

Draft Low Voltage Live Work Model Procedures



EEA.CO.NZ

1

Scope and Purpose



- Explain the journey toward implementation of National Low Voltage Live Work Procedures
- Look at some examples
- Improvements to the draft procedures
- Feedback on what procedures you would like developed next

2

Background

In 2015, *SM-EI* mandated the use of procedures for live LV work

3.717 LIVE LV WORK

- a. Guidance on live LV work is set out in the EEA publication *Guide to Live LV Electrical Work* (2013).
- b. Prior to undertaking live LV work, consideration shall be given to whether the work should be carried out live. Live LV work shall not be carried out in a hazardous area.
- c. Live LV work shall be undertaken under a minor works management system, using an appropriate industry procedure or procedure developed from SM-EI. (See rule 3.307)

3

Background

Since then in 2020, the *EEA Guide to Low Voltage Works Management for Distribution Infrastructure Assets* reinforced the use of procedures for live LV work

8 Control of Work Live Low Voltage Distribution Network

8.1 Minimum Requirements

It is essential that live low voltage work is only undertaken when it is safe for employees to work on live conductors. For the purpose of determining if it is safe the following conditions shall be met:

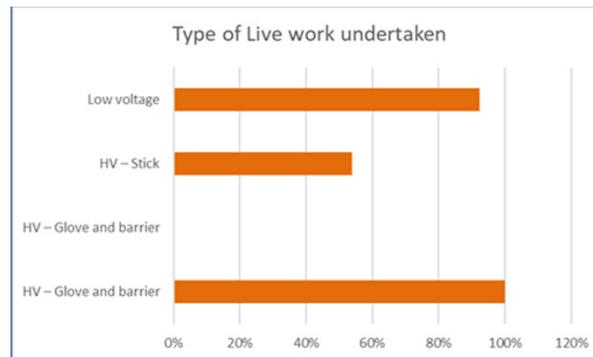
- The risk assessment confirms there is a low risk of failure resulting in serious harm to the employees, public or damage to property.
- Precautions are available and can be applied to minimise the risk of harm. (i.e. insulating mats and/or barriers)
- Approved live work procedures and techniques are available that will be applied to undertake the work that ensure safe outcomes
- Authorised and qualified employees undertake the procedures and techniques.

4

Background

The EEA Live Line Industry Survey highlighted that:

- LV live work that was being done by 92% of those who responded
- The EEA should focus its attention in the live LV space



5

Procedures -Development



Targets in the development of procedures

- To follow a similar pattern to the HV Industry procedures for consistency
- To cover off the hands on live work part only
- To emphasise the importance of the basic principals that underpin the work

6

Procedures – Front Section

Underpinning Principals – examples:

- Protection from SPOC shall be established
- Tools shall not be passed to an employee in contact with a live conductor
- Insulated tools should be used



7

Procedures – Front Section

Test & Review

- Procedures to be developed, proven and documented
- Formal Review at least 5 yearly
- Review to be conducted at the de-brief session



8

Procedures – Front Section

Responsibilities are defined for those involved in:

- Planning the work
- Supervising the work on site
- Performing the work

4. Responsibilities

Role	Responsibilities include:
Project / Job Manager / Responsible Employee (Safety)	<p>Planning the work to comply with SMEI, industry guidelines and requirements contained within the Asset Owner and or SP Live LV Work Manual.</p> <p>Completion of a risk assessment of work methods to undertake Low Voltage live Work,</p> <p>Review Justification process and prohibited tasks applicable to the network owner's requirements</p>
Site Supervisor / Person in Charge	<p>Overall compliance with this Procedure or Technique.</p> <p>Comply with, industry guidelines and documentation contained within the AO and SP Live LV Work Manual.</p> <p>Comply with network owner requirements.</p> <p>Appoint a Safety Observer as require by the task procedure.</p>
All staff on site	<p>Performing the work in accordance with this Procedure or Technique.</p> <p>Comply with SMEI, Industry Guidelines and Network owner requirements, industry guidelines and documentation contained within the AO and SP Live LV Work Manual.</p> <p>Identifying and mitigation of hazards/risks.</p> <p>Document findings from team briefing. (<i>Tailgate Meeting</i>)</p> <p>STOP THE WORK when you have any concerns.</p>

9

Procedures – Front Section

H&S Requirements

- Risk/hazard assessment
- Competence
- Stop work policy
- Responsibilities – PIC/SO
- SP policies
- Ground to ground rule
- Communication devices



All work must comply as a minimum, SM-EI Rules, section EE 6.3011, EEA Guides and Practice Notes, AO and SP Health and Safety Procedures and Network owner requirements.

In addition, each job **SHALL** include:

- Engagement and documentation identifying all hazards, risks, and the controls for these, specific to the tasks being undertaken. (Site Risk assessment)
- Verifying persons are competent for the activities they're undertaking as required by a documented work type competency policies and framework
- Reinforcement of SP policy regarding Stopping Work
- Define and document acknowledgment of responsibilities – Supervisor, Safety Observer
- Understanding of relevant SP policies – (e.g. PPE, In service tools and equipment, Heat and Fatigue, Arc flash)
- Ensuring Insulating gloves SHALL be worn "ground to ground"
- Implement control of the use of mobile communication devices in accordance with SM-EI , 4.1 TD Digital devices
- These procedures cover H&S risks associated with live work, other safety risk such as traffic management and work site should be covered through a specific risk assessment for the job

10

Procedures – Front Section

Minimum Staff Numbers

- Minimum numbers to be specified in the procedure
- Assistance from NC staff

Note

Non Live Work staff assisting (such as crane operators) are in addition to the numbers required under the procedure and **SHALL** be inducted and under supervision at all times.



11

Procedures – Front Section

Prepare the Worksite

- Weather
- LW justification
- Permits
- Risk assessment

ACTION (<i>The steps to be performed</i>)	NOTES (<i>Additional Information</i>)
1. Check the weather	a) Confirm there is an adequate weather window to undertake the task b) Discuss weather conditions as part of the Live Low Voltage Work Permit application
2. Check Live Low Voltage Work selection has been completed	a) Check the Live Low Voltage Work justification sheet has been completed
3. Confirm you have the appropriate permits to work, any associated switching schedules required to complete the task	a) Ensure that adequate protection exists on the circuit being worked on and identified means of isolation under emergency preparedness. b) Ensure Live Work Permits are held
4. Obtain Live Low Voltage Work Permit	
5. Complete a site risk assessment.	The meeting should also include
Plan the work and identify all site and equipment Risks / Hazards ensuring all controls to manage the Risks / Hazards are in place	a) Discuss the tasks to be undertaken b) The procedures to be used c) All SPOC are identified and managed d) Allocate individual team responsibilities e) Appoint a Safety Observer, as appropriate

12

Procedures – Front Section

Prepare the Worksite

- Equipment
- Condition of asset
- Plant setup
- Impact on others

6. Select and prepare the equipment to be used.	a) Check that all equipment and tools are in test, pre-inspected and fit for purpose.
7. Identify and confirm any assets to be worked on, and the condition of these and adjacent assets.	a) Positively identify circuits, b) Confirm asset identification, c) Check the condition of the pole and hardware to be worked on, d) Check the condition of adjacent assets and hardware, e) Check clearances will not be infringed.
8. Position and set up any plant.	a) Ensure risk to step and touch potential is minimised.
9. Confirm that all work will not negatively impact on the safety of the work party and the public.	a) Ensure drop zones are managed, b) Traffic and Pedestrian access is managed.

13

Replace or Install Pole Mounted Cutout

1.5 Replace or install pole mounted cutout

BEFORE YOU START

Before entering the LV MADs conduct:

- A visual inspection of hardware – these checks are in addition to any ground-based pole and hardware checks prior to the commencement of the task,
- **ALL** conductors to be positively identified and marked prior to commencement of work and reconfirmed by test at the completion of work,
- Refer to: Testing of Service Connections to Premises guide (EEA, 2020),
- Refer to: Guide to Safe Work with Cables, (EEA, 2017),
- Refer to: Guide to Live Electrical Work, (EEA, 2017).

This procedure applies to where Neutrals remain connected

14

Replace or Install Pole Mounted Cutout

This procedure applies to where Neutrals remain connected			
Staff numbers		Equipment Description	Quantity
		Insulating mats and pegs	
		Conductor covers	
		Assorted insulated tools	
		Face shields	
		Test Equipment	

15

Replace or Install Pole Mounted Cutout

ACTION <i>(The steps to be performed)</i>	NOTES <i>(Additional Information)</i>
<p>STEP 1</p> <p>Confirm potential SPOC</p> <p>Cover all SPOC at different potentials that could be contacted by the body, tools, equipment, or conductors during the course of the work.</p>	<p>CAUTION</p> <p>The required outcome is that NO second point of contact (Phase to Phase or Phase to Earth) can be made by the worker at the work position.</p> <p>All SPOC SHALL be covered.</p>
<p>STEP 2</p> <p>Identify the cut out requiring replacement and pull the fuse and test for de-energised.</p>	<p>For multi-phase supply pull all fuses, may also include pilot fuses.</p>
<p>STEP 3</p> <p>Identify the Neutral and Phase conductors and mark accordingly.</p>	

16

Replace or Install Pole Mounted Cutout

ACTION <i>(The steps to be performed)</i>	NOTES <i>(Additional Information)</i>
STEP 4 Cut away leads to existing cutout.	
STEP 5 Fit new cutout to pole.	
STEP 6 Terminate and connect phase conductor from line in to cutout.	
STEP 7 Connect service lead in to cutout.	
STEP 8 Insert fuse and conduct electrical safety tests as appropriate.	Neutral connections should be checked as part of Electrical safety checks. Reinstate fuses on multi-phase supply.

17

Replace or Install Pole Mounted Cutout

DIS - ESTABLISH THE WORK SITE

ACTION <i>(The steps to be performed)</i>	NOTES <i>(Additional Information)</i>
a) Remove and lower all equipment. b) Remove insulating barriers. c) Store all live line equipment. d) Sign off Live work permit as applicable, inform staff. e) Return the Live work permits, inform staff as applicable. f) De-brief the crews.	

18

Disconnect LV Jumpers

ACTION <i>(The steps to be performed)</i>	NOTES <i>(Additional Information)</i>
<p>STEP 1</p> <p>Identify customers and disconnect / pull all fuses for connected load.</p>	<p>Where practicable 'remove' the load by isolating supplies or back feeding the load via another source.</p>
<p>STEP 2</p> <p>Confirm there is NO load.</p>	<p>Measure the circuit current /load that is intended to be broken.</p>
<p>STEP 3</p> <p>Confirm potential second points of contact; fit and secure insulating barriers to all second points of contact. Apply to the nearest conductive part first. Barriers are to be fitted from below the conductor.</p>	<p>The required outcome is that NO second point of contact (Phase to Phase or Phase to Earth) can be made by the worker at the work position.</p> <p>All SPOC SHALL be covered.</p>

19

Disconnect LV Jumpers

<p>STEP 4</p> <p>Identify and mark the phasing on each conductor on either side of the intended break.</p> <p>Disconnect phase jumpers one at a time:</p> <ul style="list-style-type: none"> - Cut the phase jumper, - Fold back the tails, - Secure, <p>Repeat with the remaining phase jumpers.</p> <p>Test for de-energised as appropriate include check there is no current in Neutral conductor.</p> 	<p>Phase rotation testing and marking the jumper/conductor will ensure correct phasing when restored.</p> <p>Conductors shall be under control at all times.</p> <p>Start the removal process with the jumper that will allow safest access to the conductor and the next jumper.</p> <p>CAUTION</p> <p>Always treat the neutral as a live conductor.</p>
<p>STEP 5</p> <p>As required issue a LV access permit or work authority.</p>	

20



21



EEA.CO.NZ

22