

Skills for Queensland

Discussion paper response

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INTRODUCTION

Master Electricians Australia (MEA) is a trade association representing electrical contractors, recognised by industry, government and the community as the electrical industry's leading business partner, knowledge source and advocate. MEA currently has a membership base of approximately 3000 electrical contractors in Australia. MEA understands the current and potential issues facing electrical contractors today.

Master Electricians Australia has a dedicated team that provides comprehensive technical advice, is a registered training organisation (RTO) and a significant participant in the National Industry Reference Committee for the Electrotechnology Industry Certificate 3.

THE QUEENSLAND ELECTROTECHNOLOGY INDUSTRY

The Queensland Electrotechnology Industry generates revenue of approximately \$4 billion annually in Queensland and includes a workforce of approximately 80,000 including 51,000 trade qualified employees and 10,300 apprentices employed by 11,000 electrical contracting businesses.

The electrical industry is a specialist construction industry and provides specialist services for downstream construction and industrial markets. Contractors have endured subdued demand from building markets over the past five years and reduced household discretionary income has limited consumer spending. The large drop in non-building infrastructure due to the conclusion of mining boom and associated public capital expenditure programs has negatively affected industry operators.

The key drivers for the electrical services and technology industries are:

- residential building construction
- residential discretionary spending
- commercial and industrial construction
- capital expenditure on machinery and equipment
- heavy industry, institutional and non-building construction

Queensland economic data is pointing to continued softness in the electrical industry. On the review of housing approvals, the unemployment rate and consumer confidence, all indicators are pointing to a soft sector and continuing to do so. Data from the Queensland Statisticians Office shows the following:

Building approvals, June 2018 QSO Key data *

Total dwelling approvals monthly change (trend):

Queensland	- 1.6%
Australia	+ 0.1%

Total dwelling approvals annual change (trend):

Queensland	- 5.2%
Australia	+ 2.1%

*Source [Qld building approvals](#)

Unemployment rate (trend)

August-18	6.3 %
July-18	6.2 %
August-17	6.0 %

Source [QSO labour-force 201808 Table 2 Interstate Comparison](#)

According to the 2018 IBISWorld report E3232 Electrical Services in Australia;

“The industry’s profit performance is projected to deteriorate over the five years through 2018-19, with margins narrowing to an estimated 6.5%. This trend reflects the competitive conditions in key building markets and the slump in demand from several mining and infrastructure markets, which has forced contractors to reduce prices to secure installation and maintenance jobs. However, businesses servicing the emerging growth markets of home automation and energy conservation are expected to generate stronger profit margins over the five years through 2018-19.”

Over the next five years expansion in the industry will be attributable to the adoption of new technologies, increasing prevalence of long-term facilities management contracts and energy-auditing contracts. However more broadly technological advances in electrical and electronic equipment over the next five years include key growth areas such as Solar PV systems, domestic and commercial battery storage systems, networking systems for electronic data transfer; C-Bus systems; LED energy-efficient lighting; domestic smoke detection and alarm; telephone, broadband and pay TV services; surveillance instrumentation installation and maintenance. Emerging technology also points to growing demand for the installation of electricity charging facilities for electric vehicles, including commercial charging stations at shopping centres and workplaces, and the installation of specialist plugs at residential premises.

BUSINESS SUCCESS FACTORS AND COSTS

90% of the industry are micro or small employers employing less than 5 employees. As such the owner of the businesses has multiple responsibilities as well as having a hands-on approach or “on the tools” and must invest not only in themselves but also the business. The five attributes electrotechnology businesses need to be successful include:

1. Ability to expand and contract in line with market needs

Whilst many see that contracting is prevalent in the building and construction industry it is prevalent in all sectors of the electrotechnology industry. In most cases all companies will expand and contract their size of their business based on factors including:

- industry demand
- organisational skill
- risk profile
- organisational goals

Significantly, and a major barrier to the industry, is its propensity to engage predominately full-time staff. Like general construction, the electrotechnology industry lags others in the introduction of family friendly or flexible hours to accommodate part time staff or those with caring commitments.

Businesses also look at efficiencies whereby assets such as vans and stock need to be utilised to maximise income and profitability. This is further highlighted as an issue later in this section where we discuss the current profitability difficulties within the industry.

2. Quickly assimilate to new technologies

Electrotechnology businesses rely on expanding into areas of advanced technology growth. This results in an increase in market share. Businesses need to be aware of new customer demands in new technology and match that with services and skills of staff to ensure that reputational concerns are met. This demonstrates the necessity of maintaining a diversity of skill to ensure ongoing business success.

3. Operate in multiple markets with multiple clients

Diversification also is imperative to business success. Relying on a sole customer or industry segmentation for revenue is fraught with risk. As seen in the slow adaptation of some businesses since the mining infrastructure boom ended and the return of larger contracting companies to markets. Those with diversified and multiple business avenues and markets continue to prosper while others trying to enter new non-traditional markets have suffered in recent years. This shows that diversity of skill is required to ensure ongoing business success.

4. Reputation and client relationships

Longevity in the industry and related competition relies on the establishment of a reputation for work which is complaint, safe, uses good quality products, efficient and professional. Customer relationships and business development skills are important and should be backed up with customer service training for employees to ensure relationships don't sour.

5. Competitive price structure

In the last 5 years tier one businesses have left mining and related construction and returned to high rise residential construction work and followed many tier one builders as they return to more traditional markets. Smaller players have then had to compete on price and reputation in many cases.

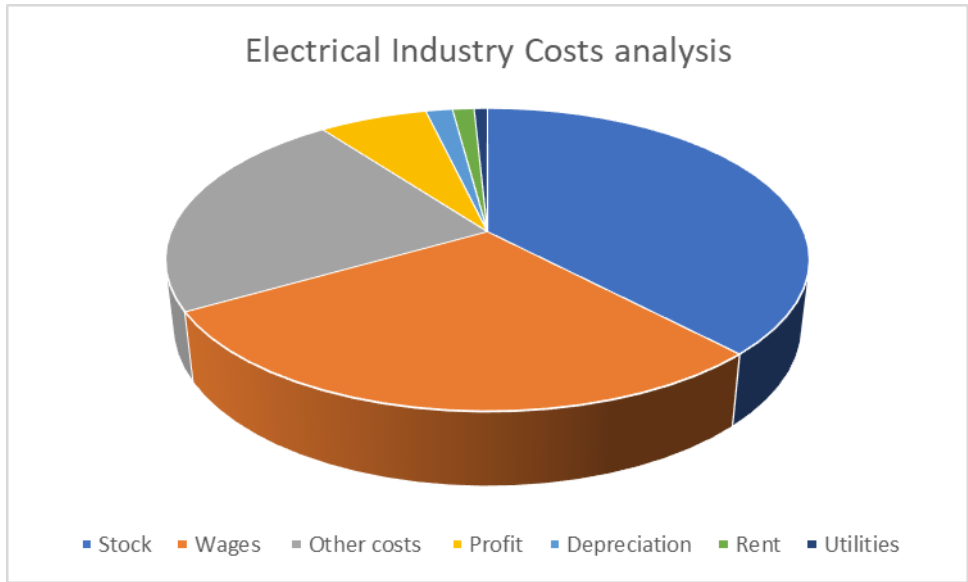
In maintaining competitive price structures IBISWorld report 2018 E3232 demonstrates that most companies exhibit the following cost breakdown and compares it with the all industry average.

Table 1

Average costs		
	Electrical	All Industries
Stock	37.90%	31.20%
Wages	28.80%	18.30%
Other costs	23.10%	38.10%
Profit	6.50%	9.00%
Depreciation	1.60%	2.20%
Rent	1.30%	1.00%
Utilities	0.80%	0.20%

As can be seen in Table 1 and Chart 1 the reliance on technical product and supplies and wages indicates that a significant amount of time and energy must be given to ensure all parties are knowledgeable about their installation products and staff are competent to undertake the work.

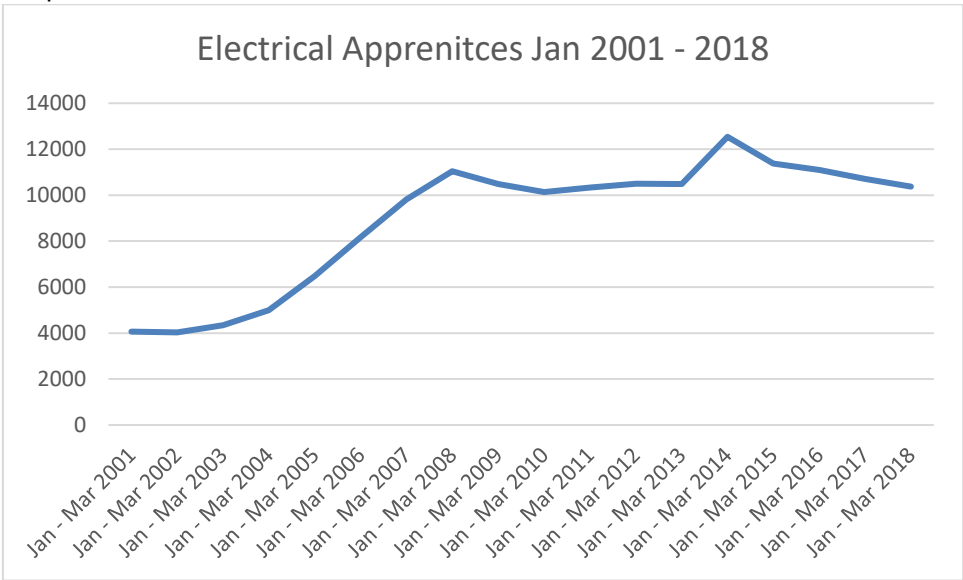
Chart 1.



QUEENSLAND ELECTROTECHNOLOGY APPRENTICESHIP PROFILE

In the last 18 years the industry has seen more than a doubling of apprenticeships offered in Queensland.

Graph 1



The electrical industry however has also gone through some other significant changes in the last 18 years. MEA has completed a Apprentice snap shot comparison comparing Jan – Mar 2001 and Jan – Mar 2018. This data was obtained from NCVET Apprentice Data cube. [NCVER Vocstats](#)

- School Based apprenticeships have grown from 0.4% in 2001 to 5% in 2018

- Female participation has grown from 1.4% in 2001 to 4% in 2018
- Indigenous participation has grown from 1.8% in 2001 to 3.4% in 2018

SCHOOL BASED APPRENTICES

Whilst school based apprenticeships have grown during the period. feedback from MEA members detail concerns that one day a week is not sufficient time for adequate learning and retention of skills learnt on the job. In addition, wage progression of school based apprentices in accordance with the award is described as

Schedule E—School-based Apprentices

E.8 School-based apprentices progress through the relevant wage scale at the rate of 12 months progression for each two years of employment as an apprentice, or at the rate of 12 months progression for each two years of employment as an apprentice, or at the rate of competency based progression if provided for in this award.

The above arrangements result in a school based apprentice progressing with far less on the job hours as opposed to those in a normal apprenticeship. Additionally, when compared to part time apprentices who are required under Queensland legislation to complete a minimum of 15 hours per week, this raises issues of consistency across apprenticeships.

FEMALE PARTICIPATION

Whilst there has been some growth in female participation in the industry the participation rate is not growing due to reasons other than just traditional gender issues. It is rare to find part time arrangements for employees in the industry whether male or female. Structural issue within the industry such as asset utilisation are an important business consideration. As described earlier stock and wages are the two highest costs for employers. Employers with staff working in the contracting industry on a part time basis results in the assets of the business and the stock not being utilised and is an inefficient use and ultimately raises costs for the business. A reduction in income results in an increase in charge out rates to gain an equivalent profitability from less hours. This however then pits the employer against others who have full time staff and offer a lower hourly rate to consumers. There are several other award issues that create structural impediments as well such as the onerous part time provisions under the award.

INDIGENOUS WORKFORCE

According to the Qld Government statistics ATSI people make up 3.6% of the population. The industry has achieved 3.4% in January 2018. This is an encouraging sign for the industry. Factors that may have attributed to this include proactive engagement within the industry and access to opportunities with more than one-third (34.2%) of Queensland's Aboriginal and Torres Strait Islander population lived in the Brisbane Indigenous Region.

Table 2

Age	Jan- Mar 2018	Jan - Mar 2001
19 years and under	3294	1638
20 to 24 years	3831	1858
25 to 44 years	2928	546
45 years and over	325	27
Total	10378	4069

MEA has calculated that the average age has increased from 21.5 years in 2001 to 24.25 in 2018. With almost 30% of all new apprentices being over 25 years of age. This is reflective of the broader national trend where apprentices aged over 25 have increased in some jurisdiction by 10 times in the last 18 years.

Table 3

Previous highest education level	Jan - Mar 2018	Jan – Mar 2001
Bachelor degree/Higher degree level	130	7
Advanced diploma/Associate degree	39	7
Diploma	215	28
Certificate IV	349	16
Certificate III	2700	221
Year 12	5587	2940
Year 11	598	340
Certificate II	131	6
Year 10	580	461
Certificate 1	0	3
Miscellaneous education	1	0
Non-award course	0	0
Year 9 or lower	48	34
Did not go to	0	0
Not Known	0	6
Not Collected	0	0
Total	10378	4069

Significantly there has also been an increase in the qualifications of workers prior to entering the apprenticeship. The data above shows significant increases which reflects a growing trend for older students engaging with the trade and coming with similar level qualification and experience in higher learning. This is influencing the availability of places available for younger apprentices when employers are attracted to those with higher education and likely a demonstrated work history. It now occurs that 33% of all apprentices have previous education at certificate III or higher level. This compares to just 6.8% in 2001.

Table 4

Client remoteness (ARIA+) region	Jan - Mar 2018	Jan – Mar 2001
Major cities	6235	1949
Inner regional	1940	906
Outer regional	1596	817
Remote	312	165
Very remote	227	170
Not known	68	62
Total	10378	4069

We have seen a 250% increase in apprenticeships overall; however, within this uptake of apprenticeships is a 320% increase in major cities. With all other locations not matching or keeping

pace with apprenticeship growth. This is creating apprentice placement shortages and a lack of opportunities for young people leaving schools particularly in remote and outer regional areas.

Table 5

Employer type	Jan - Mar 2018	Jan – Mar 2001
Private sector	8076	2633
Government or business enterprise	681	226
Local government	74	61
State government	53	101
Commonwealth government	0	1
Group training scheme	1494	1047
Total	10378	4069

The above table demonstrates the importance of private sector employers in training and developing future tradespeople. Interestingly group training companies, whilst their numbers have increased, they have not kept pace with private sector or Government placements available. This may be because of a lack of confidence in the GTO system and is of concern particularly if those concerns are related to the quality of the apprentice or the outcome achieved.

Table 6

Training Organisation Type	Jan – Mar 2018	Jan – Mar 2001
TAFE	7130	3540
Non-TAFE	3247	313
Mixed	1	0
Unknown	0	216
Total	10378	4069

As can be seen above, TAFE has lost 25% market share over the last 18 years to private providers.

Accompanying the above is an estimated 65% completion rate in the Electrotechnology area.

TRAINING PACKAGE CONSTRUCTION AND IMPEDIMENTS

Currently for the Electrotechnology Training Package (UEE30811) the completion requirements will be met when competency is demonstrated and achieved in:

- All the Core competency standard units, defined in the Core Competency Standard Units appendix 1 and
- A combination of Elective competency standard units to achieve a total weighting of 140 points in accordance with the Elective Competency Standard Units appendix 1.

A total of 1060 points is required; however, when all the elective options are examined there is almost 4000 points available as electives, or more than 100 different subjects that can contribute to achieving the qualification.

It is apparent within the industry that RTOs are not able to offer any more than approximately 12 different electives. Information would indicate that in most cases in the electrical apprenticeship PLC, Communications and one other significant stream is offered by RTOs. RTOs are then incentivised to convince participants to undertake the electives on offer to ensure revenue is maximised from the apprentice.

Employers have vastly differing business needs and the package supports many options however to expect an employer, particularly a small employer, to understand their training/customers' needs 4 years in advance is unrealistic. This is further complicated by RTOs that do not deliver all options. The funding model also does not easily allow for apprentices and employers to change to single competencies that might be offered by another RTOs. It is the view of MEA that this is significant when meeting of expectations of employers and apprentices finishing their electrical qualifications.

DISCUSSION PAPER RESPONSES

Industry Engagement

The Electrotechnology Industry has the advantage of having Energy Skills Queensland (ESQ) to assist in ensuring we have industry engagement to identify some of the needs. However, the energy industry covered by ESQ includes the electricity, oil and gas, mining, renewable and telecommunications sectors. Over the past decade the high priority areas of oil and gas and mining have been a predominate feature of ESQ activity. ESQ have, with limited resources, over the past 7 years prepared various reports and information these include:

- [2013 heartbeat mining industry](#) report 2013
- [Discussion paper future skilling implications smart grid](#) 2011
- [Response to Skills Queensland's strategic priorities issues/](#) 2011
- [Electrical contractors industry workforce plan 2012-2017](#)
- [Queensland CSG LNG industry-workforce-plan](#) 2013

However, MEA submits that the Energy sector, which is crucial to the success of nearly all other sectors, does not systematically review its training needs and emerging skill requirements. As an example, whilst ESQ have previously identified issues it has not gone to the depth that would allow regional investigation and analysis and as such is limited in application to further assist with a targeted scheme or strategies of particular benefit to different areas of the state.

The industry, from the perspective of MEA has had limited engagement with Jobs Queensland and as such cannot be closely linked with the Governments economic and industry development strategies. Industry needs will develop more frequently and rapidly in the future however the intelligence needed to anticipate these needs cannot be 6 – 7 years old. MEA is of the view that a rolling skills analysis is required in the industry very 3 – 4 years. This allows the industry to make small incremental changes to training needs and employee skill supply channels rather than what we see at present which is an antiquated response and a move away from accredited training to unaccredited training to fill gaps of immediate need. It is our view that by doing this we can maximise local jobs by making sure locals have the skills needed and avoid 'mismatch' unemployment.

MEA also believes this would also start to address some of the issues we have highlighted earlier in relation to the decreasing number of apprentices that are being trained in inner regional outer regional

and remote areas. Apprentices are far more likely to stay and live in rural communities if they can train in those areas. This is proven by recent practices in the Health system whereby regional Doctors trained in regional Queensland are more likely to stay we see this strategy linked to other industry development as key factors in making sure local contractors and tradesman are available for local communities.

Market Settings

The delivery of skills in the electrotechnology industry as demonstrated in graph 1 has gone through significant increase over the last 18 years. Although the last 4 has seen a flattening of apprentice demand; we consider this is linked to economic activity. The IBISworld report indicates the following

“The Electrical Services industry is projected to benefit from improved demand conditions across key construction markets over the next five years. However, demand for electrical installation and wiring work in the residential building market is expected to contract further in the short term, limiting the industry’s performance. Demand for electrical contracting services is forecast to strengthen across most building and infrastructure markets from 2020-21 onwards. In addition, some of the industry’s larger contractors are expected to continue to be supported by ongoing work on the rollout of the National Broadband Network (NBN). Overall, industry revenue is forecast to increase at an annualised 2.7% over the five years through 2023-24, to \$22.8 billion. Increasing industry activity is projected to support employment growth. However, the projected rise in the workforce is expected to lag behind revenue growth, due to a shift to long- term maintenance and facility management contracts. Industry enterprise numbers are also expected to grow moderately over the next five years, as improved demand conditions in key building markets encourage small independent operators to enter the industry. These operators are largely expected to focus on narrow regional or specialist markets.”

Whilst this is a national view we believe that the statistics raised earlier in the paper support that this will be reflected in the Queensland market more broadly, noting that Brisbane may have a larger spike given significant major projects due to commence and reach peak workforce in the next 2 – 3 years. This may result in a more localised shortage of apprentices.

As noted in the statistics above MEA is concerned that regional and remote Queenslanders are not achieving the same apprenticeship outcomes as major cities. MEA notes that all Australian states at present except Queensland and Victoria have agreed to terms with the Federal Government for their apprentice and traineeship partnership agreement. MEA believes that the bipartisanship exhibited in other states will deliver superior outcomes for those states and industries and as such we believe that this injection of funds is greatly needed and should be aimed particularly at employers and apprentices in inner and outer regional and remote areas.

MEA is also concerned currently with the market settings. We have highlighted our concern in the areas of the package delivery above and the lack of variability of elective offerings in the industry. This is particularly linked to not delivering the skills of employers require. MEA has been unable to identify any data whereby out of the 100 electives how many of those are delivered and certainly there is no data or research to match if those being delivered match those of employers and apprentice need for their current positions / employer. This is a significant gap in the market data analysis and one that should be / could be addressed through cooperation of ESQ, MEA, Electrical Trade Union (ETU) and VET Department.

MEA believes the discussion paper also shows a lack of recognition for employers concerning their contribution for costs associated with electrical apprenticeships. Tools, out of pocket expenses, travel, additional allowances and significant non-productive time of apprentices are all costs associated, but unacknowledged in the discussion paper. In addition, indirect costs such as supervision and non-productive time of supervising tradesman who reviewing/ authorisation e-profiling, additional time and or assistance with college work and competency assessment and endorsement supported by the hours of mentoring of both a professional and personal level.

Many small employers do not have the expertise to manage some difficult situations that can arise with struggling apprentices and mentoring has been proven to increase completion rates. However in Queensland there has been a significant lack of mentoring services available for both supervising tradesman and apprentices. Whilst the Australian Apprentice Support Network AASN provide some mentoring it is clear from experience at MEA that additional resources benefit completion rates of electrical apprentices in Queensland. Particularly those in second and third year whereby college subjects are harder and more demanding.

ROLE OF PROVIDERS

As shown in Table 6 above the face of VET training delivery has changed significantly in the last 18 years. TAFE has experienced a 25% reduction in market share. The Electrotechnology industry does have many providers both public and private. As demonstrated in Graph 1 the industry does have the capacity to expand and contract in accordance with economic conditions.

Electrical apprenticeships are a set four-year period and as such whole economic cycles can take place in that period, reflecting a boom or bust result for apprentices. This cycle can lead to wildly varying employment and wage results and traditionally skill shortages results. Hard economic times also result in young entrants to the employment market often struggling to obtain an apprenticeship due to increased competition from older workers perhaps returning to the market after gaining higher qualifications and being more attractive / reliable to employers.

To address economic cycles, non-completions rates due to a mismatch between an apprentice and the electrical trade itself and ensure employers have a scope of work that will allow the apprentice to receive a well-rounded education MEA suggests that all apprenticeships be centrally coordinated. Similar to higher education placements at Universities through a Queensland Tertiary Admissions Centre.

It is the suggestion of MEA that all electrical apprentice candidates undergo initial assessment. This would include the Energy Skills Australia readiness assessment for numeracy and literacy skills, combined with an assessment such as the Harrison Job Suitability personality assessment and relevant interview to ensure candidates are suited, prepared and committed to take on the Electrical Trade.

Similarly, as is happening now through audits from ESO and VET Department, Employers should nominate to be available for an apprentice and be assessed to ensure an appropriate scope of work is available to ensure the apprentice receives the full benefit of training.

MEA has in this response already discussed the issue of electives in the electrical apprenticeship and what we believe is a very limited range being offered based on RTO preference/capability. MEA believes a small number of additional electives are needed however the requirement is for an improved matching of currently available electives from the training package with the apprentices and employer's needs.

MEA would support investigation into the improvement within the payment system of training providers that could deliver better income regularity for private RTOs and Group Training Organisations. Within the electrical trade there are some competencies in which full payment is not received until fourth year, even though progress is made through each year. TAFE providers due to size and government capacity to pay overheads can carry outstanding amounts for longer period compared to GTO and private RTO providers. The impact of also transferring apprentices from one RTO to another also impacts on the financial viability of providers when services have been provided but not re-compensable due to full competency being achieved.

Whilst there is no hard evidence to identify exact skill shortages in the electrotechnology industry in Queensland at present anecdotal evidence from member feedback suggests there are gaps within the industry in emerging technologies such as batteries and advanced home automation.

Private RTOs play an important role for Queensland with 25% of the market however private providers are more likely to be able to respond more quickly to emerging technology and requirements due to a propensity to also provide unaccredited training on a fee for service basis. This is important as many of these courses can become the precursor to accredited training later as larger interest develops in certain areas of skill. TAFE is also important particularly in the areas of Community Service Obligation (CSO). As described already in table 4 remote an outer regional and remote training can be uneconomical and as such Private Providers will be reluctant to enter into those markets particularly where traditional face to face training is required. As is experienced with Energy Qld and Telstra CSOs are important and necessary to ensure all regions of Queensland have skills that are needed to develop economies and maintain communities.

ENCOURAGING VET PARTICIPATION

A significant barrier to VET acceptance in Australia begins in school. At present all communication at school, including career counsellors, is that students and parents need to make a choice of VET or University. This distinction is students learn either the "what" (VET) practical skills with limited theory and a completion of practical skills, or student learn the "how" (University) being the theoretical application but with limited to no practical skill. The electrotechnology industry experiences this regularly when we see tradespeople move on to University and become engineers, but also Engineers who wish to run contracting businesses return to do a trade to get the practical application and licensing required. As demonstrated in table 3 we believe examples of this would be contained in the data, although without access to the raw data we cannot confirm this. MEA has examples within our own membership of this occurring.

VET also must overcome the stigma that has been attached to it via VET in schools whereby qualifications have been used to reach school benchmarks and OP equivalent outcomes but by avoiding formal education and required competencies such as maths. As an example, the Certificate III in Fitness which has plagued VET in schools for the last 10 years has reputationally damaged VET significantly. Student cohorts realise that it is a way for students to achieve a Queensland Certificate of Education

(QCE) via a different path that does not lead to the same educational learning and standard students undertaking “traditional” or core subjects achieve. This also helps schools achieve benchmarks of QCE attainment at the cost of reputational damage to VET.

The above issues have a flow on effect to employers who “trust/expect” the QCE to be a significant indication that students are at a certain level of education only to find that VET students actual level is not what they expected. This however is not just limited to VET in school students. As an example, the numeracy requirement for the QCE are:

*At least a **Sound Level of Achievement in one semester** of one of these subjects¹:*

Mathematics A

Mathematics B

Mathematics C

Prevocational Mathematics.

A student may exit the subject:

after 1, 2, 3 or 4 semesters with at least a Sound Level of Achievement

*with a Limited or Very Limited Level of Achievement, **having achieved a notional Sound in a single semester** (see Section 4.4 of the QCE handbook).*

[QCE literacy numeracy requirements](#)

This means that out of 80 weeks of maths education in Queensland to gain a QCE a student only has to pass a quarter of the course. If we were to take the obtuse comparison of one semester of Mathematics C versus one semester pass mark of Prevocational Mathematics the ability of each student at the end of this comparison of both achieved a 4 is so vastly different that a comparison can not be made as to the level of education each of the students has achieved.

For prevocational maths and Mathematics A, we believe that this standard for the QCE is not preparing students to become apprentices and trainees to a level that employers are expecting. Through our industry partners who do undertake numeracy testing prior to employment we are advised that only 65% pass the numeracy requirements however 95% pass the literacy requirements. It is also not insignificant that the title of “Prevocational Maths” particularly in licensed trades is misleading parents to think this level of maths is acceptable for electrical and plumbing when in fact students at this level will struggle with the requirements of each of those trades.

These results and factors have a significant effect on the reputation and standing of Vocational Education in this country and state.

TRAINING PACKAGE

The Australian Qualification Framework (AQF) was established in 1995 and since then the electrical qualification has been amended and reviewed several times. The significant change that has occurred in the industry since 1995 is vast compared to other industries with tradesman now required to have significantly broader knowledge and understanding of theoretical concepts. It is well recognised that the uptake of advancements in the electrotechnology industry is greater than most industries and is on the leading edge of adaption and installation of areas where even Australian standards have not been developed. Given the package has over 100 electives this also attests to the breadth of skills required or envisaged that a tradesman will be exposed to in their career. It is our view that upon a closer

examination of the current package we will see that the package is likely undervalued at Certificate III level most likely a Certificate IV but perhaps even diploma level. We reach this conclusion using the following from the AQF handbook features.

In examining the AQF the comparisons between the level of Certificate III and Diploma Levels are the following distinguishing features

Certificate III	Certificate IV	Diploma
Do the competencies enable the individual with this qualification to	Do the competencies enable the individual with this qualification to	Do the competencies enable the individual with this qualification to
demonstrate some <i>relevant theoretical knowledge</i>	demonstrate understanding of a <i>broad knowledge base incorporating some theoretical concepts</i>	demonstrate understanding of a broad knowledge base incorporating theoretical concepts, <i>with substantial depth in some areas</i>
apply a range of well-developed skills		
apply known solutions to a <i>variety of predictable problems</i>	apply solutions to a <i>defined range of unpredictable problems</i>	<i>analyse and plan approaches to technical problems or management requirements</i>
perform processes that require a <i>range of well-developed skills where some discretion and judgement</i> is required	<i>identify and apply skill and knowledge areas to a wide variety of contexts with depth in some areas</i>	<i>transfer and apply theoretical concepts and/or technical or creative skills to a range of situations</i>
interpret available information, using <i>discretion and judgement</i>	<i>identify, analyse and evaluate information from a variety of sources</i>	evaluate information using it to <i>forecast for planning or research</i> purposes
take responsibility for own outputs in work and learning	take responsibility for own outputs <i>in relation to specified quality standards</i>	take responsibility for own outputs in relation to specified quality standards

take limited responsibility for the output of others	take limited responsibility for the quantity and quality of the output of others	take some responsibility for the achievement of group outcomes
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In examining Certificate 4 we see the following:

Certificate IV qualification type descriptor

Purpose	The Certificate IV qualifies individuals who apply a broad range of specialised knowledge and skills in varied contexts to undertake skilled work and as a pathway for further learning
Knowledge	Graduates of a Certificate IV will have broad factual, technical and theoretical knowledge in a specialised field of work and learning
Skills	<p>Graduates of a Certificate IV will have:</p> <ul style="list-style-type: none"> • cognitive skills to identify, analyse, compare and act on information from a range of sources • cognitive, technical and communication skills to apply and communicate technical solutions of a non-routine or contingency nature to a defined range of predictable and unpredictable problems • specialist technical skills to complete routine and non-routine tasks and functions • communication skills to guide activities and provide technical advice in work and learning
Application of knowledge & skill	<p>Graduates of a Certificate IV will demonstrate</p> <ul style="list-style-type: none"> • to specialised tasks or functions in known or changing contexts and skills • with responsibility for own functions and outputs, and may have limited responsibility for organisation of others • with limited responsibility for the quantity and quality of the output of others in a team within limited parameters
Volume of learning	The volume of learning of a Certificate IV is typically 0.5 – 2 years. There may be variations between short learning duration specialist qualifications that build on knowledge and skills already acquired and longer duration qualifications that are designed as entry level requirements for work. AQF-2nd-edition-january-2013.pdf

MEA believes that as such that the Community under values the worth of VET due to VET under valuing certain courses. We say that properly elevating the qualifications such as electrical raises the profile and acceptance of VET and with it, its reputation and viability as a long-term career.

SCHOOL BASED APPRENTICESHIPS

As detailed earlier school-based apprenticeship only make up 5% of the total apprenticeship's being undertaken. Advice to MEA from our members is that the business and students struggle with the lack

of continuity achieved with one day a week. Learning and experiences are not retained, and supervision and mentoring is higher than those that are full time apprenticeships.

HOLISTIC APPROACH

To prepare Queensland with the skills that the state needs we believe at its core the following key factors and action are required

- A continuation and extension that the apprentice and employer are at the centre of the VET system design to achieve maximum potential.
- Ongoing and extensive industry skills analysis and need identification matched to regional economic data to anticipate need.
- A continuum of education that removes the checkpoints / barriers between high school vocational education and university learning.
- Ensure that both public and private training suppliers are available to provide pre and post trade training both accredited and non-accredited.
- Allowing and encouraging multimodality training with particularly focused on reducing costs for employers in rural and remote locations.
- An extension of practical application of VET skills through increased employer participation of up to 3 days per week.
- Institutional based apprenticeship's that allow for higher educated participants to quickly assimilate technical knowledge which will facilitate apprenticeship experience and competency assessment whilst maintaining contact hours requirements.
- A significant investment in STEM skills education and review of the pass marks for mathematics for the QCE.
- A review of the Electrotechnology training package to examine it being realigned to certificate IV or diploma level.
- Implementation of renewed funding model for long term competencies to allow for improved financial viability of private RTOs and GTOs.
- A centralised assessment and apprenticeship placement system to ensure supply and quality of apprentices, employers and RTO's.
- A review and assessment of the number of electives being delivered in Queensland by RTO's to assess if those match the requirement of the training needs of employers
- Increased and specific mentoring of students and increased training of tradesman in how to supervise and mentor an apprentice.
- Investigating ways businesses can improve part-time and flexible working hours in a mobile, asset intensive industry particularly for female employees and people with caring responsibilities.
- Ensuring a CSO on training opportunities in regional and remote locations that maintain pace with population and apprenticeship growth. This will maximise opportunities for training and apprenticeship to maintain skills in these locations and provide opportunities for youth and indigenous apprentices as well.

MEA looks forward to discussing and advancing the VET sector over the coming years and is available to discuss and or plan for any of the above actions.



Jason ODwyer
Manager Policy and Advocacy

APPENDIX ONE

Core Competency Standard Units All Core competency standard units to be achieved		Weighting Points
UEENEEC020B	Participate in electrical work and competency development activities	60
UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace	20
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components	40
UEENEEE104A	Solve problems in d.c. circuits	80
UEENEEE105A	Fix and secure electrotechnology equipment	20
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications	40
UEENEEE137A	Document and apply measures to control OHS risks associated with electrotechnology work	20
UEENEEG006A	Solve problems in single and three phase low voltage machines	80
UEENEEG033A	Solve problems in single and three phase low voltage electrical apparatus and circuits	60
UEENEEG063A	Arrange circuits, control and protection for general electrical installations	40
UEENEEG101A	Solve problems in electromagnetic devices and related circuits	60
UEENEEG102A	Solve problems in low voltage a.c. circuits	80
UEENEEG103A	Install low voltage wiring and accessories	20
UEENEEG104A	Install appliances, switchgear and associated accessories for low voltage electrical installations	20
UEENEEG105A	Verify compliance and functionality of low voltage general electrical installations	40
UEENEEG106A	Terminate cables, cords and accessories for low voltage circuits	40
UEENEEG107A	Select wiring systems and cables for low voltage general electrical installations	60
UEENEEG108A	Trouble-shoot and repair faults in low voltage electrical apparatus and circuits	40
UEENEEG109A	Develop and connect electrical control circuits	80
UEENEEK142A	Apply environmentally and sustainable procedures in the energy sector	20
Total points in core		920

Group B – Qualification Elective Units Complete units to a minimum weighting of 80 You may select all your elective units from this Group		Weighting Points
UEENEEA110A	Assemble, mount and connect control gear and switchgear	40
UEENEEA112A	Fabricate and assemble bus bars	40
UEENEEA113A	Mount and wire control panel equipment	40
UEENEEA104A	Use engineering applications software on personal computers	40
UEENEEE121A	Plan an integrated cabling installation system	40
UEENEEF102A	Install and maintain cabling for multiple access to telecommunication services	120
UEENEEF104A	Install and modify performance data communication copper cabling	40
UEENEEG110A	Find and repair faults in LV d.c. electrical apparatus and circuits	60
UEENEEG111A	Carry out basic repairs to electrical components and equipment	40
UEENEEG113A	Install and maintain emergency safety systems	60
UEENEEG116A	Diagnose and rectify faults in traction lift systems	80
UEENEEG118A	Maintain operation of electrical mining equipment and systems	60
UEENEEG119A	Maintain operation of electrical marine equipment and systems	60
UEENEEG120A	Select and arrange equipment for special LV electrical installations	60
UEENEEG126A	Install and maintain field power and distribution systems with a low voltage demand up to 200 A per phase	40
UEENEEG129A	Overhaul and repair major switchgear and control gear	60
UEENEEG150A	Wind electrical coils	40
UEENEEG151A	Place and connect electrical coils	40
UEENEEG152A	Rewind single phase machines	40
UEENEEG153A	Rewind three phase low voltage induction machines	60
UEENEEG154A	Rewind LV direct current machines	60
UEENEEG157A	Conduct electrical tests on LV electrical machines	40
UEENEEG159A	Conduct mechanical tests on electrical machines and components	40
UEENEEG164A	Repair and maintain mechanical components of electrical machines	40

UEENEEG165A	Maintain and service traction lifts systems and equipment	40
UEENEEG166A	Install and maintain escalators, moving walks and treadways	40
UEENEEG167A	Align and install traction lift equipment	20
UEENEEG171A	Install, set up and commission interval metering	20
UEENEEG181A	Provide advice on effective and energy efficient lighting products	20
UEENEEG182A	Supply effective and efficient lighting products for domestic and small commercial applications	40
UEENEEG183A	Provide advice on the application of energy efficient lighting for ambient and aesthetic effect	20
UEENEEG189A	Install and maintain emergency lighting systems	40
UEENEEH102A	Repairs basic electronic apparatus faults by replacement of components	40
UEENEEH111A	Troubleshoot single phase input d.c. power supplies	40
UEENEEH150A	Assemble and set up basic security systems	80
UEENEEI140A	Plan the electrical installation of integrated systems	20
UEENEEI141A	Develop electrical integrated systems	20
UEENEEI101A	Use instrumentation drawings, specification, standards and equipment manuals	40
UEENEEI102A	Solve problems in pressure measurement components and systems	40
UEENEEI103A	Solve problems in density/level measurement components and systems	40
UEENEEI104A	Solve problems in flow measurement components and systems	40
UEENEEI105A	Solve problems in temperature measurement components and systems	40
UEENEEI116A	Assemble, enter and verify operating instructions in microprocessor equipped devices	20
UEENEEI150A	Develop, enter and verify discrete control programs for programmable controllers	60
UEENEEJ102A	Prepare and connect refrigerant tubing and fittings	30
UEENEEJ103A	Establish the basic operating conditions of vapour compression systems	60
UEENEEJ104A	Establish the basic operating conditions of air conditioning systems	20
UEENEEJ105A	Position, assemble and start up single head split air conditioning and water heating heat pump systems	70

UEENEEJ172A	Recover, pressure test, evacuate, charge and leak test refrigerants — split systems	60
UEENEEK125A	Solve basic problems in photovoltaic energy apparatus and systems	20
UEENEEK148A	Install, configure and commission LV grid connected photovoltaic power systems	40
UEENEEM019A	Attend to breakdowns in hazardous areas — coal mining	20
UEENEEM020A	Attend to breakdowns in hazardous areas — gas atmospheres	20
UEENEEM021A	Attend to breakdowns in hazardous areas — dust atmospheres	20
UEENEEM022A	Attend to breakdowns in hazardous areas — pressurisation	20
UEENEEM023A	Install explosion-protected equipment and wiring systems — coal mining	60
UEENEEM024A	Install explosion-protected equipment and wiring systems — gas atmospheres	60
UEENEEM025A	Install explosion-protected equipment and wiring systems — dust atmospheres	60
UEENEEM026A	Install explosion-protected equipment and wiring systems — pressurisation	60
UEENEEM027A	Maintain equipment in hazardous areas — coal mining	60
UEENEEM028A	Maintain equipment in hazardous areas — gas atmospheres	60
UEENEEM029A	Maintain equipment in hazardous areas — dust atmospheres	60
UEENEEM030A	Maintain equipment in hazardous areas — pressurisation	60
UEENEEM038A	Conduct testing of hazardous areas installations — coal mining	40
UEENEEM039A	Conduct testing of hazardous areas installations — gas atmospheres	40
UEENEEM040A	Conduct testing of hazardous areas installations — dust atmospheres	40
UEENEEM041A	Conduct testing of hazardous area installations — pressurisation	40
UEENEEM042A	Conduct visual inspection of hazardous areas installations	40
UEENEEM076A	Use and maintain the integrity of a portable gas detection device	20
UEENEEM077A	Install and maintain the integrity of fixed gas detection equipment	20
UEENEEM080A	Report on the integrity of explosion-protected equipment in a hazardous area	20

UEENEEN102A	Assemble and wire internal electrical rail signalling equipment	30
UEENEEN103A	Install and maintain rail track circuit leads and bonds	30
UEENEEN104A	Test copper rail signalling cables	20
UEENEEN121A	Repair rail signalling power and control cables	40
UETTDRIS43A	Perform low voltage field switching operation to a given schedule	50
UETTDRIS44A	Perform HV field switching operation to a given schedule	50
UETTDRIS47A	Sample, test, filter and reinstate insulating oil	40
UETTDRIS67A	Solve problems in energy supply network equipment	80
UETTDRIS68A	Solve problems in energy supply network protection equipment and systems	40
UETTDRSB23A	Install and maintain substation direct current systems	30
UETTDRSB29A	Maintain capacitor bank equipment for voltage regulation	40
UETTDRSB39A	Perform power system substation switching operation to a given schedule	50
Group A – Imported and Common Elective Units You may complete units to a maximum weighting of 60		Weighting Points
UEENEEC001B	Maintain documentation	20
UEENEEC002B	Source and purchase material/parts for installation or service jobs	20
UEENEEC003B	Provide quotations for installation or service jobs	20
UEENEEC010B	Deliver a service to customers	20
UEENEED101A	Use computer applications relevant to a workplace	20
UEENEEE009B	Comply with scheduled and preventative maintenance program processes	20
UEENEEE020B	Provide basic instruction in the use of electrotechnology apparatus	20
CPCCOHS1001A	Work safely in the construction industry	10
HLTAID001	Provide cardiopulmonary resuscitation	10
HLTAID003	Provide first aid	10

	<p>Imported units from other training packages and/or state accredited courses can be added to this group, but they must be selected from qualifications where the unit is first packaged at AQF level 3. If units have not being assigned a weighting by the relevant EE-Oz Industry Technical Advisory Committee, their weighting will be 10 points.</p> <p>Note: For further information see Application of the NQC Flexibility Formula, UEE11 Electrotechnology Training Package, Version 1, Volume 1 Qualification Framework</p>	Up to 60 points
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