



WELCOME TO THE
LIVE WORK FORUM | 2019



- ▶ Welcome
- ▶ House keeping
- ▶ Overview of the day
- ▶ Update on the EEA National Committee and Live Work (NCLW) work

Robert Taylor — Chair of NCLW



Break times

- ▶ Morning tea: 10.40 – 11.00am
- ▶ Lunch: 12.30 – 1.10pm
- ▶ Afternoon tea: 3.00pm – 3.20pm

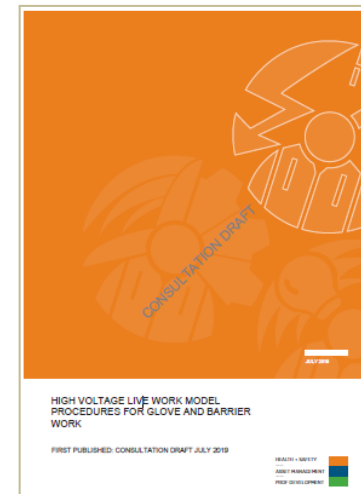
FORUM CONCLUDES 4.45PM



High Voltage Live Work Model Procedures for Glove and Barrier Work

SPEAKER

Robert Taylor Chair of NCLW



Justification and Process

- Control of HV Live Line Work (ECP46, Selection, Procedures, Competency and Monitoring)
- Industry Support
- Procedure Development (Powerco support)
- Design of Model Procedures
- Consultation (end of August)



Consultation Feedback

- Order of steps and practical limits (current flow)
- Lack of H&S detail to control site
- Removal of jumpers for ABS maintenance
- Clarity and transition when hot sticks are used
- Scope of application for some procedures



Consultation Feedback

- Inspection outside contact area before entry
- Limitation on jumper load and livening of lines
- Grammatical improvements

Feedback essential by end of August



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Powerco Application of HV Glove and Barrier Procedures

SPEAKER

Gavan Paget – Project Manager, Powerco

Craig Webby – Design Manager, Powerco

Haden Bedggood – Team Leader G&B, Downer



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Future Opportunities for stick work in NZ power industry

FACILITATOR

Robert Taylor — Chair of NCLW



High Voltage Live Work Model Procedures for Glove and Barrier Work

- Replacing 3 phase Airbreak switched
- Maintaining 3 phase Airbreak switches
- Energising single or 3 phase overhead lines
- Installing temporary inline isolator
- Replace pin or post insulator
- Tightening line hardware
- Replacing a non-tension connection or jumper
- Emergency procedure: Loss of Conductor During Glove and Barrier Work



Morning Tea 10:40 – 11:00am

Session Chair: Graeme Johnson, Technical Manager, Electrix



Australian Live Work Practices Forum and Work Programme

Overview of Australian Standards for live work

SPEAKER

Mick McGreevy — Senior Transmission Support Engineer
Operations, Ergon Energy Network/ Energex



PANEL SESSION — Guide to Field Auditing of Live Line Work

Practical Application

FACILITATOR

- ▶ **Robert Taylor** – Chair, NCLW

PANEL MEMBERS

- ▶ **Mick McCreevy** - Senior Transmission Support Officer, Energex/Ergon, Queensland
- ▶ **Charlie Dixon** - Trade Specialist, Northpower
- ▶ **Waihaki Rameka** – Contracting Services Branch Manager, Unison





Overview (Requirement to Monitor)

- Required to have a documented audit process
- Monitor the safety standards in place
- EEA Guide published in 2005 revised 2014
- Sets frequency
- Sets scope of audits, audit process and reporting
- Covers managing non-conformance



Northpower- Audit form

 APQC: 10.10.3.2	QMS form- 090 Internal assessment: General Live Line Audit Manage Health, Safety, Quality and Environment Manage quality program	Approved: John (Charlie) Dixon Version: 4.0 Reviewed: 27/10/2017
		

Assessor: []	Date : []	Job/Project No.: []	No.: AUD []
Start Time : []	Finish Time : []	Customer (Network): []	
Location : []		Person in charge (PIC)/Subcontractor : []	
Work Method & Type : [] <small>(e.g. G&B pole replacement)</small>		Team Members : []	
Procedure/Technique No : []		Northpower Project Manager : []	

Subject		Complies				Comments <i>If No, explain what, why, who, etc</i>
		N/A	Yes	No	CN*	
Site Safety	• Traffic Management meets Transit NZ or Council requirements	[]	[]	[]	12	[]
	• Public safety management is in place (barriers, covers, access)	[]	[]	[]	12	[]
	• Visitors to the site are challenged	[]	[]	[]	12	[]
	• The worksite area is clearly identified	[]	[]	[]	12	[]
	• Spans/structure to be worked on and adjacent structures checked.	[]	[]	[]	10	[]
	• All hazards identified and managed (including weather considerations)	[]	[]	[]	10	[]
Personnel	• Personnel understand the procedure and the role they are performing	[]	[]	[]	2	[]
	• Support staff (e.g. crane operator) are competent and supervised	[]	[]	[]	12	[]
	• Personnel are aware of emergency procedures and incident reporting	[]	[]	[]	12	[]
	• Staff levels are sufficient for task	[]	[]	[]	12	[]
Documents Authorisation	• Tailgate is complete, and signed by everyone on site	[]	[]	[]	2	[]
	• L/L manual including Procedures/Techniques & COP are on site	[]	[]	[]	1	[]
	• LW Justification & L/L permit on site and appropriate for task/location	[]	[]	[]	1	[]
	• Certificates for L/L Competency/Network authorisation/EWRB registration requirements are current and available on site	[]	[]	[]	4	[]
	• Work plan/obstruction plan/TMP is on site	[]	[]	[]	1	[]
	• Communication link established & checked	[]	[]	[]	11	[]
	• Reclose block in place/permit received and returned	[]	[]	[]	11	[]

*CN= Category number for non-conformance as per the EEA Guide for Field Auditing



Northpower- Audit form, pg 2

Subject		Complies				Comments <i>If No, explain what, why, who, etc</i>
		N/A	Yes	No	CN	
Personal Safety	• Appropriate PPE inspected, worn/in test and in good condition				7	
	• Team members are observed as fit/healthy				12	
	• No conductive jewellery/cell phones or lighters taken aloft				12	
Equipment	• Tools/equipment correctly checked, stored, cleaned and silicone wiped				6	
	• Tools and equipment in test and safe working order				6	
	• Tools/equipment have appropriate mechanical and electrical rating				6	
	• Rope or rescue kit is available are within test where applicable				12	
Vehicle	• Registration/WOF/COF/Road User/Electrical/Mechanical tests current				12	Reg. No.:
	• Vehicle is chocked appropriately				12	
	• Earthing and bonding requirements have been met				12	
	• Safety equipment available & in test e.g. extinguisher/first aid kit				12	
	• EWP/Crane Mechanical & Electrical test certificates current				12	
During Procedure	• Safety observer is effective (meets ECP 46 requirements)				5	
	• Communication between team members is effective				11	
	• Two levels of protection maintained				8	
	• MAD maintained at all times				3	
	• All second points of contact are covered				9	
	• One potential maintained during the course of the work				9	
Debrief	• Work is completed in accordance with written Procedure/Technique				1	
	• Site is left safe and tidy/sign off completed as required				12	
	• Staff are debriefed				12	
Team Scorecard						
Classification	Action	Points Deducted	Number of Occurrences	Totals	Team Score (subtract Total 1 from 100)	
Critical	Work stopped until issue was resolved	10				
Serious	Pointed out and corrected at time of occurrence	5				
Important	Discussed in debrief session	2				
Note: 3 or more Critical or Serious non-compliances result in increased audit frequency and or refresher training				Total 1=		



Electricity Engineers' Association



EEA LIVE WORK FORUM | 2019

Lunch 12:30 – 1:10pm

Session Chair: Peter Berry – Executive Director, EEA



EEA LIVE WORK FORUM | 2019

LV Works Selection Guide

Practical application, Northpower

SPEAKER

Robert Taylor – Chair, NCLW

Charlie Dixon - Trade Specialist, Northpower



LV Work Method Selection (Guide published July 2019)

- Aligns to the HV Work Method Selection Guide
- Network Justification based on risk, not reasonable to de-energise
- Determines if it is reasonably practicable for an employee to work on live equipment
- Requires all limitations to be identified to determine if it is safe to proceed



EEA LIVE WORK FORUM | 2019

LV Works Management

SPEAKER

Robert Taylor – Chair of NCLW

Graeme Johnson – Technical Manager, Electrix



Control of Work

- SMEI recognises 3 types of control
- Access/Test Permits
- HV Live Work Permit
- Minor Work Management (Work Authority)
- This session seeks your feedback on **how or if** we should align these to LV work management
- What is the demarcation and limitations



EEA LIVE WORK FORUM | 2019

LV Works Management Overview

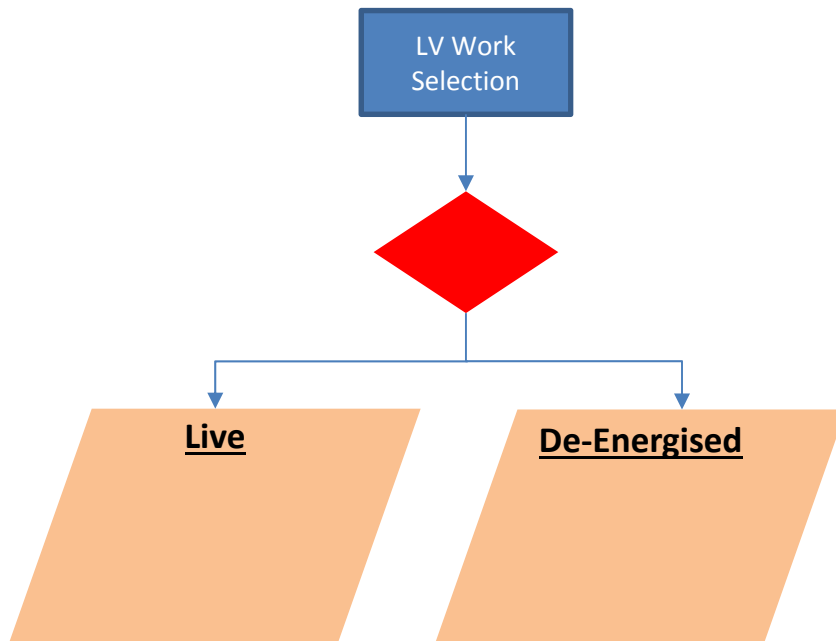
SPEAKER

Graeme Johnson – Technical Manager, Electrix




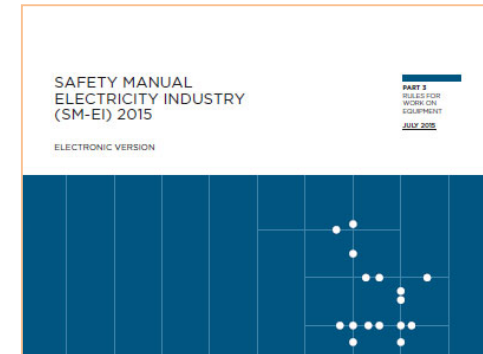
Existing Industry Guidance on LV Controls for Work

What do we currently have?



Identifying the need

- Limited information and guidance in SM-EI / Guides
- Not at the same level as HV requirements
- More complex LV systems – multi directional power flows
- Increase risk to workers through new technologies
- Significant number of near misses from back feeds



SAFETY ALERT!

Attention: All Unison employees
Note: Audience identified above must stop work, discuss and complete sign off as soon as practicable.

Subject	Inadvertent liveing of shutdown area		
Alert Number	SA 127	Date Issued	1/07/2019
Issued by	UCSL Health and Safety Manager	Effective	Immediately

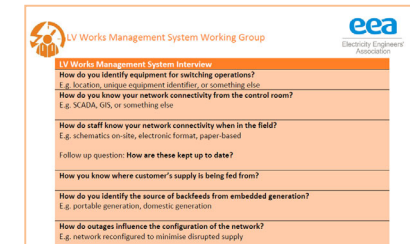
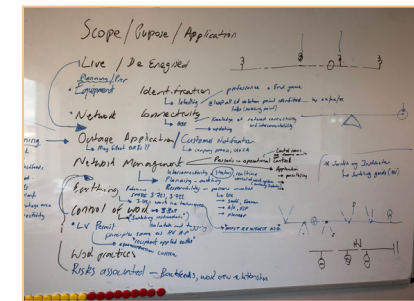
SAFETY ISSUE/BACKGROUND

On 24 May 2019, a staff member received an electric shock whilst involved in pole replacement work in rural Hastings.
The work party (including the impacted individual) was working under a **shutdown** access permit 152003738.
Under the parameters of the access permit the 11kV supply was isolated, proven de-energised



What did we do

- Formed a working group to draft guidance
- Tele survey of Industry (18 companies, North and South Island)
 - Network owners and FSPs
 - Structured questions
- EEA Conference Panel Session
- Engaged with industry (ongoing)



Survey Results

Work Selection process	Most have something in place a few with nothing, a lot only allow if a live work procedure available Reference new guide
Equipment Id	South Island appears well labelled vrs North Island
Network Configuration	Most companies have electronic systems in the office, some have available to field – (mostly South Island) Planned - use office beforehand. Accuracy of information can be an issue
Back feeds Identified	Only if notification received, some marked on HV scada, some field circuits labelled
Operational control of LV Network	50/50 split between field control and network managed, volume could be an issue going forward

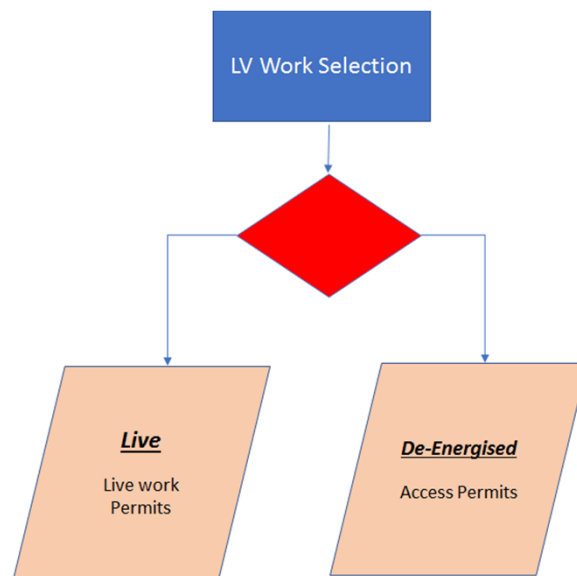


Survey Results

Any form of Permitting and or earthing	10 of the companies surveyed have a permitting system of one sort or another in place presently Some isolate and work no earths no gloves A number isolate and use live working techniques A few isolate and earth but don't issue a permit A few do nothing No one has a complete safe system of work
LV Work Procedures	2 companies with documented Live Work procedures A number with these in development A number without any live work procedures
Desired Outcome	Common and consistent approach, Clear guidance LV managed same as HV, Earthing of LV



Fundamentals of the guide



Control of Work

- Live work permits
- De-Energised Access Permits
- MWMS – Customer Service Mains



Fundamentals of the guide

Fundamentals are:

- That Low Voltage Distribution Network equipment is labelled and network connectivity is understood.
- Before any work is started a risk assessment is completed to determine the work process to be used (live or de-energised)
- Control of the Low Voltage Distribution Network is either managed by the Network Controller or Supervisor under agreement from the Network owner.
- Control of any potential livening or back feed source is managed through earthing and bonding of circuits.
- Isolation points and earthing are controlled through an Access Permit System
- Live Low Voltage is controlled through a Live Work Permit
- Work on consumer mains may be controlled under a MWMS



Next Steps

- Drafting complete for Low Voltage De-Energised Access Permits
- Drafting for Live Low Voltage Permitting has begun
 - Includes industry consultation
- Draft guide to industry October EEA HS Forum



EEA LIVE WORK FORUM | 2019

LV Live Works Management

SPEAKER

Bob Taylor – CHAIR of NCLW



Control of LV Live Work, Minimum Requirements

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

- The risk assessment confirm there is a low risk of failure resulting in serious harm to the employees or public.



- 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 competent employees undertake the procedures and techniques.



- The live work team have tools and equipment to carry out the work
- An emergency procedure is established at the work site to ensure effective response in the event of an incident.
- Immediately prior to start of the work the live work team confirm it is safe to proceed. (specifically weather, asset and site conditions do not present risk)



Procedures (Minimum Requirements)

Procedures shall incorporate the requirements detailed in the following rules and guides as they apply to the work to be undertaken:

- SMEI rule 3.717
- EEA Guide Safe Practices for Low Voltage Electrical Work
- EEA Guide to Live LV Electrical Work
- Guide to Livening of Service Connections to Premises



LV Live Work Permit

The Live Work Permit shall contain the following information;

- Scope of work
- Address of work and equipment identification
- Location and extent of equipment covered
- State of equipment
- Live Low Voltage work procedure number



LV Live Work Permit

- Other safety measures
- Any special precautions
- Sign on / Sign Off

Note: Regular audits of live work practices shall be conducted to ensure worker complacency does not occur. Approved procedures.



PANEL SESSION — **Interactive discussion**

FACILITATOR

- ▶ **Peter Berry**- EEA

PANEL MEMBERS

- **Mick McCreevy** - Senior Transmission Support Officer, Energex/Ergon, Queensland
- **Phil Johnson** - Field Safety and Training Officer, Powernet
- **Mike Burke**- Consultant, BETAA
- ▶ **Graeme Johnson**- Technical Manager, Electrix

- H& S Incidents
- Equipment Standards
- Links with other Live line groups
- Standard work practices
- LV work training



EEA LIVE WORK FORUM | 2019

Afternoon tea 3:00 – 3:20pm

Session chair: Geoff Thorburn, Network Operations
Manager, Wellington Electricity



PANEL SESSION — Maintenance of HV Live Line competency and Live Line restart

FACILITATOR

- ▶ **Robert Taylor**

PANEL MEMBERS

- ▶ **Mick McCreevy** - Senior Transmission Support Officer, Energex/Ergon, Queensland
- ▶ **Mike Burke** – Consultant, **BETAA**

Panel & workshop question:

What is the minimum requirement for a restart programme?

- ▶ Trainers & competency
- ▶ Competency of staff



Minimum requirement for a restart programme? NZECP 46 requirements!

Trainers & competency - History

- Pre 2003 secretary approvals applied – *“This approval is only valid up to the date specified on the approval”*. **Note:** Sunset clause
Post 2003 - A NZQA registered and accredited training provider
- *Have conducted, to a certified trainer’s satisfaction, a full live line work training course in the **method** being taught under the guidance of that certified trainer, and passed that trainer’s assessment of the delivery of the instruction in **live line work** theory and practical techniques.* **Note:** No prescriptive criteria in ECP 46



Trainers Competency – ECP 46

- **“Training Providers shall regularly audit the competencies of their trainers to ensure they meet industry competency requirements. This process should include knowledge of live work accident causes, audited non-compliance trends, new technologies, and equipment mechanical and electrical limitations.”** **Note:** This can become a bit circular given there are only two NZQA registered training providers. *“a bit like having your family on the jury”*

Internal QMS, monitored by NZQA can give some assurance of *“trainer competence”*. They also monitor *“professional development”*

Note: Have suggested an external entity to assess LL trainers. (off shore)



Restart Programme: - ECP 46 – Refresher requirements – (c)

- *“Refresher training shall be conducted on live work safety rules, concepts and **techniques** of the **method**:
(a) At intervals no greater than twelve months, and
(b) Whenever **techniques** are found to be deficient during the field inspections, and/or
(c) When a lineworker has performed no live work in a specific competency for **in excess of twelve months.**”*



Requirements of a Person Conducting Field Inspections of Competency ECP46

- (a) *who is authorised by the **Service Provider**;*
(b) *who has been trained and is currently competent in the methods being inspected; and*
(c) *who is independent of the work party.*

Training and Certification (ECP 46)

- *“All training (including refresher training) shall be carried out under the direct and immediate supervision of a trainer certificated by the **Training Provider** as competent to undertake **procedures** or **techniques** being taught.”*



Overview of international trend in live work

SPEAKER

Peter Berry — Executive Director, EEA



CLOSING REMARKS

Bob Taylor — Chair of NCLW

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