



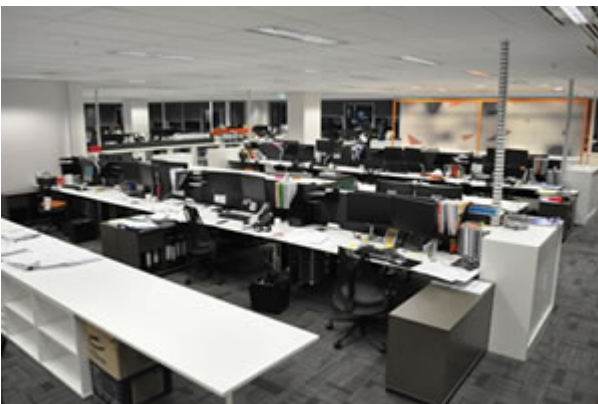
Wood and Grieve Engineers Rely on a Siemon ConvergeIT™ Cabling Design to Deliver Advanced Civil and Building Engineering Technology in their New Headquarters



- **Region:** Australia
- **Vertical Market:** Commercial
- **Customer:** Wood & Grieve Engineers
- **Environment:** Office Facility
- **Products:** ConvergeIT, Category 6A F/UTP & Category 7A TERA

WGE Overview

Established in 1961 in Perth, Australia, Wood and Grieve Engineers (WGE) have grown to be a nationally recognized engineering consultancy firm with over 350 staff in eight offices located throughout Australia and China. WGE provides civil and building engineering services to a wide range of private industry and Government clients in the disciplines of acoustics, civil, electrical, ESD, fire, hydraulic, lifts, property asset management, mechanical, structural, and underground power services. Some of WGE's civil and land development projects include the Riverside Drive re-development, Brookland Park and Greens, Albany Waterfront, and Richmond Raceway. WGE's building services have had successes at Fiona Stanley Hospital, Raine Square development, RAC headquarters, Western Australian Newspaper House, and other major sites in Western Australia.



Open office layout with suspended dual large screens designed to support Consulting Engineers at WGE's new Perth Office

To accommodate recent growth, a major development project for a new WGE headquarters building in Perth was initiated. The new building space was designed to accommodate 200 employees initially with room to grow an additional 15% to 20% in the future. From the start, it was understood that the new WGE office space would showcase a high-performance IT infrastructure supporting data, intelligent building systems, video, power management, security, and digital signage. Since WGE relies on the graphically intensive 3-dimensional capabilities of Revit® Structural and Revit™ MEP (Mechanical, Electrical, and Plumbing (Hydraulic)) software for Building Information Modelling (BIM), 10 Gigabit per second data capability was a minimum performance

requirement. Furthermore, WGE was targeting a Green Building Council of Australia (GBCA) 5 Star Green Star - Performance rating for their facility to recognize the reduced environmental impact of the fitout design and resulting energy savings expected to be realized. The end result would be a state-of-the-art "Smart Building" where potential clients could see the advanced civil and building engineering technology that WGE emphasizes in their designs put into practice.

A Converging Network

It was clear from the start that the data network had to be very robust in order to support WGE's high performance BIM computing requirements. WGE wanted a network that was highly flexible to support dynamic open workspaces and a large variety of network-delivered services, as well as scalable to allow new employees to get up and running quickly. WGE also had a wide range of IP-based building automation (e.g. lighting control and power management) and video technologies (e.g. HDMI and VGA video, wall-mounted video touch screens, and "smart boards") that they hoped to support with their IT infrastructure. Using a Siemon ConvergeIT cabling design allowed WGE to run all of these applications over a single, structured cabling system and reap the benefits of fewer cabling pathways, scalability, and virtual elimination of proprietary cabling media. WGE was able to leverage the ability of their Siemon ConvergeIT cabling network to reduce materials and waste and provide superior implementation of systems to optimize energy efficiency as part of their strategy to obtain their sustainability targets.

A Special Challenge with a Unique Solution

WGE knew that a minimum category 6A-rated cabling system would be required to support the 10GBASE-T application and selected a shielded system, which provides superior electromagnetic compatibility (EMC) performance and alien crosstalk immunity in a multi-cable environment. Angled 24-port Siemon TERA MAX patch panels were deployed

in the telecommunications room to reduce and simplify cable management and maximize density. The patch panels were then populated with quick terminating category 6A shielded Z-MAX® connectors. The same hybrid flat/angled category 6A shielded Z MAX connectors were also installed in the angled orientation at the work area.

A zoned cabling configuration was adopted to ensure the flexibility required to quickly accommodate new users and devices as well as reconfigure existing services. This topology features a third connection point in the channel, which is called a Consolidation Point (CP) when used for data applications or Horizontal Connection Point (HCP) when used for building automation applications, that is housed within a zone box enclosure. Zoned cabling is the ideal choice for enterprise spaces that are rapidly growing and expanding. The configuration facilitates the availability of "spare ports" so that new services can be rapidly deployed without the need to pull new cables from the telecommunications room and is a valuable time-saving strategy for deployment of both new and existing services.



Siemon Category 6A Shielded Z MAX® Connector



While zoned solutions offer many benefits, only a few highly-specialized cabling suppliers, such as Siemon, have the ability to manufacture the solid shielded category 6A patch cords used to connect the CP/HCP to the work area. What in fact proved to be the largest challenge associated with this project was the speed of product delivery to the westernmost territory in Australia. Since RJ45-based solid category 6A CP/HCP cords cannot be field-terminated, WGE could have been forced to stock a wide range of specific

Angled 24-port Siemon TERA MAX Patch Panels with Category 6A Shielded Z-MAX® Connectors in the Telecom Room

length factory pre-terminated cords or risk extended shipping lead-times waiting for cords to arrive. This problem was solved by deploying a Siemon category 7A TERA® connector at the CP/HCP in the zone box.

Since both TERA outlets and plugs are field-terminatable, all cabling to and from the zone box could be custom configured to the exact length. Everett-Smith, the largest privately owned electrical construction company in Western Australia and a Siemon Certified Installer, installed the cabling on the WGE project and, by field terminating, were able to neatly dress and eliminate cord slack in all of the TERA connections at the zone box. Nick Williams, Data Division Manager of Everett-Smith, reported that, "Terminating the TERA connectors was surprisingly fast and allowed us to completely customize the installation. Furthermore, TERA has so much performance headroom, that the addition of a third connector into the channel barely impacted the overall transmission performance".

Zone Box Connections



Zone Box consisting of two flat Siemon TERA MAX panels with Category 7A TERA® connectors mounted in a custom-designed enclosure under the cable tray

Each zone box consisted of two flat Siemon TERA-MAX panels mounted in a custom-designed enclosure under the cable tray providing a total of 48 flexible CP/HCP connection points. TERA plugs and outlets were field terminated with category 7A shielded low smoke, zero halogen cables that were custom cut to length on-site. This approach allowed WGE to easily overcome the potential logistical constraints of stocking and/or shipping a wide range of specific length factory pre-terminated solid cords across to their site in Western Australia.

While each zone box was fully populated with cables and TERA outlets, only the work area connections immediately required were connected from the zone box via a TERA plug and category 7A shielded cable. This approach provides a great deal of flexibility as it allows quick termination of converged building

services such as lighting control, access control, and meeting room management as needed in the future. According to Liliana Mironov, Electrical Project Engineer/UPD Section Manager, Principal at WGE, "The Siemon TERA zone cabling approach exceeded our expectations by providing a solution that is not only infinitely configurable with a small product set on hand, but completely satisfied our objectives of flexibility and scalability. At a moment's notice, we can rapidly deploy new services or reconfigure our existing deployment without the hassle of pulling new cabling from the telecom room."

Design Benefits

WGE's installed zoned cabling solution uses shielded category 7A TERA outlets and cable from the CP/HCP in the zone box to the work area outlets, shielded category 6A Z-MAX outlets at the work area and interconnect patch panel, and shielded category 6A low smoke, zero halogen patch cords for all equipment connections. This future-proof design exceeds the high-performance transmission performance needed to support all building technologies, as well as Ethernet technologies up to and including 10GBASE-T.

For a company growing as quickly as WGE, the zoned cabling approach provides high flexibility for moves, adds, and changes (MACs) through the availability of spare horizontal channel access points in the zone box. Modifications at the work area are as easy as adding or moving a TERA to Z-MAX category 7A cord connection. Because these solid cord connections may be configured to exact and customizable lengths in the field, no special product stock is required to be on hand to immediately respond to a change request.

In addition to supporting all IP-based building automation technologies, WGE also has the ability to take advantage of the cable sharing feature of the TERA connector as needed. Many analog and building automation applications, such as security cameras, broadcast video, and device control, only transmit over one or two pairs of a 4-pair cable. Because of its fully shielded construction, the signals on individual category 7A pairs are fully isolated from each other and multiple applications transmitting on just one or two pairs may be run over a TERA category 7A/class FA channel without concern for interference. This strategy offered WGE the opportunity to minimize waste in the form of unused pairs and reduce costs.

A Smart Success

As a proponent of sustainable infrastructure and architecture, WGE is very proud of their new headquarters. A Siemon ConvergeIT cabling solution enabling IP-based lighting and centralized power management was a critical part of an overall strategy to reduce operating expenses by increasing energy efficiency. ConvergeIT strategies such as eliminating multiple, proprietary cabling systems and pathways, using cable sharing to reduce the number of unused pairs, and specifying a zoned cabling design and a custom field termination process that eliminated cable waste were the key cabling features that WGE leveraged to make their new state-of-the-art green fitout a reality.

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