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EUIAS Level 3 End-point Assessment for Power Industry Substation Fitter
(Distribution maintenance; Transmission maintenance; Construction)

Specification

QAN 610/4850/1

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Specification for

EUIAS Level 3 End-point Assessment for Power Industry Substation Fitter

(Distribution maintenance; Transmission maintenance; Construction)

QAN 610/4850/1

Updates to this specification

Since the first publication of the EUIAS Power Industry Substation Fitter (PISF) Specification (Distribution maintenance; Transmission maintenance; Construction) – the following updates have been made.

Version	Date first published	Section updated	Page(s)
V1.1	October 2024	Minor updates to align the 3 Power Industry Specifications	
V1.0	October 2024	First published	All

Section 1: At a glance EPA summary

Qualification name	EUIAS Level 3 End-point Assessment for Power Industry Substation Fitter
Ofqual qualification number	QAN 610/4850/1
Standard reference	ST01331
Assessment plan	V1.1
Standard title	Power Industry Substation Fitter
Pathways	Distribution maintenance Transmission maintenance Construction
Level	3
Gateway pre-requisites submitted to EUIAS	Apprentice has: • achieved English and mathematics qualifications in line with the apprenticeship funding rules • passed Emergency first aid 1 day course • compiled and submitted an EPA portfolio, which will be the focus of the interview based on an EPA portfolio
On-programme duration	Typically 30 months
Gateway readiness	Apprentice has met all Gateway pre-requisites. Employer completes, signs and submits Gateway Eligibility Form (GER) form to EUIAS. See Appendix B, PISF Supporting Documents 'Gateway Eligibility Form.'

End-point assessment duration	Typically 6 months after Gateway
End-point assessment methods and their order	Both the • multiple-choice test; and • interview based on an EPA portfolio **must both be completed and passed before** starting the • trade test practical assessment with questions; and • trade test technical interview
End-point assessment methods and component grading	Multiple-choice test: Fail or Pass Interview underpinned by an EPA portfolio: Fail; Pass; or Distinction Trade test practical assessment with questions: Fail; Pass; or Distinction Trade test interview: Fail or Pass
Overall Grading	Fail; Pass; or Distinction
Certification	EUIAS request Apprenticeship completion certificates from the ESFA
Glossary of Terms	Appendix A, PISF Supporting Documents

Objective

The purpose of the Power Industry Substation Fitter (PISF) end-point assessment (EPA) is to confirm that an apprentice is fully capable of doing their job before they receive their apprenticeship certificate. It also helps to demonstrate that what an apprentice has learned can be applied in the real world.

Once the apprentice has completed the PISF end-point assessment requirements successfully and has been certified they could take on the following typical job roles:

- Construction substation fitter
- Craftsperson substation fitter
- Electrical fitter – substation
- Electrical or mechanical fitter - substation plant and equipment
- Electrical plant fitter
- High voltage (hv) construction fitter
- High voltage (hv) electrical fitter
- High voltage (hv) maintenance fitter
- Transmission or distribution substation fitter

Professional recognition

This apprenticeship aligns with The Institution of Engineering and Technology (IET) for Engineering Technician (EngTech). The experience gained and responsibility held by the apprentice on completion of the apprenticeship will either wholly or partially satisfy the requirements for registration at this level. Please contact the professional body for more details.

Gateway readiness

Gateway takes place before the EPA can start. The employer and training provider will review their apprentice's knowledge, skills and behaviours to see if they have met the minimum requirements of the apprenticeship set out in the apprenticeship standard and are ready to take the assessment. Only apprentices who complete gateway successfully can start the EPA. Gateway pre-requisites are listed in the summary table above. The Gateway Eligibility Form must be completed see PISF Supporting Documents Appendix B.

Recognition of prior learning (RPL)

EUIAS does not recognise any apprentice prior learning (RPL) or prior achievement (RPA) for the purpose of amending the assessment requirements of any end-point assessments.

Please refer to the EUIAS RPL and RPA policy at www.euias.co.uk/end-point-assessment/policies-and-fees

In order for EUIAS to award an end-point assessment qualification, the apprentice must successfully complete all required assessment components with EUIAS. This means that:

- each of the EPA components must be completed in full with EUIAS
- where an apprentice transfers to EUIAS from another EPAO they have to undertake the entire EPA with EUIAS
- components of the EPA cannot be certificated in isolation
- evidence for portfolio and the interview must be produced while the apprentice in on-programme to demonstrate current practice

This does not affect the Gateway requirements which must be met in order for an apprentice to be eligible for end-point assessment.

This does not affect any reasonable adjustments that may be granted.

Section 2: End-point assessment components

Component 1: Multiple-choice test

Overview

The multiple-choice test is a computer based test which consists of 40 multiple-choice questions. Paper-based tests are available on demand.

Apprentices have 60 minutes to complete the test. The multiple-choice questions will have four possible answers of which one will be correct.

The Pass mark is 28 correct answers.

For this paper:

- a (scientific) calculator is required
- access to the internet or intranet is NOT allowed
- apprentices cannot refer to reference books or materials whilst taking the test

Apprentices must take the test in a quiet space, free from distractions and influence, in the presence of an EUIAS approved invigilator.

Multiple-choice test coverage

The knowledge assessment consists of 40 knowledge questions.
The table below lists each of the knowledge elements, assessed in the multiple-choice test. Amplification and Guidance can be found in the table below.

Number of Questions	Knowledge	Amplification and Guidance (where required)
1 - 3	**K1**: Power network industry appreciation: generation of electricity, Transmission Network Operator, Distribution Network Operator (DNO), Independent Distribution Network Operator (IDNO), Independent Connections Provider (ICP), supplier, generators - role and boundary of operation.	Power network industry appreciation: 1. Generation of electricity The role and boundary of operation of: 2. Transmission Network Operator (TNO) 3. Distribution Network Operator (DNO) 4. Independent Distribution Network Operator (IDNO) 5. Independent Connections Provider (ICP) 6. Suppliers 7. Generators
1 - 2	**K2**: The office of gas and electricity markets (Ofgem) - their role and powers.	The Office of Gas and Electricity Markets (Ofgem) 1. Their role and responsibilities 2. Their powers such as licensing, enforcement and price controls

Number of Questions	Knowledge	Amplification and Guidance (where required)
1 - 3	**K3**: Power industry regulations: Electricity at Work Regulations, and The Electricity Safety, Quality and Continuity Regulations (ESQCR). Their purpose and basic requirements.	The purpose and basic requirements of power industry regulations: 1. Electricity at Work Regulations 2. The Electricity Safety, Quality and Continuity Regulations (ESQCR)
1 - 3	**K6**: Business operation considerations: how activities may impact customers, financial constraints (budgets), penalties and rewards, ethical business practices.	Business operation considerations: 1. How activities, such as implementing energy efficiency and maintenance programmes; price setting; and customer engagement, may impact customers 2. Financial constraints (budgets) such as regulatory compliance requirements; integration of renewable energy sources 3. Penalties and rewards such as under RIIO (Revenue = Incentives + Innovation + Outputs); performance targets 4. Ethical business practices such as fair treatment of employees and customers, environmental responsibility
5 - 7	**K9**: Health and safety regulations, standards, and guidance - their purpose and basic requirements: asbestos awareness, Construction Design	Purpose and basic requirements of: 1. Asbestos awareness such as where they may come into contact; safe work practices, control measures, and protective equipment needed

Number of Questions	Knowledge	Amplification and Guidance (where required)
	Management (CDM), Health and Safety at Work Act, Control of Substances Hazardous to Health (COSHH), Lifting Operations and Lifting Equipment Regulations (LOLER), lone working, Management of Health and Safety at Work, Provision and Use of Work Equipment Regulations (PUWER), Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR), and warning signs and symbols.	2. The Construction (Design and Management) Regulations 2015 (CDM) 3. Health and Safety at Work Act 1974 (HASWA) 4. Control of Substances Hazardous to Health 2002 (COSHH) 5. Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) 6. Lone working 7. Management of Health and Safety at Work 8. Management of Health and Safety at Work Regulations 1999 9. Provision and Use of Work Equipment Regulations 1998 (PUWER) 10. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) 11. Warning signs and symbols by type, colour and recognising their pictograms
1 - 2	**K14**: Working in confined spaces awareness.	Working in confined spaces awareness: 1. Definition and identification 2. Hazards and risks, safety procedures, emergency procedures 3. Equipment and tools

Number of Questions	Knowledge	Amplification and Guidance (where required)
		4. Regulations and compliance
1 - 2	**K17**: The Environmental Protection Act – its purpose and basic requirements.	The Environmental Protection Act 1990 – its purpose and basic requirements: 1. Coverage and obligations of the Act 2. Related legislation (Environment Act, Hazardous Waste Regulations)
1 - 3	**K20:** Oil: containment, storage, disposal, spill management escalation and reporting, and specialist risk assessment.	1. Oil: containment, storage, disposal 2. Oil: spill management escalation and reporting 3. Oil: risk assessment
1 - 3	**K21:** Sulfur hexafluoride (SF6): regulations, procedures, certification requirements for handling, reporting leaks.	1. Sulfur hexafluoride (SF6): regulations 2. Sulfur hexafluoride (SF6):procedures 3. Sulfur hexafluoride (SF6): certification requirements for handling 4. Sulfur hexafluoride (SF6): reporting leaks
3 - 5	**K30**: Mathematical theory in power engineering. Round numbers, scientific notation, percentages and ratios. Areas, perimeters, volumes and surface areas of simple shapes. Scales, tables, graphs and charts. Pythagoras' Theorem and sin, cos,	Mathematical theory in power engineering: 1. Round numbers, scientific notation, percentages and ratios 2. Areas, perimeters, volumes and surface areas of simple shapes 3. Scales, tables, graphs and charts

Number of Questions	Knowledge	Amplification and Guidance (where required)
	and tan in right-angled triangles. Substitution of numerical values into simple engineering formulae. The sequence of arithmetic operations.	4. Pythagoras' Theorem and sin, cos, and tan in right-angled triangles 5. Substitution of numerical values into simple engineering formulae 6. The sequence of arithmetic operations Examples of the focus of questions that may be asked: • Calculating loads, currents, and voltages, voltage drops • Solving equations to determine the correct settings for equipment • Calculating distances and angles for placement of equipment • Statistics and probability for analysing data from equipment tests and reliability assessments • Calculating the appropriate size of cables based on the current they need to carry and the distance they need to cover, considering factors like resistance and heat dissipation • Calculating the required capacitance to correct the power factor • Using mathematical formulas to determine the appropriate size of transformers based on the load requirements and efficiency

Number of Questions	Knowledge	Amplification and Guidance (where required)
		• Estimating energy losses
3 - 5	**K31:** Mechanical theory in power engineering. Mass, force and weight. Parameters of mechanical systems. The components of hydraulic and pneumatic systems. Statics and forces. Energy, work and power. The parameters of material tensile strengths. The parameters of mechanical advantage. The lever principle and theorem of movement.	1. Mechanical theory in power engineering 2. Mass, force and weight 3. Parameters of mechanical systems 4. The components of hydraulic and pneumatic systems 5. Statics and forces 6. Energy, work and power 7. The parameters of material tensile strengths 8. The parameters of mechanical advantage 9. The lever principle and theorem of movement
1 - 3	**K32**: Electrical theory in power engineering. Circuit technology. Magnetism and electromagnetism. Transformers.	1. Electrical theory in power engineering: Ohm's Law; Kirchhoff's Current Law; Kirchhoff's Voltage Law; power factors; three-phase power 2. Circuit technology such as distribution panels and associated equipment; switchgear; protective relays; smart grids 3. Magnetism and electromagnetism such as magnetic fields and forces; electric fields and forces; Faraday's Law 4. Transformers such as core materials and types; primary and secondary windings

Number of Questions	Knowledge	Amplification and Guidance (where required)
1 - 2	**K33**: Power engineering electrical networks: generation, transmission, distribution and transformation of system voltages.	Power engineering electrical networks: 1. Generation: function and components 2. Transmission: function, components and types 3. Distribution: function, components and types 4. Transformation of system voltages
1 - 3	**K34**: Power engineering electrical plant and apparatus, the properties and purpose of transformers, switchgear, earthing devices, voltage control and automated equipment.	1. Power engineering electrical plant and apparatus 2. The properties and purpose of transformers 3. The properties and purpose of switchgear 4. The properties and purpose of earthing devices 5. The properties and purpose of voltage control 6. The properties and purpose of automated equipment
1 - 2	**K35:** The symptoms and causes of common faults on electrical power circuits, plant and apparatus.	1. The symptoms of common faults on electrical power circuits, plant and apparatus 2. The causes of common faults on electrical power circuits, plant and apparatus
6 - 8	**K36:** Substation high-voltage (HV) and low-voltage (LV) equipment and its purpose: air compressors, busbars, circuit breakers, current transformers and voltage transformers, earthing systems and	Substation high-voltage (HV) and low-voltage (LV) equipment and its purpose: 1. air compressors 2. busbars 3. circuit breakers

Number of Questions	Knowledge	Amplification and Guidance (where required)
	associated equipment, electrical switchgear, multi-core cabling, HV metering , isolators, primary equipment and connections, protection and control systems, telecontrol and automation equipment, transformer cooling, transformers, substation batteries, and AVCS systems (automatic voltage control systems).	4. current transformers and voltage transformers 5. earthing systems and associated equipment 6. electrical switchgear 7. multi-core cabling 8. HV metering 9. isolators 10. primary equipment and connections 11. protection and control systems 12. telecontrol and automation equipment 13. transformer cooling, transformers 14. substation batteries 15. AVCS systems (automatic voltage control systems)

Multiple-choice test roles and responsibilities

Role	Responsibility
Invigilator	Is typically provided by the employer or training provider. Attend induction training as directed by EUIAS. Must not invigilate an assessment, solely, if they have delivered the assessed content to the apprentice. Invigilate and supervise the apprentice during tests and in breaks during assessment methods to prevent malpractice in line with the EUIAS' invigilation procedures.
Employer/Training Provider	Ensure that the multiple-choice test is scheduled with EUIAS for a date and time which allow the apprentice to be well prepared. Follow EUIAS guidance in setting up and confirming IT provision for the on-screen test.
EUIAS	Arrange for the multiple-choice test to take place, in consultation with the employer/training provider. Mark multiple-choice test answers accurately according to the mark scheme and procedures.

Component 2: Interview based on an EPA portfolio

Overview

This interview is based on the apprentice's EPA portfolio developed from the EPA Portfolio Template's tasks and focuses on holistic evidence covering the KSBs. The interview allows for testing of responses where there are a range of potential answers.

The EPA portfolio, compiled throughout the apprenticeship and completed by Gateway must be submitted to EUIAS. The EPA Portfolio Template will be issued to employers/training providers by their EUIAS Service Delivery Coordinator.

Step-by-Step Guide

The table below provides a step-by-step guide on how the interview based on an EPA portfolio will be carried out:

Assessors	1 independent assessor approved by EUIAS will conduct the interview
Interview (based on the portfolio) structure	**Types of questions:** • The assessor will ask at least 5 questions for apprentices following the transmission maintenance pathway • The assessor will ask at least 7 questions for apprentices following the distribution maintenance and construction pathways • Standardised open questions will be asked based on the contents of the evidence in the EPA portfolio • Additional follow up questions are allowed, to seek clarification **Locations:** Employer's premises or a suitable venue for example a training provider's premises. **Time:** • The interview must last 60 minutes for apprentices following the transmission maintenance pathway • The interview must last 75 minutes for apprentices following the distribution maintenance and construction pathways

	• The independent assessor has the discretion to increase the time of the professional discussion by up to 10%, to allow the apprentice to complete their last answer **The Interview will be:** • conducted by 1 independent assessor • face to face or remote, as agreed • recorded in writing using the interview record template provided by EUIAS • video recorded using relevant technology such as Microsoft Teams or an audio recording device • conducted under examination conditions The apprentice will have access to their EPA portfolio throughout the interview. EPA Portfolio: • The apprentice's Manager/Mentor will typically support the development of the EPA portfolio in accordance with company policy and procedures • Although questioning will cover ALL the elements of the standard (listed below in this section of the Specification), the assessor will prioritise areas according to what they see in the portfolio • For further guidance on the EPA portfolio refer to Section 5 Practical Guidance on EPA Portfolio
What topics will be covered?	**For further details refer to 'Knowledge, Skills and Behaviours (KSBs) Coverage below pages [21-32].**
When will the EPA portfolio be referred to?	The EPA portfolio: • will be reviewed by the independent assessor before the interview • can be referred to by the apprentice to illustrate their answers Note: the EPA portfolio is not directly assessed.
Grading	Fail, Pass or Distinction

Interview based on EPA portfolio knowledge, skills and behaviours (KSBs) coverage

The interview based on EPA portfolio covers:

Substation fitter - core

Task 1: Communication and working with others	Amplification and guidance (where required)
Communication	
K24 Communication techniques. Industry terminology. Adapting style to audience	The apprentice should be able to: • describe the different methods of communication they use in their job role and the benefits and draw backs of one communication method over another for differing circumstances e.g. direct conversation – email, telephone call – in person • explain how they would differ their style of communication for different parties to achieve the best results e.g. explaining technical issues to a colleague, industry engineer or a member of the public
S21 Communicate with others to give and receive information for example, colleagues, customers, and stakeholders	The apprentice should be able to use their portfolio to: • provide examples of how they have used their communication skills in the course of their work

Task 1: Communication and working with others	Amplification and guidance (where required)
	• evidence how they have adapted their communication style dependent on who they are communicating with, and the information being given
B5 Perform in a professional manner for example, polite, courteous, and respectful to customers and members of the public	The apprentice should be able to use their portfolio to: • provide examples of work locations where they were required to interact with customers, landowners or members of the public in a professional manner • describe the principles they followed to ensure they represented the company in a professional manner e.g. company clothing, identification badge, listening to concerns, respecting other views
K26 Written communication techniques	The apprentice should be able to demonstrate an understanding of: • how written communication is used in their role, e.g. work allocation and reporting of completed work • provide examples of their personally written documentation, in a clear legible manner e.g. safety documentation
S24 Produce or amend documents for example, handover notes, procedures, and reports	The apprentice should be able to use their portfolio to: • provide evidence of operational and technical documents they produced or amended in the course of their work activities e.g. sub-

Task 1: Communication and working with others	Amplification and guidance (where required)
	station layout plans they have amended to record plant and switchgear updates, risk assessments which required additional information at a later stage
Information and digital technology	
K27 Information and digital technology: computers and mobile devices. Software: email, word processing, databases, productivity and collaboration software, and work and asset management systems. General Data Protection Regulation (GDPR). Cyber security	The apprentice should be able to: • describe the different forms of digital information they encounter in their job role and the company processes for dealing with the different types of information e.g. work instructions, risk assessments, sub-station plans • identify the different types of digital devices they work with in their job role and the company processes they follow to ensure the information is kept secure within the business
S25 Use digital and information technology. Follow cyber security requirements	The apprentice should be able to use their portfolio to: • provide examples of work projects where they have used different types of digital information and technology in their job role and how they have complied with cyber security requirements

Task 1: Communication and working with others	Amplification and guidance (where required)
Teamwork	
K28 Team working principles	The apprentice should be able to: • describe the benefits of team working • explain how they can support the development of an effective team spirit to improve working relationships e.g. clear goals and objectives, effective communication, cooperation, collaboration and trust
S20 Apply team working principles	The apprentice should be able to use their portfolio to: • provide evidence of how they have worked successfully in a team and describe the principles they used to develop their working relationships with others
B6 Team-focus to meet work goals and support inclusivity. For example, support others, show respect to people from different trades, disciplines, backgrounds, and expertise	The apprentice should be able to use their portfolio to: • provide examples of how during their different work activities they have used a team focus approach to work with others to achieve their team goals
K29 Principles of equality, diversity, and inclusion in the workplace	The apprentice should be able to: • describe how the company promotes the principles of equality, diversity, and inclusion in the workplace, which may include equal

Task 1: Communication and working with others	Amplification and guidance (where required)
	opportunities, non-discrimination, inclusive polies and practices, diverse representation and training and education • describe some of the positive benefits on the workforce of applying the principles of equality, diversity, and inclusion in the workplace

Task 2: Sustainability	Amplification and guidance (where required)
K18 The power industry's net zero strategy. Principles of sustainability. Impact of sites of special scientific interest, flora and fauna on work. Potential effects on the environment of companies and individuals not complying with good environmental practices.	Using their portfolio, the apprentice should be able to discuss the topic and provide examples of: • the actions and measures which their company puts in place to help reduce its carbon footprint and deliver outputs which mitigate the effect on climate change, reduce environmental pollution, and build a more sustainable energy future • the expectations of the company's environmental stakeholders e.g. The Environment Agency The apprentice should be able to demonstrate an awareness of Low Carbon Technologies, such as low carbon heating systems, charging point installations for electric vehicles (EV's)

Task 2: Sustainability	Amplification and guidance (where required)
S12 Apply sustainability principles for example, minimising waste.	Using their portfolio, the apprentice should be able to: • provide examples of how they have used a sustainable approach in the sub-station fitting activities they have carried out e.g. safe storage and disposal of waste products • describe some of the actions the industry is taking to improving its sustainability e.g. renewable energy sources, use of EV's, energy efficiency initiatives • identify some of the benefits of adopting a sustainable approach for the business and the environment
B2 Consider the environment and sustainability when using resources and carrying out tasks	Using their portfolio, the apprentice should be able to: • provide examples of sub-station fitting activities they have conducted, where they have considered the environment in the way they have carried out the work e.g. oil containment, waste management • describe how they can reduce the effect on the environment in the way they work and the resources they use e.g. types of plant, equipment, transport, materials they use and their safe disposal

Task 3: CPD and improvement activities	Amplification and guidance (where required)
S26 Carry out and record planned and unplanned learning and development activities	The apprentice should be able to use their portfolio to: • provide examples of activities they have carried out which have contributed to their professional development and provided valuable learning points e.g. courses they have attended, activities they have undertaken, managing/recording site responsibility activities
B7 Committed to continued professional development to maintain and enhance competence	The apprentice should be able to: • describe how they have reflected on the activities undertaken and used the experience to enhance their skills, knowledge or understanding to improve their overall performance • describe any future plans they have to continue their professional development and how they feel the planned event/s will enhance their development
S19 Identify areas for improvement. For example, in relation to quality, cost, time, safety, or environmental impact	The apprentice should be able to use their portfolio to: • provide examples of sub-station fitting projects they have worked on, where they have put forward ideas or proposed solutions which have led to an improved work performance e.g. better use of sub-station fitting resources/materials, hazard identification, problem solving, site safety management (access/egress) and risk awareness

Substation fitter - distribution maintenance

Task 4: Working on the highway and location and avoidance of utilities	Amplification and guidance (where required)
Plant or vehicle checks	
K15 Plant and vehicle check requirements	The apprentice should be able to: • identify the items to examine when conducting checks on their vehicle e.g. tyre condition, fluid levels • identify the items to examine when inspecting plant they use • e.g. hydraulic compressors, plant trailers, Mobile Elevated Work Platforms (MEWPs) • describe the signs/information they look for when examining their vehicle and items of plant before use
S14 Conduct plant or vehicle checks	The apprentice should be able to use their portfolio to: • provide evidence of vehicle and/or plant checks they have carried out e.g. copies of check lists, inspection records

Task 4: Working on the highway and location and avoidance of utilities	Amplification and guidance (where required)
New Roads and Street Works Act and access to private land, streets and wayleaves	
K52 New Roads and Street Works Act (NRSWA): signing, lighting, and guarding. Safe excavation	The apprentice should be able to: • discuss activities they have carried out, which have taken into account impacts on public highways, footpaths • recognise organisations which may be impacted by a failure to prepare vehicle/plant access and egress safely and effectively
K53 Access to private land, streets, and wayleaves permissions	The apprentice should be able to: • describe the importance of ensuring that the work activity being carried out has been legally accepted/agreed by land owners and any third parties and the implications of any permissions required not being granted when a project is started
Location and avoidance of utilities	
K54 Methods for locating and avoiding utilities. Avoiding danger from underground services and overhead exposed conductors. The health and safety executive guidance and requirements: HSG 47 (Avoiding danger from underground services)	The apprentice should be able to: • describe the company process and equipment used for the location and avoidance of underground utilities in line with HSE Guidance • describe the basic requirements and precautions of HSG 47

Task 4: Working on the highway and location and avoidance of utilities	Amplification and guidance (where required)
and GS6 (Avoiding danger from overhead power lines)	• describe the method for identifying overhead exposed conductors and the company procedure to follow when identified • describe the basic requirements and precautions of GS6

Substation fitter - transmission maintenance

Task 4: Vehicle and plant checks	Amplification and guidance (where required)
K15 Plant and vehicle check requirements	The apprentice should be able to: • identify the items to examine when conducting checks on their vehicle e.g. tyre condition, fluid levels • identify the items to examine when inspecting plant they use • e.g. hydraulic compressors, plant trailers, Mobile Elevated Work Platforms (MEWPs) • describe the signs/information they look for when examining their vehicle and items of plant before use
S14 Conduct plant or vehicle checks	The apprentice should be able to use their portfolio to:

Task 4: Vehicle and plant checks	Amplification and guidance (where required)
	• provide evidence of vehicle and/or plant checks they have carried out e.g. copies of check lists, inspection records

Substation fitter - construction

Task 4: Vehicle and plant checks and location and avoidance of utilities	Amplification and guidance (where required)
Plant or vehicle checks	
K15 Plant and vehicle check requirements	The apprentice should be able to: • identify the items to examine when conducting checks on their vehicle e.g. tyre condition, fluid levels • identify the items to examine when inspecting plant they use • e.g. hydraulic compressors, plant trailers, Mobile Elevated Work Platforms (MEWPs) • describe the signs/information they look for when examining their vehicle and items of plant before use
S14 Conduct plant or vehicle checks	The apprentice should be able to use their portfolio to:

Task 4: Vehicle and plant checks and location and avoidance of utilities	Amplification and guidance (where required)
	• provide evidence of vehicle and/or plant checks they have carried out e.g. copies of check lists, inspection records
Vehicle marshalling requirements	
K80 Vehicle marshalling requirements and limits of role	The apprentice should be able to: • demonstrate how they help ensure vehicle movements are conducted safely and efficiently, minimising the risk of accidents
Location and avoidance of utilities	
K79 Methods for locating and avoiding utilities. Avoiding danger from underground services and overhead exposed conductors. The health and safety executive guidance and requirements: HSG 47 (Avoiding danger from underground services) and GS6 (Avoiding danger from overhead power lines)	The apprentice should be able to: • describe the company process and equipment used for the location and avoidance of underground utilities in line with HSE Guidance • describe the basic requirements and precautions of HSG 47 • describe the method for identifying overhead exposed conductors and the company procedure to follow when identified • describe the basic requirements and precautions of GS6

Interview based an EPA portfolio roles and responsibilities

Role	Responsibility
Independent Assessor	Record and report assessment outcome decisions for each apprentice, following instructions and using assessment recording documentation provided by EUIAS.
Employer/Training Provider	The interview must be scheduled with EUIAS for a date and time which allow the apprentice to be well prepared. Ensure the apprentice has access to their portfolio before and on the day of the interview.
EUIAS	Arrange for the interview to take place, in consultation with the employer/training provider and independent assessor.

Component 3: Trade test practical assessment with questions

Overview

Apprentices who have successfully completed and passed:

- the multiple-choice test
- the interview based on an EPA portfolio

will move onto completing the trade test practical with questions and trade test technical interview.

An employer assessor will conduct and assess the trade test practical assessment with questions. The employer assessor observes the apprentice completing a task or series of tasks set by their employer and asks questions. The employer must use a simulated environment for the trade test practical with questions. The assessment environment must closely relate to the apprentice's natural working environment. The assessment must be designed to meet the requirements of the PISF Standard – Level 3.

Photographic records of each apprentice's outputs must be taken and retained as evidence, along with records of assessment documentation and any relevant supplementary questioning and the answers given during the test. The employer assessor conducting the assessment:

- must remain in visual contact with the apprentice throughout the trade test assessment
- will ask knowledge questions where competence is not confirmed through observation of natural performance and a record made of the event where relevant

The test will be awarded a fail, pass or distinction.

The trade test will be based on the trade test requirements and criteria set out in the PISF Assessment Plan.

The employer must produce the following materials to support the trade test practical assessment with questions:

- employer assessor assessment materials which include:
  - training materials
  - administration materials
  - guidance materials
  - grading guidance
  - question bank
- EPA guidance for the apprentice and their manager

The employer must be aware that the EPA materials are subject to quality assurance procedures including standardisation and moderation by EUIAS.

Trade test mapping summaries for each pathway are provided in PISF Supporting Documents:

- Appendix C, 'Trade Test Practical Assessment Requirements and Mapping Form

Each employer/provider must submit their trade test(s) to EUIAS in advance of the testing process for standardisation and approval.

Step-by-Step Guide

The table below provides a step-by-step guide on how the trade test practical assessment with questions will be carried out:

Assessors	1 employer assessor, approved by EUIAS. As a minimum the employer assessor will have recent relevant experience of the occupation or sector to at least occupational level 3 gained in the last 3 years or significant experience of the occupation or sector
Practical structure	The trade test practical with questions must take 30 - 37.5 hours. The trade test practical may take place in parts but must be completed over no more than 21 working days. A working day is typically considered to be 7.5 hours long. The reason for this split is the apprentice will need to complete several tasks, which may require work on different apparatus. The ratio of employer assessors to apprentices will comply with the employer's trade test assessment specification. The employer assessor must explain to the apprentice the format and timescales of the trade test practical assessment with questions tasks before they start. This does not count towards the assessment time. The employer assessor will ask standardised open questions from the employer's question bank (or create their own questions in line with EUIAS' training). Follow up questions may be asked as appropriate, to confirm their understanding of the rationale for actions taken and the choices made to complete the tasks. There may be breaks during the trade test practical assessment to allow the apprentice to move from one location to another and for meal/comfort breaks. During these breaks, the clock will be stopped and then restarted to ensure that the assessment duration is not reduced.

	The employer must manage invigilation of the apprentice during the assessment, to maintain security of the EPA, in line with their malpractice policy.
Where will the assessment take place?	The trade test practical with questions must be conducted in a simulated environment selected by the employer which reflects the apprentice's natural work environment.
What are the tasks that will be covered?	The apprentice will undertake the following activities: **Core** • prepare for power substation fitter activities • organise and supervise a working party including receiving and clearing a safety document, and briefing a working party • maintain work site health, safety, and environmental compliance including completing a risk assessment • identify apparatus to be worked on • select, prepare, use, and store tools and equipment • complete work records **Distribution maintenance** • use maintenance specifications • electrical testing • circuit breaker maintenance • battery maintenance • inspection and monitoring of substation equipment • switching operations **Transmission maintenance** • use maintenance specifications • use elevated work platforms • electrical testing • circuit breaker maintenance **Construction** • use engineering representations, drawings, and graphical information

	• follow construction safety requirements • install new substation equipment including positioning of a transformer and locating and fixing high voltage switchgear • install earthing associated with substations • install and terminate multi-core cables and containment systems • conduct testing on installed equipment

Who sets the task(s)?	The employer must develop a purpose-built assessment specification and question bank.
	
	The employer sets the task(s) based on their trade test assessment specification and guidance provided in this Specification.
	
	The employer must ensure that the EPA materials are subject to quality assurance procedures including standardisation and moderation by EUIAS.
	
	The employer must produce the following materials to support the trade test practical with questions:
	
	• employer assessor assessment materials which include:
	  ○ training materials
	  ○ administration materials
	  ○ guidance materials
	  ○ grading guidance
	  ○ question bank
	• EPA guidance for the apprentice and their manager.
	
	The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

What resources	Equipment and resources needed for the observation must be: • provided by the employer

can the apprentice use?	• a suitable premises • the plant, machinery, equipment and PPE required for the job • in good and safe working condition Relevant work instructions/manuals must be available in hard copy or electronically.
How many questions will the apprentice be asked?	The employer assessor: • will ask at least 9 standardised open questions to assess the related underpinning knowledge • may ask follow-up questions in order to seek clarification.
What will the questions focus on?	The purpose of the questioning is to assess the apprentice's level of competence against the grading descriptors.
Grading	Fail, Pass or Distinction. If an apprentice fails a task or tasks in the trade test practical with questions, the apprentice must re-sit or re-take the assessment method in full and not just re-sit or re-take a failed task or tasks.

Trade test practical assessment with questions knowledge, skills and behaviours (KSBs) coverage

The trade test practical assessment with questions covers:

Substation fitter - core

Trade Test Theme: Prepare for substation fitter activities	Amplification and guidance (where required)
K22: Planning, prioritising, organisation, and time management techniques for self and working party.	The apprentice should be able to demonstrate: • how they have planned their substation fitting activities which could include check lists for preparation, risk assessments of the work area, Substation site, plant drawings, written notes of planned activities • how they have prioritised the activities in their preparation to ensure the planned operations run smoothly and meet the required timescales • how they have taken into consideration how their work will affect others and the actions they can take to ensure all affected parties are informed and prepared e.g. other employees, members of the public • the safety precautions they have planned to allow substation/plant maintenance operations to commence e.g. safe access, egress, live equipment recognition, relevant tools, test equipment, person in attendance

Trade Test Theme: Prepare for substation fitter activities	Amplification and guidance (where required)
	• how the planning requirements for low voltage operations and high voltage operations differ e.g. receipt of safety documents, use of tools and equipment
S1: Review drawings, instructions, or information to understand the task for example, work instructions, design specifications, utility plans, on-line search documents.	The apprentice should be able to demonstrate their ability to: • identify differing types of plant and switchgear, interpret network diagrams to identify apparatus types and plant/switchgear positions e.g. schematics, network mains records • interpret substation layout diagrams to identify critical components, measurements and safety clearance zones e.g. plant and switchgear manufacturers specifications, company substation operations manual • use company online systems to identify substation locations, plant and switchgear types, associated network apparatus • interpret work/job instruction sheets to identify the work to be conducted and any restrictions
S2: Prioritise and plan tasks with consideration for safety, environmental impact, quality, and cost.	The apprentice should be able to demonstrate their ability to: • plan and organise their work to achieve the most effective and efficient outcome in terms of the resources required by themselves

Trade Test Theme: Prepare for substation fitter activities	Amplification and guidance (where required)
	and their working party e.g. time, cost, people, materials, plant and equipment • assess the safety requirements for the work to be conducted by themselves and their working party and have a clear plan to implement a safe system of work • describe the company's justification for conducting live working activities within the substation environment e.g. approved procedures, safety rules, competent persons, suitable conditions, approved tools and equipment • consider and identify the environmental impact of their planned work and have a clear plan to minimise the impact to an acceptable company level e.g. noise, fumes, waste products • develop a plan of work to conduct their live working activities in a logical step by step process which meets the company specification requirements and allows for checking of the final work specification
S3: Identify and organise resources to complete tasks for example, consumables.	The apprentice should be able to demonstrate their ability to: • identify the range of resources required to complete their planned substation fitting activities

Trade Test Theme: Prepare for substation fitter activities	Amplification and guidance (where required)
	• follow company processes involved for organising the range of resources required e.g. materials, people, plant, equipment • organise resources to be available at the time of need for the work to be conducted
S18: Select, check, and prepare resources.	The apprentice should be able to demonstrate: • the process(es) they go through to identify resources required to complete their planned substation fitting activities, including how they check and prepare for their use

Trade Test Theme: Organise and supervise a working party	Amplification and guidance (where required)
S5: Receive and clear a safety document. Brief a working party.	The apprentice should be able to demonstrate their ability to: • interpret the content of the safety document issued to them and identify the safety precautions specified • carry out their responsibilities when taking receipt of a safety document for work on the network • brief their working party on the content of the safety document and answer and confirm it has been understood • answer any questions in relation to the safety document and confirm their response has been understood • clear the issued safety document on completion of the work confirming all necessary requirements are in place
B3: Take ownership for work and responsibility for its impact on others. For example, self-motivated, disciplined in the approach to work tasks, identify and deal appropriately with distractions to enable tasks to be achieved, work carried out in line with standards.	The apprentice should be able to demonstrate their ability to: • take ownership of the work being conducted and the associated work area, by maintaining site safety and monitoring the site conditions and work of others on site • provide guidance to their working party where required and ensure work progresses in a safe and efficient manner

Trade Test Theme: Organise and supervise a working party	Amplification and guidance (where required)
	• ensure the work is conducted in an efficient manner without distractions and meets the required company standards and specifications

Trade Test Theme: Maintain work site health, safety, and environment compliance	Amplification and guidance (where required)
K7: The hazards associated with work on or near electrical power networks.	The apprentice should be able to demonstrate an understanding of: • the hazards associated when working within an electrical substation where activities are to be carried out on or near electrical plant • the actions required to identify these hazards
K10: Risk assessments and method statements. Emergency procedures. Personal protective equipment (PPE). Manual handling. Fire safety.	The apprentice should be able to demonstrate an understanding of: • the purpose and method of conducting an on-site risk assessment and the company process for recording the findings • the purpose and usage of company method statements and the type of information they contain

Trade Test Theme: Maintain work site health, safety, and environment compliance	Amplification and guidance (where required)
	• the company's emergency procedures in the event of an incident on site e.g. electric shock, flashover, unauthorised site access by a third party, oil containment breach • the company procedure for the inspection and usage of their personal protective equipment used for substation fitting activities e.g. live working gloves, face and eye protection, insulated tools • the safe application of manual handling techniques e.g. assess the load, TILE (Task, Individual, Load, Environment), two man lift • the precautions to take to minimise the risk of fire on site and the actions to take in the event of fire
K19: Recycling and waste transfer requirements.	The apprentice should be able to demonstrate an understanding of: • the company's process for the control of hazardous and non - hazardous substation fitting activities waste on-site e.g. oil, asbestos, protective coatings, cable terminations - compound/resins • the company's process for the recycling of general substation related waste e.g. replaced/refurbished plant and equipment, recovered cable and conductors, busbar fittings, busbars, various plant and switchgear components

Trade Test Theme: Maintain work site health, safety, and environment compliance	Amplification and guidance (where required)
K37: Hazards and controls for access and egress of operational substation sites: security, pre-entry checks, logging in requirements, automatic or remotely operated equipment, and fire suppression systems.	The apprentice should be able to demonstrate an understanding of: • the company's process for identifying and evaluating the full extent of the risks presented when accessing or exiting and/or working at an electrical substation site • how they consider the health and safety of colleagues and third parties alike - Working Party considerations • an awareness of security and the process for notifying any breaches • the company policy and procedure for entry to a substation site and the logging-in requirements of a Working Party • the process for reporting operational site hazards
S6: Follow substation access and egress procedures.	The apprentice should be able to demonstrate: • evidence of liaison with relevant company Network Control department to ensure clearance for safe access/egress • completed site safety access related documentation

Trade Test Theme: Maintain work site health, safety, and environment compliance	Amplification and guidance (where required)
S7: Identify hazards and risks and apply control measures.	The apprentice should be able to demonstrate their ability to: • conduct an on-site risk assessment in a safe and controlled manner, identifying hazards and gauging the risk to implement appropriate control measures • record their findings in a clear and appropriate manner in line with company procedures and requirements • monitor and maintain site safety conditions and adjust their risk assessment control measures if the substation site conditions change
S8: Apply health and safety procedures in compliance with regulations, standards, and guidance. For example, demarcate the work area, working at height, confined spaces, COSHH.	The apprentice should be able to demonstrate their ability to: • apply the relevant health and safety procedures throughout the duration of their substation fitting activities work which meet the required company and regulatory requirements • be aware of others on site and how their own work or the work of others may impact the working conditions and require additional safety measures e.g. setting out demarcated safe work areas/zones

Trade Test Theme: Maintain work site health, safety, and environment compliance	Amplification and guidance (where required)
S10: Apply measures to leave power work environments in a safe condition.	The apprentice should be able to demonstrate their ability to: • leave their work area in a safe condition on completion of their activities e.g. removal of tripping hazards, tools, waste material, signing, lighting and guarding, reinstatement of trench covers, ensure plant/switchgear is kept in a stable state
S13: Segregate waste for reuse, recycling, and waste transfer.	The apprentice should be able to demonstrate their ability to segregate their waste: • for re use/recycling and transfer in line with company procedures e.g. recovered plant and switchgear and any associated fittings • into hazardous and non-hazardous for transfer and disposal in line with company procedures e.g. oil, asbestos, resin/bitumen
B1: Prioritise health and safety. For example, risk aware, minimise risks, and proactively work towards preventing accidents.	The apprentice should be able to demonstrate their ability to: • take a proactive approach to identifying hazards and maintaining the safety of themselves and others on site e.g. toolbox talks, working party 'sign on' procedure, regular monitoring and checking of site conditions

Trade Test Theme: Identify apparatus	Amplification and guidance (where required)
S4: Identify apparatus to be worked on.	The apprentice should be able to demonstrate their ability to: • use substation plans and schematic/network diagrams to identify the plant and apparatus to be worked on in line with work instructions and associated company procedures • use appropriate equipment to identify the correct apparatus to be worked on in line with company policy and procedures

Trade Test Theme: Tools and equipment	Amplification and guidance (where required)
K23: Hand tools and power tools application and operation requirements. Insulated tools - selection and care considerations.	The apprentice should be able to demonstrate an understanding of: • considerations for the correct use of any insulated tools and the inspection procedure to confirm that all tools are fit for purpose • the considerations taken for selection, use and care of the appropriate tools the use for their substation fitter role in line with company policy and procedures • methods of reporting any defects found and 'do not use' • cleaning methods and appropriate storage
S17: Select, check, prepare, use, and store hand tools and power tools.	The apprentice should be able to demonstrate their ability to:

Trade Test Theme: Tools and equipment	Amplification and guidance (where required)
	• select, inspect and use the correct tools and equipment for their substation fitting activities in a methodical manner in line with the company procedures and method statements • note aspects of the visual inspection process, highlighting cracks, nicks, cuts • clean and store their personal tools and equipment in an appropriate manner to maintain their condition for future use

Trade Test Theme: Complete work records	Amplification and guidance (where required)
K25: Documentation requirements; importance of accurate records.	The apprentice should be able to demonstrate an understanding of: • the range of documentation and company systems used to plan and organise work within the substation environment e.g. job instructions, risk assessments/method statements • the types and requirements of safety documentation used for work within the substation environment and on associate plant/switchgear e.g. risk assessments/method statements, permit to work, limitation of access, sanction for test

Trade Test Theme: Complete work records	Amplification and guidance (where required)
	• the requirements and process used to record post work substation fitting activities e.g. plan updates, maintenance records, network amendments
S23: Record information.	The apprentice should be able to demonstrate their ability to: • carry out and record risk assessment information in line company procedures • record new plant/switchgear installation test results and asset details e.g. apparatus type, serial numbers, earthing arrangements • record apparatus locations, noting any associated test results and measurements for asset data records • ensure that all asset identification data from work being carried out is recorded accurately on appropriate company databases

Substation fitter - distribution maintenance

Trade Test Theme: Use maintenance specifications	Amplification and guidance (where required)
S27: Read, interpret, and follow maintenance specifications.	The apprentice should be able to demonstrate their ability to: • deliver appropriate substation fitting maintenance in a methodical, safe manner and their ability to interpret appropriate work instructions • relate the work detail to company policy and procedures and any manufacturers recommendations to ensure the safety, integrity and longevity of the equipment/network being worked on

Trade Test Theme: Electrical testing	Amplification and guidance (where required)
K43: Electrical testing requirements and methods: continuity and polarity of circuits, insulation resistance, Voltage, Earth Fault Loop Impedance (EFLI), phase rotation, and joint or contact resistance.	The apprentice should be able to demonstrate an understanding of: • the range of company approved test methods to carry out appropriate testing procedures, referencing and understanding safety critical documentation, e.g. Sanctions for Test, Permits to Work • appropriate safe systems of work and method statements in line with company policy and procedures

Trade Test Theme: Electrical testing	Amplification and guidance (where required)
	• the range of correct personal protective equipment for carrying out electrical testing procedures • the need to understand technical information, interpret operational procedures and test requirements • an awareness of their own limitations and know when to request assistance - referencing appropriate competence and authorisations • recording testing data in appropriate company format
S28: Conduct diagnostic testing to identify asset condition; identify action.	The apprentice should be able to: • conduct appropriate safe diagnostic testing using appropriate equipment in conjunction with company operational policy and procedures • record test results and make recommendations for remedial action in appropriate company database
S29: Conduct continuity testing using a continuity test instrument or multimeter.	The apprentice should be able to: • carry out safe continuity testing using appropriate company approved equipment in conjunction with company operational policy and procedures • record test results in appropriate company database

Trade Test Theme: Electrical testing	Amplification and guidance (where required)
S30: Conduct joint or contact resistance testing using a contact resistance tester (ductor).	• carry out safe resistance testing using appropriate Ductor equipment in conjunction with company operational policy and procedures • record test results in appropriate company database
S31: Conduct insulation testing using an insulation test instrument.	The apprentice should be able to: • carry out safe insulation testing using appropriate company approved equipment in conjunction with company operational policy and procedures • record test results in appropriate company database
S46: Conduct supply checks of a low voltage single and three phase supply to identify: correct polarity, voltage, earth fault loop impedance and phase rotation.	The apprentice should be able to: • carry out safe LV supply testing using appropriate company approved equipment in conjunction with company operational policy and procedures • record test results in appropriate company database
S47: Use electrical test instruments to diagnose a fault condition on low voltage distribution or control equipment for example open circuit, blown fuse, short circuit or out phase condition.	The apprentice should be able to: • carry out safe fault condition testing using appropriate company approved equipment in conjunction with company operational policy and procedures • record test results in appropriate company database

Trade Test Theme: Circuit breaker maintenance	Amplification and guidance (where required)
K44: Insulating oil sampling methods: sample taps and sample tubes and their requirements.	The apprentice should be able to demonstrate an understanding of: • the relevant risk assessment/method statement process • appropriate personal protective equipment required for the sampling process • safety critical working procedure • environmental work process risk e.g. COSHH • the process for taking oil samples and the equipment required, in conjunction with company policy and test company guidelines e.g. clean environment, contamination free equipment • the test records and data collection process
K47: Post fault and routine maintenance of oil filled circuit breakers requirements.	The apprentice should be able to demonstrate an understanding of: • the company post fault maintenance policy and the need for managing engineering asset related risks • the level of maintenance required following both a network fault and routine maintenance, in line with company policy and procedures, manufacturers recommendations

Trade Test Theme: Circuit breaker maintenance	Amplification and guidance (where required)
S32: Conduct circuit breaker timing tests.	The apprentice should be able to: • conduct appropriate safe testing procedures in line with company policy and procedures, manufacturers recommendations
S33: Set up oil pumping equipment.	The apprentice should be able to demonstrate: • appropriate equipment set up in line with company policy and procedures, manufacturers recommendations
S34: Remove and replace insulating oil from substation plant avoiding contamination.	The apprentice should be able to: • conduct appropriate testing in line with company policy and procedures, manufacturers recommendations • demonstrate methodical process for ensuring contamination free sampling is successful • refer to relevant COSHH related regulations and the processes for managing related risks
S35: Clean oil filled equipment following removal of insulating oil.	The apprentice should be able to demonstrate: • oil sample equipment cleaning process in line with company policy and procedures, manufacturers recommendations
S36: Check circuit breaker contact condition; remove and replace or dress.	The apprentice should be able to:

Trade Test Theme: Circuit breaker maintenance	Amplification and guidance (where required)
	• demonstrate appropriate circuit breaker maintenance processes in line with company policy and procedures, manufacturers recommendations • refer to relevant COSHH related regulations regarding use of any cleaning fluids/materials and the processes for managing related risks
S37: Take oil samples from equipment.	The apprentice should be able to: • conduct appropriate testing processes in line with company policy and procedures, manufacturers recommendations • refer to relevant COSHH related regulations and the processes for managing related risks
S38: Clean and lubricate operating mechanisms using approved lubricants.	The apprentice should be able to: • demonstrate appropriate safe maintenance processes in line with company policy and procedures, manufacturers recommendations • refer to relevant COSHH related regulations and the processes for managing related risks
S39: Adjust, remove, and replace components for example, gaskets.	The apprentice should be able to: • demonstrate appropriate safe maintenance processes in line with company policy and procedures, manufacturers recommendations

Trade Test Theme: Battery maintenance	Amplification and guidance (where required)
K49: Substation battery maintenance and testing requirements: wet cell and dry (sealed) battery types.	The apprentice should be able to demonstrate an understanding of: • appropriate substation battery maintenance requirements in line with company policy and procedures, manufacturers recommendations • the techniques used to carry out maintenance and testing on different types of substation battery systems • the relevant PPE and safety requirements whilst carrying out substation battery maintenance/testing
S44: Check battery connections for any damage, clean cells, check monitoring alarms, check function of charging equipment.	The apprentice should be able to: • conduct appropriate maintenance and testing processes in line with company policy and procedures, manufacturers recommendations • wear appropriate PPE for carrying out battery testing/maintenance
S45: Test substation batteries using voltage and analytical testing instruments.	The apprentice should be able to: • conduct appropriate maintenance and testing using company approved testing equipment in line with company policy and procedures, manufacturers recommendations • wear appropriate PPE for carrying out battery testing/maintenance

Trade Test Theme: Inspection and monitoring of substation equipment	Amplification and guidance (where required)
K45: Requirements for inspection, monitoring and condition assessment of equipment in distribution secondary or primary substation types.	The apprentice should be able to demonstrate an understanding of: • the range of inspection, monitoring and condition assessment requirements of plant, switchgear and other equipment in line with company policy and procedures, manufacturers recommendations • the identification process for substation building requirements with regards to humidity, temperature, pollution, dust and ventilation impacts on plant/switchgear/equipment • the need for recognising differing substation asset inspections processes such as routine, safety, security, functional testing • the process for ensuring condition inspection detail is recorded in appropriate company databases • site/equipment risk rating considerations and importance of ESQCR and COSHH Regulations
S40: Conduct functional tests of equipment - post maintenance or routine.	The apprentice should be able to: • carry out a range of functional testing on miscellaneous plant, switchgear and ancillary equipment, following company's inspection and maintenance policy

Trade Test Theme: Inspection and monitoring of substation equipment	Amplification and guidance (where required)
	• record all test results in appropriate company inspections and maintenance databases
S41: Inspect substation site, buildings and equipment including steelwork and neutral earthing conductors and connections and identify defects.	The apprentice should be able to: • demonstrate carrying out general inspection of substation infrastructure, checking condition of the buildings and miscellaneous asset components, highlighting flashovers, physical damage or deterioration, water ingress, trench covers broken/missing, oil spills and leaks. Also considers aspects such as fire protection equipment • record and demonstrate the reporting process for substation inspection, including aspects such as vandal damage, security breaches • ensure firefighting equipment/devices are fit for purpose and within their test date • recognise excessive stanchion steelwork deterioration and record condition in line with relevant company policy and procedures

Trade Test Theme: Switching operations	Amplification and guidance (where required)
K56: Low voltage and high voltage operational switching and testing requirements.	The apprentice should be able to demonstrate an understanding of: • the company's operational policy for switching and testing operations • the purpose and methods used for carrying out a range of low and high voltage switching and testing operations of a range of plant, switchgear and ancillary components • their understanding of the range of safety arrangements and PPE required to carry out switching and testing operations • the types and requirements of safety documentation and compliance with operational safety procedures including associated documentation e.g. Permit to Work, Sanction for Test
S48: Interpret network schematic diagrams and geographic records to identify running arrangements prior to operation.	The apprentice should be able to: • interpret substation plant and equipment symbols from operational diagrams/records, ensuring current running arrangements are as per network diagrams • demonstrate how to identify a range of substation plant and switchgear in conjunction with network schematic/geographic diagrams

Trade Test Theme: Switching operations	Amplification and guidance (where required)
S49: Prepare low voltage or high voltage switching operation schedules.	The apprentice should be able to demonstrate: • completion of low/high voltage switching schedules in line with company safe operational policy and procedures
S50: Operate network switching equipment such as switches, circuit breakers, links or fuses on low voltage or high voltage distribution networks.	The apprentice should be able to: • carry out safety checks prior to switching operations • wear suitable PPE for carrying out switching operations • operate designated plant and apparatus under supervision of suitably authorised company personnel • carry out a range of switching operations on low/high voltage network equipment, in line with company policy, procedures and safety rules • record switching operations in line with company policy

Substation fitter – transmission maintenance

Trade Test Theme: Use maintenance specifications	Amplification and guidance (where required)
S51: Read, interpret, and follow maintenance specifications.	The apprentice should be able to demonstrate their ability to: • deliver appropriate substation fitting maintenance in a methodical, safe manner and their ability to interpret appropriate work instructions • relate the work detail in line with company policy and procedures and any manufacturers recommendations to ensure the safety, integrity and longevity of the equipment/network being worked on • note any equipment anomalies and report in an approved manner

Trade Test Theme: Use elevated work platforms	Amplification and guidance (where required)
S53: Use mobile elevated work platforms.	The apprentice should be able to: • demonstrate the risk assessment/method statement process, taking into consideration any safety distance/clearance implications, demarcated safe working zones, siting of the MEWP on acceptable ground • follow company process for consideration of access/egress of MEWPs

Trade Test Theme: Use elevated work platforms	Amplification and guidance (where required)
	• demonstrate the process for applying suitable supervision whilst a MEWP is on site - including issuing appropriate safety documentation • carry out safety checks required of both MEWP and personal protective equipment • demonstrate consideration of environmental risk management process e.g. loss of hydraulic fluid from MEWP • follow company policy for ensuring safe earthing of MEWPs within an operational substation environment

Trade Test Theme: Electrical testing	Amplification and guidance (where required)
K57: Electrical testing requirements and methods: continuity, voltage, and joint or contact resistance.	The apprentice should be able to demonstrate an understanding of: • the range of electrical testing procedures that may be required on a range of substation plant, switchgear and ancillary equipment • the expected results from the range of testing procedures when conducted on healthy and faulted substation plant and switchgear • the parameters of acceptable expected results and permitted tolerances of post energisation testing procedures e.g. voltage, phase rotation, circuit continuity

Trade Test Theme: Electrical testing	Amplification and guidance (where required)
K66: Restoring power procedures.	The apprentice should be able to demonstrate an understanding of: • the process for ensuring safe, compliant power restoration procedures in conjunction with company policy and procedures • the safe working practices to be considered during power restoration procedures • the range of PPE required for carrying out power restoration procedures
S52: Interpret network schematic diagrams prior to carrying out testing activities.	The apprentice should be able to: • interpret substation plant and equipment symbols from operational diagrams/records • demonstrate how to identify a range of substation plant and switchgear • follow company safe pre-testing procedures in conjunction with appropriate policy and standards
S54: Use diagnostic equipment to identify asset condition; identify action.	The apprentice should be able to: • conduct appropriate safe diagnostic testing using appropriate equipment in conjunction with company operational policy and procedures

Trade Test Theme: Electrical testing	Amplification and guidance (where required)
	• record test results and make recommendations for remedial action in appropriate company database
S55: Conduct testing using a continuity test instrument or multimeter.	The apprentice should be able to: • carry out safe continuity testing using appropriate equipment in conjunction with company operational policy and procedures • record test results in appropriate company database
S56: Conduct resistance testing using a contact resistance tester (ductor).	The apprentice should be able to: • carry out safe resistance testing using appropriate Ductor equipment in conjunction with company operational policy and procedures • record test results in appropriate company database
S57: Conduct circuit breaker timing tests.	The apprentice should be able to: • carry out safe circuit breaker timer tests in conjunction with company operational policy and procedures • record test results in appropriate company database
S69: Restore power.	The apprentice should be able to: • carry out safe power restoration processes in conjunction with company operational policy and procedures

Trade Test Theme: Circuit breaker maintenance	Amplification and guidance (where required)
K59: Use and operation of mechanical fixings.	The apprentice should be able to demonstrate an understanding of: • the range of mechanical fixings used within the substation fitting environment and the appropriate use and operation of these components in conjunction with company policies, procedures and manufacturers recommendations • factors such as torque settings, safe working loads, failure mode analysis, corrosion prevention
K62: Maintenance processes for circuit breakers.	The apprentice should be able to demonstrate an understanding of: • circuit breaker maintenance processes utilising detail from company policies and procedures
S62: Take insulation medium samples from equipment for example, oil, SF6.	The apprentice should be able to: • demonstrate the processes used for taking insulation medium samples • take into consideration the environmental implications during this process e.g. COSHH • follow safe procedures to conduct various insulation sampling • demonstrate use of appropriate PPE during sampling procedures

Trade Test Theme: Circuit breaker maintenance	Amplification and guidance (where required)
S63: Clean and lubricate operating mechanisms using approved lubricants.	The apprentice should be able to: • demonstrate the processes used for cleaning and lubricating varied operating mechanisms • take into consideration the environmental implications during this process e.g. COSHH • follow safe procedures to conduct various insulation sampling • demonstrate use of appropriate PPE during cleaning/lubrication procedures
S64: Adjust or replace components.	The apprentice should be able to: • demonstrate varied equipment adjustment or replacement processes in conjunction with company policies and procedures
S65: Conduct functional tests of equipment, post maintenance or routine, to confirm operating to expected parameters.	The apprentice should be able to: • carry out a range of functional testing on miscellaneous plant, switchgear and ancillary equipment, following the company's inspection and maintenance policy • record all test results in appropriate company asset related inspections and maintenance databases

Trade Test Theme: Circuit breaker maintenance	Amplification and guidance (where required)
S66: Conduct a visual inspection of transmission steelwork earthing connections; identify issues.	The apprentice should be able to: • demonstrate carrying out general inspection of substation steelwork and earthing connection infrastructure, checking condition and demonstrating the reporting process • recognise excessive stanchion/tower steelwork earthing degradation and record condition in line with company policy and procedures

Substation fitter – construction

Trade Test Theme: Use engineering representations, drawings, and graphical information	Amplification and guidance (where required)
K67: Construction. Engineering representations, drawings, and graphical information: application and importance.	The apprentice should be able to demonstrate an understanding of: • how they interpret a variety of graphical information in the course of their substation construction fitting work • the process for highlighting safety critical information and appropriate company reporting procedure
S73: Read, interpret, and follow representations, drawings, and graphical information to complete tasks. For example, multicore diagrams, schematics, and core sheets.	The apprentice should be able to: • demonstrate how they interpret a variety of graphical information in the course of their substation construction fitting work • highlight safety critical information, including deciphering detailed construction related data

Trade Test Theme: Follow construction safety requirements	Amplification and guidance (where required)
K75: Lifting operations – rigging and slinging.	The apprentice should be able to demonstrate an understanding of: • appropriate health and safety guidance regarding lifting operations, e.g. LOLER and PUWER (Lifting Operations and Lifting Equipment Regs, The Provision and Use of Work Equipment Regulations) • the importance of safe working loads
S74: Prove plant, equipment, cabling, and system is safe to work on. For example, prove dead, isolate.	The apprentice should be able to: • demonstrate the safe procedures for ensuring the plant, equipment, electrical system is safe to work on • follow the relevant company safety rules, ensuring compliance • interpret instructions from relevant safety documentation for carrying out work on the system • use appropriate PPE whilst carrying out safe work practices
S75: Check earthing is in place. For example, additional earths, equipment earths, and drain earths.	The apprentice should be able to demonstrate: • compliance with company earthing policy and procedures
S76: Follow lifting plan.	The apprentice should be able to demonstrate:

Trade Test Theme: Follow construction safety requirements	Amplification and guidance (where required)
	• compliance with various appropriate health and safety guidance including LOLER and PUWER (Lifting Operations and Lifting Equipment Regs 1998, The Provision and Use of Work Equipment Regulations 1998) • appropriate risk assessments and method statements, including manual handling considerations

Trade Test Theme: Install new substation equipment	Amplification and guidance (where required)
K73: Fixing systems: unistrut, rawl bolts, chemical fixing anchors and proof loading, shims, and grouting for base plates.	The apprentice should be able to demonstrate an understanding of: • the range of documentation and associated company safe working procedures for the utilisation of varied fixing systems for substation assets
S79: Locate and fix high voltage switchgear.	The apprentice should be able to: • demonstrate locating high voltage switchgear in corporation with appropriate company work instructions • carry out a range of high voltage switchgear fixing procedures

Trade Test Theme: Install new substation equipment	Amplification and guidance (where required)
	• use appropriate and approved tools and PPE to carry out work

Trade Test Theme: Install earthing associated with substations	Amplification and guidance (where required)
K68: Commercial gas: storage, transportation, and safe use.	The apprentice should be able to demonstrate an understanding of: • appropriate commercial gas transportation, storage and safe use safety requirements in conjunction with company policy and procedures • an awareness of appropriate inspection procedures
K72: System earthing requirements: selection of materials and equipment for above and below ground earthing systems, installation, mechanical connections, welding, and brazing.	The apprentice should be able to demonstrate an understanding of: • various company substation earthing requirements as detailed in relevant policies and procedures • the processes for ensuring effective earthing systems and varied installation • an understanding of portable earthing requirements • company earthing testing policy and procedures

Trade Test Theme: Install earthing associated with substations	Amplification and guidance (where required)
S81: Apply mechanical connections, brazing, and welding techniques.	The apprentice should be able to: • demonstrate the range of techniques for connection of a range of earthing systems • operate brazing and welding equipment within company safety policy and procedures • demonstrate safe clearance of adjacent plant, switchgear and others, whilst brazing/welding earthing systems • demonstrate compliance with risk assessments/method statements
S82: Lay and fix earth tape within excavation and to plant and equipment.	The apprentice should be able to demonstrate: • the installation of earthing systems in a substation environment, within an excavation and terminated to various plant and equipment

Trade Test Theme: Install and terminate multi-core cables and containment systems	Amplification and guidance (where required)
K70: Multi-core wiring requirements: installation, termination (glanding , looming, crimping, and ferruling), labelling and identification system.	The apprentice should be able to demonstrate an understanding of:

Trade Test Theme: Install and terminate multi-core cables and containment systems	Amplification and guidance (where required)
	• requirements of substation multi-core wiring installations in conjunction with company policy and procedures e.g. protection and control and alarm systems • installation considerations regarding route lengths, trenching, ducts, cable tray/racks • termination procedures for varied multi-core cable types • cable identification/labelling techniques
S85: Select, position, and connect multi-core wiring including glanding, looming, crimping, and ferruling. For example, panel wiring within a protection panel and switchgear. Apply labelling and identification system.	The apprentice should be able to: • demonstrate the safe installation of a multi-core cable system within an operational substation environment • demonstrate the process for earthing both ends of cable armours on all multi-core cables • conduct various multi-core cable terminations in conjunction with company and manufacturer policy and procedures • ensure labelling of cores is recorded accurately in company asset databases, wiring diagrams

Trade Test Theme: Conduct testing on installed equipment	Amplification and guidance (where required)
K76: Testing procedures: voltage, polarity, insulation resistance, three-phase testing, phase rotation, earth loop impedance, continuity, and joint resistance.	The apprentice should be able to demonstrate an understanding of: • company appropriate test methods whilst carrying out testing procedures, referencing and understanding safety critical documentation, e.g. Sanctions for Test, Permits to Work • appropriate safe systems of work and method statements in line with company policy and procedures • correct PPE for carrying out testing • technical information, interpret operational procedures and test requirements • their own limitations and know when to request assistance - referencing appropriate competence and authorisations • recording testing data in appropriate company format
K82: Mechanical testing requirements.	The apprentice should be able to demonstrate an understanding of: • relevant substation asset mechanical testing requirements and associated procedures • limitations of mechanical testing, e.g. referring to safe working loads • types of mechanical testing that may be undertaken, e.g. tensile testing, impact testing, fatigue tests, non-destructive testing

Trade Test Theme: Conduct testing on installed equipment	Amplification and guidance (where required)
K83: Oil sampling methods and requirements.	The apprentice should be able to demonstrate an understanding of: • the risk assessment/method statement process • appropriate PPE requirements • safety critical working procedure • environmental work process risk - e.g. COSHH • the process for taking oil samples and the equipment required, in conjunction with company policy and test company guidelines e.g. clean environment, contamination free equipment • test records and data collection process
S86: Use test instruments. For example, volt meters, multi-function tester, and resistance tester.	The apprentice should be able to demonstrate: • the safe use of a range of test instruments, in a methodical, safe manner, on a range of substation assets • carrying out testing and interpret the results in line with company policy and procedures • recording of test result data into appropriate company records systems

Trade Test Theme: Conduct testing on installed equipment	Amplification and guidance (where required)
S87: Conduct mechanical testing. For example, torque and proof loading.	The apprentice should be able to: • demonstrate the process for carrying out mechanical testing in conjunction with company and component manufacturer policy and procedures • show how test results of lifting equipment, or its components for example, can avert potential catastrophic legal, financial, practical, insurance and of course moral implications • establish the scope of the torque/proof load test, refer to drawings and plans to create reliant test result data in conjunction with company and manufacturer policy and processes
S88: Conduct alignment checks.	The apprentice should be able to: • demonstrate the process for carrying out asset alignment checks in conjunction with company and manufacturer recommendations • explain why alignment testing regularly on can help in early identification of misalignment and alignment-related problems, thus minimizing the risk of unplanned downtime, increased parts costs, and more frequent component replacement

Trade Test Theme: Conduct testing on installed equipment	Amplification and guidance (where required)
S89: Take oil samples for testing.	The apprentice should be able to: • conduct appropriate testing in line with company policy and procedures, manufacturers recommendations • demonstrate the processes used for taking oil samples • show awareness and consideration for environmental implications during this process e.g. COSHH • follow safe procedures to conduct sampling from various types of plant and switchgear • demonstrate use of appropriate PPE during sampling procedures
S91: Interpret test results and action as required.	The apprentice should be able to demonstrate: • an understanding of the test results gained and how they align to company inspection, test and maintenance policy and procedures • recording of test result data into appropriate company records systems

Trade test practical assessment roles and responsibilities

Role	Responsibility
Employer Assessor	Provide written and verbal instructions for the trade test practical with questions. Administer and assess the trade test practical with questions in line with their company's requirements, and EUIAS' requirements including using resources approved by EUIAS. Undertake standardisation training before conducting an EPA for the first time, when the EPA is updated, and periodically on a risk based approach. Make preliminary grading decisions for the trade test practical with questions which will be subject to EUIAS's moderation process. Record and report assessment outcome decisions to EUIAS. Comply with the IQA requirements of EUIAS.
Employer/Training Provider	Provide the venue for the trade test practical with questions which must be suitably equipped to allow the apprentice to attempt all aspects of the trade test practical with questions. Provide all necessary tools and equipment for the apprentice. Develop and produce an assessment specification, question bank, assessment materials, and assessment recording documentation for the trade test practical with questions in line with the EPA plan.

Role	Responsibility
	Confirm arrangements with EUIAS for the standardisation and approval of the trade test practical with questions, question bank, assessment materials, and assessment recording documentation. Appoint employer assessors in line with the requirements of this EPA plan. Appoint administrators, invigilators and any other roles required to facilitate the trade test practical assessment with questions. Maintain the security of the trade test practical with questions including verifying the identity of the apprentice, invigilation, and security of materials. Arrange for standardisation training for their employer assessors with EUIAS. Give EUIAS at least two weeks' notice of the date of the trade test practical with questions and trade test technical interview to enable EUIAS to schedule quality assurance. Not start any trade test practical with questions until EUIAS has confirmed that the apprentice has passed the multiple-choice test and interview based on an EPA portfolio. Maintain and apply a policy for the declaration and management of conflict of interests and independence for the trade test practical with questions.

Role	Responsibility
	Submit completed assessment documentation to EUIAS within 5 working days from the last assessment day relating to the trade test practical assessment with questions or trade test technical interview.
EUIAS	Provide information, advice, and guidance to enable an employer to develop a trade test practical with questions specification, question bank, assessment materials, and assessment recording documentation. Undertake standardisation of the employer's trade test practical assessment with questions, question bank and assessment materials before the employer conducts an assessment for the first time, and periodically on a risk-based approach. Approve the employer's assessment specification, question bank, assessment materials, and assessment recording documentation to be used by employer assessors. Confirm employers appoint employer assessors in line with the requirements of this EPA plan conduct standardisation training with employer assessors before they deliver an EPA, when the EPA is updated, and at least once a year. Conduct on-going moderation across all the employer assessors' decisions according to a sampling plan, with associated risk rating of employer assessors.

Role	Responsibility
	Confirm the grade for the trade test practical with questions through their internal quality assurance (IQA) procedures.

Component 4: Trade test technical interview

Overview

The interview allows for testing of responses where there are a range of potential answers. It is established practice in the power industry and supports regulatory requirements.

Step-by-Step Guide

The table below provides a step-by-step guide on how the trade test technical interview will be carried out:

Assessors	1 employer assessor approved by EUIAS will conduct the interview. As a minimum the employer assessor will have recent relevant experience of the occupation or sector to at least occupational level 3 gained in the last 3 years or significant experience of the occupation or sector
Interview	The employer assessor will ask at least ten questions to explore the apprentice's level of knowledge, skills and behaviours. The employer assessor must use the questions from their employer's question bank or create their own questions in line with EUIAS training. Additional follow up questions are allowed, to seek clarification. **Locations:** Employer's premises or a suitable venue for example a training provider's premises. **Time:** The trade test technical interview must last for at least 75 minutes. **The trade test technical interview will be:** • face to face or remote, as agreed • recorded in writing using the trade test technical interview record template approved by EUIAS

	• video recorded using relevant technology such as Microsoft Teams or an audio recording device • conducted under examination conditions The employer must give an apprentice 2 weeks' notice of the trade test interview.
What topics will be covered?	The purpose of the employer assessor's questions is to assess the apprentice's competence against the following themes: **Core** • role and responsibilities • electrical danger and control • working at height • asset security • insulating mediums • methods of cooling transformers • handling and transportation of insulation oil • determining insulating oil integrity **Distribution maintenance** • functional tests • jointing earthing conductors • ground mounted distribution oil filled switchgear maintenance • transformers maintenance requirements • air break disconnectors maintenance requirements **Transmission maintenance** • insulation testing • insulation medium maintenance • battery maintenance • transmission equipment maintenance • condition monitoring **Construction** • construction equipment and cabling installation

	• AC/DC (alternating current and direct current) supply power cable and power wiring installation • diagnostic fault-finding techniques • plant and equipment locking devices and interlocking systems requirements • producing wiring core sheets from wiring diagrams • replacing components • removing cabling and equipment
Grading	Fail or Pass

Trade test technical interview knowledge, skills and behaviours (KSBs) coverage

Substation fitter – core

Interview Theme: Role and responsibilities	Amplification and guidance (where required)
K4 Substation fitter roles and responsibilities. Limitations of role and escalation procedures	Apprentices should be able to describe: • the duties of a substation fitters role within their business e.g. their range of work and general conduct • their range of responsibilities in relation to the relevant company policies and procedures e.g. health and safety requirements, methods of work, environmental practices • the limitations of their role as a substation fitter e.g. levels of authority for decision making • the company processes for raising issues/seeking confirmation and raising objections when necessary
K5 Responsibilities of persons as defined in industry standard safety rules: supervising a working party, competent persons. Authorisation roles and responsibilities. Safety documentation	Apprentices should be able to: • explain operational authorisation roles and associated levels of responsibility • describe the range of operational safety documentation to carry out work in a substation environment and the processes for completion and any restrictions

Interview Theme: Role and responsibilities	Amplification and guidance (where required)
	• explain the range of control measures that are required to maintain safety from the system • Describe their approach to observing the whole of the work to be carried out and the associated work area. • explain their approach to Identifying and assessing the significant work related risks. • explain their approach to complying with a range of control measures required to prevent accident or injury.
S22 Escalate issues outside limits of responsibility	Apprentices should be able to: • provide examples of when they have raised specific issues or sought clarification with their line management to resolve work related issues e.g. unsafe substation building conditions, identified plant and switchgear integrity issues, operational network/site issues, hazardous substation structures
B4 Respond and adapt to work demands. For example, adapt working methods to reflect changes in working environment, take initiative - making on the spot decisions, re-prioritise	Apprentices should be able to: • provide examples of when they have had to adapt or change their approach to their substation fitting activities to resolve a specific issue and explain how this change allowed them to maintain safe working practices and meet the work requirements

Interview Theme: Role and responsibilities	Amplification and guidance (where required)
workloads to react to emergency response and to fault scenarios	

Interview Theme: Electrical danger - control and first aid	Amplification and guidance (where required)
K8 The dangers of electricity and how an electric shock can be received: direct contact, induced (impressed) voltage, and arcing. Electric shock emergency procedures	Apprentices should be able to: • explain the different ways an electric shock can be received and describe examples of each which are relevant to their job role as a substation fitter • describe the potential danger of secondary incidents following an electrical shock e.g. disorientation, loss of balance • describe how to assess the situation of a person receiving an electric shock before attempting to deal with the situation • describe the company procedure for removing/isolating the source of supply dependent on the situation • describe the company emergency procedure for summoning assistance and the information required when reporting the incident
K11 Emergency first aid	Apprentices should be able to:

Interview Theme: Electrical danger - control and first aid	Amplification and guidance (where required)
	• describe the company procedure for rendering emergency first aid to the victim of an electric shock • describe the different methods of treatment for different conditions e.g. unconscious or conscious casualty, no sign of life, burns • describe the actions to take while waiting for assistance to arrive dependent on the situation e.g. warn others, maintaining a safe environment
K42 Safe systems of work on high voltage and low voltage equipment to ensure safety from the inherent dangers of the system	Apprentices should be able to: • explain the roles and responsibilities of personnel who are sufficiently competent to carry out the work e.g. for issuing a safety document for the release of a HV substation plant and switchgear to be worked on • describe the company process for identifying substation plant and switchgear to be worked on e.g. substation network plans, identification methods and equipment used • explain the steps in the company procedure for making the HV substation plant and switchgear, LV switchboard and cables safe (dead, isolated and earthed) for work to be carried out

Interview Theme: Electrical danger - control and first aid	Amplification and guidance (where required)
	• explain how safety requirements and limitations of work communicated to all parties on site • describe how any changes to the planned work activities will be managed • explain the actions which can be carried out to mitigate the risk of cables/terminations on an LV switchboard becoming live from alternative sources • explain the company method used for screening the substation LV fitting work area from live equipment e.g. adjacent cables, switchboard terminations • explain the company process for carrying out live low voltage fitting activities e.g. risk assessment, site safety arrangements, live working PPE, tools, equipment and procedures
S9 Respond in the event of an emergency first aid situation including situations where there is electrical risk	Apprentices should be able to: • explain the actions they would take in the event of an emergency first aid situation e.g. assessing the situation, summoning assistance, informing others, providing first aid, ongoing site management, access and egress arrangements/restrictions

Interview Theme: Electrical danger - control and first aid	Amplification and guidance (where required)
	• provide examples of company policies and procedures relating to emergency first aid

Interview Theme: Working at height	Amplification and guidance (where required)
K12 Working at height awareness and safe use of methods of access and egress. Hierarchy of methods. Mobile working platforms, scaffolding, ladders – inspection, operation, and maintenance requirements	Apprentices should be able to: • describe the reasoning behind the working at height hierarchy • explain considerations of movement of long objects/MEWPs in an electrical operational work environment • describe the inspection processes of the working at height access equipment and company procedures for reporting defects • explain avoidance of infringement of safety clearances/distances in line with company policy, safe working practices, distribution safety rules . Referencing supervision criteria; personal supervision • describe operational authorisation procedures, safety documentation requirements

Interview Theme: Working at height	Amplification and guidance (where required)
	• specify the control measures to be implemented whilst the access equipment and vehicles are being moved within a substation fitting environment, including where and when it should be bonded to earth • explain the principles of safe demarcation routes/working zones
K13 Working at height personal protective equipment: harnesses, fall restraint and arrest equipment - user inspection, operation, and maintenance requirements. Rescue from height equipment and methods	Apprentices should be able to: • describe the company procedure for the inspection and use of personal protective equipment used for substation working at height fitting activities e.g. lanyards/harness, flame retardant/arc flash protective overalls, hard hat, gloves, face and eye protection • describe relevant PPE inspection and maintenance procedures • describe working at height rescue methods in line with company safety procedures
S15 Use working at height access equipment for example, scaffold towers and ladders	Apprentices should be able to: • provide examples of on-site risk assessments for the movement and use of height access equipment within a substation and the company process for recording the findings

Interview Theme: Working at height	Amplification and guidance (where required)
	• provide examples of company working at height Method Statements and give explanations of the type of information they contain applicable to the substation fitting activity • provide examples of projects where various working at height access equipment has been utilised in line with company working at height hierarchy
S16 Select, inspect, and use working at height personal protective equipment	Apprentices should be able to: • provide examples of their approach to using and maintaining a range of PPE for working at height activities, e.g. safety harness/lanyard, hard hat, gloves, safety eyewear

Interview Theme: Asset security	Amplification and guidance (where required)
K16 Asset security requirements	Apprentices should be able to explain: • the requirements for the protection of company assets and the processes followed to keep substations sites and network assets safe and secure e.g. application of suitable security locks/fencing, barbed wire enhancement, general access restrictions, safe storage of cable and materials, vehicle and plant security, alarm systems, CCTV, prevention of illegal extraction from the network • the company operational procedure, referencing distribution safety rules regarding substation site access/egress and the requirements to have proper authority to enter or have access to any operational premises such as any control room, substation, switching station or underground chamber
S11 Apply security measures for example, set alarm system, remove climbing aides	Apprentices should be able to: • show examples of the measures they have taken to ensure that network assets and operational sites are protected from issues such as third party interference, unauthorised access and theft e.g. locking substations and storage areas, locking vehicles and installing anti-theft devices to plant

Interview Theme: Asset security	Amplification and guidance (where required)
	• provide evidence of the steps they have taken to report any asset security anomalies and the process for recording any incidents in line with company policy and procedures

Interview Theme: Insulating mediums	Amplification and guidance (where required)
K38 Types of insulating mediums used in high voltage equipment and their advantages or disadvantages: insulating oil, SF6 gas, vacuum, air, and SF6 alternatives	Apprentices should be able to: • describe types of insulating mediums used in HV plant and switchgear and their advantages/disadvantages, associated operational characteristics, cost, availability • explain the environmental impacts of each insulating medium and the potential risk implications • describe the health, safety and environment implications of the varying insulating mediums

Interview Theme: Methods of cooling transformers	Amplification and guidance (where required)
K39 Methods of cooling transformers and their advantages and limitations: natural, pump forced, and fan forced. The methods of control and associated protection if overheating occurs	Apprentices should be able to: • explain methods available for cooling of transformers. e.g. air/natural, pump/fan forced • describe methods of dedicated protection, e.g. thermal overload relays

Interview Theme: Handling and transportation of insulation oil	Amplification and guidance (where required)
K40 Considerations for the handling or transportation of insulating oil (bulk and drums): reducing risk of spillage, bunding requirements, hygiene, barrier creams, specialist PPE, pumps, storage, labelling containers, manual handling, and disposal	Apprentices should be able to: • reference COSHH regulations and the relevant associated guidance provided by the company • explain company transportation and handling processes for insulating oil • describe company policies and guidance regarding aspects of insulating oil handling, e.g. PPE, manual handling, reporting processes

Interview Theme: Handling and transportation of insulation oil	Amplification and guidance (where required)
	• explain environmental risk management processes and reporting procedures • explain oil bunding requirements and emergency oil spill kit procedures

Interview Theme: Determining insulating oil integrity	Amplification and guidance (where required)
K41 Methods of determining insulating oil electrical integrity or presence of contaminants: dielectric strength, moisture, acidity, polychlorinated biphenyl (PCB), and carbonisation	Apprentices should be able to: • explain how the condition of oil in electrical equipment can provide a signature of the state of that equipment, and by monitoring this aspect over time, can identify where/when deterioration may occur • explain why consideration must be given to the COSHH regulations • explain the essential electrical integrity properties of high dielectric strength, low viscosity, low pour point, low volatility, high chemical stability and essential outcome to be free from contamination. • have an understanding of the range of testing procedures and some of the potential deterioration resultant aspects, e.g. Furfural – Level of

Interview Theme: Determining insulating oil integrity	Amplification and guidance (where required)
	Furfuraldehyde, Dissolved Gas Analysis (DGA), diagnostic testing - Hydrogen/Methane/Ehtylene/Acetylene/Carbon Dioxide/Carbon Monoxide/Nitrogen/Oxygen

Substation fitter – distribution maintenance

Interview Theme: Functional tests	Amplification and guidance (where required)
K46 Functional checks and routine basic maintenance of substation equipment requirements: breather gels, Automatic Voltage Control systems, cooling systems, bund pumps, battery monitoring alarms, oil pressure alarms, Transient Earth Voltage (TEV) testing	Apprentices should be able to: • explain the processes for carrying out a range of functional checks and routine basic maintenance in line with company inspection and maintenance policies and procedures • describe the operational safety and general health and safety procedures to be adhered to during functional checks/routine maintenance • explain associated COSHH regulations and potential impacts regarding functional checks and routine maintenance, including environmental considerations • explain the importance of updating company maintenance records

Interview Theme: Jointing earthing conductors	Amplification and guidance (where required)
K55 Requirements for jointing earthing conductors using mechanical compression joints	Apprentices should be able to:

Interview Theme: Jointing earthing conductors	Amplification and guidance (where required)
	• describe conductor materials available for network earthing systems and the safe working procedures and practices for carrying out mechanical jointing of the conductors • explain the safe working procedures to be followed • describe tools, equipment and PPE required to carry out earth conductor jointing
S42 Conduct electrical testing of earth electrodes using a digital earth resistance tester	Apprentices should be able to: • provide evidence of earthing resistance testing projects, including risk assessments and method statements • provide examples of resistance test equipment usage and explanation of recorded test results • provide examples of a range of earth resistance test results in a company preferred format
S43 Joint earthing conductors using mechanical compression joints	Apprentices should be able to: • provide examples of earthing projects, where mechanical compression joints have been utilised

Interview Theme: Ground mounted distribution oil filled switchgear maintenance	Amplification and guidance (where required)
K48 Routine ground mounted distribution oil filled switchgear maintenance requirements: removal and replacement of oil, cleaning of internal tanks and components, inspection and replacement of gaskets, lubrication of external mechanisms	Apprentices should be able to: • describe company policy and procedures for carrying out routine maintenance of oil filled ground mounted oil filled switchgear • explain the safety, health and environment policies to be adhered to during the process • describe company time intervals for substation maintenance and how the required switchgear maintenance period may be dependent on other substation plant maintenance programs • explain how to complete maintenance records and how/where to store them on appropriate company databases • explain safety and environmental aspects of carrying out switchgear maintenance, referencing COSHH, PPE requirements

Interview Theme: Transformers maintenance requirements	Amplification and guidance (where required)
K50 Distribution primary transformer and ancillary equipment maintenance requirements	Apprentices should be able to: • describe the range of ancillary equipment maintenance requirements in line with company inspection and maintenance policy and procedures • describe components for maintenance and the processes for carrying out the work. E.g. transformer tank, cooling tubes, Bucholz relay, oil outlet/inlet valves, oil level indicator, L.V./H.V. Terminals, temperature gauge, conservator, breather, vents, earthing connections, tap changer, circuit breakers

Interview Theme: Air break disconnectors maintenance requirements	Amplification and guidance (where required)
K51 Air break switch disconnectors maintenance requirements for motorised load breaking and manual non-load breaking equipment	Apprentices should be able to: • explain types of air-break switch disconnectors (ABSD) and the maintenance requirements, in line with company policy and procedures

Interview Theme: Air break disconnectors maintenance requirements	Amplification and guidance (where required)
	• describe the impacts of fault making and non-load breaking operations on the ABSD equipment and resultant components prioritised for maintenance • explain company health and safety operational considerations for carry out ABSD maintenance • provide awareness of network engineering risk considerations

Substation fitter – transmission maintenance

Interview Theme: Insulation testing	Amplification and guidance (where required)
K58 Insulation resistance testing methods and requirements	Apprentices should be able to: • describe the process for carrying out insulation test methods in line with company policy and procedures. • explain the reasons for carrying out insulation resistance testing and why earlier degradation detection and better fault detection on high voltage equipment is advantageous • explain why insulation resistance test results should be compared to historical values to identify changes • provide awareness of network engineering risk considerations and why insulation resistance testing is advantageous
S58 Conduct insulation testing using an insulation test instrument	Apprentices should be able to: • demonstrate the process for carrying out insulation testing in line with company policy and procedures • provide examples of carrying out insulation testing in line with company operational safety procedures and operational safety rule requirements (appropriate documentation)

Interview Theme: Insulation testing	Amplification and guidance (where required)
	• explain the need for all HV test equipment (including potential indicators and phasing out devices) to be tested on a routine basis for an adequate level of insulation to establish the integrity of the insulation and the functionality of the unit to its original specification and to ensure it continues to operate safely • provide evidence of operational safety documentation indicating process for safe working operations for insulation testing

Interview Theme: Insulation medium maintenance	Amplification and guidance (where required)
S59 Remove and replace insulating medium for example, oil, SF6 or air from transmission plant avoiding contamination	Apprentices should be able to: • demonstrate appropriate procedures to carry out removal and replacement of varying insulating mediums in line with company operational policy and safety rules/procedures • provide examples of the utilisation of appropriate testing equipment, ensuring that its 'fit for purpose' and suitable for maintenance procedures

Interview Theme: Insulation medium maintenance	Amplification and guidance (where required)
	• provide evidence of selection and use of appropriate PPE to carry out the work process • provide examples demonstrating implementation procedures and risk plans that consider potential environmental impacts • provide evidence of operational safety documentation indicating process for safe working operations
S60 Clean equipment following removal of insulating medium	Apprentices should be able to: • demonstrate suitable processes for effectively cleaning equipment that has been used for removing insulating mediums • explain the process for any environmental considerations when cleaning insulating medium equipment • demonstrate use of appropriate PPE that must be worn • provide examples of company environmental management policy and procedures
S61 Check circuit breaker contact condition; remove and replace or dress	Apprentices should be able to: • provide examples of circuit breaker contact maintenance in line with company operating policy and procedure

Interview Theme: Insulation medium maintenance	Amplification and guidance (where required)
	• provide evidence of circuit breaker maintenance risk assessments and methods statements • provide evidence of the need to carry out circuit breaker contact maintenance to prevent electrical catastrophes and optimize HV bushing service life in line with company inspection and maintenance policy • provide examples of inspection modes, checking for cracks and/or contamination i.e. leakage current will become visually excessive, sometimes appearing as carbon tracking, or 'treeing,' on the bushing surface • provide evidence of the care taken to ensure that any maintenance cleaning products used are compatible with the circuit breaker following the recommended company procedure, in conjunction with the manufacturer's instructions before applying recommended lubricants • provide examples of checks carried out for loose connections and presence of moisture

Interview Theme: Insulation medium maintenance	Amplification and guidance (where required)
	• provide evidence that all tools and cleaning mediums are removed from the equipment before returning to service • provide evidence of operational safety documentation indicating process for safe working operations

Interview Theme: Battery maintenance	Amplification and guidance (where required)
K65: Substation battery maintenance and testing requirements: wet cell and sealed.	Apprentices should be able to: • explain company operating policy and procedures for carrying out wet/dry cell battery maintenance and testing e.g. battery maintenance should be carried out only by persons within the bounds of their operational competency and authorisation level • provide an understanding of company requirements for battery inspection and maintenance reporting - • provide awareness of network engineering risk considerations relating to substation battery integrity

Interview Theme: Battery maintenance	Amplification and guidance (where required)
	• describe considerations for appropriate risk assessments and methods statements e.g. the operating characteristics of the battery systems and the known dangers imposed • demonstrate an awareness and understanding of the company environmental policies associated with battery testing and maintenance
S67: Check battery connections for any damage, clean cells, check monitoring alarms, check function of charging equipment.	Apprentices should be able to: • provide examples of the battery maintenance process in line with company inspection and maintenance procedures • demonstrate operational safety documentation indicating processes for safe working operations • provide examples of the range of PPE required to carry out battery maintenance • provide evidence of how to safely check the battery electrolyte levels, where applicable • provide evidence of the process for inspecting any glass cells for traces of sludge deposit.

Interview Theme: Battery maintenance	Amplification and guidance (where required)
	• provide examples of cleaning the battery installations and cubicles (or battery room) using insulated tools and checking the tightness of all main connections in line with safety operational policy and procedures
S68: Test substation batteries using voltage and analytical testing instruments.	Apprentices should be able to: • provide examples of testing substation batteries in accordance with company operating policy and procedures, including operational authorisation considerations • provide evidence of selection and use of appropriate PPE which shall be worn. Noting when additional PPE requirements may be required; e.g. chemically resistant glasses or masks for eyes and face and gloves and aprons for skin protection. Footwear shall not contribute to the build-up of electrostatic charges

Interview Theme: Transmission equipment maintenance	Amplification and guidance (where required)
K61 Maintenance processes for transformers: tap changers, Buchholz relay, winding temperature	Apprentices should be able to:

Interview Theme: Transmission equipment maintenance	Amplification and guidance (where required)
indicator (WTI), qualitrol, breathers, surge arrestors, coordinating gaps, arcing horns, insulator checks and recalibrating (LNER)	• demonstrate evidence of transformer maintenance processes in line with company operating policy and procedures • provide evidence and details of company maintenance processes for ancillary assets • provide awareness of network engineering risk impacts and company obligations for transformer/ancillary asset maintenance
K63 Maintenance processes for air systems: making new pipework HP fittings, air leak detection, and gas leak detection	Apprentices should be able to: • demonstrate evidence of carrying maintenance processes for air systems in line with company safe operating policy and procedures • provide evidence and details of company maintenance processes for air system pipework, HP fittings • explain the gas leak detection process in line with company policy and procedures
K64 Maintenance processes for ancillary equipment: Isolator dynamic torque testing	Apprentices should be able to: • demonstrate evidence of the company policy and procedures for maintenance processes for ancillary equipment, including carrying out dynamic torque testing of isolators

Interview Theme: Transmission equipment maintenance	Amplification and guidance (where required)
S70 Conduct transformer maintenance including tap changers, Buchholz relay, WTI, qualitrol, breathers, surge arrestors, coordinating gaps, arcing horns, insulator checks and recalibrating (LNER)	Apprentices should be able to: • provide examples of carrying out transformer maintenance processes in line with company operating policy and procedures • provide evidence of selection and use of appropriate PPE which Shall be worn • provide examples of maintenance work being carried out in accordance with company operational safety rules
S71 Conduct air system maintenance including making new pipework HP fittings, air leak detection and gas leak detection	Apprentices should be able to: • provide examples of carrying out air system maintenance processes in line with company maintenance safe operating policy and procedures • provide evidence of selection and use of appropriate PPE which Shall be worn • provide examples of air system maintenance work being carried out in accordance with company operational safety rules
S72 Conduct ancillary equipment maintenance	Apprentices should be able to: • provide examples of carrying out ancillary equipment maintenance processes in line with company operating policy and procedures

Interview Theme: Transmission equipment maintenance	Amplification and guidance (where required)
	• provide evidence regarding the selection and use of appropriate PPE which shall be worn • provide examples of ancillary equipment maintenance work being carried out in accordance with company operational safety rules

Interview Theme: Condition monitoring processes	Amplification and guidance (where required)
K60 Condition monitoring processes and use of equipment relating to measuring asset condition	Apprentices should be able to: • demonstrate an understanding of company condition monitoring processes within the substation fitting environment • explain the company inspection and maintenance policy and the related condition based monitoring process • demonstrate an understanding of assets health index scores

Substation fitter – construction

Interview Theme: Construction equipment and cabling installation	Amplification and guidance (where required)
K69 Types of cable containment management systems and installation requirements	Apprentices should be able to: • describe types of cable containment management systems within the substation fitting environment • provide evidence of identifying cable containment condition degradation issues and associated reporting processes
K74 Installation of plant, metal structures, and apparatus - internal and external - positioning requirements	Apprentices should be able to: • describe the company procedure for the installation of plant and apparatus within the substation fitting environment • describe the physical plant/apparatus installation process, in conjunction with operational safety policy and procedures and civil works operations
K81 Battery installation and checking requirements. Principles of stored energy and incident level	Apprentices should be able to: • provide examples of the battery installation process in line with procedures e.g. proper sizing and placement, mounting, integrity • provide examples of the battery checking process in line with procedures e.g. visual inspection, voltage and load testing

Interview Theme: Construction equipment and cabling installation	Amplification and guidance (where required)
	• provide examples of the range of PPE required to carry out battery installation and checking • identify principles of stored energy e.g. storage and density • describe incident levels e.g. risk assessment, safety measures, incident response
S77 Install batteries. Check function and action as required	Apprentices should be able to: • describe the company procedure for the installation of batteries/battery systems within the substation fitting environment • describe the physical plant/apparatus installation process, in conjunction with operational safety policy and procedures
S78 Position transformers	Apprentices should be able to: • demonstrate the company procedure for the installation of plant and apparatus within the substation fitting environment • provide evidence of the physical transformer installation process, in conjunction with operational safety policy and procedures and civil works operations

Interview Theme: Construction equipment and cabling installation	Amplification and guidance (where required)
S84 Select, position, and install containment management system. For example, unistrut, ladder tray, and trunking	Apprentices should be able to: • provide examples of the installation of various cable containment management apparatus within the substation fitting environment • provide evidence of the physical plant/apparatus installation process, in conjunction with operational safety policy and procedures

Interview Theme: AC/DC (alternating current and direct current) supply power cable and power wiring installation	Amplification and guidance (where required)
K71 AC/DC (alternating current and direct current) supply power cable and power wiring installation requirements	Apprentices should be able to demonstrate an understanding of: • installation, operation and maintenance of AC/DC power cable wiring installations within the substation fitting environment, in line with company operational policy and procedures
S80 Select, position, and install AC/DC supply power cable and power wiring	Apprentices should be able to: • provide examples of installation and maintenance of AC/DC power cable wiring installations within the substation fitting environment in

Interview Theme: AC/DC (alternating current and direct current) supply power cable and power wiring installation	Amplification and guidance (where required)
	line with operational safety rules. Including evidence of safety documentation • provide evidence of working to risk assessments and method statements

Interview Theme: Diagnostic fault-finding techniques	Amplification and guidance (where required)
K77 Diagnostic fault-finding techniques	Apprentices should be able to: • explain the company policy and procedures when carrying out diagnostic fault finding • explain processes for the activity associated with the identification techniques, response, restoration, monitoring of system fault finding • demonstrate an understanding of operational safety processes e.g. following the completion of an appropriate risk assessment, that fault-finding/testing is carried out safely, with correct equipment and PPE, and complies with relevant legislation

Interview Theme: Diagnostic fault-finding techniques	Amplification and guidance (where required)
S90 Apply diagnostic fault-finding techniques	Apprentices should be able to: • provide examples of a range of HV fault finding techniques including overvoltage (pressure) testing, operation of HV fault location equipment (test van and portable), phasing checks following work on the System • provides examples regarding the completion of appropriate risk assessment with reference to correct equipment and PPE, including evidence that testing is carried out safely within the scope of operational safety rules, correct safety documentation issued

Interview Theme: Plant and equipment locking devices and interlocking systems requirements	Amplification and guidance (where required)
K78: Plant and equipment locking devices and interlocking systems requirements.	Apprentices should be able to: • describe a range of plant and equipment locking devices and interlocking systems and the company operational safety policy and procedures

Interview Theme: Plant and equipment locking devices and interlocking systems requirements	Amplification and guidance (where required)
	• provide evidence of risk assessments and method statements incorporating plant and equipment locking/inter-locking device safety management processes

Interview Theme: Producing wiring core sheets from wiring diagrams	Amplification and guidance (where required)
S83 Produce wiring core sheets from wiring diagrams	Apprentices should be able to: • provide examples of wiring core sheets transposed from wiring diagrams in line with company operational policy and procedures

Interview Theme: Replacing components	Amplification and guidance (where required)
S92 Replace components within equipment	Apprentices should be able to: • provide examples of replacing components within substation fitting plant and equipment in line with company policy and procedures • provide evidence of risk assessments and method statements in association with equipment component replacement

Interview Theme: Replacing components	Amplification and guidance (where required)
	• provide evidence of component replacement work carried out in accordance with company operational safety rules

Interview Theme: Removing cabling and equipment	Amplification and guidance (where required)
S93 Remove cabling and equipment	Apprentices should be able to provide examples of: • removing cabling and equipment within substation fitting plant and equipment in line with company operational policy and procedures • risk assessments and method statements in association with cabling and equipment removal • cabling/equipment removal work carried out in accordance with company operational safety rules

Trade test technical interview roles and responsibilities

Role	Responsibility
Employer Assessor	Administer and assess the trade test technical interview in line with their company's requirements, and EUIAS' requirements including using resources approved by EUIAS. Undertake standardisation training before conducting an EPA for the first time, when the EPA is updated, and periodically on a risk based approach. Make preliminary grading decisions for the trade test technical interview which will be subject to EUIAS's moderation process. Record and report assessment outcome decisions to EUIAS. Comply with the IQA requirements of EUIAS.
Employer/Training Provider	Develop and produce an assessment specification, question bank, assessment materials, and assessment recording documentation for the trade test technical interview in line with the EPA plan. Confirm arrangements with EUIAS for the standardisation and approval of the trade test technical interview question bank, assessment materials, and assessment recording documentation.

Role	Responsibility
	Appoint employer assessors in line with the requirements of this EPA plan. Maintain the security of the trade test technical interview including verifying the identity of the apprentice, invigilation, and security of materials. Arrange for standardisation training for their employer assessors with EUIAS. Give EUIAS at least two weeks' notice of the date of the trade test technical interview to enable EUIAS to schedule quality assurance. Not start any trade test technical interview until EUIAS confirms that the apprentice has passed the multiple-choice test and interview based on an EPA portfolio. Maintain and apply a policy for the declaration and management of conflict of interests and independence for the trade test technical interview. Submit completed assessment documentation to EUIAS within 5 working days from the last assessment day.
EUIAS	Provide information, advice, and guidance to enable an employer to develop a trade test technical interview specification,

Role	Responsibility
	question bank, assessment materials, and assessment recording documentation. Undertake standardisation of the employer's trade test technical interview, question bank and assessment materials before the employer conducts an assessment for the first time, and periodically on a risk-based approach. Approve the employer's assessment specification, question bank, assessment materials, and assessment recording documentation to be used by employer assessors. Confirm employer assessors have been appointed in line with the requirements of the PIOL EPA Plan. Conduct standardisation training with employer assessors before they deliver an EPA, when the EPA is updated, and at least once a year. Conduct on-going moderation across all the employer assessors' decisions according to a sampling plan, with associated risk rating of employer assessors. Confirm the grade for the trade test technical interview through their internal quality assurance (IQA) procedures.

Section 3: Grading and grading criteria

Component 1: Multiple-choice test

The following grade boundaries apply to the multiple-choice test:

Grade	Minimum mark	Maximum mark
Fail	0	27
Pass	28	40

Component 2: Interview based on an EPA portfolio

The apprentice must demonstrate KSBs in an integrated way.

A Fail will be awarded if an apprentice has not achieved **all** the Pass criteria.

To gain a Pass, an apprentice must successfully achieve **all** the descriptors for the core and their option.

To achieve a Distinction an apprentice must successfully achieve **all** the Pass descriptors and **all** of the Distinction descriptors for the core and their option.

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve ALL of the following:
Task 1: Communication and working with others (core)	
Communication K24 K26 S21 S24 B5	Describes how they communicate in a professional manner by using communication techniques and industry terminology suitable for the context (K24, S21, B5) Describes how they apply written communication techniques to produce or amend documents in their work that are suitable for the context (K26, S24)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve ALL of the following:
Information and digital technology K27 S25	Describes how they use information and digital technology – computers and mobile devices - in their work in compliance with their organisation's cyber security requirements. Outlines the requirements of the General Data Protection Regulation (GPDR) (K27, S25)
Teamwork K28 K29 S20 B6	Describes how they apply team working principles to meet work goals and support inclusivity in line with their company's policy on equality, diversity, and inclusion (K28, K29, S20, B6)
Task 2: Sustainability (core)	
Sustainability K16 S15 B2	Describes how they consider and apply the principles of sustainability and the circular economy in their own work to support their employer's and the power industry's net zero strategy with reference to the impact of sites of special scientific interest, flora and fauna on work, and the potential effects on the environment of companies and individuals not complying with good environmental practices (K18, S12, B2)
Task 3: CPD and improvement activities (core)	
Continued professional development S26 B7	Outlines the planned and unplanned learning and development activities they have carried out and recorded and shows a commitment to future continued professional development to maintain and enhance competence (S26, B7)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve ALL of the following:
Contribute to improvement activities S19	Describes how they have identified an area of improvement in the workplace (S19)
Task 4: Working on the highway, excavations and laying cables (distribution maintenance)	
Plant or vehicle checks K15 S14	Describes how they conduct plant or vehicle checks in line with company requirements (K15, S14)
New Roads and Street Works Act and access to private land, streets and wayleaves K52 K53	Explains requirements for safe excavation and signing, lighting, and guarding in line with the New Roads and Street Works Act (K52) Explains the access to private land, streets, and wayleaves permissions in terms of impact on role (K53)
Location and avoidance of utilities K54	Explains methods for locating and avoiding utilities and avoiding danger from underground services and overhead exposed conductors in line with the health and safety executive guidance and requirements: HSG 47 (Avoiding danger from underground services) and GS6 (Avoiding danger from overhead power lines) (K54)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve ALL of the following:
Task 4: Vehicle and plant checks (transmission maintenance)	
Plant or vehicle checks K15 S14	Describes how they conduct plant or vehicle checks in line with company requirements (K15, S14)
Task 4: Location and avoidance of utilities (construction)	
Location and avoidance of utilities K79	Explains methods for locating and avoiding utilities and avoiding danger from underground services and overhead exposed conductors in line with the health and safety executive guidance and requirements: HSG 47 (Avoiding danger from underground services) and GS6 (Avoiding danger from overhead power lines) (K79)
Plant or vehicle checks K15 S14	Describes how they conduct plant or vehicle checks in line with company requirements (K15, S14)
Vehicle marshalling requirements K80	Explains vehicle marshalling requirements and limits of their role in line with industry practice (K80)

Distinction criteria for the interview based on an EPA portfolio

Interview (based on an EPA portfolio)	To achieve a Distinction the apprentice must achieve ALL of the following:
Task 1: Communication and working with others (core)	
Communication K49 S34 S36 B5	
Information and digital technology K45 S37	
Teamwork K28 K29 S20 B6	Justifies the application of teamworking principles to meeting work goals (K28, S20, B6)
Task 2: Sustainability (core)	
Sustainability K16 S15 B2	Justifies the application of sustainability practices in the power industry (K18, S12, B2)
Task 3: CPD and improvement activities (core)	
Continued professional development S38 B7	
Contribute to improvement activities S19	Justifies the potential impact of the improvement suggestion with consideration to benefits and any potential risks (S19)

Interview (based on an EPA portfolio)	To achieve a Distinction the apprentice must achieve ALL of the following:
Task 4: Working on the highway, excavations and laying cables (distribution maintenance)	
Plant or vehicle checks K15 S13	
Plant or vehicle checks K15 S14	
New Roads and Street Works Act and access to private land, streets and wayleaves K52 K53	
Location and avoidance of utilities K54	
Task 4: Vehicle and plant checks (transmission maintenance)	
Plant or vehicle checks K15 S14	
Task 4: Location and avoidance of utilities (construction)	
Location and avoidance of utilities K79	

Interview (based on an EPA portfolio)	To achieve a Distinction the apprentice must achieve ALL of the following:
Plant or vehicle checks K15 S14	
Vehicle marshalling requirements K80	

Component 3: Trade test practical assessment with questions

The apprentice must demonstrate KSBs in an integrated way.

A Fail will be awarded if an apprentice has not achieved **all** the Pass criteria.

To gain a Pass, an apprentice must successfully demonstrate **all** the descriptors for the core and their option.

To achieve a Distinction an apprentice must successfully demonstrate **all** the Pass descriptors and **all** of the Distinction descriptors for the core and their option.

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
Prepare for substation fitter activities (core) K22 S1 S2 S3 S18	Reviews drawings, instructions, or information to understand the task's requirements. (S1) Plans tasks and identifies and organises resources required to complete tasks for self and working party using planning, prioritising, organisation, and time management techniques with consideration for safety, environmental impact, quality, and cost. (K22, S2, S3)

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
	Selects, checks, and prepares resources in line with task requirements. (S18)
Organise and supervise a working party (core) S5 B3	Receives and clears a safety document and briefs a working party in line with company requirements taking ownership for work and responsibility for the impact of the work on others. (S5, B3)
Maintain work site health, safety, and environment compliance (core) K7 K10 K19 K37 S6 S7 S8 S10 S13 B1	Follows company's substation access and egress procedures to control hazards including security, pre-entry checks, logging in requirements, automatic or remotely operated equipment, and fire suppression systems. (K37, S6) Identifies hazards and risks in the workplace including consideration of hazards associated with work on or near electrical power networks and applies control measures including demarcation systems to identify equipment made safe for work. Prioritises and applies health and safety procedures in compliance with regulations and standards mitigating against risks including emergency procedures, personal protective equipment, manual handling, and fire safety. (K7, K10, S7, S8, B1)

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
	Applies measures to leave power work environments in a safe and secure condition in line with company procedures. (S10) Segregates resources for reuse, recycling, and waste handling in line with company procedures for recycling and waste transfer (K19, S13)
Identify apparatus (core) S4	Identifies apparatus to be worked on using identification methods suitable for the equipment and the situation. (S4)
Tools and equipment (core) K23 S17	Selects, checks, and prepares hand tools and power tools required for the task in line with company procedures including selection and care of insulated tools. Uses hand tools and power tools that are suitable for the application in line with operational requirements. Stores tools and equipment in line with company procedures. (K23, S17)
Complete work records (core) K25 S23	Records information for work tasks in line with company documentation requirements. (K25, S23)

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
Use maintenance specifications (distribution maintenance) S27	Reads, interprets, and follows maintenance specifications to support task completion. (S27)
Electrical testing (distribution maintenance) K43 S28 S29 S30 S31 S46 S47	Conducts diagnostic testing to identify asset condition and identifies action required. Conducts electrical testing using correct methods for continuity, joint or contact resistance, insulation, and supply checks on a low voltage single and three phase supply to identify: correct polarity, voltage, earth fault loop impedance and phase rotation in line with task requirements and company procedures. (K43, S28, S29, S30, S31, S46, S47)
Circuit breaker maintenance (distribution maintenance) K44 K47 S32 S33 S34 S35 S36 S37 S38 S39	Sets up oil pumping equipment, removes and replaces insulating oil, and cleans equipment following removal of insulating oil in line with task requirements and company procedures. Checks circuit breaker contact condition, removing and replacing or dressing in line with task requirements and company procedures.

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
	Cleans and lubricates operating mechanisms using approved lubricants in line with task requirements and company procedures. Adjusts, remove, and replaces components in line with task requirements and company procedures. (K47, S32, S33, S34, S35, S36, S38, S39) Takes oil samples using insulating oil sampling methods including sample taps and tubes in line with task requirements and company procedures. (K44, S37)
Battery maintenance (distribution maintenance) K49 S44 S45	Conducts wet cell and dry battery maintenance including checking connections for any damage, cleaning cells, checking monitoring alarms, and checking function of charging equipment, and tests substation batteries using voltage and analytical testing instruments in line with task requirements and company procedures. (K49, S44, S45)
Inspection and monitoring of substation equipment (distribution maintenance) K45 S40 S41	Conducts functional tests of equipment to confirm operating to expected parameters and inspects substation site, buildings and equipment including steelwork and neutral earthing conductors and connections in line with task

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
	requirements and company procedures and identifies any defects in condition. (K45, S40, S41)
Switching operations (distribution maintenance) K56 S48 S49 S50	Conducts switching operations including accurately interpreting the network schematic diagrams and geographic records to identify the running arrangements, preparing low voltage or high voltage switching operation schedules, and operating network switching equipment in line with task requirements and company procedures. (K56, S48, S49, S50)
Use maintenance specifications (transmission maintenance) S51	Reads, interprets, and follows maintenance specifications to support task completion. (S51)
Use elevated work platforms (transmission maintenance) S53	Uses mobile elevated work platforms safely in line with company procedures. (S53)
Electrical testing (transmission maintenance) K57 K66 S52 S54 S55 S56 S57 S69	Interprets network schematic diagrams accurately prior to carrying out testing activities.

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
	Uses diagnostic equipment to identify asset condition and identifies action required. Conducts electrical testing using correct methods for continuity, resistance, and circuit breaker timing in line with task requirements and company procedures. (K57, S52, S54, S55, S56, S57) Restores power in line with company procedures. (K66, S69)
Circuit breaker maintenance (transmission maintenance) K59 K62 S62 S63 S64 S65 S66	Conducts circuit breaker maintenance in line with task requirements and company procedures including taking insulation medium samples from equipment, cleaning and lubricating operating mechanisms using approved lubricants, adjusting or replacing components using mechanical fixings, conducting functional tests of equipment to confirm it is operating to expected parameters, and conducting visual inspections of transmission steelwork earthing connections, identifying any issues. (K59, K62, S62, S63, S64, S65, S66)
Use engineering representations, drawings, and graphical information (construction)	Reads, interprets, and follows engineering representations, drawings, and graphical information to support task completion. (K67, S73)

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
K67 S73	
Follow construction safety requirements (construction) K75 S74 S75 S76	Proves plant, equipment, cabling, and system is safe to work on and checks earthing is in place in line with task requirements and company procedures. (S74, S75) Follows lifting plan in line with lifting operations - rigging and slinging - requirements. (K75, S76)
Install new substation equipment (construction) K73 S79	Locates and fixes high voltage switchgear using fixing systems including unistrut, rawl bolts, chemical fixing anchors and proof loading, shims, and grouting for base plates in line with task requirements and company procedures. (K73, S79)
Install earthing associated with substations (construction) K68 K72 S81 S82	Installs earthing including laying earth tape, selecting and applying mechanical connections, brazing and welding to fix it within excavations and to plant and equipment above and below ground. In doing so, uses materials and equipment suitable for the task and stores, transports and uses commercial gas in line with company procedures. (K68, K72, S81, S82)

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
Install and terminate multi-core cables and containment systems (construction) K70 S85	Selects, positions, and connects multi-core wiring including glanding, looming, crimping, and ferruling in line with task requirements and company procedures. Applies labelling and identification system in line with task requirements and company procedures. (K70, S85)
Conduct testing on installed equipment (construction) K76 K82 K83 S86 S87 S88 S89 S91	Selects and use test instruments to conduct a minimum of 3 different testing procedures and describes how they would conduct others in line with task requirements and company procedures, covering voltage, polarity, insulation resistance, three-phase testing, phase rotation, earth loop impedance, continuity, and joint resistance. (K76, S86) Conducts mechanical testing including proof loading and torque tests in line with task requirements and company procedures. (K82, S87) Conducts alignment checks in line with task requirements and manufacturer's instructions. (S88)

Trade test practical assessment	To achieve a Pass the apprentice must demonstrate ALL the descriptors for the core and their option
	Takes oil samples for testing in line with task requirements and company procedures. (K83, S89) Interprets test results identifying action as required. (S91)

Distinction criteria for the trade test practical assessment

Trade test practical assessment	To achieve a Distinction the apprentice must demonstrate all the Pass descriptors and all of the Distinction descriptors for the core and their option
Prepare for substation fitter activities (core) K22 S1 S2 S3 S18	Justifies their planning in terms of efficiencies achieved and the balance of safety, environmental impact, quality, and cost in planning decisions.
Organise and supervise a working party (core) S5 B3	
Maintain work site health, safety, and environment compliance (core) K7 K10 K19 K37 S6 S7 S8 S10 S13 B1	Justifies how the controls they applied eliminated or reduced risks to an acceptable level using a hierarchical approach to risk assessment. (S7)
Identify apparatus (core) S4	
Tools and equipment (core) K23 S17	
Use maintenance specifications (distribution maintenance) S27	

Trade test practical assessment	To achieve a Distinction the apprentice must demonstrate all the Pass descriptors and all of the Distinction descriptors for the core and their option
Electrical testing (distribution maintenance) K43 S28 S29 S30 S31 S46 S47	Evaluates the diagnostic results to determine potential underlying cause of issues and rectification. (K43, S28)
Circuit breaker maintenance (distribution maintenance) K44 K47 S32 S33 S34 S35 S36 S37 S38 S39	
Battery maintenance (distribution maintenance) K49 S44 S45	
Inspection and monitoring of substation equipment (distribution maintenance) K45 S40 S41	
Switching operations (distribution maintenance) K56 S48 S49 S50	
Use maintenance specifications (transmission maintenance)	

Trade test practical assessment	To achieve a Distinction the apprentice must demonstrate all the Pass descriptors and all of the Distinction descriptors for the core and their option
S51	
Use elevated work platforms (transmission maintenance) S53	
Electrical testing (transmission maintenance) K57 K66 S52 S54 S55 S56 S57 S69	Evaluates the diagnostic results to determine potential underlying cause of issues and rectification. (K57, S54)
Circuit breaker maintenance (transmission maintenance) K59 K62 S62 S63 S64 S65 S66	
Use engineering representations, drawings, and graphical information construction) K67 S73	
Follow construction safety requirements (construction) K75 S74 S75 S76	

Trade test practical assessment	To achieve a Distinction the apprentice must demonstrate all the Pass descriptors and all of the Distinction descriptors for the core and their option
Install new substation equipment (construction) K73 S79	
Install earthing associated with substations (construction) K68 K72 S81 S82	
Install and terminate multi-core cables and containment systems (construction) K70 S85	
Conduct testing on installed equipment (construction) K76 K82 K83 S86 S87 S88 S89 S91	Evaluates the importance of applying electrical and mechanical testing in terms of preventing operational issues. (K76, K82, S86, S87)

Component 4: Trade test technical interview

The apprentice must demonstrate KSBs in an integrated way.

A Fail will be awarded if an apprentice has not achieved **all** the Pass criteria.

To gain a Pass, an apprentice must successfully demonstrate all of the Pass descriptors for the core and their option.

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
Role and responsibilities (core) K4 K5 S22 B4	Outlines their role as a substation fitter including their limits of responsibility and how they escalate issues. Describes how they respond and adapt to work demands in line with organisational requirements. (K4, S22, B4) Explains the responsibilities of persons as defined in the industry standard safety rules: supervising a working party, competent persons, and authorisation roles and responsibilities in relation to working under safety documentation. (K5)

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
Electrical danger - control and first aid (core) K8 K11 K42 S9	Explains the dangers of electricity and how an electric shock can be received including direct contact, induced (impressed) voltage, and arcing. Outlines electric shock emergency procedures in line with company procedures (K8) Explains safe systems of work on high voltage and low voltage equipment to ensure safety from the inherent dangers of the system (K42) Describes how they would respond in the event of a first aid emergency, with reference to their emergency first aid training and responsibilities and measures they would take to avoid electrical risk in line with company procedures (K11, S9)
Working at height (core) K12 K13 S15 S16	Describes how they use working at height access equipment with reference to hierarchy of methods for working at height and inspection, operation, and maintenance requirements for mobile working platforms, scaffolding and ladders in line with company procedures

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
	Describes how they use personal protective equipment: harnesses, fall restraint and arrest equipment suitable for the context with reference to user inspection, operation, and maintenance requirements Outlines rescue from height equipment and methods in line with company procedures
Asset security (core) K16 S11	Describes how they apply asset security measures in line with company procedures
Insulating mediums (core) K38	Explains the advantages and disadvantages of different types of insulating mediums used in high voltage equipment including insulating oil, SF6 gas, vacuum, air, and SF6 alternatives
Methods of cooling transformers (core) K39	Explains the advantages and limitations of different methods of cooling transformers including natural, pump forced, and fan forced. Along with the methods of control and associated protection if overheating occurs
Handling and transportation of insulation oil (core) K40	Explains considerations for the handling or transportation of insulating oil (bulk and drums) including reducing risk of spillage, bunding requirements, hygiene,

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
	barrier creams, specialist PPE, pumps, storage, labelling containers, manual handling, and disposal in line with company procedures
Determining insulating oil integrity (core) K41	Explains methods of determining insulating oil electrical integrity or presence of contaminants with reference to dielectric strength, moisture, acidity, polychlorinated biphenyl (PCB), and carbonisation
Functional tests (distribution maintenance) K46	Explains the functional checks and routine basic maintenance of substation equipment including breather gels, Automatic Voltage Control systems, cooling systems, bund pumps, battery monitoring alarms, oil pressure alarms, and Transient Earth Voltage (TEV) testing in line with company procedures
Jointing earthing conductors (distribution maintenance) K55 S42 S43	Describes how they joint earthing conductors using mechanical compression joints and conduct electrical testing of earth electrodes using a digital earth resistance tester in line with company procedures
Ground mounted distribution oil filled switchgear maintenance (distribution maintenance) K48	Explains routine ground mounted distribution oil filled switchgear maintenance requirements in line with company procedures including removal and replacement of oil, cleaning of internal tanks and components, inspection and replacement of gaskets, lubrication of external mechanisms

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
Transformers maintenance requirements (distribution maintenance) K50	Explains distribution primary transformer and ancillary equipment maintenance requirements in line with company requirements
Air break disconnectors maintenance requirements (distribution maintenance) K51	Explains air break switch disconnectors maintenance requirements in line with company procedures for motorised load breaking and manual non-load breaking equipment
Insultation testing (transmission maintenance) K58 S58	Describes how they conduct insulation testing using an insulation test instrument in line with task requirements and company procedures
Insulation medium maintenance (transmission maintenance) S59 S60 S61	Describes how they remove and replace insulating medium and clean equipment following its removal in line with task requirements and company procedures (S59, S60) Describes how they check circuit breaker contact condition and remove and replace or dress in line with task requirements and company procedures (S61)
Battery maintenance (transmission maintenance)	Describes how they conduct wet cell and sealed battery maintenance including checking battery connections for any damage, cleaning cells, checking

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
K65 S67 S68	monitoring alarms, and checking function of charging equipment and test substation batteries using voltage and analytical testing instruments in line with task requirements and company procedures
Transmission equipment maintenance (transmission maintenance) K61 K63 K64 S70 S71 S72	Describes how they conduct transformer maintenance including tap changers, Buchholz relay, WTI, qualitrol, breathers, surge arrestors, coordinating gaps, arcing horns, insulator checks and recalibrating (LNER) in line with task requirements and company procedure (K61, S70) Describes how they conduct air system maintenance including making new pipework HP fittings, air leak detection and gas leak detection in line with task requirements and company procedures (K63, S71) Describes how they conduct ancillary equipment maintenance including isolator dynamic torque testing in line with task requirements and company procedures (K64, S72)
Condition monitoring processes (transmission maintenance) K60	Explains the condition monitoring processes and equipment used within their area of operation

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
Construction equipment and cabling installation (construction) K69 K74 K81 S77 S78 S84	Describes how they install batteries in line with company procedures (K81, S77) Describes how they position transformers in line with company procedures (S78) Describes how they select, position, and install a given containment management system in line with company procedures (K69, S83) Explains the internal and external positioning requirements when installing plant, metal structures, and apparatus (K74)
AC/DC (alternating current and direct current) supply power cable and power wiring installation (construction) K71 S80	Describes how they select, position, and install AC/DC supply power cable and power wiring in line with company requirements
Diagnostic fault-finding techniques (construction) K77 S90	Describes how they use diagnostic fault-finding techniques to investigate issues with equipment

Trade test technical interview	To achieve a Pass the apprentice must demonstrate ALL the Pass descriptors for the core and their option.
Plant and equipment locking devices and interlocking systems requirements. (construction) K78	Explains plant and equipment locking devices and interlocking systems requirements in their company
Producing wiring core sheets from wiring diagrams (construction) S83	Describes how they produce wiring core sheets from wiring diagrams in line with company procedures
Replacing components (construction) S92	Describes how they replace components within equipment in line with company procedures
Removing cabling and equipment (construction) S93	Describes how they remove cabling and equipment in line with company procedures

Overall grading

The apprenticeship will be graded fail, pass, or distinction. The final grade will be determined by collective performance in the four assessment components.

The multiple-choice test and trade test technical interview are marked separately and awarded a fail or pass.

The interview based on an EPA portfolio and trade test practical assessment with questions are marked separately and awarded a fail, pass or distinction.

The multiple-choice test is based on the number of correct answers achieved. The grade for each of the other three assessment components is based on the number of criteria achieved.

The overall grade for the PISF Standard is based on the grades in individual components as follows:

Multiple-choice test	Interview based on an EPA portfolio	Trade test practical assessment with questions	Trade test technical interview	Overall grading
Fail in any component				Fail
Pass	Pass	Pass	Pass	Pass
Pass	Distinction	Pass	Pass	Pass
Pass	Pass	Distinction	Pass	Pass
Pass	Distinction	Distinction	Pass	Distinction

The grading criteria that will be applied for each assessment criteria along with additional details can be found in Section 3 of this Specification.

The overall grading for the PISF standard is based on the grades in the individual components as follows:

- Fail – if a Fail is awarded for at least one of the components

- Pass – If at least a Pass is awarded in all the components
- Distinction – If a Distinction is awarded in the interview based on an EPA portfolio and trade test practical assessment with questions, and a pass in the multiple-choice test and trade test technical interview

Section 4: Resits and retakes

Apprentices who fail one or more EPA components can re-sit or re-take the failed component at the employer's discretion. The apprentice's employer needs to agree that a re-sit or re-take is appropriate. A re-sit does not need further learning, but a re-take does. Apprentices should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and EUIAS agree the timescale for a re-sit or re-take. A re-sit is typically taken within 4 months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within 6 months of the EPA outcome notification. Failed EPA components must be re-sat or re-taken within the 6 month end-point assessment period, otherwise the EPA will need to be re-sat or re-taken in full.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to a higher grade.

An apprentice will get a maximum EPA grade of pass if there has been a re-sit or re-take for one or more assessment methods.

The EUIAS resit and re-take policy can be found at:
https://www.euias.co.uk/end-point-assessment/policies-and-fees/

Section 5: Practical guidance

Preparing for the multiple-choice test

While on-programme, the employer and/or training provider should brief the apprentice on the areas to be assessed by the multiple-choice test, as detailed in Section 2 in this specification. It is good practice to identify the areas within the learning programme where the relevant knowledge is delivered, ensuring that apprentices are aware that elements of these might come up in the test.

The multiple-choice test is aligned to the standard rather than a specific job role that the apprentice may be doing. The questions have been written to reflect the Power Industry Substation Fitter role as a whole and not focussed on specific plant, machinery, or employer-specific processes.

In readiness for end-point assessment, the apprentice should complete a practice multiple-choice test. This should be undertaken in advance of the live multiple-choice test, with enough time to mark the test, and provide feedback to the apprentices.

A practice multiple-choice test is available as a printable copy - see Appendix E, PISF Supporting Documents 'Practice Multiple-choice Test'.

For maximum effect, ensure the test is taken in exam conditions similar to those that will be experienced in a live test.

Preparing for the interview based on an EPA portfolio

A practice interview should take place between the apprentice and the person acting the role of an assessor. The apprentice should draw on evidence from their portfolio during the discussion.

Guidance on the EPA portfolio

The EPA Portfolio should be compiled towards the end of the on-programme training when the apprentice has developed the knowledge, skills and behaviours required and can evidence them in tasks and activities they carry out. The EPA portfolio is **not assessed**. The interview will draw on the evidence contained in the EPA portfolio.

The EPA portfolio should reflect

- their individual experiences and the activities carried out during this period
- the requirements outlined in the assessment plan.

A completed EPA portfolio is one of the Gateway requirements.

The apprentice will have access to their EPA portfolio during the interview.

The EPA portfolio is a record of how each apprentice demonstrated the knowledge, skills and behaviours that are assessed in the interview. Each apprentice will have access to their EPA portfolio during the interview. A set of four tasks to support the compilation of the EPA portfolio has been developed. They help each apprentice focus on the specific knowledge, skills and behaviours that will be assessed in the interview.

For each task there is:

- a series of questions to be answered
- a text box following each question for apprentices to provide their response. These boxes will expand to take more text; however apprentices should be aware that quality of answer is more important than quantity. Apprentices will be able to use their answers as prompts in the interview
- a table for the apprentice to record evidence that supports the examples provided in response to the questions.

Supporting evidence must be:

- produced by the apprentice (authentic)
- relevant to the task
- cross referenced and easily accessible in the portfolio
- produced during the time the apprentice are carrying out their on-programme training.

The apprentice should include their best examples to answer each question in this document. The examples should be individual to them.

The completed EPA portfolio should contain the four tasks with their responses and at least one piece of evidence backing up each of the questions. A piece of evidence may cover more than one question. No other evidence should be included.

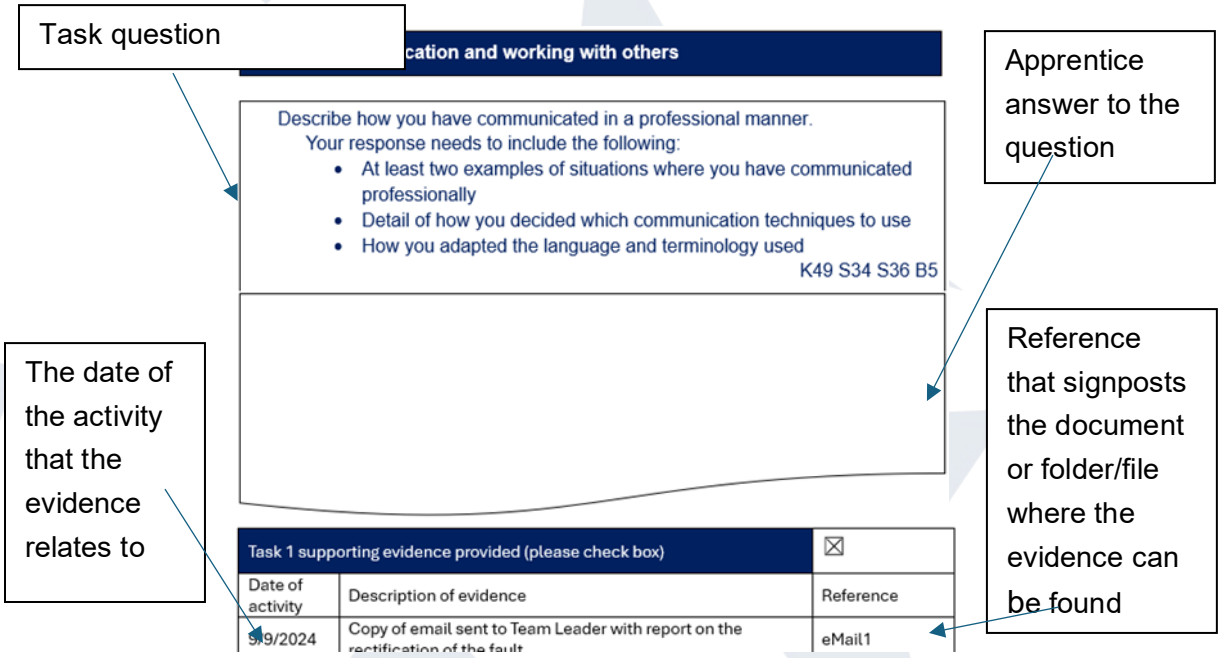
Examples of acceptable evidence:

- workplace documentation/records, for example job task sheets/job card/times sheets, equipment maintenance /service records related to the apprentice
- witness statements signed and dated by coaches/trainers
- employer contributions that focus only on direct observation of evidence (for example witness statements) rather than opinions
- annotated photographs/video clips with a maximum total duration of 10 minutes showing the apprentice carrying out tasks
- diagrams

The above is not a definitive list. The apprentice can include other relevant evidence sources. The portfolio must not contain any methods of self-assessment.

Each piece of evidence must be given a reference. For those using e-portfolios such as ONEFILE or SMARTASSESSOR, the reference used must simply be the file or folder name the apprentice used when uploading the evidence to such systems.

How the apprentice should complete the EPA portfolio template



The role of the employer/training provider

Their employer/training provider is expected to support the apprentice in preparing their portfolio by:

- providing clear instruction and deadlines to allow the apprentice to plan and compile their portfolio in preparation for the Gateway meeting
- advising on which pieces of evidence to select
- authenticating evidence as valid
- signing off the EPA portfolio
- submitting the portfolio to EUIAS as part of Gateway requirements.

What to expect in the practice interview?

The practice interview will be based on the EPA portfolio which will provide the apprentice with the opportunity to practice discussing their KSBs gained throughout their on-programme and by referring to the evidence from their portfolio using their responses to the tasks and associated evidence. A suitable person should be chosen to play the part of the assessor.

A practice interview based on the EPA portfolio is provided to help prepare the appropriate questions to ask and to record the apprentices' performance. See Appendix F, PISF Supporting Documents 'Practice Interview based on an EPA Portfolio Form.
As part of the practice exercise, apprentices should have access to their EPA portfolio to support their responses.

Trade test practical assessment with questions approval

EUIAS are required to approve employers' trade test practical assessment with questions materials to be used by employer assessors, apprentices and their managers. The approval must take place before the first trade test practical assessment is carried out. Additional approvals may be taken periodically on a risk-based approach. The purpose of the approval is to provide EUIAS with assurance that the trade test practical assessment will be conducted in line with the PISF Assessment Plan.

Submitting the form to EUIAS

To obtain approval, employers must complete the trade test practical assessment requirements and mapping form, see Appendix C, PISF Supporting Documents

'Trade Test Practical Assessment Requirements and Mapping Form'. This must be submitted to the EUIAS Service Delivery Team for approval at least 3 months before Gateway. The form must be accompanied by the relevant documents, listed on page 1 of the form.

EUIAS Approval Process

Once the trade test practical assessment requirements and mapping form has been received the approval process will be conducted by EUIAS. The outcomes will be shared with the employer/training provider no later than 10 working days following receipt of all the relevant documents.

Preparing for the trade test practical assessment with questions

Where possible, the employer/training provider should provide the apprentice with the opportunity to carry out a practice trade test practical as close to the real assessment described in Section 2 of the specification (Component 3).

The employer/training provider should prepare tasks similar to (but not identical to) the tasks being used for the live assessment. A suitable person should be chosen to play the part of the assessor. An example trade test practical assessment recording form for assessors is provided in Supporting Documents, see Appendix G, PISF Supporting Documents 'Example: Trade Test Practical Assessor Recording Form'.

Employer assessors who will be carrying out assessment of the trade test, as part of the EPA, are required to be approved by EUIAS and listed on the EUIAS assessor register. Employers should contact EUIAS to ensure that the approval process if followed.

Trade test technical interview approval

Purpose

EUIAS are required to approve employers' trade test technical interview materials to be used by employer assessors, apprentices and their managers. The approval must take place before the first trade test technical interview is carried out. Additional approvals may be taken periodically on a risk-based approach. The

purpose of the approval is to provide EUIAS with assurance that the trade test technical interview will be conducted in line with the PISF Assessment Plan.

Submitting the form to EUIAS

To obtain approval, employers must complete the trade test technical interview requirements and mapping form, see Appendix D, PISF Supporting Documents 'Trade Test Technical Interview Requirements and Mapping Form. This must be submitted to the EUIAS Service Delivery Team for approval at least 3 months before Gateway. The form must be accompanied by the relevant documents, listed on page 1 of the form.

EUIAS Approval Process

Once the trade test technical interview requirements and mapping form has been received the approval process will be conducted by EUIAS. The outcomes will be shared with the employer/training provider no later than 10 working days following receipt of all the relevant documents.

Preparing for the trade test technical interview

Where possible, the employer/training provider should provide the apprentice with the opportunity to carry out a practice trade test technical interview as close to the real assessment described in Section 2 of the specification (Component 4).

A practice technical interview should take place between the apprentice and the person acting the role of an assessor. An example trade test technical interview recording form, for assessors, is provided in Supporting Documents, see Appendix H, PISF Supporting Documents 'Example: Trade Test Technical Interview Assessor Recording Form'.

Employer assessors who will be carrying out the technical interview, as part of the EPA, are required to be approved by EUIAS and listed on the EUIAS assessor register. Employers should contact EUIAS to ensure that the approval process is followed.

Section 6: Authenticity and security of apprentice work

The apprentices must be advised by their training provider and employer that copying of any work (whether it is from another apprentice or from internal, external documents or source) and presenting it as their own will be deemed as malpractice and will lead to their work being disqualified. Apprentices must not share their work or allow any person to copy their work as this is not allowed and would also be deemed as malpractice.

In signing off the portfolio, training providers and employers must be satisfied that the evidence in the portfolio is:

- **adequate**: evidence must support the tasks (and associated KSBs) within the EPA Portfolio Template. Adequate does not mean a large quantity of evidence. The evidence should focus on quality rather than quantity
- **authentic:** apprentices must be able to confirm and talk about the evidence that they submit with the independent assessor, appointed by the EUIAS. It is vitally important apprentices only submit evidence relating to them
- **appropriate**: all evidence must be relevant tasks (and associated KSBs) assessed during the interview based on an EPA portfolio
- **recent and up to date**: all evidence must be linked to the tasks in the EPA Portfolio Template. The evidence must be recent and current which demonstrate the apprentice's competence. The independent assessors, appointed by the EUIAS will assess current competencies. Apprentices must gather the evidence during their on-programme training.