



General Electrical and Signalling Work

Warning

You cannot undertake this activity in the rail corridor unless you have completed a pre work brief and work site protection plan.

Reference should also be made to the [Protocol for Entering the ARTC Rail Corridor](#) and the [Business Rules for Working in the ARTC Rail Corridor](#)

Minimum Personal Protective Equipment (PPE) requirements must also be met in line with the [Personal Protective Equipment \(PPE\) Work Instruction](#).

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| Work Activity: | General Electrical and Signalling Work (including maintenance and equipment servicing; system fault finding; installation of new or modified equipment and testing and commissioning of new/altered infrastructure). | | WMS No: WHS - WI - 500 |
| Coverage: | ARTC employees, and contractors directly managed by ARTC | | Version No: 1.0 |
| Developed by: | Brett Teasdale, Julian Richards, Justin Tannock, Mark Blaik, Stephen Baxter, Trevor Moore. | Approved by: | A/Executive General Manager, Enterprise Services Date Approved: 14 December 2016 |

| <i>What are the tasks involved?</i> | <i>What are the hazards and risks?</i> | <i>What are the control measures?</i> | <i>Related Documents</i> |
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| Disarrangement of signalling circuits and associated infrastructure. | Rail vehicle collision or derailment – death, serious injuries. Disruption to rail operations. | Apply one or more of the following controls: 1. Notify Network Control before performing work on signalling circuits and related infrastructure. 2. Documented processes for disconnection of signals equipment. 3. Documented requirements for checking signals equipment before reinstatement to service. | ARTC Signalling Procedures and Forms Network Rules - Infrastructure Booking Advice (IBA) - Condition Affecting Network (CAN) |
| Working on or near: <ul style="list-style-type: none"> power lines or electrical traction overhead wiring or within substations. | Exposure to hazardous electrical energy – death. | Apply one or both of the following controls: 1. Identify and isolate hazardous electrical energy. 2. Maintaining a separation distance of 3 metres for voltages up to 132KV and 8 metres for voltages greater than 132KV, unless you have a suitable permit. Work within the defined electric traction network requires the person to have completed the ARTC Electrical Safety Induction. | ARTC Signalling Procedures and Forms ARTC Electrical Procedures and Forms Adelaide Metro Electrical Procedures (obtain current versions from Adelaide Metro) Melbourne Metro Electrical Procedures Sydney Trains Electrical Procedures |



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| <p>Working on or near exposed electrical conductors within equipment and related infrastructure, such as traction return cables, signals, signal huts and related infrastructure.</p> | <p>Exposure to hazardous electrical energy – death, electric shock, burns.</p> | <p>-Assume electrical installations are energised, unless proven otherwise. -Identify and isolate hazardous electrical energy (except when necessary to perform diagnostic and related tests, or where work is on extra low voltage circuits). -Do not perform electrical work in wet or damp conditions or with damp or wet hands. -Ensure adequate working space. -Limit access to the work area. -Use insulated tools. -Wear insulated gloves and safety glasses for voltages above 120 volts, for diagnostic and related tests.</p> <p>Work within the defined electric traction network requires the person to have completed the ARTC Electrical Safety Induction.</p> | <p>ARTC Signalling Procedures and Forms ARTC Electrical Procedures and Forms</p> |
| <p>Working on or around moving mechanical equipment including:</p> <ul style="list-style-type: none"> • LX boom gates • Motors • Point blades and rodding | <p>Exposure to moving equipment parts – crush injuries.</p> | <p>-Identify and isolate hazardous mechanical energy. This may include, removing fuses, placing blocks between movable parts, clipping and locking points, applying cut out devices, or otherwise securing the equipment. (except when necessary to perform diagnostic and related tests). -Confirm workers are clear of movable parts prior to operation. -Ensure adequate working space. -Keep clear of movable parts. -Limit access to the work area.</p> | <p>ARTC Signalling Procedures and Forms</p> |
| <p>Working on or around access tracks, or roads (private and public).</p> | <p>Struck by road vehicles – death or other serious injuries.</p> | <p>Put traffic control measures in place, when needed. (prevent, slow and/or direct vehicle and people movements).</p> | <p>-</p> |
| <p>Working on or around batteries.</p> | <p>Exposure to battery related explosive gases and corrosive liquids – burns, loss of sight and other injuries.</p> | <p>Maintain batteries according to manufacturer guidelines and type approval conditions. No hot work, smoking or other ignition sources. Obtain and follow the safety data sheet. Use insulated tools. Ventilate work area. Wear goggles or face shield. Wear acid resistant gloves (when handling and refilling batteries).</p> | <p>-</p> |



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| Working within and around signals, signal huts and related infrastructure. | Contact with rodents / insects/ snakes – death or infection disease transmission. | Visually inspect work area for hazards before conducting work. Avoid walking through long grass. Carefully and slowly, open point motor covers and signal pit covers. Do not disturb snakes. Do not place hands or feet into places where you cannot see them. Install and maintain rodent baits within signal huts. Use insect repellent, when needed. | - |
| | Struck by signal and/or signal hut doors – head injuries and cuts. | Engage latch on door or prop door open with a suitable object. | - |
| | Incorrect tools used / tools not used correctly – cuts. | Use correct tools / tool parts for the task. Use tools according to manufacturer instructions. Do not perform work unless trained to do so. Use residual current devices with - protectively earthed portable electrical equipment, extension leads and power boards. | Air and Power Tools - Work Method Statement Vegetation Management - Work Method Statement |
| | Exposure to Chemicals – burns, skin sensitisation, loss of sight. | Obtain and follow the safety data sheet. | - |
| | Exposure to Asbestos – asbestosis, mesothelioma, and other cancers. | Check the asbestos register before disturbing materials that have been manufactured or constructed before 2003. (particularly electrical backing boards, building insulation and building materials manufactured before 1990). Do not disturb materials suspected or known to contain asbestos. | Asbestos Work Instruction |
| | Exposure to airborne dust – respiratory diseases, asthma, foreign body in eyes. | Isolate work area where dusts are suspected to contain asbestos. Vacuum dusty surfaces. Wear P1 or P2 respiratory protection (placing respiratory protection against a clean-shaven face will maximise its effectiveness). Wear safety goggles. | Asbestos Work Instruction |
| | Fall from height – death, other serious injuries. | Refer to work method statement. | Heights (including ladders) - Work Method Statement |
| | Exposure to sharp surfaces and tools - cuts. | Check for sharp edges. Wear cut proof gloves, when needed. | - |
| | Handling hot objects – burns e.g. - after grinding metal - after using tools - removing hot globes | Allow objects to cool before touching them. Wear heat resistant gloves, when needed. | - |

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| Working with infrastructure. | Performing manual tasks – strains. (e.g. manually operating points, moving equipment, installing equipment) | Use correct manual task techniques. | - |
| Entering a confined space. | Exposure to atmospheric and other hazards – death, respiratory illnesses, loss of consciousness. | Refer to work method statement. | Confined Spaces - Work Method Statement Confined Space Entry Permit |
| Working with optic fibre cable. | Exposure to Optic fibre glass – cuts, eye injuries, internal bleeding due to ingestion of fibres, skin infections due to splinters. | Wear puncture proof gloves and an apron/coat. Wear eye protection, such as safety glasses or goggles. Use correct handling techniques, such as picking up fibre fragments with sticky tape and place them into a dedicated disposal container. Keep ends of fibres away from eyes, skin and clothing. Remove apron and wash hands thoroughly before touching the face, eyes, smoking, drinking, chewing gum and eating. | Manufacturer guidelines |
| | Eye exposure to optic fibre light – loss of sight. | Do not look at the end of a fibre or connector, unless you are certain the fibre is dark. Replace protective caps on ends of unused connectors. | Manufacturer guidelines |



| References | |
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| <p>Standards, Codes of Practice, Guidance:</p> <p><u>ARTC Standards and Forms</u></p> <p>ARTC Signalling Procedures and Forms</p> <p>ARTC Electrical Procedures and Forms</p> <p><u>Rail Infrastructure Manager Standards and Forms</u></p> <p>Adelaide Metro Electrical Procedures (obtain current versions from Adelaide Metro)</p> <p>Melbourne Metro Electrical Procedures</p> <p>Sydney Trains Electrical Procedures</p> <p><u>Law</u></p> <p>Commonwealth Work Health and Safety Act</p> <p>Commonwealth Work Health and Safety Regulation (particularly sections 144 – 166)</p> <p>Commonwealth Code of Practice – Managing Electrical Risk in the Workplace (Safe Work Australia - Model Code of Practice)</p> <p>State Electrical Safety Laws</p> <p><u>Standards</u></p> <p>AS/NZS 3000 – Wiring Rules</p> <p>AS/NZS 3760 – In Service Safety Inspection and Testing of Portable Electrical Equipment</p> | <p>Plant / Equipment / Tools:</p> <p><u>Equipment</u></p> <ul style="list-style-type: none"> -Electrical testing equipment, with insulated probes. -Fibre optic power metre (or similar device to detect light in optic fibre cables). -Insulated tools, including screw drivers and pliers. -Insulated, fully enclosed foot ware. -Isolation locks, tags and related equipment. -Ladders, including step ladders. -Residual current devices. -Socket sets and accessories. -Spanners (adjustable spanners are not permitted). <p><u>PPE</u></p> <ul style="list-style-type: none"> -Acid resistant gloves -Cotton, full-length shirt (with sleeves rolled down) and trousers. -Cut proof gloves -Face shield -Goggles -Heat resistant gloves. -Insulated gloves. -P1 or P2 respiratory protection. -Puncture proof gloves -Safety glasses. |
| <p>Training and Competency Requirements:</p> <p>Rail Industry Worker Card with appropriate competencies and licences.</p> | <p>Inspection / Testing requirements:</p> <p>Inspect equipment before use. Portable electrical equipment, cables and residual current devices must comply with AS/NZS 3760.</p> |