# High Voltage Conference

## 22nd & 23rd July 2025

Rydges South Bank
Brisbane, QLD

## Booking Discounts

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**10% Off**
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# Your Keynote Speakers

## Stephen Palmer

### CEO | Safearth

- Convenor of the International CIGRE Working Group B3.54 on Earthing System Testing
- Committee Member and Technical Editor for IEEE Std 80 and 81
- Contributing member for Australian standards including EG-0, AS/NZ 3007, and AS/NZ 2067
- Former Secretary of CIGRE & CIRED Joint Working Group B3.35 (TB 749 on substation earthing design optimisation)
- Over 25 years of experience in earthing, lightning protection, and interference risk management

## Karl Haubner

### High Voltage Test Application Engineer | High Energy Services

- Expert in condition monitoring techniques for distribution, transmission, and generating plants
- Author of several technical papers on HV asset condition monitoring and cable fault location
- Member of CIGRE D1 Australian Panel
- Member of AS Committee EL-007

# The Benefits of Attending:

- Practical solutions to high voltage design and installation issues.
- Insights into the latest techniques to extend the life of high-voltage assets.
- Practical techniques and technologies for testing and assessing the condition of high-voltage assets, cables, switchgear and transformers.
- Actionable steps for preventing high voltage incidents and improving safety.
- Updates to key standards such as AS2067.
- An understanding of the role of smart technologies in monitoring and managing high voltage systems.
- Best practices in high-voltage equipment maintenance and asset management.
- Case studies on successfully implementing advanced high voltage technologies in complex projects.
- Strategies for integrating AI and automation in high voltage monitoring systems.
- Effective risk management frameworks for high-voltage operations.
- Approaches to optimising high voltage design to reduce energy loss and improve efficiency.
- Solutions for performing arc flash assessments in standalone power systems and microgrids
- Hands-on demonstrations of diagnostic tools for high-voltage systems.
- An understanding of advancements in fault detection and predictive maintenance for high-voltage equipment.
- Steps to addressing the challenges of ageing high-voltage infrastructure.
- Innovative approaches to improving worker safety in high-voltage environments.
- Networking opportunities with your peers and specialists in the field

## Overview

# 12th Australian High Voltage Conference

We are delighted to host the 12th Australian High Voltage Conference, featuring a fresh lineup of speakers and topics, including earthing.

The event will take place in Brisbane in July 2025 at Rydges South Bank.

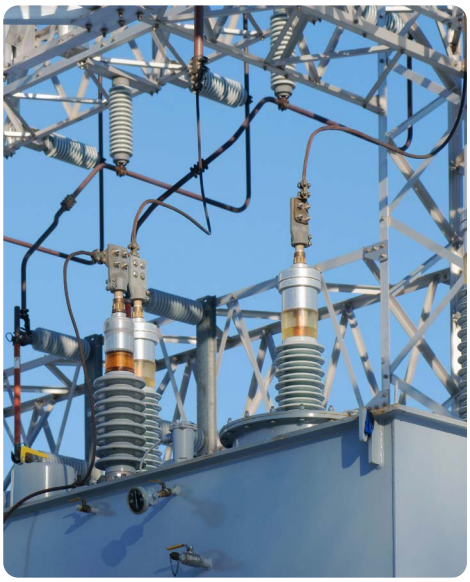
Designed for professionals working with high voltage systems in mining, industrial plants, oil & gas, and utilities, this conference will provide valuable insights, practical solutions, and networking opportunities. The event will focus on high voltage design, installation, testing and maintenance, as well as covering the updates to industry standards.

High voltage installations can range from substations, auxiliary systems, interconnecting cables/lines, and user facilities such as plants, factories, offices and mine sites.
The conference will encompass all relevant equipment and infrastructure, including switchgear, transformers, converters, cables, lines, batteries, earthing systems, capacitors and reactors.

The experienced presenters will expose attendees to the latest techniques used to avoid equipment failures and best practice for extending the life of high voltage equipment. They will also consider problems that arise when maintaining high voltage equipment and how industry can overcome these issues through technology, well-planned maintenance programs, adherence to standards/regulations, and forward thinking.

## Who Should Attend?

- Substation engineers and technicians
- Generation and transmission engineers and technicians
- High voltage engineers, technicians and auditors
- Electrical engineers, technicians and electricians
- Maintenance engineers and asset managers
- Plant, project and design engineers
- Specialists working in industrial organisations with high voltage electrical distribution
- Engineering and safety managers



Conference Program

# Day One | Tuesday 22nd July, 2025

## 8:00am Registration Opens

## 8:25am Welcome Address

## 8:30am Session One | Keynote Presentation

### AS 2067 Earthing Compliance: What's Required & What's Next

**Stephen Palmer:** CEO, *Safearth*

AS 2067 is the principal standard for high-voltage installations in Australia, providing essential guidance on the design, testing, and management of earthing systems. The 2016 edition introduced significant updates, including new safety criteria and a shift towards Quantified Risk Analysis methods. However, applying these requirements in practice presents challenges, particularly in areas such as segregated earthing systems and risk-based safety assessments. How can engineers and asset managers ensure compliance with AS 2067 while effectively managing safety and design complexities?

In this presentation, Stephen will recap the key changes introduced in the 2016 edition of AS 2067, including individual and societal safety criteria, testing methods, commissioning, and design requirements. He will explore how the standard is commonly applied, where misinterpretations arise, and the broader implications of its adoption. Stephen will also provide insights into international developments in earthing from Cigre, Cired, and IEEE.

The session will conclude with a discussion on how the Australian adoption of IEC 61936 may shape future compliance and industry practices. Delegates will gain a clearer understanding of AS 2067's requirements, its practical application, and upcoming changes that may influence earthing compliance in Australia.

## 9:30am Session Two

### On and Off-line Testing and Condition Monitoring of Distribution Cables

**Karl Haubner:** HV Test Application Engineer, *High Energy Service Pty Ltd*

The reliability of Medium Voltage (MV) distribution cable networks depends heavily on effective acceptance testing and continuous condition monitoring. The industry faces the challenge of needing cost-effective, reliable tools that can assess the condition of cable insulation and identify potential failures. How can utilities ensure that their cable networks are reliable, safe, and effectively monitored without incurring high costs or operational disruptions?

In this presentation, Karl will review the most commonly used offline and online diagnostic tests for identifying cable insulation defects. Through case studies, he will explain the advantages of each testing technique, demonstrating how combining these methods can provide a comprehensive assessment of a cable's insulation condition.

Karl will also demonstrate real-time cable Partial Discharge (PD) testing and mapping, along with Ultra High Frequency (UHF) and Radio Frequency Interference (RFI) techniques, specifically for cable terminations in a test simulation.

Delegates will gain insights into practical diagnostic techniques and condition monitoring strategies, helping them improve network reliability and make more informed decisions about cable maintenance and asset management.

## 10:15am Morning Tea

## 10:45am Session Three

### Enhancing High Voltage Equipment Inspections with Artificial Intelligence

**Naaman Shibi:** General Manager, *Techs4biz Australia*

The reliability and safety of electrical systems depend on thorough high-voltage equipment inspections. However, traditional inspection methods are often time-consuming, inconsistent, and susceptible to human error, increasing the risk of undetected faults and unexpected failures. How can artificial intelligence improve the accuracy, efficiency, and effectiveness of high-voltage equipment inspections?

In this presentation, Naaman will explore how AI-driven solutions are transforming high-voltage asset management. He will discuss the role of high-resolution image recognition in detecting defects such as insulation degradation, corrosion, and partial discharge. He will also highlight how predictive analytics can forecast failures, enabling proactive maintenance and reducing downtime. Naaman will demonstrate how AI-powered mobile applications allow inspectors to perform real-time assessments, capturing images that AI analyses for defects, ensuring greater accuracy and efficiency. He will also cover how automated reporting helps ensure compliance with standards like AS 2067 and AS 7000. Delegates will gain insights into how AI-powered inspections can streamline maintenance processes, enhance safety, and lower operational costs in high-voltage asset management.

## 11:30am Session Four

### Optimising the Installation of Natural Ester-Filled Transformers

**Mark Foster:** Technical Support & Advisory, *KingHill*

**Philip Reilly:** Business Development Manager, *Cargill*

Transformer installations, in both urban and national park areas, must balance cost-effectiveness with compliance to stringent fire and environmental safety regulations. Traditional dielectric fluids can pose challenges related to fire hazards, environmental impact, and long-term maintenance. How can transformer installations enhance fire safety and environmental sustainability without increasing costs or complexity?

In this presentation, Mark and Phil will explore key considerations for selecting dielectric fluids, including fire safety, biodegradability, toxicity, and maintenance requirements. They will also examine how to reduce the installation footprint, streamline fire protection and containment systems, and improve overall sustainability.

Delegates will gain practical insights into how adopting natural ester dielectric fluids can lead to safer, more sustainable transformer installations while optimising costs and regulatory adherence.

## 12:15pm Lunch

## 1:15pm Session Five

### Look Up and Live - Lessons in Public Safety for Powerlines

**Glen Cook:** Principal Public Safety Specialist, *Energy Queensland*

Every day in Australia, an average of 10 accidental contacts occur with powerlines, some of these lead to severe injuries and fatalities. Each year, around seven people are electrocuted, and 30 suffer serious burns. Alarmingly, 90% of electrocutions in Australia and New Zealand result from accidental powerline contacts by workers. Despite ongoing safety measures, these incidents continue to pose a major risk.

How can workers and the public better protect themselves from accidental powerline contact and reduce the risk of serious injury or death? In this presentation, Glen will share real-world insights from his experience responding to powerline incidents. He will explore the key factors contributing to these accidents and discuss practical strategies for improving powerline safety.

Delegates will leave with a heightened awareness of powerline hazards and take away actionable steps to enhance safety in their workplaces and communities.

## 2:00pm Session Six

### On Load Tap Changer Case Studies: New Insights & Lessons from the Field

**Nick Clarke:** Field Services Manager, *Transaudit / Tapchanger Services, New Zealand*

On Load Tap Changers (OLTCs) are critical components in transformers, but their complexity often leads to maintenance challenges. As the only moving part in a transformer's electrical circuit, OLTCs are vulnerable to failures, yet the lack of historical data, fault records, and loading information makes it difficult for maintenance contractors to address issues effectively. Recurring problems such as corrosive sulfurs, regenerated oils, and misinterpretation of maintenance requirements contribute to the risk of failure. How can we improve the maintenance and reliability of OLTCs, despite these challenges?

In this presentation, Nick will present updated insights based on new case studies, focusing on real-world failures, diagnostic challenges, and best practices for ensuring OLTC reliability. He will explore recurring issues like improper oil DGA sampling and provide practical strategies for avoiding common pitfalls. Nick will also discuss evolving industry approaches to OLTC management, offering fresh perspectives on maintenance strategies and how to mitigate risks.

Delegates will gain a deeper understanding of OLTC maintenance, helping them implement more effective strategies to prolong asset life, reduce failures, and improve overall transformer performance.

## 2:45pm Afternoon Tea

## 3:15pm Session Seven

### Online PD Testing – Which Sensor Should I Use, When and Why?

**Brad Monaghan:** Head of Services, *EA Technology*

Partial discharge (PD) testing is essential for assessing the condition of high-voltage assets, but selecting the right sensor for each application can be challenging. With a wide range of test techniques and sensor types available, understanding when, where, and why to use each one is critical for effective monitoring and fault detection. How can asset managers ensure they are using the most suitable PD detection method for their specific HV equipment and environment?

In this presentation, Brad will explore the variety of PD detection sensors used in online testing, including TEV, ultrasonic, UHF, HFCT, and VPIS sensors. He will discuss how different HV assets require tailored approaches to PD monitoring. These HV assets include switchgear, transformers, cables, and other plant equipment in environments which are indoor, outdoor, and underground. Brad will explain the strengths and limitations of each sensor type and provide practical guidance on selecting the right tool for specific applications. Delegates will leave with a clearer understanding of how to optimise PD testing strategies, improve asset reliability, and prevent costly failures through informed sensor selection.

## 4:00pm Session Eight

### Challenges and Solutions for Performing Arc Flash Assessments in Standalone Power Systems and Microgrids

**Robert Lake:** Director & Principal Electrical Engineer, *GPA Engineering*

As microgrids and standalone power systems become more prevalent in industrial, commercial, and remote settings, accurate arc flash hazard assessment is increasingly critical. These systems differ from conventional grid-tied networks presenting unique challenges such as low and decaying fault currents, inverter dynamics, bi-directional power flows, evolving topologies, and the coexistence of AC and DC subsystems which limit the application of conventional calculation approaches.

In this presentation, Robert will examine the technical and practical complexities of conducting arc flash assessments in microgrid and standalone configurations. Topics include the limitations of conventional calculation standards when applied to inverter-fed and low-fault-current systems, approaches for modelling fault current decay, protection strategies, and evaluating incident energy on DC buses (PV and BESS).

## 4:45pm-5:45pm Networking Drinks

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Conference Program

# Day Two | Wednesday 23rd July, 2025

## 8:30am Session Nine | Morning Keynote Workshop

### Review of Condition Monitoring Techniques to Assess the Condition of HV Assets

**Karl Haubner:** HV Test Application Engineer, *High Energy Service Pty Ltd*

High-voltage assets are critical to power system reliability, yet failures can be costly and disruptive. Without effective condition monitoring, potential faults may go undetected until they cause significant damage or outages. Ensuring asset integrity requires a proactive approach to diagnostic testing. How can engineers and asset managers use modern condition monitoring techniques to detect and address potential failures before they escalate?

In this interactive workshop, Karl will demonstrate a range of diagnostic testing techniques, from fundamental insulation resistance tests to advanced methods like Frequency Response Analysis. He will discuss best practices for field testing transformers, bushings, rotating machines, switchgear, and cables, as well as the industry's shift toward permanent online monitoring. Through real-world case studies, Karl will highlight the practical value of these techniques, with a particular focus on partial discharge measurements. Attendees will also benefit from hands-on demonstrations, including partial discharge testing on motor bars using different sensors and simple transformer testing on a sample transformer.

Delegates will gain valuable insights into condition monitoring strategies that enhance asset reliability, improve safety, and support informed maintenance decisions.

## 10:00am Morning Tea

## 10:30am Session Ten

### Earthing Resistance Testing: Common Misconceptions & Best Practices

**Stephen Palmer:** CEO, *Safearth*

Earthing resistance testing is one of the most frequently performed earthing tests, and many consider it straightforward. However, despite guidance from IEEE Std 80, it has become clear that many misunderstand the key principles behind these tests. This confusion persists even among experienced earthing specialists, and the upcoming revision of the guide aims to address these gaps in understanding.

In this presentation, Stephen will explore the most commonly used methods for measuring earthing resistance, explaining how these methods work, and highlighting their strengths and weaknesses. He will provide practical guidance on how to approach specific cases and discuss common misconceptions that may lead to incorrect conclusions.

Stephen will also offer a platform for attendees to discuss their own experiences and case studies, providing valuable insights into best practices and how to avoid common pitfalls in earthing resistance testing. Delegates will leave with a better understanding of how to conduct accurate earthing resistance tests and apply the correct methodologies, ensuring safer and more reliable earthing systems.

## 11:15am Session Eleven

### Understanding Transformers and Life Extension Strategies for Asset Longevity and Performance

**Jan-Ockert Fourie:** Senior Electrical Engineer, *Machinemonitor*

Transformers are critical components in power systems, responsible for regulating voltage and distributing power. However, understanding their design, operation, and performance parameters is essential to maintaining their efficiency and ensuring long-term reliability. How can we extend transformer life and improve performance while managing operational costs?

In this presentation, Jan-Ockert will delve into transformer core and winding structures, insulation systems, cooling methods, failure modes, and diagnostics. He will discuss the impact of aging factors such as thermal stress, moisture ingress, insulation degradation, and mechanical wear on transformer performance. Jan-Ockert will explore life extension strategies such as oil management, condition monitoring, load management, and advanced diagnostics. He will also share maintenance best practices that can help enhance the longevity and reliability of transformers, ultimately reducing operational costs.

Delegates will leave with practical knowledge on how to manage and extend the lifespan of transformers, ensuring better performance and a more cost-effective approach to asset management.

## 12:00pm Lunch

## 1:00pm Session Twelve

### Choosing the Right Transformer Oil: Balancing Cost, Safety, Environmental & Technical Performance

**Philippe Reboul:** Managing Director, *Molekulis Pty Ltd*

As the energy transition continues to evolve, energy asset owners, project developers, and industry practitioners face new challenges in selecting the right materials and solutions. But how can they navigate these complexities effectively?

In this presentation, Philippe will provide guidance on choosing transformer insulating oil, a key component in ensuring operational reliability. Through a comparative study, Philippe will explore critical performance drivers such as cost, safety, environmental impact (including CO2 emissions), and technical performance, addressing criteria like partial discharge, oxidation stability, and operating temperatures. Participants will gain the tools necessary to balance risk and make informed decisions on the ideal fluid for their applications.

## 1:45pm Session Thirteen

### On-Load Tap Changer Advancements: A Manufacturer's Perspective on Technology, Innovation, and Best Practices

**Barry Myburgh: Reinhausen,** *Reinhausen Australia*

On-Load Tap Changers (OLTCs) are critical components in voltage regulation for transformers. The evolution of OLTC technology, from oil-switching to vacuum-switching, has brought about significant advancements, but challenges remain in ensuring their long-term reliability and performance. How can new advancements in OLTC technology enhance reliability and address challenges related to service intervals, monitoring, and retrofitting?

In this presentation, Barry will explore the evolution of OLTC technology, with a focus on innovations in vacuum-type OLTCs for various applications, including Voltage Regulated Distribution Transformers and small power transformers. He will delve into advanced monitoring solutions for OLTCs, particularly those with vacuum technology.

Barry will also discuss retrofitting strategies, emphasising the importance of oil quality monitoring, the use of alternative insulating liquids like Ester-fluids, and the impact of Sulphur Sulphide in insulating fluids on Silver Corrosion in OLTC components. Attendees will gain valuable insights into best practices for maintaining OLTCs, ensuring their reliability, and implementing advanced monitoring strategies to extend their operational life.

## 2:30pm Afternoon Tea

## 3:00pm Session Fourteen

### AI-Human Hybrid Innovative Technique for PD Analysis and Monitoring in MV Switchgears

**Giacomo Ciotti: Engineer,** *Machinemonitor*

The aging of electrical assets, particularly critical components such as switchgear and cables in industrial environments, has intensified the need for reliable assessment of electrical insulation health. While modern partial discharge (PD) monitoring systems offer automated alarm-triggering capabilities and ease of deployment, a major challenge remains— the reliability of automatic data analysis, which can lead to false alarms or misinterpretation of critical signals.

How can we improve the reliability of PD monitoring systems to minimise false alarms and ensure accurate diagnostics for critical electrical assets? In this presentation, Giacomo will introduce an innovative hybrid approach that integrates artificial intelligence with human expertise to enhance the reliability of PD monitoring. This approach goes beyond automatic PD data interpretation by incorporating offline test results (e.g., tan delta) with online monitoring data to compute a dynamic risk index for the monitored asset. In this presentation, Giacomo will explore how periodic risk assessments using a hybrid AI-human model enable trend tracking and provide asset managers with a powerful tool for optimising maintenance scheduling. Real-world case studies will demonstrate how this method improves diagnostic accuracy, reduces false alarms, and enhances decision-making in asset management.

## 3:45pm Session Fifteen - Discussion Panel

## 4:15pm Conference Close

# About the Keynote Speakers

## **Stephen Palmer** | CEO | Safearth

Stephen Palmer is a renowned earthing specialist and the Convenor of the International CIGRE Working Group B3.54. He is also a Committee Member and Technical Editor for IEEE Standards 80 and 81. Over his 25-year career, Stephen has gained extensive experience in all aspects of earthing, including design, audits, and testing, across sectors such as power generation and delivery, heavy industry, mining, and rail. His work focuses on managing the risks associated with earthing, lightning protection, and electromagnetic interference.

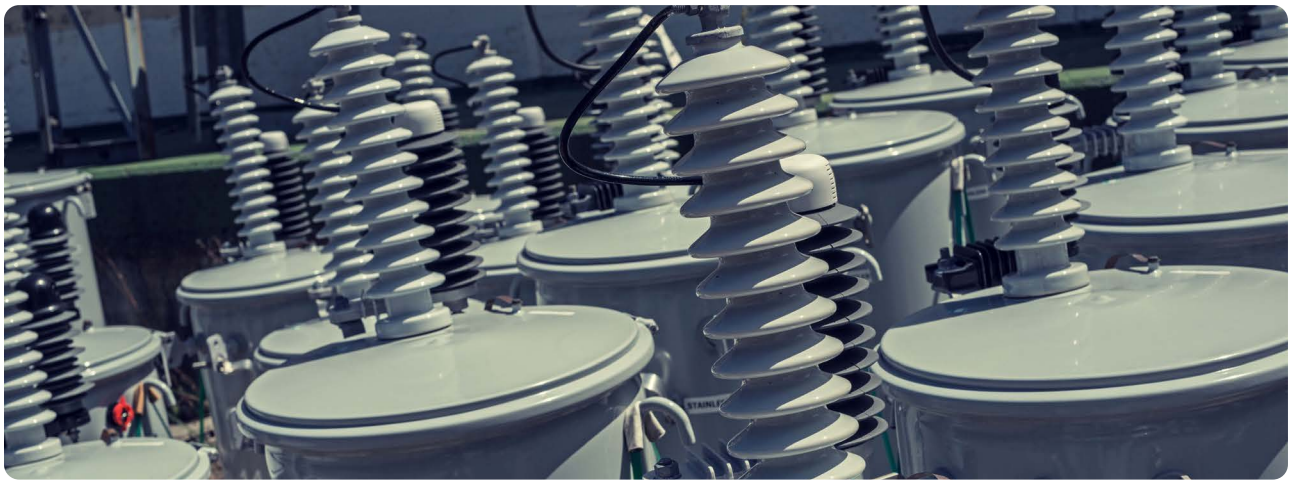
As the leader of a team of 45 consultants and researchers, Stephen's expertise extends beyond the technical domain,  it include strategic leadership and risk management. He has contributed to key Australian documents such as EG-0, AS/NZ 3007, and AS/NZ 2067, and serves as a committee member for IEEE Std 80 and Std 81. Stephen was also the Secretary of the CIGRE & CIRED Joint Working Group B3.35, which published TB 749 on substation earthing design optimisation and quantified risk.

Stephen has been a dedicated educator, delivering formal earthing training for more than two decades. He has presented at numerous conferences, both in Australia and internationally, including for the NSW Government, Energy Networks Association (ENA), Engineers Australia, CIRED, Cigre, and the IEEE.

## **Karl Haubner** | HV Test Application Engineer | High Energy Service Pty Ltd

Karl Haubner, is an expert in providing High Voltage training, testing, and consultancy services to the industry. He currently serves as the High Voltage Test Application Engineer at High Energy Service (HES). Prior to his appointment with HES, he was the HV Applications Engineer for Doble Engineering, where he serviced the Asia-Pacific region.

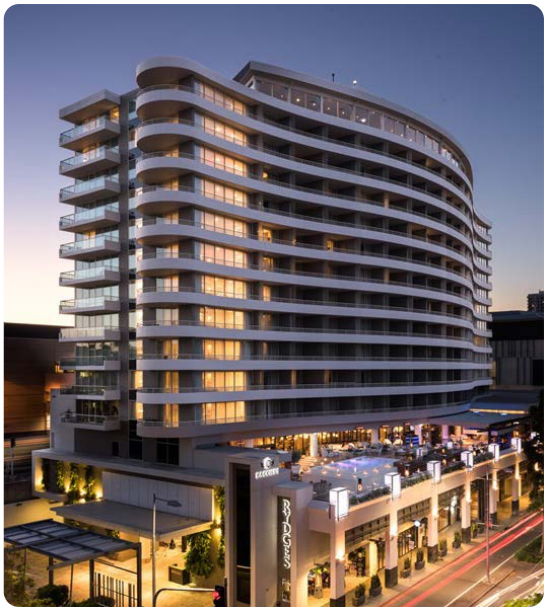
In his roles, Karl has been actively involved in the development and introduction of new condition monitoring techniques for distribution, transmission, and generating plants. Karl is the author of several technical papers on the condition monitoring of HV assets and cable fault location, and he has delivered numerous short courses on testing techniques at both university and industry levels. He is a member of CIGRE D1 Australian Panel and the AS Committee EL-007.



# General Information

## Cancellation Policy

A 20% cancellation fee will apply for cancellations received 7–14 days prior to the start date of the conference. Cancellations received less than 7 days prior to the start date of the conference are not refundable, however substitutes are welcome.



## Conference Venue & Accommodation

Rydges South Bank
9 Glenelg Street, South Brisbane
QLD 4101 Australia
**Hotel:** +61 7 3364 0800
**Email:** reservations_rydgessouthbank@evt.com
**Web:** www.rydges.com

## Alternative Accommodation

Alternative accommodation can also be found nearby at:
Novotel South Bank
Emporium South Bank
Quest Apartments South Brisbane

## Food and Beverages

All lunches, and morning and afternoon refreshments are part of your delegate registration. The networking session is also included.

## If you are unable to attend the full conference

Please contact us for details to attend individual sessions or to purchase the Conference Resource Kit.

# Tickets & Registration

## Early Bird Offer - 10% Off

Single ticket
**$1,530.00*** per person
**Save 10% when you book on or before 13th June, 2025*

Group Booking
**$1,377.00*** per person
**When you book for 2 (two) or more people on or before 13th June, 2025*

Reserved Table of 8
**$1,197.00*** per person
**When you book for 8 (eight) or more people on or before 13th June, 2025*

## Standard Pricing

Single ticket
**$1,700.00*** per person
**When you book after 13th June, 2025*

Group Booking
**$1,530.00*** per person
**When you book for 2 (two) or more people after 13th June, 2025*

Reserved Table of 8
**$1,300.00*** per person
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