Robert Mulcrone

Overhead Line Equipment Design Engineer

Qualification: Bachelor of Engineering (Hons) Aerospace Engineering

Relevance to project: Robert is a railway electrification engineer with over twenty years' experience in the design and documentation of overhead wiring systems. He has been involved at all stages of the project life-cycle from survey to production of concept and detailed designs. Robert has also worked on the client's side in his role with Network Rail in the United Kingdom, as Overhead Line Design Engineer, and during his many secondments into the Public Transport Authority in Perth.
He has experience using the following equipment:

- PTA 25kV AC including: Simple, auto-tensioned equipment
- QR 25kV AC including: Mk5 simple, auto-tensioned equipment
- RailCorp 1500V DC including: Simple & compound, auto-tensioned & fixed equipment
- Network Rail (UK) 25kV AC including: Mk1 simple & compound both auto-tensioned & fixed equipment, Mk3A & B simple auto-tensioned equipment and UK1 simple auto-tensioned equipment.

Metronet - Thornlie Cockburn Link Yanchep Rail Extension (TCLYRE)
2020 – Present

Independent overhead line design verification to ensure compliance with the Scope of Works and Technical Criteria (SWTC), relevant Public Transport Authority Standards and Codes of Practice and where relevant International Standards.

Claremont Station Project (CSP)
2019 - 2020

Overhead Line design reviewer for the Claremont Station Project. The project includes significant remodelling of the overhead line equipment to suit track realignment, the introduction of two turn-back facilities to the West of Claremont Station, remodelling of the Claremont Station and installation of new pedestrian overpass. Deliverables for the project include staged OLE layout, bonding plans, cross-sections and switching designs.

Secondment into Public Transport Authority – Network and Infrastructure
2015 - 2019

Part-time secondment into PTA's Network and Infrastructure (N&I) branch to undertake miscellaneous overhead line design related duties, including:

- Design reviews;
- System design development;
- Overhead line design and checking; and
- Various project engineering activities.

Forrestfield Airport Link (FAL)
2015 - 2020

Overhead Line design reviewer for the Forrestfield Airport Link. This includes the grade separated junction area at Bayswater, and the overhead conductor rail design for 16 track kilometres. Overhead Line System design developed as part of the project, allow for any future projects with similar overhead line requirements. Deliverables include the following:

- Staged design;
- Detailed layout design;
- Detailed cross-section design;
- Switching cross-section design;
- Detailed bonding design; and
- Miscellaneous documentation to support the installation contractor.

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PTA Codes of Practice & Maintenance Work Instructions
2013 - 2014

The Perth Transport Authority (PTA) is undertaking reviews of the maintenance practices within their organisation. GHD have been tasked to review existing Code of Practice and create maintenance work instructions on behalf of the PTA. Robert's role within this project includes the following:

- Review of existing Codes of Practice, benchmarking against equivalent standards from other operators, and providing recommendations to the PTA.
- Creation of maintenance work instructions for specific activities undertaken by the PTA maintenance staff.

Independent Design Verification
2013

Robert has undertaken independent design reviews for various projects, to ensure the designs meet safety requirements, the requirements of relevant standards and Codes of Practice and constructability.

Examples of projects where Robert has undertaken reviews of OLE designs include:

- Butler Extension Project (BEP),
- Overbridge renewals on behalf of Longrun.

Network Rail Overhead Condition Renewals (OCR) – 2006-2008

Network Rail OCR is a division of Network Rail maintenance established to undertake the heavy maintenance on life expired equipment throughout the United Kingdom.

As Overhead Wiring Designer for Network Rail Robert's role included the following:

- Designer for WCML Line Speed Enhancements,
- Site surveys to identify material requirements,
- Bill of quantity production,
- Construction support,
- WCML campaign changes, and
- Heavy maintenance & wiring train design support.

Perth City Link Rail Alliance (PCLRA)
2012 – 2013

The Perth City Link Rail Alliance will deliver the Perth City Link Rail Project, which involves sinking the Fremantle Railway Line, improving connections between Perth Station and Perth Underground via a new pedestrian underpass, whilst maintaining Perth Station's capacity to cater for special events. The project area must remain a live operating rail environment throughout. The project includes the Overhead Traction Wire Equipment designs associated with the modifications to the railway alignment and associated infrastructure changes necessary to complete this significant project. The Overhead Traction Wire Equipment design includes the tie-in to overhead conductor rail and construction support throughout the staged installation.

As Overhead Wiring Designer for PCLRA (PTA 25kV) Robert's role included the following activities:

- Preparing Overhead Wiring Design reports, including risk assessments and Safety in Design reports,
- Staged designs to suit the construction and possession programmes,
- Layout Plan and Bonding Plan design,
- Cross-section design and allocation,
- Bridge cross-section design and allocation,
- Switching design and allocation,
- Dropper schedules, foundation schedules and cantilever set-up details, and
- Construction support.

- Robert has 20+ years' experience in the design and documentation of Overhead Line Systems;
- Is experienced with multiple Overhead Line Equipment types, both Australian and United Kingdom;
- Also experienced in the support of Overhead Line Equipment construction, in various roles involving on-site design support.
- And experienced with the maintenance of Overhead Line Equipment during his time with Network Rail.