

TECHNICAL BULLETIN

TB 0158

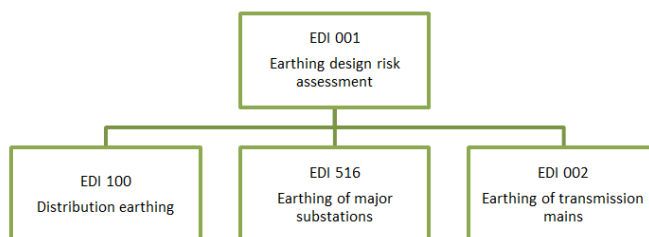
NEW EARTHING DESIGN STANDARDS

Background

Endeavour Energy has adopted the risk based assessment design criteria for earthing systems developed by Energy Networks Australia (ENA). This is intended to align the safety requirements and assessment processes throughout the electricity supply industry based on the guide EGO. This adoption is expected to appropriately proportionate cost and effort justifiably to reduce earthing risks to a level that is as low as reasonably practicable (ALARP). The principles of ENA EGO have been adopted in Australian Standards AS/NZS 7000 and AS/NZS 4853 and are continuing to be adopted into further new and updated Australian Standards.

In accordance with and to assist with the adoption of ENA EGO in Endeavour Energy Company Policy 9.2.5 – Network Asset Design as well as meet the requirements of 9.2.2 – Network Protection and 9.2.10 – Network Asset Rating and Board Policy 2.0.5 – Risk Management (as well as associated company procedure GRM 0003) for earthing systems, a number of associated earthing standards for Endeavour Energy have been updated or created:

- Recently released:
 - o EDI001 (new) – Earthing Design Risk Assessment: provides the earthing design risk assessment requirements and techniques to develop earthing systems for any of Endeavour Energy’s assets to ensure the associated risks do not present an unacceptable level to workers and the general public during unbalanced network conditions (and in particular, system earth faults).
 - o EDI516 (supersedes SDI516am3) – Major Substation Earthing Design: provides the design criteria as well as construction and commissioning requirements of all major substation assets (Transmission Substations, Zone Substations and Switching Stations with transmission voltages)
- Future releases:
 - o EDI100 for distribution assets will supersede SDI100am10 with transitional arrangements in the coming months.
 - o EDI002 for transmission mains circuits and associated parallel and nearby metallic non-power system infrastructure is under development and planned for released in the latter half of 2014.



The ongoing review of earthing system maintenance and testing regimes is continuing. The earthing inspection, testing and maintenance requirements of SMI104, SMI100, SMI101, MMI series are continuing to be reviewed and consolidated in consultation with affected workers.

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Action

Company Standards EDI001 and EDI516 have been released. The following actions are required in respect to each asset class. Because EDI001 includes the earthing design risk assessment requirements for all asset classes, the document will be applied in stages as detailed below:

Asset class	Previous design requirement	New requirement
Major Substations	SDI516am3 has been superseded by EDI516am0.	Asset design & construction: Designs approved up to close of business 6th May 2014 may continue to use SDI516am3. Following this date, all designs submitted for approval must meet the minimum requirements of EDI516 unless prior arrangements are made with and approved by the Earthing & Power Quality Manager. The drawings associated with SDI516am3 have also been superseded by the drawings called upon in EDI516am0. Asset earthing risk management: As called upon in EDI516, EDI001am0 contains the earthing design risk assessment requirements for major substations. The earthing design risk assessment requirements of EDI516 and EDI001 shall be met. Ongoing testing & Maintenance The requirements of SMI104 and SMI100 have not changed.
Distribution assets	SDI100am10, MCI0005 & MCI0006 still apply to distribution assets with HV and LV earths.	No change as yet. Continue to use the design and earthing risk assessment criteria of SDI100am10 (including cl 5.11) until further notice. EDI001 does not apply to distribution assets yet. Online webinars, the release of the new '3E' distribution earthing design program and transitional arrangements and change management for the adoption of EDI001 for distribution assets will be given following the upcoming release of EDI100.
Transmission circuits, structures and pits	MDI012 cl 5.1.13.5 MDI012 cl 5.1.13.3	Clause 5.1.13.5 (step and touch potentials in accordance with C(b)1) have been superseded and replaced with the requirements of AS/NZS 7000 as detailed in EDI001. Designs approved up to close of business 6th May 2014 may continue to use MDI012. Following this date, all designs submitted for approval must meet the minimum requirements of EDI001 unless prior arrangements are made with and approved by the Earthing & Power Quality Manager. Clause 5.1.13.3 (earthing resistance) is still applicable unless inferior safety is obtained as detailed in EDI001 cl 5.5.7. No change to earthing assemblies at present.
Shared use assets (distribution and transmission on the same structure)	SDI100am10 cl 5.15.16 and TB-0052	EDI001 Cl 5.4.5 reinforces the existing requirement of SDI100am10 and TB-0052. Appropriate insulation is required for shared use assets to minimise the risk of transfer voltages. Engineering are continuing to develop methods to acquire appropriate insulation / isolation between earthing systems and will advise of changes in due course.

Endeavour Energy is committed to assisting designers and workers with meeting the requirements of the new and updated Earthing standards. Please forward all enquiries to:

earthingenquiry@endeavourenergy.com.au.