



ESITO INDUSTRY FORUM

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THE LINE MECHANIC'S AND CABLE JOINTER'S HANDBOOK

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eea | Electricity Engineers'
Association



THE LINE MECHANIC'S AND CABLE JOINTER'S HANDBOOK

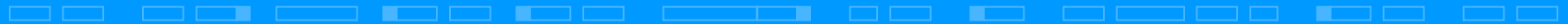
Revised and republished as the 5th Edition in 2004, EEA's "The Line Mechanic's Handbook" and its predecessors have served the industry well over the years as a reference book for line mechanics and an outline of what line mechanic training should cover. There is no intent by the EEA that this situation should change but it has decided to revise the Handbook again for two main purposes:

- update text and insert new material on safety
- expand the contents to better cater for cable jointers.

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There have been safety developments in the ESI since 2004, particularly in respect to improving the working procedures used to safeguard line mechanics during their work and members of the public in the workplace.

There is also a need to ensure that the content of the Handbook is entirely consistent with the content of the “Safety Manual – Electricity Industry” in respect of the general safety advice in Parts 1 and 2 and the Safety Rules in Part 3.



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In updating the treatment in the Handbook on safety procedures and the reasons for them, the opportunity will be taken to review all of the current content of the Handbook, revise some text and rearrange the order in which some of the topics are covered.

In particular, it is intended that the safety content will be given prominence at the front of the Handbook.



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The use of cables and the skills of cable jointing have been an integral part of the ESI since the earliest days of generation, transmission and distribution and use of electricity.

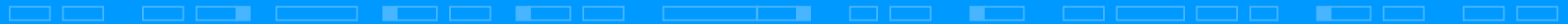
Cable jointing skills have always been recognised and jointing schools have existed for many years to ensure that jointers have the necessary skills to make LV and HV cable joints and terminations that will last over time and not fail.



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The Electricity Act, as amended in 2006, provides for the EWRB to determine the categories of registered persons carrying out PEW. The EWRB recently proposed in a discussion paper that there should be a separate registered electrical worker category for cable jointers rather than continue to have them registered as line mechanics.

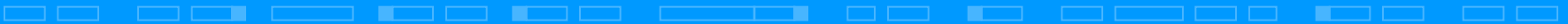
The EEA supports this move as it will recognise cable jointing as a separate and distinct trade.



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The EEA and the ESI have appreciated for some time that there is a need for to provide an industry guide covering cable laying and jointing but also recognise that much of the content of “The Line Mechanic’s Handbook” (particularly the theory and safety content) is equally applicable to cable work.

The Handbook already contains a chapter that provides information on cables and jointing but its content is considered insufficient to provide adequate guidance to those carrying out cable work.



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Accordingly, the EEA, after consultation with ESI representatives, concluded that the best way forward is to update the current content of “The Line Mechanic’s Handbook” and add more information applicable to cable laying and cable jointing. The Handbook will then serve both line mechanics and cable jointers.

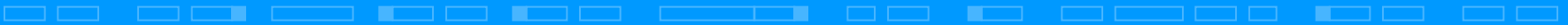
It is intended to rename the revised Handbook as - “The Line Mechanic’s and Cable Jointer’s Handbook”.



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To progress the TLMCJH revision and expansion project the EEA drew up terms of reference in June of this year and, after negotiation, appointed Standards NZ to carry out the final preparation of the amended and new text in preparation for publication.

It then appointed a Chair (Bob Taylor) to oversee the project and a project manager (Peter Browne) to progress the various tasks involved.

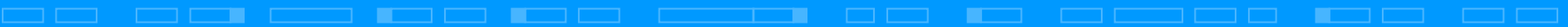


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In consultation with the Chair, the EEA set up four groups of people from the ESI (total of 26):

- a management and steering group (6) to make the final decisions on the revised and expanded content
- a working party (WP1) (8) to review and amend the current content of the Handbook
- a working party (WP2) (8) to identify and write new content to cover cable laying and cable jointing
- a consultation group (7) to comment on the proposed amended text.

(Some people are members of two groups.)



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A joint meeting of the first three groups was held on 22 July at Standards NZ. The morning was used to discuss the project in general and ensure everyone was aware of the required outcomes.

WP1 and WP2 met separately in the afternoon with members of the Steering Group spread over the two WPs. WP1 identified sections in the current text that need updating in content and references while WP2 identified the topics on cables, cable laying and cable jointing that should be added to the Handbook.

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WP1 identified most of the existing chapters in the Handbook for a degree of attention, although some suggestions for amendment were minor in nature.

Among other observations, it considered that the references in Chapter 3 needed expansion to include all relevant codes, guides and standards and that Chapter 8, which covers safety, should be brought to the front of the Handbook so it will have prominence in the revised publication.



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WP1 also considered that Chapter 4 should include a description of a distribution network, and provide the essential characteristics of overhead networks and underground networks.

WP1 considered there is a special need to emphasise and promote, as an essential process for all work on isolated and earthed conductors and equipment, - “Isolate, test, earth and bond”.



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Topics identified for additions and amendments in Chapter 8 included:

Earthing and creation of equipotential zones

Hazard identification and control, and risk assessment

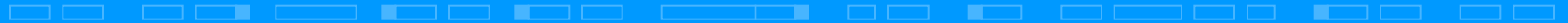
Testing for safety and testing of equipment

Pole safety and working at heights

PPE

Housekeeping

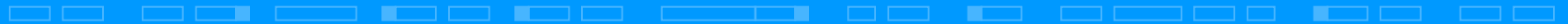
Confined spaces



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WP2 identified the main topics and subtopics on cables, cable laying and cable jointing that should be added to the Handbook.

The writing of a brief description of each subtopic was then allocated to one or more members of the WP.



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The main topics identified for additions relevant to cable laying and cable jointing were:

Cable safety

Cable types

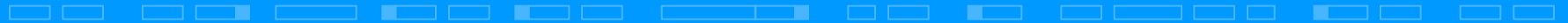
Cable laying

Cable jointing

Testing and faultfinding

Tools and equipment

Maintenance of cables



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Cable safety subtopics identified were:

Supervision

Hazard identification and control

Reading of plans, cable location and identification

Spiking of HV cables

Phase identification

PPE and EPZ

Sources of re-energisation

Distressed equipment and stored energy

Rescue techniques and procedures



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A number of subtopics were identified under each main topic.

Cable type subtopics identified were:

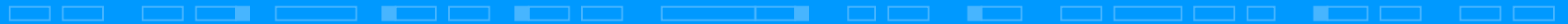
Low voltage power cables (to 1000 V a.c. and 1500 V d.c.)

High voltage power cables (over 1 kV to 110 kV)

Conductor types (materials, solid, stranded, shaped, compacted)

Multicore and pilot cables

Marine and petrochemical cables



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Cable laying subtopics identified were:

Depth of cover including thermal resistance considerations

Ratings

Safe distances from other services

Safe digging, trenching and thrusting

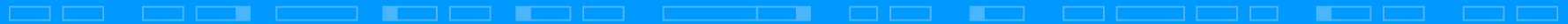
Notifiable work

Pulling techniques, choice of pulling direction and tensions

Bending radii

Protection of cables

Storage and transport



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Cable jointing subtopics identified were:

Jointing bays

Stripping LV and HV cables

Earth continuity and bonding

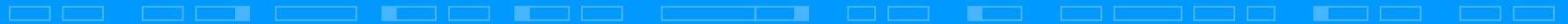
Jointing and termination types

Conductor connections

Moisture testing

Live jointing

Supporting uncovered cables and other services



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Cable testing and faultfinding subtopics identified were:

Continuity

Insulation

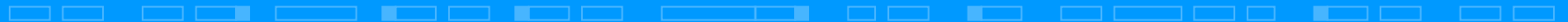
Polarity

Phasing

Phase rotation

Earth resistivity

Fault finding



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Cable tools and equipment subtopics identified were:

Insulated tools

Compression tools

Cable Maintenance subtopics identified were:

Inspection

Sheath testing

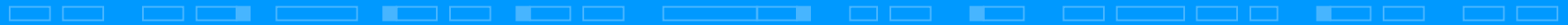
Oil and gas pressures



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Members of WP2 have supplied nearly all of the required new text and many of the photos required for the cable related additions. It remains to collate and edit these contributions and address the various amendments and additions identified by WP1.

The project was placed on hold in September while the EEA considered the exposure draft of the Electricity (Safety) Regulations 2009 and prepared its submission on the draft. That has been completed so work can resume on the TLMCJH project.



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The project was scheduled to be completed to the point of handover to Standards NZ in mid-October by with a view to publication by mid-November. There has been slippage with that timeline and it is likely to be the end of October before Standards is given the amended TLMCJH to prepare it for publishing.



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Questions?

