SAFETY • QUALITY • TECHNOLOGY

SELECT

Electrician as a Profession

The Case for Regulation

The Case for Regulation

This report has been prepared in response to a request from the Better Regulation team of the Scottish Government following a series of preliminary meetings between Better Regulation and senior personnel from SELECT.

The contents of the Report are in support of the wish of the electrical installation industry in Scotland to be regulated in law to put an end to widespread shoddy workmanship in Scotland's Domestic Sector and thus protect householders from injury or death from electrical causes.

Each year also, fires arising from dangerous electrical installations load costs on to insurance companies and our emergency services.

Regulation in law will flush out the untrained or inadequately trained 'rogue traders' who are portraying themselves as 'electricians' and make Scottish homes a much safer place in which to live.

We are looking to the Scottish Government to act in support of our industry and the people of Scotland.

SELECT
December 2016

STOP PRESS

As we prepare to commit this report to be printed, we have received the letter below from a member company. It illustrates graphically the unscrupulous practices of unskilled individuals working in the construction industry who are prepared to put people at risk by concealing their lack of technical expertise.

We are grateful to FT Davidson Electricians for bringing this to our attention. We will be pursuing this on their behalf with both Building Standards Division and Highland Council.

Who's not scared to break the rules?

Good afternoon,

We felt we should report that a builder has called us this afternoon who has wired his own new build property, he said his been in the trade for 60 years and does his own wiring though he has no certification, he wanted us to sign off his electrical work and give him a building standards certificate for the new build so he can get his building warrant. We advised our concern at him not being qualified and stated we would only be willing to do an EICR as we haven't witnessed the work he carried out and he has no electrical certification.

He wouldn't give a name, his number was: xxxxx xxxxxx and he said the building was local (Inverness-shire area). He asked us to supply names of other electricians who "weren't scared to break the rules" however we advised we knew of no-one.

Not sure if anything can be done but we felt it best to mention in case there is as this seems a case of he knew he shouldn't wire the property but did anyway.

Best Regards

Karen Davidson, FT Electricians

Front cover: SELECT Technical Adviser Stuart McKelvie (left) with Gordon McCall, Director of GMC Electrics.

Foreword

A few years ago I was asked to be the independent chair of SELECT's Independent Registration Board. The Board deals with complaints about SELECT members and has the power in the most extreme of circumstances to remove a company's membership.

SELECT places the greatest of emphasis on maintaining standards. The organisation runs training courses, keeps member companies updated as to best practice and delivers high quality apprenticeships through the biggest single trade apprenticeship programme in Scotland to secure the future of the electro-technical industry. The Registration Board is comprised of representatives of member companies with a majority of independent persons such as me. It is pleasing to note that at the time of writing I have had to cancel two meetings because of lack of business. Vigilance, however, must be constant. Once the guard is dropped the industry's customers will be hit and, most likely, safety will be compromised.

This is what happens only as far as SELECT is concerned and thus domestic, commercial and industrial customers can have confidence in SELECT electricians. My ambition is that this should be the case across the whole of the market place. Experience shows - and I can vouch for this over my career - that there is poor workmanship, incompetence and downright bad practice beyond the ranks of SELECT and other member bodies. Society needs to put a halt to the homer done by an amateur, the fraudster who covers his van in logos which he is not entitled to display and the kitchen fitter who chances his arm and bluffs his way to a few extra quid from a householder for "installing" or "fixing" an appliance.

Fatalities are remarkably few. Some would say "what then is the problem?". I put it to them that there are patent faults but many more latent faults that are putting the public at risk. Latent faults lie waiting for the right combination of circumstances before they strike. Only when several factors combine will someone receive a shock or be electrocuted or will fire break out. We, however, should rule out such risks and the regulation of the profession of electrician would go a long way to achieving a better state of affairs.

Years ago I worked with a now sadly disbanded organisation called the Gas Consumers Council. It dealt with complaints from consumers and uncovered some crazy installation and servicing work. It was sobering to stand in a home where there had been a death from carbon monoxide. The gas industry then had a much tighter regulatory enviroment than the electro technical industry - and it still does. SELECT knows that its industry needs a similar regime.

I invite readers of this report to back their case.

S W Johnston

Stan Johnston
Chair, Independent Registration Board

Introduction

Our philosophy at SELECT is the delivery of the highest standards of professionalism and workmanship. We believe in constant improvement to meet this goal. We not only demand of our member companies that they work to the established baseline of our National Occupational Standards but we seek the same across our profession.

Our emphasis is on the best of training, quality apprenticeships, learning whilst at work and the sharing of best practice. We have an Independent Registration Board which maintains proficiency and calls to account any of our members who do not deliver what we expect of them. We self-regulate within SELECT to ensure that our members work to the highest standards.

We also believe, however, that our industry should ensure basic standards of safety and competence so that any customer can rely on any electrician they may employ.

For that reason we have long believed that our profession should be regulated in law. We have asked and indeed campaigned for this for almost half a century. It is somewhat galling to us that some other professions enjoy this safeguard when their activities do not necessarily involve life and death situations. A glance through the list of 102 regulated professions on the UK National Contact Point for Professional Qualifications (UK NCP) in Appendix E may perhaps convince sceptics of our concern.

We have produced this report to illustrate and underline our commitment to Statutory Regulation and to convince others to back our cause. We trust that government at whatever level will approach the issues we have highlighted appropriately because, when all is said and done, it is up to them to act.

Our report shows what's wrong in the marketplace. We present evidence of a continuing and disturbing pattern of shoddy, dangerous and potentially lethal work which our members encounter and are called upon to rectify on a daily basis. We also asked the public for their impressions through specially commissioned professional research. We say what we mean by "Regulation" and how it might be achieved without being burdensome on businesses.

Our purpose is to prevent unnecessary loss of life, to avoid injuries and to reduce resultant costs to the Scottish public, the insurance industry and to institutions such as the NHS. SELECT does not seek to monopolise anything in any way. We do not wish to restrict competition. Nevertheless we do believe that competition should be free and fair from a sound base of safety standards and not unfair because some win work by cutting corners - including proper training - and thus put others at risk.

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Appendices

1. Background

SELECT is the trade association for the electrical contracting industry in Scotland and, founded in 1900 as The Electrical Contractors Association of Scotland, is the oldest electrical trade association in the world. Throughout the last 116 years, our two main objectives have always been (a) to protect public safety by driving up industry standards and (b) to provide for the future by training apprentices for a career in the industry.

We have over 1,200 member companies ranging in size from the very biggest down to one-man businesses. Taken together, our members contribute a combined annual turnover to the Scottish economy in excess of £1 billion and employ over 15,000 qualified electricians. Together, the 1,200 SELECT member firms account for 90% by value of all the legitimate electrical work carried out. Unfortunately, we are unable to quantify the value of transactions in the black economy so we can not quantify the opportunity cost to HMRC each year through the absence of Regulation.

Together with Unite the Union, SELECT's partners in the Scottish Joint Industry Board, we deliver Scotland's largest single trade apprenticeship and a further 700 talented young people started out on their road to a top class vocation by embarking on their apprenticeship in electrical installation. This will take them to an SVQ Level 3 – a qualification awarded jointly by the Scottish Joint Industry Board and the Scottish Qualifications Authority.

Safety Critical

Our member firms work to long-established, highly technical standards ranging from the UK Wiring Regulations (BS 7671) to Health and Safety at Work Act requirements and the Scottish Building Standards Regulations.

Our members deal with electricity on a daily basis. Because the potential for danger is always present, it is vital that our member companies are staffed by qualified Electricians who understand that their work is truly "Safety Critical".

Fortunately, unlike many other trades, electrical work is readily measureable. The ability of a fully qualified Electrician to inspect and test electrical systems is an Electrician's stock-in-trade and differentiates qualified Electricians from untrained or partly trained amateurs.

Our members encounter unsafe workmanship almost every week and are frequently called upon to rectify the problems and deficiencies created by others. Unfortunately, unlike gas fitters they do not have the authority to arrange to have the supply to a dangerous installation disconnected. This is explained later in 3.2.

SELECT members bring first hand experience to a report such as this. They see the evidence and deal directly with the customer. Their collective understanding of the marketplace should not be denied.

2. A Domestic Sector Problem

The problem of poor, or worse, workmanship is predominantly – but not exclusively – a Domestic Sector problem. This will be explained more fully later in this report (see Appendix C: Self-Regulation).

SELECT conducted a survey of public opinion (see Appendix A: Scotland's Opinion Survey June 2016) in which it became apparent that domestic consumers commission electrical work infrequently – in sharp contrast with customers in the Public, Industrial and Commercial Sectors. The survey shows that around half of Scotland's householders have not used the services of a tradesperson "within active memory" and a further quarter have done so only once.

Domestic consumers, therefore, are not practised or experienced in purchasing work and are heavily reliant on the individual who carries it out for them. Of those commissioning electrical work in their homes, 51% are guided by the recommendation of a friend or relative and a further 25% rely on past experience. Those householders who carefully check the qualifications of their "electricians" are among the remaining 24% - along with those who choose at random from websites, the local newspaper or cards displayed in a shop window.

2.1 Is My Electrician Qualified?

Our survey in June of this year showed clearly that 93% of Scotland's householders expect someone claiming to be an "electrician" to be qualified. An almost identical proportion (92%) regarded the safety of their home and family to be more important than trusting an unqualified electrician.

However as we have seen (as the survey shows) actually 89% of those surveyed have no idea how to check the qualifications of an electrician.

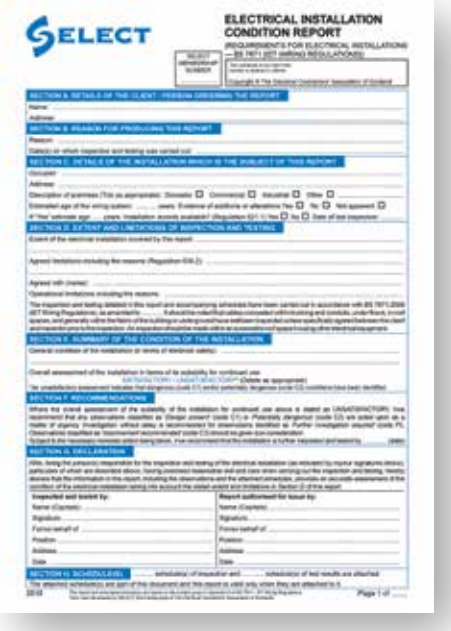
Whereas a fully Qualified Electrician is indeed the expectation, the alarming reality is that anybody who is so inclined can legally set up in business as an 'electrician' unimpeded by any requirement to have been trained beforehand – and there are many doing exactly that.

3. Current Condition of Domestic Electrical Installations across Scotland

Statistics relating specifically to Scotland are not available but the UK charity Electrical Safety First have supplied the following information for Great Britain.

Electric Shocks	Number of people aged 15+ receiving a mains voltage electric shock (2010)	2,500,000
	of whom received a serious injury	350,000
	of which fatalities	28
Fires	Number of domestic fires caused by faulty electrical systems (Year 2011/2012)	7,763
	those causing serious injury	799
	those causing death	25

3.1 Electrical Installation Condition Reports


SELECT
ELECTRICAL INSTALLATION CONDITION REPORT

A major part of the work of a fully qualified Electrician is Inspection and Testing. Indeed, these skills are among the last pieces in the jigsaw for an apprentice as he or she seeks to become a fully qualified Electrician and, for that reason they form a large part of the Final Integrated Competence Assessment which requires to be passed to round off four/five years of rigorous training.

In assessing the suitability – and safety – of an existing electrical system, Electricians will complete an Electrical Installation Condition Report (EICR) and this will provide a detailed record of the condition of the installation on the day of inspection. Such documents are routinely and regularly required to satisfy local authorities regarding the safety of rented accommodation whether provided by local authorities themselves, housing associations, private landlords and also for Houses in Multiple Occupation (HMOs).

SELECT member companies and the qualified Electricians they employ carry out thousands of these inspections each year to provide clients with information regarding any remedial work required to the installation. (A copy of a completed EICR can be found in Appendix B)

3.2 Notification of Dangerous Electrical Condition


NOTIFICATION OF DANGEROUS ELECTRICAL CONDITION

In the course of their work, Electricians encounter electrical installations for which modest remedial work would be woefully inadequate – installations which pose a clear and present danger to life.

Where similarly dangerous gas installations are encountered, the gas engineer can arrange to have the gas supply disconnected to safeguard human life. Unfortunately Electricians have no such authority to disconnect. All they can do by way of prevention is to strongly recommend immediate action and to issue a form to the client advising of a Dangerous Electrical Condition.

The issuing of this form is designed to prompt action by the client, but also to safeguard the contractor because copies of the form are retained by the contractor and can be sent to SELECT to verify that due warning of the danger to life was given to the client and that the contractor had acted responsibly.

Each year, our member firms ask us for hundreds of such forms (600 so far in 2016) and this confirms to us that such dangerous installations are much more common than should be the case.

Set out below for illustrative purposes is a random sample of the type of dangerous installations our members encounter. For each picture, we have recorded the rough geographical area in which the installation was found, a brief explanation of what is shown in the picture, a similarly brief explanation of the fault illustrated and a clear statement of the danger that it presents.

All of these have been drawn from reports of dangerous conditions submitted to us so far during this calendar year (2016)

Location:	Scottish Borders.
Image Shows:	Joints under floor within a domestic property in a kitchen.
Fault Illustrated:	Joint not suitably connected and not contained within a suitable enclosure.
Danger Present:	Fire.

Location:	Turnberry.
Image Shows:	Distribution board in a caravan park.
Fault Illustrated:	Access to touch live parts by the public and staff.
Danger Present:	Electric shock or eletrocution.

Location:	Ayrshire.
Image Shows:	Distribution board.
Fault Illustrated:	Access to touch live parts by the public and staff.
Danger Present:	Electric shock or eletrocution.

Location:	Kilwinning.
Image Shows:	Distribution board in a caravan park.
Fault Illustrated:	Neutral conductors burning.
Danger Present:	Fire.

Location:	Isle of Lewis.
Image Shows:	Joint behind socket-outlet.
Fault Illustrated:	Poorly connected and not suitably enclosed.
Danger Present:	Fire.

Location:	Edinburgh.
Image Shows:	Double pole isolation switch for domestic house.
Fault Illustrated:	Switch burned from loose connection.
Danger Present:	Fire.

Location:	Ayrshire.
Image Shows:	Joint Box.
Fault Illustrated:	Connections for a ring main circuit supplying socket-outlets, in a spur situation may cause overload.
Danger Present:	Fire.

Location:	Dumfriesshire.
Image Shows:	Cables and joints under floor of domestic property.
Fault Illustrated:	No protection on the cables. No earths connected together. Some of the cables are live and exposed to touch.
Danger Present:	Fire, electric shock.

Location:	Edinburgh.
Image Shows:	Shower pull switch.
Fault Illustrated:	Undersize cable used for shower burning live conductor.
Danger Present:	Fire.

Location:	Aberdeen.
Image Shows:	Electric panel board.
Fault Illustrated:	Undersized cables, bunched together. Cover missing exposing live parts.
Danger Present:	Fire, electric shock, electrocution.

Location:	Montrose.
Image Shows:	Pre-payment meter in domestic premises.
Fault Illustrated:	Co-axial (arial cable) bridged across the meter live -load
Danger Present:	Fire, electric shock, electrocution.

Location:	Perthshire.
Image Shows:	Cables Inapproriately left for wall to be plastered.
Fault Illustrated:	Tape used to cover conductors which were live.
Danger Present:	Electric shock / electrocution.

Location:	Perthshire.
Image Shows:	Joining of cables using tape.
Fault Illustrated:	Conductors joined together and taped.
Danger Present:	Fire.

Location:	Lanarkshire.
Image Shows:	Light switch.
Fault Illustrated:	CPC (Circuit protective conductor) used as a switch wire.
Danger Present:	Fire.

Location:	Ayrshire.
Image Shows:	Conductor used to link busbar at bottom of consumer unit. Connection terminal used for conductor next to main isolator switch.
Fault Illustrated:	Not installed as per manufacturers instructions. No appropriate protection for conductor.
Danger Present:	Fire/Electric shock.

3.3 Extracts from SELECT Member Reports and Inspections

For over 40 years SELECT has delivered the biggest single trade apprenticeship programme in Scotland. In some ways this is not surprising because a commitment to training has been at the heart of what Electricians do since the industry began in the 1870s. It has become part of an Electrician's psyche.

Witnessing the consequences of bad practices, therefore, is disturbing and worrying to the qualified Electrician.

Each year, SELECT receives letters, e-mails and phone calls from member businesses drawing attention to bad practices they encounter in the course of their work. Many express frustration that, after 150 years, Scotland still tolerates unqualified individuals putting householders' lives at risk.

Each year also, SELECT receives requests from individuals and organisations to send a Technical Inspector to carry out a thorough examination of a property. This is often to provide the basis for fault rectification or settling disputes with a contractor. Equally, it can often be a precursor to providing 'expert witness' in court.

Set out below are extracts from substantial and detailed reports arising from SELECT's Inspection On Request service together with communications from contractors concerned about dangerous conditions they have encountered.

As with the examples in 3.2, specific locations and contractors are not identified – not least because one of these has now become a criminal prosecution.

The short case studies that follow are from Ayrshire, Western Isles, East Lothian and Edinburgh - but they could be from anywhere in Scotland. The stories are the same.

Case Study:
Helping Out a Friend

Location:	Ayrshire.
Image Shows:	Electric Shower.
Fault Illustrated:	Undersized cable installed to electric shower.
Danger Present:	Fire / electric shock.

My friend called me after work on Friday to ask for my help. As a professional Electrician I get several calls like this but, as a member of SELECT's technical team, I leave the actual work to my contractor colleagues.

David told me that a plumber had finished installing an electric shower but had said that a simple job remained – to install a new 32A circuit breaker at the consumer unit (fuse board). I knew that more was needed than that but decided to sort it out when I visited after the weekend.

When I arrived, I was astounded to find that the plumber had replaced a power shower rated at 5A with an electric shower rated at 8.5KW using the existing cables. I found that the grossly undersized 1.5mm^2 cable was connected to the shower via a connector block within the wall in the shower cubicle. (A 1.5mm^2 cable joined to a 6mm^2 cable!).

As it stood, the shower presented a severe present danger of fire and/or electric shock. To remove this danger, the shower would have to be rewired using the correct size of cable supplemented by an appropriate Residual Current Device suitably rated for the cable size and the shower. Furthermore, on completion the issue of an Electrical Installation Certificate would be required.

The effect of all of this, therefore, would be to delay use of the shower until remedial work had been completed and an Electrical Installation Certificate issued.

In the meantime, David was left to pick up the consequences of the plumber's poor working practices, a shower he couldn't use and a potential bill of around £150 – on top of what he'd already paid the plumber earlier.

It could have been worse – he could have used the shower!

Stuart McKelvie, SELECT Technical Adviser

Case Study:
"I'd Send Them Packing"

Location:	Western Isles.
Image Shows:	Metal light fitting suspended from ceiling.
Fault Illustrated:	Metal part of fitting not earthed.
Danger Present:	Electrocution

I am concerned about the electrical industry on our island.

Main contractors are securing contracts involving electrical work but the work is not being certified or even tested. I have come across some awful installations. At this point I am not naming anyone but it is very clear there are no qualified people at these companies.

The organisations awarding the contracts seem happy to ignore the need for testing and certification. I have not attempted to get any of these contracts and don't particularly want them but I am concerned about the state these jobs are being left in.

When we price work we allow for testing and certification but are usually told we are too expensive. It is impossible to compete against this.

It's reaching the point where I feel the only option left to me is to slowly pay off my staff, become a "one man band" and just work on my own.

The photos enclosed are of a house where one building contractor got us in to sort out the wiring carried out by another builder and it is as bad as I've seen - unearthed metal light fittings, excessive loop impedence at the supply, no Residual Current Devices (RCDs) to be seen, connections lying loose behind socket boxes, smoke alarm not interlinked plus two-way switches and sockets not working.

We repaired these faults, installed RCDs, tested and provided probably the first certificate on the whole contract. This is only one example of houses we have seen and I am worried about the many other houses where electrical work has been carried out or arranged by builders.

If these companies turned up at my mother's house I would send them packing.

Iain Mackay, Mackay Electrical Services

Case Study:
See You In Court

Location:	Ayrshire.
Image Shows:	Fan installation in a shower room in a domestic property.
Fault Illustrated:	No ducting installed from the fan outside. Poor cable installation method.
Danger Present:	Fire / electric shock.

In response to a request by a householder's son now based in England, SELECT sent one of their Technical team to inspect a domestic property in the West of Scotland. Specifically, the Inspector was asked to look at the recent installation of a light fitting and extractor fan in a newly refurbished shower room.

The Inspector's report revealed multiple breaches of the Wiring Regulations (BS 7671). These included

- The absence of any RCD protection for the shower room
- Unsheathed live cables in the attic space unprotected by a suitable enclosure
- Unsheathed live conductors in the attic unprotected by suitable termination
- The absence of ducting from the fan to exterior meaning that warm moist air was gathering in the attic area. Condensation was found inside the fan.
- Joint box poorly secured leaving exposed wiring
- No Electrical Installation Certificate in respect of the changes made
- No Schedules of Inspection or Test results
- No warning notice to draw attention to the use of both old and new cable colours within the same installation.

The report recommended that these very dangerous faults should be attended to immediately by a qualified electrical contractor – and I was called in to rectify these deviations from the required standard (BS 7671).

On first contact with the householder, I discovered that he had been extremely ill. It seemed that his son's request for an inspection had followed an incident in which his father had touched the fan cover in the shower cubicle and received a severe electric shock after which he had lain undiscovered for some 20 hours. The man considered himself very lucky to be alive. He told me that the installation work had been carried out by a builder and that the builder had received grant assistance from the local authority to carry out the job.

This is one of the most disgracefully negligent jobs that I have encountered anywhere and I am outraged that the local authority had been party to financing such dreadful work.

The SELECT Inspector has informed me that he has been told to expect to be called into Court to give evidence against the builder concerned and/or the local authority.

Gordon McCall, GMC Electrical

Case Study:

A Catalogue of Errors – but not a Comedy!

Location:	East Lothian.
Image Shows:	Recessed garden light fitting in a domestic garden.
Fault Illustrated:	Ingress of water from poor installation method.
Danger Present:	Fire, electric shock, electrocution.

Much of the humour from Shakespeare's "Comedy of Errors" is drawn from multiple mistaken identities and so is the story of a recently built very substantial house in East Lothian which boasts an equally substantial garden.

In this case, however, the objective is to 'spot the electrician' – the real electrician, that is.

Early this year, Electrician A (of uncertain background and training) was asked to handle the installation of a Home Automation system within the house. In carrying out that task, he quickly discovered that the electrical installation commissioned by the builders some four years earlier and carried out by Electrician B was of very doubtful quality. Electrician A's opinion was that "even someone with very poor electrical skills would have done better".

Realising that by carrying out work on sub-standard electrical installation, he was laying himself open to blame for the whole installation, he commissioned Electrician C to provide a certificate certifying that the work Electrician A had carried out met the required technical standard (BS 7671). To make it easier for Electrician C to certify the work, Electrician A provided Electrician C with his test data on the installation (A's data).

It is not known what steps Electrician C took to verify Electrician A's data but the Electrical Installation Condition Report was later found to be of doubtful veracity.

Electrician C was asked by the owner of the house to also certify the external work and, in particular the extensive garden lighting. Electrician C briefly inspected the exterior wiring installation and refused to go anywhere near it because, in his view, the exterior wiring had been installed by Electrician D who, clearly, was not an electrician.

At this stage, the house owner commissioned SELECT's Inspection Service to carry out a thorough inspection of the electrical systems in both house and garden. At the same time, the owner engaged the services of Electrician E (a fully-qualified electrician to carry out whatever remedial work Electrican F (the SELECT Inspector) deemed necessary. Electrician E accompanied the SELECT Inspector on his inspection and so was fully aware of all faults highlighted.

Process

It has to be noted that in carrying out this inspection (a) lighting units were not removed to inspect connections (to prevent possible damage to décor) (b) circuits were not isolated (to reduce inconvenience to the occupiers and (c) testing was limited to earth fault loop impedance tests carried out at a sample of socket-outlets.

Findings

41 significant deviations from BS 7671 were found during the inspection This, however, could not be taken as comprehensive because (a) all accessories were not removed for inspection (b) cables concealed within the fabric of the building were not inspected.

Some of the most significant faults were:

- Live parts exposed to touch within Consumer Unit
- Excessive rating of some protective devices meant that cables could overload and catch fire without the devices operating
- Cables were left unterminated leaving the danger of electric shock
- Cables were jointed by twisting them together giving the risk of fire through overheating or loss of connection with earth leading to electric shock
- Metal cable sheaths in the garden were not earthed. Without protection, this could lead to electrocution if struck by a spade or fork.
- Sharp edges where cables entered enclosures could expose live conductors giving risk of electric shock or risk of fire from a spark igniting flammable substances

Where there's smoke .....

The last bullet point above provides a sharp reminder of the tragedy at Rosepark Care Home, Uddingston in 2004 where cables expanding and contracting against sharp-edged orifices ignited flammable substances in an airing cupboard. Ten elderly people died in the resulting blaze and four others later died of smoke inhalation.

If Regulation of Electricians had been in place that tragedy would not have occurred. Neither would there have been the Catalogue of Errors and that East Lothian home.

Jim Cornwall, SELECT Technical Adviser

Case Study:
Shocked Babysitter

Location:	Edinburgh.
Image Shows:	Unsecured twin socket.
Fault Illustrated:	Detached bare earth cable welded to live conductor.
Danger Present:	Electric Shock.

Babysitting his two young grandchildren was all in a day's work for Grandad so, to keep things nice and tidy for his daughter's return, he had gathered up the dirty dishes from lunchtime with the kids and carefully made them spotless once more in the dishwasher.

Like a lot of Grandads, he found stooping to empty a dishwasher rather taxing – and straightening up again can be even worse! So, with the dishwasher door still horizontal, he pushed himself upwards and, to help the process, reached up for the edge of the sink to complete the process.

What came next happened in a flash. Grandad received the full force of mains electricity through his body. Fortunately paramedics were quickly at the scene and he was taken to hospital.

We were called in to investigate the cause. We found that the dishwasher had been connected to a socket supplied in turn from an unsecured twin socket. (see picture). The bare earth cable in the socket had become detached and had welded itself to the live conductor. This had resulted in the entire cabinet of the dishwasher becoming live.

With his hand on the dishwasher, Grandad had put his other hand on the stainless steel sink which was earthed. Hence the electric shock.

Grandad survived, but he suffered temporary paralysis and blindness and was kept in hospital overnight. He was lucky because the shock he received had the potential to prove fatal. If this had happened to one of the grandchildren, it almost certainly would have been.

The family had bought the house only six months earlier and had received a satisfactory home report. The kitchen was only two years old and had been installed

by a “Specialist Kitchen Fitter”. One thing is for certain, there was no specialist electrician involved.

The company has since gone out of business.

I wonder how Scottish Government Ministers and Civil Servants would feel living in a house with electrical problems like that? Putting it another way, how would they know that they’re not already doing just that?

John Noble, John Noble (Electrical Services) Ltd

Case Study:
They’re still ‘at it’!

SELECT’s Stuart McKelvie and Gordon McCall discuss the reverse polarity incident experienced by Gordon’s neighbour.

A lady in a neighbouring flat came to see me to ask for my advice as an electrician because the electric ignitor on her gas cooker had stopped working.

She explained that it had worked perfectly well until recently when she’s had modernisation work carried out in her bathroom since – although she could see no connection between these events.

On checking the main Distribution Board, I discovered reverse polarity which, in addition to disabling her cooker ignitor represented a serious safety risk to occupants of the flat. The Bathroom company had also changed the Distribution Board in favour of one with standard circuit breakers –wholly inappropriate for the property concerned.

There were so many things dangerously wrong with what the Bathroom company had done that I drew up a full list of these defects and suggested that she go to see the company and ask for her money back. I also said to her that if they refused she should tell them to call me.

When my neighbour went to the company with the list of defects, the man she saw went straight to the till and refunded the costs in full. Although a clear admission of guilt, my neighbour was still left with a dangerously inadequate electrical installation.

In the course of my work, I encounter too many such situations which are clearly the work of people who have enough knowledge to create an electrical system that is waiting to kill someone or start a serious fire but who are stupid enough not to care that could be responsible for taking someone's life.

What really angers me, though, is despite being exposed as wilfully inadequate, these toy town electricians are not inhibited by failure and quite happily continue to take on work they are incapable of completing safely.

I understand from SELECT that in this section of their report they feature another case where I was called upon to carry out substantial remedial work in the wake of a so-called "all-trades" contractor (Note: see 'See You In Court'.)

Scotland should be ashamed that government has so little regard for the safety of householders that we can permit rogue traders to spread danger across the community despite the fact that we know how often they have failed before and even know where to find the premises from which they work.

We know what they do and where they are – **but they're still 'at it'!**

Gordon McCall, GMC Electrical

3.4 Summary and Conclusions

Wherever SELECT member companies go to do domestic work across Scotland they frequently encounter electrical installation work that presents immediate danger to the people living in or visiting the house.

The workmanship is often of such poor quality and so far from complying with or achieving the standards required by BS 7671 that it is immediately evident to the qualified eye that such installations have not been the work of a qualified Electrician.

The most common theme running through such work is that the person carrying out electrical work has been commissioned by a builder, kitchen or bathroom fitter or other such non-electrical tradesperson often carrying out modernisation work in houses.

Such small companies carrying out the bulk of work on a kitchen or bathroom seldom have dedicated qualified tradesmen to carry out work required from allied trades and, not wishing to spend money to hire a qualified professional, will often ascribe the required work to someone with little knowledge– or perhaps even carried out by those persons themselves. BS 7671 defines such persons as “Ordinary Persons” in that they are not sufficiently skilled to undertake electrical work.

Whatever the reasons, dangerously poor electrical installations are far too common in domestic properties and it is time for government to act to protect Scottish householders.

It is clear from the Scottish opinion Survey we commissioned in June of this year that Scottish householders are unaware of the laxity of the current system but also that they absolutely expect someone claiming to be an ‘electrician’ to be properly qualified.

4. A Call for Action

Across the UK, there are 102 Regulated Professions. Many of these are those that almost everybody would expect to be on that list such as Doctors and Lawyers. Some, however, are occupations that would surprise the majority of the population namely Bouncers (Door Supervisors), Road/Street Works Operatives, Arts Therapists and Public Space Surveillance Operatives.

It may be that there are good reasons for regulating these professions but their presence on the list dramatically underlines the absence from the list of "Electrician". Registered Gas Engineer is, quite rightly, on the list but the absence of "Electrician" is entirely unacceptable to SELECT and to our industry.

4.1 Why Should Scotland Lead?

Through its predecessor BIS, the UK Government's Department for Business, Enterprise Innovation and Skills has made it plain in submissions to the EU on the general subject of the regulation of business and industry that the Government is firmly opposed not only to further regulation but even apparently to existing Regulated Professions remaining so.

Ironically the electrical industry in England and Wales has a bigger problem than Scotland with around two thirds of those carrying out electrical work lacking qualifications. Ensuring that these operatives, estimated to number about 100,000, obtain the appropriate qualifications is frankly very unlikely to happen because (a) The gap between the National Occupational Standard and their current skill level is too great to be bridged in less than five years (b) the majority of unskilled electrical practitioners would recognise that they do not have the ability to close the gap and (c) without the unskilled workers, the legislative system designed by the Westminster parliament would be incapable of being delivered – with serious resulting macro-economic consequences. This means that the regulation of the profession of electrician in England if it were ever to occur would inevitably be based on a standard much further down the skills spectrum from the National Occupational Standard (currently SVQ Level 3 in Scotland – NVQ Level 3 Diploma in England & Wales).

Over the eight years since England and Wales allowed staff with minimal training (Domestic Installers) into the industry in 2005 under Part P of their Building Regulations to 2014, the number of house fires in London caused by sub-standard work on Distribution Boards **increased by 937%**. (Source: London Fire Brigade)

SELECT members do not wish to see these market conditions replicated in Scotland. They wish to see the high skills option of a regulated profession taken in Scotland primarily for safety reasons but also because the problem of the unqualified or under qualified operative is potentially much more manageable at present. That is also seemingly the view and declared aspiration of the Scottish Government who are

striving to attract more young people into apprenticeships and to drive up standards. Indeed Fergus Ewing MSP, the then Scottish Government Minister for Business, Energy and Tourism told an international audience in Edinburgh on 11th September 2015 that his government backed the case for Regulation of Electrician as a Profession.

In summary, therefore, if "Electrician" was to be made a Regulated Profession in Scotland, it would

- Protect Scottish Householders
- Outlaw Rogue Traders
- Give coherence to other Scottish Government activities such as Building Standards, Public Sector Procurement, Electrical inspection by Landlords (both Private and Public). i.e. 'joined-up Government' by connecting the standards expected by government to the existing National Occupational Standards.
- Show leadership

4.2 Necessary Conditions are Already in Place

The UK National Contact Point (UK NCP) identifies four different routes to Regulation which are:

- Through Legislation
- By Royal Charter or through a Chartered Association
- By becoming an EU Sectoral Association
- Under Regulation 35

Two of these routes are definitely among the 'routes less travelled' as there are only seven professions whose required entry qualifications have been harmonised across Europe sufficiently to be deemed a Sectoral Profession. Given recent events, it is unlikely that we will see many more of these in the UK. Current examples include Doctors, Midwives, Architects and Veterinary Surgeons.

Regulation 35 has a total of one profession – the ancient trade of Farrier where no specific entry qualification is required.

Both of the remaining routes have the same three basic entry requirements:

- A recognised national standard. (Our UK apprenticeship and qualification is based upon the National Occupational Standards and, through the Scottish Joint Industry Board's partnership with the Scottish Qualifications Authority, the means of delivering Scotland's biggest apprenticeship)
- A recognised national governing body. (we have this in the form of the Scottish Joint Industry Board – a 47 year old joint venture between SELECT and Unite the Union)
- A national register of all qualified individuals. (The Scottish Joint Industry Board has developed and administered this register for the past 47 years. It is private at present but, with the force of law, it would be possible to address data protection issues and make it public)

All of the necessary conditions for Regulation of our 150 year old profession are in place. To make Regulation of Electrician as a Profession happen, what we need now is for the Scottish Government to express the will that it should be delivered.

4.3 Competence to Act

We believe that the Scottish Government has the legal competence to act in this matter.

During the passage of the recent Scotland Act in the House of Lords, SELECT lobbied for an amendment to the then bill. Informal contacts in the Upper House, however, suggested that such an amendment was misplaced as the Scottish Government already has the capabillity to legislate to bring about the regulation of the proffession.

At the very least the Scottish Government should be asked to explain why it dissents from such a view if it does so. If not it should recognise our evidence and consult widely on the form that regulation should take.

5. SELECT's Proposal

SELECT proposes that the Scottish Government should as a first step enact protection of title for the profession of Electrician. In other words, no-one would be permitted to call themselves an "Electrician" unless they can prove that they are qualified to the UK National Occupational Standards. Such legislation could include prohibitions to such effect so as to make it a criminal offence not only to call oneself an Electrician but deliberately to create a false impression of being properly qualified without using the actual term.

A comprehensive approach would include the creation of a specific criminal offence for carrying out work of a certain type or types, above a grade of complexity or beyond a rudimentary level on an electrical installation. This would bring regulation of Electricians as a profession into line with the requirements of Certification under the Scottish Building Standards Regulations.

Any such legislation would not prohibit householders from changing plugs or general low-level domestic requirements.

SELECT envisages that protection of title could be achieved by means of a Scottish Statutory Instrument.

SELECT would also welcome the creation of a criminal offence of working on an electrical installation whilst unqualified to do so. The purpose of this would be to prevent unqualified people from starting to work on an installation.

We also propose that the IET Wiring Regulations (as expressed in BS 7671) should have the force of law so that the nature and quality of the work carried out would be the subject of criminal sanction. This would be in addition to any current offences for carrying out work in an unsafe or dangerous manner. We believe that both of these changes could also be achieved by means of a Scottish Statutory Instrument.

SELECT believes that Scottish Ministers have powers to make Regulations under Schedule 1 of the Building (Scotland) Act 2003 Schedule 1 Section 5 (1) (c) at least in so far as the creation of an offence of working on an installation when unqualified to do so is concerned.

We are not interested in going down the route of Scottish Government Guidance as 12 years of experience with the Building Standards system has taught us that this methodology is ineffectual at least as far as our industry is concerned.

SELECT does not claim expertise in statutory draftsmanship. We do believe, however, that where there is a will there is a way.

A final point is that our proposals do not infer any attempt to lock out Electricians from other jurisdictions. We endorse the mutual recognition of qualifications across Europe and welcome competition from beyond Scottish shores because such competition acts to drive up standards and to deliver better value for money for the customer.

Appendices

Appendix A: Scottish Opinion Survey June 2016

Appendix B: Completed Electrical Installation Condition Report

Appendix C: Self-Regulation: Existing Strengths and Weaknesses

Appendix D: External Threats to Scottish Industry Standards

Appendix E: UK NCP Regulated Professions

Appendix F: News of (the Rest of) the World.

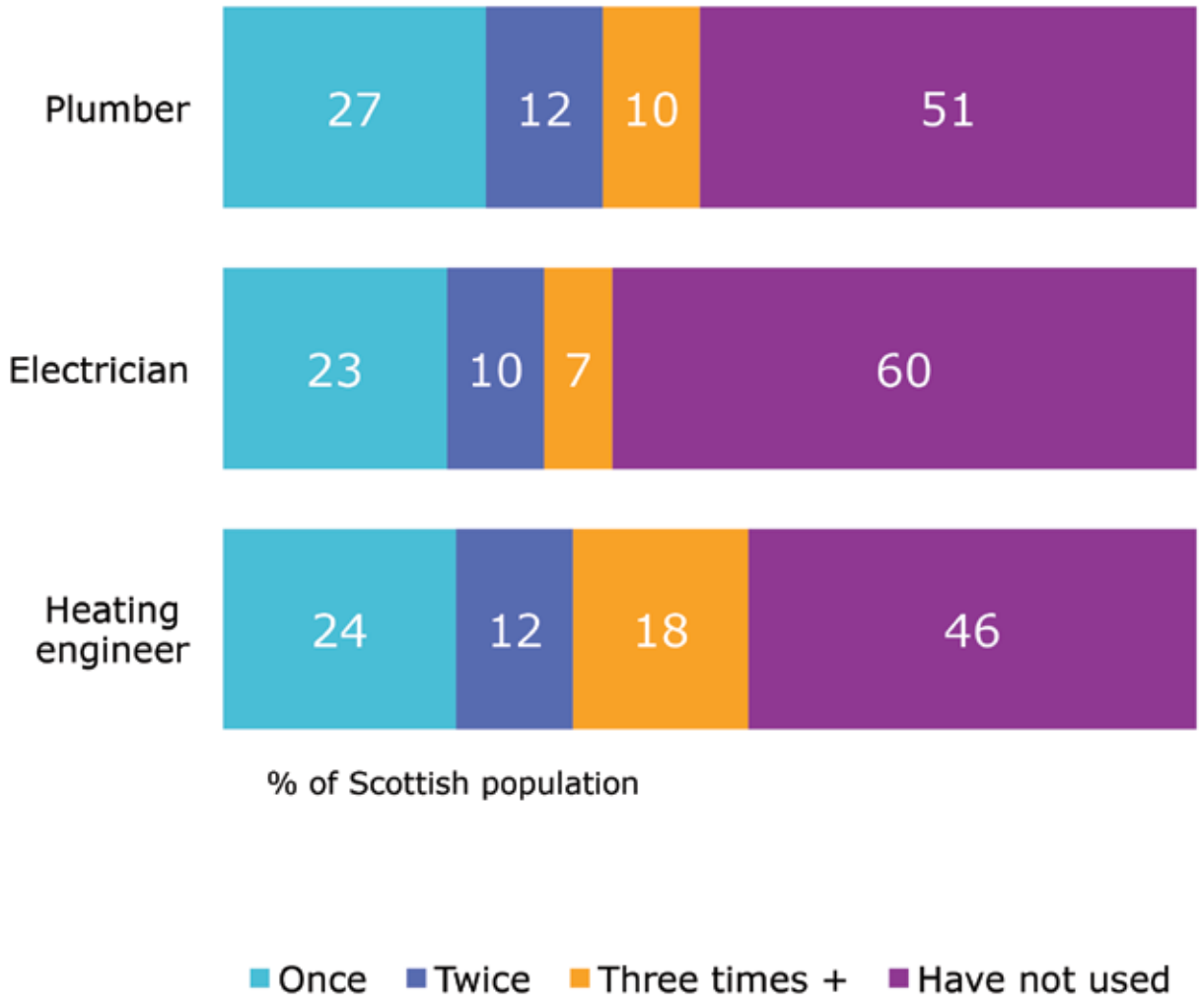
Attitudes towards Use of Electricians in Scotland

July 2016

TNS

SELECT

Around half of the Scottish population have not used the services of a tradesperson in the last few years and a further quarter have done so only once.

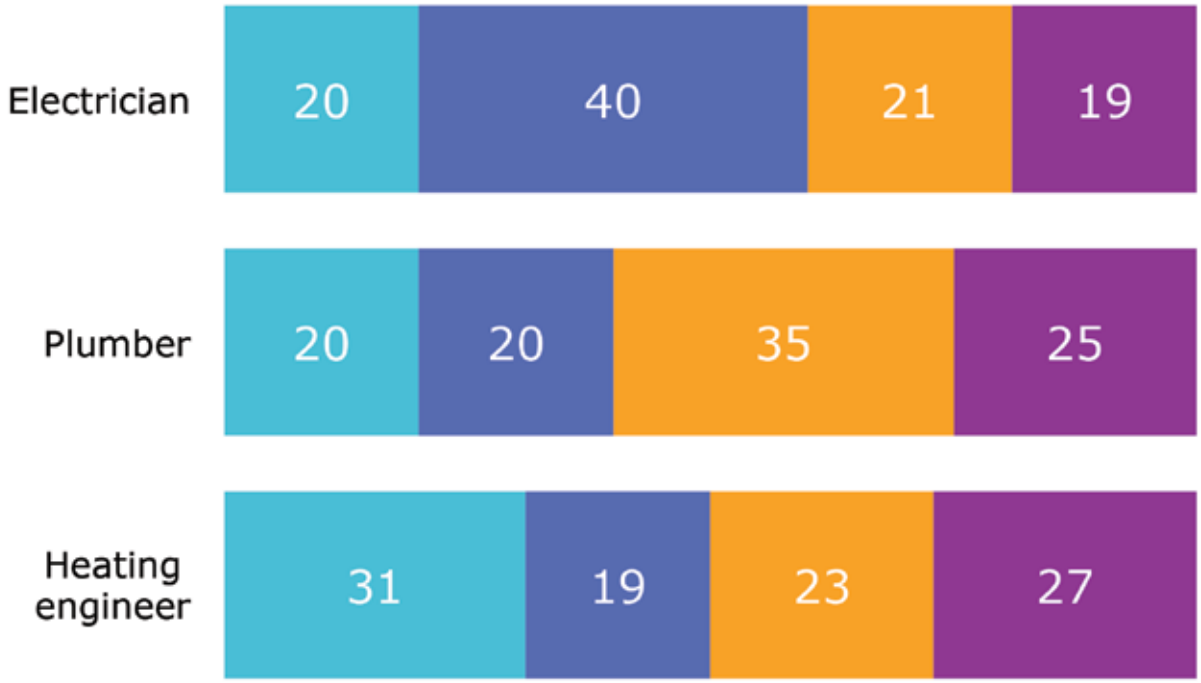


TNS

SELECT

2

Considerable reliance on previous experience, personal recommendations for choosing tradespeople, separate from those arranged through a third party

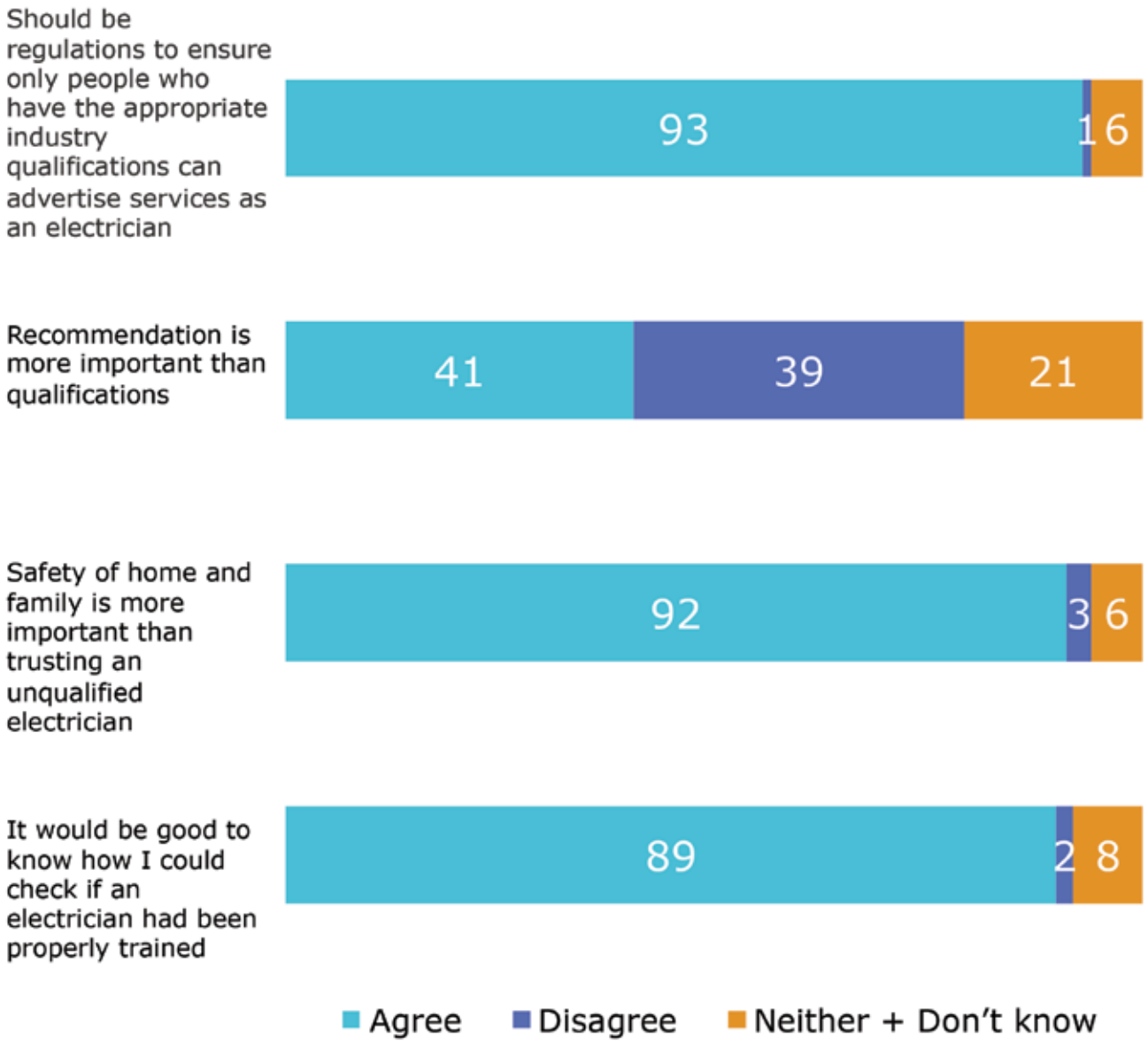


Some further insights …….

- Of the various domestic trades, electricians have the lowest level of use – 60% of the population not having done so, compared to 51% for plumbers and 46% for heating engineers.
- Those in the middle age groups (35-64 years) are most likely to use electricians – just over half have done so in the last few years.
- Reflecting their housing status, younger people aged under 25 years are very unlikely to have used the services of electricians.
- A small minority of those using tradespeople access these services through formal channels of information – 3% do so from advertisements in newspapers and magazines and 5% by Internet searches.

Attitudes towards use of Electricians

% of Scottish population



TNS

SELECT

5

Insights and recommendations

Research insights

- Previous experience and/or recommendations from friends and relatives are the critical channels for the choice of a tradesperson to use.
- There is an inherent trust that the selected tradesperson will have the appropriate professional qualifications without the need to check specifically.
- Focusing on electricians, there is undoubtedly a recognised need for regulations relating to advertising of services and being able to establish that an electrician is fully qualified.

Recommendations

- Increasing the public's awareness of SELECT and the role which it plays in training electricians is critical.
- Encouraging electricians to feature the SELECT logo on websites, printed information such as advertisements, invoices etc would be a clear reminder and reassurance to the public that the electrician is fully qualified.
- Ensuring that the public are aware that SELECT can provide them with confirmation that an electrician is fully qualified – in an easily accessible manner.

TNS

SELECT

6

Background and Methodology

- SELECT is the trade association for the electrical contracting industry in Scotland. Founded in 1900 as The Electrical Contractors' Association of Scotland, SELECT became the first trade association in the world to serve the electrical industry.

- The purpose of this research was to gain insights into how the general public in Scotland use services provided by different tradespeople e.g. electricians, plumbers, heating engineers.
  - The research looked specifically at the reasons for choosing a particular tradesperson and in particular electricians and the importance of the level of qualification held by the tradesperson.

- A sample of 1025 adults aged 16+ across Scotland was interviewed between 1st June - 28th June 2016.

- The Scottish Opinion Survey was used for data collection.
  - All interviews were conducted face-to-face, in-home, using CAPI (Computer Assisted Personal Interviewing), with quota sampling used for respondent selection.
  - At each wave the sampling points were selected to be geographically and demographically representative of Scotland.

TNS

SELECT

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Sample profile

- To ensure that the sample was representative of the adult population in terms of age, sex and class, it was weighted to match the population profile based on mid year population estimates 2014, 2011 Census and TGI July 2014-June 2015.

- The weighted and unweighted sample profiles at a total level are shown below.

		Unweighted	Weighted
		%	%
GENDER	Male	49%	46%
	Female	51%	54%
AGE	16-24	14%	10%
	25-34	16%	13%
	35-44	15%	12%
	45-54	18%	15%
	55-64	15%	19%
	65+	22%	32%
SEG	AB	25%	19%
	C1	28%	26%
	C2	19%	25%
	DE	29%	30%

TNS

SELECT

8

SELECT

ELECTRICAL INSTALLATION CONDITION REPORT

(REQUIREMENTS FOR ELECTRICAL INSTALLATIONS — BS 7671 [IET WIRING REGULATIONS])

SELECT MEMBERSHIP NUMBER .....

This certificate is not valid if the number is defaced or altered

SECTION A. DETAILS OF THE CLIENT / PERSON ORDERING THE REPORT

Name: .....

Address: .....

SECTION B. REASON FOR PRODUCING THIS REPORT

Reason: .....

Date(s) on which inspection and testing was carried out: .....

SECTION C. DETAILS OF THE INSTALLATION WHICH IS THE SUBJECT OF THIS REPORT

Occupier: .....

Address: .....

Description of premises (Tick as appropriate): Domestic ☐ Commercial ☐ Industrial ☐ Other ☐ .....

Estimated age of the wiring system: ..... years. Evidence of additions or alterations Yes ☐ No ☐ Not apparent ☐

If "Yes" estimate age: ..... years. Installation records available? (Regulation 621.1) Yes ☐ No ☐ Date of last inspection: .....

SECTION D. EXTENT AND LIMITATIONS OF INSPECTION AND TESTING

Extent of the electrical installation covered by this report: .....

.....

Agreed limitations including the reasons (Regulation 634.2): .....

.....

Agreed with (name): .....

Operational limitations including the reasons: .....

The inspection and testing detailed in this report and accompanying schedules have been carried out in accordance with BS 7671:2008 (IET Wiring Regulations), as amended to ..... It should be noted that cables concealed within trunking and conduits, under floors, in roof spaces, and generally within the fabric of the building or underground have **not** been inspected unless specifically agreed between the client and inspector prior to the inspection. An inspection should be made within an accessible roof space housing other electrical equipment.

SECTION E. SUMMARY OF THE CONDITION OF THE INSTALLATION

General condition of the installation (in terms of electrical safety): .....

.....

Overall assessment of the installation in terms of its suitability for continued use

SATISFACTORY / UNSATISFACTORY* (Delete as appropriate)

*An unsatisfactory assessment indicates that dangerous (code C1) and/or potentially dangerous (code C2) conditions have been identified.

SECTION F. RECOMMENDATIONS

Where the overall assessment of the suitability of the installation for continued use above is stated as UNSATISFACTORY, I/we recommend that any observations classified as '*Danger present*' (code C1) or '*Potentially dangerous*' (code C2) are acted upon as a matter of urgency. Investigation without delay is recommended for observations identified as '*Further investigation required*' (code FI). Observations classified as '*Improvement recommended*' (code C3) should be given due consideration.

Subject to the necessary remedial action being taken, I/we recommend that the installation is further inspected and tested by ..... (date)

SECTION G. DECLARATION

I/We, being the person(s) responsible for the inspection and testing of the electrical installation (as indicated by my/our signatures below), particulars of which are described above, having exercised reasonable skill and care when carrying out the inspection and testing, hereby declare that the information in this report, including the observations and the attached schedules, provides an accurate assessment of the condition of the electrical installation taking into account the stated extent and limitations in Section D of this report.

Inspected and tested by:	**Report authorised for issue by:**
Name (Capitals)	Name (Capitals) .....
Signature	Signature .....
For/on behalf of	For/on behalf of .....
Position	Position .....
Address	Address .....
Date	Date .....

SECTION H. SCHEDULE(S)

..... schedule(s) of inspection and ..... schedule(s) of test results are attached.

The attached schedule(s) are part of this document and this report is valid only when they are attached to it.

2015

This report and associated schedules are based on the models given in Appendix 6 of BS 7671 - IET Wiring Regulations. They were developed by SELECT (the trading style of The Electrical Contractors' Association of Scotland).

Page 1 of .....

SECTION I. SUPPLY CHARACTERISTICS AND EARTHING ARRANGEMENTS

Earthing arrangements	Number and Type of Live Conductors	Nature of Supply Parameters	Supply Protective Device Characteristics
TN-C ☐ TN-S ☑ TN-C-S ☐ TT ☐ IT ☐	a.c. ☑ d.c. ☐ 1-phase, 2-wire ☑ 2-wire ☐ 2-phase, 3-wire ☐ 3-wire ☐ 3-phase, 3-wire ☐ Other ☐ phase, 4-wire ☐ Confirmation of supply polarity ☑	Nominal voltage, U/Uo(1) .....230..... V Nominal Frequency, f(1) .....50..... Hz Prospective fault current, Ipf(2) ..1.6.. kA External loop impedance, Ze(2) .0.2. Ω *(Note: (1) by enquiry, (2) by enquiry or by measurement)*	BS (EN): ..... Type: ....Not known..... Rated current: .....A

Other sources of supply ☐ (as detailed on attached schedule)

SECTION J. PARTICULARS OF INSTALLATION REFERRED TO IN THE REPORT

Means of Earthing	Details of Installation Earth Electrode *(where applicable)*		
Distributor's facility ☑ Installation earth electrode ☐	Type (e.g. rod(s), tape etc) .....N/A.....	Location .....N/A.....	Electrode resistance to earth .....N/A.....Ω

Main Protective Conductors

Earthing conductor:	material	...Copper....	csa ....16.... mm²	Continuity/connection verified	☑
Main protective bonding conductors (to extraneous conductive parts):	material	...Copper....	csa ....6..... mm²	Continuity/connection verified	☑

To water installation pipes ☑	To gas installation pipes ☒	To oil installation pipes ☐	To structural steel ☐
To lightning protection ☐	To other ☐ Specify:		

Main Switch / Switch-Fuse / Circuit-Breaker / RCD

Location .....Hall cupboard.....	Current rating .....100.....A	**If RCD main switch**
.....	Fuse/device rating or setting.....N/A.....A	Rated residual operating current ($I_{\Delta n}$) .....N/A....mA
BS (EN) .....60947-3.....		Rated time delay .....N/A.... ms
No. of poles .....2.....	Voltage rating .....240.....V	Measured operating time (at $I_{\Delta n}$) .....N/A.... ms

SECTION K. OBSERVATIONS

Referring to the attached Schedules of Inspection and Test Results, and subject to the limitations specified at Section D, Extent and Limitations of the Inspection and Testing: ☐ No remedial action is required ☑ The following observations are made:

Inspection Schedule Item No. or 'Test'	OBSERVATIONS	Classification Code C1, C2, C3 or FI (see below)
4.3	One blanking piece missing from main consumer unit exposing live parts	C1
	(Note: Insulating tape was fitted as a temporary measure during the inspection)	
5.12 b)	30 mA RCD protection not provided for socket-outlets in outhouse used to supply	C2
	portable equipment for use outdoors	
3.6	Main protective bonding not provided to gas installation pipe	C2
5.18	Face plate of a twin socket-outlet in church hall is cracked	C2
6.4	Local supplementary bonding not provided in shower room	C2
Test	Low insulation resistance (0.3 megohm) recorded for outhouse & garden lighting circuit	C2

One of the adjacent Codes, as appropriate, has been allocated to each of the observations made above to indicate to the person(s) responsible for the installation the degree of urgency for remedial action.		
	Danger present. Risk of injury. Immediate action required.	**C1**
	Potentially dangerous – urgent remedial action required.	**C2**
	Improvement recommended.	**C3**
	Further investigation required without delay.	**FI**

☑ **Additional observations are recorded on the following number of continuation sheet(s) ..1..**

2015 Page 2 of ..7..

SELECT

CONDITION REPORT INSPECTION SCHEDULE

OUTCOMES	Acceptable condition	✔	Unacceptable condition	State C1 or C2	Improvement recommended	State C3	Further investigation	FI	Not verified	N/V	Limitation	LIM	Not applicable	N/A

ITEM No.	DESCRIPTION	OUTCOME Use codes above. Provide additional comment where appropriate. C1,C2,C3 and FI coded items to be recorded in Section K of the Condition Report
1.0	DISTRIBUTOR'S / SUPPLY INTAKE EQUIPMENT	
1.1	Condition of service cable	✓
1.2	Condition of service head	✓
1.3	Condition of distributor's earthing arrangement	✓
1.4	Condition of meter tails – Distributor/Consumer	✓
1.5	Condition of metering equipment	✓
1.6	Condition of isolator (where present)	N/A
2.0	PRESENCE OF ADEQUATE ARRANGEMENTS FOR OTHER SOURCES SUCH AS MICROGENERATORS (551.6; 551.7)	N/A
3.0	EARTHING / BONDING ARRANGEMENTS (411.3; Chapter 54)	
3.1	Presence and condition of distributor's earthing arrangement (542.1.2.1; 542.1.2.2)	✓
3.2	Presence and condition of earth electrode connection where applicable (542.1.2.3)	N/A
3.3	Provision of earthing / bonding labels at all appropriate locations (514.13.1)	C3
3.4	Confirmation of earthing conductor size (542.3; 543.1.1)	✓
3.5	Accessibility and condition of earthing conductor at main earthing terminal (MET) (543.3.2)	✓
3.6	Confirmation of main protective bonding conductor sizes (544.1)	C2
3.7	Condition and accessibility of main protective bonding conductor connections (543.3.2; 544.1.2)	✓
3.8	Accessibility and condition of other protective bonding connections (543.3.2)	N/A
4.0	CONSUMER UNIT(S) / DISTRIBUTION BOARD(S)	
4.1	Adequacy of working space / accessibility to consumer unit / distribution board (132.12; 513.1)	✓
4.2	Security of fixing (134.1.1)	✓
4.3	Condition of enclosure(s) in terms of IP rating etc (416.2)	C1
4.4	Condition of enclosure(s) in terms of fire rating etc (421.1.201; 526.5)	N/A
4.5	Enclosure not damaged/deteriorated so as to impair safety (621.2(iii))	✓
4.6	Presence of main linked switch (as required by 537.1.4)	✓
4.7	Operation of main switch (functional check) (612.13.2)	✓
4.8	Manual operation of circuit-breakers and RCDs to prove disconnection (612.13.2)	✓
4.9	Correct identification of circuit details and protective devices (514.8.1; 514.9.1)	FI
4.10	Presence of RCD quarterly test notice at or near consumer unit / distribution board (514.12.2)	N/A
4.11	Presence of non-standard (mixed) cable colour warning notice at or near consumer unit / distribution board (514.14)	C3
4.12	Presence of alternative supply warning notice at or near consumer unit / distribution board (514.15)	N/A
4.13	Presence of other required labelling (please specify) (Section 514)	N/A
4.14	Examination of protective device(s) and base(s); correct type and rating (no signs of unacceptable thermal damage, arcing or overheating) (421.1.3)	✓
4.15	Single-pole switching or protective devices in line conductors only (132.14.1; 530.3.2)	✓
4.16	Protection against mechanical damage where cables enter consumer unit / distribution board (522.8.1; 522.8.11)	✓
4.17	Protection against electromagnetic effects where cables enter consumer unit / distribution board / enclosures (521.5.1)	✓
4.18	RCD(s) provided for fault protection - includes RCBOs (411.4.9; 411.5.2; 531.2)	N/A
4.19	RCD(s) provided for additional protection - includes RCBOs (411.3.3; 415.1)	Refer to Item 5.12
4.20	Confirmation of indication that SPD is functional (534.2.8)	N/A
4.21	Confirmation that **ALL** conductor connections, including connections to busbars, are correctly located in terminals and are tight and secure (526.1)	✓
4.22	Adequate arrangements where a generating set operates as a switched alternative to the public supply (551.6)	N/A
4.23	Adequate arrangements where a generating set operates in parallel with the public supply (551.7)	N/A

CIRCUIT CHART AND SCHEDULE OF TEST RESULTS (18 CIRCUITS)

SELECT

Details of circuits and/or installed equipment vulnerable to damage when testing

Distribution Board Reference No. .....Main Consumer unit..... .....Dimmer switches for hall lights.....

Location and Type ...Hall cupboard 10 way MCB CU..... Phase sequence confirmed (where appropriate) ☐

Z_s at DB .....0.20..... Ω

I_{pf} at DB .....1.6..... kA

Supply polarity confirmed ☑

CIRCUIT DETAILS															TEST RESULTS								
No.	Circuit Description	No. of Points	Wiring Details: Type (see code below)	Wiring Details: Ref. Method †	Wiring Details: csa mm² Live	Wiring Details: csa mm² CPC	Overcurrent Device Breaking Capacity: Type	Overcurrent Device Breaking Capacity: Amps (6.... kA)	Continuity: R1+R2 or R2 Ω	Continuity: Ring Final Circuit Ω L-L	Continuity: Ring Final Circuit Ω N-N	Continuity: Ring Final Circuit Ω CPC-CPC	Insulation Resistance (Lowest values measured) MΩ L-L	Insulation Resistance (Lowest values measured) MΩ L-E	Polarity (✓)	Z_s Ω	RCD Protection: $I_{\Delta n}$ mA	RCD Protection: Time (ms) 100%	RCD Protection: Time (ms) *500%	Functional testing (✓)	Remarks
1	Cooker	1	A	B	6	2.5	2	32		0.15				145	✓	0.35				✓	
2	Shower	1	A	B	10	4	2	40		0.12				145	✓	0.32				✓	
3	Unidentified				2.5	1.5	2	16						145							FI - circuit not traced
4	Kitchen sockets	5	A	B	2.5	1.5	2	32	0.17		0.25	0.25	0.42	145	✓	0.37				✓	
5	Hall sockets	8	A	B	2.5	1.5	2	32	0.27		0.40	0.40	0.67	145	✓	0.47				✓	
6	Outhouse DB	1	F	D	4	4	2	40	0.40					145	✓	0.60				✓	Cable buried in the ground
7	Hall lights	12	B	B	1.5	1.5	2	10		0.45				145	✓	0.65				✓	
8	Kitchen lights	5	B	B	1.5	1.5	2	10		0.30				145	✓	0.50				✓	
9	Shower room & toilet lights	3	B	B	1.5	1.5	2	10		0.25				145	✓	0.45				✓	
10	Spare																				

† Insert Reference Method (see Table 4A2 from BS 7671 Appendix 4)

*30mA RCDs only

Code for Wiring Type	A	B	C	D	E	F	G	H	O (Other - please specify)
	PVC/PVC	PVC in Metal Conduit	PVC in Plastic Conduit	PVC in Metal Trunking	PVC in Plastic Trunking	PVC/SWA	XLPE/SWA	Mineral Insulated	

TEST INSTRUMENTS USED

Manufacturer	Type	Serial No.	Date Accuracy Verified	Manufacturer	Type	Serial No.	Date Accuracy Verified	Manufacturer	Type	Serial No.	Date Accuracy Verified
Megger	MFT 1730	123579	01/02/2015								

2015 Tested by: NAME (CAPITALS) ....WILLIAM SMITH..... Signature .....William Smith..... Date ....2/8/2015.....

CIRCUIT CHART AND SCHEDULE OF TEST RESULTS (18 CIRCUITS)

SELECT

Associated Certificate/Report Serial No. .....EICR 000001.....

Distribution Board Reference No. .....Outhouse.....

Location and Type ....Outhouse 2 way consumer unit.....

Details of circuits and/or installed equipment vulnerable to damage when testing: .....None.....

Phase sequence confirmed (where appropriate) ☐

Z_s at DB .....0.60.....Ω

I_{pf} at DB .....0.38..... kA

Supply polarity confirmed ☑

CIRCUIT DETAILS									TEST RESULTS															
No.	Circuit Description	No. of Points	Wiring Details: Type (see code below)	Wiring Details: Ref. Method †	Wiring Details: csa mm² Live	Wiring Details: csa mm² CPC	Overcurrent Device Breaking Capacity: Type	Overcurrent Device Breaking Capacity: ....6.... kA Amps	Continuity: R1+R2 or R2 Ω R_1+R_2	Continuity: R1+R2 or R2 Ω R_2	Continuity: Ring Final Circuit Ω L-L	Continuity: Ring Final Circuit Ω N-N	Continuity: Ring Final Circuit Ω CPC-CPC	Insulation Resistance (Lowest values measured) MΩ L-L	Insulation Resistance (Lowest values measured) MΩ L-E	Polarity (✔)	Z_s Ω	RCD Protection $I_{\Delta n}$ mA	RCD Protection Time (ms) 100%	RCD Protection Time (ms) *500%	Functional testing (✔)	Remarks
1	Outhouse sockets	4	A	B	2.5	1.5	B	32	0.11		0.16	0.16	0.27		>999	✓	0.87				✓	
2	Outhouse & garden lights	8	F	D	2.5	2.5	C	10		0.50					0.3	✓	1.1				✓	C2 (Low IR)

† Insert Reference Method (see Table 4A2 from BS 7671 Appendix 4)

*30mA RCDs only

Code for Wiring Type	A	B	C	D	E	F	G	H	O (Other - please specify)
	PVC/PVC	PVC in Metal Conduit	PVC in Plastic Conduit	PVC in Metal Trunking	PVC in Plastic Trunking	PVC/SWA	XLPE/SWA	Mineral Insulated	

TEST INSTRUMENTS USED

Manufacturer	Type	Serial No.	Date Accuracy Verified	Manufacturer	Type	Serial No.	Date Accuracy Verified	Manufacturer	Type	Serial No.	Date Accuracy Verified
Megger	MFT 1730	123579	01/02/2015								

2015 Tested by: NAME (CAPITALS) .....WILLIAM SMITH..... Signature .....William Smith..... Date .....2/8/2015..... Page ..6.of .7.

SELECT

ELECTRICAL INSTALLATION CONDITION REPORT OBSERVATIONS (CONTINUED)

Associated Condition Report Serial No. **EICR** ...000001.....

The following observations are made in addition to those detailed in Section K of the Electrical Installation Condition Report, referring to the attached Schedules of Inspection and Test Results, and subject to the limitations specified at Section D, Extent and Limitations of Inspection and Testing.

Inspection Schedule Item No. or 'Test'	OBSERVATIONS	Classification Code C1, C2, C3 or FI (see below)
4.9	Circuit 3 is not identified at the main consumer unit and could not be traced during the inspection	FI
5.12 a)	30 mA RCD protection not provided for socket-outlets in church hall and kitchen	C3
3.3	'Safety electrical connection' label not provided at bond to water installation pipe	C3
4.11	Notice not provided to indicate that the installation has wiring colours to two versions of BS 7671	C3
6.1	30 mA RCD protection not provided for lighting and shower circuits in shower room	C3

One of the adjacent Codes, as appropriate, has been allocated to each of the observations made above to indicate to the person(s) responsible for the installation the degree of urgency for remedial action.		
	Danger present. Risk of injury. Immediate action required.	**C1**
	Potentially dangerous – urgent remedial action required.	**C2**
	Improvement recommended.	**C3**
	Further investigation required without delay.	**FI**

2015

Page ..7. of ..7.

ELECTRICAL INSTALLATION CONDITION REPORT

GUIDANCE FOR RECIPIENTS

This Report is an important and valuable document which should be retained for future reference.

1. The purpose of this Condition Report is to confirm, so far as reasonably practicable, whether or not the electrical installation is in a satisfactory condition for continued service (see Section E). The Report should identify any damage, deterioration, defects and/or conditions which may give rise to danger (see Section K).
2. The person ordering the Report should have received the "original" Report and the inspector should have retained a duplicate.
3. The "original" Report should be retained in a safe place and be made available to any person inspecting or undertaking work on the electrical installation in the future. If the property is vacated, this Report will provide the new owner/occupier with details of the condition of the electrical installation at the time the Report was issued.
4. Where the installation incorporates a residual current device (RCD) there should be a notice at or near the device stating that it should be tested quarterly. **For safety reasons it is important that this instruction is followed.**
5. Section D (Extent and Limitations) should identify fully the extent of the installation covered by this Report and any limitations on the inspection and testing. The inspector should have agreed these aspects with the person ordering the Report and with other interested parties (licensing authority, insurance company, mortgage provider and the like) before the inspection was carried out.
6. Some operational limitations, such as inability to gain access to parts of the installation or an item of equipment, may have been encountered during the inspection. The inspector should have noted these in Section D.
7. For items classified in Section K as C1 ("Danger present"), **the safety of those using the installation is at risk** and it is recommended that a skilled person competent in electrical installation work undertakes the necessary remedial work immediately.
8. For items classified in Section K as C2 ("Potentially dangerous"), **the safety of those using the installation may be at risk** and it is recommended that a skilled person competent in electrical installation work undertakes the necessary remedial work as a matter of urgency.
9. Where it has been stated in Section K that an observation requires further investigation (code FI) the inspection has revealed an apparent deficiency which may result in a code C1 or C2, and could not, due to the extent or limitations of the inspection, be fully identified. Such observations should be investigated without delay. A further examination of the installation will be necessary, to determine the nature and extent of the apparent deficiency (see Section F).
10. For safety reasons, the electrical installation should be re-inspected at appropriate intervals by a skilled person or persons, competent in such work. The recommended date by which the next inspection is due is stated in Section F of the Report under 'Recommendations' and on a label at or near to the consumer unit / distribution board.

Self-Regulation: Existing Strengths and Weaknesses

Current Strengths

The electrical installation industry has regulated itself since 1900 when The Electrical Contractors Association of Scotland was established (now trading as "SELECT"). In 1969, SELECT and Unite the Union came together to form the Scottish Joint Industry Board (SJIB) with the purpose of co-operatively managing industry standards, working terms and conditions and training industry apprentices.

For the past 45 years the SJIB have trained more apprentices than any other Scottish trade to the UK-wide National Occupational Standard. In Scotland, the culmination of the four/five year apprenticeship is achieved by the successful completion of the Final Integrated Competence Assessment (FICA) and the award of an SVQ Level 3 (equivalent of NVQ Level 3 Diploma in England). The awarding body for the SVQ is the Scottish Joint Industry Board in partnership with the Scottish Qualifications Authority.

The apprenticeship is employed status and the theoretical elements are delivered through Scotland's network of community colleges while the practical parts of learning the trade are imparted by employers. Funding is supplied by Skills Development Scotland.

Completion of the SJIB apprenticeship qualifies the individual to be 'graded' as an "Electrician" and he or she is then entitled to carry the SJIB 'Grade Card' which certifies what he/she is an "Electrician".

There is a further stage to be achieved if the individual wishes to become an "Approved Electrician". To achieve this, the individual must have been an "Electrician" for at least two years and have passed the Advanced Competence Assessment (ACA). If this is achieved and the employer supports the individual's application, then that person can be graded as an "Approved Electrician" and can carry the appropriate SJIB Grade Card to certify this.

This four to seven year process is what is required to become a qualified electrician. It is a robust process and the qualifications it produces in terms of "Electricians" and "Approved Electricians" are respected across Scotland and the UK as a whole.

England and Wales have a similar system which also works to the National Occupational Standard and there is also a Joint Industry Board which handles grading BUT there is a major problem relating to the number of qualified electricians in different parts of the UK.

The population of England and Wales is 11 times greater than that of Scotland so one might expect to find 11 times as many qualified electricians in England and Wales than there are in Scotland. That, however, is not the case. Scotland has 15,000 qualified

Electricians while England and Wales have 46,000 between them - ONLY THREE TIMES AS MANY.

The arrival of the “Part P” through the new Building Regulations for the Domestic Sector in 2005 opened the flood gates for around 100,000 poorly qualified “Domestic Installers” whose ultra short training programmes (one to three weeks typically) leaves them a world away from the capability of fully qualified Electrician who have learned their trade over four to five years. This shambles in England and Wales presents a serious structural training problem that is threatening the integrity of the industry in Scotland.

In general, clients in the Public, Industrial and Commercial sectors who frequently commission electrical work are familiar with all of the above and will know where to find reputable firms (through SELECT) and qualified Electricians (by checking their Grade Cards).

So, for the most part, the self-regulation system establish by SELECT and Unite the Union all those years ago works tolerably well. When it comes to the domestic sector, however, there is a big problem – a serious weakness.

Current Weaknesses

You will see from the results of the Scottish Opinion Survey run by TNS in June 2016 (see Appendix A) that most householders expect that when they go looking for an electrician to do work in their house that they will find an “Electrician” – somebody who has been thoroughly trained, is properly qualified and knows what he/she is doing.

In fact there is no reason for any householder to expect that because, in Scotland, any individual can set up in business undertaking electrical work for monetary reward. There is no necessity for any person calling themselves an “electrician” to be properly trained. It is also OK not to have had any training at all!

Unlike buyers in the Public, Industrial and Commercial sectors, most householders will only commission electrical work two or three times in a lifetime. They don’t know about SELECT and they don’t know about Grade Cards. Even apparently reputable websites can be seriously misleading.

External Threats to Scottish Industry Standards

Earlier in this report, we have demonstrated that unscrupulous (and unqualified) individuals are taking advantage of weaknesses in the law – and the lack of government action – to put the lives of Scottish householders at risk. There are, however, additional government organised activities which threaten Scottish industry standards further.

Some of these are sponsored by the UK Government and, largely, are currently still confined to England and Wales, but they pose threats to standards in the electrical installation industry in England and Wales but, potentially, in Scotland also.

A little more than a decade ago, Building Regulations specific to the Domestic Sector were introduced in England and Wales for the first time. “Part P” of those regulations relate to electrical work and, in requiring electrical work under those regulations to be signed off by a ‘competent person’ it became obvious that there were insufficient electricians in England and Wales to make that work. As a consequence, standards were dropped with the introduction of individuals called “Domestic Installers”.

Instead of serving a full four/five year apprenticeship to the recognised National Occupational Standards, Domestic Installers could achieve that rank after only a few weeks – typically around three weeks. We estimate that in England and Wales, Domestic Installers now outnumber fully qualified electricians by more than 2:1. These Domestic Installers can now obtain Grade Cards south of the Border and so are able to get their businesses listed on supposedly reputable registers of electrical companies.

The Select Committee for Communities and Local Government have expressed concern about this situation and some steps have been taken to rectify this, but Domestic Installers with three weeks’ training are so far away from qualified electricians that few are likely to ever make the grade – or to want to. In the meantime, the Department of Business, Energy and Industrial Strategy (BEIS) has accepted Domestic Installer as a route to qualifying to install Microrenewable Devices. Such people now operate across the UK under the auspices of BEIS because that activity is a reserved matter.

With such downskilling taking place under the guidance of the UK Government, this carries potential threats for Scotland also.

UK NCP Regulated Professions

Professions Regulated by Law or Public Authority are professions where there is a regulatory requirement to register with a competent authority prior to practising that profession.

Professions Regulated by Professional Bodies incorporated by Royal Charter are a list of certain Chartered titles, professional titles or designatory letters that are protected by a competent authority holding a Royal Charter.

Professions Regulated Under Regulation 35 are professions where pursuit of a profession can be limited to holding sufficient proof of knowledge and aptitude. At present, only one in this category - "Farrier in England, Wales and Scotland". Shown with suffix **"35"** on the list.

Sectoral Professions are the seven professions where the minimum training requirements have been harmonised across the Member States. Strangely, these become nine in the UK. They are "Architect", "Dental Practitioner", "Doctor with Basic Training", "Doctor: Specialist Doctor", :"Doctor: General Practitioner", "Nurse and Midwife", "Pharmacist (England, Wales and Scotland)", Pharmacist (Nothern Ireland)", "Veterinary Surgeon" .. Shown with suffix **"S"** on list.

Construction and Engineering

Chartered Arboriculturist
Architect **(S)**
Chartered Architectural Technologist
Chartered Builder
Associate of the Chartered Institute of Building
Chartered Building Services Engineer
Chartered Chemical Engineer
Chartered Civil Engineer
Chartered Energy Engineer
Chartered Engineer
Engineering Technician
Chartered Forester
Chartered Gas Engineer
Registered Gas Engineer
Incorporated Engineer
Member of the Institution of Engineering and Technology
Member of the Institution of Mechanical Engineers
Chartered IT Professional
Registered IT Technician
Information and Communications Technology Technician
Chartered Marine Engineer
Naval Architect
Chartered Petroleum Engineer
Chartered Structural Engineer
Member, Royal Aeronautical Society
Fellow, Royal Aeronautical Society

Education

Principal of further education institution (England)
School Teacher in a publicly regulated school (England)
School Teacher in a publicly regulated school (Northern Ireland)
School Teacher in a publicly regulated school (Scotland)
School Teacher in a publicly regulated school (Wales)
Teacher at a further education institution (England)
Teacher at a further education institution (Wales)

Environmental and Public Health

Chartered Environmental Health Practitioner
Environmental Health Officer
Chartered Environmental Health Officer
Environmental Health Officer
Chartered Safety and Health Practitioner

Appendix E

Finance and Insurance
Chartered Accountant
Chartered Arbitrator
Associate of the Chartered Institute of Arbitrators
Member of the Chartered Institute of Arbitrators
Chartered Banker
Chartered Certified Accountant
Associate of the ifs School of Finance (Aifs)
Chartered Financial Planner
Insolvency Practitioner
Chartered Insurer
Chartered Insurance Practitioner
Chartered Insurance Broker
Chartered Loss Adjuster
Chartered Management Accountant
Chartered Public Finance Accountant
Chartered Tax Adviser

Health
Farrier in England, Wales and Scotland **(35)**
Chiropractor
Dental Hygienist
Dental Therapist
Clinical Dental Technician
Dental Nurse
Dental Technician
Orthodontic Therapist
Arts Therapist
Biomedical Scientist
Chiropodist / Podiatrist
Clinical Scientist
Dental Practitioner **(S)**
Dietitian
Doctor with Basic Training **(S)**
Doctor: Specialist Doctor **(S)**
Doctor: General Practitioner **(S)**
Farrier (England, Wales and Scotland)
Hearing Aid Dispenser
Nurse and Midwife **(S)**
Occupational Therapist
Operating Department Practitioner
Orthoptist
Paramedic
Pharmacist (England, Wales and Scotland) **(S)**
Pharmacist (Northern Ireland) **(S)**
Physiotherapist
Prosthetist / Orthotist
Radiographer
Practitioner Psychologist
Social Worker (England)
Speech and Language Therapist
Nurse – Sub-Part 1
Optometrist (Ophthalmic Optician)
Dispensing Optician
Osteopath
Pharmacy Technician (Great Britain)
Social Worker (Northern Ireland)
Social Worker (Scotland)
Social Worker (Wales)
Social Care Manager (Wales)
Listed Veterinary Nurse
Veterinary Surgeon **(S)**

Law
Actuary
Advocate (Scotland)
Barrister (England and Wales)
Barrister (Northern Ireland)
Licensed Conveyancer
Licensed CLC Practitioner
Notary Public (England and Wales)
Patent Attorney
Solicitor (England and Wales)
Solicitor (Northern Ireland)
Solicitor (Scotland)
Conveyancing Practitioner (Scotland)
Executry Practitioner (Scotland)
Costs Lawyer
Chartered Legal Executive
Registered Trade Mark Attorney
Registered Trade Mark Agent

Maritime
Deck Officer Class 1 – Fishing Vessels
Deck Officer Class 2 – Fishing Vessels
Deck Officer Class 3 – Fishing Vessels
Engineer Class 1 – Fishing Vessels
Engineer Class 2 – Fishing Vessels
Diver

Other

Chartered Biologist
Analytical Chemist
Chartered Chemist
Chartered Colourist
Licentiate of the Society of Dyers and Colourists
Chartered Geologist
Chartered Geographer
Housing Practitioner
Landscape Architect
Chartered Member of the Chartered Institute of Library and Information Professionals
Chartered Manager
Chartered Marketer
Associate Member of the Chartered Institute of Marketing
Member of the Institute of Materials Minerals and Mining (MIMMM)
Chartered Mathematician
Chartered Mathematics Teacher
Chartered Measurement and Control Technologist
Chartered Meteorologist
Chartered Physicist
Licentiate of the Royal Academy of Dance
Chartered Scientist
Chartered Secretary
Chartered Shipbroker
Chartered Statistician
Registered Teacher of the Royal Academy of Dance
Certified Technically Competent Person (Scotland and Northern Ireland)
Chartered Textile Technologist
Licentiate of the Textile Institute
Chartered Town Planner
Chartered Waste Manager
Chartered Water and Environment Manager
Inspector of Weights and Measures
Inspector of Weights and Measures (Northern Ireland)
Road/Street Works Operatives
Road/Street Works Supervisors

Security

Close Protection Operative
Door Supervisor
Public Space Surveillance Operative
Security Guard
Vehicle Immobiliser (England, Wales, Northern Ireland)
Cash and Valuables in Transit Operative (England and Wales)
Cash and Valuables in Transit Operator (Scotland and Northern Ireland)

Surveying

Chartered Building Surveyor
Chartered Surveyor
Chartered Arts and Antiques Surveyor
Chartered Building Control Surveyor
Chartered Civil Engineering Surveyor
Chartered Commercial Property Surveyor
Chartered Construction Surveyor
Chartered Engineering Surveyor
Chartered Environmental Surveyor
Chartered Facilities Management Surveyor
Chartered Forestry Surveyor
Chartered Hydrographic Surveyor
Chartered Land Surveyor
Chartered Machinery Valuation Surveyor
Chartered Management Consultancy Surveyor
Chartered Minerals Surveyor
Chartered Planning and Development Surveyor
Chartered Project Management Surveyor
Chartered Quantity Surveyor
Chartered Valuation Surveyor
Associate of the Royal Institution of Chartered Surveyors

Transport

Airport Fire Officer
Airport Fire Fighter
Licensed Boatmaster
Approved Driving Instructor (Great Britain)
Approved Driving Instructor (Northern Ireland)
Certified Instructor (Motor Cycles) (Great Britain)
Approved Motorcycle Instructor (Northern Ireland

News of (the Rest of) the World

Introduction

Scotland is not unique in needing to tackle problems of faulty, bad and dangerous practice by electricians. Other countries have the same problems and are plagued by the unqualified carrying out negligent work. They deal with it in a variety of ways – but all with the same objective to make the homes of their citizens safer places in which to live.

The selection of recent media articles set out below demonstrates that there is a chance for Scotland to lead the way within the UK by devising a new, modern system to regulate the profession of electrician in the public interest.

The common approach across many countries is to define the circumstances and conditions under which certain types of , or all, electrical work is out of bounds except to Qualified Electricians - and then to establish appropriate tariffs for those who transgress.

Like our own Scottish Building Standards System, the offences are set in Criminal Law and typically include the following:

- Working without the required “Certification of Qualification”
- Falsifying Certification of Qualification
- Illegally performing restricted electrical work
- Leaving behind electrical work which is not to the required standard, deficient, unsafe or which poses a danger to human life
- Failing to provide an inspection/Certificate of Compliance***
- Falsely claiming to be, or giving the impression of being, a Qualified Electrician

*** = NB: In Scotland this need not be an additional task/cost as, under the Building Standards Regulations, Approved Certifiers of Construction are already qualified to do this.

The onus to comply typically also extends to clients as it is also a criminal offence to knowingly pay someone to perform unauthorised prescribed electrical work.

ELECTROCUTION: THE SHOCKING FACTS

31st March 2012,
Ascot Electrical Education College
(Phil Watts)

In the week where many of us have been shocked by the events involving Bolton Wanderers player Fabrice Muamba, I was moved to investigate how many deaths and serious injuries were sustained in the work environment from electricity.

What happened to Fabrice has prompted a lot of discussion about how to make things safer for footballers generally such as bi-annual checkups , ECG tests etc.. This is all good stuff and has taken up a lot of media coverage.

Four years ago, there were NINE people missing from the 2008 New Year celebrations because they had been electrocuted at work just doing their job BUT I do not remember any national media coverage or calls for changes and improvements to practices and legislation regarding electrical safety?

Add on to that another 10 people who died in the home or at leisure directly from electrocution and then another 49 people dying in fires of electrical origin. So, altogether 77 people lost their lives through the use of electricity. But where is the media coverage and public outcry?

In addition, 350,000 people received a serious injury from electric shock and 2.5 million (yes, two and a half million) people received electric shock at 230 V or above!

It is time we started paying proper attention to the dangers of electricity and electrical installations. There should be a system whereby all installations are correctly installed and maintained by qualified people who have the skills, knowledge and experience to carry out the work in a safe manner.

None of the current 'schemes achieve this. An effective licensing system, as used in many other parts of the world would.

Perhaps we could consider this seriously now without having to electrocute a celebrity?

LATEST PROSECUTIONS UNDER ELECTRICITY ACT

4th August 2014,
New Zealand

Convictions under the Electrical Workers Registration Board (EWRB) has risen to 16 over the past 12 months.

EWRB Registrar says that a Milford man pleaded guilty in North Shore District Court to carrying out work without a certificate of compliance.

He could not provide such a certificate because he is not a licensed electrician.

The charges related to four LED lights, a 16amp heater, an extractor fan, towel rail, power point and wiring a hot-water cylinder. The man was fined $1,500 and ordered to pay court and solicitors costs.

At Wellington District Court two men, one from Johnsvill, one from Newlandsm pleaded guilty to performing unauthorised prescribed electrical work under the Electricity Act 1992 on a property rented by one of them.

The work involved connecting power to a garage, installing an outside light and replacing a new sensor light with a second-hand one.

The Johnsvill man was fined $2,500 and ordered to pay solicitors fees. The Newlands man was fined $600 and ordered to pay court and solicitors costs.

8th October 2014,
Toronto Canada

UNLICENSED ELECTRICAL CONTRACTOR FACES JAIL FOR FIRST TIME IN ONTARIO

A man who posed as a licensed electrical contractor faces an unprecedented sentence of 30 days in jail and was fined more than $6,000 for several offences related to illegally performing electrical work in the Greater Toronto Area, according to the Electrical Safety Authority (ESA).

Richard Hazel operated under the name of Voltcom Electrical Services and faces a further two years of probation after the Electrical safety Agency said a Hamilton court found him guilty on 2nd October of working without an electrical contractor's licence, failing to obtain required inspections, producing a false certificate of qualification and leaving behind unsafe electrical conditions at four homes in Hamilton and Burlington.

The ESA news release also said that Hazel pled guilty to five charges laid by the Ontario College of Trades, for which he was fined an additional $7,400.

According to ESA, Haxel had been previously convicted on 19 counts of violating electrical safety regulations at seven sites in the Windsor area. He was fined almost $24,000 for those.

According to Norman Breton of the ESA there are a "significant number" of people who violate the Electricity Act each year. He said that the jail sentence was a "positive precedent" in Ontario and warned the public that "when you hire an unlicensed contractor, you are taking a lot of risk".

KILDARE MAN FINED € 3,000 FOR PRETENDING TO BE A REGISTERED ELECTRICIAN

3rd November 2014,
County Kildare,
Republic of Ireland

A man has been fined € 3,000 for pretending to be registered electrician and carrying out electrical work illegally.

At Dublin District Court today, Peter Knowles from County Kildare was found guilty on two counts; illegally carrying out restricted electrical work and portraying himself as a Registered Electrical Contractor.

This is the first successful prosecution of its kind in Ireland. The offences were committed under the Electricity Regulation Act 1999.

Since October 2013 it has been a legal requirement for electricians to be approved by the Registered Electrical Contractors of Ireland nor the Electrical Contractors Safety & Standards Association.

In addition to the € 3,000 fine, € 350 was awarded to the Commissioner for Energy Regulation (CER) – the body responsible for overseeing safety in the area of electrical contracting – as a contribution to their costs.

Commissioner for Safety Paul McGowan said that the case demonstrates "CER's continued commitment in using its resources to investigate and prosecute unregistered individuals who carry out restricted electrical works or portray themselves as Registered Electrical Contractors"

Think you've come across an unregistered electrician? You can contact Safe Ireland.

(TheJournal.ie)

WICKLOW MAN JAILED FOR DANGEROUS ELECTRICAL WORK

**12th February,
Wicklow,
Republic of Ireland**

Michael O'Connell received a six-month sentence after his work was found to have posed a serious safety risk to the two adults and three young children occupying the house.
Sean Ward of the Commission for Energy Regulation (CER) watchdog told Naas District Court that the work was of poor quality was "wholly unsafe" and posed a danger to human life.
Mr O'Connell was sentenced by Judge Desmond Zaidan to three months in prison for undertaking the work without the required licence and a further three months for falsely portraying himself as a registered electrical contractor. Judge Zaidan ruled that no time would be suspended because of the severity of the risk posed to consumers.

GHANA REGULATES ELECTRICIANS

**25th February 2015,
Kumasi, Ghana**

The Electrical Wiring Regulation Legislative Instrument 2008 comes into force today.
Under the law, only certified professional electricians will be mandated to do wiring with approved materials to conform to the code of wiring under the Ghanaian electrical wiring standards GS1009.
The Public Affairs Manager of the Energy Commission, Mr Victor Owusu emphasised that, from today, no electrical engineer would be engaged in the wiring of buildings and that the Electricity Company of Ghana (ECG) would not connect electricity to any building that has not been wired by a professional electrician.
Mr Owusu also said that any landlord who engaged an unqualified electrician to wire a building would be liable to a fine of not less than GHc 6,000 or serve a 24 month term of imprisonment or both. He stressed that should the ECG connect electricity to any buildings not wired by a qualified electrician, the Energy Commission would hold the ECG's District Engineer and Technical Officer responsible for not meeting the requirement of the law.

21st May 2016,
Ontario, Canada

IT SHOULDN'T COME AS A SHOCK THAT YOU NEED A LICENSED ELECTRICIAN TO WORK ON ANY WIRING

I take electricity safety very seriously. If a backsplash isn't properly installed or if a wall is poorly painted, it may be an inconvemience that will cost you time and money, but poorly done electrical work is dangerous. Electrocution and electrical fires can be a result of electrical work not done properly.
Electrical work is not DIY. Hire a professional to do any job that involves any kind of electrical wiring. You don't want to go poking around electrical wiring if you don't have the knowledge or experience. Hire a licensed electrical contractor for any electrical work in your home, even for things like changing an outlet or installing a light fixture.
Mike Holmes

QUALIFIED ELECTRICIANS OR ARTFUL DODGERS?

1st June 2016,
Ascot College of Electrical Studies
(Phil Watts)

It never ceases to amaze me what so-called 'electricians' get up to!
I do not do much installation work these days but I did promise a good friend that I would do a little job for him this week. I changed the switch on his garden lighting and in the process discovered that the firm that he had employed to install the system some eight years ago had not bothered to earth any part of it, so the cables all around the garden had no earth fault protection! Given that he had two young daughters who often played in the garden, this could have been a tragic news headline in the making.
He had employed a so-called electrical 'trusted trader' belonging to one of the various trade groupings that we hear so much about. It has long been obvious to me that the current 'competent person' registers just do not work because many less than conscientious persons are working within these schemes.
It is also fair to say that the guarantees that so many of these schemes throw around are worth nothing. In my experience I have dealt with several cases where these bodies have simply ignored customer complaints.
Again I come back to asking "why are electricians not individually licensed?".
With a licensing scheme, customers could report individual poor workmanship and, if too many complaints were made against one individual their licence could be revoked.
Competent, trustworthy and conscientious electricians should have no fear of such a scheme, but those who are just out to pick a pocket or two would have to beware!

14th June 2016,
New Zealand

$5,000 IN FINES HANDED DOWN FOR UNAUTHORISED ELECTRICAL WORK

Two fines were handed down to an Auckland company and an Ashhurst man for breaching the Electricity Act 1992.
Tiscoski Renovation Ltd of Mt Albert was fined a total of $2,500, and ordered to repay court and solicitor costs. The company was charged with knowingly paying a person to do unauthorised prescribed electrical work. They hired an overseas backpacker to carry out electrical work at the property. The electrical work was later found to be unsafe by a registered electrician.
David Johnson, of Ashhurst, was also fined $2,500, and ordered to repay court and solicitor costs. He was charged with doing unauthorized prescribed electrical work in the form of wiring and electrical work for the installation of solar panels on a rural New Plymouth property. An inspector was later called in and identified that the installation was not compliant with the applicable standards in a number of respects, and reported Mr Johnson to the Electrical Workers Registration Board (EWRB).
Registrar of the EWRB John Sickels says "We will continue to be vigilant in relation to unregistered and unlicensed workers and will prosecute wherever necessary."
"It's important to think carefully who you're engaging to carry out electrical work. Always use a licensed electrical worker; ask to see their photo ID; and ask them to certify their completed work," he says.

16 July 2016,
Canada

WINDSOR MAN SENTENCED FOR UNSAFE ELECTRICAL WORK

Roberto Spada was found guilty on 16 chargesincluding doing unsafe work and advertising to do electrical work without an electrical contractor's licence.
Although he avoided jail, he was placed on probation for two years and was required to pay $27,585 in fines and restitution to his victims.
He also faces 75 hours of community service.
The Electrical Safety Authority charged Spada with leaving a hazardous electrical condition (2 counts), not having an electrical contractor's licence (six counts), proposing to carry out services of an electrical contractor without the necessary contracting licence (two counts) and failure to apply for an electrical inspection (six counts).
Spada pleaded guilty to all charges.

12th September 2016
Alexandria, Scotland

HOUSE DESTROYED IN ALEXANDRIA AFTER ELECTRICAL FIRE

A house was destroyed following an electrical blaze in Alexandria on Saturday afternoon.
The shocked householder discovered flames coming from an electrical socket at around 4pm and managed to flee the house as the fire took hold.
Teams in breathing apparatus entered the building to attack the blaze and a third crew was sent from Helensburgh to assist efforts to bring it under control. Firefighters were strategically deployed to surround and contain the flames using four high pressure jets and they successfully prevented the fire spreading to adjacent homes.
The fire was extinguished around 6.30pm and crews continued dampening down operations for several hours afterwards.

PART P, COMPETENT PERSON SCHEMES AND THE TOOTH FAIRY

13th September 2016,
Ascot College of Electrical Studies
(Phil Watts)

I have been looking into the effect of Part P, "Competent Persons" Schemes and the standard of safety in electrical installations.
Part P (of the Building Regulations) was introduced in 2005 and all sorts of bodies jumped on the band wagon selling training courses and 'qualifications' which people were led to believe were required if they wanted to carry out electrical work in dwellings. I say 'led to believe' because most of it was nonsense – just a money-making exercise for certain training providers.
Then 'competent person' schemes developed led by two or three industry-related bodies, but unfortunately the criteria for entry were not strict enough – some just needing a payment of fundes and attendance at a five-day course. These became known amongst some of us as the 'five day wonders'.
In 2015, an amendment was made to BS7671 (the wiring regulations) mainly as a result of the efforts of London Fire Brigade who were alarmed by at the increase in the incidence of fires started by electrical installations in recent years.
So, it could be argued that one effect of the introduction of Part P and Competent Person schemes is that electrical installations in dwellings are now MORE dangerous. It seems that installers are NOT as competent, and that material selection is NOT a priority amongst these installers – "Domestic Installers" I believe they are called?
In other words, the industry bodies know that they are NOT electricians.
NB: The electrical installation industry in Scotland does not recognise Domestic Installers (minimum standard is SVQ Level 3 – NVQ Level 3 Diploma in England). Neither does the industry in Scotland have Competent Person schemes – YET. Regulation of what it is to be an Electrician is vital if we are to ensure that lower industry standards will never prevail in Scotland.

13th September 2016,
Ascot College of Electrical Studies
(Phil Watts)

HOUSE FIRES CAUSED BY FUSE-BOARDS, THE PLOT THICKENS

Figures obtained from London Fire Brigade show 253 recorded fires where a consumer unit was identified as the source of ignition in the year 2013/2014.
How does that compare with eight years earlier in 2005/2006 when the lower standards of Part P were first introduced? Well, see for yourself.

2005/2006 – 27
2006/2007 – 28
2007/2008 – 33
2008/2009 – 21
2009/2010 – 54
2010/2011 - 73
2011/2012 - 71
2012/2013 - 220
2013/2014 - 253

18 October 2016,
New Zealand

TWO MEN FINED FOR UNSAFE, UNAUTHORISED ELECTRICAL WORK

Two men have been prosecuted under the Electricity Act 1992 on charges of undertaking prescribed electrical work while neither qualified nor licensed.
Ronald Todd of Petone had been working on the flood and security light system at Upper Hutt school while Jack Camplin of Massey had carried out work on a 36 foot yacht in Auckland harbour. When concerns were expressed, inspectors found their work to be both deficient and potentially dangerous.

The men pleaded guilty to charges of misrepresenting themselves as Electricians and they were fined a total of $9,262, and ordered to pay costs of $715.
Registrar of the Electrical Workers Registration Board Richard Stubbings says
““In both of these cases, the men involved implied that they were qualified to do the electrical work they were engaged to complete, however that was not the case. The misrepresentation of their qualifications could have resulted in a serious incident.

“For safety reasons, only licensed electrical workers are allowed to perform prescribed electrical work.” he says. “The Board will continue to be vigilant and will prosecute people who operate outside the law.”
The EWRB was established in 1992 and is responsible for the training and qualifications of over 30,000 registered electrical and electronic workers in New Zealand. Part of its function is to exercise disciplinary powers and bring prosecutions where necessary.

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