ELECTRICAL SAFETY

PURPOSE AND SCOPE

The intent of this document is to eliminate or minimise the risks of fatalities, injuries and incidents arising from all temporary and/or permanent electrical installations at Gamuda Australia (GA) projects / workplaces. This standard applies to all electrical work, including installation, testing, and commissioning.

CRITICAL CONTROLS
– Temporary electrical works are designed, installed, tested, and commissioned as per Australian Standards (including 3 monthly testing and tagging of portable electrical equipment)
– Unless tested for dead, all wires and equipment are to be treated as live
– Personnel undertaking electrical work must be qualified/licensed electricians
– Electrical work methodology consists of a process to ensure personnel are not exposed to inadvertently energised equipment
– Electrical work must not be carried out on live electrical equipment and/or whilst the equipment is energised (subject to prescribed exceptions and circumstances)
– All circuits and powered equipment have RCD protection
– Switchboards are compliant and secured
– All energy sources are clearly identified and marked
– Live cabling is protected from mechanical (machinery and tools) damage
– Work in and around electrical infrastructure is effectively managed
– All electrical work shall be risk assessed and controlled as per the hierarchy of control

Note: The above controls are to be read in conjunction with the Regulations, Standards and Codes listed below.

PRESCRIBED EXCEPTIONS AND CIRCUMSTANCES

Electrical work must not be carried out on live or energised electrical equipment while the equipment, subject to prescribed exceptions and the following circumstances.

– Extra-low voltage supplied electrical equipment (unless it forms part of an electrical installation located in an area in which the atmosphere presents a risk to health and safety from fire or explosion)
– Electrical equipment that is or is part of an active impressed current cathodic protection system within the meaning of AS 2832
– automotive electrical work
– work carried out by electricity supply authorities on the electrical equipment including line-associated
– equipment, controlled or operated by the authority to transform, transmit or supply electricity
– electrical work carried out on life preservation or life-saving equipment which is to remain energised and operating while electrical work is carried out, or
– electrical work being carried out on equipment which remains energised for the work to be carried out properly i.e. testing and commissioning, or
– where it is necessary for the purposes of testing to ensure the equipment is energised as required by Work Health and Safety Regulation 155, or

- there is no reasonable alternative means of carrying out the work, and
- the work meets other requirements for carrying out energised electrical work

Before electrical work is carried out on electrical equipment the equipment is tested by a qualified electrician or person to determine whether it is energised or de-energised:

- Each exposed part is treated as energised until it is isolated and determined not to be energised, and each high-voltage exposed part is earthed after being de-energised
- Electrical equipment that has been de-energised to allow for electrical work to be carried out cannot be inadvertently re-energised. A Permit to Isolate and a lock-out and tag-out system must be in place and each person working on the isolated service must attach their own personal danger lock at the isolation point or lock box (where applicable).

ELECTRICAL INSTALLATIONS

Electrical installations will comply with AS/NZS 3000 – Electrical installations and AS/NZS 3012 – Electrical Installations – Construction and Demolition sites.

Electrical installations will be inspected and certified as correctly installed in accordance with AS/NZS 3017 – Electrical installations – Verification guidelines and relevant regulatory requirements specific to the jurisdiction where the work is being performed. This verification must be completed by a licenced electrical worker. GA will ensure that documented electrical certificates / handovers are provided.

Electrical certificates / handovers include temporary electrical installations such as temporary electrical switchboards and the establishment of temporary site offices, amenities, crib rooms or similar.

EARTH LEAKAGE PROTECTION

Earth leakage protection isolates the supply of electricity to protected circuits, socket outlets or electrical equipment in the event of a current flow to earth that exceeds a predetermined value. Earth leakage protection is achieved through the use of Residual Current Devices (RCDs). RCD's will be:

- Provided on all portable generators.
- Provided on all mains and sub-mains circuits.
- Provided on all wiring used for construction, with the construction wiring clearly marked.

Regularly tested by a competent worker in accordance with the requirements of AS/ NZS 3760 – Inservice safety inspection and testing of electrical equipment.

RCD's that have built-in test buttons and which are either individually portable or part of an extension lead, must be tested before each use to confirm the devices are operating effectively.

A record of testing (other than for daily testing of the portable RCD push-buttons) must be maintained and include the following;

- Date of the testing.
- Name and competency of the worker who conducted the testing.
- The outcome of the inspection, inclusive of trip time details.

RCDs found to not to be working, will be taken out of service immediately.

CONSTRUCTION WIRING

Construction wiring is a term used for electrical installations which supply temporary power to a construction site. It is normally intended to be removed once the construction work has finished and so will not be part of the permanent electrical installation. In addition to the control measures for electrical work, construction wiring will:

- Be installed and certified (as per AS/NZS 3012).
- Not be tied, bundled, or grouped with permanent wiring.
- Not be attached to free-standing fencing.
- Be protected by conduit or equivalent where this is a risk of mechanical damage.
- Be marked by attaching yellow “construction wiring” tape / signage at intervals not exceeding 5m.

REGULATIONS, STANDARDS AND CODES

- Work Health & Safety Regulation 2011 (QLD, ACT), 2012 (SA), 2017 (NSW, NT) and 2022 (WA); Chapter 4, Part 4.7 General electrical safety in workplaces and energized electrical work
- Electrical Safety Regulation 2013 (QLD)
- Occupational Health and Safety Regulations 2017 (Victoria) 3.5.39 Electrical plant and electrical hazards
- AS/NZS 3760 – In-service safety inspection and testing of electrical equipment
- AS/NZS 3012 – Electrical Installations - Construction and demolition sites
- AS/NZS 3190 – Approval and test specifications – RCDs
- AS/NZS 2293 – Emergency escape lighting and exit signs for buildings
- AS/NZS 2790 – Electricity generating sets - Transportable
- AS/NZS 3008 – Electrical installations - Selection of Cables
- AS/NZS 3010 – Electrical installations - Generating sets
- AS/NZS 3017 – Electrical Installations - Testing and Inspection Guidelines
- AS/NZS 3000 – Wiring Rules
- SafeWork Australia Code of Practice Managing electrical risks at the workplace
- Queensland Code of Practice Managing electrical risks in the workplace
- NSW Code of Practice Managing electrical risks in the workplace
- WA Code of Practice Safe Low Voltage Work Practices by Electricians
- Victoria Electrical installations on construction sites - Industry standard

FORMS AND CHECKLISTS

- **GA-FRM-HSE-135** Permit to Isolate
- **GA-FRM-HSE-147** Temporary Switchboard and RCD Checklist
- **GA-FRM-HSE-148** Electrical Equipment and Tagging Register