End-point assessment plan for Engineer Surveyor apprenticeship standard

Apprenticeship standard reference number	Level of this end point assessment (EPA)	Integrated
ST0847	4	No

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Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Engineer Surveyor apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Engineer Surveyor apprentices, their employers and training providers.

Full time apprentices will typically spend 24 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices will spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and that they can be evidenced to an EPAO.

All pre-requisites for EPA assessment methods must also be complete and available for the independent assessor as necessary.

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA must be completed within an EPA period lasting typically 6 months, beginning when the apprentice has passed the EPA gateway.

The EPA consists of 3 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Multiple choice test

· Fail
· Pass
· Distinction

Assessment method 2: Observation

· Fail
· Pass

Assessment method 3: Professional interview

· Fail
· Pass
· Distinction

Performance in the EPA will determine the overall apprenticeship standard and grade of:

· Fail
· Pass
· Distinction

EPA summary table

On-programme (typically 24 months)	Training to develop the occupation standard's knowledge, skills and behaviors. • Working towards English and mathematics level 2.
End-point Assessment Gateway	• Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. • Achieved English/mathematics Level 2 • Submitted a copy of the company inspection procedures and processes to be referred to by the independent assessor during the observation. • Submitted a portfolio of evidence compiled during the on-programme period of the apprenticeship, containing sufficient evidence to demonstrate the knowledge, skills and behaviours (KSBs) that will be assessed by the professional interview.
End Point Assessment (which would typically take 6 months)	Assessment Method 1: Multiple choice test With the following grades: · Fail · Pass · Distinction Assessment Method 2: Observation With the following grades: · Fail · Pass Assessment Method 3: Professional interview With the following grades: · Fail · Pass · Distinction
Professional recognition	Aligns with recognition by: Society of Operations Engineers – Engineering Technician Safety Assessment Federation – Level 4 Institute of Engineering and Technology – Engineering Technician

Length of end-point assessment period:

The EPA must be completed within an EPA period lasting typically 6 months, beginning when the apprentice has passed the EPA gateway.

Any supporting material required for the EPA should be submitted at the Gateway.

If an EPA assessment method is failed, the resit/retake must be taken as per the requirements set out in this assessment plan.

Order of assessment methods

The assessment methods can be delivered in any order.

Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they are deemed to have achieved occupational competence. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

English and mathematics at level 2.

For those with an education, health and care plan or a legacy statement the apprenticeships English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

For Multiple choice test:

- No specific requirements

For Observation:

- A copy of the company inspection procedures and processes must be submitted to the EPAO so the independent assessor can ensure these are being followed when knowledge statement 1 is being assessed.

For Professional interview supported by Portfolio of Evidence, the apprentice will be required to submit:

- A portfolio of evidence allowing the apprentice to demonstrate the knowledge, skills and behaviours across AM3 (the professional interview) criteria set out in Appendix A. This is used as an aide memoir during the professional interview. This should be a portfolio of evidence of the apprentice's best work to demonstrate their achievements. It should be an example of work completed during the apprenticeship that the apprentice can quickly refer to during the professional interview to support the answers that are being given.
- Apprentices must compile the portfolio of evidence at the end of their training but prior to entering the gateway and it should contain evidence collected during the on-programme period of the apprenticeship. The portfolio of evidence must contain sufficient evidence to demonstrate the KSBs that will be assessed by the professional interview.
- There must be at least one piece of evidence relating to each knowledge, skill and behaviour mapped to AM3. One piece of evidence can be referenced against more than one knowledge, skill or behavioural requirement. It is expected that there will typically be 10-12 pieces of evidence; a qualitative as opposed to a quantitative approach is required.

- The portfolio should contain written accounts of activities that have been completed and referenced against the knowledge, skills and behaviours, supported by appropriate evidence. This could include:
    - photographic evidence
    - work products, such as work reports, instructions and safety documentation
    - progress review documentation
    - witness testimonies
    - feedback from colleagues and/or client.
    - company internal reports relating to competency
- This is not a definitive list; other evidence sources are allowable.
- The portfolio of evidence should not include any methods of self-assessment. Any employer contributions should focus on direct observation of evidence (for example witness statements) of competence rather than opinions. The evidence provided must be valid and attributable to the apprentice; the portfolio of evidence must contain a statement from the employer confirming this.
- The portfolio of evidence must be submitted at the gateway point.
- The portfolio of evidence is not assessed but is used to support the professional interview.

Assessment methods

Assessment Method 1: Multiple choice test (This Method has 1 component.)

Method 1 Component 1: Multiple choice test

Overview

The rationale for this assessment method is:

Defined quantitative method to test the underpinning knowledge and skills against the occupational standard.

Test Format

The test can be:

· computer based
· paper based

It will consist of 30 questions.

These questions will consist of:

· Closed response questions (e.g. multiple-choice questions)

Test administration

Apprentices must have 60 minutes to complete the test.

The test is open book which means that the apprentice can refer to reference books or materials during the test. This replicates occupational duties, where the apprentice will be expected to use reference books to research equipment specifications during inspections.

Apprentices must take the test in a suitably controlled environment that is a quiet space, free of distractions and influence, in the presence of an invigilator. The invigilator may be the independent assessor or another external person employed by the EPAO or specialised (proctor) software, if the test can be taken on-line. The EPAO is required to have an invigilation policy that will set out how the test is to be carried out. This will include specifying the most appropriate ratio of apprentices to invigilators to best take into account the setting and security required in administering the test.

The EPAO is responsible for ensuring the security of testing they administer to ensure the test remains valid and reliable (this includes any arrangements made using online tools).

This assessment method will be carried out as follows:

This is a multiple choice test and the questions relating to skills must include scenarios with multiple choice responses (six questions, two for each skill). There will be 4 possible answers, one of which will be the only correct answer. Each option will have a bank of questions specific to that option.

The EPAO must verify the suitability of the venue for taking the test and the identity of the person taking the test.

Marking

Tests must be marked by independent assessors or markers employed by the EPAO following a marking guide produced by the EPAO. Alternatively, marking by computer is permissible where questions types allow this, to improve marking reliability.

Correct answers will be assigned 1 mark. Any incorrect or missing answers must be assigned 0 marks.

Question and resources development

A test specification and questions must be written by EPAOs and must be relevant to the occupation and employer settings. It is recommended that this is done in consultation with employers of this occupation. EPAOs should also maintain the security and confidentiality of the test specification and their questions when consulting employers. EPAOs must develop a test specification and 'question banks' of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the questions they contain, are fit for purpose. EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Required supporting material

As a minimum EPAOs will produce the following material to support this method:

- a test specification
- sample tests and mark schemes
- live tests and mark schemes
- analysis reports which show areas of weakness for completed tests/exams and an invigilation policy.

Assessment Method 2: Observation and questioning

Method 2 Component 1: Observation and questioning

Overview

The rationale for this assessment method is:

- the occupation involves practical activity best assessed through observation; it would be difficult to replicate the working environment in a valid way and employers would doubt the occupational competence of an individual not assessed in this way.
- observation allows the assessment of work tasks in which they are familiar, which is likely to enable the apprentice to perform at their best.
- the questioning component enables the checking of underpinning knowledge and behaviours and provide context for the skills.

Delivery

Apprentices must be observed by an independent assessor completing work in their normal workplace, which includes customers' premises, in which they will demonstrate the KSBs assigned to this assessment method. The EPAO will arrange for the observation to take place, in consultation with the employer.

One independent assessor may observe up to a maximum of 1 apprentice at any one time, to allow for quality and rigour.

The observation must take 5 hours. This is then followed by 30 minutes of questioning. (5 hours and 30 minutes in total). The observation may be split into discrete sections held over a maximum of 1 working

day. The length of a working day is typically considered to be 7.5hours. There may be breaks during the observation to allow the apprentice to move from one location to another and for meal/comfort breaks. During these breaks, the clock must be stopped and restarted to ensure that the assessment duration is not reduced. The apprentice must not communicate with anyone else during any breaks. EPAOs must manage invigilation of apprentices during breaks in order to maintain security of the assessment in line with their malpractice policy.

The independent assessor has the discretion to increase the time of the observation by up to 10% to allow the apprentice to complete a task at the end of this component of the EPA.

In advance of the observation, apprentices must be provided with information on the format of the observation, including timescales.

The following activities MUST be observed during the observation:

- Inspection of 3 items of plant/machinery/equipment (that provides the breadth and depth of the core KSBs and the option KSBs across the 3 inspections) to assess condition.
- Production of a report to document findings identified and completed during the examination/inspection activity. This can be used when assessing the Report Writing cluster of grade descriptors (K6, K16 and S5).
- Interaction with customer (K16).
- Application of technical inspection procedures and safe systems of work, including preparation of a risk assessment to support the Risk Assessment cluster of grade descriptors (K7, K15, S7 and S8).
- Use of appropriate PPE and tools as required for the task.

Observation specifications must be produced by the EPAO to assist employers in identifying the most appropriate inspection activity. The specifications must be of equal complexity so as to require a competent person 5 hours to complete the practical element.

The observation should be conducted in the following way, to take account of the occupational context in which the apprentice operates.

The independent assessor must be unobtrusive whilst conducting the observation.

The observation must provide the opportunity for the apprentice to cover the knowledge, skills and behaviours set out for this assessment method in the mapping section of this EPA plan.

The inspection report must be completed using the apprentice's employer's Thorough Examination reporting template, which must be regulation compliant. The completed form must be made available to the independent assessor upon completion, and this must take place during the 5 hour practical assessment time and before the start of the 30 minute questioning section. The apprentice must discuss the findings of their inspection with the customer during the practical element of the task. The independent assessor may refer to the report during the questioning element at the end of the observation in order to probe further into K6, K16 and S5).

Questions will be asked after the observation is complete. The purpose of the questioning is to assess or clarify underpinning knowledge and behaviours based on what the independent assessor has observed and to assist in determining whether the apprentice has reached pass or distinction criteria. The independent assessor should ask a minimum of 5 questions. They may ask follow up questions in addition to this where clarification is required. Activities not observed by the independent assessor during the observation can instead be covered by this questioning session, but these must be kept to a

minimum. The question component must not exceed 30 minutes, which is in addition to the 5 hour observation time. The independent assessor has the discretion to increase the time of the questioning by up to 10% to allow the apprentice to complete their final answer. KSBs observed, and answers to questions, must be documented by the independent assessor. The independent assessor will make all grading decisions.

Other relevant information

Customers must agree in advance with the employer and EPAO to be part of the observation.

Customers must have made an appointment for an inspection in advance of the observation which is confirmed by the employer/apprentice 24 hours prior to the observation.

Support material

EPAOs will produce the following material to support this assessment method:

- observation specification
- marking materials
- recording documentation

Venue

The observation can take place in:

· workplace other than the employer's own premises (e.g. premises of a client)
· employer's premises

Specific venue requirements that must be in place include:

EPAO will be required to use appropriate PPE as directed by the client.

Confidentiality agreements are to be followed in full.

Question development

EPAOs will create open questions to assess related underpinning knowledge and behaviours. They must develop 'question banks' of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the questions they contain, are fit for purpose. Independent assessors can tailor these questions based on what they observe.

EPAOs must ensure that apprentices have a different observation specification and set of questions in the case of re-sits/re-takes.

Assessment Method 3: Professional interview (This Method has 1 component.)

Method 3 Component 1: Professional interview

Overview

The rationale for this assessment method is:

- it allows the apprentice to be assessed against KSBs which may not naturally occur during the observation
- it is supported by a portfolio of evidence, enabling the apprentice to demonstrate the application of skills and behaviours as well as knowledge
- allows for testing of responses where there are a number of potential answers that couldn't be tested through a multiple-choice test
- Inspection activities covered in the Observation are either right or wrong and should follow the procedures outlined by the respective companies within their manuals. Therefore this method allows scope for the apprentice to demonstrate the depth and breadth of KSBs, allowing for a distinction marking.
- it is cost effective, as apart from a venue it does not require additional resources

Delivery

This assessment will take the form of a professional interview, which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. Questioning should assess the KSBs assigned to this assessment method and the apprentice my use their portfolio to support their responses.

The professional interview can take place in any of the following:

· employer's premises
· a suitable venue selected by the EPAO (e.g. a training provider's premises)

The professional interview will be conducted as set out here:

The independent assessors will conduct and assess the professional interview on a one to one basis.

The professional interview must last for 90 minutes. The independent assessor has the discretion to increase the time of the professional interview by up to 10% to allow the apprentice to complete their last answer. Further time may be granted for apprentices with appropriate needs, in-line with the EPAOs Reasonable Adjustments policy.

During this method, the independent assessor must combine questions from the EPAO's question bank and those generated by themselves. The contents of the portfolio of evidence will influence the questions selected; the independent assessor will have two weeks to review the portfolio of evidence and then select areas they wish the apprentice to expand on with reference to the identified grading descriptors. The apprentice can use the portfolio of evidence as an aide memoire and to support answers being given.

Apprentices must be assessed against the KSBs assigned to this assessment method as shown in the mapping of KSBs. Apprentices are expected to understand and use relevant occupational language that would be typical of a level 4 apprentice in this occupation.

The independent assessor must ask a minimum of twelve open questions that adequately cover the KSBs mapped to this assessment method. They may ask follow up questions in addition to this where clarification is required.

Video conferencing can be used to conduct the professional interview, but the EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided in some way, e.g. 360 degree camera.

The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional interview. The independent assessor will make all grading decisions. Evidence from the professional interview must be assessed holistically using the grading criteria for this assessment method.

Venue

The professional interview can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (e.g. a training provider's premises)

The professional interview should take place in a quiet room, free from distractions and influence.

Other relevant information

A question bank must be developed by EPAOs. The 'question bank' must be of sufficient size to prevent predictability and the EPAO must review it regularly (and at least once a year) to ensure that it, and its content, are fit for purpose. The questions relating to the underpinning knowledge, skills and behaviours, must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of professional interview and reaching consistent judgement.

EPAOs will produce the following material to support this assessment method:

- professional interview specification
- question bank
- marking materials
- recording documentation

Weighting of assessment methods

All assessment methods are weighted equally in their contribution to the overall EPA grade.

Grading

Assessment method 1: Multiple choice test

KSBs
K9, K10, K11, K12, K13, K17, K18, K19 **S11, S12, S13**

The following grade boundaries apply to the test:

Grade	Minimum score	Maximum score
Distinction	27	30
Pass	22	26
Fail	0	21

Assessment method 2: Observation

KSBs	Fail	Pass
K1, K2, K3, K6, K7, K8, K14, K15, K16 **S1, S3, S5, S6, S7, S8, S10, S16, S18** **B2, B4**	Does not meet the pass criteria	Apprentice meets all Pass grading descriptors

Assessment method 3: Professional interview

KSBs	Fail	Pass	Distinction
K4, K5, K20, K21	Does not meet the pass criteria	Apprentice meets all Pass grading descriptors	Apprentice meets all Pass and Distinction grading descriptors.

S2, S4, S9, S14, S15, S17 **B1, B3, B5, B6, B7, B8, B9, B10, B11, B12, B13**			

Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

A distinction in assessment method 1 and 3 along with a pass in AM2 will result in an overall distinction grade.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment method 1 Multiple Choice Test	Assessment method 2 Observation	Assessment method 3 Professional interview	Overall grading
Fail	Any grade	Any grade	Fail
Any grade	Fail	Any grade	Fail
Any grade	Any grade	Fail	Fail
Pass	Pass	Pass	Pass
Pass	Pass	Distinction	Pass
Distinction	Pass	Pass	Pass
Distinction	Pass	Distinction	Distinction

Roles and responsibilities

Role	Responsibility
Apprentice	• participate in development opportunities to improve their knowledge skills and behaviors as outlined in the standard • meet all gateway requirements when advised by the employer • understand the purpose and importance of EPA and undertake EPA
Employer	• support the apprentice to achieve the KSBs outlined in the standard to their best ability • determines when the apprentice is working at or above the level outlined in the standard and is ready for EPA • select the EPAO • confirm all EPA gateway requirements have been met • confirm arrangements with EPAO for the EPA (who, when, where) in a timely manner • ensure apprentice is well prepared for the EPA
EPAO	As a minimum EPAOs should: • understand the occupational role • appoint administrators/invigilators and markers to administer/invigilate and mark the EPA • provide training and CPD to the independent assessors they employ to undertake the EPA • provide adequate information, advice and guidance documentation to enable apprentices, employers and providers to prepare for the EPA • deliver the end-point assessment outlined in this EPA plan in a timely manner • prepare and provide all required material and resources required for delivery of the EPA in-line with best practices • use appropriate assessment recording documentation to ensure a clear and auditable mechanism for providing assessment decision feedback to the apprentice • have no direct connection with the apprentice, their employer or training provider i.e. there must be no conflict of interest • maintain robust internal quality assurance (IQA) procedures and processes, and conducts these on a regular basis • conform to the requirements of the nominated external quality assurance body • organise standardisation events and activities in accordance with this plan's IQA section • organise and conduct moderation of independent assessors' marking in accordance with this plan • have, and operate, an appeals process

	• arrange for certification with the relevant training provider
Independent assessor	As a minimum an Independent assessor should: • understand the standard and assessment plan • deliver the end-point assessment in-line with the EPA plan • comply to the IQA requirements of the EPAO • be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest • satisfy the criteria outlined in this EPA plan • hold or be working towards an independent assessor qualification e.g. A1 and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading • have the capability to assess the apprentice at this level • attend the required number of EPAOs standardisation and training events per year (as defined in the IQA section)
Training provider	As a minimum the training provider should: • work with the employer to ensure that the apprentice is given the opportunities to develop the KSBs outlined in the standard and monitor their progress during the on-programme period • advise the employer, upon request, on the apprentice's readiness for EPA prior to the gateway • Plays no part in the EPA itself

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- appoint independent assessors who have knowledge of the following occupational areas: Experience completing engineering inspections
- appoint independent assessors who have recent relevant experience of the occupation/sector at least the same level as the apprentice gained in the last three years or significant experience of the occupation/sector
- appoint independent assessors who are members of relevant professional bodies.
- appoint independent assessors who are competent to deliver the end-point assessment
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time.
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit any failed assessment methods only.

The timescales for a resit/retake is agreed between the employer and EPAO. A resit is typically taken within 3 months of the EPA outcome notification. The timescale for a retake is dependent on how much re-training is required and is typically taken within 6 months of the EPA outcome notification. Re-sits and re-takes are not offered to apprentices wishing to move from pass to distinction.

Where any assessment method has to be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of pass, unless the EPAO determines there are exceptional circumstances requiring a re-sit or re-take.

Affordability

Affordability of the EPA will be aided by using at least some of the following practice:

· online assessment
· using an employer's premises
· use of video conferencing
· use of clients' premises for purpose of observation exercise

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as an Engineer Surveyor with:

Society of Operations Engineers – Engineering Technician

Safety Assessment Federation – Level 4

Institute of Engineering and Technology – Engineering Technician

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for Reasonable Adjustment and what Reasonable Adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Mapping of knowledge, skills and behaviors (KSBs)

Assessment method 1: Multiple choice test

Core

Knowledge
K9 Appropriate legislation and standards including all relevant Health and Safety requirements.
K10 Appropriate mathematical problem-solving tools including engineering mathematics such as calculus, algebraic transformation techniques, logarithmic and exponential functions and algebraic methods, trigonometric functions, the radian measure, trigonometric identities and graphs.
K11 Engineering science, including the behavioral characteristics of elements of static engineering systems, the behavioral characteristics of elements of dynamic engineering systems.
K17. Installation methods and practices.
Skills
S11 Apply engineering science, to identify the behavioral characteristics of elements of static engineering systems, the behavioral characteristics of elements of dynamic engineering systems and AC and DC theory and use this knowledge to identify equipment defects and suggest solutions.

Mechanical Option only

Knowledge
K12 Mechanical Materials science, including the properties, characteristics and selection criteria of materials from tests and data sources including, metallic, ceramic, polymer and composite material.
K19: Principles of materials engineering, including the relationships between manufacturing processes and material behaviour, the impact of heat treatment, liquid processing and mechanical processing methods.
Skills
S13 Apply the appropriate mechanical engineering science principles when inspecting a mechanical installation, to reach overall conclusions.

Electrical Option only

Knowledge
K13 Principles of electrical engineering, including technical drawings, circuits, distribution boards, wiring, measurement and testing of electrical circuits.
K18. AC and DC theory and how this can be used to solve electrical and electronic engineering problems
Skills
S12 Apply the appropriate electrical engineering science principles when inspecting, testing and commissioning an electrical installation, to reach overall conclusions.

Assessment method 2: Observation

Core

Knowledge
K1 Company inspection procedures and processes.
K2 The equipment being inspected and how it is used.
K3 Use a range of measurement tools and equipment to carry out inspections such as Vernier Calipers, Pressure Gauges, electrical test equipment, flow meters - where appropriate.
K6 Report writing tools and note taking techniques and correct use of Systems International (SI) units of abbreviations
K7 Risk assessment methodology and appropriate control measures.
K8 How and when to use appropriate IT tools, including spreadsheets and word processing packages.
K14 A detailed technical awareness of the equipment being inspected.
K15 Safe access and egress.
K16 Effective oral and written communication strategies, the terminology used in this occupation and the appropriate format of inspection reports.
Skills
S1 Carry out inspections of engineering equipment in accordance with company policies, relevant legislation and standards.
S3 Use appropriate inspection equipment.
S5 Prepare succinct inspection reports using appropriate IT systems.
S6 Use engineering principles to reach an overall conclusion about the condition of the equipment.
S7 Prepare Risk Assessments and apply Safe Systems of Work.
S8 Identify and manage risks of health, safety and welfare.
S10 Manage own time and tasks.
S16 Read and interpret drawings, data and other relevant information.
S18 Work competently and safely in the workplace to meet regulatory and legislative requirements.
Behaviors

B2 Logical approach: Able to structure a plan and develop activities following a logical thought process, but also able to quickly "think on feet" when working through them.
B4 Quality focus: Follows rules, procedures and principles in ensuring work completed is fit for purpose and pays attention to detail. Checks for errors.

Assessment method 3: Professional interview

Core

Knowledge
K4 Management techniques including customer relationship management, negotiating and influencing techniques, commercial awareness, conflict management and assertiveness techniques.
K5 Roles and responsibilities within the organisation, team dynamics and their own boundaries of authority.
Skills
S2 Identify equipment defects - both common and complex - and take appropriate action to advise a compliant outcome.
S4 Use negotiating and influencing techniques to build and maintain customer relationships.
S9 Communicate professionally, effectively and appropriately - both verbally and in writing - with all stakeholders.
S14 Manage and diffuse potential conflicts.
S15 Work safely at height.
S17 Interpret appropriate engineering mathematical formulae and compare results with actual on-board readings, data/calculations and inspection findings.
Behaviors
B1 Strong work ethic: Positive attitude, motivated by engineering, dependable, ethical, responsible and reliable.
B3 Problem solving orientation: Identifies issues quickly, enjoys solving complex problems and applies appropriate solutions. Has a strong desire to push to ensure the true root cause of any problem is found and a solution is identifies which prevents recurrence.
B5 Personal responsibility and resilience: Motivated to succeed. Accountable and persistent to complete task.
B6 Clear communicator: Uses a variety of communication methods to give and receive information accurately and in a positive manner.
B7 Team player: Not only plays own part but able to work and communicate clearly and effectively within a team and interacts with and helps others when required. Does so in a respectful manner.
B8 Maintains competence and keeps pace with change: Continuous improvement in driving effectiveness and efficiency and maintenance of regulations and rules.
B9 Adaptability: Able to adjust to different conditions, technologies, situations and environments.

B10 Self-motivation: A "self-starter" who wants to give their best, sets themselves challenging targets and can make their own decisions.
B11 Commitment: Able to commit to beliefs, goals and standards of their own employer and to the wider industry and its professional standards.
B12 Independence and impartiality: Maintains independence and impartiality at all times.
B13 Health and Safety: Maintains a health and safety focus at all times, challenging unacceptable behavior.

Mechanical Option only

Knowledge
K20: The in-service causes of failure of engineering materials, including the most common causes of in-service failure and appropriate remedial action.

Electrical Option only

Knowledge
K21. Health and safety requirements which apply when inspecting, testing and commissioning principles of electrical installations. (Requirements for inspecting and testing electrical installations, requirements for the safe inspection of electrical installations, requirements for the safe testing of electrical installations, inspection and testing procedures of electrical installations).

Appendix A: Grading Descriptors

Assessment method 1: Multiple choice test

Multiple choice question paper. Questions will be generated by the EPAO, and it is recommended they consult employers when they are being developed.

KSBs
K9, K10, K11, K12, K13, K17, K18, K19 **S11, S12, S13**

Assessment method 2: Observation

Fail	Pass
Does not meet the pass grading descriptors	Apprentice meets all Pass grading descriptors

Core

Area	KSB	Pass Criteria
Company policies	**K1** Company inspection procedures and processes. **S1** Carry out inspections of engineering equipment in accordance with company policies, relevant legislation and standards. **B4** Quality focus: Follows rules, procedures and principles in ensuring work completed is fit for purpose and pays attention to detail. Checks for errors.	Follows company inspection procedures as detailed within the company manual. (K1) Identifies and applies any additional and specific client site procedures. (S1) Complies with company/site rules procedures and principles in ensuring work completed is fit for purpose. (B4)
Planning and carrying out Inspection	**S10** Manage own time and tasks. **B2** Logical approach: Able to structure a plan and develop activities following a logical thought process, but also able to quickly "think on feet" when working through them. **K3** Use a range of measurement tools and equipment to carry out inspections such as Vernier Calipers, Pressure Gauges, electrical test equipment, flow meters - where appropriate. **S3** Use appropriate inspection equipment. **K2** The equipment being inspected and how it is used. **S6** Use engineering principles to reach an overall conclusion about the condition of the equipment.	Manages site time to achieve an overall plan, using a logical approach, including preparation for contingencies. (S10, B2) Selects and uses appropriate inspection tools and equipment to carry out tasks correctly. (K3) (S3) Identifies equipment needing inspection and identifies, and reports on the overall condition of the equipment. (K2, S6)

Technical Knowledge	**K14** A detailed technical awareness of the equipment being inspected. **S16** Read and interpret drawings, data and other relevant information.	Explains all safety critical components associated with the equipment under inspection and its function. (K14) Makes use of drawings, data and other relevant information when conducting their examination. (S16)
Reporting and Communicating	**K6** Report writing tools and note taking techniques and correct use of Systems International (SI) units of abbreviations **K8** How and when to use appropriate IT tools, including spreadsheets and word processing packages. **K16** Effective oral and written communication strategies, the terminology used in this occupation and the appropriate format of inspection reports. **S5** Prepare succinct inspection reports using appropriate IT systems.	Utilises company reporting systems to produce an inspection report in accordance with company procedures and associated regulations. The report must include correct use of the technical terminology used in the profession. (K6, K8, S5) Explains findings from the inspection to the customer checking for understanding. The content of the interview reflects the finding in the report. (K16)
Health and Safety	**K7** Risk assessment methodology and appropriate control measures. **K15** Safe access and egress. **S7** Prepare Risk Assessments and apply Safe Systems of Work. **S8** Identify and manage risks of health, safety and welfare. **S18** Work competently and safely in the workplace to meet regulatory and legislative requirements.	Determines and complies with any permit to work procedures. Creates a risk assessment specific and appropriate to the activity being observed, which correctly identifies potential risks and hazards and puts measures in place to mitigate them. (K7, S7, S8) Explains the safe procedure of access and egress. (K15) Follows regulatory and legislative health and safety requirements at all times. (S18)

Assessment method 3: Professional interview

Fail	Pass	Distinction
Does not meet the pass grading descriptors	Apprentice meets all Pass grading descriptors	Apprentice meets all Pass and all Distinction grading descriptors

Core

Area	KSB	Pass Criteria	Distinction Criteria
Tools and Equipment	**S2** Identify equipment defects - both common and complex - and take appropriate action to advise a compliant outcome.	Describes common and complex defects they have identified on equipment they have worked on and the steps required to rectify them. (S2)	
Customer Relationships	**K4** Management techniques including customer relationship management, negotiating and influencing techniques, commercial awareness, conflict management and assertiveness techniques. **S4** Use negotiating techniques to build and maintain customer relationships. **S14** Manage and diffuse potential conflicts.	Explains how they have used negotiating and influencing techniques to build and maintain customer relationships and the impact this can have on commercial success. (K4, S4) Explains how they have managed and diffused a potential conflict and how they achieved this. (S14)	Explains how they evaluate their negotiating and influencing techniques to check whether they are working when in use. (K4, S4) Explains how they evaluate and adapt the steps they then take to vary their approach to achieve their goal. (S14)
Problem Solving	**B3** Problem solving orientation: Identifies issues quickly, enjoys solving complex problems and applies appropriate solutions.	Explains how they took ownership of a complex task and how they got to the root cause and found a solution. Describes	Justifies how they analysed solutions to a problem that had a lasting and wide reaching impact, beyond the

	Has a strong desire to push to ensure the true root cause of any problem is found and a solution is identified which prevents recurrence. **B5** Personal responsibility and resilience: Motivated to succeed. Accountable and persistent to complete task.	the steps they took to prevent reoccurrence of the problem. (B3) Explains how they maintain resilience and motivation to complete a task in the face of adversity. (B5)	immediate case in hand. (B3)
Roles, responsibilities and accountability	**K5** Roles and responsibilities within the organisation, team dynamics and their own boundaries of authority **B7** Team player: Not only plays own part but able to work and communicate clearly and effectively within a team and interacts with and helps others when required. Does so in a respectful manner.	Explains the roles and responsibilities within their team and the importance of maintaining the boundaries of their authority (i.e They must not inspect equipment outside their range as they are not authorised to do so.) (K5) Describes how their contribution to team activities makes a difference to project outcomes. (B7)	Explains how they use a range of techniques to support others, including mentoring and coaching, describing the impact it had on the individual. (B7)
Health and Safety	**S15** Work safely at height. **B13** Health and Safety: Maintains a health and safety focus at all times, challenging unacceptable behavior.	Explains the importance of maintaining a Health and Safety focus at all times, with reference to working at height and describes the considerations they make when planning an inspection activity. (S15) Explains how they act as a good role	Describes the range of approaches they use to educate others on Health and Safety issues, including how they select the appropriate approach and the impact it has on the individual. (B13)

		model in terms of Health and Safety and the impact of challenging poor behaviour. (B13)	
Client Communication	**S9** Communicate professionally, effectively and appropriately - both verbally and in writing - with all stakeholders. **B6** Clear communicator: Uses a variety of communication methods to give and receive information accurately and in a positive manner. **B12** Independence and impartiality: Maintains independence and impartiality at all times.	Demonstrate by use of an example, where they have maintained effective partnerships with clients through the inspection activity to achieve efficient and compliant outcomes, always with a positive and respectful attitude and by using a variety of communication methods. (S9, B6) Describes how they maintain independence and impartiality during inspection activities. (B12)	Describes how they manage conflicts of interest. (B3)
Mathematics and data	**S17** Interpret appropriate engineering mathematical formulae and compare results with actual on-board readings, data/calculations and inspection findings.	Describes, with an example, how they use mathematical, scientific calculations relevant to their role in order to make logical informed decisions. (S17)	
Changing and adapting	**B8** Maintains competence and keeps pace with change: Continuous improvement in driving effectiveness and efficiency and maintenance of regulations and rules. **B9** Adaptability: Able to adjust to different conditions,	Describes, with an example, ways in which they have increased their effectiveness and efficiency when carrying out inspections and kept up to date with regulations and rules. (B8)	

	technologies, situations and environments. **B10** Self-motivation: A "self-starter" who wants to give their best, sets themselves challenging targets and can make their own decisions.	Describes the considerations they make when adjusting to different conditions and environments. (B9) Describes how they manage multiple tasks concurrently and how they manage the challenges to meet tight deadlines. (B10)	
Commitment	**B1** Strong work ethic: Positive attitude, motivated by engineering, dependable, ethical, responsible and reliable. **B11** Commitment: Able to commit to beliefs, goals and standards of their own employer and to the wider industry and its professional standards.	Describes, using an example, where they have created and maintained positive, professional, and trusting working relationships with key stakeholders. (B1) Describes how they maintain the highest standards of integrity and ethics in all business relationships. (B11)	

Mechanical Option only

Area	KSB	Pass Criteria	Distinction Criteria
Mechanical equipment failure	**K20:** The in-service causes of failure of engineering materials, including the most common causes of in-service failure and appropriate remedial action.	Describes the three most common causes of in-service mechanical equipment failure and appropriate remedial action. (K20)	Explains their analysis of the causes of mechanical equipment failure and compares and contrasts different approaches to remedial action. (K20)

Electrical Option only

Area	KSB	Pass Criteria	Distinction Criteria
Working safely with electrical equipment	**K21.** Health and safety requirements which apply when inspecting, testing and commissioning principles of electrical installations. (Requirements for inspecting and testing electrical installations, requirements for the safe inspection of electrical installations, requirements for the safe testing of electrical installations, inspection and testing procedures of electrical installations).	Describes the health and safety requirements that they take into account when preparing to undertake an inspection or test of electrical installations. (K21)	Explains the most common causes of electrical failure when testing electrical installations and compares and contrasts different approaches to test for these and other less common failures. (K21)