ENERGY & ENVIRONMENT AWARDS

EEA Level 3 End-point Assessment for Water Industry Asset Maintenance Technician
(Mechanical; Electrical; Instrumentation, control and automation)

Specification

QAN 610/6456/7
ST1404 V1.0

Specification for

EEA Level 3 End-point Assessment for Water Industry Asset Maintenance Technician

QAN 610/6456/7

Updates to this specification

Since the first publication of Energy & Environment Awards (EEA) Water Industry Asset Maintenance Technician Specification (WIAMT), the following updates have been made.

Version	Date first published	Section updated	Page(s)
v1.0	January 2026	First published	All

Section 1: At a Glance EPA Summary

Qualification name	EEA Level 3 End-point Assessment for Water Industry Asset Maintenance Technician
Ofqual qualification number	610/6456/7
Standard reference	ST1404
Assessment plan	V1.0
Standard title	Water Industry Asset Maintenance Technician
Specialist options	Mechanical Electrical Instrumentation, control and automation
Level	3
Entry requirements	Learners must be 16 years of age or above
On-programme duration	Typically 48 months Must spend a minimum of 8 months on the program and complete the required off-the-job training according to the apprenticeship funding rules
Gateway readiness	Mandatory requirements: • Employer or training provider must confirm the apprentice is ready to take the EPA • Apprentice must achieve English and mathematics qualifications in line with the apprenticeship funding rules • Compile and submit an EPA portfolio, which the interview will be based To confirm the apprentice has met all Gateway pre-requisites, employer must complete, sign and

	submit the Gateway Eligibility Form (GER) form to EEA. See Appendix B, Water Industry Asset Maintenance Technician Supporting Documents 'Gateway Eligibility Form.'
End-point assessment duration	Typically, 3 months after the Gateway
End-point assessment methods and their order	The assessment components can be delivered in any order. The result of one assessment method does not need to be known before starting the next: • Observation with questions • Interview based on an EPA portfolio • Multiple-choice test
End-point assessment methods and component grading	Observation with questions: Fail; or Pass Interview based on an EPA portfolio: Fail; Pass; or Distinction Multiple-choice test: Fail; or Pass
Overall Grading	Fail; Pass or Distinction
Certification	EEA request Apprenticeship completion certificates from DfE
Glossary of Terms	Appendix A, Water Industry Asset Maintenance Technician Supporting Documents

Objective

The purpose of the Water Industry Asset Maintenance Technician end-point assessment (EPA) is to reflect compliance with all Ofqual requirements, the requirements of the relevant Assessment Plan and 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 WIAMT end-point assessment requirements successfully and has been certified they could take on the following job role:

- ICA technician
- Maintenance technician
- Maintenance technician electrician
- Mechanical asset technician
- Mechanical maintenance technician

Professional recognition

The apprenticeship standard aligns with:

- The Institution of Engineering and Technology for EngTech

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 WIAMT Supporting Documents Appendix B.

Recognition of prior learning (RPL)

Energy & Environment Awards (EEA) 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 Energy & Environment Awards RPL and RPA policy at https://energyenvironmentawards.co.uk/policies-and-fees/

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

- each of the EPA components must be completed in full with EEA
- where an apprentice transfers to EEA from another EPAO they have to undertake the entire EPA with EEA
- components of the EPA cannot be certificated in isolation
- evidence for the portfolio and interview must be produced while the apprentice is 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: Observation with questions

Overview

In the observation with questions, an independent assessor, approved by Energy & Environment Awards, will observe the apprentice completing their normal work duties, under normal working conditions. The apprentice will demonstrate the application of the relevant job role knowledge, skills and behaviours (KSBs) through naturally occurring evidence. The observation must be of an apprentice completing their usual work and simulation is not permitted.

The independent assessor will ask questions during the observation. To remain as unobtrusive as possible, the independent assessor will ask questions during natural breaks between tasks and after completion of work rather than disrupting the apprentice's flow.

Energy & Environment Awards will give the apprentice at least **2 weeks' notice** of the assessment.

The following table outlines the procedure for conducting an observation with questions:

Assessors	1 Independent assessor, approved by EEA.
Observation structure	The total assessment time is 4 hours. The independent assessor can increase the time by up to 24 minutes (10%) to allow the apprentice to complete a task or respond to a question if necessary. The independent assessor: • may observe only one apprentice at any one time, to ensure quality and rigour. • will ask questions to assess the level of competence against the grading descriptors. Questioning will take place during and after work completion The observation may be split into discrete sections held on the same working day.

	There may be breaks during the 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 breaks must be invigilated during the assessment, to maintain security of the EPA, in line with EEA's malpractice policy. The apprentice may choose to end the observation early. The apprentice must be confident they have demonstrated competence against the assessment requirements for the assessment method. The independent assessor must ensure the apprentice is fully aware of all the observation requirements. The independent assessor cannot suggest or choose to end the assessment methods early, unless in an emergency. The independent assessor is responsible for ensuring the apprentice understands the implications of ending an observation early if they choose to do so. The independent assessor may suggest the observation continues. The independent assessor must document the apprentice's request to end the observation early.
Where will the assessment take place?	The observation with questions must take place at the apprentice's workplace in a real work setting under normal working conditions. Questioning that occurs after the assessment should take place in a quiet location free from distractions and influence.
What are the tasks that will be covered?	The apprentice will be observed carrying out all of the following core activities: **Core** • preparation of resources for work • health and safety compliance • completion of documentation and written communication The apprentice will also be observed carrying out ONE of the following specialist options: **Mechanical** • repair or maintenance activities **Electrical** • repair or maintenance activities

	Instrumentation, control and automation • configuration and calibration activities • repair or maintenance activities These activities provide the apprentice with the opportunity to demonstrate the KSBs mapped to this assessment component. **For further details refer to 'Knowledge, Skills and Behaviours (KSBs) Coverage' below pages [11 - 39].**
Who sets the task(s)?	EEA must review the employer and/or training provider planned tasks which are based on the activities listed above. See Appendix D, WIAMT Supporting Documents 'Level 3 Water Industry Asset Maintenance Technician observation with questions planning and approval form.'
What resources can the apprentice use?	The employer/training provider will provide equipment and resources needed for the observation with questions. Equipment and resources needed for the observation must be: • the tools, 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 independent assessor: • will ask a minimum of 5 questions • may ask follow-up questions in order to seek clarification
What will the questions focus on?	Underpinning knowledge and/or skills and behaviours where an opportunity to observe them has not occurred.
Grading	Fail or Pass

Observation with questions knowledge, skills and behaviours (KSBs) coverage

The observation with questions covers core and pathway KSBs

Core	
Observation with questions Core Theme: Prepare for work	Amplification and Guidance (where required)
S3: Identify and organise resources to complete tasks, with consideration for process, cost, quality, safety, security and environmental impact.	Demonstrates how they: • review the task requirements, breaking down tasks into phases, e.g. isolation, removal, inspection, installation, testing, reinstatement • identify required resources, listing all necessary tools and equipment, materials, permits, PPE, and documentation • check availability and suitability of resources, ensuring they are in good condition and appropriate for the task This should include how they: • schedule resources and personnel to avoid delays and minimise downtime • select cost-effective materials and methods without compromising quality • ensure safety and compliance with company procedures and regulatory obligations • minimise environmental impact by implementing environmental controls and ensuring waste is segregated and disposed of safely • safeguard critical national infrastructure by maintaining site and asset security, such as closed gate policy, CCTV, and building alarms

Core	
Observation with questions Core Theme: Health and safety	Amplification and Guidance (where required)
K7: Safe systems of work.	Demonstrates an understanding of: • risk assessments: how to identify hazards, assess risks and implement control measures • method statements: outline the step-by-step approach to completing tasks safely and effectively • permit to work systems: required for high-risk activities such as electrical isolation, hot works, or confined space entry • lock-off / tag-out procedures: safely isolate equipment to prevent accidental energisation or operation
S4: Follow health and safety procedures and safe systems of work in compliance with regulations and standards, including PPE.	Demonstrates how they: • identify and review existing risk assessments or method statements relevant to the task and site • conduct pre-work risk assessments, considering the task, team roles, environmental conditions and any implications to assets or process • select and inspect appropriate PPE suitable for the task and environment, such as working with wastewater assets or chemicals • comply with permit-to-work systems where required, e.g. confined spaces, electrical isolation and hot works • use tools, equipment and machinery in line with PUWER and following safe operating procedures

Core	
Observation with questions Core Theme: Health and safety	Amplification and Guidance (where required)
	• maintain good housekeeping, keeping the work area tidy, removing trip hazards and managing waste responsibly • clearly verbalise safety checks, explaining each step taken to colleagues, contractors and stakeholders working on or impacted by the task • ensure compliance of relevant legislation and standards, e.g. Health and Safety at Work Act, COSHH (Control of Substances Hazardous to Health), PUWER (Provision and Use of Work Equipment Regulations), LOLER (Lifting Operations and Lifting Equipment Regulations), WEEE (Waste Electrical and Electronic Equipment) Regulations
S7: Restore the work area on completion of the activity.	Demonstrates how they: • remove any locks, safety devices or signage that has been used for isolation or information during the work activity • sign off job tickets, and permits to work, and complete a log entry in the site logbook or job recording system • clean and inspect all tools and equipment, checking for damage or wear and storing correctly • collect and segregate waste, disposing of waste materials correctly in accordance with company procedures and environmental regulations • return unused or reusable materials to designated areas to avoid unnecessary waste, e.g. fittings and lubricants

Core	
Observation with questions Core Theme: Health and safety	Amplification and Guidance (where required)
	• leave the work area safe for others on completion of task, such as removing trip hazards, securing access points, reinstating or removing barriers or signage as necessary • confirm task completion with the relevant stakeholders such as control room or supervisors

B1: Take responsibility for and promotes health, safety and wellbeing for self, others, site and assets.	Consistently take responsibility for the health, safety and wellbeing of:
	• themselves and others:
	  ○ encourage team members to follow safety rules
	  ○ report unsafe practices
	  ○ maintain a clean and safe work area
	  ○ participate in safety briefings
	  ○ model positive wellbeing habits
	• sites and assets
	  ○ follow site access and security protocols such as sign-in procedures
	  ○ know site emergency procedures
	  ○ report unsafe conditions immediately
	  ○ report asset condition and defects in line with company procedures

Core	
Observation with questions Core Theme: Documentation and written communication	Amplification and Guidance (where required)
K15: Written communication and documentation: methods and requirements - electronic and paper. Service records. Test results.	Demonstrates an understanding of the: • use of digital platforms to record service history, test results, and maintenance actions, such as asset management systems (e.g. Maximo, SAP), handheld devices, or SCADA logs • relevant documentation to be completed in line with company procedures and task requirements, such as job sheets, risk assessments, permits, handover documents, and inspection checklists • company protocols for version control, approvals, and distribution • importance of maintaining audit trials and following GDPR, cyber security, and data protection policies
S8: Communicate in writing and record or enter information - paper based or electronic. For example, job sheets, risk assessments, equipment service records, test results, handover documents and manufacturers' documentation, asset management records, work sheets, checklists, waste environmental records and legal reporting requirements.	Demonstrates how they: • select appropriate documentation for job sheets, risk assessments, service records, and permits • save and organise electronic files, ensuring documents are stored correctly in secure systems • draft and review risk assessments., updating where required to clearly identify hazards, controls, and residual risks • accurately complete all documentation, using correct terminology and recording all relevant details, such as dates, times, asset ID’s, test results, and actions taken

Core	
Observation with questions Core Theme: Documentation and written communication	Amplification and Guidance (where required)
	• prepare handover documents, outlining completed work, outstanding issues, and next steps for the incoming team • update electronic asset management records with relevant details, e.g. maintenance history, component replacements, and calibration dates • complete waste transfer notes, hazardous waste logs, and environmental records • submit any legal or statutory documents to relevant authorities or internal compliance teams

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)

K24: Safe isolation and depressurisation of mechanical plant and equipment in preparation for repair and maintenance work. Permits, safe isolation policies and procedures, lock off systems.	Demonstrates an understanding of:
	• Safe systems of work for mechanical isolation:
	  ○ Permit-to-work systems for mechanical tasks
	  ○ safe isolation procedures, including valve closure, drain-down, and lock-off/tag-out
	  ○ depressurisation techniques for pressurised systems (e.g. air, water, steam)

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)
S21: Isolate plant and equipment in preparation for maintenance work, including permits, safe isolation policies, lock off systems and depressurisation of pressurised systems.	○ company policies and documentation for mechanical isolation This should include how they: • obtain and complete the correct authorisation paperwork such as Permit-to-work, and risk assessments • review the machine's isolation system to identify isolation points such as valves, switches, or breakers • identify and isolate all sources of energy, e.g. electrical power, pressurised fluids or gasses, stored mechanical energy, and thermal energy • drain or vent pressurised systems safely using approved methods • follow companies' safe isolation policy: ○ applying lock-off/tag-out devices ○ using signage, and barriers as required • ensure isolation is verified before work begins • communicate with supervisors or permit holders to update the permit as each stage is completed if applicable
S18: Disconnect and remove mechanical equipment or components.	Demonstrates how they: • review technical drawings, manuals, and isolation diagrams • carry out a targeted risk assessments and method statements • follow safe isolation procedures appropriate to specific plant and machinery

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)
	• select the appropriate tools, equipment and techniques to correctly disassemble and reassemble equipment or components • follow safe lifting and handling procedures when manoeuvring heavy components, including the use of lifting aids • inspect parts after disassembly to make sure they are clean, undamaged, and safe to reuse • label, store and/or dispose of removed parts in line with company procedures
S30: Apply mechanical theories and principles.	Demonstrates an application of mechanical theories and principles, such as: • Force: the relationship between force, mass and acceleration; Newton's laws of motion • Pressure: Pascal's Principle, Hydrostatic pressure, and fluid dynamics • Torque: the rotational force applied to an object (e.g. when tightening bolts), with its direction determined by the right-hand rule • Flow: how liquids or gases move through systems (e.g. pumps, valves); conservation of mass, momentum and energy This should include how they: • ensure correct alignment and orientation using appropriate tools and equipment such as torque wrenches, and pressure gauges • use correct torque settings when tightening bolts to avoid leaks or damage • consider component suitability when selecting replacement parts

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)

	• check flow direction and velocity when installing or inspecting pipework:
	  ○ ensure correct pipe orientation
	  ○ assess flow rates to ensure they are within safe operating limits
	• make adjustments based on mechanical behaviour:
	  ○ adjust valve positions to control flow
	  ○ balance rotating equipment to reduce vibration
	  ○ use shims or spacers to align components accurately
	• apply appropriate lubrication to reduce friction and wear based on operating temperature, load and speed, and environmental conditions

K26: Repair and maintenance of machinery, equipment and components. Practices and techniques. Removing and replacing parts, set up, adjustment, cleaning and lubricating.
 	
S19: Apply repair and maintenance practices and techniques.
	Demonstrates an understanding of:
	• industry-standard maintenance regimes, such as:
	  ○ planned preventative maintenance (PPM): scheduled maintenance performed at set intervals
	  ○ condition-based monitoring: maintenance triggered by real-time data on equipment condition
	  ○ reactive maintenance: unplanned repairs carried out after equipment has failed or a fault occurs
	
	Applies repair or maintenance techniques to:
	• recognise faults and, where applicable, diagnose systematically using appropriate:

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)
	○ test equipment such as multimeters, pressure gauges, and vibration sensors ○ fault-finding techniques such as visual and sensory checks, half split technique, and unit substitution • interpret relevant technical documentation: ○ manuals, datasheets, service records, and drawings ○ specifications, tolerances, recommended procedures • identify and correctly remove and replace worn/damaged parts with suitable replacements • prepare for reassembly by ensuring components are: ○ cleaned using appropriate methods and agents ○ lubricated according to operating conditions, using clean tools to prevent contamination and over-lubrication • reassemble mechanical equipment, using proper alignment, torque settings, and precision measuring tools • conduct functional checks and recommissioning under load to ensure replacement parts are operational • document results clearly, interpreting them against set tolerances and standards • carry out final handover with agreed resolutions and areas for improvement to supervisors/asset managers

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)

K27: Tools, equipment, resources and components used for the installation, repair and maintenance of mechanical systems. Application, operation, care and calibration requirements.
 	
S20: Use tools, equipment, resources and components for installation, repair and maintenance tasks.
	Demonstrates an understanding of:
	• identify and select suitable consumables and components, ensuring system compatibility and compliance with environmental and safety standards
	• the purpose and suitability of:
	  ○ tools and equipment, such as hand tools, power tools, measurement and test equipment, and lifting and handling equipment
	  ○ components and resources, such as bearings, seals, gaskets, couplings, fasteners, lubricants, and mechanical consumables
	• the importance of:
	  ○ IP Ratings (Ingress Protection): level of protection against ingress of solid objects such as dust and water
	  ○ Ex (ATEX) Ratings: certification of tools and equipment for use in explosive areas
	• calibration requirements and processes
	
	This should include how they:
	• select the correct tools for the task, e.g. torque wrench for bolting, pipe cutters for pipework, and lifting gear for heavy components
	• use tools safely and effectively, following manufacturer's guidelines, correct technique, and company procedures e.g. tightening bolts to specified torque, aligning flanges, applying sealant

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)

	• identify and select suitable consumables and components, ensuring system compatibility and compliance with environmental and safety standards
	• follow calibration processes, including:
	  ○ manufacturer's guidelines for correct calibration intervals and procedures
	  ○ check calibration certificates to confirm tools or equipment are within their valid calibration period
	  ○ ensure calibration labels are present and match the tool's or equipment's serial number
	• follow correct procedures for inspecting, cleaning, storing and maintaining tools and equipment
	• follow company procedures to report any faulty equipment

K29: Inspection, monitoring and testing requirements and techniques. **S22:** Inspect and test mechanical systems and components. **S24:** Carry out inspection and monitoring of mechanical systems and equipment.	Understands techniques and requirements for: • visual inspections: to identify signs of wear, corrosion, leaks, misalignment, or damage on mechanical components such as pumps, valves, pipework, and rotating equipment • condition monitoring, such as vibration analysis, thermography, oil sampling, and ultrasonic testing to assess equipment health • use of tools, such as dial indicators, laser alignment tools, or straight edges to check shaft alignment and coupling integrity

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)
	• fault recognition: to prevent system failure, environmental harm, or pose a risk to health and safety • remote monitoring through technologies such as SCADA, IoT sensors, and telemetry systems • trend analysis: use of equipment to identify patterns or changes in equipment performance over time Demonstrates how they: • follow inspection schedules in line with manufacturer's guidelines and organisational procedures to carry out visual/sensory checks and inspections • carry out alignment and movement checks for excessive vibration, noise, or movement in rotating or reciprocating equipment • perform mechanical integrity and functional tests – record results and highlight any anomalies • monitor mechanical systems to ensure they are operating within set parameters • follow site-specific safety procedures to ensure systems are isolated, depressurised, de-energised, and safe to inspect or test • adhere to standard operating procedures (SOPs), risk assessments, method statements and safe systems of work

Mechanical	
Observation with questions Mechanical Theme: Repair or Maintenance	Amplification and Guidance (where required)
	• use control and automation systems such as SCADA, sensors, data loggers to identify trends, anomalies, or alarms that may indicate developing faults • verify sensor readings and calibrate monitoring equipment as required • check systems and components meet relevant standards, specifications, and manufacturer requirements • complete documentation (digital or manual) to log inspection results, including any anomalies or defects

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)

K38: Safe isolation of plant and electrical equipment in preparation for repair and maintenance work. Permits, safe isolation policies and procedures, lock off systems.
 	
S39: Isolate equipment in preparation for maintenance work, including permits,
	Demonstrates how they:
	• review plant or equipment's isolation system before commencing work
	• identify all relevant sources of energy, e.g. electrical supply, control circuit, telemetry interface
	• follow safe isolation procedures including:
	  ○ appropriate test equipment, e.g. voltage indicators, proving units
	  ○ lock-off devices and warning tags
	  ○ verifying dead before commencing work

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)
safe isolation policies and lock off systems.	• obtain and complete the correct permits and authorisations, (e.g. Permit to Work (PTW), Electrical Isolation Certificate), updating at all relevant stages as necessary • maintain safe isolation throughout the task • coordinate with permit authorities and relevant stakeholders, e.g. operations team, control room
S33: Apply electrical theories and principles.	Applies electrical theories and principles when carrying out safe isolation on plant and equipment, including: • identifying and verifying isolation points, e.g. wiring diagrams, AC/DC, single phase & three-phase, circuit protection principles, Ohm's Law, power calculations • proving dead and locking off, e.g. voltage, current, and resistance relationships (Ohm's Law); safe isolation procedures • confirming earthing and bonding integrity before and after isolation • identifying and checking circuit protection devices such as fuses, breakers, RCDs to ensure correct isolation and asset protection • system impact of isolation, e.g. three-phase systems, control systems and feedback loops
K42: Tools, equipment, resources and components used for the installation, repair and maintenance of electrical	Demonstrates an understanding of the purpose and suitability of: • tools and equipment, such as: ○ hand tools: insulated screwdrivers, pliers, cable strippers, crimping tools

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)
systems. Application, operation, care and calibration requirements. **S38:** Use tools, equipment, resources and components for installation, repair and maintenance.	○ power tools: drills, impact drivers ○ workshop tools: torque wrenches ○ test equipment: multimeters, insulation testers, clamp meters • components and resources, such as fuses, relays, contactors, and wiring • the importance of: ○ IP Ratings (Ingress Protection): level of protection against ingress of solid objects such as dust and water ○ Ex (ATEX) Ratings: certification of tools and equipment for use in explosive areas • how system requirements effect the selection of tools, equipment, resources, and components • calibration requirements and processes This should include how they: • select the appropriate tools and equipment in line with manufacturer's specifications and task requirements, including: ○ inspecting tools and equipment before use ○ the competent use and operation of tools and equipment ○ cleaning and storing tools properly after use

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)

	• select and use suitable consumables and components in accordance with installation diagrams, manufacturer's guidelines and company procedures, including using the appropriate PPE
	• consider IP Ratings and EX ratings when selecting tools, equipment and resources
	• follow calibration processes, including:
	  ○ manufacturer's guidelines for correct calibration intervals and procedures
	  ○ check calibration certificates to confirm tools or equipment are within their valid calibration period
	  ○ ensure calibration labels are present and match the tool's or equipment's serial number

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)

K44: Inspection and testing requirements and techniques.
 	
S40: Inspect and test electrical installations and equipment.
	Applies an understanding of inspection and testing requirements for electrical installations and equipment when completing work tasks, including:
	• purpose of inspection and testing, e.g. safety, compliance, fault-finding, and performance verification
	• types of inspection:
	  ○ visual inspection for damage, overheating, corrosion or loose connections
	  ○ functional inspection to check the operation of control systems, sensors, and alarms
	• electrical testing techniques such as insulation resistance, polarity, continuity, Residual Current Device (RCD) functionality, and Earth loop impedance
	• use and calibration of test equipment e.g. multimeters, insulation testers, RCD testers, continuity testers, and loop impedance meters
	• regulatory standards, e.g. BS 7671:2018 IET Wiring Regulations, and Electricity at Work Regulations 1989
	• manufacturer's guidelines for specific assets such as pump control panels, MCCs (Motor control centres), and telemetry systems
	• documentation and reporting requirements: recording test results, identifying non-compliance, and updating asset management systems

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)

K45: Repair and maintenance of equipment and components. Practices and techniques. Removing and replacing parts.
 	
S34: Apply repair and maintenance practices and techniques.
	Demonstrates an understanding of:
	• industry-standard maintenance regimes
	  ○ planned preventative maintenance (PPM): scheduled maintenance performed at set intervals
	  ○ condition-based monitoring: maintenance triggered by real-time data on equipment condition
	  ○ reactive maintenance: unplanned repairs carried out after equipment has failed or a fault occurs
	
	Applies repair or maintenance techniques to:
	• verify safe isolation before commencing work
	• diagnose faults systematically using appropriate:
	  ○ tools and test equipment, such as, multimeters, insulation testers, RCD testers, continuity testers, and loop impedance meters
	  ○ techniques such as half split, continuity testing, signal tracing, and component substitution
	• interpret relevant technical documentation, including wiring diagrams, manufacturer manuals, and asset maintenance records
	• identify and correctly remove and replace worn/damaged parts with suitable replacements

Electrical	
Observation with questions Electrical Theme: Repair or maintenance	Amplification and Guidance (where required)

	• follow correct disassembly and reassembly sequences, ensuring components are removed and replaced without damage and in line with manufacturer guidance
	• select and follow the appropriate maintenance technique:
	  ○ condition-based maintenance techniques, such as thermal imaging, insulation resistance testing, loop impedance and earth fault testing
	  ○ preventative maintenance techniques such as calibration checks, replacing parts, cleaning and tightening connections
	• conduct functional checks and recommissioning under load to verify correct operation and effectiveness of the replacement part
	• demonstrate safe working practices and ensure the safety of themselves and others
	• document results clearly, interpreting them against set tolerances and standards

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Configure and calibrate	Amplification and Guidance (where required)

K54: Open and closed loop systems. First and second order control systems.
 	
S48: Calibrate and monitor open and closed loop systems.
	Demonstrates an understanding of:
	• open-loop and closed-loop control systems, including their practical applications e.g. flow control loops, level regulation, and dosing systems
	• the characteristics of first-order and second-order control systems, including: time constant, damping ratio, overshoot, and settling time
	• the role of data-logging tools and software, such as:
	  ○ capture step responses
	  ○ plot output versus time
	  ○ calculate key metrics to verify system performance against expected behaviour
	
	Demonstrates how they:
	• recognise signs of unacceptable operation, such as instability, excessive oscillation, or poor response time
	• carry out calibration routines on control system components, such as sensors, transmitters, controllers, actuators, and feedback devices
	• monitor system performance and verify correct operation of control loops through the use of:
	  ○ SCADA, Human Machine Interface (HMI), Telemetry, and current loops
	  ○ laptop monitoring and trend analysis
	• optimise system response by adjusting control parameters, e.g. gain, setpoint, and damping)

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Configure and calibrate	Amplification and Guidance (where required)
	• confirm successful operation through functional testing and performance verification • document calibration results and system behaviour, comparing against expected tolerances and standards
K62: Configuration and calibration procedures and requirements. Precision and tolerance. **S47:** Configure instrumentation and control devices. **S55:** Calibrate ICA equipment.	Demonstrates an understanding of: • procedures to configure and calibrate ICA equipment, including sensors, transmitters, controllers, and actuators • calibration tools and equipment, e.g. loop calibrators, signal simulators, and multimeters • precision and tolerance when calibrating equipment Demonstrates how they: • set up, configure and calibrate ICA devices such as sensors, transmitters, actuators and controllers, according to manufacturer's guidelines and task requirements • ensure correct input and output settings, including signal ranges (e.g. 4–20 mA, digital I/O), scaling, and setpoints • verify devices are operating within defined tolerances and interacting properly with control systems, e.g. PLCs, SCADA, and telemetry • use appropriate: ○ calibration tools, e.g. loop calibrators, signal simulators, multimeters, to ensure equipment operates within required tolerances

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Configure and calibrate	Amplification and Guidance (where required)
	○ configuration tools and software, e.g. HART communicator, configuration software, and handheld calibrators • recognise when equipment is out of tolerance and take appropriate corrective action • document configuration settings and changes accurately, ensuring traceability and compliance with company procedures • record calibration results clearly and accurately

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)
K52: Repair and maintenance of instruments, controllers, sensors, probes, attachments, cabling, meters and display units. Practices and techniques. **S51:** Apply repair and maintenance practices and techniques to instrumentation and control equipment, control systems and cabling.	Demonstrates an understanding of: • industry-standard maintenance regimes: ○ planned preventative maintenance (PPM): scheduled maintenance performed at set intervals ○ condition-based monitoring: maintenance triggered by real-time data on equipment condition ○ reactive maintenance: unplanned repairs carried out after equipment has failed or a fault occurs Applies repair or maintenance techniques to: • verify safe isolation before commencing work

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)

	• diagnose faults systematically using
	  ○ appropriate tools and equipment such as, loop calibrators, signal generators, Highway Addressable Remote Transducer (HART) communicators, insulation testers, and continuity testers
	  ○ laptops, software and programming languages, such as Ladder Logic, Structured text, and function blocks
	• repair or maintain ICA components such as controllers, sensors, transmitters, probes, attachments, cabling, meters, display units, PLCs, and HMIs
	• interpret relevant technical documentation, including wiring diagrams, piping and instrumentation diagrams, manufacturer manuals, calibration certificates, and maintenance records
	• identify and correctly remove and replace worn or faulty components with suitable replacements
	• follow correct disassembly and reassembly sequences, ensuring components are removed and replaced without damage and in line with manufacturer guidance
	• select and follow the appropriate maintenance technique:
	  ○ condition-based maintenance techniques, such as:
	  ▪ testing: thermal imaging, signal integrity checks, insulation resistance testing, loop impedance, and earth fault testing
	  ▪ data analytics: review performance data, alarm history, and trends
	  ○ preventative maintenance techniques such as calibration checks, replacing parts, cleaning and tightening connections

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)
	• conduct functional checks and recommission equipment under operational conditions to verify correct performance • demonstrate safe working practices and ensure the safety or themselves and others • document results clearly, interpreting them against set tolerances and performance criteria

K55: Safe isolation of plant and ICA equipment in preparation for repair and maintenance work. Permits, safe isolation policies, lock off systems.
 	
S57: Isolate equipment in preparation for maintenance work, including permits, safe isolation policies and lock off systems.
	Demonstrates how they:
	• review plant or equipment's isolation system before commencing work including:
	  ○ 4–20 mA current loops e.g. signal cables to transmitters, sensors
	  ○ Communication devices e.g. Ethernet switches, point-to-point links
	  ○ PLC racks and modules, HMI panels and SCADA servers
	• identify all relevant sources of energy e.g. electrical supply, control circuit, telemetry interfaces and signal lines
	• follow safe isolation procedures including:
	  ○ appropriate test equipment, e.g. voltage indicators, proving units, loop testers, and signal simulators
	  ○ lock-off devices and warning tags
	  ○ verifying dead before commencing work
	• obtain and complete the correct permits and authorisations (e.g. Permit to Work (PTW), Electrical Isolation Certificate, Instrument Isolation Certificate), updating at all relevant stages as necessary
	• maintain safe isolation throughout the task

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)
	• coordinate with permit authorities and relevant stakeholders e.g. operations team, control room
S45: Apply electrical theories and principles.	Applies electrical theories and principles when carrying out safe isolation on plant and equipment, including: • identifying and verifying isolation points, e.g. wiring diagrams, AC/DC, single phase & three-phase circuit protection principles, Ohm's Law, power calculations, signal attenuation • proving dead and locking off, e.g. voltage, current, and resistance relationships (Ohm's Law); safe isolation procedures • confirming earthing and bonding integrity before and after isolation • identifying and checking circuit protection devices such as fuses, breakers, RCDs to ensure correct isolation and asset protection • understanding system impact of isolation, e.g. three-phase systems, control loops, SCADA interfaces, and automated processes

K56: Tools, equipment, resources and components used for the installation, repair and maintenance of control systems. Application, operation, care and calibration requirements.	Demonstrates an understanding of the purpose and suitability of:
	• tools and equipment such as:
	  ○ hand tools: insulated screwdrivers, cable strippers, crimping tools
	  ○ workshop tools: torque wrenches, soldering stations, signal simulators
	  ○ testing equipment: multimeters, insulation testers, loop testers, portable signal generators, oscilloscope
	  ○ communication devices: laptop, configuration tools, network controllers

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)

S49: Use tools, equipment, resources and components for installation, repair and maintenance.	• components and resources such as sensors (e.g., pressure, flow, temperature), transmitters, actuators, control valves, PLCs, relays, contactors, and wiring
	• how system requirements effect the selection of tools, equipment, resources, and components
	• calibration requirements and processes
	
	This should include how they:
	• select the appropriate tools and equipment in line with manufacturer's specifications and task requirements, including:
	  ○ inspecting tools and equipment before use
	  ○ the competent use and operation of tools and equipment
	  ○ cleaning and storing tools properly after use
	• select and use suitable consumables and components in accordance with installation diagrams, manufacturer's guidelines and company procedure
	• follow correct procedures for inspecting, cleaning, storing, and maintaining tools and instrumentation devices
	• follow calibration processes, including:
	  ○ follow manufacturer's guidelines for correct calibration intervals and procedures
	  ○ check calibration certificates to confirm tools or equipment are within their valid calibration period

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)
	○ ensure calibration labels are present and match the tool's or equipment's serial number • consider cybersecurity and network considerations: ○ use secure protocols for communication and configuration ○ awareness of risks such as malware, unauthorized access, and data breaches
K59: Inspection and testing requirements and techniques **S53:** Inspect and test ICA equipment **S61:** Assess condition of equipment. Identify action required.	Applies inspection and testing requirements and techniques for ICA installations and equipment when completing work tasks, including: • purpose of inspection and testing, e.g. safety, compliance, fault-finding, performance verification and system integrity • types of inspection: ○ visual inspection for damage, overheating, corrosion or loose connections ○ functional inspection to check the operation of control systems, sensors, transmitters, alarms, PLCs, and HMIs • electrical testing techniques such as insulation resistance, polarity, continuity, Residual Current Device (RCD) functionality, Earth loop impedance, signal integrity (e.g. 4–20 mA loop checks), and calibration verification • Use and calibration of test equipment, e.g. multimeters, insulation testers, RCD testers, continuity testers, signal generators, loop testers, and impedance meters

Instrumentation, Control and Automation (ICA)	
Observation with questions ICA Theme: Repair or maintenance	Amplification and Guidance (where required)
	• regulatory standards, e.g. BS 7671 IET Wiring Regulations, and Electricity at Work Regulations 1989 • manufacturer's guidelines for specific assets such as pump control panels, MCCs (Motor control centres), telemetry systems, instrumentation cabinets, and field devices • documentation and reporting requirements: recording test results, identifying non-compliance; updating asset management systems, and maintaining calibration records

Observation with questions roles and responsibilities

Role	Responsibility
Independent Assessor	Explain, to the apprentice, the format and timescales of the observation with questions before it starts. Conduct and assess the observation with questions. Use language in the delivery of the EPA that is appropriate to level 3. Invigilate and supervise the apprentice during the observation with questions, including moving between tasks and breaks, to prevent malpractice in line with EEA invigilation procedures. Record and report assessment outcome decisions for each apprentice, following instructions and using assessment recording documentation provided by EEA. In the event of an apprentice requesting to end the interview early, the assessor must ensure the apprentice is fully aware of all the assessment requirements for the session. Requests must be documented in line with instructions provided by EEA.
Employer/Training Provider	The training provider must liaise effectively with the employer to ensure the apprentice is prepared for the observation with questions. Provide the venue for the observation with questions which must be suitably equipped to allow the apprentice to attempt all aspects of the observation with questions. Provide all necessary tools and equipment for the apprentice. Ensure the apprentice has access to the resources used on a daily basis. Provide EEA with access to any employer-specific documentation as required for example, company policies. Use EEA observation with questions review service to review and discuss the fitness for purpose of the assessment task. Ensure that any required supervision during the EPA period, as stated in this Specification, is in place.

Role	Responsibility
	Employer/training provider must remain independent from the delivery of the EPA.
Energy & Environment Awards	EEA will review the arrangements for the observation with questions planned by the employer/training provider. Arrange for the observation with questions to take place, in consultation with the employer/training provider and independent assessor

Component 2: Interview based on an EPA portfolio

Overview

The interview is based on the apprentice's EPA portfolio and focuses on holistic evidence covering the KSBs relating to the interview. The apprentices may refer to their EPA portfolio to help answer interview questions.

The EPA portfolio is **not assessed**. The EPA Portfolio Template is designed to assist the apprentice during their interview. The apprentice should use the EPA Portfolio Template to collate evidence in preparation for their interview. It should only contain evidence compiled throughout the apprenticeship. The EPA Portfolio Template will be issued to employers/training providers by their Energy & Environment Awards Service Delivery Coordinator and must be completed and submitted to EEA at Gateway.

The apprentice will be given at least **2 weeks notice** of the interview.

The following table outlines the procedure for conducting an interview based on an EPA portfolio:

Assessors	1 independent assessor approved by EEA will conduct the interview.
Interview structure based on an EPA portfolio	The apprentice's Manager/Mentor must support the completion of the EPA Portfolio Template tasks in accordance with company policy and procedures. **Types and number of questions:** • The independent assessor must ask a minimum of 10 questions • Standardised open questions which will be based on the contents of the evidence in the EPA portfolio to ensure the apprentice's level of knowledge, skills and behaviours • Additional follow up questions are allowed, to seek clarification **Location:** Employer's premises or a suitable venue for example a training provider's premises. **Time:** • The interview must last 90 minutes (1 hour 30 minutes) • The independent assessor has the discretion to increase the time of the Interview by up to 9 minutes (10%) to allow the apprentice to complete their last answer The apprentice may choose to end the interview early. The apprentice must be confident they have demonstrated competence against the assessment requirements for the

	interview. The independent assessor must ensure the apprentice is fully aware of all assessment requirements. The independent assessor cannot suggest or choose to end the interview early, unless in an emergency. The independent assessor is responsible for ensuring the apprentice understands the implications of ending the interview early if they choose to do so. The independent assessor may suggest the interview continues. The independent assessor must document the apprentice's request to end the assessment early. **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 EEA • video recorded using relevant technology such as Microsoft Teams or an audio recording device • conducted under examination conditions The apprentice must have access to their EPA portfolio throughout the Interview. Although questioning will cover ALL the elements of the WIAMT standard (listed below in this section of the Specification), the independent assessor will prioritise areas according to what they see in the EPA portfolio. **For further guidance on the EPA portfolio refer to Section 5 Practical Guidance on an EPA Portfolio.**
What topics will be covered?	**For further details refer to 'Knowledge, Skills and Behaviours (KSBs) Coverage below pages [44 - 86].**
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 an EPA portfolio knowledge, skills and behaviours (KSBs) coverage

The Interview based on an EPA portfolio covers the following:

Core	
Interview based on an EPA portfolio Theme: Responsibilities and continual improvement	Amplification and guidance (where required)
Roles, responsibilities and requirements	

K2: Awareness of water industry legislative and regulatory requirements. Materials in contact (WRAS approved), food grade lubricants, Asset Management Periods.	Demonstrates an understanding of:
	• key legislation and regulations governing the water industry such as:
	  ○ Water Supply (Water Fittings) Regulations 1999
	  ○ Water Industry Act 1991
	  ○ Health and Safety at Work Act 1974
	  ○ Drinking Water Inspectorate (DWI) requirements
	• The importance of using WRAS (Water Regulations Advisory Scheme) approved materials and food grade lubricants
	• The concept of Asset Management Periods (AMPs) set by Ofwat
	
	This should include how:
	• process safety, risk assessments, and incident procedures are applied to prevent pollution, service loss, and harm in water industry operations
	• AMP's influence business planning, investment, and maintenance priorities

Core	
Interview based on an EPA portfolio Theme: Responsibilities and continual improvement	Amplification and guidance (where required)
K5: Water industry maintenance technician role, responsibilities, limits of autonomy and reporting channels.	Demonstrates an understanding of: • their responsibilities in maintaining system integrity, safety, water quality, and environmental compliance. • their limits of autonomy, knowing when to act independently within safe and authorised parameters, and when to escalate issues or seek guidance from supervisors, engineers, or managers. • the reporting channels and communication structures within the organisation to ensure clear accountability and effective information flow
S1: Work in line with water industry standards and regulatory requirements.	Describe how they: • follow organisational and regulatory procedures during maintenance activities • apply safe systems of work, maintaining compliance with health, safety, and environmental legislation • ensure all materials, tools, and consumables meet WRAS or equivalent standards and are food-grade where required • complete documentation and reporting in line with regulatory and company requirements

Core	
Interview based on an EPA portfolio Theme: Responsibilities and continual improvement	Amplification and guidance (where required)
Continual improvement and CPD	
K18: Continuous improvement techniques. Asset and process optimisation.	Understand continuous improvement techniques, such as: • Root Cause Analysis (RCA): identify the underlying cause of recurring faults or failures to prevent future issues • Plan-Do-Check-Act (PDCA): cycle for testing and refining improvements • Kaizen: continuous incremental improvement through small, ongoing positive changes • 5S (Sort, Set, Shine, Standardise and Sustain): used to organise and maintain efficient workspaces • LEAN: principles focused on maximising value and minimising waste in processes • other continuous improvement techniques relevant to their organisation Describe how using these techniques supports asset and process optimisation by: • maximising the performance and lifespan of assets • increasing efficiency and reducing risk

Core	
Interview based on an EPA portfolio Theme: Responsibilities and continual improvement	Amplification and guidance (where required)
S12: Apply continuous improvement techniques. Devise suggestions for improvement.	Describe how they use continuous improvement techniques in their work, to include: • a suggestion they have made for asset or process optimisation or improvement • how they recorded or presented the idea • the process for trialling improvements and learning from outcomes • the potential impact of the improvement, both benefits and risks
S14: Carry out and record learning and development activities.	Apprentices should: • outline the learning and development activities they have completed • explain how the knowledge or skills gained has enhanced their ability to perform effectively in their role

B3: Seek to improve ways of working.	Describe how they:
	• actively look for opportunities to improve ways of working
	• suggest improvements and outline expected benefits, e.g. improved efficiency, and/or cost savings
	• reflect on lessons learned e.g. reviewing previous incidents or near misses to improve safe working practices.
	• share lessons learnt with:
	  ○ colleagues through stand downs or toolbox talks
	  ○ contract partners and wider industry

Core	
Interview based on an EPA portfolio Theme: Responsibilities and continual improvement	Amplification and guidance (where required)
B7: Committed to maintaining and enhancing competence of self and others through Continued Professional Development (CPD).	Show how they keep their own and colleagues' skills up to date through Continued Professional Development (CPD): • keeps up to date with industry developments • willingly participates in training to maintain or enhance current knowledge • maintains a record of progress • attempts to improve performance following constructive feedback • supports others with their learning

Core	
Interview based on an EPA portfolio Theme: Health, safety, security, environment and sustainability	Amplification and guidance (where required)
K8: Dangerous Substances and Explosive Atmospheres Regulations (DSEAR). ATEX compliance (safety requirements of the workplace and equipment used in explosive atmospheres). Working in and around explosive atmospheres. Hazardous areas (DSEAR zones). PPE. Intrinsically safe tools for working in explosive	Describe the DSEAR and ATEX regulation requirements for working in and around explosive atmospheres, including: • identification of hazardous areas (DSEAR zones) and classification of equipment • how they: ○ identify intrinsically safe tools and PPE approved for explosive atmospheres

Core	
Interview based on an EPA portfolio Theme: Health, safety, security, environment and sustainability	Amplification and guidance (where required)
atmospheres. Exposure limits. Necessary forced pre-ventilation. Gas monitoring equipment.	○ ensure safety from dangerous atmospheres and substances, e.g. exposure limits, necessary forced pre-ventilation, and gas monitoring equipment ○ ensure compliance with DSEAR/ATEX regulations whenever working in explosive atmospheres
K10: The impact water industry operations have on the environment.	Demonstrates an understanding of: • how water industry activities impact the natural environment through factors such as energy use, emissions, waste, leakage, pollution, and resource consumption • how processes such as treatment, pumping or maintenance use energy and chemicals • how poor waste handling can lead to land or water pollution • the environmental risks of spills, leaks, or uncontrolled discharges • why reducing waste and reusing materials supports environmental protection
S5: Comply with sustainability principles. Segregate waste for recycling, reuse or disposal.	Describe the practical actions they take to work sustainably: • segregate recyclable materials into designated streams, e.g. plastics, metals, paper, and cardboard • ensure hazardous waste is disposed of correctly. e.g. chemical containers, and oily rags

Core	
Interview based on an EPA portfolio Theme: Health, safety, security, environment and sustainability	Amplification and guidance (where required)
	• reduce material use where feasible, e.g. avoiding unnecessary PPE waste, and minimising packaging • reuse materials such as fittings, components or tools when safe and permitted • follow procedures for waste labelling, storage and transfer • prevent wastage of water, chemicals, and energy on site
B2: Considers the environment and sustainability.	Demonstrates how they consistently consider sustainability in their work by: • taking personal responsibility for minimising environmental impact • proactively preventing pollution, e.g. cleaning up minor spills, and reporting leaks • considering sustainability before starting a task, e.g. choosing the most environmentally efficient method • supporting site environmental initiatives such as reducing energy use or improving recycling rates • following all environmental procedures without needing to be reminded

K12: Asset security requirements.
 	
S15: Comply with security procedures. For example, site access, document classification, and securing assets.
	Explain how they comply with company security procedures:
	• access control:
	  ○ controlled access to restricted areas, e.g. ID badges, sign-in procedures
	  ○ key management and authorisation protocols

Core	
Interview based on an EPA portfolio Theme: Health, safety, security, environment and sustainability	Amplification and guidance (where required)

	• documentation control:
	  ○ awareness of data protection policies and secure handling of digital information, e.g. secure storage, confidentiality, version control
	• securing assets:
	  ○ adherence to procedures for safeguarding tools, equipment and materials
	  ○ use of mechanical locks and secure storage
	  ○ maintenance and inspection of locking mechanisms
	  ○ asset tagging
	  ○ reporting and escalation of security breaches or concerns

B6: Identifies issues and takes responsibility for actions.	Explain how they: • take personal responsibility for securing tools and equipment used • would report and act on any perceived security breaches • challenge unsafe or non-compliant behaviour in line with company security policies
K16: Personal hygiene risks and requirements for working on a water treatment or a wastewater treatment site.	Demonstrates an understanding of the hygiene and safety practices on water and wastewater sites: • key hygiene risks on water/wastewater sites, such as contact with sewage, sludge, aerosols, untreated water, biological pathogens, and chemical residues

Core	
Interview based on an EPA portfolio Theme: Health, safety, security, environment and sustainability	Amplification and guidance (where required)

	• potential health impacts, including infections, gastrointestinal illness, skin conditions, or long-term health effects from exposure to contaminants
	• required personal hygiene practices, including:
	  ○ thorough handwashing before eating, drinking, smoking, or leaving site
	  ○ correct donning, use, and removal of PPE
	  ○ safe storage and cleaning of reusable PPE
	  ○ procedures for contaminated clothing and equipment
	  ○ avoiding eating/drinking in contaminated areas
	  ○ following site decontamination points and wash stations.
	• organisational and legal requirements, such as COSHH, site-specific hygiene rules, and industry best practice
	• link between hygiene practices and safety outcomes: how correct behaviour reduces risk to themselves, colleagues, the public, and the water environment

K17: Water industry process safety and process risk assessments. Incidents and emergency situations (internal and external): pollution, loss of process, security, weather, and accidents: their potential impact. Incident management and	Describes how they: • follow process safety controls and site procedures • use and comply with process risk assessments, applying the required control measures

Core	
Interview based on an EPA portfolio Theme: Health, safety, security, environment and sustainability	Amplification and guidance (where required)
procedures. The risk of pollution and untreated water in supply.	• follow incident management steps, reporting issues, escalating emergencies, and carrying out required actions • recognise and act to prevent potential impacts such as pollution, untreated water release, or service disruption This should include: • why process controls, safety systems, and risk assessments are essential for preventing hazards and ensuring safe, compliant operations including • the benefits to themselves and the business, of complying with safety process and procedures, such as reduced risk of injury, improved competence, and protection from legal or disciplinary consequences

Core	
Interview based on an EPA portfolio Theme: Working with others	Amplification and guidance (where required)
Equity and diversity	
K19: Principles of equity, diversity, and inclusion in the workplace. Unconscious bias.	Understands the principles of equity, diversity, and inclusion in the workplace: • equity: provide fair access and opportunities, e.g. ensuring training, PPE, and shift patterns are accessible to all • diversity: value differences in background, experience, and perspective, e.g. recognising the varied skills and knowledge across teams • inclusion: create a respectful and welcoming environment, e.g. a culture where everyone feels respected, heard, and able to contribute fully Awareness of unconscious bias and how they can recognise it: • unconscious bias: unintentional judgements or assumptions which can affect how we make decisions and interact with others
S10: Apply equity, diversity and inclusion policies and practices.	Describes how they: • apply their company's equity, diversity and inclusion policies and practices within their role
B4: Promote inclusivity in the workplace with colleagues, stakeholders, and customers.	Describes how they: • show respect to others, e.g. promotes active listening and addresses conflicts promptly

Core	
Interview based on an EPA portfolio Theme: Working with others	Amplification and guidance (where required)
	• use inclusive language, avoiding assumptions and stereotypes • model respectful behaviour • create and maintain productive working relationships, e.g. set clear goals, encourage open communication, and foster inclusivity
Team working and communication	
K20: Team working principles. **S11:** Apply teamworking principles. **B5:** Collaborate and promote teamwork across disciplines.	Understands the principles of team working: • team dynamics and collaboration: working well with others to achieve common goals • goal setting and accountability: setting clear goals and taking responsibility for results • communication and flexibility: sharing ideas clearly sand adapting when things change • leadership and motivation: encouraging and guiding others to do their best Describes how they: • apply teamworking principles in line with company policy to achieve goals safely and effectively • develop and maintain positive relationships with colleagues • contribute to the team and understand the way they work impacts on wider teams

Core	
Interview based on an EPA portfolio Theme: Working with others	Amplification and guidance (where required)
	• ensure other people have the information they need to make the right decision quickly and to do their job well
K21: Non-written communication methods and techniques. Engineering maintenance terminology.	Demonstrates an understanding of non-written communication methods and techniques: • clear verbal instructions: deliver concise and accurate spoken instructions, especially in noisy, time-sensitive or safety-critical environments • tone and clarity: use of appropriate tone, pace, and volume to ensure messages are understood across diverse teams and settings • active listening: attentive listening and appropriate verbal responses to confirm understanding and encourage collaboration • use non-verbal communication appropriately, e.g. body language and eye contact
S13: Communicate with and provide support, technical advice, work updates and information to technical and non-technical colleagues and other stakeholders.	Describes how they use non written communication to: • understand instructions, feedback and concerns • provide support and updates to all stakeholders, adapting language and technical terminology for the audience • communicate clearly and concisely, ensuring understanding and transparency

Core	
Interview based on an EPA portfolio Theme: Working with others	Amplification and guidance (where required)
ICT and digital	
K22: Information technology and digital: digital interfaces, email, Management Information Systems (MIS), spreadsheets, presentation, word processing, virtual communication, learning platforms, work collaboration platforms. General Data Protection Regulation (GDPR). Cyber security. **S9:** Collect, interpret and use data and information using information and digital technology. Comply with GDPR and cyber security regulations and policies.	Outlines the importance of: • GDPR compliance: understands the General Data Protection Regulation (GDPR) requirements relevant to their role • Cybersecurity: awareness of cybersecurity risks and protective measures • following their company's GDPR and cyber security policies, highlighting the benefits to themselves and the business Describes how they: • use digital tools such as management information systems (MIS), data sharing platforms, email, spreadsheets, word processing software and other digital tools to support collecting and analysing data

Core	
Interview based on an EPA portfolio Theme: Planning for work	Amplification and guidance (where required)

K11: Planning, prioritising, work scheduling and time management approaches.
 	
S2: Plan maintenance work, taking into consideration: process safety and following process risk assessments; the impact work has on the environment and on water treatment or wastewater recycling.
	Demonstrate an understanding of:
	• roles and responsibilities
	• maintenance schedules and planning approaches
	• priority setting and adjustment based on operational needs
	• resource allocation, e.g. equipment, personal protective equipment (PPE), parts, and tools
	• time management techniques, e.g. daily, and contingency planning
	
	Describe how they:
	• plan maintenance work:
	  ○ set priorities based on task urgency and operational needs
	  ○ follow maintenance schedules
	  ○ apply scheduling methods
	  ○ manage work orders and task tracking
	  ○ communicate the plan clearly to all team members, contractors, and stakeholders
	• ensure process safety:
	  ○ safe isolation requirements
	  ○ lock-out/tag-out procedures
	  ○ emergency protocols
	  ○ Standard Operating Procedures
	  ○ permits to work
	• use and review risk assessments:

Core	
Interview based on an EPA portfolio Theme: Planning for work	Amplification and guidance (where required)
	○ identification of risks and hazards ○ purpose of different risk assessments, (e.g. generic, site-specific, dynamic) ○ when and how risk assessments and safety documents are reviewed • limit the impact of maintenance work on the environment and water industry processes, (water treatment and wastewater recycling): ○ identify and mitigate risks such as chemical contamination
K13: Tools and equipment used in maintenance and repair tasks. Operational checks, calibration, storage and maintenance requirements. **S6:** Select, check store and maintain equipment and tools.	Explain how tools and equipment are: • selected and used appropriately for a task: ○ review the job description, method statement, standard operating procedures and risk assessment ○ carry out pre-use checks and confirm calibration where required ○ follow manufacturers' guidelines and operating instructions • maintained to keep them working properly and in good condition: ○ inspect and maintain tools and equipment regularly ○ store tools and equipment appropriately (e.g. toolboxes, cabinets, racks, drawers) ○ check tools before use (e.g. look for signs of wear and tear, calibration) ○ use appropriate PPE ○ clean tools correctly after use

Core	
Interview based on an EPA portfolio Theme: Planning for work	Amplification and guidance (where required)
	○ follow manufacturer's guidelines and operating instructions
K14: Maintenance strategies and techniques: planned, preventative, predictive and reactive methods and their frequency.	Describe different maintenance strategies and techniques: • planned maintenance practices: ○ scheduled inspections and servicing ○ replacement of components before failure ○ calibration of instruments and control systems ○ cleaning and flushing of systems ○ minimising unplanned downtime and improving reliability • preventative maintenance practices: ○ routine servicing and inspections ○ replacement of parts (e.g. filters, seals) ○ top up of lubricants and grease • predictive maintenance practices: ○ condition monitoring ○ data analysis ○ maintenance scheduling ○ reducing maintenance costs and emergency repairs • reactive maintenance practices: ○ repairing systems after breakdown ○ replacing failed components (e.g. belts, switches, sensors, bearings, cable connections, terminals, joints) ○ restoring systems to operational condition

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	

K25: Practices and techniques for the installation, commissioning and decommissioning of mechanical systems and equipment.	Demonstrates an understanding of practices and techniques for:
	• installation:
	  ○ preparation of work area
	  ○ interpret technical drawings to verify component specifications and alignment requirements
	  ○ correct positioning, alignment, and securing of mechanical components such as pumps, valves, pipework, and actuators
	  ○ use appropriate tools and lifting equipment
	  ○ ensure all connections (mechanical, hydraulic, pneumatic) are correctly processed
	  ○ follow manufacturer's instructions including torque settings, lubrication requirements and calibration procedures in line with the specification
	• commissioning:
	  ○ conduct functional checks and performance tests to ensure systems operate as intended
	  ○ verify flow rates, pressure levels, and mechanical integrity
	  ○ calibrate instruments and adjust settings in line with operational requirements
	  ○ follow manufacturer's instructions including torque settings and lubrication requirements

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
	○ document results and confirm compliance with manufacturer guidelines and site-specific protocols • decommissioning: ○ safely isolate and dismantle mechanical systems, ensuring environmental and safety procedures are followed ○ drain fluids, depressurise systems, remove components without damage ○ dispose or store parts in accordance with regulations and/or manufacturer's guidelines
S16: Carry out commissioning and decommissioning tasks on mechanical equipment.	Describe how to: • commission mechanical equipment: ○ conduct checks to confirm correct installation ○ carry out functional tests on components such as pumps, valves, gearboxes and actuators ○ adjust settings and calibrate equipment to meet operational specifications ○ apply appropriate techniques, such as pressure testing to ensure systems are commissioned correctly • decommission mechanical equipment: ○ isolate energy sources to make sure all energy sources have been disconnected

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
	○ drain fluids and depressurise systems ○ dismantle components safely, taking care not to cause damage ○ work in line with operational and environmental requirements This should include how: • documentation and manufacturer's guidance are used to ensure commissioning and decommissioning is completed correctly and safely • risks and mitigated during both commissioning and decommissioning phases
Repair or maintenance	
K30: Basic fabrication, welding and thermal cutting processes for mechanical components and structures **S27:** Apply basic fabrication, welding and thermal cutting processes for mechanical components and structures.	Describe the processes used for: • basic fabrication: shape, cut, and assemble metal components using hand tools and machinery to create or repair parts • welding processes: join metal parts permanently using heat or pressure techniques • thermal cutting: cut metal accurately using heat-based methods such as laser cutting

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
	This should include how they: • follow manufacturer's instructions and safe working practices • refer to task specifications, e.g. dimensions, tolerances, material type • interpret fabrication drawings to determine dimensions, tolerances and material requirements • select correct tools and settings for the material and task • measure and mark materials accurately using appropriate tools before cutting
S29: Use machinery. For example, lathes, pillar drills, milling machine, threading machine, mechanical saws.	Describe how they: • use machinery such as lathes, drills, and saws to complete fabrication or machining tasks in accordance with specifications • select and wear appropriate PPE for the task, ensuring compliance with safety standards • follow manufacturer's instructions for equipment setup, operation, and maintenance to achieve accurate and safe results

K31: Bench fitting techniques used in equipment and component assembly.
 	
S28: Apply bench fitting techniques.
	Describe how they:
	• apply bench fitting techniques, such as:
	  ○ marking out, using appropriate tools, e.g. steel rule, callipers, and scribers
	  ○ sawing, using saws to cut materials to size

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
	○ filing, using hand tools to smooth, shape or fine-tune metal surfaces and edges ○ drilling, to create holes in components using hand drills or bench drills ○ tapping, to cut internal threads in drilled holes for bolts or screws • use appropriate hand tools to assemble components, such as spanners, hammers, and clamps • assemble components with precision to meet specifications and operational requirements, conducting checks to ensure correct fit and functionality • follow company procedures and manufacturer's guideline to ensure safe working practices, e.g. use of correct PPE
K33: Design specifications, plans, drawings and manufacturer's instructions. **S26:** Interpret and use manufacturer's instructions, design specifications, plans and drawings	Describe how they read and correctly interpret: • design specifications: dimensions, tolerances, and materials • engineering drawings and plans: layout, orientation, and connection points • manufacturer's instructions: installation, operation, lubrication and torque settings • technical documentation: calibration, alignment, and adjustment procedures

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
	This should include: • the importance of correctly interpreting manufacturer's instructions, design specifications, plans, and drawings when installing mechanical equipment or components, e.g. safety standards, compliance, equipment integrity, performance and reliability
S17: Assemble, position and install mechanical equipment or components.	Describe how they: • prepare the work area and confirm all safety measures are in place • select and inspect tools and lifting equipment for suitability and condition • refer to technical drawings and specifications to identify component locations and assembly requirements • position and align components accurately using appropriate alignment tools and techniques • secure components correctly with fasteners, torque settings, and locking devices as per manufacturer guidelines • connect mechanical, hydraulic, and pneumatic systems in line with specifications • check installation against specifications to ensure correct fit, alignment, and functionality • follow safe working practices, including using the correct PPE

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
Fault finding and problem solving	
K28: Fault finding, problem solving and rectification techniques. Aids and diagnostic equipment. **S23:** Carry out fault finding and rectification techniques using aids and diagnostic equipment	Describe how they apply: • fault finding techniques such as visual inspection, half split technique, unit substitution, manual testing, vibration analysis, and temperature checks • problem solving methods such as, root cause analysis, collaborating with colleagues • rectification techniques, such as component replacement, realignment and adjustment, lubrication and re-greasing This should include how they: • select diagnostic tools, such as multimeters, vibration analyser, pressure gauges and flow meters • identify and solve problems using fault finding and rectification techniques • document the fault-finding process, rectification steps, and justify the techniques used

Mechanical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	
S25: Identify a problem, investigate problem to identify the underlying cause. Identify a solution.	Describe how they: • identify problems with mechanical equipment such as pumps, gearboxes, valves, bearings, and hydraulic or pneumatic systems • use appropriate diagnostic tools and techniques to investigate the fault, including vibration analysis, pressure testing, flow measurement, and temperature checks • interpret results to identify the underlying cause such as misalignment, worn bearings, seal failure, contamination, or inadequate lubrication • evaluate options and propose an appropriate solution, e.g. replacing a bearing, re-aligning a shaft, resealing a hydraulic connection, re-greasing or applying fresh lubricant to components

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	

K35: Practices and techniques for the installation, commissioning and decommissioning of cabling and electrical equipment.	Demonstrates an understanding of practices and techniques for:
	• installation:
	  ○ interpret electrical plans and drawings, such as wiring diagrams
	  ○ selection of correct cable types, containment systems and protective devices
	  ○ use correct tools and methods for techniques such as terminating, routing and securing
	  ○ follow safe working practices, including safe isolation and risk assessments
	• commissioning:
	  ○ configure equipment following manufacturer's instructions
	  ○ carry out functional tests, insulation resistance testing, and earth continuity verification
	  ○ document commissioning results in line with company protocols
	• decommissioning:
	  ○ conduct isolation and lock-off procedures to ensure safe working conditions
	  ○ follow manufacturer's guidelines to remove equipment and cabling minimising disruption to surrounding equipment
	  ○ complete relevant documentation and update asset records

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	○ dispose or recycle components in line with environmental regulations and company policies
S32: Install, commission and decommission cabling and electrical equipment.	Describes how they: • follow manufacturer's instructions and task specifications • ensure compliance with wiring regulations BS7671 and company procedures • apply safe work practices and complies with health and safety requirements • communicate effectively with colleagues before, during and after task completion • install cabling and electrical equipment: ○ interpret wiring diagrams and installation instructions ○ select appropriate tools, materials and fixings for the task ○ conduct safe isolation ○ install cabling and components to a high standard to manufacturer's specifications • commission and test electrical equipment: ○ conduct functional checks to verify correct operation ○ performs insulation resistance testing and earth continuity checks ○ Completes relevant documentation with test outcomes and configuration details • decommission electrical equipment:

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	○ follow procedures to safely isolate, disconnect, and remove equipment and cabling ○ identify and label disconnected circuits and update documentation to reflect changes ○ dispose of equipment and materials responsibly, in line with company and regulatory requirements
K46: Awareness of wiring regulations - purpose and importance.	Demonstrates an understanding of: • BS 7671:2018: requirements for Electrical Installations (IET Wiring Regulations), including design, installation, and verification standards for safe electrical systems • purpose of wiring regulations, e.g. safety of people and equipment; prevention of risks such as electric shock, fire and equipment failure • the impact wiring regulations have on carrying out tasks: ○ importance of regulatory compliance ○ factors which may restrict or dictate locations of installations such as zones, IP ratings (Ingress Protection Ratings), environmental conditions, accessibility, proximity to other services

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
K37: Design and modification of electrical circuits. **S35:** Modify electrical circuits.	Describe the process used to design and/or modify electrical circuits, including how: • electrical drawings and design specifications are referred to before making modifications, to identify symbols, cable routes and termination points • modifications are checked to ensure they remain compliant with installation requirements such as, cable ratings and termination methods • the modifications they make are justified in order to achieve task requirements
K43: Design specifications, plans, drawings and manufacturer's instructions.	Describes how to read and correctly interpret: • design specifications: current ratings, cable types, protection devices, and installation environments • plans and drawings: electrical schematics, single-line diagrams, and layout drawings • manufacturer's instructions: installation, testing, and commissioning guidance
S41: Use electrical drawings.	Describes how they: • read and interpret drawings such as single-line, schematic and wiring diagrams • understand symbols and conventions, e.g. switches, relays, cable types

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)

	• apply drawings and specifications installation, commission and decommission tasks
	• update drawings throughout tasks:
	  ○ using appropriate methods such as red-lining and as-built
	  ○ accurately use version control

K48: Cable types and termination methods. Specifications and application. **S42:** Install different cable types and terminate to their specifications and applications	Describes how they interpret and use design specifications, plans, drawings and manufacturers' instructions to: • select and install appropriate cable types • decide which termination method is appropriate for the installation This should include: • cable types such as instrumentation, power, data, and armoured • termination methods such as crimping, gland termination, soldering, and plug connectors • the typical techniques and equipment used to carry out reliable termination • how modifications meet safety and task requirements • typical considerations and specifications which impact installations
K39: Types of intelligent control equipment. PLCs, HMIs, Intelligent starters, Variable Speed Drives (VSDs).	Demonstrates an understanding of monitoring system performance using: • PLCs (Programmable Logic Controllers): access diagnostic screens, input/output status, and fault logs • HMIs (Human-Machine Interfaces): view real-time data, alarms, and system trends

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	• Intelligent Starters: review motor status, overload conditions, and start/stop history to evaluate motor health • Variable Speed Drives (VSDs): interpret speed, current, voltage, and fault codes
S36: Interrogate information displayed on different types of intelligent control equipment. To include, PLCs, HMIs, Intelligent Starters, Variable Speed Drives (VSDs).	Describes how they: • interpret information from different types of intelligent control equipment such as PLCs, HMIs, VSDs, and intelligent starters • use information to monitor system performance, locate faults and aid problem solving • record and report findings in line with company protocols and escalation procedures when necessary

K40: Basic telemetry signals and outstations.	Describes:
	• the purpose of telemetry in monitoring and control
	• what an outstation does
	• how to interpret basic telemetry signals through:
	  ○ programming software
	  ○ hardware such as outstation indication LEDs
	• how telemetry supports safe operation and monitoring
	• the use of telemetry data in fault-finding or monitoring

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Fault finding and problem solving	
K41: Fault finding, problem solving and rectification techniques, aids and diagnostic equipment.	Demonstrates an understanding of: • fault finding techniques such as, visual inspection, continuity testing, thermal imaging, insulation resistance testing, half split technique, substitution, voltage testing, loop impedance testing, and RCD testing • problem solving methods such as, logical sequencing, root cause analysis, and collaborating with colleagues • rectification techniques, such as rewiring, component replacement, and panel refurbishment • the use of diagnostic tools, such as multimeter, thermal imaging camera, circuit tracer, insulation resistance tester, earth loop impedance tester, clamp-on devices, volt-free probes, and RCD tester
S37: Carry out fault finding and rectification techniques using aids and diagnostic equipment.	Describes how they: • identify and solve problems using fault finding and rectification techniques This should include: • the use of diagnostic tools and equipment • how they carried out the rectification of faults • justification of the techniques used

Electrical	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
S44: Identify a problem, investigate problem to identify the underlying cause. Identify a solution.	Describes how they: • identify problems with electrical equipment such as pump control panels, motor circuit, telemetry system • use appropriate diagnostic tools and techniques to investigate the fault • interpret results to identify the underlying cause such as water ingress, damaged cable, corrosion • evaluate options and propose an appropriate solution, e.g. replacement part, resealing an enclosure

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Installation, commissioning and decommissioning	

K51: Practices and techniques for the installation, commissioning and decommissioning of ICA equipment.	Demonstrates an understanding of practices and techniques for:
	• installation:
	  ○ interpret electrical and ICA documentation such as wiring diagrams, loop drawings, P&IDs and network schematics
	  ○ installs low voltage circuits and ICA components such as sensors, transmitters, actuators, control panels, PLCs, HMIs

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	and instrumentation, (e.g. flow, pressure, level), in line with manufacturers' guidelines ○ correctly installs analogue and digital signal paths, including 4-20mA current loops, voltage signals and digital Input/Output ○ follow safe working practices, including safe isolation, lock-out/tag-out, site-specific safety protocols ○ connects devices to networks safely, following cyber good working practices, such as secure login procedures, correct IP addressing ○ conduct appropriate tests: ▪ electrical tests: continuity, insulation resistance, polarity ▪ signal tests: verification of 4-20mA scaling, analogue/digital states ▪ network tests: pinging devices, checking communication status ▪ software validation: confirming correct PLC logic, HMI functionality and system integration • commissioning: ○ configure and calibrate equipment following manufacturer's instructions ○ carry out functional tests and verify integration with SCADA or PLC systems

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	○ document baseline performance data such as trends, signals, scaling, analogue/digital states • decommissioning: ○ conduct safe isolation, ensuring no residual energy remains ○ follow manufacturer's guidelines to disconnect and remove devices without damaging surrounding equipment complete relevant documentation and update asset records ○ dispose of or store equipment in line with environmental regulations and company policies
S46: Install, commission and decommission ICA equipment.	Describes how they: • follow manufacturer's instructions and task specifications • ensure compliance with wiring regulations BS7671 and company procedures • apply safe work practices and complies with health and safety requirements • communicate effectively with colleagues before, during and after task completion • install ICA equipment: ○ interpret wiring diagrams and installation instructions ○ select appropriate tools, materials and fixings for the task ○ conduct safe isolation ○ install cabling and components to a high standard to manufacturer's specifications

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)

	• commission and test ICA equipment:
	  ○ conduct functional checks and calibrations to verify correct operation
	  ○ perform loop testing and signal verification to ensure system integrity
	  ○ adjust settings and parameters in line with operational requirements and manufacturer's guidance
	  ○ complete relevant documentation with test outcomes and configuration details
	• decommission ICA equipment:
	  ○ follow procedures to safely isolate, disconnect, and remove ICA equipment
	  ○ identify and label disconnected circuits and update documentation to reflect changes
	  ○ Dispose of equipment and materials responsibly, in line with company and regulatory requirements

K61: Awareness of wiring regulations - purpose and importance.	Demonstrates an understanding of: • BS 7671:2018: requirements for Electrical Installations (IET Wiring Regulations), including design, installation, and verification standards for safe electrical systems • purpose of wiring regulations, e.g. safety of people and equipment; prevention of risks such as electric shock, fire and equipment failure. • Impact wir9ng regulations have on carrying out ICA tasks

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	○ importance of regulatory compliance ○ factors which may restrict or dictate locations of installations such as zones, IP ratings (Ingress Protection Ratings), environmental conditions, accessibility, proximity to other services
K60: Design specifications, plans, drawings and manufacturer's instructions. **S54:** Interpret and use design specifications, plans, drawings and manufacturer's instructions.	Demonstrates an understanding of: • design specifications: signal types, control logic, and installation standards • plans and drawings: electrical schematics, wiring and loop diagrams, and layout drawings • manufacturer's instructions: installation, calibration and configuration, safety Describes how they: • interpret design specifications, drawings, and manufacturer's instructions before starting tasks • check drawings against site conditions and raise issues if there are conflicts • use design specifications, drawings, and manufacturer's instructions to select the correct cable type for the application (signal, control, power) • install and terminate cables following the specification and standards

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	• record and update installation details to keep as-built documentation accurate
K64: Cable types and termination methods. Specification and application. **S58:** Install different cable types and terminate to their specifications and applications.	Describes how they interpret and use design specifications, plans, drawings and manufacturers' instructions to: • select and install appropriate cable types • decide which termination method is appropriate for the installation This should include: • cable types such as instrumentation, power, data and armoured • Termination methods such as crimping, gland termination, soldering and plug connectors • the typical techniques and equipment used to carry out reliable termination. • how modifications meet safety and task requirements • typical considerations and specifications which impact on installations.
Fault finding and problem solving	
K58: Fault finding, problem solving and rectification techniques. Aids and diagnostic equipment.	Demonstrates an understanding of: • fault finding techniques such as, signal path analysis, simulation and substitution, and calibration checks • problem solving methods such as, logical sequencing, root cause analysis, and collaborating with colleagues

Instructional, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	• rectification techniques, such as sensor calibration and replacement, component replacement, SCADA and HMI configuration adjustments • the use of diagnostic tools, such as calibration equipment, Data loggers, SCADA systems and HMI's
S52: Carry out fault finding techniques for instrumentation and control equipment. Use diagnostic equipment.	Describes how they: • identify and solve problems using fault finding and rectification techniques This should include: • the use of diagnostic tools and equipment • how they carried out the rectification of faults • justification of the techniques used
S62: Identify a problem, investigate problem to identify the underlying cause. Identify a solution.	Describes how they: • identify faults and establish the root cause • use appropriate diagnostic tools and techniques to investigate the fault • interpret results to identify the underlying cause, evaluating options to choose an appropriate solution

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
Calibration, configuration and software	

K57: Field instrumentation, communication devices and equipment used in system and process control. To include: Human Machine Interfaces (HMIs), Programmable Logic Controllers (PLC), Supervisory Control and Data Acquisition (SCADA) systems, back up procedures. Configuration procedures and requirements.	Demonstrates an understanding of the functions of:
	• Programme Logic controllers (PLC's):
	  ○ automate processes such as chemical dosing, pump sequencing
	  ○ receive digital and analogue signals from field devices (e.g. sensors, switches, transmitters)
	• Human Machine interfaces (HMIs): monitor equipment in real time and allows for manual control
	• Supervisory Control and Data Acquisition (SCADA): monitor and control sites and assets remotely; data used for analysis and reporting
	
	This should include:
	• typical inputs and outputs from different types of control equipment, and how they integrate with plant and equipment
	• configuration processes and requirements in line with company procedures and manufacturer's instructions
	• back up procedures for configuration data and data recovery

K65: Telemetry signals and outstations configuration.	Demonstrates an understanding of: • telemetry: ○ types of telemetry signals, e.g. analogue, digital, serial, and IP based

Instructional, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	○ how basic telemetry signals are interpreted ○ the role of telemetry in monitoring and fault-finding ○ how telemetry supports safe operation: ▪ real time monitoring and remote control of assets ▪ early detection of abnormal operating conditions ○ importance of maintaining secure communication channels in line with cyber policies and procedures • outstation configuration: ○ role of outstations: collect data and transmit to a central system ○ communication with central systems such as SCADA: ▪ protocols e.g. DNP3, Modbus, MQTT ▪ methods e.g. GSM 3G/4G/5G, PSTN, BT Lines ○ setting parameters such as alarm thresholds and data logging intervals
S50: Configure field instrumentation, communication devices and equipment used in system and process control.	Describes how they configure: • field instrumentation: ○ set ranges, scale outputs, and calibrate sensors ○ ensure correct integration with PLC's, SCADA and HMI's • communication devices: ○ IP addresses, protocol selection, security setting ○ test for connectivity and signal strength • monitoring and safety equipment such as alarm panels, data loggers, surge protectors, and isolation devices

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	This should include how they: • ensure tasks are carried out safely, e.g. selecting correct PPE, safe isolation, site specific considerations • follow manufacturer's guidance and company processes • record and back up configurations for reliability
S59: Test telemetry signals and configure outstations.	Describe how they: • test telemetry signals to ensure reliable communication, signal strength, data integrity, and correct protocol operation • check and rectify faults such as signal loss or incorrect data formatting • configure outstations, set parameters and confirm correct data flow to central system
K66: Software and logic used within the control system.	Demonstrates an understanding of: • how processes are controlled by master systems • software packages used to produce programs for control systems, such as Wonderware, Siemens WinCC, Rockwell, Mitsubishi • development of control logic using appropriate programming languages such as ladder logic, structured text, function blocks • how logic is structured, e.g. ladder diagrams • use of inputs/outputs, timers, alarms to meet task requirements • safety features within control software • tests carried out on programs to check correct operation and verification

Instrumentation, control and automation (ICA)	
Interview based on an EPA portfolio Theme: Work activities	Amplification and guidance (where required)
	This should include: • justification for software selection to meet task requirements (e.g. integration with existing hardware and systems) • steps taken to modify programs when required • completion of documentation detailing programs used in line with company protocols
S60: Use software to produce programs to be used within the control system.	Explain how they: • use software tools to write or edit programs to meet task requirements • load programs into PLCs, HMI's or controllers safely • follow manufacturer guidelines and site-specific programming standards
K67: Data analysis and monitoring techniques.	Demonstrate an understanding of how data is: • collected and monitored from ICA systems using sensors, PLC's, SCADA and HMI • transmitted, e.g. analogue, digital, pulse signals, serial data, Network/IP Data • analysed to identify trends and anomalies which may indicate faults or inefficiencies
S63: Analyse and monitor data to make evidence based changes if required.	Explains how they: • analyse trends and spot issues • use data to recommend changes • use evidence to support decisions

Interview based on an EPA portfolio roles and responsibilities

Role	Responsibility
Independent Assessor	Review the apprentice's EPA portfolio prior to the interview. Record and report assessment outcome decisions for each apprentice, following instructions and using assessment recording documentation provided by EEA In the event of an apprentice requesting to end the interview early, the assessor must ensure the apprentice is fully aware of all the assessment requirements for the session. Requests must be documented in line with instructions provided by EEA.
Employer/Training Provider	The Interview must be scheduled with EEA 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.
Energy & Environment Awards	Arrange for the Interview to take place, in consultation with the employer/training provider and independent assessor.

Component 3: Multiple-choice Test

Overview

The multiple-choice test is a computer-based test which consists of 30 multiple-choice questions. Paper-based tests are available on request.

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 24 correct answers.

For this paper:

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

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

Apprentices must be given at least **2 weeks notice** of the date and time of the multiple-choice test.

Multiple-choice Test Coverage

The multiple-choice test consists of 30 core and option knowledge questions.

The table below lists each of the knowledge elements, assessed in the knowledge assessment. Amplification and Guidance can be found in the table above.

Core		
Number of Questions	Knowledge	Amplification and Guidance
2 - 4	**K1:** Overview of water and wastewater industries. Regulators and stakeholders: Drinking Water Inspectorate (DWI), Water Services Regulation Authority (OFWAT), Consumer Council for Water (CCWater), Environment Agency (EA), Health and Safety Executive (HSE), and Department for Environment, Food and Rural Affairs (Defra) - roles and powers.	Knowledge of the roles and responsibilities of: 1.1 Drinking Water Inspectorate (DWI) - ensures public drinking water meets safety and quality standards 1.2 Water Services Regulation Authority (OFWAT) - regulates water companies to deliver reliable service and fair pricing 1.3 Consumer Council for Water (CCWater) - represents customers and handles complaints about water services 1.4 Environment Agency (EA) - protects the environment by regulating water resources and pollution control 1.5 Health and Safety Executive (HSE) - enforces workplace health and safety laws, including water industry sites 1.6 Department for Environment, Food and Rural Affairs (Defra) - sets national policy for water, environment, and sustainability
2 - 4	**K3:** Awareness of water and waste water process theory from source to recycling. Abstraction processes. Water treatment	Awareness of water and waste water process theory: 3.1 abstraction processes - methods of extracting raw water from natural sources like rivers, reservoirs, or groundwater

Core		
Number of Questions	Knowledge	Amplification and Guidance
	and disinfection processes. Water distribution, boosters and service reservoirs. Wastewater treatment, networks and pumping stations. Effluent discharges and parameters.	3.2 water treatment and disinfection processes – techniques such as coagulation, filtration, and chlorination to remove impurities and kill pathogens, ensuring safe drinking water 3.3 water distribution, boosters and service reservoirs – assets such as pipelines, booster pumps, valves, and storage reservoirs that store treated water and deliver it under pressure through networks to homes, businesses, and public services 3.4 wastewater treatment, networks and pumping stations – collecting, transporting and treating wastewater to remove contaminants before discharge or reuse 3.5 effluent discharges and parameters - controlled release of treated wastewater into the environment, monitored against regulatory standards for quality and compliance
2 - 4	**K4:** Chemical dosing systems for water and wastewater. Risks, mitigations and safe systems of work. Equipment and storage to include pumps, valves and dosing lines.	Understanding of chemical dosing systems for water and wastewater: 4.1 types and use of chemicals: coagulants, disinfectants, pH adjusters, or anti-scalants 4.2 risks, mitigations and safe systems of work to prevent health hazards, environmental contamination, and equipment failures 4.3 equipment and storage to include pumps, valves and dosing lines

Core		
Number of Questions	Knowledge	Amplification and Guidance
7 - 9	**K6:** Awareness of health and safety regulations, relevant to the occupation and the technician's responsibilities. CDM regulations. Control of Substances Hazardous to Health (COSHH). Display Screen Equipment. Due diligence. Electricity at work regulations (EaWR). Emergency evacuation procedures. Health and Safety at Work Act – responsibilities. Isolation and emergency stop procedures. Legionella. Lifting Operations and Lifting Equipment Regulations (LOLER). Lone working. Management systems of occupational health and safety ISO 45001. Manual handling. Near miss reporting. Noise regulation. Provision and use of Work Equipment Regulations (PUWER). Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations (RIDDOR). Risk assessments. Safety equipment: guards, signage, fire extinguishers. Situational awareness. Slips,	Awareness of: 6.1 Construction (Design and Management) Regulations (CDM) - health and safety requirements for construction projects 6.2 Control of Substances Hazardous to Health (COSHH) – safe handling and control of harmful substances 6.3 Display Screen Equipment - ergonomic and health requirements for screen-based work 6.4 due diligence - reasonable steps to ensure work is planned and carried out safely and legally 6.5 Electricity at work regulations (EaWR) - requirement to protect people from electrical danger such as electric shock, burns, fires, and explosions 6.6 emergency evacuation procedures - plans to safely exit a site during fire, gas leak, or other emergencies 6.7 Health and Safety at Work Act (HASAWA)– responsibilities for employers and employees to ensure safe working environments 6.8 isolation and emergency stop procedures - methods to disconnect power or stop equipment to prevent harm during work 6.9 legionella - control measures to prevent bacteria growth in water systems that can cause illness

Core		
Number of Questions	Knowledge	Amplification and Guidance
	trips and falls. Types of hazards. Personal Protective Equipment (PPE). Working in confined spaces. Pressure Systems Safety Regulations (PSSR).	6.10 Lifting Operations and Lifting Equipment Regulations (LOLER) – safe planning, use and inspection of lifting equipment 6.11 lone working - safety arrangements for employees working alone, including communication and risk controls 6.12 Management systems of occupational health and safety ISO 45001 - international standard for managing workplace health and safety risks 6.13 Manual Handling Operations Regulations – guidance on safe lifting, carrying and moving of loads 6.14 near miss reporting – company procedures for recording incidents that could have caused harm to prevent future accidents 6.15 noise regulation - controls to protect workers from hearing damage caused by excessive noise 6.16 Provision and use of Work Equipment Regulations (PUWER) requirements for safe selection, maintenance and use of work equipment 6.17 Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations (RIDDOR) – legal obligations for reporting workplace incidents and near misses 6.18 risk assessments - identifying hazards and implementing controls to reduce risks before work starts

Core		
Number of Questions	Knowledge	Amplification and Guidance
		6.19 safety equipment: guards, signage, fire extinguishers 6.20 situational awareness - being alert to surroundings and potential hazards while working 6.21 slips, trips and falls - preventing common workplace accidents through good housekeeping and safe practices 6.22 types of hazards - physical, chemical, biological, and ergonomic risks that can cause harm 6.23 Personal Protective Equipment (PPE) at work regulations - provision and use of appropriate PPE to mitigate risks 6.24 Confined Spaces Regulations — safety requirements for working in enclosed or restricted spaces 6.25 Pressure Systems Safety Regulations (PSSR) - requirements for safe design, maintenance, and inspection of pressurised systems
2 - 4	**K9:** Water industry sustainability and environmental principles and requirements. Permits and operation conditions for water extraction. Requirements for disposing of discharges and waste. Monitoring emissions to air, land and water (MCERTS). Waste Electrical and Electronic Equipment (WEEE) Regulations.	Knowledge of working in ways that protect resources and reduce environmental impact: 9.1 permits and operation conditions for water extraction - legal permissions and rules for taking water from rivers, lakes, or groundwater 9.2 requirements for disposing of discharges and waste, including an awareness of:

Core		
Number of Questions	Knowledge	Amplification and Guidance
		• Water Industry Act 1991 – requirements to manage discharges safely to protect public health and water resources • Environmental Protection Act 1990 - manage and dispose of waste safely to prevent harm to health or the environment • The Waste (England and Wales) Regulations 2011 – requirements for managing waste responsibly and reducing environmental impact • Hazardous Waste Regulations 2005 – requirements to classify, store and dispose of hazardous waste 9.3 monitoring emissions to air, land and water (MCERTS) - certified systems to measure and report pollution levels accurately 9.4 Waste Electrical Equipment (WEEE) Regulations – requirements for recycling and safely disposing of old electrical and electronic items

Mechanical		
Number of Questions	Knowledge	Amplification and Guidance
2 - 4	**K23:** Mechanical theories and principles; pneumatics, hydraulics and pressure systems. Torque, gearbox ratios, flow ratios, step-down ratios. Machine specifications.	Understanding of: 23.1 pneumatics – use of compressed air or gas to transmit and control energy in mechanical systems 23.2 hydraulics – use of pressurised liquid to generate, transmit, and control power in machines and systems 23.3 pressure systems - designed to contain and manage liquids or gasses under pressure safely to transmit energy and perform mechanical work 23.4 torque – measure of a rotational force applied to an object around an axis 23.5 gearbox ratios - relationship between input and output gears that determines speed and torque 23.6 flow ratios – proportional relationship between fluid flow rates in different parts of a system 23.7 step-down ratios - ratio between the input and output speeds (or gear sizes) in a mechanical system that reduces rotational speed while increasing torque 23.8 machine specifications - detailed technical data defining a machine's capabilities and limits
2 - 4	**K32:** Types and application of machinery. For example: lathes, pillar drills, milling machine, threading machine, mechanical	Understanding of: 32.1 types and application of machinery: lathes, pillar drills, milling machine, threading machine, mechanical saws

Mechanical		
Number of Questions	Knowledge	Amplification and Guidance
	saws. Machine speeds for different materials.	32.2 machine speeds for different materials including stainless steel, carbon steel, cast iron, copper, brass
3 - 5	**K34:** Round numbers, scientific notation, percentages and ratios. Area, perimeter, volume and surface area. Scales, tables, graphs and charts. Trigonometry and Pythagoras' Theorem. Engineering formulae. Sequence of operations. Conversions and calculations. **S31:** Use mathematical theory.	Demonstrates an understanding of: 34.1 round numbers, scientific notation, percentages and ratios 34.2 area, perimeter, volume and surface area 34.3 scales, tables, graphs and charts 34.4 trigonometry and Pythagoras' Theorem 34.5 engineering formulae 34.6 sequence of operations 34.7 conversions and calculations

Electrical		
Number of Questions	Knowledge	Amplification and Guidance
2 - 4	**K36:** Electrical theories and principles. Basic concepts of electricity. Ohms law, Kirchoff's law, circuits, conductors and insulators, basic AC theory, complex numbers, resistance and impedance -	Understanding of electrical theories and principles: 36.1 basic concepts of electricity such as voltage, current, and power 36.2 Ohms law - relationship between voltage, current, and resistance

Electrical		
Number of Questions	Knowledge	Amplification and Guidance
	capacitive and inductive, transformers, polyphase AC circuits, power factor. Harmonics.	36.3 Kirchoff's laws - rules for conserving current and voltage in electrical circuits 36.4 circuits, including: series, parallel and combination 36.5 conductors and insulators - materials that either allow or resist the flow of electric current 36.6 basic AC theory - principles of alternating current, including frequency and waveform behaviour 36.7 complex numbers - mathematical representation used in AC analysis for magnitude and phase 36.8 resistance and impedance (capacitive & inductive) - opposition to current flow in DC and AC circuits, including reactance effects 36.9 transformers - devices that change electricity from one voltage to another using coils and a magnetic field 36.10 polyphase AC circuits - Systems using multiple alternating currents for efficient power distribution 36.11 power factor - electrical power is converted into useful work by comparing real power to apparent power in an AC system 36.12 harmonics - higher-frequency distortions in AC systems that affect power quality
2 - 4	**K47:** Electrical drawings.	47.1 electrical diagrams used in maintenance and fault diagnosis, including: Circuit diagrams, Wiring diagrams, Block diagrams,

Electrical		
Number of Questions	Knowledge	Amplification and Guidance
		Layout diagrams, Single-line diagrams, Earthing diagrams, Control diagrams 47.2 standard symbols and abbreviations used in electrical schematics to represent components such as resistors, capacitors, switches, relays, transformers, and protective devices 47.3 graphical conventions including line types, connection points, and signal paths 47.4 documentation standards (e.g. BS and IEC) governing the use of symbols and diagram formats
3 - 5	**K49:** Round numbers, scientific notation, percentages and ratios. Area, perimeter, volume and surface area. Scales, tables, graphs and charts. Trigonometry and Pythagoras' Theorem. Engineering formulae. Sequence of operations. Conversions and calculations. **S43:** Use mathematical theory.	demonstrates an understanding of: 49.1 round numbers, scientific notation, percentages and ratios 49.2 area, perimeter, volume and surface area 49.3 scales, tables, graphs and charts 49.4 trigonometry and Pythagoras' Theorem 49.5 engineering formulae 49.6 sequence of operations 49.7 conversions and calculations

Instrumentation, control and automation (ICA)		
Number of Questions	Knowledge	Amplification and Guidance
2 - 4	**K50:** Electrical theories and principles. Basic concepts of electricity. Ohm's law, Kirchoff's law, circuits, conductors and insulators, basic AC theory, complex numbers, resistance and impedance - capacitive and inductive, transformers, polyphase AC circuits, power factor.	Understanding of electrical theories and principles: 50.1 basic concepts of electricity such as voltage, current, and power 50.2 Ohms law - relationship between voltage, current, and resistance 50.3 Kirchoff's laws - rules for conserving current and voltage in electrical circuits 50.4 circuits, including: series, parallel and combination 50.5 conductors and insulators - materials that either allow or resist the flow of electric current 50.6 basic AC theory - principles of alternating current, including frequency and waveform behaviour 50.7 complex numbers - mathematical representation used in AC analysis for magnitude and phase 50.8 resistance and impedance (capacitive & inductive) - opposition to current flow in DC and AC circuits, including reactance effects 50.9 transformers - devices that change electricity from one voltage to another using coils and a magnetic field 50.10 polyphase AC circuits - Systems using multiple alternating currents for efficient power distribution

Instrumentation, control and automation (ICA)		
Number of Questions	Knowledge	Amplification and Guidance
		50.11 power factor - electrical power is converted into useful work by comparing real power to apparent power in an AC system
2 - 4	**K53:** Instrumentation and control device operational principles: flow, level, pressure, analysers, transducers, transmitters, gauges. Proportional–integral–derivative controller.	Understanding of: 53.1 operational principles of common devices: flow, level and, pressure measurement; analysers, transducers, transmitters, and gauges 53.2 how 4–20 mA current loops, including zeroing and scaling, are used to transmit accurate measurement signals to control systems 53.3 operating principles of Proportional–integral–derivative (PID) controllers, including how calibrated 4–20 mA signals are used to optimise process control
3 - 5	**K63:** Round numbers, scientific notation, percentages and ratios. Area, perimeter, volume and surface area. Scales, tables, graphs and charts. Trigonometry and Pythagoras' Theorem. Engineering formulae. Sequence of operations. Conversions and calculations. **S56:** Use mathematical theory.	Demonstrates an understanding of: 63.1 round numbers, scientific notation, percentages and ratios 63.2 area, perimeter, volume and surface area 63.3 scales, tables, graphs and charts 63.4 trigonometry and Pythagoras' Theorem 63.5 engineering formulae 63.6 sequence of operations 63.7 conversions and calculations

Multiple-choice Test Roles and Responsibilities

Role	Responsibility
Invigilator	Is typically provided by the employer or training provider. Attend induction training as directed by EEA. 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 EEA invigilation procedures.
Employer/Training Provider	Ensure that the multiple-choice test is scheduled with EEA for a date and time which allow the apprentice to be well prepared. Follow EEA guidance in setting up and confirming IT provision for the on-screen test.
Energy & Environment Awards	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.

Section 3: Grading and Grading Descriptors

Component 1: Observation with questions

The apprentice must demonstrate core and option KSBs in an integrated way.

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

To gain a Pass, an apprentice must successfully achieve **all** the descriptors for each KSB, as shown below.

Pass descriptors for the observation with questions

Observation with questions - Themed KSBs	To achieve a Pass the apprentice must achieve **ALL** of the following:
Core – Prepare for work S3	Identifies and organises resources required to complete tasks with consideration for process, cost, quality, safety, security and environmental impact. (S3)
Core – Health and safety K7 S4 S7 B1	Takes responsibility for themselves, others, sites and assets and promotes health, safety and wellbeing in the workplace by following safe systems of work and using PPE, in compliance with health and safety regulations, standards and guidance. (K7, S4, B1) Restores the work area on completion of the activity in line with company or task requirements. (S7)
Core – Documentation and written communication K15 S8	Communicates in writing in the workplace and records or enters information for work tasks, using paper-based or electronic methods in line with company procedures and task requirements. (K15, S8)

Observation with questions - Themed KSBs	To achieve a Pass the apprentice must achieve **ALL** of the following:
Mechanical – Repair or maintenance K24 K26 K27 K29 S18 S19 S20 S21 S22 S24 S30	Applies mechanical theories and principles to isolate, depressurise, disconnect and remove mechanical plant or equipment in preparation for installation or repair or maintenance work in accordance with work permits and employer's safe isolation policies, to complete task requirements. (K24, S18, S21, S30) Uses tools, equipment, resources or components for installation, or maintenance or repair of mechanical systems in line with procedures and manufacturers' guidelines to complete task requirements. (K27, S20) Applies repair or maintenance practices and techniques to repair or maintain machinery, equipment or components in line with manufacturer's guidelines and task requirements. (K26, S19) Monitors, inspects or tests mechanical systems, equipment or components in line with manufacturer's inspection and testing requirements and task requirements. (K29, S22, S24)
Electrical – Repair and maintenance K38 K42 K44 K45 S33 S34 S38 S39 S40	Applies electrical theories and principles to isolate plant or electrical equipment in preparation for installation or repair or maintenance work in accordance with work permits and employer's safe isolation policies and lock off systems to complete task requirements. (K38, S33, S39)

Observation with questions - Themed KSBs	To achieve a Pass the apprentice must achieve **ALL** of the following:
	Uses tools, equipment, resources or components for installation or maintenance or repair of electrical systems in line with procedures and manufacturers' guidelines to complete task requirements. (K42, S38) Applies repair or maintenance practices and techniques to repair or maintain equipment or components in line with manufacturer's guidelines and task requirements. (K45, S34) Inspects or tests electrical installations and equipment in accordance with manufacturer's inspection and testing requirements and task requirements. (K44, S40)
Instrumentation, control and automation – configure and calibrate K54 K62 S47 S48 S55	Calibrates and monitors open or closed loop systems in first or second order control systems, in line with task requirements. (K54, S48) Configures and calibrates ICA equipment, instrumentation and control devices to required precision and tolerance in line with employer's procedures and task requirements. (K62, S47, S55)
Instrumentation, control and automation – repair or maintenance K52 K55 K56 K59 S45 S49 S51 S53 S57 S61	Applies electrical theories and principles to isolate plant or ICA equipment in preparation for installation or repair or maintenance work, in accordance with work permits and employer's safe isolation policies and lock off systems and task requirements. (K55, S45, S57)

Observation with questions - Themed KSBs	To achieve a Pass the apprentice must achieve **ALL** of the following:
	Uses tools, equipment, resources or components for installation, or maintenance or repair of ICA systems in line with procedures, manufacturer's guidelines and task requirements. (K56, S49) Applies repair or maintenance practices and techniques to instrumentation, control equipment, control systems, controllers, probes, attachments, cabling, meters and display units in line with manufacturer's guidelines and task requirements. (K52, S51) Inspects or tests ICA equipment to assess condition and identifies action required in line with manufacturer's inspection and testing requirements and task requirements. (K59, S53, S61)

Component 2: Interview based on an EPA portfolio

The apprentice must demonstrate core KSBs in an integrated way.

To gain a Pass, an apprentice must successfully achieve **all** the assessment descriptors for each KSB, as shown below.

To achieve a Distinction, an apprentice must successfully achieve **all** the Pass assessment descriptors and **all** descriptors from each of the Distinction boxes.

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve **ALL** of the following:
Core - Role, responsibilities and requirements K2 K5 S1	Describes the responsibilities, reporting channels and limits of autonomy applicable to their role and how they work in line with industry legislative requirements, standards and regulatory requirements, including those related to materials in contact and food-grade lubricants and OfWAT's Asset Management Periods. (K2, K5, S1)
Core – planning for work K11 K13 K14 S2 S6	Describes how they plan, prioritise and schedule maintenance, installation or repair work, taking into account process safety, risk assessments and the impact on the environment and water treatment or wastewater recycling. (K11, S2) Describes the planned, preventative, predictive and reactive maintenance strategies and techniques used in their workplace and outlines the frequency of each method in accordance with company procedures. (K14)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve **ALL** of the following:
	Explains how they select, check, store and maintain tools and equipment in line with manufacturers' guidelines and operating instructions, including calibration checks. (K13, S6)
Core – health, safety, security, environment and sustainability K8 K10 K12 K16 K17 S5 S15 B2 B6	Outlines the personal hygiene risks and requirements for working on a water treatment or wastewater treatment site. (K16) Describes how they comply with sustainability principles and consider the environmental impact of water industry operations in their role, in line with organisational procedures, regulations and standards for material reuse and recycling. (K10, S5, B2) States the ATEX and DSEAR regulations which they must follow when working in and around explosive atmospheres. (K8) Explains how they identify issues and take responsibility for their own actions when following organisational asset security requirements for site access, documentation and securing assets. (K12, S15, B6) Describes how they comply with their employer's process safety, process risk assessments and incident management procedures. (K17)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve **ALL** of the following:
Core – continual improvement and CPD K18 S12 S14 B3 B7	Describes how they have sought to improve ways of working by applying a continuous improvement technique to devise a suggestion for asset or process optimisation or improvement. (K18, S12, B3) Outlines the learning and development activities they have carried out and shows a commitment to future continued professional development of self and others to maintain and enhance competence. (S14, B7)
Core – equity and diversity K19 S10 B4	Describes how they promote inclusivity in the workplace with colleagues, stakeholders and customers by applying the principles, policies and practices of equity, diversity and inclusion, taking account of unconscious bias. (K19, S10, B4)
Core – team working and communication K20 K21 S11 S13 B5	Describes how they collaborate and promote teamwork across disciplines by applying team working principles in line with organisational policy. (K20, S11, B5) Describes how they communicate with and provide support, technical advice, work updates and information in their work that are suitable for the context. (K21, S13)
Core – ICT and digital K22 S9	Describes how they use information and digital technology to collect, interpret and use data and information, in compliance with cyber security regulations and policies and GDPR. (K22, S9)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve **ALL** of the following:
Mechanical – installation, commissioning and decommissioning K25 S16	Describes the practices and techniques they use to install, commission and decommission mechanical systems and equipment in line with manufacturers' requirements. (K25, S16)
Mechanical – repair or maintenance K30 K31 K33 S17 S26 S27 S28 S29	Describes how they use machinery to carry out basic fabrication, welding and thermal cutting processes for mechanical components and structures to complete the task in accordance with task requirements and manufacturers' instructions. (K30, S27, S29) Describes how they apply bench fitting techniques to assemble mechanical equipment or components in line with specification and task requirements. (K31, S28) Describes how they interpret and use manufacturers' instructions, design specifications, plans and drawings to position and install mechanical equipment or components in line with specification and task requirements. (K33, S17, S26)
Mechanical – fault finding and problem solving K28 S23 S25	Describes how they use fault finding, problem-solving and rectification techniques, aids and diagnostic equipment to fault find, identify a problem, and any underlying causes before providing a solution in line with the task requirements. (K28, S23, S25)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve **ALL** of the following:
Electrical – installation, commissioning and decommissioning K35 K37 K39 K40 K43 K46 K48 S32 S35 S36 S41 S42	Describes the practices and techniques they use to install, commission and decommission cabling and electrical equipment in line with manufacturer's requirements and wiring regulations. (K35, K46, S32) Describes how they use electrical drawings, design specifications, plans and manufacturers' instructions to modify electrical circuits, installing different cable types and terminating in accordance with the specification and task requirements. (K37, K43, K48, S35, S41, S42) Describes how they interrogate information displayed on different types of intelligent control equipment, including PLCs HMIs, intelligent starters and variable speed drives to monitor system performance in accordance with employer's procedures and task requirements. (K39, S36) Explains how to interpret basic telemetry signals received from outstations. (K40)
Electrical – fault finding and problem solving K41 S37 S44	Describes how they use fault finding, problem-solving and rectification techniques, aids and diagnostic equipment to fault find, identify a problem, and any underlying causes before providing a solution in line with the task requirements. (K41, S37, S44)

Interview (based on an EPA portfolio)	To achieve a Pass the apprentice must achieve **ALL** of the following:
Instrumentation, control and automation – installation, commissioning and decommissioning K51 K60 K61 K64 S46 S54 S58	Describes the practices and techniques they use to install, commission and decommission ICA equipment in line with manufacturers' requirements and wiring regulations. (K51, K61, S46) Describes how they interpret and use design specifications, plans drawings and manufacturers' instructions to install different cable types and terminate in accordance with the specification and task requirements. (K60, K64, S54, S58)
Instrumentation, control and automation – calibration, configuration and software K57 K65 K66 K67 S50 S59 S60 S63	Describes how they test telemetry signals and configure outstations, field instrumentation, communication devices and equipment used in system and process control in line with manufacturers' instructions. (K57, K65, S50, S59) Describes how they use software to produce programs used in the control system, to meet task requirements. (K66, S60) Explains how they monitor and analyse data to make evidence-based changes in line with task requirements. (K67, S63)
Instrumentation, control and automation – fault finding and problem solving K58 S52 S62	Describes how they use fault finding, problem-solving and rectification techniques, aids and diagnostic equipment to fault find, identify a problem, and any underlaying causes before providing a solution in line with the task requirements. (K58, S52, S62)

Distinction descriptors 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 Pass descriptors and **ALL** of the Distinction Descriptors:
Core - Role, responsibilities and requirements K2 K5 S1	Explains the benefits and importance for individuals and the business of complying with water industry standards, legislative and regulatory requirements and the consequences of non-compliance. (K2, K5, S1)
Core – planning for work K11 K13 K14 S2 S6	None
Core – health, safety, security, environment and sustainability K8 K10 K12 K16 K17 S5 S15 B2 B6	Explains the benefits to themselves and the business of complying with the company's process safety, process risk assessments and incident management procedures. (K17)
Core – continual improvement and CPD K18 S12 S14 B3 B7	Justifies the potential impact of their improvement suggestions with consideration to benefits and potential risks. (K18, S12, B3)
Core – equity and diversity K19 S10 B4	None
Core – team working and communication K20 K21 S11 S13 B5	None

Interview (based on an EPA portfolio)	To achieve a Distinction the apprentice must achieve **ALL** of the Pass descriptors and **ALL** of the Distinction Descriptors:
Core – ICT and digital K22 S9	Outlines the benefits to themselves and the business of ensuring GDPR and cyber security regulations and policies are followed. (K22, S9)
Mechanical – installation, commissioning and decommissioning K25 S16	None
Mechanical – repair or maintenance K30 K31 K33 S17 S26 S27 S28 S29	Explains how they achieve a right-first-time outcome for fabrication, welding and thermal cutting tasks in line with task requirements. (K30, S27)
Mechanical – fault finding and problem solving K28 S23 S25	Justifies fault finding and problem-solving techniques they have used in the rectification of faults. (K28, S23)
Electrical – installation, commissioning and decommissioning K35 K37 K39 K40 K43 K46 K48 S32 S35 S36 S41 S42	Justifies the modifications made to electrical circuits to achieve the task requirements. (K37, S35)
Electrical – fault finding and problem solving K41 S37 S44	Justifies fault finding and problem-solving techniques they have used in the rectification of faults. (K41, S37)

Interview (based on an EPA portfolio)	To achieve a Distinction the apprentice must achieve **ALL** of the Pass descriptors and **ALL** of the Distinction Descriptors:
Instrumentation, automation and control – installation, commissioning and decommissioning K51 K60 K61 K64 S46 S54 S58	None
Instrumentation, automation and control – calibration, configuration and software K57 K65 K66 K67 S50 S59 S60 S63	Justifies their choice of software and explains how the steps of their written program met the task requirements. (K66, S60)
Instrumentation, automation and control – fault finding and problem solving K58 S52 S62	Justifies fault finding and problem-solving techniques they have used in the rectification of faults. (K58, S52)

Component 3: Multiple-choice Test

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

Grade	Minimum mark	Maximum mark
Fail	0	23
Pass	24	30

Overall grading

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

In order to gain a pass, an apprentice must achieve at minimum of a pass in each EPA component. A pass represents full competence against the standard. To achieve an overall distinction the apprentice must achieve a distinction in the interview based on an EPA portfolio along with a pass in both the observation with questions and multiple-choice test.

The observation with questions and multiple-choice test are marked separately and awarded a fail or pass. The interview based on an EPA portfolio is marked separately and awarded a fail, pass or distinction.

The multiple-choice test is based on the percentage score achieved. The grade and mark for the observation with questions and interview is based on the number and level of descriptors achieved.

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

Multiple-choice Test	Observation with questions	Interview based on an EPA portfolio	Overall grading
Fail in any component			Fail
Pass	Pass	Pass	Pass
Pass	Pass	Distinction	Distinction

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

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 Energy & Environment Awards should agree the timescale for a re-sit or re-take. A re-sit is typically taken within 3 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 assessment methods must be re-sat or re-taken within a 6-month period from the EPA outcome notification, otherwise the entire 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.

The apprentice will get a maximum EPA grade of a pass if they need to re-sit or re-take one or more assessment methods, unless Energy & Environment Awards determines there are exceptional circumstances.

The Energy & Environment Awards resit and re-take policy can be found at: https://energyenvironmentawards.co.uk/policies-and-fees/

Section 5: Practical Observation Guidance

Level 3 WIAMT observation with questions planning and approval form

Purpose

Energy & Environment Awards must approve employer's observation with questions assessment. The purpose of the approval is to provide Energy & Environment Awards with assurance that the observation will be conducted in line with the WIAMT assessment plan. The approval must take place before the first observation with questions assessment is carried out. To access the service, see Appendix D, WIAMT Supporting Documents 'Level 3 WIAMT observation with questions planning and approval form.'

Submitting the form to Energy & Environment Awards

To obtain approval, employers must complete the Level 3 WIAMT observation with questions planning and approval form'. This must be submitted to Energy & Environment Awars Service Delivery Team for approval at least 2 months before Gateway.

Energy & Environment Awards Approval Process

Once the observation with questions planning and approval form has been received the approval process will be conducted by Energy & Environment Awards. The outcomes will be shared with the employer/training provider no later than 5 working days following the review.

The employer/training provider must ensure:

- the task(s) being observed is suitable and sufficient and is to be carried out at a suitable premises. Site access for the assessor and any specific requirements must be advised in advance
- all equipment and resources are suitable for the task, in good safe working condition and certification where applicable

Please be aware:

- Observation with questions approval does not guarantee the apprentice will pass the assessment
- No health and safety risk assessment has been carried out by EEA
- EEA approval does not remove any of the training provider obligations to ensure full coverage of the standard, and full compliance with relevant legislation
- EEA approval is based only on information supplied and is not a guarantee that the observation tasks/briefs, selected plant/machinery/equipment on the day of the observation will be sufficient for the observation with questions
- The information provided in the Level 3 WIAMT observation with questions planning and approval form must not be shared with the apprentice

Preparing for the Observation with questions

Where possible, the employer/training provider should provide the apprentice with the opportunity to carry out a practice observation with questions as close to the real assessment described in Section 2 of the specification (Component 1).

The employer/training provider should prepare a practical task 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.

A template is provided to help ensure that the activities assessed during the observation will give complete coverage of the standard. See Appendix E, WIAMT Supporting Documents ‘Practice observation with questions template.’

Preparing for the Interview based on an EPA portfolio

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

Guidance on an EPA Portfolio

Throughout the on-programme part of their apprenticeship, the apprentice must compile an EPA portfolio to support them in the interview. 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 and meet the requirements outlined in the assessment plan.

A completed EPA portfolio is one of the Gateway requirements.

The EPA portfolio is **not assessed**. It serves the following purposes:

- It provides the opportunity for each apprentice to provide examples of the knowledge, skills and behaviours that will be assessed in the interview
- A carefully prepared EPA portfolio will support the apprentice during the interview
- It allows the assessor to review the EPA portfolio before the interview to help focus and contextualise the questions the apprentice will be asked

The EPA portfolio is a record of how each apprentice demonstrated the knowledge, skills and behaviours that are assessed in the interview. Apprentices will have access to their EPA portfolio during the interview. When the employer/training provider registers their apprentices with Energy & Environment Awards they will have access to the EPA Portfolio Template.

The role of the employer/training provider

Employer/training providers are 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 EEA 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 template is provided to help prepare the appropriate questions to ask and to record the apprentices' performance. See Appendix F, WIAMT Supporting Documents 'Practice interview based on an EPA portfolio template'.

As part of the practice exercise, apprentices should have access to their EPA portfolio to support their responses.

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 Water Industry Asset Maintenance Technician 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 C, WIAMT 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.

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 cover all relevant KSBs within the assessment plan. 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 EEA. It is vitally important apprentices only submit evidence relating to them
- **appropriate**: all evidence must be relevant to the 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 EEA, will assess current competencies. Apprentices must gather evidence during their on-programme training