

Prescribed content for EWRB approved Competence Programmes



Electrical Workers Registration Board

SAFETY | COMPETENCY | COMPLIANCE

Introduction

The Competence Programme (CP) for continued registration of Electrical Workers is prescribed by the Electrical Worker Registration Board (EWRB) through Gazette Issue 45, **Notice No. 2017-go1985**; a corrigendum was published in Gazette Issue 90, **Notice No. 2017-go4672**. The Gazette notices provide for mandatory course content to be covered in CPs for each registration class.

Purpose

This document sets out further detail to the Gazette notices to assist Competence Programme Providers to ensure full coverage of the mandatory course content to the EWRB's requirements.

Gazette Notice No. 2017-go1985 sets out that the **mandatory course content** for classes of registration (not involved in high voltage installations)– Inspector, Inspector (mining), Electrician, Electrician (mining), Electrical Engineer, Electrical Installer is as follows:

- *Supervision.*
- *Earthing requirements as listed in AS/NZS 3000.*
- *The installation, operation and testing of residual current devices (RCCB, RCBO, SRCD and PRCD).*
- *Prospective short circuit currents.*
- *Testing and certification as listed in AS/NZS 3000, AS/NZS 3760 and the Electricity (Safety) Regulations 2010.*
- *Inspection of electrical fittings installed by others.*
- *An update on changes to regulations and/or standards.*

Additional **mandatory course content** in relation to a **mining endorsement**:

- *The requirements of AS/NZ 3007.*
- *The safety principles that apply to mining.*
- *The performance of safety functions required for mining activities and mining electrical equipment.*

Note: Only facilitators that are suitably qualified and have the appropriate knowledge and skill recognized by the Board may provide this additional content.

How to use this document

The left hand column of the below table sets out additional detail to the mandatory course content prescribed in the Gazette and referred above. This detail is separated into subject areas for easier understanding. The right-hand column provides commentary to assist with covering both the prescribed content as well as the additional detail. The programme delivery material and assessment must be appropriate for the class of registration.

Glossary of Abbreviated Terms

- Competence Programme – CP
- Electrical Workers Registration Board – EWRB
- AS/NZS – Australian Standard / New Zealand Standard
- Electrical (Safety) Regulations 2010 – ESR
- Electricity Act 1992 – EA

Mandatory Course Content

Additional detail	Guidelines for minimum coverage
<p>Supervision</p> <p><i>General Regulatory</i></p> <ol style="list-style-type: none"> Supervision of “Trainees” carrying out “prescribed electrical work”. Requirements for the issue of Trainee Limited Certificate or as an authority to carry out PEW. <p><i>Legislative</i></p> <ol style="list-style-type: none"> EA sections 76, 77, 78 ESR 92, 93,100, 101 <p><i>EWRB Rules and Policy</i></p> <ol style="list-style-type: none"> Supervision “Companion Guide” B-PO-05A Supervision (other than Limited Certificate Holders) B-PO-05 Supervision of Trainees Holding a Limited Certificate 	<p><i>Legislative</i></p> <p>Electrical workers and employer’s responsibilities under ESR 100 and 101.</p> <p><i>EWRB Rules and Policy</i></p> <p>Reference to EWRB documents:</p> <ul style="list-style-type: none"> Supervision companion guide: promote contents and use B-PO-05 Supervision (of Trainees Holding a Limited Certificate) applies to trainees, those working towards registration B-PO-05A Supervision (other than Limited Certificate Holder) applies to licensed persons working outside of their class of registration or no non licenced persons) <p>Supervisor’s responsibilities/ level of supervision, as per B-PO-05 section 7. Supervisor’s responsibilities for electrical work out by the trainee.</p> <p>Trainee’s responsibilities as per B-PO-05 section 8.</p> <p>Definition of Trainee and requirements for Trainee limited certificate or limited certificate.</p>
<p>Earthing requirements as listed in AS/NZS 3000.</p> <p><i>Standards</i></p> <ol style="list-style-type: none"> AS/NZS 3000:2007 	<p>Earthing arrangement and earthing conductors as in Section 5 of AS/NZS 3000:2007.</p> <p>MEN earthing system functions and general arrangement.</p> <p>Fundamental principles purpose for</p> <ul style="list-style-type: none"> earthing functions , protective, functional automatic disconnection times and prospective touch voltage earth fault loop impedance equipotential bonding <p>Earthing system parts, wiring specific requirements</p> <ul style="list-style-type: none"> MEN switch board, arrangement distribution to other switchboards MEN link connection to neutral, when and where they are required Main earth conductor Function of the main earth electrode Earthing conductors installation and connection ,wiring systems

<p>The installation, operation and testing of residual current devices (RCCB, RCBO, SRCD and PRCD).</p> <p><i>Legislative</i></p> <p>1. ESR 24</p> <p><i>Standards</i></p> <p>2. AS/NZS3000 (<i>protection by RCD's</i>)</p>	<p>Operational, principals and limitations of a RCD as a safety device:</p> <ul style="list-style-type: none"> AS/NZS3000 requirements for installation of RCD's Identification of and function of different types of RCD's, AC,A, Type 1 NZ requirements Locations requiring 10mA RCD & differences type A 10 MA & type1 10 MA Max number and current rating of MCB's downstream of a RCCB rated at 40 or 63 A <p>Identifying electrically unsafe RCD's.</p> <p>Compare instrument testing of RCDs with test button operation</p> <p>Importance of regular testing of PRCD's on a work or construction site.</p>
<p>Prospective short circuit currents (PSCC).</p> <p><i>Standards</i></p> <p>1. AS/NZS 3000:2007</p>	<p>Refer to Clauses 5.7, 8.3.9, Tables 8.1 & 8.2 and Appendices B4 & B5 of AS/NZS 3000:2007</p> <p>Cover earth fault loop, path, protection by automatic disconnection times, touch voltages.</p> <p>The relationship of low impedance to current flow and fault levels. ($I=V/Z$).</p> <p>PSCC</p> <ul style="list-style-type: none"> The dangers and risks associated with high PSCC to electrical workers The effect of proximity and size of network transformers on PSCC and possible dangers to older existing installations PSSC measurement at switch board and for a final sub circuit Describe value of taking and recording PSCC results on test reports or marked on the switchboard for future reference Testing to ensuring the installations protective devices must be rated higher than the recorded PSCC
<p>Testing and certification</p> <p>Testing</p> <p><i>Standards</i></p> <p>1. Requirements as specified in AS/NZS 3000, AS/NZS 3760</p> <p><i>Legislative</i></p> <p>2. ESR 59, 60, 63, 64 <i>Include safety verification testing for personal safety using an independent earth probe.</i></p> <p>Certification</p> <p><i>Legislative</i></p> <p>3. ESR 65, 67, 68, 69, 74, 73A, 74C, 74D, 74E, 74G</p>	<p>Testing</p> <p>Ensure detailed coverage of mandatory testing and verification as required by AS/NZS 3000. Also referencing AS/NZS 3017:</p> <ul style="list-style-type: none"> Visual inspections Earth continuity; main earth, protective, equipotential bonding conductors, Insulation resistance test Polarity test Correct circuit connections Fault-loop impedance test RCD's Phase rotation <p>Describe application of different testing equipment required, including the requirement and methods to confirm instruments remain accurate.</p> <p>Cover methods for safety verification testing using an independent earth probe.</p> <p>Describe the testing sequence and verification process, including the importance of visual inspections.</p>

	<p>Explain the importance, fundamental principles, analyse meaning of test results and what hazards could arise including actions required to be under taken to ensure safe outcomes if test results fall outside the prescribed parameters.</p> <p>Provide a practical (hands on) exercise that all participants can independently demonstrate and have their competency assessed in testing an installation so it is electrically safe to connect to a supply.</p> <p>All the Electricity (Safety) Regulations that cover testing and verification of PEW should be covered:</p> <p>Make reference to new regulations, the importance of keeping up to date and the need for a good level or understanding of the latest version Electricity (Safety) Regulations.</p> <p>Cover Test and Tag requirements and AS/NZS 3760:2010 . ESR 26, 15 and 15A. Particularly the importance of visual inspections by the user of the equipment and the use of RCD's.</p> <p>Certification Thoroughly cover the requirements for the certification requirements as set out in the Electricity (Safety) Regulations. Including how to correctly complete and the correct application of ESC's CoC's Rol's and proper document management/storage.</p> <p>Cover the importance of filling in these documents correctly, and attaching test results and additional info, photos etc.</p>
<p>Inspection of electrical fittings installed by others.</p> <p><i>Legislative</i> 4. ESR 70, 71, 72, 72A, 73, 73A, 74F, 4, 6A</p> <p>Notes <i>Electrical Inspectors will require more in-depth coverage on the regulatory requirements of independent inspecting.</i></p> <p><i>All EW classes should have an operational knowledge around how inspection works what needs inspection.</i></p> <p><i>Include periodic assessments and issue of warrants of electrical fitness. For connectable installations ESR 75, 76, 77, 78</i></p>	<p>Explain and discuss types of PEW that require independent inspection by a person authorised to inspect "Mains work". Reference to ESR 4 and 6A.</p> <p>Ensure understanding of the value of an inspection (i.e. a second set of independent eyes checking and verifying PEW which is defined as high-risk).</p> <p>Cover specialist installations requiring a competent inspecting; including medical areas such as dental clinics medical centres, hazardous area, solar PV.</p> <p>The role of the Rol + CoC in the verification process. Note that a Rol is not complete without an attached CoC.</p> <p>Discuss and explain the requirements for Rol's and the high risk data base; including how to access and search the data base.</p> <p>Discuss and explain the different types of installations that require periodic assessments and who can carry out assessments.</p> <p>Discuss and explain the requirement for issue of warrants of fitness for connectable installations such as mobile medical, pleasure vessels ,food trucks ,caravans</p> <p>Additional requirements for Electrical Inspectors Verifying the compliance of the PEW being inspected.</p> <p>Ensuring the supplied CoC contains the correct information and is consistent with the inspectors Rol in determining compliance and safety, verifying person is authorized to carry out the work. (check public register)</p> <p>The requirement to enter Rol details comprehensively and accurately into the required sections of the high-risk data</p>

	base.
An update on changes to regulations and/or standards.	<p>Cover changes and updates to the Electricity Safety Regulations and relevant standards, particularly AS/NZS3000, include any other relevant legislative changes</p> <p>Promote importance of using current version of the Electricity (Safety) Regulations and to maintain a good level of regulatory understanding.</p> <p>Promote and develop understanding and awareness for using the correct standard for specialist installations.</p> <p>Promote the use of free standards available to all licenced electrical workers with a Realme login through the EWRB website.</p> <p>Promote the importance to maintain competency with ongoing professional development on a regular basis</p> <p>Include relevant authoritative information from EWRB Electron, Board news, notices, EnergySafety and WorkSafe bulletins, technical publications and websites.</p>
Additional subject matter to be incorporated into the CP	
Earth fault-loop impedance and EFL paths.	<p>How to use protective device guidance (EF-LI) Tables 8.1 of AS/NZS3000:2007</p> <p>Impact of excessively long cable runs on protective earth impedance value and fault current level) Appendix B Table B1.</p> <p>How to use and determine <u>Maximum Value of Resistance</u> using table 8.2 of AS/NZS3000:2007 Reference AS/NZS3000 8.3.9.1</p>
Certified Designs and Manufacturer's instructions ESR 58,14A	<p>Explain what a Certified Design (CD) is and the associated risks and requirements with undertaking PEW in compliance to a CD.</p> <p>Understanding the requirement in relation to installing fittings using manufactures instructions and the risks associated with not complying with instructions.</p>
Safety responsibilities for person carrying out PEW. ESR 100	Explain requirement to follow ESR 100 and promote the use of AS/NZS 4836 as referenced which sets out procedures and guidance for safe work on or near electrical installations.
Promote the use of the EWRB Toolbox	EWRB's tool box is a developing educational reference for electrical workers looking for more substantive information on electrical issues and practices. The Toolbox is available from the home page of the EWRB website.
Limits of work for various licence classes	<p>Discuss and explain the difference in limits of work for licence classes (mining endorsement, electrical installer and electrical engineer, electrical service technician, associated trades person, electrical appliance service person and classes of line mechanics).</p> <p>Promote the need to check persons licenses not only for inspectors but other classes that are relying on work carried out by others.</p> <p>Promote the requirement to always work within ones limits of work and individual competencies.</p>