

# CommScope helps ensure vital safety communication for tunnel workers constructing Ausgrid’s \$800 million “CityGrid”

## Customer

Ausgrid

## Country

Australia

## Challenges

Ausgrid used a simplex radio channel via the New South Wales Government Radio Network (NSWGRN) to maintain open communications between the maintenance staff deployed at various checkpoints and teams working deeper within the tunnel. But this method had major drawbacks and limitations.

## CommScope solution

The Distributed Coverage and Capacity Solutions team recommended additional coverage supplied by the ION-M® intelligent optical network—a radio-over-fiber, wide-band, technology-agnostic repeater platform. The platform re-broadcasts NSWGRN signals from dedicated base stations located at two of Ausgrid’s substations. ION-M also enables Wi-Fi access within the tunnel, offering Ausgrid an entirely new suite of communication and efficiency opportunities.

***“It’s my responsibility to protect the safety of our teams. Efficient, reliable wireless communication is the first step in that process. That’s why we turned to CommScope. I’m glad we did.”***

— Peter Hopkins, radio engineering manager, Ausgrid



Australia’s largest public utility implemented ION-M and RADIAX® radiating cable solutions from CommScope to provide seamless communication during tunnel construction.

As Australia’s largest public utility, Ausgrid supplies electrical power to 1.6 million homes and businesses in and around Sydney’s central business district (CBD). In 2010, the electrical provider began an ambitious \$800 million upgrade project codenamed CityGrid. The project’s twin goals are to supply sufficient power to the Sydney CBD through 2024 and to inject extra backup capabilities into the power grid for optimal future reliability.

## The project consists of three aspects:

- Construct up to four new interconnected substations
- Replace and upgrade key high-voltage cables
- Add a new 8-kilometer City East tunnel linking existing City West and City South tunnels to form a comprehensive electricity supply ring around the business district

## Keeping tunnel personnel safe

At any point in time during the construction process, teams were working up to 55 meters below the surface. Australia's Health & Safety procedures require that tunnel workers have a means by which to contact the surface if the need arises—whether by land line, radio or mobile phone.

Ausgrid used a simplex radio channel via the New South Wales Government Radio Network (NSWGRN) to maintain open communications between the maintenance staff deployed at various checkpoints and teams working deeper within the tunnel. But this method had major drawbacks and limitations. Chief among them: it drew maintenance staff away from their daily monitoring and repair duties, forcing them to rely on land lines, escorts and face-to-face meetings (instead of wireless communications) to connect with tunnel construction teams.

Given the scope, duration, complexity and physical depth of the project, Ausgrid needed an easier, faster way to communicate—a method that ensured optimal safety for its tunnel construction staff.



### *Is it a cable or an antenna?*

*RADIAX radiating coaxial cables were fixed to the ceiling of the emerging tunnel ring. At four meters in diameter, the tunnel now acts like a custom DAS—emitting much more reliable wireless signals for instant two-way communication.*

## Impressed by previous projects, Ausgrid turns to CommScope

In prior roles at former companies, Ausgrid's radio engineering Manager, Peter Hopkins, had participated as a customer in several previous deployments of CommScope's wireless solutions. He was impressed by the results. When CityGrid's communications challenge became apparent, Peter contacted CommScope's Distributed Coverage and Capacity Solutions (DCCS) team to develop and deploy a more efficient communications strategy. Hopkins explained, "For a project as large and complex as CityGrid, it's my responsibility to protect the safety of our teams. Efficient, reliable wireless communication is the first step in that process. That's why we turned to CommScope. I'm glad we did."

## CommScope recommends ION-M®

The DCCS team recommended additional coverage supplied by the ION-M intelligent optical network—a radio-over-fiber, wide-band, technology-agnostic repeater platform. The platform re-broadcasts NSWGRN signals from dedicated base stations located at two of Ausgrid's substations. ION-M also enables Wi-Fi access within the tunnel, offering Ausgrid an entirely new suite of communication and efficiency opportunities.

"Beyond ION-M, we also chose RADIAX® cables to make sure we had reliable communications deep underground," said Peter Hopkins. "You just attach the cables to the ceiling of the tunnel. It emits signals from tiny slots directly to each tunnel worker's radio."

By functioning as a continuous distributed antenna, RADIAX cables are designed specifically to solve wireless communication problems in confined areas like tunnels, where multiple services are often blocked by radio frequency obstructions. The RADIAX RCT series Ausgrid selected for use with the local NSWGRN is designed for 50 MHz to 2.8 GHz frequency bands.

## Instant communication = an immediate boost in safety and productivity

Following the deployment of ION-M across the new tunnel, Ausgrid project leaders didn't need to worry about any further radio silence between topside, maintenance and tunnel teams. Before the implementation of ION-M, three or four Ausgrid personnel were required to man tunnel exits and escort workers. Workers now use a two-way radio and can access the tunnel without an escort, reducing teams—and costs—to roughly half the size, typically one or two people. No longer tethered to land lines, teams were also free to complete multiple tasks simultaneously, improving overall project deployment speed and productivity while reducing expenses. Tasks were dispatched from Ausgrid's local project headquarters in Regent's Park to field staff in seconds, not hours. That also meant no more waiting for periodic land-line status calls or less frequent face-to-face surface returns. And the tunnel itself is just the beginning. Hopkins sees other ways to leverage the technology.



“We’ve already expanded the ION-M platform into the City East tunnel. I could also see us using 2G, 3G or 4G mobile phone services as the project progresses,” said Hopkins. “I could even see ION-M being used to provide coverage for CBD underground parking lots, shopping centers and a future dedicated railway system.”

Everyone communicates. It’s the essence of the human experience. *How we communicate is evolving.* Technology is reshaping the way we live, learn and thrive. The epicenter of this transformation is the network—our passion. Our experts are rethinking the purpose, role and usage of networks to help our customers increase bandwidth, expand capacity, enhance efficiency, speed deployment and simplify migration. From remote cell sites to massive sports arenas, from busy airports to state-of-the-art data centers—we provide the essential expertise and vital infrastructure your business needs to succeed. The world’s most advanced networks rely on CommScope connectivity.

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