

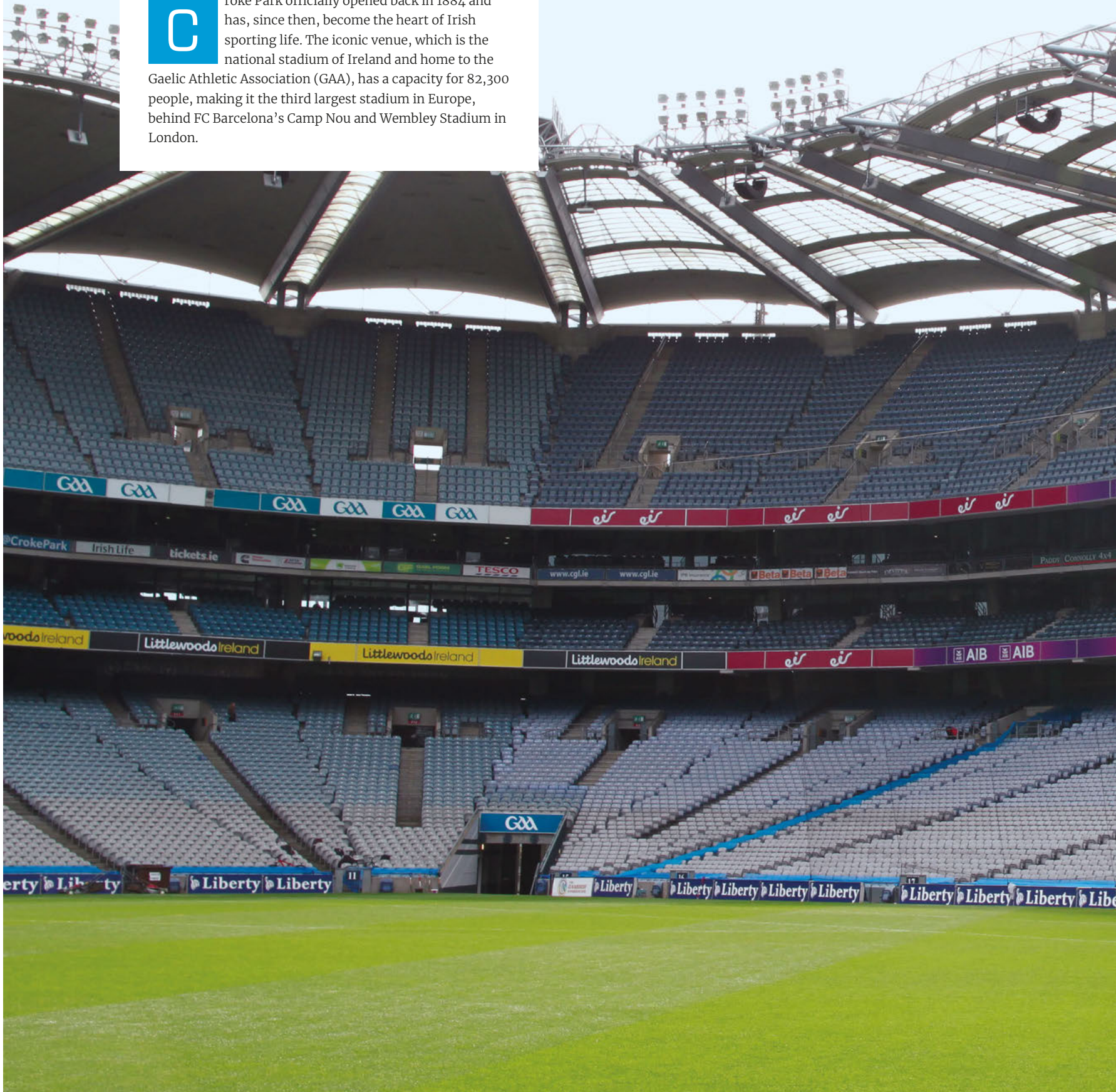
THE FULL PITCH

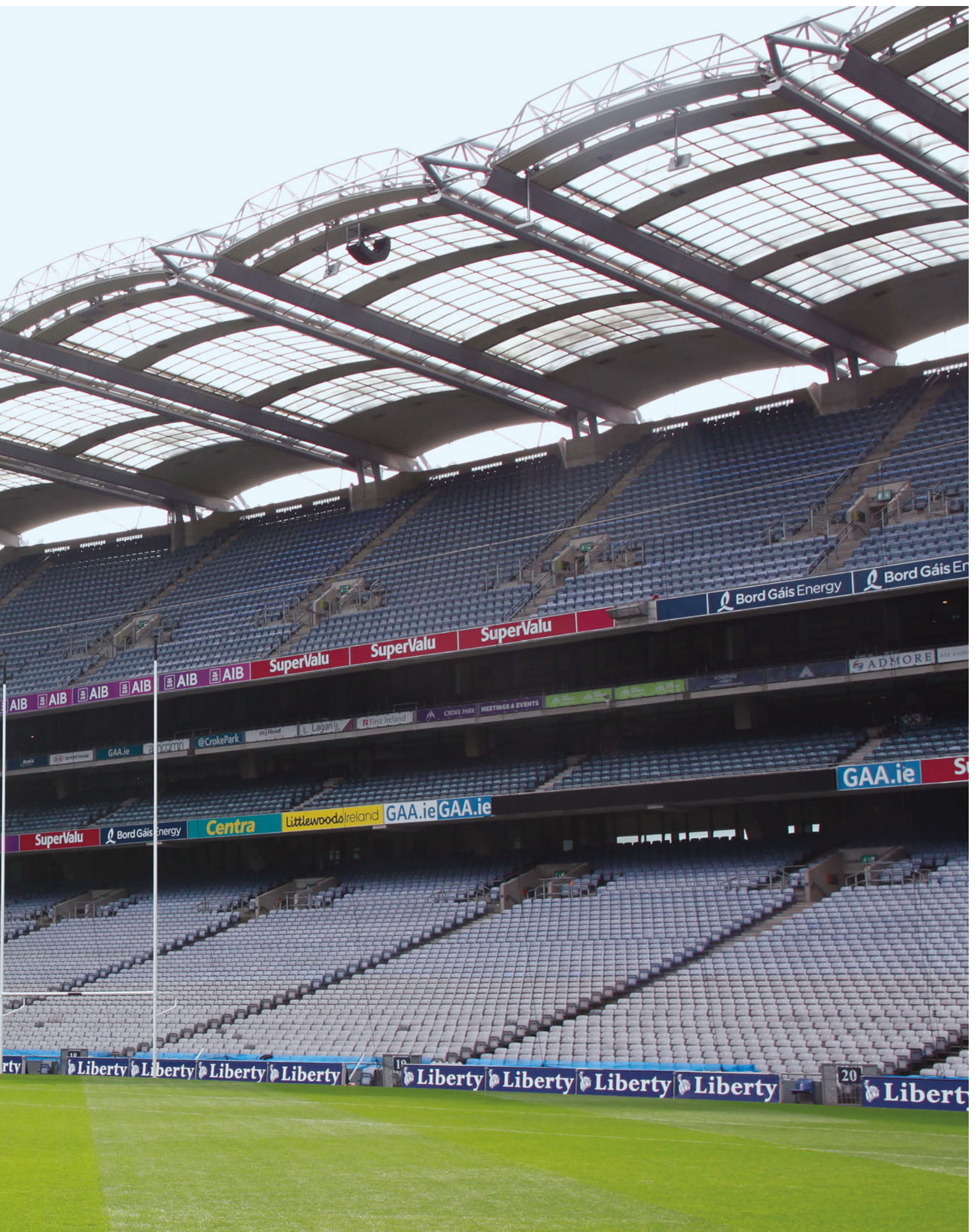
CROKE PARK

Dublin, Ireland

Images: NEXO & MONDO | STADIA

Croke Park officially opened back in 1884 and has, since then, become the heart of Irish sporting life. The iconic venue, which is the national stadium of Ireland and home to the Gaelic Athletic Association (GAA), has a capacity for 82,300 people, making it the third largest stadium in Europe, behind FC Barcelona's Camp Nou and Wembley Stadium in London.







The stadium is primarily used by the GAA to host Gaelic games, such as the annual All-Ireland finals in both football and hurling, as well as being a popular venue choice for huge concerts and events. Croke Park has seen the likes of U2, Westlife, Neil Diamond, Take That, One Direction and Spice Girls all play to sold-out crowds. With a range of events held at the Dublin venue, the GAA – the managing body for the stadium – understood the importance of improving the audio system, particularly as the existing setup had aged somewhat. The GAA’s criteria for the audio upgrade focussed on qualitative improvements to the stadium facilities for voice alarm and evacuation (VA), and for announcement and music reinforcement for matchday entertainment (PA). “The audio system in the stadium was in the region of 20 years old. Technology moves very quickly and certainly we were very conscious that it was time for us to pay attention to the improvements made in technology, in regards to

playing music and speech intelligibility,” explained Brian Conlon, Head of Stadium Operations & Projects. Mongey Communications, the full-service audiovisual and communications provider from Kildare, was intimately involved with the planning of the upgrade, working alongside technology consultancy, Vanguardia. Mongey, having been involved with Croke Park for 15 years, was instrumental in guiding the GAA, the managing body for the stadium, to a world-class audio setup, which not only benefits its regular audience of sports fans but also elevates its provision for concert sound. The audio system design options for the bowl, done in accordance with relevant British Standard guidelines and industry-standard practices, looked at the reinforcement of live and pre-recorded entertainment audio during sporting events, audio reproduction for video content, and reinforcement for pitch-side interviews. In addition to improving audio throughout the stadium,



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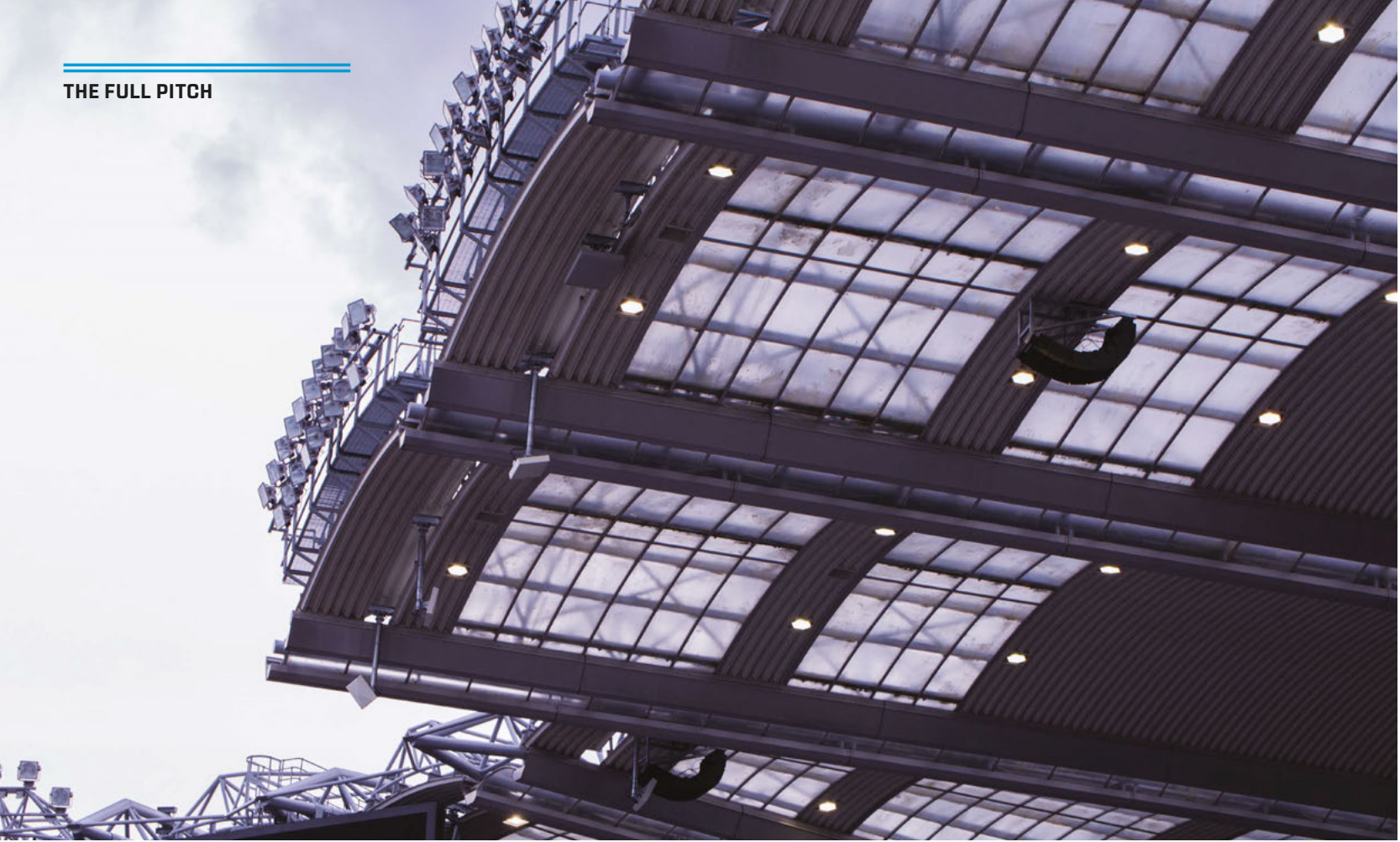
the brief required the new system to have the capability to supplement coverage for concert use.

“One great feature that it’s given the stadium is the ability for a touring rig to come in and use the loudspeakers addressing the upper terraces in the Hogan, Cusack and Davin stands – this delivers high-quality audio to those areas, which they weren’t able to achieve before,” revealed Kevin McGrath, Project Manager, Mongey Communications. “From a reputational point-of-view, the GAA wanted a best-in-class production type sound system,” Kevin added. “Croke Park Stadium is in a highly residential neighbourhood, so it doesn’t host that many live music shows. However, when they do, they host the top artists in the world, like Coldplay, U2, the Rolling Stones and Taylor Swift, so the GAA wanted to ensure that audio coverage was top-flight in all areas of the stadium.”

The stadium roof canopy now carries 18 clusters of NEXO’s GEO S12-ST specialist long-throw loudspeakers, each

curved cluster containing eight modules. Powered by NEXO’s proprietary NXAMP4x4 amplifiers and controlled over a Dante network, the new system addresses the three grandstands of Croke Park. The 18 identical clusters give uniform coverage across all seats, as well as significant improvements in SPL without infringing the very stringent noise regulations applied to the stadium’s events. The fourth side of the stadium, known as Hill 16, is maintained as traditional standing terraces and has a discrete audio system.

The GAA’s stated goal of equipping Croke Park with the highest international level of technical facilities, allowing them to attract the finest performers in the world, required a well-researched supply chain. Mongey and Vanguardia refined their choices down to three different suppliers, focussing on the issues of price: performance ratios, the manufacturer’s ability to deliver and engineering issues, such as the number of loudspeakers necessary to do the job.



“Our first dealings with NEXO included the examination of reference sites like the Stade de France, and we found them highly credible,” said Kevin. “The company’s support from the planning to the implementation was near flawless.” Croke Park’s amplification hubs had been upgraded earlier in the year, with 8km of electrical cabling installed as part of that project. RG Jones were tasked with rebuilding all the Croke Park racks and doing all the cabling, from the marshalling boxes back to the NEXO NXAMPs, together with the power distribution and cabling to route the controlling Dante network straight into the amplifiers. The installation of almost 150 NEXO loudspeakers was certainly a challenge for the Mongey team, with only a small window of opportunity in between a Rolling Stones concert and the Gaelic hurling and camogie championships, which was soon followed by the Papal visit.

“We had two weeks for the physical installation work,” continued Kevin. “We created the sub-assemblies, fixed into custom-built steel frames. Given the height of the roof canopy and the weight of the loudspeaker clusters, the only way to do it was to send the riggers onto the top of the roof to haul the arrays up into place. With all the wiring done from the top side of the canopy, they were then bolted into place under the roof structure, which had been modified with special steelwork to hold them.”

Impressively, the Mongey team completed the installation of all 18 clusters in less than two weeks, meaning there was an extra week for finetuning the network, and testing and commissioning the system.

Kevin added: “We probably shouldn’t tell people how quickly we got the job done, as it might encourage other stadium owners to expect the same from their integrators!”

With the advantages of the Dante network, the stadium can now deploy pitch side mixing positions very easily, depending on the entertainment content.

Since the bulk of the new system was brought into service

last summer, Croke Park has hosted a wide variety of events. In addition to the normal annual calendar of sporting fixtures, His Holiness Pope Francis visited Ireland as part of the World Meeting of Families 2018. It was the first visit by a reigning pontiff to Ireland since 1979 – and one of the highlights was the Festival of Families at Croke Park, which was attended by 53,392 people. Musically speaking, Michael Bublé returned to the stage at Croke Park and was the first to use the installed sound equipment for acoustic reinforcement for the upper terraces.

In every one of these cases – all significant sporting, cultural and concert occasions – the NEXO system has met with universally positive reviews. Audio quality is vastly improved and bears favourable comparison with international best in class standards. In addition to meeting the required life safety standards in full, the new equipment provides very high-quality public address for general announcements. Reinforcement of live and pre-recorded entertainment audio during sporting events and audio reproduction for video content has been deemed exceptional, and commentary and feedback on both pitch-side interview and concert audio reinforcement has been universally positive.

“Everyone is very pleased – there have been a lot of positive comments. With the age of the old system, it has been a dramatic improvement in terms of the sound quality from the new NEXO loudspeakers,” concluded Kevin.

The lighting at the stadium is provided by Thorn Lighting, with the Croke Park team keen to go down the route of LED lighting throughout the venue.

“We did a trial of Thorn LED lighting just in our tunnel area throughout the three main stands. It was an effective project and we are considering it for the rest of the stadium, however, the footprint across seven levels is vast. Currently any upgrade works we do in office spaces, and so on, would incorporate LED as a preferred replacement,” said Brian.



“We had several proposals, but we decided, based on case studies and warranties, to go with Thorn Lighting.”

The visual aspect of the stadium has also been addressed, too, with Daktronics screens installed at Croke Park.

“Similar to the upgrade of the loudspeaker system, technology had moved on. The requirement to have much clearer, digitally enhanced screens that can be clearly viewed from extreme angles was high on our agenda,” Brian explained.

“Additionally, we needed technology that could absorb the glare from the sun. Another consideration of both projects was weight loading. The roof structure here in Croke Park had to take loadings into account as the screen on the Davin stand is hung directly from the roof, much like the loudspeaker clusters.”

The stadium had Ross Video technology installed some years before in anticipation of replacing the screens.

“This meant the back-end technology had been addressed and, when the new screens were installed, we were ready to up our game on visual comms within the bowl. Additionally, we installed a ribbon board on the Davin stand which we use as a scoreboard and clock – that replaced an older system too,” said Brian.

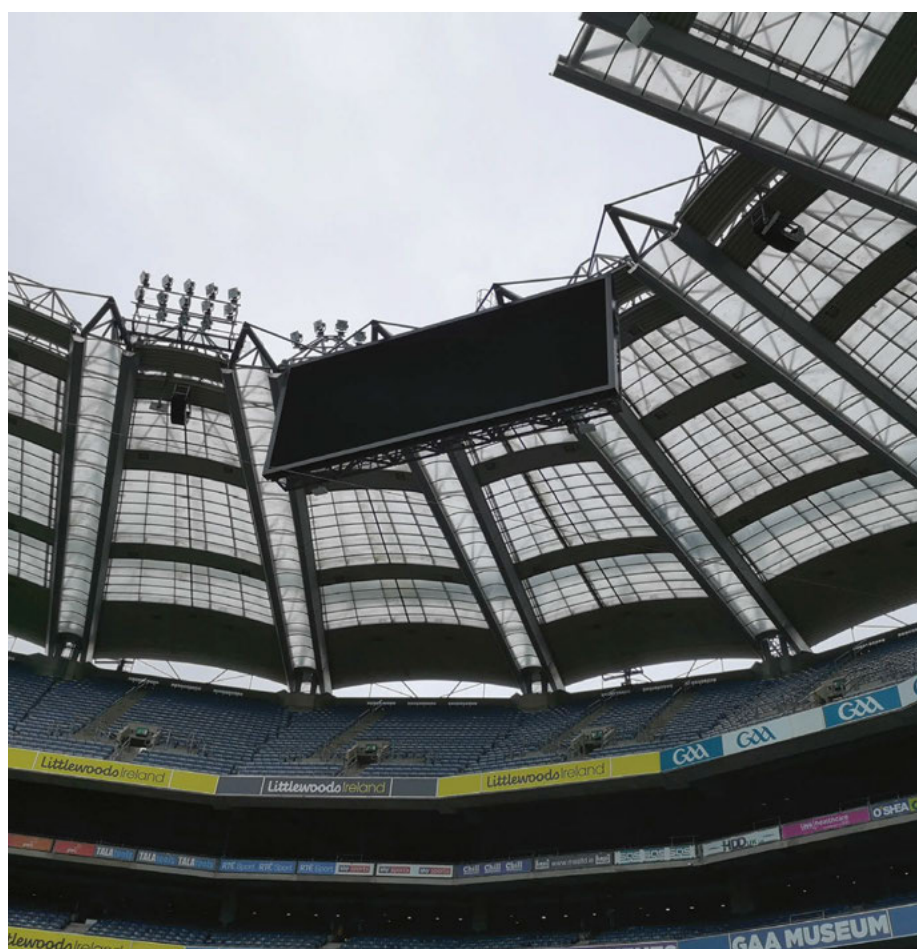
“We are always conscious of fan engagement and we continue to strive to raise the bar using our Daktronics screen technology, now coupled with our new in bowl loudspeaker system.”

The team at Croke Park have one eye on the future when it comes to 5G stadiums. In late 2018, the venue deployed a 39 sector shared Distributed Antenna System (DAS) that carries all networks. Consisting of over 480 antennas and 40km of cabling, the system provides support for 3G and 4G mobile traffic, with a capacity for over 100,000 devices. It allows for an easy upgrade to 5G services when they become available, too – making Croke Park a truly connected stadium.

“We’re also engaged in a Smart Stadium partnership with DCU, Microsoft and Intel. Croke Park is used as a test bed whereby IOT gateways and sensors have been installed to better understand crowd and environmental dynamics in a controlled space,” said Brian.

The forward-thinking attitude extends to the turf at Croke Park, as Brian explained further: “Last year, we purchased a farm in North County Dublin where we have started to grow our own turf for the post-concert replacement process. Ordinarily, we sourced the turf from the UK, however, having our own turf on our doorsteps mitigates against many risks. We have a very good relationship with County Turf who would have provided the replacement turf in the past and they continue to harvest the turf at our new venture for us.

The installation of sub metering and smart technologies has allowed us to track our usage and gauge performance issues with some of our larger plants and equipment,



hence allowing us make savings on our utilities spend. We use a temperature sensor on the pitch to ensure the undersoil heating system is activated only when the temperature falls below a certain level. “We have also trialled LED grow lights for the pitch as this technology is improving at a rapid rate.” With a new state-of-the-art NEXO audio system in place, alongside the existing lighting and visual technology already installed, Croke Park is maintaining an incredibly high standard befitting of its status as one of the best multifunctional stadiums in Europe.

However, it’s not stopping there, either, as Brian explained, there is certainly more to come: “For a stadium this size, with its footfall and high usage levels, there is a huge amount of maintenance required on an ongoing basis. We constantly have plans for upgrades and sustainability is at the fore, playing an increasingly important role in our decision making.”

INSTALLER: Mongey Communications | **CONSULTANTS:** Vanguardia | **BRANDS:** NEXO, Thorn Lighting, Daktronics | **WEBSITES:** www.nexo-sa.com, www.thornlighting.co.uk, www.daktronics.com, www.mongey.ie, www.vanguardia.co.uk