RECOMMENDATIONS FOR AN IMPROVED AUDIT FRAMEWORK FOR THE ELECTRICAL WORKERS REGISTRATION BOARD

SAFETY | COMPETENCY | COMPLIANCE

Developed in Conjunction with

Joint Accreditation System of Australia and New Zealand

Contents

Abbreviations:

CoC Certificate of Compliance
ESC Electrical Safety Certificate
EWRB Electrical Workers Registration Board
PEW Prescribed Electrical Work
MBIE Ministry of Business, Innovation and Employment
ROI Record of Inspection

1. Introduction

The Electrical Workers Registration Board (EWRB) was established in 1992 to promote safety for all New Zealanders by ensuring the competency of electrical workers.

The principal roles of the EWRB are the hearing of complaints and general governance of the registration and licensing framework. This includes:

- Conducting examinations of electrical workers
- Monitoring the training of electrical workers
- Receiving and authorising the registration of electrical workers
- Issuing provisional licences to electrical workers
- Ensuring registered electrical workers maintain an adequate level of competency
- Exercising disciplinary powers and facilitating prosecutions when necessary.

The EWRB has established and maintains a number of audit programmes designed to monitor electrical worker competency levels. The EWRB is concerned that the audit programmes may not be fit-for-purpose and changes may be required.

The EWRB sought advice from the Joint Accreditation System of Australia and New Zealand (JAS-ANZ) to review the current audit programmes and to advise, in consultation with an electrical industry technical committee ("Technical Committee"), recommendations for improvements in the design and implementation of its audit programmes. A schematic of the project concept is provided in Figure 1. The project is linked to all parts of New Zealand electricity network – wherever prescribed electrical work is performed. It therefore has direct implications for generators, transmission and distribution companies and commercial and residential stakeholders. Similarly the project is linked with the country's electrical workers whether they be operating under employer licences or practicing licences. Whilst the project has a wide reach it does focus on aspects of regulatory conformance which has been acknowledged by informed industry stakeholders as being timely.

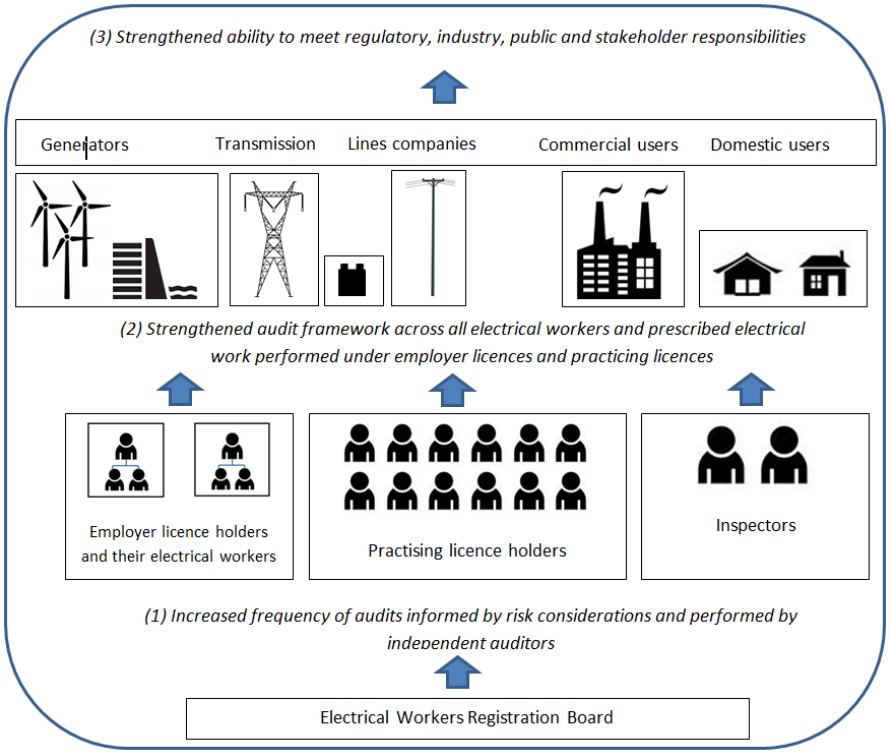

Figure 1: Project schematic

2. Scope of Report

This report provides a summary of the relevant EWRB audit programmes and improvement recommendations.

JAS-ANZ prepared an earlier report to inform the Technical Committee of additional background to the development of the recommendations. For purposes of readability and wider industry consultation, that layer of detail is not reproduced in this report.

The recommendations have been developed following a high level review of existing EWRB audit processes, interviews of personnel involved in the delivery and monitoring of the existing audit programmes and discussion with the Technical Committee.

Recommendations in this report are aligned with internationally established principles for third-party audits.

Throughout this report the term 'competency' is generally used to refer to the ability of electrical workers to perform their work safely and in compliance with the relevant electrical codes of practice.

3. Limitations

The recommendations detailed in this report will need to be considered alongside the associated internal and external resourcing requirements in delivery of the recommendations. The recommendations are 'high-level' and require further levels of detail prior to implementation.

4. Technical Committee

The recommendations presented in this report have been discussed and considered by an electrical industry Technical Committee. That committee provided valuable input in the shaping of this report's recommendations. Committee members are not constrained in providing submissions in support or opposition to any or all recommendations at the time of wider industry consultation.

The Technical Committee included representatives from:

- Electrical Safety Organisation (ESO)
- Electricity Engineers Association (EEA)
- Electrical Contractors Association of New Zealand (ECANZ)
- New Zealand Amalgamated Engineering, Printing and Manufacturing Union (EPMU)
- Omaka Training
- The Skills Organisation
- Electricity Supply Industry Training Organisation (ESITO)
- New Zealand Electrical Institute (NZEI)
- Electrotechnical Education Centre (ETEC)
- Ministry of Business Innovation and Employment
- WorkSafe.

5. Project Concepts

In amongst other considerations, JAS-ANZ's review of the EWRB audit programmes had regard to the following three key principles that are embodied in conformity assessment:

(i) Impartiality:

Key to ensuring public and stakeholder confidence in audit programmes is the concept of impartiality. For an audit/inspection team to make objective decisions they must be free from conflicts of interest or matters that could influence their impartiality. Risks to impartiality include:

- Self-interest threats: being threats that arise from a person or a body acting in their own interest, for instance, financial self-interest.
- Self-review threats: being threats that arise from a person or body reviewing work done by themselves. Auditing an electrical worker or employer licence where the auditor provided related consultancy to that electrical worker or employer would be a self-review threat.
- Familiarity (or trust) threats: these are threats that arise from a person or body being too familiar with or trusting of another person instead of seeking audit evidence.
- Intimidation threats: threats that arise from a person or body having a perception of being coerced openly or secretively, such as a threat to be reported.

Where a conflict of interest exists, processes to manage that circumstance may avoid any risk to impartiality.

(ii) Sampling:

The size of New Zealand's electrical industry is such that it is not economically or physical reasonable to audit every electrical worker on a regular and on-going basis. Accordingly, 'sampling' of the electrical worker 'population' is required.

The determination of what constitutes an appropriate sample size is an important decision. Inappropriate, inadequate or excessive sampling will directly influence the quality, accuracy and cost of an audit programme and how it is perceived by stakeholders. Correspondingly, the degree and method of sampling will dictate the frequency that an electrical worker engages in an audit.

Two approaches to sampling are typically used: non-statistical and statistical. A statistical approach can allow for conclusions to be inferred on a wider population based upon attributes determined from a sample of that population. However an audit programme does not need to be statistically based to be valid. Non-statistical methods can be applied to randomly select or focus audit effort. The choice of audit sample size may be solely influenced by the audit objectives, the attributes of the population and the degree of acceptable risk and uncertainty. Both statistical and non-statistical approaches require the use professional judgement. Regardless of the sampling approach adopted, practical limitations (e.g. timeframe, resources, budget constraints) may override any initial determination of the preferred sample size.

(iii) Competence, performance and alignment of assessment methods:

A worker's competence encompasses their knowledge, skills, abilities and traits. Competence is gained in the electrical industry through pre-service education, in-service training and work experience. The EWRB position has been that electrical worker competence is established at the time of its decision to issue registration or a licence and that audits are therefore not the sole means by which an electrical workers competence is established.

Whilst competence is a precursor to doing the job right, measuring performance periodically is also crucial in determining whether workers are using their competence on the job. For instance, an electrical worker may have the required knowledge and skills but may use these poorly on the job because of personal individual factors (e.g. abilities, goals, values, traits) or external factors (e.g. equipment type and availability, employer support, project time and budget pressures). A worker's awareness of being audited can affect their performance (either decreased as a consequence of anxiety or increased due to increased rigour). An assessment of competence will not always predict on-job performance: poor job performance may not indicate poor competency albeit good job performance is likely to indicate competency.

'Knowledge' can be considered as one of the prerequisites of 'competence' and 'on-job performance'. Notably knowledge is typically assessed by way of tests and exams; however these methods have diminished value in making an assessment of competence, and are further removed from being able to predict on-job performance. Typically a range of assessment techniques are used to determine knowledge, competence and performance; however care is required to select and invoke tools that are aligned with assessment objective(s). This is illustrated in Figure 2, and is an important concept in the evaluation and refinement of EWRBs audit programmes.

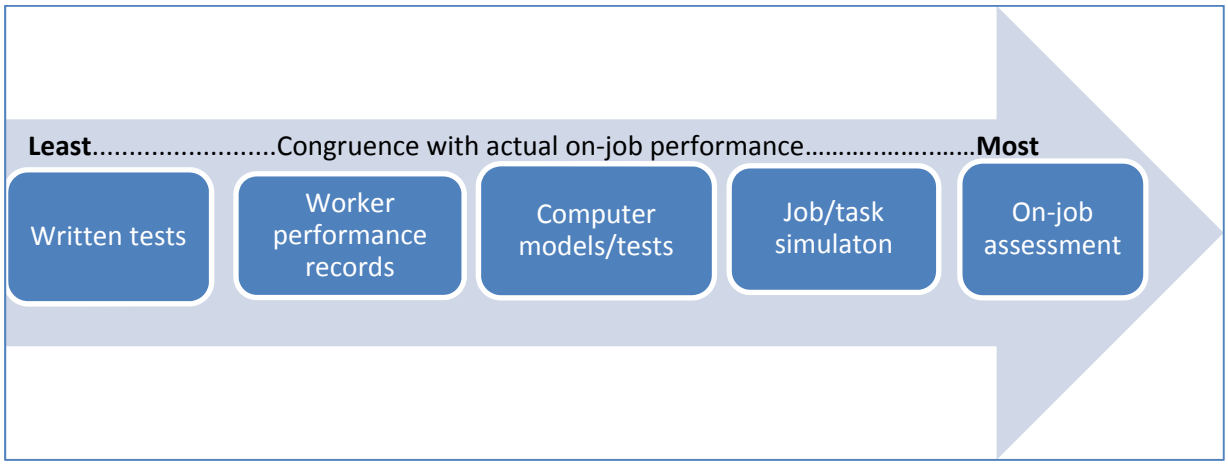

Figure 2: Assessment techniques and their congruence with actual on-job performance

Regardless of the assessment method selected, some measure of competence against an agreed minimum threshold of competence is required (i.e. 'at what level of performance is someone considered competent so that they can be trusted to undertake PEW?'). Inconsistent audits will occur where there are poorly defined standards for conducting that audit. Generally audits are performed using standards, guidelines, checklists and/or rating scales. Checklists tend to be less subjective and achieve the greatest conformity amongst auditors, but may also constrain the breadth of audit coverage where they are a poor fit for the circumstance being audited. A checklist may allow use of a less experienced auditor than would otherwise be required for an overall assessment of competence. An absence of an auditable standard, or the absence of guidance, will see wide variation in audit focus, effort and consistency of results between audits and auditors.

The EWRB is satisfied that when a person is granted registration or a licence they have, at that point in time the appropriate level of required competence. Thereafter, holding a licence or registration is not necessarily a reliable predictor that the practitioner is still competent.

6. EWRB Audit Regime

Effective from 1 July 2013, the Electricity (Safety) Amendment Regulations 2012 changed the Electricity (Safety) Regulations 2010. Those changes included providing flexibility and

improvement in electrical certification. The changes have, however, removed the ability of the Board to track prescribed electrical work through CoCs.

This has affected the EWRB core audit programme of auditing CoCs issued by holders of practising licences. Recommendations for revamping that audit programme are outlined in Section 6.1.

6.1 Electrical workers (excluding those operating under an employer licence)

Introduction

The EWRB has maintained an audit regime to assess and monitor the competency of electrical workers. The audit and assessment methods are highlighted below; table 1 provides statistics of audit activities since 2009:

- CoC audits: Prior to 1 July 2013 electrical workers were required to issue a CoC for PEW. CoCs were purchased from EWRB and issued upon job completion. CoCs were traceable back to the purchasing electrical worker via its serial number; EWRB used that traceability to identify a sample of CoCs and electrical worker of interest for audit. The EWRB then contracted electrical inspectors to audit the PEW for regulatory safety and compliance; inspections might include insulation resistance testing, polarity testing, earth continuity testing and RCD operation. The electrical inspectors' scope did not include an audit of electrical worker competence, albeit inevitably some view would be formed. Electrical workers were encouraged, but not required, to be present during the audit. Non-compliant electrical work would be, where possible, rectified at the time of the audit.
- Telephone audits: a significant number of telephone audits of registered electrical workers have been conducted for the purpose of, amongst other administrative tasks, establishing whether illegal PEW is being undertaken. Telephone audits were discontinued on 1 July 2013.
- Provisional and limited licences: audits undertaken by contracted electrical inspectors.
- Training providers: audits undertaken of training providers' providing competence programmes.
- Complaint system: the EWRB maintains an effective public complaint system.

Table 1: Annual summary of audits and inspections

		2009/10	2010/11	2011/12
Electrical worker activity	Total registrations/new registrations[1]	41,113/1,629	43,321/1,456	43,627/1,577
	Certificates of Compliance (CoC) sold	295,401	295,334	299,809
	Practising licences issued during year	24,198	24,924	26,281
Audit activity	Telephone audits	6,167	5,766	6,587
	Provisional and limited licences	58	52	50
	Certificate of compliance audits	377	490	504
	Training provider audits	23	26	23
	Complaint system audits	130	41	Not reported

Known weaknesses of current audit and assessment mechanisms are:

- The number of CoC audits conducted in recent years is very low in consideration of the number of CoCs sold. Indications are that less than 0.2% of CoCs are audited in any year, representing less than an indicative 2% of practising licence holders. Note: these statistics are approximate only. The reason for the low number of audits was the EWRB was of the view that the incidences of people doing non-compliant work or being shown to have done non-compliant work was low under the CoC audit regime and the number of audits had been reduced over the years as a consequence.
- As can be extrapolated from the previous point, a holder of a practising licence has a low chance of being selected for audit. Under this audit regime, a holder of a practising licence could expect to be audited about once in 50 years. This does has to be balanced against the view that competence was also measured through the Board's approved competency programmes which all licenced persons are required to undertake.
- CoC audits are conducted on completed PEW. Gaining access to hidden work (e.g. behind new walls) for inspection and testing can be problematic.
- The CoCs selected might be for low risk work (e.g. a socket replacement) rather than electrical work with increased complexity and or safety risks.
- CoC traceability from the central pool of EWRB CoCs sold no longer existed after 1 July 2013.
- Audits have largely been focused in urban centres – as influenced by the amount of PEW performed in those areas and the location of electrical inspectors. Inspection of PEW in remote and rural areas is uncommon.
- Electrical inspector/auditors may be faced with conflicts of interest (for instance, auditing work performed by an electrical worker who the electrical inspector is them self dependent upon work). EWRB/electrical inspector contracts are weak in respect of conflicts of interest.
- Stakeholders have expressed concern as to the competency and even-handedness of some electrical inspector/auditors.
- The telephone surveys audits required a degree of self-incrimination. The surveys were therefore of limited effect; albeit it was recognised that the uptake of practising licences would temporarily increase following telephone audit campaigns.

Recommendations

It is recommended that:

1. Audits of electrical workers operating under practising licences continue and:
    a. The volume of audits is increased such that competent practising licence holder could reasonably expect to be subject to audit about once every 5 years. The basis for this recommendation is industry advice that the current audit sampling rates are too low and that an informed stakeholder group (e.g. public, insurance companies, local authorities) would suggest a frequency of between annual to once every 10 years. It can be assumed that a shorter frequency would find diminished support from electrical workers. A frequency at or beyond 10 years would likely receive diminished consumer and stakeholder confidence.
    b. Audit effort targets the inspection of active, rather than completed, PEW. Electrical workers are to be present for some/all of the audit.
2. A new mechanism be developed for selecting electrical workers and PEW for audit that takes into account:
    a. The recommended increase in sampling
    b. Prioritises electrical workers for audit on the basis of their risk profile. The risk profile would take into account the types of matters that would increase or decrease their priority for audit (refer to Table 2).

c. Audits are conducted of electrical workers who perform PEW under an employer licence (refer section 6.2 in respect of audits of employer licences).
d. Audits on PEW where responsibility for work sign-off is at an appropriate higher level within the owner's organisation, and where there are effective systems to measure and manage electrical worker competency and implement any corrective and preventive actions may be at the organisational level.
e. Sampling rules are developed to guide the generation of the annual audit quota of electrical workers audits. Proposed sampling rules are provided in Table 3. Professional judgement will need to be exercised in the refinement and application of those rules.
f. EWRB maintains a database to:
    i. manage the risk profile tool
    ii. manage the annual audit quotas and the nomination of electrical workers for audit.
    iii. Record audit outcomes in respect of electrical worker competency and the auditor recommendation for the timing of the next audit.

3. The audit sample is established at commencement of each annual audit cycle. This will allow audits to be geographically grouped – facilitating efficiencies in audit travel time.
4. Consideration is given to disciplinary measures where electrical workers clearly make themselves unavailable for audit.

Table 2: Example factors that may affect priority for audit

Risk	Category	Treatment in annual audit quota
Increased risk	Complaints relating to technical competency	Indicates possible deficiency in competence.
	Electrical workers with 5 to 10 years' experience	Industry commentators indicate these workers are an elevated risk of unsatisfactory compliance.
	Audit result = unsatisfactory	Prioritised for an additional audit in accordance with auditor recommendation.
	Holder of provisional or limited licence	Prioritise for audit and expand the audit scope to verify employer systems for supervision, training and assessment whilst acknowledging training and assessment is the domain of Industry Training Organisations.
	Electrical worker registration classes: • Electrical inspector • Electrician • Electrical engineer • Electrical installer • Electrical service technician • Line mechanic (fittings repair endorsement) • Electrical appliance service person (endorsed) • Electrical appliance service person	Routinely engaged in PEW.
Neutral	Electrical workers with a high volume of work.	No effect on sample rate as compliances or non-compliances may be widespread.
	Electrical workers with a low volume of work.	No effect on sample rate. A low volume of work may be an indicator of knowledge currency issues.
	First practising licence uplifted	Include a limited sample in annual audit quota
Decreased risk	Also actively employed/contracted under an employer licence	Low level of annual audit quota for the period where this condition is met; assumes electrical worker's exposure to good practice and on-going professional development and mentoring.
	Electrical worker demonstrates relevant continuing professional development (CDP) over and above that which is currently required by the EWRB and which focuses on practical assessment.	Remove from annual audit quota for a term appropriate to the nature and scale of the CPD.
	Active member of a relevant and effective industry association.	Decreased priority for audit provided the industry association can demonstrate effectiveness in ensuring electrical worker competence and knowledge of regulatory requirements. It is recommended that EWRB explore this matter further with electrical industry associations.
	Audited within the previous 5 years and assessed as competent.	Remove from audit sample for period of (up to) 5 years. Note this exemption can be revoked.
	Conducting high risk work and ROIs are compliant	Decreased priority within annual audit quota.
	Electrical worker registration classes for "works" (and not "installation"): • Line mechanic (or new proposed classes: Transmission line mechanic, Traction line mechanic, distribution line mechanic) • Cable jointer • Electrical fitter [New proposed class]	PEW performed by these classes of electrical workers provided that work is inspected and verified by a competent person.
Other	Associated Tradesperson: - Plumber - Gas fitter	Licences are issued by the EWRB and as such person would be treated the same as all other licensed persons.

Table 3: Recommendation for audit of electrical workers undertaking PEW

<table>
<tr><th>Category</th><th>Recommendation</th></tr>
<tr><td>Data requirements:</td><td>Development and maintenance of an electrical worker database with input/output functionality to automate sample generation.</td></tr>
<tr><td>Sampling Rules</td><td>

The number of audits scheduled in any 12 month period is planned on the basis of achieving a 5 year audit frequency of practising licence holders. The annual audit quota will need to take into account the status of the audit programme towards achieving its longer term objectives – and in particular to ensure under or over-sampling is avoided; sampling rates will need to be reviewed annually. The annual audit quota is to be made-up of:

<table>
<tr><th>Description</th></tr>
<tr><td><u>Complaints:</u> All electrical workers for which legitimate complaints have been made in respect of PEW are included in the annual audit quota. Where complaints are managed by a separate comparable mechanism (e.g. disciplinary action that includes on-going supervision) they would not also be included in the annual audit quota.</td></tr>
<tr><td><u>High risk PEW</u>: 10% of electrical workers who have performed high risk PEW (as identified from the Electricity and Gas High Risk Database) in the previous 12 months are included in the annual audit quota. Audit scope should include the role and performance of the electrical inspector. This low sampling rate is justified on the basis that high risk PEW work is also subject to a Record of Inspection (ROI).</td></tr>
<tr><td><u>Practising licences:</u> 5% of the total of first time practising licence holders issued in the previous 12 months is to be included in the annual audit quota.</td></tr>
<tr><td><u>Limited licences:</u> 10% of the total of limited licences issued is included in the annual audit quota. Provisionally one audit per term of the limited licence. Audit scope to include a review of employer processes for training and supervision.</td></tr>
<tr><td><u>Balance of annual audit quota</u> is derived from a sample of registered electrical workers drawn from the remaining electrical worker population after adjustment for their risk profiles (refer to table 2). The balance of the annual audit quota is made-up of those electrical workers with the highest risk profiles in that population.</td></tr>
</table>

Where an electrical worker is audited and deemed competent, they are to be removed from the sampling population for a period of 5 years. They would be returned to the sample population within that period in event of the complaint mechanism or other justifiable reason (e.g. an auditor may recommend a shorter period for reaudit).
In any 12 month period an electrical worker would, unless otherwise justified, be subject to no more than one audit.
Following generation of the annual quota, adjustments will be required to account for electrical worker availability, employment status and role/classification.
Audits will target, wherever possible, witnessing an electrical worker performing PEW. This will provide the auditor with increased ability to audit competency. Priority is to be given to active ‘general work’; where that is not available, then an audit of completed ‘general work’ may be considered. The auditor will need to use their best endeavours to select a job without being led to an exemplary job ‘offered-up’ by the electrical worker.

</td></tr>
<tr><td>Reporting to EWRB</td><td>Auditors are to advise the EWRB on electrical worker competency and recommendations for the timing of the next audit of that electrical worker.</td></tr>
<tr><td>EWRB monitoring and overview</td><td>

EWRB to conduct periodic evaluations of its auditors by way of witness assessments.
Rules will need to be established around the management of electrical workers who evade audit. A mechanism linking back to renewal of their practising licence could be considered.

</td></tr>
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6.2 Employer licences

Introduction

The EWRB is responsible for the issuing of employer licences. Employer licences are valid for a period of up to five years unless otherwise cancelled or suspended. They are issued where an employer meets various administrative requirements and obtains and submits an annual certificate from an "approved person" (i.e. an approved auditor). That certificate is required to inform EWRB that the employer is maintaining a system of operation that satisfies the requirements of Section 115 of the Electricity Act 1992 and regulation 94 of the Electricity (Safety) Regulations 2010 ("Regulations").

There are currently six companies recognised as "approved persons".

On 10 March 2014, the EWRB released a 'Proposed Policy for the Issuing of Employer Licences' for industry comment.

Employer licence audits

Key feature of employer licence audits relevant to the purposes of this report include:

- Approved persons use their best endeavours in audit planning, implementation and reporting to meet the requirements of Section 115 of the Electricity Act 1992. However there is no published guidance material to translate the regulatory requirements into audit practice. Approved persons have advised that they have received only limited feedback from EWRB, and they therefore assume their individual audit processes are correct.
- Audits may be undertaken in conjunction with audits of other certification standards – such as AS NZ ISO9001:2008 (an international quality management systems standard).
- Employer licence audit durations are typically between 2 to 4 hours. Anything more than half a day is reported as being unusual.
- Audit frequency is at least annual; some employer licence holders are audited more frequently as dictated by other audit programme requirements (e.g. AS NZ ISO9001:2008). Not all employer licence sites are necessarily audited in any 12 month period. Audit frequency is influenced by staff numbers, nature of activities, number of sites (e.g. offices) and maturity of the company's systems.
- Audit activities include a review of an employer licence holder's procedures and training records; audits tasks do not necessarily observe electrical workers performing PEW.
- An audit report is prepared and provided to the employer licence holder. A copy of that report is not provided to the EWRB; the EWRB is provided an annual certificate or letter confirming conformance. The EWRB is <u>not</u> provided visibility of:
    - Non-conformities identified in the audit, or of any weaknesses in employer licence compliance.
    - Details of the employer licence holder's electrical worker resource (e.g. name, number, registration status, electrical class) or the type and location of PEW undertaken.
    - The employer licence manual (refer to Regulation 95 of the Electricity (Supply) Regulations 2010).

    Note: EWRB's proposed policy (issued 10 March 2014) requires that the manual is submitted to the EWRB at the time of employer licence application, and thereafter the EWRB is notified of changes to that manual. That policy also seeks to allow EWRB to restrict the type of PEW undertaken and/or the geographic areas that PEW may be undertaken.

- Employer Licence Auditors have variable electrical industry technical competencies. For instance, some are registered electrical workers whilst others are quality management experts with knowledge of the electrical industry and/or who are supported with an industry technical expert on an as-determined basis.
- There is no requirement than approved persons are impartial. Auditors may audit employer licence systems where they have contributed to its design, implementation and/or maintenance.

Recommendations

Whilst employer licence audits are active there are some weaknesses in the planning, delivery and reporting of those audits, and in the technical competencies of the approved persons. The root cause of these weaknesses is the absence of guidance to approved persons on the application and interpretation of Section 115 of the Electricity Act 1992. Recommendations to address improve the employer licence audits are presented in Table 4.

Table 4: Recommendations for employer licence audits

Category	Recommendations
Design & implementation	In consultation with electrical industry representatives, EWRB develop 'scheme rules' for the planning, conduct and reporting of employer licence audits. The 'scheme rules' may be supported by tools such as templates and checklists. The scheme rules should provide guidance on at least the following matters: • Define the technical and non-technical competencies of auditors and/or audit teams. • Define the mandatory and expected detail of employer licence holder documentation (e.g. manual, training records, description of authorised PEW, employees or classes of employees, procedures, competencies). • Define minimum audit activities for evaluating whether an employer licence is well implemented and maintained – including establishing requirements around audit frequency and sampling of multi-site organisations. • Set minimum audit/inspection activities for establishing the robustness of the employer's management system and the competency of electrical workers covered by the employer licence (e.g. head office and observation of electrical worker practice). • Consider the implications of an integrated employer licence and quality management system (or other) audit • Define minimum audit reporting documentation and reporting requirements • In consultation with employer licence holders, improve EWRBs visibility of employer licence compliance and of the type and geographic areas of PEW undertaken. • Provide summary details to EWRB of: - Organisational compliance to its employer licence - Confirmation of the number and names of electrical workers, types of work and geographic areas covered by the employer licence - The name(s) of the auditor. Note: this information will assist fine tuning of the EWRB PEW audit program by identifying registered electrical workers employed under an employer licence, and therefore not subject to separate PEW audits.
Monitoring	• EWRB to assess and monitor the performance of "approved persons" and their audit personnel through a program of audit report reviews and witness assessments. The assessor should be independent and suitably experienced. EWRB to adjust its assessment frequency commensurate with good practice and auditor performance. Witness assessments of auditors should be at a frequency no less than about once every 3 years. • Auditors to provide EWRB its annual audit plan for each employer licence client. The plan should provide details of audit frequency and any site sampling.

7. Illegal PEW

Illegal electrical work remains a government and industry recognised issue. This work is being performed by:

- registered electrical workers who do not hold a practising licence
- electrical workers performing work outside their registration class
- people other than electrical workers.

The EWRB and WorkSafe have responsibilities to ensure people undertaking PEW are licenced to do so, and thereby have a dual responsibility along with the legal system to identify those operating outside of the law.

EWRBs previous attempts to identify unlawful electrical work via phone surveys are understood to have had only limited success – but can be done in a cost effective manner. Electrical industry representatives have encouraged the EWRB to consider further phone surveys.

Public and electrical industry communications and complaint systems are available mechanisms to reduce the volume of illegal PEW and to identify those who continue to perform illegal PEW. Key messages for the target sectors are provided in Table 5.

Table 5: Illegal PEW work key message concepts

Target sector	Key messages
Electrical workers	• Responsibilities • Enforcement provisions and consequences • Access to complaint/reporting systems
Public	• Responsibilities • Required credentials of an electrical worker for performing PEW • Enforcement provisions and consequences • Access to complaint/reporting systems

Preliminary screening of complaints would be required to identify complaints that are vexatious and/or arise inappropriately from trade competition.

8. Auditors/inspectors - resourcing

It is recommended that audit programmes:

- achieve national geographic coverage of the audit programs
- use auditors that possess the required technical and non-technical skills and knowledge
- use auditors that are impartial.

In recent times EWRB have resourced the audit programmes using contracted inspector/auditors. Implementation of all recommendations in this report will lead to a significant increase in the number of audits needing to be conducted; this will require increased resourcing and auditor capacity.

This resourcing may be better controlled and provided by an in-house audit team.

Where auditors and electrical inspectors continue to be contracted it is recommended that increased efforts and systems are implemented to ensure:

- Conflicts of interest and risks to impartiality are identified and managed
- Auditor competencies and performance is defined and monitored
- Regular auditor training and refresher training is provided to ensure currency and consistency in audit delivery

- Delivery of audits and reporting is efficient and timely
- Tools required to effectively deliver audits are provided
- Contractual arrangements that facilitate these recommendations are in place.

9. Training

Training provider - integrity

The EWRB has an established and prescribed competency programme for persons applying for, and holding, practising licences. EWRB maintains a list of approved competence programme providers. Providers are subject to audit by MBIE personnel.

Job simulation assessment

The EWRB has established competency programmes in association with the renewal of practising licences. An additional course component based around job simulation could be developed. Electrical workers who demonstrate competence in the job simulation would be recorded in the electrical worker audit database and ascribed a low priority for on-job audit/inspection for a specified time period (e.g. 2 years). This lever on its own is unlikely to be sufficient to attract course attendance - consideration could be given to establishing market recognition of that attainment.

10. Conclusions

Whilst the EWRB audit regime for verifying the competence of electrical workers is active it is not effective in all areas in that it is applied. EWRB have flagged this concern leading to a review of that programme and the promulgation of recommendations for realignment and improvement.

Employer licences audits are active but the framework has weaknesses. Employer licence auditors ('approved persons') are in the unenvious position of having to interpret legislative requirements and formulate their own audit methodology (e.g. audit duration, coverage, site sampling) in the hope that this satisfies the regulatory needs and requirements. Whilst the employer licence holder is advised of the audit findings, only limited information is relayed to the EWRB. Recommendations are made to strengthen this programme by developing 'scheme rules' for the planning, execution and reporting of audits.

The audit regime in place for practising licences and PEW is not achieving the desired outcomes of increased safety and compliance with the regime having a very low sampling rate of electrical workers PEW the reality is that electrical workers could reasonably expect never to be subject to audit during their career. Recommendations are made to increase the number of audits such that electrical workers could expect to be audited more frequently (approximately once every five years is suggested), and that audits are prioritised to those electrical workers who are less likely to be performing PEW competently.

It is also recommended that EWRB examine its contractual arrangements with electrical inspectors to ensure that conflicts of interest are being satisfactorily managed, and that timely geographic coverage of inspections is being achieved.

It is expected that the matters identified in this report, and the recommendations made, will be of significant interest to the electrical industry. It is also expected that many of the concerns raised will be shared. Landing on the correct solutions will require technical input from salient parts of the electrical industry given the interwoven nature of issues (e.g. competence assessment, training, course curriculum, apprentice and electrical worker supervision and mentoring, industry association assistance and resources, audit team direction and competence). To this end, the recommendations detailed in this report should be further discussed and evolved in consultation with the electrical industry.