

apprenticeship FRAMEWORK

Electrotechnical (non-statutory) (Wales)

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Electrotechnical (non-statutory) (Wales)

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Framework summary

Electrotechnical (non-statutory)

Apprenticeships (Level 3) in the Electrotechnical Industry

Pathways for this framework at level 3 include:

Pathway 1: Electrical Installation

Competence qualifications available to this pathway:

N/A

Knowledge qualifications available to this pathway:

N/A

Combined qualifications available to this pathway:

B1 - Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 2: Electrical Maintenance

Competence qualifications available to this pathway:

N/A

Knowledge qualifications available to this pathway:

N/A

Combined qualifications available to this pathway:

B1 - Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance)

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 3: Highway Electrical Systems Service & Maintenance

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Diploma in Servicing Highway Electrical Systems (QCF)

Knowledge qualifications available to this pathway:

K1 - Level 3 Certificate in Highway Electrical Work - Public Lighting (QCF)

K2 - Level 3 Certificate in Highway Electrical Work - Traffic Signals (QCF)

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Pathway 4: Highway Electrical Systems Commissioning

Competence qualifications available to this pathway:

C1 - Level 3 NVQ Diploma in Servicing and Commissioning Highway Electrical Systems

Knowledge qualifications available to this pathway:

K1 - Level 3 Certificate in Highway Electrical Work (Public Lighting)

K2 - Level 3 Certificate in Highway Electrical Work (Traffic Signals)

Combined qualifications available to this pathway:

N/A

This pathway also contains information on:

- Employee rights and responsibilities
- Essential skills

Framework information

Information on the Publishing Authority for this framework:

Instructus

The Apprenticeship sector for occupations in air conditioning, building services engineering, business and administration, cleaning, customer service, digital/information technology, electro technical, electrical and electronic servicing, enterprise and business support, facilities management, heating and ventilating, housing, human resources and recruitment, industrial relations, leadership and management, marketing and sales (also includes contact centres and third sector), plumbing, property and refrigeration.

Issue number: 2	This framework includes:
Framework ID: FR01023	Level 3
Date this framework is to be reviewed by: 01/04/2016	This framework is for use in: Wales

Short description

Apprenticeship (Level 3) frameworks in the Electrotechnical Industry are designed to reflect the industry's competence requirements. In this document are the following occupation framework pathways:

- Electrical Installation
- Electrical Maintenance
- Highway Electrical Systems Service & Maintenance
- Highway Electrical Systems Commissioning

Successful completion of these Apprenticeship (Level 3) frameworks reflect the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. This includes taking responsibility for initiating and completing tasks and procedures, as well as exercising autonomy and judgement within parameters. It also reflects awareness of different

perspectives or approaches within an area of study or work.

These Apprenticeship (Level 3) frameworks can be completed within 42 months.

Job roles:

- Installation Electrician
- Maintenance Electrician
- Highway Electrical Systems Service & Maintenance Electrician
- Highway Electrical Systems Commissioning Electrician

Contact information

Proposer of this framework

N/A

Developer of this framework

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Revising a framework

Contact details

Who is making this revision: Trevor Hill
Your organisation: Summitskills
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Why this framework is being revised

Two further framework pathways for the Highway Electrical Systems sector have been added to this framework document.

Summary of changes made to this framework

Amendments have been made to the generic sections to reflect the addition of the two new frameworks as well as the addition of the two pathways.

Qualifications removed

N/A

Qualifications added

- Level 3 NVQ Diploma in Servicing and Commissioning Highway Electrical Systems (Competence element of the framework)
- Level 3 NVQ Diploma in Servicing Highway Electrical Systems (Competence element of the framework)
- Level 3 Certificate in Highway Electrical Work (Public Lighting) (Knowledge element of the framework)
- Level 3 Certificate in Highway Electrical Work (Traffic Signals) (Knowledge element of the framework)

Qualifications that have been extended

N/A

Purpose of this framework

Summary of the purpose of the framework

These occupation framework pathways are designed to provide individuals with the opportunity to develop competencies that are needed to carry out job roles and responsibilities associated with the installation and/or maintenance of electrotechnical systems and equipment in buildings, structures and the environment, including relevant:

- Environmental Technologies
- Technological requirements and changes
- Statutory and Non- Statutory Regulations & Requirements
- Working practices in accordance with Health and Safety requirements
- Inspection, testing and commissioning procedures

The following job roles will be covered in these frameworks:

- Installation Electrician
- Maintenance Electrician
- Highway Electrical Systems Service & Maintenance Electrician
- Highway Electrical Systems Commissioning Electrician

Aims and objectives of this framework (Wales)

The aim of this framework document is to ensure that the Apprenticeship (Level 3) frameworks deliver:

- The Skills and Knowledge required by the industry to achieve competence
- Job related skills that will be used in the working environment
- Transferable Skills
- Career progression

Employers have endorsed this programme as it delivers qualified competent employees and improves productivity and retention.

Further career information can be found at www.summitskills.org.uk

Entry conditions for this framework

A career in the Electrotechnical Industry will not only reward an apprentice's potential, but also offer opportunities to enhance their technical capability. The industry always needs individuals of appropriate ability, and in return offers a varied and rewarding career in a challenging working environment. Although there are generally no nationally laid-down minimum entry or previous experience requirements to undertake the Apprenticeship (Level 3) in Electrical Installation, Electrical Maintenance, Highway Electrical Systems Service & Maintenance or Highway Electrical Systems Commissioning the following selection criteria may be used as guidance.

The programme is likely to be suitable for individuals who:

- Have an aptitude for technical subjects and/or are practically minded
- Have an interest in technology
- Can demonstrate an ability to solve practical problems

Other selection criteria may include:

- Motivation to succeed
- Willingness to learn and apply that learning in the workplace/job role
- Enthusiasm and attitude to work
- Ability to demonstrate that they have the potential to achieve the qualifications which are part of the Apprenticeship (Level 3) frameworks
- Ability to communicate effectively with a range of people
- Being numerate and literate
- Good colour vision to recognise colour coded wires and components
- Ability to work at heights or in confined spaces
- Willingness to work outside
- Willingness to work unsociable hours
- Willingness to undergo a Criminal Records Bureau (CRB) check when required

Examples of formal qualifications that could indicate that an applicant has the potential to progress into the Apprenticeship (Level 3) in Electrical Installation, Electrical Maintenance, Highway Electrical Systems Service & Maintenance or Highway Electrical Systems Commissioning are:

- Welsh Baccalaureate Intermediate Diploma
- Completion of a 'Pathway to Apprenticeship' in Engineering
- Successful completion of one of the Foundation (Level 2) frameworks from the Building Services Engineering sector
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 2 GNVQs in relevant vocational/technical subjects

- A Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Level 3

Title for this framework at level 3

Apprenticeships (Level 3) in the Electrotechnical Industry

Pathways for this framework at level 3

- | | |
|------------|--|
| Pathway 1: | Electrical Installation |
| Pathway 2: | Electrical Maintenance |
| Pathway 3: | Highway Electrical Systems Service & Maintenance |
| Pathway 4: | Highway Electrical Systems Commissioning |

Level 3, Pathway 1: Electrical Installation

Description of this pathway

Electrical Installation (installing, testing, inspecting and commissioning electrotechnical systems and equipment in buildings, structures and the environment) - 122 credits in total

Entry requirements for this pathway in addition to the framework entry requirements

No additional requirements

Job title(s)	Job role(s)
Installation Electrician	Completes and oversees the installation, inspection, testing and commissioning of electrical systems, devices, appliances and equipment in domestic, industrial, commercial, leisure and agricultural buildings, structures and environments

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 - Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
B1a	501/1605/8	EAL	104	726	N/A	
B1b	501/2232/0	City & Guilds	104	726	N/A	

Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualifications B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) which has:

Knowledge Units

- Understanding Health and Safety legislation, practices and procedures - installing and maintaining electrotechnical systems and equipment H/602/2523 **Unit Credit Value 6**
- Understanding environmental legislation, working practices and the principles of environmental technology systems M/602/2525 **Unit Credit Value 4**
- Understanding the practices and procedures for overseeing and organising the work environment - electrical installation J/602/2532 **Unit Credit Value 6**
- Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment T/602/2560 **Unit Credit Value 10**
- Understanding the principles of planning and selection for the installation of electrotechnical equipment and systems in buildings, structures and the environment A/602/2561 **Unit Credit Value 8**
- Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems J/602/2563 **Unit Credit Value 9**
- Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment D/602/2567 **Unit Credit Value 8**
- Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and

the environment R/602/2579 **Unit Credit Value 6**

- Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems A/602/2589 **Unit Credit Value 12**

Knowledge Element = 69 Credits

Competence Units:

- Applying Health and Safety legislation and working practices - installing and maintaining electrotechnical systems and equipment R/602/2596 **Unit Credit Value 3**
- Applying environmental legislation, working practices and the principles of environmental technology systems H/602/2599 **Unit Credit Value 3**
- Overseeing and organising the work environment - electrical installation K/602/2605 **Unit Credit Value 3**
- Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment R/602/2792 **Unit Credit Value 6**
- Terminating and connecting conductors, cables and flexible cords in electrical systems H/602/2828 **Unit Credit Value 4**
- Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment K/602/2703 **Unit Credit Value 6**
- Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment M/602/2704 **Unit Credit Value 6**
- Electrotechnical occupational competence R/602/2503 **Unit Credit Value 4**

Competence Element = 35 credits

Total Qualification = 104 credits

For further qualification details refer to: register.ofqual.gov.uk/Qualifications and search for qualification or unit number.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	N/A
Application of numbers	N/A
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of one of the Building Services Engineering Foundation (Level 2) frameworks
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Progression routes out of this pathway

On successful completion of the Apprenticeship (Level 3) in Electrical Installation, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Building Services Engineering

Technology & Project Management or Foundation Degree in Engineering

- Progress in their career with further training into such job roles as Technician, System Designer, Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: www.summitskills.org.uk/careers

UCAS points for this pathway: N/A

Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below can be achieved through an induction programme, in combination with the City & Guilds (501/2232/0) or EAL(501/1605/8) Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) qualification into which they are integrated and signposted. The ERR elements will be evidenced by issuing a qualification achievement certificate plus a completed checklist, which must be signed by the assessor and the apprentice confirming all nine ERR elements have been achieved.

This checklist must accompany the claim for an Apprenticeship completion certificate and can be downloaded from:

www.summitskills.org.uk/Apprenticeships/Certification-and-Registration/219

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety, and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

Additional employer requirements

(No requirement specified)

Level 3, Pathway 2: Electrical Maintenance

Description of this pathway

Electrical Maintenance (The maintenance and servicing of electrotechnical systems and equipment) - 121 credits in total

Entry requirements for this pathway in addition to the framework entry requirements

No Additional Requirements

Job title(s)	Job role(s)
Maintenance Electrician	Completes and oversees the maintaining, servicing and repairing of electrical and electronic systems in commercial, leisure, industrial, and agricultural buildings, structures and the environment. This may include office blocks, leisure complexes, shopping centres or automated production systems.

Qualifications

Competence qualifications available to this pathway

N/A

Knowledge qualifications available to this pathway

N/A

Combined qualifications available to this pathway

B1 - Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
B1a	501/1624/1	City & Guilds	103	714	N/A	
B1b	501/1604/6	EAL	103	714	N/A	

Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualifications B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance) which has:

Knowledge Units:

- Understanding Health and Safety legislation, practices and procedures - installing and maintaining electrotechnical systems and equipment H/602/2523 **Unit Credit Value 6**
- Understanding environmental legislation, working practices and the principles of environmental technology systems M/602/2525 **Unit Credit Value 4**
- Understanding the practices and procedures for overseeing and organising the work environment - electrical maintenance M/602/2542 **Unit Credit Value 6**
- Understanding the practices and procedures for planning and preparing to maintain electrotechnical systems and equipment J/602/2594 **Unit Credit Value 8**
- Understanding the practices and procedures for maintaining electrotechnical systems and equipment T/602/2591 **Unit Credit Value 8**
- Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems J/602/2563 **Unit Credit Value 9**
- Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment D/602/2567 **Unit Credit Value 8**
- Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment R/602/2579 **Unit Credit Value 6**
- Understanding the electrical principles associated with the design, building, installation

and maintenance of electrical equipment and systems A/602/2589 **Unit Credit Value 12**

Knowledge Element = 67 credits

Competence Units:

- Applying Health and Safety legislation and working practices - installing and maintaining electrotechnical systems and equipment R/602/2596 **Unit Credit Value 3**
- Applying environmental legislation, working practices and the principles of environmental technology systems H/602/2599 **Unit Credit Value 3**
- Overseeing and organising the work environment K/602/2605 **Unit Credit Value 3**
- Plan and prepare to maintain electrotechnical systems and equipment L/602/2709 **Unit Credit Value 3**
- Maintain electrotechnical systems and equipment A/602/2706 **Unit Credit Value 4**
- Terminating and connecting conductors, cables and flexible cords in electrical systems H/602/2828 **Unit Credit Value 4**
- Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment K/602/2703 **Unit Credit Value 6**
- Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment M/602/2704 **Unit Credit Value 6**
- Electrotechnical occupational competence R/602/2503 **Unit Credit Value 4**

Competence Element = 36 credits

Total Qualification = 103 credits

For further qualification details refer to: <http://register.ofqual.gov.uk/Qualification> and search for the qualification or unit number.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	N/A
Application of numbers	N/A
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of one of the Building Services Engineering Foundation (Level 2) frameworks
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

Progression routes out of this pathway:

On successful completion of the Apprenticeship (Level 3) in Electrical Maintenance, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Building Services Engineering

Technology & Project Management or Foundation Degree in Engineering

- Progress in their career with further training into such job roles as Technician, Designer, Estimator, Project Manager, Site/Workshop Supervisor/ Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: www.summitskills.org.uk/careers

UCAS points for this pathway: N/A

Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below are likely to be achieved through an induction programme, in combination with the City & Guilds (501/1624/1) or EAL(501/1604/6) Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance) qualification into which they are integrated and signposted. The ERR elements will be evidenced by issuing a qualification achievement certificate plus a completed checklist which must be signed by the assessor and the apprentice confirming all nine ERR elements have been achieved.

This checklist must accompany the claim for an Apprenticeship completion certificate and can be downloaded from:

www.summitskills.org.uk/Apprenticeships/Certification-and-Registration/219

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

Additional employer requirements

(No requirement specified)

Level 3, Pathway 3: Highway Electrical Systems Service & Maintenance

Description of this pathway

Highway Electrical System Service & Maintenance 68-76 credits in total depending on which qualifications are chosen

Entry requirements for this pathway in addition to the framework entry requirements

Although not a requirement it would be an advantage to have completed a Level 2 NVQ Diploma in Highway Electrical Systems

Job title(s)	Job role(s)
Highway Electrical Systems Service & Maintenance Electrician	Servicing, maintaining and repairing electrical and electronic systems on highways.

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Diploma in Servicing Highway Electrical Systems (QCF)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
C1a	501/1578/9	Lantra	37	179-191	N/A	

Knowledge qualifications available to this pathway

K1 - Level 3 Certificate in Highway Electrical Work - Public Lighting (QCF)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
K1a	500/6254/2	Lantra	13	110	N/A	

K2 - Level 3 Certificate in Highway Electrical Work - Traffic Signals (QCF)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
K2a	500/6252/9	Lantra	21	186	N/A	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

This framework requires the completion of the competence qualification C1a identified in the competence qualifications section above **plus** either of the knowledge qualifications K1a or K2a.

The breakdown of these qualifications is as follows:

Qualification Title - **Level 3 NVQ Diploma in Servicing Highway Electrical Systems (501/1578/9)** in which a candidate must achieve a minimum of 37 credits - 31 credits must come from mandatory group A and a minimum of 6 credits must come from the options units in group B.

Mandatory Group A

Knowledge Units:

- Apply Health and Safety and Environmental Legislation and Working Practices F/601/9709 **Unit Credit Value 15**
- Maintain Effective Working Relationships H/602/0299 **Unit Credit Value 4**

Knowledge Elements = 19 credits

Competence Units:

- Plan and Prepare for the Installation and Maintenance of Highway Electrical Systems and Equipment Y/602/0302 **Unit Credit Value 6**
- Inspect and Test Highway Electrical Systems, Equipment and Components J/601/9713 **Unit Credit Value 6**

Competence Elements = 12 credits

Mandatory Group A = 31 credits

Group B Options units

Competence Units:

- Identify and Correct Faults in Highway Electrical Systems, Equipment and Components F/601/9712 **Unit Credit Value 6**
- Install and Connect Highway Electrical Systems, Equipment and Components A/602/0292 **Unit Credit Value 6**

- Maintain Highway Electrical Systems, Equipment and Components L/602/0300 **Unit Credit Value 6**
- Commission Highway Electrical Systems, Equipment and Components A/601/9711 **Unit Credit Value 6**

Competence Elements = 24 credits

Qualification Title - *Level 3 Certificate in Highway Electrical Work (Public Lighting)* (500/6254/2)

Knowledge Units:

- Advanced Electrical Theory and Practice for the Highway Electrical Sector T/502/4508 **Unit Credit Value 3**
- Electrical Inspection and Testing A/502/4509 **Unit Credit Value 3**
- Management and Supervision of Highway Electrical Works M/502/4510 **Unit Credit Value 3**
- Public Lighting Advanced Routine Maintenance T/502/4511 **Unit Credit Value 2**
- Public Lighting Advanced Reactive Maintenance A/502/4512 **Unit Credit Value 2**

Knowledge Elements = 13 credits

Or

Qualification Title - *Level 3 Certificate in Highway Electrical Work (Traffic Signals)* (500/6252/9)

- **Knowledge Units:**
- Advanced Electrical Theory and Practice for the Highway Electrical Sector T/502/4508 **Unit Credit Value 3**
- Electrical Inspection and Testing A/502/4509 **Unit Credit Value 3**
- Management and Supervision of Highway Electrical Works M/502/4510 **Unit Credit Value 3**
- Traffic Signals Transmission Systems and Ancillary Control F/502/4561 **Unit Credit Value 3**
- Traffic Control Advanced Principles J/502/4562 **Unit Credit Value 3**
- Traffic Signal Inspection and Commissioning Procedures L/502/4563 **Unit Credit Value 3**
- Traffic Signals Specialist Techniques - Microprocessor Optimised Vehicle Actuation R/502/4564 **Unit Credit Value 3**

Knowledge Elements = 21 credits

For further qualification details refer to: <http://register.ofqual.gov.uk/Qualification> and search for the qualification or unit number.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	N/A
Application of numbers	N/A
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation Level 2 framework in the Building Services Engineering Sector
- Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills
- A Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

On successful completion of the Apprenticeship (Level 3) in Highway Electrical Systems Service & Maintenance, an apprentice will have the skills, knowledge and qualifications to:

- register on an appropriate Industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Level 4 Building Services Engineering Technology & Project Management, Higher National Certificate in Construction and the Built Environment or Foundation Degree in Building Services Engineering
- progress in their career with further training into job roles such as Technician, System Designer, Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered

Engineer, Sales Engineer or Service Manager

Further career guidance can be found at: www.summitskills.org.uk/careers

UCAS points for this pathway: N/A

Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below are likely to be achieved through an induction programme, in combination with either the Lantra (501/1578/9) Level 3 NVQ Diploma in Servicing Highway Electrical Systems qualification into which they are integrated and signposted. The ERR elements will be evidenced by issuing a qualification achievement certificate plus a completed checklist which must be signed by the assessor and the apprentice confirming all nine ERR elements have been achieved.

This checklist must accompany the claim for an Apprenticeship completion certificate and can be downloaded from:

www.summitskills.org.uk/Apprenticeships/Certification-and-Registration/219

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety, and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

Additional employer requirements

(No requirement specified)

Level 3, Pathway 4: Highway Electrical Systems Commissioning

Description of this pathway

Highway Electrical Systems Commissioning – 86 - 94 credits in total depending on which qualifications chosen

Entry requirements for this pathway in addition to the framework entry requirements

Although not a requirement it would be an advantage to have completed a Level 2 NVQ Diploma in Highway Electrical Systems

Job title(s)	Job role(s)
Highway Electrical Systems Commissioning Electrician	Commissioning electrical and electronic systems on highways

Qualifications

Competence qualifications available to this pathway

C1 - Level 3 NVQ Diploma in Servicing and Commissioning Highway Electrical Systems						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
C1a	501/1579/0	Lantra	55	285	N/A	

Knowledge qualifications available to this pathway

K1 - Level 3 Certificate in Highway Electrical Work (Public Lighting)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
K1a	500/6254/2	Lantra	13	110	N/A	

K2 - Level 3 Certificate in Highway Electrical Work (Traffic Signals)						
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value	Total qualification time
K2a	500/6252/9	Lantra	21	186	N/A	

Combined qualifications available to this pathway

N/A

Relationship between competence and knowledge qualifications

This framework requires the completion of the competence qualifications C1a identified in the competence qualifications section above **plus** either of the knowledge qualifications K1a or K2a.

The breakdown of these qualifications is as follows:

Qualification Title - ***Level 3 NVQ Diploma in Servicing and Commissioning Highway Electrical Systems (501/1579/0)*** which has:

Knowledge Units:

- Apply Health and Safety and Environmental Legislation and Working Practices F/601/9709 ***Unit Credit Value 15***
- Maintain Effective Working Relationships H/602/0299 ***Unit Credit Value 4***
- Plan and Prepare for the Installation and Maintenance of Highway Electrical Systems and Equipment Y/602/0302 ***Unit Credit Value 6***
- Maintain Highway Electrical Systems, Equipment and Components L/602/0300 ***Unit Credit Value 6***
- Commission Highway Electrical Systems, Equipment and Components A/601/9711 ***Unit Credit Value 6***

Knowledge Element = 37 credits

Competence Units:

- Install and Connect Highway Electrical Systems, Equipment and Components A/602/0292 ***Unit Credit Value 6***
- Inspect and Test Highway Electrical Systems, Equipment and Components J/601/9713 ***Unit Credit Value 6***
- Identify and Correct Faults in Highway Electrical Systems, Equipment and Components F/601/9712 ***Unit Credit Value 6***

Competence Element = 18 credits

Total Qualification = 55 credits

Qualification Title - ***Level 3 Certificate in Highway Electrical Work (Public Lighting) (500/6254/2)***

Knowledge Units:

- Advanced Electrical Theory and Practice for the Highway Electrical Sector T/502/4508 **Unit Credit Value 3**
- Electrical Inspection and Testing A/502/4509 **Unit Credit Value 3**
- Management and Supervision of Highway Electrical Works M/502/4510 **Unit Credit Value 3**
- Public Lighting Advanced Routine Maintenance T/502/4511 **Unit Credit Value 2**
- Public Lighting Advanced Reactive Maintenance A/502/4512 **Unit Credit Value 2**

Knowledge Elements = 13 credits

Or

**Qualification Title - Level 3 Certificate in Highway Electrical Work (Traffic Signals)
(500/6252/9)**

Knowledge Units:

- Advanced Electrical Theory and Practice for the Highway Electrical Sector T/502/4508 **Unit Credit Value 3**
- Electrical Inspection and Testing A/502/4509 **Unit Credit Value 3**
- Management and Supervision of Highway Electrical Works M/502/4510 **Unit Credit Value 3**
- Traffic Signals Transmission Systems and Ancillary Control F/502/4561 **Unit Credit Value 3**
- Traffic Control Advanced Principles J/502/4562 **Unit Credit Value 3**
- Traffic Signal Inspection and Commissioning Procedures L/502/4563 **Unit Credit Value 3**
- Traffic Signals Specialist Techniques - Microprocessor Optimised Vehicle Actuation R/502/4564 **Unit Credit Value 3**

Knowledge Elements = 21 credits

For further qualification details refer to: <http://register.ofqual.gov.uk/Qualification> and search for the qualification or unit number.

Transferable skills (Wales)

Essential skills (Wales)

Subject	Minimum Level
Communication	N/A
Application of numbers	N/A
ICT/Digital literacy	N/A

For a full list of available proxies for starts on or after 14th October 2016 please see section 35 of the current [SASW](#).

Progression routes into and from this pathway

Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation Level 2 framework in the Building Services Engineering Sector
- Completion of a 'Pathway to Apprenticeship' in Engineering
- Work or work experience
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills
- A Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

On successful completion of the Apprenticeship (Level 3) in Highway Electrical Systems Commissioning, an apprentice will have the skills, knowledge and qualifications to:

- register on an appropriate Industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Level 4 Building Services Engineering Technology & Project Management, Higher National Certificate in Construction and the Built Environment or Foundation Degree in Building Services Engineering
- progress in their career with further training into job roles such as Technician, Designer, Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer,

Sales Engineer or Service Manager

Further career guidance can be found at: www.summitskills.org.uk/careers

UCAS points for this pathway: N/A

Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below are likely to be achieved through an induction programme, in combination with the Lantra (501/1579/0) Level 3 NVQ Diploma in Servicing and Commissioning Highway Electrical Systems qualification into which they are integrated and signposted. The ERR elements will be evidenced by issuing a qualification achievement certificate plus a completed checklist which must be signed by the assessor and the apprentice confirming all nine ERR elements have been achieved.

This checklist must accompany the claim for an Apprenticeship completion certificate and can be downloaded from:

www.summitskills.org.uk/Apprenticeships/Certification-and-Registration/219

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety, and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

Additional employer requirements

(No requirement specified)

The remaining sections apply to all levels and pathways within this framework.

How equality and diversity will be met

The nature of the work means that the Electrotechnical Industry is not a traditional career choice for women, but women do qualify and work successfully in the industry and this is encouraged. We are continuing to work with the UK Resource Centre for Women in Science, Engineering and Technology and Platform 51 (formerly the YWCA) to promote the opportunities for women working in the building services engineering sector.

SummitSkills will have overall responsibility for the development and review of the framework and for monitoring equality of opportunity, primarily by the analysis of the National Apprenticeship Service data.

There should be open recruitment of apprentices who meet the selection criteria, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability .

All partners involved in the delivery of the apprenticeship and employers must be committed to a policy of equal opportunities and must have a formal equal opportunities policy and procedures in place.

Employers/providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and training activities must comply with relevant legislation, such as the Equality Act 2010.

www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/

Providers will monitor equality of opportunity practice and procedures within their own organisation and take positive action when necessary. It is also recommended that employers/providers conduct an exit interview if the apprentice leaves the programme before completion.

On and off the job training (Wales)

Summary of on- and off-the-job training

Overview of Electrical Installation

Qualification Total - 726 hrs (Knowledge elements 646hrs + Competence elements 80hrs)

Essential Skills (ES) - 135 hrs (notional value of 45 hrs per ES x 3, which can be offset if completed within the previous 5yrs)

Mentoring - 322 hrs (based on 46 wks x 2 hrs per full year over 3.5 years)

Total minimum training hours for this framework is 1183 hrs

Overview of Electrical Maintenance

Qualification Total - 714 hrs (Knowledge elements 626hrs + Competence elements 88hrs)

Essential Skills (ES) - 135 hrs (notional value of 45hrs per ES x 3, which can be offset if completed within the previous 5yrs)

Mentoring - 322 hrs (based on 46 wks x 2 hrs per full year over 3.5 years)

Minimum total training hours for this framework is 1171 hrs

Overview of Highway Electrical Systems Servicing and Maintenance

1/ Qualification Total – Level 3 NVQ Diploma in Servicing Highway Electrical Systems (501/1578/9) - 179-191 hrs depending on units chosen (Knowledge elements 95 hrs + Competence elements 84-96 hrs depending on options chosen)

Plus either

2/ Qualification Total – Level 3 Certificate in Highway Electrical Work (Public Lighting) (500/6254/2) - 110 hrs (Knowledge elements 110 hrs)

or

3/ Qualification Total – Level 3 Certificate in Highway Electrical Work (Traffic Signals) (500/6252/9) - 186 hrs (Knowledge elements 186 hrs)

Minimum Qualifications Total Training Hours - 289 hrs for qualification 1 & 2

Maximum Qualifications Total Training Hours - 377 hrs for qualification 1 & 3

Essential Skills (ES) - 135 hrs (notional value of 45hrs per ES x 3, which can be offset if completed within the previous 5yrs)

Mentoring - 644 hrs (based on 46 wks x 4 hrs per full year over 3.5 years)

Total number of recommended training hours for this framework is 1068-1156 hrs depending on options chosen

Overview of Highway Electrical Systems Commissioning

1/ Qualification Total – Level 3 NVQ Diploma in Servicing and Commissioning Highway Electrical Systems (501/1579/0) - 285 hrs (Knowledge elements 186 hrs + Competence elements 99 hrs)

Plus either

2/ Qualification Total – Level 3 Certificate in Highway Electrical Work (Public Lighting) (500/6254/2) - 110 hrs (Knowledge elements 110 hrs)

or

3/ Qualification Total – Level 3 Certificate in Highway Electrical Work (Traffic Signals) (500/6252/9) - 186 hrs (Knowledge elements 186 hrs)

Minimum Qualifications Total Training Hours - 395 hrs for qualification 1 & 2

Maximum Qualification Total Training Hours - 471 hrs for qualification 1 & 3

Essential Skills (ES) - 135 hrs (notional value of 45hrs per ES x 3, which can be offset if completed within the previous 5yrs)

Mentoring - 644 hrs (based on 46 wks x 4 hrs per full year over 3.5 years)

Total number of recommended training hours for this framework is 1174-1250 hrs depending on options chosen

Off-the-job training

Electrical Installation

Minimum total of off-the-job training hours is 861 hrs over 42 months

- Yr 1 - 246 Training Hours
- Yr 2 - 246 Training Hours
- Yr 3 - 246 Training Hours
- Yr 4 (6 months) - 123 Training Hours

Electrical Maintenance

Minimum total off-the-job training hours is 849hrs over 42 months

- Yr 1 - 243 Training Hours
- Yr 2 - 243 Training Hours
- Yr 3 - 243 Training Hours
- Yr 4 - (6 months) 120 Training Hours

Highway Electrical Systems Service & Maintenance

Minimum total off-the-job training Hours is 424-512 hrs over 42 months

- Yr 1 - 130 hrs
- Yr 2 - 130 hrs
- Yr 3 - 130 hrs
- Yr 4 - (6 months) 34 -122 hrs

Highway Electrical Systems Commissioning

Minimum total off-the-job training Hours is 530-606 hrs over 42 months

- Yr 1 - 170 hrs
- Yr 2 - 170 hrs
- Yr 3 - 170 hrs
- Yr 4 - (6 months) 20-96 hrs

How this requirement will be met

Training Hours will be achieved through clear and specific outcomes which contribute directly to the successful completion of the framework, and these may include accredited and non-accredited elements of the framework.

Training Hours will be delivered through one or more of the following methods during time away from the normal work duties: individual and group teaching; e-learning; distance learning; feedback and assessment; guided study. All Training Hours delivery will take place during contracted working hours and while working under an Apprenticeship Agreement.

Recognition of prior learning (RPL) can be made if achieved within the previous 5 years. As examples of previous experience will vary it will be the responsibility of the Awarding Bodies to agree adjustments to the learning programmes with Training Providers and Employers. Summitskills reserves the right to audit centres regarding RPL and recommend further training if it is felt the adjustments are not suitable.

For learners who have followed a WAG funded apprenticeship programme a simple declaration from the Training Provider is suitable confirmation of the depth and quality of the training hour delivery. The Training Provider would then keep evidence such as individual learning plans,

progress reviews, attendance statistics and assessment reports which could be inspected should the need arise.

On-the-job training

Electrical Installation

Minimum total on-the-job training hours is 322 hrs over 42 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs
- Yr 3 - 92 hrs
- Yr 4 (6 months) - 46 hrs

Electrical Maintenance

Minimum total on-the-job training hours is 322 hrs over 42 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs
- Yr 3 - 92 hrs
- Yr 4 - (6 months) - 46 hrs

Highway Electrical Systems Service & Maintenance

Minimum total on-the-job training hours is 644 hrs over 42 months

- Yr 1 - 184 hrs
- Yr 2 - 184 hrs
- Yr 3 - 184 hrs
- Yr 4 - (6 months) - 92 hrs

Highway Electrical Systems Commissioning

Minimum total on-the-job training hours is 644 hrs over 42 months

- Yr 1 - 184 hrs
- Yr 2 - 184 hrs
- Yr 3 - 184 hrs
- Yr 4 - (6 months) - 92 hrs

These are the minimum number of training hours that should be allocated for the apprentice to gather evidence in accordance with the requirements of the integrated qualification and mentoring.

How this requirement will be met

Training Hours will be achieved through clear and specific outcomes which contribute directly to the successful achievement of the framework and these may include accredited and non-accredited elements of the framework.

Training Hours will be delivered through one or more of the following methods: coaching; mentoring; feedback and assessment; collaborative/networked learning with peers. All Training Hours delivery to take place during contracted working hours and while working under an Apprenticeship Agreement.

Recognition of prior learning (RPL) can be made if achieved within the previous 5 years. As examples of previous experience will vary it will be the responsibility of the Awarding Bodies to agree adjustments to the learning programmes with Training Providers and Employers. Summitskills reserves the right to audit centres regarding RPL and recommend further training if it is felt the adjustments are not suitable.

For learners who have followed a WAG funded apprenticeship programme a simple declaration from the Training Provider is suitable confirmation of the depth and quality of the training hour delivery. The Training Provider would then keep evidence such as individual learning plans, progress reviews, attendance statistics and assessment reports which could be inspected should the need arise.

Essential employability skills (Wales)

Essential employability skills

(No requirement specified)

apprenticeship
FRAMEWORKS ONLINE

For more information visit
www.afo.sscalliance.org