can attitude

- Do it once well

… and above all — CARE.

MIDAS Proves the Right Mix for Sydney Opera House

November 2016

The AV team at the iconic Sydney Opera House is always looking to upgrade and better the venue's facilities.

Jeremy Christian, former head of sound AV services at the Sydney Opera House, says: "We do upgrades all the time and are actually going to be doing a complete overhaul in the near future. But the last project was specifically for upgrading the consoles. We had a Midas Heritage 3000 in the main concert hall and that was replaced along with the other smaller boards in other spaces with digital consoles."

The switch to digital was the driving factor behind the upgrade of the mixing boards and Christian comments: "Basically the industry has switched to digital and we wanted to get in line with the industry moving forward. We also have a very high turnover of shows so the ability to have proper digital recall outweighed most other priorities when we were looking at upgrading the consoles."

A Midas XL8 has been installed as the main front of house mixing console for the main concert hall at the Sydney Opera House. The concert hall also features a Midas Pro9 which handles the monitors in the space as well as the microphone splitting. A Midas Pro2 serves at the third mix position in the concert hall and is employed for smaller talks and sessions.

The Playhouse at the Sydney Opera House has been fitted with a Midas Pro2 while the drama theatre, studio and Joan Sutherland Theatre are equipped with Midas ProX consoles. A few Midas Pro1 boards are also used in the different spaces when required.

All the Midas boards were provided by distributor National Audio Systems (NAS).

The upgrade was uneventful and Christian says: "I can't recall any major issues. NAS was great and provided training. I guess getting the team up to scratch on a new console was a challenge. But the XL8 is pretty similar to the old Heritage board in terms of functionality and usability. We basically overlaid the new system on top of the old one. The old one kept working all the way through the install and then there was a hard switch over."

The selection process for the consoles was exhaustive and Christian explains: "We did a shootout of all the different console options in the studio. We invited some key manufacturers and they brought their products down and we tested them out. I guess the biggest thing I went in there thinking was that it was going to be all about function and how they connect and what type of transport they provide. But the thing I wasn't expecting on the day was sound quality. I thought all modern boards would have pretty good sound quality and the performance of all the boards would be comparable. But when we tested them the Midas consoles blew us away."

Christian also talks about other considerations: "Acceptance was a big factor. We have a lot of touring people come to the Sydney Opera House and we had to pick a board that was acceptable to the touring market."

Many thanks to InAVate magazine for the fantastic write up!

## d&b: A game changer at the ANZ

April 2014

Now here's a great idea, let's put a really powerful standard concert system complete with full on throbbing low end, into a highly reverberant space and entertain eighty thousand people. There is a way, and system engineers have been managing it with varying degrees of success for years; correctly placed delays, careful array targeting, and good time alignment fit the bill. But have you ever visited a stadium that has such a system already permanently installed? You can now. As ANZ Stadium, Sydney Australia's premier stadium settles into what promises to be a prolonged new era of success, they pose the question; how long will it be till everywhere else steps up to the line?

"Any well run venue will seek to maximise utilisation and when you have exhausted the sporting potential you have to look at other mass spectator events," explains Simon Davies, General Manager of ANZ Stadium. "Stadiums often host big rock concerts, ANZ certainly does, and the sound systems these shows bring to our venues are really potent. But these are concert systems and come with the tour; the only time you see systems of this potency actually installed in stadia is for the big sporting events such as the Olympics, Rugby World Cups or NRL Grand Finals. Look at the London Olympics; the impact of great audio for the opening ceremony was profound. But these systems are only ever temporary. So we asked ourselves, why can't we do this at ANZ Stadium on a permanent basis, and can we achieve this in an affordable fashion? That's the task we set ourselves

and I believe we have achieved those goals on both counts."

Davies and the ANZ Stadium management team led by MD Daryl Kerry were fortunate in one respect; the man who designed the London Olympics sound system is Australian. "Scott Willsallen cut his teeth working on the Sydney Olympics and had over the years, worked with ANZ Stadium on the special events we staged here using the pre-existing sound system," explained Davies. "That familiarity with the venue and the goals we had given ourselves allowed us to set a tough brief." Willsallen it seems was unperturbed. "The main confine of this brief was to use pre-existing rigging points and all cable infrastructure from the old PA system." The thinking being, as Davies so succinctly put it, "I'd rather invest our money in the new system hardware than the infrastructure. Our customers don't value the infrastructure, they take it for granted, but what they experience directly: sound, vision and comfort, all have great importance."

Willsallen's bid package invited eighteen of the world's leading pro audio manufacturers, "Representatives for all bidders were open for feedback, so we could comment on their initial proposals and they could respond to those comments. Besides the broad in depth evaluation process conducted by Stefan Goertz at d&b Application Support in Germany, I also took an integrated approach to the installation process. It is normal for installers to forge relationships with particular loudspeaker brands, but it doesn't follow that the best installer for your project will necessarily have a relationship with the best manufacturer
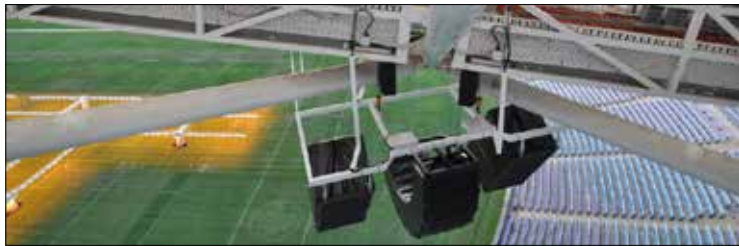
for your project. So I set out to separate manufacturer from installer in the bid process. We got the best installer and the best equipment."

Once the decision was made Willsallen defined the precise installation, over four hundred d&b loudspeaker cabinets were suspended from the ANZ Stadium roof in the final design. "The system ANZ Stadium eventually settled on was based on a d&b medium format line array system, the V-Series, specifically the Vi installation variant models Vi8, Vi12, and Vi-SUB, the system was supplied by d&b Australian distributor National Audio Systems (NAS) and installed by integrator The PA People."

The d&b V-Series succeeded for a number of significant reasons, not just by being the best performer on the day. "When I first looked at renewing the system in early 2012 Shane Bailey, Director of NAS, had suggested the d&b new V-Series in its Vi installation variant. From the point of view of stadium requirements the Vi loudspeakers have several compelling features, in particular the fact that they are fully passive. Given the restrictions of pre-existing rigging points and cable infrastructure we had a limited circuit count of just eight channels at each point. Being passive meant we could put in more boxes at each position, that's a huge advantage. Most of the arrays are covering 130 degrees in the vertical plane so more cabinets is a real benefit; also the two types of full range loudspeaker, Vi8 and Vi12, at 80 and 120 degree horizontal respectively, proved ideally matched to the general seating patterns. For the icing on the cake, the cardioid Vi-SUB is also passive, so where a single cabinet to fail there's no loss of cardioid behaviour from the other subs in that particular array. Just one circuit to drive two Vi-SUBs; there's a certain elegance to that."

The new system was revealed to all the various officials of the five sporting codes that regularly grace the ANZ on June 13th, "An auspicious day for us," commented Davies. "They all quickly understood the benefits and potential of the new system and were excited by what they heard. For me as far as I was concerned the d&b system was the best choice. I'm no expert, but the shootout process convinced, it put this system head and shoulders above everything else. We stage some fifty or so sporting events a year, at least six are full houses, and another third draws about a thirty five percent capacity, so they were all very interested. The ability to impart even more emotion to the games was an obvious benefit to them. In some ways we were surprised by how wholeheartedly the various authorities embraced the idea, but you only have to look at something like the Indian Premier League cricket competition to see where that game is headed. The thing with all sports is that people come because they want to have fun; by communicating directly through the high quality sound system that Scott has produced for us we have a way of enhancing the fun and drama. That's the ANZ Stadium vision and we believe this is the future for sport."

With thanks to Scott Willsallen for some of the photographs.

RFDS Darwin Tourist Facility

December 2016

THE VENUE

The RFDS Darwin Tourist Facility exists to tell two stories. The first is of the Royal Flying Doctor Service (RFDS) — the life-saving airborne medical service that began its aero-medical operations in the Northern Territory in 1939. The second story is the Bombing of Darwin Harbour, an event that brought destruction to the city on February 19th, 1942. RFDS Darwin Tourist Facility immortalises personal anecdotes and experiences from both these historic episodes of Australian heritage. From cutting-edge VR and holographic technology to life-size models of Japanese aircraft, the new venue gives visitors the chance to relive moments from yesteryear with unforgettable realism.

THE CHALLENGE

The brief was to use technology in both the audio and visual fields to bring the two stories to life, ultimately delivering a memorable experience for visitors. The room featuring the Bombing of Darwin Harbour story, dubbed 'Window of 1942', required immersive audio to complement the multiple projectors displaying recreated scenes from the historic event.

The Royal Flying Doctor Service story was to be told in a separate section of the venue. Automation was key, as was the ability to have the pre-recorded audio translated into multiple languages for tourists.

THE FIX

Rodney Taylor from Taylor Integration spearheaded the install. Working with Kerry Panara from NAS, Taylor commissioned a number of products from dBTechnologies,
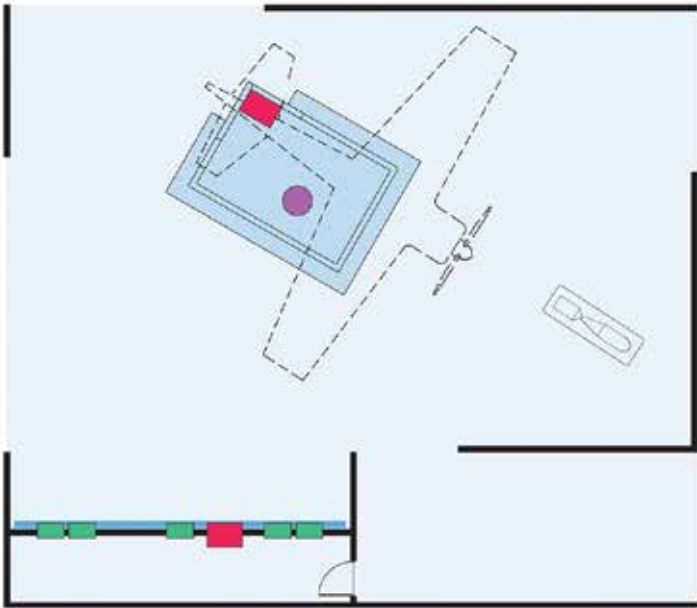
SoundTube, and Listen Technologies to complete the experience.

The Window of 1942 space features a unique, raised floor section from which viewers behold a multi-sensory experience of the Darwin bombing. A dBTechnologies SW15 15-inch subwoofer lies underneath the floor, complementing three SoundTube SM890i surfacemount speakers placed behind custom grilles above the 7m-wide projection screen in LCR configuration. Enhancing the immersive sound experience are additional SM890i surround speakers combined with SoundTube RS600i ceiling speaker suspended overhead. Another dBTechnologies SW15 sub is mounted behind a grille below the video wall. Combined with an under-floor air blast system, tactile transducers and vertically-mounted floor projection, and the system forms a stunningly immersive experience for visitors.

Next door is the RFDS cinema space. Here, a pre-recorded narration is played back featuring a holographic image of Rev. John Flynn, founder of the Royal Flying Doctor Service. Three dBTechnologies Arena 8 active loudspeakers form the front-of-house rig for the 57-seat cinema, while an extra two Arena 8s are positioned down the room with a time delay. Another dBTechnologies SW15 subwoofer was employed here, mounted in a custom-built cabinet.
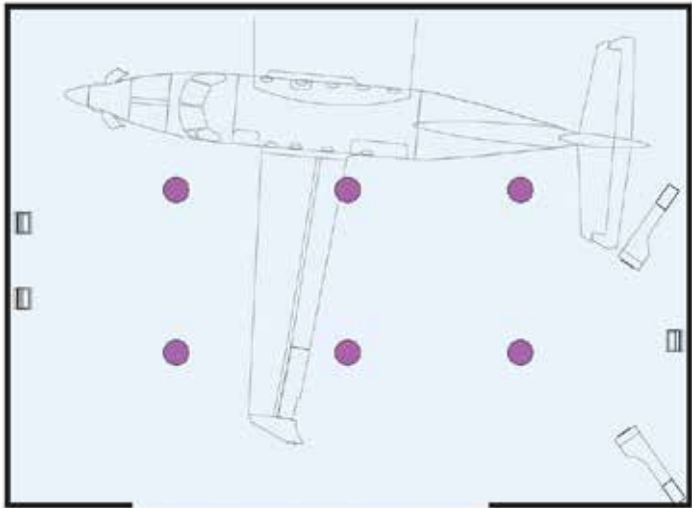
- ● SoundTube RS600i
- ● SoundTube SM890i
- ● dBTechnologies SW15
- ● dBTechnologies Arena 8
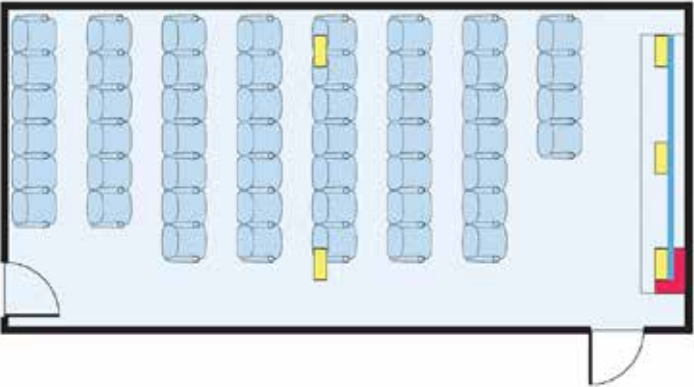
Real-time translation of Rev. John Flynn's speech is provided by Listen Technologies products. Four playback devices run into four LT800-150 FM transmitters. A localised antenna in the cinema allows up to 24 Listen Technologies receivers to play translated audio in four languages. Receiver options include the LR500-150 portable receiver, LA164 ear speaker, and LA166 neck loop for T-coil hearing aids.

Several more SoundTube RS600i and SM500i speakers are suspended from the ceiling throughout the facility, including the RFDS area and retail spaces.

THE RESULT

Since its opening, the steady stream of visitors at the RFDS Darwin tourist facility have given outstanding feedback regarding the one-of-a-kind experience. The audio visual elements were expertly installed, integrated and commissioned by Taylor Integration, which had full support from NAS's Projects Team on all matters audio. The AV combines sympathetically with other stunning visual elements in the space to form a unique testament to the stories of the RFDS and the Bombing of Darwin Harbour.

Australia Zoo – Africa Exhibit

February 2017

THE VENUE

Located on Queensland's beautiful Sunshine Coast, Australia Zoo is best known as the home of Steve Irwin, the Crocodile Hunter. But you'll find more than just reptiles on the Zoo's extensive premises.

Steve Irwin had a dream for Australia Zoo, which included the creation of an African Safari Park where guests could see animals roam together on open plains, just as they would in the wild. This dream has been realised in the form of the African Savannah, now home to giraffes, rhinos, zebras and cheetah.

THE CHALLENGE

The open-range African Savannah is a key attraction at Australia Zoo and therefore, the team wanted to enhance the visitor experience by adding authentic African background music throughout the guest viewing areas. AV & Production Manager, Kris Berndt, contacted Brendon McDonald at NAS for assistance in designing a PA system that would fit the bill. Being a large space and entirely outdoors, the installation required a creative (and weather-proof) solution that would provide clear audio across the whole viewing area without detriment to aesthetics.

THE FIX

Initially, Kris suggested IP-rated, outdoor-friendly music horns mounted on poles throughout the fenced area. However once Brendon inspected the exhibit, he recommended SoundTube's XT850-SS coaxial outdoor speakers, placed both in front of the fence and in the garden areas. This was for a few reasons: firstly, the 360° dispersion of the XT Series would mean greater coverage over the wide viewing area, and secondly, the unique weatherproof enclosure of the units would be far more discrete than horns on poles while offering the superior sound of an eight-inch driver and one-inch tweeter.

The three undercover viewing areas needed their own audio reinforcement. Here, Brendon specified SoundTube's SM590i-II speakers in the 'Weather Xtreme' variant. These feature a dual-layer hydrophobic material inside the speaker grille to keep water away

from the drivers and internal electronics.

The SoundTube speakers are powered by a 1600W Ashly nX8002 two-channel amplifier. One channel supplies power to the XT850s in series, and the other takes care of the SM590i-IIs. A Cloud CX261 single-zone mixer receives audio from an InterM CD-6208 multi-source media player and sends it to the amp.

Australia Zoo's own audio visual team managed the installation in consultation with NAS. As part of this, they custom-painted the XT850-SS speakers to blend inconspicuously with the surroundings, adding to the visual appeal of the finished project.

Installing an audio system at a zoo has its unique set of hurdles, one of which was acclimatising the giraffes to the sound! All up, it took the team one week to install — a commendable effort considering more than 350m of speaker cabling had to traverse fencing, concrete, garden beds, and climb three 6m-high gazebos.

THE RESULT

Visitors to Australia Zoo's African Savannah can now enjoy a fitting audio experience when visiting the African animals. The Australia Zoo crew couldn't be happier with the final product. The uniquely shaped

SoundTube XT850s proved a flawless solution both visually and sonically for the area and the consistent coverage provided by the SM590i-II gazebo speakers, even in a crowd ten rows deep, has impressed the Zoo and its patrons.

Looking ahead, the zoo already has plans to utilise the system to run talks via wireless microphone from the centre gazebo.

● **SoundTube XT850-SS**
Power: 100W
Max. SPL: 105dB
Freq. Response: 51Hz - 10kHz
Impedance: 4Ω
Weight: 7.6kg

● **SoundTube SM590i-II-WX**
Power: 80W RMS
Max. SPL: 106dB
Freq. Response: 100Hz - 22kHz
Impedance: 8Ω
Weight: 4.3kg

● **Ashly nX8002 amplifier**
• Dual-channel amp
• 800W per channel
• Front panel switch & level controls
• 2U 19-inch rack unit

● **Cloud CX261 single-zone mixer**
• Six stereo line inputs
• Two electronically-balanced mic inputs
• Music mute control (NO or NC)
• Transformer-isolated mono aux output
• 1U 19-inch rack unit

● **Inter-M CD-6208 multi-source media player**
• Internal storage for up to six virtual CDs
• SD card slot plus USB drive input
• 10 track-assignable buttons for instant play
• High quality DAC chip
• Third-party control via RS-232

Stokehouse Restaurant

March 2017

THE VENUE

Stokehouse has a revered reputation as one of Melbourne's premier restaurants. Sitting in a picturesque location just metres from the St Kilda beach shoreline, the two-storey venue boasts ocean views, a stunning menu, and beautifully designed interior eating spaces.

Three spaces make up the venue. The main floor-level eating space, dubbed Pontoon, hosts casual dining with a pub-like atmosphere. An 18m-long bar runs the length of the space, with benched seating and an abundance of windows providing uninterrupted views to St Kilda beach. Upstairs you'll arrive at the fine dining restaurant. This area often hosts high profile events, from AFL Club dinners to the launch of the new BMW M5. The restaurant boasts the large oval Stokebar for drinks, a walk-in wine cellar, all-weather balcony, a 130-seat dining area, and a 40-seat private dining space called Palm Room. Finally, Paper Fish is Stokehouse's takeaway fish & chips offering. It sits outside to the rear of Pontoon facing the beach and has a laid back eating area with wooden stools and benches.

THE CHALLENGE

In 2014 Stokehouse burnt down due to an unfortunate kitchen incident. Work soon began to rebuild the iconic restaurant, which presented an opportunity for it to reincarnate better than ever in every sense — including audio.

Each space has its own audio zone and coverage requirements. Pontoon hosts DJs from Thursday to Saturday nights, and the upstairs restaurant also needed the ability to cater for small bands, or speech-type presentations with clear audio throughout both spaces. Paper Fish needed low level background music in a discreet visual solution that matched the casual vibe of the outdoor space.

THE FIX

Jason Rooney from Eventcraft worked with the NAS Projects Team to design the ultimate audio system for the new Stokehouse.

d&b audiotechnik speakers were chosen for both the Pontoon and fine dining spaces. To compliment the look of the venue, the decision was made to go with 'DJ trolleys' in which three d&b 18S subwoofers are mounted. Two Y7P speakers hang from ceiling brackets at the far end of both areas for high quality reproduction of music and speech with the ability to throw the length of the room. d&b 5S speakers are neatly ceiling mounted on custom-made brackets throughout Pontoon, and the larger 8S speakers similarly nested inside ceiling cavities above the fine dining restaurant. For events, DJ performances, or speeches, these ceiling speakers act as time-delayed reinforcements for the Y7Ps to ensure intelligible sound is relayed to room's far end with coherent phase. Both rooms were acoustically modelled with d&b's ArrayCalc software to ensure ample audio coverage throughout.

d&b 5S speakers are similarly mounted in the bathroom areas, with the hallways of both floors covered by the smaller d&b 4S models.

Direct exposure to saltwater spray makes the Paper Fish eating area as harsh as it gets when it comes to speaker environments. NAS suggested the extremely weather-resistant SoundTube XT850 models to service this area. Not only does the XT850 do a great job handling tough outdoor atmospheres, its unique enclosure meant Jason could install the speakers discreetly between rocks and benches for better visual appeal.
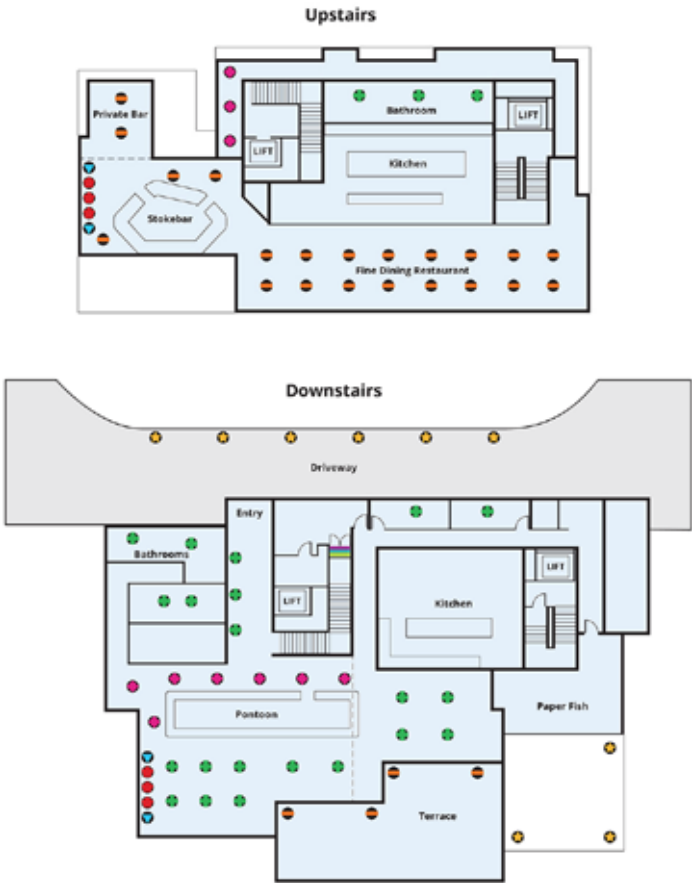
Near the entrance you'll find the rack room in which sits all the amplifiers and DSP control is on the ground floor near the entrance. Two d&b 30D amps drive the six 18S subwoofers on the DJ trolleys (three downstairs and three upstairs). The remaining d&b speakers (8S, 5S and 4S models) are powered by five d&b 10D amps running multiple zones. Delays were configured within the 10Ds themselves for each zone. Three InDesign BA2240 two-channel amplifiers run the SoundTube XT850 speakers in the Paper Fish and entrance areas, as well as some other IP-rated outdoor speakers covering the terrace and balcony.

Four inputs feed the DSP unit (iPod/DJ 1/DJ 2/dining), any of which can be independently routed to each zone. Restaurant staff have intuitive control over input levels in each zone via wall-mounted control panels.

THE RESULT

The Stokehouse rebuild was a huge project — one of the most hotly anticipated restaurant fitouts in Australia in recent times. There are few venues of its kind that will go to such lengths for uncompromising sound. The owners, clients, and customers alike couldn't be happier.

Trent Alexander, Project Manager for venue owner Van Haandel Group, is delighted with the final outcome. "We wanted a top-of-the-range system that could facilitate any client requirements without the need to bump in additional gear. The result is better than we expected. We've used it for weddings, launches, and other functions that require speeches. The system in Pontoon sounds great turned up when the DJs come in to play. Frank [Van Haandel, the Group boss] was pleasantly surprised at how rich and warm the sound was throughout the building. It's very even coverage without hot spots and cold spots."

Upstairs

Downstairs

d&b xS Series 8S
Power: 150W RMS
Max. SPL: 124dB
Freq. Response: 70Hz - 20kHz
Directivity: 100° conical
Impedance: 16Ω
Weight: 7.4kg

d&b 18S-SUB
Power: 400W
Max. SPL: 129dB
Freq. Response: 37Hz - 140Hz
Impedance: 8Ω
Weight: 32kg

d&b Y-Series Y7P
Power: 400W RMS
Max. SPL: 132dB
Freq. Response: 59Hz - 18kHz
Directivity: 75° x 40°
Impedance: 8Ω
Weight: 18kg

SoundTube XT850-SS
Power: 100W
Max. SPL: 105dB
Freq. Response: 51Hz - 10kHz
Impedance: 4Ω
Weight: 7.6kg

InDESIGN BA 2240
Two-Channel 240W amplifier
Freq. Response: 50Hz - 18kHz
Output Impedance: 4Ω - 8Ω
Weight: 15.2kg

d&b 10D/30D
Four-channel amplifier
10D: 750W per channel (4Ω)
30D: 1000W per channel (4Ω)
User-definable EQ/channel delay
Weight: 10.6kg

International Convention Centre, Sydney
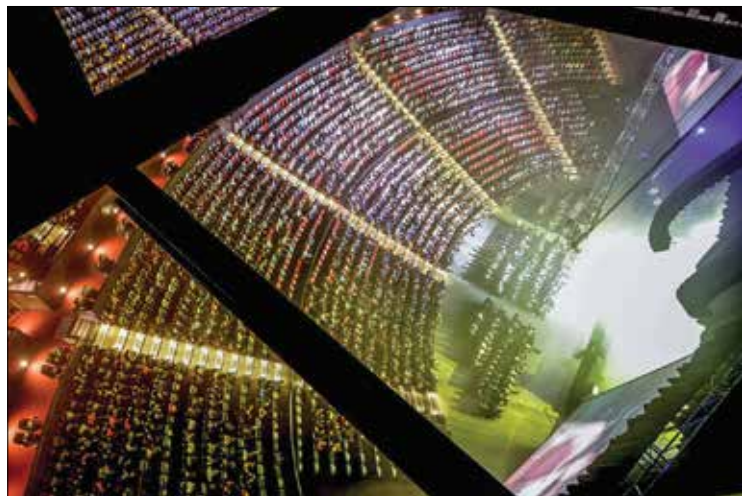
July 2017

THE VENUE

ICC Sydney is a venue like no other. As Australia's premier go-to convention centre for all manner of high-profile events and conferences, the $1.5b precinct is a showpiece of cutting-edge design, architecture, and AV technology. 1000 wi-fi access points gives you an idea of its scale. All up ICC Sydney has three expansive theatres catering for crowds from 1000 to 8000, plus a lavish ballroom and dozens of smaller conference and meeting rooms.

THE CHALLENGE

ICC Sydney Theatre is the largest of the public performance spaces, and it's truly immense. Replacing the Sydney Entertainment Centre which was demolished a few years back, the Theatre plays host to headline events be it music, corporate, comedy, or even sports. Within a couple of months ICC Sydney Theatre had hosted Keith Urban, PJ Harvey, Nick Cave, and a tennis Fast Four match with Rafael Nadal and Novak Djokovic.

The necessity of a world class PA was without question. Sure, high-quality sound had to be accurately relayed to every tiered seating row in the expansive space — that's a given. When hosting a rock concert, the system needed low end punch and SPL to spare. For large corporate events, speech needed to be utterly intelligible. But flexibility was also of high priority. The rig had to be scalable. When the stage is replaced with a tennis court, the PA elements had to be reconfigurable with ease and efficiency.

To provide all of the above, the decision was to go with a d&b audiotechnik system that would be essentially configured like a touring rig.

THE FIX

The NAS Projects Team provided support during the commissioning phase. Gert Sanner from d&b HQ flew out for the commissioning as well.

Dave Jacques is head of the NAS Projects Team: "The biggest part of our job was in the implementation; as the gear went in we worked with Fredon to help get the most out of the PA. It was a great experience in that regard: the Fredon team was very keen to get a good result. Sometimes there's a temptation on behalf of the installer to knock something like this out and not worry too much about the detail. In this case everyone was very focussed on the detail.

"The ICC Sydney Theatre PA is based on two large d&b V Series arrays per side. The side arrays aren't much shorter than the main hangs, and this is down to just how large and wide the theatre is; you have to push a lot of energy to the sides to cover those areas.

"The SPL targets of the brief were lofty. Fortunately, the design provided an adequate number of loudspeakers and wasn't cut back at any stage, as is often the case — we needed a serious system to meet those targets (105dBA ±10dB with 10dB headroom).

"We hit those SPL targets with something to spare. That was really nice to see in the flesh; to see that the modelling and the EASE data is trustworthy."

Along with the four speaker arrays the design encompasses a flown array of V-Subs either side of stage. Flying, rather than stacking, the subs was always going to be the preferred method, given the tiered design of the theatres. The long array of subs provides greater pattern control and more efficiency in the far field. The sub array sits in behind the main hang and not so far from the side hang. The distances are such that the three arrays operate as one line source in the lower frequencies.

Often the lower tier of seating will be retracted but when those seats are deployed, there are some additional V Subs in the inventory that can be ground stacked to fill in the nearfield. There are also a number of additional V Series array boxes that are positioned at stage level and shoot into the lower bowl. Sound for the stage level V array boxes are timed to arrive slightly earlier than the main arrays to pull the image down to the stage.

d&b D80 amps power the whole system. It's effectively a touring system with touring amp racks, allowing for easy reconfiguration.
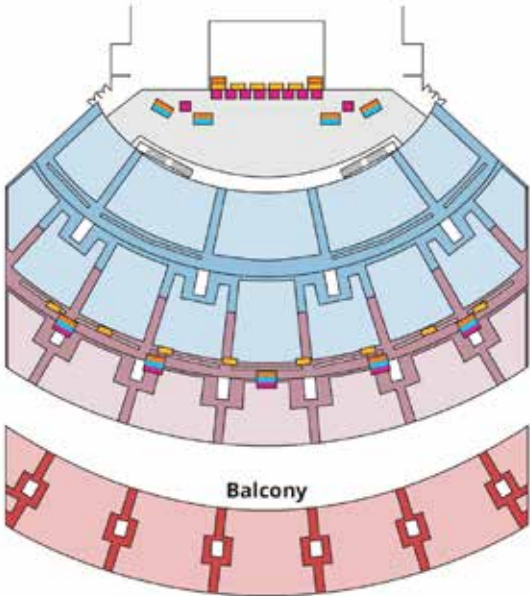
THE RESULT

Thanks to its touring-style flexibility, the world-class PA system at ICC Sydney Theatre has surpassed expectations in both sound and functionality.

Dave Jacques: "I've had feedback from people who have mixed in ICC Sydney Theatre and they've commented that they've looked at the space and looked at the arrays and thought 'I'm going to need a pile of ground stacked subs', but it's not the case — it fills the space nicely. I was very pleased with the results — there's an even full-range feel."

Besides the ICC Sydney Theatre, d&b line array systems were also installed in the Darling Harbour Theatre, Pyrmont Theatre, and Grand Ballroom within the precinct.

Balcony

GEAR LIST

Front Hangs:
- 44 x d&b V8 boxes
- 8 x d&b V12 boxes
- 16 x d&b V-Subs

Delays:
- 10 x d&b V8 boxes
- 10 x d&b V12 boxes
- 5 x d&b V-Subs

Under Balcony:
- 8 x d&b T10 boxes

Floor Mounted Infill:
- 2 x d&b V8 boxes
- 6 x d&b T10 boxes
- 8 x d&b V-Subs

d&b V-Series V8
Power: 500W
Max. SPL: 142dB
Freq. Response: 67Hz - 18kHz
Directivity: 80° x 0-14°
Impedance: 8Ω
Weight: 34kg

d&b V-Series V12
Power: 500W
Max. SPL: 142dB
Freq. Response: 67Hz - 18kHz
Directivity: 120° x 0-14°
Impedance: 8Ω
Weight: 34kg

d&b V-Series V-Sub
Power: 800W
Max. SPL: 137dB
Freq. Response: 37 - 115Hz
Directivity: Omni
Impedance: 8Ω
Weight: 64kg

d&b T-Series T10P
Power: 200W RMS
Max. SPL: 132dB
Freq. Response: 68Hz - 18kHz
Directivity: 90° x 35°
Impedance: 16Ω
Weight: 11kg

Westin Hotel

September 2018

THE VENUE

Westin Hotel is one of Perth's new luxury accomodation spots located in the heart of the CBD. The 368-room five-star hotel is the perfect place from which to experience Perth culture with a number of city attractions only a short walk away.

On the ground floor of Westin Hotel sits Garum Restaurant, owned by celebrity chef Guy Grossi. The restaurant's facade is markedly retro against the modern design of the rest of the hotel — this is because Garum occupies what used to be a fire station whose heritage listing meant its exterior had to stay relatively untouched.

The front outdoor area of Garum Restaurant seats a number of patrons and the same brief for audio coverage applied here.

THE CHALLENGE

As part of the $2m AV fitout of Westin Hotel, two outdoor areas within the venue — the hotel terrace, and the alfresco outside Garum Restaurant — required an audio solution for providing background music. The brief was threefold: the solution had to sufficiently cover the area with a ±1.5dB SPL variance, it had to be IP-rated to withstand the weather, and it had to look good. In addition, there was a limit on how much spill could be tolerated as a the Garum's front entrance faces an apartment block.

THE FIX

The entire audiovisual and background music system was installed by Stokes Technologies.
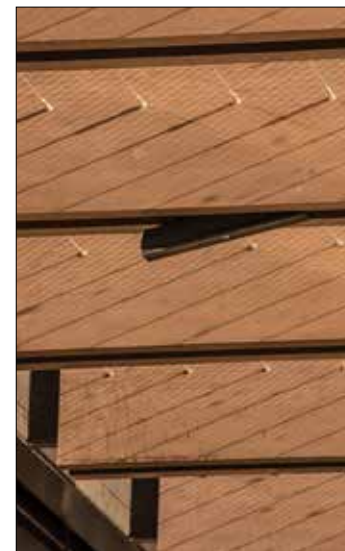
To an integrator, a flat roof surface is the easiest to work with. However the beam-slatted roofing in Westin Hotel is a key design element throughout the venue which restricted the type of speaker Stokes Technologies could install. The narrow width of the K-array Python KP52 loudspeaker, along with its precise dispersion, made it fit the brief (and the roof slats) like a glove.

Aaron Mitchell, Engineer at Stokes Technologies: "Once we added all the requirements together — the sound variance, the IP rating, the shape and coverage of the area, as well as the physical dimensions of what would fit — the K-array's were pretty much the only thing we could put in there."

The K-array KP52 is a passive array loudspeaker comprised of six 3.15-inch drivers housed in a stainless steel chassis. The KP52 has two dispersion options — flood (45°) or spot (10°).

Due to the architectural restraints, there were limited positions in the roof that would support the installation of the K-array loudspeakers. Prior to installation, Stokes Technologies modelled the environment in EASE Focus to make sure the K-array's could achieve the correct coverage from those points.

Four KP52 loudspeakers were mounted at a height of 6m above the hotel terrace, with the Spot setting providing a dispersion of 10° to fill a 20m-wide area with a ±1.5db variance in coverage. For Garum Restaurant's outdoor space, two KP52 loudspeakers were mounted at a similar height under the eaves.

THE RESULT

Thanks to the slim profile and smooth coverage of the K-array KP52, both the hotel terrace and Garum Restaurant alfresco outdoor areas are effortlessly supplied

HOTEL TERRACE 1

GARUM RESTAURANT 2

with high quality sound with a minimal number of loudspeakers. And as the client requested, the IP-rated loudspeakers withstand all seasons of Perth's climate while integrating neatly with the architecture.

Most importantly, the KP52 sounds the business. "The sound quality of the KP52 is really excellent," comments Aaron. "The first time I heard it was with a sung track with female vocals. It sounded really special, a lot better than just a background music speaker."
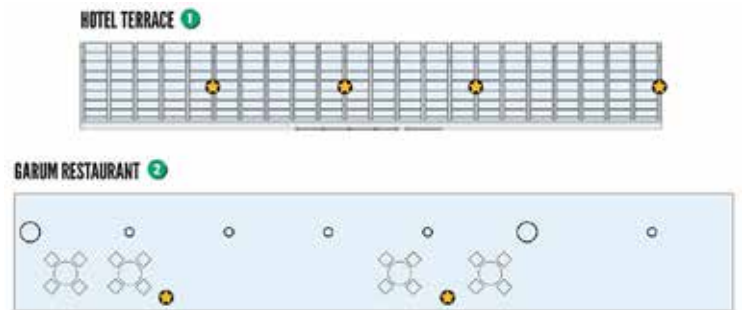
GEAR LIST

★ **K-Array Python KP52**
Power: 360W RMS
Max. SPL: 128dB
Freq. Response: 100Hz - 20kHz
Impedance: Selectable 8Ω/32Ω
Weight: 5.8kg

nas.solutions

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